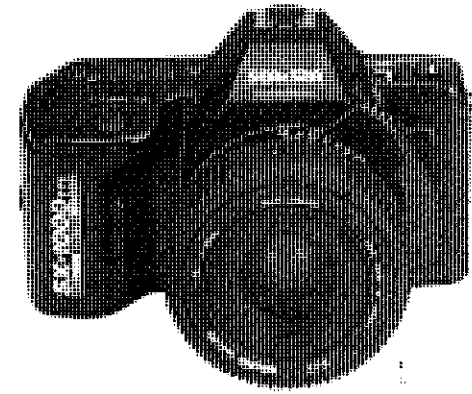


# SEA&SEA

# SEA&SEA SX-1000TTL



株式会社 シー・アンド・シー 〒332 埼玉県川口市幸町3-2-20 TEL.048-256-2251  
3-2-20 Saiwaicho, Kawaguchi-shi, Saitama, Japan 332  
PHONE. 048-256-2251 FAX. 048-256-2276

1994(1)

取扱説明書  
INSTRUCTIONS

## Introduction

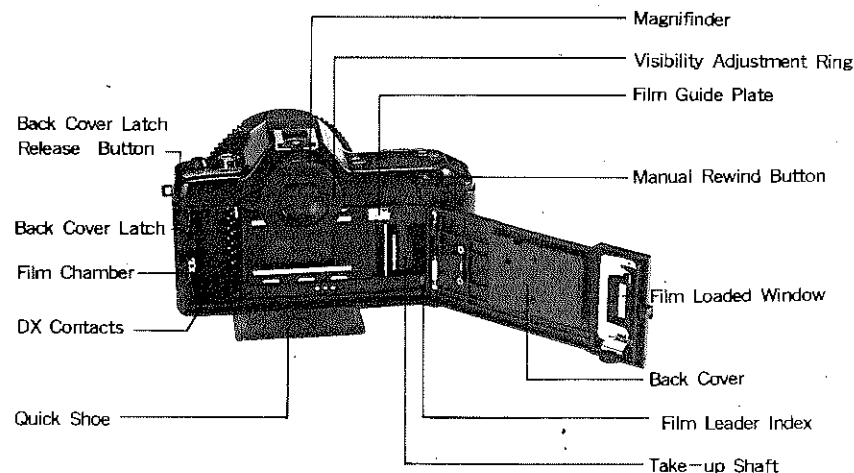
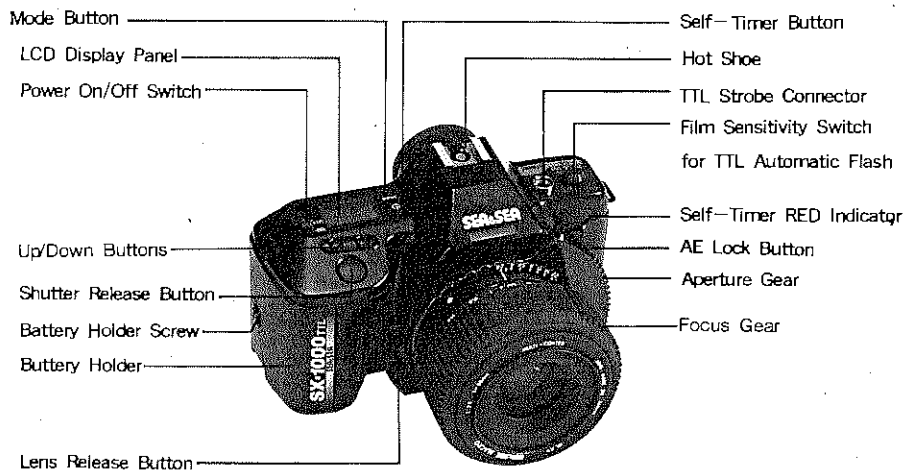
Thank you for purchasing our SEA & SEA SX-1000TTL.  
The viewfinder of the SX-1000TTL comes complete with internal LCD display of information. Exposure adjustment is by either aperture priority AE photography or manual photography and automatic TTL flash photography is possible in combination with our Yellow Sub series of underwater stroscopes. This is the original SEA & SEA camera, fully equipped with functions such as autobracket which automatically corrects exposure from available light in three steps over +1-0.5EV, exposure correction, AE lock and 2 frames / second continuous exposure. The six interchangeable lenses, 14mm and 24mm wide lenses, 50mm, 90mm and 180mm macro and 28-70mm zoom, are all fitted with gears.  
Be sure to fully read the instruction manual before operating this camera. After reading the manual keep it in a safe place together with the warranty certificate.  
If any unclear points arise in use recheck the manual then contact the store where you purchased this camera.

## Contents

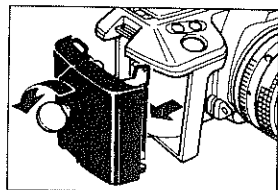
Description of Components	4 5, 4 6	Exposure Compensation	7 1, 7 2
Battery Insertion	4 7	Multiple Exposure Photography	7 3
Power Switch	4 8	Auto Bracket Photography	7 4
Battery Check	4 9	Bulb Photography	7 5
Notes on Battery	5 0	Photography Using	
Mounting Magnifier	5 1	On-Land Automatic Strobes	7 6
Fitting Lenses	5 2, 5 3	TTL Strobe Photography	7 7, 7 8
LCD Display Panel	5 4	Manual Strobe Photography	7 9
Film Insertion	5 5, 5 6, 5 7	Mounting Quick Shoe	8 0
Setting Film ISO Speed	5 8	Camera Care and Maintenance	8 1, 8 2
Viewfinder Display	5 9	Main Specifications	8 3, 8 4
Up/Down Button	6 0		
Aperture Priority AE	6 1, 6 2		
Full Manual Photography	6 3		
Supporting Camera	6 4		
Focusing	6 5		
Rewinding Film	6 6, 6 7		
Self Timer Photography	6 8		
AE Lock	6 9		
Continuous Photography	7 0		

# Description of Components

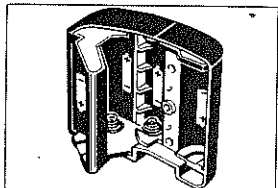
When reading this manual, refer to "Description of Components"



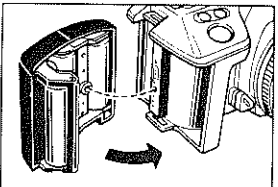
## Battery Insertion



1. Remove the Battery Holder by turning the Battery Holder Screw counterclockwise with a coin.



2. Insert four fresh AA batteries into the Battery Holder, first checking that the + and - on each battery are lined up correctly according to the polarity diagram inside the Battery Holder.

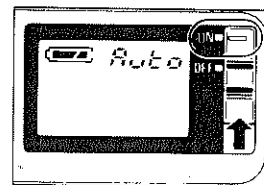


3. Secure the Battery Holder to the camera body by turning the Battery Holder Screw clockwise with a coin. Condition of batteries should be checked frequently. See Section 5 for details.

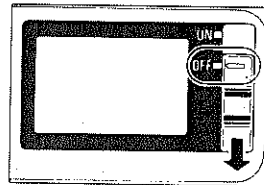
### Battery Choices:

- ★ Four Penlight (AA) manganese batteries, alkaline batteries or nickel cadmium batteries. (We recommend alkaline batteries.)

## Power Switch

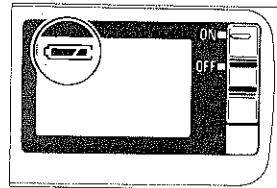


1. Slide the Power On/Off Switch to ON.

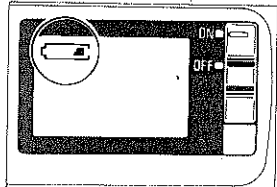


- ★ The camera is designed to shut off the main power supply automatically to save battery energy when the camera is not in use for about 30 secs. even if the Power On/Off Switch is left ON. This will turn off the top LCD Display, but the information contained in camera memory will be retained. Lightly press the Shutter Release Button to turn on the power and update the LCD Display. For maximum battery life, always turn the power On/Off Switch to the OFF position when the camera is stored.

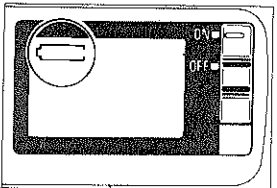
## Battery Check



1. Batteries are in a good condition when the symbol appears on the LCD Display Panel.





2. When the batteries are nearly exhausted, the symbol will be displayed on the LCD Display Panel. Replace with fresh batteries.



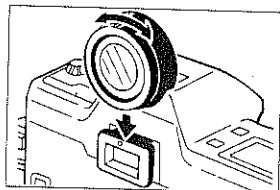
3. When the batteries are virtually dead, the symbol will appear on the LCD Display Panel. Replace with new batteries.

## Notes on Battery

★If the  symbol lights for about one minute, then disappears, the battery is only capable of retaining camera memory. However, do not remove old batteries until you are ready to replace them with fresh ones. The memory of the photography mode and exposure counter number will be retained for about 30 minutes without batteries. If you replace with new batteries within that 30 minutes, the display of the photography mode left in the camera memory will again appear in LCD Display Panel.

★Cold temperatures will reduce battery efficiency. In freezing weather, the symbol may turn off and only the  symbol may show on the LCD Display Panel. If you are taking pictures in cold weather, keep the batteries warm and insert them just before shooting. (If batteries are removed for more than 30 minutes, counter may reset to "0". Film will automatically advance 3 frames when batteries are reinserted.)

## Mounting Magnifier

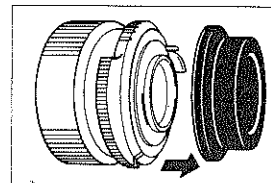


1. Insert the attached magnifier into the eyepiece of the camera along its groove.
2. Adjust its visibility by turning the Visibility Adjusting Ring to the position at which the indications within the finder become most visible.

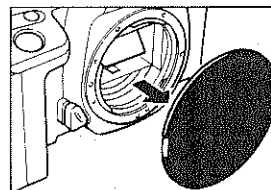
### [Cautions]

A special finder is used for this SX-1000TTL. Be sure to use the finder after mounting the attached magnifier. It is impossible to look into the finder without attaching the magnifier.

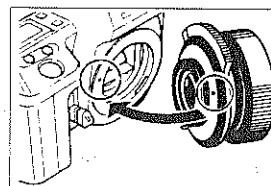
## Fitting Lenses



1. Pull off the Back Lens Cap to remove it from the lens.

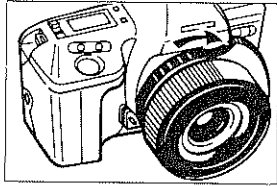


2. Pull off the Camera Body Cap.

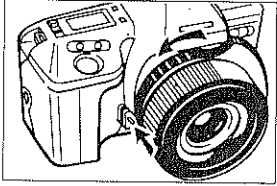


3. Align the red dot on the camera with the red dot on the lens and mount the lens on the camera.

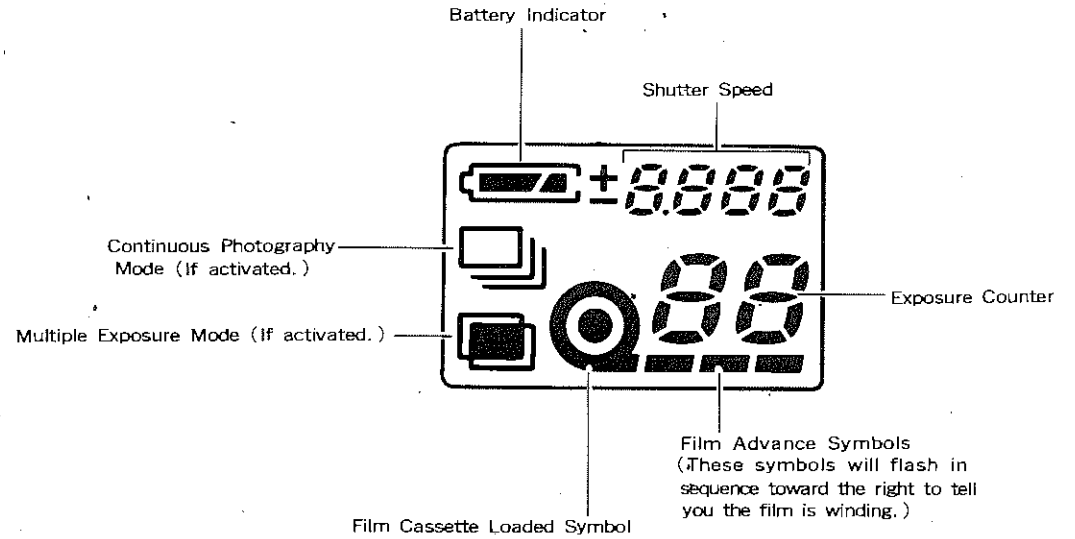
# LCD Display Panel



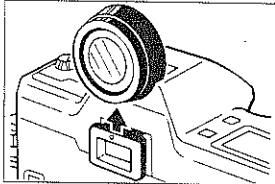
4. Turn the lens to the direction shown by the arrow until it clicks into place.



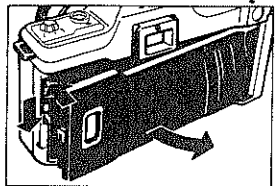
5. To remove the lens, turn the lens to the direction shown by the arrow, pressing the Lens Release Button.



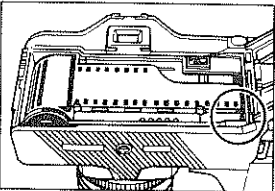
## Film Insertion



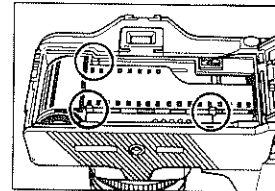
Always avoid direct sunlight when loading the film.  
1. Remove the magnifier from the finder eyepiece of the camera.



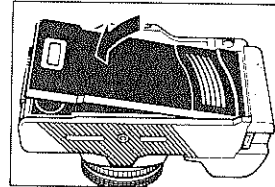
2. Press the Back Cover Lock Release Button and slide the Back Cover Latch all way down.



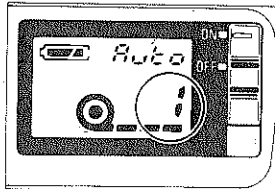
3. Load the Film Cassette into the Film Chamber and pull out film leader enough to extend just beyond the Film Leader Index. Put it on the Take-up Shaft.



4. Make sure that the film is within the Film Guides, and that the upper sprocket edge is under the Guide Plate.

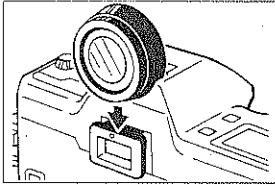
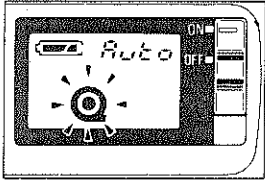


5. Close the Back Cover so that the Back Cover Latch snaps shut.



6. The film will now automatically advance until number "1" appears on the top LCD Display Panel.

## Setting Film ISO Speed

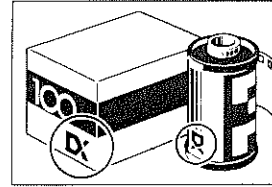


7. If the film is not being wound on correctly, the film presence Indicator flashes and the shutter cannot be pressed. If this happens reinsert the film.

**[Caution]**

If non-DX-coded film is used and the film is not wound on properly, the film counter etc. are not displayed on the LCD panel. However, the shutter button can be pressed, so beware of lost exposures.

8. The Magnifier can be fitted to the eyepiece of the camera viewfinder.

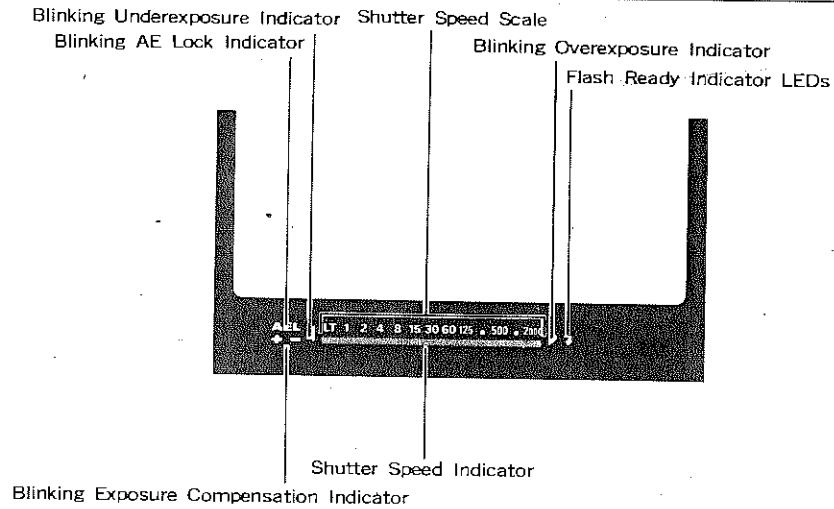


DX coded films are provided with black-and-silver patterns corresponding to film speed and number of exposure on-roll. The camera reads this pattern and automatically sets itself for DX films with speeds ranging from ISO 25 to 5000.

**[Caution]**

When using our YS50TTL-II or YS300TTL-II for automatic flash photography always use the film sensitivity switch for TTL automatic flash to set the film speed. (Three-level switch: ISO 25, 50, 100). This set value is given overall priority when using automatic TTL flash photography. In case of using our Sea & Sea underwater strobe with excepting ISO 25, 50, 100 please use them in manual photography.

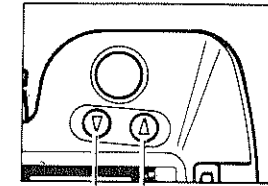
### Indications in Viewfinder



**★Viewfinder Lighting**

An auxiliary light turns on automatically when the Viewfinder LCD is dark and difficult to see

### Up/Down Button

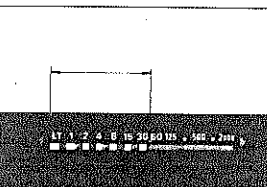
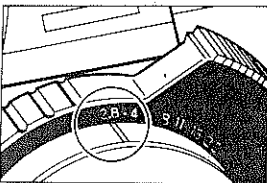
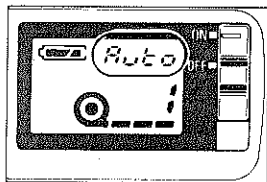


Down Button  
Up Button

When using the Up/Down Button to change Auto to the desired shutter speed, note that the button are set so that they must be pressed for over 1.5 seconds to operated.

- ★ Press the Down Button to change Auto to high shutter speed. Press the Up Button to change to Bulb or slow shutter speed.

# Aperture-Priority AE (Auto-Exposure) Photography



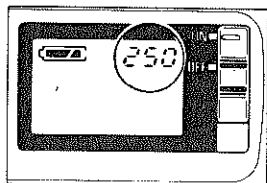
When the aperture value is set in aperture priority AE photography the camera automatically selects the appropriate shutter speed in response to the brightness of the photographed subject. Use this mode in photography which uses depth of field, for example panfocus seabed scenery or macro photography of seabed organisms requiring fine focus.

1. Push Up-Down Button till AUTO appears in LCD display.
2. Move the gear to set the aperture value.
3. When the Shutter Speed Indicator in the viewfinder is in LT to 30(1/30 sec.)range, the shutter speed is too slow to hand-hold. Either select a new F-stop or mount the camera on a tripod or other suitable support.



4. When an overexposure symbol (▶) or underexposure symbol (◀) appears in the viewfinder, the camera is unable to provide the proper shutter speed for correct exposure. Adjust the F-stop Ring (to change the F-stop number) until you are able to obtain an acceptable exposure within the available shutter speed range and extinguish the over/underexposure symbol.

## Full Manual Photography

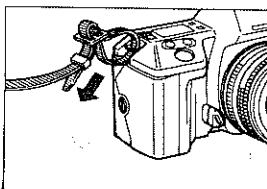


You may manually select the shutter speed and the F-stop number for unusual or creative picture taking situations.

1. Press and hold the Up or Down Button for about one second until the desired shutter speed is indicated on the LCD Panel.
2. Set the shutter to the desired speed using the Up or Down Button and information provided on LCD Display. Your pre-selected shutter speed will be shown by the single steady indicator on the Viewfinder LCD Display. A second shutter speed indicator may blink to indicate the camera meters suggested speed at a given f-stop.
- ★ The shutter speed setting will also be displayed in the top LCD.
3. Turn the F-stop Ring until your shutter speed indicator and the camera meter's blinking indicator (showing suggested exposure) overlap each other. This confirms that correct exposure is set.
4. Manually adjust the shutter speed to move the setting indicator towards the blinking indicator.

— or —

## Supporting Camera (Photograph in a stance to avoid camera shake)

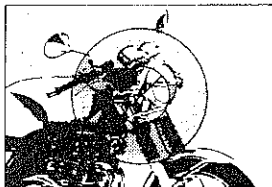


1. Place the camera on the palm of your left hand so that you can turn the lens focus ring with your fingers.
2. Support the camera body gently with your right hand and rest your index finger lightly on the shutter button. Hold your right arm in a comfortable position.
3. Move your left arm to rest lightly against your body and look through the Magnifier with the camera resting against your forehead.

### «Fitting Strap»

1. As per drawing insert strap into hang-metal fitting and set it.
2. Adjust the length of strap.
- ★ If it is too hard to install it, remove battery holder and fix strap.

## Focusing

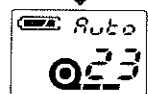
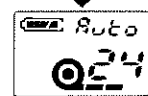
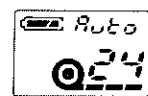


1. Focus by turning the focus gear while looking through the viewfinder. When the pattern of squares in the center of the viewfinder disappears and the image becomes sharp, it is in focus.

### [Note]

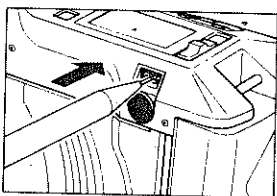
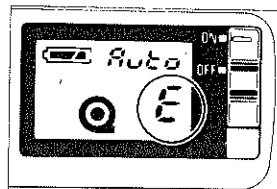
This camera has a special built-in viewfinder which should be used with the provided Magnifinder attached. At the time, please recheck that the visibility has been correctly adjusted for.

## Rewinding Film



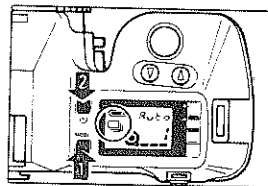
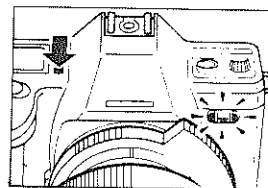
1. DX coded films will rewind automatically when you reach the end of the roll.
- ★ Film rewinding is indicated by a series of three dashes flashing in sequence from right to left, while the Exposure counter is counting down.

## Self-Timer Photography



2. When the film is fully rewound, the motor stop automatically and "E" appears on the LCD Display Panel. You can now open the Back Cover to unload the film.
- ★ The Sutter Release is locked when "E" is displayed.

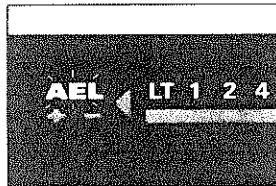
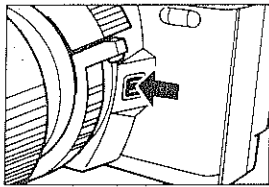
3. If you wish to rewind the film before the end of roll is reached. You can do by pressing the Manual Rewind Button of the camera with a pen, etc. for about 2 times.



The Self-Timer is used to include yourself in your pictures and normally provides a delay of 10 seconds.

1. Switch to single exposure mode.
- ★ If full display information is not showing, lightly touch the Shutter Release to the information reappear.
2. Press the Self-Timer Button. The Self-Timer RED Indicator Lamp will blink.
  3. You can use the Self-Timer in Continuous Mode. It will allow taking two pictures in a row.
  4. To cancel the Self-Timer after it has been started, press the Self-Timer Button again or turn the Power Switch OFF.

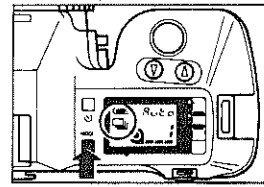
## AE Lock




When back light or spot light is given to the subject being metered in AE photography and contrast is excessive between the background and the subject, under or over exposed pictures may result. Use the AE lock to remember, or lock into the camera's electronic memory a close-up reading of the subject.

1. Bring the camera close to subject to the point that exposure will not be affected by the background.
  2. Press the AE Lock Button once to memorize the exposure. A flickering AEL is not displayed on the Viewfinder LCD.
  3. AE Lock is automatically cancelled after the Shutter Release Button is pressed for the exposure.
- ★ To cancel AE lock without taking a picture press AE Button a second time.
  - ★ For a continuous exposure series under similar conditions all requiring the use of AE Lock, you may wish to adjust your exposure using the exposure compensation feature instead.

## Continuous Photography

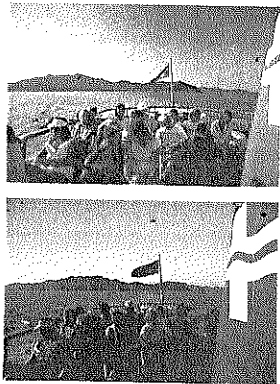


### 【Caution】

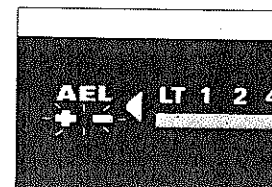
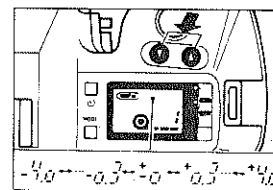
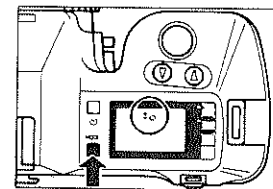
Push the Mode Button until  mark appears in the LCD display

1. It is now possible to take continuous pictures suitable for fast moving objects.
2. Selecting Continuous mode and pushing Self-Timer Button will allow you to take two frame pictures in a row.

## Exposure Compensation



Any camera's center-weighted meter can be fooled under very extreme lighting conditions, or when attempting to read very light (e.g. snow or beach scenes) or very dark (night scene) subjects. Also, when back or spot lit subjects are being metered in AE photography and contrast is excessive between the background and the subject, under or over exposed pictures usually result. Exposure compensation may also be used to intentionally take over/underexposed pictures for creative effects, and to adjust ISO speeds away from DX values.



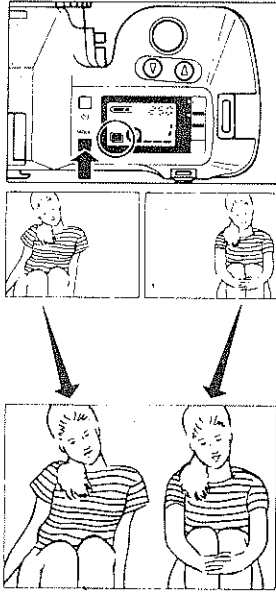
1. Press Mode Button to display  $\pm$  mark on the LCD.


2. Press the Up or Down Button until the desired amount and direction of the compensation appears on the LCD. Adjustments may be made up to  $\pm 4$ EV (stops) in  $1/3$  EV increments.

- ★ Be sure to set it back to the "0" position after use.
- ★ When the exposure compensation is set at positions other than 0, the  $\pm 1$  symbols are displayed on both LCD's.
- ★ Remember that you must increase exposures to keep light subjects light, and decrease exposures to keep dark subjects dark.



## Multiple Exposure Photography



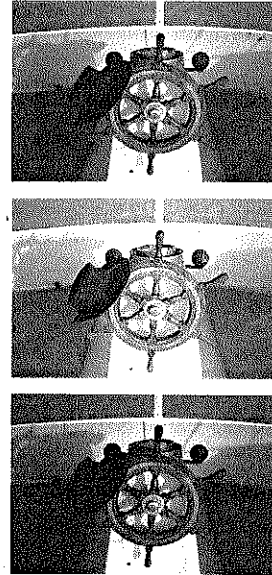
1. If you want to take two or more pictures on a frame, push Mode Button till you see  mark in the LCD display.
2. Press the shutter button to select the desired number of exposures. A number of shutter button presses. (For example, two button presses for double exposure, three presses for triple exposure). When this is done the film counter does not advance.
3. You can cancel this mode by shutting off the Main Switch or pressing the Mode Button.


### 【Caution】

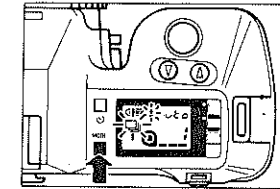
When having the film developed explain in advance that double exposure has been used. Otherwise it may be mistaken for an accidental double exposure and not be developed.

73

## Auto Bracket

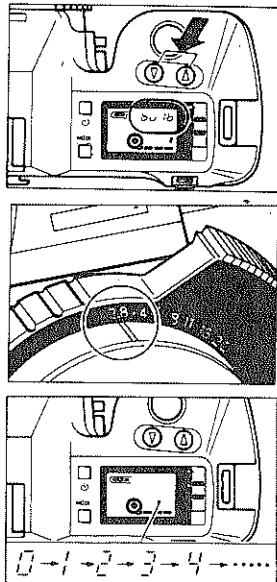


1. When you push the Mode Button, you will see the blinking  and ± mark at the same time, then you enter the Auto Bracket Model. It means that you can take three frames in a row by one shutter release. Each of the three frames will have a different EV(0, +0.5, -0.5 stop).
2. When the Exposure compensation mode or AE lock mode is selected, exposure adjustments will be made by ±0.5 EV toward the setting which you already selected.
3. If using a dedicated flash which is fully charged, the Auto Bracket Mode will not work.
4. When you use Reversal film, you will see the maximum effect of this mode.



74

## Bulb Photography



Bulb photography is used for night scenes and other situations requiring long exposure times.

1. Press the up/down button to set shutter speed to bulb.

### 【Caution】

When using the Up/Down Button to change Auto to the desired shutter speed, note that the buttons are set so that they must be pressed for over 1.5 seconds to be operated.

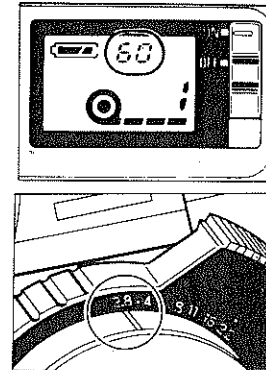
2. Set aperture to the desired value.

3. Bulb photography continues while the shutter button is pressed. The LCD panel displays the length of time the shutter has been open.

★ It is advisable to use a tripod for bulb photography.

75

## Photography Using On-Land Automatic Strobes



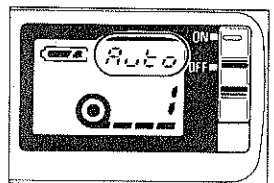
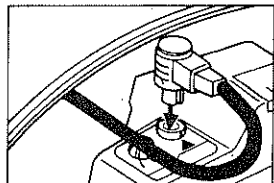
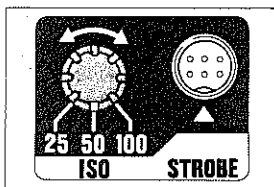
1. Set shutter speed to 1/60s or below.

2. Set aperture to that automatically designated by the strobe.
3. Check that the flash charge completion indicator is lit on the strobe then take the picture.

★ Refer to the strobe instruction manual for further details.

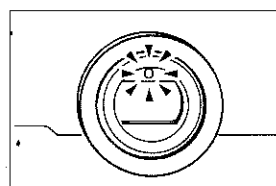
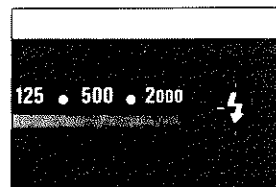
76

## TTL Strobes Photography (YS50TTL-II)



This is provided with TTL strobes connector which makes it possible to carry out automatic light adjusted photographing even on land in combination with our underwater strobe YS50TTL-II and SX Hot Shoe Arm set. The finder is easy to be seen over a mask because of adoption of a long eye point realized by the exclusive-use magnifier. It is a single-lens reflex camera provided with such features suitable for a underwater housing.

1. Set the sensitivity for the film in use of the film sensitivity switch for TTL automatic flash. (Three-level switch: ISO 25, 50, 100)
2. Connect the sync cord of SX Hot Shoe Arm set to TTL strobe connector.
  - ★ For more details, refer to the instruction manual for Hot Shoe Arm set.
  - ★ When setting to the housing, refer to the instruction manual for SX-1000 housing.
3. Set shutter speed on "AUTO"
4. Turn the strobe power switch to ON. Now set the Mode Switch on the strobe to TTL. If the strobe has charged and the charge completion indicator in the viewfinder lights the shutter speed is set to the synchro speed of 1/100s.



★ Even if shutter speed is mistakenly set to 1/125s or over it will automatically be set to the synchro speed of 1/100s. If shutter speed is set to 1/60 or below that speed can be used for slow synchro photograph. And if when before the completion of charging battery or the switch is on OFF it is taken picture the condition is as per the indication on the panel of LCD. (Auto or Manual)

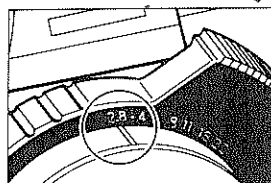
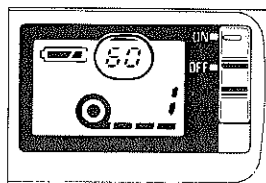
5. When taking picture in the range of TTL automatic flash confirm LED (green) in the finder.

★ Refer to the strobe instruction manual for further details.

### 【Caution】

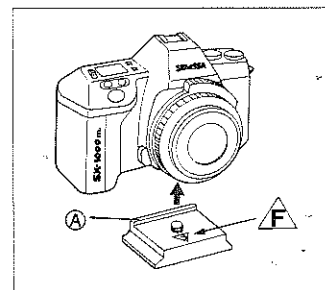
When photographing in TTL automatic flash mode always use the film sensitivity switch for TTL automatic flash to set the film sensitivity. This set value is given overall priority when using automatic TTL flash photography. (Three level switch: ISO 25, 50, 100). In case of using our Sea & Sea underwater strobe with excepting ISO 25, 50, 100 please use them in manual photography.

## Manual Strobe Photography



1. Set shutter speed to 1/60 or below.
2. Set aperture.
3. Check that the charge completion indicator on the strobe has lit before taking the photograph.
  - ★ Yellow sub series can be used for manual photograph in case of with our Dual synchro cord.

## Mounting Quick Shoe



This is adopting a quick shoe for enabling a speedy setting of a camera on the housing.

1. Fix the quick shoe for camera on the bottom of the camera body with  $\Delta$  mark in front. In this case, fix quick shoe stopper  $\text{\textcircled{A}}$  to keep pushing it to the lower side of back of camera body.

### 【Caution】

Camera can not be set on the housing unless this quick shoe for camera is mounted on camera body. There is a possibility that photographing is interfered if this quick shoe has been incompletely mounted.

# Camera Care and Maintenance

A camera is a precision instrument, so follow the points below when handling it.

## 【Precautions on use】

1. The main body and lenses of the SX-1000TTL are not waterproof. Take care that they do not come into contact with seawater, rain, grit, dust etc.
2. When the camera is subjected to extreme temperature changes, for example when being taken from a cold place to a warm place, condensation forms on the inside and outside of the body and lens. This can make the camera work poorly so in this situation place the camera and lenses in a vinyl bag etc. to adjust the temperature change and remove it from the bag once there is no temperature difference.
3. Inside a car or direct sunlight the temperature can exceed 60°C which has an adverse effect on the performance of the camera so never place it in this kind of environment.
4. Even if film is contained in the camera it can still be exposed by X-rays from airport baggage checks. Explain to the inspector that the camera contains film and avoid X-rays wherever possible.
5. Do not put the camera down with the lens facing upward. Try to place it in a stable position.

## 【Care and storage】

1. If dirt sticks to the lenses or viewfinder blow it off with a blower and wipe it off gently with a soft cloth. Do not touch it directly.
2. Remove the batteries if the camera is to be stored for a long time.
3. If a film has been partially used, remove it soon and develop it. Prolonged storage may cause discoloration.
4. Store in a well-ventilated place away from high temperature, humidity and dust. Do not store in drawers treated with insecticides. The lens cases supplied are fitted with O-rings so they are effective in excluding air and if a drying agent is placed inside, they can be used to store lenses safely. However, these cases are not waterproof. (Fitted with valve for regulating external pressure)
5. If the camera is not used for a long period, take it out around once per month and operate each part as for normal photography but without film. This will maintain the camera in good condition.
6. If the camera is in need of repair, take it to the store where it was bought. Please do not try to disassemble it yourself.

## Main Specifications

Type: Electronic, automatic exposure control 35mm single-lens focal plane shutter camera

Usable film: 35mm cartridge film, J135

Lens mount: K-mount

Shutter: Electronic control vertical action focal plane shutter

Auto Mode: 1/2000s-32s (Automatic)

Manual Mode: 1/2000s-16s, bulb

Synchro Speed: 1/100s or less

Self Timer: Operation time 10s (action indicated by the Self Timer Lamp)

Viewfinder Field of view rate: 91%(when mounted with the Magnifier)

Viewfinder Magnification: 0.84 times(when mounted with a 90mm F2.8 macro lens and Magnifier)

Viewfinder Screen: Accubrite screen

Magnifier: Visibility adjustable (+2.5~-1.5degrees)

Viewfinder Display: AE lock, exposure correction, underexposure, overexposure, shutter speed, recharge, completion, TTL auto OK

Focusing: Diagonal split image spot in microprism band; full ground glass field

Light Metering Method: Emitted light metering centrewighted average light metering

Light Metering Range: EV -2~20 (ISO100, with a 50mm F2.8 macro lens mounted)

Exposure Compensation: Exposure adjustment system(+4 to -4 in 1/3 EV increments)

Autobricket: 3 consecutive photographs in the order 0, +0.5, -0.5EV

TTL Automatic Flash: Automatic flash possible with a specialist strobe in three switch steps of ISO sensitivity; 25, 50, 100

Film Sensitivity Range: ISO 25-5000(1/3 steps)

Synchro Contact: X contact and synchro contact for TTL automatic flash

Film Lading: Autoloading, automatic setting to first frame

Film Wind on: Automatic winding on by built in motor

Continuous winding possible depending on the mode(maximum 2 frames/second)

Film Rewind: Automatic rewind on film completion, manual rewind possible

Film tip may optinally be left outside after rewinding

LCD Panel Display: Shutter speed, film advance, film presence, film counter,

continuous photography, exposure correction, multiple exposure,

autobricket, battery indicator

Other Functions: Viewfinder illumination, 30 second power saver timer built in

Power Source: AA-type alkaline dry batteries, AA-type manganese dry batteries, or AA-type NiCad dry batteries(4 pcs).

Size: 151(w)×105(h)×71(d)mm(when mounted with quickshoe and magnifier)

Weight: 550g (body only)

Accessories: Strap, Magnifier, Quickshoe, AA-type alkaline dry batteries.(4 pcs.)

\*Specification, price etc. may be changed without notice.