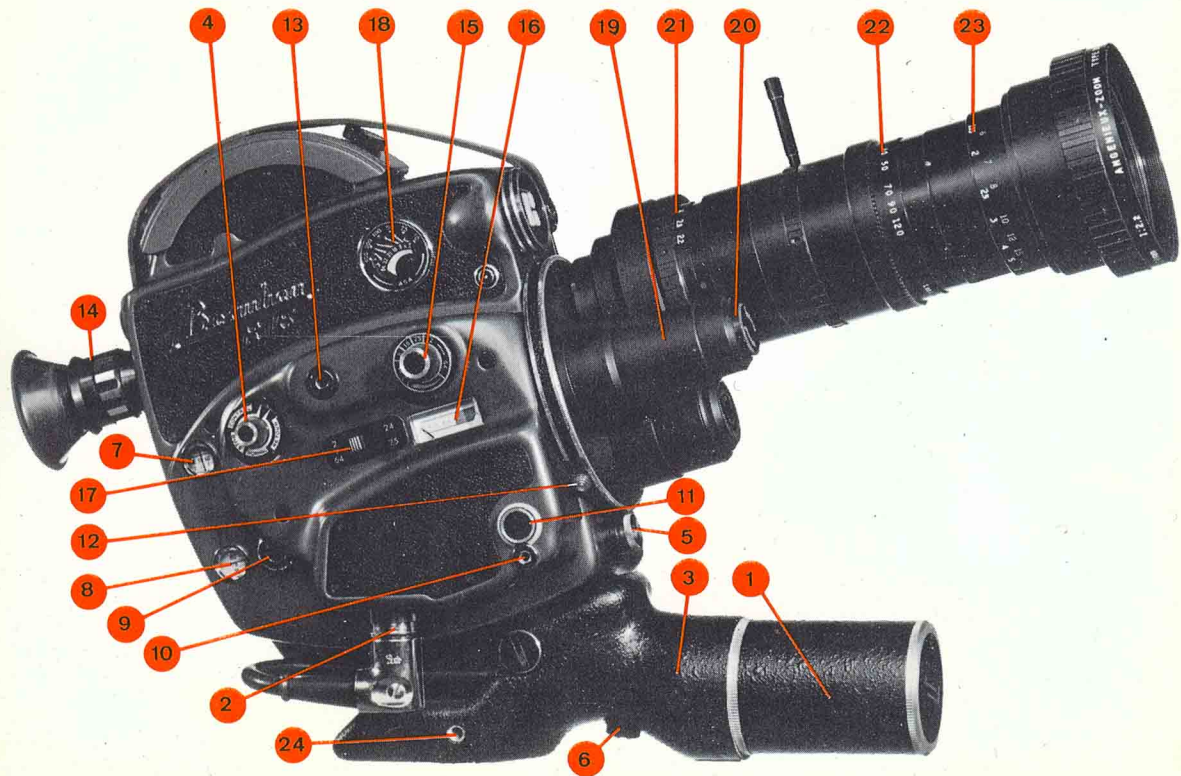


*Beaulieu*  
R 16 "Automatic"



- |           |  |           |   |
|-----------|--|-----------|---|
| <b>1</b>  | Battery                                  | <b>14</b> | Viewfinder eyesight correction adjustment                 |
| <b>2</b>  | Camera power socket                      | <b>15</b> | Filming-speed control knob                                |
| <b>3</b>  | Handgrip for battery                     | <b>16</b> | Filming-speed indicator window (tachometer)               |
| <b>4</b>  | Master control switch                    | <b>17</b> | Speed range converter switch (24-25 f.p.s.; 2-64 f.p.s.)  |
| <b>5</b>  | Release button with cable-release socket | <b>18</b> | Film-sensitivity/filming-speed adjustment for light meter |
| <b>6</b>  | Camera power-supply and safety switch    | <b>19</b> | Reglomatic automatic diaphragm control                    |
| <b>7</b>  | Footage counter                          | <b>20</b> | Reglomatic cut-out switch                                 |
| <b>8</b>  | Frame counter                            | <b>21</b> | Diaphragm setting ring                                    |
| <b>9</b>  | Frame counter zero-reset knob            | <b>22</b> | Focal length adjustment ring                              |
| <b>10</b> | Single frame release                     | <b>23</b> | Focussing ring  |
| <b>11</b> | Sync pulse generator socket              | <b>24</b> | Wrist-strap fixing nut                                    |
| <b>12</b> | Turret locking catch                     |           |   |
| <b>13</b> | Remote-control release socket            |           |   |

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## ELECTRICAL DATA

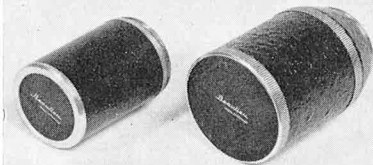
These instructions are intended for the R 16 Automatic (Model B) camera, but are perfectly suitable for the R 16 B Reflex Control Semi-Automatic single-lens or turret-type cameras; special paragraphs, applying exclusively to the types, are included.

To achieve the best results, you should make yourself perfectly familiar with the camera's characteristics and with the possibilities offered by its various features. This is why we suggest that you should first "get acquainted with your camera".

## DESCRIPTION

### 1. Battery:

The R 16 camera is powered by two types of nickel-cadmium batteries: the 500-milliamp battery, which allow you to shoot seven 100-ft films on a full charge, and the 1 000-milliamp battery, which will give power for sixteen 100-ft films, at 24/25 f.p.s. (1).



1

Number of 100-ft reels which can be exposed, according to battery type and filming speed.

Type of battery	Number of 100-ft reels		at 64 f.p.s.
	at 2 f.p.s.	at 24/25 f.p.s.	
500-milliamp'	1	7	14
1000-milliamp	2	16	32

2

If 200-ft reels are used, divide the above figures by 2. Filming times will vary according to reel-length and filming speed.

	2 f.p.s.	24/25 f.p.s.	64 f.p.s.
100-ft reels	32'	2'30"	1'
200-ft reels	65'	5'	2'

Current consumption drops by about 50 % between maximum and minimum filming speeds. But, on account of the increase in running-time, the number of reels exposed at 2 f.p.s. is less than at 64 f.p.s.

## 2. Camera power input socket

3

This connects the power supply to the camera, whether the batteries are housed in the camera handgrip or external to the camera.



### 3. Handgrip with built-in battery

This handgrip will take two types of batteries (500 and 1000 milliamp) with a screw-in connection. It comprises the camera power-supply and safety switch.

Other batteries are available for special applications.

### 4. Master control switch

The master switch has four positions (2) :

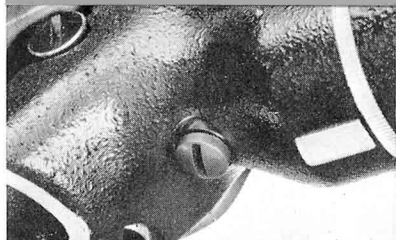
- at " Stop ", the camera is switched off;
- at " Normal ", the camera is ready for forward filming;
- at " Retour ", the camera is ready for reverse filming;
- at " Control ", battery tension can be checked (providing the camera power-supply switch is depressed, i.e. " on ").

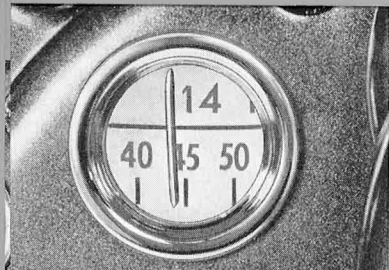
### 5. Release button and cable-release socket

The release button has two positions (3) :

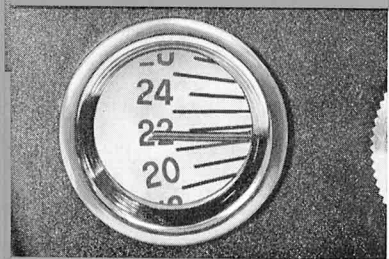
- " pushed in ": this sets the film running;
- " pushed in " and button turned clockwise through 90°: this position allows continuous filming.

When the button is released, the camera automatically stops with the image visible in the view finder (i.e. shutter closed). In the centre of the button is a threaded socket for fitting the cable release.

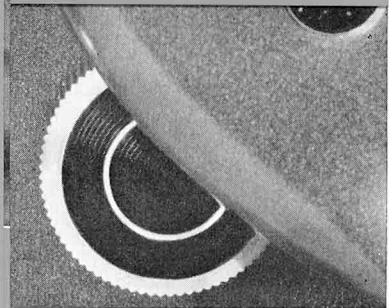




5



6



7

## 6. Camera power-supply and safety switch

This switch has three position (4) :

- " Off " position no power reaches the camera (button out);
- " On " position: when the handgrip is held, the switch is depressed and the camera is ready to operate.
- " Continuous " position: the switch is depressed and turned clockwise through 90° with a coin. This position is only used when the camera is mounted on a tripod, for remote-control filming, and for single-frame filming. (Never leave the switch in this position. for the battery would be flat within 6 hours),

The camera's operation is nevertheless controlled by the master switch and the release button.

## 7. Footage counter:

The footage counter shows, in meters on the upper scale and in feet on the lower scale, the length of film already exposed. This counter automatically returns to zero on loading the camera (5).

## 8 and 9. Frame counter and zero-reset knob

The frame counter is graduated from 0 to 100. A milled knob is provided for zero reset (6-7).

## 10. Single-frame release:

Single-frame filming is performed by means of a cable release screwed into the single frame release socket (each time you wish to expose a frame, depress the cable release button, with master switch set to normal and handgrip power-supply switch " on ").

### 11. Sync pulse generator socket:

This allows a 50-cycle, 25 f.p.s. or 60 cycle, 24 f.p.s. sync pulse generator to be fitted for lip-sync double system sound filming.

### 12. Turret locking catch:

This catch is found on all the cameras, but is only used on the three-lens turret model.

### 13. Remote control socket:

This socket takes a remote cable release .

### 14. Viewfinder eyesight-correction adjustment:

The eyepiece can be set so as to be perfectly adapted to the operator's eyesight.

### 15. Filming-speed control knob:

Sets the camera to the desired filming speed (8).

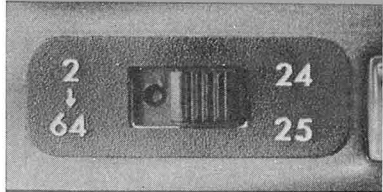
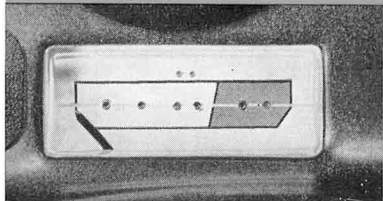
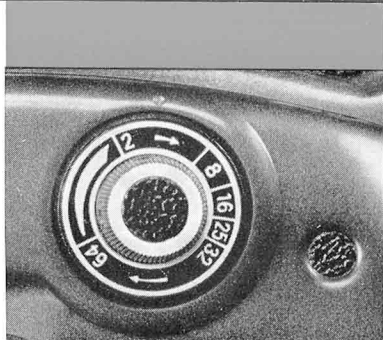
### 16. Filming-speed indicator window-(tachometer)

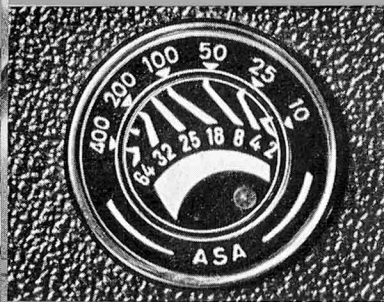
Its needle provides a visual check, on the graduated scale, of precise filming speed (the line of sight must be strictly perpendicular to the dial). The two upper dots give 24 (green dot) and 25 f.p.s. (red dot) for synchronous filming, when the filming-speed range switch is set to 24/25 f.p.s.). This tachometer allows high-accuracy speed setting when using a sync pulse generator for sound filming. With the switch in the 2-64 f.p.s. position, the lower scale indicates speeds between 8 and 64 f.p.s. (9).

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# **17. Speed-range converter switch (24/25 f.p.s. or 2-64 f.p.s.):**

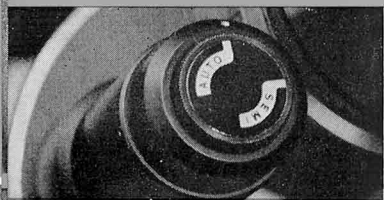
When switched to the left, the available speed range is from 2 to 64 f.p.s. When switched to the right, its purpose is to give a perfectly accurate definition of speeds of 24 or 25 f.p.s. This is of course essential for synchronous sound filming (10).

N.B. The converter switch should, as far as possible, only be manipulated when the camera is not operating.

11

# **18. Film-sensitivity/ filming-speed adjustment potentiometer:**

This knob makes it possible to set filming speed according to the sensitivity of the emulsion of the film loaded. This preliminary setting, connected with the light-metering system, ensures standardized exposure (11)



12

# **19. Automatic diaphragm control (Reglomatic)**

This device ensures automatic diaphragm control according to the amount of light falling on the cell through the reflex viewing system. Automatic adjustment lenses are removable.

# **20. Reglomatic cut-out switch:**

This is a two-position switch:

- In the "auto" position, the diaphragm is automatically controlled and thus adjusts the amount of light transmitted through the lens (12).
- In the "semi" position, the automatic system is cut out and the diaphragm must be set manually according to the cell's indications (needle in the viewfinder) (13).

13



12

## 21. Diaphragm setting ring:

In the " auto " position, this ring is positioned by a micro-motor controlled by a transistorized system which translates the light variations recorded by the reflex cell.

In the " semi " position, it must be controlled manually, according to the reflex cell's indications (variations in light can be checked from the needle visible in the viewfinder).

## BEFORE FILMING

### 1. Battery-charge check:

Before you start filming, it is a wise precaution to check battery charge. The voltmeter being built in with the camera, this is easy:

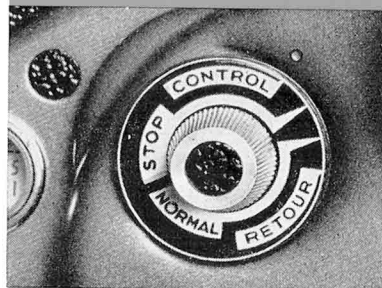
- a) Set the master switch to " Control " (14).
- b) Make sure the filming-speed converter switch is on " 2-64 f.p.s. " (15).
- c) Simultaneously depress the camera power-supply switch and the release button. The tachometer needle must swing into the red zone, and stay there (wait for about 30 seconds). If it drops into the white zone, power supply is deficient. The battery therefore needs charging (see paragraph 1 in the chapter on the use of accessories).
- d) If the battery is adequately charged, set the master switch back to " normal ", or to " stop " if you do not want to film immediately.

### 2. Loading the camera:

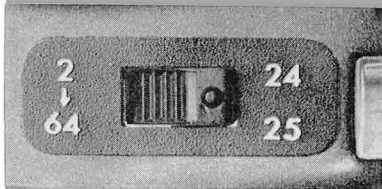
The camera should be loaded in the shade.

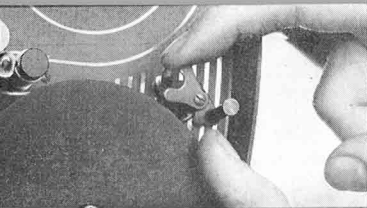
- a) Open the camera side plate by turning the catch as shown by the arrow. Remove the take-up reel delivered with the camera, being

14



15





16

careful to push the footage counter zero reset fork **(16)** (see use of this fork when using a 200-ft magazine, p. 00). Open the film gate

**b)** Unwind about 10" of the film leader. Place the feed reel on the feed spindle, fitting it snugly on to the square arbor. The film must wind out from the bottom, in the direction shown by the arrow.

**c)** Insert the film between the upper feed spindle and the feed guide. Film perforations should automatically be positioned on the corresponding spindle teeth. To ensure this, thread the film in, pressing the edge gently down and simultaneously switching the camera on **(17)**. Check that perforations are well meshed with the feed sprocket's teeth by gently pulling on the film.

Thread the film, with the appropriate loops as shown on the film feed path on the plate, and fit it into the gate.

Close the gate pressure plate: if the film is properly positioned the pressure plate should, on resuming its position, ensure perfect contact with the gate. This should be checked by gently moving the film in the normal (forward) direction. The claw should then be positioned so as to fit into a perforation.

**d)** After setting aside a sufficient length of film to make up the loop required after the gate, thread the film between the lower feed sprocket and guide, and proceed as in **c)** above to ensure proper seating.

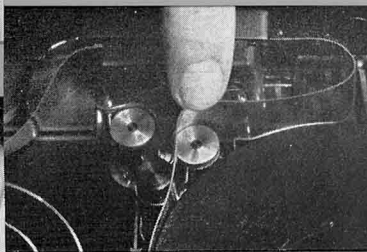
**e)** Thread the leader end into the hub of the take-up spool, and take up 3 or 4 turns.

**f)** Lift the footage counter zero-reset fork. Replace the take-up spool on its spindle. Release the fork, which should return to its position above the upper side of the spool **(18)**. Run a few inches of film to make certain that everything is in order, that the loops remain at the right length and that the feed sprockets teeth are properly engaged.

**g)** Replace the camera side-plate, setting the locking catch to "f" (closed). The camera side-plate can in fact only be locked in place if the gate pressure plate has been properly positioned.

**h)** The film can be run until the red area of the footage counter, showing that all the leader has run through the gate, coincides with the vertical hairline.

17



### 3. How to hold the camera:

When using a battery-handgrip, the photograph opposite (19) shows how the camera should be held. Using this grip, the camera power-supply and safety switch is held in the "depressed" or "on" position by the thumb. This means that the camera has power available and is ready to film. For forward filming, all you now have to do is to press on the release button (the master switch being in the "Normal" position).

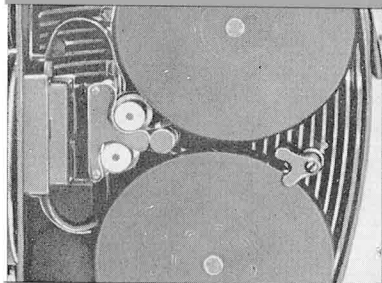
**IMPORTANT:** In no case should the camera be stopped by first releasing the camera power-supply switch for this interrupts the electric circuit and the shutter may stop in any position; this might lead to fogged frames whereas, if the release button is first released, the camera stops with its shutter closed, thus avoiding any risk of fogging. The camera power-supply switch can then be released.

This power-supply switch also acts as a safety device. In the "Off" position, i.e. when no pressure is applied, the camera's power-supply is cut off.

### 4. Adjusting the viewfinder:

- a) Bring the zoom system to the "wide-angle" position.
- b) Set the focussing ring to infinity.
- c) Set the Reglomatic switch to "semi".
- d) Set the diaphragm to maximum aperture.
- e) View a distant point, and turn the eyepiece's milled ring until the subject is perfectly sharp. The viewfinder is then adjusted to your eyesight. An operator usually wearing glasses can take them off, for comfort's sake, and do all his focussing with the naked eye once the eyepiece is adjusted to his own eyesight (withing limits of +2 to -2 diopters) (20).

18



19



20



## 5. Choice of filming speed:

With the BEAULIEU R16 camera, you can film at any speed between 2 and 64 f.p.s.

### Normal use :

- Set the speed range converter switch to the left-hand position (2 to 64 f.p.s.).
- Set the masterswitch to "normal"
- Depress the release button.
- Turn the filming-speed control knob until the tachometer needle stops on the selected speed. This can be done using the trailer alone. Speeds corresponding to the dots on the lower part of the filming-speed dial (reading from left to right) are as follows:

1st point	8 f.p.s.
2nd point	16 f.p.s.
3rd point (red)	25 f.p.s.
4rth point	32 f.p.s.
5th point	48 f.p.s.
6th point (red)	64 f.p.s.

### Synchronous sound filming :

To ensure perfect synchronization between picture and sound, it is vital that you should film at 24 or 25 f.p.s. (according to local mains frequencies: 24 f.p.s. with 60-cycle supply, 25 f.p.s. with 50-cycle).

- Set the filming-speed converter switch in the right-hand position (24/25 f.p.s.).
- Set the master switch to "normal"
- Depress the release button.
- Turn the filming-speed control knob until the tachometer needle lies strictly on the appropriate dot on the upper scale .



— The left-hand dot (green) indicates 24 f.p.s., that on the right (red) 25 f.p.s.

**NOTE:** *Never* let the camera run empty at speeds in excess of 32 f.p.s.

— The tachometer dial has no marks corresponding to 2 or 4 f.p.s.

These speeds' extreme slowness makes this check superfluous.

Table of exposure times for different filming speeds:

Filming speed in f.p.s.	Exposure time in fractions of a second
2 .....	1/5
4 .....	1/10
8 .....	1/20
16 .....	1/40
24/25 .....	1/62
32 .....	1/80
48 .....	1/120
64 .....	1/160

## 6. Adjusting exposure control (filming-speed/film-sensitivity):

— Bring the chosen filming speed opposite the film's A.S.A. rating (in the photograph opposite, **(21)** the speed chosen was 25 f.p.s. and the film's sensitivity 100 A.S.A.).

It is always possible to set a film sensitivity lying between those marked. The interval between two successive degrees of sensitivity corresponds to the ratio between two successive apertures. Intervals in the sensitivity scale, from one mark to the next, are equal. Should you for example wish to set a sensitivity of 150 A.S.A., all you need do is to set the filming-speed mark half-way between 100 and 200 A.S.A.

21





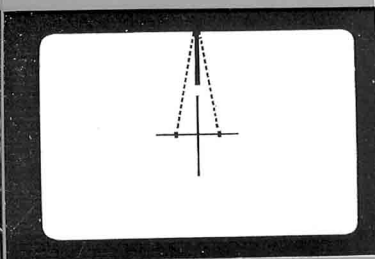
22

There is a mathematical relationship between emulsion speed and shutter speed (the latter being dependent on filming speed). Thus, filming at 16 f.p.s. with 50-A.S.A. film corresponds to filming : at 32 f.p.s. with 100-A.S.A. film, or at 8 f.p.s. with 25 A.S.A. film, and exposure-times will be identical.

**CAUTION:** When filming under conditions of exceptionally poor lighting, at very slow speeds (2 or 4 f.p.s.) it is essential to use an independent, highly sensitive light meter if the film used has a rating of under 20 A.S.A.

Thus, for filming-speeds slower than 8 f.p.s., it is necessary to use the "semi" setting.

The filming-speed film-speed system is adjusted to give perfect results under normal lighting conditions. In case of special lighting conditions (against the light, glare, snow- or seascapes) or of desired special effects, this adjustment can be adapted. In order to obtain longer exposure, all you need do is set a lower film sensitivity. Conversely in order to achieve underexposure, you must set a higher film rating. For example, at a filming speed of 25 f.p.s. with a 100-A.S.A. film, in order to increase exposure by half an aperture, you only have to bring the 25 f.p.s. mark half-way between the 50 and 100 A.S.A. marks (22).



23

## 7. The automatic diaphragm and its use:

- Check that the Reglomatic cut-out switch is set to "auto".
- Switch on the camera power-supply.

To achieve proper exposure, the needle visible in the viewfinder must remain on the vertical axis of the crosshairs. Outside the tolerance zone (see diagram opposite), (23) lighting conditions are unsuitable for filming.

If the needle lies to the right of this zone, there is not enough light; therefore, if the subject allows it, use a slower filming speed. If the needle lies to the left, the light is too strong, and a neutral grey filter should be used in front of the lens, or a higher filming speed adopted. The automatic camera can be fitted with the following lenses:

- Angénieux 17 -68 mm zoom f 2.2. (24)
- Angénieux 12,5-75 mm zoom f 2.2. (25)
- Angénieux 12 -120 mm zoom f 2.2. (26)

Although these lenses are interchangeable, they have to be specially adjusted for each camera.

**CAUTION:** The automatic camera will take most 16 mm cine lenses with C mounts, and still-camera lenses the rear diameter of whose lens-mount does not exceed 50 mm in the first 60 mm. Under such conditions, the camera can only be used in a semi-automatic capacity. It will also take extension tubes and microscope adapter rings.

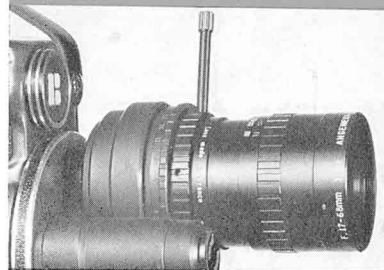
## 8. Manual aperture setting:

Whether using a semi-automatic camera (single-lens or turret-type) or a fully automatic one, all you have to do to set the diaphragm by hand is to aim at the subject, and to bring the needle visible in the viewfinder within the tolerance limits by operating the diaphragm setting ring. The cell lying behind the lens, no special corrections are required when using extension tubes or filters.

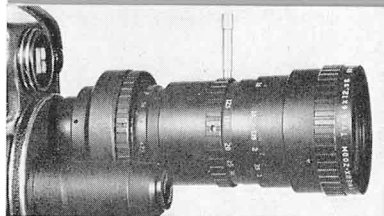
## 9. Turret-type cameras:

BEAULIEU 16-mm cameras can be fitted with a 3-lens turret. To change the lenses' position, all you need do is to depress the turret

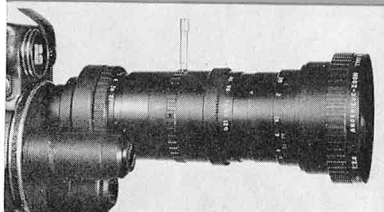
24

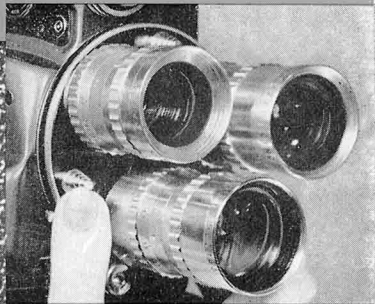


25



26





27

locking catch, thus freeing it (27). To swivel the turret (either clockwise or anticlockwise), use the three knobs fitted between the lenses, to avoid any risk of modifying their settings. Once the catch has clicked into place, the lens chosen for filming is properly aligned (upper position) (28).

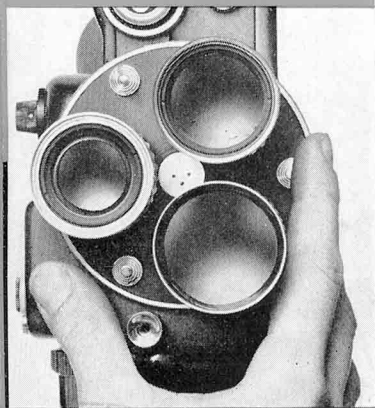
The lenses most usually used to meet all needs are:

- a normal lens of 25 mm focal length;
- a wide-angle lens of 10 mm focal length;
- a telephoto lens of 75 mm focal length.

All standard lenses with a standard C mount and a film plane distance of 17.52 mm can be fitted on the turret, providing the rear portion of the thread, when drawn in to a maximum (i.e. when focussed on infinity) does not exceed 3.8 mm (0.1496 ins). The turret-type camera can also be fitted with a zoom lens, or with very long-focus telephoto lenses. On account of their weight, the turret should be locked.

For exceptionally heavy lenses, a turret reinforcing plate is available to avoid any risk of warping (29).

Single-lens R16 cameras are usually fitted with a zoom lens. Both single-lens and turret-type model B cameras can be converted to automatic providing the lenses designed for this purpose are used.



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## 10. Framing and focusing:

We assume that the viewfinder has been adapted to the operator's eyesight. This being so, the subject to be filmed must be sharp on the focussing screen. To achieve this, the lens focussing ring must be turned until the subject comes into pin-point focus. This adjustment should, whenever possible, be made with the diaphragm at maximum aperture. If the camera is fitted with a zoom lens, this adjustment should be made with the zoom set to telephoto.

## 11. Unloading the camera:

As soon as the letter " F " appears in the footage counter window the usable portion of the film has been exposed.

Run the camera until the letter " F " has moved right across the window. Open the camera.

Using the motor, finish winding the film on to the take-up spool until it is free from the feed mechanism. Never pull on the film if it is still retained by the sprockets, otherwise you might tear it or cause film fragments to fall into the mechanism. In order to unload unfinished film (e.g. to change emulsion speeds), open the pressure plate and remove the film guide (hold it by both ends and pull upwards; to replace, press home until secure).

## SPECIAL APPLICATIONS

### 1. Use on a tripod:

Before fitting the camera on the tripod, do not forget to set the camera power-supply switch to " continuous " (i.e. switch depressed and rotated through 90° clockwise with a coin). After use, do not forget to release the switch.

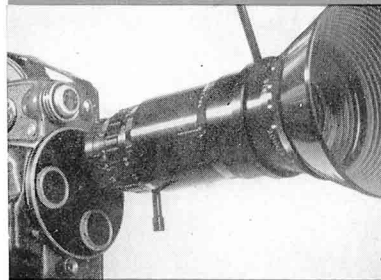
### 2. Filming in reverse:

Set the master switch to the " Retour " position.

Reverse filming has a dual purpose:

- filming in reverse for special effects.
- Rewinding to obtain double exposures, or in order to change emulsions while shooting.

Except when reverse-motion *filming* is required, the lens be capped before operating.





By looking at the footage counter and the frame counter, the length of film rewound is easily checked.

NOTE: Reverse can be used at any filming speed, but cannot be used with the 200-ft. magazine.

### 3. Single-frame filming:

This is for cartoon or puppet animation, or for time-lapse cinematography. Under these circumstances, the camera must be operated on an appropriate tripod or stand, using a cable release screwed into the special socket (30).

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Frame exposure time are then as follows:

2 frames per second =  $1/5$  second

4 frames per second =  $1/10$  second

8 frames per second =  $1/20$  second

16 frames per second =  $1/40$  second

25 frames per second =  $1/62$  second

32, 48 and 64 frames per second =  $1/80$  second.

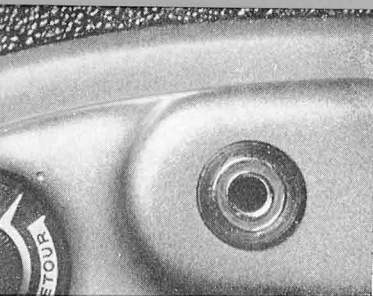
**CAUTION:** When single-frame filming is involved, never put the release, cable in the continuous filming position.

Similarly, never attempt single-frame filming when in reverse. The two operations attempted simultaneously might jam the mechanism or overload the electric circuits.

### 4. Remote-control filming:

This facility, which exists with the BEAULIEU camera, will be appreciated by all concerned with making films calling for unobtrusive filming (animal wild life, children at play, and so on) or involving a certain danger (big game, motor races, acrobatics, scientific experiments with an unpredictable outcome, etc.).

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Set the camera power-supply switch to "on", and do not forget to cap the viewfinder eyepiece.

**a) Mechanical remote control**

In this case, remote control is achieved by means of a long cable release or, better, with a pneumatic or electro-magnetic system operating a short cable release fitted to the appropriate socket.

**b) Remote control by electric lead :**

- Plug into the jack socket (31).
- Set the release button to "continuous"

**c) Remote control by radio :**

All radio-control sending and receiving sets are suitable (a single channel is enough).

- Connect the receiver jack plug to the camera's special socket.
- Set the release button to "continuous"
- Control camera operation by means of the transmitter set.

The maximum effective distance is dependent on the radio equipment's power. Trials should be carried out before attempting to film.

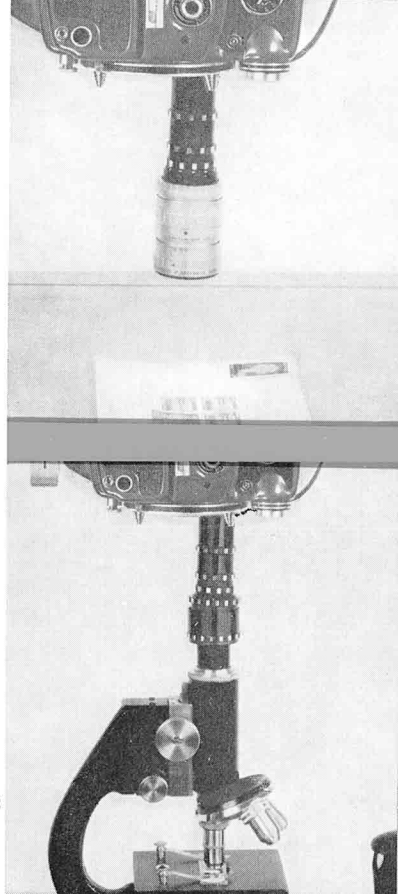
**IMPORTANT NOTE:** Using line or radio remote control, the camera may stop with the shutter either open or shut owing to the automatic closing circuit's being cut off. Moreover, however speedily the Reglo-matic system may react, a few frames are necessary at the beginning of each sequence for it to adapt to true lighting conditions. (Do not forget that, since the camera power-supply remains "on", the battery is continually being discharged). Under normal filming conditions or with a mechanical remote-control system, the camera stops shutter closed.

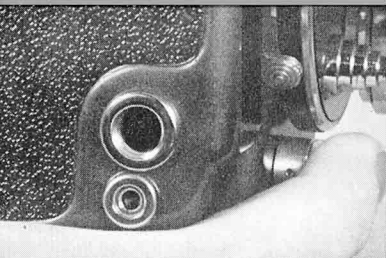
## 5. Micro- and macrophotography:

The BEAULIEU cameras reflex viewfinder is of the greatest value for this type of filming, allowing as it does precise focussing, appreciation

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of field depth and framing. For macrophotography, a set of 5 extension tubes ranging in length from 5 to 50 mm (0.2" to 2" approx.) is available. They are mounted between lens and camera according to the reproduction ratios desired (32). For microphotography, an auxiliary ring mount is fitted between the microscope eyepiece and the camera, the lens having been removed. According to the magnification required, one or more of the extension tubes should be fitted between microscope and camera (33).

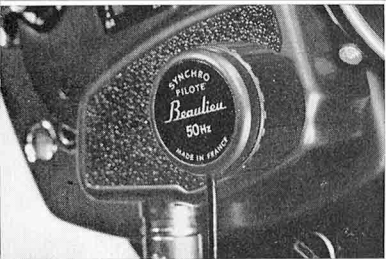
Focussing is carried out directly on the camera focussing screen. For these uses, the built in light-meter cell offers an enormous advantage, for there is no need to calculate the correction to be applied to diaphragm aperture. As for all other uses, all you need do is to bring the needle over the crosshairs in the view-finder, in the first case by adjusting the diaphragm setting ring and, in the other, by regulating the microscope's light source.

## 6. Sound synchronization

The BEAULIEU camera is fitted with a 1 rev. per frame drive shaft (34) to which may be adapted a sync pulse generator (35) allowing double-system sound synchronization with appropriate recording and projecting systems.

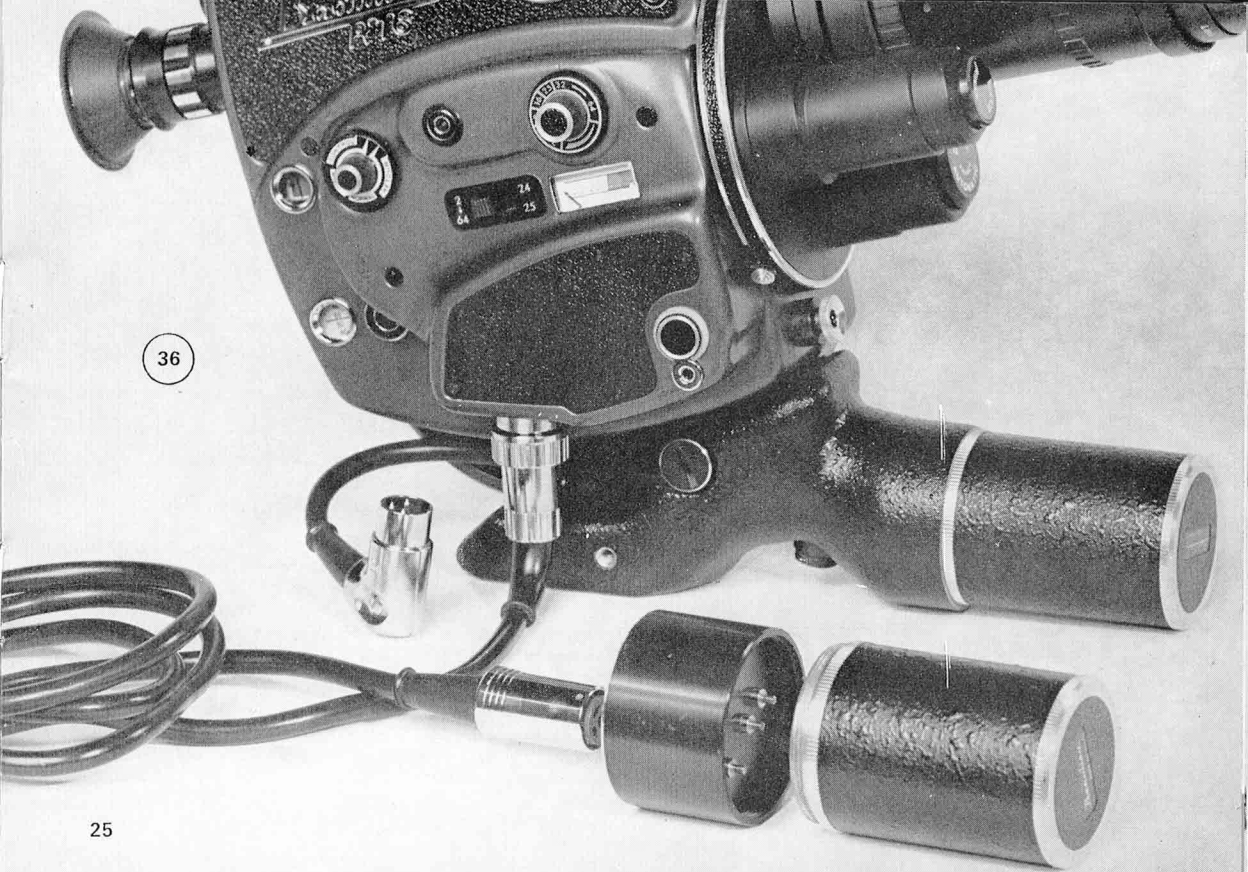
The sync pulse generator gives a 60-cycle pulse at 24 f.p.s. (or a 50-cycle pulse at 25 f.p.s.). The sync pulse generator is screwed into the side of the camera and a lead feeds the signal to a tape recorder with a signal recording head (NAGRA, Uher 1000, EMI L 4, etc.). The signal generator records on the tape a signal acting as an invisible perforation essential for sound/picture synchronization.

Later, when editing, the recording thus obtained on unperforated tape will be transferred to 16-mm perforated tape. From this tape two synchronization methods can, according to the type of projector to be used, be adopted:



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**Double-band projectors** (usually reserved for professional use). Synchronization and editing of the film and of the magnetic tape are performed on an editing bench with an electronic synchronizer. Once synchronized, film and tape can be simultaneously put through a double-band projector, the film providing the picture and the tape, the sound.

**16-mm optical or magnetic sound projectors:**

In this case the perforated tape (sound) is transferred by an optical or a magnetic process to the unperforated side of the 16-mm film (in this case, use single-perforation 16-mm film in your BEAULIEU R16). Only specialized laboratories are equipped to make prints with an optical or a magnetic sound track. Using this process, picture and sound will be on the same film, which can be projected with an appropriate sound projector.

## **7. Using the camera at very low temperatures:**

The BEAULIEU R16 camera will operate at temperature between  $-30^{\circ}\text{C}$  ( $-22^{\circ}\text{F}$ ) and  $+65^{\circ}\text{C}$  ( $+150^{\circ}$ ). But, at temperatures below  $0^{\circ}\text{C}$  ( $32^{\circ}\text{F}$ ), it is recommended that the battery should be protected from the cold, for instance by carrying it in your pocket. For this purpose the independent charging container (see next chapter) should be connected to the camera by means of a 3'3" cord.

In this case, either use an extra battery or replace the handgrip battery with a dummy battery pack screwed into the handgrip socket (36).

NOTE: Under these conditions, the camera power-supply switch will be cut out of the circuit, so do not forget to set the master switch back to "Stop" between sequences.



## THE ACCESSORIES AND THEIR USES:

### 1. Charging the batteries from a wall socket:

One of three types of charger should always be used for charging the batteries from the wall socket:

- 50-milliamp charger for the 500 milliamp battery;
- 90-milliamp charger for the 1000 milliamp battery;
- trickle charger, which can be used for all available batteries.

NOTE: Never charge a 500-mA battery with a 90-mA charger.

#### a) Charging a battery on the camera (37) :

— Check that the charger is set to the right voltage (110-220-V AC). This setting is not critical to within — 30 volts.

— Disconnect the handgrip lead from the power socket.

— Plug the lead into the charger.

— Set the camera power-supply switch to the "continuous" position (1/4-turn clockwise, using a coin).

— Plug the charger lead into the wall socket. (The charger's pilot lamp must light up for charging to take place).

Normal charging time is indicated on the back of the chargers: about 15 hours. (There is no risk of damaging the battery if 25 hours are not exceeded).

#### b) Charging a battery away from the camera (38) :

— Check that the charger is set to the right voltage (110-220-V AC).

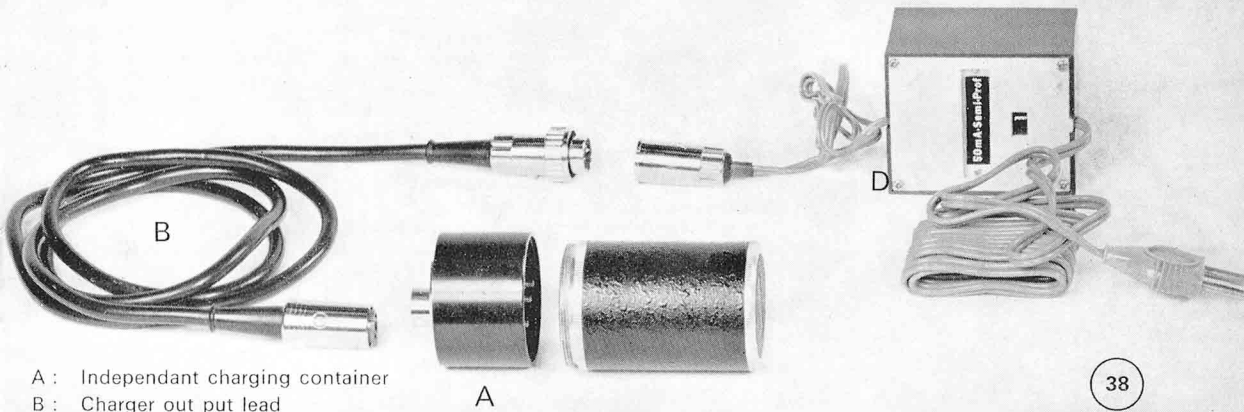
— Unscrew the battery to be charged from the handgrip and screw it on to the BEAULIEU independent charging container.

— Connect the charger out put lead to the container.

— Plug the charger lead into the wall socket. (The charger's pilot lamp must light up for charging to take place).

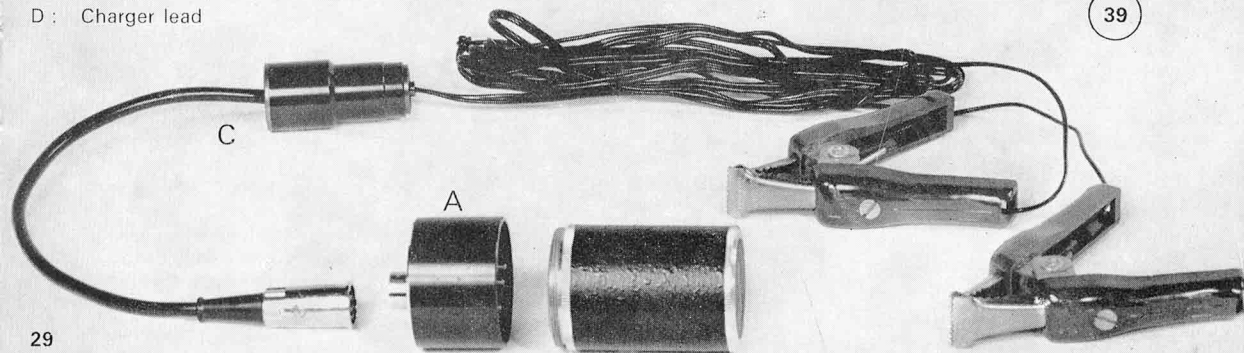
### 2. Charging the battery from a DC source (Car batteries, etc.):

The batteries can be charged from various types of 12-V batteries (car, boat, aircraft, etc.) (39).

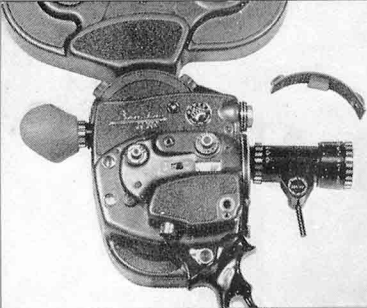


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- C: Charger out put lead on the battery  
D: Charger lead



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In such cases also, charging is carried out through two special types of DC/DC chargers: 50-mA and 90-mA.

— Screw the battery on to the charging container or the handgrip as before.

— Connect the charger lead to the charger.

— Connect the crocodile clips to the battery terminals (no attention need be paid to polarity). Charging time: about 15 hours.

In order to keep your batteries in good shape, you should charge them about once a month when they are not in use.

Never hesitate to charge your batteries after filming, even if they are not flat. This will keep them up to full power.

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### 3. Use of the 200-ft magazine:

#### a) Preliminary technical instructions :

The torque motor built into the magazine is driven by the camera battery. (Camera and magazine are connected by pressure contacts).

#### b) Fitting the magazine to the camera :

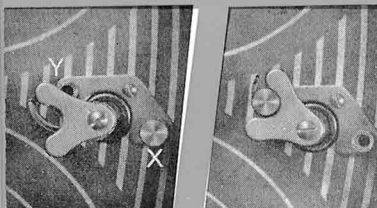
1. Undo the two camera cover plate retaining screws, and remove the cover plate.
2. Replace the cover plate by the magazine, and loosely screw the two knurled magazine retaining screws (40).

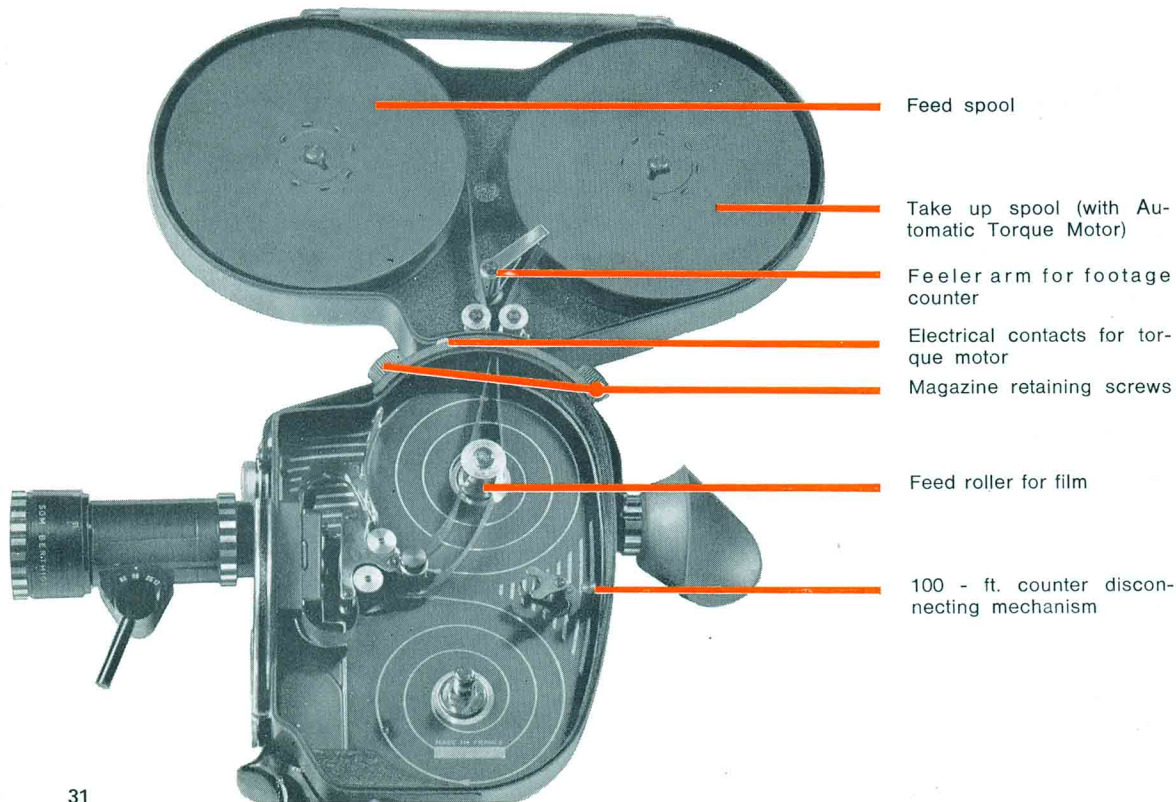
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**CAUTION:** The magazine side-plate must be on the same side as that of the camera.

3. In order to allow filming in perfect comfort, the 200-ft. magazine can be tilted forwards or backwards (41). It can thus be locked in the most suitable position. To do this, the two magazine

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Feed spool

Take up spool (with Automatic Torque Motor)

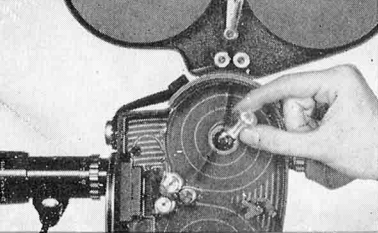
Feeler arm for footage counter

Electrical contacts for torque motor

Magazine retaining screws

Feed roller for film

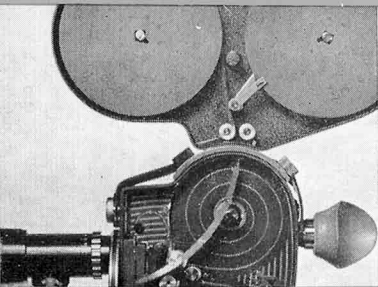
100 - ft. counter disconnecting mechanism



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retaining screws should only be loosely tightened.

- Hold the camera in your hands.
- Rest the 200-ft. magazine against your forehead.
- Adjust its position by tilting.
- Finally, tighten the two retaining screws.

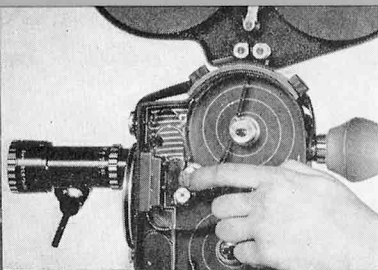


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### c) Loading the magazine and the camera :

Loading should be carried out in the shade.

1. Open the magazine and the camera side-plates.
2. When filming with a 200-ft. magazine, the camera's footage counter cannot be used, and must be disconnected by swinging the counter feeler arm away from the take-up reel and locking it out of the way with the small pin marked, which fits into the hole marked Y (42).
3. Put the feed roller supplied with the 200-ft. magazine on the upper spindle of the camera (43). (This roller will prevent the film from rubbing against itself).
4. Place the 200-ft feed spool on its spindle, pressing it firmly home on the square-section part. The film must feed out of the top (44).
5. Thread the film leader between the two feed rollers of the magazine, and introduce it into the camera, unrolling about 18" of film.
6. Thread the film through the upper feed sprocket and film guide, as indicated in the previous section entitled "Loading the camera" (45).



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NOTE: Once the film is half threaded between the upper feed sprocket and film guide, it will be easily positioned by pressing gently on it, running the camera mechanism at the same time.



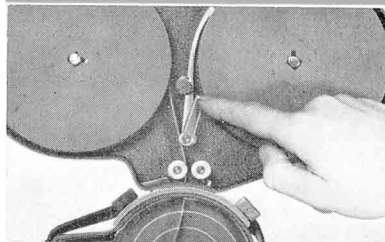
7. Lock the footage counter feeler arm by pushing it to the left (46). It fits into the central spindle to allow loading, and automatically comes back into position on closing the magazine. The footage counter on the back of the magazine shows the footage still to be used.
8. Thread the end of the film into the magazine once more, passing it to the right of film-guide roller and between the two rollers of the magazine (47). Remove the take-up reel from its spindle. Feed the leader into the reel hub slot and take up 3 or 4 turns rounds the hub as shown by the arrow, making sure that the end has remained in the slot.
9. Before replacing camera and magazine side-plates, run the camera for a few seconds to make certain everything is running correctly.

#### d) Magazine base plug :

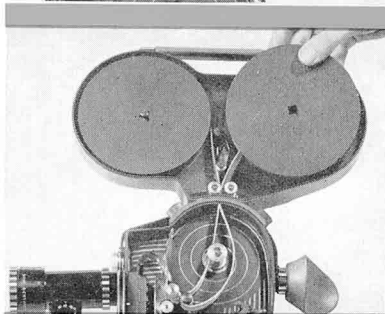
The black rubber plug supplied with the 200-ft magazine makes it possible to prepare a second magazine beforehand. This system allows considerable gain of time when changing magazines, for loading is simplified: all you have to do is to place the magazine on the camera with its plug in place, then to remove the plug and to thread the film (48). When the magazine is not in use, the rubber plug (supplied with the magazine) should be replaced to keep out dust or foreign particles.

NOTE: The 200-ft. magazine *does not allow filming in reverse, or rewinding*. After using the 200-ft. magazine, do not forget to replace the camera cover plate before using 100-ft. rolls.

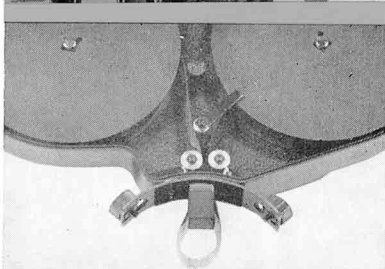
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## **MAINTENANCE**

### **1. Lenses:**

Lens surfaces must be kept perfectly clean.

External surfaces should be wiped with a clean, very fine and lint-free cloth. Never damp the cloth.

After filming, replace the lens cap.

### **2. Film gate:**

Clean the gate frequently (every 3 or 4 reels) with the small brush supplied with the camera. Once the feed spindle is removed, the pressure plate can be pulled back sufficiently to allow easy access. Feed sprockets can similarly be cleaned by pulling out the feed guides.

### **3. Reflex viewing system:**

The mirror and focussing screen can be reached through the film gate. Remove the lens: the mirror appears. Using the hand blower, remove any specks of dust which may adhere to the mirror, but never try to rub it clean.

### **4. Lubrication:**

Generally speaking, lubrication is unnecessary; but, every 3 years or so, the camera should be put into the hands of a BEAULIEU dealer for a normal general overhaul.

NOTE: the serial number of the camera, which should be mentioned in all correspondence with the BEAULIEU dealer, will be found either beneath the camera, on unlocking the handgrip, or inside the camera, by the side of the gate.

## ELECTRICAL DATA

Current and voltage: the camera's consumption is obviously dependent on filming speed. It lies between: 400 mA at 2 f.p.s. and 900 mA at 64 f.p.s.

Normal supply voltage: 7.2 volts (up to 8 V without danger).

The camera circuit is so designed that it calls for a very smooth DC supply for perfect operation. For this reason, if the camera is to be run off a AC wall socket, we recommend that only the authorized AC/DC converter be used. This unit is available on a special order basis.

### IMPORTANT :

Owing to the high-precision mechanism and circuitry of this camera, only authorized BEAULIEU power supplies should be utilized. Use of any other power-supply might result in severe damage to electronic components.

Generally, any use of unauthorized accessories or attachments is liable to void your warranty.

The Manufacturers reserve the right to make any modifications to the camera described in this instructions manual.