

HASSELBLAD

# Sales Manual



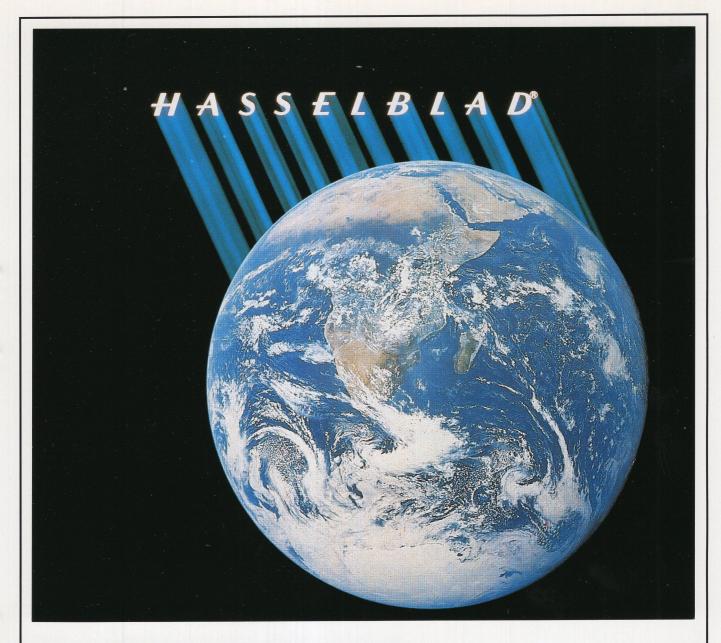








Basic facts



# Hasselblad all over the world!

Dear Hasselblad Salesperson!

When most people hear the word Hasselblad, they associate it automatically with cameras, space shots, high quality, and status. Studies have documented this fact. Most people know very little about the company that makes these renowned Hasselblad cameras.

Few people know, for example, that:

- the Hasselblad factory is the only one of its kind in Scandinavia and that it is located on Sweden's west coast, in the center of the city of Göteborg.
- approximately 600 people are employed by Hasselblad. 500 work at the factory in Göteborg and the remainder work at subsidiary companies in the United States, France, Belgium, and Sweden.
- the company manufactures about 20,000 cameras per year.
- the manufacturing process is based upon a unique combination of handcrafted workmanship and advanced automation.

- camera manufacturing was started in 1941 with aerial cameras for the Swedish Air Force.
- the first "Hasselblad camera" was introduced in 1948 and that mass production and sales of the first camera model, the Hasselblad 1600F, was started in 1949.
- Hasselblad's business concept has been expanded from the earlier slogan, "to manufacture the world's best camera", to a present slogan, "to develop, manufacture and sell equipment for the creation of pictures, picture reproduction, and the transmission and analysis of pictures".

Not too many people know that the Hasselblad system has developed, over the years, into one of the world's most expansive and versatile camera systems for the  $2^{1}/4 \times 2^{1}/4$  format and that the pillars of the system are the four camera models and a wide line of lenses, film magazines, viewfinders, and other interchangeable camera accessories. Or that Hasselblad has a new branch that specializes in equip-



You will find Hasselblad distributors in most countries.

ment for the professional audio-visual market with its PCP80 projector system. There aren't too many either that know that Hasselblad created a department a few years ago that works exclusively with special applications i.e. equipment for photogrammetry, hospital photography, aerial photography, underwater photography, and many other areas that require special equipment. Here the work done is a matter of advanced technology that borders on the scientific.

Still, it is surprising that Hasselblad is as well-known as it is when one takes into consideration that it is a small company that has reached international proportions.



From an organizational point of view, the company isn't limited to its factory in Göteborg. People work with administration, sales and service in over 80 different countries around the world and at Hasselblad we know that we are dependent upon every single person that puts effort into our products. No product, irrespective of how great it is, can sell by itself. This is also true for Hasselblad. Therefore it is essential that reliable, knowledgeable information continually reaches our customers. This is where you play a vital roll. In the final stage, it is up to you to see that our products are highly visible in your store and that they are properly demonstrated for our customers. It is up to you to see that our customers are well-informed about the many possibilities our camera system offers and it is up to you to see that those same customers make the right purchasing decision.

We have put together this sales manual in order to assist you with your task as a salesperson. Our intention is that it will serve as a reference book for you and your colleagues that answers questions about our products, technical data, the system, and the many areas of application. We also want it to be a way of communicating between ourselves via the distributor in your own particular country.

It is our hope that this sales manual will quite simply be an effective instrument for succeeding in an increasingly more competitive photo-market.

We wish you the best of luck with your work!

With best regards,

Victor Hasselblad Aktiebolag

## Distributors

**NORTH AMERICA** 

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Lisle-Kelco Limited 6799 Steeles Ave. West REXDALE Ont. M9V 4R9

**EUROPE** 

Austria

Ing. Herbert Slach KG Nussdorfer Strasse 26-28 1091 WIEN 9

Belgium

Hasselblad Belgium S A 130 Chaussée de la Hulpe Bte 12 1050 BRUXELLES

**Denmark** 

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**Great Britain** 

Hasselblad (GB) Ltd York House Empire Way WEMBLEY Middx. HA9 0QQ

Finland

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France

Hasselblad France S A Courcellor 1 2, rue Curnonsky **75017 PARIS** 

Gibraltar

A D Cohen Ltd 207 Main Street P O Box 160 **GIBRALTAR** 

Greece

Agopian S A 11 Kolokotroni Street 105 62 ATHENS

Holland

Kodak Nederland B V Zeisterweg 1 P O Box 1000 3970 BA DRIEBERGEN-RIJSENBURG

**Iceland** 

Gevafoto H F Bildshofda 16 P O Box 10140 130 REYKJAVIK

Ireland

Data Micrographics Ltd **OL** House Rathmines Road, Lower **DUBLIN 6** 

Italy

Fowa Professional s p a C P 1191 Ferrovia **10100 TORINO** 

Norway

Roar Bogen A/S Postboks 4302 Torshov OSLO 4

**Portugal** 

Profoto Limitada Rua de Santa Justa 25 Apart. 2799 1119 LISBOA 2

Spain

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Antonia Vela Murillo General Mola 93 Apartado 470 S/C de TENERIFE

Hasselblad Svenska AB Östra Hamngatan 5 Box 415 401 26 GÖTEBORG

Switzerland

Yashica AG Zürcherstrase 73 8800 THALWIL

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Mr. M. Orhan Bükey Istiklal Cadd. 465/23 Beyoglu ISTANBUL

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**CSSR** 

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Interal AG Pionerska 9/a 813 45 BRATISLAVA 1

Heimelectric **Export-Import** Volkseigener Aussenhandelsbetrieb der DDR Alexanderplatz 6 Postschliessfach 113 1026 BERLIN

Hungary

Ofotért Reitter Ferenc Utca 45-49 1135 BUDAPEST

Poland

Varimex Wilcza 50/52 Postfach 263 00-679 WARSZAWA

Rumania

Technoimport-export Str Doamnei 2 PO B 110 70014 BUCHAREST **USSR** 

V/O Technointorg Smolenskaja-Sennaja Pl 32/34 121200 MOSCOW G-200

Yngoslavia

Jugolaboratorija ul 7 Jula No 44 P O Box 517 11000 BEOGRAD

**AFRICA** 

**Ivory Coast** 

Agence Photographique Africaine 01 B P 3935 ABIDJAN 01

Kenya

Elite Studios Ltd Market Street P O Box 40683 **NAIROBI** 

Mauritins

Halbwachs Photo-Ciné Ltd Place Foch P O Box 155 PORT LOUIS

Morocco

Cogédir 51 Rue Omar Slaoui P O Box 156 CASABLANCA

Reunion

Photo-Ciné J. Lun-Sin 6 Rue Alexis de Villeneuve 97400 SAINT-DENIS

Seychelles

Photo Eden Pty Ltd P O Box 326 Mont Fleuri MAHE

South Africa

Photra (Pty) Ltd 3rd floor, Commercial City 26 Roper Street New Centre P O Box 9072 **JOHANNESBURG 2000** 

**Tunisia** 

**INTERA** Agence Inter Représentation 2 bis, Rue Pierre de Coubertin **TUNIS** 

**ASIA** 

Bahrain Ashraf Brothers P O Box 62 Manama **BAHRAIN** 

Cyprus

Photo (Studio) Fisher 237 Ledra Steet P O Box 1349 **NICOSIA** 

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Ashraf & Co Ltd P O Box Safat 3555 **KUWAIT** 

Oman

Photocentre P O Box 3115 **RUWI** 

**Qatar** 

Ali Bin Ali P O Box 75 DOHA

People's Republic of China

China Hua Yuan Co Ltd China Resources Bldg, 10th fl 26 Harbour Road Wanchai HONG KONG

Saudi Arabia

Shamsuddin Ashraf P O Box 285 ALKHOBAR 31952

**United Arab Emirates** 

Ashraf Brothers P O Box 1677, Riqa **DUBAI** 

Hong Kong Shriro (H.K.) Ltd St. George's Bldg, 20th fl P O Box 181 HONG KONG

India

Patel India Private Ltd "Film Centre" 68, Tardeo Road **BOMBAY 400 034** 

Japan

Shriro Trading Co Ltd Shiba P O Box 52 TOKYO 105-91

Shriro (International) Ltd C P O Box 19 **SEOUL** 

Lebanon

Teknix Inc P O Box 113-6150 BEIRUT

Malaysia

Shriro (Malaysia) Sdn Bhd 9, Jalan Dua P O Box 10571 **KUALA LUMPUR 01-02** 

Singapore

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Thailand

Central Trading Co Ltd Wang Burapha 708 Mahachai Road P O Box 471 BANGKOK

**OCEANIA** 

Australia CR Kennedy & Co Pty Ltd

Accura House 7 Union Street P O Box 276 BRUNSWICK, Vic 3056 **New Zealand** 

General Machinery Co Ltd 32 Taupo Quay P O Box 293 WANGANUI

**Tahiti** 

Photo Lux P O Box 265 **PAPEETE** 

**SOUTH AMERICA** 

Argentina Fotimport S A San Lorenzo 3887 1636 OLIVOS

Prov. Buenos Aires

John Bull Camera Divison P O Box N 3737 **NASSAU** 

Barbados

Louis L. Bayley & Son Ltd 33 Broad Street P O Box 17 **BRIDGETOWN** 

Bermuda

The Camera Store Ltd 14 Queen Street P O Box 427 **HAMILTON** 

Brazil

Importécnica S A Avenida Dr Abrao Ribeiro 740 POB 6134 SAO PAULO

Reifschneider Foto SACI Agustinas 1151 P O Box 4216 **SANTIAGO** 

Cayman Islands, BW I

Cayman Camera P O Box 2172 **GRAND CAYMAN** 

Comercial Ultramar S A Colima No 411 P O Box 24346 06700 MEXICO, DF

Panama

Foto Internacional S A Ave Central 151 P O Box 1878 PANAMA 1

Venezuela

Micron C A 4a Trans-Urbanizacion Horizonte Edf. América Apartado 70250 CARACAS 107

**MILITARY SALES** 

C Förster GmbH Martin-Luther-King-Str. 24 Postfach 1451 6450 HANAU 1 West Germany



# Milestones in Hasselblad's history

## 1841

Victor Hasselblad's great grandfather establishes the family company, F.W. Hasselblad & Co. The firm develops into an important trading company with sizable import operations.

## 1885-1887

Two of his sons, one being Victor Hasselblad's grand-father, start up a photographic department within the company.

## 1906

Victor Hasselblad, the inventor of the Hasselblad cameras, is born on March 8.

## *1908*

Operations grow within the photographic department. Hasselblads Fotografiska Aktiebolag is founded and becomes the general agent for Eastman Kodak Company in Sweden.

## 1941-1945

Victor Hasselblad Aktiebolag is founded and begins manufacturing cameras for aerial photography for the Swedish Air Force.

## 1946

The company manufactures clock works for ornamental clocks. At the same time, the company's engineers work on the design of the Hasselblad 1600F, the first Hasselblad camera.

## 1948

The Hasselblad 1600F is introduced to the American market. The Hasselblad 1600F was the world's first single-lens reflex camera in a  $2^{1/4} \times 2^{1/4}$  format with interchangeable lenses and film magazines.

## 1949

The first series delivery of the Hasselblad camera.

## 1952

Hasselblad 1000F supersedes the 1600F.

## 1954

Hasselblad Super Wide (SW) with Carl Zeiss Biogon 4.5/38 mm lens having a 90° angle of view is introduced at photokina in Cologne.

## 1957

The Hasselblad 500C is introduced. In order to meet the growing demands from photographers wanting to use an electronic flash for quick shutter speeds, a lens series with a built-in central shutter for the camera is introduced.

## 1959

The Hasselblad Super Wide C (SWC) further complements the modern lens series encompassed in the Hasselblad system, making it an excellent quick camera for extreme wide angle photography.

## Milestones in Hasselblad's history

## 1962

NASA chooses a modified Hasselblad 500C as its still picture camera. The first 500C makes 6 orbits around the earth on October 3. Collaboration between Hasselblad and NASA is further expanded in the Gemini Program and for the Apollo Project.

## 1964

The underwater housing for the Hasselblad cameras is introduced.

## 1965

The Hasselblad 500EL is introduced simultaneously in New York, Hamburg, and Göteborg. With this event the Hasselblad system is further expanded with a motorized camera, adapted for a whole new range of photographic applications.

## 1968

Victor Hasselblad is conferred a doctor's degree in technology at Chalmers Institute of Technology in Göteborg.

## 1969

The Hasselblad 500EL Data Camera with a Reseau plate is specially manufactured for NASA. It is the first camera to be used on the moon on July 20.

Manned American space flights to the moon continue with increasingly more Hasselblad equipment on board.

The Hasselblad SWC is equipped with a black anodized lens.

## 1970

The Hasselblad 500C and 500EL are modified and get interchangeable focusing screens. The model designations are changed to 500C/M and 500EL/M.

## 1971

Two more American space flights take place with Hasselblad equipment on board. A contract is signed for cameras to be used for NASA's space research laboratory.

The Hasselblad photogrammetric camera MK 70 is introduced at a geodetic convention, GEO-71 in Wiesbaden.

## 1972

The Hasselblad 500C/M, 500EL/M, and SWC are introduced in an all black version. These new versions are delivered in the following year.

## 1973

The entire line of lenses for Hasselblad cameras is available in all black versions. Lenses with focal lengths from 30 mm to 80 mm receive several anti-reflection coatings  $(T^*)$ .

## 1974

Hasselblad celebrates its 25th anniversary and now has the world's most extensive camera system for the  $2^{1/4} \times 2^{1/4}$  format.

## 1975

The Hasselblad Reflex Camera documents the historical space hook-up between Apollo and Soyuz.

A new underwater housing for the Hasselblad 500EL is introduced at the international diving exhibition in Stockholm.

## 1976

Victor Hasselblad sells his company to Säfveåns AB. He remains nevertheless on the Board of Directors.

## 1977

The Hasselblad 2000FC is previewed by the press in Göteborg.

## 1978

Victor Hasselblad passes away on August 5.

## 1980

Victor Hasselblad AB founds two subsidiary companies; Victor Hasselblad Inc. in the U.S. and Hasselblad Svenska AB in Sweden.

During the photokina, several more new products are introduced.

## 1981

The United States starts its Space Shuttle Program. The Hasselblad 500EL/70 is on board the first flight, April 12 to 14 and is scheduled for future flights.

The Hasselblad 2000FC/M supersedes the 2000FC.

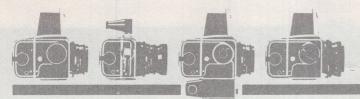
## 1982

The Hasselblad PCP80 professional projector with an advanced, unique design is introduced at the photokina. The lens series is given a new design and new shutter construction. A specially built film magazine with a built-in microcomputer is previewed.

Hasselblad starts its own sales organization in Belgium.

## 1984

Hasselblad establishes a subsidiary company in France. Hasselblad is listed on the Stockholm Stock Exchange.



# HASSELBLAD INFORMATION

Victor Hasselblad Inc. 10 Madison Road Fairfield, N.J. 07006 Tel. (201) 227-7320

Year after year, since 1948, more and more of the best professional photographers and most critical amateurs all over the world are selecting Hasselblad for their work. There are many good reasons for choosing Hasselblad and the Hasselblad picture format. They are summarized in these information sheets.

## TEN KEY REASONS FOR SELECTING HASSELBLAD

- 1. The 2½ film format, being almost four times larger than 35mm, provides a dramatic image improvement over 35mm as well as working conveniences from the moment the film is loaded into the camera until the final print is made.
- 2. A Hasselblad is not mass produced but handcrafted to last with a solid one-piece aluminum alloy casting camera body to protect the interior components and their accurate alignment.
- 3. Every Hasselblad camera and each camera component is checked and rechecked throughout the manufacturing and assembly process. One craftsman out of every eight does nothing but check that the other seven's work is up to scratch.
- 4. The components in every Hasselblad/Carl Zeiss lens are made to a degree of precision that other manufacturers use only for scientific instruments and the performance data of each lens, the acutance, the distortion, and field illumination, which are factory secrets by other companies, are documented by Zeiss and readily available from Hasselblad.
- 5. The superior performance of the Carl Zeiss lenses is assured on the film through metal framed groundglass screens which are milled individually to proper measure; an accurate alignment of mirror and screens with laser/computer measuring instruments and maximum film flatness obtained with a patented interaction of the rollers in the film magazine and film holder. The latter requires individual matching of each film insert to a particular magazine shell.
- 6. Hasselblad cameras, lenses, and accessories are designed as tools for working photographers incorporating all the necessary features for serious photography and a degree

Product Information Ten Key Reasons For Selecting Hasselblad Page Two

of automation that is fully controlled by the photographer not built-in automation that controls the photographer.

- 7. Hasselblad's complete and totally interchangeable camera system makes Hasselblad the ideal tool in every field of photography—in the studio or on location, and it is, thus, a good investment. The photographer never outgrows the camera's capabilities making it necessary to add or to change to another camera system.
- 8. Hasselblad's complete and precise magazine interchangeability between the four camera models combined with the choice of three different film formats gives the photographer the option of composing the images in the "ideal" rectangular format or as an even more ideal square, changing format or film type in mid-roll, producing test shots on Polaroid at any time.
- 9. Hasselblad's concern for non-obsolescence ensures that whenever possible new camera components fit older cameras, older components fit the latest camera models. As a result, the Hasselblad photographer never needs to start from scratch; he can always be up to date with camera equipment that retains its value or even increases in value as it is being used.
- 10. Hasselblad's image quality, performance, and reliability has been proven for over 30 years in the hands of the world's top professionals and on every manned American space flight since fall of 1962.

# Product facts

# **2000FCW Camera Body**

The Hasselblad 2000FCW is a medium format camera with extremely fast shutter speeds, large aperture lenses and optional winder operation. The  $2^{1/4} \times 2^{1/4}$  format and its compatibility with the extensive selection of accessories from the Hasselblad system provide the camera with maximum flexibility, making it ideal for demanding professional photography.

The 2000FCW is compatible with both the high speed F-series lenses with no shutter and the CF-series lenses with built-in leaf shutters—a total of 20 lenses with 15 different focal lengths from the 30mm fish-eye to the 500mm telephoto. The focal lengths of the telephoto lenses can be doubled with the Hasselblad Mutar 2X Teleconverter. All of the lenses are made by Carl Zeiss, West Germany. A zoom lens, the 140–280 mm Variogon f/5.6 is made by Jos. Schneider of West Germany.

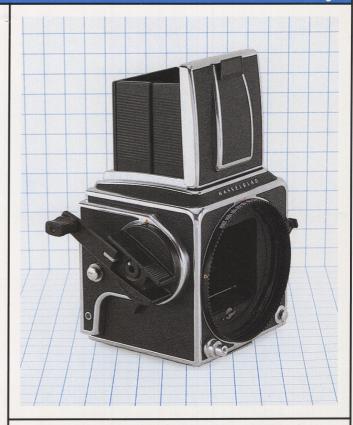
The focal plane shutter made of titanium is electronically controlled and its fastest speed is 1/2000 s. Together, full-speed and in-between speed settings provide a total of 23 different shutter speeds. With a CF-lens mounted on the camera, the photographer can choose to work with the camera's own focal plane shutter or with the built-in leaf shutter of the lens. If the built-in leaf shutter is chosen, then the camera is completely independent of battery operation and can be synchronized for electronic flash down to 1/500 s.

All of the film magazines in the Hasselblad system can be used on the 2000FCW. When changing film magazines, the camera's focal plane curtains are automatically retracted from the film opening for protection.

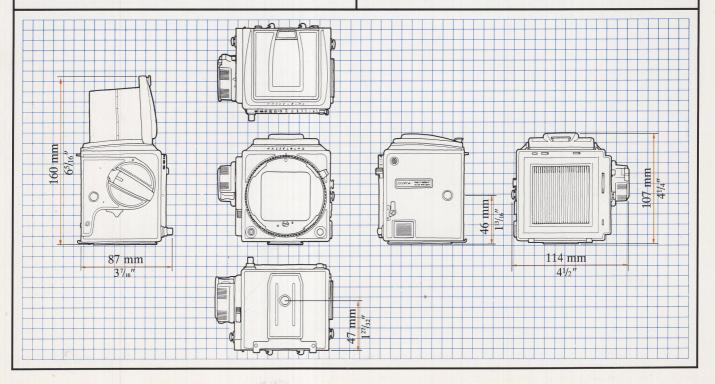
Film advancement and shutter cocking are done manually with the winding crank or automatically with the Hasselblad Winder. This accessory provides the ability to take sequential pictures at a speed of 1.3 frames/s. Double exposures can be taken by simply disengaging the film advancement.

The camera comes with a focusing hood that is equipped with a fine-focusing magnifier. Interchangeable correction magnifiers for compensating faulty vision are option. Several types of focusing screens and prism viewfinders with or without light meter are available as extra accessories.

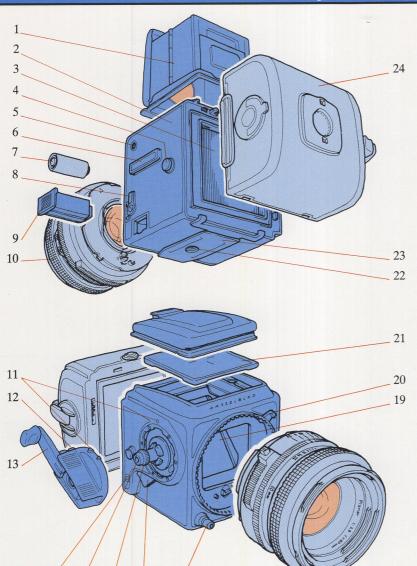
The camera's mirror delivers a non-vignetting viewfinder image and can be programmed for instant return, return when the shutter is cocked or locked in a raised position.



- Superb image quality with a large film size and first class Zeiss optics.
- Extremely fast shutter speeds to 1/2000 s.
- Two optional shutter systems with Hasselblad CF-lenses: leaf shutter or focal plane shutter.
- Battery independent operation with CF-lenses.
- Large apertures with high speed Hasselblad F-lenses.
- High preparedness and fast picture sequences with the Hasselblad Winder.
- Maximum flexibility. A part of the world's most comprehensive system for medium format cameras.



# 2000FCW Camera Body



- 1. Focusing hood, interchangeable and collapsible
- 2. 2000FCW camera body
- 3. Focal plane shutter
- 4. Strap lug
- 5. PC outlet for focal plane shutter
- 6. Accessory rail
- 7. Battery
- 8. Shutter speed ring lock
- 9. Battery compartment, interchangeable
- 10. Lens (interchangeable accessory)
- 11. Indexes for attachment of winder
- 12. Winding crank release tab
- 13. Winding crank, interchangeable
- 14. Shutter status indicator
- 15. Double exposure button
- 16. Mirror program setting
- 17. Pre-release latch
- 18. Shutter release
- 19. Reflex mirror
- 20. Shutter speed ring with lever
- 21. Focusing screen, interchangeable
- 22. Tripod socket 3/8"
- 23. Tripod plate for quick-coupling attachment

Right to changes without notice.

24. Film magazine (interchangeable accessory)

#### Technical specifications and equipment

16

15

Technical specific	cations and equipment					
Camera type:	Single-lens reflex camera with $2\frac{1}{4} \times 2\frac{1}{4}$ film size (max.) and built-in focal plane shutter.					
Design:	Electromechanical design with light metal camera body shell cast in one piece.					
Viewfinder:	Non-vignetting viewfinder image. Folding focusing hood. The camera can accept different types of focusing screens, prism viewfinders with or without a built-in light meter, focusing hood, or sports viewfinder.					
Film advance:	Manual advance with winding crank. Automatic with the Hasselblad Winder.					
Shutter:	Horizontal focal plane shutter of titanium with speeds to 1/2000s. With CF-lenses, built-in leaf shutter with speeds to 1/500s. Camera operation is then independent of the battery.					
Flash synchronization:	Focal plane shutter with X synchronisation at 1/90s and slower shutter speeds.					
Battery/capacity:	6 V PX-28 type. Fresh battery good for 20,000 exposures.					
Tripod socket:	3/8" socket thread and tripod plate for quick-coupling attachment.					
External dimensions:	Camera body only—see opposite side. The camera body with 80mm Planar F-lens and magazine A 12: $180 \text{ L} \times 114 \text{ W} \times 107 \text{ H mm} (7 \times 4^{1/2} \times 4^{1/4} \text{ in})$ .					
Weight:	Camera body only: 730 g (1 lb 10 oz). The camera body with 80mm Planar F-lens and magazine A 12: 1560 g (3 lb 7 oz).					
8	The camera body (chrome model, product no. 10317 or black model, product no. 10333) comes with standard focusing screen, focusing hood, neck strap, and front and rear protective covers.					
Accessories						
Lenses:	Interchangeable Hasselblad F-lens series without built-in shutters and CF-lens series with built-in leaf shutters. The CF-lens series has $X$ synchronisation for electronic flash at all speeds to $1/500$ s.					
Film magazines:	Interchangeable magazines for the following sizes: 21/4×21/4, 21/4×15/8, and 15/8×15/8. Film types: 120, 220, 70 mm double-					

perforated film, sheet film, and Polaroid film.

More information on other accessories in the Hasselblad Product Catalog.

## HASSELBLAD®

## Winder 2000FCW



The Hasselblad Winder is a motorized unit specially developed for the 2000FCW. By removing the winding crank and attaching the winder in its place, the photographer can change quickly from manual to automatic film advancement and have a motorized camera with a sequential picture capacity of 1.3 frames/s.

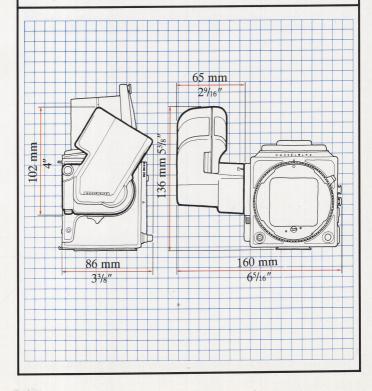
The winder, which is attached to a bayonet mounting, is activated via the camera's regular shutter release button.

The battery set includes 5 1.5 V nickel-cadmium batteries or 5 regular alkaline batteries and provides adequate power for at least 1,000 exposures.

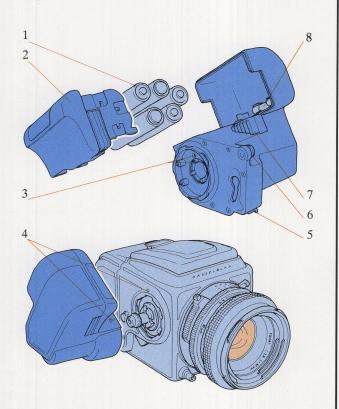
When changing film magazines, the winder automatically rewinds the retracted focal plane curtains, increasing the camera's picture-taking preparedness and completely eliminating the risk of unintentional exposures and hence the loss of a film frame.

The winder is designed to provide a comfortable, firm grip and allows the photographer to work with the camera in the classic left-handed grip.

- Maximum picture-taking preparedness and the ability to take fast picture sequences at 1.3 frames/s.
- Extremely quick and easy to attach and remove from the bayonet mounting.



## Winder 2000FCW



- 1. Batteries
- 2. Battery compartment
- 3. Red indexes for neutral position
- 4. Indexes for attachment to 2000FCW
- 5. Latch for the winder
- 6. Strap lug
- 7. Lock for battery compartment
- 8. Fuse

Technical specif	Technical specifications and equipment					
Design:	Interchangeable servo-motor unit with stainless steel mounting housed in a glass-fibre reinforced polycarbonate shell. Bayonet mounting.					
Batteries:	5 type R6, AA or UM3 alkaline or rechargeable nickel-cadmium batteries.					
Capacity:	A minimum of 1,000 film frames per battery set at 20°C.					
Operation:	Sequential pictures at a rate of 1.3 frames/s or single exposures.					
External dimensions:	See opposite side.					
Weight:	With batteries 450 g (1 lb).					
Accessories:	Recharge unit for NC-batteries. See Hasselblad Product Catalog. Right to changes without notice.					

# **№** 500ELX Camera Body

The Hasselblad 500ELX is a medium format, motorized, single-lens reflex camera. The built-in motor automatically advances the film and cocks the shutter, making it possible to take sequential pictures at a rate of 1.2 frames/s.

Remote-control operation for single exposures as well as sequential ones can be carried out via a release cord or cord-lessly using special equipment. The Hasselblad intervalometer can automatically provide exposure impulses at varying intervals

The camera has built-in flash control. A sensor measures the amount of light that is reflected from the film plane during an exposure, commonly referred to as TTL/OTF measuring. With the Hasselblad flash adapter SCA 390, flash units compatible with the (European) System SCA 300 can be connected to the camera's sensor system. After taking into account film speed and the aperture opening, the camera's electronics determine the amount of flash light needed for a correct exposure. A glowing light under the left edge of the focusing screen indicates that the flash attachment is ready to be fired. After an exposure has been made, a blinking signal shows that the flash attachment has discharged the right amount of light.

The 500ELX accepts the entire Hasselblad CF-lens series which consists of 14 different focal lengths from 30 mm (fisheye) to 500 mm (telephoto). The focal lengths of the telephoto lenses can be doubled by using the Hasselblad Mutar 2X teleconverter. A zoom lens, the Schneider Variogon C has a focal length range from 140–280 mm. The built-in leaf shutters of the lenses offer settings from 1–1/500s and B, all of which are synchronized for flash.

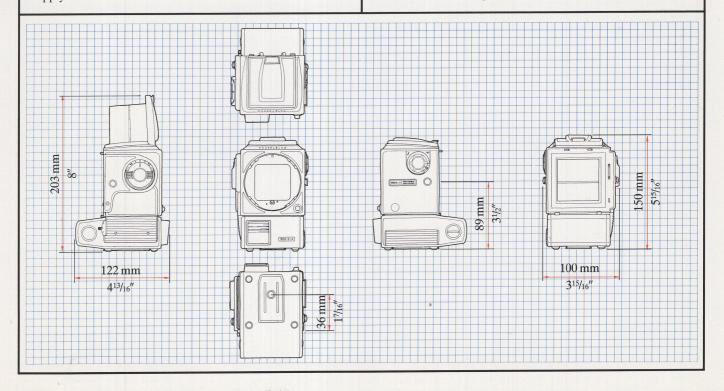
The camera's viewfinder system accepts several different types of focusing screens and prism viewfinders with or without a built-in meter that features center-weighted, throughthe-lens light measurement. The camera body comes with a standard focusing hood with a finefocusing magnifier that is interchangeable with correction magnifier that has interchangeable correction magnifiers for compensating faulty vision.

The interchangeable film magazines provide wide versatility with regard to film format, film loads, and film types. There are three different formats;  $2^{1/4} \times 2^{1/4}$ ,  $2^{1/4} \times 1^{5/8}$ , and  $1^{5/8} \times 1^{5/8}$ . Film loads can vary from 12 to 200 exposures per load. A magazine for Polaroid film is available for test shots.

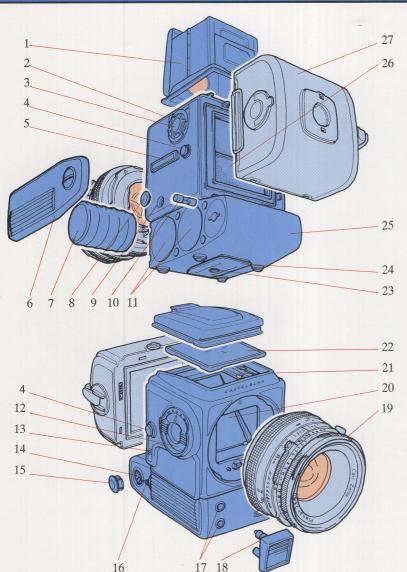
The camera is powered with one or two rechargeable nickelcadmium batteries, but can also be operated independent of battery power when stationary and connected to a power supply unit.



- Superb image quality with a large film size in combination with first class Zeiss optics.
- The superior advantages of motorized operation with the added possibility for sequential exposures lets you concentrate on the subject.
- Through-the-lens flash control for flash units from the System SCA 300.
- Lenses with built-in leaf shutters with speeds from 1 to 1/500s and flash synchronization at all speeds.
- Maximum flexibility. The comprehensive Hasselblad system includes numerous special accessories for the 500 ELX.



# **500ELX Camera Body**



18

- 1. Focusing hood, interchangeable and collapsible
- 2. 500ELX camera body
- 3. Film speed dial for flash
- 4. Strap lug
- 5. Accessory rail
- 6. Battery compartment cover, interchangeable
- 7. Battery, rechargeable
- 8. Socket plug
- 9. Socket for flash control
- 10. Fuse
- 11. Battery compartment
- 12. Mode selector
- 13. Shutter status indicator
- 14. Side socket for battery charging and cable release
- 15. Socket plug
- 16. Time exposure locking and charging lever
- 17. Front release sockets
- 18. Release plate, interchangeable
- 19. Lens (interchangeable accessory)
- 20. Reflex mirror
- 21. Signal diode
- 22. Focusing screen, interchangeable
- 23. Tripod socket (3/8")
- 24. Tripod plate for quick-coupling attachment
- 25. Motor housing
- 26. Auxiliary shutter
- 27. Film magazine (interchangeable accessory)

## **Technical specifications and equipment**

and focusing screens.

Camera type:

16

Design:	Integrated motor. The camera body shell and motor housing are built of light metal and each cast in one piece.
Viewfinders:	Folding focusing hood. The camera can accept different types of focusing screens, prism viewfinders with or without a built-in light meter, magnifying hood, or sports viewfinder.
Film advance:	Automatic, motorized film advance and simultaneous shutter cocking. Exposure rate of approx. 1.2 frames/s. Mode selector for single exposures, automatic, automatic with pre-release.
Battery/capacity:	Rechargeable 6 V nickel cadmium type (DEAC 5/600 DKZ). Battery size 35×50 mm. Weight 137 g. A maximum of 1,000 exposures per fully charged battery. The camera can be loaded with one or two batteries.
Flash control:	OTF/TTL-measurement. ISO 15–1000 with the flash adapater SCA 390 for connection with flash units from the System SCA 300. Measuring area within Ø 40 mm in the center of the film surface.
Tripod socket:	3/8" socket thread and tripod plate for quick-coupling attachment.
External dimensions:	Camera body only—see opposite side. The camera body with 80 mm Planar CF-lens and magazine A12: $180 L \times 100 W \times 150 H mm (7 \times 4 \times 6 in)$ .
Weight:	Camera body only: 1230 g (2 lb 11 oz). The camera body with 80 mm Planar CF-lens and magazine A12: 2130 g (4 lb 11 oz).
	The same hely (chrome model product no 10066 or black model product no 1020) comes with a standard focusing

Motorized, single-lens reflex camera with 21/4×21/4 film size (max.). Interchangeable lenses, film magazines, viewfinders,

The camera body (chrome model, product no. 10066 or black model, product no. 10220) comes with a standard focusing screen, focusing hood, recharge unit, battery, fuses, release plate, release cord, carrying strap, and front and rear protective covers. Accessories

14 interchangeable Hasselblad CF-lenses. The CF-series has a built-in shutter in all lenses with speeds from 1 to 1/500s and Lenses:

X synchronization for electronic flash at all speeds. Interchangeable magazines in the following film sizes:  $2^{1/4} \times 2^{1/4}$ ,  $2^{1/4} \times 1^{5/8}$ ,  $1^{5/8} \times 1^{5/8}$ ; and film types: 120, 220, 70 mm double Film magazines: perforated film, sheet film, and Polaroid film.

More information on other accessories in the Hasselblad Product Catalog. Exclusive U.S. distributor: Victor Hasselblad Inc., 10 Madison Road, Fairfield, New Jersey 07006

# **№** 500 C/M Camera Body

The Hasselblad 500C/M is a medium format, single-lens reflex camera with manual film advance. With few exceptions, the camera accepts all of the other accessories in the comprehensive Hasselblad system, offering maximum versatility with regard to equipment configurations. In a matter of seconds, the photographer can build a Hasselblad combination to suit any particular need.

The Hasselblad 500C/M camera body is the camera's central unit. The camera body accepts the Hasselblad CF-lens series which offers 14 different focal lengths from 30 mm (fish-eye) to 500 mm (telephoto). All of the lenses in the series are made by Carl Zeiss, West Germany.

The interchangeable film magazines provide wide versatility with regard to film formats, film loads, and film types. There are three different film formats;  $2^{1/4} \times 2^{1/4}$ ,  $1^{5/8} \times 2^{1/4}$ , and  $1^{5/8} \times 1^{5/8}$ . Film loads can vary from 12 to 200 exposures per load.

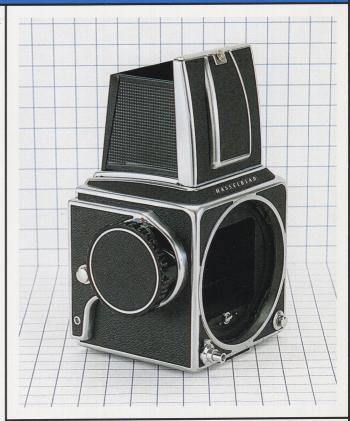
The camera's viewfinder system accepts several different types of focusing screens and prism viewfinders with or without a built-in meter that features center-weighted, through-the-lens light measurement.

The standard winding knob, which can be replaced with a rapid winding crank or knob with built-in exposure meter, manually advances the film while simultaneously cocking the shutter.

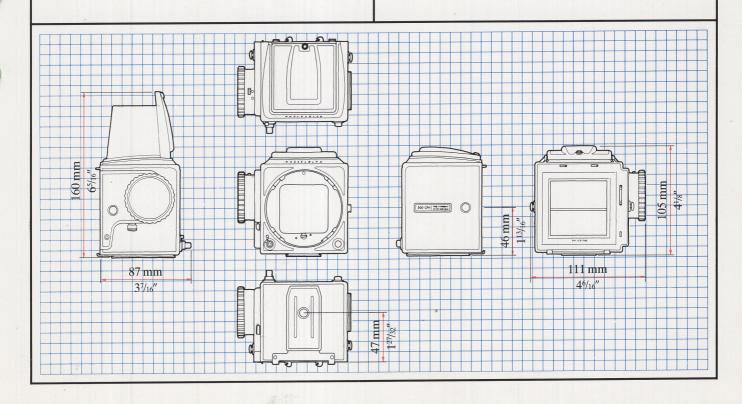
On the camera's left side there is an accessory rail for the sports viewfinder, spirit-level, and other accessories. There is a tripod socket for tripod or pistol grip attachment on the camera's underside.

The 500 C/M is surprisingly small and light for a medium format camera making it an excellent choice for hand-held photography. With the camera firmly gripped in your left hand, your right hand is free to focus, set the exposure values or advance the film.

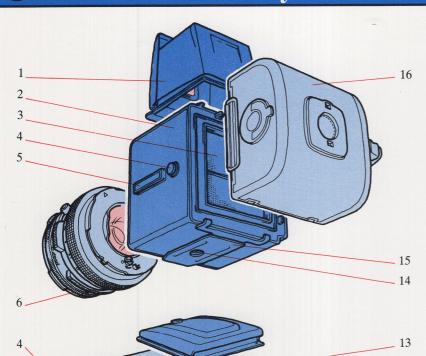
The Hasselblad 500C/M is a rugged camera built to handle grinding professional workloads under demanding conditions. The sturdy, light metal camera body shell, which is cast in one piece, contributes to the precision necessary for achieving superior image sharpness.



- Superb image quality with a large film size in combination with first class Zeiss optics.
- Easy to use and reliable. Compact design.
- Built-in leaf shutter with speeds from 1 to 1/500s. Flash synchronization at all speeds.
- Maximum flexibility. A part of the world's most comprehensive system for medium format cameras.
- An investment in the future. Accessories from the Hasselblad system are compatible irrespective of when they were made.



## **№** 500C/M Camera Body



- 1. Focusing hood, interchangeable and collapsible
- 2. 500C/M camera body
- 3. Auxiliary shutter
- 4. Strap lug
- 5. Accessory rail
- 6. Lens (interchangeable accessory)
- 7. Winding knob (interchangeable)
- 8. Shutter status indicator
- 9. Pre-release latch
- 10. Time exposure lock
- 11. Shutter release
- 12. Reflex mirror

\_ 12

- 13. Focusing screen (interchangeable)
- 14. Tripod socket (3/8")
- 15. Tripod plate for quick-coupling attachment
- 16. Film magazine (interchangeable accessory)

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10

Camera type:	Single-lens reflex camera with $2^{1/4} \times 2^{1/4}$ film size (max.). Interchangeable lenses, film magazines, viewfinders, and focusing screens.
Design:	Mechanical assembly with a light metal camera body shell cast in one piece.
Viewfinders:	Folding focusing hood. The camera can accept different types of focusing screens, prism viewfinders with or without a built-in light meter, magnifying hood, or sports viewfinder.
Film advance:	Manual advance with simultaneous shutter cocking. Standard winding knob which can be replaced with a rapid-winding crank or knob with built-in exposure meter.
Tripod socket:	3/8" socket thread and tripod plate for quick-coupling attachment.
External dimensions	Camera body only—see opposite side. Camera body with 80 mm Planar CF lens and film magazine A12: $180 L \times 111 W \times 105 mm H (7 \times 4^{1/4} \times 4 in)$ .
Weight:	Camera body only: 600 g (1 lb 5 oz). The camera body with 80 mm Planar CF lens and film magazine A12: 1500 g (3 lb 5 oz).
	The camera body (chrome model, product no. 10022 or black model, product no. 10170) comes with standard focusing screen, focusing hood, winding knob, neck strap, and front and rear protective covers.

14 interchangeable Hasselblad CF-lenses. The CF series has a built-in leaf shutter in all lenses with speeds from 1 to 1/500s

Interchangeable magazines for the following sizes:  $2^{1/4} \times 2^{1/4}$ ,  $1^{5/8} \times 2^{1/4}$ , and  $1^{5/8} \times 1^{5/8}$ ; and film types: 120, 220, 70 mm double-

and X synchronization for electric flash at all speeds.

More information on other accessories in the Hasselblad Product Catalog.

perforated film, sheet film, and Polaroid film.

Accessories

Film magazines:

Lenses:

Right to changes without notice.

## <page-header> 500EL/M Camera Body

The Hasselblad 500EL/M is a medium format, motorized, single-lens reflex camera. With few exceptions, the camera accepts all of the other accessories in the comprehensive Hasselblad system. A large number of special accessories further enhances the camera's area of application.

The Hasselblad 500EL/M camera body is the camera's central unit. The camera body accepts the Hasselblad CF-lens series which offers 14 different focusing lengths from 30 mm (fisheye) to 500 mm (telephoto). All of the lenses are made by

Carl Zeiss, West Germany.

The interchangeable film magazines provide wide versatility with regard to film format, film loads, and film types. There are three different formats;  $2^{1/4} \times 2^{1/4}$ ,  $1^{5/8} \times 2^{1/4}$ , and  $1^{5/8} \times 1^{5/8}$ . Film loads can vary from 12 to 200 exposures per load.

The camera's viewfinder system accepts several different types of focusing screens and prism viewfinders with or without a built-in meter that features center-weighted, through-

the-lens light measurement.

The built-in motor automatically advances the film and cocks the shutter. This allows the photographer to devote all of his attention to the subject and also provides the added possibility of taking sequential exposures with remote control operation. These features provide greater freedom of movement in the studio with the camera mounted on a tripod as well as in other situations over long distances, where several different special accessories can be used to trigger the camera.

The camera has five different release modes including an automatic setting for sequential exposures at the rate of 70

frames per minute.

The camera is powered by one or two rechargeable batteries, but can also be operated independent of battery power when

stationary and connected to a power supply unit.

The motor is completely integrated with the camera's mechanism. For maximal operational reliability, the dimensions of the camera's parts have been designed for motorized operation. The sturdy, light metal camera body shell, which is cast in one piece, contributes to the precision necessary for achieving superior image sharpness.

The Hasselblad 500EL/M is built to handle grinding professional workloads under demanding conditions. The astronautes used the Hasselblad 500EL/M during their voyages to the moon and the camera is standard equipment on American

space shuttle flights.



• Superb image quality with a large film size in combination with first class Zeiss optics.

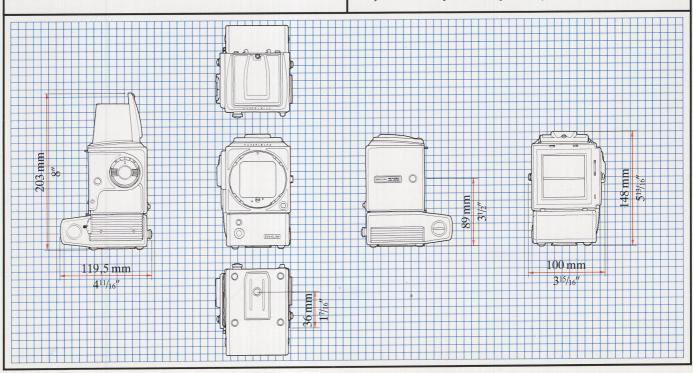
 The superior advantages of motorized operation with the added possibility for sequential exposures lets you concentate on the subject.

• Built-in leaf shutter with speeds from 1 to 1/500 s. Flash synchronization at all speeds.

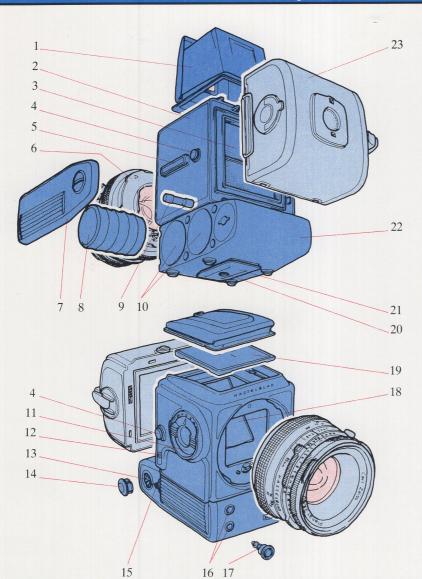
 Dependability. Tried and tested in space as well as under the ocean.

• Maxiumum flexibility. The comprehensive Hasselblad system has numerous special accessories for the 500 EL/M.

• An investment in the future. Accessories from the Hasselblad system are compatible irrespective of when they were made.



# **№** 500EL/M Camera Body



- 1. Focusing hood, interchangeable and collapsible
- 2. 500EL/M camera body
- 3. Auxiliary shutter
- 4. Strap lug
- 5. Accessory rail
- 6. Lens (interchangeable accessory)
- 7. Batttery compartment cover, interchangeable
- 8. Battery, rechargeable
- 9. Fuse
- 10. Battery compartment
- 11. Mode selector
- 12. Shutter status indicator
- 13. Side socket for battery charging and cable release
- 14. Socket plug
- 15. Time exposure locking and charging lever
- 16. Front release sockets
- 17. Shutter release, interchangeable
- 18. Reflex mirror
- 19. Focusing screen, interchangeable
- 20. Tripod socket (3/8")
- 21. Tripod plate for quick-coupling attachment
- 22. Motor housing
- 23. Film magazine (interchangeable accessory)

# Camera type: Motorized, single-lens reflex camera with 2½×2¼ film size (max.). Interchangeable lenses, film magazines, viewfinders, and focusing screens. Design: Integrated motor. The camera body shell and motor housing are built of light metal and cast in one piece. Viewfinders: Folding focusing hood. The camera can accept different types of focusing screens, prism viewfinders with or without a built-in light meter, magnifying hood, or sports viewfinder.

Film advance: Automatic, motorized film advance and simultaneous shutter cocking. Exposure rates from 1 frame per second to 70 frames per minute. Mode selector.

**Battery/capacity:** Rechargeable nickel cadmium type (DEAC 5/600 DKZ). Battery size 35×50 mm. Weight 137 g. A maximum of 1,000 exposures per fully charged battery. The camera can be loaded with one or two batteries.

**Tripod socket:** 3/8" socket thread and tripod plate for quick-coupling attachment.

**External dimensions:** Camera body only–see opposite side. The camera body with 80 mm Planar CF lens and magazine A12:  $180 L \times 100 W \times 148 mm H (7 \times 4 \times 5 \% in)$ .

Weight: Camera body only: 1200 g (2 lb 10 oz). The camera body with lens and magazine A12: 2000 g (4 lb 7 oz).

The camera body (chrome model, product no. 10065 or black model, product no. 10219) comes with a standard focusing screen, focusing hood, recharge unit, battery, fuses, release button, release cord, carrying strap, and front and rear protective

covers.
Accessories

Lenses: 14 interchangeable Hasselblad CF lenses. The CF series has a built-in shutter in all lenses with speeds from 1 to 1/500 s and X synchronization for electronic flash at all speeds.

Film magazines: Interchangeable magazines in the following film sizes: 21/4×21/4, 15/8×21/4, 15/8×15/8; and film types: 120, 220, 70 mm double-perforated film, sheet film, and Polaroid film.

More information on other accessories in the Hasselblad Product Catalog. Right to changes without notice.

**Technical specifications and equipment** 

# **2000FC/M Camera Body**

The Hasselblad 2000FC/M is a medium format, single-lens reflex camera with a focal plane shutter. It accepts all of the accessories of the comprehensive Hasselblad system, offering maximum versatility with regard to equipment configurations. In a matter of seconds, the photographer can build a Hasselblad combination to suit any particular need.

The Hasselblad 2000FC/M camera body is the camera's central unit. It accepts both the high speed F-series of lenses that have no built-in shutter and the CF-series with its built-in shutter. Both series combined offer a total of 19 different lenses to choose from with 15 focal lengths from 30 mm (fish-eye) to 500 mm (telephoto). Both of the series are made by Carl Zeiss, West Germany. With a CF-lens mounted on the camera, the photographer can choose to work with the camera's own focal plane shutter or with the built-in leaf shutter in the lens. There is also a zoom lens in the F-series, the Schneider Variogon F f/5.6 140–280 mm.

The focal plane shutter made of titanium is electronically controlled. The 1/2000 s shutter is the fastest of any medium format camera. Together, full-speed and in-between speed settings provide a total of 23 different shutter speeds. The focal plane curtains are automatically retracted from the film opening and are protected when changing film magazines.

The interchangeable film magazines provide wide versatility with regard to film formats, film loads, and film types. There are three different film formats:  $2^{1/4} \times 2^{1/4}$ ,  $1^{5/8} \times 2^{1/4}$ , and  $1^{5/8} \times 1^{5/8}$ . Film loads can vary from 12 to 200 exposures per load.

The camera's viewfinder system accepts several different types of focusing screens and prism viewfinders with or without a built-in meter that features center-weighted, throughthe-lens light measurement.

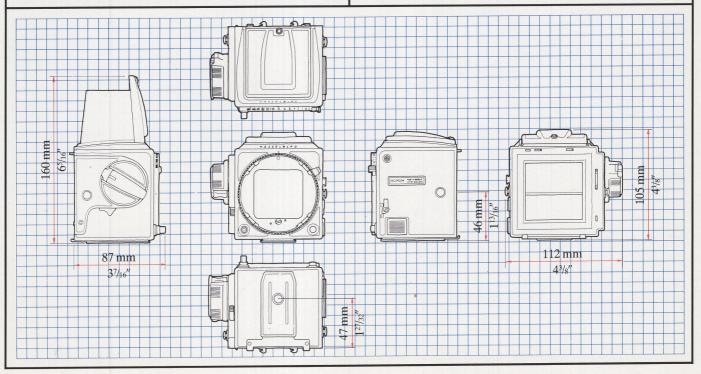
The film is manually advanced with the folding winding knob and can be disengaged for intentional double or multiple exposures of the same frame.

The camera's mirror delivers a non-vignetting viewfinder image and can be programed for three different modes; instant, return, return when the shutter is cocked, and locked in a raised position.

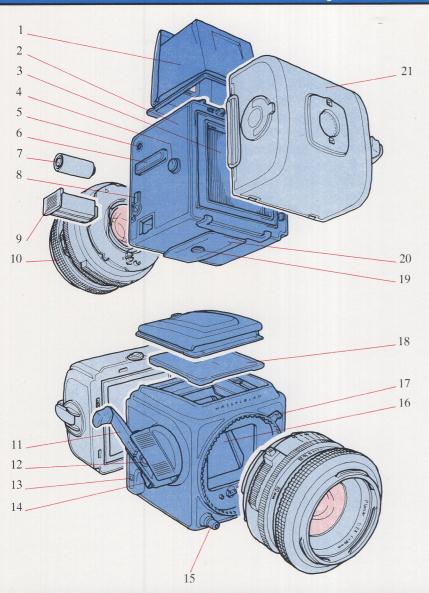
The Hasselblad 2000FC/M is a camera with advanced characteristics for handling demanding photographic assignments. The sturdy, light metal camera body shell, which is cast in one piece, contributes to the precision necessary for achieving superior image sharpness.



- Superb image quality with a large film size in combination with first class Zeiss optics.
- Extremely fast shutter speeds from 1 to 1/2000 s.
- Two optional shutter systems. Built-in leaf or focal plane shutters with the Hasselblad CF-lens series.
- No other medium format camera can offer higher speeds than the Hasselblad F-lens series.
- Maximum flexibility. A part of the world's most comprehensive system for medium format cameras.
- An investment in the future. Accessories from the Hasselblad system are compatible irrespective of when they were made.



# **№ 2000FC/M Camera Body**



- 1. Focusing hood, interchangeable and collapsible
- 2. 2000FC/M camera body
- 3. Focal plane shutter
- 4. Strap plug
- 5. PC outlet for focal plane shutter
- 6. Accessory rail
- 7. Battery
- 8. Shutter speed ring lock
- 9. Battery compartment, interchangeable
- 10. Lens (interchangeable accessory)
- 11. Winding crank
- 12. Mirror program setting
- 13. Shutter status indicator
- 14. Pre-release latch
- 15. Shutter release
- 16. Reflex mirror
- 17. Shutter speed ring with prong
- 18. Focusing screen, interchangeable
- 19. Tripod socket 3/8"
- 20. Tripod plate for quick-coupling attachment
- 21. Film magazine (interchangeable accessory)

Technical specifi	cations and equipment
Camera type:	Single-lens reflex camera with 2 <sup>1</sup> / <sub>4</sub> ×2 <sup>1</sup> / <sub>4</sub> film size (max.) and built-in focal plane shutter.
Design:	Electromechanical design with light metal camera body shell cast in one piece.
Viewfinder:	Non-vignetting viewfinder image. Folding focusing hood. The camera can accept different types of focusing screens, prism viewfinders with or without a built-in light meter, focusing hood, or sports viewfinder.
Film advance:	Manual advance with simultaneous shutter cocking. Folding winding crank with mirror program disc for multiple exposure.
Shutter:	Horizontal focal plane shutter of titanium with speeds from 1 to 1/2000s. With CF-lenses, built-in leaf shutter with speeds from 1 to 1/500s.
Flash synchronization:	Focal plane shutter with X synchronization at 1/90 s or slower shutter speeds.
Battery/capacity:	6V PX-28 type. Fresh battery good for 20,000 exposures.
Tripod socket:	3/8" socket thread and tripod plate for quick-coupling attachment.
External dimensions:	Camera body only-see opposite side. The camera body with 80 mm Planar F lens and magazine A12: 176 L×112 W×105 mm $(7 \times 4^{1/2} \times 4^{1/4} \text{in})$ .
Weight:	Camera body only: 720 g (1 lb 9 oz). The camera body with 80 mm Planar F lens and magazine A12: 1550 g (3 lb 6 oz).
Accessories	The camera body (chrome model, product no. 10316 or black model, product no. 10332) comes with standard focusing screen, focusing hood, neck strap, and front and rear protective covers.
Lenses:	Interchangeable Hasselblad F-lens series without built-in shutters and CF-lens series with built-in leaf shutters. The CF-lens series has $X$ synchronization for electronic flash at all speeds from 1 to $1/500$ s.
Film magazines:	Interchangeable magazines for the following sizes: $2^{1/4} \times 2^{1/4}$ , $1^{5/8} \times 2^{1/4}$ , and $1^{5/8} \times 1^{5/8}$ ; and film types: 120, 220, 70 mm double-perforated film, sheet film, and Polaroid film.

More information on other accessories in the Hasselblad Product Catalog.

Right to changes without notice.

## **SWC/M Camera Body**

The Hasselblad SWC/M is a wide-angle, medium format camera with an optical viewfinder. The camera accepts many other accessories from the comprehensive Hasselblad system.

The Hasselblad SWC/M camera body has a permanently attached wide-angle lens, the 38mm f/4.5 Biogon CF, which is made by Carl Zeiss, West Germany. Its uncompromising design is characterized by the camera's superb optics with regard to image sharpness and corner quality. The lens offers the very best in corner-to-corner sharpness without a trace of distortion.

The camera's wide-angle (a diagonal angle of view of  $90^{\circ}$ ) together with its depth of field which ranges from 26 in to infinity at f/22 enables the photographer to concentrate completely on the subject. The built-in leaf shutter operates silently and is synchronized for electronic flash at all speeds down to 1/500 s.

The interchangeable film magazines provide wide versatility with regard to film formats, film loads, and film types. There are three different film formats to choose from:  $2^{1}/4 \times 2^{1}/4$ ,  $1^{5}/8 \times 2^{1}/4$ , and  $1^{5}/8 \times 1^{5}/8$ . Film loads can vary from 12 to 200 exposures per load.

The Hasselblad magazine 100 for Polaroid film can be used for immediate picture information on exposure, lighting, and composition.

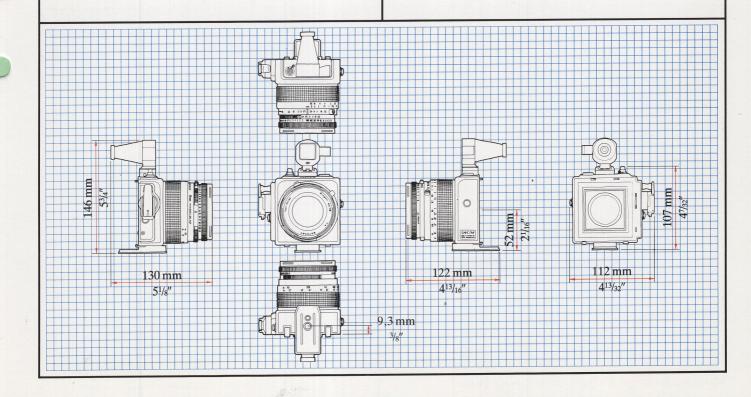
The optical viewfinder is equipped with a spirit-level which makes vertical and horizontal alignment easier. When a focusing screen adapter is used, the camera can accept other types of viewfinders from the Hasselblad system.

The folding winding knob manually advances the film and cocks the shutter.

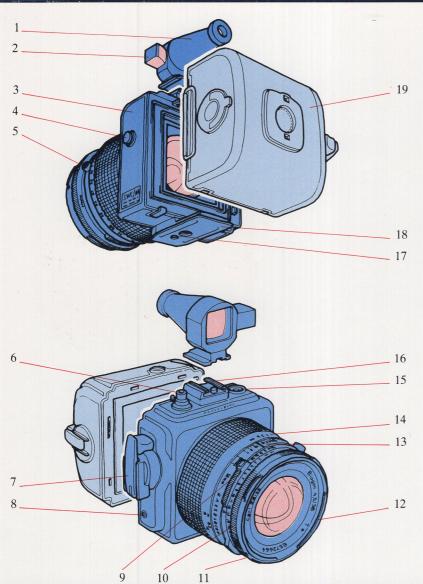
The extremely compact Hasselblad SWC/M with its conveniently located shutter release button works excellently as a hand-held camera or precision instrument for architectural or reproduction photography with the use of a tripod.



- Superb image quality with a large film size and superior special lens from Zeiss.
- Ready for exposure when you are with an extreme wide angle of view and enormous depth of field.
- Easy to use. Compact design.
- Extremely flexible. The comprehensive Hasselblad system offers unlimited possibilities.
- An investment in the future. Accessories from the Hasselblad system are compatible irrespective of when they were made.



# **SWC/M Camera Body**



- 1. Viewfinder
- 2. Prism for reflecting spirit level
- 3. SWC/M camera body
- 4. Strap lug
- 5. PC flash terminal
- 6. Shutter release
- 7. Winding crank
- 8. Shutter status indicator
- 9. Aperture ring with cross-coupling lever
- 10. Shutter speed ring
- 11. External accessory mount
- 12. Internal accessory mount
- 13. Depth-of-field scale
- 14. Focusing ring with distance scale
- 15. Spirit level
- 16. Viewfinder mount
- 17. Tripod sockets (3/8" and 1/4")
- 18. Tripod plate for quick-coupling attachment
- 19. Film magazine (interchangeable accessory)

## **Technical specifications and equipment**

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Camera type:	Wide-angle camera with a permanently attached lens, optical viewfinder, and interchangeable film magazine.
Design:	Mechanical assembly with a light metal camera body shell cast in one piece. Convenient shutter release on top. Built-in spirit level.
Viewfinder:	Removable optical viewfinder with prism for reflecting spirit level.
Film advance:	Manual advance with simultaneous shutter cocking. Folding winding crank.
Lens:	38mm f/4.5 Carl Zeiss Biogon CF T*.
Aperture/focal length:	1:4.5/38 mm.
Angle of view:	Diagonal 90°, horizontal 72° with 21/4×21/4 format.
Front lens cap:	For accessories with $\emptyset$ 60.
	(Other lens specifications available in the product information sheet for the 38mm Biogon CF.)
Tripod socket:	<sup>3</sup> / <sub>8</sub> " and <sup>1</sup> / <sub>4</sub> " socket threads and tripod plate for quick-coupling attachment.
External dimensions:	Camera body with lens only–see opposite side. Complete with magazine A12: $145 \text{ L} \times 112 \text{ W} \times 146 \text{ mm H } (5^{3/4} \times 4^{1/2} \times 5^{3/4} \text{ in}).$
Weight:	Camera body with lens only: 980 g (2 lb 3 oz). Complete with film magazine A12: 1380 g (3 lb 1 oz).
	The camera body (chrome model, product no. 10050 or black model, product no. 10198) comes with viewfinder, neck strap, front lens cap and rear protective cover.
Accessories	
Film magazines:	Interchangeable magazines for following film sizes: $2^{1/4} \times 2^{1/4}$ , $1^{5/8} \times 2^{1/4}$ , and $1^{5/8} \times 1^{5/8}$ ; and film types: 120, 220, 70mm double-perforated film, sheet film, and Polaroid film.

More information on other accessories in the Hasselblad Product Catalog.

Right to changes without notice.



# HASSELBLAD INFORMATION

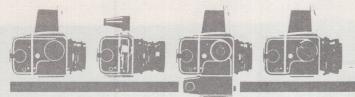
Victor Hasselblad Inc. 10 Madison Road Fairfield, N.J. 07006 Tel. (201) 227-7320

## TEN ADVANTAGES OF THE MEDIUM FORMAT

- 1.  $2\frac{1}{4}$  square  $3\frac{1}{2}$  X larger than 35mm frame.
- 2. Greatly improved image quality compared to 35mm.
- 3. Extensive cropping possibilities.
- 4. Better retouching possibilities.
- 5. Convenient image evaluation with the naked eye.
- 6. Proofsheet evaluation without need for magnifying glass.
- 7. Camera offers large "view camera" groundglass screen.
- 8. Large image produced with a lightweight, portable camera.
- 9. "View camera" advantages combined with 35's fast shooting capability.
- 10. Medium format Hasselblad cameras are ideal for studio work and location photography.

## ELEVEN REASONS WHY THE SQUARE IS THE MOST IDEAL FORMAT

- 1. No need to turn the camera.
- 2. Choice of waistlevel; 45° and 90° finder offers viewing possibilities from any angle.
- 3. Image evaluation on groundglass with both eyes open.
- 4. Extensive cropping possibilities with possibility of changing square negative into horizontal or vertical prints.
- 5. Most "ideal" format for composition.
- 6. Square image make the most effective slide projection with every image filling the entire square screen.
- 7. Perfect record album cover format.
- 8. Beautiful wedding album format.
- 9. Ideal "proofsheet format." No need to turn proofsheet.
- 10. Square image on 8 X 10 paper makes a professional looking PR presentation print.
- 11. Popular advertising format.



# HASSELBLAD INFORMATION

Victor Hasselblad Inc. 10 Madison Road Fairfield, N.J. 07006 Tel. (201) 227-7320

#### TWENTY-TWO ADVANTAGES OF THE MOTORDRIVEN ELX

- 1. Camera can be operated with "normal" electronic flash in manual or automatic mode or in automatic dedicated flash mode with light measured on the film plane.
- 2. Dedicated flash unit can be on or off the camera.
- 3. Automatic dedicated flash operation combined with photographers complete control of aperture and shutter speed selection.
- 4. Flash exposure measured in 40mm center area of film, thus dedicated flash operation usable with all film magazines.
- 5. Automatic dedicated flash operation in close-up photography with Hasselblad Makro Flash Unit.
- 6. Flash ready signal in camera viewfinder so photographer can keep eye in finder.
- 7. Signal in camera finder indicates whether exposure is sufficient.
- 8. Flash sync up to 1/500 sec. with full line of lenses.
- 9. Non-vignetting mirror shows complete area coverage with all lenses and close-up accessories.
- 10. Large release plate, replaceable with release button or cable.
- 11. Motordrive ideal for sequence photography without need for removing eye from viewfinder.
- 12. Camera is always ready for shooting.
- 13. Camera can be operated with one hand.
- 14. Film is advanced without disturbing camera set-up.
- 15. Ideal for remote operation.
- 16. Wireless remote operation possible with radio, infrared.
- 17. Automatic sequence photography with intervalometer.
- 18. Perfect for multiple camera operation.
- 19. Single battery delivers 1,000 exposures; 2,000 exposures possible with two batteries in camera.
- 20. Motor operation works in single picture operation with or without mirror lock up and also in either mode in automatic operation.
- 21. Waistlevel finder with diopter correction possibility.
- 22. Component interchangeability with other Hasselblad models.

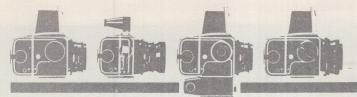


# HASSELBLAD INFORMATION

Victor Hasselblad Inc. 10 Madison Road Fairfield, N.J. 07006 Tel. (201) 227-7320

#### EIGHTEEN GOOD REASONS FOR SELECTING THE 2000 FCW

- 1. Camera can be operated with focal plane shutter or with leaf shutter in CF lenses.
- 2. Camera can be operated electronically (with focal plane shutter) or as a completely mechanical camera without the need of a battery (with a leaf shutter lens).
- 3. Film can be transported manually with winding knob/crank combination or automatically with attached compact motordrive.
- 4. Camera provides shutter speeds up to 1/2000 sec. and flash sync up to 1/500 sec. (with full range of CF shutter lenses).
- 5. Accurate, electronically-controlled focal plane shutter.
- 6. Short 1/2000 sec. shutter speed.
- 7. Long 60 sec. exposure time (with multiplier).
- 8. Focal plane shutter protection (automatic curtain retraction).
- 9. Automatic shutter recocking when film magazine is reattached (with motordrive on camera).
- 10. Focal plane flash sync up to 1/90 sec.
- 11. Flash firing control so flash fires at sync speeds only.
- 12. 1/500 sec. flash sync with 15 shutter lenses including zoom.
- 13. Instant return mirror.
- 14. Double exposures possible without removing magazine.
- 15. Use of large aperture lenses (up to f/2).
- 16. Extensive use of special lenses (i.e., luminars) and great potential for future design of optics.
- 17. Motor winder serves as an excellent grip for carrying and photographing.
- 18. Component interchangeability with other models.

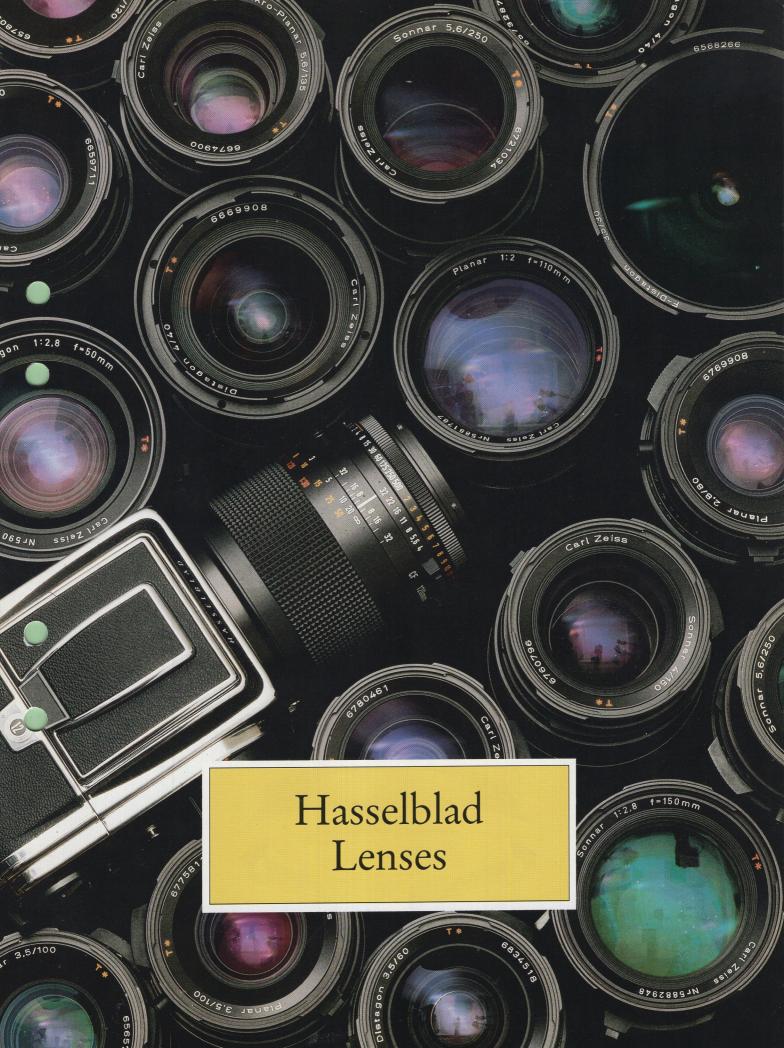


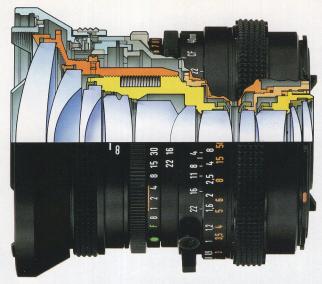
# HASSELBLAD INFORMATION

Victor Hasselblad Inc. 10 Madison Road Fairfield, N.J. 07006 Tel. (201) 227-7320

#### EIGHTEEN REASONS FOR SELECTING CF LENSES

- 1. Large metal lens barrel provides smooth operation of all controls and an assurance that the precise and accurate alignment of all lens elements is maintained.
- 2. Every lens element is manufactured, multicoated, and assembled to a degree of precision other manufacturers use for critical scientific instruments only.
- 3. Performance data are not factory secrets. The sharpness, acutance, and distortion for all Carl Zeiss lenses are documented, readily available, and guaranteed.
- 4. Standardized 60mm filter and lens accessories mount on all lenses from 50 to 250mm focal length and SWC/M. Standardized 93mm filter and lens accessory mount on 40, 350, and 550mm CF lenses.
- 5. Most modern shutter design developed through close cooperation between Hasselblad, Zeiss, and Prontor.
- 6. The size of the shutter is matched to each lens for greatest accuracy and efficiency at all apertures and shutter speeds.
- 7. CF lens operating controls are matched to those on F lenses.
- 8. Accuracy and life expectancy further improved with large mainspring (used in the space taken up by the selftimer in C lenses).
- 9. Aperture and shutter speed can be set independently for complete creative control or interlocked so either the aperture or the shutter speed sets itself automatically when the other is changed.
- 10. "F" lens setting maintains the 2000 FC's instant return mirror benefits.
- 11. Practical manual diaphragm stop down control.
- 12. All shutter speeds up to 1/500 sec. synchronized automatically for electronic flash.





Lenses are optical and mechnical precision instruments. A Zeiss Distagon CF f/4 40 mm  $T^*$ , has no fewer than 403 parts.

# The crucial choice

There are no short cuts to high picture quality. Every detail of a camera's optical system is equally important to the final picture.

The tolerances are very small. Everything must be perfect, from the tolerances in the camera, lenses and magazines to the film's position on the film plane, the grinding of the lens surfaces and the anti-reflection coating.

In order to keep its place in the Hasselblad system, a lens must meet very clearly defined optical and mechanical performance specifications. And its operation and reproduction quality must be able to stand up to years of hard professional use.

#### The world's best lens manufacturers

Hasselblad lenses are produced in cooperation with the world's leading lens manufacturers. The expertise, technology and commitment to quality we demand are found at Carl Zeiss and Jos. Schneider & Co. of West Germany

The lenses are subjected to rigorous quality control at every point of the manufacturing process. As you would expect, every lens must pass a final series of tests before leaving the factory.

A lens that does not meet the required specifications, for example, because of unsatisfactory resolution characteristics or imperfect dimensioning on the mounts, can never get by these stringent tests.

It's a demanding quality control system built up to ensure that Hasselblad lenses can be matched by few other manufacturers. But we don't stop there. When the lenses arrive at Hasselblad, they are put through another series of tests before they're approved for sale.

A complete lens program

Today the Hasselblad system includes 23 different lenses with focal lengths from 30 mm wide angle to

500 mm telephoto. Our goal is to provide a complete lens program to meet the needs of professional photographers in every photographic situation.

There are two main lens types in the Hasselblad system: CF lenses, which have integral leaf shutters and the wider aperture F lenses, specially designed for use with the Hasselblad 2000 series camera focal plane shutter. In addition there are several dedicated lenses and a teleconverter for doubling focal lengths.

#### Which lens options meet your needs best?

Because of the extraordinary breadth of the Hasselblad lens program, there really are no limits. Which lensely you choose for your outfit depends entirely on your own needs

Even with just one or two lenses you will get most of the benefits of the Hasselblad system's unique flexibility. One, classic combination, is 50–80–150 mm. It's still combination many photographers use today. But because the Hasselblad system offers so many choices, it's very likely that one of the other alternatives within each focal length will give you even better results.

Instead of the 80 mm, perhaps a wider angle 60 mm as your standard lens or the longer 100 mm lens would offer a better alternative?

If you need a longer telephoto you could choose a 140–280 zoom instead of the 150 mm lens. Or if you prefer a fixed focal length, you could complement your outfit with a 250 mm telephoto.

For everyday professional work it's enough to choose a lens which makes the most of the picture format. Using every millimeter of the large Hasselblad 6×6 format means you can be sure of the best possible results.

Using the right lens shade is also important. Each lens has its corresponding lens shade carefully designed to shade out as much extraneous light as possible without vignetting. And to ensure that the lenses you choose re-

tain their superlative performance characteristics, remember to always use Hasselblad original filters and close-up lenses.

Special lenses for special subjects

In copying applications the demands made on lens performance are even greater. That's when you benefit from the extraordinary characteristics the designers managed o build into several of our lenses.

Some will give you an unusually high resolution, right out to the corners of the picture. Others offer a minimum of distortion or special possibilities for close-

up work.

To make it easy to choose lenses for those special photographic situations, Hasselblad publishes complete technical data for all the system lenses in detailed product information sheets that provide data on MTF, distortion and light requirements. Your Hasselblad distributor can supply you with copies or you can have them sent direct from Victor Hasselblad AB in Sweden.

Continuous development

In recent years photographic film quality and specifications have improved significantly. This means that lens flaws which weren't even noticed earlier can be seen now. And only those lenses that meet the very highest standards can satisfy the new demands on lens performance.

Since one of our goals is to stay one step ahead of our competitors, our lens manufacturers are constantly seeking ways to improve lens performance. Their major

On their presentation in 1982, the CF lenses were warmly received by Hasselblad photographers. The designers had



The T\* multi-coating diminishes the amount of scatter in the lens and increases image contrast.

Both pictures were taken at exactly the same exposure setting and with the same camera and film. The picture on the left was taken using a 100 mm Planar C without  $T^*$ , the one on the right using a modern 100 mm Planar CF  $T^*$ .

concern is to produce only those improvements in design that will lead to a significant increase in lens quality

or performance.

For Hasselblad this philosophy has been put into practice by offering the very best within optical technology. If you work to professional standards where your only concern is quality of the very highest order, it is especially important that you have access to the latest generation of lenses.

On the next page you will find a chronological list of lenses and improvements it may be useful to know about.

included most of the users' wishes. Pictured here are some of the CF generation's strong points.

#### Standardized lens mount

Eleven of the fourteen CF lenses have a Ø 60 mm filter.

#### Ebutton

Locks out the lens' built-in leaf shutter, returning the viewfinder image instantly when using the focal plane shutter on the 2000FCW.

#### Preview button

Stops down the diaphragm for a quick depth-of-field check on the focusing screen.

#### Protected flash outlet

Flash outlet is held securely by a friction ring.

#### Soft and exact focusing

Improved mechanical movement. Wide and comfortable grip.



#### Convenient settings

The shutter speed and aperture setting rings can be adjusted independently.

#### Doubled lifetime

The newly developed Prontor shutter has double the expected lifetime of the earlier Compur shutter.

#### Cross-coupling button

With the cross-coupling button depressed speed/aperture combinations can be altered without changing the Exposure Value setting.

#### Both metres and feet

Two distance scales. And a focusing index for IR photography.



#### 1957—C Lenses from Zeiss

Hasselblad introduces a new camera model, the 500C/M, and the new C series lens made by Zeiss. The C lenses are matt-chromed and have an integral Compur-shutter. They can be used on all Hasselblad single-reflex cameras built after 1957.

1973—Zeiss T\* multi-coating launched

Zeiss has developed the multi-layer, antireflection, T\* multi-coating. It's considered a breakthrough in optical technology. Reflections inside camera lenses can be greatly reduced.

T\* multi-coating is used first on lens in the 30–80 mm focal length range.

#### 1973—Black trim lenses

All C lenses are supplied in black trim from this year onwards.

#### 1974—T\* multi-coating on all lenses

Only one year after its initial launch, the revolutionary anti-reflection treatment from Zeiss is applied to all Hasselblad lenses. All carry the red T\* symbol.

## 1974—Zeiss Sonnar C Superachromat f/5.6 250 mm

Yet another technological breakthrough—a new lens with practically perfect chromatic correction. It is now possible to focus a lens

in the visible spectrum which can also be used when working in the infra-red range up to 1000 nM.

#### 1976—Zoom lens from Schneider

Zoom-lens specialist Jos. Schneider & Co. in West Germany starts production of the first lens with a variable focal length in the Hasselblad system: the Schneider Variagon f/5.6 140–280 mm.

## 1978—the Hasselblad 2000FC and the F Lenses

A completely new series of Zeiss lenses are introduced at the same time as Hasselblad's focal-plane shutter camera, the 2000FC. These F lenses have a wider aperture and shorter close-up focusing limits than the C lenses. Because they have no built-in shutter, the lenses can only be used with cameras in the 2000 series.

#### 1982—the CF Lenses

The new CF lens series replaces the C lenses. Among the important improvements are a more modern design with improved ergonomics and a newly developed Prontor shutter with double the life-expectancy of the earlier Compur shutter. The CF lenses are designed so they can also be used on the 2000 series cameras.

#### 1982—newly developed CF lenses

Distagon CF f/4 40 mm T\*. Smaller, more compact than its predecessor and with further improved imaging characteristics.

Makro-Planar CF f/4 120 mm T\*. Replaces the S-Planar C f/5.6 120 mm T\* and increases lens speed one stop without impairing performance.

Tele-Apotessar CF f/8 500 mm T\*. By using a new, special glass with unique optical characteristics, Zeiss has succeeded in drastically reducing chromatic aberrations in the Hasselblad system's longest telephoto lens. Imaging characteristics for close-up work have also been improved.

#### 1984—Zeiss Mutar 2X T\*

The teleconverter Mutar 2X brings new posibilities to the Hasselblad lens program. gives extremely high image quality to all Zeiss lenses.

#### 1984—Zeiss Tele-Tessar F f/4 350 mm T\*

An optically true telephoto lens for the 20 series cameras rounds out the lens program at 23 different lenses.

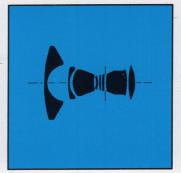
Hasselblad lenses	Focal length	Max. aperture	Dia- phragm	Angle of view diag./horizont.	No. of elements	Focusing range	Filter- diameter	Weight g	Length mm
CF Normal lenses				-					
Planar CF f/2.8 80 mm T*	80 mm	f/2.8	f/2.8-22	52°/38°	7T*	0.9 m−∞	Ø 60	510	65
Planar CF f/3.5 100 mm T*	100 mm	f/3.5	f/3.5-22	42°/30°	5 T*	0.9 m−∞	Ø 60	605	75
CF Wide-angle lenses									
Distagon CF f/3.5 30 mm T*	30 mm	f/3.5	f/3.5-22	180°/112°	9 T*	0.3 m−∞	Ø 26	1365	117.5
Distagon CF f/4 40 mm T*	40 mm	f/4	f/4-22	88°/67°	11 T*	0.5 m−∞	Ø 93	915	102
Distagon CF f/4 50 mm T*	50 mm	f/4	f/4-22	75°/57°	7T*	0.5 m−∞	Ø 60	795	98
Distagon CF f/3.5 60 mm T*	60 mm	f/3.5	f/3.5-22	66°/50°	7 T*	0.6 m−∞	Ø 60	680	83
Biogon CF f/4.5 38 mm T*	38 mm	f/4.5	f/4.5-22	90°/72°	8 T*	0.3 m−∞	Ø 60	960	
CF Telephoto lenses	-								
Sonnar CF f/4 150 mm T*	150 mm	f/4	f/4-32	28°/20°	5 T*	1.4 m−∞	Ø 60	785	101
Sonnar CF f/5.6 250 mm T*	250 mm	f/5.6	f/5.6-45	17°/12°	4 T*	2.5 m−∞	Ø 60	1000	164
Tele-Tessar CF f/5.6 350 mm T*	350 mm	f/5.6	f/5.6-45	12.8°/9°	4 T*	4.5 m−∞	Ø 93	1350	227
Tele-Apotessar CF f/8 500 mm T*	500 mm	f/8	f/8-64	9°/6.4°	5 T*	8.5 m−∞	Ø 93	1810	329
CF Special purpose lenses									
UV-Sonnar CF f/4.3 105 mm	105 mm	f/4.3	f/4.3-32	40°/29°	7	1.8 m−∞	Ø 60	750	91
Makro-Planar CF f/4 120 mm T*	120 mm	f/4	f/4-32	37°/25°	6 T*	0.8 m−∞	Ø 60	695	99
Makro-Planar CF f/5.6 135 mm T*	135 mm	f/5.6	f/5.6-45	32°/23°	7T*	_	Ø 60	625	87
Sonnar CF Superachromat (Sa) f/5.6 250 mm	250 mm	f/5.6	f/5.6-45	17°/12°	6	3 m-∞	Ø 60	985	158
F-lenses									
Distagon F f/2.8 50 mm T*	50 mm	f/2.8	f/2.8-22	74°/56°	9 T*	0.32 m−∞	Ø 93	1240	112
Planar F f/2.8 80 mm T*	80 mm	f/2.8	f/2.8-22	51°/37°	7 T*	0.6 m−∞	Ø 50/Ø 60	425	60
Planar F f/2 110 mm T*	110 mm	f/2	f/2-16	39°/28°	7T*	0.8 m−∞	Ø 70	760	87
Sonnar F f/2.8 150 T*	150 mm	f/2.8	f/2.8-22	30°/21°	5 T*	1.4 m−∞	Ø 70	710	87
Tele-Tessar F f/4 250 mm T*	250 mm	f/4	f/4-32	18°/13°	5 T*	2.5 m−∞	Ø 70	920	157
Tele-Tessar F f/4 350 mm T*	350 mm	f/4	f/4-32	13°/9°	8 T*	1.9 m−∞	Ø 93	2000	262
Zoom Lens									·
Variogon C f/5.6 140-280 mm	140-280 mm	f/5.6	f/5.6-45	16°-30°/11°-22°	17 multi.	2.5 m−∞	Ø 93	1850	240
Teleconverter									т
Mutar 2X T* Teleconverter		_	_	-	7 T*	-	_	420	80

# HASSELBLAD®

Victor Hasselblad AB, Box 220, S-401 23 Göteborg, Sweden

F-**Distagon** T\* f/3.5–30 mm Cat. No. 104877



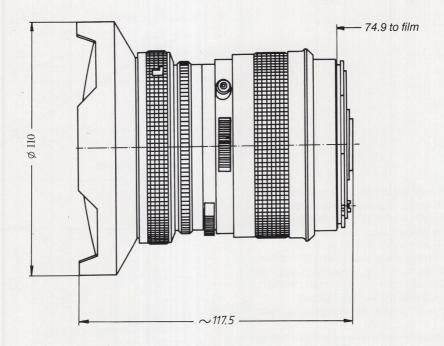




With its angular field of  $180^{\circ}$  of the image field diagonal, this fisheye lens covers the entire  $6 \times 6$  cm format.

Owing to the extremely large angular field photographs taken with this lens supply ample information even of narrow interiors. Its outstanding image quality offers the creative photographer new possibilities. The excellent correction of this lens results in outstanding sharpness, even at initial aperture.

Four special filters (neutral glass and three color filters) are supplied with each lens. These filters are built into the lens and are fixed to the front component, because even the largest attachment filter would occlude the 180° angular field. The filter is part of the optical system. Either the neutral glass or one of the color filters must always be mounted in the lens. To exchange filters, the front component with bayonet mount is removed.



Number of lens elements: 8

Number of components: f-number:

Focal length: Negative size:

Angular field 2 w: Spectral range:

f-stop scale: Mount:

Filter mounting:

8 7 3.5 30.6 mm

56.5 x 56.5 mm

diagonal 180°, side 112° visible spectrum

3.5-4-5.6-8-11-16-22 Prontor CF shutter

filter thread M 24 x 0.5 mm, exchangeable after loosening

of front component

Distance range:

Position of entrance pupil: Diameter of entrance pupil:

Position of exit pupil:

Diameter of exit pupil: Position of principal plane H: Position of principal plane H':

Distance between first and last lens vertex:

∞ to 0.3 m

28.5 mm behind the first lens vertex

8.5 mm

35.9 mm in front of the last

lens vertex

29.9 mm

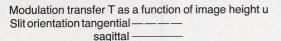
50.4 mm behind the first lens vertex

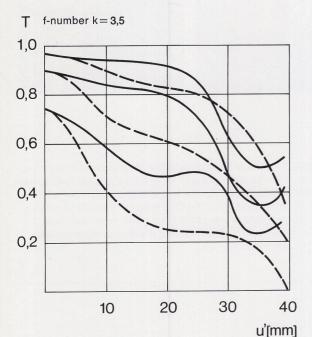
40.2 mm behind the last lens vertex

113.8 mm

## Performance data:

## F-**Distagon** T\* f/3.5–30 mm Cat. No. 104877







The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

#### 2. Relative illuminance

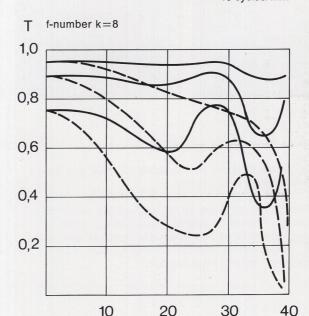
In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

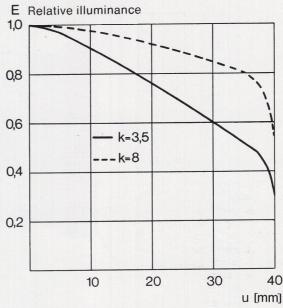
#### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

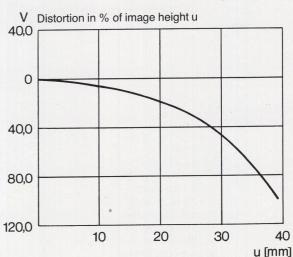


Spatial frequencies R = 10 cycles/mm 20 cycles/mm 40 cycles/mm





u'[mm]



Subject to technical amendment

**Biogon** T\* f/4.5–38 mm Cat. No. 104867





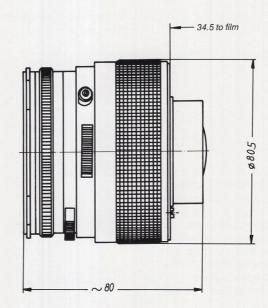


West Germany

Because of the extremely short distance of the last lens vertex from the film plane (back focal distance), the  $\bf Biogon$  lens cannot be used in the Hasselblad 500 C/M-500 EL/M. It is therefore assembled in its own special camera body, the Superwide C.

Even at full aperture the **Biogon** f/4.5–38 mm lens produces pictures of outstanding sharpness and brilliance. Distortion aberration is virtually eliminated. Owing to the short focal length, there is such a large depth of focus that the fixed-focus adjustment can frequently be used.

The **Biogon** lens particularly suitable for architectural and model photography, for interiors and for the recording of technical processes at close range. Whenever maximum image quality has top priority and subjects of this type are to be reproduced with a minimum of distortion, the **Biogon** lens is the best choice. For compactness and performance it cannot be beaten by any retrofocus system.



Number of lens elements: 8 Number of components: 5

f-number: Focal length:

Focal length: Negative size:

Angular field 2 w: Spectral range: f-stop scale: Mount:

Filter mounting:

5 4.5

38.4 mm

56.5 x 56.5 mm diagonal 90°, side 72° visible spectrum

4.5-5.6-8-11-16-22 Prontor CF shutter

mounted on SWC Camera body bayonet for Hasselblad series 60

Distance range:

Position of entrance pupil: Diameter of entrance pupil: Position of exit pupil:

Diameter of exit pupil: Position of principal plane H: Position of principal plane H':

Distance between first and last lens vertex:

∞ to 0.3 m

21.7 mm behind the first lens vertex

8.6 mm

21.6 mm in front of the last lens vertex

9.1 mm

23.5 mm behind the first lens vertex

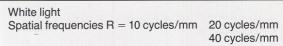
19.9 mm in front of the last

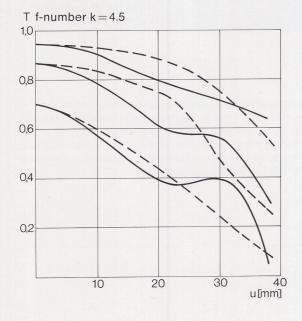
lens vertex

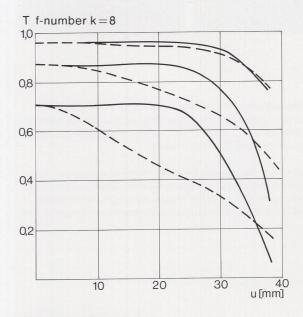
76.2 mm

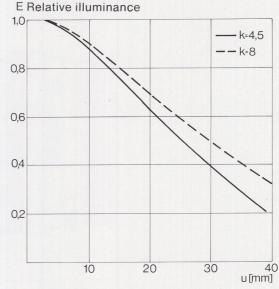
## **Biogon** T\* f/4.5–38 mm Cat. No. 104867

Modulation transfer T as a function of image height u Slit orientation tangential ———— sagittal ————









1. MTF Diagrams

The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = M0 dulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

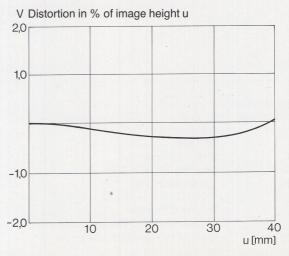
Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.



Subject to technical amendment

## Distagon 7 f/4 - 40 mmCat. No. 104878





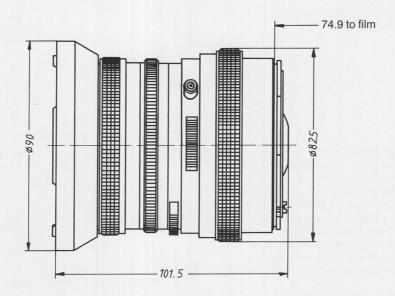


The new **Distagon** f/4 – 40 mm lens has only two things in common with its predecessor – the initial aperture and the focal length.

The user is immediately taken with the attractive and compact form of the helical focusing mount with Prontor CF shutter. Compared with the previous 40 mm lens the weight has been reduced by one third, the mechanical length by approx. 20 % and the diameter of the front mount from 104 mm to 90 mm. The fact that despite the considerably reduced dimensions the image quality of the time-tried Distagon f/4-40 mm lens, 10 41 63, has been surpassed underlines the leading position of Carl Zeiss in the field of optical design.

To attain the target that had been set an additional element was introduced. Thanks to the extreme anti-reflection effect of the T\* coating this measure posed no problems.

On closer observation you will see that the new Distagon lens has two focusing rings. While the one nearest the camera body can be continuously adjusted as usual and has a complete scale from  $\infty$  to 0.5 m, the focusing ring on the front mount is provided with the three click stops  $\infty - 2$  m, 2 m - 0.9 m and 0.9 m - 0.5 m. When setting this ring, the spacing between the front group (elements 1 and 2) and the rest of the system is changed. In this way it is possible to select the air space affording the best image quality for any of these ranges. After this, focusing proper must be carried out as usual.



Number of lens elements: 11 Number of components: f-number:

40.9 mm Focal length\*: 56.5 x 56.5 mm Negative size:

diagonal 88.7°, side 69.3° Angular field 2w:

visible spectrum Spectral range: f-stop scale: 4 - 5.6 - 8 - 11 - 16 - 22 Mount: Prontor CF mount

Hasselblad series 93 Filter mount:

Distance range:

 $\infty$  to 0.5 m. Additional setting of the

focusing ring on the front mount

in 3 click stops.

Smallest object area: 473 x 473 mm (18.6" x 18.6")

Position of entrance pupil\*: 35.4 mm behind the first lens vertex

Diameter of entrance pupil\*: 10.2 mm

Position of exit pupil\*: Diameter of exit pupil\*:

25.9 mm in front of the last lens vertex

24.1 mm

Position of principal

plane H\*:

58.7 mm behind the first lens vertex

plane H'\*:

Position of principal

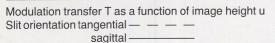
28.7 mm behind the last lens vertex

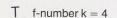
Distance between first and last lens vertex:

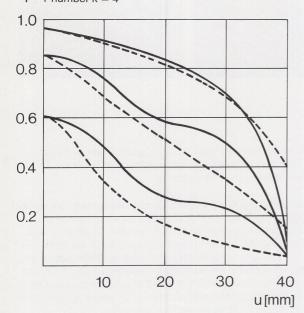
99.4 mm

<sup>\*</sup> for image scale 1 : ∞

## **Distagon** T\* f/4-40 mm Cat. No. 104878

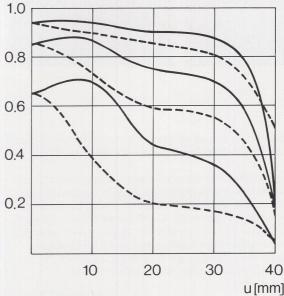




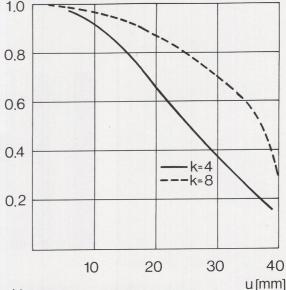


White light Spatial frequencies R = 10, 20 and 40 cycles/mm

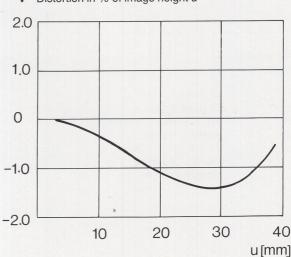
### T f-number k = 8



E Relative illuminance



### / Distortion in % of image height u



### 1. MTF Diagrams

The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

#### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

#### 3 Distortion

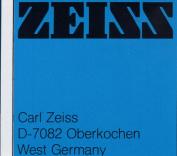
Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

AW-Wa-V/84 Koo

**Distagon** T f/4-50 mm Cat. No. 104870





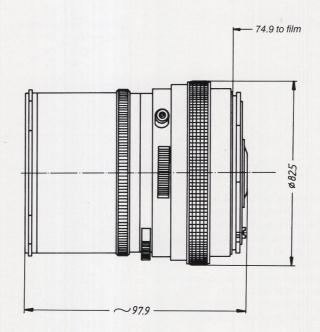


In all wide-angle lenses for reflex cameras the distance between the last lens surface and the image plane is larger than the focal length. This applies also to the 50 mm Distagon lens.

In spite of its extraordinary technical features the Distagon T\* f/4-50 mm lens has a remarkably good correction of all image aberrations and is of unusually compact design.

The **Distagon** T\* f/4-50 mm lens is used above all for landscape and architectural photography, photography of interiors and for press photography.

As the lens is corrected for large object distances, it should be stopped down further when it is used for close-range work.



Number of lens elements: 7 Number of components: f-number:

Focal length: Negative size:

Angular field 2 w: Spectral range:

f-stop scale: Mount: Filter mounting:

Weight:

51.3 mm

56.5 x 56.5 mm diagonal 75°, side 58° visible spectrum 4-5.6-11-16-22 Prontor CF shutter

bayonet for Hasselblad series 60

approx. 795 g

Distance range:

Position of entrance pupil: Diameter of entrance pupil:

Position of exit pupil: Diameter of exit pupil:

Position of principal plane H:

Distance between first and last lens vertex:

∞ to 0.5 m

32.3 mm behind the first lens vertex

21.5 mm in front of the last lens vertex

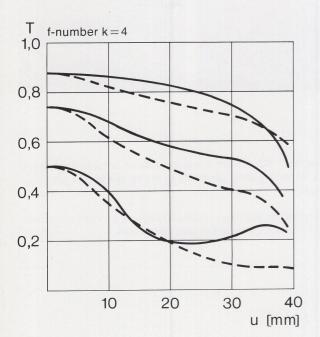
23.0 mm

54.8 mm behind the first lens vertex Position of principal plane H': 18.6 mm behind the last lens vertex

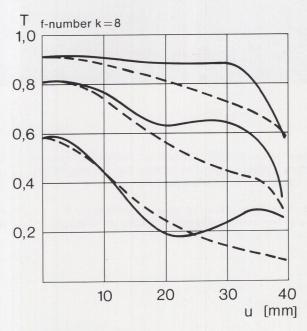
91.7 mm

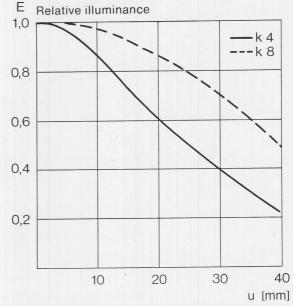
## **Distagon** T\* f/4–50 mm Cat. No. 104870

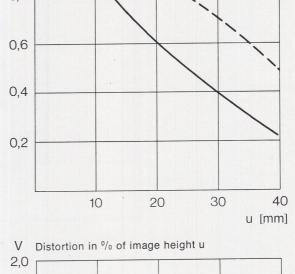
Modulation transfer T as a function of image height u Slit orientation tangentialsagittal -

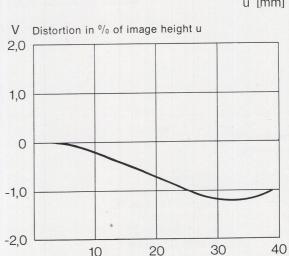


White light 20 cycles/mm Spatial frequencies R = 10 cycles/mm 40 cycles/mm









1. MTF Diagrams

The image height u - reckoned from the image center - is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

AW-Wa-V/84 Koo

u [mm]

**Distagon** T\* f/3.5 = 60 mmCat. No. 104869

HASSELBLAD





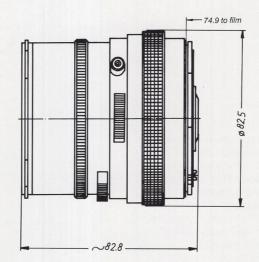
Carl Zeiss D-7082 Oberkochen West Germany

In response to repeated requests, we developed this wide-angle lens which surpasses its predecessor, the Distagon T\* f/4-60 mm lens, in performance and speed.

This was achieved even without an increase in optical sophistication through the use of most modern computers.

Special features of this lens are its compact design and its relatively low weight.

The varied applications of the **Distagon** T\* f/3.5-60 mm lens make it almost a universal lens. Many owners of Hasselblad cameras will include this lens together with the Sonnar T\* f/4-150 mm lens in their standard equipment.



Number of lens elements: 7

Number of components: f-number:

Focal length: Negative size: Angular field 2 w: Spectral range:

f-stop scale: Mount:

Filter mounting: Weight:

7 3.5

> 60.2 mm 56.5 x 56.5 mm diagonal 66°, side 50° visible spectrum

3.5-4-5.6-8-11-16-22

Prontor CF shutter

bayonet for Hasselblad series 60

approx. 680 g

Distance range:

Position of entrance pupil: Diameter of entrance pupil:

Position of exit pupil: Diameter of exit pupil:

Position of principal plane H:

Distance between first and

last lens vertex:

 $\infty$  to 0.6 m

32.2 mm behind the first lens vertex

17.0 mm

22.7 mm in front of the last lens vertex

26.7 mm

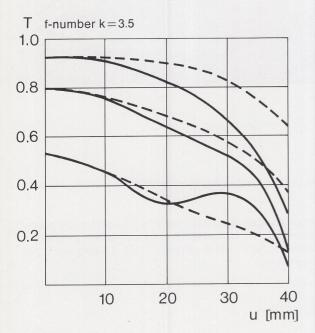
53.8 mm behind the first lens vertex

Position of principal plane H': 11.0 mm behind the last lens vertex

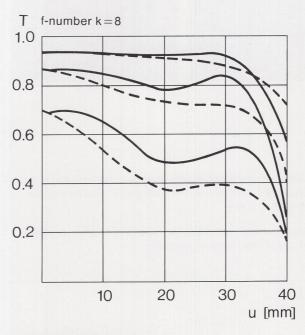
75.3 mm

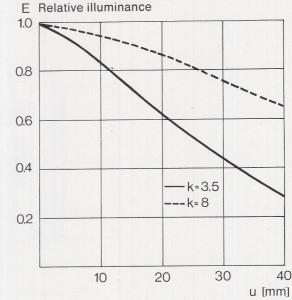
## **Distagon** T\* f/3.5 = 60 mm Cat. No. 104869

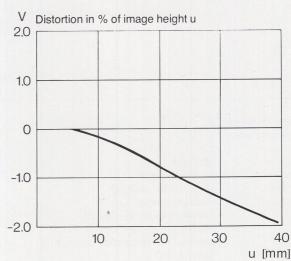
Modulation transfer T as a function of image height u Slit orientation tangential ———— sagittal ————



White light
Spatial frequencies R = 10 cycles/mm
20 cycles/mm
40 cycles/mm







1. MTF Diagrams

The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

#### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

AW-Wa-V/84 Koo

Planar T\* f/2.8-80 mm Cat. No. 102165

HASSELBLAD





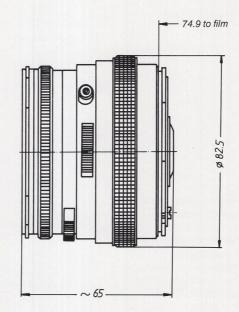
D-7082 Oberkochen West Germany

This Planar T\* lens is characterized by an extremely uniform edge-to-edge sharpness at full aperture, owing to the excellent correction of all lens aberrations. As indicated by its name, the astigmatic flatness of the image field is outstanding.

The focal length corresponds approximately to the diagonal of the 6 x 6 cm format.

Apart from the Planar T\*f/3.5-100 mm lens the 80 mm Planar T\* lens is standard outfit of the Hasselblad 500 C and 500 EL cameras.

The lens is suited for almost any task in general photography.



Number of lens elements: 7 Number of components:

f-number: Focal length:

Negative size: Angular field 2 w: Spectral range:

f-stop scale: Mount:

Filter mounting:

Weight:

2.8 80.5 mm

56.5 x 56.5 mm diagonal 52°, side 38° visible spectrum

2.8-4-5.6-8-11-16-22

Prontor CF shutter

bayonet for Hasselblad series 60

approx. 510 g

Distance range:

Position of entrance pupil: Diameter of entrance pupil:

Position of exit pupil:

Diameter of exit pupil:

Position of principal plane H: Position of principal plane H':

Distance between first and last lens vertex:

 $\infty$  to 0.9 m

26.6 mm behind the first lens vertex

28.8 mm

25.7 mm in front of the last

lens vertex

34.5 mm

39.0 mm behind the first lens vertex

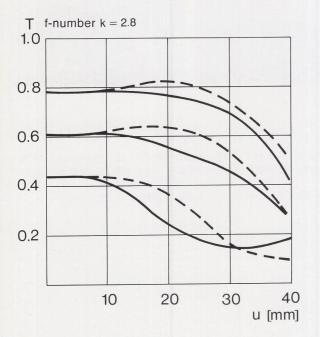
10.8 mm in front of the last

lens vertex

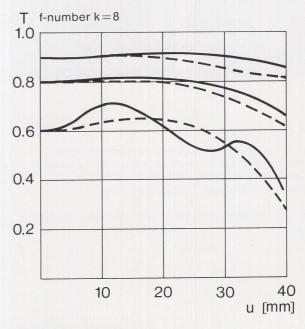
46.4 mm

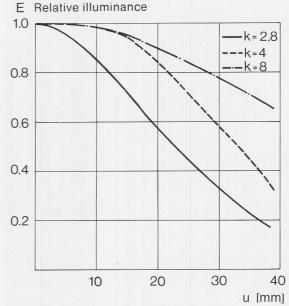
### Planar T\* f/2.8-80 mm Cat. No. 102165

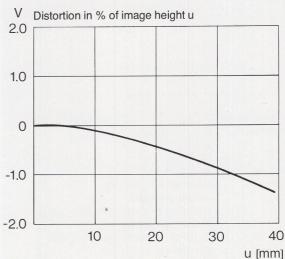
Modulation transfer T as a function of image height u Slit orientation tangential ———— sagittal ————



White light
Spatial frequencies R = 10 cycles/mm
20 cycles/mm
40 cycles/mm







1. MTF Diagrams

The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

#### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

AW-Wa-V/84 Koo

Planar T\* f/3.5-100 mm Cat. No. 102166 ASSELBLAD



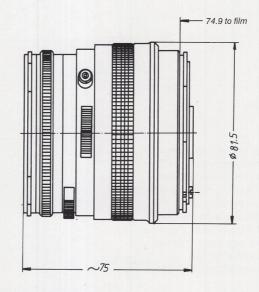


D-7082 Oberkochen West Germany

The Planar T\* f/3.5-100 mm lens is distinguished by outstanding freedom from distortion and image quality owing to optimum speed and focal length. This lens with Prontor CF shutter has been specially developed for the Hasselblad camera.

At full aperture and when stopped down moderately, the image quality of the Planar T\* f/3.5-100 mm lens is superior to that of the 80 mm Planar lens. For this reason the lens is recommended as standard lens for photography where the demands for detail recognition and brilliance are high.

The excellent distortion correction is also of great importance for architectural photography and for all applications which require an exact reproduction of the geometry of the object (e.g. for surveying).



Number of lens elements: 5

Number of components: f-number:

Focal length: Negative size: Angular field 2 w: Spectral range:

f-stop scale: Mount:

Filter mounting:

Weight:

3.5 100.3 mm 56.5 x 56.5 mm diagonal 43°, side 32° visible spectrum

3.5-4-5.6-8-11-16-22

Prontor CF shutter

bayonet for Hasselblad series 60

approx. 605 g

Distance range:

Position of entrance pupil: Diameter of entrance pupil:

Position of exit pupil:

Diameter of exit pupil: Position of principal plane H: 42.2 mm behind the first lens vertex

Distance between first and

last lens vertex:

∞ to 0.9 m

32.9 mm behind the first lens vertex

28.7 mm

42.6 mm in front of the last lens vertex

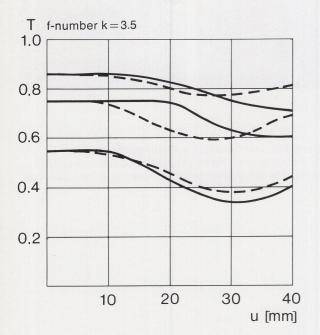
33.4 mm

Position of principal plane H': 27.1 mm in front of the last lens vertex

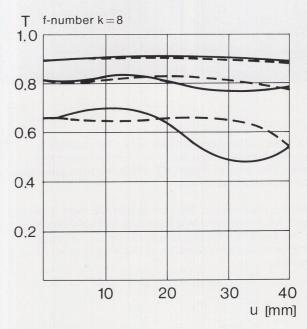
57.2 mm

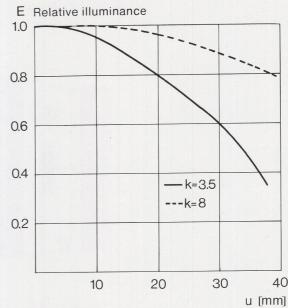
## Planar T\* f/3.5-100 mm Cat. No. 102166

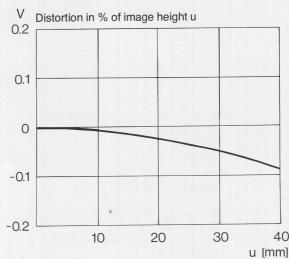
Modulation transfer T as a function of image height u Slit orientation tangential ———— sagittal ————



White light
Spatial frequencies R = 10 cycles/mm
20 cycles/mm
40 cycles/mm







1. MTF Diagrams

The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = M0 dulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

AW-Wa-V/84 Koc

UV-**Sonnar** f/4.3–105 mm Cat. No. 104209





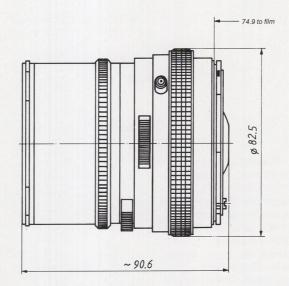


West Germany

The UV-Sonnar f/4.3–105 mm lens is a special design consisting of fluorite and quartz lens elements with excellent light transmission in the UV spectral range and chromatic correction in the UV as well as the visible spectral range. The lens thus lends itself to photography in the UV as well as in the visible ranges.

Over the wide range from far UV up to the visible spectral range, the UV-Sonnar lens features high performance and excellent distortion correction. For UV photographs, focusing can be made with visible light without any further adjustment.

The lens finds wide application in applied technical-cum-scientific photography including studies of textiles, printing forgeries, and materials of all kinds. It is of special interest for extraterrestrial UV photography.



Number of lens elements: Number of components: f-number:

Focal length:
Negative size:
Angular field 2 w:
Spectral range:
f-stop scale:

Mount: Filter mounting: Weight: 7 7 4.3 107.5 mm 56.5 x 56.5 mm diagonal 40°, side 29° 215–700 mm 4.3–5.6–8–11–16–22–32 Prontor CF shutter

Prontor CF shutter bayonet for Hasselblad series 60 approx. 820 g Distance range:
Position of entrance pupil:
Diameter of entrance pupil:
Position of exit pupil:
Diameter of exit pupil:
Position of principal plane H:
Position of principal plane H':
Distance between first and
last lens vertex:

 $\infty$  to 1.8 m 39.8 mm behind the first lens vertex 24.6 mm

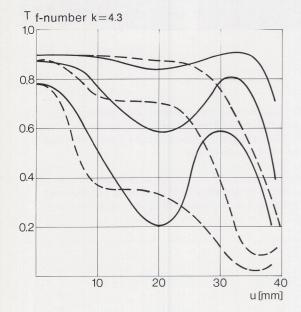
10.8 mm in front of the last lens vertex 21.1 mm

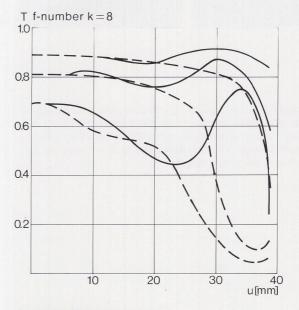
20.8 mm behind the first lens vertex 26.8 mm in front of the last lens vertex

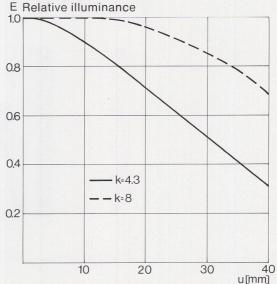
65.2 mm

Modulation transfer T as a function of image height u Slit orientation tangential ———— sagittal ————

 $\lambda = 436 \text{ mm}$  Spatial frequencies R = 10, 20 and 40 cycles/mm









The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

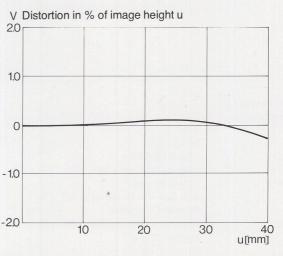
Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

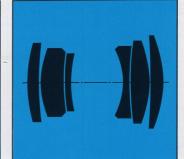
#### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.



Subject to technical amendment

Makro-Planar T\* f/4 - 120 mm Cat. No. 107836





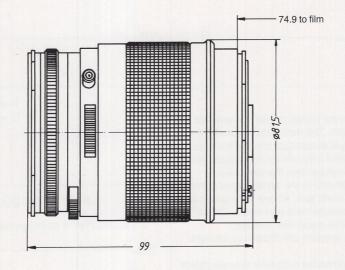
D-7082 Oberkochen

As is already indicated by the name of this new lens in a Prontor CF shutter, its main field of application is close-up photography. Like its predecessor, the S-Planar T\* f/5.6-120 mm lens, the new lens consists of 6 elements in 4 groups which are arranged almost symmetrically to the iris diaphragm. The Makro-Planar lens performs best in the region of slightly reduced imaging of the subject. With the helical focusing mount the shortest taking distance of 0.8 m can be set (reproduction ratio of 1:4.5). By inserting the Hasselblad extension tube 32 the macro range can be increased to 1:2.

It was a major achievement on the part of the designer that the initial aperture of the new Makro-Planar lens could be increased to f/4 compared with the f/5.6 of its predecessor without exceeding the optical dimensions of the f/5.6 lens or making any concessions on the image quality.

Macro pictures are usually taken at small working apertures to increase the depth of field. At first glance the wider initial aperture therefore seems unnecessary. But as the considerable increase in extension when taking close-ups results in a marked reduction of the effective lens speed and hence in ground-glass brightness, the maximum aperture of f/4 doubles the brightness of the ground-glass image compared with the f/5.6 lens. Furthermore, the shallow depth of field associated with the new initial aperture makes it easier to recognize the plane of sharpness. Both factors facilitate the work of the photographer and give him more confidence in the composition of his picture.

The recommendation that only extension tubes and no supplementary lenses should be used for close-ups below the shortest marked distance holds good also for the new Makro-Planar lens. This ensures that the good image quality of this lens is maintained.



Number of lens elements:

Number of components:

f-number: Focal length: Negative size:

Angular field 2w: Spectral range:

f-stop scale: Mount:

Filter mounting: Weight:

6 4

4\*)

120.9 mm 56.5 x 56.5 mm diagonal 36.6°, side 26° visible spectrum

4 - 5.6 - 11 - 16 - 22 - 32 Prontor CF shutter

bayonet for Hasselblad series 60 approx. 695 g

Distance range:

Close limit field size:

Position of entrance pupil\*): Diameter of entrance pupil\*):

Position of exit pupil\*):

Diameter of exit pupil\*):

Position of principal plane H: 43.1 behind the first lens vertex Position of principal plane H': 27.5 mm in front of the last lens vertex Distance between first and

last lens vertex:

\*) for image scale 1: ∞

 $\infty$  to 0.8 m

257 x 257 mm (10.1 x 10.1")

30.2 mm behind the first lens vertex

29.7 mm

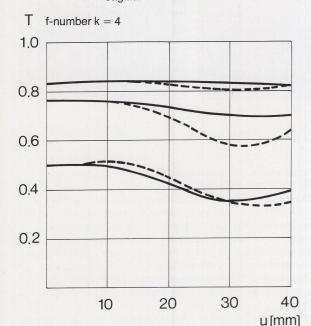
41.9 mm in front of the last lens vertex

33.5 mm

61.0 mm

## Performance data at image scale 1:5

Modulation transfer T as a function of image height u Slit orientation tangential — — — — sagittal ————



1. MTF Diagrams

The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

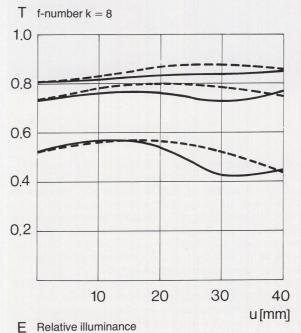
### 2. Relative illuminance

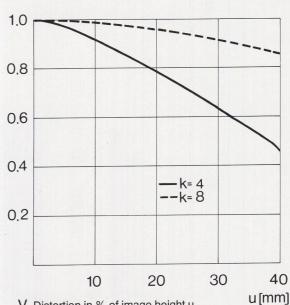
In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

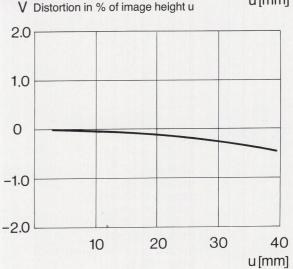
#### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

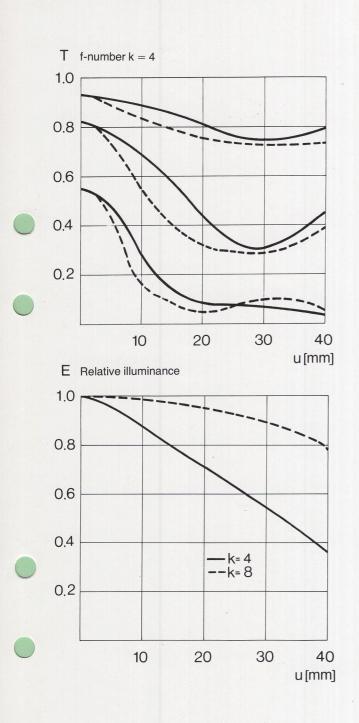
White light
Spatial frequencies R = 10, 20 and 40 cycles/mm

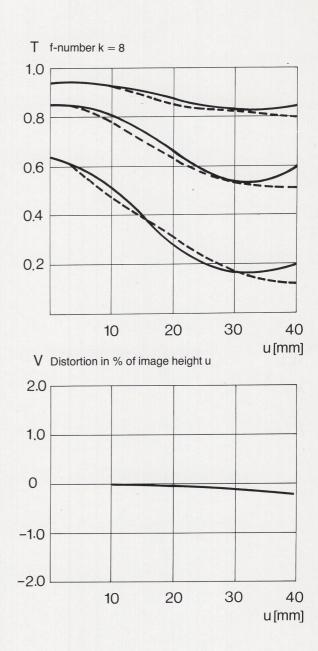






Subject to technical amendment





Makro-Planar T\* f/5.6-135 mm Cat. No. 107824

HASSELBLAD

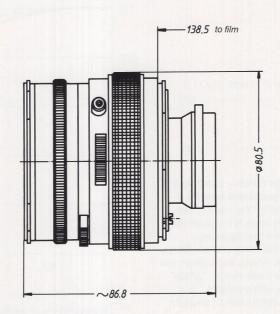




The Makro-Planar T\* f/5.6-135 mm lens is designed for use with a bellows extension, so it has no worm-wheel drive for focusing. With the bellows extension the focusing range of the lens is continuous from infinity to scale 1:1.

Like the 120 mm Makro-Planar T\* lens the Makro-Planar T\* f/5.6-135 mm lens is optimally corrected for close-range work and is therefore ideally suited for all subjects at close range where maximum image quality and freedom from distortion are required.

Owing to its relatively constant correction over a broad scale range, the lens can also be used successfully for distance if it is stopped down slightly more than a normal lens.



Number of lens elements: 7 Number of components:

f-number: Focal length: Negative size:

Angular field 2 w: Spectral range:

f-stop scale: Mount:

Filter mounting: Weight:

5.6 at ∞ 137.1 mm 56.5 x 56.5 mm

diagonal 32°, side 23° at ∞

visible spectrum

5.6-8-11-16-22-32-45

Prontor CF shutter

bayonet for Hasselblad series 60

approx. 625 g

Distance range:

Position of entrance pupil\*): Diameter of entrance pupil:

Position of exit pupil\*):

Diameter for exit pupil: Position of principal plane H:

Distance between first and

last lens vertex:

 $\infty$  to 0.54 m (image scale 1:1)

to be used with bellows only 47.4 mm behind the first lens vertex

24.2 mm 47.3 mm in front of the last lens vertex

28.5 mm

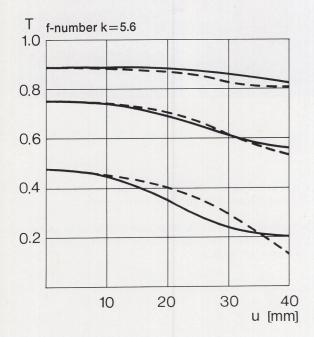
67.7 mm behind the first lens vertex Position of principal plane H': 23.5 mm in front of the last lens vertex

80.2 mm

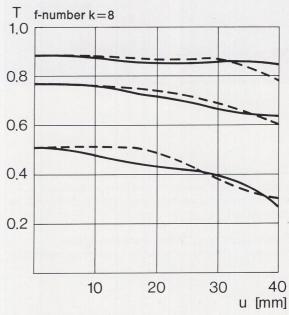
\*) for image scale 1 : ∞

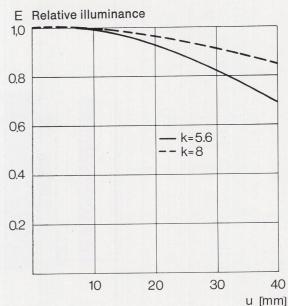
## Performance data at image scale 1:5

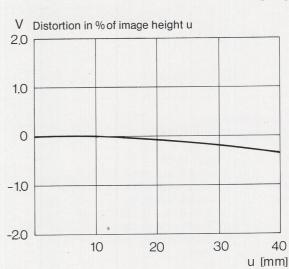
Modulation transfer T as a function of image height u Slit orientation tangential ———— sagittal ————



White light
Spatial frequencies R = 10 cycles/mm 20 cycles/mm
40 cycles/mm







1. MTF Diagrams

The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = M0 dulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

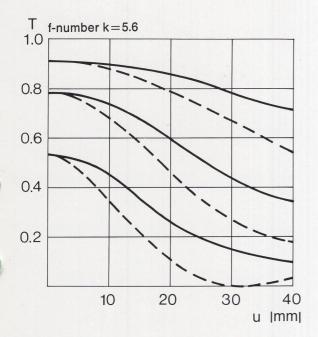
### 2. Relative illuminance

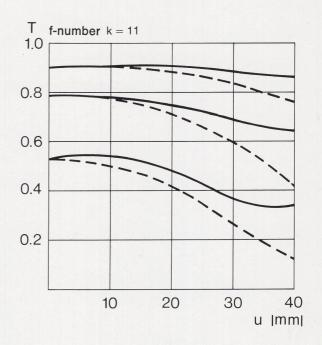
In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

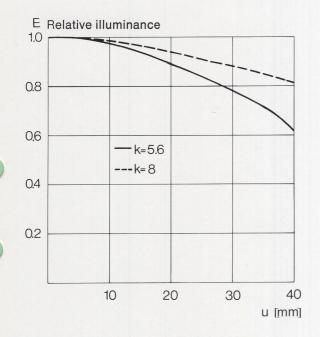
#### 3. Distortion

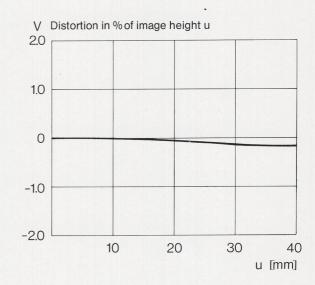
Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

Subject to technical amendment



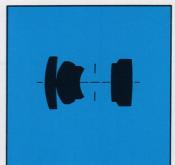


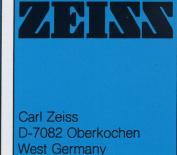




Sonnar T\* f/4-150 mm Cat. No. 101114



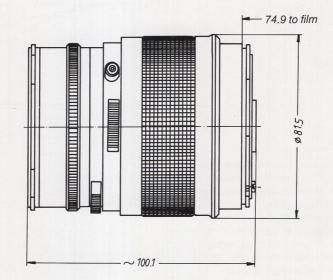




Many photographers consider the Sonnar T\* f/4-150 mm lens the most important supplementary lens for the Hasselblad camera. Even at full aperture the lens covers the entire 6 x 6 cm format and produces pictures of excellent sharpness and brilliance.

The compact design which is characteristic of all Sonnar lenses offers excellent corner-to-corner illumination of the image field.

The **Sonnar** T\* f/4-150 mm lens is suited above all for portraiture, press, sports, and stage photography. Owing to its high speed this lens allows short exposure times and thus hand-held exposure also under unfavorable light conditions, e.g. on the stage or for documentary series in bad weather.



Number of lens elements: 5

Number of components:

f-number:

Focal length: Negative size:

Angular field 2 w:

Spectral range: f-stop scale:

Mount:

Filter mounting:

Weight:

3

151.2 mm

56.5 x 56.5 mm diagonal 29°, side 21°

visible spectrum

4-5.6-8-11-16-22-32

Prontor CF shutter

bayonet for Hasselblad series 60

approx. 785 g

Distance range:

Position of entrance pupil:

Diameter of entrance pupil:

Position of exit pupil:

Diameter of exit pupil:

Position of principal plane H: 11.6 mm behind the first lens vertex

Distance between first and

last lens vertex:

∞ to 1.4 m

63.8 mm behind the first lens vertex

37.4 mm

32.1 mm in front of the last lens vertex

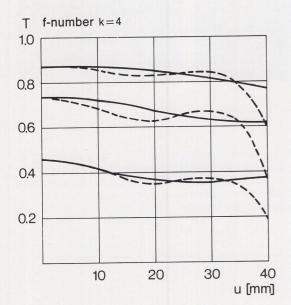
28.0 mm

Position of principal plane H': 70.8 mm in front of the last lens vertex

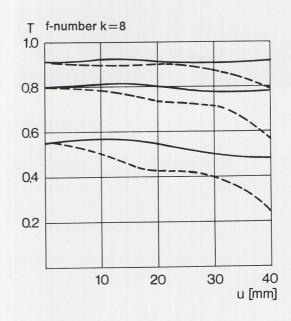
81.8 mm

### **Sonnar** T\* f/4-150 mm Cat. No. 101114

Modulation transfer T as a function of image height u Slit orientation tangential — — — sagittal — — —



White light
Spatial frequencies R = 10 cycles/mm
40 cycles/mm



1. MTF Diagrams

The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

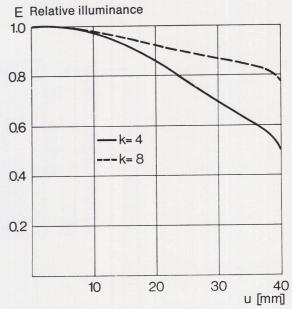
Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

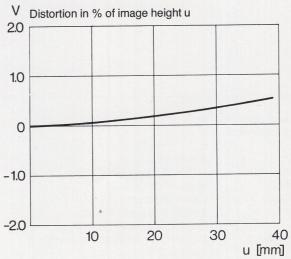
### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

### 3. Distortion

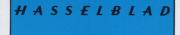
Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.





Subject to technical amendment

**Sonnar** T\* f/5.6–250 mm Cat. No. 101115





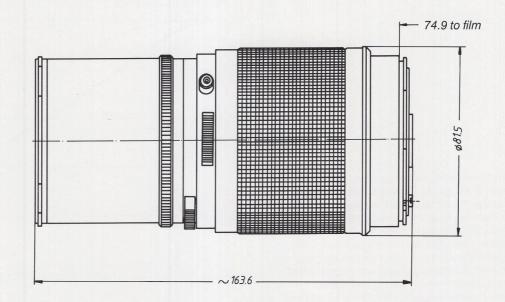


West Germany

Even at full aperture the image quality of this lens is excellent and cannot be improved any further by stopping down.

Despite its long focal length and the remarkable tele effect the lens is compact and handy and allows hand-held exposure.

Applications: portraiture, long-range, press, sports, and stage photography. For outdoor portraiture the narrow depth-of-focus range of the lens can be applied to advantage to separate the model from an unsteady background.



Number of lens elements: 4

Number of components: f-number:

Focal length:

Negative size: Angular field 2 w: Spectral range:

f-stop scale: Mount:

Filter mounting: Weight:

3 5.6

248.4 mm 56.5 x 56.5 mm

diagonal 18°, side 13° visible spectrum

5.6-8-11-16-22-32-45

Prontor CF shutter

bayonet for Hasselblad series 60

approx. 1000 g

Distance range:

Position of entrance pupil: Diameter of entrance pupil: Position of exit pupil:

Diameter of exit pupil:
Position of principal plane H:

Position of principal plane H': Distance between first and last lens vertex:

∞ to 2.5 m

125.5 mm behind the first lens vertex

44.8 mm

21.3 mm in front of the last lens vertex

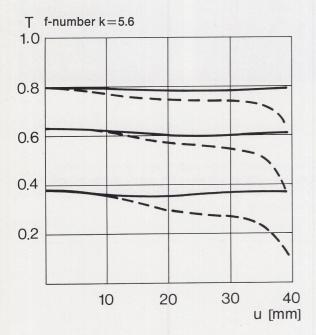
25.6 mm

62.8 mm in front of the first lens vertex 23.0 mm in front of the first lens vertex

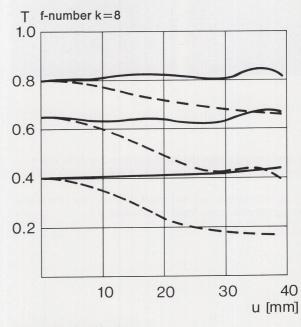
105.5 mm

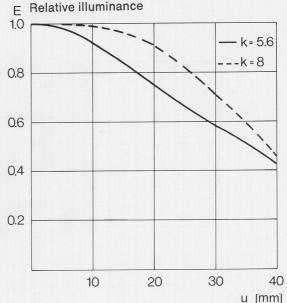
### **Sonnar** T\* f/5.6–250 mm Cat. No. 101115

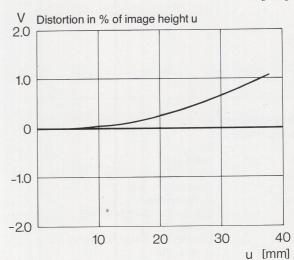
Modulation transfer T as a function of image height u Slit orientation tangential ———— sagittal ————



White light
Spatial frequencies R = 10 cycles/mm
40 cycles/mm







1. MTF Diagrams

The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

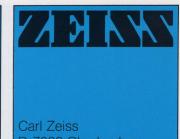
#### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

Sonnar **Superachromat** f/5.6–250 mm Cat. No. 104532

HASSELBLAD





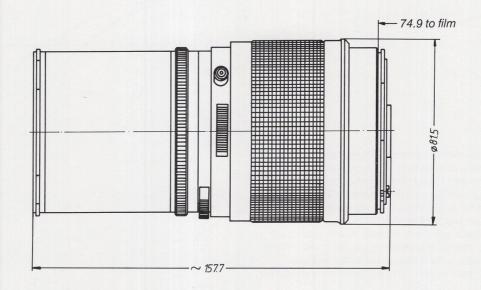
D-7082 Oberkochen West Germany

This lens has a so far unachieved correction of chromatic aberrations. The secondary spectrum which is the dominating aberration of lenses of long focal length, is corrected for the entire spectral range between approx. 400 and 1000 nm.

Visual focusing in visible light guarantees optimum sharpness even on IR or false-color film.

The Sonnar Superachromat lens f/5.6-250 mm lends itself to taking photographs which are to be considerably reenlarged. It is primarily applied in technical and scientific IR photography. Special effects in landscape and architectural photography, geology, hydrology and archaeological documentation with the aid of aerial photographs, botany, plant pathology, environmental control and multi-spectral photography are examples of the wide range of application of this extraordinary lens.

As the distance setting ring has no ∞-stop position, focusing for longrange work must also be carried out with the aid of the camera ground glass.



Number of lens elements: 6 Number of components:

f-number: Focal length:

Negative size: Angular field 2 w: Spectral range:

f-stop scale: Mount:

Filter mounting:

Weight:

5.6 249.6 mm

56.5 x 56.5 mm diagonal 18°, side 13° 400 to 1000 nm

5.6-8-11-16-22-32-45

Prontor CF shutter

bayonet for Hasselblad series 60

approx. 985 g

Distance range:

Position of entrance pupil:

Diameter of entrance pupil: Position of exit pupil:

Diameter of exit pupil:

Position of principal plane H':

Distance between first and last lens vertex:

1) no stop position for ∞

 $\infty^{1}$ ) to approx. 2.8 m

130.5 mm behind the first lens vertex

44.6 mm

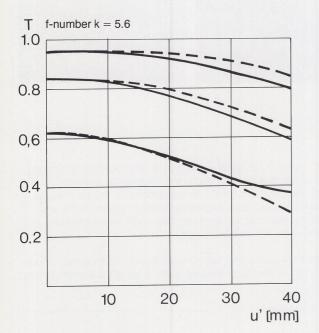
5.1 mm in front of the last lens vertex 23.0 mm

Position of principal plane H: 107.0 mm in front of the first lens vertex 27.9 mm in front of the first lens vertex

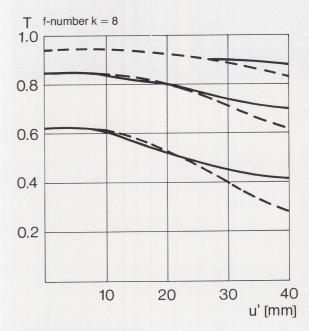
98.7 mm

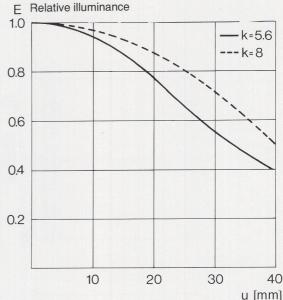
# Performance data: Sonnar Superachromat f/5.6–250 mm Cat. No. 104532

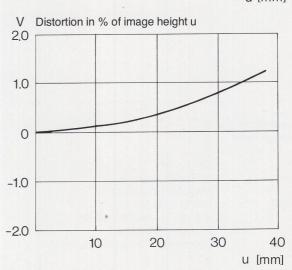
Modulation transfer T as a function of image height u Slit orientation tangential ———— sagittal ————



White light
Spatial frequencies R = 10 cycles/mm
40 cycles/mm







1. MTF Diagrams

The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = M0 dulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

### 2. Relative illuminance

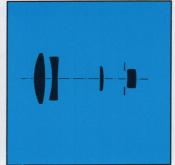
In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

#### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

Tele-Tessar T\* f/5.6-350 mm Cat. No. 104536



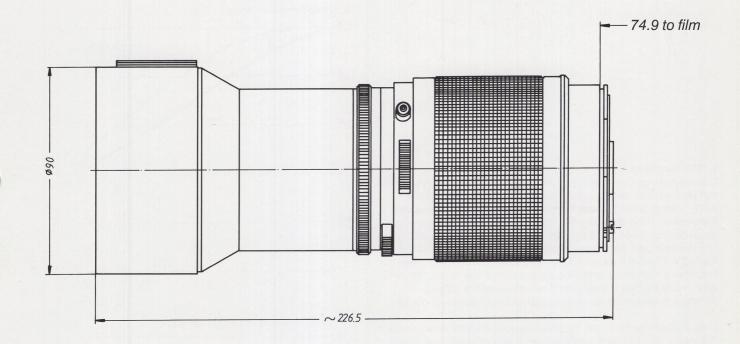




With a length of only 22.5 cm and a diameter of the mount of max. 9 cm, this tele lens is compact and handy in spite of its long focal length.

Even at full aperture the image quality is excellent for a lens of so long a focal length.

The Tele-Tessar T\* f/5.6-350 mm lens is well suited for longrange and animal photography and for picture series. Like all lenses with long focal lengths the Tele-Tessar T\* lens can be applied to achieve special effects in the composition, e. g. to separate a motive from its background or to "gather up" the perspective.



Number of lens elements: 4

Number of components:

f-number: Focal length:

Negative size: Angular field 2 w: Spectral range:

f-stop scale: Mount:

Filter mounting:

5.6 at ∞ 341.2 mm 56.5 x 56.5 mm diagonal 13°, side 9° visible spectrum

5.6-8-11-16-22-32-45 Prontor CF shutter

screw thread for Hasselblad series 86

Distance range:

Position of entrance pupil:

Diameter of entrance pupil: Position of exit pupil:

Diameter of exit pupil:

Distance between first and

last lens vertex:

∞ to 4.5 m

325.5 mm behind the first lens vertex

59.4 mm

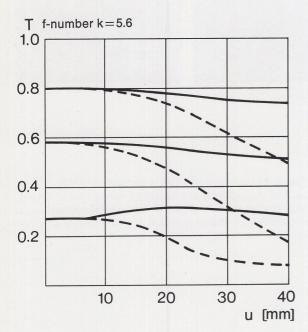
13.2 mm in front of the last lens vertex

24.2 mm

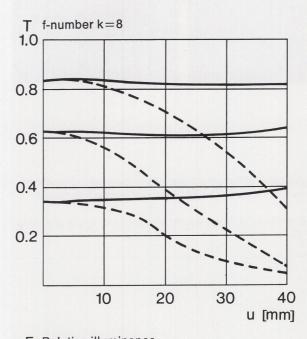
Position of principal plane H: 173.6 mm in front of the first lens vertex Position of principal plane H': 47.5 mm in front of the first lens vertex

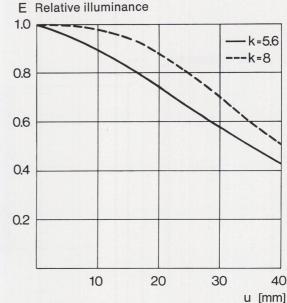
168.1 mm

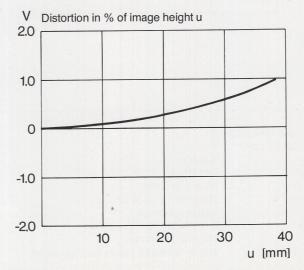
Modulation transfer T as a function of image height u Slit orientation tangential ———— sagittal ————











### 1. MTF Diagrams

The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = M0 dulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

### 2. Relative illuminance

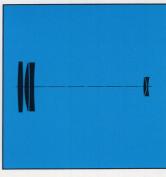
In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

## Tele-Apotessar T\* f/8-500 mm Cat. No. 104615



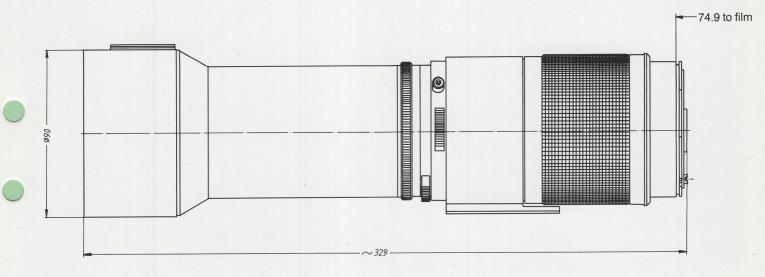




For a long time, photographers have had to put up with the unalterable fact that chromatic aberration in lenses consisting of classic optical glasses was aggravated as the length increased. When taking pictures with a normal and a tele lens from the same point, the tele photo therefore showed the subject magnified by the focal length factor but not the full gain in detail rendition which could have been expected if the imaging performance of both lenses had been the same.

The new Tele-Apotessar lens has been designed using special glasses of extreme optical properties. Compared with its predecessor, the chromatic aberrations have been drastically reduced, as is also indicated by the change in name. For example, the axial focal shift (due to secondary spectrum) between the wavelengths  $\lambda = 546$  nm and  $\lambda = 656\,\text{nm}$  was reduced to less than half of its former amount. Lateral colour has decreased accordingly, hence pictures of motives with high contrast do not show any colour fringes on bright / dark edges.

Another special feature of the Tele-Apotessar lens is its internal focusing, i.e. the lens is focused by moving the rear group while the front group remains stationary. This yields several remarkable advantages for tele lenses. Firstly, the mechanical length of the lens does not change during focusing. Hence, when working with a tripod, the location of the centre of gravity of the equipment remains virtually constant during focusing because the mass of the parts moved is very small. Secondly, as the focusing thread is relieved of the pressure of the total weight of the main mount, the movement of the focusing ring is much smoother and operation is much more comfortable and faster than with the previous Tele-Tessar f/8 - 500 mm lens. Finally another important point is the improved image quality at close range. At the shortest distance setting of 8.5 m, the 500 mm Tele-Apotessar lens gives significantly better corner image than the 500 mm Tele-Tessar lens.



Number of lens elements: 5 Number of components: f-number:

499.3 mm Focal length\*: Negative size: 56.5 x 56.5 mm Angular field 2w: diagonal 9°, side 6.5° Spectral range: visible spectrum

8 - 11 - 16 - 22 - 32 - 45 - 64 f-stop scale:

Prontor CF mount Mount: Hasselblad series 86 Filter mount:

∞ to 8.5 m (Internal focusing) Distance range: 926x926 mm (36.5"x36.5") Smallest object area:

Position of entrance pupil: 262.2 mm behind the last lens vertex

Diameter of entrance pupil\*: 62.5 mm

32.7 mm in front of the last lens vertex Position of exit pupil\*:

374.0 mm in front of the first lens vertex

Diameter of exit pupil\*: 22 8 mm

Position of principal

plane H\*:

Position of principal

90.0 mm in front of the first lens vertex plane H\*:

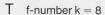
Distance between first and

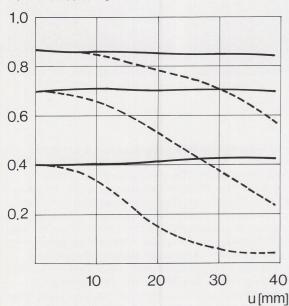
235.0 mm last lens vertex:

\* for image scale 1 : ∞

## Tele-Apotessar T\* f/8-500 mm Cat. No. 104615

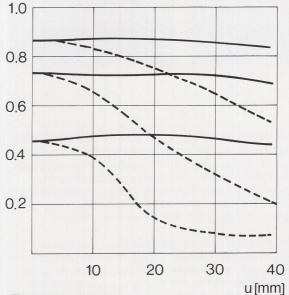
Modulation transfer T as a function of image height u Slit orientation tangential — — — — sagittal — ———



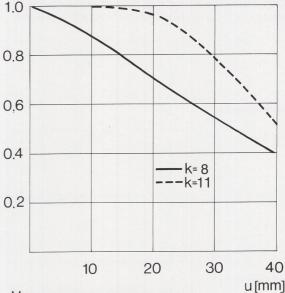


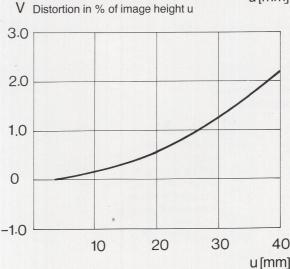
White light Spatial frequencies  $R=10,\,20$  and 40 cycles/mm

### T f-number k = 11



E Relative illuminance





### 1. MTF Diagrams

The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

#### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

**Distagon** T f/2.8-50 mm Cat. No. 104854 ASSELBLAD





Carl Zeiss D-7082 Oberkochen West Germany

The **Distagon** T\* f/2.8-50 mm lens with an angular field of 75° is a top class ultra wide-angle lens especially developed for the Hasselblad 2000 FC. As this camera has a focal-plane shutter the speed could be increased to f/2.8 which is quite an outstanding value for a wide-angle lens for this medium film size.

Thanks to the superb correction of distortion and all monochromatic and chromatic aberrations the imaging performance of this lens is excellent. Finally, the new design with nine lens elements is remarkably compact despite the speed and large angular field. This is a particular achievement in view of the fact that - owing to the mirror motion - the distance of the last lens surface from the film must be about 35% longer than the focal length.

As is widely known, wide-angle reflex lenses suffer from a loss in imaging performance in the marginal areas which becomes all the more noticeable the greater the speed and angular field. This often forces the photographer to do without extreme close-ups. To compensate for the decrease in imaging performance the optical

design was made such that the middle components change position in relation to each other when focusing. So this lens features a shortest object distance of 0.32 m which is equivalent to an image scale of 1: 2.5. The image quality provided at this distance is about the same as that at image scale 1:10 without compensation.

74.9 to film -90 -112

Number of lens elements: 9

Number of components:

f-number:

Focal length:

Negative size:

Angular field 2 w:

Spectral range:

Filter mount:

f-stop scale: Mount:

8

2.8

51.7 mm

56.6 x 56.6 mm

diagonal 75.5°, side 57°

visible spectrum

2.8-4-5.6-8-11-16-22 focusing mount with bayonet;

coupling system for automatic diaphragm

function

screw thread M 86 x 1

approx. 1240 g Weight:

Distance range:

∞ to 0.32 m (13")

Smallest object field:

144 x 144 mm (5.7")

Aberration correction for close range by floating element

Position of entrance pupil\*:

39.2 mm behind the first lens vertex

Diameter of entrance pupil:

18.2 mm

Position of exit pupil\*:

20.3 mm in front of the last lens vertex

Diameter of exit pupil:

32.1 mm

Position of principal plane H\*:

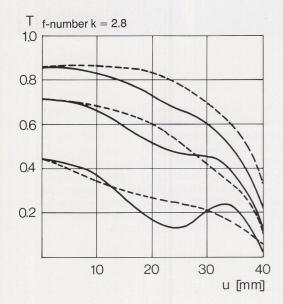
61.2 mm behind the first lens vertex Position of principal plane H'\*: 18.1 mm behind the last lens vertex

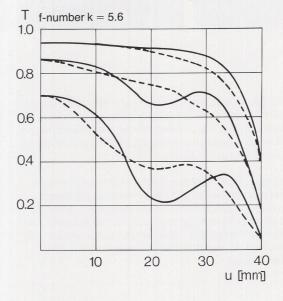
Distance between first and

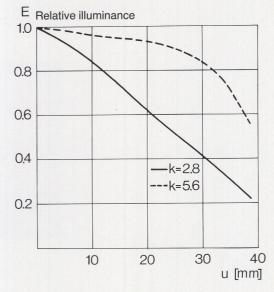
last lens vertex\*: \*Data valid for ∞ 105.9 mm

Modulation transfer T as a function of image height u Slit orientation tangential — — — — sagittal ————

White light Spatial frequencies R = 10, 20 and 40 cycles/mm









The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

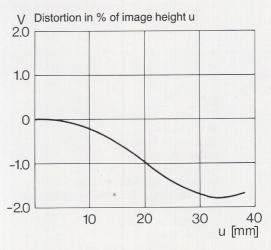
Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

#### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.



Subject to technical amendment

AW-Wa-V/84 KTo



### PLANAR T\* f/2.8 – 80 mm Cat. No. 10 21 09

## HASSELBLAD

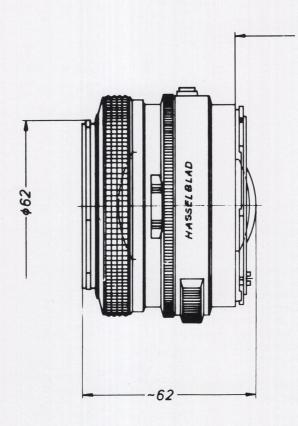
**CARL ZEISS** Abteilung für Photographie

The optical design of the Planar T\* f/2.8 - 80 mm for the Hasselblad 2000 FC is the same as that of its sister lens for the Hasselblad 500 C/M and 500 EL/M versions which has successfully stood the test of many NASA space flights round the earth and to the moon.

7082 Oberkochen West Germany

Compared with the 500 C version the extension of the helical focusing mount and thus the range of the distance setting have been considerably increased. The shortest distance of 0.6 m settable between object and film plane is equivalent to an image scale of 1:5.5. At this distance an object field of 310 x 310 mm fills the format from edge to edge.

This lens can virtually be used in all fields of general photography.



74.9 to Film -

Number of lens elements: 7 Number of components: 5

f-number: Focal length: Negative size:

Angular field 2w: Spectral range:

f-stop scale: Mount:

Filter mount: Weight:

1:2.8 mm 80.5 mm 56.5 x 56.5 mm diagonal 52°, side 38° visible spectrum 2.8 - 4 - 5.6 - 8 - 11 - 16 - 22 focusing mount with bayonet; coupling system for automatic

diaphragm function bayonet for Hasselblad series 50

approx. 410 g

Distance range:

Smallest object field: Position of entrance pupil: Diameter of entrance pupil:

Position of exit pupil: Diameter of exit pupil:

Distance between first and

last lens vertex:

0.6 m (2')

310 x 310 mm (12.2" x 12.2") 26.6 mm behind the first lens vertex

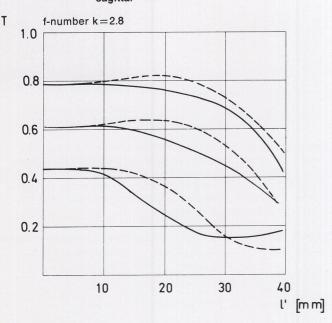
25.7 mm in front of the last lens vertex

34.5 mm

Position of principal plane H: 39.0 mm behind the first lens vertex Position of principal plane H': 10.8 mm in front of the last lens vertex

46.4 mm

Modulation transfer T as a function of image height I' Slit orientation tangential — — — — sagittal — — —



1. MTF Diagrams

The image height I' — reckoned from the image center — is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in periods (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

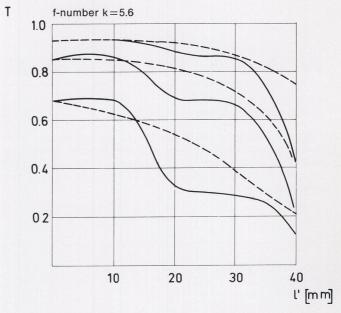
### 2. Relative illuminance

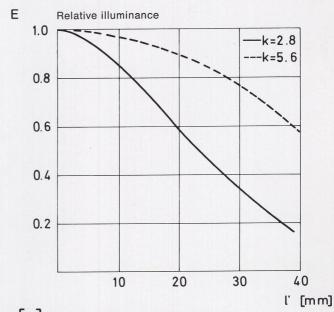
In this diagram the horizontal axis gives the image height I' in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease. With virtually distortion-free imaging the latter is independent of the design and degree of correction of the lens.

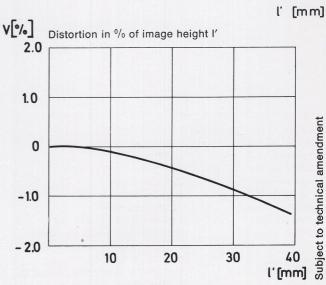
#### 3. Distortion

Here again the image height I' is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

White light Spatial frequencies R=10, 20 and 40 periods/mm







**Planar** T\* f/2–110 mm Cat. No. 102150

HASSELBLAD





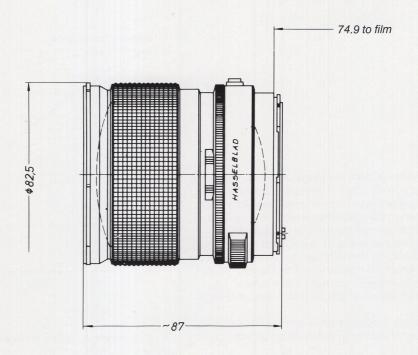
Carl Zeiss
D-7082 Oberkochen
West Germany

The Planar  $T^*$  f/2–110 mm lens is a fast high-performance lens for the Hasselblad 2000 FC with focal-plane shutter.

This 7 element **Planar** lens is an advance on the classic **Planar** lens developed at Zeiss, which for the first time offered an excellent anastigmatic flatness of the image field for a fairly large angular field.

The correction potential of this lens type at a focal length of 110 mm and a speed of f/2 could be fully used as no complicated installation conditions had to be met. The result is a lens distinguished by a uniform and superior definition over the entire image field.

The angular field of the lens referred to the diagonal of the negative is about 40°. The distance setting goes down from infinity to a shortest of 0.8 m measured from the film plane. This is equivalent to an image scale of 1:5.2 and a smallest object field of approx. 294 x 294 mm. The speed, the angular field and the excellent imaging performance make this **Planar** lens most versatile. Its main field of application will be sports and press photography with extremely short exposure times, hand-held shots even under unfavourable lighting conditions, photographs of individual persons and groups as well as portrait photography.



Number of lens elements: 7 Number of components: 6 f-number: 2

Focal length:
Negative size:

Angular field 2 w: Spectral range: f-stop scale:

Mount:

110.8 mm

56.5 x 56.5 mm diagonal 40°, side 28.5°

visible spectrum 2-2.8-4-5.6-8-11-16

focusing mount with bayonet; coupling system for automatic

diaphragm function

Filter mount: Weight: bayonet, size B 77 approx. 750 g

Distance range:

Smallest object field: Position of entrance pupil: Diameter of entrance pupil:

Position of exit pupil: Diameter of exit pupil:

Position of principal plane H: Position of principal plane H':

Distance between first and last lens vertex:

 $\infty$  to 0.8 m (2.75")

294 mm x 294 mm (11.6" x 11.6") 55.2 mm behind the first lens vertex

53.8 mm

39.3 mm in front of the last lens vertex

58.4 mm

60.8 mm behind the first lens vertex

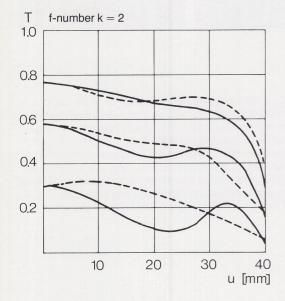
33.4 mm in front of the last lens vertex

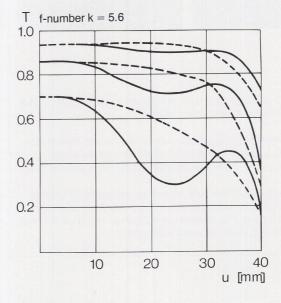
74.4 mm

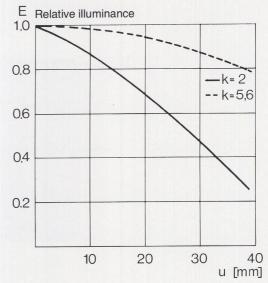
### Planar T\* f/2-110 mm Cat. No. 102150

Modulation transfer T as a function of image height u Slit orientation tangential ———— sagittal ————

White light Spatial frequencies R = 10, 20 and 40 cycles/mm









The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

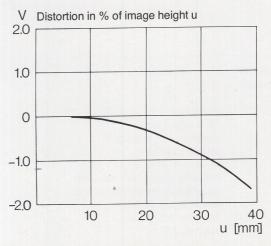
Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.



Subject to technical amendment

Sonnar T\* f/2.8-150 mm Cat. No. 101085







D-7082 Oberkochen

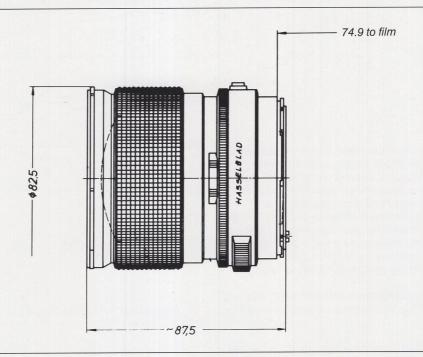
The Sonnar T\* f/2.8-150 mm lens is a fast high-performance lens of medium focal length for the Hasselblad 2000 FC with focal-plane shutter.

If, at a relatively high speed, the focal length is to be twice or three times as long as the diagonal of the film format, this type of lens is especially suited for achieving a high imaging performance. Zeiss were the first to come up with lenses of this type and have given priority to their further development. The Sonnar T\* f/2.8-150 mm lens fully utilizes the potential of extremely good and balanced correction inherent in this lens type.

Apart from the high imaging performance this lens is distinguished by further features which are important for single-lens reflex cameras in particular: at infinity setting the distance of the exit pupil from the film

is by 30% shorter than the focal length. This ensures that rays leaving the lens are not vignetted anywhere in the space between optics, film and image corners and that the finder area is fully illuminated. At infinity setting, the distance of the front lens vertex from the film plane is only as long as the focal length which permits a remarkably compact lens design.

The Sonnar T\* f/2.8-150 mm lens is a first-class lens of extraordinary versatility. It is suited for sports and portrait photography and allows - thanks to its relatively high speed - hand-held exposures under unfavourable lighting conditions. In portrait photography this lens guarantees a correct perspective and permits the elimination of unsteady and thus disturbing background by using full aperture.



Number of lens elements: 5

Number of components: f-number:

Focal length: Negative size: Angular field 2 w:

Spectral range: f-stop scale:

Mount:

2.8

151.1 mm 56.5 x 56.5 mm

diagonal 29.5°, side 21° visible spectrum

2.8-4-5.6-8-11-16-22

focusing mount with bayonet; coupling system for automatic

diaphragm function bayonet, size B 77 approx. 680 g

Distance range:

Smallest object field:

Position of entrance pupil:

Diameter of entrance pupil: Position of exit pupil:

Diameter of exit pupil:

Distance between first and

last lens vertex:

∞ to 1.4 m (4.5 ft)

400 mm x 400 mm (15.8" x 15.8") 58.9 mm behind the first lens vertex

52.5 mm

37.1 mm in front of the last lens vertex

38.2 mm

Position of principal plane H: 0.8 mm in front of the first lens vertex Position of principal plane H': 79.7 mm in front of the last lens vertex

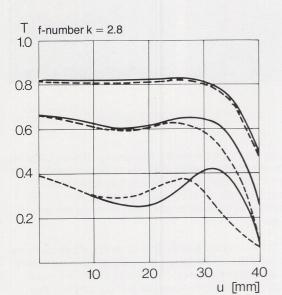
80.1 mm

Filter mount: Weight:

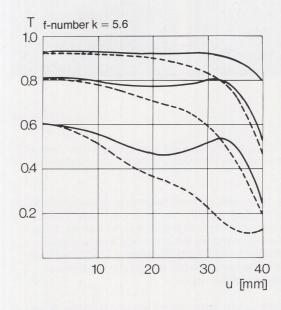
#### Performance data:

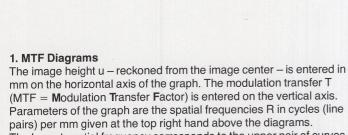
## **Sonnar** T\* f/2.8–150 mm Cat. No. 101085

Modulation transfer T as a function of image height u Slit orientation tangential — — — sagittal — — —



White light Spatial frequencies R = 10, 20 and 40 cycles/mm





mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

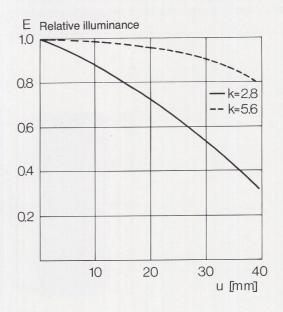
Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

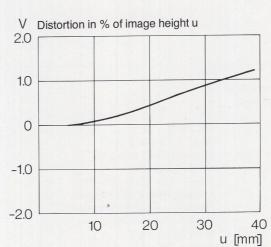
#### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

#### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.





Subject to technical amendment

Sonnar T\* f/2.8-150 mm Cat. No. 101085







D-7082 Oberkochen

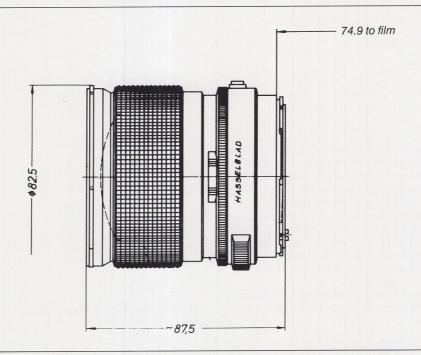
The Sonnar T\* f/2.8-150 mm lens is a fast high-performance lens of medium focal length for the Hasselblad 2000 FC with focal-plane shutter.

If, at a relatively high speed, the focal length is to be twice or three times as long as the diagonal of the film format, this type of lens is especially suited for achieving a high imaging performance. Zeiss were the first to come up with lenses of this type and have given priority to their further development. The Sonnar T\* f/2.8-150 mm lens fully utilizes the potential of extremely good and balanced correction inherent in this lens type.

Apart from the high imaging performance this lens is distinguished by further features which are important for single-lens reflex cameras in particular: at infinity setting the distance of the exit pupil from the film

is by 30% shorter than the focal length. This ensures that rays leaving the lens are not vignetted anywhere in the space between optics, film and image corners and that the finder area is fully illuminated. At infinity setting, the distance of the front lens vertex from the film plane is only as long as the focal length which permits a remarkably compact lens design.

The **Sonnar** T\* f/2.8 – 150 mm lens is a first-class lens of extraordinary versatility. It is suited for sports and portrait photography and allows - thanks to its relatively high speed - hand-held exposures under unfavourable lighting conditions. In portrait photography this lens guarantees a correct perspective and permits the elimination of unsteady and thus disturbing background by using full aperture.



Number of lens elements: 5 Number of components:

f-number: Focal length: Negative size: Angular field 2 w:

Spectral range: f-stop scale: Mount:

151.1 mm 56.5 x 56.5 mm diagonal 29.5°, side 21° visible spectrum 2.8-4-5.6-8-11-16-22 focusing mount with bayonet; coupling system for automatic diaphragm function bayonet, size B 77

approx. 680 g

2.8

Distance range: Smallest object field: Position of entrance pupil: Diameter of entrance pupil: Position of exit pupil: Diameter of exit pupil: Distance between first and last lens vertex:

∞ to 1.4 m (4.5 ft) 400 mm x 400 mm (15.8" x 15.8") 58.9 mm behind the first lens vertex

52.5 mm

37.1 mm in front of the last lens vertex

38.2 mm

Position of principal plane H: 0.8 mm in front of the first lens vertex Position of principal plane H': 79.7 mm in front of the last lens vertex

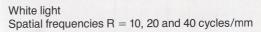
80.1 mm

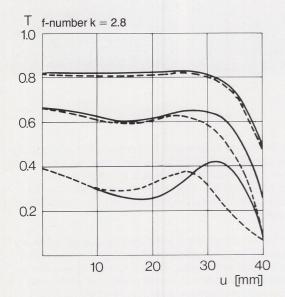
Filter mount: Weight:

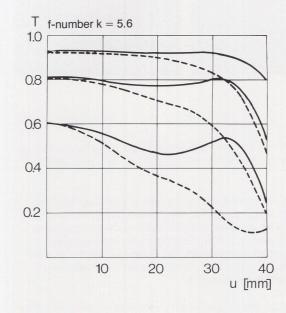
#### Performance data:

## **Sonnar** T\* f/2.8-150 mm Cat. No. 101085

Modulation transfer T as a function of image height u Slit orientation tangential ———— sagittal ————







1. MTF Diagrams

The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the graph are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

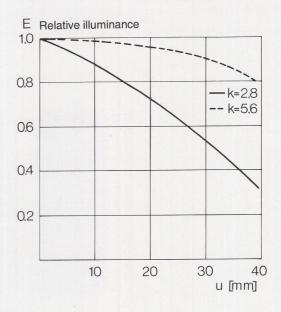
Unless otherwise indicated, the performance data refer to large object distances, for which normal photographic lenses are primarily used.

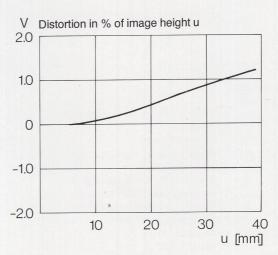
#### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

#### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.

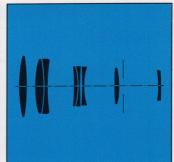




Subject to technical amendment

**Tele-Tessar** T\* f/4–350 mm Cat. No. 10 45 41

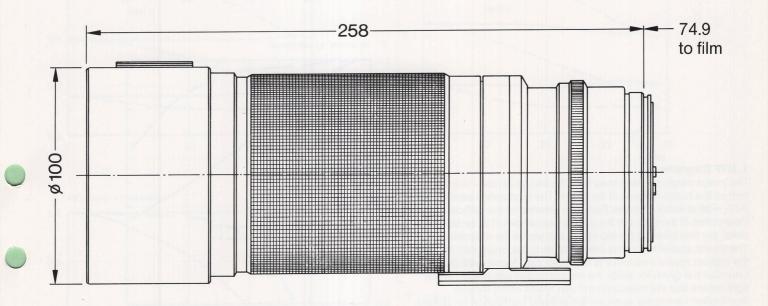






The 350 mm **Tele-Tessar** T\* f/4 with its long focal length and wide initial aperture is a further addition to the lens programme for the Hasselblad 2000 FC camera. Like the other lenses of this programme it is characterized by outstanding image quality. It has internal focusing and a minimum focus of 1.90 m.

We particularly recommend using the 350 mm **Tele-Tessar** f/4 lens with the Mutar 2x converter. This combination results in a high-quality telephoto lens with the relative aperture of 1:8 and the focal length of 700 mm.



Number of elements: Number of groups: Max. aperture:

Focal length: Negative format: Angular field 2w:

Spectral region: Aperture scale: Lens mount: 8 6 f/4

350,3 mm\* 56,5 x 56,5 mm 13° diagonal, 9.2° side visible spectrum

4-5.6-8-11-16-22-32 focusing helicoid with bayonet.

Coupling system for automatic diaphragm

function.

Filter: Thread M 96x1 mm, screw-in type clip-on, dia. 100 mm

Weight: approx. 2000 g

Distance range:

Close-limit field size:

Position of entrance pupil\*: Entrance pupil dia.\*:

Position of exit pupil\*:

Exit pupil dia.\*:

Position of principal planes H\*

H'\*

\*for∞

Distance between first and last lens vertex:

 $\infty$  to 1.9 m, (6.2 ft) internal focusing 226 x 226 mm (8.9" x 8.9") 304.0 mm behind first lens vertex

86.4 mm

49.4 mm in front of last lens vertex

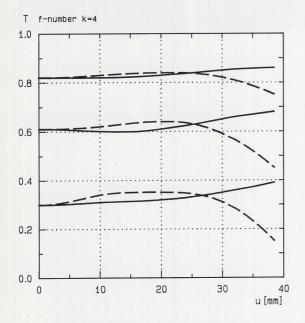
43.1 mm

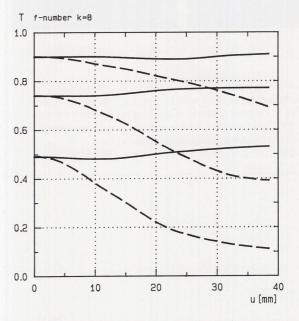
76.0 mm in front of first lens vertex 19.0 mm in front of first lens vertex

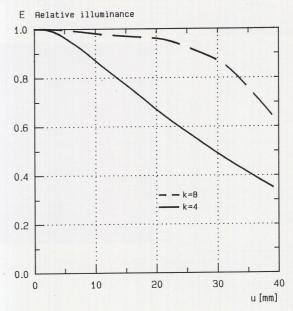
212.7 mm

Modulation transfer T as a function of image height u Slit orientation tangential — — — — sagittal ————

White light Spatial frequencies R=10, 20 and 40 cycles/mm







#### 1. MTF Diagrams

The image height u – reckoned from the image center – is entered in mm on the horizontal axis of the graph. The modulation transfer T (MTF = Modulation Transfer Factor) is entered on the vertical axis. Parameters of the grap are the spatial frequencies R in cycles (line pairs) per mm given at the top right hand above the diagrams. The lowest spatial frequency corresponds to the upper pair of curves, the highest spatial frequency to the lower pair. Above each graph the f-number k is given for which the measurement was made. "White" light means that the measurement was made with a subject illumination having the approximate spectral distribution of daylight.

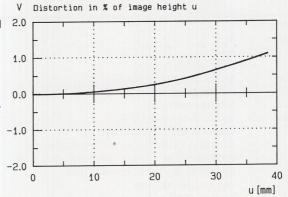
Unless otherwise indicated, the performance data to large object distances, for which normal photographic lenses are primarily used.

#### 2. Relative illuminance

In this diagram the horizontal axis gives the image height u in mm and the vertical axis the relative illuminance E, both for full aperture and a moderately stopped-down lens. The values for E are determined taking into account vignetting and natural light decrease.

#### 3. Distortion

Here again the image height u is entered on the horizontal axis in mm. The vertical axis gives the distortion V in % of the relevant image height. A positive value for V means that the actual image point is further from the image center than with perfectly distortion-free imaging (pincushion distortion); a negative V indicates barrel distortion.



## Performance data:

## **Tele-Tessar** T\* f/4-350 mm Cat. No. 10 45 41 with Mutar 2x T\* Cat. No. 104329

Number of elements: Number of groups: Max. aperture:

8 + 76 + 5f/8

Focal length: Negative format: Angular field 2w: Spectral region:

Lens mount:

Filter:

Weight:

700.5 mm\* 56.5 x 56.5 mm 6.5° diagonal, 4.6° side visible spectrum

focusing helicoid with bayonet. Coupling system for automatic

diaphragm function.

Thread M 96x1 mm, screw-in type clip-on, dia. 100 mm

lens: approx. 2000 g, converter: approx. 420 g Distance range:

Close-limit field size: Position of entrance pupil\*:

Entrance pupil dia.\*:

Position of exit pupil\*:

Exit pupil dia\*:

Position of principal planes

H\* H'\*

> Distance between first and last lens vertex:

∞ to approx. 2 m (6.2 ft) internal focusing

113 x 113 mm (4.45" x 4.45")

304.0 mm behind first lens vertex

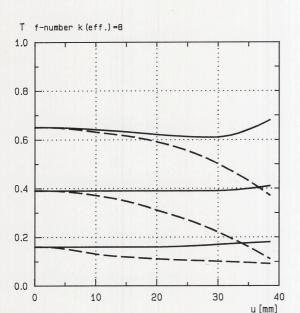
76.8 mm in front of last lens vertex

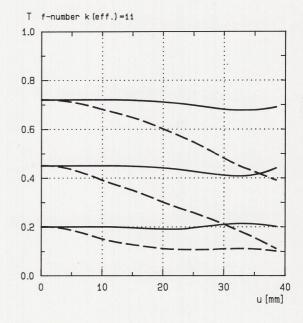
19.5 mm

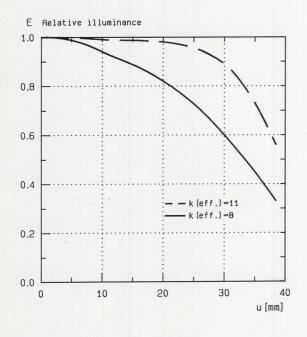
2103 mm in front of first lens vertex 303.5 mm in front of first lens vertex

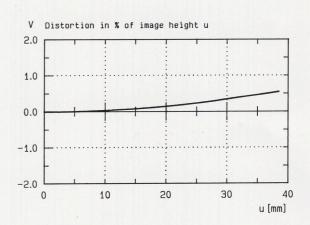
315.4 mm

\*for∞











# PRODUCT

# HASSELBLAD INFORMATION

Victor Hasselblad Inc. 10 Madison Road Fairfield, N.J. 07006 Tel. (201) 227-7320

# TWELVE ADVANTAGES OFFERED BY HASSELBLAD'S MAGAZINE INTERCHANGEABILITY

- 1. Change to new roll of film instantly with pre-loaded magazines.
- 2. Change type of film in mid-roll.
- 3. Switch a loaded magazine from one Hasselblad camera to another.
- 4. Produce double exposures at separate times.
- 5. Separate magazines for 120 and 220 assures best possible image quality on either film.
- 6. Use of 70mm film.
- 7. Use of sheet film.
- 8. Use of Polaroid film.
- 9. Change from 120 to 220, 70mm, to sheet film, to Polaroid film in mid-roll.
- 10. Produce square or rectangular pictures.
- 11. Produce superslides in camera.
- 12. Change format in mid-roll.

## TEN WAYS A POLAROID FILM MAGAZINE CAN HELP

- 1. To check camera and lens operation; flash sync, etc.
- 2. To see whether lens settings produce correct exposure.
- 3. To check effectiveness of lighting (i.e., in multiple flash).
- 4. To see lighting ratio (i.e., between flash and daylight).
- 5. To see amount of blur produced by slow shutter speeds.
- 6. To see results of zoom effect.
- 7. To see results when moving the camera (i.e., to follow moving subjects).
- 8. To see the image produced by a double exposure.
- 9. To have an instant image for direct approval, teaching.
- 10. To produce instant souvenir pictures.

Hasselblad film magazines are interchangeable and are compatible with all four Hasselblad camera models.

By simply changing film magazines, the photographer can quickly and efficiently change exposed film for unexposed, change from one film type to another, change from one film format to another, or change a film magazine from one camera to another.

Extra film magazines provide the Hasselblad photographer with increased capacity and picture-taking readiness.

30074 Film magazine A12 (chrome)

30147 Film magazine A12 (black) 30104 Film magazine A24 (chrome)

30171 Film magazine A24 (black) 30082 Film magazine A16 (chrome)

30155 Film magazine A16 (black)

30090 Film magazine A16S (chrome) 30163 Film magazine A16S (black)

30066 Film magazine 70 (chrome)

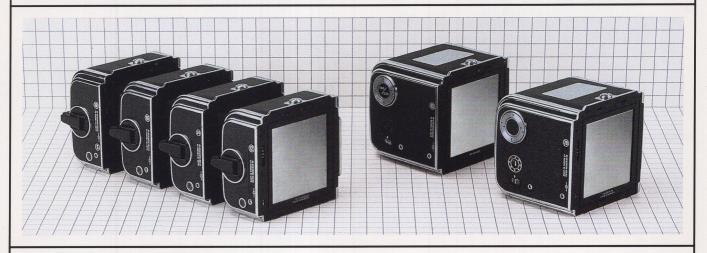
30139 Film magazine 70 (black)

30201 Film magazine 70/100-200 (chrome) 30228 Film magazine 70/100-200 (black)

30198 Hasselblad magazine 100 for Polaroid film

41017 Sheet film adapter

51012 Sheet film holder



Hasselblad magazines for roll film

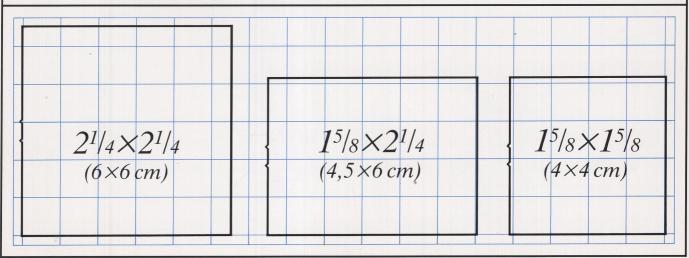
Hasselblad has three different film formats; the large square film format  $2^{1/4} \times 2^{1/4}$ , the economical rectangular format  $1^{5/8} \times$  $2^{1/4}$  and the  $1^{5/8} \times 1^{5/8}$  format which is primarily for use with a 35mm projector. The magazines have a load capaicty that ranges from 12 to 200 frames. For additional information, see film format/film capacity headings on the last page.

Hasselblad film magazines are easy to load and provide convenient fool-proof operation with a built-in system of indicators and automatic safety features that prevent mistakes. A red/white signal system indicates if the magazine is loaded, another indicates when an exposure has been made and whether or not the film has been advanced. The film counter is automatically reset to zero when the magazine is reloaded and film type and speed can be set on the film indicator. The magazine is locked to the camera and can not be removed before the magazine slide has been inserted to protect the film from exposure to light.

Film transport works mechanically via the camera body's cocking mechanism.

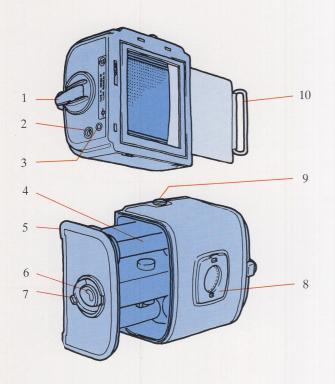
The Hasselblad roll film magazines are of an all-metal design, which provides a stable, light-tight fit to the camera body and accurate film-plane positioning.

- All of the film magazines are compatible to the four Hasselblad camera models.
- Three different film formats are available:  $2^{1/4} \times 2^{1/4}$ ,  $1^{5/8} \times 2^{1/4}$ , and 15/8×15/8.
- Load capacity ranges from 12 to 200 frames.
- All-metal, sturdy, compact design.
- Separately adjusted for maximum film-plane positioning.
- Simple to load on or off the camera.
- Increases the photographer's readiness and efficiency.
- Magazines can be changed in the middle of a roll of film without losing a single frame.



#### Magazine A12

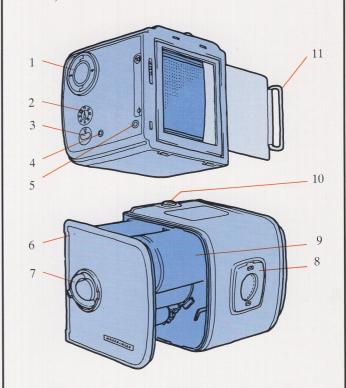
(Magazines A24, A16 and A16S have the same exterior design as magazine A12 with the exception of film format.)



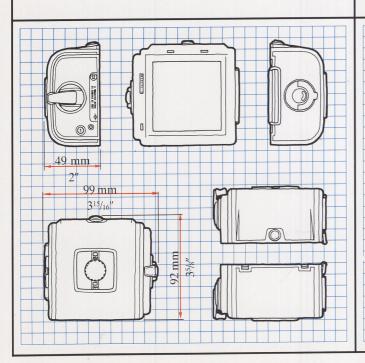
- 1. Film winding crank
- 2. Film counter
- 3. Film advance indicator
- 4. Take-up spool (empty)
- 5. Removable film roll holder
- 6. Film consumption indicator
- 7. Roll holder key
- 8. Film indicator
- 9. Magazine release catch
- 10. Magazine slide

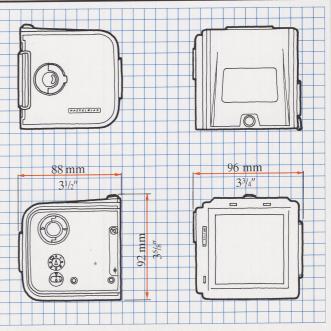
#### Magazine 70

(Magazine 70/100-200 has the same exterior design as magazine 70.)



- 1. Film winding knob
- 2. Serrated knob for manual setting of film counter
- 3. Exposure counter
- 4. Film signal
- 5. Film advance indicator
- 6. Removable cassette holder
- 7. Cassette holder catch
- 8. Film indicator
- 9. Film cassette
- 10. Magazine release catch
- 11. Magazine slide





#### Hasselblad magazine for Polaroid film

The Hasselblad magazine for Polaroid film provides the photographer with instant information about exposure, lighting, and composition. The "quick magazine change" feature of the Hasselblad system allows the photographer to switch to a Polaroid film magazine in the middle of a roll of film in order to acquire an accurate appraisal of the final results of a test shot instantly.

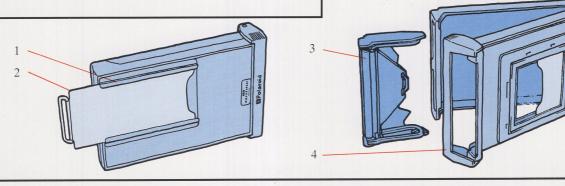
The ability to take a test shot with Polaroid film is of special value under those circumstances when it is difficult or impossible to get an accurate exposure meter reading, e.g., extreme close-up shots, weak lighting situations, or when working directly into a light source. The same applies to difficult photography techniques when the camera or camera object is in motion during the time of exposure, when using a flash attachment, when making a double-exposure, or when striving after special effects.

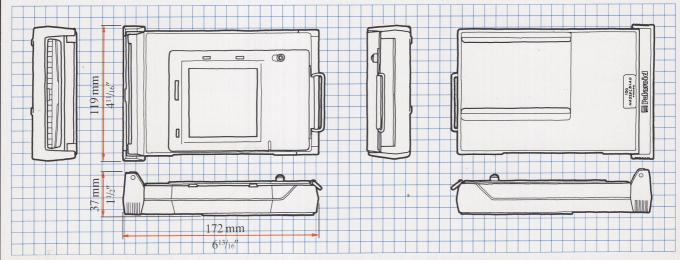
To insure that the image formed by the lens is positioned to the exact film-plane distance of the Hasselblad magazine for Polaroid film, a patented glass plate is located in the magazine opening to correct the optical system. This insures optimal sharpness in the Polaroid pictures that are taken with a Hasselblad. In addition to test shots that are easy to appraise, it is possible to make large enlargements from negatives when using Polaroid Type 665 film.

- Checking exposure, lighting, and compositon.
- Checking the results attained from e.g., panning, double-exposures, zoom or other special effects.
- Checking synchronization and exposure for flash photography, for multiple-flash set-ups, and flash applications in combination with daylight or other light sources.
- Is an aid for taking quick memory shots and preliminary sketch pictures or for transfering information.
- Provides basic material for discussion with customers concerning checking and approval.



- 1. Magazine slide holder
- 2. Magazine slide
- 3. Developer spreader
- 4. Clamp catch
- 5. Magazine release catch



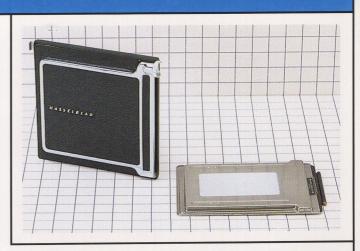


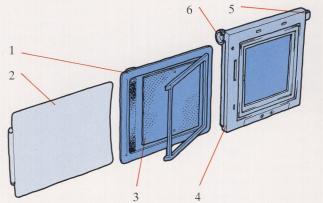
#### Hasselblad sheet film adapter and holder

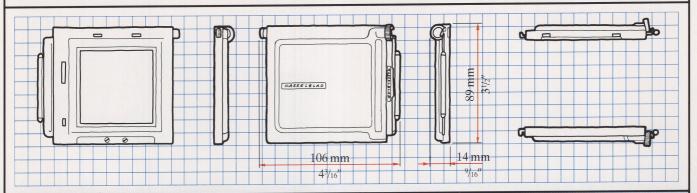
The sheet film adapter and holder are used for photography assignments that specify the use of special emulsions that are not normally available in roll film, e.g., Lith film or when single film frames are developed separately. It is also possible to use specially prepared glass plates by removing the pressure plate in the sheet film holder.

The sheet film is cut down to 64×64mm size (maximum) and darkroom-loaded into the Hasselblad sheet film holder. The sheet film holder is made of stainless steel and is equipped with a light surface for making notes in pencil about film, film speed, etc. To use, attach the sheet adapter holder to the camera and insert the holder. All four Hasselblad camera models accept the adapter and it can be removed just as easily and as quickly as any of the roll film magazines. The system has the usual features that prevent mistakes and the sheet film holder's dark slide has a red button that can be used as an exposure signal.

- Complements the Hasselblad film magazine line.
- Makes it possible to use film types that are not available in roll
- All-metal, sturdy, compact design.
- 1. Sheet film holder
- 4. Sheet film adapter
- 2. Dark slide
- 3. Pressure plate
- 5. Film holder lock
- 6. Release catch







## Hasselblad Film Magazines

Film format							
Magazine type	A12	A24	A16	A16S	70	70/100–200	Polaroid magazine 100
Format designation (ISO)	21/4×21/4	21/4×21/4	15/8×21/4	$1^{5/8} \times 1^{5/8}$	$2^{1/4} \times 2^{1/4}$	$2^{1/4} \times 2^{1/4}$	$2^{1/4} \times 2^{1/4}$
Actual image size <sup>1)</sup>	55×55 mm	55×55 mm	41×55 mm	41×41 mm	55×55 mm	55×55 mm	55×55 mm
Film capacity							
Film 120	12 exp.		16 exp.	16 exp.			
Film 220		24 exp.					
70mm film (standard)					70 exp.2)	100 exp.3)	
70mm film (extra-thin base)						160-200 exp. <sup>3)</sup>	
Polaroid film <sup>4)</sup>							8 exp.
Weight <sup>5)</sup>	14 oz (400 g)	1 lb 3 oz (530 g)	1 lb 2 oz (500 g)	13 oz (370 g)			

- 1) Hasselblad's actual image size on film (the sheet film adapter image size is 56×56 mm).
- 2) Double-perforated film, type II, cassette loaded.
- 3) Double-perforated film, type II, loaded directly into the magazine in a darkroom. 4) Polaroid Land Film Pack (8.3×10.8 cm). Type 107, 108, 665, 667, and 668.

Right to changes without notice.

5) The weight of the magazine unloaded including an empty take-up spool or cassette (the sheet film adapter with holder weighs 5 oz/135 g).

## **Viewfinders and Focusing Screens**

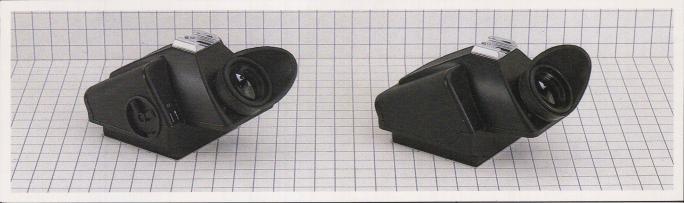
The viewfinder system is the camera's creative center. Hasselblad cameras have a large, clear focusing screen image that aids composition and focusing. The viewfinder effectively blocks extraneous light and enlarges the image. The Hasselblad system provides a range of viewfinders and focusing screens with different features. They have been developed to suit a wide variety of individual requirements, conditions, and photographic situations. The interchangeable focusing screens and viewfinders are compatible with the Hasselblad 500C/M, 500EL/M, and 2000FC/M. The Hasselblad SWC/M can be equipped with a focusing screen adapter for

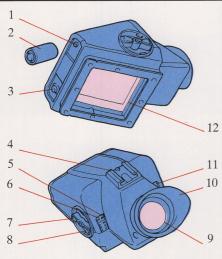
different viewfinders. The adapter can be attached to the SWC/M where the film magazine is normally attached.

The Hasselblad prism viewfinders, reflex viewfinder, and magnifying hood are equipped with an adjustable rubber eyepiece for the best possible comfort and light screening.

Fast moving camera subjects can require a traditional sports or frame viewfinder. The Hasselblad system has two such viewfinders.

#### **Prism viewfinders**





#### **Meter prism finder PME** (42293)

A prism viewfinder that features centerweighted measuring (TTL). For photography at eyelevel with 45° sighting angle. Yields an unreversed screen image and magnifies it three times. Can be fitted with correction lenses for compensation of faulty vision (see the Hasselblad Product Catalog).

Light entering the lens and falling on the screen is measured by a center-weighted system using a silicon cell. It is reliable and has fast response even at low light levels. Values are read on an expsoure value scale (EV 2–19) under the focusing screen image. The meter automatically shuts off after 5 to 10 seconds. Battery type PX28, UI or similar with a 6V current. Built-in battery test. Weight 1 lb (450 g) incl. battery.

- Superior optical system that yields an unreversed focusing screen image.
- Proven metering method with fast response and distinctive signals.
- Comfortable sighting angle.
- · Sturdy, compact design.
- Countersunk, protected levers.

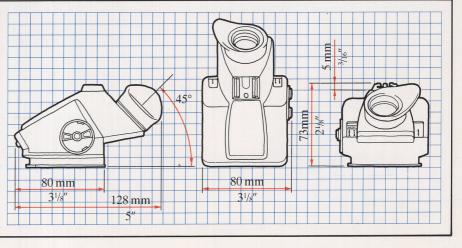
#### Prism viewfinder PM (42307)

A prism viewfinder for eyelevel photography with a 45° sighting angle. Yields an unreversed focusing screen image that is magnified three times. Can be fitted with correction lenses for compensation of faulty vision (see the Hasselblad Product Catalog).

The ocular is equipped with a rotatible rubber eyepiece. Weight 14 oz (400 g).

- Superior optical system that yields an unreversed focusing screen image.
- Comfortable sighting angle.
- Sturdy, compact design.

- 1. Battery compartment
- 2. Battery
- 3. On/off switch
- \* 4. Accessory shoe
  - 5. Scale for lens aperture
  - 6. Scale for film sensitivity
  - 7. Film sensitivity selector
  - 8. Lens control selector (Selector for maximum aperture)
- \* 9. Position for correction lens
- \*10. Rubber eyepiece
- 11. Battery test signal
- 12. Illuminated exposure value scale
- \* Features in addition to the optical system and exterior design that are the same on viewfinders PME and PM.



#### Reflex viewfinder



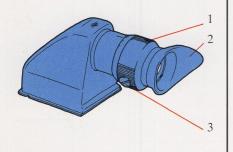
#### Reflex viewfinder RM (52086)

A reflex viewfinder for photography at eyelevel with a sighting angle that is parallel to that of the lens. Yields an unreversed focusing screen image and magnifies it three times. The ocular is focusable from +5 to -5 diopters for compensation of faulty vision.

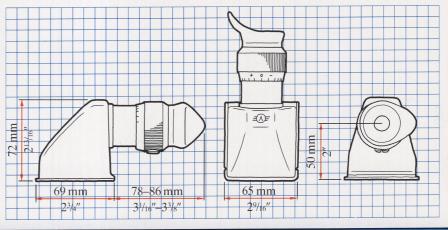
The ocular is fitted with a rotatible rub-

The ocular is fitted with a rotatible rule ber eyepiece. Weight 12 oz (350 g).

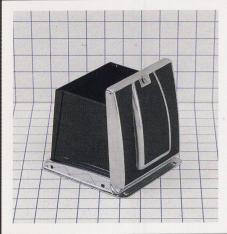
- Yields an unreversed focusing screen image.
- Adjustable ocular for compensation of faulty vision.
- Especially suitable for the 15/8×21/4 format with the film magazine A16.



- 1. Focusing ring
- 2. Rubber eyepiece
- 3. Locking screw



## **Focusing hood**



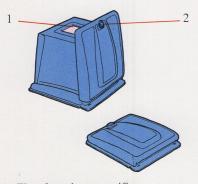
#### Standard focusing hood (chrome 42021 or black 42277)

An all-round viewfinder for photography with the camera at a distance or right up against the eye. Sighting angle perpendicular to the lens. Its design makes camera work at hip level or difficult angles possible.

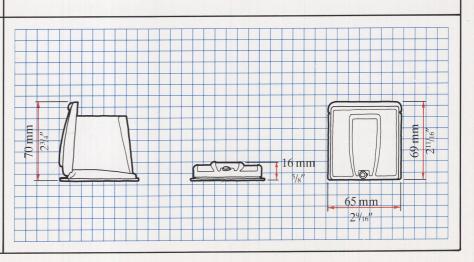
The focusing hood is collapsible and can be raised or lowered while attached to the camera. Provides effective screening of the focusing screen image. A folding fine-focus magnifier enlarges the image 2½ times. The collapsed hood takes a minimum amount of space, making the entire camera compact.

The focusing hood is standard equipment on the Hasselblad 500C/M, 500EL/M, and 2000FC/M. Weight 3 oz (85 g).

- Flexible, the camera doesn't need to be held up to the eye.
- Opens to a raised position automatically, when the focusing hood latch is released.
- Built-in folding fine-focus magnifier.
- Acquires least space of all viewfinders, still high preparedness.



- 1. Fine-focusing magnifier
- 2. Catch for focusing hood and fine-focus magnifier



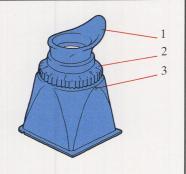
## **Magnifying hood**



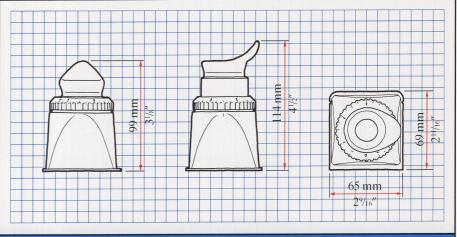
#### Magnifying hood (52094)

A sturdy, reliable viewfinder for carefully checking the focus and composition of the focusing screen image. Sighting angle perpendicular to the lens. Enlarges the focusing screen image  $2^{1/2}$  times. The ocular is adjustable from +3.5 to -2.5 diopters for compensation of faulty vision. Weight  $4^{1/2}$  oz (125 g).

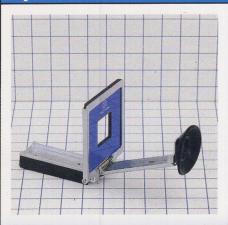
- A perfect aid for careful focusing.
- Suitable for photography with a tripodattached camera.
- Adjustable ocular for compensation of faulty vision.



- 1. Rubber eyepice
- 2. Focusing ring
- 3. Scale



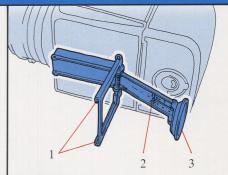
#### **Sports viewfinder**



#### Sports viewfinder (43028)

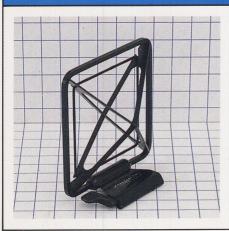
For direct viewfinding of fast moving camera subjects. Attaches to the accessory rail on the camera's left side. Comprised of a frame with a position for inchangeable masks. Features parallax compensation through a movable sight with a rubber eyepiece. The fixed frame outlines the image field for 80mm focal length lenses when a film magazine for the  $2^{1/4} \times 2^{1/4}$  format is used. There are nine different interchangeable masks for lenses with greater focal lengths. The sports viewfinder is collapsible. Weight  $1^{1/2}$  oz (40 g).

- Excellent for wildlife and sports photography.
- Practical supplementary finder for high preparedness.



- 1. Mask holder
- 2. Parallax adjustment
- 3. Rubber eyepiece

#### Frame viewfinder

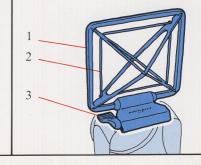


#### Frame viewfinder (40215)

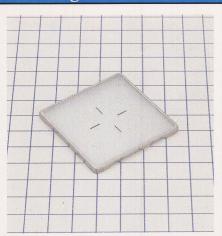
For direct viewfinding of fast moving camera subjects. Attaches to a square lens shade or with the help of the frame viewfinded attachment to the longer telephoto lenses. Two square frames, of which the inner is removable, outline an image field for 150mm, 250mm, 350mm and 500mm focal lengths when magazines for the  $2^{1/4} \times 2^{1/4}$  format are used. The frame viewfinder has a sight that consists of double, diagonal crosses that are aligned in unison. Weight  $1^{1/2}$  oz (40 g).

- Excellent for wildlife and sports photography.
- No rear sight, ideal for eyeglass users.

- 1. Frame for the 150mm focal length
- 2. Frame for the 250mm focal length
- 3. Arm for off-radial lock



#### **Focusing screens**



#### Interchangeable focusing screens

The Hasselblad system's range of focusing screens was developed to satisfy the individual needs of photographers working under widely varying conditions. Focusing screens that show 96% of the image format provide a clear, bright image for composition and control of depth of field at different aperture set-

The focusing screens are manufactured with a tolerance of 0.005 mm for focusing position and rest on four adjusted supports in the camera, which gives that focusing screen image a very exact focusing ability.

A focusing screen can be changed simply and quickly. Each comes with its own protective cover.



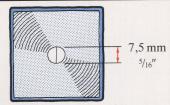
58 mm 21/4"

Standard focusing screen (42161)

The standard focusing screen is made of glass with a reference cross in the center and a Fresnel lens of plastic with an 8 line per mm spacing. The focusing screen is standard equipment on the 500C/M, 500EL/M, and 2000FC/M camera bodies.

- Durable, all-round focusing screen that can be
- written on with a felt-tip pen.

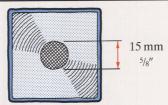
   Clear image free from details that can be disturbing when composing a picture.



Interchangeable focusing screen with split-image rangefinder (42188)

A bright focusing screen made of plastic with a vertical (horizontal) split-image rangefinder in the center. Fresnel lens with a 13 line per mm spacing. For lenses with focal length from 30 to 150mm.

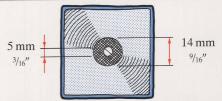
- · Can be turned for subjects with vertical or hori-
- Clear focusing even for different types of camera



Interchangeable focusing screen with central grid (42234)

A bright focusing screen made of plastic with a central grid, 15 mm in diameter. Fresnel lens with a 13 line per mm spacing. For lenses of any focal length.

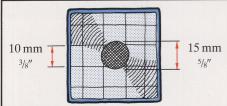
- Bright central grid image even in weak lighting
- Excellent even when the lens is stopped down.



Interchangeable focusing screen with central grid and split-image rangefinder (42218)

A bright focusing screen made of plastic with a 14 mm Ø central grid and a diagonal splitimage rangefinder, 5 mm in diameter, in the center. Fresnel lens with 13 lines per mm.

- Combines the brightness of a central grid with focusing reliability even for camera subjects that are difficult to focus.
- Diagonal split-image rangefinder is excellent for aiding vertical and horizontal focusing.



Interchangeable checked focusing screen with central grid (42250)

A bright checked focusing screen made of plastic with a central grid, 15 mm in diameter, in the center. Fresnel lens with lines that are spaced 13 per mm. For lenses of any focal length.

• Excellent aid in architectural photography and copying work where checking horizontal and vertical alignment is a must.



Interchangeable fine-line focusing screen (42285)

A focusing screen of glass with a reference cross in the center and with a Fresnel lens of plastic and lines that are spaced 13 per mm. The very closely spaced lines make focusing of very finely detailed subjects easier than with the standard focusing screen with 8 lines per mm.

• Suitable for close-up photography and copying work.

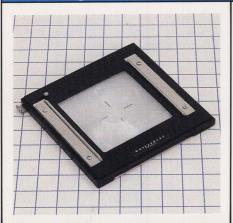


Interchangeable plain glass screen (42200) A plain glass screen with a reference cross in the center and a Fresnel lens with 8 lines per

mm spacing.

Excellent for photomicrography and macro work, where the viewfinder image is often weak due to the extra long focal lengths being used.

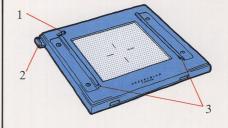
## **Focusing screen adapter**



Focusing screen adapter (41025)

For use with a tripod-attached camera. Attaches to the camera where the film magazine is normally attached, thereby placing it in the exact film plane position. The adapter contains a focusing screen with a Fresnel lens. Careful control of depth of field and composition can be made with the help of any of the Hasselblad focusing screens e.g., the magnifying hood, etc. The adapter is designed for the SWC/M, which doesn't have a reflex viewfinder but can also be used on any of the other Hasselblad cameras. Switching from focusing screen adapter to a film magazine can be performed as easily as changing from one film magazine to another. Weight 100 g.

• Provides the SWC/M with the same focusing reliability available in other Hasselblad cameras



- 1. Focusing hood catch
- 2. Adapter lock
- 3. Focusing hood attachment seat

## **Original Filter guide**

Hasselblad original filters have been manufactured under stringent demands for optical flatness and transmission qualities that complement the outstanding Zeiss lenses in the best possible way.

Complete information on the entire range of filters is available in the Hasselblad Product Catalog.

On the edge of each filter, there are engraved designations indicating diameter, filter factor, and exposure value reduction (EV). In some instances the "Kodak Wratten" designation is also given.

With one exception, the Hasselblad CF lenses only require two filter diameters. Step-up rings make it possible to use large diameter filters with lenses that have smaller accessory mounts.

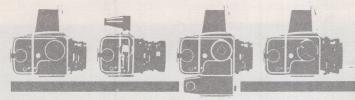
This sheet is a guide for finding the right filter diameter or adapter alternative for a certain Hasselblad lens.

The large circles indicate the right filter diameter for each lens. The double-rings indicate a filter diameter that can be used in conjunction with a step-up ring or ring/lens shade. In such instances, the product number is also given. A dotted circle indicates that a lesser, soon-to-be-discontinued filter diameter fits.



CF lenses		Filter diameter  Ø 26 Ø 50 Ø 60 Ø 63 Ø 70 Ø 86 Ø 93 Ø					Ø 104		
30mm Distagon CF		0							
38mm Biogon CF (SWC/M)				0	51638	40714			
40mm Distagon CF								0	
50mm Distagon CF				0	51638	40714			9.
60mm Distagon CF				0	51638	40714			
80mm Planar CF	The state of the s			0	51638	40714			
100mm Planar CF				0	51638	40714			
105mm UV-Sonnar CF				0	51638	40714			
120mm Makro-Planar CF				0	51638	40714			
135mm Makro-Planar CF				0	51638	40714			
150mm Sonnar CF				0	51638	40714			
250mm Sonnar CF				0	51638	40714			
250mm Sa Sonnar CF				0	51638	40714			
350mm Tele-Tessar CF							()	0	
500mm Tele-Apotessar CF								0	

Original Filter guide		•						
F lenses	Ø 26	Ø <b>50</b>	Ø <b>60</b>	Filter d Ø 63	liamete Ø 70	r ∅86	Ø <b>93</b>	Ø <b>10</b> 4
50mm Distagon F						()	(40706)	
80mm Planar F		0	40711	40053				
110mm Planar F					0			
150mm Sonnar F		+46 15.00 15.00			0			
250mm Tele-Tessar F					0			
140–280mm Variogon F						Th	0	
C lenses								
30mm Distagon C	0			73.8h				
38mm Biogon C (SWC/M)				0				
40mm Distagon C								0
50mm Distagon C				0				
60mm Distagon C				0				
80mm Planar C		0	40711	40053				
100mm Planar C		0	40711	40053				
105mm UV-Sonnar C		0	40711	40053		16		
120mm S-Planar C		0	40711	40053				
135mm S-Planar C		0	40711	40053				
150mm Sonnar C		0	40711	40053				
250mm Sonnar C		0	40711	40053				
250mm Sa Sonnar C		0	40711	40053				
350mm Tele-Tessar C						0	40703	
500mm Tele-Tessar C						0	40703	
140–280mm Variogon C							0	



# PRODUCT

# HASSELBLAD INFORMATION

Victor Hasselblad Inc. 10 Madison Road Fairfield, N.J. 07006 Tel. (201) 227-7320

# EIGHT REASONS THAT MAKE THE SOFTARS THE MOST IDEAL APPROACH TO SOFT FOCUS PHOTOGRAPHY

- 1. They produce beautiful, professional image softness.
- 2. Soft focus effect is produced without degrading image sharpness.
- 3. Groundglass focusing is possible through Softar.
- 4. Soft focus effect is unaffected by lens aperture, thus lens aperture can be set for depth of field.
- 5. Softars can be combined for various degrees of softness.
- 6. Softness is produced without a color shift.
- 7. One Softar can be attached to various focal length lenses, thus one Softar can convert several sharp Zeiss lenses into beautiful Zeiss soft focus lenses.
- 8. Different lenses produce matched color rendition.

## **∠** PCP80 Projector Body

The Hasselblad PCP80 projector is a truly professional projector for the  $2^{1/4} \times 2^{1/4}$  format. The stringent requirements placed on a professional projector, whether they be for a single projector slide show or a large-scale multivision presentation, have steered its design and development

Just as with the Hasselblad camera, priority was placed upon rendering superior image quality when the PCP80 was developed—image quality, practicality and operating reliability.

The PCP80 is the obvious choice for anyone wanting to do true justice to their  $2^{1/4} \times 2^{1/4}$  slides.

The designation PCP80 stands for "Perspective Control Projector" with 80 slides in a rotary slide magazine.

Built-in perspective control is a truly unique feature of the Hasselblad PCP80, partly because the Zeiss-designed optics make it possible to shift the screen image while retaining perfect image geometry and partly because the lamp and condenser system can also be shifted thereby making even screen illumination independent of the image's height on the screen.

The interchangeable lens is securely attached to the patented lens mount. This factor in combination with a very accurately defined image position and precision focusing ensures consistent image sharpness even during longer slide shows.

One of the condenser lenses in the projector is interchangeable with regard to lens selection, thereby providing maximum light output. Consequently, every lens comes with a matched condenser lens.

With the help of the *Edit*-control function, a slide that is in the projector gate can be ejected without continuing slide advancement. This makes it possible to remove the slide tray at any time and to correct any wrongly positioned slides. The *Edit*-control function also makes it possible to show single slides.

Interuptions in the middle of a slide show due to a burnedout lamp have been eliminated thanks to an automatic lamp replacement feature which switches from the burned-out lamp to a spare one instantly.



The ingeniuous design of the lamp housing makes it possible to fine-tune both the primary and spare lamps in advance for optimum light output, after removing the housing completely from the projector.

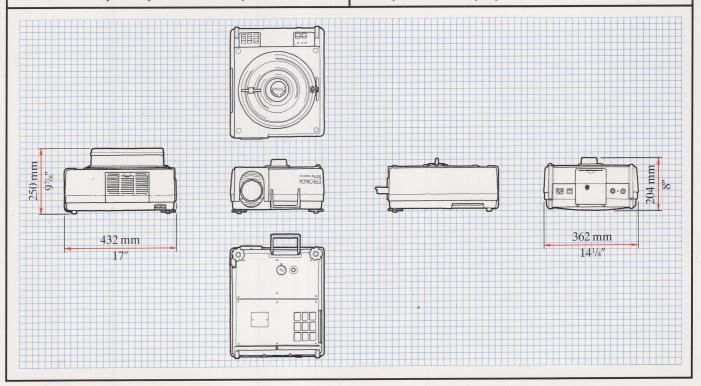
Projector ventilation is carried out by a centrifugal fan unit that draws air in through a washable and interchangeable filter. The fan system forces air through the projector under pressure into cooling channels. The hyperbaric pressure principle makes it difficult for dust to penetrate into the projector.

In addition to the ventilation system, the temperature is also controlled by two cold-light mirrors. These mirrors reflect visible light but let heat radiation from the lamp pass out.

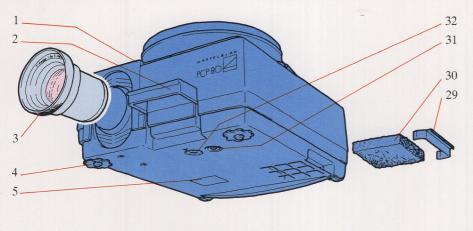
A thermal circuit breaker shuts off current to the lamp if the temperature nevertheless should rise too high.

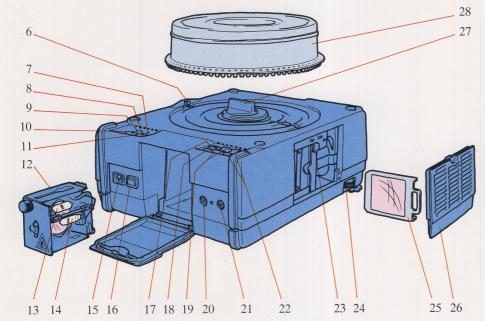
An automatic fuse protects the projector if the lamp should short circuit.

- Superior image quality
- Built-in perspective control
- Fully automatic lamp replacement



## **PCP80 Projector Body**





- 1. Projector body
- 2. Carrying handle
- 3. Lens
- 4. Adjustable supports
- 5. Type plate
- 6. Sensor for slide mag. zero position
- 7. Warning light, slide tray lock/thermal circuit breaker
- 8. Indicator light, spare lamp
- 9. Indicator light, projector lamp
- 10. Button LAMP ON
- 11. Button LAMP OFF
- 12. Lamp housing
- 13. Spare lamp
- 14. Primary lamp
- 15. Power supply connection
- 16. Mains switch
- 17. Button RESET
- 18. Button EDIT
- 19. Buttons FOCUS
- 20. 8-pin DIN contact
- 21. 6-pin DIN contact
- 22. Buttons CHANGE
- 23. Perspective control mechanism adjustment
- 24. Thumb wheel for perspective control
- 25. Interchangeable condenser lens
- 26. Side cover
- 27. Magazine lock
- 28. Rotary slide magazine
- 29. Filter cover
- 30. Air filter
- 31. Automatic fuse reset
- 32. Mains voltage selector

#### Technical specifications and equipment

Type of projector:	Slide projector for the 21/4×21/4 format. Maximum capacity of 80 slides for rotary slide magazine. The projector is equipped for remote control operation with a 6-pin DIN contact, a 8-pin DIN contact and an AV contact 12-pin.
Slide mounts:	External dimensions $2^{3/n} \times 2^{3/n} (7 \times 7 \text{ cm})$ width max $0.14^n (3.5 \text{ mm})$ according to DIN 108.

Two 24 V, 250 W halogen lamps (DIN 49820, base 6, 35-15). Automatic lamp replacement from burned-out lamp to a Illumination system:

spare one. Luminous flux approximately 1.300 lumen measured according to DIN 19021. Slide temperature approximately 70°C measured according to DIN 19021

Switchable for 110, 130, 220, 240 V AC, 50-60 Hz. Power consumption 350 W. **Electrical system:** 

For U.S. only: 120 V, 50-60 Hz. For Japan only: 100 V, 50-50 Hz A hyperbaric system with filtered cool air. Maximum ambient temperature  $40^{\circ}\mathrm{C}$ 

**Cooling system:** The projector body without lens and slide magazine:  $17 \times 14.3 \times 8$  in  $(432 \times 362 \times 204 \text{ mm}, 1 \times w \times h)$ . See illustration on the **External dimensions:** other side. Weight about 14 kg (31 lbs). Projector with 150mm lens and full slide tray about 17 kg.

Projector Body (product no. 70101) is delivered with front protective cover and power supply cable.

Accessories

Interchangeable 150 and 250mm lenses. Available soon: 75 and 400mm lenses. Lenses:

See the product information on lenses for PCP80.

Rotary slide magazine for a maximum of 80 slides. Diameter 11.8" (300 mm), height 3.5" (90 mm), weight 21 lb (0.9 kg). Magazine: Weight of full slide magazine: 5 lb (2.3 kg).

Remote cable control. Projector case. Other accessories:

For more information on other special accessories for simultaneous use of several projectors, see the Hasselblad Product Catalog.

Right to changes without notice.

## Close-up accessories

The Hasselblad range of close-up accessories contains many versatile and practical photographic components using lens extensions and shorter focal lengths to achieve higher scales of magnification.

Proxars are attached directly to lenses which have  $\emptyset$  50 and  $\emptyset$  60 front lens mounts, while the extension tubes and bellows extension are fitted between the camera and any lens. Combinations of Proxars, extension

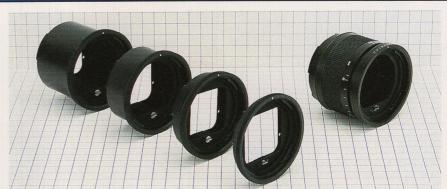
tubes and the bellows extension can be used to achieve the scale of magnification desired.

The Macro Flash unit and bracket components, described in this information sheet, are typical examples of other Hasselblad accessories which considerably simplify close-up photography, i.e. when the subject lies within the closest focusing point of the lens.

#### **Proxars**

#### **Extension tubes**





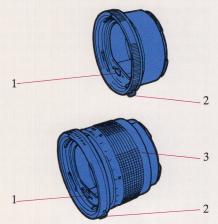
Proxars are close-up lenses which are attached to the lens using the filter bayonet mounting. They are available in three focal lengths (0.5, 1.0 and 2.0 m.) for lenses with Ø 50 and Ø 60 front lens mounts. Proxars can be used together or combined with extension tubes and the bellows extension.

Ø 60 Proxars have T\* multicoating.

51662 Proxar 0.5 Ø 60 T\* 51665 Proxar 1.0 Ø 60 T\* 51667 Proxar 2.0 Ø 60 T\* 50296 Proxar 0.5 Ø 50 50318 Proxar 1.0 Ø 50 50326 Proxar 2.0 Ø 50 The Hasselblad system offers a range of four fixed length extension tubes (8, 16, 32 and 56 mm.) and one tube with variable extension between 64–85 mm. The extension tubes can be used in combination with each other and with Proxars and the bellows extension.

All Hasselblad extension tubes are automatic, with the lens and camera connected via a shaft. Cocking the camera also sets the lens mechanism. Pressing the camera's shutter release simultaneously fires the shutter and activates the aperture in the lens.

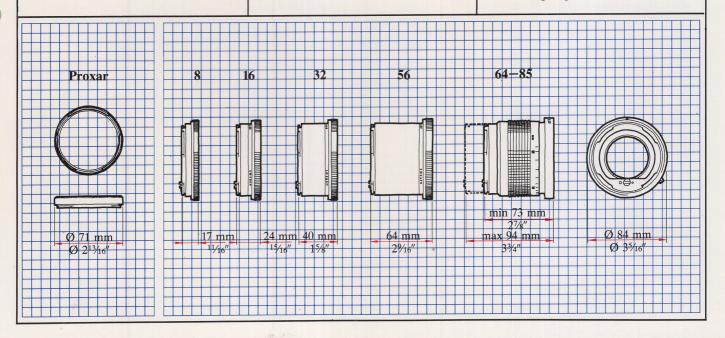
40649 Extension tube 8 40541 Extension tube 16 40568 Extension tube 32 40657 Extension tube 56 51691 Variable extension tube 64–85



1. Key

2. Lens lock release

3. Focusing ring with extension scale



## Automatic bellows extension and Transparency copyholder



#### **Automatic bellows extension**

The Hasselblad automatic bellows extension provides an infinitely variable range of extension from 64 to 202 mm. Further extension can be achieved by adding an extension tube. The bellows extension accepts the entire range of Hasselblad interchangeable lenses with focal lengths from 50 to 500 mm.

The scales on the bellows' extension rail show the actual extension in millimeters and the consequent exposure value reduction in stops for use with 135 mm Zeiss Makro-Planar lens.

A quick-coupling plate, with tripod threads, makes it possible to move the bellows and camera up to 140 mm in relation to the subject, without affecting the bellows extension setting.

A fully adjustable lens shade is available as an accessory. The lens shade is attached to the different lenses' front mounts using lens mounting rings. The mounting rings also have a slot for gelatin filter holders.

Transparency copyholder

A transparency copyholder can be attached to the flanges of the lens shade for copying transparencies to positive, negative or even Polaroid film. The distance between the slide and the lens can be further increased using the extension ring and lens support rod accessories.

40517 Automatic bellows extension

40525 Lens shade for automatic bellows extension

40533 Transparency copyholder II

40630 Extension ring

40622 Lens support rod 296

40679 Lens mounting ring Ø 50

40681 Lens mounting ring Ø 60

40684 Lens mounting ring Ø 63

40687 Lens mounting ring Ø 70

40690 Gelatin filter holder Ø 50-Ø 70

1. Camera mounting ring

2. Bellows extension scale3. Extension adjustment knob

4. Bellows slide locking screw

5. Key

16

17

6. Support rod locking screw

7. Camera lens lock release

8. Extension locking screw

9. Quick-coupling plate

10. Slide adjustment knob

11. Support rod locking screw12. Transparency copyholder

12. Transparency copyholder mounting

13. Lens shade (40525)

14. Lens mounting ring locking screw

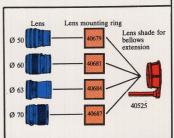
15. Transparency copyholder (40533)

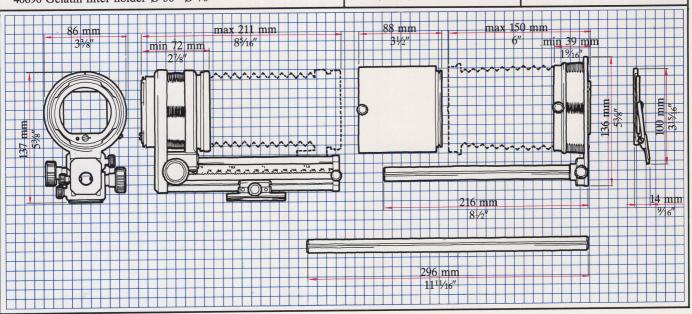
16. Extension ring (40630)

17. Lens mounting ring locking screw

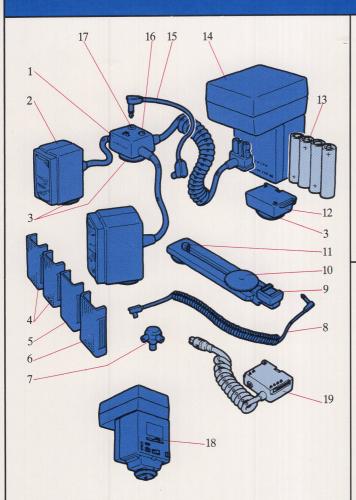
18. Support rod 296 (40622)

19. Lens mounting ring (40679-40687)



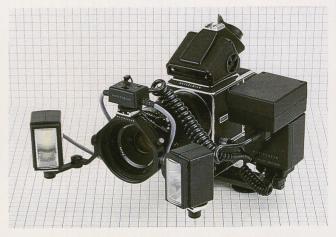


#### **Macro Flash Unit**



- 1. Lamp selector unit
- 2. Flash lamp unit
- 3. Mount locking wheel
- 4. Wide-angle filters  $-\frac{3}{4}$  EV
- 5. Grey filter −1½ EV
- 6. Wide-angle grey filter -21/4 EV
- 7. Double PC flash outlet
- 8. PC cable, coiled
- 9. Tripod bracket with shoe
- 10. Tripod fitting screw 1/4"

- 11. Tripod fitting screw 3/8"
- 12. Interchangeable adapter **SCA 301**
- 13. Batteries (Alkaline or Nickel Cadmium)
- 14. Powerpack (and main unit) 15. PC cable 240 mm
- 16. Manual firing button
- 17. PC socket
- 18. Mode/output selector
- 19. SCA 390 adapter for 500ELX



A Hasselblad Macro Flash Unit mounted on a Hasselblad 500ELX camera using Flash Adapter SCA 390. The lamps and lamp selector unit are mounted on a Hasselblad Macro Flash Bracket and attached to the lens with a lens mounting ring.

A dedicated yet versatile flash system for close-up photography, developed by Hasselblad and the West German manu-

The flash unit has the guide number 28/92 (m/ft) at ISO (ASA) 100/21°. Light outputs can be adjusted from maximum to ½, ¼, 1/8 or 1/16 of the full effect. With the twin lamp units fitted, preferably to a Hasselblad Macro flash bracket, a variety of light settings are possible. Either lamp can be turned off as required, and the accompanying grey and wide-angle screens open up further lighting possibilities.

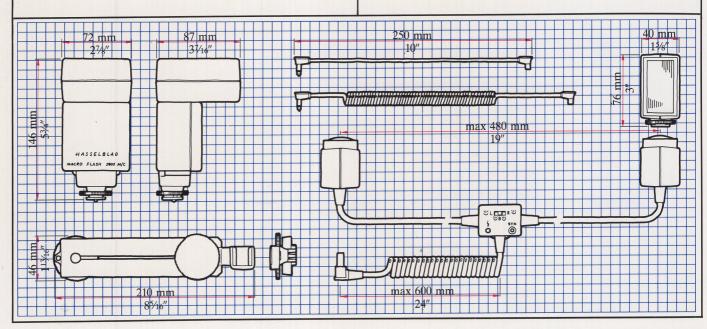
The best way of regulating flash lighting for close-up work is by using a camera's own TTL metering system. The Macro Flash Unit therefore conforms to the european System SCA 300, and can be used with most cameras with this type of flash metering circuitry. The Hasselblad 500ELX is just such a camera.

A camera specific adapter is required to connect the system. For the 500ELX use Flash Adapter SCA 390.

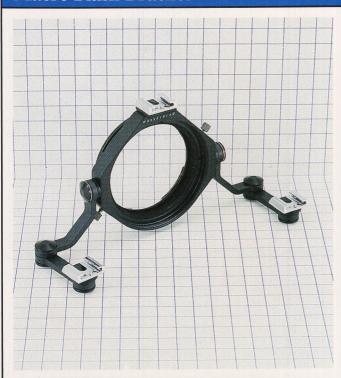
51678 Macro Flash Unit

51681 Flash Adapter SCA 390

51657 Macro Flash Bracket Ø 50-Ø 70



## **Macro Flash Bracket**



The Hasselblad macro flash bracket consists of two shoe mounts for lightweight flash units, located on arms attached to the bracket ring, and one fixed shoe on the bracket ring itself. The arms are articulated at three points with each joint capable of rotating 360°.

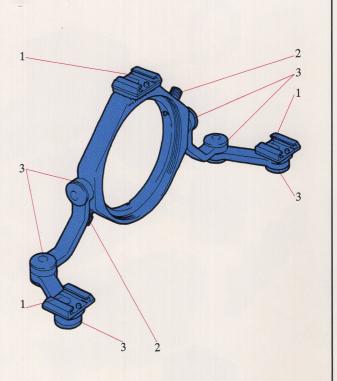
The macro flash bracket is mounted on the front lens mount using a lens mounting ring (see below, right). The mounting rings, which have a slot for gelatine filter holders, are not included and must be bought separately. The Macro Flash's lamp selector unit can be mounted in the fixed shoe on the bracket ring and the lamps in the shoe contacts on each end of the arms. When mounted the lamp units can be turned to the position that gives the best lighting.

51657 Macro Flash Bracket Ø 50-Ø 70

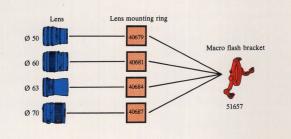
40679 Lens mounting ring Ø 50

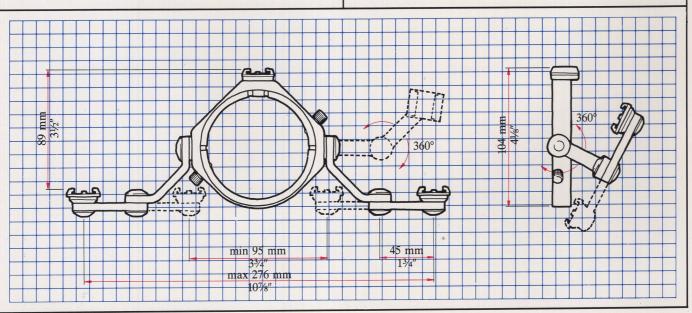
40681 Lens mounting ring Ø 60 40684 Lens mounting ring Ø 63

40687 Lens mounting ring Ø 70 40690 Gelatine filter holder Ø 50-Ø 70



- 1. Shoe mount for flash lamp unit etc.
- 2. Lens mounting ring locking screw





# Applications

Close-up and Copy work				
Studio	2			
Landscape	3			
Architecture	4			
Press and Sport	5			
Special applications	6			
Slide Presentation	7			

## **Close-up and Copy Work**

The closer one gets to one's camera subjects, the greater the requirements on accuracy and precision when considering composition, focusing, and exposure.

A distinction should be made here between close-up photography and copying work. The term close-up concerns three-dimensional subjects. Copying represents reproduction of existing pictures, slides, and completely flat, one-dimensional subjects.



Photo: Harry Opstrup

- Superior optical quality and special lenses for close-up photography.
- A wide selection of accessories for close-up photoggraphy.
- Large image size and compact equipment that is easy to use.



# Close-Up Photography

The Hasselblad is an optimal camera for close-up photography for several reasons. The large  $2^{1/4} \times 2^{1/4}$  format and the precision lenses from Carl Zeiss, West Germany, yield superlative image corner-to-corner coverage, allowing for enlargements of an extremely large scale.

Select a Hasselblad viewfinder with a comfortable sighting angle for photographing subjects in crowded spaces and difficult perspectives.

The selection of a meter prism viewfinder allows for instant exposure readings on lighting conditions without having to be bothered by extension ratios.

The Hasselblad system offers a multitude of equipment for the advanced close-up photographer. Extension tubes can be used to increase the distance between the lens and the film plane. By varying the number of extension tubes it is possible to create different levels of magnification.

The automatic bellows extension has the same function as the extension tubes, but increases flexibility by allowing you to work in the same way with the lens as you do when it is directly

connected to the camera. The extension range from is  $2^{1}/_{2}$  to 8 in (63.5 mm to 207 mm). The bellows extension combined with a 135mm Makro-Planar lens enables you to work from infinity down to 1:1.

The 120mm Makro-Planar close-up lens is also designed for the best in close-up image quality.

The shorter the focal length one works with, the closer one comes to the camera subject. The Hasselblad Proxars build upon this principle and are simple and practical accessories for close-up photography. The Proxar lenses are attached to the front of the camera lens and shorten its focal length. They are only intended for low magnification work and not to magnify the subject as much as the extension tubes or automatic bellows extension.

## **Suggested Equipment for Close-up Photography**



Suggested basic equipment

Hasselblad 2000FC/M (10316), 500C/M, or 500EL/M

camera body

Zeiss Planar CF 80mm f/2.8 (20029)

Zeiss Makro-Planar CF 135mm f/5.6 (20118)

Automatic bellows extension (40517) with lens shade Extension tubes 8 (40649), 16 (40541), 32 (40568),

and 56 (40657)

Lens shade (40673)

2 film magazines A12 (30074)

Meter prism finder PME (42293) Macro flash bracket Ø 50–Ø 70 (51657)

Interchangeable checked focusing screen with

central grid (42250)

Supplementary equipment

Zeiss Makro-Planar CF 120mm f/4 (20053)

Magazine 100 for Polaroid film (30198)

Proxar close-up lenses

Sheet film adapter (41017)

Sheet film holder (51012)

Interchangeable plain glass screen (42200)

Microscope adapter (40045)

Microscope shutter (40169)





Hasselblad Library



- Superior optical quality and large image format yield outstanding reproduction quality.
- Accessories for every level of magnification.
- Special accessories for checking to see that the plane of the original and the film plane are exactly parallel.

# Copying Work

When copying or photographing existing pictures, the principle rule is to reproduce the original as accurately as possible.

The accurate viewfinder image provided by Hasselblad equipment makes focusing and camera setting simpler and easier. The obvious selection for copying work is the checked focusing screen with central grid. The central grid makes focusing of flat subjects an easy procedure. The checked screen is an invaluable aid for perspective control.

A macro lens or bellows can be used to achieve any desired level of magnification, just as in close-up photography.

The Hasselblad transparency copyholder is ideal for copying transparencies and negatives. The copyholder can be attached to flanges on the lens shade for the automatic bellows. Electronic flash is recommended as a suitable light source.

When mounted on a tripod for copying work, a Hasselblad camera becomes a stable, compact camera ideally suited for copying, featuring perfect control from start to finish. The slightest changes in perspective and lighting are directly seen on the focusing screen.

## **Suggested Equipment for Copying Work**





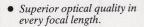
Suggested basic equipment

Hasselblad 500C/M camera body (10022) Zeiss Planar CF 100mm f/3.5 (20126) Zeiss Makro-Planar CF 135mm f/5.6 (20118) Automatic bellows extension (40517) with lens shade Transparency copyholder (40533) Professional lens shade (40676) 2 film magazines A12 (30074) Checked focusing screen with central grid (42250)

Supplementary equipment

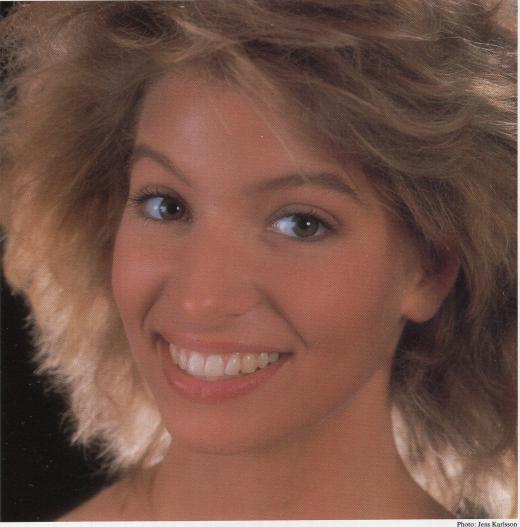
Hasselblad SWC/M with Zeiss 38mm Biogon lens (10050) Zeiss Makro-Planar CF 120mm f/4 (20053) Meter prism finder PME (42293) Magazine 100 for Polaroid film (30198) Sheet film adapter (41017) Extension tubes 8 (40649), 16 (40541), 32 (40568), and 56 (40657) Linear mirror unit (40185) Magnifying hood (52094) Light balance filters\* Focusing screen adapter (41025)

## Studio



- Flexibility through the wide array of accessories in the Hasselblad system.
- Flash synchronization down to 1/500 s provides perfect exposure control in mixed lighting.
- Motorized operation and fast film changes provide for high efficiency.





# Portrait, Fashion, and Advertising Photography

It is no coincidence that Hasselblad is one of the world's leading camera systems for studio photography today. With just a few accessories, it is possible to create a very versatile camera that can cover a wide variety of applications within portrait, advertising, industrial, and fashion photography.

The Hasselblad camera system has been developed to meet the requirements and conditions of a practical reality. Reliability and precision are two features that have greatly contributed to the success of the system among studio photographers, as well as the fact that a well-developed service network minimizes the risk for expensive periods of idleness due to equipment malfunctions.

Because of the interchangeability of the system, there are practically no limits to increasing or specially adapting photographic equipment to suit any individual need.

Hasselblad has the stability and precision needed for product photography. At the samt time, it is a quick and easy camera to use for portrait and fashion photography.

The motorized Hasselblad 500EL/M has won a lot of acclaim for its suitability for studio work. It has increased picture-preparedness and agility for fashion photography. At the sam time, it has increased accuracy for product photography by eliminating the risk of moving the camera during film advancement.

A single Hasselblad camera body can be combined with many different system accessories to create a multitude of special camera configurations. The different viewfinders and focusing screens can be perfectly matched to suit the individual needs of every photographer and the character of each camera subject. Thanks to the system's range of interchangeable film magazines, changing from one roll of film to another or from black and white film to color can be done quickly and efficiently. Studio work demands the best conditions possible with regard to control over composition, perspective, depth of field, light-

ing, etc.

It is possible to overcome problems caused by the most difficult kinds of lighting conditions with a Hasselblad CF lens that features a built-in leaf shutter. Flash synchronization is available down to 1/500 s and by using a flash attachment and a high shutter speed it is possible to eliminate secondary ghost images produced by ambient light. At the same time, it is possible to consciously work with the effects created by mixed lighting.

As a reliable camera for studio work, it is also possible to check exposure and lighting with a Hasselblad and a magazine 100 for Polaroid film.

A studio photographer can satisfy most of his basic requirements with the following equipment: a wide-angle lens, a normal lens and a telephoto lens. With just a few more accessories it is possible to increase the number of photographic applications. Take for example Hasselblad's Softars that can give a beautiful soft touch to portraits, etc. Or extension tubes that make it simple to increase the level of magnification for close-up photography.

## **Suggested Equipment for Studio Work**





Suggested basic equipment

Hasselblad 500EL/M (10065), 500C/M, or 2000FC/M camera body

Zeiss Distagon CF 50mm f/4 (20045) or 40mm f/4

Zeiss Planar CF 80mm f/2.8 (20029)

Zeiss Sonnar CF 150mm f/4 (20061)

2 film magazines A12 (30074)

Film magazine for Polaroid film (30198)

Magnifying hood (52094)

Professional lens shade (40676) with gelatin filter holder (40690)

Softars

Focusing screen with central grid (42234)

Extension tubes 8 (40649), 16 (40541), 32 (40568),

and 56 (40657)

Tripod quick-coupling (45128)

Supplementary equipment

Zeiss Distagon CF 30mm f/3.5 (20177)

Zeiss Makro-Planar CF 135mm f/5.6 (20118)

with Automatic bellows extension (40517)

Zeiss Sonnar CF 250mm f/5.6 (20080) Film magazine 70 (30066)

Meter prism finder PME (42293)

Spirit level (43117)

Proxars\*

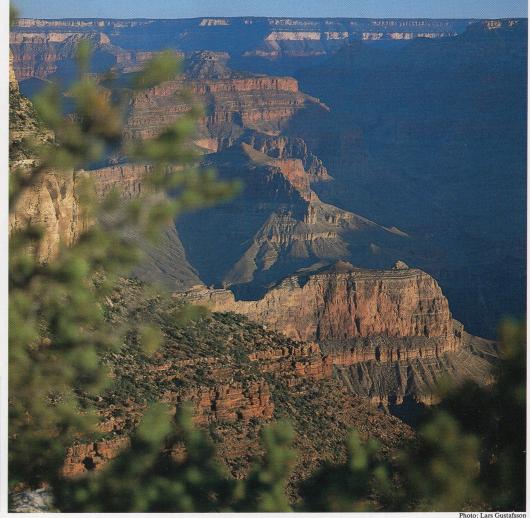
Polarization filters\*\*

Light balance filters\*\*\*

Power supply unit (for 500EL/M) (46302/46310)

Case 712 (58270)

## Landscape



Superior optical quality with focal lengths from 30

• 2<sup>1</sup>/<sub>4</sub>×2<sup>1</sup>/<sub>4</sub> format in combination with an easy to use compact design.

Large, clear viewfinder image makes composition

to 500 mm.

easier.

# Landscape Photography

As a photographic subject, landscapes present many great challenges. What the eye perceives as magnificant and beautiful doesn't always seem the same in a photograph.

To recreate what one has experienced, it's just not enough to directly photograph what one sees. Successful landscape photography requires an active approach with a methodical and deliberate will. The best chances for successful results can be obtained by trying carefully to analyze a well-chosen site. The basic elements for creating depth in a picture are the foreground, the middle distance, and the background. The eye is guided through the picture by these three basic elements.

The Hasselblad 500C/M with its generous  $2^{1/4} \times 2^{1/4}$  format and outstanding optical quality provides excellent possibilities for taking successful landscape photographs. The camera is a stable, reliable instrument with in-the-field flexibility. It is more than competent to meet the requirements placed on a hand-held or tripod-mounted camera.

The standard focusing hood gives a clear and concentrated image that aids composition. By changing to a prism viewfinder it is possible to attain an unreversed magnified screen image. Prism viewfinders are available with or without an exposure meter.

Quick film changes from black and white film to color are possible thanks to the interchangeable Hasselblad film magazines. The film can be changed in the middle of a roll without losing a single frame.

The ability to work rationally with the zone system is of special

interest in black and white landscape photography. A separate film magazine is used for each exposure level in order to control the tonal quality of the finished pictures. See the Hasselblad publication on *Black and White Photography* by Ansel Adams. Lens selection is a highly individual matter of preference and the Hasselblad photographer has the opportunity to choose lenses from a 30mm fisheye to a 500mm telephoto lens. In general the following rules apply to lanscape photography:

Wide-angle lenses lend depth to a landscape image. The foreground is emphasized and the depth of field is great.

Normal focal lengths give the landscape image a wide middle distance, while at the same time emphasizing the subject more than wide-angle lenses. Excellent for panoramic images.

Tele-photo lenses are perfect for emphasizing the dynamic aspects of a rolling landscape image or mountains. Telephoto lenses reduce perspective impression and raise the effect of mountains and hills.

## Suggested Equipment for Landscape Photography



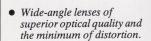


Suggested basic equipment

Hasselblad 500C/M camera body (10022) Zeiss Distagon CF 50mm f/4 (20045) Zeiss Planar CF 80mm f/2.8 (20029) Zeiss Sonnar CF 250mm f/5.6 (20080) 2 film magazines A12 (30074) Meter prism finder PME (42293) Professional lens shade (40676) Focusing screen with split-image rangefinder (42188) Supplementary equipment

Hasselblad SWC/M with the 38mm Zeiss Biogon lens (10050) Zeiss Sonnar CF 150mm f/4 (20061) Zeiss Tele-Tessar CF 350mm f/5.6 (20185) or Zeiss Tele-Apotessar CF 500mm f/8 Film magazine A16 (30082) Extension tubes 8 (40649), 16 (40541), 32 (40568), and 56 (40657) Filters\* Spirit level (43117) Cases 530 (58394) or 712

## Architecture



- Flexibility through the wide array of accessories available in the Hasselblad system.
- Flash synchronization down to 1/500 s allows for perfect control of mixed light when taking interior





## Architectural Photography

Architectural photography has a number of purposes. It can be a matter of an exact reproduction in connection with technical documentation, blueprints, and models, a more general journalistic architectural picture, or a very subjective interpretation, where the photographer seeks to create new dimensions. The flexibility of the Hasselblad system with its interchangeable viewfinders, focusing screens, lenses, and film magazines offers almost unlimited possibilities for creating a camera configuration that is best suited to solve a particular photographic assign-

Architectural photography can be divided into two major areas exteriors and interiors. Both areas, nevertheless, have a common requirement. They require advanced control abilities with regard to perspective and a very high level of reproduction qual-

The most suitable focusing screen for this kind of application is the checked focusing screen with central grid. The checked pattern is an excellent aid for controlling the subject's horizontal and vertical lines. A spirit level attached to the camera further increases accuracy.

To achieve the most accurate reproduction of an exterior, a telephoto lens can be used from a distance. This is a sure method to avoid disturbing lines. Nevertheless, buildings in large cities or downtown areas are difficult to approach with long focal lengths.

A unique camera is the Hasselblad SWC/M, a special wideangle camera with the 38mm Zeiss Biogon lens. The SWC/M provides a diagonal angle of view of 90° and an uncompromising design that displays exceptional correction of distortion.

Wide-angle lenses are naturally the most practical lenses for architectural photography, especially for interior shots. The architectural photographer is well-equipped with a wide-angle camera, checked focusing screen, spirit level, and a stable

Interior photography can offer a number of problems with mixed lighting. A typical problem is the balance between the lighting in a room and daylight coming in from the windows.

These problems are easily solved with a Hasselblad CF lens with a built-in leaf shutter. The electronic flash setting is made on the interior to be shot and the shutter speed setting is changed while retaining the flash synchronization setting to the exact exposure for daylight. With a Hasselblad it is possible to use flash synchronization down to 1/500 s. By using the Hasselblad magazine 100 for Polaroid film, it is easy to check the results for a particular exposure setting.

# Suggested Equipment for Architectural Photography





Suggested basic equipment

Hasselblad SWC/M camera body with the 38mm Zeiss Biogon lens (10050)

Hasselblad 500EL/M (10065) or a 500C/M camera body

Zeiss Planar CF 100mm f/3.5 (20126) Zeiss Sonnar CF 150mm f/4 (20061)

2 film magazines A12 (30074) Magazine 100 for Polaroid film (30198)

Meter prism finder PME (42293)

Professional lens shade (40676)

Spirit level (43117) (for 500EL/M and 500C/M)

Checked focusing screen with central grid (42250)

Tripod quick-coupling (45128)

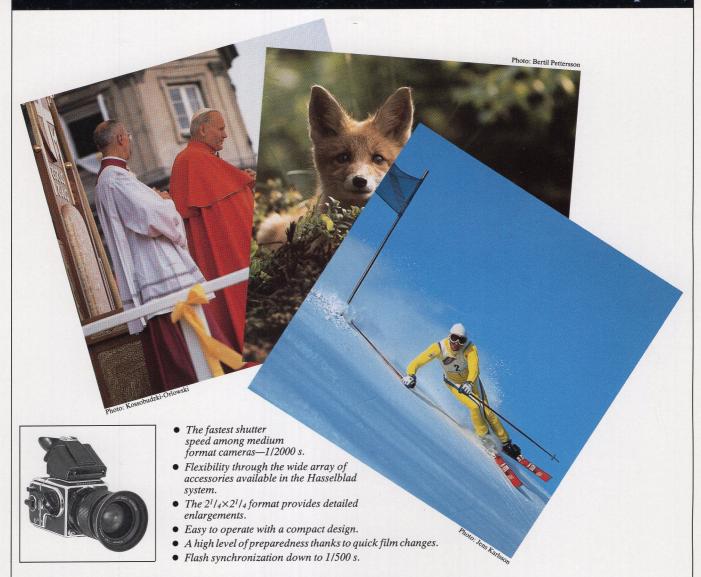
Supplementary equipment

Zeiss Distagon CF 30mm f/3.5 (20177) Zeiss Distagon CF 50mm f/4 (20045) Zeiss Sonnar CF 250mm f/5.6 (20080) Focusing screen adapter (41025)

Magnifying hood (52094)

Case 712 (58270)

### **Press and Sports**



# Press and Sports Photography

Press photography is a wide area of photography that covers most subjects. Irrespective of whether the assignment is covering a presidential election, wild animals in the jungle, or the Olympics, there are several common conditions.

In general, press photography is a matter of concise photographic documentation in constantly shifting environments and situations. Often the photographer has very limited ability to influence the circumstances. Photographic assignments are usually carried out under pressure and with a time limit.

As a result, the room for mistakes is minimal, often nonexistant. Within the elite class of press photographers, no excuses can be made for missing a shot.

The Hasselblad system was created to give the best possible image results for every situation. Every component of the system meets the most stringent requirements on reliability and precision. The system's interchangeable components allow for the creation of very flexible equipment that can be suited exactly to a particular photographic application.

Lenses from Carl Zeiss, together with the  $2^{1}/_{4} \times 2^{1}/_{4}$  format give an extremely accurate plane positioning for film, negatives, and slides. Detailed enlargements have the same high image quality as the original. With the knowledge that pictures can be cropped at ease after an assignment, the photographer is given greater freedom when at work out in the field.

Film is loaded into the interchangeable magazines, making it possible to change quickly to a new roll of film or from black and

white film to color. The interchangeable film magazines offer a photographer a high level of picture-taking preparedness and flexibility that otherwise could only be obtained with numerous cameras with conventional film loading.

The built-in leaf shutter in the Hasselblad CF lenses has flash synchronization down to 1/500 s. This is ideal for use in situations, where the photographer wants to eliminate disturbing existing light or wants to illuminate the subject with a flash attachment. The focal plane shutter in the Hasselblad 2000FC/M camera body is an excellent alternative if extremely fast shutter speeds are required. The camera's focal plane shutter can be set to speeds down to 1/2000 s. This factor, together with the bright F-lens series, produces a clear, quick-responding viewfinder image even under weak lighting conditions. All of the lenses with built-in leaf shutters are compatible with the 2000FC/M, making it a very quick flash camera. If motorized operation is desired, the Hasselblad 500EL/M is an alternative that also has a high level of picture-taking preparedness, the film is advanced quickly and the camera is ready for the next shot.

À meter prism finder with an unreversed focusing screen image and centerweighted metering further increases a photoggrapher's level of preparedness for all types of action.

Many photographers have choosen the Hasselblad SWC/M with its super wide-angle and extensive depth of field as the perfect camera for press photography.

# Suggested Equipment for Press Photography





Suggested basic equipment

Hasselblad 2000FC/M (10316) or the 500C/M, or 500EL/M camera body

Zeiss Distagon F 50mm f/2.8 (20427)

Zeiss Planar F 80mm f/2.8 (20400)

Zeiss Planar F 110mm f/2 (20419)

2 film magazines A12 (30074) Meter prism finder PME (42293)

Sports viewfinder (43028)

Lens shades (40576) or (40118)

Focusing screen with central grid (42234)

Case 530 (58394)

Supplementary equipment

Hasselblad SWC/M with the 38mm Zeiss Biogon lens (10050)

Zeiss Tele-Tessar F 250mm f/4 (20478)

Alternative CF-lenses

Zeiss Tele-Apotessar CF 500mm f/8 (20088) or Zeiss Tele-Tessar CF 350mm f/5.6

Zeiss Makro-Planar CF 135mm f/5.6 (20118)

Automatic bellows extension (40517)

Film magazine 70 (30066)

Pistol grip (45047)

Flashgun bracket (45071)

Frame viewfinder (40215)

Case 712 (58270)

## **Special Applications**

Optimal interchangeability and adaptability to every conceivable type of photographic application are the cornerstones upon which the Hasselblad system has been built. It is even possible to solve very special photographic situations with the standard equipment available.

Certain advanced areas of application can nevertheless require solutions that can not be reached using standard accessories from the Hasselblad system. Therefore, there is a special department at Hasselblad with technicians that only work on developing equipment for special applications.

A number of the products that have been developed by the Special Applications Department have been series-produced on a small scale and are included in the Hasselblad Product Catalog. In most cases, the work they do primarily deals with direct orders from customers.

Hasselblad is and will remain the camera system that has almost no limitations. This means that when a customer requires custom-built equipment not normally available, then Hasselblad will manufacture it.

NASA's orders for space cameras for its space projects are a good example of Hasselblad's ability, although their largest market is still here on earth.

In collaboration with specialists within different areas, Hasselblad has developed special products that have received an increasingly greater significance and use on the world market. Several examples of these products are equipment for photogrammetry, medicine, underwater photography, aerial photoggraphy, surveillance, and police assignments.

See the back side for examples of custom-ordered special equip-

For more information, contact your Hasselblad distributor or Victor Hasselblad AB, Special Applications Department, Box 220, S-401 23 Göteborg, Sweden.

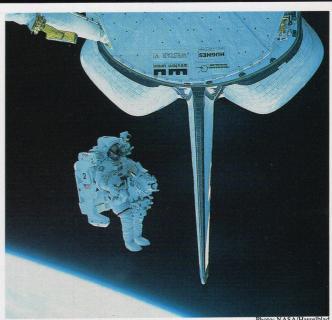
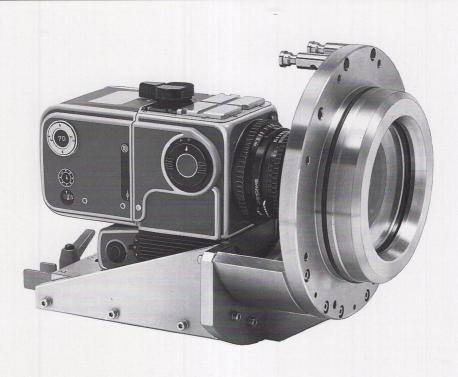




Photo: Bo Timback



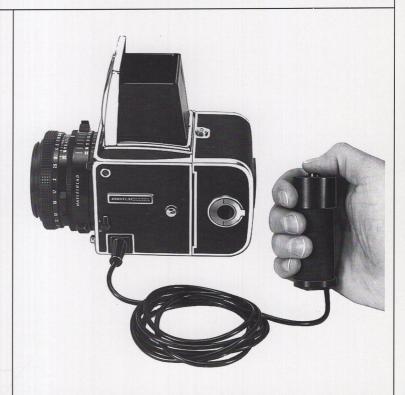
# **Special Equipment**



A special seat for a Hasselblad MK70 that is a part of a pair of photogrammetric cameras for dual photographing of test items in a large vacuum chamber at Estec in Noordwijk, Holland.



A motorized version of a Hasselblad SWC/M for remote-control operation.



 $\label{lem:alpha} A \ hand grip \ for \ remote-control\ triggering\ of\ the\ shutter\ in\ a\ Hasselblad\ 2000FC/M.$ 

#### **Slide Presentations**

- The most highly advanced projector system for the  $2^{1}/4 \times 2^{1}/4$  format on the
- Unique perspective control feature.
- Fully automatic lamp replacement.
- Built for modern audio-visual techniques.





Photo: Jens Karlsson

## Slide Show Presentations

Hasselblad has created a new dimension to slide show presentations with its PCP80 projector for the  $2^{1}/_{4} \times 2^{1}/_{4}$  format. The Hasselblad standard of quality is now available from picture conception to final presentation.

The Hasselblad projector is a professional product with the highest optical reliability built to meet any requirements that can be placed by modern audo-visual techniques. Most of the control systems available on the market can be used. As a rule, special built-in or external adapters are required depending upon the type of control system equipment.

The Hasselblad PCP80 is the superior choice for single projector slide presentations. The projector can be controlled by remote cable control or directly via the control panel on the projector.

The PCP80 works with a rotary slide magazine with an 80-slide capacity.

The danger of interruption during a slide presentation is minimized due to several safety systems.

Filtered cool air passes under pressure through the cooling channels in the projector, effectively preventing dust from penetrating in. When a lamp burns out, the projector automatically switches to the spare lamp which is already pre-

adjusted for use.

Neither the projector, nor the slide can be damaged, if a wrongly positioned slide should fasten in the projector. The motor disengages immediately and is shut off when a malfunction occurs. It is also impossible for heat to damage slides because the lamp is shut off automatically by a thermal circuit breaker if the projector should heat up.

In a reliable and practical way, the built-in perspective control of the PCP80 solves a major problem with slide show presentations.

Perspective control allows the screen image to be shifted upwards or downwards without having to tilt the projector. The screen image retains its square geometric form and remains unchanged in size. This is of vital significance when working with several projectors for viewing on the same screen.

A projector rack is available that accommodates two or more

projectors with great stability and control.

Hasselblad has also developed its own slide mounts in response to increasing demands for perfect image alignment. The slide mounts have special guide pins that simplify perfect image alignment. Slide mounts with special guide pins are recommended for slide presentations of panorama pictures or presentations of sequences of pictures which require exact alignment in relation to one another. For other types of slide presentations, standard slide mounts with an external dimension of  $2^{3/4}$ " ×  $2^{3/4}$ " (7×7 cm) can be used.

A number of first-class projector lenses designed by Carl Zeiss in West Germany are available. At present, lenses with 150 and 250 mm focal lengths are available, but during the latter part of 1984, a 75mm lens will be on the market and in 1985, a 400mm lens will also be available. The focal length of a lens is chosen in relation to the actual distance from the projector to the screen and the desired size of the screen image. The shorter the focal

length, the larger the screen image.

## **Suggested Equipment for Slide Presentations**



#### Basic equipment for single PCP80 projector presentations

PCP80 projector body

A projector lens selected according to projector distance and screen image size.

Rotary slide magazine

Remote cable control unit

#### Supplementary equipment for single PCP80 presentations

Projector case

Alternative lenses for varying conditions

Extra rotary slide magazine

An extra air filter (the filter should be cleaned occasionally)

#### Equipment for simultaneous use of several projectors

Projector rack for two projectors

Rack extension for a third projector

Slide mounts with special guide pins for exact alignment

For simultaneous use of several projectors, a control system is needed. Several different types are available on the market. Each control system has its own special requirements for connectors or adapters. Request special information with regard to the particular control system.

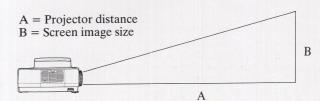
See the Hasselblad Product Catalog for more information about

other available accessories.

#### **Projection Distance and Screen Image Size**

In order to fill out a viewing format that is  $5\times5$  ft  $(1.5\times1.5 \text{ m})$ , the distance between the 75mm lens and the screen should be 7 ft (2.1 m). For a 150mm projector lens, the distance is increased to 14 ft 6 in (4.4 m) and for a 250mm projector lens, the distance is 23 ft 6 in (7.1 m).

The following equation can be of assistance for computing each viewing situation and the relationship between focal length, projector distance, and screen image size:  $A = B \times C$ . Please note that the equation does not apply to projector distances less than 6 ft (2 m).



C = Constant

Lenses	C
75 mm	1.4
150 mm 250 mm	2.9

# - Sales Promotion material

Printed matters		1
Dealers display material		2
Hasselblad Boutique		3
Video/slide shows	_	1
Sales training		5
Demonstration kits	(	6

### HASSELBLAD

#### - HASSELBLAD RENTAL HOUSES -

A good number of Franchised Hasselblad dealers in the major photographic markets have well stocked rental departments making it convenient to rent Hasselblad camera bodies, lenses, film magazines and accessories.

Some of the dealers currently featuring Hasselblad rental equipment are listed below. Contact the one nearest you for a list of products and rental pricing information.

#### **NORTHEAST:**

ameras Etc. Inc. 4101 North Market Street Shipley Square Wilmington, DE 19802 (302) 764-9400

Philip Levine, Co. 150 Lincoln Street, 5th Floor Boston, MA 02111 (617) 357-5617

Fishkin Brothers 285 Madison Avenue Perth Amboy, NJ 08861 (201) 826-0048

Photo Pro 10630 Connecticut Avenue Kensington, MD 20895 (301) 933-3350

Penn Camera 915 "E" Street, N.W. Washington, DC 20004 (202) 347-5777

Camera Clinic 36 East Baltimore Avenue Clifton Heights, PA 19018 (215) 626-9100

#### ORTHWEST:

The Camera Shop 1007 Pacific Avenue Tacoma, WA 98402 (206) 627-4159

Citizens Photo 709 S.E. 7th Street Portland, OR 97214 (503) 232-8501

Glazer's Camera 430 8th Avenue, North Seattle, WA 98109 (206) 624-1100

Optechs 133 Dexter Avenue, North Seattle, WA 98109 (206) 443-1737 Pro Photo Supply 2324 S.E. 11th Avenue Portland, OR 97214 (503) 239-5617

#### **SOUTHEAST:**

Photo Barn, Inc. 725 Beaver Ruin Road Lilburn, GA 30247 (404) 921-9500

Wolf Camera 1706 Chantilly Drive, NE Atlanta, GA 30247 (404) 633-9000

World Wide Foto 5040 Biscayne Boulevard Miami, FL 33137 (305) 756-1744

#### **SOUTHWEST:**

Camera & Darkroom 2931 Monte Vista NE Albuquerque, NM 87106 (505) 983-2948

#### **CALIFORNIA:**

Pan Pacific Camera, Inc. 825 North La Brea Los Angeles, CA 90038 (213) 933-5888

Adolph Gasser, Inc. 181 2nd Street San Francisco, CA 94101 (415) 495-3852

Keeble & Shuchat Photo 290 California Avenue Palo Alto, CA 94306 (415) 327-8996

Samy's Camera, Inc. 2298 Third Street San Francisco, CA 94107 (213) 466-1641

Marin Photo Center 1233 Fourth Street San Rafael, CA 94901 (415) 454-3456

#### **MIDWEST:**

Colonial Camera 6906 Windsor Berwyn, IL 60402 (312) 579-1130

K&R Photographics 538 Terry Lane Ft. Mitchell, KY 41017 (606) 341-6986

LaSalle Photo Service 1700 West Diversey Pkwy. Chicago, IL 60614 (312) 327-6402

W. Schiller & Co. 9240 Manchester Road St. Louis, MO 64144 (314) 968-3650

Standard Photo 43 E. Chicago Avenue Chicago, IL 60611 (312) 440-4920

WestBank Photo 833 West Chicago Chicago, IL 60622 (612) 379-2321

Photo Marketplace 890 Supreme Drive Bensenville, IL 60106 (312) 860-0271

PhotoArt 840-44 N. Plankinton Milwaukee, WI 53203 (414) 271-2252

Lawrence Photo 1211 Cambridge Circle Dr. Kansas City, KS 66103 (913) 621-1211

### HASSELBLAD

#### - HASSELBLAD SERVICE CENTERS -

Hasselblad equipment in need of service can be sent to the Hasselblad service centers in New Jersey or California or to any one of the authorized service centers listed below. This applies to warranty and non-warranty repairs.

#### ARIZONA

Phoenix Camera Repair, Inc. 3232 N. 16th Street Phoenix, AZ 85016 Tel: (602) 277-1811

#### **CALIFORNIA**

Cudabac Camera Repairs The Mint Mall 953 Mission St., Room 10B San Francisco, CA 94103 Tel: (415) 777-1862

California Precision Service, Inc. 1714 28th Street Sacramento, CA 95816 Tel: (916) 451-1330

Rudy Lingg's Camera Service Center 4355 Sepulveda Blvd. Culver City, CA 90230 Tel: (213) 397-0072

#### **COLORADO**

Metro Camera Service, Inc. 1470 S. Federal Blvd. Denver, CO 80219 Tel: (303) 934-2471

#### **DISTRICT OF COLUMBIA**

Strauss Photo Technical Service, Inc. 1240 Mt. Olivet Road, NE Washington, DC 20002 Tel: (202) 529-3200

#### **FLORIDA**

Southern Photo Technical Service 1750 Ninth Avenue, North St. Petersburg, FL 33713 Tel: (813) 896-6141 NEW JERSEY
VICTOR HASSELBLAD INC.

10 Madison Road, Fairfield, N.J. 07006 Attn: Service Dept. Tel: (201) 227-7681 (201) 227-7320

#### **GEORGIA**

Camera Service Co. 4391 Atlanta Road Smyrna (Atlanta), GA 30080 Tel: (404) 432-4257

#### **ILLINOIS**

International Camera 231 South Jefferson St. Chicago, IL 60606 Tel: (312) 876-1530

Mid State Camera Service, Inc. 407 South Dearborn St. Chicago, IL 60605 Tel: (312) 939-2272

#### **MASSACHUSETTS**

Sanford Camera & Projector 1054 Massachusetts Ave. Arlington, MA 02174 Tel: (617) 648-2505

Precision Camera Repair, Inc. 43 Sheridan Street Chicopee Falls, MA 01021 Tel: (413) 598-8005

#### **MINNESOTA**

Marquette Camera Repair 903 Marquette Avenue Minneapolis, MN 55402 Tel: (612) 332-5787

#### **NEW HAMPSHIRE**

Hilton Command Exposures Inc. 210 Daniel Webster Highway South Nashua, NH 03060 Tel: (603) 888-3684 CALIFORNIA VICTOR HASSELBLAD INC. 2716 Ocean Park Blvd., Suite 1065

Santa Monica, CA 90405 Tel: (213) 450-4242

#### **NEW YORK**

Professional Camera Repair Service 37 West 47th Street New York, NY 10036 Tel: (212) 382-0550

Kipling's Camera Inc. 19 Morris Avenue, Rockville Center Long Island, NY 11570 Tel: (516) 678-6670

#### OHIO

Pro Cam Company 5301 Broad View Cleveland, OH 44134 Tel: (216) 661-8666

#### TEXAS

Photographic Maintenance 2555 Inwood Road, #247 Dallas, TX 75235 Tel: (214) 351-4289

Houston Camera Repair 3001-C Fondren Street Houston, TX 77063 Tel: (713) 780-2607

Havel Camera Service 1102 Basse Road San Antonio, TX 78212 Tel: (512) 735-7412

#### **WASHINGTON**

Photo Tronics, Inc. 223 Westlake Avenue, North Seattle, WA 98109 Tel: (206) 682-2646

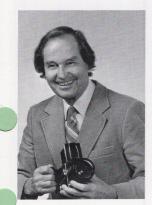
#### SERVICE SHIPPING INSTRUCTIONS

TO ASSIST THE HASSELBLAD SERVICE CENTERS IN PROVIDING EFFICIENT SERVICE WE SUGGEST THE FOLLOWING:

- 1. Describe nature of defect.
- 2. If equipment has focusing or sharpness problem the camera body as well as lens must be included. Also enclose negatives or transparencies. DO NOT SEND PRINTS!!
- 3. Equipment with light leak problem please enclose negatives.
- 4. Clearly indicate if estimate is required.
- 5. Silver Service Card or original warranty card embossed with the Victor Hasselblad Inc. corporate seal must be enclosed with all warranty repairs.

# PROFESSOR WILDI RECOMMENDS

# THE HASSELBLAD 500 ELX CAMERA

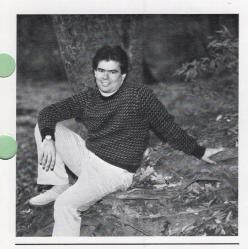


The Hasselblad ELX camera offers a simple yet accurate solution to automatic flash photography.

#### Perfect Exposure in Flash Photography

The Hasselblad ELX has provided me with perfect exposures automatically not only in general indoor photography with direct or bounced flash, but also in more difficult applications, like photographing small areas of autumn leaves, 7x to 15x magnified, in translucent light, or when duplicating transparencies, utilizing the bellows.

Outdoors, the ELX has produced beautiful flashfill shots, with the desired lighting ratio between flash and daylight, and all this without any complicated mathematical calculations.



The ELX approach to flash photography is so simple and produces such good results that every photographer should use it for photographing people outdoors or indoors.

#### The Hasselblad Solution To Dedicated Flash

The secret behind this flash automation is a sensor in the ELX that measures the amount of flash illumination reflected off the film plane. The flash duration which produces the correct exposure is based on the ASA rating of the film and lens aperture. It is determined automatically, and the flash turns off as soon as the proper amount of light reaches the film.

This kind of flash operation can be accomplished only if the flash unit is an extension of the camera; usually referred to as being dedicated to the camera.



On the Hasselblad ELX the "dedication" is accomplished by means of adapters. Two are presently available, and one or the other will work with various European made flash units. Shown here is the Metz 45 CT-4. The sync cable from the flash unit goes into the adapter mounted on the accessory rail of the camera and the adapter is connected to the six pin socket on the side of the ELX. The film sensitivity is set on the ASA dial on the side of the camera.

Dedicated flash is often considered strictly a solution for amateur snapshots. With the ELX solution, where the light is measured on the film plane (OTF), it is not only for "snapshooting" but also for more sophisticated work as well, such as in close-up photography. In my opinion, it is in these special situations that the photographer can benefit the most from dedicated flash and from the ELX.



The Hasselblad Macroflash unit offers automatic exposure in close-up photography. The coin, about lifesize magnification, was photographed with one macro flash unit (left) for directional lighting and with both units for flat, practically shadowless illumination (right).

#### **Dedicated vs Automatic Flash**

Since dedicated flash is often considered a form of automation working basically in the same

fashion as any automatic flash unit, let's discuss OTF dedication by comparing it to the working benefits of a separate portable automatic flash unit.

Both measure the light that is reflected back from the subject and automatically turn off the flash when "correct" exposure is obtained. The similarities end here. The ELX system has many benefits and practical advantages over an automatic flash.

#### Through the Lens Metering

In a separate, portable automatic flash unit, the sensor that picks up the light reflected from the subject is positioned somewhere on the front of the flash unit. In an OTF system, it is located inside the camera, reached by the light that is reflected from the film plane. The in-camera sensor always reads the area which is being photographed; with the sensor on the flash, you are never quite sure because the flash may be turned or tilted in relation to what the camera lens is seeing. You may have "sensor parallax."

#### Different Angle of Coverage

The typical "on-flash" sensor's angle is narrow and its angle of direction is very critical. With the ELX system, metering is not as critical because the cell measures the light reflected from a "large" 40~x 40mm center area of the film. You are working with a center weighted, not a spot metering device.

In the ELX dedicated system, the angle of coverage is furthermore not fixed but is dependent on the lens on the camera, resulting in more accurate exposures, especially with longer lenses.

#### **Protected Sensor Location**

When photographing people outdoors using the sun as a backlight, which is popular in fashion and wedding photography, the sun may also shine on the exposed sensor of an automatic flash unit thus giving you a false exposure. Switching to manual flash is then necessary. Not so with the ELX. The sensor is inside the camera protected from direct light. It only "reads" the fill-in flash.

#### **Controlled Automation**

While the ELX offers automatic flash, it is you, the photographer, who decides aperture and shutter speed. The two settings are made in the normal fashion. You maintain complete control over depth of field. You are also free to select whatever shutter speed provides the proper or desired ratio between the flash and existing light. But once this is done, it is only necessary to depress the release, and you probably will come away with a beautifully exposed flash picture.

#### Ready Light and Exposure Signal in Finder

OTF dedicated flash offers another, equally valuable, benefit. The ready light, indicating when the flash is fully charged, is visible on the camera's



The exposure for the existing light, the daylight outside the door in this case, was darkened by simply changing the shutter speed from 1/30 sec. (left) to 1/250 sec. (right). The lens aperture was set at f/8 in both pictures. The exposure on the model therefore remained the same.



Fill in flash used normally provides a good exposure, but may look overpower ing making the viewer overly aware that flash was added (left). Photographed with ASA 100 film the flash exposure can be reduced by one stop without changing the exposure for the background by setting the ASA dial to ASA 200. It gives a more natural "portrait" look.

focusing screen. You can keep your eye on the finder instead of moving back and forth between the flash and camera, and losing visual contact with your subject.

The signal on the focusing screen also indicates whether the film received a sufficient amount of light. If the light should be insufficient, open the lens aperture, move the flash closer to the subject, use a faster film, or a more powerful dedicated flash unit

#### Filter and Exposure Factors

Any through-the-lens metering system also takes into account the light absorbed by filters, eliminating the need for considering filter factors. It also makes it unnecessary to consider the exposure increase when extension tubes or bellows are used in close-up photography.

#### Direct and Indirect Flash

Since the flash duration and exposure are based on the amount of light reaching the film, the ELX works with direct flash, indirect flash bounced off ceilings, walls, umbrellas and other reflectors. It even works with transmitted light (subject lit from the rear) as when duplicating slides, producing black and white or color negatives from transparencies, or photographing translucent subjects. This is another field where you will quickly appreciate the value of the dedicated automation.

#### **Dedicated Flash in Special Fields**

The value of OTF light metering becomes even more evident when you're involved in high magnification photography, photomicroscopy or other specialized applications, where exposure is difficult to calculate without making a test on Polaroid film. I use specially designed Carl Zeiss Luminar lenses for magnifications of 3x to 25x and they, too, work beautifully with a dedicated flash unit.

#### Flash and Existing Light

Practically all flash photography, indoors or out, is done in a lighted location, daylight outdoors, daylight, tungsten or fluorescent light indoors. The flash is really an additional light source. Most

photographs are more effective, more beautiful and more professional if the existing light is made part of the picture. That's where the ELX with its dedicated OTF flash metering brings the greatest benefits. It is easy to produce such photographs that effectively combine flash and existing light with the following step-by-step procedure.

#### Combining Flash and Existing Light

- 1) Set film sensitivity on ELX camera body (not on flash unit).
- 2) Set flash unit to TTL.
- 3) Take a meter reading of the existing light in the room or outdoors.
- 4) Based on the meter reading, set the aperture and shutter speed that produces the desired exposure for the existing light and the correct depth of field
- Press the release and make certain the exposure signal flickers indicating the film received a sufficient amount of light.

The ELX approach to flash photography is so simple and produces such good results that I honestly feel every photographer should use it for photographing people outdoors even for family snapshots and vacation souvenir pictures.

#### **Changing Lighting Ratios**

The procedure outlined above provides good exposure for the subject and the background. This so-called 1:1 lighting ratio can be changed in any desired fashion. You can make backgrounds lighter or darker by simply changing the shutter speed.

Regardless what aperture and shutter speed you decide on for the existing light, the exposure for the flash always remains the same. This gives you wide control over depth of field.

#### Changing Flash Exposure

You can also change the exposure for the flash without altering the exposure for the existing light. An outdoor portrait may look more natural if the flash exposure is one stop darker than the background.

You can cut down the flash exposure by simply changing the ASA rating on the camera. A 200

ASA setting with 100 ASA film in the camera would reduce the flash exposure by one stop. Exposure for the existing light remains the same. A 400 ASA setting with 100 ASA film would reduce flash exposure by two stops. This easy method of changing flash exposure is another ELX benefit.

#### What's Wrong with the ELX?

The benefits of the dedicated flash operation perhaps sounds so overwhelming that you might wonder what you have to sacrifice. Nothing really, unless you want to check whether the light is sufficient before you take a picture. You may have to "waste" a frame because you must have film in the camera even for an exposure check. Additional tests can, of course, be made on the same frame.

There are also small differences in the light reflectance of the emulsions of different types and makes of film. These have been found to be less than ½ f-stop with the commonly used films, and can thus be ignored.

Nevertheless it is recommended that you make your own tests with all the films you plan to use. There is an exception, however, with Polaroid film. For checking exposure, keep the following necessary adjustments in mind: with 665, set AS at 100 instead of 80; with 667, set at 1000 instead of 3,000; and with 668, set at 160 instead of 80.

With dedicated OTF flash, as with any automatic flash, flash duration is based on the amount of light reflected from the subject.

For very bright subjects, set the ASA dial to a lower rating (to 50 for a one stop increase with 100 ASA film) for very dark subjects, to a higher rating.

#### The True Motor Driven Camera

In addition to dedicated flash operation, the ELX offers a built-in motor drive. It not only advances the film automatically after each shot, but also allows you to operate the camera remotely with cables or wireless, a great benefit when photographing people, especially babies and children. The ELX also shows you the entire field of view on the focusing screen. There is no vignetting with any Hasselblad lens or Hasselblad close-up accessory.

# HASSELBLAD

Published by Victor Hasselblad Inc., 10 Madison Road, Fairfield, NJ 07006

Volume 14

Spring 1988

#### HASSELBLAD INCREASES FLOOR SPACE

We have recently doubled the office and warehouse space at our headquarters in Fairfield, NJ.

The newly expanded facility includes a completely refurbished camera service center, more warehouse area for products, promotional literature, and instructional material, and additional office space for the recently formed Department of Consumer Relations. All these changes are designed to improve overall service to our franchised dealers and to end users around the country.

An official opening day was arranged for members of the photographic press. Both Jerry Oster, President of Victor Hasselblad AB in Sweden, and Skip Cohen, President of Victor Hasselblad Inc., USA, were on hand to personally greet the invited guests, and to give everyone the grand tour.





Inside, the new offices are decorated with over 40 large Cibachrome prints produced from Hasselblad 24" transparencies. The photograph on the top was made by our Technical Director Ernst Wildi with a Sonnar 150mm lens and the one below by our National Sales Manager Chuck Gutierrez with a Distagon 50mm. The beautiful prints were produced by K & L Custom Photographics in New York City and presented to Hasselblad by Ilford Inc.



Jerry Oster, cutting the ribbon, is being watched by representatives from American Photographer, Modern Photography, Petersen's Photographic, Photo Business, Photo District News, Photo Methods, Photographic Trade News, Popular Photography, Studio Photography, Ilford, Inc., and K& L Custom Photographics.

#### THE OLDEST 500C CAMERA STILL IN USE

A 500C camera with serial number 30016 made in 1957 is still in continuous use in the studio of Pam Taylor in Canby, Minnesota.

"Mother of Teen-Agers Starts Her Own Business" was the headline in the local Canby News, when Pam opened her studio just three years ago. Pam used to work as a lab technician at the Canby Medical Clinic, but her passion for photography was strong, and she found herself constantly taking pictures of her



Pam Taylor graduated in July 1985, from the school of Communication Arts in Minneapolis. While attending school her work experience broadened to include portraits and weddings. Now wedding portraits and albums, senior portraits, family portraits and children's sittings are all part of her studio specialties.

children as they were growing. Eventually she decided to pursue a career of her own as a professional photographer.

"In my field you have to keep current," she says, "so I try to attend as many seminars as I can. I am constantly learning, and try to keep my ideas fresh. I try to individualize each photo, and I have to work hard so that my customers should be pleased, and keep coming back."

A gold Hasselblad 500C/M prize camera was presented to Pam Taylor at a seminar, sponsored in January by Camera Art of Lewiston MN, with 300 professional photographers applauding her good fortune.

Her love and deep interest in photography has paid off. Several of her images have won top awards at South Dakota and Minnesota Professional Photographers conventions.



Pam Taylor's Minnesota Gold Seal Award winner was chosen for the loan collection which will tour the midwest for two years.

#### **EXPOSURE VALUES FOR CREATING GREAT IMAGES**

Aperture and shutter speed must be set, not only to provide correct exposure but to create good images with the desired depth of field and background sharpness. The photographer



With the lens set to EV, you can select the aperture that provides the desired depth of field. The shutter speed that exposes the image correctly is automatically set. As an example, at EV13 an aperture of f/4 automatically sets the shutter speed to 1/500 second (A). If you decide to go to f/11, the shutter speed automatically moves to 1/60 second (B), or to 1/8 second at f/32 (C).

Vice versa, again with EV13 if you select a shutter speed priority of 1/500 second to freeze the action, the aperture is automatically set to f/4 for correct exposure (A). Should you decide to take a second picture at 1/8 second to blur the motion, the aperture changes automatically to f/32 (C).

must decide which aperture/shutter speed combination produces the desired results on the film.

The concept of exposure value helps in making this critical decision. The exposure value (EV), is a single number which represents all the combinations of aperture and shutter speed that give correct exposure on the film.

Using the EV concept will force you to think about which aperture and shutter speed are necessary to create the most effective image. Once the lens is set to a certain EV value, every one of the aperture and shutter speed combinations on the interlocked rings provide the same exposure, but with different depth of field, foreground and background sharpness. You can look over all the possible combinations and at the same time also view the depth of field scale which is next to the aperture and shutter speed scale.

EVs provide the same kind of automation that is usually associated with aperture and shutter speed priority. But the EV method is even more practical. In aperture priority, you have to pre-select the aperture and you won't know the shutter speed until you make a meter reading. In shutter speed priority you pre-set the shutter speed without knowing what aperture you end up with. With EV, you have all the possible combinations of aperture and shutter speed in front of you and can decide on both at the same time.

There are other benefits to the EV system. Exposure value, being a single number, makes

it easy to transfer the setting from one lens to another. A single number is also easy to remember and this number is the same in the same lighting conditions and for the same film. EV14, for instance, gives the correct exposure for slides in sunlight with ASA 50 or 64 film. EV15 is correct for ASA 100. These settings provide beautifully exposed slides regardless of whether you photograph in a desert, at a seashore, in the mountains or in a city park. The same amount of sunlighfalls everywhere. Naturally, early in the morning or late afternoon, adjustments must be made. A meter reading is recommended.



At the same EV value (12 in illustration) you can photograph at a large aperture (f/2.8) (little depth of field) and high shutter speed 1/500 second to freeze the action, or blur the action at a slow speed (1/8 second) and use a small aperture (f/22) fo increased depth of field.

#### PREVENTION BETTER AND LESS EXPENSIVE THAN CURE

We all know that proper care of equipment, and careful reading of instruction material can often eliminate costly repairs or replacement. Here are some suggestions that apply to Hasselblad equipment.

How to get the most life from EL batteries:

The nickel cadmium batteries in the EL models can last practically a lifetime, but only if treated properly. The battery's capacity (number of exposures per charge) is reduced by overcharging and, if done extensively, the battery seals can start to bulge, perhaps even split open. A nickel cadmium battery's capacity is also reduced if the battery receives a partial charge constantly rather than being discharged and recharged completely at least every fourth or fifth time it receives a charge. To obtain the full life and benefit from the EL batteries we recommend the following working procedure:

1. Insert only one battery in camera, but

keep a charged spare in your camera case.

- Use the battery in the camera until the camera cycle slows down, indicating the battery is close to being fully discharged.
- Change to the charged spare battery and use this battery until the camera cycle slows down.
- Re-charge the first battery as soon as possible for 14 hours using the Hasselblad recharge unit and keep it as a spare in your camera case.

To keep the spare fully charged, re-charge it one to two hours each month.

#### Cleaning, Focusing Screens and Softars:

The Softars and the Fresnel lenses combined with most of the focusing screens are not made from glass. They should never be cleaned with lens cleaning fluids or any other chemicals. Simply brush or blow off the dust. If further

cleaning is necessary, to remove finger printfor instance, wipe with a moist soft and cleatissue. When placing the screen back into the camera, make sure that it goes in properly with the finished frame on top.

#### Cleaning Filters:

We know that most Hasselblad photographers are very careful when cleaning lenses, but often they do not exercise the same care with filters. Filters certainly are less expensive than lenses, but they deserve the same care. Hasselblad filters are coated and the coating can be damaged. Unless filters have finger marks or have been exposed to water spray, cleaning means nothing more than brushing or blowing off the dust and dirt. If further cleaning is needed, filters should be wiped very gently with a soft cloth or lens cleaning tissue and lens cleaner, if necessary, (not on Softars).

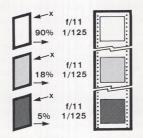
#### BETTER EXPOSURES THROUGH BETTER UNDERSTANDING

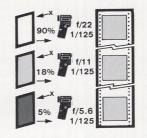
Remembering five points helps to produce better exposures regardless what camera, film size, or metering system is used.

- 1. The lens settings (aperture and shutter speed) that provide correct exposure are based on the amount of light that *falls* on the subject or scene. The lens settings are thus the same whether the subject or scene is white, green, yellow, red, blue, black etc. as long as they are lit the same way.
- An incident exposure meter measures the amount of light that falls on the subject or scene and thus provides the correct lens settings in most cases, regardless of what color or brightness the scene may be.
- 3. A reflected light meter, (including the Hasselblad meter prism and any built-in meter) measures the amount of light *reflected* off the subject. Its reading thus depends not only on the amount of light that falls on the subject but also on the color, brightness, reflectance of the scene or subject and gives completely different lens settings for white, green, yellow, red, blue or black subjects.
- 4. The lens settings shown on any reflected light meter are correct only if the reading is taken off a subject that reflects approximately 18% of the light. Therefore with any reflected meter, the reading must be taken off an 18% reflectance subject (green grass or a Kodak graycard) or the lens setting must be adjusted as follows:

Open lens aperture 1½ to 2 stops for a reading off white (snow). Open aperture ½ to 1 stop for a reading off yellow, light colors. Close lens aperture 2 stops for a reading off a black tuxedo. Close aperture ½ to 1 stop for a reading off brown, darker colors.

5. When the subject or scene includes lighted





The same lens settings (f/11 and 1/125 sec.) will record white as white, gray as gray, and black as black if the same amount of light falls on all three (left). If the lens settings are made according to a reflected meter reading (right) (f/22 for white; f/11 for gray and f/5.6 for black); white, gray and black will be recorded as gray on the film.

and shaded areas, an incident or reflected light meter reading must be made in the lighted area for transparency films; in the shaded area for negative black and white or color films.

In either case, a reflected meter reading must be based on an 18% reflected subject.

# GREAT TIME TO UPDATE YOUR HASSELBLAD SYSTEM

Substantial rebates are now available when purchasing the Hasselblad 500ELX and 2000FCW cameras. You can save \$250.00 when purchasing a 2000FCW complete with any CF or F lens and any roll film magazine; \$200.00 on a 500ELX purchased together with any CF lens and roll film magazine.

When you update your Hasselblad system with these latest models, we highly recommend that you also consider updating your C lenses to the new CF types. If you already have new lenses, or if you really feel that your older lenses still serve your purposes satisfactorily, there are also rebates on the camera bodies alone; \$150.00 on the 2000FCW; \$100.00 on the 500ELX. Please obtain complete details on these very generous Hasselblad rebates from your franchised Hasselblad dealer.

#### **HOW OFTEN IS SERVICE NEEDED?**

Hasselblad cameras are built to last, and they do, but they require care and servicing like any other product that is subjected to continuous professional use. The frequency of servicing is determined mainly by the amount of usage. For example, say the oil in a car should be changed every 3,000 miles. This means only two changes a year for those who drive occasionally, but once a month for those driving 36,000 miles a year. The same with a Hasselblad. Most amateurs need only worry about service about once every five years. This does not apply to a busy pro who may very well shoot an average of 20 rolls a day. Assuming this happens 200 days a year, it means that 4,000 rolls of film go through the camera. In terms of exposure it means that the shutter has opened and closed, the film has been advanced, and the mirror has flipped up and down about 50,000 times. Such a camera and lens should be cleaned and relubricated at least once a year, even though it probably still performs faultlessly.

A wedding photographer covering one wedding each Saturday and Sunday all year long may very well go through 1,700 rolls a year which is over 20,000 exposures.

If you are one of these busy pros, perhaps you never made that calculation and never realized how often the camera and lens mechanism is actually operating.

These exposure numbers also emphasize why Hasselblad must be considered the choice of the working pro.

When service is needed, it should be performed either by Hasselblad's own service center or by one of the authorized service centers. Only these centers have the qualified training that is essential for checking the distance between the lens and the film plane, and adjusting it to a tolerance of less than 0.05 mm; for adjusting the position of the focusing screen and the mirror so it lies precisely at an angle of 45° to the camera's optical axis; and for checking the shutter speeds, the flash synchronization and the focus of the lens at infinity.

They also have the variety of lubricants which have been found to stand up to the rough daily use to which Hasselblad cameras are often exposed.

#### SEARCH FOR THE OLDEST 500C CAMERA COMPLETED

There were over 2300 entries in our contest to find the oldest 500C in the United States, a most gratifying response by any standards. Even more gratifying was the large number of very early 500C cameras that are still in use today. 438 entries were for cameras made during the first three years, 1957, 1958 and 1959, and over 1700 entries for cameras made between 1960 and 1969.

Pam Taylor of Canby, MN, turned out to be the owner of the oldest camera, serial number 30016, and was awarded a gold 500C/M anniversary camera as first prize. Stan Rosol of Burbank, CA, won the second gold anniversary camera. His lucky name was chosen in a random drawing from all the entries submitted in the contest.



The drawing for the gold camera from among all the entries submitted, was under the supervision of the Swedish American Chamber of Commerce. Shown at their office in New York City are Skip Cohen, President of Victor Hasselblad, Inc., together with Renee Nystrom and Bengt Fasth, both officers of the Swedish American Chamber of Commerce.

#### WHY A 2000FCW

For most photographers the short 1/2000 second shutter speed is not the major reason for buying the 2000FCW. Nor are the generous \$150 to \$250 rebates which can be obtained if the camera is purchased before June 30, 1988.

The 2000FCW deserves serious consideration because it is a most versatile photographic tool and the only medium format camera that offers;

- 1) Choice of focal plane or lens shutter with focal plane shutter speeds up to 1/2000 second and flash sync up to 1/500 second with 15 different shutter lenses including fisheye, zoom and long telephoto.
- 2) Choice of manual or motor driven film advance for single pictures or sequences.
- Choice of electronically controlled focal plane shutter speeds requiring a battery or completely mechanical operation without needing a battery when using the lens shutter.
- 4) Large aperture lenses: 110mm; f/2, 50mm and 150mm; f/2.8, 250mm and 350mm; f/4.
- 5) Instant, nonvignetting return mirror.
- 6) Double exposures without need of removing film magazine.
- 7) Electronically controlled exposure times up to 60 seconds with multiplier accessory.
- 8) Choice of three film formats.
- Choice of regular 120 or 220 roll film; 70mm long rolls, sheet or Polaroid film.
- 10) Component compatibility with the other Hasselblad models.

#### HASSELBLAD RENTAL HOUSES

You undoubtedly know where to purchase Hasselblad equipment, but do you know where it is available for rent?

As a professional photographer you may very well turn to rental of Hasselblad equipment when a job requires a special piece of equipment that is not needed for the normal daily work and, therefore does not justify the purchase.

As a professional or serious amateur, you might like to try a piece of equipment before you add it permanently to your personal camera outfit. Renting it for a day, or a few days allows you a thorough personal evaluation.

We are happy to inform you that a good number of franchised retail outlets all over the United States now also offer a broad range of Hasselblad products for rental.

The dealers that have an established rental department at the present time are listed on the enclosed sheet. Contact them for further details and rental prices.

#### A SUPERFINDER FOR THE SUPERWIDE

Viewing and focusing on the SWC/M cameras has become easier, faster, more convenient and likely more accurate with the introduction of a new viewfinder. The spirit level is built into the finder and can thus be seen and checked while viewing. You can also read the focusing scale on the lens while viewing through the finder. This is accomplished with a diopter close-up lens built into the bottom part of the finder. It, however, works only with SWC/M cameras that have the new CF lenses. (The focusing scale on the older lenses is in a different position). The convenience of the built-in spirit level alone will justify this addition to older SWC/M models.



SWC/M cameras are now equipped with the new finder with built-in spirit level. It is available separately for use on older models.



The superb image quality of the Biogon 38mm lens on the SWC/M camera is maintained down to the minimum focusing distance. The SWC/M is, therefore, a great tool for all wide angle photography from 12 inches to infinity.

#### MINOX SERVICE

Since January, 1988, Minox equipment is being distributed by Minox USA Inc., 1315 Jericho Turnpike, New Hyde Park, New York 10040; (516) 437-7837.

Minox USA Inc., was recently formed by the management of Minox Processing Laboratories. The new company now proudly assumes all the marketing and distribution functions for this famous precision product, thus continuing the 33 year old association between Minox Processing Laboratories in the USA and Minox in Europe.

### NEW HASSELBLAD CONSUMER RELATIONS DEPARTMENT

It has always been our philosophy that Hasselblad should lead, not only in the quality of its cameras, but also in the quality of assistance offered to Hasselblad users and to photographers in general.

We feel we have been providing first class service throughout, but now we have established a special Consumer Relations Department, managed by Michael Malone, to make sure our service is even better.

The new Consumer Relations Department is responsible for all communications with customer through letters and telephone calls, mailing of all requests for literature including product data sheets, instruction books, and the Forum magazine. The department is furthermore in charge of demonstrations, consumer rebates and product registrations.

Michael Malone is assisted by: Mark Brady for questions relating to photography, cameras and accessories, and special product applications; Barbara Dunn for questions on consumer rebates and registrations; Bill Prendergast for all literature requests. Questions relating to camera repairs should continue to go directly to the service department as before.



The staff of the new Customer Relations Department: Michael Malone (far right) and (from left to right) his secretary Robin Casper, Bill Prendergast, Barbara Dunn and Mark Brady.

#### ERNST WILDI TO TEACH IN WINONA

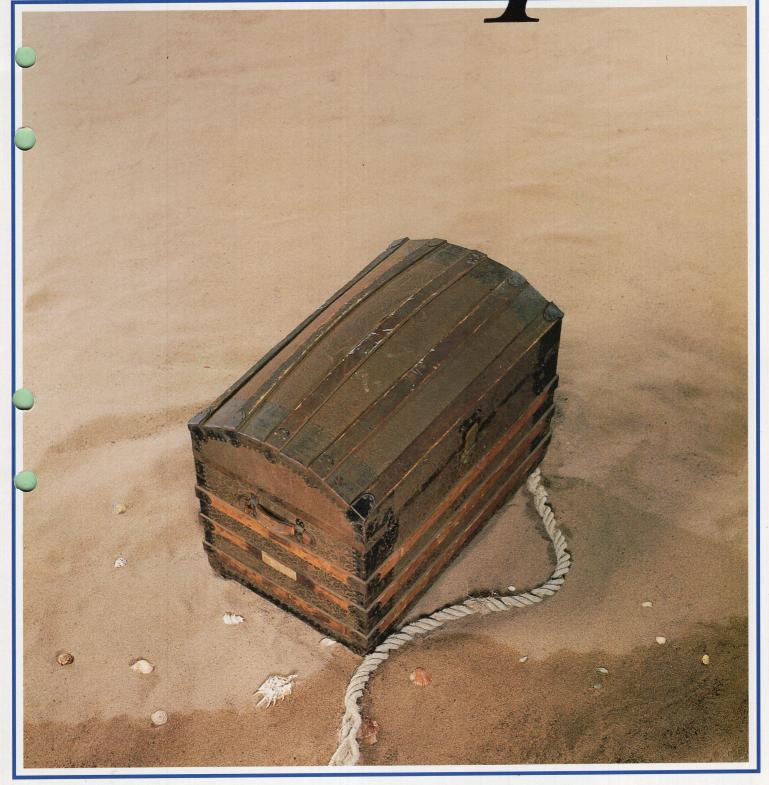
Photographers have an opportunity to become thoroughly familiar in the use, applications and operation of the Hasselblad system in a three day course conducted at the Winona School of Professional Photography in Mt. Prospect near Chicago's O'Hare Airfield. The course entitled "Ernst Wildi and the Hasselblad" will be held Sunday, Nov. 6th, to Tuesday, Nov. 8th, 1988.

In addition to his lectures about the Hasselblad camera, participants will have the opportunity to do actual photography with guest lecturers from the field of professional photography. While the course is designed mainly for professional photographers, serious amateurs with a good photographic knowledge are welcome.

For further details contact the Winona International School of Photography, 350 N. Wolf Road, Mount Prospect, IL 60056; (312) 299-8161.

HASSELBLAD®

# Boutique



# Boutique

Actually, neither you nor the Hasselblad Boutique are marooned on a desert island. On the contrary. We keep in touch with the world of style.

You might have the necessities of life. But you find pleasure in that little something extra.

We've engaged top designing talent and quality conscious manufacturers to live up to your needs. All of our items carry the HASSELBLAD name or our camera symbol. They're entitled to them.

# WINDBREAKER Comfortable, lightweight jacket with high, windproof collar and removable hood. Zippered pockets, two outside and one inside. Elasticized cuffs and hip band. Material: 65% cotton, 35% polyester. Water repellent. Machine washable. Suede trim shoulders. Sizes: Extra small 93079 Small 93080 Medium 93081 Large 93082 Extra large 93083.

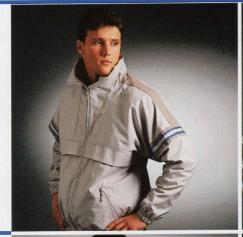
**SWEATER** Knitted pullover with round collar. Grey with blue trim. Material: 50% wool, 50% acryl. Sizes: Extra small 93089 Small 93090 Medium 93091 Large 93092 Extra large 93093.

# BODY WARMER Quilted with a bolt cut. Double-breasted snap closures. Warm dacron filling (190 gram/m²). Diagonal outside pockets and inside pocket with zipper. Material: 65% cotton, 35% polyester. Water repellent. Machine washable. Suede trim shoulders. Sizes: Extra small 93069 Small 93070 Medium 93071 Large 93072 Extra large 93073.

SPORT SHIRT Soft, free and easy sport shirt in a modern cut. Breast pocket. Material: 50% cotton, 50% polyester. Sizes: Extra small 93084 Small 93085 Medium 93086 Large 93087 Extra large 93088.

# SPORTS JACKET A robust jacket with warm dacron filling (110 gram/m²). Zipper and snap closures. Zippered pockets, two outside and one inside. Elasticized tricot in cuffs, hip band and collar. Material: 65% cotton, 35% polyester. Water repellent. Machine washable. Sizes: Extra small 93074 Small 93075 Medium 93076 Large 93077 Extra large 93078.

**BATH TOWEL** Large terry cloth towel of 100% cotton made by Marks Pelle Vävare, Sweden. Solid blue with the Hasselblad name woven in two places. Size 65×140 cm. 93022

















TIE An elegant pure silk tie with a fully lined back. Dark blue with discrete matching stripes.

93051

SCARF An excuisite scarf of pure silk with a well balanced colour combination of light blue and grey against a dark blue background. 93053





DRESSING CASE Dark blue, patterned with Hasselblad cameras. Durable plasticized Alcantara. Washable. 93094

BELT Textile belt in the Hasselblad colours and with our camera on the buckle. 93033





UMBRELLA A large, rugged umbrella, big enough for two. Very sturdy metal design, robust wooden handle and 100% nylon fabric. 93050

FLIGHT BAG A popular flight bag with a handle and an adjustable shoulder strap. Two large compartments and an outside pocket. All of them zippered. Outer material cotton/rayon and soft, water tight plastic inside.

93043





### **BLACK PEN AND PENCIL**

**SET** Ball point and pencil of high quality. Flat black anodized finish. Elegant case. 93066

#### WHITE PEN AND PENCIL

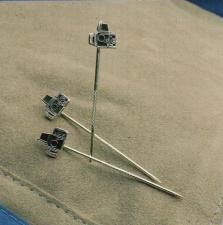
**SET** The same high quality. White chinese enamel. Black text. Gold-plated metal parts. 93067



# HASSELBLAD

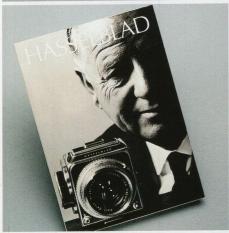
VICTOR HASSELBLAD AB · BOX 220 · S-401 23 GÖTEBORG · SWEDEN

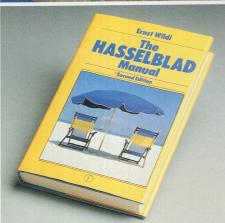




**KEY RING** An original key ring of a Hasselblad 500 C/M. Form pressed anodized metal with beautiful relief details on a grainy surface. 93056

HASSELBLAD PIN A discrete, silver plated lapel pin with the Hasselblad camera.
93054





HASSELBLAD The book about Victor Hasselblad. Evald Karlsten writes about the man who won a place in the history of photography with his camera. 120 richly illustrated pages.

English 93044/German 93045/Italian 93046/ Swedish 93047

#### THE HASSELBLAD

MANUAL A richly illustrated handbook on the art of using your Hasselblad equipment to its optimum. Ernst Wildi, professor of photography, USA, shares his expertise. English text only. New revised edition in mid 1986. 93048





SPACE PICTURES Three unique pictures from space, taken with a Hasselblad by American astronauts. A plastic coating gives the pictures extra depth. Size  $40 \times 40$  cm. 93049

CRYSTAL GLASS The crystal glass design "Old Fashioned" with a Hasselblad 2000 FC/M engraving. Swedish quality crystal from Orrefors glass works. Comes in set of two packed in a black carton. 93057





CRYSTAL CAMERA A sculpture in crystal of the Hasselblad camera. A full scale 500 C/M from Lindshammars glass works. This serial numbered piece is signed by the artist Chr. Sjögren. Comes in an elegant silver carton marked "Swedish Crystal".

CAMERA CLOCK An exclusive quartz timepiece built into a Hasselblad camera body on a wooden stand. Powered by a 1.5 volt battery.

93058

HASSELBLAD

# Boutique





#### Crystal Camera

Crystal Camera

Swedish design and quality impressively combined – a crystal sculpture of the Hasselblad camera! A full-scale 500C/M, made at the Lindshammar glass works. This exclusive, numbered piece is signed by the artist Chr. Sjögren. Delivered in an elegant silver carton marked "Swedish Crystal".

93001

# Boutique

A wide variety of combinations is the basic concept of Hasselblad camera systems. They are made to meet individual demands. This concept has been adapted to the collection presented here.

The Sportswear is designed for activities – for finding new camera angles in absolute comfort.

The Hasselblad design combines fresh blue and white with a touch of elegant grey. The colors and the leisurely cut give a well balanced, completed look, whatever way you choose to combine the separate pieces.

Designed by Lars Westin and Craft of Sweden for Hasselblad only, the entire collection carries the Hasselblad name.

So does the range of accessories offered by your Hasselblad boutique. All in order to give you the liberty of selecting your favorite combinations.

# Windbreaker Body Warmer Sweater



#### Windbreaker

A comfortable, light jacket with a choice of collar design: Nehru collar or hooded. Several pockets, the inside one zippered. Made of 65% cotton and 35% polyester. Water repellant. Machine washable.

Small **93002** Medium **93003** Large **93004** Extra large **93005** 



#### **Body Warmer**

Extra large 93009

A no-nonsense cut with a soft and fluffy dacron lining. Diagonal pockets for added comfort, breast pocket with burr strip fastener, the inside pocket zippered. Made of 65% cotton and 35% polyester. Water repellant. Machine washable.
Small 93006
Medium 93007
Large 93008



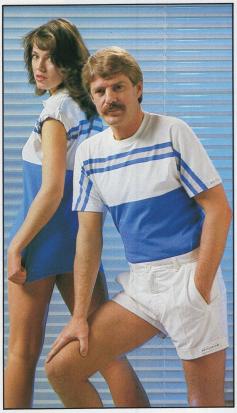
#### Sweater

Knit pullover with a round neck, made of 55% cotton and 45% acrylic fibers. The grey strip adds contrast along the sleeves.

Small **93010** Medium **93011** Large **93012** Extra large **93013** 



# T-shirt Joggingsuit Bath Towel



T-shirt
Soft and roomy T-shirt of the newest cut.
All in cotton with a round neck.
Small 93014
Medium 93015
Large 93016
Extra large 93017



Joggingsuit
Two-piece joggingsuit for maximum
comfort and use. Top with a roll-up
hood collar, zippered front and pockets.
Pants with pockets. Of 65% cotton and
35% polyester.
Small 93018
Medium 93019
Large 93020
Extra large 93021



Large bath towel of 100% fluffy cotton. Woven by Marks Pelle Vävare, Sweden, in blue with the Hasselblad name interwoven in two places. Size 25×55 inches. 93022

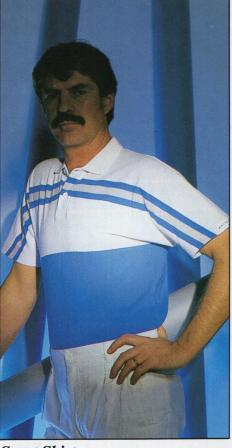


# Shorts Sport Shirt Waist Belt/Socks



Shorts
White shorts with convenient pockets.
The Hasselblad label on one cuff. Made of 65% cotton, 35% polyester.
Small 93023

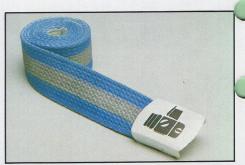
Medium 93024 Large 93025 Extra large 93026



Sport Shirt

Soft knit shirt, designed to give you freedom of movement. With a collar and short sleeves. 100% cotton.
Small 93027
Medium 93028

Large 93029 Extra large 93030





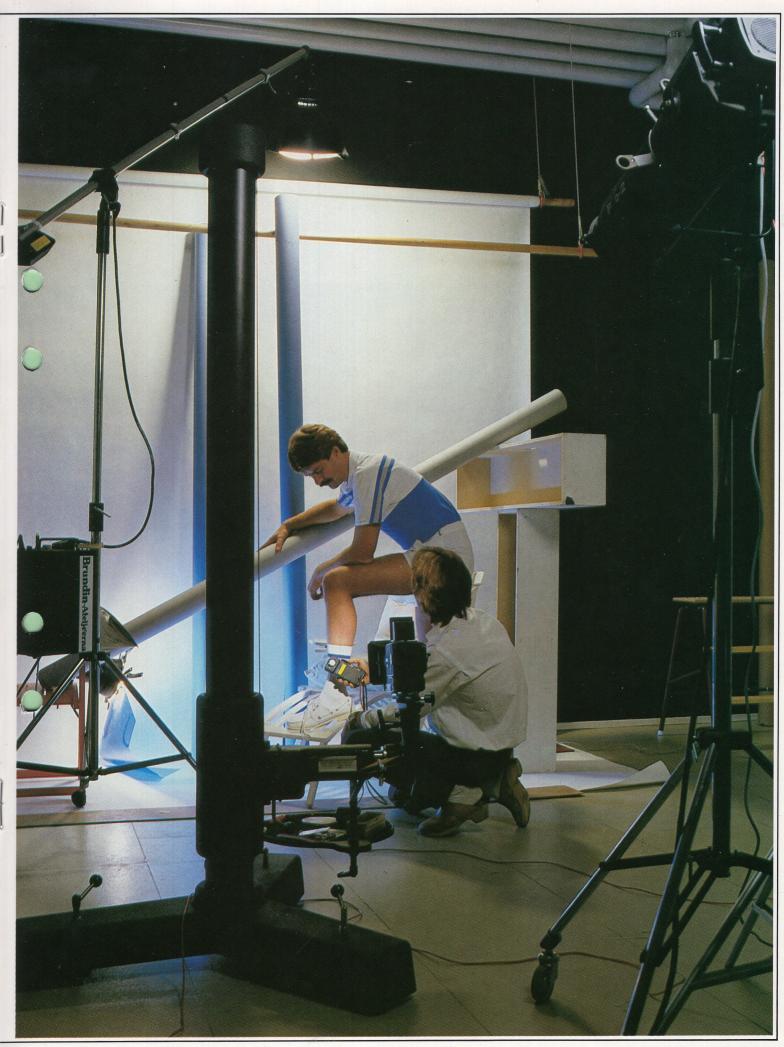
#### Waist Belt

Textile waist belt in the Hasselblad colors, featuring the Hasselblad camera on the belt buckle.

93033

#### Socks

Socks to match, of rib knit. 80% cotton, 18% polyamide and 2% lycra. Small 93031 Medium/Large 93032



# Sports Polo Sports Jacket Flight Bag



Sports Polo
Long sleeve polo of 100% cotton.
Semi-turtle neck, with a zipper for convenience. Decorative stripes along the neck line.
Small 93035
Medium 93036
Large 93037
Extra large 93038



Sports Jacket

Robust jacket with an insulating dacron lining. Ties at the waist and hem to keep the cold out. Both front zipper and snaps. Double pockets on the front, inside pocket with a zipper. Made of 65% cotton, 35% polyester. Water repellant. Machine washable. Small 93039 Medium 93040 Large 93041 Extra large 93042



Flight Bag
The popular Hasselblad flight bag in a new design. Roomy, with two handles and a shoulder strap. Two large, inside pockets and an outside pocket as well, all with zippers. Exterior of cotton/rayon, interior of pliable waterproof plastic.

93043



# Tie

Sophisticated pure silk tie in dark blue with a back lining. Decorative, discrete Hasselblad cameras in your choice of blue or red.

Cameras in blue 93051 Cameras in red 93052



# Umbrella

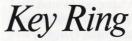
A large, protective umbrella with room for two – and your Hasselblad equipment. Very sturdy metal frame, durable wooden handle and 100% nylon fabric. 93050





# Pen

A ballpoint pen in mat black metal. With the Hasselblad name and camera in contrasting white. Supplied in a case. 93055



Unique key ring, with a profile of the 500C/M in oxide metal on a grainy surface.
93056





Scarf

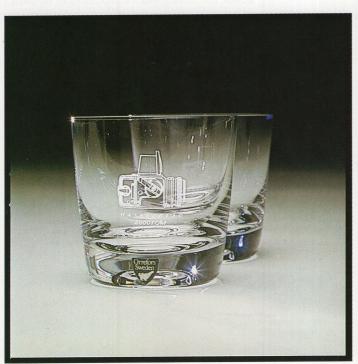
Delightful, pure silk scarf with a pattern of Hasselblad cameras along the border. Color coordinated in light blue on a dark blue background.
93053

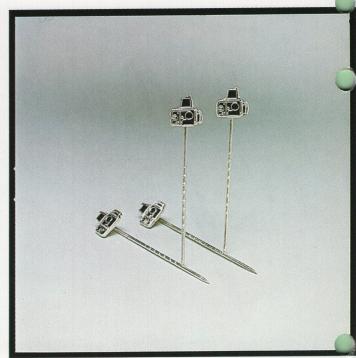
# Crystal Glasses

The Hasselblad 2000FC/M engraved in the "Old Fashioned" Swedish crystal glass. A high quality crystal from Orrefors glass works. Sold in sets of two, packed in a black carton. 93057

# Hasselblad Lapel Pin

Silver plated lapel pin with the Hasselblad camera. Adds discrete elegance to your jacket. 93054





# Space Portfolio

A portfolio with three exciting and unique space pictures, taken by American astronauts using the Hasselblad. The pictures are coated in plastic, giving them added depth. Size about 16×16 inches.



# Meet Dr Hasselblad

A book on Victor Hasselblad and his incredible creation. Written by Evald Karlsten, this book brings you close to the man who made history in the art of photography. 120 pages with plenty of illustrations.

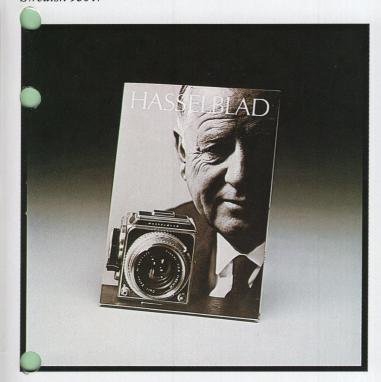
English 93044 / German 93045 / Italian 93046 /

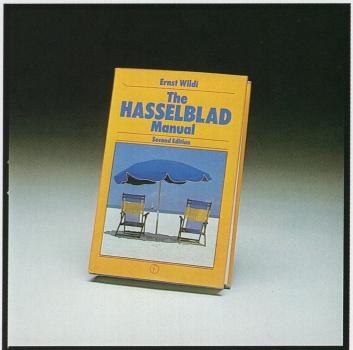
Swedish 93047



Tells how to use your Hasselblad equipment for maximum pleasure and performance. Amply illustrated, this manual guides you through the basic techniques to the utmost sophistication. Share the unique insights of Ernst Wildi, professor of photography in the United States. 302 pages, in English only.

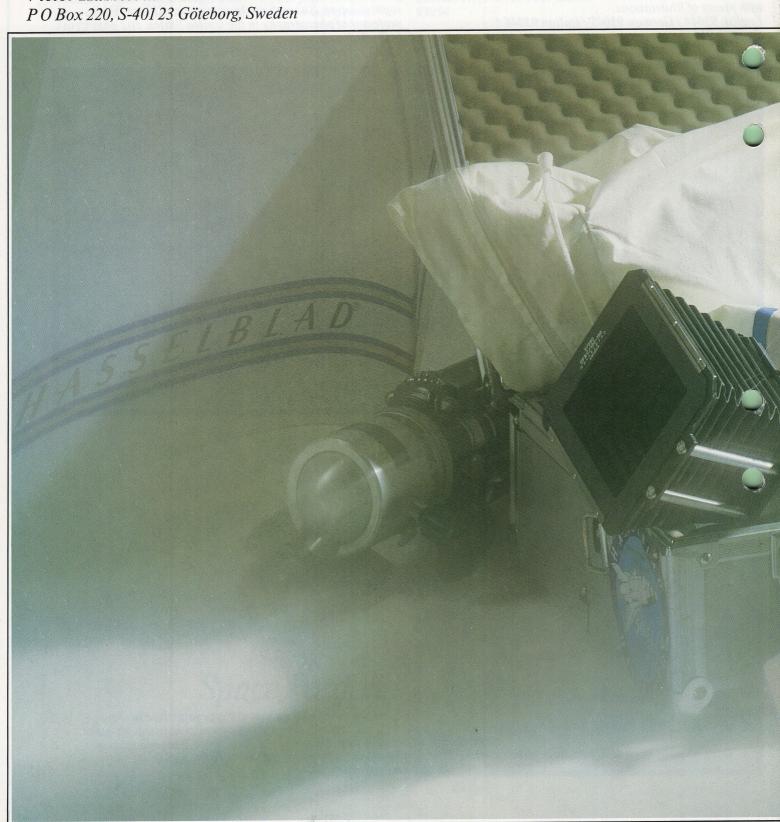
93048





# HASSELBLAD

Victor Hasselblad AB



#### Video/slide shows



## Video and slide shows

A slide show presentation with a Hasselblad PCP80 projector is unbeatable and convincing proof of the superior image reproduction of the Hasselblad camera and projector.

# Position the projected image in the center of the screen!

The screen image is the final result of a creative photographer's work and it is the expected image result that is decisive in a photographer's decisions about which type of equipment to choose. We have produced two slide programs so that you can show your customers informative, interesting, stimulating, and beautiful Hasselblad pictures. These slide show presentations are available from the Hasselblad distributor in your country. Each program consists of about a hundred slides that are loaded into two round slide magazines for the PCP80 projector. The slide programs are delivered complete with sound in several languages (German, English, French, and Swedish). If you would like to take advantage of this opportunity for your customers, please contact your Hasselblad distributor for more detailed information.

The slide programs available at present are:

1. **Hasselblad Close-Up**, which deals with the history of Hasselblad, its development, and present situation. The program takes about 15 minutes to show and consists of documentary pictures and beautiful scenes.

2. Hasselblad's new line of CF-lenses. A slide program that describes the technical features and advantages of the new Carl Zeiss CF-lenses in attractive pictures that show the high level of performance available through the different lenses and their features. Approximately 15 minutes long.

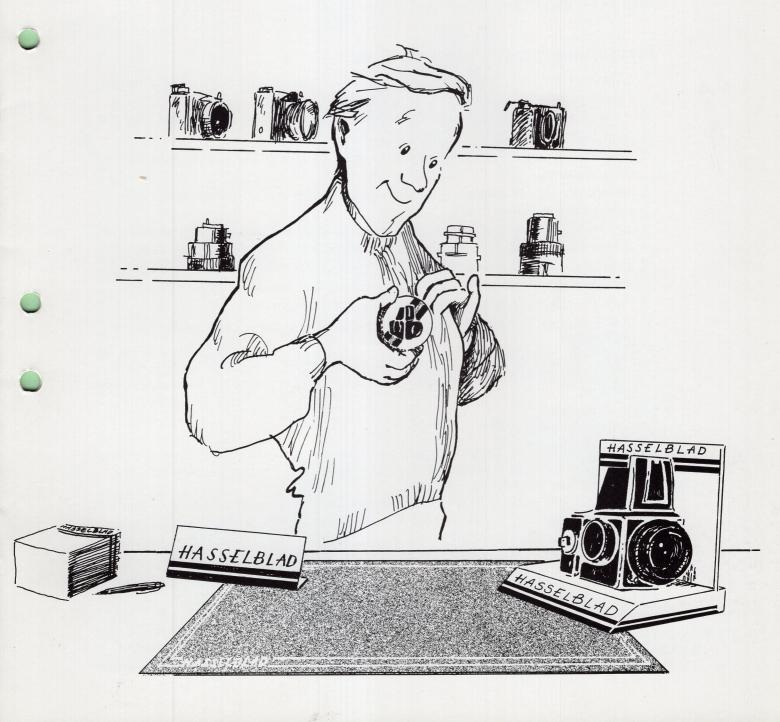
New slide show presentations are continually in development. Your distributor will notify you when new slide programs become available.

#### Video as an aid

We are also planning to produce several short video programs that deal with the use of Hasselblad cameras in such special areas of photography as close-ups, portraits, landscapes, etc. In the future, your customers will be able to buy, loan, or rent these video programs and view them at leisure at home. You can also use the video programs as a demonstration and sales aid. More information about these programs will be available shortly.

# Demonstrating Hasselblad!





It takes knowledge and training to give a good demonstration. You must be able to change lenses, viewfinders and film magazines without hesitation and know all the right grips for handling the camera so that the customer sees how easy it is to use a Hasselblad. Most important make sure that the customer gets a chance to get the feel of the camera, to work it and to try out different combinations.

Your demonstration is an important part of your sales job. With the camera in your hand, it is easier to convince the customer of the advantages of a Hasselblad and help

him towards making a buying decision.

In this pamphlet you will find some basic advice and instruction on how to set-up your Hasselblad 500 C/M demonstration. If possible compliment this demonstration with other lenses, viewfinders, film magazines and accessories.

### First though a few general tips:

- 1. Offer every serious photographer a Hasselblad demonstration even if they don't ask for one specifically.
- 2. Assume that every customer is interested in a Hasselblad and can afford one.

3. Find out what kind of photography the customer works with.

- 4. Demonstrate the Hasselblad and explain how it can help the photographer take better pictures.
- 5. Emphasize the advantages of the Hasselblad system that are of particular significance to the customer.
- 6. Don't limit your demonstration to the standard-equipped camera. If you have other lenses, viewfinders, focusing screens and accessories, then demonstrate them too!
- 7. Don't bore the customer with a lot of technical jargon. Demonstrate the camera with enthusiasm, efficiency and ease.
- 8. Give the customer an opportunity to try out the equipment.
- 9. Ask questions. A customer's answers can give you a clue about aspects that are significant.
- 10. When you realize that the customer has made a buying decision then stop your demonstration and close the sale.

### Prepare yourself!

The customer assumes that you know how to handle the Hasselblad system. The best way to inform yourself is to read through the Hasselblad Product Catalog and other publications that describe the system.

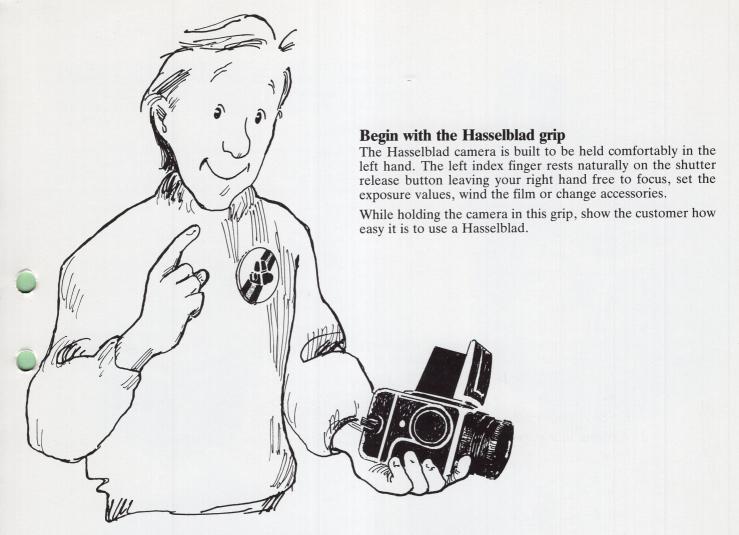
Another excellent guide is Ernst Wildi's handbook "The Hasselblad Manual" that

describes in detail how to handle both the camera and its accessories.

The instruction manuals provided with every Hasselblad product are also of good assistance. It is important that you train with the camera in your hand.

## Display Hasselblad prominently!

If possible, you should transform your demonstration counter into a "Hasselblad counter" similar to the one on the cover of this pamphlet. If you are missing an item in the display material then contact your Hasselblad distributor. He can tell you what is available.

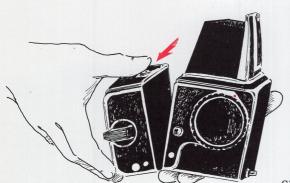


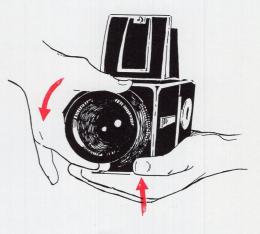
#### Strip the camera down to the body

Disassemble all of the accessories from the camera body. Perform this in a fluent motion with confident and distinct movements so that the customer sees every grip. Line up the accessoires in front of you on the demo-mat.

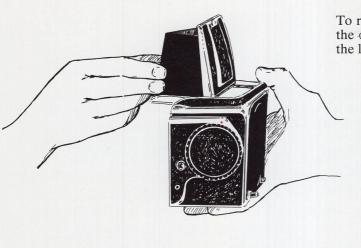
#### Begin with the lens

Grip the lens with your right hand. Depress the lens lock lever with your left thumb and turn the lens counter-clockwise until it comes free from the camera lens mount.

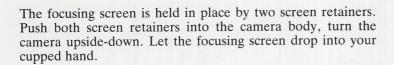


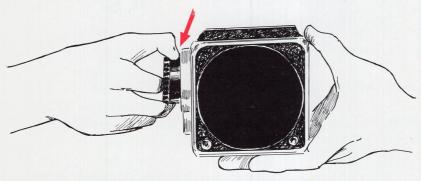


Slide the magazine release latch to the right and let the film magazine swing backward from the camera body to remove it.



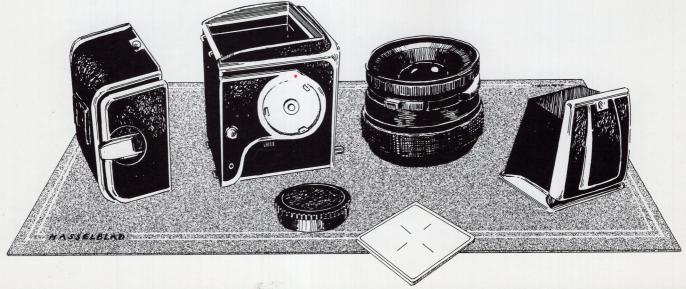
To remove the focusing hood slide it towards the rear and off the camera. Hold the focusing hood by its back edge or push the lower front part of the hood with your index finger.





Now only the winding knob remains to be removed. Push the locking device on the knob to the right with your thumb while turning the knob counter-clockwise.

The different parts of the camera are now arranged on the demo-mat in front of you and the customer can see how simply and logically the camera is designed. Explain that this is the principle concept of the Hasselblad system. Every component is interchangeable enabling the photographer to put together a camera that suits his needs best.



#### The stripped camera body

The camera body has six sides each with features for attaching different accessories. Pick up the camera and explain these functions.

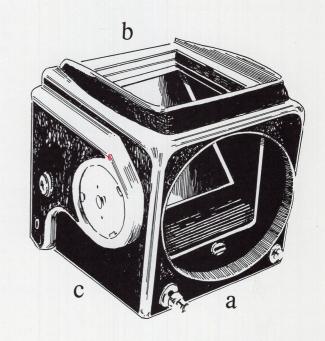
Start with the **front of the camera body** (a) and point out the sturdy bayonet mount. Point out the slot on the coupling shaft that connects the camera and lens mechanisms, the lens lock release button and the shutter release button with the time exposure lock.

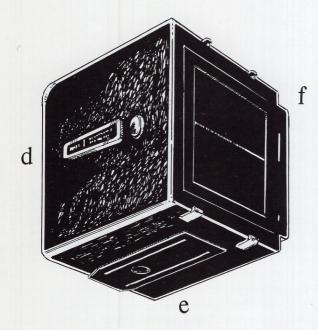
The top side (b) with focusing screen opening.

The right side (c) with features for the winding knob, prerelease button and shutter status indicator.

The pre-release button is located just below the winding knob. When the pre-release button is depressed all of the camera's functions are released with the exception of the built-in leaf shutter in the lens. This shutter is then released by depressing the shutter release button located on the front side of the camera. Perfect for attaining vibration-free results.

The shutter status indicator located in the lower rear corner of the camera body shows if the camera has been released or not. When the indicator shows red the shutter is not cocked. White appears when the shutter is cocked and the camera is ready.





The left side (d). The name plate functions as an accessory rail for the sports viewfinder, spirit-level or adjustable flash-shoe.

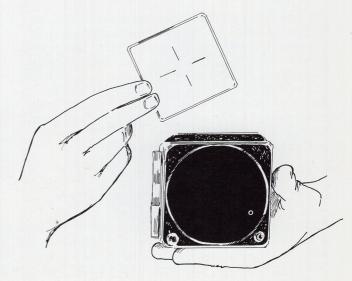
**The underside** (e) has a 3/8'' tripod socket and a plate for the quick-coupling attachment for the tripod or pistol grip.

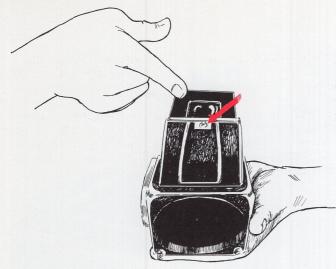
**Located on the back side** (f) there are support catches and a magazine lock for the film magazine and an auxiliary shutter. The auxiliary shutter protects the film from light coming through the lens and viewfinder before and after a picture is taken.

# Now begin to reassemble the camera

Pick up the focusing screen. Explain that there are six different types plus a plain glass screen for photomicrography and macro work. The focusing screen comes in different combinations with split-image, central grid and/or check patterns.

Insert the focusing screen with the finished side up. Both the screen retainers will close automatically when the viewfinder is attached to the camera.

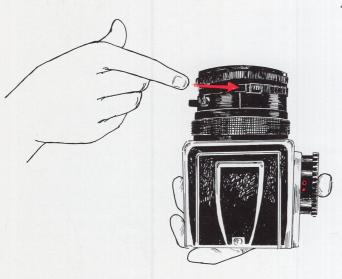




Attach the focusing hood by sliding it into the guiding grooves. Demonstrate how the folding fine-focus magnifier pops up when the catch is moved to the right. The magnifier enlarges the image  $2^{1/2}$  times. The photographer has four other view-finders to choose from, the prism viewfinder with or without light meter, the reflex viewfinder or the magnifying hood.

The winding knob is attached by aligning the red circle with the red dot on the camera. Turn the knob clockwise locking it into position. The standard winding knob can be replaced with a knob with a built-in exposure meter or a folding winding crank.

Shut the focusing hood by folding the hood's side leaves down first, followed by the rear leaf and finally the front leaf.



The Hasselblad CF-lens series is compatible with the Hasselblad 500 C/M. The CF-series has a total of 14 lenses with focal lengths ranging from 30 mm to 500 mm. These top-quality optics are made by Carl Zeiss, West Germany.

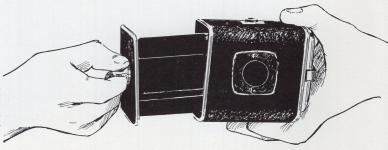
The built-in leaf shutter is synchronized for electronic flash at all shutter speeds, 1–1/500s. This provides the photographer with fantastic possibilities allowing the freedom to choose the flash as a main light source or as a shadow-easing fill-in.

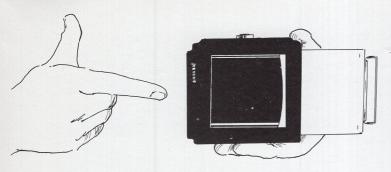
Attach the lens by aligning the red delta at the rear of the lens with the red dot at the top of the camera lens mount. Turn the lens clockwise until it clicks into place. Point out the distinctly marked scales on the aperture ring, shutter speed ring and focusing ring. All of these scales can be easily read by looking at the top of the lens.

Explain that shutter speeds and aperture settings can be cross-coupled by depressing the cross-coupling button located on the aperture scale ring. When the shutter speed is changed and both rings are moved cross-coupled, then the aperture setting is automatically switched so that the exposure value remains unchanged.

Point out the depth-of-field preview tab on the left side of the lens. When you depress this tab the lens will stop down to the preset working aperture. Light upwards pressure on the tab will return the diaphram to the maximum aperture.

Pick up the film magazine. Fold out the roll holder key, turn it counter-clockwise and pull out the film roll holder. Make note of the high finish and the precision of the spools and the black pressure plate. Re-insert the roll holder and turn the key clockwise until it clicks into place.





Withdraw the magazine slide to reveal the film opening. Point out that the  $2^{1/4} \times 2^{1/4}$  format is  $3^{1/2}$  times larger than the 35 mm format.

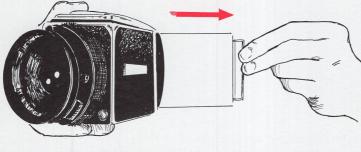
Re-insert the magazine slide and describe the advantages of interchangeable film magazines. Magazines can be switched in seconds without the loss of a single film frame, providing a wide freedom of choice with regards to film formats, film loads and film types.

Attach the magazine to the camera by hooking it onto the lower magazine support catches located on the lower edge of the camera's back side. Swing the top of the magazine up against the upper catches and push the magazine release catch to the left. Make sure the magazine is securely locked in place.

After attaching the film magazine explain that the function of the magazine slide is to protect the film from light when the magazine is detached and that the magazine slide obstructs the camera's shutter release. No exposure can be made until the magazine slide is withdrawn.

Indicate that the shutter release is obstructed and that the magazine can be detached. Then withdraw the magazine slide and make an exposure. Advance the film by turning the winding knob and demonstrate how the magazine release catch is blocked when the magazine slide is withdrawn.

Point out that this safety system makes it impossible for the photographer to make a mistake.



There are six Hasselblad film magazines in three different formats,  $2^{1/4} \times 2^{1/4}$ ,  $1^{5/8} \times 2^{1/4}$ , and  $1^{5/8} \times 1^{5/8}$ (superslides for projection in a 35 mm projector). The magazines have a load capacity that ranges from 12 to 200 frames.

There are also film magazines for Polaroid film and

sheet film.

You have now completed your Hasselblad 500 C/M demonstration. Now it's time to give the customer an opportunity to

handle the camera.



# Hasselblad - built to take priceless pictures!

### The Hasselblad System

The Hasselblad system is the world's most comprehensive system for the  $2^{1/4} \times 2^{1/4}$  format. A well-known, reliable system under constant development.

- 1. **Freedom of choice!** With four camera models and over 300 different components to choose from, the photographer has almost unlimited options for tackling every conceivable photographic situation.
- 2. An investment in the future! The Hasselblad system is timeless. Irrespective of what a photographer photographs today or during the next five to ten years, he can do it with a Hasselblad. New components compatible to the system are under constant development.
- 3. **Trade-in value!** Purchasing a Hasselblad is an economically sound investment. Thanks to its first class quality the Hasselblad system has an incredibly good trade-in value.

### The Four Cameras

#### Hasselblad 500 C/M

The world's most popular camera with a built-in leaf shutter for medium format photography.

Shutter speeds with flash synchronization at speeds down to 1/500s. No batteries. Meeting all the demands of serious photography.

#### Hasselblad 2000FC/M

Electronically controlled focal plane shutter with speeds down to 1/2000s. Flash synchronization at shutter speeds from 1 to 1/90s.

High speed Hasselblad F-lenses are designed for the Hasselblad 2000 FC/M. Hasselblad CF-lenses with built-in leaf shutters and flash synchronization at all speeds down to 1/500s are also compatible.

#### Hasselblad 500EL/M

The motorized camera with all the features of the Hasselblad 500 C/M plus the advantages of a built-in motor.

#### Hasselblad SWC/M

The wide-angle camera with the permanently attached lens that features uncompromising design.

### The Hasselblad Format for Image Quality

The large  $2^{1}/4 \times 2^{1}/4$  format is  $3^{1}/2$  times larger than the 35 mm format, providing a lot of advantages.

- 1. **Picture Quality.** The reknown Carl Zeiss lenses with their superb quality will ensure optimum image sharpness. The larger the film size, the lesser degree of film grain when enlarging.
- 2. Large Viewfinder Image. The large, distinct focusing screen image makes it easier to focus and compose pictures.
- 3. **Big Print Margins.** A photographer can crop 75% of a Hasselblad film frame and still have a negative that is larger than the 35mm film format.
- 4. **Easier Printing.** Negatives, slides and contact prints are large enough to study without the aid of a magnifying glass.

# HASSELBLAD®

Box 220, S-401 23 Göteborg, Sweden



# VICTOR HASSELBLAD AKTIEBOLAG, Box 220, S-401 23 Göteborg, Sweden









