Canon
Internal Fixation Unit
CF-IF2
Operation Manual
1. Remove the four screws on the side of the unit and remove the unit cover.

2. Fasten the screw in the CF-60UVi main unit. The CF-60UD does not have this screw.

3. Put the ground cover to the main unit by eye fixation stick into the hole in the
that the SPLIT switch of the \textit{CF-60UD} is turned OFF when the eye fixation stick enters the field of view. Otherwise, the stick will hit a panel and may be damaged.

The split lines of the \textit{CF-60UVi} automatically turn off when the stick leaves the field of view.

If the eye fixation stick to right or left within the range indicated by a \textbullet mark, it is looking at the required position.

The left-hand side (position indicated by \textbullet mark) of the panel should be used whenever the power is going to be turned \textit{ON} or \textit{OFF}, or when...
Safety Information

IMPORTANT

To gain a full understanding of the CF-60UD, please read this operation manual carefully and keep it for future reference.

You will be held responsible for any damage or accident caused by improper use. Be sure you accurately adhere to the instructions in this manual.

REGULATIONS

As equipment, no changes or modifications to the equipment unless otherwise authorized. If any changes or modifications should be made, you could be voiding your warranty and safety of the equipment.

The equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and the receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for assistance.

Any unauthorized changes or modifications to this equipment could void the user's authority to operate this device.
GENERAL SAFETY RULES

1. Turn off the power of the power control unit before connecting or disassembling, charge or dispose of the battery used for the instrument. Do not expose to a fire as it is dangerous.

2. If trouble (e.g., smoke, odd smell, noise), disconnect the plug at any time, free from any obstacles.

3. Handle the CF-60UD carefully, as pre-adjustment may be altered if it receives a strong shock.

4. Do not transport the instrument by automobile or other means of transport without packing the instrument in a case or a bag to protect its body or road, even for a short distance, without packing the set.

5. Contact a Canon representative or distributor for advice on the product if further assistance is needed.

6. Install the CF-60UD in a dusty or humid room as it is a high-precision instrument.
Photographs

Hand angles

An angle of 60 degrees and 40 degrees can be simply selected by adjusting the knob.

Photograph of small pupil is possible

By turning the 40° S.P knob in the field angle of 40 degrees, photograph of eye closed can also be taken. (Picture equal to field angle of 30 degrees is possible)

35 mm camera

It is simple to load film into 35 mm film camera CF-FE and film the double lens wound.

Additional units
Description and Functions

CF-60UD Main Unit

1. [Label]
2. [Label]
3. [Label]
4. [Label]
5. [Label]
6. [Label]
Assembly and Preparation

Assembly of the CF-60UD

- Eye Fixation Lamp
- Main Unit
- Poles
- Eye fixation lamp cable
- Connector
- Projection
- Panning arm
- Stage
- Setscrew
- Panning lock knob
Installation of Face Rest Poles

1. Fixation lamp cable from the face rest pole through the face rest base to the holes on the base.
2. Mark each on right and left poles.
3. Mark marks on both poles with the top of the face rest base.
4. Screw poles fully using four pole setscrews.
5. Slide the CF-60UD toward the examinee’s side so bottom of face rest base is accessible.
6. Align fixation lamp connector into the square socket from under the face rest base.
7. Insert pole and socket into the base and screw accessory cover with a screw.
Installation of Cables

1. Blow the dust in the connectors with compressed air before connecting the cables.
2. Always screw the plugs tightly together. Otherwise, the instrument may be damaged when the power is turned ON.
3. Do not overtighten the screws.

Remove the V-60UD on a table.

Set the main unit and stage unit with a screwdriver and tighten the screws.

Set the main unit and power control unit with a screwdriver cable and tighten the screws.
Battery

Your camera uses one 6-volt lithium (CR5).

Do not disassemble, charge or place the battery used for 35 film camera into a fire as it is dangerous.

Fingerprints or stains on contact cause contact failure.

Replace the battery when you do not expect to use the film camera for more than three weeks.
Battery check

Battery voltage of 35 mm film camera must be checked before turning on the power whenever the CF-60UD is going to be used.

Battery can be checked whether with film camera mounted onto or removed from the CF-60UD.

However, when it is mounted, power of the CF-60UD must be turned off.

Press check button. Battery check mark indicated on the panel.

Battery power sufficient.
Attachment/Detachment of 35 mm Film Camera

Detachment

Any dirt, oil, or grease on electronic contact surfaces of the main unit and camera may cause严重的接触 failure. Be sure to clean them thoroughly with a blower brush or lens cleaning paper before attachment.

1. Lift up the positioning pin of camera to the top of the hole on the main unit.

2. Place the camera against the main unit and turn the camera in a clockwise direction until you hear a clicking sound.
Loading of Film

It is recommended that the operation be performed with the film camera and its power turned ON.

Before loading the first roll of film, remove the plastic insert.
Lock cover latch down while pressing the lock cover lock button to open the film cartridge into the film chamber.

Align the loading edge of the film across the sprocket chain until its tip is aligned with the slot. There must be no slack.
Film Rewind

Automatic Film Rewind

In Automatic mode, the film transport bars (——) move in sequence from right to left, indicating film is in progress and the frame counter counts in descending order. This is also displayed on the CF-60UD.

The film rewinder stops automatically when the film has been completely rewound. It unlocks the back cover when the film-load check mark (⊙) blinks.

Rewind the film cartridge.
Photography Modes

Press the mode switch on the operation panel to enter the photography mode.

**COLOR**

Sub Camera Photography

Select to perform photography with optional camera.

**SUB**

Main Color Photography Mode

Select to perform color photography with film camera CF-FE.
### Intensity

#### Color Photography (35mm / Polaroid)

The relationship between film and flash intensity in general color photography is not uniform:

<table>
<thead>
<tr>
<th>Film Type</th>
<th>35 mm</th>
<th>Polaroid</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 64 / 100 with DX code</td>
<td>Automatically set.</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>Select from F-1 to F-5.</td>
<td>Automatically set. (Equivalent to ISO 64)</td>
</tr>
</tbody>
</table>

*Manual Setting*
Compensation for Flash Intensity

Intensities which have been set automatically can be compensated for by using buttons. Flash intensity increases when is pressed and decreases when is pressed. The number of triangles lit indicates the amount of compensation.

- Intensity is doubled. (Equivalent to 1 diaphragm)
- Intensity increases by 40% of the standard. (Equivalent to ½ diaphragm)
- Standard
- Intensity decreases by 30% of the standard. (Equivalent to ½ diaphragm)
- Intensity decreases by 50% of the standard. (Equivalent to 1 diaphragm)
Section for Small Pupil (40° S.P Knob)

40° S.P (small pupil) knob in field angle 40 degrees, eye with diameter photographed. When 40° S.P knob is turned ON, image area that can be equivalent to 30 degrees in 0 diopter.

The outline of the effective image area is blurred, there will be no problem if there is no flare within the effective image area.

This function does not operate in field angle of 60 degrees.

Set 40 degrees with field angle selecting

Less “–” mark on the knob is properly aligned with “40°” mark on instrument, function for small pupil will not operate.
operation has been interrupted for more than 20 minutes with the power-saving system of the CF-60UD operates and turns lamps and other expendable items. When the system is operating, “— — — ” mark will blink on the display panel. Press the shutter release button in order to restore the function.

Photography by Main 35 mm Film Camera

Check

If voltage of 35 mm film camera drops on the power. See page 11.
Displaying of Flash Intensity

When loaded film is ISO 64 or ISO 100 with this unit, flash intensity will be automatically adjusted according to ISO sensitivity will be displayed on the panel.

However, when other film is loaded, display other film will be set on the panel. In this case, set the flash intensity manually according to the sensitivity of film being used (see page 19.)

Registration of Data

Handwritten data or serial number (number of exposures) can be printed on film.

Handwritten Data

Write data on the data card with a dark felt pen or with felt pen containing water-resistant ink. Try to fill in the spaces.
number is not usually displayed on display panel. If you need to see the number before it is going to be printed on film, press "button for 1 to 2 seconds. The serial number will be displayed for about 3 seconds, and then the display will return to the previous data.

"022" will be displayed if data card is inserted.

The serial number will not be displayed when timer is ON, or when timer is OFF.

If the button is pressed for more than 3 seconds, serial number will be reset to "1" and will be displayed as long as the button is pressed.

Remainder of Eye’s Height
Adjustment

Adjust the position of the CF-60UD.

Turn the right adjusting ring to adjust the position [1], incline the operation lever to the right and left in order to adjust side direction, and incline the lever back and forth to change the forward/backward position [3]. Proper forward/backward position is obtained when the working distance dots are small and clear.

Note: Dots may not be visible when the examinee moves his/her eye or when periphery is photographed. Also, they will not be visible in a field angle of 40 degrees.
To focus the fundus image by turning the knob and aligning the split lines.

- Split lines cannot be seen under the following conditions:
  - The pupil is not sufficiently dilated.
  - The center of the pupil is not aligned with the fundus camera's optical axis.
  - Illumination is obscured by eyelashes or eyelid.
  - Iris or lens is too close.
Adjustment of Field Angle

Set the field angle selecting knob to the required angle by aligning the angle indicator on the knob with the "—" mark on the unit.

**WARNING 1:** Do not apply excessive force after the knob is set to "—" mark.

2: Although fundus image can be seen even when knob is set between 60 and 40 degrees, picture cannot be taken.

Adjustment

Perform fine adjustment of the CF-60UD unit. See step (8).

There should be no flare within the field of view.
Barcin Angiography by Main 35 mm Film

Angiography can be performed with the main 35 mm film camera CF-1 with regular film.

The instructions mean it is the same as in color photography.

Check

System

Point of Finder

Mode of Photography Mode

switch.
Measurement of Eye’s Height

Measurement of Observation Light

Adjustment

Selecting Area to be Photographed

Shading

Adjustment of Field Angle

Selection of Fluorescein Medium

Timer ON

The TIMER switch to turn on the timer coincides with the beginning of the titration of the fluorescein medium.
The filter will be set by pulling the filter holder.


daccordingly.

Adjustment

Use of Filter for Photography

The buzzer will sound 6 times after the release button is pressed.

Photography

There is no flare and fundus is
Camera Photography

Synchrony can be performed by using optional camera (sub camera).

Refer to the operation manual attached to respective unit for operation other than

Refer to the operation manual of the TV adapter for photography using TV adapter.

35 mm Film Camera CF-FE with Double 35 mm Film Camera CF-DU

35 mm film camera can be attached by using the CF-DU to perform cooperation.

Battery Check

The battery voltage of both main and sub film cameras before turning on the

Page 11.
Color Back Unit CF-PU3

This can be performed by using the optional Polaroid color back unit on Polaroid High Speed Color Land Film 600 or 779.

Refer to the instruction manual of the CF-PU3 for the procedure for other operations.

Endcap Check

Check that the voltage of the 35 mm film is within the range of the power.

Film Pack

Refer to the instructions provided with the film pack.
Adjustment of Observation Light

Adjustment of Remaining Area to be Photographed

Adjustment of Field Angle

Adjustment

Photography

Press the shutter release button. The photograph automatically comes out.

Note: Do not forcibly pull out the photograph or prevent it from coming out.
Insertion and Replacement of Film

1. First, turn on the power of the power control unit.

2. Turn the film take-out lever to the position indicated by the arrow to open the film pack.

3. Insert the film pack fully until the film advance lever (light shielding cover) facing you.

4. Insert the film pack fully until the film advance lever (light shielding cover) facing you.

5. Insert the film pack fully until the film advance lever (light shielding cover) facing you.

6. Insert the film pack fully until the film advance lever (light shielding cover) facing you.

7. Insert the film pack fully until the film advance lever (light shielding cover) facing you.

8. Insert the film pack fully until the film advance lever (light shielding cover) facing you.

9. Insert the film pack fully until the film advance lever (light shielding cover) facing you.
If roller is not clean, black spots may appear on the picture, or darkness may be uneven. In this case, clean the roller with cotton swab.

See the instructions on the film pack for handling the film.
Photography

Check battery voltage of the 35 mm film camera before turning on.

Digital Photography

Place the flash unit fully toward the examiner.

Set the shutter compensating slider out two steps.

Adjust the flash intensity. The flash intensity is the same as for color photography.

Focus using the autofocus.

Press the shutter release button.
Photography using Special Filter

The holder already contains red-free filter and exciter filter.

- 3-slot filter holder
- Exciter filter
- Filter holding plate
- Red-free filter

Replacement of Filter

Follow the procedures indicated below in order to replace the red-free filter with another filter.

A filter that can be used is 28.0 mm in diameter and less than 2.0 mm thick.

1. Remove the two screws on the back of the holder and remove the filter holder.
Insert the filter holder fully into the slot.

Press the stopper.

To remove the filter holder, raise the stopper and gently pull out the filter holder from the slot.
Calling Serviceman

When a problem occurs or when there is a mistake in operation, error will be indicated by combination of LEDs and switches or by electronic sound. Take the countermeasures indicated below according to the cause. If still not restored or when error display does not disappear, contact Qualified Service Personnel.

<table>
<thead>
<tr>
<th>Error Display</th>
<th>Electronic Sound</th>
<th>Cause</th>
<th>Remedies</th>
</tr>
</thead>
<tbody>
<tr>
<td>- - - -</td>
<td>○ 3 times</td>
<td>Main 35 mm film camera is not mounted.</td>
<td>Mount the camera.</td>
</tr>
<tr>
<td>○ 3 times</td>
<td></td>
<td>35 mm film in main camera is used up.</td>
<td>Load new film.</td>
</tr>
<tr>
<td>○ 3 times</td>
<td></td>
<td>Back of main 35 mm film camera is not closed.</td>
<td>Close the back cover.</td>
</tr>
<tr>
<td>○ 3 times</td>
<td></td>
<td>Film is not loaded in main 35 mm film camera.</td>
<td>Properly load a new film.</td>
</tr>
<tr>
<td>○ 3 times</td>
<td></td>
<td>Field angle selecting knob is set between 40 degrees and 60 degrees.</td>
<td>Properly set the knob to either 40 or 60 degrees.</td>
</tr>
<tr>
<td>○ 3 times</td>
<td></td>
<td>Data card was inserted when FLUO switch was pressed.</td>
<td>Remove the data card.</td>
</tr>
<tr>
<td>Display</td>
<td>Cause</td>
<td>Remedy</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>E05</td>
<td>Error inside the CF-60UD.</td>
<td>Turn off the power and press the shutter release button again after about 30 seconds. If the error still does not appear, contact Canon representative or distributor.</td>
<td></td>
</tr>
<tr>
<td>E10</td>
<td>35 mm film is not properly loaded in main camera.</td>
<td>Properly load the film.</td>
<td></td>
</tr>
<tr>
<td>E15</td>
<td>Others</td>
<td>Detach the main 35 mm film in the camera and attach it again. Press the shutter release button once and then press it again about 10 seconds. If the error still does not appear, contact Canon representative or distributor.</td>
<td></td>
</tr>
<tr>
<td>E20</td>
<td>35 mm film is not properly loaded in sub camera.</td>
<td>Properly load the film.</td>
<td></td>
</tr>
</tbody>
</table>
Maintenance

Cleaning

Clean the cover with a piece of cloth soaked in neutral detergent diluted in water. Never use alcohol, thinner, benzine, or any other cleaning agent that may damage the coating of the instrument.

Protective Lens

Remove the dust on the lens with a blower.
dust or dirt on the lens surface with

Information

Concerning servicing such as overhaul, contact Canon representative.
Solutions when Moving the Instrument

1. The procedure for moving the instrument only for a short distance by oneself:
   a. Make sure to turn off the power switch.
   b. Disconnect all the cables.
   c. Open the panning lock knob.
   d. Lift the instrument by holding the sides at the base. Do not hold the face rest poles or 35 mm film camera, as it may become damaged.
   e. Do not transport the instrument by automobile or other means of transport if it will be taken from room to room or road, even for a short distance, without packing the instrument. Contact Canon representative or distributor for advice on the procedure.

Handling the Instrument under Cold Conditions
Specifications

- Magnification on 35 mm film
  - Variable between 60 degrees and 40 degrees
  - 1.7 × (60 degrees), 2.5 × (40 degrees)

- Magnification of observation
  - 8.5 × (60 degrees), 12 × (40 degrees)

- Objective size
  - φ 29 mm (W) × 22 mm (L) on 35 mm film
  - φ 75 mm (W) × 57 mm (L) on Polaroid

- Diameter of pupil required
  - 4 mm (With 40° S.P knob turned ON it is equivalent to 30 degrees in 0 diopter)

- Distance
  - 45 mm

- Inter-pupillary center compensation range
  - Without compensation lens: -10D to +11D
  - With minus compensation lens: -8D to -7D
  - With plus compensation lens: +8D to +2D
35mm film:

- Color photography: ISO 64, 100 films can be obtained with this.
- Fluorescein angiography: ISO 400

Polaroid film: ISO 600/640

Photography interval: 1 frame/sec. optionally.

Exciter and barrier filters must be set.

For observation: 12V 75W halogen lamp

For photography: Max. 300W rating lamp

External eye fixation lamp, optional: CF-IF2

Dispenser: ISO cuvetttes
Control Unit CF-CUD

- 100 VAC ± 10%, 50 - 60 Hz
- 110 VAC ± 10%, 50 - 60 Hz
- 120 VAC ± 10%, 60 Hz
- 240 VAC ± 10%, 50 - 60 Hz

1,000 VA

225 (W) × 390 (L) × 455 (H) mm

Approx. 28 kg

Domino Camera CF-FE

One 6 V lithium battery (2CR5)

148 (W) × 67.5 (L) × 35 (H) mm
Components

- CUD Main Unit
- Control Unit CF-CUD
- 2 m Cable
- 0.6 m Cable
- 2 m Cable
- Film Camera CF-FE (with lithium battery 2CR5)
- Flashgun Lamp
- Filter Holder
- Card
- w/ive Lens Cap
- Cap
- Brush
- Cover

Accessories