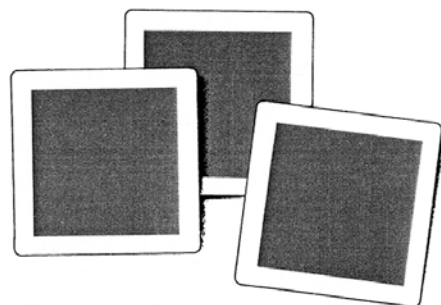
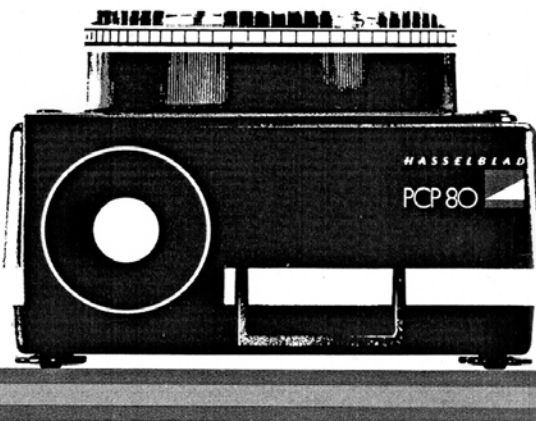


HASSELBLAD
PCP 80

Instruction Book



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HASSELBLAD

PCP 80

Automatic circuit breaker.
Page 18, figure 1.

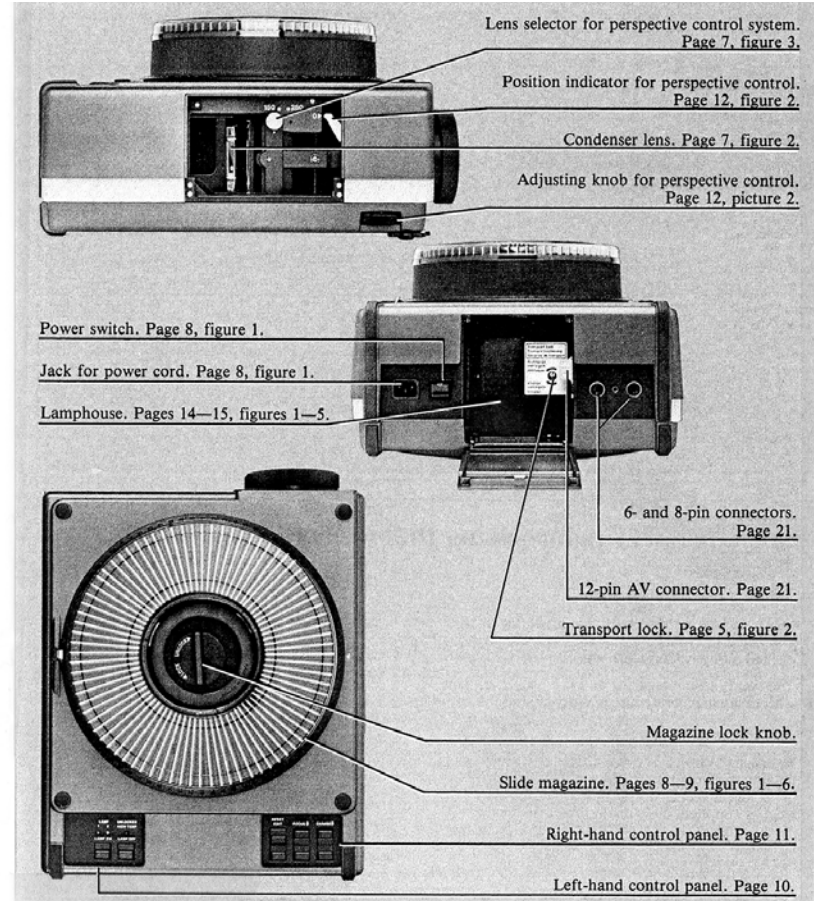
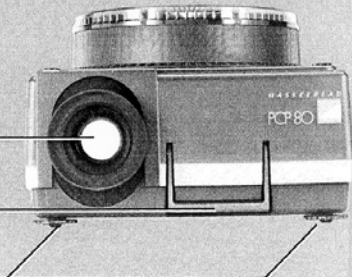
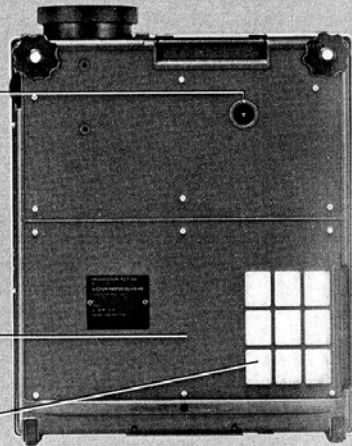
Base plate, removable for cleaning the optical system.
Page 13, figure 4.

Air filter. Page 13, figure 3.

Lens tube, projection lens. Pages 6 and 22.

Carrying handle.

Adjustable feet. Page 12, figure 1.



Introduction

The Hasselblad PCP 80 is more than just another slide projector. It is based on an entirely new concept and has been developed for pictorial artists, photographers and others with professional demands on image reproduction. The projector is therefore intended for medium-sized slides, 6 × 6 (2 1/4 × 2 1/4").

The name alone tells you that this projector is something out of the ordinary.
Hasselblad PCP 80:

Hasselblad stands for quality and continuity.

PCP stands for Perspective Control Projector. Perspective control is a unique feature of this projector, especially useful for the professionals.

80 indicates that the projector's slide magazine holds 80 slides.

The Hasselblad PCP 80 has a Zeiss lens of the same high quality as Hasselblad cameras.

The projector is designed for maximum image quality and reliability of operation, and features sophisticated mechanics and electronics of the same calibre as Hasselblad cameras.

With the accessories and control features already available and under development, the PCP 80 has a very wide range of application — from single projector showings to slide shows with a large number of projectors.

In order to get the greatest possible enjoyment and performance from your projector, we recommend that you read this booklet carefully. It provides a simple and clear picture of the projector's features, functions, standard accessories etc.

IMPORTANT before using the projector for the first time

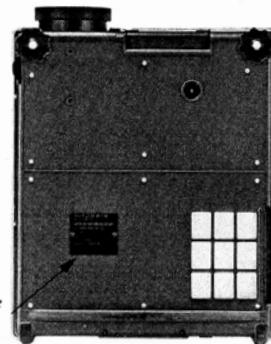
When unpacking the projector, lift it out of the box using the fold-in handle. The power cord is packed along with the projector.

The rotary slide magazine and the projection lens with condenser lens come packed separately.

For 120 V AC only

In order to ensure best possible performance and maximum illumination without shortening the lamp life, a special version of the PCP 80 for USA is supplied. This version is preset at the factory for 120V AC, 50—60 Hz and cannot be switched to any other voltage.

Figure 1. Check that you have received the correct projector version (120 V AC).



4

Release the transport lock

Vital moving parts such as the lamphouse and the condenser system are locked at delivery by a screw-type transport lock. It is released as follows (figure 2):

Fold down the rear cover (1). The transport lock (2) is now accessible through a hole in the sliding lid. Remove the screw and close the lid and the cover. Then use the transport lock screw to fix the perspective control's adjusting knob (figure 3) to its shaft. Screw in the screw firmly. Make sure that the hole in the shaft is aligned with the hole in the knob.

The transport lock has now been released and the perspective control can be used.

Storage and transport

It is a good idea to save the original carton. It may come in handy for occasionally transporting the projector. But if more frequent transport is planned, it pays to get Hasselblad's special transport case for the PCP 80 (figure 4).

The projector can, if desired, be stored and transported standing on end, since it rests on rubber strips at the back.

Make it a rule always to transport the lens separately. Due to its weight, the lens can damage the rest of the optical system if it is packed mounted in the projector.

Lock for transport!

For short, gentle journeys, for example on the seat of a car or as hand baggage, the PCP 80 does not have to be locked.

For transportations where the projector can be expected to be treated roughly, it should always be locked.

The transport lock is secured as follows:

Set the perspective control's indicator to the 0 position (page 7, figure 2). Remove the transport lock screw from the perspective control's adjusting knob (see figure 3). Open the sliding lid 10—12 mm (figure 2) and put the screw in the transport lock through the hole in the sliding lid. Tighten the screw firmly.



Figure 2. Release the transport lock by folding down the rear cover 1, and remove the screw 2.

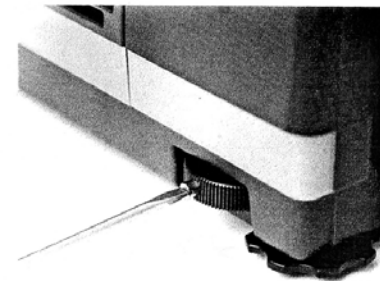


Figure 3. Move the transport lock screw over to the perspective control's adjusting knob.

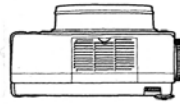


Figure 4. This special case for the Hasselblad PCP 80 is recommended for frequent transport.

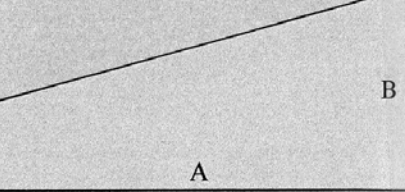
5

PROJECTION LENS

To attach the lens, insert it straight into the tube until a clear "click" is heard as it snaps into place. The snap lock fixes the projection lens in a distinct position. It may sometimes be necessary to rotate the lens slightly in order for the lock to function.



Relationship between projection distance (A) and image size (B) for projection lenses with focal lengths of 75, 150 and 250 mm



To remove the projection lens, rotate it slightly clockwise or counterclockwise.

Choice of projection lens

If the projector is to be used on different premises with different projection distances and screen sizes, several projection lenses with different focal lengths are required.

Lenses with the following focal lengths are available for the PCP 80: 75 mm, 150 mm, 250 mm.

The table can be of help in selecting a lens according to the projection distance and the size of the screen.

Projection distance Metres, A	Image size, cm, B		
	P-Distagon 75	P-Planar 150	P-Sonnar 250
1	64		
2	133	64	
3	200	99	
4	270	135	78
5	340	170	100
6	410	205	120
7	480	240	140
8	550	275	160
9		310	185
10		345	205
12		415	245
15		520	310
17		590	350
20			410
25			515

Condenser lens

The projector's optical system includes three condenser lenses, one of which is interchangeable to permit the condenser system to be adjusted to the focal length of the projection lens. The condenser lens is located behind the side cover, which is released by pressing lightly downward/outward in the semi-circular recess (figure 1).

When installing or changing the condenser lens, it is important that the perspective control's indicator (figure 2) is in the 0 position. If it isn't, adjust by means of the adjusting knob.

The condenser lens can then be removed from or inserted into the guide rails by a simple motion and fixed in the right position by means of a snap lock. The convex surface of the condenser lens shall face forward, towards the projection lens.

When the condenser lens is in place, put the side cover back on again.

How to adjust the lens selector for the perspective control

Remove the side cover by pressing downward in the semi-circular recess. Turn the knob-shaped screw (figure 3) counterclockwise until it comes loose from its threads so that the control arm can

be moved. Position 150 is for lenses with a focal length of 150 mm or less, position 250 is for lenses with a focal length of 250 mm or more.

When the correct position has been set, fix the control arm again by tightening the screw.

More about the function and adjustment of the perspective control on page 12.



Figure 1. Remove the side cover like this.

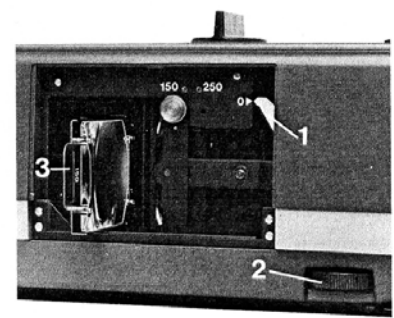


Figure 2. Set the perspective control's indicator (1) to the 0 position by means of knob (2). The condenser lens (3) can then be changed.

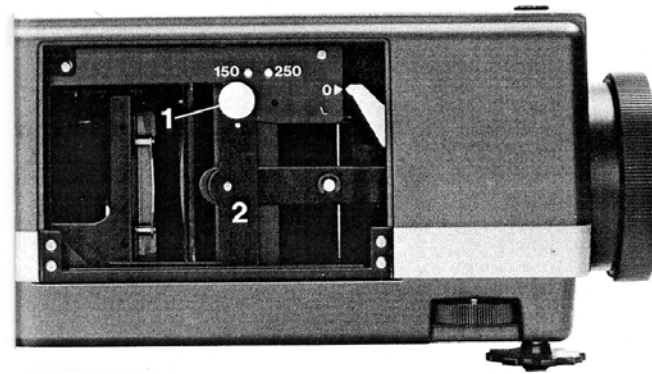


Figure 3. The lens selector is matched to the projection lens by loosening the screw (1) and moving the control arm (2) to the desired position.

READY TO START

Have all the preparations been completed?

- ✓ The transport lock has been released (p 5)
- ✓ The projection lens and condenser lens are in place (p 6–7)
- ✓ The lens selector has been adjusted to the lens (p 7)

Now it's time to start the projector:

1. Connect the projector's power cord to the projector (figure 1) and to a wall outlet.
2. Depress the power switch (figure 1). The projection lamp will then light, the cooling fan will start and the green lamp (LAMP 1) will light. The light is blocked until a slide comes down into the slide gate.

3. Check that the magazine lock is in the UNLOCK position. The slide changer arm should then be in its upper position (figure 3).

If the arm is in its lower position, it can be moved to its upper position as follows:

Turn the magazine lock to the LOCK position and depress the EDIT button (page 11). Then turn the magazine lock to UNLOCK.

Attach the slide tray so that its groove engages the

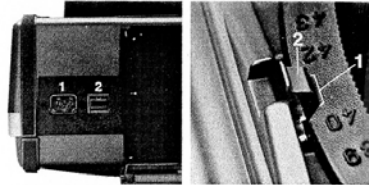


Figure 1. Jack for projector's power cord (1). Power switch (2).

Figure 2. The groove (1) in the magazine should fit against the sensor for "position 1" (2).

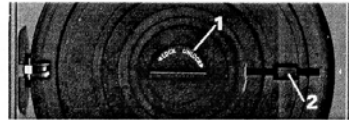


Figure 3. The magazine has a lock knob for LOCK and UNLOCK (1). Slide changer arm (2).

sensor for "position 1" (figure 2). Turn the magazine lock to LOCK.

When the power switch is turned on, the lamp UNLOCKED/HIGH TEMP (page 10) will light until the magazine has been securely locked in position.

The projector is now ready for showing.

Removing the magazine

Start the projector. Press the EDIT button. The slide changer arm will then go up to its upper position. Turn the lock to the UNLOCK position. It doesn't matter what position the magazine is in. Take off the magazine. Note that the slide changer arm must be in its upper position before the lock knob can be turned from LOCK to UNLOCK. This means that the magazine can only be taken off if all the slides are in place. Another safety feature!

Slides in safe, dustproof storage

The PCP 80 slide magazines can also be used for safe storage of slides. The tightly-fitting cover protects against dust and keeps the slides in place.

The cover can be removed by a short counter-clockwise rotation.

The Hasselblad PCP 80 is intended for slides of medium format, 6×6 ($2\frac{1}{4} \times 2\frac{1}{4}$). To put it more exactly, the slides shall be mounted in mounts as per DIN 108. Outside dimensions: $69.9 \text{ mm} \pm 0.8 \text{ mm}$. Thickness: min. 1.3 mm, max 3.5 mm.

"Invisible" 0 position

Most other circular magazines for 80 slides have a special 0 position between slide slots No. 80 and No. 1. It is common practice to put a black slide in the 0 position to keep the screen dark when changing from slide 80 over the 0 position to slide No. 1.

This transition is no problem on the PCP 80. There is a so-called "invisible" 0 position, which means that the magazine is in position 1, but the slide is in the upper position. This is the normal starting position.

If the projector has slide No. 80 down in the projection gate and CHANGE Δ is pressed for the first time, the slide is lifted and the magazine is advanced to position 1, but the slide stays in the upper position. The next time CHANGE Δ is pressed, the magazine is not advanced, but slide No. 1 is dropped into the lower position, the projection gate.

Starting in the middle of the slide magazine

Sometimes you may want to start with another slide than slide No. 1. Proceed as follows:

Make sure that the magazine lock is in the UNLOCK position. Put on or lift the magazine so its edge rests on the sensor for the position 1 (figure 4).

Turn the magazine until the desired slide is at the index (white arrow). Figure 5.

Move the sensor to the side so the magazine drops down into the operating position (figure 6). Turn the magazine to LOCK.

Start the projector. After CHANGE Δ is pressed, the desired slide will be shown.



Magazine lock knob in UNLOCK position.



Magazine lock knob in LOCK position.

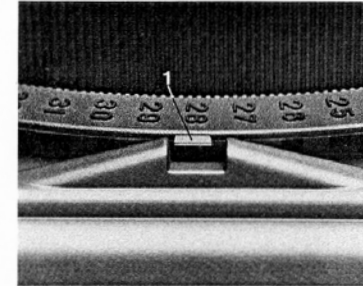


Figure 4. Lift the magazine so its edge rests on the sensor (1) for position 1.

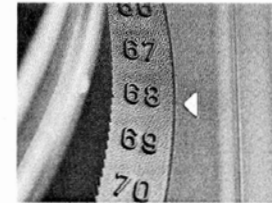


Figure 5. Turn the magazine until the desired slide is at the index (white arrow).

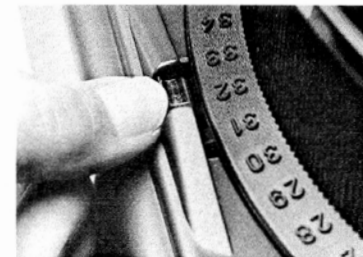
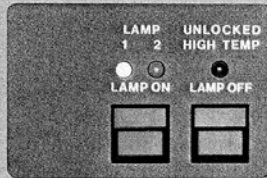
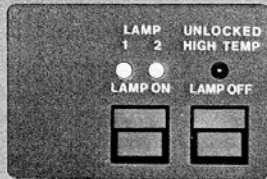


Figure 6. Move the sensor for the position 1 to the side so the magazine drops down into the operating position.

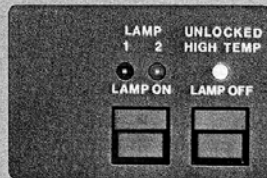


LAMP 1
Green indicating lamp lit:
The projector is ready for use.
Projection lamp No. 1 is connected and lit.



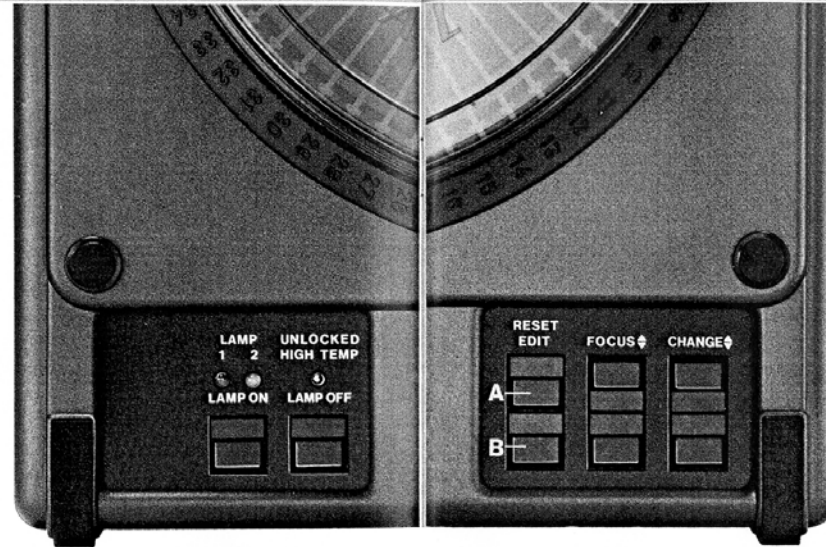
LAMP 2
Green and *yellow* indicating lamp lit:
The projector is ready for use. Projection lamp No. 2 is connected and lit.

If only the yellow indicating lamp is lit, this means that the projection lamps have been interchanged, but that lamp No. 2 is not lit.



UNLOCKED/HIGH TEMP
is a warning lamp that lights red either if the magazine lock is not securely locked or if the projector has overheated (more about this on page 18).

CONTROL PANEL



Left-hand control panel

Right-hand control panel

LAMP ON/LAMP OFF

The projection lamp is turned on with LAMP ON and turned off with LAMP OFF without the other functions of the projector being affected. The green indicator is lit or extinguished accordingly. The projection lamp lights automatically when the power switch is turned on.

If an external control system is connected, the projection lamp is under the control system's command. Note that the lamp must be turned on.

RESET

Pressing the RESET button (A) turns off the projection lamp and automatically returns the magazine to position 1, the "home" position.

The projection lamp can be turned on again with the LAMP ON button when the magazine has returned to position 1.

Note that RESET and other buttons on the right-hand control panel only work when the magazine lock is in the LOCK position.

If the RESET button has been pressed by mistake, the return can be stopped by depressing the CHANGE Δ button.

EDIT

The EDIT button (B) is used to raise a slide from the projection gate up into the magazine. Pressing CHANGE Δ returns the slide to the projection gate.

A slide that is reversed or upside down in the magazine can be corrected and returned to the projection gate without adjacent slides having to be shown.

FOCUS ∇

Focusing, which is operated electrically on the PCP 80, is controlled by means of the two buttons FOCUS Δ and FOCUS ∇.

Focusing cannot be done by manually pushing or turning the lens.

Total focusing travel is 22 mm. When the lens tube has reached its forward or rear position, a friction clutch is disengaged. A change in the sound of the motor will then be heard.

Remember to move the lens tube to its rear position by means of FOCUS ∇ before transporting the projector. For long journeys, pack the lens separately.

CHANGE ∇

Slides are changed by means of the two CHANGE buttons. Forward with CHANGE Δ, reverse with CHANGE ∇.

A brief touch on the button is enough. If the button is held down, slide changing continues until the button is released.

If you accidentally press one of the CHANGE buttons during a slide-changing sequence, slide feed will stop. Wait a few seconds and then press the desired button.

SETTING UP THE PROJECTOR

Place the projector on a firm surface

In order to ensure smooth and even slide changing, the PCP 80 should be placed on a firm surface. Remember to keep the ventilation

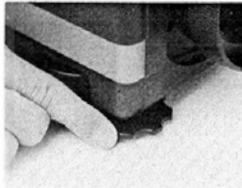


Figure 1. The slide and the screen should be parallel. Adjust the level by means of the projector's front feet.

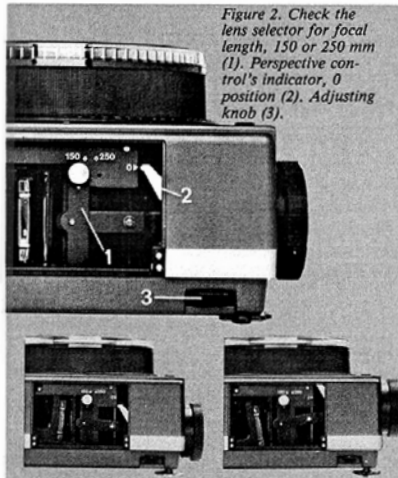


Figure 2. Check the lens selector for focal length, 150 or 250 mm (1). Perspective control's indicator, 0 position (2). Adjusting knob (3).

Turning the adjusting knob towards the lens lowers the image.
Turning the knob away from the lens raises the image.

openings clear to ensure efficient cooling. A loose sheet of paper or similar object underneath the projector can be sucked up and block the air intake.

The professional projector — with perspective control!

One of the reasons why the Hasselblad PCP 80 has received such wide acclaim is its perspective control.

Thanks to the perspective control on the PCP 80, the projector can be placed on a level that is higher or lower than the middle of the screen and still project an undistorted image. The only requirement is that the slide and the projection surface (screen) are parallel, i.e. that the projector's optical axis is perpendicular to the screen.

Adjust the perspective control as follows:

Put a slide in the projection gate (such as a Hasselblad calibration slide, order number 70520). Align the projector with the screen.

Adjust the projector's front feet (figure 1) so that the lens is as perpendicular to the screen as possible and the projector is level (figure 2). Check first that the control arm is set to the right focal length (150 or 250 mm).

When the perspective control's white indicator is in the 0 position, the projector is set for projection straight ahead.

By means of the adjusting knob, the projected image can be raised or lowered without altering the geometry of the image.

Turning the knob towards the lens lowers the projected image. Turning it away from the lens raises the image. Adjust with the perspective control until the projected image is at the right level. If the image is not quite right-angled (with parallel edges), fine-adjust with feet. If necessary, make the final adjustment with the knob.

PROPER CARE FOR OPTIMUM PERFORMANCE

The Hasselblad PCP 80 is designed for long, trouble-free operation and is virtually maintenance-free. All you have to remember is to clean the optical system and the filter every now and then.

The reward for proper care is better image quality and more reliable operation.

Changing or cleaning the filter

In order to minimize problems with dust and dirt, the PCP 80 has been equipped with forced-air ventilation. The cooling air is taken in through a filter in the projector's base plate (figure 3). The filter should be cleaned occasionally.

It is usually sufficient to take out the filter and wash it in lukewarm water. When necessary, a mild detergent can be used. Allow the filter to dry before putting it back.

If the projector is used on dusty premises, it may be necessary to clean the filter daily. It is then a good idea to have a spare filter to be used when the other filter is being cleaned and dried.

Always unplug the projector's *power cord* when cleaning or replacing parts or accessories or during any other work on the projector!

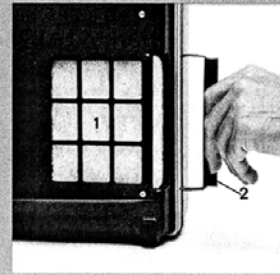


Figure 3. The filter (1), located on the bottom of the projector, is easily accessible when the cover (2) at the right-hand edge of the base plate has been pulled out.

Cleaning the optical system

The filter in the projector's air intake is an efficient dust barrier. Nevertheless, dust may collect in the optical system, on lens surfaces etc. after a long period, especially if the projector is not in use!

In order to prevent the quality of the image from deteriorating, the projection lens, condenser lens and lamphouse must be cleaned occasionally. If the front of the projection lens is heavily soiled, a special liquid lens cleaner may be used.

Other parts of the optical system are easily accessible by removing the base plate. Stand the projector on edge. Start by removing the air filter (figure 3). Then undo the six screws in the base plate and lift it off. Thoroughly clean all visible surfaces with a soft brush and an air blower (figure 4).

Then screw on the base plate and replace the air filter.



Figure 4. Stand the projector on edge. Remove the air filter and the base plate. This permits all visible parts to be cleaned using a brush and air blower.

LAMP SYSTEM WITH TWO LAMPS

The PCP 80 has a light system with one main projection lamp (LAMP 1) and a spare lamp (LAMP 2) that automatically drops down into the projection position if lamp 1 burns out. This minimizes the risk of an interruption in projection due to a defective lamp.

When the lamps have been switched in this manner, we recommend that lamp 1 be replaced as soon as possible. It is a good idea to shift lamp 2 to socket 1 and put the new lamp in socket 2 occasionally. This reduces the risk of both lamps burning out during the same showing.

Before changing the lamp, turn off the power, allow the lamphouse to cool and check that the perspective control is in the 0 position.

The lamphouse is removable and accessible by opening the rear cover. Move the sliding lid to the right (figure 1). Loosen the large screw at the top of the lamphouse (about 10 turns anti-clockwise). Grasp this screw and pull the lamphouse straight out from its guide rail. When the lamphouse is about half-way out, it comes loose from its rail and can be withdrawn freely (figure 2).

In order to render the defective lamp (lamp 1) accessible, lift up the rod (figure 3) until it hooks into place. Remove the defective lamp by pulling it straight out of its socket. Press the new lamp into place (figure 4).

If the filament image needs to be adjusted on lamp 2 (see page 16), it is easy to bring it into the operating position by depressing the catch (figure 5).

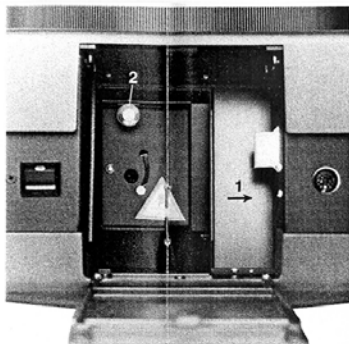


Figure 1. Open the projector's rear cover, move the sliding lid (1) to the right and loosen the screw (2).

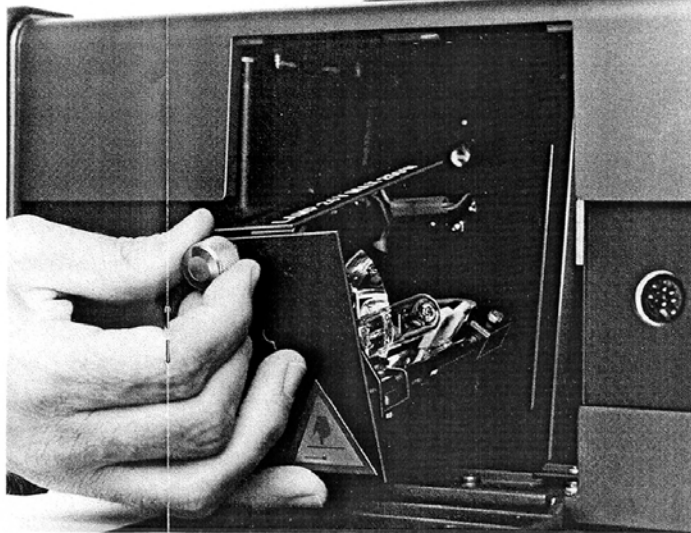


Figure 2. When the screw has been loosened, the lamphouse can be pulled straight out from the rail.

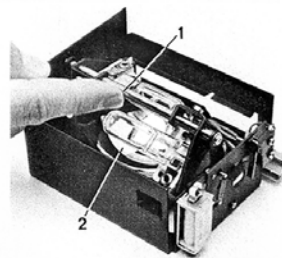


Figure 3. When the rod (1) is raised, lamp 1 is brought into position in front of the spherical mirror (2).

Don't touch the new lamp directly with your bare fingers since the slightest fingerprint will be burned onto the bulb due to its high temperature. This results in light loss. The most convenient method is to use the protective sleeve included in the lamp box to fit the lamp. But remember to remove the sleeve once the lamp has been installed and adjusted!

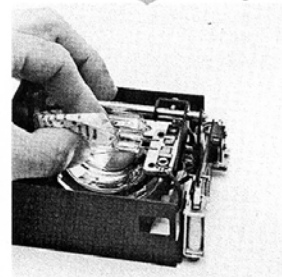


Figure 4.

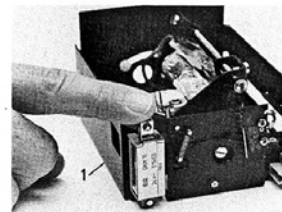
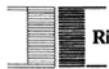
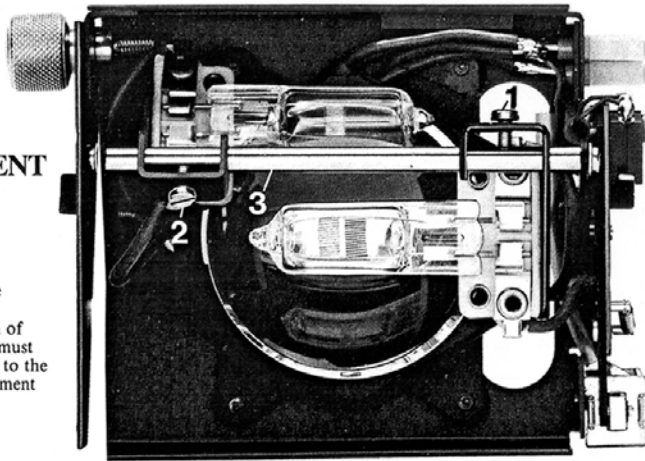


Figure 5. By depressing the catch (1), lamp 2 is brought into the working position while lamp 1 drops down.

ADJUSTING THE FILAMENT IMAGE

In order to achieve the greatest possible light efficiency, the position of the lamp in its holder must be adjusted in relation to the mirror. Adjust the filament image as shown in the figures!



Right filament image

Adjusting the filament image

Fault	Remedy
<p>A</p> <p>The lamp filament and its reflected image are laterally displaced.</p>	<p>For lamp 1: Loosen <i>screw 1</i> (figure 1) and slide the lamp fixture until the correct filament image is visible. Tighten screw 1. For lamp 2: Proceed in a similar manner (<i>screw 2</i>, figure 1).</p>
<p>B</p> <p>The reflected image is smaller than the filament.</p>	<p>For lamp 1: Loosen <i>screw 1</i> (figure 1) and turn the lamp fixture until the correct filament image is visible. Tighten screw 1. For lamp 2: Proceed in a similar manner (<i>screw 2</i>, figure 1).</p>
<p>C</p> <p>The filament and its reflected image are vertically displaced.</p>	<p>For lamp 1: Loosen <i>screw 3</i> (figure 2A) and move the bar (figure 1:3) vertically until the correct filament image is visible. Tighten screw 3. For lamp 2: Proceed in a similar manner (<i>screw 4</i>, figure 2B).</p>

Figure 1. FAULT A: For lamp 1, loosen screw 1 and slide the lamp fixture until the correct filament image is visible. Tighten the screw.

FAULT B: For lamp 1, loosen screw 1 and turn the lamp fixture until the correct filament image is visible. Tighten the screw.

For lamp 2: Proceed in a similar manner (screw 2).

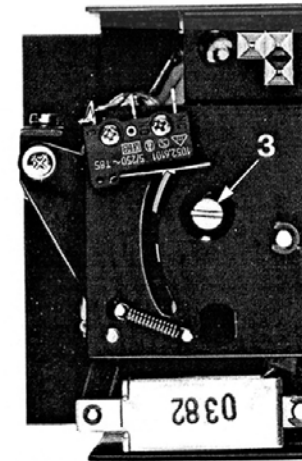


Figure 2A. FAULT C: For lamp 1, loosen screw 3 and move the bar (figure 1:3) vertically until the correct filament image is visible. Tighten the screw.

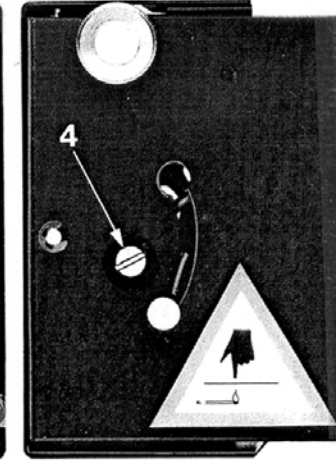
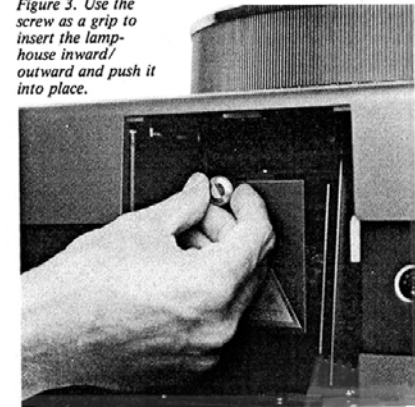


Figure 2B. FAULT C: For lamp 2, loosen screw 4 and move the bar (figure 1:3) vertically until the correct filament image is visible. Tighten the screw.

When the adjustment is finished, put the lamphouse back into the projector — with lamp 1 in the projection position. Use the screw (figure 3) as a grip and insert the lamphouse inward and upward so that it hooks onto the guide rail. Make sure that the lamphouse is fully inserted and tighten the screw (about 10 turns clockwise). Close the sliding lid completely and put the rear cover in place. For the best cooling, it is important that the sliding lid be completely closed.

Figure 3. Use the screw as a grip to insert the lamphouse inward/outward and push it into place.



SAFETY SYSTEMS FOR MORE SECURE OPERATION

The Hasselblad PCP 80 has a number of safety systems. These systems protect the different parts of the projector from damage in the event of faults during operation.

In case the *transformer* should be overloaded due to a short circuit in the projection lamps, it is protected by a special circuit breaker (figure 1). The breaker can be reset manually.

The temperature in the projector is monitored by a thermostat which automatically turns off the lamp when the temperature becomes too high.

The *electronic control circuitry* is protected by a separate protection system.

Possible fault situations

Important rule: Always turn off the power and pull out the power cord before working on the projector.

1. The projector stops with the tray lock engaged

If the projector stops with the slide changer arm in the lower position and the magazine lock engaged, e.g. due to a power failure, proceed as follows (figure 2):

Open the side cover and lift up the slide changer arm using a pencil or similar object. Keep the arm raised while turning the magazine lock to the UNLOCK position.

2. The projection lamp is lit — but there is no image or a weak one

Lamp switch may have taken place despite the fact that lamp 1 is still intact. Open the covers on the lamphouse and return lamp 1 to the projection position. Do this by moving the metal tongue to the upper position (figure 3).

3. The projection lamp doesn't light

Pilot lamp UNLOCKED/HIGH TEMP lit. Other controls work.

If the automatic thermostat trips due to overheating, the projection lamp is turned off and HIGH TEMP is lit.

The lamp can, however, be kept lit for a short while, in order to finish a program and show a few slides. This is done by keeping the LAMP ON button depressed (override function). Figure 4.

Bear in mind the risk of the slides' overheating. Make sure that the fan motor is running and the ventilation openings are clear. When the projector has cooled, turn the projection lamp on with LAMP ON.

4. The projection lamp goes out without the lamp being switched

No signal from the pilot lamps. Controls work.

If the projection lamp should draw too much current for any reason, the circuit breaker will

trip. The breaker is located on the bottom of the projector (figure 1).

Remove the lamphouse and check that the lamps are of the specified type. Reset the breaker by pressing it in again after it has cooled for a few minutes.

If there is a short circuit (the breaker trips again), the lamp must be changed or removed. If lamp 1 is removed, lamp 2 will automatically be switched in.

5. No controls work, only the fan motor is running

The electronic control circuitry's protection system has cut off the power supply. Call in a specialist.

6. Only the lamp and fan motor work

The electronic control circuitry's protection system has cut off the power supply. Call in a specialist.

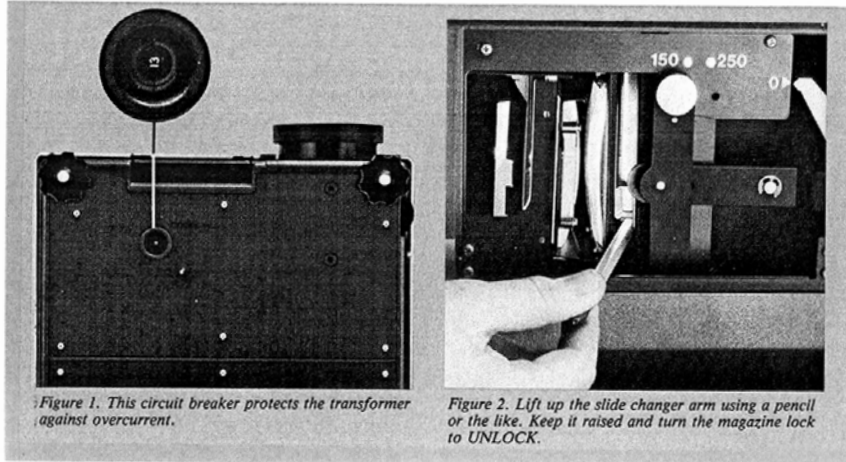


Figure 1. This circuit breaker protects the transformer against overcurrent.

Figure 2. Lift up the slide changer arm using a pencil or the like. Keep it raised and turn the magazine lock to UNLOCK.

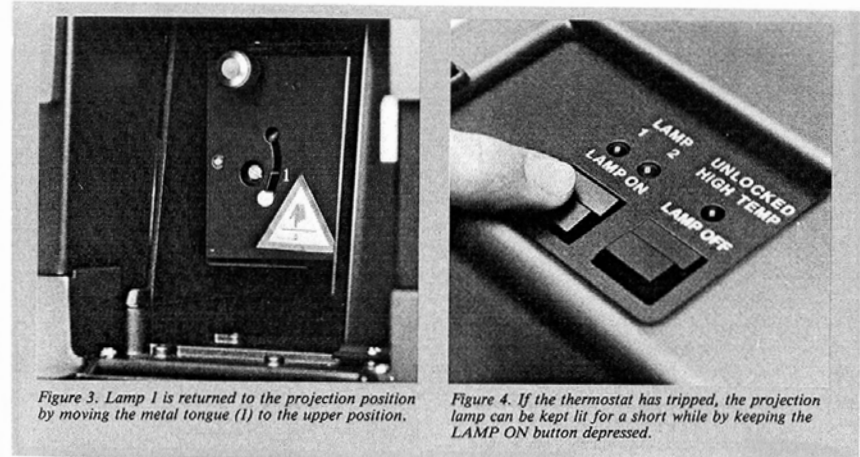


Figure 3. Lamp 1 is returned to the projection position by moving the metal tongue (1) to the upper position.

Figure 4. If the thermostat has tripped, the projection lamp can be kept lit for a short while by keeping the LAMP ON button depressed.

TECHNICAL DATA

Dimensions and weight

Projector housing without lens and slide magazine:

Length	432 mm
Width	362 mm
Height	204 mm
Weight	14 kg

Perspective control

By means of the adjusting knob (page 12, figure 2), the projected image can be raised and lowered without distorting the perspective. How much the image can be moved depends on the type of lens.

Slide changing

Vertical gravity-feed slide changing. Slide changing cycle: about 1.5 s (with full magazine and lamp lit). When operating, the projector should not be inclined more than $\pm 15^\circ$ from the horizontal.

Electrical system

The projector is made to operate on 120 V AC, 50–60 Hz.

Power consumption about 350 W.
E-type safety transformer.

3 electric motors: Fan, 110 V AC. Slide changing, 12 V DC. Focusing 12 V DC.

Automatic circuit breaker for transformer.

Built-in electronic control circuitry (TRIAC circuits) for regulation of lamp output via external control system.

Remote control via 6- and 8-pin connector or 12-pin AV connector (Kodak type).

Cooling system

The fan is a silent-running centrifugal fan. The cooling system is a forced-air (hyperbaric) system where the cooling air is taken in through a filter

and forced out by the fan into the cooling channels.

The filter is easily accessible and the cotton can be cleaned in water or washed in a dishwasher.

An overheating protection cuts off the current to the projection lamp if the fan jams.

Connectors

The PCP 80 has several connectors for different remote-control options (see figure 1). There is a 6-pin connector for simple remote control cables.

There is an 8-pin connector for complete remote control and dissolve.

There is a 12-pin connector inside the rear cover for remote control with external TRIAC.

Special panels with built-in connectors for different existing control systems are available as accessories. These connectors enable the PCP 80 to be adapted to a variety of different control accessories.

For specification of the signals on the pins in the different connectors, see at right.

If control equipment is connected, the starting procedure may be slightly different from that described above.

Illumination system

Two 24 V 250 W halogen lamps (DIN 49820, base 6, 35–15), of which one in reserve.

If lamp No. 1 fails, lamp No. 2 is automatically switched in. Because the lamphouse is removable,

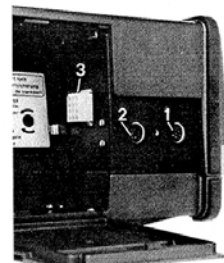


Figure 1. 6-pin connector (1), 8-pin connector (2) and 12-pin connector (3).

the position of the lamps in relation to the lamp reflector can be accurately adjusted.

The lamp reflector is a cold-light concave mirror. The light is diverted 90° via a planar cold-light mirror.

The condenser system consists of 1 aspheric and 2 planoconvex lenses. One planoconvex lens is chosen according to the focal length of the projection lens and is therefore included with the lens on delivery as a matched pair.

J12

Type: Molex 1360



- | | |
|---|--|
| 1. 0V AC | 8. CHANGE FWD
Connect to J12.10 for 200–300 ms. |
| 2. NC | 9. CHANGE REV
Connect to J12.10 for 200–300 ms. |
| 3. External light control with TRIAC.
Connect the TRIAC's other terminal to J12.4. | 10. +24V DC. Fullwave rectified, unfiltered.
Total load for 24V AC and +24V DC max. 750mA. |
| 4. 24V AC.
Total load for 24V AC and +24V DC max. 750mA. | 11, 12. HOME FB
Short circuit between J12.11 and J12.12 when magazine not in home position. |
| 5. 0V DC | |
| 6. NC | |
| 7. NC | |

J13

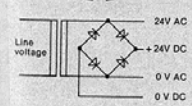
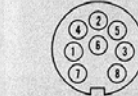
Type: DIN 45322



- | | |
|--|---------------------------------|
| 1. CHANGE REV
Connect to J13.3 for 200–300 ms. | 4. FOCUS IN. Connect to J13-3. |
| 2. CHANGE FWD
Connect to J13.3 for 200–300 ms. | 5. FOCUS OUT. Connect to J13.3. |
| 3. +24V DC. Fullwave rectified, unfiltered. Total load for 24V AC and +24V DC max. 750 mA. | 6. 0V DC. |

J14

Type: Hirschmann Mab 8 S



- | | |
|--|---|
| 1. 24V AC. Total load for 24V AC and +24V DC max. 750 mA. | Light intensity controlled by delay of positive pulse flank relative to line voltage's zero crossing. Negative pulse flank shall coincide with line voltage's zero crossing.
High pulse level: +4.6–7.0 V relative to 0V DC.
Low pulse level: 0 — +0.1 V relative to 0V DC. |
| 2. LAMP INDICATOR
LAMP 1 in use 0V DC (high impedance)
LAMP 2 in use: +4.0–5.5V relative to 0V DC (220 Ω impedance) | |
| 3, 6. HOME FB
Short circuit between J14.3 and J14.6 when magazine not in home position. | 7. LAMP ON/OFF CONTROL
Lamp on: pulse 0 — +0.8 V relative to 0V DC, 100–500 ms.
Lamp off: pulse +11–20 V relative to 0V DC, 100–500 ms.
Left open in absence of control pulse. |
| 4. RESET. Connect to J13.3 for 200–300 ms. | 8. 0V AC |
| 5. LIGHT CONTROL. Control of projection lamp's light intensity with pulse synchronized to line voltage. | |

The manufacturer reserves the right to alter technical specifications.

ACCESSORIES



1. Rotary slide magazine

Specially designed circular tray for 80 slides 7 x 7 cm as per DIN 108.
Diameter 300 mm. Height 90 mm. Weight 0.9 kg.
Order number 70303.

2. Projection lenses

Zeis P-Distagon 3.5/75 mm with condenser lens. Order number 70214.
Zeis P-Planar 3.5/150 mm with condenser lens. Order number 70205.
Zeis P-Sonnar 4/250 mm with condenser lens. Order number 70210.

Projection lens with focal length 400 mm is under development.

3. Registration slide mounts

Hasselblad slide mounts with locating pins for exact image positioning, for example in the production of multivision programs. Order number 70511.

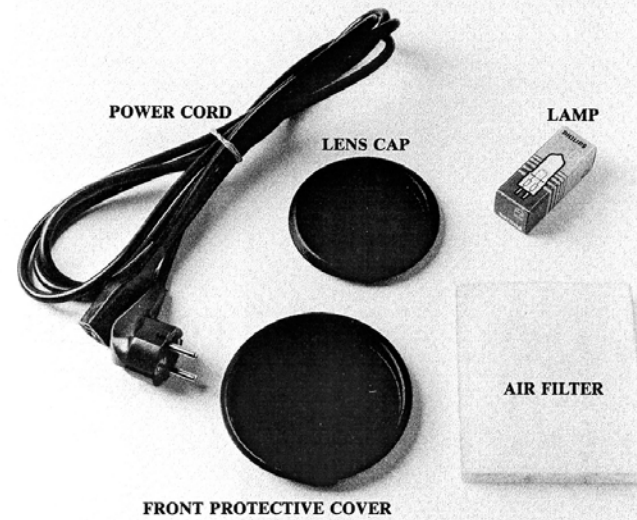
4. Calibration slide

Order number 70520.

5. Rack

Projector rack for multiple projector set-up. Order number: basic unit for two projectors 70517, suppl. unit for an additional projector 70518.

SPARE PARTS



6. Case

Transport case for PCP 80. Order number 70535.

7. Remote control

Cable-connected control for slide changing forward, reverse and focusing. Cable length about 4 m. Order number 70507.

8. Rear panel

12-pin AV connector for connection of certain control systems to the Hasselblad PCP 80. Substituted for existing panel on rear of projector. Order number: 70523.
12-pin AV connector/Adapter AA for connection of

certain control systems that cannot be directly connected via 70523. Substituted for existing panel on rear of projector. Order number: 70524.

7-pin AV connector/Adapter AA for connection of certain control systems with American-type connectors. Order number: 70525.

For multivision programs or dissolve between two projectors, the PCP 80 can be controlled by several different control systems.

New accessories are continuously being developed for the PCP 80. Ask your Hasselblad dealer for more information on control systems and other accessories.



**FOR BEST
PROJECTION RESULTS....!**

Some fundamental advice

1. Get the projector ready well in advance.
2. Run through all the slides and make sure that they are arranged in the right sequence, that none is upside-down etc.
3. Place the projector on a firm surface so that the slides won't shake during slide changing.
4. Check the focus in advance, using e.g. Hasselblad's calibration slide. If there is room, leave it in the slide magazine's position 80.
5. The screen should be smooth and of good quality in order to do the pictures justice.
6. Darken the room as much as possible.
7. Test to make sure that the audience does not foul the projection beam. Position the projector high.
8. Even though the PCP 80 has a system with two projection lamps, it is wise to have at least one spare lamp in readiness.

More hints and aids

- Bring an extension cord for the power supply.
- Speakers should be positioned as close to the screen as possible. Make sure that no one is blocking the sound.
- Don't use numbered labels or the like on the slide mounts — they can get stuck in the slide shaft. Write the number of the slide directly on the mount.
- If you use extension cables, it is a good idea to have masking-type tape to hold down the cables to prevent anyone from tripping.
- Always put on the lens cap after the show.

Finally — good luck with your Hasselblad PCP 80!