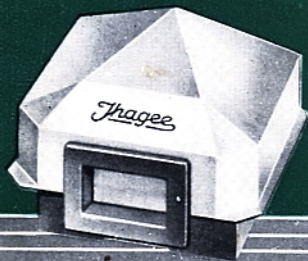


# EXA

1 × 1½ in.  
24 × 36 mm

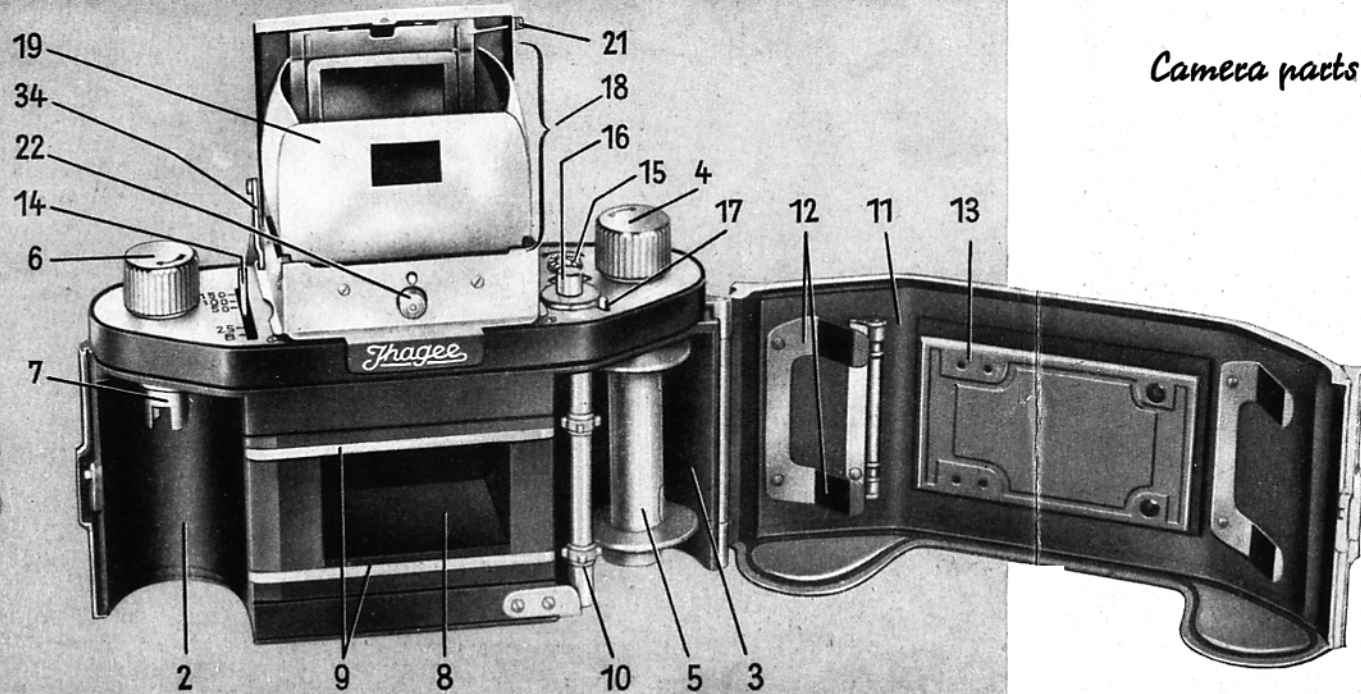


Please, open these two pages fully so that the two tables are visible and you can refer to them while reading the text. All the parts of the EXA that are important for operating the camera bear the same numbers on the tables and in the text.

HOW TO USE THE

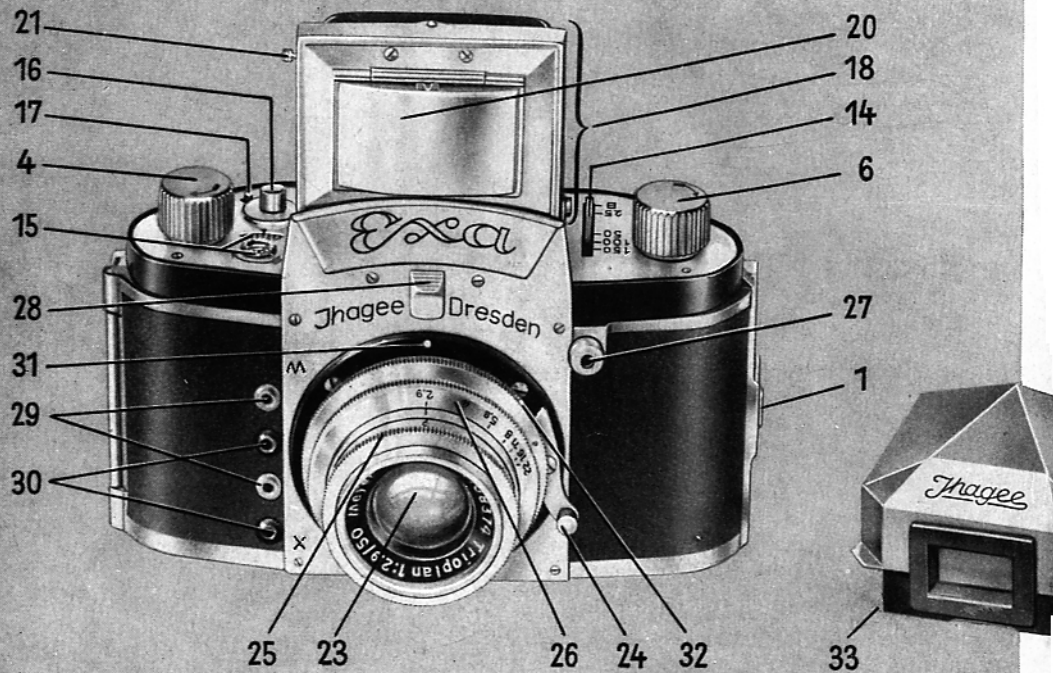
**EXA**

(1½ × 1 in. = 24 × 36 mm.)



*Camera parts:*

- 1 = camera back catch
- 2 = film chamber for feeder cartridge (unexposed film)
- 3 = film chamber for take-up spool or take-up cassette
- 4 = film transport knob
- 5 = take-up spool for exposed film
- 6 = film rewinding knob
- 7 = pivot of film rewinding knob No. 6
- 8 = image frame
- 9 = film guide
- 10 = film transport sprockets
- 11 = hinged camera back
- 12 = springs holding cartridge in position
- 13 = film pressure plate
- 14 = shutter speed lever
- 15 = exposure counter
- 16 = rewind button (Push button before rewinding film!)
- 17 = reversing lever



- 18 = reflex finder-hood
- 19 = back wall of finder-hood with frame-finder rear sight
- 20 = protecting cover for hinged focusing magnifier
- 21 = button for folding magnifier up and down
- 22 = finder-hood catch
- 23 = lens
- 24 = lens bayonet catch
- 25 = distance ring (for front cell focusing lenses)
- 26 = stop ring
- 27 = shutter release knob
- 28 = milled knob for interchange of finder-hood and Special Prism
- 29 = "M" flash-bulb contact sockets (upper pair, nickel-plated)
- 30 = "X" electronic flash contact sockets (lower pair, black enamelled)
- 31 = red mark on camera
- 32 = red mark on lens
- 33 = Special Prism (delivered as accessory)
- 34 = lever (locking shutter release when finder hood is closed)

## The EXA (1 1/2 x 1 in.)

is yours now and we wish you good luck with it. The camera will give you much pleasure, for it is handy, easy to operate, and ready for use at a moment's notice. So it is well suited to be your constant companion.

We would advise you, however, to read this instruction booklet attentively before setting out to make photographs with your new camera. Having acquired sufficient experience in correctly manipulating all parts that eventually lead to taking pictures, you will obtain better results in every case and avoid damaging the camera mechanism.

You are, no doubt, well aware of the unique advantages of the EXA which is a single-lens reflex camera. In its interior there is a small mirror which reflects the image taken by the lens on to the ground-glass focusing screen. For that reason the future picture is always strictly the same as the reflex image. This image permits critical focusing and composition of the picture on the ground-glass screen to an unexcelled degree of precision.

We hope and wish you will obtain excellent results with the EXA and are at your disposal for all questions concerning your camera.



DRESDEN A 16 (Germany)

## Before loading the camera

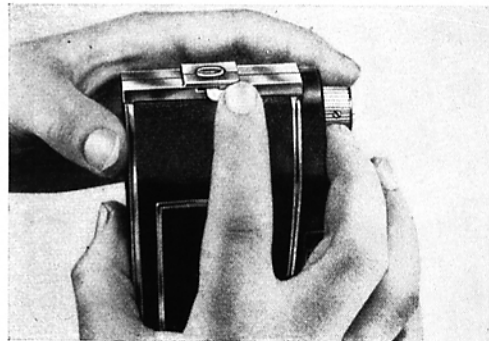
it is advisable to get thoroughly acquainted with the camera without film. To begin with, one should train oneself to master all the movements: to release the shutter, to open and shut the camera, to use the finder-hood, to compose and focus the picture, always handling the camera as though it were loaded with film. It is only when a complete mastery of the camera has been achieved that it should be loaded with film. To start with, the use of an old exposed film is recommended.

### A. How to open and shut the camera back

Press camera back catch (1) to the left (Ill.3), and open hinged back (11) completely. When closing the camera, care must be taken that the camera back engages correctly in the groove on the body of the camera. Press back (11) lightly towards camera body until the catch (1) snaps into position.

### B. How to open and shut the finder-hood

When the catch (22) is pressed inward, the finder-hood automatically opens into working position (Ill.4.). A detailed description of the various possibilities which it offers for composition and observation of the image, will be found in section E of this booklet. For the present let us stress the most important fact



only: The ground-glass image is always strictly the same as the future photograph. That is the reason why the ground-class image is the decisive factor for all operations which lead to taking a picture: composition, choice of frame, critical focusing, stopping down. The degree of brightness of the ground-class image even permits of determining the exposure time fairly accurately. — If there is no image visible in the finder-hood, wind the film transport knob (4) once in the direction of the arrow as far as it will go.

Before shutting the finder-hood make sure that the focusing magnifier is in its neutral (vertical) position (Section E). Then, beginning at either side, fold down the side walls, the back wall (19), and finally the front part until it snaps into position (III.5).

As long as the finder-hood (18) is closed it is impossible to release the shutter when pressing the shutter release knob (27) (Locking device preventing accidental exposures).

### C. Shutter and film transport

The EXA camera possesses a very simple and sturdy shutter. In order to observe how it works, open the back of the unloaded camera or remove the lens (see Section D). With the release of the shutter for exposure the mirror swings upwards into a position parallel with the focusing screen so that no stray light can get into the camera. Therefore no image is visible when a picture has been taken and the shutter has not been wound up again.

The shutter speeds are set by means of the lever (14): The mark on the lever must come to lie against the mark of the speed required (III. 6). The figures engraved on the camera top plate indicate fractions of seconds, so that e. g. 25 stands for  $\frac{1}{25}$  sec. Release by pressing the shutter release knob (27) gently (III. 7). A cable release can be screwed into the release button screw thread. If the lever (14) is set to "B", the shutter will open upon pressure on the release knob (27) and remain so as long as the knob (27) is pressed. It will close as soon as the pressure ceases. For "T" setting (after pressure on the release knob (27) the shutter will remain open, until a second pressure will close it again) a special cable release is available. Long exposure times can be easily

measured by counting the seconds or checked by a watch. In this case it is absolutely necessary to use a tripod (tripod bush in camera base) or to place the camera on a stable support (a table, a wall, etc.). Hand-held instantaneous exposures, however, are unconditionally possible. After exposure wind the film transport knob (4) in the direction of the arrow as far as it will go. With this action the shutter is wound up, the film advanced one frame, the mirror swung into focusing position (the reflex image is visible again), and the exposure counter (15) advanced one mark.

#### D. How to focus the EXA

The lens (23) of the EXA is interchangeable, but the camera should always be kept with the lens or it will be spoilt by dust. The front element of the lens should be protected by a lens

cover which must be taken off before making an exposure. To remove the lens press the lens catch (24) lightly towards the lens (Ill. 8) and, holding the lens by the back ring, turn it to the left, until the red mark on the camera (31) comes to lie opposite the red dot on the lens (32), and the lens can be lifted from the camera body. — To insert a lens this procedure is reversed: Insert lens (23) into the bayonet mount so that the red mark on the lens (31) comes to lie against the red mark on the camera body (32). Now the lens is turned to the

Ill. 7

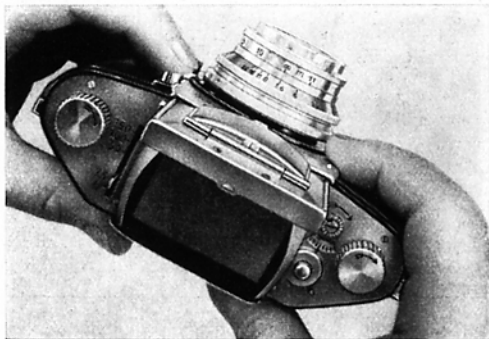
right until it is heard to slip into the catch (24) on the camera.

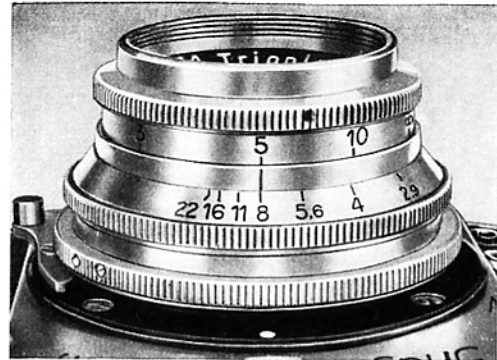
The best way to arrive at critical sharpness is to turn the distance ring (25) to and fro until the main subject appears absolutely sharp on the focusing screen in the finderhood. The figure on the distance ring (25) that comes to lie opposite the red mark, indicates to which distance the lens is set (lens-to-subject distance) (Ill. 9).

The diaphragm is adjusted by turning the knurled stop ring (26) until the stop required is opposite the red mark. The figures on the ring indicate the effective lens opening, i. e.

low figures (2.9, 4, etc.) = large aperture  
= short exposure time  
high figures (22, 16, etc.) = small aperture  
= long exposure time

When increasing (or decreasing) the lens aperture, shorter (or longer) exposure time is required, namely for one stop





III. 9

double (or half) the normal exposure time; e. g. if the normal exposure is 1/50 sec. for an aperture of f/8, it will be 1/25 sec. for f/11 or 1/100 sec. for f/5.6.

A reduction of lens aperture (higher figures) produces an increase in depth of field, that is to say, also points some distance in front of and behind the main subject focused at appear to be sharp. For further details see the following table. For instance: lens set at 5 m, stop 8: extent of depth of field from 3.02 m to 15.08 m, but lens set at 5 m, stop 4: extent of depth of field from 3.76 m to 7.47 m.

III. 10

### Extent of depth of field (for 50 mm lenses)

(All distances between object to be photographed and image plane are indicated in m)

Aperture	Lens focusing ring set at								
	$\infty$	10	5	3.3	2.5	2.7	1.7	1.4	1.2
f/2.9	20.93 $\infty$	6.85 19.05	4.06 6.50	2.87 3.88	2.25 2.81	1.84 2.19	1.59 1.84	1.32 1.48	1.14 1.26
f/4	14.65 $\infty$	6.02 31.36	3.76 7.47	2.72 4.20	2.16 2.97	1.78 2.28	1.54 1.90	1.29 1.53	1.12 1.29
f/5.6	10.50 $\infty$	5.20 $\infty$	3.42 9.32	2.55 4.72	2.05 3.22	1.71 2.43	1.49 1.99	1.25 1.58	1.09 1.33
f/8	7.37 $\infty$	4.30 $\infty$	3.02 15.08	2.32 5.81	1.90 3.68	1.60 2.67	1.41 2.15	1.20 1.68	1.06 1.40
f/11	5.38 $\infty$	3.55 $\infty$	2.64 66.00	2.09 8.20	1.75 4.50	1.50 3.07	1.33 2.40	1.14 1.82	1.01 1.49
f/16	3.72 $\infty$	2.76 $\infty$	2.18 $\infty$	1.80 26.70	1.54 7.17	1.35 4.08	1.21 2.96	1.06 2.13	0.94 1.67
f/22	2.74 $\infty$	2.19 $\infty$	1.82 $\infty$	1.55 $\infty$	1.36 26.15	1.20 6.86	1.10 4.17	0.97 2.66	0.88 1.98

Permissible confusion (diameter of circle of confusion) = diagonal of negative: 1000 = 0.043 mm

Notice: The distances given in the above chart have been obtained by calculation; for the purposes of practical work they can be rounded off within reasonable limits.



The above description applies to front cell focusing lenses. If lenses with helical focusing mounts are used in the EXA, the procedure is the same in principle except that these lenses have the distance ring (25) behind the front stop ring (26) (Ill. 10). The depth of field scale engraved in the back ring of the lens mount tells practically the same as the above table. The aperture figures diverge from either side of the red index mark. The index lines on the left hand side indicate the distance in meters from which sufficient sharpness can be expected, those on the right hand side the distance in meters up to which sharpness can be expected (= range of depth of field). The respective distances are opposite the figures of the aperture chosen. If the aperture figure on the right hand side comes to lie to the right of the infinity sign ( $\infty$ ) sharpness will extend to infinity. Taking Illustration 10 as an example: lens set at 5 m., stop 8: range of sharpness from about 3 m. to nearly 15 m.

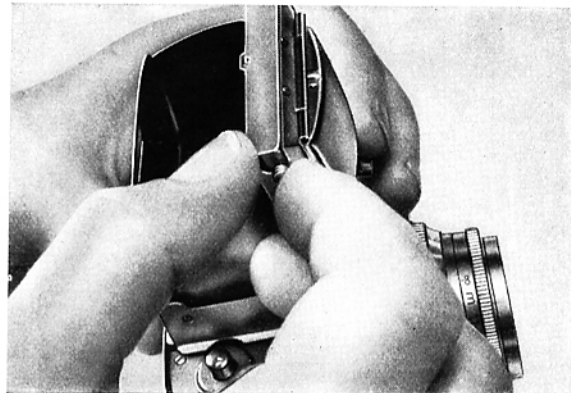
### **E. How to use and exchange the finder-hood**

A bright ground-glass image is visible in the EXA finder-hood. It is magnified by the ground-glass (a plano-convex lens) to such a degree that accurate focusing is possible. For more critical focusing the built-in magnifier is employed: To bring it into position move the button (21) upwards along the guide in the finder-hood front wall (Ill. 11) while holding the index finger along top of finder-hood front wall. To bring the magnifier back to its neutral (vertical) position move button (21) downwards again.

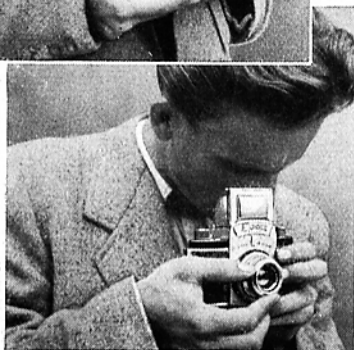
The sharp outline of the ground-glass image facilitates composition and determination of picture frame. While turning the stop ring (26) the varying extent of depth of field can be observed. Focusing should always be done at full aperture and the lens stopped down afterwards.

Normally the camera is held at chest-level (Ill. 12). Illustration 13 shows how to hold it when the magnifier is used. When using the finder-hood vertical pictures can be taken at right angles to the object to be photographed, so that the photographer can work without being hindered or observed (Ill. 14). The Special Prism (see Section F) permits vertical pictures in direct vision and shows an upright and laterally correct image. Control of the ground-glass image is also possible when turning the camera upside down and looking up into the finder-hood (Ill. 16), as it is necessary when shooting from behind a wall, over a crowd, etc. In order to use the finder-hood (18) as a frame-finder (Ill. 15), bring magnifier into working position by moving button (21) upwards and swing protective cover (20) forward. The rectangular opening in the finder-hood back wall (19) serves as frame-finder rear sight (Ill. 17). The use of the frame-finder is particularly indicated for sports shots etc.

The EXA is a two-system camera: the finder-hood is interchangeable and can be replaced by a Special Prism (Ill. 21). This Special Prism (see also Ill. 1 and 2) is delivered separately as a camera accessory and specially designed for snapshots. The camera is raised to eye-



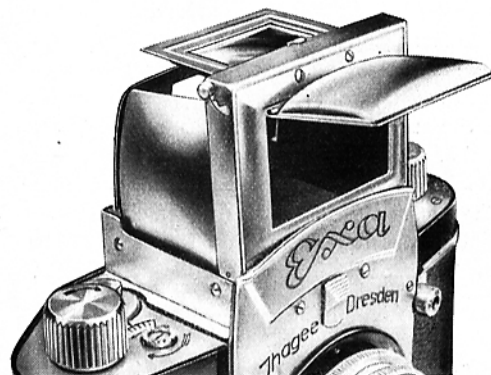
level position (III. 18) and the object to be photographed is viewed in direct vision through the finder. The Special Prism shows an upright and laterally correct reflex image which corresponds to nature in all details for both vertical and horizontal pictures (III. 19). The image in the Special Prism moves in the same direction as the object. Holding the camera at eye-level it is easy to follow moving subjects.



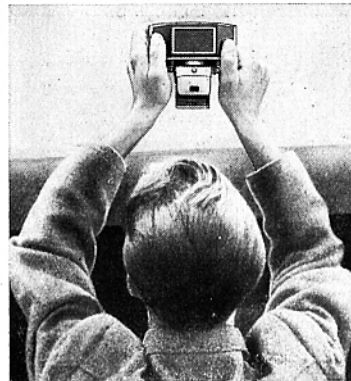
III. 14

### Interchange of finder-hood

Close finder-hood (18.) Push milled knob (28) downwards and lift closed finder-hood (18) from camera body (III.20). When replacing the finder-hood insert shutter locking lever (34, beside shutter speed lever) into the opening and press finder-hood towards camera base until it is heard to slip into the catch. The Special Prism (33) is inserted into and removed from the camera in exactly the same way as the finder-hood (18), but it does not possess a shutter locking lever (34). Take care not to insert finder-hood or Special

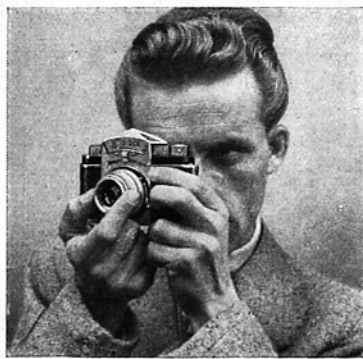


III. 15



III. 17





III. 18

Prism by force and make sure that they are inserted in a strictly perpendicular direction and not in a slanting position!

### F. How to load the EXA (Ill. page 16)

The EXA uses perforated miniature cine-film of 35 mm. width for 36 exposures  $1\frac{1}{2} \times 1$  in. (=  $24 \times 36$  mm.) on a strip of the usual length of 1.60 m. The film is supplied either in factory-filled cartridges or an empty cassette is loaded with refill film or with bulk film. For further details apply to your photo dealer. When using bulk film no special trimming of the film end is necessary except rounding off the angles.

Open camera back (see Section A). Place loaded cartridge or cassette into film chamber (2). Insert pivot (7) of rewinding knob (6) into hollow part of cartridge or cassette so that the groove of the pivot (7) engages in the bar of the centre spool. The cartridge or cassette must not be larger than the chamber (2) or else it will not be possible to shut the camera. Make sure that the free end of the film runs straight into the film track (9, film guide), the emulsion (mat) side of the film showing towards the lens. Take care not to pull more than 10 cm. of film from the cartridge or cassette. Remove take-up spool from film chamber (3) and push free



III. 19



III. 20

III. 21

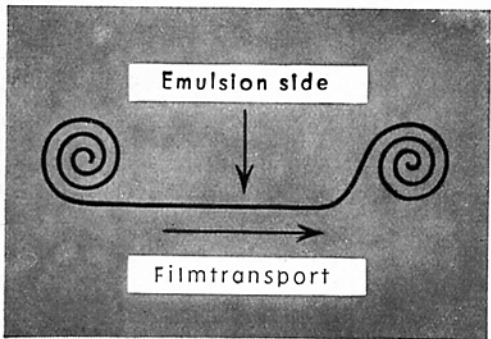


III. 22

end of film under spring of take-up spool until film keeps fast (III. 22). The film is wound into the take-up spool with the emulsion side outwards (See Diagramm 23). Insert take-up spool (5) again and make sure that the groove of the pivot of the film transport knob (4) engages in the bar of the centre spool. The strip of film must run perfectly straight from film track to film transport sprockets (10) and take-up spool (III. 24).

When closing camera back (11) make sure that cartridge, film, and spool are kept in their proper positions.

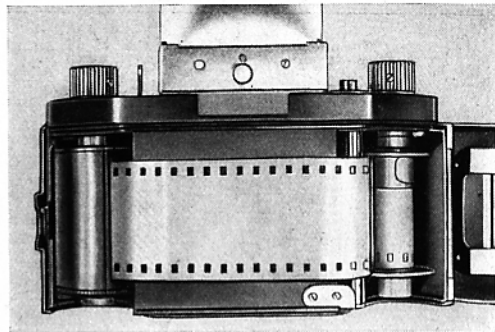
Now two "blind" exposures must be made: Open finder-hood (18) as described in Section B. If there is no image visible in the finder-hood, wind film transport knob (4) up to the stop in the direction of the arrow. Release by pressing shutter release knob (27): first "blind" exposure. Wind knob (4) again up to the stop and release again: second "blind" exposure. Wind film transport knob a third time



III. 23

as far as it will go: an unexposed piece of film is brought into position in the image frame (8). Now set picture counter (15) by turning the milled knob with the right hand forefinger in the direction of the arrow (III. 25) until No. 1 points to the picture counting mark, and the camera is ready for the first "real" exposure. If one does not wish to rewind the exposed film after 36 exposures into the cartridge, but to remove it from the camera in a second cartridge, the procedure is strictly the same as described above. Simply remove take-up spool (5) and replace it by a second cartridge.

Spare cartridges are on sale for this purpose, or used ones may be employed. In order to load the cassette, open it and fix film on its centre spool. Place it into film chamber and make sure that the pivot of the film transport knob (4) engages in the bar of the centre spool and that the film is wound up emulsion side outwards. Illustration 26 shows the path the film must take.



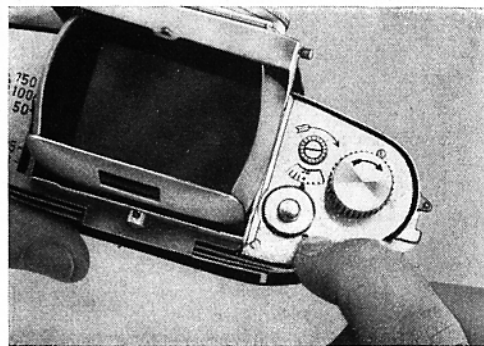
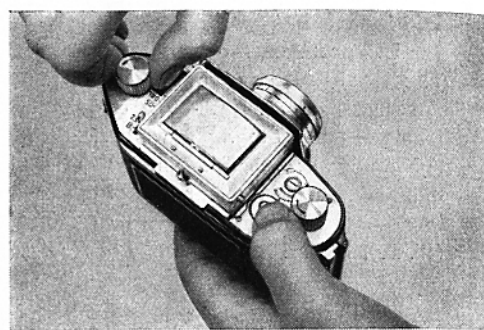
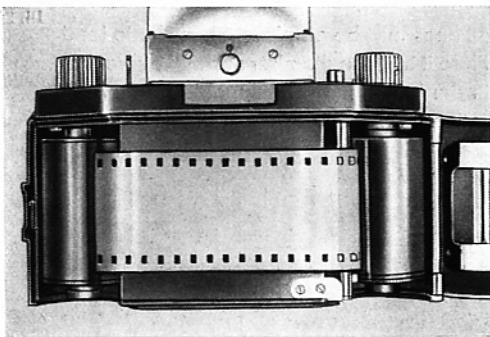
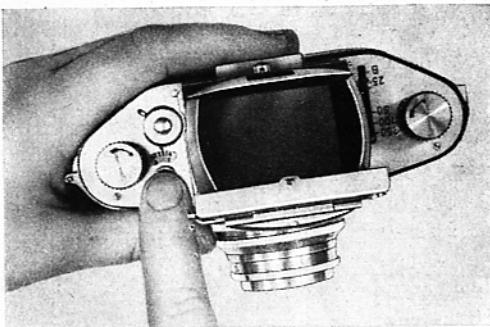
III. 24

**G. How to change films** (III. page 19)

If the film is wound on the take-up spool belonging to the camera, one length of film will take more than 36 exposures. Even if the picture counter points to "36" already, one or two more exposures can be made, until the film transport knob (4) cannot be wound any more. Now the film must be rewound in the following manner: Holding the camera in your left hand, press down the button (16) with the thumb, while the other hand turns the rewinding knob (6) in the direction of the arrow (III. 27). As long as the film is being rewind, the film transport knob (4) will rotate in an anti-clockwise direction. Once the film is rewind into the cartridge, the transport knob (4) will stop. Now open the camera (see Section A) and remove the cartridge or cassette containing the exposed film. To make the camera ready for loading and regular

film transport again, make sure that the small reversing lever (17) is pushed at once towards the camera back and springs back again (III. 28).

If, on the other hand, the film is wound into a cassette instead of into the take-up spool, only 36 exposures can be made. As soon as the counter (15) points to "36", make two more "blind" exposures, so that all 36 exposed frames will disappear into the cassette. Open camera back, take out feeder cartridge or cassette, open the latter and detach the film end from the centre spool. This done, remove the take-up cassette and wind up the rest of the film by turning the top of the centre spool. To make the camera ready for regular film transport again, make sure that the reversing lever (17) is pushed towards the camera back as described above.

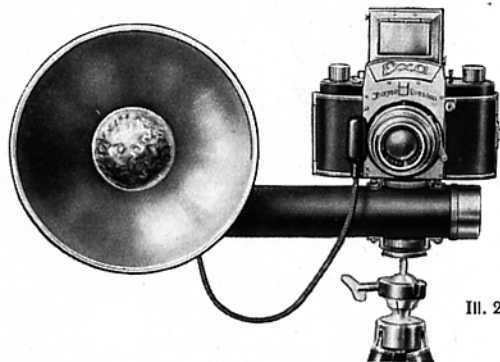


## H. Flashlight

The EXA possesses two pairs of syndronization sockets for flash photography.

The flash-bulb synchronization releases the flash-bulb at the precise moment when the shutter opens. Flash-bulbs of different light output are available for the various requirements of the photographic work. Although the various types of bulbs have different delay and lighting duration, the EXA flash syndronization allows in every case of using the type of bulb that will meet the requirements of the task in hand. Details concerning exposure times will be found in the EXAKTA Flashgun Instruction Booklet which is supplied with the EXAKTA Flashgun (III. 29). It consists of a battery case serving as handle, flash lamp with spring locking device

suitied for all sizes and all bases of flash-bulbs, reflector, and connecting cord which plugs into the upper pair of contact sockets (29). A special leaflet is available giving complete information about the EXAKTA Flashgun and EXAKTA Flashgun accessories. The EXAKTA Flashgun can be used with the EXA without restrictions. The electronic flash syndronization allows of using the EXA with the most up-to-date electronic flash units.



III. 29

(III. 30). The lower pair of contact sockets (30) which is syndronized for electronic flash, takes a special plug that is supplied by the manufacturers of electronic flash units for the EXAKTA and the EXA. Electronic flashes are released with shutter speeds of  $1/50$  sec. or more. The effective exposure time is  $1/5000$  sec. and therefore short enough to catch extreme speeds.

For more detailed pamphlets dealing with electronic flash units apply to specialized photo dealers or to flash equipment manufacturers.

III. 30



### I. Treatment and care of camera and lens

The camera with lens should always be kept in the everready case or wrapped in a piece of cloth that will not ravel out. All easily accessible parts should be kept clean and, if necessary, dusted with a soft brush. Above all the film track with the film guide (9), the film chambers (2 and 3), the camera back (11), the two springs (12), and the film pressure plate (13) should always be kept clean.

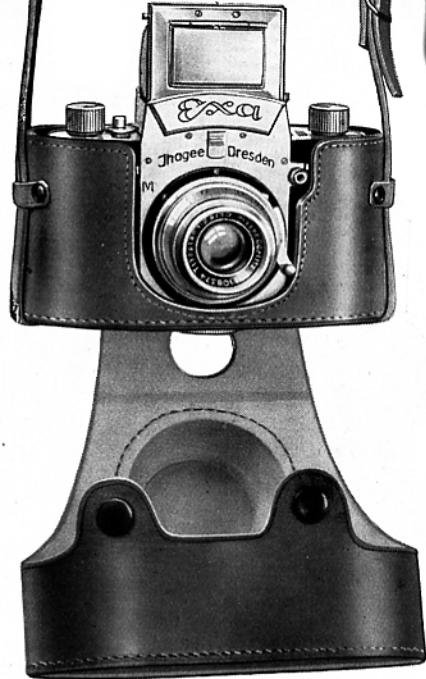
The reflex mirror of the EXA is surface-silvered and extremely liable to suffer from careless handling. A very soft hair-brush should be used when cleaning it at long intervals. The EXA must be carefully protected against dust, sand, etc. as well as against moisture in any form. Never touch the glass surfaces of the lens with the fingers! If necessary, the lens surfaces may be cleaned with a soft chamois leather or a piece of soft linen that will not ravel out. We would advise against tampering with the camera mechanism under any circumstances. Only expert mechanics being able to do repairs properly, our advice to you is to have repairs done in our works whenever that is possible.

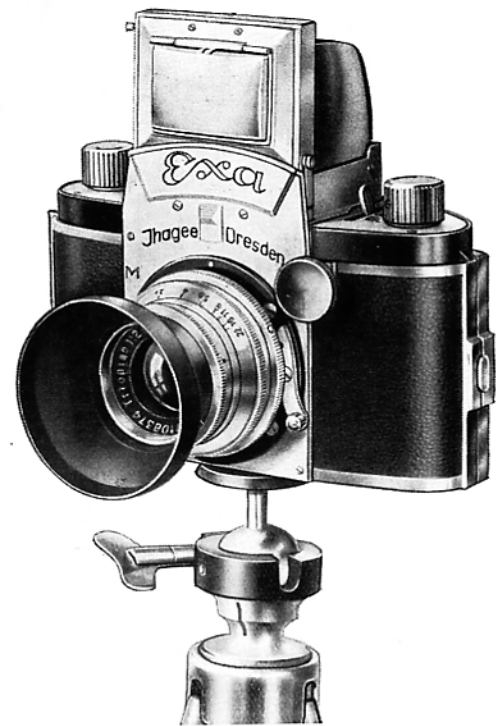
### K. EXA accessories

The EXA takes practically all EXAKIA accessories with the exception of the everready case of the EXAKTA. Special lenses with focal lengths exceeding 100 mm. cannot be used unconditionally in the EXA (vignette).

The EXA Everready Case has been designed to protect the camera without impairing its operative speed. All mechanical parts which are important for picture taking, can be operated even if the camera is in the case. A camera retaining screw with tripod socket secures the camera in the carrying case for safety (Ill. 31).

Ill. 31





### Other accessories:

The Giant Release Button (Ill. 32) is screwed into the shutter release knob (27) whose effective surface it increases. It allows of releasing the shutter with ease and security when wearing gloves or when the fingers are numb with cold.

**Colour Filters.** The purpose of filters in black-and-white photography is to render the colours of the object to be photographed in the grey tone values that correspond to the impression received by the human eye, as the film registers several colours otherwise than the human eye. All filters are corrective filters: they lighten objects of their own colour, while darkening those of their complementary colour; e. g. a yellow filter will produce tones of a lighter gray for the yellow areas, and darker gray tones for the blue areas of the object, for, to the human eye, yellow appears to be the lightest, and blue the darkest colour. Consequently, the blue sky will appear darker in the picture and the white clouds will offer a good contrast. The results obtained

when using filters, further depend upon the light conditions and the colour sensitivity of the film used. For more detailed information consult the technical literature.

The filters are pushed on to the lens front mount. The filter mounts will take, if required, a lens hood or a soft-focus disc. As the colour filters cut out certain parts of the light, an increase in exposure time is necessary when using them:

Yellow filters, light and medium	2—3 times the normal exposure time
Yellow filters, dark . . . . .	4—5 times the normal exposure time
Green filters, light . . . . .	3 times the normal exposure time
Green filters, dark . . . . .	4 times the normal exposure time
Blue filters, light . . . . .	3 times the normal exposure time
Red filters, light . . . . .	8 times the normal exposure time

The Lens Hood (Ill. 32) is far more important than is generally believed. It protects the lens not only against frontal stray light when photographing against the sun, but in every case against side stray light and glares, enhancing thereby the contrasts in the picture. The lens hood is pushed on to the lens front mount or the front ring of the filter mount.

**Soft-Focus Discs** are widely used to catch "atmosphere". Causing the bright areas to appear slightly over-emphasized towards the darker areas it is their purpose to register sunny atmosphere in a picture. The soft-focus discs are also pushed on to the lens front mount.



Form. 215 c/10/5307

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