

CANON CAMERA COMPANY, INC. TOKYO, JAPAN



Canon

**CK-A
CK-C**

COPYING STAND

for
CLOSE-UP PHOTOGRAPHY,
MACROPHOTOGRAPHY, PHOTOMICROGRAPHY, ETC.



Canon Camera Co., Inc.



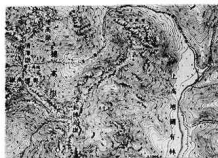
COPYING STAND

Because 35mm film is inexpensive and can be easily handled and stored, its use is expanding in every field of photography. For copying of printed matters, manuscripts, drawings, photographic prints, paintings and various tables and figures, and for photographing of future reference of various phenomena and specimens of medical, physical, engineering, and biological significance, 35mm film is widely and intensively used.

Canon Copying Apparatus is a device designed to adapt Canon-Serenar Lens and Canon Camera, whose reputation as top-class precision instrument

has been established the world over, to close-up work, so that 35mm film will be used in copy work easily, rapidly and accurately.

The apparatus can be housed in a small, compact case, so that you can carry it anywhere you please, and speedily assembled for use.

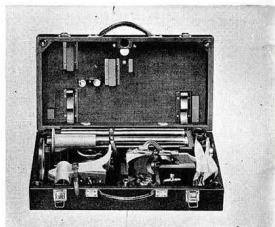


SPECIFICATION

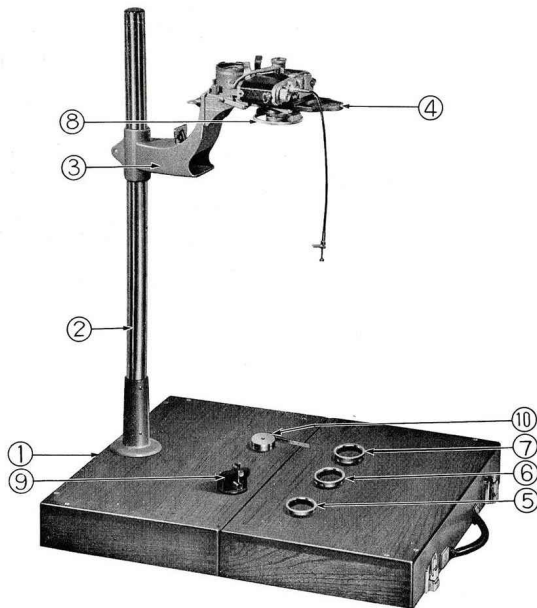
Camera Body	Canon Camera of any type	
Lens	Canon-Serenar 50mm f:3.5 or f:1.9 (Collapsible Mount)	Canon-Serenar 50mm f:2.8, f:1.8 or f:1.5 (Rigid Mount)
Negative Size	24mm × 36mm	24mm × 36mm
Ratio of Reduction	1/17—1/1	1/7.5—1/1
Areas covered	408mm × 612mm— 24mm × 36mm	180mm × 270mm— 24mm × 36mm
Object-to-Film-Plane Distance	984mm—206mm	497mm—206mm
Focusing Device	Photographic Camera Mount. Focusing Mount. Extension Tubes.	
Board	500mm × 560mm (CK-A)	470mm × 530mm (CK-C)
Upright Post	710mm	

- Note.**
- Canon-Serenar 50mm f:3.5 and f:1.9, both of which have collapsible mounts, require different Focusing Mounts. Canon-Serenar 50mm f:2.8 50mm f:1.8 and 50mm f:1.5, which have rigid mounts, can use any of the Focusing Mounts.
 - Canon-Serenar 50mm f:2.8 50mm f:1.8 and 50mm f:1.5, which have rigid mount, have smaller object area covered than the lenses with collapsible mounts. However, since an area about the size of a large-sized magazine page can be fully covered without difficulties, little practical inconveniency will be caused by the use of those lenses.
 - It will be possible to take a magnified picture of an object by additional use of specially-prepared extension tubes and also to take a micrographic picture by combined use of a Micro-Photographic Hood.
 - Other type of photography will also be possible by using an ordinary tripod instead of Upright Post.

model CK-A



- 1 Wooden Carrying Case (serves as a baseboard).
- 2 Upright Post.
- 3 Sliding Arm.
- 4 Camera Mount.
- 5 Extension Tube A.
- 6 Extension Tube B.
- 7 Extension Tube C.
- 8 Focusing Mount for Canon Lens.
- 9 Right Angle Focusing Glass.
- 10 Metallic Scale, (graduated in inches and millimeters.)



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PHOTOGRAPHY

- 1 BOARD
- 2 UPRIGHT POST
- 3 SLIDING ARM

The Upright Post is screwed into the board and the Sliding Arm is attached to the Upright Post, as illustrated. Depending upon the size of the object to be photographed, the Sliding Arm can be attached with its end pointed either upward, as illustrated in fig. 1, 2, and 4, or downward as illustrated in fig. 3 and 5. It is secured to the Upright Post by means of a tightening screw and the camera mount is attached onto the end of the Sliding Arm either vertically or horizontally.

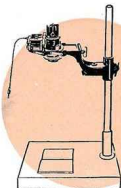
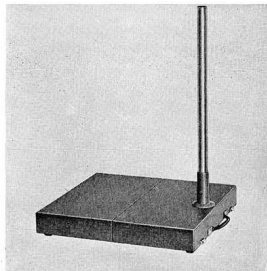


fig. 1

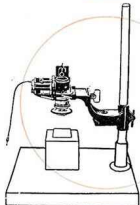


fig. 2

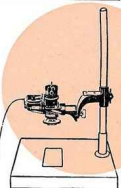


fig. 3

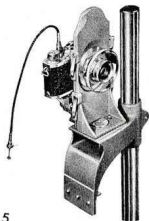


fig. 5

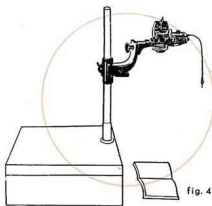


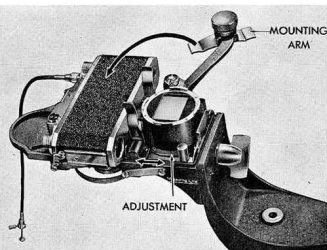
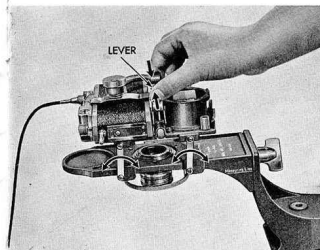
fig. 4

4 CAMERA MOUNT

The Camera Mount is one of the key parts of the Canon Copying Stand. It consists of two plates, a Fixed Plate for holding the lens and extension tubes and a Moving Plate for holding the camera body. On the Moving Plate there is also a ground glass through which an object is to be focused upon. The Moving Plate is linked to the Fixed Plate, which is attached to the Sliding Arm, in such a manner the camera body and the ground glass will change their positions when the plate is transferred. The ground glass has an area equal to the size of the Canon negative and in exactly same plane as the film in Canon Camera. When the image of the object being photographed is in sharp focus on the ground glass, it will also be in perfect focus on the film plane. This is how to operate the camera mount: In order to mount the Canon Camera body on the Camera Mount, place the Lens Mount of the Body exactly on the flange ring of the Moving Plate, and the Metal Holder on the back of the body and tighten it by screwing the knob. Before tightening the Metal Holder it is advised to adjust the Positional Scale, which is also equipped on the Moving Plate, in order to ensure that the Camera body is in direct angle to the plate. Adjustment of the Positional Scale can be done by loosening the screws that hold it in position.

In order to transfer the Moving Plate, press the two Levers that locks the plate simultaneously and move to the desired position as illustrated. Then lay it onto the Fixed Plate and release the Levers. The Moving Plate will be automatically locked and held rigidly in place.

The Lens is screwed into the under-side of the flange ring of the Fixed Plate when used singly. But more frequently it is used in combination with the Focusing Mount and/or an Extension Tube or Extension Tubes depending upon the size of the object to be photographed.



5

EXTENSION TUBES

Extension Tubes are designed to separate the lens from the body for close-up work. Three different tubes ... A ... 6mm, B ... 9mm, C ... 12mm ... are available for Canon Copy Stand. They can be used either singly or in combination.



6

FOCUSING MOUNT

The Focusing Mount is a kind of extension tube with an adjusting helicoid. It will enlarge the scope of the objects that can be photographed and facilitate focusing. In order to attach the lens to the focusing mount, unscrew the lens from the camera body, collapse the barrel, and introduce the bayonet flange into the Focusing Mount. A slight clockwise turn then will put the lens rigidly in position. The Focusing Mount can be mounted on to the Camera Mount either directly as illustrated in Fig. A, or through the medium of an extension tube or extension tubes as illustrated in Fig. B. On some occasions one or more extension tubes are introduced between the Focusing Mount and the lens, as illustrated in Fig. C.

(Important) When the Focusing Mount is attached directly to the Camera Mount and a Canon-Serenar standard lens with collapsible mount 50mm f: 3.5 or 50mm f: 1.9 is attached to it, an area ranging from 120mm×180mm to 408mm×612mm, or 5 to 17 times the Canon negative size is covered. However, when a Canon-Serenar standard lens with rigid mount

50mm f: 1.8 or f: 1.5 is in use, areas larger than 180mm×270mm or 7.5 times the negative size will not be fully covered, because the lens with rigid mount has to be screwed into the Focusing Mount and is less separated from the object. Appropriate use of the Extension Tubes will make it possible to cover smaller areas down to the negative size irrespective of the type of the lens in use. The table on Page 11 will show how to combine the Extension Tubes and the Focusing Mount to copy object areas of varying size.

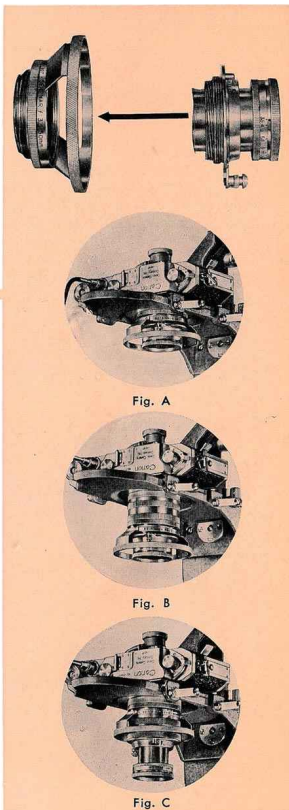


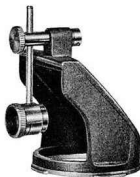
Fig. A

Fig. B

Fig. C

7 THE RIGHT ANGLE FOCUSING GLASS

This is a magnifier designed to facilitate focusing. It is equipped with the sun-shade and can be attached over the ground-glass on the Camera Mount by means of a bayonet catch. Since this allows right-angle image viewing by means of a reflex mirror incorporated, it is of particular help when the ground glass comes as high as the eye position. The ratio of magnification is $\times 3$.

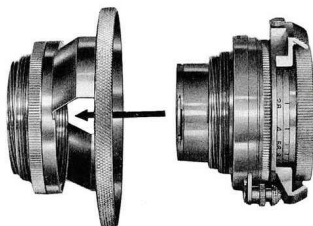


8 METAL SCALE

Used to measure the distance between the object and the measuring line marked on the side of the camera mount.

9 APERTURE-ADJUSTER FOR 50mm f:1.9 LENS

This is for exclusive use with Serenar 50mm f:1.9 and designed to facilitate aperture adjustment when the lens is attached to the Focusing Mount. It is clamped on the aperture scale of the lens by means of a tightening screw.



PHOTOGRAPHY

One thing that facilitated copy work is to determine the distance from the object to the camera from the ratio of the negative to the object area to be photographed. A measuring line is inscribed on one side of the Camera Mount for this purpose. The table on page 11 gives the value of this distance for various ratios of reduction. This is how to use the table:

First, see how to mount the Sliding Arm to the Upright post by consulting extreme right-hand column. Namely, if the ratio of reduction to be obtained is from 1/17 to 1/14 times, raise the board, point the arm outward and place the object to be photographed on the floor, as illustrated in Fig. 1. If a ratio of 1/3.5 or less is to be obtained, either mount the arm with tapered and pointed downward, as illustrated in Fig. 3 or separate the object from the board by putting something in between, as illustrated in Fig. 4.

Next, slide the arm till the distance from the object to the Camera Mount reaches the value corresponding to the ratio of reduction to be obtained.

Then, consult the Assembly Column, (How to combine lens and extension tubes) and attach to the Camera Mount the combination corresponding to the ratio of reduction required. Next, place the Ground-Glass directly over the lens, attach the Focusing Glass and turn Focusing Mount of lens helicoid while looking the image on the Focusing Glass. When the image of the object being copied is brought into sharp focus on the Ground-Glass interchange the positions of the ground-glass and the camera. Then determine the exposure and release the shutters.

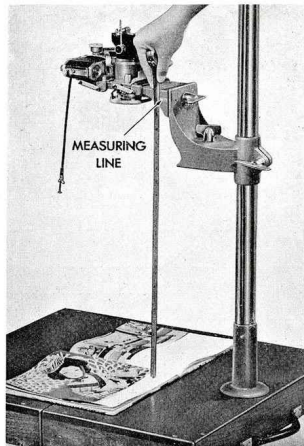


Table No.1 Reference Data

Reduction Photographs-CK-A & CK-C Units

Reduction Ratio	Field mm x mm	Approx. HT. of Measuring Line	Exposure Factor	Assembly	
				f: 3.5, Lens	f: 1.8, Lens
1: 17	408 x 612	934	1.1	F, L	
1: 16	384 x 576	882	1.1	F, L	
1: 15	360 x 540	830	1.1	F, L	
1: 14	336 x 504	779	1.1	F, L	
1: 13	312 x 468	728	1.2	F, L	
1: 12	288 x 432	677	1.2	F, L	
1: 11	264 x 396	625	1.2	F, L	
1: 10	240 x 360	575	1.2	F, L	
1: 9	216 x 324	523	1.2	F, L	
1: 8	192 x 288	473	1.3	F, L	
1: 7.5	180 x 270	447	1.3	F, L	L
1: 7	168 x 252	422	1.4	F, L	L
1: 6	142 x 216	371	1.4	F, L	L
1: 5	120 x 180	321	1.5	F, L	L
1: 4	96 x 144	272	1.6	A, F, L	A, L
1: 3.5	84 x 126	248	1.7	A, F, L	A, L
1: 3	72 x 108	225	2.0	C, F, L	B, L
1: 2.5	60 x 90	203	2.0	C, F, L	C, L
1: 2.25	54 x 81	192	2.5	F, A, F	F, A, F
1: 2	48 x 72	182	2.5	F, A, L	F, A, L
1: 1.75	42 x 63	173	2.5	F, C, L	F, C, L
1: 1.5	36 x 54	165	3.0	F, C, L	F, C, L
1: 1.25	30 x 45	159	3.5	F, B, C, L	F, B, C, L
1: 1	24 x 36	156	4.0	F, A, B, C, L	F, A, B, C, L

F: Focussing Mount; L: Canon-Serenar 50mm Lenses; A, B, C. Extension Tubes Note. Height of measuring line is approximate and may vary 2 millimeters.

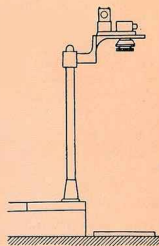


Fig. 1

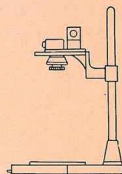


Fig. 2

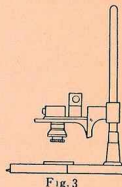


Fig. 3

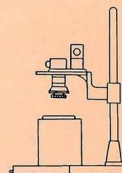


Fig. 4

In the "How to combine the lens and extension tubes" column, "L" denotes the Lens, "F" the Focusing Mount and "A", "B" and "C" Extension Tubes. Be sure to combine and attach them to the Camera Mount strictly in order given in this column, particularly not to misplace the Focusing Mount. When the Lens comes immediately after the Focusing Mount, collapse the Lens and use the bayonetted flange. Use the screw for all other combinations.

* To be exact, following values must be added to the object-to-the-film-plane distance given in the table in consideration of the separation between the Principal Points of the Lens in use: + 0.4mm for 50mm f:3.5 Lens, -5 mm for 50mm f:1.9 Lens, -2mm for 50mm f:1.8 Lens and + 0.3mm for 50mm f:1.5 Lens. However, except for extreme close-up photography such as when a ratio of 1:1 is required, the Table may be used without any noticeable harm whatsoever.

* Since the "Area Covered" value is theoretical, the work will be easily done if it is taken somewhat conservatively.

* The "Measuring Line" is marked exactly 50mm away from the film plane.

Depth of Field (mms); Canon-Serenar 50mm Lenses

Reduction Ratio	Field	Approx. HT. of Measuring Line	f: 1.8	f: 2.8	f: 3.5	f: 4	f: 5.6	f: 8	f: 11	f: 16
1: 17	408 x 612	934	+ 19.7 + 31.0 + 39.0 + 44.9 + 64.1 + 94.4 + 135.0 + 210.9	- 18.9 - 29.1 - 36.0 - 41.0 - 56.3 - 78.5 - 104.6 - 144.7						
1: 15	360 x 540	830	+ 15.4 + 24.2 + 30.5 + 35.0 + 49.9 + 73.1 + 104.1 + 160.9	- 14.9 - 22.9 - 28.4 - 32.3 - 44.5 - 62.1 - 83.1 - 115.6						
1: 12	288 x 432	677	+ 10.0 + 15.7 + 19.7 + 22.6 + 32.0 + 46.7 + 66.0 + 100.5	- 9.7 - 14.9 - 18.5 - 21.1 - 29.2 - 41.0 - 55.1 - 77.3						
1: 10	240 x 360	575	+ 7.0 + 11.0 + 13.8 + 15.9 + 22.4 + 32.6 + 45.8 + 68.6	- 6.9 - 10.6 - 13.2 - 15.0 - 20.8 - 29.2 - 39.4 - 55.6						
1: 7.5	180 x 270	447	+ 4.1 + 6.3 + 8.0 + 9.1 + 12.9 + 18.6 + 26.0 + 38.9	- 4.0 - 6.2 - 7.7 - 8.8 - 12.2 - 17.2 - 23.2 - 33.0						
1: 5	120 x 180	321	+ 1.9 + 3.0 + 3.7 + 4.3 + 6.0 + 8.6 + 12.0 + 17.8	- 1.9 - 2.9 - 3.6 - 4.1 - 5.8 - 8.2 - 11.1 - 16.0						
1: 4	96 x 144	272	+ 1.3 + 2.0 + 2.5 + 2.8 + 4.0 + 5.7 + 7.9 + 11.4	- 1.3 - 1.9 - 2.4 - 2.9 - 3.9 - 5.5 - 7.5 - 10.8						
1: 3	72 x 108	225	+ 0.8 + 1.2 + 1.5 + 1.7 + 2.4 + 3.5 + 4.7 + 7.0	- 0.8 - 1.2 - 1.4 - 1.6 - 2.3 - 3.3 - 4.6 - 6.5						
1: 2.5	60 x 90	203	+ 0.6 + 0.9 + 1.1 + 1.2 + 1.7 + 2.5 + 3.4 + 5.0	- 0.6 - 0.9 - 1.1 - 1.2 - 1.7 - 2.4 - 3.3 - 4.7						
1: 2	48 x 72	182	+ 0.4 + 0.6 + 0.7 + 0.8 + 1.2 + 1.7 + 2.3 + 3.4	- 0.4 - 0.6 - 0.7 - 0.8 - 1.2 - 1.6 - 2.2 - 3.2						
1: 1.5	36 x 54	165	+ 0.2 + 0.4 + 0.5 + 0.6 + 0.8 + 1.1 + 1.5 + 2.2	- 0.2 - 0.4 - 0.5 - 0.6 - 0.8 - 1.0 - 1.4 - 2.1						
1: 1	24 x 36	156	+ 0.1 + 0.2 + 0.2 + 0.3 + 0.4 + 0.6 + 0.8 + 1.1	- 0.1 - 0.2 - 0.2 - 0.3 - 0.4 - 0.6 - 0.8 - 1.1						

F: Focussing Mount; L: Canon-Serenar 50mm Lenses; A, B, C. Extension Tubes. Note: Height of measuring line is approximate and may vary 2 millimeters.

Close-up copy work does not differ much from other type of photography so far as general handling of the camera is concerned. The following is some of its aspects which are of particular importance:

1

The Lens shows smaller Depth of Field and more critical focusing becomes necessary. This makes it particularly important to close down the lens aperture when an object with greater Depth is being photographed.

2

Longer exposure time is required because the separation between the lens and the film plane is greater in copy work than in other type of photography. For instance, 1:1 copy work requires four times as much exposure as photography from infinity provided that the other factors remain the same. Since a smaller lens aperture is required on many occasions, the exposure time tends to be further. The lengthened "Exposure Factor" column of the Table on Page 11 shows how many times the exposure should be increased to obtain various ratios of reduction compared to other type of photography.

3

Object areas must be illuminated not only adequately but also uniformly. The best way of insuring this is to use an Exposure Meter and have the object area thoroughly checked for intensity of illumination. When copying an object such as a manuscript page it is convenient to place a transparent glass on it to flatten its surface. In such case care must be taken to prevent back reflections. The ordinary sidelighting with the lights set at a 45° angle will prevent the more harmful of the back reflections but a polar screen will be required to prevent them completely. A polar screen is also necessary to obtain a perfectly illuminated reproduction of a lustrous object. In copying a 3 dementional object it is necessary to give the object proper illumination in accordance with total effect desired.

4

As prevention of vibration is must always be kept in mind in copy work, Cable Release must be used without fail. When using the Canon Copying Stand in place liable to receive vibrations from trains or trucks, it is advisable to place under the board something to absorb the vibrations such as a rubber sponge mattresses. Where excess vibrations cannot be prevented by this methods, a faster shutter speed can be used, which in turn requires strong illumination, high sensitivity film, and large lens aperture.

WHAT TYPE OF FILM SHOULD BE USED ?

Selecting appropriate films and filters to fit the object being photographed is more important in copy work than in other type of photography, because in copy work special effects are required on many occasions. Usually the following types of film are used in copy work :

1. Positive Films

2. Slow panchromatic films, such as Microcopy

3. Medium-fast panchromatic films

4. Color films

1. Positive films are contrasty and have an extremely fine-grain emulsion. They are best fitted for copying printed matters such as books, newspapers, maps, line drawings, and objects that require extreme contrast in the final negative and enlargement, but not fitted to some kind of multi-colored objects as they are not sensitive to any color except blue and violet. However, this characteristic of the positive films does not prevent them from being extensively used, as those portions of an object whose color does not register on the film, such as red lines, will appear as clear portions on the negative, and will be clearly distinguishable from other portions. A filter is of little effect on the films of this type.

2. Slow panchromatic films: One of the most widely-used films for copy work. Particularly fitted for copying multi-colored printed matters, paintings and blue-prints, whenever correction filters are to be used to emphasize contrasts and obtain special results. For example, a vivid black-and-white reproduction may be obtained of an old newspaper yellowed with age, if you use a yellow or dark yellow filter and a more contrasty one, if use an orange or red filter. Because of their super fine grains, these films are fitted to copy a multicolor object with a light color filter or without filter at all and also to do ordinary black-and-white copy work without filter.

3. Medium-fast panchromatic films: These films are recommended to copy Moving object which require fast films and any subjects which require color-correction filters and short exposures at the same time. The relatively greater latitude they have makes those films best fitted to copy paintings that require faithful reproduction of the delicate color gradations.

4. Color films are essential for natural color reproduction of an object.