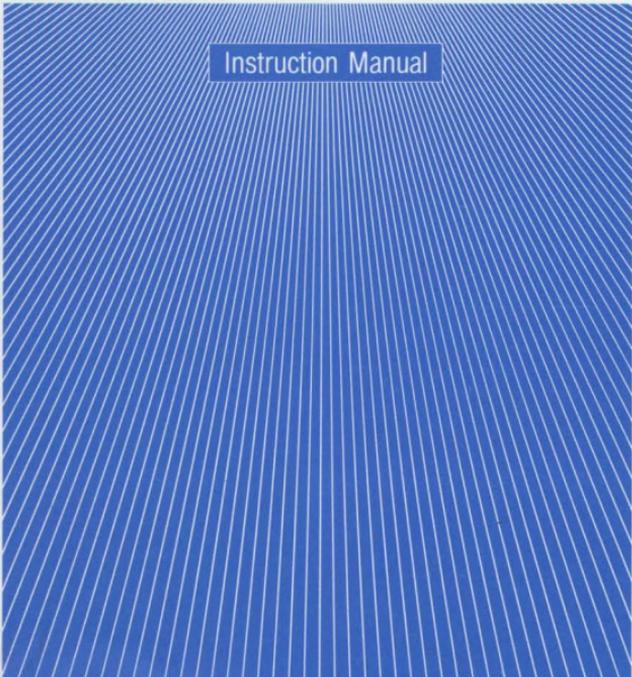


Nikon
NIKONOS

Speedlight

SB-104

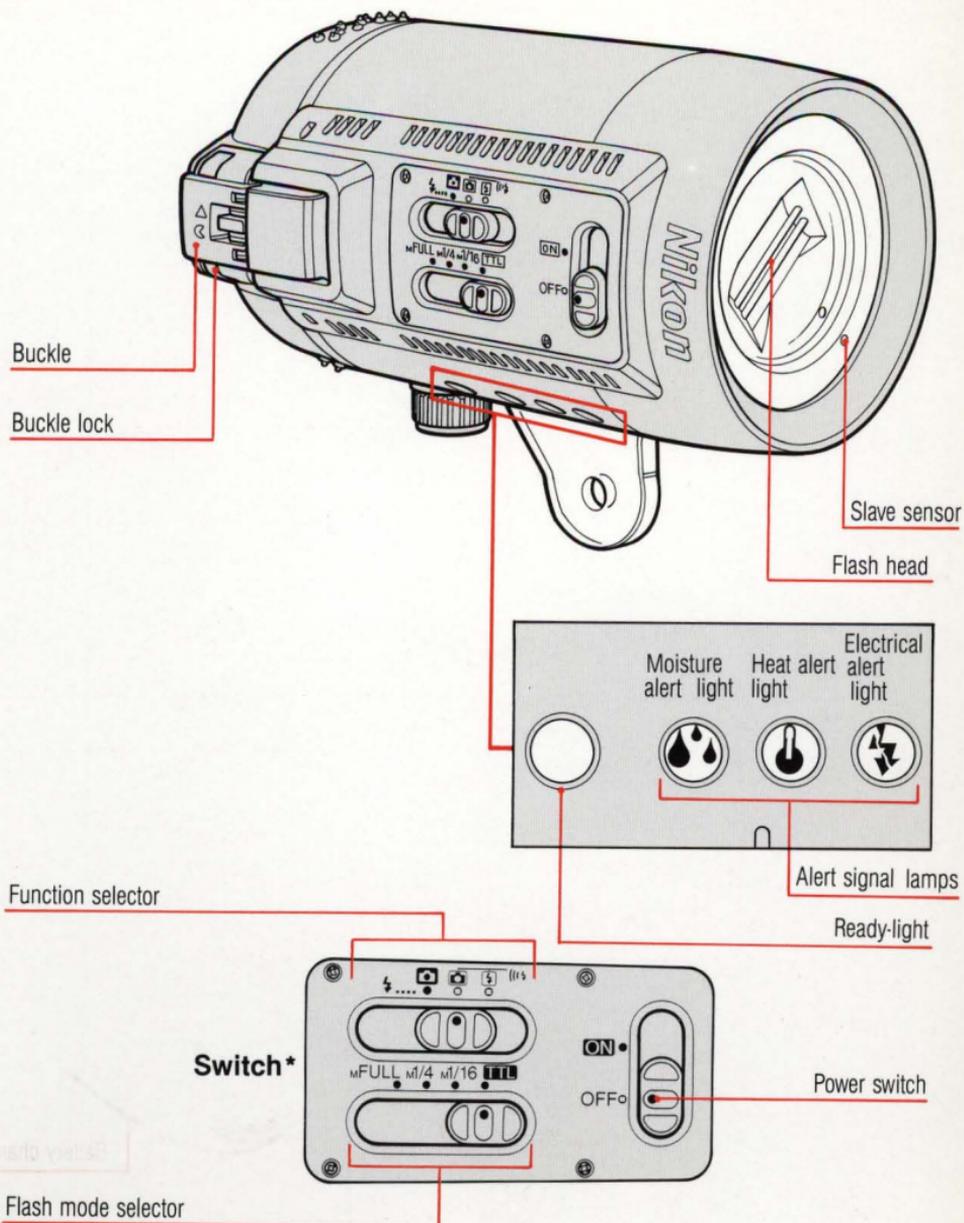


Instruction Manual

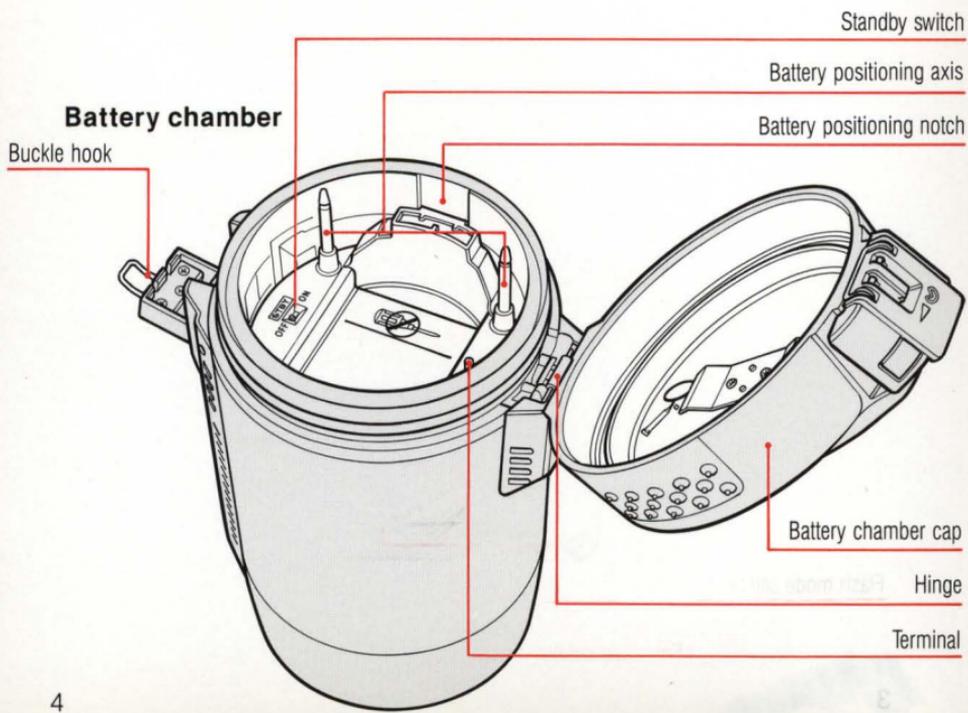
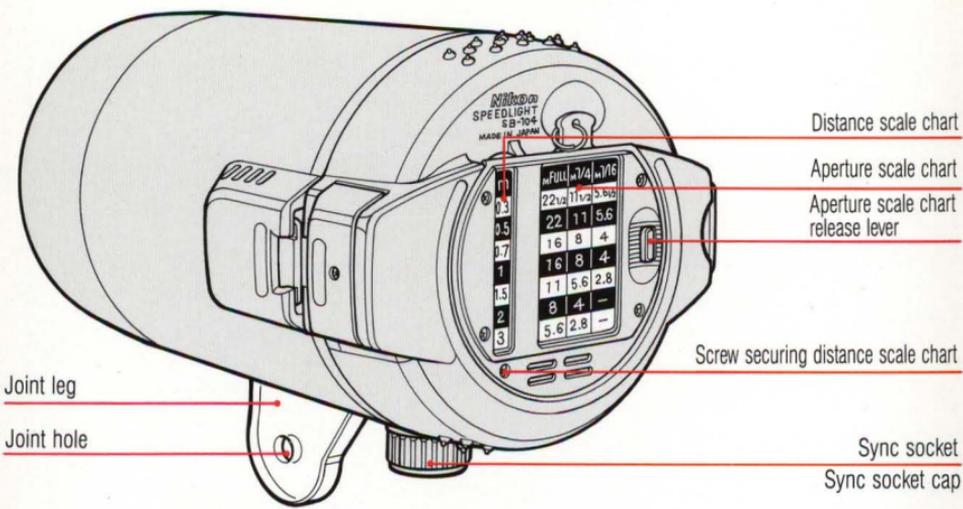
FOREWORD

Thank you for purchasing the Nikonos Speedlight SB-104. This Speedlight is specially designed for underwater photography and can be used with the Nikonos RS, as well as the Nikonos V and Nikonos IV-A. When used with the Nikonos RS, it will allow you to take flash pictures at depths of up to 100 meters (328 feet).

Speedlight Parts



*For more details on the above items, see pages 21 — 22.



Sync cord

Plug locking ring

Sync cord

Camera plug

Speedlight plug

Flash head positioning index

Wrist joint

Stopper pin

Standard arm

Wrist joint adjustment knob

Arm

Grip

Shoulder joint release button

Shoulder joint lock

Front positioning index

Standard bracket

Front positioning index

Bracket

Camera mounting knob

Shoulder joint

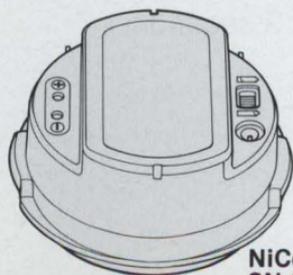
Shoulder joint adjustment knob

Cord fastening hanger

Tripod socket

Standard accessories (SB-104 standard set)

- Standard arm and bracket set SK-104
- Sync cord (with cap)
- O-ring grease and screws set



NiCd battery unit
SN-104 (option)

Main Features

■ **Matrix Balanced Fill-Flash Photography (Nikonos RS only)**

Brightness of flash exposure on the foreground subject is automatically balanced with the ambient light of the background.

■ **Camera Slave (Nikonos RS only)**

Cordless remote photography. The Nikonos RS's shutter release is triggered when the SB-104's built-in slave sensor detects the flash from another speedlight.

■ **Flash Slave**

The SB-104 fires simultaneously when another speedlight is fired through its built-in slave sensor.

■ **Signal Flash**

The SB-104 fires at 1/32 power approximately every two seconds to signal your location on the surface to others.

■ **Alert Signal Display**

The Speedlight is automatically monitored for moisture, overheating, and proper electronic functioning.

■ **High Power Manual Flash Operation**

Full power guide number (underwater) for ISO 100 in meters is 16 (53 in feet). 1/4 power and 1/16 power are also available. Fast recycling time of 3 seconds at full power.

About this Manual

This Instruction Manual has been organized as follows for easy reference. Use this guide to learn how to make the most of your Speedlight's potential.

Preparations for Taking Pictures

Here we explain how to get the Speedlight ready for taking pictures.

Basic Shooting/Taking Pictures

In these sections the fundamentals of flash photography with the Nikonos RS, V and IV-A, and the procedures for taking pictures using the SB-104 are explained.

Details on the Speedlight's Parts

This section describes the Speedlight's various features, points to be checked, and other pertinent items.

Basic Applications

This section explains how to use the Speedlight's features to obtain various results.

Other Items

In this section, we describe optional accessories, details on the NiCd battery and tips on SB-104 care.

- Important** Denotes an important point.
- Caution** Denotes points where caution or mandatory action is required.
- ◆ Note** Denotes a useful point that should be remembered for future reference.

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Tips on Speedlight Care

Be sure to take trial shots first . . .

- When taking important photographs with the SB-104 or using it again after a long period of disuse, be sure to take one or more trial shots first to be sure it is working properly.

Have Nikon spot check your Speedlight regularly . . .

- Because the Speedlight is a precision instrument, we recommend taking your Speedlight to a Nikon service center once every year or two to have it spot checked, and to have it overhauled every three to five years.
 - We recommend this service especially if the Speedlight is being used for commercial applications.
 - Once water gets inside the plastic case or the battery has decayed, be sure to have your Speedlight spot checked, or it may emit a flammable gas.

Using the Speedlight safely . . .

- Use only Nikon products with this Speedlight, since the SB-104 has been designed for use with specialized Nikon camera and lens accessories. The Speedlight may become damaged if you attempt to use it with products of other manufacturers.

Do not fire toward eyes

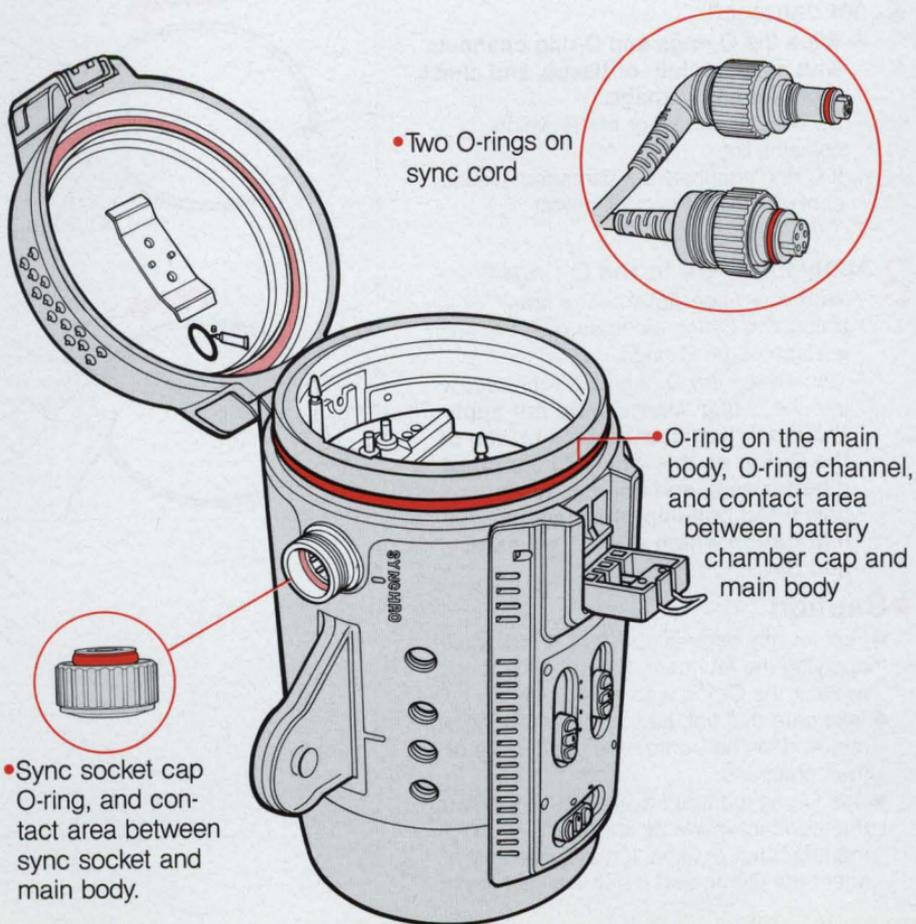
- Since the SB-104 is a high-power output flash unit, be sure not to fire the unit directly at or in the vicinity of human eyes.

Checking O-rings

■ Be sure to check the O-rings before use.

This Speedlight uses O-rings to ensure that it is well sealed and water-proofed. If dust or damage is found on the O-rings, water will leak into the Speedlight and cause damage. It is important to check all the O-rings and lubricate them before use.

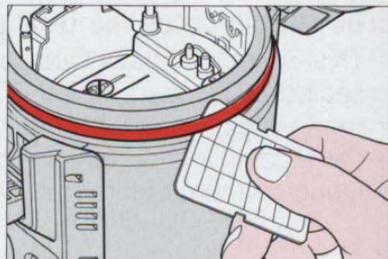
■ O-ring areas to check



Removing and Reseating O-rings

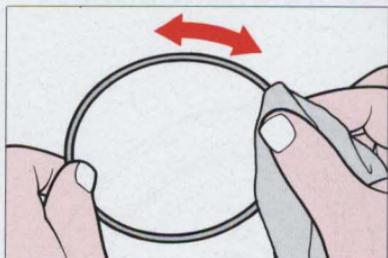
1 Remove the O-rings from their channels.

- Use a thin plastic card, such as the SB-104's exposure calculation chart, to remove O-rings.
- Do not use metal items with sharp edges that may damage the O-rings.



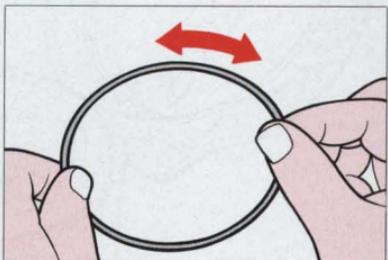
2 Check the O-rings to be sure they are not damaged.

- Wipe the O-rings and O-ring channels with a clean cloth or tissue, and check them for any damage.
- Do not use a cloth or tissue which contains lint.
- If O-ring channels are damaged, please contact a Nikon service center.



3 Apply lubricant to the O-rings.

- With your fingertip, smear a small amount of O-ring lubricant over the entire surface of the O-rings.
- This makes the O-rings slip more easily into the O-ring channels. **Do not apply too much lubricant to the surface of the O-ring as this will not help make a better seal, and can cause an unwanted build-up of excess lubrication which will attract sand and dirt.**

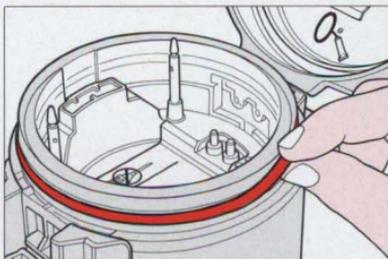


● Caution

- Feel for any damage on the O-rings while applying the lubricant. If damage is found, replace the O-ring with a new one.
- Take care that lint, hair, or other foreign matter does not remain on the O-rings or their channels.
- Use O-ring lubricant available from Nikon. If a lubricant made by another manufacturer is used, it may adversely affect the O-ring and result in water leaks.

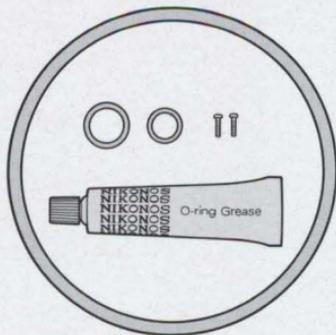
4 Reseat the O-ring into their channels.

—Do not stretch the O-rings too much. Be sure that the O-rings are not warped and they go into the channel correctly.



◆Note

The SB-104 package includes an O-ring set (three large and small O-rings, O-ring lubricant, and two screws). The O-ring set is also available optionally. Be sure to have this set with you wherever you go with your Speedlight.

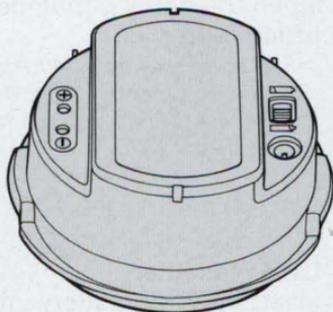


***Preparations
for
Taking Pictures***

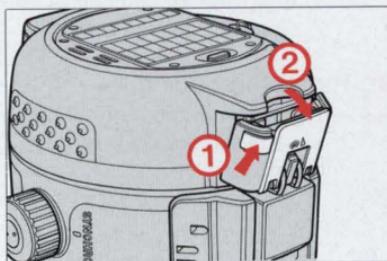
Installing the Battery

■ Important

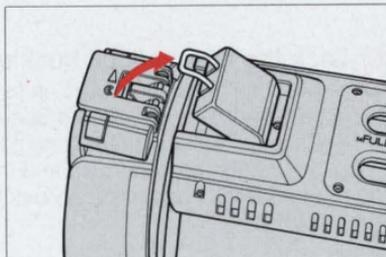
- Only the NiCd battery unit SN-104 can be used with this Speedlight. Do not use any other type of battery.
- Be sure to turn OFF the power of the SB-104 when replacing the battery.
- Be sure to recharge the SN-104 battery when using it for the first time or after having stored it for three months or more.
—For procedures on recharging the SN-104, refer to the Instruction Manual that came with the Quick Charger SH-104.
- Refer to page 62 for details on the battery. Be sure also to read the Instruction Manual that came with the SN-104 battery unit.



- 1** Open the battery chamber while sliding the buckle lock as shown in the figure.

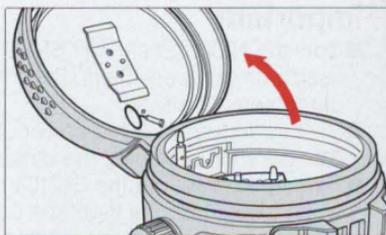


- 2** Remove the buckle hook.



3 Open the battery chamber cap by lifting it up.

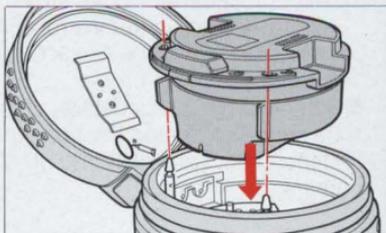
- The cover may be hard to open if the O-ring isn't properly lubricated. In this case, the O-ring should be relubricated. (See page 12.)



4 Load the battery.

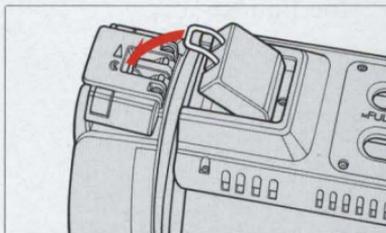
Insert the NiCd battery unit SN-104 into the battery chamber securely, aligning the battery positioning notch with the battery lock release lever (orange).

- Slide the battery lock release lever (orange) in the direction of the arrow (→) to remove the battery.



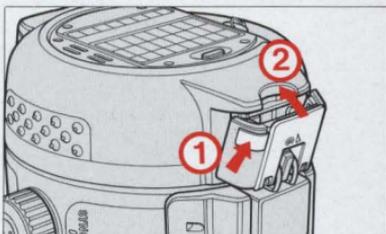
5 Raise the buckle.

- Hold down the battery chamber cap and engage the buckle hook to raise the buckle.



6 Lock the release/lock buckle.

- Slide the buckle lock and press the release/lock buckle to the Speedlight.
- Check to be sure there is no gap between the battery chamber cap and the Speedlight. The buckle should be securely locked.



◆ Note

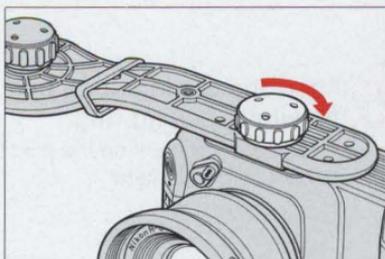
Standby switch

The SB-104 is provided with a standby switch to conserve battery power. Refer to page 37 for details on the standby switch.

■ Important

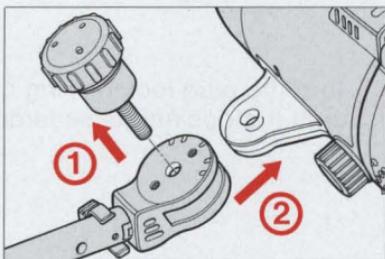
- Be sure to turn OFF the power to the camera and the SB-104 before attaching the Speedlight.
- Check the O-rings and apply a small amount of lubricant when attaching the connector plugs.

- 1** Attach the bracket to the camera at the camera mounting knob.

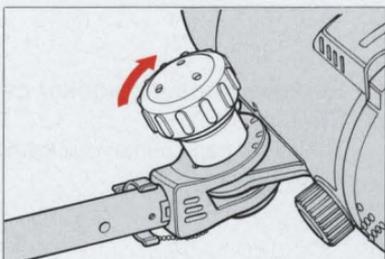


- 2** Remove the wrist joint adjustment knob and insert the Speedlight joint leg.

—Make sure that the shoulder joint release button and the flash head turn to the same direction.

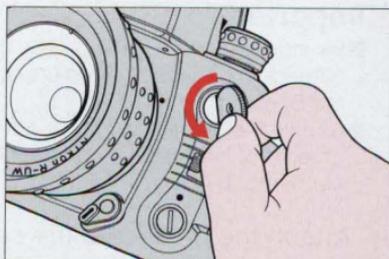


- 3** Insert the adjustment knob into the joint hole and fasten the knob.



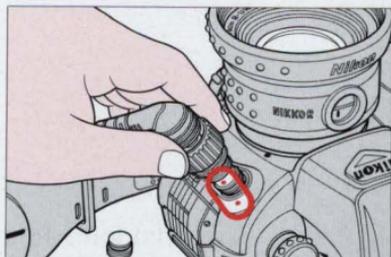
4 Remove the sync socket cap on the camera.

—The cap can be removed by using a coin to turn it counter-clockwise.

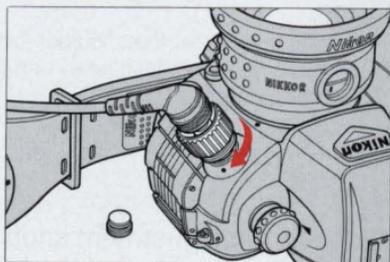


5 Insert the camera plug and fasten the white locking ring.

—Align the red mark on the plug to the red mark on the camera.

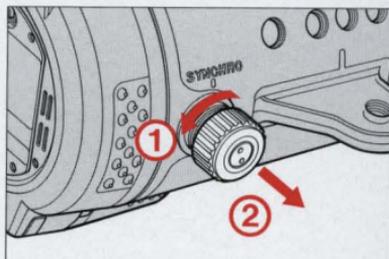


6 Turn the plug locking ring clockwise until it stops and is secured.



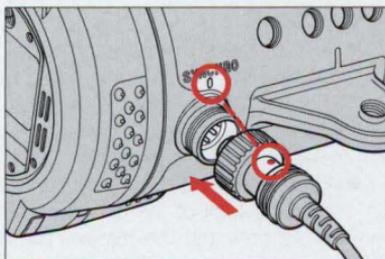
7 Remove the sync socket cap on the SB-104.

—Turn the cap counter-clockwise until it separates.



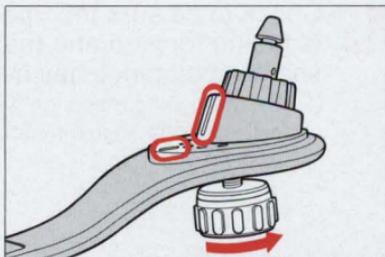
8 Insert the Speedlight plug and fasten the black locking ring.

—Align the guide marks on the plug and the SB-104.



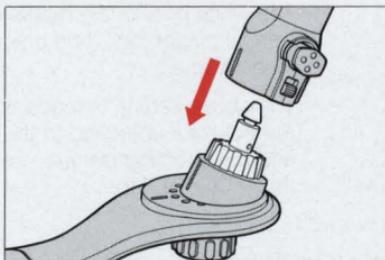
9 Turn the shoulder joint adjustment knob on the bracket in the direction of the arrow to fasten the shoulder joint.

—Align it with the white positioning index on the front.



10 Insert the arm.

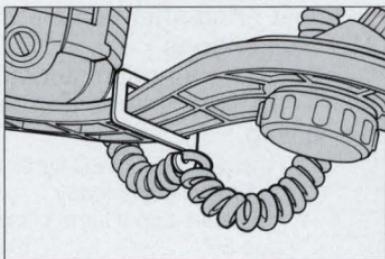
—Release the shoulder joint lock and align the arm with the white positioning index on the front of the joint.



◆ Note

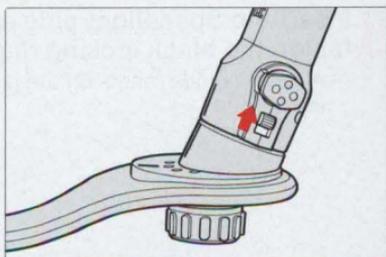
Cord fastening hanger

This hanger secures the sync cord to the bracket to keep it out of the way while shooting. To use the cord fastening hanger, attach it to the speedlight bracket as shown in the illustration, then attach the sync cord to the hook.



● Caution

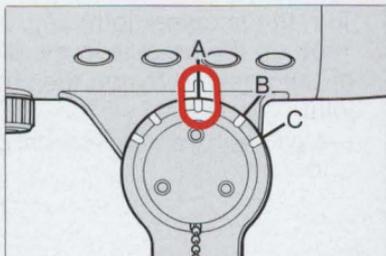
- Be sure the shoulder joint is locked when gripping the arm to carry the camera and Speedlight after making settings. If it is not locked, the camera may fall off when the release button is pressed.
- When releasing the arm from the bracket, undo the lock of the shoulder joint first before pressing the release button.



12 Check to be sure the Speedlight is facing forward and the correct shooting distance has been set.

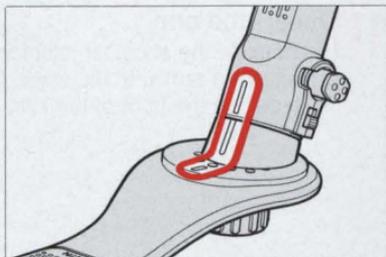
(1) The positioning marks on the SB-104 and wrist joint should match the shooting distance.

- A: ∞
- B: 1m
- C: 0.5m



(2) The white positioning marks of the arm, shoulder joint, and bracket should all be aligned.

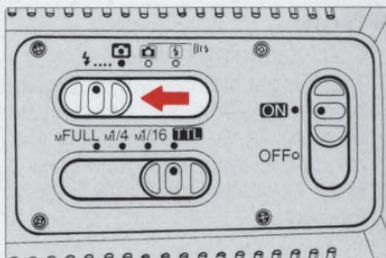
The above setting is made when the Speedlight is attached to the bracket and the shooting distance set at more than 50cm (1.6 ft).



13 Test firing after completing the connections

Slide the function selector knob to the test fire position before diving.

- If the ready-light LED lights up again, the Speedlight is ready.
- If the alert signal lamp blinks, see page 39.

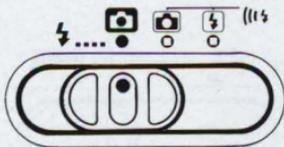


Function Selector

The Function Selector is used in the ways described below.

Standard flash photography

Standard flash photography is possible except for the following modes. The following functions are also possible by sliding the selector from  to .



Test firing

The SB-104's flash can be tested.
—Useful for test firing the flash before taking pictures.

Signal Flash

When the function selector is held in the test firing position for more than four seconds, it will begin firing a signal flash at 1/32 power approximately every two seconds.

—This is convenient when you are on the surface and wish to signal your location in the water to others.

Camera Slave (cordless remote photography)

When set to "Camera Slave", the SB-104's built-in slave sensor can detect the flash of another Speedlight, and as it flashes the SB-104 will signal the Nikonos RS to release its shutter simultaneously, exposing the frame. Cordless remote photography can be performed with another Speedlight that can be flashed.

—It is effective up to a distance of 10 meters (32.8 feet) and can be performed only with the Nikonos RS.

Flash Slave

The SB-104 can be fired simultaneously with other Speedlights (SB-104, SB-101, SB-102 or SB-103) mounted on the Nikonos RS, V, or IV-A when its built-in slave sensor detects the flash of other Speedlights.

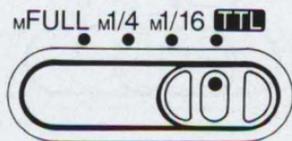
—This is useful when you want to add more light to your scene or when you wish creative photographic lighting. When the SB-104 is set to "Flash Slave", it acts as a second light source for another primary camera and Speedlight.

Important

Be sure to turn OFF the power before switching among , , and  positions.

Flash Mode Selector

The Flash Mode Selector is used in the ways described below.



TTL TTL flash mode

When the SB-104 is used with the Nikonos RS, matrix balanced fill-flash mode and center-weighted TTL flash mode are both possible.

When used with the Nikonos V, center-weighted TTL flash mode is possible.

TTL flash mode is not possible when the SB-104 is used with the Nikonos IV-A.

mFULL m1/4 m1/16 Manual flash mode

When the SB-104 is used with either the Nikonos RS, V, or IV-A, the flash output can be selected from among 3 options:

“M Full,” “M 1/4,” or “M 1/16.”

Basic Shooting

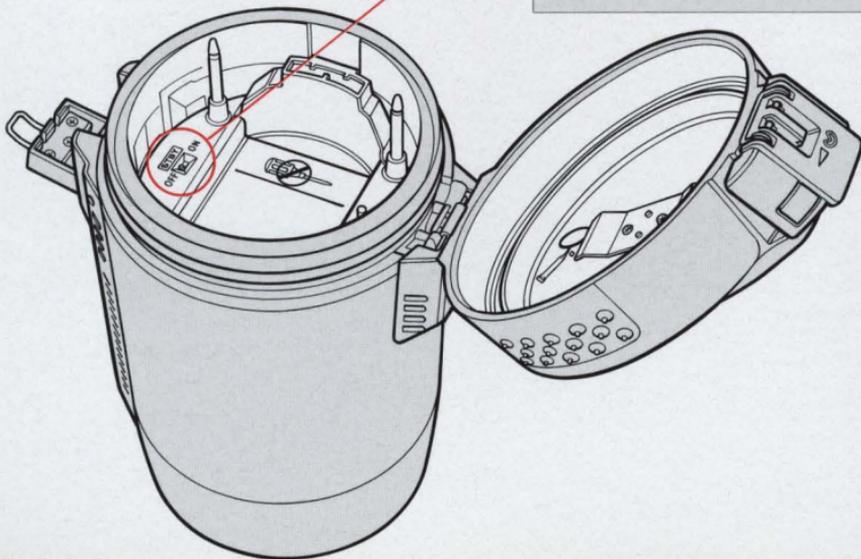
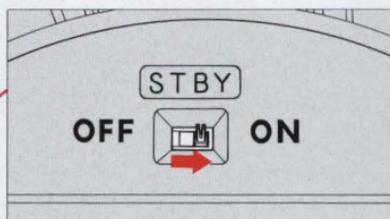
Basic Flash Photography with the Nikonos RS

Flash photography with matrix balanced fill-flash operation in combination with the Nikonos RS and the SB-104 will be explained in this section. Set exposure mode to Aperture-Priority Auto Exposure (A). In matrix balanced fill-flash operation, the camera automatically balances the flash brightness in both the background and the main subject.

Matrix Balanced Fill-Flash (Nikonos RS only)

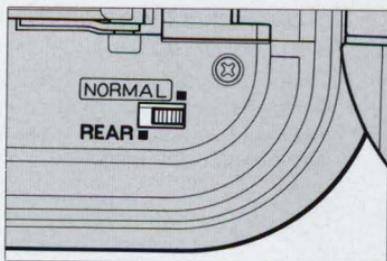
Flash output falling on the foreground subject is balanced with the ambient light background exposure automatically, producing more natural photographs. The Matrix Meter reads five segments, analyzing brightness and contrast, then determines the correct exposure. Set your preferred aperture, the camera will automatically adjust shutter speed. The SB-104 is automatically told how much light to provide for a precise balance with the predetermined background exposure. As you change apertures for different depths of field the camera automatically adjusts shutter speed and flash output to provide consistent exposures.

- 1 The Speedlight's standby switch is ON.

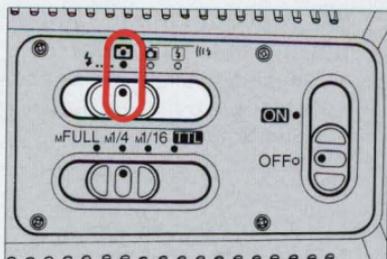


2 Set the camera's sync mode to any desired mode.

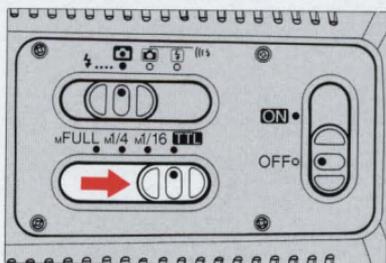
—When the sync mode switch is set to "Normal", the shutter speed is controlled between 1/125 and 1/30 second. When it is set to "Rear", the shutter speed is controlled between 1/125 and 1 second.



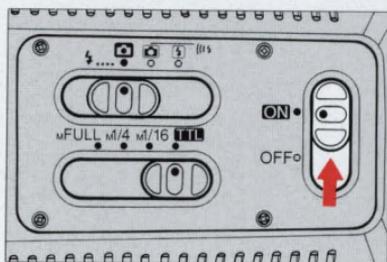
3 The Speedlight's function selector is set to "Standard."



4 The Speedlight's flash mode selector is set to TTL.

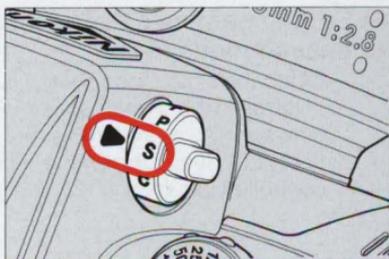


5 Power switch is ON.



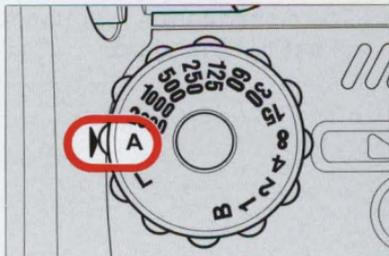
6 Set the focus mode on the Nikonos RS to "S" or "C".

—All focus modes can be used. However, Nikon recommends using "S" (single servo autofocus) or "C" (continuous servo autofocus) mode.



7 Set exposure mode to aperture-priority auto exposure (A).

—Set the aperture value so that the subject distance is within the flash shooting distance range.

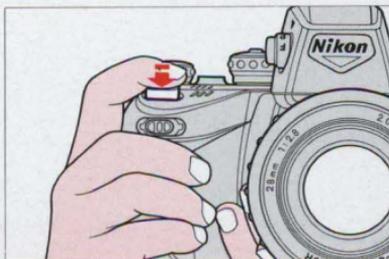


8 Pressing the shutter release button slightly

Check the flash shooting distance range and be sure the ready-light and the (●) in-focus indicator are lit up.

—If the electronic analog display appears, the operation is controlled by center-weighted TTL flash. In this case, the main subject is taken at the correct exposure, but if the electronic analog display is on the plus side, the background exposure will be too bright (over-exposed), or if it is on the minus side, the background exposure will be too dark (under-exposed). If no special background effects are needed, the photograph can be taken as is with correct exposure.

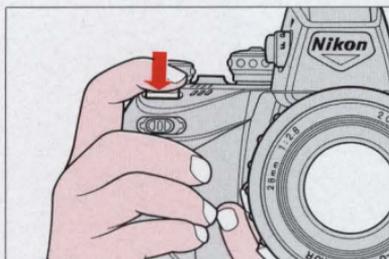
For matrix balanced fill-flash operation, reset the aperture dial on the camera so that the overexposure or underexposure indicator goes out. Using the exposure calculation chart (see page 41), be sure the aperture value set is within the shooting distance range.

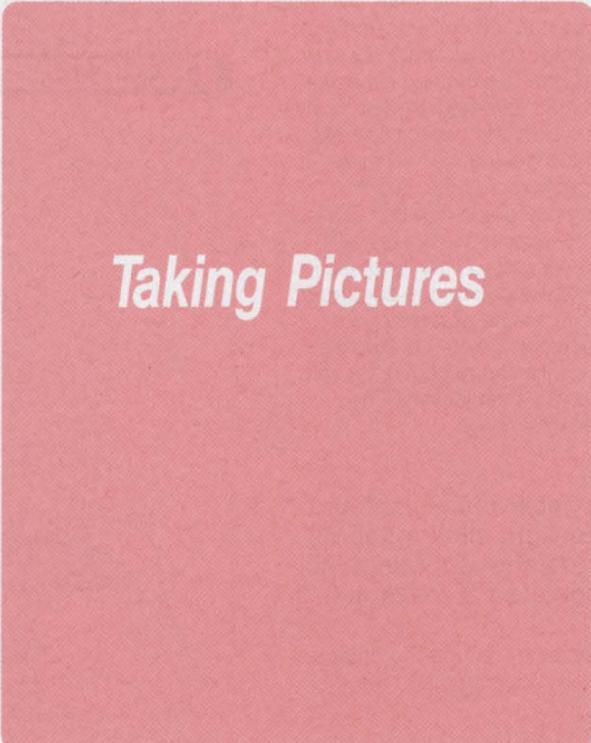


9 Shooting

If both viewfinder ready-light and SB-104 ready-light blink for about three seconds after shooting, the flash has operated at maximum power.

—In this case, either reduce the object distance, or select a smaller f-number.





Taking Pictures

Possible Shooting Modes with the SB-104 and Nikonos RS

The settings and shooting techniques that are possible with the SB-104 vary according to the camera used. Follow the procedures below.

—See page 46 for basic tips on underwater flash photography.

Possible shooting modes	SB-104 settings			Nikonos RS settings	
	Standby switch	Function selector (*1)	Flash mode selector	Sync mode (*2)	Exposure mode (*3)
Matrix balanced fill-flash (*4)	ON	Standard	TTL	Desired mode	Aperture-priority auto
Center-weighted TTL flash (*6)	ON	Standard	TTL	Desired mode	Manual
Rear-curtain sync	ON	Standard	Desired mode	Rear-curtain mode	Desired mode
Manual (*5)	ON	Standard	M Full M 1/4 M 1/16	Desired mode	Desired mode

*1 Set the function selector to "Standard" for operations other than Camera Slave and Flash Slave.

*2 When the sync mode is set to "Normal" in aperture-priority auto exposure mode (A), the shutter speed is controlled between 1/125 and 1/30 second. (When it is set to "Rear", the shutter speed is controlled between 1/125 and 1 second.)

*3 In manual exposure mode, the shutter speed can be set at 1/125 second to 1 second, or B (bulb). (When shutter speed is set to 1/2000 to 1/250 second, it is automatically controlled at 1/125 second.)

*4 In matrix balanced fill-flash operation, set the aperture dial so that the electronic analog display in the viewfinder goes out. If the photograph is taken while the electronic analog display appears, the operation is automatically controlled by center-weighted TTL flash. (In this case the main subject is taken at the correct exposure but with no background exposure adjustment.) Refer to "Matrix Balanced Fill-Flash" on page 24.

*5 When setting the flash mode selector in manual shooting mode, select a guide number (M Full, M 1/4, or M 1/16) so that the actual shooting distance corresponds to that of the exposure calculation chart. Manual Flash Exposure mode

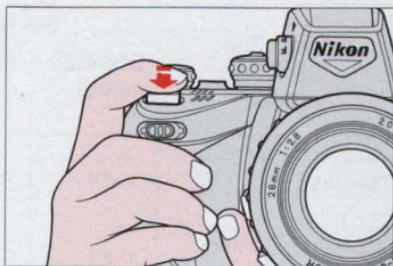
The flash output that falls on the foreground subject is directly related to the selected power setting on the SB-104 and the distance from the Speedlight to the subject.

*6 Center-Weighted TTL Auto Exposure (Nikonos RS & Nikonos V only)

The flash output that falls on the foreground subject is automatically controlled by the camera as a result of measuring the amount of light which passes through the lens and strikes the film. It has no effect on the background ambient light, which is controlled manually by the photographers shutter speed and aperture settings.

1 Select a possible shooting mode, and set the SB-104 and the camera.

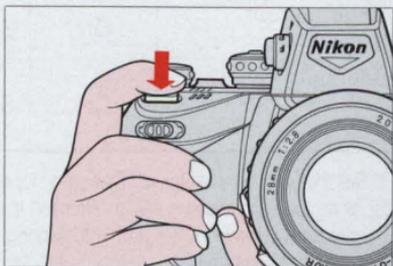
2 Press the shutter release button slightly.



3 Confirm the flash shooting distance range and check to be sure that the ready-light and the (●) in-focus indicator are lit up to shoot.

—If both viewfinder ready-light and SB-104 ready-light blink for about three seconds after shooting, the flash has operated at maximum power.

—In this case, either reduce the object distance, or select a smaller f-number.



Possible Shooting Modes with the SB-104 and Nikonos V

Possible shooting modes	SB-104 settings			Nikonos V settings	
	Standby switch (*1)	Function selector (*2)	Flash mode selector	Shutter dial (*3)	Aperture value (*4)
Center-weighted TTL flash (*5)	ON	Standard	TTL	"A". 1/1000—1/30 sec.	Desired aperture value
Manual (*6)	ON	Standard	_M Full _M 1/4 _M 1/16	"A". 1/1000—1/30 sec., "M90," "B"	Desired aperture value

*1 In manual shooting mode, turn OFF the standby switch when the shutter speed dial is set to "M90" or "B."

*2 Set the function selector to "Standard" for operations other than Camera Slave and Flash Slave.

*3 If the shutter speed is set to "A" or 1/1000—1/125 second, it is automatically controlled at 1/90 second. If the shutter speed dial is set to 1/60 second or slower, the shutter speed is automatically controlled at the specified shutter speed.

*4 If the shutter speed dial is set to "A," select the aperture value so that the shutter speed indicators for "125" and "60" blink, or "60" or "30" blinks.

If you set the shutter speed dial to 1/60 second or 1/30 second select aperture value so that the specified shutter speed indicator blinks, or that a shutter speed slower than the one specified blinks.

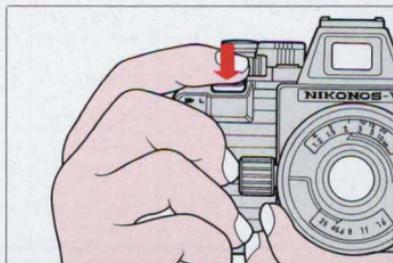
*5 If the usable film speed range in TTL flash mode exceeds ISO 400, the sync cord is not correctly connected, or the shutter speed dial is set to "M90" or "B", the ready-light will blink to alert you.

*6 When setting the flash mode selector in manual shooting mode, select a guide number (_M Full, _M 1/4, or _M 1/16) so that the actual shooting distance corresponds to that of the exposure calculation chart (see page 41).

1 Select a possible shooting mode, and set the SB-104 and the camera.

2 Check the flash shooting distance range and to be sure that the ready-light is lit up to shoot.

- If both viewfinder ready-light and SB-104 ready-light blink for about three seconds after shooting, the flash has operated at maximum power.
- In this case, either reduce the object distance, or select a smaller f-number.



Possible Shooting Modes with the SB-104 and Nikonos IV-A

Possible shooting modes	SB-104 settings			Nikonos IV-A settings		
	Standby switch	Function selector	Flash mode selector (*1)	Shutter dial (*2)	Lens aperture value (*3)	Lens distance scale
Manual	OFF	Standard	M Full M 1/4 M 1/16	A, M (1/90 sec.), B	Desired value	Distance to subject

*1 When setting the flash mode selector, select a guide number (M Full, M 1/4, or M 1/16) so that the actual shooting distance corresponds to that of the exposure calculation chart (see page 41).

*2 If the shutter speed dial is set to "A," the shutter speed is automatically controlled at 1/90 second.

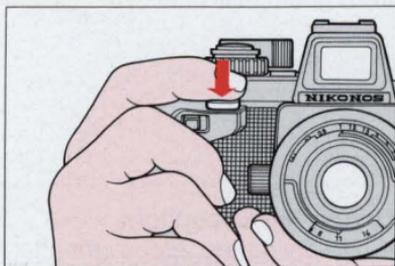
*3 Determine aperture value by reading the relationship between the shooting distance and the guide number from the exposure calculation chart.

● Caution

If the flash mode selector is set to TTL, the ready-light blinks to alert you. Reset the flash mode selector.

1 Set the SB-104 and the camera.

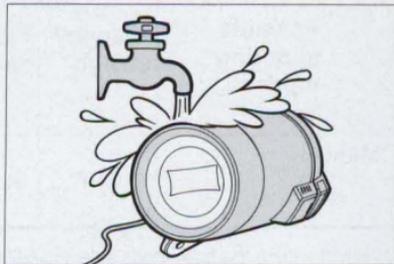
2 Press the shutter release button to shoot.



Caring for the SB-104 After Use

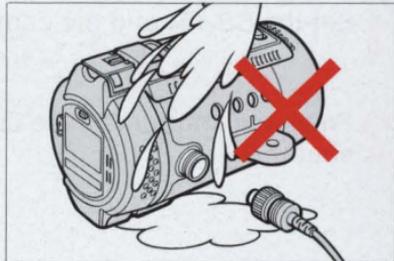
Wash the Speedlight with fresh water . . .

If the SB-104 Speedlight is stored without having been washed after use under water (especially in seawater), salt and other foreign matter will stick to its parts, possibly causing corrosion or operation failures. With the Speedlight's cap closed, wash the Speedlight thoroughly with fresh water (do not use hot water). If the Speedlight was used in salt water or muddy places, submerge it in a sink or other suitable vessel filled with fresh water, and move all operating parts (such as levers and knobs) to remove any salt or dirt from the gaps around these parts. It is then a good idea to rinse the Speedlight under running water.



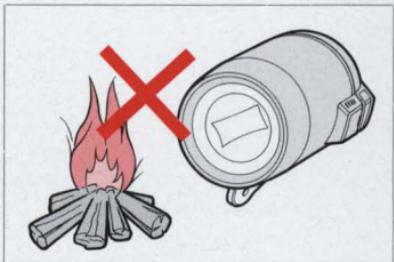
Do not let water get into the sockets . . .

When washing the Speedlight, attach the supplied sync socket cap to prevent water from getting into the sync socket.



Drying the Speedlight . . .

When drying the Speedlight after washing, do not subject it to flames or heat. Avoid direct sunlight. Let it dry in a well-ventilated area.



.....

Be sure that all water has been removed. . .

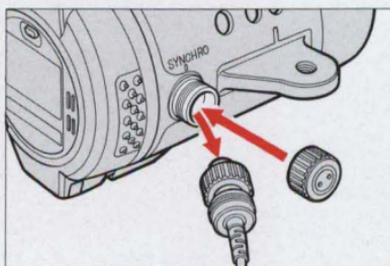
Several days are required for all water to dry from below the rubber cover. Keep in mind that water may still remain in hard-to-reach areas even after the surface has dried.

.....

Disconnect the sync cord from the socket and attach the cap. . .

Salt and other foreign matter will remain on the sync cord and the socket if the cord is not disconnected. After washing and drying the Speedlight, remove the plug and remove all the salt. After that, it is a good idea to apply a small amount of O-ring lubricant to the screw threads. Be sure always to attach the socket cap to prevent water or dirt from getting into the socket.

.....

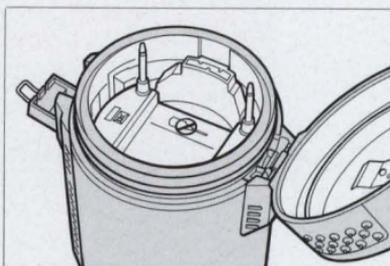


.....

Also dry the battery chamber. . .

After drying the main body, open the battery chamber, **remove the battery**, and let the inside of the chamber dry completely before closing it again.

.....

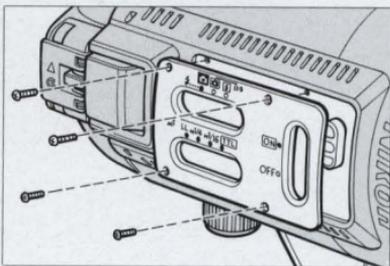


.....

If switch or selector movements become rough. . .

Tiny particles of sand getting inside the panel may affect smooth operation of the power switch or selector. In this event, remove the four screws (as illustrated), open the panel, and rinse out the sand. Reassemble the panel after letting the inside dry completely. If a screw is lost, use a spare screw provided.

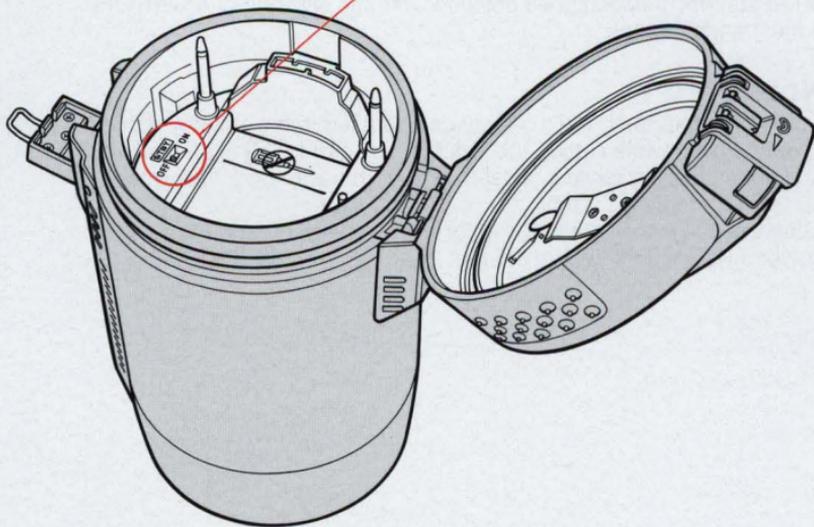
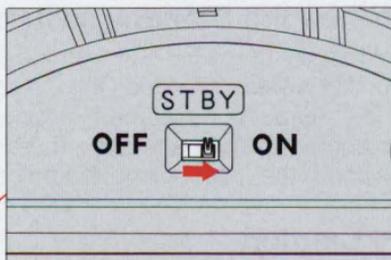
.....



Details on the Speedlight's Parts

Standby Switch

When the Speedlight is used with the Nikonos RS or Nikonos V, turning ON the standby switch inside the battery chamber will help conserve battery power.



When the Standby switch is ON . . .

The power of the SB-104 is turned OFF automatically when the flash is not operated for about 80 seconds after the SB-104's power switch is turned ON.

—The SB-104's ready-light goes out. The SB-104 then automatically turns ON the power (for about 80 seconds) about once an hour to keep the flash ready to fire at any time.

When the power to the camera is turned ON (by pressing the shutter release button slightly), the SB-104 power is turned ON accordingly and becomes ready to fire.

—The SB-104 power is turned ON when its power switch is turned OFF then ON again and becomes ready to fire as well.

When the Standby switch is OFF. . .

When using the SB-104 with the Nikonos RS or V, if the SB-104's power switch is turned ON, the power required for one manual full flash output is consumed in about 10 minutes without the flash being fired. The battery will thus be used up in about 20 hours without the flash being fired unless the standby switch is turned ON.

● Caution

- The standby function does not work in Flash Slave mode.
- The standby function does not work with the Nikonos IV-A. Turn OFF the standby switch.

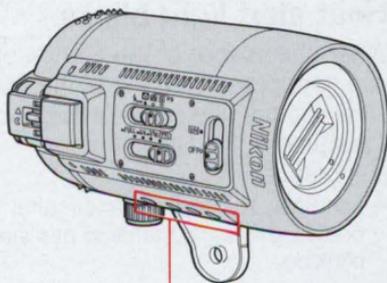
◆ Note

A fully-charged, fresh NiCd battery can be used in the standby mode for about 60 days while setting the function selector to  (standard) mode, and about 30 days while it is set to  (cordless remote flash) mode (at 20° C, no flashes fired).

If the Speedlight will not be used for a long period of time, be sure the power switch is OFF before storing.

Alert Signal Lamps

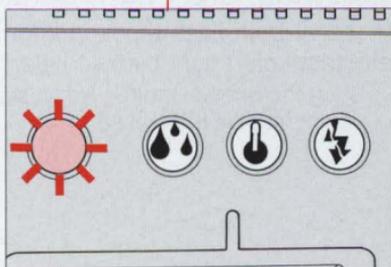
A warning is indicated when any of the lamps in the illustration starts blinking. Look up the cause of the problem below and follow the procedures given to fix it.



Ready-light blinks.

If the exposure is not sufficient when the flash is fired at full output, the SB-104's ready-light blinks for about three seconds to alert you immediately after the flash is fired in TTL mode. (The ready-light in the viewfinder will also blink.)

—In this event, reduce the distance between the camera and the subject, or select a smaller f-number.



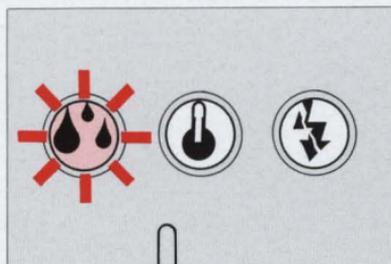
◆ Note

Flash power may vary due to surrounding conditions — with unusually dark subjects, for example — even though flash shooting distance settings are the same. A warning may thus appear if the subject is at the far end of the flash shooting distance range but still within it.

Moisture alert light blinks.

This alert indicator blinks when water has entered the battery chamber. Operation of the SB-104 stops automatically.

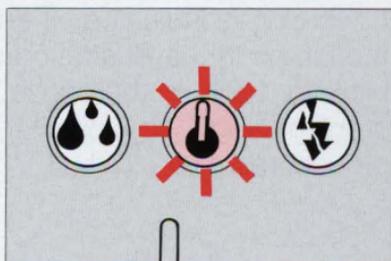
—Bring the Speedlight to a Nikon service center to have it checked.



Heat alert light blinks.

When the interior of the SB-104 overheats due to successive firing of the flash or other factors, the heat alert light blinks. Operation of the SB-104 stops automatically.

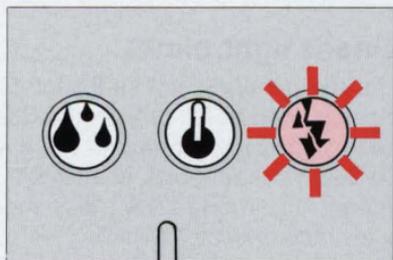
—The flash can be used again after it has cooled down and the lamp has stopped blinking.



Electrical alert light blinks.

If one or both flash tubes did not fire, the electrical alert light blinks to alert you.

—Bring the Speedlight to a Nikon service center to have it checked.



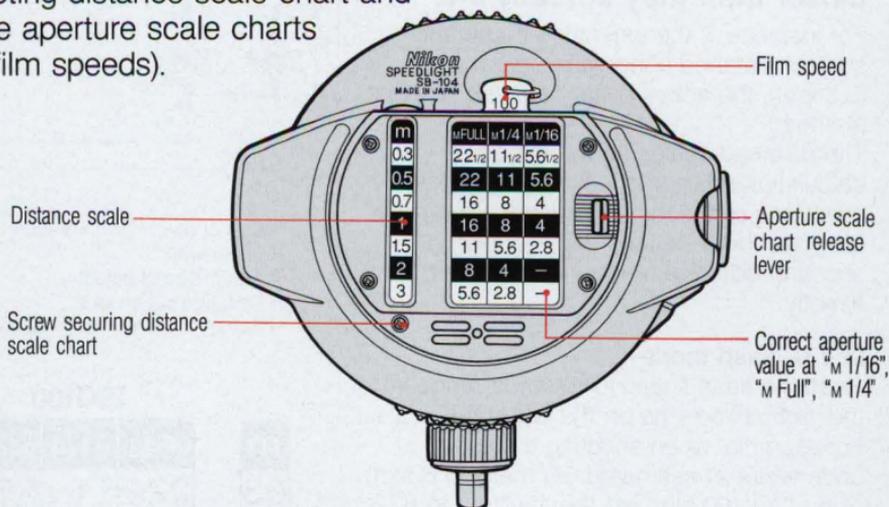
◆ Note

Each time the flash is fired, the SB-104 checks to be sure both flash tubes have fired normally. If both flash tubes fire abnormally, the Flash Abnormality lamp blinks after firing. If the lamp blinks even though the SB-104 has fired, one of the two flash tubes is defective.

If the shutter is released before the ready-light goes on, the flash will not fire and the flash abnormality lamp will blink. However, there is no abnormality in this case.

Reading the Exposure Calculation Chart

The SB-104 comes with one flash shooting distance scale chart and three aperture scale charts (by film speeds).



Changing the distance scale chart and exposure calculation charts

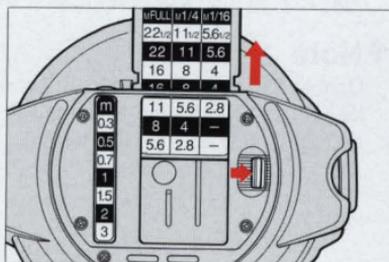
Distance scale chart

The distance scale is marked in meters (on one side) and in feet (on the other side). Use the system you prefer. Loosen the screw to remove the chart. When reattaching it, tighten the screws to hold it securely. —Do not tighten the screws too much to avoid damage to the plastic.

Aperture scale chart

Remove the aperture scale chart by holding down the release lever in the direction of the arrow and insert an aperture scale chart matching the film speed being used.

Be sure to peel off protective film on the scale chart before use.



Objects underwater appear closer than they actually are.

For instance, if the estimated camera-to-subject distance underwater is 1 meter (3.3 feet), the actual distance is 1.33 meters (4.3 feet).

The distance scales on the exposure calculation chart and lenses are marked by estimated distances underwater. When you estimate the distance, read the flash shooting distance range from the chart directly.

In TTL flash mode

Read the flash shooting distance range in the "m Full" column on the left of the scale. For example, when shooting a subject underwater at estimated 0.5 meter (1.6 feet) using ISO 100 film, set the aperture to f/22 or larger (smaller f-number) to get the correct exposure.

When taking pictures with the arm removed from the bracket

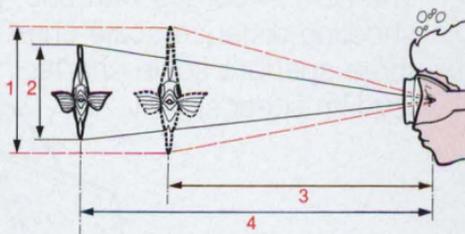
Open the aperture one or more steps wider (f/16) than that (f/22) read in the "m Full" column on the left of the scale.

Important

When setting aperture, check the flash shooting distance range first. To obtain the best possible color reproduction, set the aperture to the larger f-number if available.

Note

Usable film speed range in TTL mode:
ISO 25 to 1000 for the Nikonos RS
ISO 25 to 400 for the Nikonos V



- 1 Size of object as it appears underwater
- 2 Actual size of object
- 3 Distance set on lens
- 4 Actual or measured distance

ISO100

m	MFULL	M1/4	M1/16
0.3	22 $\frac{1}{2}$	11 $\frac{1}{2}$	5.6 $\frac{1}{2}$
0.5	22	11	5.6
0.7	16	8	4
1	16	8	4
1.5	11	5.6	2.8
2	8	4	—
3	5.6	2.8	—

In manual flash mode

The scales from the left indicate "M Full," "M 1/4," and "M 1/16."

For example, when shooting a subject underwater at an estimated 0.5 meter (1.6 feet) using ISO 100 film, the appropriate f/stop at "M Full" is f/22, at "M 1/4" is f/11, and at "M 1/16" is f/5.6.

Important

In manual mode, set the guide number (M Full, M 1/4, or M 1/16) corresponding to the aperture value selected.

If the aperture value is set to f/11 (in the above example), set the flash mode selector to "M 1/4."

m	ISO100		
	M FULL	M 1/4	M 1/16
0.3	22 _{1/2}	11 _{1/2}	5.6 _{1/2}
0.5	22	11	5.6
0.7	16	8	4
1	16	8	4
1.5	11	5.6	2.8
2	8	4	—
3	5.6	2.8	—

Note

The exposure calculation chart is effective only when the SB-104 is mounted on the standard arm with the standard bracket.

In manual mode, you can determine the correct f/stop using the following equation:

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

See table below for the guide number at various film speed.

Guide number at various film speed

m (ft)

Light output	Underwater shooting							
	ISO 25	50	64	100	200	400	800	1000
M Full	8 (26)	11 (36)	12 (39)	16 (53)	22 (72)	32 (105)	45 (148)	50 (164)
M 1/4	4 (13)	5.6 (18)	6 (20)	8 (26)	11 (36)	16 (53)	22 (72)	25 (82)
M 1/16	2 (7)	2.8 (9)	3 (10)	4 (13)	5.6 (18)	8 (26)	11 (36)	12 (39)

m (ft)

Light output	On-land shooting							
	ISO 25	50	64	100	200	400	800	1000
M Full	16 (52)	22 (72)	25 (82)	32 (105)	45 (148)	64 (210)	90 (295)	101 (331)
M 1/4	8 (26)	11 (36)	12 (39)	16 (52)	22 (72)	32 (105)	45 (148)	50 (164)
M 1/16	4 (13)	5.6 (18)	6 (20)	8 (26)	11 (36)	16 (52)	22 (72)	25 (82)

● Caution

- Guide numbers under water vary according to water conditions.
- When aiming the Speedlight diagonally, open the aperture 1/2 to 1 stop wider (smaller f-number) than the aperture value obtained in the above equation to compensate for the different angle of reflection.
- When taking photographs with the arm removed from the bracket, Nikon recommends you to take various pictures with different apertures by adjusting the camera-to-subject distance.

■ Important

If the camera-to-subject distance is actually measured underwater, multiply the measured distance by 3/4 to get the estimated distance underwater.

For example, if the actual camera-to-subject distance is 1.33 meters (4.3 feet), set the lens distance scale to 1 meter (3.3 feet), and read the "1 meter" column on the exposure calculation chart.

Basic Applications

Basic Tips on Underwater Flash Photography

The basic aspects of underwater flash photography will be reviewed in this section.

The Role of the Speedlight . . .

The primary purpose of the Speedlight underwater is to accurately reproduce the subject's colors. At a depth of three meters (10 feet), the red content of the subject will begin to be absorbed by the water, resulting in a photograph strong in blue content. This phenomenon, known as "Selective Light Absorption," increases as you go deeper underwater and move farther from the subject. Using a Speedlight effectively will restore the lost color to your photographs and create better contrast.

Try to stay as close as possible to your subject to reduce the amount of water between your camera and subject. This will result in a sharp, colorful photograph.

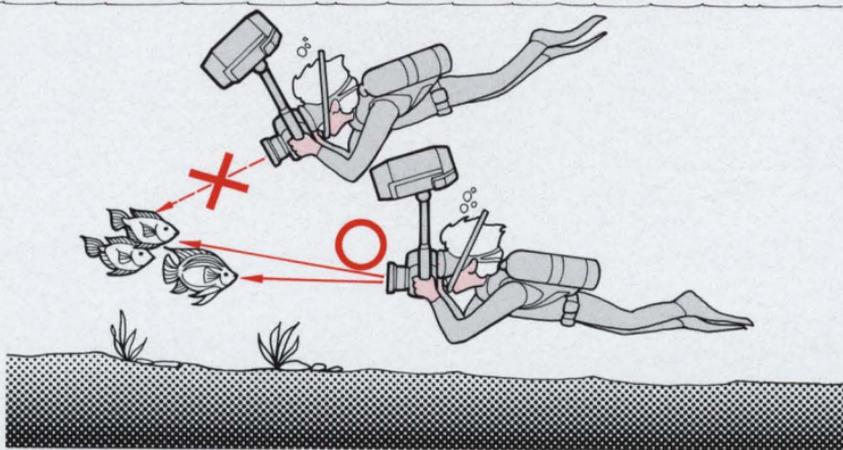
Taking photographs highlighting the blue of the sea . . .

Try to shoot at an upward angle to allow the background ambient light to enter into the picture.

In TTL flash mode, select the aperture value to get the correct exposure while aiming the camera at the blue background. Then set the aperture dial.

In this condition, you can take photographs with correct exposure and a natural blue background. The main subject can be reproduced in vivid colors by the light from the Speedlight.

—In manual flash mode, select the combination of shutter speed and aperture value to obtain the correct exposure against the background.

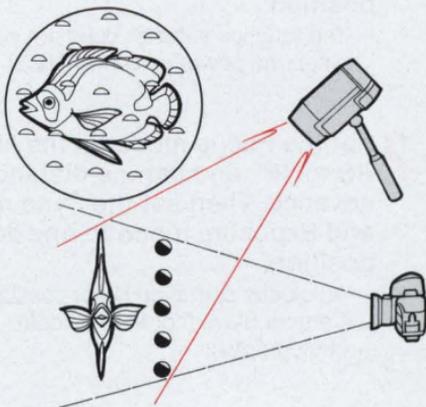
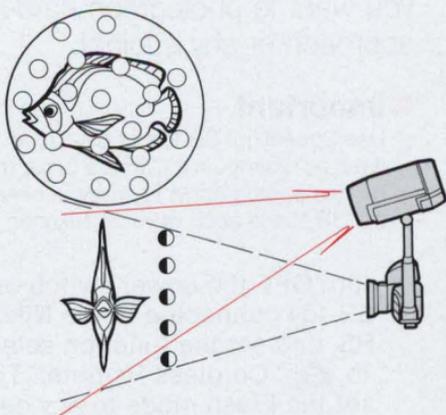


When shooting brightly shining fish . . .

If the Speedlight is aimed at shiny silver fish from the front, correct exposure will be hard to obtain because of the bright light reflected from the fish. To shoot this sort of subject, remove the arm from the bracket, hold the Speedlight as far away from the camera as possible, and aim the Speedlight at the subject diagonally.

When sand has been stirred up in the water . . .

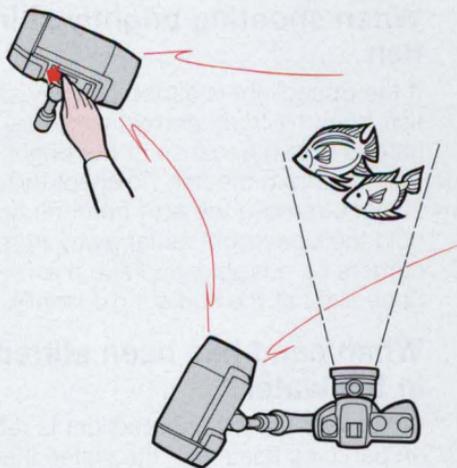
When light from the Speedlight is reflected on particles floating in the water, the photograph turns out looking like it was taken in a snowstorm. It is best to wait until the sand settles down, or to remove the arm from the bracket and aim the Speedlight at the subject diagonally, as far away from the camera as possible.



Illustrations and editorial supervision supplied by Akira Tateishi, Marine Art Center, Co., Ltd.

Camera Slave (Cordless Remote Photography)

When used with the Nikonos RS, the SB-104 can release the camera's shutter upon being activated from a remote location by another Speedlight. The SB-104 detects the remote flash with its built-in slave sensor, fires its flash and releases the camera's shutter simultaneously. This is useful when you want to photograph hard-to-approach or shy subject.

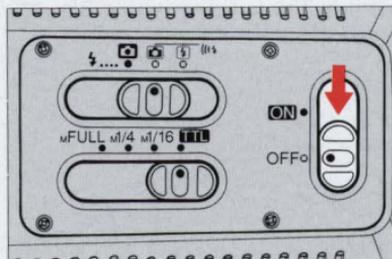


■ Important

Use Speedlight SB-104 or SB-102 as the flash activating unit. Camera Slave (cordless remote photography) is possible only when the SB-104 is used with the Nikonos RS.

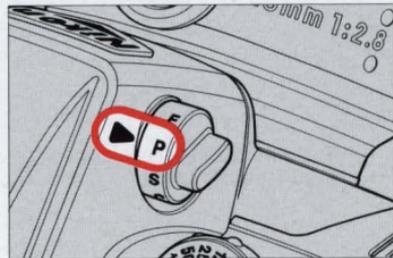
- 1 Turn OFF the power switch on the SB-104 connected to the Nikonos RS, and set the function selector to  "Cordless Remote." Then set the Flash mode to any desired position.

—The function selector does not work when the power switch is ON.

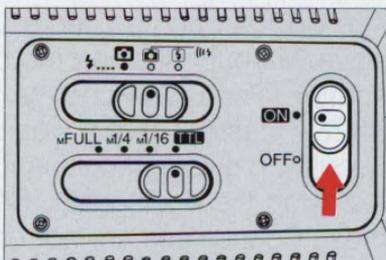


- 2 Set the Focus mode on the Nikonos RS to "P" and set the distance in advance. Then set the Sync mode and Exposure mode to any desired position.

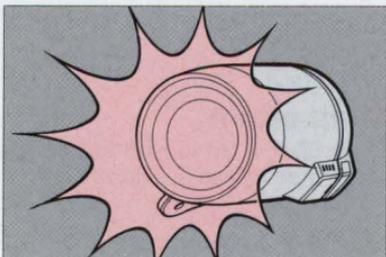
—Autofocus operation is not possible for Camera Slave (cordless remote photography).



- 3** Turn ON the SB-104's power switch, and check to be sure that the ready-light is lit.



- 4** The shutter is released each time another speedlight fires, and the SB-104 mounted on the camera also fires at the preset mode.



● Caution

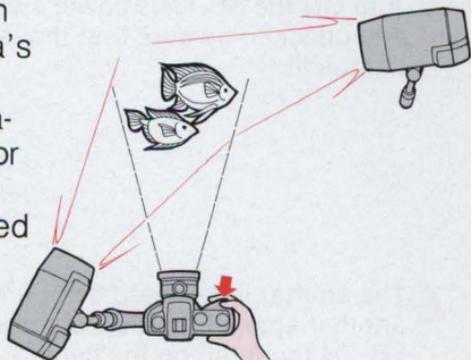
If there are other people in the area firing a speedlight, it may cause your Speedlight to fire also.

◆ Notes

- ◆ It is recommended that you use a tripod for this operation unless you have someone to assist by holding the slave SB-104 and Nikonos RS.
- ◆ Underwater Camera Slave (cordless remote photography) when another speedlight (activating a shutter release operation) and the SB-104 are facing each other is possible within a distance of 10 meters (32.8 feet).
- ◆ If the flash from the other speedlight (activating shutter release operation) is not detected by the sensor on the SB-104, the SB-104 may not fire. Check to be sure the flash fires properly before using it.
- ◆ Battery power consumption of the SB-104 when set for cordless remote operation is as follows:
With standby switch ON: Equivalent power required for one manual full output is consumed in approximately six hours.
With standby switch OFF: Equivalent power required for one manual full output is consumed in approximately 10 minutes.

Flash Slave

The SB-104 can be used as a flash slave without releasing the camera's shutter. When it senses the light from a master flash, it fires simultaneously, providing additional light for exposing the photograph. Because these Speedlights are not connected by a cord, more than two can be used to create special lighting effects.

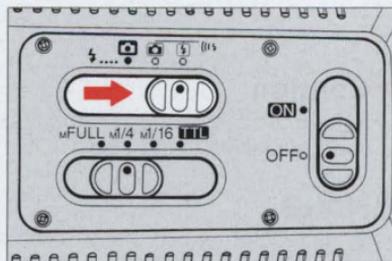


■ Important

An SB-104, SB-101, SB-102, or SB-103 can be used as a flash activating unit.

1 Set the function selector on the slave unit to "flash slave" mode.

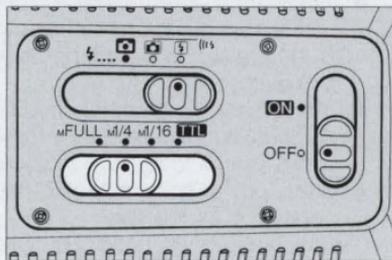
—When the power switch is ON, you cannot set the function switch selector. Turn OFF the power switch.



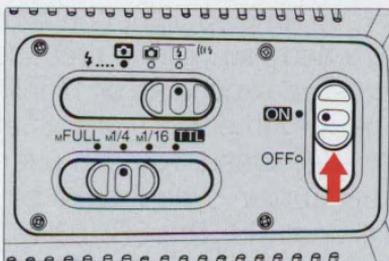
2 Set the flash mode selector on the slave unit to either "M Full," "M 1/4," or "M 1/16." (Manual)

Set the output to the desired flash power as a fill-in light.

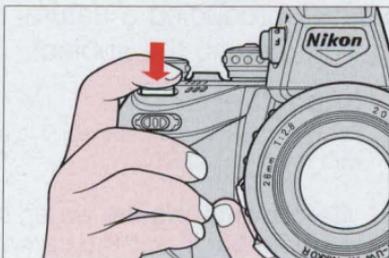
Determine the correct flash output from the camera's aperture value and the distance between the subject and the Speedlight.



- 3** Turn ON the power switches on both Speedlights, and be sure the ready-lights are lit.



- 4** Release the shutter on the camera. —When the Speedlight (connected to the camera) fires, the another Speedlight (SB-104) will fire simultaneously.



● Caution

- If there are other people in the area firing a Speedlight, it may cause your slave unit to fire also.
- The slave unit normally fires only when it senses a sudden burst of light. However, it can also fire in the event a lamp such as a fluorescent light flickers when it is turned ON. However, there is no abnormality in this case.

◆ Notes

- ◆ The slave unit fires when light from the master unit activates the slave unit's sensor. The maximum distance under water at which the slave unit can react to light from the master unit is about 10 meters (32.8 feet) when the master unit is directly facing the slave unit's sensor. However, the slave unit may not fire if the water is cloudy or there is strong external light. Test fire the Speedlights in advance to be sure the Flash Slave will work properly.
- ◆ The standby function does not work in Flash Slave mode. Battery power will thus be consumed in about 10 minutes, the equivalent power needed to fire the flash once in manual full output. At this rate, battery power will be used up in about 20 hours even WITHOUT a single firing of the flash.

Rear-Curtain Sync Photography

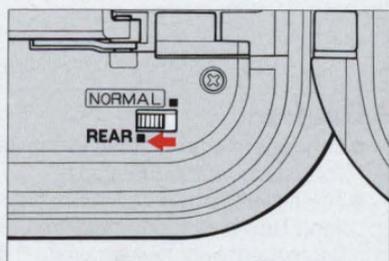
When ambient light conditions are low and you wish to produce creative exposures by highlighting the movement of subjects at a slow shutter speed, you can use the rear-curtain sync feature on the Nikonos RS. The SB-104 will then synchronize with the closing of the shutter producing a natural stream of light behind the subject.



■ Important

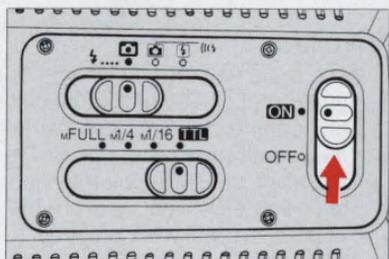
Rear-curtain sync photography is possible with the Nikonos RS.

1 Before entering the water, open the camera back, set the camera's sync mode switch in the direction of the arrow, and close the camera back.



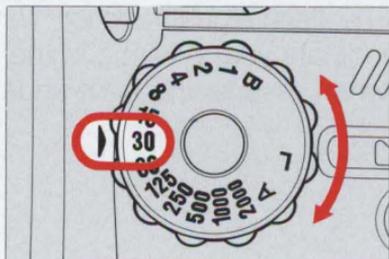
2 Turn ON the SB-104's power switch and check to be sure the ready-light is ON.

- Set the function selector to "standard."
- Set the flash mode selector to any desired position.



3 Set the f/stop and shutter speed on the camera.

- The Shutter Dial can be set to either “A,” 1/125—1 second, or “B,” but a shutter speed of 1/60 second or slower is most effective for rear-curtain sync photography.
- Set the Focus mode to any desired position.

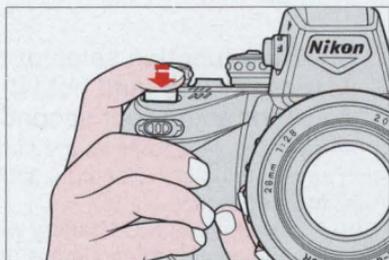


● Caution

When using rear-curtain sync flash in Aperture-Priority Auto Exposure (A) mode, the shutter speed will automatically set itself to between 1/125—1 second (standard operation is between 1/125—1/30 second). Be careful that your subject does not become blurred at these speeds.

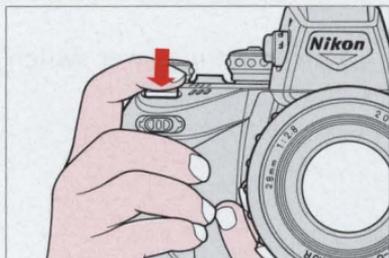
4 Press the shutter release button slightly and check the viewfinder indicator:

The (●) in-focus indicator should be lit,
The ready-light should be lit.



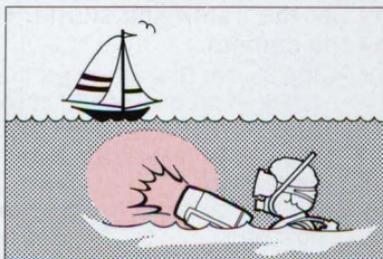
5 Check the flash shooting distance range, and release the shutter.

—See page 41 for details on the flash shooting distance range.

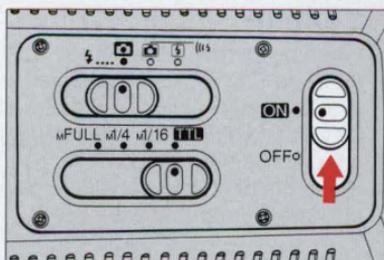


Using the Flash Signal Function

The flash signal function serves to indicate your position in the sea when resurfacing from under water.

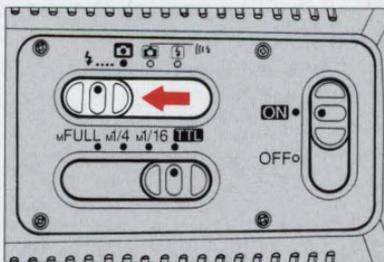


1 Turn ON the SB-104's power switch.

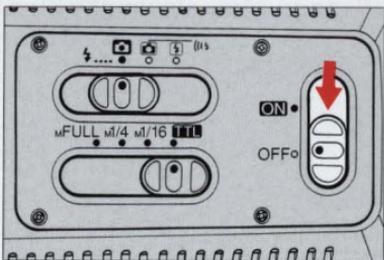


2 Slide the function selector to the Test position ⚡ and hold it down for about four seconds.

- From the second firing, the flash will repeat firing at 1/32 output about every two seconds.
- A fully-charged NiCd battery will let the SB-104 continue firing in this mode about 3000 times (about one and a half hours).



3 Turn OFF the power switch to stop.



Other Items

Optional Accessories

Extension Arm SK-104E

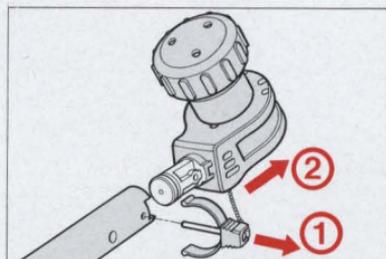
Used for extending the length of the standard arm (SK-104A). Especially useful for obtaining special lighting effects for close-up photography or for distancing the axis of the lens from the Speedlight by stretching the arm.

Weight: Approx. 332g (11.7 oz) (on land)
Approx. 180g (6.4 oz) (underwater)

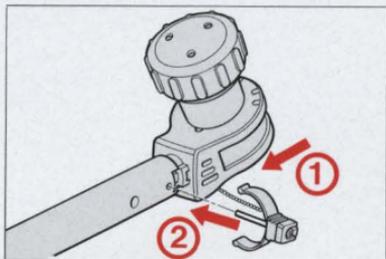


Using the SK-104E Extension Arm

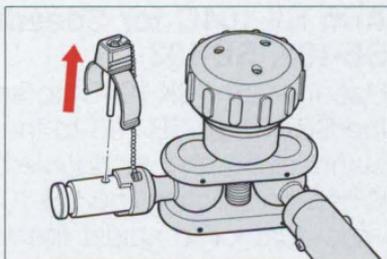
1 Pull out the stopper pin from the standard arm (SK-104A) and detach the wrist joint.



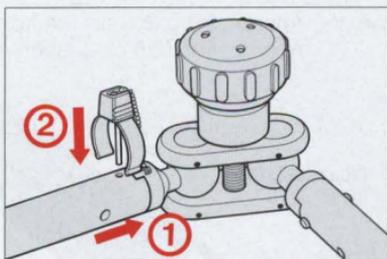
2 Insert the wrist joint (protruding portion) into the hole by aligning it to the notch at the end of the extension arm, and secure it by reinserting the stopper pin.



- 3** Pull out the stopper pin at the lower end of the extension arm.



- 4** Insert the lower end of the extension arm (protruding portion) into the hole by aligning it to the notch at the end of the standard arm (SK-104A), and secure it by reinserting the pin.



Arm SK-104C for Speedlights SB-102, SB-103

Use the arm (SK-104C) to secure the SB-102 or SB-103 to the standard bracket or double bracket. When connecting the SB-103, use a wide adaptor to adjust the shooting angle and flash angle.

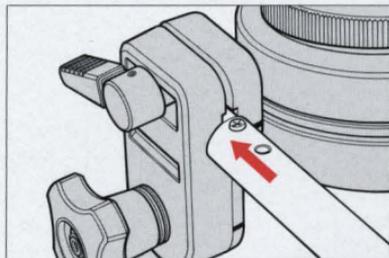
Weight: Approx. 250g (8.8 oz) (on land)
Approx. 80g (2.8 oz) (underwater)



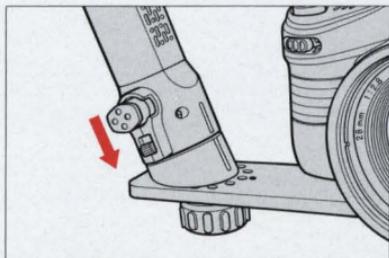
Using the SK-104C arm for the SB-102 and SB-103

- 1 Insert the arm (SK-104C) into the joint attached to the SB-102 or SB-103.

—For details on the joint and instructions on its use, see the Instruction Manual for the SB-102 or SB-103.



- 2 Attach the arm to the double bracket (SK-104W) in the same way that the standard arm (SK-104A) is attached to the standard bracket (SK-104B). (See page 17.)



Double Bracket SK-104W

The double bracket (SK-104W) is used when attaching two Speedlights — SB-104, SB-102, or SB-103 — to the camera for enhanced flash illumination. Light can be aimed from both the left and right sides to eliminate shadowed areas on the subject for close-up photography.

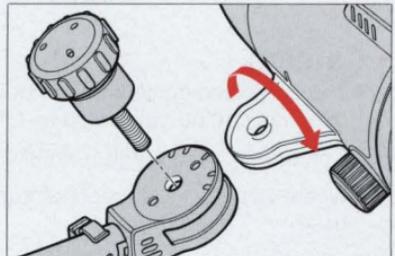


Using the SK-104W Double Bracket

Attach the arms to the double bracket in the same way that the standard arm (SK-104A) is attached to the standard bracket (SK-104B). (See page 17.)

◆ Note

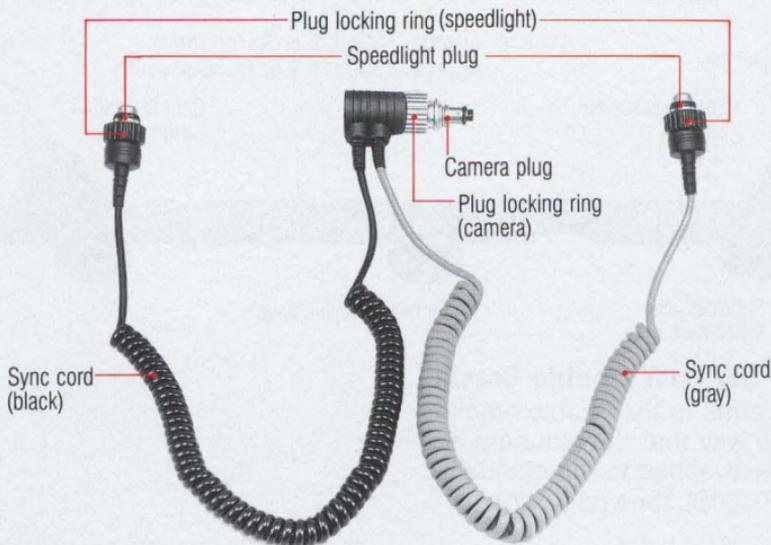
When mounting the SB-104 on the arm (camera's shutter release button side), remove the SB-104 once from the wrist joint and attach it reversely to the wrist joint again.



Double Sync Cord SC-100

The Double Sync Cord lets you use two Speedlights for TTL flash (matrix balanced fill-flash, center-weighted TTL flash) operation.

—Manual flash mode only is available when used with the Nikonos IV-A connected.



● Caution

- The combined guide number for two Speedlights firing in the same direction can be calculated as follows:

$$\text{Combined GN} = \sqrt{(\text{GN1})^2 + (\text{GN2})^2}$$

where GN1 and GN2 represent the guide numbers of each Speedlight used.

- Attach a wide adaptor when using the SB-102 or SB-103 for close-up photography.
- If you want to use just one of two Speedlights attached, use the Speedlight connected by the black cord.
 - If the power switch on the Speedlight connected by the black cord is turned OFF, the flash fires at full output instead of TTL automatic flash. The camera's shutter speed cannot be switched automatically to the sync shutter speed.

NiCd Battery Unit SN-104

The SN-104 is a rechargeable NiCd battery designed exclusively for the SB-104. A fresh, fully-charged SN-104 can fire approximately 120 times at manual full power output.

Weight: Approx. 370g (13.1 oz)



Quick Charger SH-104

The SH-104 is used exclusively to recharge the NiCd battery unit SN-104. Full charging takes about two hours for one battery unit (four hours for two units).

Weight: Approx. 600g (21.2 oz)
(Photo: US/Canada version)



O-Ring and Screw Set

A set of spare O-rings (one large, two small), O-ring lubricant, and two screws for securing the switch panel.



Generally speaking, battery power weakens as the temperature drops, and power drains off slowly when not used for a long time.

Please note the following points when using the NiCd battery:

Notes on using the NiCd battery

- Be sure to recharge the NiCd battery unit SN-104 when using it for the first time or after having not used it for over three months.
- Overcharging or excessive running of the battery shortens overall battery life. Be sure to turn OFF the power switch of the SB-104 when not in use to prevent battery leaks and to ensure long battery life.
- If the battery cannot be used for the specified length of time after being properly charged, it is approaching the end of its life. Replace it with a fresh one.
- When taking photographs in the low temperatures (especially under 0°C), use a fully-charged battery and keep it warm.
- Do not subject battery packs to excessive heat or throw them into fire.
- Do not disassemble, heat, short-circuit, or throw batteries into a fire, as explosions may result.
- Take care not to allow metal objects to come into contact with the battery's terminals, as they can cause a short and blow the fuse inside the battery pack. There is no way of replacing the fuse.

Tips on carrying and storing the SN-104

- Be sure that the SN-104 is not subject to shock or moisture, as it cannot be disassembled for repair. Keep the SN-104 in its protective case whenever not being used.
- If water or moisture gets inside the SN-104's plastic case, the SN-104 can no longer be used because the water can react with battery chemicals to produce flammable gases.
- Do not carry or store the battery in the same case as wet under-water equipment (speedlights, cameras, diving gear, etc). Water may get inside the battery pack and cause a short-circuit.
- If the Speedlight will not be used for a long time, remove the battery and store it in a cool place (20°C). Otherwise, flammable gas may be produced inside the battery chamber.
- Keep the SN-104 out of the reach of small children.
- Do not recharge while the battery is still warm immediately after use.

When recharging the SN-104 battery pack . . .

- When recharging, only use Nikon's SH-104 Quick Charger. Read carefully the instruction manual provided.
—Charging is best conducted between 5°C and 35°C.

Notes of Caution

Do not subject the Speedlight to vibrations or shock.

Strong vibrations or shock may cause damage to delicately-adjusted parts. If you accidentally drop the Speedlight, take it to a Nikon service center to be checked for damage, although no damage may be found by a simple visual inspection.



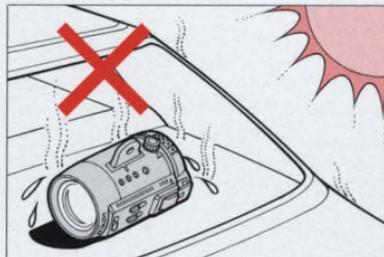
Do not jump into the water while holding the Speedlight.

When entering the water from a boat, enter it yourself first and then have someone hand you the camera and Speedlight from the boat, or suspend the items on a rope and claim them after entering the water. Unforeseen damage may be caused by the shock of the Speedlight hitting the water surface if you jump into the water while holding it.



Do not subject the Speedlight to excessive heat.

Do not leave the Speedlight inside an enclosed location, such as a car, that is subject to sunlight and high temperatures. Also avoid leaving it in any other area subject to high temperatures (over 60°C). When the interior of the SB-104 overheats, the heat alert light blinks and operation of the SB-104 stops automatically.



Prevent dirt, mud, sand, dust, water, salt, or other foreign matter from entering the Speedlight.

The Speedlight can be damaged if foreign matter finds its way inside the battery chamber. Damage of this sort is not always covered by the warranty.

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Take care not to splash water into the battery chamber or onto the NiCd batteries.

When changing batteries, be sure not to accidentally splash water into the battery chamber or onto the NiCd battery unit SN-104. If water has been splashed, wipe it away immediately. Nikon recommends keeping the batteries in the plastic case provided until they are needed.

If a lot of water enters the battery chamber, the moisture alert light will light up and the Speedlight will stop working. Remove the battery from the chamber and take the Speedlight to a Nikon service center with the chamber's cover open.

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If the Speedlight gets soiled . . .

Use a blower to remove dust first, and then wipe the Speedlight clean with a soft, dry cloth.

Do not use thinner, benzine, or other active agents.

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Never disassemble the Speedlight.

Never disassemble or remodel the Speedlight if damaged.

The Speedlight houses a high-voltage circuitry which is very dangerous. Take the Speedlight to a Nikon service center if damaged.

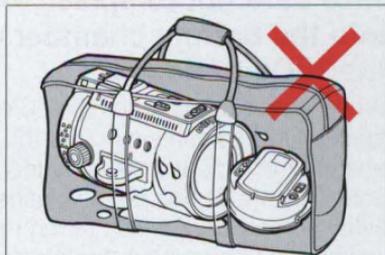
.....



Carrying the SB-104

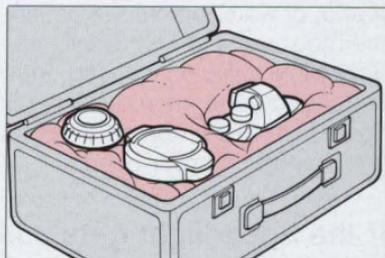
When transporting the SB-104 . . .

Do not put the SB-104 into the same bag as the NiCd battery unit SN-104 or SH-104 charger. Water from below the rubber parts of the SB-104 may cause damage to these items.



Do not subject the Speedlight to vibrations or shock.

When carrying the SB-104 in the car or in the boat, insert the Speedlight and other equipment into bags to prevent them from bumping each other, or fill the gaps with a towel to absorb vibrations or shock.



Do not carry the Speedlight by the sync cord.

Do not carry the Speedlight dangling at the end of the sync cord.



Safekeeping the SB-104

Remove the NiCd battery.

If the Speedlight will not be used for a long time, remove the battery from it. If the battery leaks, flammable gas may be produced inside the battery chamber which is very dangerous. If that happens, do not use the Speedlight and take it to a Nikon service center.



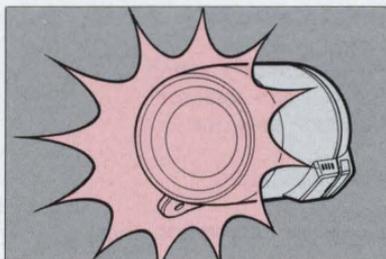
When storing the SB-104...

Store the Speedlight in a cool, dry place to prevent mold from growing on it. Do not leave the Speedlight inside an enclosed location, such as humid or wet areas, or places subject to magnetism or chemicals such as camphor or naphthalene (mothballs).

Test fire the Speedlight about once a month.

If the Speedlight is being kept in storage for a long time, take it out about once a month, insert the NiCd battery unit SN-104, and fire the Speedlight several times to prevent the condenser from weakening. Before returning it to storage, turn OFF the power switch while the ready-light is lit, and remove the battery.

—By occasionally test firing the SB-104, you can preserve the performance of the condenser for a long period of time.



Specifications

Electronic construction	Automatic insulated gate bipolar transistor (IGBT) and series circuitry
Usable exposure mode	Matrix balanced fill-flash (Nikonos RS only); TTL auto flash (Nikonos RS and Nikonos V only); Manual: "M Full," "M 1/4," and "M 1/16" settings
Guide number	32 (at M Full), 16 (at M 1/4), 8 (at M 1/16) ASA/ISO 100 on land and meters/160 Ws (at M Full), 40 Ws (at M 1/4), 10 Ws (at M 1/16)
Angle of coverage	100° (covering 15mm lens), 115° (on land)
Flash shooting distance range	f/5.6 to f/22: 0.3 to 6m (on land), 0.3 to 3m (underwater) in TTL auto flash mode (using ASA/ISO 100)
Usable film speed range in TTL mode (ASA/ISO 100)	ASA/ISO 25—1000 (Nikonos RS) ASA/ISO 25—400 (Nikonos V)
Number of flashes (at full output)	Approx. 120 (with Nikon NiCd battery unit SN-104)
Recycling time (at full output)	Approx. 3 sec. (with Nikon NiCd battery unit SN-104)
Water resistance	Up to 100m (328 ft) depth
Power source	Nikon NiCd battery unit SN-104
Power standby switch	Available with Nikonos RS and Nikonos V
Flash mode selector	TTL and manual (M Full, M 1/4, M 1/16)
Function selector	Standard/Test firing/Signal flash/ Camera slave/and Flash slave
Alert Indicators	Full output/Heat alert light/Moisture alert light/ Electrical alert light
Exposure calculation chart	Removable aperture scale charts (× 3), distance scale chart (× 1)
Flash duration	Approx. 1/1000 sec. (at M Full) Approx. 1/1800 sec. (at M 1/4) Approx. 1/7000 sec. (at M 1/16)
Dimensions (diam. × length)	Approx. 124mm (4.9 in.) × 222mm (8.7 in.) (main flash head)
Weight	
On land	Approx. 1990g (4.4 lbs.) (SB-104 only) Approx. 3450g (7.6 lbs.) (SB-104 with SK-104, SN-104 and sync cord)
Underwater	Approx. — 510g (— 1.1 lbs.) (SB-104 only) Approx. 340g (12 oz) (SB-104 with SK-104, SN-104 and sync cord)

Accessories (provided)

Standard arm (SK-104A), standard bracket (SK-104B), sync cord (with cap), O-ring set (three O-rings, O-ring lubricant, and two screws)

Note: All performance data are subject to change depending on environmental and charging conditions.

Specifications and design are subject to change without notice.

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Nikon

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FAX: 81-3-3201-5856

Correction

O-ring contact areas as shown on page 11 are incorrect.
Check O-ring contact areas as shown here.

Berichtigung

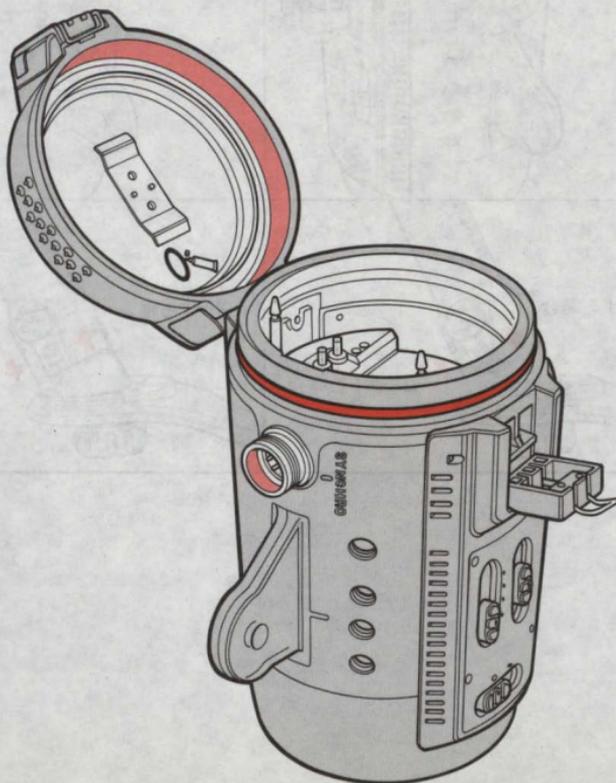
Die auf Seite 11 gezeigten Verbindungsstellen der O-Ringe sind nicht zutreffend.
Die Verbindungsstellen der O-Ringe gemäß der hier gezeigten Abbildung prüfen.

Correction

Les zones de contact des joints toriques indiquées page 11 sont incorrectes.
Vérifier les zones de contact indiquées ici.

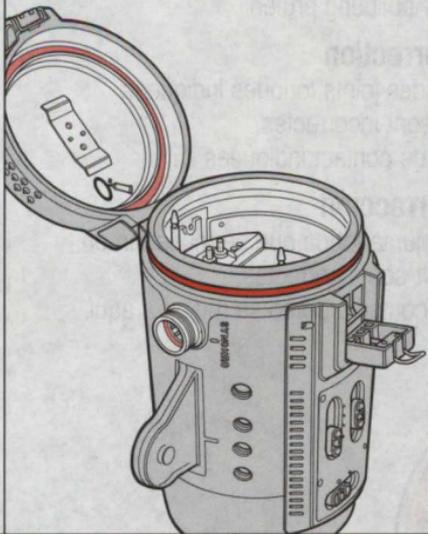
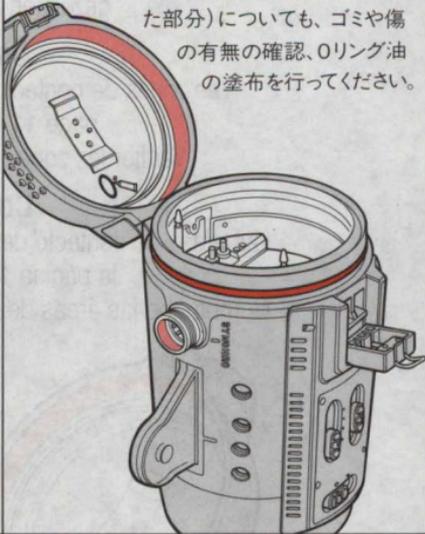
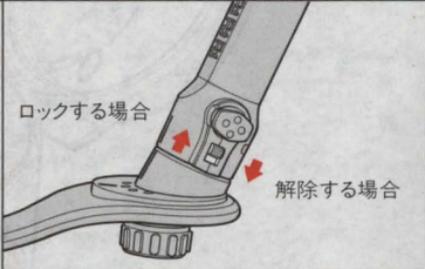
Corrección

Las áreas de contacto de junta tórica que se muestran en la página 11 son incorrectas.
Compruebe las áreas de contacto como se muestra aquí.



SB-104使用説明書正誤表

SB-104使用説明書に誤りがありましたので、おわび申し上げますとともに、
以下のように訂正いたします。

ページ	誤	正
11		<p data-bbox="688 313 979 431">Oリングが接触する面(赤く塗った部分)についても、ゴミや傷の有無の確認、Oリング油の塗布を行ってください。</p> 
20	<p data-bbox="159 966 288 991">解除する場合</p>  <p data-bbox="409 1047 542 1072">ロックする場合</p>	<p data-bbox="578 970 711 995">ロックする場合</p>  <p data-bbox="835 1047 964 1072">解除する場合</p>