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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. Alternatively release button C and wind up lever D until counter E shows 1.

**Shutter speed selecting**
Turn speed dial F and set, for instance, to $\frac{1}{125}$ 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.
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.
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. Briefly press in the rewind release 35.

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:

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

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

**For horizontal shots**
holds 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 eyepiece 16, supporting the camera against the forehead.

**For upright shots**
hold the camera in the same way, but turned through 90°.
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'/2 feet to 8.

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:

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<table>
<thead>
<tr>
<th>Lens Type</th>
<th>Focal Length</th>
<th>Aperture</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 mm Distagon</td>
<td>25 mm</td>
<td>f/2.8</td>
<td>ultra-wide angle</td>
</tr>
<tr>
<td>35 mm Distagon</td>
<td>35 mm</td>
<td>f/2.8</td>
<td>normal wide-angle</td>
</tr>
<tr>
<td>50 mm Planar</td>
<td>50 mm</td>
<td>f/1.8</td>
<td>standard</td>
</tr>
<tr>
<td>85 mm Sonnar</td>
<td>85 mm</td>
<td>f/2.8</td>
<td>medium long focus</td>
</tr>
<tr>
<td>135 mm Tele-Tessar</td>
<td>135 mm</td>
<td>f/4</td>
<td>telephoto</td>
</tr>
<tr>
<td>200 mm Tele-Tessar</td>
<td>200 mm</td>
<td>f/4</td>
<td>telephoto</td>
</tr>
</tbody>
</table>

further details see page 47.
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 $\frac{1}{1000}$ 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.
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).
Releasing

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

With cable release
For slower shutter speeds — exposure times longer than \( \frac{1}{30} \) 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 12 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 \( \frac{1}{30} \) 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 \( \frac{1}{30} \) second; \( \frac{1}{60} \) and \( \frac{1}{125} \) second are safer and more reliable. With long focus lenses and a not very steady camera hold use \( \frac{1}{125} \) or, better still, \( \frac{1}{250} \) 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 \( \frac{1}{1000} \) second. Winter sports, tennis \( \frac{1}{1000} \) to \( \frac{1}{500} \) second. Horse races, cross country runners \( \frac{1}{500} \) second. Running children and cyclists \( \frac{1}{250} \) to \( \frac{1}{125} \) second. Walking figures, standing people \( \frac{1}{125} \) to \( \frac{1}{60} \) 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.
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.

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 $\frac{1}{1000}$ second and B on the shutter speed dial 27 signals the limit of the setting range.

When approaching this interval by passing $\frac{1}{1000}$ second (extreme brightness and high-speed film): ignore the meter needle movement or central position. Return the shutter speed dial to $\frac{1}{1000}$ 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.
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 or Toshiba HS-D, 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 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 \( \frac{1}{4} \) 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: \( \frac{1}{60} \) to 1 second and B for electronic flash; \( \frac{1}{30} \) 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: \( \frac{1}{1000} \) to 1 second and B.
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 spring-loaded aperture is out of action. The lens cannot be focused by turning the focusing mount 14.

**Extension tubes**

are available as a complete set 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.

**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
(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 1/4" and 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 length 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.
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, and mainly in conjunction with the extension tubes 72 and/or the extension bellows.

**Purpose:** Optimum optical quality, especially at high magnifications (macrophotography).

**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.
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 81. Fit the adapter 81 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 ultraviolet 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.

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**Approved Rollei workshops in West Germany**

<table>
<thead>
<tr>
<th>Region</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berlin</td>
<td>Marland-Gesellschaft</td>
</tr>
<tr>
<td></td>
<td>Marlow &amp; Co. OHG</td>
</tr>
<tr>
<td></td>
<td>1 Berlin 41,</td>
</tr>
<tr>
<td></td>
<td>Handjerstrasse 18</td>
</tr>
<tr>
<td>Düsseldorf</td>
<td>Fa. Anton Paepke</td>
</tr>
<tr>
<td></td>
<td>4 Düsseldorf,</td>
</tr>
<tr>
<td></td>
<td>Scheurenstrasse 24</td>
</tr>
<tr>
<td></td>
<td>Fa. ARLÜWA</td>
</tr>
<tr>
<td></td>
<td>5 Köln, Offenbachplatz 1</td>
</tr>
<tr>
<td>Frankfurt</td>
<td>Fa. W. Laukhardt KG</td>
</tr>
<tr>
<td></td>
<td>65 Mainz, Binger Strasse 10</td>
</tr>
<tr>
<td>Hamburg</td>
<td>Fa. Ludwig Lanckow</td>
</tr>
<tr>
<td></td>
<td>Nachf. GmbH</td>
</tr>
<tr>
<td></td>
<td>2 Hamburg 36,</td>
</tr>
<tr>
<td></td>
<td>Jungfernstieg 48</td>
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<tr>
<td>Munich</td>
<td>Fa. Rudolf Mitterreiter</td>
</tr>
<tr>
<td></td>
<td>8 München 90,</td>
</tr>
<tr>
<td></td>
<td>Klagenfurter Strasse 22</td>
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<tr>
<td></td>
<td>7 Stuttgart-W,</td>
</tr>
<tr>
<td></td>
<td>Ludwigstrasse 6</td>
</tr>
<tr>
<td>Country</td>
<td>Address</td>
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<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Austria</td>
<td>Medefind &amp; Bernfuss, Photovertrieb KG, Mariahilferstraße 17, A-1060 Wien 6, Postfach 80</td>
</tr>
<tr>
<td>Belgium</td>
<td>Attraco S. A., 294 Rue Royale, B-1030 Bruxelles</td>
</tr>
<tr>
<td>Denmark</td>
<td>P. A. Herskind &amp; Co., Søllerødvej 64, 2840 Holte</td>
</tr>
<tr>
<td>Finland</td>
<td>Bioptä Oy, Veneentekijäntie 10, P. O. Box 21 104, Helsinki 21</td>
</tr>
<tr>
<td>France</td>
<td>Rollei France S. A., 75-81, Rue de la Grosse Pierre, Centre SILIC, 94 Rungis</td>
</tr>
<tr>
<td>Gr. Britain</td>
<td>R. F. Hunter Ltd., Denington Industrial Estate, Wellingborough, Northants NN 8 II. RG, England</td>
</tr>
<tr>
<td>Greece</td>
<td>Salcofot S. A., Heinz D. S. Cougno, 15 Venizelos Street, Thessaloniki; FOTOSCOPE, Stadiou St. 43, Athen</td>
</tr>
<tr>
<td>Italy</td>
<td>ERCA S.p.A., Viale Certosa 49, I-20149 Milano</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Ilford Foto N.V., Jan Rebelstraat 5, Amsterdam W</td>
</tr>
<tr>
<td>Norway</td>
<td>Foto-Optikk Odd Aronsen, Drammensveien 43, Oslo 2</td>
</tr>
<tr>
<td>Portugal</td>
<td>J. Wimmer &amp; Co., Avenida 24 de Julho, 34, Lisbon 2, Caixa Postal 2243</td>
</tr>
<tr>
<td>Sweden</td>
<td>Bell &amp; Howell AB, Vintergatan 1, S-17230 Sundbyberg</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Filmo AG, Seestrasse 341, CH - 8038 Zürich</td>
</tr>
<tr>
<td>Spain</td>
<td>Gaspar Mampel, Avda. Glmo. Franco, 497, Barcelona 15</td>
</tr>
<tr>
<td>Canada</td>
<td>Rollei Canada Ltd., 311 Norfinch Drive, Downsview, Ontario</td>
</tr>
<tr>
<td>U. S. A.</td>
<td>Rollei of America Inc., 100 Lehigh Drive, Fairfield, N. J. 07006</td>
</tr>
<tr>
<td>Mexico</td>
<td>Casa Calpini S. A., Apartado Postal 703, Av. Madero 34, Mexico 1, D. F.</td>
</tr>
<tr>
<td>Argentina</td>
<td>Casa Eduardo Udenio &amp; Cia., S. C. A., Calle Florida 683-5° piso, Casilla Correo Central 410, Buenos Aires</td>
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<tr>
<td>Brazil</td>
<td>SINCRONAR, Productos Fotográficos Ltda., Rua Florencio de Abreu, 194</td>
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<tr>
<td></td>
<td>7° And., São Paulo</td>
</tr>
<tr>
<td>Venezuela</td>
<td>C. Hellmund &amp; Cia. S. A., Avenida Pantin-Chacao, Apartado 589, Caracas</td>
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<tr>
<td>Canaries</td>
<td>AFE-Import, Calle Presidente Alvear 48, Las Palmas de Gran Canaria</td>
</tr>
<tr>
<td>Kenya</td>
<td>Achelis (Kenya) Limited, New Kijabe Street, P. O. Box 30378 + 6767, Nairobi</td>
</tr>
<tr>
<td>Republic of South Africa</td>
<td>PETER HOUSE LTD., Cor. Mail Road and Pine Ave. P. O. Box 42414 Fordsburg, Johannesburg</td>
</tr>
<tr>
<td>Tanzania</td>
<td>Achelis (Tanganyika) Ltd., P. O. Box 2721, Karim Ladha Mansion, Makunganya Street, Dar-es-Salaam</td>
</tr>
<tr>
<td>Tunisia</td>
<td>Le Matériel Photo et Ciné, 15, Rue d'Angleterre, Tunis</td>
</tr>
<tr>
<td>Uganda</td>
<td>Achelis (Uganda) Ltd., P. O. Box 2663, 24, Seventh Street, Kampala</td>
</tr>
<tr>
<td>Hongkong</td>
<td>Melchers (H. K.) Ltd. Hongkong P. O. Box 713, 401 - 8, Realty Building, 71, des Voeux Road Central Hongkong</td>
</tr>
<tr>
<td>Iran</td>
<td>Hamazasb Martin &amp; Co., Avenue Roosevelt, Koutché Nodjoumi, Teheran</td>
</tr>
<tr>
<td>Japan</td>
<td>Balcom Trading Co., Inc., 15-10 Takanawa 2-chome, Minato-ku, Takanawa P. O. Box 21, Tokyo Honjo &amp; Co., 10 Kitanagasa-Dori 1-chome, Ikutaku, P. O. Box 8 Kobe Port, 651-01 Kobe</td>
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<tr>
<td>Singapore</td>
<td>Behn, Meyer &amp; Co. (Pte.) Ltd., 100, Pasir Panjang Road, P. O. Box 2000, Singapore</td>
</tr>
<tr>
<td>Thailand</td>
<td>Berli Jucker Co. Ltd., 542/1, Ploenchit Road, Bangkok</td>
</tr>
<tr>
<td>Australia</td>
<td>Watson Victor Ltd., 95–99 Epping Road, P. O. Box 100, North Ryde N. S. W. 2113</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Allan G. Mitchell (N. Z.) Ltd., 31, St. Benedicts Street, P. O. Box 3798, Auckland 1</td>
</tr>
<tr>
<td>For black-and-white film only</td>
<td>Characteristics and effect</td>
</tr>
<tr>
<td>------------------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>Medium yellow filter</td>
<td>Darkens blue, lightens yellow and green</td>
</tr>
<tr>
<td>Green filter</td>
<td>Darkens red and blue, lightens green and yellow-green</td>
</tr>
<tr>
<td>Orange filter</td>
<td>Strongly darkens blue, appreciably lightens red and yellow</td>
</tr>
<tr>
<td>Light red filter</td>
<td>Completely absorbs blue, very strongly lightens red and orange</td>
</tr>
<tr>
<td>For infra-red film only</td>
<td>Absorbs visible light, passes only infra-red rays from 750 nm (see also page 12)</td>
</tr>
</tbody>
</table>
**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:**
- $5\frac{5}{16} \times 3\frac{11}{16} \times 3\frac{7}{16}$ inches (141 x 93 x 87 mm) with 50 mm f/1.8 lens
- $5\frac{5}{16} \times 3\frac{11}{16} \times 2$ inches (141 x 93 x 50 mm) without lens

**Weight:**
- 27 3/8 ounces (775 grams) with 50 mm f/1.8 lens
- 20 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. Set of 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.

<table>
<thead>
<tr>
<th></th>
<th>Distagon</th>
<th>Distagon</th>
<th>Planar</th>
<th>Sonnar</th>
<th>Tele-Tessar</th>
<th>Tele-Tessar</th>
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<tbody>
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<td>f/2.8</td>
<td>f/2.8</td>
<td>f/1.8</td>
<td>f/2.8</td>
<td>f/4</td>
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<td>Focal length</td>
<td>25 mm</td>
<td>35 mm</td>
<td>50 mm</td>
<td>85 mm</td>
<td>135 mm</td>
<td>200 mm</td>
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<td>Aperture range</td>
<td>2.8–22</td>
<td>2.8–22</td>
<td>1.8–16</td>
<td>2.8–22</td>
<td>4–32</td>
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<td>Angle of view, diagonal</td>
<td>80°</td>
<td>61°</td>
<td>45°</td>
<td>29°</td>
<td>19°</td>
<td>13°</td>
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<td>Angle of view, horizontal</td>
<td>70°</td>
<td>52°</td>
<td>36°</td>
<td>24°</td>
<td>16°</td>
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<td>Angle of view, vertical</td>
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<td>36°</td>
<td>26°</td>
<td>18°</td>
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<td>Number of elements</td>
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<td>5</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Number of components</td>
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<td>5</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>5</td>
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<td>Nearest focus</td>
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<td>16 ins.</td>
<td>11½ ft.</td>
<td>3½ ft.</td>
<td>5½ ft.</td>
<td>8½ ft.</td>
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<tr>
<td></td>
<td>0.25 m</td>
<td>0.4 m</td>
<td>0.45 m</td>
<td>1 m</td>
<td>1.6 m</td>
<td>2.5 m</td>
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<td>E 49</td>
<td>E 49</td>
<td>E 49</td>
<td>E 49</td>
<td>E 67</td>
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<tr>
<td>Length</td>
<td>2½ ins.</td>
<td>2½ ins.</td>
<td>17½ ins.</td>
<td>2½ ins.</td>
<td>3½ ins.</td>
<td>5½ ins.</td>
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<tr>
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<td>64 mm</td>
<td>53 mm</td>
<td>47 mm</td>
<td>52 mm</td>
<td>98 mm</td>
<td>134 mm</td>
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<td>2½ ins.</td>
<td>2½ ins.</td>
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<td>62 mm</td>
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<td>Weight approx.</td>
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<td>7¼ oz.</td>
<td>6½ oz.</td>
<td>6³/₄ oz.</td>
<td>13½ oz.</td>
<td>20½ oz.</td>
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<tr>
<td></td>
<td>315 g</td>
<td>205 g</td>
<td>190 g</td>
<td>195 g</td>
<td>370 g</td>
<td>570 g</td>
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<tr>
<td>Fault</td>
<td>Possible cause</td>
<td>Remedy</td>
<td>Notes</td>
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<td>----------------------------------------------------</td>
<td>----------------------------------------------</td>
<td>---------------------------------------------------------</td>
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<tr>
<td>Meter needle does not respond</td>
<td>Stop-down key only partly depressed</td>
<td>Fully depress the key</td>
<td>For usable setting range see table on page 50; see also page 26</td>
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<tr>
<td></td>
<td>Preselected exposure time outside setting range</td>
<td>Select shorter or longer exposure time</td>
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<tr>
<td></td>
<td>Battery exhausted, not inserted or wrongly inserted</td>
<td>Change or (correctly) fit the battery</td>
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<tr>
<td>Finder image very dark</td>
<td>Automatic spring-loaded aperture disengaged</td>
<td>Set changeover switch to “A”</td>
<td>See page 18</td>
<td></td>
<td></td>
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<tr>
<td>Shutter does not release</td>
<td>Rapid winding lever only partly tensioned</td>
<td>Fully pull out rapid winding lever</td>
<td>See page 23</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Self-timer lever only partly tensioned</td>
<td>Fully tension self-timer lever</td>
<td>See page 22</td>
<td></td>
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<tr>
<td>Picture unexposed or partly exposed</td>
<td>Elektronic flash used on FP outlet</td>
<td>Connect electronic flash only to X outlet</td>
<td>FP contact closes to early; see page 31</td>
<td></td>
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<tr>
<td></td>
<td>FP-Flash bulbs used on X outlet</td>
<td>Connect long peak FP-flash bulbs only to FP outlet</td>
<td>X contact closes too late; see page 31</td>
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<tr>
<td></td>
<td>Shutter speed too fast for flash bulbs</td>
<td>Shutter speed 1/30 second or longer</td>
<td>See page 31</td>
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<tr>
<td></td>
<td>Shutter speed too fast for electronic flash</td>
<td>Do not use shorter speeds than 1/40 second with electronic flash</td>
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<tr>
<td>Picture underexposed</td>
<td>Wrong exposure measurement</td>
<td>Measure brightness of main subject</td>
<td>See close-up or substitute readings, page 26 – 27</td>
<td></td>
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<tr>
<td></td>
<td>Stray light entry through finder eyepiece in strong side light</td>
<td>Use eyepiece cup, especially when wearing spectacles</td>
<td>See page 13</td>
<td></td>
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<tr>
<td>Fault</td>
<td>Possible cause</td>
<td>Remedy</td>
<td>Notes</td>
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<tr>
<td>Whole film under- or overexposed</td>
<td>Wrong film speed setting</td>
<td>Set film speed correctly</td>
<td>Note table on page 9</td>
<td></td>
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<tr>
<td>Whole film unexposed</td>
<td>Film has not advanced due to faulty loading or because torn</td>
<td>Correctly load film, advance smoothly but not too fast</td>
<td>Check transport: see page 9</td>
<td></td>
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<tr>
<td>Image partly or completely unsharp</td>
<td>Subject movement: exposure time too long for moving subject</td>
<td>Use faster shutter speed</td>
<td>See page 25</td>
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<tr>
<td></td>
<td>Camera shake: exposure time too long for handheld shot</td>
<td>Support camera or use a tripod</td>
<td>See page 22</td>
<td></td>
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<tr>
<td></td>
<td>Image inaccurately focused</td>
<td>Focus exactly</td>
<td>Use correction lenses if necessary, see page 13</td>
<td></td>
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</tr>
<tr>
<td>Meter needle &quot;kicks&quot;</td>
<td>Preselected exposure time outside setting range</td>
<td>Select different exposure time</td>
<td>See table on page 50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rewind knob does not turn</td>
<td>Film wrongly loaded</td>
<td>Correctly load film, leader into outer slot</td>
<td>See page 8</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Film torn</td>
<td>Remove torn piece of film, trim new leader and rethread</td>
<td>See page 8</td>
<td></td>
<td></td>
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<tr>
<td>Rewind release fails to engage, heavy resistance against film transport</td>
<td>Excessive exploitation of film length, film entirely wound off</td>
<td>Avoid any force, keep rewind release pressed in and rewind film somewhat, then finish lever stroke</td>
<td>If film is torn out of cartridge: open back in total darkness only, rewind film by hand and wrap up light-proof</td>
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</table>
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
- Outside setting range, ignore meter indication.

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</table>

**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.