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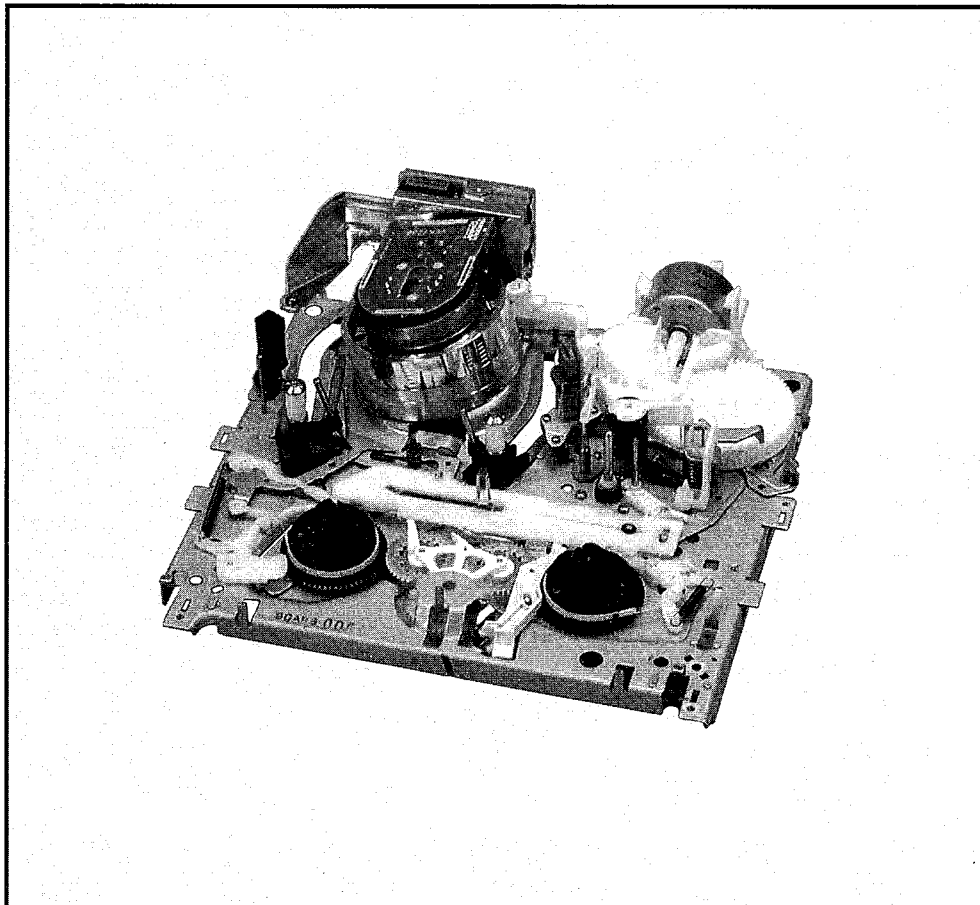
**The files are in Adobe Acrobat Format To view them you will need**

# Service Hints

Video Cassette Recorder

**Panasonic** **VHS**

**Z-MECHANISM CHASSIS**



**Panasonic**

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## **WARNING**

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

## **INTRODUCTION**

This service hint contains actual repair service result which will allow service personnels to understand and service Z Mechanism, have been got the repair data of Z Mechanism occurred in the market actually. We expect it will help you to provide the quick and accurate repair service to the customers' VTR mounted Z mechanism.

## **REMARKS**

As mentioned in INTRODUCTION, this service hint have been published by Z Mechanism getting actual repair service data occurred in the market.

Therefore, we expect you will send us the similar repair data for any kinds of models with your cooperation in order to publish the useful technical informations like service hint.

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Self-Test Indication Display F05 or H02	

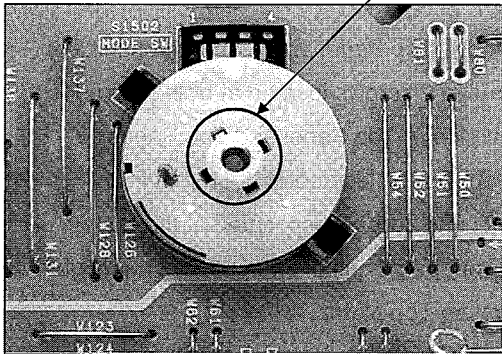
## Z Mechanism phase alignment and checking points

There are 4 phase alignments in Z Mechanism. 3 phase alignments have to be done in Eject position and 1 phase alignment has to be done in Cassette down position. The phase alignments are able to be checked at the following 4 points.

1. Position switch (Mode Switch)  
Rotate Position switch until it reaches to click position.
2. Main cam gear  
Adjust the hole of Main cam gear and the penetration hole of Mechanism chassis.
3. Loading rack  
Adjust the hole that sets the position of Loading rack and the penetration hole of Mechanism chassis.
4. Wiper arm and Drive rack  
Adjust the hole of Drive rack and the gear hole of Wiper arm.

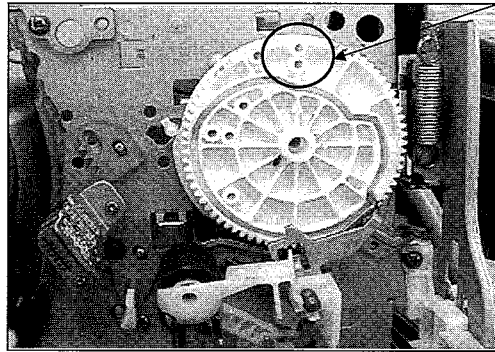
### Position switch

Click position of Position switch  
(Check the phase alignment in Eject mode)



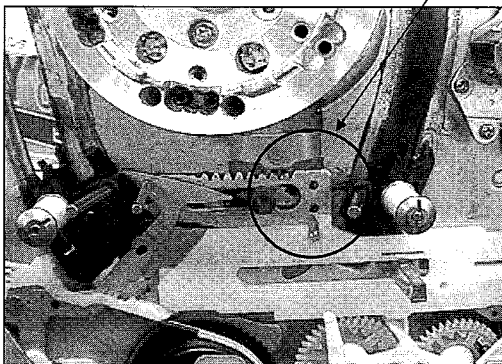
### Main cam gear

The hole of Main cam gear and the penetration hole of Mechanism chassis  
(Check the phase alignment in Eject mode)



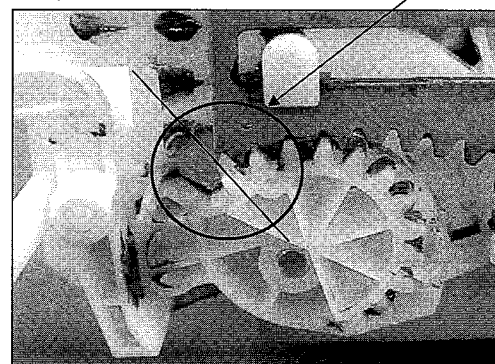
### Loading rack

The Hole of loading rack and the penetration hole of Mechanism chassis  
(Check the phase alignment in Eject mode)



### Wiper arm and Drive rack

Assign the hole of Drive rack and the hole of Wiper arm on the straight line.  
(Check the phase alignment in Cassette down position)



In disassembly and assembly of Z Mechanism, there are 3 phase alignments at gear portion and 4 phase alignments related to arm and lever.

- |                    |                                 |                                         |
|--------------------|---------------------------------|-----------------------------------------|
| 1. Main cam gear   | 4. Take up / Supply loading arm | 6. Conversion lever, P5 arm, Main lever |
| 2. Position switch | 5. Drive main arm               | 7. Drive rack arm                       |
| 3. Loading rack    |                                 |                                         |

## Phenomenon : Cassette tape is not inserted / Tape tangles

### Diagnosis and Disposal

#### Checking

Cassette tape does not move to Cassette down position  
Tape tangles

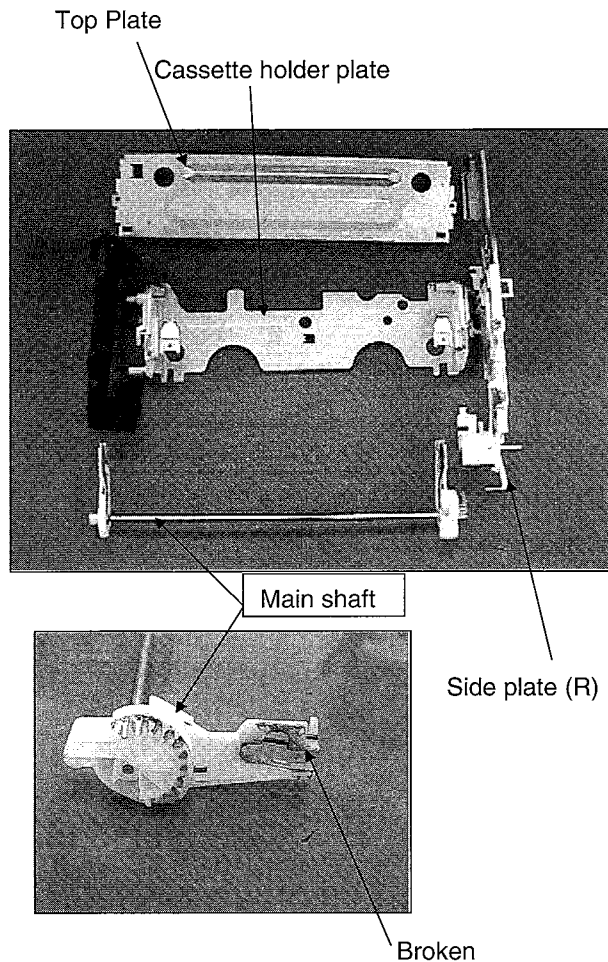
#### Judgement

Break-down of the plastic portion in Main shaft  
Deformation of Side plate or out of gear phase alignment in Wiper arm and Drive rack

#### Disposal

Replacement of Main shaft (VXP1730)  
Replacement of Side plate (R) unit (VXA5740)

### Parts location



#### Remove of Cassette holder unit

1. Remove Top Panel and Front panel unit.  
Remove 2 screws located at both left and right side of Top Panel and Top Panel.  
Unlock 4 tabs located at the top of Front panel unit and 3 tabs located at the bottom of Front panel unit. Remove Front panel unit.
2. Remove Top plate.  
Unlock 4 tabs located at both left and right side of Top plate softly and remove Top plate.
3. Remove Cassette holder plate.  
Keep pressing 2 stoppers on Cassette holder plate and press Cassette holder plate to the rear of VTR and remove it from left and right side plate unit.
4. Remove Left and Right side plate unit.  
Remove Connection spring of Drive gear and remove 3 red screws and remove Left and right side plate unit.
5. Remove Main shaft and replace it.

### Remarks

The plastic portion in Main shaft is broken so that Cassette holder unit can not advance.

Phenomenon : Cassette tape is not inserted/Cassette tape is ejected

## Diagnosis and Disposal

### Checking

Cassette tape floats during loading

### Judgement

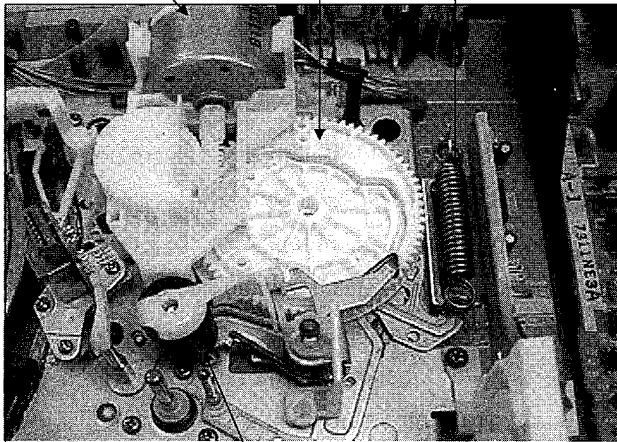
Deformation of Drive rack arm located under Main cam gear

### Disposal

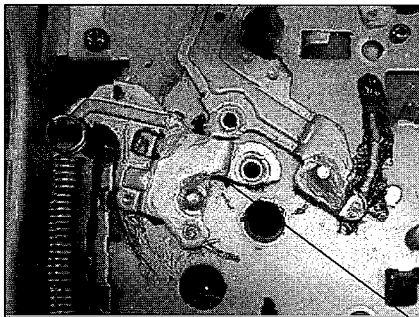
Replacement of Drive rack arm (VML3165)

## Parts location

Loading motor      Main cam gear      Connection spring



Pinch arm unit



Drive rack arm

### On Mechanism unit

1. Remove Mechanism unit.
  - Remove 5 screws that fix Mechanism unit.
  - Disconnect some connectors.
  - Remove Mechanism unit.
2. Remove Pinch arm unit.
  - Unlock the tab of Opener piece and remove Opener piece.
  - Remove Pinch arm unit.
3. Remove Loading motor unit.
  - Unlock 3 tabs of Loading motor unit and remove Loading motor unit.
4. Remove Main cam gear.
  - Remove Snap washer located at the bottom of Mechanism chassis and remove main cam gear.
5. Remove Drive rack arm.
  - Rotate Drive rack arm to the counterclockwise and remove Drive rack arm.
  - Then replace Drive rack arm.

\* The mechanism phase alignment has to be done.

Adjust the hole of Main cam gear and the penetration hole of Mechanism chassis.

Adjust the hole that sets the position of Loading rack and the penetration hole of mechanism Chassis.

## Remarks

Snap washer is very hard so that take care the disassembly of Snap washer during removing Main cam gear.

Phenomenon : Cassette tape can not ejected

Abnormal sound in FF/REW mode

## Diagnosis and Disposal

### Checking

Mis-function of Mechanism or abnormal sound in Mechanism

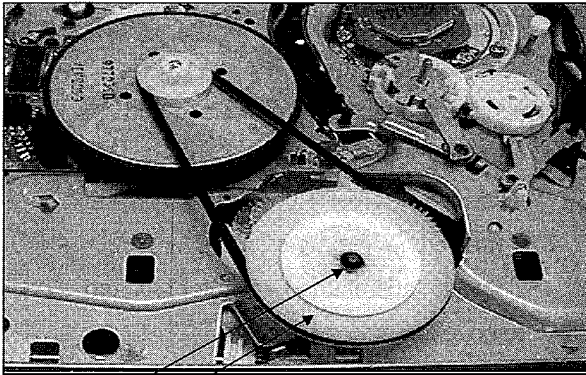
### Judgement

The rotation of Centre clutch unit is heavy

### Disposal

Replacement of Centre clutch unit (VXP1850 or VXP1732) No. of Centre clutch unit is different depend on the model No.

## Parts location

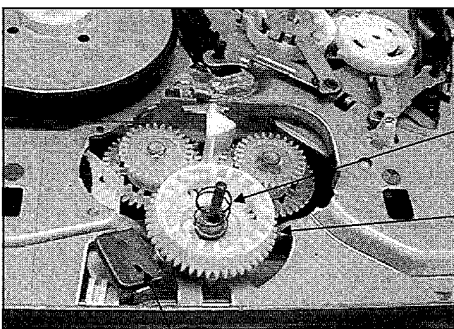


Washer

Centre clutch unit

### On Mechanism unit

1. Remove Mechanism unit.
  - Remove 5 screws that fix Mechanism unit.
  - Disconnect some connectors.
  - Remove Mechanism unit.
2. Remove centre clutch located at the bottom of Mechanism chassis.
  - Remove Capstan belt and Washer and remove centre clutch unit while pressing conversion lever B to the bottom.After confirming the rotation of Centre clutch unit individually, replace it.



Conversion gear spring

Conversion gear

Conversion lever B

## Remarks

Centre clutch unit failure is thought. When rotate Centre clutch unit individually, the rotation of Centre clutch unit is uneven.

Phenomenon : Tape is not running

Abnormal sound in playback mode

## Diagnosis and Disposal

Checking

Tape running is abnormal  
or Abnormal sound in  
Mechanism unit

Judgement

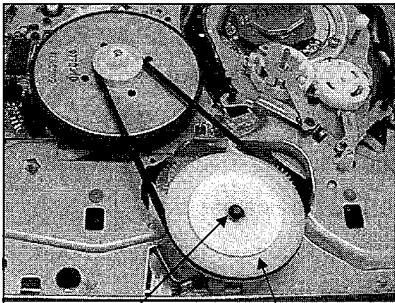
Engagement between  
Idler arm unit and Centre  
clutch unit is not so good.

Disposal

Replacement of Idler arm  
unit (VXL2792)

## Parts location

Bottom of Mechanism unit

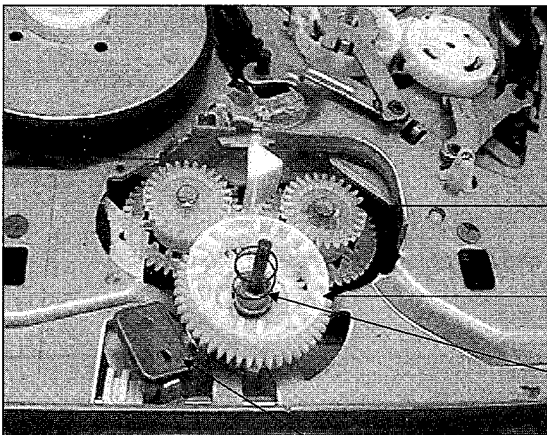


Washer

Centre clutch unit

On Mechanism unit

1. Remove Mechanism unit.
  - Remove 5 screws that fix Mechanism unit.
  - Disconnect some connectors.
  - Remove Mechanism unit.
2. Remove Centre clutch unit located at the bottom of Mechanism chassis.
  - Remove Capstan belt and Washer.
  - Remove Centre clutch unit while pressing Conversion lever B to the bottom.
3. Remove Idler arm unit.
  - Remove Conversion gear and Conversion gear spring and remove Idler arm unit.



Idler arm unit

Conversion gear

Conversion gear spring

Conversion lever B

## Remarks

Engagement of gear of Idler arm unit is bad.



Phenomenon : Cassette tape is not inserted / Loading is not done

## Diagnosis and Disposal

### Checking

Loading is not done

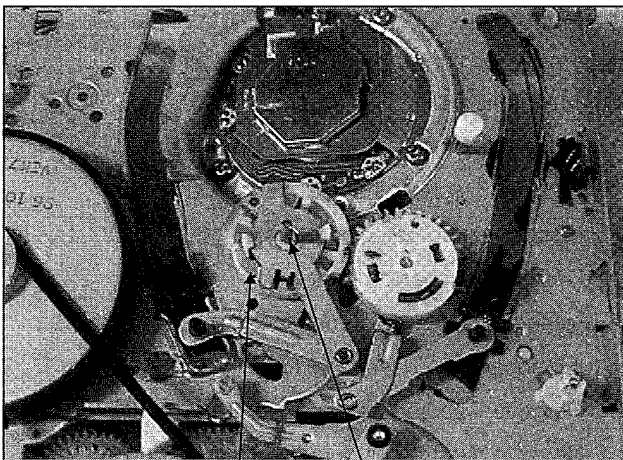
### Judgement

-Roller post is not fixed  
-Take up loading arm is out of position

### Disposal

Replacement of Take up loading arm (VXL2670)

## Parts location



Take up loading arm

Tab of Take up loading arm

### On mechanism unit

1. Remove Mechanism unit.
  - Remove 5 screws that fix Mechanism unit.
  - Disconnect some connectors.
  - Remove Mechanism unit.
2. Replacement of Take up loading arm.
  - Unlock the tab of Take up loading arm located at the bottom of Mechanism chassis and remove Take up loading arm.
  - Replace Take up loading arm. When mount Take up loading arm, the arrow mark mentioned on the gear of Take up loading arm has to be adjusted to the gear of Supply loading arm.

\* The Mechanism phase alignment has to be done.

Adjust the hole of Main cam gear and the penetration hole of Mechanism chassis.

Adjust the hole that sets the position of loading rack and the penetration hole of Mechanism chassis.

## Remarks

The tab of Take up loading arm loosens and Take up loading arm is not fixed to the pin so that Take up loading arm get out of position.

## Phenomenon : Tape slack (Self-Test Indication Display F05)

### Diagnosis and Disposal

#### Checking

Cassette tape is floating  
in cassette down position

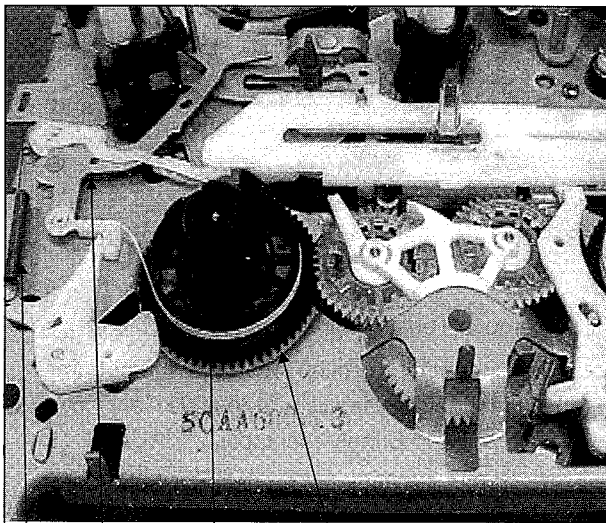
#### Judgement

Cassette tape is not  
engaged with Supply reel  
table (Engagement of  
cassette tape with Supply  
reel table is bad)  
(Tape is not wound)

#### Disposal

Replacement of Supply  
reel table (VDR0346)

### Parts location



Tension band

Supply reel table

Tension Arm unit

Tension spring

#### On Mechanism unit

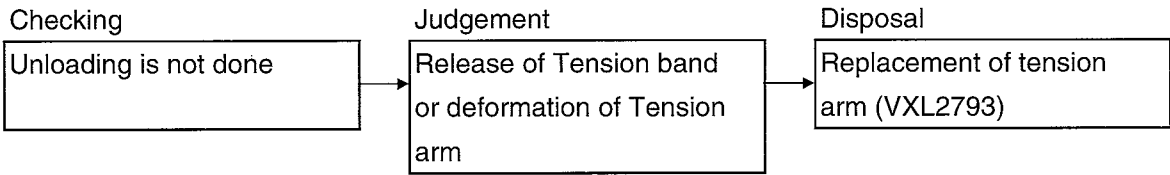
1. Remove Mechanism unit.
  - Remove 5 screws that fix Mechanism unit.
  - Disconnect some connectors.
  - Remove Mechanism unit.
2. Remove Cassette holder unit.
  - Remove Connection spring of Drive gear and remove 3 red screws and then remove Cassette holder unit.
3. Remove Tension arm unit and Supply reel table
  - Remove Tension spring. Unlock the tab of Tension arm projection located at the bottom of Mechanism chassis and remove Tension arm unit and Supply reel table.
  - Then replace Tension arm unit and Supply reel table.

### Remarks

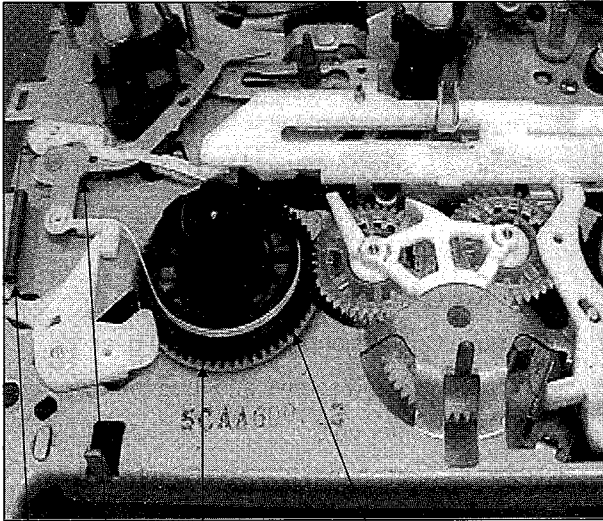
The engagement with gear portion of Supply reel table and cassette tape is bad so that cassette tape is not set to the regular position.

Phenomenon : Cassette tape can not be ejected

## Diagnosis and Disposal



## Parts location



Supply reel table

Tension arm unit

Tension spring

Tension band

On Mechanism unit

1. Remove Mechanism unit.
  - Remove 5 screws that fix mechanism unit.
  - Disconnect some connectors.
  - Remove Mechanism unit.
2. Remove Cassette holder unit.

Remove Connection spring of Drive gear and remove 3 red screws.

Then remove Cassette holder unit.
3. Remove Tension arm unit and Supply reel table.

Remove Tension spring. Unlock the tab of Tension arm projection located at the bottom of Mechanism chassis and remove Tension arm unit and Supply reel table.

Then replace tension arm unit and Supply reel table.

## Remarks

Tension band comes off Supply reel table and tape is not wound.

Phenomenon : Blue back in playback mode

(No picture or noisy picture)

## Diagnosis and Disposal

Checking

A/C Head condition

Judgement

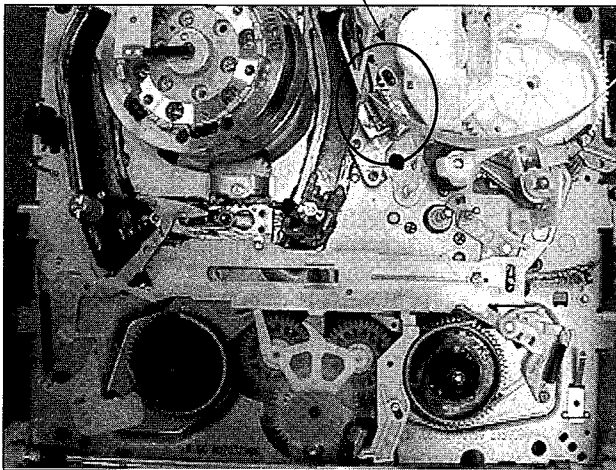
Clog of A/C Head or  
A/C Head failure

Disposal

Cleaning of A/C Head or  
replacement of A/C Head  
(VED0412)

## Parts location

A/C Head



1. Remove Top Panel.

Remove 2 screws that locate on both left and right side of Top Panel and Top Panel.

2. Clean the surface of A/C Head.

3. Replace A/C Head.

Remove 1 screw that fix A/C Head and replace A/C Head.

\* The tape running adjustment has to be done after replacing A/C Head.

The other phenomenon

- Playback picture is disarranged and playback audio mutes.
- Repeat LP mode and SP mode.
- No function of counter.

## Remarks

Since A/C Head is clogged and control signal is not detected, above phenomenon appears.

(Control signal is not detected so that blue back appears.)

Phenomenon : A tape is not inserted

Noisy picture in REV mode

## Diagnosis and Disposal

### Checking

Cassette tape does not move to cassette down position

Noisy picture in playback mode

### Judgement

Bend of P5 arm

1. Cassette tape catch in cassette holder unit
2. Tape running is unstable.

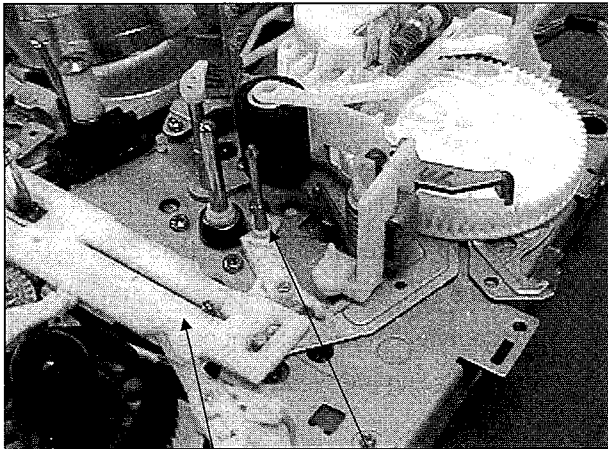
### Disposal

Replacement of P5 arm (VXL2677)

\* The phenomenon varies depend on the degree of the bend of P5 arm.

Example : Noisy picture

## Parts location



Main Lever

P5 Arm

On Mechanism unit

1. Remove mechanism unit.
  - Remove 5 screws that fix Mechanism unit.
  - Disconnect some connectors.
  - Remove Mechanism unit.
2. Remove Main lever and P5 arm.

Unlock 2 tabs that fix LED prism and 1 tab that fix the projection on Mechanism chassis while lifting the left side of Main lever a little and remove Main lever and P5 arm. Then replace Main lever and P5 arm.

\* The Mechanism phase alignment has to be done.

Adjust the hole of Main cam gear and the penetration hole of Mechanism chassis.

Adjust the hole that sets the position of Loading rack and the penetration hole of Mechanism chassis.

## Remarks

The plastic portion of P5 arm is broken or P5 arm is bent.

Phenomenon : Tape is not running (Capstan does not rotate)

Self-Test Indication Display F05 or H02

## Diagnosis and Disposal

NV-HD670A/EA/BD, HD620A/EA/AM/EU/BD, HD625AM, SD570AM/EU

Checking

Cap.R/F (Capstan rotation direction control) at pin 7 of IC0201 in Capstan drive circuit (Cap.ED/S at pin 10 of IC6001)

Judgement

Confirmation of the voltage for Hole element at pin 9 of IC0201 and Motor driving voltage at pin 22, 24 and 25 of IC0201

Disposal

Replacement of Capstan unit (VEK8239)  
The inside of IC0201 is broken and IC0201 is being supplied with Capstan unit as one unit

NV-SD320AM, SD420A/EA/SA/EU

NV-SD270A/EA/SA, SD225AM/AMJ/EU, SD220AM/AMJ/A/SA, SD210SA

Checking

Cap.R/F (Capstan rotation direction control) at pin 7 of IC0201 in Capstan drive circuit (Cap.ED/S at pin 10 of IC6001)

Judgement

Confirmation of the voltage for Hole element at pin 9 of IC0201 and Motor driving voltage at pin 22, 24 and 25 of IC0201

Disposal

Replacement of Capstan unit (VEK8024)  
The inside of IC0201 is broken and IC0201 is being supplied with Capstan unit as one unit

NV-HD620BR/PM, SD420AR/BR/PM

Checking

Cap.R/F (Capstan rotation direction control) at pin 7 of IC0201 in Capstan drive circuit (Cap.R/F at pin 12 of IC6001)

Judgement

Confirmation of the voltage for Hole element at pin 9 of IC0201 and Motor driving voltage at pin 22, 24 and 25 of IC0201

Disposal

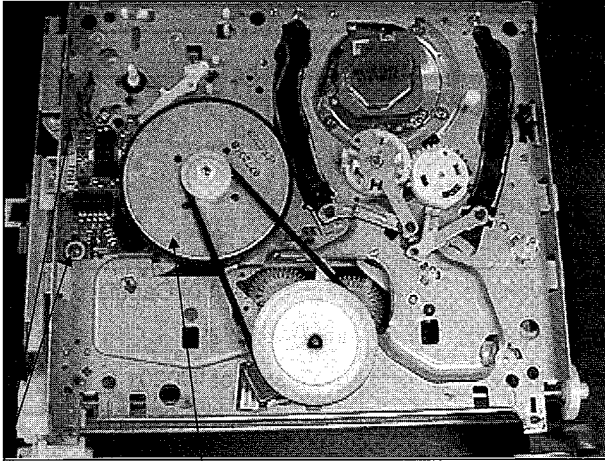
Replacement of Capstan unit (VEK8239)  
The inside of IC0201 is broken and IC0201 is being supplied with Capstan unit as one unit

The other phenomenon

Capstan runs away so that cassette tape can not be ejected or VTR is placed to CUE mode even though VTR is set in SP playback mode.

## Parts location

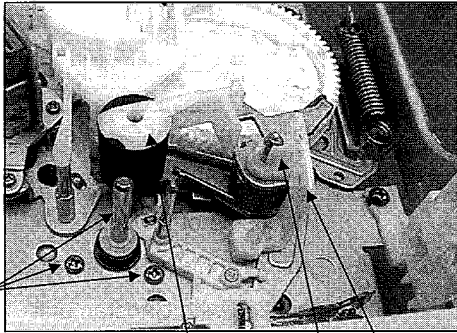
### Bottom of Mechanism



Screws

Capstan unit

### Top of Mechanism



Screws

Opener piece

Tab of Opener piece

Pinch arm unit

1. Remove Top Panel and Front Panel unit.
  - Remove 2 screws located at both left and right side of Top Panel and Top Panel.
  - Remove 7 tabs located at top and bottom of Front Panel unit and Front Panel unit.
2. Remove Mechanism unit.
  - Remove 5 screws that fix Mechanism unit.
  - Disconnect some connectors.
  - Remove Mechanism unit.
3. Replacement of Capstan unit.
  - Unlock the tab of Opener piece and remove Opener piece. Remove Pinch arm unit.
  - Remove 3 screws that mount Capstan unit at the top of Mechanism unit.
  - Remove 2 screws that mount Capstan unit at the bottom of Mechanism unit.
  - Remove Capstan unit and replace capstan unit.

Concerning more detailed disassembly method, refer to Service Manual for Z Mechanism (Order No. VRD9612M129)

### Checking point

The requirement condition to be driven Capstan of IC0201

1. Cap R/F (Capstan rotation direction control) at pin 7 of IC0201 has to be Low voltage.
2. VCC at pin 28 of IC0201 has to be 5V.
3. Motor voltage at pin 19 of IC0201
4. Torque voltage at pin 10 of IC0201
5. Current detection at pin 23 of IC0201
6. Hole element at pin 9 of IC0201





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