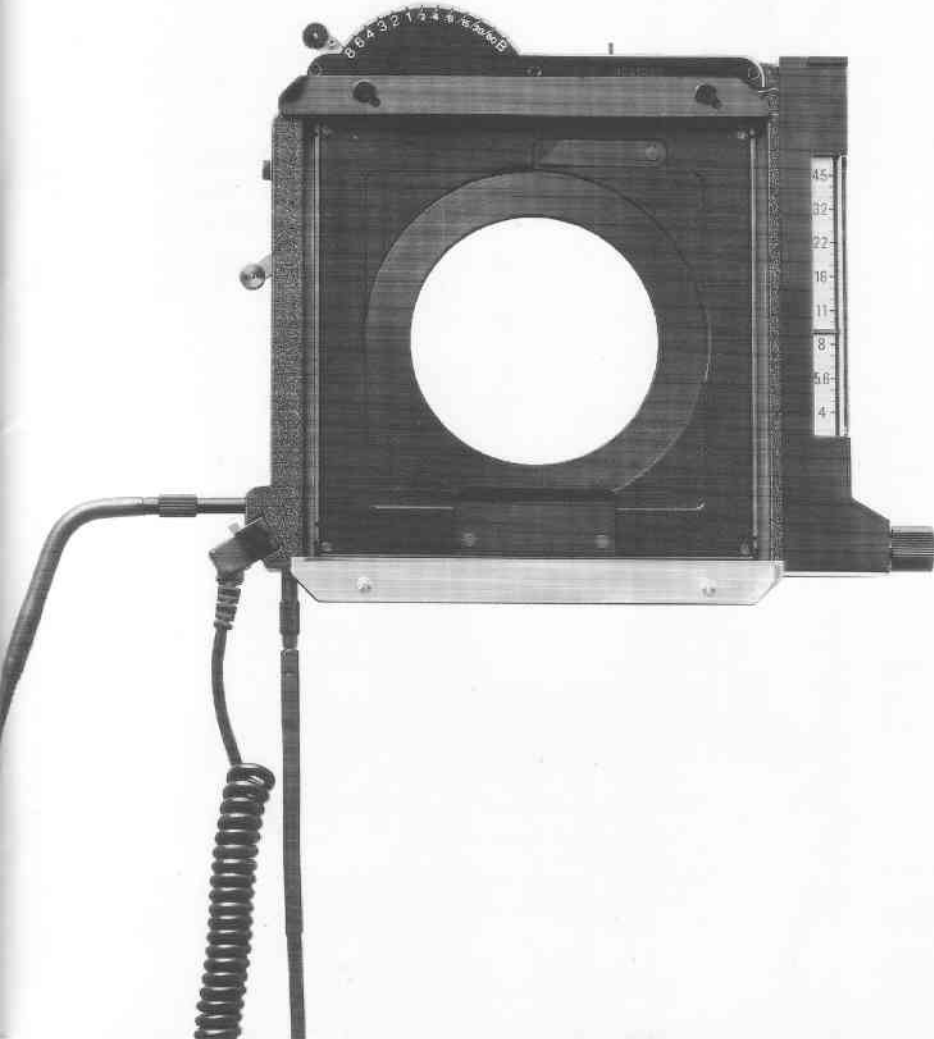


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**Sinar Autoaperture Shutter**

## Instruction Manual



## 1. Before you start ...

### Introduction

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We congratulate you on your purchase of your Sinar Autoaperture Shutter and we appreciate your confidence in our products. We are convinced that the Sinar Autoaperture Shutter will add significant convenience to your work. Its robust and precise construction will bring you long and trouble-free operation.

The Sinar Autoaperture Shutter is a mechanically controlled, self-cocking behind-the-lens shutter with an automatic spring-loaded diaphragm that can be used with all Sinaron lenses as well as many other lenses currently on the market.

Before you use your Sinar Autoaperture Shutter for the first time, please read this Instruction Manual carefully. It will help you to use the shutter correctly, thus avoiding difficulties that might arise from improper use.

If you have any comments or recommendations regarding your Sinar Autoaperture Shutter or this Instruction Manual, please do not hesitate to send us your opinions in writing.

We sincerely wish you much satisfaction in working with the Sinar Autoaperture Shutter and gratifying success with your photographs.

### For those in a hurry

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If you are in a big rush, at the very least read the *Abbreviated Instructions* on Page 4. But in order to use the Sinar Autoaperture Shutter to your best advantage, we do recommend that sometime later you read the full operating instructions all the way through.

**Before you begin, please open this fold-out page of the operating instructions!**

## Operating Components

1 Shutter-open indicator

### Front View

2 Aperture Selection Knob

3 Orientation Dot

4 Shutter Speed Selection Lever

5 Locking Lever (red)

6 Closure Index

7 Closing Lever (red)

8 Aperture Coupler

9 Cable Release

10 Flash Contact

11 Flash Cord

12 Automatic Interlock

### Rear View

4 Shutter Speed Selection Lever

5 Locking Lever (red)

6 Closure Index

7 Closing Lever (red)

9 Cable Release

10 Flash Contact

11 Flash Synchro Lead Adapter

12 Automatic Interlock Cable

1 Shutter-open indicator

13 Locking Latch

14 Swiveling Spring

15 Aperture Scale

2 Aperture Selection Knob

17 Recess for Filter Holder

16 Retaining Spring

18 Recess for Filter

## Abbreviated Instructions

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These Abbreviated Instructions are designed to give you an overview of the use of the Sinar Autoaperture Shutter. Detailed information is provided in Chapter 4, *Operating the Shutter*, starting on page 17.



The Sinar Autoaperture Shutter requires lenses in auto-aperture mounts (DB or DBM) or in conventional mounts (NF). Lenses with between-the-lens shutters can only be used with limitations. In this case, the automatic functions can not be guaranteed. Furthermore, there is the risk of damaging the shutter blades. The use of such lenses is at your own risk!

1. When the shutter blades are closed, open the shutter by pressing the locking lever (5) (Shutter-open Indicator (1) becomes visible).
2. Attach the shutter to the back of the lens standard and lock it. Make sure that the flash connection is on the left side when seen from the focusing screen.
3. Attach the bellows to the back of the shutter. Check that the latches for the lens standard, the shutter and the bellows are all properly locked in.
4. Screw the cable release (9) into its receptacle on the shutter. The shutter can only be operated with the cable release.
5. Connect the Automatic Interlock Cable (12) between the Sinar Autoaperture Shutter and the measuring back or the focusing back.
6. Attach lenses with spring-loaded diaphragms (DB or DBM) to the lens standard in such a way that the red dot on the lens mounting board lines up with the red orientation dot on the shutter.
7. To use the focusing screen with lenses that are not equipped with spring-loaded diaphragms, open the shutter and the diaphragm at the lens.
8. Set the desired shutter speed with the shutter speed selection lever (4).
9. With lenses that are equipped with spring-loaded diaphragms, set the desired f-stop with the aperture se-

lection knob (2). With f-stops smaller than  $f/45$  (on DBM lenses) and with lenses that are not equipped with autoaperture mounts, set the desired f-stop directly at the lens.



**Warning:** Manual setting of DBM lenses disables their automatic aperture control. In such cases the aperture has to be opened or closed directly at the lens.

10. Close the shutter by operating the closing lever (7) or by inserting a film holder (when the Automatic Interlock Cable is being used). (The shutter open indicator (1) is no longer visible).
11. Withdraw the dark slide from the film holder.
12. Release the Sinar Autoaperture Shutter by pressing the button on the cable release. In doing so, first sense the pressure point and then push the button all the way to release the shutter.
13. Re-insert the dark slide into the film holder.
14. Remove the film holder from the camera.
15. When lenses without spring-loaded diaphragms are being used, open the shutter and the aperture at the lens. When you use the Automatic Interlock Cable (12), the shutter opens automatically when the film holder is removed.

## Long exposure times

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When the shutter speed selection lever is set at “B”, the shutter remains open as long as the button on the cable release is depressed.

For long exposures, turn the locking ring at the release button to the left (counterclockwise) until it pops up. Now the release button will be locked automatically once it is depressed.

To close the shutter, depress the locking ring.



The Sinar Autoaperture Shutter should be stored or transported only when the shutter is open (shutter open indicator (1) visible) and with the shutter speed selection lever (4) set at 8 seconds.

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## About this Publication

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### Purpose of these Instructions

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These operating instructions constitute a comprehensive description of the Sinar Autoaperture Shutter. They contain all the information you need for the correct use of the shutter and for its trouble-free operation.

The arrangement of these instructions and the identification of symbols used in these instructions are covered in the paragraphs that follow. We recommend that you open the first fold-out page of this instruction manual. That keeps the illustrations of all the operating components mentioned in the instructions in view at all times.

The specifications contained in these instructions may be changed without advance notice.

### Document Identification and Copyright

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This Instruction Manual can be ordered from SINAR AG or from its local distributor under the number 02.0502.

This Instruction Manual is subject to copyright. All rights are protected.

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### Warranty

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SINAR guarantees for the quality of the material and the function of the Sinar Autoaperture Shutter for two years beginning with the date of the invoice.

Further liability for subsequent damages (e.g. loss of production of the photographer, etc.) is not admitted.

Warranty expires if alterations or repairs are performed at the shutter by non-authorized persons. Repairs must only be performed by SINAR or its local agencies.

## **Arrangement of these Instructions**

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These instructions contain basic information for users with little experience in using the Sinar Autoaperture Shutter, and detailed specifications for experienced users of this shutter.

For clearer understanding, the instructions have been grouped into several chapters:

### **Safety Rules**

Recommendations you should heed for your own personal safety, for trouble-free operation and for preventing damage to the product.

### **Product Description**

General Information about the product, its features and applications, as well as product range and accessories.

### **Using the Sinar Autoaperture Shutter**

Here you can read how to attach the shutter to the camera and how to use it to your best advantage.

### **Care and Maintenance**

This chapter contains information about the care and the required maintenance of your Sinar Autoaperture Shutter.

### **Technical Data**

Here you can find all the technical specifications, dimensions and weights, as well as the surrounding conditions that have to be observed for trouble-free operation.

### **Appendix**

A glossary contains brief explanations of the most important technical terms that appear in these instructions, and a list of key words helps you to find a particular subject very quickly.



## Identification of Symbols

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To make these instructions easy to understand, certain styles and forms of writing are used to indicate special meanings:

*Italicized text* indicates a *chapter* or a specific *paragraph* of these instructions.

“**Text printed in bold letters**” and with quotation marks denotes terms that are imprinted on the shutter.

Numbers in parenthesis (12) refer to operating components illustrated on fold-out page 3.

Particularly important recommendations are highlighted by means of a symbol to the left of the text. These symbols have the following meanings:



### **Important**

Useful recommendations for the use of the shutter and other important information.



### **Caution**

Warning against manipulations or uses that may lead to product damage or personal injury.



### **Pointer**

Tips and tricks That facilitate work or that lead to greater productivity.



### **Do not touch!**

Parts marked with this symbol must not be touched with fingers or with other items.



### **Protect from moisture!**

Parts marked with this symbol must not be exposed to humidity or to water.

## 2. Safety Rules

### **In this Chapter ...**

---

In this chapter you find information about preventing damage to your Sinar Autoaperture Shutter and about preventing your film from being fogged.

### **Fundamentals**

---

These operating instructions should be studied thoroughly to ensure correct and economically efficient use of your Sinar Autoaperture Shutter. We must decline any responsibility for damages caused by improper use of the shutter.

Unauthorized disassembly or modification of the shutter voids all its guarantees. Conversions and modifications of a Sinar Autoaperture Shutter may only be performed by authorized Sinar repair facilities. Addresses of such authorized repair stations can be obtained from the SINAR distributor in your country.

The Sinar Autoaperture Shutter may only be used for its designated purpose on Sinar large format cameras.

### **Protection from Fogging**

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In very bright light conditions it is advisable not to change lenses when the dark slide is drawn, even if the shutter is closed. As a general rule, the film holder should not remain open for more than 5 minutes under such light conditions.

## When working, always keep the following in mind:

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- To keep the mechanism free of strain, store or transport the shutter with its blades open and with the shutter speed selection lever set at 8 seconds.
- Never touch the shutter blades. Deformed shutter blades cause malfunctions.
- **Never** lubricate the shutter blades. The shutter blades must be absolutely dry for proper functioning.
- To release the shutter by pressing the button on the cable release, first press that button gently until you reach the pressure point, then continue to press it **slowly and all the way**.
- Protect the shutter against dust and dirt.
- When making multiple exposures, always allow an interval of at least 4 seconds between individual exposures, otherwise the shutter may operate inaccurately or even fail to operate properly at all.

## Special Notices

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To prevent vibrations and bouncing of the aperture mechanism beyond the selected setting, the release must not be operated abruptly.

It is recommended to feel for the pressure point first and then to release the shutter gently.

Do not forcibly turn the Aperture Selection Knob (2) beyond its limit values. In time, this can lead to damage of the aperture mechanism.

The Sinar Autoaperture Shutter must not come in contact with water or with any chemicals. Special care should be taken in the darkroom to prevent any chemical splashes from reaching the shutter.

## 3. Product Description

### **In this Chapter ...**

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This chapter describes the basic features of the Sinar Autoaperture Shutter, the applications for which it was designed, its limitations of use, product components and available accessories.

### **Overview**

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The Sinar Autoaperture Shutter is a mechanically controlled, self-cocking behind-the-lens shutter with spring-loaded diaphragm that is especially suited for use with Sinaron and many other lenses in mounts with spring-loaded diaphragms.

This shutter conforms to DIN Standard 19015 with regard to shutter speeds and to DIN Standard 4522 with regard to aperture settings.

The serial number of the shutter can be found at the top right (when seen from behind). The last two digits indicate the year of manufacture.

### **Automatic Functions**

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#### **Self-cocking mechanism**

The Sinar Autoaperture Shutter is self-cocking. Every time the release button is pressed all the way, the shutter is first cocked and then released.

#### **Spring-loaded aperture mechanism**

When lenses with autoaperture mounts (DB and DBM) are used, the aperture automatically closes down to the pre-selected value when the release button is pressed.

#### **Shutter closing mechanism**

When the Automatic Interlock Cable (12) is used, the shutter closes automatically when a film holder is inserted

into the camera back. The shutter opens again when the film holder is removed.

## Shutter Speeds

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The Sinar Autoaperture Shutter has shutter speed settings ranging from  $\frac{1}{60}$  sec to 8 sec plus B.

## Aperture Range

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All aperture stops on the Sinar Autoaperture Shutter can be pre-selected in stepless settings between f/4 and f/45. When lenses in mounts with spring-loaded diaphragms (DB and DBM) are used, the aperture automatically closes down to the pre-selected value when the shutter is released.

Aperture stops smaller than f/45 can be set manually (without automatic coupling) with lenses in a DBM autoaperture mount.

## Applications

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The Sinar Autoaperture Shutter was designed to be compatible with every model of the Sinar camera. All lenses in Sinar autoaperture mounts (DB, DBM) and in standard mounts (NF) can be used with this shutter.

Lenses with built-in between-the-lens shutters mounted on plain lens boards have limited applications and can only be used at your own risk. Such applications incur the danger of damage to the shutter blades. Automatic functions (such as automatic aperture control) is no longer assured in such cases. Correct performance can best be expected with original Sinaron lenses.

## Limitations

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- The Sinar Autoaperture Shutter can be used without limitations on lenses with focal lengths ranging from 65 mm to 480 mm with virtually no exceptions.

Only lenses with a large angle of view of more than  $100^\circ$ , with focal lengths between 150 mm and 210 mm can not be used with the Sinar Autoaperture Shutter. With between-the-lens shutters, these lenses have to be set manually, and with the Sinar Expolux Shutter, they are controlled automatically.

- Lenses with focal lengths shorter than 65 mm can not be used with this shutter. Sinaron lenses are marked accordingly.
- Lenses with focal lengths greater than 480 mm require a standard mount (NF) or a special assembly. Contact your Sinar distributor about the particulars in such cases.

The shutter mechanism can be used with lenses in standard mounts (NF). The automatic aperture-setting mechanism will not be operative. The aperture stop has to be set manually by using the aperture ring on the lens.
- For shutter speeds faster than  $1/60$  sec and when the automatic aperture control is used in conjunction with aperture stops smaller than  $f/45$ , we recommend the use of the Sinar Expolux Shutter (up to  $1/500$  sec and aperture stop  $f/128$ ).

## Product Components

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The Sinar Autoaperture Shutter is supplied complete with a Cable Release (521.61), Flash Synchro Lead Adapter (522.11.005), Automatic Interlock Cable (521.51), Bayonet Piece (521.91), and Filter Holder 100 mm (547.41).

## Accessories

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- |            |   |
|------------|---|
| 521.51     | Automatic Interlock Cable.<br>As a replacement or as an extension for bellows extensions greater than 75 cm (30")   |
| 521.81     | Coupling Piece for 521.51.<br>For joining two Automatic Interlock Cables for long bellows extensions.   |
| 521.91     | Bayonet Piece for 521.51.<br>As a replacement or for use when more than one rear standard is used.  |
| 521.61     | Cable Release with locking disc.<br>Length: 70 cm (28").  |
| 547.41     | Filter Holder 100 mm.<br>For attachment to the rear of the shutter.<br>Accepts up to 3 filters of the 100 mm size.  |
| 522.11.005 | Flash Synchro Lead Adapter.<br>For connecting commercially available flash synchronization cables.  |
| 521.51.010 | Y-Synchro Cable.<br>For the simultaneous connection of the exposure meter and the flash generator to the Sinar Autoaperture Shutter.<br>Makes it unnecessary to transfer the connections. |

## 4. Operating the Shutter

### In this Chapter ...

In this chapter you learn when to use your Sinar Autoaperture Shutter with lenses in autoaperture mounts (DB and DBM) and how to operate it correctly.

The first paragraphs contain information about attaching the shutter to the camera, about the correct installation of the lens and also about the attachment and adjustment of the Automatic Interlock Cable. Careful preparations are important for safe and efficient work.

You also learn everything you need to know for setting the aperture stop and the shutter speed, and we conclude with special applications such as multiple exposures, the use of filters, and the proper use of the various modes of the autoaperture feature.



When you fold out the first page of this instruction manual, all the operating elements and their numbers are clearly visible at a glance.

### Attaching the Shutter to the Camera

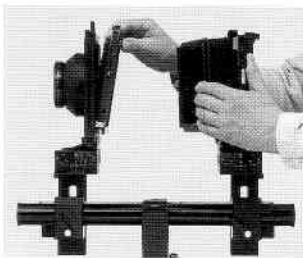


Figure 1

The Sinar Autoaperture Shutter is attached to the rear side of the lens standard between the standard and the bellows.

To accomplish this, increase the distance between the lens standard and the rear standard and detach the bellows from the lens standard. Then hold the bellows back with one hand and attach the shutter to the rear side of the lens standard with the other hand (Figure 1). When you install the shutter, the SINAR logo on the shutter speed scale should face forward.



The shutter is positioned correctly when the shutter speed scale is at the upper left as seen from the back of the camera. If attempts are made to install the shutter in a twisted position, the latch on the lens standard cannot be closed.



Now connect the bellows to the back of the shutter and lock it in place with the locking latch (13).

If you have not already done so, attach the lens to the lens standard and lock it in place. When using lenses with autoaperture mounts (DB and DBM), make sure that the red dot on the lens board is lined up with the red orientation dot (3) on the shutter.



The shutter should normally be open and set at a shutter speed of 8 seconds. This releases the tension on the shutter springs and prevents damage to the shutter blades. If the shutter is closed, it can be opened at any time by pressing the locking lever (5).

Attach the cable release (9) to the threaded socket provided for this purpose on the left side of the shutter (as seen from the back of the camera). The shutter can only be operated by means of this cable release!

## Attaching the Automatic Interlock Cable

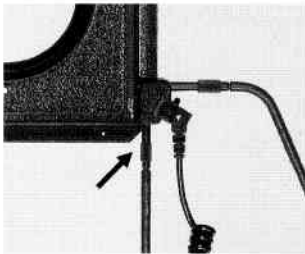


Figure 2

The Automatic Interlock Cable connects the Sinar Autoaperture Shutter with the film holder frame (Figure 5) for the purpose of automatically closing the shutter when a film holder is inserted into the frame.

Before attaching the Automatic Interlock Cable, be sure to open the shutter by pressing the locking lever (5).

Then screw the threaded end of the Automatic Interlock Cable into the socket provided for this purpose at the bottom of the shutter (Figure 2).

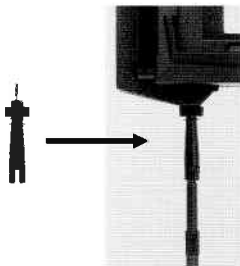


Fig. 3

Fig. 4

Now screw the bayonet piece (Figure 3) lightly into the opening provided for this purpose on the film holder frame (1 or 2 turns) and insert the free end of the Automatic Interlock Cable into the bayonet piece (Figure 4).

In order to function correctly, the length of the Automatic Interlock Cable has to be adjusted.

But before doing so, a film holder must first be inserted all the way into the film holder frame on the rear standard.



Figure 5



Temporarily disconnect the Automatic Interlock Cable and then screw the bayonet piece in far enough so that the closing lever (7) lines up with the lower line of the closure index (6) when the Automatic Interlock Cable is reconnected.

When the setting is correct, lock the bayonet piece in place with the locking screw. The closing mechanism is now ready to operate.

If the shutter does not close completely when a film holder is inserted, the Automatic Interlock Cable has been shortened too much. If the shutter remains closed when the film holder is removed, the Automatic Interlock Cable is too long. In either case, the adjustment has to be repeated as described above.

With the Automatic Interlock Cable in place and a film holder in the frame, the shutter can not be opened with the closing lever (5). In this case, it can only be opened by removing the film holder.

With bellows extensions of more than 75 cm (30"), the Automatic Interlock Cable has to be lengthened by adding a second Automatic Interlock Cable by means of a Coupling Piece (521.81).



To avoid having to re-adjust the Automatic Interlock Cable for a different rear standard when the format is changed, each rear standard can be equipped with its own bayonet piece. In that case, the Automatic Interlock Cable is detached from the bayonet piece when the rear standard is being changed.

## Viewing the Focusing Screen

To view the focusing screen, open the shutter by pressing the locking lever (5). When the Automatic Interlock Cable is in place, the shutter opens automatically when the film holder is removed from the rear standard.

On lenses with spring-loaded diaphragms, the aperture is always open when the shutter is in the open position. To view the image on the focusing screen when a lens without a spring-loaded diaphragm is being used, the aperture has to be opened manually at the lens.

## Shutter Open Indicator

When the shutter is open, a red stud (1) is visible on the top of the shutter housing. In a dark studio, this stud can also be felt by touching.

## How to avoid Vignetting

You can eliminate the risk of vignetting by using the following procedure:

- Complete all the camera adjustments, attach the bellows lens hood and stop the aperture down to the working aperture.
- Adjust the bellows lens hood standard to be parallel to the film plane.
- Look at the stopped-down lens through the four cut-out corners of the focusing screen (Figure 6).

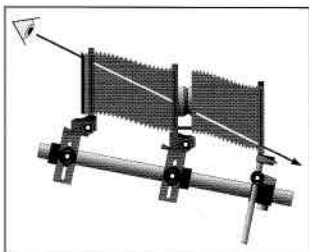


Figure 6

Possible situations:

**Not all 5 (or 7, respectively) blade tips of the aperture diaphragm can be seen:**

- ⇒ Because of camera adjustments, the film is not positioned within the image circle.  
Remedy: Correct the camera adjustments.

**All 5 (or 7, respectively) of the blade tips of the aperture diaphragm are visible, but the bellows lens hood is not visible:**

- ⇒ The film is positioned within the image circle.
- ⇒ The bellows lens hood is too short at best.  
Remedy: Extend the bellows lens hood until it just becomes visible and then retract it a little.

**All 5 (or 7, respectively) of the blade tips of the aperture diaphragm and the bellows lens hood are visible:**

- ⇒ The bellows lens hood is too long or mounted incorrectly.  
Remedy: Mount the bellows lens hood to be coaxial with the image axis; adjust the bellows lens hood standard to be parallel to the film plane; shorten the bellows lens hood until it is barely no longer visible.

## Setting the Shutter Speed

---

The shutter speed can be set at any time by using the Shutter Speed Selection Lever (4). It does not make any difference whether the shutter is open or closed.

Shutter speeds can be set between 8 seconds and  $\frac{1}{60}$  sec, plus B, with click stops for full steps.

For shutter speeds faster than  $\frac{1}{60}$  sec (up to  $\frac{1}{500}$  sec), please note the capabilities of the Sinar Expolux Shutter.

If a correct exposure cannot be achieved in spite of the smallest aperture stop setting and  $\frac{1}{60}$  sec, the brightness can be reduced by one stop with the use of a Sinar Neutral Density Filter 3 ND (547.92.030), by two stops with a Sinar Neutral Density Filter 6 ND (547.92.060), and by three stops with a Sinar Neutral Density Filter 9 ND (547.92.090). Smaller increments are possible by means of Sinar Neutral Density Filters with densities that reduce brightness by  $\frac{1}{3}$  and  $\frac{2}{3}$  aperture stops. The Neutral Density Filters can be attached to the back of the Sinar Autoaperture Shutter. (see the chapter on *The Use of Filters* on Page 26.)



## Releasing the shutter when it is set at "B"

---

When the shutter speed selection lever (4) is set at "B", the shutter remains open as long as the button on the cable release is depressed.

The release of the shutter at "B" is deliberately very soft in order to achieve a completely silent and vibration-free shutter action when the camera is set up in a vibration-prone position.

When the flash synchronizing cable is connected and the shutter is set at "B", a flash is fired when the cable release is depressed, even when the lens is stopped down to the working aperture stop. The flash contact remains connected as long as the cable release is depressed. This may lead to the flash being fired repeatedly by the power packs when a radio-controlled remote release is being used.

In that event, deactivate the radio-controlled remote release, make the exposure and fire the flash manually during the exposure.



## T-Exposures

---

The T-setting is intended for long exposures. Unlike the B-setting, the button on the cable release does not have to be depressed for the entire duration of the exposure.

For T-exposures, the shutter speed selection lever (4) is set at "B", and the locking disc on the release button of the cable release is loosened by turning it counterclockwise.

When the release button is depressed, it will remain depressed until that locking disc is pushed down to let it spring back.

To deactivate the T-setting, the locking disc has to be pushed down and locked in the down position by turning it clockwise.

## Setting the Aperture Stop

---

The automatic stopping down of the aperture with aperture presetting at the lens works only on lenses in auto-aperture mounts DB and DBM.

The aperture stop is set by means of the aperture selection knob (2) on the right side of the shutter housing. It makes no difference whether the shutter is open or closed. The preset aperture stop can easily be read at any time on the large aperture scale (15).

When an aperture is selected that is greater than the maximum aperture of the lens, the exposure will be made at the largest possible aperture.

On lenses without spring-loaded aperture mounts, the aperture has to be set manually at the lens in the conventional manner.



Do not force the aperture selection knob (2) beyond the maximum or minimum values on the aperture scale (15). In time, that could result in damage of the mechanism. Do not shift the position of the aperture scale (15)!

## Aperture stops smaller than f/45



Figure 7

Certain subjects require an aperture stopped down to a value smaller than f/45. Because of standards specifications, the automatic stopping down feature only works up to f/45. Nevertheless, smaller apertures can be used with the DBM autoaperture mount (Figure 7).

To select apertures smaller than f/45, press the transfer button (see arrow) on the ring on the autoaperture mount and then turn that ring counterclockwise by at least one click stop. The aperture can now be set manually in the conventional way in click steps of  $\frac{1}{3}$  aperture stops.



When the autoaperture mount DBM is used, the automatic aperture-setting feature will not be functional!

## Stopping down temporarily

It is possible to stop the aperture down temporarily in order to check the depth of field, the image circle or possible vignetting by the bellows lens hood.

To do so, press the button on the cable release all the way with the shutter open or set at "B". The iris diaphragm will then close down to the f-stop selected with the aperture selection knob (2).

If you press the cable release button too vigorously, parts of the iris diaphragm blades will become visible in the light path, but this will not affect the exposure. When that happens, gently reduce the pressure on the button.

When you remove the pressure from the cable release button completely, the iris diaphragm will reopen to its full aperture.

If the pressure on the cable release button is not removed quickly enough, it may happen that the iris diaphragm blades will close by a few millimeters and not return all the way to the fully open position. This occurrence is normal and does not indicate a malfunction of the shutter. When this happens, it can easily be corrected by briefly closing and opening the shutter.

On lenses in autoaperture mounts (DB and DBM), the aperture has to be stopped down to the desired value and reopened manually at the lens.

## **Releasing the Shutter/Making the Exposure**

To make the exposure, insert the film holder in the frame on the rear standard. When the Automatic Interlock Cable is used, the Sinar Autoaperture Shutter will close automatically.

Then remove the darkslide from the film holder, gently depress the cable release button until you sense the pressure point (for automatic stopping down of the aperture) and then continue to depress the cable release button uniformly to release the shutter. The stopping down of the aperture to the preselected value takes place automatically during this procedure (when an autoaperture mount DB or DBM is used).

Re-insert the dark slide in the film holder and remove the film holder from the frame. The iris diaphragm and the shutter will then reopen automatically.

If needed, reopen the shutter for viewing the focusing screen by pressing the locking lever (5).

On lenses without autoaperture mounts, the iris diaphragm has to be closed down manually to the desired value at the lens before the dark slide is removed from the film holder. Conversely, after the exposure has been made and the dark slide has been placed back in the film holder, the iris diaphragm has to be opened manually.

The Sinar Autoaperture Shutter can only be operated with the cable release that is supplied with it.

To prevent vibrations (double contours) and shutter blades bouncing beyond the selected value (underexposure), the cable release button has to be depressed slowly and uniformly.



## Multiple Exposures

In order to make multiple exposures, the shutter can be released several times in succession. It is also possible to change both the aperture stop as well as the shutter speed between individual exposures.



When multiple exposures are made, it is important to wait at least 4 seconds between individual exposures. Repeated fast releases of the shutter in too rapid a succession may cause an inaccurate exposure or even damage the shutter!

## Flash Contact



Figure 8

Flash units are connected to the flash contact (10) on the Sinar Autoaperture Shutter by means of the Flash Synchro Lead Adapter (522.11.005) (Figure 8).

The Flash Synchro Lead Adapter improves the electrical connection between the shutter and the flash cord and it also serves to relieve the strain on the flash contact.

The Sinar Autoaperture Shutter is equipped with an interlock that prevents the flash from being fired while the focusing screen is being viewed. This interlock ensures that the flash is fired only when the cable release is operated, and not when the shutter is opened manually (by pressing the locking lever 5).

Synchronization of electronic flash is provided for all shutter speeds ( $1/60$  sec to 8 sec and B).

When low power electronic flash units are used, there are certain situations when these flashes have to be fired several times in succession. This technique is particularly easy and convenient to perform with the self-cocking Sinar Autoaperture Shutter.

The otherwise ever present danger of double contours can be disregarded because the camera does not have to be touched for cocking the shutter.





## The Use of Filters



Figure 9

The Sinar Autoaperture Shutter makes it possible to use filters behind the lens. The advantage of that arrangement is a smaller filter diameter, less danger of mechanical damage and better optical performance (no degradation by stray light).

The Sinar Autoaperture Shutter is supplied with a filter holder that accepts up to three Sinar filters of the 100 mm size (Figure 9).

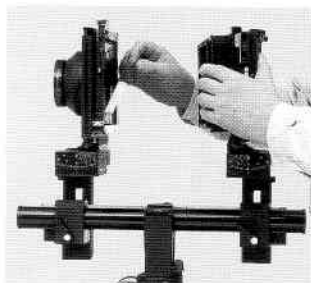


Figure 10

After detaching the front of the bellows, the filter holder is placed in the round filter recess (17) on the back side of the Sinar Autoaperture Shutter. Insert the filter holder under the lower retaining spring (16) and then lock it in place with the upper swiveling spring (14).

The older, round 103 mm diameter Sinar glass filters can also be inserted in that filter recess.

There is also an additional square recess (18) that can accommodate a single 100 mm Sinar filter (without the filter holder) or a gelatin filter (Figure 10).



When filters are to be used behind the Shutter, focusing **must** be performed with the filters **in place**, otherwise there will be a shift in the depth of sharpness.

## Automatic Aperture Control

The great advantage of the automatic aperture setting linkage can only be utilized with lenses that are mounted in Sinar Autoaperture Mounts. These mounts are now standard on Sinaron lenses.

The majority of Sinaron lenses that are not in autoaperture mounts and lenses from other manufacturers can be retro-fitted with spring-loaded diaphragms by the user.

The following conversion kits are required for this purpose:

**DB Autoaperture Conversion Kit:**

For practically all Sinaron lenses as well as many lenses from other manufacturers.

**DBM Autoaperture Conversion Kit:**

For Sinaron lenses and lenses from other manufacturers with minimum apertures smaller than f/45.

**DBS Autoaperture Conversion Kit:**

Can only be used in conjunction with a Sinar Expolux Shutter.



Specifications for correct autoaperture mounts for the various lenses can be found in the Sinar General Catalog.

Practically every lens for large format photography with a focal length greater than 150 mm can be ordered in a DBM Autoaperture Mount at an additional cost.



The conversion to DB Autoaperture Mounts of lenses with between-the-lens shutters and with focal lengths shorter than 90 mm can only be performed at the Sinar factory.

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## Wide-Angle Photographs

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When the angle of view of a lens with a short focal length (shorter than 90 mm for the 4 × 5" format) is fully utilized, uniform exposure is achieved when the following steps are taken:

- Exposure time  $\frac{1}{15}$  sec or longer.
- Lens stopped down to at least f/16.
- Appropriate concentric gradient filters for the respective focal lengths. (Different filters are required for each focal length.)

These three precautions reduce the vignetting of the corners of the images that is typical for lenses with short focal lengths.

## 5. Care and Maintenance

### In this Chapter ...

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In this chapter you can read what cleaning and maintenance care is needed to keep your Sinar Autoaperture Shutter ready for use at all times.

### General Recommendations

---

The Sinar Autoaperture Shutter usually requires little maintenance. Such maintenance is limited to simple cleaning care.

Under no circumstances should you disassemble the Sinar Autoaperture Shutter. The interior of the shutter contains no parts that you could service yourself. In case of malfunctions, the shutter should be sent to your respective SINAR distributor for repair.



The following precautions when storing your Sinar Autoaperture Shutter will ensure that the shutter speeds will remain stable over long periods of time.

- Open the shutter (by pressing locking lever 5).
- Set the shutter speed selection lever (4) at 8 seconds.



Do not lubricate the shutter blades under any circumstances! The shutter blades must remain absolutely dry to operate properly.

### Care of the Sinar Autoaperture Shutter

---

It is sufficient just to clean the exterior of the Sinar Autoaperture Shutter occasionally. To remove dust or dirt we recommend the use of a soft brush (such as a lens brush).



To prevent damage to the shutter blades, it is essential that the shutter be open during cleaning procedures!

In no case should solvents such as alcohol, benzine, etc. be used for cleaning the shutter!



The shutter blades must be protected from humidity! During outdoor use, the shutter should be protected from the weather, especially rain and humidity.

## 6. Technical Data

### **Sinar Autoaperture Shutter** (Catalog Number 521.31)

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Mechanical, self-cocking behind-the-lens shutter with automatic spring-loaded diaphragm mechanism for lenses with autoaperture mounts (DB and DBM) and for standard mounts (NF).

**Shutter Type:** Central shutter with four blades.

**Shutter Speeds:**  $1/60$  sec to 8 sec and B.

**Preset Aperture Stops:** f/4 to f/45.

**Shutter Release:** Cable release with locking disc.

**Automatic Closure:**

The shutter is closed and opened automatically when the film holder is inserted and removed from the frame, respectively (when the automatic interlock cable is in place).

**Automatic Aperture Control:**

The iris diaphragm is closed and opened automatically to the value preset on the shutter (on lenses in DB or DBM autoaperture mounts).

**Longevity:** At least 50,000 cycles.

**Dimensions:**

Width: 210 mm (8 $1/4$ " )

Height: 190 mm (7 $1/2$ " )

Depth: 23 mm (7/8" )

**Weight:** 680 g (1 $1/2$  Lb.), without accessories.

## 7. Appendix

### Glossary

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#### **Aperture Stop**

Effective aperture of the lens, which limits the bundle of light rays traveling through the lens. The larger the aperture, the smaller the  $\rightarrow f\text{-stop number}$ .

#### **Autoaperture Mount**

Special lens mount for Sinar cameras that permits the automatic transfer of the  $\rightarrow aperture\ stop$  that has been preset on the Sinar Autoaperture Shutter or on the Sinar Expolux Shutter to the lens itself ( $\rightarrow automatic\ aperture\ control$ ).

#### **Automatic Aperture Control**

On large format cameras the aperture stop as a rule has to be set manually to the required value before the exposure and opened again later on. With automatic aperture control this sequence takes place automatically, relieving the photographer of routine manipulations and ensuring correct procedure.

#### **Automatic Closure**

On large format cameras, the shutter as a rule has to be closed by hand before the dark slide is withdrawn and opened again later on. Automatic closure performs this step automatically when the film holder is inserted in its frame on the rear standard.

#### **Behind-the-Lens Shutter**

A shutter that is positioned behind the lens. Advantages: Only one shutter is required for a quantity of lenses; identical shutter speeds with every lens. Disadvantage: Vignetting may occur with very short focal lengths (less than 65 mm) ( $\rightarrow between\text{-}the\ lens\ shutter$ ).

#### **Between-the-Lens Shutter**

A shutter that is positioned between the elements of a lens. Advantage: cost-effective design. Disadvantage:

Every lens requires its own shutter; uncertainties result from the different tolerances of the individual shutters. (→*behind-the-lens shutter*).

## **B-Exposures**

B-exposures permit manually controlled long exposure times in the range of seconds. When the shutter is set at B, it remains open as long as the release button is depressed.

## **Flash Synchronization**

Today's standard X-synchronization for electronic flash fires the flash immediately before the shutter reaches its maximum opening. This permits perfect synchronization with central shutters, even with the fastest shutter speeds.

## **f-stop Number**

Ratio of focal length to effective aperture diameter (→*aperture*). The larger the f-stop number, the smaller the aperture, the larger the f-stop number.

## **Maximum Aperture**

Largest possible →*aperture* of a lens. Also often referred to, not entirely correctly, as "speed".

## **T-Exposures**

Similar to →*B-exposures*, except that the release button does not have to be depressed during the entire length of the exposure. Therefore, T-exposures are particularly suited for very long exposure times in the range of minutes and hours.

## **Vignetting**

Shading of the rays at the outer edge of the bundle of rays that forms the image. Vignetting can be caused by mechanical components of the camera (such as too long a bellows hood), by the positioning of the standards, and by the positioning of the shutter outside the principal plane of the lens. (→*behind-the-lens shutter*).

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