



eumig

SOUND 31 XL

live sound

Camera operation, page by page

- | | | | |
|----|---------------------------------------|----|------------------------------|
| 4 | Before you start shooting | 12 | Inserting the film cartridge |
| 4 | Loading the batteries | 13 | Footage counter |
| 5 | AC operation | 14 | Using a cable release |
| 5 | Checking the batteries | 14 | Using the run lock |
| 6 | Adjusting the eyepiece | 15 | Eyepiece shutter |
| 6 | Focusing | 15 | Shooting sound movies |
| 6 | Framing and image scale | 16 | Microphone |
| 7 | Universal focus setting | 17 | Sound recording |
| 7 | Automatic exposure control | 17 | Monitoring with the earphone |
| 7 | Manual exposure control | 18 | Sound takes made easy |
| 8 | Exposure override | 21 | Editing sound movies |
| 8 | Framing speeds | 22 | Camera care |
| 9 | Fades | 24 | Technical data |
| 10 | Finder signals | 27 | Depth of field tables |
| 12 | Daylight and artificial light filming | 31 | Optional accessories |

Your new EUMIG SOUND 31 XL movie camera is the key to a novel experience: live sound recorded on the same film at the same time as the moving picture.

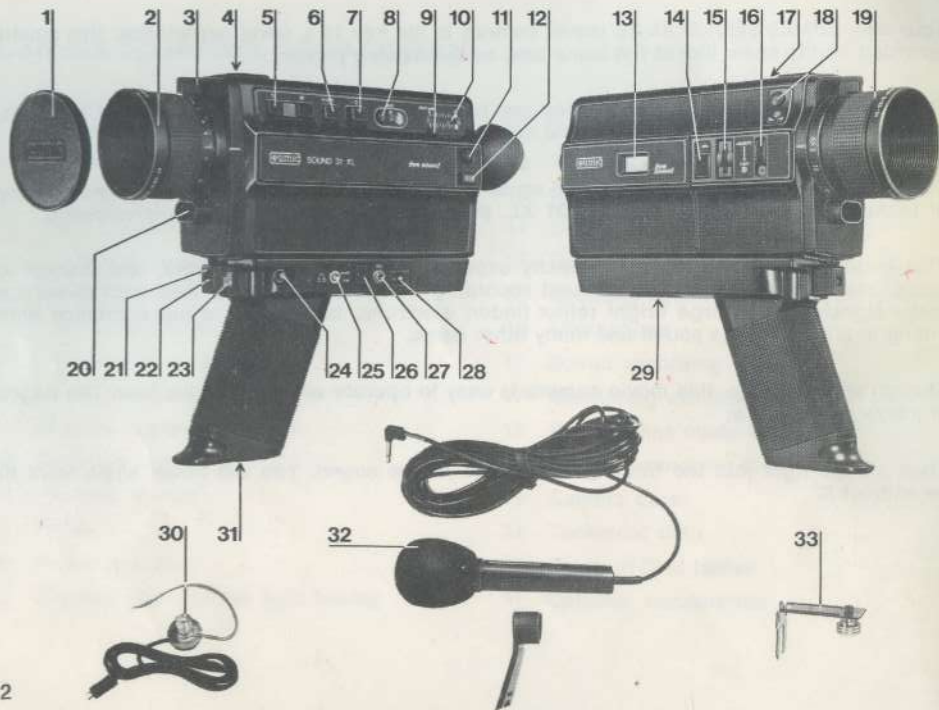
There is nothing like it: sound movies are true to life, regular documentaries of children, parties, folklore or vacations — you will never run out of subjects.

To make sure that your movies come up to your expectations, we have built a wide array of features into the EUMIG SOUND 31 XL, providing maximum operating convenience.

This includes XL capability for perfectly exposed films even in poor light, and automatic sound start for a distortion-free sound recording from the first frame. And then there are many signals in the large bright reflex finder, electronic fading in and out combined with fading in and out of the sound and many other items.

Though very versatile, this movie camera is easy to operate when you know how. The pages to follow tell you how.

Then plunge right into the thrilling experience of live sound. You will never again want to be without it.



Your camera at a glance

- 1 Lens cap
- 2 8.5–24 mm Eumig Vario-Viennon f/1.3 zoom lens
- 3 Zooming ring
- 4 Framing speed control
- 5 Power zoom rocker switch
- 6 Aperture override key
- 7 Main on/off switch
- 8 Battery test button
- 9 Footage counter marker slide
- 10 Footage counter
- 11 Eyepiece focus
- 12 Eyepiece shutter
- 13 Film identification window
- 14 Film door latch
- 15 Manual aperture control
- 16 Sliding filter switch
- 17 Movie light mounting slot
- 18 Fade button
- 19 Focusing ring
- 20 Exposure metering cell
- 21 Release button
- 22 Cable release socket
- 23 "Test sound" mark
- 24 Continuous run button
- 25 Earphone jack
- 26 Microphone sensitivity switch
- 27 Microphone input jack
- 28 Socket for external supply plug
- 29 Tripod bush
- 30 Earphone
- 31 Battery compartment locking screw
- 32 Microphone
- 33 Movie light mounting bracket

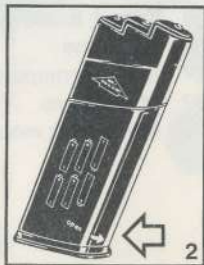
Before you start shooting . . .

.you'll do well to familiarize yourself with all camera functions on the basis of these operating instructions. Put the camera through its paces in a dry run, without film, so that even your first movie will be a smashing success.

Loading the batteries

Your camera is powered by six penlight (AA) batteries. Use only leakproof types as defective batteries can ruin your camera. Camera damage due to leaking batteries is not covered by the warranty. We recommend alkaline-manganese batteries such as Mallory MN 1500, Eveready E 91, RCA VS 1334, UCAR E 91, Ray-O-Vac 815, Maxell AM 3, Hellesens MN 1500, Kapsch R 6/6 or Varta 7244.

In place of the penlight batteries you can also use size AA Nicad accumulators and recharge them in a suitable charger unit. Consult your photo dealer



1. Turn the screw with a coin in the direction of the arrow ("open") and pull the battery holder out of the handgrip.
2. Open the battery holder by lifting its cover
3. Insert the six batteries in the battery holder as indicated by the polarity marks (+/-).
4. Replace the cover, push the battery holder back into the handgrip, and turn the screw clockwise.

AC operation



You can operate your camera also on house current, using the optional AC adapter. Make sure that the plug of the connecting cable is firmly seated in the plug socket. With AC operation, the batteries are automatically cut off.

Checking the batteries



Check the batteries occasionally before using your camera. To do this, set the on/off switch **1** to the ON position (red dot) and press the battery-check button **2** for a moment. If the batteries are in good condition, the white needle in the battery-check window will shoot into the green area. When the needle remains in the red area, check to see whether the batteries are inserted correctly. If they are and the needle stays in the red, replace the batteries.

When the AC adapter is being used, the battery check indicates whether the camera is drawing current.

Adjusting the eyepiece

The viewfinder eyepiece can be adjusted to your individual eyesight over a range of ± 3 diopters. To do this, keep turning the eyepiece-adjustment button back and forth until the sighting line is sharply defined when viewed against a plain background.



Focusing

Set the lens to the longest focal length (24 mm tele position) and sight your subject. If you see double outlines, the image is unsharp. Turn the focusing ring until the double outlines fuse to a single outline.



Framing and image scale

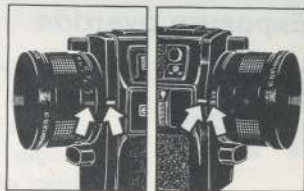


The focal length of the zoom lens can be continuously varied between 8.5 mm (wide angle) and 24 mm (telephoto) for selection of the desired image size. This is the basic function of a zoom lens. But you can change focal length also while shooting, to achieve a dolly or tracking effect. You can change the focal length, or zoom, either manually, by means of the zoom ring, or electrically with the power-zoom rocker switch. When you press either its T (telephoto) or W (wide-angle) end, the servomotor will give you a smooth, continuous variation of focal length or zooming

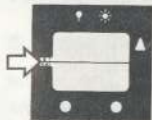
movement. The particular focal length for which the camera is set can be read off the zoom ring.

Universal focus setting

When there is no time to focus, use the universal focus setting. Align the double line (II) on the focusing ring and the figure 10 on the zoom ring with the index mark on the camera body. With this combination, you'll get a depth of field extending from about 1.5 m to infinity even in poor light, and you can "shoot from the hip".

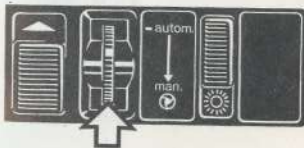


Automatic exposure control



The EUMIG SOUND 31 XL automatically controls the exposure, allowing also for the speed of the film in the camera. You can read off the aperture in use on the scale to the left of the viewfinder image. A shaded area before $f/1.3$ warns against underexposure, the red area beyond $f/45$ against overexposure.

Manual exposure control

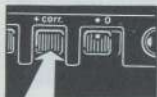


For special effects you can switch off the automatic exposure control system and set any desired f /stop manually with the knurled wheel. The f /stop so set is displayed in the viewfinder

Manual exposure control is indicated by a red light in the lower right-hand corner of the viewfinder



Exposure override



The automatic exposure control system of the EUMIG SOUND 31 XL can cope with all normally encountered lighting conditions. However, the electric eye measures all of the light reflected by the scene and averages the highlight and shadow readings. Now when the darker subject of major interest, say, a sunbather, is influenced for exposure purposes by its brighter surroundings, in this case an expanse of sand, a plus-one-stop correction is called for. Apart from beach scenes, this will be the case with snow, backlighting scenes, and fog.

To actuate this plus-one-stop correction, press the "+ corr." button and hold it down for as long as you want it to be effective. The whole automatic exposure-control range then moves up one f/stop but remains operative.

Framing speeds



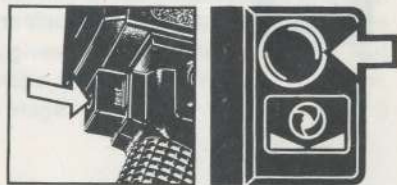
While reproduction of sound recorded at 18 fps can be excellent quality when the movie is projected on a Eumig High Quality Sound projector, for still better sound the EUMIG SOUND 31 XL gives you the option of shooting both picture and sound at 24 fps. Of course you'll have to project at 24 fps, too.

Fades

Your EUMIG SOUND 31 XL incorporates electronic fade-in/fade-out provision. The optical fade-in or fade-out is combined with a sound fade-in or fade-out.

Fade-in

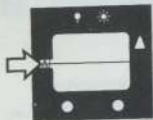
- Pull the trigger partway, to the "test sound" mark.
- Press the fade button for about two seconds and then release it. As you can see from the aperture scale in the viewfinder, the diaphragm is closing. After a few seconds the aperture scale starts moving again. Now pull the trigger all the way.



Fade-out

Press the fade button two, three seconds before the end of the take und hold it down while completing the take.

Finder signals



f/stop in use: The actual lens aperture can be read off once the camera is ready to run (on/off switch switched on and release depressed to "Test Sound" mark) or at any time during filming.

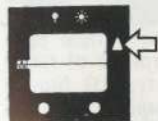
A shaded field before f/1.3 warns against underexposure, a red field against overexposure.



Manual exposure control: The red indicator in the lower right-hand corner of the viewfinder lights up when you switch to manual exposure control.



Sound recording indicator: Visible in the lower left-hand corner of the viewfinder and described in the section on sound movies.

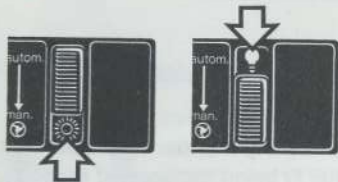


Film-run blinker: A clear triangular signal on the right in the viewfinder that keeps going on and off indicates that the film is being transported properly. Just before you come to the end of the film, with about 20 seconds or five feet to go, this signal turns red. This gives you a chance to plan the last take accordingly. When the signal stops blinking, you're out of film or, rarely, the film is jammed in the cartridge. (Check the footage counter.)



Conversion-filter indicator: Two symbols above the finder image, a light-bulb (for artificial light) and a sun (for daylight), tell you whether the conversion filter is in the right position. When you pull the trigger partway, to the "test sound" mark, one of these two symbols lights up, depending on which filter position you selected.

Daylight and artificial-light filming



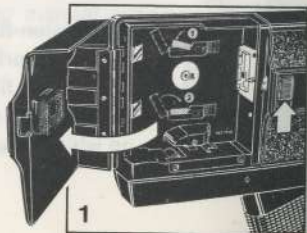
With the super-8 films now on the market, you can shoot both in daylight and in artificial light. Make sure that the sun symbol is exposed by the filter slide when you shoot in daylight, and take care to move the filter slide to expose the lightbulb symbol when you use an off-camera movie light directly on the camera by means of the adapter, the filter automatically swings out of the optical path and the lightbulb symbol lights up regardless of filter-slide position. Similarly, when you use type G film, a notch in the cartridge moves the conversion filter out of the way and actuates the appropriate viewfinder symbol (but not the filter slide).

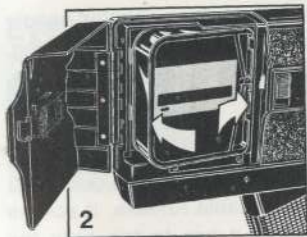
When shooting with on-camera movie light, be sure to plug in the mounting bracket in the position shown.

Inserting the film cartridge

Load the camera either with a regular (silent) Super-8 cartridge or with a Super-8 sound cartridge of film rated at ASA 40 or 160 (17 or 23 DIN). When used in daylight, these film speeds are reduced to ASA 25 or 100 (15 or 21 DIN) by the camera's built-in conversion filter. The film speed is set automatically by a notch on the cartridge when you insert the latter in the cartridge chamber.

1. Push the latch up and raise the hinged film door



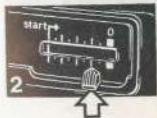


2. Place the cartridge in the chamber with the film aperture toward the lens, label on top, then snap it in by pressing down on the other end.
3. Close the film door and make sure that the door latches. A glance at the film-identification window then tells you whether the camera is loaded and what kind of film you have in it.

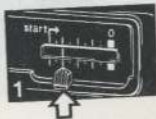
Caution: When inserting a sound cartridge, be careful not to damage the film at the cutout in the cartridge where the film is contacted by the soundhead.

Footage counter

The footage counter tells you how much film there is left in your 50-ft. cartridge. This is particularly important in the case of longer takes with live sound. With a fresh cartridge inserted, the footage-counter needle stands at "start" and then begins to travel toward to "0" position as you start shooting. It automatically returns to the "start" mark when you remove the cartridge. If you take out a cartridge before all of the film has been exposed (not recommended in the case of sound cartridges), you can use the marker slide to "make a memo" of the footage-counter position at which you stopped shooting. To illustrate: Let's say you've exposed one-fourth of the film and want to change cartridges.



1. Before removing the cartridge, move the marker slide up to the footage-counter pointer
2. When you're ready to continue with the partly exposed cartridge, move the marker slide as many scale divisions from the right as it was from the left. The marker slide now indicates the end of the film.



Do not remove a fully exposed cartridge from the camera until the footage-counter needle is in the "0" position and the film-run signal in the viewfinder has also stopped blinking. When a cartridge has been fully exposed, the word "Exposed" appears in the film aperture.

Using a cable release



For shake-free releasing with a tripod, use a cable release. It screws into the socket in the release button. Since it has to trip both the sound section and the film drive, the cable release should be a heavy-duty type.

Using the run lock



When shooting long scenes, with the camera preferably on a tripod, you can set the release for continuous run. Push it all the way in, then lock it in position by pressing the continuous-run button. This also gives you a chance to get into the act yourself. To release the lock, momentarily press the release button once more.

Eyepiece shutter



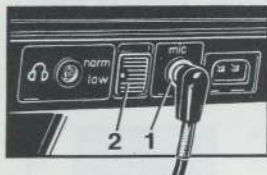
To prevent stray light from getting on the film through the viewfinder eyepiece (when shooting from a tripod with the sun in the back), the viewfinder opening can be covered. This is done simply by pushing the slide forward, toward the lens.

Shooting sound movies



The EUMIG SOUND 31 XL records the picture and sound at the same time for lip-synchronised sound movies. The sound is recorded in the camera on a narrow magnetic stripe already applied to one edge of the Super-8 sound film. Your camera also has an automatic sound start system to begin recording the sound without delay or distortion from the first frame of the film. As you press the release part of the way to the "**Test sound**" mark, you not only switch on the finder signals but you can also hear the motor running for the sound section. The conversion filter signal lights up at the same time. Now fully depress the release to start the film running for your shot.

Microphone



Place the microphone as close to the sound source as possible. The 20-ft. long cable affords you plenty of freedom of movement. Plug the microphone into the jack 1 in the camera body, making sure that the plug is all the way in.

The recording level is controlled automatically. However, the microphone sensitivity switch 2 permits you to set the sensitivity of the microphone input as required in a given situation. Set it to "norm" when you want to record all ambient sounds and your subject is at some distance. Set it to "low" if the sound is loud enough, your subject is very close, and you care less about ambient sound. In the "low" position, background noise is largely suppressed.

Place the microphone not less than 1 metre or 3—4 feet from the camera as otherwise you may be recording also the camera noise.

In addition to the standard microphone that comes with the camera, two special Eumig microphones are sold by camera stores. (See appendix to these Operating Instructions.)

Sound recording indicator



You can visually monitor the sound being recorded as you shoot. The recording indicator is located in the lower left-hand corner of the viewfinder. When you press the release partway, as far as the "Test sound" mark, this green light begins to flicker rhythmically with the sound, provided that the camera is loaded with a sound cartridge, that the microphone is plugged in and properly placed, and that the microphone input sensitivity has been set correctly. You are now ready to start recording. A steady green light means that the sound is too loud and that the switch should be moved to "low". A green light that barely flickers means that the microphone should be moved closer to the sound source. If the green light does not go on at all or only now and then, set the microphone sensitivity switch to "norm" and move the microphone still closer to the sound source.

Monitoring with the earphone

You can monitor the sound being recorded also with the earphone that comes with the camera. Plug it into the earphone jack. Now you can hear the sound exactly the way it is being recorded on the magnetic stripe of your film.



Sound takes made easy

A few hints and reminders

- How long should a sound take be? That depends on what you are recording. One thing to bear in mind is that you should not suddenly change the microphone location during a sound take — of a conversation, for instance.
- Place the microphone close to the sound source and as far away from the camera as possible.
- You get the cleanest sound tracks with the microphone sensitivity switch in the “low” position. For this reason, always try to adjust the recording conditions so that you can use the microphone in this low-sensitivity position.
- Whenever possible, use the windscreen with your microphone. About the only time you cannot do this is when the sound is so weak that the green record indicator hardly lights up even when the microphone switch is in the “norm” position.

- Always focus with the lens in the full telephoto position.
- A sound camera consumes a lot more current than a silent movie camera. To extend the life of the batteries, switch off the camera whenever you interrupt shooting. Also, it is a good idea to always carry a spare set of batteries.
- In many cases — for example, when the sound source is far away — the live-sound recording will be unsatisfactory. You can judge the quality of the sound being recorded by monitoring it with the earphone. But poor sound need not deter you from shooting. After the film has been processed, you can postrecord the sound track for that scene on your Eumig sound projector, using background music, narration, or sound effects from a record or tape. Some noise may record on the film even when the microphone is not plugged in, but this noise will be automatically erased in postrecording.

- With the release partly depressed to the "Test sound" mark, you are instantly ready to record a sound scene. The automatic sound start is fully energised in this position and you can check all settings in the viewfinder
- Two-stage releasing (depressing the release first only to the "Test sound" mark) has the advantage that the whole sound section (flywheel and amplifier) is ready for operation, thus recording the sound without delay and without distortion from the first frame. If on the other hand you fully depress the release in one go, the amplifier takes about 1 second to become fully operational and the sound fades in softly over the first few frames of the shot.
- Since the sound is recorded on the magnetic stripe 18 frames (or about one second) ahead of the picture, pull the camera trigger all the way a second or two before speech sets in. (More about this in the next section.)

Editing your sound movie

Sound movies can be edited and spliced by conventional techniques. However, you will have to allow for a peculiarity of sound film. In conformity with international standards, the live sound that goes with a given picture leads the picture by 18 frames (or about one second). Now when you cut out a number of frames within a scene, you are cutting out the sound for the pictures behind them. One way around this problem is to see to it during live-sound takes that music, speech or other sounds set in a second or so after the beginning of the sequence being filmed.

The EUMIG SONOMATIC sound recording system greatly facilitates adding to, correcting and improving live sound films. More on page 34 – 35 .

Camera care

Our slogan "Eumig makes filming easy" applies also to the care of your EUMIG SOUND 31 XL. It requires very little attention. While its fine lens has a scuff-resistant antireflective coating, it should not be cleaned with anything that might scratch it. Use a camel hair brush or a clean, soft, lintfree cloth.

Dust the cartridge chamber occasionally with a camel hair brush, too.

As the film moves within the cartridge, any dirt and dust which it may carry will deposit on the recording mechanism. Some of its parts should therefore be cleaned periodically (after every five to ten cartridges). Follow this procedure:



1. Raise the film door and push down the retaining spring, as shown. This releases the film door latch and the latch slide drops down.
2. Set the on/off switch to the red dot. Push the shutter-release button all the way in and press the continuous-run button.



3
Capstan
Pressure roller

3. The camera is now running, but the capstan and the pressure roller are not turning. To set these, too, in motion, you can simulate an inserted sound cartridge by pushing down the sound-cartridge sensor, as shown. You can do this also to check any other sound functions without a sound cartridge being inserted.

With a swab (Q-Tip or the like) or a small piece of clean, soft, lintless cloth wrapped around a matchstick and dipped in denatured alcohol, clean the capstan and the rubber pressure roller as they rotate. Then use a fresh, dry swab to remove any residue. When you are finished, release the run lock.

Caution: Be sure to close the film door before raising it again to insert a sound cartridge. Closing the film door retracts the pressure roller. If you neglect to close it, you may damage your camera. Such damage is not covered by the warranty.

EUMIG SOUND 31 XL — LIVE SOUND, Technical data

Film gauge:	Super-8 film in silent or sound cartridges.
Film speed:	Up to 160 ASA (23 DIN), automatic film speed setting by cartridge notch scanning.
Lens:	8.5—24 mm Eumig Vario-Viennon f/1.3 Motorised and manual zooming Focuses from infinity down to 1.2 metres or 4 feet
Focusing:	Optical double-image rangefinder
Exposure:	Automatic aperture control, Individual aperture override by +1 f/stop; smallest stop f/45. Wheel in camera side to switch from automatic to manual aperture control.
Finder:	Reflex finder with eyepiece focusing over ± 3 dioptres and built-in eyepiece shutter Finder signals: a) Film transport check b) Aperture display with under and overexposure warning c) Approaching end of film d) End of film e) Sound recording indicator f) Conversion filter position g) Manual aperture setting indication

Fades:	By push-button operation; electronic fade in and out with automatically coupled sound fade in and out.
Footage counter:	Footage counter with automatic zero reset; marker slide for changing partly exposed cartridges.
Framing speed:	18 and 24 fps, stabilised (silent and sound), Picture/sound separation: 18 frames.
Drive:	Electric motor drive, powered by 6 penlight batteries or AC adapter, built-in battery test.
Release:	Release lockable for continuous running, cable release socket, automatic sound start with two-stage releasing 1st stage: sound section; 2nd stage: film transport.
Electronics:	8 transistors 4 diodes 1 IC Automatic gain control

- Microphone input:** Switchable from normal sensitivity (Norm — 0.1 mV) to reduced sensitivity (Low — 0.3 mV, suppresses ambient noise).
- External supply input:** For 220 or 120 volt (primary) AC mains adapter; 9 volts secondary output.
- Output:** Monitoring earphone socket.
- Weight:** 1350 grams (47¹/₂ ounces) without batteries, without film.
- Accessories supplied:** Omni-directional microphone (600 Ohms impedance) with 6-metre (20-foot) lead, windscreen and stand; earphone, lens cap, movie light adapter

DEPTH OF FIELD TABLE

for EUMIG SOUND 31 XL

with objective EUMIG VARIO-VIENNON 1.3/8.5 – 24 mm.

Quoted in m. from the filmplane Φ

	1,3	1,8	2,8	4	5,6	8	11	16
Meter	f = 8,5 mm							
∞	3,7 – ∞	2,68 – ∞	1,72 – ∞	1,20 – ∞	0,86 – ∞	0,60 – ∞	0,44 – ∞	0,30 – ∞
15	2,97 – ∞	2,27 – ∞	1,54 – ∞	1,11 – ∞	0,81 – ∞	0,58 – ∞	0,43 – ∞	0,30 – ∞
7	2,42 – ∞	1,94 – ∞	1,38 – ∞	1,03 – ∞	0,77 – ∞	0,55 – ∞	0,41 – ∞	0,29 – ∞
4	1,92 – ∞	1,60 – ∞	1,20 – ∞	0,93 – ∞	0,71 – ∞	0,52 – ∞	0,39 – ∞	0,28 – ∞
3	1,66 – 16	1,41 – ∞	1,09 – ∞	0,86 – ∞	0,67 – ∞	0,50 – ∞	0,38 – ∞	0,27 – ∞
2,5	1,49 – 7,7	1,29 – ∞	1,02 – ∞	0,81 – ∞	0,64 – ∞	0,49 – ∞	0,37 – ∞	0,27 – ∞
2	1,30 – 4,3	1,14 – 7,9	0,92 – ∞	0,75 – ∞	0,60 – ∞	0,46 – ∞	0,36 – ∞	0,26 – ∞
1,5	1,07 – 2,52	0,96 – 3,4	0,80 – 12	0,67 – ∞	0,55 – ∞	0,43 – ∞	0,34 – ∞	0,25 – ∞
1,2	0,91 – 1,77	0,83 – 2,18	0,71 – 4	0,60 – ∞	0,50 – ∞	0,40 – ∞	0,32 – ∞	0,24 – ∞

	1,3	1,8	2,8	4	5,6	8	11	16
Meter	f = 10 mm							
∞	5,1 — ∞	3,7 — ∞	2,38 — ∞	1,67 — ∞	1,19 — ∞	0,83 — ∞	0,61 — ∞	0,42 — ∞
15	3,8 — ∞	2,97 — ∞	2,05 — ∞	1,50 — ∞	1,10 — ∞	0,79 — ∞	0,58 — ∞	0,41 — ∞
7	2,96 — ∞	2,42 — ∞	1,78 — ∞	1,35 — ∞	1,02 — ∞	0,74 — ∞	0,56 — ∞	0,39 — ∞
4	2,25 — 18	1,92 — ∞	1,49 — ∞	1,18 — ∞	0,92 — ∞	0,69 — ∞	0,53 — ∞	0,38 — ∞
3	1,89 — 7,2	1,66 — 16	1,33 — ∞	1,07 — ∞	0,85 — ∞	0,65 — ∞	0,50 — ∞	0,37 — ∞
2,5	1,68 — 4,9	1,49 — 7,7	1,22 — ∞	1,00 — ∞	0,81 — ∞	0,62 — ∞	0,49 — ∞	0,36 — ∞
2	1,44 — 3,3	1,30 — 4,3	1,09 — 12	0,91 — ∞	0,75 — ∞	0,59 — ∞	0,47 — ∞	0,34 — ∞
1,5	1,16 — 2,12	1,07 — 2,52	0,92 — 4,1	0,79 — 15	0,66 — ∞	0,54 — ∞	0,43 — ∞	0,33 — ∞
1,2	0,97 — 1,57	0,91 — 1,78	0,80 — 2,42	0,70 — 4,3	0,60 — ∞	0,49 — ∞	0,40 — ∞	0,31 — ∞
f = 12 mm								
∞	7,4 — ∞	5,3 — ∞	3,4 — ∞	2,40 — ∞	1,71 — ∞	1,20 — ∞	0,87 — ∞	0,60 — ∞
15	4,9 — ∞	3,9 — ∞	2,79 — ∞	2,07 — ∞	1,54 — ∞	1,11 — ∞	0,82 — ∞	0,58 — ∞
7	3,6 — ∞	3 — ∞	2,30 — ∞	1,79 — ∞	1,38 — ∞	1,02 — ∞	0,78 — ∞	0,55 — ∞
4	2,59 — 8,7	2,29 — 16	1,85 — ∞	1,50 — ∞	1,20 — ∞	0,92 — ∞	0,72 — ∞	0,52 — ∞
3	2,13 — 5,1	1,92 — 6,9	1,60 — ∞	1,33 — ∞	1,09 — ∞	0,86 — ∞	0,68 — ∞	0,50 — ∞
2,5	1,87 — 3,8	1,70 — 4,7	1,45 — 9	1,22 — ∞	1,02 — ∞	0,81 — ∞	0,65 — ∞	0,48 — ∞
2	1,57 — 2,74	1,45 — 3,2	1,26 — 4,8	1,09 — 12	0,92 — ∞	0,75 — ∞	0,61 — ∞	0,46 — ∞
1,5	1,25 — 1,88	1,17 — 2,09	1,04 — 2,67	0,92 — 4	0,80 — 12	0,67 — ∞	0,55 — ∞	0,43 — ∞
1,2	1,03 — 1,43	0,98 — 1,55	0,89 — 1,85	0,80 — 2,40	0,71 — 4	0,60 — ∞	0,51 — ∞	0,40 — ∞

⊙	1,3	1,8	2,8	4	5,6	8	11	16
Meter	f = 16 mm							
∞	12 — ∞	8,9 — ∞	5,7 — ∞	4 — ∞	2,86 — ∞	2 — ∞	1,45 — ∞	1 — ∞
15	6,8 — ∞	5,6 — ∞	4,1 — ∞	3,2 — ∞	2,40 — ∞	1,76 — ∞	1,33 — ∞	0,94 — ∞
7	4,5 — 16	3,9 — ∞	3,1 — ∞	2,55 — ∞	2,03 — ∞	1,56 — ∞	1,20 — ∞	0,87 — ∞
4	3,0 — 5,9	2,76 — 7,3	2,35 — 13	2 — ∞	1,67 — ∞	1,33 — ∞	1,07 — ∞	0,80 — ∞
3	2,41 — 3,97	2,24 — 4,5	1,97 — 6,3	1,71 — 12	1,46 — ∞	1,20 — ∞	0,98 — ∞	0,75 — ∞
2,5	2,08 — 3,14	1,95 — 3,5	1,74 — 4,4	1,54 — 6,7	1,33 — 20	1,11 — ∞	0,92 — ∞	0,71 — ∞
2	1,72 — 2,39	1,63 — 2,58	1,48 — 3,1	1,33 — 4	1,18 — 6,7	1 — ∞	0,84 — ∞	0,67 — ∞
1,5	1,34 — 1,71	1,28 — 1,80	1,19 — 2,03	1,09 — 2,40	0,98 — 3,2	0,86 — 6	0,74 — ∞	0,60 — ∞
1,2	1,09 — 1,33	1,06 — 1,39	0,99 — 1,52	0,92 — 1,71	0,85 — 2,07	0,75 — 3	0,66 — 6,9	0,55 — ∞
f = 20 mm								
∞	15 — ∞	11 — ∞	7,1 — ∞	5 — ∞	3,6 — ∞	2,50 — ∞	1,82 — ∞	1,25 — ∞
15	7,6 — ∞	6,4 — ∞	4,8 — ∞	3,7 — ∞	2,88 — ∞	2,14 — ∞	1,62 — ∞	1,15 — ∞
7	4,8 — 13	4,3 — 19	3,5 — ∞	2,92 — ∞	2,36 — ∞	1,84 — ∞	1,44 — ∞	1,06 — ∞
4	3,2 — 5,4	2,94 — 6,2	2,56 — 9,1	2,22 — 20	1,89 — ∞	1,54 — ∞	1,25 — ∞	0,95 — ∞
3	2,51 — 3,73	2,36 — 4,11	2,11 — 5,2	1,87 — 7,5	1,63 — 19	1,36 — ∞	1,13 — ∞	0,88 — ∞
2,5	2,15 — 2,99	2,04 — 3,23	1,85 — 3,8	1,67 — 5	1,47 — 8,3	1,25 — ∞	1,05 — ∞	0,83 — ∞
2	1,77 — 2,30	1,69 — 2,44	1,56 — 2,78	1,43 — 3,3	1,28 — 4,5	1,11 — 10	0,95 — ∞	0,77 — ∞
1,5	1,37 — 1,66	1,32 — 1,73	1,24 — 1,90	1,15 — 2,14	1,06 — 2,59	0,94 — 3,8	0,82 — 9	0,68 — ∞
1,2	1,11 — 1,30	1,08 — 1,35	1,03 — 1,44	0,97 — 1,58	0,90 — 1,81	0,81 — 2,31	0,72 — 3,5	0,61 — ∞

	1,3	1,8	2,8	4	5,6	8	11	16
Meter	f = 24 mm							
∞	22 — ∞	16 — ∞	10 — ∞	7,2 — ∞	5,1 — ∞	3,6 — ∞	2,62 — ∞	1,80 — ∞
15	8,9 — 46	7,7 — ∞	6,1 — ∞	4,9 — ∞	3,8 — ∞	2,90 — ∞	2,23 — ∞	1,61 — ∞
7	5,3 — 10,2	4,9 — 12	4,2 — 22	3,5 — ∞	2,96 — ∞	2,38 — ∞	1,91 — ∞	1,43 — ∞
4	3,4 — 4,9	3,2 — 5,3	2,88 — 6,5	2,57 — 9	2,25 — 18	1,89 — ∞	1,58 — ∞	1,24 — ∞
3	2,64 — 3,47	2,53 — 3,69	2,32 — 4,24	2,12 — 5,1	1,89 — 7,2	1,64 — 18	1,40 — ∞	1,13 — ∞
2,5	2,25 — 2,82	2,16 — 2,96	2,01 — 3,30	1,86 — 3,8	1,68 — 4,9	1,48 — 8,2	1,28 — ∞	1,05 — ∞
2	1,83 — 2,20	1,78 — 2,29	1,67 — 2,48	1,57 — 2,77	1,44 — 3,3	1,29 — 4,5	1,13 — 8,5	0,95 — ∞
1,5	1,40 — 1,61	1,37 — 1,66	1,31 — 1,76	1,24 — 1,89	1,16 — 2,12	1,06 — 2,57	0,95 — 3,5	0,92 — 9
1,2	1,14 — 1,27	1,12 — 1,30	1,07 — 1,36	1,03 — 1,44	0,97 — 1,57	0,90 — 1,80	0,82 — 2,22	0,72 — 3,6

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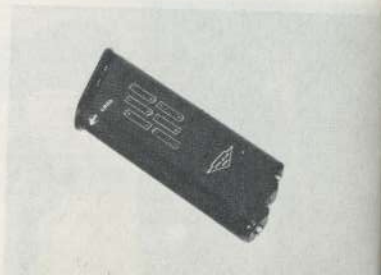
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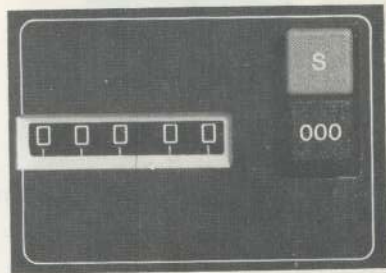
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Condensed instructions for live-sound filming with the EUMIG SOUND 31 XL

1. Load the batteries (6 alkaline-manganese penlight).
2. Set the on/off switch to "on" (red dot).
3. Insert a super 8 sound-movie film cartridge
4. Plug in the microphone and locate it as close to the sound source as possible.
Set the sensitivity switch to "low".
5. Focus (in the telephoto position).
6. Zoom to select image size.
- 7 Pull the trigger part way (to "test sound") to energize the sound system.
8. Pull the trigger all the way for a sound take.

Viewfinder signals:

