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IKOFLEX

Ic

INSTRUCTION BOOK

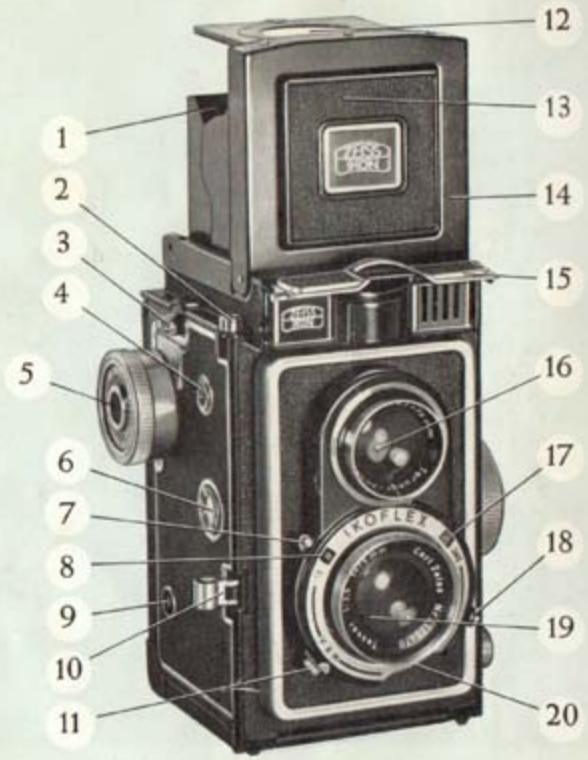
ZEISS IKON AG · STUTTGART

IKOFLEX *picture by Costabel (Tessar f/3.5 75 mm, f/8, 1/100 sec.).*

The IKOFLEX Ic

made by ZEISS IKON AG. STUTTGART is a twin-lens mirror reflex camera with built-in exposure meter taking twelve $2^1/_4 \times 2^1/_4$ ins. exposures on 120 roll film in black and white or colour. The viewing lens projects an unusually sharp and brilliant image of the subject on to a bright ground glass screen. The readings derived from the exposure meter can be seen on a scale clearly visible at the front of the ground glass screen. Since both the viewing and taking lenses, which have equal focal lengths and speeds, are coupled, the IKOFLEX can be quickly adjusted with the use of only one hand. This permits rapid operation and accurate focusing, allowing the photographer to concentrate on the composition. Both the taking and viewing lenses have an anti-reflection coating to prevent internal reflections and flares. The taking lens is excellently colour-corrected, ensuring colour photographs as well as black and white pictures of superb definition. The thoroughly reliable ground glass focusing mechanism allows the quality of the high-speed lens of the IKOFLEX to be utilised to the full. The IKOFLEX Ic has a fully synchronised shutter and an automatic film transport lock to prevent double exposures and blanks.

Before inserting the first film into your IKOFLEX Ic, *the operations described in this instruction book should be practised carefully. If you take this trouble, you will be rewarded by good pictures from the very beginning and your* IKOFLEX *will be a never-ending source of pleasure to you.*



COMPONENTS AND CONTROLS

1 Finder hood
2 Thread for cable release
3 Eyelet for carrying strap
4 Automatic frame counter
5 Film wind knob with film type indicator
6 Notched wheel for setting the frame counter
7 Shutter tensioning lever
8 Diaphragm control window
9 Flash contact
10 Body shutter release
11 Setting lever for flash synchronisation and delayed action (self-timer)
12 Focusing magnifier
13 Central front panel of finder hood
14 Frame of front panel of finder hood
15 Cover flap of exposure meter
16 Viewing lens
17 Shutter speed control window
18 Diaphragm setting lever
19 Taking lens
20 Shutter speed setting ring
21 Upper film spool holder
22 Depth-of-field scale
23 Focusing knob with distance scale
24 Exposure meter computer disk
25 Lower film spool holder
26 Locking catch for camera back
27 Locking pin for finder hood
28 Film window } see page 22
29 Tripod bush }
30 Frame finder eyepiece

OPENING AND CLOSING THE FINDER HOOD

To open the finder hood, depress the locking pin (27); the hood will then open automatically. For critically sharp focusing, swing up the focusing magnifier (12) which is fitted inside the front of the finder hood (1). To close the hood, first fold back the magnifier, and then the front of the hood itself. In this way the finder hood will fold up flat.

FOCUSING

The special feature of the IKOFLEX is its reflex viewing system, by which the viewing lens shows an exact replica of the subject to be taken. This viewing lens, which has the same focal length and speed as the taking lens, projects, via an inclined mirror, a brilliant upright image on to a ground glass screen. The final picture will be depicted sharply on the film when it appears sharply focused on the screen. On account of the high light-

transmission of the viewfinder system, the ground glass is evenly illuminated right into the corners, so that the framing is indicated exactly and the definition can be judged with precision.

For focusing, turn the focusing knob (23); by turning through 130° all distance settings from 3 feet to infinity (∞) can be covered. As the focusing knob is turned, objects lying at varying distances from the camera can be seen coming into sharp focus one after another. Thanks to the ground glass screen focusing system, the IKOFLEX makes it easy to find the critical point of sharpness. Even when the diaphragm of the taking lens is stopped down,

Focusing the viewfinder image by turning the distance setting knob

the image depicted by the viewing lens will always retain its full brightness. The depth of field of the stopped-down taking lens can easily be read off from the depth-of-field scale (22).

To facilitate really critical focusing, the magnifier (12) can be swung into position by pressing gently against the central panel of the finder hood front (13). When using the focusing magnifier, the eye must be brought as close as possible and directly above the centre of the magnifier. To assist the avoidance of converging lines and other distortions, the ground glass screen is divided into squares.

Magnifier for pin-point focusing

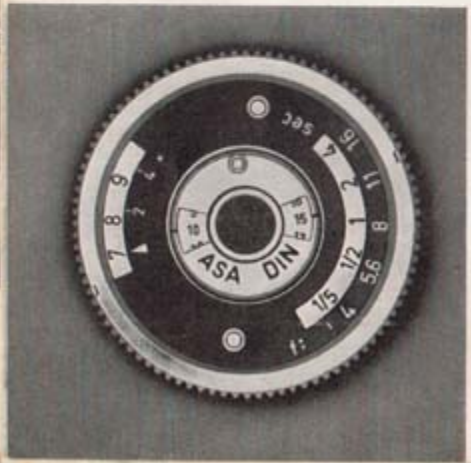
DEPTH-OF-FIELD SCALE

The depth-of-field scale (22) surrounds the focusing knob (23). The divisions on the depth-of-field scale indicate the zone of sharp definition for each individual diaphragm stop (aperture setting); the figures representing the actual diaphagm settings. The extent of the zone of sharp definition at any given diaphragm setting can be read off from the distance scale by means of the diaphragm figures to the right and left of the distance setting mark. If, for instance, the distance setting mark is set to the red dot (see page 16) and a diaphragm setting of f/8 has been chosen, everything between 12 and 45 feet will be recorded sharply. If stop f/16 is used, the zone of sharp definition will extend from 9 feet to ∞, whereas when the largest stop f/3.5 is used (denoted by the strokes on either side of the setting mark), the zone will only extend from 18 to 36 feet. In this way the extent of the depth-of-field range can always be determined at a glance. For exact depth-of-field values, see table on page 13.

Automatic depth-of-field scale

EXPOSURE COMPUTER

The rotatable computer disk of the exposure meter (24) is incorporated in the focusing knob (23). It may be used for calculating the relationships between the aperture settings and the shutter speeds.
First set the speed of the film in use on the inner disk by means of the little lug. The disk can be set for film speeds rated in either DIN or ASA, according to instructions on the film packet. In the example used for our illustration below, the computations were based on a film speed of 15/10° DIN (10 ASA).
Before making an exposure, take a reading from the indicator on the scale on the focusing screen. If the exposure meter shows, for instance, "7" (see illustration page 7) the triangular mark on the outer setting ring of the exposure computer disk should be set to 7.
Proceed by reading off values for aperture setting and shutter speed from the scales calibrated in f/nos. and seconds. You will see that for f/4 an exposure time of 1/2 sec. is required; for f/5.6, 1/2 sec.; for f/8, 1 second; for f/11, 2 seconds (a green figure); if f/16 should be required an exposure time of 4 seconds (green figure) will be necessary.



Computer disk for the exposure meter

If, at any particular setting, the triangular mark is set to any figure between 12 and 16 (white figures on black ground), the green figures also appearing on the seconds scale should not be used under any circumstances.

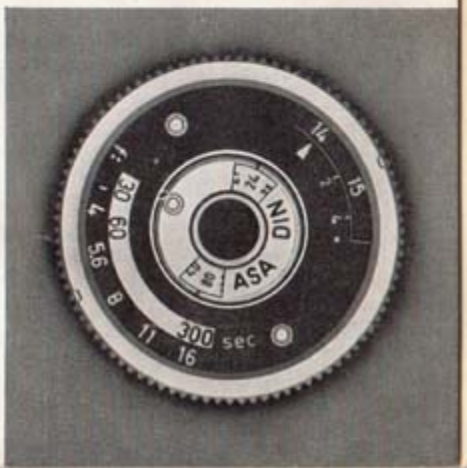
If the camera is loaded with a film rated at 24/10° DIN (80 ASA) and if the exposure meter on the focusing screen scale shows 14, an exposure can only be made at f/16, 1/300 sec.; the green figures 30 and 60 which are also visible will result in over-exposure.

Basic rule:

If the triangular mark △ points to figures between 2 and 11 (black figures on white ground), all values shown on the seconds scale can be used.

If the triangular mark △ points to figures between 12 and 16 (white figures on black ground), the green whole second figures will always result in excessive over-exposure and should not be used.

For exposures with filters the filter factor, e.g. 2× (yellow filter) should be set instead of the triangular mark △ against the figure indicated by the exposure meter.



Computer disk for the exposure meter

APERTURE SETTING

Lever (18) is used for setting the diaphragm to the correct lens aperture, which can be read off from the little window (8). The larger the aperture figure, the smaller is the actual diaphragm opening, which necessitates longer exposure times but also provides a larger depth-of-field zone. "Stopping down" (making the lens aperture smaller) will extend the zone of sharp definition further. However, you should avoid stopping down to such an extent that over-long exposure times become necessary, for which the camera can no longer be safely employed without tripod. Since the focusing screen of the IKOFLEX permits continuous focusing control, it is better to use shorter exposure times with larger lens apertures.

Diaphragm setting (values can be read off from the window)

DEPTH-OF-FIELD TABLE

focal length = 75 mm

Distance setting	DIAPHRAGM SETTING 3.5		DIAPHRAGM SETTING 4		DIAPHRAGM SETTING 5.6	
inf.	70' 8"	— ∞	61' 8"	— ∞	44' 4"	— ∞
48'	28' 8"	—147' 8"	27' 4"	—210' 0"	23' 4"	— ∞
15'	12' 8"	— 19' 0"	12' 4"	— 19' 8"	11' 4"	— 22' 4"
9'	8' 0"	— 10' 4"	8' 0"	— 10' 4"	7' 8"	— 11' 0"
6'	5' 6"	— 6' 6"	5' 6"	— 6' 6"	5' 4"	— 6'10"
5'	4' 8.5"	— 5' 4"	4' 8"	— 5' 4"	4' 7"	— 5' 6"
4'	3'10"	— 4' 2.5"	3' 9.5"	— 4' 3"	3' 9"	— 4' 4"
3'6"	3' 5.5"	— 3' 8.5"	3' 5"	— 3' 9"	3' 4.5"	— 3'10"
Distance setting	DIAPHRAGM SETTING 8		DIAPHRAGM SETTING 11		DIAPHRAGM SETTING 16	
inf.	31' 0"	— ∞	22' 8"	— ∞	15' 8"	— ∞
48'	19' 0"	— ∞	15' 8"	— ∞	12' 0"	— ∞
15'	10' 4"	— 28' 0"	9' 4"	— 42' 4"	8' 0"	—265' 4"
9'	7' 0"	— 12' 4"	6' 6"	— 14' 4"	5'10"	— 19' 8"
6'	5' 2"	— 7' 4"	4'10"	— 8' 0"	4' 6"	— 9' 4"
5'	4' 4.5"	— 5'10"	4' 2.5"	— 6' 2"	3'11"	— 7' 0"
4'	3' 7.5"	— 4' 6"	3' 5.5"	— 4' 8.5"	3' 3.5"	— 5' 1.5"
3'6"	3' 3.5"	— 3'11.5"	3' 2.5"	— 4' 1"	3' 0.5"	— 4' 4.5"

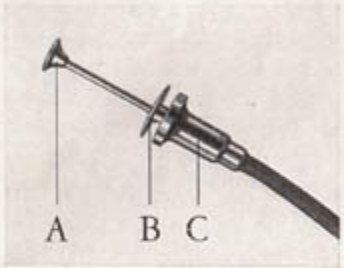
SHUTTER

The IKOFLEX Ic is equipped with a fully synchronised Prontor SVS shutter with self-timer. The shutter speeds range from 1/300 sec. to 1 second and are set by means of the setting ring (20). Furthermore, time exposures of any lengths are also possible. The speed to which the shutter is set can be seen in the window (17). The figures appearing here represent fractions of seconds; e.g., "5" means 1/5 sec., "100" means 1/100 sec., etc.

If the required exposure time exceeds 1 second, the shutter should be set to "B", with the result that the shutter remains open as long as the shutter release is depressed. For time exposures it is strongly recommended to work with a cable release to eliminate any danger of camera shake; the use of a tripod or other firm support is also advised. The built-in self-timer *cannot* be used when the shutter is set to "B".

Shutter speed setting (values can be read off from the window)

THE ZEISS IKON CABLE RELEASE is equipped with a plunger catch, making longer time exposures much more convenient to take. The cable release is screwed into the thread (2) on the camera body. For all instantaneous and short time exposures, press the small plate "B" towards the sleeve "C" and turn it slightly, whereupon it will remain in this position. For longer time exposures the plate "B" should not be pressed against "C". In this case a gentle pressure on the plunger "A" will lock it in the depressed position until a second pressure on plate "B" releases it. This plunger catch allows time exposures of any duration to be made without having to keep the finger on the plunger all the time.



RED DOT SETTING

One way of benefiting from the large depth of field provided by small taking lens apertures can be particularly useful when the lighting conditions are good. By setting the diaphragm setting lever (18) and the focusing knob (23) to the red dots, i. e., at approximately 25 feet and between f/8 and f/11, everything beyond approximately 13 feet will be rendered sharply without further focusing. Framing and composition can be done on the ground glass screen, whilst fast action shots will be made much easier by using the direct vision frame finder. Using a film rated at 17/10° DIN (17 ASA), an exposure time of 1/200 sec. will be correct if the lighting conditions are excellent; use 1/100 sec. if the light is only reasonably good, and 1/25 sec. if it is rather poor.

Red-Dot Setting for snapshots. Distance approx. 23 ft, diaphragm between f/8 and f/11

FRAME FINDER

For taking pictures at eye level, there is a built-in frame finder. Press the front panel of the finder hood (13) inwards so that it folds up. The front frame of the hood (14) can then be used together with the eye piece (30) at the rear as a frame finder. Correct framing is ensured when the edges of the eye piece coincide with the inner edges of the front frame. Focusing can either be done in advance on the ground glass screen or by using the "Red Dot Setting". This direct viewfinder is especially suitable for taking sports events and rapid action snapshots.

Frame finder for candid shots and fast action pictures (sports events)

LOADING THE CAMERA

Before loading the camera, first make sure that the automatic film lock is released. It will be unlocked if the last film used has already been advanced beyond the twelfth frame No. 12 showing in the frame counter (4), as then the film wind knob (5) can be turned indefinitely without encountering further resistance.

If, for some reasons, the film lock is still engaged, the film wind knob must be wound on until the fig. 12 has passed the frame counter window. To do this, tension the shutter, release it and while keeping the release knob depressed turn the film wind knob until fig. 12 appears in the frame counter window. As soon as the fig. 12 has passed the window, the film lock will be automatically released.

Open the camera back by pushing the locking catch (26) in the direction of the arrow; then hinge the back downwards and pull out the upper film spool holder (21), turning it so that it is locked in the withdrawn position. The empty take-up spool is then inserted into

Inserting the empty take-up spool into the upper spool chamber

the upper spool chamber so that the prong of the film wind knob (5) engages the slot in the spool. Turn back the upper film spool holder (21) and allow the pivot to snap into the hole of the spool, which can now be rotated easily by means of the film wind knob (5).

In exactly the same way, the new spool of film is inserted into the lower spool chamber (25); tear the seal and thread the tongue of the backing paper into the long slit of the empty take-up spool by pulling it across the film window. Turn film wind knob (5) until the paper is tight and winds evenly on to the take-up spool. Then close the camera back and wind on the film until the figure 1 appears in the film window (28). The camera is now correctly loaded and ready for the first exposure. Close the film window, depress the notched wheel (6) of the frame counter (4) and turn it in an anti-clockwise direction until it locks. The window of the frame counter will now also indicate No. 1; from now on it is only necessary to consult the frame counter.

Loading the camera is best done in subdued light, never in bright sunlight!

Tightening the threaded backing paper

MAKING AN EXPOSURE

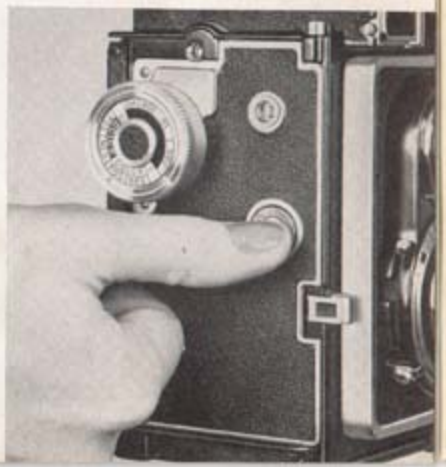
When taking hand-held exposures, the IKOFLEX should hang from its carrier strap, adjusted to a comfortable length for viewing the subject in the finder hood. The aperture and shutter speed required should be read off from the exposure computer disk (24) on the focusing knob (23). Set the shutter speed with the left forefinger and the aperture with the thumb; both thumb and forefinger should be used to operate the focusing knob (23) for distance settings. Make sure that the film wind knob (5) has been wound on correctly, i. e., until it comes to a stop. Cock the shutter (7) and swing the shutter release (10) into position. Compose the picture and focus it sharply on the ground glass screen; the grid pattern will help you in aligning both the vertical and the horizontal lines of the subject. As soon as the screen image just looks right, make the exposure by giving a gentle pressure on the release knob (10); NEVER jerk the knob abruptly. Although the release knob (10) must be depressed as far as it will go, the camera must be kept absolutely still at the moment of exposure. After every picture, the film transport knob (5) should be wound on fully in order to be ready for the next shot.

For exposures longer than 1/25 second a tripod should be used. The tripod should be screwed into the tripod bush (29) at the base of the camera. It is a good plan to use a cable release, which should be screwed into its appropriate thread (2).

FILM WIND LOCK AND FRAME COUNTER

After each exposure the film is advanced by turning the film wind knob (5) until it comes to a stop. The film can be advanced even in the dark: there is no need to watch the numbers in the frame counter. The number of the frame ready for exposure appears automatically in this window (4). As long as the shutter release (10) is folded back into its rest position, exposure cannot take place. In order to release the shutter, the lever must be swung into the operational position.

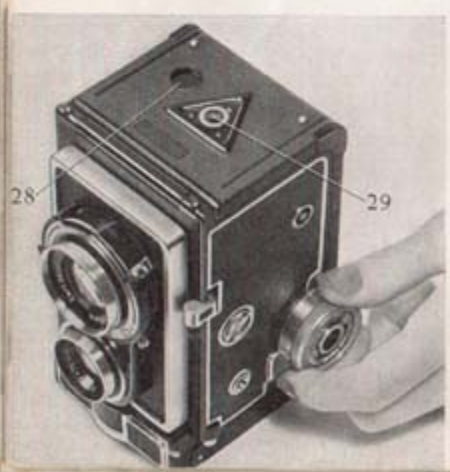
The film can be wound on only after the shutter has been released and the next exposure cannot be made until the film has been advanced to the next frame. Double exposures or blanks are therefore eliminated completely.



Setting the frame counter

UNLOADING THE CAMERA

After the twelfth exposure, the film wind lock is automatically disengaged. Open the film window (28) and turn the film wind knob until the end of the backing paper can be seen passing the window; a few more turns will wind the film tightly on to the take-up spool. Open the back of the IKOFLEX, seal the film, pull out the upper film spool holder (21) and remove the spool from the chamber. Straight away remove the empty feeding spool from the lower spool chamber and replace it in the upper one. Care must be taken to ensure that the prong of the film wind knob (5) engages the slit in the spool. The camera is now ready for a new film.



Film window and tripod bush at the bottom of the IKOFLEX

SELF-TIMER ("V" SETTING)

For taking pictures with the self-timer, the shutter speed should be set and the shutter tensioned. Then set the synchro-lever (11) to the "V" mark. The delayed action mechanism starts to operate when either the cable release or the body shutter release (10) is depressed. After approximately 10 seconds, the shutter will be automatically released, the exposure time being that which was set beforehand.

The use of the self-timer is recommended in all cases when the shutter speed is slower than 1/25 second, as it acts as a safeguard against camera shake. While the delayed action mechanism is running the camera can be firmly held with both hands, so that even longer exposure times can be used successfully without a tripod provided that the photographer does not move during the actual exposure.

The self-timer cannot operate when the shutter is set to "B" (time exposure) or when the synchro-lever (11) is set to "M" or "X" marks.

Tensioning the shutter for the self-timer (set the synchro-lever to "V")

PICTURES WITH FLASHLIGHT

The fully synchronised shutter of the IKOFLEX can be used with both expendable flashbulbs and electronic flash. The flash is fired by the shutter release and is synchronised to operate at the most effective moment. To take flash photographs, slip the plug of the connecting lead over the contact nipple (9). The fully synchronised shutter not only permits the firing or flashes at the exact moment the shutter is wide open ("X" setting), but, when set to pre-ignition ("M" setting), a fraction of a second before the shutter is fully opened.

PICTURES WITH INSTANTANEOUS FLASH ("X" SETTING)

Before making exposures with electronic flashes, the synchro-lever (11) should be set to "X"; all shutter speeds between 1 sec. and 1/300 sec. may then be used. This setting may also be used for flashbulbs, but only at shutter speeds between 1 sec. and 1/25 sec.

For flash pictures with the self-timer, set the synchro-lever to "V"; the flash will be fired as soon as the delayed action mechanism has run off and the shutter is wide open, in the same way as when the "X" setting has been used.

It is one of the remarkable features of the Prontor SVS shutter that the three settings, "V" (for self-timer without delay), "X" (for instantaneous ignition) and "M" (for pre-ignition), can be operated or disengaged selectively whether the shutter is cocked or not.

PICTURES WITH DELAY-TO-PEAK FLASH ("M" SETTING)

At this setting all shutter speeds up to 1/300 sec. may be employed when using expendable flashbulbs. The exposure times suitable for particular flashbulbs can be obtained from the table on the following page.

The synchro-lever (11) must be set to "M". The shutter is cocked and released as usual.

In contrast to electronic flash tubes, flashbulbs of the "M" class need some time to attain their greatest intensity. For this reason the actual firing of the flashbulb has to commence slightly before the release of the shutter, if shutter speed faster than 1/25 sec. are used. When "M" setting is in use, the delayed action release mechanism first ignites the flashbulb and then opens the shutter. This is why the self-timer cannot be used with the "M" setting.

Electronic flash lamps *cannot* be used when the shutter is set to "M".

Setting the lever for flash synchronisation with delay to peak (Lever to be set to "M")

SHUTTER SPEEDS FOR FLASH EXPOSURES

Type of flashbulb		Set synchro-lever (11) to X or V	Set synchro-lever (11) to M
Osram	XM 1, S 0	1—1/25	1/50—1/500
	XM 1B, S 0B	1—1/25	1/50—1/125
	XP	1—1/50	—
	XO	1—1/25	—
	S 2	1—1/10	1/25—1/250
Philips	PF 1, PF 3, PF 14, PF 25, PF 60	1—1/25	1/50—1/500
	PF 100	1—1/10	1/25—1/50
General Electric	No. 5, No. 11, No. 22	1—1/25	1/50—1/500
	SM	1—1/125	—
	No. 50	1—1/10	1/25—1/50
Sylvania	Bantam 8, 0, 2, 25 C, Press 40, 2 B, Press 25, 25 B, 40 B	1—1/25	1/50—1/500
	SF	1—1/125	—
	3, 3 B	1—1/10	1/25—1/50
Electronic flash		1—1/500	—

ACCESSORIES FOR THE IKOFLEX Ic

FILTERS are particularly useful with black and white film for they allow natural colours to be represented in the most effective tones of grey. Either 35.5 mm screw-in filters or 37 mm slip-on filters can be attached to the lens of the IKOFLEX. The use of precision-made ZEISS IKON filters is recommended, since they do not impair the resolution of the taking Zeiss lens.

LENS HOODS (sunshades) are indispensable for backlight photography. The ZEISS IKON lens hood, which can be slipped on to the lens mount or even over a filter, prevents rays from the light source striking the lens directly.

The IKOPROX is a close-up attachment with supplementary lenses for fitting to both the viewing and the taking lens of the IKOFLEX when taking close-up pictures (less than 3 ft. 3 in.). It compensates automatically for the parallax between the viewfinder image and the image produced on the film, which has to be allowed for when taking close-ups.

The required lens settings, image scales and sizes of the field covered by the camera may be found on the table on page 29.

The IKOPOL, an attachment with coupled polarising filters for both viewing and taking lenses, eliminates to a considerable degree troublesome reflections on glass, water, wet pavements, etc. In many cases, pictures with good definition and contrast can only be made with the aid of polarising filters. Colour photographs which are usually rather subdued when the sky is overcast will gain in colour saturation when the IKOPOL polarising filter is used. When the IKOPOL is employed three times the normal exposure should be given.

The EVER-READY CASE protects your precious IKOFLEX from accidental impact and damage without hindering your picture-taking.
On the bottom of the ever-ready case there is provision for attaching a ZEISS IKON flash lamp; when using a tripod, however, the camera must be removed from the case for screwing the tripod to the tripod bush (29).

With the IKOBLITZ, our flash gun for flashbulbs, or the IKOTRON, the ZEISS IKON electronic flash unit, pictures can be taken in poor light or even in complete darkness.

ZEISS IKON

MAINTENANCE OF THE IKOFLEX

It is advisable to clean the interior of the camera and the film track in particular from time to time with a very soft brush. If the lenses should become dirty, first remove all dust with a soft brush and then wipe them carefully with a soft, dry cloth. This cloth should be a frequently washed piece of linen, free from all chemical agents and fluff. However, the lenses should be cleaned only when absolutely necessary. The lens cover provided with the camera ensures complete protection.

Every IKOFLEX has a serial number which should be noted down in order to be able to identify your camera and establish your ownership in cases of loss or theft.

ZEISS IKON

TABLE FOR USING THE IKOPROX CLOSE-UP ATTACHMENT

	Distance setting in feet	Distance between object and camera	Reduction 1 :	Size of picture field Width Height
f = 1 m	inf.	3' 3¼"	13.3	2' 6" × 2' 6"
	48'	3' ⅛"	12.3	2' 3⅞" × 2' 3⅞"
	15'	2' 8"	10.8	2' ⅛" × 2' ⅛"
	9'	2' 4¼"	9.5	1' 9⅛" × 1' 9⅛"
	6'	2' ¾"	8.2	1' 6⅛" × 1' 6⅛"
	5'	1' 11"	7.6	1' 5¼" × 1' 5¼"
	4'	1' 9¼"	6.9	1' 3⅛" × 1' 3⅛"
	3'6"	1' 8¼"	6.4	1' 2¼" × 1' 2¼"
f = 0.5 m	inf.	1' 7¾"	6.7	1' 3¼" × 1' 3¼"
	48'	1' 7"	6.4	1' 2⅛" × 1' 2⅛"
	15'	1' 5⅜"	5.9	1' 1¼" × 1' 1¼"
	9'	1' 4⅛"	5.5	1' ⅛" × 1' ⅛"
	6'	1' 3¼"	5.1	11⅛" × 11⅛"
	5'	1' 2⅛"	4.8	10¾" × 10¾"
	4'	1' 1⅛"	4.5	10¼" × 10¼"
	3'6"	1' 2¼"	4.3	9¾" × 9¾"

The distance between object and camera must be measured from the rim of the IKOPROX *lens to the object. To obtain adequate depth-of-field it is advisable to stop down to f/8 or smaller.*