



INTRODUCTION

The Bolex H-16 Rex 5 is a 16mm reflex camera. The optical system permits through the lens viewing at all times. It is an extremely versatile, portable, dependable, well-built camera. The self-threading allows easy loading of daylight spools. This camera's features include single frame, extended exposure, slow motion, a 135° angle variable shutter, and backwind. Media Loan has H-16 Bolex cameras, zoom lenses, many prime lenses, and a double system sync package with 400 foot magazines as well as other accessories.



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Media Loan

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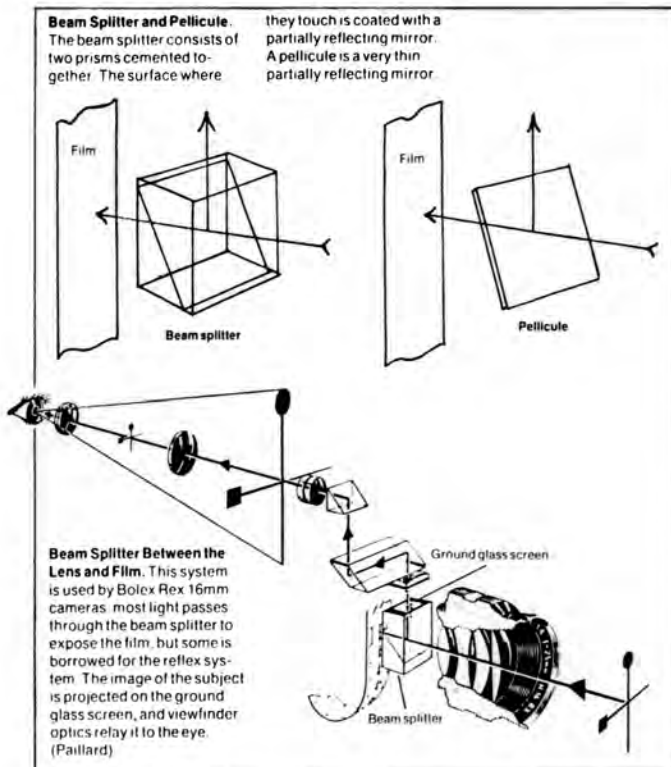
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Reflex Viewfinder

The optical system of the Bolex H16 reflex permits through the lens viewing at all times. This system utilizes a beam splitter so the image seen in the viewfinder is completely free from flicker. The reflex finder enables accurate focusing and framing, and allows you to estimate the depth of field. The reflex prism deflects 20-25% of the light passing through the lens into the viewfinding system. Only 75-80% reaches the film plane. The actual quality of light reaching the film is reduced by about 1/2 to 1/3 of an f-stop. To compensate for this, Bolex has determined that the effective shutter speed for the H16 camera is 1/80 second rather than the standard 1/65 of a second. To further confuse matters, Bolex (in conjunction with Kern/Switar) has designed a series of lenses which are calibrated to pass 1/2 to 1/3 stop more light than the aperture markings on the barrel indicate, compensating for the light lost to the viewfinding system.



The letters “rx” designates these lenses after the name on the barrel. When using these lenses with the H16 camera, the effective exposure is back to 1/65 of a second.

	Bolex H16	Other Camera
RX	Read exposure meter at 1/65 a second	Under expose film by 1/3 to 1/2 stop
Non RX	Read exposure meter at 1/80 a second	Read exposure meter at 1/65 a second

Warning: Light meters in Media Loan are calibrated for 180° angle shutter not the 135° angle shutter in the Bolex H16

Diopter Adjustment

This adjustment corrects the optical system to the operator’s eyesight (whether or not if s/he wears glasses) and remains the same for all lenses on the camera.

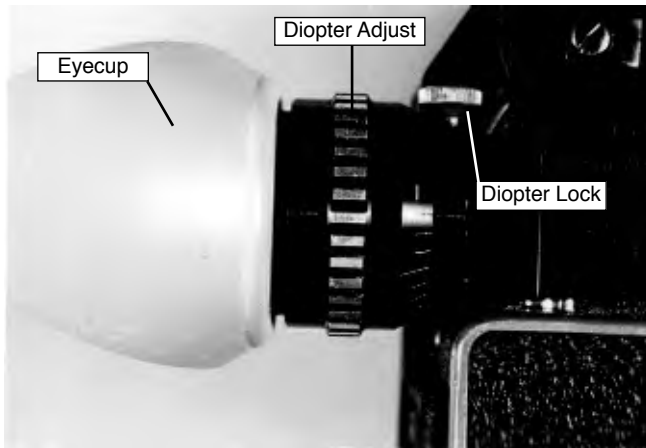
To set the diopter:

1. Turn the turret to expose the reflex prism (no lens in taking position).
2. View a well-lighted subject.
3. Loosen the grooved ring around the viewfinder and turn the lever until the grain of the ground glass is perfectly sharp.
4. Tighten the ring that acts as a lock nut. Some viewfinders have locking screws.

Douser

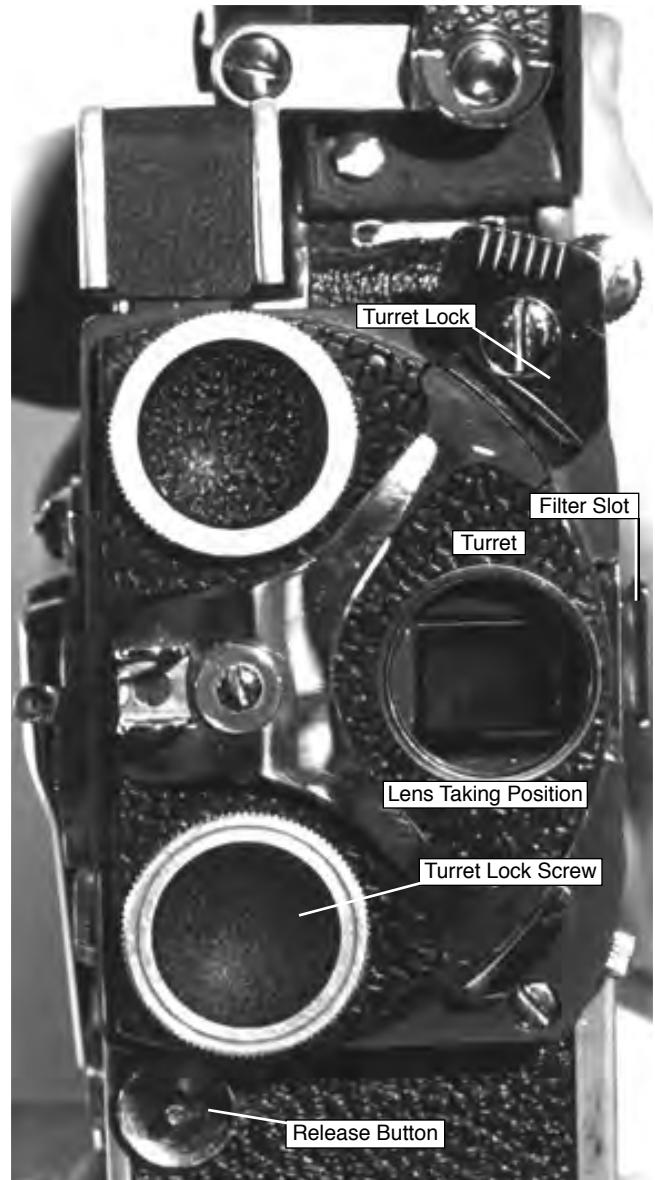
The douser (located on the reflex viewfinder) closes the eyepiece to keep light from reaching and fogging the film plane through the viewfinder.

It is necessary to use the douser when doing pixilation with a strong light behind the camera. The douser is open when the lever is in the horizontal position; closed in the vertical position.



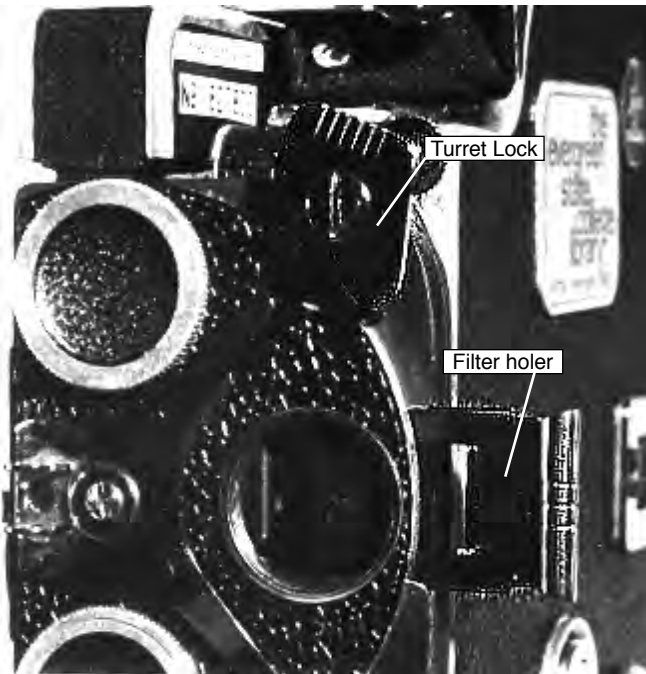
Turret

By turning the turret you can change from one lens to another. To turn the turret, use its fold away lever rather than handling the lenses. In this way, there is less risk of accidentally changing the aperture and/or focus ring. When using heavy lenses, such as telephotos or zooms, the turret should be locked with either a special locking clamp or a turret plug. Turret plugs go into the lowest lens cavity (when turret is on normal position); they are marked with a red ring. For other lighter lenses, the turret lock on the camera should be sufficient. This lock is located above the lens in the taking position and should be tightened before the lenses are in place. Keep the wide-angle lenses and telephoto lens opposite of each other on the turret so the telephoto lens doesn't interfere with the field of view of the wide-angle lens.



Filters

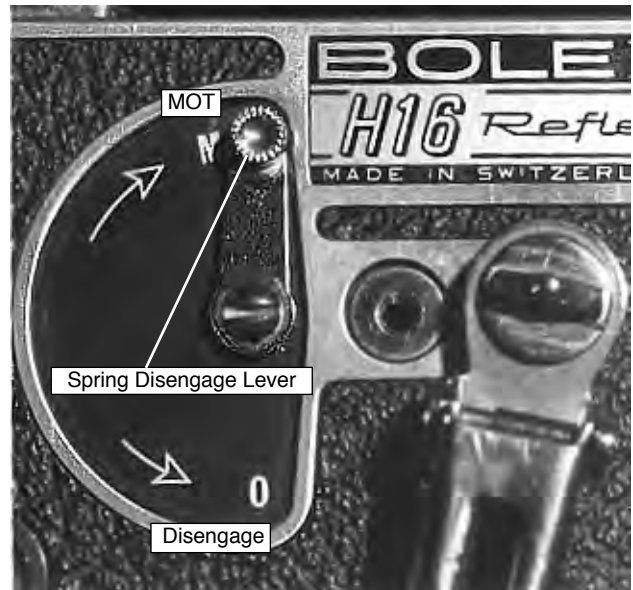
The H16 camera has a filter between the taking lens position and the reflex prism. The filters therefore remain in place no matter which lens is used. When filming without a filter, an empty filter carrier should be left in the filter slot to prevent light from entering the slot and fogging the film. Make sure the carrier is located firmly within the slot and the correct filter is in place before shooting. An incorrect filter will either alter the color balance or exposure.



Camera Motor

The Bolex H16 has its own internal spring drive motor. This allows an electric motor to be used and also allows you to backwind the film for camera dissolves. Turn the motor disengaging lever to “MOT” and move the slide release to “stop”. If the side release will not go to stop, slightly wind the spring. Lift the winding crank, which automatically engages the spindle, and turn counterclockwise. Wind the spring fully without forcing it. Fold the crank and secure it on the latch on the lower body. Fully wound, the motor will drive about eighteen feet of film through the camera (about 28 seconds at 24fps).

IMPORTANT: Never leave the camera wound during storage. This may ruin the spring. When running down the spring with no film in the camera, set film speed at 8fps.



Film Speeds

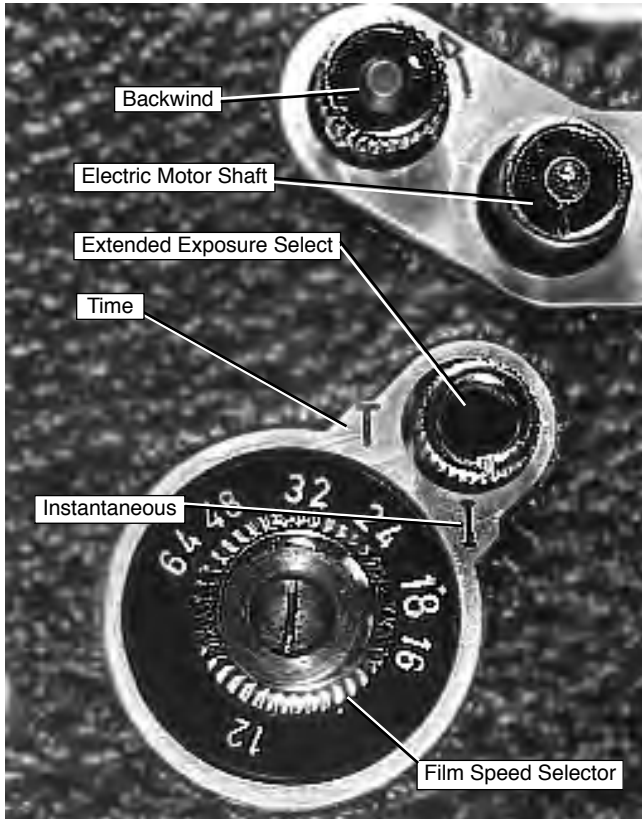
The camera has seven film speeds from 12 to 64 frames per second (fps). To select the desired speed, turn the control knob until the corresponding figure is opposite the red dot. When changing filming speeds do not forget to alter the exposure setting. (When changing from 24 to 48 by one stop and so forth.)

Release Selector (on/off)

The H16 can be used for normal, continuous, or single frame filming. The different operations are controlled by the side release.

Normal filming-- This method is suitable for most shooting situations. Then camera runs as long as the operator depresses the front release or pushes the side release towards “M.”

Continuous filming-- Push the side release towards “M” until it clicks into place. The camera will continue running until the wind runs out or the side lever is pushed to the STOP position.



Variable Shutter

The H16 is equipped with a shutter whose aperture can be varied when the camera is running and when it is stopped. This enables you to reduce exposure time without altering the camera running speed or f-stop. In bright light, the variable shutter can be used to reduce exposure, therefore eliminating the need for a neutral density filter.

The shutter may be locked in each of its four positions by pulling it out and pushing in when at the desired setting.

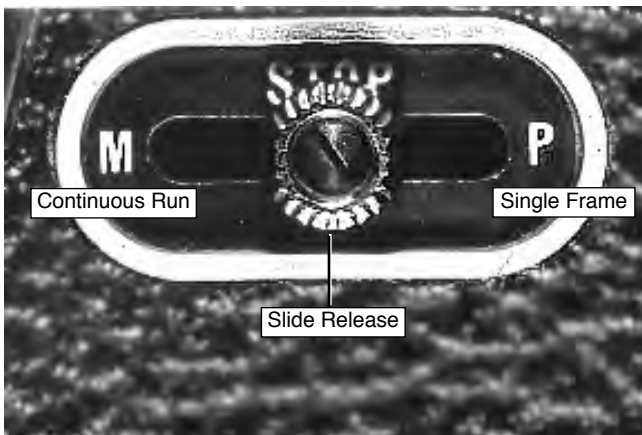
Fully open -- normal exposure -- at the red mark.

1/4 closed -- exposure reduced by a half stop

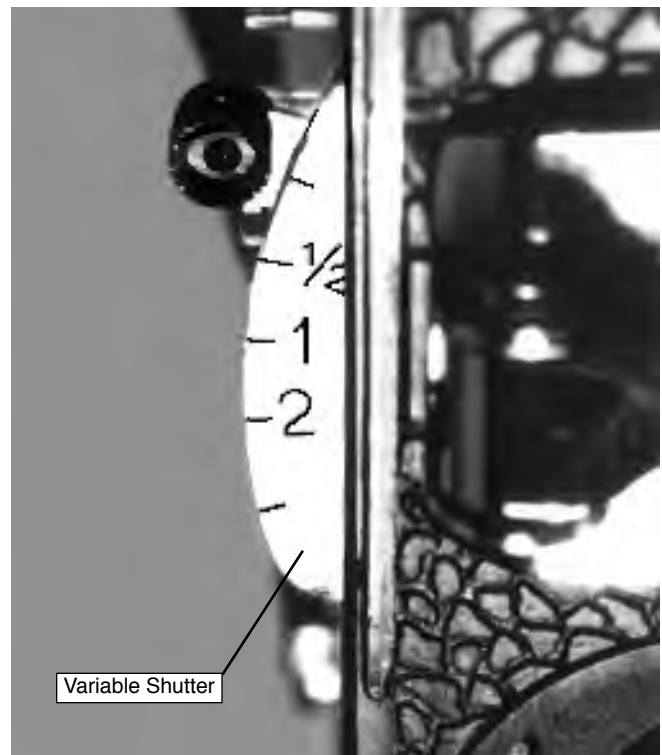
1/2 closed -- exposure reduced by a full stop

Fully closed -- no light reaching the film plane

In some cameras, a triangular warning signal will appear in the viewfinder if the variable shutter is not in the fully open position.



Single frame filming-- Instantaneous: Turn the knob until the guide mark is in the "I" position. The effective exposure time in this position is 1/30 of a second. Time: Place guide mark in "T" position; shutter will remain open as long as side release is in the "P" position.



Lap Dissolve

Superimposing a fade-in on a fade-out makes a lap dissolve so that one picture gradually disappears as the next gradually appears. This allows for a smooth transition during which the picture brightness scarcely varies. To produce lap dissolve, close the first shot in a sequence with a fade-out. Lock the shutter in the “closed” position. Set the frame control to zero. Disengage the motor. Set the slide release to the ‘M’ position. Douse the Viewfinder. Cap the lens. Rewind the film, using the backwind key, until the frame counter indicates the duration of the fade-out. Move the slide release to the STOP position. Frame the second sequence to be filmed and release the slide lever. At the same time make a fade-in the same length as the fade-out.

Duration of the fade in seconds	Number of frames/ Filming Speed	
	18 fps	24 fps
1 1/2	973	964
2	964	952
2 1/2	955	940
3	973	928

Loading the Camera

Before loading:

1. Set side release to stop.
2. Set disengaging motor to MOT.
3. Turn FPS selector knob until the number corresponding to the desired camera speed faces the red dot.
4. Wind the camera.

Check that the pressure plate pin is locked so that the pressure plate cannot open.

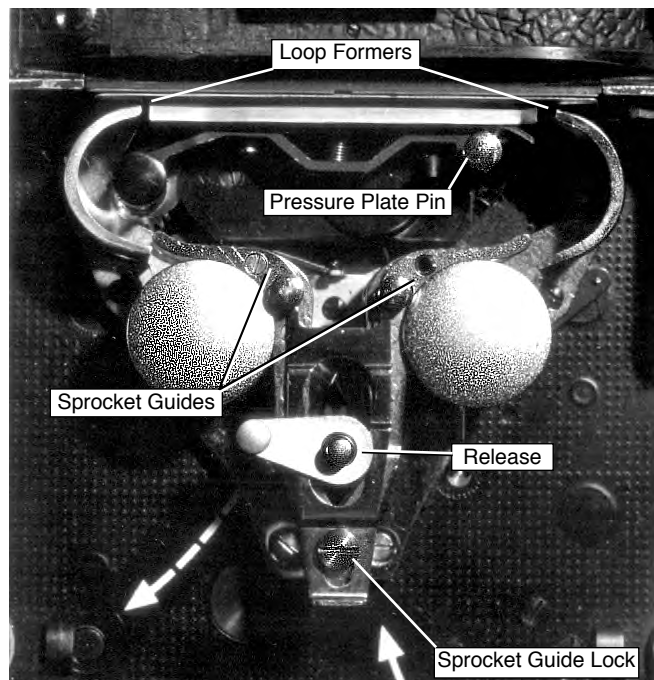
The film will jam at this point if the plate is not closed. Remove the empty spool from its spindle by pressing the ejector. Place the loaded daylight spool on the upper spindle. (Film should come off in the direction indicated by the engraved arrow).

IMPORTANT: At the film gate the emulsion should always face towards the front of the camera.

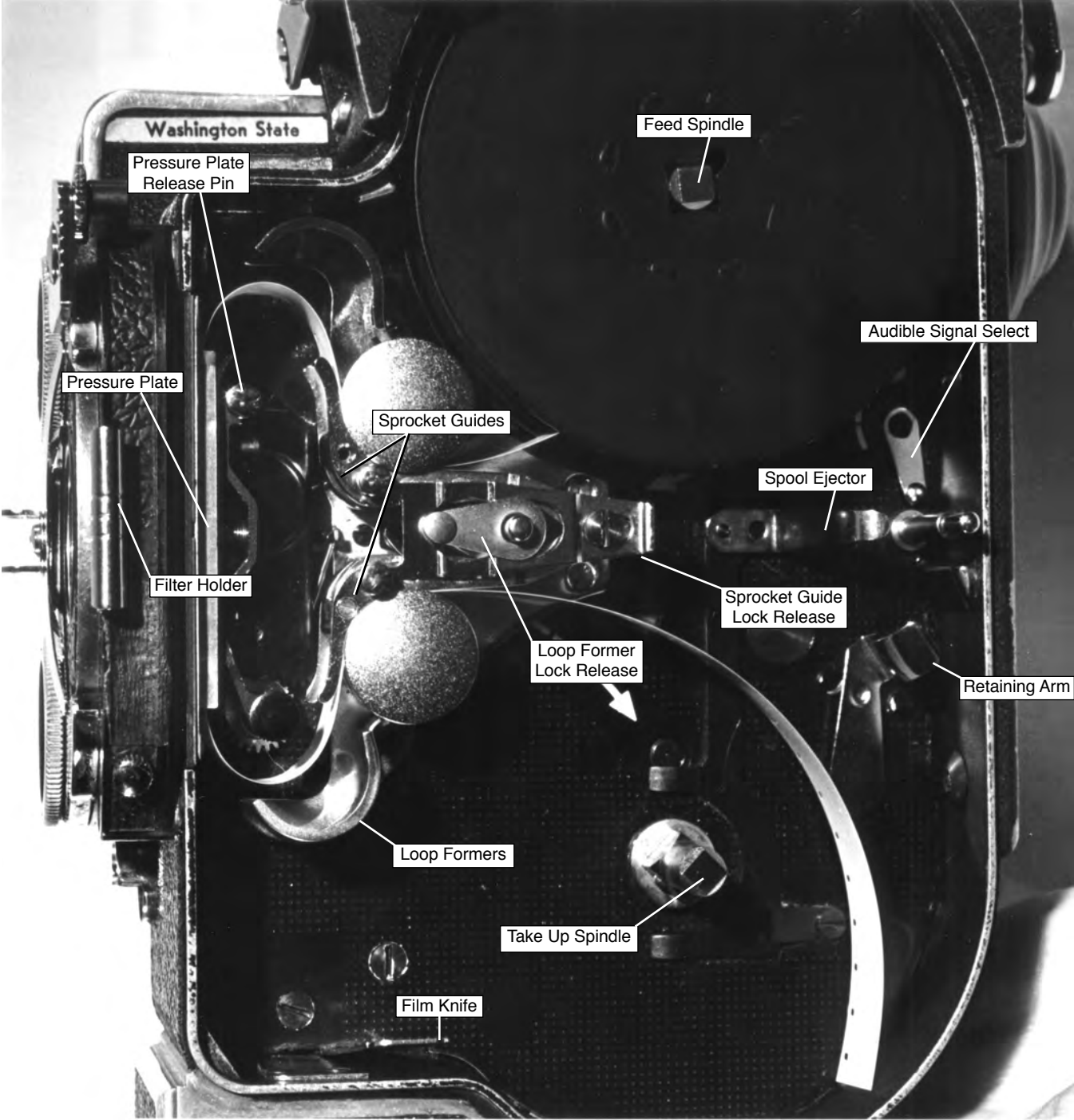
Using the film knife (located at the bottom of the camera), clip the film end. Close the loop formers by moving the control lever parallel to the pressure plate. Insert film end in the top feed sprocket and start the camera motor. The film is automatically threaded through the gate. If you need to adjust the film, you can spread the sprocket guides by sliding the locking plate forward.

Continue to run the camera until 12 to 15 inches of film have passed through the drive mechanism.

Open the loop formers by pressing the button located on the sprocket/gate assembly. Insert the film end into the take-up spool (in the direction of the engraved arrow), place the spool on the lower spindle and take up any



Camera Diagram



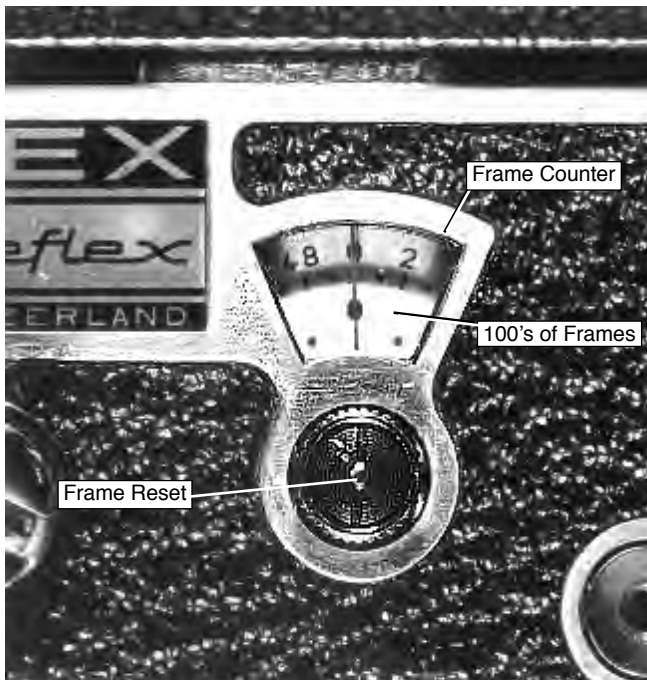
slack by hand. Run the camera again for several seconds to make sure that everything is okay (check that the film is advancing normally and the loops do not scrape the body). Replace the lid and lock.

Footage Counter

The footage counter indicates how much film has been exposed. Once the camera has been loaded, the counter will read FEET. Run the camera until the figure "0" appears opposite the white line in the indicator window. This indicates the film leader has been taken up and the camera is ready to be used.

The counter will automatically return to "0" when the lid is removed.

When shooting a 24 fps, there is the option for an audible CLICK every second indicating that 8 inches of film has passed through the camera. This can be useful when timing a pan or zoom shot. For an audible CLICK, move the audible signal select lever down when loading film; for no click place the lever in the "0" position.



Frame Counter

The frame counter is helpful for lap dissolves, double exposures, and animation.

The upper dial adds the frame in forward run and subtracts them in reverse (0 to 50 frames).

The lower dial totals in unit of 50 frames. It will subtract when the camera runs in reverse.

Indicators are from 0 to 1000 frames.

Troubleshooting

Problem and Probable Cause

Film is black:

Variable lens shutter was closed

Lens cap left on

Exposure incorrect

Film underexposed, images reversed; with color film, general orange tint:

Film incorrectly loaded with the base facing forward instead of the emulsion

Jumpy Images:

Loops formed incorrectly

Shrunken film stock

Prevailing red-orange tint:

Using tungsten lamps with a daylight film or an underpowered tungsten lamp

Obscured Images:

Turret Incorrectly positioned

Telephoto lens on turret obscuring view of other lenses

Partly obscured pictures:

Telephoto lens in the way of the taking lens or turret badly positioned

Parallel scratches on the edge of the film:

Dust or particles of emulsion in the film gate

Camera poorly loaded

Troubleshooting Continued

Fogged film:

Light entering through the viewfinder or filter slot

Film was loaded in extremely bright light

Camera not seated well

Film fogged at edges:

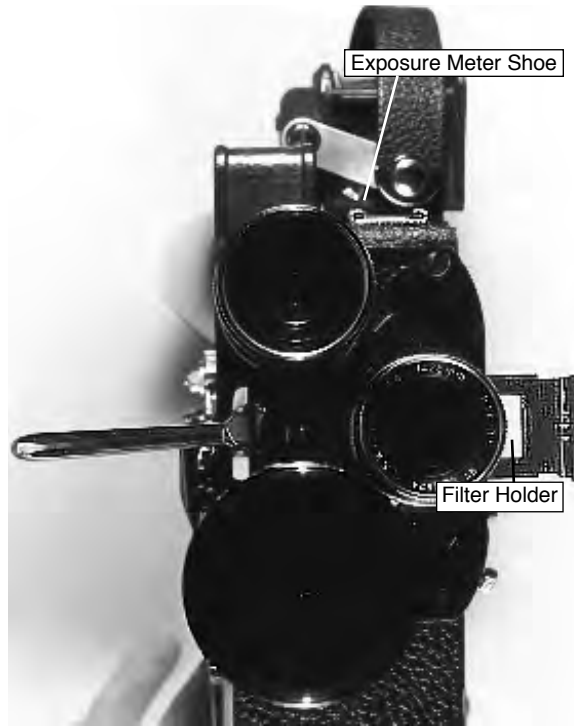
Camera loaded in strong light

Warped take up or feed reel

Filter carrier not in slot during exposure

Out of focus or "breathing" pictures:

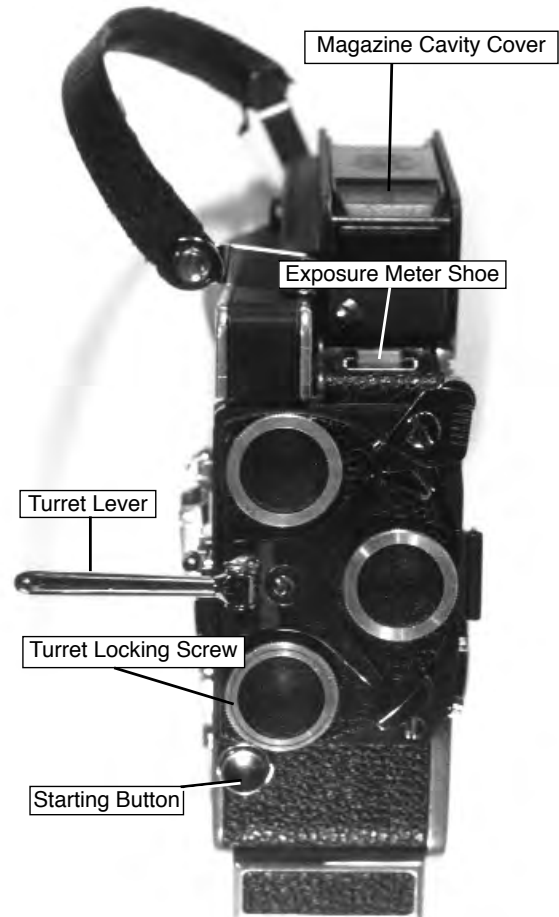
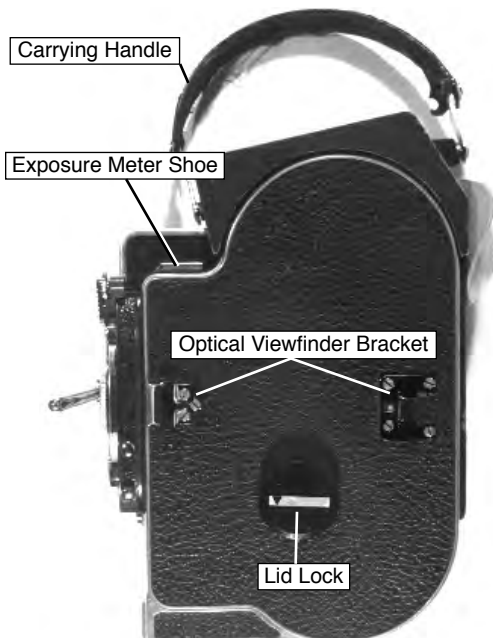
Pressure plate incorrectly locked



Reference Illustrations

Exposure times (in fractions of a second)

Filming speed	Shutter open Lever up		Shutter ¼ closed Lever on ½		Shutter ¾ closed Lever on 1	
	RX	Non RX	RX	Non RX	RX	Non RX
	12 f.p.s.	1/33	1/40	1/45	1/55	1/75
16 f.p.s.	1/45	1/55	1/60	1/75	1/100	1/125
18 f.p.s.	1/50	1/60	1/70	1/87	1/110	1/137
24 f.p.s.	1/65	1/80	1/90	1/112	1/150	1/188
32 f.p.s.	1/90	1/110	1/120	1/150	1/200	1/225
48 f.p.s.	1/130	1/160	1/180	1/225	1/300	1/375
64 f.p.s.	1/180	1/220	1/240	1/300	1/400	1/500
Speed control knob on 18-64 f.p.s.	Single-frame exposure		(selector in position I)			
	1/30	1/40				



**Please complete the proficiency test before
checking out the Bolex H16 from media loan**

Written Test

1. List the four steps necessary to set the diopter adjustment.
2. How many frames per second is the Bolex capable of shooting? How few?
3. What kind of viewing system does the Bolex H16 employ?
4. What is the maximum shutter angle of the Bolex H16? What is the shutter speed?
5. Explain the difference between Bolex Rx lenses and normal lenses. What is the effect on the shutter speed, and how do you compensate?
6. What is the function of the turret plug?
7. List the steps necessary to perform a lap dissolve.
8. List the steps necessary to thread the camera.
9. Describe any precautions you need to take while cleaning and operating the Bolex.
10. What is the extent of your financial responsibility in case of loss, or damage to the camera?

Operational Proficiency Test

1. Identify all of the parts and control of the Bolex H16.
2. Set the diopter and place the 85b filter in the camera.
3. Set the fps at 24, set the counter at 0.
4. Load the film in the camera.
5. Demonstrate how to create a lap dissolve.
6. Demonstrate extended exposure and animation features.
7. Display proper lens mounting to insure appropriate "taking" balance.