

Why SINAR shutters perrit closer shooting



View camera lenses should in no way restrict camera movements – and must be rapidly interchangeable.

A simple way of achieving this is to install the shutter directly in the lens, but this solution has various drawbacks. The photographer normally observes the focusing screen from behind the camera; he then has to return to the front of the camera to adjust the aperture and shutter speed or to tension the shutter. If he has also mounted a bellows hood to keep out stray light, he has to remove the hood every time he wants to read the settings. This procedure is inefficient and often leads to mistakes in precise exposure settings.

The SINAR behind-lens shutters allow simple aperture and speed adjustments: from behind the camera. You set these as on a modern small camera. You no longer need to go back and forth: you stay behind the screen and adjust the shutter with the convenient aperture and speed controls. The selected settings are instantly visible on large scales or illuminated display. If you use lenses in spring-loaded auto-aperture mounts, you can preset the aperture so that the iris automatically stops down before the shutter opens.

You don't even have to worry over tensioning the shutter – this is automatic.

In addition: SINAR behind-lens shutters close automatically when a film holder is inserted and re-open again as soon as the film holder is removed. The SINAR behind-lens shutters locate simply between the lens standard and bellows. Even with the shutter in place, the camera remains fully usable with wide-angle lenses down to 65 mm.

As the lens standard remains the same with all lenses and all film sizes, one single shutter takes care of all exposure problems. This is very important because most mechanical shutters are subject to tolerances at all settings. If every shot is exposed with the same shutter, a given time setting really remains the same with all lenses and at all apertures.

Obviously, you can also use lenses without auto-diaphragm in the SINAR shutter. In that case you set the aperture manually on the lens or on the SINAR B diaphragm control. Linking the shutter and film holder/screen

Linking the shutter and film holder/screen frame with an automatic cable further improves shooting readiness. Pushing in the film holder automatically closes the shutter and iris. As you operate the release, the shutter opens for the set exposure time. Then the shutter is tensioned for the next exposure. Immediately after removing the film holder the shutter and aperture fully open again for a brilliant screen image. The SINAR shutters incorporate filter holders that fully protect filters against du scratches. Nor can filters positioned at the ar

The SINAR behind-lens shutters take all lenses of rear lens diameter up to 80 mm.

All main professional lenses are available with spring-loaded auto-aperture control.

With the SINAR behind-lens shutter, the precision of the exposure is independent of the working aperture set on the lens.

SINAR offers two alternative behind-lens shutters:





The DIGITAL shutter

The SINAR DIGITAL shutter is a microproc controlled rotary blade shutter with coatively few moving parts. Therefore, it features consistent precision and is much more durable than conventional mechanical shutters. Unlike usual leaf shutters, the rotary blade system ensures absolutely even exposure from the centre to the corners of the image.

concentration







The automatic speed range of the shutter extends from 1/500 to 80 seconds. And you need no stop watch at the B setting: for long exposure times the shutter counts the number of seconds it has been open and shows this on its large LED display.

With SINAR auto-aperture lenses the shutter is fully automatic from f/4 to f/45, but you can also set smaller apertures manually on the lens.

Large convenient control wheels set the exposure time and apertures in V_3 stop intervals. The display shows the selected settings.

Apart from indicating apertures and shutter speeds, the logical display avoids setting errors.

Further, a code indicates wrong operation and breakdowns. A double exposure lock setting prevents inadvertent double exposures. It may be disconnected for multiple exposures. The automatic shutter system warns the photographer against using flash at too short times or against presetting a larger lens aperture than available on the lens.

Flash synchronisation can be triggered at the beginning or end of the exposure period.

The shutter is powered by a rechargeable accumulator suspended from the camera rail without interfering with camera adjustments.

A fully charged accumulator can trigger the shutter up to 500 times, depending on the number of control operations made. When the accumulator capacity is down to some 20 exposures, a warning LED begins to blink in the display.

The SINAR DIGITAL shutter has a multi-pole outlet for modules that can take over important exposure metering and control functions. These modules are described in the SINAR "Exposure meters" prospectus.

The SINAR/COPAL shutter

The SINAR/COPAL auto-aperture shutter is a mechanical leaf shutter operating with the same auto-aperture system as the DIGITAL shutter. It takes the same lenses. The auto-aperture system operates from f/5.6 to f/45. Smaller apertures may be set manually on the lens. A knob on the shutter permits stepless aper-

A knob on the shutter permits stepless aperture adjustment. The shutter covers exposure times from 1/60 to

8 seconds and B. It is X-synchronised at all settings.

A large scale gives an instant view of the preset exposure time.

The peripheral modules available for the DIGITAL shutter cannot be used on the SINAR/ COPAL shutter.







There are more that 200 lenses from 47 to



Type B diaphragm control

The first way of controlling the aperture from behind the focusing screen was the B diaphragm control with a flexible aperture setting scale. The selected value can be read from behind the camera or from the front. Lens boards may be mounted in the camera in different orientations turned through 90 or 180° to locate the aperture control at the top, bottom, left or right for any required camera set-up. Lenses with a B diaphragm control can be used with a SINAR behind-lens shutter. But the aperture control can equally be fitted to a lens with built-in between-lens shutter – and at any later time.

The plain lens board

The plain lens board is matched to the required lens. The board carries a barrel for highprecision fitting and enables each lens to be used in combination with a behind-lens shutter.

Focusing mount with Prontor Press shutter

Lenses for the SINAR handy have a focusing mount with metric and feet scale to focus the lens. Focusing mounts come on a circular panel and are available for 47, 65, 75, 90, 100 and 120 mm lenses with built-in self-tensioning Prontor Press shutters. These lenses adapt to either the plain or the shift-lensboard. Every lens supplied by SINAR in a focusing mount has a precisely calibrated distance scale.



The auto-aperture control

To make the most of the automatic operation scope of SINAR behind-lens shutters, the lenses should be equipped with auto-aperture control. SINAR can supply auto-aperture mounts to order where the auto-aperture control can be disengaged for manual aperture settings.

Many current lenses can be converted subsequently to the auto-aperture system.



















Different lens types

When working with an adjustable camera, such as the SINAR, you often displace the image frame away from the centre of the image circle. When utilising the lens standard for sharpness distribution control, the lens axis also moves away from the image centre. Hence, a view camera needs lenses with the largest possible angle of field, i.e. the usable image circle must be appreciably larger than the film format used. Broadly, view camera lenses can be divided into three groups:

Extreme-angle lenses

These are special wide-angle lenses which at the working aperture cover a useful angle of 100 to 105° and thus permit maximum displacement even with short focal lengths. Their virtually symmetrical design eliminates all distortions.

Applications: Architecture, industrial photography, pictures with deliberately enhanced perspective, photography in confined spaces.

Lenses of 100° angle (6-element systems) Schneider Super-Angulon f/8 65 to 210 mm Rodenstock Grandagon f/6.8 75 to 155 mm

Lenses of 105° angle (8-element systems) Schneider Super-Angulon f/5.6 47 to 90 mm Rodenstock Grandagon f/4.5 65 to 90 mm Nikkor-SW f/4.5 75 and 90 mm Nikkor-SW f/8 90 mm

Lenses of normal angle

These lenses cover an angle of around 70° with optimum correction for medium and larger subject distances. They are semi-symmetrical modern Gauss-type derivatives. Applications: Universal use.

 Lenses of 56-73° angle
 (6-element systems)

 Schneider Symmar-S
 f/5.6
 100 to 300 mm

 f/6.8
 360 mm

 f/9.4
 480 mm

 f/9.4
 480 mm

 f/6.8
 360 mm

 f/6.8
 360 mm

 f/5.6
 100 to 300 mm

 f/6.8
 360 mm

 f/6.8
 360 mm

 f/6.8
 360 mm

 f/6.8
 300 mm

Reduced-angle lenses

These lenses of 50° angle are four-element fully symmetrical apochromats, offering extremely high chromatic correction and freedom from distortion. They yield optimum performance at nearer distances.

Applications: Copying; product shots with focal lengths above 300 mm.

Lenses of 50° angle (4-element systems) Rodenstock Apo-Ronar f/9 1.50 to 800 mm f/14 1000 and 1200 mm Nikkor-M f/10 450 mm

Lenses of 55° angle (4-element systems) Nikkor-M f/9 300 mm

The Imagon

The Imagon soft-focus system involves lenses of deliberately undercorrected spherical aberration. Various perforated stops allow the photographer to control the resulting soft focus effect at will.











Lenses type		focal length in mm	shutter	with auto-	with between lens shutter											
			size 2)	control	Con mec	n pur hanical			Copal mechanical				Prontor-Press for SINAR handy			
				DB M	plain board		aperture control		plain board		aperture control		Focusing mount			
							В				в					
	Nikkor-SW 105° 1:4,5 1:8 Nikkor-W 70-73°	75	0	4)						DB 4)		DB 4)				
		90	0	4)						DB 4)		DB 4)				
NIKON		90	0		<u> </u>					DB		DB				
		135	0		 				L	DB		DB				
	1:5,6	150	0							DB		DB				
		210	1	-	-					DB		DB				
		240	3	-						DB		DB				
	1:6.3	300	3							DB M)		DB M)				
	Nikkor-M -	300	1	M)	1					DB M)		DB M)				
	$^{1:9}_{1:10} \sim 55^{\circ}$	450	3	■ M)						DB M)		DB M)				
	Grandagon	65	0		Δ		Δ		Δ		Δ					
	MC 105°	75	0	4)	•	DB 4) 8)	٠	DB 4) 8)	٠	DB 4) 8)	٠	DB 4) 8)				
	1:4,5	90	1	4)	•	DB 4) 8)	•	DB 4) 8)	•	DB 4) 8)	•	DB 4) 8)				
	Grandagon MC	75	0			DB 8)	•	DB 8)	•	DB 8)	•	DB 8)				
	102-104°	115	1	-	•	DB 8)	•	DB 8)	•	DB 8)	•	DB 8)				
RODENSTOCK	1.0,0	155	1		Δ	/	Δ	,	Δ		Δ	,				
	Sironar-N	100	0		•	DB	٠	DB	•	DB	٠	DB				
	MC 64-72°	135	0		•	DB	•	DB	•	DB	٠	DB				
	1 : 5,6	150	0		•	DB	•	DB	•	DB	•	DB				
		210	1			DB	•	DB		DB		DB				
		240	3		•	DB	•	DB	•	DB	•	DB				
		300	3	M)	٠	DB M)	٠	DB M)	٠	DB M)	٠	DB M)				
	1 : 6,8 Apo Ronar 9) 40-48°	360	3	M)	•	DB M)	٠	DB M)	•	DB M)	•	DB M)				
		150	0		•	DB	•	DB	•	DB	•	DB				
	1:9	300	1	M)		DB M)	•	DB M)		DB M)		DB M)				
		360	3	M)	•	DB M)	•	DB M)	•	DB M)	•	DB M)				
	1:11	420	3	M)	٠	DB M)	٠	DB M)	•	DB M)	•	DB M)				
		480	3	■ M) 3)					•	DB M) 3)	٠	DB M) 3)				
		600		▲ NF	-						_					
	CL 1 · 14	1000														
	CL 1:14	1200		▲ NF												
	Imagon ~ 40°	200	3	• NF	•				٠							
	H 5,8	250	3	NF	•				•							
	H 6,8	300	3	● NF	-				•							
CHNEIDER	Super 1) Angulon	47	0		Δ						.		Δ			
	MC 1)	75	0					סח		סט		סח				
	1:5,6 1)	90	0			DB	•	DB	•	DB	•	DB				
	Super 1)	65	0			DB 8)		DB 8)	-	DB 8)		DB 8)				
	Angulon 1)	90	0	•	•	DB	٠	DB	٠	DB	•	DB	Δ			
	1:8 1)	120	0	■ M)	٠	DB M)	٠	DB M)	•	DB M)	٠	DB M)				
		165	3	M)	Δ	DB M) 8)	Δ	DB M) 8)	Δ	DB M) 8)	Δ	DB M) 8)				
		210	3	M)	Δ	DB M) 8)	Δ	DB M) 8)	Δ	DB M) 8)	Δ	DB M) 8)				
	Symmar-S MC	100	0		•	DB	•	DB	•	DB	•	DB	Δ .			
	56-70°	120	0			DB	•	DB	•	DB	•	DB	Δ			
S	1:5,6	150	0				•	DB			•	DB				
		180	1			DB	•	DB	•	DB	•	DB				
		210	1		•	DB	•	DB	•	DB	•	DB				
		240	3		•	DB	٠	DB	•	DB	•	DB				
		300	3	■ M)	٠	DB M)	٠	DB M)	٠	DB M)	٠	DB M)				
	1 : 6,8	360	3	■ M)	٠	DB M)	٠	DB M)	٠	DB M)	٠	DB M)				
	1:9,4	480	3	M)	•	DB M)	٠	DB M)	•	DB M)	٠	DB M)				

		length in mm	iax. aperture f/	of field in °	e circle diameter ה 6)	Parallel displacement (horizontal format) in mm 7)									
						6 x 9 cm / 2 ¼ x 3 ¼"		9x12 cm / 4x5″		13 x 18 cm / 5 x 7"		18 x 24 cm		8x10″	
		Focal	Rel. m	Angle	Image in mn	\rightarrow	t	→	t	\rightarrow	t	→	t	→	ţ
	Nikkor-SW	75	4,5	106	200	52	62	28	32	-	-		-	-	-
	105*	90	4,5	105	235	70	81	47	53	15	20	-	-	-	-
z	Nikkor-W	135	8,0	73	235	70 52	81 62	47	32	15	20		-	-	-
	70–73°	150	5,6	70	210	57	67	33	38	_	_	_	_	_	
ŝ		180	5,6	70	253	79	91	57	63	25	32	-	-	-	-
Z		210	5,6	70	295	101	113	79	87	49	59	5	6	-	-
		240	5,6	70	336	122	134	101	109	71	84	29	36	15	18
	Nikkor-M	300	6,3	70	420	164	1//	144	153	115	131	76	90	64	10
	$\sim 55^{\circ}$	450	9,0	52	440	174	188	155	164	126	142	87	102	75	86
	Grandagon	65	4,5	105	170	36	45	10	12	-	_	-	-	-	-
	MC 105°	75	4,5	105	195	49	59	25	29	-	-	-	-	-	-
	×	90	4,5	105	236	71	81	48	54	16	20	-		-	-
	Grandagon MC	75	6,8	102	187	45	55	20	24	-	-	-	-	-	-
	102-104°	115	6.8	102	221	99	111	77	85	47	57	2	3	_	
		155	6,8	102	382	145	158	125	133	95	110	55	67	42	50
	Sironar-N	100	5,6	72	151	26	33	-	-	-		-	-	-	-
	1010 04 72	135	5,6	72	200	52	62 70	28	32	- 2	-	-	-	-	-
		180	5,6	72	262	84	95	62	68	30	38	-	_	_	_
Š		210	5,6	72	301	104	116	83	90	52	63	8	11	_	-
2		240	5,6	72	350	129	141	108	116	79	92	37	46	23	28
5		300	5,6	64	409	159	172	139	148	110	125	70	83	58	67
B	Apo-Ronar	150	9,0	48	135	17	23	-	-	-	-	- 04		-	
20	40-48°	240	9,0	48	212	58	68	35	39	1	2	-		-	-
halan .		300	9,0	48	264	85	96	63	70	32	40	-	-	-	-
		420	9,0	48	318	113	125	92	102	61	73	19	24	3	4
		480	11	46	396	152	165	132	141	103	118	63	75	50	59
		600	9,0	45	496	202	216	183	193	155	172	117	134	106	119
	0	800	9,0	42	605	257	271	239	248	211	229	175	194	164	180
	CL	1200	14	40	873	318	406	300	311	347	367	313	335	303	245
	Imagon	200	H 5,8	0	145	23	30	-	-	-	-	-	-	-	-
	~ 40°	250	H5,8	- 1 2a. 4	181	42	51	17	20	-	-		-	-	-
		300	H 6,8		218	61	72	38	43	5	7	-	-	-	-
	Super 1) Angulon	47	5,6	105	123	11	15	-	-	-	-	-	-		-
	MC 105° 1)	75	5.6	105	198	51	45 61	27	31		-	-	_	_	
	1)	90	5,6	105	235	70	81	47	53	15	20	-	-	_	-
	Super 1)	65	8,0	100	155	28	36	1	1	-	-	_	-	-	-
	Angulon 1) MC 100° 1)	90	8,0	100	216	60	71	37	42	4	5	-	-	-	-
~	1)	120	8,0	100	288	97	109	76	83	45	55	-	-	-	-
百百		165	8,0	100	395	152	165	132	140	102	117	110	126	108	121
	Symmar-S	100	5.6	70	143	204	210	-	-	-	-	-			-
SCHN	MC 56-70°	120	5,6	70	173	38	46	12	14	-	-	-	-	-	-
		135	5,6	70	190	47	56	22	26		-	-	-		-
		150	5,6	70	210	57	67	33	38	-	-	-		-	-
		180	5,6	70	252	79	90	56	63	25	32	-	-	. —	-
		210	5,6	70	294	100	135	102	109	48	59 84	30	37	- 15	10
		300	5.6	70	411	160	173	140	149	111	126	71	84	59	68
		360	6,8	64	435	172	185	152	161	123	139	84	99	72	83
_		480	9,4	56	500	204	218	185	195	157	174	119	136	108	121

1

Notes and symbols

2)

4)

- Type DB auto-aperture iris is automatically controlled down to f/45 by the DIGITAL shutter or the SINAR/COPAL shutter
- Type M lenses also have manual control M) for smaller apertures. Other type DB lenses with manual settings on application.
- DB A conversion set allows conversion of many existing lenses from the original mount to DB mounting.
- Usable with all SINAR shutters.
- Full use with SINAR shutters only from f/22. Apo-Ronar 1200 mm only from f/32.
- Not compatible with SINAR shutters. \wedge
- NF With manual iris diaphragm or perforated
- stop in place of spring-loaded autoaperture. To compensate optical vignetting (light 1) loss) at the image edges the use of annular graduated filters is recom-
 - No. For Super Angulon
 - 1

mended.

- 65 mm f/8 47 mm f/5.6, 2
- 3 65 mm f/5.6, 75 mm f/5.6 3a 90 mm f/8
- 4 90 mm f/5.6, 120 mm f/8 Exposure factor for all sizes: 3×
- Shutter sizes: Compur

Copal

 $0 = 1 - \frac{1}{500}$ s $1 = 1 - \frac{1}{500}$ S $3 = 1 - \frac{1}{200}$ s $0 = 1 - \frac{1}{500}$ s $1 = 1 - \frac{1}{400}$ S $3 = 1 - \frac{1}{125}$ S

- 3) Maximum aperture f/11 for lens in springloaded auto-aperture control.
 - Max. aperture = 5.6 when used with SINAR/COPAL shutter 521.31.
- 6) The image circle and maximum displacements all apply to lenses at f/22, focused at infinity. At a close-up scale of for instance 1:5 the values are increased by 20%.
- For upright pictures the vertical and 7) horizontal displacements are interchanged. The values apply only when the lens is displaced from its centre position either horizontally or vertically.
- 8) Mounting in factory only.
- 9) CL-series and further focal lengths on request.
- Lens does not cover format.

Lenses fitted by SINAR can be used with the SINAR shutters as indicated in the table.

Establishing displacement limits

The chart indicates the maximum displacement at f/22 and infinity focus for lenses of known angle of coverage and focal length, used with given image formats. In view of the increased bellows extension, the maximum dis-

In view of the increased bellows extension, the maximum displacements become considerably greater in the close-up range. Suppose the maximum displacement is wanted for a 150 mm lens of 70° angle to cover a 4×5 inch image (shown with broken lines of the chart). Trace vertically upwards from 150 (focal length in mm) to the level of the 4×5 inch format. Then count the number of squares between this point and the line drawn in for 70° angle. The two squares shown here indicate a 2 cm displacement in the direction of the extended diagonal to the format.

For detailed data on displacements for the main film sizes in upright or horizontal format see the appendix to the lens list on page 7.





8

Why lenses must be mounted by experts



Factory mounting

The mechanical precision of the SINAR, matching the high performance of modern view camera lenses, is only effective when lenses are mounted with the same care.

High-performance lens systems must be mounted at exactly right angles to the lens board and precisely centred. SINAR therefore supplies the world's top lenses ready mounted and thus guarantees a precision standard to match the whole camera system. In photography, as anywhere else, a chain is no stronger than its weakest link.

SINAR has a special optical bench for view camera lenses. On this we can not only check the mounting precision but also optical lens performance. Tight factory tolerances assure to the SINAR photographer the best optical equipment for his most important tool. Lenses fitted by SINAR are engraved with the SINAR name.



DB conversion kits

Many existing lenses in barrel mount, with built-in shutter or with type B diaphragm control, can be converted to type DB springloaded auto-aperture control.

Here the actual conversion can be done by anyone, for SINAR provides the high-precision auto-aperture mounts ready fitted on the lens board.

Conversion simply involves screwing the front and rear elements into the complete pre-assembled mount. Detailed instructions cover any possible special requirements.







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