Nikon

Autofocus Speedlight

SB-22s

Instruction Manual

E

T1F1000601(S855)11

Foreword

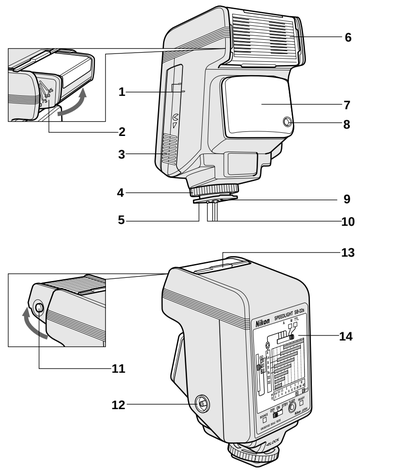
Congratulations. You are now the proud owner of the Nikon Autofocus Speedlight SB-22s, a flash unit offering compact design and easy operation. With a powerful flash output (GN 28 at ISO 100, m), the SB-22s can be used not only for shooting in dimly lit interiors or outside at night, but for daylight fill-in flash. The SB-22s features three flash modes: TTL Auto, Non-TTL Auto, and Manual. In the Non-TTL Auto mode, you have a choice of four shooting apertures at A1, A2, A3 and A4. Other advanced flash capabilities include Bounce, Close-up, and Multiple Flash. To get the most out of your new flash unit, please read this manual before use.

●Make some test shots
Before taking important flash photographs, make some test shots to ascertain the SB-22s is working properly.

●Use only Nikon-approved equipment
The SB-22s is designed for use with Nikon cameras, lenses, and accessories.
—Using cameras or accessories other than those specified by Nikon may damage the SB-22s.
—Nikon cannot be held responsible for malfunctions caused by using the SB-22s in ways not specified in this manual, or using the SB-22s with a camera made by another manufacturer.

Speedlight parts

Note: Setting positions and scales shown on the aperture/shooting distance range panel below may differ from those in actual operation.



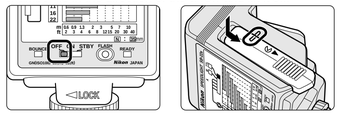
1 Battery chamber lid indices
2 Bounce angle indicators
3 Battery chamber lid
4 Mounting foot lock nut
5 Mounting foot
6 Flash head
7 AF assist illuminator LED window
8 Light sensor for non-TTL auto flash operation
9 Mount pin (for cameras featuring a safety lock system)
10 Hot-shoe contacts
11 Wide flash adapter lock release button
12 Sync/multiple flash terminal
13 Built-in wide flash adapter
14 Aperture/shooting distance range panel
15 Flash mode indicator LED
16 Flash mode selector
17 Film speed (ISO) scale
18 Film speed (ISO) selector
19 Film speed (ISO) index
20 Aperture scale (for non-TTL mode)
21 Aperture scale
22 BOUNCE indicator LED
23 POWER switch
24 Flash shooting distance range indicators
25 Distance scale (meters/feet)
26 Angle of coverage (N-35mm/W-28mm) index windows
27 Ready-light
28 FLASH button

NIKON CORPORATION
FUJI BLDG., 2-3, MARUNOUCHI 3-CHOME, CHIYODA-KU, TOKYO 100-8331, JAPAN

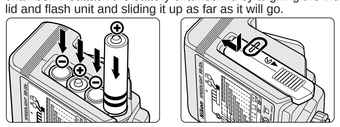
Printed in Japan

Preparation

1 Set the SB-22s's POWER switch to OFF, then slide down the battery chamber lid in the direction of the arrow and lift it off.



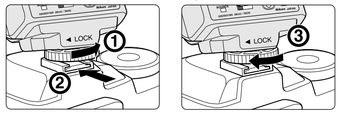
2 Install four penlight batteries following the + and – symbols inside the chamber. Reattach the battery chamber lid by aligning the indices on the lid and flash unit and sliding it up as far as it will go.



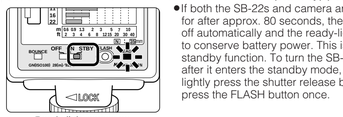
●Four penlight batteries of any of the following types may be used:
① AA-type zinc-carbon ② AA-type alkaline-manganese ③ AA-type NiCd (rechargeable) ④ AA-type Ni-MH (Nickel-Metal Hydride) (rechargeable) ⑤ AA-type (1.5V) lithium
For more information on batteries, refer to "Notes on Batteries."

CAUTION
●When replacing batteries, replace all four batteries at the same time, do not mix battery types or brands, do not use old with new batteries, and never reverse the polarity of the batteries when installing. Otherwise, the batteries may catch on fire or explode, due to the possible leakage of corrosive liquids.
●In the event that corrosive liquids do seep from the batteries, avoid touching the liquids. Certain types of batteries contain strong alkaline liquids. If the alkaline liquids stick to your skin or clothes, wash immediately with running water.

3 Loosen the SB-22s's mounting foot lock nut ①. Slide the SB-22s into the camera's accessory shoe ② and tighten the lock nut ③.



4 Set the SB-22s's POWER switch to ON or STBY (standby) position.



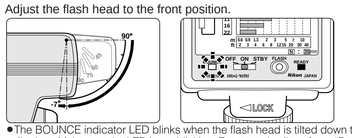
Ready-light comes on.

●If both the SB-22s and camera are not used for after approx. 80 seconds, the SB-22s shuts off automatically and the ready-light goes out to conserve battery power. This is called the standby function. To turn the SB-22s on again after it enters the standby mode, you can lightly press the shutter release button or press the FLASH button once.

NOTE
Do not use the standby function:
●If the SB-22s is mounted on Nikon F3-series, New FM2, FM10 or FE10 cameras.
●If the SB-22s is mounted on Nikon FA or FE2 cameras and the shutter speed is set to M250 or B (bulb).
●If the SB-22s is mounted on Nikon FG or Nikonos V cameras and the shutter speed is set to M90 or B (bulb).
●If the SB-22s is mounted on a Nikonos V with an optional sync cord for land use connected and the shutter speed is set to M90 or B (bulb).
●If the SB-22s is mounted on a Nikon FM3A camera and the shutter speed is set to B (bulb).

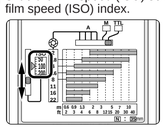
The standby function does not work:
●If the SB-22s is mounted on Nikon FA or FE2 cameras with Motor Drive MD-12 attached and Remote Code MC-4A (or MC-10) is connected.

5 Adjust the flash head to the front position.



●The BOUNCE indicator LED blinks when the flash head is tilted down to the -7° or tilted up. Make sure the LED is not blinking. For more details, refer to "Bounce Flash."
●The SB-22s comes with a wide flash adapter to increase the angle of coverage to match a 28mm focal length lens. Refer to "Setting the Built-In Wide Flash Adapter." When no wide flash adapter is set, the SB-22s provides an angle of coverage to match a 35mm or longer focal length lens.

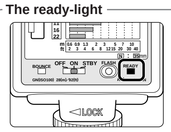
6 Slide the film speed (ISO) selector to align film speed (ISO) in use with the film speed (ISO) index.



●For example, if you're using ISO 100 film, align 100 with the film speed (ISO) index.
●Operations explained in this manual are based on the assumption that the correct film speed is set on the SB-22s, which is necessary for checking the flash shooting distance range and aperture values on the aperture/shooting distance range panel. However, because there is no electrical connection between the ISO selector and the flash unit circuitry, flash firing and flash output will not be affected, even if the ISO scale is accidentally changed by moving the film speed (ISO) selector.

7 Preparation is complete.
Now, refer to the following available flash modes:
●TTL Auto Flash **TTL** mode
●Non-TTL Auto Flash **A** mode
●Manual **M** mode
●Or other advanced flash techniques on the reverse side of this sheet

The ready-light



Lights up : Indicates the SB-22s is recycled and ready to fire.

Blinks : In TTL or Non-TTL Auto flash mode, if the ready-light blinks for approx. 3 seconds after shooting, this indicates the light may have been insufficient for correct exposure. In this case, use a wider aperture (smaller f-number) or move closer to the subject.

●Refer to the following table to determine if your batteries should be replaced or recharged. (For more information, see "Notes on Batteries.")

Type of batteries installed	Ready-light takes	Remedy
Zinc-carbon	More than 30 seconds to light up.	Replace batteries.
Alkaline-manganese		
Lithium	More than 10 seconds to light up.	
NiCd (rechargeable)		Recharge batteries.
Ni-MH (rechargeable)		

TTL Auto Flash TTL Mode

The built-in TTL auto flash sensor in cameras so equipped measures the illumination provided by the SB-22s that is reflected back from the subject. This measurement is made through-the-lens and when the light is sufficient to ensure proper exposure, the camera sends a signal to the SB-22s to stop firing. TTL Auto Flash **TTL** mode* provides simple and effective flash operation, recommended for users with little experience with flash.

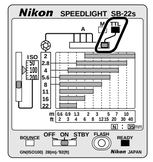
Cameras usable in the TTL Auto Flash mode

F5	F4-Series	F100	F90X/N90S*2	F90-Series/N90*2	F80-Series/N80-Series*2
F70-Series/N70*2	F65-Series/N65-Series*2	F60-Series/N60*2	F50-Series/N50*2	F-801s/N8008s*2	F-801/N8008*2
F-601/N6006*2	F-601M/N6000*2	F-501/N2020*2	F-401x/N5005*2	F-401s/N4004s*2	F-401/N4004*2
F-301/N2000*2	FM3A	FA	FE2	FG	Pronea 600i/6i*2
					Nikonos V

*1 Sold exclusively in the USA. *2 Sold exclusively in the USA and Canada.
• TTL Auto Flash **TTL** mode is not possible with Nikon F3-Series except with the AS-17 attached, New FM2, FM10, FE10 and D1 Series cameras. Use the Non-TTL Auto Flash **A** mode or Manual **M** flash mode instead.
• If camera's ready-light LED keeps blinking, the camera is not ready for TTL Auto Flash mode. Confirm that the shutter speed is not set to M250, M90, or B).

* Depending on the Nikon camera and lens, or finder in use, either one of the following TTL flash operations is possible: Multi-Sensor Balanced Fill-Flash, Matrix Balanced Fill-Flash, Center-Weighted Fill-Flash/Spot Fill-Flash, Programmed TTL Auto Flash, or Standard TTL Flash. For more details on TTL flash operation, refer to your camera's instruction manual. 3D Multi-Sensor Balanced Fill-Flash is not possible, because the SB-22s has no Monitor Preflash function.

1 Set the flash mode selector on the SB-22s to **TTL**.



2 Set your camera. (Refer to your camera instruction manual for details.)
●Set your camera's exposure mode to Programmed auto (P), Aperture-priority auto (A), or Manual (M) mode. (Shutter-priority auto (S) mode is not recommended, because setting an appropriate aperture to match the shooting distance is difficult.)
●Set your camera's metering system to Matrix Metering, Center-Weighted Metering, or Spot Metering.
●The shutter speed is automatically set to the flash sync speed. (Or you can intentionally set the shutter speed to one slower than the flash sync speed.)
●Because the SB-22s features the same TTL flash operations as those of the SB-15 and SB-22, refer to those items corresponding to SB-15 or SB-22 in the flash photography section of your camera's instruction manual, if the SB-22s is not listed.

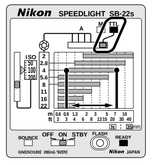
3 Wait for the ready-light to come on and make sure the subject is in focus before taking the picture.
●If the ready-light blinks for approx. 3 seconds after shooting, this indicates the light may have been insufficient for correct exposure. In this case, use a wider aperture (smaller f-number) or move closer to the subject. You can also check if the subject will receive the correct exposure by test firing the SB-22s. Refer to "Checking the Correct Exposure."

Checking the Correct Exposure

Determining an appropriate flash shooting distance range in the TTL Auto Flash "TTL" mode

1 Check the aperture set on the camera or lens.
●In the TTL Auto Flash mode, you can set any aperture value on the camera or lens aperture ring.

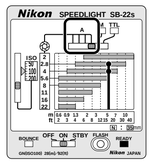
2 Check the shooting distance range represented by the flash shooting distance range indicator which matches the f-number in the aperture scale window.
●For example, selecting f/4 lets you get the flash shooting distance range from 0.9m to 7.0m (3 ft. to 23 ft.) with angle of coverage at N-35mm and a film speed of ISO 100.
In this case, underexposure may occur when the subject is more than 7.0 m (23 ft.) away.
●For other shooting distance ranges, apertures, and ISO film speeds, refer to the table below.



Determining an appropriate flash shooting distance range and apertures in the Non-TTL Auto Flash "A" mode

1 Determine the shooting distance.

2 Follow the appropriate vertical line upward from the shooting distance on the distance scale until it meets one of the flash shooting distance range indicators. Then follow the flash shooting distance range indicator horizontally and you will find the appropriate apertures.
●In Non-TTL Auto Flash **A** mode, you can select A1, A2, A3, or A4 only.
●For example, when shooting a subject located at 5m (16.4 ft.) with the angle of coverage at N-35mm and a film speed of ISO 100, the available apertures are f/2.8, f/4 or f/5.6. Selecting f/2.8 lets you take pictures of subjects approx. 1.3m to 10.0m (4.3 ft. to 32.8 ft.) away from the SB-22s. If you choose f/4, you can take pictures of subjects approx. 0.9m to 7.0m (3 ft. to 23 ft.) Underexposure may occur when the subject is more than 10m (32.8 ft.) away when f/2.8 is selected, or more than 7m (23 ft.) away when f/4 is selected.
●For other shooting distance ranges, apertures, and ISO film speeds, refer to the table below.
●Available apertures possible at A1 to A4 vary according to the setting of the film speed (ISO) scale. Correct exposures cannot be obtained if the same aperture as indicated by the illuminated f-number is not set on your camera or lens aperture ring.



Usable apertures with corresponding flash shooting distance ranges

Flash mode selector in A mode	ISO film speed							Shooting distance range Unit: m (ft)	
	25	50	100	200	400	800 (1000*1)	1600*2	N-35mm	W-28mm
—				1.4	2	2.8	4	3.2 - 20.0 (10.5 - 65.6)	2.2 - 17.0 (7.2 - 55.8)
—	—	—	—	1.4	2	2.8	4	2.2 - 17.0 (7.2 - 55.8)	1.6 - 12.0 (5.2 - 39.3)
—	—	1.4	2	2.8	4	5.6	8	1.8 - 14.0 (5.9 - 45.9)	1.3 - 10.0 (4.3 - 32.8)
A4	1.4	2	2.8	4	5.6	8	11	1.3 - 10.0 (4.3 - 32.8)	0.9 - 7.0 (3.0 - 23.0)
A3	2	2.8	4	5.6	8	11	16	0.9 - 7.0 (3.0 - 23.0)	0.6 - 5.0 (2.0 - 16.4)
A2	2.8	4	5.6	8	11	16	22	0.6 - 5.0 (2.0 - 16.4)	0.6 - 3.5 (2.0 - 11.5)
A1	4	5.6	8	11	16	22	32	0.6 - 3.5 (2.0 - 11.5)	0.6 - 2.5 (2.0 - 8.2)
—	5.6	8	11	16	22	32	45	0.6 - 2.5 (2.0 - 8.2)	0.6 - 1.7 (2.0 - 5.6)
—	8	11	16	22	32	45	64	0.6 - 1.7 (2.0 - 5.6)	0.6 - 1.2 (2.0 - 3.9)
—	11	16	22	32	45	64	—	0.6 - 1.2 (2.0 - 3.9)	0.6 - 0.9 (2.0 - 3.0)

*1 Use an aperture 1/3 of an f/stop smaller than those shown in the table.
*2 Not possible in **TTL** mode

Determining whether the subject will receive the correct exposure in TTL and Non-TTL Auto Flash modes by test firing the SB-22s.

1 Follow the same procedures as in TTL Auto Flash **TTL** or Non-TTL Auto Flash **A** mode.
●In **TTL** mode, set the flash mode selector to either A1, A2, A3 or A4 to line up the same aperture set on the camera or lens aperture ring with that indicated on the aperture/shooting distance range panel. If the apertures are out of the range of available apertures possible at A1 to A4, the correct exposure cannot be determined before shooting.

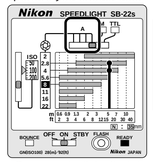
2 Wait for the ready-light to come on and press the SB-22s's FLASH button to fire the flash.
●If the ready-light blinks for approx. 3 seconds after shooting, this indicates the light may have been insufficient for correct exposure. In this case, use a wider aperture (smaller f-number) or move close to the subject.

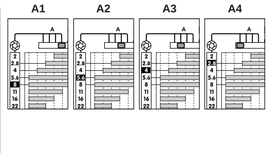
Non-TTL Auto Flash A Mode

The SB-22s's built-in sensor measures the flash illumination reflected back from the subject, automatically controlling the flash output to give you the correct exposure. This is called the Non-TTL Auto Flash **A** mode. A choice of four shooting apertures at A1 to A4 are available, covering a variety of shooting distances.

1 Set your camera's exposure mode to Aperture-priority auto (A) or Manual (M).
●Set your camera's metering system to any setting.
●For Nikon FM3A, New FM2 and FM10 cameras, manually set the shutter speed to the flash sync shutter speed or slower.
For other cameras, the shutter speed is automatically set to the flash sync speed. (You can intentionally set the shutter speed to one slower than the flash sync speed.) Refer to your camera's instruction manual for details.

2 Set the SB-22s's mode selector to either A1, A2, A3 or A4 depending on the aperture selected that brings the subject within the flash shooting distance range. The illuminated f-number shown in the window at left is the aperture you should use.





●For example, if the flash-to-subject distance is 5m (16.4 ft.), set the flash mode selector to **A4** (f/2.8), **A3** (f/4) or **A2** (f/5.6) when using ISO 100 film with the angle of coverage adjusted to N-35mm. Underexposure may occur if **A1** (f/8) is selected.
●Using an aperture wider than the maximum aperture of the lens in use is not recommended.
●To determine the correct flash shooting distance range and aperture, refer to "Checking the Correct Exposure."

3 Set the same aperture as indicated on the aperture/shooting distance range panel on your camera or lens aperture ring.
●To set the aperture on Zoom-Nikkor lenses having variable maximum apertures, refer to "Setting Apertures on Zoom-Nikkor Lenses having Variable Maximum Apertures."

4 Wait for the ready-light to come on and make sure the subject is in focus before taking the picture.
●If the ready-light blinks for approx. 3 seconds after shooting, this indicates the light may have been insufficient for correct exposure. In this case, use a wider aperture (smaller f-number) or move closer to the subject. You can also check if the subject will receive the correct exposure by test firing the SB-22s. Refer to "Checking the Correct Exposure."

Camera and film speed combinations

Because the flash output is automatically controlled by the SB-22s, any Nikon camera/film speed combination can be used. Correct exposure is obtained by setting the same aperture (obtained from the aperture/shooting distance range panel) as set on the camera or lens aperture ring. Exposure compensation is easy to achieve by intentionally changing the aperture on the camera or lens aperture ring.

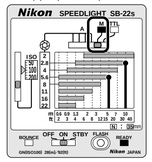
Manual Flash M Mode

In this mode, the flash always fires at full output. Manual flash photography is recommended when shooting subjects in which the correct exposure is difficult to obtain in the TTL or Non-TTL Auto Flash mode or when you want to exercise your creative preferences.

1 Set your camera's exposure mode to Aperture-priority auto (A) or Manual (M).
●Set your camera's metering system to any setting.
●For Nikon FM3A, New FM2 and FM10 cameras, manually set the shutter speed to the flash sync shutter speed or slower.
For other cameras, the shutter speed is automatically set to the flash sync speed. (You can intentionally set the shutter speed to one slower than the flash sync speed.) Refer to your camera's instruction manual for details.

2 Set the flash mode selector to **M**.

3 Determine the shooting distance and follow the appropriate vertical line upward from the shooting distance on the distance scale until it meets one of the distance range indicators. Then follow the flash shooting distance range indicator horizontally and you will find the appropriate apertures. Set the appropriate aperture on the camera or lens aperture ring.



●For example, when shooting with ISO 100 film, with the angle of coverage adjusted to N-35mm, selecting f/5.6 lets you take pictures of subjects at a distance of approx. 5m (16.4 ft.) away, while f/2.8 lets you take pictures of subjects approx. 10 m (32.8 ft.) away.
●To determine the correct aperture, use the equation and guide number table:

$$\text{f/stop (aperture)} = \frac{\text{guide number}}{\text{flash-to-subject distance (m/ft)}}$$

Guide numbers (m/ft) in M mode at 20˚C/68˚F

Film speed (ISO)	25	50	100	200	400	800	1600
Normal 35mm	14/45.9	20/65.6	28/91.9	40/131.2	56/183.7	80/262.5	110/360.9
Wide 28mm	10/32.8	14/45.9	20/65.6	28/91.9	40/131.2	56/183.7	80/262.5

For example, when shooting a subject at a distance of 5m (16.4 ft.) using ISO 100 film with the angle of coverage adjusted to N-35mm (no wide flash adapter),

$$\text{f/stop} = \frac{28}{5}\text{ (in meters)} = 5.6$$

$$\text{f/stop} = \frac{91.9}{16.4}\text{ (in feet)} = \text{approx. } 5.6$$

Therefore f/5.6 is the correct aperture.
●To set the aperture on Zoom-Nikkor lenses having variable maximum apertures, refer to "Setting Apertures on Zoom-Nikkor Lenses having Variable Maximum Apertures."

4 Wait for the ready-light to come on and make sure the subject is in focus before taking the picture.

Setting Apertures on Zoom-Nikkor Lenses having Variable Maximum Apertures

Setting the aperture using the camera aperture dial:

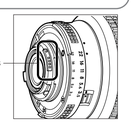
For example, F5, F100, F80-Series/N80-Series, F65-Series/N65-Series, F60-Series/N60, F50-Series/N50, F-401x/N5005, F-401s/N4004s, F-401/N4004, Pronea 600i/6i, D1 Series cameras with Nikkor lenses with a built-in CPU*: First set the lens to its minimum aperture (largest f-number) (except G-type Nikkor lenses**), then set the aperture on the camera using the aperture dial or button after zooming in or out to determine the focal length setting. In this way, the variable aperture will be automatically compensated by the camera.

Setting the aperture on the camera's LCD panel using the lens aperture ring:

For example, F4-Series, F90X/ N90s, F90-Series/ N90, F70-Series/ N70, F-801s/ N8008s, F-801/N8008, F-601/N6006, F-601M/ N6000 cameras with Nikkor lenses with a built-in CPU*
Check and set the aperture on the LCD panel after zooming in or out to determine the focal length setting. In this way, the variable aperture will be automatically compensated by the camera.

*Nikkor lenses with a built-in CPU incorporate CPU contacts. (See the figure on the right.)

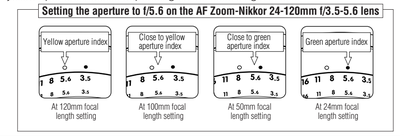
**G-type Nikkor lenses have no aperture ring. The aperture should therefore be selected from the camera body. Unlike other CPU Nikkor lenses, the aperture does not need to be set to its minimum.



For other camera/lens combination:

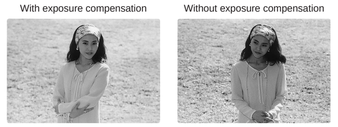
For example, F-501/ N2020, F-301/N2000, FM3A, FA, FE2, FG, Nikonos V, F3-Series, New FM2, FM10, FE10 with all other Nikkor and Nikon lenses except G-type Nikkor lenses.
(Use the following method for cameras listed on the left when combined with Nikkor lenses without a built-in CPU.)
Align the aperture ring between the green and yellow aperture indexes after zooming in or out to determine the focal length setting.
●If the zoom lens has a maximum aperture difference of approx. 1 or more f/stop between the longest and shortest focal length positions (see the figures below), align the aperture ring with the green aperture index for a wide setting, and align the aperture with the yellow aperture index for a telephoto setting. For intermediate focal length settings, set the aperture ring somewhere between the green and yellow aperture indexes depending on the focal length in use.

Setting the aperture to f/5.6 on the AF Zoom-Nikkor 24-120mm f/3.5-5.6 lens



Exposure Compensation in Flash Photography

Some plus compensation may be necessary when the background includes a mirror, white wall, or other highly reflective surface. Otherwise, underexposed pictures might occur. Similarly, some minus compensation may be required when the background is dark or includes subjects of low reflectivity to prevent overexposed pictures. In these cases, making exposure compensation is recommended to obtain the correct exposure. Normally, exposure compensation within the range of -2 to +1 steps is recommended.



Exposure compensation in TTL Auto Flash "TTL" mode

●Make exposure compensation on the camera to match the shooting situation. Consult the instruction manual provided with your camera for specific information on procedures for exposure compensation.
●When shooting a subject containing highly reflective surfaces, use some plus compensation. When the background is very dark, or the subject is in deep shadows, use some minus compensation.

Exposure compensation in Non-TTL Auto Flash "A" mode

Set a different aperture on the camera or lens aperture ring without changing the flash mode selector. When shooting a subject containing highly reflective surfaces, set a larger aperture (smaller f-number). When the background is very dark, or the subject is in deep shadows, set a smaller aperture (larger f-number).

Exposure compensation in Manual "M" mode

Intentionally change the aperture set on the camera or lens aperture ring. When you want an overexposed picture, set a wider aperture (smaller f-number) than the one calculated. For an underexposed picture, use a smaller aperture (larger f-number).

Autofocus Flash Operation in Dim Light

For autofocus cameras only

When the light is too dim for normal autofocus operation, the SB-22s's AF assist illuminator LED automatically turns on to illuminate dark subjects when the shutter release button is pressed halfway. The AF assist illuminator LED turns off as soon as the subject is in focus.

NOTE
●The subject must be within the range of 1m (3.3 ft) to 5m (16.4 ft) at 20˚C (68˚F).
●Replace the SB-22s's batteries whenever the ready-light becomes dark or blinks after the AF assist illuminator LED turns on.
●If the AF assist illuminator LED comes on but no in-focus indicator appears in the camera's viewfinder with the shutter release button pressed halfway, the subject is either too far away or too dark for the camera AF-sensor even with the AF assist illuminator LED. In this case, set the flash mode selector to Manual **M** and focus manually.

Conditions necessary to activate the AF assist illuminator LED:

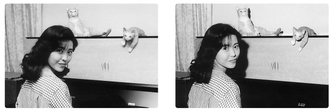
●The subject must be sufficiently dark.
●AF Nikkor lenses must be used. Lenses from 24mm (35mm for F-501/N2020**) to 105mm are recommended.
●The camera's autofocus mode is set to Single Servo Autofocus (Set camera's focus mode selector to "AF" for F50-series/N50*, and "A" for F-401x/N5005*, F-401s/N4004s* and F-401/N4004*).
●Focus lock is not employed.
●The SB-22s's ready-light is on.

*Sold exclusively in the USA
**Sold exclusively in the USA and Canada

Bounce Flash

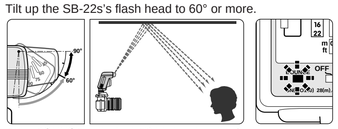
When taking pictures indoors, direct flash often causes harsh, unattractive shadows on the subject or background. By bouncing the light off the ceiling or walls, you can soften the shadows and produce more natural-looking portraits.

Bounce flash using diffused light | Normal flash using direct flash



NOTE
In color photography, select white or highly reflective surfaces to bounce the light off of. Otherwise, your pictures will come out with an unnatural color cast similar to that of the reflecting surface.

1 Tilt up the SB-22s's flash head to 60° or more.

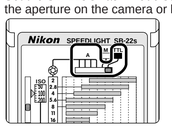


- The BOUNCE indicator LED blinks when the flash head is tilted.
- The flash head can be tilted up to 90°. Intermediate settings can also be used.

NOTE
If the angle of the flash head is not far enough off axis from the subject, uneven illumination will result from a combination of direct and bounced flash.

2 Set the camera's exposure mode to Aperture-priority auto (A) or Manual (M).
- Any metering system is acceptable.
- For Nikon FM3A, New FM2 and FM10 cameras, manually set the shutter speed to the flash sync shutter speed or slower.
- For other cameras, the shutter speed is automatically set to the flash sync speed. (Or you can intentionally set the shutter speed to one slower than the flash sync speed.) Refer to your camera's instruction manual for details.

3 Set the SB-22s's flash mode selector to **TTL**, **A1**, **A2**, **A3** or **A4**, then set the aperture on the camera or lens aperture ring.



- With bounce flash, there is a 2 to 3 stop light loss when compared with normal TTL or non-TTL auto flash modes. Therefore, you should open up the lens by 2 to 3 stops (use smaller f-numbers) and bracket your exposures, whenever possible.
- For details on the flash mode selector (TTL, A1-A4) and aperture values, refer to "TTL Auto Flash **TTL** Mode," "Non-TTL Auto Flash **A** Mode," or "Checking the Correct Exposure."

4 Wait for the ready-light to come on and make sure the subject is in focus before taking the picture.
- If the ready-light blinks for approx. 3 seconds after shooting, this indicates the light may have been insufficient for correct exposure. In this case, use a wider aperture or reduce the distance between the subject and the SB-22s, where the distance is measured from the flash to the bounce surface and back again to the subject. You can also check if the subject will receive the correct exposure by test firing the SB-22s. Refer to "Checking the Correct Exposure."

When shooting subjects closer than 1 m (3.3 ft.)

Tilt the flash head down to the -7° position when shooting subjects 1 m (approx. 3.3 ft.) or closer to give sufficient light to the subject with the SB-22s mounted on camera.
- The BOUNCE indicator LED blinks when the flash head is tilted down to -7°.
- Use of the wide flash adapter is recommended.

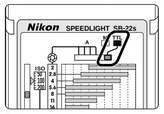
Close-Up Flash

In TTL Auto Flash **TTL** mode, when shooting subjects such as flowers or insects closer than 0.6m (2 ft), use your SB-22s off camera and utilize its built-in wide flash adapter to take close-up pictures with flash.

1 Connect the SB-22s to your camera using an optional TTL Remote Cord.
- Use an optional TTL Remote Cord SC-17 (or SC-24 for F4 cameras with a High-Magnification Finder DW-20 or DW-21, and F5 cameras with a High-Magnification Finder DW-30 or DW-31) for connecting the SB-22s to your camera. The subject cannot be sufficiently illuminated if the flash unit is attached to the camera's accessory shoe.
- For details on connections, refer to the SC-17 or SC-24's instruction manual.

2 Set the camera's exposure mode to Aperture-priority auto (A) or Manual (M).
- Set your camera's metering system to any setting.
- The shutter speed is automatically set to the flash sync speed when the SB-22s's POWER is turned on. (Or you can intentionally set the shutter speed to one slower than the flash sync speed.)
- For the FM3A camera, set a shutter speed slower than 1/250 sec., the flash sync speed.

3 Set the flash mode selector to **TTL**.



- Correct exposure cannot be obtained in non-TTL auto flash **A** mode.

4 Set the built-in wide flash adapter. Then adjust the flash head toward the subject.
- Refer to "Setting the Built-In Wide Flash Adapter."
- The angle of coverage changes from "N-35mm" to "W-28mm."

5 Set the aperture on the lens aperture ring or on the camera by calculating the f/stop using the equation and table below.

$$\text{f/stop (aperture)} \geq \frac{\text{coefficient}}{\text{flash-to-subject distance (m/ft)}}$$

ISO film speed and coefficient (m/ft)

ISO film speed	25	50	100	200	400	800	1000
Coefficient	1.5 (4.9)	2.2 (7.2)	3 (9.8)	4.3 (14)	6 (20)	8.5 (27.9)	9.6 (31.5)

For example, with a subject 0.5m (1.6 ft.) away from the SB-22s's flash head using ISO 100 film and the wide flash adapter in place, the suggested aperture is:

$$\text{f/stop} \geq \frac{3}{0.5} \text{ (in meters)} = 6$$

$$\text{f/stop} \geq \frac{9.8}{1.6} \text{ (in feet)} = \text{approx. } 6$$

Therefore, you should use f/6 or smaller (larger f-number), such as f/8, f/11 or f/16.

6 Wait for the ready-light to come on and make sure the subject is in focus before taking the picture.
- If the ready-light blinks for approx. 3 seconds after shooting, this indicates the light may have been insufficient for correct exposure. In this case, use a wider aperture (smaller f-number) or move closer to the subject.

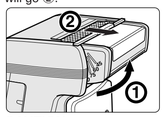
Setting the Built-In Wide Flash Adapter

The SB-22s comes with a wide flash adapter to increase the angle of coverage to match a 28mm lens. The guide number is reduced from 28 to 20 (ISO 100, meters) when the built-in wide flash adapter is used.

Setting the wide flash adapter

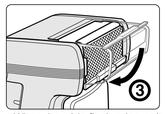
1 Tilt the flash head to the 90° position ①.

2 Slide out the wide flash adapter in the direction of the arrow as far as it will go ②.



CAUTION
Do not tilt down the flash head from 90° position when the wide flash adapter is extended midway.

3 Return the flash head to its original position ③.

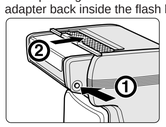


- When the wide flash adapter is set, the angle of coverage changes from N-35mm to W-28mm, and the distance scale also moves.

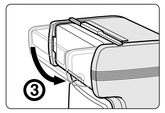
Detaching the wide flash adapter

1 Tilt the flash head to the 90° position.

2 While pushing the wide flash adapter lock button ①, slide the wide flash adapter back inside the flash head ②.



3 Return the flash head to its original position ③.



Troubleshooting

Warning indicator	Cause	Reference/remedy
Ready-light does not come on.	POWER switch is turned OFF.	Preparation (4)
	Batteries are not installed correctly.	Preparation (2)
	Battery power is weak.	"The Ready-Light"
	Standby function is in operation.	Preparation (4)
	Contacts in the battery chamber (SB-22s) or battery electrodes are corroded.	Clean the contacts or electrodes.
Ready-light blinks for approx. 3 sec. after shooting.	Subject is out of the flash shooting distance range.	"Checking the Correct Exposure"
Ready-light takes longer to light up.	Batteries are exhausted.	"The Ready-Light"
	Lithium batteries become hot by repeated use which activate their safety circuit, thus cutting off power.	Allow longer recycling time between flashes or wait until they cool off. "Notes on Batteries"
BOUNCE indicator LED lights up.	SB-22s's flash head is tilted from the front position.	"Bounce Flash Operation"
Shutter cannot be released even when the ready-light lights up.	Flash mode selector is set to A1, A2, A3, A4 or M, and camera's exposure mode is set to Programmed auto or Shutter-priority auto mode.	Non-TTL Auto Flash A Mode (1)
		Manual Flash M Mode (1)

Tips on Speedlight Care

- Use a blower brush to remove dirt and dust from the SB-22s and clean it with a soft, clean cloth. Never use commercial cleaners containing thinner, benzene, or alcohol as they could damage its plastic parts.
- When storing the SB-22s for two weeks or longer, remove the batteries to prevent battery leakage. Also once a month, insert fresh batteries and fire the unit several times to reform its capacitor and keep the SB-22s in top working order. Finally make sure the ready-light is on, before turning the power off and removing the batteries.
- Keep the SB-22s away from chemicals such as camphor or naphthalene. Also avoid exposing it to magnetic waves from TVs or radios.
- Never store the SB-22s in the truck or glove compartment of a vehicle during the summer nor place it in front of a heater.

Notes on Batteries

Handling batteries
- Battery power tends to weaken as the temperature drops. At low temperatures, the number of flashes decrease and recycling time is longer. NiCd, Ni-MH and lithium batteries feature greater efficiency at low temperatures, usable as low as –20°C (–4°F). Alkaline-manganese and zinc-carbon batteries are not recommended as their performance become noticeably degraded at –10°C (14 °F) for alkaline-manganese and 0°C (32°F) for zinc-carbon batteries.
  In either case, battery performance may differ with each brand, due to modification in specifications or improvement in performance.

Using lithium batteries
- Lithium batteries incorporate internal safety switches. When they become hot, their safety circuits are activated, cutting off power. Battery power will recover if you stop using them, allowing their temperature to return to normal.

Using rechargeable NiCd and Ni-MH batteries
- Overcharging and excessive use may shorten battery life. Always make certain to turn the SB-22s off when not in use.
- Because flash consumes a large amount of battery power, rechargeable batteries may not operate properly before reaching the end of their stated life-span or the number of charging/discharging as specified by the battery manufacturer.

WARNING

Never attempt to disassemble or repair the SB-22s yourself as this may cause electric shock or cause the unit to malfunction, leading to possible injury.

Do not drop the SB-22s or hit it against a hard surface. If dropped, do not touch the metal portions inside the flash, because they could cause electric shock or injury. Remove the batteries and take the unit to your local Nikon dealer for repair.

If you detect heat, smoke, or the smell of burning, stop operation immediately and remove the batteries to prevent the unit from catching on fire or burning. Let the SB-22s cool down sufficiently before removing batteries. Then take the unit to your local Nikon dealer for repair.

The SB-22s should not be exposed to rain or saltwater. If water gets inside the SB-22s, this can cause electric shock or cause the unit to catch on fire. Also never touch the flash unit with wet hands.

Do not operate the SB-22s in an environment containing a combustible gas, as this may cause the unit to catch on fire or result in an explosion.

Keep batteries out of the reach of children. If a battery is accidentally swallowed, call a doctor immediately.

When replacing batteries, replace all four batteries at the same time, do not mix battery types or brands, do not use old with new batteries, and never reverse the polarity of the batteries when installing. Otherwise, the batteries may catch on fire or explode, due the possible leakage of corrosive liquids.

In the event that corrosive liquids do seep from the batteries, avoid touching the liquids. Certain types of batteries contain strong alkaline liquids which can cause chemical burns. If the alkaline liquids stick to your skin or clothes, wash immediately with running water.

CAUTION

Do not fire the flash directly into a person's eyes at close range as this may damage the retina, leading to partial or complete blindness.

Keep the SB-22s out of the reach of children. This will prevent them from swallowing batteries or getting an electric shock.

Do not throw used batteries into a fire. Do not short circuit, disassemble, or heat a battery; this may cause it to explode or catch on fire.

Always follow the warning instructions printed on batteries to prevent them from becoming hot, leaking corrosive liquids, catching on fire, or exploding.

When recharging NiCd or Ni-MH batteries, be sure to use the battery charger specified by the battery maker and read the instructions thoroughly. Do not recharge NiCd or Ni-MH batteries with their terminals reversed in the charger or before the batteries have cooled off sufficiently, as this may cause them to leak corrosive liquids, become hot, catch on fire, or explode.

Non-rechargeable batteries such as zinc-carbon, alkaline-manganese and lithium batteries should not be charged in a battery charger as they may become hot, catch on fire, explode, or leak corrosive liquids.

Multiple Flash Operation

To eliminate harsh shadows produced by a single flash unit, add additional illumination to the background, or create special lighting effects not possible with a single flash unit, you can attach Nikon Speedlights in series.

Flash shooting with more than one unit | Flash shooting with one flash unit

Multiple flash operation can be accomplished in two ways: (1) by connecting a Speedlight to the camera using a sync or remote cord such as TTL Remote Cord SC-17 or (2) by mounting a Speedlight on the Wireless Slave Flash Controller SU-4 (optional). In both cases, TTL multiple flash operation is possible with Nikon cameras in the TTL Auto Flash mode.

Notes on multiple flash operation using a sync or remote cord:
- SB-11, SB-14, SB-140 and SB-21B Speedlights cannot be used with Nikon F-401/N4004 or F-401s/N4004s as either main or secondary units.
- In multiple flash operation, if the electric current in the synchro circuit exceeds a certain level, you may not be able to take a second shot after the first. In this case, disconnect the main flash unit from the camera. This resets the circuits so you can resume shooting.
- In multiple flash operation, take care that the combined total of the coefficients in the table below for all flash units used together does not exceed 20 at 20°C (68°F), or 13 at 40°C (104°F).

Speedlight coefficient per each unit

Speedlight	Coefficient
SB-500X, SB-29, SB-28/28DX, SB-27, SB-26, SB-25, SB-24, SB-22s, SB-14, SB-11, SB-140	1
SB-23, SB-21, SB-17, SB-16, SB-15	4
SB-22	6
SB-20	9

Coefficient numbers are in units of 70μA.

Notes on multiple flash operation using the Wireless Slave Flash Controller SU-4 (optional):
- TTL, non-TTL or Manual multiple flash operation is possible by using the camera's built-in Speedlight or a Speedlight mounted on the camera's hot shoe as the master flash unit, and one or more Speedlights mounted on Wireless Slave Flash Controller SU-4s as the slave flash units.
- The SU-4's built-in light sensor not only detects when the master flash unit fires to trigger the slave flash unit, but also controls the flash duration of the slave flash unit in sync with the master flash unit.
- These Nikon Speedlights are usable:
  SB-29, SB-28/28DX, SB-27, SB-26, SB-25, SB-24, SB-23, SB-22s, SB-22, SB-20, SB-18, SB-16B, SB-15
- For more information, refer to the instruction manual provided with the SU-4.

TTL multiple flash operation

NOTE
TTL multiple flash operation is not possible with Nikon New FM2, FM10, FE10 and D1 Series cameras. In this case, perform non-TTL or manual multiple flash operation using the SU-4.

1 Connect the main flash unit to the camera directly.
- Or use the TTL Remote Cord SC-17/SC-24 or Power Bracket Unit SK-6 instead.

2 Connect the main flash unit to the secondary flash unit(s)
- Use one or more TTL Remote Cords SC-18/SC-19 or the TTL Multi-Flash Adapter AS-10.
- Use the Wireless Slave Flash Controller SU-4 to control remotely one or more slave flash units in the TTL flash mode.
- For other optional remote cords, refer to "Optional Accessories."

3 Set each flash unit by considering its direction and distance.
- Please note that the brightness of flash illumination is inversely proportional to the square of the distance between the flash unit and the subject when the same Speedlight models are used for both the master and slave Speedlights. For example, if the flash-to-subject distance is a reference unit of 1 (e.g., 1m), the brightness will be one-half that when the subject is 1.4 times away, and one-quarter when the subject is twice as far away.
- For details on connections, refer to the SC-17, SC-18, SC-19, or SC-24's instruction manual.

4 Turn on all flash units and make sure their standby functions are not activated.

5 Set the flash mode on all flash units to **TTL**.

6 Follow the same procedures as in normal TTL Auto Flash **TTL** mode.

Manual multiple flash operation

1 Attach the SB-22s to the camera's accessory shoe.

2 Connect the SB-22s to the sync flash terminal of the secondary flash unit(s).
- Use the same cords as used for TTL multiple flash operation, or Sync Cord SC-11 or coiled Sync Cord SC-15.
- Use the Wireless Slave Flash Controller SU-4 to control remotely one or more slave flash units in the Manual flash mode.
- For usable optional remote cords, refer to "Optional Accessories."

3 Set each flash unit by considering its direction and distance.
- Please note that the brightness of flash illumination is inversely proportional to the square of the distance between the flash unit and the subject. See the example described in "TTL multiple flash operation" above.
- For details on connections, refer to the SC-17, SC-18, SC-19, or SC-24's instruction manual.

4 Turn on all flash units and make sure their standby functions are not activated.

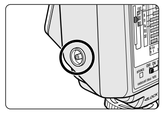
5 Set the flash mode of all the flash units to Manual **M**.

6 Follow the same procedures as in normal Manual flash **M** mode.

Optional Accessories

The SB-22s's sync/multiple flash terminal

This terminal is provided for connecting the SB-22s to your camera using Sync Cord SC-11 or SC-15 (for instance, if your camera does not have an accessory shoe) or when you want to perform Multiple Flash photography in Manual **M** mode with the SB-22s.



NOTE
When the SB-22s's sync terminal is connected to your camera via the Sync Cord SC-11 or SC-15, automatic flash sync speed setting and viewfinder ready-light no longer function. To retain these features, use optional TTL Remote Cord SC-17 or SC-24 which attach directly to your camera's accessory shoe.

Sync Cord SC-11 and SC-15
Sync Cords SC-11 and SC-15 are handy when you want to use the SB-22s off-camera or for use with cameras without accessory shoes. The SC-11 is approx. 25 cm (9.8 in.) long and the SC-15 is approx. 1m (3.2 ft) long. Use Sync Terminal Adapter AS-15 when connecting the SB-22s to cameras not having a sync terminal.

TTL Remote Cord SC-17 and SC-24
The TTL Remote Cords SC-17/24 provide TTL Auto Flash operation when the SB-22s is used off-camera. It comes with one tripod socket and two TTL multiple flash terminals. Both the SC-17 and SC-24 are approx. 1.5m (4.9 ft) long.

TTL Multi-Flash Sync Cord SC-18 and SC-19
Multi-Flash Sync Cords SC-18 or SC-19 are useful for connecting the SB-22s to the multiple flash terminal of the SC-17 (SC-24) or AS-10 for TTL multiple flash operation. The SC-18 is approx. 1.5 m (4.9 ft) long, and the SC-19 is approx. 3 m (9.8 ft) long.

TTL Multi-Flash Adapter AS-10
Use Multi-Flash Adapter AS-10 when connecting more than three flash units together for TTL multiple flash operation, or if the secondary flash units are not equipped with multiple flash terminals. The AS-10 comes with one tripod socket and three TTL multiple flash terminals.

Sync Terminal Adapter AS-15
The Sync Terminal Adapter AS-15 is necessary when using Sync Cords SC-11/SC-15 to connect the flash unit to cameras not having a sync terminal.

Flash Unit Coupler AS-4 and AS-7
Necessary when mounting the SB-22s on F3-series cameras. In this case, TTL auto flash is not possible.

Wireless Slave Flash Controller SU-4
Useful for multiple flash photography, the SU-4 features a built-in, movable light sensor and an accessory shoe for attachment of a slave Speedlight. The SU-4's light sensor not only triggers the slave unit to fire in unison with the master flash, but controls the flash duration of the slave unit in sync with the master unit to provide TTL, non-TTL, or Manual operation.

TTL Flash Unit Coupler AS-17 for F3-Series cameras
Dedicated adapter for F3-Series cameras providing TTL flash operation with Nikon Speedlights such as SB-29 and SB-28 featuring ISO-type mounting foot (not designed for F3).

Specifications

Electronic construction
Automatic Insulated Gate Bipolar Transistor (IGBT) and series circuitry.

Power source
Four AA-type zinc-carbon, alkaline-manganese, lithium (1.5V), NiCd (rechargeable) or Ni-MH (rechargeable) penlight batteries.

Guide number (at ISO 100, m)
28 at N-35mm; 20 at W-28mm (with wide flash adapter)

Angle of coverage

	Horizontal	Vertical	Usable lens
N-35mm	60˚	45˚	35mm or longer
W-28mm	70˚	53˚	28mm or longer

Bounce capability
Flash head can be tilted down to -7° or up to 90°. The BOUNCE indicator LED blinks whenever the flash head is tilted.

POWER switch
Three positions are provided: OFF, ON and STBY (standby). At STBY position: the SB-22s automatically turns itself off to conserve battery when the flash is not used for approx. 80 seconds.

Number of flashes and recycling times

Batteries*1	Min. recycling time (approx.)*2	No. of flashes (approx.)*3
AA-type zinc-carbon	10 sec.	50
AA-type alkaline-manganese	5 sec.	230
AA-type NiCd (700mAh)*4	3.6 sec.	90
AA-type Ni-MH (1200mAh)	4.5 sec.	130
AA-type lithium (1.5V)	5.5 sec.	340

*1 With fresh batteries
*2 Duration until the ready-light comes on after firing at full manual output.
*3 Total number of flashes when fired at full manual output at an interval of 30 seconds without using the AF assist illuminator LED.
*4 1000 mAh NiCd batteries provide approx. 1.4 times the number of flashes of 700 mAh NiCd batteries with the same recycling time.

Flash exposure control
- Three flash modes are provided: TTL, non-TTL (A1, A2, A3, A4) and M.
- TTL mode is not possible with Nikon F3-series, New FM2, FM10, FE10 cameras.

Ready-light
- Lights up when SB-22s is recycled and ready to fire.
- Blinks for 3 seconds when flash fires at its maximum output, indicating light may have been insufficient (in TTL and non-TTL (A1-A4) modes).

FLASH button
- Performs test firing for correct exposure determination.
- Can turn the SB-22s on again after the unit enters standby mode.

AF assist illumination
Automatically fires LED beam toward subject when performing autofocus in dim light or in the dark with Nikon AF cameras.

Flash duration
1/1100 sec. @ full manual output

Other features
Sync/multiple flash terminal

Dimensions (W x H x D)
Approx. 68 x 105 x 80mm (2.7 x 4.1 x 3.1 in.)

Weight (without batteries)
Approx. 210g (7.4 oz.)

Accessories supplied
Soft Case SS-22s

All performance data are for normal-temperature operation (20°C/68°F). Specifications and design are subject to change without notice.