

FUJINON TV LENS
富士能电视镜头
UA107×8.4BESM-T35K

取扱説明書 /Operation Manual/ 使用手册

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日本語版

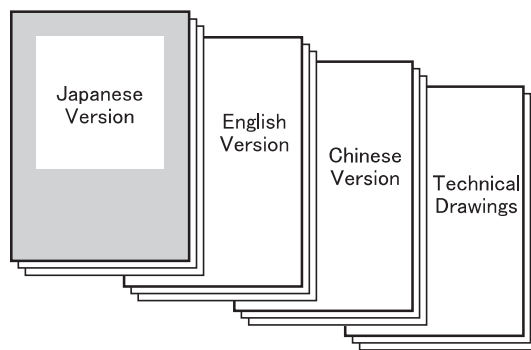
ENGLISH

中文版

技術資料 /Technical Drawings/ 技术资料

ENGLISH VERSION

- ◆ This operation manual is composed of the Japanese version, English version, Chinese version, and Technical Drawings.



FCC REGULATIONS

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAUTION : Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canadian Radio Interference Regulation

CAN ICES-3(A) / NMB-3(A)

CAUTION : This Class A digital apparatus complies with Canadian ICES-003.

Disposal of Electrical and Electronic Equipment in Private

In the European Union, Norway, Iceland and Liechtenstein:

This symbol on the product, or in the manual, and/or on its packaging indicates that this product shall not be treated as household waste. Instead it should be taken to an applicable collection point for the recycling of electrical and electronic equipment.

By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate waste handling of this product.



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■ TECHNICAL DRAWINGS

FOR YOUR SAFETY USE

This content explains important notices for all the users to use this product safely. Read the content carefully before using, and follow the instructions.

The following signs show:

 **WARNING** Indicates the possibility of causing death or serious injury when misused.

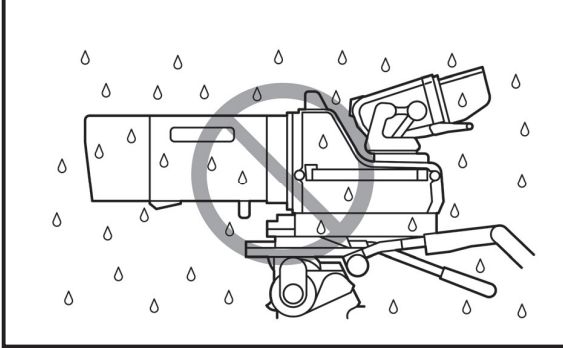
 **CAUTION** Indicates the possibility of causing injury or substantial damage when misused.



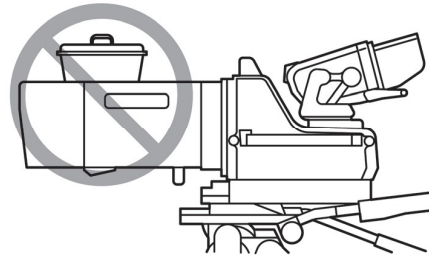
Indicates what the user “should not do.”

WARNING

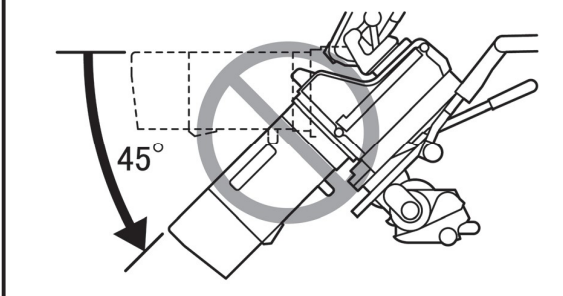
- ◆ Do not moisten inside of the appliances. It may cause fire or electric shock. If the incident occurs, shut off the power supplied to the lens immediately.



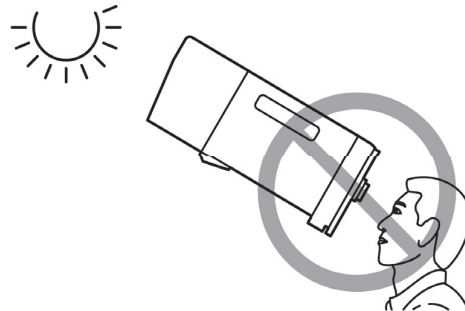
- ◆ Do not attach something to the lens other than Fujinon optional accessories that are designed to be attached to the lens; do not put something on the lens. An abnormal object attached to or on the lens may fall in operation of the camera causing a serious accident.



- ◆ If the camera is declined by 45 degrees or more, there may be a case that the lens installed on the camera falls. If it is required to shoot an object with the camera in the posture stated above, before using the camera, a proper measure should be taken on the lens to avoid falling.



- ◆ Do not look at any sorts of strong illuminant such as the sun through the lens. Eyes could be harmed.



- ◆ Be sure to attach all the parts securely. Dropping any parts from a height may cause severe accidents.
- ◆ Before operating the camera, confirm that there is no object in the range of camera movement.
If the lens is bumped against an object with a strong force, there may be a case that the lens falls from the camera causing a serious accident.

⚠ CAUTION

- ◆ Take care when carrying the lens. Dropping the lens while carrying may cause injury.
- ◆ Before supplying the power to the lens, make sure all the parts are connected correctly.
- ◆ In order to install or release the lens cable, be sure to hold the joint part. Do not damage the cable by gripping. It may cause fire or electric shock.
- ◆ If any sorts of incidents such as unusual smoke, noise, smell or obstacles are found, shut off the power supplied to the lens and pull out the lens cable immediately. Please notify the sales agent from which you purchased the lens.
- ◆ Do not remodel the product: it may impair the functions of product or cause electric shock.

NOTICE

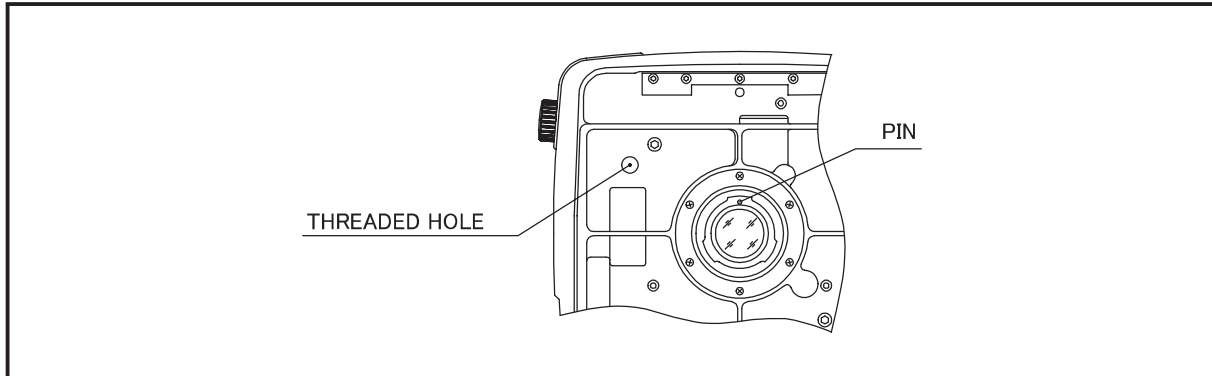
- ◆ Lens and its accessories are extremely precise instrument, then be sure not to apply the strong impacts to them. If the lens is of a type in which the rear lens protrudes from the flange surface of the lens mount, be sure not to apply impact to the lens part when installing or releasing.
- ◆ There may be a case that the glasses of the lens mist when the lens is carried from a cool place to a place of high temperature and high humidity. To avoid a mist on the glasses, before moving the lens, let the lens adjust to the ambient temperature of the place where the lens will be used.
- ◆ Be sure not to apply impact to the front part of the lens when operating the camera.
- ◆ Put the cap on the lens while the camera is not used.
- ◆ If an accessory to be attached to the lens is equipped with a mechanical drive relaying part, before attaching it, check the joint part and get rid of all obstacles. If there are any unusual conditions, please contact the sales agent from which you purchase the product.
- ◆ When the lens is used in the weather of fog, raining, or snowing, cover up the lens to prevent it from the water.
- ◆ When this product is used or is attached or detached in an environment with an excess of dust or fine particles, make sure to prevent dust or fine particles from entering into the product. If dust sticks to or gets inside the product, it may cause a malfunction.
- ◆ When this product is used, stored, or put in standby state in a high- or low-temperature environment, provide heat shielding or thermal insulation measures to prevent damage to this product and the entire camera system.
- ◆ To minimize the impact to the lens in transportation, set the zoom to the wide end and the focus to the infinity side end before releasing the lens from the camera.

MEMO

PRIOR TO USE

(1) Before Installing onto Camera

When it is required to install this lens on a Sony studio camera (Ex. HDC-4300) or on a Sony large lens adapter (Ex. HDLA-1500), remove the pin on the bayonet mount of the lens, and attach it to the threaded hole in the mount frame. To install this lens on another camera, reinstall the pin on its former position.



(2) Caution when using the lens supporter

When using this lens with a Fujinon lens supporter (ELH-*) attached, use a power source connector (see “Name and Function of Each Part”) to supply power from the lens side. If power is not supplied, correct operation may not occur.

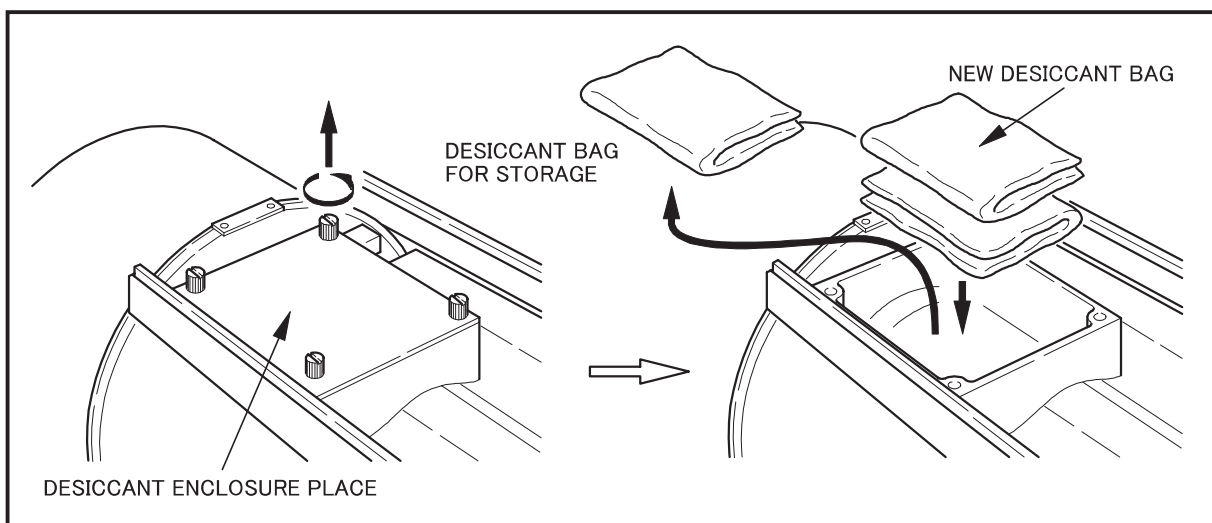
(3) Enclosure of Desiccant

The inside of this lens is able to enclose desiccant in order to eliminate humidity that may mist the surfaces of the internal glasses. A desiccant bag for storage was enclosed in the desiccant enclosure place before shipment at the factory. Prior to use, take out this bag first, and put new desiccant bags in that place as follows:

- There are twelve desiccant bags in the trunk. Take out two of them to use. The rest should be used when the exchange of the desiccant is required.
- Loosen the two lens shroud attaching knobs on the both sides of the lens. Draw the shroud towards the front of the lens to detach it from the body.
- Remove the four screws to take off the lid.
- Take out the desiccant bag for storage.
- Fold new desiccant bag and put it in the desiccant enclosure place.
- Put the detached lid in its place and reinstall the four screws. Finally, reinstall the lens shroud.

Note 1. Perform the above procedure in a dust-free place.

Note 2. In a humid region, it is recommended to change the desiccant bags two times a year. The desiccant being jellied indicates the time when it must be exchanged.



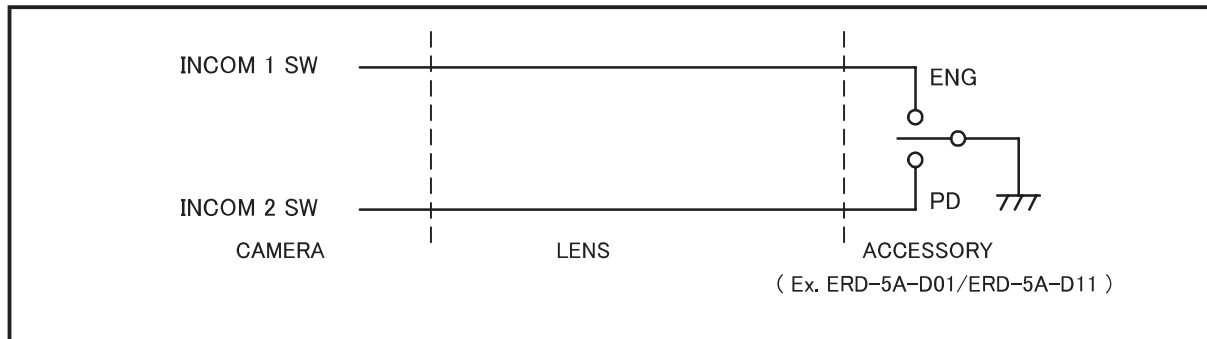
(4) Selection of Camera

The behavior of the intercom select switch in an accessory differs by types of camera. If required, change the setting of dip switch (S710-7) on the A-board in the lens according to the type of camera.

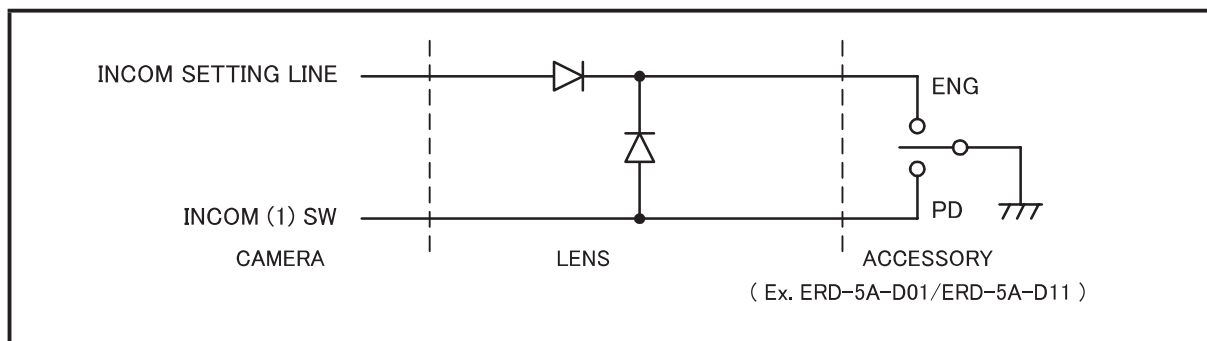
At the factory, the switch is set to "TYPE 1."

The circuits relative to the dip switch are shown below.

I . TYPE 1 CAMERA : BVP-270 series (NTSC) and BVP-370 series (NTSC)

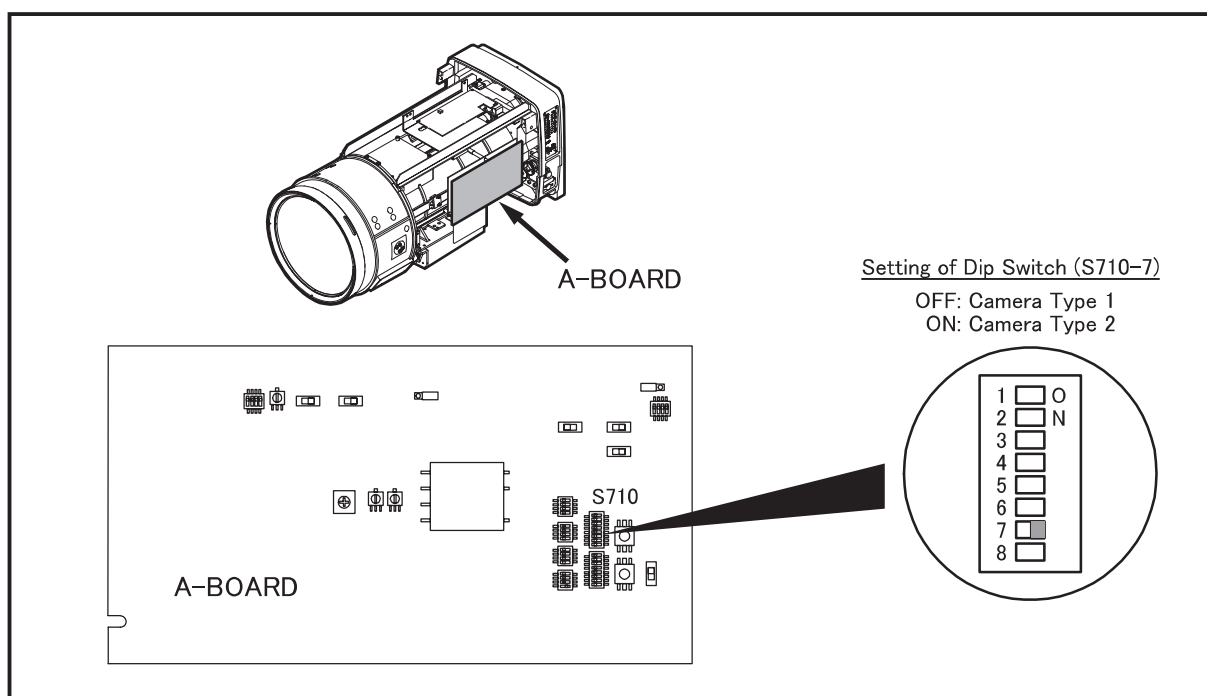


II . TYPE 2 CAMERA : BVP-370 series (PAL)



Note. If the camera is of TYPE 2, set the intercom select switch on the camera side to "PD."

At the position of "ENG," "PD" can not be selected from a zoom rate demand unit.



(5) Setting of Camera Mode

If the camera to be used with is not capable of serial communication with a lens, set the communication mode (camera mode) of the lens to OFF.

Setting Method

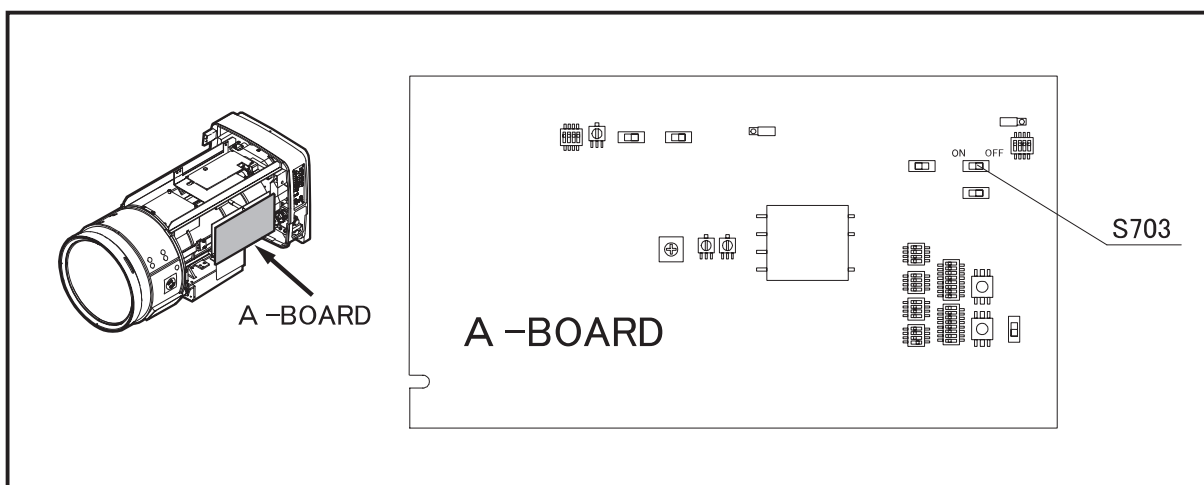
First, remove the shroud.

The shroud can be removed by pulling it towards the front after loosening the two lens shroud attaching knobs on both sides of the lens.

The switch S703 (on A-board) can be seen on the right-hand side (viewed from front of lens) of the lens by removing the lens shroud.

Set this switch to "OFF."

Note. Before shipping at the factory, S703 is set to ON.



MEMO

1. GENERAL DESCRIPTION

Fujinon TV lens of XA99 $\times$ 8.4 series is a high performance zoom lens designed for 2/3" format 4K-TV color cameras.

This lens has the following features.

- High magnification zoom

Its super high zoom ratio of 99 times and a built-in 2 times range extender make it super narrow angle zoom lens with a maximum focal length of 1664 mm. In spite of super high zoom ratio, the maximum relative aperture is 1:1.7.

- Equipped with advanced focus system

An advanced focus system (AF system) based on focus operation using a dedicated focus position demand unit is installed. This system can assist the photographer's focus operation even on air, because there is no movement to find the focus.

- Built-in Optical stabilizer system

This lens is equipped with an anti-vibration mechanism. The functions of the vibration detection sensor and optical compensation system installed in the product enables shooting stable images with less blurring even when taking pictures in a place where there is no secure footing or outdoors with a strong wind.

- High precision digital control

This lens is a digitally controlled by a high performance processor.

By performing high-speed digital processing, each part of the lens is controlled with high precision

In addition, this lens can be controlled with an external controller or computer using the RS - 232C interface.

With all features described above, this lens is compact in size and light in weight, therefore the lens is particularly useful for field applications.

2. LIST OF COMPONENTS

■ Standard Components

1. Lens package	1
2. Front lens cap	1
3. Rear lens cap	1
4. Claening kit	1
5. Operation manual (This book)	1

3. SPECIFICATIONS

ITEM \ LENS	UA107×8.4BESM-T35K	
Application	2/3" Format Color Camera (Prism Optical System)	
Aspect Ratio	16 : 9	
Image Format	9.59 × 5.39 mm (ϕ 11.0 mm)	
Focal Length	8.4 ~ 900 mm [16.8 ~ 1800 mm] ^{*1}	
Zoom Ratio	107 ×	
Extender magnification Ratio	2 ×	
Maximum Relative Aperture (F No.)	F1.7 (8.4 ~ 340 mm) [F3.4 (16.8 ~ 680 mm) ~ F4.5 (900 mm) ~ F9.0 (1800 mm)] ^{*1}	
Iris Range	F1.7 ~ F16 、close	
Flange Focal Length (in Air)	48 mm (See Fig. 1.)	
Minimum Object Distance (from Front of Lens)	3.05 m (0.3 m in Macro Operation)	
Field Angle (H×V)	Wide	59.4° × 35.6° [31.9° × 18.2°] ^{*1}
	Tele	0.6° × 0.3° [0.3° × 0.2°] ^{*1}
Object Area at M.O.D. (H×V)	Wide	3053 × 1717 mm [1594 × 896 mm] ^{*1}
	Tele	30 × 17 mm [15 × 9 mm] ^{*1}
Operation range of tilt	± 45°	
Iris Control	Servo	
Zoom Control	Servo (Min. Op. Time: Approx. 0.6 s ^{*2})	
Focus Control	Servo (Min. Op. Time: Approx. 0.8 s) , Manual or Advanced Focus	
Anti-vibration Mechanism		
Direction of Compensation	Vertical + Horizontal or Vertical Only	
Compensation Mode	HIGH or STD.	
Mount	Bayonet mount (See Fig. 1.)	
Power Consumption (at 12V DC, Approx.)	2.4 W (Quiescent)、38.4 W (Maximum)	With external power supply ^{*3} .
	2.4 W (Quiescent)、36 W (Maximum)	No external power supply
Dimensions (H × W × L)	258 × 264 × 670 mm	
Mass (Approx.)	26 kg	

*1 The values in the brackets are given when the 2 × range extender is used.

*2 The value when ESM-D53 is used as the zoom servo module. Using an external power supply, the minimum operating time can be reduced to about 0.35 seconds.

*3 When using an external power supply, first turn on the camera power.

4. NAMES AND FUNCTIONS

Note. The encircled numbers indicate the numbers in the outline drawing (Fig. 1).

① Tally Lights (2 places)

② Handles (2 places)

To carry this lens, hold these handles with both hands.

③ Shroud Attaching Knobs (2 places)

The knobs to fix the lens shroud to the body of the lens.

④ Extender Remote/Manual Select Switch

To select the extender manually, set this switch to “MANU.”

To select the extender by means of a remote control unit such as a range selector, set this switch to “REMO.”

⑤ Extender Select Knob

The extender manual selection is performed by means of this knob.

⑥ Zoom, Iris, Extender Indicator

This indicator shows the present positions of the zoom, iris and extender.

⑦ Indicator ON/OFF Select Switch

Operation of this switch can select ON or OFF of “Zoom, Iris, Extender Indicator.”

⑧ Hood

This hood prevents the extra light from entering the lens.

⑨ Servo Modules (2 places)

To control the lens with servo control units, install servo modules.

⑩ Manual Module (2 places)

To control the lens with manual control units, install manual modules.

⑪ RS-232C Connector (DE-9PF-N, JAE)

In either self-diagnosis operation using a Fujinon Find System or remote-control operation using a computer, the communication with a computer can be made through this connector.

The RS-232C connector is located inside the lens.

When it is required to control the lens using a personal computer, detach the partial cover under the connector.

The cover can be detached by removing the four screws that attach the cover.

(For the lens control protocol, contact the sales agent from which you purchased the lens.)

⑫ Connector for Macro Control (HR25-9R-20S, HIROSE)

This connector is provided for a macro control unit.

⑬ Connector for Encoder Output (HR25-9R-20S, HIROSE)

The connector for outputting digital signals derived from the iris, focus, and zoom encoders.

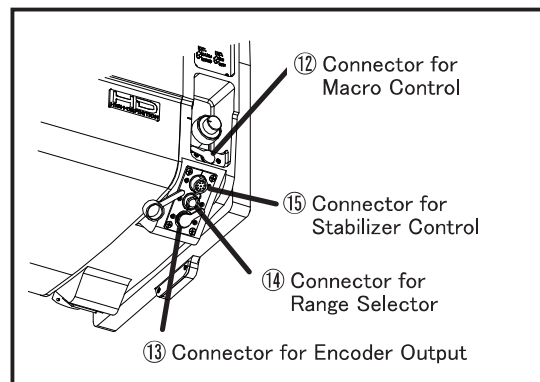
For the output signal, refer to section “Specifications of Encoder Output Signal” on page 16.

⑭ Connector to Range Selector (HR10G-10R-12S, HIROSE)

This connector is provided for either a range selector or an iris control unit.

⑮ Connector for Stabilizer Control (R03-R8F3, TAJIMI)

This connector is provided for an optical stabilizer control unit with which the camera operator can select the optical stabilizer function of the lens. (To select the optical stabilizer function using an optical stabilizer control unit, set the stabilizer H+V/OFF/V select switch of the lens to OFF.)



⑩ F.f Adjusting Knob

The flange focal length of the lens is adjusted by means of this knob.

⑪ F.f Locking Knob

This knob secures the F.f adjusting knob.

⑫ Bayonet Mount

The bayonet type mount used in installation onto a portable camera.

⑬ Pin

In installation of the lens, align this pin with the appropriate hole in the mounting surface of the camera or the lens supporter.

⑭ Hook

In installation of the lens, hang this hook on that on the mounting surface of the camera or the lens supporter.

⑮ Pin

In installation of the lens onto a portable camera, align this pin with the hole in the mounting surface of the camera.

⑯ Spring Pin

In installation of the lens, this spring pin enters the appropriate hole in the mounting surface of the camera or the lens supporter and prevent shaking of the lens.

⑰ Connector to Camera (57-10360, DDK)

The electrical connection with the camera is made through this connector.

⑱ Stabilizer H+V/OFF/V Select Switch

This switch selects ON / OFF of the optical image stabilization function and the correction direction.

With this switch set to “H+V,” the optical stabilizer functions responding to the vibration of both vertical and horizontal directions, while set to “ V, ” it functions responding to the vibration of only vertical direction.

When this switch is set to “OFF,” the anti-vibration mechanism does not operate.

(When an optical stabilizer control unit is connected to this lens, the setting of the select switch on the optical stabilizer control unit has priority to the setting of this switch.)

⑲ Tally Lights HIGH/LOW/OFF Select Switch

The intensity of illumination of the tally lights can be selected from High or Low intensity.

When the switch is set to OFF, the tally lights go out.

⑳ Connector for Focus, Zoom Control (PT02A-16-26S, BENDIX)

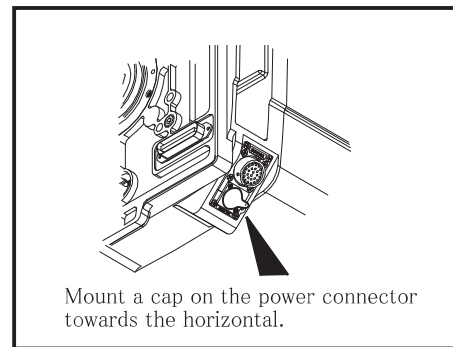
This connector is provided for a connection cable, one or two ends of which are connected to a focus control unit and a zoom control unit.

㉑ Connector for Power Source (XLR-4-32-F152, ITT CANNON)

This connector is provided for a DC power source.

If the camera is not able to supply sufficient electric power to the lens, use a DC power source.

Connector	ITT CANNON (XLR-4-32-F152)
Pin1	GND(0V)
Pin2	NC
Pin3	NC
Pin4	+12V(+12 ~ +16V), More than 3.5A



㉒ Stabilizer HIGH/STD. Select Switch

The stabilizing characteristic of the optical stabilizer can be selected by means of this switch. (When an optical stabilizer control unit is connected to this lens, the setting of the select switch on the optical stabilizer control unit has priority to the setting of this switch. If the optical stabilizer control unit connected to this lens is not equipped with a select switch, the stabilizing characteristic cannot be changed.)

The suitability of stabilizing characteristic mode settings and pan and tilt operation by the operator is shown in the table at right.

MODE	Pan and Tilt Operation	
	Yes	No
STD.	○	◎
HIGH	◎	○

㉓ Macro ON/OFF Select Switch

With this switch set to ON, the macro operation (taking a close-up shot) can be performed.

◎ = Optimal ○ = Suitable

5. INSTALLATION

Description in this section applies to installation of a lens onto a studio camera.

For installation onto a portable camera, a lens supporter is required. Refer to the operation manual of the lens supporter.

Note1. Prior to installation, turn off the power of the camera.

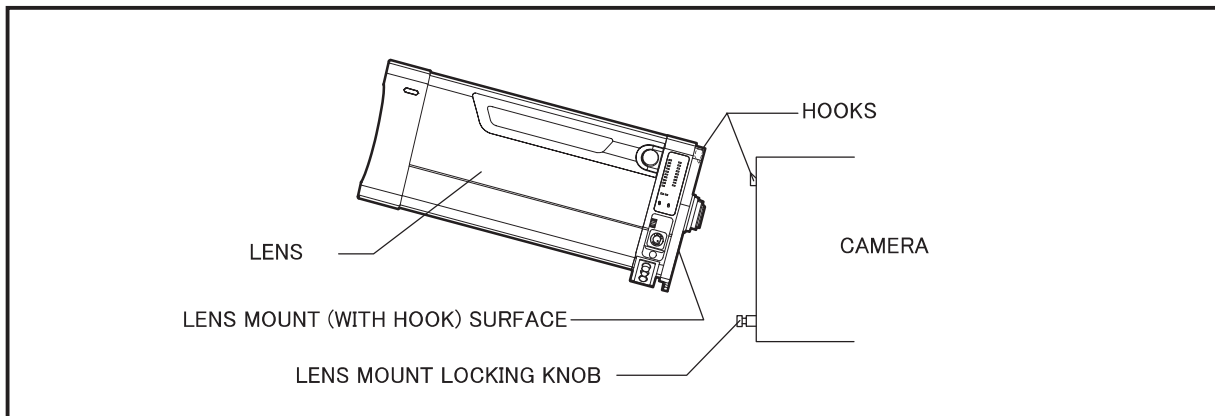
Note2. After installation, when the power of the camera is turned on, the initial settings of the stabilizer mechanism and the main lens are carried out for about ten seconds and several seconds respectively at the same time. During the setting of the stabilizer mechanism, do not perform panning or tilting operation of the camera; the indicator of the optical stabilizer control unit linked to the lens blinks. During the setting of the main lens, the operation of the lens cannot be performed. After the setting, the zoom returns to its former position.

⚠ WARNING Be sure to attach all the parts securely. Dropping any parts from a height may cause severe accidents.

■ Installation onto Studio Camera

- Holding the lens package with both hands, hang the hook at the top rear of the package on the hook at the top front of the camera, and align the pin on the lens mount with the groove in the camera mount.
- Swing the package down so that the spring pin on the lens mount gets in the hole in the camera mount. In this procedure, the electrical connections, via the connectors on both mounting surfaces, is automatically made.
- Securely fix the lens package by means of the lens mount locking knob attached to the camera mount.

Note. Make sure to adjust the flange focal length when installing the lens on a camera for the first time or installing it on another camera (refer to the next page for details).



MEMO

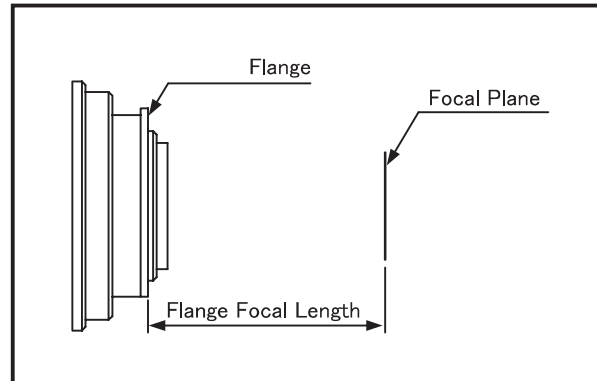
6. ADJUSTMENT OF FLANGE FOCAL LENGTH

The flange focal length is the distance from the flange (mounting surface) of a lens to the focal plane.

If the focal plane of the lens does not coincide with the image plane of the camera, the object will be out of focus during a zoom operation.

To prevent this from happening, the adjustment of the flange focal length is required.

Make sure to carry out the adjustment when installing the lens to a camera for the first time or installing it to another camera.



■ Conditions of Object and Iris Position

- Object : an object that provides clear and easy focusing even at the wide end
- Object distance : about 7.5m (measured from front glass of the lens)
- Iris position : maximum aperture or near that condition

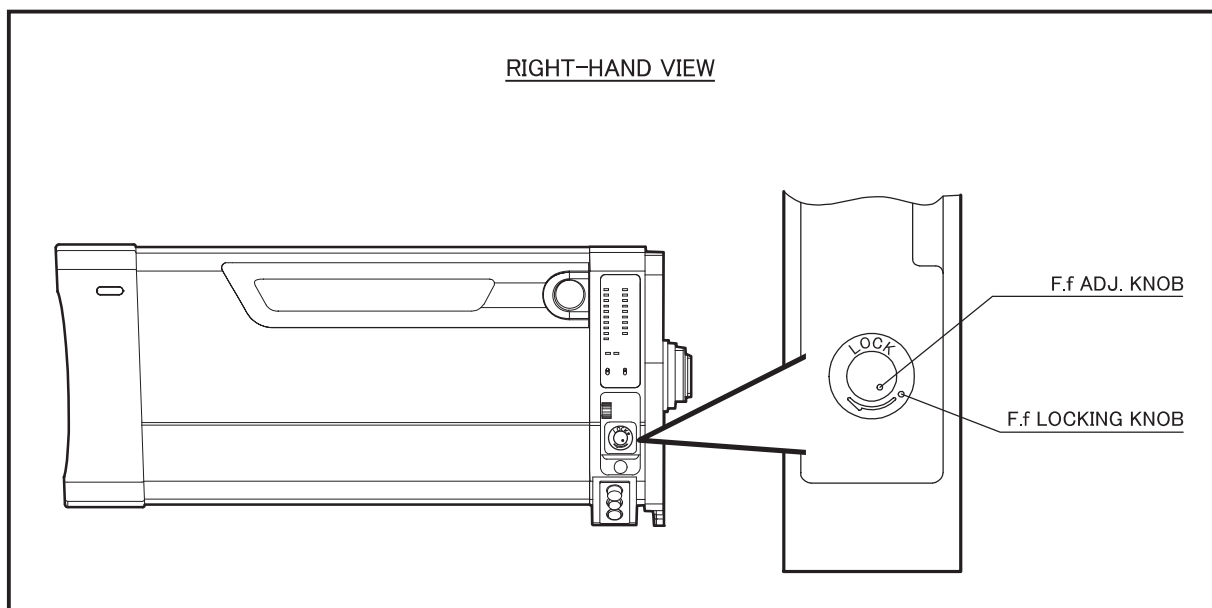
■ Adjustment

Note. Before adjustment, set the macro ON/OFF select switch on this lens to OFF. If a remote macro control unit (EA-3A-10A, 11A, etc) is linked to this lens, set the remote macro ON-OFF select switch on the unit to OFF.

Carry out the adjustment observing a monitor.

For the operation of focusing and zooming, refer to sections “Focusing Operation” and “Zooming Operation (page 8).

- a. Loosen the F.f locking knob by rotating it counterclockwise.
- b. At the wide end in the zoom range, focus on the object by means of the F.f adjusting knob.
- c. At the tele end, focus on the object by means of a focus control unit.
- d. Repeat steps ‘b’ and ‘c’ several times so that the F.f is adjusted completely.
- e. Finally tighten the F.f locking knob by rotating it in the direction of the arrow.

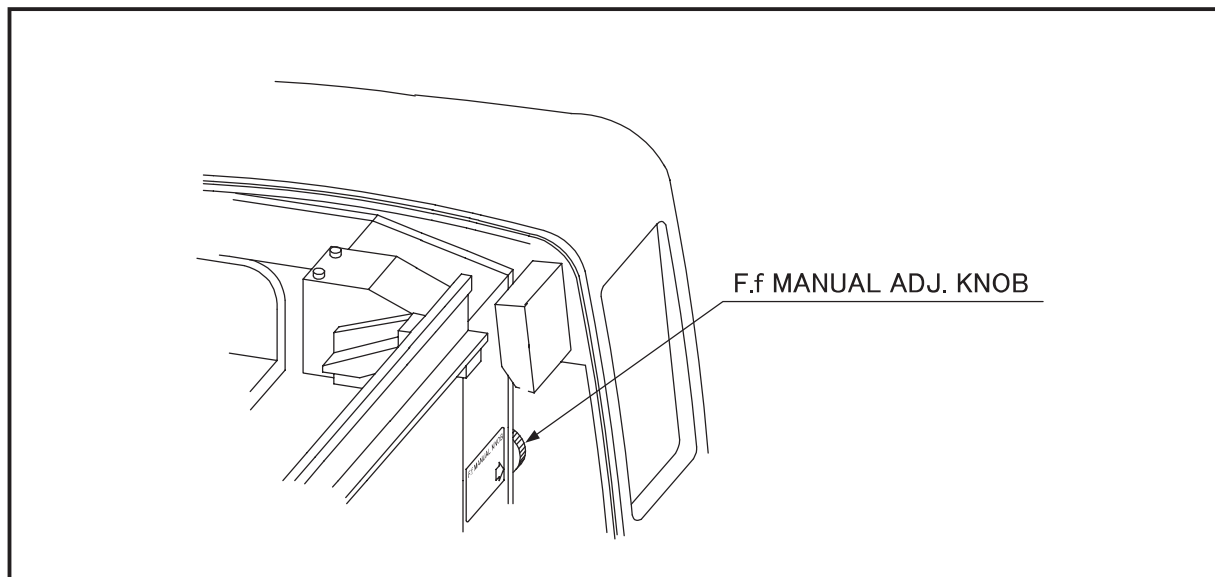
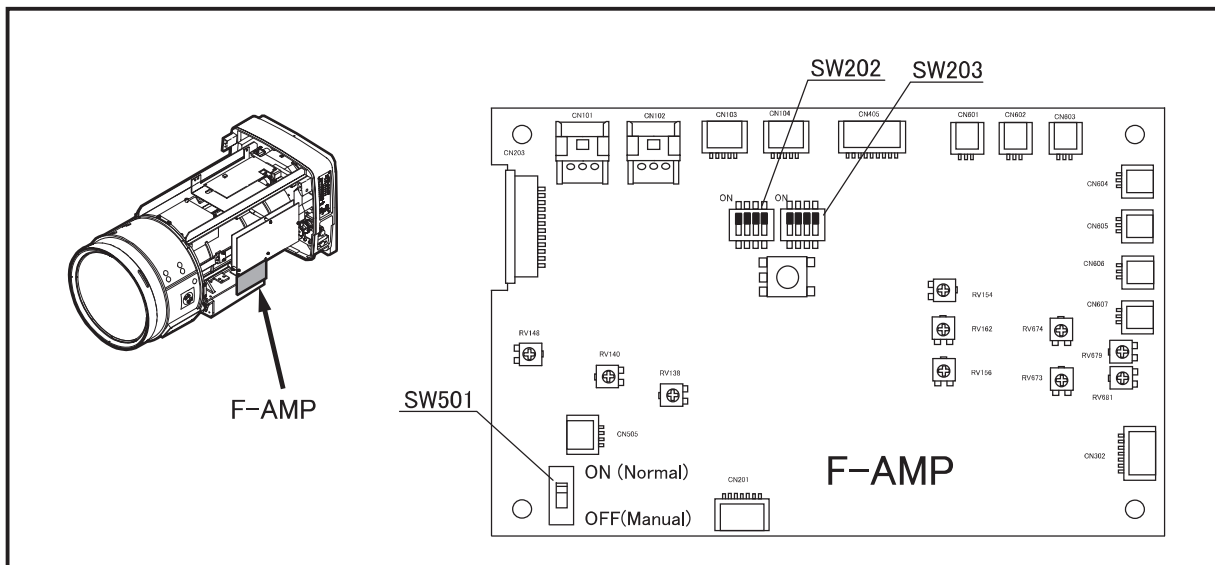


■ Adjustment by F.f Manual Adjusting knob

The flange focal length adjustment mechanism incorporated in this lens is driven under servo control. However, even in the case that the power is not supplied to the flange focus length adjustment mechanism for any reason, the adjustment can be carried out using the F.f manual adjusting knob located inside the lens.

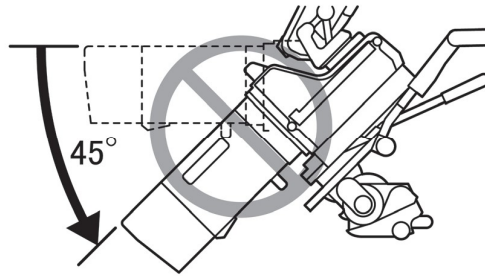
- a. Remove the shroud.
The shroud can be removed by pulling it towards the front after loosening the two lens shroud attaching knobs on both sides of the lens.
- b. Turn off the switch SW501 on the F-amplifier.
- c. At the wide end in the zoom range, focus on the object by means of the F.f manual adjusting knob.
- d. At the tele end, focus on the object by means of a focus control unit.
- e. Repeat steps 'c' and 'd' several times so that the F.f is adjusted completely.

Note. Unless the adjustment is performed using the F.f manual adjusting knob, set switch SW501 to "ON".



7. OPERATING INSTRUCTION

⚠ WARNING If the camera is declined by 45 degrees or more, there may be a case that the lens installed on the camera falls.
If it is required to shoot an object with the camera in the posture stated above, before using the camera, a proper measure should be taken on the lens to avoid falling.



Note. Contact to our sales agent for the accessory model numbers mentioned.

7.1 FOCUSING OPERATION

Focus is controlled by means of a control unit linked with the lens.

For operating instruction of a control unit, refer to the operation manual of the control unit.

Control Unit for Servo Operation

- Focus Position Demand Unit : EPD-4A-S13F、EPD-4A-S13G or equivalent
- Shot Box : ESB- *

Control Unit for Manual Operation

- Focus Grip : BFH- *

Note 1. To control the focus of this lens by servo operation, use the digital control unit.

Note 2. When using the control unit for manual operation, be sure the internal mechanism is not pressed hard against the final control element. If the internal mechanism is subjected to a strong impact, this may cause the adjustment to deviate or cause a malfunction.

7.2 ZOOMING OPERATION

Zoom is controlled by means of a control unit linked with the lens.

For operating instruction of a control unit, refer to the operation manual of the control unit.

Control Unit for Servo Operation

- Zoom Rate Demand Unit : ERD- *
- Shot Box : ESB- *

Control Unit for Manual Operation

- Zoom Handle : BZH- *

Note 3. To control the focus of this lens by servo operation, use the digital control unit.

Note 4. When using the control unit for manual operation, be sure the internal mechanism is not pressed hard against the final control element. If the internal mechanism is subjected to a strong impact, this may cause the adjustment to deviate or cause a malfunction.

7.3 IRIS OPERATION

Iris is controlled by an iris control signal (auto iris or manual) derived from the camera.

Iris can also be controlled by means of an iris control unit (EIC-*) linked with the lens.

For operating instruction of an iris control unit, refer to the operation manual of the iris control unit.

7.4 EXTENDER SELECTION

There are two methods of extender selection: “Manual Selection” using the extender select knob on the lens and “Selection by Accessory” using an optional accessory.

7.4.1 Manual Selection

- a. Set the extender remote/manual select switch on the lens (viewed from front glass side of lens) to “MANU.”
- b. Rotate the extender select knob on the lens to select the extender.

7.4.2 Selection by Accessory

The extender can be selected by means of a range selector or an accessory that has an extender selection switch.

- a. Set the extender remote/manual select switch on the lens to “REMO.”
- b. Select the extender by means of an accessory linked with the lens. For operating instruction of an accessory, refer to the operation manual of the accessory.

7.5 MACRO OPERATION

The macro operation (taking close shot) can be done by means of either a zoom control unit (zoom rate demand unit, etc.) or a remote macro control unit (EA-3A-10A, 11A, etc.).

7.5.1 Operation by Zoom Control Unit

- a. Set the macro ON/OFF select switch on the lens to “ON.”
- b. Bring the focus to the M.O.D. position, by means of a focus control unit (focus position demand unit, etc.).
- c. Focus on the object by means of a zoom control unit.

7.5.2 Operation by Remote Macro Control Unit

- a. Move the zoom near the wide end using a zoom control unit (zoom rate demand unit, etc.). Also, bring the focus to the M.O.D. position using a focus control unit (focus position demand unit, etc.).
- b. Set the remote macro function to “ON” using a remote macro control unit.
- c. Focus on the object by operating the position setting knob of the remote macro control unit.

Note1. To perform the macro operation using a remote macro control unit, set the macro ON/OFF select switch on the lens to “OFF.”

Note2. For the operation method of each operation unit, refer to the respective operation manual of each device.

8. Advanced focus Assistance System (AF SYSTEM)

The Advanced Focus Assistance System (AF System) is a new autofocus system for 4K-TV cameras.

In the 4K-TV system, even though the blur of the subject is not detected on the viewfinder of the camera, it can be recognized if it is displayed on a larger display. For that subject, the AF System automatically find the best focus actively. Since the AF System works actively, the best focus is continuously maintained even if the subject is moving.

Note. In the case the blur amount of the subject in the AF frame is relatively large, the AF System will not find the best focus.

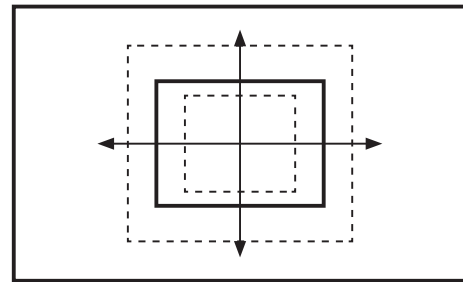
In that case, manually move the focus to a position nearer the best focus; or temporarily move the zoom to the side of wider-angle so that the image of the subject is sharpened, and then resume the former zoom position.

If the amount of blur is decreased, the AF System automatically works to find the best focus.

8.1 About Advanced focus Assistance System

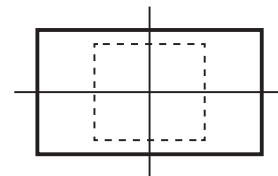
8.1.1 Features of AF-System

- In the AF System, at first the camera operator performs the focusing operation. After that the AF System automatically assists the operator to find the best focus.
- The focus finding movement is not shown on the display.
- A subject moving along the optical path can be kept in best focus as well as one that is being zoomed in or out.
- If the camera supports the AF system, this system displays the AF frame on the viewfinder and allows you to specify the position where you want to focus.



AF frame size and position can be changed

Note. If the camera does not support the AF system, the AF point will not be displayed. In this case, the AF system operates to focus on a rectangular area in the center of the screen (50% horizontally and 80% vertically) relative to the screen size.



AF frame fixed at center

8.1.2 Difficulty in acquiring and maintaining focus

The AF system has difficulty in acquiring and maintaining focus with subjects (or situation) as listed below.

- Low contrast subject. (a blue sky, a monochromatic plane, etc.)
- Rain, snow, or heat haze.
- High illumination spot in AF frame.
- The object which distance differ from the subject is in the AF frame.
- The subject in a night view or a dark place.
- The subject is moving quickly.
- Subject of a repeating pattern.

8.1.3 AF System functioning range

- Excluding near wide end.
- Excluding narrow aperture side.

However, the F value at which AF functions decreases as the distance from the center of the AF frame increases.

8.2 AF position adjustment

This product can adjust the position of the subject detection unit to make the most of the AF system.

This adjustment differs from the flange back adjustment of the image and does not need to be performed every time the camera to be installed is changed. However, if the focus position accuracy of the AF system decreases due to a large difference in the temperature of the use environment, etc., the adjustment can be performed as follows.

8.1.1 Adjustment

Note. The AF position adjustment knob is located inside the cover. Loosen the two lens shroud attaching knobs on the both sides of the lens. Draw the shroud towards the front of the lens to detach it from the body.

- Set the AF mode selection switch of the focus position demand unit to one-push AF to stop the AF system.
- Adjust the flange back on the main line side.
- Set zoom to tele end.
- Adjust the orientation of the camera so that a subject enters the center of the viewfinder (if the camera supports the AF system, within the AF frame).
- Operate the lens to focus on the image.

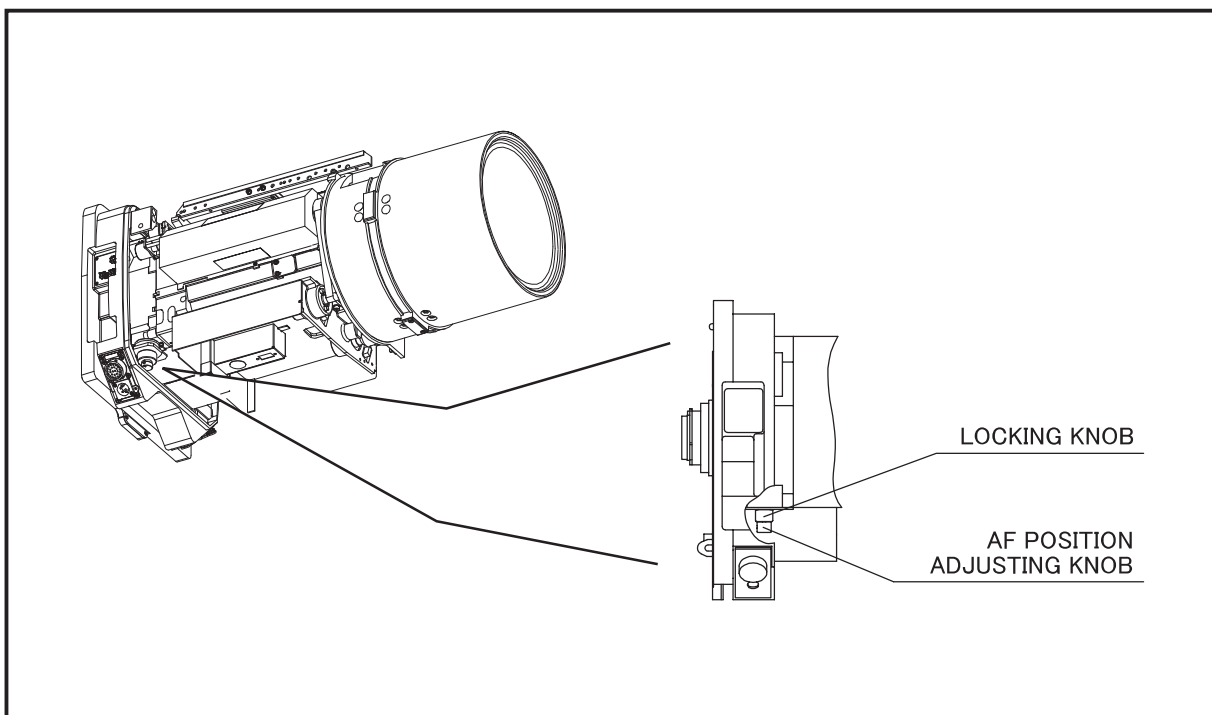
Note. After this, be careful not to move the focus until the AF position adjustment is completed.

- Loosen the fixed knob. Turn the AF position adjustment knob so that the AF status indicator of the focus position demand unit lights up.

(If the camera supports the AF system, the focus position information can be displayed in the viewfinder, and the display can be adjusted to "0".)

- Tighten the fixing knob.

※ The Siemens star chart and Step chart at the back of this book are useful.



8.3 Subject holding function

The AF system has a function to keep the focus position to some extent and prevent unintended focus shift even when the subject loses sight, such as when the subject goes out of frame or another object crosses the subject. There is.

This characteristic of holding the subject when the subject changes can be adjusted steplessly using the AF speed adjustment knob of the focus control unit.

With this product, you can use the AF speed adjustment knob (PF speed adjustment knob) of the focus control unit (focus position demand unit) to adjust the characteristics of the subject holding function.

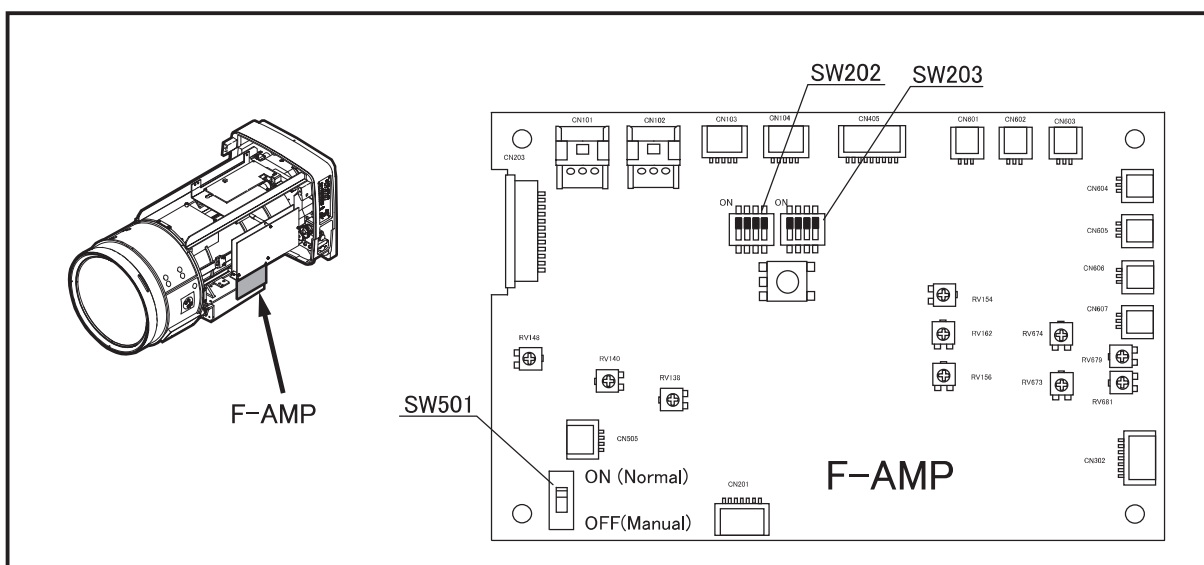
Set the DIP switch (SW202) on the F board (AF control board) of this product as shown below for the function operated by the AF speed adjustment knob of the focus control unit.

Setting of SW2020 3rd switch	Control knob functions	Position of Control knob	
		L : Counterclockwise rotation (CCW)	H : Clockwise rotation (CW)
ON	Adjusting the subject holding function	Quickly focus on a new subject	Maintain the current focus position for a long time
OFF	Adjusting the AF speed	Focus on the subject slowly	Focus on the subject quickly

Note1. The subject holding function is a function to hold the focus position. Please note that this is not a function that keeps track of the subject.

Note2. This switch is set to ON at the factory.

Note3. The focus position demand unit compatible with this product is EPD-4A-S13F, EPD-4A-S13G, or equivalent.



9. ADJUSTMENT OF IRIS AMPLIFIER

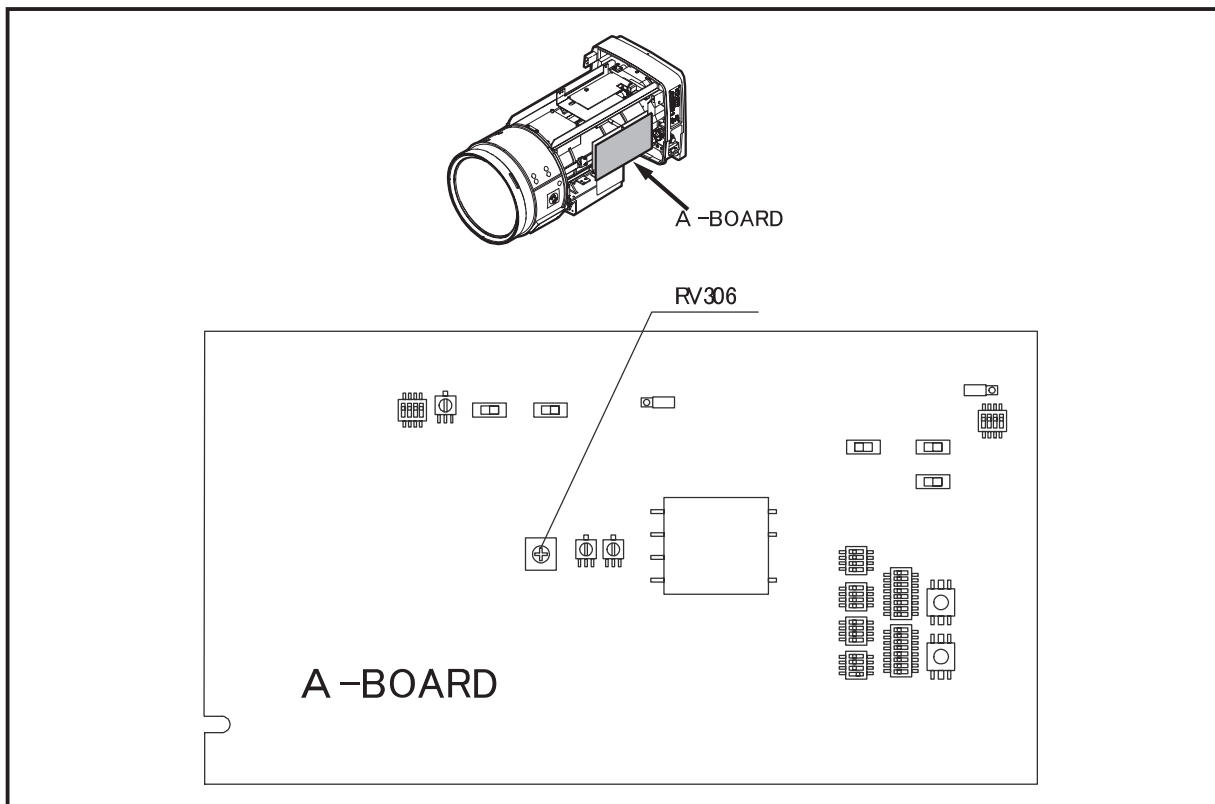
Depending on matching with a camera, hunting of the iris movement occurs.
If it occurs, carry out the Gain Adjustment described below.
Use a small screwdriver or similar implement to operate the trimmers.

■ Removal of Shroud

First, remove the shroud. The shroud can be removed by pulling it towards the front after loosening the two lens shroud attaching knobs on both sides of the lens.

■ Gain Adjustment

- Set the iris control mode to AUTO on the camera side (CCU).
- Operate the “Gain Adjustment Trimmer” (RV306) on the A-board so that the maximum iris gain is obtained within the range hunting does not occur.



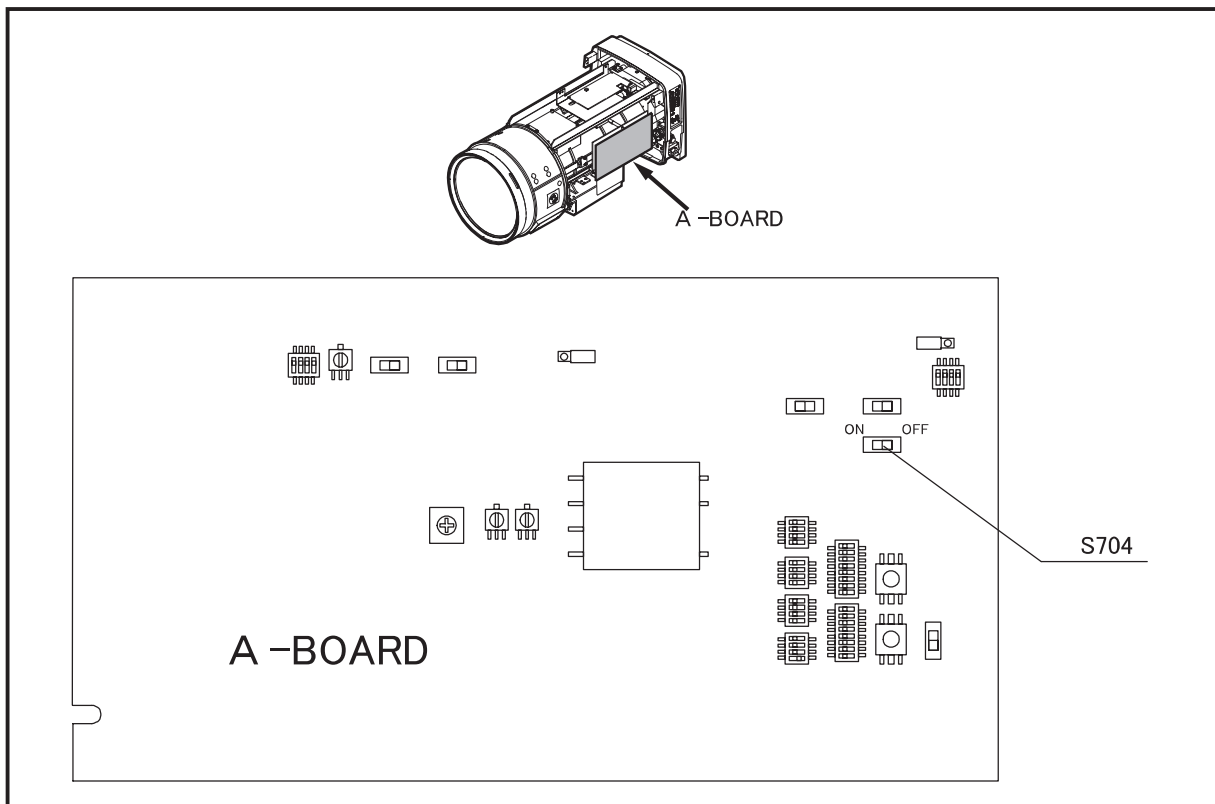
10. FUNCTION OF COMPENSATION FOR CHANGE OF FIELD ANGLE

This lens incorporates a function that compensates for the change of the field angle caused by focusing.

This function can be used, with switch S704 set to “ON.”

(Switch S704 has been set to ON at the factory before shipment.)

This function works when the lens is operated with a digital zoom rate demand unit and a digital or servo focus position demand unit.



11. MAINTENANCE

11.1 DAILY MAINTENANCE

■ Lens Cleaning

Prepare a mixture of 20% alcohol and 80% ether; soft, clean and lint free cloth or lens cleaning paper.

- a. Brush off any dust and dirt from the glass surface with a soft brush.
- b. Fold the cloth to a suitable size and moisten it with the mixture

Lightly wipe the glass surface by moving the cloth in a spiral course from the center to the periphery.

- c. If the glass does not come clean for the first time, use another cloth and wipe similarly. Repeat step 'b' several times until the glass is thoroughly cleaned.

■ Check Connection Cords

Carefully inspect outer covering and terminals for cuts, scratches or other damages.

■ Optional Accessories

When the driving power is achieved by using optional accessories, any meshing part must be normal in shape and free from dust or any other foreign matter. Carefully check all the optional equipment prior to its installation. Any foreign matter should be removed immediately, and any malformed part should be serviced as soon as possible.

■ Lens Cap

If the lens is left in position on the camera body and the camera is not in use, be sure to place the lens cap (or the hood cap when the lens hood is on) in order to protect the front glass surface of the camera.

11.2 ELIMINATION OF WATER

If the moisture contained in the air is collected in the lens unit, it may produce stubborn soils on the glasses and rust on the metal parts.

Remove such moisture in the following manner:

- 1) Wipe away any moisture that has collected on the outside of the lens unit. Then place the lens unit in a sealed vinyl bag together with a drying agent so that the agent can absorb any moisture that remains.
- 2) If ample time is available for dehumidifying, leave the lens unit in a dry room after the moisture on the outside of the unit has been removed.

Note. The time required for total drying will vary according to the size of the lens unit, the amount of moisture present and the quantity of the drying agent used.

However, it is recommended that the lens unit be left in the bag for at least three hours. A new drying agent should be used for maximum effect.

11.3 STORAGE OF LENS

After use, wipe the lens clean, and with the lens cap on, place the unit in its storage box.

For safe storage of the lens, avoid hot or humid place, and avoid places containing corrosive gas or salt.

The lens should be occasionally removed and dried if stored for prolonged periods of time.

11.4 INSPECTION

If an abnormality occurs on the lens, contact the sales agent from which you purchased the lens.

To maintain the high performance for a long term for use, we recommend that a periodic inspection is conducted at least once a year.

Note that we may not be able to inspect and repair our products that have been remodeled on the user's end.

12. SPECIFICATIONS OF ENCODER OUTPUT SIGNAL

1. Connector

ヒロセ HR25-9R-20S

2. Pin Assignment of Connector

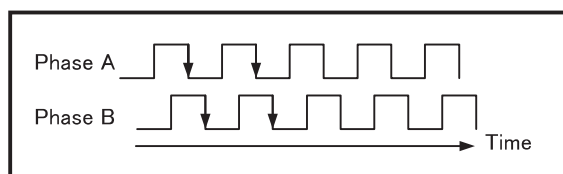
See following table.

Pin Number	Signal	
1	N.C.	
2	GND (Digital)	
3	N.C.	
4	+5V (Zo Output Impedance : 1k Ω)	
5	N.C.	
6	N.C.	
7	N.C.	
8	Iris Encoder	Phase A (H 5V / L : 0V)
9		Phase B (H 5V / L : 0V)
10	Zoom Position	(Wide : 2 V / Tele : 7 V)
11	Stabilizer ON/OFF Signal	(ON : H = Open , OFF : L = 0V)
12	Zoom Encoder	Phase Z (H 5V / L : 0V)
13	Focus Position	(Near : 2 V / Far : 7 V)
14	Extender Signal	($\times 1$: Open / $\times 2$: L = 0V) Open collector output.
15	Reference Voltage	5.0 V
16	Zoom Encoder	Phase A (H 5V / L : 0V)
17		Phase B (H 5V / L : 0V)
18	Focus Encoder	Phase A (H 5V / L : 0V)
19		Phase B (H 5V / L : 0V)
20	Signal GND (Analog)	

3. Waveforms of Output Signals

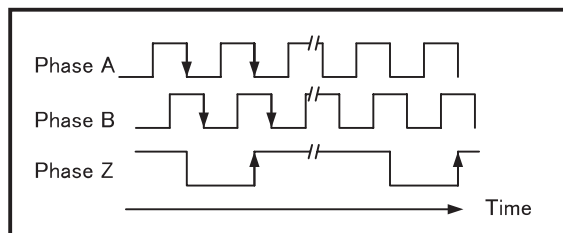
(1) Waveforms of Focus Encoder Output Signals

(when focus moves from inf. side toward MOD side)



(2) Waveforms of Zoom Encoder Output Signals

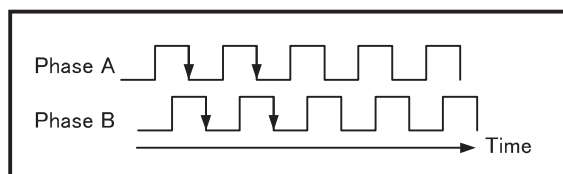
(when zoom moves from wide side toward tele side)



* The position of phase Z is not regulated to that of phase A or B.

(3) Waveforms of Iris Encoder Output Signals

(when iris moves from closed side toward open side)



4. Resolution

	Resolution
FOCUS	16 bits
ZOOM	16 bits
IRIS	10 bits