

IHAGEE CAMERA WORKS AG i. V.

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Provisional

INSTRUCTIONS FOR USE

for our new equipment

Ihagee-Flash Gun

(new design)



How to use the Ihagee Flash Gun

The Ihagee Flash Gun was constructed for the practical use of flashbulbs and is suitable for all models of the EXAKTA Varex, the Kine-Exakta, the EXA, and other cameras, too, provided with a corresponding flash contact.

In order to avoid losses and wrong results, we recommend earnestly to read through the instructions for use attentively.

Please, when using the Ihagee Flash Gun, pay special attention above all to the following two hints:

1. Insert a flashbulb into the Flash Gun, if only the camera shutter is tensioned!
2. Never connect the Flash Gun to the electric supply network!



A. Preparation for use of the Ihagee Flash Gun

The Ihagee Flash Gun is provided with a built-in Capacitor Ignition. That is to say: With the aid of an audio frequency battery of 22.5 V a condenser is loaded, which, when released, supplies a sufficiently intensive current-stroke for igniting the flashbulb.

First the body of the Flash Gun, therefore, must be provided with an audio-frequency battery of 22.5 V. Please, take this body into your left hand, grasp with your right hand the body-lid on the back at the fluted bulgings, shifting it in the direction of the red press-button switch as far as the body-lid can be lifted off, first below and then above. The backing paper is removed from the contact spots of the battery. Now you can press the battery between the contact springs of the body-lid. Hereby you must pay attention to exact poling: negative pole (-) to the test-lamp, positive pole (+) to the opposite side



(see also + and - signs in the lid). Now the body-lid can be inserted into the body, first above, and pressed again below, too, after soft pressure in direction of the red press-button switch, that it may spring back into the primary position. Thus the Flash Gun is electrically prepared for operating. That is confirmed by short flashing up of the test-lamp, when you put in action the red press-button switch. Hereby, however, no flashbulb must be in the Flash Gun.

Now, please, put the reflector folded up on the body: Quite simply stick the metal ring into the round opening of the body, and that with the two cams into the guide grooves. By short turn to the left the reflector can be stopped. On the curled button the topmost sector-disk of the reflector is taken in a circle to the left or to the right, thus opening the reflector.

It is no disadvantage already now to practice inserting and extracting the



flashbulbs. Thereto employ, if possible, a flashbulb burnt-off. If for exercising there is an unfinished flashbulb only, avoid please, setting in action the press-button switch: when pressing on this red button, the flash is fired independent of the synchronisation with the camera shutter. Hold the body with your right hand so that you can press along with your thumb the self-centering lamp-holder knob in the slit. As you will see, the self-centering lamp-holder opens in the round aperture, that you may take a look at the springy contact-plate. Now, every flashbulb must be inserted so that its bottom-contact touches to the contact-plate pressing it a little inwards. When the pressure on the button diminishes, the centering lamp-holder shuts, thus holding fast the flashbulbs. After all it is suitable for all flashbulbs of any size and any base type. Is the flashbulb to be removed, a pressure on the button suffices and, as a rule, the flash burnt off is ejected automatically. In such a case it may be caught with your hand.



Flash Gun and camera are connected by the Camera-rail to the two fixing screws. In order to fix the rail to the camera, one chooses that fixing screw the thread of which corresponds to that of the tripod. The form of the rail guarantees that the newest models, too, of the EXAKTA Varex can be fixed free from blur. For the former models of the EXAKTA Varex, the Kine-Exakta, the EXA, and cameras of other origin the last thread-hole but one is used best, that is the last before the bend of the rail. The screw must be turned or only stuck through the hole and screwed in the tripod thread of the camera. The second screw serves for fixing the Flash Gun to the other end of the rail, and for this purpose the body has two tripod-threads, that is to say: a continental thread ($3/8''$) and an English one ($1/4''$).

Several cameras of other origin are provided with a special sticking-shoe. At these cameras the body of the Ihagee Flash Gun can be

fixed to directly, without use of the camera-rail: the special sticking-foot available as a supplement is screwed into the larger tripod-thread of the body, and thus the sticking-foot can be put to the sticking shoe of the cameras mentioned. Finally you must make the electric connexion between Flash Gun and camera, that is, put the synchro-cable, on the one hand, to the flash-contact of the camera and, on the other hand, to the contact of the Flash Gun marked with the camera-symbol. Which flash contact you choose for the EXAKTA Varex and the EXA, that depends on the flashbulb, about which you read particulars in the following section B : "The choice of the flashbulb".

For the contact to the latest models of the EXAKTA Varex and the EXA as well as to many camera models of other origin the synchro-cable is deliverable with a standardized angle-plug (according to DIN 19003). For the former models with



one or two flashbulb-contacts a special cable is necessary.

B. The choice of the flashbulb

The marketable flashbulbs differ not only by their light-output, but also by their different ignition- and lighting times. By the ignition-time one means the ignition-delay inevitable at flashbulbs, that is the time from letting go the contact until the real flashing up. As lighting time one designates the flash duration. Both these indications are often made in milliseconds (1 millisecond = 1/1000 of a second, 5 milliseconds = 1/200 of a second) and are important for the choice of the flashbulb, the synchro-flash contact (M, F or X, respectively V or E of the former models), and the suitable shutter-setting.

It is known that at the EXAKTA Varex IIa there are three and at the EXA two synchro-flash contacts: the flash contact X for "open-flash" work with flashtubes



and flashbulbs, the contacts M and F for use of flashbulbs with short shutter speeds of the camera.

The M - c o n t a c t closes the circuit about 15 milliseconds before the first shutter-blind opens the shutter, thus having regard to the ignition-delay known at the flashbulbs. In that way the lighting up of certain flashes coincides with the running down of the shutter. One uses this contact for the synchronisation of flashbulbs that have a longer flash duration (e.g. Philips PF 45). With this synchronisation short exposure times are possible up to $1/1000$ of a second (see Table a).

The F - c o n t a c t closes the circuit about 11 milliseconds, before the shutter has fully opened. This contact, too, has regard to an ignition-delay and is intended for small short-burning flashbulbs (e.g. Osram XM 1, XM 5 and Philips PF 1, PF 5, and RFT F 19). The shutter is set at $1/25$ of a second (see Table b).

With the X - contact all the flashbulbs with shutter-setting of $1/5$ of a second and more can be fired. In this case the exposure time is designed by the flash duration of the flashbulbs (s. Table c).

Besides, the X-contact is intended for the synchronisation of the flashtubes (further details see Instructions for use of EXAKTA Varex IIa and EXA).

The following Tables give information about the use of the different flashbulbs with the flash contacts of the EXAKTA Varex IIa.

For special work, when using the X-contact with a flashtube device, one flashbulb at the M- or F-contact can be fired.

Should there be misfires with the different flashbulbs (e.g. by bad base contact or so) you must remove the flashbulb out of the Flash Gun after running down of the shutter. Only after having tensioned the shutter again, another flashbulb may



be inserted, as, in general, every change of the bulb in the Flash Gun must be made, if only the shutter is tensioned.

For the EXAKTA Varex and the Kine-Exakta provided with X-contact (EXA see page 16) there are two different sorts of flash photos:

- a) One flashes into the fully opened camera shutter. That is the case with the X- and F-synchronisation and is named "Open-flash technique", cable-contact at X (formerly E) and F.
- b) One makes run down the whole shutter within the flash duration. That is named "full synchronisation", cable-contact to M (formerly V).

In case a, viz at the "Open-flash technique", you must take in consideration at the X-contact, that during the shutter exposure time the day- or artificial light apart from the flash, too, can act to the film. You must, therefore, pay attention that the object does not move too much, because otherwise



inconvenient ghost images can rise. At the F-contact, however, that is not too important, as the shutter must be set at $1/25$ of a second so that spray light may occur only, when taking luminous objects moving at high speed.

In case b, that is at the full synchronisation, only the shutter exposure time really used is decisive for the speed of the object, for one extracts from the full flash duration nothing but a more or less small fraction. Thus, in such a case, this working method is appropriate for objects with greatest speed, too, (sport, artistics, etc.) and spray light is of no importance.

The "guide numbers" indicated in the following Tables are indispensable for the right exposure of the flash photos. Every flash furnishes an unchangeable amount of light quite determinated which one must adapt to two important taking dates: the choice of the "distance between flash and object" and the "diaphragm aperture of



the lens". The guide number is the product of both these factors, that is "distance from flash to object in meters"x"diaphragm number". The distance given, one gets the necessary diaphragm by dividing guide number by distance.

$$\text{Thus: Diaphragm} = \frac{\text{guide number}}{\text{Distance}}$$

Example:

Guide number 32, distance 4 m, thus diaphragm = $32 : 4 = 8$.

Diaphragm 8, therefore, is necessary. Vice versa, the diaphragm fixed, one gets the distance by dividing guide number by diaphragm.

Example:

Guide number 32, diaphragm 8, distance = $32 : 8 = 4$, thus distance of the flash from the object = 4 m.



Tables for the three flash-contacts of the
EXAKTA Varex IIa

a) Full synchronisation: Cable connected to the M-contact.

Shutter-setting = real exposure time	Philips-Photoflux-Flashbulbs	
	PF 24 guide number for	PF 45 17° DIN
1/1000	5	7
1/500	7	10
1/250	10	15
1/100	15	20
1/50	--	25

The horizontal dash means that no full synchronisation is possible.

b) Open-Flash Technique: Connect cable to the F-contact and set shutter on 1/25 sec.! Applicable with the small short-burning flashbulbs.

Shutter-setting = not exposure time	Type	Osram-Vakublitz-Bulbs	
		guide number 17° DIN	Exposure time (~ flash dura- tion)
1/25 sec.	XM 1	25	1/100
	XM 5	40	1/80



Shutter-setting = not exposure time	Philips-Photoflux-Bulbs		
	Type	guide number	Exposure time (~flash dura- tion)
		17° DIN	

1/25 sec.	PF 1	25	1/100
	PF 5	40	1/80

Shutter-setting = not exposure time	RFT-Photo-Flashbulbs		
	Type	guide number	Exposure time (~flash dura- tion)
		17° DIN	

1/25 sec.	F 19	18	1/200
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c) Open-Flash Technique: Connect cable to the X-contact and set shutter on 1/5 sec. or longer! Applicable with all the marketable flashbulbs. For the German flashbulbs following further dates:

Shutter-setting = not exposure time	Osram-Vakublitz-Bulbs		
	Type	guide number	Exposure time (~flash dura- tion)
		17° DIN	

1/5 sec.	XM 1	25	1/100
and longer	XM 5	40	1/80

Shutter-setting = not exposure time	Philips-Photoflux-Bulbs		
	Type	guide number 17° DIN	Exposure time (~flash duration)
1/5 sec. and longer	PF 1	25	1/100
	PF 5	40	1/80
	PF 24	25	1/40
	PF 45	30	1/20
	PF 60	55	1/50
	PF 100	80	1/45

Shutter-setting = not exposure time	RFT-Photo-Flashbulbs		
	Type	guide number 17° DIN	Exposure time (~flash duration)
1/5 sec. and longer	F 19	18	1/200
	F 32	21	1/125
	F 40	35	1/100
	DF 40	35	1/50

The guide numbers in the Tables are valid for black-and white photos. For films with a sensibility 3° DIN higher the guide number increases by a third, at films with a sensibility 3° DIN lower the guide number is to be indicated by a third lower.



For the EXA the following hints are valid: The short-burning flashbulbs (e.g. Osram XM 1, XM 5, Philips PF 1, PF 5, and the RFT-photoflash F 19) can be employed with F-synchronisation and shutter setting on 1/25 of a second. One uses all other flashbulbs in accordance with the "Open-flash technique" with X-synchronisation and shutter-setting on B. It is recommendable - at least at the longer burning flashes - to screw EXA and Flash Gun on a tripod. Take the luminous figures and guide numbers from the Table b and c.

For Cameras of other origin the instruction for use will give information about the choice of suitable flashbulbs, above all, when "full synchronisation" is possible. But most shutters work with simple synchronisation only, similarly to the X-contact of the EXAKTA Varex: the circuit, therefore, is closed, when the shutter is fully opened. As to between-the-lens shutters one chooses that shutter-speed which is somewhat longer



than ignition-time and lighting-time of the flash combined.

Example: ignition-time 12, lighting-time 18 milliseconds = 30 milliseconds (= 1/33 of a second), thus shutter-setting not shorter than 1/33 sec. Right shutter-exposure time, therefore, 1/25 or 1/10 of a second.

C. Practical work with the Ihagee Flash Gun

Surely, the advantages of firing the flashbulb working without flames, smoke, smell, and considerable noise are known enough. As to the mere technical taking the flashbulbs can be used in most taking fields with great success, for the light-output of certain flashbulbs suffices even for great groups of persons, technical pictures, architectures, interiors, even for sport-shots and stage-pictures with shortest shutter speeds. Flashbulbs are often used, too, for assisting day- and artificial light, indeed at cloudy weather during day-time they can replace even the effect of direct sunlight. When taking countre-jour pictures,



flashbulbs clarify undesirable shadows, and at photos of landscapes and architectures at night-time these modern light-sources can obtain fully new interesting light effects. In order to adapt to the sensibility of the different colour-films, there are flashbulbs with blue ends for day-light films and flashbulbs with yellow ends for artificial-light films. One can use these films alone or as supplements for the occasionally possible lighting.

Please, normally adjust the body with the reflector so that the object gets the full light of the flashbulb. As a rule, the lighting axis and the taking one are to intersect about near the object. The larger the distance between both these axes, that is to say between Flash Gun and lens, the more effective is the shadow-cast at the object. The camera-rail, therefore, can be extended by the extension-rail deliverable as a supplement, and then an advantageous shadow-cast rises, above all, when taking



upright pictures. With one of the two fixing screws belonging to the extension-rail you can connect the camera-rail and the extension-rail, in this way obtaining a distance of 35 cm between flash and lens.

Moreover, the two fixing screws of the basic equipment of the Ihagee Flash Gun are provided with interior thread, too: camera and Flash Gun, therefore, can be screwed upon a tripod. Above all that is desirable at pictures with self-timer and with "Open flash technique" (shutter-speed $1/5$ of a sec. and more). If it should be necessary on account of the equilibrium, it goes without saying that one of the thread hobs, too, of the camera-rail can serve for being screwed on the tripod. And if you possess the extension-rail, it is even possible to place camera and Flash Gun on any plane base (e.g. on a table, a wall, a chair, a window-sill, a step-ladder etc.). With its $1/4$ "-fixing screw (with thinner thread-bolt) one screws the extension-rail on the exterior tight thread-hole ($1/4$ ") of the



camera-rail so that camera-rail and extension-rail form a right angle or a plane one, thus obtaining a sure tribasic support. When using the EXAKTA Varex with broad tripod socket, the extension-rail is screwed on the camera-rail from below, at all other models from above. In the latter case the fixing screw is screwed with its thicker thread-bolt (3/8") into the extension-rail from below, so far only that a completely horizontal stand of the total unit may arise. Thereby, however, care must be always taken that the whole unit, e.g. when placing it on a table, stands directly on the table border, that the full angle of field of the lens may be utilized and the light-output of the flash may sustain no considerable loss.

Please, let us call once more your attention to the fact that flashbulbs may be inserted into the EXAKTA Varex, Kine-Exakta, or EXA, when only the shutter is tensioned. When pressing the shutter release knob of the camera, the lightning



flashes up at the same time as the shutter runs down. After every flash photo the shutter must be tensioned again at once. Immediately after flashing finished flash-bulbs are very hot still. Guard, therefore, your hand, when ejecting the flash, by a pocket-handkerchief, if necessary. At all events let us repeat that the Ihagee Flash Gun must never be connected to the supply network.

Should you wish, when illuminating interiors etc. at night, to fire the flash independent of the synchronisation with the camera shutter, set in action the red press-button switch. If in special cases you wish to intensify the flash-light, further flashes synchronised can be employed, too: for that the Ihagee Flash Gun has a second contact for an additional Flash Gun. Such an additional Flash Gun consisting of body, reflector, screw, cable 35 cm of length with two equal couplings for the contacts of the Ihagee Flash Gun, is delivered separately.



Hanging downwards, it can be placed directly on the camera-rail, if the whole unit shall be transportable. Moreover, when using the extension-rail, two additional Flash Guns can also be used without much ado. Every body is provided, as described, with an audio frequency battery of 22.5 V, and the connexion between the single Flash Gun is done by the cable of 35 cm length, belonging to each additional Flash Gun. With the first body it is fastened on the second extension cord - that is to say opposite the contact of the camera - and with the next body on the contact marked with the camera-symbol. In the same way the connexion from the second to the third Flash Gun would be made. But, besides, an additional cable, 1.50 m of length, can be delivered, which renders possible to add the additional flash some distance from the camera as side-, back-, top-, or countre-your light. For this purpose you can make hold the additional Flash Gun quite simply by a helper, or screw it on a tripod with its tripod female screw.



The small synchro cable, 35 cm of length, as it is delivered with the basic equipment of the Ihagee Flash Gun, is also obtainable separately, and that, if desired, with the one-piece plug or the normalized angle-plug according to DIN 19003.