

the open door
to pictures of perfection
with your

BELL & HOWELL

Filmo

**MAGAZINE-
LOADING**

16MM CAMERAS



Congratulations!

You have made a wise decision in selecting Filmo motion picture equipment, precision-made to give you professional results with amateur ease.

The name Bell & Howell Filmo is your guarantee of satisfactory, long-lasting performance. Since 1907 Bell & Howell Company has manufactured the professional equipment preferred by the motion picture industry. Experience gained in the designing and production of this equipment has been applied to supplying the needs of the amateur and semi-professional with the ultimate in performance, convenience, appearance. Even in the face of unprecedented demand, Bell & Howell has not compromised with quality.

Precision operations in every phase of manufacture assure perfection in the finished product. Matched registration mechanisms in Filmo cameras and projectors result in steady pictures in full, natural color or sparkling black-and-white on your movie screen.

The far-sighted basic design of your Filmo provides for a built-in capacity to keep pace with the latest developments. Your original investment is never lost because you can have the newest improvements developed by the Bell & Howell Engineering Laboratory added to your sturdy Filmo.

With such a capable instrument in your possession you will naturally want to get the fullest enjoyment from it by achieving the best results. To become properly acquainted with this new servant of yours, study the following pages carefully with your Filmo in front of you before putting it to work.

Should you desire additional help in your movie-making, please feel free to call on your Bell & Howell dealer or write directly to us.

BELL & HOWELL COMPANY
7100 McCormick Road
Chicago 45, Illinois

IN 2 MINUTES' TIME

you can be ready
to make Pictures
of Perfection!



← **1. Wind camera fully**

← **2. Open camera door and
insert film magazine**

← **3. Set camera speed**

← **4. Determine correct
exposure and set lens**

← **5. Sight and press
starting button**

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CAUTION: Do not attempt to remove the camera head as it will affect the shutter timing and result in improperly exposed pictures. Removal of camera head voids the B&H Lifetime Guarantee.

Section 1

Loading—Controls—How to Hold the Camera

A. DOOR LOCK—Loading the Camera

To open the camera door for loading or unloading, press together the two latch-bars A, Figure 2. The door swings open easily. Insert film magazine X, Figure 2, and push it home. Each film magazine is plainly marked as to the end which is toward the lens and the side which is toward the operator—green window on the left side, film label toward the lens. The door is interlocked with the mechanism, so that the camera will not operate unless the door is properly closed. As the magazine is pushed in, its aperture is automatically uncovered, and as it is withdrawn, the aperture is again sealed, thus preventing fogged film. When the magazine is firmly seated and the door closed, press the starting button G, Figure 3, *upward* two or three times to make certain that the shuttle tooth is engaged in the film perforation.

B. EXPOSURE CALCULATOR

The 3-dial exposure calculator provides for many different factors in successful motion picture photography. It enables you to take the following into consideration:

- | | |
|----------------------|---------------------------------------|
| 1—Season of the year | 4—Time of day |
| 2—Light condition | 5—Film speed (Weston) |
| 3—Subject matter | 6—Camera speed
(frames per second) |

To ascertain correct lens setting:

- A. Rotate dial 2 until the speed of the film in use (4, 8, 16,

32, 64, or 128) appears in the opening at the top of dial 3.

B. Rotate dial 1 until the camera speed (frames per second) in use is opposite the letters B H D on dial 2.

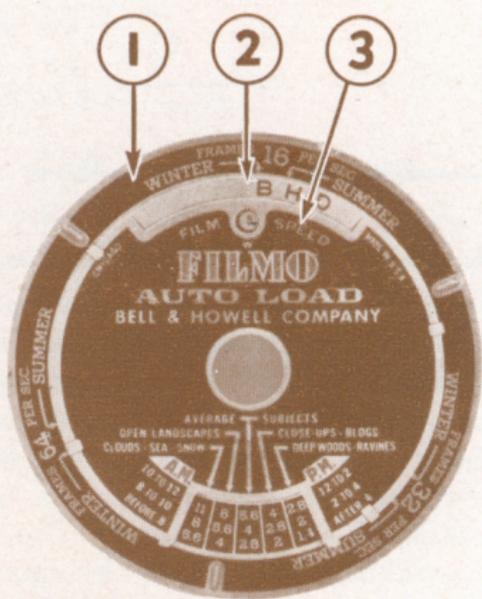


Figure 1

C. Refer to the subject table below the words "Bell & Howell Company" on dial 3.

a. Select the designation most suited to your subject.

(A.) Follow the arrow leading from it to the lens openings listed directly below. Your correct lens setting is the figure opposite the hour at which you are filming.

For example, in Figure 1, the guide has been set for the following conditions:

- | | |
|---|------------------------|
| Film speed—8 (correct for outdoor Kodachrome) | Time of year—Winter |
| Camera speed—16 frames per second | Light condition—Bright |
| | Subject—Average |
| | Time of day—3:00 P.M. |

Rotate dial 2 until the film speed 8 appears in the opening at the top of dial 3. Rotate dial 1 until the camera speed

(frames per second) 16 is opposite the letters B H D on dial 2. Then set the arrow for Winter opposite the letter B. Now, follow the arrow leading from Average Subjects to the lens openings listed directly below. Your correct lens opening, 4, shows opposite the time of day, 3:00 P.M.

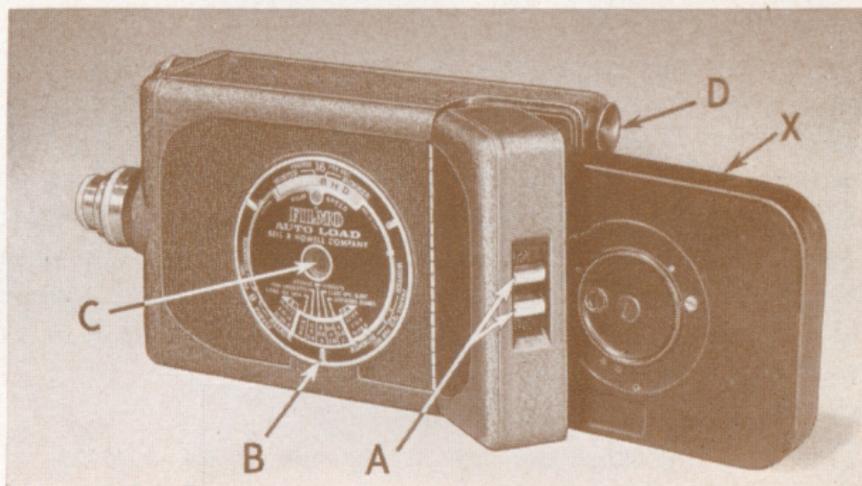


Figure 2

- A. Door lock latch bars
- B. Built-in exposure calculator
- C. Window through which film footage dial on magazine may be seen
- D. Viewfinder eyepiece
- X. 50-foot 16mm film magazine

C. FILM FOOTAGE DIAL

In the center of the exposure calculator is a circular window through which the green footage dial on each magazine is visible. The dial rotates as the camera operates, and the figures always indicate the film footage which is still *unexposed*. When the figure "O" appears in the window, no more unexposed film is available.

D. VIEWFINDER EYEPIECE

In use, the camera is held with this eyepiece before the

right or left eye, as desired. Hold the camera several inches from the face and draw it slowly toward the eye while sighting through the viewfinder. The camera will come to rest against the cheek or in the angle between nose and cheek. The soft rubber eye-cup excludes extraneous light, and is an aid to persons wearing glasses.

E. WINDING KEY

Hold the camera in the left hand, raise the key, and turn it counter-clockwise until you reach a definite stopping point. Then fold the key flat against the side of the camera. Each full winding provides power for a run of $12\frac{1}{2}$ feet at normal (16) speed. Wind the camera after every scene to insure having the full motor capacity always available. Camera will stop with shutter open (and fog one film frame) if allowed to run until spring motor is fully unwound.

F. SPEED CONTROL DIAL

This dial indicates the camera speed, or the number of single pictures (frames) exposed per second. Light pressure of the thumb on the beaded center of the dial will turn it easily. The Filmo Auto Load and the Filmo Auto Master provide speeds of 16, 24, 32, 48, and 64 frames per second. Normal speed is 16—use it generally; 24 speed slows down the rate of action in projected pictures to two-thirds normal; 32 speed to one-half normal; 48 speed reduces the rate of action to one-third normal; 64 speed produces semi-slow motion pictures, the action being reduced to one-fourth normal speed. Use the speeds above 16 for filming fast moving sporting events, for panoramic scenes (moving camera shots—but move the camera very slowly!), for scenes taken from moving trains or automobiles, and for too-rapidly moving subjects, such as kittens at play. It is good practice, after using another speed, to return the speed control dial to the 16 mark. (See also Using Speeds Other Than Normal, on page 16.)

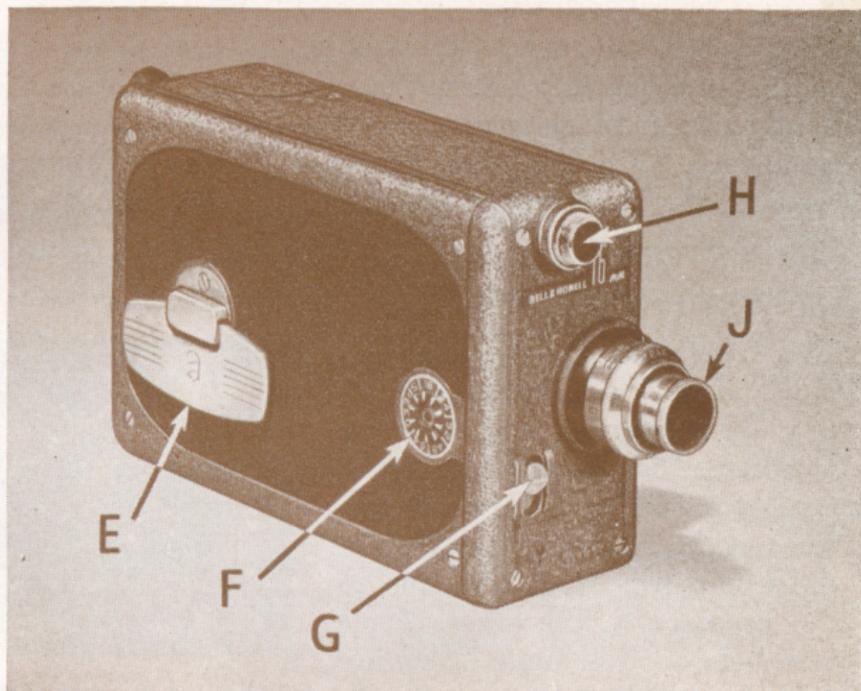
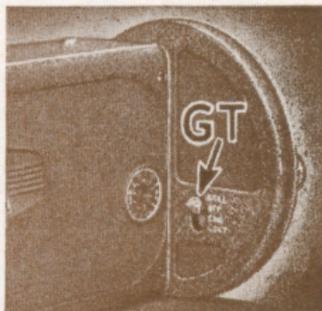


Figure 3

- E. Winding key**
- F. Camera speed control dial**
- G. Starting button**
- H. Viewfinder objective unit (interchangeable to match various lens focal lengths)**
- J. Lens**

G. STARTING BUTTON

G, Figure 3, locates the starting button on the Auto Load. On the Auto Master the starting button is on the right rear surface of the turret head, as shown here at GT. Press the starting button down and the camera hums in action but will stop when the button is released. Press the button all the way down, and the camera is locked in action, so that you may leave it on a tripod or other solid support,



and enter the picture yourself. A slight upward pressure releases the button from the locked position. Press the button upward from the neutral position, and a single picture is exposed. (See The Single Exposure Shutter Release, on page 17, for more about the use of the single-frame exposure feature.)

H. VIEWFINDER OBJECTIVE

The viewfinder shows exactly as much of your subject as will appear on the screen, and since the viewfinder is of the "positive" type, you will note that the outlines of the field do not change as the eye moves from one side of the eyepiece to the other. When telephoto or wide angle lenses are to be used, the objective is unscrewed and replaced by one matching the lens. On the turret model, when the turret is revolved, the correct objective is brought into place in front of the viewfinder. With these matching objectives, the field included always entirely fills the viewfinder. The fields of lenses longer than 2-inch as seen through the matching viewfinder actually appear larger than when viewed with the naked eye.



In making close-ups, allowance should be made for the fact that the lens is $1\frac{1}{2}$ " below and $\frac{5}{8}$ " to the left (as viewed by the operator) of the viewfinder.

J. LENS

It is vitally important to getting clear, brilliant pictures that the lens be set so as to give the correct exposure to each scene. Every lens has a control ring which regulates the size of the diaphragm, thus governing the amount of light admitted to the film.

This adjustment is calibrated in what are known as F stops, each stop admitting 100% more light than the next smaller in size. Note that as the stops decrease in size, they increase numerically. Every lens is named for its largest diaphragm opening. The 1-inch F 2.5 lens is "wide open" at F 2.5 (for dull days or poor light) and is graduated to F 16, a tiny opening for very bright lighting conditions. You can see the metal leaves of the iris diaphragm open and close as you turn the lens collar. The 1-inch F 1.5 and F 1.9 lenses can be opened even wider than the F 2.5, and consequently will do good work in very poor light indeed.

The diaphragm control ring should be turned until the F stop indicated by the exposure calculator or by an exposure meter is opposite the index mark on the lens barrel.

When you have become familiar with the adjustment of the lens, study the exposure chart, which is built into the left side of your camera, to get a general idea of the proper stops to use under the various conditions you are likely to encounter outdoors at this season and at various hours during the day. Be guided by this chart or an exposure meter in setting the lens diaphragm for every outdoor movie scene.

Your Filmo will be equipped with a universal (fixed) focus lens or a lens in focusing mount, as you select. A universal focus lens needs no adjustment for focusing, but the diaphragm setting determines how close you may approach your subject and still be in sharp focus. The smaller the F stop, the closer you may be. For example, most of your outdoor movies will be made at F 4 or smaller, and with the lens diaphragm set at F 4, everything at and beyond 20 feet from the camera will be

sharply focused. For average work, subjects as close as 10 feet will be satisfactorily sharp.

The use of lenses in focusing mounts calls for care in determining the distance of subjects from the camera before setting the focusing scale, but such lenses permit photographing subjects at very short distances, even at the largest apertures. The focusing ring on the lens is calibrated in feet, and this should be set to correspond to the distance between camera and subject. For all objects beyond the largest figure on the scale, the infinity setting should be used; distances falling between calibration marks may be estimated and the lens set accordingly.

Remember to remove the red rubber lens cap before making pictures. Always replace it after using the camera, for it keeps out the dust and dirt.

LENS COMBINATIONS

which can be mounted on the Filmo Auto Master turret head without interference by the longer lenses with the fields of the shorter lenses.

Shortest lens on turret	B&H lenses which may be used on Auto Master turret with shorter lenses listed at left. Lenses in these columns are to be focused on infinity (which reduces their length to the minimum).					
15mm	1" f/1.9	2" f/1.4	2" f/3.5	3" f/4	4" f/4.5	6" f/4.5*
1" f/1.9		2" f/1.4	2" f/3.5	3" f/4	4" f/4.5	6" f/4.5
2" f/1.4			2" f/3.5	3" f/4	4" f/4.5	6" f/4.5
2" f/3.5				3" f/4	4" f/4.5	6" f/4.5
3" f/4					4" f/4.5	6" f/4.5
4" f/4.5						6" f/4.5

*Sunshade must be removed.

K. TURRET HEAD

The Filmo Auto Master may be purchased with one, two, or three lenses and their matching viewfinder objectives mounted upon its built-in turret head. If less than three lenses are purchased with the camera, the remaining lens

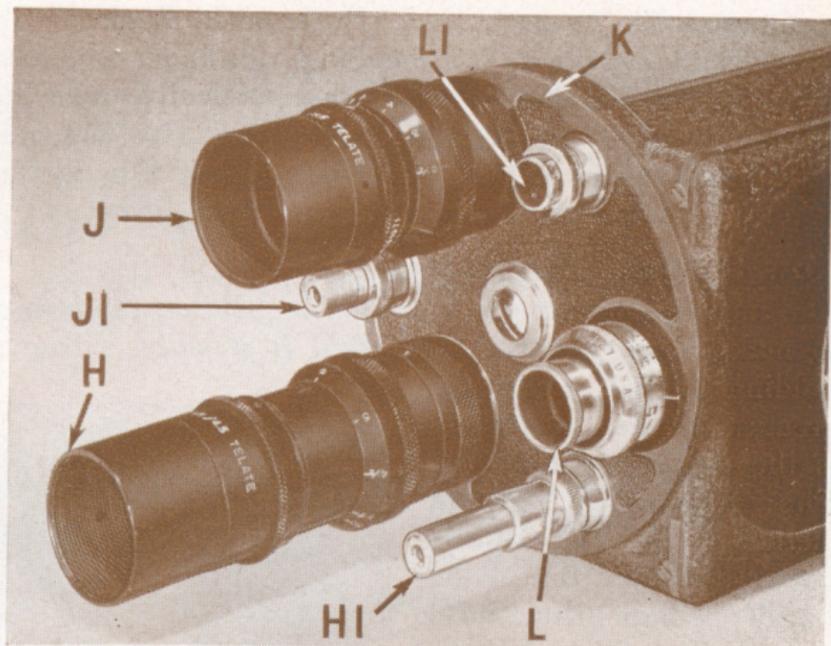


Figure 4. Filmo Auto Master Camera

H., J., L.	Lenses
H1., J1., L1.	Viewfinder objectives
K.	Turret head

and viewfinder openings are closed with metal caps. These caps may be unscrewed and additional lenses and finder objectives screwed in at any time.

In ordering an extra lens, be sure to mention the number which is engraved adjacent to the seat in which the new lens will be placed. The lens supplied will be so mounted that the diaphragm and footage markings will be clearly visible when the lens is in place.

To bring a different lens in front of the photographic aperture, grasp the edge of the turret head and revolve it in either direction until the new lens is in place. An audible click tells when the lens is properly seated, as does the feeling of the revolving motion being automat-

ically stopped. As each lens (H, J, or L, Figure 4) is brought into position, its matching viewfinder objective (H1, J1, or L1, Figure 4) is automatically, correctly located in front of the viewfinder tube. This not only facilitates the rapid change of lenses, but also insures against photographing with a non-matching finder.

How to Hold the Camera

The most important consideration in holding the camera to make a movie scene is to *hold it steadily*. Whatever holding method yields the greatest camera steadiness is the one for you to use. The following holding method is the one usually preferred for the Auto Loads when the B&H "Steady-Strap" is not used: Grasp the camera firmly with the left hand, forefinger reaching up to the starting button from below. With the right hand grasp the top and bottom of the camera, near the eyepiece, and bring it up to either eye, bracing the camera against the cheek. Keep the elbows as close to the body as possible for greater steadiness.



If the B&H "Steady-Strap," which attaches to the tripod socket, is used, a convenient method of holding is the one pictured here. The left hand is passed through the strap from the left side of the camera. Thus no shifting of the left hand grip is necessary in swinging the camera up to your eye from the carrying position at your side.

Tripod

A standard socket will be found on the bottom of the camera, permitting it to be mounted on a tripod.

Section 2

Making the Pictures

On the "Must" List

1. See that the spring motor is fully wound, as described in Paragraph E, page 6.
2. Use the exposure calculator on the camera or a reliable exposure meter to determine the correct lens setting for the light of the moment.
3. Set the lens so that the F stop just determined is opposite the index mark on the lens barrel. If the lens is in a focusing mount, make the focusing adjustment as described in Paragraph J, page 8.
4. Remove the red rubber lens cap.
5. Holding the camera steadily, sight through the viewfinder and press the starting button down. Hold it down as long as you wish the camera to record the scene which is framed by the viewfinder. Then release the button and the camera will stop instantly.
6. Wind the camera again, so that the full film run is always available.

The Magazine

You may change from one type of film to another at any time, without waiting to finish the film in the camera and without fogging any film, although more than four or five reloadings on one magazine are not recommended. The footage of the film remaining unused in the magazine is always indicated on the dial. Never expose the film magazine to direct sunlight. Keep it in its container when you are out of doors, and when the camera must be loaded in sunlight, do it in the shadow of your own body. Avoid, as

much as possible, loading or unloading the camera in dusty air such as is often encountered outdoors on windy days. Save the cardboard carton in which the magazine is packed—you will need it for sending the film to be processed. Write or print your name and address clearly on the carton, as the laboratory has no other way to identify you as the owner of the film. Address the carton to the processing station nearest you, as explained in the booklet enclosed with each magazine. There are no processing charges.

Length of Scenes

A common tendency, when first starting to use a moving picture camera, is to make the scenes too short—that is, to fail to keep the camera operating long enough on each subject. As a result the scenes, when projected, flash on the screen and off again too quickly for the eyes of the audience to grasp the details. Three feet can be considered an absolute minimum footage for such scenes as close-ups of people, scenic, or any action which is continuous but not changing in nature.

If action is changing, more than three feet of film may be required to tell the story. Ordinarily the camera should be started just before the action begins, and stopped just after the action ends.

While filming, counting seconds is the commonly used guide. Three feet of film are exposed in about $7\frac{1}{2}$ seconds of normal speed operation. You may check the accuracy of your counting by consulting the footage dial.

What to "Shoot"

Plan your shots to take full advantage of the possibilities of motion pictures. Probably your first pictures will be of family and friends. Avoid posed pictures—leave these for the still camera. You will very likely get your best scenes when your subjects are not conscious of being

filmed, or when you can give them something to do which will induce natural actions and expressions and help them forget the camera.

Plan your shots, wherever possible, to tell a little story of some kind, whether it be a simple account of a day's events at home or a chronological record of a holiday trip. Scenes need not necessarily be exposed in the order in which you want them to appear when projected, as they can be cut and spliced, after being processed, into any sequence.

Panoramic Pictures

A panorama or "pam" shot is made by pivoting the camera in a horizontal plane while it is in operation. Unless there is absolutely no other way in which you can tell the story or get the desired scene, *don't pam!* It is the subject that should move, not the camera. Don't chase your subject all around the backyard, and don't sweep the lens grandly across a broad landscape in the effort to "get it all in." Instead, take several shots, moving the camera only between pictures.

Just about the only good reason for pamming is to show the relation of two or more scenes to each other. In this case pivot slowly, pausing for a motionless shot when the viewfinder shows a scene of special interest, and then continue pamming to the next interesting stop.

When you think you are moving the camera slowly enough, cut your pivoting speed in half, and you will be better satisfied with the results. If you must pam, it is a good idea to use 24 speed, opening the lens diaphragm one-half stop wider than for 16 speed. Where a choice is possible, pam from left to right, as the eye can follow pams in this direction more easily.

Filming Moving Objects

In pamming to follow a constantly moving object, such as

a race horse, a speed boat, or the man with the ball trying desperately to make a touchdown, the problem is different. Here the camera should be swung to keep the subject constantly as nearly as possible in the center, or, better, just behind the center of the field of view. The background may be blurred in the process, but here it is not so objectionable as in a straight pan, for the eye is on the moving subject, which is the center of interest.

If you wish to show the subject moving into, across, and out of the field of view, select a viewpoint from which the subject will not move directly across in front of the camera at a right angle to the lens. Have the subject moving toward or away from the camera at an oblique angle. This will help avoid blurring. If the action must take place at right angles to the camera, do not attempt a short shot, but get at least 30 feet away from the line of action before starting the camera, or farther in cases of very fast action.

To slow down the action, use 24, 32, 48, or 64 speed and open the lens accordingly. (See the next paragraph.)

Using Speeds Other Than Normal

Paragraph F, page 6, covers the uses of the camera's various operating speeds, and you are advised to use normal (16) speed as a general thing. After using some other speed, be sure to return speed control dial (F, Figure 3) to 16 speed.

The exposure chart (B, Figure 2) gives the correct lens stop to use at 16, 32 and 64 camera operating speeds.

When the camera is operated faster than normal speed, the shutter is open for a shorter period. This necessitates setting the lens $\frac{1}{2}$ stop wider open for 24 speed than exposure calculator indicates when set for 16 speed; $\frac{1}{2}$ stop wider open for 48 speed than exposure calculator indicates when set for 32 speed. Examples: Chart read-

ing at 16 speed, F 8; for 24 speed, set lens midway between F 5.6 and F 8. Chart reading at 32 speed, F 5.6; for 48 speed, set lens midway between F 4 and F 5.6.

Each of the figures listed below represents a lens opening which admits twice as much light as the next smaller (in size) stop and, conversely, half as much as the next larger stop. (F 1.5 on the lens is near enough to F 1.4 in the scale to be considered the same; likewise F 1.9 and F 2.)

F 1.4 — F 2 — F 2.8 — F 4 — F 5.6 — F 8 — F 11 — F 16

Single Exposure Shutter Release

When the starting button is pressed upward, a single picture is photographed on the film. This provision is for animation work, which means making motion pictures of inanimate objects or drawings. When a series of single pictures is made, and the position or pose of the subject is changed very slightly between pictures, the subject will appear to move when the picture is shown on the screen. Jointed dolls and animals are good subjects, and animated maps, trick titles, drawings of processes impossible to photograph, are all possibilities for you to explore.

The camera must be on a tripod for this work. Set the speed control dial at 16, and set the lens diaphragm for the exposure you would give were you running the camera for a normal, continuous movie. The single exposure release is applicable also to other than inanimate objects. For example, landscapes featuring cloud effects can be filmed frame by frame at uniform intervals of from one-half to several seconds. On the screen the billowing advance of the clouds will be speeded up so as to be clearly visible. Again, you will secure an amazing film if you point your lens directly into a colorful sunset (with Kodachrome film in the camera) and expose single frames at intervals. The sun will actually set before your eyes,

sensitivity to light than regular panchromatic, and for color pictures be sure to use Type A Kodachrome, which is especially corrected for artificial light.

The exposure calculator on the camera is of no value indoors. Use a good exposure meter. Don't be afraid of movie making under artificial light. It is easy, and many priceless family pictures can be made only in the home.

Parallax

When taking close-ups, allowance must be made for the fact that the viewfinder is $1\frac{1}{2}$ inches above the camera lens, and $\frac{5}{8}$ inch to the right of it (with the lens pointing away from you). For all scenes six feet or more from the camera, this offset can be ignored.

Looking through the viewfinder D, Figure 2, turn and/or tilt the camera and increase or decrease the distance between camera and subject until the desired picture area fills the viewfinder. With the desired area framed in the viewfinder:

For objects about three feet from the camera, tilt the camera up and to your right until the horizontal and vertical notches in the finder mask line up with the top and right edges of the desired picture area.

For objects about six feet from the camera, the parallax can usually be ignored. However, for critical work, tilt the camera up half as far as for objects at three feet. At this distance horizontal parallax may be ignored.

After tilting and, in the first case, turning to properly point the camera, the camera will still photograph the area originally seen in the viewfinder.

The B&H Direct Focuser or the B&H Close-up Attachment will make any close-up movie-making easy and accurate. Ask your B&H dealer for descriptive literature.

Filters

You do not need filters to make good pictures, but in many cases, they will make good pictures better. Information on the types of filters available and their uses is given in "This Filter Question" folder; ask your B&H dealer for a copy.

Cleaning Lens and Viewfinders

The lens must always be kept scrupulously clean. A film of dirt, oil, or finger marks on the lens will prevent your getting clear, brilliant, sharp pictures. Unscrew the lens from the camera, and clean the exposed surfaces, using the B&H Lens Cleaning Kit. *Do not take the lens apart—clean the exposed surfaces only.* Use Opti-kleen lens cleaning fluid *only*—any other cleaning agent may damage the Filmocoted surfaces.

After cleaning, be sure that the lens is screwed firmly into the camera, and that none of the lens elements was partially unscrewed in the process of removing the lens.

Color filters should be kept as clean as lenses. Use the same cleaning materials.

Clean the viewfinder eyepieces and objectives with the same materials as for lenses.

Cleaning Aperture

Clean camera aperture (accessible through the film chamber via the rear door) immediately after every film is exposed. Use the brush supplied with the camera. Never use a hard instrument for removing dirt from the aperture.

Foreign matter which sticks may be removed with a swab of lintless cloth or lens cleaning tissue moistened slightly with alcohol. Brush out the camera magazine chamber occasionally, to keep it free of dust.

Lubrication

Your Filmo camera is lubricated for one year's usage when it leaves the factory. It should be thoroughly cleaned and lubricated annually; take it to your B&H dealer who will arrange for its servicing. The camera requires no other lubrication.

IMPORTANT

Be sure to fill in and mail the accompanying registration card. This will:

1. Enable you to obtain the full benefits of the B&H Lifetime Guarantee.
2. Bring you *Filmo Topics*, an interesting and informative periodical on personal movie making.
3. Let us help you find your equipment in case of loss or theft.
4. Enable our Personal Service department to co-operate with you intelligently.

The serial number of your Filmo Auto Load or Auto Master will be found on the camera base near the tripod socket.

Name	Model
Filmo Auto Load.....	153-B
Filmo Auto Master.....	153-BA

SIZE OF PHOTOGRAPHED AREA (approx) covered by Lenses for Filmo 16mm Cameras

Note: For camera distances from 1 to 10 feet, read the following table direct. For greater distances, simply move decimal point. Example: Subject width for 1-inch lens on a 16mm camera is 2.22 feet at a distance of six feet. At sixty feet it would be 22.2 feet; at six hundred feet it would be 222 feet.

Lens Focal Length	Object Size in Feet for Various Object Distances										
	1	2'	3'	4'	5'	6'	7'	8'	9'	10'	25'
0.5"*	0.54	1.10	1.66	2.22	2.78	3.34	3.90	4.46	5.02	5.58	13.98
	0.72	1.47	2.22	2.98	3.73	4.48	5.23	5.98	6.74	7.49	18.77
0.7"	0.38	0.78	1.18	1.58	1.98	2.38	2.78	3.18	3.58	3.98	9.98
	0.51	1.04	1.58	2.12	2.65	3.19	3.73	4.27	4.80	5.34	13.40
1"	0.26	0.54	0.82	1.10	1.38	1.66	1.94	2.22	2.50	2.78	6.98
	0.34	0.72	1.10	1.47	1.85	2.22	2.60	2.98	3.35	3.73	9.37
1.5"	0.16	0.35	0.54	0.72	0.91	1.10	1.28	1.47	1.66	1.84	4.64
	0.22	0.47	0.72	0.97	1.22	1.47	1.72	1.97	2.22	2.48	6.24
2"	0.12	0.26	0.40	0.54	0.68	0.82	0.96	1.10	1.24	1.38	3.48
	0.16	0.34	0.53	0.72	0.91	1.10	1.28	1.47	1.66	1.85	4.67
3"	0.07	0.16	0.26	0.35	0.44	0.54	0.63	0.72	0.82	0.91	2.31
	0.09	0.22	0.34	0.47	0.60	0.72	0.85	0.97	1.10	1.22	3.10
4"	0.05	0.12	0.19	0.26	0.33	0.40	0.47	0.54	0.61	0.68	1.73
	0.06	0.16	0.25	0.34	0.44	0.53	0.63	0.72	0.81	0.91	2.32
6"	0.02	0.07	0.12	0.16	0.21	0.26	0.30	0.35	0.40	0.44	1.14
	0.03	0.09	0.16	0.22	0.28	0.34	0.41	0.47	0.53	0.60	1.54

Upper dimension is height of picture.

Lower dimension is width of picture.

*1" lens with Wide Angle Attachment

THE HYPERFOCAL DISTANCE is the minimum distance at which critical sharpness is obtained with a given diaphragm opening when the lens is focused at infinity. When a focusing lens is set at the hyperfocal distance, all objects at half the hyperfocal distance and beyond will be in focus. The table below shows the hyperfocal distances for lenses for Filmo 16mm cameras, expressed in feet and based upon a circle of confusion of 0.001" diameter. When used with U.F.H. lenses (universal focus, hyperfocal distance), the following table gives the distance of best focus corresponding to the full aperture of the lens; objects more than half this distance away will be in focus for all f/settings.

Lens Focal Length	Hyperfocal Distance in Feet for Various Apertures													
	f/1.4	f/1.5	f/1.9	f/2	f/2.5	f/2.7	f/3.5	f/4	f/5.6	f/8	f/11	f/16	f/22	f/32
0.5"*	14.9	13.9	11.0	10.4	8.3	7.7	6.0	5.2	3.7	2.6	1.9	1.3	1.0	0.6
0.7"	29.2	27.2	21.5	20.4	16.3	15.1	11.7	10.2	7.3	5.1	3.7	2.6	1.9	1.3
1"	59.5	55.6	43.9	41.7	33.3	30.9	23.8	20.8	14.9	10.4	7.6	5.2	3.8	2.6
1.5"	133.9	125.0	98.7	93.8	75.0	69.4	53.6	46.9	33.5	23.4	17.0	11.7	8.5	5.8
2"	238.1	222.2	175.4	166.7	133.3	123.5	95.2	83.3	59.5	41.7	30.3	20.8	15.2	10.4
3"	535.7	500.0	394.7	375.0	300.0	277.8	214.3	187.5	133.9	93.8	68.2	46.9	34.1	23.4
4"	952.4	888.9	701.8	666.7	533.3	493.8	381.0	333.3	238.1	166.7	121.2	83.3	60.6	41.7
6"	2142.9	2000.0	1579.0	1500.0	1200.0	1111.1	857.1	750.0	535.7	375.0	272.7	187.5	136.4	93.8

*1" lens with Wide Angle Attachment

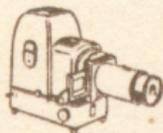
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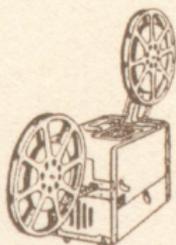
Filmo-Master 400
8mm projector



Filmo Sportster
8mm camera



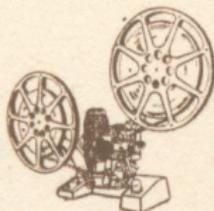
Duo-Master
slide projector



Filmosound 16mm
sound-on-film
projectors



Filmo 70-DA
16mm camera



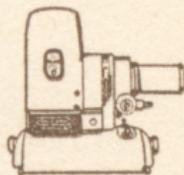
Filmo Showmaster
16mm silent projector



Filmo Diplomat
16mm silent projector



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sound projector



Slide Master
still projector

B&H Close-up Attachment for all Filmo 8mm and 16mm cameras

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