

Operating manual “Eclair 16”

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As the conception of the **Eclair 16** is different from that of other cameras, it is imperative that the instructions and recommendations for its use be followed closely. We suggest that the various operations involved are practiced before filming is commenced. The following points should be noted:

- 1 – Use only 12 volt batteries conforming to the wiring diagrams shown in this manual.
- 2 – Use only “Cannon” plugs, properly connected as inversion of current could cause serious damage.
- 3 – Never use transformed direct current unless it has been rectified with transformers supplied by Eclair.
- 4 – From camera **Eclair 16** No. 1,676 onwards, the reflex mirror can be cleaned with cotton wool or a soft cotton material. For cameras up to No. 1675, the reflecting surface must never be touched, cleaning should be carried out with an air syringe.
- 5 – Before cleaning the aperture, ensure that the mirror has been cleared from the area of the aperture.
- 6 – When cleaning the aperture plate, be careful not to strain the spring of the movable guide (Photograph C).
- 7 – Make sure that the magazine lid on the take-up side is closed before forming the loop (photograph I).
- 8 – Always check the size of the loop on the magazine before snapping it on-to the camera.
- 9 – If a high noise level is located in the magazine, remove the magazine and check the loop. Familiarize yourself with the noise made by two alarm systems built into the magazine.

The **Eclair 16** includes a reflex viewfinder composed of a revolving shutter (D30) to which is attached the mirror opened at 180° (D29) which reflects the image formed by the lens onto a frosted glass (D31) while the aperture is closed. This image is transmitted to the viewfinder through an intermediate lens and a prism.

The viewfinder can be rotated through 360° parallel to the camera and the eye-piece can be rotated by 360° at right angles to the camera. It is therefore possible to view the subject from all possible angles without moving the head.

Ground glass (D 31)

The dimensions (8.4x17 mm.) are considerably larger than the filmed image which is defined by an engraved rectangular frame. The area outside of the frame, which is almost equal to that of the image, provides an important extra field all around the image and prevents accidental framing when filming.

The ground glass has 3 engravings:

1. a frame for the cinema format (7.42x10.20 mm.)
2. a frame with rounded corners for the TV format (6.30x8.41 mm.)
3. a cross indicating the center of the two above formats.

A slot under the frosted glass allows the insertion of special viewing masks. The insertion must be made taking particular care not to touch either the frosted glass or the reflex mirror.

Caution:

In order to avoid any reflection on to the recorded image, never use a gelatine mask or a mask which has a glossy surface.

Mounting the viewfinder to the camera

1. Unscrew the lens cover and the lens holder cover.

2. Fit the lens into its holder, locating the slot at the top.
3. Secure the locking ring (E 47).

Viewfinder characteristics

1. Since it can rotate by 360° parallel to the camera, it may be locked at any angle, using the locking screw (E 46). When the standard viewfinder is rotated, the framed image also rotates proportionally. You will quickly become accustomed to this peculiarity.

The **Eclair 16** can, however, be supplied on request with a special viewfinder, the optics of which automatically remove this rotation.

2. The eye-piece can revolve by 360° transversely relative to the camera, this allows viewing with either the right or the left eye and an accurate positioning relative to the eye. A screw (E 45) permits an adjustment of the friction of the eye-piece.
3. The rubber eyelet (E 42) rotates through 360°, accommodate the eye used. A shutter opens automatically as soon as a light pressure is effected with the eye, and closes as soon as this pressure is removed. A firmer pressure keeps the shutter open. To shut the shutter, the eyelet (E 42) is lightly pulled back. Two screws (F 55 – F 56) allow adjustment of the optical axis of the eyepiece if this should be necessary. Viewing is then effected relative to an external marking and as follows:
 - a) release screw (F 56).
 - b) view through the viewfinder, turn screw (F 55) to obtain the required setting.
 - c) tighten screw (F 56).
4. An adjustment of ± 9 diopters is provided for on the viewfinder by the knob (E 44). Setting to the desired diopter is effected as follows:
 - a) remove lens and move the reflex-mirror to the viewing position (alternatively, position the turret as shown in photograph D – see Section III).

Reflex Viewfinder System

- b) release button (E 44).
- c) view through the lens and turn the diopter adjusting ring until the cross engraved in the ground glass is perfectly in focus.
- d) lock button (E 44).

Check this adjustment from time to time as it is possible that eye strain may be caused under certain working conditions if the camera is not correctly set.

General

The **Eclair 16** is provided with a turret with 2 lens mounts: one for "CA" (Cameflex) mount (E 51), the second for universal "C" mount (E 49). The dimensions for the focal length from the film plane to the bearing face of the lens are respectively:

48 mm. —0	and 17.52 mm. —0
+0.01	+0.01

On request, the **Eclair 16** can be supplied with 2 "C" mounts, however, the use of "CA" mount lenses is strongly recommended, as this mount provides a superior seating, especially for zoom or long focal length lenses.

Positioning the turret (E 50)

1. Turn central knurled button (F 54) in the direction of the arrow "D".
2. Pull out the button (F 54) to remove the turret from its housing.
3. Turn the turret through 180°.
4. Push the turret back to its new position, without forcing.
5. Lock button (F 54) by turning in the direction of the arrow "S".

Fitting the lenses

The distance between the axes of the 2 lenses allows the simultaneous mounting of a short focus lens, Kinoptik Tegea F— 5.7 mm. (or Angénieux F— 10 mm.) and an 12x120 mm. zoom without the latter entering the field of the short focus lens. Reflex viewing allows full advantage to be taken of this feature in all situations.

"C" Mount:

Remove protective cover (F 49), screw the lens firmly into place without using unnecessary force.

"CA" Mount:

Remove protective cap (E 51) by turning it counter-clockwise and then

pulling it out. Push the lens mount into the cup taking care that the slot in one of the flanges locates on the stud which is at the top of the cup; turn the lens clockwise to lock it. Do not force.

Always replace the protective cap into the mounts when no lens is mounted to prevent dust entering the camera.

Intermediate mounts:

The following can be supplied:

- CINTA for converting lens cup "C" (F 49) to "CA" mount (Cameflex)
- CARRI for converting lens cup "CA" (E 51) to "Arriflex" mounts
- CIRAD for converting lens cup "C" (F 49) to "Arriflex" mounts.

The above intermediates should only be considered for emergency use, as the "Intermediate/Lens" unit will not assure precision especially with zoom or long focus lenses.

Lens holder

For zoom or long focus lenses, the use is recommended of an (E 33) support with (E 34) rod, which fits in socket (E 32). To place this rod in position, remove the knurled button (E 35), push the rod in the socket, groove downwards. Tighten button (E 35). Place the lens in position and raise the support (E 33) until it is in contact with the lens. Tighten the knurled button of the support.

Matt box:

Bellows type matt boxes can be supplied.

- CIPAR (F 57), with two mounts for 60x85 mm. filters, one of which is free to swivel.
- ROPAR, with two mounts for square 76x76 mm. filters, one of which is free to swivel.

The swivelling filter-holder may be used for polarising filters or for a graduated sky light-filter.

12/120 mm. Zoom

This lens has been chosen as standard zoom for the Eclair because of its quality and focal range. The rigid construction of the "CA" mount ensures a perfect seating of the lens and eliminates any risk of vibration which would be harmful to definition. The zoom should be inserted in the place provided in the camera case CICOE. Do not forget to replace all the protective caps.

The zooms are generally supplied with a focussing handle which is engaged by pulling out the boss and released by pushing it in. On request, the zooms may be supplied with a focussing lever instead of the handle.

The geometric openings (f—) are engraved in white, and the photometric openings (T) are in red.

Other lenses

Many well-known lens manufacturers offer their products with a "CA" standard mount and all over the world excellent lenses are available with the "C" universal mount.

The **Eclair 16** shutter is characterized by its large diameter and the fact that it rotates only once per image. It has therefore only one blade which, by passing very close to the aperture, ensures maximum definition. As it cuts the aperture horizontally, it reduces to the minimum the stroboscopic effect of other systems.

The shutter opening is adjustable (with the camera stopped) between 5° and 180° . The adjustment is in steps of 10° between 10° and 180° .

The adjustment is carried out as follows:

1. Unlock the turret (E 50) as shown in Section III.
2. Turn the turret through 90° (photograph D), push it in slightly to retain the position.
3. Push the lever (E 37) through 90° on to "Reflex".
4. Using the knurled wheel (E 36) turn the shutter until the blade covers about the half of the aperture.
5. Move the lever (E 37) to "réglage obturateur" and keep it in this position.
6. Push and then rotate the button (C 23) in the direction required to adjust the shutter. The desired opening is obtained when the corresponding figure is at the edge of the reflex-mirror.
7. The lever (E 37) automatically comes back to the position "moteur". For the reflex viewing, if the camera is equipped with our multi-program "BEALA" motor, the mirror always stops on viewing position. With other motors it may be necessary to rotate the shutter to bring the reflex-mirror to the viewing position. This is carried out as follows:
 1. Move the lever (E 37) through 90° to "Reflex"; it remains in this position.
 2. Turn the knurled wheel (E 36) until the image appears in the viewfinder.
 3. Push lever (E 37) back to its initial position (motor). If operation 3 has not been carried out, the camera will run noisily and may not run at the correct speed. However, no damage can result in this condition.

The **Eclair 16** is usually equipped with a **Multiduty motor** (code BEALA): See booklets 7006 and 7007

Power: 12 volt direct current

Speed: a) 24 and 25 frames/second
pilot frequency: 50, 60 or 100 cycles set by switches
b) variable speed from 4 to 40 frames/second servo controlled with a regulation of 2 %.

Clapper: three-position switch: automatic clapper, no clapper or manual clapper.

On specification the following regulated motors can still be supplied:

Power supply: 12 volt direct current

25 f/s. 50 cycles with synchro generator and automatic clapper (Bloop)	Code: BLOTU
25 f/s. 100 cycles with synchro generator and automatic clapper	Code: CLAMO
24 f/s. 50 cycles with synchro generator and automatic clapper (Bloop)	Code: BLOBO
24 f/s. 60 cycles with synchro generator and automatic clapper (Bloop)	Code: BLOMU
24 f/s. 100 cycles with synchro generator and automatic clapper	Code: CLIPE

The above regulated motors include a pilot lamp (E 41) which goes off as soon as the motor does not run at synchro speed.

Electrical connection of regulated motors

The four-pin "Cannon" socket on the motor connects the supply cable. The start switch is next to the "Cannon" socket. A 50, 60 or 100 cycle generator, depending on the type of motor, supplies the synchronisation frequency to the BAKEL or CIBIN battery by means of cable CICAB.

A four-core CICAB cable feeds the motor on 2 cores and transmits through the other two cores the synchronization frequency to the magnetic recorder.

Speed regulation

A built-in regulator controls the speed to a tolerance of $\pm 0.5\%$; there is no need therefore for a tachometer. As soon as the control-light (E 41) lights up, even weakly, the filming speed is guaranteed. If the light does not go on, synchronization is not guaranteed. Since the lighting power of the bulb depends on the amperage of the battery the brilliance indicates the state of charge of the battery.

Automatic clapper

Every time the camera starts, the light E 48 goes on for 0.3 secs. which will fog 6 or 7 frames; the light then goes out and a pilot frequency is sent to the magnetic recorder. When editing, the synchronization of the film-image with the sound tape is obtained by aligning the last image completely fogged with the beginning of the pilot frequency.

In the case of "BLOOP" motors, the blackening of the frames is similar, but during that time the camera sends an 8 volt direct current supply to the recorder oscillator (e.g. Nagra); this oscillator transmits a 1000 cycle audible frequency which is superimposed on the modulation of the magnetic tape. On the editing table synchronization is obtained by making the last frame completely fogged coincide with the 1000 cycle frequency.

Caution:

Due to the fact that a reversal of polarity would result in the destruction of electronic components, the following points should be observed:

- a) never use supply cables wiring and polarity of which is unknown; in doubtful cases, check that the connections have been properly made as indicated:

Driving motors

pin 1 12 volts (minus)

pin 4 12 volts (plus)

pin 2 pilot frequency

pin 3 pilot frequency

as per diagram CIR 897 of booklet No. 7007.

- b) Do not use transformed current because the actual power supplied is difficult to determine and varies considerably according to the charge: a transformer which indicates 16 volts when it is not functioning may, for example, fall to 8 volts when the camera starts. Only the transformer supplied by Eclair will assure efficient operation.

Two types of 12 volt cadmium-nickel batteries are supplied for the **Eclair 16**:

- in a plastic box (code BAKEL)
- with a leather belt (code BACIN)

These two batteries have the same characteristics and performance.

Technical Characteristics

Composition	10 insulated cylindrical cells type SAFT VR 3.5
Nominal voltage	12 volts
Capacity	3.5 Ah
Weight	BAKEL 2.100 kgs. (cells only account for 1.5 kgs.) BACIN 2.300 kgs.

The performance is close to 90% for a discharge rate of 2 to 3 amps. which corresponds to the average consumption of the **Eclair 16**.

Duration of power	from 6 to 10 400-foot reels
Wiring	see diagrams 898 A and B
Galvanometer	Schoeller galvanometer type 564.60421.1
Presentation	BAKEL unbreakable black polyethylene box, 230x160x40 mm. with carrying belt BACIN black leather belt with pockets

Note

The batteries are always supplied discharged after a complete cycle of charge and discharge.

Charger (Code CIBRE)

Technical Characteristics

Size	175x50x50 mm.
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Power supply	115 or 220 v. alternating current by voltage selector; 50 or 60 cycles
Weight	0.740 kg.
Check feature	a control light goes on as soon as the charger is connected to the mains
Safety	fuse on the alternating current, type 01 0.25 amp.
Rate of charge	320 mA.

1. Charge

Pull out the voltage selector button, and position it to 115 or 220 volts as required.

Connect the charger to the mains:

- the control light comes on
- if the control light does not come on, check the 0.25 amp. fuse

Set the switch to "charge" indicated by "C".

Connect the four-pin Cannon socket of the battery to the charger with the standard CICAB cable.

Charge for 14 hours. ✱

2. Partial charge

Very often the battery will be recharged before having been fully utilized: the following table indicates the charging time necessary:

number of 120 m. magazines used	1	2	4	8	or more
number of hours of charge	3	6	8	14	

3. Maintenance charge

If the battery is not to be used the same day as it was recharged

- set the switch to "maintain" marked with an "E"
- full charge can then be maintained for any length of time

Batteries

The battery thus remains fully charged as this makes up for the slow discharge of the battery at rest, and for the consumption of the charge controller, about 5 mA.

4. Charge indicator

Discharged battery: the pointer is in the red area

Charged battery: the pointer is in the middle of the white area

If, while the camera is operating, the pointer is between the two areas for an 11.5 voltage, the battery will only last for one or two 120 m. magazines.

5. Caution

Between 10 and 20°C below zero, the power consumption of the camera is doubled: it should therefore be kept in mind that the charge of one battery will only last for 3 or 4 magazines.

Never use an incomplete section of the battery as the cells would be unbalanced and the polarity of some of them could be reversed.

6. Maintenance

No maintenance is necessary. Check the wiring from time to time. Never alter it. However, if a battery does not hold its charge, or if the duration of its performance reduces, it should undergo the following operation:

- a) discharge the complete battery down to 9 volts
- b) discharge each cell using a 1-Ohm resistance inserted between the terminals, down to 0 volt.
- c) let the cells stand for one hour
- d) recharge the battery for 18 hours

If then the battery has not regained its full performance it is because one of the cells has been damaged and must be changed. A new cell can be inserted into the battery only under the condition that **all** the cells have a zero voltage.

7. Old rectangular batteries (CIBUR-CIBUN) SAFT VOL 4-cells

Connections should conform to diagram CIR 897 for

- a) use of the BEALA multiprogram crystal motor
- b) use of regulated motors 24 or 25 f/s. 50 or 60 cycles which do not have the extra Cannon socket for the "Nagra" bloop (diagram CIR 892).

With respect to BLOTU, BLOBO and BLOMU, they must be modified to conform with diagram 895 (47 ohm resistance).

Note

For Perfectone EP6 All recorders, motors CLAMO and CLIPE (diagram CIR 891) can be used with both the above types of battery (diagram CIR 890).

For Perfectone EP6 A recorders, connection is as for the CIBUR-CIBUN batteries.

General

This co-axial magazine has two compartments: film-feed and take-up, toothed-sprocket and guide-rollers. Each side has a removable locking lid. Loading of the film feed side is carried out in a dark room or in a changing-bag in the case of normal reels of non-exposed film; it can be carried out in day-light with daylight loading spools. The loading of the take-up side part is carried out in daylight in both cases. To fit a magazine to the camera, or to change magazine, is work of seconds.

- a) **Daylight loading spools.** These are generally available for 100 and 200 foot reels. Eclair will supply spools with removable flanges, that can hold 400 feet of film, which provide the possibility of daylight loading the film feed side of the magazines.
- b) **Reels.** The non-exposed film supplied on reels has a plastic core of ϕ 50 mm.

Counter. On the upper part of the magazine is a counter (F 52) which indicates the number of feet or meters of film that remain. This counter automatically returns to zero. Two separate counters are provided either for spools or reels.

Side doors

On each door, film-feed side and take-up side, are two white plastic discs on which the cameraman may record information as to the emulsion used, the footage, etc. or any instructions for the processing laboratory.

Safety system

1. A torque limiter prevents mechanical damage in the event of a film jam.
2. If, for any reason, the loop disappears, a sound indicator (H 74) placed under the lower guide shoe (H 3) of the drive sprocket switches on and warns the cameraman.

It is important that the loop coming out of the magazine be 12 perforations long and have the same length at both ends of the gate (photograph I). A correctly formed loop also adds to steadiness and to the silence of the camera.

Placing the film in the magazine

1. Lay the magazine on its side, film-feed side upwards (photograph G).
2. Pull lid lock (F 59) to the left, slide lock button downwards and remove the lid by pulling and lifting at the back on the small flange provided.
3. Raise the arm of counter (G 52) to the locked-up position.
4. **Daylight loading spools.** Slide and lift the spindle lock (G 61) and lift off the flange (G 60). Place the spool on to the spindle and lock in place by fastening the spindle lock (G 61). Ensure that this catch is correctly seated otherwise it could rub against the lid and create noise. The non-exposed film may be wound with the emulsion externally or internally but the emulsion side must always be towards the top of the magazine.
5. Free the feed sprocket guide by lifting the axle (G 63) and moving the guide away from the sprocket.
6. Pass the end of the film, about 1 inch., under the roller, then on to the feed sprocket (G 67), taking great care that the perforations are located on the sprocket; the emulsion side of the film must be towards the shoe (G 64), close the feed sprocket guide.
7. Replace the lid by inserting the front edge into the magazine and sliding the lid forward ensuring that the lid is firmly located. Slide the safety lock into place.

The loading can then continue in daylight

8. Turn over the magazine so that the take-up side is upwards. Remove the lid as indicated above. Turn the take-up spindle as marked by the arrow (counter clockwise) until about 4 inches of film emerge into the magazine.
9. Open the upper and lower pressure guide rollers (H 70) and (H 73). Place the film on the sprocket drum maintaining a loop as indicated

by the engraving on the plate. Close the upper pressure-guide (H 70). Turn the take-up spindle counter clockwise, whilst pressing the pressure plate (I 77) inwards, until about 30 inches of film have emerged above the pressure plate.

10. Pull gently on the film until the sprocket wheel turns to ensure that no slack film remains inside the magazine between the sprocket wheel and the pressure plate (I 77).
11. Press in the pressure plate (I 77) and slide the end of the film through the lower opening of the pressure plate and the film guide.
12. Pull the film through between the lower part of the sprocket (H 76) and the pressure guide-rollers (H 73) leaving a loop of 12 images (about the width of two fingers); shut the lower pressure guide rollers making sure that the perforations are located on the sprocket wheel.
13. Pass the film over the roller (H 72), and wind the film onto the take-up core (or spool), ensuring that the film takes up in an anticlockwise direction, emulsion outwards.
14. Replace the take-up side lid.

Reel: The loading is carried out in the same way as for the daylight loading spool, except that

- a) it is not necessary to remove the flange (G 60) from the magazine
- b) the operations 1 to 7 inclusive must be carried out in a dark room.

Form of the outside loop

Although this operation has already been carried out when loading the magazine, it is important always to ensure that the loop is of the correct length before snapping the magazine on-to the camera.

1. Remove the aperture plate cover by pressing button (C 25) and ensure that the plate is clean.
2. Always check that the magazine loop is of the correct length (12 images) and evenly distributed in the magazine.
3. Attach the magazine to the camera by inserting the two lower guides (G 65) in to the slots (C 28) of the camera (under the aperture plate). Pivot the magazine on the location slots and ensure that the tongue of the lock engages correctly in the magazine.

Always push over the safety catch (C 27) so that it engages in the top of the magazine.

Removing the magazine

1. Push safety catch (C 27) to the right.
2. Hold the magazine in one hand at the same time press button (C 24) with one finger of the other hand.

Note

When the shooting is terminated, replace the aperture plate cover and the magazine nose protector.

Connection

With the lever (E 37) on "Moteur", connect the battery to the camera, using the supply cable with the four-pin Cannon socket (E 39).

In the case of a multiprogram BEALA motor, the socket is on the right hand side of the motor.

After setting the focus and aperture, set the camera running by pressing the button (E 38). For the BEALA motor, press button (10) (see booklet 7007).

Warning systems

Two warning systems are provided:

a) Loop warning

b) Torque limiter

a) the magazine gives a distinctive warning if the loop is lost.

In such a case, proceed as follows:

1. Stop the camera and remove the magazine
2. Check the loop (chapter IX). If the film is coming entirely from the top of the box redivide it evenly as already indicated, i. e. 6 frames at the top and 6 frames at the bottom. Re-attach the magazine on the camera and start running. If the fault persists, check the loading of the magazine in a changing bag: there is probably a film jam or damaged perforations.
3. Check the three following points:
 - cleanliness of the aperture plate
 - correct operation of spring loaded side pressure guide (C 24).
 - correct operation of the magazine pressure plate

Checking the loop warning device

To make sure that this safety system is working well, we suggest that from time to time you carry out the following test:

- load a magazine normally **but with no loop outside** (any fogged film can be used)
- fit the magazine on the camera
- start the camera

the loud clattering noise should be evident.

We recommend that this test is made before the first film is shot so that you are familiar with the noise of this warning device.

- b) The magazine is also provided with a noise making clutch which operates when a film jam occurs. This clutch releases the driving shaft of the magazine, thus protecting the film and the camera mechanism. As soon as the warning sound is heard, stop the camera and check the magazine loading in a changing bag.

Checking the torque limiter

For the same reason as for the loop warning check as follows:

- fit a magazine to the camera but with no lid on the take-up side.
- start running and press with the thumb on the take-up sprocket drum (H 76).

A similar but louder noise to the loop warning should be apparent.

Note

Do not carry out the above noise making tests with magazines of series A - B - C - D - E and F.

Cleaning the aperture plate and the magazine pressure plate

With the shutter open and using a clean chamois leather occasionally moistened with a **small amount of alcohol** clean the plate, rubbing up and down. Care should be taken not to catch the claw (C 18) or the counter-claw (C 22) with the chamois.

If there are deposits in the channel, particularly along the side pressure plates, remove them carefully with a tooth pick or preferably a manicure orange stick. Never use any metal object.

It is important that the spring load pressure guide (C 24) on the right of the channel) and the pressure plate of the magazine (I 77) operate smoothly and freely. The spring pressure of the pressure guide is 60 grs. If this guide does not work satisfactorily the equipment should be returned to the supplier for adjusting.

Avoid the use of brushes since they are generally dirty and have loose hairs. If a hair is caught in the claw slot it may damage the movement, if it is caught in the window it will very likely appear on the projection of the film.

Cleaning the magazine

The sprocket drums and the pressure plate roller-guides may be cleaned with a fluff cloth slightly moistened with alcohol. For the interior it is preferable to use an air syringe.

Note

Never lubricate any moving part of the camera. All moving parts are permanently self lubricated. For the optical parts use an air syringe. Any other cleaning, even with optical or above all tissue paper, could slightly scratch the surfaces.

As for all cinematographic equipment for professional users, a general overhaul carried out from time to time by the maintenance service of your supplier will avoid troubles and waste of time and money.

It is generally very difficult, without using a sound meter, to determine the noise level of a camera. In fact, the noise is sometimes subjective and depends on various factors, such as:

- surrounding noise
- reflecting surfaces (walls, ceiling, etc.) of a room or of the scenery
- the position the listener relative to the camera
- age of film used
- etc.

We recommend that you always use new film and, most important, leave no unexposed film in the magazine for any length of time.

On request we will measure the noise level of your camera.

13.7 ECLAIR NPR 16 CAMERA* (Figs. 13-10, 13-11)

NOTE: All directions are from the Operator's point of view.

13.7a Base

None. An *angled cradle* (not shown) with a flat bottom fitted with a $\frac{3}{8}$ "-16 tapped hole to accommodate a tripod lockdown screw is used whenever the camera is to be mounted on a tripod. The camera motor inserts into the felt-lined cradle up to its hubs, which are located at each side of the motor ON/OFF switch. The camera is secured to the cradle by a lock screw located at the bottom of the cradle.

13.7b Motors

To mount: Insert motor drive shaft into female receptacle located at bottom of camera body. Swing lock blades inward to secure motor.

*Manufacturer states the designation "NPR" stands for Noiseless Portable Reflex.

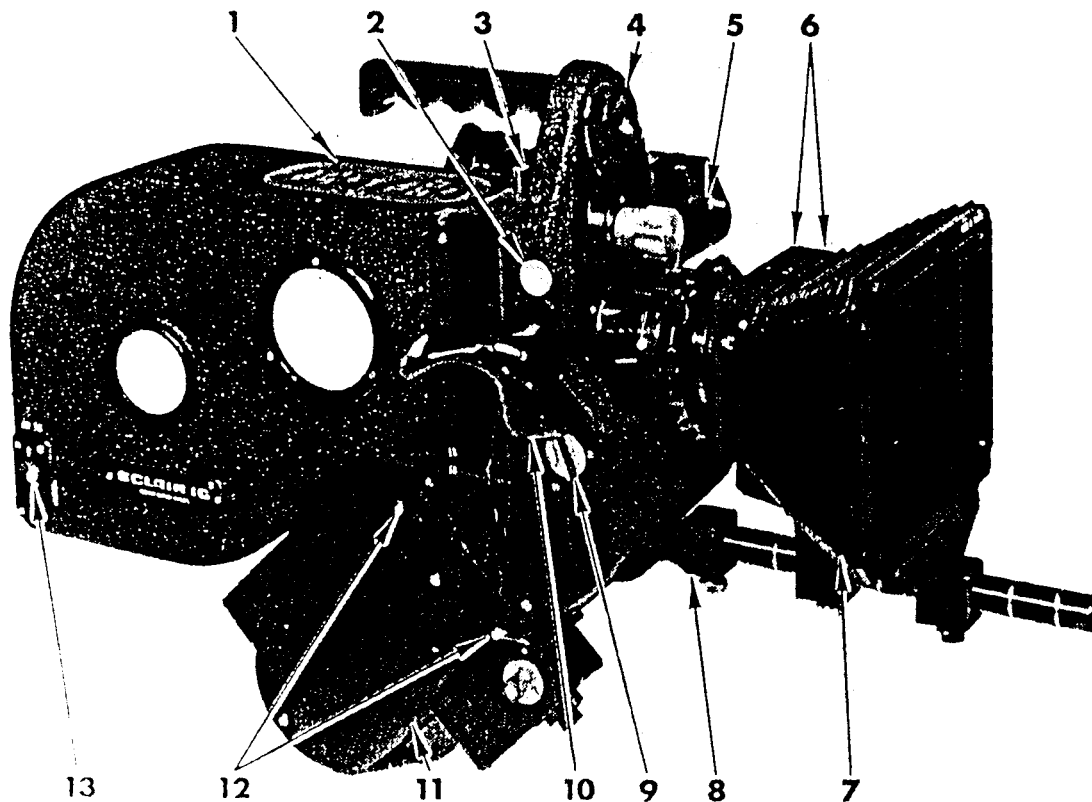


Fig. 13-10. Eclair NPR with standard lens and matte box (right side).
Courtesy of Eclair International Diffusion.

- | | |
|------------------------------|--|
| 1. Magazine footage counters | 7. Sunshade |
| 2. Magazine-lock button | 8. Matte-box rod socket |
| 3. Magazine-locking cam | 9. Variable shutter control |
| 4. Turret | 10. Thumbgrip (optional accessory) |
| 5. Viewfinder position-lock | 11. Governor-controlled (constant-speed) motor |
| 6. Matte-box filter holders | 12. Motor lock blades |
| | 13. Magazine lid lock |

To remove: Hold hand under motor. Swing four lock blades away from motor. Motor will drop free.

Governor-controlled (constant-speed) motor (shown): Pilot light at top left side indicates motor running at 24 fps when lit. There is *no* inching knob on the motor.

Variable-speed motor (not shown): Has a built-in electronic tachometer. Tachometer registers 0–40 fps in increments of five frames per second. A high-speed/low-speed selector switch is located at the left side of the motor. For 0–25 fps, set selector for low; for 20–40 fps, set selector for high.

A speed-control knob is located below the high/low switch. Rotate clockwise for fast, counterclockwise for slow.

No reverse; no inching knob on the motor.

NOTE: A minimum of 12V DC is required to run the camera with a 400-ft load.

CAUTION: Application of more than 14V DC or any AC will damage a governor-controlled or variable-speed DC motor.

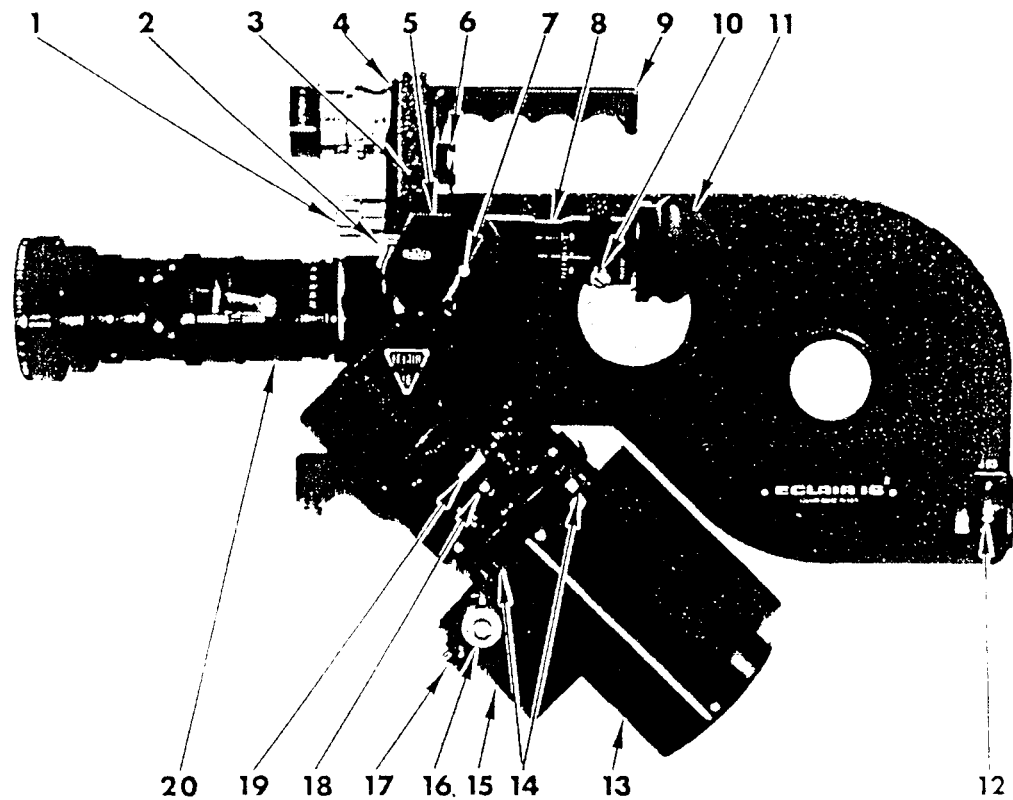


Fig. 13-11. Eclair NPR with varifocal lens (left side). Courtesy of Eclair International Diffusion.

- | | |
|-----------------------------|--|
| 1. Turret lock knob | 11. Eyecup |
| 2. Viewfinder-position lock | 12. Magazine-lid lock |
| 3. Automatic clapper | 13. Governor-controlled (constant-speed) motor |
| 4. Auxiliary lens mount | 14. Motor-lock blades |
| 5. Prism box | 15. Power-line receptacle |
| 6. Magazine-locking cam | 16. Cradle hub |
| 7. Eyepiece locking screw | 17. ON/OFF switch |
| 8. Viewfinder | 18. Shutter-control lever |
| 9. Carrying handle | 19. Inching knob |
| 10. Dioptics lock | 20. Taking-lens position |

The following motors are available for the Eclair NPR:

Variable-speed motor: 8/12V DC (set at 8V: 0–25 fps; set at 12V: 20–40 fps).

Governor-controlled (constant-speed) motor: 12V DC (24 fps); 12V DC (25 fps).

Synchronous motor: 120V AC 60 Hz (24 fps); 120V AC 50 Hz (25 fps); 220V AC 60 Hz (24 fps); 220V AC 50 Hz (25 fps).

Crystal-controlled motor: (for cordless double system sound recording): 12V DC (60 Hz signal to tape recorder); 12V DC (50 Hz signal to tape recorder).

NOTE: The 12V DC crystal-controlled motor can be utilized as follows: 1. Cord type sync operation (cable from camera to recorder). 2. Cordless type sync operation (crystal generated reference frequency to camera and recorder). 3. Mains Reference Sync (camera motor follows the *frequency* of the local house power, the “mains,” via an

intermediate transformer). (The motor is *not* powered by the house voltage.) 4. Playback (camera motor will follow frequency of a pre-recorded sync pulse on the tape). 5. Multiple camera sync operation (more than one camera in sync with only one recorder in use). 6. With an additional accessory attached, it becomes an 8–40 fps variable-speed motor.

13.7c Power line

Input to camera (see Fig. 13-11) inserts into a four-pin receptacle below the ON/OFF button at the front of motor: pin no. 1, ground (minus); pins no. 2 and 3, synchronous pulse; pin no. 4, plus.

Lock holds ON/OFF button down. To release, push up on lock.

13.7d Turret: Two-position. The lowest lens port is the taking lens.

To rotate: Turn central turret lock knob toward “D” (desserer: unlock). Pull outward and swivel turret 180°. Push in until seated. Turn lock knob toward “S” (serrer: lock) to secure. Pull knob to check seating.

13.7e Lenses

To mount: Insert bayonet base of lens into taking-lens port, with the split flange of the bayonet facing the turret lock (*up*). Turn in port counterclockwise until secure.

CAUTION: Snug lens only!

13.7f Viewfinder

Reflex. Image magnified 10×. Views more than full aperture. Area within scribe denotes full aperture. Some models may have a TV scribe (pumpkin) within the aperture.

To view through lens: Press eye against eyecup to open diaphragm.

To lock eyecup diaphragm open: Press firmly on eyecup.

To close eyecup diaphragm: Push eyecup to side.

To align reflex mirror for viewing: Turn shutter-control lever (at left side of camera housing) to “REFLEX,” (Fig. 13-11) then rotate milled inching knob (forward of the lever) until the shutter clears the eyepiece. Return the lever to “MOTEUR” (motor).

To alter finder position for viewing: Loosen viewfinder-position lock (the lever at the left of the knurled coupling ring). Rotate eyepiece parallel to the camera in desired direction (eyepiece will rotate 360° and lock in any position).

To swivel eyepiece at right angles to the camera: (To set it for the left or right eye) loosen eyepiece-locking screw on left behind the prism box (Fig. 13-11).

To focus: Remove the taking lens, or unlock turret and set it in a horizontal position. Loosen dioptics lock. Focus on scribe of ground-glass aperture.

To detach eyepiece: Loosen viewfinder coupling (knurled nut next to camera body). Pull eyepiece out of housing.

Groundglass: Located inside the camera housing above the aperture. Nonremovable.

13.7g Sunshade/matte box (see Fig. 13-10)

Bellows/sunshade slides on a single rod (Fig. 13-10) which inserts into a socket below the taking lens. On some models, a cradle mounted on a rod, which is inserted into the socket, supports a zoom lens when the sunshade is not used.

13.7h Filters

Double holder in matte box houses two 2 × 2 in. glass holders (Fig. 13-10). The rear holder rotates.

No filter slot for gelatines in the camera body.

13.7i Door: None.

13.7j Footage counter: None.

13.7k Magazine: 400-ft.

To mount:

1. Pull film from the face of the magazine and set the loops (see Sec. 13.8f and Fig. 13-14). 2. Set lower front of magazine into notches at the bottom of the gate plate. Press the circular magazine lock button (Fig. 13-10) at the top-right side of turret housing. Tilt magazine up and forward until it is flush with the camera plate. 3. Release the magazine-lock button and check the magazine for proper seating. If the lock button is not quite flush with the side of the camera and the magazine is tight, it is secure. 4. Push the locking cam at the top of the camera toward the eyepiece (to the left) and force the wedge into the top of the magazine recess.

To remove:

1. Push locking cam away from the eyepiece (to the right) to unlock the wedge. 2. Hold magazine. Depress the circular magazine-lock button. 3. Lower the back of the magazine. Remove.

13.7l Tachometer

None. Correct fps rate is determined on the governor-controlled (constant-speed) motor by observing the glowing pilot lamp on the left side of the motor. When the lamp flickers or goes out, the motor is out of synchronism (see Sec. 13.7b).

13.7m Shutter: Variable; 5–180°.

To change shutter opening:

1. Either remove taking lens or unlock turret and set it in a horizontal position. 2. Turn shutter control lever to "REFLEX." 3. Rotate the inching knob until the leading edge of the shutter reaches the left side of the aperture (nearest the eyepiece). 4. Turn the shutter-control lever down to "REGLAGE OBTURATEUR" (shutter adjustment) and hold. 5. Push the raised variable-shutter-control knob *in* and turn it until the desired shutter setting appears on the scale along the edge of the mirror. 6. Release the shutter-control knob, and

return the lever back to "MOTEUR" (motor). 7. Check the adjustment often.

13.7n Lubrication

None. All bearings and gears are permanently lubricated.

13.7o Cleaning

Optics: Clean with bulb syringe or camel's-hair brush.

CAUTION: Use *only* the bulb syringe on the reflex mirror, as the silver is delicate and lifts easily.

Manufacturer recommends the following maintenance *each time magazine is changed:*

1. Remove emulsion build-up with orangewood stick. 2. Wipe plates with chamois or soft cotton handkerchief (not linen). 3. Clean single pulldown claw spring with soft brush. Avoid entering into slot.

CAUTION: The spring can be knocked out when cleaning it. Repair is a factory job.

13.7p Weight: (with 400-ft load) 21 lb.

13.7q Troubleshooting

<i>Trouble</i>	<i>Probable Cause</i>
High-speed whirr	REFLEX lever not set to "MOTEUR" (motor)
Knocking noise	Film jam or lost loop
Pilot light out while camera is running	Low battery or battery cold
Bloop light stays on in eye-piece	Low battery
Pilot light remains on after camera is turned off	Relay not pulling; low battery
Camera will not start	Dead battery; power line faulty
Camera stops while filming	Film jam
Perforation tear, accordion pleat	Dirty pressure plate; loop uneven
Motor runs at excess speed	Transistors burned out by overload of battery voltage
Motor smells of "burning"	Wrong polarity of plugs
Magazine "chatter"	Lost loop
Noisy camera "grind"	Shrunken film stock; loose magazine
Clutch "chatter"	Magazine jam

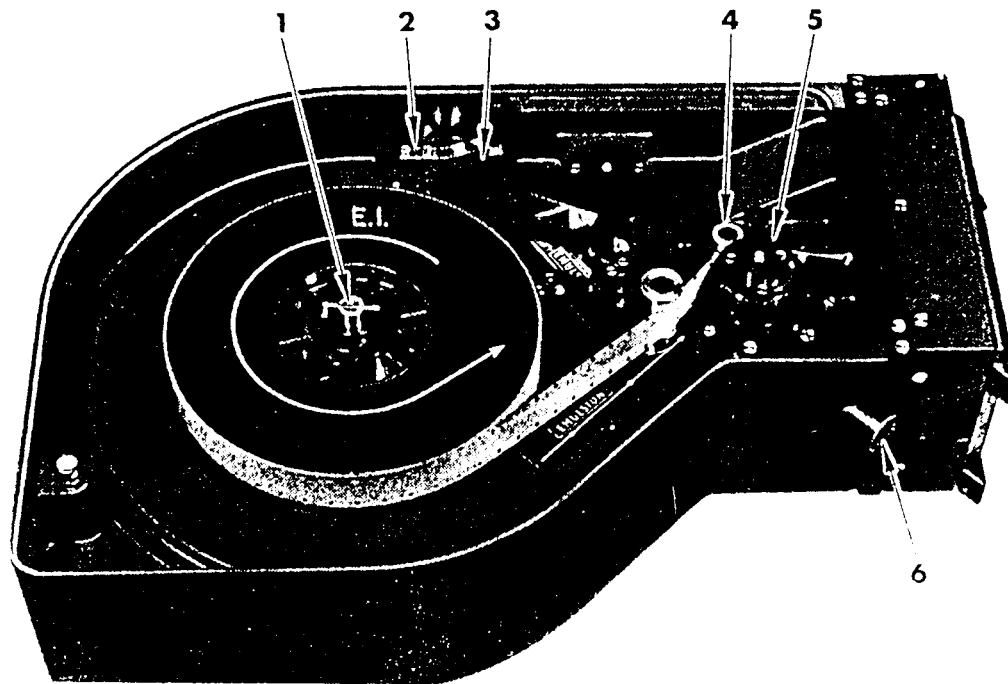


Fig. 13-12. Eclair NPR magazine (feed side). Courtesy of Eclair International Diffusion.

- | | |
|------------------------|-------------------------------|
| 1. Spindle lock | 4. Feed sprocket-guide roller |
| 2. Spring-arm holder | 5. Feed sprocket wheel |
| 3. Footage-counter arm | 6. Magazine drive shaft |

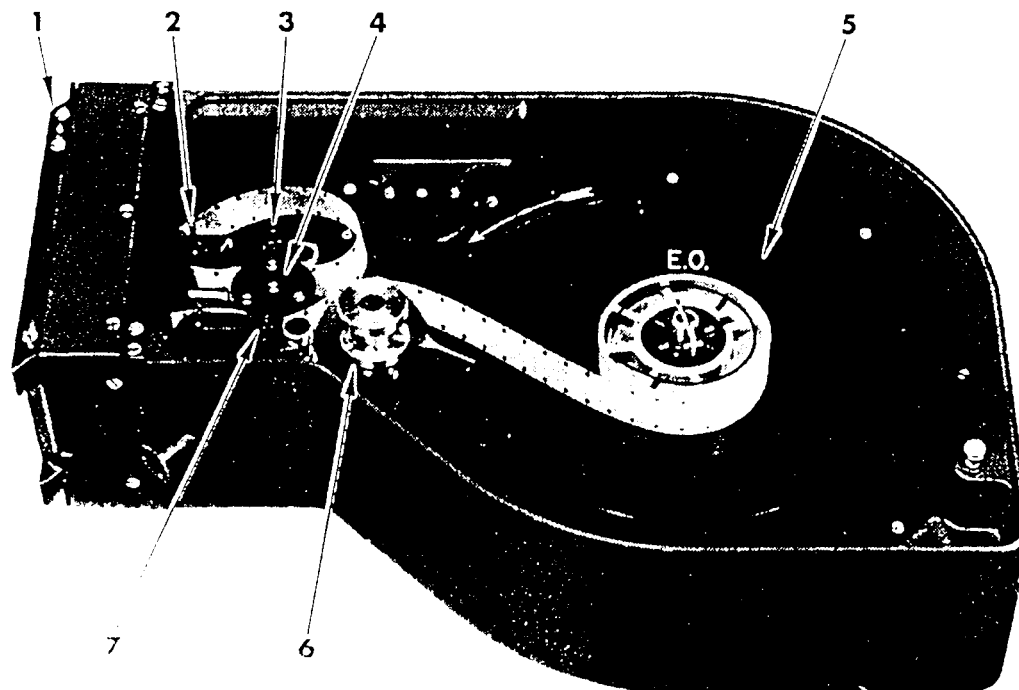


Fig. 13-13. Eclair NPR magazine (take-up side). Courtesy of Eclair International Diffusion.

- | | |
|---------------------------------|-----------------|
| 1. Pressure plate | 4. Sprocket |
| 2. Film-guide opening pin | 5. Flange |
| 3. Upper take-up sprocket guide | 6. Guide roller |
| 7. Lower take-up sprocket guide | |

13.8 ECLAIR NPR 16 MAGAZINE (Figs. 13-12, 13-13)

13.8a Type: Coaxial.

13.8b Capacity: 400-ft.

13.8c Lids

Two. Located at each side of magazine, which is divided longitudinally. Both lids are lip- and dog-locked.

To remove: Slide safety lock toward rear of magazine. Push lock button down. Lift rear of magazine up and off.

13.8d Feed

Right half. (Magazine pressure plate should be at the loader's right, the magazine drive shaft toward the loader, and the footage counters away from the loader.) Film (wound emulsion in) pulls off spindle counterclockwise. Film (wound emulsion out) pulls off spindle clockwise.

NOTE: Feed interior is scribed with both emulsion-in and emulsion-out guide lines. Film wound emulsion-in should be loaded as pictured.

13.8e Take-up

Left half. (Magazine pressure plate should be at loader's left, the magazine drive shaft toward the loader, and the footage counters away from the loader.) Film winds on spindle counterclockwise, emulsion always out.

13.8f Loading

1. (Fig. 13-12) Remove feed lid. Swing footage-counter arm toward top of magazine and lock it into the spring-arm holder. 2. In darkness, remove film roll from can and bag. Place film, emulsion in, on the supporting flange (which rides the feed spindle) and pull film off the roll counterclockwise.

CAUTION: When loading single-perforated (B-wind) film, perforations must be toward lid on the feed side, away from the lid on the take-up side.

3. Lift sprocket-guide roller and push the guide *up* toward the top of the magazine. Place a few inches of film *between* the sprocket wheel and sprocket-guide roller. Depress guide to engage film on the sprocket. 4. Replace feed-side lid. Slide the right-hand side of the lid under the magazine lip and push down firmly. Cover will depress the pin on the spring-arm holder and release the footage-counter arm, which will drop onto roll. Check lock by attempting to lift the lid with the fingernails. 5. Flip the magazine over and remove the take-up lid.

NOTE: Take-up loading may be done in the light.

6. (Fig. 13-13) Rotate take-up spindle counterclockwise to transport film through the upper channel. Wind sufficient film through and follow scribed film-guide lines. 7. Lift upper take-up sprocket guide. Push guide *up* (toward top of the magazine). Insert film *between* the sprocket and upper take-up sprocket guide. Push guide down to

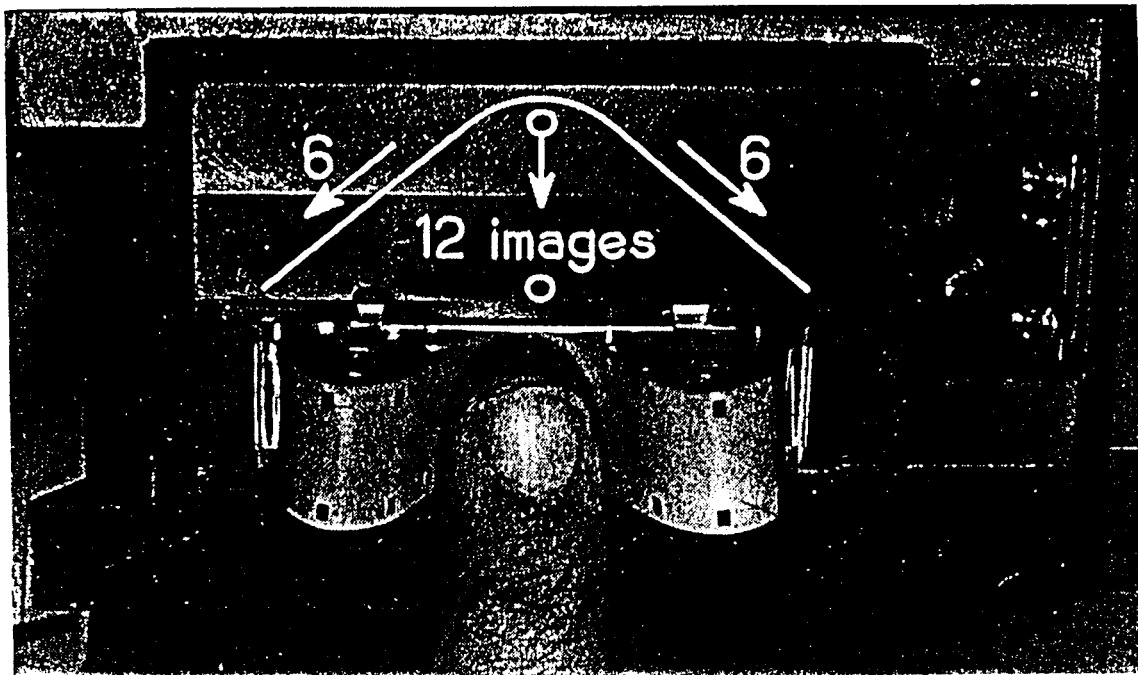


Fig. 13-14. Eclair NPR—dividing the loop. Courtesy of Eclair International Diffusion.

engage film on sprocket. 8. Push top of pressure plate in. Rotate take-up spindle counterclockwise until approximately 2-1/2 ft of film exits the magazine take-up side above the pressure plate.

CAUTION: It is very important that the film be taut between the sprocket and top pressure-plate exit.

9. Release top of pressure plate. Push bottom of pressure plate in. Place two fingers over the pressure pads (forefinger against the pads). Insert film end below the pressure plate and draw the film into the magazine take-up side again. Hold film taut against the index finger (the two fingers provide a rough guide for setting the 12-13-frame loop). 10. Keeping fingers in place, lift lower sprocket guide and push the guide toward the bottom of the magazine; insert the film *between* the sprocket and lower sprocket guide. Push the guide *up* to engage film in the sprocket. 11. Remove the two fingers from between the film and pressure plate. An arc of 12-13 frames should be outside the magazine; if not, adjust. 12. Place any excess film which may be *inside* the magazine *over* the guide roller (follow scribed line). Wind film counterclockwise (emulsion out) onto take-up core. Insert core onto spindle, allowing little or no slack. 13. To check threading, rotate magazine drive shaft clockwise. 14. Slide left hand of lid under magazine lip; push down firmly and engage. Slide safety lock on lid toward pressure plate.

NOTE: On older magazine with the tension knob in the door, rotate the tension knob counterclockwise to remove slack.

15. *To set loops* (Fig. 13-14): Press the forefinger into the center of the 12–13-frame arc to form two equal halves which, when pushed back into the magazine, will form the upper and lower internal loops. (There should be six frames for the top loop, six to seven frames for the bottom loop.)

NOTE: (a) Flanges in newer magazines are held in place by a spindle lock (Fig. 13-12) that fits horizontally across the top of the spindle. Older magazines merely hold the cores by pressure fit. Flanges are removed from the magazine when daylight spools are loaded into the magazine. (b) Older magazines are equipped with flange-ejector buttons in the feed and take-up sides. Newer magazines do *not* have ejectors.

13.8g Unloading

In darkness, remove lid. Place index finger on core, thumb on edge of roll. Turn magazine over, remove film roll, and place exposed roll in black bag and can.

13.8h Footage counters

Two sets. Located at top of magazine. Subtractive in both feet and meters, in increments of 5 ft and 2 meters. One set of counters, marked "ROULEAU," registers the amount of film on a darkroom-core load. The other counter, marked "BOBINE METAL," registers the amount of film on a daylight spool.