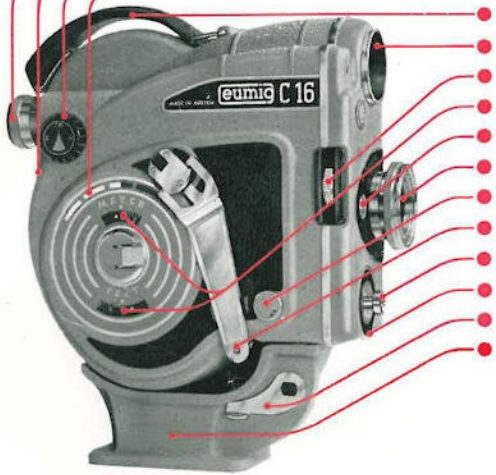
english



Adjustable view finder eyepiece
Bushing for cable release (single exposures)
Adjustment of view finder for normal, tele, and wide-angle shots
Power reserve indicator
Hinged carrying handle
Selenium cell of automatic light-meter
Knurled wheel for automatic diaphragm setting
Footage indicator
Visible diaphragm setting
EUMIGAR lens f:1,9, 25 mm
Adjusting knob for locking, normal release and continuous running
Crank
Release knob with bushing for cable release
Setting the frame speeds of 16—64 f. p. s.
Quick action lever for camera cradle
Camera cradle
Loop-formers, to be slid out
Pressure plate
Top and bottom sprockets
Setting the film speed

Fig. 1

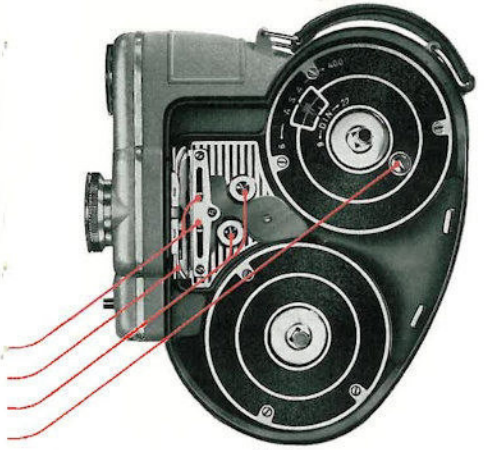


Fig. 2

CONTENTS

We are happy to welcome you as the owner of an EUMIG C 16. This 16 mm. camera is a precision instrument of the highest quality that will meet to the full any demands made on it. Before your EUMIG C 16 left our works, it was subjected to a series of stringent tests and most carefully regulated.
EUMIG was the first firm in the world to fit cine cameras with built-in exposure meters. All this know-how—no other firm in the world can approach us in this—has been used for the benefit of EUMIG C 16 and provides a guarantee for the trouble-free functioning of the camera.
Before you begin actual filming, please read this instruction booklet through carefully, and familiarize yourself with the various manipulations. This will avoid the waste of precious film.
Practise the manipulations first with the camera unloaded, but never run the camera at a higher speed than 32 frames per second if it is not loaded, as otherwise the mechanism will be damaged.

Fig. 3

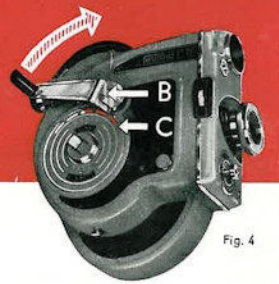


Fig. 4

BEFORE FILMING

For filming with a tripod, every EUMIG C 16 is provided with a quick-action camera cradle which makes possible rapid fixing and unfixing of the camera. A turn of the rapid-lock lever A (Fig. 3), and the camera can be removed from the cradle.

Winding

Swing over the crank, as shown in Fig. 4, and turn in the direction of the arrow until the tongue B engages. Now turn the crank clockwise as far as the stop. At one winding the motor transports over 16' (5 m.) of film at a constant speed (at 16 frames per second this corresponds to a running time of about 40 seconds).
The red-painted part in the curved slits of the disc C indicates how much motor-power has been used, the white-painted part shows how much film can be shot without rewinding.
The motor is provided with safety mechanisms preventing overwinding on the one hand, and on the other hand ensuring that the motor stops with the shutter closed if there is not enough tension in the spring. Therefore over-exposure and waste of film—the results of inadequate spring tension—are completely eliminated.
If the camera is going to be out of use for any considerable time, it is advisable to allow the motor to run down with the camera unloaded, to avoid weakening the spring.

Fig. 5

Fig. 6

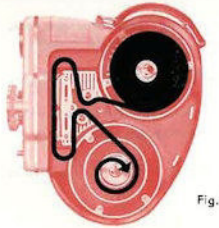


Fig. 7

Setting the Film Speed

The EUMIG C 16 can be adjusted for the exceptionally wide range of 9—27/10 DIN (6—400 ASA).

In order to avoid unintentional alteration of the setting while filming, the control is situated inside the camera.

Open the camera by prising up the catch A (Fig. 5). Give this catch a quarter turn to the left, and lift off the side plate.

Set the dial by rotating the centre knob B (Fig. 6)—a coin may be used for this—until the film-speed (DIN or ASA) appears opposite the triangular marks. The exposure meter now automatically adjusts itself to the film-speed setting.

Loading

You can load your EUMIG C 16 with 100′ (30 m.) or 50′ (15 m.) daylight-loading spools. The transport mechanism is also designed to permit the use of films perforated on one side only. This is important and allows for the subsequent addition of a sound-track.

Never load the camera in bright sunlight. If there is no other shade available, load in the shadow of your own body.

After setting the film-speed, slide out the two loop-formers, as shown in Fig. 8, and place the loaded spool on the upper spindle so that film unwinds in a clockwise direction.

Now unwind about 8″ of film, lead this round behind the top sprocket C 1, close round the loop-former, and push it down diagonally from above between the film-gate and the pressure-plate (Fig. 9), until the pressure-plate slips back into place. After leading the film round the lower loop-former and sprocket C 2 (Fig. 10) in a similar manner, bend the film over sharply about ½″ from the end, make it fast on the lower spool by wrapping it round two or three times, and place the spool on the take-up spindle (Fig. 10). Fig. 7 shows the path to be followed by the film. If there is not enough film available for threading, press the trigger D (Fig. 9) and allow the motor to run for a moment. (See that the safety catch described on Page 7 is released.)

When loading the camera, please take care that the teeth of the sprockets C 1 and C 2 engage the film perforations properly (a gentle pull on the film behind the sprockets will ensure correct engagement). Turn the take-up spool in a clockwise direction to make sure that the film is properly secured to it, slide the two loop-formers back and check the operation of the camera by running the motor for a few moments. N. B. The side-plate cannot be replaced until the loop-formers have been slid back into their original position.

Fig. 8

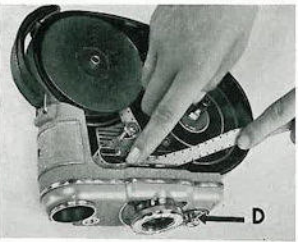


Fig. 9

Fig. 10

Fig. 11

Footage Indicator

After loading the camera according to the above instructions, replace the side plate and lock it in place. Then prise up the small hinged plate A (Fig. 11), turn it until the triangular marks of the indicator coincide (see Fig. 11) and press the plate back. Now run the motor until the figure 0 is exactly below the triangular mark. The leader has now been run through, and the camera is ready for filming.

When using 100′ (30 m.) spools, continue filming until the indicator reaches the 100′ (30 m.) mark. This is the point at which the trailer begins, the purpose of which is to guard against fogging when unloading the camera. Run the motor until the last division of the dial is opposite the triangular mark. The trailer has now been run through, and the camera can safely be unloaded. The alteration in the tone of the motor is an additional sign that film is no longer being transported.

You can now open the camera—in the shade again if possible—to remove the full take-up spool. First of all turn the spool clockwise a little to tighten the film on it—not too much or you will damage the emulsion—remove the spool, place it in its metal container, and stick the sealing tape **across** the container for easy differentiation between exposed and unexposed film. The film can now be sent away for development.

The procedure for 50′ (15 m.) spools is similar to that for 100′ (30 m.) spools. In this case, however, filming must cease when the indicator reaches the 50′ (15 m.) mark. About 6′ (2 m.) more film is run through without opening the camera, to ensure that the trailer is taken up on to the lower spool.

Speeds

The EUMIG C 16 has five speeds: 16, 24, 32, 48, and 64 frames per second. The speeds are selected by setting the knurled wheel B (Fig. 12) on the front plate of the camera to the red dot. You need have no worries about altering the exposure, for **the exposure meter automatically adjusts itself to the speed in use.**

Nevertheless, the exposures for each speed are listed below:

Single shot	per frame approx. $^1/_{35}$ second	
16 frames/sec.	per frame approx. $^1/_{36}$ second	(normal speed)
24 frames/sec.	per frame approx. $^1/_{54}$ second	(for sound film and copying on normal film)
32 frames/sec.	per frame approx. $^1/_{72}$ second	(slow motion)
48 frames/sec. (Never run camera at these speeds when unloaded!)	per frame approx. $^1/_{106}$ second	(slow motion)
64 frames/sec. (Never run camera at these speeds when unloaded!)	per frame approx. $^1/_{138}$ second	(slow motion)

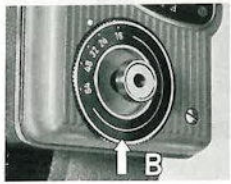
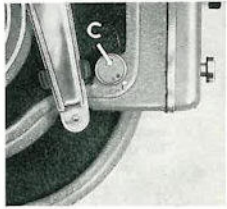


Fig. 12

Normal Release, Continuous Running, and Single Shots

When the green dot of the button C (Fig. 13) is set to the white mark, the release can be operated by hand or cable.
When the red dot is set to the white mark, the release is locked, and accidental exposure cannot take place.
For continuous running, **first** press the release knob or cable, and **then** set the red dot of the knob C to the white mark. The camera will now film without any pressure on the trigger or cable release, and you can, if you wish, yourself appear in the scene being filmed. You can, of course, take continuous running shots at any frame-speed **(the automatic exposure meter always adjusts itself to the speed in use!).**

Fig. 13



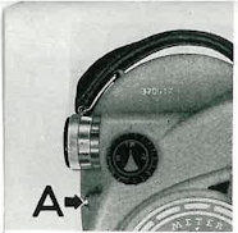


Fig. 14

By screwing a cable release into the bushing A (Fig. 14) underneath the viewfinder eyepiece, you can take single shots.
Single shots should always be taken with a tripod to avoid camera shake and moving the camera between shots.

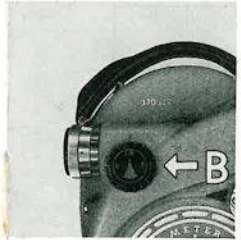


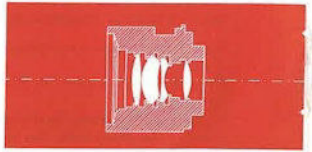
Fig. 15

Telescopic Viewfinder

This viewfinder has a precision optical system consisting of ten lenses, coated on all surfaces, and showing the field of view in natural size, i. e. on the scale 1:1. This makes it possible for you to follow any scene through the viewfinder exactly as with the naked eye. For spectacle wearers, the eyepiece can be adjusted from plus to minus 4 diopters.
The telescopic viewfinder is coupled to the focussing of the normal lens, and so is completely parallax-free from 3′ (1 m.) to infinity.
To adjust the viewfinder if one of the various supplementary lenses is in use, alter the setting of the knob B (Fig. 15).
When using the normal 25 mm. lens, the mark "f 25" on the knob B is set to the white mark. For the EUMACRONAR tele attachment, the mark "2 ×" is set to the white dot, while the setting "$^1/_2$" is employed when filming with the EUMICRONAR wide-angle attachment.

Lens and Focussing

Your EUMIG C 16 is fitted with the outstanding EUMIGAR lens, an EUMIG product. This exceedingly crisp four-lens 25 mm. anastigmat in focussing mount has the high speed of f/1.9, is colour-corrected, and coated on all surfaces.
The focussing scale (3′/1 m. to infinity) is calibrated in metres and feet. The distances are measured from the film plane, the latter being marked on the lid by the sign ◇.
For close-ups nearer than 3′ (1 m.) special EUMIG portrait attachments must be used.



Built-In Automatic Exposure Meter

This is one of the most important advantages of your EUMIG C 16, as it prevents wrong exposure, but, in spite of its automatic principle, allows you to expose as you will for special effects.
All you have to do is to keep the movable needle visible in the eyepiece steady on the fixed pointer by turning the knurled wheel C (Fig. 16). This automatically sets the diaphragm correctly.

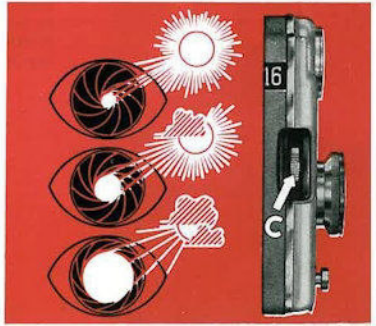


Fig. 16

The exposure meter automatically takes into account the film and frame speed in use. Its readings are, moreover, correct for whatever lens or attachment is in use, tele, wide-angle, or close-up.

N. B. The exposure meter of your EUMIG C 16 is a special design and consists of a unit completely sealed from dust and damp. Thus there can be absolutely no question of inaccuracy of reading owing to oxidized contacts or solders.

This feature will be of particular importance for all those whose cameras have to stand up to rugged conditions, e. g. especially mountaineers, explorers, etc., for the great advantage of this design is that, if the camera should be damaged, any unskilled person can replace the exposure meter in one simple operation, so that filming can go on uninterrupted without having to call on the services of a special workshop.

After loosening the screw A (Fig. 17), the protective cap can be lifted off. Now, by loosening the knurled screw B, the exposure meter unit can be removed. In spite of its sturdy construction, the exposure meter of the EUMIG C 16 is a precision instrument, and we therefore urge you to take all due care when removing the unit, if this should prove necessary.

Fig. 17

FILMING

Preparatory Operations

1. Wind up motor
2. Set film-speed
3. Load film
4. Set footage indicator
5. Set frame-speed and
6. Focus

These manipulations soon become second nature, and are the work of seconds.

Fig. 18

Holding the Camera

If you are filming without a tripod, hold the camera in the left hand, and rest the right hand lightly upon it.

Select the scene with the viewfinder, set the exposure, and you are ready to begin filming. The golden rule is to hold the camera in a relaxed, steady fashion, and not in a vice-like grip. The illustrations opposite show the correct grip.

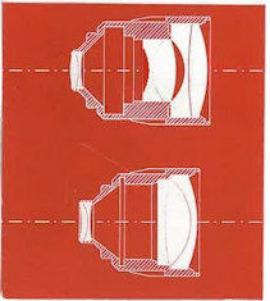
Fig. 19

Fig. 20

Power Reserve Indicator

The red-painted part of the disc A (Fig. 20) visible through the curved slits indicates how much of the motor power has been used, the white-painted part, on the other hand, shows how much film can be shot without rewinding. The total length of the 5 slits represents the power of the motor when fully wound, i. e. about 16′ (5 m.) of film; the individual slits therefore each represent about 3′ (1 m.) of film.
This handy device can be read in a flash, and enables you, for example, to predetermine the length of scenes shot in the continuous running position, as you always have a check on the amount of power available. (3′ or 1 m. of film correspond roughly to 8 seconds running time in projection.) This feature has the added advantage that, if you wish to appear in the scene yourself, you can do so right up to the last, and do not need to hurry back to switch off the camera. After the predetermined length of film has been shot, the camera automatically stops with the shutter closed.

An aid to the determination of scene-lengths is the audible click signal, which operates every 2′ (60 cm.) of film (corresponding to 5 seconds at 16 frames per second).



Filming with Tele and Wide-Angle Attachments

The EUMACRONAR tele and EUMICRONAR wide-angle attachments have been developed specially for the EUMIG C 16. Apart from their optical excellence, they have the advantage that the effective aperture of the taking lens always remains at the high value of f/1.9. **Thus the exposure meter always gives the correct readings—even for tele and wide-angle shots.**

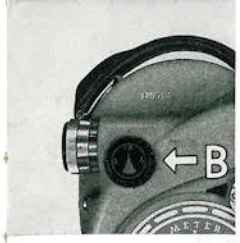


Fig. 21

The EUMACRONAR tele attachment doubles the focal length of the normal lens, making it 50 mm., and so achieves a two-times magnification in relation to the normal lens.
If you wish to film with the EUMACRONAR, first set the mark "2 ×" visible on the knob B (Fig. 21) to the white dot. This brings the corresponding viewfinder mask into operation, correcting the field of view. **Always set the normal lens to infinity, and then screw the attachment into the mount of the normal lens.** Focussing is then carried out only on the attachment.
It is important to hold the camera particularly steady when filming with the tele attachment, since—owing to the doubling of the focal length—any shakiness is magnified twice in projection.
For a wider field of view than that afforded by the normal lens, you can use the EUMICRONAR wide-angle attachment. This attachment is similar in use to the tele attachment (normal lens set to "infinity"), but shortens the focal length of the normal lens to 12.5 mm.; objects photographed therefore appear half-size in relation to normal lens filming. To correct the viewfinder image for the use of the wide-angle attachment, set the mark "$^1/_2$" visible on the knob B (Fig. 21) to the white dot.
Please note!
The automatic parallax adjustment does not operate in close-ups for which one or other of the attachments is used, so that in these really unusual cases allowance must be made for parallax. This is $1^3/_4$" (4.5 cm.) vertically and $1^3/_{16}$" (3 cm.) horizontally. This means that, after training the camera on the object, you must first elevate $1^3/_4$" (4.5 cm.) and then slew $1^3/_{16}$" (3 cm.) to the right.

Portrait Attachments and Filters

Special filters and supplementary lenses have been developed for the EUMIG C 16, the use of which adds greatly to the possibilities of the camera.
For close-ups below 3′ (1 m.) we provide EUMIG supplementary lenses, allowing filming at distances down to 10" (25 cm.).
When filming with EUMIG colour filters, it is necessary to fit a so-called "cell-filter" in front of the selenium cell of the exposure meter, to enable the meter to give correct readings by taking the filter factor into account.
Full instructions are enclosed with all EUMIG filters and supplementary lenses to answer all your questions about their use.

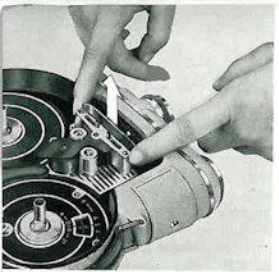


Fig. 22

Care of the EUMIG C 16

Your EUMIG C 16 requires hardly any maintenance and will always give you faithful service. It will certainly interest you to learn that your EUMIG C 16 has **life-long** lubrication and that it requires absolutely no attention in this respect. N. B. In unusually low temperatures the action of lens-focussing is somewhat heavier than in normal temperatures.
Moreover, your EUMIG C 16 has been subjected to temperature tests showing that it can give long-term service at temperatures from 5°F. to 122°F. (—15°C. to +50°C.). The camera can be used for short periods at temperatures beyond these limits, but it should be borne in mind that the actual film will probably not be equal to such conditions.
We would ask you merely to observe the following few rules for the care of your EUMIG C16: Keep the lens surfaces scrupulously clean, but avoid hard rubbing which would damage the coating.
The interior of the camera should also be kept clean. Fluff and gelatine dust may collect on the pressure plate. As shown in Fig. 22, the pressure plate can be removed so that it and the film-gate can easily be cleaned with a cloth or a thin piece of wood. Under no circumstances use metal or other sharp objects for cleaning.
Your EUMIG C 16 has been designed to stand up to the most exacting conditions such as may be encountered, for example, on expeditions. We would nevertheless suggest that you protect your camera as far as possible from extremes of temperatures, dust, and damp.

HINTS ON FILMING WITH THE EUMIG C 16

Although most EUMIG C 16 owners will be familiar with filming technique, we should like to give here a few hints which will enable even the novice to make a success of his first films. Of course, we have space here for only a few hints. For more information about filming technique, production, titling, and cutting etc. we recommend you to consult one of the many books on the subject.

Exposure

The built-in exposure meter of the EUMIG C 16 is the ideal solution of the problem of cine exposure. Its special advantage is that it is possible to alter the diaphragm setting while filming (important for panorama shots!).

If, in spite of opening the diaphragm to the maximum, the moving needle remains on the left side of the fixed pointer, the light is too weak and films would be underexposed. If the smallest stop is in use and the moving needle is still to the right of the fixed pointer, there is danger of over-exposure. In this case we recommend the use of a neutral density filter. Slight aberrations of the needle from the pointer are unimportant.

The exposure meter of the EUMIG C 16 measures the average brightness of the entire scene to be filmed. If the scene is one of great brightness contrast, you can therefore decide whether to film with the average stop given by the exposure meter, or whether to expose for the highlights or the shadows. If you wish to concentrate on one of these, go close up to the corresponding part of the scene and take an exposure meter reading. Then return to your original viewpoint and film the scene with the diaphragm aperture thus obtained.

A similar method is of course followed if you are working with colour film and place special emphasis on the correct rendering of any particular colour.

Here are a few examples illustrating how to film with the built-in automatic exposure meter.

When filming a sunny landscape from a shady gateway or arch, first take a reading for the landscape, then step back until the arch forms a silhouette frame for the landscape, and film from this viewpoint with the reading first obtained.

In colour shots of sunsets, the red clouds are particularly good subjects. As in this case the correct rendering of the red tones is all-important, and the exposure meter measures not only the bright but also the dark near areas, the diaphragm should be closed 2 or 3 stops.
Sunsets and evening scenes are extremely effective and make very good closing scenes for films. By very gradual stopping down to f/22, the scene appears to become darker and darker, while the sun takes on a reddish tinge, to turn slowly dark red as the aperture becomes smaller.
Side lighting gives excellent modelling.
Unusual effects can be achieved by filming against the light. Always take care that the sun does not shine directly into the lens or the selenium cell, and use a lens hood if necessary.

A good method of obtaining the correct stop for against-the-light shots is to make a quarter turn away from the sun with your camera and to shoot the scene with the stop thus found.

Filming by Artificial Light

In scenes illuminated by artificial light, the lamps are usually directed on to a certain object. The exposure meter of the EUMIG C 16, however, gives an average reading between highlights and shadows, so go right up to the illuminated object (4″/10 cm.—1′ 6″/50 cm. according to the size of the object) and take a reading. Then return to your original viewpoint and film the scene from there.

Filming by Night

Night scenes of streets with normal lighting and neon signs can perfectly well be filmed with colour films for artificial light at stops from f:1.9 to f:4 (the latter for very bright light), although the exposure meter cannot indicate this. The reason for this is that—as previously mentioned—the meter gives an average value between light and dark, while in the scenes in question the illuminated points are only a very small percentage of the whole scene.

Movement of the Camera

It is best of all to avoid any movement of the camera, for the film comes to life through the movement of objects before a motionless camera, and not through the movement of the camera itself.
There are nevertheless cases where movement of the camera may be of good effect, e. g.:
Panorama Shots:
Pan the camera very slowly (allow about 10—12 seconds for panning through 90 degrees) and smoothly and always in one direction only—as a rule horizontally or vertically. When panning without a tripod, move only the upper part of the body, keeping the feet always still. In order to give a feeling of rest, film for about 1 second at the beginning and end of a panorama shot without moving the camera.
The advantage of the built-in automatic exposure meter of the EUMIG C 16 is very apparent in panning, as you can make diaphragm adjustments while actually filming.

Depth of Focus

On the side (lid) of the camera you will find a depth-of-focus scale by which you can see whether you have the required depth of field at the focus setting selected, with the diaphragm set at the reading given by the exposure meter.
The following table gives the exact depths of field for the focus setting of 3′ (1 m.).

Table (the normal lens being focussed at 3′/1m. distance)

Aperture	1.9	2.8	4	5.6	8	11	16	22
Feet	3′—3′6″	2′11″—3′9″	2′9½″—4′	2′8″—4′3″	2′5½″—5′	2′3″—6′	2′—9′	1′8½″—27′

When using the EUMACRONAR tele and the EUMICRONAR wide-angle attachment, you can read off the depth of field on the focussing rings of these attachments.

Single Shot Filming

By using the single-shot mechanism you can achieve very interesting effects, but in this case it is absolutely essential to use a tripod, as even the slightest movement of the camera between shots will spoil the entire results.
For time-condensation effects, you can speed up the movement of clouds by using the single-shot mechanism, by taking one shot per second—instead of the normal 16 frames per second. As the entire film is projected at a constant speed of for example 16 frames per second, the above scene will appear to take place at 16 times its natural speed, and the clouds will seem to be racing along.
The single-shot mechanism can also be used for special tricks in titling and for numerous other attractive effects.

And now we wish you much pleasure with your **EUMIG C 16**

eumig

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