

# Canon SLIDE DUPLICATOR

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The Canon Slide Duplicator is an apparatus which is attached to the front of the Bellows FL and is used for duplicating color slides at approximately life size. The apparatus is convenient because both slides and color or black and white negatives can be copied.

The apparatus can be effectively used for publishing research work and for making up educational material and commentary material. According to the lens used, there are two kinds—the 48mm set (for FL 50mm f/1.8) and the 55mm set (for FD 50mm f/1.8, FD 50mm f/1.4, FD 50mm f/3.5 Macro). Usable lenses are as follows:

Mounting Attachment	Usable Lenses
48mm	FL 50mm f/1.8
55mm	FD 50mm f/1.8, f/1.4, FD 50mm f/3.5 Macro
Unnecessary	FL 50mm f/1.4, FL 50mm f/3.5 Macro

- ① Guide Pin
- ② Slide Insertion Slot (for mount use)
- ③ Film Holder (for strip film)
- ④ Light Diffusion Glass
- ⑤ Guide Rail
- ⑥ Film Holder Release Pin
- ⑦ Lens Tightening Screw
- ⑧ Bellows Holder
- ⑨ Bellows Guide
- ⑩ Lens Attachment Ring
- ⑪ Attachment
- ⑫ Strut Tightening Screw
- ⑬ Positioning Pin
- ⑭ Fixing Screw

## SHOOTING PREPARATIONS

- 1** Insert the strut, at the front of the Bellows FL, deeper than the screw thread and tighten. Then align the parts shown in the diagram and securely fix them with the fixing screw.
- 2** Attach the camera body and standard lens to the Bellows FL.
- 3** Loosen the lens tightening screw.
  - (1) In the case of the FL 50mm f/1.4, FL 50mm or f/3.5 Macro, remove the mounting attachment.
  - (2) In the case of the FL 50mm f/1.8, screw in the 48mm attachment to the front end of the lens.
  - (3) In the case of the FD 50mm f/1.8, FD 50mm f/1.4, or FD 50mm f/3.5 Macro, screw in the 55mm attachment to the front end of the lens.
    - A 58mm attachment is available for the FD 55mm f/1.2.
- 4** Remove the bellows holder of the duplicator, stretch the bellows, attach the ring to the tip of the lens and fix into position with the tightening screw.

## BELLOWS ADJUSTMENT

From the chart on the reverse side, obtain the photographic distance according to the magnification desired, and set the position of the camera body. Extend the lens by setting it to the magnification of the bellows scale.

Photographic distance is measured from the film plane mark on the camera body, to the slide insertion slot of the Slide Duplicator.

### INSERTING OF FILM

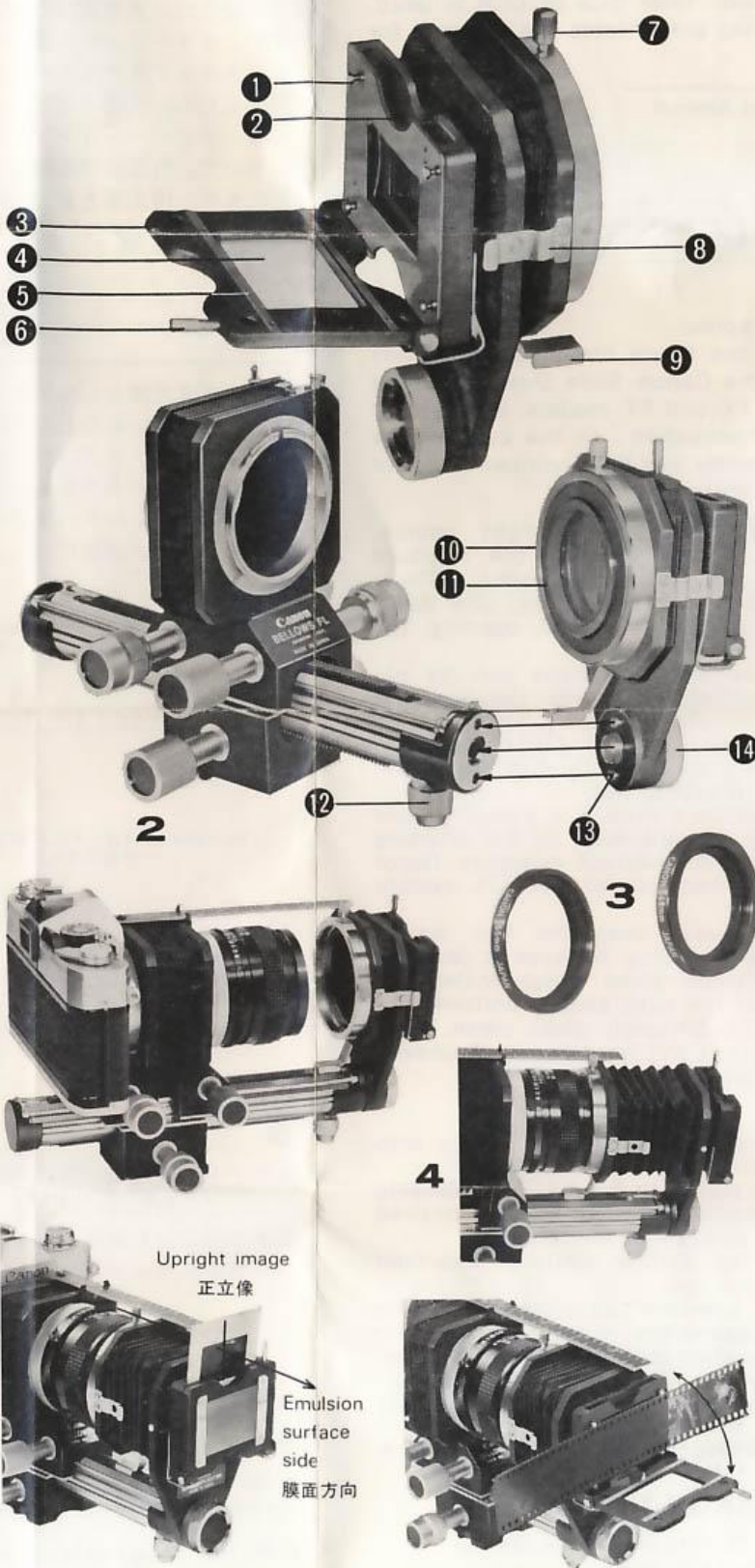
In the case of mounted film, insert the film into the slide insertion slot with the emulsion side facing the light diffusion glass and the image in an upright direction. Then look into the viewfinder and check to see whether the film has been correctly inserted.

Also perform precision focusing.

- When the film has been inserted too deeply, it can be pushed upwards. Horizontal adjustment can also be made for approximately 2 mm by inserting the forefinger and the thumb into the grooves on the top and bottom of the mount.

In the case of unmounted film, open the film holder, set the film against the four guide pins, and close the holder. The direction of the film is exactly the same as in the case of mounted film.

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## ILLUMINATION AND LIGHT SOURCE

Illuminate by placing the light source on the side of the diffusion glass. When duplicating black and white film, such light sources as floodlamp, fluorescent lamp or natural daylight can be used. When duplicating color film it is necessary to select the light source because the color temperatures differ according to daylight type and tungsten type. Conversion filter CCA or CCB is used, according to the type, to convert the color temperature. The following are suitable light sources for duplicating color film.

Light Source	Flood Lamp	Natural Daylight Against Frosted Glass
Film		
Daylight Type	Convert color temperature with CCB(12) filter	⊙
Tungsten Type	⊙	Convert color temperature with CCA(12) filter

⊙ No filter required.

## EXPOSURE

In slide duplication, the light passing through the film is photographed. Therefore, when measuring the exposure in the ordinary method, the figure obtained sometimes cannot be used according to the density of the film. When using the Canon Slide Duplicator, the light measured with TTL metering, like with the F-1, EF, FTb, TX and FT models, is the most accurate and, moreover, there is no need for exposure factor compensation. In the case of the Canon FX or FP, the film surface is measured with an exposure meter and then compensated for by using the exposure factor. In this way an accurate exposure is obtained.

### 1. Measuring the film surface.

Disconnect the duplicator and the lens, contract the bellows of the duplicator, and lock. When measuring, place the light receiving section of the FX or FP exposure meter as close as possible to the film surface. Adjust the f/stop as indicated in the table below, using this figure to determine by how much the f/stop must be adjusted.

With this exposure factor compensation method, the correct exposure corresponding to the density of the film can be obtained.

### 2. Ordinary measuring method.

The exposure is measured in front of the light diffusion glass. When using a light infiltrating type exposure meter, the light is measured by facing the meter toward the light source, and this figure is used to determine the f/stop compensation necessary as indicated in the table below.

When using a reflecting type exposure meter, the reflecting light of the standard reflector plate is measured at the same position. The aperture is then further opened by 0.5—1 stops, and this figure is used to determine the f/stop compensation necessary as indicated in the table below. In either case, experience and a sixth sense is necessary regarding the density of the film.

### 3. Exposure factor compensation.

Please use the following chart.

■ The surface of the film becomes uneven due

Classification	Bellows FL Scale					
	Lens	50	60	70	80	90
Shooting Distance (mm)	FL 50mm f/3.5	208	209	213	218	224
	FD 50mm f/3.5	206	207	211	216	222
	FD 50mm f/1.8	197	198	202	207	214
	FD 50mm f/1.4 (FD 55mm f/1.2)	189 (201)	190 (201)	194 (204)	199 (209)	206 (214)
Magnification	0.97 (0.91)	1.2 (1.09)	1.36 (1.27)	1.55 (1.46)	1.74 (1.64)	
Exposure Factor	4	4.7 (4)	5.6 (4.8)	6.3 (5.3)	7.5 (1.6)	
Aperture Adjustment (degree of opening)	2 stops	2-1/4 (2)	2-1/2 (2-1/4)	2-3/4 (2-1/2)	3 (2-3/4)	

to the temperature of the light source. Therefore, it is safer to keep the aperture closed down to f/5.6 or smaller. Thus, when correcting the exposures, slow down the shutter speed instead of opening the aperture.

■ The shutter speed adjustment can be obtained by multiplying it with the exposure factor.

■ When duplicating unmounted film, be careful that strong surrounding light does not hit the slide insertion slot.

■ In case the camera used is a Pellix, proper exposure can be obtained by the ordinary measuring method, without exposure factor compensation, because of the TTL system exposure meter.

■ Be sure to always keep the film holder closed during shooting because it contains the light diffusion glass which makes the illumination of the light source uniform.

\* Keep the light diffusion glass clean. If it should be dirty it will be a cause of uneven lighting and uneven photography.

## PROCEDURE

Take the following steps in accordance with the following chart:

1. Obtain the distance to the subject according to the photographic magnification desired and set the position of the camera.
2. Next, read the bellows scale at this time and extend the lens.
3. Obtain the aperture adjustment volume

against the photographic magnification and correct the value obtained with the exposure meter.

■ Figures inside parentheses are for 55 mm f/1.2 use.

■ Keep the distance scale of the lens set at infinity.

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