

Any deviation from the design of the instrument as compared with this description will be due to technical progress.



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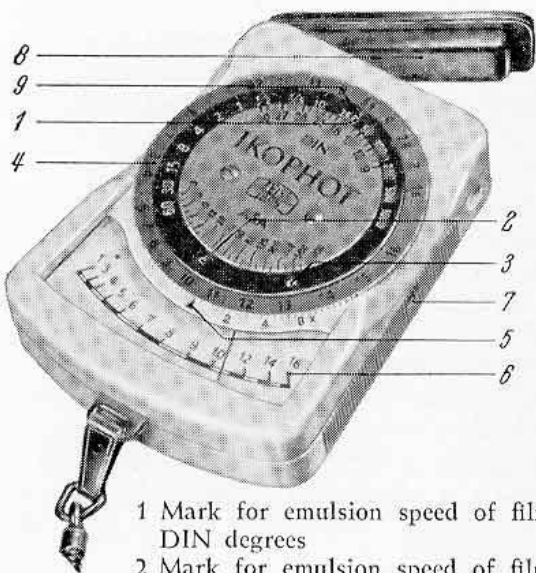
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Photo-electric exposure meter
IKOPHOT
INSTRUCTIONS FOR USE



The photo-electric exposure meter IKOPHOT gives maximum sensitivity with quick action and has been designed to give reliably direct readings. It enables the photographer to obtain correct exposures under practically all lighting conditions and for all stops. Implicit reliance may be placed on its accuracy whether your camera is loaded with black-and-white or colour film and whether you work with daylight or artificial light. The IKOPHOT gives a direct reading and no conversion whatever is necessary.

For cinematography also the IKOPHOT can be used with advantage. The normal exposure time of narrow-gauge cine-cameras is distinctly marked so that the stop required can be directly determined.



- 1 Mark for emulsion speed of films in DIN degrees
- 2 Mark for emulsion speed of films in A.S.A. and B.S.I. (arith) values
- 3 Knob to adjust the film speed
- 4 Adjusting ring
- 5 Adjustment mark
- 6 Scale showing the deflection of the pointer
- 7 Adjustment screw
- 8 Diffuser
- 9 Mark for f-number of cine-cameras

How to use the Ikophot

ADJUSTMENT TO THE EMULSION SPEED OF FILMS

To adjust the IKOPHOT to the speed of the film in use check first the rating of the speed. If it is in DIN degrees turn knob (3) to mark (1) and the film speed equivalent to that on the film box. If it is in A.S.A. values do the same, but turn knob (3) to mark (2) (see page 6).

THE MEASUREMENT

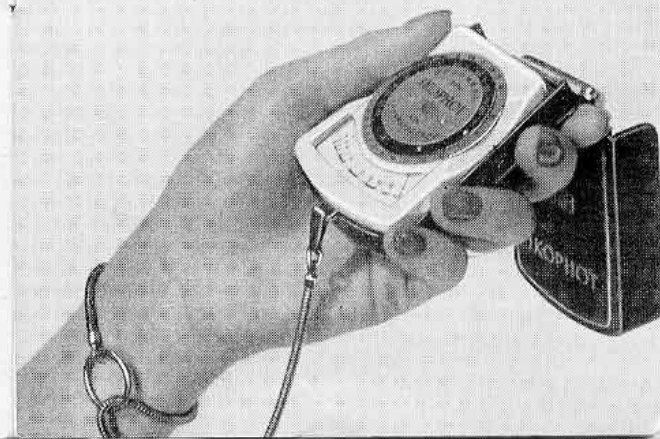
Point the glass covering the sensitive cell (on the front of the case) towards the middle-tones of the subject to be photographed and note the value of the scale indicated by the pointer (6) (see page 8).

THE READING

By turning adjustment ring (4)

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with your thumb, set value on it corresponding to that indicated by the pointer on the scale (6), to the red mark (5) or, when using filters, to the respective filter factor to the right of the adjustment mark. For every $f = \text{number}$ (black figure on the outer ring) the exposure time required (golden figure in the red-brown ring) can be read off, without conversion of figures,



also for shots with filters. In addition to this reading, the special model of the IKOPHOT gives readings of light values on the green scale. The triangle between the figures 11 and 12 on setting disk (4) is in this case the setting mark to be used.

The figures in the exposure time scale to the right of $\frac{1}{5}$ (or $\frac{1}{4}$ with the IKOPHOT with light values) indicate fractions of a second, the figures to the left of $\frac{1}{2}$ mean full seconds. Reading for cinematographers see page 10.)

HINTS

ADJUSTMENT TO THE EMULSION SPEED OF FILMS

The IKOPHOT is so constructed as to take into consideration the values used in Germany (DIN), U.S.A. (A.S.A.) and England

(B.S.I.arith. identical with A.S.A.). The IKOPHOT can be adjusted to DIN degrees by means of mark (1) whereas mark (2) indicates the A.S.A. values. A table showing the comparative values of other systems of speed rating can be found on the back of the IKOPHOT and on page 17 of these instructions.

While the speed of black-and-white films can be measured accurately by these standardised methods, similar methods for colour films have not been devised as yet. The exposure latitude and the brightness range values are smaller than for black-and-white materials. Manufacturers of colour films abstain from giving a straightforward speed rating but use the expression "to be exposed like a film of..." These values may be used with

confidence, but it is nevertheless recommended that tests should be made with different exposure times or stops to establish the speed of the colour film used with regard to your own IKOPHOT.

THE MEASUREMENT

The IKOPHOT should always be pointed to the middle-tones and shadows of the subject to be photographed. When measuring a landscape the exposure meter should be pointed towards the foreground and not towards the bright sky. If small subjects that are important for the picture as a whole must be taken, they should be approached with the IKOPHOT as close by as possible. In this case, however, the casting of one's own shadow on the subject to be measured should be avoided.

The measuring of the light intensity. Subjects with a wide brightness range and strong contrasts, e.g. all photographs against the light, call for an exposure time that will provide for sufficient details in the shadows. Reliable results are obtainable if the diffuser (8) is slipped on the window of the measuring cell and the IKOPHOT is held next to the subject, but pointing towards the camera. The reading is then taken in the usual way. Make sure that no other light sources interfere with your reading.

If the light source is extremely weak (candle, paraffin-lamp etc.) the usual method of measuring does not give the pointer any deflection, but a valuable indication may be obtained by pointing the IKOPHOT from the subject to be photographed to-

wards the light-source, without using the diffuser. The exposure time thus found should be multiplied by 10. This method can be used only if a single, weak light-source casts its light directly onto the subject.

THE READING

The red figures on adjustment ring (4) are equivalent to the figures of the deflection of the pointer on its scale (6). The black figures on this ring are the stop numbers.

There are two possibilities, either the exposure time that corresponds to the f number (which provides for the depth of field required) can be read off or the f number opposite the exposure time required to prevent subject movement can be used. Intermediate values of f numbers, too, can be read, an impor-

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tant point in colour photography. In this case the diaphragm in the camera is set to the intermediate value indicated (e.g. between f/5.6 and f/8).

For cinematographic shots the film speed is adjusted and the subject measured in the usual way. For the normal camera speed of 16 frames per second the necessary stop is found opposite the triangle mark (9) between $1/25$ and $1/50$ sec. If the camera speed is slower or faster, read the f numbers, between the equivalent values:

8	frames/sec	at	$1/16$
24	"	"	$1/50$
32	"	"	$1/64$
64	"	"	$1/128$

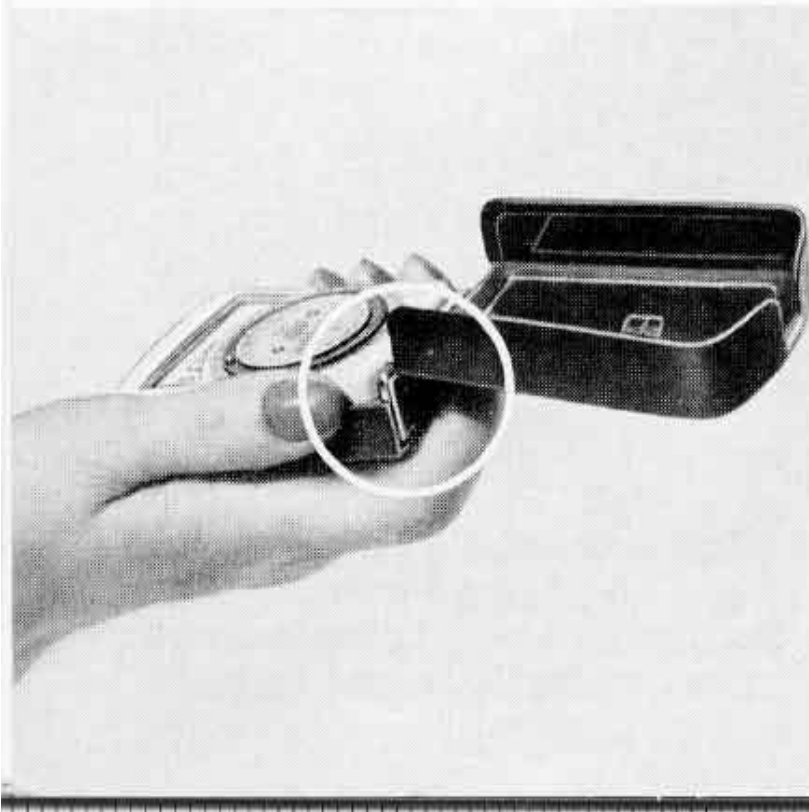
EVER-READY CASE

The movement used in the IKOPHOT is well protected from pressure, humidity and dust by

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the dust-proof casing. Mechanical damage is prevented by the elegant ever-ready case from which the IKOPHOT need not be removed when measurements are to be made. The diffuser is accommodated in the lid and

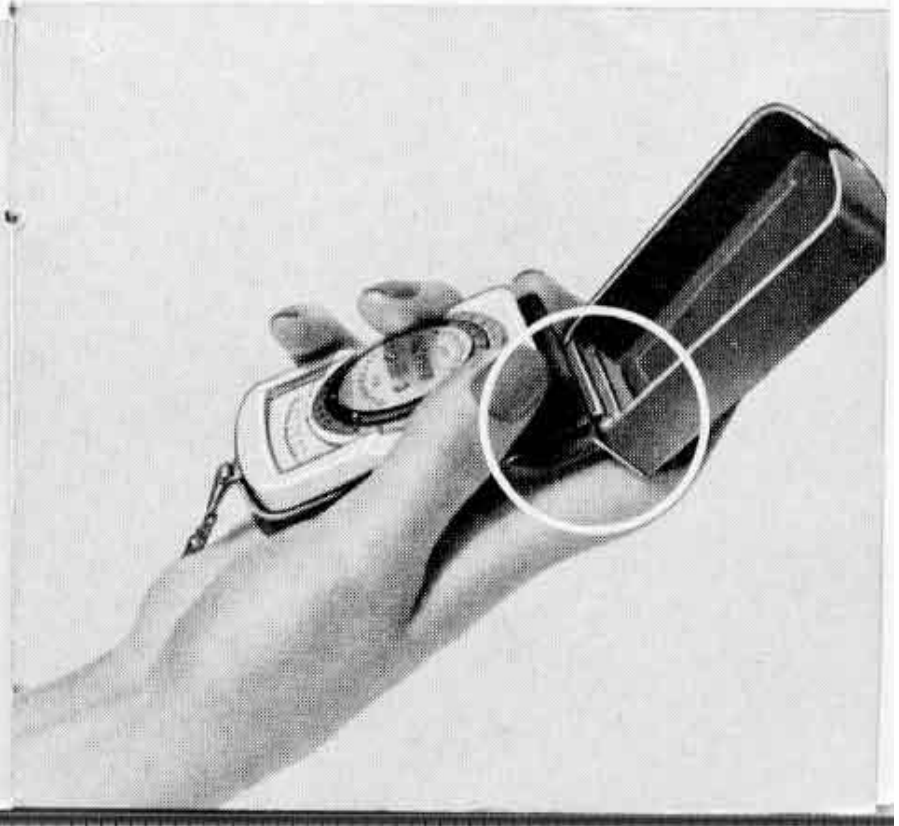
WRONG



has to be pushed sideways for use.

To close the ever-ready case the lid is hinged down in the direction of the diffuser and then pushed over the IKOPHOT (see picture).

RIGHT



In order not to lose the IKOPHOT and to leave both hands free, it should be fastened to the snake chain by which it can be bound to the wrist. The chain is long enough to allow the instru-



ment to be used even when the hand is hanging down. The ring of the chain is large enough to form a loop so that the IKOPHOT need not to be removed from the chain (see picture).

ADJUSTMENT

When the lens opening of the cell is completely blacked-out the pointer deflects to the brown dot on the left of the scale (6). If this is not the case — after long use — the pointer can be readjusted by rotating the adjustment screw (7) on the right side of the casing. In this case the IKOPHOT has to be removed from the ever ready case by bending up the springy side walls.

The IKOPHOT is a precision scientific instrument and should be handled accordingly. To keep the accuracy of the measuring cell it should not be exposed to strong light for a longer time than necessary or to heat above 122° F (50° C). The lens on the front should be kept clean; dust or fingermarks may cause incorrect readings.

Approximate equivalence of the various systems of speed rating

DIN /10°	Scheiner Europa	Scheiner USA	Weston	ASA
10	21	14	5	6
11	22	15	6	8
12	23	16	8	10
13	24	17	10	12
14	25	18	12	16
15	26	19	16	20
16	27	20	20	25
17	28	21	24	32
18	29	22	32	40
19	30	23	40	50
20	31	24	50	64
21	32	25	64	80
22	33	26	80	100
23	34	27	100	125
24	35	28	125	160
25	36	29	160	200
26	37	30	200	250
27	38	31	250	320