ZEISS IKON

Instructions for use

Icarex 35 + 35 S TM

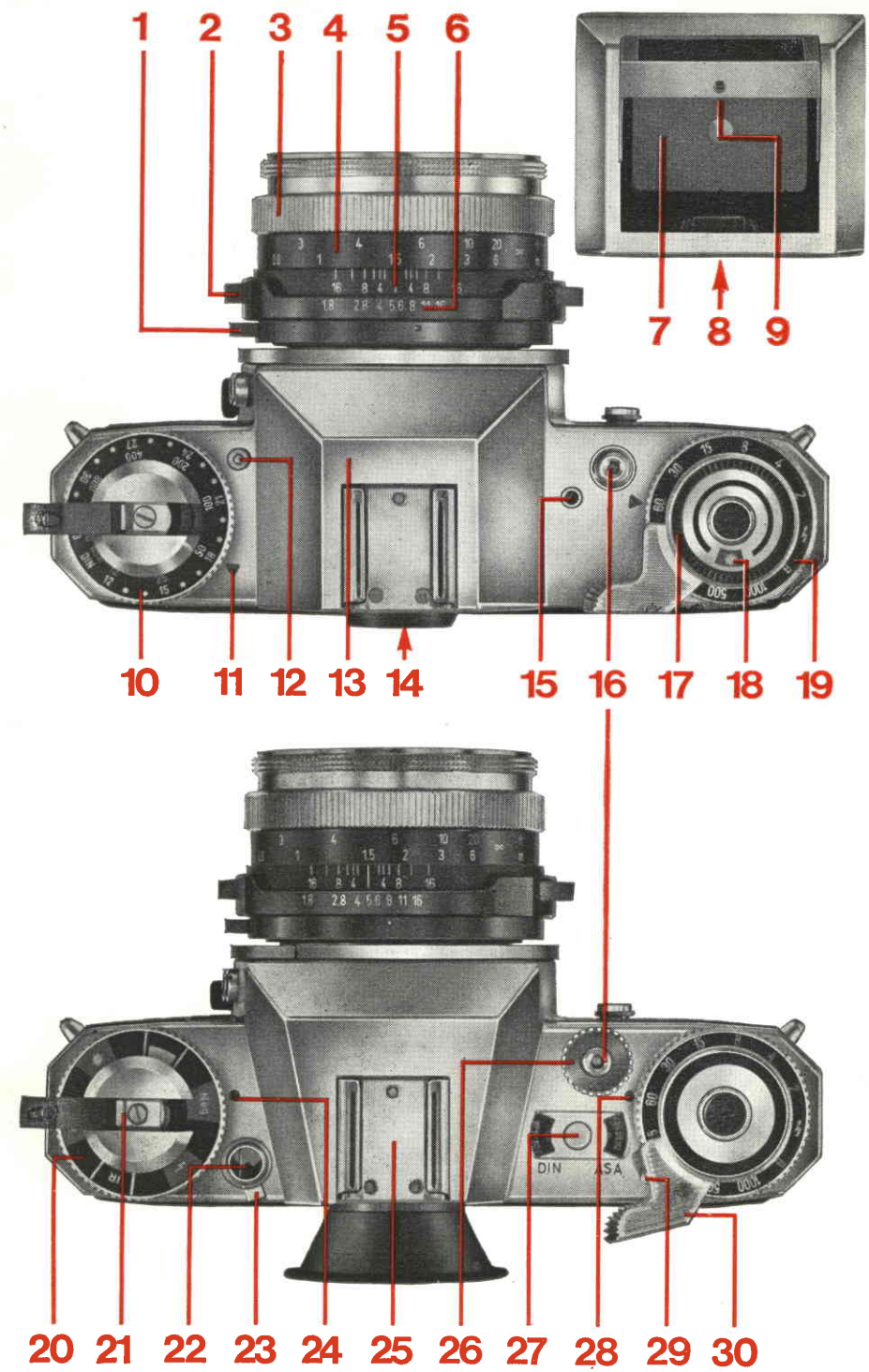
Icarex 35 TM*

Icarex 35 S TM*

Single lens reflex camera for miniature film
Format 24 x 36 mm

These instructions apply for both types of camera, in black and silver finish. The cameras differ from each other only in regard to the viewfinder system and the relevant deviations in the exposure measurement.
Each section of the text in these instructions is clearly marked for which camera model it is applicable.
We advise you to practise using the various controls on your ICAREX before loading a film. Open out the inner flaps of the covers so that you can refer to the individual camera controls when reading the instructions.

* TM = thread mount (of lens)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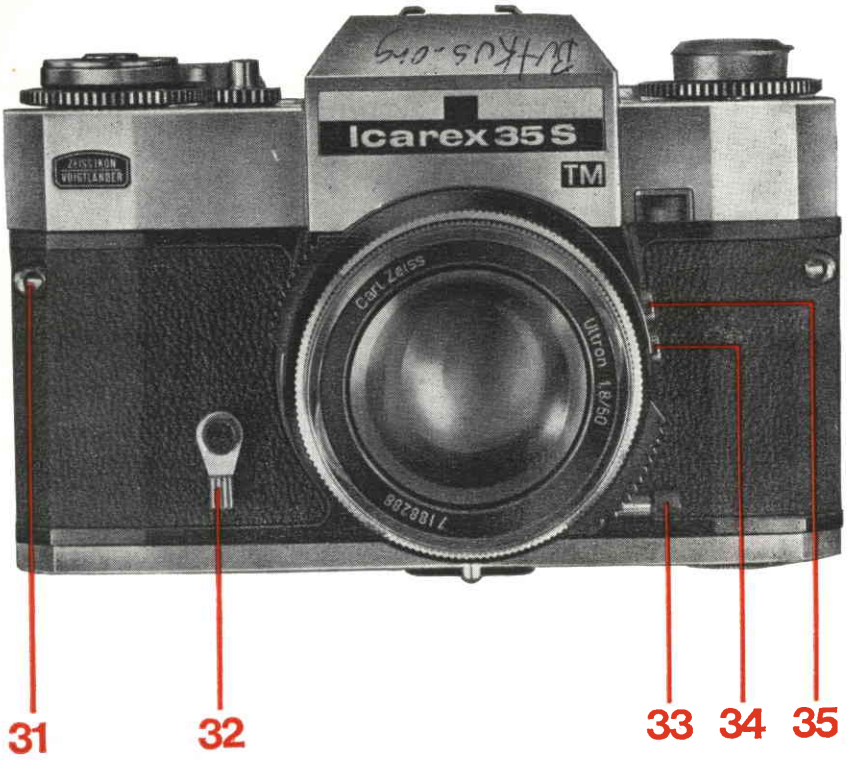
DIN
ASA

Controls

for ICAREX 35 TM and ICAREX 35 S TM
(control numbers without a special note apply for both models)

	1	**Diaphragm stop-down pin on lens** (To check depth-of-field, when the lens is used on other cameras which are not equipped with a special diaphragm stop-down mechanism)
	2	**Aperture setting ring with aperture scale and grips**
	3	**Focusing ring**
	4	**Focusing scale in metres and feet**
	5	**Setting mark for distance and aperture**
	6	**Depth-of-field scale**
ICAREX 35	7	**Interchangeable waist-level viewfinder**
ICAREX 35	8	**Catch for opening waist-level viewfinder**
ICAREX 35	9	**Hinge pin for snap-up focusing magnifier**
ICAREX 35	10	**Film speed disc** with DIN and ASA scale
ICAREX 35	11	**Setting mark for disc 10**
ICAREX 35	12	**Button release for changing viewfinder units**
ICAREX 35	13	**Interchangeable pentaprism viewfinder** with accessory shoe
	14	**Viewfinder eyepiece**
ICAREX 35	15	**Indicator for ready-to-shoot control** (green dot)
	16	**Shutter release** with screw-in socket for cable release
ICAREX 35	17	**Milled ring for setting film-in-use disc**
ICAREX 35	18	**Indicator window for film-in-use disc**
	19	**Shutter speed ring**
ICAREX 35 S	20	**Film-in-use disc**
	21	**Rewind button** with fold-away rewind crank
ICAREX 35 S	22	**Exposure meter window on camera body**
ICAREX 35 S	23	**Lever for covering viewfinder eyepiece.** Normal position "right" (red dot covered)
ICAREX 35 S	24	**Setting mark for disc 20**
ICAREX 35 S	25	**Accessory shoe**
ICAREX 35 S	26	**Milled film speed disc**
ICAREX 35 S	27	**Window indicating set film speed**
	28	**Setting mark for shutter speed**
ICAREX 35 S	29	**Main switch for power circuit**
	30	**Rapid advance lever** (swung out in working position)


Icarex 35 S
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Carl Zeiss
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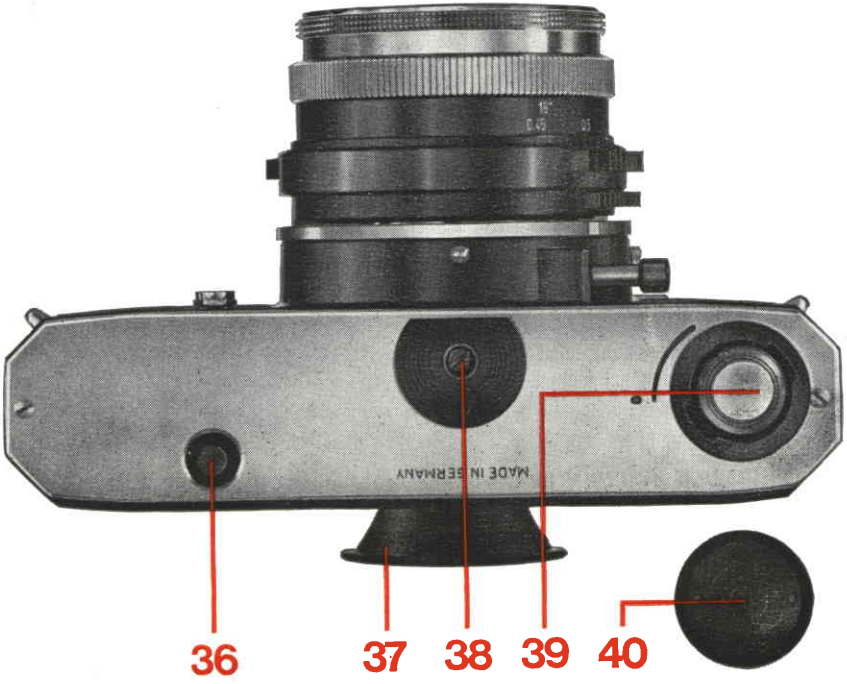
MADE IN GERMANY
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The following control numbers refer to the illustrations on page 30.

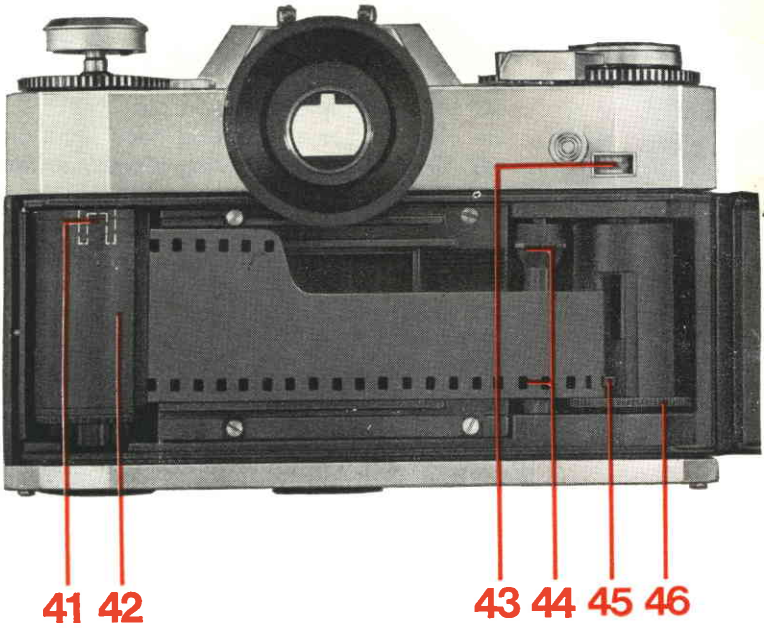
31 **Eyelets for carrying straps**
32 **Lever for delayed-action mechanism** (self-timer)
33 **Diaphragm stop-down pin**
34 **Socket for connecting flash lamp units**
35 **Socket for connecting electronic flash units**
36 **Release knob for rewind locking mechanism**
ICAREX 35 S 37 **Viewfinder eyepiece with eyecup**
38 **Tripod socket**
ICAREX 35 S 39 **Battery compartment** with loaded battery
ICAREX 35 S 40 **Battery cover**

Loading and unloading (Fig. on page 6)

(Dot not load or unload film in direct sunlight.)

ICAREX 35
ICAREX 35 S

Pull rewind knob 21 upwards until the camera back is released. Then slip the film leader which projects from the film cassette into slot 45 of the take-up spool and engage one of the perforations on the tooth in the slot. (If slot 45 is not visible, rotate the spool by turning milled ring 46.)
Next pull the cassette across the film track and drop into film chamber 42 with rewind knob 21 again being pulled upwards as far as it will go. Now push the rewind knob right down into the camera. (If necessary, rotate slightly whilst pushing down.) Rotate the take-up spool by turning milled ring 46 until the perforations at both edges of the film are engaged by the sprockets on transport roller 44.
Close the camera back and press down so firmly that it is heard to click into position. Operate rapid advance lever 30 and shutter release 16 alternately until the number "1" appears under the mark in frame counter 43. As soon as a number is visible in the frame counter window, this indicates that there is a film in the camera (loading control). When the frame counter moves on, the film has been advanced (film transport control). The frame counter always indicates the number of frames that have already been exposed.
After exposing the last frame (the frame counter indicates the number corresponding to the number of frames on



41 **Film winding lug** (must engage in slot in the base of film cassette
42 **Film cassette chamber**
43 **Frame counter**
44 **Transport roller with sprocket rings** for engaging the perforations of the film
45 **Slot with tooth** for engaging and holding the film leader
46 **Milled disc** for turning film take-up spool

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the film), do not tension with the rapid advance lever but rewind the film.

Removing the film

Press down button 36 to release the rewind locking mechanism and turn rewind crank 21 in the direction of the arrow until the frame counter indicates it has reached its initial position and a slight resistance is felt. The film is thus detached from the take-up spool. Only now open the camera back by pulling up the rewind knob and remove the film cassette.
Always keep the take-up spool and film guide track clean!

Setting the film speed

ICAREX 35 S

Set the film speed on the camera immediately the film has been loaded or check the speed that has already been set.
Turn milled ring 26 until the appropriate rating is opposite one of the red triangles under window 27.
If the rating is not engraved on the scale, set at a suitable intermediate value.
The film speed in DIN or ASA is given on the film packing or in the accompanying instructions for use.

Setting the film speed

ICAREX 35

Immediately after loading the film, set or check the film speed either on the separate exposure meter or on disc 51, if the camera has the pentaprism viewfinder with exposure meter, (see page 17).
The film speed in DIN or ASA is given on the film packing or in the accompanying instructions for use.

Film-in-use discs

These serve only as a memory aid and do not influence the camera action.

ICAREX 35

The film speeds are given in DIN and ASA on disc 10. On turning the disc, they click into position at setting mark 11. The disc visible under window 18 contains symbols on the types of film used.
It is set with milled ring 17.
The symbols indicate:

1 No film loaded
2 Black-and-white negative film
3 Colour negative film
4 Colour reversal film for flash exposure
5 Colour reversal film for daylight exposure
6 Colour reversal film for artificial light

ICAREX 35 S

On turning disc 20 the symbols click into position at setting point 24. They indicate the following:

Colour reversal film for daylight exposure
Black-and-white negative film
Colour negative film
Colour reversal film for flash exposure
Infra-red film
Colour reversal film for artificial light

Viewfinder System

ICAREX 35 S

In contrast to the ICAREX 35, the ICAREX 35 S has a fixed viewfinder.
The focusing screen is a ground glass screen with microprism ring and central diagonal split-image rangefinder, on which the subject when looked at through a pentaprism in the shooting position is the right-way-round and enlarged.

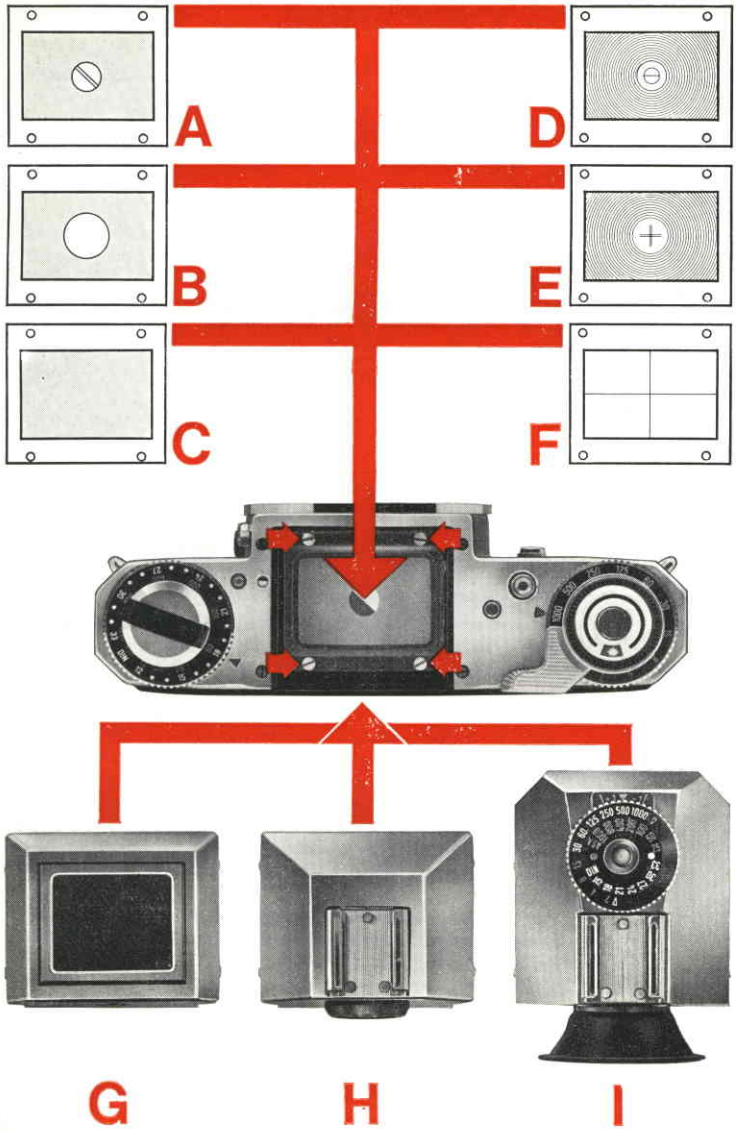
ICAREX 35

A notable feature of this camera are the interchangeable screen and viewfinder units. The screen units (focusing screens) serve to hold the image outlined by the lens, whereas the viewfinder units permit agreeable and enlarged observation of this image.
The fact that the finder units are interchangeable means that the focusing method can be adapted to suit prevailing conditions.

Screen units (focusing screens)

ICAREX 35

The camera is supplied with a ground glass screen with microprism spot and central diagonal split-image rangefinder as standard focusing screen, with which nearly all photographic needs can be met.
It is highly suitable for checking the depth-of-field with stopped down lens.
Similar in its range of use is the ground glass screen with microprism spot. It permits exact focusing even under poor lighting conditions. The ground glass screen is recommended when sharpness over the entire image field is desired. This is usually the case in close-ups and macrophotography. When there is sufficient illumination, the depth-of-field can also be checked with stopped down lens.
The fresnel screen with microprism spot and split-image rangefinder provides rapid and accurate focusing when the viewing area is very bright.
The clear glass screen with cross hairs and the fresnel screen with double cross hairs are suitable for exposures through a microscope or endoscope. They can also be used, if the rangefinder in the standard focusing screen is not adequately illuminated owing to a small lens aperture or if the available light is too poor to permit focusing with the ground glass screen.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A **Ground glass screen with microprism spot and central diagonal split-image rangefinder**
B **Ground glass screen with microprism spot**
C **Ground glass screen**
D **Fresnel screen with microprism spot and split-image rangefinder***
E **Fresnel screen with double cross hairs (micro-screen)***
F **Clear glass screen with cross hairs (micro-screen)***

* **These screens cannot be used for exposure measurement with the pentaprism viewfinder with CdS exposure meter.**

G **Waist-level viewfinder**
H **Pentaprism viewfinder**
I **Pentaprism viewfinder with CdS exposure meter**

Viewfinder units

ICAREX 35

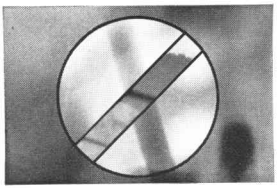
Waist-level viewfinder 7 is used for direct observation of the image on the focusing screen by looking down into it, although the image is reversed from left-to-right. It keeps out any disturbing stray light. It is opened by pressing down catch 8. A magnifier, which is lifted up by hinge pin 9 facilitates focusing the subject.
Through the **pentaprism viewfinder** the image can be seen the right-way-round and upright. It should be part of the standard equipment of the camera.
The **pentaprism viewfinder with CdS exposure meter** also provides through-the-lens exposure measurement.

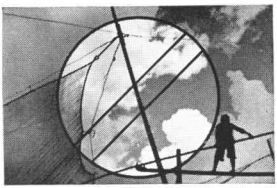
Changing the finder units

ICAREX 35

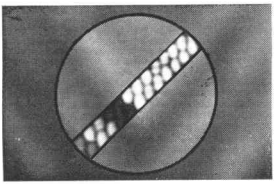
To remove the viewfinder unit, press down catch 12 and slide unit backwards and out.
To attach, push the unit forward until catch 12 is heard to engage.
The screen unit (focusing screen) can be removed, after the viewfinder unit has been lifted off, by loosening the 4 screws; it can be replaced by an alternative screen. The screen units are of symmetrical design. On insertion the narrower end must be towards the mirror and the collar with the screw holes be in level contact.

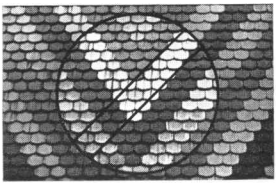
Focusing with central diagonal split-image rangefinder





Focusing with microprism spot and ground glass screen





Focusing

ICAREX 35 S

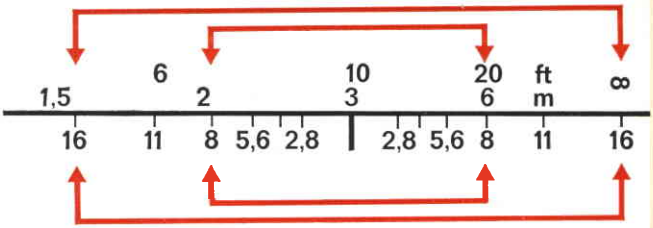
If the viewfinder eyepiece is locked, push small lever 23 to the right to cover the red dot.

ICAREX 35
ICAREX 35 S

Look through the viewfinder and sight the subject, if possible, on a vertical or horizontal edge or line so that it runs exactly through the centre of the finder. The line which appears distorted in the central diagonal split-image rangefinder is straightened by turning setting ring 3. The correct distance has now been focused and, at the same time, the unsharp line on the ground glass screen and in the microprism spot is sharp.
The focused distance is indicated on scale 4 at orange setting mark 5.
Subjects which have no straight line for focusing can be focused with the microprism spot or the ground glass screen.

ICAREX 35

When using the fresnel screen with microprism ring and split-image rangefinder, bring the two halves of the split-image visible in the centre of the viewfinder into coincidence or, in the case of subjects without prominent lines, focus with the microprism ring until the image is clearly recognizable.



Aperture and depth-of-field

ICAREX 35
ICAREX 35 S

Pre-select the aperture by turning setting ring 2. The f/number required must be opposite setting mark 5. The aperture depends on the depth-of-field dictated by the type of subject. The smaller the f/number, the larger the lens aperture and the smaller the depth-of-field. The depth-of-field indicated by the pre-selected aperture can be read direct from the depth-of-field scale 6 on the lens barrel.

It covers the range from the distance opposite the set f/number on the left to the distance opposite the same f/number on the right. The depth-of-field can also be checked on the ground glass screen in the viewfinder. By pressing down pin 33 the diaphragm is stopped down to the pre-selected value and thus the aperture or distance can be adjusted exactly as required. When pin 33 is pressed down again, the diaphragm returns to full aperture. It is then automatically stopped down to the pre-selected aperture when the shutter is released.

Focusing is also possible with the depth-of-field scale (recommended for snap-shots). Fix the depth-of-field required with ring 3 and scale 6 and set the indicated f/number opposite setting mark 5 with setting ring 2.

Exact data on the depth-of-field are given in the enclosed booklet of tables.

Setting the shutter speed

ICAREX 35
ICAREX 35 S

Turn disc 19 until the shutter speed required for the exposure engages opposite setting dot 28. Intermediate speeds must not be used.
The shutter speed depends on the lighting conditions and the rate at which the subject is moving. The faster the movement, the shorter the exposure time. The numbers on ring 19 denote fractions of a second (60 = 1/60 sec). The orange numbers are a reminder to use a tripod.

Shutter speed and aperture are inter-dependent. The faster the shutter speed, the larger the aperture and vice-versa. The speed-aperture combination is determined by the film speed, the general brightness and, when using colour filters, their filter factor.

ICAREX 35
with waistlevel or pentaprism viewfinder

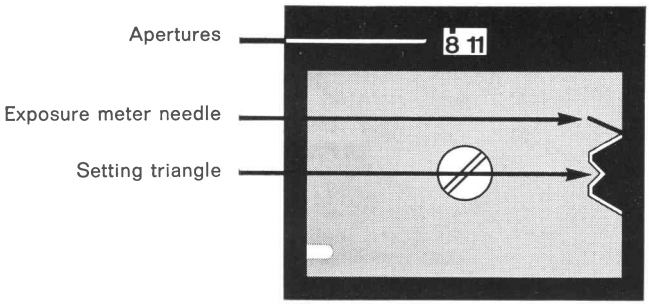
The setting of the speed and aperture can be determined with the use of tables, but even more accurately with a photo-electric ZEISS IKON-VOIGTLÄNDER exposure meter. The exposure meter is indispensible, especially for colour exposures, as colour films must have exact exposure.

Preparations for exposure measurements

Battery

ICAREX 35
with exposure meter in pentaprism viewfinder
ICAREX 35 S

The Mallory PX 13 battery inserted in the camera to operate the exposure meter will last about one year under normal use.
When testing in the open at average brightness with the camera set at 1/60 sec., the battery is still in working order as long as the exposure meter needle moves across the entire acceptance field on turning the aperture ring after the diaphragm stop-down pin has been depressed and, with ICAREX 35 S only, the rapid advance lever swung out. If this is not the case, the battery must be changed. New batteries are obtainable from photographic dealers.



Changing the battery

ICAREX 35 with exposure meter in penta-prism viewfinder

It is accessible after lifting up battery holder 54. When inserting a new battery, make sure that it is poled to match the signs on the holder.

ICAREX 35 S

It is accommodated underneath cover 40 which is removed after being turned to the left. When inserting a new battery, make sure that it is poled to match the signs on the cover.

Exposure measurement

Do not forget to set the film speed

ICAREX 35 S

To operate the exposure meter, main switch 29 must be switched on by swinging out rapid advance lever 30 into the working position and diaphragm stop-down pin 33 must be pressed down.

After pre-selecting the shutter speed, sight the subject with the camera in a horizontal position, even if the exposure is to be made with the camera in the vertical holding position. Turn aperture ring 2 until the exposure meter needle in the viewfinder or under window 22 on the camera is exactly in the centre of the triangular mark.

The aperture thus set is indicated on the lens barrel or in the viewfinder under the orange setting mark.

If a definite aperture is required for the exposure, preselect this aperture and turn shutter speed disc 19 to set the exposure meter needle in the centre of the triangle. Only a click-in shutter speed must be used, otherwise slightly adjust the aperture setting.
On changing to longer exposure times, the lower measuring limit of the exposure meter (referred to full lens aperture), depending on the film speed set, will be reached. For example, with 21 DIN on changing from 1/4 sec to 1/2 sec or with 24 DIN between 1/8 sec and 1/4 sec, etc. In order to avoid any unintentional crossing of this limit, the measuring circuit is switched-over electrically, so that adjustment is no longer possible.
This switch-over is visible even when the exposure meter is switched off, because a slight zero current still flows for technical reasons in the measuring circuit; it does not have any influence, however, on the service life of the battery.
On setting to the flash symbol, the exposure meter is always switched-over and thus measurement is not possible.
If the indicator below window 22 is used for exposure measurement, for instance, when using a tripod, the viewfinder eyepiece must be covered, otherwise stray light can influence the exposure measurement and result in under-exposure. In this case, move lever 23 to the left (red dot becomes visible).
See also "Notes on exposure measurement" page 19.

Exposure measurement

ICAREX 35 with exposure meter in pentaprism viewfinder

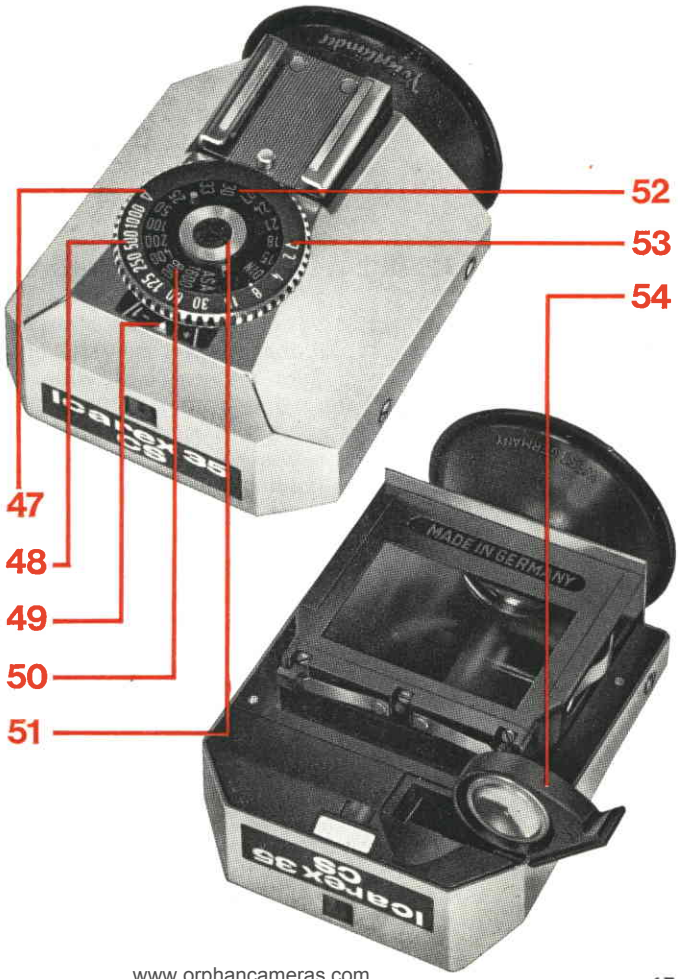
For exposure measurement, one of the three focusing screens A, B or C (see page 10 + 11) must be inserted in the camera.

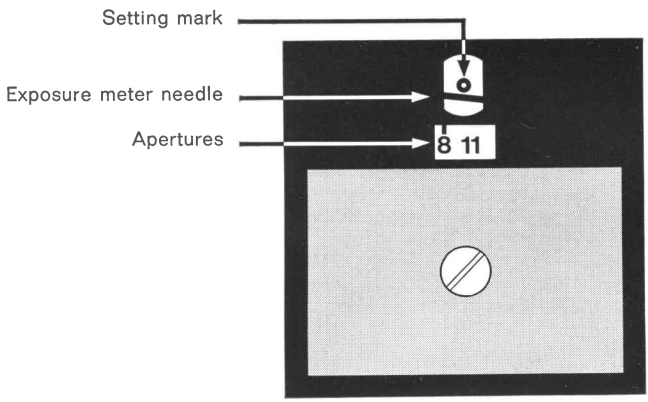
Setting the film speed

Set disc 48 at 1/60 sec. Press down disc 51 so that it clicks out of position and then turn it with the two pins until the film speed given on the film packing or in the accompanying instructions for use is exactly opposite setting mark 47 or 53. If the required number is not engraved on the scale, set at a suitable intermediate rating.
Please note! The exposure meter in the pentaprism viewfinder operates only in combination with the camera and with the diaphragm stop-down pin 33 in the depressed position.

Controls

47 **Setting mark for ASA film speed**
48 **Shutter speed setting disc with scale**
49 **Setting mark for shutter speed and correction factors**
50 **ASA film speed scale**
51 **Film speed setting disc**
52 **DIN film speed scale**
53 **Setting mark for DIN film speed**
54 **Battery holder** (swung out) with loaded battery





Setting the exposure values

The shutter speed selected in accordance with the prevailing conditions and set on the camera is transferred to the exposure meter. To do this, turn disc 48 until the relevant value engages at setting mark 49. Sight the subject with the camera held in a horizontal position, even if the exposure is to be made with the camera in the vertical holding position. Press down the diaphragm stop-down pin on the camera (exposure meter is switched on) and turn the aperture ring on the lens barrel until the exposure meter needle in the viewfinder is zeroed. The resulting aperture is indicated on the lens barrel and in the viewfinder. Applicable is the f/number opposite the orange setting mark. If the exposure meter needle cannot be zeroed by turning the aperture ring, an alternative shutter speed must be selected.

When setting a film speed from 21 DIN to 31 DIN or 100 ASA to 1600 ASA, the speed setting at disc 48, owing to the lower measuring limit being reached, is mechanically limited by increasingly shorter exposure times, in order to avoid incorrect measurements. Starting from these limit settings (at full aperture) other desired speed-aperture combinations can be easily determined by using conversion factors.

If a definite aperture is required for the exposure, reverse

the measurement procedure. Pre-select the aperture on the aperture ring, press down the diaphragm stop-down pin and turn shutter speed disc 48 to zero the exposure meter needle. Only a click-in shutter speed must be used, otherwise slightly adjust the aperture setting. Read the shutter speed at setting mark 49 and transfer to the shutter speed disc on the camera. The orange numbers are a reminder to use a tripod.

Exposure measurement

ICAREX 35
ICAREX 35 S

Please use the eyecup for the measurement. It guarantees that no stray light can cause incorrect measurement. Do not fold back the eyecup.
We advise spectacle wearers to screw eyesight correction lenses in the viewfinder eyepiece (see accessories).
Exposure measurement is throught-the-lens light metering. The light falls on two CdS photo-resistors. These control the battery power in relation to the incident light. The exposure metering has standard calibration. It provides correct exposure for average conditions. Correction is however necessary for against-the-light exposures or dark subjects against a bright background or for subjects of low contrast (overcast sky, snow landscapes).
In this case, open the aperture after taking the measurement by ½ to 1 stop. With subjects of high contrast, in particular, very bright subjects against dark backgrounds, close the aperture after the measurement by ½ to 1 stop.

ICAREX 35 with pentaprism viewfinder and CdS exposure meter

With this camera, the desired modifications in the exposure are made on the exposure meter with the aid of index + 1 (longer exposure) or — 1 (shorter exposure) instead of setting mark 49 and by re-setting the aperture. The speed disc setting on the camera must not be changed.

If no change in the aperture is desired, the exposure meter must be adjusted and the reading at + 1 or — 1 transferred to the speed disc on the camera.

ICAREX 35 S Here the procedure is the same as indicated above, in that either the aperture is opened up or stopped down accordingly after the measurement, or the exposure time is either shortened or lengthened.

ICAREX 35
ICAREX 35 S In order to avoid unnecessary battery drain, switch off the exposure meter during long pauses between use.
To do this, the diaphragm stop-down pin is raised or, in the case of the ICAREX 35 S, main switch 29 is pressed back into its initial position by the rapid advance lever.

The exposure

ICAREX 35
ICAREX 35 S When taking a shot, press down release button 16 rapidly and smoothly. The mirror swings up, the diaphragm closes down to the pre-set lens aperture and the focal-plane shutter travels at the pre-set speed. Immediately afterwards, the mirror returns to its position for viewfinder focusing and the diaphragm returns to full lens aperture. When the diaphragm stop-down pin is depressed, the diaphragm always remains at the set value, however, after release and tensioning.
Working with a depressed diaphragm stop-down pin is specially recommended when variable lighting conditions necessitate frequent adjustment of the exposure meter.
To tension rapid advance iever 30 always swing it through until it stops.

ICAREX 35 When the shutter has been released, green dot 15 disappears to indicate that the camera must be tensioned for the next exposure.

ICAREX 35 S When the shutter has been released, a warning mark appears in the bottom left-hand corner of the viewfinder to indicate that the camera must be tensioned for the next exposure.

Self-timer

ICAREX 35
ICAREX 35 S

Tension the shutter beforehand with the rapid advance lever and then press lever 32 upwards as far as it will go. On letting go the lever, about 8 seconds elapse before automatic exposure. During this time the lever returns to its initial position.
Time exposures (shutter setting "B") are not possible with the delayed-action mechanism.

Filters

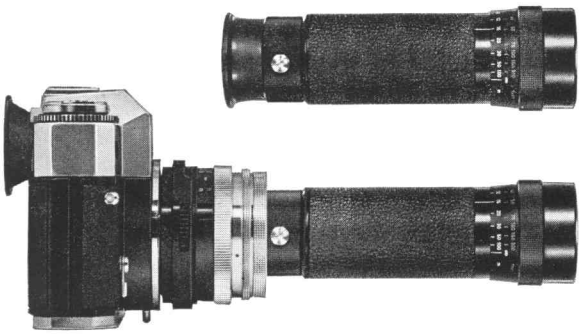
ICAREX 35
with
exposure meter
in pentaprism
viewfinder
ICAREX 35 S

The yellow, green, orange and red filters that are available for the ICAREX can be used only with black-and-white film, whereas the UV, Ikolor-A, Ikolor-B, skylight and CONTAPOL can also be used with colour material. Filters, in bayonet mount fitting B 50, fit all ICAREX lenses from 35 to 135 mm.
The through-the-lens light metering system means that the filter factor is usually adjusted automatically. Only when using the more dense colour filters for black-and-white film is it advisable after exposure measurement to open the aperture one stop or increase the exposure time by one full value (corresponding to filter factor 2x). On the pentaprism viewfinder with exposure meter for use with ICAREX 35, the exposure time is extended by setting correction factor "+ 1".

Flash exposures

ICAREX 35
ICAREX 35 S

When the flash symbol on disc 19 is set at mark 28, the contact is so controlled that the different flashbulbs and electronic guns are fired at the correct moment. Contact for firing the flashbulbs, e. g., type AG, is made in socket 34 (flashbulb symbol), for electronic guns in socket 35 (flash symbol). The flash unit itself can be slipped, on ICAREX 35, into accessory shoe 13 (only possible with pentaprism viewfinders) or, on ICAREX 35 S, into accessory shoe 25; attachment to tripod socket 38 is also possible on both cameras by means of a rail. When using flash units with M-contact (no cable), the electrical connection to the camera is by means of an adapter which is available from photographic dealers; the cable of the adapter must be connected to one of the two flash symbols.



Exposures with monocular 8 x 30 B

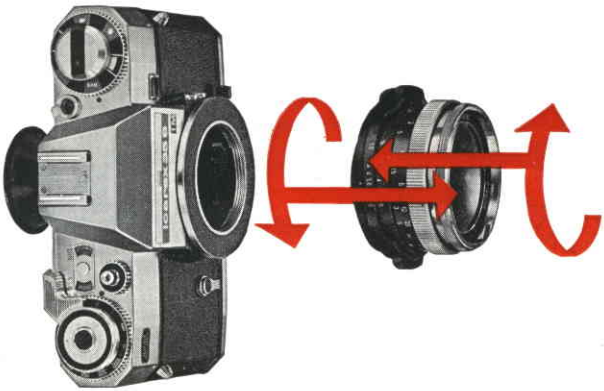
ICAREX 35 with CdS exposure meter in pentaprism viewfinder **ICAREX 35 S**

When using monocular 8 x 30 B, which can be attached in front of ZEISS TESSAR 2.8/50 with an adapter ring, the lens is stopped down to a fixed smaller aperture. During exposure measurement, the aperture ring must therefore be set at full aperture. Actual measurement is made by turning speed ring 48 or 19.

Changing the lens

ICAREX 35
ICAREX 35 S

The lenses of the ICAREX cameras are fitted to the camera by means of a thread mount.
When removing or attaching the lens, diaphragm stop-down pin 33 must be in its initial position, i. e., out, in order to avoid any damage to the diaphragm stop-down mechanism.



Removing the lenses

Unscrew anti-clockwise.

Attaching the lenses

Do not cant! Place on level and screw in clockwise until a slight resistance is felt.

Close-ups

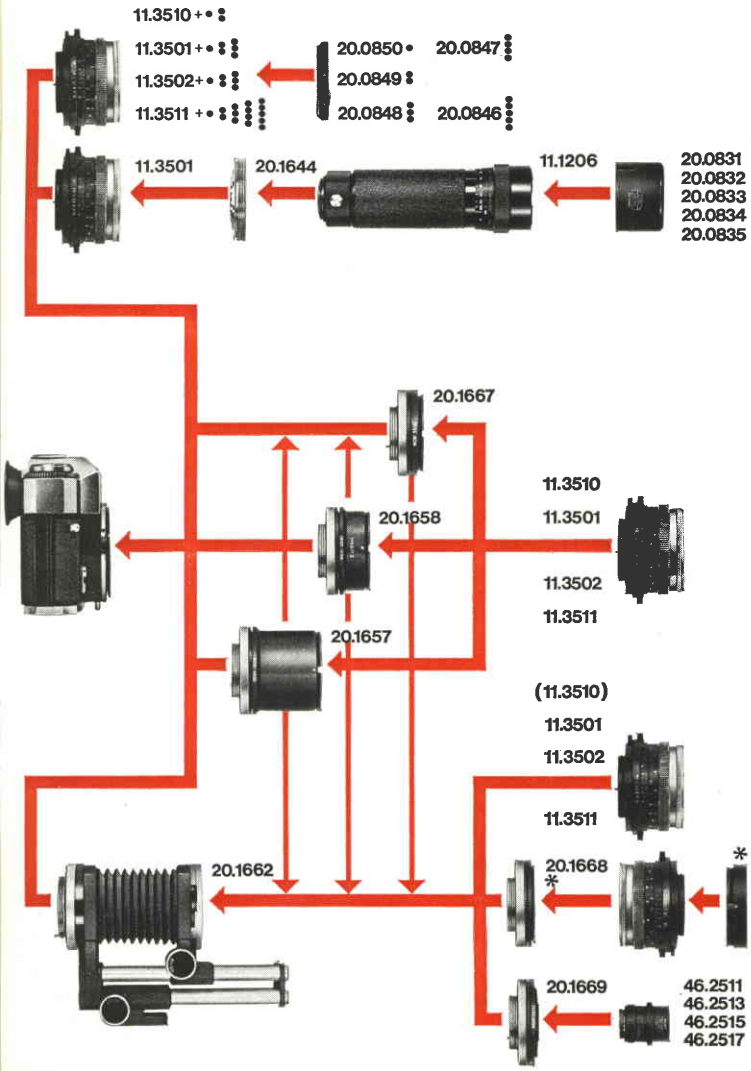
ICAREX 35
ICAREX 35 S

In addition to the focusing range of the lenses, close-ups up to an image scale of 3:1 are possible with supplementary lenses, extension tubes and a bellows extension unit. **The tables booklet contains not only all the necessary tables but also a diagram showing the exposure ranges that can be obtained in this way.** Since the reduced depth-of-field in close-ups requires additional stopping down, which in most cases results in longer exposure times, the use of a tripod and cable release are recommended.

Reference is made here to our table copying unit and our universal copying unit REPROPHOT. The latter unit is equipped with a focusing slide which is practically indispensible for close-ups.

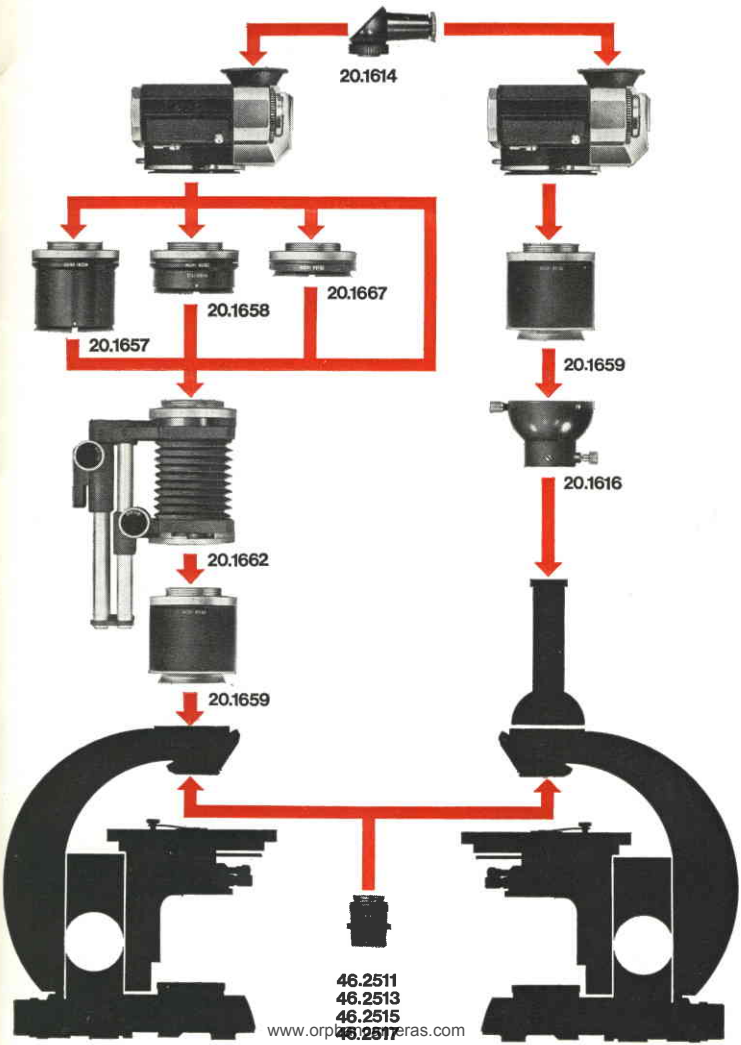
Accessories for close-ups

(Explanation of catalogue numbers see page 31 and 32)



Accessories for microphotographs

(Explanation of catalogue numbers see page 31 and 32)



Exposure measurement for close-ups

If supplementary lenses, extension tubes 1:4, 1:2 and 1:1, the bellows extension unit, the Luminars or the micro-attachment are used, exposure measurement is in principle the same as described above.
The exposure factors given in the tables booklet for extension tubes, the bellows extension unit and the Luminars apply only when a separate exposure meter is used.

Supplementary lenses

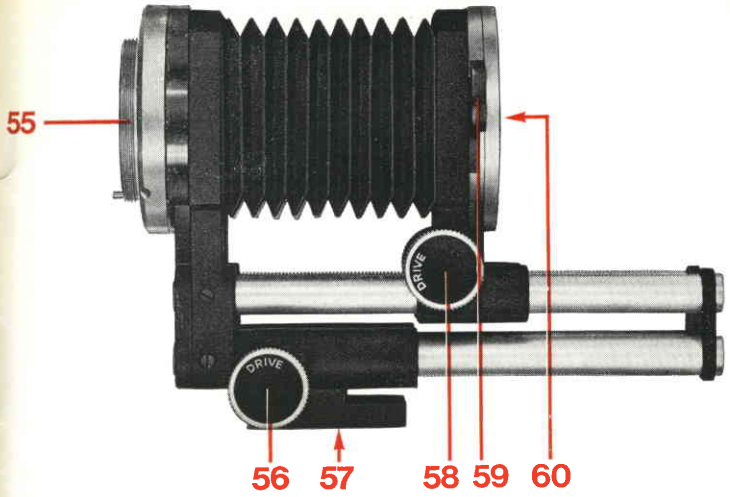
ICAREX 35
ICAREX 35 S

With their bayonet fitting Ø B 50 they fit on all ICAREX lenses from 35 to 135 mm. In order to obtain a sufficient depth-of-field, the lens should be stopped down to at least f/5.6. If filters are used, these are to be mounted in front of the supplementary lens. Special supplementary lenses can also be fitted to the monocular 8 x 30 B. The image scales that can be obtained in this manner are given in the diagram in the tables booklet. All other data are to be found in the instructions for use for the monocular.

Extension tubes

ICAREX 35
ICAREX 35 S

The extension tubes extend the focusing range of the ICAREX up to an image scale 1:4, 1:2 and 1:1 (particular advantage when copying slides). The image scales 1:4, 1:2 and 1:1 apply, however, only to exposures taken with 50 mm lenses. These values are not correct, if referred to other lenses.
The extension tubes are attached to the camera as described under "Changing the lens". The diaphragm stop-down pin must not be depressed here either. In the same way, the lenses are then attached to the front thread mount of the extension tubes.
Aperture pre-selection or depth-of-field control by depressing pin 33 is not impaired by the extension tubes.
The tubes can, of course, be used as combination and also attached to the bellows extension unit. In the tables booklet there is a chart in which are listed all the possible combinations with the TESSAR 2.8/50 mm.
There is also a simplified table which shows the depth-of-field for the set image scale. The exposure extension factors that are given apply when working with a separate exposure meter.



Bellows extension unit

ICAREX 35
ICAREX 35 S

Controls

55 **Thread-mount ring for screwing on the camera**
56 **Tripod slide with focusing knob**
57 **Tripod socket**
58 **Focusing slide with focusing knob**
59 **Diaphragm tensioning lever**
60 **Thread-mount for attaching lenses**

The bellows extension unit extends the scope of the ICAREX in the field of close-ups and macrophotography. This unit makes it possible to take pictures at a slightly reduced, in natural size and on a magnified scale of reproduction. The bellows extension unit increases the lens-to-film distance and thus, depending on its focal length, the lens can be focused to shorter distances than would be possible with the lens attached direct to the ICAREX.
The 35 mm lens cannot be used with the bellows extension unit, because the subject would then lie within the range of the guide bars of the unit.

Attaching the unit

The bellows extension unit is attached to the camera in the same way as the lens with thread-mount ring 55.

The lens is also attached in this way to the bellows unit with thread mount 60. The diaphragm stop-down pin must not be depressed here either. When attaching or removing the bellows unit in the case of the ICAREX 35 with pentaprism viewfinder and exposure meter, this must be pulled back, so that the bellows unit can be turned without knocking against it. Should the camera not be exactly level with the camera after it is screwed on, use a screw-driver not more than 1.5 mm in width to loosen the 3 adjusting screws in ring 55 until the ICAREX is suitably aligned. Now re-tighten the screws.

Focusing

Focusing is carried out by looking through the ICAREX viewfinder and turning the left-hand knob marked "DRIVE" on focusing slide 58, whereby the lens with its focusing mount can also be used. The right-hand knob (LOCK) serves to lock the focused setting, if it is turned in the direction of the arrow on it.

Focus with the diaphragm open, if possible. If it is closed, then push back diaphragm tensioning lever 59. After tensioning, it returns to its initial position.

The diaphragm stop-down pin must not be depressed, unless the depth-of-field is to be checked, which is only possible however with bright illumination of the subject.

Owing to the fact that with close-ups focusing simply by extending the bellows unit can lead to difficulties, because extending the bellows also involves a change in the subject distance, it is advisable when using a tripod to use tripod slide 56 for focusing. This permits the ICAREX to be moved forwards or backwards with the bellows unit whilst the bellows extension remains the same. Adjustment is made with the right-hand knob (DRIVE) whilst the tripod slide can be fixed in position with the left-hand knob (LOCK).

For technical reasons, the camera cannot be swung into an upright position at the bellows extension unit. This adjustment must be made with the tripod head.

Exposure

In the case of ICAREX models with built-in exposure meter, make the exposure measurement as usual with stopped down aperture, i. e., working aperture. (Press down the diaphragm stop-down pin.) When adjusting the exposure meter, take care not to open the lens aperture too much, in order not to reduce the already small depth-of-field even further. It is better to select a longer exposure time, if this is possible.

There are 2 possibilities for making the exposure:
Either press down the release button immediately after the exposure measurement with the diaphragm stop-down pin in the depressed position. In this case, diaphragm tensioning lever 59 need not be actuated, because the lens aperture is already stopped down. Or, check the setting with the diaphragm open after making the exposure measurement. To do this, the diaphragm stop-down pin must be released and the diaphragm opened by tensioning lever 59. During the subsequent exposure, the diaphragm will be automatically stopped down to the set f/number.

Retro-ring

ICAREX 35
ICAREX 35 S

For close-ups, in which the subject is to be reproduced on the film on a larger-than-life scale (over 1:1), we recommend the use of the retro-ring. It permits reversal of the lens, which is of advantage for optical reasons. First unscrew the two parts of the ring. Fit the part with the silver bayonet mount ring in thread-mount 60 of the bellows extension unit. Then attach the lens in reverse (writing towards the camera) to the bayonet of the retro-ring and turn clockwise as far as possible. Now screw the second part of the ring to the thread mount of the lens, which will hold the diaphragm tight in each position.
The automatic diaphragm stop-down mechanism in the bellows unit becomes inoperative with the retro-ring. The diaphragm has to be opened up or stopped down for the various operations by hand.

ZEISS Luminars

ICAREX 35
ICAREX 35 S

Special lenses for close-ups, with which to a large extent very large scales of reproduction can be obtained (up to max. 16:1). An adapter ring is required which can be screwed into the camera, the bellows extension unit or the extension tubes.
Focusing is carried out by changing the distance to the subject (use the focusing slide).
Opening up and stopping down the lens apertures must be carried out by hand. The relevant apertures for the scale values on the setting ring are given in the tables. Exposure measurement is carried out either with the built-in exposure meter or with a separate meter.

Accessories for ICAREX 35 and 35 S

(Numbers without special note apply for both models)

Interchangeable lenses

11.3510	Skoparex 3.4/35
11.3501	Tessar 2.8/50
11.3502	Ultron 1.8/50
11.3511	Super-Dynarex 4/135 with built-in lens hood
11.1206	ZEISS monocular 8 x 30 B (f = 400 mm)
20.1644	Adapter ring

Viewfinder accessories

ICAREX 35	20.1519	Waist-level viewfinder
ICAREX 35	20.1520	Pentaprism viewfinder
ICAREX 35	20.1521	Pentaprism viewfinder with CdS exposure meter
ICAREX 35	20.1304	Clear glass screen with cross hairs
ICAREX 35	20.1305	Ground glass screen
ICAREX 35	20.1306	Ground glass screen with microprism spot
ICAREX 35	20.1307	Ground glass screen with microprism spot and central diagonal split-image rangefinder
ICAREX 35	20.1308	Fresnel screen with double cross hairs (micro-screen)
ICAREX 35	20.1309	Fresnel screen with microprism ring and split-image rangefinder
	20.1614	Right-angle finder
	35.0207	Eyecup
	20.0504	Eyesight correction lens ± 0.5 to ± 5 dptrs. (Please state dptrs. when ordering.)

Lens hoods

20.0718	Lens hood (flexible) for 35 mm and 50 mm lens S 56 Ø

Filters

20.1051	yellow	for 35 to 135 mm lens B 50 Ø
20.1052	green	for 35 to 135 mm lens B 50 Ø
20.1053	orange	for 35 to 135 mm lens B 50 Ø
20.1054	red	for 35 to 135 mm lens B 50 Ø
20.1055	UV	for 35 to 135 mm lens B 50 Ø
20.1056	Ikolor A	for 35 to 135 mm lens B 50 Ø
20.1057	Ikolor B	for 35 to 135 mm lens B 50 Ø
20.1058	skylight	for 35 to 135 mm lens B 50 Ø
20.1208	polarizing filter (Contapol)	for 35 to 135 mm lens B 50 Ø

Accessories for close-ups and microphotography

20.0846 Supplementary lens f = 2.0 m 0.5 dptr. B 50 Ø
20.0847 Supplementary lens f = 1.0 m 1.0 dptr. B 50 Ø
20.0848 Supplementary lens f = 0.5 m 2.0 dptrs. B 50 Ø
20.0849 Supplementary lens f = 0.3 m 3.0 dptrs. B 50 Ø
20.0850 Supplementary lens f = 0.2 m 5.0 dptrs. B 50 Ø
20.1657 Extension tube 1:1 for 35 to 135 mm lens
20.1658 Extension tube 1:2 for 35 to 135 mm lens
20.1667 Extension tube 1:4 for 35 to 135 mm lens
20.1668 Retro-ring with diaphragm stop-down ring
20.1662 Bellows extension unit with automatic aperture control for 50 and 135 mm lens
20.1659 Extension tube for microscope
20.1616 Connecting head for microscope
20.1853 REPROPHOT 1, universal copying unit
20.1855 REPROPHOT 2, big copying unit
20.1843 Lightbot 220 V, 50 cycles without fluorescent tubes
20.0205 Adapter plate for connection of ICAREX to copying unit
20.1669 Adapter ring for Luminars

46.2511 ZEISS Luminar 1:2.5/16 mm
46.2513 ZEISS Luminar 1:3.5/25 mm
46.2515 ZEISS Luminar 1:4.5/40 mm
46.2517 ZEISS Luminar 1:4.5/63 mm

} CARL ZEISS order numbers

Supplementary lenses for ZEISS monocular 8 x 30 B

20.0831 f = 1 m 1 dptr. up to image scale 1:1.2
20.0832 f = 0.5 m 2 dptrs. up to image scale 1.2:1
20.0833 f = 0.35 m 3 dptrs. up to image scale 1.7:1
20.0834 f = 0.2 m 5 dptrs. up to image scale 2.5:1
20.0835 f = 0.12 m 8 dptrs. up to image scale 3.6:1

Cases and containers

23.0017 Every-ready case in soft leather
23.0016 Every-ready case, standard finish
23.0013 Every-ready case, de-luxe finish
23.0215 Small universal case
23.0207 Universal case
23.0211 Carrying straps (real leather) with clip ring for camera without case
23.1004 Leather case for 35 and 50 mm lens (optional) and 1 filter or 1 supplementary lens
23.1005 Leather case for Super-Dynarex 135 and 1 filter or 1 supplementary lens
23.2006 Case for waist-level or pentaprism viewfinder

23.2011	Case for pentaprism viewfinder with CdS exposure meter
23.1012	Leather case for ZEISS monocular 8 x 30 B
23.2007	Case for 3 filters or 3 supplementary lenses
20.0633	Rear lens cover

Care of the cameras

From time to time the film guide track and film transport bearing in the ICAREX as well as the inside of the camera back should be carefully cleaned with a soft brush. (Please note: Do not scratch the shutter blind.) Dust or threads on the focusing screen or mirror can be carefully removed with a soft hair brush when the lens is removed. Fingermarks should be carefully removed with a soft linen cloth from the lens surface and the viewfinder eyepiece. Dust particles should be removed beforehand with a soft hair brush.

Serial number

On the base of each ICAREX is its serial number. Each lens also has its particular number. We advise you to make a note of these numbers, so that you can establish your ownership in the case of loss or a mistake.

Special note:

Your photographic dealer or the photographic advisory service of ZEISS IKON, 7 Stuttgart, Postfach 540, will gladly advise you free of charge, if you have any photographic problems or require any information.
ZEISS IKON offer a world-wide guarantee – a valuable service covering all countries and frontiers. A guarantee booklet is provided with each camera. Make sure that your photographic dealer confirms the date of purchase with his signature on the back of the booklet. Take good care of this booklet in your own interest, as it contains a list or repair agents throughout the world for ZEISS IKON products.

Subject to change in the interest of technical progress.