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HASSELBLAD 500EL

INSTRUCTION BOOK

The Hasselblad 500 EL — your new camera which you have just unpacked — will help you to solve many picture-taking problems.

The best and most effective way to become familiar with this new camera, operated by an electrically-driven motor, is to study it carefully, its parts and its accessories, a little at a time. The more thoroughly you study its movements, and how the camera should be used, the quicker you can take advantage of all its features in your practical work.

You will also find, described in these instructions, a great many accessories of service to you. They help to make the Hasselblad 500 EL a camera useful in an extremely wide range of work, and can solve a great many different photographic problems. This camera is a part of the Hasselblad system and all the accessories available for the Hasselblad 500 C, with the exception of a very few, can also be used with the 500 EL.

We wish you much pleasure and success with your new camera.

Fig. 1

The Hasselblad 500 EL is an electric motor-driven $2\,^1/_4 \times 2\,^1/_4$ **SLR** camera. Like the world-famous Hasselblad **500 C**, the 500 EL is based on a series of interchangeable camera components – various types of film magazine, lenses and viewfinders can be attached to the camera body as required. Using various combinations of these components – with the possible addition of one or several special accessories – the Hasselblad 500 EL can be adapted to master practically every conceivable situation encountered in the majority of photographic applications.

The Hasselblad 500 EL is equipped with a reliable electric motor which gives the photographer greater freedom, permitting him to devote more time to actual photographic work – focusing and exposing – by relieving him of the mechanical task of advancing the film and cocking the shutter. The motor is powered by one or two rechargeable batteries which last for 1,000 and 2,000 exposures respectively on a single charge.

A number of advanced engineering features make the Hasselblad 500 EL a camera far above the ordinary. For example, you can take pictures with the aid of a timer, by radio or using remote release cords. You can also switch the camera to "automatic" and take a series of rapid-sequence shots. The rapid-exposure feature which was introduced on the 500 C to reduce camera reaction time is also incorporated in the Hasselblad 500 EL.

Power operation and facilities for remote release

broaden the nature photographer's scope and provide unexcelled opportunities of obtaining exclusive pictures. For industrial subjects, as well as in scientific laboratories, the 500 EL with timer, radio or remote release cords permits fast and simple operation whether set up for a programmed sequence of shots or in situations where an operator handles the camera in addition to other work tasks. In many other fields the 500 EL makes for faster and more effective photography: the portrait photographer need no longer be tied to his camera, on press assignments the camerman need never take his eye from the viewfinder . . .

Fig. 2

The Hasselblad 500 EL will add speed and dexterity to your camera technique, too.

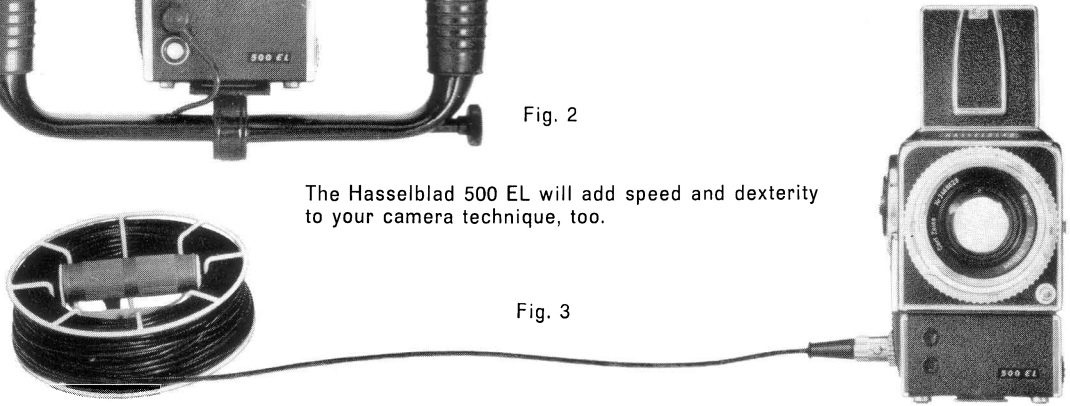


Fig. 3

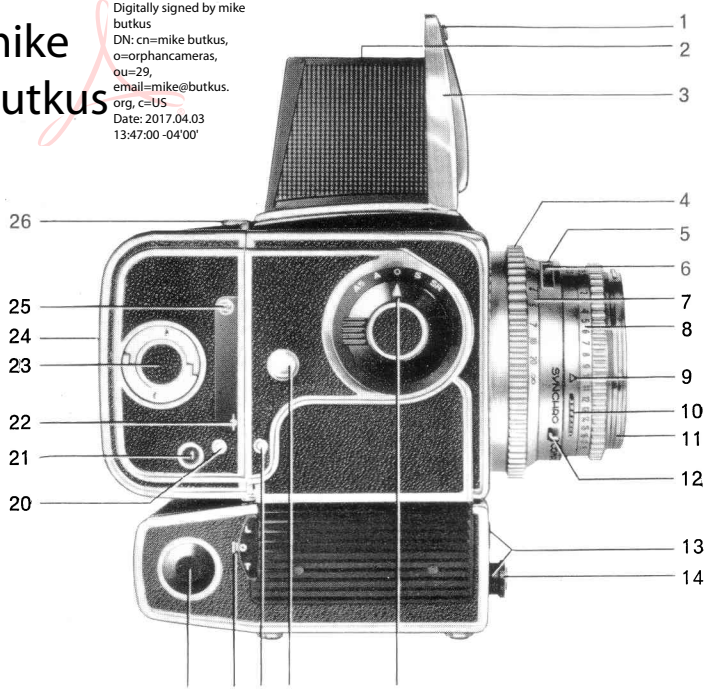


Fig. 4

1 Catch for focusing hood and magnifier
2 Fine-focusing magnifier
3 Interchangeable focusing hood
4 Focusing ring
5 Central index for setting shutter speed, diaphragm and distance
6 Movable depth-of-field indicators
7 Distance scale
8 Exposure value scale
9 Exposure value index
10 Exposure value catch
11 External and internal bayonet fittings for filter, sunshade, etc.
12 Diaphragm catch for checking depth of field on the groundglass
13 Front sockets
14 Release button
15 Selector
16 Carrying-strap button
17
18 Time lever
19 Side socket
20 Film signal
21 Exposure counter
22 Film plane marking

23 Loading key for film
24 Film window for visual film check
25 Magazine identification
26 Magazine catch
27 Diaphragm scale
28 Synchronizer contact for M and X
29 Lever for synchronization and self-timer
30 Catch for M X V
31 Speed scale
32 Setting ring for speed, diaphragm
33 Lens catch
34 Cable hook
35 Fitting for accessory items
36 Catch for battery compartment
37 Spool holder catch
38 Magazine slide

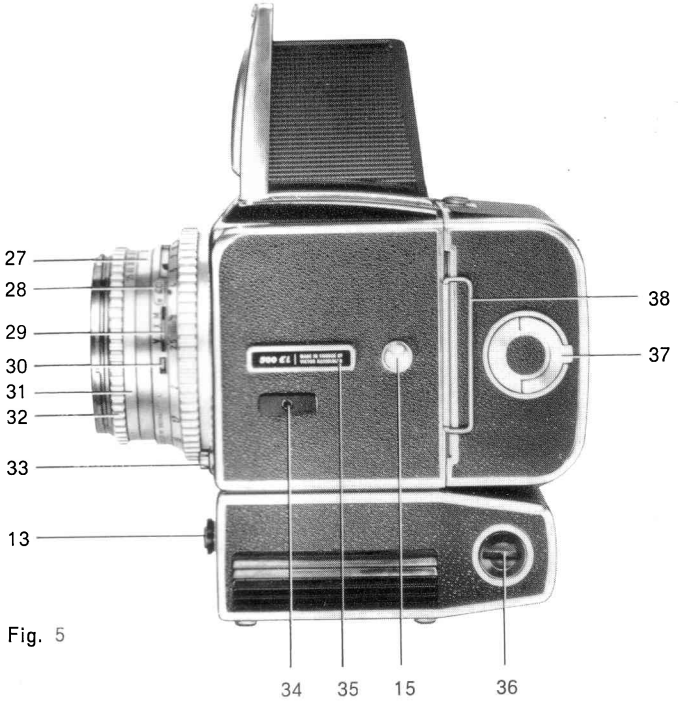


Fig. 5

METHODS OF EXPOSURE

With the Hasselblad 500 EL you can choose between five different ways of making an exposure. These are indicated on the selector scale and the various settings are as follows:

Fig. 6

O

Normal setting — after an exposure the film is advanced, the shutter is cocked and the mirror returns to its focusing position.

Fig. 7

S

Speed setting — reduces the reaction time of the camera (between release and exposure) to a minimum. This is accomplished through the following normal release sequence being carried out in advance when the selector is turned to 'S': the mirror is lifted, the auxiliary shutter is opened, and the diaphragm is stopped down to the pre-set aperture.

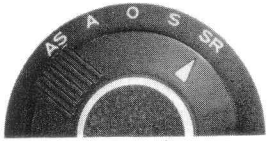


Fig. 8

SR

Speed Repeat setting — same as speed setting, except that the camera remains at this setting after exposure.

Fig. 9

A

Automatic setting — at this setting the camera continues to make exposure as long as an exposure signal is given (and the magazine exposure counter indicates that it contains unexposed film) by means of a release cord, for example. Time between each exposure approx. 1 sec. Avoid using the automatic setting for exposure times between 1 and 1/15 sec. See page 19.

Fig. 10

AS

Automatic Speed setting — same as automatic setting, except that the camera remains at the 'S' setting on cessation of the exposure signal.

Exposure times longer than 1 sec. (B, T)

For long exposure times – from 1 sec. to about 1 minute – expose film by means of the release button (or remotely by radio or cord) for the length of time required. Set the shutter at 'B'.

For long-duration exposures (over 1 minute) open the shutter by moving the time lever to 'T' (shutter set at 'B'). To close the shutter, return the time lever to the 'O' setting. This advances the film and cocks the shutter. The camera's release solenoid consumes no current when exposures are made with the time catch. To save the batteries, use the time lever for all exposures longer than 1 minute. The time lever is also used when making exposures with the self-timer. See also page 21.

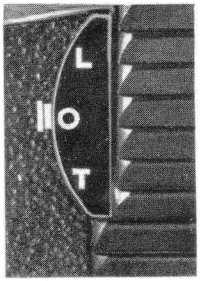


Fig. 11

ALTERNATIVE RELEASE METHODS

The Hasselblad 500 EL has three release sockets – two at the front and one at the side. Recharge cords can also be connected to the side socket. Alternative release connections are as follows:

Release button (Front socket)

Normal exposures with the Hasselblad 500 EL are made with the release button. This can be attached to either of the two front sockets.

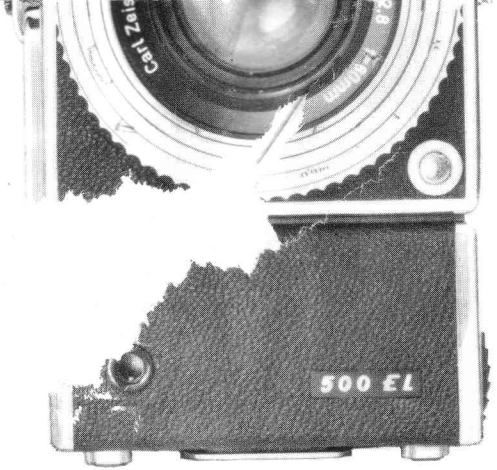


Fig. 12

Release cords (Front socket)

Cords measuring 1 foot, 10 or 20 feet (FK 30, FK 300, FK 600) can be connected to either of the front sockets. When using either of these cords, the release button need not be removed and will continue to function normally — exposures can then be made using either cord or button. Note that the camera cannot be released if the magazine film counter indicates that the last frame has been exposed or if the magazine slide has not been removed.

Fig. 13

Cords (Side socket)

The following standard cords may be connected to the camera's side socket:

SK 150 is a release cord measuring 5 feet in length.

Fig. 14

LK 50, LK 500 and DK 3000 are extension cords measuring 5, 16 and 100 feet in length respectively. Two to six DK 3000 may be joined together to make a longer release cord. However, a transistor amplifier (MOTTC) must be used if cord length exceeds 100 feet. Do not use two or more amplifiers at the same time. Power for the amplifier is provided by the camera batteries.

Fig. 15

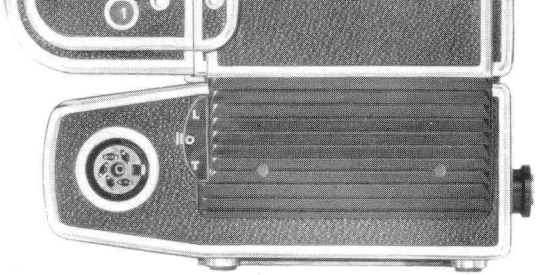


Fig. 16

Cord reel

The Hasseblad cord reel holds 100 feet of cord and provides a quick and convenient means of carrying, laying out and storing DK 3000 cords.

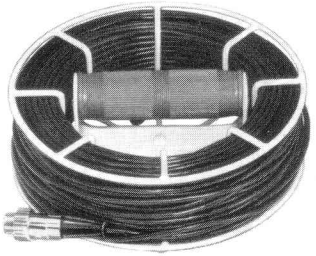


Fig. 17

Timer (Side socket)

Using the Hasselblad timer, the Hasselblad 500 EL can be programmed to make exposures at fixed intervals – from one frame every two seconds to one every 60 hours. The Hasselblad timer is connected to the side socket of the camera. The timer is electric and runs off a mains supply.

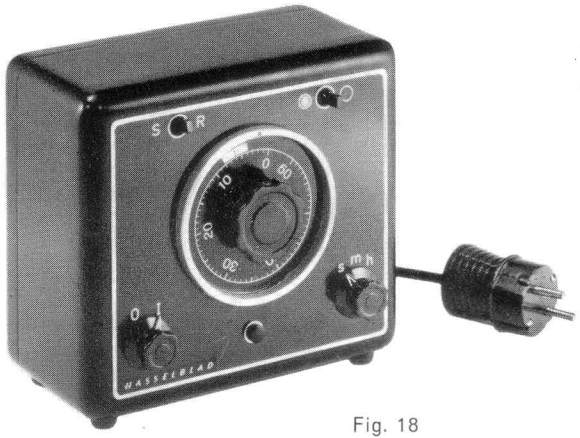
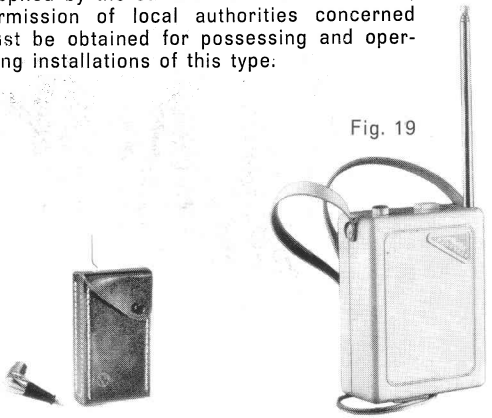


Fig. 18

Radio

The Hasselblad 500 EL may also be remotely controlled by radio. A tone transmitter operating on the 27 mc/s radio control band is employed to send a release signal to the camera. It is powered by two standard flashlamp batteries. The receiver can be mounted in a special leather case designed for attachment to the camera accessory shoe. Power for the receiver is supplied by the camera batteries. As a rule, permission of local authorities concerned must be obtained for possessing and operating installations of this type.

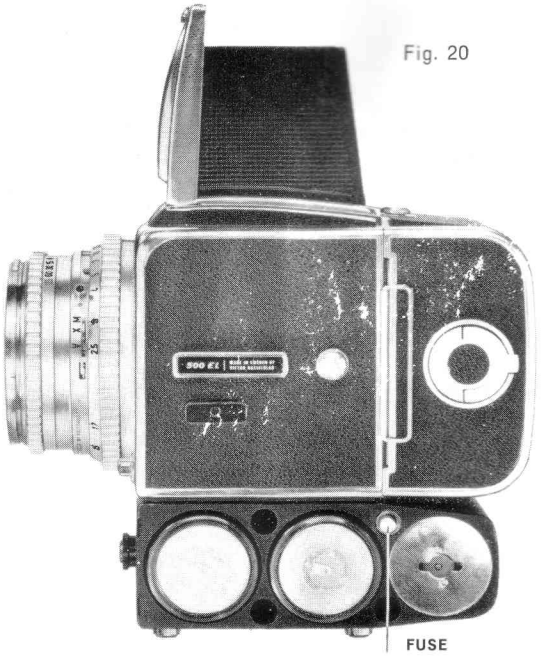
Fig. 19



Other release methods

The Hasselblad 500 EL shutter can be triggered by changes in a closed or open circuit (photocell, etc.) A circuit diagram of the camera's electrical system will be found on page 32.

Fig. 20



A 1.6-amp 5×20 mm time-lag fuse is fitted in the hole (see fig. 20).

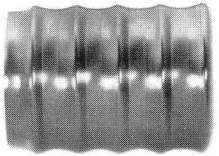
BATTERIES

The electric motor fitted to the Hasselblad 500 EL is powered by one or two rechargeable batteries which last for approximately 1,000 and 2,000 exposures per charge respectively. These batteries are DEAC type 5/500 DKZ nickel cadmium cells, 35×50 mm.

To fit the batteries in the camera, remove the battery compartment cover on the left-hand side of the camera. Turn the catch anti-clockwise a quarter-turn, bringing the slot into a vertical position. Open the cover slightly and slide it towards the front of the camera.

Insert the batteries in the camera's narrowest end first (see Fig. 20). If the batteries are inserted the wrong way the battery compartment cover cannot be closed. When only one battery is used, it may be placed in either space.

The camera cannot work until the battery compartment cover is fitted in place.



Recharge unit I

Supplied as standard with the Hasselblad 500 EL is one recharge unit I. This unit is designed to recharge one or two batteries in the camera. Charging time for one battery is 14 hours and for two batteries 28 hours. The unit is adjustable for operation on either 110-volt or 220-volt a. c. mains. Before plugging into a wall point, make sure that it is adjusted for the right voltage, (see Fig. 21) and then connect it to the side socket on the camera.

Note: Do not connect the recharge unit if the batteries have been removed from the camera.

At the **beginning** of the charging period, a fully discharged battery requires charging for 40–60 seconds for each exposure.

Do not overcharge the batteries.

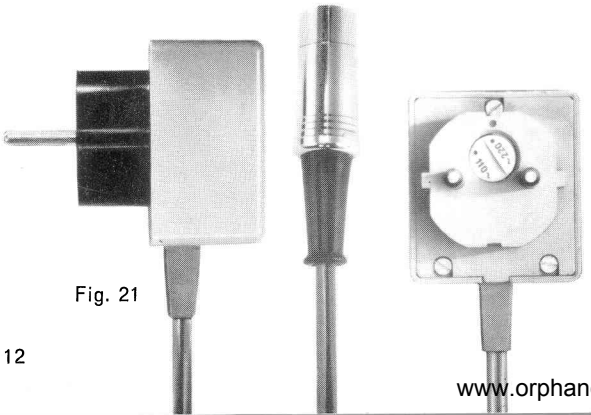


Fig. 21

Fig. 22

Battery case

This is designed to permit charging of the camera batteries at times when no mains supply is available. Five dry batteries (monocell VII, 1.5 volt) will bring one battery in the camera to fully-charged condition. If the dry batteries are of good quality, two camera batteries can be charged **simultaneously** and both will be brought to fully-charged condition. Film can be exposed while the battery case is connected, but at least one battery must be fitted in the camera. Charging time is 14 hours.

Recharge unit II

Fig. 23

This unit is intended for charging batteries in the camera or in the Hasselblad battery box which may be connected to the recharge unit. Recharge unit II is equipped with an adjustable timer which automatically interrupts the charging process when the pre-set time has elapsed. Charging time for one or two fully discharged batteries is 14 hours. Sockets are provided for continuous charging, the Hasselblad 500 EL and batteries to be run off the mains supply when the camera is set up for stationary use. A special socket is also provided to release the camera through cord SK 150.

Lens and shutter

The standard lens supplied with the Hasselblad 500 EL camera is a Carl Zeiss Planar f/2.8 with an 80 mm focal length and a 52° angle-of-view. This modern lens is highly corrective and has excellent resolving power over the entire field. It comprises 7 lens elements. Each lens has a Synchro-Compur between-lens shutter with exposure value, automatic diaphragm and depth-of-field indicators. Together, each lens and between-lens shutter form an interchangeable unit which functions automatically via direct contact with the film-advance mechanism. Other lenses—the Distagon f/4/50 mm, the S-Planar f/5.6/120 mm, the Sonnar f/4/150 mm, the Sonnar f/5.6/250 mm and the Tele-Tessar f/8/500 mm—all feature indvidual between-lens shutters and are coupled to the camera just as easily as the standard lens. The focal length of these additional lenses are chosen to cover virtually every phase of potography from wide angle to telephoto. The Planar and Sonnar lenses are of equal diameter and consequently have the same bayonet fittings for filters and sunshade.

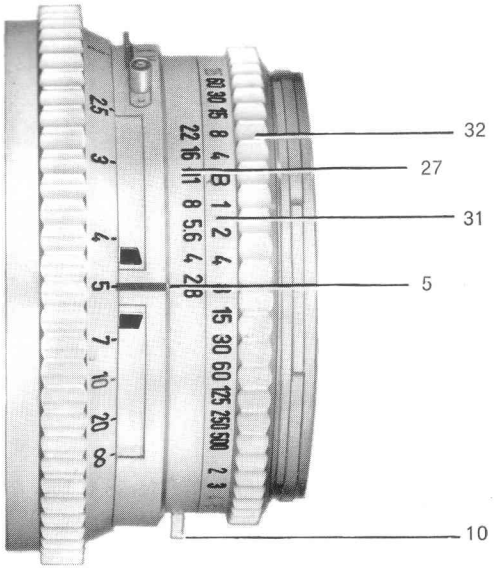


Fig. 24

Shutter speeds

Shutter speeds are arranged in **geometrical** progression running from 1 **second to** 1/500 of a second and B. The scale (31) **graduations** are equidistant and include: B, 1, 2, 4, 8, 15, 30, 60, 125, 250 and 500. For B exposures made when using the EVS setting, the speed scale is continued with the following series of green, engraved numbers: 2, 4, 8, 15, 30, 60 and 125 seconds. Shutter speeds are set with the speed setting ring (32); they are set against the black central index (5).

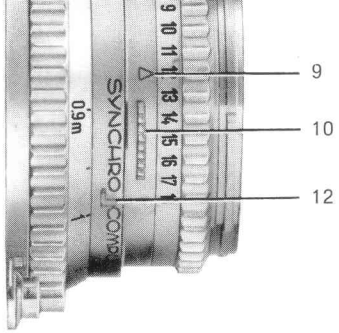
Diaphragm

The standard lens diaphragm scale includes f/2.8, f/4, f/5.6, f/8, f/11 and f/22 stops. The diaphragm ring (27) is released from the speed setting ring (32) by moving catch (10) towards the camera body after which aperture is set against the black central index (5).

Shutter speeds and aperture can be set in direct relation to each other since the scale graduations are immediately adjacent and are read against the same index (5). This feature enables you to view the combined aperture and shutter-speed settings at a glance.

Automatic diaphragm control

All focusing is normally done at maximum diaphragm opening. Stopping down to the actual aperture used for the exposure takes place automatically on exposing the film. The depth-of-field indicators (page 18) show the depth of field at different



apertures. However, it is possible to check the effect of the selected aperture by pressing catch (12) upwards. Spring action then snaps the diaphragm to the pre-set opening. The diaphragm is returned to maximum aperture by turning to full opening or by advancing the film after an exposure.

Exposure value system

Like the diaphragm scale, the speed scale is provided with identically-spaced graduations. Thus the factors of aperture and speed can be combined to form a single aperture speed factor. The purpose of this feature is to enable you to obtain identical exposure with all combinations of settings for a given exposure factor. This aperture/speed factor is expressed in exposure values ranging from 2 to 18 (standard lens), and these figures are engraved in red. The shutter speed for each exposure value is twice that of the next lower exposure value.

EVS		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
APERTURE	2,8	2	1	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500						
	4	4	2	1	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500					
	5.6	8	4	2	1	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500				
	8	15	8	4	2	1	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500			
	11	30	15	8	4	2	1	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500		
	16	60	30	15	8	4	2	1	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500	
	22	125	60	30	15	8	4	2	1	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500

Fig. 26

Setting

Push the exposure value catch (10) backwards to release the ring on which the red EVS numbers are engraved. Exposure meter readings can be transferred directly to the corresponding EVS number opposite index (9). The exposure value (EVS number) provides a series of aperture/speed combinations, all of which provide identical exposures.

Example:

Seven alternative aperture/speed settings can be used with an exposure value of 12. Thus the entire range of apertures on the diaphragm scale can be used, and shutter speeds will vary between 1/500 —1/8. Scales (27) and (31) will then be set at the combinations shown in red on the table. (Fig. 26).

Times longer than one second are shown to the left of the diagonal blue line on the same table. Thus the exposure values can also be used for exposures up to 125 seconds at f/22. These speeds are engraved in green on the speed scale.

Setting to half units

The EVS scale can be set very accurately even down to half units. This is of particular importance in allowing for the increase in shutter times when using color filters or when taking color photographs in general. The narrow exposure latitude of certain color films necessitates extremely accurate exposures; an error as small as a single EVS number can have a serious effect on both the exposure and the color balance.

Long exposure times

With EVS values of 8 and below, the possibilities of using instantaneous shutter speeds are limited. The table (28) shows aperture/speed combinations for exposures of more than 1 second at EVS values of 2—8. The green figures on the lens indicate the correct exposure times for the relevant apertures when the shutter is set to B.

Example

Set the EVS scale to 5. For the sake of depth of field you wish to use f/11. According to the table (fig. 28) the exposure time is 4 seconds. The scales (27) and (31) on your camera show the same value as the table.

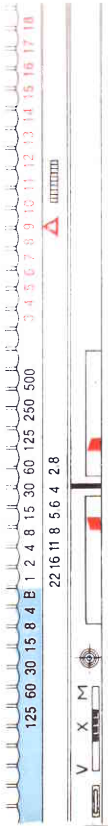
When making long exposures on color film, however, allowance must be made for the color balance correction factor.

These corrections are given in the table below:

exp. time as per exposure meter	correction factor
1–3 secs.	1.0
3–6 secs.	1.3
6–10 secs.	1.6
10–18 secs.	2.0
18–31 secs.	2.5
31–60 secs.	3.0
60–130 secs.	4.0

One EVS number = factor 2.0. The figures are those for Eastman Kodak Ektachrome film.

Fig. 27



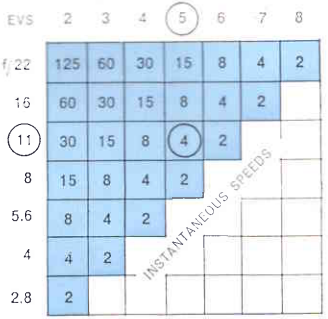


Fig. 28

Focusing and depth of field

The focusing ring (4) (standard lens) is adjustable to distances between 3 feet and infinity. The distance scale is engraved on the ring and corresponds directly with the central index and the movable depth-of-field indicators. After the picture on the ground glass screen has been brought into focus, the distance of the film plane from the subject will equal the distance-scale value opposite the central index (5).

Automatic depth-of-field indicators

Thanks to the movable depth-of-field indicators (6) it is appreciably easier to focus the camera. Moreover, since it is possible to read off the depth of field corresponding to the exposure combination right on the distance scale (7), you avoid the roundabout diaphragm-scale method.

The movable depth-of-field indicators show the exact field of focus and, at the same time, the distance from camera to subject can be read opposite the central index (5) (see fig 24). The depth-of-field indicators consist of two parallel movable pointers. The position of these pointers relative to the distance scale is reset when the aperture is changed. As you know, every change of shutter speed results in a corresponding change in the aperture since these two factors are automatically connected. Changes in the EVS setting due to changed lighting conditions also affect the aperture. Finally, the diaphragm can be disconnected from the exposure value setting which will also affect the position of the depth-of-field indicators. However, when the distance setting is changed, the pointers remain in the same position. The picture shows how the largest aperture (f/2.8) results in the smallest depth of field. This is equal to the distance between the two pointers. The smallest aperture (f/22) gives the maximum depth of field. A practical method of localizing a predetermined depth of field is to focus first on the nearest part of the object and read off the corresponding value on the distance scale. The same procedure is then applied to the part of the object farthest away. By setting the depth-of-field indicators to these two points you will have immediately made a setting that previously seemed extremely complicated. By taking full advantage of the automatic depth-of-field indicators you will develop faster, more reliable photographic techniques.

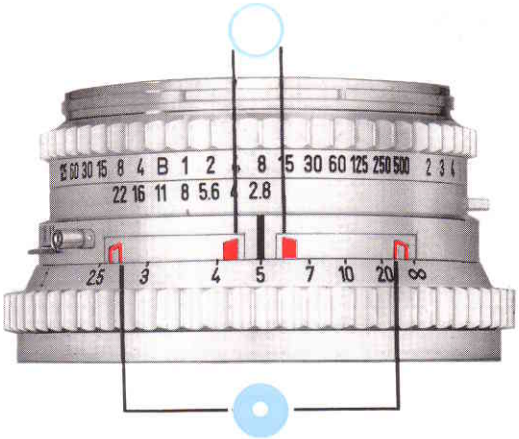


Fig. 29

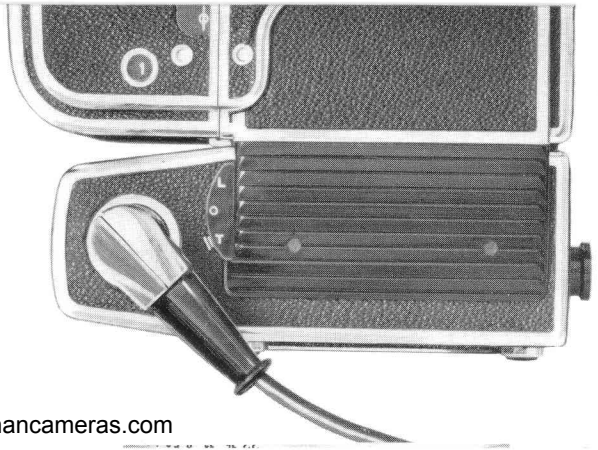
Exposure

Film is exposed by pressing the release button (14). Rule for all exposures: keep the button depressed until the between-lens shutter completes the exposure. This is especially important for times between 1 second and 1/15 of a second.

If the between-lens shutter is set for 1 second, for example, and you release the button too soon the auxiliary shutter will close and interrupt the exposure.

Fig. 30

Fig. 31



Time Lever

When making exposures of longer duration, the time lever (18) should be used. Set the between-lens shutter at "B". When the time lever is moved to the "T" position the shutter opens. When the lever is moved back from the "T" position exposure is terminated, the film advanced and shutter recocked. When exposing, the selector dial (15) should be in the "O" position.

Self-timer

The lever (29) engages the self-timer which, when in position V, operates at all shutter speeds except B. However, before the lever can be moved to V, the catch (30) must be moved forward. When the self-timer is engaged, exposure should be made with the time lever (18) — not the release button. The self-timer provides an 8–10 second delay after setting. The lever then returns to position "X".
The shutter is then X-synchronized and the camera can be used with both electronic flash and self-timer.

Shake-free exposures

One cause of unsatisfactory pictures is fuzziness caused by camera shake. Pressing the release button smoothly and firmly reduces the risk of camera shake. Release cords may be used to advantage for longer exposures.

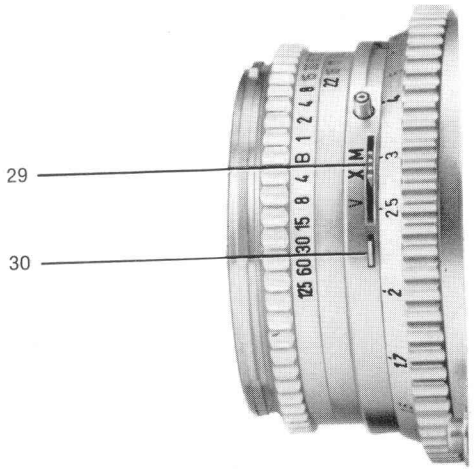


Fig. 32

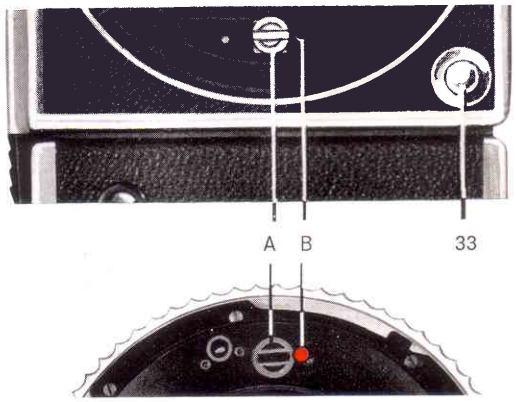


Fig. 33

Shutter cocking

The shutter is cocked by means of the cocking shaft. The slot in shaft (A) points to the red spot (B) when the shutter is cocked. If the shutter has been released while the lens was removed from the camera, it must be re-cocked before the lens can be inserted. The simplest way of cocking the shutter is to insert a coin into the slot on the cocking shaft and turn clockwise.

Changing lenses

The lens on your camera is replaceable and is attached by a bayonet fitting. The lens can be removed only when the selector (15) is set at position O or A and the time lever (18) is simultaneously at position L or O. When the lens catch (33) is depressed the lens can be removed by rotating it 1/5 of a turn in an anti-clockwise direction. Hold the entire lens mount in the right hand to ensure a firm grip.

The lens is correctly in position for attaching to the camera body when the red dot (O) is directly opposite the corresponding red dot (O) on the camera. Turn the mount clockwise until you hear the lens catch click into position.

Fig. 34

Synchronization

The camera is fully synchronized for both M and X settings. The synchronizer contact (28) is of the coaxial type. The cord from the flash gun to the synchro-contact is secured to the cable fastening with a special cable hook. Changeover between M and X is accomplished by the lever (29) after moving catch (30) forward. The diagram below illustrates what is meant by M and X synchronization.

M synchronization

This delays the exposure until the flash has reached its peak intensity.
It is used with class M and S flash bulbs at all shutter speeds. When M synchronization is used the shutter speed is usually shorter than the flash time of the bulb. This factor must be borne in mind when using fast shutter speeds.

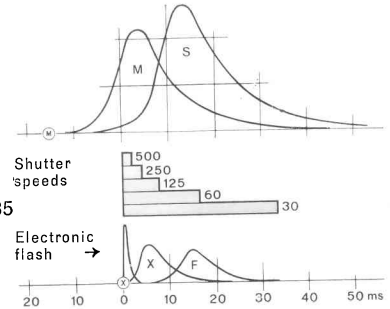


Fig. 35

X synchronization

This is used to fire to the flash when the shutter is fully open. It is used for electronic flash at all shutter speeds and for flashes in accordance with class X and F at longer shutter speeds.

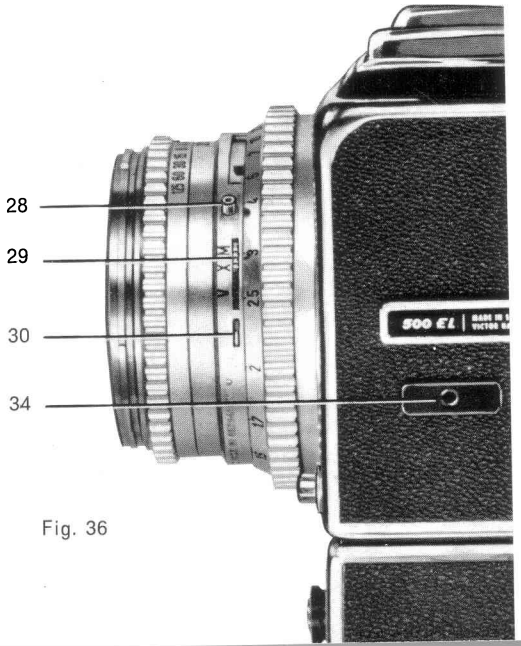


Fig. 36

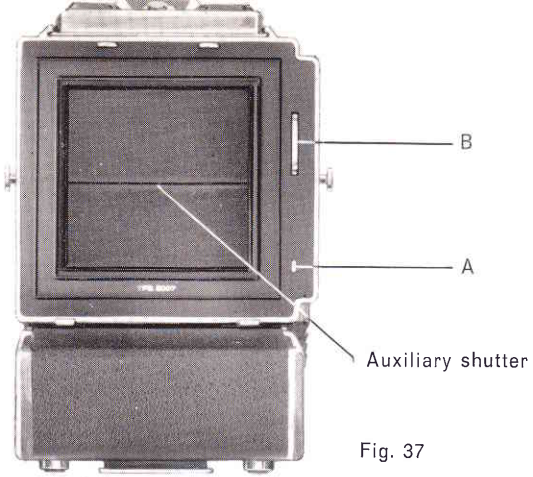


Fig. 37

Auxiliary shutter

The advantage of being able to use interchangeable lenses with individual between-lens shutters in a single-lens reflex camera is achieved by using an auxiliary shutter. This is fitted to the rear wall of the camera housing and consists of two movable blades. The auxiliary shutter is opened by the release button and remains open as long as the button is depressed or an exposure signal is transmitted by other means.

The auxiliary shutter is closed to prevent light from striking the film when the mirror is in the lower position for focusing on the groundglass. It assumes a similar position and function when changing lenses, since this operation can be performed only with the mirror lowered – i.e. when the selector is set at O or A.

Interchangeable backs

The rear of the camera and the front of the magazine are precisely matched. Light traps effectively prevent the intrusion of extraneous light. Power is transmitted from the winder to the film-advance shaft via gear wheel B. The double exposure check and the film signal are actuated by pin A. Make sure that dirt and dust does not collect at A and B to impair camera operation.

One of the major advantages of the Hasselblad camera is that you can change magazines. For this reason it is especially important to learn the necessary procedure at an early stage.

Hold the camera in your left hand with the lens pointing away from you. Press the magazine catch

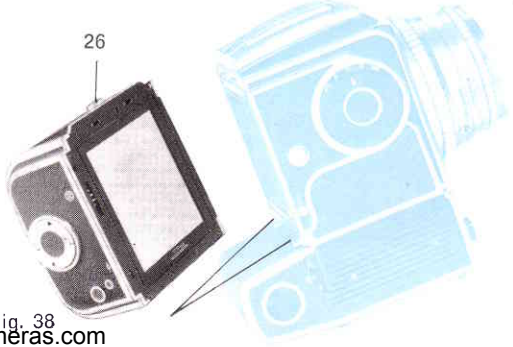


Fig. 38

Fig. 39

(26) to the right with the thumb of the right hand, releasing the magazine and enabling you to lift it from the locking hooks.
The magazine slide (38) must be in place before the magazine can be changed. The magazine slide actuates the catch which prevents you from removing the magazine until the film is protected from light. When the slide is removed you can operate the camera, but the magazine cannot be removed. When it is in position you cannot make an exposure or wind the film, but the magazine can be removed. It is important that the slide be inserted at right angles to the camera body and front. This facilitates loading.

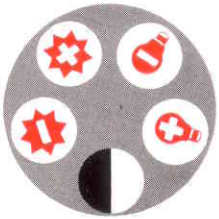
Negative sizes

The following magazines are available for the Hasselblad 500 C:

Magazine 12 for 12 negatives, $2^1/_4'' \times 2^1/_4''$; **16** for 16 negatives, $1^3/_4'' \times 2^1/_4''$; **16 S** for 16 negatives, $1^5/_8'' \times 1^5/_8''$. $1^5/_8'' \times 1^5/_8''$ negatives can be mounted as $2'' \times 2''$ superslides for projection in 35 mm machines. **Magazine 70** provides approx. 70 negatives on 70 mm perforated film for loading in special cassettes.
Magazines are identified by the numbers (25) printed on the same plate that carries the film plane marking (22).

Film type indicator

When working with several magazines you must make absolutely sure to note the type and speed of the film after loading the magazine. Do this on the film type indicator on the back of the magazine.



It is graduated in ASA 6—1600 and DIN 12—33. Set the exposure meter to the required film speed. The type of film is indicated by symbols designating black-white, color, daylight, artificial light, positive, negative.

Fig. 40

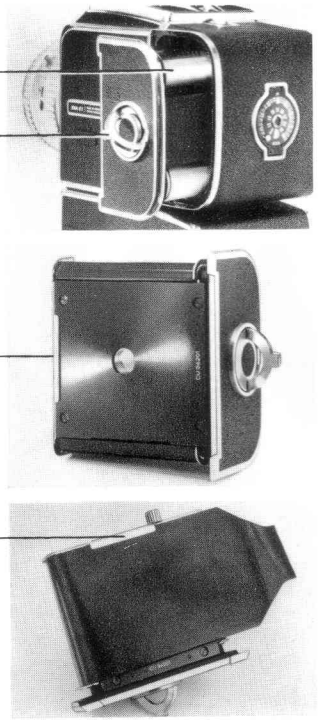


Fig. 41

Loading the roll film magazine

First release the spool holder by turning the spool holder catch (37) counter-clockwise. Next withdraw the spool holder. Then turn the spool holder clockwise until the film clamp opens. Open the spool-holder arms so that the spool and the empty (take-up) spool can be inserted.

Place the take-up spool in the holder with the knurled knob, and the film spool in the opposite one. Hold the thumb on the rolled film and pull out about 4 inches of the paper. The black side of the paper should be towards you.

Insert the paper under the film clamp. Lock it in place by turning the spool holder catch counter-clockwise. Insert the paper flap into the take-up spool. Tighten the paper with the knurled knob.

Place the loaded spool holder in the magazine. Release the paper and lock the spool holder by turning the spool holder catch clockwise.

Open the film window. Turn the winding knob until the figure 1 appears in the window. **Now set the exposure counter by turning the film winding knob counter-clockwise as far as it will go.** The figure 1 will then appear in the exposure-counter window. After the last frame has been exposed the exposure stop comes into action automatically. The film is then wound onto the take-up spool by means of the loading key (23).

When changing magazines, always make certain that white color appears in the film signal window.

Tips on using the roll film back

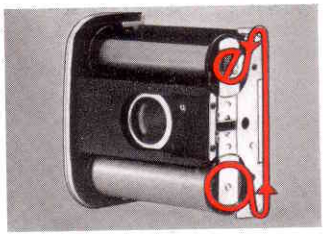
There is no need to remove the magazine from the camera when loading the roll film magazine. On the contrary, you should avoid changing the magazine unnecessarily. Immediately after attaching the magazine, remove the slide. If the slide is left in the magazine you run the risk of losing valuable seconds when swinging into action. If you plan to take a large number of pictures the best method is to load several magazines with film and thus save considerable time.

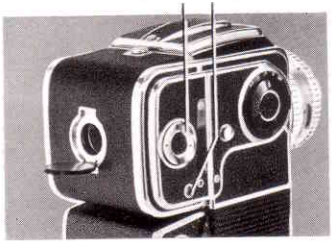
Make a habit of setting the film type indicator to the speed of the film in the magazine as soon as you have loaded the magazine. Don't forget to indicate the type of film. If you are using several magazines you must do this to avoid mix-ups.

Make a habit of turning back to set the exposure counter to 1 after transporting the film; check the number in the film window.

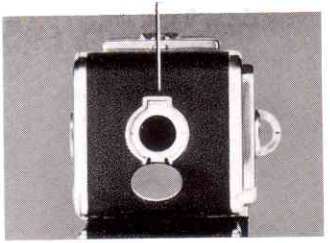
Fig. 42

How to thread the film





Film window opened



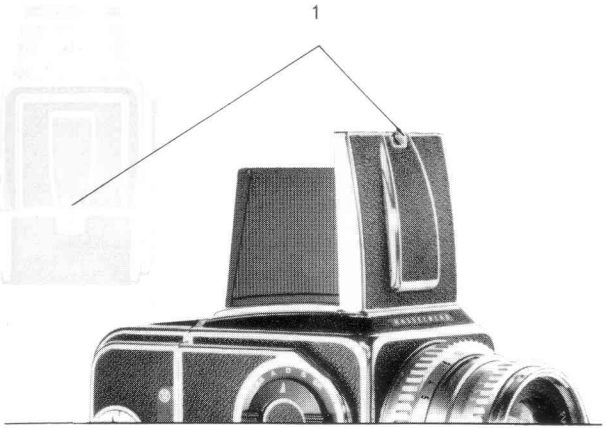


Fig. 43

Focusing hood and ground glass screen

Open the focusing hood by pressing the catch (1) to the right. The fine-focusing magnifier is released by pressing the catch still further to the right. To close the hood, fold the sides over the ground glass screen, then the back, and finally the front.

Note: before closing the hood, the magnifier must be returned to the closed position. Do not touch the surface of the magnifier, since fingerprints and smears greatly reduce brilliance when focusing.

Fine-focusing magnifier

When the focusing hood is opened you will see a bright image of the picture. This is completely free from parallax. i.e., exactly the same picture will be recorded on the film when the exposure is made. The fine-focusing magnifier should be used frequently to check the accuracy of focus.

Ground glass screen

The ground glass screen on Hasselblad cameras is practically free from grain—a feature that greatly facilitates focusing even in very poor light. The brilliance of the image is enhanced considerably by the Fresnel lens which provides faithful light rendition over the entire surface of the ground glass screen.

Removing the focusing hood

To remove the focusing hood, first remove the film magazine, then push the focusing hood backwards in its grooves. The ground glass can be easily cleaned when the focusing hood is removed.

Other finders used with ground glass screen

Accessories used with the ground glass screen instead of the focusing hood include a magnifying hood, which completely shuts out disturbing extraneous light, and two eye-level prism finders.
One prism finder has its line of sight parallel to the lens axis: the other has a 45° sighting angle. Both provide a right-way-round image. The magnifying hood and prism finders are mounted in the same way as the focusing hood.

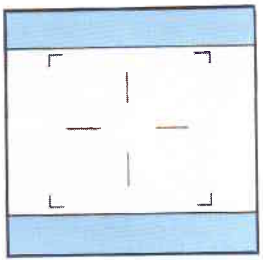


Fig. 44

Markings on the ground glass screen

The ground glass screen is marked with a cross showing the horizontal and vertical planes.
When using roll film magazines 16 and 16 S, a special mask (see fig. 44) is placed over the ground glass screen and held in place by the focusing hood or magnifying hood which are positioned on top of it. The mask is of transparent plastic and is provided with markings for the various picture areas. A checked mask is also available for architectural photography, etc.

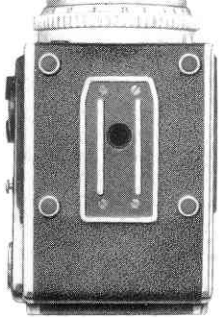


Fig. 45

Tripod fastening devices

Fitted to the bottom of the camera is the usual European tripod thread as well as a quick-attachment shoe. This is inserted in a Hasselblad tripod quick coupling which is supplied as an accessory. The coupling is attached to the tripod pan head or ball and socket. With this accessory the camera can be quickly freed and re-attached in its pre-set position. In addition, the camera is fitted with four rubber feet which provide stable support when the camera is placed on a flat surface.

Cable hook

Insert the cable hook in hole (34) to hold the synchronization cord in position.

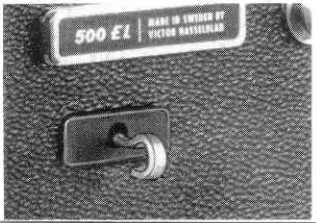


Fig. 46

Frame viewfinder

This viewfinder indicates the field of view for the Sonnar 150 and Sonnar 250 lenses when used in conjunction with the Hasselblad 500 EL and magazine 12 or 70. The frame viewfinder slides onto the sunshade from the front and is clamped in place with an effective snap catch.

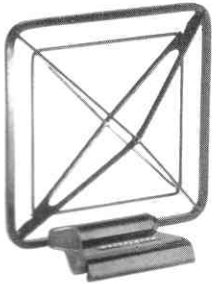


Fig. 47

Spirit level, adjustable flash shoe

Attach and remove in the same way as the sports viewfinder.

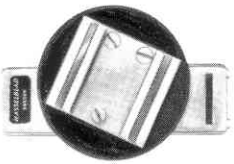


Fig. 48

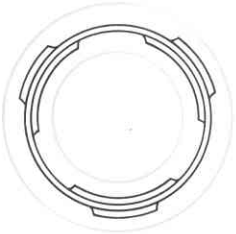


Fig. 49

Filters and sunshade

The lens mount is provided with external and internal bayonet fittings (11) for rapid attachment of filters and sunshade. The internal bayonet fitting is used for color filters, polarization filters and supplementary lenses. The external bayonet fitting is for a sunshade or ringlight. The bayonet fittings have three lugs.

Color filters

The externel and internel bayonet fittings for lenses with focal lengths of 80, 120, 150 and 250 mm are identical. Conventional screw-in filter rings and filters are used with the 50 mm and 500 mm lenses. The size designation for bayonet-fitting filters is **50**; for the 50 mm lens the size designation is **63**; and for the Tele Tessar 500 mm it is **86**. Filters should be attached with the identification code at the right-hand side of the camera where it is conveniently visible for correcting the exposure value obtained from the light meter. Genuine Hasselblad filters are made of solid glass and include correction, contrast and haze filters. They are mounted in black anodized aluminium rings. The identification code indicates color, filter factors and diameter.

Example:
The yellow filter is designated 50 1.5×Y—0.5. 50 means 50 mm filter diameter. 1.5, the filter factor, means that the exposure should be 1.5 times as long. Y means yellow. 0.5 means a reduction of half an exposure value.

The prolonged exposure can either be compensated for directly on the exposure meter reading or by correcting the exposure value (an exposure 1.5 times as long is thus equivalent to an exposure value which is a half step lower: —0.5).

Yellow

For landscapes, snow, cloudy skies.
Yellow and red–lighter.
Blue–darker.

Yellow-green

Cloud effects, distance shots.
Foliage and grass rendered lighter.

Green

Multicolored subjects in daylight.
Portraits in daylight or artificial light.

Orange

Sky contrasts, stresses textures and color variations outdoors.
Absorbs part of ultraviolet light in long distance shots.

Red

More effective than orange filters.
(Filter factors for pan film.)

Grey

Reduces light strength. Used for close-up shots with electronic flash or other subjects exposed to excessive light.

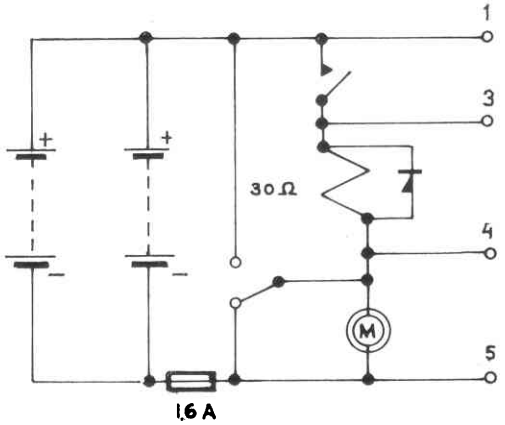
Polarization filters

The Hasselblad polarization filter 50 2×Pola—1 is used to absorb reflections (not metal surfaces). The filter passes a maximum amount of light in one plane only. By rotating the filter with the knurled outer ring the angle presented to entering light can be changed.
The polarization filter can also be used to darken a blue sky; on color film this effect is similar to the effect of a yellow filter on ordinary black-white film.

Light balance filters

Eight light balance filters are available for color photography. Two of these are conversion filters: one for using artificial light film in daylight and one for using daylight film in artificial light.

Fig. 50



Tension: 6 v
Battery: 1 or 2 pcs Deac 5/500 DKZ
Fuse: Wickman 1.6 A time-lag
Terminal: Preh 8-6404 or 8-6082
Current when exposing (pin 1 and 3): 0,2 A

Your Hasselblad is produced in Göteborg, Sweden, by Victor Hasselblad Aktiebolag. This is to inform you that your Hasselblad camera is guaranteed for one year against defective materials or workmanship, **if the enclosed Registration Card is returned within ten days of the date of purchase of the equipment.** Transportation charges to and from manufacturer's nearest authorized service workshop to be paid by customer. No liability is assumed for damaged or faulty film. The guarantee does not apply where the camera is subject to abnormal treatment.