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ORDER NO. VRD8012468

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Service Manual

Portable Video Cassette Recorder

Vol. 1

Panasonic VHS

NV-3000-E -B

Summary Operating Instructions

SPECIFICATIONS

Power Source:	12 V DC Battery LCR-1812E, LCR-3012VBE Prog. Tuner Unit NV-V300 AC Adaptor NV-B30
Power Consumption:	Approx. 5.6 W at Record mode Approx. 9.5 W at Play mode
Television System:	CCIR: 625 lines, 50 fields PAL colour signal
Video Recording System:	2 rotary heads, helical scanning system Luminance: FM azimuth recording Colour signal: converted subcarrier phase shift recording
Audio Track:	1 track
Tape Format:	Tape width 12.7 mm high density tape
Tape Speed:	23.39 mm/s
Record/Playback Time:	180 min. with NV-E180 240 min. with NV-E240
FF/REW Time:	Less than 6 min. with NV-E180
Heads:	Video: 2 rotary heads Audio/Control: 1 stationary head Erase: 1 full track erase 1 audio track erase for audio dubbing
Input Level:	Video: VIDEO IN connector (BNC) 1.0 Vp-p, 75Ω unbalanced CAMERA/TUNER IN connector (10P) 1.0 Vp-p, 75Ω unbalanced Audio: MIC IN Jack −70 dB, 600Ω unbalanced
Output Level:	Video: VIDEO OUT Jack (BNC) 1.0 Vp-p, 75Ω unbalanced Audio: AUDIO OUT Jack (RCA) −6 dB, 600Ω unbalanced RF Modulated: UHF channel 36 (±4)
Weight:	5.3 kg without battery pack
Dimensions:	291(W) × 114(H) × 249(D) mm
Accessories Supplied:	1 pc. Remote controller, VSQ0146 1 pc. Earphone, VBE0002 2 pcs. DIN-DIN coaxial cable, VJA0130 1 pc. Audio input attenuator, VJP1164 1 pc. Connection cord for auxiliary battery pack, VJA0148 1 pc. Carrying case: VFC0005
Optional Accessories:	Video cassette tape: NV-E240 Approx. 344 m 240 min. NV-E180 Approx. 258 m 180 min. NV-E120 Approx. 174 m 120 min. NV-E60 Approx. 88 m 60 min. Battery pack, LCR-1812E, LCR-3012VBE AC adaptor, NV-B30 14 Day 8 programme Timer, NV-V300 Colour video camera, WV-2600E, WV-3000E, WV-3200E Car battery cord, NV-C24

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic

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INTRODUCTION

This service manual contains technical information which will allows service technicians to understand and service the Panasonic portable PAL VHS Video Tape Recorder Model NV-3000.
The NV-3000 has many special features as shown below.
These features in addition to the basic PAL VHS Format make the unit an ideal one for your culture and entertainment.

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FEATURES

1. **4 hours recording/playback possible with new tape NV-E240**
   New system for high-density recording allows up to 4 hours recording on a single tape.
2. **Compact and lightweight**
   The use of integrated circuitry has resulted in a truly compact, lightweight video cassette recorder that is extremely convenient and easy to carry.
3. **Three power source system**
   The recorder can use any of 3 power sources; a battery pack, a car battery, or household plug socket by utilising the optional accessories, car battery cord NV-C24, AC Adaptor NV-B30 or the Programmable Tuner/Timer NV-V300. By using a portable video camera (optional), you can make a live recording either indoors or outdoors.
4. **Fine editing function**
   When a recording is paused, the tape will automatically rewind slightly. When recording is resumed the tape reaches its normal playing speed before switching to record this cutting to a minimum any interference.
5. **Battery-saving camera feature**
   A stand-by switch on the colour video camera WV-3200E allows conservation of the battery pack during recording.
6. **Multi-motion playback at your option**
   Playback at normal speed, quick/slow-motion, frame-by-frame and still-frame pictures can operate during playback. You can stop the tape temporarily during recording, too. The Remote Controller permits you to operate these effects from a distance.
7. **Built-in "MEMORY" feature**
   By simply setting the Memory Switch and the Tape Counter, before recording, the tape will automatically stop during rewind for subsequent playback.
8. **Head and capstan servo**
   A direct drive video head assembly and servocontrolled capstan assure high picture stability in both recording and playback modes.
9. **Playback through any Conventional TV set**
   With the internal RF converter, the output of the recorder can be viewed on a suitable TV Receiver.

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CONTROLS AND COMPONENTS

TOP and FRONT

SIDE

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FUNCTION OF CONTROLS AND COMPONENTS

TOP and FRONT

① **Cassette Holder**
For insertion of the video cassette.

② **Eject Key [EJECT]**
Press to raise the cassette holder.

③ **Rewind Button [REW]**
Push to rewind the tape.

④ **Stop Button [STOP]**
Push to stop the tape. **STOP** must be pushed between FF REW modes.

⑤ **Fast Forward Button [FF]**
Push to fast forward wind the tape.

⑥ **Play Button [PLAY]**
Push to play back a recorded tape.

⑦ **Record Button [REC]**
Push together with **PLAY** to record.

⑧ **Audio Dubbing Button [AUDIO DUB]**
Push together with **PLAY** to record your own soundtrack on a previously recorded tape in place of the original soundtrack by using either a microphone or your own component audio system.

⑨ **Pause Button [PAUSE/STILL]**
Push to temporarily stop tape for avoiding recording unwanted material of a programme or to view a still-frame picture during playback.
Push again to release this mode.

⑩ **QUICK/SLOW BUTTON [QUICK/SLOW]**
When this button is pushed without letting go during playback, the picture will play in fast forward motion at 3.5 times normal speed. Pushing this button during playback of a still-frame picture, a frame-by-frame picture appears on the screen. You can view slow-motion pictures at 1/5 of normal playback pushing without letting go this button.

⑪ **Tape Counter [COUNTER]**
Indicates how far the tape has moved. It is very useful for locating a desired part of the tape.

⑫ **Reset Button**
Push to reset the tape counter to "0000".

⑬ **Memory Switch [MEMORY]**
This switch is convenient for rewinding a tape automatically to the beginning of the part that you want to replay.
Reset the Tape Counter to "0000" before the start of recording and set this switch to ON. After the recording is finished push **REW**, and the tape will automatically rewind to the point at which the Tape Counter was previously set ("0000"). By pushing **PLAY** you can now see the segment which you just recorded.
Notes:
- The tape will actually stop rewinding at around "9998" in order not to miss the beginning of the playback.
- For ordinary operation, **MEMORY** Switch should be set to OFF.
  If it is ON, the tape will always stop at a point around "9998" when the tape is rewound.
  To continue rewinding the tape, then, push **REW** Button once again.

⑭ **Remote Control Jack [REMOTE]**
The Remote Controller connects here to allow temporary pause during recording and to operate the multimotion playback (still-frame, frame-by-frame and quick/slow-motion) from a distance.

⑮ **Earphone Jack [EAR]**
Connect the earphone here to monitor the audio signal.

⑯ **Tracking Control [TRACKING]**
When playing prerecorded tapes or those recorded on other units and distortion bars appear on your TV screen, turn this control slowly in either direction until the picture clears up. It should usually be left in the centre position.

Noisy Picture

⑰ **Moisture Indicator Lamp [MOIST]**
When excessive moisture is present inside the recorder, this lamp lights up when the power is first switched on; it then goes out about 5 seconds later. Do not operate the recorder. Turn the power switch off and wait until the lamp ceases to light up when the power switch is turned on again. The moisture disappears within a few hours. Remove the cassette for fast removal of moisture. When the lamp ceases to light it is safe to operate the recorder.

⑱ **VTR Switch [VTR]**
Turns the recorder power on and off.
- If you turn the recorder off after pushing **STOP**, wait for a few seconds until the tape is retracted into the cassette.

⑲ **Battery Meter [BATTERY]**
Indicates the charging capacity of the battery pack of the recorder when **POWER** is ON. If the needle points to the red range, the battery pack must be recharged or replaced with a fully-charged pack.

SIDE

⑳ **Audio Output Connector [AUDIO OUT],**
㉑ **Video Output Connector [VIDEO OUT]**
These are for connections to a TV monitor. Not used with an ordinary TV set.

㉒ **Video Input Connector [VIDEO IN]**
For connection of a video camera or other video input signal to be recorded.

㉓ **RF Output Connector [RF OUT]**
This is the signal output connector from the built-in RF converter of the recorder.

㉔ **Tuner/Camera Input Terminal [TUNER/CAMERA]**
For connection of Video Cameras with a 10-pin Camera Cable or the optional Programmable Tuner/Timer.

㉕ **Microphone Input Jack [MIC]**
For connection of a microphone or the audio input attenuator (included).

㉖ **DC Power Input Terminal [DC IN]**
For connection of an external DC power source such as the Programmable Tuner/Timer (optional), AC Adaptor (optional), car battery cord (optional), or connection cord for an auxiliary battery pack.

㉗ **Battery Compartment**
Place the battery pack in this compartment.

㉘ **RF Converter**
Allows you to play back the recorded material and to monitor camera recording on your TV set through an unused broadcast channel.

Notes:
- After adjustment the TV will require slight retuning to the new RF output channel.
- If an interference pattern is noticed on the playback picture the RF output converter may need slight adjustment using a flat tip screwdriver.

㉙ **Vertical Lock Adjuster [V-LOCK]**
Adjusts the still-frame picture for minimum vertical jitter on your TV. To reduce the jitter, remove the rubber cap and carefully adjust using a flat-tip screwdriver. After completing the V-LOCK adjustment, remember to re-install the rubber cap.

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POWER SOURCES

(1) BATTERY PACK (OPTIONAL ACCESSORY)

How to insert the battery back

❶ **VTR** to OFF.

❷ Remove the battery compartment cover and insert the battery pack into the battery compartment.

❸ Connect the battery pack's plug to the recorder's jack, and then reattach the cover.

If you wish to make an outdoor recording lasting longer than 1 hour with battery packs, use another battery pack as an auxiliary power source.

① Connect the battery pack to the supplied connection cord for auxiliary battery pack.

② Connect the 4-pin plug to **DC IN** of the recorder when the Battery Meter points to the red area. The auxiliary battery pack will supply power to the recorder with less interruption.

Because the auxiliary battery pack takes priority over the battery of the recorder, you can first use the auxiliary battery pack. In this case, be sure to pull out the connection cord from **DC IN** when the Battery Meter points to the red area.

HINTS TO ASSURE BEST SERVICE FROM THE BATTERY PACK

A fully charged battery pack will provide power for approximately 60 minutes of continuous recording at room temperature. The type of camera used and the ambient temperature affect this time capacity.

The nature of the battery pack is the same as that of a car battery, i.e. the lower the temperature, the shorter the useful operation time, e.g., the useful operation time of the battery pack at 0°C (32°F) will be reduced by about half the operating time under normal temperature conditions.

Notes about storage

- The battery pack will naturally discharge while it is in storage. Be sure, therefore, to recharge it at least once every 6 months.
- Store the battery pack in a cool, dry, and dark place.
- Do not drop it or subject it to strong impact shocks.
- Always charge the battery pack soon after use. Discharging for a long time may make the life of the battery pack shorter and recharging impossible.

Notes about use

- Be careful not to put the battery pack into fire or to short-circuit it.
- Do not use any other chargers than specified.
- Do not use the battery pack for other appliances than specified.
- Do not replace or repair the plug and lead wires.
- Do not use the recorder and battery pack below 0°C or above +40°C (32°F or 104°F).
- Should the battery pack be broken and the internal electrolyte containing sulfuric acid be spilt over skin or cloth, be sure to immediately wash in water or neutralize with ammonium water or sodium bicarbonate.
- Charge the Battery Pack before and after each use.
- The useful operation time of the battery pack will gradually decrease after several discharges and recharges. The battery pack is no longer serviceable if the operation time is too short even after a sufficient charge.

Refer to the Operating Instructions of the AC Adaptor NV-B30 and the Programmable Tuner/Timer NV-V300 on how to recharge the battery pack.

CAMERA RECORDING

Prepare for camera recording as shown below.

This recorder can make indoor and outdoor recordings with an optional video Camera, but will also work with most other type Video Cameras with a 10-pin camera cable.

❶ Select the power source to be used depending upon the objective.

❷ Connect the camera to the **TUNER/CAMERA** socket.

If you wish to monitor camera recording—

❸ Connect your TV set to **RF OUT** with the supplied RF Coaxial Cable.

❹ Turn on TV and select the RF output playback channel.

Note that you cannot monitor the recording when using the battery pack of the recorder as a power source.

Notes

- For camera recording, it is necessary that the video camera is warmed up prior to recording.
- When the Video Camera is being connected to the recorder, be sure to turn the **VTR** switch OFF.
- Indoor use of the camera may require additional lighting.
- If an external microphone (optional) is connected to **MIC IN**, the sound through the microphone will take priority over the built-in microphone of the camera.

OPERATION

❶ Insert a cassette.
- If the cassette tab is removed no recording can be performed.

❷ Push **REC** together with **PLAY**, and the recorder will go into the standby mode.

❸ Make necessary adjustments on the camera.

❹ Press the camera's Start/Stop Switch, and recording will start. To stop the tape temporarily during recording, press the Start/Stop Switch once again.

❺ If you leave the camera in the pause mode for a long period, set the Standby Switch of the camera to STANDBY. This switch is for saving power of the battery pack.

- For better joining of one recorded scene to the next, first push **PAUSE/STILL** and then the Standby Switch. If **PAUSE/STILL** is not pushed first there will be a distortion in the playback picture between cuts.

Notes:

- The recorder will release the Pause mode after approx. 5 minutes and stop automatically.
- When joining a new recording to already recorded material from the stop mode, first play back the last part of the already recorded material in order to confirm its end point, and then start recording after stopping the tape temporarily in the pause mode.

If you want to immediately review the tape you have recorded, you can do so with the electronic viewfinder of the camera by pushing **PLAY**. You can also listen to the sound by connecting an earphone to **EAR**.

Refer to the Operating Instructions of the camera for full details of the camera operation.

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WITH AN ORDINARY VIDEO CAMERA

Connect as shown below.

Make sure that **VTR** is OFF.

❶ Connect the TV monitor to **VIDEO OUT** and **AUDIO OUT** with coaxial cable ① and audio cable ② (not supplied).
❷ Connect the microphone to **MIC IN**.
❸ Connect the camera to **VIDEO IN** with coaxial cable.
❹ Connect the AC Adaptor (optional) to **DC IN**.

The signal being recorded can be monitored during recording by viewing the TV monitor.

PLAYBACK

Connect as shown below.

Make sure that **VTR** is OFF.

❶ Connect the "VTR" position of the Antenna Selector to **RF OUT** and the "TV" position to the TV set with the supplied coaxial cables. Connect the external antenna to the "ANTENNA" position.
❷ Connect the AC Adaptor to **DC IN** and plug in the AC Adaptor.
❸ Turn TV on and select a channel for RF Output.
❹ Switch the Antenna Selector to "VTR" for playback. (Switch to "ANTENNA" to watch TV.)

OPERATION

❶ Insert a cassette.

❷ Push **PLAY**.

❸ Keeping on pushing **QUICK/SLOW**, you can view pictures in fast-forward motion at 3.5 times normal speed.
❹ Push **PAUSE/STILL** to view a still-frame picture. The stability of the still-frame picture can be adjusted by using the Vertical Lock Adjuster.
❺ Push **QUICK/SLOW** to view frame-by-frame pictures. If you keep this button depressed you can view slow-motion pictures.
Push **PAUSE/STILL** again to release the tape from ❹ mode.

Notes:
- Frame-by-frame and slow-motion playbacks are operative only during still-frame playback.
- If you leave the recorder in PAUSE for approx. 5 minutes, the recorder will automatically stop.
- Audio will not be heard during STILL-FRAME and QUICK/SLOW playback.
- A slight distortion may appear on the screen during STILL-FRAME and QUICK/SLOW playback.
- Connect the Remote Controller to **REMOTE** to control operations ❸, ❹ and ❺ from a distance.

AUDIO DUBBING

Your own soundtrack can be substituted to a previously recorded tape by using a microphone, tape recorder, or your own component audio system.
Note that the original soundtrack will be automatically erased during audio dubbing.

Connect as shown below.

❶ Insert a cassette.
- If the cassette tab is removed no dubbing can be performed.

❷ Play back the tape to which you want to add new sound.
❸ Push **AUDIO DUB** together with **PLAY**.

Notes:
- When an audio dub is made the previous audio track is erased so that new audio can be recorded.
- When a microphone is used for dubbing do not get it near the speaker of TV while the dub is being made. A howling noise (feedback) may occur.

● **Audio Input Attenuator**
Use the Audio Input Attenuator for matching of the audio input level and the plugs when something other than a microphone (optional) is used.

Notes:
- First connect the RCA-pin plug (gray) with **AUDIO OUT** and then the M3 plug (red) to **MIC IN**.
- The RCA-pin plug (gray) must be connected to the recorder to prevent hum.

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Service Manual

Portable Video Cassette Recorder

Vol. 2

Panasonic VHS

NV-3000-E -B

Mechanical Adjustment Procedures

Electrical Adjustment Procedures

SPECIFICATIONS

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FF/REW Time:	Less than 6 min. with NV-E180
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MECHANICAL ADJUSTMENT PROCEDURES

DISASSEMBLY OF CABINET PARTS

1. DISASSEMBLY FLOWCHART

This flowchart indicates disassembly steps of the cabinet parts and the PC Boards in order to find the item(s) necessary for servicing.
When reassembling, perform the step(s) in the reverse order.

Notes: 1. Since this model is designed very compactly and uses locking tabs instead of mounting screws, work with extreme care for servicing.
2. Final adjustment is required when the Cassette Guide was replaced.

Fig. 1 Disassembly Flowchart

2. DETAILED DISASSEMBLY METHOD

2-1. Removal of the Bottom Case

1. Place the deck upside down so the Bottom Case faces upward.
2. Remove 4 screws (A). Then remove the Bottom Case by lifting the rear portion of it.

Note: When reinstalling, first insert the locking portion into the slot of the front panel.

Fig. 2 Removal of Bottom Case

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2-2. Removal of the Top Case

1. Turn the deck over again so the Cassette Cover faces upward. And press the Eject Button to raise the Cassette Compartment.
2. Remove 2 screws (B). Then carefully lift the rear portion and pull toward the rear of deck to remove.

Fig. 3 Removal of Top Case

Notes: 1. The Cassette Compartment must be raised when removing and reinstalling the Top Case.
2. When reinstalling, first insert the locking portions into the front panel.

2-3. Removal of the Front Panel

1. Stand the deck so the control panel faces upward.
2. Hold the both right and left ends of the Front Panel and carefully lift and turn the top portion of it to remove.

Note: Work this step with extreme care for not being damaged on the locking portions.

Fig. 4 Removal of Front Panel

2-4. Removal of the Cassette Cover

Remove 2 screws (C). Then carefully lift and turn the rear portion of it to remove. Pay attention for not being damaged on the locking portion.

Note: When reinstalling, first suit the locking portion of the cassette cover to the tab on the cassette holder unit.

Fig. 5 Removal of Cassette Cover

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2-5. Removal of the Cassette Guide

Remove 2 screws (D) and Cassette Guide.

Note: When reinstalling, insert the cassette tape and ensure the clearance between tape and projections on cassette guide is more than 1 mm. Then tighten 2 screws (D).

Fig. 6 Removal of Cassette Guide

2-6. Removal of the Cassette Holder Unit

Remove 4 red screws (E) and the Cassette Holder Unit. Do not remove 2 screws located between 4 screws (E).

Fig. 7 Removal of Cassette Holder

Note: When reinstalling, ensure the pin located at left lower portion is engaged with the connecting rod.

Fig. 8 Note for Installation

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2-7. Removal of the Operation Panel

Note: As the space of this portion is very compressed, especially work with care and ensure on each step.

1. Unlock 2 locking portions located on lower of each side.
2. Unlock 2 locking portions located on top of each side.
3. Disconnect 2 connectors which are connected to the ear phone jack and the battery meter.
4. Carefully unlock 8 locking portions which lock P.C. Board to the operation panel.

Notes: 1. When reinstalling, reconnect the 2 connectors.
2. Pay attention for not missing the operation buttons and knobs.

Fig. 9 Removal of Operation Panel

2-8. Removal of the Shield Case

Remove 2 screws (F) and the shield case.

Note: When reinstalling, ensure the red lead wire is restored around dumper correctly.

Fig. 10 Removal of Shield Case

2-9. Opening of the Circuit Boards

1. Disconnect a connector which is connected to the tape counter.
2. Remove 2 screws (G), unlock the 2 locking portions and carefully open the P.C. Board.
   Support the P.C. Boards with your hand to prevent them laying down.
3. Then carefully lay down the P.C. Boards.

Fig. 11 Circuit Boards

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Notes: 1. Place the cloth or any other soft materials under the P.C. Boards for preventing them being damaged while servicing.
2. When reinstalling, ensure the connectors are reconnected and any electrical components are not damaged.

REPLACEMENT PROCEDURES

1. REPLACEMENT OF THE VIDEO HEAD DISC

1. Remove the Bottom Case, Top Case, Cassette Compartment and the Shield Case. (Refer to the section of "DISASSEMBLY METHOD", Item 2-1, 2-2, 2-6 and 2-8).
2. Unscrew the screw (A) and remove the brush unit.
3. Unscrew the screw (B) and remove the wire guide.
4. Unsolder the 4 lead wires of the video heads from the head relay board and remove the Video Head Disc (Upper Cylinder).
5. Clean the flinge, bottom and rotative surface of the new Video Head Disc with a soft cloth dampened with alcohol or freon liquid.
6. Place the new Video Head Disc on the head disc base so that the screw holes match.
7. Solder the 4 lead wires to the head relay board, be sure to match the colour of the wires and tighten the 2 screws (B) with the wire guide.
8. Place the brush unit with a screw (A).

Fig. 12

2. REPLACEMENT AND ADJUSTMENT OF DD CYLINDER UNIT

A. Replacement Procedure

1. Remove the Bottom Case, Top Case, Cassette Compartment and the Shield Case. (Refer to the section of "DISASSEMBLY METHOD", Item 2-1, 2-2, 2-6 and 2-8.)
2. Open the circuit boards. (Refer to section of "DISASSEMBLY METHOD", Item 2-9.)
3. Disconnect the connectors P002 and P003 on the Luminance section.
4. Disconnect the connector P001 on the Cylinder Drive P.C. Board (VJB02113).
5. Unscrew the 3 screws (A) securing the DD Cylinder Unit and remove them from the chassis.
6. Clean the surface of the new DD Cylinder Unit with a soft cloth dampened with alcohol or freon liquid.
7. Mount the new DD Cylinder Unit and reverse the above steps to complete the installation.

Fig. 13

B. Adjustment Procedure

After the DD Cylinder Unit was replaced, the tape interchangeability should be checked. (Refer to section of "TAPE INTERCHANGEABILITY ADJUSTMENT" item 12.

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ADJUSTMENT PROCEDURES

1. POSITION ADJUSTMENT OF CASSETTE GUIDE PIN

This adjustment is required only when the cassette guide pin was replaced or it's mounting screw was loosened.

Equipment Required:
Capstan Reference Plate ... (VFK0141)

1. Remove the Bottom Case, Top Case, Cassette Compartment and the Shield Case. (Refer to the section of "DISASSEMBLY METHOD", Items 2-1, 2-2, 2-6 and 2-8.)
2. Remove the 2 screws (A) and the Loading Motor Drive P.C. Board.

Fig. 14 Motor Drive P.C.B.

3. Remove the Opener Unit by removing the screw (B) and the Pressure Roller Unit by removing the Retaining Ring & Spring.

Fig. 15 Opener & Pressure Roller

4. Place the Capstan Reference Plate (VFK0141), set the cassette guide pin into the hole of the plate.

Fig. 16 Adjustment of Guide Pin

5. Move the fixture so the capstan shaft fits snungly in the notch of the fixture and tighten the screw (C).

2. POSITION ADJUSTMENT OF PRESSURE ROLLER

Specification: 1.2 ± 0.3 mm

1. Remove the Cassette Compartment. Blind the photo transistors (Q6551 & Q6552), push the eject lock lever down, turn the safety switch on by hand and push the play button and record button to simulate the REC mode.

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Fig. 17 Simulation of REC-PAUSE

2. Continuously push the pause button to simulate the REC-PAUSE mode.
3. Confirm the clearance between the capstan shaft and pressure roller is within the specification.
4. If it is out of spec., adjust it by turning a screw (A) to obtain the specified clearance.

Fig. 18 Spec. of Clearance

3. CONFIRMATION OF PRESSING FORCE OF PRESSURE ROLLER

Equipment Required:
Fan-Type Tension Gauge (VFK66)

1. Playback the cassette tape.
2. Set a Fan-Type Tension Gauge to the part (A) of Main Pressure Arm Unit.
3. Press the Arm with the Gauge, in the direction indicated by the arrow as shown below.

Fig. 19

4. Confirm that reading of the Tension Gauge is 1,600 ± 350 g at the moment of tape stop.

4. CONFIRMATION OF TAPE SPEED

Equipment Required:
Frequency Counter
VHS Alignment Tape ... VFM8100H3D
Specification: 600 ± 1.5 Hz

1. Remove the Bottom Case, Top Case and the Front Panel.
2. Connect the frequency counter to the collector of Q2008 on the Servo section (VJB0399).

Fig. 20 Location of Q2008

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3. Playback the monoscope portion of the alignment tape and wait until tape movement is well stabilized.
4. Read the frequency counter and confirm it is within the specification.
5. If it is out of spec., replace the capstan belt.

Part No.	Marking	Speed Range
VDV0121A		Slow
VDV0121B		Center
VDV0121C		Fast

Fig. 21

6. When to replace the Capstan Belt, first remove 2 screws (A), Thrust Holder, and the Fast Wind Belt. Then change the capstan belt to obtain the correct speed. (VDV0121A,VDV0121B,VDV0121C)

Fig. 22

Notes: 1. Do not put any oil or grease on the belts or pulleys.
2. When installing the capstan belt, make sure that the marked side comes outside.

5. POSITION ADJUSTMENT OF TENSION POST

Equipment Required:
Tension Post Adjustment Plate ..(VFK0187)
Fine Adjustment Screwdriver ....(VFK0136)

1. Remove the cabinet parts, open P.C. Boards and stand the deck so the rear portion of the deck faces down.

Fig. 23 Pulley on Bottom View

2. Push the eject lock level down.
3. Turn pulley counter-clockwise slowly (viewing from bottom side) by hand to simulate the play mode. Then place the deck up-rightly.

Note: While turning pulley, do not supply excessive force. Fifteen turns of pulley makes play mode (from the start, posts are just moved, to loading completion).

4. Place the adjustment plate, slightly loosen a screw securing the tension band bracket.
5. Insert the fine adjustment screwdriver into the hole and move the tension band bracket in either of direction so the tension post just touches the fixture.

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Fig. 24 Adjustment of Tension Post

6. MEASUREMENT AND ADJUSTMENT OF BACK TENSION

A. Measurement Procedure

Equipment Required:
Back Tension Meter (Tentelometer)
VHS Cassette Tape (120 Minutes Tape)

Specification: 25 ∿ 30 g

1. Remove the Bottom Case, Top Case, Cassette Compartment and the Shield Case.
2. Pull the erase head in the direction indicated by the arrow and hold it by adhesive tape.
3. Playback the cassette tape from its beginning and wait until tape running has stabilized. (For approx. 10 to 20 seconds)
4. Insert tension meter in tape path and confirm reading.
5. If the reading is out of spec., continuously perform the adjustment procedure.

Notes: 1. Make sure that the three probes of the meter are all in good contact with tape, but out of contact with any parts while measuring.
2. It is recommended to be measured three times as tension meter is very sensitive.

Fig. 25 Measurement of Back Tension

B. Adjustment Procedure

Equipment Required:
Fine Adjustment Screwdriver ..(VFK0136)

1. Loosen a screw (A) and insert the fine adjustment screwdriver into the hole (B).
2. Move the adjustment plate in either of direction indicated by the arrow to obtain the specified tension. Turn the driver clockwise to lower tension, counter-clockwise to raise it.
3. Tighten the screw (A) and varify tension with the meter once again.
4. Reinstall the shield case and cabinet parts.

Fig. 26 Adjustment of Back Tension

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Note: Upon completion of adjustment, remove the adhesive tape.

7. CONFIRMATION/ADJUSTMENT OF BRAKE TORQUE

A. Confirmation Procedure

Equipment Required:
Dial Torque Gauge ... (VFK0133)
Adaptor for Gauge ... (VFK0134)

	A	B
Takeup	More than 400 g-cm	70 ∿ 150g-cm
Supply		95 ∿ 195 g-cm

Fig. 27 Spec. of Brake Torque

1. Attach the adaptor to the torque gauge.
   And place the deck in STOP mode.
2. Place the torque gauge on the reel table. The weight of gauge should not rest on the reel table.

Fig. 28 Measuring Method

3. Turn torque gauge in the direction indicated as A or B until the brake begins slipping.
   Read the torque when it begins slipping.

B. Adjustment Procedure

To adjust the brake torque, change the notch.

Fig. 29 Adjustment of Torque

Note: If proper brake torque could not obtained by changing the spring position, clean the rotating surface of the reel table with soft cloth and confirm torque before replace it.

8. CONFIRMATION OF TAKEUP TORQUE

Equipment Required:
Dial Torque Gauge ... (VFK0133)
Adaptor for Gauge ... (VFK0134)

Specifications:
in PLAY mode ..... 130 ∿ 180 g-cm
in F.F., REWIND modes
..... more than 400 g-cm

1. Attach the adaptor to the torque gauge.
2. Blind the takeup and supply photo transistors (Q6552 and Q6551) with opaque paper. Lower the cassette up unit (without cassette cover), and turn power switch on.
3. Set a torque gauge to the Takeup Reel Table, push the play button and read torque on gauge. Also work for F.F. mode by pushing the F.F. button.

Note: While measuring, the weight of gauge should not rest on the reel table.

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4. Set a torque gauge to the Supply Reel Table, push the rewind button for confirmation of the rewind mode.
5. Remove the opaque paper and reinstall the cassette cover.

Note: There are no adjustment here. If the torque readings are off considerably, rollers or idlers or reel tables may need replacement.

Fig. 30 Measuring Method

9. POSITION ADJUSTMENT OF SAFETY SWITCH

This adjustment is required only when the safety Switch was replaced or mounting screw were loosened.

Equipment Required:
Cassette Holder Fixture ... (VFK0188)

1. Remove the Bottom Case, Top Case, Cassette Compartment and Front Panel. And open the operation panel. (Refer to the section of "DISASSEMBLY METHOD", Items 2-1, 2-2, 2-3, 2-4, 2-5 and 2-6.)
2. Place the fixture, just slightly loosen 2 screws (A) by about half turn.

Fig. 31 Adjustment of Safety SW -- (1)

3. Turn the switch base counter-clockwise and then slowly turn clockwise until switch turns on (it clicks). Tighten 2 screws.

Fig. 32 Adjustment of Safety SW -- (2)

10. ADJUSTMENT OF CASSETTE HOLDER

This adjustment is required only when the screw (A) was removed accidentally.

Equipment Required:
Cassette Holder Fixture ... VFK0188

Note: Before adjustment, ensure the cassette lock lever is unlatched.

1. Remove the Cassette Guide and slightly loosen 6 screws (A) and (B). Keep the cassette holder ejected condition.

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2. Insert the fixture and push all the way in till it touches the tabs on the cassette holder.
   Hold the fixture and cassette holder together with your hand, then slowly lower them with watching all holes and cut-outs till the cassette holder latches.

Fig. 33 Adjustment of Cassette Holder

3. Press the center portion of the fixture down not for missing adjusted position then tighten 6 screws.
4. Supply power and ensure the smooth movement by repeating pressing down and ejecting of the cassette holder.

11. HEIGHT ADJUSTMENT OF REEL TABLES

Equipment Required:
Post Adjustment Plate ..... (VFK0138)
Reel Table Height Fixture ..... (VFK0139)
Retaining Ring Remover, 3 mm .. (VFK0144)
Hex. Wrench, 1.5 mm ..... (VFK76)

1. Place the Post Adjustment Plate, set the U-shaped block and place it on the adjustment plate.
2. Fit the sensor of the dial gauge on the cut-out portion of the adjustment plate and set the pointer of gauge to 0 (zero).

Fig. 34 Height Adjustment -- (1)

3. Fit the sensor of the dial gauge on the top of the reel table and read the gauge. When the top of the reel table is lower than the cut-out, it does not.
   In that case slightly press the sensor until it touches the reel table, then read the gauge.

Fig. 35 Height Adjustment -- (2)

4. Confirm that the difference of the readings between steps 2 and step 3 is within specification.
   If it is out of spec., then adjust the height of the reel table.
   (The washer is available in sizes of 0.13 mm, 0.25 mm and 0.5 mm of thickness).
5. To replace the washer, remove the counter belt 1, retaining ring and takeup reel table for maintenance the takeup reel table. Remove the 2 retaining rings, tension post unit and supply reel table for maintenance the supply reel table.

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Fig. 36 Height Adjustment -- (3)

12. HEIGHT ADJUSTMENT OF TAPE GUIDE POSTS

Equipment Required:
Post Adjustment Plate ..... (VFK0138)
Post Adjustment Screwdriver ... (VFK0137)
Block Gauge ..... (VFK0139)
Hex. Wrench, 0.9 mm ..... (VFK0146)
Nut Driver, 6 mm
(Purchase from local supplier)

This procedure is just the pre-adjustment of the "TAPE INTERCHANBEABILITY ADJUSTMENT" for 4 tape guide posts, if does not by itself constitute the final interchangeability adjustment.

Fig. 37 Location of Posts

1. Place the post adjustment plate on the 4 cassette support pins correctly and put the block gauge on it. And fit the block gauge against each post for confirmation that the post is positioned lower or higher against the adjustment plate.
2. Loosen the locking hex. screws of posts (P2 & P3), then rotate the top of post counter clockwise with post adjustment screwdriver to raise them as is the condition (C) shown below.
3. Then slightly press the block gauge against the post sleeve and rotate the top of the post clockwise with post adjustment screwdriver until to obtain the condition (A) shown below.

Fig. 38 Height Adjustment

4. Make the same adjustment for posts (P1 & P4) with nut driver. (Remove the post cap for P4 by turning it counter-clockwise).

Note: When the post cap is reinstalled, the direction of it should be as shown below viewing from the direction indicated by the allow.

Fig. 39 Installation of Post Cap

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13. TAPE INTERCHANGEABILITY ADJUSTMENT

Note: To perform these adjustment/ confirmation procedures, make sure that the tracking control is set into the detent (fixed) position.

Equipment Required:
VHS Alignment Tape VFM8100H3D
H. Position Adj. Fixture ... VFK0189
Post Adj. Screwdriver VFK0137
Hex. Wrench, 0.9 mm VFK0146
Hex. Wrench, 1.5 mm VFK76
Oscilloscope
Nut Driver (Purchase from local supplier)

13-A. Confirmation of Tape Travel

To prevent the alignment tape from being damaged, use a normal cassette tape for confirmation.

1. Playback a cassette tape and confirm that tape travels without curling at the edges of the tape.

Fig. 40 Location of Posts

2. If curling is apparent, adjust the height of posts by turning the top of post with the post adjustment screwdriver (for P2 & P3) or nut driver (for P1 & P4).

Fig. 41 Height Adjustment

13-B. Confirmation of A/C Head Height

This confirmation is required when the A/C Head was replaced and to adjust the height of it preliminary. For final adjustment, perform next item 13-C.

1. Looking at the lower edge of the control head with the tape running, ensure the lower edge of tape runs along the lower edge of the control head.
2. If it doesn't, just slightly turn the nut (A) in either directions to correct it.
   Turn it clockwise to lower the head, counter-clockwise to raise it.

Fig. 42 A/C Head Pre-Adjustment

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13-C. Height Adjustment of A/C Head

1. Connect the oscilloscope to the audio output jack on the side of the deck.
2. Playback the alignment tape, VFM8100H3D.
3. Adjust the screw (A) and the Hex. screw in the Fig. 43 to obtain the maximum output level.

Fig. 43 A/C Head Adjustment -- (1)

13-D. Confirmation of Tilt of A/C Head

This procedure should be confirmed after the height adjustment of P4.

1. Playback the tape and confirm the tape runs between lower and top limiters of post. And confirm the condition of tape running.
2. If the waving or frilling is apparent on the lower or top edge of the tape, correct it by turning a hex. screw located on the A/C Head Base. (See Fig. 42.)

Fig. 44 A/C Head Adjustment -- (2)

13-E. Horizontal Position Adjustment of A/C Head

1. Connect the oscilloscope to the Test Point, TP3012 located next to Pin No. 12 of IC3003.
2. Playback the alignment tape, VFM8100H3D, and confirm the RF envelope figure.
3. If the adjustment is required, set the H-position screwdriver into the slot of the adjustment nut and rotate in either of direction to obtain the maximum envelope output.

Fig. 45 A/C Head Adjustment -- (3)

13-F. Confirmation/Adjustment of Envelope Output

1. Connect the oscilloscope to the Test Point, TP3012.

Fig. 46 Location of TP3012

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2. Playback the monoscope portion of the alignment tape, VFM8100H3D and adjust the posts P2 & P3 by watching the scope display so the envelope figure becomes as flat as possible. (V1/V-max ≧ 0.7, V2/V-max ≧ 0.8)

Fig. 47 Envelope Figure -- (1)

3. When the scope display is as follow, adjust the height of P2 shown below.

Fig. 48 Envelope Figure -- (2)

4. When the scope display is as follow, adjust the height of P3 shown below.

Fig. 49 Envelope Figure -- (3)

5. The scope display with P2 and P3 adjusted correctly should become as shown below.

Fig. 50 Envelope Figure -- (4)

6. When the adjustment is required, turn the top of post with the post adjustment screwdriver.

Fig. 51 Height Adjustment

14. ADJUSTMENT OF TAKEUP DETECTOR

This adjustment is required when the Tape Counter or the Detector PC Board (Hall IC) is replaced or loosened.

Equipment Required:
Fine Adjustment Screwdriver, 3mmϕ
..... (VFK0136)

Specification: 0.2 ∿ 0.7 mm

Before installing the Takeup Detector Bracket to the chassis, confirm the clearance is within the spec.
If it is out of spec., slightly loosen a screw (A) and adjust the position of the Detector PC Board with the Fine Adjustment Screwdriver to obtain the specified clearance.

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Fig. 52 Adjustment of Takeup Detector

15. ADJUSTMENT OF CAM GEAR AND MODE SELECT SWITCH

General Condition

The mechanism of this model is mostly engaged to the electrical circuit, System Control Circuit, through the mode select switch. Therefore the relation between the mode switch and the cam gear decides all further mechanical movement of the mechanical parts such as levers, gears, rollers and so on. If the adjustment of this item is performed inproperly, the deck will be unloaded or compulsorily stopped. And it will result being damaged at any mechanical or electrical parts.

Note: The step 11 of this procedure describes the adjustment of case that mode select switch is replaced.

Adjustment Procedures:

1. Turn loading gear clockwise until the post 2 and 3 were fully unloaded. The small projection on the loading gear will be top portion at the unloading condition.

Fig. 53 Adjustment Procedure -- (1)

Fig. 54 Adjustment Procedure -- (2)

2. Install the action gear so the hole on the action gear meets the projection on the loading gear. Ensure that the loading gear is still fully unloaded condition.

Fig. 55 Adjustment Procedure -- (3)

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Fig. 56 Adjustment Procedure -- (4)

3. Slowly slide the main rod so the V-shaped mark meets the V-shaped mark of the mode select switch. This results main rod and mode select switch simulated stop (unloading completion) mode.
4. Insert the cam gear so the hole (A) on the gear meets the hole on the main rod. To meet the two holes easier, use the small hex. wrench (VFK75) or metal pin. Also ensure the two V-shaped marks are fixed and the simple slot side of the cam gear is apparent.
5. Install the sector gear so the pin on the sector gear meets the inner slot of the cam gear (simple slot side). And install 2 retaining rings to mount cam gear and sector gear.

Fig. 57 Adjustment Procedure -- (5)

6. Final figure should become as illustrated below, and at the same time two V-shaped marks are fixed at the mode select switch.

Fig. 58 Adjustment Procedure -- (6)

7. Install the gear protector and tighten the nut for mounting it. And install the large gear so the teeth of it contact the outer teeth of the intermediate gear. Then install a retaining ring to mount it.

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Fig. 59 Adjustment Procedure -- (7)

8. Before installing the Cassette Lock Detector Unit, confirm that the Lock Lever Unit is set unlocked condition.
9. Then install the Cassette Lock Detector Unit from the through hole on the chassis. And while installing, perform that the indicated portion of the main rod is set between two tabs as shown below. Turn pulley in either direction to obtain the best position for performing this step.

10. Tighten 2 screws (B), install the belt and belt cover and tighten a screw (C). Turn the large pulley in both direction to confirm the smooth movement of this mechanism.

Fig. 61 Adjustment Procedure -- (9)

Fig. 60 Adjustment Procedure -- (8)

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11. Fix the main rod in the unloading completion condition, meet the V-shaped notch of the switch and the tab on the main rod then tighten 2 screws (A).
Upon completion, ensure the movement of the deck is normal condition.

Fig. 62 Adjustment of Mode Select SW.

16. REPLACEMENT OF BATTERY FUSE

CONFIRMATION:

Before fuse replacement, confirm that the voltage of the battery terminal is zero "0".
If any voltage is measured, fuse replacement is not required.

Fig. 63 Pre-Confirmation

Fuse Replacement Procedure:

1. Cut the outer label with a knife as indicated.

Fig. 64 Battery Fuse Replacement -- (1)

2. Remove the label and lift the plastic cover.

Fig. 65 Battery Fuse Replacement -- (2)

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3. Bend the gray lead wire to the outside with long nose pliers.
   Carefully pull out the 2 black wires and continue to pull out the fuse.

Fig. 66 Battery Fuse Replacement -- (3)

Note: While this step is being performed, be careful not to damage the lead wires or the fuse.

4. Unsolder the 2 Lead wires and remove the fuse. Replace the fuse which is read and marked with a "10" in white paint.
   When resoldering. Do not supply excessive heat and use corrosive type solder.

Fig. 67 Battery Fuse Replacement -- (4)

5. Restore the fuse and lead wires within the fuse compartment and confirm the voltage at the battery terminal.
6. Install the plastic cover.
   No specific direction for installation is required. Confirm that the plastic cover is flush and not lifted by the wires within the fuse compartment.
7. Replace the label as indicated.

Fig. 68 Battery Fuse Replacement -- (5)

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Servicing Fixtures & Tools

VFM8100H3D VHS Alignment Tape

VFK0138 Post Adjustment Plate

VFK0188 Cassette Holder Fixture

Back Tension Meter
(Tentelometer, Made in U.S.A.)

VFK0144 Retaining Ring Remover (3mm)
VFK0145 Retaining Ring Remover (4mm)

VFK0189 H-Portion Adj. Fixture

VFK0133 Dial Torque Gauge
VFK0134 Adaptor for VFK0133
VFK0180 (Plastic Clamper Only)

VFK0146 Hex. Wrench (0.9mm)
VFK75 Hex. Wrench (1.25mm)
VFK76 Hex. Wrench (1.5mm)

VFK0139 Reel Table Height Jig

VFK0135 Eccentric Screwdriver

VFK0184 Head Tester

VFK66 Fan Type Tension Gauge

VFK0136 Fine Adjustment Screwdriver

VFK0185 Cleaning Cassette Tape

VFK0141 Capstan Reference Plate

VFK0137 Post Adjustment Screwdriver

VFK0187 Tension Post Adj. Fixture

VFK27 Head Cleaning Stick

MOR265 Morlytone Grease

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ELECTRICAL ADJUSTMENT PROCEDURES

This section provides complete electrical adjustment procedures which may be required for electronic circuits of PAL VHS video cassette recorder.

1. Test Equipment

To perform the electrical adjustments completely, the following equipment is required.

1. VTVM (Vacuum Tube Volt Meter) or high impedance digital voltmeter
   Voltage Range: 0.001 - 50 V
2. Dual-trace Oscilloscope
   Voltage Range: 0.005 - 50 V/Div.
   Frequency Range: DC - 10 MHz
   Probes: 10:1, 1:1
3. Frequency Counter
   Frequency Range: 0 - 10 MHz
4. Signal Generator
   Sinewave: 0 - 10 MHz
5. Sweep Generator
   Frequency Range: 0 - 10 MHz
6. Color TV Receiver or Monitor
7. Plastic Tip Driver
8. VHS Alignment Tape
   VFM8100H3D

2. Adjustment Procedures

These adjustment procedures consist of the following sections.

1. A.V.R Section
2. System Control Section
3. Servo Section
4. Slow/Still Section
5. Audio Section
6. Video Section

2-1. A.V.R Section

Fig.1.

Fig.2.

2-1-1. +9V, +5V Regulator Adjustment

Test Points: TP1001, TP1002
Adjustment: R1024 (9V ADJ)

1. Supply the video signal to the Video Input on the right side panel or tune in a local on-air TV program.
2. Connect the VTVM to TP1001 on the Power Supply section.
3. Place the unit in REC·PLAY mode and make a recording.
4. Adjust the 9V ADJ (R1024) for 9.1 ±0.1 V DC.
5. Connect the VTVM to TP1002 on the same section.
6. Confirm that the voltage is 5.1 ±0.4 V DC.

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2-2. System Control Section

Fig.3.

Fig.4.

Fig.5.

2-2-1. UNDER CUT Adjustment

Test Point: Connector S4-4 (System Control Section)
Adjustment: R6215 (UNDER CUT)

1. Connect a resistor 33 kΩ to R107 (AC Adaptor, NV-B30) or R115 (Tuner Unit, NV-V300) in parallel.
2. Connect the AC Adaptor, NV-B30 or the Tuner Unit, NV-V300 to the VCR, NV-3000.
3. Turn the UNDER CUT (R6215) on the system control circuit board (VJB 06115) to fully clockwise.
4. Supply a video signal to the Video Input on the right side panel or tune in a local on-air TV program.
5. Insert a cassette and make a recording.
6. Adjust the CHARGE LEVEL R113 (AC Adaptor, NV-B30) or R122 (Tuner Unit, NV-V300) for 10.2 ± 0.1 V DC.
7. Slowly adjust the UNDER CUT (R6215) untill the point which places the unit in STOP mode.
8. Remove the resistor 33 kΩ.
9. Then adjust the CHARGE LEVEL R113 (AC Adaptor, NV-B30) or R122 (Tuner Unit, NV-V300) for 12 ± 0.05 V.

2-2-2. Battery Meter Adjustment

Adjustment: R6203 (METER)

1. Connect a resistor 33 kΩ to R107 (AC Adaptor, NV-B30) or R115 (Tuner Unit, NV-V300) in parallel.
2. Connect the AC Adaptor, NV-B30 or the Tuner Unit, NV-V300 to the VCR, NV-3000.
3. Supply a video signal to the Video Input on the right side panel or tune in a local on-air TV program.
4. Insert a cassette and make a recording.
5. Adjust the CHARGE LEVEL R113 (AC Adaptor, NV-B30) or R122 (Tuner Unit, NV-V300) for 10.7 ± 0.1 V DC.
6. Adjust the METER (R6203) on the system control circuit board (VJB 06115) so that the indicator becomes on the black line between red zone and green zone of the Battery Meter.
7. Remove the resistor 33 kΩ.
8. Then adjust the CHARGE LEVEL R113 (AC Adaptor, NV-B30) or R122 (Tuner Unit, NV-V300) for 12 ± 0.05 V DC.

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2-2-3. Short Rewind Voltage Adjustment

Test Point: TP6401
Adjustment: R6416 (S.R.VR)

1. Supply a video signal to the Video Input on the right side panel or tune in a local on-air TV program.
2. Place the unit in the REC·PLAY mode.
3. Connect the scope or VTVM to TP6401 on the Loading Motor Drive circuit board (VJB06100).
   Use the scope in DC mode.
4. Press the Pause button. During short rewind, adjust the S.R.VR (R6416) so that the voltage is 4.3 - 4.5 V DC.
5. Remove the scope or VTVM from TP6401.

2-3. Servo Section

Fig.6.

Fig.7.

2-3-1. PG Shifter Adjustment

Test Points: TP8001, TP2004
Adjustments: R2013 (PG SHIFT B)
R2015 (PG SHIFT A)

1. Connect a jumper between TP3006 and TP3007 on the Luminance section of Main circuit board (VJB0399).
   Use a jumper as short as possible.
2. Connect the scope CH1 to TP8001 on the Chrominance circuit board (VJB 0862) and CH2 to TP2004 on the servo section of Main circuit board.
   Use TP2004 as scope trigger.
3. Play back the monoscope pattern of the alignment tape (VFM8100H3D) and set the scope to the CHOP mode.
   Then expand the switching position of the envelope.

Fig.8.

4. Now adjust the PG SHIF A (R2015) on the Servo section of Main circuit board so that the rising edge of the switching pulse in the center of the overlapped of RF signal.

Fig.9.

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5. Adjust the PG SHIFT B (R2013) on the Servo section of Main circuit board so that difference between the leading edge and trailing edge is as shown below.
   Switch the scope selector on the scope to either + (plus) or - (minus) and adjust for less than 10 μsec.

Fig.10.

6. Remove the jumper between TP3006 and TP3007.

2-3-2. Tracking Fix Adjustment

Test Points: TP2004, TP2010
Adjustments: R2087 (REC FIX)
R2088 (PB FIX)

1. Supply a video signal to the Video Input on the right side panel or tune in a local on-air TV program.
2. Insert a cassette and make a recording.
3. Set the Tracking Control in the front panel to the center detent point.
   Connect the scope CH1 to TP2004 and CH2 to TP2010 on the servo section and expand sweep.
   Use TP2004 for trigger of the scope.
4. During Recording, adjust the REC FIX (R2087), so the T period becomes 0.4 ± 0.3 msec.

Fig.11.

TP2010 : 2V/div.
TP2004 : 5V/div.
5msec./div.

Fig.12.

5. Then, make a recording for a few minutes.
6. Playback the portion just recorded.
7. During playback, adjust the P.B.FIX (R2088), so the T period becomes 0.4 + 0.3 msec.

2-3-3. Buffer OSC Frequency Adjustment

Test Point: TP2002
Adjustment: R2003 (BUF. OSC)

1. Don't supply a any video signal.
2. Connect the scope to TP2002 on the Servo section of Main circuit board (VJB0399).
3. Place the unit in REC mode and adjust the BUF. OSC (R2003) so that the "T" is 21.0 ± 0.2 msec.

2V/5msec.div.

Fig.13.

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Fig.14.

4. Supply a video signal to the Video Input on the right side panel or tune in a local on-air TV program.
5. Confirm that the "T" is 20msec.

2-3-4. Cylinder Free Run Adjustment

Test Points: TP2005, TP2007, TP2008
Adjustment: R2021 (CYL. F. R.)

1. Supply a video signal to the Video Input on the right side panel or tune in a local on-air TV program.
2. Insert a cassette and make a recording.
3. Connect the scope CH1 to TP2005 and CH2 to TP2008 on the Servo section of Main circuit board (VJB0399). Set the scope to the CHOP mode.
4. Pre-adjust the CYL.F.R. (R2021) on the same section so that the two waveforms are locked.

5V/10msec.div.

Fig.15.

5. Connect the VTVM to TP2007 on the same section.
6. Adjust the CYL.F.R. (R2021) for 3.5 ± 0.1 V DC.
7. Remove the scope and the VTVM.

2-3-5. Capstan Free-Run Adjustment

Test Points: TP2010, TP2012, TP2013
Adjustment: R2107 (CAP. F.R.)

1. Supply a video signal to Video Input on the right side panel or tune in a local on-air TV program.
2. Insert a cassette and make a recording.
3. Connect the scope CH1 to TP2010 and CH2 to TP2012 on the servo section. Set the scope to the CHOP mode.
4. Pre-adjust the CAP. F.R. (R2107) on the same section so the two waveforms are locked.

5V/10msec.div.

Fig.16.

5. Connect the VTVM to TP2013 on the same section.
6. Adjust the CAP. F.R. (R2107) for 3.5 ± 0.1 V DC.

2-3-6. REC Shifter Adjustment

Test Points: TP2004, TP3011
Adjustment: R2017 (REC SHIF)

1. Supply a video signal to the Video Input on the right side panel or tune in a local on-air TV program.
2. Insert a cassette and make a recording.
3. Connect the scope CH1 to TP2004 on the Servo section and CH2 to TP3011 on the Luminance section. Set the scope to the CHOP mode.

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4. Also set the scope to the Delay mode or expand the vertical interval of the signal at TP3011.

TP3011: 0.5V div.
TP2004: 5V div.
5msec.div.

Fig.17.

5. Change the scope selector on the scope from "+" to "-" and make sure that the other switching point is also 6 ± 0.5 H before the beginning of the vertical sync.
   If the tollerance is more or less than 6 ± 0.5 H readjust the switching Flip-Flop Duty Cycle. (Refer to item 2-3-1. PG Shifter Adjustment).
6. Remove the scope.

2-4. Still & Slow section

Fig.18.

Fig.19.

2-4-1. Pulse Width Adjustment

Test Points: TP2701, TP2702
Adjustments: R2717 (PULSE WIDTH)
R2721 (SLOW SPEED)

1. Supply a video signal to the Video Input on the right side panel or tune in a local on-air TV program.
2. Insert a cassette and make a recording for a few minutes.
3. Playback the portion just recorded and set in still mode.
4. Press the Cue & Slow button and hold it down.
5. Connect the scope to TP2702 on the Still & Slow section.
   External trigger to TP2004.
6. Adjust the Pulse Width (R2717) so that the T portion is 4.0 ± 0.1msec.

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Fig.20.

7. Change the scope from TP2702 to TP2701 on the same section.
8. Adjust the Slow Speed (R2721) so that the T portion is 9.5 ± 0.1msec.

Fig.21

2-4-2. V. Sync Phase Adjustment in Still mode

Test Points: TP2004, TP3011
Adjustments: R2703 (V-SYNC B)
R2712 (V-SYNC A)

1. Supply a video signal to Video Input on the right side panel or tune in a local on-air TV program.
2. Insert a cassette and make a recording for a few minutes.
3. Playback the portion just recorded.
4. During playback, place the unit in Still mode.
5. Connect the oscilloscope CH1 to TP3011 and CH2 TP2004 and expand the V sync portion.
6. Adjust V-SYNC B (R2703) and V-SYNC A (R2712) as shown in Fig. 22.
7. If vertical jitter apears on a TV screen even though above adjustment is performed, readjust V-SYNC A (R2712) again until the vertical jitter is removed.

Fig.22.

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2-5. Audio Section

Fig.23.

Fig.24.

2-5-1. Bias Current Adjustment

Test Point: Audio Head Terminal
Adjustment: R4054 (BIAS ADJ)

1. Don't supply any audio signal to the MIC JACK on the right side panel and disconnect the 10 pin connector from the Tuner Unit.
2. Insert a cassette and make a recording.
3. Connect the VTVM as shown below.

Fig.25.

4. Set the VTVM to AC voltage input position.
5. While the recording is taking place, adjust BIAS ADJ (R4054) on the Audio section so that the voltage is 3.6 ± 0.1 mVrms.
6. Remove the VTVM.

2-5-2. Playback Gain Adjustment

Test Point: Audio Out
Adjustment: R4006 (P.B. GAIN)

1. Supply a sinewave signal (1 kHz - 70dB) to the Mic Input on the right side panel.
2. Supply a video signal to the Video Input on the right side panel.
3. Connect the VTVM to the Audio Output on the right side panel.
4. Insert a cassette and make a recording for a few minutes.
5. Playback the portion just recorded.
6. Adjust the P.B. GAIN (R4006) so that the output voltage is equal to that of recording.
7. Remove the VTVM.

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2-6. Video Section

Fig.26.

Fig.29.

Fig.27.

Fig.28.

2-6-1. Head Amp Peak Frequency

Test Points: TP8001
Adjustments: C3030 (PEAK-A)
C3031 (PEAK-B)

1. Do not supply any video or RF signal on the right side panel.
2. Turn the controls as follows. (All controls are on the Luminance Section)

R3047	Center
R3051	Fully Clockwise
R3044	Fully Counter-clockwise
R3054	Center

3. Connect the sweep generator to TP3005 on the Luminance section (VJB0399).
4. Connect the scope to TP8001 on the Chrominance section (VJB0862).
5. Blind the Supply and Take up photo transistors by two pieces of black paper and place the unit in the PLAY mode without a tape.

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6. Adjust the level of sweep generator to 200 ± 50 mVp-p at TP8001.
7. Adjust the peak-A (C3030) and the peak-B (C3031) so that the peaks on the scope become 4.9 MHz $\pm^{0}_{0}{}^{1}_{2}$ MHz.

50mV/2msec.div.
Fig.30.

2-6-2. Head Amp Frequency Responce and Balance Adjustment

Test Points: TP3006, TP3008, TP3009, TP8001
Adjustments: R3044 (Q-A)
R3047 (MIX BAL.)
R3051 (Q-B)
R3054 (RF LEVEL)

1. Supply the composite sync signal from the sweep generator to the Video Input on the right side panel.
2. Connect the jumper between TP3003 and GND on the Luminance section (VJB0399).
3. Connect the sweep generator to TP3004. Put the marker on 2 MHz and 3.8 MHz.
4. Connect the scope between TP3006 (Hot) and TP3008 (GND).
5. Set the RF LEVEL (R3054) to the center position.
6. Insert a cassette and make a recording for a few minutes.
7. Adjust the sweep gain so that the 3.8 MHz portion becomes 150 mVp-p.

50 mV/div. 2 msec div
Fig.31.

8. Play back the portion just recorded.
9. Connect the scope to TP8001 on the Chrominance section (VJB0862). Trigger the scope to TP2004 on the Servo section (VJB0399).
10. Adjust the Q-A (R3044) and Q-B (R3051) so that the levels at 2 MHz and 3.8 MHz are balanced.

0.1 V/div. 2 msec/div.
Fig.32.

11. Then adjust the MIX BAL. (R3047) so that the both channel outputs are balanced.
12. Connect the scope to TP3009.
13. Adjust the RF LEVEL (R3054) so that the peak level becomes 1.1 ± 0.1 Vp-p.

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0.2V/2msec.div.
Fig.33.

2-6-3. E-E Level Adjustment

Test Point: TP3011
Adjustment: R3025 (E-E LEVEL)

1. Supply a video signal (1 Vp-p) to the Video Input on the right side panel.
2. Connect the scope to TP3011 on the Luminance section (VJB0399).
3. Place the unit in STOP mode.
4. Adjust the E-E LEVEL (R3025) on the Luminance section so that the video level is 2.0 ± 0.1 Vp-p.

TP3011

0.5V/20µsec.div.
Fig.34.

2-6-4. Sync Tip and Deviation Adjustment

Test Point: TP3002, TP3003
Adjustments: C3011 (SYNC TIP FREQ)
R3016 (DEVIATION)

1. Do not supply any video signal to the Video Input.
2. Connect the frequency counter to TP3003 on the Luminance section (VJB0399).
3. Insert a video cassette tape and place the unit in REC mode.
4. Adjust the SYNC TIP FREQ (C3011) so that the indication of frequency counter becomes 3.8 ± 0.1 MHz.
5. Supply a colour bar signal to the Video Input.
6. Connect the scope to TP3002.
7. Place the unit in REC mode.
8. Adjust the DEVIATION (R3016) so that the output level at TP3002 which is from white level to sync tip level becomes 0.5 ± 0.1 Vp-p as shown below.

TP3002

Fig.35.

2-6-5. White and Dark Clip Adjustment

Test Point: TP3002
Adjustments: R3020 (DARK CLIP)
R3021 (WHITE CLIP)

1. Supply a colour bar signal to the Video Input on the right side panel.
2. Connect the scope to TP3002 on the Luminance section (VJB0399).
   Set the scope to 0.2 V/div, 20 µsec/div.
3. Place the unit in REC.PLAY mode.
4. Adjust the DARK CLIP (R3020) and WHITE CLIP (R3021) on the same section so the overshoot and undershoot are as shown below.

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Fig.36.

TP3006

Fig.38.

2-6-6. Recording Current Adjustment

Test Points: TP3006, TP3008
Adjustments: R3030 (REC CURR)
R8025 (REC CHROMA)

1. Supply a colour bar signal to the Video Input on the right side panel or tune in a local on-air TV program.
2. Connect the scope to TP3006 (HOT) and TP3008(GND) on the Luminance section (VJB0399).
3. Insert a cassette and make a recording for a few minutes.
4. Turn the REC CURR (R3030) fully counter clockwise.
5. Adjust the REC CHROMA (R8025) on the Chrominance section so that the level of cyan portion is 32 ± 2 mVp-p.

Fig.37.

6. Then slowly turn the REC CURR (R3030) on the Luminance section so that the V sync portion of the envelope at TP3006 becomes 150 ± 5mVp-p.

Fig.39.

2-6-7. Limiter Balance Adjustment

Test Point: TP3011
Adjustments: R3066 (LIM BAL 1)
R3063 (LIM BAL 2)

1. Supply a stairstep signal to the Video Input on the right side panel or turn in a local on-air B/W TV program.
2. Insert a cassette and make a recording for a few minutes.
3. Playback the portion just recorded.
4. Connect the scope to TP3011 on the Luminance section (VJB0399).
5. Turn the LIM BAL 2 (R3063) at the center position.
6. During playback, adjust the LIM BAL 1 (R3066) on the same board so that the carrier at sync tips becomes minimum at TP3011.
7. Turn the Tracking Control on the front panel for the poorest tracking. (Worst playback image)
8. During playback, adjust the LIM BAL 2 (R3063) on the Luminance section for minimum noise on the TV screen.

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2-6-8. 4.43 MHz Crystal Oscillator Adjustment

Test Point: TP8010
Adjustment: C8049 (FREQ ADJ)

1. Playback the blank tape.
2. Connect the frequency counter to TP8010 on the chrominance section (VJB0862).
3. Adjust the FREQ ADJ (C8049) so that the frequency at TP8010 becomes 4.433619 MHz ± 10 Hz.

2-6-9. AFC Adjustment

Test Point: TP8009
Adjustment: R8031 (AFC)

1. Don't supply any video signal to the Video Input on the right side panel.
2. Place the unit in STOP mode.
3. Connect the frequency counter to TP8009 on the Chrominance section (VJB0862).
4. Adjust the AFC (R8031) so that the frequency at TP8009 becomes 15.625 kHz ± 50 Hz.
5. Supply a colour bar signal on the Video Input on the right side panel.
6. Confirm the frequency at TP8009 is 15.625 kHz ± 1 Hz.

2-6-10. APC 4.43 MHz VXO Adjustment

Test Point: TP8007
Adjustment: C8053 (APC)

1. Connect a jumper between TP8005 and GND.
2. Connect a jumper between TP8006 and GND.
3. Supply a colour bar signal to the Video Input on the right side panel.
4. Insert a cassette and place the unit in RECORD mode.
5. Connect the frequency counter to TP8007.
6. Adjust the APC (C8053) so that the frequency at TP8007 becomes 4.433619 MHz ± 20 Hz.
7. Remove the jampers.

2-6-11. Comb Filter Adjustment

Test Point: TP3011
Adjustment: R8013 (COMB MIX)

1. Supply a colour bar signal to the Video Input on the right side panel.
2. Place the unit in RECORD mode and make a recording.
3. Connect the scope to TP3011 on the Luminance section (VJB0399).
4. Playback the portion just recorded.
5. Turn the Tracking Control on the front panel for the poorest tracking. (Worst playback image)
6. During playback, adjust the COMB MIX (R8013) on the Chrominance section (VJB0862) as shown in Fig. 40.

Fig.40.

TP3011

0.2V/10µsec.div.
Fig.41.

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2-6-12. Playback level Adjustment

Test Point: TP3011
Adjustment: R3078 (P.B. LEVEL)

1. Supply a colour bar signal to the Video Input on the right side panel.
2. Insert a cassette and make a recording for a few minutes.
3. Connect the scope to TP3011 on the Luminance section (VJB0399).
4. Playback the portion just recorded.
5. During playback, adjust the P.B. LEVEL (R3078) so the video level becomes 2.0 ± 0.1 Vp-p as shown Fig. 42.
6. Then confirm the level of cyan portion is 1.1 ± 0.1 Vp-p as shown in Fig. 42.

Fig.42.

Location of Test Points and Controls (1)

SYSTEM CONTROL BOARD

(VEP06115A)

LOADING MOTOR DRIVE BOARD

(VEP06100B)

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Location of Test Points and Controls (2)

MAIN (A.V.R./SERVO/LUMINANCE PROCESS/SLOW & STILL BOARD)

(VEP0399A/B)

CHROMINANCE PROCESS/AUDIO BOARD

(VEP0862A)

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ADJUSTMENT OF MODEL ENC-17354 RF CONVERTER

1. Rating

1-1.Channel: CH36 (591.25MHz)
1-2.Supply Voltage: 9 ± 0.1V
1-3. RF Output Impedance:75Ω unbal
1-4.Video Input Voltage: 1 ± 0.2Vp-p
1-5.Audio Input Voltage: 0.5 ± 0.1Vrms
1-6.Sub Carrier Freq. : 5500KHz

2. Adjustment

2-1.Adjsut the variable resistor (VR4) inorder to get 591.25MHz oscillator frequency.
2-2.Adjust the variable resistor (VR2) in order to get 73 ± 3 dB video-RF output level.
2-3.Adjust the variable resistor (VR1) in order to get 70 $^{+5}_{-10}$% video modulation ratio using standard colour bar pattern.
2-4.Adjust the transformer (T1) in order to get 5.5MHz oscillator frequency.
2-5.Adjsust the variable resistor (VR3) in order to get 70 ± 10% sound modulation ratio using 1KHz sine wave.

ADJUSTMENT OF MODEL ENC-17355 RF CONVERTER

1. Rating

1-1.Channel: CH36 (591.25MHz)
1-2.Supply Voltage: 9 ± 0.1V
1-3 RF Output Impedance:75Ω unbal
1-4.Video Input Voltage:1 ± 0.2Vp-p
1-5.Audio Input Voltage:o.5 ± 0.1Vrms
1-6.Sub Carrier Freq. : 6000KHz

2. Adjustment

2-1.Adjust the variable resistor (VR4) in order to get 591.25MHz oscl-lator frequency.
2-2.Adjust the variable resistor (VR2) in order to get 73 ± 3 dB video RF output level.
2-3.Adjust the variable resistor (VR1) in order to get 70 $^{+5}_{-10}$% video modulation ratio using standard colour bar pattern.
2-4.Adjsut the transformer (T1) in order to get 6.0MHz oscillator frequency.
2-5.Adjust the variable resistor (VR3) in order to get 70 ± 10% sound modulation ratio using 1 KHz sine wave.

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Service Manual

Portable Video Cassette Recorder

Vol. 3

YUENER VIDEO T.V. SERVICE CENTER
Breemarsweg 110c 7553 HT Hengelo (O) Telefoon 074-914274

Panasonic VHS

NV-3000-E -B

Block Diagrams
Schematic Diagrams

SPECIFICATIONS

Power Source: 12V DC
Battery LCR-1812E, LCR-3012VBE
Prog. Tuner Unit NV-V300
AC Adaptor NV-B30

Power Consumption: Approx. 5.6W at Record mode
Approx. 9.5W at Play mode

Television System: CCIR: 625 lines, 50 fields
PAL colour signal

Video Recording System: 2 rotary heads, helical scanning system
Luminance: FM azimuth recording
Colour signal: converted subcarrier phase shift recording

Audio Track: 1 track

Tape Format: Tape width 12.7mm high density tape

Tape Speed: 23.39mm/s

Record/Playback Time: 180 min. with NV-E180
240 min. with NV-E240

FF/REW Time: Less than 6 min. with NV-E180

Heads: Video: 2 rotary heads
Audio/Control: 1 stationary head
Erase: 1 full track erase
1 audio track erase for audio dubbing

Input Level: Video: VIDEO IN connector (BNC) 1.0Vp-p, 75Ω unbalanced
CAMERA/TUNER IN connector (10P) 1.0Vp-p, 75Ω unbalanced
Audio: MIC IN Jack −70dB, 600Ω unbalanced

Output Level: Video: VIDEO OUT Jack (BNC) 1.0Vp-p, 75Ω unbalanced
Audio: AUDIO OUT Jack (RCA) −6dB, 600Ω unbalanced
RF Modulated: UHF channel 36 (±4)

Weight: 5.3kg without battery pack

Dimensions: 291(W)×114(H)×249(D)mm

Accessories Supplied:
- 1 pc. Remote controller, VSQ0146
- 1 pc. Earphone, VBE0002
- 2 pcs. DIN-DIN coaxial cable, VJA0130
- 1 pc. Audio input attenuator, VJP1164
- 1 pc. Connection cord for auxiliary battery pack, VJA0148
- 1 pc. Carrying case: VFC0005

Optional Accessories:
Video cassette tape:
NV-E240 Approx. 344m 240 min.
NV-E180 Approx. 258m 180 min.
NV-E120 Approx. 174m 120 min.
NV-E60 Approx. 88m 60 min.
Battery pack, LCR-1812E, LCR-3012VBE
AC adaptor, NV-B30
14 Day 8 programme Timer, NV-V300
Colour video camera, WV-2600E, WV-3000E, WV-3200E
Car battery cord, NV-C24

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

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OVERALL BLOCK DIAGRAM

B + POWER SUPPLY BLOCK DIAGRAM

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CYLINDER SERVO BLOCK DIAGRAM

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CAPSTAN SERVO BLOCK DIAGRAM

A.V.R. BLOCK DIAGRAM

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LUMINANCE PROCESS BLOCK DIAGRAM

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CHROMINANCE PROCESS BLOCK DIAGRAM

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STILL BLOCK DIAGRAM

AUDIO BLOCK DIAGRAM

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SYSTEM CONTROL BLOCK DIAGRAM

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MICROPROCESSOR MN1405VQ TIMING CHART (1)

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MICROPROCESSOR MN1405VQ TIMING CHART (2)

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MICROPROCESSOR MN1405VQ TIMING CHART (3)

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RF CONVERTER BLOCK DIAGRAM

MODE SELECT SW CIRCUIT BOARD (VJB00518)

TAKEUP DETECTOR CIRCUIT BOARD (VJB00522)

SAFETY TAB SW CIRCUIT BOARD (VJB00525)

TAKEUP PHOTO TR CIRCUIT BOARD (VJB00520)

REMOTE PAUSE/EARPHONE JACK CIRCUIT BOARD (VJB00523)

CASSETTE DOWN SW CIRCUIT BOARD (VJB00526)

SENSOR LAMP CIRCUIT BOARD (VJB00519)

SUPPLY PHOTO TR CIRCUIT BOARD (VJB00521)

A/C HEAD CIRCUIT BOARD (VJB00524)

DEW SENSOR CONNECTION CIRCUIT BOARD (VJB00581)

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SYSTEM CONTROL SCHEMATIC DIAGRAM

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SYSTEM CONTROL CIRCUIT BOARD (VEP06115A)

JE	
1	REMOTE PAUSE
2	
3	
4	
5	
6	

JA	
1	GND
2	Co
3	REW
4	STOP
5	F F
6	PLAY

JB	
1	REC
2	CAMERA PAUSE
3	PROGRAM Ⓛ
4	B3
5	TUNER Ⓛ
6	LINE SW

JC	
1	
2	POWER SW ON Ⓛ
3	B2
4	B1
5	SAFETY TAB
6	C1

JD	
1	DEW LED
2	A-DUB LED
3	PAUSE LED
4	B0
5	FRAME ADVANCE
6	+5V

S3	
1	LOADING END Ⓗ
2	DELAY PAUSE
3	
4	REC Ⓗ
5	REMOTE PAUSE
6	CASSETTE DOWN
7	REEL SENSOR
8	DEW SENSOR

S4	
1	CAPSTAN REVERSE
2	CAPSTAN STOP
3	STILL Ⓗ
4	12V
5	5V
6	9V
7	9V OFF
8	GND
9	FWD Ⓗ (1)
10	CYL LOCK

S5	
1	DRIVING LOAD Ⓗ
2	TAKE UP PHOTO TR
3	LOADING END SW
4	FF/REW END SW
5	FRAME ADVANCE
6	UNLOADING Ⓗ
7	SHORT REW
8	LOADING Ⓗ
9	UNLOADING END SW
10	DEW/UNDER CUT Ⓗ
11	PAUSE END SW
12	REC PAUSE Ⓛ

P22	
1	METER
2	METER

SYSTEM CONTROL DC VOLTAGE CHART

REF. NO.	Q1			Q2			Q3			Q4			Q5		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	5.34	0.05	0	5.34	0.06	6.03	12.89	6.54	0.17	12.89	0.65	0	0	0.66
PLAY	0	5.34	0.05	0	5.34	0.06	5.97	12.79	6.49	0.17	12.79	0.65	0	0	0.66
REC	0	5.33	0.05	0	5.34	0.06	5.99	12.82	6.5	0.17	12.82	0.65	0	0	0.66
F.F	0	5.34	0.05	0	5.34	0.06	5.96	12.76	6.47	0.16	12.76	0.64	0	0	0.66
REW	0	5.33	0.05	0	5.34	0.06	5.95	12.74	6.46	0.16	12.74	0.65	0	0	0.64
REF. NO.	Q6			Q8			Q9			Q10			Q12		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	0.03	0.65	5.37	0.2	5.31	0	3.63	0.01	0	0.12	0.3	0	2.24	−0.4
PLAY	0	5.25	0.15	5.37	0.19	5.32	0	3.65	0.01	0	0.98	0.01	0	2.24	−0.4
REC	0	4.92	0.15	5.36	0.12	5.32	0	8.82	0.01	0	8	0.01	0	2.24	−0.4
F.F	0	0.03	0.65	5.36	0.12	5.32	0	3.22	0.01	0	0.11	0.3	0	2.24	−0.4
REW	0	0.03	0.65	5.36	0.12	5.32	0	3.22	0.01	0	0.11	0.3	0	2.24	−0.4
REF. NO.	Q13			Q14			Q16			Q17			Q18		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	2.57	−0.6	0	0.03	0.7	5.35	5.34	4.68	0	5.32	0.04	5.35	0	5.34
PLAY	0	2.57	−0.6	0	0.03	0.69	5.35	0.02	5.32	0	5.32	0.04	5.35	0	5.33
REC	0	2.57	−0.6	0	0.02	0.69	5.35	0.02	5.32	0	5.32	0.04	5.35	0	5.33
F.F	0	2.57	−0.6	0	0.02	0.69	5.35	0.02	5.32	0	5.32	0.04	5.35	0	5.33
REW	0	2.57	−0.6	0	0.02	0.69	5.35	0.03	5.32	0	0.01	0.63	5.35	5.33	5.33
REF. NO.	Q19			Q20			Q21			Q22			Q23		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	0.01	0.63	0	12.4	0.01	12.9	0	12.4	12.9	12.9	12.2	0	0.01	0.64
PLAY	0	0.01	—	—	—	0.01	—	—	—	12.8	12.8	12	0	0.01	0.64
REC	0	—	—	—	—	—	—	—	—	12.8	12.8	12.1	0	0.01	0.64
F.F	0	4.84	0.01	4.25	9.88	4.84	10.51	4.25	9.88	12.8	12.7	12	0	0.01	0.64
REW	0	4.85	0	4.25	9.87	4.85	10.48	4.25	9.87	12.8	12.7	12	0	0.01	0.64
REF. NO.	(S5-6)			(S4-6)											
MODE	E	C	B	E	C	B									
STOP	0	0.67	0	0	5.36	0									
PLAY	0	0.67	0	0	5.36	0									
REC	0	0.67	0	0	5.35	0									
F.F	0	0.67	0	0	5.36	0									
REW	0	0.67	0	0	5.35	0									

System Control	
Q6201	A-2
Q6202	D-2
Q6203	A-1
Q6204	A-1
Q6205	B-1
Q6206	B-1
Q6208	B-2
Q6209	C-2
Q6210	A-2
Q6212	E-1
Q6213	D-2
Q6214	E-1
Q6216	E-1
Q6217	E-1
Q6218	D-1
Q6219	D-1
Q6220	C-1
Q6221	D-1
Q6222	C-1
Q6223	C-1
IC6201	C-2
IC6202	C-2
IC6203	B-2
IC6204	C-2
IC6205	A-1
IC6206	A-2
IC6207	A-2

		STOP	PLAY	REC	F.F	REW
IC1	1	0	0	0	0	0
	2	0	0	0	0	0
	3	0	0	0	0	0
	4	0	0	0	0	0
	5	0.09	0.09	0.09	0.09	0.09
	6	0.02	0.02	0.02	0.02	0.02
	7	0.02	4.65	4.65	0.02	0.02
	8	0.02	0.02	0.02	0.02	0.02
	9	0.02	0.02	0.02	0.02	0.02
	10	5.12	5.21	5.2	5.22	5.22
	11	5.12	5.21	5.2	5.22	5.22
	12	5.15	5.23	5.22	5.22	5.22
	13	5.14	5.22	5.22	5.21	5.21
	14	0.8	—	—	0.42	0.41
	15	0.84	0.34	0.34	0.47	0.47
	16	0.57	0.34	0.34	0.33	0.33
	17	0.02	0.18	0.18	0.16	0.16
	18	0.23	0.13	0.13	0.12	0.12
	19	0.22	0.13	0.13	0.12	0.12
	20	0.01	0.01	0.01	0	0
	21	0.01	0	0	0	0
	22	0.04	0.04	0.04	0.04	4.64
	23	0.06	5.36	5.36	5.35	5.35
	24	0.09	0.09	0.09	0.09	0.09
	25	5.35	5.35	5.35	5.35	5.35
	26	0	0	0	0	0
	27	5.38	5.38	5.37	5.38	5.38
	28	0	0	0	0	0
	29	0	0	0	0	0
	30	2.59	2.59	2.59	2.59	2.59
	31	4.07	4.08	4.14	0.04	0.04
	32	4.61	4.61	4.6	4.61	0.13
	33	0.14	5.33	5.32	5.33	5.33
	34	5.33	5.33	5.33	0.15	5.33
	35	4.31	0.15	0.15	4.23	4.31
	36	4.73	4.73	0.16	4.73	4.73
	37	5.38	5.38	5.37	5.38	5.38
	38	5.36	5.36	5.36	5.36	5.36
	39	5.34	5.34	5.34	5.34	5.34
	40	2.02	2.02	2.02	2.02	2.02

		STOP	PLAY	REC	F.F	REW
IC2	1	5.14	5.23	5.23	5.23	5.24
	2	5.36	5.36	5.36	0	—
	3	1.08	—	—	—	—
	4	5.37	0	0	5.37	5.36
	5	1.04	0.57	0.57	0.7	0.7
	6	5.37	5.37	5.37	5.37	5.37
	7	0.78	0.58	0.58	0.57	0.57
	8	0	0	0	0	0
	9	0.23	0.43	0.43	0.4	0.4
	10	0	5.38	5.37	5.38	5.38
	11	0.24	0.15	0.15	0.13	0.13
	12	5.36	5.36	5.35	5.35	5.35
	13	0.24	0.15	0.15	0.13	0.13
	14	5.36	5.36	5.35	5.36	5.36
	15	5.16	5.25	5.25	5.26	5.26
	16	5.39	5.39	5.38	5.39	5.38

		STOP	PLAY	REC	F.F	REW
IC3	1	5.17	5.25	5.25	5.27	5.26
	2	5.39	5.38	5.38	5.39	5.38
	3	1.34	—	—	0.66	0.64
	4	4.98	4.98	4.98	4.98	4.98
	5	1.03	0.54	0.55	0.69	0.69
	6	0.61	0.62	0.62	0.61	0.61
	7	0.77	0.56	0.56	0.56	0.56
	8	0	0	0	0	0
	9	0.22	0.41	0.41	0.39	0.39
	10	0.04	0.04	0.04	0.04	0.04
	11	1.03	0.55	0.55	0.69	0.69
	12	4.78	4.78	4.78	4.78	4.78
	13	1.05	—	—	0.65	0.63
	14	0.01	—	—	1.67	1.67
	15	5.18	5.26	5.26	5.25	5.25
	16	5.4	5.39	5.39	5.39	5.39

		STOP	PLAY	REC	F.F	REW
IC4	1	5.17	5.25	5.25	5.24	5.24
	2	5.38	5.38	5.38	5.38	5.38
	3	1.33	—	—	0.65	0.64
	4	0	0	0	0	0
	5	1.02	0.55	0.55	0.68	0.68
	6	0.01	0.01	0.01	0.01	0.01
	7	0.76	0.55	0.55	0.55	0.55
	8	0	0	0	0	0
	9	0.21	0.4	0.4	0.38	0.38
	10	0.03	0.03	0.03	0.03	0.03
	11	0.22	0.4	0.4	0.39	0.39
	12	0.07	0.07	0.07	0.07	0.07
	13	0.76	0.56	0.56	0.55	0.55
	14	5.37	5.37	5.37	5.37	5.37
	15	5.17	5.25	5.25	5.25	5.25
	16	5.4	5.39	5.39	5.39	5.39

		STOP	PLAY	REC	F.F	REW
IC5	1	0.06	0.06	0.06	0.06	0.06
	2	0.03	0.02	0.02	0.02	0.02
	3	12.91	12.8	12.84	12.77	12.75
	4	5.53	—	—	—	5.55
	5	2.71	2.71	2.71	2.71	2.71
	6	6.01	5.96	5.97	5.95	5.94
	7	4.86	4.86	4.86	4.86	4.86
	8	0.68	0.68	0.68	0.68	0.67
	9	0	0	0	0	0
	10	—	—	—	—	—
	11	2.71	2.71	2.71	2.71	2.71
	12	0	0	0	0	0
	13	5.32	5.32	5.32	5.32	5.32
	14	0.05	0.05	0.05	0.05	0.05

		STOP	PLAY	REC	F.F	REW
IC6	1	9.1	9.09	9.09	9.09	9.09
	2	8.93	8.93	8.93	8.79	8.79
	3	8.96	8.96	8.96	8.84	8.84
	4	0	0	0	0	0
	5	0	0	0	0	0
	6	0	0	0	0	0
	7	4.97	4.97	4.97	4.97	4.97
	8	5.38	5.38	5.37	5.37	5.37
	9	5.38	5.37	5.37	5.38	5.37
	10	0	0	0	0	0
	11	0	0	0	0	0
	12	0	0	0	0	0
	13	8.96	8.96	8.95	8.96	8.96
	14	8.93	8.93	8.93	8.93	8.93

		STOP	PLAY	REC	F.F	REW
IC7	1	0.33	9.04	9.02	0.33	0.33
	2	0	0	5.02	0	0
	3	9.1	9.09	9.09	9.09	9.1
	4	0.02	4.66	4.66	0.02	0.02
	5	0.3	0.02	0.02	0.3	0.3
	6	0.02	0	0	0	0
	7	0	0	0	0	0
	8	0	0	5.36	0	0
	9	4.75	4.75	0.16	4.75	4.75
	10	5.37	5.37	5.37	5.37	5.37
	11	5.38	5.38	5.38	5.38	5.38
	12	0	0	0.09	0	0
	13	5.38	5.38	5.38	5.38	5.38
	14	0.34	0	0	0.34	0.34

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AUDIO SCHEMATIC DIAGRAM

COLOUR PROCESS SCHEMATIC DIAGRAM

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COLOUR PROCESS/AUDIO CIRCUIT BOARD (VEP0862A)

JA

1	PB FM IN
2	VIDEO IN
3	GND
4	+9 IN
5	GND
6	EXCEPT REC 9V IN

JB

1	REC +9V IN
2	D.O.C. PULSE IN
3	VIDEO IN (HSS)
4	REC CHROMA OUT
5	PB CHROMA OUT
6	50Hz OUT

JC

1	HEAD SW PULSE
2	VSS OUT
3	
4	
5	GND
6	EE-VV

JD

1	EARPHONE
2	AUDIO DUB (H)
3	REC & A DUB (H)
4	STILL CUE MUT.
5	GND
6	AUDIO OUT

P17

1	F.E HEAD
2	GND

P18

1	A.E HEAD
2	GND
3	GND
4	A/C HEAD
5	A/C HEAD

P25

1	MIC IN
2	MIC IN
3	GND

(REF. NO. 8001 ~ UP)

UNLESS OTHERWISE SPECIFIED, ALL DIODES ARE MA165.

Colour & Audio	
Colour	
Q8001	A-1
Q8002	C-1
Q8003	A-2
Q8004	B-3
IC8001	A-1
IC8002	C-1
IC8003	C-2
IC8004	C-3
Audio	
Q4001	D-1
Q4002	E-1
Q4003	E-1
Q4004	D-1
Q4005	E-3
Q4006	E-2
Q4007	E-2
Q4008	D-2
Q4009	D-3
Q4010	D-2
Q4011	D-2
Q4012	D-3
IC4001	E-2
IC4002	E-3
IC4003	D-2
IC4004	E-1

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A.V.R./SERVO SCHEMATIC DIAGRAM

Main Board							
A.V.R.		Servo		Luminance		Slow & Still	
Q1001	E-4	Q2001	C-4	Q3001	B-1	Q2701	D-3
Q1002	E-4	Q2002	C-4	Q3002	B-2	Q2702	E-3
Q1003	E-4	Q2003	C-4	Q3003	B-1	Q2704	F-3
Q1004	E-4	Q2004	C-4	Q3004	C-1	Q2705	F-3
Q1005	E-5	Q2005	B-4	Q3005	B-2	Q2706	E-3
Q1006	E-5	Q2006	D-5	Q3006	C-1	Q2709	F-3
Q1007	E-5	Q2007	C-5	Q3007	E-2	Q2710	F-3
Q1008	E-5	Q2008	C-5	Q3008	E-2	Q2711	F-3
Q1009	F-4	Q2010	D-4	Q3009	E-1		
Q1010	F-4	Q2011	D-4	Q3010	C-2	IC2701	E-3
Q1014	F-4	Q2012	D-5	Q3011	D-3	IC2702	D-3
Q1016	F-4	Q2013	D-5	Q3012	C-3	IC2703	F-3
Q1017	F-5	Q2014	B-5	Q3013	D-3	IC2704	E-3
Q1018	E-4	Q2020	C-4	Q3014	B-2		
Q1019	E-4	Q2021	D-5	Q3015	B-2		
Q1020	E-4	Q2022	D-5	Q3016	B-1		
Q1021	E-4	Q2023	D-5	Q3017	B-1		
		Q2024	D-5				
		Q2025	C-5	IC3001	C-1		
		Q2026	B-5	IC3002	D-1		
		Q2027	C-4	IC3003	A-3		
		Q2028	B-5	IC3004	C-3		
				IC3005	D-1		
		IC2001	B-4	IC3006	A-3		
		IC2002	C-5				
		IC2003	D-4				
		IC2004	D-4				
		IC2005	C-5				

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Main Board

MAIN (A.V.R./SERVO/LUMINANCE PROCESS/SLOW & STILL) CIRCUIT BOARD (VEP0399A/VEP0399B)

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D-D CYLINDER DRIVE CIRCUIT BOARD (VEP02113A)

D-D CYLINDER DRIVE SCHEMATIC DIAGRAM

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SLOW & STILL SCHEMATIC DIAGRAM

LUMINANCE PROCESS SCHEMATIC DIAGRAM

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KEY BOARD SCHEMATIC DIAGRAM

KEY BOARD (VEP06118A)

Key Board	
Q6001	C-1
Q6002	C-1
Q6003	D-1
Q6004	C-1
Q6005	C-1
Q6006	E-1
Q6007	E-1
Q6008	B-1
Q6010	C-1
Q6011	D-1
Q6012	C-2

JA	
6	PLAY
5	F.F.
4	STOP
3	REW
2	CO
1	GND

JB	
6	LINE SW
5	TUNER (L)
4	B3
3	PROGRAM (L)
2	CAMERA PAUSE
1	REC

JC	
6	C
5	SAFETY TAB
4	B1
3	B2
2	POWER SW
1	

JD	
6	DEW LED
5	A-DUB LED
4	PAUSE LED
3	BO
2	FLAME ADV
1	+5V

JE	
6	
5	RESET
4	UNLOADING (H)
3	CASSETTE DOWN
2	12V
1	NC

P21	
1	MEMORY SW
2	MEMORY SW

P16	
1	POWER SW
2	
3	POWER SW COM
4	TUNER (H)
5	PROGRAM (H)
6	CAMERA PAUSE
7	REC/PLAY (H)
8	
9	
10	

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LOADING MOTOR DRIVE SCHEMATIC DIAGRAM

LOADING MOTOR DRIVE CIRCUIT BOARD (VEP06100B)

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JACK BOARD SCHEMATIC DIAGRAM

JACK BOARD (VEP00627)

RF CONVERTER CIRCUIT BOARD (ENC17354/ENC17355)

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RF CONVERTER SCHEMATIC DIAGRAM (ENC17354/ENC17355)

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CIRCUIT BOARD LAYOUT

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TOP VIEW

LEFT SIDE VIEW

FRONT VIEW

BOTTOM VIEW I

BOTTOM VIEW II

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NV-3000 INTERCONNECTION SCHEMATIC DIAGRAM

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Panasonic

MATSUSHITA ELECTRIC

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ORDER NO. VRD-8012-468

3/10/2024

Service Manual

Portable Video Cassette Recorder

Vol. 4

Panasonic VHS

NV-3000-E -B

Exploded Views
Replacement Parts List

SPECIFICATIONS

Power Source: 12V DC
Battery LCR-1812E, LCR-3012VBE
Prog. Tuner Unit NV-V300
AC Adaptor NV-B30

Power Consumption: Approx. 5.6W at Record mode
Approx. 9.5W at Play mode

Television System: CCIR: 625 lines, 50 fields
PAL colour signal

Video Recording System: 2 rotary heads, helical scanning system
Luminance: FM azimuth recording
Colour signal: converted subcarrier phase shift recording

Audio Track: 1 track

Tape Format: Tape width 12.7mm high density tape

Tape Speed: 23.39mm/s

Record/Playback Time: 180 min. with NV-E180
240 min. with NV-E240

FF/REW Time: Less than 6 min. with NV-E180

Heads: Video: 2 rotary heads
Audio/Control: 1 stationary head
Erase: 1 full track erase
1 audio track erase for audio dubbing

Input Level: Video: VIDEO IN connector (BNC)
1.0Vp-p, 75Ω unbalanced
CAMERA/TUNER IN connector (10P) 1.0Vp-p, 75Ω unbalanced
Audio: MIC IN Jack
−70dB, 600Ω unbalanced

Output Level: Video: VIDEO OUT Jack (BNC)
1.0Vp-p, 75Ω unbalanced
Audio: AUDIO OUT Jack (RCA)
−6dB, 600Ω unbalanced
RF Modulated: UHF channel 36 (±4)

Weight: 5.3kg without battery pack

Dimensions: 291(W)×114(H)×249(D)mm

Accessories Supplied: 1 pc. Remote controller, VSQ0146
1 pc. Earphone, VBE0002
2 pcs. DIN-DIN coaxial cable, VJA0130
1 pc. Audio input attenuator, VJP1164
1 pc. Connection cord for auxiliary battery pack, VJA0148
1 pc. Carrying case: VFC0005

Optional Accessories: Video cassette tape:
NV-E240 Approx. 344m 240 min.
NV-E180 Approx. 258m 180 min.
NV-E120 Approx. 174m 120 min.
NV-E60 Approx. 88m 60 min.
Battery pack, LCR-1812E, LCR-3012VBE
AC adaptor, NV-B30
14 Day 8 programme Timer, NV-V300
Colour video camera, WV-2600E, WV-3000E, WV-3200E
Car battery cord, NV-C24

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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INNER PARTS LOCATION

TOP VIEW

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BOTTOM VIEW

EXPLODED VIEW

1. Transport Section
2. Moving Mechanism Section-(1)
3. Moving Mechanism Section-(2)
4. Moving Mechanism Section-(3)
5. Chassis Frame Section
6. Casing Parts Section
7. Packing Parts & Accessory Section

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants for better maintenance of the unit.

Marks	Kind of Lubricant	Availability	Part Number
× × ×	Morlytone Grease	Available From Factory	MOR265
○ ○ ○	Spindle Oil	Purchase From Local Supplier	———

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EXPLODED VIEW

1 Transport Section

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2 Moving Mechanism Section-(1)

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3 Moving Mechanism Section-(2)

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4 Moving Mechanism Section-(3)

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5 Chassis Frame Section

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6 Casing Parts Section

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7 Packing Parts & Accessories Section

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MECHANICAL REPLACEMENT PARTS LIST

Model No. NV-3000-E/-B

Notes:
1. * Be sure to make your orders of replacement parts according to this list.
   * "Ⓝ" in Remarks column indicates new parts.

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			MECHANICAL CHASSIS UNIT		
1 (3)		VXD0054	Metal Unit	1	
2 (2)		VXA1172	Place Fix Bracket Unit	1	
			LOADING BASE UNIT		
			CONSIST OF		
3 (1)		VMD0100	1. Post Stopper	2	
4 (1)		VXP0302A	2. Roller Post Unit (L)	1	
5 (1)		VXP0302C	3. Roller Post Unit (R)	1	
210 (1)		VXA1191	4. Inclind Base Unit (S)	1	
211 (1)		VXA1084	5. Inclind Base Unit (B)	1	
212 (1)		VXA1189	6. Shaft Holder Unit (S)	1	
213 (1)		VXA1190	7. Shaft Holder Unit (T)	1	
7 (1)		VMA3997	8. Shaft Holder Spring	2	
8 (1)		VXL0754	9. Loading Arm Unit (R)	1	
9 (1)		VXL0753	10. Loading Arm Unit (L)	1	
10 (1)		VXP0325	11. Loading Gear Unit	2	
11 (1)		VMB0669	12. Loading Spring	2	
12 (1)		VXA1295	13. Loading Base 1 Unit	1	
13 (1)		VMX0257	14. Arm Sleeve	2	
14 (1)		VHN0014	15. Adjust Nut	1	
425 (1)		XYN3+F10FXS	16. Screw With Washer, 3x10	4	
511 (1)		XUEV4FP	17. Retaining Ring, 4	2	
418 (1)		XYN3+C4FXS	18. Screw With Washer, 3x4	2	
420 (1)		XTV3+6FFXS	19. Screw With Washer, 3x6	2	
15 (1)		VMB0699	Post Spring (P4)	1	
16 (1)		VMX0280	Post Sleeve B	1	
17 (1)		VMX0271	Post Cap (P4)	1	
			A/C HEAD UNIT		
			CONSIST OF		
18 (1)		VEH0127	1. A/C Head Base Unit		
19 (1)		VMA4097	2. Sensor Lamp Angle	1	
E (1)		Elec. Part	3. Sensor Lamp C.B.A.	1	
439 (1)		XSS26+6FXS	4. Screw, 2.6x6	1	
20 (4)		VMB0700	Fast Wind Lever Spring	1	
21 (3)		VEM0121	Motor Bracket Unit	1	
E (4)		Elec. Part	Loading Motor Drive C.B.A.	1	
			FAST WIND IDLER BASE UNIT		
			CONSIST OF		
22 (2)		VMA1198	1. Guide Base Unit	1	
24 (2)		VXL0769	3. Fast Wind Idler Lever Unit	1	
25 (2)		VML1026	4. Friction Lever	1	
26 (2)		VMG0210	5. Friction Rubber	1	
27 (2)		VMB0664	6. Friction Lever Spring	1	
512 (2)		XUC25FP	7. Retaining Ring, 3	2	
28 (1)		VMX0324	Inertia Roller Arm Unit	1	
29 (1)		VMB0667	Roller Arm Spring	1	
30 (2)		VXL0763	Play idler Lever Unit	1	
31 (2)		VXP0332	Pause Brake Pulley Unit	1	
32 (2)		VMX0261	Idler Washer	1	
33 (2)		VMB0683	Play Idler Coil Spring	1	
34 (2)		VMB0681	Idler Spring	1	
35 (2)		VXP0331	Play Idler (1) Unit	1	
502 (2)		XWXV3D	Washer	1	
36 (1)		VXA0869	Discharge Brush Unit	1	
37 (2)		VXP0330	Pressure Roller Unit	1	
38 (2)		VMB0679	Pressure Spring	1	
39 (2)		VMA4098	Spring Hook	1	
40 (2)		VXA1175	Opener Unit	1	
			FAST WIND IDLER ARM UNIT		
			CONSIST OF		
250 (2)		VXP0329	FF Idler Unit	1	
251 (2)		VXL0760	FF Idler Arm Unit	1	
252 (2)		VDP0746	Guide Roller	1	
512 (2)		XUC25FP	Retaining Ring	1	
502 (2)		XWXV3D	Washer	1	
517 (2)		XUC15FP	Retaining Washer	1	
			ERASE HEAD UNIT		
			CONSIST OF		
41 (1)		VML1032	1. Erase Head Lever	1	
42 (1)		VMB0665	2. Erase Head Lever Spring	1	
43 (1)		VBS0014	3. Erase Head	1	
415 (1)		XYN2+C4FXS	4. Screw With Washer, 2x4	2	
44 (4)		VXZ0072	Soft Brake Unit	1	
45 (4)		VMB0659	Soft Brake Spring	1	
46 (4)		VXP0326	Takeup Gear Unit	1	
47 (2)		VXR0079	Takeup Reel Table Unit	1	
48 (2)		VXR0080	Supply Reel Table Unit	1	
49 (2)		VXA1176	Fast Wind Pulley Bracket Unit	1	
			MIS-ERASE PROTECTION UNIT		
			CONSIST OF		
50 (4)		VXA1185	1. Cassette Support Unit	1	
51 (4)		VML1062	2. Sensing Lever	1	
52 (4)		VSM0027	3. Micro Switch	1	
53 (4)		VMB0708	4. Actuator Spring	1	
416 (4)		XYN3+C10FXS	5. Screw With Washer, 3x10	2	
512 (4)		XUC25FP	6. Retaining Ring, 2.5	1	
			MAIN BRAKE UNIT		
			CONSIST OF		
54 (2)		VXZ0073	1. Brake Unit (L)	1	
55 (2)		VXZ0074	2. Brake Unit (R)	1	
56 (2)		VMB0661	3. Brake Arm Spring	1	
			PHOTO TR. BRACKET UNIT		
			CONSIST OF		
57 (2)		VMA4096	1. Holder Angle	1	
E (2)		Elec. Part	2. Takeup Sensor C.B.A.		
58 (2)		VMD0091	3. Tr. Holder	1	
437 (2)		XSN3+8FXS	4. Screw	1	
515 (2)		XWC3BF	5. Toothed Lock Washer,3	1	
59 (2)		VEK1129	Dew Sensor Unit	1	
			TENSION ARM BAND UNIT		
			CONSIST OF		
60 (2)		VXL0750	1. Tension Arm Unit	1	
61 (2)		VXZ0076	2. Tension Band Unit	1	
62 (2)		VMA4089	3. Adjust Hook	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
63 (2)		VMB0666	4. Tension Spring	1	
510 (2)		XUEV3FP	5. Retaining Ring, 3	1	
420 (2)		XYN3+F5FXS	6. Screw With Washer, 3x5	1	
64 (3)		VDP0735	Loading Intermediate Pulley	1	
65 (3)		VDP0750	Idler Pulley	1	
66 (4)		VDG0017	Transit Gear	1	
67 (4)		VDG0016	Driving Gear	1	
68 (4)		VMX0122	Slide Washer A	6	
			MAIN ROD LATCH UNIT		
			CONSIST OF		
69 (4)		VXA1193	1. Main Rod	1	
70 (4)		VMB0680	2. Adjust Spring	1	
71 (4)		VXL0797	3. Sub Rod Unit	1	
72 (4)		VML1114	4. Kick Lever (A)	1	
73 (4)		VML1115	5. Kick Lever (B)	1	
74 (4)		VMB0744	6. Kick Lever Spring	1	
513 (4)		XUC3FP	7. Retaining Ring	1	
438 (4)		XSN3+10FXS	8. Screw, 3x10	1	
75 (4)		VML1035	Fast Wind Release Arm	1	
76 (4)		VMB0746	Release Arm Spring	1	
77 (4)		VDG0021	Cam Gear	1	
78 (4)		VXL0752	Sector Gear Unit	1	
79 (4)		VMA4088	Cap Plate	1	
E (3)		Elec. Part	Cylinder Drive C.B.A.		
80 (3)		VDP0748	Large Pulley	1	
81 (4)		VML1040	Kick Lever	1	
82 (3)		VMZ0295	Insulation Sheet	1	
83 (3)		VXP0322	Fast Wind V Pulley Unit	1	
84 (3)		VDV0120	Fast Wind Belt	1	
85 (3)		VXP0341	Capstan Shaft Unit	1	
86 (3)		VMA3999	Thrust Spring	1	
87 (3)		VMX0251	Oil Seal	1	
88 (3)		VMD0104	Oil Pool	1	
			MODE SELECT SW. UNIT		
			CONSIST OF		
89 (4)		VMA4094	1. Switch Holder	1	
90 (4)		VSS0048	2. Mode Select Switch	1	
515 (4)		XWC3BF	3. Toothed Lock Washer,3	1	
422 (4)		XYN3+F10FXS	4. Screw With Washer, 3x10	1	
91 (3)		VDV0121	Capstan Belt	1	
92 (3)		VDV0122	Loading Belt 1	1	
93 (3)		VDV0123	Loading Belt 2	1	
94 (3)		VXA1182	Thrust Holder Unit	1	
95 (3)		VGF0013	Belt Cover	1	
96 (1)		VMB0754	Supply Limiter Spring	1	
97 (1)		VMS1767	Supply Limiter (Upper)	1	
98 (1)		VMB0668	A/C Head Height Spring	1	
99 (1)		VMX0256	Stopper Snap	1	
			CYLINDER UNIT		
			CONSIST OF		
100 (1)		VEG0176	1. Cylinder Unit	1	
101 (1)		VEH0121	2. Upper Cylinder Unit	1	
424 (1)		XYN3+B10BWS	3. Screw With Washer, 3x10	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
102 (2)		VMX0259	Spacer	2	
103 (4)		VMA4095	Lever Holder	1	
104 (4)		VMB0749	Kick Lever Spring	1	
105 (4)		VMX0268	Driving Gear Sleeve	1	
106 (3)		VQL1055	Pulley Caution Label	1	
107 (1)		VMA4122	Lead Wire Holder	1	
108 (3)		VMX0269	Bearing Cap	1	
109 (3)		VMB0707	Pre-load Spring	1	
110 (3)		VXP0342	Fast Wind Pulley B Unit	1	
111 (3)		VMX0278	Stainless Washer, 4	2	
112 (3)		VMX0265	Capstan Shaft Washer	1	
			COUNTER UNIT CONSIST OF		
113 (5)		VMA4144	1. Counter Angle	1	
114 (5)		VMA4102	2. Sensor Mount Angle	1	
E (5)		Elec. Part	3. Takeup Sensor C.B.A.		
115 (5)		VDC0020	4. Counter	1	
116 (5)		VDV0125	5. Counter Belt 2	1	
117 (5)		VXZ0087	6. Soft Brake (T) Unit	1	
118 (5)		VMB0757	7. Soft Brake Spring	1	
423 (5)		XYN3+F8FXS	8. Screw With Washer	3	
419 (5)		XTV3+6FFXS	9. Screw With Washer	2	
407 (5)		XTV3+8FFXS	10. Tapping Screw	1	
515 (5)		XWC3BF	11. Washer	1	
512 (5)		XUC25FP	12. Retaining Ring	2	
			CHASSIS ANGLE UNIT (R)		
			CONSIST OF		
119 (5)		VXA1195	1. Chassis Angle Unit	1	
120 (5)		VXP0328	2. Counter Pulley Unit	1	
509 (5)		XUEV2FP	3. Washer	1	
501 (5)		XWXV2A	4. Washer	2	
121 (5)		VMX0272	5. Washer	2	
			SENSOR ANGLE UNIT		
			CONSIST OF		
122 (5)		VXA1199	1. Sensor Angle Unit	1	
123 (5)		VMM0070	2. Connecting Rod	1	
124 (5)		VMG0207	3. Stopper Rubber A	1	
125 (5)		VMG0206	4. Stopper Rubber B	1	
126 (5)		VMD0092	5. Transistor Holder	1	
E (5)		Elec. Part	6. Supply Sensor C.B.A.	1	
127 (5)		VMA4149	7. Transistor Holder Guard	1	
128 (5)		VMB0674	8. Holder Spring	1	
437 (5)		XSN3+8FXS	9. Bind Screw	1	
401 (5)		XTV3+6FFXS	10. Tapping Screw	1	
512 (5)		XUC25FP	11. Retaining Ring	1	
515 (5)		XWC3BF	12. Washer	1	
502 (5)		XWXV3D	13. Washer	1	
129 (5)		VXA1197	14. Chassis Angle Unit (L)	1	
			RIGHT FRAME UNIT		
			CONSIST OF		
130 (5)		VMD0102	1. Right Frame	1	
131 (5)		VMA4116	2. Mech Angle F-R	1	
132 (5)		VMA4118	3. Mech Angle R-R	1	
134 (5)		VQL1139	4. Fuse Replacement Label	1	
423 (5)		XYN3+F8FXS	5. Screw With Washer, 3x8	2	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			LEFT FRAME UNIT		
			CONSIST OF		
135 (5)		VMD0103	1. Left Frame	1	
136 (5)		VMA4117	2. Mech Angle F-L	1	
137 (5)		VMA4119	3. Mech Angle R-L	1	
423 (5)		XYN3+F8FXS	4. Screw With Washer,3x8	2	
138 (5)		VDG0022	Dumper	1	
			CASSETTE LOCK UNIT		
			CONSIST OF		
139 (4)		VXA1204	1. Eject Angle Unit	1	
140 (4)		VXA1207	2. Eject Rod Unit	1	
141 (4)		VMA4100	3. Stopper	1	
142 (4)		VXA1205	4. Lock Lever Unit	1	
143 (4)		VML1157	5. Actuator Lever	1	
144 (4)		VMB0677	6. Eject Spring	1	
145 (4)		VMB0673	7. Stopper Spring	1	
146 (4)		VXA1210	8. Main Lock Lever	1	
147 (4)		VMB0671	9. Main Lock Lever Spring	1	
148 (4)		VMA4152	10. Obstruction Rod B	1	
149 (4)		VMB0705	11. Rod Hold Spring	1	
150 (4)		VMA4151	12. Obstruction Rod A	1	
419 (4)		XYN3+C6FXS	13. Screw With Washer,3x6	1	
508 (4)		XWXV4D65	14. Washer	1	
512 (4)		XUC25FP	15. Retaining Ring	9	
			SWITCH ANGLE UNIT		
			CONSIST OF		
151 (4)		VMA4103	1. Switch Mount Plate	1	
152 (4)		VSM0027	2. Micro Switch	1	
416 (4)		XYN2+C10FX	3. Retaining Ring	2	
153 (5)		VDV0124	Counter Belt (1)	1	
430 (5)		XYN4+F30FXS	Screw With Washer, 4x30	4	
406 (5)		XTV3+8FFXS	Tapping Screw, 3x8	5	
423 (5)		XYN3+F8FXS	Screw With Washer, 3x8	2	
			CASSETTE UP UNIT		
			CONSIST OF		
154 (5)		VXA1265	1. Cassette Up Unit	1	
160 (5)		VMB0678	2. Discriminating Lever	1	
			Spring		
161 (5)		VMX0247	3. Lock Collar	1	
162 (5)		VML1098	4. Main Arm (L)	1	
163 (5)		VMG0215	5. Stand Cushion	1	
164 (5)		VMA4002	6. Holder Angle (R)	1	
165 (5)		VMA3990	7. Holder Adjustment Plate	2	
166 (5)		VML1111	8. Sub Arm (R)	1	
167 (5)		VMA4003	9. Holder Angle (L)	1	
168 (5)		VML1110	10. Sub Arm (L)	1	
169 (5)		VMB0735	11. Holder Spring (R)	1	
170 (5)		VMB0730	12. Cassette Holding Spring	1	
171 (5)		VMA4300	13. Cassette Compartment	1	
			Support Angle (Front)		
172 (5)		VMA4301	14. Cassette Compartment	1	
173 (5)		VGQ0135	Cassette Guide	1	
174 (3)		VGF0019	Lead Wire Holder	1	
175 (5)		VKC0033	Clip	2	
E (6)		Elec. Part	Jack Plate Unit	1	
176 (5)		VYF0160	Shield Case	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
177 (5)		VMZ0297	Shield Cover (Top)	1	
178 (6)		VQL1118	Caution Label	1	
408 (6)		XTV3+10BFX	Tapping Screw, 3x10	1	
409 (3)		XTV3+10FFXS	Tapping Screw, 3x10	1	
421 (5)		XYN3+F6FXRS	Screw With Washer, 3x6	4	
423 (5)		XYN3+F6FXS	Screw With Washer, 3x8	2	
402 (5)		XTV3+6FFXRS	Tapping Screw, 3x6	2	
417 (1)		XYN3+F5FXS	Screw With Washer, 3x5	1	
			CONTROL PANEL UNIT		
			CONSIST OF		
179 (6)		VMD0101	1. Control Panel	1	
180 (6)		VQL1140	2. Service Lavel	1	
181 (6)		VXU0175	3. Operation Button A	7	
182 (6)		VGU0198	4. Operation Button B	1	
183 (6)		VMB0685	5. Button Spring	1	
184 (6)		VGT0160	6. Power Switch Knob	1	
E (6)		Elec. Part	7. Ear Phone Jack C.B.A.	1	
E (6)		Elec. Part	8. Battery Meter	1	
186 (6)		VGT0161	9. Memory Switch Knob	1	
187 (6)		VGQ0148	10. Memory Switch Cover	1	
188 (6)		VMB0709	11. Earth Spring	2	
410 (6)		XTV3+10BFX	12. Tapping Screw, 3x12	2	
			EJECT LEVER UNIT		
			CONSIST OF		
189 (6)		VML1048	1. Eject Lever (A)	1	
190 (6)		VML1049	2. Eject Lever (B)	1	
191 (6)		VXA1171	3. Eject Lever Angle Unit	1	
192 (6)		VMB0686	4. Eject Lever Spring A	1	
193 (6)		VMB0687	5. Eject Lever Spring B	1	
194 (6)		VGU0199	6. Eject Button	1	
E (6)		Elec. Part	7. Tracking VR	1	
195 (6)		VGT0151	8. Tracking VR Knob	1	
196 (6)		VMX0262	9. Eject Lever Collar	1	
513 (6)		XUC3FP	10. Retaining Ring	1	
197 (6)		VYK0227	11. Top Case Unit	1	
198 (6)		VYP0488	12. Front Panel Unit	1	
199 (6)		VYK0230	13. Bottom Case Unit	1	
200 (6)		VGP0048	14. Cassette Cover	1	
201 (6)		VHD0042	15. Decoration Screw	2	
202 (6)		VKF0048	16. Battery Cover	1	
434 (6)		XSB3+16FXKS	17. Screw With Washer,3x16	4	
436 (6)		XSB3+6FCWS	18. Screw With Washer	2	
203 (6)		VQLS0184	Guide Label	1	
204 (6)		VQL1183	Battery Terminal Label	1	
205 (6)		VGN1514	Jack Plate Decoration A	1	
206 (6)		VGN1517	Jack Plate Decoration B	1	
207 (6)		VJJ0076	Jack Plate	1	
208 (6)		VMA4120	10P Jack Angle B	1	
209 (6)		VQL1121	Fuse Caution Label	1	
223 (7)		VFC0005	Carrying Case	1	NV-300CE/B
224 (7)		VPN0631	Left Cushion	1	
227 (7)		VPN0630	Right Cushion	1	
228 (7)		VQF0556	Fan Bag Kit	1	NV-3000E
(7)		VQF0557	Fan Bag Kit	1	NV-3000B
229 (7)		VPN0586	Accessory Case	1	
230 (7)		VJP1164	Audio Input Attenuator	1	
231 (7)		VJA0148	Connection Cable	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
233 (7)		VBE0002	Earphone	1	
236 (7)		VSQ0146	Remote Control	1	
237 (7)		VPG0808	Packing Case	1	NV-3000E
(7)		VPG0853	Packing Case	1	NV-3000B
239 (1)		VDP0759	Supply Roller	1	
240 (1)		VMX0288	Collar	1	
241 (1)		VMS1768	L Supply Limiter (Lower)	1	
242 (4)		VMB0677	Eject Spring	1	
243 (5)		VHD0052	Screw	1	
244 (7)		VPF0140	Polyethylene Bag	1	
444 (1)		XNG3B	Nut	2	
426 (1)		XYN3+C10FXS	Screw	3	
411 (3)		XTV3+18FFXS	Screw	1	
440 (2)		XYE3+BF8FX	Screw	1	
516 (1)		XWG4FX	Washer	1	
445 (1)		XNG4	Nut	1	
507 (1)		XWXV4D9	Washer	2	
245 (6)		VMA4197	BNC Jack Angle	1	

ELECTRICAL REPLACEMENT PARTS LIST

Model No. NV-3000-E/-B

Notes:
1. * Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
   Components identified by ⚠ have special characteristics important for safety. When replacing any of these components, use only the original ones.
3. Unless otherwise specified,
   All resistors are in OHMS (Ω), 1/8W ± 5% carbon. K=1,000Ω, M=1,000KΩ.
   All capacitors are in MICROFARADS (μF), ± 10% P=μμF.

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
		VEP0399A	MAIN CIRCUIT BOARD ASS'Y	1	
		VEP0862A	COLOUR/AUDIO CIRCUIT	1	
			BOARD ASS'Y		
		VEP06115A	SYSTEM CONTROL CIRCUIT	1	
			BOARD ASS'Y		
		VEP06118A	KEY BOARD ASS'Y	1	
		VEP06100B	LOADING MOTOR DRIVE	1	
			CIRCUIT BOARD ASS'Y		
		VEP02113A	D.D.CYLINDER DRIVE	1	
			CIRCUIT BOARD ASS'Y		
		VJB00627	JACK BOARD	1	
		VJB00518	MODE SELECT SW BOARD	1	
		VJB00519	SENSOR LAMP BOARD	1	
		VJB00520	TAKEUP PHOTO TR BOARD	1	
		VJB00521	SUPPLY PHOTO TR BOARD	1	
		VJB00522	TAKEUP DETECTOR BOARD	1	
		VJB00523	REMOTE PAUSE/EARPHONE	1	
			JACKS BOARD		
		VJB00524	A/C HEAD BOARD	1	
		VJB00525	SAFETY TAB SW BOARD	1	
		VJB00526	CASSETTE DOWN SW BOARD	1	
		VJB00581	DEW SENSOR CONNECTION	1	
			BOARD		
		ENC17354	RF Converter Unit	1	NV-3000-E
		ENC17355	RF Converter Unit	1	NV-3000-B
			MAIN CIRCUIT BOARD ASS'Y		
			(AVR/SERVO/STILL & SLOW		
			/LUMINANCE)		
			AVR Section		
			Integrated Circuit		
IC1001		VCR0010		1	
			Transistors		
Q1001-Q1006		2SD603		6	
Q1007		2SB759		1	
Q1008		2SA886V		1	
Q1009		2SB759		1	
Q1010		2SD603		1	
Q1014		2SC1317		1	
Q1016		2SD946		1	
Q1017		2SD636		1	
Q1018		2SD603		1	
Q1019		2SB641		1	
Q1020		2SD603		1	
Q1021		2SB793		1	
			Diodes		
D1001		MA1062		1	
D1002		MA165		1	
D1003		ERA81004G		1	

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Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
D1005	RD6R2JB1		1	
	or 5R6JB3			
D1006	ERA81004G		1	
D1007-1010	MA165		4	
		Resistors		
R1001	ERD10TJ472	4.7K	1	
R1002	ERD10TJ563	56K	1	
R1003	ERD10TJ103	10K	1	
R1004	ERD10TJ823	82K	1	
R1005	ERD10TJ682	6.8K	1	
R1006	ERD10TJ102	1K	1	
R1007	ERD10TJ183	18K	1	
R1008	ERD10TJ682	6.8K	1	
R1009	ERD10TJ563	56K	1	
R1010	ERD10TJ472	4.7K	1	
R1011	ERD10TJ224	220K	1	
R1012	ERD10TJ124	120K	1	
R1013	ERD10TJ103	10K	1	
R1014	ERD10TJ391	390	1	
R1015	ERD10TJ332	3.3K	1	
R1016	ERD10TJ224	220K	1	
R1017	ERD10TJ563	56K	1	
R1018	ERD10TJ333	33K	1	
R1019	ERD10TJ123	12K	1	
R1020	ERX12AUJR56	Metal 1/2W 0.56	1	
R1021	ERD10TJ682	6.8K	1	
R1022	ERD10TJ103	10K	1	
R1023	ERD10TJ562	5.6K	1	
R1024	EVN38CA00B24	Variable 20K	1	
R1025	ERD10TJ333	33K	1	
R1031	ERG1ANJ560	Metal 1W 56	1	
R1032	ERD25VJ332	1/4W 3.3K	1	
R1033	ERD10TJ473	47K	1	
R1034	ERD10TJ333	33K	1	
R1036	ERD10TJ561	560	1	
R1037	ERD10TJ562	5.6K	1	
R1039	ERD10TJ682	6.8K	1	
R1040	ERD10TJ472	4.7K	1	
R1041	ERD10TJ104	100K	1	
R1042	ERD10TJ473	47K	1	
R1043	ERD10TJ153	15K	1	
R1044	ERD10TJ223	22K	1	
R1045	ERD10TJ473	47K	1	
R1046	ERD10TJ182	1.8K	1	
R1047	ERD10TJ104	100K	1	
R1048,1049	ERD10TJ473	47K	2	
R1050	ERD10TJ223	22K	1	
R1051	ERD25VJ104	1/4W 100K	1	
R1053	ERX12AUJ2R2	Metal 1/2W 2.2	1	
		Capacitors		
C1001	ECEA1CS221	Electrolytic 16V 220	1	
C1002	ECKZ1H471KB	Ceramic 50V 470P	1	
C1003	ECCD1H181KN	Ceramic 50V 180P	1	
C1004	ECKZ1H221KB	Ceramic 50V 220P	1	
C1005	ECEA1HK010	Electrolytic 50V 1	1	
C1006	ECCZ1H390K	Ceramic 50V 39P	1	
C1007	ECKZ1H561KB	Ceramic 50V 560P	1	
C1008	ECEA1AS221	Electrolytic 10V 220	1	
C1009	ECEA10Z100	Electrolytic 10V 10	1	
C1010	ECEA1AS221	Electrolytic 10V 220	1	
C1011	ECEA1AK470	Electrolytic 10V 47	1	
C1012	ECEA1HK3R3	Electrolytic 50V 3.3	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
C1017	ECEA0JK101	Electrolytic 6.3V 100	1	
C1018,1019	ECEA1CS101	Electrolytic 16V 100	2	
C1020	ECEA1CK100	Electrolytic 16V 10	1	
C1021	VCY25333KX	0.033	1	
		Coils		
L1001	VLQ0066		1	
L1002	VLQ0067		1	
L1003	VLQ0066		1	
L1006	VLQ0068		1	
		Relay		
RY1001	VSY2026		1	
		Miscellaneous		
TP1001,1002	VJH0096Z	Check Terminal	2	
TP1003	VJH0096Z	Check Terminal	1	
F1001	VEK0983	Fuse Unit	1	⚠
		Servo Section		
		Integrated Circuits		
IC2001	AN6350		1	
IC2002	DN819		1	
IC2003	AN6341N		1	
IC2004	M54819L		1	
IC2005	VCR0022		1	
		Transistors		
Q2001	2SD889		1	
Q2002	2SD636		1	
Q2003	2SD636-R		1	
Q2004	2SD636		1	
Q2005	2SB641		1	
Q2006-2008	2SD636		3	
Q2010	2SD636		1	
Q2011,2012	2SB641		2	
Q2013	2SD636		1	
Q2014	2SD636		1	
Q2020	2SB641		1	
Q2021	2SB643		1	
Q2022	2SD946		1	
Q2023	2SB643		1	
Q2024	2SD636		1	
Q2025	2SB641		1	
Q2026	2SD636		1	
Q2027	2SB641		1	
Q2028	2SD636		1	

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Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		Diodes		
D2002-2008	MA165		7	
D2010,2012	MA165		2	
D2014-2016	MA165		3	
D2018,2019	MA165		2	
D2020	MA165		1	
D2021	RD5R6EB		1	
		Resistors		
R2001	ERD10TJ822	8.2K	1	
R2002	ERD10TJ224	220K	1	
R2003	EVN38CA00B15	Variable 100K	1	
R2004	ERD10TJ274	270K	1	
R2005	ERD10TJ822	8.2K	1	
R2006	ERD10TJ223	22K	1	
R2007	ERD10TJ154	150K	1	
R2008	ERD10TJ103	10K	1	
R2009	ERD10TJ104	100K	1	
R2010	ERD10TJ124	150K	1	
R2011,2012	ERD25TJ105	1/4W 1M	2	
R2013	EVN38CA00B25	Variable 200K	1	
R2014	ERD10TJ183	18K	1	
R2015	EVN38CA00B25	Variable 200K	1	
R2016	ERD10TJ183	18K	1	
R2017	EVN38CA00B15	Variable 100K	1	
R2018	ERD10TJ393	39K	1	
R2019	ERD10TJ123	12K	1	
R2020	ERD25TG683	1/4W ±2% 68K	1	
R2021	EVN38CA00B54	Variable 50K	1	
R2022	ERD10TJ124	120K	1	
R2023	ERD10TJ222	2.2K	1	
R2024	ERD25TG103	1/4W ±2% 10K	1	
R2025	ERD25TG472	1/4W ±2% 4.7K	1	
R2026	ERD10TJ473	47K	1	
R2027	ERD25TG184	1/4W ±2% 180K	1	
R2029	ERD10TJ564	680K	1	
R2030	ERD10TJ104	100K	1	
R2031	ERD10TJ152	1.5K	1	
R2032	ERD10TJ272	2.7K	1	
R2033	ERD10TJ123	12K	1	
R2034	ERC14GK225	Solid 1/4W ±2% 2200K	1	
R2036	ERD10TJ332	3.3K	1	
R2037	ERD25VJ823	1/4W 68K	1	
R2039	ERD10TJ104	100K	1	
R2040	ERD10TJ473	47K	1	
R2044	ERD10TJ333	33K	1	
R2045	ERD25TJ105	1/4W 1000K	1	
R2048	ERD10TJ473	47K	1	
R2056	ERD25VJ104	1/4W 100K	1	
R2057	ERD10TJ563	56K	1	
R2058	ERD25VJ104	1/4W 100K	1	
R2059	ERD10TJ103	10K	1	
R2062	ERD25VJ104	100K	1	
R2063	ERD10TJ104	100K	1	
R2065	ERD10TJ104	100K	1	
R2066	ERD10TJ101	100	1	
R2067	ERD10TJ333	33K	1	
R2068	ERD10TJ224	220K	1	
R2069	ERD10TJ222	2.2K	1	
R2070	ERD10TJ472	4.7K	1	
R2071	ERD10TJ104	100K	1	
R2072	ERD10TJ682	6.8K	1	
R2073	ERD10TJ333	33K	1	
R2074,2075	ERD10TJ104	100K	1	
R2076	ERD10TJ332	3.3K	1	
R2077	ERD25VJ393	39K	1	
R2078	ERD10TJ223	22K	1	
R2079	ERD10TJ103	10K	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R2080	ERD10TJ472	4.7K	1	
R2081	ERD10TJ223	22K	1	
R2082	ERD10TJ473	47K	1	
R2083,2084	ERD10TJ104	100K	2	
R2085	ERD10TJ221	220	1	
R2086	ERD10TJ473	47K	1	
R2087,2088	EVN38CA00B15	Variable 100K	2	
R2089	ERD25VJ683	1/4W 68K	1	
R2090	ERD10TJ183	22K	1	
R2091	ERD10TJ104	100K	1	
R2092	ERD10TJ124	120K	1	
R2093	ERC14GK395	1/4W ±2% 6.8M	1	
R2094	ERD10TJ682	6.8K	1	
R2095	ERD10TJ822	8.2K	1	
R2096	ERD10TJ472	4.7K	1	
R2097	ERD25TG272	1/4W ±2% 2.7K	1	
R2098	ERD10TJ473	47K	1	
R2099	ERD10TJ223	22K	1	
R2103	ERD10TJ273	27K	1	
R2104	ERD10TJ562	5.6K	1	
R2105	ERD25VJ273	1/4W 27K	1	
R2106	ERD10TJ683	150K	1	
R2107	EVN38CA00B24	Variable 20K	1	
R2108	ERD10TJ102	1K	1	
R2109	ERC14GK155	1/4W ±2% 1.5M	1	
R2110	ERD10TJ563	56K	1	
R2111	ERD10TJ272	6.8K	1	
R2112	ERD25VJ182	1/4W 1.8K	1	
R2113	ERD10TJ473	47K	1	
R2115	ERD10TJ104	100K	1	
R2116	ERD25VJ333	1/4W 33K	1	
R2117	ERD10TJ473	47K	1	
R2118	ERD10TJ823	8.2K	1	
R2119	ERD10TJ822	8.2K	1	
R2120	ERD25FAJ1R8	1/4W 1.8	1	
R2123	ERD10TJ102	1K	1	
R2124,2125	ERD10TJ473	47K	2	
R2126	ERD10TJ223	22K	1	
R2127	ERD10TJ473	47K	1	
R2128	ERD10TJ682	6.8K	1	
R2129	ERD10TJ223	22K	1	
R2130	ERD25VJ101	100	1	
		Capacitors		
C2001	ECQV05124JZ	Mylar 50V 0.12	1	
C2002	ECQM1H273KZ	Mylar 50V 0.027	1	
C2003	ECQM1H103KZ	Mylar 50V 0.01	1	
C2004	ECQM1H472KZ	Mylar 50V 4700P	1	
C2005	ECEA1HK010	Electrolytic 50V 1	1	
C2006	ECSF35ER33KE	35V 33P	1	
C2007,2008	ECEA1HK010	Electrolytic 50V 1	2	
C2009,2010	ECQM1H183KZ	Mylar 50V 0.018	2	
C2011	ECQM1H273KZ	Mylar 50V 0.027	1	
C2012,2013	ECQV05104JZ	Mylar 50V 0.1	2	
C2014	ECEA10Z100	Electrolytic 10V 10	1	
C2015	ECEA1ASS331	Electrolytic 10V 330	1	
C2016	ECSF35ER22KE	35V 22P	1	
C2017	ECKW1H331KBN	Ceramic 50V 330	1	
C2018	ECEA1CK470	Electrolytic 10V 47	1	
C2019	ECEA0JK220	Electrolytic 6.3V 22	1	
C2020	VCY25223KX	0.022	1	
C2021	ECQV051104JZ	Mylar 50V 0.1	1	
C2022	ECQV05124JZ	Mylar 50V 0.12	1	
C2023	ECQM1H473KZ	Mylar 50V 0.047	1	
C2024	VCY25682KX	6800P	1	
C2025	ECEA0JK220	Electrolytic 6.3V 22	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C2029,2030		ECEA1HK010	Electrolytic 50V 1	2	
C2031		ECEA1HK0R1	Electrolytic 50V 0.1	1	
C2032		ECEA1CK220	Electrolytic 10V 22	1	
C2033		ECEA1HK010	Electrolytic 50V 1	1	
C2034		ECKD1H103Z	Electrolytic 50V 0.01	1	
C2035		ECSF35ER33K	35V 0.33	1	
C2036,2037		ECQV05104JZ	50V 0.1	2	
C2038		ECEA1CK470	Electrolytic 10V 47	1	
C2039		ECEA0JK470	Electrolytic 6.3V 47	1	
C2040		ECEA1CK100	Electrolytic 16V 10	1	
C2041		ECEA1ACK470	Electrolytic 10V 47	1	
C2042		ECQV05274JZ	Mylar 50V 0.027	1	
C2043		ECQV05184JZ	Mylar 50V 0.018	1	
C2044		ECQM1H103KZ	Mylar 50V 0.01	1	
C2045		ECQV05104JZ	Mylar 50V 0.018	1	
C2046		ECKD1H472ZF	Ceramic 4700P	1	
C2047		ECEA1CS331S	Electrolytic 16V 330	1	
C2048		ECEA1CK100	Electrolytic 16V 10	1	
C2051		ECEA1HK010	Electrolytic 50V 1	1	
C2052		ECKD1H103ZF	Ceramic 0.01	1	
C2053		ECEA0JK470	Electrolytic 47	1	
			Coils		
L2001		VLQEL06F101K	100μ	1	
L2002		VLQEL06R100K	10μ	1	
			Check Terminals		
TP2001-2007		VJH0096Z		7	
TP2009-2014		VJH0096Z		6	
			Still & Slow Section		
			Integrated Circuits		
IC2701		μPD4013C		1	
IC2702,2703		μPD4081C		2	
IC2704		DN819		1	
			Transistors		
Q2701,2702		2SD636		2	
Q2704,2705		2SD636		2	
Q2706		2SB641		1	
Q2709,2710		2SD636		2	
Q2711		2SB819		1	
			Diodes		
D2701-2705		MA165		5	
			Resistors		
R2701		ERD10TJ473	47K	1	
R2702		ERD10TJ103	10K	1	
R2703		EVN38CA00B15	Variable 10K	1	
R2704		ERD10TJ103	10K	1	
R2705		ERD10TJ222	2.2K	1	
R2706		ERD10TJ103	10K	1	
R2707		ERD10TJ124	120K	1	
R2709		ERD10TJ473	47K	1	
R2710		ERD10TJ183	18K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R2711		ERD10TJ102	1K	1	
R2712		EVNK4AA00B54	Variable 10K	1	
R2713		ERD10TJ473	47K	1	
R2714		ERD10TJ823	82K	1	
R2715,2716		ERD10TJ103	10K	2	
R2717		EVN38CA00B25	Variable 20K	1	
R2718,2719		ERD10TJ103	10K	2	
R2720		ERD10TJ473	47K	1	
R2721		EVN38CA00B15	Variable 10K	1	
R2722		ERD10TJ563	56K	1	
R2723,2724		ERD10TJ103	10K	2	
R2725		ERD10TJ473	47K	1	
R2726		ERD10TJ563	56K	1	
R2727		ERD10TJ333	33K	1	
R2728		ERD10TJ273	27K	1	
R2729		ERD10TJ472	4.7K	1	
R2730		ERD10TJ393	39K	1	
R2731		ERD10TJ103	10K	1	
R2732		ERD10TJ153	15K	1	
R2733		ERD10TJ222	2.2K	1	
R2734		ERD10TJ223	22K	1	
R2735		ERD10TJ563	56K	1	
R2736		ERD10TJ334	330K	1	
R2742		ERD10TJ103	10K	1	
R2744		ERD10TJ332	3.3K	1	
R2745		ERD10TJ822	8.2K	1	
R2901		ERD10TJ823	82K	1	
R2903		ERD25FAJ1R8	1/4W 1.8	1	
R2906		ERD10TJ682	6.8K	1	
R2907		ERD10TJ223	22K	1	
R2908		ERD10TJ473	47K	1	
			Capacitors		
C2701		ECQM1H470KZ	Mylar 50V 47P	1	
C2702		ECQM1H272KZ	Mylar 50V 2700P	1	
C2703		ECQM1H470KZ	Mylar 50V 47P	1	
C2704		ECQM1H272KZ	Mylar 50V 2700P	1	
C2705		ECKD1H472ZF	Ceramic 50V 4700P	1	
C2706		ECEA1HK0R1	Electrolytic 50V 0.1	1	
C2707		ECEA1AK330	Electrolytic 10V 33	1	
C2708		ECEA1CK100	Electrolytic 16V 10	1	
C2709		ECQM1H103KZ	Mylar 50V 0.01	1	
C2710		ECQM1H102KZ	Mylar 50V 1000P	1	
C2711		ECEA1HK0R1	Electrolytic 50V 0.1	1	
			Check Terminals		
TP2701,2702		VJH0096Z		2	
			LUMINANCE SECTION		
			Integrated Circuits		
IC3001		AN6310		1	
IC3002		AN6320N		1	
IC3003		AN304		1	

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Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
IC3004	AN6332		1	
IC3005	VCR0024		1	
IC3006	VCR0013		1	
		Transistors		
Q3001	2SD636		1	
Q3002,3003	2SD638		2	
Q3004	2SB641		1	
Q3005,3006	2SD636		2	
Q3007-3009	2SD638		3	
Q3010	2SC2206		1	
Q3011	2SC2377		1	
Q3012	2SB641		1	
Q3013	2SD636		1	
Q3014	2SB641		1	
Q3015-3017	2SD636		3	
		Diodes		
D3001-3004	MA165		4	
D3007	MA165		1	
		Resistors		
R3001	ERD10TJ473	47K	1	
R3002	ERD10TJ223	22K	1	
R3003	ERD10TJ821	820	1	
R3004	ERD10TJ562	5.6K	1	
R3005	ERD10TJ561	560	1	
R3006	ERD10TJ272	2.7K	1	
R3007	ERD10TJ333	33K	1	
R3008	ERD25VJ821	1/4W 820	1	
R3009	ERD10TJ750	75	1	
R3010	ERD10TJ821	820	1	
R3011	ERD10TJ222	2.2K	1	
R3012	ERD10TJ152	1.5K	1	
R3013	ERD10TJ102	1K	1	
R3014	ERD10TJ391	390	1	
R3015	ERD10TJ821	820	1	
R3016	EVN38CA00B53	Variable 5K	1	
R3017	ERD10TJ222	2.2K	1	
R3018	ERD10TJ102	1K	1	
R3019	ERD10TJ332	3.3K	1	
R3020,3021	EVN38CA00B53	Variable 5K	2	
R3022	ERD10TJ562	5.6K	1	
R3023	ERD25VJ332	1/4W 3.3K	1	
R3024	ERD10TJ123	12K	1	
R3025	EVN38CA00B24	Variable 20K	1	
R3026	ERD10TJ684	680K	1	
R3027	ERD10TJ152	1.5K	1	
R3028	ERD10TJ271	270	1	
R3029	ERD10TJ222	2.2K	1	
R3030	EVN38CA00B23	Variable 2K	1	
R3031	ERD10TJ820	82	1	
R3032	ERD25VJ821	1/4W 820	1	
R3033	ERD10TJ102	1K	1	
R3034	ERD10TJ393	39K	1	
R3035	ERD10TJ823	82K	1	
R3036	ERD10TJ152	1.5K	1	
R3037	ERD10TJ471	470	1	
R3038	ERD10TJ223	22K	1	
R3039	ERD10TJ272	2.7K	1	
R3040,3041	ERD10TJ100	10	2	
R3042	ERD10TJ272	2.7K	1	
R3043	ERD10TJ473	47K	1	
R3044	EVN38CA00B13	Variable 1K	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
R3045	ERD10TJ391	390	1	
R3046	ERD10TJ822	8.2K	1	
R3047	EVN38CA00B23	Variable 2K	1	
R3048	ERD10TJ822	8.2K	1	
R3249	ERD10TJ102	1K	1	
R3050	ERD10TJ391	390	1	
R3051	EVN38CA00B13	Variable 1K	1	
R3052	ERD10TJ473	47K	1	
R3053	ERD10TJ273	27K	1	
R3054	EVN38CA00B23	Variable 2K	1	
R3055	ERD10TJ472	4.7K	1	
R3056	ERD10TJ272	2.7K	1	
R3057,3058	ERD10TJ561	560	2	
R3059	ERD10TJ681	680	1	
R3060	ERD10TJ391	390	1	
R3061	ERD10TJ820	82	1	
R3062	ERD10TJ102	1K	1	
R3063	EVN38CA00B15	Variable 100K	1	
R3064	ERD10TJ473	47K	1	
R3065	ERD10TJ153	15K	1	
R3066	EVN38CA00B54	Variable 50K	1	
R3067,3068	ERD10TJ102	1K	2	
R3069	ERD10TJ391	390	1	
R3070	ERD10TJ102	1K	1	
R3071	ERD10TJ222	2.2K	1	
R3072	ERD10TJ274	270K	1	
R3073	ERD10TJ471	470	1	
R3074	ERD10TJ332	3.3K	1	
R3075	ERD10TJ562	5.6K	1	
R3076	ERD10TJ102	1K	1	
R3077	ERD10TJ472	4.7K	1	
R3078	EVN38CA00B13	Variable 1K	1	
R3080	ERD10TJ152	1.5K	1	
R3081	ERD10TJ271	220	1	
R3083,3084	ERD10TJ222	2.2K	2	
R3085	ERD10TJ182	1.8K	1	
R3086	ERD25VJ102	1K	1	
R3087	ERD10TJ471	470	1	
R3089	ERD10TJ222	2.2K	1	
R3090	ERD10TJ471	470	1	
R3091	ERD10TJ101	100	1	
R3092,3093	ERD10TJ562	5.6K	2	
R3094	ERD10TJ221	220	1	
R3095	ERD10TJ102	1K	1	
R3096	ERD10TJ561	560	1	
R3097	ERD10TJ332	3.3K	1	
R3098	ERD10TJ153	15K	1	
R3099	ERD10TJ123	12K	1	
R3100	ERD10TJ391	390	1	
R3103	ERD10TJ273	27K	1	
		Capacitors		
C3001	ECEA0JK470	Electrolytic 6.3V 47	1	
C3002	ECEA1HK2R2	Electrolytic 50V 2.2	1	
C3003	VCY25473KX	0.047	1	
C3004	ECCD1H330KN	Ceramic 50V 33P	1	
C3005	ECKD1H681KN	Ceramic 50V 680P	1	
C3006,3007	ECEA0JK470	Electrolytic 6.3V 47	2	
C3008	ECEA1ASS221	Electrolytic 10V 220	1	
C3009	ECEA1VK4R7	Electrolytic 35V 4.7	1	
C3010	ECCD1H470KCN	Ceramic 50V 47P	1	
C3011	ECV1ZW40X53N	Trimmer	1	
C3012	ECKD1H102ZFN	Ceramic 50V 1000P	1	
C3013	ECEA1AK330	Electrolytic 10V 33	1	
C3014	ECKD1H472ZFN	Ceramic 50V 4700P	1	
C3015	ECKD1H472ZF	Ceramic 50V 4700P	1	

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Ref. No.		Part No.	Part Name & Description			Pcs / Set	Remarks
C3016		ECEA1AN220S	Electrolytic	10V	22	1	
C3017		ECEA1VK4R7	Electrolytic	35V	4.7	1	
C3018		ECEA0JK330	Electrolytic	6.3V	33	1	
C3019		ECQM1H333KZ	Mylar	50V	0.033	1	
C3020		VCKD1H621JSA	Ceramic	50V	620P	1	
C3021		ECEA0JK470	Electrolytic	6.3V	47	1	
C3022		ECEA1CK100	Electrolytic	16V	10	1	
C3023		ECEA1AK330	Electrolytic	10V	33	1	
C3024		ECEA1HK010	Electrolytic	50V	1	1	
C3025		ECEA1AK330	Electrolytic	10V	33	1	
C3026		ECEA1CK100	Electrolytic	16V	10	1	
C3027		ECKD1H472ZFN	Ceramic	50V	4700P	1	
C3028		ECEA1AK330	Electrolytic	10V	33	1	
C3029		ECEA1HK010	Electrolytic	50V	1	1	
C3030,3031		ECV1ZW60X64	Trimmer			2	
C3032		ECKD1H472ZFN	Ceramic	50V	4700P	1	
C3033		ECKD1H472ZF	Ceramic	50V	4700P	1	
C3034		ECEA1HK010	Electrolytic	50V	1	1	
C3035		ECEA1CK100	Electrolytic	16V	10	1	
C3036		ECKD1H472ZF	Ceramic	50V	4700P	1	
C3037		ECCD1H470KCN	Ceramic	50V	47P	1	
C3038		ECCD1H150KN	Ceramic	50V	15P	1	
C3039		ECKD1H472ZFN	Ceramic	50V	4700P	1	
C3040		ECKD1H472ZF	Ceramic	50V	4700P	1	
C3041		ECCD1H470KCN	Ceramic	50V	47P	1	
C3042		ECKD1H472ZF	Ceramic	50V	4700P	1	
C3043		ECCD1H121KN	Ceramic	50V	120P	1	
C3044		ECKD1H271KBN	Ceramic	50V	270P	1	
C3045		VCKD1H431JSA	Ceramic	50V	430P	1	
C3046		ECEA1CK470	Electrolytic	10V	47	1	
C3047		ECKD1H331KB	Ceramic	50V	330P	1	
C3048		ECEA1AK330	Electrolytic	10V	33	1	
C3049		ECKD1H472ZF	Ceramic	50V	4700P	1	
C3050		ECKD1H103ZFN	Ceramic	50V	0.01	1	
C3051,3052		ECKD1H472ZF	Ceramic	50V	4700P	2	
C3053		ECKD1H103ZFN	Ceramic	50V	0.01	1	
C3054		ECKD1H472ZF	Ceramic	50V	4700P	1	
C3055,3056		ECKD1H472ZFN	Ceramic	50V	4700P	2	
C3057		ECEA0JK220	Electrolytic	6.3V	22	1	
C3058		ECCD1H101KN	Ceramic	50V	100P	1	
C3059		ECEA0JK470	Electrolytic	6.3V	47	1	
C3060		ECQM1H182KZ	Mylar	50V	1800P	1	
C3061		VCKD1H122JSA	Ceramic	50V	1200P	1	
C3062		VCY25473KX			0.047	1	
C3063		ECEA1HK010	Electrolytic	50V	1	1	
C3064		ECCD1H270K	Ceramic	50V	27P	1	
C3065		ECCD1H270KN	Ceramic	50V	27P	1	
C3066		ECEA1CK100	Electrolytic	16V	10	1	
C3067		ECCD1H820KN	Ceramic	50V	82P	1	
C3069		ECCD1H330KN	Ceramic	50V	330P	1	
C3070		VCKD1H621JSA	Ceramic	50V	620P	1	
C3071		ECCD1H101KN	Ceramic	50V	100P	1	
C3072		ECCD1H121KN	Ceramic	50V	120P	1	
C3074		ECEA1ASS221	Electrolytic	10V	220	1	
C3075		ECEA0JK470	Electrolytic	6.3V	47	1	
C3076		ECEA1CK100	Electrolytic	16V	10	1	
C3077		ECKD1H472ZF	Ceramic	50V	4700P	1	
C3078		ECEA1CK470	Electrolytic	16V	47	1	
C3079		VCY25473KX			0.047	1	
C3080		ECEA0JK220	Electrolytic	6.3V	22	1	
C3081-3082		ECEA0JSS471	Electrolytic	6.3V	470	2	
C3083		ECEA0JK470	Electrolytic	6.3V	47	1	
C3085		ECCD1H220K	Ceramic	50V	22P	1	
C3087		VCY25473KX				1	
C3088		ECEA1AK330	Electrolytic	10V	33	1	
C3089		ECEA1ASS221	Electrolytic	10V	220	1	
C3090		ECEA1AK330	Electrolytic	10V	33	1	
C3091		ECKD1H472ZF	Ceramic	50V	4700P	1	
C3092		ECCF1H151K	Ceramic	50V	150P	1	
C3093		ECCD1H820KN	Ceramic	50V	82P	1	

Ref. No.		Part No.	Part Name & Description			Pcs / Set	Remarks
C3095		ECCD1H121KN	Ceramic	50V	120P	1	
C3096		ECCD1H560KN	Ceramic	50V	56P	1	
C3097		ECCD1H390KN	Ceramic	50V	39P	1	
			Coils				
L3001,3002		VLQEL06F221K			220μ	2	
L3003		VLQEL06R101K			100μ	1	
L3004		VLQEL06F181K			180μ	1	
L3005		VLQEL06F3R3K			3.3	1	
L3006		VLQEL06R100K			10μ	1	
L3007		VLQEL06F3R3K			3.3	1	
L3008		VLQEL06R220K			22μ	1	
L3009		VLQEL06F2R7K			2.7μ	1	
L3010		VLQEL06R151K			150μ	1	
L3011		VLQEL06F221K			220μ	1	
L3012		VLQEL06F181K			180μ	1	
L3013,3014		VLQEL06F100K			10μ	2	
L3015		VLQEL06R471K			470μ	1	
L3016		VLQEL06F471K			470μ	1	
L3017		VLQEL06F101K			100μ	1	
L3019		VLQEL06F820K			82μ	1	
L3020		VLQEL06F101K			100μ	1	
L3021		VLQEL06F330K			3.3μ	1	
L3022		VLQ00F222K			2200μ	1	
			Test Pins				
TP3001-3011		VJH0096Z				11	
			Pin Headers				
P1		VJP1151	6P			1	
P2		VJP1150	5P			1	
P3		VJP1145	8P			1	
P4		VJP1146	10P			1	
P5		VJP1147	12P			1	
P6		VJP1142	3P			1	
P7,8		VJP1150	5P			2	
P9		VJP1152	8P			1	
P10		VJP1148	2P			1	
P11		VJP1149	3P			1	
P12		VJP1148	2P			1	
P13,14		VJP1149	3P			2	
P15		VJP1152	8P			1	
P24		VJP1145	8P			1	
P002		VJP1144	6P			1	
P003		VJP1148	2P			1	
			Shield Cases				
		VSC0469	A			1	
		VSC0470	B			1	
		VSC041	C			1	
		VSC0473				1	
		VSC0474				1	
			Shield Cover				
		VMZ0301				1	

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Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		COLOUR/AUDIO CIRCUIT		
		BOARD ASS'Y		
		Colour Section		
		Integrated Circuits		
IC8001	AN6360		1	
IC8002	AN6363		1	
IC8003	AN6371		1	
IC8004	AN6342N		1	
		Transistors		
Q8001	2SD636		1	
Q8002	2SB641		1	
Q8003	2SD636		1	
Q8004	2SC2206		1	
		Diodes		
D8001	VD1222		1	
D8002-8004	MA165TA5		3	
		Resistors		
R8001	ERD10TJ563	56K	1	
R8002	ERD10TJ103	10K	1	
R8003	ERD10TJ821	820	1	
R8004	ERD10TJ102	1K	1	
R8005	ERD10TJ121	180	1	
R8006	ERD10TJ122	1.2K	1	
R8007	ERD10TJ152	1.5K	1	
R8008	ERD10TJ684	680K	1	
R8009,8010	ERD10TJ102	1K	2	
R8011,8012	ERD10TJ122	1.2K	2	
R8013	EVN38CA00B14	14K	1	
R8014-8016	ERD10TJ391	390	3	
R8017	ERD10TJ273	27K	1	
R8018	ERD10TJ102	1K	1	
R8019,8020	ERD10TJ391	560	2	
R8021	ERD10TJ562	5.6K	1	
R8022	ERD10TJ221	220	1	
R8023	ERD10TJ332	3.2K	1	
R8024	ERD10TJ152	1.5K	1	
R8025	EVN38CA00B23	2K	1	
R8026	ERD10TJ562	5.6K	1	
R8027	ERD25TJ391	390	1	
R8028	ERD10TJ224	220K	1	
R8029	ERD10TJ273	27K	1	
R8030	ERD10TJ682	6.8K	1	
R8031	ERD10TJ222	2.2K	1	
R8032	ERD10TJ122	1.2K	1	
R8033	ERD10TJ153	15K	1	
R8034	ERD10TJ472	4.7K	1	
R8035	ERD10TJ102	1K	1	
R8036	ERD10TJ222	2.2K	1	
R8037	ERD10TJ274	270K	1	
R8038	ERD10TJ473	47K	1	
R8039,8040	ERD10TJ102	1K	2	
R8041,8042	ERD10TJ103	10K	2	
R8043	ERD10TJ562	5.6K	1	
R8044	ERD10TJ102	1K	1	
R8045	ERD10TJ472	4.7K	1	
R8046	ERD10TJ274	270K	1	
R8047	ERD10TJ392	3.9K	1	
R8048	ERD10TJ182	1.8K	1	
R8049	EVN38CA00B52	Variable 500	1	
		Capacitors		
C8001	ECKZ1H472ZF	Ceramic 50V 0.047	1	
C8002	ECEA1AK330	Electrolytic 10V 33	1	
C8003	ECQM1H153KZ	Mylar 50V 0.0015	1	
C8004,8005	ECKZ1H472ZF	Ceramic 50V 0.047	2	
C8006	ECKF1H103ZF	50V 0.001	1	
C8007	ECEA1AK330	Electrolytic 10V 33	1	
C8008	ECKZ1H472ZF	Ceramic 50V 0.047	1	
C8009	ECEA1HK010	Electrolytic 50V 1	1	
C8010	ECKD1H472ZF	Ceramic 50V 0.047	1	
C8011	ECKZ1H331HB	Ceramic 50V 33	1	
C8012	ECHD1H472ZF	Ceramic 50V 0.047	1	
C8013	ECKZ1H472ZF	Ceramic 50V 0.047	1	
C8014,8015	ECKD1H472ZF	Ceramic 50V 0.047	2	
C8016	ECKD1H821KBN	Ceramic 50V 82P	1	
C8017	ECKD1H122KBN	Ceramic 50V 0.012	1	
C8018	ECEA1CK100	Electrolytic 16V 10	1	
C8019	ECEA1CK100	Electrolytic 16V 10	1	
C8020	ECQM1H183KZ	Mylar 50V 0.0018	1	
C8021	ECCD1H121KCN	Ceramic 50V 120P	1	
C8022	ECCD1H181KCN	Ceramic 50V 180P	1	
C8023	ECEA1HK010	Electrolytic 50V 1	1	
C8024	ECCD1H221KN	Ceramic 50V 220P	1	
C8025	ECKD1H821KBN	Ceramic 50V 82P	1	
C8026	ECKZ1H472ZF	Ceramic 50V 0.047	1	
C8027	ECKD1H472ZF	Ceramic 50V 0.047	1	
C8028	ECCZ1H150K	Ceramic 50V 15P	1	
C8029	ECEA1HK2R2	Electrolytic 50V 2.2	1	
C8030,8031	ECKZ1H472ZF	Ceramic 50V 0.047	2	
C8032	ECKD1H103ZFN	Ceramic 50V 0.01	1	
C8033,8034	ECEA1AK330	Electrolytic 10V 33	2	
C8035	ECKD1H472ZFN	Ceramic 50V 0.047	1	
C8036	ECEA1HK010	Electrolytic 50V 1	1	
C8037	ECEA1HK0R1	Electrolytic 50V 01	1	
C8038	ECEA1HK0R1	Electrolytic 50V 01	1	
C8039	ECQV05333JZW	Mylar 50V 0.01	1	
C8040	ECCD1H101KN	Ceramic 50V 100P	1	
C8041	ECEA1CK100	Electrolytic 16V 10	1	
C8042	ECKZ1H472ZF	Ceramic 50V 0.047	1	
C8043	ECCZ1H040DC	Ceramic 50V 4P	1	
C8044	ECCZ1H060DC	Ceramic 50V 6P	1	
C8045	ECEA1AK330	Electrolytic 10V 33	1	
C8046	ECKZ1H472ZF	Ceramic 50V 0.047	1	
C8047	ECCD1H151KCN	Ceramic 50V 150P	1	
C8048	ECCD1H101KCN	Ceramic 50V 100	1	
C8049	ECV1ZW20X53N	Trimmer 20P	1	
C8050	ECCZ1H150KC	Ceramic 50V 15P	1	
C8051	ECKZ1H472ZF	Ceramic 50V 0.047	1	
C8052	ECEA1CK100	Electrolytic 16V 10	1	
C8053	ECV1ZW40X53N	Trimmer 40P	1	
C8054	ECCD1H390KN	Ceramic 50V 39	1	
C8055	ECKD1H561KBN	Ceramic 50V 560P	1	
		Coils		
L8001	VLQEL06F221K	220μ	1	
L8002	VLQEL06F471K	470μ	1	
L8003,8004	VLQEL06R6R8J	6.8μ	2	
L8005	VLQEL06R330K	33μ	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
L8006		VLQ7H682K	6.8m	1	
L8007		VLQEL06F470K	47μ	1	
L8008		VLQFL06R221K	220μ	1	
L8009		VLQEL06F560K	56μ	1	
L8010		VLQEL06F221K	220μ	1	
L8011		VLQEL06R221K	220μ	1	
			Filters		
FL8001		VLF0103	(L.P.F)	1	
FL8002		VLF0122	(REC.B.P.F)	1	
FL8003		VLF0103	(L.P.F)	1	
FL8004		VLF0123	(PB B.P.F)	1	
FL8005		VLF0124	(5.06MHz B.P.F)	1	
			X'tal Oscillators		
X8001		VSX0066		1	
X8002		VSX0068		1	
			Delay Line		
DL8001		VLD0024		1	
			Test Points		
TP8001		VJH0096Z		1	
TP8003-8010		VJH0096Z		8	
			Miscellaneous		
P17		VJP1141	Pin Header	1	
P18		VJP1143	Pin Header	1	
			AUDIO SECTION		
			Integrated Circuits		
IC4001		HA12005		1	
IC4002		μPC4558		1	
IC4003		VCR0020		1	
IC4004		VCR0021		1	
			Transistors		
Q4001		2SD636		1	
Q4002		2SD655		1	
Q4003		2SB641		1	
Q4004		2SD655		1	
Q4005		2SD638		1	
Q4006		2SB643		1	
Q4007		2SD655		1	
Q4008		2SD636		1	
Q4009		2SD973		1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
Q4010,4011		2SD636		2	
Q4012		2SD973		1	
			Diodes		
D4001-4009		MA165		9	
D4010,4011		MA165		2	
			Resistors		
R4001		ERD10TJ104	100K	1	
R4002		ERD10TJ181	180	1	
R4003		ERD10TJ104	100K	1	
R4004		ERD10TJ332	3.3K	1	
R4005		ERD10TJ182	1.8K	1	
R4006		EVN38CA00B24	Variable 20K	1	
R4007		ERD10TJ392	3.9K	1	
R4008		ERD10TJ104	100K	1	
R4009		ERD10TJ221	220	1	
R4010		ERD10TJ682	6.8K	1	
R4011		ERD10TJ472	4.7K	1	
R4012		ERD10TJ122	1.2K	1	
R4013		ERD10TJ103	10K	1	
R4014		ERD10TJ152	1.5K	1	
R4015		ERD10TJ103	10K	1	
R4016		ERD10TJ104	100K	1	
R4017		ERD10TJ333	33K	1	
R4018		ERD10TJ103	10K	1	
R4019		ERD10TJ184	180K	1	
R4020		ERD10TJ472	4.7K	1	
R4021		ERD10TJ470	47	1	
R4022		ERD10TJ561	560	1	
R4023		ERD10TJ153	15K	1	
R4024		ERD10TJ183	18K	1	
R4025		ERD10TJ563	56K	1	
R4026		ERD10TJ104	100K	1	
R4027		ERD10TJ102	1K	1	
R4028		ERD10TJ273	27K	1	
R4029		ERD10TJ470	47	1	
R4030		ERD10TJ151	150	1	
R4031		ERD10TJ332	3.3K	1	
R4032		ERD10TJ473	47K	1	
R4033		ERD10TJ153	15K	1	
R4034		ERD10TJ104	100K	1	
R4036		ERD10TJ103	10K	1	
R4037		ERD10TJ102	1K	1	
R4038,4039		ERD10TJ103	10K	2	
R4040		ERD10TJ103	10K	1	
R4041,4042		ERD10TJ223	22K	2	
R4043,4044		ERD10TJ103	10K	2	
R4045		ERD10TJ103	10K	1	
R4046		ERD10TJ333	33K	1	
R4047		ERD10TJ4R7	4.7	1	
R4048		ERD10TJ103	10K	1	
R4049		ERD10TJ332	3.3K	1	
R4050		ERD10TJ333	33K	1	
R4051		ERD10TJ4R7	4.7	1	
R4052,4053		ERD10TJ682	6.8K	2	
R4054		EVN38CA00B54	Variable 50K	1	
R4055		ERD10TJ104	100K	1	
R4056		ERD10TJ103	10K	1	
R4057		ERD10TJ104	100K	1	
R4059		ERD10TJ332	3.3K	1	
R4060		ERD10TJ103	10K	1	

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Ref. No.		Part No.	Part Name & Description			Pcs / Set	Remarks
			Capacitors				
C4001		ECEA1CK100	Electrolytic	16V	10	1	
C4002		ECKZ1H681KB	Ceramic	50V	680P	1	
C4003		ECEA1CK100	Electrolytic	16V	10	1	
C4004		ECKD1H102KBN	Ceramic	50V	0.01	1	
C4005		ECEA0JK470	Electrolytic	6.3V	47	1	
C4006		ECQM1H333JZ	Mylar	50V	0.33	1	
C4007		ECEA1AK220	Electrolytic	10V	22	1	
C4008		ECEA1EK3R3	Electrolytic	25V	3.3	1	
C4009		ECEA1AK330	Electrolytic	10V	33	1	
C4010		ECEA1EK3R3	Electrolytic	25V	3.3	1	
C4011		ECEA1CK100	Electrolytic	16V	10	1	
C4012		ECEA0JK470	Electrolytic	6.3V	47	1	
C4013		ECKD1H103ZFN	Ceramic	50V	0.01	1	
C4014,4015		ECEA1CK100	Electrolytic	16V	10	2	
C4016		ECEA1EK3R3	Electrolytic	25V	3.3	1	
C4017		ECEA1EK3R3	Electrolytic	25V	3.3	1	
C4018		ECEA0JK101	Electrolytic	6.3V	100	1	
C4019		ECEA1CK100	Electrolytic	16V	10	1	
C4020		ECQM1H272KZ	Mylar	50V	0.027	1	
C4021		ECEA1CK470	Electrolytic	16V	47	1	
C4022		ECEA1CK100	Electrolytic	16V	10	1	
C4023		ECQV05124JZ	Mylar	50V	0.12	1	
C4024		ECEA0JK470	Electrolytic	6.3V	47	1	
C4025		ECEA1EK3R3	Electrolytic	25V	3.3	1	
C4026		ECEA1CK100	Electrolytic	16V	10	1	
C4027		ECEA1CK100	Electrolytic	16V	10	1	
C4028		ECEA0JK470	Electrolytic	6V	47	1	
C4029		ECKD1H103ZFN	Ceramic	50V	0.01	1	
C4030		ECQV05333JZ	Mylar	50V	0.033	1	
C4031		ECEA1EK3R3	Electrolytic	25V	3.3	1	
C4032		ECQF2223KZ	Polyplopylene	200V	0.022	1	
C4033		ECKD1H103ZFN	Ceramic	50V	0.01	1	
C4034		ECQV05333JZ	Mylar	50V	0.033	1	
C4035		ECEA1EK3R3	Electrolytic	25V	3.3	1	
C4036		ECQF6152KZ	Polyplopylene	600V	0.015	1	
C4037,4038		ECEA1CK470	Electrolytic	16V	47	2	
C4039		ECEA0JK470	Electrolytic	6.3V	47	1	
C4040		ECEA1EK3R3	Electrolytic	25V	3.3	1	
C4041		ECCD1H680KN	Ceramic	50V	68P	1	
C4042		ECKZ1H102KB	Ceramic	50V	0.01	1	
C4043		ECCD1H330KN	Ceramic	50V	33P	1	
C4044		ECKZ1H102KB	Ceramic	50V	0.01	1	
C4045		ECEA1CK470	Electrolytic	16V	4.7	1	
C4046,4047		ECEA1CK100	Electrolytic	16V	10	2	
			Coils				
L4001		VLQFS08L102K			1m	1	
L4002		VLQ00F222K			2.2m	1	
L4003		VLQE206R471K			470μ	1	
			Transformers				
T4001		VLT0116				1	
T4002		VLT0118				1	
			Test Point				
TP4001		VJH0096Z				1	
			Miscellaneous				
P17		VJP1141	Pin Header			1	
P18		VJP1143	Pin Header			1	

Ref. No.		Part No.	Part Name & Description		Pcs / Set	Remarks
			SYSTEM CONTROL CIRCUIT BOARD ASS'Y			
			Integrated Circuit			
IC6201		MN1405VQ			1	
IC6202-6204		μPD4503BC			3	
IC6205		AN6912			1	
IC6206		VCR0011			1	
IC6207		VCR0016			1	
			Transistors			
Q6201-6206		2SD636			6	
Q6208		2SB641			1	
Q6209,6210		2SD636			2	
Q6212-6214		2SD636			3	
Q6216		2SB641			1	
Q6217		2SD636			1	
Q6218		2SB641			1	
Q6219		2SD636			1	
Q6220		2SD889			1	
Q6221		2SA886V			1	
Q6222		2SB641			1	
Q6223		2SD636			1	
			Diodes			
D6201,6202		MA165			2	
D6203		RD5.6JB			1	
D6204-6217		MA165			14	
D6219-6225		MA165			7	
			Resistors			
R6201		ERD10TJ331		330	1	
R6202		ERD10TJ182		1.8K	1	
R6203		EVN38CA00B33	Variable	5K	1	
R6204		ERD10TJ562		5.6K	1	
R6205		ERD10TJ183		18K	1	
R6206,6207		ERD10TJ154		150K	2	
R6208		ERD10TJ102		1K	1	
R6209		ERD10TJ683		68K	1	
R6210		ERD10TJ473		47K	1	
R6211,6212		ERD10TJ223		22K	2	
R6213		ERD10TJ683		68K	1	
R6214		ERD10TJ153		15K	1	
R6215		EVN38CA00B14	Variable	10K	1	
R6216		ERD10TJ183		18K	1	
R6217		ERD25TJ105		1M	1	
R6218		ERD10TJ223		22K	1	
R6219		ERD25TJ395		3.9M	1	
R6220		ERD25TJ105		1M	1	
R6221		ERD10TJ124		120K	1	
R6222		ERD10TJ682		6.8K	1	
R6223		ERD10TJ393		39K	1	
R6224		ERD10TJ154		150K	1	
R6225		ERD10TJ104		100K	1	
R6226		ERD10TJ223		22K	1	
R6227		ERD10TJ684		680K	1	
R6228-6230		ERD10TJ223		20K	3	
R6231-6233		ERD10TJ473		47K	3	
R6234		ERD10TJ103		10K	1	
R6236-6240		ERD10TJ223		22K	5	
R6241		ERD10TJ183		18K	1	
R6242		ERD10TJ473		47K	1	
R6243		ERD10TJ822		8.2K	1	
R6244		EXBP85103K			1	
R6245		ERD10TJ561		560	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R6247		ERD10TJ153	15K	1	
R6249-6252		ERD10TJ223	22K	4	
R6253		ERD10TJ473	47K	1	
R6254		ERD10TJ223	22K	1	
R6255		ERD10TJ562	5.6K	1	
R6256		ERD10TJ103	10K	1	
R6257,6258		ERD10TJ124	120K	2	
R6259		ERD10TJ223	22K	1	
R6260		ERD10TJ103	10K	1	
R6261		ERD10TJ153	15K	1	
R6262		ERD10TJ823	82K	1	
R6263		ERD10TJ222	2.2K	1	
R6264		ERD10TJ473	47K	1	
R6265		ERD10TJ223	22K	1	
R6266		ERD10TJ682	6.8K	1	
R6267		ERD10TJ473	47K	1	
R6268		ERD10TJ561	560	1	
R6269		ERD10TJ473	47K	1	
R6270		ERD10TJ223	22K	1	
R6271		ERD10TJ103	10K	1	
R6272		ERD10TJ563	56K	1	
R6273		ERD10TJ683	68K	1	
R6275		ERD10TJ333	33K	1	
R6276		ERD10TJ823	82K	1	
R6277		ERD10TJ473	47K	1	
R6278		ERD10TJ223	22K	1	
R6282		ERD25TJ220	22	1	
R6285,6286		ERD10TJ103	10K	2	
R6287		ERD10TJ223	22K	1	
R6288		ERD10TJ473	47K	1	
R6291		ERD10TJ472	4.7K	1	
			Capacitors		
C6201		ECEA1AK330	Electrolytic 10V 33	1	
C6202		ECEA0JK220	Electrolytic 6.3V 22	1	
C6203		ECCD1H101KN	Ceramic 50V 100P	1	
C6205		ECEA0JK470	Electrolytic 6.3V 47	1	
C6206,6207		ECSF35ER68E	Electrolytic 35V 0.68	2	
C6208		EXFP6102Z		1	
C6209,6210		ECQV05124JZA	Mylar 50V 0.12	2	
C6212		ECEA1EK4R7	Electrolytic 25V 4.7	1	
C6213		ECKD1H103ZFN	Ceramic 50V 0.01	1	
C6214		ECEA0JK470	Electrolytic 6.3V 47	1	
C6215,6216		ECEA1HKR47	Electrolytic 50V 0.47	2	
C6217		ECKD1H103ZFN	Ceramic 50V 0.01	1	
			Miscellaneous		
P22		VJP1141	2P Pin Header	1	
		VJP06115		1	
		VKC0033	Hing	2	
		VEK0792	5P Connector	1	
		VEK0793	8P	1	
		VEK0794	10P	1	
		VEK0795	12P	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			KEY BOARD ASS'Y		
			Integrated Circuits		
IC6001		HD7407P		1	
			Transistors		
Q6001-6005		2SD636		5	
Q6006,6007		2SB641		2	
Q6008		2SD636		1	
Q6010-6012		2SD636		3	
			Diodes		
D6001-6010		MA165		10	
D6012		LN48YCPP	L.E.D	1	
D6013-6019		LN28RCPP	L.E.D	7	
			Resistors		
R6001		ERD10TJ104	100K	1	
R6002		ERD10TJ822	8.2K	1	
R6003,6004		ERD10TJ223	22K	2	
R6005,6006		ERD10TJ103	10K	2	
R6007		ERD10TJ562	5.6K	1	
R6008		ERD10TJ473	47K	1	
R6009,6010		ERD10TJ223	22K	2	
R6011		ERD10TJ222	2.2K	1	
R6012		ERD10TJ223	22K	1	
R6013-6017		ERD10TJ561	560	5	
R6018,6019		ERD10TJ473	47K	2	
R6020-6022		ERD10TJ223	22K	3	
R6023		ERD10TJ273	27K	1	
R6024,6025		ERD10TJ223	22K	2	
R6026,6027		ERD10TJ223	22K	2	
R6028		ERD10TJ683	68K	1	
R6029,6033		ERD10TJ562	5.6K	2	
R6034		ERD10TJ103	10K	1	
R6035		ERD10TJ332	3.3K	1	
R6036		ERD10TJ473	47K	1	
			Capacitors		
C6001		ECKF1H103ZF	Ceramic 50V 0.01	1	
C6002		ECEA1HK010	Electrolytic 50V 1	1	
C6003		ECEA1CK220	Electrolytic 25V 22	1	
			Switches		
S6001-6008		EVQPXR04K	Function Sw.	8	
S6009		ESD14121	Memory Sw.	1	
S6010		ESD14118	Power Sw.	1	
			Miscellaneous		
		VJP1107	10P Bottom Entry	1	
P21		VJP1157	3P Bottom Entry	1	
		KL-02	LED Spacer	8	

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Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		LOADING MOTOR DRIVE		
		CIRCUIT BOARD ASS'Y		
		Integrated Circuit		
IC6401	VCR0014		1	
		Transistors		
Q6401	2SA886V		1	
Q6402	2SD889		1	
Q6403	2SD636	(ORC2021R.S.E)	1	
Q6404,6405	2SB819		2	
Q6406	2SD636		1	
Q6407,6408	2SD1051		2	
Q6409,6410	2SD636		2	
Q6411	2SB641	(OR2SA937)	1	
		Diodes		
D6401	10E1LF		1	
D6402,6403	MA1082A		1	
D6404,6405	MA165		2	
D6406	RD12EB		1	
D6407	HZ2LL-B		1	
		Resistors		
R6401	ERD10TJ333	33K	1	
R6402	ERD10TJ473	47K	1	
R6403	ERD10TJ273	27K	1	
R6404	ERD10TJ223	22K	1	
R6405	ERD10TJ562	5.6K	1	
R6406	ERD10TJ223	22K	1	
R6407,6408	ERD10TJ102	1K	2	
R6409	ERD25TJ471	470	1	
R6410	ERD10TJ102	1K	1	
R6411	ERD25TJ471	470	1	
R6412	ERD25TJ102	1K	1	
R6413	ERD10TJ223	22K	1	
R6415	ERD25TJ471	470	1	
R6416	EVN38CA00B53	Variable 5K	1	
R6417	ERQ12HJ3R9	3.9	1	
R6418	ERD10TJ104	100K	1	
R6419	ERD10TJ223	22K	1	
R6420	ERD10TJ473	47K	1	
R6421	ERD25VJ331	330	1	
		Capacitors		
C6401	ECET16R682	Electrolytic 16V 6800	1	
C6404,6405	ECKD1H103ZFN	Ceramic 50V 0.01	2	
C6407	ECEA0JK470	Electrolytic 6.3V 47	1	
C6408	ECEA1CK470	Electrolytic 16V 47	1	
C6409	ECEA1CS221	Electrolytic 16V 220	1	
C6410	ECKD1H221KB	Ceramic 50V 220P	1	
		Miscellaneous		
TP6401,6402	VJH0096Z	Check Point	2	
RY6401	VSY1009	Reley	1	
P19	VJP1148	2P Pin Header	1	
P23	VJP1143	5P Pin Header	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		D.D. CYLINDER DRIVE		
		CIRCUIT BOARD ASS'Y		
		Integrated Circuit		
IC2501	AN6677		1	
		Transistor		
Q2501	2SD636		1	
		Diode		
D2501	10E1		1	
		Resistors		
R2501	ERD10TJ152	1.5K	1	
R2502	ERD10TJ273	27K	1	
R2503	ERD10TJ561	560	1	
R2504	ERD10TJ153	15K	1	
R2505	ERD10TJ471	470	1	
R2506-2508	ERD10TJ470	47	3	
R2509	ERX12ANJR47	Metal	1	
R2510	ERD10TJ823	82K	1	
R2511	ERD10TJ153	15K	1	
		Capacitors		
C2501	ECKD1H472MDN	Ceramic 50V 4700P	1	
C2502	ECEA1CK100	Electrolytic 16V 10	1	
C2503	ECEA1HKR33	Electrolytic 50V 0.33	1	
C2504	ECKD1H103ZFN	Ceramic 50V 0.01	1	
C2505	ECEA1ASS101	Electrolytic 10V 100	1	
C2506-2508	ECEA1HKNR47	Electrolytic 50V 0.47	1	
C2509	ECQM1H103KZW	Mylar 50V 0.01	1	
C2510	ECQM1H333KZW	Mylar 50V 0.033	1	
C2511	ECSF10E3R3KZ	Tatalum 10V 3.3	1	
C2512	ECEA1HK2R2	Electrolytic 50V 2.2	1	
C2513-2515	ECEA1HKR22	Electrolytic 50V 0.22	3	
C2516	ECQM1H822KZW	Mylar 50V 8200P	1	
P001	VJP1147	12P Pin Header		

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Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		Jack Panel		
		Transistor		
Q6501	2SD636		1	
		Diodes		
D6502	ERC0402E3		1	
D6504	ERB81004		1	
		Resistors		
R6502	ERD25TJ104	100K	1	
R6503,6504	ERD25TJ750	75	2	
R6505	ERD25TJ223	22K	1	
R6506	ERD25TJ153	15K	1	
R6508	ERD25TJ473	47K	1	
R6509	ERD25TJ223	22K	1	
R6510	ERD25TJ473	47K	1	
R6511	ERD25TJ271	270	1	
		Capacitors		
C6501,6502	ECKD1H103ZFN	Ceramic 50V 0.01	2	
		Miscellaneous		
J6501	VJJ0070	Battery Jack	1	
J6502	VJS1163	4P Jack	1	
J6504,6505	VJS1170	BNC Connector	2	
J6507	VJS1081-1	10P Jack	1	
J6508	VJS1172	RCA-DIN Connector	1	
	VJJ0076	Jack Boad	1	
	VGN1514	Name Plate A	1	
	VGN1517	Name Plate B	1	
	TJC6320	Fuse Holder	2	
P25	VJP1149	3P Pin Header	1	
	VJR0019	Lug Boad	1	
	QJT0015	Oval Lug	1	
	XTV3+10BFX	Screw	3	
	XSS26+8FXS	Screw	2	
	VMA4120	Braket	1	
	VMA4197	Bracket	1	
	VJS1141	Housing	1	
	VJS1142	Housing	3	
	VJS1143	Housing	1	
	VJS1146	Housing	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
F6501	XBA1C30NU100	Fuse	1	⚠
		SENSOR LAMP C.B.		
PL6551	VAMV0019	Sensor Lamp	1	
		TAKEUP DETECTOR C.B.		
IC6551	DN838	Hall IC	1	
		REMOTE PAUSE/EARPHONE JACK C.B.		
J6509	VJJ0071	Earphone Jack	1	
J6510	VJJ0069	Remote Control Jack	1	
		TAKEUP PHOTO TR C.B.		
Q6552	PN150NV	Photo Transistor	1	
		SUPPLY PHOTO TR C.B.		
Q6551	PN150NV	Photo Transistor	1	
		ELECTRICAL PARTS LOCATED ON CHASSIS		
	ESD14118	Power Switch	1	
S6554	ESD14121	Memory Switch	1	
S6551	VSS0040	Mode Select Switch	1	
S6552	VSM0027	Safety Tab Switch	1	
S6553	VSM0027	Cassette Down Switch	1	
	VJJ0069	Remote Control Jack	1	
R6553	EVJ4A312B15	Tracking Control 100K	1	
	VSES02	Battery Meter	1	
	VEKS0274	Dew Detector Unit	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			RF CONVERTER		
			Integrated Circuit		
IC1		AN6395		1	
			Transistors		
Q1, 2		2SD636T/R		2	
Q3, 4		2SC1215R		2	
			Diodes		
D1		1S953		1	
D2		MA27W		1	
D3		RD62E		1	
D4		MA27B		1	
D5, 6		1SS86		2	
D7		MA320		1	
			Resistors		
R1		ERD10TJ333	33K	1	
R2		ERD10TJ103	10K	1	
R3		ERD10TJ331	330	1	
R4		ERD10TJ105	1M	1	
R5		ERD10TJ102	1K	1	
R6		ERD10TJ122	1.2K	1	
R7		ERD10TJ821	820	1	
R8		ERD10TJ471	470	1	
R9, 10		ERD10TJ101	100	2	
R11		ERD10TJ333	33K	1	
R12, 13		ERD10TJ471	470	2	
R14		ERD25VJ222	2.2K	1	
R15		ERD10TJ121	120	1	
R16		ERD25FJ680	68	1	
R17		ERD10TJ101	100	1	
R18		ERD10TJ390	39	1	
R19		ERD10TJ220	22	1	
R20		ERD25TJ682	6.8K	1	
R21		ERD10TJ682	6.8K	1	
R22		ERD10TJ751	750	1	
R23		ERD10TJ682	6.8K	1	
R24		ERD10TJ392	3.9K	1	
R25		ERD10TJ470	47	1	
VR1		EVN38CA00B13	Variable Resistor 1K	1	
VR2, 3		EVN38CA00B14	Variable Resistor 10K	2	
VR4		EVMG4GS05B14	Variable Resistor 10K	1	
			Capacitors		
C1		ECEA1CK330	Electrolytic 16V 33	1	
C2		ECEA1HK3R3	Electrolytic 50V 3.3	1	
C3		ECEA1CK330	Electrolytic 16V 33	1	
C5		CX2102PF	Ceramic 1000P	1	
C6		ECCD1H150K	Ceramic 15P	1	
C7		ECCD1H050K	Ceramic 5P	1	
C8		ECCD1H152K	Ceramic 1500P	1	
C9		ECEA1EK4R7	Electrolytic 25V 4.7	1	
C10		ECCD1H150K	Ceramic 15P	1	
C11		ECCD1H680K	Ceramic 68P	1	
C12		ECCD1H151K	Ceramic 150P	1	
C13		ECCD1H470K	Ceramic 47P	1	
C14		ECCD1H270K	Ceramic 27P	1	
C15		ECCD1H070D	Ceramic 7P	1	NV-3000-E
C16		ECCD1H221K	Ceramic 220P	1	
C17, 18		ECCD1H050C	Ceramic 5P	2	
C19		ECEA1EK100	Electrolytic 25V 10	1	
C20		ECCD1H020C	Ceramic 2P	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C21		ECCD1H102P	Ceramic 1000P	1	
C22		ECEA1CK470	Electrolytic 47	1	
C23		ECCD1H0R5CC	Ceramic 0.5P	1	
C24		CX2060CC	Ceramic 6P	1	
C25		CP20R1VA01	Stater Board	1	
C26		ECCD1H180K	Ceramic 18P	1	
C27		CX2331K	Ceramic 330P	1	
C28, 29		CY2102MES	Ceramic 1000P	2	
C30, 31		CY2020MES	Ceramic 2P	2	
C32		ECCD1H0R75U	Ceramic 0.75P	1	
C33		ECKD1H103PF	Ceramic 0.01	1	
C34		ECCD1H221K	Ceramic 220P	1	
C35		ECEA1CK470	Electrolytic 16V 47	1	
C36		ECCD1H070K	Ceramic 7P	1	
C37		ECCD1H102K	Ceramic 1000P	1	
VC1		ECV1ZW04X53N	Trimmer	1	
C15		ECCD1H220K	Ceramic 22P	1	NV-3000-B
			Coils		
L1		LB162609VU03	Chok Coil	1	
L2		FL3H8R2K	Chok Coil	1	
L3		LB162609VU03	Chok Coil	1	
			Transformers		
T1		VLT0327		1	
T2		BRNA010V		1	
			Miscellaneous		
		BPC69AV12FYZ	Print Board	1	
		VJP1144	6 Pin Connector	1	

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