

Canon

BCTV Zoom Lens

HDGCLENSES

KJ13x6B

OPERATION MANUAL "LENS"

Read this operation manual before using the product.



ENG

memo

GENERAL SAFETY INFORMATION

The safety warnings and cautions provided on the product or in this operation manual must be observed. Failure to observe these warnings and cautions provided for the purpose of hazard prevention may result in injuries or accidents. Read this manual carefully to familiarize yourself with its contents and to ensure proper operation of this product. Also, store this manual in a safe place where it can easily be referenced whenever required.

This manual uses the following symbols and terms in the warning and caution notices for preventing accidents and protecting the safety of the customer and others.

 WARNING	This indicates a potentially hazardous situation which, if not heeded, may result in death or serious injury to you or others. Be sure to heed all warning notices to ensure safe operation at all times.
 CAUTION	This indicates a potentially hazardous situation which, if not heeded, may result in a minor injury to you or others, or damage to property. Be sure to heed all caution notices to ensure safe operation at all times.
NOTE	This indicates cautions and recommendations for operation. This contains essential information which, if not heeded, may result in this product failing to function properly. These notices also contain useful information for operation.

HANDLING THE PRODUCT

WARNING

1. Do not get the lens wet or allow liquid inside. If water gets inside, stop using the product immediately. Continuing to use the product under this condition may cause a fire or electric shocks.
2. Do not stare at the sun or other bright objects through the lens. This may injure your eyes.
3. Be sure to hold the connector itself when disconnecting the cable. Pulling on the cable may sever or damage it and pose a risk of a fire or electric shocks from a short circuit.

CAUTION

1. Be careful not to drop the product when carrying it. Dropping the lens may damage it or cause injury.
2. Ensure that all mountings are securely tightened. If a mounting becomes loose, parts may fall off and cause injury.
3. Inspect mountings regularly (about every six months to one year) to ensure they are securely tightened. If a mounting becomes loose, parts may fall off and cause injury.

NOTE

1. Do not expose the lens to strong impact. Striking or dropping the lens may cause the malfunction.
2. The lens is not waterproof. Take measures to avoid direct contact with rain, snow, or moisture.
3. In dusty environments, cover the lens mount when attaching or removing the lens. If dust enters inside, it may cause the malfunction of the product.
4. Take measures to avoid sudden changes in temperature where the lens is used, which may prevent operation temporarily if condensation forms in the lens.
5. Before use in particular environments, such as places where chemical products are used, contact your Canon sales representative or dealer.

DEALING WITH ABNORMALITIES

WARNING

If any of the following situations occurs, immediately disconnect the cable from the camera and contact your Canon sales representative or dealer.

- Smoke, fumes, or unusual noises coming from the lens
- Foreign objects (such as liquid or metal objects) inside the lens

MAINTENANCE AND INSPECTION



WARNING

Be sure to disconnect the lens cable and remove the lens from the camera before cleaning outside of the lens. Do not use benzene, thinner, or other flammable substances to clean the lens. This may cause a fire or electric shock.

NOTE

1. Clean off any dust on the lens surface using a lens blower or a soft lens brush. In case of getting fingerprints or stains on the lens, use a clean cotton cloth moistened with commercial lens cleaning fluid, or use lens cleaning paper. Gently wipe in a spiral pattern from the center of the lens. Be careful not to rub dust across the lens, which may scratch the lens surface.
2. Routine inspection about once a year is recommended, depending on the conditions and environment of use. Request overhaul, if needed.

STORAGE



CAUTION

Always attach the lens cap (or hood cap) and dust cap before storage. Storing the lens without the caps attached poses a risk of fire if the lens focuses a light source.

NOTE

Immediately wipe off any moisture on the lens from misty or foggy environments, using a dry cloth. Seal the lens in a plastic bag with a desiccant (preferably new) to prevent moisture inside.

TO THE CUSTOMER

1. Canon shall bear no responsibility for damage resulting from improper operation of this product by the customer.
2. Canon shall make no guarantees about the product quality, functions, or operation manual and its marketability and suitability for the customer's purpose.
Moreover, Canon shall bear no responsibility for any damage, direct or incidental, that results from usage for the customer's purpose.
3. The product specifications, configuration, and appearance are subject to change without prior notice.
4. For further information on repairs, maintenance, or adjustments not mentioned in this operation manual, contact your Canon sales representative or dealer.
5. Note that Canon may be unable to undertake servicing or repair of a product if it is modified without consulting Canon or your Canon sales representative.

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– FOREWORD –

Thank you for purchasing the Canon BCTV zoom lens.

This product comes with the following documents for the models mentioned below:

- Operation Manual "Before Using The Product" (Included with the product)
- Operation Manual "Regulations" (Included with the product)
- Operation Manual "Lens" (Web)

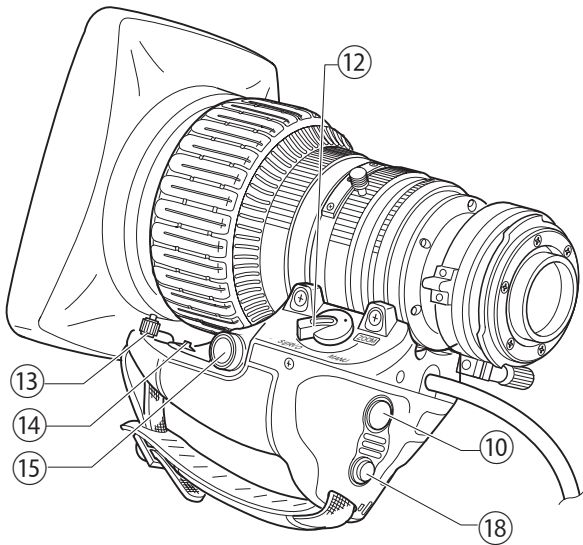
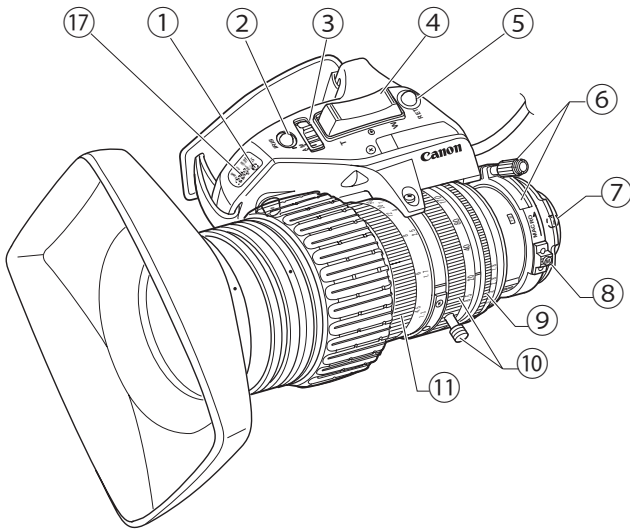
HDGC LENSES

KJ13x6B KRSD

KJ13x6B KTS

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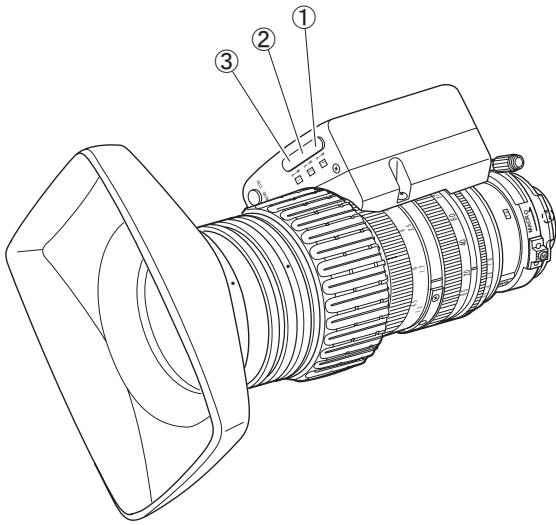
1. NOMENCLATURE



The shape of the lens body and attachments are different by models.

- ① **Iris Gain Adjusting Trimmer**
Adjusts the iris response speed in Auto iris mode.
- ② **Instant Auto-Iris Switch**
While pressing this switch, automatic iris operation instantly takes effect.
- ③ **Iris Operation Mode Change-over Switch**
Use this switch to change from manual to automatic or vice versa.
- ④ **Zoom Rocker Seesaw**
Use this rocker for servo zoom operation.
The zoom speed changes according to how far down the rocker is pressed.
- ⑤ **RET Switch (Video Return Switch)**
While this switch is held down, on air picture/ being recorded picture can be seen in the viewfinder through camera control system when multi cameras are connected to its system.
- ⑥ **Flange Back Lock Screw/Flange Back Adjusting Ring**
Loosen this screw and turn this ring to adjust the back focus.
- ⑦ **Locating Pin**
Determines the mounting position of the lens.
- ⑧ **Macro Button/Macro Ring**
Use this button and ring to shoot an object which is closer than the M.O.D.
- ⑨ **Iris Ring**
Turn the iris ring to operate the iris manually.
- ⑩ **Zoom Ring/Zoom Lever**
Use the zoom ring and zoom lever to operate the zoom manually.
- ⑪ **Focus Ring**
Turn this ring to focus on the object.
- ⑫ **Zoom Operation Change-over Knob**
Use this knob to change from manual to servo zoom operation or vice versa.
- ⑬ **Hood Lock Knob**
Loosen or tighten this knob to remove or fix the lens hood on the lens.
- ⑭ **MEMO Switch**
Use this knob to set the shuttle position.
- ⑮ **Connector for Remote Zoom Control**
Zooming is performed by remote control when this connector is used to connect the unit to an optional controller for zoom operations.
Normally, this connector is covered with a cap.
- ⑯ **VTR Switch**
Use this switch to start or stop the VTR.
- ⑰ **DIP Switches**
Use these DIP switches for the settings related to the shuttle-shot function.
- ⑱ **Shuttle Button (Shuttle-Shot Button)**
This switch is used for shuttle-shot function.

Remote Control Type Lens



① **Auto/Manual Focus Selecting Switch**

Use the focus operation mode change-over switch to change from automatic to manual operation or vice versa.

② **Auto/Manual Zoom Selecting Switch**

Use the zoom operation mode change-over switch to change from automatic to manual operation or vice versa.

③ **Auto/Manual Iris Selecting Switch**

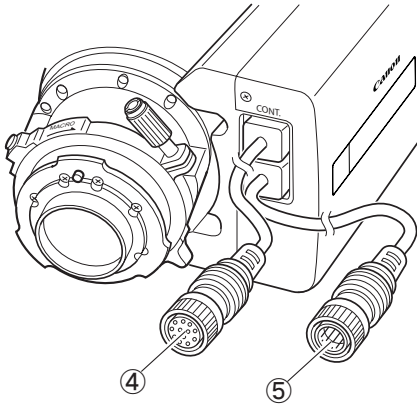
Use the iris operation mode change-over switch to change from automatic to manual operation or vice versa.

④ **Control Cable**

Connect to the remote controller.

⑤ **Power/Iris Control Cable**

Connect to the camera.

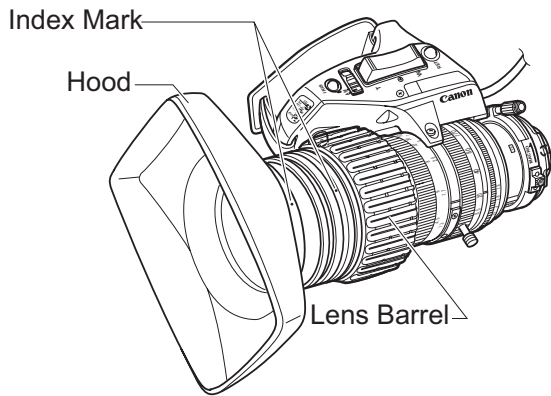


KTS type

2. HOW TO MOUNT AND CONNECT

2-1. MOUNT THE HOOD ON THE LENS

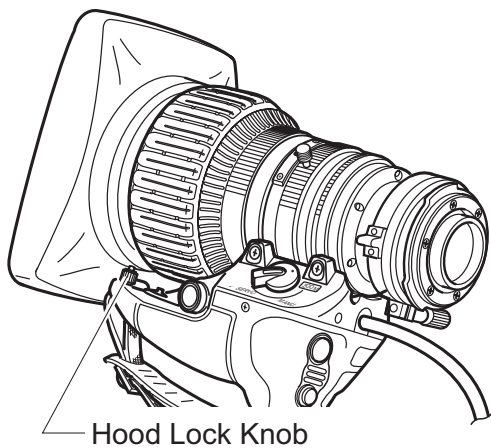
A lens cap may be attached to the lens at the factory. If attached, remove the lens cap before mounting the hood as instructed below.



- 1** Fit the hood on the front of the lens barrel.
- 2** Align the index marks.
- 3** Turn the hood lock knob clockwise to tighten the hood securely.

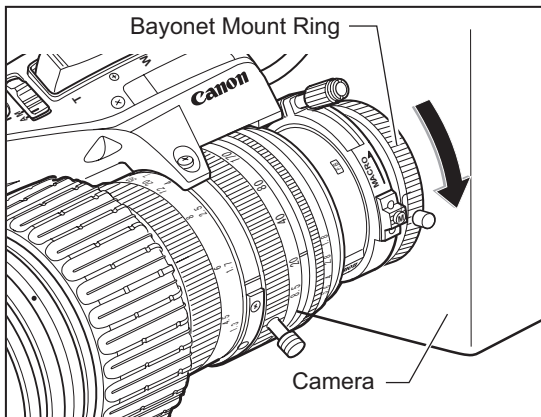
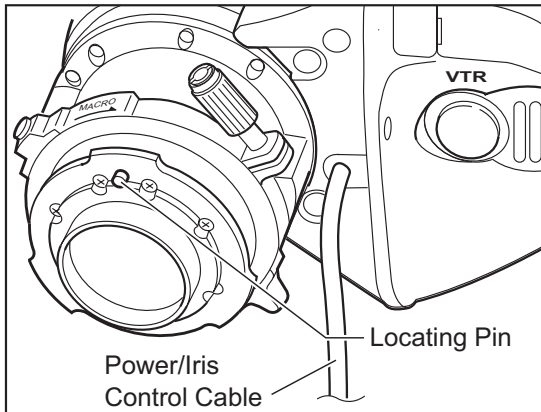
NOTE

Keep the removed hood cap in a safe place so as not to lose it.



2-2. MOUNT THE LENS ON THE CAMERA

Before mounting the lens on the camera, make sure that the camera's power is turned off.



- 1 Position the camera horizontally.
- 2 Turn the bayonet ring of the camera counter-clockwise as viewed from the lens. Remove the dust cap from the camera mount.
- 3 Remove the dust cap from the lens.
- 4 Align the locating pin on the lens mount with the slot on the camera mount and fit the lens into the camera mount surface.
- 5 Turn the bayonet ring clockwise until the lens mount is firmly fixed in place.
- 6 Connect the power/iris control cable on the back of the drive unit to the appropriate receptacle on the camera head.

* For KTS type lens
Connect the control cable on the back of the drive unit to the remote controller.

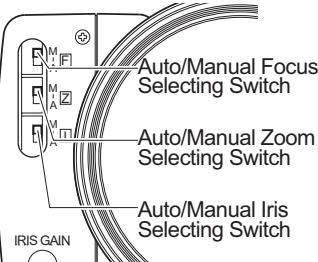
NOTE

- 1) Never hold the lens, drive unit and band portion to support the entire weight of the camera. Excessive force to the mount portion and drive unit of the lens may result in damage to the lens mechanism.
- 2) Once they have been removed, keep the caps in a safe place so that they will not be lost or misplaced.
- 3) A master key mark is provided on the power/iris control cable. Connection can be performed smoothly by aligning the master key mark on the camera connector with this mark.
- 4) Depending on systems, it is required to check the camera's specification.

2-3. TURN IT ON

Turn on the camera, and the power of the lens will be supplied.

3. ADJUSTMENT



Auto/Manual Focus Selecting Switch

Auto/Manual Zoom Selecting Switch

Auto/Manual Iris Selecting Switch

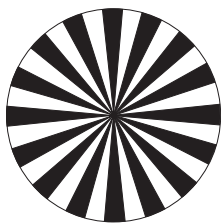
IRIS GAIN

Before starting adjustment

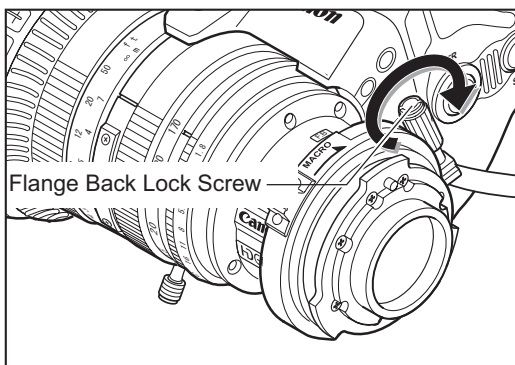
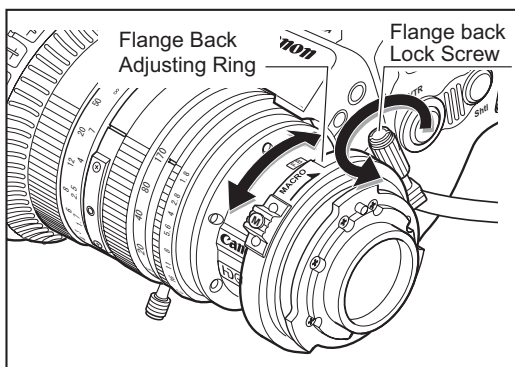
Before operating the iris, zoom or focus manually, make sure to set the Auto/manual selecting switches at the front of the lens drive unit to "M" position.

3-1. BACK FOCUS ADJUSTMENT OF THE LENS

If the relationship between the image plane of the lens and the image plane of the television camera is incorrect, the object goes out of focus when the lens is zoomed. Adjust the back focus of the lens as follows.



Siemens star chart



- 1** Select an object at an appropriate distance (approx. 1 to 3 m recommended).
A Siemens star chart is preferable for this adjustment. If no such chart is available, use any object that offers sharp contrast to facilitate the adjustment work.
- 2** Set the iris fully open.
- 3** Set the lens to the telephoto by turning the zoom ring.
- 4** Bring the object into focus by turning the focus ring.
- 5** Set the lens to the widest angle by turning the zoom ring.
- 6** Loosen the flange back lock screw, and turn the flange back adjusting ring to bring the object into focus.
- 7** Repeat steps 3 to 6 a few times until the object is brought into focus at both the widest angle and telephoto.
- 8** After making sure that the object is in sharp focus, tighten the flange back lock screw.

The adjustment procedure is now completed.

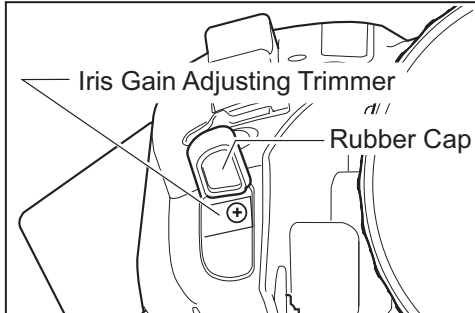
NOTE

Refer to "4 OPERATION" as for details on zooming, focusing, and iris operation performed with the back focus adjustment.

3-2. IRIS GAIN ADJUSTMENT

An iris gain adjusting trimmer is located on the front of the lens drive unit. The iris gain is set at middle of range at the factory. However, if you wish to change the iris gain, adjust the trimmer through the procedure described below.

(For KRSD type lens)



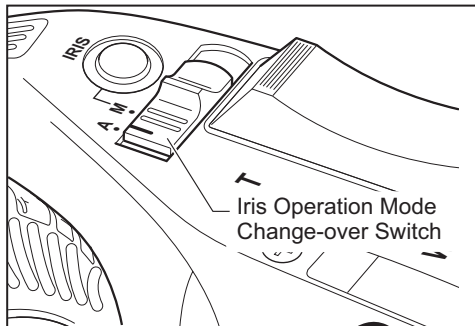
1 Turn over [or remove] the rubber cap.

2 (For KRSD type lens)

Set the iris operation mode change-over switch to the "A" position.

(For KTS type lens)

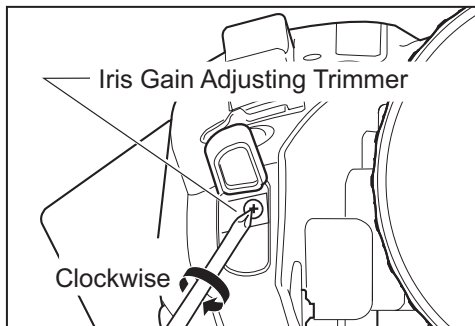
Set the auto/manual iris selecting switch of the lens to the "A" position.



3 Turn the iris gain adjusting trimmer, using a small screwdriver to set the level as desired.

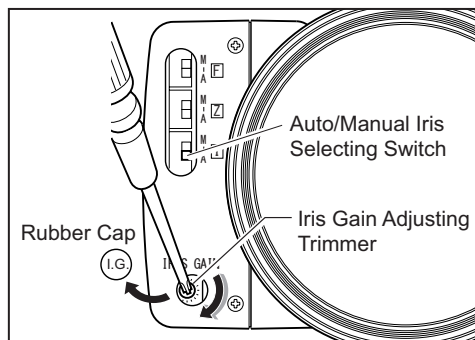
Clockwise : higher sensitivity
Counterclockwise : lower sensitivity

To determine the maximum gain, set the trimmer at a level where no hunting occurs.



4 After the iris gain adjustment is completed, set it based on the rubber cap turned over.

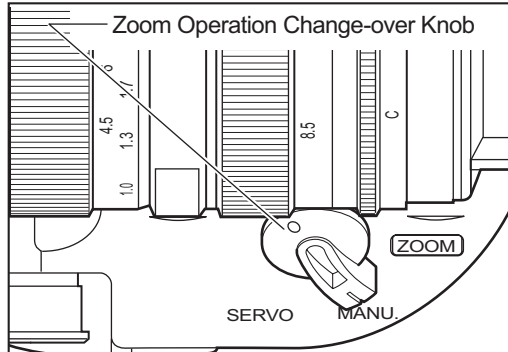
(For KTS type lens)



4. OPERATION

4-1. ZOOM OPERATION

4-1-1. Manual Zoom Operation



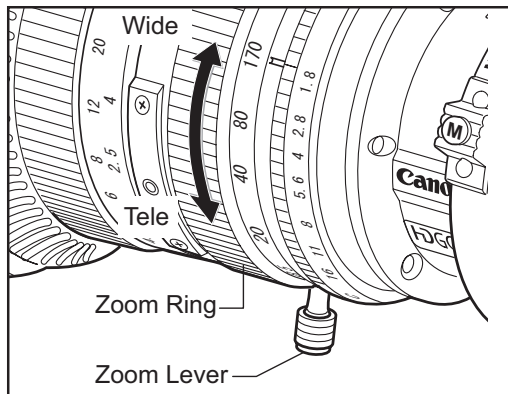
1 Set the zoom operation change-over knob at the bottom of the lens drive unit to "MANU." position.

2 Turn the zoom ring (itself or with the zoom lever).

As viewed from the camera side

Clockwise : to zoom out (to widest angle)

Counterclockwise : to zoom in (to telephoto)



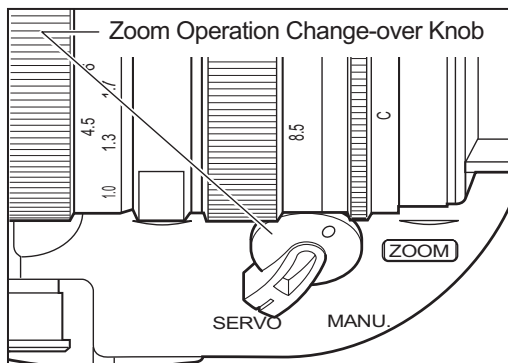
NOTE

The zoom operation change-over knob must be set to the "MANU." position before performing manual zoom operations.

The lens may be damaged if manual zoom operations are forcibly performed with the knob at the "SERVO" position.

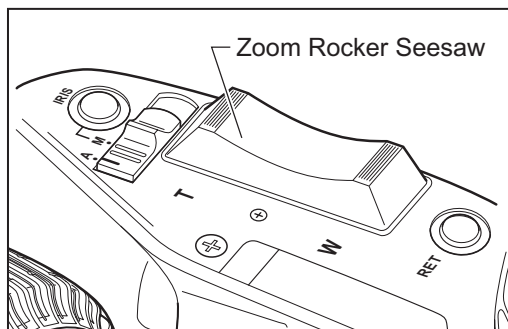
4-1-2. Servo Zoom Operation

In servo zoom operation, pressing the rocker seesaw drives the motor built-in the lens and performs zoom operation.



1 Set the zoom operation change-over knob at the bottom of the lens drive unit to "SERVO" position.

2 The zoom can be operated by pressing the zoom rocker seesaw located on the top of the lens drive unit.



Operation direction	Zoom direction
T → W	Zoom out (To widest angle)
T ← W	Zoom in (to telephoto)

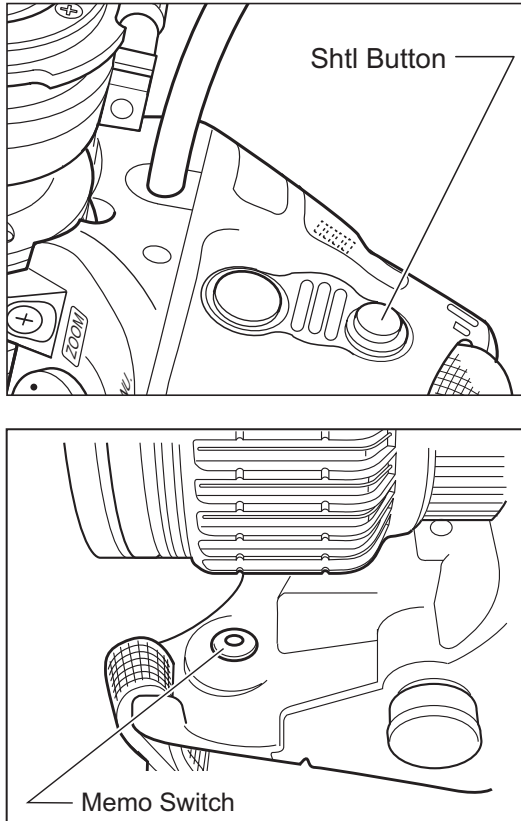
The zoom speed changes according to how far down the rocker seesaw is pressed.

4-1-3. Shuttle-Shot

While shooting, the Shtl button allows the zoom shuttle between two zoom positions (shuttle and original positions) at the maximum speed.

A. How to set the shuttle position

Any desired zoom position can be stored.



At the desired position to store, press the the Shtl button while holding down the Memo switch.

As viewd from the camera side
Clockwise : toward Tele side
Counterclockwise : toward Wide side

NOTE

The stored zoom position remains in the memory even after the power is turned off.

When the Shtl button is released, normal operation by zoom rocker seesaw is enabled.

B. How to move to the shuttle position

When holding down the Shtl button, the zoom moves toward the shuttle position at the maximum speed, and stops at the shuttle position. So long as the Shtl button is held down, the zoom stays at the shuttle position. When the Shtl button is released, the zoom returns to the original position.



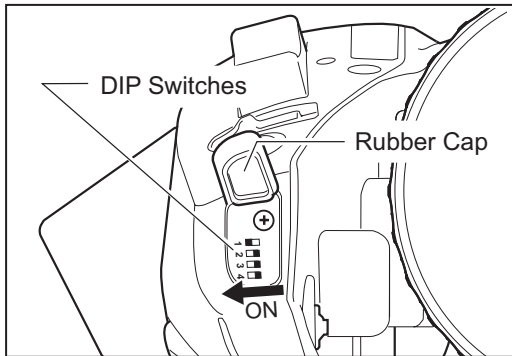
NOTE

Since operation with the Shtl button is given priority, Operation cannot be performed with the zoom rocker seasaw while the Shtl button is held down.

C. How to set the DIP switches

At the far end of the rubber cap covering the drive unit are the DIP switches which are used for the settings related to the shuttle-button function.

By setting these switches, the Shtl button functions can be assigned to the VTR switch and RET switch functions. The shuttle shot function can be set to off if not needed.



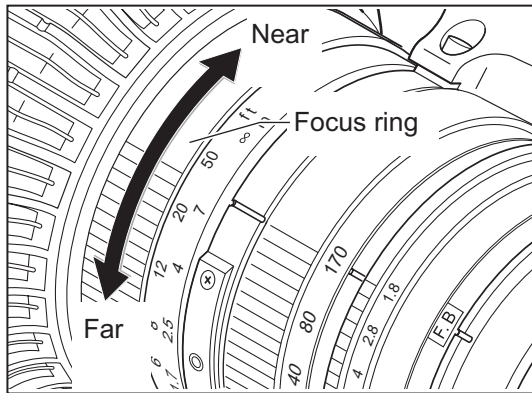
- 1** Turn over the rubber cap.
- 2** The various function settings available are listed below. Set the DIP switches to the desired settings. The switch is ON when it is set to its bottom-side position and OFF when it is set to its top-side position.
- 3** Upon completion of the settings, re-set the rubber cap in place.

Setting Items	Function Selection	DIP Switch Settings (DIP Switch No. : position)
Turning ON or OFF the Shuttle-Shot function	ON	1: ON
	OFF	1: OFF
Assigning a function as the RET switch	Return (RET)	2: OFF
	Shuttle-Shot (Shtl)	2: ON
Assigning a function as the VTR switch	VTR-Start/ Stop (VTR)	3: OFF
	Shuttle-Shot (Shtl)	3: ON
Spare (Not used.)		4: OFF

: Factory Settings

4-2. FOCUS OPERATION

Turn the focus ring of the lens manually.



- 1 Turn the focus ring to focus on the object.

As viewed from the camera side

Clockwise : to Near end
[to focus on a closer object]

Counterclockwise : to Far end
[to focus on a farther object]

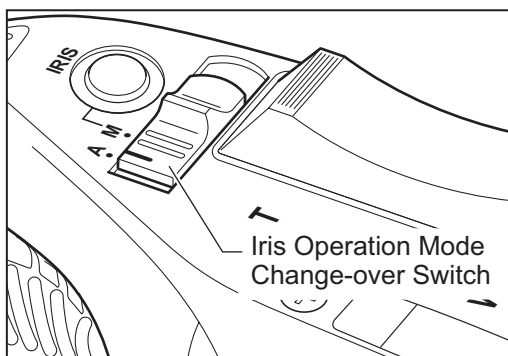
4-3. IRIS OPERATION

The iris can be operated automatically or manually by changing the iris operation mode change-over switch.

A (Automatic) : Automatic iris operation from the camera.

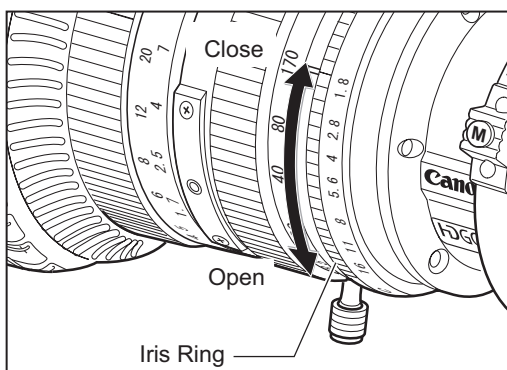
M (Manual) : Manual iris operation by rotating the iris ring.

4-3-1. AUTOMATIC IRIS OPERATION



- 1 Slide the iris operation mode change-over switch to the "A" position.
- 2 The iris ring rotates automatically (driven by a motor in the drive unit) according to a camera signal. The video level is automatically adjusted by the camera.

4-3-2. MANUAL IRIS OPERATION



- 1 Slide the iris operation mode change-over switch to the "M" position for performing manual iris operations.
- 2 Adjust exposure by rotating the iris ring of the lens manually.

Turn the iris ring

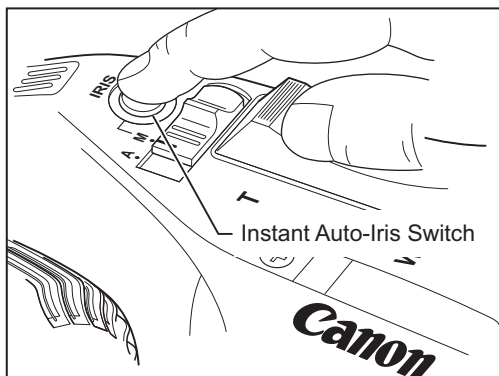
As viewed from the camera side
Clockwise : closing down
Counterclockwise : opening up

NOTE

The iris operation mode change-over switch must be set to the "M" position before performing manual iris operations. The lens may be damaged if manual iris operations are forcibly performed at the "A" position.

Instant auto-iris switch

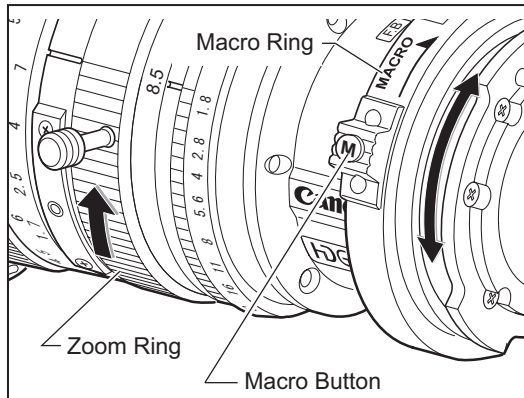
When the instant auto-iris switch is pressed during manual iris operation mode, the iris changes to automatic operation mode while the switch is held down.



4-4. MACRO OPERATION

When the macro function of the lens is used, macro shooting is enabled. In macro shooting, the object distance becomes shorter than the normal minimum object distance (M.O.D.).

The minimum object distance by macro operation for this lens is 10 mm at widest angle.



Press the macro button to unlock the macro ring. While holding the button down, turn the macro ring at the back side of the lens clockwise as viewed from the camera side to allow macro shooting.

- 1** Set the lens to the widest angle by manual or servo zoom operation.
- 2** Bring the object into focus by turning the macro ring.

NOTE

Macro operation is also possible at any zoom position other than the widest angle, but the object distance increases.ject and bring into focus by macro operation.

Object Distance and Dimensions in Macro Shooting

KJ13x6B KRSD, KTS	Zoom Position	Position of Macro Ring or Button	^{*1} Minimum Object Distance	Object Dimensions
Normal Operation	6 mm	^{*2} Locked	0.4 m	74.3 x 41.8 cm
	78 mm	^{*2} Locked	0.4 m	5.4 x 3.0 cm
Macro Operation	6 mm	^{*2} Macro position	10 mm	8.7 x 4.9 cm

*1: The object distance is measured from the front lens vertex.

*2: Macro shooting is possible, regardless of where the macro ring is positioned between the locked position and maximum macro rotated position. At the intervening positions, the above data vary.

Multi-point Focus Shooting

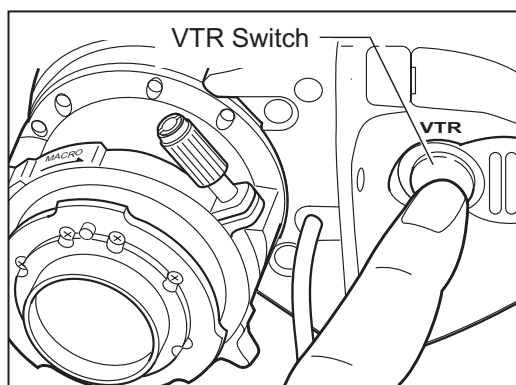
In macro shooting, when zooming to change the focal length, the focal point varies. The multi-point focus shooting technique uses this characteristic. The focal point is shifted by the zoom operation. Follow the steps below :

- 1** Zoom in to a far object, and bring it into focus by normal focus operation.
- 2** Zoom out to a near object and bring into focus by macro operation.
- 3** Zoom in to the far object again while not touching the macro button set by above step 2, and bring into focus again by normal focus operation.

When steps **1** to **3** have been performed, the setting for multi-point focus shooting is completed.

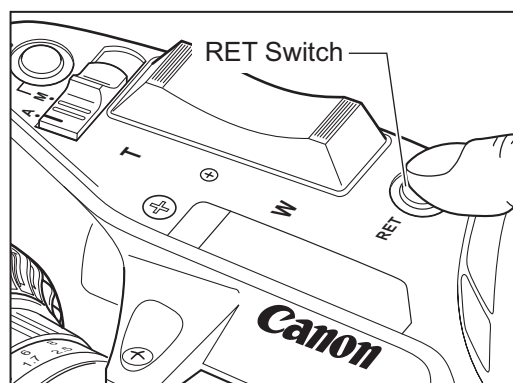
When zooming in, the focal point is shifted from the object in the foreground to the farther object in the background continuously.

4-5. VTR AND RET SWITCH OPERATIONS



VTR Switch

Press the VTR switch to execute the operation of VTR and press it again to stop the operation of VTR.



RET Switch (Video Return Switch)

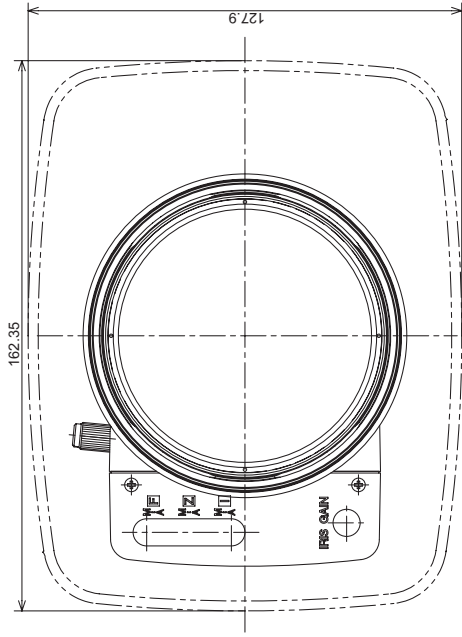
While the RET switch is held down, on air picture / being recorded picture can be seen in the view finder through camera control system when multiple cameras are connected to its system.

5 PRODUCT SPECIFICATIONS

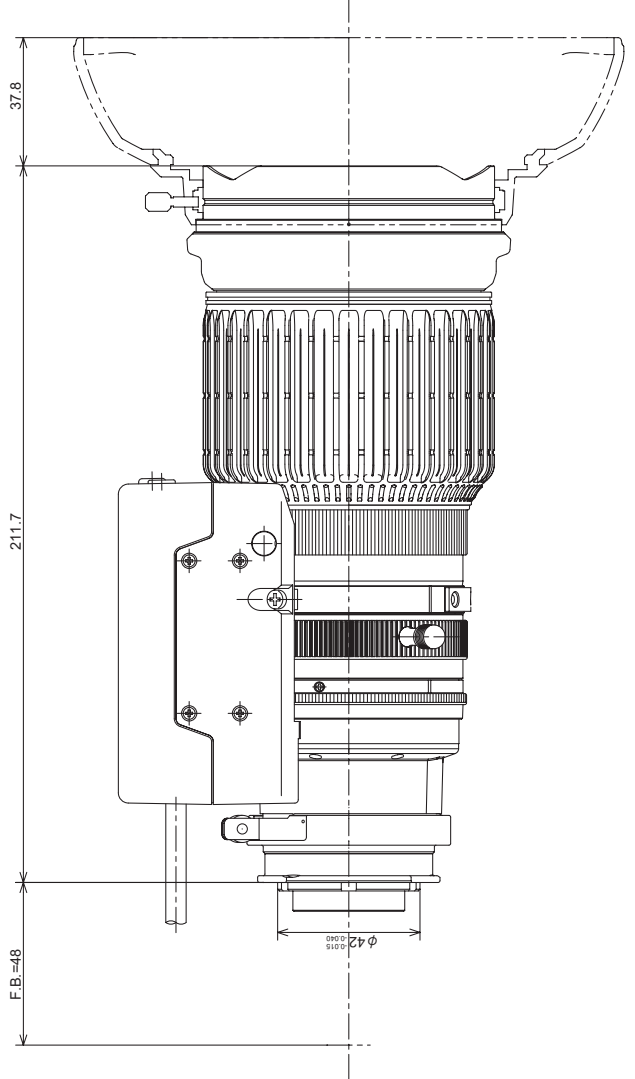
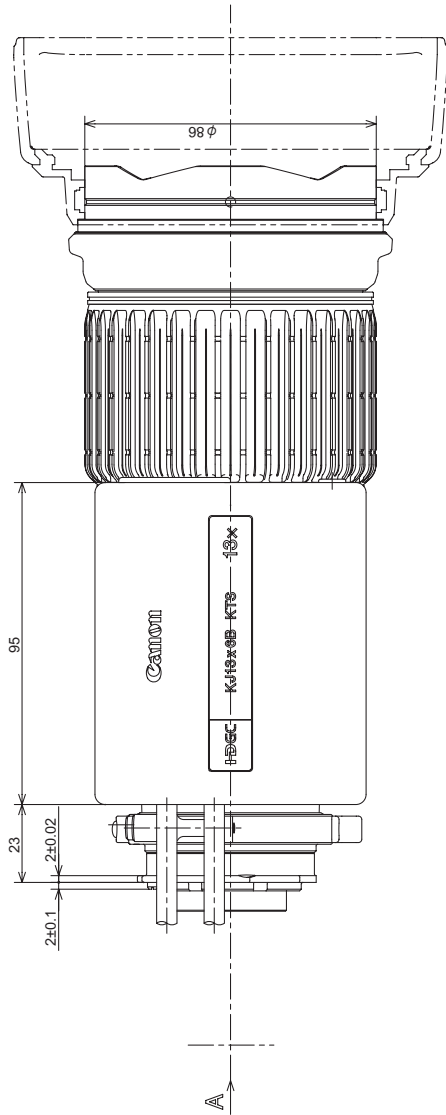
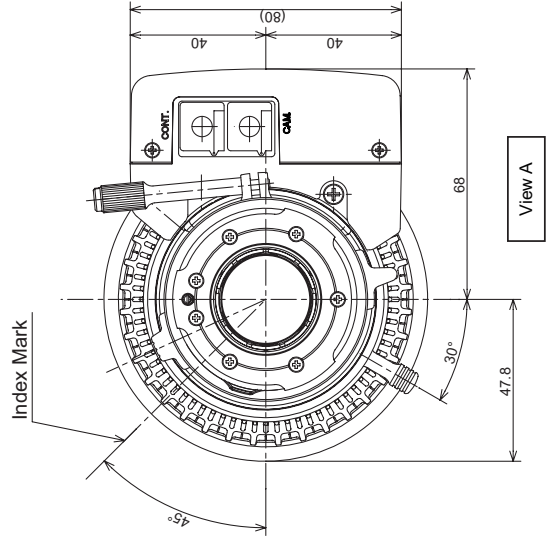
Model Name		KJ13x6B	
		KRSD	KTS
Image Size		2/3"	
Focal Length		6-78 mm	
Zoom Ratio		13 x	
Maximum Relative Aperture		1:2.0 (at 6 - 58 mm) 1:2.7 (at 78 mm)	
Image Format		at Dia. 11 mm (9.6×5.4 mm)	
Angular Field of View	Widest angle	77.3° × 48.5° (at 6 mm)	
	Telephoto	7.0° × 4.0° (at 78 mm)	
Minimum Object Distance (M.O.D.)		0.4 m (10 mm from the front lens vertex in macro mode)	
Object Dimensions at M.O.D.	Widest angle	74.3 cm × 41.8 cm (at 6 mm)	
	Telephoto	5.4 cm × 3.0 cm (at 78 mm)	
Size (W x H x L)		165.4 mm × 105.1 mm × 211.7 mm	115.8 mm × 95.5 mm × 211.7 mm
Mass (Without Hood)		Approx. 1.59 kg	Approx. 1.73 kg
Flange Back (in air)		48 mm	
Thread for Filters		82 mm P0.75 (Lens barrel thread size)	105 mm P1.0 (Hood thread size)
Zoom Speed for Full Range (Room temperature)		1.2 ± 0.5 s	-
Iris		Control from camera and manual operation	Control from camera / remote controller and manual operation
Mount		Bayonet mount	
Power Source		DC12V (DC10 -17V)	
Current Consumption (DC12V in)		230 mA	435 mA
Operating Temperature		-10°C to +45°C	

TECHNICAL INFORMATION

KJ13x6B KTS



(Unit: mm)





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