ARCO EIGHT MODEL 803A

INSTRUCTION BOOK

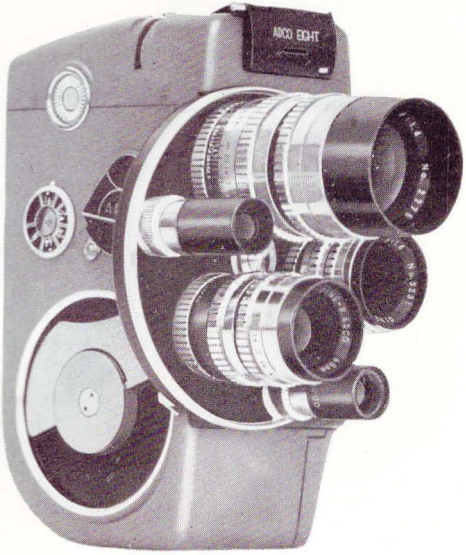
ARCO EIGHT MODEL 803 A

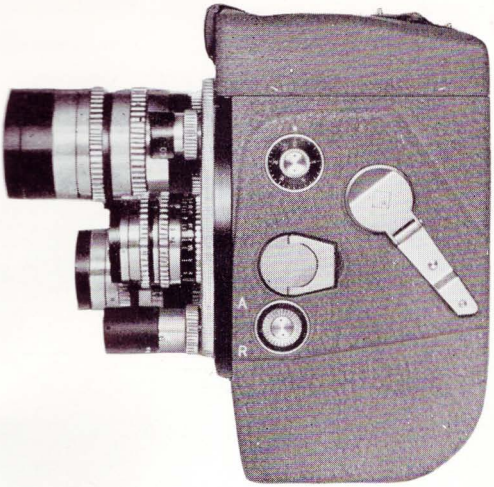
FOREWORD

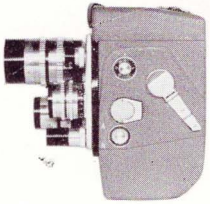
Featuring a shutter slot adjustment, film rewind, positive objective finder which rotates with the tri-lens turret and shows the exact field of view of the lenses, and an accurate through-the-lens focusing device, Arco Eight 803A is the most advanced, versatile 8mm movie camera on the market today.

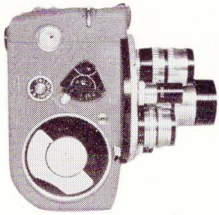
In order to avoid poor results due to improper use, it is desired that those who are to use this camera for the first time read this booklet carefully before actually going on a shooting spree.

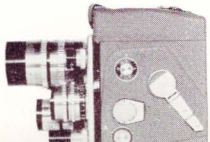
Since there are two kinds of Arco Eight 803 A : one with feet scale and the other, meter scale, explantion of the scale is given both in feet and meter.


ARCO EIGHT









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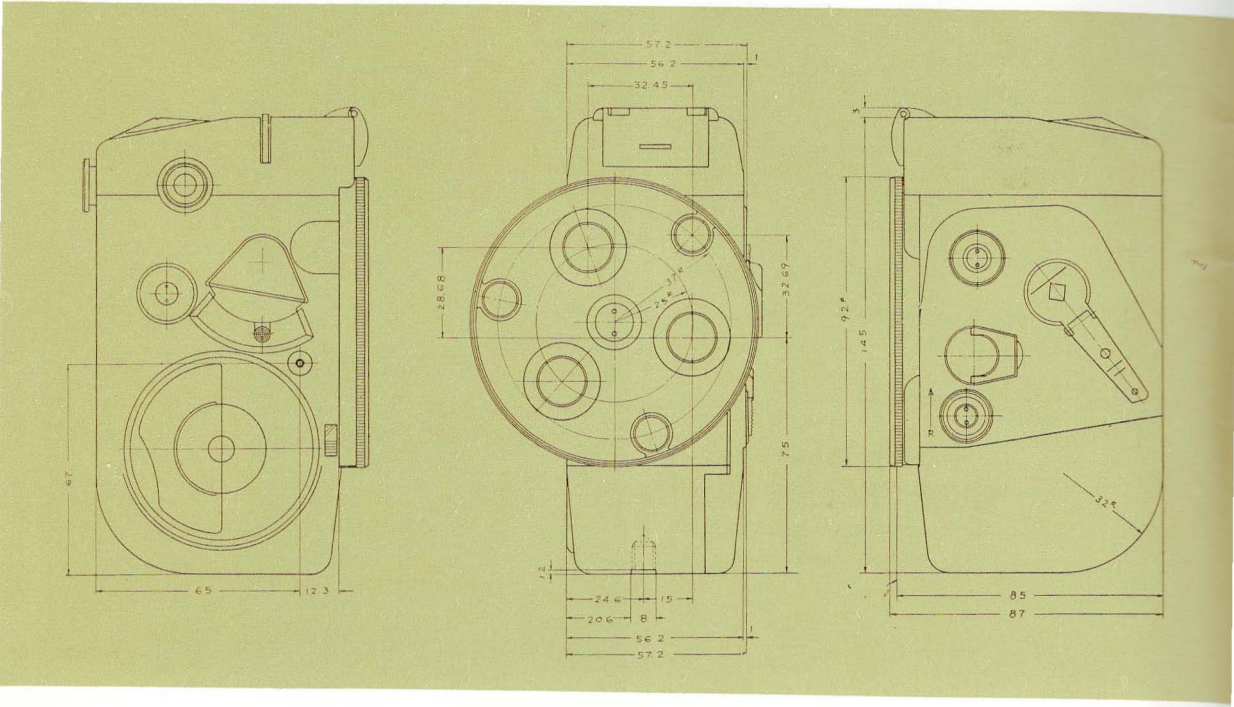

57.2
56.2
32.45
28.68
32.69
75
67
65
123
24.6
15
20.6
8
56.2
57.2
92.5
145
85
87
32°

Specifications

Type : Spool-loading, double-eight movie camera.

Measurements :

Body only 148 × 87 × 57.2 mm (excluding lens turret)

With lens Depth 151 mm
Width 92 mm (diameter of lens turret)

Weight :

Overall weight 1490 g
Body only 1270 g

Lenses :

Standard lens

Length : 27.7 mm
Diameter : 30 mm
Filter mount : 25.5 mm P=0.5
Lens mount : D mount

Wide angle lens

Length : 43.2 mm
Diameter : 30 mm
Filter mount 25.5 mm P=0.5
Lens mount D mount

Telephoto lens

Length : 67.7 mm
Diameter 39 mm
Filter mount 34 mm P=0.5
Lens mount D mount

Finder objectives :

Special screw mount (Diameter 12 mm P=0.5)

Features

Motor : Manual wind motor transports 8 feet (2.4 meter) of film at one full wind.

Winding : Ratchet-type requiring no change of grip.

Filming speeds : 8, 16, 24, 32 and 64 f. p. s., plus frame-by-frame shots.

Shutter slot angle : Adjustable from 0° to 165°

Rewind : Crank-type manual rewind with rewind film counter and rewind film adjuster.

Finder : Secures unreversed image ; magnification of 0.7× (standard), 0.35× (wide angle) and 2.07× (telephoto) ; finder objectives rotate with lens turret ; dioptric adjustment feasible ; E. P 15 mm.

Focusing Finder can be set for focusing by manipulating the change lever ; secures unreversed image even in accurate through-the-lens focusing work.

Shutter release : Three stage release (run, continuous run and single frame) with cable release adaptor.

Built-in exposure meter : Reflected light photoelectric exposure meter for both high and low light ; with ASA index readings of 10 to 200, and DIN, 11 to 24.

Tripod mount : Conforms to specifications of JIS B 7103.

Lenses :

Standard lens Cine-S Arco 1 1.4 f=1/2 in. (13mm) six-element, focusing type lens with D mount, equally spaced diaphragm scale, depth of field scale and threaded filter mount.

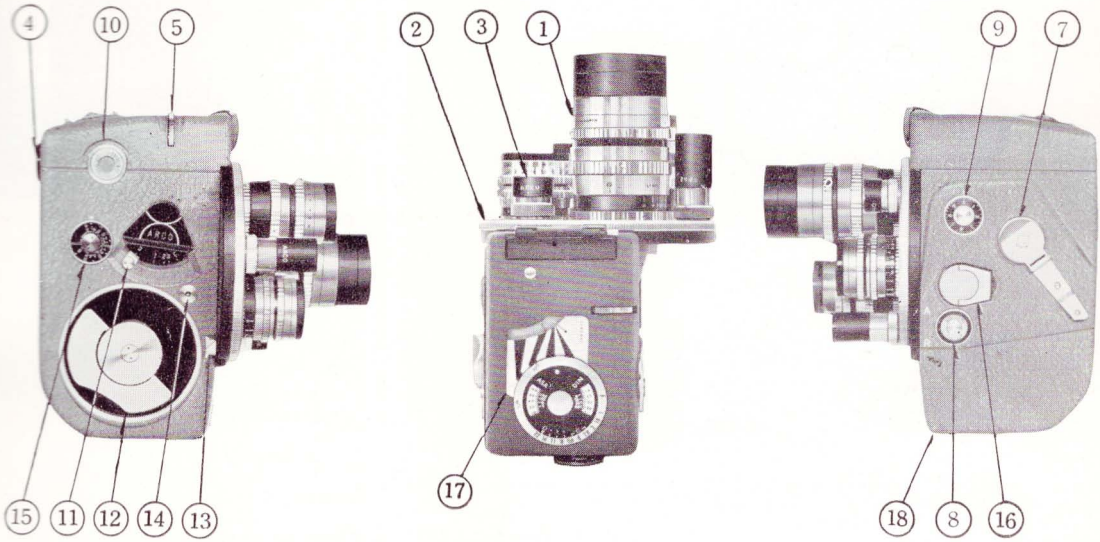
Wide angle lens Cine-W Arco 1.4 f=1/4 in. (6.5mm) seven-element, fixed focus type lens with D mount, equally spaced diaghragm scale, and threaded filter mount.

Telephoto lens. Cine-T Arco 1 1.4 f=1 1/2 in. (38mm) four-element, focusing type lens with D mount, equally spaced diaphragm scale, depth of field scale and threaded filter mount.

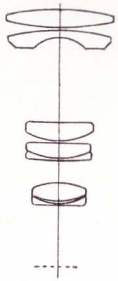
Turret : Rotating type turret with click stops.

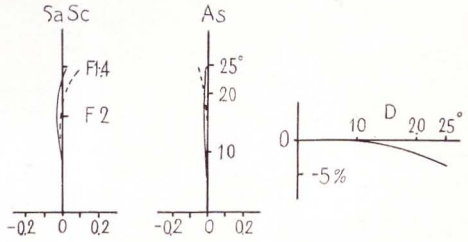
OUTLINE OF PARTS CONSTITUTING ARCO EIGHT MODEL 803 A

The following 17 sections give a general explanation of various parts constituting the Arco Eight 803A. By going over these pages, one will be able to obtain a general picture of the superior capabilities of this camera.

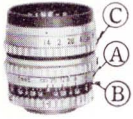


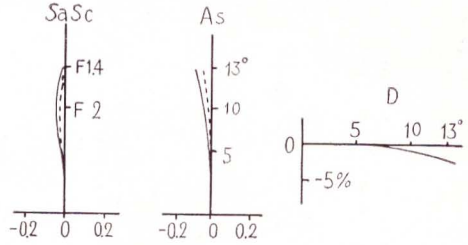
1	Lens	8.	Rewind button	14.	Cable release holder mount
2.	Lens turret	9	Rewind film counter	15.	Filming speed adjustment dial
3.	Finder objective	10.	Rewind film adjuster	16.	Cover lock
4.	Finder eyepiece	11	Shutter slot adjustment lever	17	Photoelectric exposure meter
5.	Finder lever	2.	Spring motor winder	18.	Tripod mount
7	Rewind handle	13.	Release button		



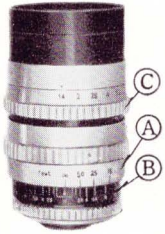


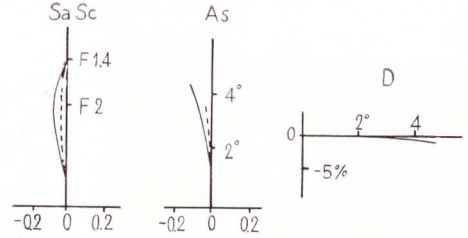
Cine-W Arco 1 : 1.4 f=1/4 in. (6.5mm) seven-element (6-group) Lens





Cine-S Arco 1 : 1.4 f=1/2 in. (13mm) six-element (4-group) Lens





Cine-T Arco 1 : 1.4 f=1-1/2 in. (33mm) four-element (2-group) Lens

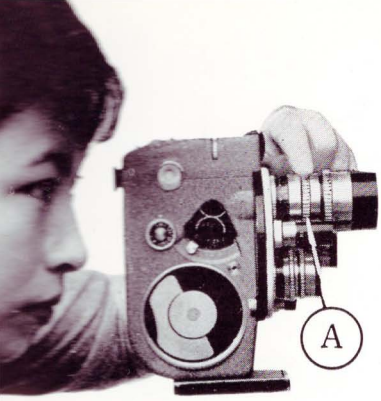


Fig. 1

* The above combination of the distance scale and depth of field scale shows that any subject within the range of 16′—2″5/8 to 26′—3″ (4.95 to 8.01 meter) will appear acceptably sharp in case the aperture is set at f2.8. When stopped down further at f 4. this depth of field is extended to a range of 15′—1″1/8 to 30′—1″1/4 (4.60 to 9.18 meter).

* For further details, see depth of field scale which appears later in this booklet. Reading of the distance scale in meter is the same as in feet.

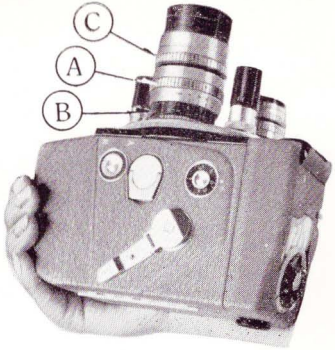
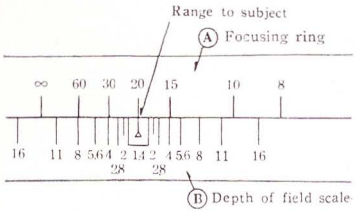
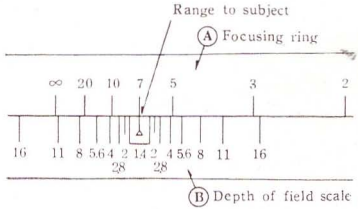


Fig. 3

Fig. 2



(Feet Scale)



(Meter Scale)

Arco Eight Model 803A features Cine Arco telephoto, standard and wide angle lenses which have already established a world-wide reputation as optics of the highest degree of precision. These lenses are mounted on a rotating turret (2) (See next page) which enables any of these lenses to be set to taking position with the minimum of difficulty.

As shown in Figure 1 accurate through-the-lens focus can be secured by turning the focusing ring (A) and observing the subject through the finder (See "Finder" section for futher details).

Since lenses mounted on 8 mm movie cameras have short focal lengths, acceptably sharp focus can be secured also by adjusting the distance scale to the general range to the subject. Cine Arco lenses provide depth of field scale for convenient adjustment of focus in this manner

As indicated in Figure 2, the handy combination of the distance scale and depth of field scale shows at a glance the range in which all subjects will appear well focused.

The wide angle lens alone is a fixed focus type optic; therefore, it does not feature any focusing ring or depth of field scale.

In order to facilitate the adjustment of lens openings, these lenses are equipped with an iris diaphragm scale with equal spacings between settings.

The index marks of all scales are located at a spot to afford easy reading (See Fig. 3)

Turret

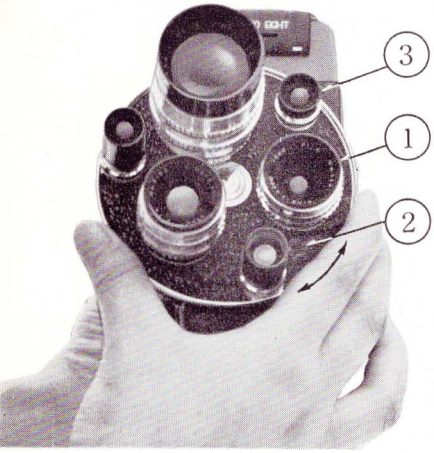
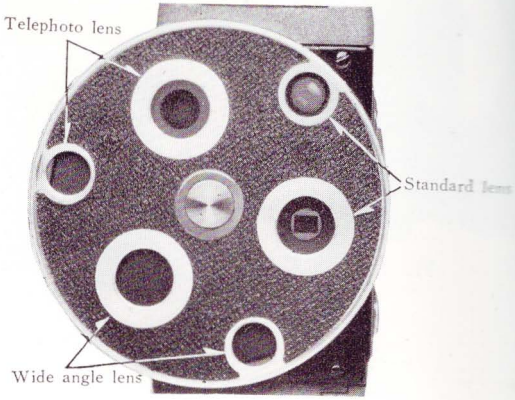


Fig. 4

Fig. 5



Each lens & finder objective must be mounted as indicated on the turret.

Al three lenses and finder objectives are mounted on the rotating turret (2) equipped with click stops enabling fast and accurate changing o taking lenses.

The turret can be rotated in either direction (Fig. 4)

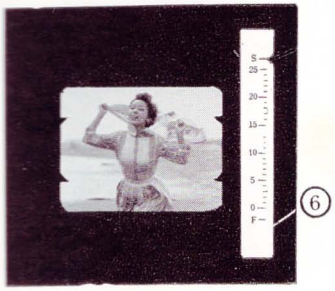
The l nses and finder objectives must be screwed into their respective mount Their mount is clearly indicated on the turret surface (Fig. 5) T S and W stand for telephoto, standard and wide angle lenses and objectives.

Finder Eyepiece

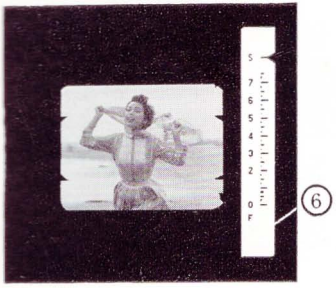
The finder eyepiece of Arco Eight Model E03A provides dioptric adjustment Consequently even people with poor eyesight can observe the subject clearly through the finder under all conditions. Moreover, since the eye-ring point is set at a distance of about 15mm from the eyepiece, people wearing eyeglasses can observe the entire field of view without the least difficulty (Fig. 6)

The film counter located on the right side of the finder mask is visible through the finder (Fig. 7) For further details, turn to "Film Counter section.

Fig. 7



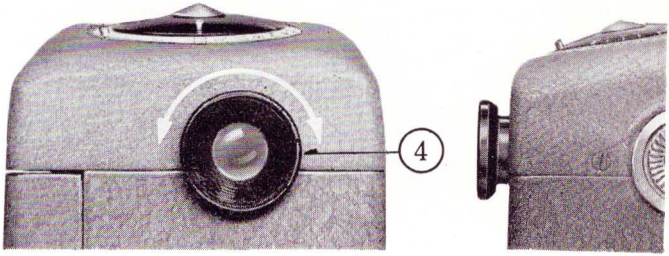
(Feet Scale)



(Meter Scale)

Finder mask seen through the eyepiece.

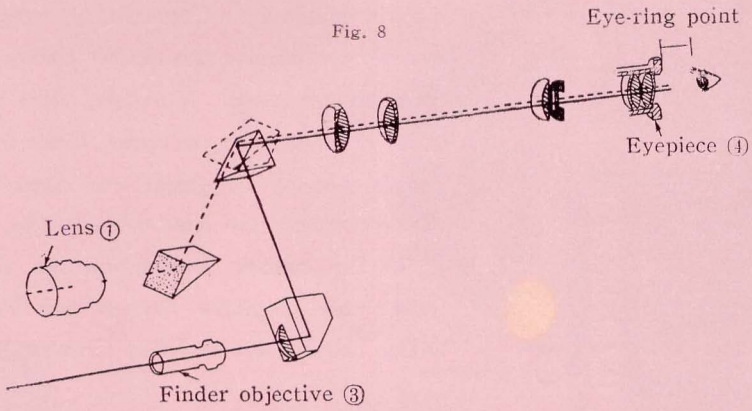
Fig. 6



Dioptric adjustment
Left turn. —
Right turn. +

Finder Objectives

Fig. 8



Dark line indicates optical system of finder.
Dotted line shows optical system in case of through-the-lens focusing

Standard Wide Angle Telephoto

Through the use of the finder objectives (3), the finder of Arco Eight Model 803A always secures a bright image of the subject in the manner shown in Fig. 8.

The finder objectives accuratey indicate the field of view of the telephoto, standard and wide angle lenses. They are mounted on the turret (2) between the taking lenses and click into position when the lens is changed (Fig. 9)

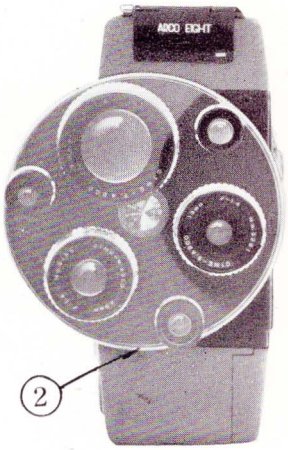
The objectives bear the focal length of the respective lenses and must be mounted on the turret in the proper order (See "Turret section)

The objective for the wide angle lens also shows the mask for anamorphic lens (2X) (Fig. 10)

Because the anamorphic lens can be screwed only into the mount of the standard lens, the finder objective for the standard lens must be replaced with that of the wide angle lens when shooting pictures with anamorphic lens.

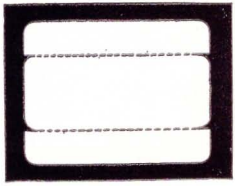
Sepcial objectives can also be mounted when leneses with focal length of 2 in. (50mm) or 4 in. (100mm) are to be used.

Fig. 9



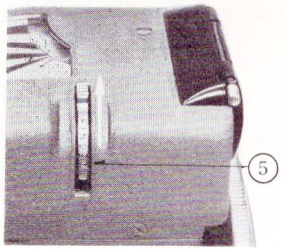
Lens and objective in shooting position.

Fig. 10

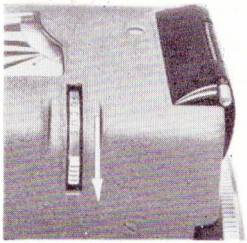


Finder Change Lever

Fig. 11



Push up the lever for viewing.



Push down the lever in case of accurate focusing work.

The finder can be used for either viewing or accurate through-the-lens focusing.

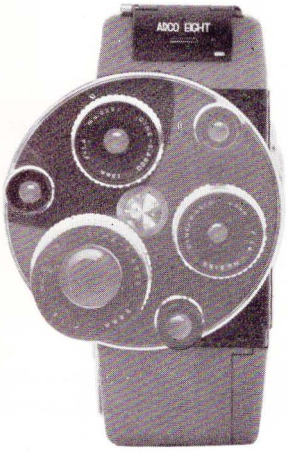
In case of focusing work, set the lever (5) from "Finder" to "Focus position (Fig. 11) Then, turn the lens to focusing position (Fig. 12) and adjust focus by turning the focusing ring (A) After an accurate focus is secured, rotate the turret until the lens is placed to taking position and shift the lever (5) to "Finder position.

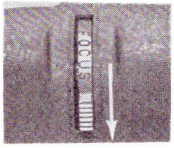
When the lever is set to "Focus position, the images seen through the finder will appear slightly bluish. This unique system enables the user to clear differentiate whether the finder is set for viewing or focusing. After focusing, the lens must of course be returned to the shooting position (Fig. 12)

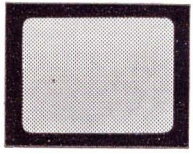
This through-the-lens focusing can be conducted with enses other than those originally mounted on this camera.

Fig. 12

Focusing

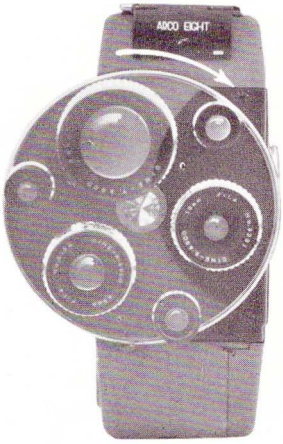


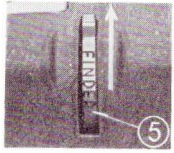


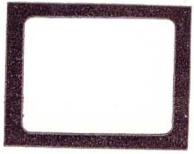


(Light blue)

Viewing







Film Counter

The film counter (6) is located on the right side of the finder mask. Since it is visible through the finder the user can always see the actual length of film yet to be exposed (Fig. 13)

The counter shows in terms of feet (meter) the remaining length of film.

The index needle (D) resets automatically to start (S) position when the cover is opened (Fig. 14)

In case the needle shifts during loading operation, it can be adjusted to start position by turning the rewind film adjuster (10) (See "Rewind Film counter" section)

When the film is properly loaded, press the release button (13) and let the film run until the needle points to figure 25 (7.5)

The entire 25-foot (7.5 meter) length of the film is exposed when the counter points to 0. Then, let the remaining length of the film (to be used as leader when reloading the film) run until the needle points to F

This film counter (6) provides simple adjustment when some length of the film is to be rewound. For details regarding this adjustment see "Rewind Film Adjuster section.

Fig. 13

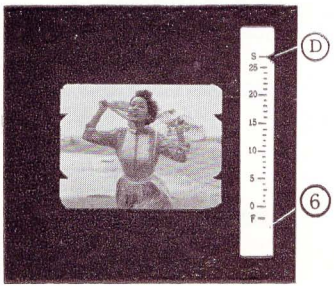
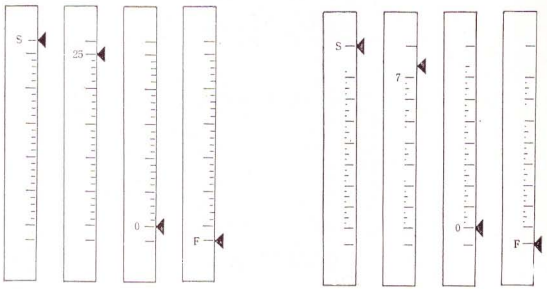


Fig. 14



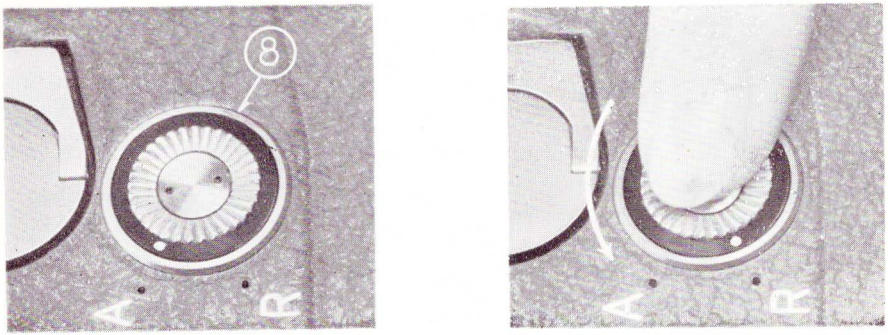
(Feet Scale) (Meter Scale)

Rewind Button

Before rewinding, set the rewind button (8) from A to R (See Fig. 15) The button will turn smoothly when pressed gently with the fingertip.

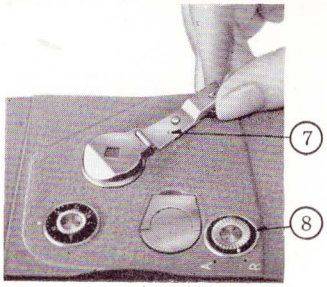
After rewinding the required length of the film, reset the button to A. When it is set at R, the film will not be transported even if the release is pressed.

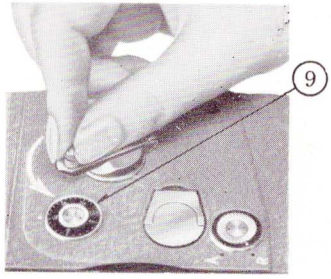
Fig. 15



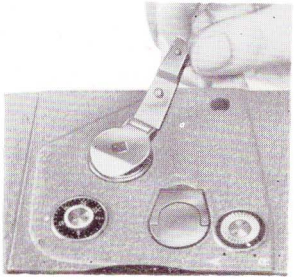
Rewind Handle

Fig. 16





To rewind, press handle and turn it in a counter-clockwise motion.



The rewind handle (7) is used for rewind the film for overlapping.

As shown in Fig. 16, pul out the handle and turn it in a counter-clockwise motion while pressing it slightly

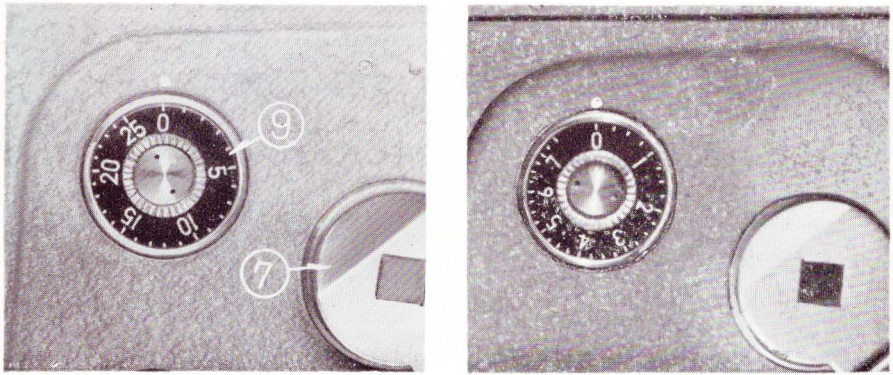
When returning the handle to its original position, it must be moved as shown in the lower photo. Otherwise, it may move the film and affect the accurate count of the length of film rewound.

The length of film actually rewound is registered on the rewind film counter (9)

The rewind handle wil not operate unless the rewind button (8) is set to rewind position. If the handle is operated forcefully without properly setting the rewind button (8), the perforations of the film will tear and filming will become impossible.

Rewind Film Counter

Fig. 17



(Feet Scale) (Meter Scale)

Adjust the rewind film counter in accordance with figure indicated by the film counter (6).

The rewind film counter (9) registers the length of the film rewound by manipulating the rewind handle (7) (Fig. 17)

Before actually rewinding the film, adjust this counter in accordance with the figure indicated by the film counter (6) (See " Film Rewinding " section)

This counter is used only for keeping tally of the length of film rewound ; therefore, it does not operate when the film is advanced.

Rewind Footage Adjuster

Fig. 18

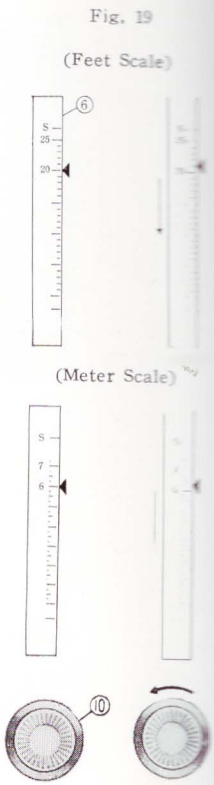
The rewind film adjuster (10) provides accurate adjustment of the film counter (6) when some length of the film is rewound.

When it is turned in a counter-clockwise motion (Fig. 18) the film counter moves downward (Fig. 19) While observing through the finder set back the counter according to the film rewound.

This rewind film adjuster enables the adjustment of up to seven feet (2.1 meter)

In case a new roll of film is to be loaded after making the foregoing adjustment the film counter will not automatically reset to start position. In this case, the counter must be set to " S position manually by operating this adjuster

Fig. 19



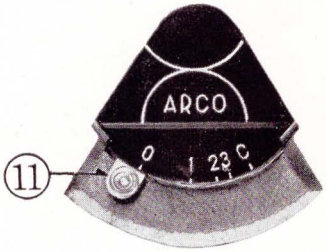
Shutter Slot Adjustment Lever

The shutter slot adjustment lever (11) provides the adjustment of the shutter slot angle to control the exposure. Its function can be compared with that of the shutter speed dial of still cameras.

Five graduations are provided, enabling the shutter slot to be adjusted from 0 to C (Closed) The relation between the shutter slot angle, filming speed and exposure is as shown in Fig. 20.

This lever is equipped with click stops, but, in case of fade-in and fade-out, it can be slid smoothly by slightly pushing it toward the camera body

The shutter slot adjustment not only serves to control the exposure ; it also comes in handy in shooting fast moving subjects and aids immensely in employing fade-in, fade-out and overlapping techniques (See " Principles of Shutter Slot Angle ')



Relation between Shutter Slot Angle and Exposure

Fig. 20

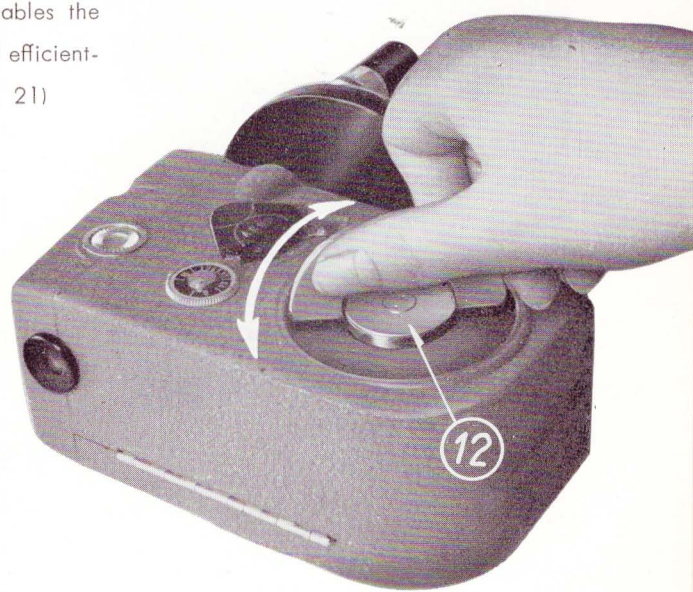
Shutter Slot Angle \ F P S.		8	16	24	32	64
 165°	0	1/17.5	1/35	1/50	1/70	1/150
 82.5°	1	1/35	1/70	1/100	1/150	1/300
 41.2°	2	1/70	1/150	1/200	1/300	1/600
 20.6°	3	1/150	1/300	1/400	1/600	1/1200
 0	C	0	0	0	0	0

Spring Motor Winder

The spring motor of Arco Eight Model 803A runs a length of about 8 feet (2.4 meter) of the film at one full wind. In other words, when fully wound, it wil run the film for about 40 seconds at a speed of 16 f p. s.

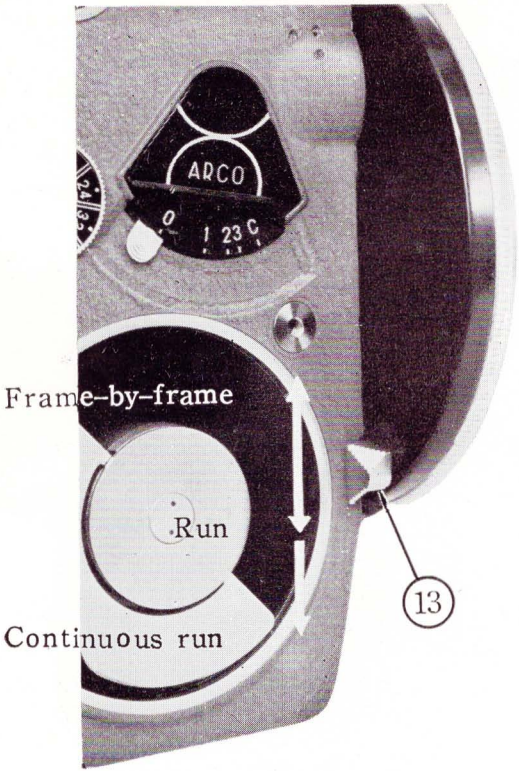
Winding is conducted by means of a ratchet-system key (12) which enables the user to wind the motor rapidly and efficiently without changing the grip (Fig. 21)

Fig. 21



Release Button

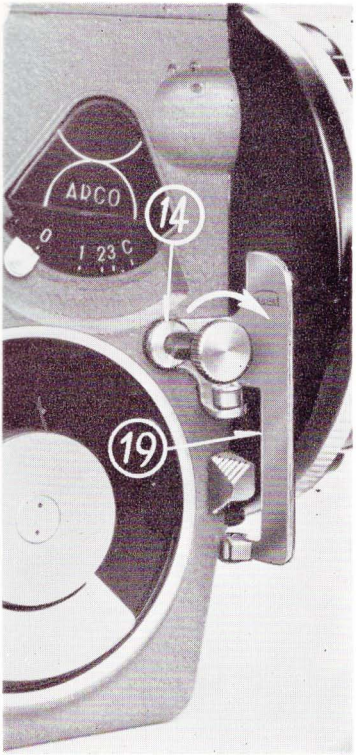
Fig. 22

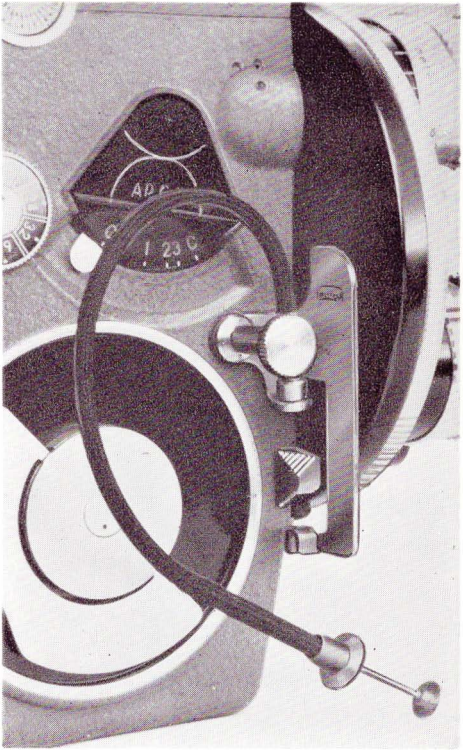


The release button (13) is located at a spot shown in Fig. 22. The motor begins to run when it is pressed gently downward and stops when the pressure is released. If the release is pressed all the way down, it locks for continuous run and will stop the motor only when it is ifted upward. For frame-by-frame shots, push the release all the way up.

With the aid of a cable release holder (19) self-timer and cable release can be used with this camera. The holder can be easily mounted on the camera by screwing it into the cable release holder mount (14) The shutter can be released manually even if this holder is mounted on the camera.

Fig. 23



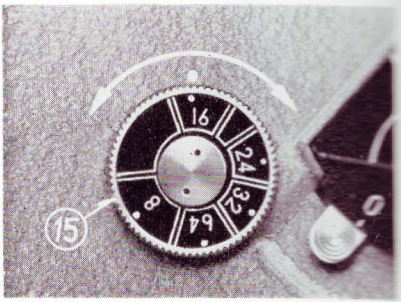


Filming Speed Dial

The filming speed dial (15) of Arco Eight Model 803A provides five speeds. In addition to the standard filming speed of 16 frames per second, it can be adjusted to 8 f p. s. for animated effect, 24 f p. s. for sound synchronization, and 32 and 64 f p. s. for slow motion effect

The filming speed dial must be set to the desired figure prior to shooting (Fig. 24)

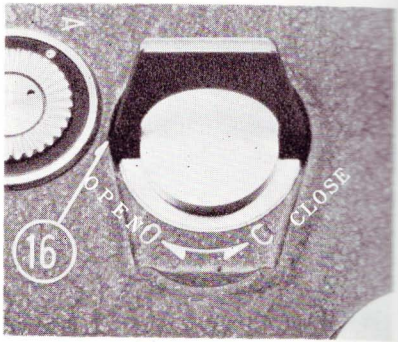
Fig. 24



Cover Lock

To open the cover lift up the cover lock (16) as shown in Fig. 25 and turn it in a right motion. To close, reverse this procedure.

Fig 25



Tripod Mount

One big abvantage of 8mm movie camera is that it can be operated while being held with your hands. The hand grip aids greatly in stabilizing the hold. But in order to obtain good, stabilized shots, it must be operated by mounting it on a tripod (Fig. 26)

Fig. 26

Photoelectric Exposure Meter

Arco Eight Model 803A has a built-in reflected light exposure meter which affords very simple operation.

One turn of the dial will show the appropriate exposure (relation between the shutter slot angle and lens opening) (Fig. 27)

The cover (a) must be closed for computation of high light (Fig. 28)

The correct procedure for use of this exposure meter is as follows :

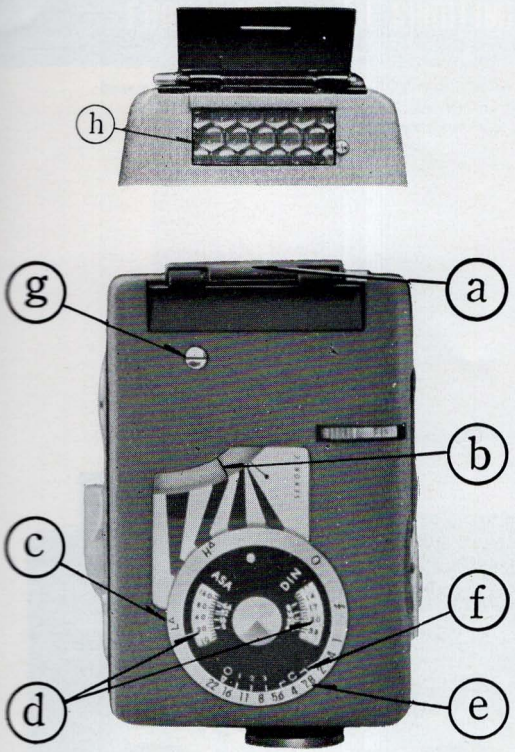
First of all, turn the inner (black) dial and adjust the desired filming speed to the ASA or DIN index of the film loaded into the camera (Fig. 29 (1) Then, point the photo cell window of the meter toward the subject and set the index mark (c) to where the needle points (Fig. 29 (2)) Use the index mark H (red) in high light computation and L (yellow) for low light computation. As shown in Fig. 28, these index marks are color coded.

This simple operation will bring out the appropriate exposure under the condition (Fig. 29 (3))

If the filming speed is adjusted to the ASA or DIN index of the film loaded, this meter will show the correct exposure by one simple turn of the dial.

The zero corrector (g) is used for adjusting the needle when it does not zero in correctly

Fig. 27



(a) Cover

(b) Needle

(c) Index mark

(d) ASA (DIN) index and f. p. s. scale

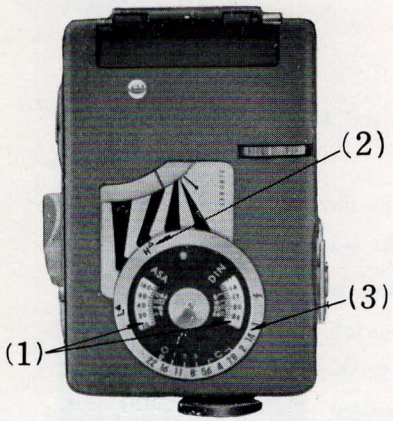
(e) f-stop dial

(f) Shutter slot dial

(g Zero corrector

(h) Multiple lens

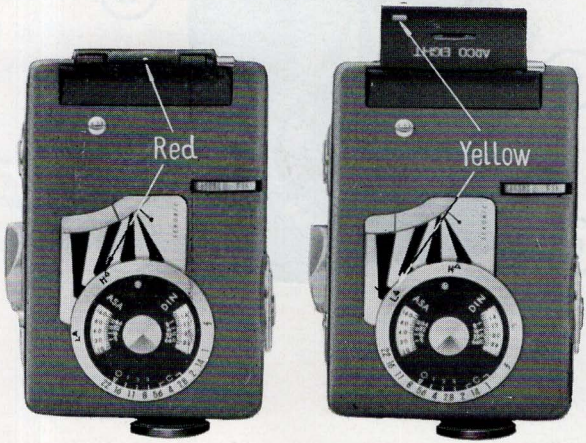
Fig. 29



(1) First of all, set ASA (DIN) index to filming speed.
(2) Adjust index mark to where the needle points.
(3) Reads correct exposure.

Fig 28

(A) (B)



Color index is provided for High and Low light.

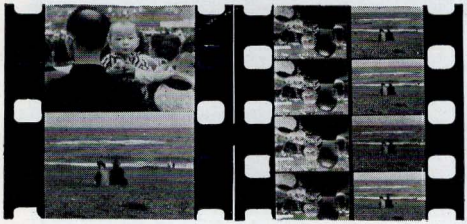
FROM LOADING TO SHOOTING

This section gives a general explanation of all necessary operation from loading to actual shooting.

By reading these few pages, you will be able to handle Arco Eight Model 803A properly

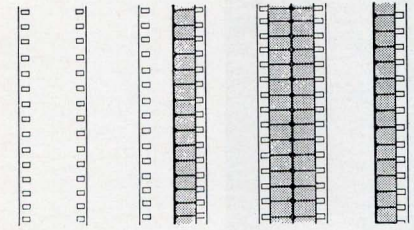
1. 8 mm Movie Film

Fig. 30



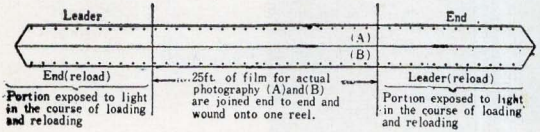
16 mm film Double-eight film.

Fig. 31



Unexposed Half exposed Fully exosed 50 ft.(7.5mm) of 8 mm film ready for projection.

Fig. 32



8mm movie cameras utilize film measuring 16mm in width. This, however does not mean that they use film identical with that loaded into 16mm movie cameras.

The film loaded into 8mm movie cameras is called double-eight film (See Fig. 30)

• At first only one half of the width of the film is exposed. When the whole length of the film is thus exposed, it is reloaded into the camera in order to expose the remaining half of the film. After the film is developed, it is spliced into half and made into an 8mm film ready for projection (Fig. 31)

• An extra length of film is provided because a portion is exposed to light during loading and reloading operation (Fig. 32)

2. Loading

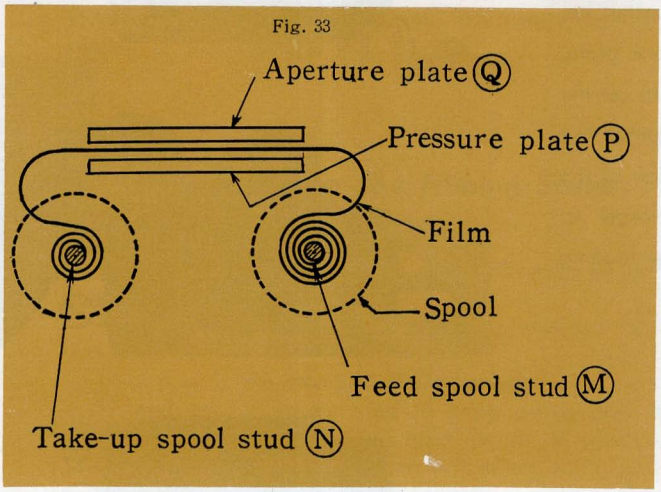
Before loading the film, open the side cover and make a close study of the proper film path (Fig. 33)

• While taking every precaution to prevent the film from recoiling or slipping off the spool, pull out about 1 foot (30 cm) of the film, insert its tip into the slot of the take-up spool spindle, and wind it two or three times onto the spool spindle.

The take-up spool is color-coded to prevent improper loading. At first, it must be placed into the camera so that the figure 1 imprinted in yellow faces upward and the film wound onto its spindle in the direction of the arrow When it is reversed, it will not fit into the spool stud (N) (Fig. 34)

• Then, as shown in Fig. 34, put the take-up spool into the stud (N) and insert the film between the pressure plate (P) and aperture plate (Q) in accordance with the film path imprinted on the camera. After this is done, insert the film spool into the feed spool stud (M) During this operation, utmost care should be taken to prevent the film from recoiling.

Fig. 33

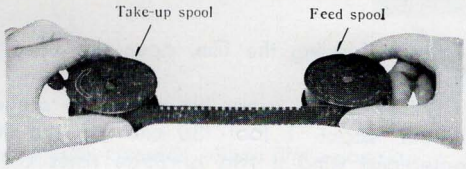


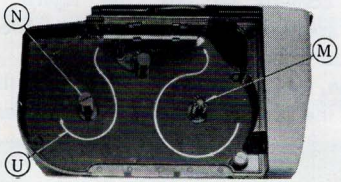
• After thus loading the film into the camera, ascertain whether the spools are securely held by the spool studs (M and N), whether the film is wound properly onto the spool spindle, and whether the film is properly inserted between the pressure plate (P) and aperture plate (Q) After you are sure that these points are in order, close the cover of the camera.

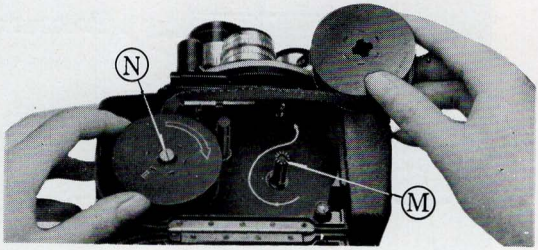
• Although it is not necessary to load the film in a darkroom, it is advisable to conduct the loading operation in a comparatively dark spot Do not load or reload the film under direct sunlight

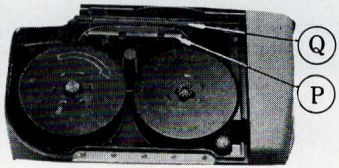
• In case the film cannot be inserted between the pressure plate and aperture plate, close the cover of the camera and set the rewind button to R. This will retract the film claw and facilitate the insertion of the film. In such a case, do not forget to reset the rewind button to (A) after loading the film.

Fig. 34









3. Adjusting The Film Counter

After the film is properly loaded into the camera, the film counter (6) must be adjusted (See " Film Counter " section.)

• The index needle (D) of the film counter seen through the finder points to a spot way above the scale. Consequently, it must be adjusted so that it would point to S on the scale by turning the rewind film adjuster (Once this adjustment is made, the counter wil automatically reset to S when the cover is opened. Nevertheless, if the film is rewound for overlapping and the film counter adjusted by turning the rewind film adjuster, the film counter must be adjusted in the manner indicated above when a new roll of film is loaded.)

• Then, press the release button (13) until the needle points to figure 25 (7.5) on the scale.

• By thus running the film, the leader which was exposed to light during the loading operation is wound onto the take-up spool and an unexposed frame is placed at the aperture (Fig. 33 (Q))

4. Determining The Filming Speed

The filming speed adjustment dial (15) must be set to the required figure before actually shooting pictures.

Arco Eight 803A provides five filming speeds : 8, 16, 24, 32 and 64 frames per second.

16 f. p. s. is the standard filming speed.

32 and 64 f. p. s. are used to bring out a slow action effect on the screen. They are used for studying quick action in sports and other field and also in bringing out an " out-of-this-world effect

8 f. p. s. will produce an absolutely opposite effect In other words, a slow moving objects will appear to be moving at a high rate of speed when taken at this speed.

When the filming speed is altered, the shutter speed and also the exposure changes. These matters must be taken into consideration when using different filming speeds.

Frame-by-frame shots can be taken by pushing up the release button (13)

5. Wind The Motor Before Shooting

The spring motor of Aco Eight Model 803 A runs a length of about 8 feet (2.4 meter) of the film when fully wound. Consequently, several short scenes can be taken continuously. Nevertheless, the motor might stop suddenly while shooting and spoil an otherwise perfect film. It is, therefore, advisable to wind the motor each time before shooting.

6. Determine The Field of View and Secure Focus

Select either one of the three lenses in accordance with the condition of the subject and rotate the turret so as to place the required lens to shooting position (See " Finder " section)

- If the subject does not appear clear when seen through the finder it means that the eyepiece (4) is not well adjusted to your eyesight Turn the eyepiece to the left or right for dioptric adjustment.
- After composing the subject, secure focus by turning the focusing ring (A) of the lens.
- Because the lenses mounted on 8mm movie cameras have short focal length, acceptably sharp focus can be secured simply by eye-measurement, but the finder can be used for through-the-lens focusing when telephoto lens is to be used or when accurate focus is required.
- In case of through-the-lens focusing, set the finder lever (5) to " Focus " and turn the turret to bring the lens into focusing position. Then, observe the subject through the finder and secure precise focus by turning the focusing ring of the lens.

• **Be sure in correct dioptric adjustment.**

Unless correct dioptric adjustment is secured, such undesirable results may follow that correct distance is not obtained in case of focusing, or the field of view of the lenses becomes blurred so that the film counter located on the right side of the finder mask may not be clearly visible through the finder These defects can be completely eliminated by correct dioptric adjustment

• **How to make correct dioptric adjustment**

Correct dioptric adjustment can not be made in case you make adjustment while observing the field of view or the images through the finder

It has been already mentioned above that the correct dioptric adjustment can be made by turning the eyepiece to the left or right However since adjustment is generally dependent upon eyesight, it occasionally happens that you err unconsciously in dioptric adjustment The following provides you more detailed and surer procedure for dioptric adjustment

First, remove the taking lens in focusing position, and set the lever (5) from "Finder to "Focus position. Then, turn the eyepiece to the left or right while seeing through it and you will see granules on the focusing glass. When you see them most clearly, it means that the eyepiece is correctly adjusted to your eyesight Now you can mount the taking lens and start shooting at any time.

• **Correctly adjusted finder**

The correctly adjusted finder always shows the accurate field of view and the mask with the film counter and also secures the correct distance in focusing. Even though correct dioptric adjustment is made, when subjects at a range of one meter or so are observed through the finder of the telephoto lens, they appear blurred, but this does not mean that dioptric adjustment is incorrect In this case, of course, you could adjust the finder eyepiece till the subjects are clearly observed, however you should know that it would not represent the right field of view or eyesight

7. Determining The Exposure

Another important matter is to adjust the lens opening (C) and shutter slot angle (1) in accordance with the prevailing condition to produce the right exposure (See " Shutter Slot Adjustment Lever ")

• The correct exposure can be determined easily by means of the built-in photo-electric exposure meter (17) As explained earlier in this booklet, the lens opening and shutter slot can be adjusted directly in accordance with the readings of the meter

• If the exposure meter shows the following readings, any one of the combination can be used with equally good result :

Shutter slot	f stop	Shutter slot	f stop
0	11	2	5.6
1	8	3	4

Whether to use a fast shutter speed and widen the lens opening or slow shutter speed and close down the lens opening must be decided according to the condition of the subject and the effect you wish to bring out When effecting a fade-in or fade-out, the angle of the shutter slot wil increase or decrease the effect (See other sections pertaining to shutter slot adjusment)

Usually, the exposure (relation between lens opening and shutter slot angle) can be determined by pointing the camera toward the subject from the spot you are to shoot the picture. In case the background is brighter than the subject, however, accurate exposure cannot be determined unless the exposure meter is brought close to the subject

• Improper use of the exposure meter may result in poor exposures ; therefore, it is advisable to acquaint yourself with the proper procedure before using it.

• After determining the exposure, you are now ready to shoot pictures.

8. Hold The Camera Firmly

In case you are going to shoot pictures while holding the camera with your hands, press the camera firmly against your forehead and then depress the release button (13) (See "Release Button" section)

- In case the motor does not run when the release button is pressed, it means that either the spring motor has not been wound or the rewind button is set at R.
- Everything is going smoothly when the motor is running with a soft clicking sound.
- For titling work or frame-by-frame shots, use cable release after mounting the cable release holder (19)
- Self-timer can be used to take your own pictures.

9. What to do When The Film is Completely Exposed

When the film counter seen through the finder points to 0, the entire 25-foot length (7.5 meters) of the film has been exposed. Then, run the film still further until the needle of the counter points to F

You have now wound the entire length of the film onto the take-up spool. Therefore, you can open the cover and reload the film to expose the other half

When both sides of the film are fully exposed, you must of course load a new roll of film.

In case the film is wound onto the take-up spool, only half of the film width is exposed. If the said spool is empty it means that the entire width of the film has been exposed.

10. Arco Eight Model 803A Enables Application of All Movie Techniques

The shutter slot adjustment and film rewind device features in this camera enables you to employ all difficult movie techniques and bring out a professional motion picture effect. Further details are given in the following pages.

ADVANTAGES OF ARCO EIGHT MODEL 803A'S UNIQUE MECHANISM

The following few pages outline the procedure for using the shutter slot adjustment and rewind mechanism which are found only in ARCO EIGHT MODEL 803A. These instructions will come in handy in all types of movie shots.

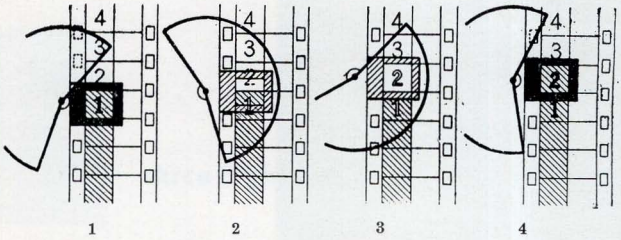
Principles Of Shutter Slot Adjustment

In any 8mm camera, the motor begins to run when the shutter release is depressed. The motor runs the film and operates the shutter As shown in Fig. 35, the shutter which is a semi-circular plate rotates on an axle. When it opens, it exposes one frame of the film, and, while it covers the aperture, the exposed frame is transported.

Motion picture is made by recording certain movements on a given number of frames during a given length of time. It has been found that the minimum rate of speed to reproduce a movement most naturally is 16 frames per second. In case of narrow-gauge movie cameras, the standard speed has been set at 16 f p. s. Consequently, the above-mentioned synchronized operation of the shutter and film run is repeated 16 times during an interval of one second.

The opening of the half-moon-shaped shutter shown in Fig. 35 is called the shutter slot angle. Generally speaking, this shutter slot angle in most of the 8mm cameras is set somewhere around 160° The shutter slot angle and the filming speed determine the exposure. If the shutter slot angle is set at 180° and a filming speed of 16 f. p. s. is used, the exposure time is adjusted constantly at 1/32 sec.

Fig. 35



1. Shutter just about to cover the aperture after exposing the frame.
2. Exposed frame being transported while shutter covers aperture.
3. Next frame accurately centered in the aperture and ready for exposure.
4. Film exposed during the split-second it pauses. This procedure is repeated.

The exposure time of 8mm movie camera is computed according to the following formula :

$$\text{Exposure time} = \text{Filming speed} \times \frac{360^\circ}{\text{shutter slot angle}}$$

In ordinary 8mm movie cameras, therefore, the shutter speed or exposure

time is constantly at 1/32 to 1/35 sec. when operated at a filming speed of 16 f. p. s. The shutter speed of course changes when the filming speed is adjusted to 8 or 32 f. p. s., but, in changing the filming speed, it is impossible to obtain the same effect as with the filming speed of 16 f p. s. In other words, users of these cameras are required to take pictures at an extremely slow shutter speed. This often gives rise to considerabe inconveniences.

In short, this slow shutter speed often causes blurred images. Even a slight movement of the hands holding the camera wil produce poor results and shooting of fast moving subjects becomes virtually impossible.

Furthermore, the exposure can be controlled only through the adjustment of the iris diaphragm of the lens, and, in extremely bright spots, it becomes practically impossible to obtain the correct exposure.

In other words, these movie cameras have the same disadvantages as box cameras, so far as shutter speed or exposure adjustment is concerned.

It became evident that these inconveniences could be eliminated by incorporating shutter slot adjustment also in 8mm movie cameras.

If the shutter slot angle of 160° were reduced to 80°, the shutter speed would be increased proportionately It works according to the same principle as the adjustment of the slit of the focal plane shutter of still cameras.

The shutter slot adjustment lever of Arco Eight Model 803A provides five-stage adjustment of the slot angle. 0 which stands for open sets the angle to 165° and provides shutter speed of 1/35 sec. at 16 f. p. s. Each succeeding figure reduces the angle by half and increases the shutter speed. When set at 3, the angle is narrowed down to about 20° and the shutter speed increased to 1/300 sec.

See Fig. 20 for relation between shutter slot angle and exposure.

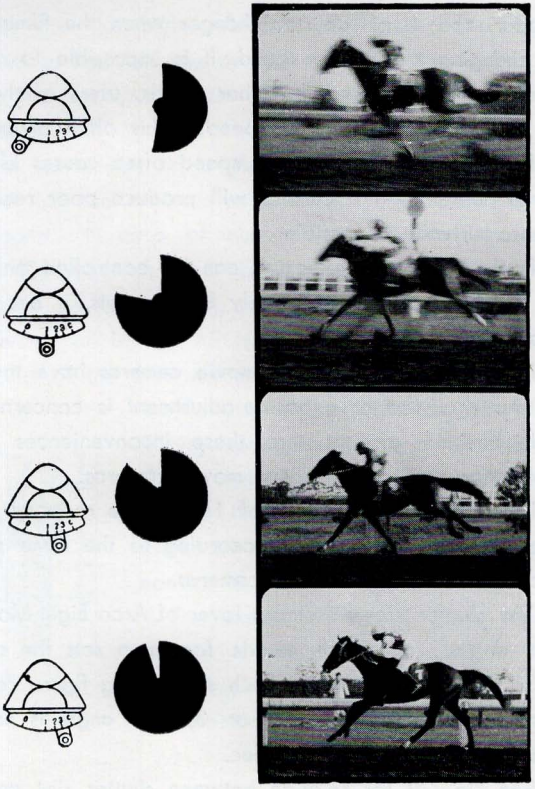
Shutter Slot Angle And Blurring Of Images

As mentioned in the preceding section, 8mm cameras featuring shutters with slot set at about 160° provide only a slow shutter speed of 1/35 sec. at a filming speed of 16 f. p. s. When shooting a fast-moving subject or a moving subject at close range, it is practically impossible to obtain good results at such a slow shutter speed.

As shown in Fig. 36, this deficiency can be eliminated by narrowing down the shu ter slot angle and clear shots of even fast-moving subjects can be made.

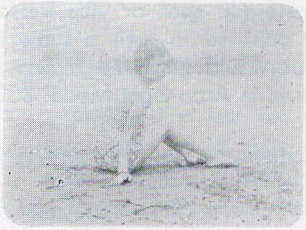
The shutter slot angle should be adjusted in accordance with the movement of the subject In ordinary shots, it is advisable to set the lever to 1 (1/70 sec. at 16 f. p. s.) This shutter speed wil effectively prevent blurring due to movement of the hand holding the camera.

Fig. 36



Shutter Slot Adjustment For Controlling Exposure

Fig. 37



Over-exposed even when lens opening is closed down.

The shutter slot adjustment can be used for controlling exposure.

In shooting pictures at the sea-side or ski-grounds where the light is extremely strong, the film is liable to be over-exposed. In such cases, ND filters are generally used to control the exposure.

With Arco Eight Model 803A however, the correct exposure can be obtained simply by adjusting the shutter slot angle and increasing the shutter speed (Fig. 37)

Use of dark filter produces excess ve contrast.

Proper exposure obtained through adjustment of shuttr slot.

Shutter Slot Adjustment For Controlling Exposure While Shooting

When the camera is panned from a dark to a bright spot or vice versa, either one of the scenes has to be sacrificed. If the camera is adjusted to take a subject in a comparatively dark place, the sudden shift-over to a bright spot would spoil the picture.

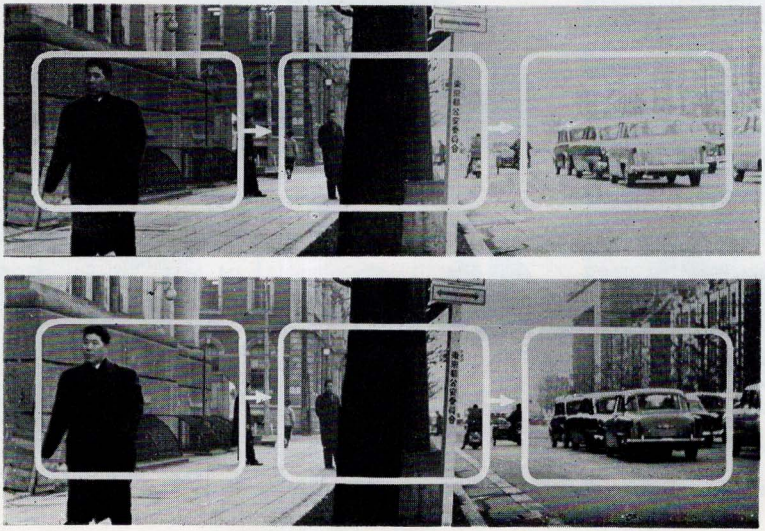
The use of the shutter slot adjustment lever featured in Arco Eight Model 803A completely solves this problem.

All you have to do is to set the lever to 0 when taking the subject in the dark spot and to gradually slide the lever toward 3 when the camera is panned toward a better lighted spot. In case the camera is to be panned from a bright to a dark spot, you will only have to reverse this procedure.

Although this lever is equipped with click stops, it will slide smoothly when pressed gently toward the camera body

A few practice shots will enable you to obtain perfect results (Fig. 38)

Fig. 38



Fade-In And Fade-out

Fade-in which gradually brightens the scene and Fade-out which gradually dims out the scene are important motion picture techniques used frequently in all types of film.

By sliding the shutter slot adjustment from 0 to C (Fade-out) and from C to 0 (Fade-in), you will be able to bring out this highly effective result

Since the figures on the shutter slot scale are not spaced equally from one another the lever must be moved comparatively fast from 0 to 2 and then at controlled speed thereafter

Usually Fade-in and Fade-out should be conducted during an interval of three se onds, but this duration may be altered in accordance with the effect desired.

Film Rewinding Procedure

Arco Eight 803A incorporates a film rewind system which is indispensable to over lapping. Film rewind is conducted by means of a rewind handle (7) rewind button (8) rewind film counter (9) and rewind film adjuster (10)

The following is the procedure you will have to follow in rewinding the film, presuming that you are going to take an overlapped scene after shooting 15-foot (4.5 meter) length of the film.

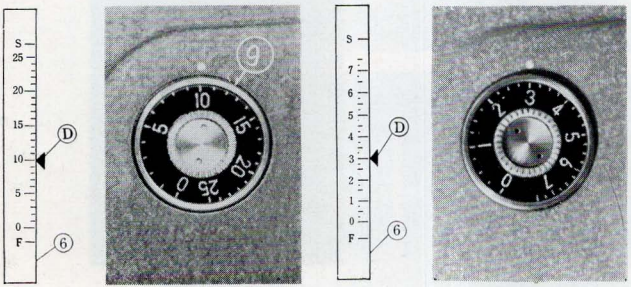
A peep through the finder will show that the film counter (6) points to 10 feet (3 meter) (Since the film counter shows the lenght of film unexposed, the needle will point at 10 (3 meter) when 15 feet (4.5 meter) of the film has been exposed)

Turn the rewind film counter (9) so that the index mark points to 10 (3) (Fig. 39)

Then, shift the rewind button (8) from A to R. This will retract the film claw and set the camera for rewind operation.

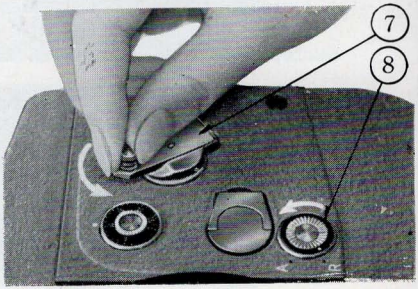
Lift the rewind handle and turn it gently while pressing it toward the camera body until one foot (0.3 meter) of the film is rewound (Fig. 40)

Fig. 39



(Feet Scale) (Meter Scale)

Fig. 40



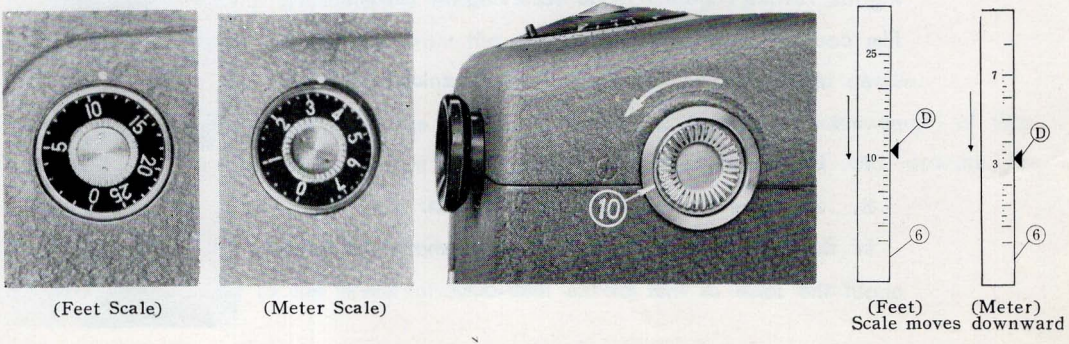
Because you have just rewound one foot (0.3 meter) of the film, you now have 1 feet (3.3 meter) of film to be exposed. However, this is not shown on the film counter (6) You must, therefore, adjust the film counter

The scale of the film counter (6) moves downward when the rewind film adjuster (10) is turned in a counter-clockwise motion (Fig. 41) In this way, make adjustment of the film counter in accordance with the figure shown on the rewind film counter (9)

When returning the rewind handle to its original position, it must be turned while lifting it upright. In this case the rewind film counter will rotate but this does not mean that an additional length of the film is being rewound.

Even if you forget to adjust the film counter (6) after some length of the film has been rewound, it will not affect the operation of the camera. In such a case, you will only lose track of the remaining length of film.

Fig. 41



Overlapping

Overlapping (or dissolving) is another highly effective technique employed frequently in movies. This effect can be obtained by employing the fade-in and fade-out techniques.

Following is a general procedure for overlapping :

1 Fade out the end of one scene according to the procedure given in the preceding section. Let us presume that the fade-out covers a footage of 1 ft (30 cm)

2. Read the footage on the film counter (6) seen through the finder

3. Adjust the rewind film counter (9) accordingly

4. Set the rewind button (8) to R.

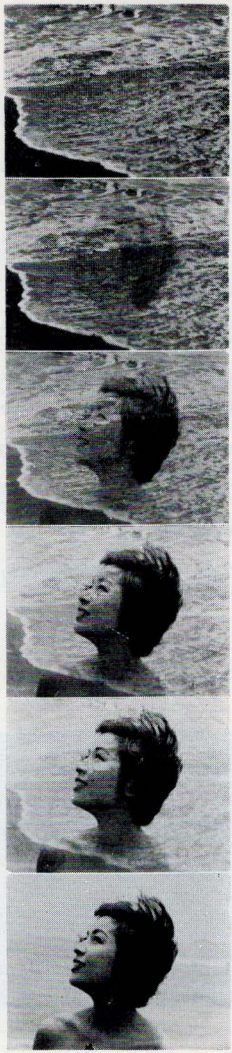
5. Rewind 1.5 foot (45cm) of the film by turning the rewind handle (7) and observing the rewind film counter (9)

6. Adjust the film counter (6) by turning the rewind film adjuster 10)

7 Reset the rewind button to A.

8. Start the next scene with a fade-in.

In this case the duration for fade-in should be about the same as that of the fade-out



Caution

Utmost care must be taken in handling any device, particularly when it incorporates a number of high-precision mechanism.

Following are precautions you should take in handling ARCO EIGHT 803 A.

1 Do not operate the camera at high filming speeds of 32 and 64 f. p. s. without loading the film.

2. If, by mistake, you trip the shutter release, let the motor run until it stops.

3 Do not subject the camera to any sudden change in temperature.

4. Do not take out the taking lenses and objectives without due reason as the slightest amount of dust on the lenses is uglily magnified.

5. Be sure to put the mount caps in case the lenses other than the ones to be used are taken out

6. In case the lens surface has become dirty, wipe the lens with gauze slightly dampened with alcohol of good quality.

7 Do not expose the photoelectric exposure meter to strong light

8. Use soft brush to remove dust from the photo cell window.

9 Do not touch the zero corrector (g) unless you have to correct the needle.

10. Recoil the spring motor when the camera is to be left unused for some length of time.

11 Even if it is to be left unused, it is a good policy to examine it and operate the mechanism on a test basis from time to time.

12. Always keep the camera in a dry place.

13. Pay special heed to the preservation of the camera in the rainy season.

Table of Depth of Focus

Telephoto lens Min. circle of confusion = 0.02mm

feet	F 1.4		F 2		F 2.8		F 4		F 5.6		F 8		F 11		F 16	
	from	to	from	to	from	to	from	to	from	to	from	to	from	to	from	to
2.5	2′-5″⅞	2′-6″⅜	2′-5″⅝	2′-6″⅝	2′-5″¼	2′-6″¾	2′-5″	2′-7″⅛	2′-4″⅜	2′-8″	2′-3″½	2′-8″⅝	2′-2″⅞	2′-9″⅝	2′-2″	2′-11″½
3	2′-11″⅝	3′-0″½	2′-11″	3′-0″⅝	2′-10″⅞	3′-1″⅛	2′-10″½	3′-1″¾	2′-9″¾	3′-2″⅜	2′-8″⅝	3′-3″	2′-7″½	3′-4″½	2′-6″⅜	3′-6″½
3.5	3′-5″⅛	3′-6″⅜	3′-4″½	3′-6″¾	3′-4″⅛	3′-7″⅛	3′-3″¾	3′-7″⅜	3′-3″⅜	3′-9″¼	3′-2″⅜	3′-10″½	3′-0″¼	4′-0″¾	2′-10″½	4′-4″⅜
4	3′-11″½	4′-0″⅞	3′-10″⅞	4′-1″¼	3′-10″½	4′-1″⅝	3′-10″	4′-2″¾	3′-9″¼	4′-5″⅛	3′-7″⅛	4′-8″½	3′-5″¾	5′-1″	3′-2″⅝	5′-4″
5	4′-11″	5′-2″⅝	4′-10″¼	5′-3″	4′-9″	5′-4″⅜	4′-7″⅜	5′-6″⅛	4′-6″⅜	5′-7″½	4′-3″	5′-11″½	4′-1″⅝	6′-6″¾	3′-10″⅝	7′-6″
6	5′-10⅞	6′-4″⅛	5′-10″¼	6′-5″⅜	5′-9″½	6′-7″	5′-7″⅛	6′-9″⅞	5′-5″½	7′-1″¼	5′-2″	7′-9″½	4′-10″⅞	8′-8″⅜	4′-6″⅛	10′-1″¼
8	7′-9″¾	8′-4″¾	7′-6″½	8′-6″½	7′-3″⅞	8′-10″⅜	7′-2″	9′-3″¾	6′-10″⅞	9′-11⅝″	7′-5″⅛	10′-10″¾	6′-0″⅝	12′-11″⅞	5′-5″	15′-11″
10	9′-5″½	10′-7″	9′-3″¾	11′-1″⅛	8′-11″⅞	11′-5″⅜	8′-8″⅛	12′-1″⅝	8′-2″½	13′-3″½	7′-6″½	15′-0″½	6′-10″⅝	19′-5″	6′-1″¼	29′-5″⅞
15	13′-10″⅜	16′-4″⅞	13′-1″¼	16′-10″⅜	12′-0″¾	17′-10″⅝	11′-10″⅜	19′-4″¾	11′-3″⅜	22′-8″⅜	9′-11″⅞	30′-9″¼	8′-9″½	49′-2″½	7′-5″¾	∞
20	18′-0″⅜	22′-1″¾	18′-9″¼	23′-7″⅝	16′-2″⅝	26′-3″	15′-1″⅛	30′-0″¼	13′-9″⅜	36′-5″	12′-3″⅝	60′-0″½	10′-5″¾	∞	8′-6″⅜	∞
30	25′-3″	36′-5″	24′-1″⅜	40′-10″⅛	22′-0″	47′-4″⅞	19′-8″⅜	61′	17′-6″⅝	10′-3″	14′-11″⅛	∞	12′-5″⅝	∞	9′-11″⅝	∞
60	43′-5″⅝	92′	38′-11″¾	124′	34′-5″⅜	223′	29′-8″¼	∞	24′-9″¼	∞	19′-10″⅞	∞	15′-9″⅞	∞	11′-11″⅝	∞

Standerd lens Min. circle of confusion = 0.02mm

feet	F 1.4		F 2		F 2.3		F 4		F 5.6		F 8		F 11		F 16	
	from	to	from	to	from	to	from	to	from	to	from	to	from	to	from	to
1	11″¼	1′-0″¼	11″	1′-0″½	10″¾	1′-0″¾	10″½	1′-1″⅛	9″⅞	1′-1″⅞	9″⅜	1′-3″⅜	8″¾	1′-5″½	7″⅞	1′-10″⅞
2	1′-10″	2′-2″⅛	1′-9″¼	2′-3″¾	1′-8″⅛	2′-5″½	1′-7″	2′-9″⅞	1′-5″⅞	3′-1″¾	1′-3″¾	4′-0″¼	1′-2″	7′-2″⅝	11″¾	∞
4	3′-4″½	4′-11″½	3′-1″¼	5′-6″½	2′-10″½	6′-7″⅛	2′-6″½	8′-10″½	2′-3″⅝	19′-1″½	1′-11″¼	∞	1′-7″	∞	1′-3″¼	∞
6	4′-10″½	8′-8″	4′-2″½	10′-1″⅞	3′-9″⅝	14′-2″	3′-3″⅜	27′-0″¾	2′-9″½	∞	2′-3″½	∞	1′-10″⅜	∞	1′-5″¼	∞
8	5′-9″¼	13′-1″⅝	5′-2″⅜	18′-11″½	4′-6″⅜	30′-10″	3′-9″¼	∞	3′-1″¾	∞	2′-5″⅞	∞	2′-0″⅜	∞	1′-6″⅛	∞
12	6′-10″⅞	26′-3″	6′-1″¼	∞	5′-0″⅞	∞	4′-1″⅜	∞	3′-3″¾	∞	2′-6″½	∞	2′-0″⅜	∞	1′-5″⅝	∞
20	10′-2″⅞	∞	8′-8″⅝	∞	6′-10″⅞	∞	5′-4″¾	∞	4′-1″⅝	∞	3′-0″¾	∞	2′-4″¾	∞	1′-8″½	∞

Winde angle lens Min. circle of confusion = 0.01mm

feet	F 1.4		F 2		F 2.8		F 4		F 5.6		F 8		F 11		F 16	
	from	to	from	to	from	to	from	to	from	to	from	to	from	to	from	to
	3′-7″⅜	8′-16″⅜	3′-10″	13′-5″	2′-8″¼	46′	2′-3″⅞	∞	1′-10″⅜	∞	1′-5″¾	∞	1′-2″⅞	∞	11″	∞

Table of Depth of Focus

Telephoto lens Min. circle of confusion=0.02mm

meter	F 1.4		F 2		F 2.8		F 4		F 5.6		F 8		F 11		F 16	
	from m	to m	from m	to m	from m	to m	from m	to m	from m	to m	from m	to m	from m	to m	from m	to m
0.8	0.79	0.81	0.78	0.82	0.77	0.82	0.77	0.83	0.75	0.84	0.74	0.87	0.72	0.90	0.69	0.95
1	0.98	1.02	0.97	1.02	0.96	1.03	0.95	1.05	0.93	1.07	0 90	1.11	0.87	1.16	0.83	1.26
1.2	1.17	1.22	1.16	1.24	1.15	1.25	1.13	1.28	1.10	1.31	1 06	1.37	1.02	1.45	0.96	1.60
1.5	1.46	1.54	1.44	1.56	1.42	1.59	1.39	1.63	1.35	1.68	1.29	1 78	1 23	1.92	1.14	2.19
2	1.93	2.08	1.90	2.11	1.86	2.16	1.81	2.23	1.74	2.35	1.65	2.54	1 55	2.83	1.40	3.50
3	2.84	3.18	2.77	3.26	2 69	3.38	2.58	3.58	2.44	3.88	2.27	4.45	2.08	5.44	1.82	8.63
5	4.56	5.53	4.40	5.79	4.20	6.19	2.93	6.89	3.61	8.11	3.23	11	2.86	20	2.39	∞
7	6.17	8.09	5.87	8.66	5 51	9.58	5.06	11	4.55	15	3 96	30	3.41	∞	2.76	∞
10	8.38	12	7.84	14	7.21	16	6.44	22	5.65	44	4 76	∞	3.18	∞	3.13	∞
20	14	33	13	45	11	88	9.49	∞	7.85	∞	6 23	∞	4.95	∞	3.79	∞

Standard lens Min. circle of confusion=0.02mm

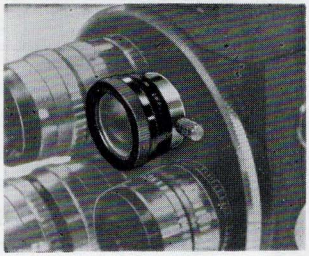
meter	F 1.4		F 2		F 2.8		F 4		F 5.6		F 8		F 11		F 16	
	from m	to m	from m	to m	from m	to m	from m	to m	from m	to m	from m	to m	from m	to m	from m	to m
0.3	0.29	0.31	0.28	0.32	0.28	0.33	0.27	0.34	0.26	0.36	0.24	0.39	0.23	0.45	0.20	0.58
0.5	0.47	0.54	0.45	0.56	0.44	0.59	0.41	0.63	0.39	0.71	0.35	0.88	0.32	1.2	0.27	3.5
0.7	0.63	0.78	0.61	0.83	0.58	0.89	0.54	1.0	0.49	1.2	0.44	1.8	0.31	4.4	0.32	∞
1	0.87	1.2	0.82	1.3	0.77	1.4	0.70	1.8	0.62	2.6	0.54	6.8	0.46	∞	0.37	∞
2	1.5	2.9	1.4	3.6	1.2	5.4	1.1	19	0.89	∞	0.72	∞	0.59	∞	0.45	∞
4	2.5	7	2.1	41.0	1.8	∞	1.4	∞	1.1	∞	0.88	∞	0.68	∞	0.50	∞
7	3.3	∞	2.7	∞	2.2	∞	1.7	∞	1.3	∞	1.0	∞	0.73	∞	0.52	∞

Wide angle lens Min. circle of confusion=0.01mm

meter	F 1.4		F 2		F 2.8		F 4		F 5.6		F 8		F 11		F 16	
	from m	to m	from m	to m	from m	to m	from m	to m	from m	to m	from m	to m	from m	to m	from m	to m
	1.1	2.7	0.94	4.1	0.82	14	0.69	∞	0.57	∞	0.45	∞	0.36	∞	0.28	∞

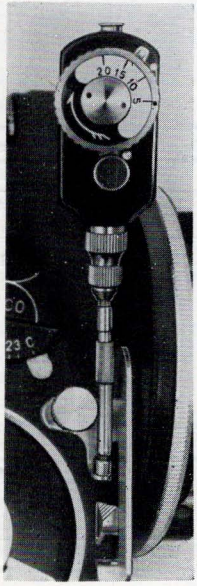
ARCO EIGHT
MODEL 803A

ACCESSORIES



Parallax Corrector

Although the unique design of Arco 8 does away with all major problems of parallax-compensation, the use of this parallax corrector assists of titling and closeup shots by utilizing telephoto lens.



MOVIE SELF-TIMER

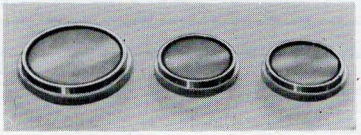
With the aid of a cable release holder the self-timer can readily be mounted on the camera.

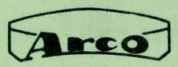
* There are 13 seconds from start to shooting.
* Shooting time is adjustable to four stages : 5, 10, 15, 20 minutes.

FILTER

Following filters for standard, wide angle and telephoto lenses are available at any time on your request.

* Skylight (L-1A)
* Amber (0-85A)
* Blue (B-80A)
* Yellow (Y-2)





ARCO PHOTO INDUSTRIAL CO., LTD.

TOKYO JAPAN

Care to be Used Before Rewinding

It may sometimes happen that the film wound onto the feed spool becomes loose. In such a case, before doing film rewinding in accordance with the procedure described in Page 47, leave the rewind button (8) as it is (without setting it to R) and turn the rewind handle counter-clockwise gently as shown in Fig. 40 Page 47 When the loose portion of the film has been wound thoroughly onto the spool, one feels the kick in one's finger-tip and the handle becomes heavy.

This operation is highly recommendable to do before starting rewinding so as to assure the correct count of the length of film rewound.

Since this operation is done for the sole purpose of winding the loose portion of the film without retracting the film claw, special care should be directed not to over-wind the film or operate the handle forcefully; otherwise. the perforations of the film will tear.

GUARANTEE No. 14344

This camera is fully guaranteed for a period of one year from the date of purchase against mechanical defects under normal usage.

For service, return us the camera and this guarantee card with the blanks filled.

Name of camera : .....

Body No. ..... Lens No. .....

Date of purchase : .....

Name : .....

Home (or APO) address : .....

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