

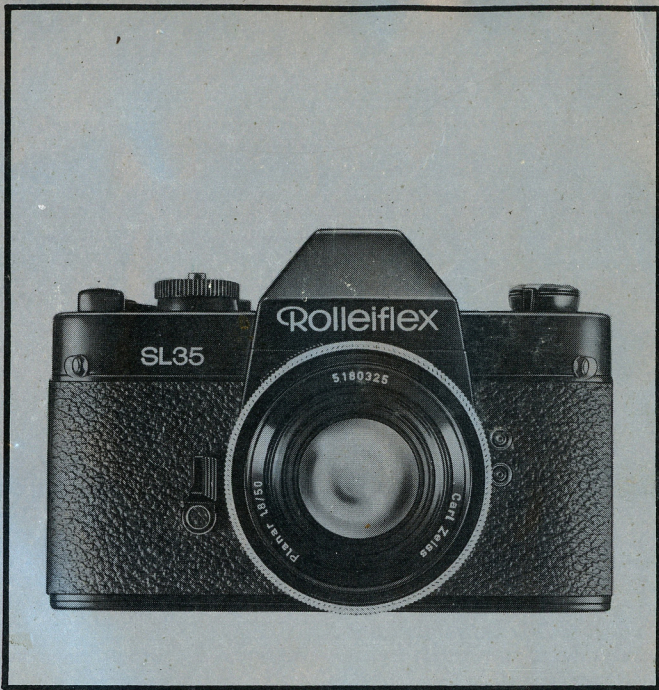
# WILSONWERKS ARCHIVES

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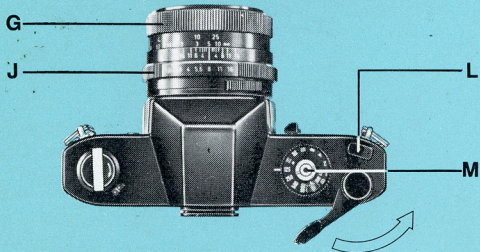
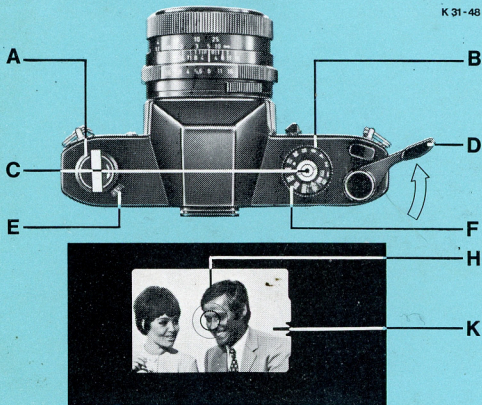
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# Rolleiflex SL35



in practical use



## Shooting in a nutshell

### Film Loading

Pull up knob **A** until back opens. Load the film — see page 8.

Pull up ring **B**, turn and engage ASA or DIN speed. Alternately release button **C** and wind up lever **D** until counter **E** shows  $\cdot 1$ .

### Shutter speed selecting

Turn speed dial **F** and set, for instance, to  $1/125$  second.

### Subject focusing

Sight subject in finder, and turn ring **G** until image appears sharp in spot **H**.

### Exposure setting

Turn aperture ring **J** to centre needle **K** while pressing down aperture knob **L**.

### Shooting!

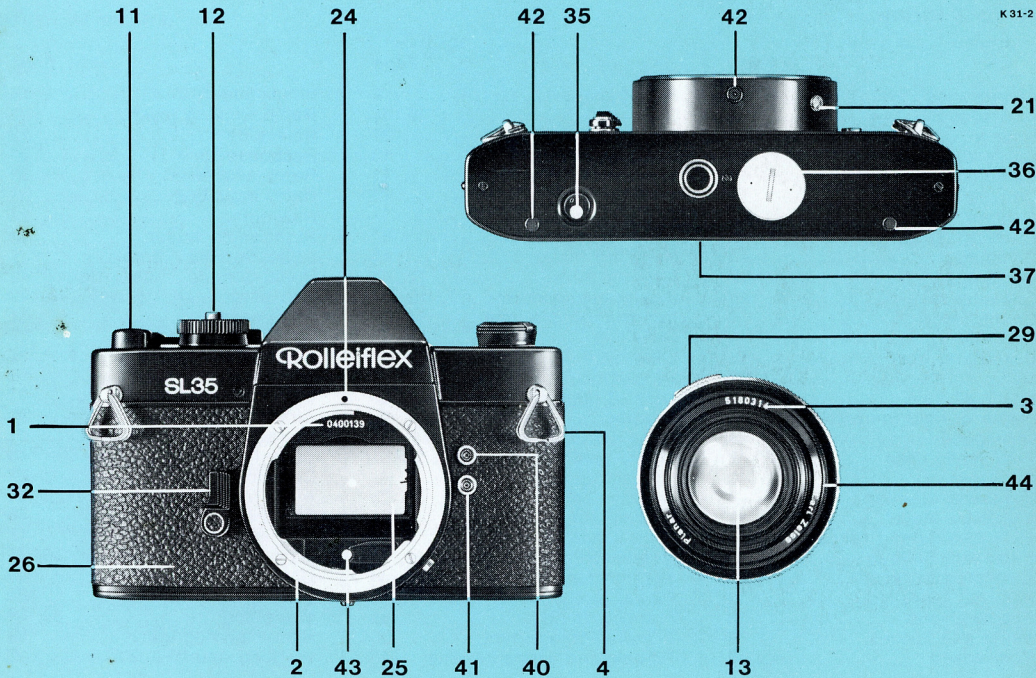
Press shutter release **M** fully down, then rewind lever for next picture.

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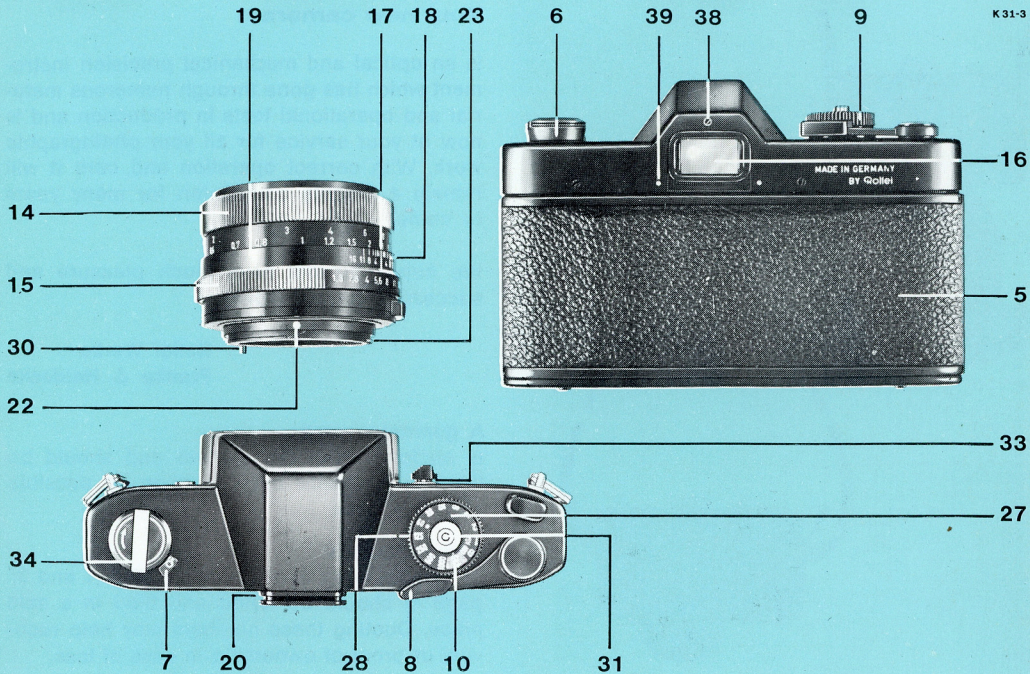
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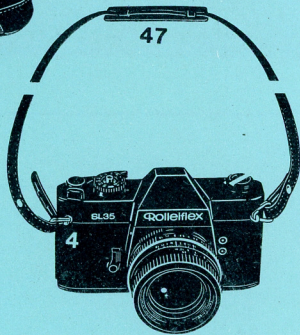
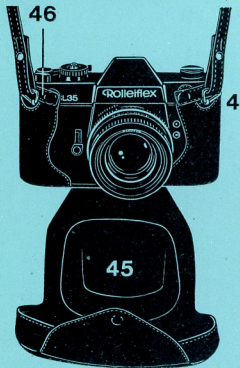


## Camera controls and components

- 1 Serial number of camera
- 2 Camera bayonet
- 3 Serial number of lens
- 4 Eyelet for carrying strap
- 5 Camera back
- 6 Rewind knob
- 7 Exposure counter
- 8 Rapid winding lever for film transport and shutter tensioning
- 9 Film speed setting rim
- 10 ASA/DIN index
- 11 Stop-down key for exposure measurement
- 12 Release button
- 13 Lens
- 14 Focusing ring with distance scale in feet and metres
- 15 Aperture ring
- 16 Finder eyepiece
- 17 Aperture and distance index
- 18 Infra-red index
- 19 Depth of field indicator
- 20 Mounting groove for finder accessories
- 21 Locking button of bayonet mount
- 22 Red dot on lens bayonet
- 23 Lens bayonet
- 24 Red dot on camera bayonet
- 25 Instant return mirror
- 26 Camera body
- 27 Shutter speed dial
- 28 Shutter speed index
- 29 Changeover switch for automatic (A) or manual (M) aperture setting
- 30 Coupling pin for aperture automation
- 31 Cable release socket
- 32 Self-timer tensioning lever
- 33 Self-timer start button
- 34 Rewind crank
- 35 Rewind release
- 36 Cover of battery compartment
- 37 Tripod bush
- 38 Blanking screw for accessory shoe
- 39 Locating pin for accessory shoe
- 40 X-synchronising outlet for electronic flash
- 41 FP-synchronising outlet for flash bulbs
- 42 3-point camera support
- 43 Coupling link for aperture automation
- 44 Screw thread for filter and lens hood







## Your new camera

is an optical and mechanical precision instrument which has gone through numerous material and operational tests in production and is now at your service for all your photographic work. With correct operation and care it will remain a reliable companion for many years to come.

We hope you will have much pleasure and success with your Rollei.

**Rollei Werke  
Franke & Heidecke**

## A guarantee card

is enclosed with the camera and should be filled in and sent back as soon as possible after purchase.

## Serial numbers

of camera body and lenses (see No. 1 and 3/ page 4) should be noted and filed in a safe place. Quoting these numbers may help recovery or proof of ownership in case of loss.

### The ever-ready case

To remove the camera: Snap open the rear press button, fold open the front **45** of the case. Release the lugs **46** at both sides.

Thread the carrying strap as shown, with the seam inside, through the loops of the non-slip pad **47** and then through the eyelets **4**. Secure the ends at the required length.

Inserting the camera: Proceed in the reverse order, leading the lugs **46** behind the eyelets **4** and close. The front **45** is fully removable; release with the sliding button. The ever-ready case is designed to permit rapid film changing and therefore has no tripod bush.

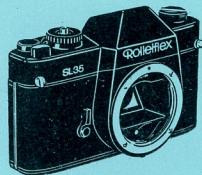
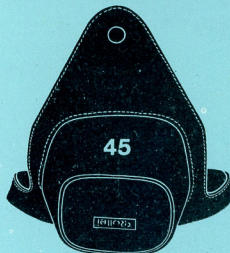
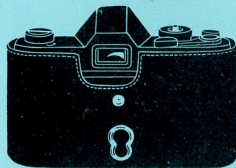
### The lens cap

for the interchangeable lenses and the blanking cap for the camera body (the latter available as an accessory) protect the equipment against dust and dampness.

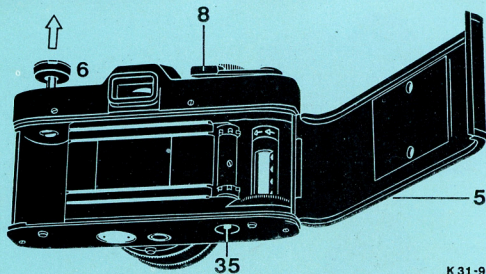
Insertion and removal of the blanking cap in the camera body: See page 14 – Changing lenses.

### Inserting a battery

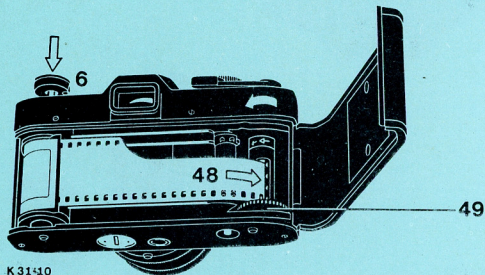
Proceed as described on page 28 – Changing the battery.



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K 31-9



K 31-10

8

## Loading the film

The camera takes all 35 mm miniature films in standard cartridges of 12, 20 or 36 exposures available throughout the world, as well as daylight spools, darkroom reloads and bulk film loaded in such cartridges. Load the film into the camera at least in the shade of your own body; avoid brilliant sunlight and dusty locations.

Open the camera back **5** by pulling up the rewind knob **6** and fold open. (Work the rapid winding lever **8** to make the rewind release **35** spring out, if engaged.)

Fully pull out the rewind knob **6** and insert the film cartridge. Turn the rewind knob until it can be pushed in again.

Pull out the film leader from the cartridge and fully push it into the outer slot **48**. Turn the milled wheel **49** in the direction of the white arrows to get both film perforations properly meshed. Close the camera back and let it engage.

Alternately release and tension as shown until the exposure counter **7** shows **· 1 ·**.

Checking the correct film advance: The rewind knob **6** should rotate during tensioning (with 20-exposure or 12-exposure cartridges or short bulk lengths it may only start turning after several exposures).

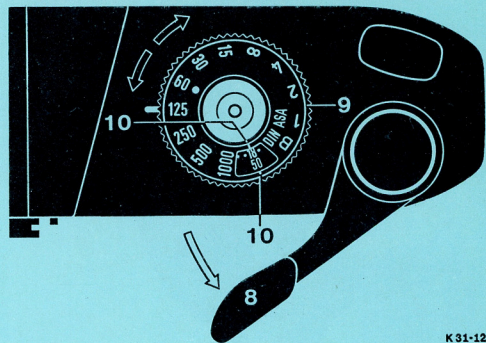
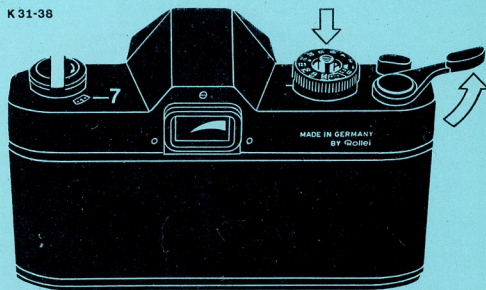
## Setting the film speed

Move the winding lever **8** into its starting position as shown (this facilitates handling for instance when wearing gloves). Pull up the rim **9** and turn until the speed figure of the film loaded in the camera engages opposite the index mark **10** (the dots indicate intermediate speed values).

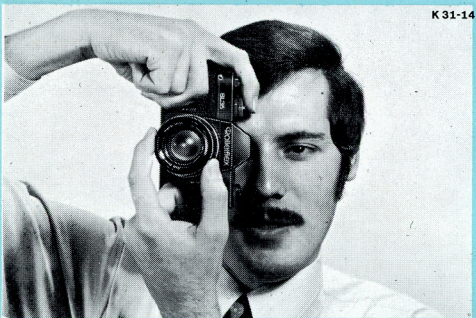
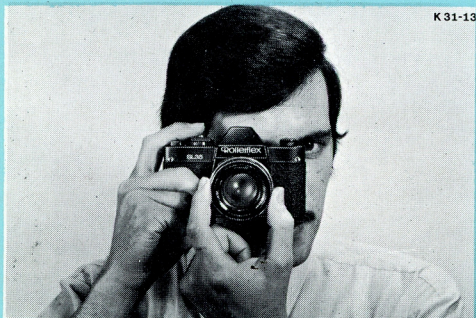
The setting range covers from 12 to 6400 ASA (12 to 39 DIN) as shown in the table below:

ASA	DIN	ASA	DIN	ASA	DIN	ASA	DIN
<b>12</b>	<b>12</b>	64	19	320	26	<b>1600</b>	<b>33</b>
16	13	80	20	<b>400</b>	<b>27</b>	2000	34
20	14	<b>100</b>	<b>21</b>	500	28	2500	35
<b>25</b>	<b>15</b>	125	22	640	29	<b>3200</b>	<b>36</b>
32	16	160	23	<b>800</b>	<b>30</b>	4000	37
40	17	<b>200</b>	<b>24</b>	1000	31	5000	38
<b>50</b>	<b>18</b>	250	25	1250	32	<b>6400</b>	<b>39</b>

K 31-38



K 31-12



## The correct camera hold

follows almost automatically from the handy shape and functional layout of the controls:

### For horizontal shots

hold the camera in the right hand with the index finger on the stop-down key **11** and the release button **12**. The left hand holds the lens **13** and operates the focusing mount **14** as well as the aperture ring **15**.

Press the eye closely against the finder eye-piece **16**, supporting the camera against the forehead.

### For upright shots

hold the camera in the same way, but turned through  $90^{\circ}$ .

This hold permits rapid switching from horizontal to upright shots, although other camera holds can also be used if preferred.

## Focusing

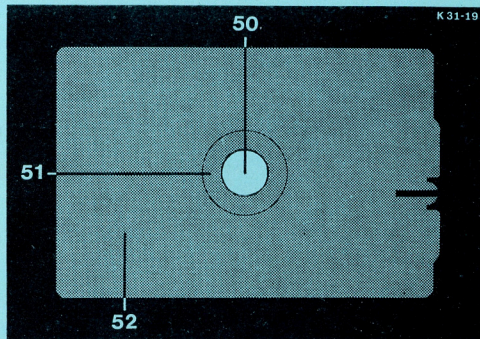
Sight the subject so that the main object appears within the microprism spot **50** or the screen ring **51** or the focusing screen **52**. Turn the focusing mount **14** until the image appears fully sharp without any blur or "shimmering" effect.

Depending on the subject conditions, use the above screen areas as follows:

**The microprism spot** yields abrupt definition change from unsharp to sharp. Use for quick focusing e. g. sports, action and feature photography.

**The screen ring** surrounding the microprism spot is evenly bright and finely matted. Use for central focusing in place of the microprism spot, e. g. at small apertures and/or with close-up, macro and photomicro subjects.

**The focusing screen** has an extremely fine Fresnel lens structure for even illumination from the centre to the edges. Use for general focusing of main subject points outside the centre, also at small apertures — e. g. in close-ups, macrophotography and photomicrography and for copying where the sharpness needs checking right to the edges of the field.





### With infra-red film

(of maximum sensitivity at a wavelength of 800 nm) first focus as described above. Then read the distance opposite the index 17, mount the infra-red filter and reset the distance read against the infra-red index 18.

### Depth of field

**Direct assessment:** Fully depress the stop-down key 11, thus closing the aperture to the preset value. The expected depth of field in the image can then be judged directly on the focusing screen 52 (suitable only for bright lighting and with not too small apertures).

**From the depth of field indicator:** Here the aperture marks corresponding to the preset lens aperture on the scale 19, to each side of the index mark 17, point to the depth of field zone on the focusing ring 14 (circle of confusion  $z = 50$  microns or 0.002 inch; further stopping down is necessary for utmost sharpness). Example: 50 mm Planar  $f/1.8$ , stopped down to  $f/16$  and focused to 10 feet: depth of field from approx.  $5\frac{1}{2}$  feet to  $\infty$ .

**From tables:** A depth of field table is available separately, with exact values for all lenses.

## Framing the subject

The prism finder shows a bright, laterally correct and parallax-free image with optimum conformity to the view recorded on the film.

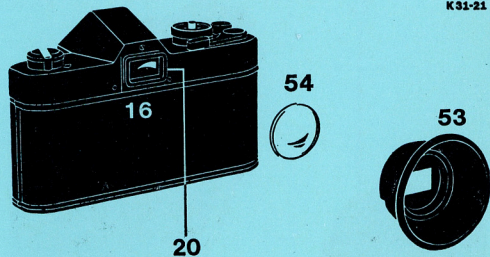
If the required subject field or the aspired perspective view cannot be covered with the lens attached by changing the shooting direction or viewpoint, use interchangeable lenses (see page 14 – Changing lenses).

### Finder accessories

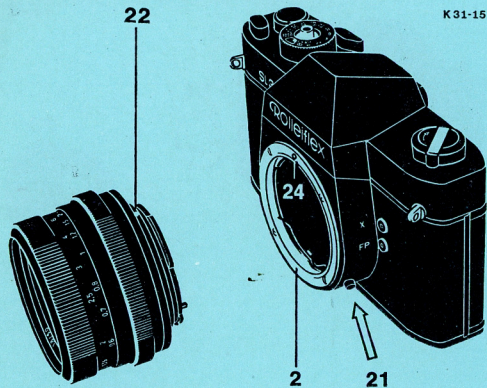
The mounting groove **20** on the finder eyepiece **16** takes an eyepiece cup **53** to screen off external glare.

Spectacle wearers may use a correcting lens **54** made up by any optician (outside diameter of the lens 26 mm). Insert the lens directly in the inside mount of the cup **53** by pushing in until it engages. Remove by pushing out in the opposite direction.

The groove **20** will also take a right angle finder which is used for low-level shots (worm's eye views), for shooting round the corner and when using the camera on a microscope etc.







## Changing lenses

Push in the locking button **21**. Release the lens from the camera bayonet **2** by turning to the left.

Attach the interchangeable lens so that the red dot **22** on the lens bayonet lines up with the red dot **24** on the camera bayonet, then turn to the right until the lens locks.

For rapid one-handed lens changing press the button **21** with the right index finger while the right hand at the same time turns the lens to the left. When inserting, the red dot **22** is correctly located when the changeover switch **29** is level with the self-timer lever **32**.

Always change lenses in the shade of your own body; avoid brilliant sunlight and dusty conditions.

Never touch the instant return mirror **25**. When no lens is mounted in the camera body **26** close it with the blanking cap **56**, available as an accessory (fit and remove this like an interchangeable lens).

Protect the front and rear lens of interchangeable lenses, when not on the camera, with the caps **57** and **58**.

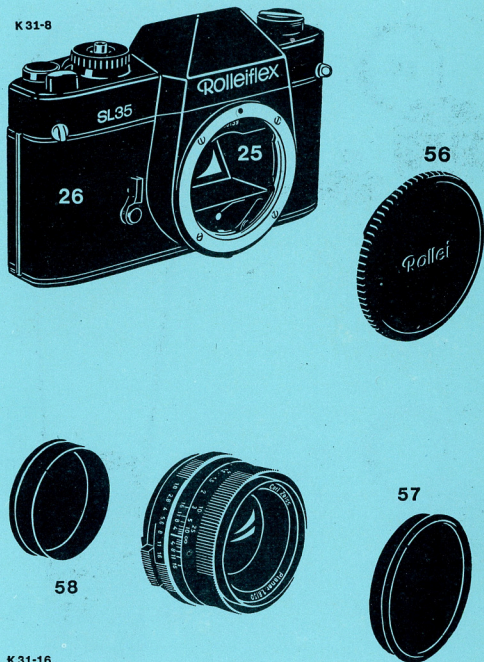
### Interchangeable lenses

with distance scales in feet and metres, quick-change bayonet mount, depth of field indicator, infra-red index, automatic spring-loaded aperture control, filter thread, and click stop apertures with half stop intervals:

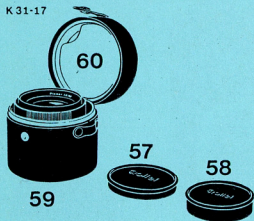
#### Carl Zeiss

- |                    |       |                          |
|--------------------|-------|--------------------------|
| 25 mm Distagon     | f/2.8 | — ultra-wide angle lens  |
| 35 mm Distagon     | f/2.8 | — normal wide-angle lens |
| 50 mm Planar       | f/1.8 | — standard lens          |
| 85 mm Sonnar       | f/2.8 | — medium long focus lens |
| 135 mm Tele-Tessar | f/4   | — telephoto lens         |
| 200 mm Tele-Tessar | f/4   | — telephoto lens         |

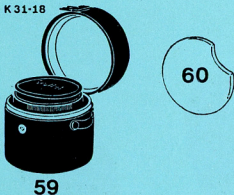
further details see page 47.



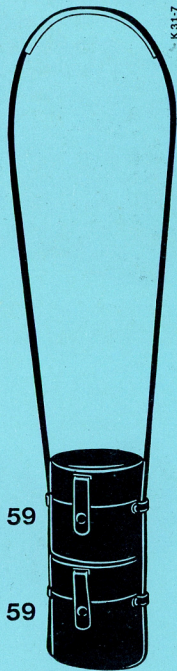
K 31-17



K 31-18



K 31-7



The lens case **59** protects the lens against dust and moisture. Remove the internal lid **60** when the lens is inserted with the front and rear caps in position.

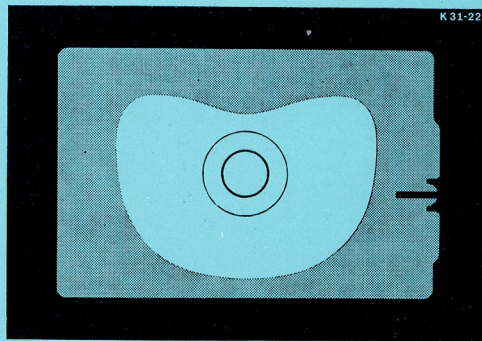
The same lens case takes the 35, 50 or 85 mm lenses.

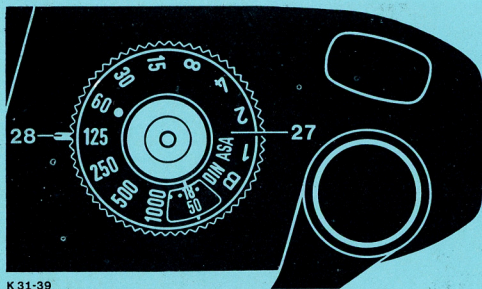
Lens cases with extra lenses can also be fitted on the camera carrying strap. A second strap may carry further lens cases **59** with interchangeable lenses or accessories.

## The exposure meter

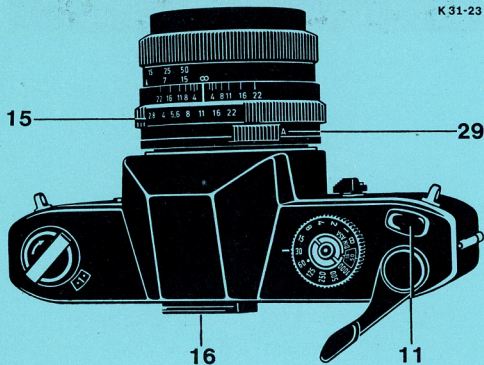
The full-field exposure measurement method at the working aperture has been designed by practical photographers for practical photography. In the large majority of cases this well planned system directly yields the optimum reading. It works reliably even in difficult special cases if a few simple rules are followed.

The exposure meter is a precision instrument of high sensitivity with a specially extended measuring range (1 second at  $f/1.8$  to  $1/1000$  second at  $f/16$  with 100 ASA or 21 DIN film). It assesses the average brightness of the subject field covered and uses two cadmium sulphide cells to measure the light coming through the lens. This "TTL measurement" automatically allows for all brightness variations due to filters, extension tubes, extension bellows, effective lens aperture changes etc. Moreover, the Rollei measuring system accordingly weights the important image centre more than the edge of the field. The illustration shows the shape and position of the central area whose brightness contributes about 90 per cent of the reading.





K 31-39



K 31-23

## Measuring the exposure

### With preselected shutter speed

Turn the shutter speed dial **27** in either direction until the required shutter speed engages opposite the index **28**. This can be done with the shutter tensioned or not tensioned.

The figures on the shutter speed dial indicate fractions of a second. No intermediate values can be used.

The B setting (for time exposures of any length) cannot be preselected for exposure measurement.

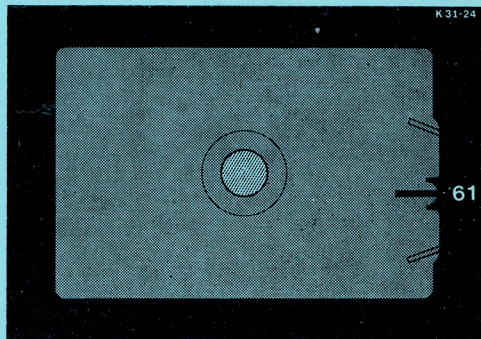
Set the changeover switch **29** to "A" (automatic spring-loaded aperture). Sight the subject through the finder eyepiece **16** and depress the stop-down key **11**: this switches on the meter system. Turn the aperture ring **15** to centre the meter needle **61**. The aperture ring engages at half stop intervals down to the smallest stop but one; however, intermediate settings can also be used.

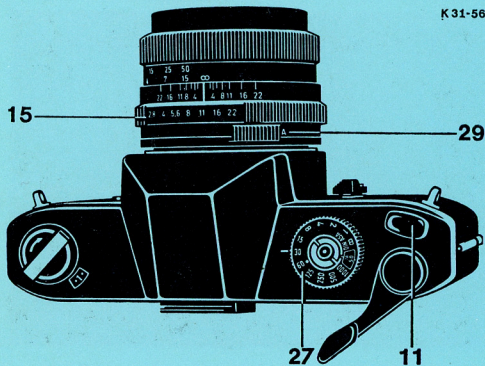
When the meter needle is centred in the cut-out, the correct aperture is set for the preselected shutter speed. Then release the stop-down key: this switches off the meter system and the meter needle returns into its rest position pointing obliquely upwards.

If the meter needle does not react or cannot be centred, preselect a different exposure time: If the needle stops too high up, use a shorter time; if the needle is too low down, use a longer time, as given in the table on page 50.

**Applications:** Exposures requiring fast shutter speeds to arrest rapid movement (action and sports shots, street scenes, children, animals etc.) or to avoid camera shake (when shooting from a car, train, ship or aircraft, when mountaineering etc.).

**Important:** The large measuring range permits shots under virtually all light conditions. The usable setting range and appropriate time for preselection are shown in the table on page 50.





### With preselected aperture

Set the changeover switch **29** to "A". Turn the aperture ring **15** to the selected value. Sight the subject and fully depress the stop-down key **11**. Centre the meter needle **61** by turning the shutter speed dial **27**. Always let the shutter speed dial engage fully; no intermediate values can be used. If this procedure brings the B setting into play, see pages 27 and 50.

When the meter needle is centred in the cut-out, the correct shutter speed is set for the preselected aperture. Then release the stop-down key.

If the meter needle cannot be centred, preselect a different aperture:

If the meter needle stops above the central position, use a smaller aperture; if it stops below, preselect a larger aperture.

**Applications:** Subjects requiring a specified depth of field as determined from the indicator **19** or the depth of field table (architecture, industrial shots, macrophotography etc. mostly requiring maximum depth of field; fashion, portrait and advertising shots often requiring minimum depth of field for differential focusing).

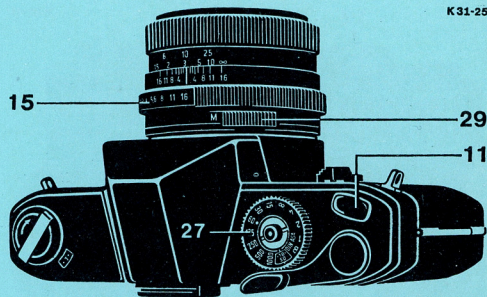
**Important:** If turning the shutter speed dial 27 fails to centre the meter needle, a subsequent "fine adjustment" with the aperture ring 15 will do the rest.

**Without automatic spring-loaded aperture**

Move the changeover switch 29 to "M" (manual setting). Fully depress the stop-down key 11. Centre the meter needle 61 by turning the aperture ring 15 and/or the shutter speed dial 27. When the needle is centred in the cut-out, the aperture and exposure time are correctly set.

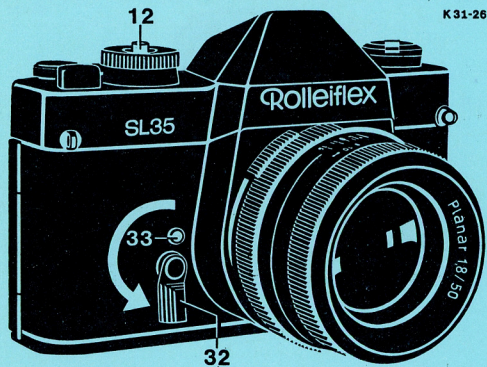
**Applications:** Subjects requiring direct depth of field control without pressing the stop-down key; also shots with

the lens in its retro position (see page 32) or with lenses of other makes in the intermediate adapter (see page 38).



K 31-25





## Releasing

Hold the camera steady. Smoothly and fully depress the release button **12**.

### With cable release

For slower shutter speeds — exposure times longer than  $1/30$  second — screw the cable release into the socket **31** and mount the camera on a tripod (with a thread of up to 0.18 inch/4.5 mm length). For long time exposures use a cable release with lock, also cover the finder eyepiece to screen off stray light.

### With self-timer

Tension the lever **32** as far as it will go. The delay time is about 10 seconds after pressing the start button **33**.

The shutter and self-timer can be tensioned and released independently of each other. Hence the release button **12** can be used for direct exposures even when the self-timer is tensioned, while the self-timer can run down when the shutter is not tensioned.

The self-timer is also useful for avoiding camera shake with hand-held shots of static subjects at exposure times of  $1/30$  second or longer.

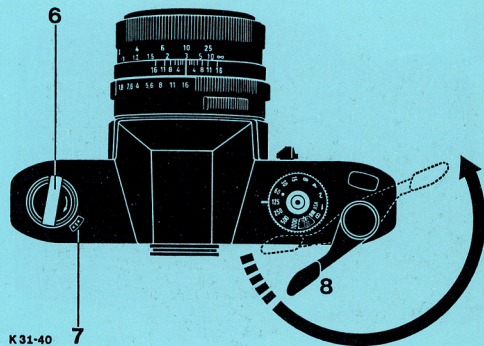
## After the exposure

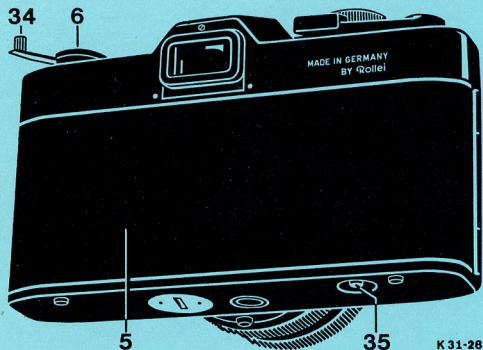
Smoothly and fully (!) pull out the rapid winding lever **8** and let it swing back into its starting position.

This advances the film by one frame, retensions the shutter and gets the camera ready for the next shot. With rapid picture sequences the camera may remain against the eye in shooting position.

The rapid winding lever can be worked in a single stroke or in several (usually two) strokes; on letting it go it returns to its starting position. When not in use, fold it back against the camera body.

The exposure counter **7** shows the number of exposures made on the film. The twentieth and thirty-sixth exposure (for 20-exposure and 36-exposure cartridges) are marked in red; the second and all subsequent odd numbers are marked by dots. After the thirty-eighth exposure (also marked in red) the exposure counter stops counting. Further exposures may however still be made if the film is long enough. The exposure counter **7** springs back to zero on pulling up the rewind knob **6**.





## Unloading the film

After the last exposure: swing out the rewind crank **34**, briefly press in the rewind release **35** and turn the crank **34** in the direction of the arrow until the resistance of the film tension suddenly slacks off (during the next film transport movement the rewind release **35** springs out again).

Fold in the crank **34** and pull up the rewind knob **6**. The camera back **5** springs open; swing it fully open. Fully pull up the rewind knob **6** and remove the film cartridge.

Unload the film at least in the shadow of your own body; avoid brilliant sun and dusty conditions.

Exposed films (especially colour films) should be processed as soon as possible, as they only keep for a limited time.

## Practical hints

### Selecting the best shutter speed

Image sharpness depends, among other things, on the use of a sufficiently fast shutter speed. Therefore

**With hand-held exposures:** Use fast speeds to avoid camera shake. The longest usable time is  $1/30$  second;  $1/60$  and  $1/125$  second are safer and more reliable. With long focus lenses and a not very steady camera hold use  $1/125$  or, better still,  $1/250$  second.

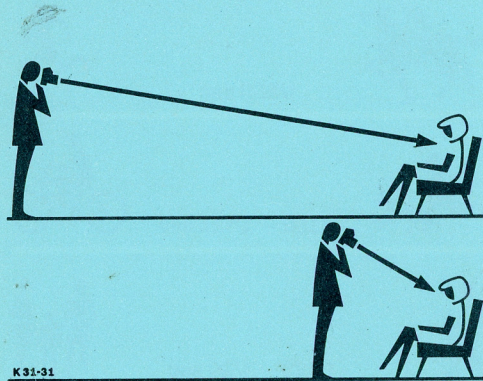
**With moving subjects:** Use short exposure times to avoid movement blur. As a general guide: Starting and landing aircraft at close range, motor races —  $1/1000$  second. Winter sports, tennis —  $1/1000$  to  $1/500$  second. Horse races, cross country runners —  $1/500$  second. Running children and cyclists —  $1/250$  to  $1/125$  second. Walking figures, standing people —  $1/125$  to  $1/60$  second.

In general: Movement at close range and across the viewing direction needs faster shutter speeds, movement from greater distances and approaching or receding from the camera can be taken with longer exposure times.

 $1/1000$  sec $1/1000 - 1/500$  sec $1/500$  sec $1/250 - 1/125$  sec $1/125 - 1/60$  sec

**The snapshot setting** for quick or unprepared shots which do not permit direct focusing through the finder:

Find a suitable setting of distance and aperture for an adequate sharp zone from the depth of field indicator **19** or depth of field table, and set these values on the camera. This requires good subject lighting or a high-speed film to allow sufficiently short exposure times to arrest subject movement.



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## Correct exposure measurement

The exposure meter measures the mean brightness of the subject field covered. It directly yields the correct exposure settings for

**Normal subjects:** Lighting from the front or obliquely from the side, without brilliant highlights or heavy shadows. Balanced light and dark areas.

**Special subjects:** Appreciable brightness contrast between the main subject and its surroundings – shots against the light, figures in brilliant sun against snow or ice, Mediterranean seaside subjects etc., main subject constituting only a small part of the field of view (e. g. figures not filling the frame against large sky areas).

A reading from the camera position would here yield a wrong exposure setting. This can be compensated by a

**Close-up reading:** Approach the subject with the camera until the main subject fills the finder view. Set the exposure, then return to the original viewpoint for the shot itself.

If close-up readings are not possible, use a

**Substitute reading:** Take a reading from an object similar to the main subject (if necessary, the back of your own hand), of normal brightness range and under the same lighting conditions (a grey card available from photo dealers can be used for this purpose). Read the exposure, then take the picture with the setting obtained.

If neither close-up nor substitute readings are possible, take a normal reading and open the lens by half to one stop, depending on the brightness range of the subject.

In very poor light together with very small lens apertures do not take the reading too quickly as the response time of the system becomes somewhat longer.

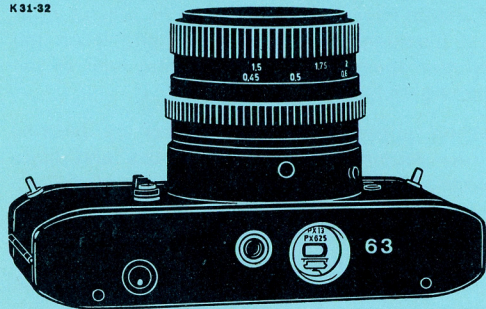
**Shutter speed preselection:** Select a time according to the film speed to permit centering the meter needle in the cut-out. Find further details in the table on page 50.

**Films:** Select the film according to the subject and avoid unsuitable combinations e. g. ultra-speed film for snow or seaside subjects in full sun.

**Extreme cases:** The noticeable increased interval between the  $1/1000$  second and B on the shutter speed dial **27** signals the limit of the setting range.

When approaching this interval by passing  $1/1000$  second (extreme brightness and high-speed film): ignore the meter needle movement or central position. Return the shutter speed dial to  $1/1000$  second and use a neutral density filter and/or an exchangeable lens which stops down further. If necessary, load with a slower film.

If this interval is approached by passing the B setting (very poor light and slow film): set the shutter speed dial back to 1 second. Depending on the subject conditions, select one of the following alternatives: Use a faster lens (if not already on the camera); load with a faster film or plan for forced development; use flash if the subject permits it.



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36

## Changing the battery

Unscrew the cover **36** anti-clockwise with a coin. Remove the spent battery.

Wipe the new battery on both sides with a cloth to remove any oxide deposit. Place the battery **62** with the + sign on top (see also diagram in the battery compartment) into the battery compartment **63** holding it by the edge only, do not touch the front or back. Screw in the cover **36** moderately tightly. Suitable battery types: Mallory PX 625 and PX 13, or equivalent batteries of other makes.

**Important:** The battery lasts one to two years; a yearly battery change is recommended. During extended idle periods keep the battery outside the camera. Always remove a spent battery. After prolonged idle periods clean the battery as described above.

In very cold weather first warm up the battery to body temperature and insert it immediately before use.

Find further details in battery packing or leaflet.

## Using the lens hood

Use the lens hood whenever possible; it protects the lens against glare, splashes of water and drops of rain. It also improves the contrast and definition of the picture.

The following lens hoods are available for the different lenses:

Rectangular lens hood **64** for the 25 mm lens,  
Folding lens hood **65** for the 35 to 50 mm (with a slightly reduced efficiency up to 135 mm) lenses,

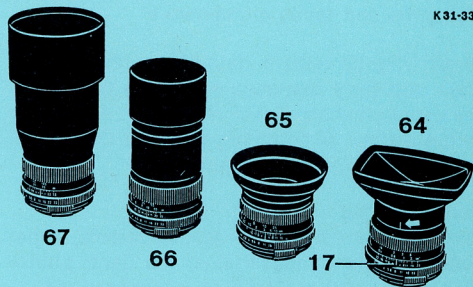
Screw-in lens hood **66** for the 85 to 135 mm lenses,

Extendible lens hood **67** for the 200 mm lens.  
The rectangular lens hood must be mounted with its line mark opposite the index **17**.

## Using filters

All Rollei filters are ground plane-parallel, coated on both sides and free from vignetting (see, however, remarks on page 30).

Screw the filter moderately tightly into the lens mount. A filter can be used together with a lens hood or several filters can be used at the same time; see also page 30. (An exception is the polarising filter for the 25 mm Distagon



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with built-in lens hood.) The light reaching the meter system in the camera is already filtered, so no exposure corrections are necessary.

Filters modify the light reaching the film in the following ways:

They selectively pass light of certain wavelengths (yellow, green, orange, red, infra-red, ultra-violet, and R 1.5 conversion filter) — or they evenly hold back all wavelengths (neutral density filter) — or they pass only light vibrating in one plane (polarising filter).

For further details see the filter table on page 44.



## Using the soft focus attachments

These slightly reduce definition with soft outlines and hazy luminous highlights instead of the usual pinsharp Rollei rendering. According to the degree of softening required the following alternatives are available:

### **Softar I** (slight softening)

for very contrasty and brilliant subjects, especially when shooting against the light; photographs of jewellery, textiles, silverware etc.

### **Softar II** (more pronounced softening)

for low-contrast subjects and soft lighting, especially portraits, scenes with certain atmosphere, against-the-light shots of water and river scenes etc.

### **Softar I + II** (maximum effect)

for enhanced softness and artistic photography.

The Softars fit the lenses from 25 to 135 mm in focal length and screw into the lens mount. Stopping down does not change their softening effect. They can be used together with filters

and with the lens hood. In this case attach the items on the lens in the sequence: Softar – filter – lens hood.

### **Important:**

The following combinations of soft focus attachments, filters and lens hoods may be used without risk of vignetting (fading the image corners):

25 or 35 mm lens – up to one Softar or one filter with lens hood;

50 or 85 mm lens – up to two Softars or two filters with lens hood, or one Softar and one filter with lens hood;

135 mm lens – up to two Softars and one filter with lens hood, or one Softar and two filters with lens hood.

## Flash exposures

Mount the camera with the 1/4 inch tripod bush **37** on a flash bracket or fit the flash gun in the accessory shoe. This accessory shoe is available separately. Ask your photo dealer to fit it, or mount as follows:

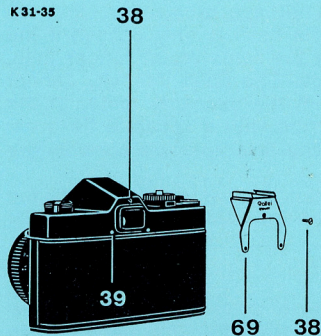
Unscrew the blanking screw **38**, press the accessory shoe **69** as shown onto the locating pins **39** and screw in position with the screw **38**. Connect the synchronising lead from the flash unit to the outlet **40** or **41** depending on the type of flash. The capping plugs **70** protect the outlet not in use against dust and moisture and prevent faulty plugging in, as long as the same flash units or flash bulbs are used.

**X outlet:** For electronic flash and short-delay flash bulbs of short flash duration such as AG 3 B, XM 1 B and 5 B, PF 5 B etc. Permissible shutter speeds with X-synchronisation: 1/60 to 1 second and B for electronic flash; 1/30 to 1 second and B for flash bulbs.

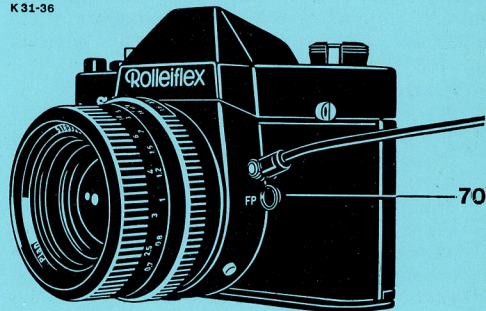
**FP outlet:** For long-delay flash bulbs of long duration, such as XM 6 B, PF 6 B, PF 45 B, PF 100, GE 31 etc.

Permissible shutter speeds with FP-synchronisation: 1/1000 to 1 second and B.

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**Important:** With FP-synchronisation the full light output of the flash is only utilised if the shutter speed is the same as, or longer than, the flash duration. The flash intensity cannot be measured with the exposure meter of the camera (but can be with a separate flash exposure meter). The lens aperture controls the exposure.

Note the instruction manual (and especially the guide number) of the flash unit or flash bulb.

## Close-ups

extend the scope of photography into a new world of miniature subjects. They need certain accessories and a somewhat different approach to photography; TTL exposure measurement however in this case again ensures correct exposure settings.

General rules:

1. Use the depth of field indicator on the lens only when it is directly fitted into the camera bayonet.
2. Focus with the lens aperture fully open. Adjust the camera-subject distance until the subject appears sharply in the finder. Then adjust the focusing ring **14** for final focusing, unless the lens is mounted in the retro position (see there).

3. Always use a rigid tripod with ball head, cable release, bright lighting or flash and contrasty illumination for the subject.

The purpose of close-up photography is to show small objects on as large a scale and filling the frame as fully as possible. This is achieved by suitable selection of lenses with appropriate focal length, and of accessories. The separate depth of field table indicates all necessary details for the individual lenses.

## Accessories

### Retro adapter

for interchangeable Rollei lenses with focal lengths of 25 to 50 mm, and for lenses of other makes with a 49 mm screw thread in the front filter mount. Focal lengths greater than 50 mm require extension tubes or the extension bellows.

**Purpose:** The retro-mounted lens (with the front lens facing the camera) yields better optical performance at scales of reproduction greater than 1 : 1.

**Use:** Fit the adapter **70** into the camera bayonet (or the bayonet of the extension tube or extension bellows) and lock by turning to the right.

Screw the lens **13**, with the front lens facing the camera, into the adapter **70**.

If required, fit a Rollei filter **71** between the adapter **70** and the lens **13**.

Fully open the aperture and set the focusing mount **14** to the shortest distance. This makes the lens tube act as a lens hood.

Exposure measurement: Set the changeover switch **29** to "M", then proceed in the usual way.

The automatic aperture spring-loaded is out of action. The lens cannot be focused by turning the focusing mount **14**.

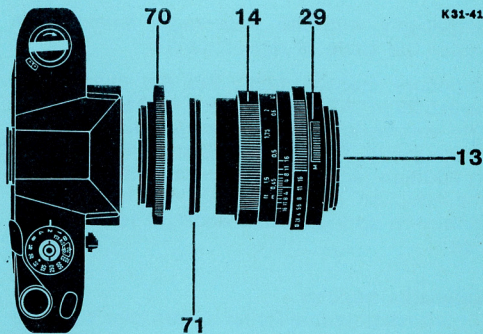
### Extension tubes

are available in lengths of 7.8 – 15 – 30 – 50 mm for interchangeable Rollei lenses (see separate table).

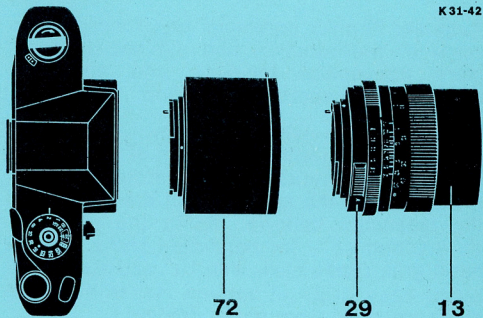
**Purpose:** They permit higher scales of reproduction and shorter subject distances (see separate table).

**Use:** Mount the extension tube **72** with its red dot opposite the red dot on the camera bayonet and secure by turning clockwise. Fit the lens **13** in the usual way in the bayonet of the extension tube.

Extension tubes can be combined in any desired way, but longer overall extensions may lead to some vignetting. Use smaller apertures



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(especially with the wide-angle lenses), the larger the scale of reproduction.

**Exposure measurement:** Set the changeover switch **29** to "A", then proceed in the usual way. The automatic spring-loaded aperture remains in operation. The retro adapter **70** can be used in addition (and should be used with scales of reproduction beyond 1 : 1); in this case the automatic spring-loaded aperture is out of action.

### **Extension bellows**

for interchangeable Rollei lenses (see separate table).

**Purpose:** Permits continuous adjustment of the scale of reproduction and subject distance, more convenient focusing and automatic spring-loaded aperture operation.

**Use:** Mount the extension bellows **73** with the red dot lined up with the red dot of the camera bayonet and secure by turning clockwise. Mount the lens **13** in the usual way in the bayonet of the extension bellows. Mount the assembly on a tripod or — for hand-held shots — on a hand grip. (Base plate with  $\frac{1}{4}$ " and  $\frac{3}{8}$ " tripod bush; hand grips of various makes available as accessories from photo dealers.)

**Focusing:** Slack off the locking knob **74** and turn the focusing knob **75**. Fine focus with the focusing mount **14**.

**Selecting the field of view:** Slack off the locking knob **76** and turn the drive knob **77**. Refocus if necessary. The uncovered figures on the scale facing the drive knobs show the extension in millimetres. Finally tighten the locking knobs **74** and **76**. A right-angle finder **55** permits more convenient view-finding.

**Exposure measurement:** Set the changeover switch **29** to "A". Pull down the tensioning lever **78** and release. Fully depress the stop-down key **11**. Measure in the usual way after preselecting the shutter speed or aperture according to the subject. (Aperture preselection is usually preferable in view of the relatively limited depth of field with close-ups.)

**Before the exposure:** Tension the lever **78** once more to permit observation of the subject at full aperture up to the moment of releasing.

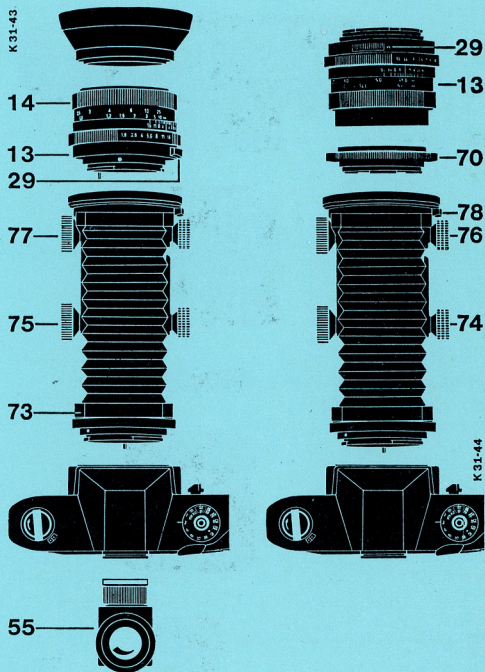
The retro adapter **70** can be used in addition (and should be used with scales of reproduction above 1 : 1); the automatic aperture coupling is then out of action.

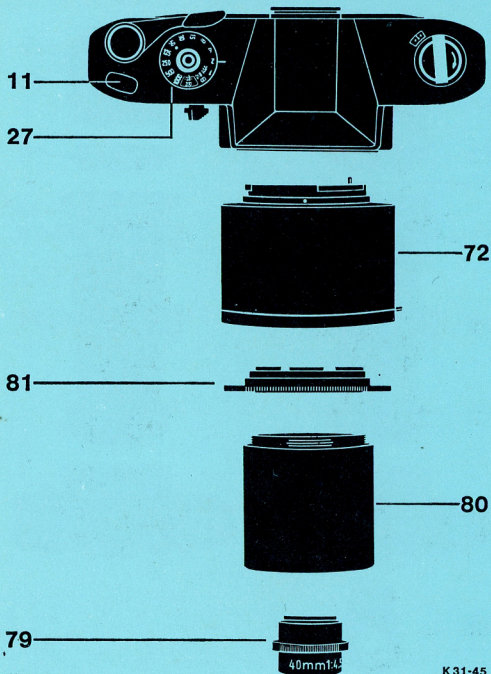
Extension tubes can also be used in addition; in this case the automatic spring-loaded aperture remains in operation. For maximum stability the sequence of the set-up should be: camera – extension bellows – extension tubes – lens; a vertical arrangement is safest. With the full bellows extension and several extension tubes some vignetting may occur (see also table).

Finally, for largest scales of reproduction with improved optical quality the combination: camera – extension bellows – extension tubes – retro adapter – lens is possible, provided that some vignetting is acceptable (see also table).

Filters can be used with all combinations. It may however often be necessary to do without the lens hood when the subject distance is equal to or shorter than the depth of the hood.

Messrs. Novoflex of Memmingen, Germany, supply a slide copying attachment and a bellows lens hood. These items are available from photo dealers.





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### Macro lens adapter

for the Luminar, Photar, Summar and Microtar lenses available through photo dealers. They are used as indicated in the table or the instructions supplied with the lens.

**Purpose:** Optimum optical quality, especially at high magnifications (macrophotography). The macro lenses are mainly used in conjunction with the extension tubes **72** and/or the extension bellows.

**Use:** Screw the lens **79** into the macro adapter **80** and this into the intermediate adapter **81** (42 mm screw thread) required with it. This combination is then inserted in the bayonet of the camera, extension tube or extension bellows.

**Focusing:** Fully open the lens aperture and adjust the camera position for maximum sharpness. Check the sharpness preferably in the screen ring **51** or on the focusing screen **52**. For fine focusing on the extension bellows use the focusing knob **75**.

**Exposure measurement:** Fully depress the stop-down key **11**, and centre the meter needle by turning the shutter speed dial **27** and/or adjusting the lens aperture on the lens **79**. The optimum working aperture is derived from the table or the lens instructions and set on the lens. Recalculate the exposure to the aperture

set or repeat the measurement at this working aperture.

### Microscope adapter

is used with microscopes having a straight cylindrical draw tube of 1 inch/25 mm diameter.

**Purpose:** Photography of the image formed by the microscope (without the camera lens).

**Use:** Remove the microscope eyepiece, slack off the clamping screw **82** and push the adapter **83** with the lettering facing you onto the eyepiece draw tube. Re-insert the eyepiece and tighten the clamping screw **82** so that the eyepiece does not protrude above the adapter **83**. Mount the camera with its red dot opposite the red dot of the adapter and lock. The right-angle finder **55** permits convenient viewing through the finder.

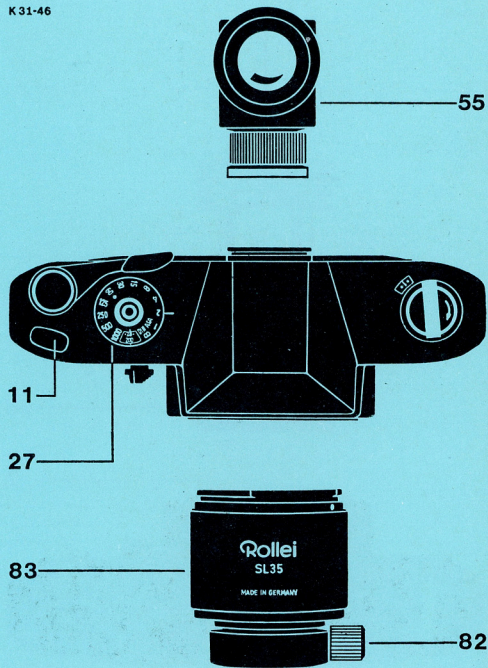
Focus with the microscope movement.

Select the field of view by selecting the microscope objective and/or eyepiece or by inserting Rollei extension tubes.

Exposure measurement: Press the stop-down key **11** and adjust the shutter speed dial **27**, or the subject lighting or (where available) the microscope aperture the centre the meter needle.

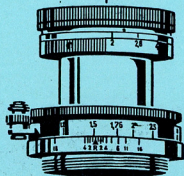
Where possible, use eyepieces specially corrected for photomicrography.

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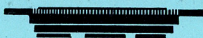




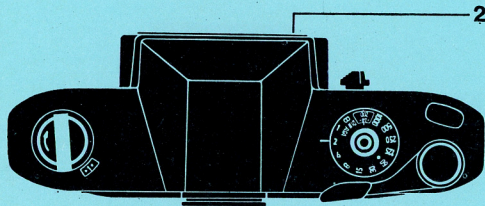
84



85



2



### Intermediate adapter

This takes lenses of other makes with screw mounts: the adapter M 42 x 1 for lenses of the Edixa, Pentax, Praktica and similar models — and the adapter M 39 x 1 for Leica lenses (of older models up to III f) and similar types.

**Important:** Some of those lenses can be focused only in the close-up range but not to infinity (e. g. Leica lenses). Collapsible lenses should be fitted, used and released in extended position **only**.

The M 42 x 1 adapter is also required when using macro lenses.

**Use:** Screw the lens 84 into the adapter 85. Fit the adapter 85 into the camera bayonet in such a way that the lens scales are visible from above after locking.

**Focusing:** In the usual way.

**Exposure measurement:** Switch the lens to manual aperture setting where available or keep stop-down key pressed in. Measure in the usual way; any automatic aperture coupling is disengaged.

Combinations with Rollei extension tubes and/or the extension bellows are possible. Exposure tests are recommended.

## Winter photography

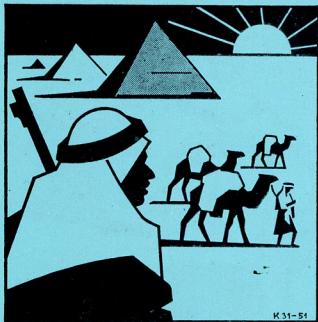
offers no special problems if the following points are observed:

Load with a medium-speed to high-speed film. Always use the lens hood as protection against stray light and snowflakes.

For winter sports, mountaineering and climbing carry the camera in its ever-ready case underneath the outer clothing or attach it to the body with a second strap and protect it against moisture with a plastic bag. Always fit an ultra-violet or the R 1.5 filter; under conditions of extreme brightness (in high mountains) use a neutral density filter.

In extremely cold weather carry the camera next to the body underneath the outer clothing. Work the winding lever slowly to avoid tearing the film. The cold camera is liable to mist over when brought into a warm room. Do not clean off the condensation; this disappears of its own.





## Tropical photography

Special rules for exposure technique and camera care apply in the tropics, desert and other regions of hot and/or damp climates. Read up appropriate literature and travel books on the subject. The data sheets of leading film manufacturers also give useful information.

A few hints:

Heat, sand, moisture and perspiration are most harmful to the camera. So clean it frequently, if necessary daily. Always carry the camera and accessories in hermetically sealed containers, protected in addition by plastic bags and silica-gel. See that shocks and vibrations are kept off the camera when travelling by car or aircraft.

### Care of the camera

and accessories maintains their value and reliability for many years.

### Cleaning

of the camera should be done regularly at appropriate intervals according to use: Dust the camera and accessories inside and outside with a soft sable brush and a rubber blower.

Clean the outer parts with a soft dry cloth, glass surfaces with lens cleaning tissue. Never polish the mirror and never touch the inside components or the rubber blinds of the focal plane shutter with the fingers. Clean the ever-ready case, holdall case and lens cases by blowing and brushing out.

### **Storage**

always in the ever-ready case, holdall case or lens case. Plastic bags and the lens caps provide additional protection in dusty and damp conditions as well as against snow and harmful fumes. When not in use for longer periods, store at room temperature with the battery removed.

### **Maintenance**

The International Rollei-Service with over 150 approved workshops throughout the world provides servicing in all countries. Rollei dealers and specialists trained at our works will take expert care of your Rollei and provide help and advice in all questions of Rollei photography.

## **Approved Rollei workshops in West Germany**

Berlin	Marland-Gesellschaft Marlow & Co. OHG 1 Berlin 41, Handjerystrasse 18
Region Düsseldorf	Fa. Anton Paepke 4 Düsseldorf, Scheurenstrasse 24 Fa. ARLÜWA 5 Köln, Offenbachplatz 1
Region Frankfurt	Fa. W. Laukhardt KG 65 Mainz, Binger Strasse 10
Region Hamburg	Fa. Ludwig Lanckow Nachf. GmbH 2 Hamburg 36, Jungfernstieg 48
Region Munich	Fa. Rudolf Mitterreiter 8 München 90, Untersbergstrasse 83
Region Stuttgart	Fa. Haustein & Co. 7 Stuttgart-W, Ludwigstrasse 6

**International Rollei-Service** (see your dealer for countries not listed)

- |                    |  |                    |  |
|--------------------|--|--------------------|--|
| <b>Austria</b>     | Medefind & Bernfuss,<br>Mariahilferstraße 17,<br>A-1060 Wien 6, Postfach 80                                    | <b>Norway</b>      | Foto-Optikk Odd Aronsen,<br>Drammensveien 43, Oslo 2   |
| <b>Belgium</b>     | Ets. Alfred Basler S. P. R. L.,<br>24 Ave. de la Constitution,<br>Bruxelles 8                                  | <b>Portugal</b>    | J. Wimmer & Co., Avenida 24 de<br>Julho, 34, Lisbon 2, Caixa Postal<br>2243  |
| <b>Denmark</b>     | Ilford Foto Akts, Gadelandet 18,<br>DK - 2700 Brønshøj   | <b>Sweden</b>      | Bell & Howell AB,<br>Vintergatan 1<br>S-17230 Sundbyberg   |
| <b>Finland</b>     | Biopta Oy, Veneentekijäntie 10,<br>P. O. Box 21 104<br>Helsinki 21   | <b>Switzerland</b> | Filmo AG, Seestraße 341,<br>CH - 8038 Zürich   |
| <b>France</b>      | Télos S. A., 58, rue de Clichy,<br>F 75 Paris 9 e  | <b>Spain</b>       | Gaspar Mampel, Avda. Glmo.<br>Franco, 497, Barcelona 15  |
| <b>Gr. Britain</b> | R. F. Hunter Ltd., Celfix House,<br>51 & 53 Gray's Inn Road,<br>London, W. C. 1, England                       | <b>Canada</b>      | Rollei Canada Ltd.<br>311 Norfinch Drive,<br>Downsview, Ont.   |
| <b>Greece</b>      | Heinz D.S. Cougno, Salcophat S.A.<br>15 Venizelos Street, Thessaloniki;<br>FOTOSCOPE, Stadiou St. 43,<br>Athen | <b>U. S. A.</b>    | Rollei of America Inc.<br>100 Lehigh Drive,<br>Fairfield, N. J. 07006  |
| <b>Italy</b>       | ERCA S. p. A., Via Mauro Macchi,<br>29, I - 20 124 Milano  | <b>Mexico</b>      | Casa Calpini S. A., Apartado<br>Postal 703, Av. Madero 34,<br>Mexico 1, D. F.                                      |
| <b>Netherlands</b> | Ciba-Ilford N. V., Jan Rebel-<br>straat 5, Postfach 9040,<br>Amsterdam W                                       | <b>Argentine</b>   | Casa Eduardo Udenio & Cia.,<br>S. C. A., Calle Florida 683-5° piso,<br>Casilla Correo Central 410,<br>Buenos Aires |

<b>Brazil</b>	H. Schneiker S. A., Rua Amintas de Barros 309, Caixa Postal 294, Curitiba, Paraná	<b>Hongkong</b>	Melchers (H. K.) Ltd. Hongkong P. O. Box 713, Central 401 - 8, Realty Building, 71, des Voeux Road Hongkong
<b>Venezuela</b>	C. Hellmund & Chia. S. A., Avenida Pantin-Chacao, Apartado 589, Caracas	<b>Iran</b>	Hamazasb Martin & Co., Avenue Roosevelt, Koutché Nodjoumi, Teheran
<b>Canaries</b>	AFE-Import Leon y Castillo, 499 - 501 Las Palmas de Gran Canaria	<b>Japan</b>	Balcom Trading Co., Inc., 15-10 Takanawa 2-chome, Minatoku, Central P. O. Box 176, Tokyo Honjo & Co., 10 Kitanagasa-Dori 1-chome, Ikutaku, P. O. Box 8 Kobe Port
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<b>Tanzania</b>	Achelis (Tanganyika) Ltd., P. O. Box 2721, Karim Ladha Mansion, Makunganya Street, Dar-es-Salaam	<b>New Zealand</b>	Agfa-Gevaert N. Z. Ltd., P. O. Box 215, Harvey's Building, 5-7 Albert Street, Auckland
<b>Tunisia</b>	Le Matériel Photo et Ciné 15, Rue d'Angleterre, Tunis		
<b>Uganda</b>	Achelis (Uganda) Ltd., P. O. Box 2663, 24, Seventh Street Kampala		

## The right Rolleiflex filter

For black-and-white and colour film	Characteristics and effect	Use in daylight for	Use in artificial light for
UV-filter	Absorbs ultra-violet	Shots in high mountains (above 6500 feet) or by the seaside (especially by midday sun)	Scientific and technical photography (fluorescence phenomena)
Conversion filter R 1.5 (Skylight filter)	Changes the colour temperature of the light transmitted (by 1.5 decamired), also full UV filter effect	Correcting blue casts in distant views on cloudless days with high sun, Alpine and seaside photography (esp. on reversal colour film)	Electronic flash exposures with units of too high a colour temperature
Neutral density filter	Uniformly holds back light of all colours, reduces light intensity to 25% (ND - 2) or 12.5% (ND - 3) respectively	Extremely bright subjects on high-speed or ultra-speed film	Exposures (including flash shots) at large apertures for limited depth of field on high-speed or ultra-speed film
Polarising filter	Absorbs polarised light from the sky, subdues or extinguishes reflections from non-metallic(!) surfaces; effect reduced with shorter focal lengths	Landscapes: blue sky becomes darker without change in other colours, water surfaces become transparent	Near shots of glass, china, pictures and other objects displayed behind glass; shop windows, display cases etc.

<b>For black-and-white film only</b>	Characteristics and effect	Use in daylight for	Use in artificial light for
Medium yellow filter	Darkens blue, lightens yellow and green	Landscapes, sky and cloud effects, snow subjects	Increased contrast of close-ups and macro shots, copying yellowed originals
Green filter	Darkens red and blue, lightens green and yellow-green	Landscapes with large areas of green, close-ups of plants, portraits on high-speed film	Increased contrast and copying, similar to medium yellow filter
Orange filter	Strongly darkens blue, appreciably lightens red and yellow	Distant views, dramatic cloud effects, architectural subjects, increased contrast, haze cutting	Increased contrast of close-ups and macro subjects
Light red filter	Completely absorbs blue, very strongly lightens red and orange	Distant views, simulated night and moonlight effects, effect still stronger than for orange filter	Increased contrast similar to (but greater than) orange filter
<b>For infra-red film only</b> (max. sensitivity at 800 nm) infra-red filter	Absorbs visible light, passes only infra-red rays from 750 nm (see also page 12)	Distant views in hazy weather, haze and mist penetration, moonlight and night effects	Technical and scientific shots for industrial, forensic and medical photography



## Facts and figures

**Camera type:** 24 x 36 mm single lens reflex camera with exposure measurement through the lens.

**Features:** Rollei bayonet mount for interchangeable lenses, metering system with automatic switch-off, focal plane shutter with rubber blinds and single-multi-stroke rapid winding, double exposure and blank frame lock, self-timer with starting button, self-zeroing exposure counter, 1/4 inch tripod bush, carrying strap eyelets.

**Exposure measurement:** TTL system with CdS cells, centre-weighted full-field measurement of finder screen image at working aperture. Film speed range 12 to 6400 ASA (12 to 39 DIN), measuring range with 50 mm f/1.8 lens from 1.6 to 100,000 apostilb, meter needle centred with index in finder. Powered by button cell in camera bottom, switched on only during measurement by stop-down key on camera top.

**Finder system:** Pentaprism, instant return mirror. Focusing screen with central microprism grid, matted screen ring and matted screen with Fresnel lens. Rectangular finder eyepiece with fitting for eyepiece cup and correction

lenses. Laterally correct and parallax-free finder image.

**Focal plane shutter:** Shutter speeds  $1/1000$  to 1 second and B, continuously rotatable shutter speed dial, flash outlets for X and FP, electronic flash synchronisation up to  $1/60$  second.

### Dimensions:

$5\frac{9}{16} \times 3\frac{11}{16} \times 3\frac{7}{16}$  inches (141 x 93 x 87 mm)  
with 50 mm f/1.8 lens

$5\frac{9}{16} \times 3\frac{11}{16} \times 2$  inches (141 x 93 x 50 mm)  
without lens

### Weight:

$27\frac{3}{8}$  ounces (775 grams) with 50 mm f/1.8 lens  
 $20\frac{5}{8}$  ounces (585 grams) without lens

**Accessories:** Rectangular lens hood for 25 mm, folding hood for 35 to 135 mm, screw-in hood for 85 to 135 mm, extendible hood for 200 mm focal length.

Medium yellow, green, orange, light red, UV, R 1.5, neutral density - 2, neutral density - 3, and infra-red filters for lenses from 25 to 135 mm and 200 mm focal length. Polarising filter for 25 mm and 35 - 135 mm focal length. Zeiss Softar I and II soft focus attachments for 25 to 135 mm focal length.

Accessory shoe, eyepiece cup, rotating right angle finder.

Rollei retro adapter, macro lens adapter, microscope adapter, intermediate adapter.  
 Extension tubes 7.8 – 15 – 30 – 50 mm with automatic spring-loaded aperture, extension bellows  
 with automatic spring-loaded aperture. Ever-ready case, carrying strap with non-slip pad.  
 Lens cases for 25 mm, 35 to 85 mm, 135 mm, 200 mm focal length.

**Interchangeable lenses:** Distance scale in feet and metres, quick-change bayonet mount, depth of  
 field indicator, infra-red index, automatic spring-loaded aperture plus manual setting, click stops  
 at half stop intervals; made by Carl Zeiss/Oberkochen, Germany.

	Distagon	Distagon	Planar	Sonnar	Tele-Tessar	Tele-Tessar
Maximum aperture	f/2.8	f/2.8	f/1.8	f/2.8	f/4	f/4
Focal length	25 mm	35 mm	50 mm	85 mm	135 mm	200 mm
Aperture range	2.8–22	2.8–22	1.8–16	2.8–22	4–32	4–32
Angle of view, diagonal	80°	61°	45°	29°	19°	13°
Angle of view, horizontal	70°	52°	38°	24°	16°	11°
Angle of view, vertical	50°	36°	26°	16°	10°	7°
Number of elements	8	5	7	4	4	6
Number of components	7	5	6	4	4	5
Nearest focus	10 ins. 0.25 m	16 ins. 0.4 m	1½ ft. 0.45 m	3¼ ft. 1 m	5¼ ft. 1.6 m	8¼ ft. 2.5 m
Filter thread	E 49	E 49	E 49	E 49	E 49	E 67
Length	2½ ins. 64 mm	2⅙ ins. 53 mm	1⅞ ins. 47 mm	2⅙ ins. 52 mm	3⅞ ins. 98 mm	5¼ ins. 134 mm
Diameter	2⅞ ins. 62 mm	2⅞ ins. 62 mm	2⅞ ins. 62 mm	2⅞ ins. 62 mm	2⅞ ins. 62 mm	3 ins. 76 mm
Weight	11⅛ oz. 315 g	7¼ oz. 205 g	6⅝ oz. 190 g	6¾ oz. 195 g	13⅛ oz. 370 g	20⅛ oz. 570 g


## Handling faults and remedies


Fault	Possible cause	Remedy	Notes
Meter needle does not respond	Stop-down key only partly depressed	Fully depress the key	
	Preselected exposure time outside setting range	Select shorter or longer exposure time	For usable setting range see table on page 50; see also page 26
	Battery exhausted, not inserted or wrongly inserted	Change or (correctly) fit the battery	See page 28
Finder image very dark	Automatic spring-loaded aperture disengaged	Set changeover switch to "A"	See page 18
Shutter does not release	Rapid winding lever only partly tensioned	Fully pull out rapid winding lever	See page 23
	Self-timer lever only partly tensioned	Fully tension self-timer lever	See page 22
Picture unexposed or partly exposed	Elektronic flash used on FP outlet	Connect electronic flash only to X outlet	FP contact closes too early; see page 31
	FP-Flash bulbs used on X outlet	Connect long peak FP-flash bulbs only to FP outlet	X contact closes too late; see page 31
	Shutter speed too fast for flash bulbs	Shutter speed $1/30$ second or longer	See page 31
	Shutter speed too fast for electronic flash	Do not use shorter speeds than $1/60$ second with electronic flash	
Picture underexposed	Wrong exposure measurement	Measure brightness of main subject	See close-up or substitute readings, page 26 — 27
	Stray light entry through finder eyepiece in strong side light	Use eyepiece cup, especially when wearing spectacles	See page 13

<b>Fault</b>	<b>Possible cause</b>	<b>Remedy</b>	<b>Notes</b>
Whole film under- or overexposed	Wrong film speed setting	Set film speed correctly	Note table on page 9
Whole film unexposed	Film has not advanced due to faulty loading or because torn	Correctly load film, advance smoothly but not too fast	Check transport: see page 9
Image partly or completely unsharp	Subject movement: exposure time too long for moving subject	Use faster shutter speed	See page 25
	Camera shake: exposure time too long for hand-held shot	Support camera or use a tripod	See page 22
	Image inaccurately focused	Focus exactly	Use correction lenses if necessary, see page 13
Meter needle „kicks“	Preselected exposure time outside setting range	Select different exposure time	See table on page 50
Rewind knob does not turn	Film wrongly loaded	Correctly load film, leader into outer slot	See page 8
	Film torn	Remove torn piece of film, trim new leader and rethread	See page 8
Rewind release fails to engage, heavy resistance against film transport	Excessive exploitation of film length, film entirely wound off	Avoid any force, keep rewind release pressed in and rewind film somewhat, then finish lever stroke	If film is torn out of cartridge: open back in total darkness only, rewind film by hand and wrap up light-proof

## Exposure setting range

depends on the film speed when measuring. The table shows exposure times and film speed combinations as follows:

 Usable shutter speed, within setting range

 Shutter speed not usable, outside setting range, ignore meter indication.

DIN	ASA	B *)	1	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500	1/1000
12	12												
15	25												
18	50												
21	100												
24	200												
27	400												
30	800												
33	1600												
36	3200												
39	6400												

**Important:** If in special cases the meter needle cannot be centred within the setting range, note hint on page 27.

\*) If meter needle centres at B setting, use an exposure of 2 seconds.

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**Twin-lens reflex cameras**

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**Cine projectors**

**Slide projectors**

**Computer flash units**

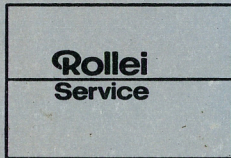
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