

HITACHI

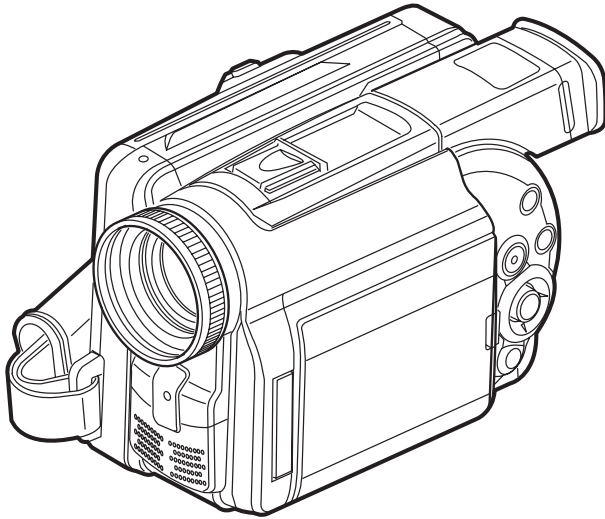
SERVICE MANUAL

TK

No. 7201E

DZ-MV230A

DZ-MV200A



Contents included

- This service manual does not include information on drive mechanism unit and MAN circuit board.
When servicing, replace the entire drive mechanism unit or the entire MAN circuit board if necessary.
For fault judgment, see Chapter 6 simplified circuit board diagrams that show the voltage values of major ICs on circuit boards (DRC and HDM) mounted on drive mechanism unit and MAN circuit board.
- Trouble diagnosis and electric circuit adjustment are explained elsewhere.



SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

DVD VIDEO CAMERA/RECORDER

March

2002

Digital Media Products Division, Tokai

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts have special safety-related characteristics. These are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for a higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual. Electrical components having such features are identified by marking with a ⚠ on the schematics and the parts list in this Service Manual. The use of a substitute replacement component which does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards. Product safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current HITACHI Service Manual. A subscription to, or additional copies for, HITACHI Service Manual may be obtained at a nominal charge from HITACHI SALES CORPORATION.

CAUTION (COLOR LCD)

LCD display; the liquid crystal display (LCD) panel is made by highly precise technology. More than 99.99% of its picture elements (pixels) are effective, but some (less than 0.01%) may appear as colored bright dots. This mode not indicate a fault as the LCD panel stretches the limits of current technology.

CLASS 1
LASER PROTECT

CAUTION

This product contains a laser diode of higher class than 1. To ensure continued safety, do not remove any covers or attempt to gain access to the inside of the product. Refer all servicing to qualified personnel.

CAUTION - VISIBLE AND INVISIBLE
LASER RADIATION WHEN OPEN.
DO NOT STARE INTO BEAM.

How to discriminate the "TYPE" identifications in the manual

The parts and circuits are identified by "TYPE" in this manual to discriminate the differences between models. The TYPE numbers are the same as the model numbers. The table below shows how to read the type identifications.

TYPE identification	Model name
TYPE 230	DZ-MV230A
TYPE 200	DZ-MV200A

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Lead-Free Solder

To conserve global environment, lead-free solder is used in this product.
Be sure to read the following before soldering.

Caution

Be sure to wear protective goggles so that no solder smoke or scattered solder enters the eye.
Lead-free solder may scatter at high temperatures (600°C).

Indication of lead-free solder used

"F" is printed on either surface of circuit boards for which lead-free solder is used.

Characteristics of lead-free solder

The following shows the characteristics of lead-free solder used in this product:

Composition of alloy (wt%): Sn-3.0Ag-0.5Cu
Melting temperature: Approx. 220°C

Solder for servicing

It is recommended that you use lead-free solder whose characteristics are the same as that used in product.

It is also possible to service using lead solder. However, if lead solder is used for servicing, some cautions are necessary. (Neglecting these cautions could decrease strength, causing malfunctions.)

Cautions when using lead solder

- When replacing components, remove the lead-free solder previously used for soldered points as far as possible.
- For additional soldering, melt lead-free solder completely and mix well with lead solder.
[Do not perform repair using the bare soldering iron tip (without adding solder)].

Soldering iron for servicing

It is recommended that you use a soldering iron whose temperature at its tip can be set (with thermal control function).

Lead-free solder melts at a temperature 30°C - 40°C higher than lead solder. Therefore, workability will decrease unless you use a soldering iron whose temperature is high, whose temperature at its tip does not change greatly (heat capacity is large), and that can be set to match the work points.

Recommended soldering iron

- With thermal control function (temperature setting range: 320°C - 450°C)

Recommended tip temperatures for different work points

Work point	Recommended tip temperature
Circuit board with surface-mounted (chip) parts	320°C ± 30°C
Circuit board without surface-mounted (chip) parts	380°C ± 30°C
Chassis, metal shield	420°C ± 30°C

Notes When Using Service Manual

The following shows the contents to be noted when using service manual:

1. Value units used in parts list

Certain symbols are indicated below for value units of resistors, capacitors and coils in parts list. When you read them note the following regular indications:

Parts	Indication in list	Regular indication
Resistor	KOHM	kΩ
Capacitor	UF	μF
	PF	pF
Coil	UH	μH
	MH	mH

2. Values in schematic diagrams

The values, dielectric strength (power capacitance) and tolerances of the resistors (excluding variable resistors) and capacitors are indicated in the schematic diagrams using abbreviations.

[Resistors]

Item	Indication
Value	No indication Ω
	K kΩ
	M MΩ
Tolerance	No indication ±5% (All tolerances other than ±5% are indicated in schematic diagrams)
	No indication 1/8W (1/16W for leadless resistors without indication) All capacitances other than the above are indicated in schematic diagrams.

[Capacitors]

Item	Indication
Value	No indication μF
	P pF
Dielectric strength	No indication 50V (All dielectric strengths other than 50V are indicated in schematic diagrams)

[Coils]

Item	Indication
Value	μ μH
	m mH

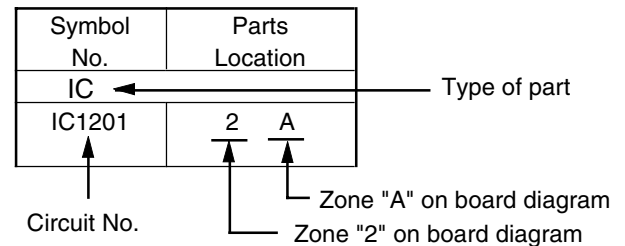
3. Identifications of sides A/B in circuit board diagrams

- Board having a pattern on one side and parts on both sides.
 - Side A: Shows discrete parts, viewed from the pattern side.
 - Side B: Shows leadless parts, viewed from the pattern side.
- Board having patterns on both sides and parts on both sides.
 - Side A: Shows parts and patterns which can be seen when the case is opened.
 - Side B: Shows parts and the pattern on the back of side A.

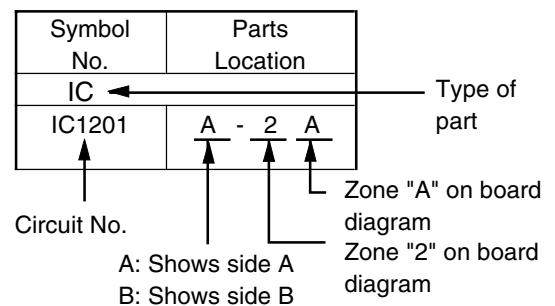
4. Table for indexing locations of parts

This table shows locations of each part on circuit board diagrams. The locations are indicated using the guide scales on the external lines of diagrams.

- One diagram indicated for each board



- Two diagrams indicated for each board



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1. Specifications

CCD Image sensor (number of effective pixels)	DZ-MV230A	1/4 inch interlaced Total number of pixels: approx. 1,100,000 Video (Movie): approx. 720,000 Photo (Still): approx. 1,000,000
	DZ-MV200A	Total number of pixels: approx. 680,000 Video (Movie): approx. 340,000 Photo (Still): approx. 630,000
Lens	F2.0 to 2.7, f = 3/16 to 1-15/16 inch (4.1 to 49.2 mm) Filter diameter: 1-7/16 inch (37 mm)	
Focal length (converted to 35mm camera)	Video (Movie): approx. 1-3/4 to 20-13/16 inch (44 to 528 mm) Photo (Still): approx. 1-1/2 to 17-15/16 inch (38 to 456 mm)	
Focus	Auto/Manual	
Zoom	Optical 12x, 48x to 240x with digital zoom added	
Required minimum illumination	8 lx	
Viewfinder	Black & white	
LCD monitor	2.5 inch color TFT (approx. 60,000 pixels)	
Image stabilizer	Electronic type	
Shutter speed	1/60 to 1/4000 second (Video)	
Flash [using Video Flash (optional)]	(Auto/On/Off) Photo (still) recording only	
Self-timer recording	Photo (still) recording only	
External microphone jack	External microphone jack / ø 3.5 mm stereo mini-jack: Recommended microphone impedance 600 ohm to 1 k ohm	
Recording mode	Video (Movie) [with sound] Photo (Still) [only with DVD-RAM disc]	
Maximum recordable time	DVD-RAM disc (on both sides of disc)	approx. 36 to 120 minutes (XTRA) [only DZ-MV230A] approx. 60 minutes (FINE) approx. 120 minutes (STD)
	DVD-R disc (on one side of disc)	approx. 30 minutes (FINE) approx. 60 minutes (STD) approx. 30 minutes (LPCM)
Maximum number of recordable stills (on both sides of DVD-RAM disc)	1998	
Recording format	DVD-RAM disc	Video (Movie): Conforming to DVD video recording format (MPEG audio layer 2) Photo (Still): Simultaneous recording, conforming to DVD video recording format (704 × 480 pixels) and JPEG (1,280 × 960 pixels on DZ-MV230A, 1,024 × 768 pixels on DZ-MV200A)
	DVD-R disc	Video (Movie): Conforming to DVD video format (linear PCM, MPEG audio layer 2)
Audio playback format	MPEG audio layer 2, linear PCM (LPCM), Dolby AC3	
Recording medium	8 cm DVD-RAM disc (Conforming to DVD-RAM Ver.2.1) 8 cm DVD-R disc (Conforming to DVD-R for General Ver.2.0)	
Jacks	Video/audio input/output ×1, S-video output ×1, External microphone input ×1, Digital input/output terminal (connected to PC USB jack) ×1	
Battery system	Lithium-ion	
Power requirements / consumption	7.2V DC / approx. 5.8W when recording with LCD monitor off	
Dimensions (W × H × D)	approx. 3-1/14 × 4 × 5-5/8 inch (82 × 101 × 143 mm) [excluding hood and projections]	
Operation temperature (humidity)	32 to 104 °F (0 to 40 °C) (less than 80 %) 32 to 86 °F (0 to 30 °C) when connection to PC	
Storage temperature	-4 to 140 °F (-20 to 60 °C)	
Weight	1.47 lbs (approx. 670 g) (without battery and disc)	
Total weight when recording	1.83 lbs (approx. 830 g) (when using DZ-BP14(R)/DZ-BP16 (sold separately) battery)	
Provided accessories	AC adapter, battery, AV input/output cable, infrared remote control, 2 "AA" batteries for remote control, lens cap, lens cap string, shoulder strap, power cable, 2 ferrite cores, 8 cm DVD-R disc	

Reference: Specifications of DZ-ACE1 AC Adapter

Power supply	100-240 V AC, 50/60 Hz	Dimensions (W x H x D)	46 x 30 x 111 mm
Input capacity	28 VA (at 100 V)	Operation temperature	0 to 40°C
DC output	8.4 V, 1.5 A	Allowable relative humidity	90 % less than
Weight	Approx. 185 g		

(Design and specifications are subject to change without notice.)

2. Comparison of Specifications/Functions with Previous Model

Item		DZ-MV230A DZ-MV200A	DZ-MV100A	
Specifications/Functions	CCD image sensor	1/4 inch interlaced	1/4 inch interlaced	
		Total number of pixels	DZ-MV230A: approx. 1,100,000 DZ-MV200A: approx. 680,000	approx. 1,100,000
		Number of video effective pixels	DZ-MV230A: approx. 720,000 DZ-MV200A: approx. 340,000	approx. 720,000
		Number of photo effective pixels	DZ-MV230A: approx. 1,000,000 DZ-MV200A: approx. 630,000	approx. 1,000,000
	Lens	Focal length (When converted to 35 mm camera)	Video(movie): approx. 44 to 528 mm Photo(still): approx. 38 to 456 mm	<i>Same as in left column</i>
		F-value	F2.0 to 2.7 (f = 4.1 to 49.2 mm)	<i>Same as in left column</i>
		Zoom magnification	Optical 12x; 240x when digital zoom is used	Optical 12x; 48x when digital zoom is used
		Focus	Autofocus/manual focus	<i>Same as in left column</i>
		Filter diameter	37 mm	<i>Same as in left column</i>
	Minimum required illumination		8 lx	18 lx
	Minimum recordable distance		With wide-angle: approx. 1 cm With telephoto: approx. 1 m	<i>Same as in left column</i>
	Viewfinder		Black & white	0.44 inch color TFT (approx. 1,800,000 pixels)
	LCD monitor		2.5 inch color TFT (approx. 1,200,000 pixels)	3.5 inch color TFT (approx. 2,000,000 pixels)
	Image stabilizer system		Electronic type (only when recording video)	<i>Same as in left column</i>
	Shutter speed	When recording video (movie)	1/60-1/4000 (auto)	<i>Same as in left column</i>
		When recording photo (still)	1/30-1/800 (auto)	<i>Same as in left column</i>
	Flash		Not equipped: Optional [Usable only with photo (still)]	Equipped: Usable only with photo (still) (auto/forced on/off) Guide number: 4 Effective distance: approx. 4 m
	Self-timer recording		Usable only with photo (still) (approx. 10 seconds)	<i>Same as in left column</i>
	Interval recording		Not equipped	Equipped: Usable only with photo (still) (can be set in 10 seconds units from approx. 30 seconds to approx. 5 minutes)
Built-in microphone		Stereo, omnidirectional	<i>Same as in left column</i>	
Recording/playback media		8 cm DVD-RAM disc (conforming to DVD-RAM Ver. 2.1) 8 cm DVD-R disc (conforming to DVD-R for General Ver. 2.0)	8 cm DVD-RAM disc (conforming to DVD-RAM Ver. 2.1)	
Recording mode	8 cm DVD-RAM disc	Video (movie) [with audio] / Photo (still)	Video (movie) [with audio] / Photo (still)	
	8 cm DVD-R disc	Video (movie) [with audio]	Incompatible with DVD-R disc	
Maximum video (movie) recordable time	8 cm DVD-RAM disc (both sides)	XTRA mode: approx. 36-120 minutes (only DZ-MV230A) FINE mode: approx. 60 minutes STD mode: approx. 120 minutes	FINE mode: approx. 60 minutes STND mode: approx. 120 minutes	
	8 cm DVD-R disc (one side)	FINE mode: approx. 30 minutes STD mode: approx. 60 minutes LPCM mode: approx. 30 minutes	Incompatible with DVD-R disc	
Maximum recordable number of photos (stills)	8 cm DVD-RAM disc (both sides)	1998	<i>Same as in left column</i>	
	8 cm DVD-R disc (one side)	Photo (still) cannot be recorded on DVD-R disc	Incompatible with DVD-R disc	

		Item	DZ-MV230A DZ-MV200A	DZ-MV100A
Specifications/Functions	Video recording format	8 cm DVD-RAM disc	Conforming to DVD video recording format (MPEG audio layer 2)	<i>Same as in left column</i>
		8 cm DVD-R disc	Conforming to DVD video format (linear PCM or MPEG audio layer 2)	Incompatible with DVD-R disc
	Photo (still) recording format	8 cm DVD-RAM disc	Conforming to DVD video recording format (704 × 480 pixels), and JPEG (1,280 × 960 pixels on DZ-MV230A, 1,024 × 768 pixels on DZ-MV200A), recorded simultaneously [640 × 480 pixels with external input]	Conforming to DVD video recording format (704 × 480 pixels), and JPEG (1,280 × 960), recorded simultaneously [640 × 480 pixels with external input]
		8 cm DVD-R disc	Photo (still) cannot be recorded	Incompatible with DVD-R disc
	Audio playback format		MPEG audio layer 2, linear PCM (LPCM), Dolby AC3,	MPEG audio layer 2, Dolby AC3
	Jacks mounted	Video/audio	Input/output: 1 (ø 3.5 mm)	<i>Same as in left column</i>
		S-video	Output: 1	Input/output: 1
		External microphone input	1 (ø 3.5 mm. stereo mini-jack; impedance: 600 to 1 k ohm)	<i>Same as in left column</i>
		Digital input/output	1 (mini-USB, Type B)	1 (Hitachi original shape)
	Battery system		Lithium-ion	<i>Same as in left column</i>
	Power requirements		7.2 V DC	<i>Same as in left column</i>
	Power consumption		approx. 5.8 W when recording with LCD monitor off	approx. 6.5 W when recording with LCD monitor off
	Dimensions (W x H x D)		approx. 82 x 101 x 143 mm (excluding hood and projections)	approx. 78 x 108 x 166 mm (excluding hood and projections)
	Allowable operating temperature/humidity		0 to 40 °C / 80 % or less (0 to 30 °C when connected to PC)	0 to 40 °C / 80 % or less (0 to 35 °C when connected to PC)
	Weight (excluding battery and disc)		approx. 670 g	approx. 800 g
	Analog input recording function		Equipped: Video/audio input/output jack used	<i>Same as in left column</i>
	Disc Navigation		Equipped (*1)	Equipped (*1)
	Program AE		6 modes equipped (*1)	5 modes equipped (*1)
	White balance		Auto/Hold	<i>Same as in left column</i>
	Exposure correction		Auto/Manual, exposure correction used in common	<i>Same as in left column</i>
Built-in microphone wind noise reduction		Not equipped	Equipped: ON/OFF selectable	
Battery pack charging on camera/recorder		Equipped	Not equipped	
Accessory shoe		Mounted: With power terminal	Not mounted	
Speaker output		Monaural, 200 mW (max)	<i>Same as in left column</i>	
Provided AC adapter or		DZ-ACE1 [AC Adapter]	DZ-ACP1 [AC Adapter/charger]	
Major provided/optional accessories	AC adapter/charger		(100-240 V AC, 50/60 Hz input)	(100-240 V AC, 50/60 Hz input)
	Provided battery pack		DZ-BP14(R) (7.2 V/1600 mAh)	DZ-BP16 (7.2 V/1600 mAh)
	Provided infrared remote control		DZ-RM2	DZ-RM1
	Provided disc		8 cm DVD-R disc (DR30.1P)	8 cm DVD-RAM disc (DRMS-V28R)
	Optional 8 cm DVD-RAM disc		DRMS-V28R (recommended)	<i>Same as in left column</i>
	Optional battery pack (including the same type battery pack provided)		DZ-BP14(R) (7.2 V/1600 mAh) DZ-BP16 (7.2 V/1600 mAh) DZ-BP28 (7.2 V/2800 mAh)	DZ-BP16 (7.2 V/1600 mAh) DZ-BP28 (7.2 V/2800 mAh)
	Optional video flash		DZ-FLH3	Unnecessary: Flash built into camera/recorder
	Optional video light		DZ-LD9	Unusable
	PC connection kit		DZ-WINPC3(W) (*2)	DZ-WINPC1/DZ-WINPC2 (*3)

*1: Refer to "Supplement to comparison of functions" on the next page for detailed comparison of Disc Navigation and program AE functions.

*2: DZ-WINPC3(W) is used in common for video (movie) and photo (still).

*3: DZ-WINPC1 is for photo (still), and DZ-WINPC2 is used in common for video (movie) and photo (still).

Supplement to comparison of functions

Comparison of Disc Navigation Function

The following table shows the differences in Disc Navigation function between DZ-MV230A/MV200A and DZ-MV100A, using the function names of DZ-MV230A/MV200A.

Since the names of functions using Disc Navigations are different for DZ-MV230A/MV200A and DZ-MV100A, some functions overlap and are omitted in the following table:

Note: A DVD-RAM disc recorded or edited on DZ-MV230A/MV200A can be played back or edited on DZ-MV100A.
A DVD-RAM disc recorded or edited on DZ-MV100A can be played back or edited on DZ-MV230A/MV200A, except for scene memo function.

Function name		DZ-MV230A/MV200A		DZ-MV100A	
		DVD-RAM disc	DVD-R disc		
Play list	Switch	Yes	No	Yes	
	Play	Yes	No	Yes	
	Create	Yes	No	No	
	Edit	Yes	No	Yes	
	Title	Yes	No	Yes	
	Delete	Yes	No	Yes	
Scene	Delete	Yes	No	Yes	
	Edit	Fade	Yes	No	Yes
		Combine	Yes	No	Yes
		Divide	Yes	No	Yes
		Move	Yes	No	No
	Skip	Yes	No	Yes	
	Select	Current -> End	Yes	Yes	Yes
		Start -> End	Yes	Yes	Yes
		All	No	No	Yes
	Detail	Yes	Yes	Yes	
Title	No	No	Yes		
Program	Switch	Yes	Yes	Yes	
	Play	Yes	Yes	Yes	
	Title	Yes	No	No	
Disc	Capacity	Yes	Yes	Yes	
	Format Disc	Yes	No	Yes	
	Finalize	No	Yes	No	
	Update Control Info	Yes	No	Yes	
Others	Repeat Play	Yes	Yes	Yes	

Comparison of Program AE Function

Mode	DZ-MV230A DZ-MV200A	DZ-MV100A
Auto/Full auto	Yes	Yes
Sports	Yes	Yes
Portrait	Yes	Yes
Spotlight	Yes	Yes
Sand & Snow	Yes	Yes
Low Light	Yes	No

Comparison of DZ-MV230A and DZ-MV200A

Item		DZ-MV230A	DZ-MV200A
CCD Image Sensor (Total number of effective pixels)		approx. 1,100,000	approx. 680,000
XTRA mode of DVD-RAM disc video (movie) recording		Yes	No
Number of pixels at photo (still) recording	JPEG	Camera: 1280 × 960 Extrenal input: 640 × 480	Camera: 1024 × 768 Extrenal input: 640 × 480
	MPEG	Camera: 704 × 480 Extrenal input: 704 × 480	Camera: 704 × 480 Extrenal input: 704 × 480

3. Formats Concerning DVD (DVD-RAM/DVD-R Discs)

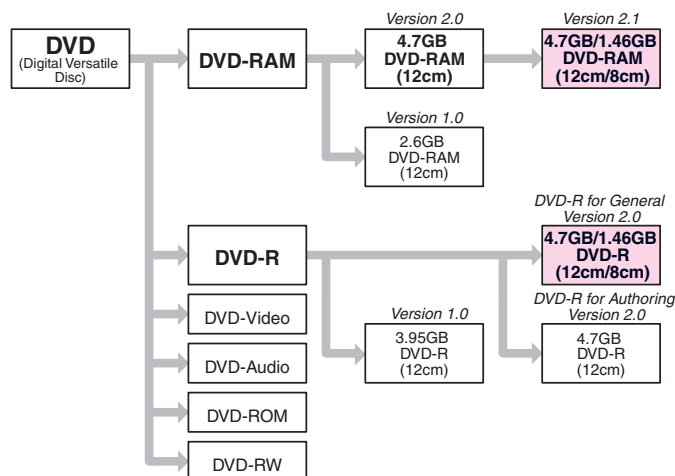
The contents in this section are correct as of March 2002.

3.1 Formats for DVD-RAM/DVD-R Discs

(1) Overview

DVD discs can be divided into DVD-RAM, DVD-R, DVD-Video, DVD-Audio, DVD-ROM and DVD-RW. The format for each type is stipulated in format books defined by DVD Forum (*1). Each time format articles are added or changed, the books versions are also changed. The following diagram shows the overview of formats of DVD-RAM (*2) and DVD-R (*3) discs that can be used on this DVD video camera/recorder:

- *1: DVD Forum is an international organization that rules on technical specifications of DVD format.
- *2: Use 8 cm discs for AV (discs on which "For Video", etc. is specified), which is suitable for video recording, on this DVD video camera/recorder.
- *3: DVD-R disc has two formats – DVD-R for General (for home use) and DVD-R for Authoring (for professional use).
Use an 8 cm "DVD-R for General" disc for AV (discs on which "For Video", etc. is specified), which is suitable for video recording, on this DVD video camera/recorder.



(2) Specifications

Item	8 cm DVD-RAM	12 cm DVD-RAM (reference)	8 cm DVD-R	12 cm DVD-R (reference)
Format version	DVD-RAM Ver. 2.1	DVD-RAM Ver. 2.1	DVD-R for General Ver. 2.0	
Diameter of medium	8 cm	12 cm	8 cm	12 cm
Cartridge	Provided (*4)		Not provided (*5)	Not provided
Capacity (per side)	1.46 Gbytes	4.7 Gbytes	Approx. 1.46 Gbytes	4.7 Gbytes
Number of times rewritable	At least 100,000		Write-once only	
Laser wavelength (NA)	650 nm (0.6)		650 nm (0.6)	
Recording format	Mark edge recording		Mark edge recording	
Track format	Wobble land groove		Wobble groove	
Track pitch	0.615 μm		0.74 μm	
Data recording bit length	0.28 μm		0.27 μm	
Sector size	2048 bytes		2048 bytes	
Modulation scheme	8/16 modulation		8/16 modulation	
Error correction format	RSPC (Read Solomon Product Coding)		RSPC (Read Solomon Product Coding)	
Recording rate	22.16 Mbps		26.16 Mbps	

*4: Note the following three types of 12 cm DVD-RAM disc depending on whether the cartridge is provided or not, and usable status with or without cartridge:

- Type 1 (with cartridge, usable only when cartridge is in)
- Type 2 or 4 (with cartridge, usable both when cartridge is in and when it is removed)
- Non-cartridge (without cartridge)

The 8 cm DVD-RAM disc can be used both with cartridge in and with cartridge removed, the same as DVD-RAM Type 2 or 4.

*5: When using DVD-R disc on this DVD video camera/recorder, insert disc into caddy.

3.2 DVD file format

DVD format can be divided into physical format (structure and shape of disc), file format (structure of file, directory, etc.), and application format (video, audio, etc.): The file format conforms to UDF (*7) defined by OSTA (*6).

This DVD video camera/recorder uses 8 cm DVD-RAM discs (for AV) and 8 cm DVD-R discs (DVD-R for General, for AV), which are initialized according to the UDF version 2.01 file format.

Unformatted 8 cm DVD-RAM or DVD-R disc cannot be used: Initialize it by the specified procedure (*8).

*6: OSTA stands for Optical Storage Technology Association, which is the internal industrial group that promotes recordable optical storage used to store computer data and video. OSTA does not set standards, but supports the optical storage industry that defines the practical phasing of standards and maintains the compatibility of products subsequently produced.

*7: UDF stands for Universal Disk Format.

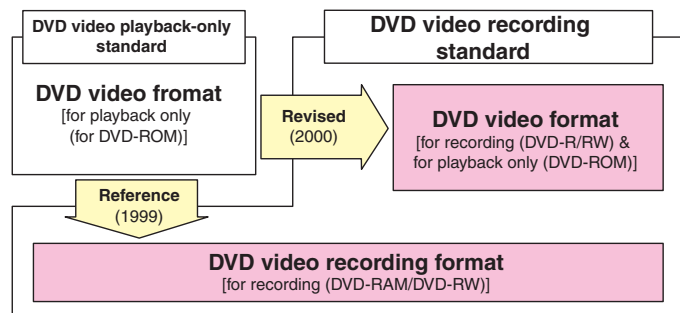
*8: Refer to "4. Initializing and Finalizing DVD-RAM/DVD-R Discs" in the following section for how to initialize DVD-RAM and DVD-R discs.

3.3 DVD video recording format

The following two DVD video recording formats are defined by DVD Forum (*9):

This DVD video camera/recorder is compatible with both recording formats, which can be switched to match the recording medium.

- DVD video recording format : DVD-RAM disc
- DVD video format : DVD-R disc



(1) DVD video recording format

The DVD video recording format is a common international format defined in 1999 for recording of video on DVD in real time. This format was established with reference to the "DVD video format" that had been adopted for playback-only DVD-ROM discs (i.e., DVD video discs) before this format was defined. The DVD video recording format has achieved real-time recording, addition or deletion of video/audio, and editing, which had been considered difficult. It also defines the devices for achieving the characteristics inherent in disc, such as easy arrangement of playback order (play list function), coping with photos (stills), recording of character data for searching, etc.

(2) DVD video format

The conventional "DVD video format" was adopted only for playback-only DVD-ROM discs (i.e., DVD video discs), but it was revised in 2002, and also applied to DVD recording media (DVD-R/DVD-RW). (*10)

With this format, the versatile editing functions that the DVD video recording format offers cannot be used, but the recorded DVD-R and DVD-RW discs have a physically high affinity with DVD-ROM disc (i.e., DVD video disc), and can be played back on DVD players and PCs compatible with DVD-ROM. (*11)(*12)

*9: DVD Forum is an international organization that decides technical specifications of DVD format.

*10: The DVD video format allows recording of "recording free" programs: It does not allow recording of "one-time only recordable" programs.

*11: The DVD video format newly defines the identification method of discriminating the DVD-R and DVD-RW discs from DVD-ROM, but conformity to this format is on a voluntary basis for each manufacturer, so these discs may not be playable, depending on the manufacturer or model. To make DVD-R disc recorded on this DVD video camera/recorder playable on another DVD device, the disc must be finalized: Refr to "4. Initializing and Finalizing DVD-RAM/DVD-R Discs" in the following section for how to finalize the DVD-R disc.

*12: With this DVD video camera/recorder, audio recording can be selected from the LPCM (linear PCM) mode that conforms to DVD video format, the FINE mode, and the STD mode that uses the MPEG2 audio layer 2, which is the optional standard of DVD video format.

Comparison of DVD video recording format and DVD video format

Item		DVD video recording format	DVD video format
Video	Coding format	MPEG-1/MPEG-2	
	Number of streams	1 stream only	
	Aspect ratio	4:3/16:9	
	Number of pixels (NTSC)	720 × 480, 704 × 480, 544 × 480, 480 × 480, 352 × 480, 352 × 240	720 × 480, 704 × 480, 352 × 480, 352 × 240
	Photo (still) data structure	I picture of one photo (still)	Not defined
Audio	Coding format	MPEG/Dolby AC3/Linear PCM	
	Number of streams	Up to 2 / Up to 8	Up to 8
	Number of channels per stream	Mono/Stereo/Dual Mono/Multi (up to 71 channels)	Mono/Stereo /Multi (up to 71 channels)
Sub-picture	Coding format	Run-length encoding	
	Number of streams	1 only	
	Display control command	Sub-set of that at right	Full set
Data for control	None	Provided (essential)	
Multiplexing type	MPEG-2 program stream		
Versatile editing functions	Possible	Impossible	
Finalization needed or not	Not needed	Needed	
Playback device	Players and PCs compatible with DVD-RAM	DVD players, PCs compatible with DVD-ROM, etc. (unplayable on some models)	

4. Initializing and Finalizing DVD-RAM/DVD-R Discs

Caution:

- Always use AC adapter to power the DVD video camera/recorder when initializing or finalizing DVD-RAM/DVD-R disc. Turning power off midway will result in fault in disc, which could make recording or playback impossible.
- Do not allow any interruption during initializing or finalizing of DVD-RAM/DVD-R disc, such as turning power off: Doing this will result in fault in disc, which could make recording or playback impossible.
- If DVD-RAM/DVD-R disc is dirty, initializing or finalizing may not be completed normally.

Perform the following procedures after turning DVD video camera/recorder on and opening the LCD monitor (while viewing LCD screen). Use the buttons, etc. on DVD video camera/recorder for all operations.

4.1 How to initialize DVD-RAM disc

Caution:

- Executing this operation will delete all files on DVD-RAM disc: Copy necessary files to PC, etc.
- Initialization is performed on one side and then the other. When initializing only one side, be sure to check the recorded contents before executing this operation.

There are two methods of initialization – with the Disc Navigation function, to be described here, and without it. For initialization without Disc Navigation, refer to "2.2 Forced disc formatting" in Chapter 3.

Before starting:

- Use the joystick to move the cursor to a menu item, and then designate it when Disc Navigation is in operation. (Tilt up, down, to left or right to move to an item, and press the center of joystick to designate the item.)

Operational procedure:

- 1) Release write-protect of DVD-RAM disc to be initialized and load the disc in the DVD video camera/recorder.
- 2) Press the DISC NAVIGATION button to start Disc Navigation.
- 3) Press the MENU button to display the menu screen.
- 4) Choose "Disc", "Format Disc" on the menu screen, and then designate it.
- 5) The screen for verifying disc formatting will appear: Choose "YES" and designate it. (*1)
- 6) When initialization ends normally, message "Disc formatted" will appear: To initialize the other side of disc, turn it over, and start with step 1). To finish the work, press the DISC NAVIGATION Button again.

*1: Choosing "NO" and designating it will stop initialization.

4.2 How to initialize DVD-R disc

Caution:

- This operation is necessary only when using brand-new DVD-R disc the first time.
- After this operation, the DVD-R disc can be used only on this DVD video camera/recorder (it will not be recordable on another device).
Do not initialize the DVD-R disc when using it on PC (i.e., connecting the DVD video camera/recorder via USB and using it as an external device of PC).


Operational procedure:

- 1) Load a brand-new DVD-R disc to be set.
- 2) After disc is recognized, message "For camera use?" will appear: Choose "YES" following the screen and designate it. (*1)

*1: The on-screen message will appear only when a brand-new, unformatted DVD-R disc is loaded. Choosing "NO" and designating it will not initialize the DVD-R disc.

4.3 How to finalize DVD-R disc

Caution:

- The operation is necessary when playing back on another device (DVD player, etc.) a DVD-R disc on which video was recorded using this DVD video camera/recorder.
- No further recording or editing can be done on a finalized DVD-R disc. When the finalized DVD-R disc is loaded in this DVD video camera/recorder,  will appear on the disc thumbnail screen.

Before starting:

- Use the joystick to move the cursor to a menu item, and designate it when Disc Navigation is in operation.
(Tilt up, down, to left or right to move to an item, and press the center of joystick to designate the item.)

Operational procedure:

- 1) Load the DVD-R disc to be finalized in the camera/recorder.
- 2) Press the DISC NAVIGATION button to start Disc Navigation.
- 3) Press the MENU button to display the menu screen.
- 4) Choose "Disc", "Finalize" on the menu screen, and then designate it.
- 5) Following the screen, choose "YES" and designate it. (*1)
- 6) A message showing that the disc is being finalized will appear, and then finalizing will be completed.

*1: Choosing "NO" and designating it will stop finalization.

5. Displaying Remaining Disc Capacity

This section shows how to check the remaining capacity on an inserted DVD-RAM/DVD-R disc. Perform the following procedures after turning DVD video camera/recorder on and opening the LCD monitor (while viewing LCD screen). Use the buttons, etc. on DVD video camera/recorder for all operations.

Caution:

- Once video is recorded on DVD-R disc, the record quality mode will be maintained. Therefore, all record quality modes and disc capacity for unrecorded DVD-R disc will be displayed, but after recording is started only the record mode used and disc capacity will appear. This DVD video camera/recorder specifies that no photo can be recorded on DVD-R disc: No remaining recordable photo will appear.
- Once the DVD-R disc has been finalized (Ⓜ appears on the disc thumbnail screen), no further recording or editing can be done even if there is sufficient remaining capacity.

- Note:**
- With DVD-RAM disc, the remaining capacity on only one side will appear.
 - The remaining capacity of write-protected DVD-RAM disc will appear as "0 min".

Before starting:

- Use the joystick to move the cursor to a menu item, and then designate it when the Disc Navigation is in operation. (Tilt up, down, to left or right to move to an item, and press the center of joystick to designate the item.)

Operational procedure:

- 1) Load DVD-RAM/DVD-R disc to be checked for capacity in the DVD video camera/recorder.
 - 2) Press the DISC NAVIGATION button to start Disc Navigation.
 - 3) Press the MENU button to display the menu screen.
 - 4) Choose "Disc", "Capacity" on the menu screen, and then designate it:
The remaining capacity will appear.
- Pressing the stop/cancel button will restore the thumbnail screen.

Example of displaying capacity on DVD-RAM disc [For DZ-MV230A]

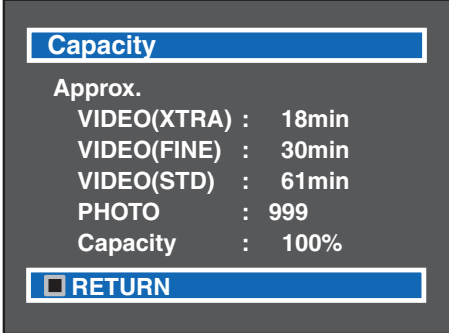


Fig. 5-1

Example of displaying capacity on DVD-RAM disc [For DZ-MV200A]

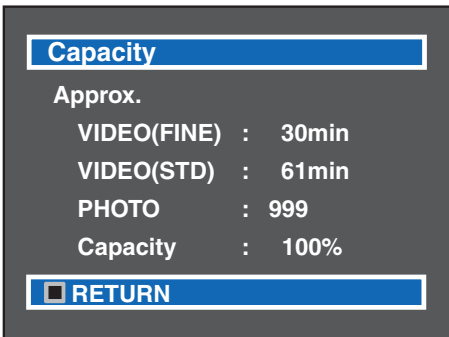


Fig. 5-2

6. Removing Disc from Cartridge or Caddy

Caution:

- Most generally available 8 cm DVD-RAM/DVD-R discs for video camera use (for AV use) can be removed from cartridge or caddy and then used. Before removing a disc, however, refer to the instructions provided with it, or consult the disc maker to find out if removal is possible. Handle the removed disc with care as follows:
 - Do not leave the disc outside the cartridge or caddy.
 - Do not subject the disc to heat, impact or undue force. (Never bend the disc.)
 - Do not write on disc surfaces (Characters can be written only on the label printed surface of DVD-R disc using an oily felt pen.)
- Be careful that the recording surface is not scratched and that no fingerprint, dust or dirt adheres to it: A dirty recording surface may cause block noise. If dirt adheres, use a dry, soft cloth to wipe it off. (Do not use solvent, water, anti-static agent, etc.)
- Caddy is used only for DVD video camera/recorder. When using DVD-R disc on another device, remove it from the caddy, and then follow the instructions of device to be used.
- Insert bare disc (disc removed from caddy or cartridge) into caddy or cartridge before using it on DVD video camera/recorder.

6.1 Disc packed in cartridge

(1) Removing the disc

- 1) Release (snap off) the lock pins at the bottom left corners of sides A and B (see Fig. 6-1a). (Use a fine tipped pen to slide the lock pin in the direction of arrow ①, and then turn it in the direction of arrow ② to snap and remove it.)
- 2) While pushing the release levers from both sides inward, hold the center of disc tray and pull it out to the front (see Fig. 6-1c).

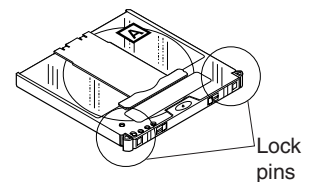


Fig. 6-1a

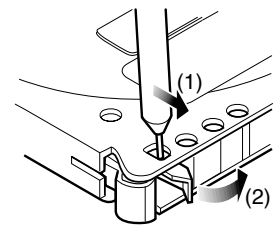


Fig. 6-1b

(2) Replacing the disc in cartridge

- 1) Make sure that the side indications on disc and cartridge match, and then insert the disc into cartridge (see Fig. 6-1d).
- 2) Fit the disc tray into the cartridge until a click is heard.

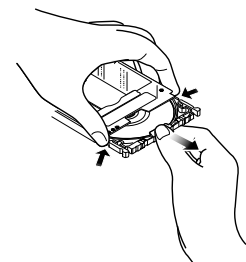


Fig. 6-1c

- Notes:**
- 1) The actual recording surface for side A is the surface opposite to the one indicated "SIDE A".
 - 2) The write-protect tabs are placed in the positions shown in Fig. 6-1f.

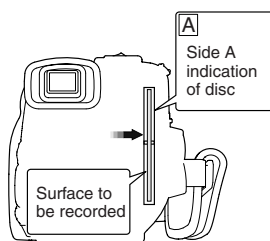


Fig. 6-1e

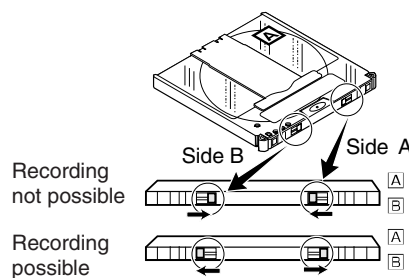


Fig. 6-1f

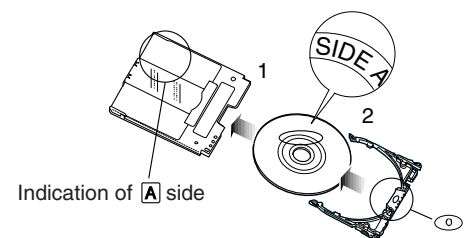


Fig. 6-1d

6.2 Disc packed in caddy

(1) Removing the disc from caddy

- 1) Insert your finger into the hole in the center of disc and lightly lift it up (in the direction of arrow ①). (Fig. 6-2a)
- 2) Hold the disc at its edge and center hole, and remove it in the direction of arrow ② (obliquely upward).

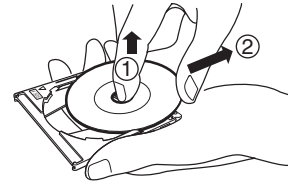


Fig. 6-2a

(2) Replacing the disc in caddy

- 1) Hold the disc at its edge and center hole with the printed label surface up. (Fig. 6-2b)
- 2) Insert the disc under the claws at the disc hold portion in the direction of arrow ③ . Gently push the disc in until it is completely stored.

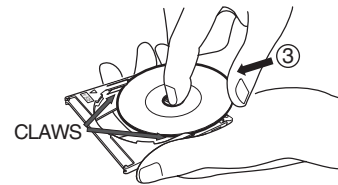


Fig. 6-2b

7. Battery Pack

Caution:

- Securely attach a battery pack to the DVD video camera/recorder and charge it, using the provided AC adapter.
- Charge the battery at normal temperature (10 to 30°C). Charging at ambient temperature under -5°C or over 35°C may result in fault in battery pack.
- The battery pack will be warm during charging or immediately after charging ends, but this does not indicate a fault.
- if the following phenomena appear, the battery pack could be faulty:
 - Charging does not start within 10 seconds (the CHARGE/ACCESS indicator does not blink)
 - Charging reaches only 75% even when 9 hours has elapsed after charging started.
 - Battery is not fully charged even when 5 hours has elapsed after it was charged to 75%.
- Dispose of used battery pack in an appropriate way. (The disposal method varies depending on the country or district.)

Prohibition:

- Do not short-circuit battery terminals.
- Do not disassemble or modify the battery.
- Do not throw the battery into fire.

7.1 Checking charged status

The charged status can be checked using the CHARGE/ACCESS indicator:

- Charging 0 to 50% complete : Blinks once per 1 to 2 seconds
- Charging 50 to 70% complete : Blinks twice per 1 to 2 seconds
- Charging 75% or more : Blinks three times per 1 to 2 seconds
- Fully charged : Remains lit

7.2 Reference for charging time and continuous movie recordable time at normal temperature

Battery pack	Charging time	Continuous movie recordable time
DZ-BP14(R)/BP16	approx. 170 minutes	approx 40 to 60 minutes
DZ-BP28	approx. 270 minutes	approx 70 to 100 minutes

7.3 Life

The life of battery pack will vary greatly depending on the ambient environment and how often the DVD video camera/recorder is used. If the usable time of DVD video camera/recorder with a fully charged battery is noticeably short, the battery is probably dead.

8. Demo (Demonstration) Mode

This section explains the demo (demonstration) mode equipped with this DVD video camera/recorder. Perform the following procedures after turning DVD video camera/recorder on and opening the LCD monitor (while viewing LCD screen). Use the buttons, etc. on this DVD video camera/recorder for all operations.

8.1 How to set demo mode

Before starting:

- Use the joystick to move the cursor to a menu item, and then designate it when the Disc Navigation is in operation. (Tilt up, down, to left or right to move to an item, and press the center of joystick to designate the item.)

Operational procedure:

- 1) Set the power switch to "POWER OFF".
- 2) Connect the AC adapter or fully charged battery as the power supply.
- 3) Set the power switch to "VIDEO".
- 4) Press the MENU button to display the camera menu screen.
- 5) Choose "Initial Setup", "Demo Mode" on the camera menu screen, and then designate it.
- 6) Choose "Start" on the Demo Mode setting screen, and then designate it.

- Notes:**
- 1) Specifying "Demo Mode: Auto" will automatically set the camera/recorder to the demo mode in the following status:
 - When the DVD video camera/recorder without a disc loaded is left without being operated for at least 3 minutes after it is turned on (except during playback/recording)
 - 2) During the demo mode, the recording indicator blinks and no operation other than the following is accepted:
 - Power switch
 - Stop/cancel button
 - DISC EJECT button
 - MEMO button
 - DISC NAVIGATION button
 - 3) The demo mode will not operate when the camera/recorder is connected to PC.

8.2 How to exit demo mode

- Note:** To end the demo mode, perform any of the following operations: If "Demo Mode: Auto" is specified, the demo mode will automatically start again in the above status even if it has stopped once.
- Set the power switch to "POWER OFF".
 - Press the stop/cancel button.
 - Press the DISC EJECT button.

Before starting:

- Use the joystick to move the cursor to a menu item, and then designate it when the Disc Navigation is in operation. (Tilt up, down, to left or right to move to an item, and press the center of joystick to designate the item.)

Operational procedure:

- 1) Set the power switch to "POWER OFF".
- 2) Connect the AC adapter or fully charged battery as the power supply.
- 3) Set the power switch to "VIDEO".
- 4) Press the MENU button to display the camera menu screen.
- 5) Choose "Initial Setup", "Demo Mode" on the camera menu screen, and then designate it.
- 6) Choose "Off" on the Demo Mode setting screen, and then designate it.

8.3 Details of operation

The following shows the details of operation (display) in demo mode and the display order:

Order	Operation/display item	Description
1	Disc animation	Displays animation in which the disc at the center rotates at gradually higher speed.
2	Displaying logo	The DVDCAM logo appears first while it extends to left and right, and then the Hitachi logo appears.
3	Displaying concept	Displays the concept of DVD video camera/recorder in sequence.
4	Disc animation	Same as in 1 above
5	Displaying logo	Same as in 2 above
6	Playback using Disc Navigation	The procedure from thumbnail screen to start of playback is displayed with explanation.
7	Creating play list using Disc Navigation	The procedure from selecting scenes on thumbnail display to creating play list is displayed with explanation.
8	Disc animation	Same as in 1 above
9	Displaying logo	Same as in 2 above
10	Displaying features	The major features of DVD video camera/recorder are displayed. (*1)

*1: After step 10 is finished, step 1 will be restored, and then the operations/displays in steps 1-10 will be repeated.

9. Resetting various settings

9.1 System reset

Note: Execute system reset if the DVD video camera/recorder does not operate normally: It may recover.

(1) Items to be reset

The following items will be reset to defaults at the factory:

Item	Default	Available Settings	Remarks
Camera Functions Setup			
Program AE	Auto	Auto, Sports, Portrait, Spotlight, Sand & Snow, Low Light	
White Balance	Auto	Auto, Hold	
Electronic Image Stabilizer (EIS)	On	On, Off	
Digital Zoom	48x	240x, 48x, Off	
Record Functions Setup			
VIDEO Mode with DVD-RAM disc	FINE	XTRA, FINE, STD	
VIDEO Mode with DVD-R disc	FINE	FINE, STD, LPCM	
Input Source	CAMERA	CAMERA, LINE	
PHOTO Input	Field	Frame, Field	Only when using DVD-RAM disc
Self Timer	Off	On, Off	
OSD Output	On	On, Off	
Date Setup			
Date Mode	M/D/Y	M/D/Y, D/M/Y, Y/M/D	
Date Set	1/ 1/2002 0:00AM	-----	
Initial Setup			
Beep	On	On, Off	
Power Save	Off	On, Off	
Record LED	On	On, Off	
Language	English	English, French, Spanish, German, Italian	
Demo Mode	Off	Auto, Off, Start	

(2) How to reset

- 1) Set the power switch to "POWER OFF".
- 2) Detach the AC adapter or battery so that no power source is installed in the DVD video camera/recorder.
- 3) Use a fine tipped pen, etc. to hold down the RESET button (SW3101) for several seconds.

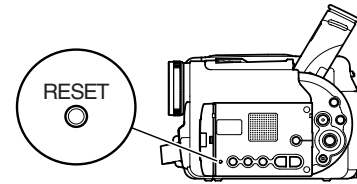


Fig. 9-1

9.2 Resetting camera functions

Perform the following procedures after turning DVD video camera/recorder on and opening the LCD monitor (while viewing LCD screen). Use the buttons, etc. on DVD video camera/recorder for all operations.

(1) Items to be reset

The items of system reset in the above item, except for the date function, will be reset.

(2) How to reset

Before starting:

- Use the joystick to move the cursor to a menu item, and then designate it when the Disc Navigation is in operation.
(Tilt up, down, to left or right to move to an item, and press the center of joystick to designate the item.)

Operational procedure:

- 1) Press the MENU button to display the menu screen.
- 2) Choose "Initial Setup", "Reset" on the menu screen, and then designate it.
- 3) Following the screen, choose "YES" and designate it. (***1**)
 - To restore the normal status, press the cancel button.

***1:** Choosing "NO" and designating it will stop reset.

10. Explanation of Trouble Messages

This section includes the messages related to servicing which appear on the LCD screen during user operation, and their explanation.

Refer to the instruction manual for messages other than those shown here. (The messages are subject to change without notice for improvements on operability.)

Messages divided by broken lines will automatically appear in sequence.

In the following text, the DVD-RAM and DVD-R discs are generally referred to as "disc" except where this would cause confusing in understanding.

Message	Cause/condition for message to appear	Troubleshooting
Disc is not formatted. Format the disc now? YES NO	Appears when an unformatted DVD-RAM disc or one initialized on PC is loaded.	When initializing it, choose "YES" and designate it, following the screen. (*1)
	Appears if user rejects repair of video file (partial repair).	Choose "NO" and designate it to repair video file (partial repair).
Disc is not formatted. If it formats, it becomes unrecordable except for camera. ----- Disc is not formatted. If it formats, it becomes impossible to use except a camera until it finalizes. ----- Format this disc for camera use? YES NO	Appears when DVD-R disc that is not formatted for use on DVD video camera/recorder is loaded. If the DVD-R disc is formatted, writing to it by other than by camera recording will be impossible, so the explanation about it will be displayed.	When initializing it, choose "YES" and designate it, following the screen. (*1)
Disc error has occurred. Formatting is not complete.	Appears when formatting of disc cannot be normally performed because of dirt of fingerprints, dust, etc., or warped disc is loaded.	Clean the disc, or use another disc.
Disc error has occurred. Finalizing is not complete.	Appears when finalizing of disc cannot be normally performed because of dirt of fingerprints, dust, etc., or warped disc is loaded.	Clean the disc, or use another disc.
	Appears if accident, such as power off, has occurred during finalizing.	Turn power on, or reload the disc and begin finalizing again.
	If the message still appears even when the disc is cleaned and finalized again, the disc may be defective.	Use another disc.
Finalize may not be complete. Finalize again now? YES NO	Appears if accident, such as power off, occurred during finalizing, and then power was turned on again or disc was reloaded.	To finalize the disc, choose "YES", following the screen, and designate it.
Disc error	Appears when the disc has been edited on a device other than this DVD video camera/recorder, and mismatch has occurred in recorded data.	Format the disc (*1), or use another disc.
	Appears when reading or writing from/to recorded file cannot be performed because of dirt of fingerprints, dust, etc., or warped disc is loaded.	Clean the disc, or use another disc.
	If the message still appears even when the disc is formatted or cleaned, the DVD video camera/recorder may be faulty.	Check the DVD video camera/recorder, and repair it if necessary.
Disc error has occurred. Format the disc now? YES NO	Appears when disc that is loaded was formatted on PC or disc for which formatting has been suspended (logically damaged disc).	Choose "YES" following the screen, and reformat the disc. (*1)

*1: Formatting a disc will delete all data recorded on it.

Message	Cause/condition for message to appear	Troubleshooting
Error has occurred. Please restart.	Appears if abnormality has been detected by "self-diagnosis function" when power was turned on, and the abnormality may be remedied when power is turned on again or disc is reloaded.	Turn power on again or reload a disc, following the screen.
Error has occurred. Please reinsert a disc.	This abnormality will be recorded in microprocessor as an error code after it is remedied. (*2)	
Error has occurred. Error code No. xxxx Please read the manual.	Appears if the same abnormality has been detected by "self-diagnosis function" three consecutive times. (Message in upper row will appear in modes other than recording; message in lower row will appear during recording.)	Check the DVD video camera/recorder, and repair it if necessary.
Error: xxxx	The DVD video camera/recorder may be faulty: Take note of the error code and ask the factory for troubleshooting.	
Disc error has occurred. Keep disc inside & restart.	Appears if abnormality has occurred during editing of video file (during Disc Navigation).	Exit the Disc Navigation function and turn power on with the disc loaded, following the screen (automatic repair of video file).
	If the message still appears even when power is turned on again, the disc may be defective.	Use another disc.
Disc full. Cannot execute.	Appears if the recording capacity of disc has reached the limit.	Use another disc, or delete unnecessary scenes.
	If the message appears when the disc free space is sufficient, the RX file may be abnormal.	Delete the RX file. (Refer to "Subsidiary functions for servicing" in Chapter 3.)
Disc overheat. Please retry later. Stop processing.	Appears when the temperature inside the DVD video camera/recorder or the temperature of disc is too high, and reading or writing from/to recorded file on normal disc cannot be executed.	Turn power off, leave the DVD video camera/recorder until the inside temperature decreases (effective if it is placed in well-ventilated place).
PlayList over limit.	Appears if an attempt is made to create a new play list after the number of registered play lists has reached the upper limit (99) of format. (*3)	Mistake in operation. Perform correct procedure.
Scenes over limit. Cannot add scenes.	Appears if an attempt is made to register (record) a new scene after the number of recorded scenes has reached the upper limit (999) of format. (*4)	Delete unnecessary scenes.
Scenes over limit. Cannot divide scenes.	Appears if an attempt is made to divide, move or delete a scene after the number of recorded scenes has reached the upper limit (999) of format. (*4)(*5)	
Scenes over limit. Cannot move scenes.		
Cannot delete scenes.	This message also appears when the number of scenes exceeds 999 by division or movement.	

***2:** Refer to "Subsidiary functions for servicing" in Chapter 3 for how to display error codes.

***3:** The DVD video recording format sets maximum number of play lists at 99.

***4:** The DVD video recording format sets the maximum number of entry points at 999: Since one entry point is allocated to one scene, the maximum number of scenes recordable on disc with this DVD video camera/recorder is 999.

***5:** If recording is continued without editing, one scene will comprise one cell for each entry point. When scenes are combined, only the number of entry points will decrease (only the entry point is deleted); the number of cells will not decrease. Assume that the number of cells before scenes are combined is 999, which is the upper limit defined by the DVD video recording standard. If a scene comprising one cell is divided at two points and the scene between the divided scenes needs to be deleted, the cell must be further divided in order to delete. However, since the number of cells has reached the upper limit in this case, the cell cannot be divided and the scene cannot be deleted.

Message	Cause/condition for message to appear	Troubleshooting
Disc includes protected scenes. Delete scenes? YES NO	Appears if the disc has a program that is write-protected by a device other than this DVD video camera/recorder. (This DVD video camera/recorder is not equipped with a write-protect function.)	If the device that has set write-protect can be found, release the write-protect on that device. To execute deletion of scene or program, choose "YES", following the screen, and designate it.
This Program is protected. Delete Program? YES NO	However, the video recording format specifies that write-protect can be set for units of program.)	
Data error in a part of image file. Repair data now? YES NO	A message in upper row appears if power was turned off by mistake during video recording or editing (deleting, dividing or combining scenes, creating play list), and writing to file cannot be completed normally.	Choosing "YES", following the screen, will automatically repair the video file. (*6)(*7) (Choosing "NO" will display the message for verifying initialization.)
Found error in image file. Repair data now? YES NO	A message in lower row appears if partial repair in upper row has failed.	
Data error in a part of image file. Repair all data now? YES NO	A message in upper row appears if power was turned off by mistake during video recording or editing (deleting, dividing or combining scenes, creating play list), and writing to file cannot be completed normally.	Choosing "YES", following the screen, will automatically repair the video file. (*6)(*7) (Choosing "NO" will display the message for verifying initialization.)
Error occurred. Please replace disc or format disc.	A message in lower row appears if all repair in upper row has failed. In this case, data error on disc may occur (disc is logically damaged).	Initialize the disc (*1) , or use another disc.
Use AC adapter. Turn off power.	Appears if AC adapter is not connected when repairing video file: Video file can be repaired only when AC adapter is connected. This message also appears if AC adapter is not connected when finalizing DVD-R disc.	Connect AC adapter.
Control Information Error.	Appears if mismatch has occurred between the recorded video and the scene information because editing was performed near the limit of disc storage capacity on any device made by other manufacturers; it also appears if the control information file was operated.	Update the control information.
	Appears when reading or writing from/to recorded file cannot be performed because of dirt of fingerprints, dust, etc.	Clean the disc, or use another disc.
	If the message still appears even when the control information is updated, or the disc is cleaned, the DVD video camera/recorder may be faulty.	Check the DVD video camera/recorder, and repair it if necessary.

*1: Formatting a disc will delete all data recorded on it.

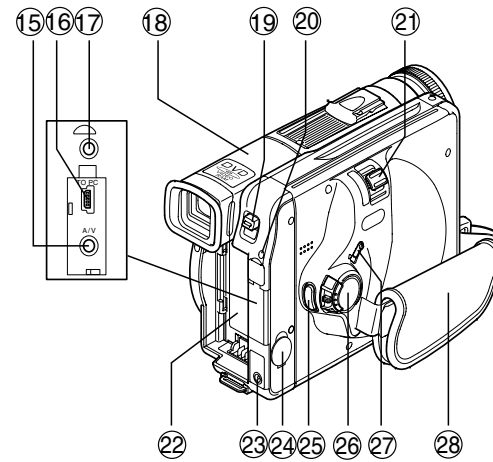
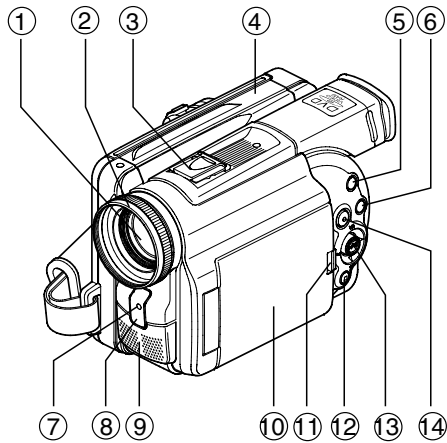
*6: If the disc is removed while it is being recognized, the repair function of video file will be invalid.

*7: Take care with the following when repairing video file:

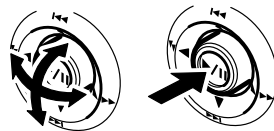
- If the timing with which power is turned off is inappropriate, normal repair may be impossible.
- If the disc has data that was recorded on a device other than this DVD video camera/recorder, normal repair may be impossible.
- The repaired data may be different from the original recorded content because of partial deletion of defective portion.
- The repaired data (corrected portion in case of partial repair) loses the original date/time information because the information of date/time was located where repair was executed.
- If all repair is executed, repair will be made in the order of all videos and all photos, and the time-sequential relationship of recorded contents will be lost.

Message	Cause/condition for message to appear	Troubleshooting
Scene without control info. Update control information? YES NO	Appears when Disc navigation is first started with a disc that has a scene whose thumbnail cannot be displayed with Disc Navigation (no entry point has been attached to the start of program or play list). (*8)	Choose "YES", following screen, and designate. (A thumbnail will be automatically produced if it is necessary, after Disc Navigation is started.)
Disc is full. Cannot add control info.	Appears if, during the above process, the number of scenes on play list exceeds the upper limit (999) defined by the format.	Mistake in operation. Perform correct procedure.
DVD-R Disc, Video mode cannot be changed.	Appears if an attempt was made to change the Video recording mode of recorded DVD-R disc using the camera menu. (Once even one scene is recorded on DVD-R disc which has been initialized, it will be specified that the originally designated Video record mode be maintained.)	—

***8:** If s disc is edited on a device other than this DVD video camera/recorder, or scenes in different programs are combined, there may be no entry point attached to the start of program or play list.

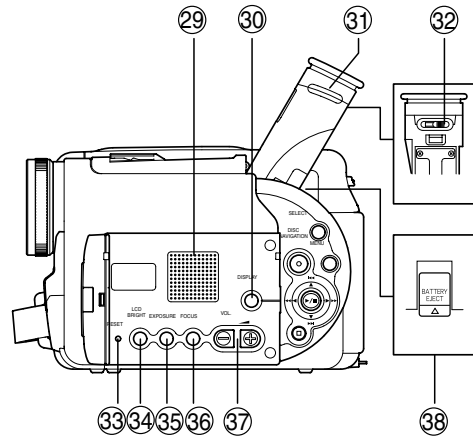


- ① **Optical 12x zoom lens**
- ② **Lens hood**
- ③ **Accessory shoe**
Slide the cover to remove it, and then attach the optional video flash, etc., here. (See the instruction manual of device to be attached for details.)
- ④ **Disc guide**
- ⑤ **SELECT button**
- ⑥ **MENU button**
Press this button to display the menu for setting camera functions and Disc Navigation. The camera menu will appear even if disc is not loaded.
- ⑦ **Recording indicator**
The red indicator will light during recording.
- ⑧ **Infrared receiver**
When the remote control is used to operate the DVD video camera/recorder, this receiver will receive the infrared signal.
- ⑨ **Stereo microphone**
- ⑩ **2.5" type liquid crystal display (inside)**
- ⑪ **OPEN button**
Press this button and hold it while opening the liquid crystal display (LCD).
- ⑫ **Stop/cancel button**
To end playback or set menu.
- ⑬ **Joystick**
- ⑭ **DISC NAVIGATION button**

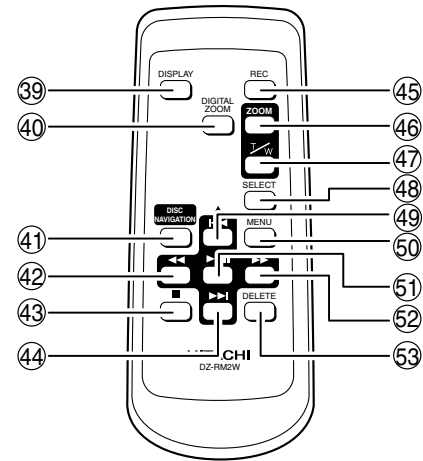


Move the joystick to select a scene or menu item, and play back scenes.

- ⑮ **AV input/output jack**
- ⑯ **PC connection terminal (TO PC)**
- ⑰ **External microphone jack**
- ⑱ **Viewfinder**
- ⑲ **DISC EJECT button**
Press down this button to open the disc guide.
- ⑳ **CHARGE/ACCESS indicator**
Will blink or light during charging, or while the DVD video camera/recorder is operating.
- ㉑ **Zoom lever**
Push the lever to the T side for telephoto, or to the W side for wide-angle.
- ㉒ **Battery attachment platform**
- ㉓ **DC cord connection terminal (DC IN 8.4V)**
- ㉔ **S-VIDEO output jack**
- ㉕ **Record button (REC)**
- ㉖ **Power switch**
 - ⏏ PHOTO : To record still images
 - 📽 VIDEO : To record a movie
- POWER OFF: To turn off the DVD video camera/recorder
Press the red button at the center of power switch and turn it only when turning power on: It is not necessary to press the button when setting the switch to "POWER OFF". The power switch cannot be changed over during recording. For playback, set the power switch to either "⏏PHOTO" or "📽VIDEO".
- ㉗ **LOCK switch**
To lock the recording mode, so that the VIDEO mode is not switched to the PHOTO mode by mistake.
- ㉘ **Hand strap**



- 29 Speaker**
The sound accompanying a movie being played back will be heard from here.
- 30 Screen display button (DISPLAY)**
Press this button to display the details of image being played back or camera setting status, or switch the display off.
- 31 Eyecup**
- 32 Diopter control**
To adjust the focus of image appearing in the viewfinder .
- 33 RESET button**
To reset all settings to defaults.
- 34 LCD BRIGHT button**
Press this button to start LCD screen brightness adjustment.
- 35 EXPOSURE button**
Press this button to adjust the exposure.
- 36 FOCUS button**
To switch between manual focus and auto-focus.
- 37 Volume control buttons (VOL)/ ⊖ ⊕ buttons**
To adjust the volume of sound from speaker, etc.
- 38 BATTERY EJECT button**
To release the battery



- 39 DISPLAY button**
- 40 DIG. ZOOM button**
- 41 DISC NAVIGATION button**
- 42 REVERSE SEARCH button**
- 43 STOP button**
- 44 FORWARD SKIP button**
- 45 REC button**
- 46 ZOOM T button**
- 47 ZOOM W button**
- 48 SELECT button**
- 49 REVERSE SKIP button**
- 50 MENU button**
- 51 PLAY/PAUSE button**
- 52 FORWARD SEARCH button**
- 53 DELETE button**

* The buttons on remote control will function the same as those on DVD video camera/recorder.

1. Names and Locations of Major Components

1.1 General View (Fig. 1-1)

- 1. Top cover
- 2. Heat radiating rubber A
- 3. R block
- 4. L block
- 5. O-ring
- 6. Hand strap
- 7. Disc cover

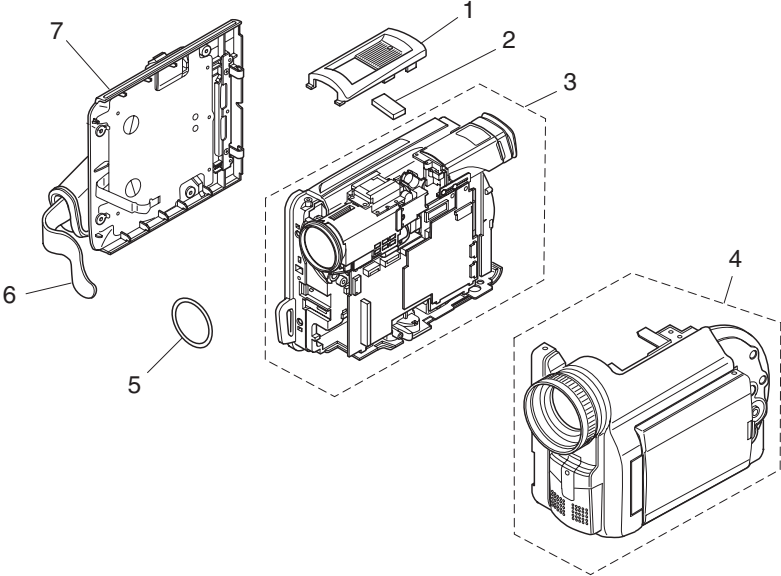


Fig. 1-1

1.2 L Block (Fig. 1-2)

- 1. SWL cable
- 2. SWL circuit board
- 3. L case
- 4. LCD block
- 5. MR circuit board
- 6. LCD case U
- 7. Adjustment cap
- 8. AUD circuit board
- 9. Front block
- 10. Front case
- 11. Microphone cover
- 12. Microphone
- 13. Lens hood

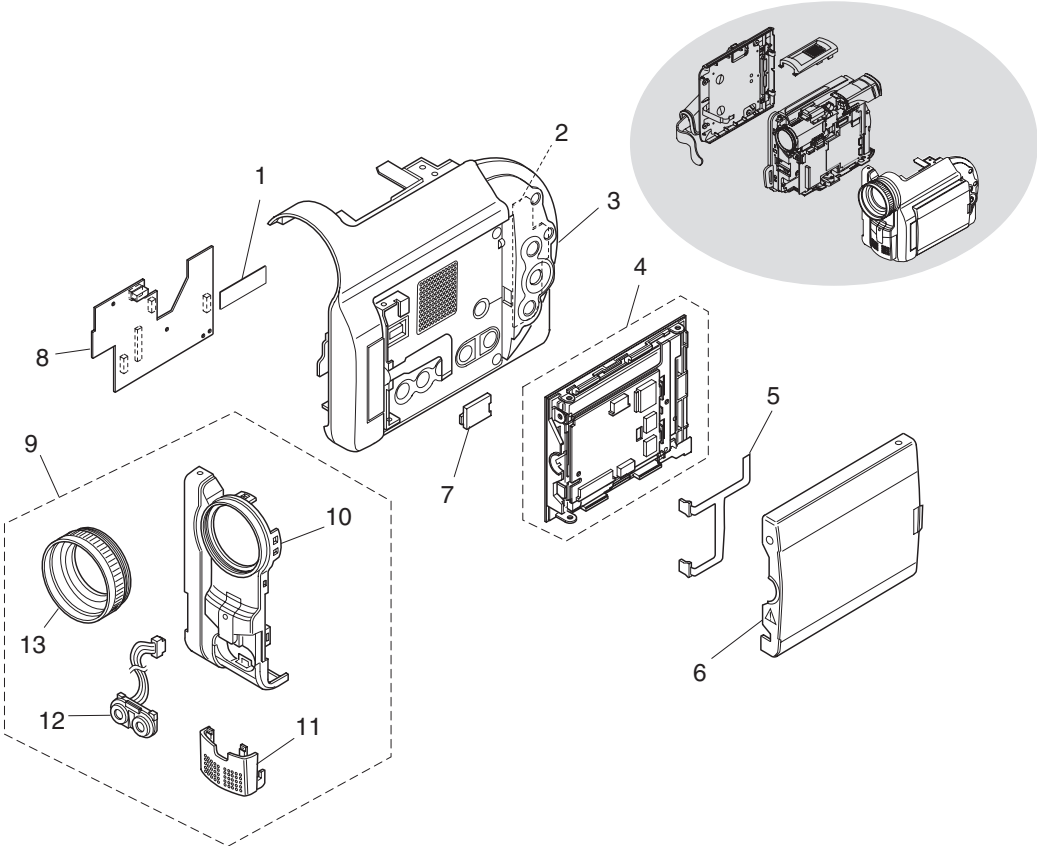


Fig. 1-2

1.3 R Block [1/2] (Fig. 1-3)

1. Hot shoe
2. DRF circuit board
3. Rear block
4. MAN circuit board
5. REF circuit board
6. Circuit board frame
7. Camera block

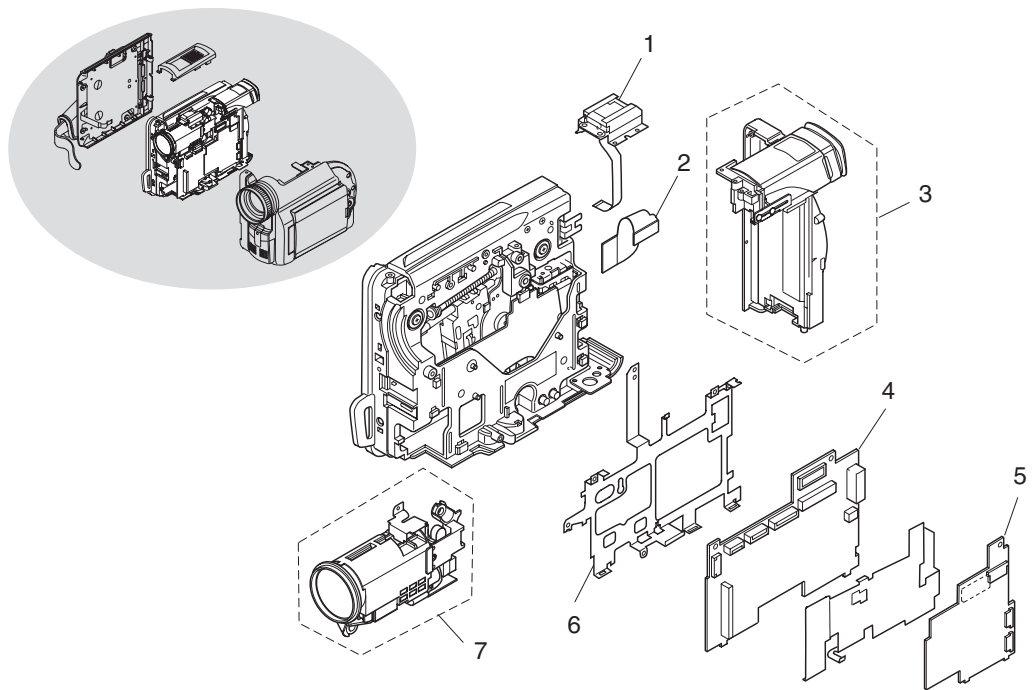


Fig. 1-3

1.4 R Block [2/2] (Fig. 1-4)

1. Drive block
2. Lock unit
3. R case
4. Link bracket
5. Loader
6. Drive mechanism unit
7. Heat radiating rubber B
8. Heat radiating rubber C

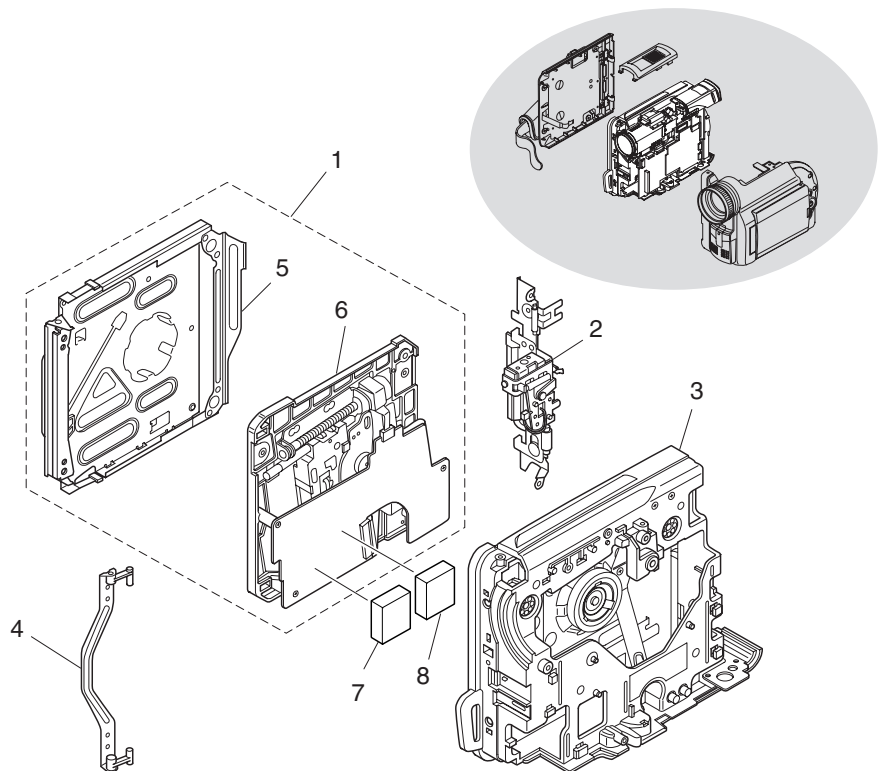


Fig. 1-4

1.5 Rear Block (Fig. 1-5)

1. Rear cover
2. EVF block
3. Jack cover R
4. Battery terminal
5. DCJ circuit board
6. JACK holder
7. AVJ circuit board
8. Jack cover S

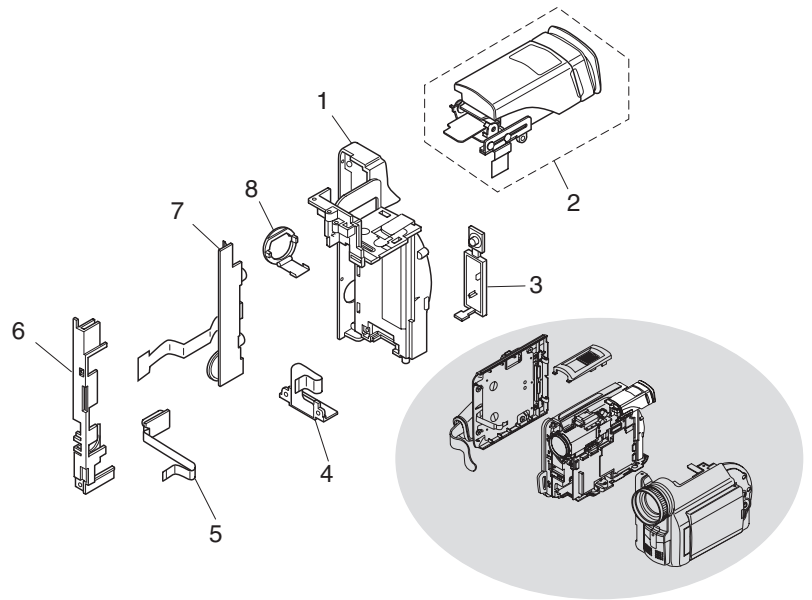


Fig. 1-5

1.6 LCD Block (Fig. 1-6)

1. LCD case B
2. Monitor LCD
3. Monitor backlight
4. LCD frame
5. LCD circuit board
6. LCD case U

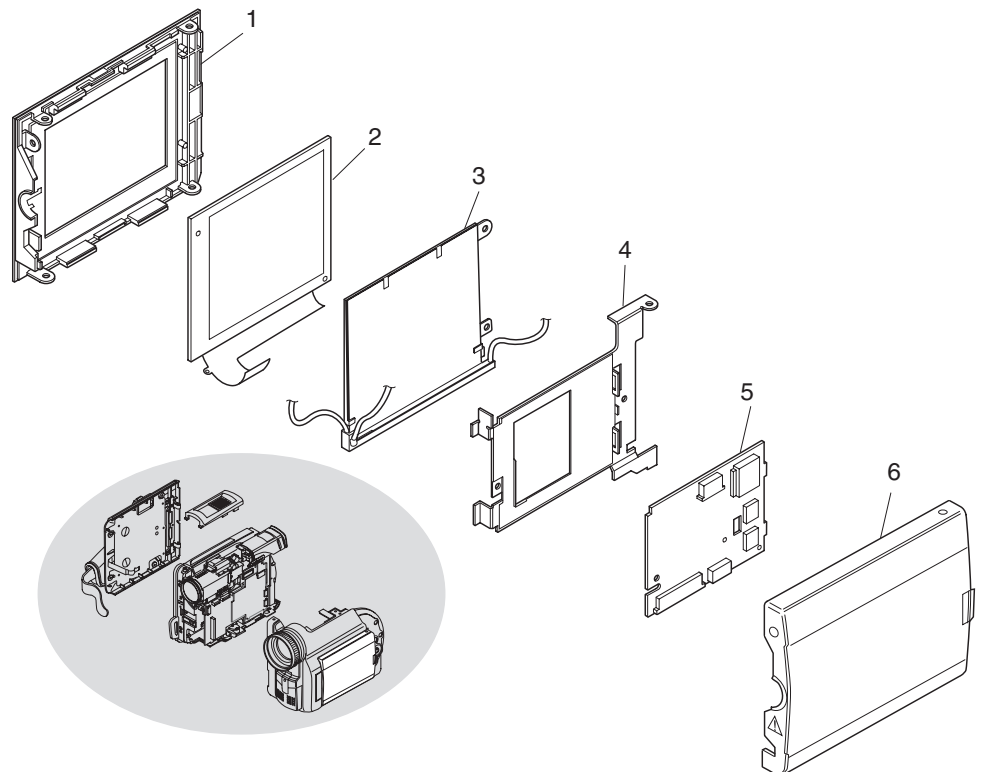


Fig. 1-6

1.7 Camera Block (Fig. 1-7)

1. SE circuit board
2. Lens frame R
3. Lens frame F
4. Lens
5. Crystal filter
6. Light shading rubber
7. CCD image sensor
8. Lens heat radiating plate

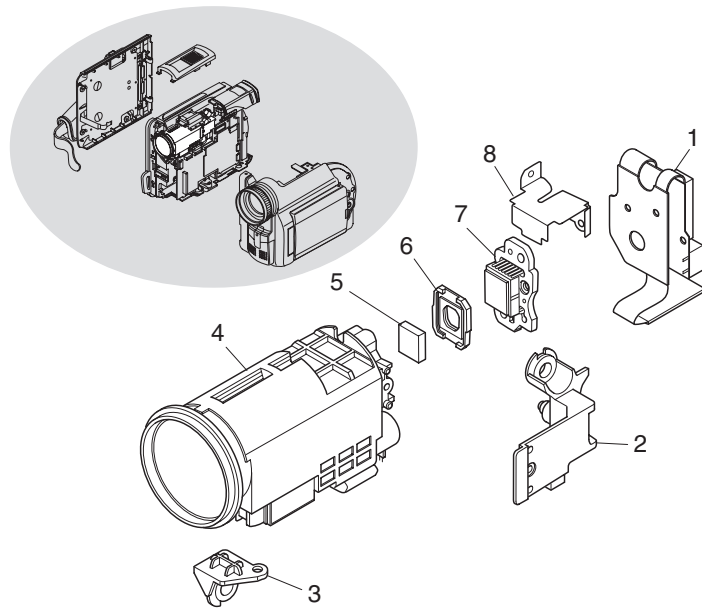


Fig. 1-7

1.8 EVF Block (Fig. 1-8)

1. EVF case U
2. EVF LCD
3. Eyecup
4. Clear cover
5. EVF case B
6. EVF fulcrum
7. EBLB circuit board
8. LCD holder
9. EVF backlight
10. LCD holder cover

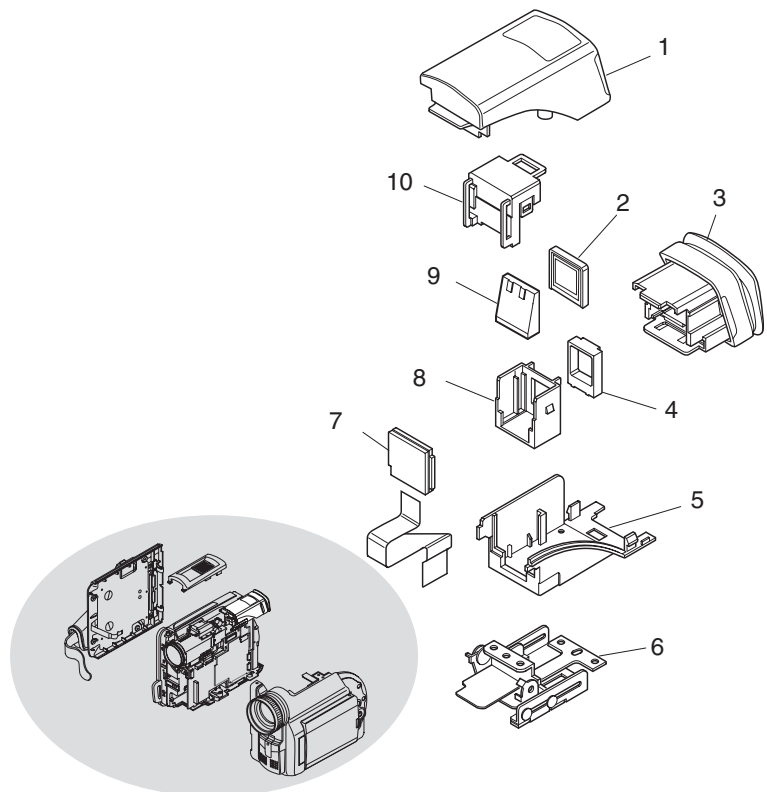


Fig. 1-8

2. Before Starting Disassembly

Prohibition:

Do not perform disassembly with power supplied. (Perform work with power supply off.)

Execute operation check to be performed after completing attachment/assembly, with all components reassembled.

This DVD video camera/recorder incorporates a laser emitter block: Never let the laser beam strike your eye.

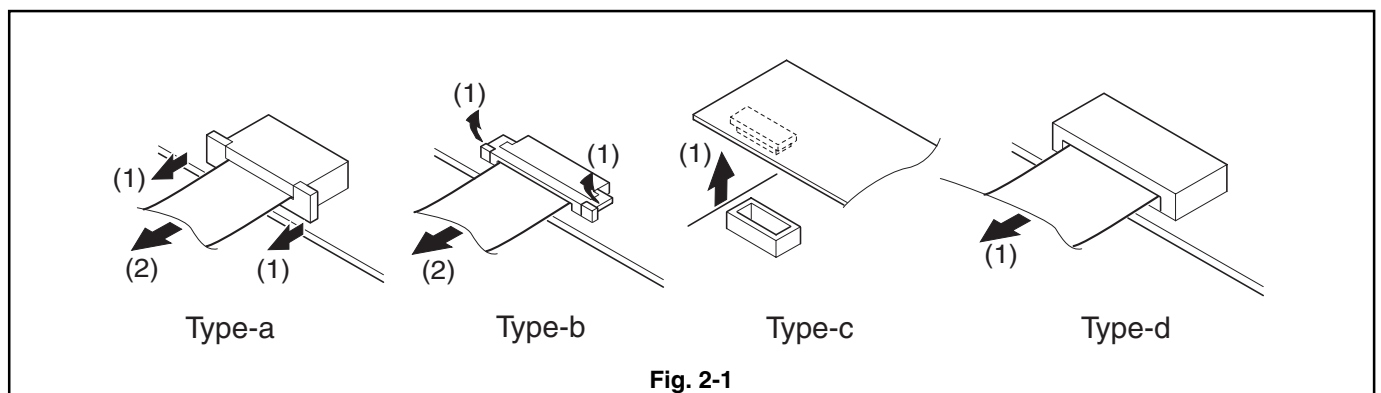
Essential note:

Take antistatic measures: Wear a wrist strap, etc. to prevent damage to electronic components because of static electricity in human body.

Cautions:

- Lens, loader and mechanism unit are precise components: Do not subject them to impact or undue force. Do not disassemble the components in lens or drive mechanism unit.
- Be careful that no foreign object, such as dust, enters the lens or drive mechanism unit.
- Be sure to use only replacement parts listed in "parts list".

- 1) Press the DISC EJECT button and make sure that the disc loading block opens. If a disc is in the holder, remove it. (After checking and removing the disc, close the disc loading block.) If the disc loading block does not open, refer to "3. Troubleshooting during Disassembly" on the next page.
- 2) Flat-cable connectors (female) used in this DVD video camera/recorder are four types (a)-(d) shown in Fig. 2-1: Note that the disconnection method with flat cable is different for each connector. (Some connectors have the same structure as type (a), but the flat cable is connected to the circuit board at right angles.) Connect the flat cables by the reverse procedure to disconnection.
 - Type-a disconnection
 - (1) Move both ends of connector in the direction of the arrows (parallel with flat cable) to release the lock.
 - (2) Pull out the flat cable in the direction of the arrow.
 - Type-b disconnection
 - (1) Pull up both ends of connector from the circuit board (in the direction of the arrow) to release the lock.
 - (2) Pull out the flat cable in the direction of the arrow.
 - Type-c disconnection
 - (1) Disconnect the flat cable from connector in the direction of the arrow.
 - Type (d) disconnection
 - (1) Pull out the flat-cable in the direction of the arrow.



3. Troubleshooting during Disassembly

3.1 Removing DVD-RAM/DVD-R disc

Perform the following procedure only when the disc loading block does not open (DVD-RAM/DVD-R disc cannot be removed) when the DISC EJECT button is pressed.

Caution:

The disc loading block of DVD video camera/recorder will normally open even if power supply is not connected. However, if the power supply is removed while the disc is being accessed, the disc loading block will not open. Before starting the following procedure, supply power again, and make sure that access to disc is completed. Perform the following procedure only when the disc loading block still does not open.

- Remove the top cover (A), and then separate the R block (B), L block (C) and front block (D). (See Fig. 3-1a, 3-1b)

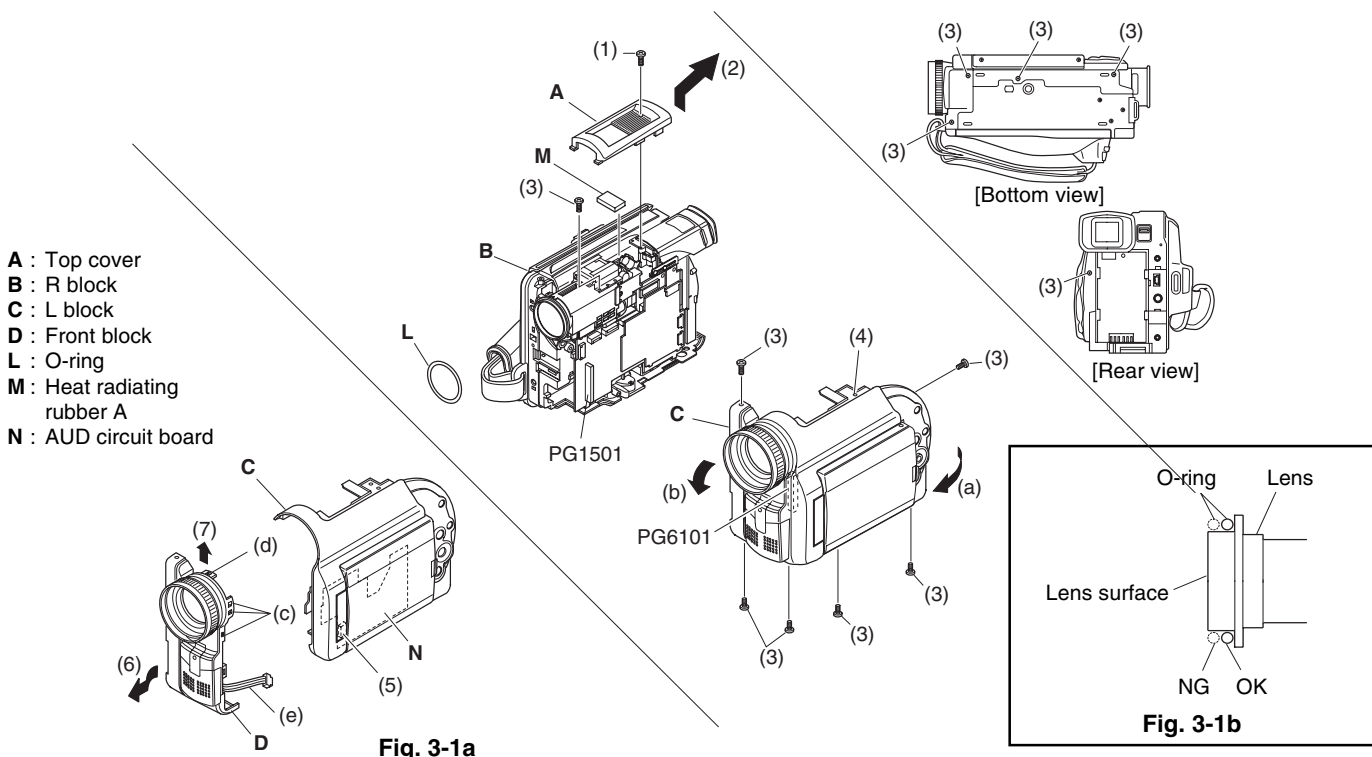
Caution when disassembling:

- Be careful not to damage the plugs (PG1501 and PG6101) between R and L blocks.
- When separating the R and L blocks, the O-ring (L) will detach automatically: Be careful not to lose it.
- Be careful not to damage the front case, microphone cable (e) or its connector.

- (1) Remove the screw holding the top cover.
- (2) Remove the top cover in the direction of the arrow, and then remove the heat radiating rubber A (M).
- (3) Remove the seven screws holding the L block.
- (4) While opening the L block in the direction of arrow (a) from the rear, release the tab at the top and disconnect R and L blocks (PG1501 and PG6101); then move the L block in the direction of arrow (b) to separate it from the R block.
- (5) Disconnect the connector on AUD circuit board (N).
- (6) Move the bottom of front block in the direction of the arrow to release the tabs (c) on the side.
- (7) Release the tab (d) on the top of front block in the direction of the arrow, and then remove the front block from the L block.

Caution when reinstalling:

- Before installing the front block, connect the microphone cable (e) to AUD circuit board and assemble the R and L blocks.
- Install the O-ring as shown in Fig. 3-1b.
- Securely connect the plugs (PG1501 and PG6101) between R and L blocks and the microphone connector.



- Remove the rear block (E), REF circuit board (F), camera block (G), MAN circuit board (H), circuit board frame (J), and then operate the lock unit (K). (See Fig. 3-2)

Caution when disassembling:

- Be careful not to damage the plugs (PG0501 and CN1501) between REF and MAN circuit boards.

- (8) Remove the four screws holding the rear block.
- (9) Disconnect the three flat cables on REF circuit board.
- (10) Disconnect the flat cable on MAN circuit board.
- (11) Remove the screw holding the REF circuit board.
- (12) Move the REF circuit board in the direction of the arrow, and then disconnect the connectors (PG0501 and CN1501) from the MAN circuit board.
- (13) Remove the REF circuit board in the direction of the arrow.
- (14) Disconnect the three flat cables on MAN circuit board.
- (15) Remove the three screws holding the camera block.
- (16) Disconnect the two flat cables and the one connector on MAN circuit board.
- (17) Remove the screw holding the MAN circuit board.
- (18) Remove the MAN circuit board in the direction of the arrow.
- (19) Remove the screw holding the circuit board frame.
- (20) Remove the circuit board frame in the direction of the arrow.
- (21) Use a screwdriver, etc. to push portion (f) of the lock unit in the direction of the arrow.
- (22) Press the DISC EJECT button to open the disc cover, and then remove the DVD-RAM/DVD-R disc.

Caution when reinstalling:

- Securely connect the flat cables to the connectors.
- Securely connect the plugs (PG0501 and CN1501) between REF and MAN circuit boards.
- Install the circuit board frame in the specified position.

- E : Rear block
- F : REF circuit board
- G : Camera block
- H : MAN circuit board
- J : Circuit board frame
- K : Lock unit

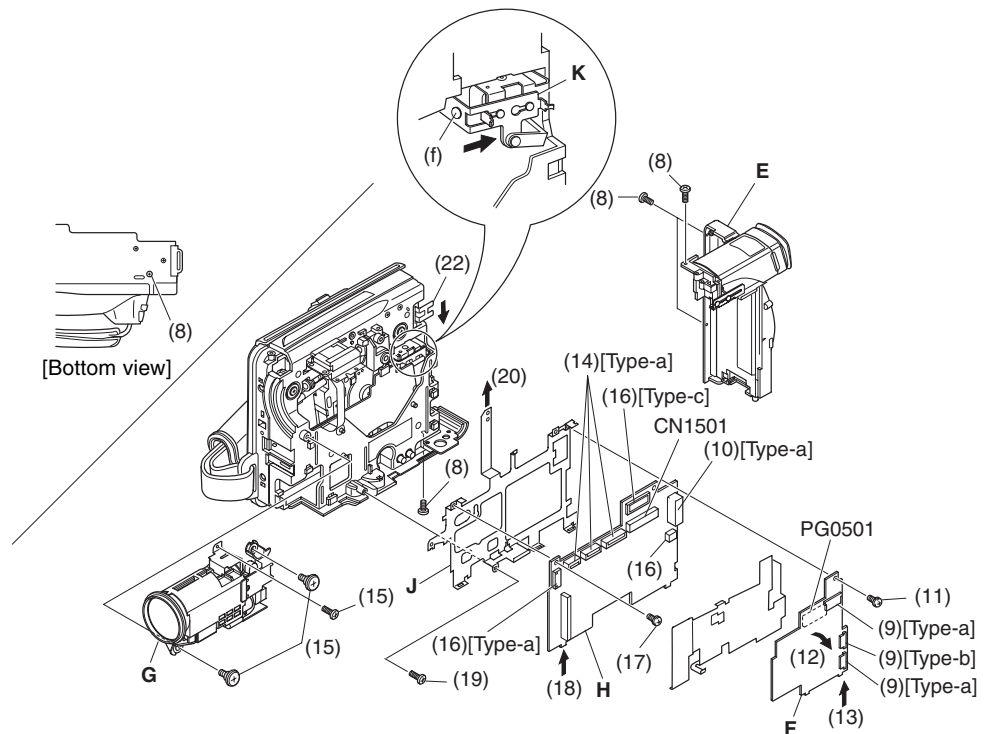


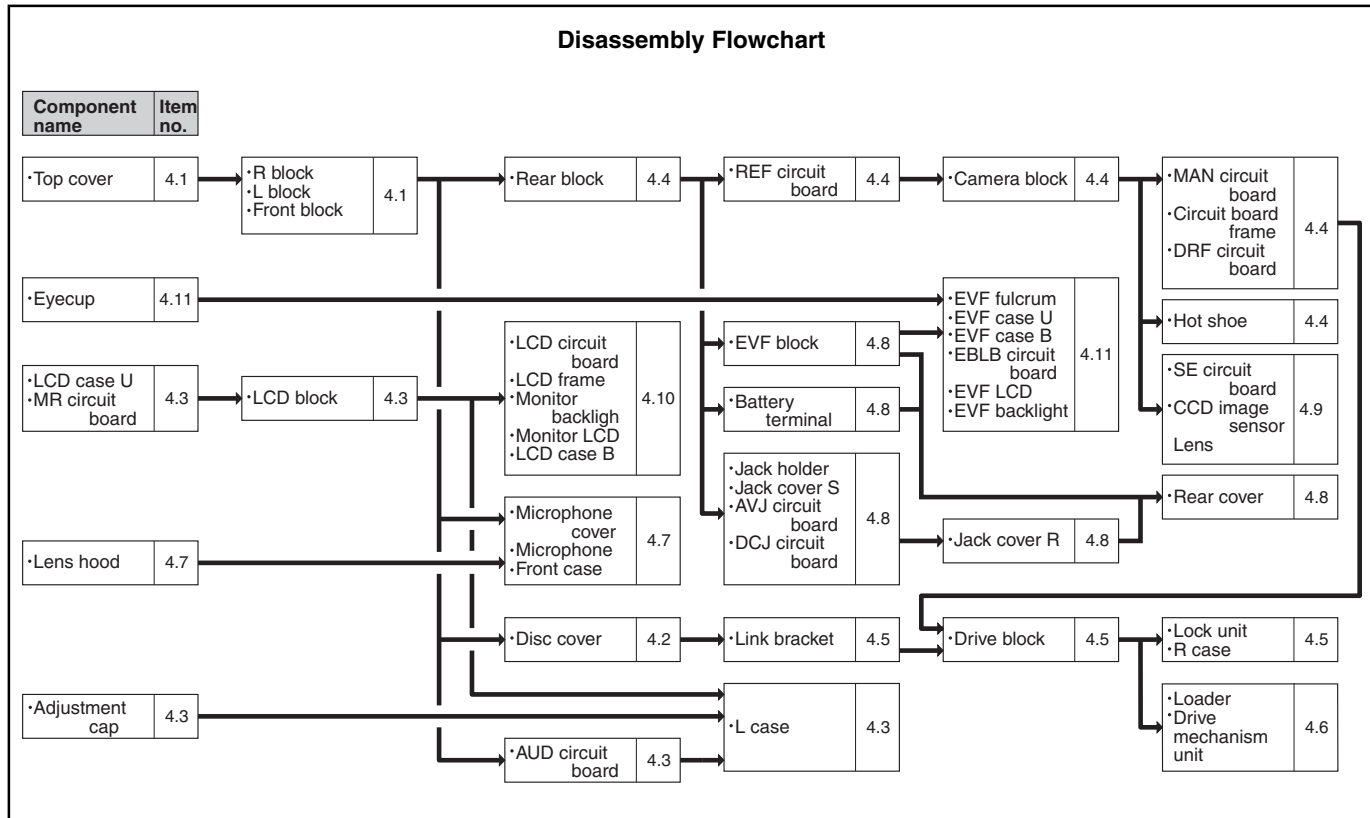
Fig. 3-2

4. Disassembly Procedure

This section explains the general disassembly procedure for this DVD video camera/recorder.
 For the order of removing components, follow the disassembly flow chart.
 Reinstall each component by the reverse procedure to removal unless otherwise specified.

Interpreting Disassembly Flowchart

Find the component to be removed in flowchart: Trace the arrows (routes) from the left of flowchart, and remove the components in sequence until you reach the target component.
 If there are multiple paths to the target component, remove all components on all routes.



4.1 Top cover, R block, L block, and Front block (Fig. 4-1a, 4-1b)

Caution when disassembling:

- Be careful not to damage the plugs (PG1501 and PG6101) between R and L blocks.
- When separating the R and L blocks, the O-ring (E) will detach automatically: Be careful not to lose it.
- Be careful not to damage the front case, microphone cable (e) or its connector.

■ **Top cover (A)**

- (1) Remove the screw holding the top cover.
- (2) Remove the top cover in the direction of the arrow, and then remove the heat radiating rubber A (F).

■ **R block (B), L block (C)**

- (3) Remove the seven screws holding the L block.
- (4) While opening the L block in the direction of arrow (a) from the rear, release the tab and disconnect R and L blocks (PG1501 and PG6101); then move the L block in the direction of arrow (b) to separate it from the R block.

■ **Front block (D)**

- (5) Disconnect the connector (G) on AUD circuit board.
- (6) Move the bottom of front block in the direction of the arrow to release the tab (c) on the side.
- (7) Release the tab (d) on the top of front block in the direction of the arrow, and then remove the front block from the L block.

Caution when reinstalling:

- Before installing the front block, connect the microphone cable (e) to AUD circuit board and assemble the R and L blocks.
- Install the O-ring as shown in Fig. 3-1b.
- Securely connect the plugs (PG1501 and PG6101) between R and L blocks and the microphone connector.

- A : Top cover
 B : R block
 C : L block
 D : Front block
 E : O-ring
 F : Heat radiating rubber A
 G : AUD circuit board

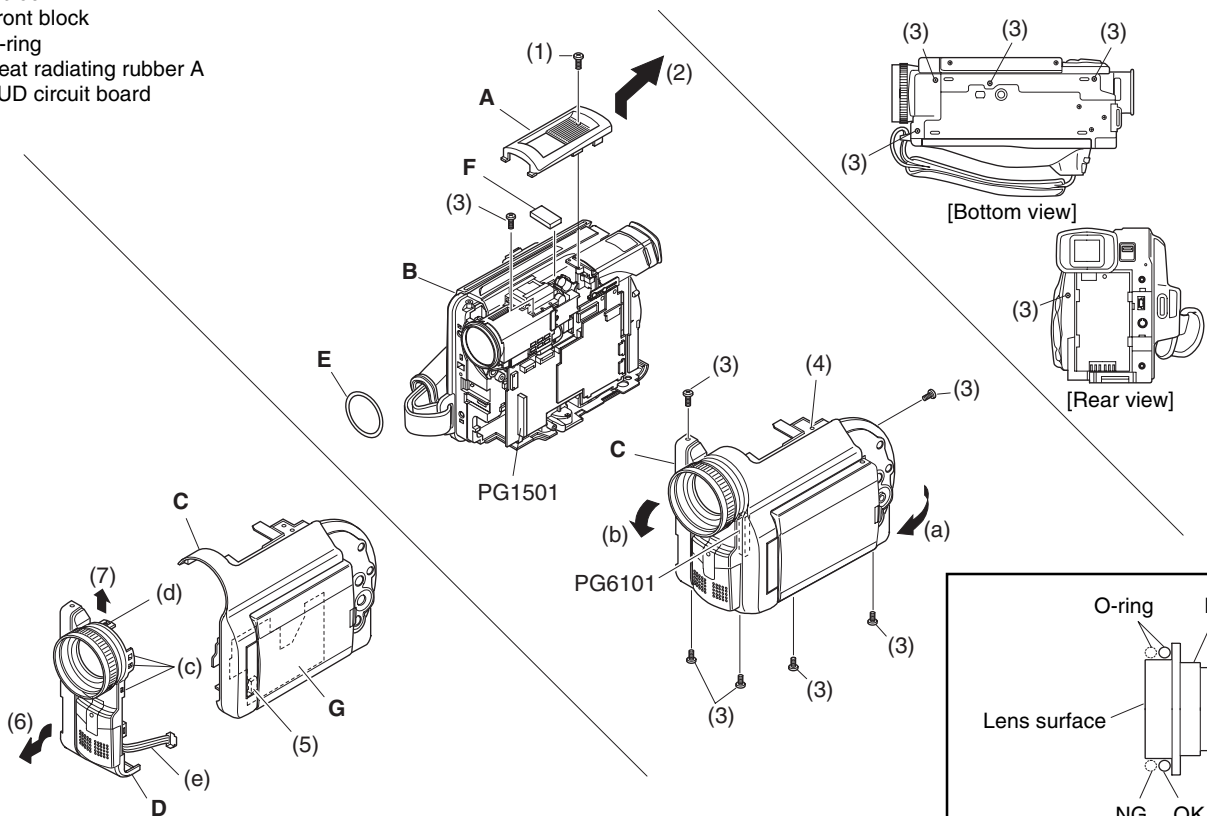


Fig. 4-1a

Fig. 4-1b

4.2 Disc cover (Fig. 4-2a, 4-2b, 4-2c)

Caution when disassembling:

- When removing the disc cover, press the DISC EJECT button to open the disc cover attachment block.
When the disc loading block does not open even if the DISC EJECT button is pressed, refer to “3. Troubleshooting during Disassembly”.
- When removing the disc cover, be careful not to damage the flat cable (a) [Take care with the tab (b) on R case (E)].

- (1) Disconnect the flat cable on the MAN circuit board (F).
- (2) Remove the hand strap (B) from the R case (E).
- (3) Remove the four screws holding the disc cover (A).
- (4) Remove the disc cover in the direction of the arrow.

Caution when reinstalling:

- When reinstalling the disc cover, take care with the wiring of flat cable (a). (Fig. 4-2b)
- When reinstalling the disc cover, assemble the hinge (H) of R case and the cover lock plate (C) of disc cover as shown in Fig. 4-2c.

A : Disc cover
B : Hand strap
E : R case
F : MAN circuit board

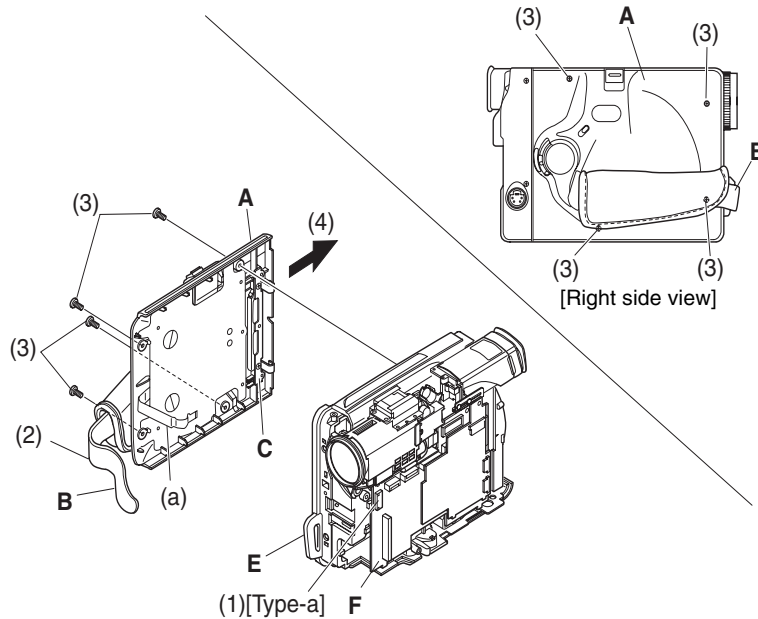


Fig. 4-2a

A : Disc cover
D : Hinge
E : R case

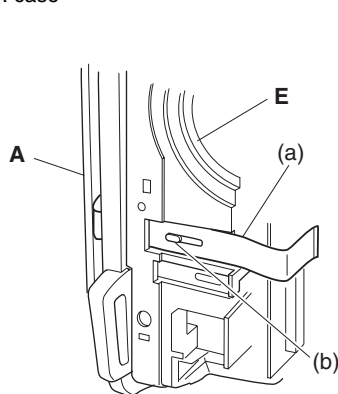


Fig. 4-2b

A : Disc cover
C : Cover lock plate
D : Hinge

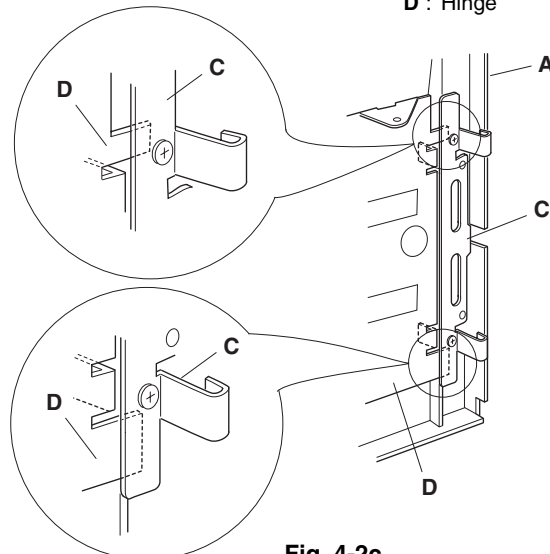


Fig. 4-2c

4.3 LCD case U, MR circuit board, LCD block, AUD circuit board, Adjustment cap, and L case (Fig. 4-3)

Caution when disassembling:

- Be careful not to damage the MR circuit board.
- Be careful not to damage the L case.
- Be careful not to damage the adjustment cap.

■ **LCD case U (A), MR circuit board (B)**

- (1) Remove the three screws holding the LCD case U.
- (2) Remove the screw holding the LCD case U.
- (3) Remove the LCD case U from the bottom in the direction of the arrow.
- (4) Disconnect the flat cable on LCD circuit board.
- (5) Remove the MR circuit board in the direction of the arrow.

■ **LCD block (C)**

- (6) Disconnect the flat cable on LCD circuit board.
- (7) Remove the screw holding the LCD block.
- (8) Release the tab on LCD case B that hold the LCD block.

■ **AUD circuit board (D)**

- (9) Disconnect the two flat cables and one connector on AUD circuit board.
- (10) Remove the three screws holding the AUD circuit board.

■ **Adjustment cap (E), L case (F)**

- (11) Insert a fine-tipped flat-bladed screwdriver into portion (a), and remove the adjustment cap in the direction of the arrow.
(Or, push portion A from the inside of L case to remove the adjustment cap.)

Caution when reinstalling:

- When installing the adjustment cap, insert the tab on the lens side into the L case, and then push portion (a).

- A : LCD case U
- B : MR circuit board
- C : LCD block
- D : AUD circuit board
- E : Adjustment cap
- F : L case
- G : SWL cable

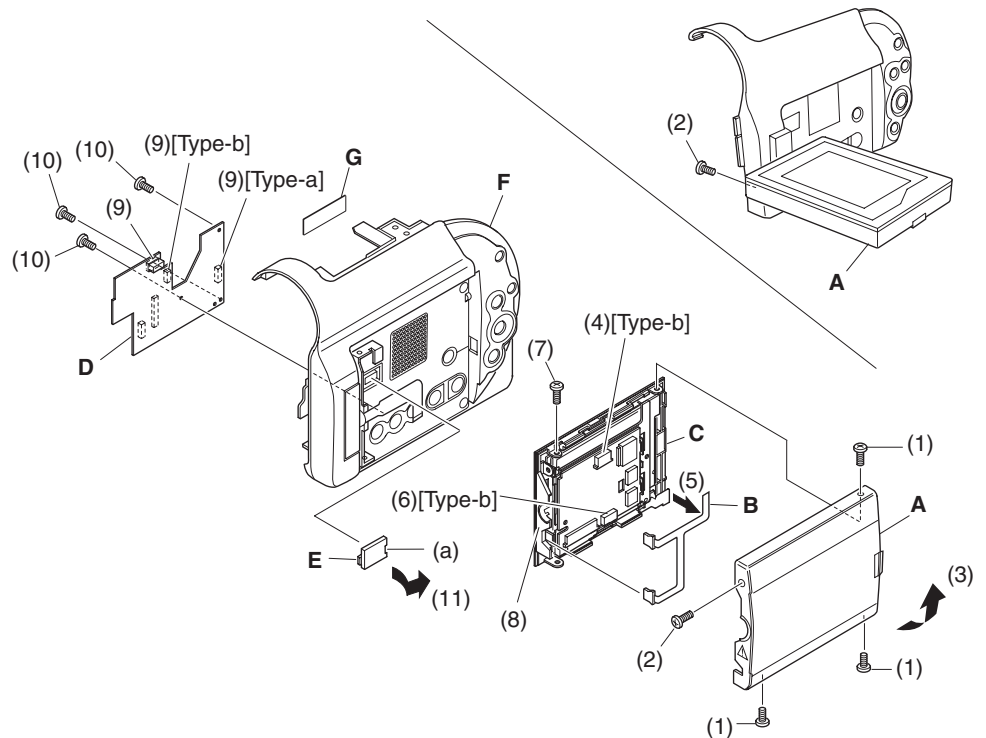


Fig. 4-3

4.4 Rear block, REF circuit board, Camera block, MAN circuit board, Circuit board frame, DRF circuit board, and Hot shoe (Fig. 4-4)

Caution when disassembling:

- Be careful not to damage the flat cable on rear block.
- Be careful not to damage the camera block (lens), and that no foreign object, such as dust, enters the lens.
- Be careful not to damage the plugs (PG0501 and CN1501) between REF and MAN circuit boards.

■ Rear block (A)

- (1) Remove the four screws holding the rear block.
- (2) Disconnect the three flat cables on REF circuit board.
- (3) Disconnect the flat cable on MAN circuit board.

■ REF circuit board (B)

- (4) Remove the screw holding the REF circuit board.
- (5) Move the REF circuit board in the direction of the arrow to disconnect the connections (PG0501 and CN1501) from the MAN circuit board.
- (6) Remove the REF circuit board in the direction of the arrow.

■ Camera block (C)

- (7) Disconnect the three flat cables on MAN circuit board.
- (8) Remove the three screws holding the camera block.

■ MAN circuit board (D), Circuit board frame (E), DRF circuit board (F)

- (9) Disconnect the one flat cable, connector of DRF circuit board and one connector on MAN circuit board.
- (10) Remove the screw holding the MAN circuit board.
- (11) Remove the MAN circuit board in the direction of the arrow.
- (12) Remove the screw holding the circuit board frame.
- (13) Remove the circuit board frame in the direction of the arrow.
- (14) Remove the DRF circuit board in the direction of the arrow.

■ Hot shoe (G)

- (15) Remove the screw holding the hot shoe.
- (16) Remove the hot shoe in the direction of the arrow.

Caution when reinstalling:

- Securely connect the flat cables and connectors.
- Securely connect the plugs (PG0501 and CN1501) between REF and MAN circuit boards.
- Install the circuit board frame in the specified position.

- A : Rear block
 B : REF circuit board
 C : Camera block
 D : MAN circuit board
 E : Circuit board frame
 F : Hot shoe
 G : DRF circuit board

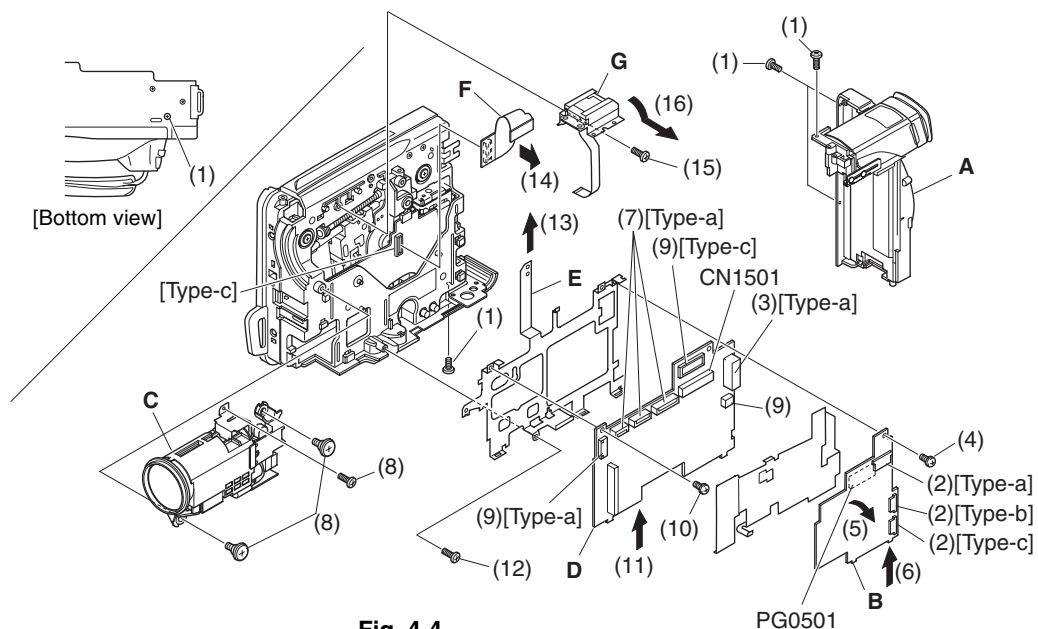


Fig. 4-4

4.5 Link bracket, Drive block, Lock unit, and R case (Fig. 4-5a, 4-5b)

Caution when disassembling:

- Be careful not to damage the cables (a) and (b) on lock unit.

■ Link bracket (A)

- (1) Remove the two screws holding the link bracket. (Fig. 4-5a)

■ Drive block (B)

- (2) Remove the two screws holding the hinge, and then open the hinge.
- (3) Disconnect the connector on drive block circuit board. (Fig. 4-5b)
- (4) Remove the three screws holding the drive block.

■ Lock unit (C), R case (D)

- (5) Remove the three screws holding the lock unit.

Caution when reinstalling:

- When installing the lock unit, wire the cables (a) and (b) of lock unit as shown in Fig. 4-5b.

A : Link bracket
E : Hinge

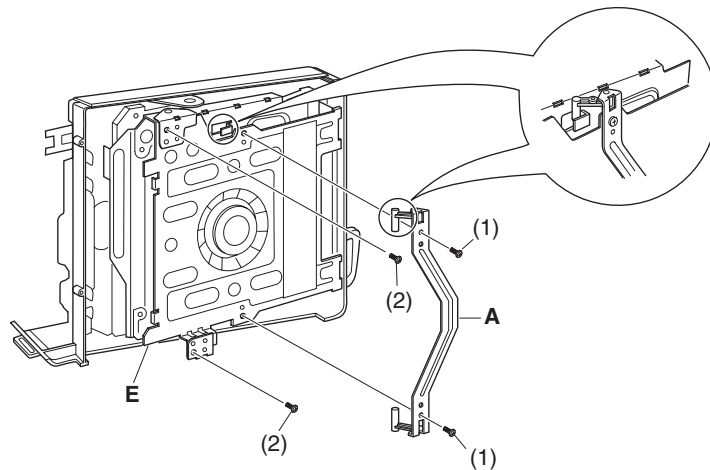


Fig. 4-5a

B : Drive block
C : Lock unit
D : R case
E : Hinge
F : Heat radiating rubber B
G : Heat radiating rubber C

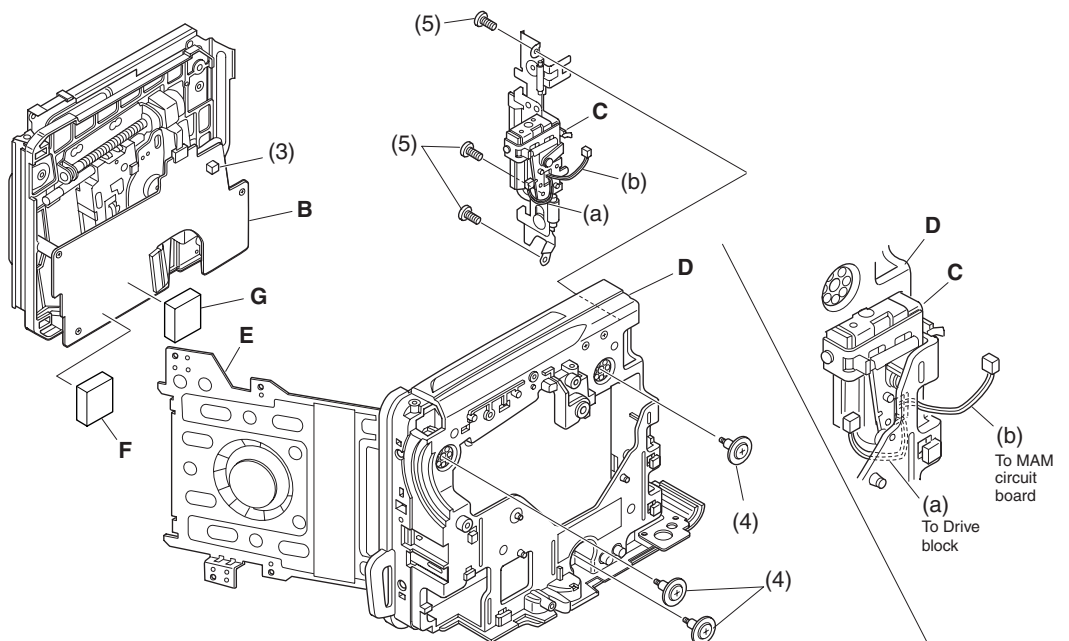


Fig. 4-5b

4.6 Loader and Drive mechanism unit (Fig. 4-6)

■ Loader (A), Drive mechanism unit (B)

- (1) Remove the two screws holding the loader.

A : Loader

B : Drive mechanism unit

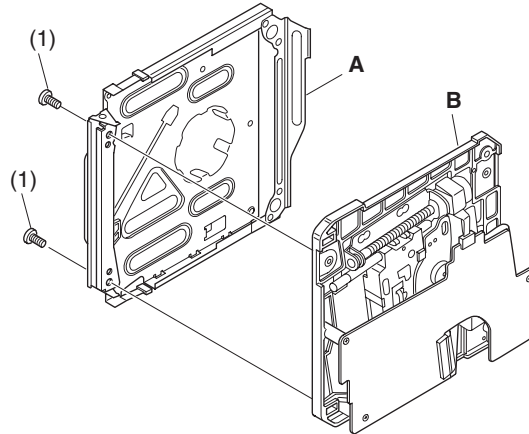


Fig. 4-6

4.7 Microphone cover, Microphone, Lens hood, and Front case (Fig. 4-7)

■ Microphone cover (A), Microphone (B)

- (1) Push the top of the microphone cover to release the two tabs, and then remove the microphone cover in the direction of the arrow.
- (2) Remove the microphone in the direction of the arrow.

■ Lens hood (C), Front case (D)

- (3) Turn the lens hood in the direction of the arrow to remove it from the front case.

A : Microphone cover

B : Microphone

C : Lens hood

D : Front case

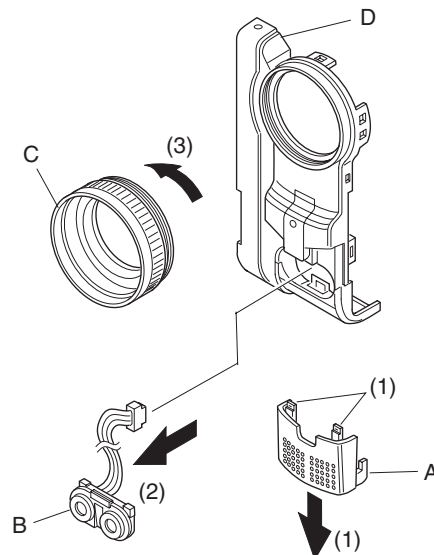


Fig. 4-7

4.8 EVF block, Jack holder, Jack cover S, AVJ circuit board, DCJ circuit board, Jack cover R, Battery terminal, and Rear cover (Fig. 4-8)

Caution when disassembling:

- Be careful not to damage the jack holder.

■ **EVF block (A)**

- (1) Remove the two screws holding the EVF block.

■ **Jack holder (B), Jack cover S (C), AVJ circuit board (D), DCJ circuit board (E)**

- (2) Remove the screw holding the jack holder.
- (3) Open the jack cover S, and remove the jack holder in the direction of the arrow.
- (4) Remove the jack cover S in the direction of the arrow.
- (5) Widen the portion (a) of jack holder in the direction of the arrow.
- (6) Remove the AVJ circuit board in the direction of the arrow.
- (7) Remove the DCJ circuit board in the direction of the arrow.

■ **Jack cover R (F)**

- (8) Release the two tabs one by one, and then remove the jack cover R.

■ **Battery terminal (G), Rear cover (H)**

- (9) Release the two tabs, and then remove the battery terminal.

- A : EVF block
B : JACK holder
C : Jack cover S
D : AVJ circuit board
E : DCJ circuit board
F : Jack cover R
G : Battery terminal
H : Rear cover

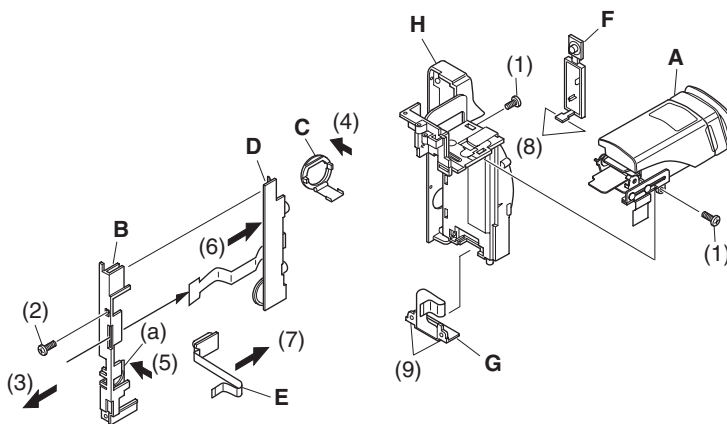


Fig. 4-8

4.9 SE circuit board, CCD image sensor, and Lens (Fig. 4-9)

Caution when disassembling:

- Be careful not to damage the CCD image sensor.
- When removing the SE circuit board, the crystal filter (D) and light shading rubber (G) will detach automatically:
Be careful not to damage the crystal filter.

■ SE circuit board (A), CCD image sensor (B)

- (1) Remove the screw holding lens frame R.
- (2) Remove the two screws holding the SE circuit board.
- (3) Open the gyro side of SE circuit board in the direction of the arrow.
- (4) Remove the two screws holding the SE circuit board and lens.
- (5) Unsolder the points on CCD image sensor.
- (6) Remove the two screws holding the CCD image sensor.

■ Lens (C)

- (7) Remove the screw holding lens frame F.

Note during reinstalling:

- The crystal filter does not have any special orientation.

- A : SE circuit board
B : CCD image sensor
C : Lens
D : Crystal filter
E : Lens frame R
F : Lens frame F
G : Light shading rubber
H : Sensor plate

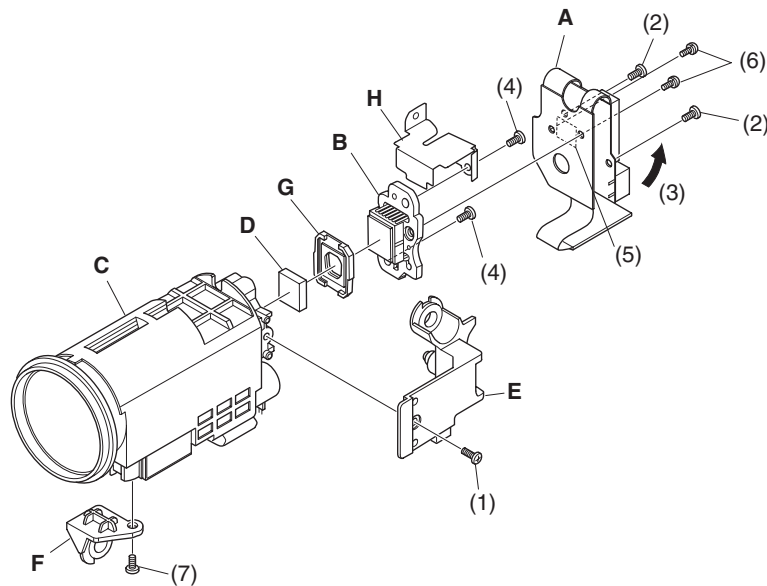


Fig. 4-9

4.10 LCD circuit board, LCD frame, Monitor backlight, Monitor LCD, and LCD case B (Fig. 4-10)

Caution when disassembling:

- Be careful not to damage the monitor LCD or monitor backlight.

■ **LCD circuit board (A)**

- (1) Disconnect the flat cable on LCD circuit board.
- (2) Unsolder the three points on LCD circuit board (three cables on monitor backlight).
- (3) Remove the screw holding the LCD circuit board.

■ **LCD frame (B), monitor backlight (C), monitor LCD (D), LCD case B (E)**

- (4) Release the two stoppers of LCD frame.

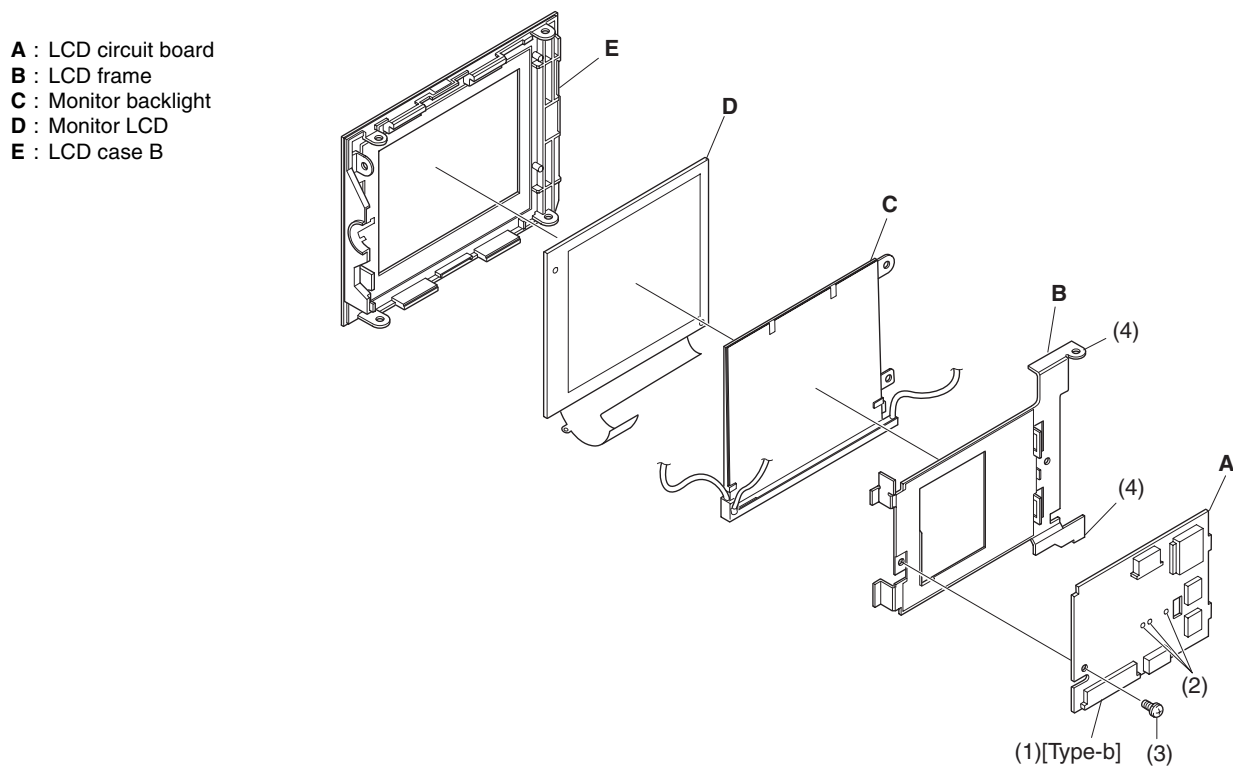


Fig. 4-10

4.11 Eye cup, EVF fulcrum, EVF case U, EVF case B, EBLB circuit board, EVF LCD, and EVF backlight (Fig. 4-11)

Caution when disassembling:

- Be careful not to damage the EVF LCD or EVF backlight.

■ Eyecup (A)

- (1) Release the tab, and then remove the eye cup in the direction of the arrow.

■ EVF fulcrum (B), EVF case U (C)

- (2) Remove the four screws holding the EVF fulcrum, and then remove the EVF fulcrum.
- (3) Remove the EVF case U in the direction of the arrow.

■ EVF case B (D), EBLB circuit board (E), EVF LCD (F), EVF backlight (G)

- (4) Remove the EVF LCD block (H) from EVF case B, and then release the two tabs on LCD holder cover (J).
- (5) Release the two tabs, and then remove the EBLB circuit board.
- (6) Disconnect the two flat cables on EBLB circuit board.
- (7) Remove the EVF LCD and EVF backlight from LCD holder (K) in the direction of the arrow.

- A : Eyecup
- B : EVF fulcrum
- C : EVF case U
- D : EVF case B
- E : EBLB circuit board
- F : EVF LCD
- G : EVF backlight
- H : EVF LCD block
- J : LCD holder cover
- K : LCD holder
- L : Clear cover
- M : EVF connection cable

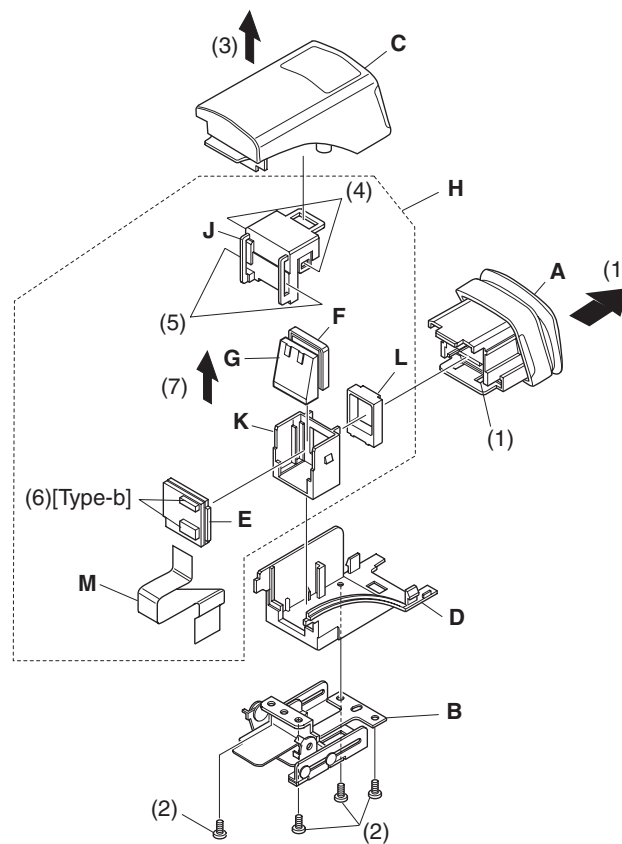


Fig. 4-11

Prohibition:

This information deals with functions exclusively used for servicing (not disclosed to persons other than service engineers): Do not disclose this information to customers.

Perform the following functions with DVD video camera/recorder turned on and LCD monitor open (while viewing the LCD screen).

Use the buttons on DVD video camera/recorder for all operations.

1. Information on Firmware

Firmware refers to the software programs used to operate the DVD video camera/recorder: They are stored in the microprocessors of DVD video camera/recorder at factory during production. This DVD video camera/recorder stores the following four firmware programs:

Type of firmware	Description	Remarks
System firmware	Software that drives SH CPU: Controls the operation of entire system, such as recording, playback, Disc Navigation, connections with external device	
Camera microprocessor firmware	Controls the operation of camera block (including optical system), clock, battery, input/output.	Does not require updating
Disc drive main firmware	These programs control the DVD disc drive system (mechanism block).	
Disc drive core firmware		Does not require updating

1.1 Checking firmware versions

Purpose:

To display the versions of the following firmware programs stored in the microprocessors of DVD video camera/recorder (Fig. 1-1):

- System firmware: System
- Camera microprocessor firmware: Cam Ver
- Disc drive main firmware: Drive (Main)
- Disc drive core firmware: Drive (Core)

Pertinent case:

When the factory asks you to check, or you want to ask the factory about the servicing method.

Operational procedure:

- 1) Turn the DVD video camera/recorder on, and then press the DISC NAVIGATION button.
- 2) While the Disc Navigation screen is displayed, tilt the joystick up and hold it, and then press the following 2 buttons simultaneously:
 - SELECT
 - REC
- To restore normal status, press the stop/cancel button.

Example of firmware version display

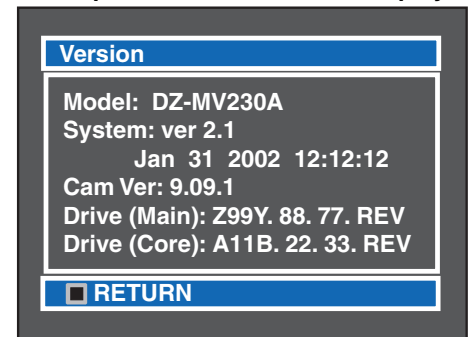


Fig. 1-1

Note: Operation (display) is possible without DVD-RAM or DVD-R disc loaded. When performing the operation, it is not necessary to press the DISC NAVIGATION button.

1.2 Updating firmware

Purpose:

To update the firmware recorded on the microprocessors of DVD video camera/recorder, in order to improve operability.

Pertinent case:

Update the firmware whenever so instructed by the factory, after confirming that updating is necessary by checking the versions in the preceding item.

Operational procedure:

- 1) Turn the DVD video camera/recorder off.
- 2) Connect the AC adapter to the DVD video camera/recorder.
- 3) Insert the DVD-RAM disc for updating firmware supplied by the factory.
- 4) Turn the DVD video camera/recorder on: After approx. 20 seconds, the updating start screen (Fig. 1-2a) will appear, and the firmware programs will be automatically updated in sequential order. When updating of each firmware program is completed, the updating complete screen (Fig. 1-2d) will appear momentarily. (*1)
 - System firmware (Fig. 1-2b: The updating progress is displayed with bar)
 - Disc drive main firmware (Fig. 1-2c)
- 5) When all required updating is completed, the screen for verifying completion of updating will appear. (Fig. 1-2e: The updated firmware will be displayed in red).
- 6) Turn the DVD video camera/recorder off and remove the DVD-RAM disc for updating.

*1: Not all firmware programs need updating every time. The firmware programs that do not require updating will be skipped. With this DVD video camera/recorder, the camera microprocessor firmware and disc drive firmware do not require updating.

Example of updating start screen

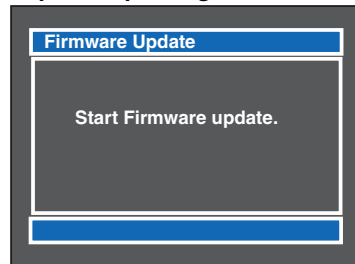


Fig. 1-2a

Example of system firmware updating screen

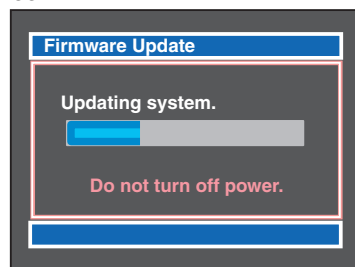


Fig. 1-2b

Example of screen for updating disc drive main firmware

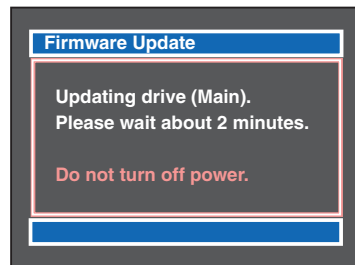


Fig. 1-2c

Example of updating complete screen

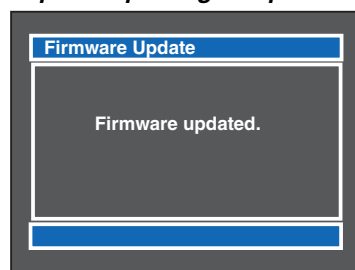


Fig. 1-2d

Example of screen for verifying completion of updating

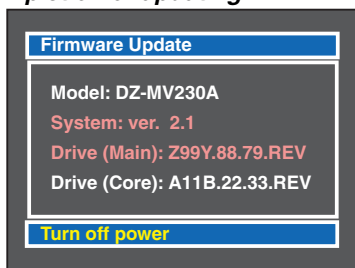


Fig. 1-2e

2. Deleting Files on DVD-RAM Disc

2.1 Deleting disc control data (RX) file

Caution:

Executing this operation will delete all the following data on disc. Take note of the details of setting if they will need resetting after deletion:

- Skip data
- Fade data
- Record mode setting (FINE, STD, frame , etc.)

Purpose:

To erase the RX file which contains the disc control data on playback skip setting, playback fade setting, thumbnails, etc.

Delete the RX file when:

Thumbnails cannot normally be displayed using Disc Navigation, or message "Disc full. Cannot execute." appears on LCD screen even though the disc has sufficient free space.

(These phenomena may occur if the DVD video camera/recorder is turned off while the RX file is being written to disc.)

Before starting:

Use the joystick to move the cursor, select a menu item, and designate it while the debug menu is being activated. (Tilt up, down, to left or right to select an item, and press the center of joystick to designate the item.)

Operational procedure:

- 1) Insert the DVD-RAM disc whose RX file is to be deleted.
- 2) Turn the DVD video camera/recorder on, and then press the DISC NAVIGATION button.
- 3) While the Disc Navigation menu screen is displayed, tilt the joystick to right and hold it, and then press the following 2 buttons simultaneously, to display the debug menu:
 - SELECT
 - REC
- 4) With the debug menu screen (Fig. 2-1) displayed, choose "Delete RX file" and designate it.

- To restore normal status, press the stop/cancel button.

Note: The following shows the functions when menu items other than "Delete RX file" are chosen on the debug menu screen:

Version:	To display firmware versions (same function as "1.1 Checking firmware versions")
Error Code:	Invalid
Drive Status:	Invalid
Format Disc Lv1:	Do not use (*1)
Staff:	Invalid

*1: Do not use this function. This initialization is more precise than in "Initialization of DVD-RAM disc" on Disc Navigation and "Forced disc formatting" in the following section. However, it takes considerable time to complete, and then a disc with which initialization has failed cannot then be initialized on this video camera/recorder anymore (initialization on PC will be necessary).

Example of debug menu screen

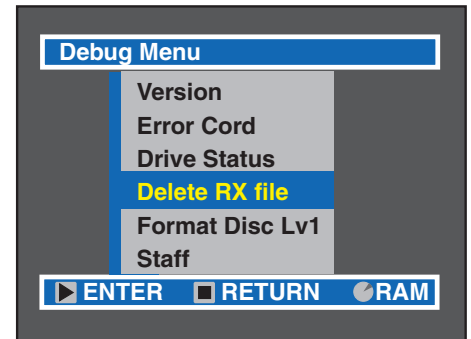


Fig. 2-1

2.2 Forced disc formatting

Caution:

- Executing this operation will delete all files on DVD-RAM disc: Copy the necessary files to PC, etc.
- Formatting will be performed on one and then the other. To format one side only, check the recorded contents (recorded side) before performing this operation.

Purpose:

To initialize without starting Disc Navigation.

Pertinent case:

When ordinary initialization is not possible because the data on DVD-RAM disc has been destroyed (excluding physical damage to disc) and Disc Navigation does not start.

Operational procedure:

- 1) Turn the DVD video camera/recorder on, and then insert the disc to be initialized.
- 2) Hold down the following 3 buttons simultaneously for at least 3 seconds in the camera image status:
 - SELECT
 - REC
 - VOL. + (plus)
- 3) Follow the instructions on LCD screen thereafter.
- 4) To format the other side of disc, turn the disc over and start over from step 1). To end the operation, press the stop/cancel button.

3. Displaying Various Types of Information

3.1 Playback file detailed information display

Purpose:

To display the bit rate and elapsed position of the movie or still file being played back.

Pertinent case:

Used as a reference to locate noise that occurs in the middle of a long recorded movie.

Before starting:

Use the joystick to move the cursor, select a menu item, and designate it while the playback menu is activated. (Tilt up, down, to left or right to select an item, and press the center of joystick to designate the item.)

Operation procedure:

- 1) Turn the DVD video camera/recorder on.
 - 2) Insert the object DVD-RAM disc and play it back.
 - 3) Press the DISPLAY button to switch off the ordinary playback information.
 - 4) Press the MENU button to display the playback menu.
 - 5) Choose "Specify" on the playback menu screen (Go To), enter it, and press the following 2 buttons simultaneously. (Releasing the buttons will display the detailed information of playback file.)
 - SELECT
 - MENU
- To restore normal status, press the DISPLAY button.

Example of playback file detailed information

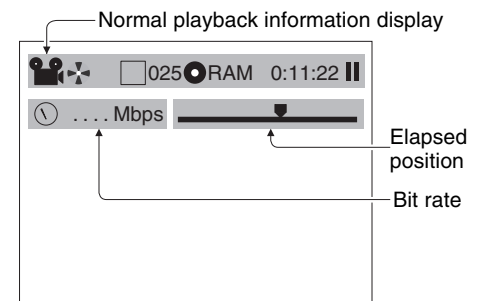


Fig. 3-1

Caution:

Be sure to press the DISPLAY button after the operation is finished. Since the playback file detailed information display function is backed up, neglecting to press DISPLAY will always display the detailed information.

3.2 Error code display

Note: Inquire with the factory about the details of error codes. The error codes in the text and illustration of this section are here noted randomly for explanation of operational procedure, etc.; they have nothing to do with actual error codes.

(1) Displaying error code

Pertinent case:

When you need to investigate the error code when "ERROR" appears on the LCD monitor screen, and also need to ask the factory about the servicing method.

Operation procedure:

- 1) Turn the DVD video camera/recorder on.
- 2) Make sure that camera image appears.

- 3) Press the SELECT button and release it, and then, within 0.5 second, hold down the following 2 buttons for at least 3 seconds to display the error code (Fig. 3-2a):
 - SELECT
 - FOCUS
- To restore normal status, press the DISPLAY button.

Caution:

Be sure to press the DISPLAY button after the operation is finished. Since the error code display function is backed up, neglecting to press DISPLAY will always display the error code.

Details of display:

- Error code is displayed in combination of 4 letters and numerals. The error code of the latest trouble appears in the upper row, and the error code of the trouble that occurred before (when the content differs from that of the latest trouble) appears on the lower row.
- Each time new trouble that differs from previous ones occurs, the error codes will be rewritten from the upper row in sequence.
- If the same trouble occurs consecutively three times, the message shown in Fig. 3-2b will appear on the LCD monitor screen.

Example of error code display

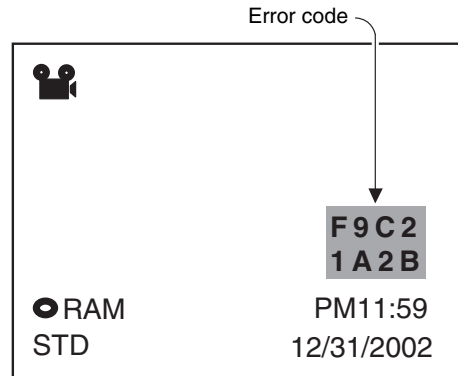


Fig. 3-2a

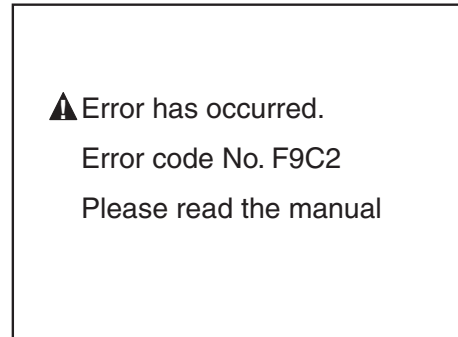


Fig. 3-2b

(2) Detailed display of error code

Pertinent case:

When you are asked by the factory, or you yourself ask the factory about the servicing method.

Operation procedure:

- 1) Turn the DVD video camera/recorder on.
- 2) Make sure that camera image appears.
- 3) Press the DISPLAY button and release it, and then, within 0.5 second, hold down the following 2 buttons for at least 3 seconds to display the test mode screen (Fig. 3-2c: Has nothing to do with this function):
 - DISPLAY
 - SELECT
- 4) While the test mode screen is displayed, press the following 2 buttons simultaneously:
 - DISPLAY
 - Stop/cancel
- 5) Press the center of joystick to display the error code detailed screen (Fig. 3-2d).
- To restore normal status, press the DISPLAY and SELECT buttons simultaneously.

Example of test mode screen display

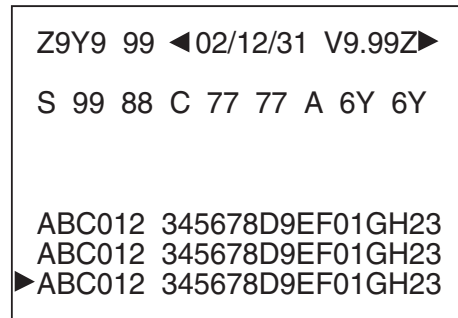


Fig. 3-2c

Example of error code display

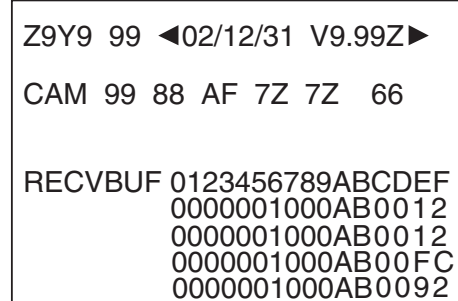


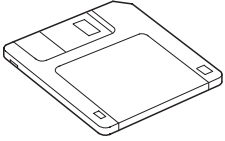

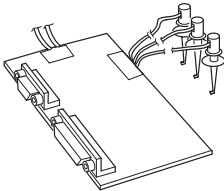
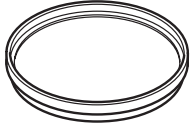
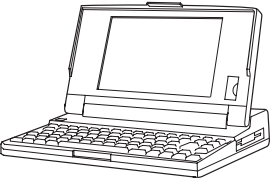
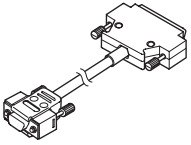

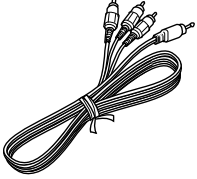
Fig. 3-2d

◆ Electric Circuit Adjustment

1. Test Equipment/Jigs Necessary for Adjustment

1.1 List of jigs and tools

The following table shows the jigs and tools, some of them new, used for servicing (electrically adjusting) the DVD video camera/recorder.

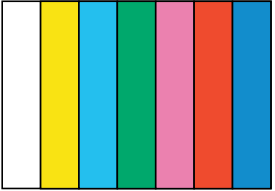
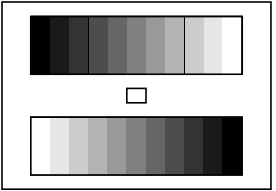
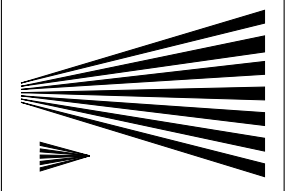
<p>[New] Adjustment Floppy disk No. TP13871</p> 	<p>[New] MV-230 Connection Cable (*2) No. TP13881</p> 	<p>DSP-R Jig No. 7099448</p> 	<p>C12 Light Balancing Filter (Diameter: 46 mm) No. 7099369</p> 
<p>Personal Computer (*1) [generally available]</p> 	<p>RS-232C Cable (9-pin or 25-pin straight type) [generally available]</p> 	<p>ND2/ND4/ND8 Filters (*3) (Diameter: 46 mm) [generally available]</p> 	<p>AV Output Cable [Accessory (provided)]</p> 

*1: Personal Computer will be abbreviated as PC hereafter.

*2: The actual jig shape may be different from the illustration, since it might have been changed to improve workability.

*3: The filters may be used in "6.3 Shutter Adjustment".

1.2 List of charts for adjustment

<p>Color bar chart</p> 	<p>Grayscale chart</p> 	<p>Backfocus chart</p> 
--	--	--

1.3 Test equipment, etc.

- Color video monitor (color TV with AV input jacks)
- Oscilloscope
- Vectorscope (*1)
- Digital voltmeter (DVM)
- Frequency counter
- 3100 K light box
- AC adapter
- DC power supply (5 V/1 A) (*2)
- Lighting device, such as a video light (not fluorescent light) (*3)

*1: Adjustment is possible without a vectorscope, but more precise adjustment can be made if it is used.

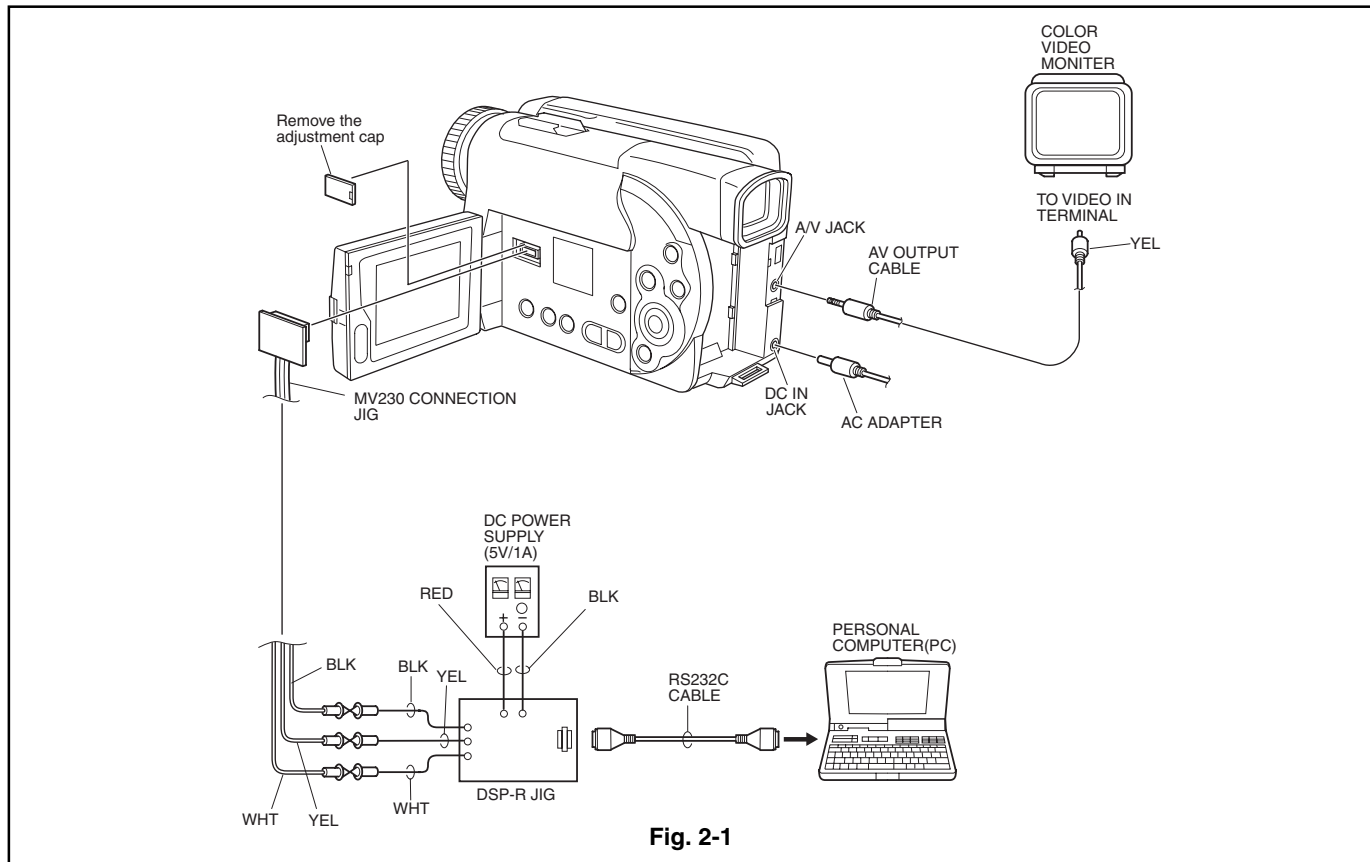
*2: The DC power supply is used to power the DSP-R jig.

*3: This may be used in "6.3 Shutter Adjustment".

2. Before Starting Adjustment

2.1 Connections for adjustment

Connect the DVD video camera/recorder and jigs/test equipment as shown in Fig. 2-1.



2.2 Cautions

Prohibition:

Do not attempt any perform adjustment or work with the product disassembled.

This DVD video camera/recorder incorporates a laser emitter block: It is very dangerous if laser beam strikes your eye.

Assemble the product completely, and perform adjustment with only the adjustment cover removed (see Fig. 2-1).

- 1) Use a small tripod to fix the DVD video camera/recorder, making certain it will not move during adjustment.
- 2) Adjustment is performed using PC (adjustment program). Although this chapter explains the adjustment procedure in accordance with actual PC screens, it is also possible to independently adjust one item unless otherwise specified.
- 3) Note that the adjustment program is subject to change without notice for improvements in functions and operability, and that the actual displays (instructions) on PC screen may be different from those in this manual: If so, follow the instructions on PC screen.
- 4) The adjustment program will not normally start and operate unless the DVD video camera/recorder, PC and test equipment/jigs are connected correctly, and all are turned on.
- 5) Be sure to connect the video output of DVD video camera/recorder to a color video monitor and terminate it: If the video output is not terminated, the output video signal level cannot be measured correctly.
- 6) Use light box whose color temperature and brightness are controlled and no flickering occurs, for adjustment. If an inappropriate light box is used, the adjustment program will not operate normally, and precise adjustment will not be possible.

- 7) Take care with the following when pointing the DVD video camera/recorder at a chart (light box):
- Set the chart 30-50 cm away from the lens surface, and avoid any effects from surrounding light (except where some such designation is given).
 - Aim at the chart and let chart fill the screen (video period). (Except where some other designation is given.)
 - Focus the chart correctly.

2.3 Setting DVD video camera/recorder

Before starting adjustment, use the menu screens to set the functions of DVD video camera/recorder as in the table below [this table lists only the items (functions) that affect adjustment]:

After setting the functions, make sure that the power switch is set to "VIDEO", and then turn off the "Menu" and "Disc Navigation" functions.

Note: After executing system reset (*1) using the following procedure, set "OSD Output", "Demo Mode" and "Dig. Zoom" to "Off": The specified setting status will be attained.

- 1) Set the power switch to "POWER OFF".
- 2) Detach the AC adapter or battery, making sure that no power is supplied to the DVD video camera/recorder.
- 3) Use a fine-tip pen, etc. to push the "reset" button (S3101) on the left side and hold it for several seconds.

Item	Setting status	Remarks
Camera Functions Setup		
Program AE	Auto	
White Bal.	Auto	
EIS	On	
Dig. Zoom	Off	Set to "48x" after system reset.
Record Functions Setup		
Input Source	CAMERA	
PHOTO Input	Field	
Self Timer	Off	
OSD Output	Off	Set to "On" after system reset.
Initial Setup		
Power Save	Off	Be sure to set to "Off", since the "5 min" setting hinders adjustment.
Record LED	On	
Demo Mode	Off	Set to "Auto" after system reset. Be sure to set to "Off", since the "Auto" of "Start" setting will hinder adjustment.

*1: Refer to "9.1 System Reset" in Chapter 1 for details on system reset.

2.4 Setting test equipment

The names of switches, knobs, etc. of test equipment may vary depending on the manufacturer and model. Since some test equipment units may have switches, knobs, etc. and are not listed below that must be set, see the instruction manual of the particular test equipment for details.

- Refer to the following section for how to start the adjustment program.
- Ground test equipment to the shield cover on MAN circuit board.
- Setting on oscilloscope and vectroscope:

Item	Setting status	Remarks
Settings on oscilloscope		
Probe	10:1	
TIME/DIV	10 or 20 μ s	Except where some other designation is given
VOLTS/DIV	-----	Change depending on the measurement object
Synchronization	Internal	Except where some other designation is given
AC/DC/GND	AC	Except where some other designation is given
Setting on vectroscope		
SATURATION	75%	

3. Starting Adjustment Program (MAP)

The adjustment program will not start or operate normally unless the DVD video camera/recorder, PC, jig and test equipment are correctly connected, and power is supplied to each unit: Check the connections referring to "2.1 Connections for adjustment", and then supply power to the DVD video camera/recorder, PC, jig and test equipment.

- 1) Operate the PC to start MS-DOS (*1). (See MS-DOS screen 1.)
- 2) Make sure that the adjustment floppy disk is write-protected.
- 3) Insert the adjustment floppy disk into the floppy disk drive of PC.
- 4) Use the PC keyboard to type **A:**, and then press the **Enter** key (*2). (See the MS-DOS screen 2.)
- 5) Type **MAP_IBM** (space) **1**, and then press the **Enter** key (*3). (See the MAP input screen.)
- 6) Make sure that the model select screen appears on the PC display (*4). (See the model select screen.)
- 7) If the appropriate model is displayed on the model select screen, input the number to PC. If the appropriate model name is not shown on the model select screen, input **P** to PC until the model name appears (*5).
- 8) The screen for verifying the model name will appear on PC display: If it is correct, input **Y** to PC. If it is incorrect, input **N** and start over from step 7.
- 9) Make sure that the main menu appears on PC display: If it does not appear, check whether model selection (in step 7) is correct.

*1: For details on how to start MS-DOS, refer to the instruction manual of PC or OS, since this varies for each PC.

*2: The letter to be input designates the drive into which the adjustment floppy disk has been inserted. If using a drive other than A, designate that drive.

*3: The number to be input after space designates the serial port number of PC. If the PC has two or more serial ports, and the RS-232C cable (DSP-R jig) is connected to a port other than serial port 1, input that serial port number.

*4: If the model select screen does not appear, make sure of the following:

- The designation of drive in step 4 is correct.
- The designation of serial port in step 5 is correct.
- The correct adjustment floppy disk has been normally inserted.

*5: If an erroneous model name or number is input, misoperation message will appear on PC display: Press any key to restore the model select screen and start over.

To terminate the adjustment program (MAP):

Press the **Esc** key one to three times until the PC display returns from a menu screen to the MS-DOS screen.

When the MS-DOS screen appears on PC display, turn off the camera/recorder and jig.

MS-DOS screen 1

```
C>
```

Insert adjustment floppy disk into PC.

Input **A:** to PC and press **Enter** key.

MS-DOS screen 2

```
C>A:  
A>
```

Input **MAP_IBM** (space) **1** to PC.

MAP input screen

```
C>A:  
A>MAP_IBM 1
```

Press **Enter** key on PC.

Model select screen

```
*****  
MODEL SELECT  
*****  
[1]  xxxxxxxx  
[2]  xxxxxxxx  
[3]  xxxxxxxx  
[4]  xxxxxxxx  
[5]  xxxxxxxx  
[P]  NEXT SELECTION  
[ESC] END  
  
Please select the type of the set  
Press [1] - [5] or [P] or [ESC]
```

Select model (input the corresponding number)

Screen for verifying model name

```
Selected model is xxxxxxxx  
Are you sure ? (Y/N)
```

Input **Y** to PC.

Main menu screen

```
*****  
MANUAL ADJUSTMENT PROGRAM  
*****  
[A]  DATA INITIALIZE  
[B]  CAMERA ADJUSTMENT  
[C]  AUTO FOCUS  
[D]  STABILIZER  
[E]  SPOT NOISE  
[ESC] END  
  
Please select [A] - [E] or [ESC]
```

Reference: Misoperation message screen

```
CAN NOT FIND THE DATA FILE  
**** PRESS ANY KEY ****
```


4. List of Adjustment Items

4.1 Adjustments Needed After Replacing Major Components

The following table shows the adjustment items, their purposes, and whether or not adjustment is required after replacing major components (items with a circle mark must be adjusted).

The items shown in the table below are the minimum that must be adjusted after replacing major components: If several components have been replaced - or depending on the cause of a defect - more items may need to be adjusted. (After replacing numerous components, make sure that all adjustments are correct.)

Item	Purpose	Circuit board		Electrical part			Miscellaneous
		SE	MAN (*1)	IC1001	IC1403 IC1404	IC1405	Lens
Data Initialize							
Data Initialize (*2)	To initialize EEPROM		●				
Camera Adjustment							
Sampling Pulse	To measure the delay time in sampling IC, and optimize pulse timing		●				
Auto Iris Control	To set iris control data	●	●	●			●
Shutter	To measure the shutter open time, thereby setting still image exposure control data	●	●	●			●
B Matrix (*5)	To correct dispersion of tint		●	●			
White Balance	To input auto white balance control data	●	●	●			●
Chroma Gain	To set color saturation for the reference color temperature	●	●	●			●
Autofocus							
Zoom/Focus Tracking	To set out-of-focus correction level during zoom	●	●	●			●
AF Noise Level	To set noise level in autofocus circuit	●	●	●			●
Stabilizer							
Stabilizer (*3)	To write to EEPROM average value of camera shake correction data during production at factory	●	●		●	●	
Spot Noise							
Spot Noise (*4)	To correct spot noise		●	●			

*1: When replacing EEPROM or the board containing EEPROM (MAN board), be sure to perform "Data Initialize". (Normally, "Data Initialize" is not necessary after replacing components.)

*2: Do not perform "Data Initialize" indiscriminately.

Since the data in EEPROM will be initialized (adjustment data is initialized) by "Data Initialize", all adjustments must be performed thereafter.

*3: Do not perform "Stabilizer" adjustment indiscriminately.

Performing "Stabilizer" adjustment will write the camera shake correction value stored on adjustment floppy disk to EEPROM. The camera shake correction value stored on adjustment floppy disk is an average of several hundred products (several thousand products) adjusted at factory during production: It is not a value inherent in individual products.

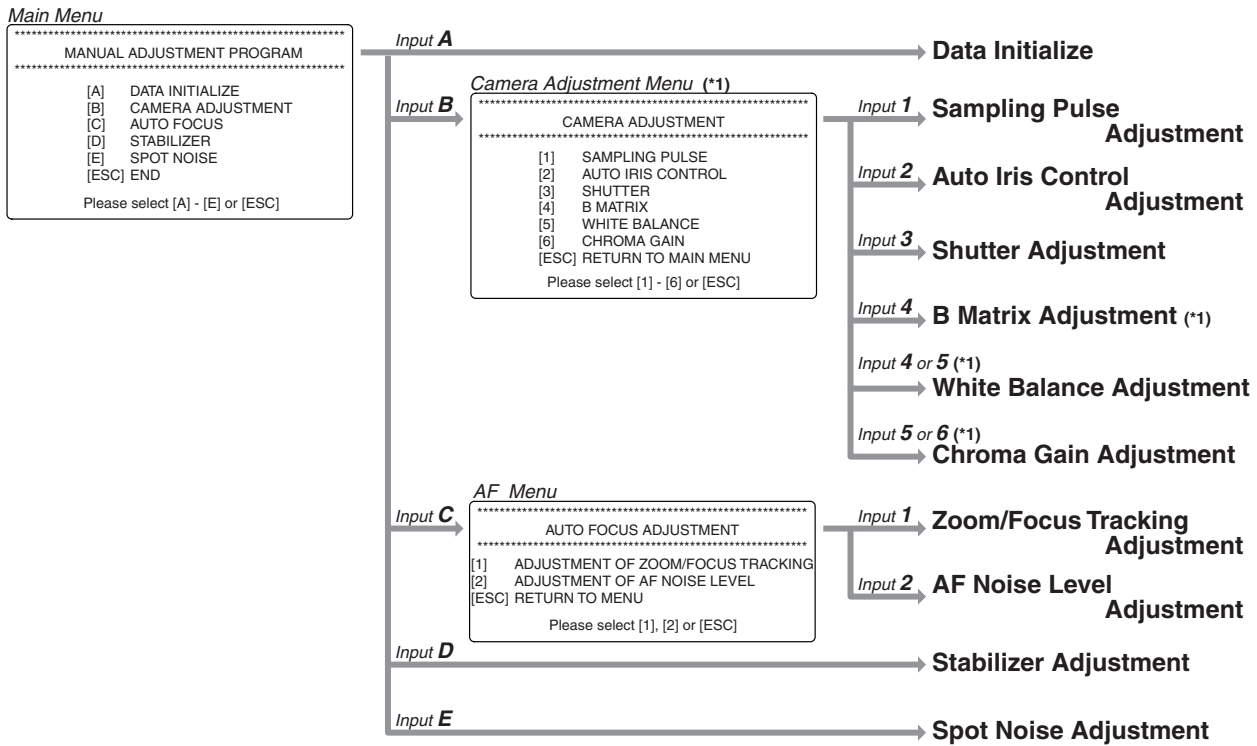
*4: Perform the "Spot Noise" adjustment in the following cases:

- When replacing components for which it is specified that adjustment is necessary after replacing them in the above table
- When white spot occurs under unusual use conditions or during use for extended period of time

*5: The "B MATRIX" adjustment applies only to the following models:

- DZ-MV200A/MV200A(K)
- DZ-MV208E(AU)/MV208E(SW)
- DZ-MV200E/MV200E(UK)

4.2 Adjustment Item Transfer Diagram



*1: The "B Matrix Adjustment" is only for the following models:

(Since the adjustment name appears on the camera adjustment menu screen only for models that need this adjustment, the number to be input will differ for each model.)

- DZ-MV200A/MV200A(K)
- DZ-MV208E(AU)/MV208E(SW)
- DZ-MV200E/MV200E(UK)

5. Data Initialize

Refer to "3. Starting Adjustment Program (MAP)" in advance, then start MAP and display the main menu on PC display. If error message appears on PC display during adjustment, perform troubleshooting, referring to "10. Error Messages".

Essential note:

After completing this adjustment, be sure to perform all adjustment items.

Caution:

This procedure initializes the data in EEPROM (including the adjustment data). Any time you replace EEPROM or the board containing EEPROM, be sure to perform this procedure. (Generally, this procedure is not necessary after replacing components.)

Procedure:

- 1) Input **A** to PC on the main menu screen to display the Initialize screen.
- 2) Input **Y** to PC. (*1)
- 3) Follow the instructions on PC display thereafter. (The setting is complete when the main menu screen is restored.)

*1: Entering **N** on the Initialize screen will restore the main menu screen.

Main menu screen

```

*****
MANUAL ADJUSTMENT PROGRAM
*****
[A] DATA INITIALIZE
[B] CAMERA ADJUSTMENT
[C] AUTO FOCUS
[D] STABILIZER
[E] SPOT NOISE
[ESC] END

Please select [A] - [E] or [ESC]
  
```

Input **A** to PC.

Initialize screen

```

<< DATA WRITING >>
START TO SEND DATA. (Y/N)
  
```

Input **Y** to PC.

Follow the instructions on PC display thereafter. (The setting is complete when the main menu screen is restored.)

6. Camera Adjustment

Refer to "3. Starting Adjustment Program (MAP)" in advance, start MAP and display the main menu on PC display. If error message appears on PC display during adjustment, perform troubleshooting, referring to "10. Error Messages".

Before starting:

- 1) Input **B** to PC on the main menu screen to display the camera adjustment menu screen.
- 2) Input to PC the appropriate adjustment number. (*1)

*1: Pressing the **Esc** key on the camera adjustment menu screen will restore the main menu screen.

Note:

The B matrix adjustment applies only to the following models:
The adjustment name will appear on the camera adjustment menu screen only for models that need this adjustment.

- DZ-MV200A/MV200A(K)
- DZ-MV208E(AU)/MV208E(SW)
- DZ-MV200E/MV200E(UK)

Main menu screen

```

*****
MANUAL ADJUSTMENT PROGRAM
*****
[A] DATA INITIALIZE
[B] CAMERA ADJUSTMENT
[C] AUTO FOCUS
[D] STABILIZER
[E] SPOT NOISE
[ESC] END

Please select [A] - [E] or [ESC]
  
```

Input **B** to PC.

Camera adjustment menu screen

```

*****
CAMERA ADJUSTMENT
*****
[1] SAMPLING PULSE
[2] AUTO IRIS CONTROL
[3] SHUTTER
[4] B MATRIX
[5] WHITE BALANCE
[6] CHROMA GAIN
[ESC] RETURN TO MAIN MENU

Please select [1] - [6] or [ESC]
  
```

6.1 Sampling Pulse Adjustment

Phenomenon due to incomplete adjustment:

The S/N of output image deteriorates.

Status during adjustment:

Lens capped (shading light from lens)

Procedure:

- 1) Input **1** to PC on the camera adjustment menu screen.
- 2) The screen for verifying the start of adjustment will appear: Input **Y** to PC. (***1**)
- 3) The screen for verifying that lens is capped will appear: Press any key on PC.
- 4) The screen showing that the sampling pulse is being adjusted will appear, and then the sampling pulse adjustment complete screen will appear. Press any key on PC to restore the camera adjustment menu screen on PC display.
- 5) Turn the DVD video camera/recorder off for at least 5 seconds, and then turn it on again. (The camera adjustment menu screen will be restored, and continuing other adjustments will be possible.) (***2**)

***1:** If **N** is input to PC on the screen for verifying the start of adjustment, the camera adjustment menu screen will be restored: If the **Esc** key is pressed, the main menu screen will be restored.

***2:** When the DVD video camera/recorder is turned on again, the MAP may not operate normally, and continuing other adjustments may not be possible. If this happens, press the **Esc** key to restore the MS-DOS screen, restart the MAP, and then perform the other adjustments (this adjustment item is complete).

Camera adjustment menu screen

```
*****
CAMERA ADJUSTMENT
*****
[1]  SAMPLING PULSE
[2]  AUTO IRIS CONTROL
[3]  SHUTTER
[4]  B MATRIX
[5]  WHITE BALANCE
[6]  CHROMA GAIN
[ESC] RETURN TO MAIN MENU
Please select [1] - [6] or [ESC]
```

↓
Input **1** to PC

Screen for verifying start of adjustment

```
NOW GOING TO START SAMPLING PULSE ADJUSTMENT PROGRAM...
ARE YOU SURE? (Y/N)
Please select [Y] - [N] or [ESC]
```

↓
Input **Y** to PC

Screen for verifying that lens is capped

```
CAUTION!
PLEASE FIT A CAMERA WITH LENS CAP.
ARE YOU SURE?
[PRESS ANY KEY]
```

↓
Press any key on PC

Screen for sampling pulse being adjusted

```
NOW ADJUSTING...
PLEASE WAIT AROUND 30 SECONDS...
```

Sampling pulse adjustment complete screen

```
SUCCESS.
ADJUSTMENT COMPLETED !
[PRESS ANY KEY]
```

↓
Press any key on PC to restore the camera adjustment menu screen.

↓
Turn the DVD video camera/recorder off for at least 5 seconds, and then turn it on again. (The camera adjustment menu screen will be restored, and continuing other adjustments will be possible.) (***2**)

6.2 Auto Iris Control Adjustment

Phenomenon due to incomplete adjustment:

The output image is extremely bright and/or extremely dark.

Status during adjustment:

Set zoom to wide-angle end, and point at light box without chart to fill the screen.

Procedure:

- 1) Input **2** to PC on the camera adjustment menu screen.
- 2) Follow the instructions on PC display thereafter.
- 3) After the adjustment complete screen appears, press any key on PC to restore the camera adjustment menu screen on PC display.
- 4) Turn the DVD video camera/recorder off for at least 5 seconds, and then turn it on again. (The camera adjustment menu screen will be restored, and continuing other adjustments will be possible.) **(*1)**

***1:** When the camera/recorder is turned on again, the MAP may not operate normally, and subsequent adjustments may not be possible. If this happens, press the **Esc** key to restore the MS-DOS screen, restart the MAP, and then perform the other adjustments (this adjustment item is complete).

Camera adjustment menu screen

```
*****
          CAMERA ADJUSTMENT
*****
[1]  SAMPLING PULSE
[2]  AUTO IRIS CONTROL
[3]  SHUTTER
[4]  B MATRIX
[5]  WHITE BALANCE
[6]  CHROMA GAIN
[ESC] RETURN TO MAIN MENU
Please select [1] - [6] or [ESC]
```

↓
Input **2** to PC

↓
Follow the instructions on PC display thereafter.

↓
Adjustment complete screen

```
*****
          ADJUSTMENT FINISHED
          PRESS ANY KEY
*****
```

↓
Press any key on PC to restore the camera adjustment menu screen.

↓
Turn the DVD video camera/recorder off for at least 5 seconds, and then turn it on again to complete adjustment. (The camera adjustment menu screen will be restored, and continuing other adjustments will be possible.) **(*1)**

6.3 Shutter Adjustment

Phenomenon due to incomplete adjustment:

The still image is too bright or too dark.

Conditions:

Point at the light box, without chart inserted, 20 cm away.

Procedure:

- 1) Input **3** to PC on the camera adjustment menu screen.
- *Shutter Adjustment No. 1* -
- 2) The shutter adjustment menu screen will appear: Input **1** to PC to select Shutter Adjustment No. 1. **(*1)**
- 3) The initial setting screen will appear, and the zoom and focus will automatically be set as follows (The DVD video camera/recorder may restart at this time): **(*2)**
 - Digital zoom: Off
 - Optical zoom: Tele-end
 - Focus: Close-up end
- 4) The light amount instruction screen B or D will appear: adjust the amount of light referring to Table 6-1 until the light amount check complete screen appears. **(*3)(*4)**

Table 6-1 Light Amount Adjustment Method

Light amount instruction screen B	Attach ND filters in order beginning with the smallest number over the lens. (*7)
Light amount instruction screen D	Reduce the distance between light box and lens. Illuminate the surface of light box to be recorded using a video light, etc. (no fluorescent light). (*8)

***1:** Pressing the **Esc** key on the shutter adjustment menu screen will restore the main menu screen.

***2:** Do not operate zoom or focus.

***3:** The DVD video camera/recorder will always detect the amount of light during this adjustment: When the appropriate light amount is detected, the light amount check complete screen will appear automatically. In some cases, the light amount check complete screen may appear without the light amount instruction screen displayed.

***4:** If the **Esc** key is pressed to restore the shutter adjustment menu screen and adjustment is started again, the light amount check complete screen may appear.

***7:** ND filters reduce the amount of light entering the lens: The larger the number, the greater the effect. Overlapping multiple filters will intensify the effect.

***8:** Ordinary incandescent lamp can also be used.

Camera adjustment menu screen

```

*****
CAMERA ADJUSTMENT
*****
[1]  SAMPLING PULSE
[2]  AUTO IRIS CONTROL
[3]  SHUTTER
[4]  B MATRIX
[5]  WHITE BALANCE
[6]  CHROMA GAIN
[ESC] RETURN TO MAIN MENU
Please select [1] - [6] or [ESC]
    
```

Input **3** to PC

Shutter adjustment menu screen

```

*****
SHUTTER ADJUSTMENT
*****
[1]  ADJUSTMENT No. 1
[2]  ADJUSTMENT No. 2
[ESC] END
Please select [1] - [2] or [ESC]
    
```

Shutter Adjustment No. 1

Shutter Adjustment No. 2

(Perform after completing Shutter Adjustment No. 1)

Input **1** to PC

Input **2** to PC

Initial setting screen

```

SHUTTER ADJUSTMENT No. X
NOW INITIALIZING
Please wait a moment
    
```

Light amount instruction B screen

```

SHUTTER ADJUSTMENT No. X
NOW CHECKING LIGHT CONDITION.
TOO BRIGHT!
Please control light condition more darker.
    
```

Light amount instruction D screen

```

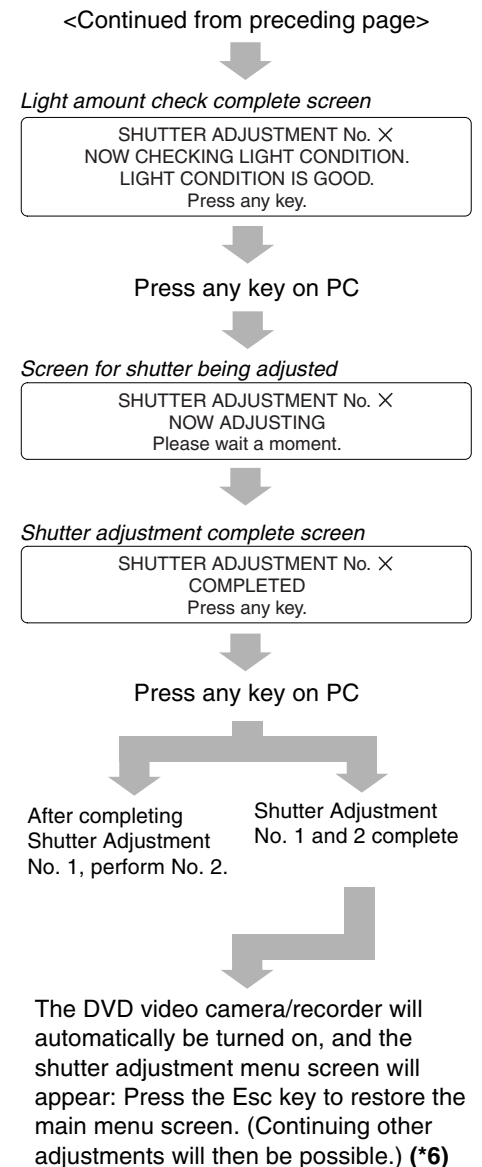
SHUTTER ADJUSTMENT No. X
NOW CHECKING LIGHT CONDITION.
TOO DARK!
Please control light condition more brighter.
    
```

See Table 6-1 to adjust amount of light.

<Continued on next page>

- 5) When the light amount check complete screen appears, press any key (except for **Esc** key) on PC. (*5)
 - 6) The screen for shutter being adjusted (*5) will appear, and then the shutter adjustment complete screen will appear. Press any key on PC to restore the shutter adjustment menu screen. (*9)
- Shutter Adjustment No. 2 -
- 7) Input **2** to PC on the shutter adjustment menu screen to select Shutter Adjustment No. 2. (*1)
 - 8) The initial setting screen will appear, and the zoom and focus will automatically be set as follows: (*2)
 - Digital zoom: Off
 - Optical zoom: Tele-end
 - Focus: Close-up end
 - 9) The light amount instruction screen B or D will appear: adjust the amount of light referring to Table 6-1 until the light amount check complete screen appears. (*3)(*4)
 - 10) When the light amount check complete screen appears, press any key (except for **Esc** key) on PC. (*5)
 - 11) The screen for shutter being adjusted (*5) will appear, and then the shutter adjustment complete screen will appear. Press any key on PC to restore the shutter adjustment menu screen. (*9)
 - 12) Press the **Esc** key while the shutter adjustment menu screen is displayed to restore the main menu screen (other adjustments can then be done). (*6)

- *1: Pressing the **Esc** key on the shutter adjustment menu screen will restore the main menu screen.
- *2: Do not operate zoom or focus.
- *3: The DVD video camera/recorder will always detect the amount of light during this adjustment: When the appropriate light amount is detected, the light amount check complete screen will appear automatically. In some cases, the light amount check complete screen may appear without the light amount instruction screen displayed.
- *4: If the **Esc** key is pressed to restore the shutter adjustment menu screen and adjustment is started again, the light amount check complete screen may appear.
- *5: Pressing the **Esc** key will restore the shutter adjustment menu screen.
- *6: When the DVD video camera/recorder is turned on again, the MAP may not operate normally, and the subsequent adjustments may not be possible. If this happens, press the **Esc** key to restore the MS-DOS screen, restart the MAP, and then perform any other adjustment (this adjustment is complete).
- *7: ND filters reduce the amount of light entering the lens: The larger the number, the greater the effect. Overlapping multiple filters will intensify the effect.
- *8: Ordinary incandescent lamp can also be used.
- *9: When the shutter adjustment menu screen is restored, the DVD video camera/recorder will automatically be restarted.



6.4 B (Blue) Matrix Adjustment (Fig. 6-1)

Caution:

- The B matrix adjustment applies only to the following models:
The adjustment name will appear on the camera adjustment menu screen only for models that need this adjustment.
 - DZ-MV200A/MV200A(K)
 - DZ-MV208E(AU)/MV208E(SW)
 - DZ-MV200E/MV200E(UK)
- Be sure to complete the B matrix adjustment before performing the white balance adjustment.

Phenomenon due to incomplete adjustment:

Color reproduction is degraded.

Test equipment/jig:

Oscilloscope

Test point:

Video output

Status during adjustment:

- Attach a C12 light balancing filter.
- Point at a color bar chart.

Procedure:

- 1) Input **4** to PC on the camera adjustment menu screen.
- 2) The B matrix adjustment screen will appear.
- 3) Press the **U** key on PC to minimize the yellow (YEL) level on waveform.
- 4) Press the **D** key on PC so that the ratio between the yellow (YEL) and blue (BLU) levels on waveform is as shown in Table 6-2 (rough adjustment).
Then, while holding down the **Ctrl** key on PC, press the **D** and **U** keys so that the ratio between the yellow (YEL) and blue (BLU) levels on waveform is as shown in Table 6-2 (precise adjustment).
- 5) Press the **Enter** key on PC: The screen on PC display will switch from data writing to adjustment complete.
- 6) Press any key on PC to restore the camera adjustment menu screen on PC display.

Table 6-2 B Matrix Adjustment Value

Model	YEL : BLU
DZ-MV200A/MV200A(K)	3 : 10
DZ-MV208E(AU)/MV208E(SW)	1 : 4
DZ-MV200E/MV200E(UK)	1 : 4

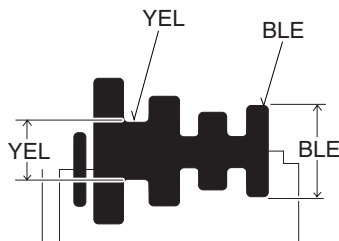


Fig. 6-1

Camera adjustment menu screen

```

*****
          CAMERA ADJUSTMENT
*****
[1]  SAMPLING PULSE
[2]  AUTO IRIS CONTROL
[3]  SHUTTER
[4]  B MATRIX
[5]  WHITE BALANCE
[6]  CHROMA GAIN
[ESC] RETURN TO MAIN MENU

Please select [1] - [6] or [ESC]
    
```

Input **4** to PC

B matrix adjustment screen

```

<< ADJUSTMENT OF BLUE MATRIX >>
          ROUGH ADJUSTMENT
[U]      UP
[D]      DOWN

          FINE ADJUSTMENT
[Cr] + [U]  UP
[Cr] + [D]  DOWN

[ENTER]  SAVE & RETURN TO MENU
[ESC]    QUIT
    
```

Press the **U** or **D** key on PC to minimize the yellow (YEL) level on waveform. Press the **D** key on PC so that the ratio between the yellow (YEL) and blue (BLU) levels on waveform is as shown in Table 6-2 (rough adjustment). Then, while holding down the **Ctrl** key on PC, press the **D** and **U** keys so that the ratio between the yellow (YEL) and blue (BLU) levels on waveform is as shown in Table 6-2 (precise adjustment).

Data writing screen

```

<< ADJUSTMENT OF BLUE MATRIX >>
          DATA WRITING INTO EEPROM
    
```

Adjustment complete screen

```

<< ADJUSTMENT OF BLUE MATRIX >>
          ADJUSTMENT FINISHED
          PRESS ANY KEY
    
```

Press any key on PC to restore the camera adjustment menu screen:
The adjustment is now complete.

6.5 White Balance Adjustment

Phenomenon due to incomplete adjustment:

- The original color of subject is different from that of output image.
- White subject is not seen as white.

Status during adjustment:

- Attach a C12 light balancing filter.
- Set the zoom to wide end, and point at a grayscale chart.

Procedure:

- 1) Input **4** or **5** to PC on the camera adjustment menu screen. **(*1)**
- 2) The R-B offset screen will appear: Input the 2-digit R-B offset code, referring to Table 6-3, and then press the **Enter** key.
- 3) The Mg-G offset screen will appear: Input the 2-digit R-B offset code, referring to Table 6-3, and then press the **Enter** key.
- 4) Follow the instructions on PC display thereafter. (The adjustment will be complete when the camera adjustment menu screen is restored.)

*1: The number to be input will differ depending on the model (B matrix adjustment necessary or not): Input the number, following the camera adjustment menu screen that appears on actual PC display.

Table 6-3 R-B/Mg-G Offset Codes

Model	R-B offset code	Mg-G offset code
DZ-MV230A/MV230A(K)	0 (zero) A	0 (zero) 0 (zero)
DZ-MV200A/MV200A(K)	12	1B
DZ-MV238E(AU)/MV238E(SW)	0 (zero) A	0 (zero) 0 (zero)
DZ-MV230E/MV230E(UK)	0 (zero) A	0 (zero) 0 (zero)
DZ-MV208E(AU)/MV208E(SW)	0 (zero) E	1F
DZ-MV200E/MV200E(UK)	0 (zero) E	1F

Camera adjustment menu screen

```

*****
CAMERA ADJUSTMENT
*****
[1]  SAMPLING PULSE
[2]  AUTO IRIS CONTROL
[3]  SHUTTER
[4]  B MATRIX
[5]  WHITE BALANCE
[6]  CHROMA GAIN
[ESC] RETURN TO MAIN MENU

Please select [1] - [6] or [ESC]
    
```

Input **4** or **5** to PC **(*1)**

R-B offset screen

```

<< WHITE BALANCE ADJUSTMENT >>
INPUT DATA OF OFFSET FOR R-B --> 00
    
```

Input the corresponding 2-digit R-B offset, referring to Table 6-3, and press **Enter**.

Mg-G offset screen

```

<< WHITE BALANCE ADJUSTMENT >>
INPUT DATA OF OFFSET FOR Mg-G --> 00
    
```

Input the corresponding 2-digit Mg-G offset, referring to Table 6-3, and press **Enter**.

Follow the instructions on PC display thereafter. (Adjustment will be complete when the camera adjustment menu screen is restored.)

6.6 Chroma Gain Adjustment (Figs. 6-2, 6-3, 6-4)

Phenomenon due to incomplete adjustment:

The color of output image is denser than that of subject and/or lighter than that of subject.

Test equipment/jig:

Oscilloscope (or vectorscope)

Test point:

Video output

Status during adjustment:

- Attach a C12 light balancing filter.
- Point at a color bar chart.

Procedure:

- 1) Input **5** or **6** to PC on the camera adjustment menu screen. **(*1)**

*1: The number to be input will differ depending on the model (B matrix adjustment necessary or not): Input the number, following the camera adjustment menu screen that appears on actual PC display.

Camera adjustment menu screen

```

*****
CAMERA ADJUSTMENT
*****
[1]  SAMPLING PULSE
[2]  AUTO IRIS CONTROL
[3]  SHUTTER
[4]  B MATRIX
[5]  WHITE BALANCE
[6]  CHROMA GAIN
[ESC] RETURN TO MAIN MENU

Please select [1] - [6] or [ESC]
    
```

Input **5** or **6** to PC **(*1)**

<Continued on next page>

- 2) The chroma gain adjustment screen will appear.
- 3) *When using an oscilloscope (Fig. 6-2):*
 Press the **D** or **U** key on PC to set the red level on waveform as specified in Table 6-4 (rough adjustment).
 Then, while holding down the **Ctrl** key on PC, press the **D** or **U** key to set the red level on waveform as specified in Table 6-4 (precise adjustment).
When using a vectorscope (Figs. 6-3, 6-4):
 Press the **D** or **U** key on PC so that the red vector is as specified in Table 6-4 with respect to burst vector (rough adjustment).
 Then, while holding down the **Ctrl** key on PC, press the **D** or **U** key so that the red vector is as specified in Table 6-4 with respect to burst vector (precise adjustment).
- 4) Press the **Enter** key on PC: The PC display will switch from the data write screen to adjustment complete screen.
- 5) Press any key on PC to restore the camera adjustment menu screen.

Table 6-4 Chroma Gain Adjustment Value

Model	Oscilloscope	Vectorscope
DZ-MV230A/MV230A(K)	A = 540mV ± 20mV	B = 190 % ± 5 %
DZ-MV200A/MV200A(K)	A = 430mV ± 20mV	B = 150 % ± 5 %
DZ-MV238E(AU)/MV238E(SW)	A = 630mV ± 20mV	C = 210 % ± 5 %
DZ-MV230E/MV230E(UK)	A = 630mV ± 20mV	C = 210 % ± 5 %
DZ-MV208E(AU)/MV208(SW)	A = 450mV ± 20mV	C = 150 % ± 5 %
DZ-MV200E/MV200E(UK)	A = 450mV ± 20mV	C = 150 % ± 5 %

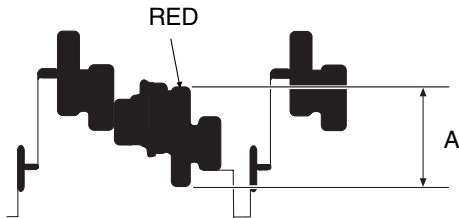


Fig. 6-2

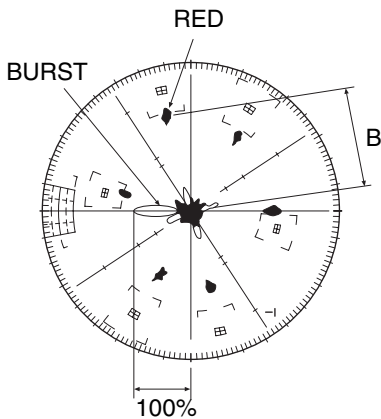


Fig. 6-3

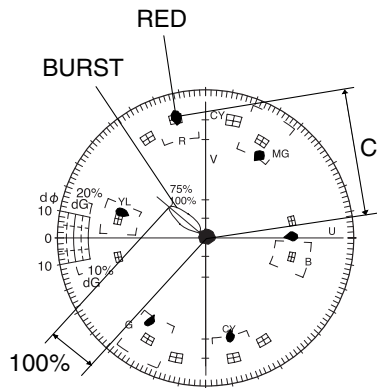


Fig. 6-4

<Continued from preceding page>

Chroma Gain adjustment screen

```

<< ADJUSTMENT OF CHROMA GAIN >>
      ROUGH ADJUSTMENT
[U]   CHROMA GAIN UP
[D]   CHROMA GAIN DOWN

      FINE ADJUSTMENT
[Cr] + [U] CHROMA GAIN UP
[Cr] + [D] CHROMA GAIN DOWN

[ENTER] SAVE & RETURN TO MENU
[ESC]   QUIT
  
```

When using an oscilloscope:

Press **D** or **U** on PC so that the red level on waveform is as specified in Table 6-4.

Then, while holding down **Ctrl** on PC, press **D** or **U** so that the red level on waveform is as specified in Table 6-4.

When using a vectorscope:

Press **D** or **U** on PC so the red vector is as specified in Table 6-4 with respect to burst vector.

Then, while holding down **Ctrl** on PC, press **D** or **U** so that the red vector is as specified in Table 6-4 with respect to burst vector.

Press **Enter** on PC

Data write screen

```

<< ADJUSTMENT OF CHROMA GAIN >>
      DATA WRITING INTO EEPROM
  
```

Adjustment complete screen

```

<< ADJUSTMENT OF CHROMA GAIN >>
      ADJUSTMENT FINISHED
      PRESS ANY KEY
  
```

Press any key on PC to restore the camera adjustment menu screen.

7. Autofocus

Refer to "3. Starting Adjustment Program (MAP)" in advance, start MAP and display the main menu on PC display. If an error message appears on PC display during adjustment, perform troubleshooting, referring to "10. Error Messages".

Before starting adjustment:

- 1) Input **C** to PC on the main menu screen to display the AF menu screen.
- 2) Input the appropriate adjustment number to PC. (***1**)

***1:** Pressing the **Esc** key on the AF menu screen will restore the main menu screen.

Main menu screen

```
*****
MANUAL ADJUSTMENT PROGRAM
*****
[A] DATA INITIALIZE
[B] CAMERA ADJUSTMENT
[C] AUTO FOCUS
[D] STABILIZER
[E] SPOT NOISE
[ESC] END

Please select [A] - [E] or [ESC]
```

Input **C** to PC

AF menu screen

```
*****
AUTO FOCUS ADJUSTMENT
*****
[1] ADJUSTMENT OF ZOOM/FOCUS TRACKING
[2] ADJUSTMENT OF AF NOISE LEVEL
[ESC] RETURN TO MENU

Please select [1], [2] or [ESC]
```

7.1 Zoom/Focus Tracing Adjustment

Phenomenon due to incomplete adjustment:

Focus is lacking during zooming.

Status during adjustment:

- Point at backfocus chart 1500 ±5 mm away from the lens surface.
- Set the illumination of backfocus chart to 200-400 lx.

Cautions during adjustment:

- Measure the distance between the chart and lens surface precisely.
- Place the chart as close to parallel as possible to the lens surface.
- Note that the backfocus chart should always be at the center of monitor screen when the zoom is set to either wide-angle or telephoto end.
- Normally, the zoom/focus tracking adjustment will be completed within 2 minutes after it is selected. If the adjustment is not completed after several minutes have elapsed, turn off the PC and DVD video camera/recorder, check to see if the chart and lighting are correct, and then perform readjustment.
- Do not allow any obstacle between the chart and lens during adjustment.

Procedure:

- 1) Input **1** to PC on the AF menu screen.
- 2) Follow the instructions on PC display thereafter. (The adjustment will be complete when the AF menu screen is restored.)

AF menu screen

```
*****
AUTO FOCUS ADJUSTMENT
*****
[1] ADJUSTMENT OF ZOOM/FOCUS TRACKING
[2] ADJUSTMENT OF AF NOISE LEVEL
[ESC] RETURN TO MENU

Please select [1], [2] or [ESC]
```

Input **1** to PC

Follow the instructions on PC display thereafter. (The adjustment will be complete when the AF menu screen is restored.)

7.2 AF Noise Level Adjustment

Phenomenon due to incomplete adjustment:

It takes too much time to focus subject, or subject is not focused at all.

Status during adjustment:

Point at light box without chart 10 cm away from the lens surface.

Cautions during adjustment:

- Place the light box as close to parallel as possible to the lens surface.
- Normally, the AF noise level adjustment is completed within 30 seconds after it is selected. If the adjustment is not completed after several minutes have elapsed, turn off the PC and DVD video camera/recorder, check to see if the light box and lighting are correct, and then perform readjustment.

Procedure:

- 1) Input **2** to PC on the AF menu screen.
- 2) Follow the instructions on PC display thereafter. (The adjustment will be complete when the AF menu screen is restored.)

AF menu screen

```
*****
          AUTO FOCUS ADJUSTMENT
*****
[1]  ADJUSTMENT OF ZOOM/FOCUS TRACKING
[2]  ADJUSTMENT OF AF NOISE LEVEL
[ESC] RETURN TO MENU

Please select [1], [2] or [ESC]
```

↓
Input **2** to PC

↓
Follow the instructions on PC display thereafter. (The adjustment will be complete when the AF menu screen is restored.)

8. Stabilizer

Caution:

Do not perform this adjustment indiscriminately. With this adjustment, the camera shake correction value stored on adjustment floppy disk will be written to EEPROM. The camera shake correction value stored on adjustment floppy disk is an average of several hundred products (several thousand products) adjusted at factory during production: It is not a value inherent in individual products.

Refer to "3. Starting Adjustment Program (MAP)" in advance, start MAP and display the main menu on PC display. If an error message appears on PC display during adjustment, perform troubleshooting, referring to "10. Error Messages".

Phenomenon due to incomplete adjustment:

The stabilizer does not operate normally.

Procedure:

- 1) Input **D** to PC on the main menu screen.
- 2) The screen for verifying writing of data will appear: Input **Y** to PC. (*1)
- 3) When writing data is complete, the data write complete screen will appear: Press any key on PC to restore the main menu screen.

*1: Entering **N** on the screen for verifying writing of data will restore the main menu screen.

Main menu screen

```
*****
          MANUAL ADJUSTMENT PROGRAM
*****
[A]  DATA INITIALIZE
[B]  CAMERA ADJUSTMENT
[C]  AUTO FOCUS
[D]  STABILIZER
[E]  SPOT NOISE
[ESC] END

Please select [A] - [E] or [ESC]
```

↓
Input **D** to PC

Screen for verifying writing of data

```
<< DATA WRITING >>
START TO SEND DATA. (Y/N)
```

↓
Input **Y** to PC

Data write complete screen

```
FINISHED WRITING DATA
PRESS ANY KEY
```

↓
Press any key on PC to restore the main menu screen.

9. Spot Noise

Spot noise refers to bright points that appear on the screen: They are caused by a defect in pixel of CCD image sensor.

Caution:

- Perform this adjustment with normal video signal, after completing all other adjustments.
- Perform this adjustment after specified components have been replaced (see "4. List of Adjustment Items").
- Perform this adjustment if spot noise occurs during abnormal usage conditions or after long-term use.
- If spot noise still occurs after this adjustment is complete, the CCD image sensor may be defective.

Refer to "3. Starting Adjustment Program (MAP)" in advance, start MAP and display the main menu on PC display. If an error message appears on PC display during adjustment, perform troubleshooting, referring to "10. Error Messages".

Phenomenon due to incomplete adjustment:

Spot noise occurs during abnormal usage conditions or after long-term use.

Test equipment/jig:

Color video monitor (CRT monitor is desirable when checking spot noise)

Adjustment status:

Lens capped (when checking spot noise)

Procedure:

- 1) Input **E** to PC on the main menu screen.
- 2) The screen for verifying start of adjustment will appear: Input **Y** to PC. (*1)
- 3) The screen showing that the spot noise is being adjusted will appear: Wait for approx. 30 seconds. (Restart will occur automatically several times during this adjustment.) (*2)
- 4) When the adjustment is complete, the adjustment complete screen will appear: Press any key on PC to restore the main menu screen on PC display. (Restart Will automatically be executed before the main menu screen is restored.)

*1: Entering **N** on the screen for verifying start of adjustment will restore the main menu screen.

*2: Take care during adjustment that no fault occurs in connections or power supplies of DVD video camera/recorder, PC, jig and test equipment (faulty connection, unexpected power shutoff, etc.). If fault does occur (faulty connection, unexpected power shutoff, etc.), perform "5. Data Initialize", followed by any other adjustments.

Main menu screen

```
*****
MANUAL ADJUSTMENT PROGRAM
*****
[A] DATA INITIALIZE
[B] CAMERA ADJUSTMENT
[C] AUTO FOCUS
[D] STABILIZER
[E] SPOT NOISE
[ESC] END

Please select [A] - [E] or [ESC]
```

Input **E** to PC

Screen for verifying start of adjustment

```
*****
SPOT NOISE ADJUSTMENT PROGRAM
*****
NOW GOING TO SPOT NOISE ADJUSTMENT PROGRAM
ARE YOU SURE ? (Y/N)
Please select [Y] - [N] or [ESC]
```

Input **Y** to PC

Screen for spot noise being adjusted

```
*****
SPOT NOISE ADJUSTMENT PROGRAM
*****
NOW ADJUSTING
PLEASE WAIT AROUND 30 SECONDS
```

Adjustment complete screen

```
*****
SPOT NOISE ADJUSTMENT PROGRAM
*****
SUCCESS
ADJUSTMENT COMPLETED
[PRESS ANY KEY]
```

Press any key on PC to restore the main menu screen.

10. Error Messages

An error message may appear on PC display during electrical adjustment.
This section explains error messages, their causes and troubleshooting.

10.1 Error messages during picture control system adjustment

Error Message	Cause/Troubleshooting
ERROR OCCURRED. IRIS TROUBLE PRESS ANY KEY	<i>Cause:</i> <ul style="list-style-type: none"> • Defective soldering, pattern damaged in power supply, iris drive circuit <i>Troubleshooting:</i> <ul style="list-style-type: none"> • Check power supply • Check iris drive circuit • Check lens block, and replace it if necessary.
ERROR OCCURRED ON dax ADJUSTMENT PRESS ANY KEY	<i>Cause:</i> <ul style="list-style-type: none"> • Defective soldering, pattern damaged in Hall amp circuit <i>Troubleshooting:</i> <ul style="list-style-type: none"> • Check Hall amp circuit
D RANGE OVER. ERROR ON dax ADJUSTMENT PRESS ANY KEY	<i>Cause:</i> <ul style="list-style-type: none"> • Defective soldering, pattern damaged in Hall amp circuit <i>Troubleshooting:</i> <ul style="list-style-type: none"> • Check Hall amp circuit
ERROR OCCURRED ON da0 and da1 ADJUSTMENT PRESS ANY KEY	<i>Cause:</i> <ul style="list-style-type: none"> • Defective soldering, pattern damaged in Hall amp circuit <i>Troubleshooting:</i> <ul style="list-style-type: none"> • Check Hall amp circuit
FILE NOT FOUND !!!! PRESS ANY KEY	<i>Cause:</i> <ul style="list-style-type: none"> • No adjustment program (file) <i>Troubleshooting:</i> <ul style="list-style-type: none"> • Check adjustment floppy disk, and replace it if necessary.
FILE OPEN ERROR !!!! PRESS ANY KEY	<i>Cause:</i> <ul style="list-style-type: none"> • No adjustment program (file) <i>Troubleshooting:</i> <ul style="list-style-type: none"> • Check adjustment floppy disk, and replace it if necessary.
ERROR OCCURRED ON C DUTY ADJUSTMENT PRESS ANY KEY	<i>Cause:</i> <ul style="list-style-type: none"> • Defective soldering, pattern damaged in iris drive circuit <i>Troubleshooting:</i> <ul style="list-style-type: none"> • Check iris drive circuit
ERROR OCCURRED ON FDET ADJUSTMENT PRESS ANY KEY	<i>Cause:</i> <ul style="list-style-type: none"> • Malfunction of microprocessor • Defective soldering, pattern damaged in Hall amp circuit <i>Troubleshooting:</i> <ul style="list-style-type: none"> • Supply power again and readjust. • Check Hall amp circuit
ERROR OCCURRED. ZOOM DOES NOT WORK PRESS ANY KEY	<i>Cause:</i> <ul style="list-style-type: none"> • Malfunction of microprocessor <i>Troubleshooting:</i> <ul style="list-style-type: none"> • Supply power again and readjust.
TOO BRIGHT PRESS ANY KEY	<i>Cause:</i> <ul style="list-style-type: none"> • Subject image is too bright. <i>Troubleshooting:</i> <ul style="list-style-type: none"> • Move the camera/recorder further away from light box.
TOO DARK PRESS ANY KEY	<i>Cause:</i> <ul style="list-style-type: none"> • Subject image is too dark. <i>Troubleshooting:</i> <ul style="list-style-type: none"> • Check light box. • Move the camera/recorder closer to light box.

Error Message	Cause/Troubleshooting
D RANGE OVER ERROR ON HALL AMP IRIS CANNOT OPEN ANY MORE PRESS ANY KEY	<p><i>Cause:</i></p> <ul style="list-style-type: none"> • Malfunction of microprocessor • Subject image is too dark. • Defective soldering, pattern damaged in Hall amp circuit <p><i>Troubleshooting:</i></p> <ul style="list-style-type: none"> • Supply power again and readjust. • Check light box. • Move the camera/recorder closer to light box. • Check Hall amp circuit
SATURATION ERROR. TOO BRIGHT PRESS ANY KEY	<p><i>Cause:</i></p> <ul style="list-style-type: none"> • Subject image is too bright. <p><i>Troubleshooting:</i></p> <ul style="list-style-type: none"> • Move the camera/recorder further away from light box.
CAN'T ADJUST WHITE BALANCE PLEASE RETRY PRESS ANY KEY	<p><i>Cause:</i></p> <ul style="list-style-type: none"> • Malfunction of microprocessor • Subject image is too bright or too dark. <p><i>Troubleshooting:</i></p> <ul style="list-style-type: none"> • Supply power again and readjust. • Check light box. • Move the camera/recorder further away from, or closer to, light box.

10.2 Error messages during autofocus system adjustment

Error Message	Cause/Troubleshooting
TIME OUT ERROR ON FOCUS	<p><i>Cause:</i></p> <ul style="list-style-type: none"> • Subject image is too bright or too dark. • Malfunction of microprocessor <p><i>Troubleshooting:</i></p> <ul style="list-style-type: none"> • Check the subject, and then supply power again and readjust. • If this error message still appears after adjustment is performed 2 or 3 times, the autofocus circuit is faulty.
TIME OUT ERROR ON AF STEP	
AF LIMIT OVER	
TIME OUT ERROR ON ZOOM	<p><i>Cause:</i></p> <ul style="list-style-type: none"> • Malfunction of microprocessor <p><i>Troubleshooting:</i></p> <ul style="list-style-type: none"> • Check the subject, and then supply power again and readjust. • If this error message still appears after adjustment is performed 2 or 3 times, the autofocus circuit is faulty.
AF ERROR	
TOO DARK	<p><i>Cause:</i></p> <ul style="list-style-type: none"> • Subject image is too dark. • Malfunction of microprocessor <p><i>Troubleshooting:</i></p> <ul style="list-style-type: none"> • Check the subject, and then supply power again and readjust.

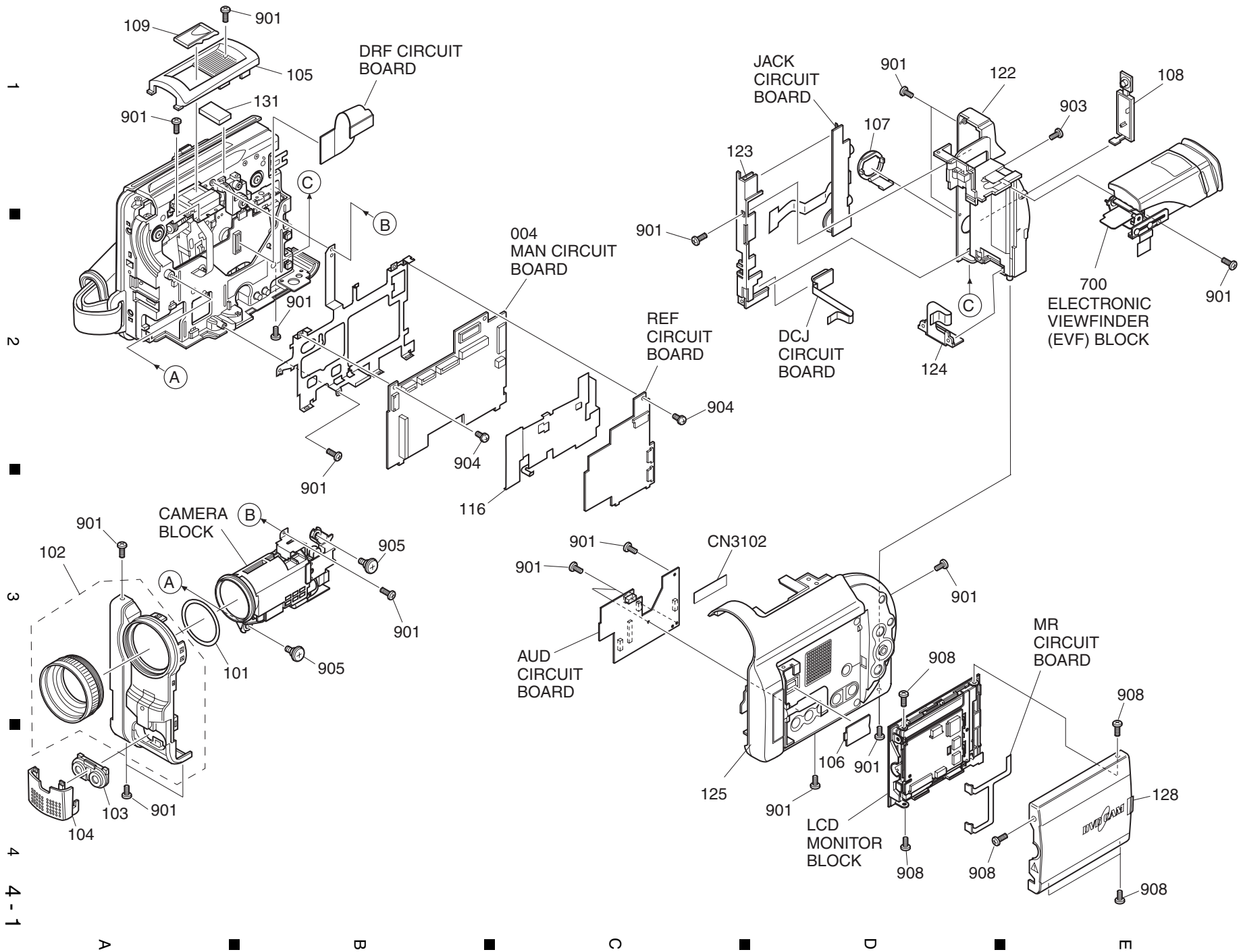
10.3 Error messages during stabilizer adjustment

Error Message	Cause/Troubleshooting
THIS MODEL NEED NOT BE ADJUSTED PRESS ANY KEY.	<p data-bbox="727 306 802 327"><i>Cause:</i></p> <ul data-bbox="768 333 1409 474" style="list-style-type: none"><li data-bbox="768 333 1409 390">• Adjustment is to be started for models that do not have a stabilizer function.<li data-bbox="768 394 1409 474">• Model selection was incorrect when adjustment program started, or initial setting for each mode was performed with incorrect mode selection. <p data-bbox="727 480 906 501"><i>Troubleshooting:</i></p> <ul data-bbox="768 508 1349 636" style="list-style-type: none"><li data-bbox="768 508 1349 564">• Restart adjustment program, taking care to select the correct model.<li data-bbox="768 569 1349 636">• If error still appears after selecting the correct model, perform initial setting for each model and perform all adjustment items.

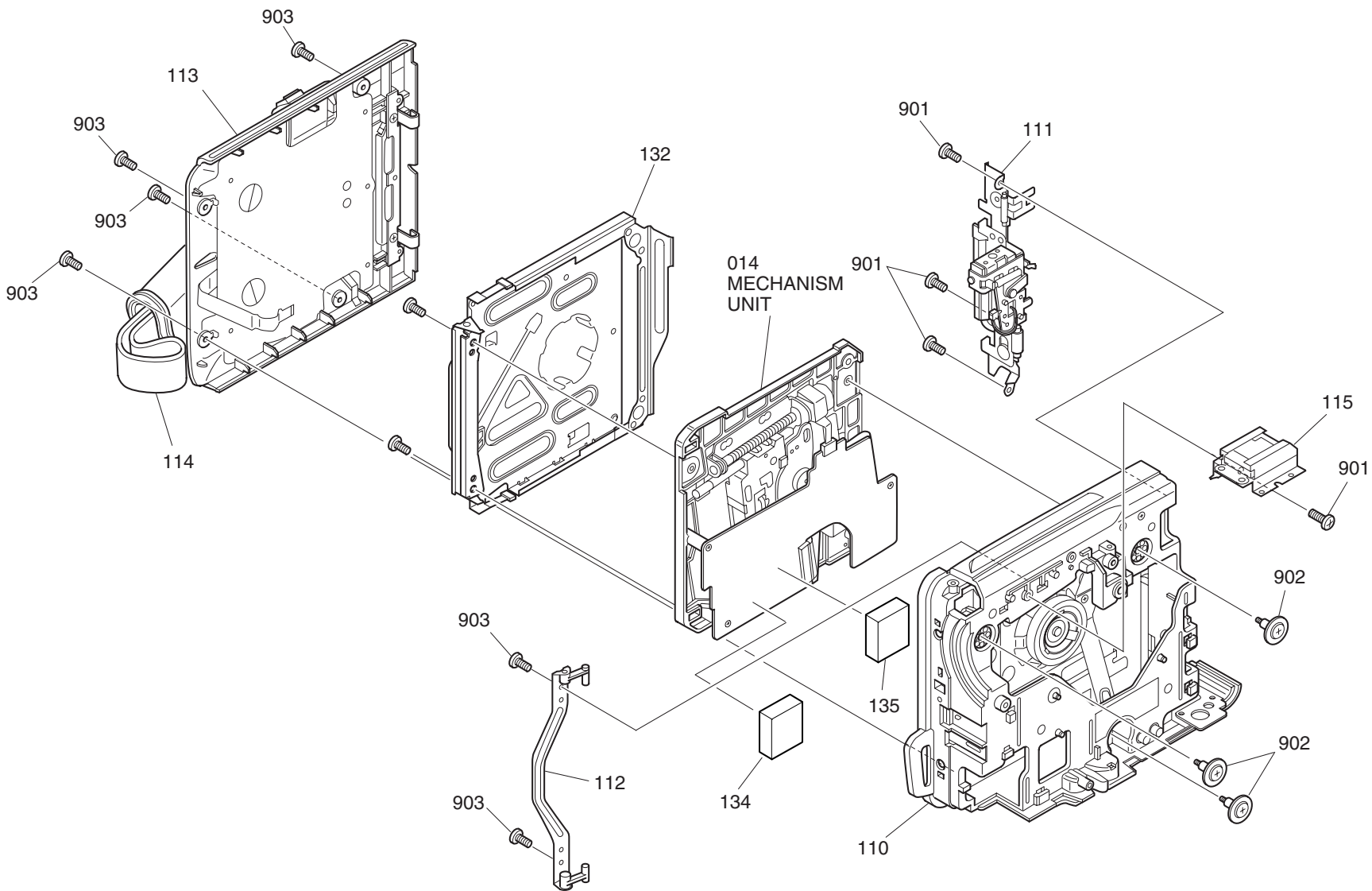
10.4 Error messages during spot noise adjustment

Error Message	Cause/Troubleshooting
ERROR! ADJUSTMENT FAILED. CAUTION! Temperature of Camera is too high. Please retry. [Shut down and wait a moment.] PRESS ANY KEY	<p data-bbox="727 854 802 875"><i>Cause:</i></p> <ul data-bbox="768 882 1279 903" style="list-style-type: none"><li data-bbox="768 882 1279 903">• The temperature inside camera/recorder rises. <p data-bbox="727 909 906 930"><i>Troubleshooting:</i></p> <ul data-bbox="768 936 1403 1052" style="list-style-type: none"><li data-bbox="768 936 1403 993">• Turn the camera/recorder off, and wait until the inside temperature falls before starting readjustment.<li data-bbox="768 997 1403 1052">• If this error still appears after adjustment is performed 2 or 3 times, the CCD image sensor is faulty.
ERROR! ADJUSTMENT FAILED. Please retry. Shut down and wait a moment. If you failed again and again, CCD may failure. PRESS ANY KEY	

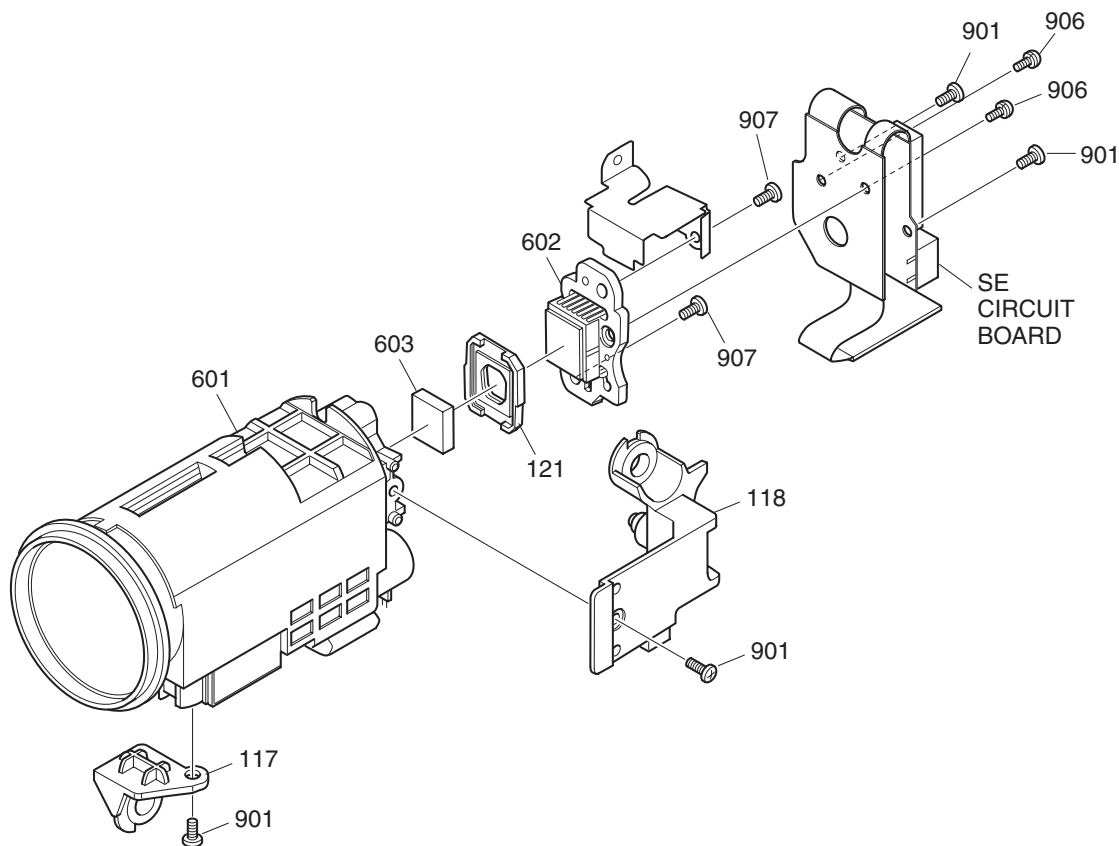
1. Cabinet (1)



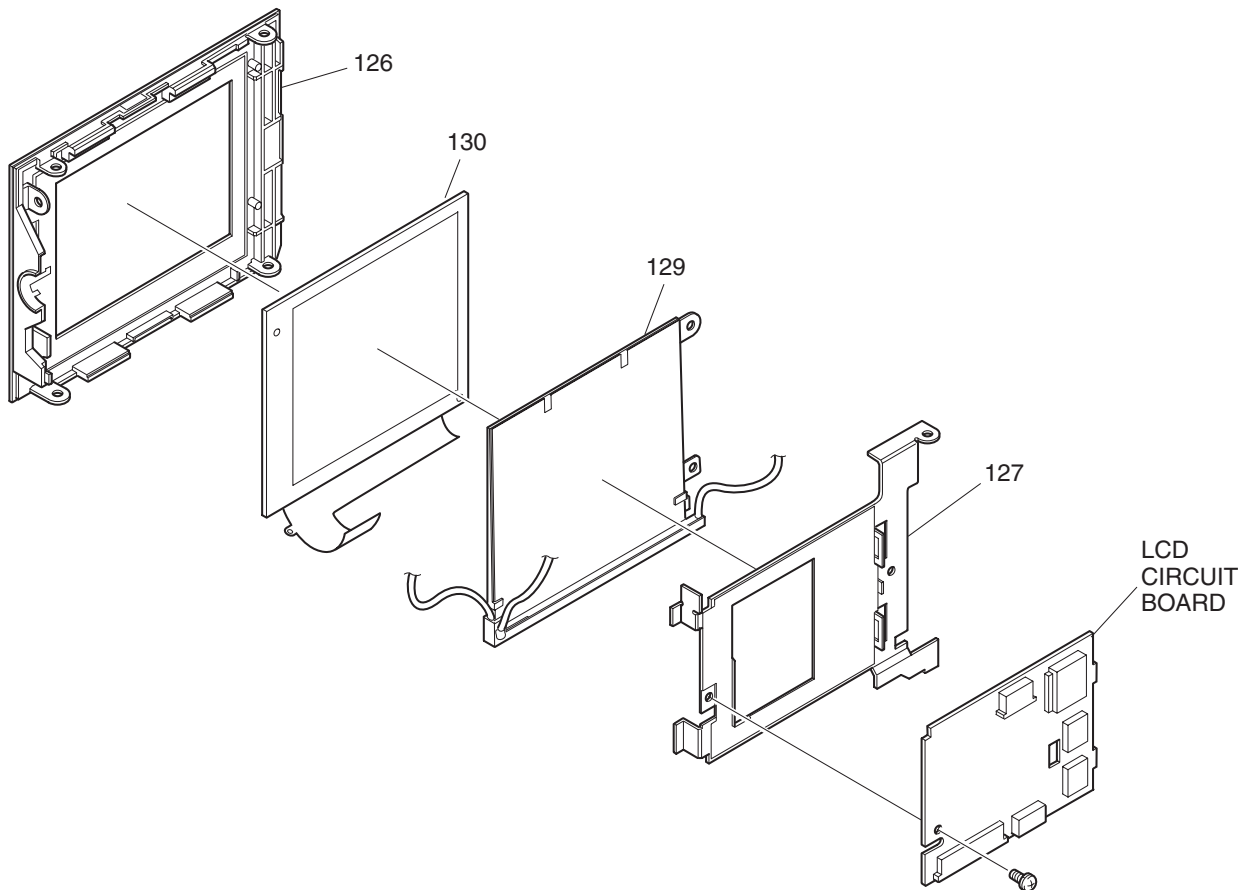
2. Cabinet (2)



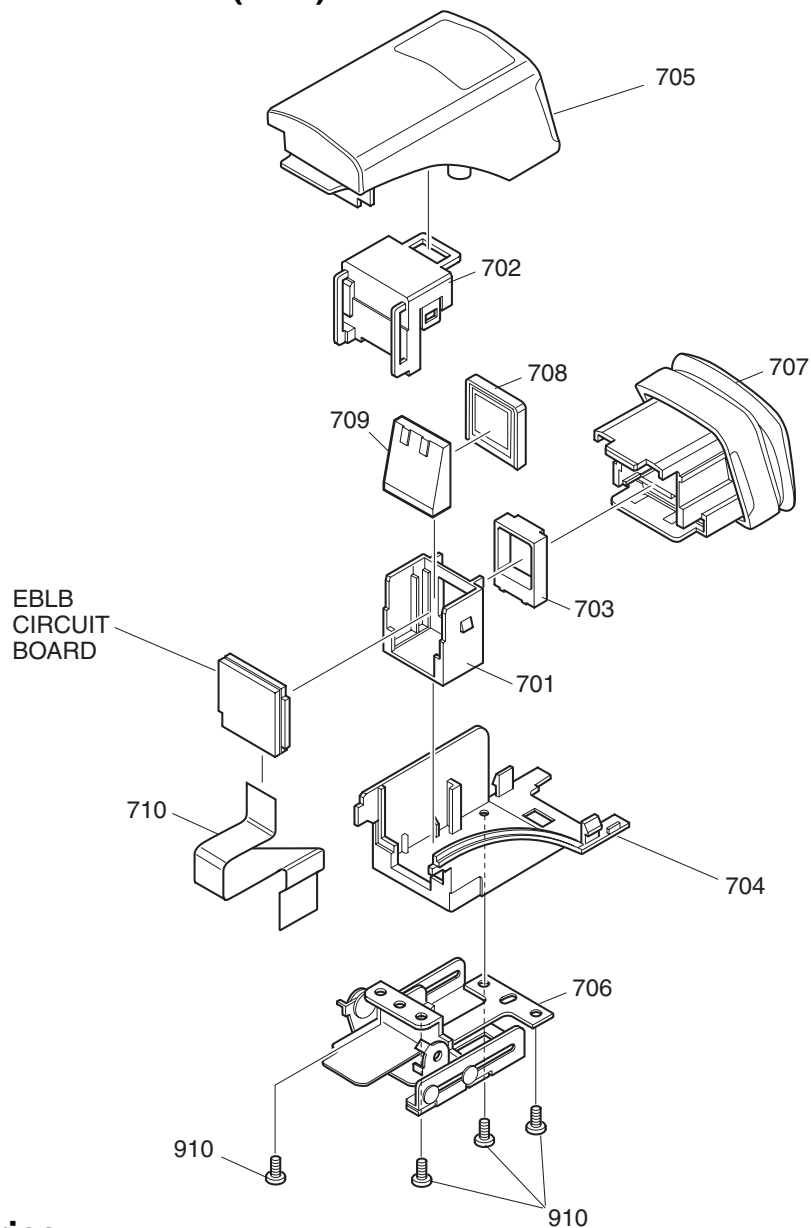
3. Camera



4. LCD Monitor



5. Electronic Viewfinder (EVF)



6. Accessories

<p>801 AC ADAPTER (DZ-ACE1)</p>	<p>802</p>	<p>803</p>	<p>804 REMOTE CONTROL (DZ-RM2)</p>
<p>807</p>	<p>808</p>	<p>Battery Pack (DZ-BP14(R))</p>	

1. MECHANICAL PARTS LIST

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
MECHANISM SECTION			ACCESSORIES		
004	JP33354	PWB ASSY MAN[TYPE 230]	△ 801	TS16791	ADPTOR,AC
004	JP33356	PWB ASSY MAN[TYPE 200]	△ 802	EV10861	CORD,POWER
014	UA12151	DVD DRIVE MECHA AS	803	EW12401	CORD,AV
101	NX19503	RING(O)	804	HL11382	REMOTE HAND SET
102	QD23681	CASE,FRONT	807	TS16751	STRAP,SHOLDER
103	GH10381	MICROPHONE,STEREO	808	QX14961	CAP,LENS
104	QX14931	COVER,MICROPHONE			
105	QX14941	COVER,TOP			
106	QX14901	COVER,ADJUSTMENT			
107	QX14811	COVER,JACK(S)			
108	QX14821	COVER,JACK(R)			
109	QX14952	COVER,SHOE			
110	QD23551	CASE,SIDE(R)			
111	GY10331	LOCK UNIT			
112	KX27741	BRACKET,LINK			
113	QD23592	COVER,DISC			
114	PV10373	STRAP,HAND			
115	EZ10602	TERMINAL			
116	MD14331	CASE,SHEILD			
117	NJ12761	FRAME,LENS(F)			
118	NJ12781	FRAME,LENS(R)			
121	NX11252	RUBBER			
122	QD23512	COVER,REAR			
123	QD23581	HOLDER,JACK			
124	EZ10541	TERMINAL,BATT			
125	QD23342	CASE,SIDE(L)[TYPE 230]			
125	QD23343	CASE,SIDE(L)[TYPE 200]			
126	QD23381	CASE,LCD(B)			
127	NA31631	FRAME,LCD			
128	QD23393	CASE,LCD(U) [TYPE 230]			
128	QD23394	CASE,LCD(U) [TYPE 200]			
129	DT10491	LIGHT,BACK(2.5)			
130	DB10721	DISPLAY,LIQUID CRYSTAL			
131	MC10419	RUBBER,HEATSINK			
132	KX27602	LOADER AS			
134	MC10415	RUBBER,HEATSINK			
135	MC10416	RUBBER,HEATSINK			
601	KQ10891	LENS ASSY			
602	UE15021	CCD IMAGE SENSOR[TYPE 230]			
602	UE15023	CCD IMAGE SENSOR[TYPE 200]			
603	DT10471	CRYSTAL[TYPE 230]			
603	DT10481	CRYSTAL[TYPE 200]			
700	UE15691	EVF AS			
701	NX21161	HOLDER,LCD			
702	NX21171	COVER,LCD			
703	KQ10991	COVER,CLEAR			
704	QD23641	CASE,EVF(B)			
705	QD23652	CASE,EVF(U)			
706	NX21181	FLUCLUM AS			
707	QX14862	PIECE,EYE			
708	DB10861	LIQUID CRYSTAL			
709	DT10502	LIGHT,BACK(0.44)			
710	EK11464	CONNECTOR			
901	MJ10281	SCREW(1.7X4)			
902	MK12201	SCREW(M1.7W)			
903	MK11991	SCREW(1.7X3)			
904	MK13061	SCREW			
905	MJ10221	SCREW			
906	8650103	SCREW(2X3)			
907	7775945	SCREW(2X5)			
908	MK11992	SCREW(1.7X4)			
910	MK11911	SCREW(1.7X5)			

2. ELECTRICAL PARTS LIST

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
CAMERA & VCR SECTION					
C0501	0893179	CERAMIC CHIP 0.1UF+-10% 16V	C0574	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V
C0502	0893179	CERAMIC CHIP 0.1UF+-10% 16V	C0576	0893213	CERAMIC CHIP 2200PF+-10% 50V
C0503	0893179	CERAMIC CHIP 0.1UF+-10% 16V	C0577	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V
C0504	0893179	CERAMIC CHIP 0.1UF+-10% 16V	C0578	0893217	CERAMIC CHIP 4700PF+-10% 50V
C0505	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C1001	0893107	CERAMIC CHIP 5PF+-0.25% 50V[TYPE 230]
C0506	0893217	CERAMIC CHIP 4700PF+-10% 50V	C1001	0893109	CERAMIC CHIP 7.0PF 50V[TYPE 200]
C0507	0893129	CERAMIC CHIP 180PF+-5% 50V	C1002	0893062	CERAMIC CHIP 1UF+-80-20% 16V
C0508	AA01111R	CERAMIC CHIP 1UF 6.3V	C1003	0893239	CERAMIC CHIP 0.01UF+-80-20% 50V
C0509	0893179	CERAMIC CHIP 0.1UF+-10% 16V	C1004	AA00422R	CERAMIC CHIP 10UF 16V
C0510	0893222	CERAMIC CHIP 0.01UF+-10% 50V	C1007	0893235	CERAMIC CHIP 2200PF+-80-20% 50V
C0511	0893222	CERAMIC CHIP 0.01UF+-10% 50V	C1008	AD10484R	CAPACITOR 47UF+-20% 10V
C0513	0893126	CERAMIC CHIP 100PF+-5% 50V	C1009	0893062	CERAMIC CHIP 1UF+-80-20% 16V
C0514	0893179	CERAMIC CHIP 0.1UF+-10% 16V	C1010	0893239	CERAMIC CHIP 0.01UF+-80-20% 50V
C0515	0893179	CERAMIC CHIP 0.1UF+-10% 16V	C1011	0893239	CERAMIC CHIP 0.01UF+-80-20% 50V
C0516	0893179	CERAMIC CHIP 0.1UF+-10% 16V	C1012	0893239	CERAMIC CHIP 0.01UF+-80-20% 50V
C0518	0893179	CERAMIC CHIP 0.1UF+-10% 16V	C1013	AD10484R	CAPACITOR 47UF+-20% 10V
C0519	0893213	CERAMIC CHIP 2200PF+-10% 50V	C1016	0893062	CERAMIC CHIP 1UF+-80-20% 16V
C0520	AA00698R	CERAMIC CHIP 2.2UF+-10% 16V	C1017	0893239	CERAMIC CHIP 0.01UF+-80-20% 50V
C0521	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C1403	0893232	CERAMIC CHIP 0.1UF+-80-20% 25V
C0522	0893213	CERAMIC CHIP 2200PF+-10% 50V	C1404	0893232	CERAMIC CHIP 0.1UF+-80-20% 25V
C0523	AA00698R	CERAMIC CHIP 2.2UF+-10% 16V	C1405	AD10344R	CHEMICAL CAPACITOR 15UF+-20% 4V
C0524	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C1406	AD10344R	CHEMICAL CAPACITOR 15UF+-20% 4V
C0525	0893213	CERAMIC CHIP 2200PF+-10% 50V	C1407	0893194	CERAMIC CHIP 0.012UF+-10% 25V
C0526	AA00698R	CERAMIC CHIP 2.2UF+-10% 16V	C1408	0893194	CERAMIC CHIP 0.012UF+-10% 25V
C0527	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C1409	0893194	CERAMIC CHIP 0.012UF+-10% 25V
C0528	0893213	CERAMIC CHIP 2200PF+-10% 50V	C1410	0893194	CERAMIC CHIP 0.012UF+-10% 25V
C0529	AA00698R	CERAMIC CHIP 2.2UF+-10% 16V	C1411	AA00966R	CHIP CAPACITOR 4.7UF+-20% 6.3V
C0530	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C1412	AA00941R	CERAMIC CAPACITOR 4.7UF 10V
C0531	0893213	CERAMIC CHIP 2200PF+-10% 50V	C1413	0893214	CERAMIC CHIP 2700PF+-10% 50V
C0532	AA00698R	CERAMIC CHIP 2.2UF+-10% 16V	C1414	0893214	CERAMIC CHIP 2700PF+-10% 50V
C0533	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C1415	0893248	CHIP CERAMIC 0.33UF+-80-20% 16V
C0534	0893213	CERAMIC CHIP 2200PF+-10% 50V	C1801	AD10481R	CAPACITOR 47UF+-20% 6.3V
C0535	AA00698R	CERAMIC CHIP 2.2UF+-10% 16V	C3501	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0536	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C3502	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0537	0893213	CERAMIC CHIP 2200PF+-10% 50V	C3503	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0538	AA00698R	CERAMIC CHIP 2.2UF+-10% 16V	C3504	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V
C0539	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C3505	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0541	AA00698R	CERAMIC CHIP 2.2UF+-10% 16V	C3506	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0542	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C3507	AA01111R	CERAMIC CHIP 1UF 6.3V
C0543	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C3508	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0544	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C3509	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0545	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C3510	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C0546	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C3511	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C0547	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C3512	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C0548	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C3513	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V
C0549	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C3514	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0550	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C3515	AA00422R	CERAMIC CHIP 10UF 16V
C0551	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C3516	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0552	AA00698R	CERAMIC CHIP 2.2UF+-10% 16V	C3517	AA00422R	CERAMIC CHIP 10UF 16V
C0553	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C3518	0893205	CERAMIC CHIP 560PF+-10% 50V
C0554	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C3519	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C0555	0893179	CERAMIC CHIP 0.1UF+-10% 16V	C3520	0893126	CERAMIC CHIP 100PF+-5% 50V
C0560	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C3521	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0561	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C3523	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0562	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C3524	AA00968R	CERAMIC CAPACITOR 1UF+-20% 6.3V
C0564	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C3525	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C0565	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C3526	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0567	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C3527	AA01111R	CERAMIC CHIP 1UF 6.3V
C0568	AA00698R	CERAMIC CHIP 2.2UF+-10% 16V	C3528	AD10274R	ELECTROLYTIC 6.8UF 20V
C0571	AA01111R	CERAMIC CHIP 1UF 6.3V	C3529	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0572	0893222	CERAMIC CHIP 0.01UF+-10% 50V	C3530	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V
C0573	0893179	CERAMIC CHIP 0.1UF+-10% 16V	C3531	0893193	CERAMIC CHIP 0.01UF+-10% 25V
			C3601	AA00422R	CERAMIC CHIP 10UF 16V
			C3602	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V
			C3603	AF10122R	CAPACITOR 0.027UF+-5% 50V

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
C3604	AA10648R	CERAMIC CAPACITOR 15PF+-5% 2KV	C6142L	0893135	CERAMIC CHIP 470PF+-5% 50V
C3605	AA10648R	CERAMIC CAPACITOR 15PF+-5% 2KV	C6142R	0893135	CERAMIC CHIP 470PF+-5% 50V
C3802	0893193	CERAMIC CHIP 0.01UF+-10% 25V	C6143L	AA01111R	CERAMIC CHIP 1UF 6.3V
C3803	0893193	CERAMIC CHIP 0.01UF+-10% 25V	C6143R	AA01111R	CERAMIC CHIP 1UF 6.3V
C3804	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C6144L	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C3805	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C6144R	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C3807	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V	C6145L	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C3808	AA01111R	CERAMIC CHIP 1UF 6.3V	C6145R	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C3810	0893184	CERAMIC CHIP 0.022UF+-10% 16V	C6146	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C3811	AA01111R	CERAMIC CHIP 1UF 6.3V	C6147	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C3812	0893208	CERAMIC CHIP 1000PF+-10% 50V	C6148	AA00964R	CERAMIC CAPACITOR 2.2UF+-10% 6.3V
C3813	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V	C6149L	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C3814	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V	C6149R	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C3815	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C6150L	0893174	CERAMIC CHIP 820PF+-10% 50V
C3816	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C6150R	0893174	CERAMIC CHIP 820PF+-10% 50V
C3817	AA00362R	CERAMIC CHIP 2.2UF+-10% 16V	C6151L	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C3818	0893193	CERAMIC CHIP 0.01UF+-10% 25V	C6151R	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C3819	0893193	CERAMIC CHIP 0.01UF+-10% 25V	C6152	AA00751R	CERAMIC CHIP 10UF+-10% 6.3V
C3820	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V	C6153L	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C3891	0893193	CERAMIC CHIP 0.01UF+-10% 25V	C6153R	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C3892	0893193	CERAMIC CHIP 0.01UF+-10% 25V	C6154L	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C3893	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C6154R	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V
C3894	AA00422R	CERAMIC CHIP 10UF 16V	C6155	AD10478R	CAPACITOR 33UF+-20% 6.3V
C3895	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C6156	0893208	CERAMIC CHIP 1000PF+-10% 50V
C3896	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C6158	AA01111R	CERAMIC CHIP 1UF 6.3V
C3951	0893193	CERAMIC CHIP 0.01UF+-10% 25V	C6160L	AA01111R	CERAMIC CHIP 1UF 6.3V
C3952	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C6160R	AA01111R	CERAMIC CHIP 1UF 6.3V
C3953	AA00951R	CERAMIC CAPACITOR 1.0UF+-10% 16V	C6163	AD10277R	CHEMICAL CAPACITOR 220UF+-20% 4V
C3954	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V	C6165L	AA01111R	CERAMIC CHIP 1UF 6.3V
C3955	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V	C6165R	AA01111R	CERAMIC CHIP 1UF 6.3V
C3958	AA01111R	CERAMIC CHIP 1UF 6.3V	C6166L	0893215	CERAMIC CHIP 3300PF+-10% 50V
C6005	0893123	CERAMIC CHIP 56PF+-5% 50V	C6166R	0893215	CERAMIC CHIP 3300PF+-10% 50V
C6008	0893123	CERAMIC CHIP 56PF+-5% 50V	C6170L	0893215	CERAMIC CHIP 3300PF+-10% 50V
C6009	0893123	CERAMIC CHIP 56PF+-5% 50V	C6170R	0893215	CERAMIC CHIP 3300PF+-10% 50V
C6010L	0893208	CERAMIC CHIP 1000PF+-10% 50V	C6171L	0893215	CERAMIC CHIP 3300PF+-10% 50V
C6010R	0893208	CERAMIC CHIP 1000PF+-10% 50V	C6171R	0893215	CERAMIC CHIP 3300PF+-10% 50V
C6011L	AA01111R	CERAMIC CHIP 1UF 6.3V	C6172L	0893219	CERAMIC CHIP 0.0068UF+-10% 50V
C6011R	AA01111R	CERAMIC CHIP 1UF 6.3V	C6172R	0893219	CERAMIC CHIP 0.0068UF+-10% 50V
C6012L	0893128	CERAMIC CHIP 150PF+-5% 50V	C6173L	0893215	CERAMIC CHIP 3300PF+-10% 50V
C6012R	0893128	CERAMIC CHIP 150PF+-5% 50V	C6173R	0893215	CERAMIC CHIP 3300PF+-10% 50V
C6014	AA01111R	CERAMIC CHIP 1UF 6.3V	C6174L	0893219	CERAMIC CHIP 0.0068UF+-10% 50V
C6102	AD10481R	CAPACITOR 47UF+-20% 6.3V	C6174R	0893219	CERAMIC CHIP 0.0068UF+-10% 50V
C6112L	0893324	CERAMIC CHIP 2200PF+-10% 50V	C6175L	0893215	CERAMIC CHIP 3300PF+-10% 50V
C6112R	0893324	CERAMIC CHIP 2200PF+-10% 50V	C6175R	0893215	CERAMIC CHIP 3300PF+-10% 50V
C6113	AA00968R	CERAMIC CAPACITOR 10UF+-20% 6.3V	C6177L	AA01111R	CERAMIC CHIP 1UF 6.3V
C6123	AA00964R	CERAMIC CAPACITOR 2.2UF+-10% 6.3V	C6177R	AA01111R	CERAMIC CHIP 1UF 6.3V
C6125L	0893219	CERAMIC CHIP 0.0068UF+-10% 50V	C6181	AA01111R	CERAMIC CHIP 1UF 6.3V
C6125R	0893219	CERAMIC CHIP 0.0068UF+-10% 50V	C6182	AA01111R	CERAMIC CHIP 1UF 6.3V
C6126L	0893215	CERAMIC CHIP 3300PF+-10% 50V	C6198	0893119	CERAMIC CHIP 33PF+-5% 50V
C6126R	0893215	CERAMIC CHIP 3300PF+-10% 50V	C6199	0893119	CERAMIC CHIP 33PF+-5% 50V
C6127L	0893219	CERAMIC CHIP 0.0068UF+-10% 50V	CN3101	EA11072R	PLUG
C6127R	0893219	CERAMIC CHIP 0.0068UF+-10% 50V	CN6001	EY11231R	JACK
C6128	AD10488R	CHIP CAPACITOR 100UF+-20% 4V	CN6101	EA11694R	PLUG
C6129	0893193	CERAMIC CHIP 0.01UF+-10% 25V	R0001	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
C6132	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V	R0002	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
C6133	AD10273R	CHIP RESISTOR 100UF+-20% 6.3V	R0004	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
C6134	AD10478R	CAPACITOR 33UF+-20% 6.3V	R0005	0790217	CHIP RESISTOR 5.6KOHM+-5% 1/16W
C6135	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V	R0006	0103978	CHIP RESISTOR 3.3OHM+-5% 1/8W
C6136	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V	R0007	AQ10405R	CHIP RESISTOR 0.10OHM 1/4W
C6137L	AA01111R	CERAMIC CHIP 1UF 6.3V	R0009	AQ01024R	CHIP RESISTOR 18KOHM+-0.5% 1/16W
C6137R	AA01111R	CERAMIC CHIP 1UF 6.3V	R0010	AQ01007R	CHIP RESISTOR 1KOHM+-0.5% 1/16W
C6138	AA01111R	CERAMIC CHIP 1UF 6.3V	R0011	AQ01021R	CHIP RESISTOR 10KOHM+-0.5% 1/16W
C6139	0893193	CERAMIC CHIP 0.01UF+-10% 25V	R0012	AQ01007R	CHIP RESISTOR 1KOHM+-0.5% 1/16W
C6141L	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V	R0013	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
C6141R	AA01141R	CHIP CAPACITOR 0.1UF+-10% 16V	R0014	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
R0504	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W	R1001	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W[200]
R0505	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W	R1002	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0507	AQ01019R	CHIP RESISTOR 8.2KOHM+-0.5% 1/16W	R1003	0103823	CHIP RESISTOR 22OHM+-5% 0.1W
R0509	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W	R1004	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0511	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W	R1005	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0513	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W	R1006	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0515	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W	R1013	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0517	0790222	CHIP RESISTOR 12KOHM+-5% 1/16W	R1403	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R0518	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16W	R1404	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R0519	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W	R1405	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0520	0790219	CHIP RESISTOR 8.2KOHM+-5% 1/16W	R1406	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0521	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W	R1407	0790072	CHIP RESISTOR 390KOHM+-5% 1/16W
R0527	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W	R1408	0790072	CHIP RESISTOR 390KOHM+-5% 1/16W
R0528	AQ01023R	RESISTOR 15KOHM 1/16W	R1409	AQ00236R	CHIP RESISTOR 39KOHM+-1% 1/16W
R0532	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W	R1410	AQ00236R	CHIP RESISTOR 39KOHM+-1% 1/16W
R0533	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W	R1411	AQ00269R	CHIP RESISTOR 680KOHM+-1% 0.63W
R0534	AQ01016R	CHIP RESISTOR 4.7KOHM+-0.5% 1/16W	R1412	AQ00269R	CHIP RESISTOR 680KOHM+-1% 0.63W
R0535	AQ01024R	RESISTOR 18KOHM +-0.5% 1/16W	R1413	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0536	AQ01009R	CHIP RESISTOR 1.5KOHM+-0.5% 1/16W	R1414	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0537	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W	R1416	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0538	AQ01021R	CHIP RESISTOR 10KOHM+-0.5% 1/16W	R1424	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0539	AQ01024R	CHIP RESISTOR 18KOHM+-0.5% 1/16W	R1425	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0540	AQ01007R	CHIP RESISTOR 1KOHM+-0.5% 1/16W	R1801	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R0541	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W	R1803	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0542	AQ01024R	CHIP RESISTOR 18KOHM+-0.5% 1/16W	R3101	AQ00194R	CHIP RESISTOR 1.0KOHM+-1% 1/16W
R0543	AQ01021R	CHIP RESISTOR 10KOHM+-0.5% 1/16W	R3103	AQ00192R	CHIP RESISTOR 820 OHM+-1% 1/16W
R0544	AQ01008R	CHIP RESISTOR 1.2KOHM+-0.5% 1/16W	R3104	AQ00194R	CHIP RESISTOR 1.0KOHM+-1% 1/16W
R0545	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W	R3105	AQ00194R	CHIP RESISTOR 1.0KOHM+-1% 1/16W
R0547	AQ01021R	CHIP RESISTOR 10KOHM+-0.5% 1/16W	R3106	AQ00167R	CHIP RESISTOR 100 OHM+-1% 1/16W
R0548	AQ01011R	CHIP RESISTOR 1.8KOHM+-0.5% 1/16W	R3107	AQ00194R	CHIP RESISTOR 1.0KOHM+-1% 1/16W
R0549	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W	R3108	AQ00181R	CHIP RESISTOR 330 OHM+-1% 1/16W
R0550	AQ01024R	CHIP RESISTOR 18KOHM+-0.5% 1/16W	R3109	AQ00198R	CHIP RESISTOR 1.5KOHM+-1% 1/16W
R0551	AQ01023R	RESISTOR 15KOHM 1/16W	R3110	AQ00172R	CHIP RESISTOR 150OHM+-1% 0.63W
R0552	AQ01011R	CHIP RESISTOR 1.8KOHM+-0.5% 1/16W	R3111	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0553	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W	R3502	0790246	CHIP RESISTOR 820KOHM+-5% 1/16W
R0555	AQ01024R	CHIP RESISTOR 18KOHM+-0.5% 1/16W	R3503	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W
R0556	AQ01011R	CHIP RESISTOR 1.8KOHM+-0.5% 1/16W	R3504	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0557	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W	R3505	0790227	CHIP RESISTOR 33KOHM+-5% 1/16W
R0558	AQ01024R	CHIP RESISTOR 18KOHM+-0.5% 1/16W	R3506	0790194	CHIP RESISTOR 100 OHM+-5% 1/16W
R0559	AQ01014R	CHIP RESISTOR 3.3KOHM +-0.5% 1/16W	R3507	0790194	CHIP RESISTOR 100 OHM+-5% 1/16W
R0560	AQ01008R	CHIP RESISTOR 1.2KOHM+-0.5% 1/16W	R3508	0790194	CHIP RESISTOR 100 OHM+-5% 1/16W
R0562	AQ01026R	CHIP RESISTOR 27KOHM+-0.5% 1/16W	R3509	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0564	AQ01016R	CHIP RESISTOR 4.7KOHM+-0.5% 1/16W	R3510	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W
R0565	AQ01027R	CHIP RESISTOR 33KOHM+-0.5% 1/16W	R3511	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0567	AQ01016R	CHIP RESISTOR 4.7KOHM+-0.5% 1/16W	R3512	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R0568	AQ00213R	CHIP RESISTOR 5.1KOHM+-0.5% 1/16W	R3513	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0569	AQ01021R	CHIP RESISTOR 10KOHM+-0.5% 1/16W	R3514	0790232	CHIP RESISTOR 68KOHM+-5% 1/16W
R0570	AQ01026R	CHIP RESISTOR 27KOHM+-0.5% 1/16W	R3515	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0574	BM00131R	FILTER	R3517	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W
R0575	BM00131R	FILTER	R3518	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R0576	BM00131R	FILTER	R3519	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0577	BM00131R	FILTER	R3520	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0578	BM00131R	FILTER	R3521	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0579	BM00131R	FILTER	R3522	0790247	CHIP RESISTOR 1MOHM+-5% 1/16W
R0580	BM00131R	FILTER	R3526	0790213	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0583	AQ10403R	CHIP RESISTOR 0.47OHM+-1% 1/4W	R3528	AQ00824R	CHIP RESISTOR 39KOHM+-1% 1/16W
R0584	0790202	CHIP RESISTOR 390 OHM+-5% 1/16W	R3529	AQ00826R	CHIP RESISTOR 47KOHM+-1% 1/16W
R0585	0790234	CHIP RESISTOR 100KOHM+-5% 1/16W	R3530	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0586	AQ10405R	CHIP RESISTOR 0.10OHM 1/4W	R3531	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R0587	AQ01023R	RESISTOR 15KOHM 1/16W	R3532	0790243	CHIP RESISTOR 470KOHM+-5% 1/16W
R0588	AQ01007R	CHIP RESISTOR 1KOHM+-0.5% 1/16W	R3601	0104273	CHIP RESISTOR 1KOHM+-1% 1/10W
R0589	AQ01021R	CHIP RESISTOR 10KOHM+-0.5% 1/16W	R3807	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W
R0593	0790002	CHIP RESISTOR 2.2 OHM+-5% 1/16W	R3809	0790214	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0595	0790233	CHIP RESISTOR 82KOHM+-5% 1/16W	R3810	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W
R1001	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W[230]	R3811	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
R3814	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W	R6147L	AQ00835R	CHIP RESISTOR 100KOHM+-1% 1/16W
R3815	0790228	CHIP RESISTOR 39KOHM+-5% 1/16W	R6147R	AQ00835R	CHIP RESISTOR 100KOHM+-1% 1/16W
R3816	0790212	CHIP RESISTOR 2.2KOHM+-5% 1/16W	R6148L	AQ00205R	CHIP RESISTOR 2.7KOHM+-1% 1/16W
R3817	0790226	CHIP RESISTOR 27KOHM+-5% 1/16W	R6148R	AQ00205R	CHIP RESISTOR 2.7KOHM+-1% 1/16W
R3821	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W	R6149L	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R3823	0790207	CHIP RESISTOR 1KOHM+-5% 1/16W	R6149R	0790218	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R3891	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W	R6153	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R3892	0790216	CHIP RESISTOR 4.7KOHM+-5% 1/16W	R6154	0790201	CHIP RESISTOR 330 OHM+-5% 1/16W
R3893	0790229	CHIP RESISTOR 47KOHM+-5% 1/16W	R6155	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W
R3894	0790223	CHIP RESISTOR 15KOHM+-5% 1/16W	R6157	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R3951	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W	R6158L	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R3952	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W	R6158R	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R3953	0790017	CHIP RESISTOR 33 OHM+-5% 1/16W	R6159L	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R6005L	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W	R6159R	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R6005R	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W	R6160L	AQ00225R	CHIP RESISTOR 15KOHM+-1% 1/16W
R6010L	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W	R6160R	AQ00225R	CHIP RESISTOR 15KOHM+-1% 1/16W
R6010R	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W	R6163L	AQ00808R	CHIP RESISTOR 10KOHM+-1% 1/16W
R6011L	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W	R6163R	AQ00808R	CHIP RESISTOR 10KOHM+-1% 1/16W
R6011R	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W	R6166L	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R6012L	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W	R6166R	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R6012R	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W	R6169L	AQ00218R	CHIP RESISTOR 8.2KOHM+-1% 1/16W
R6013L	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W	R6169R	AQ00218R	CHIP RESISTOR 8.2KOHM+-1% 1/16W
R6013R	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W	R6170L	AQ00225R	CHIP RESISTOR 15KOHM+-1% 1/16W
R6014L	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W	R6170R	AQ00225R	CHIP RESISTOR 15KOHM+-1% 1/16W
R6014R	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W	R6172L	AQ00176R	CHIP RESISTOR 220 OHM+-1% 1/16W
R6015L	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W	R6172R	AQ00176R	CHIP RESISTOR 220 OHM+-1% 1/16W
R6015R	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W	R6173L	AQ00239R	CHIP RESISTOR 51KOHM+-1% 1/16W
R6016L	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W	R6173R	AQ00239R	CHIP RESISTOR 51KOHM+-1% 1/16W
R6016R	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W	R6174L	AQ00205R	CHIP RESISTOR 2.7KOHM+-1% 1/16W
R6102	0790056	CHIP RESISTOR 27KOHM+-5% 1/16W	R6174R	AQ00205R	CHIP RESISTOR 2.7KOHM+-1% 1/16W
R6103L	AQ00218R	CHIP RESISTOR 8.2KOHM+-1% 1/16W	R6175L	AQ00827R	CHIP RESISTOR 51KOHM+-1% 1/16W
R6103R	AQ00218R	CHIP RESISTOR 8.2KOHM+-1% 1/16W	R6175R	AQ00239R	CHIP RESISTOR 51KOHM+-1% 1/16W
R6116	0790225	CHIP RESISTOR 22KOHM+-5% 1/16W	R6176L	AQ00793R	CHIP RESISTOR 2.7KOHM+-1% 1/16W
R6117L	AQ00203R	CHIP RESISTOR 2.2KOHM+-1% 1/16W	R6176R	AQ00205R	CHIP RESISTOR 2.7KOHM+-1% 1/16W
R6117R	AQ00203R	CHIP RESISTOR 2.2KOHM+-1% 1/16W	R6177L	AQ00207R	CHIP RESISTOR 3.3KOHM+-1% 1/16W
R6120L	AQ00194R	CHIP RESISTOR 1.0KOHM+-1% 1/16W	R6177R	AQ00207R	CHIP RESISTOR 3.3KOHM+-1% 1/16W
R6120R	AQ00194R	CHIP RESISTOR 1.0KOHM+-1% 1/16W	R6178L	AQ00185R	CHIP RESISTOR 470 OHM+-1% 1/16W
R6123L	AQ00207R	CHIP RESISTOR 3.3KOHM+-1% 1/16W	R6178R	AQ00185R	CHIP RESISTOR 470 OHM+-1% 1/16W
R6123R	AQ00207R	CHIP RESISTOR 3.3KOHM+-1% 1/16W	R6179L	AQ00194R	CHIP RESISTOR 1KOHM+-5% 1/16W
R6129	0790003	CHIP RESISTOR 2.7 OHM+-5% 1/16W	R6179R	AQ00194R	CHIP RESISTOR 1KOHM+-5% 1/16W
R6130	0790173	CHIP RESISTOR 2.7OHM+-5% 1/16W	R6180L	AQ00233R	CHIP RESISTOR 30KOHM+-1% 1/16W
R6131L	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16W	R6180R	AQ00233R	CHIP RESISTOR 30KOHM+-1% 1/16W
R6131R	0790208	CHIP RESISTOR 1.2KOHM+-5% 1/16W	R6181L	AQ00233R	CHIP RESISTOR 30KOHM+-1% 1/16W
R6133	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W	R6181R	AQ00233R	CHIP RESISTOR 30KOHM+-1% 1/16W
R6134	0790221	CHIP RESISTOR 10KOHM+-5% 1/16W	R6182L	AQ00229R	CHIP RESISTOR 22KOHM+-1% 1/16W
R6135L	0790211	CHIP RESISTOR 1.8KOHM+-5% 1/16W	R6182R	AQ00229R	CHIP RESISTOR 22KOHM+-1% 1/16W
R6135R	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W	R6183L	AQ00185R	CHIP RESISTOR 470OHM+-1% 1/16W
R6136L	0790241	CHIP RESISTOR 330KOHM+-5% 1/16W	R6183R	AQ00185R	CHIP RESISTOR 470OHM+-1% 1/16W
R6136R	0790241	CHIP RESISTOR 330KOHM+-5% 1/16W	R6184L	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R6137L	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W	R6184R	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R6137R	0790224	CHIP RESISTOR 18KOHM+-5% 1/16W	R6302	BM00141R	FILTER
R6138L	0790231	CHIP RESISTOR 56KOHM+-5% 1/16W	R6303	BM10362R	COIL
R6138R	0790231	CHIP RESISTOR 56KOHM+-5% 1/16W	R6304	BM10362R	COIL
R6139L	AQ00808R	CHIP RESISTOR 10KOHM+-1% 1/16W	R6305	BM00141R	FILTER
R6139R	AQ00808R	CHIP RESISTOR 10KOHM+-1% 1/16W	R6306	BM00141R	FILTER
R6140L	AQ00221R	CHIP RESISTOR 10KOHM+-1% 1/16W	R6309	BM00141R	FILTER
R6140R	AQ00808R	CHIP RESISTOR 10KOHM+-1% 1/16W	R6310	BM00141R	FILTER
R6141L	AQ00817R	CHIP RESISTOR 22KOHM+-1% 1/16W	R6311	BM00141R	FILTER
R6141R	AQ00229R	CHIP RESISTOR 22KOHM+-1% 1/16W	R6312	BM00141R	FILTER
R6142L	AQ00225R	CHIP RESISTOR 15KOHM+-1% 1/16W	R6313	BM00141R	FILTER
R6142R	AQ00813R	CHIP RESISTOR 15KOHM+-1% 1/16W	R6314	BM10362R	COIL
R6145L	AQ00808R	CHIP RESISTOR 10KOHM+-1% 1/16W	R6315	BM10362R	COIL
R6145R	AQ00808R	CHIP RESISTOR 10KOHM+-1% 1/16W	R6317	BM10362R	COIL
R6146L	AQ00194R	CHIP RESISTOR 1.0KOHM+-1% 1/16W	R6318	BM10362R	COIL
R6146R	AQ00194R	CHIP RESISTOR 1.0KOHM+-1% 1/16W	R6320	BM10362R	COIL

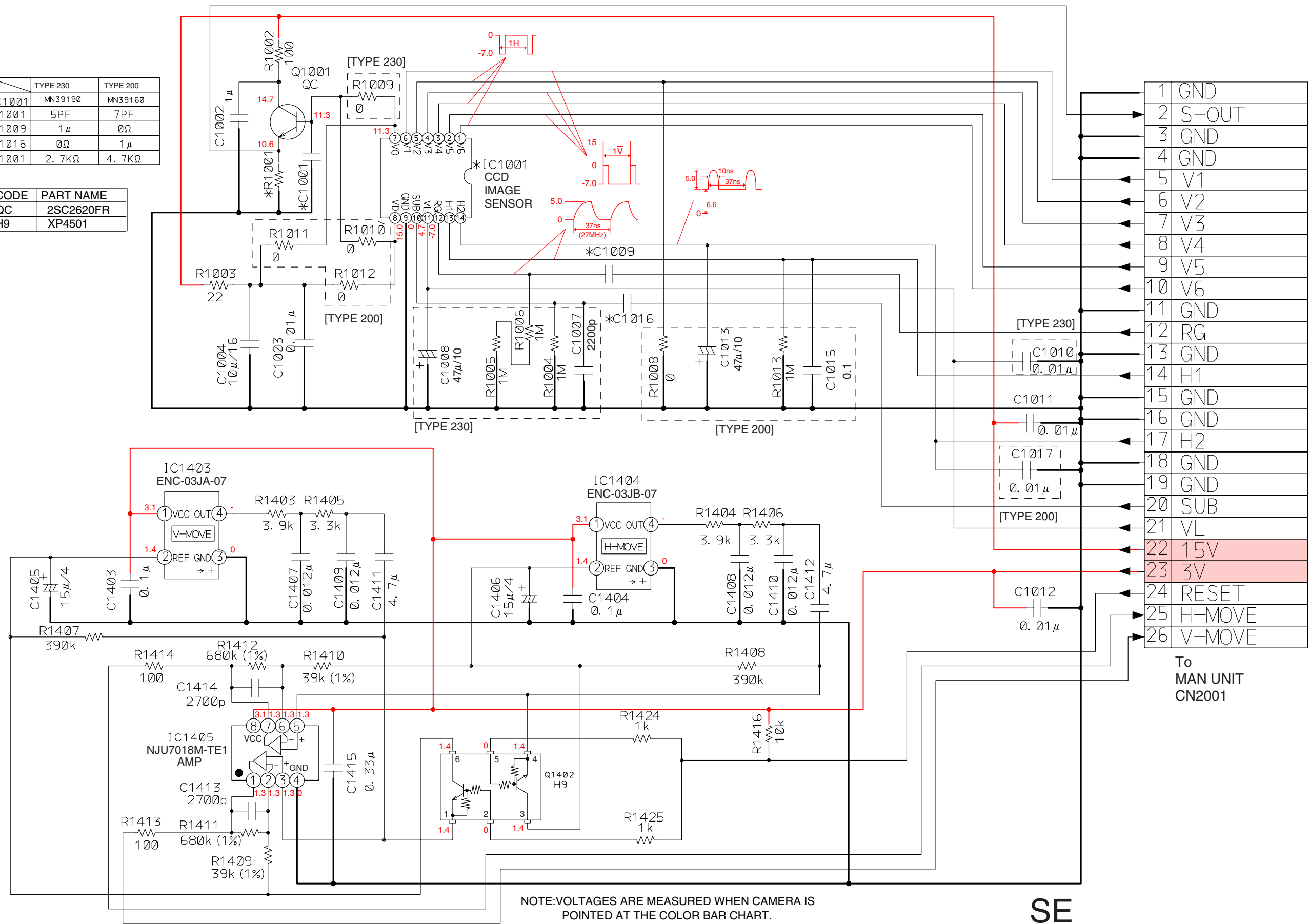
SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
R6321	0790201	CHIP RESISTOR 330 OHM+-5% 1/16W	Q3601	CA12381R	TRANSISTOR CPH5504
R6322	0790201	CHIP RESISTOR 330 OHM+-5% 1/16W	Q3801	1323292	TRANSISTOR 2SA1774
R6323	0790201	CHIP RESISTOR 330 OHM+-5% 1/16W	Q3802	1323279	TRANSISTOR DTC114YE
R6324	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W	Q3891	1323292	TRANSISTOR 2SA1774
R6326	0790194	CHIP RESISTOR 100 OHM+-5% 1/16W	Q3892	1323279	TRANSISTOR DTC114YE
D0001	CC10291R	DIODE 1SS353	Q3893	1323292	TRANSISTOR 2SA1774
D0002	5337372	DIODE SB07-03C	Q3894	1323279	TRANSISTOR DTC114YE
D0003	5337422	DIODE DA221	Q3951	1323291	TRANSISTOR 2SC4617
D0501	CC11191R	DIODE 1SS388	Q6001L	1323252	TRANSISTOR XP4501
D0502	CC11191R	DIODE 1SS388	Q6001R	1323252	TRANSISTOR XP4501
D0503	CC11191R	DIODE 1SS388	Q6102	1323291	TRANSISTOR 2SC4617
D0504	CC11191R	DIODE 1SS388	Q6103	1323279	TRANSISTOR DTC114YE
D0505	CC11191R	DIODE 1SS388	Q6104L	1323279	TRANSISTOR DTC114YE
D0506	CC10421R	DIODE U2FWJ44N	Q6104R	1323279	TRANSISTOR DTC114YE
D0507	CC12071R	DIODE SBS004	Q6105L	1323294	TRANSISTOR 2SA1774RS
D0508	CC12071R	DIODE SBS004	Q6105R	1323294	TRANSISTOR 2SA1774RS
D0509	CC12071R	DIODE SBS004	Q6106L	1323291	TRANSISTOR 2SC4617
D0510	CC12071R	DIODE SBS004	Q6106R	1323291	TRANSISTOR 2SC4617
D0511	CC12071R	DIODE SBS004	Q6107L	1323252	TRANSISTOR XP4501
D0512	CC12071R	DIODE SBS004	Q6107R	1323252	TRANSISTOR XP4501
D0513	CC12071R	DIODE SBS004	Q6110L	1323294	TRANSISTOR 2SA1774RS
D0514	CC12071R	DIODE SBS004	Q6110R	1323294	TRANSISTOR 2SA1774RS
D3501	CC10331R	DIODE HVU200A	Q6111L	1323291	TRANSISTOR 2SC4617
D3951	5337354	DIODE MA133	Q6111R	1323291	TRANSISTOR 2SC4617
IC0001	CK22711R	IC MM6564XFBE	T0501	BC10521R	TRANSFORMER
IC0501	CK41381R	IC MB3881	T3601	BC10501R	TRANSFORMER
IC0502	CK20191R	IC PQ20WZ51	L0501	BA11211R	COIL
IC0503	CK40261R	IC S-8541DOOFN-IME	L0502	BA11211R	COIL
IC0504	CK41501R	IC TK72170M	L0503	BA11211R	COIL
IC1403	FU10323	SENSOR,GYRO	L0504	BA11211R	COIL
IC1404	FU10324	SENSOR,GYRO	L0505	BA10694R	COIL
IC1405	CK24841R	IC NJU7018M	L0506	BA10693R	COIL
IC1801	CE10251R	SENSOR	L0507	BA10693R	COIL
IC3401	CK29741R	IC AN48800A	L0508	BA10694R	COIL
IC3402	CK29741R	IC AN48800A	L0509	BA10693R	COIL
IC3501	CK29711U	IC RB5P0050M	L0510	BA10693R	COIL
IC3502	CK29721U	IC LZ9FF47	L0511	BA10693R	COIL
IC3801	CK29731U	IC MCVVQ111	L0512	BA10579R	COIL 22UH
IC6101	CK40551U	IC LA74206W	L0513	BA10579R	COIL 22UH
IC6103	CK41111R	IC S-L2980A28MC	L0514	BA10579R	COIL 22UH
Q0001	CA11901	TRANSISTOR UPA1770Q	L0516	BA10579R	COIL 22UH
Q0002	CA11941R	TRANSISTOR 2SK3019	L0517	BA10577R	COIL 10UH
Q0003	CA10271R	TRANSISTOR 2SB1424	L0518	BA11211R	COIL
Q0004	1323279	TRANSISTOR DTC114YE	L1801	BA10579R	COIL 22UH
Q0501	CA12521R	TRANSISTOR 2SA2011	L1802	BA10579R	COIL 22UH
Q0502	CA12011R	TRANSISTOR FDC655AN	L3501	BA10577R	COIL 10UH
Q0503	CA12521R	TRANSISTOR 2SA2011	L3502	BA10577R	COIL 10UH
Q0504	CA12011R	TRANSISTOR FDC655AN	L3503	BA10577R	COIL 10UH
Q0505	CA12521R	TRANSISTOR 2SA2011	L3504	BA10577R	COIL 10UH
Q0506	CA12521R	TRANSISTOR 2SA2011	L3505	BA10577R	COIL 10UH
Q0507	CA12521R	TRANSISTOR 2SA2011	L3506	BA10148R	COIL 27UH
Q0508	CA12521R	TRANSISTOR 2SA2011	L3602	BA11287R	COIL
Q0509	CA12521R	TRANSISTOR 2SA2011	L3891	BA10577R	COIL 10UH
Q0510	5326502	TRANSISTOR 2SD1766 (R)	L3892	BA10577R	COIL 10UH
Q0511	1323279	TRANSISTOR DTC114YE	L3893	BA10577R	COIL 10UH
Q0512	CA12521R	TRANSISTOR 2SA2011	L6102	0773097	CHOKE COIL 330UH+-10%
Q1001	5328221	TRANSISTOR 2SC2620-QC	L6103	0773097	CHOKE COIL 330UH+-10%
Q1402	1323252	TRANSISTOR XP4501	L6104	BA10584R	COIL 100UH
Q1801	1323279	TRANSISTOR DTC114YE	LD1801	5382211	DIODE LN1251CAL-23
Q3101	1323279	TRANSISTOR DTC114YE	LD6001	CC11951R	DIODE LT1ED67A
Q3501	1323287	TRANSISTOR UMD9N	BL0001	BE10581R	FILTER
Q3502	1323287	TRANSISTOR UMD9N	BL6001A	BM00142R	FILTER
Q3503	1323287	TRANSISTOR UMD9N	BL6001B	BM00142R	FILTER
Q3504	1323279	TRANSISTOR DTC114YE	BL6001C	BM00142R	FILTER
Q3505	1323251	TRANSISTOR XP4601	BL6001D	BM00142R	FILTER

SYMBOL NO	P-NO	DESCRIPTION	SYMBOL NO	P-NO	DESCRIPTION
CN3102	EK11532	CONNECTOR			
△ F0001	FM10351R	FUSE 1.5A			
△ F0501	FM10351R	FUSE 1.5A			
△ F0502	FM10351R	FUSE 1.5A			
△ F0503	FM10351R	FUSE 1.5A			
△ F0504	FM10351R	FUSE 1.5A			
JK0001	EP10301	JACK			
JK6001	ER10401	JACK			
JK6002	EQ10381	JACK			
JK6003	ER10391	JACK			
PG0001	EA11595R	PLUG			
PG0002	EA10366R	PLUG			
PG0003	FU10691R	CONTACT			
PG0004	FU10691R	CONTACT			
PG0005	FU10691R	CONTACT			
PG0006	FU10691R	CONTACT			
PG0501	EA11942R	PLUG			
PG2301	EA12801R	PLUG			
PG2302	EA12801R	PLUG			
PG3501	EA11694R	PLUG			
PG3502	EA11073R	PLUG			
PG3503	EA11071R	PLUG			
PG3701	EA11597R	PLUG			
PG3951	EA12851R	PLUG			
PG3952	EA11072R	PLUG			
PG3953	EA11783R	PLUG			
PG6101	EA10992R	PLUG			
PG6102	ED12564R	CONNECTOR			
PG6103	EA11351R	PLUG			
PG6104	EA11353R	PLUG			
PG6105	FU10701R	CONTACT			
SW3101	1742012	SWITCH			
SW3102	1742012	SWITCH			
SW3103	1742012	SWITCH			
SW3104	1742012	SWITCH			
SW3105	1742012	SWITCH			
SW3106	1742012	SWITCH			
SW3107	1742012	SWITCH			
SW6001	FB10321R	SWITCH			

SE SCHEMATIC DIAGRAM

	TYPE 230	TYPE 200
IC1001	MN39190	MN39160
C1001	5PF	7PF
C1009	1 μ	0 Ω
C1016	0 Ω	1 μ
R1001	2.7K Ω	4.7K Ω

CODE	PART NAME
QC	2SC2620FR
H9	XP4501

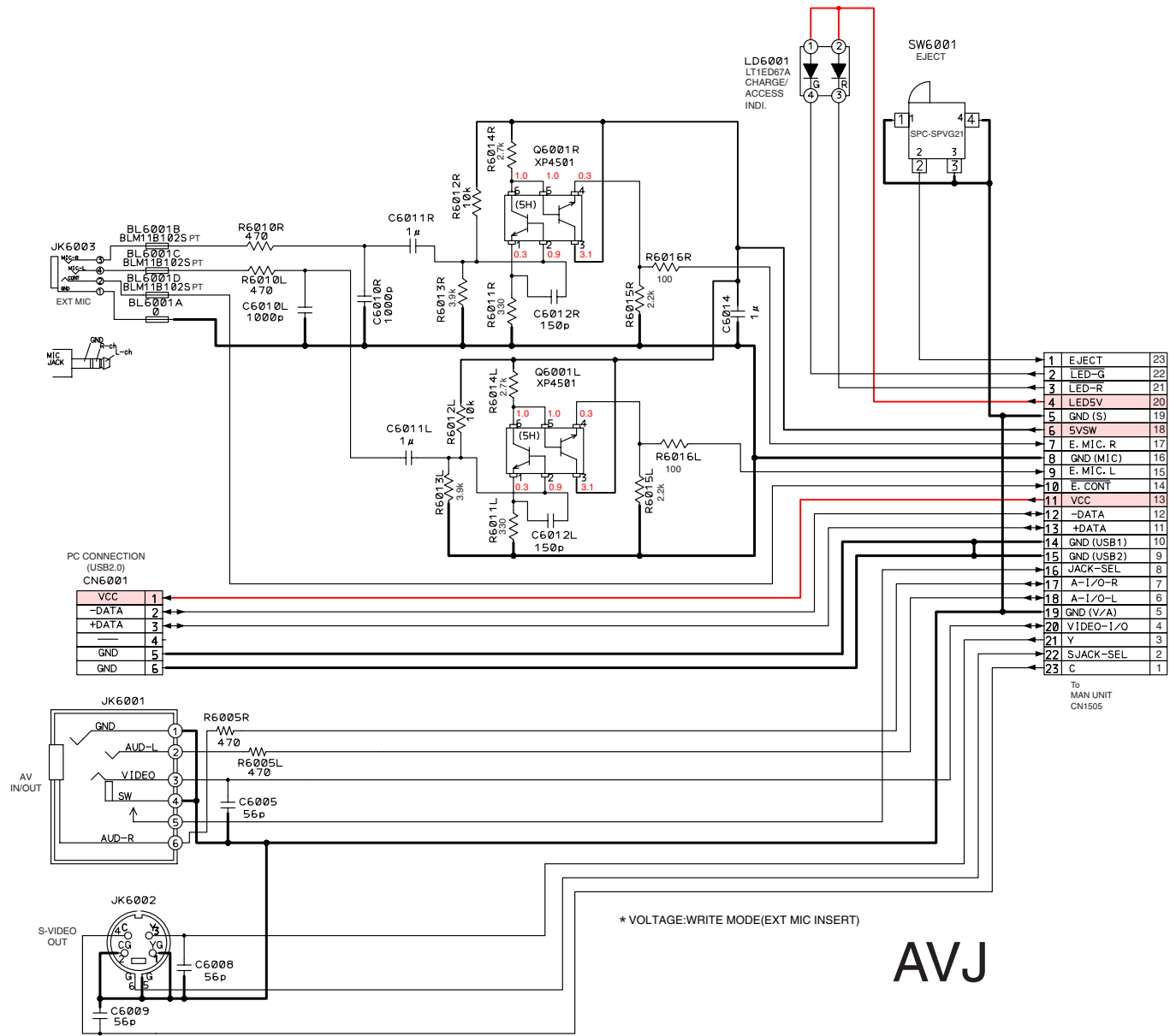


1	GND
2	S-OUT
3	GND
4	GND
5	V1
6	V2
7	V3
8	V4
9	V5
10	V6
11	GND
12	RG
13	GND
14	H1
15	GND
16	GND
17	H2
18	GND
19	GND
20	SUB
21	VL
22	15V
23	3V
24	RESET
25	H-MOVE
26	V-MOVE

To
MAN UNIT
CN2001

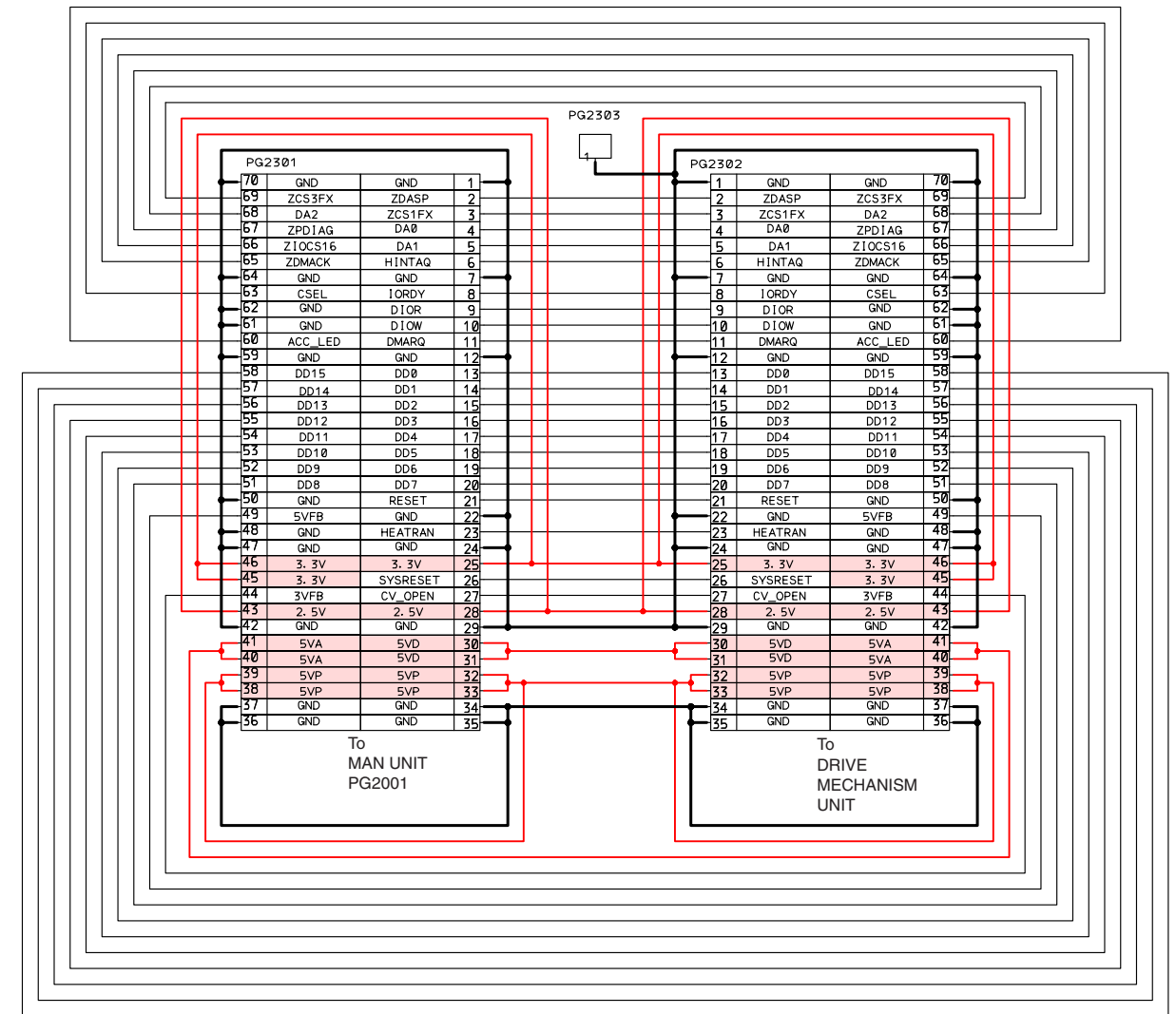
SE

AVJ SCHEMATIC DIAGRAM



AVJ

DRF SCHEMATIC DIAGRAM



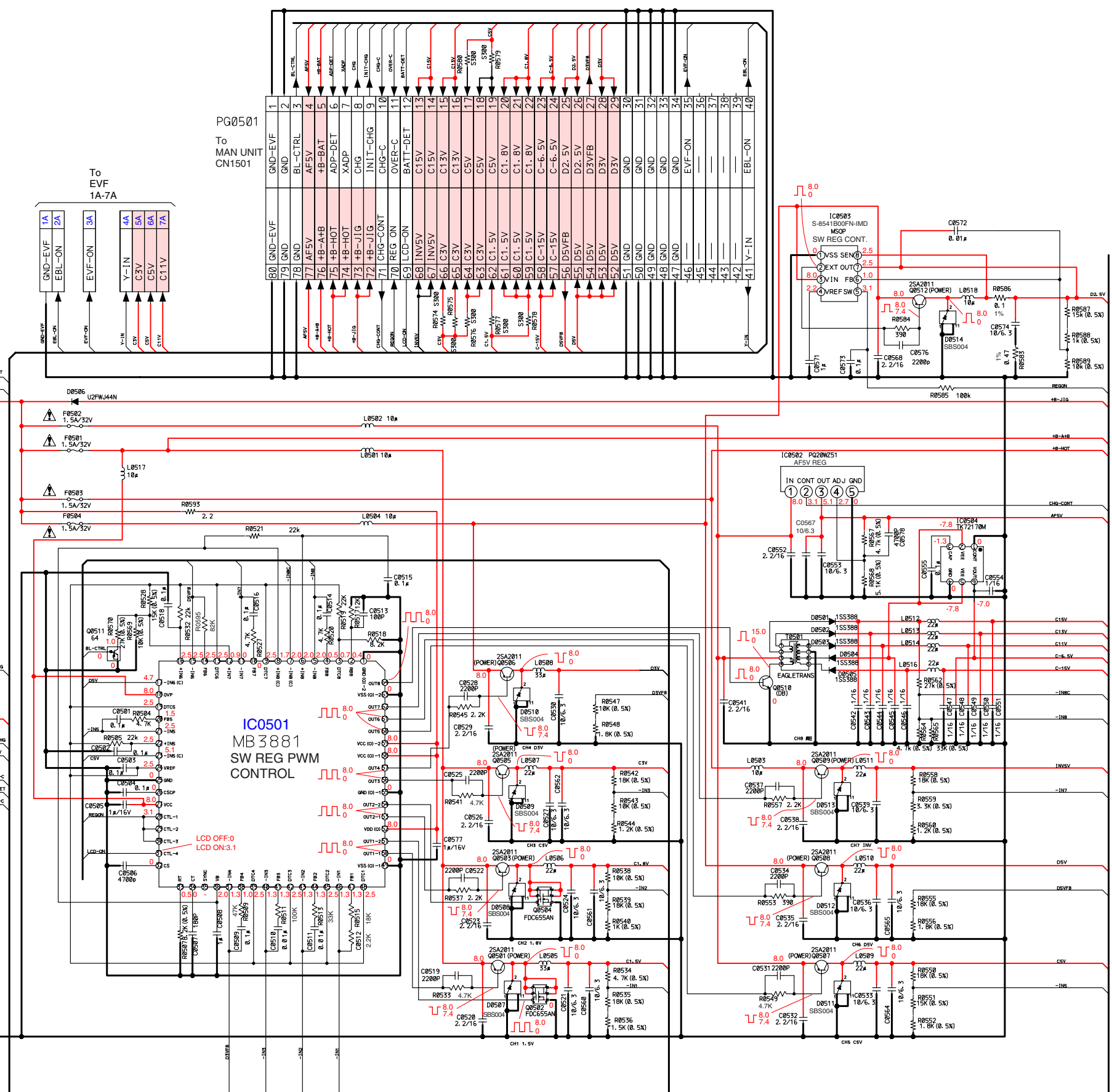
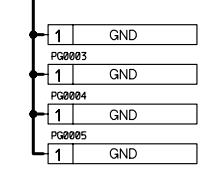
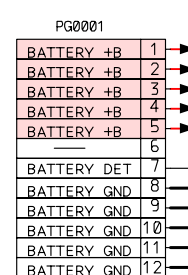
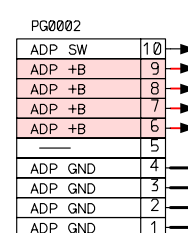
DRF

REGULATOR [REF] SCHEMATIC DIAGRAM

CODE	PART NAME
AE	2SB1424R
DB	2SD1766R
KN	2SK3019
64	DTC114YE
C	1SS353SP
J	SB07-03C
K	DA221

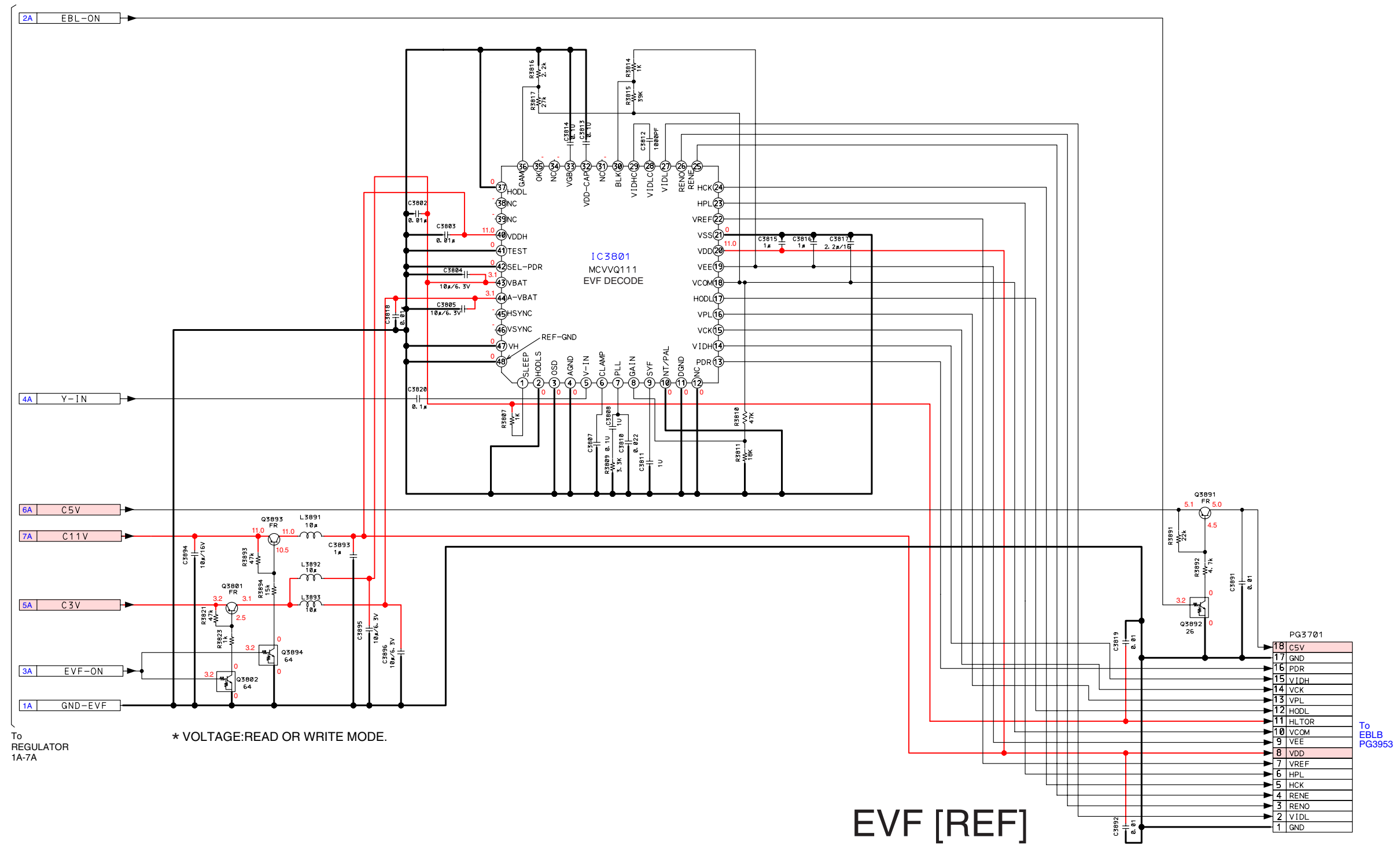
* VOLTAGE:READ OR WRITE MODE.

E
D
C
B
A



REGULATOR [REF]

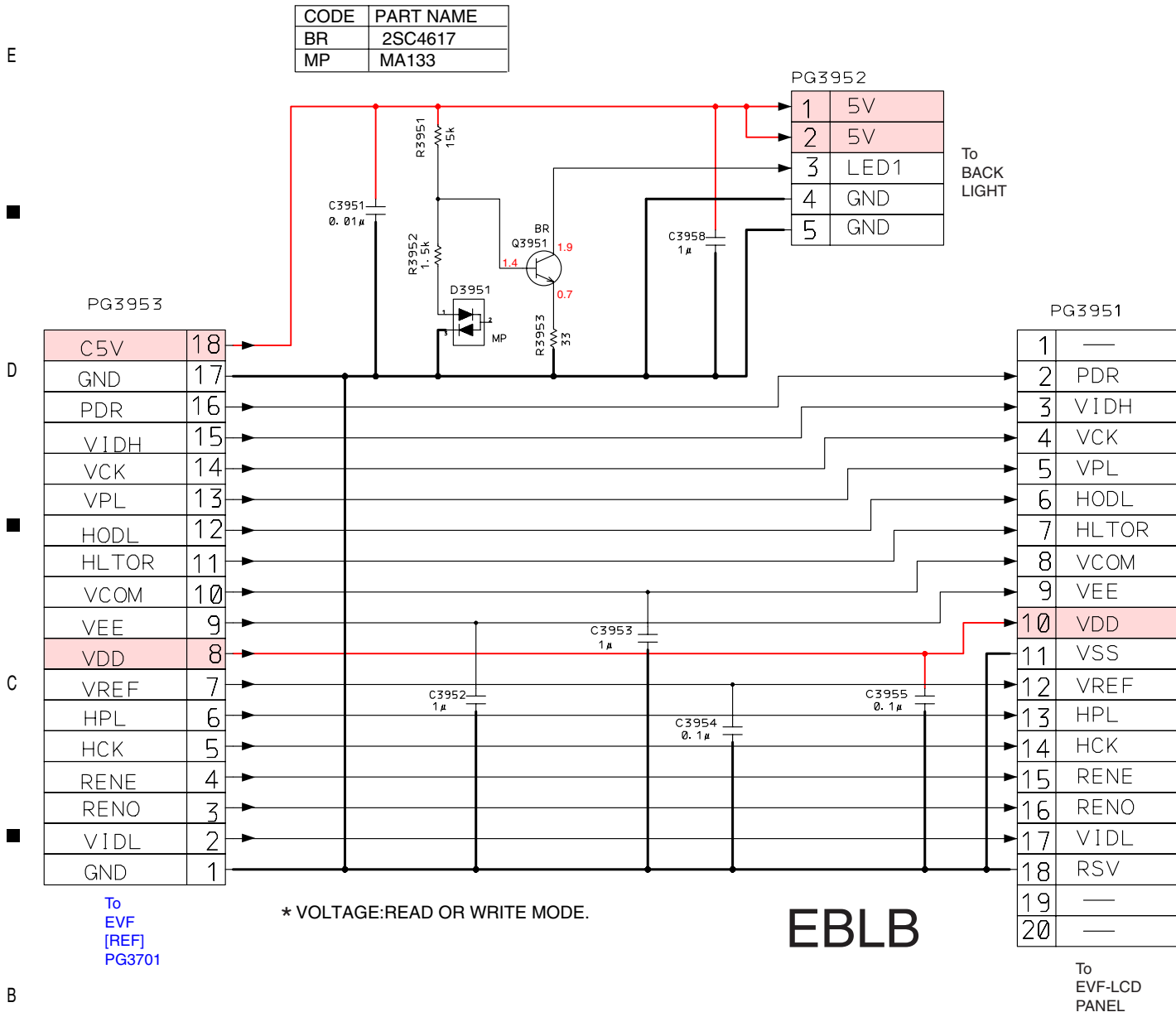
EVF [REF] SCHEMATIC DIAGRAM



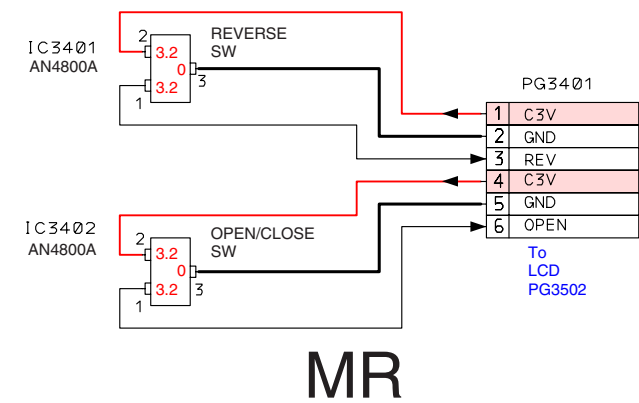
EVF [REF]

To EBLB PG3953

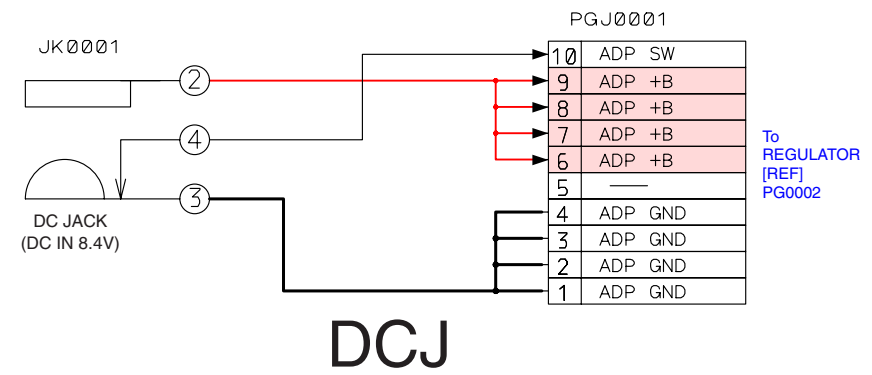
EBLB SCHEMATIC DIAGRAM



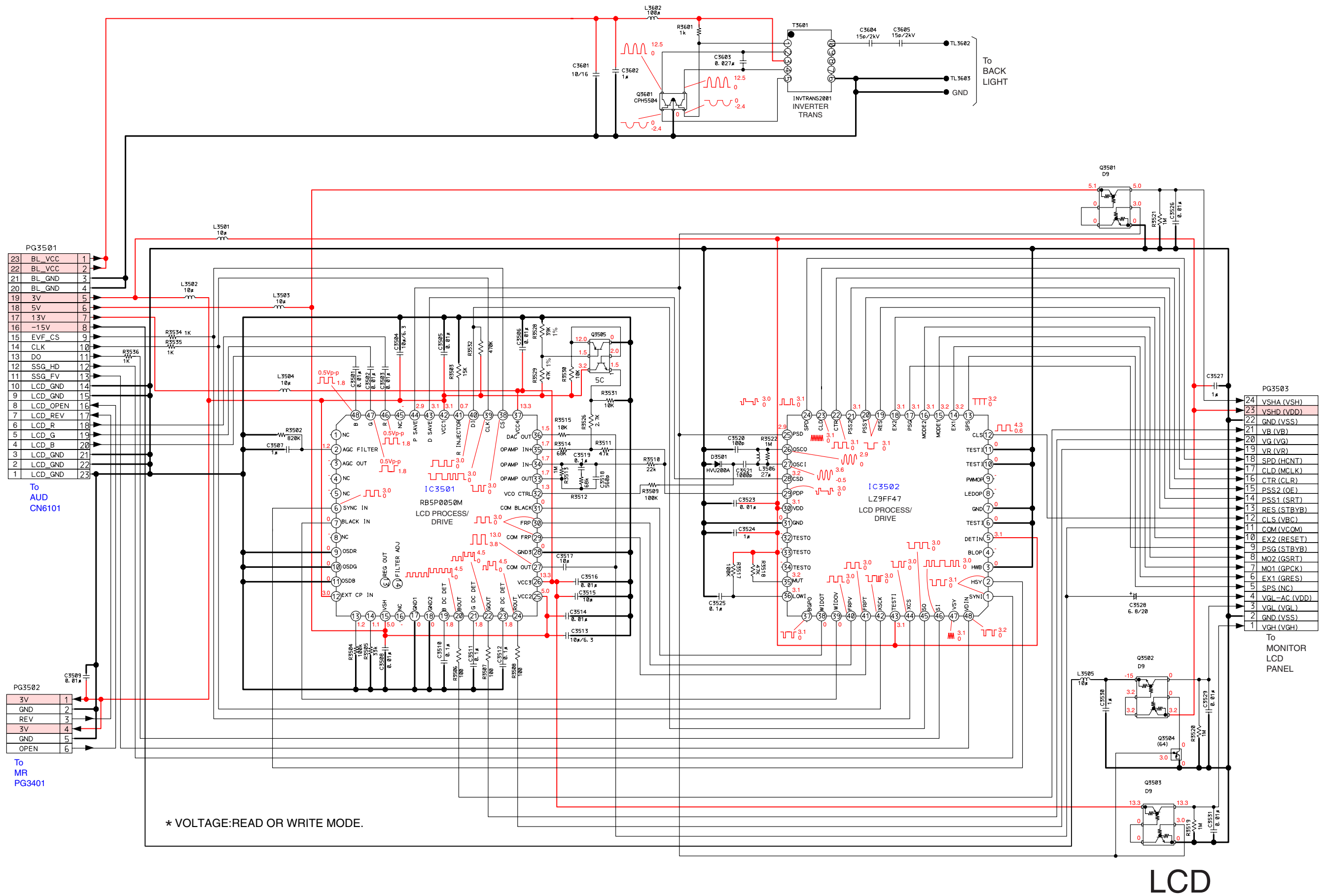
MR SCHEMATIC DIAGRAM



DCJ SCHEMATIC DIAGRAM



LCD SCHEMATIC DIAGRAM



PG3501

23	BL_VCC	1
22	BL_VCC	2
21	BL_GND	3
20	BL_GND	4
19	3V	5
18	5V	6
17	13V	7
16	-15V	8
15	EVF_CS	9
14	CLK	10
13	DO	11
12	SSG_HD	12
11	SSG_FV	13
10	LCD_GND	14
9	LCD_GND	15
8	LCD_OPEN	16
7	LCD_REV	17
6	LCD_R	18
5	LCD_G	19
4	LCD_B	20
3	LCD_GND	21
2	LCD_GND	22
1	LCD_GND	23

To
AUD
CN6101

PG3502

3V	1
GND	2
REV	3
3V	4
GND	5
OPEN	6

To
MR
PG3401

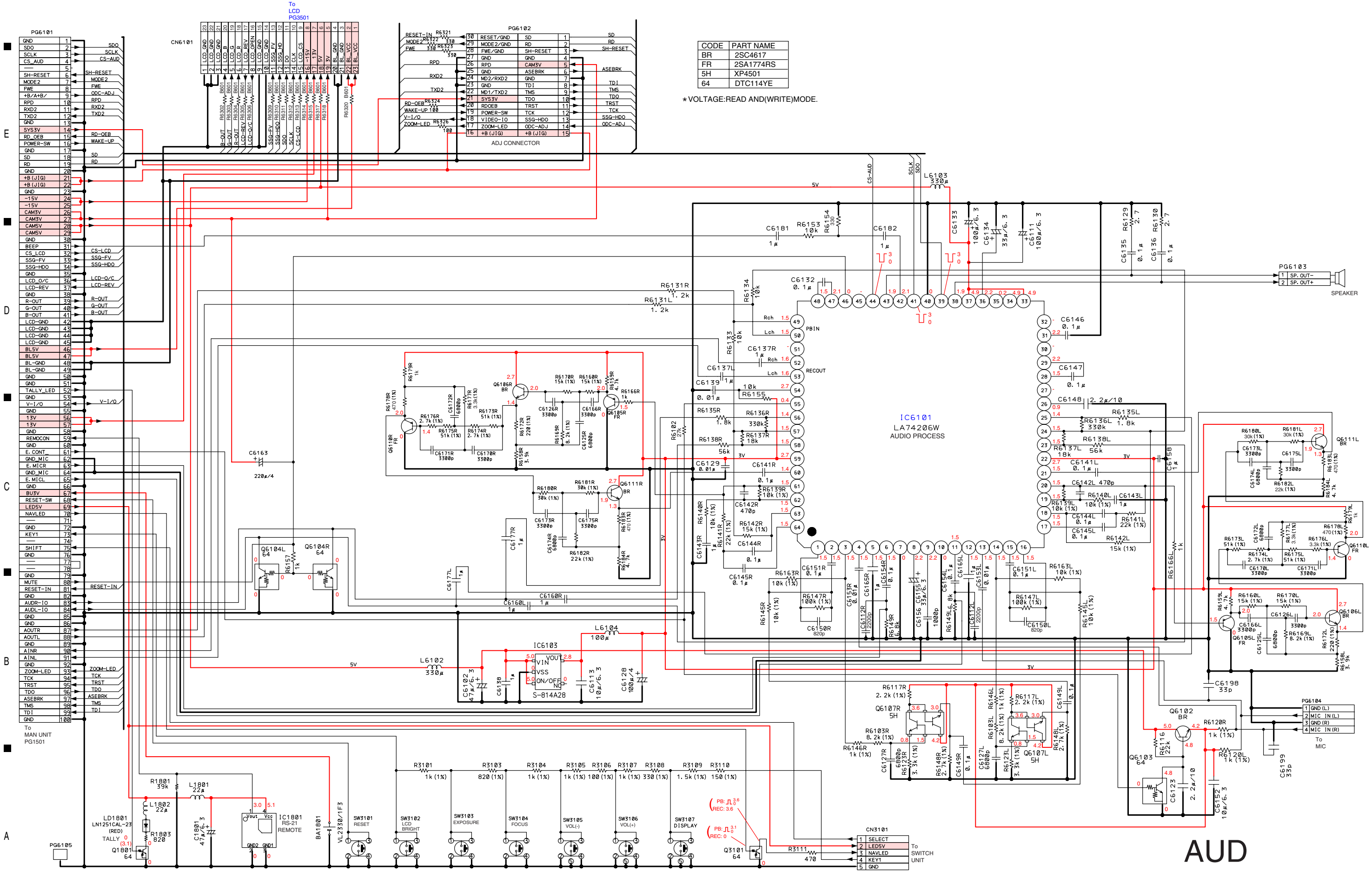
PG3503

24	VSHA (VSH)
23	VSHD (VDD)
22	GND (VSS)
21	VB (VB)
20	VG (VG)
19	VR (VR)
18	SPD (HCNT)
17	CLD (MCLK)
16	CTR (CLR)
15	PSS2 (OE)
14	PSS1 (SRT)
13	RES (STBYB)
12	CLS (VRC)
11	COM (VCOM)
10	EX2 (RESET)
9	PSG (STBYB)
8	MO2 (GSRT)
7	MO1 (GPCK)
6	EX1 (GRES)
5	SPS (NC)
4	VGL-AC (VDD)
3	VGL (VGL)
2	GND (VSS)
1	VGH (VGH)

To
MONITOR
LCD
PANEL

LCD

AUD SCHEMATIC DIAGRAM



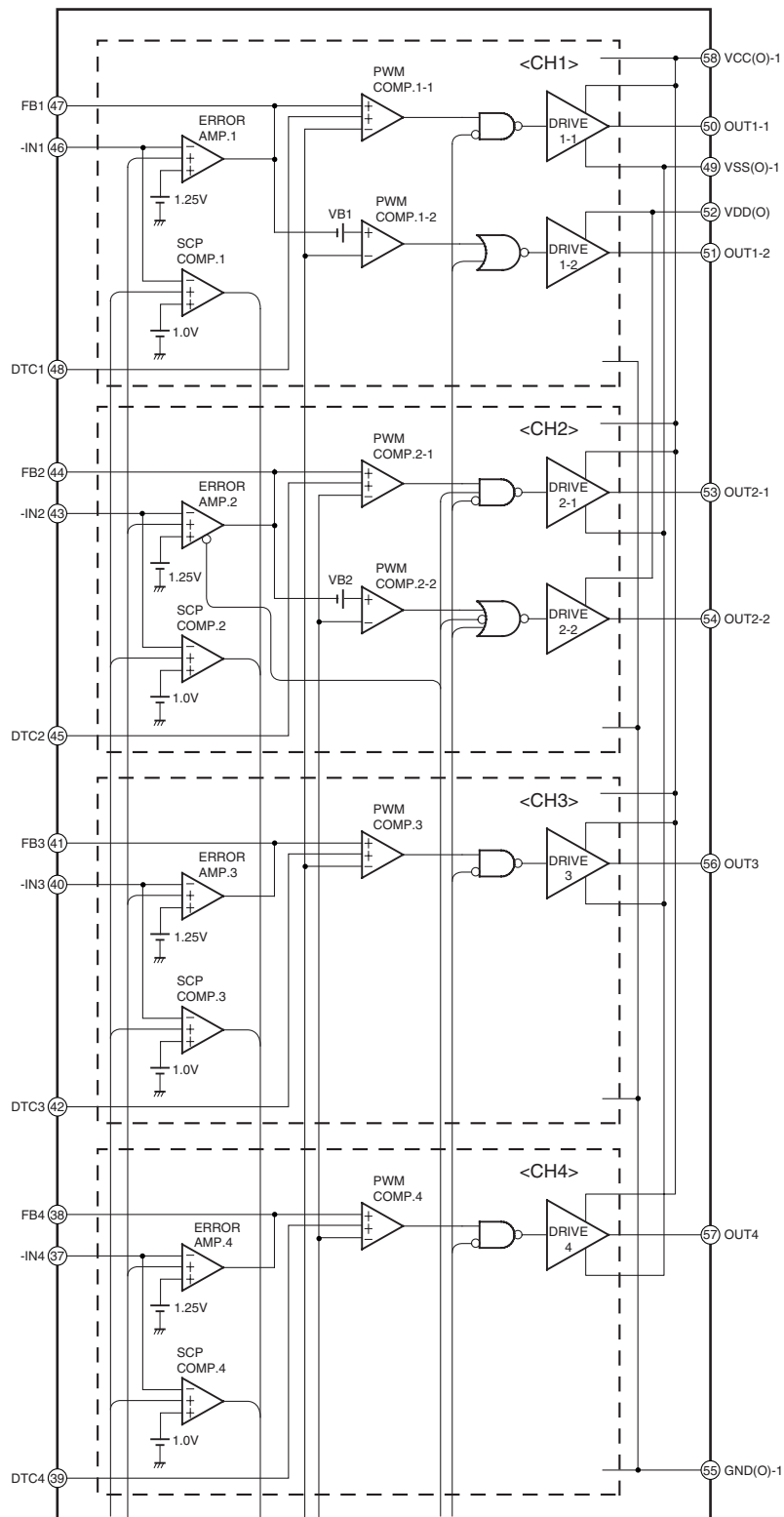
CODE	PART NAME
BR	2SC4617
FR	2SA1774RS
5H	XP4501
64	DTC114YE

* VOLTAGE: READ AND(WRITE)MODE.

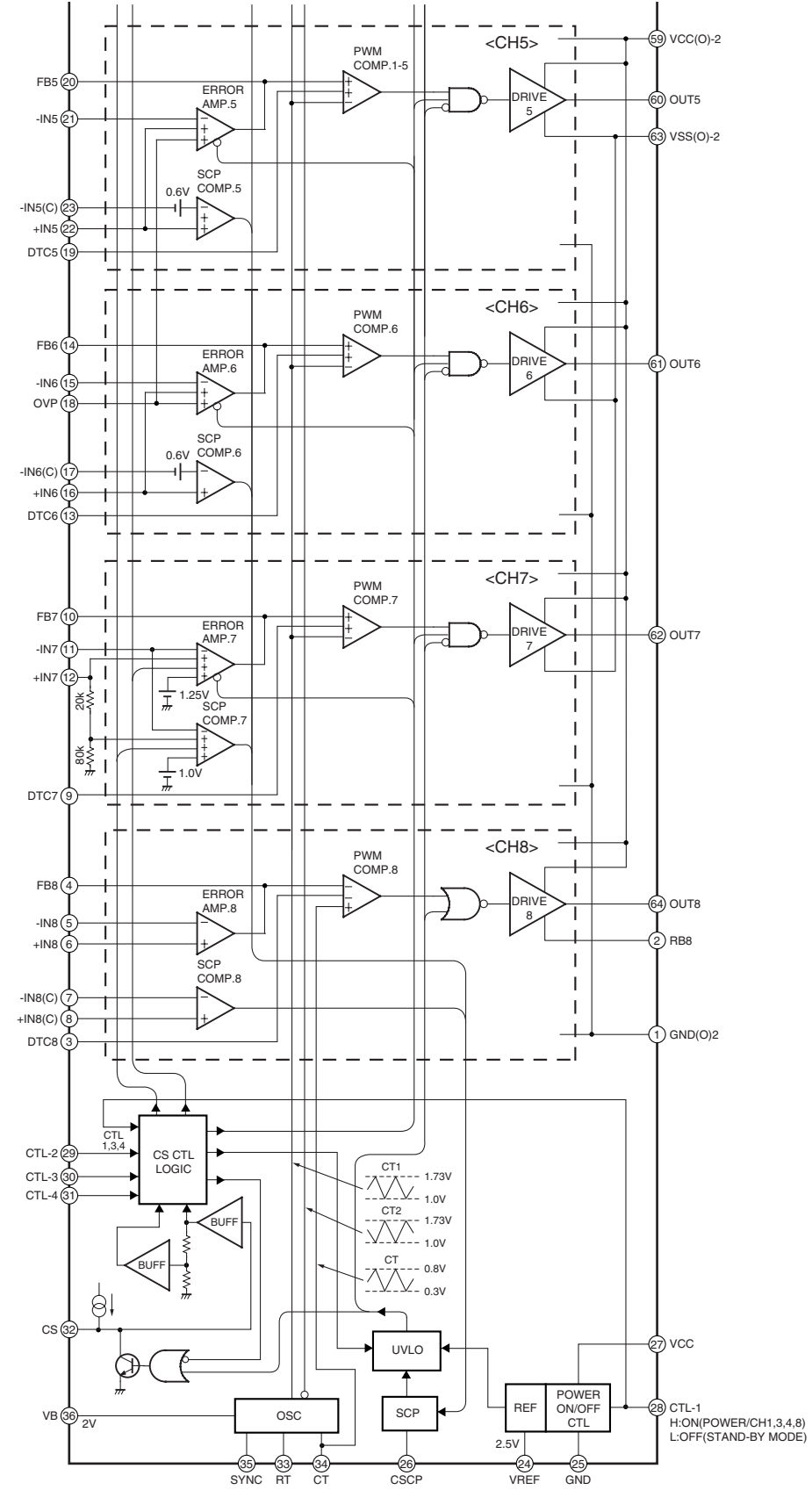
AUD

IC BLOCK DIAGRAMS

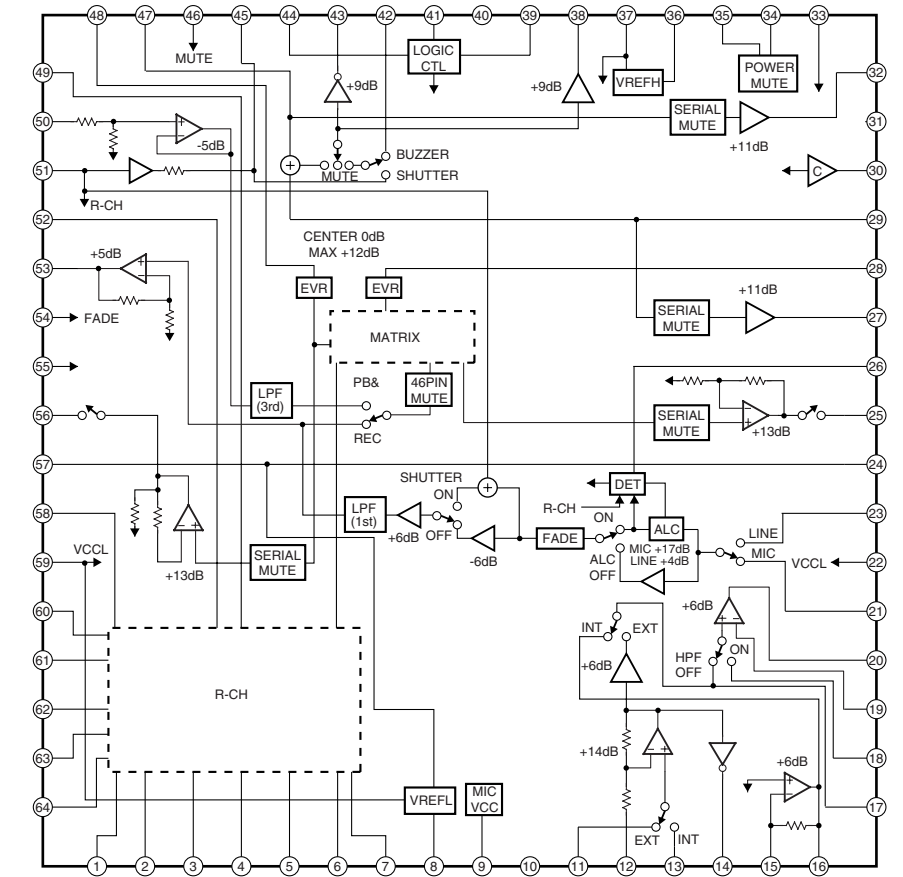
IC0501(1/2)
MB3881
SW REG PWM
CONTROL



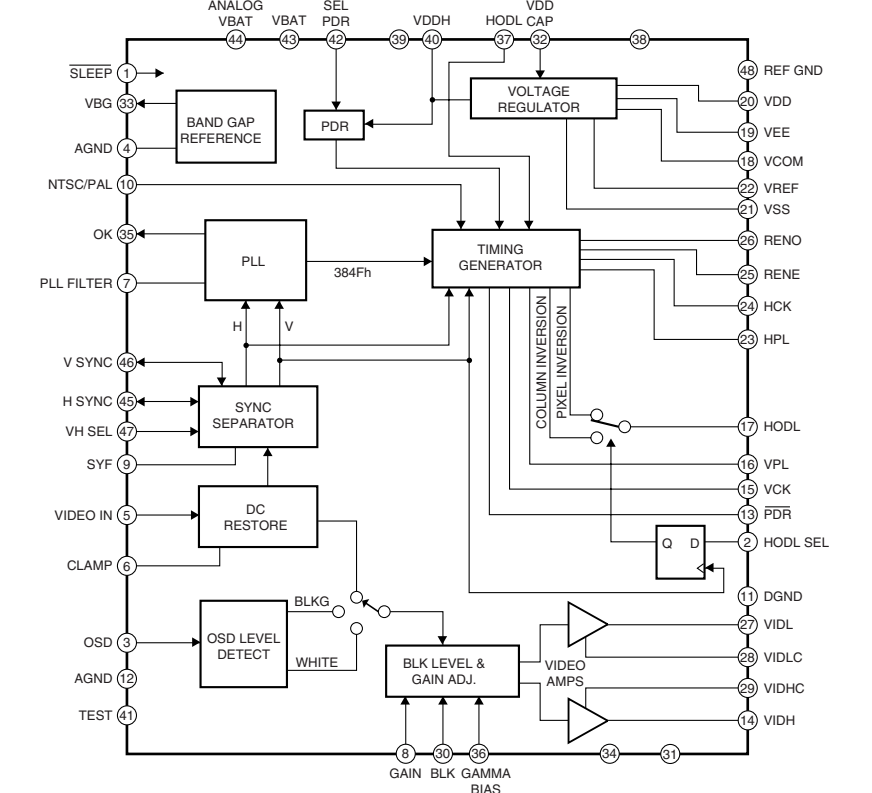
IC0501(2/2)
MB3881
SW REG PWM
CONTROL

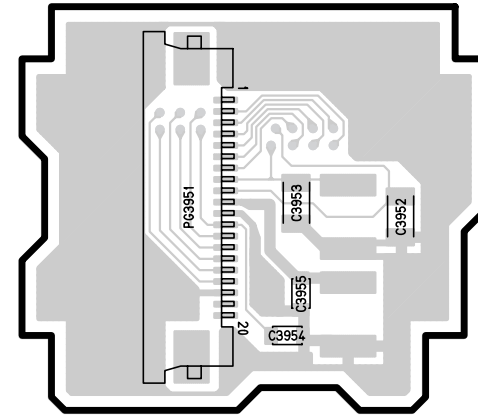
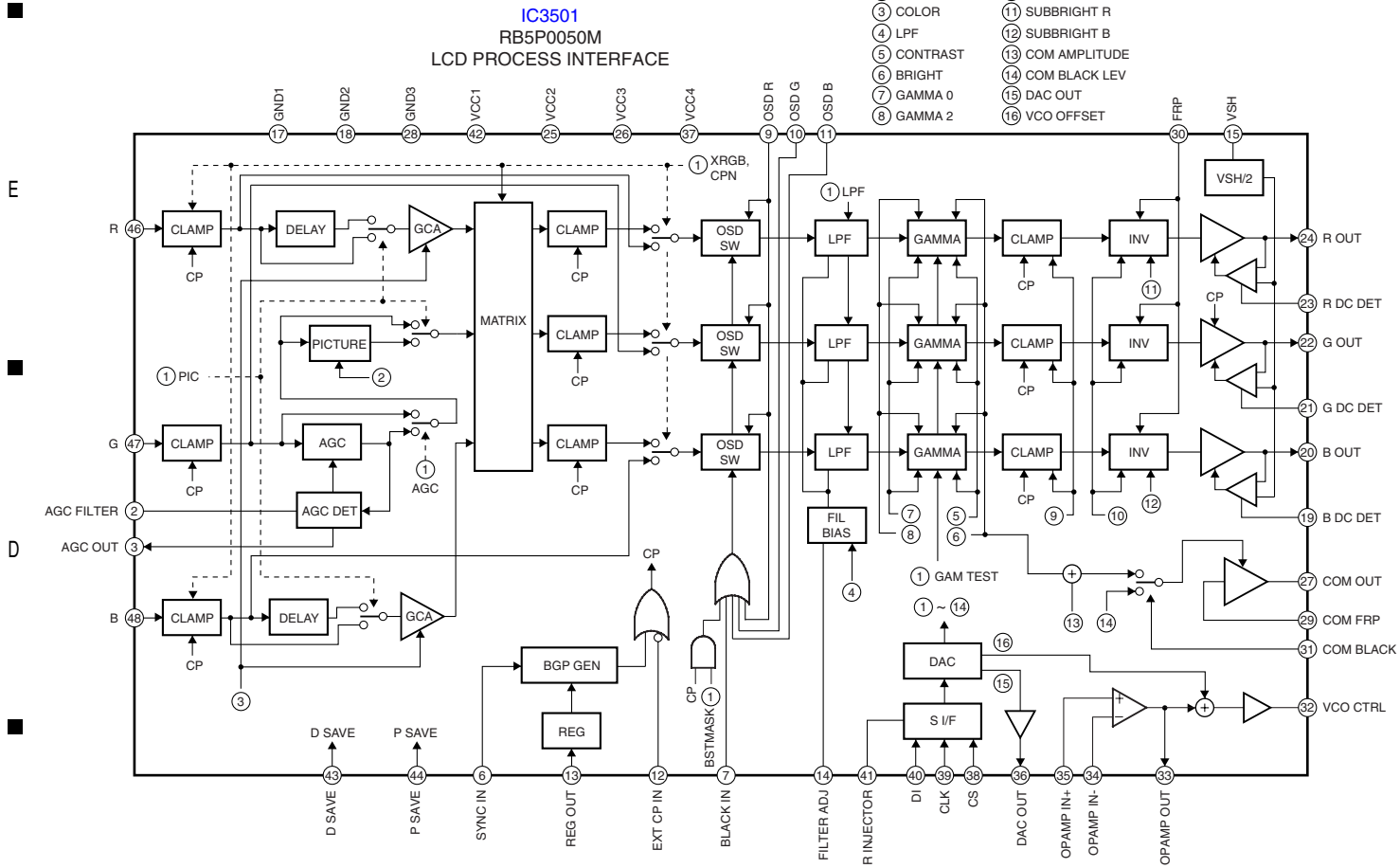


IC6101
LA74206W
AUDIO PROCESS

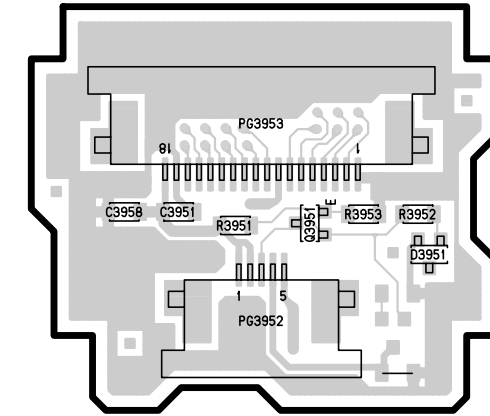


IC3801
MCVVQ111
B&W EVF DECODE

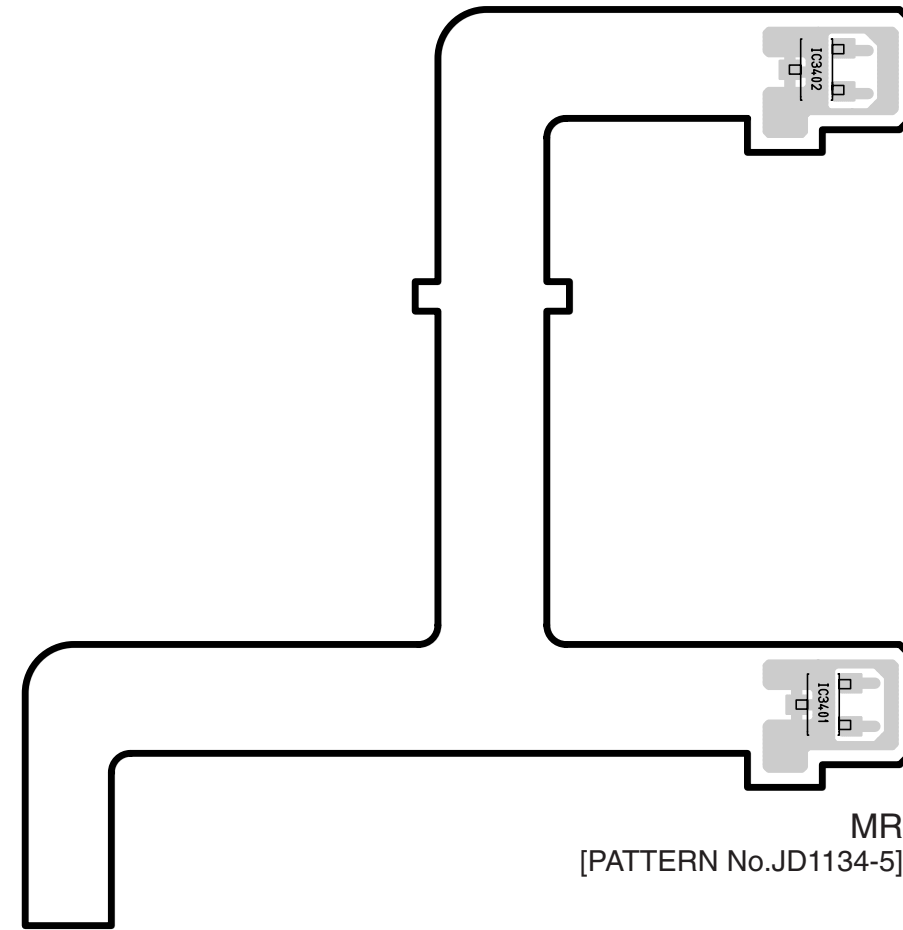
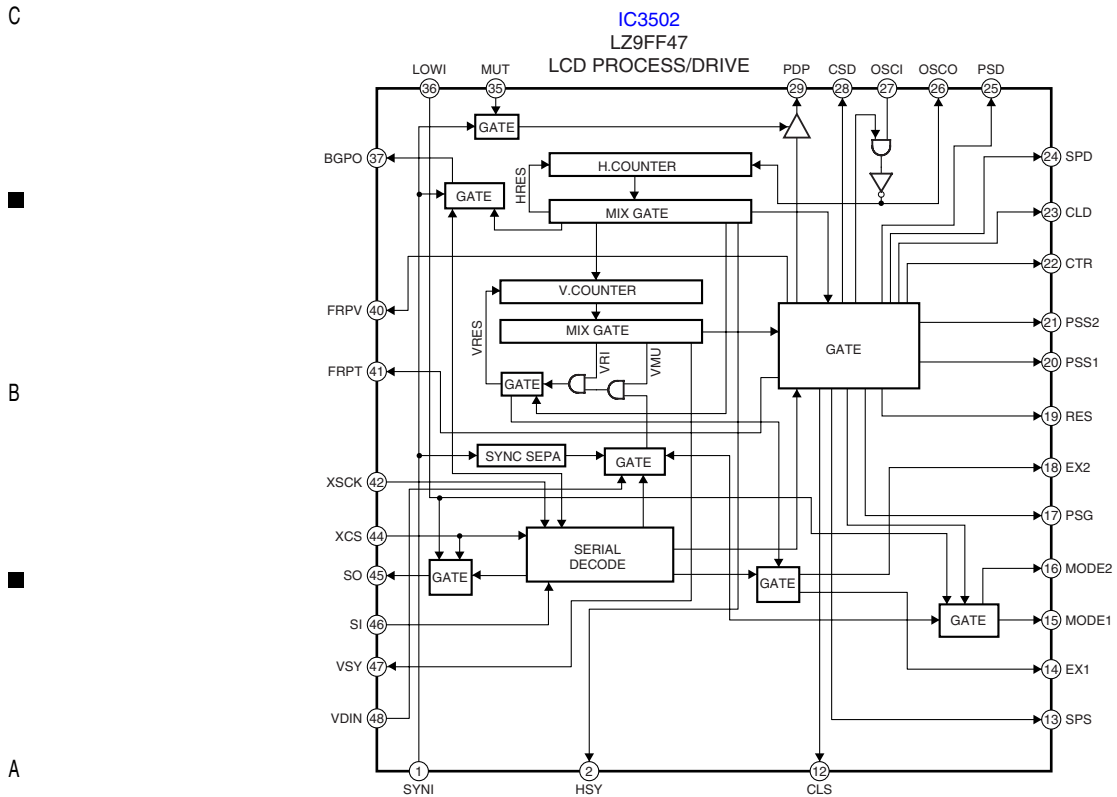




EBLB -SIDE A-

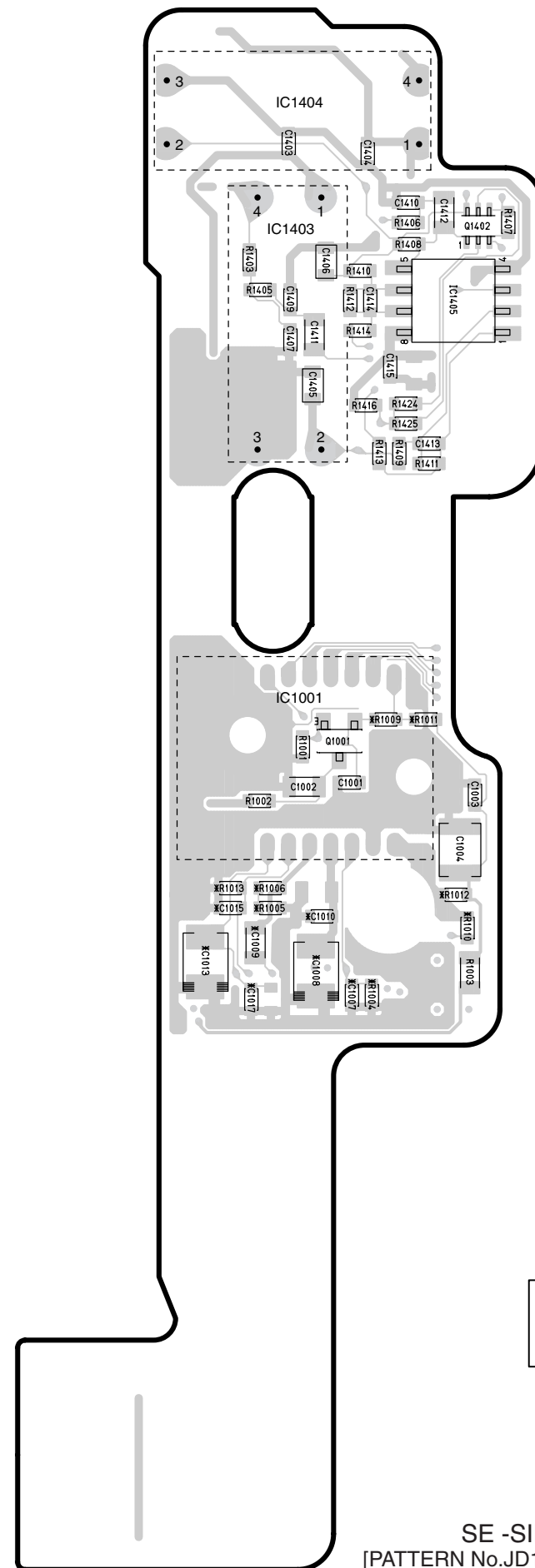
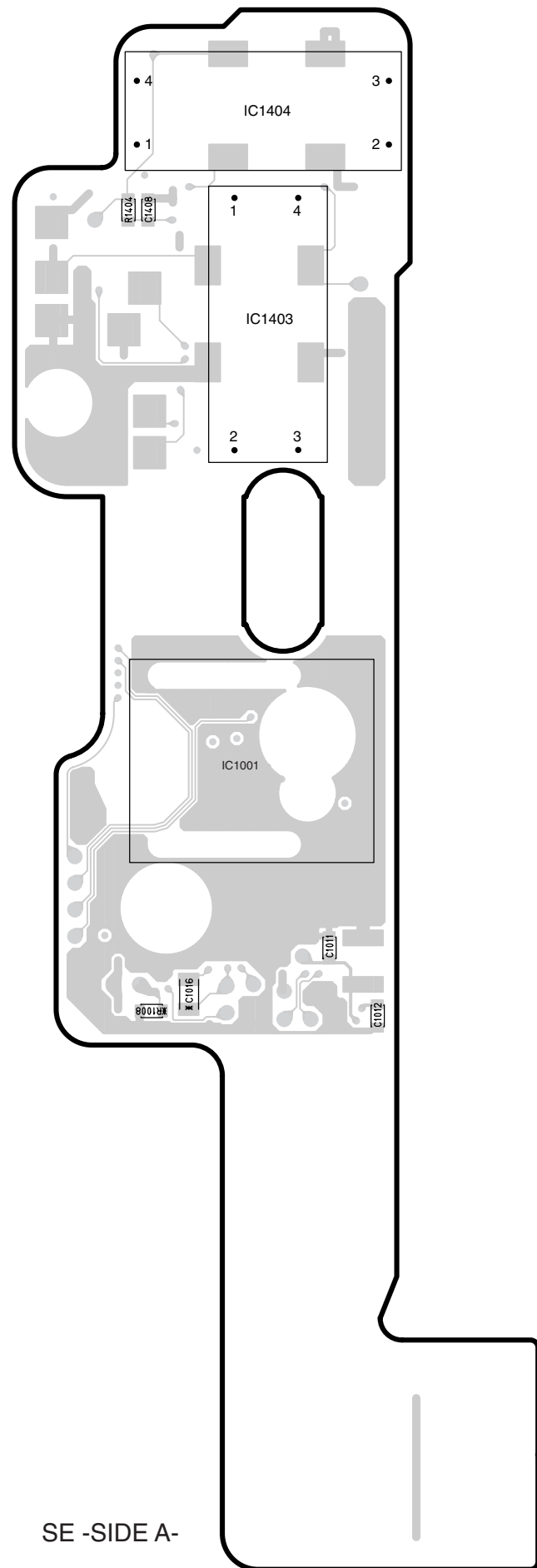


EBLB -SIDE B-
[PATTERN No.JD1134-5]



MR
[PATTERN No.JD1134-5]

SE, DRF, DCJ CIRCUIT BOARD DIAGRAMS

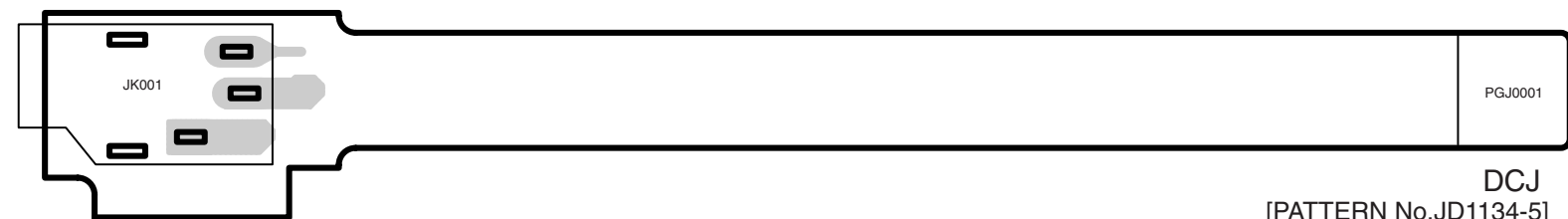
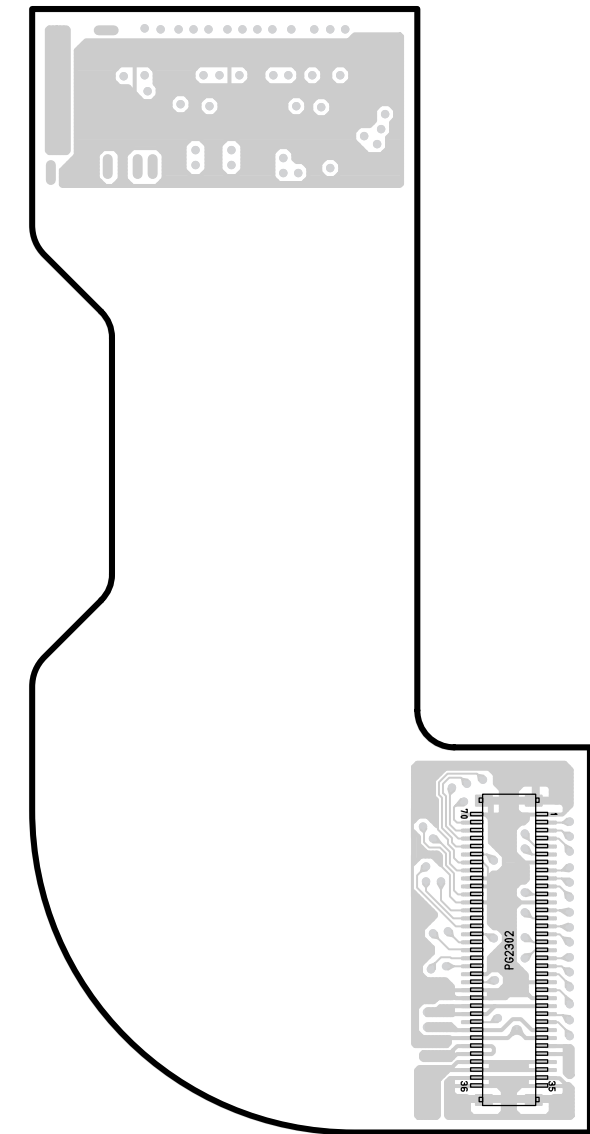
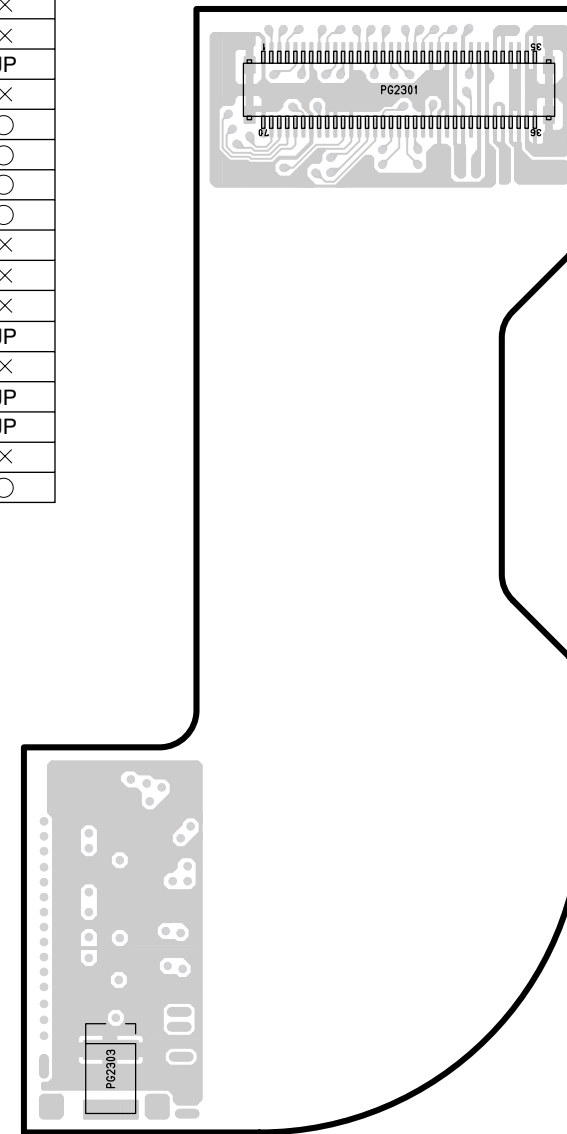


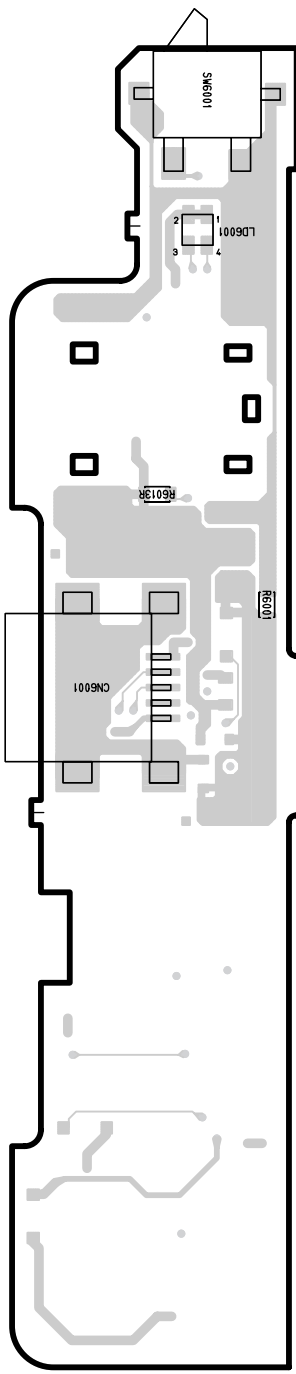
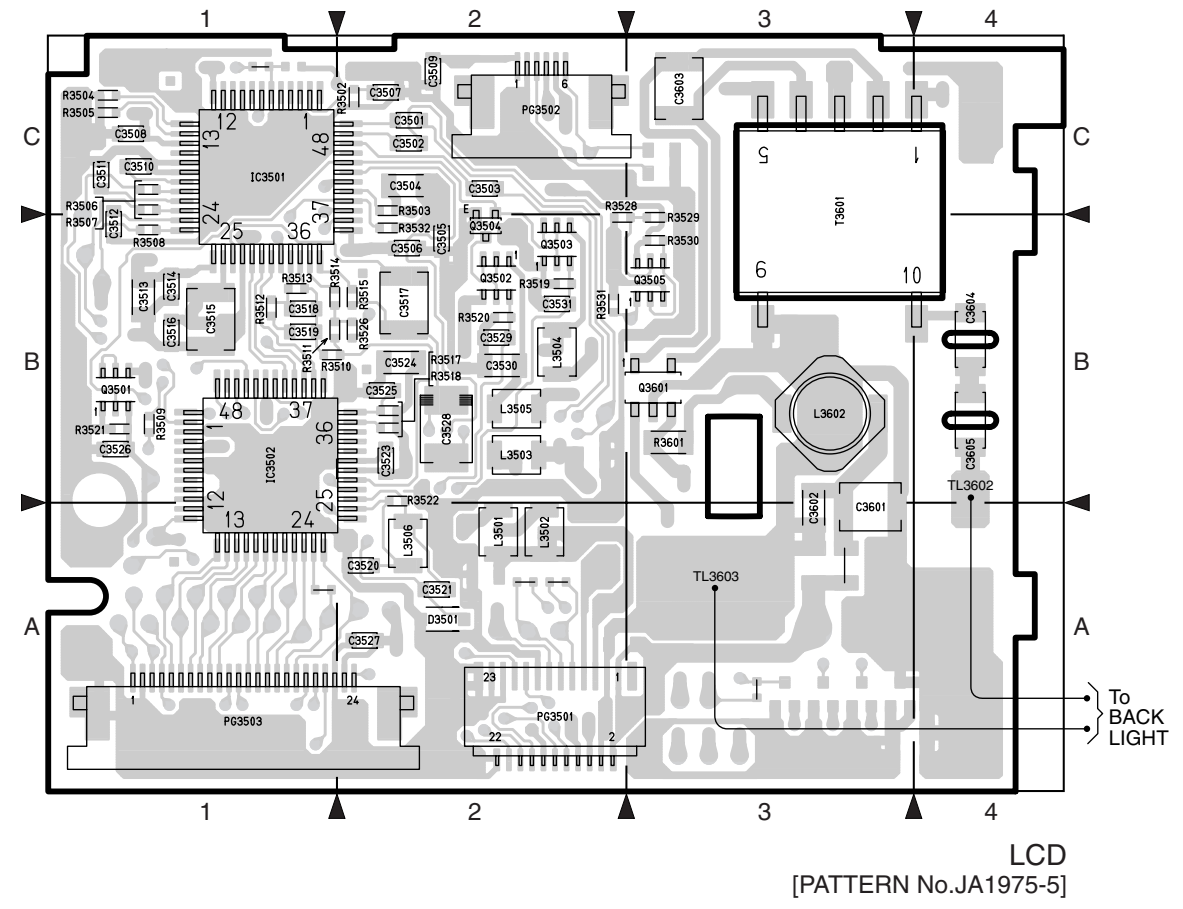
DIFFERENCE TABLE

SE

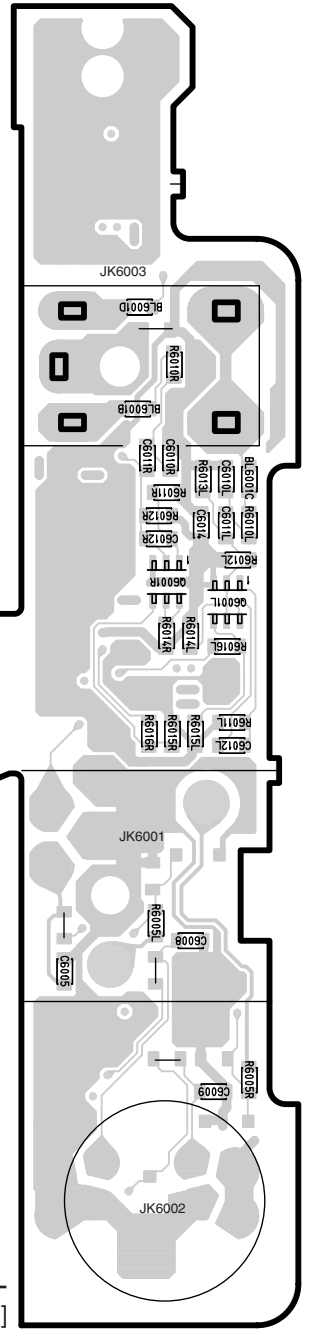
NOTE: This table lists the different components marked with asterisks (*) in the circuit board diagrams.

SYMBOL No.	TYPE230	TYPE200
C1007	○	×
C1008	○	×
C1009	○	JP
C1010	○	×
C1013	×	○
C1015	×	○
C1016	JP	○
C1017	×	○
R1004	○	×
R1005	○	×
R1006	○	×
R1008	×	JP
R1009	JP	×
R1010	×	JP
R1011	×	JP
R1012	JP	×
R1013	×	○



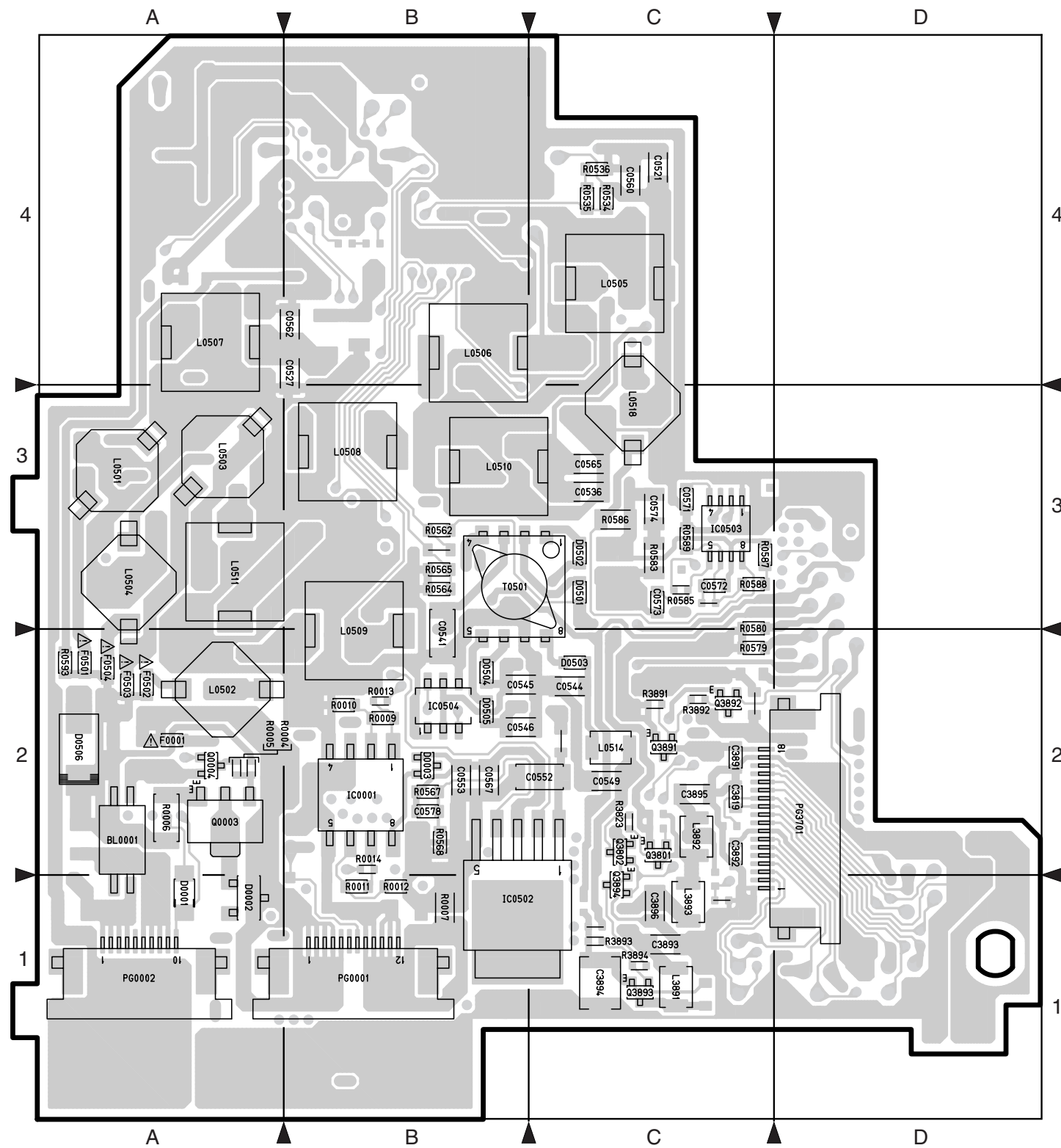


AVJ -SIDE A-

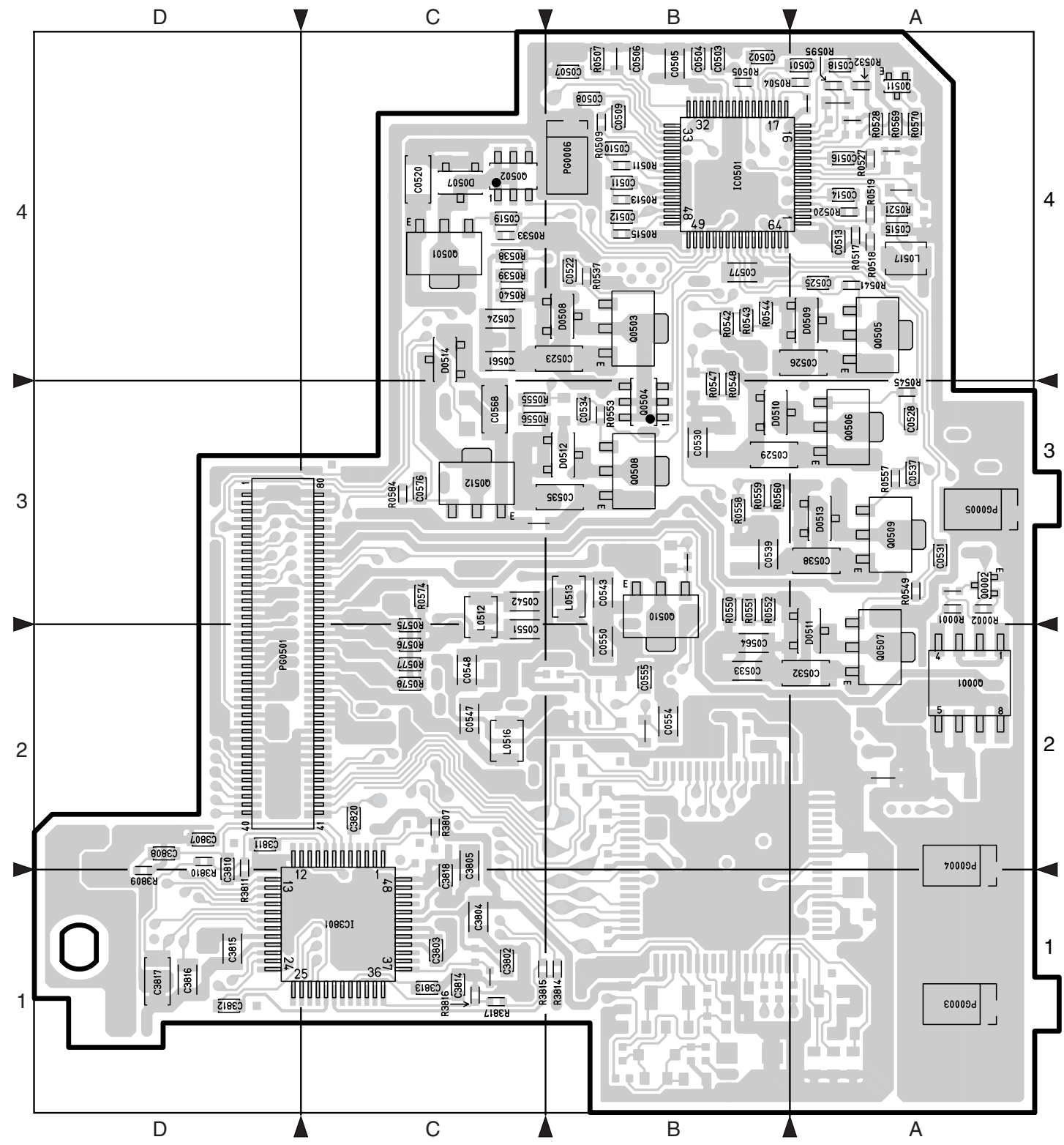


AVJ -SIDE B-
[PATTERN No.JD1134-5]

REF CIRCUIT BOARD DIAGRAM

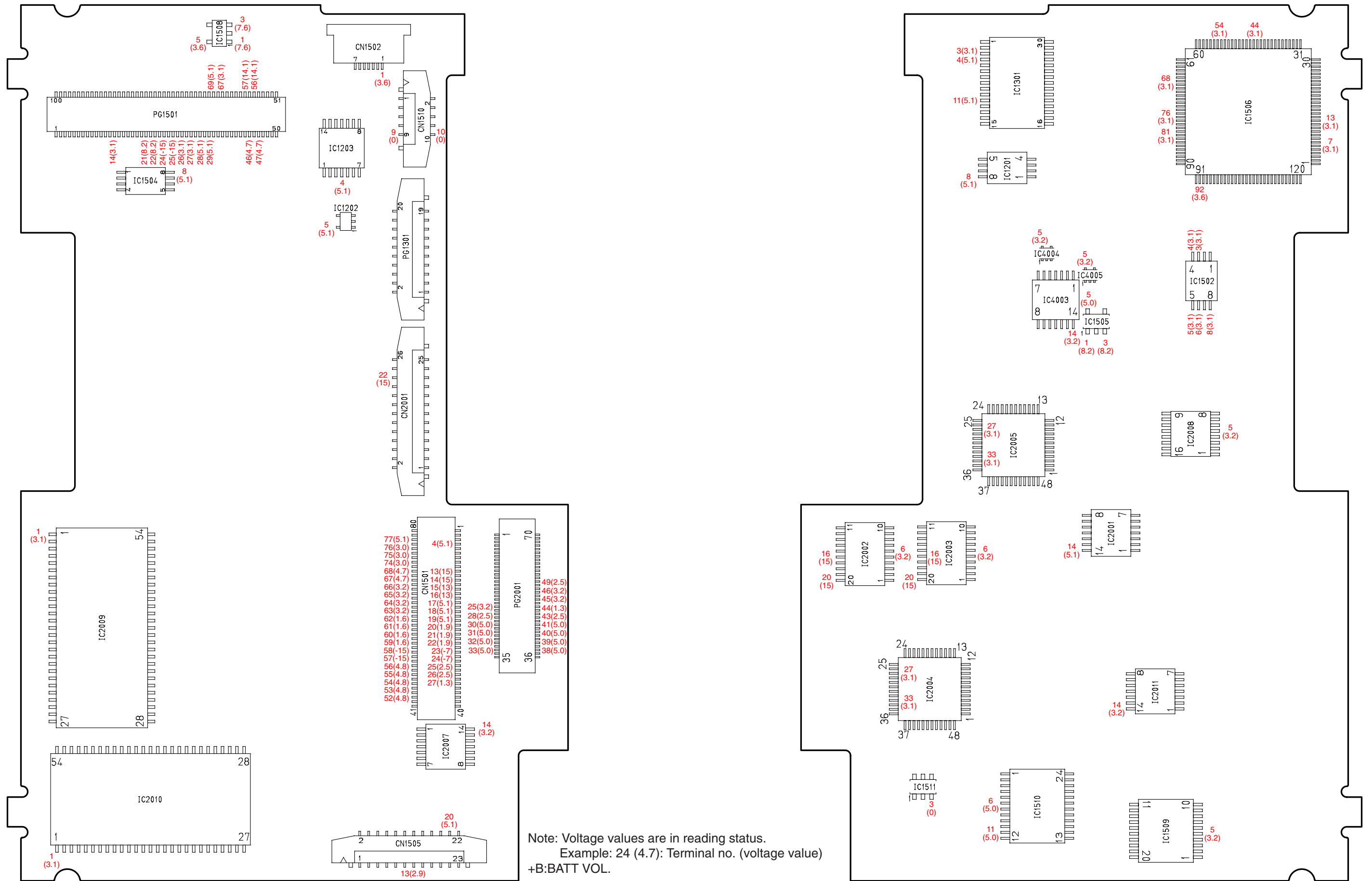


REF -SIDE A-



REF -SIDE B-
[PATTERN No.JA1975-5]

MAIN CIRCUIT BOARD DIAGRAM

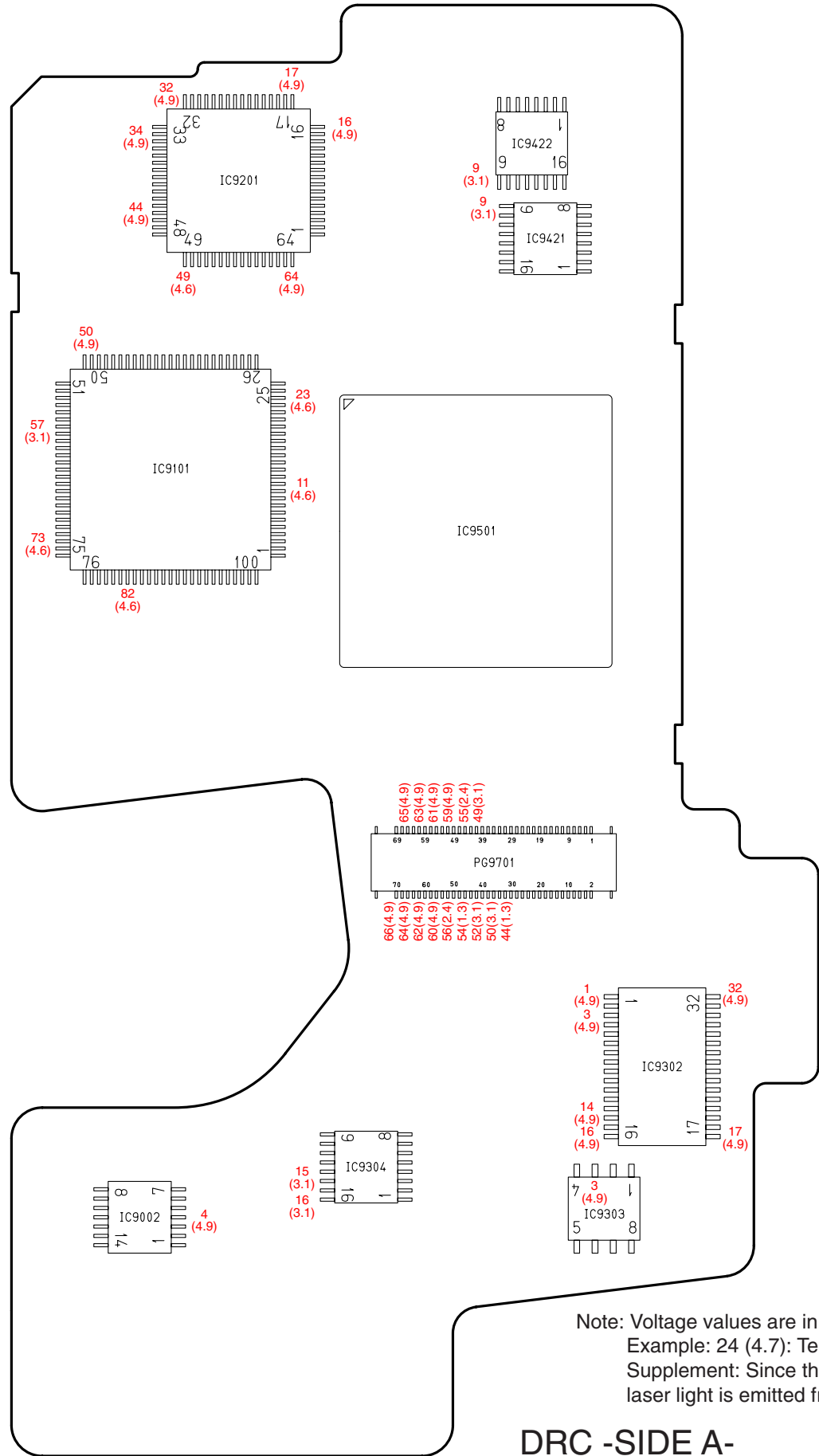


MAN -SIDE A-

MAN -SIDE B-

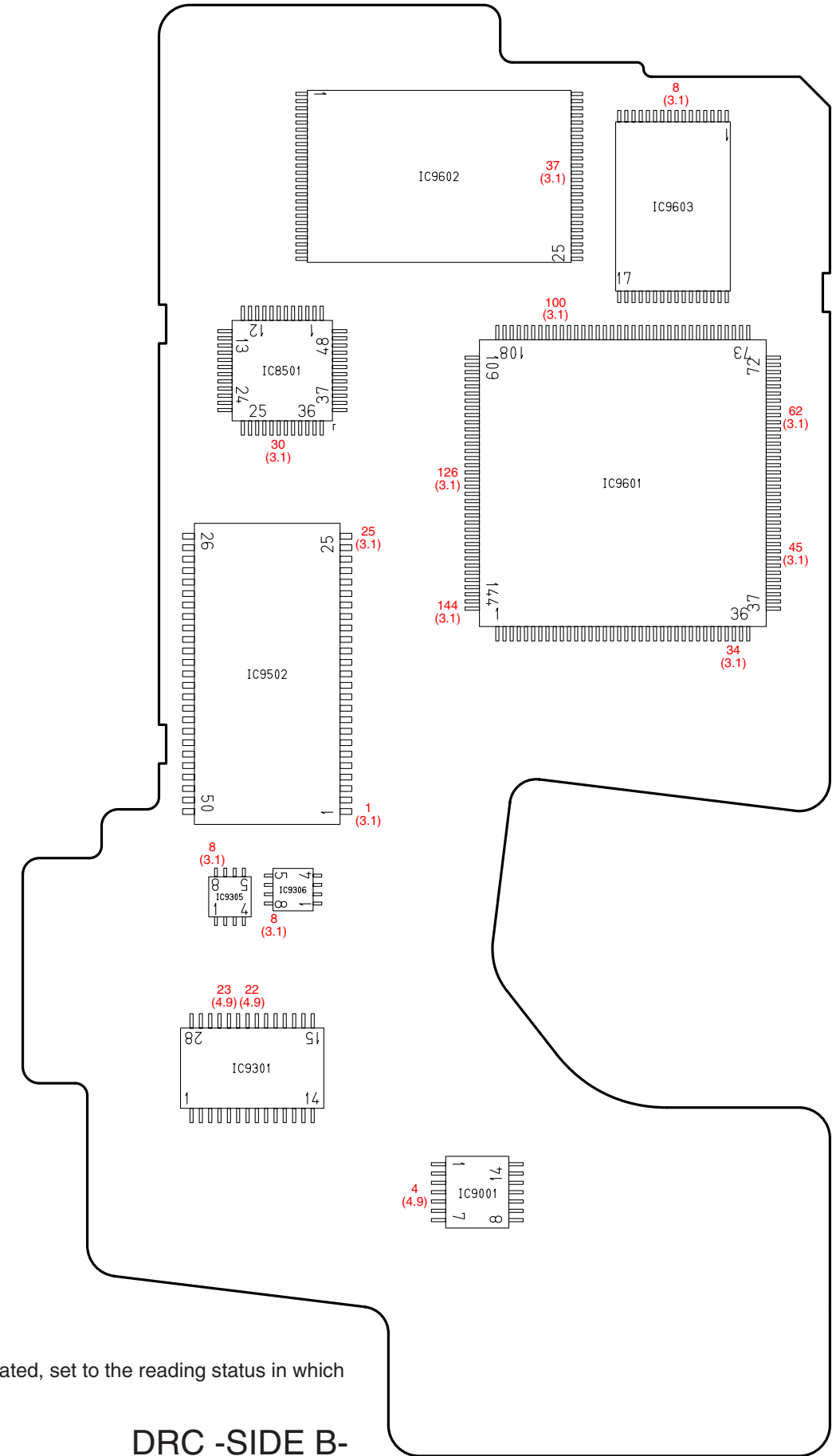
Note: Voltage values are in reading status.
 Example: 24 (4.7): Terminal no. (voltage value)
 +B: BATT VOL.

DRIVE MECHANISM UNIT
 (1) DRC CIRCUIT BOARD DIAGRAM



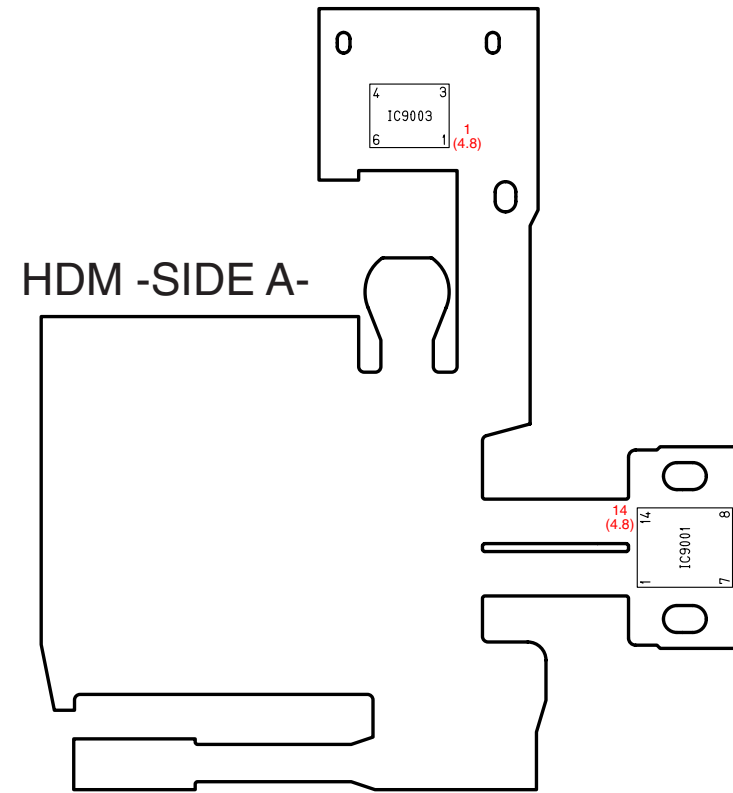
DRC -SIDE A-

Note: Voltage values are in reading status.
 Example: 24 (4.7): Terminal no. (voltage value)
 Supplement: Since the DVD drive is intermittently operated, set to the reading status in which laser light is emitted from the pickup.

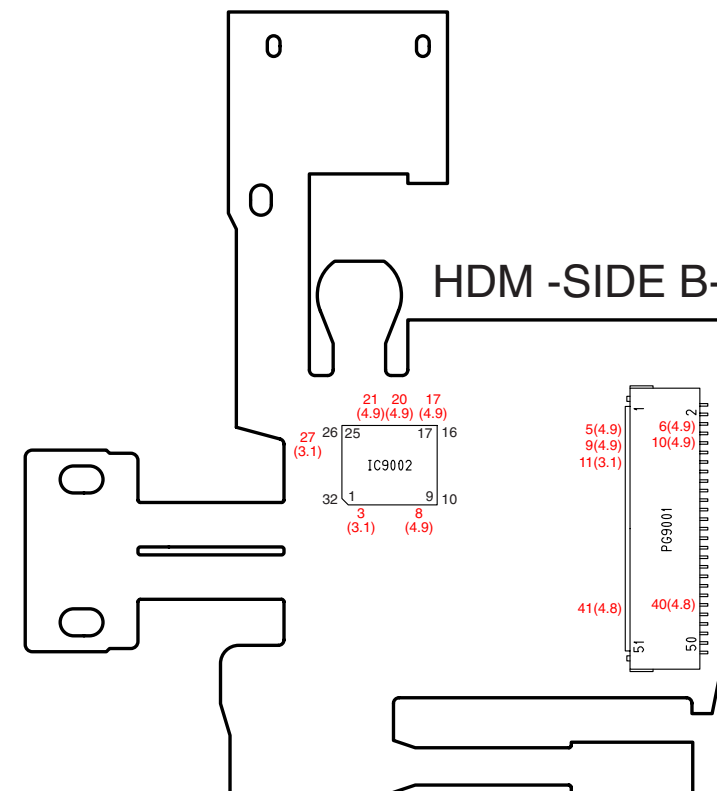


DRC -SIDE B-

(2) HDM CIRCUIT BOARD DIAGRAM



Note: Voltage values are in reading status.
 Example: 24 (4.7): Terminal no. (voltage value)
 Supplement: Since the DVD drive is intermittently operated, set to the reading status in which laser light is emitted from the pickup.



IDENTIFICATION OF PARTS LOCATION

LCD

Symbol No.	Parts Location	Symbol No.	Parts Location
C		Q3505	3B
C3501	2C	Q3601	3B
C3502	2C	R	
C3503	2C	R3502	2C
C3504	2C	R3503	2C
C3505	2B	R3504	1C
C3506	2B	R3505	1C
C3507	2C	R3506	1C
C3508	1C	R3507	1C
C3509	2C	R3508	1B
C3510	1C	R3509	1B
C3511	1C	R3510	1B
C3512	1B	R3511	1B
C3513	1B	R3512	1B
C3514	1B	R3513	1B
C3515	1B	R3514	1B
C3516	1B	R3515	2B
C3517	2B	R3517	2B
C3518	1B	R3518	2B
C3519	1B	R3519	2B
C3520	2A	R3520	2B
C3521	2A	R3521	1B
C3523	2B	R3522	2B
C3524	2B	R3526	2B
C3525	2B	R3528	2B
C3526	1B	R3529	3B
C3527	2A	R3530	3B
C3528	2B	R3531	2B
C3529	2B	R3532	2B
C3530	2B	R3601	3B
C3531	2B	T	
C3601	3A	T3601	3B
C3602	3A	TL	
C3603	3C	TL3602	4B
C3604	4B	TL3603	3A
C3605	4B		
D			
D3501	2A		
IC			
IC3501	1C		
IC3502	1B		
L			
L3501	2A		
L3502	2A		
L3503	2B		
L3504	2B		
L3505	2B		
L3506	2A		
L3602	3B		
PG			
PG3501	2A		
PG3502	2C		
PG3503	1A		
Q			
Q3501	1B		
Q3502	2B		
Q3503	2B		
Q3504	2B		

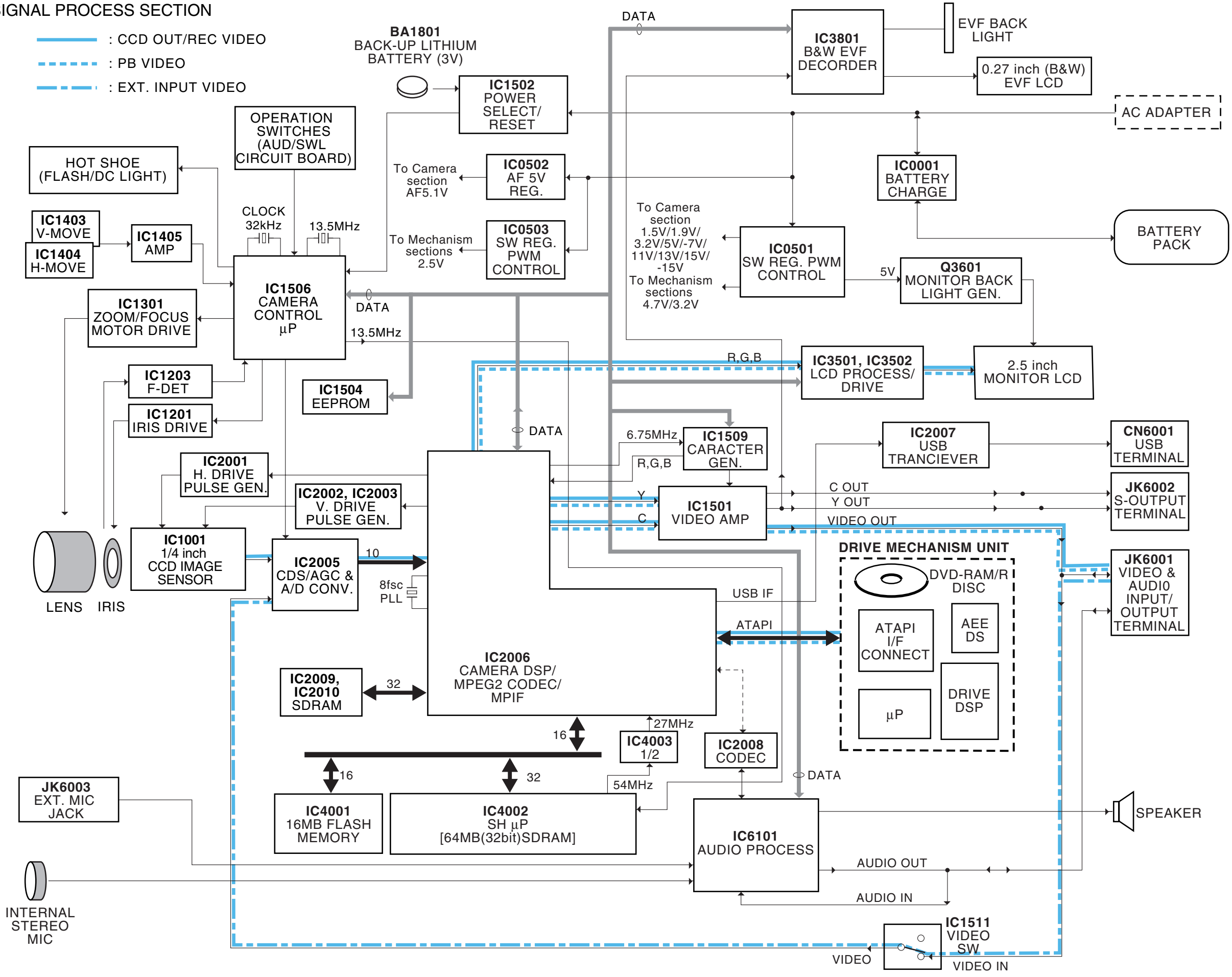
REF

Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location
BL		C0562	A-4B	F0504	A-2A	Q3892	A-2C	R0564	A-3B
BL0001	A-2A	C0564	B-2B	IC		Q3893	A-1C	R0565	A-3B
C		C0565	A-3C	IC0001	A-2B	Q3894	A-1C	R0567	A-2B
C0501	B-4A	C0567	A-2B	IC0501	B-4B	R		R0568	A-2B
C0502	B-4B	C0568	B-3C	IC0502	A-1B	R0001	B-3A	R0569	B-4A
C0503	B-4B	C0571	A-3C	IC0503	A-3C	R0002	B-3A	R0570	B-4A
C0504	B-4B	C0572	A-3C	IC0504	A-2B	R0004	A-2A	R0574	B-3C
C0505	B-4B	C0573	A-3C	IC3801	B-1C	R0005	A-2A	R0575	B-2C
C0506	B-4B	C0574	A-3C	L		R0006	A-2A	R0576	B-2C
C0507	B-4B	C0576	B-3C	L0501	A-3A	R0007	A-1B	R0577	B-2C
C0508	B-4B	C0577	B-4B	L0502	A-2A	R0009	A-2B	R0578	B-2C
C0509	B-4B	C0578	A-2B	L0503	A-3A	R0010	A-2B	R0579	A-2C
C0510	B-4B	C3802	B-1C	L0504	A-3A	R0011	A-1B	R0580	A-2C
C0511	B-4B	C3803	B-1C	L0505	A-4C	R0012	A-1B	R0583	A-3C
C0512	B-4B	C3804	B-1C	L0506	A-4B	R0013	A-2B	R0584	B-3C
C0513	B-4A	C3805	B-2C	L0507	A-4A	R0014	A-2B	R0585	A-3C
C0514	B-4A	C3807	B-2D	L0508	A-3B	R0504	B-4A	R0586	A-3C
C0515	B-4A	C3808	B-2D	L0509	A-3B	R0505	B-4B	R0587	A-3C
C0516	B-4A	C3810	B-1D	L0510	A-3B	R0507	B-4B	R0588	A-3C
C0518	B-4A	C3811	B-2D	L0511	A-3A	R0509	B-4B	R0589	A-3C
C0519	B-4C	C3812	B-1D	L0512	B-3C	R0511	B-4B	R0593	A-2A
C0520	B-4C	C3813	B-1C	L0513	B-3B	R0513	B-4B	R0595	B-4A
C0521	A-4C	C3814	B-1C	L0514	A-2C	R0515	B-4B	R3721	A-1C
C0522	B-4B	C3815	B-1D	L0516	B-2C	R0517	B-4A	R3807	B-2C
C0523	B-4B	C3816	B-1D	L0517	B-4A	R0518	B-4A	R3809	B-1D
C0524	B-4C	C3817	B-1D	L0518	A-3C	R0519	B-4A	R3810	B-2D
C0525	B-4A	C3818	B-1C	L3891	A-1C	R0520	B-4A	R3811	B-1D
C0526	B-4A	C3819	A-2C	L3892	A-2C	R0521	B-4A	R3814	B-1B
C0527	A-4B	C3820	B-2C	L3893	A-1C	R0527	B-4A	R3815	B-1C
C0528	B-3A	C3891	A-2C	PG		R0528	B-4A	R3816	B-1C
C0529	B-3B	C3892	A-2C	PG0001	A-1B	R0532	B-4A	R3817	B-1C
C0530	B-3B	C3893	A-1C	PG0002	A-1A	R0533	B-4C	R3823	A-2C
C0531	B-3A	C3894	A-1C	PG0003	B-1A	R0534	A-4C	R3891	A-2C
C0532	B-2A	C3895	A-2C	PG0004	B-2A	R0535	A-4C	R3892	A-2C
C0533	B-2B	C3896	A-1C	PG0005	B-3A	R0536	A-4C	R3893	A-1C
C0534	B-3B	D		PG0006	B-4B	R0537	B-4B	R3894	A-1C
C0535	B-3B	D0001	A-1A	PG0501	B-2D	R0538	B-4C	T	
C0536	A-3C	D0002	A-1A	PG3701	A-2D	R0539	B-4C	T0501	A-3B
C0537	B-3A	D0003	A-2B	Q		R0540	B-4C		
C0538	B-3A	D0501	A-3C	Q0001	B-2A	R0541	B-4A		
C0539	B-3B	D0502	A-3C	Q0002	B-3A	R0542	B-4B		
C0541	A-2B	D0503	A-2C	Q0003	A-2A	R0543	B-4B		
C0542	B-3C	D0504	A-2B	Q0004	A-2A	R0544	B-4B		
C0543	B-3B	D0505	A-2B	Q0501	B-4C	R0545	B-3A		
C0544	A-2C	D0506	A-2A	Q0502	B-4C	R0547	B-3B		
C0545	A-2B	D0507	B-4C	Q0503	B-4B	R0548	B-3B		
C0546	A-2B	D0508	B-4B	Q0504	B-3B	R0549	B-3A		
C0547	B-2C	D0509	B-4A	Q0505	B-4A	R0550	B-3B		
C0548	B-2C	D0510	B-3B	Q0506	B-3A	R0551	B-3B		
C0549	A-2C	D0511	B-2A	Q0507	B-2A	R0552	B-3B		
C0550	B-2B	D0512	B-3B	Q0508	B-3B	R0553	B-3B		
C0551	B-2C	D0513	B-3A	Q0509	B-3A	R0555	B-3C		
C0552	A-2C	D0514	B-4C	Q0510	B-3B	R0556	B-3C		
C0553	A-2B	F		Q0511	B-4A	R0557	B-3A		
C0554	B-2B	F0001	A-2A	Q0512	B-3C	R0558	B-3B		
C0555	B-2B	F0501	A-2A	Q3801	A-2C	R0559	B-3B		
C0560	A-4C	F0502	A-2A	Q3802	A-2C	R0560	B-3B		
C0561	B-4C	F0503	A-2A	Q3891	A-2C	R0562	A-3B		

AUD

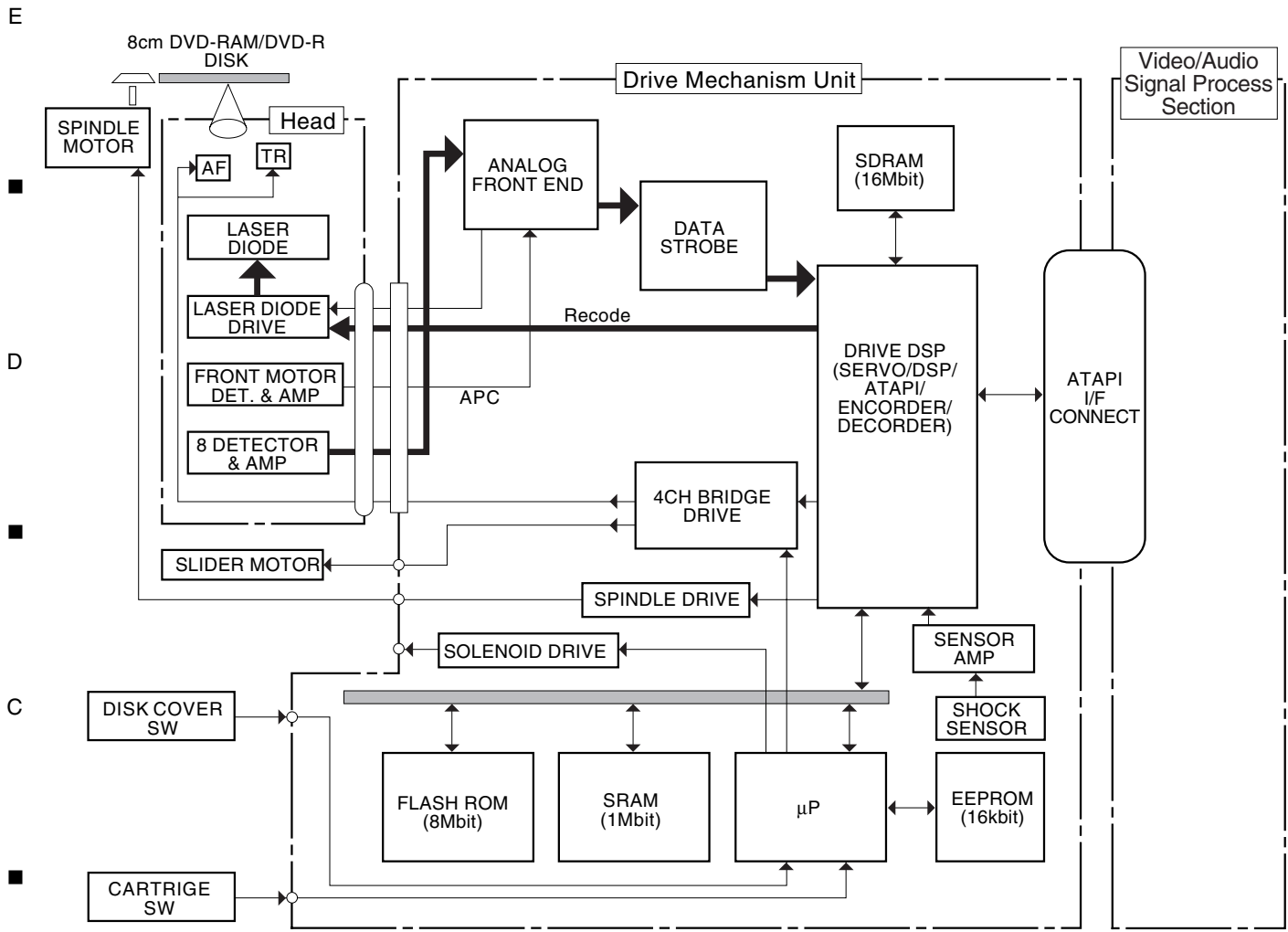
Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location	Symbol No.	Parts Location
BA		C6165R	B-5B	Q6111R	A-1B	R6153	B-4B	R6318	A-5C
BA1801	A-4B	C6166L	B-6C	R		R6154	B-4B	R6320	A-5C
C		C6166R	A-2B	R1801	B-6C	R6155	A-5B	R6321	B-4C
C1801	B-6C	C6170L	A-6C	R1803	A-6C	R6157	A-2A	R6322	B-4C
C6102	B-2B	C6170R	A-1B	R3101	B-4A	R6158L	B-6C	R6323	B-4C
C6111	B-3B	C6171L	A-6C	R3103	B-3A	R6158R	A-1B	R6324	B-5C
C6112L	A-6B	C6171R	A-1B	R3104	B-2A	R6159L	B-6C	R6326	B-5C
C6112R	A-5B	C6172L	A-6C	R3105	B-2A	R6159R	A-1B	SW	
C6113	B-2B	C6172R	A-1A	R3106	B-1A	R6160L	B-6C	SW3101	B-5A
C6123	B-5A	C6173L	A-6C	R3107	B-1A	R6160R	A-2B	SW3102	B-4A
C6125L	B-6C	C6173R	A-2A	R3108	B-1B	R6163L	B-5B	SW3103	B-4A
C6125R	A-1B	C6174L	A-6C	R3109	B-1C	R6163R	B-5B	SW3104	B-3A
C6126L	B-6C	C6174R	A-2A	R3110	B-1C	R6166L	B-6C	SW3105	B-2A
C6126R	A-1B	C6175L	A-6C	R3111	A-1B	R6166R	A-2B	SW3106	B-1A
C6127L	B-3A	C6175R	A-1A	R6102	A-6B	R6169L	B-6C	SW3107	B-1B
C6127R	B-3A	C6177L	A-3A	R6103L	B-3A	R6169R	A-1B		
C6128	B-2B	C6177R	A-2A	R6103R	B-4A	R6170L	B-6C		
C6129	A-5C	C6181	B-4B	R6112L	A-6B	R6170R	A-1B		
C6132	B-4B	C6182	B-4B	R6112R	A-5B	R6171L	B-6C		
C6133	B-2B	C6198	A-5A	R6116	B-6A	R6172L	B-6C		
C6134	B-4B	C6199	A-5A	R6117L	B-3A	R6172R	A-1B		
C6135	B-4B	CN		R6117R	B-4A	R6173L	A-6C		
C6136	B-4B	CN3101	A-1B	R6120L	B-6A	R6173R	A-1B		
C6137L	B-4B	CN6101	A-6B	R6120R	B-6A	R6174L	A-6C		
C6137R	B-4C	IC		R6123L	B-3A	R6174R	A-1B		
C6138	B-2B	IC1801	A-6B	R6123R	B-3A	R6175L	A-6C		
C6139	B-4C	IC6101	B-4B	R6129	B-4B	R6175R	A-1A		
C6141L	A-4A	IC6103	B-2B	R6130	B-4B	R6176L	A-6C		
C6141R	A-5B	L		R6131L	B-4C	R6176R	A-1A		
C6142L	A-4A	L1801	B-6C	R6131R	B-4C	R6177L	A-6C		
C6142R	B-5C	L1802	A-6C	R6133	B-4C	R6177R	A-1A		
C6143L	A-4A	L6102	B-3B	R6134	B-4C	R6178L	A-6C		
C6143R	B-5C	L6103	B-3B	R6135L	B-4B	R6178R	A-1A		
C6144L	B-5B	L6104	B-2B	R6135R	A-4A	R6179L	A-6C		
C6144R	B-5C	LD		R6136L	B-4B	R6179R	A-1A		
C6145L	B-5B	LD1801	A-6C	R6136R	B-4C	R6180L	A-6C		
C6145R	B-5B	PG		R6137L	B-4A	R6180R	A-2A		
C6146	B-4B	PG6101	A-5B	R6137R	B-4C	R6181L	A-6C		
C6147	B-4B	PG6102	B-5C	R6138L	B-4A	R6181R	A-1A		
C6148	B-4B	PG6103	A-4C	R6138R	B-4C	R6182L	A-6C		
C6149L	B-3A	PG6104	A-6A	R6139L	A-4A	R6182R	A-2A		
C6149R	B-4A	PG6105	A-3A	R6139R	B-5C	R6183L	A-6C		
C6150L	B-5B	Q		R6140L	A-4A	R6183R	A-2A		
C6150R	B-5B	Q1801	A-6C	R6140R	B-5C	R6184L	A-6C		
C6151L	B-5B	Q3101	A-1B	R6141L	B-5B	R6184R	A-2A		
C6151R	B-5B	Q6102	B-5A	R6141R	B-5C	R6302	B-5B		
C6152	B-6A	Q6103	B-6A	R6142L	B-4A	R6303	B-5B		
C6153L	A-4B	Q6104L	A-2A	R6142R	B-4C	R6304	B-5B		
C6153R	A-4B	Q6104R	A-2A	R6145L	B-5A	R6305	B-5B		
C6154L	A-5B	Q6105L	B-6C	R6145R	B-5B	R6306	B-5B		
C6154R	A-4B	Q6105R	A-2B	R6146L	B-3A	R6309	B-5A		
C6155	A-4A	Q6106L	B-6C	R6146R	B-4A	R6310	B-5A		
C6156	B-5B	Q6106R	A-1B	R6147L	B-5B	R6311	A-4A		
C6158	B-4B	Q6107L	B-3A	R6147R	B-5B	R6312	A-4A		
C6160L	A-3A	Q6107R	B-4A	R6148L	B-3A	R6313	B-5B		
C6160R	A-2A	Q6110L	A-6C	R6148R	B-4A	R6314	A-5B		
C6163	B-2A	Q6110R	A-1A	R6149L	A-4B	R6315	A-5C		
C6165L	B-5B	Q6111L	A-5C	R6149R	A-4B	R6317	A-5B		

BLOCK DIAGRAMS
AUDIO/VIDEO SIGNAL PROCESS SECTION



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