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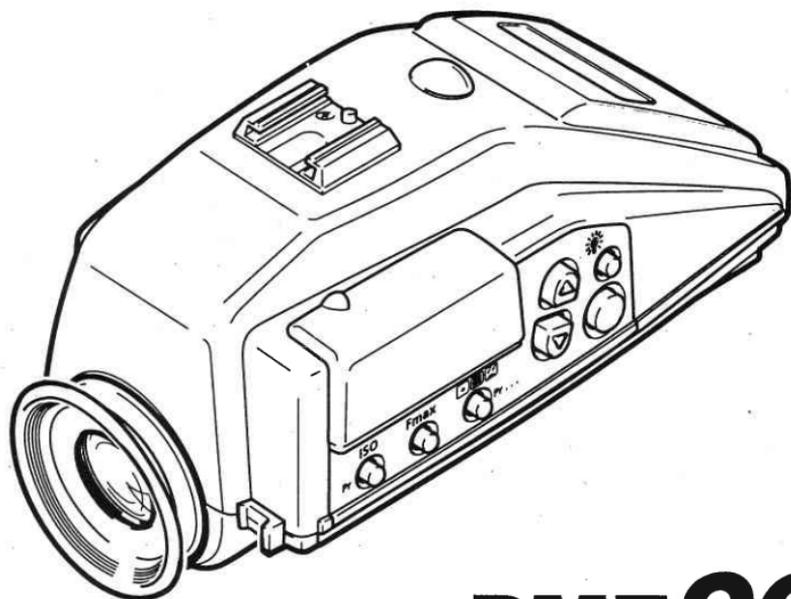
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H A S S E L B L A D



PME90

42290

Users Manual

Bedienungsanleitung

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Gebruiksaanwijzing

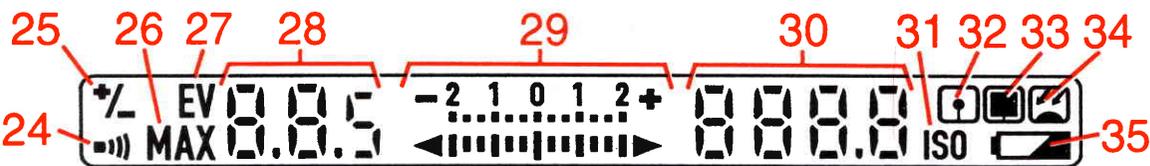
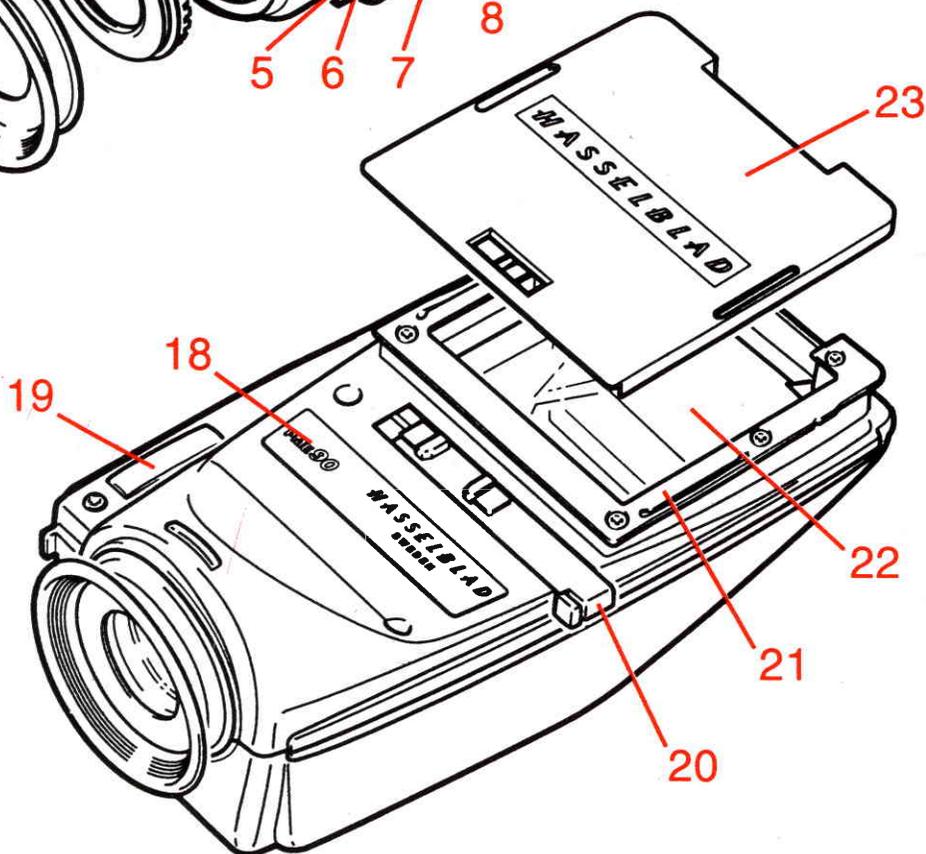
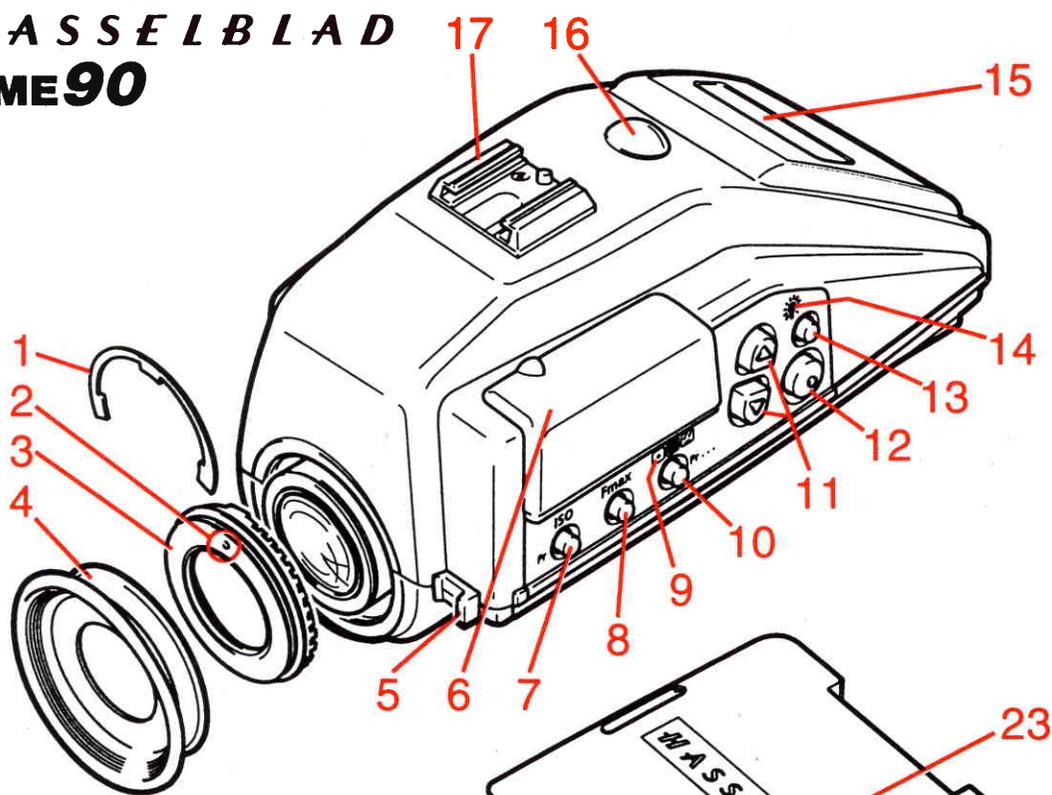
Bruksanvisning

Käyttöohjeet

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Manual de instruções

HASSELBLAD PME90



GB Hasselblad Meter Prism Viewfinder PME 90 (42290)

The Hasselblad PME90 is a 90° meter prism viewfinder for eye-level viewing in line with the photographing direction, specially suitable for shifting between horizontal and vertical format orientation. Its built-in exposure meter offers three different metering methods, a choice of shutter or aperture priority and a wide range of presetting possibilities. Film speed can be set within the ISO12 – 6400 range and lens max. aperture within f/2 – f/16. The 2x enlarged unreversed image covers the entire focusing screen including the viewfinder's built-in conspicuous Liquid Crystal Display.

The large eyepiece, specially suitable for users with eyeglasses, has a diopter adjustment range of – 2 to + 0.5 diopters. It can be changed to cover – 4.5 to – 2 or +0.5 to +3 diopters by addition of correction lenses.

Due to its low profile the PME90 has to be detached when the Film magazine 70 or the Polaroid film magazines is used.

The illustrations referred to in the text below are found on the front and rear fold-out pages. In the fig's D1 – D18 grey symbols represent continuously updated exposure data, controlled by the exposure meter. Solid black symbols are fixed or controlled manually.

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Parts & Components (fig.1)

Viewfinder & meter components

1. Locking clip (red)
2. Indication mark
3. Eyepiece diopter adjustment
4. Removable rubber eyecup
5. Eyepiece diopter adjustment catch
6. Battery compartment cover
7. Film speed/programming mode selector
8. Max. aperture selector
9. Metering method symbols
10. Metering method/program step selector
11. Upper (▲) and lower (▼) adjustment buttons
12. Metering button
13. Display illumination button
14. Display illumination symbol
15. Display illumination window
16. Incident light sensor dome
17. Accessory shoe
18. Viewfinder type sign

19. Test connector cover (service use only)
 20. Magazine catch operating slide
 21. Viewfinder retaining plate
 22. Viewfinder prism
 23. Viewfinder protective cover
- ### **Display components**
24. Sound warning indication (beep on)
 25. Plus/minus correction symbol
 26. Max. aperture indication symbol
 27. EV indication symbol
 28. EV/aperture value 7-bar digits
 29. Adjustment/reference scale
 30. Shutter speed value 7-bar digits/program setting indication
 31. Film speed (alt. shutter speed seconds) indication
 32. Spot metering indication
 33. Integral metering indication
 34. Incident light metering indication
 35. Battery "low power" warning indication

Getting started

In the text plain numbers within brackets refer to the **Parts & Components list**.

The viewfinder is delivered without battery. Use a 3V Lithium type CR-123A, common in most compact cameras.

Battery installation (fig. 2)

Swing open the battery compartment cover (6). Place the battery in the cover or in the battery compartment of the viewfinder body. Be sure to position the battery correctly according to fig. 2 and the sign in the battery compartment. Close the cover carefully after inserting the battery.

NOTE: Positioning the battery incorrectly will not damage the viewfinder but will prevent the exposure meter from functioning.

Exposure meter activation (fig. 3)

The exposure meter is completely self-contained and can be operated on or off the camera body. It is activated by pressing any of the buttons **except** the adjustment buttons (11) or the display illumination button (13). Normally the meter shuts off automatically 16 seconds after the latest manipulation of any button, but the duration of this period can be changed in the Programming mode (see page 5, section Pr4).

The first time the meter is activated the "default" settings: Max. f/2.8; ISO100; Integral metering (fig. D1, page viii) appear. See also the section "Operating details, Starting the Metering mode" below.

Viewfinder LCD display (fig. 4)

The exposure meter display is located beneath the image area. It is illuminated by the ambient light through the window (15) on the upper front side of the viewfinder body. In low light conditions the display can be illuminated by depressing the illumination button (13), which has an on/off function.

The various display appearances (D1-D18) are shown on page viii in the rear fold-out section. They will be described below together with the corresponding meter functions.

Adjusting the eyepiece (fig. 5)

1. Pull the catch (5) away from the eyepiece.
2. Activate the meter (see above).
3. Turn the diopter adjustment ring (3) with the rubber eyecup (4) clockwise or counter-clockwise until the display signs appear sharp.
4. Lock the eyepiece in the focused position by pushing the catch (5) back again.

NOTE: The eyecup can be folded in towards the viewfinder body for the convenience of eyeglass users.

Attaching the viewfinder (fig. 6)

1. Detach the film magazine.
2. Slide the present viewfinder to the rear out of the viewfinder mount.
3. Insert the PME90 into the slots and slide it forwards to a positive stop. It is retained there by spring-loaded ball latches in the camera body.
4. Recheck the eyepiece focusing on the focusing screen.

NOTE: Recommended focusing screens for use with the PME90 are the **Acute-Matte D**, (Code Nos. 42204, 42207).

See also the chart on page 7!

Attaching the magazine (fig. 7, 8)

1. Insert the magazine from below, beneath the viewfinder.
2. Place it on the magazine supports.
3. Swing it towards the camera body until it rests against the magazine hooks.
4. While gently pressing it against the hooks, squeeze the protruding part of the magazine catch operating slide (20) to release the slide atch, and push the slide firmly towards the viewfinder body.
5. Continue to press the magazine against the camera body and release the operating slide (20).
6. Pull the magazine away from the camera body to verify that it is positively attached.
7. Remove the magazine slide.

Operating details

Starting the Metering mode

The first time the meter is activated by pressing the metering button (12) the default settings, made in the factory, appear on the display (fig. D1, page viii). These settings can be changed as described below.

All settings are permanent until intentionally changed again. **Removing or replacing the battery does not affect the settings.**

Changing the meter settings (fig. 9)

The three basic settings **ISO**, **Fmax** and **Metering method** can easily be accessed by pressing the corresponding buttons (7, 8, 10).

Film speed setting ISO (fig. D3)

Press the **ISO** button (7) and use the up (▲) or down (▼) adjustment buttons (11) to increase or decrease the displayed film speed value in increments corresponding to 1/3 EV.

Lens max. aperture setting Fmax (fig. D4)

To give the brightest possible viewfinder image the lens is normally opened up to the max. aperture. For spot and integral metering the exposure meter uses the light coming through the lens. Thus, it needs to know the max. aperture of this lens to produce a correct exposure value.

Press the **Fmax** button (8) and use the up or down adjustment buttons (11) to increase or decrease the displayed max. aperture value in increments corresponding to 1/2 EV.

Selecting the metering method (fig. D5)

The meter offers three different metering methods: **Spot metering**, **Integral metering** and **Incident light metering**, each indicated on the display by the corresponding symbol (9; 32, 33, 34).

Press the **metering method** button (10) and use the up or down adjustment buttons (11) to select the required method.

- By **Spot metering** (fig.10) a circular area with $\varnothing 12$ mm in the center of the focusing screen is used. This is indicated by the free area inside the hairline cross members on the preferred focusing screens **Acute-Matte D (42204, 42207)**, see page 3. The metering

range at ISO100 is +1 to +21 EV.

- **Integral metering** (fig.11) is a center-weighted method using a central area of approx. 40x40 mm. The metering range at ISO100 is -1 to +19 EV.

This is the **default setting**.

Both the spot-meter and the integral meter methods use the light level on the focusing screen of the light reflected off the subject.

NOTE: See also page 7 for further information on the use of different focusing screens.

- **Incident light metering** (fig.12) uses the sensor on top of the viewfinder body to meter the light falling upon the subject scene. The metering range at ISO100 is -3 to +17 EV.

NOTE: Do not shade or cover any part of the sensor dome when metering incident light!

Programming mode

By selecting the **Programming mode** the display appearance can be changed by altering the following settings :

Exposure data display type	Pr1
Shutter or aperture priority	Pr2
Reference mode, warning limits	Pr3
Active period duration	Pr4
Permanent exposure correction	Pr5
Start display of Fmax and ISO	Pr6
Sound warning signal	Pr7

Selecting the Programming (Pr) mode

The Programming mode is selected by simultaneously pressing the buttons for **ISO** (7) and **Metering method** (10), also marked **Pr** and **Pr...** respectively. The first time the Pr mode is selected the display appears as in fig. D6, but after that it always returns to the last setting used. Repeatedly pressing the **Pr...** (10) button steps consecutively through the different program functions **Pr1** thru **Pr7**.

Pr1 Exposure data display mode (fig. D6)

Switching between **On** and **OFF** by pressing either adjustment button (11) changes the display appearance between figs D2 and D14, where D14 shows the aperture priority selection (refer to Pr2 below).

Default setting is **On**

Pr2 Exposure priority selection (fig. D7)

The Pr2 function appears only when the Pr1 is set at **OFF**. Change between aperture (**APeR**) and shutter (**Shut**) priority by pressing either adjustment button (11).

In metering mode the value of the selected priority function is changed up or down by the corresponding adjustment button. The other function is continuously updated on the display.

The default setting is **Shut** (shutter priority) the first time Pr1 is set to OFF.

Pr3 Reference mode with warning limits (fig. D8 & D9)

Pressing the "down" (▼) adjustment button switches between **On** and **OFF**. Pressing the "up" (▲) button moves the warning limits from 0 towards ± 2 EV in 1/3 EV increments.

When ± 2 is reached it restarts on 0. Setting the limits to 0 disables the warning function, but the reference function is still operative.

Default setting is **OFF**

See also page 6 for further information.

Pr4 Active period duration (fig. D10)

Pressing the "down" (▼) adjustment button decreases and the "up" (▲) button increases the duration of the meter's active period until auto shut-off after the latest button operation. The duration can be adjusted from 5 s to 60 s. Adjustment increments are one second up to 20 s and five seconds above 20 s.

Default setting is **16 s**.

Pr5 Permanent exposure correction (fig. D11)

A permanent correction reduces or increases the calculated exposure with the preset correction amount. The function is very useful when compensating for the different properties of various focusing screens.

See page 7 for further information on corrections for different focusing screens.

Pressing the "down" (▼) adjustment button **decreases** and the "up" (▲) button **increases** the exposure. The increment is 1/3 EV.

NOTE: This is an **exposure** correction, not an adjustment of the EV-setting.

The default correction value is **0 EV**.

Pr6 Start display Fmax and ISO (fig. D12)

Pressing either adjustment button (11) switches the function **On** or **OFF**. In the **On** setting the preset values of max. aperture (Fmax) and film speed (ISO) are displayed during 1.5 s after activation of the meter.

Default setting is **On**.

Pr7 Sound warning indication (fig. D13)

Pressing any of the adjustment buttons (11) switches the sound warning signal **On** or **OFF**. The sound warning (beep) is utilized in the reference mode:

- To confirm introduction of a new reference value.
- To warn when the difference in light level exceeds the set limits.

Default setting is **On**.

NOTE: Light level differences exceeding 2.5 EV disable the sound warning.

Metering

Spot and integral metering

The metering mode is started by pressing the metering button (12).

All exposure information obtained from the viewfinder display has to be transferred manually to the lens and the camera.

EV display

With the factory made default settings unchanged the display appears on activation as in fig. D1 for 1.5 s and then changes to fig. D2. The displayed EV value changes with changing light levels on the focusing screen. This EV value for the selected subject area has to be transferred manually to the EV scale on the camera lens.

Aperture / shutter speed display

When the display is set to indicate aperture and shutter speed (Pr1 above) the Pr2 function can be used to select "aperture priority" or "shutter speed priority".

The selected priority setting is controlled manually by means of the adjustment buttons (11). The other value will be calculated and continuously updated on the display. The aperture indication range is Fmax (preset value) to f/64 with f/2 as the largest aperture.

The shutter speed indication range is 68 minutes to 1/2000 s. Any value outside these ranges will cause the displayed value to flash. Fig. D14 shows the display for integral metering with aperture priority (solid black) and shutter speed continuously updated (grey).

Fig. D15 shows the display for spot metering with shutter priority (solid black), Reference mode On, preset Permanent correction and Sound warning (beep) On.

The central scale shows an arrowhead and is flashing together with the aperture value, indicating that the metered light level is more than 2 EV below the entered reference level (see below).

Incident light metering

The incident light metering method is used to meter the light falling upon the subject scene instead of reflected off the subject. This method is very useful when the character of the subject scene makes it difficult to apply any of the other methods.

Preferably the sensor dome (16) should be directed away from the subject, opposite the photographing direction, when the metering is carried out as described below.

NOTE: Do not shade or cover any part of the sensor dome when metering incident light!

When the incident light metering method is selected the light level is metered by pressing the metering button (12). As long as the button is kept depressed the reading and display indication is continuously updated. When the button is released the actual light value is automatically locked and stored.

NOTE: The locking and storing function is disabled in Reference mode (see below).

The value remains stored until next time a light value is taken by pressing the metering button. This condition is indicated in the display by an arrowhead, pointing at the metered and stored value. The figures D16 – D18 show the display in EV mode (fig. D16), with shutter priority (fig. D17) and with aperture priority (fig. D18).

If the meter is auto-shut-off it can be activated without losing the stored value by pressing

the metering button (12). A new light value can be taken by pressing the metering button a second time.

Reference mode

The Reference mode is very useful for keeping track of contrast differences or changes in light conditions in the subject area.

Reference mode **On** (Pr3 above) is indicated in the display by a central EV-scale from -2 to $+2$ (fig. D8). Preset difference limits are indicated by vertical marks beneath the scale (figs D9, D15). A reference light value is entered and stored by keeping the metering button (12) depressed for 2 s or longer. With the sound signal **On** (Pr7 above), storing the light value is confirmed by two short beep signals. The value remains stored until a new value is entered.

With a reference value stored, the difference between that value and the value for the presently metered subject area is indicated by a row of marks beneath the central scale. Each mark corresponds to 1/3 EV. When the difference exceeds the preset limit, the row of marks flash. If the sound warning is **On** it is actuated. When the difference range is set to zero, the sound warning is disabled.

A difference exceeding $+2$ EV or -2 EV is indicated by a full row of marks, ended with an arrowhead. Fig. D15 shows the display in reference mode with warning limits at ± 1 EV, sound warning **On**, Fmax 2.8, shutter priority, permanent correction, spot metering and a light value difference exceeding -2 EV but not -2.5 EV. The aperture figures and the difference scale are flashing and the sound warning is beeping. If the difference is exceeding -2.5 EV the beeping is disabled.

Using the reference mode

The reference mode can be used with any of the PME90 light metering methods. The major applications, however, are with the spot metering or the incident light metering methods.

Reference mode & Spot metering

With spot metering in the reference mode a medium grey (18% grey) subject area is me-

tered and the light value is stored as reference value. By moving the metering spot to other subject areas the subject contrast can easily be determined. The indication range of ± 2 EV is a suitable range for shadows to highlights on a transparency film.

Reference mode & Incident light metering

With this combination the incident light level is easily monitored e.g. during fashion photography on a beach or the like.

When the exposure conditions have been determined, by means of the PME90 or any

other light metering device, the reference value and the warning limits are stored in the PME90. Being heavily occupied by the assignment the photographer may not notice that a cloud obscures the sun. If the sky is overcast the changes in light conditions are even more gradual and difficult to observe with the naked eye. With the reference level and the warning limits set and the sound warning on, the automatic warning indications are easily observed when the light conditions change beyond the acceptable level.

PME90 and focusing screens

Screen type	Integral metering	Spot metering
Acute-MatteD 42204, 42207, 42210, 42213	No restrictions	The exposure should be reduced by one EV when using lens/teleconverter combinations which reduce the effective aperture to f/8 smaller.
Acute-MatteD 42215, 42217 42219	No restrictions	No restrictions within the f/2 – f/5.6 range. NOTE: Not recommended for lenses or lens/converter combinations where the largest effective aperture is smaller than f/5.6
Acute-Matte 42165, 42167 42203, 42170	The exposure should be reduced by 1/2 stop with lens/teleconverter combinations reducing the effective aperture to f/11 or smaller.	Will work satisfactory in the f/2 – f/4 range only.
Other Hasselblad screens	Make test photographs to determine the correction factor.*)	Make test photographs to determine the correction factor.*)
*) When a correction factor has been determined by test photography or other means, it can be preset on the viewfinder using the procedure described in paragraph Pr5.		NOTE: Incident light metering can be used without restrictions since it is independent of the focusing screen.

Eyepiece correction lens

(figs 13-16)

Plain numbers within brackets refer to the Parts & Component list (pages iii and 2).

The eyepiece diopter adjustment ring (3) can be replaced with a correction lens unit to adapt

to individual eyesight conditions.

Correction lens units are available for the eyepiece focusing ranges – 4.5 to – 2 diopters (**Correction Eyepiece PME –**, code no. 42453) and +0.5 to + 3 diopters (**Correction Eyepiece PME+**, code no. 42450).

Installation of the correction lens:

Fig.13

1. Remove the rubber eyecup (4).
2. Release the focusing catch (5).
3. Turn the eyepiece clockwise until it stops. The small position mark (2) is now aligned with the parting line of the viewfinder body.

Fig.14

4. Use a pointed instrument to remove the red retaining clip (1).
5. Lift the focusing ring (3) out of the eyepiece.

Fig.15

6. Place the correction lens unit over the eyepiece with the position mark against the parting line by the focusing catch (5).
7. Keep the lens unit gently pressed against the viewfinder and insert the locking clip (1) in the inner groove with its central lug aligned with the position mark (2). Push the clip entirely into the groove.

Fig.16

8. Replace the rubber eyecup (4) and turn it to focus the eyepiece. Push the catch (5) towards the eyepiece to lock it at the best focus.

Self-test

When the meter is activated in metering mode, pressing the **ISO** (7), **Fmax** (8) and **Method** (10) buttons simultaneously starts the self-test, which shows all characters and symbols in the display (fig.1 bottom, p.iii). Pressing any button while the self-test is running results in a temporary display turn-off and a short beep. The self-test is shut off by simultaneously pressing the buttons (7), (8) and (10) again.

Care, service and guarantee

Handling

Although ruggedly built and designed for long and troublefree professional use, the PME90 viewfinder is still an electro-optical instrument and should be treated with the same care as the camera itself. Protect it from rain and water splash and from dust and grit. Do not use it as a carrying handle or leave it where it can fall or roll about!

Whenever removed from the camera body the protective cover (23) should be attached to the viewfinder to protect the optical surface of the prism (21) and the retaining plate (22). Always remove the battery when the PME90 is not to be used for a longer period.

Cleaning

NEVER USE ANY KIND OF LIQUID WHEN CLEANING THE PME90!

Blow away dust and contaminations on the glass surfaces and on the exterior, or use a soft brush or a lintfree cloth. **DO NOT** touch the glass surfaces with your fingers!

Service

Faultless equipment performance is essential for the professional user. Therefore it is advisable to check the function of your equipment before an important assignment. The "Hasselblad Authorized Service Center" has the expert staff and the specialized tools necessary to ensure that your equipment remains in perfect working order.

Guarantee

Provided that you bought your equipment from an authorized Hasselblad outlet, it is covered by an international guarantee for one year. Keep the guarantee document supplied with the equipment carefully.

PME90 Technical Specifications

Viewfinder:

- Viewfinder type: 90° Prism Viewfinder with built-in exposure meter.
Viewfinder image: Unreversed, enlarged 2x.
Eyepiece: High eyepoint. Diopter adjustment -2 to +0.5 diopters.
With optional correction lenses -4.5 to -2 and +0.5 to +3 diopters.
Weight: 580 g (1lb. 1.5 oz)

Exposure meter:

- Operating modes: Metering mode;
Programming mode with 7 programmable functions.
Metering methods: Spot metering, center weighted integral metering,
incident light metering.
Metering areas: Spot meter: central Ø12 (1/2");
Integral meter: approx. 40 x 40 mm (1 9/16").
Metering ranges at ISO100: Spot metering +1 to +21 EV
Integral metering -1 to +19 EV
Incident light metering -3 to +17
Display: LCD type beneath the image area.
Operator controlled backlighting.
Battery type: 3V Lithium type CR-123A

Hasselblad TTL-Prismensucher PME 90 (42290)



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