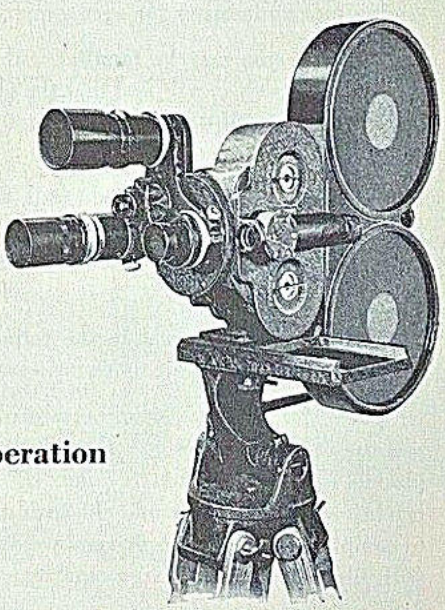
Bell & Howell

Eyemo Cameras



Instructions
for Care and Operation

FOREWORD

Eyemo Cameras, although light in weight and compactly constructed, are truly professional instruments. They are capable of producing motion pictures so sharply defined and so steady on the screen that only the most critical technician can distinguish them from pictures filmed with the B&H studio camera—the camera which has established the performance standards of the motion picture industry for over a quarter of a century.

Even though you may be familiar with other types of motion picture cameras, you will find that the few moments required to familiarize yourself with the suggestions offered in the following pages will be time well spent.

The Eyemo camera is designed and built to withstand hard usage, even under extraordinary climatic conditions, without sacrificing the precision which is such an essential prerequisite in motion picture cameras.

Normal care, as described in the following pages, will insure perfect functioning at all times.

Of particular interest is the versatility of the Eyemo camera and the variety of types available—from the single lens capacity Model "K," to the Models "P" and "Q," which, in a few seconds, can be converted from hand-held, spring-motor operated cameras to complete, studio outfits driven by electric motor and equipped with film magazines of large capacity.

Whenever lightness in weight, combined with precision, are primary requisites, the B&H Eyemo reigns supreme.

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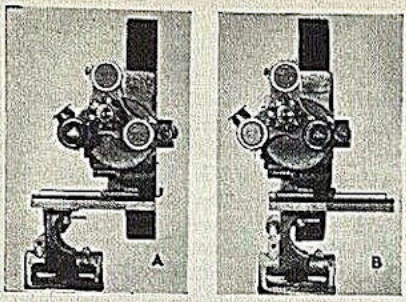

Figure 40
Eyemo Focusing Alignment Gauge in use
A—Camera in focusing position, with lens in front of focusing magnifier
B—Camera in photographing position, with lens in front of photographic aperture

When the camera is not fastened to the gauge, be sure to push the fastening screw upward if you wish to slide the platform "D".

The camera fastening screw "S" (Fig. 39) cannot be lost at any time because at its maximum downward position it rests on the bed "B" (Fig. 39).

When the camera is screwed to the alignment gauge, it is accurately seated by two dowel pins D, Figures 38 and 39, which are fastened to the sliding platform and which fit into two holes drilled in the square base of the camera. This insures perfect alignment of the camera with reference to the gauge.

The camera may then be shifted from one end of the gauge to the other, as shown in Figure 40, by sliding the platform P, Figures 38 and 39, in the dovetailed base B, Figures 38 and 39, and the camera may be securely locked in either position by the clamp screw lever F, Figures 38 and 39. The lateral movement of the camera is equal to the exact distance between the center of the lens when it is at the aperture, and its center when it is located in front of the prismatic focusing magnifier. At each end of the gauge there is a stop L, Figures 38 and 39, which locates the platform at exactly the correct position.

Move the camera to position A, Figure 40, lock the gauge, and rotate the turret to place the lens in front of the focusing magnifier, as shown. By looking through the magnifying eyepiece of the prismatic focuser, the picture may then be composed and focused on the ground glass, which is the full size of the motion picture frame.

When focusing has been completed, unlock the gauge, move the camera to position B, Figure 40, lock the gauge again, and rotate the turret to place the lens in front of the photographic aperture. The lens is now on the very same horizontal and vertical planes that it was when the field was determined, so the picture may now be filmed with definite assurance that the image on the film will be identical with that seen in the focusing magnifier.

Thus, with the Focusing Alignment Gauge and the focusing magnifier, accurate composition and perfect focus are assured, no matter how distant or how close the subject may be. The gauge is particularly useful for close work, such as filming titles, documents, macroscopic subjects, and other objects which perforce must be very close to the camera.

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Operation and Care of Bell & Howell Eyemo CAMERAS

All models of the Eyemo Camera are constructed on the same principles. They are distinguished from each other by added features which offer greater convenience and versatility, but which do not affect the major operating features. The following instructions for the Model "K" apply to all other models, and are supplemented by further instructions for the more complete models.

Each Eyemo Camera is shipped from the factory with a roll of perforated paper, having the same dimensions as film, threaded in the mechanism. The following threading instructions will be more easily understood if this paper "film" is not permitted to run through the mechanism until you have had an opportunity to examine it properly threaded in the camera.

At the time that you receive the camera, observe closely the way in which the perforated paper is threaded, and watch its motion by operating the camera for a fraction of a second at a time. See sections "WINDING" and "STARTING BUTTON."

The B&H EYEMO Model "K"

Film Capacity

The Eyemo Camera has a capacity of 100 feet of standard 35mm. motion picture film spooled for daylight loading, or 111 feet spooled for darkroom loading. The film prepared for daylight loading has a 6-foot leader, which protects the unexposed film from the light while threading the camera, and a 5-foot trailer, which wraps around the film when the entire roll has been exposed.

While film on 100-foot spools is termed "daylight loading," it is nevertheless advisable not to load any motion picture camera in the glare of bright sunlight, but rather in subdued light if it is possible to do so.

This will eliminate the possibility of "edge fog" caused by light filtering in between the spool flanges and the film itself.

Extreme care should be exercised in keeping the leader and trailer tightly wound on the film spools to prevent admittance of light.

Figure 1—Winding the spring motor

Winding

Figure 1 illustrates the method of holding the camera when winding with the collapsible, non-rotating, winding key.

Develop the habit of winding the camera fully before every scene. Rotate the winding key in a counter-clockwise direction until a definite mechanical resistance is noticeable. The Eyemo cannot be damaged by over-winding unless a deliberate effort is made to rotate the key or crank after this easily detected, fully-wound position is reached.

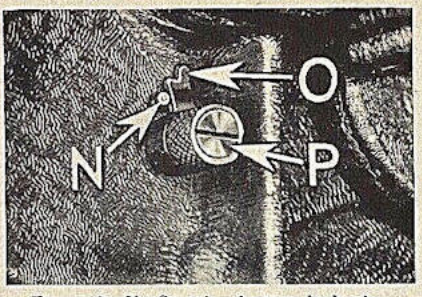

Figure 2 N—Starting button lock-pin
O—Starting button lock-lever
P—Starting button

Starting Button

Become familiar with the action of the starting button, which is shown clearly at P in Figure 2. This starting button is locked in the running position by slightly rotating it with a roll of the thumb in a counter-clockwise direction until the lever O engages the lock-pin N.

To stop the camera, rotate the button slightly in a clockwise direction, which will disengage the lock-lever. A spring will then return the button to its original position.

If preferred, the starting button may be held by the thumb in its operating position throughout the length of the scene, and released whenever desired.

Releasing the starting button instantly stops the camera.

Threading

Remove the camera door by simultaneously rotating both of the door latches which are visible in Figure 3 above and below the viewfinder. The lower door

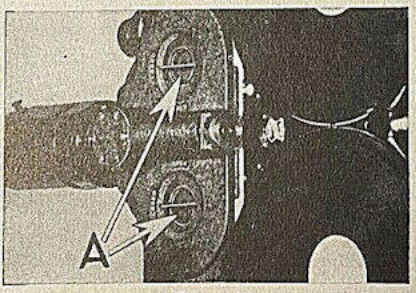

Figure 3
Eyemo Camera showing door latches—A

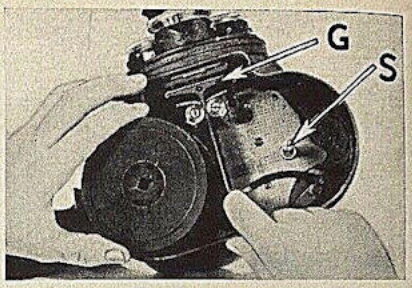

Figure 4
Removing empty spool and opening film gate
G—Film gate
S—Feed spool spindle

latch turns in a clockwise direction; the upper one in a counter-clockwise direction.

Observe very carefully the position of the paper strip in the mechanism. Count the perforations which are visible in the loops above and below the film gate G, Figure 4. When the gate is closed, eleven perforations should be visible in the lower loop (the loop to the left when the camera is in the position shown in Figure 4) and nine perforations should be visible in the upper loop. These loops must be of the correct size. Count the perforations when threading the camera—do not guess.

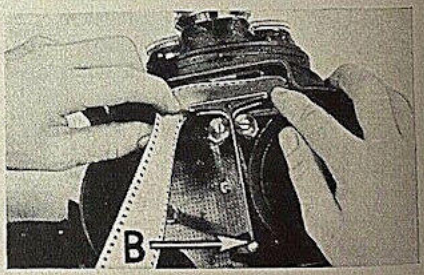

Figure 5
Loaded spool placed on spindle; film on feed sprocket B—Gate-arm knob

Operate the camera for a few seconds by pressing the starting button as previously instructed, and notice the movement of this strip of paper through the mechanism. Then remove the paper and the spool from the lower spindle. Open the film gate as shown in Figure 4, by pressing the knob B in Figure 5 toward the back of the camera. Insert a full

spool of film on the feed spool spindle S, Figure 4, and unreel about one foot of leader as shown in Figure 5. Engage the film with the teeth of the upper sprocket, as illustrated, and rotate the full spool in a counter-clockwise direction to be sure that the film is tightly wound. Be sure that the full spool of film is correctly seated, with about ⅛ inch of the feed spindle extending above the flange.

Form a film loop as shown in Figure 6, placing the film on the lower sprocket teeth, raising side tension rail E, Figure 6, which is under light spring tension, and engaging the film with the shuttle teeth which project through the polished aperture plate. (If these teeth are not visible, the camera is run down and should be wound.)

As previously stated, these film loops must be exactly the correct size, with *eleven* visible perforations in the lower loop and *nine* visible perforations in the upper loop, counting only those perforations which can be seen after the film gate has been closed (and including, of course, only the perforations on one edge of the film).

After closing the film gate as illustrated in Figure 6, by pressing the knob B, Figure 5, toward the lens, be certain that the shuttle teeth have properly engaged the film. To check this, insert the forefingers in the film loops, as shown in Figure 6, and slide the film in its channel until the perforations have engaged the teeth, after which no more movement will be possible. The counting of the perforations in the film loops, as explained above, should be done only after you are certain that the film is engaged with the shuttle teeth.

Insert the end of the film as far as it will go into the hub slot of the take-up spool (Figure 7); then wind one full turn of leader around the spool to prevent the film from slipping out of the slot in the spool hub. Carefully place the spool on the take-up spindle, as shown in Figure 8, and very gently rotate the take-up spool in a clockwise direction until all of the slack film has been wound on the spool hub.

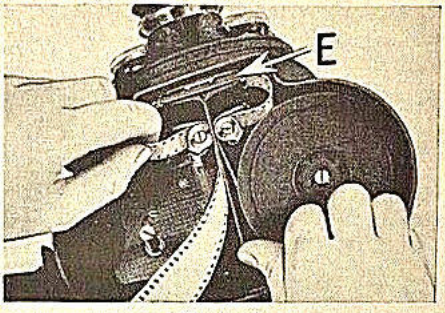

Figure 6
Forming loops, inserting film in aperture channel, and engaging film perforations. E—Resilient side tension rail

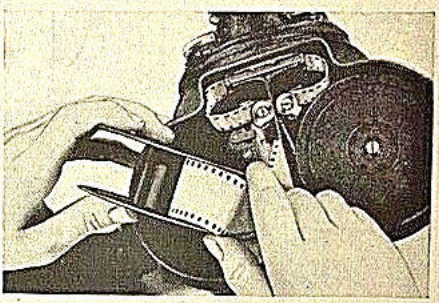

Figure 7
Inserting film leader in take-up spool

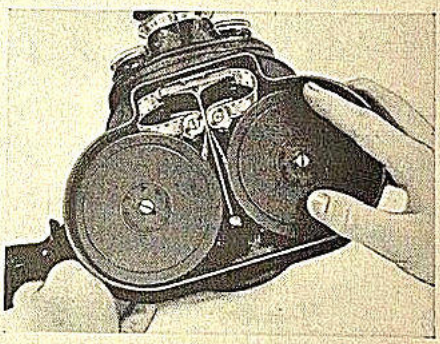

Figure 8
Testing the loaded camera. Press and release the starting button QUICKLY, holding finger on feed-spool to keep film leader taut

Press the starting button momentarily to observe the behavior of the film in the camera and to be sure that the loop sizes do not change when the camera is in operation. Naturally, the camera should be run for only a few seconds with the cover not in place. Before pressing the starting button, review the instructions given in the paragraph on that

For work where unusual speed of operation is essential, it is recommended that an auxiliary viewfinder be used for one of the lenses (Figure 17). To illustrate, the position of the operator may be such that the 2-inch lens gives the desired general view of a scene, while a 3- or a 4-inch lens gets the close-ups of the principal subject, perhaps an orator. The operator wants to film long shots and close-ups in rapid succession.

The drum finder can be set for the 2-inch lens field and the auxiliary may be equipped with objective and eyepiece to match the field of a 3- or a 4-inch lens, as chosen for the close-ups. A single twist of the turret changes the lenses, while the eye may use either eyepiece without any effort or loss of time whatsoever.

The compactness of the lens turret imposes some limitations on the type of lenses which can be used without interfering one with another. For example, it is obvious that the length and diameter of a 3-inch lens would interfere with the wide angle of view of a lens of 1-inch focal length.

Again, since the distance between the centers of the lens seats (Figure 18) is constant, it is the combined radii of any two lenses which controls their physical interference. The following table shows the lenses which can be used without interference, those which require precautions (such as removal of the lens sunshade), and those which cannot be used without interference.

The advantages of the greater range of operating speeds are self-evident. Trick shots, from those depending on slow camera speeds to the "slow-motion" resulting from the higher speeds, can be secured with no more effort or further thought than setting the speed dial for the desired speed (Figure 19), and setting the lens diaphragm to compensate for the change in exposure time.

The high-speed governor controls the accuracy of the various speeds within a 2% limit, thus insuring perfectly constant exposure throughout the maximum of the spring torque (which has a 55-foot capacity), and constant operating speed throughout the length of the run.

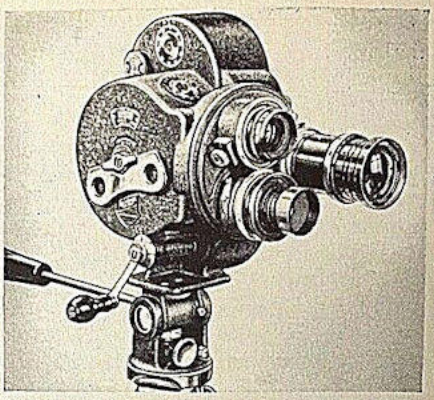

Figure 15
Eyemo models "L" and "M." They differ only in that Model "L" operates at from 4 to 32 frames per second, while Model "M" operates at from 8 to 48 frames per second

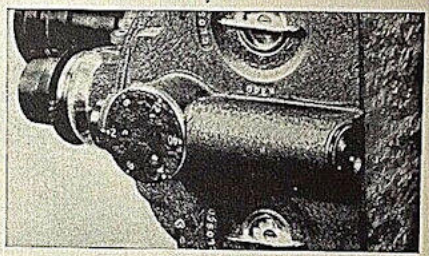

Figure 16
Drum type viewfinder, on Eyemo models "L," "M," "N," "O," "P," and "Q"

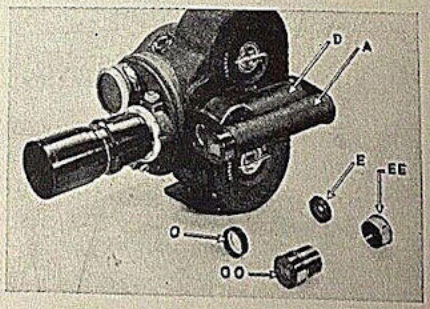

Figure 17
Auxiliary viewfinder in place
A—Auxiliary viewfinder
D—Drum viewfinder
E—Screw-in eyepiece
EE—Slip-in eyepiece
O—Screw-in objective
OO—Slip-in objective

EYEMO Cameras, Models "N" and "O"

The Eyemo Models "N" and "O" differ from the models "L" and "M" in two main features:

(1) An offset, three-arm lens turret (Figures 20 and 21).

(2) A prismatic focusing magnifier which permits visual focusing and alignment of the object being photographed (Figure 22).

By virtue of the greater distance (3 15/16 inches) between the centers of its lens holders, the offset, three-arm turret offers the decided advantage of permitting long and short focal length lenses to be used on the turret at the same time, without interference.

Since lenses of long focal length are relatively heavy, a turret lock, L, Figure 21, has been devised, which locks the turret securely in place once the lens is set in its proper position. Thus the critical positioning of the lens with reference to the focusing or photographic aperture is assured and cannot be disturbed. The lens clamp screw S, Figure 21, is particularly useful in these models, for once the lens is focused visually, it may be fastened firmly at that critical adjustment by the clamp screw, with assurance that in handling the camera or in rotating the turret, the focusing collar will not be moved accidentally.

The turret lock L, Figure 21, is an easily operated, positive lock. To release it, place your thumb or index finger in any one of the indentations and give the knob a twirl counter-clockwise. To fasten the lock, twirl the knob clockwise. DO NOT ATTEMPT TO SCREW THE LOCK TIGHT, as it is entirely unnecessary.

To rotate the turret, in order to change from one lens to another, grasp the turret center-post P, Figure 21, and pull the turret out so that the lens mount will clear the castings on the stationary part of the turret. Then rotate the turret in either direction, to bring the desired lens to the photographing position.

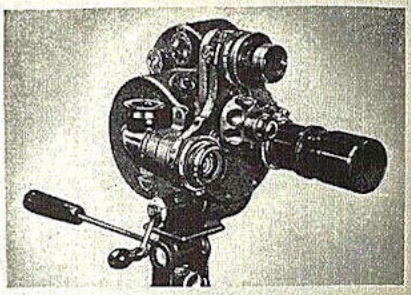

Figure 20
Eyemo models "N" and "O"

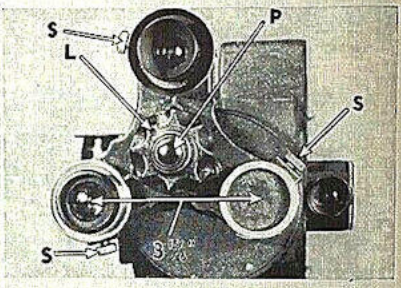

Figure 21
The offset, three-arm lens turret on Eyemo Models "N," "O," "P," and "Q"
L—Turret lock
P—Turret center-post
S—Lens clamp screw

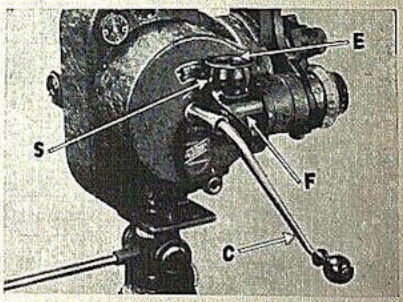

Figure 22
F—Prismatic focuser on Eyemo models "N," "O," "P," and "Q"
E—Eyepiece of prismatic focuser
C—Ratchet winding crank
S—Eyepiece set-screw

When the turret lock is locked, it is impossible to lift, and therefore to rotate, the turret. We suggest that you familiarize yourself with these controls by locking, unlocking, and rotating the turret several times.

EYEMO Cameras, Models "P" and "Q"

The Eyemo Models "P" and "Q" (Figure 23) differ from Models "N" and "O" by two main added features:

(1) The adaptation to electric motor drive, which, however, does not eliminate the camera's use as a spring-motor-driven instrument. The use of either drive is optional with the operator.

(2) The adaptation for the optional use of film magazines of great capacity.

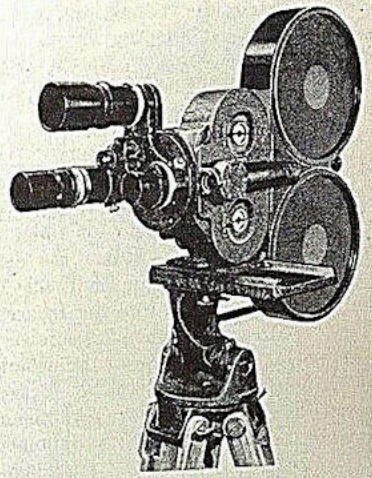

Figure 23. Eyemos "P" and "Q" differ only in the range of operating speeds

Operating With Electric Motor

There are three types of motors supplied for use with Eyemo cameras, two of which operate on 110-volt circuits, and one on 12-volt direct current. The universal type 110-volt motor and the 12-volt motor for operation on direct current, will operate the camera at any speed at which the camera speed dial may be set. The synchronous motor, on the contrary, will operate the camera at only 24 frames per second when connected to 110- to 120-volt, 60-cycle alternating current for which it is designed. In using this motor, the camera speed dial must be set *above* the 24 speed position. In order to be sure that the governor will not tend to retard the speed of the camera, it is desirable to set the camera speed dial at its highest position.

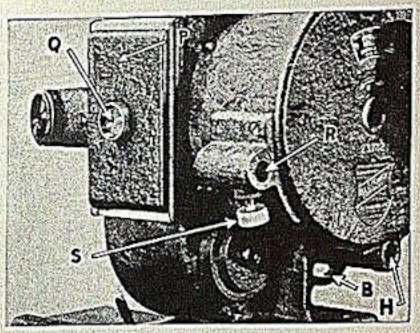

Figure 24. H—Hand crank receptacle
R—Motor bracket receptacle
S—Motor bracket clamp screw
B—Starting button P—Cover plate
Q—Cover plate locking screw

In using any of these motors, always be sure that the line voltage, and frequency in the case of the synchronous motor, conform to the specifications indicated on the motor nameplate. If synchronous motors are desired to operate on other voltages or frequencies than 110- to 120-volt, 60-cycle lines, they can be supplied on special order.

Two brackets are attached to the electric motor, one of which fits into the hand crank receptacle H, Figure 24. The other bracket fits into the receptacle R, Figures 24 and 25, into which it is securely fastened by the clamp screw S, Figures 24 and 25.

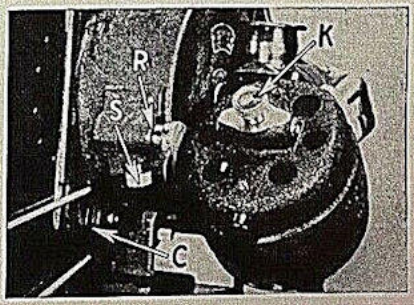

Figure 25. R—Motor bracket receptacle
S—Motor bracket clamp screw
K—Motor hand-setting knob
C—Housing of pulley for magazine spring belt

At the end of the bracket which fits into the hand crank receptacle there is a slot