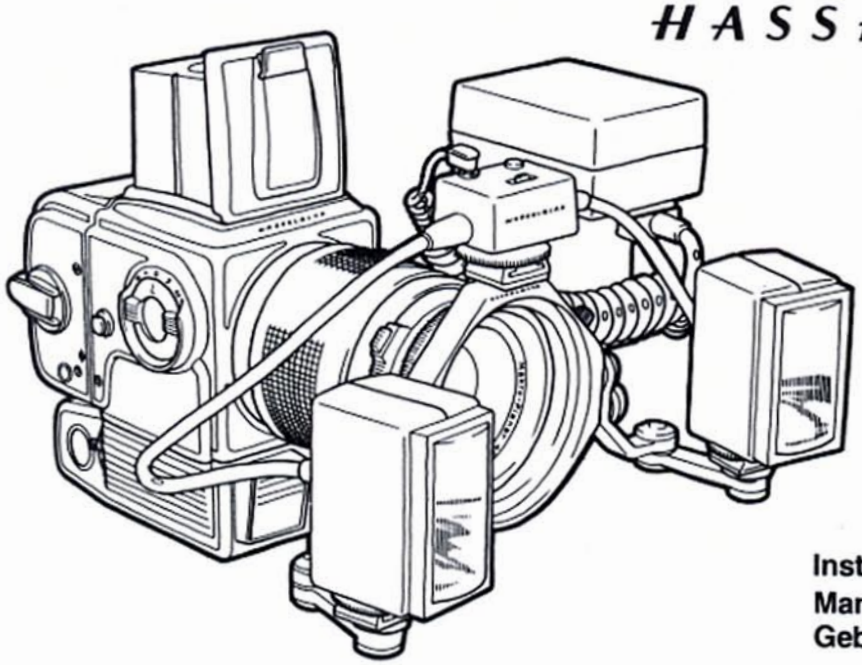
HASSELBLAD



Instruction Manual
Manuel d'instructions
Gebrauchsanweisung

GUARANTEE

If within one year from date of original purchase, this Hasselblad photographic product fails to function because of defects in materials or workmanship, Victor Hasselblad Aktiebolag will, at its option, either repair or replace the product, provided the purchaser returns the product to a Hasselblad authorized service station and submits proof of date of original purchase.

MAINTENANCE

When a flash unit is not used for some time its capacitors tend to deteriorate, we therefore recommend that the unit is conditioned every three months by turning on the unit for 15 minutes without firing the flash.

Batteries should be removed when the unit is not used for longer periods. Battery leakage can otherwise severely damage the unit.

THE HASSELBLAD MACRO FLASH UNIT 2802 M/C

In order to create a practical and versatile electronic flash system for close-up photography, Hasselblad, in conjunction with Metz in West Germany, have developed the Macro Flash Unit 2802 M/C. The flash is intended for use with the Hasselblad Macro Flash Bracket, or similar device. As the light comes from two adjustable sources it can be modelled in a multitude of different ways. Further means of varying the illumination are provided by adapters and filters that clip on over the flash lamp heads. Besides the option of shutting off one or the other lamp heads, the amount of light can be reduced in stages from full effect (1/1) to 1/16 full effect.

At present the best method to regulate flash lighting for close-up photography is via the TTL metering system in the camera. It is for this reason that the Hasselblad Macro Flash Unit conforms to the System SCA 300.

With different adapters the Macro Flash Unit can be used in conjunction with all cameras compatible with System SCA 300.

The Hasselblad 500ELX is one such camera.

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THE HASSELBLAD MACRO FLASH UNIT IS DELIVERED WITH THE FOLLOWING COMPONENTS:

A. Powerpack with adapter SCA 301

B. Lamp heads with junction box

C. Camera bracket with fittings for 1/4" and 3/8" tripod sockets

D. 240 mm PC cord

E. Wide-angle adapter 2 pcs. 3/4 EV

F. Grey filter 1 1/2 EV.

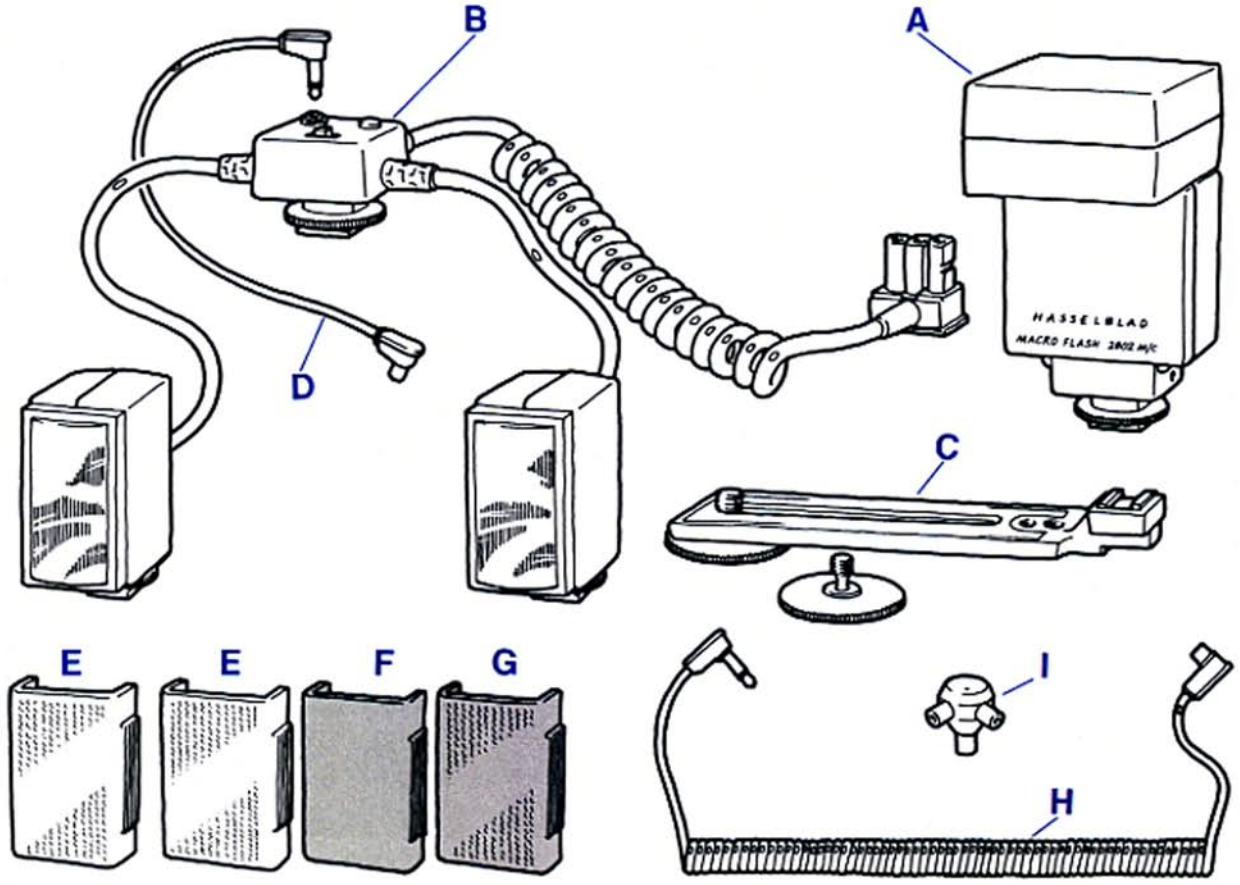
G. Wide-angle grey filter 2 1/4 EV

H. Coiled cord

I. Double PC flash outlet

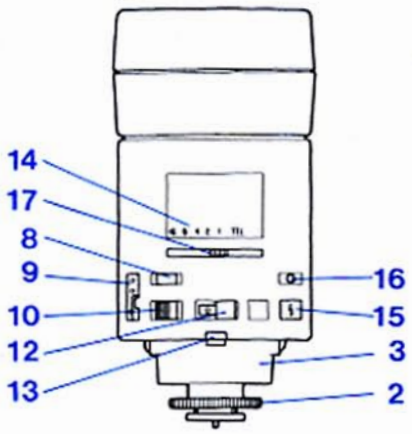
A suitable adapter from the System SCA 300 is used to connect the Macro Flash Unit with the camera's flash metering circuitry. This adapter is sold separately.

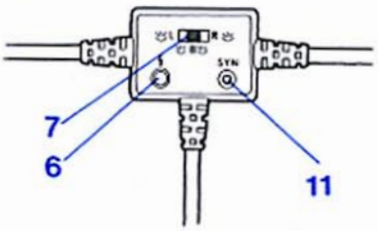
Other accessories available are the Hasselblad Macro Flash Bracket - 51657 with docking rings and gelatin filter holders – The Hasselblad Recharge Unit R6 for Nickel-Cadmium batteries and the Metz AC Power Unit N22.

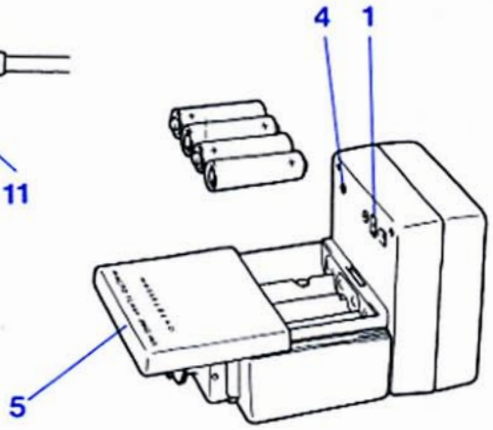


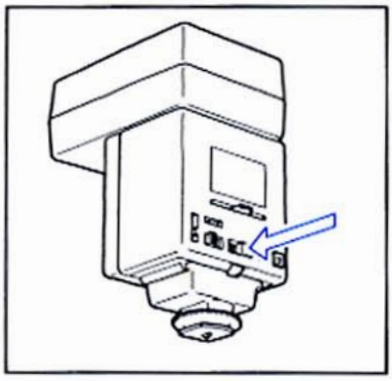
KEY TO DIAGRAMS

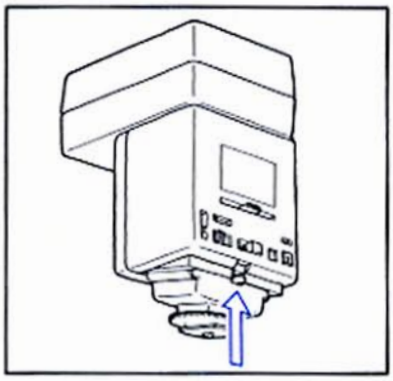
1. Socket for lamp heads
2. Fastening nut
3. SCA-adapter
4. PC socket
5. Battery cover
6. Manual firing button – junction box
7. Lamp selector
8. Ready signal
9. AC unit input socket
10. ON/OFF switch – battery power
11. PC socket – junction box
12. Safety catch for SCA-adapter
13. Locking catch for SCA-adapter
14. Mode/output selector scale
15. Manual firing button – powerpack
16. Correct exposure indicator
17. Mode/output selector

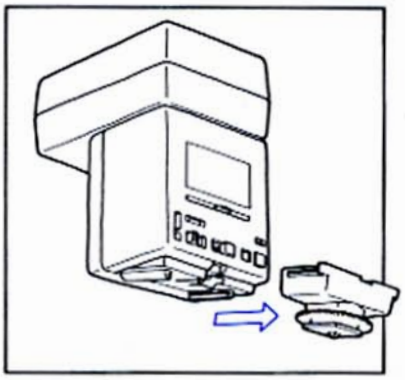






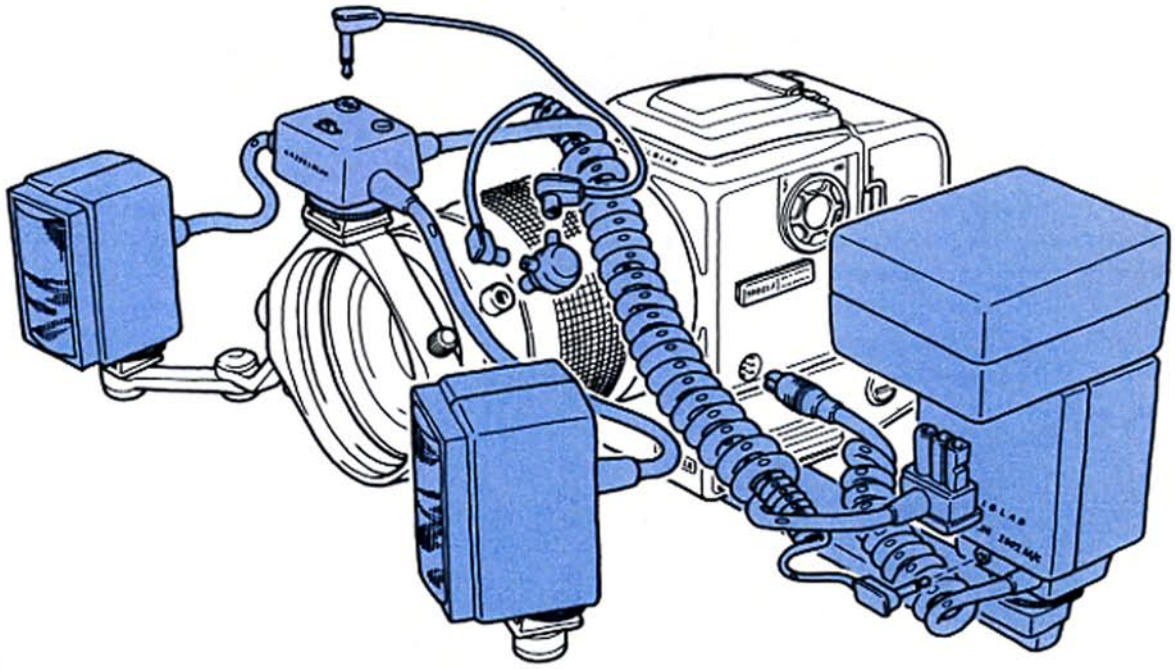






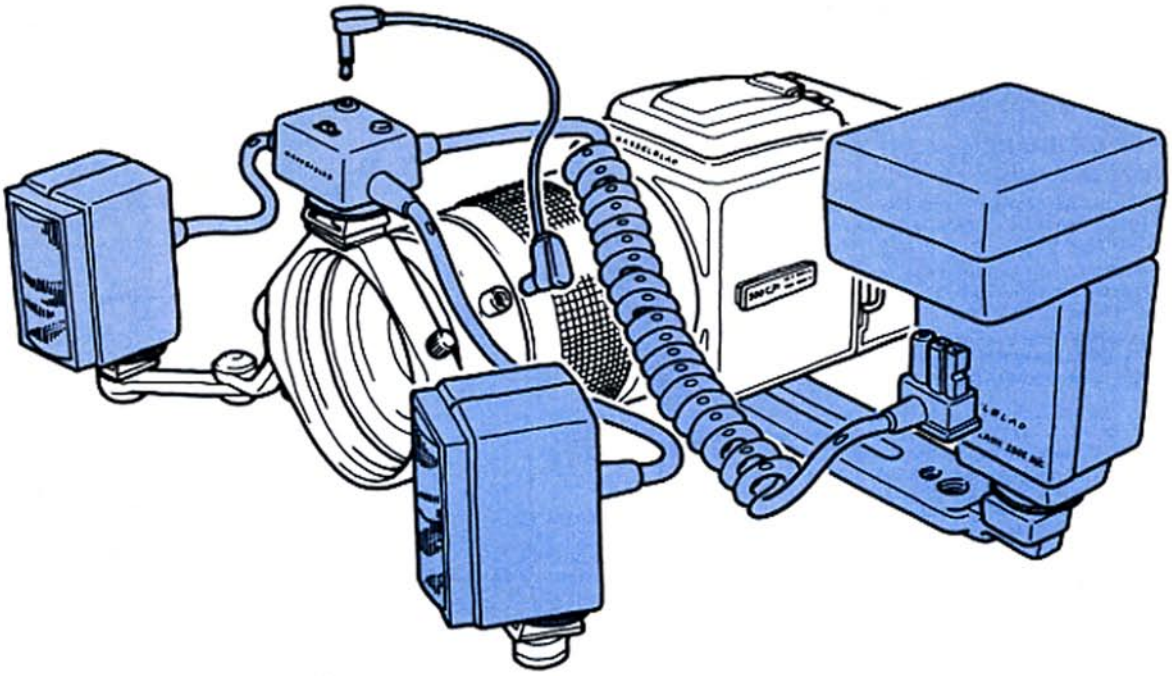
CONFIGURATION I
Hasselblad 500ELX

The camera's TTL flash metering system is connected to the Macro Flash Unit via the SCA 390-adapter (available as an accessory). This configuration can also be used for manual operation but the diagram on page 7 presents a less complicated method.



CONFIGURATION II
Any Hasselblad camera and lens with leaf shutter.

Manual firing can be effected from the junction box.

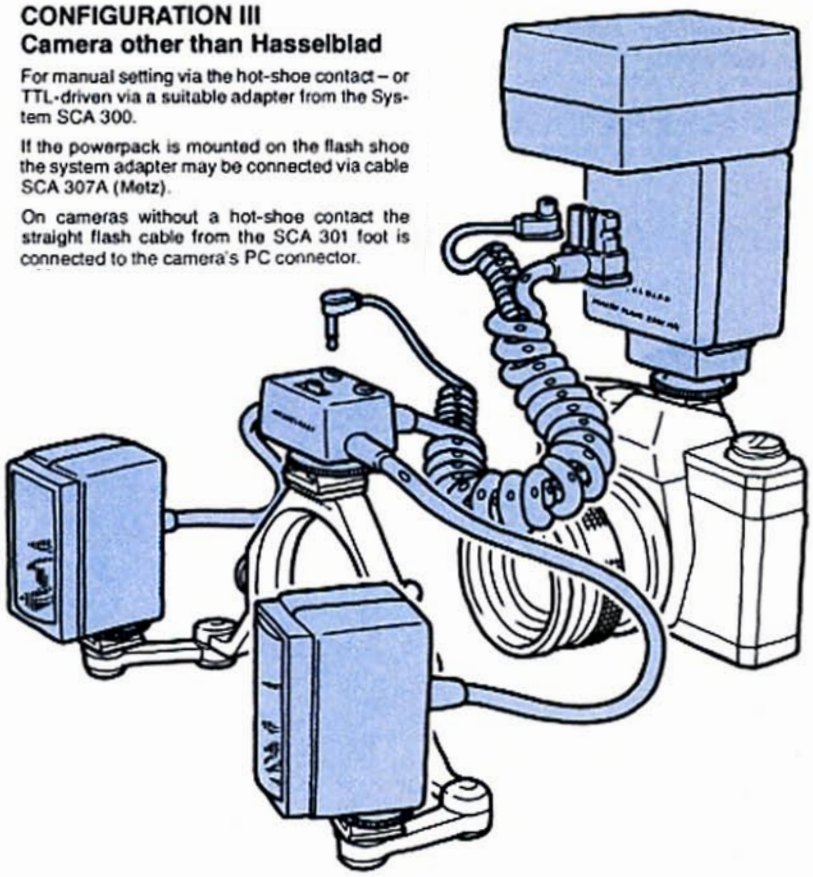


CONFIGURATION III
Camera other than Hasselblad

For manual setting via the hot-shoe contact – or TTL-driven via a suitable adapter from the System SCA 300.

If the powerpack is mounted on the flash shoe the system adapter may be connected via cable SCA 307A (Metz).

On cameras without a hot-shoe contact the straight flash cable from the SCA 301 foot is connected to the camera's PC connector.



TECHNICAL DATA

Guide number
ISO/ASA 100/21°: Meters 28
Feet 92

Covering power
Per lamp: Horizontal 43°
Vertical 55°
With wide angle adapter: Horizontal 60°
Vertical 60°

Color temperature
Circa 5.600° K

Output settings
TTL, Full effect, as well as 1/2, 1/4, 1/8, and 1/16 of full effect.

Automation
Conforms to System SCA 300 standards

Flash duration
Manual: circa 1/300–1/9000 s
TTL: circa 1/300–1/20,000 s

Number of flashes available
With Nickel-Cadmium batteries: 50–1.200
With Alkaline batteriers: 50–1.800
With AC unit N22: Unlimited

Recyling time
With Nickel-Cadmium batteries 5–0,3 s
With Alkaline batteries 12–0,3 s
With AC unit N22 20–0,3 s

Power supply
4 pcs Nickel-Cadmium batteries (penlight) IEC KR 15/51
4 pcs Alkaline batteries (penlight) IEC LR 6
AC power unit Metz N22

Weight
Without batteries: 790 g

POWER SUPPLY

The Macro Flash Unit may be powered by either four 1.5 Volt penlight batteries (AA/R6) or the AC power unit. The batteries can be of the disposable Alkaline type or rechargeable Nickel-Cadmium.

It is recommended that the Nickel-Cadmium batteries be charged in the Hasselblad charging unit R6, or other approved charger for this type of battery.

For AC power Hasselblad recommends the Metz N22 AC Power Unit.

BATTERY INSERTION

Slide down the powerpack's battery cover **5** and insert the batteries in accordance with the indication.

Alkaline batteries should be exchanged, and Nickel-Cadmium batteries recharged, before the recycling time exceeds 60s. Do not allow discharged batteries to remain in the camera, and remove batteries in any case if the unit is to be stored.

CHANGE OF ADAPTER

Depress the latch **12** so that the adapter swings out from the powerpack. Lift the latch **13** and pull the adapter out. Insert the desired adapter in the track – depress safety latch **12** and swing back the new adapter so that it is parallel to the powerpack.

The standard adapter SCA 301 has a central contact for flash synchronization via the camera's hot-shoe – without a PC cable. If the camera does not have a hot shoe contact a connection can be made between the adapter's side socket and the camera's PC connector.

TTL-automation requires that the standard adapter is exchanged for a TTL adapter suitable for the particular camera in use.

For the Hasselblad 500ELX adapter SCA 390 is used.

PREPARATION

Fit a Hasselblad Macro Flash Bracket or similar device to the lens.

CONNECTION

See the illustrations on pages 6 through 8.

POWER ON

Battery powered units are activated by moving the ON/OFF switch to the left – a red field at the switch then indicates that power is on.

If the unit is to be AC powered, the ON/OFF switch is set to the right hand position. The AC power unit's contact is connected at **9** the socket on the powerpack, after which the power unit may be connected to an AC outlet. The flash is ready to fire when the signal lamp **8** is lit.

To avoid overloading the unit when shooting long sequences at full effect, exposures should be made at 30 second intervals, or alternatively, 10 exposures may be made during a relatively short period – with a pause of at least 4 minutes thereafter.

TESTING THE FLASH

The flash may be manually test fired at the junction box button **6**, or in the case of certain hook-ups, the powerpack button **15**.

Focal plane shutters cannot be set at speeds faster than that at which the shutter synchronizes – usually indicated by X on the speed ring. Check the instruction book for your particular camera. Hasselblad 2000 series cameras synchronize at 1/90s.

Note. When the flash is working at full effect its duration is 1/300s which is longer than the shutter remains fully open at the fastest synch speed.

The fastest synch speed on cameras such as the Hasselblad 2000 series is 1/90s. This means that at full flash effect the focal plane shutter will commence closing while the strobe is still lit – resulting in partial underexposure of the frame. It is therefore recommended that a speed of 1/60s be selected with Hasselblad 2000 series cameras when full flash effect is utilized, either via manual setting or TTL automation.

FILM SPEED

TTL Automation: The camera's own ISO/ASA setting will control the Macro Flash Unit via the SCA adapter.

Manual mode: The Macro Flash Units guide number (28 meters, 92 feet) is valid at ISO/ASA 100/21° with the unit set for full effect.

GUIDE NUMBERS AT DIFFERENT FLASH OUTPUT SETTINGS

ISO/ASA 100/21°

Flash output	Guide no. Meters	Guide no. Feet
Full effect	28	92
1/2	20	65
1/4	14	46
1/8	10	32
1/6	7	23

COVERING POWER

Each lamp has a horizontal coverage of 43° and a vertical coverage of 55°. The angle of coverage can be changed by using the supplied adapters that clip over the lamp heads.

The wide angle adapter changes the angle of coverage to 60° (horizontal and vertical).

The wide angle grey filter also gives angles of coverage of 60°.

FLASH OUTPUT REDUCTION

All of the lamp adapters and filters affect light output, and when using the unit in a manual mode this must be compensated for. In the TTL mode compensation is made automatically.

Each adapter or filter is marked with a compensating factor shown in E.V. steps. This factor is valid only if both lamps are fitted with filters having the same E.V. marking. If only one lamp is connected via the lamp selector the compensating factor will remain the same – full effect then being channeled through that one remaining side.

With both lamps connected but with only one having been fitted with a filter the following compensation factors may be utilized:

Filter marking 3/4 E.V. gives a factor of 1/3 E.V.
Filter marking 1 1/2 E.V. gives a factor of 1/2 E.V.
Filter marking 2 1/4 E.V. gives a factor of 3/4 E.V.

SHUTTER SPEEDS

With leaf shutters all shutter speeds may be used, however, so that the effects of ambient lighting do not pose a problem, a "normal" speed of 1/125s is recommended.

MANUAL SETTING

Macro photography usually requires compensation for light fall-off caused by lens extention. Tables can be found further on in this manual indicating which aperture setting/flash output is required at different extentions on the most commonly used Hasselblad lenses. Manual selection of the flash output is made with the output selector **17**, the scale **14** indicates the selected output.

TTL AUTOMATION

Set the flash output selector **17** so that "TTL" is lit on the indicator scale **14**. A suitable System SCA 300 adapter is required in order that the unit can be docked with a camera's flash metering system. The Hasselblad 500ELX uses the adapter SCA 390.

SIGNAL FOR CORRECT EXPOSURE

With the unit in the TTL mode the signal **16** lights for several seconds indicating that a correct exposure has been completed. If the signal does not appear, the flash light output has not been sufficient for a correct exposure. In this case a new exposure must be made, or the unit moved closer to the subject.

The correct exposure signal will also light when the unit is used manually at 1/2 to 1/16 full effect. In this case the signal has no function.

TABLES

Aperture/Light output settings for Hasselblad lenses under extension in the manual mode

Aperture/light output settings are dependent on film speed, length of lens extension, and the optical construction of the lens.

When working with long extensions it is prudent to check exposure – using the Hasselblad magazine 100 for Polaroid film.

PLANAR CF 2,8/80 mm T*

ISO/ASA 100/21°

Extension cm	Tirage en cm	Auszug in cm	0	5	10	15	20	25
Aperture	Diaphragme	Blende	6–22	16	16–22	16	16–22	16
Flash output	Puissance	Leistung	1/8	1/16	1/16	1/16	1/16	1/8

PLANAR CF 3,5/100 mm T*

ISO/ASA 100/21°

Extension cm	Tirage en cm	Auszug in cm	0	5	10	15	20	25
Aperture	Diaphragme	Blende	16–22	16	16	16–22	16	16–22
Flash output	Puissance	Leistung	1/8	1/16	1/16	1/8	1/8	1/4

PLANAR F 2/110 mm T*

ISO/ASA 100/21°

Extension cm	Tirage en cm	Auszug in cm	0	5	10	15	20	25
Aperture	Diaphragme	Blende		16–22	16	16–22		16–22
Flash output	Puissance	Leistung		1/8	1/16	1/8		1/4

MAKRO-PLANAR CF 4/120 mm T*

ISO/ASA 100/21°

Extension cm	Tirage en cm	Auszug in cm	0	5	10	15	20	25
Aperture	Diaphragme	Blende		16	16–22	16–22	16–22	16
Flash output	Puissance	Leistung		1/16	1/16	1/161/16	1/16	1/16

MAKRO-PLANAR CF 5,6/135 mm T*

ISO/ASA 100/21°

Extension cm	Tirage en cm	Auszug in cm	6,35	10	15	20	25
Aperture	Diaphragme	Blende	16			16	
Flash output	Puissance	Leistung	1/16			1/16	

SONNAR CF 4/150 mm T*

ISO/ASA 100/21°

Extension cm	Tirage en cm	Auszug in cm	0	5	10	15	20	25
Aperture	Diaphragme	Blende		16	16–22		16	16–22
Flash output	Puissance	Leistung		1/4	1/4		1/4	1/2

Change of film speed, aperture, and flash output in the manual mode

This table is explained on the next page.

ISO/ASA	Aperture, Diaphragme, Blende																		
25/15°								1,4	2,0	2,8	4	5,6	8	11	16	22	32	45	64
50/18°							1,4	2,0	2,8	4	5,6	8	11	16	22	32	45	64	
100/21°						1,4	2,0	2,8	4	5,6	8	11	16	22	32	45	64		
200/24°					1,4	2,0	2,8	4	5,6	8	11	16	22	32	45	64			
400/27°				1,4	2,0	2,8	4	5,6	8	11	16	22	32	45	64				
800/30°			1,4	2,0	2,8	4	5,6	8	11	16	22	32	45	64					
1600/33°		1,4	2,0	2,8	4	5,6	8	11	16	22	32	45	64						
3200/37°	1,4	2,0	2,8	4	5,6	8	11	16	22	32	45	64							

How to use the table on page 17

The table shows the connection between film speed and aperture settings vertically.
The table is also used to compute how the flash output is reset when changing film speeds whilst retaining the same lens aperture setting.

Example 1
Changing the lens aperture when the film speed is changed
The subject requires an aperture of 4 with a film speed of ISO/ASA 25/15°.
Which aperture is required if the film speed is changed to ISO/ASA 400/27° if the exposure and flash output are not changed?

Find the aperture setting 4 for ISO/ASA 25/15°.
Descend vertically to the line for ISO/ASA 400/27°.
An aperture setting of 16 is indicated.

Example 2
Computing the required change in flash output when the film speed is changed without altering the aperture setting

Due to depth-of-field a subject requires an aperture of 16 and a flash output of 1/16 full effect at a film speed of ISO/ASA 400/27°.
What flash output setting is required at ISO/ASA 25/15° if the aperture setting remains unchanged?

Read off the desired output setting diagonally, as shown by the arrow.

Locate aperture 16 in the line for ISO/ASA 25/15°, which requires 4 steps in the table. From the original setting of ISO/ASA 400/27°. The output must then be changed an equal number of settings in the same direction – from 1/16 to 1/1. One steps change in output is equal to one aperture stop.