

PENTAX

MOS COLOR VIDEO CAMERA

MODEL PC-K020A

INSTRUCTION MANUAL



WARNING: TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CONGRATULATIONS!

You are now a proud owner of Pentax Color Video Camera. Please read this instruction manual carefully before use and refer to it if any difficulties arise.

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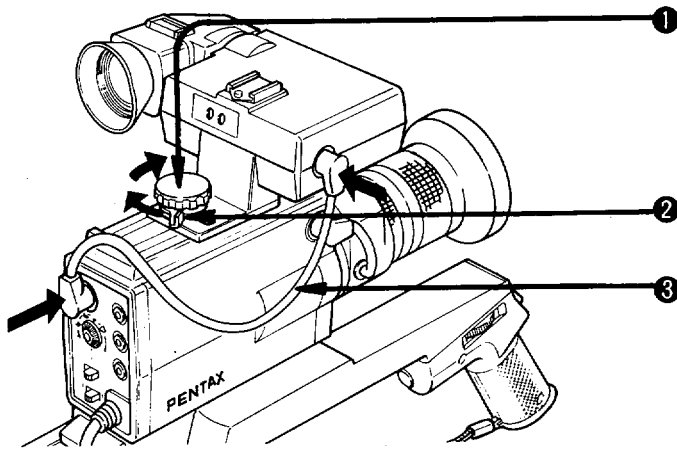
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FEATURES

- **MOS image sensor**
A newly developed MOS image sensor is used in place of the vidicon picture tube normally used; this gives sharp, colorful pictures with almost no residual image. Shooting can be started within 0.5 second* of the power being switched on.
* The picture can be monitored in the viewfinder five seconds after the power is supplied.
- **Auto iris function**
The iris automatically opens and closes depending on the brightness of the picture being taken, so it is not necessary to adjust the iris each time.
- **Instant review switch**
The instant review switch allows checking of recorded material quickly when used together with the PV-R020A portable video recorder.
- **Zoom lens (x 6) with MACRO position**
The lens provided is a zoom lens (x 6) and electrical zoom operation is possible by operating a switch. Contact photography is also possible because a MACRO position is provided.
- **Sharp directivity shot-gun type microphone**
The shot-gun type microphone has much sharper directivity than conventional uni-directional microphones.

HOW TO ASSEMBLE

INSTALLING THE ELECTRONIC VIEWFINDER



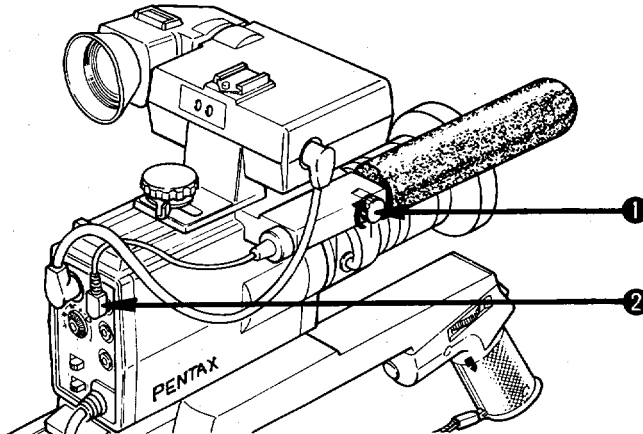
① Turn the fixing screw in the direction of the arrow to fix it.

* The viewfinder can be moved backwards/ forwards and right/left. Adjust it to the position where it is easiest to use and tighten the screw.

② Turn the locking lever in the direction of the arrow to lock it firmly.

③ Connect the connection cable between the electronic viewfinder and camera.

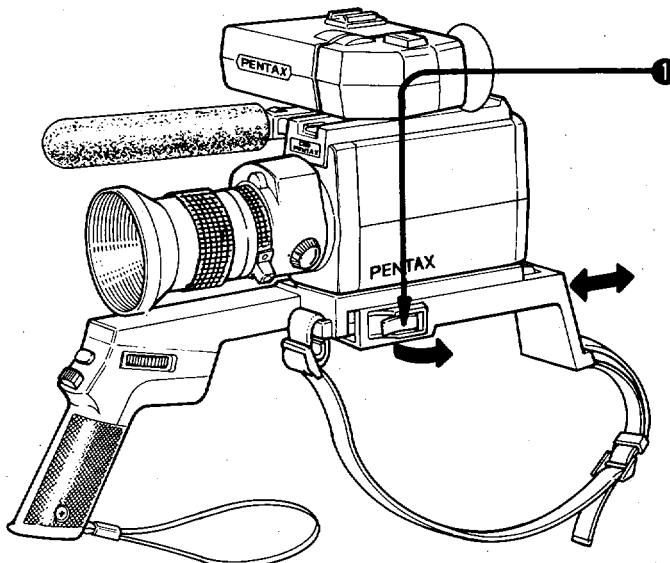
INSTALLING THE SHOT-GUN TYPE MICROPHONE



① Turn the fixing screw in the direction of the arrow to fix it.

② Connect the connection cable between the shot-gun type microphone and camera.

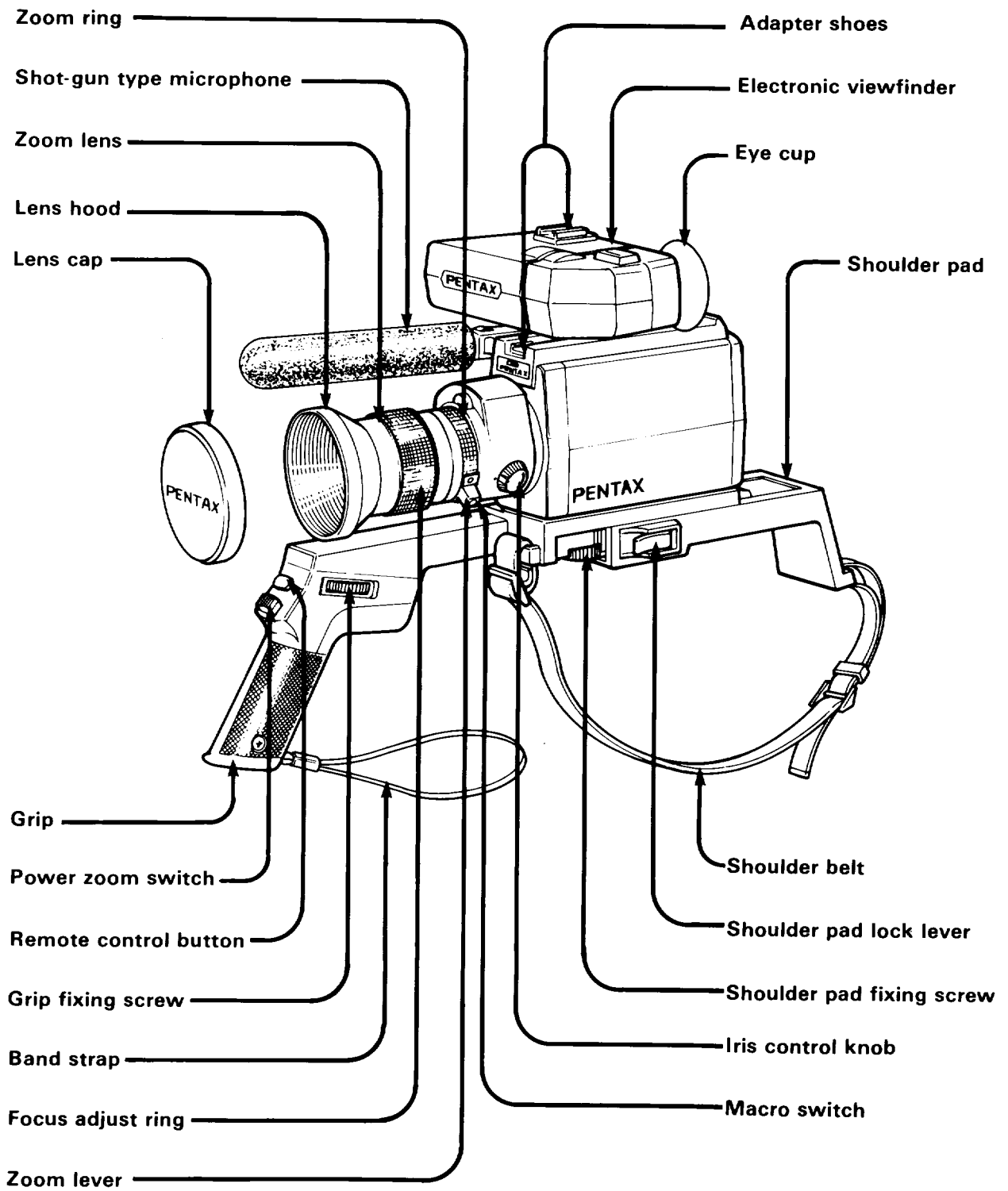
ADJUSTING THE SHOULDER PAD



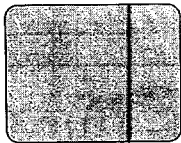
① The shoulder pad can be adjusted backwards and forwards when the lock lever is loosened. Adjust it to the position where it is easiest to use.

Lock it using the locking lever after adjustment is completed.

DESCRIPTION OF CAMERA



Indicators inside electronic viewfinder



V L B
○ ○ ○

V: Recording indicator (green)

This lamp lights during recording and goes off when the VTR enters the recording pause mode. It flashes in modes other than the recording mode (playback, fast forward, rewind, stop, etc.).

L: Underexposure indicator (red)

This lamp flashes when the object is not sufficiently illuminated.

B: Battery charge indicator (red)

This lamp flashes when the battery of the portable VTR does not have enough power.

Refer to Page 18 for the switches on the lower panel of the electronic viewfinder.

Diopter control ring

Electronic viewfinder fixing screw

Electronic viewfinder locking lever

Electronic viewfinder connection terminal

White balance control knob

White balance check switch

Power save switch

Instant review button

Electronic viewfinder connection cable

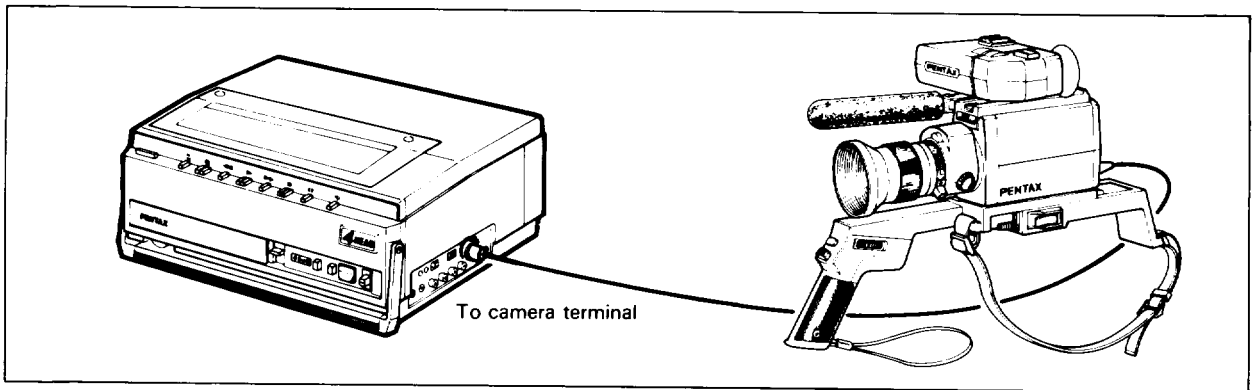
Shot-gun type microphone connection terminal

External microphone jack

Earphone jack

Camera cable

CONNECTION DIAGRAM WITH PORTABLE VTR



- Do not use the extension cables C-10M (10m), C-5M (5m) (optional) if possible when operating the PENTAX portable VTR using battery. When the battery voltage drops, the voltage drop is greater in proportion to the length of the extension cable, and the camera may not operate normally.
- Use one camera extension cable C-10M (10m) or two C-5M (5m) at most, when using the PC-K020A in combination with PV-U020A or PV-A020A. When an extension cable longer than the above is connected, the voltage drops in proportion to the resistance of the extended length; be careful of this.

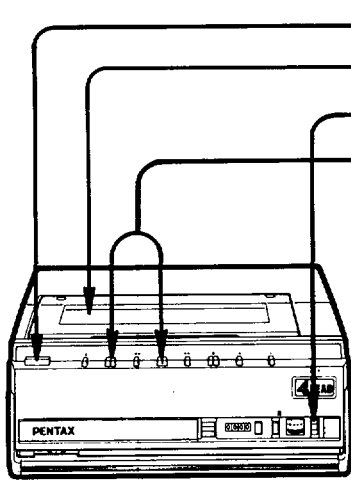
INTERCHANGING LENS

The lens is interchangeable with most of the other-make C-mount lenses, but be sure to check that they fit the camera when interchanging.
 Use of a mount adapter (C-Y100) enables you to mount Pentax 35mm camera's interchangeable lenses on the Color Video Camera. For example, if you use OMC Pentax-SR 200mm f/4 lens, you can obtain the effect of using an 800mm focal length lens for Pentax 35mm camera. However, please note that the C-mount portion alone is not durable enough to hold heavy lenses.

Preparation 2 OPERATING VTR

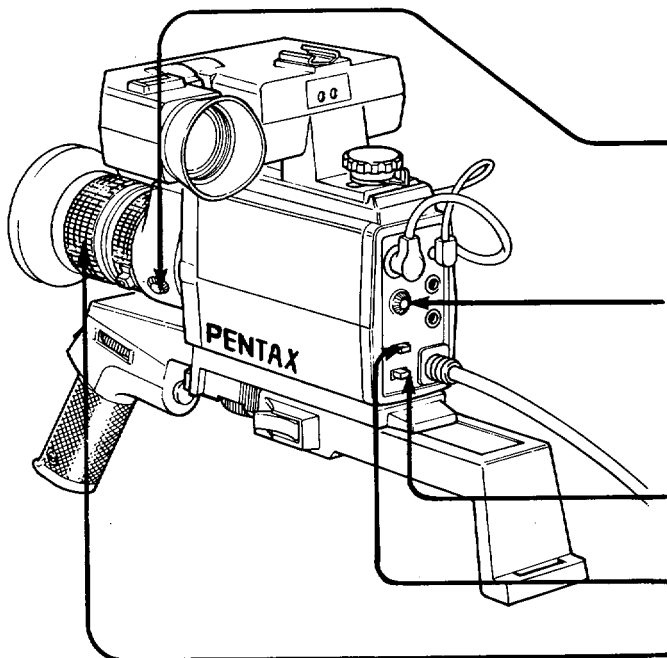
The operation method differs depending on the VTR used.
Refer to the VTR's instruction manual for details.

PORTABLE VTR (PENTAX VTR PV-R020A)



- 1 Turn on power switch.
- 2 Insert video-cassette.
- 3 Set speed selector to "EP", "LP" or "SP".
- 4 Press RECORD and PLAY buttons simultaneously.
Now, the VTR enters RECORD PAUSE mode;
preparation is complete.

Preparation 3 ADJUSTING CAMERA



1 Set the iris control knob to its click point.

2 Set the white balance control knob according to the illumination of the subject.

3 Set the power save switch to "NORM".

4 Set the white balance check switch to "OFF".

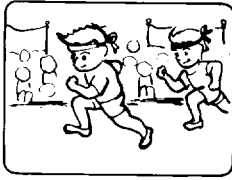
5 Adjust the focus using the focus adjustment ring.

Refer to "Useful features for operation" on Page 13 for more detailed adjustment.

Now, you are ready to start shooting a picture.

STARTING SHOOTING

When using the viewfinder.



V L B
○ ○ ○

All the lamps have gone out.

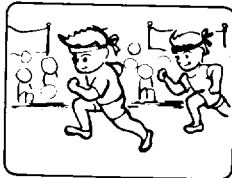
Press the remote control button.
Recording starts.



V L B
● ○ ○

Green lamp lights.

Recording stops temporarily when the remote control button is pressed again.



V L B
○ ○ ○

Green lamp goes off.

Detach the lens cap.



* Make good use of the "Convenient features" described on page 9 after you get familiar with handling the camera.

WHEN THE LAMP IS LIT BEFORE RECORDING STARTS



All the lamps should go off before recording starts.

V ●

L ●

B ●

Capacity of the battery in the VTR is low. Replace the battery with a charged one.

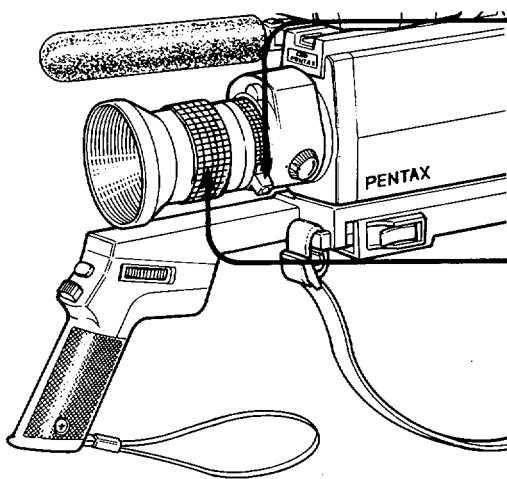
* This does not apply to VTRs which use AC power.

Illumination of the object is too low. More illumination is required.

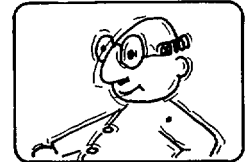
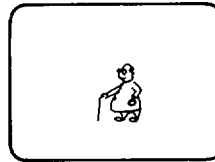
Tape runs and recording has started before pressing the remote control switch. Press the remote control switch again.

CONVENIENT FEATURES

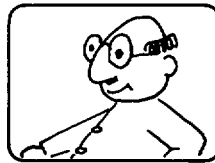
FOCUSING



1 Set to zoom-up while moving the zoom lever.

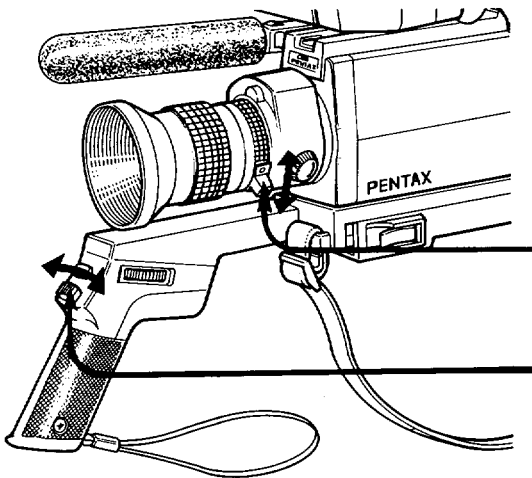


2 Focus with the focus adjust ring so that the zoomed-up picture can be seen clearly.



- When focusing is performed without zooming up, the picture may become out of focus when the zooming up is done during actual photographing.

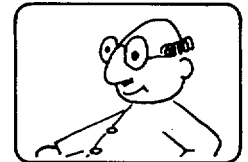
ZOOMING



Telephoto ↔ Wide angle zooming is possible both electrically and manually.



WIDE ANGLE



TELEPHOTO

Manual zoom

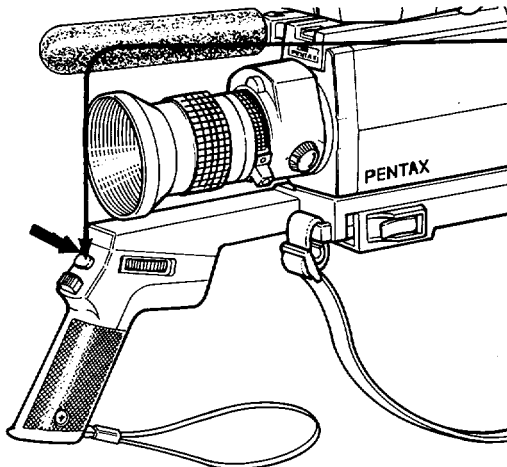
Zoom from WIDE ANGLE ↔ TELEPHOTO to suit yourself.

Power zoom

Zooming between WIDE ANGLE and TELEPHOTO can be done smoothly. Be sure not to touch the zooming lever and the zooming ring with your hand during power zooming.

REMOTE CONTROL BUTTON

This button is used to pause and start tape running.



Press the remote control button when you start shooting. Tape starts running and recording begins.

Tape stops running by pressing the button again.

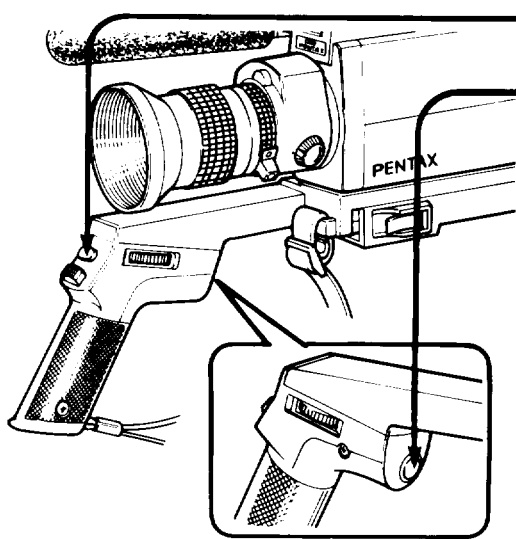


This lamp lights while the tape is running, and goes off when the tape stops.

* The "V" lamp indicates pause/run with some VTRs in reverse. It is required to change over the pause polarity switch in such a case. Refer to the "Pause polarity switch" on page 14 for details.

INSTANT REVIEW

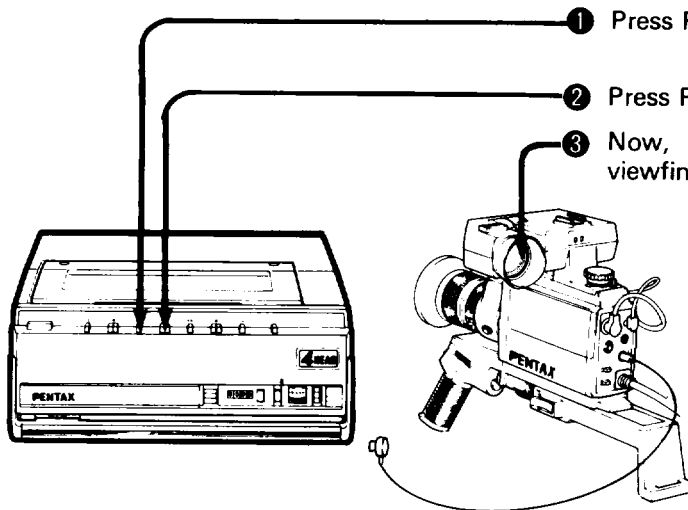
Whether recording is taking place or not can be checked quickly (when PV-R020A is used).



- ① When recording the required scene is complete, press the remote control button to stop the tape running.
 - ② Press the instant review button.
 - The last few seconds of the recorded scene is played back in the reverse direction and then played back in the forward direction. Noise occurs in the picture during reverse playback.
 - The VTR enters the pause mode when the tape reaches its original position where the remote control button was pressed.
 - When the remote control button is pressed again, recording restarts.
- * Some VTRs are not provided with this instant review function.

RECORD MONITOR

The recorded tape can be seen in the viewfinder.

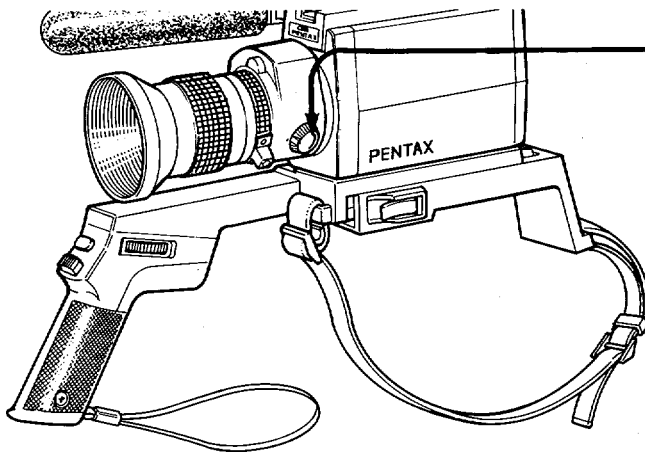


- ① Press REWIND button to rewind the recorded tape.
- ② Press PLAY button to play back tape.
- ③ Now, the recorded picture can be seen in the viewfinder.

- Use an earphone to listen to sound.
 - * When an earphone jack is provided on the VTR, connecting the earphone to the VTR is possible.
- This function does not work when connected to a stationary VTR.

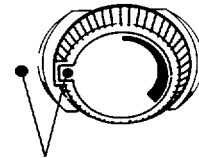
FADE IN/FADE OUT FUNCTION

This is a technique to take a picture in such a way that the picture gradually appears on a blank screen (fade in) and the picture gradually disappears from the screen (fade out).



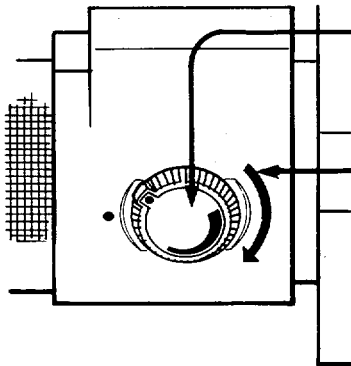
Iris control knob

Set this knob to its click position generally.

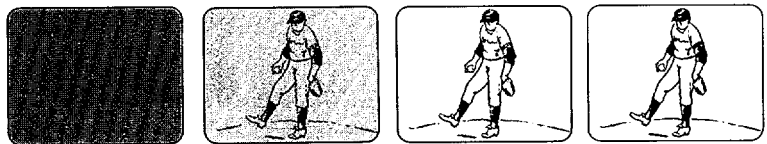


To set to this position.

■ FADE IN

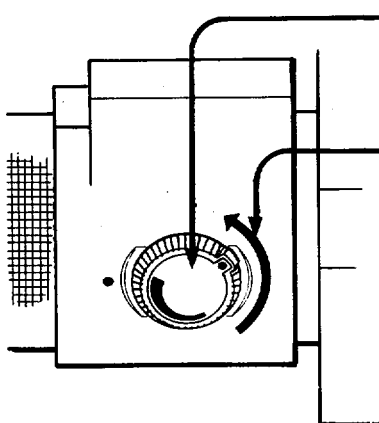


- 1 Set the iris control knob a little before the click position to start shooting.
(Roughly the position shown in the diagram)
* Make sure the picture disappears in the viewfinder.
- 2 Turn the iris control knob gradually in the direction of the arrow after shooting starts to set it to the best position.

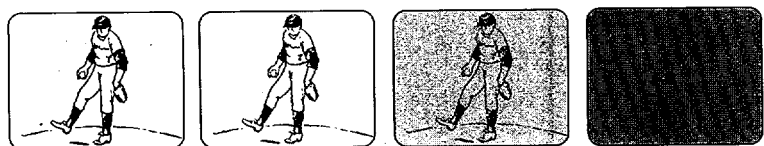


→ FADE IN

■ FADE OUT



- 1 Set the iris control knob to the approximate position shown in the diagram while watching the picture in the viewfinder before starting shooting.
* Look into the viewfinder to match the best position for the illumination of the object.
- 2 Gradually turn the iris control knob in the direction of the arrow after shooting starts to set so that the picture disappears.

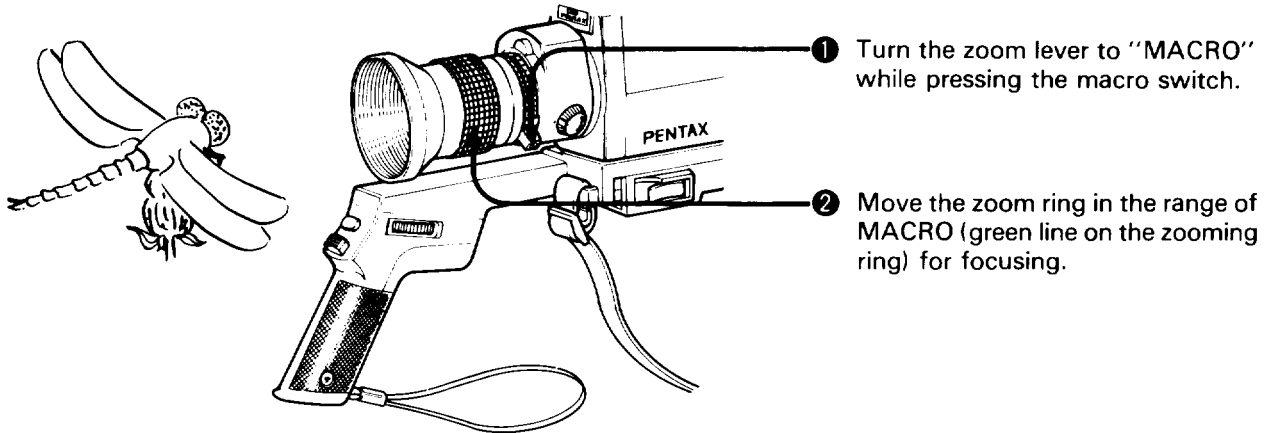


→ FADE OUT

Be sure to set the iris control knob to the click position when the fade-in/fade-out operation is completed.

MACRO MECHANISM

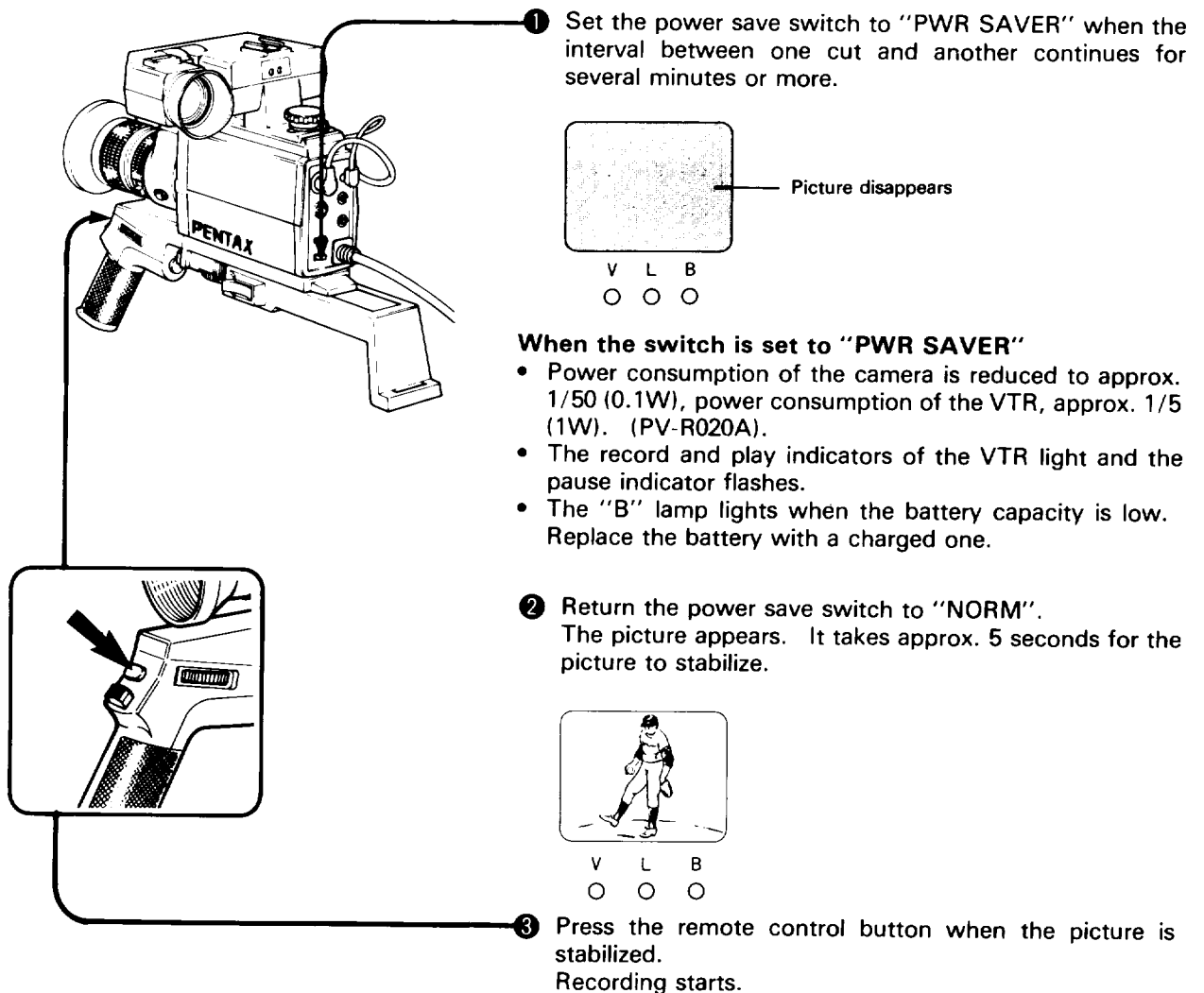
Shooting a subject as close as 1 cm from the lens is possible.



POWER SAVE SWITCH

This switch reduces power consumption enabling to shoot for a longer time when a portable VTR (PV-R020A) is used combined with the exclusive battery pack.

* Some VTRs do not have this function.



USEFUL FEATURES FOR OPERATION

ADJUSTING THE WHITE BALANCE

Color changes slightly depending on the light shining on the object. The human eyes can adapt to changes of light, so any object seems to be almost the same color indoors and outdoors. However, a camera cannot adapt automatically, so it is required to adjust depending on the place where it is used.

1 Shoot a white wall or paper to fill the screen.

2 Set the white balance check switch to "ON".

3 Turn the knob to maximize the white pattern if possible.

4 Set the white balance check switch to "OFF".
Now, the white balance adjustment is complete.

White wall or paper

Set the iris control knob to its click position.

Set the power save switch to "NORM".

White pattern appears

V L B
O O O

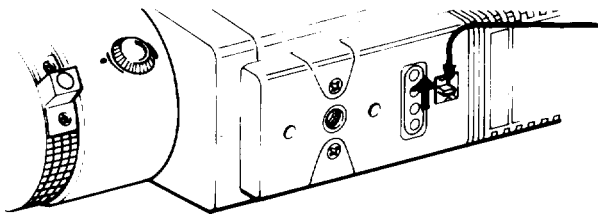
Adjust the white balance while watching the TV screen when adjusting it with the unit connected to a color TV set; adjustment can be done more precisely.

- Match the white balance control knob with the "picture" mark when there is not enough time to adjust the white balance; in this way white balance can be adjusted roughly.

Indication of white balance control knob	Place of shooting	Approx. color temperature
	Set the white balance control knob to this position when shooting inside a room illuminated by a halogen or tungsten lamp.	3000°K } 3200°K
	Set the knob to this position when shooting inside a room illuminated by a white fluorescent lamp. Set the knob between and when shooting inside a room illuminated by mixture of halogen or tungsten lamps and white fluorescent lamps.	4500°K
	Set the knob to this position when shooting outdoors in fine weather.	5100°K
	Set the knob to this position when shooting outdoors when it is cloudy or rainy or indoors illuminated by a daylight fluorescent lamp.	6000°K } 6500°K

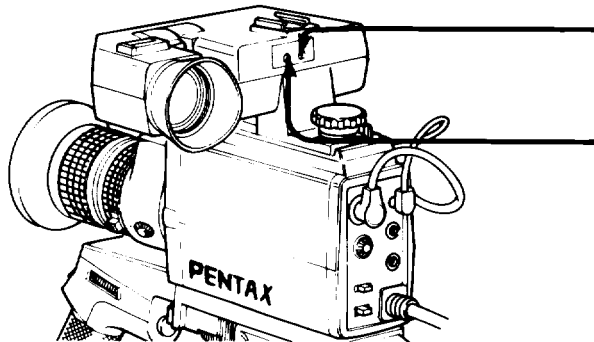
* Color temperature: Light has temperature. The color of light is indicated by a temperature; the temperature of a fine sky is 10,000°K and the temperature of the light near a bright window is 6,000°K.

PAUSE POLARITY SWITCH



The recording lamp "V" in the viewfinder goes off during recording, and lights during pause (in reverse to the actual operation) with certain VTRs. Set this switch to the direction of the arrow. It is not required to change over the switch when a Pentax VTR is used.

ADJUSTING PICTURE IN VIEWFINDER



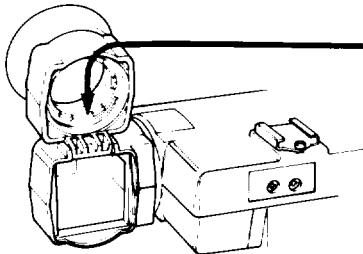
Contrast adjustment hole

Brightness adjustment hole

When it is desired to adjust the contrast and brightness on the viewfinder, insert a fine adjustment screwdriver into the adjust holes shown in the diagram. However, this adjustment does not have any effect on the picture recorded by the video deck.

DIOPTER CONTROL RING

Even a shortsighted or longsighted person can adjust the viewfinder so that it is easy to see.

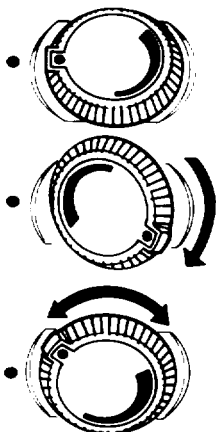


Longsighted person ... Turn the ring clockwise.

Shortsighted person ... Turn the ring counterclockwise.

EXPOSURE CORRECTION (BACK-LIGHTING)

When the background of the object is too bright and the object is dark, the object can be brightened using the iris control knob.



■ Ordinary shooting ... Set the knob to its click position.

■ When shooting with backlighting (background of the object is too bright and the object is dark), turn the knob in the direction of the arrow while looking through the viewfinder.

• When the knob is turned fully, the iris can be opened up by approx. 3 f-stops (approx. 8 times).

• The bright section is whitish or a green line enters the bright section when the knob is turned.

■ Turn the knob while looking through the viewfinder when it is desired to change the aperture.

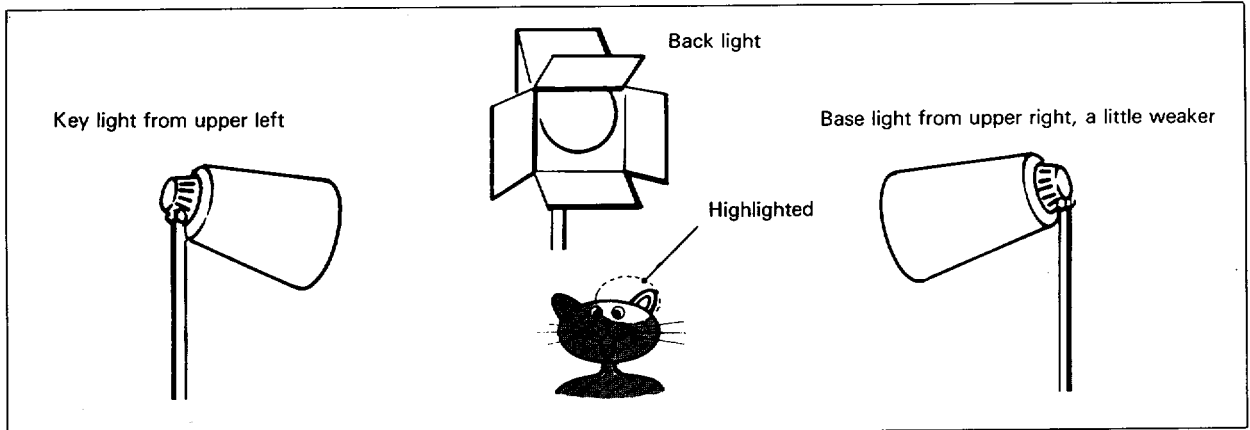
Be sure to return the iris control knob to its click position when shooting is completed.

TO PRODUCE THE BEST COLOR PROGRAM

– Lighting should be uniform from the top –

Essential points on lighting people

- ① A key light should be provided at the upper left in front of the person.
- ② A weaker base light (spot) should be provided at the upper right and balanced with the key light. (Adjusting so that the left:right ratio is 2:1.5 by moving the lights backward and forward.)
- ③ Use one more light behind the subject. This emphasizes the person's head and shoulders and prevents the subject from being lost in the background.



Lighting for sharper pictures

Sharper pictures are obtained by highlighting any part of the subject in addition to uniform lighting. Adding one light to the basic lighting set-up, a spotlight lighting the hair from behind, for example, can emphasize the outline of the person and improve the subject.

Caution: Do not place lighting equipment near the camera as heat from the lighting equipment can cause the camera to malfunction.

The brightness of the object should be optimum to obtain a beautiful color picture. The table below shows the approximate values of brightness. Set the optimum brightness of the object referring to the table below.

• Approximate values of brightness

10	• Brightness of candle (20 cm away) (10 – 15)	
100	• Direct light of flashlight (1 m away) (250)	
	• Subway platform (300)	
	• Study desk with fluorescent illumination (400)	
	• Office illuminated with fluorescent lamps (400 – 500)	• Clothes shop (400 – 500)
	• Department store (500 – 700)	• Reading room of library (400 – 500)
1,000	• Sunlight 1 hour before sunset in fine weather (1,000)	• Inside car of subway (500)
	• Sunlight 1 hour after sunrise in cloudy weather (2,000)	• Station wicket (650)
10,000	• Sunlight at 10 a.m. in cloudy weather (25,000)	• Office near fluorescent-illuminated window (1,000)
	• Sunlight in cloudy weather (32,000)	
	• Sunlight at 3 p.m. in fine weather (35,000)	
	• Sunlight at 10 a.m. in fine weather (65,000)	
100,000	• Day sunlight in fine weather (100,000)	
Lux		

* This table shows the approximate values. Use this table as standard brightness.

PRECAUTIONS

Caution in strong light

Be sure not to point the camera toward the sun or intense light.



Caution on replacing lens

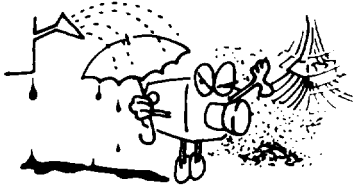
* The auto-iris mechanism does not work when the lens provided is replaced with a conventional C mount replacement lens; therefore, be sure not to point it at the sun or an intense light.

* Be sure not to touch the filter in the camera when replacing the lens.

Do not touch the focus control ring or zoom ring with the hand when the power zoom is operating. It can cause trouble.

No water or dust

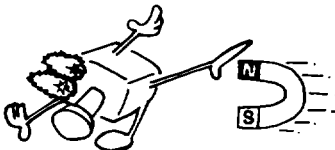
Water or dust entering the camera causes trouble and accidents. Avoid using the unit in rain or snow.



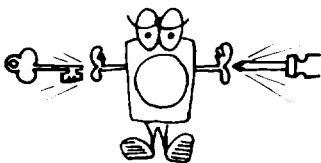
Do not apply strong vibration or shock.

Do not use the unit in a place with strong electric waves or magnetism if possible.

Stripe noise may occur, or the picture may fluctuate or bend in a place near the radio or TV transmission antenna, or a place near a motor or magnet where strong magnetism is present, or a place near a TV set.



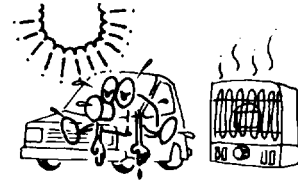
Do not open the case.



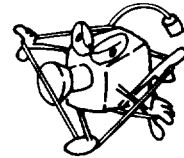
Cautions at high temperature

Be sure not to leave it in a place at high temperature exceeding 50°C. Be careful not to leave the unit in the following places:

- * Inside a car with the window closed and in direct sunshine.
- * Near heating appliances.
- * In direct sunshine in summer.
- * Inside a storeroom with a galvanized sheet iron roof in summer.



Do not wind the power cord, camera cable or VTR cable around the camera body. When it is left as it is for a long time, a trace may remain.



Be careful in that when the surface of the case is wiped off using volatiles such as benzine, alcohol and thinner, etc. or a chemically treated cloth, it may be deformed or the paint peeled off.

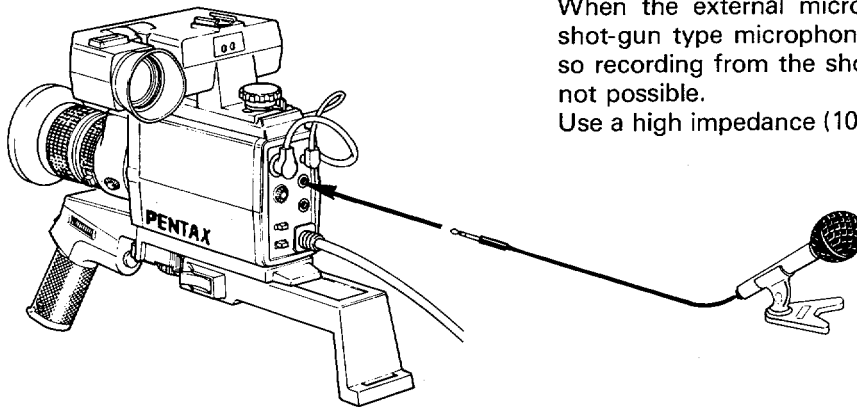
Wipe off the surface of lens if the tiny droplets of water come into contact with the lens to keep from getting musty.

Caution when shooting

If you shoot a scene with an intense light such as fluorescent lamp, spotlight, sun, etc. in it, a green belt will appear vertically in the picture. This is not a failure, but shooting such a scene should be avoided if possible.

HOW TO ASSEMBLE OPTIONAL ACCESSORIES

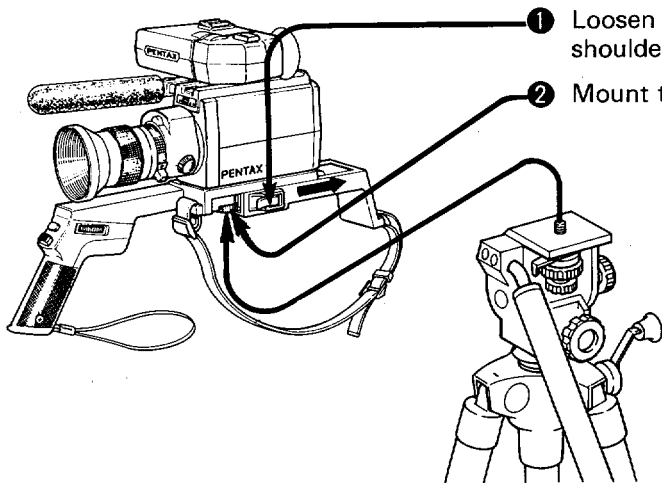
CONNECTION OF EXTERNAL MICROPHONE



When the external microphone is connected, the shot-gun type microphone is cut off automatically, so recording from the shot-gun type microphone is not possible.
Use a high impedance (10 k Ω) external microphone.

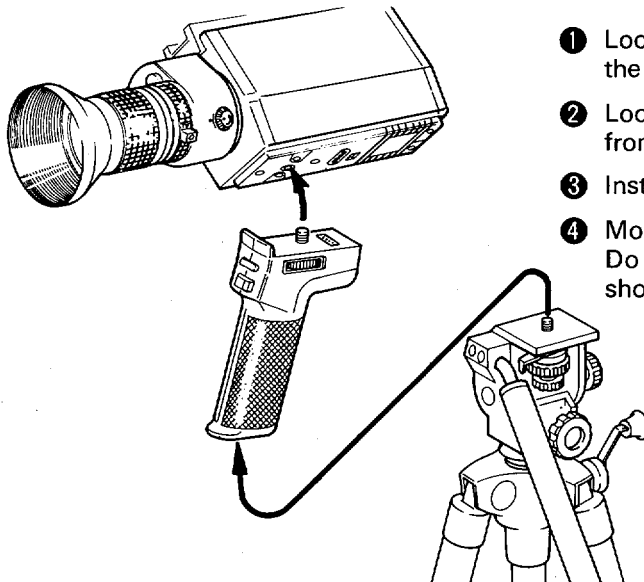
MOUNTING VIDEO CAMERA ON TRIPOD

■ When installing a tripod to the shoulder pad

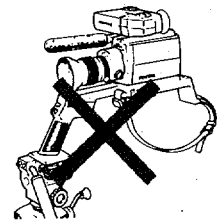


- 1 Loosen the shoulder pad lock lever and slide the shoulder pad.
- 2 Mount the video camera on the tripod.

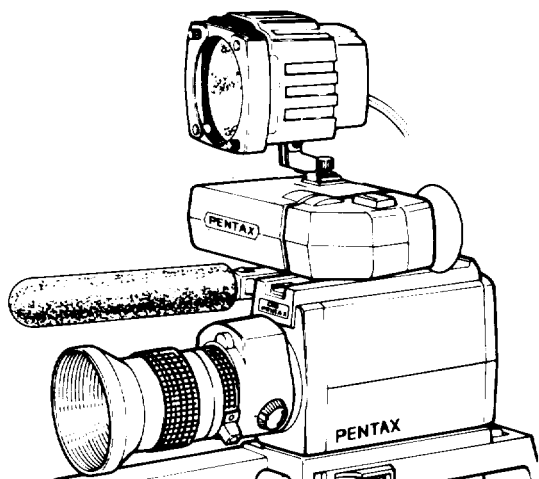
■ When installing a tripod to the grip



- 1 Loosen the shoulder pad fixing screw and remove the shoulder pad from the video camera.
- 2 Loosen the grip fixing screw and remove the grip from the shoulder pad.
- 3 Install the grip to the video camera.
- 4 Mount the grip on the tripod.
Do not install the tripod to the grip with the shoulder pad attached.



MOUNTING THE CAMERA LIGHT

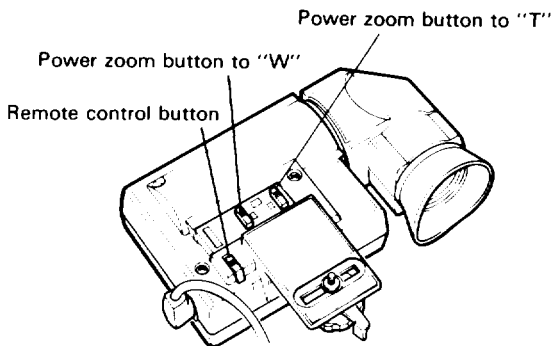
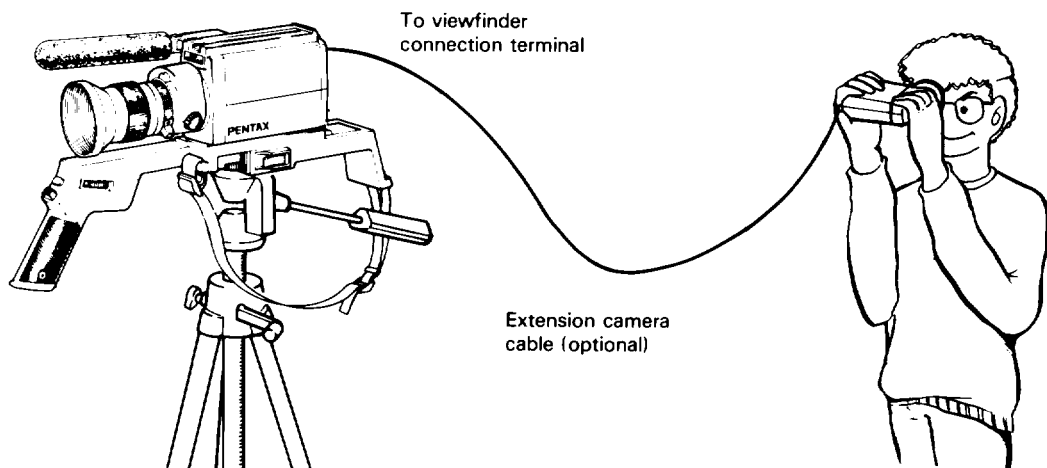


Mount the camera light on the adapter shoe of the viewfinder.

- Installing the camera light on the adapter shoe of the camera is possible; use the viewfinder extension cable and remove the viewfinder from the camera.
- Install the camera light on the adapter shoe of the camera not too near the windscreen of the microphone. When it is installed too near the windscreen, the windscreen may be burnt by heat from the camera light.

HOW TO USE VIEWFINDER WITH EXTENSION CABLE

Remote camera operation is possible when connecting an optional extension camera cable.



- 1 Remove the viewfinder from the camera; connect them with the extension camera cable.
- 2 Operate the camera using the remote control button and the power zoom buttons located at the back of the viewfinder.

SPECIFICATIONS

Pick up device:	NPN 3-layer construction MOS IMAGE SENSOR
Colour system:	NTSC
Horizontal resolution:	260 lines or more
Synchronization system:	Internal synchronization (2:1 interlace)
External mic input:	-67 dBs, high impedance
Audio output:	-20 dBs (78mV rms), low impedance
Video output:	1 Vp-p 75 Ω (unbalanced)
Video S/N ratio:	46 dB or more
Automatic sensitivity control range:	100 ~ 100,000 lux
Minimum luminance required:	100 lux (f/1.4)
Recommended luminance of object:	2,000 lux
Color temperature control:	From tungsten bulb illumination to cloudy weather
Viewfinder:	Electronic viewfinder (1" B/W CRT) SMC PENTAX TV ZOOM LENS
Lens:	12.5mm ~ 75mm f/1.4, power zoom (x 6) (Auto iris/manual iris, power zoom with MACRO mechanism)
Lens mount:	C mount
Dia. of filter screw:	52 mm, thread pitch 0.75 mm
Microphone:	Sharp directivity shot-gun type microphone
Power voltage:	DC 12V
Power consumption:	5.3W (during recording), 1.7W (during play-monitor), 0.1W (during power-save)
External dimensions:	176(W) x 288(H) x 298(D) mm (Electronic viewfinder, grip, microphone included) (Shoulder pad excluded)
Weight:	1.7 kg (Electronic viewfinder, grip, microphone included) (Shoulder pad excluded)
Camera terminal:	Circular type 10P connector, screw-locking type
Accessories:	Electronic viewfinder Shot-gun type microphone Electronic viewfinder connection cable Grip Shoulder pad Earphone Lens hood Lens cap

* The specifications and external appearance of this unit may be changed without notice for improvement.

TROUBLESHOOTING GUIDE

Check the following once more before asking for servicing.

PROBLEM	THINGS TO CHECK	SOLUTION
Picture does not appear in the viewfinder.	<ul style="list-style-type: none"> • Is the camera cable connected properly? • Is the connection cable of the viewfinder surely connected to the camera? • Is the power switch of the portable VTR set to "ON"? • Is the power save switch set to "NORM"? • Is the lens cap removed from the lens? 	<ul style="list-style-type: none"> • Connect the camera cable securely to the portable VTR. • Connect the connection cable properly. • Set it to "ON". • Set the power save switch to "NORM". • Remove the lens cap.
Auto iris does not work.	<ul style="list-style-type: none"> • Is the iris control knob set to click position? 	<ul style="list-style-type: none"> • Set it to click position.
The actual color and the color of the played picture differ greatly.	<ul style="list-style-type: none"> • Is the white balance adjustment complete? • Is the underexposure indicator "L" gone off? 	<ul style="list-style-type: none"> • Refer to the "Adjusting the white balance" of page 13. • Apply illumination so that the indicator "L" goes off.
Camera recording is not possible.	<ul style="list-style-type: none"> • Is the power save switch set to "NORM"? • Is the battery charge indicator "B" gone off? (When combined with the portable VTR) • Are the pause polarity switch and video select switch positions as specified? 	<ul style="list-style-type: none"> • Set it to "NORM". • Replace the battery with a fully charged battery. • Change over the positions correctly depending on the VTR connected. Refer to page 14 for details.

For information concerning repairs, operation or technical assistance, please contact the Service Manager of your nearest Regional Office.

Pentax Corporation
 35 Inverness Drive East
 Englewood, Colorado 80112
 Tel. 303-773-1101

Pentax Plaza
 2 Linden Place
 Great Neck, New York 11021
 Tel. 516-487-9800

8363 Reseda Boulevard
 Northridge, California 91324
 Tel. 213-701-5080

Butterfield Office Plaza, Suite 107W
 2625 Butterfield Road
 Oak Brook, Illinois 60521
 Tel. 312-323-9000

3150 Holcomb Bridge Road
 Norcross, Georgia 30071
 Tel. 404-325-1171