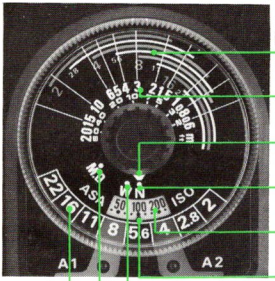
Nikon Speedlight

SB-15

INSTRUCTION MANUAL

NOMENCLATURE



Auto shooting range indicators (color-coded) ①

Distance scale ②

Mode setting index ③

N (normal) index ④

ASA/ISO film speed scale ⑤

ASA/ISO film speed index ⑥

W (wide adapter) index ⑦

MD (motor drive) index ⑧

Auto sync f/stop scale ⑨

ASA/ISO film speed setting ring ⑮

Exposure calculator dial ⑯

A2 aperture indicator band (blue) ⑰

A1 aperture indicator band (red) ⑱

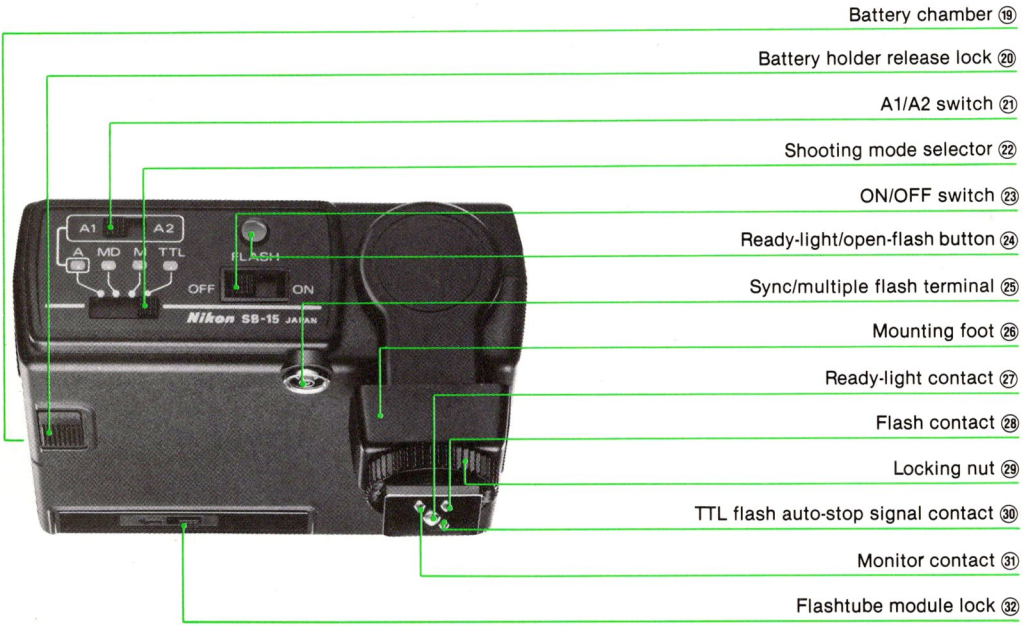
⑩ Mode setting knob

⑪ Tilting flashtube module

⑫ Light sensor (for non-TTL auto operation)

⑬ Flash head

⑭ Wide-Flash Adapter SW-6


Battery chamber ⑲
Battery holder release lock ⑳
A1/A2 switch ㉑
Shooting mode selector ㉒
ON/OFF switch ㉓
Ready-light/open-flash button ㉔
Sync/multiple flash terminal ㉕
Mounting foot ㉖
Ready-light contact ㉗
Flash contact ㉘
Locking nut ㉙
TTL flash auto-stop signal contact ㉚
Monitor contact ㉛
Flashtube module lock ㉜
A1
A2
A
MD
M
TTL
FLASH
OFF
ON
Nikon SB-15 JAPAN

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FOREWORD

The Nikon Speedlight SB-15 is a direct-mounting electronic flash unit which provides automatic *through-the-lens* (TTL) control of the flash exposure when used with the Nikon FG. Because light is measured through the actual picture-taking lens, you are assured of just the right exposure with a variety of lenses and accessory attachments at any aperture from f/2 to f/22.

Thanks to the incorporation of a front-mounted light sensor, the Nikon Speedlight SB-15 is also compatible with all other Nikon cameras for automatic, but not through-the-lens, flash output control. Through the use of a silicon-controlled rectifier and series circuitry, the SB-15 is able to conserve energy when shooting subjects at close range; thus recycling times are shorter and the number of flashes per battery set is greater.

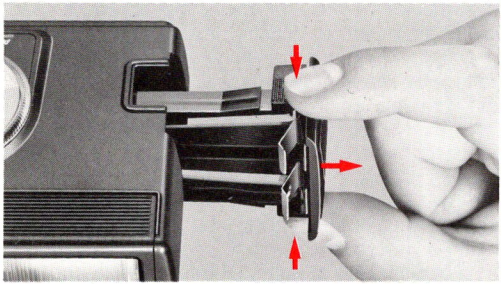
In addition, the SB-15 couples with the flash ready-lights inside the viewfinders of the Nikon FG, FM2, F3, FE, and EM. As soon as the flash is ready to fire, the LED comes on and, if the light is insufficient for correct exposure after a shot is taken, it will immediately start blinking to warn you to take the picture again at a wider aperture or a closer distance.

Of particular merit is the SB-15's movable flash head which allows you to bounce the light off the ceiling or walls for softer, more flattering lighting for portraits and snapshots. Not only is the entire flash unit rotatable on its foot through 180° with click-stops every 90°, but the flashtube module itself can be tilted back with click-stops at 15°, 30°, 60°, and 90° positions.

The SB-15 also features a special MD (Motor Drive) setting which allows you to shoot up to four flash pictures in sequence with a motor-driven camera firing continuously at up to 3.5 frames per second.

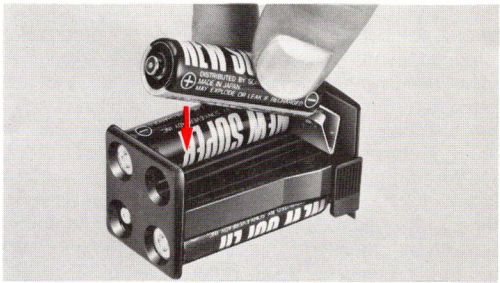
To obtain the best results, read this instruction manual carefully before use and keep it handy for quick reference until you are thoroughly familiar with the flash unit's operation. A few minutes wisely invested now will pay off later in years of rewarding photographic experiences.

BASIC OPERATION



1. Open the battery chamber ⑲.

Depress the battery holder release locks ⑳ (the knurled surfaces on the top and bottom of the left side of the flash head) and the battery holder will pop out.



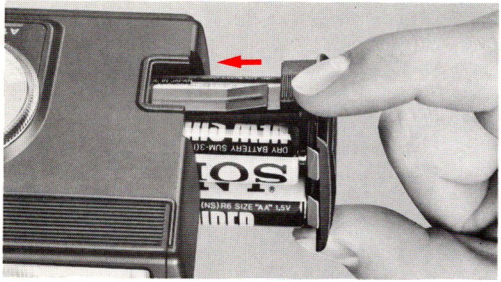
2. Load the batteries.

Power is supplied by four 1.5V AA-type penlight batteries; insert them, making sure the positive and negative (+ and −) terminals are installed according to the diagrams inside the holder.

Notes:

1) When replacing batteries, exchange all four with a fresh set.

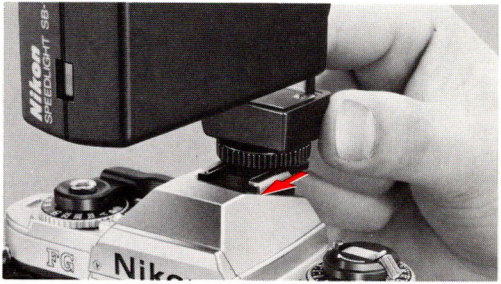
2) It's also possible to use AA-type rechargeable NiCd batteries, but the performance of the SB-15 will not be comparable to that with alkaline-manganese cells.



3. Replace the battery holder.

Push the battery holder into the battery chamber until it clicks into place.

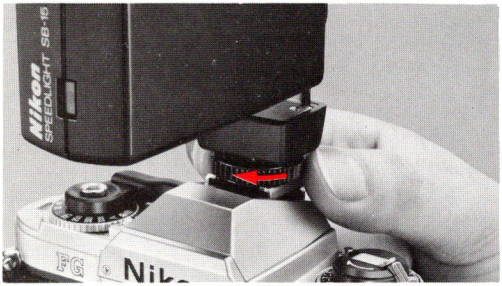
Note: *Be sure not to put the battery holder in upside down.*



4. Attach the flash unit to the camera's accessory shoe.

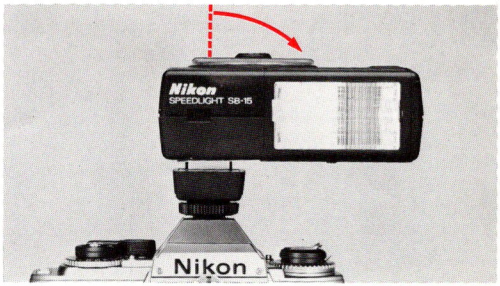
First turn the locking nut ㉙ on the mounting foot ㉖ counterclockwise until it reaches its upper limit. Then slide the mounting foot forward into the shoe as far as it will go.

Note: *With the Nikon F3 or F2, the AS-4 or the AS-1 Flash Unit Coupler must be attached to the camera's accessory shoe before mounting the SB-15.*



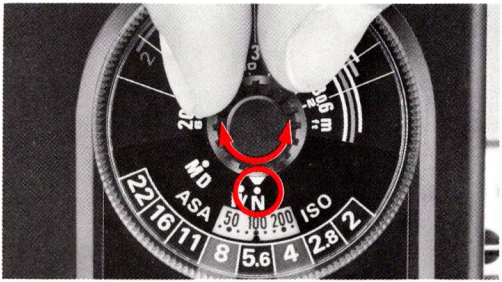
5. Lock the flash unit securely into place.

Tighten the locking nut to prevent the unit from accidentally slipping off.



6. Rotate the flash unit to the horizontal position.

Turn the flash unit 90°, so that the exposure calculator dial ⑯ is on top.

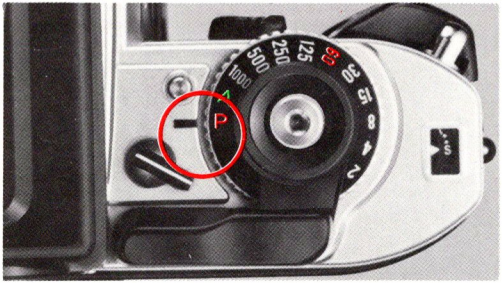


7. Set the mode setting knob ⑩ to N④.

Turn the knurled knob in the center of the exposure calculator dial until the N is opposite the index ③.

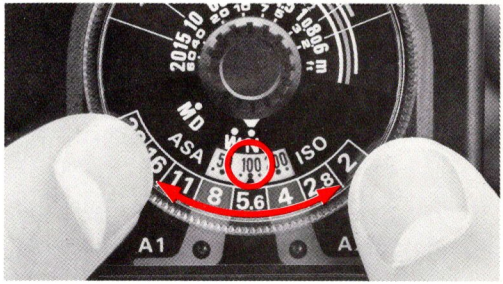
(Steps 8 through 14 are divided into two sections according to the model of Nikon camera you are using.)

BASIC OPERATION—continued



8-A. Set the camera's shutter speed/mode selector to P or A.

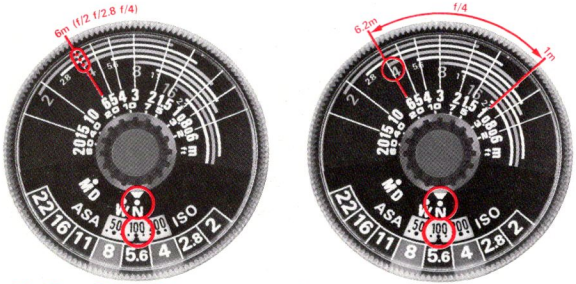
Note: *TTL operation is possible at all manual shutter speed settings,* except *M90 or B.*



9-A. Set the ASA/ISO film speed.

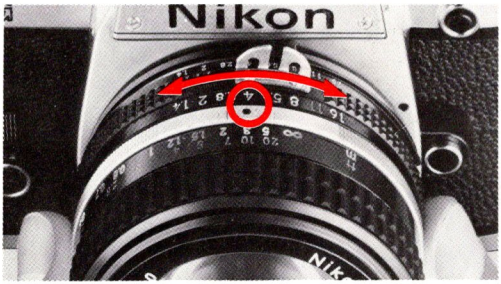
Turn the ASA/ISO film speed setting ring ⑮ (the outside ring of the exposure calculator dial) until the ASA/ISO index ⑥ is opposite the speed of the film loaded in your camera.

Note: *If camera's ASA/ISO dial is set higher than 400, the top and bottom warning LEDs will blink alternately to let you know the film speed is above the usable range.*



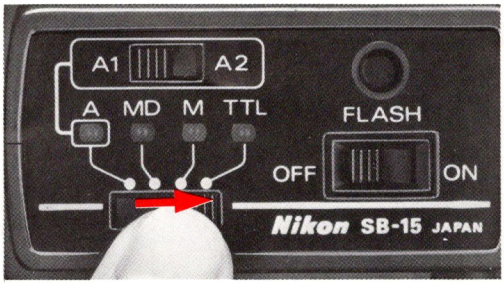
10-A. Choose an f/stop from the calculator dial.

Depending on how far away your subject is from the camera, you must select an appropriate working aperture by referring to the calculator dial. You'll notice that each f/stop (from f/2 to f/22) has its own color-coded line above the white distance scale ② indicating the range of distances at which you can shoot. For example, if you're using ASA/ISO 100 film and want to shoot subjects up to 6 meters (20 ft.) away, you can select f/4, f/2.8, or f/2. At f/4, the automatic shooting range is indicated by an orange line; it indicates you can shoot any subject between 1 and 6.2 meters (approx. 3 and 20 feet) away.



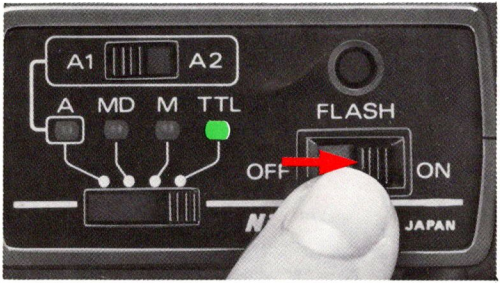
11-A. Set the lens aperture ring to the appropriate f/stop.

If you decide to shoot at f/4, then you must set the aperture ring on the lens to f/4.



12-A. Set the SB-15's shooting mode selector (22) to TTL.

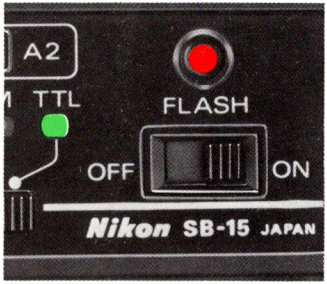
Slide the selector to the right as far as it will go for automatic through-the-lens (TTL) flash exposure control.

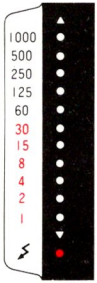


13-A. Turn on the flash unit.

Slide the ON/OFF switch ㉓ to the right; immediately the green LED will light up indicating TTL operation.

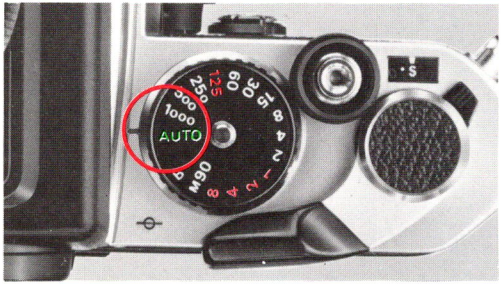
Note: *The green LED may blink for a short time after the power switch is turned on, but this does not indicate a malfunction.*





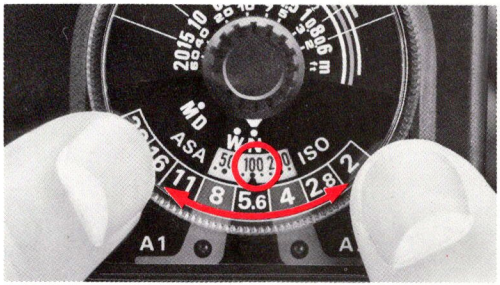
14-A. Wait for the ready-light to come on.

First turn on the camera's meter by lightly depressing the shutter release button. Then wait for the LED ready-light inside the finder to light up, indicating that the SB-15 is ready to fire. At the same time, the ready-light ㉔ built into the back of the SB-15 will come on.



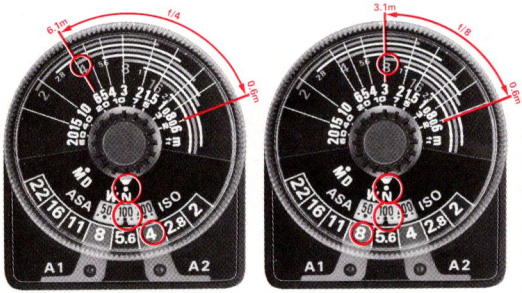
8-B. Set the camera's shutter speed for correct flash synchronization.

For example, with the Nikon FE, set the shutter speed dial to A. (For other cameras, please refer to page 21 for the correct flash synchronization setting.)



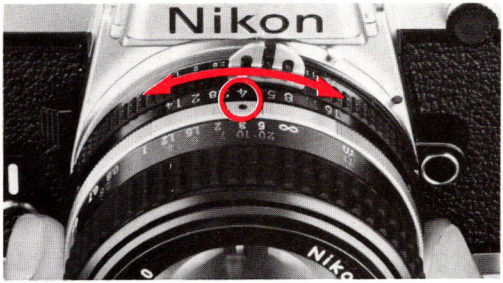
9-B. Set the ASA/ISO film speed.

Turn the ASA/ISO film speed setting ring ⑮ (the outside ring of the exposure calculator dial) until the ASA/ISO index ⑥ is opposite the speed of the film loaded in your camera.



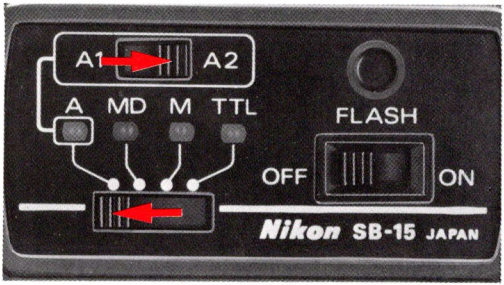
10-B. Choose an f/stop from the exposure calculator dial.

Located at the bottom of the exposure calculator dial are the blue A1 ⑰ and red A2 ⑱ aperture indicator bands which provide a choice of two f/stops. For example, with ASA/ISO 100 film, you can choose f/4 or f/8; the auto shooting ranges are 0.6～6.1m (2～20 ft.) and 0.6～3.1m (2～10 ft.), respectively.



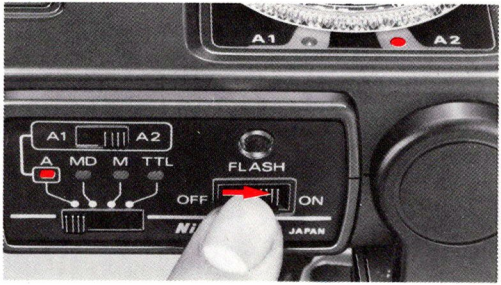
11-B. Set the lens aperture ring to the appropriate f/stop.

In the example, f/4 is set on the lens.



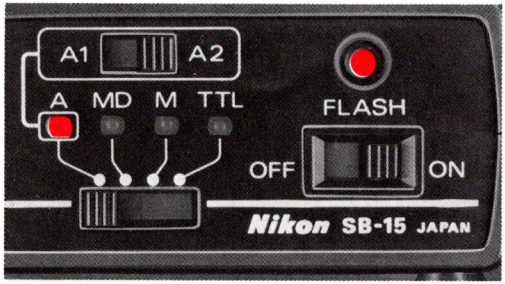
12-B. Set the mode selector ㉒ to A and the A1/A2 switch to A1 or A2.

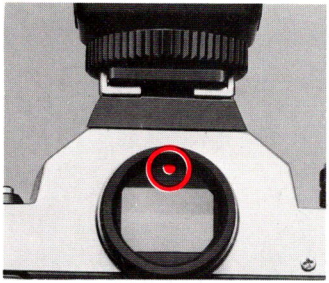
Again using ASA/ISO 100 film as an example, if you select f/4, you must set the switch to A2.



13-B. Turn on the flash unit.

Slide the ON/OFF switch ㉓ to the right. Immediately the red LED on the back of the flash will light up indicating automatic operation; simultaneously the appropriate red LED will light up inside the A2 aperture indicator band (just below the exposure calculator dial) as an indication.



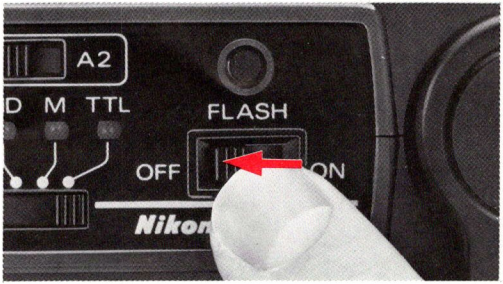


14-B. Wait for the ready-light to come on.

If your camera has an LED ready-light inside the finder, make sure that it is lit up, indicating that the SB-15 is ready to fire. If not, use the flash ready-light ㉔ built into the back of the SB-15.

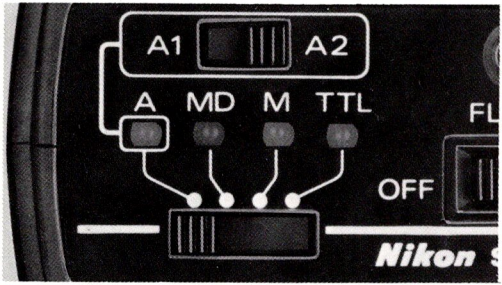
15. Take the picture.

After you take the shot, watch the ready-light inside the camera's viewfinder or the one on the SB-15. If it does not blink, then you have a perfect flash exposure. If it does, use a wider aperture if possible or move closer to the subject.



16. Take off the flash unit.

To conserve battery power between shooting sessions, slide the power switch to the left.



Shooting Mode Selector ㉒

There are four settings to choose from. Note that as soon as the SB-15 is turned on, the appropriate LED (either red or green) on the back of the unit will light up to indicate the setting.

TTL

This mode is usable only with the Nikon FG. Except when the FG is set to M90 or B, this mode provides automatic through-the-lens (TTL) control of flash exposure at any aperture from f/2 to f/22 to match the flash-to-subject distance: the farther away the subject, the more light emitted by the flash unit; the closer the subject, the less light given off. In addition, recycling time varies with distance; the closer the subject, the shorter the recycling time and vice versa. Also note that the usable film speeds in this mode are ASA/ISO 25 to 400.

A

In the automatic (A) mode, the light output of the flash varies automatically to match the flash-to-subject distance, but instead of the light being measured through the lens, it is read by the light sensor ⑫ on the front of the SB-15. At any film speed setting, you have a choice of two working apertures indicated by the blue and red (A1 and A2) aperture indicator bands ⑰, ⑱ on the top of the flash unit just below the exposure calculator dial.

M

At the manual (M) setting, the SB-15 fires at its maximum light output regardless of the flash-to-subject distance. To insure correct exposure when the subject is closer than the near limit of the automatic shooting range, it is recommended to shoot on manual; likewise when the subject is near the far limit of the auto shooting range, it is a good idea to use the SB-15 on manual. In this case, you have to calculate the exposure manually using the exposure calculator dial or the equation found on page 27. On manual, the guide number is 25 (ASA/ISO 100 and meters) or 41 (ASA/ISO 25 and feet).

MD

At the motor drive (MD) setting, the SB-15 is able to recycle fast enough to synchronize with a motor-driven camera firing continuously up to 3.5 frames per second. It is possible to take up to four flash pictures in rapid succession in this way. At MD, the SB-15's light output is approx. one-thirteenth that of its maximum power; the MD guide number is 7 (ASA/ISO 100 and meters) or 11 (ASA/ISO 25 and feet). Like the M setting, this is also a manual setting; therefore, the exposure must be calculated manually using the exposure calculator dial or guide number equation (see page 27).

Synchronization Speed

In flash photography, the shutter speed with which electronic flash will synchronize depends on the camera in use. With the Nikon FG, F3, EM, or FE set for automatic operation or at certain manual shutter speeds, the correct shutter speed is automatically set by simply turning on the SB-15. However, with all other Nikon cameras, the correct synchronization speed must be set manually. Refer to the following chart for the shutter speeds which are usable with your camera.

SB-15 Synchronization Chart

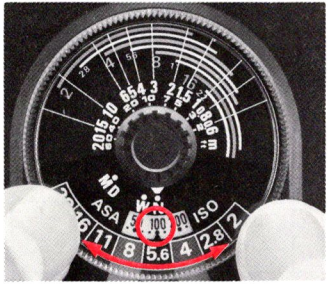
Camera	Camera setting	Actual shutter speed for correct flash synchronization	SB-15's usable modes
FG	P, A, 1/125 sec. or faster*	1/90 sec.	TTL, A, M, MD
	1/60 sec. or slower	As set	
FM2	X200, 1/125 sec. or slower	As set	A, M, MD
F3** (with AS-4)	A, X, 1/125 sec. or faster*	1/80 sec.	A, M, MD
	1/60 sec. or slower	As set	
EM	Auto*, M90	1/90 sec.	A, M, MD
	B	As set	
FE	A*, M90	1/90 sec.	A, M, MD
	1/125 sec. or slower	As set	
FM, EL2 EL*** ELW*** FT2, FT3	1/125 sec. or slower	As set	A, M, MD
F2 series (with AS-1)	1/80 sec. or slower	As set	A, M, MD

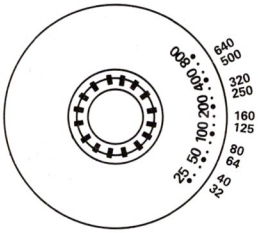
*Automatic switching to the correct synchronization speed only occurs when the SB-15 is mounted in the camera's hot shoe and turned on; it does not occur when the SB-15 is turned off or when a sync cord is used for off-camera operation.

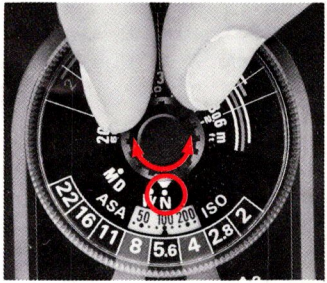
**With the F3, the viewfinder indications vary according to the settings: 80 appears on A, M 80 appears on X, or 1/125 or faster, while M⁻ appears on B.

***Set the sync selector to the lightning bolt symbol (⚡).

CONTROLS IN DETAIL—continued







Exposure Calculator Dial ⑯

The exposure calculator dial on the top of the SB-15 helps you select the aperture you must set on the lens depending on the camera-to-subject distance. To use the dial, follow these steps:

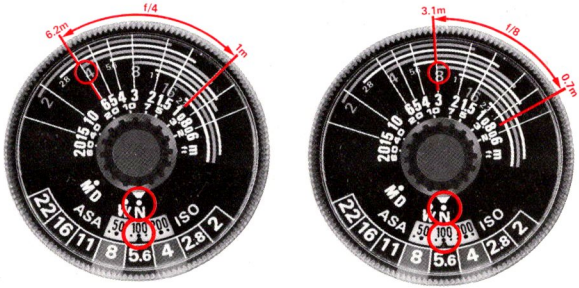
1) Setting the film speed

To set the ASA/ISO film speed, turn the ASA/ISO film speed setting ring ⑮ until the number corresponding to the speed of your film is opposite the ASA/ISO film speed index ⑥.

Note: *Dots between the numbers on the film speed scale represent intermediate settings. (See illustration.)*

2) Setting the mode setting knob ⑩

Located in the center of the exposure calculator dial is the mode setting knob. There are three settings to choose from: N ④ is for normal shooting, W ⑦ is used when the Wide-Flash Adapter is in place, while MD ⑧ should be set when operating the SB-15 in the MD shooting mode. To change the setting, grasp the knob with your fingertips and turn it until the appropriate N, W, or MD is aligned with the white index ③.



3) Determining the exposure

For Through-the-Lens (TTL) Operation

With the SB-15 attached to the Nikon FG, you can utilize the TTL mode of operation for completely automatic through-the-lens exposure control. After setting the correct film speed, setting the mode setting knob at either N or W, and adjusting the shooting mode selector to TTL, use the exposure calculator dial to determine which f/stop to set on your lens. On the dial there are 8 f/stops ranging from f/2 to f/22. Each f/stop determines the usable distance range in which you can obtain the correct automatic exposure. These ranges are indicated by a series of color-coded lines ① above the distance scale ②.

Note: *Usable film speed range for TTL flash photography is ASA/ISO 25 to 400.*

Example

If you are using ASA/ISO 100 film and select f/4, the auto shooting range is indicated by an orange line. Thus, you can take pictures of subjects located between 1 and 6.2m (approx. 3 and 20 ft.) away from the camera. However, if you choose f/8 (indicated by a blue line, the auto shooting range is 0.7 to 3.1m (approx. 2 to 10 ft.).

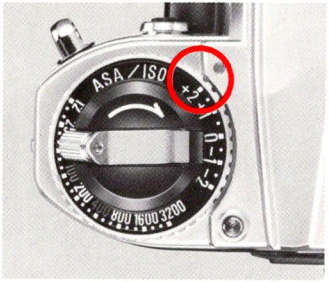
The larger the aperture you select, the greater the maximum shooting distance and the smaller the aperture the less the maximum shooting distance. So, when choosing an aperture, make sure that your subject is within the auto shooting range. If the subject distance remains the same, the larger the aperture you select, the less the depth of field in the final photograph; however, the recycling time is shorter. On the other hand, the smaller the aperture, the greater the depth of field, but the longer the recycling time. Therefore, in choosing an f/stop, all these factors should be taken into consideration. If a short recycling time is preferable, use f/2; if greater depth of field is desired, use f/16 or f/22.

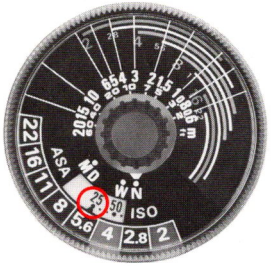
The auto shooting ranges for TTL photography are shown in the following table. Remember, if the light output of the SB-15 was insufficient for correct exposure, the flash ready-light both inside the Nikon FG's finder and on the back of the SB-15 will blink as a warning after the shot is taken.

TTL Auto Shooting Range Unit: m (ft.)

	Film speed ASA/ISO					Auto shooting range	
	400	200	100	50	25	Normal	With the wide-flash adapter
f/stop	2	-	-	-	-	4∼15 (13∼49)	2.8∼15 (9.2∼49)
	2.8	2	-	-	-	3∼15 (10∼49)	2∼12 (7∼39)
	4	2.8	2	-	-	2∼12 (7∼39)	1.4∼8.8 (4∼29)
	5.6	4	2.8	2	-	1.4∼8.8 (4∼29)	1∼6.2 (3∼20)
	8	5.6	4	2.8	2	1∼6.2 (3∼20)	0.7∼4.4 (2.6∼14)
	11	8	5.6	4	2.8	0.8∼4.4 (2.6∼14)	0.6∼3.1 (2.3∼10)
	16	11	8	5.6	4	0.7∼3.1 (2.3∼10)	0.6∼2.2 (2∼7.2)
	22	16	11	8	5.6	0.6∼2.2 (2∼7.2)	0.6∼1.5 (2∼4.9)
	-	22	16	11	8	0.6∼1.5 (2∼4.9)	0.6∼1.1 (2∼3.6)
	-	-	22	16	11	0.6∼1.1 (1∼3.6)	0.6∼0.8 (2∼2.6)

Note: *Because the voltage of batteries decreases with use, the guide number might also be reduced slightly. The flash output of the SB-15 depends on the shooting situation and the reflectivity of the subject. Because of these factors, the ready-light may blink even if the subject is within the auto shooting range.*





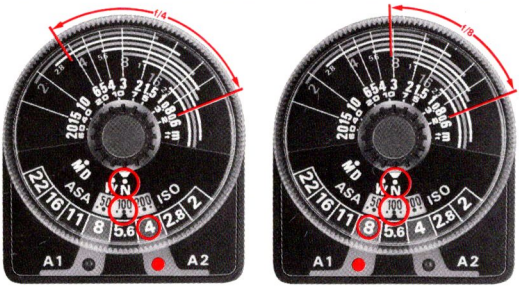
TTL exposure compensation

When shooting TTL auto flash pictures with the Nikon FG and SB-15, you can use the camera's exposure compensation dial to make intentionally over- or underexposed photographs. Turn the dial in the + direction to make an overexposed picture and turn it in the opposite direction (–) to make an underexposed one. (Refer to the Nikon FG's instruction manual for more details.) The TTL auto shooting range changes according to the amount of exposure compensation.

For example, if you are using ASA/ISO 100 film with the exposure compensation dial set at +2 (overexposure), reset the exposure calculator dial of the SB-15 to ASA/ISO 25 as shown in the following table. Then the correct TTL auto shooting range to match the compensated amount will be shown on the exposure calculator dial.

Exposure compensation value / Film speed in use	+2	+1	0	–1	–2
25	-	-	25	50	100
50	-	25	50	100	200
100	25	50	100	200	400
200	50	100	200	400	-
400	100	200	400	-	-

—CONTROLS IN DETAIL—continued



For Automatic (A) Operation

With Nikon cameras, including the FG, you can obtain the automatic exposure by setting the SB-15's shooting mode selector to A and the A1/A2 switch ㉑ to either A1 or A2. As soon as the SB-15 is turned on, the appropriate LEDs light up on the flash unit indicating your selection. You'll notice that on automatic, there is a choice of two f/stops which are indicated by the blue and red aperture indicator bands at the bottom of the calculator dial.

Example

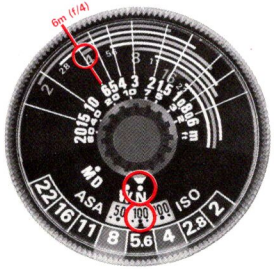
If you are using ASA/ISO 100 film, you can select either f/4 or f/8.

Just as in the TTL mode, the depth of field, maximum shooting distance, and recycling time depend on the f/stop selected. Regardless of the film speed and the corresponding f/stop available at A1 or A2, the auto shooting range is fixed and is shown in the following table:

Auto shooting range

Unit: m (ft.)

Selector mode	Normal usage	Using wide-flash adapter
A1 (blue index)	0.6～3.1 (2～10)	0.6～2.2 (2～7)
A2 (red index)	0.6～6.2 (2～20)	0.6～4.4 (2～14)



For Manual (M) Operation

After setting the ASA/ISO film speed onto the exposure calculator dial, focus on the subject; then look at the lens and read off the focused distance to determine exactly how far away the subject actually is. Now, read off the f/number which appears directly above the camera-to-subject distance on the dial. Then, set this aperture on your lens.

Example

With ASA/ISO 100 and a subject 6m (approx. 20 ft.) away, the aperture is approx. f/4.

Shooting distance Unit m (ft.)

Aperture	Normal	With wide-flash adapter
f/2	12 (39)	8.8 (29)
f/2.8	8.8 (29)	6.2 (20)
f/4	6.2 (20)	4.4 (14)
f/5.6	4.4 (14)	3.1 (10)
f/8	3.1 (10)	2.2 (7.2)
f/11	2.2 (7.2)	1.5 (4.9)
f/16	1.5 (4.9)	1.1 (3.6)
f/22	1.1 (3.6)	0.8 (2.6)

Without referring to the exposure calculator dial, you can also determine the f/stop by using the following equation:

$$\text{f/stop} = \frac{\text{guide number}}{\text{flash-to-subject distance}}$$

With ASA/ISO 100 film and meters, the SB-15's guide number is 25. If the subject is 3m away, divide 25 by 3 to get approx. f/8. With ASA/ISO 25 film and feet, the guide number is 41. Therefore, if the subject is 10 ft. away, divide 41 by 10 to get approx. f/4.

To determine the guide number at various film speeds, use the following table:

Guide Number at Various Film Speeds

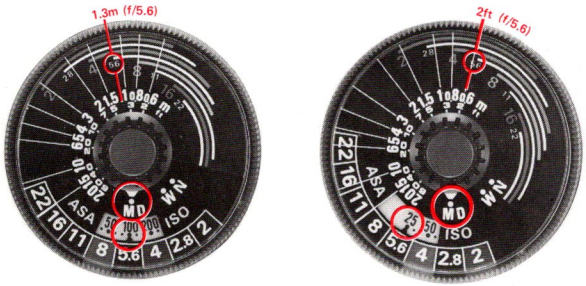
Unit: m (ft.)

		N (Normal)		W (with SW-6)	
Mode selector		M (manual)	MD	M (manual)	MD
ASA/ISO	800	71 (233)	20 (72)	50 (164)	14 (46)
	400	50 (164)	14 (46)	35 (115)	10 (33)
	200	35 (115)	10 (33)	25 (82)	7 (23)
	100	25 (82)	7 (23)	18 (59)	5 (16)
	50	18 (59)	5 (16)	13 (41)	3.5 (11)
	25	13 (41)	3.5 (11)	9 (30)	2.5 (8.2)

For motor drive (MD) operation

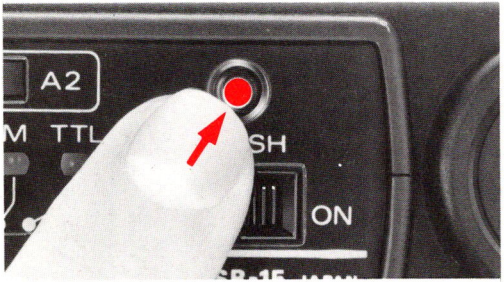
Be sure to set the shooting mode selector *as well as* the mode setting knob at MD. Then you're ready to shoot continuously with a motor drive firing at up to 3.8 frames per second for up to four flash pictures in sequence. Because the light output is manually controlled at this setting, you must compute the exposure manually using the exposure calculator dial or the guide number formula. But remember the guide number is now 7 (ASA/ISO 100 and meters) or 11 (ASA/ISO 25 and feet). When taking rapid-sequence flash shots in this way, use the freshest possible batteries and don't begin the continuous sequence until the ready-light has been lit for approx. 30 seconds. (If you start to shoot just after the ready-light lights up, it may be impossible to take four pictures in succession.)

Note: *When using the Wide-Flash Adapter ⑭, you cannot read off the correct f/stop from the exposure calculator dial. In this case, calculate the exposure manually using a guide number of 5 (ASA/ISO 100 and meters) or 8 (ASA/ISO 25 and feet).*



Example

With ASA/ISO 100 film and the subject located 1.3m away, the correct aperture is approx. f/5.6. With ASA/ISO 25 film and a subject 2 feet away, the correct aperture is f/5.6.



Ready-Light/Open-Flash Button ㉔

Built into the back of the SB-15 is the combination ready-light/open-flash button which is labeled "FLASH." After the ON/OFF switch ㉓ is turned on, this button lights up to indicate that the SB-15 is recycled and ready to fire. At the same time, the ready-light inside the viewfinder of the Nikon FG*, FM2, F3, FE, or EM also lights up. Thus, without removing your eye from the eyepiece, you can tell when the flash unit is ready for the next shot.

Both ready-lights also blink to warn you when the flash unit fired at its maximum output, indicating that the light was insufficient for correct exposure.

The following chart is useful in determining the behavior of the viewfinder ready-light for various cameras:

*The meter must first be turned on by lightly depressing the shutter release button.

Viewfinder Ready-Light Information with SB-15

Camera	Shutter speed dial/mode selector	SB-15 mode selector	Camera's ready-light	
			meter ON	meter OFF
F3	A, 8 ~ 1/2000, X, B, T	TTL	blinks	blinks
		A, M, MD	lights up	lights up
FE	Auto, 8 ~ 1/125, M90, B	TTL	blinks	blinks
		A, M, MD	lights up	lights up
	1/250 ~ 1/1000	TTL	blinks*	blinks
		A, M, MD	blinks	lights up
FM2	1 ~ 1/125, X200, B	TTL	blinks	blinks
		A, M, MD	lights up	lights up
	1/250 ~ 1/4000	TTL	blinks*	blinks*
		A, M, MD	blinks	blinks
FG	P, A, 1 ~ 1/1000	TTL	lights up	—
			blinks**	
		A, M, MD	lights up	—
	M90, B	TTL	—	blinks
		A, M, MD	—	lights up
EM	Auto, M90, B	TTL	blinks	blinks
		A, M, MD	lights up	lights up

**irregularly*

***if the ASA/ISO setting is more than 400 on the camera, the setting is incomplete.*

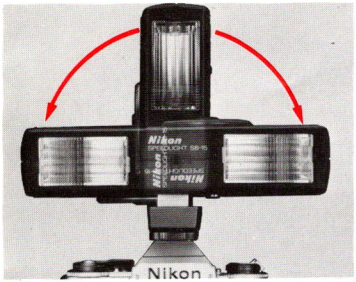
= proper flash synchronization is impossible.

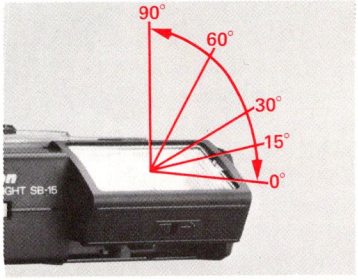
The same button can be used to fire the flash unit manually without having to trip the camera's shutter. In this manner, you can create multiple-exposure "stroboscopic" effects or paint the scene with light by firing the flash unit repeatedly with the camera set at "B."

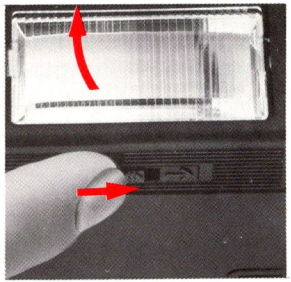
The open-flash button is also useful for test-firing the SB-15 to determine whether the illumination from the flash is sufficient for proper exposure in the regular (non TTL) automatic mode. With the shooting mode selector at A and the A1/A2 switch set to either A1 or A2, push the "FLASH" button; if it starts blinking, then you know the subject is too far away. In this case, switch to A2 if you were using A1 or move closer to the subject. Please note that it is impossible to ascertain beforehand the correct TTL automatic exposure when using the Nikon FG with the SB-15 set at the TTL mode.

Notes:

1) *With alkaline-manganese or manganese batteries, if the ready-light takes more than 30 sec. to light up, you should replace the batteries with a fresh set. If you're using NiCd batteries and the ready-light takes more than 10 seconds to come on, you should recharge the batteries.*
2) *The ready-light will light up when the SB-15 is recycled to approx. 80% full capacity. Therefore, it is a good idea to wait for a few more seconds when shooting subjects located at the far limit of the auto shooting range.*
3) *The white plastic card found inside the Nikon FG camera not only serves to protect the shutter curtains, but also can be used when making test shots with the SB-15. Without film or the white plastic card in place, the ready-lights blink even if the FG and the SB-15 are at the correct setting.*





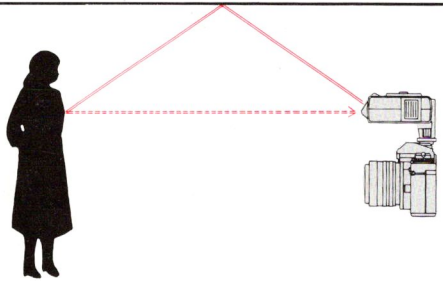


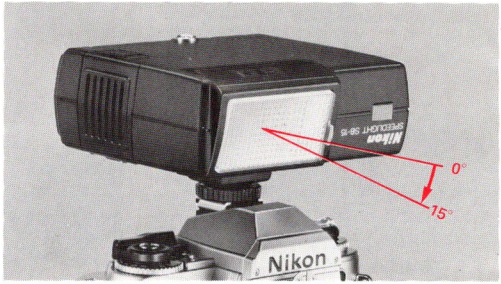
Flash Head ⑬

The SB-15's flash head rotates through an arc of 180° with click-stops every 90°. With the flash unit mounted on the camera, it is recommended to turn the flash head to the horizontal position (with the calculator dial on top) to insure adequate coverage when using wideangle lenses.

Of particular interest is the SB-15's tilting flashtube module ⑪ which has click-stops at the 15°, 30°, 60°, and 90° positions. These movements used singly or in combination allow you to bounce the light off the ceiling or walls for softer, more flattering lighting when shooting portraits or snapshots. To tilt the flashtube module back, slide the lock ㉜ in the direction of the arrow as you move the flashtube. Note that unless the surface you are bouncing the light off of is white or silver, your color photographs will come out with an unnatural color cast similar to that of the reflecting surface.

CONTROLS IN DETAIL—continued

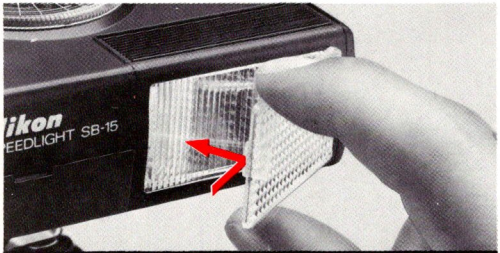




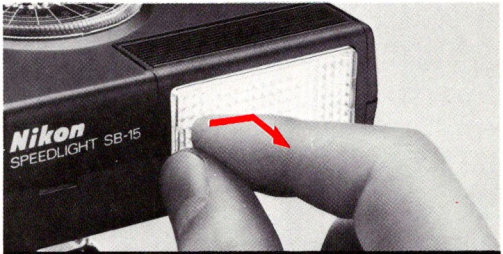
In bounce-flash photography, the exposure calculator dial cannot be used to determine the correct aperture or the automatic shooting range. Therefore, it is recommended that you make sure there is adequate illumination by watching the ready-light after the shot is taken; in the regular automatic (non-TTL) mode, you can test fire the SB-15 using the open-flash button to determine whether the illumination is sufficient. Because there is less light illuminating the subject in bounce flash, fast film such as ASA/ISO 400 is recommended.

For shooting close-ups with the flash mounted on the camera, you might try this method: rotate the flash head 180° so that the exposure calculator dial is on the bottom; then tilt the flashtube module down to illuminate the subject directly. Depending on how close the subject is to the camera, you can select either the 15° or 30° position. It is also recommended that you use the Wide-Flash Adapter SW-6 to insure even lighting.

The color temperature of the SB-14's light output is balanced for use with daylight-type color film.



To mount



To remove

Wide-Flash Adapter SW-6 ⑭

This diffuser snaps into place in front of the SB-15's flashtube to increase the angle of coverage from the normal 56° horizontal and 40° vertical to 67° and 48° respectively, allowing the SB-15 to be used with a 28mm wideangle lens. To mount the SW-6, hold it with the smooth side up; then insert the protruding tab into the groove and push the diffuser down until it click-locks into place. To remove it, insert your fingernail under the tab on the left-hand side of the SW-6 and lift it out.

With the Wide-Flash Adapter SW-6 attached, remember to set the mode setting knob to W. Because the SW-6 diffuses the light emitted from the SB-15, the guide number is reduced to 18 (ASA/ISO 100 and meters) or 30 (ASA/ISO 25 and feet); in addition, the auto shooting ranges for regular automatic operation are less:

Unit: m (ft.)

A1	0.6～2.2 (2～7)
A2	0.6～4.4 (2～14)

Sync/Multiple Flash Terminal ㉕

Located on the bottom of the flash head is a threaded terminal which serves two purposes: it can be used to attach a sync cord to the SB-15 for off-camera operation or you can attach a second electronic flash in series for multiple lighting setups.

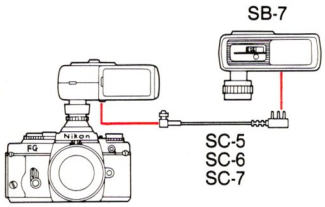
For off-camera operation, use either the optional SC-10, 11, or 15 sync cord; screw one end of the cord into this terminal and the other end into the camera's sync terminal.

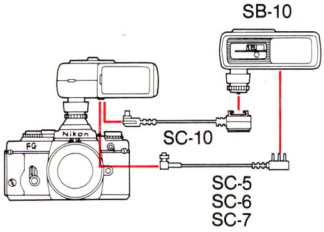
For multiple-flash, you can use this terminal to attach a second Nikon flash unit to the SB-15 in series. If the secondary flash unit is either the Nikon Speedlight SB-11, 12, 14 or 15, the use of either the SC-10, 11, or 15 sync cord is recommended; however, with the Speedlight SB-7 or 10, you must use the SC-5 (5cm), the SC-6 (1m), or the SC-7 (25cm) sync cord.

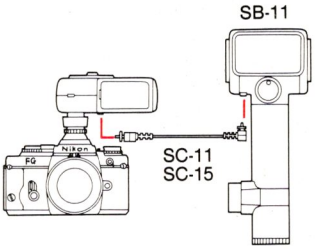
Notes:

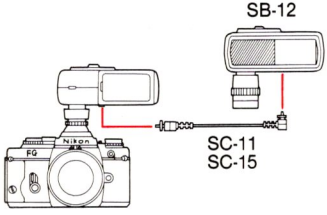
1) When the SB-15 is used off-camera via a sync cord, the ready-light inside the camera's viewfinder will not operate, nor will the correct flash synchronization speed be automatically set when the SB-15 is turned on.

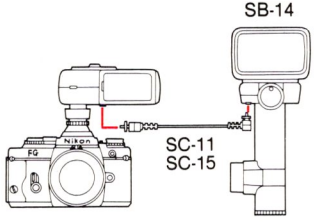
2) The SB-15 employs a special low-voltage triggering circuit to prevent electrical shock and damage to the hot-shoe contacts. We do not recommend mixing Nikon Speedlights with flash units of other makers for multiple flash photography, unless you use slave units for remote triggering. Otherwise, incorrect operation and/or damage to the unit may result.

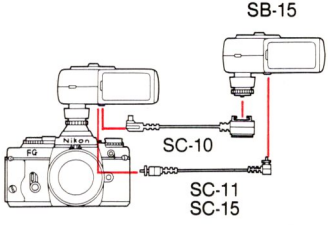










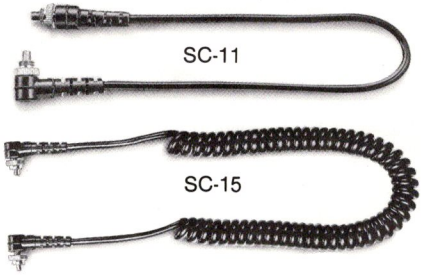


All the diagrams above illustrate multiple flash setups with the sync/multiple flash terminal of the SB-15. However, if your Nikon camera has a sync terminal, it may be used, too.

ACCESSORIES

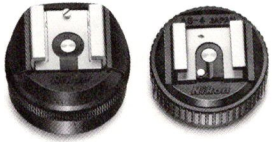
Sync Cords 11 and 15

For use with cameras not provided with a hot shoe or for off-camera or multiple-flash lighting setups. The SC-11 is 25cm, while the SC-15 is one meter.



Flash Unit Couplers AS-1 and 4

These accessories convert the accessory shoes of Nikon F2, and F3-series cameras to the standard ISO-type accessory shoe, allowing direct attachment of the SB-15. The AS-1 is designed for use with the Nikon F2, while the AS-4 fits the Nikon F3.



AS-1 AS-4

TIPS ON SPEEDLIGHT CARE

Cleaning

To remove dirt or fingerprints from your electronic flash, wipe with a soft, dry or silicon-treated cloth. Never use tissue moistened with thinner, benzine or alcohol, because these solutions might damage the plastic parts. If the Wide-Flash Adapter gets dirty, wash it with soap and water. Never use a brush as this may damage it.

Storage

Before you put away the SB-15, make sure to turn off the power switch. If you do not plan to use the unit for more than two weeks, it is best to remove the batteries to avoid possible damage to the circuitry by battery leakage. If leakage should inadvertently occur, take the flash unit to your nearest Nikon authorized service facility.

Keep the camera away from places where the temperature is likely to go higher than 60°C, such as in the trunk of a car under the summer sunlight, and places full of moisture, to prevent circuit damage.

Reforming the capacitor

If you haven't used your flash unit for a long time, the recycling time may differ from that listed in the specifications. If this is the case, use the open flash button to fire the unit a few times to bring it back to normal working order.

Miscellaneous

The ideal temperature range in which the SB-15 should be used is from −10°C to +50°C. Outside this range, the inner circuits may become damaged.

Keep the flash unit away from salt water and out of the rain.

Finally, never attempt to disassemble or repair the flash yourself. These delicate procedures should be left to an authorized repairman.

"RED EYE"

"Red eye" is a phenomenon in flash photography where the center portions of the subject's eyes appear as bright red orbs in color photographs (or white in black and white pictures). This is a result of the light from the flash illuminating the retina directly. If the subject looks straight into the lens and there is little or no ambient light, the pupil is wide open, making the retina clearly visible in the picture.

To avoid "red eye," you can take any or all of the following precautions:

1. Ask the subject not to look directly into the lens when the picture is taken.
2. Remove the flash unit from the camera and hold it as far away as possible from the camera by using a sync cord.
3. Increase the room's overall illumination to reduce the opening of the subject's pupils.

OPTIMUM BATTERY PERFORMANCE

New batteries

Between manufacturing and first use, all batteries exhibit some drain. Therefore, care should be taken to purchase the newest (and freshest) ones possible. To help you do this, some manufacturers stamp the date of manufacture on the bottom of each battery. Ask your camera dealer for assistance in interpreting the codes.

Temperature

Battery life ratings are based on operation at around 20°C (68°F). At other temperatures, battery life is shortened by as much as 1/3. Spare batteries should therefore be kept available if operation in low temperatures is anticipated.

Continuous use

Batteries are drained much more quickly by continuous use than by intermittent use.

Storage

When not in use, the batteries should be removed to prevent damage from leakage. To minimize drain during the period of disuse, store the batteries in a cool, dry place below 29°C.

Battery brands

Do not use mixed brands of batteries, nor batteries with different model numbers. Also, avoid mixing new and old batteries since proper performance will not be obtained and battery leakage into your SB-15 may occur.

Disposal

Do not dispose of batteries by burning. Also, for safety's sake, do not disassemble batteries when disposing of them.

Polarity

When installing batteries, observe the voltage polarities carefully. Reversal of the positive (+) and negative (−) terminals will result in leakage. If leakage should occur, clean carefully or take your SB-15 to your dealer.

SPECIFICATIONS

Electronic construction Automatic silicon-controlled rectifier and series circuitry

Guide number 25 (ASA/ISO 100 and meters); 18 (with Wide-Flash Adapter SW-6)
41 (ASA/ISO 25 and feet); 30 (with Wide-Flash Adapter SW-6)

Angle of coverage

	Horizontal	Vertical	Usable lens
Normal	56°	40°	35mm or longer
With SW-6	67°	48°	28mm or longer

Recycling time

Battery type	Number of flashes	Recycling time
Zinc-carbon	60 times	Approx. 9 sec. at minimum
Alkaline-manganese	160 times	Approx. 8 sec. at minimum

TTL auto exposure Through-the-lens automatic exposure control with the Nikon FG; film speeds from ASA/ISO 25 to 400; usable aperture range from f/2 to f/22.

Regular auto exposure Automatic exposure control via the front-mounted light sensor; film speeds from ASA/ISO 25 to 800; two working apertures depending on film speed

Working aperture	Auto shooting distance range
f/4 (ASA/ISO 100)	A2: 0.6~6.2m (2~20 ft.)
f/8 (ASA/ISO 100)	A1: 0.6~3.1m (2~10 ft.)

Manual exposure control Full output at M setting; approx. 1/13 power at MD setting

Batteries Four 1.5V AA-type penlight batteries; alkaline-manganese batteries recommended; Ni-Cd AA-type batteries usable, but performance is lower

Dimensions Approx. 101mm x 90mm x 42.5mm (excluding mounting foot)

Weight Approx. 270g (without batteries)

Accessories Wide-Flash Adapter SW-6; Soft Case SS-15

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