

The Camera that grows with you

As you progress in movie making, as your movie interests broaden, you're not limited to one basic camera.

MORE POWER TO IT

A universal or synchronous type electric motor can be added to the 70-70H for continuous running of the camera with or without sound magazines. Universal type— it controlled by generator or camera, can be used through entire speed range 1 to 44 frames per second. Runs on AC or DC, 12, 24, 32 or 110 volt. Synchronous motor operates at 115 volts, 60 cycle AC only, for filming at 24 fps.

NEW G.D. BELL & HOWELL '630' MAGNETIC SOUND PROJECTOR

Now you can make film and sound movies

- Load your "30" with film.
- Load your magnetic at 24 frames per second.
- Send developed film to Bell & Howell or take it to your Bell & Howell dealer for copying.
- Thread the "630" with the magnetic coated film as with any Kikodisc projector and plug in microphone.
- Record your voice or music directly on film as you project.
- The result—a professional quality sound-on-film movie inexpensively made in a matter of minutes!

MODEL 70H

The Model 70H is identical to the 7001, with the addition of a shutter multiplier and a Vocoder storage camera. This camera is adapted to take standard magazines which increase film capacity to 200 or 400 feet. Fully retractable, the magazine is in any position without interval loading of the camera with 1000 feet of film. The magazine can only be used with electric motor drive. The motor and film magazines are accessories.

best results are to be obtained. Wipe with a clean, dry, soft cloth; *use no sharp tools!* If emulsion accumulations remain, remove them with a moistened toothpick. Clean the upper and lower film guides (D and E, Figure 21) in the same way.

Wipe the inside of camera. Keep it free from dust.

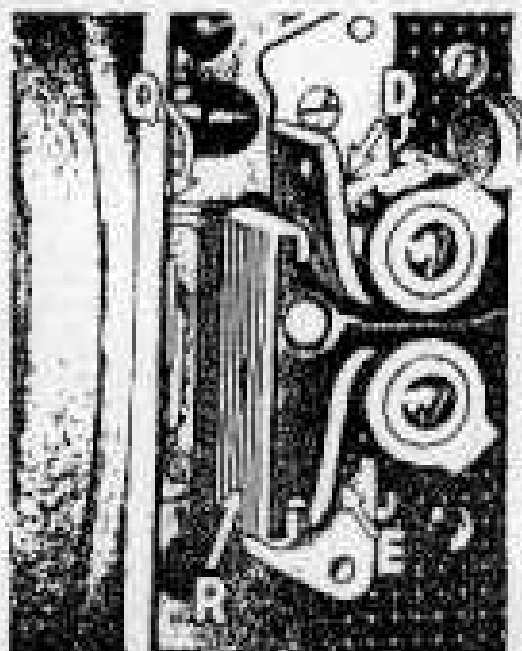


Figure 21
Q—aperture plate, R—back plate, D and E—upper and lower film guide shoes

70-S Superspeed Camera

The 70 camera is also built in a superspeed model (70-S) operating at one speed only—128 exposures per second, which is eight times normal speed. This camera produces the true s-l-o-w motion effect, and is used primarily for motion analysis work. The superspeed camera is operated in the same manner as other 70 cameras *with the following exceptions:*

Threading. The shuttle teeth of the superspeed instrument are not always in the same position when the mechanism is stopped. Sometimes, in threading the camera, it will be found that the shuttle teeth do not project through the slots in the aperture plate. In order to engage the film perforations properly on the shuttle teeth, it is necessary that these teeth project through the aperture plate. If the starting button is tapped lightly, the shuttle teeth will appear through the aperture slots, thus allowing proper engagement of the film perforations. It is advisable to stop

the shuttle with the teeth at the lower ends of the slots, as this assists in the formation of film loops of the correct size.

IMPORTANT! FIVE perforations should be visible in each loop, instead of six in the lower, and seven in the upper loop, as in the regular 70 cameras.

Operation. The superspeed camera exposes 16 feet of film when it is fully wound. Although only five seconds are required to expose this footage, it should be remembered that forty seconds will be required to run this length of film through a projector operating at normal speed. 16 pictures per second. It is important to wind the camera fully after each scene has been photographed, to insure having sufficient spring power for the next scene.

Lens Adjustment. To compensate for the shorter exposure which each individual picture receives when the film is run at 128 pictures per second, it is necessary to open the camera lens three full stops (moving the calibrated diaphragm adjusting ring in the direction of the smaller numbers of the diaphragm scale). Example: When $f/11$ would give correct exposure at normal (16) speed, set the 128-speed camera lens at $f/4$.

Cleaning and Lubrication. Clean the aperture plate and film gate after every roll of film, following the procedure outlined on page 27. Also follow the lubrication instructions on page 26, but oil the camera after every 200 feet of film have been exposed, instead of after every five or six hundred feet.

Electric Motor Drive and Magazine Equipment for 70-H Camera

Attaching the Motor. The spring motor of the camera should preferably be run down before attaching the

electric motor or using the hand crank. Lock the starting button S, Figure 18, in operating position by pushing button down as far as possible and engaging locking pin Figure 18. Test by turning the spring winding key half turn. The camera mechanism should operate as soon as the winding key is released if the starting button is properly locked. Winding key must be removed before motor can be attached. Pull out winding key to remove.

To attach the electric motor, insert the main motor shaft and the motor support shaft into their respective sockets.

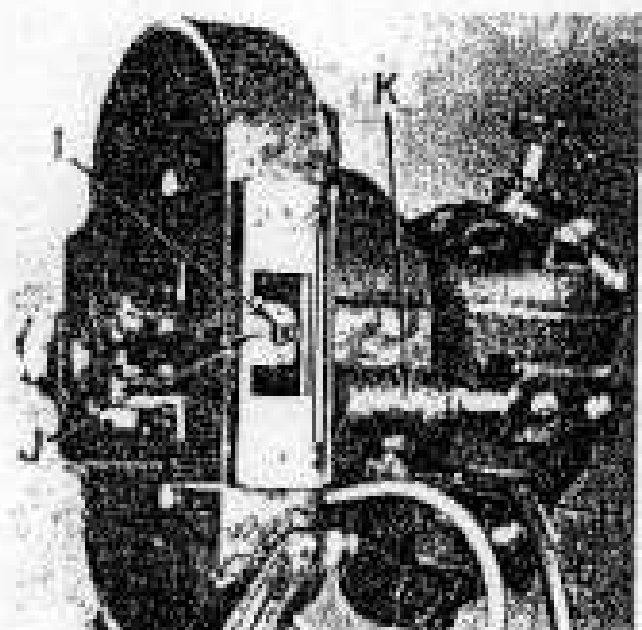


Figure 22

- G. Motor hand turning knob
- H. Motor support locking screw
- I. Magazine attaching screw socket
- J. Magazine door lock control plunger
- K. Motor support rod socket

Turn the motor knob G, Figure 22, by hand until the motor shaft engages with the camera mechanism. The motor will not slide into proper position until this engagement of slot and lug is made. When the slot is engaged, slide the motor as close to the camera as the shaft will permit. Then tighten the thumb screw H, Figure 22, below the motor supporting rod socket. Open the camera and turn the motor knob G, Figure 22, several times by hand, observing the camera sprockets, to be certain that motor drive shaft is properly engaged.

Operating with Motor. CAUTION: Never connect

the motor to any supply line until you are certain that the line voltage conforms with the specifications indicated on motor name plate.

The starting button on the camera *must always be locked down before the motor is started*. Use the calibrated control P, Figure 21, to set the camera speed; *this must be set above 24 speed for synchronous motor*. Start and stop camera with motor line switch.

Motor Lubrication and Care. After each 5,000 feet of film are run, place two drops of B&H camera oil in the two oil cups, located over each of the two main motor bearings. If the motor is used infrequently, place one drop of oil in each oil cup just before using.

Examine the motor brushes at regular intervals to make sure that they are not worn shorter than $\frac{3}{16}$ ". They may be removed, on their springs, by unscrewing the bakelite screw caps. New brushes are available through your Bell & Howell dealer. Also, inspect and clean the motor commutator occasionally. To clean, place a piece of lintless cloth on the end of a stick and insert it through one of the four holes in the motor housing, holding it firmly in position against the commutator while turning the motor by the knob G, Figure 22. Never use emery cloth.

The reduction bearing of the motor is encased in grease. This grease packing will last for two years of regular service. Repacking should be done only through your Bell & Howell dealer.

Loading Magazines. An electric motor is necessary for magazine operation, as the spring motor is not so designed.

Lay the magazine flat with cover side up and valve, or side toward you, as in Figures 23 and 24. Unscrew six cover discs by turning counter-clockwise. Attach the

loading stud as shown in Figures 23 and 24, to depress the plunger and hold the film valves open. This can be done in white light. Then in darkness, or with the aid of a suitable safe-light, open the film can. (200-foot rolls of 16mm film on daylight loading spools can be loaded in daylight. Avoid loading in bright sunlight.) The unexposed film is wound with the emulsion (dull) side in.

Unroll about 10 inches of film in a clockwise direction, pass the end to the right of the roller at the magazine aperture and out through the left-hand valve. Drop the spool or roll of film over the spindle. Film not purchased on daylight loading spools is used with a standard magazine hub instead. Loop the film, *emulsion side out*, and insert it through the right-hand valve and to the left of the roller, into the take-up chamber. Draw through, leaving a loop outside as shown in Figures 23 and 24, and attach the end to the take-up spool or hub. Drop the spool, or hub, over the right-hand spindle, and turn slowly in a counter-clockwise direction to take up slack. Check to see that the film is down snugly on the hub and will not contact the cover plates when they are screwed on. Now screw on the two cover plates, and remove the loading stud, thus closing the film valves.

Attachment of External Magazine. To attach the magazine, remove the cover plate on the back of the camera. (Figure 22 shows cover plate removed.) Hold loaded magazine near opening and slip film loop around the U-shaped plate which extends partly across the opening. Move the magazine into position against the camera and tighten thumb screw E, Figure 18, after engaging it with threaded socket I, Figure 22. Slip the spring belt over the magazine take-up pulley N, Figure 18.

Automatic Valve Action. When the camera door is

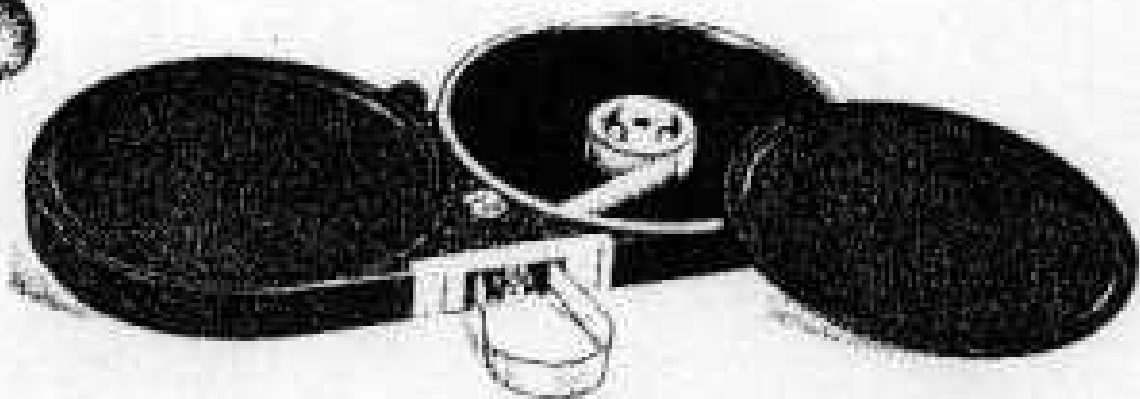


Figure 23

Correct method of loading magazine with film not supplied on daylight loading reels

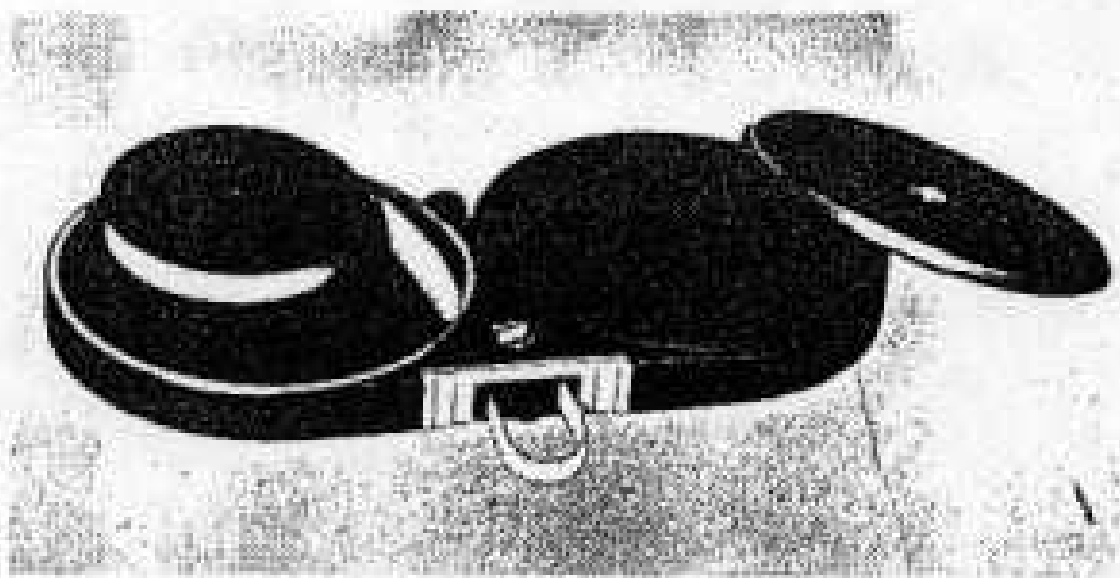


Figure 24

Correct method of loading magazine using daylight loading spools. Loading stud is in position and feed spool about to be placed on spindle

replaced and the catches are turned to "closed," the plunger J, Figure 22, automatically opens the magazine valves, holding them open until the camera door catches are turned "open" position. Free film passage is thus provided, and chances of abrasion or static eliminated.

Threading the Camera. Draw a sufficiently large loop from the upper magazine compartment to permit normal threading. Do not draw film from the lower take-up spool. Thread through the feed sprocket, film gate, and take-up sprocket in the customary way, testing correctness by turning the knob G, Figure 22, by hand, in a clockwise direction.

To use 100-foot spools of film in the camera without disconnecting the external magazine, remove the spring take-up belt by taking it apart at the joint. The belt can be easily replaced by inserting the end in the camera pulley hole and pushing it around the pulley and out the other side.

Operating with Spring Motor. With electric motor and magazine removed, and the cover plate replaced on the back of the camera, the 70 camera may be operated with either the spring motor or the hand crank. Do not attempt to use the magazine when operating camera with spring motor.

Veeder Footage Counter

The Veeder footage counter, replacing the manual footage counter, counts up to 1000 feet of film and may be reset to zero at any time.

When using the regu-



Figure 25
V. Reset knob

lar 100-foot internal loading spools, set the footage counter at "000" by turning reset knob V, Figure 25, counter-clockwise, run the camera until the counter registers "004," to run off the remainder of the leader film, and then reset the counter to "000." When the full 100 feet of film have been exposed, allow the camera to run until the counter registers past "106," to allow the film trailer to enclose the exposed film.

When using a 400-foot external magazine, set the counter at "000." Allow the camera to run until the counter registers "002" to run off the film exposed while threading the camera; then reset the counter to "000." When the full 400 feet of film have been exposed, allow the camera to run about another 2 feet; the end of the film will then have run through the camera and onto the take-up spool in the magazine.

Camera speed	Shutter speed
8	1/14 second
12	1/21 second
16	1/28 second
24	1/42 second
32	1/56 second
48	1/84 second
64	1/112 second
Single Frame	1/15 second