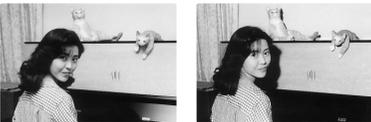


Bounce Flash

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.

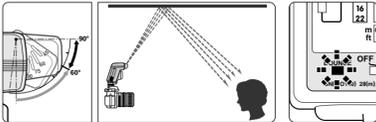
Bounce flash using diffused light Normal flash using direct flash



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.



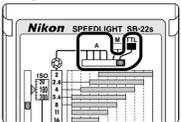
- The BOUNCE indicator LED blinks when the flash head is tilted.
- The flash head can be tilted up to 90°. Intermediate settings can also be used.

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 FM3s, 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.

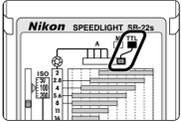
Close-Up Flash

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 FM3s 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.

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

ISO film speed and coefficient (m/ft)	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:

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

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

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.

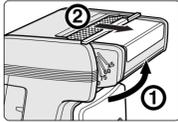
Setting the Built-In Wide Flash Adapter

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.

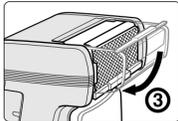
- 2 Slide out the wide flash adapter in the direction of the arrow as far as it will go ②.



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.

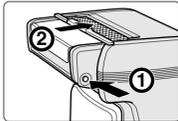


- When the wide flash adapter is set, the angle of coverage changes from N-35mm to W-28mm, and the distance scale also moves.

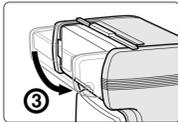
Detaching the wide flash adapter

- 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)
Ready-light blinks for approx. 3 sec. after shooting.	Contacts in the battery chamber (SB-22s) or battery electrodes are corroded.	Clean the contacts or electrodes.
	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"
	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)
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 trunk 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.

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.

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 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 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.
 - 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."
- 2 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.
- 3 Turn on all flash units and make sure their standby functions are not activated.
- 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</