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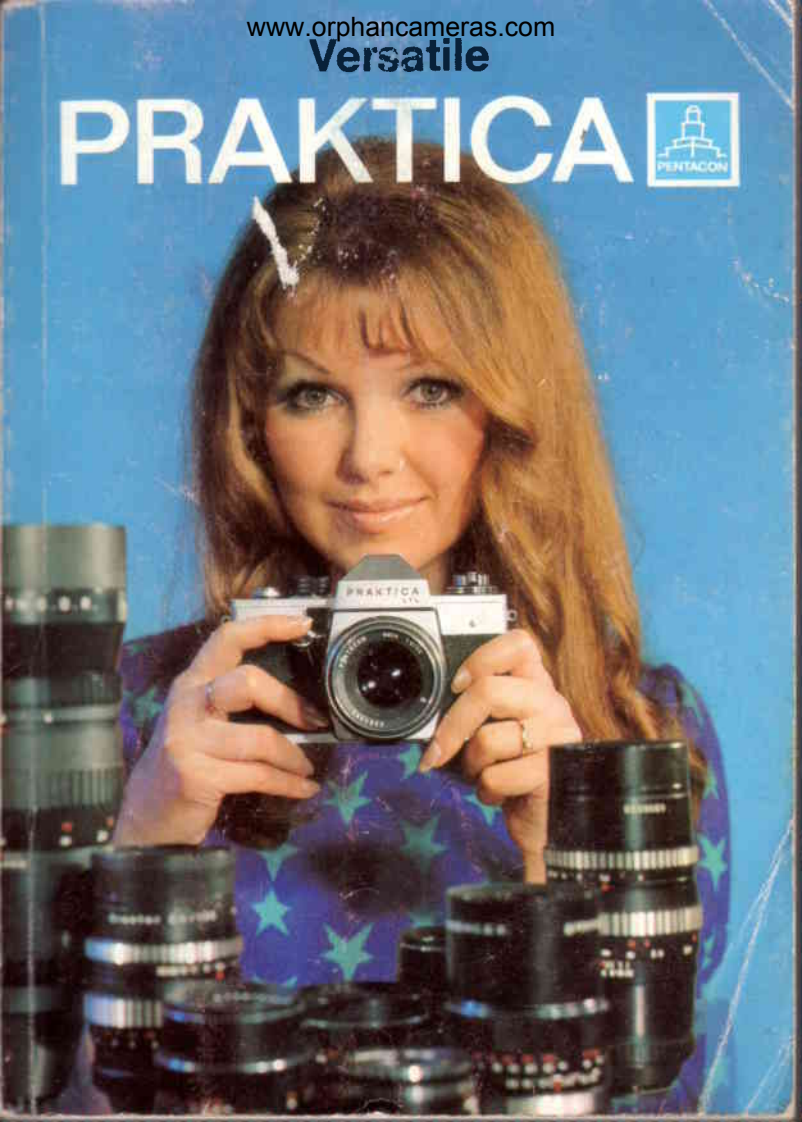
Versatile

PRAKTICA

PENTACON



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Versatile

PRAKTICA

PENTACON

Kombinat VEB PENTACON DRESDEN

Exporteur: Kamera-Film Export-Import

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Tradition and progress

Of the cameras for demanding photography, the single lens reflex miniature has found the widest distribution during the last decades. The Praktiflex 24 x 36 mm belongs to the pacemakers of this worldwide success: it has been built since 1939 in Dresden and is the forerunner of the PRAKTICA series of cameras which started in 1948.

Already the first camera carrying this name offered considerable improvements compared with its relatively modest predecessors. Noteworthy in the first place were the focal plane shutter with the extended shutter speed range and the now internationally used PRAKTICA-thread M 42 x 1. In the years to follow, this camera with its bright prospects for the future was continually developed and improved in closest touch with photographers and their ever higher demands. Advances such as flash synchronisation, prism attachment, automatic diaphragm, built-in prismatic finder, fresnel lens with additional focusing fields, built-in exposure meter, instant return mirror, automatic film loading are the most important landmarks on the road to today's perfection. In particular the PRAKTICAmat introduced in 1965 proves the farseeing construction work: as first European single lens reflex camera with automatic exposure on the basis of international light metering through the lens (TTL), it introduced decisively the era of "precision exposure". The experience gained with the PRAKTICAmat and the later PRAKTICAsuper TL is today still the secure basis of

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Praktiflex (1938)

First PRAKTICA (1948)

the reliable PENTACON-Internal light metering as used in the current PRAKTICA generation, the L series.

Since the beginning of this century Dresden has been the home of the camera industry. Strong impulses for simplification and improvement of the photographic processes emanated from this town on the River Elbe and the high standard of its precision technique belongs to its industrial tradition and they are carefully preserved and fostered by the Kombinat VEB PENTACON DRESDEN. This large undertaking combines the research, development and manufacturing capacity of the Dresden camera industry. Furthermore the VEB Feinoptisches Werk Goerlitz has been attached to it. Thus formed, this huge economic unit has chosen the PRAKTICA 24 x 36 mm as the centre point for production and manufactures by the most up-to-date methods and controls the large series of this popular camera and its many accessories. The VEB Feinoptisches Werk Goerlitz, which is part of the combined works, produces for the camera the generally preferred PENTACON Standard and auxiliary lenses. This gives you as user of the PRAKTICA the certainty that camera, lenses and attachments come from the same source and are fully tuned up to each other. You can enlarge at any time on your photographic equipment and utilise all application possibilities of the PRAKTICA. As mentioned already, since 1948 the camera thread has remained unchanged, so that cameras from the early days of the PRAK-

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PRAKTICAmat, the first European single lens reflex camera with internal metering (TTL)
Precision from the conveyor belt – PRAKTICA manufacture in the Kombinat VEB PENTACON DRESDEN

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TICA series can be fitted with modern accessories and up-to-date lenses. This is the advantage of a camera with tradition and a worldwide accepted system. It is almost superfluous to stress the precision and reliability of the PRAKTICA, as millions of satisfied owners confirm the high performance of this versatile Reflex camera much more impressively. Something that has been so widely and increasingly accepted over twentyfive years has passed its test.

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The current PRAKTICA generation

In all the phases of development the PRAKTICA 24 mm x 36 mm remains unchanged in its three chief characteristics right up to today:

1. Each PRAKTICA is a genuine single lens reflex camera. Its large viewfinder image coincides free from parallax with the actual subject; also when used with all auxiliary lenses, as well as with all accessories such as for close-up, micro, astro photography, etc., what you see in the viewfinder will be in the negative or on the slide. The finder image allows you to select the exact image, balance the depth of field and – most important – focus accurately. Not in vain it is said that PRAKTICA pictures are "reflex-sharp".
2. Each PRAKTICA is a miniature camera with its own dynamic and economy, with standard lens, the focal length of which offers good depth of field, wide aperture for short exposure times under unfavourable light conditions, with a film channel for all types of the immense number of 35 mm wide Miniature films in standard cartridges.
3. Each PRAKTICA is a universal camera to which you can add and which forms a system for interchangeable lenses and a wide range of accessories for specialised purposes in any imaginable field. It remains easy under all circumstances to obtain the maximum pictorial effect, as the image of the interchangeable lenses from Superwideangle of 20 mm focal length up to the longest Telelens of 500 or even 1000 mm is just as

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accurately visible in the finder as are those when using the various attachments.
The current PRAKTICA generation too has these important characteristics. However, in the development of all five models of the L series, a completely new concept has been realised. The common characteristic of these cameras is the steel blades focal plane shutter for speeds from $^1/_{1000}$ to 1 sec (longer exposures with the B setting). The blades (Lamina) of the focal plane shutter – to which the "L" refers as description of type – are made of high grade ribbon steel. The outstanding features of this metal focal plane shutter are: space saving, extensive independence of changes in temperature, com-

PRAKTICA LLC, one of the top models of the current PRAKTICA generation

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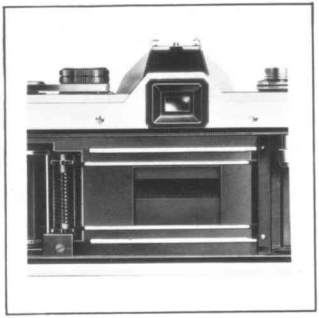

The steel blade focal plane shutter, a construction characteristic of the current PRAKTICA generation

The slit forming curtains of the shutter each consisting of three steel blades. Left, the side turned towards the picture aperture of the first running down curtain before it runs down; Right, the side turned towards the lens.

plete consistency in times and high speed with which it runs over the shorter side of the negative aperture 24 x 36 mm. This last characteristic permits extremely advantageous electronic synchronisation with a shutter setting of $^{1}/_{125}$ sec. (= shortest synchro time); this in turn serves to improve the definition, blurred secondary image is avoided if a fast moving object in relatively good light is taken with electronic flash (i.e. an athlete in a hall).

The space saving steel blade focal plane shutter gives the designers the opportunity to make for the five PRAKTICA models a particularly small and elegant housing. You will be proud to be seen with a PRAKTICA. Chrome and leather are well balanced, the manipulation parts are conveniently and harmoniously arranged without losing out in usefulness. The equipment of each of the five models is sensibly stepped to ensure that there is the right PRAKTICA for the varying demands, from the simple basic model to the top camera with electric diaphragm control and internal metering, interchangeable finder attachments and other features. Now let us have a closer look at these five models.

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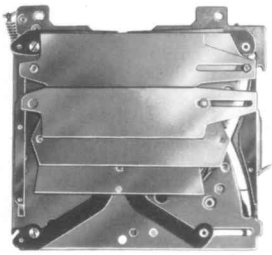

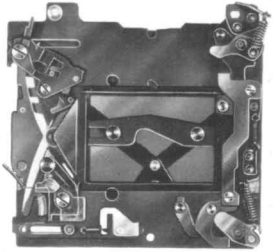

PENTACON PRAKTICA L 24 mm x 36 mm

The technical characteristics of this basic model are: steel blade focal plane shutter (shutter speeds $^{1}/_{1000}$ to 1 sec. and B). Synchro-switch for electronic flash and flashbulbs. Centre flash contact in the built-in accessory shoe. Shortest synchro-time for electronic flash is approximately $^{1}/_{125}$ sec. Prism finder with high magnification, brilliantly bright finder image (which is always upright and side correct). Readiness indicator in the viewfinder. Brightness increasing Fresnel lens with micro-prism centre and matt glass ring for fine focusing. Automatic PL-Filmloading for the simplest loading imaginable. Conveniently placed angled release. Automatic return mirror (the finder image is practically always visible and disappears only

PENTACON
PRAKTICA L

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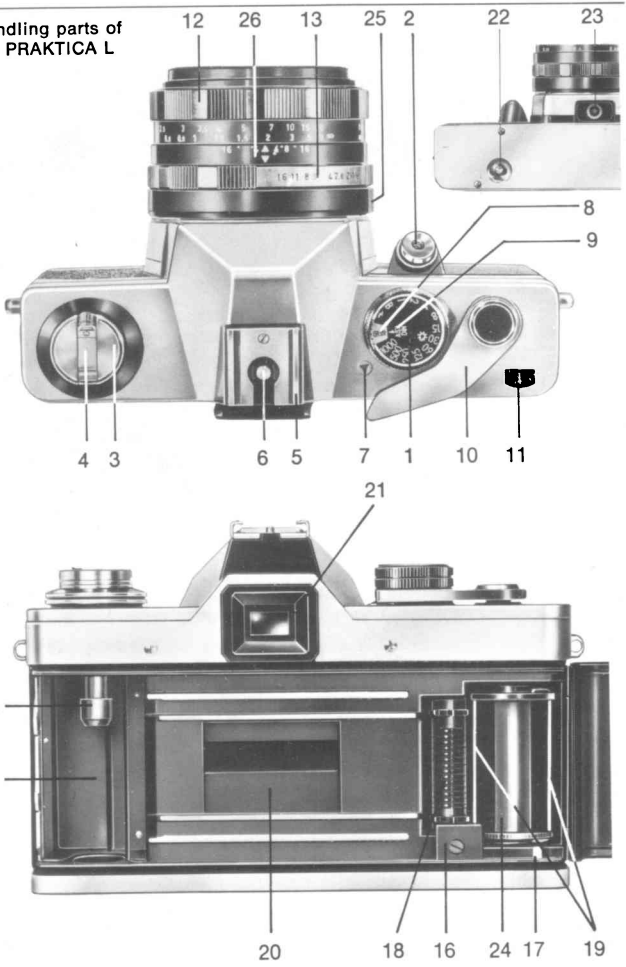
Handling parts of the PRAKTICA L



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for the duration of the actual exposure which is generally only a fraction of a second). Quick cocking lever with short winding angle. Hinged-on back. Automatic exposure counter (self re-setting on opening the back of the camera). Interchangeable lenses with focal lengths from 20 to 1000 mm, up to 300 mm with automatic diaphragm control. Dimensions with lens PENTACONauto 1.8/50 mm 142 mm x 96 mm x 89.5 mm. Weight with lens PENTACONauto 1.8/50 mm 750 g.

Handling parts of the PRAKTICA L

1 Exposure time setting knob
2 Release
3 Rewind knob
4 Rewind handle
5 Accessory shoe
6 Centre Contact
7 Setting index for Exposure time
8 Filmspeed reminder
9 Setting index for film speed
10 Quick cocking lever
11 Exposure counter
12 Distance setting ring
13 Aperture setting ring
14 Rewind claw
15 Cassette chamber
16 Holding sockets
17 Marking for film insertion
18 Film transport roller
19 Catch guard
20 Steelblade focal plane shutter
21 Ocular holder of the prism finder with changing position for accessories
22 Rewind release
23 Tripod bush
24 Take-up spool
25 Manual stopdown key and switchover lever respectively
26 Depth of field scale

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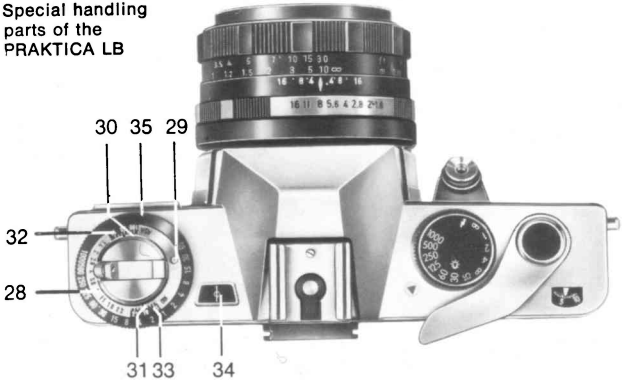
PENTACON
PRAKTICA LB

Special handling parts of the PRAKTICA LB



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PENTACON PRAKTICA LB 24 mm x 36 mm

This model corresponds to the PRAKTICA L, but has in addition a built-in photoelectric exposure meter (outside measuring). In view of the increasing demand for colour film with its somewhat limited exposure latitude, such a space and time saving unit is appreciated. Exposure time and aperture are determined according to the film speed and the subject illumination and is transferred to camera and lens.

Dimensions: as PRAKTICA L.

Weight with lens PENTACONauto 1.8/50 mm 770 g.

Special Handling parts of the PRAKTICA LB

27 Photo cell
28 Scale ring with aperture numbers
29 Marking point
30 ASA speeds marking
31 DIN speeds marking
32 ASA speeds window
33 DIN speeds window
34 Meter needle
35 Knurled scale ring with exposure times

PENTACON PRAKTICA LTL 24 mm x 36 mm

Similar to PRAKTICA L, however equipped with automatic exposure control. It is based on the reliable PENTACON internal light metering through the lens (TTL) with beam splitter, condenser and photo resistant cell. With it the correct exposure is regularly obtained, as only the light which is used to produce the picture takes part in measuring. The measuring angle and the picture angle of the lens used are identical and the exposure factors for filters and extension accessories are covered when measuring. A genuine exposure automation is obtained: either the aperture or the shutter speed are pre-selected and the appropriate second factor for

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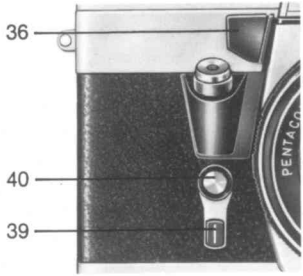
PENTACON
PRAKTICA LTL

Special handling parts of the PRAKTICA LTL



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the exposure is obtained by lining up the pointer with the indicator in the viewfinder. Metering is done stopped down by depressing the conveniently designed measuring key. Dimensions: as PRAKTICA L. Weight with lens PENTACONauto 1.8/50 mm and Battery PX 625 (or equivalent) 795 g.

Special Handling parts of the PRAKTICA LTL

36 Measuring key
37 Film speed scales
38 Film speed marking
39 Delayed action cocking lever
40 Delayed action release button
41 Battery housing cover

The models PRAKTICA L, PRAKTICA LB and PRAKTICA LTL can be fitted with a delayed action release (= selftimer).

As far as the metering method of the three models PRAKTICA LTL, PRAKTICA LLC and PRAKTICA VLC is concerned, one can say in summing up that it works part-integrated and subject correct. Extensive research on an enormous number of photographs of varying subjects has shown a definite size and position of the measuring field. This represents the focal point for metering and is placed in the centre of the finder image. In the overwhelming number of cases the most important details of the subject is shown there. Things outside are under-assessed in photo-metering and cannot falsify the measuring result. Furthermore, changes in the voltage of the source of energy have no influence as a bridge circuit has been used.

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PENTACON PRAKTICA LLC 24 mm x 36 mm

This model too is built like the PRAKTICA L and is fitted with automatic exposure control of the PRAKTICA LTL. This too is based on the famous system of the PENTACON internal metering; however, the aperture values are transferred in the camera not mechanically but electrically without friction or inertia. This is the first reflex camera in the world with this feature. Metering takes place at full aperture and with brightest finder image – even when taking close-ups with extension accessories. In addition to the special lenses with electric diaphragm control (29 to 135 mm focal length), all other PRAKTICA lenses may be used: the automatic exposure control is simply switched to stopped down aperture metering.
Dimensions: as PRAKTICA L.
Weight: with lens PENTACONelectric 1.8/50 mm and Battery PX 21 830 g.

Special Handling Parts of the PRAKTICA LLC

42 Film speed scales
43 Film speed markings
44 Switch ring for Automatic exposure
45 Full aperture or stopped down measuring symbol
46 Battery housing for PX 21 battery
47 Delayed action cocking lever
48 Delayed action release button

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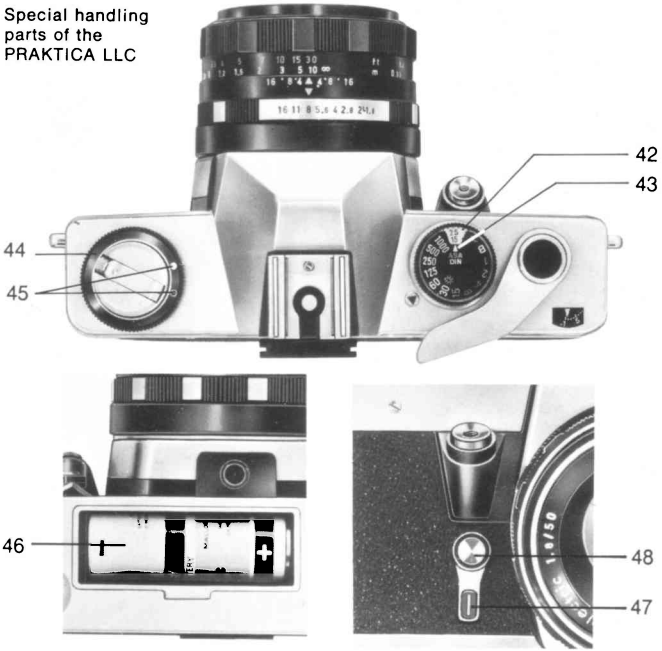
PENTACON
PRAKTICA LLC

Special handling
parts of the
PRAKTICA LLC



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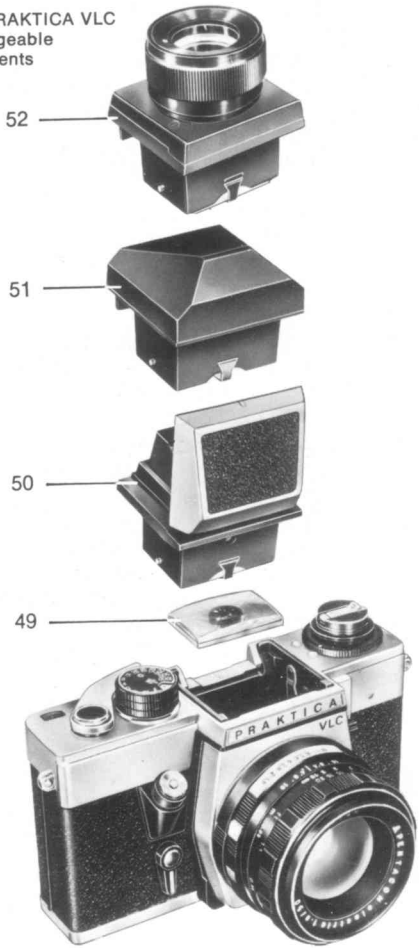
PENTACON PRAKTICA VLC
with interchangeable
finder attachments



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PENTACON PRAKTICA VLC 24 mm x 36 mm

Here the basic body design has been changed; the PRAKTICA VLC has in place of the fixed built-in prism finder, interchangeable finder attachments to give a choice of prism attachment, chestlevel reflex attachment or magnifying attachment. Furthermore, the focusing-system of each finder attachment is interchangeable, so that one has the choice of using a simple field lense or one of the special ones. To further increase the camera's versatility, it can be adapted to the individual style of working and assignments. The exposure automation of this top model employs an internal measuring system independent from the viewfinder which can be used with all three finder attachments. A partially transparent mirror acts as beam-splitter and a light dividing system guides the reflected rays to the condenser and finally to the photo-resistant cell. Exactly as with the PRAKTICA LLC the aperture values are transmitted electrically from the lens to the calculating electronic brain of the camera so that on using lenses with electric diaphragm control, metering takes place with full aperture and full brightness of the finder image. Other PRAKTICA lenses may be used with stopped-down aperture metering.

The PRAKTICA VLC is fitted with delayed action (= Selftimer).

Dimensions: with prism attachment and Lens PENTACON-electric 1.8/50 mm 142 mm x 93 mm x 101 mm.

Weight: with prism attachment, PENTACONelectric 1.8/50 mm and battery 850 g.

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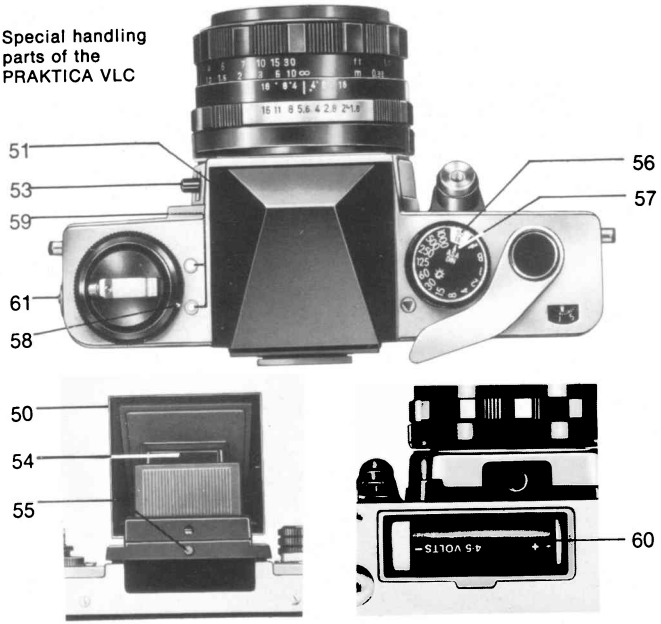
Special Handling parts of the PRAKTICA VLC

49 Focusing system
50 Chestlevel finder attachment
51 Prism attachment
52 Magnifying attachment
53 Disengaging knob for changing finder attachments
54 Focusing magnifier in chestlevel finder attachment
55 Chestlevel finder opening button
56 Film speed scales
57 Film speed markings
58 Switch ring for automatic exposure
59 Full aperture or stopped down metering symbols
60 Battery housing with battery
61 Flash contact

Special handling parts of the PRAKTICA VLC



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PRAKTICA Shooting Technique

With each Praktica camera a detailed instruction book is supplied. We like to enlarge on the most important sections with added advice.

Preparing the PRAKTICA for shooting

The PRAKTICA is quickly ready for use because its automatic film loading has simplified this action, which used to appear very difficult to many amateurs in the past, to such an extent that it can be described without exaggeration as "child's play". No specialised film packing is required. The PRAKTICA accepts all the usual standard cartridges/cassettes 35 mm width for 36, 20 or 12 exposures, as well as bulk film and darkroom refills with suitably trimmed beginning preferably placed into the film manufacturer's own cartridges. Loading the camera with film should not be done in full sunlight, but at least in the shadow of your own body. Here are the few manipulations:

Pull out the rewind knob of the PRAKTICA as far as it will go. Open the camera back and insert cartridge into the cartridge space in the camera body.

Push back rewind knob; if necessary turn it slightly to and fro to engage rewind claw in the centre of the cartridge. The catch-guard of the take-up spool must not point upwards; if necessary, turn the take-up spool slightly by its serrated flange.

Pull out the beginning of the film up to the green mark and

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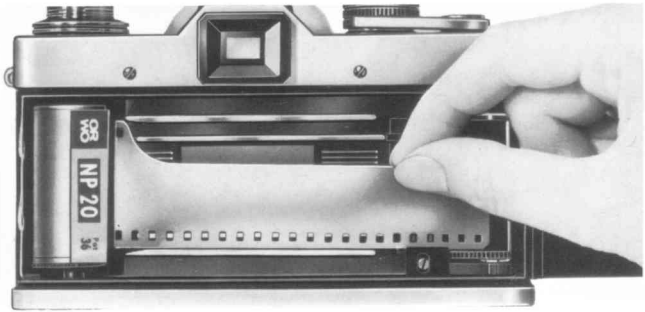

The simple loading of film with the automatic loading device of the PRAKTICA

The bright reflex finder image of the PRAKTICA shows a signal when the shutter is not wound.

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insert it from above as far as it will go under the holding socket so that the sprockets of the film transport roller engage in the perforation.
Sometimes it is advisable to turn the spool finally lightly to the left so that one of the catch-guards comes to lie on the film (this is particularly advisable if the film is strongly curled).
Now close the camera back and alternately turn the cocking lever as far as it will go and release the shutter until the automatic exposure counter points to "1'. There are two more points to make to this: 1. The focal plane shutter is not cocked when you see a signal in the viewfinder. 2. The automatic exposure counter is not set separately; it sets itself to the start on opening the camera back and counts automatically after closing the back of the camera.

Correct exposure

Photography depends on the light sensitivity of the silver bromide in the emulsions of the film. When exposing, there are two factors which have to be tuned up to the brightness of the subject and the speed of the film used; these are
1. The aperture number (this is the opening of the lens and regulates the intensity of the light), and 2. the exposure time (this regulates the duration of the light).
On the box of the film the speed is given in DIN-Numbers, ASA values (USA) or GOST values (USSR). 3 DIN more means double the speed, 3 DIN less means half the speed. With ASA and GOST the relative values may be read directly: a film of 50 ASA has twice the speed of one of 25 ASA. The speeds of the different systems are only approximately comparable:

DIN	12	15	18	21	24	27	30
ASA	12	25	50	100	200	400	800

For most exposures a medium speed film of about 18 to 21 DIN (50-100 ASA) is used. Faster films are recommended for short exposure times in unfavourable light (such as snapshots indoors, sports pictures on overcast days, etc.).
The brightness of the subject can be measured with

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separate exposure meters and built-in meters (to which the excellent internal metering system belongs) which express the result in aperture value and shutter speed pairs. We now want to discuss how you work successfully with them to obtain correctly exposed pictures.

Choosing and setting the exposure time

"Correct exposure" refers also to the definition of the picture. The exposure time has to adjust itself to the movement of the subject to be photographed and the hardly noticeable movement of your hands holding the PRAKTICA. To obtain sharp pictures one has to expose sufficiently fast, at times with correspondingly larger apertures (small aperture numbers). We suggest the following shutter speeds:

$^1/_{60}$ . . . $^1/_{125}$ sec.	for moderate movement of the subject, such as slow walking people, traffic at walking pace.
$^1/_{125}$ . . . $^1/_{500}$ sec.	for fast movement of the subject, such as town traffic, children, animals, sport, e. g. football, athletics, tennis
$^1/_{1000}$ sec.	for fastest movement, such as flying, motor races.

If the shutter speed is too slow to arrest the movement of the subject, the picture will show "subject movement'; if, on the other hand, the camera has been moved during the actual exposure through an unsteady hand, the picture will show "camera shake'. Therefore one can say that as a rule for exposures from the hand without a solid support with lenses up to 100 mm focal length, only speeds from $^1/_{1000}$ to $^1/_{30}$ sec. should be used. These are the white numbers on the exposure time setting knob of the PRAKTICA. Care should be taken when using the orange coloured times from $^1/_{15}$ to 1 sec. that the PRAKTICA is on a solid support, on a tripod or at least firmly held against a wall or similar during the exposure. When longer focal length lenses are used, the situation changes somewhat and it is recommended to use no slower speed than $^1/_{60}$ sec. when working with a 200 mm focal length lens from the hand and with 300 mm lens $^1/_{250}$ sec.

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The exposure time can be set before or after the shutter has been cocked by simply turning the exposure time setting knob. The time required has to point to the orange triangle. With the B setting, exposure times in excess of 1 sec. can be made. The shutter remains open as long as the release is kept depressed. It is essential to screw the camera to a solid tripod and use a cable release with fixing device for the plunger. (The release knob of the PRAKTICA has a cable release socket).

Choosing and setting the apertures

The front ring of the PRAKTICA lenses carries two numbers, the aperture number (1.8, 2.8, 4 etc.) and the focal length (50 mm for standard lenses, 29 mm, 100 mm, 135 mm etc. for the auxiliary lenses). The focal length is the distance between the lens (about from the aperture plane) and its focal point. Dividing the focal length by the widest diameter of the actual lens opening produces the aperture number (sometimes this relationship is expressed with, for example, 1 : 2.8). The lower the aperture number, the better it is for pictures requiring a short exposure time under unfavourable light conditions.

The opening of the lens can be reduced with the aid of the diaphragm resulting in the aperture number series on the lens, e. g. 1.8; 2; 2.8; 4; 5.6; 8; 11; 16. Please note :

1. To "stop down" means setting a larger aperture number which is a smaller lens opening. Therefore, large aperture number = small lens opening; small aperture number = large lens opening.

2. To stop down means, however, less light for the film and one has to expose longer. From aperture number 2 on each next engraved number, e. g. from 2.8 to 4, requires twice the exposure time of the previous one. Conversely, when opening up the aperture from one aperture number to the next smaller one (e. g. from 4 to 2.8) the exposure time is halved. Example: if the correct exposure time for aperture number 8 is $^1/_{60}$ sec., for aperture number 5.6 it is $^1/_{125}$ sec. and for aperture number 11 $^1/_{30}$ sec.

3. On setting larger aperture numbers (smaller lens apertures), the depth of field increases. For example, not only is a group of

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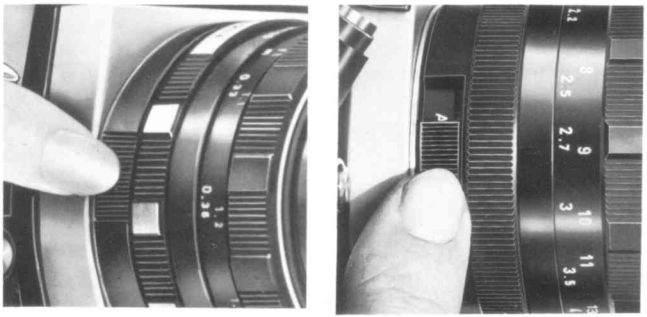

Depth of field preview through test stopping down by means of the manual aperture key, on the right with switch-over slide

people at 8 m sharp, but also the foreground and background. You find more about this from the depth of field table for the PRAKTICA lenses (see section "Focusing"). Lenses with automatic diaphragm control are fitted with a manual setting key or switch-over lever or slide to visually control the depth of field. You can try out visually the effect of stopping down. On PRAKTICA LTL you press the measuring key.

> To obtain an extensive depth of field, you have to set a large aperture number (small lens opening), but have to allow for a longer exposure time. If you require a short exposure time for fast moving subjects, you have to be satisfied with a shallower depth of field at a smaller aperture number (large lens opening).

The aperture number is set on the aperture setting ring of the PRAKTICA lenses (and with it the corresponding opening of the lens); on lenses with automatic diaphragm it is only pre-selected. The required number has to show to the index mark. Many PRAKTICA lenses have an automatic pre-set aperture which closes down to the pre-set aperture number only for the short duration of the exposure to immediately open up completely again. This permits one to see the finder image with maximum brightness, enabling one to control and correct the pictorial effect, definition

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and depth of field up to the last moment. A power reserve in each of the five PRAKTICA models converts the pressure-aperture into a semi-automatic diaphragm which does the closing (and opening) "snappily", that is very rapidly, independent of the speed of the finger pressure on the release of the camera.

Exposing with PRAKTICA L

To ensure correct exposure, you should invest in a reliable photoelectric exposure meter. You point it to the subject after having set the film speed and it will suggest a series of shutter speeds and apertures. You choose – as already discussed – fast shutter speeds with small apertures (large lens opening) for fast movements of the subject and longer shutter speeds if a great depth of field is required. On an average day most subjects can be taken successfully with a combination of middle values, say aperture 5.6 or 8 and shutter speed from $^1/_{60}$ to $^1/_{125}$ sec. Do not forget that filters swallow light, so that you will have to work with smaller aperture number (wider lens opening) or slower shutter speed.

Here are a few simple tips. Expose in full sun from spring to autumn with film

	17–18 DIN 40–50 ASA	20–21 DIN 80–100 ASA
Aperture number 16	$^1/_{30}$	$^1/_{60}$
Aperture number 11	$^1/_{60}$	$^1/_{125}$
Aperture number 8	$^1/_{125}$	$^1/_{250}$
Aperture number 5.6	$^1/_{250}$	$^1/_{500}$
Aperture number 4	$^1/_{500}$	$^1/_{1000}$
Aperture number 2.8	$^1/_{1000}$	–

From autumn to spring, where less light is available, use the next smaller aperture number or double the exposure time.

Exposing with the PRAKTICA LB

The advice given above under "Exposing with the PRAKTICA L" applies in substance also to the PRAKTICA LB which has, however, the advantage of the built-in exposure meter. To use it, set the film speed by turning the scale-

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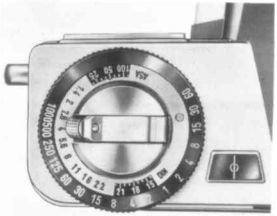

The built-in exposure meter of the PRAKTICA LB

ring which is arranged around the rewind knob. The markings have to point to the appropriate DIN and ASA values. To take the measurement, point the camera to the subject (without obstructing the photo cell with your fingers) and turn the outer milled scale ring until the indicator needle in the window points to the centre of the circle shown there. The corresponding pairs of exposure times and aperture numbers are opposite each other. The pair most suitable for your task is set on the shutter speed knob of the camera and on the aperture ring of the lens. If the shutter speed required exceeds 1 sec. (green numbers), one has to set the shutter to B. If the indicator needle cannot be turned to the circle, that indicates that the brightness of the subject is outside the measuring range of the meter.

Exposing with the PRAKTICA LTL, PRAKTICA LLC and the PRAKTICA VLC

The automatic exposure control of these three cameras, which are somewhat differently equipped, is in principle the same. They all work with the highly efficient internal metering system; their meter needle is visible in the viewfinder (on PRAKTICA VLC on all three finder attachments). To start with the film speed has to be set: the milled ring of the exposure time setting knob is lifted up and turned until the required film speed in DIN or ASA points to

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the white mark and then the milled ring is allowed to spring back.

Due to the fact that on the PRAKTICA LTL one measures stopped down, the finder image is darkened for a moment corresponding to the aperture chosen. PRAKTICA LLC and PRAKTICA VLC have full aperture measurement with brightest finder image through electric contact paths on the body and contact pins on the lens. Special PRAKTICA lenses with electric diaphragm control and diaphragm automation are available to suit this design. The switch ring for the exposure automation has to be set to the full aperture symbol and the automatic diaphragm control of the lens has to be switched on to measure at full aperture.

The individual control of the exposure determination is obtained by pre-selection and setting of the required shutter speed (thinking of object movement) or the required aperture (thinking of adequate depth of field). For most pictures in daylight it is recommended to pre-select a medium value (exposure times from $^1/_{60}$ to $^1/_{250}$ sec. or apertures 5.6 to 8) provided the subject does not call for extremely short speeds or large aperture numbers (small lens opening). The exposure automation selects the second — still unknown — value to it: you point the PRAKTICA towards the subject to be photographed and depress the measuring key in the case of the PRAKTICA LTC or, in the case of the PRAKTICA LLC and the PRAKTICA VLC, the shutter release lightly to the first pressure point. If you have pre-selected the shutter speed, you turn the aperture setting ring or if you have pre-selected the aperture the shutter speed setting knob until the meter indicator which is visible in the viewfinder points to the circle (LTL, LLC) or between the line marks (VLC). This operation has selected and set the correct exposure time and you can now release the shutter to take the picture. It is not possible to set between-values of shutter speeds; any fine adjustment has therefore to be made with the aperture. If the necessary position of meter needle cannot be obtained (while the battery is still live), one has to change the pre-

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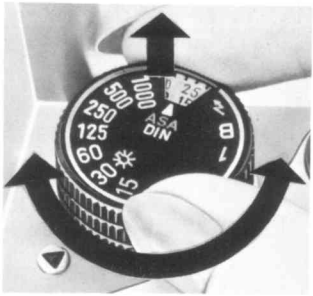
Setting the film speed on PRAKTICA models LTL, LLC and VLC

Internal exposure metering (TTL) of the PRAKTICA LTL: press measuring key.
Internal exposure metering (TTL) of the PRAKTICA LLC and the PRAKTICA VLC: press release lightly to first pressure point



selected value. Note in this connection the description of the scope of the exposure automation in the next section.
If it is required to use with the PRAKTICA models LLC and VLC lenses without electric diaphragm (but with automatic diaphragm control) one has to turn the switch ring of the exposure automation to the symbol for "stopped down" aperture. To measure, one has to depress the stop down key and switch off the diaphragm automation for a short time. Lenses with pre-selected diaphragm have to be used with the stopped down system and one has to set the aperture by hand (this applies for all three PRAKTICA models with internal metering).

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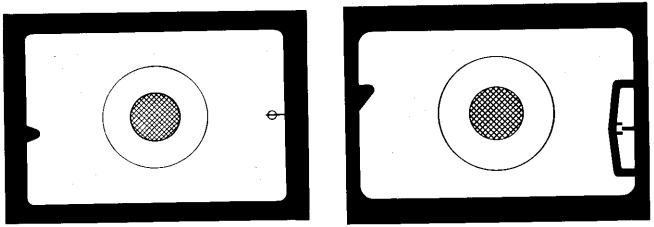

Correct position of the measuring index: Left, on the PRAKTICA LTL and the PRAKTICA LLC; Right, on the PRAKTICA VLC

Power source and scope of the internal light metering system
A power source is required for internal exposure meters with photo-resistance and electric aperture transfer. It is situated in the battery compartment in the base plate of the PRAKTICA. The PRAKTICA LTL requires a mercury Battery Mallory PX 625 or equivalent of nominal 4.5 volts. These power sources are only used for a very short time during exposure metering and have therefore a life of about two years. Changes in the voltage do not influence the measurement – as already mentioned earlier – thanks to the built-in bridge circuit. However, one day the battery is used up. How does one recognise this? The meter needles of all three PRAKTICA models with automatic exposure control rest below the circle or the line marks respectively while the meter is not switched on. The most reliable method of testing the power source is: set film speed to 18 DIN, aperture number to 2 or 2.8, point camera towards a bright sky or a powerful artificial ligth source, depress the measuring key (LTL) or press release to first pressure point (LLC and VLC), turn to all shutter speeds on the shutter speed setting knob. If the meter needle does not move from its rest position even at the slower speeds, then the battery needs renewing. Take care to position the battery correctly. On PRAKTICA LTL, the plus sign (+) has to show upwards; on PRAKTICA LLC and VLC the plus sign (+) has to point towards the spring contact.

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While the working range of the exposure automation is very extensive, it is understandable that it has its limits somewhere. Not all theoretically possible combinations of film speed, exposure time and aperture number can be realised. The table below gives the extent to which the exposure automation works with different film speeds. Outside the limits of its working range it is switched off and the required indicator needle position can – as far as it is possible at all – only be obtained by the selection of another aperture, but not through choosing a shutter speed outside the range listed.

Film speed DIN	ASA	PRAKTICA LTL	PRAKTICA LLC/VLC
12	12	1 to 1/125 sec	1 to 1/1000 sec
15	25	1 to 1/250 sec	1 to 1/1000 sec
18	50	1 to 1/500 sec	1 to 1/1000 sec
21	100	1 to 1/1000 sec	1/2 to 1/1000 sec
24	200	1/2 to 1/1000 sec	1/4 to 1/1000 sec
27	400	1/4 to 1/1000 sec	1/8 to 1/1000 sec
30	800	1/8 to 1/1000 sec	1/15 to 1/1000 sec
33	1600	1/15 to 1/1000 sec	1/30 to 1/1000 sec

One must not measure with the shutter set to B or ✍.

When in unfavourable light the exposure automation is out of action, one has to reckon with longish exposure times which are unsuitable for moving subjects. Stationary subjects, however, can be taken with a range of exposures (if necessary with the B setting of the shutter) to cover a fair range around the estimated time. If, however, the available light is quite insufficient or when in poor light fast movements are to be frozen, one should turn to flash. (For details see chapter "PRAKTICA and Flash").

Light metering using judgment

The photoelectric exposure meter – whether built-in or not – and the internal (TTL) metering establish the average brightness of the subject, that is the mean value of all the more or less light or dark parts of the picture. Such an integral or part integral measurement cannot state anything about the

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contrasts, the difference in brightness of the subject or the possibly uneven distribution of light and dark.
The film can cope with subject contrasts only to a limited degree; in this respect negative films are better than reversal films (slide film). A negative film should preferably be exposed so that the darkest parts of the subject still show details in the print. From a reversal (slide) film we expect a transparent (in colour slides also colour correct) reproduction of the brightest parts of the subject; on it depends the brilliance of the projected image. These facts permit one – in the knowledge of the performance of the films – to help along the work of the exposure meter or the exposure automatics, by correcting the values obtained in case of very high or low subject contrasts. Great brightness contrasts are given, for example, in a view from inside a wood towards an open seascape, low contrast on dull days in diffused light, in fog, etc. To obtain also good results under these critical conditions, it is suggested to correct the meter reading:

	Great subject contrast	Low contrast
Negative film	generous exposure	shorter exposure
Reversal film	shorter exposure	generous exposure

Generous exposure means to set the aperture number by half to a full stop smaller (larger lens opening). Shorter exposure means to set the aperture number by half to a full stop larger (smaller lens opening). Instead of a full aperture step (e.g. from 8 to 5.6 or reversed) one can also set the next longer or shorter shutter speed.
Where light and dark are unevenly distributed (e.g. important dark main subject in front of a less important bright background) one can measure the main subject – as far as possible – from a short distance. This will, to a large extent, exclude the influence of the background on the metering results and the exposure.

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Focusing

The lens produces in the focal plane of the PRAKTICA a side —reversed upside down image. The mirror erects it, the pentagonal prism reverses it, so that it appears in the finder side correct and the right way up. (In the chestlevel reflex and the magnifying attachments of the PRAKTICA VLC only the right way up). The finder image is always largely magnified, brilliantly bright and in true colour. The magnification is obtained chiefly through the ocular of the finder (on the reflex finder and magnifying finder attachments of the PRAKTICA VLC the built-in magnifiers). The built-in Fresnel lens enables you to see the picture evenly illuminated right into the corners.

When you turn the distance setting ring, the helical mount of the lens moves forwards and backwards with the highest precision and you can see how the definition of the finder-image changes. To control this action, the important image centre has two focusing fields: the ground glass ring and the micro prism screen. The best picture definition has not been obtained as long as the picture in the micro prism screen "vibrates" and the screen structure remains visible. Only when the image is free from vibration and clear has best definition been obtained. The micro prism screen is recommended for use on subjects without or with only minimal movement. For pictures with more movement the ground glass ring should be used. It has also to be employed when focusing with a magnifier or aperture numbers higher than 5.6. It is best to focus with full aperture (smallest aperture number) and the brightest finder image, but do not use for this the matted Fresnel field (with the delicate concentric rings).

A glance in the finder will also inform you that it is only necessary to focus up to a certain distance and that things which are far away appear sharp when the lens is set to infinity; the infinity sign (∞) and not one of the metre or feet numbers shows to the red index mark of the lens. If you now investigate further by pressing the stop down key, switching, off the automatic diaphragm or stopping down by hand, you will see that in spite of the infinity setting of the lens subjects at shorter distances are also shown sharp. The near limit of

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Reliable focusing with the ground glass ring field and the micro prism screen

the field of definition comes the closer to the camera the larger the aperture number (the smaller the lens opening). We have already called this the "depth of field" which is, of course, also utilised at shorter distance settings; the finder image (particularly the ground glass matt circle) shows you the effect. When stopping down to larger aperture numbers things nearer and further from the point at which one has focused appear sharp, the depth of field increases. This is more extensive with short focal length lenses than with long focal length ones, and less at near distances than at further ones. A visual control shows the appropriate depth of field, the depth of field scale on the lens does this too.

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Depth of field scale
of the PRAKTICA lenses

On focusing on a particular object the appropriate distance number in metres or feet will point to the red index mark. To the right and left from it you can see aperture numbers (some are only indicated as a dot). The aperture number you have selected at which to take the picture appears also on one side of the distance mark opposite the metre/feet scale where it indicates the start of depth of field and on the other side the end of it. For example:
Distance setting 3 m, aperture number 8, depth of field from 2 m to 5 m. If the aperture number on one side points to infinity or (from the position of the red mark) even beyond, then the extent of the depth of field goes to infinity.
When working with infra red film, the visually obtained focus has to be slightly corrected because infra red rays form the image slightly behind the film plane. The distance setting ring is slightly turned on so that the metre/feet number or the infinity sign moves away from the red mark to the red point which represents the infra red position indicator.
We have already mentioned that the finder of the three PRAKTICA models with internal (TTL) metering shows the metering needle and its setting mark. All five PRAKTICA models show a further signal in the finder when the camera is NOT ready to take the picture and requires actuation on of the cocking lever before releasing the shutter. The finder image is indeed a perfect control centre.

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One can fit to the eyepiece of the prism finder (and also to that of the prism attachment) accessories on which we report in the chapter "Accessories, helping to get sharper pictures". At present reference should be made to the eye cup which can be fitted. Wearers of glasses can get from their optician the appropriate correction lens to fit into the correction glass mount which is available for the eye-cup to focus the camera safely and conveniently without their own glasses. Wearers of glasses require only their "distance" glasses for the finder of all five PRAKTICA models.

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Taking the picture

After all preparations for correct exposure and a perfectly sharp picture have been completed, you could press the shutter release. It is best, however, to make certain that the camera is fully ready for the picture to be taken. You must not see the signal in the viewfinder, otherwise move the cocking lever. Do not overlook that the PRAKTICA camera with standard lens has to be screwed to a tripod or be placed on a solid support at shutter speeds longer than $^1/_{30}$ sec. (More in section "Choosing and setting the exposure time").

The body of the PRAKTICA is very grippy and may be held comfortably and securely for upright as well as horizontal pictures so that you can release with your right index finger. Observe the picture critically right up to this moment. Sometimes people, animals, vehicles change their position to the detriment of the later picture, or somebody not concerned walks into the picture field or anything else undesirable happens. If a lens with pre-set diaphragm is used, one must not forget to turn the setting ring to the stop indicating the pre-selected aperture number. One should release quietly, positively and softly, not jerkily. The instant-return-mirror of the PRAKTICA is very helpful as immediately after the exposure has been made you can see the finder image again and confirm if the shot was correct or if the subject has changed unfavourably so as to make it desirable to follow up with a second exposure. If you want to make a second shot immediately, you will appreciate the quick cocking lever which does not need to go back into the rest position, but may be taken from a position 15° earlier for re-cocking.

All PRAKTICA models can be fitted with a delayed action release (self-timer). The delayed action cocking lever is swung towards left upwards as far as it will go and is released by pressing the special release knob below the PRAKTICA release. The delay time from release to the running down of the shutter is approximately 8 seconds. This delay will enable you to get into the picture yourself (having previously reserved the required space). The camera has to be supported by a tripod or a solid support. For upright pictures, as it is recom-

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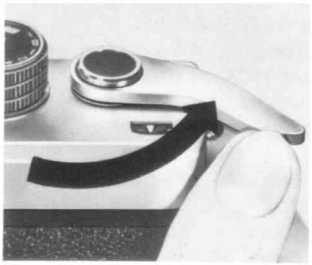

Quick tensioning of shutter and film transport with the quick action transport lever of the PRAKTICA

mended for a single self portrait, one requires a ball and socket head in conjunction with the tripod. Place some sort of substitute object in the spot where your face is to be later on and work with a somewhat larger aperture number (smaller lens opening) to compensate for any small focusing inaccuracy through greater depth of field. The delayed action release also permits you to appear in landscape and architectural pictures to liven them up and to act at the same time as a memento. If it should happen that on an occasion where a shutter speed between $^{1}/_{15}$ to 1 sec is required where no solid support is available and you have to expect camera shake, then you

Tensioning the delayed action release (= self timer) of various PRAKTICA models

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can release with the delayed action release as during the delay time the fine vibrations due to releasing subside so that you can expect a sharp picture. Incidentally, the cocking of the delayed action release of the PRAKTICA can be done before or after the shutter has been cocked. The shutter may be released as usual even if the delayed action lever has been cocked.

We will later on explain how the versatility of the PRAKTICA and its ability to adapt to special circumstances can be enlarged through the use of auxiliary lenses. Already now it can be stated that every PRAKTICA lens is removed from the camera body by unscrewing it to the left and fitted to it by screwing it with a right turn as far as it will go. Lenses with electric diaphragm control are recognisable by their three contact pins on the back.

Changing the film

The exposure counter tells you when the film has to be rewound; it indicates when the maximum number of exposures which can be taken on the film inserted into the camera (36, 20 or 12) have been made. To remove the cartridge with the exposed film from the PRAKTICA the following actions have to be taken: Depress the re-wind knob in the base plate of the PRAKTICA (it will engage and spring back automatically later on when the film transport lever is turned). Swing up the rewind crank from the rewind knob and turn it not too fast in the direction of the arrow indicated there (rapid rewinding can cause electrical discharge resulting in lightning flashes appearing on the film). At the end of rewinding a stronger resistance is felt which has to be overcome and the rewinding then moves suddenly quite freely, indicating that the rewinding process is completed. Fold the rewind crank back. Pull up rewind-knob. Open camera back and remove cartridge.

If one tries to take more exposures than the length of film allows, or on using bulk film without a definitely established number of frames, one will find that the transport lever is likely to stop before it comes to its normal stop position. In this case, do not use force otherwise you will pull the film end from the cartridge and you could not rewind the film. It would

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Film rewind with the grippy rewind handle

have to be removed from the camera in the dark. Rewind as described and finally turn the transport lever to its definite stop.

Care of the instrument

The PRAKTICA is not delicate, but designed for hard wear. However, it is a precision instrument which wants some looking after and has to be protected from damaging influences such as knock, fall, dust, sand and damp. Always carry the PRAKTICA, therefore, in its ever ready case (do not forget to screw home the retaining screw) and keep it in it. Protect against fine sand (particularly drifting sand) additionally with a well closing plastic bag. In very low temperatures it is advisable to carry the PRAKTICA under the overcoat or anorak and to expose it only to extreme cold during the actual taking of the picture. There may be situations in which you want to carry the PRAKTICA without case, such as indoors. You can hang the PRAKTICA over your shoulder with the adjustable carrying strap which is fastened to the camera by eyelets to protect it from accidents.

Clean the outside including film and take-up chamber, the film plane as well as the camera back with its film pressure plate with a soft brush. Please do not use pressure on the steel blades of the focal plane shutter, nor touch them with your fingers. The latter applies even more to all glass surfaces of the lens, eye piece, focusing magnifier and focus-

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ing system of the interchangeable finder attachments of the PRAKTICA VLC and to the mirror. When cleaning optical glass, first remove dust with a soft brush and then wipe with a cotton cloth. Fingermarks are removed with the same cloth. Keep also accessories free from dust and clean them with a brush and cotton cloth. The mirror of the PRAKTICA should be cleaned only if absolutely essential, and then only with the finest of fine hair brushes and without any pressure. The contact paths on the housing of the PRAKTICA LLC and VLC and the contact pins on the lenses must not be cleaned or even rubbed or polished. The precious metal of these contacts for the electric transmission clean themselves on changing lenses.

If your PRAKTICA has an accident, do not try to be clever and take it to pieces yourself. Only authorised experts should attend to the mechanics of the PRAKTICA. The worldwide distribution of the PRAKTICA ensures that you can find help everywhere. There are PRAKTICA contract repair workshops in all continents who are in close contact with the manufacturers in Dresden and can guarantee expert execution of all necessary work. Your photographic dealer will give you the address of the nearest workshop.