Nikon

Macro Speedlight

SB-29

Instruction Manual

CE E

T9L0500202 (S720) 11

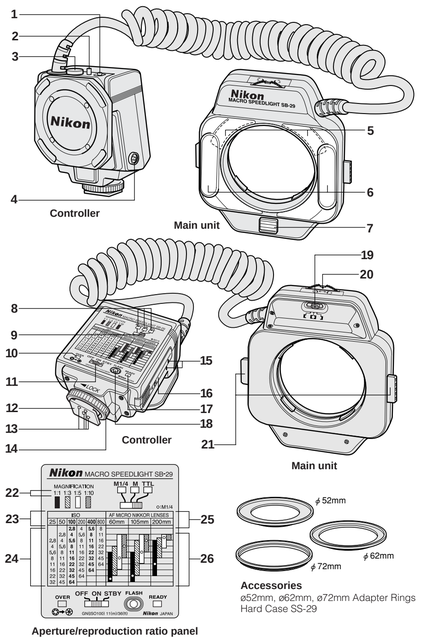
Foreword

Thank you for purchasing the Nikon Macro Speedlight SB-29, an easy-to-use flash unit offering you the most convenient system for close-up flash photography in combination with Micro-Nikkor lenses. To get the most out of your new SB-29, read this instruction manual thoroughly before use and keep it handy, so that you can refer to it whenever necessary.

Tips on using the Speedlight

- Before using this unit, read "Tips on Speedlight care" and "For safe handling of the Speedlight" on the reverse side of this sheet.
- Take some trial shots.
  Before taking important flash photographs, take some test shots to ascertain the SB-29 is working properly.
- Use only Nikon-approved equipment.
  The SB-29 is designed for use with Nikon cameras, lenses and accessories. Using cameras or accessories other than those specified by Nikon may damage the SB-29. Nikon cannot be held responsible for malfunctions caused by using the SB-29 in ways not specified in this manual, or using the SB-29 with a camera made by another manufacturer.
  For details on appropriate Nikon cameras, lenses, and accessories, read each product's instruction manual.

Nomenclature



1 AF assist illuminator lamp button
2 Modeling illuminator button
3 TTL multiple flash terminal
(Remove the terminal cover from the terminal and turn it counterclockwise by 90° when using the TTL multiple flash terminal.)
4 Sync flash terminal
5 Light reducer
6 Flash modules
7 AF assist illuminator lamp
8 Flash mode indicator LED
9 Flash mode selector
10 Overexposure warning indicator LED
11 Power switch
12 Mounting foot
13 Hot shoe contacts
14 Mounting foot lock nut
15 Alignment indices
16 Battery chamber lid
17 Ready-light
18 FLASH button
19 Flash module selector
Firing both flash modules at the same time or either independently can be selected.
20 Light reducer setting dial
The ratio of the brightness of the right flash module to the left one (or vice versa) can be set to 1:4 using the built-in light reducer.
21 Adapter ring mounting buttons
22 Reproduction ratio scale
(1:5 represents 1/5x.)
23 ISO film speed scale
24 Effective f-number (aperture)
25 Focal length of lens in use
26 Proper exposure range

NIKON CORPORATION
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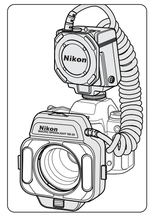
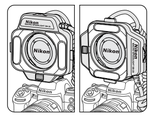
Major features of the SB-29

The SB-29 consists of the main unit and controller. Attach the main unit to the lens or to the front of the controller to take effective close-up flash photographs. With the SB-29, you can shoot ultra close-up photographs of flowers, insects or small objects in the TTL auto flash mode.

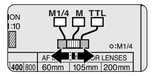
The main unit can be attached to the lens to take close-up flash photographs.
- The main unit can be rotated while pressing the adapter ring mounting buttons lightly, allowing you to set the flash modules at any position to match subject conditions or your creative preferences.
- Close-up flash photography with a lens mounted in the reverse position is possible. (Optional Adapter Rings are required.)



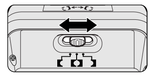
The main unit can be attached to the controller to take close-up flash photographs.
As shown in the illustration, the main unit can be rotated up to 90°. The position of the flash modules can be set vertically or horizontally to match the subject or your individual preferences.



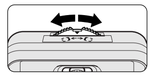
Manual flash operation in two (full and 1/4) flash output levels is possible.



Firing both flash modules at the same time or firing either independently can be selected.



The brightness of the flash module can be reduced to approx. 1/4 flash output by using the built-in light reducer.
- Be sure to set both flash modules to fire.
- Various illumination patterns where the brightness is different on the right and left sides of the subject is possible when the subject is 0.2m (0.7 ft.) or less from the main unit.



Usable lenses and cameras

■Usable lenses

The SB-29 is designed for use especially with Micro-Nikkor lenses to realize the maximum benefits of the flash unit.
- Use the appropriate adapter ring when attaching the SB-29 to the lens.

Note
Other Nikkor lenses having a ring that rotates or moves forward or backward during AF operation may not autofocus correctly or may damage the lens or camera's autofocus mechanism due to the weight of the main unit. Therefore, do not perform autofocus operation, but use manual focus instead.

Micro-Nikkor lenses providing maximum benefits
— AF Micro-Nikkor 60mm f/2.8D provides autofocus operation when the Adapter Ring UR-3 (optional) is attached to the lens and the SB-29 main unit is attached to the UR-3.
— AF Micro-Nikkor 105mm f/2.8D or 105mm f/2.8 provides autofocus operation when the SB-29 main unit is attached to the lens using the provided ø62mm Adapter Ring (not ø52mm).
— AF Micro-Nikkor 200mm f/4D IF or 200mm f/4 IF provides autofocus operation when the SB-29 main unit is attached to the lens using the provided ø62mm Adapter Ring.
— AF Zoom Micro-Nikkor 70-180mm f/4.5-5.6D ED provides manual focus operation when the SB-29 main unit is attached to the lens using the provided ø62mm Adapter Ring. Autofocus operation is not possible.
— Using the PC Micro-Nikkor 85mm f/2.8D set at the Tilt and/or Shift position is not recommended.

Usable lenses with limited functions
- Most Nikkor lenses having a 52mm, 62mm or 72mm filter attachment size
- These lenses are subject to vignetting:
  — AF Nikkors 20mm f/2.8D, 28mm f/1.4D, and AF Zoom-Nikkor 24-50mm f/3.3-4.5D (at the 24mm focal length)
  — AF Zoom-Nikkor 24-120mm f/3.5-5.6D (at focal lengths of 24mm, 28mm, 35mm and 50mm)
  — AF Zoom-Nikkor 28-70mm f/3.5-4.5D (around the 28mm focal length), AF Zoom-Nikkor 28-85mm f/3.5-4.5 (at the 28mm focal length)
  — AF Zoom-Nikkor 28-105mm f/3.5-4.5D (at focal lengths of 28mm and 35mm)
  — AF Zoom-Nikkor 28-200mm f/3.5-5.6D (at focal lengths of 28mm, 35mm and 50mm), AF Zoom-Nikkor 35-70mm f/2.8D (at the 35mm focal length)
- Manual Zoom-Nikkor lenses
  Because the adapter ring rotates while focusing, adjust the position of the SB-29's main unit after focusing.

Lenses attachable but virtually unusable
- AF Nikkor lenses having a ring that rotates during AF operation.

Lenses not attachable
- Most Nikkor lenses not having a 52mm, 62mm or 72mm filter attachment size

■Usable cameras and available flash modes

Nikon cameras usable with the SB-29 for TTL and Manual flash operations

Usable camera	Available flash mode
F5, F100, F4-Series, F90X/N90s*, F90-Series/N90*, F70-Series/N70*, F60-Series/N60*, F50-Series/N50*, Pronea 600i/6i*, F-801s/N8008s*, F-801/N8008*, F-601/N6006*, F-601M/N6000*, F-401x/N5005*	Matrix Balanced Fill-Flash (including Multi-Sensor Balanced Fill-Flash and Center-Weighted Fill-Flash/Spot Fill-Flash.) Manual Flash
F-501/N2020**, F-301/N2000**, F3-Series*1, FA*2, FE2*1, FG*1,	Standard TTL Flash Manual Flash
F-401s/N4004s***3, F-401/ N4004*3, New FM2*1, FM10*1, FE10*1	Manual Flash only

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

*1 TTL Flash Unit Coupler AS-17 is required.
*2 TTL Auto Flash operation is not possible with Nikon FA or FE2 cameras when the shutter speed is set to M250 or B (bulb), and with Nikon FG cameras when the shutter speed is set to M90 or B (bulb).
*3 TTL Auto Flash operation is not possible with the Nikon F-401s/N4004s, F-401/N4004, New FM2, FM10 and FE10 cameras. Use Manual flash operation instead.

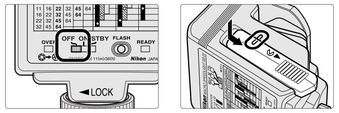
For your information
TTL Auto Flash mode (Matrix Balanced Fill-Flash or Standard TTL Flash) is automatically determined, according to your camera and lens combinations. You cannot select an appropriate flash mode on the SB-29. For details on available flash modes, read each camera's instruction manual.

Matrix Balanced Fill-Flash
Based on the ambient light, the flash output is automatically controlled to keep both subject and background correctly exposed using the camera's Matrix Metering System.

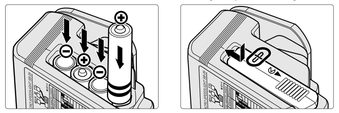
Standard TTL Flash
Flash output is manually controlled to emphasize the main subject against the background. The main subject is correctly exposed regardless of the brightness of the background.

Installing the batteries

1 Set the SB-29'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 battery chamber. Reattach the battery chamber lid by aligning the indices on the lid and the flash unit and sliding it up as it will go.



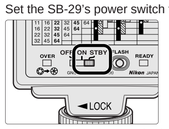
Four AA-type penlight batteries of any of these types are usable:
(1) Zinc-carbon (1.5V), (2) alkaline-manganese (1.5V), (3) lithium (1.5V), (4) rechargeable NiCd (1.2V) and (5) Ni-MH (Nickel-Metal Hydride) (1.2V).
For more information on batteries, refer to "Notes on Batteries."

Caution
- If corrosive liquids seep from the batteries, avoid touching them. Certain types of batteries contain strong alkaline liquids that can cause chemical burns. If the alkaline liquids stick to your skin or clothes, wash immediately with running water.
- When replacing batteries, replace all four at the same time. Do not mix battery types or brands and do not use old with new batteries. Otherwise, the batteries may catch on fire or explode, due the possible leakage of corrosive liquids.

Turning the SB-29 on and off/ Standby function

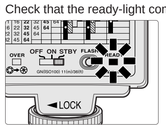
■Turning the power on and off

1 Set the SB-29's power switch to ON or STBY position.



- The standby function is activated if the power switch is set to STBY.

2 Check that the ready-light comes on.



- After the SB-29 is turned on, the ready-light lights up as soon as the SB-29 is recycled and ready to fire.
- When the SB-29 is not used, move the power switch to the OFF position to avoid turning the power on accidentally.

■Standby function

With the power switch set to STBY position, if both the SB-29 and camera are not used for after approx. 80 seconds, the SB-29 shuts off automatically and the ready-light goes out to conserve battery power.

To turn the SB-29 on again after it enters the standby mode:
- Lightly press the camera's shutter release button;
- Press the SB-29's FLASH button once (in this case, the flash does not fire); or
- Set the power switch to the ON position.

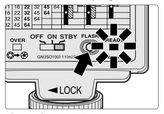
The standby function cannot be used:
- If the SB-29 is mounted on Nikon F3-Series cameras using TTL Flash Unit Coupler AS-17.
- If the SB-29 is mounted on Nikon New FM2, FM10 or FE10 cameras.
- If the SB-29 is mounted on Nikon FA or FE2 cameras and the shutter speed is set to M250 or B (bulb).
- If the SB-29 is mounted on Nikon FA or FE2 cameras when Motor Drive MD-12 is mounted.
- If the SB-29 is mounted on Nikon FG cameras and the shutter speed is set to M90 or B (bulb).

In the above cases, set the SB-29's power switch to ON or OFF.

Test firing

With the power switch set to ON or STBY, you can perform test firing to ensure that the SB-29 is working properly.

Check that the ready-light comes on, then press the FLASH button.



- Other Speedlights connected to the TTL multiple flash terminal or sync terminal will fire as well.

■Replacing or recharging the batteries (Checking battery power)

Replace or recharge the batteries if the ready-light takes the amount of time shown in the table to light up between flashes when the flash mode selector is set at M.

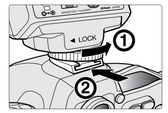
Type of batteries installed	Ready-light takes:	Remedy
Zinc-carbon Alkaline-manganese	More than 30 seconds to light up	Replace batteries
Lithium	More than 10 seconds to light up	
NiCd (rechargeable) Ni-MH (rechargeable)	More than 10 seconds to light up	Recharge batteries

Attaching the controller and main unit

The SB-29 consists of the controller and main unit. Attach the controller to the camera and the main unit to the lens or to the front of the controller.
- When attaching the SB-29 to the camera or lens, be sure to turn off the SB-29.

■Attaching the controller to the camera

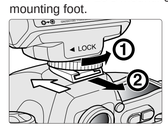
1 Loosen the SB-29's mounting foot lock nut all the way and slide the mounting foot into the camera's accessory shoe.



2 Tighten the lock nut by rotating it in the direction of the arrow.

■Detaching the controller from the camera

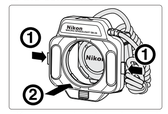
Loosen the SB-29's mounting foot lock nut all the way and gently pull out the mounting foot.



- If the lock nut doesn't loosen easily, do not force it. Push the foot forward gently once in the direction of the white arrow and try loosening the lock nut again.

■Attaching the main unit to the controller

Press the adapter ring mounting buttons on both sides to attach the main unit to the controller.



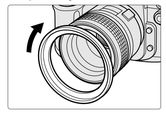
- Keep pressing the adapter ring mounting buttons as you attach the main unit to the controller, then remove your fingers to secure it.
- The main unit can be rotated up to 90°, allowing horizontal or vertical positioning of the flash modules.

Note
With certain lenses, the shadows cast by the front of the lens may appear on the subject if both modules are fired when set vertically. In this case, use the upper flash module only.
Using the modeling illuminator, you can also check if there are shadows cast by the front of the lens before taking pictures. Refer to "Checking the lighting effects before shooting".
However, when looking through the viewfinder of cameras with less than 100% frame coverage, you may not see the shadows cast by the front of the lens even when using the modeling illuminator, because the area appearing on the film is greater than the viewfinder image.

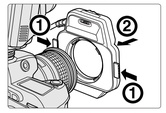
■Attaching the main unit to the lens

With the lens in normal position

1 Depending on the lens' filter attachment size, attach one of the provided adapter rings to the lens.



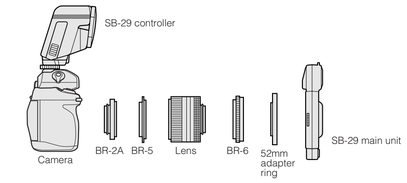
2 Press the adapter ring mounting buttons on both sides to attach the main unit to the adapter ring.



- Keep pressing the adapter ring mounting buttons as you attach the main unit to the adapter ring, then remove your fingers to secure it.
- You can adjust the position of the flash modules by rotating the main unit while lightly pressing the adapter ring mounting buttons.

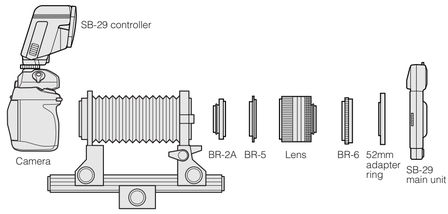
With the lens in reverse position
Set the lens in the reverse position when taking pictures at a large reproduction ratio.
Refer to the illustrations below. These optional accessories are necessary:
- Macro Adapter Ring BR-2A, Auto Adapter Ring BR-6
- Auto Adapter Ring BR-5 is also necessary between Macro Adapter Ring BR-2A and the lens when using a lens having a 62mm filter attachment size.
- Because Auto Adapter Ring BR-6 features automatic diaphragm control, using the optional Double Release AR-10 or Double Cable Releases AR-7/AR-4 speeds up shooting operation.

When attaching the lens directly to the camera body



- Set the lens focus ring to ∞ (infinity) and move the camera body back and forth to focus.

When using Nikon Bellows Focusing Attachment PB-6

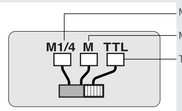


- The main unit cannot be attached to the Adapter Ring if the lens is in the reverse position with the PB-6 attached.
- Set the lens focus ring to ∞ (infinity).

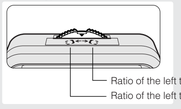
Setting the controller and main unit

Check these settings on the SB-29 before shooting.

Flash mode
Three flash modes —TTL Auto Flash, Manual (Full) Flash or Manual (M1/4) Flash—are available using the flash mode selector. *The TTL Auto Flash mode is recommended, because determining the proper exposure in close-up flash is very difficult.*

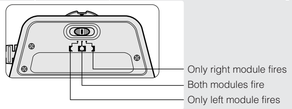


Light reducer
By using the built-in light reducer, intentional shadows can be created by changing the brightness of the right or left flash module (or upper or lower when the unit is positioned vertically).



- The output of the flash module can be reduced to approx. 1/4 by using the built-in light reducer.
- Turn the light reducer setting dial all the way until it click stops.
- Be sure to set both flash modules to fire when using the light reducer.

Setting both flash modules or either flash module
The SB-29 is equipped with two flash modules. Using the flash module selector, you have three options: 1) To fire both flash modules simultaneously; 2) To fire the left module only; or 3) To fire the right module only. This is convenient for taking close-up flash photographs when you want to emphasize the contrast between the highlight and shadow areas.



Guide number
Guide numbers (at full flash output) in Manual Flash mode (m/ft)

ISO film speed	25	50	100	200	400	800	1000	1600
For both flash modules	5.5/18	7.7/25	11/36	15.5/51	22/72	31/102	35/115	44/144
For only one flash module	6/20	8.5/28	12/39	17/56	24/79	34/112	38/125	48/157

Adjustment factors for film speed other than ISO 100

ISO film speed	25	50	100	200	400	800	1000	1600
Factor	x0.5	x0.71	x1	x1.4	x2	x2.8	x3.2	x4

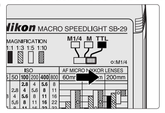
Multiply the guide numbers by the factors shown in the above table.

TTL Auto Flash TTL Mode

In this mode, the built-in TTL auto flash sensor in cameras so equipped measures the SB-29's illumination that is reflected back from the subject based on the aperture set on the lens and automatically controls the flash output to ensure proper exposure. This mode provides simple and effective flash operation for close-up flash photography.

Note
In close-up flash photography where exposures are often affected by the ambient light, it's a good idea to take additional shots at various exposure settings. (Refer to "Exposure compensation in close-up flash photography.")

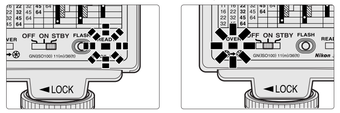
1 Set the flash mode selector on the SB-29 to **TTL**.



2 Set your camera correctly. (Refer to your camera's instruction manual for details.)
- Set your camera's exposure mode to Aperture-priority auto **A** or Manual **M** mode. Programmed auto **P** (aperture not selectable) and Shutter-priority auto **S** modes are not recommended, because choosing an appropriate shooting distance range to match the reproduction ratio 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-29 features the same TTL flash operations as the SB-22 or SB-22s, refer to them in the flash photography section of your camera's instruction manual, if the SB-29 is not listed.

3 Set the aperture on the lens or camera.
- Determine an appropriate aperture by referring to the "Aperture/reproduction ratio panel" on the back of the SB-29 controller. (Refer to "Determining a proper flash shooting distance range.")

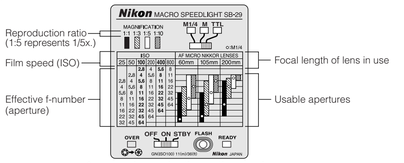
4 Wait for the SB-29's ready-light to come on before taking the picture.
- You can also use the ready-light in the viewfinder of your camera.
- If the ready-light on the SB-29 or in the viewfinder blinks for approx. 3 seconds after shooting, this indicates the light may have been insufficient for correct exposure. In this case, use a wider aperture (smaller f-number) and reshoot.
- If the SB-29's overexposure warning indicator LED lights up for approx. 4 seconds after shooting, this indicates the picture may have been overexposed. In this case, use a smaller aperture (larger f-number) and reshoot.



■Determining a proper flash shooting distance range

Using the "Aperture/reproduction ratio panel" (with the lens in normal position)
Use the "Aperture/reproduction ratio panel" on the back of the SB-29 controller to determine usable apertures at the desired reproduction ratio. The proper apertures depend on the ISO film speed, lens focal length and the desired reproduction ratio.

Note
The figures on the panel are effective f-numbers. They are not apertures on the lens. (See "Aperture to set on the lens and effective f-number".



Aperture/reproduction ratio panel

- The settings and scales on the Aperture/reproduction ratio panel are for use with AF Micro-Nikkors 60mm f/2.8D, 105mm f/2.8D, and 200mm f/4D IF-ED. If you use the AF Zoom Micro-Nikkor 70-180mm f/4.5-5.6D ED, determine the appropriate figures on the panel depending on a focal length set on the lens. Apply this to other lenses.
- For example, at a 1:5 reproduction ratio with ISO 100 film and the AF Micro-Nikkor 60mm lens, the usable apertures are from f/4 to f/32.

When an over- or underexposure warning indication appears (with the lens in reverse position, or when the reproduction ratio is greater than life-size.)
In the above case, the correct exposure cannot be obtained using the "Aperture/reproduction ratio panel." Determine the usable aperture by referring to the following "Maximum aperture." If the overexposure warning indication appears, use a smaller aperture (larger f-number) or if the underexposure warning indication appears, use a larger aperture (smaller f-number) and reshoot.

f/stop (maximum aperture*1) = Coefficient / flash-to-subject distance (m/ft)

(m/ft)

ISO film speed	100 or below	125 – 400	500 or more
Coefficient	2/6.6	4/13	5.6/18

*1 The aperture where overexposed pictures may result in TTL auto flash operation if a larger aperture (smaller f-number) than that is used.

- For example, when shooting a subject at a distance of 0.25m (0.82 ft.) using ISO 100 film, the correct aperture is:
  f/stop = 2 (coefficient) / 0.25 (m) (flash-to-subject distance) = 8
  f/stop = 6.6 (coefficient) / 0.82 (ft) (flash-to-subject distance) = approx. 8
  From the above equation, use an aperture smaller than the f/8 (larger f-number) in the TTL mode.

Exposure compensation in close-up flash photography

In close-up flash photography, it's recommended to take additional shots with varying exposures to ensure getting the correct exposure.

Plus compensation

Minus compensation

Exposure compensation in TTL Auto Flash "TTL" mode
- Make exposure compensation on the camera to match the shooting situation. Refer to your camera's instruction manual for details on how to make 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 shadow, use some minus compensation.
- Normally you can compensate exposures within a range of –2 EV to +1 EV.
- When minus compensation is made, the overexposure warning indicator LED may light up. In this case, set a smaller aperture (larger f-number) on the lens, then make minus compensation again.

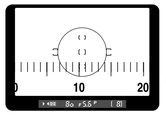
Exposure compensation in Manual "M" mode
- Intentionally change the aperture set on the camera or lens aperture ring.
- When you want an overexposed picture, set a wider aperture (smaller f-number). For an underexposed picture, use a smaller aperture (larger f-number).

Reproduction ratios and the "Aperture/reproduction ratio panel"

■Determining the reproduction ratio

For Micro-Nikkor lenses in normal position, read the number engraved on the lens focus ring. It is usually in the form of 1:n or 1/n. When using Nikon Bellows Focusing Attachment, refer to its instruction manual.
For other lenses, follow these procedures to determine the reproduction ratio:

1 Place a ruler in the same plane as the subject, then read the subject's length as seen in the viewfinder.



The subject's length is 21mm in this example.

2 Calculate the reproduction ratio by using this equation:

M = 36 / L
where M = Reproduction ratio
36 = Length of the long side of the viewfinder frame (varies depending on camera in use)
L = Length of the subject as seen in the viewfinder

- The viewfinder frame size is 24 x 36mm for cameras having 100% frame coverage and 21 x 32mm for cameras with 90% frame coverage.
- In the above example, the viewfinder frame size is 24 x 36mm. Since the subject appears as approx. 21mm along the long side of the viewfinder frame, the reproduction ratio (M) is:
  M = 36 / 21 = approx. 1.7x.

If you measure the length of the subject by placing a ruler along the short side of the viewfinder frame, use this equation:
M = 24 / L
Or if the viewfinder frame size is 21 x 32mm, the reproduction ratio (M) is 32/21 = approx. 1.5x. Likewise, if you measure the subject by placing the ruler on the short side of the viewfinder frame, the reproduction ratio is determined by the equation **M = 21 / L**.

■Aperture to set on the lens and effective f-number

Effective f-numbers of macro lenses such as Micro-Nikkor lenses vary and the brightness of images on the film decrease when the reproduction ratio increases. The relationship between the reproduction ratio and the effective f-number is:

Fe = F (1 + M)
where Fe = Effective f-number (actual lens speed)
F = Aperture to set on the lens
M = Reproduction ratio

- For example, to obtain a 1:1 (life-size) reproduction ratio at an aperture of f/8 set on the lens, Fe = 8 (1 + 1) = 16. The effective f-number is 16 which is two stops darker. Effective f-numbers are displayed on the SB-29's "Aperture/reproduction ratio panel."

To obtain the correct exposure in TTL auto flash operation, proceed as follows:
- The aperture value appearing on the LCD panel or in camera's viewfinder is the effective f-number when a Nikkor lens with a built-in CPU is mounted on the camera.
- When a Nikkor lens without a built-in CPU is mounted or no aperture value is displayed in the viewfinder calculate the effective f-number using the above equation after setting the aperture on the lens.

Manual Flash M Mode

Use Manual Flash **M** mode, if your camera does not feature TTL auto flash operation. Flash output levels of M and M1/4 can be selected.

M: Flash fires at full output.
M1/4: Flash fires at 1/4 of the full output.
- To obtain the correct exposure at a reproduction ratio of less than 1:10, determine the aperture using the SB-29's guide number and the shooting distance.
- At a reproduction ratio of 1:10 or greater, it is difficult to obtain the correct exposure because the aperture and the effective f-number may differ.

Note
In close-up flash photography where exposures are often affected by the ambient light, it's a good idea to take additional shots at various aperture settings. (Refer to "Exposure compensation in close-up flash photography.")

1 Set the flash mode selector to **M1/4** or **M**.

2 Adjust your camera.
- Set your 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, except Nikon New FM2 and FM10 cameras. Or you can intentionally set the shutter speed to one slower than the flash sync speed. For Nikon New FM2 and FM10 cameras, manually set the shutter speed to the flash sync shutter speed or slower.

3 Set the appropriate aperture on the camera or lens aperture ring.
- At a reproduction ratio of less than 1:10, use this equation to determine the correct aperture:
  f/stop (aperture) = guide number / flash-to-subject distance (m)
  At a reproduction ratio of 1:10 or greater, the above equation is not recommended as it is difficult to obtain the correct aperture.
- With Micro-Nikkor lenses mounted on the camera, refer to the "Aperture/reproduction ratio panel."
  For example, when shooting with an AF Micro-Nikkor 60mm f/2.8D lens using ISO 100 film, determine an appropriate aperture by referring to the "Aperture/reproduction ratio panel."
  At a 1:5 reproduction ratio, the effective f-numbers for the correct exposure are f/32 at Manual (full) and f/16 at Manual (M1/4) flash output.
- When a Nikkor lens with a built-in CPU is mounted on the camera and when you set the aperture in the camera's viewfinder or on the LCD panel, the aperture value appearing on the LCD panel or in camera's viewfinder is the effective f-number. Set this value on the camera.
- When a Nikkor lens without a built-in CPU is mounted or no aperture value is displayed in the viewfinder, calculate the effective f-number using the aperture set on the lens according to the reproduction ratio, then determine an appropriate aperture by referring to the "Aperture/ reproduction ratio panel." For example:
  At a 1:10 reproduction ratio, the effective f-number is approx. 1/3 of an f/stop smaller than the aperture set on the lens.
  At a 1:5 reproduction ratio, the effective f-number is approx. 1/2 of an f/stop smaller than the aperture set on the lens.
  At a 1:3 reproduction ratio, the effective f-number is approx. 2/3 to 1 f/stop smaller than the aperture set on the lens.
  At a 1:1 reproduction ratio, the effective f-number is approx. 2 f/stops smaller than the aperture set on the lens.

4 Wait for the SB-29's ready-light to come on before taking the picture.

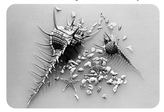
Multiple flash operation

You can use additional flash units to eliminate harsh shadows cast by the subject on the background or to create special lighting effects not possible with a single flash unit.

Flash shooting with SB-29 and another unit

- Main unit attached to the lens
- Flash modules set horizontally with both modules fired
- Subjects on a milky-white acrylic panel illuminated from the rear using a second flash unit.

Flash shooting with SB-29 only



- Main unit attached to the controller
- Flash modules set vertically with the upper module fired

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 Cords SC-17 or SC-24 or TTL Multi-Flash Sync Cords SC-18 or SC-19.
(2) By mounting a Speedlight on the Wireless Slave Flash Controller SU-4.

In both cases, TTL multiple flash operation is possible with Nikon cameras having a TTL Auto Flash mode capability. Manual multiple flash operation is possible with any Nikon camera.
- Read your Speedlight and accessories instruction manuals for details.

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 cameras.
- In multiple flash operation, if the electric current in the synchro circuits exceeds a certain level, you may not be able to take second shot after the first. In this case, disconnect the master flash unit from the camera. This resets the circuits so you can resume shooting.
- To prevent the above from happening, 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
SB-29, SB-28, 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

- Refer to "Optional accessories" for sync or remote cords.
- Read each product's instruction manual for details on connections.

Multiple flash operation using the Wireless Slave Flash Controller SU-4:
- 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 Controllers SU-4 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, SB-27, SB-26, SB-25, SB-24, SB-23, SB-22s, SB-22, SB-20, SB-18, SB-16B, SB-15
- Read the SU-4's instruction manual for more details.

■TTL multiple flash operation

1 Connect the master flash unit to the camera directly. Or use the TTL Remote Cord SC-17/SC-24 instead.

2 Connect the master flash unit to the slave flash unit(s).
- Use one or more TTL Remote Cords SC-18/SC-19 for direct connection or use these cords in combination with the TTL Multi-Flash Adapter AS-10.
- Use the Wireless Slave Flash Controller SU-4 for remote control of one or more slave flash units in the TTL flash mode.

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 flash units. For example, if the flash-to-subject distance is a reference unit of 1, 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.

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.

Note
TTL multiple flash operation is not possible with Nikon New FM2, FM10 and FE10 cameras. In this case, perform manual multiple flash operation using the TTL Multi-Flash Adapter AS-10 or Wireless Slave Flash Controller SU-4.

■Manual multiple flash operation

1 Attach the SB-29 to the camera's accessory shoe.

2 Connect the SB-29 to the sync flash terminal of the slave flash unit(s).
- Use the same cords as used for TTL multiple flash operation, or Sync Cords SC-11 or SC-15.
- Use the Wireless Slave Flash Controller SU-4 for remote control of one or more slave flash units in the Manual flash mode.

3 Set each flash unit by considering its direction and distance.
(See the note in item 3 above regarding the relationship between brightens of flash illumination and distance.)

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.

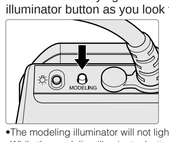
Checking the lighting effects before shooting

■Modeling illuminator

Using the modeling illuminator, you can check how the subject will be illuminated and see how the shadows will look before actually taking pictures.

1 Set the SB-29 and your camera, then focus on the subject.

2 Wait for the ready-light to come on before pressing the modeling illuminator button as you look through the viewfinder.



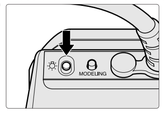
- The modeling illuminator will not light up unless the ready-light is on.
- While the modeling illuminator button is pressed, the modeling illuminator lights up—for a maximum of approx. 3 seconds (when both modules are fired), if the flash is completely recycled. Of course, the duration varies if the flash is not completely recycled.

Autofocus operation in dim light

■AF assist illuminator lamp

When the light is too dim for normal autofocus operation, the SB-29's AF assist illuminator lamp can be used to illuminate dark subjects.

1 Press the AF assist illuminator lamp button to turn the lamp on.



2 Press the AF assist illuminator lamp button again to turn the lamp off.
- The AF assist illuminator lamp turns off automatically when the SB-29 is fired. It also turns off after approx. 1 min. if the SB-29 is not touched.

Note
If the shooting distance is 150mm or less, light from the AF assist illumination may appear in the final shot and affect the camera's exposure. Therefore, be sure to turn off the illuminator lamp before shooting.

Optional accessories

Sync Cord SC-11 and SC-15
Sync Cords SC-11 and SC-15 are handy when you want to use the SB-29 off-camera. 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-29 to cameras not having a sync flash terminal.

TTL Remote Cord SC-17 and SC-24
TTL Remote Cords SC-17/SC-24 provide TTL Auto Flash operation when the SB-29 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/SC-19 are useful for connecting the SB-29 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 slave 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.

Wireless Slave Flash Controller SU-4
Useful for multiple flash photography, the SU-4's light sensor not only triggers the slave unit to fire in sync with the master unit, but controls the flash duration of the slave unit in sync with the master unit.

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).

Macro Adapter Ring BR-2A
Used for attaching the SB-29 to lenses with a 52mm filter attachment size in the reverse position.

Auto Adapter Ring BR-5
Used with the BR-2A for attaching the SB-29 to lenses with a 52mm filter attachment size in the reverse position.

Auto Adapter Ring BR-6
Used for attaching the SB-29 to lenses in the reverse position. Automatic diaphragm operation is possible if the BR-6 is used with Double Release AR-10 or Double Cable Releases AR-7/AR-4.

Adapter Ring UR-3
Dedicated adapter ring for the AF Micro-Nikkor 60mm lens providing AF flash operation with the main unit mounted.

Troubleshooting

Warning indicator	Cause	Reference/remedy
Ready-light does not come on.	• Power switch is turned OFF. • Batteries are not installed correctly. • Battery power is weak. • Standby function is in operation. Power is automatically turned off. • Contacts in the battery chamber or battery electrodes are corroded.	"Turning the SB-29 on and off" "Installing the batteries" "Replacing or recharging the batteries" "Standby function" Clean the contacts or electrodes.
Ready-light blinks for approx. 3 sec. after shooting.	Subject may have been underexposed.	Procedure 4 in "TTL Auto Flash **TTL** mode"
Overexposure warning indicator LED lights up for approx. 4 sec. after shooting.	Picture may have been overexposed.	Procedure 4 in "TTL Auto Flash **TTL** mode"
Ready-light takes longer to light up.	• Batteries are nearly exhausted. • Lithium batteries become hot by repeated use which activates their safety circuit, cutting off power.	"Replacing or recharging the batteries" Allow longer recycling time between flashes or wait until the batteries cool off.
Shutter cannot be released even when the ready-light lights up.	Flash mode selector is set to M1/4 or M, and camera's exposure mode is set to Programmed auto or Shutter-priority auto mode.	"Manual Flash **M** mode"

Tips on Speedlight care

- Use a blower brush to remove dirt and dust from the SB-29 and clean it with a soft, clean cloth. Never use commercial cleaners containing thinner or benzene as they could damage its plastic parts.
- When storing the SB-29 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-29 in top working order. Make sure to turn the power off before removing the batteries.
- Keep the SB-29 away from chemicals such as camphor or naphthalene. Also avoid exposing it to magnetic waves from TVs or radios.
- Never store the SB-29 in the truck or glove compartment of a vehicle during the summer. Also, do not place it in front of a heater.

Notes on 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.
  Please note that battery performance may differ from brand to brand, due to modifications or improvements in performance.

Using lithium batteries (rated voltage: 1.5V)
- 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 and allow them to return to normal temperatures.

Using rechargeable NiCd and Ni-MH batteries
- Overcharging and excessive use may shorten battery life. Always make certain to turn the SB-29 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 silicon-controlled rectifier and series circuitry.
Power source
Four AA-type zinc-carbon (1.5V), alkaline-manganese (1.5V), lithium (1.5V), NiCd (rechargeable) (1.2V) or Ni-MH (rechargeable) (1.2V) penlight batteries.
Guide number (at ISO 100, m)
11 for both flash modules (12 for single module) at full flash output.
5.5 for both flash modules (6.0 for single module) at M1/4 flash output.
Angle of coverage
Covers picture angle of 20mm lens (flash modules set horizontally) and 24mm lens (flash modules set vertically) at a distance of 1m (3.3 ft.) with 35mm-film cameras
Power switch
- Three positions are provided: OFF, ON and STBY (standby).
- At ON and STBY positions: the SB-29 is turned on.
- At STBY position: the SB-29 automatically turns itself off after approx. 80 seconds to conserve battery power, if the flash is not used.

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	3 sec.	300
AA-type NiCd (700mA)	2 sec.	120
AA-type Ni-MH	2 sec.	170
AA-type lithium (1.5V)	4 sec.	350

*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 with an interval of 30 seconds between flashes.
- Number of flashes are greater in TTL Auto Flash and M1/4 flash output modes.

Flash mode selector
TTL, M, or M1/4 mode selectable
Ready-light
- Lights up when SB-29 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 mode).

Overexposure warning indicator LED
Lights up for approx. 4 sec. after shooting to indicate that the picture may have been overexposed.
Built-in light reducer
Sets the ratio of the brightness of the right flash module to the left one (or vice versa) to 1:4.
FLASH button
- Performs test firing for correct exposure determination.
- Can turn the SB-29 on again after the unit enters standby mode.

Flash duration (approx.)
At full flash output: 1/1400 sec. with both flash modules (1/1250 sec. with single flash module)
At 1/4 flash output: 1/5500 sec. with both flash modules (1/3300 sec. with single flash module)
Modeling illuminator
Lights up for approx. 3 sec. (when both modules are fired), if flash is completely recycled.
Repeat firing at approx. 40 Hz.
Other features
Sync/multiple flash terminal provided
Dimensions (W x H x D)
Main unit: Approx. 119 x 133 x 28.5 mm (4.7 x 5.2 x 1.1 in.)
Controller: Approx. 69 x 106.5 x 88.5 mm (2.7 x 4.2 x 3.5 in.)
Weight
Approx. 410g (14.5 oz.) without batteries
Accessories supplied
3 Adapter Rings (ø52mm, ø62mm, ø72mm), Hard Case SS-29

All performance data is for operation at normal temperatures (20˚C/68˚F)
Specifications and design are subject to change without notice.

For safe handling of the Speedlight

Warnings

- Do not attempt to disassemble, repair, or modify the flash unit yourself, as it houses high-voltage circuitry that can cause an electric shock. Also, these action may cause the unit to malfunction, resulting in bodily injure to yourself.
- If the flash unit is dropped and damaged, do not touch any exposed interior metal parts, as it houses high-voltage circuitry that can cause an electric shock. Remove the batteries and take the Speedlight to your local Nikon dealer for repair.
- If you detect heat, smoke, or the smell of burning coming from the Speedlight, stop operation immediately and turn the flash unit off. Let the flash unit cool off before removing the batteries. Then take the flash unit to your local Nikon dealer for repair.
- The SB-29 should not be exposed to rain or saltwater, as this may result in an electric shock or cause the unit to catch on fire. Also never touch the flash unit with wet hands.
- Do not operate the flash unit 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 at the same time. Also, do not mix battery types or brands or use old with new batteries. 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 cause temporary blindness.
- Keep the SB-29 out of the reach of children. This will prevent them from swallowing accessories, batteries, or receiving an electric shock.
- Do not throw used batteries into a fire. Do not short circuit, disassemble, or heat batteries; this may cause them 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 never be charged in a battery charger as they may become hot, catch on fire, explode or leak corrosive liquids.
- Always use the batteries specified in this instruction manual. Using other batteries may cause them to become hot or catch on fire.