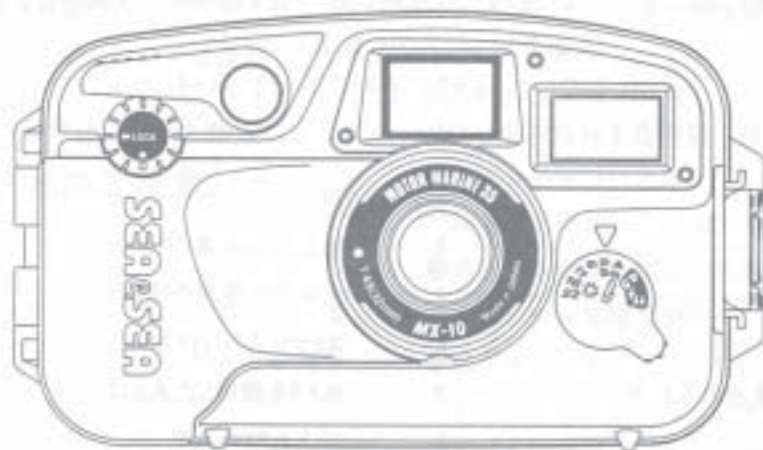


# MOTOR MARINE35

## MX-10

取扱説明書  
INSTRUCTIONS



**SEA&SEA**



Thank you for purchasing the Motor Marine 35 MX-10. The MM 35 MX-10 is an easy-to-use compact camera constructed to withstand water pressure at depth up to 45 meters. The built-in strobe permits photography under low light levels when on land.

Please read through this instruction manual thoroughly before use. Keep it together with your warranty card for future reference.

If you have any questions which are not covered in this manual, please contact your local Sea & Sea dealer.

## **CONTENTS**

<b>SAFETY CAUTIONS .....</b>	<b>18</b>
<b>SPECIFICATIONS .....</b>	<b>20</b>
<b>DESCRIPTION OF COMPONENTS.....</b>	<b>21,22</b>
<b>HOW TO OPEN THE BACK COVER AND INSTALL THE BATTERIES .....</b>	<b>23</b>
<b>HOW TO LOAD THE FILM .....</b>	<b>24</b>
<b>HOW TO CHECK REWINDING AND CLOSE THE BACK COVER.....</b>	<b>25</b>
<b>HOW TO TAKE CARE OF O-RINGS.....</b>	<b>27</b>
<b>TOPSIDE PHOTOGRAPHY.....</b>	<b>28</b>
<b>TOPSIDE STROBE PHOTOGRAPHY.....</b>	<b>29</b>
<b>UNDERWATER PHOTOGRAPHY.....</b>	<b>31</b>
<b>HOW TO INSTALL THE STRAP.....</b>	<b>32</b>
<b>AFTER USE.....</b>	<b>33</b>
<b>CARE AND MAINTENANCE.....</b>	<b>33</b>
<b>AFTER-SALES SERVICE AND GUARANTEE.....</b>	<b>34</b>

## SAFETY CAUTIONS

- For proper operation, please read this SAFETY CAUTIONS before use.
- After reading, please be sure to retain it for future reference.

\* Misuses listed under the following caution could lead to serious consequences depending on the situation. Please observe the cautions since they contain highly important information related to safety.

**CAUTION:** Contents that might result in personal injury or property damage.

### < Safety Cautions for operation of your Camera >

#### CAUTION

- Always make sure that the strobe and the accessories are firmly fixed and prevent them from falling off or getting lost, causing personal injury or malfunction.
- Do not swing your camera holding the strap. Collision or drop might cause malfunction.
- Do not attempt to disassemble your camera. It is very dangerous since it incorporates high voltage circuit.
- Do not attempt to alter or modify your camera. It might cause water leak or malfunction.
- If you notice smoke or smell, remove the batteries and bring it to your dealer for repair.

- In case of water leak, switch the strobe off, lock the shutter and stop the use of the camera.
- The pressure inside your camera may be high when there is a water leak. Handle with care when you open the backside since water might burst out and the backside cover might jump open.
- We will not be responsible for the unobtained pictures and/or the related costs due to any failure by the camera, the strobe or the accessories.
- Since many plastic parts are used in this product, avoid storing in a hot place like a car dashboard pocket or under direct sunlight. If you leave your camera in such places with the backside cover sealed, the inside pressure rises, forcing distortion or warp of the cases and might cause inundation, flood or condensation. Please pay

extra attention when storing.

## < Safety Cautions related to storing your Camera >

### CAUTION

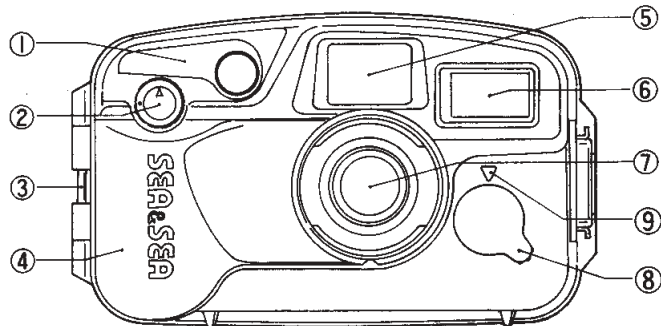
- When not in use for a long time, remove batteries since battery leakage might cause malfunction.
- Do not store your camera in damp or humid places. It might cause mold or malfunction.
- Do not store your camera together with naphthalene or camphor, or in a laboratory where chemicals are used. It may cause rust or corrosion.
- When not in use for a long time, take an empty shot once a month without film, with batteries in. By doing this various parts are moved, and your camera can be kept in a working condition.

## SPECIFICATIONS

Type:	35mm fixed focus all-weather camera 35mm film [JIS35; contained in a film cartridge] 36mm × 24mm ISO 100/400
Waterproof Performance:	Depth up to 45m
Lens:	F4.5 f+32mm 4 groups 4 elements
Focal Control:	Waterproof glass (meniscus lens) used at the front <ul style="list-style-type: none"><li>● on land 2.5m fixed focus</li><li>● underwater 1.2m fixed focus (visually)</li></ul>
Shutter Format:	(Behind the lens mechanical leaf shutter) (Synchronization) <ul style="list-style-type: none"><li>● X contact</li><li>● external strobe contact (optical trigger method)</li></ul>
Shutter Speed:	1/100 second (fixed speed)
Viewfinder:	80% frame coverage; 0.45 magnification;
Film Advance and Rewind:	Automatic
Strobe:	Built-in strobe G no.10 (ISO/100) M External strobe Exclusive Strobe YS-40A
Low Exposure Warning:	Flash of the Low Exposure Warning Lamp
Power Source:	3V DC Two alkaline-manganese AA batteries
Dimensions:	94×159×71mm (h/w/d)
Weight:	on land 595g (batteries not contained)
Accessory:	Strap O-ring set

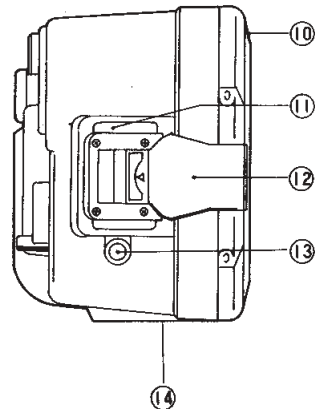
The use of color negative film for photography is recommended. Under certain conditions, if you use reversal film, you may not get a proper exposure due to the nature of slide film. Specifications and appearance are subject to change without notice.

## DESCRIPTION OF COMPONENTS



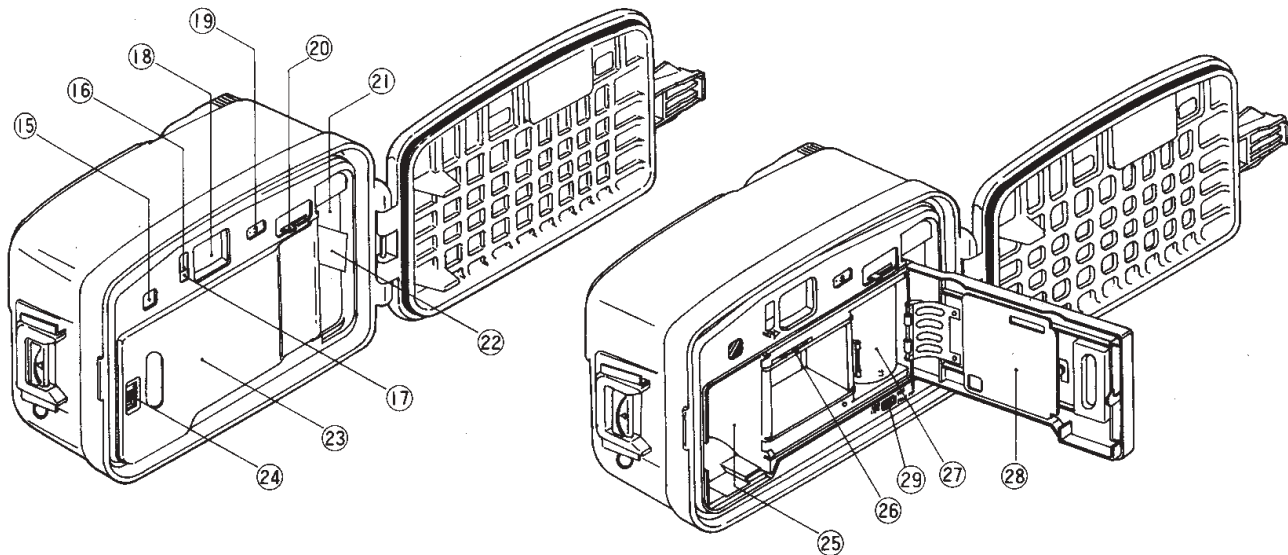
### FRONT VIEW

- ① Shutter Lever
- ② Release Lock Dial
- ③ Shoulder Strap Holders
- ④ Grip
- ⑤ Viewfinder
- ⑥ Flash Window
- ⑦ Lens
- ⑧ Aperture Knob
- ⑨ Aperture Indicator



### SIDEVIEW

- ⑩ Back Cover
- ⑪ External Strobe Connector Shoe
- ⑫ Back Cover Lever
- ⑬ External Strobe Synchronization Window
- ⑭ Tripod Screw



**VIEW BEHIND THE BACK COVER**

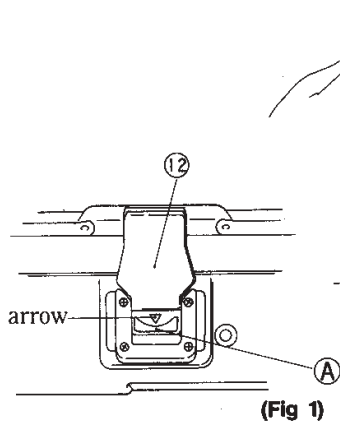
- ⑮ Film Advance Window
- ⑯ Low Exposure Warning Lamp
- ⑰ Built-in Strobe Ready Lamp
- ⑱ Viewfinder Eyepiece
- ⑲ Film Counter
- ⑳ Film Rewinding Lever

- ㉑ Battery Chamber
- ㉒ Battery Removal Ribbon
- ㉓ Film Chamber Cover
- ㉔ Film Chamber Cover Open Lever

**VIEW BEHIND THE FILM CHAMBER COVER**

- ㉕ Film Chamber
- ㉖ Sprocket
- ㉗ Film Drum
- ㉘ Pressure Board
- ㉙ ISO Switching Lever

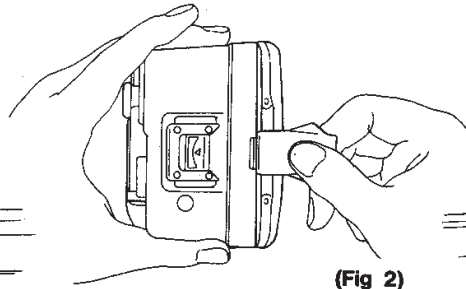
## HOW TO OPEN THE BACK COVER AND INSTALL THE BATTERIES:



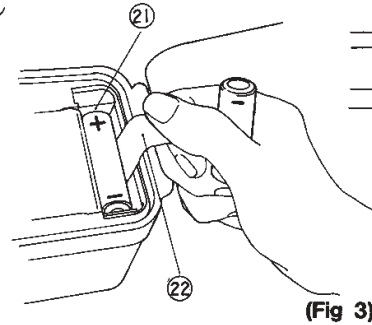
(Fig 1)

Slide the Back Cover Lock (A) in the direction of the arrow to release the latching mechanism. Pull up the lever and the back cover will open. (Fig. 1, 2)

Insert the batteries as indicated by the internal markings of the Battery Chamber. (Be sure to insert with + and - in the proper direction.) Always make sure the Battery Removal Ribbon 22 is under the batteries installed. (Fig. 3)



(Fig 2)

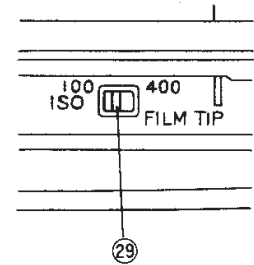


(Fig 3)

**Note:** This camera will operate on two alkaline (size AA) batteries. (Do not use Ni-Cad batteries in this unit.)

Especially after used underwater please make sure the water or sands would not be come inside to keep the back cover side down.

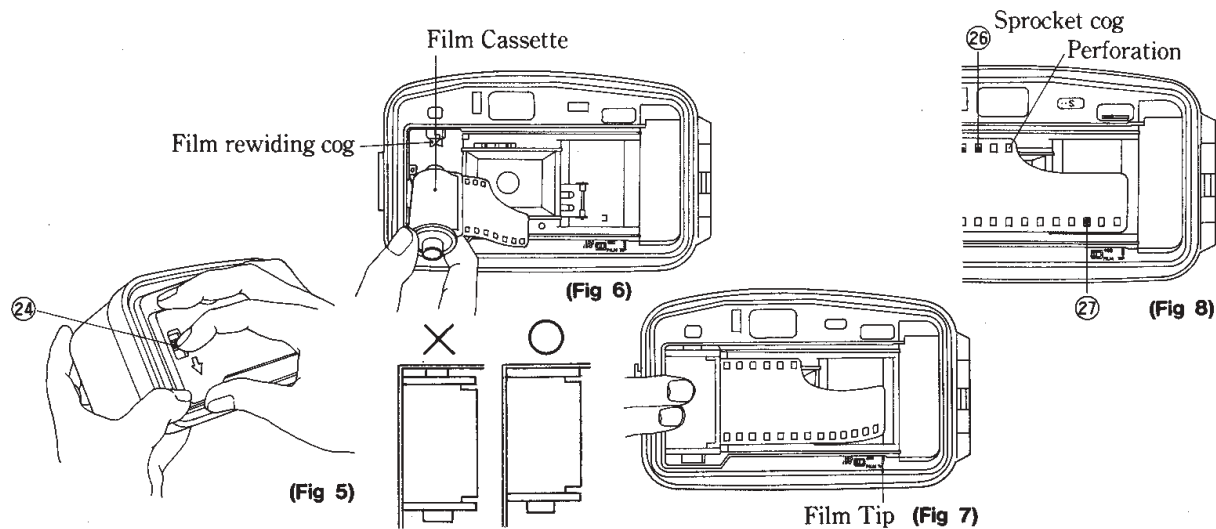
Before loading the film, set the ISO Switching Lever 29 to the ISO sensitivity of the film. The camera can operate at ISO100 or at ISO400. The speed of the film is indicated on the film cartridge. (Fig. 4)



(Fig 4)



## HOW TO LOAD THE FILM:

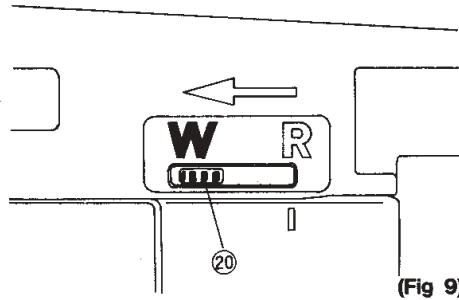


Pull down the Film Chamber Cover Open Lever ②④ to open the Film Chamber ②③. Insert the film so that the axis of the film cartridge is engaged in the Film Rewinding Claw. Shake the film horizontally if the film cartridge is hard to install. (Fig. 5, 6)

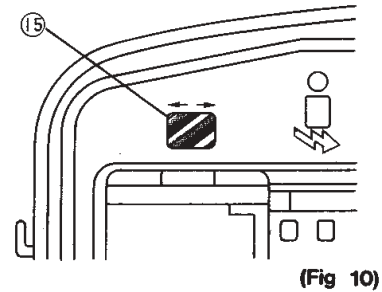
Film cassette must be set to the upper part of Film chamber.

Pull out the leader of film from the cartridge. Align the tip of the leader with the mark shown in the figure. Make sure that the perforations of the film are securely fitted over the Sprocket ②⑥ and the Film Drum ②⑦. Then depress the Shutter Lever once and the film will advance to the first frame. (Fig. 7, 8)

## HOW TO CHECK REWINDING AND CLOSE THE BACK COVER



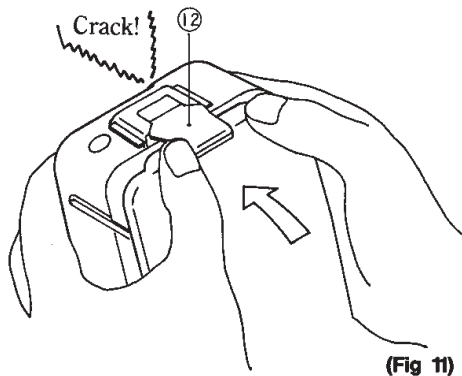
If the Film Rewinding Lever ⑳ is in the “R” position (which means the film is wound), change the position to the “W” position. Close the Film Chamber Cover ㉓ and depress the Shutter Lever a few times until the Number “1” appears in the Film Counter. (Fig. 9, 10)



Note:

If the film rewinding lever ⑳ is in the “R” and close the film chamber cover ㉓, the film is rewinded till the film stopping position.

If there is no movement in the Film Advance Window ⑮ after depressing the Shutter Lever several times, the film is not correctly wound around the Film Drum. Repeat the above procedure.

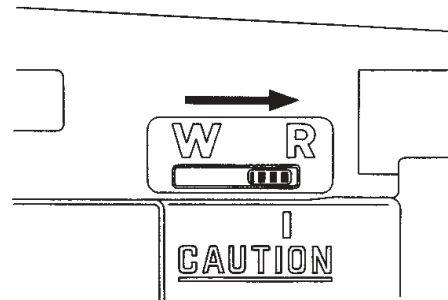


To close the Back Cover ⑩, push it with your palm to lock the Back Cover Open Lever ⑫. You are now ready to take pictures. (Fig. 11)

**Note:**

Before locking the Back Cover, check the surface of the O-ring and corresponding area of the camera body for sand or lint. If necessary, remove and clean O-ring (see instructions on O-ring care).

After you have taken all exposures on the film, the Film Rewinding Lever will automatically be switched to rewinding, regardless of the number shown in the



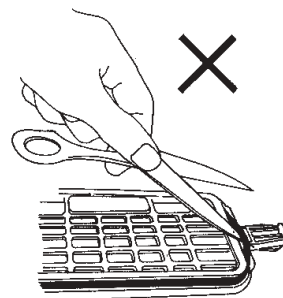
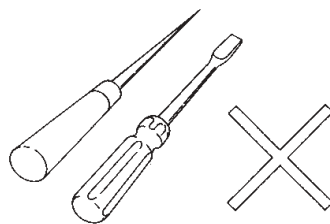
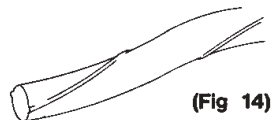
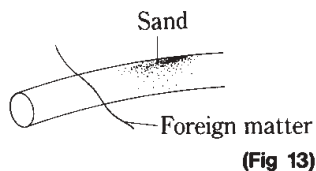
Film Counter ⑬. (Fig. 12)

If there are any exposures left on the film, switch the Film Rewinding Lever ⑳ to the "R" position and remove the film after the movement in the Film Advance Window stops.

**Note:**

There is the possibility that rewinding can not be effected due to the shorted capacity of battery make sure the film rewinding lever ⑳ is set to "R". When rewinding can not be effected due to shorted capacity replace the new batteries.

## HOW TO TAKE CARE OF O-RINGS



The O-ring is used on the Back Cover of the camera and on the Battery Pack Cover of the Exclusive External Strobe YS-40A to protect your equipment from flooding. (Fig. 13, 14)

After opening the Back Cover, remove the O-ring and check it for lint, sand, scratches, deformity, etc. If any foreign matter is evident on any O-ring, remove it and wipe it dry with a soft, lint-free cloth. Lightly coat the O-ring with the supplied silicone grease before installing the O-ring. Be sure to clean the groove and contact area of the Back Cover. When installing, do not attempt to screw or twist the O-ring.

### Note:

The silicone grease is used as a lubricant which minimizes friction and avoids wear of the O-ring. Use only a small amount of grease, as excessive grease can cause flooding.

### ⚠ CAUTION!

Please use only Sea & Sea silicone grease with a blue cap to lubricate the Sea & Sea blue O-ring. Do not apply Sea & Sea silicone grease with a white cap or any other grease to the Sea & Sea blue O-ring. They may damage the Sea & Sea blue O-ring.

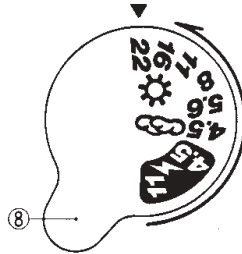
Never use any sharp or metal object to remove the O-ring. This can damage both the O-ring and the O-ring seat.

If any damage or deformity is found, replace the O-ring with a new one. After one year of use, any O-ring, even if in perfect condition, should be replaced. (Fig. 15, 16)

## TOPSIDE PHOTOGRAPHY

### Setting the Exposure:

- 1) After preparation, adjust the exposure settings by means of the Aperture Knob.

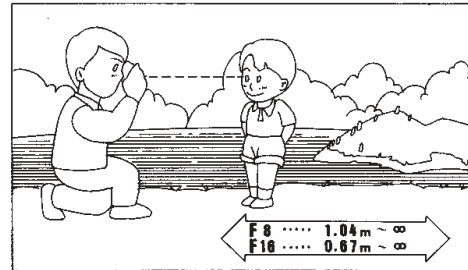


(Fig 17)

The standard exposure settings for topside photography (ASA/ISO 100) are as follows:

Subject and Condition	Aperture/F
Indoors under Normal Conditions	⚡ 4.5
Outdoors in Cloudy Weather	☁ 4.5 ~ 5.6
Outdoors in Fair Weather	☀ 8 ~ 11
Beaches and Islands in Midsummer	☀ 16 ~ 22
Snow Mountains and Skiing Grounds	☀ 16 ~ 22

- 2) After setting the aperture, try to keep subject-to-camera distance at about 2.5 meters (8.3 ft).
- 3) The focus is dependent on the aperture as shown in the following table. The range of focus is called depth of field.



(Fig 18)

F	F4.5	F5.6	F8	F11	F16	F22
METER	1.38 ~14.0	1.26 ~∞	1.04 ~∞	0.86 ~∞	0.67 ~∞	0.54 ~∞
FEET	4.53 ~45.6	4.14 ~∞	3.42 ~∞	2.82 ~∞	2.20 ~∞	1.78 ~∞

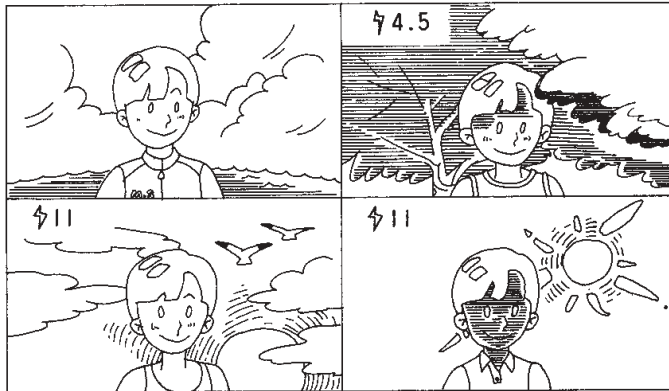
## TOPSIDE STROBE PHOTOGRAPHY

- 4) Depress the Shutter Lever halfway, while looking through the Viewfinder Eyepiece. If the Low Exposure Warning Lamp glows red, you must use the internal strobe to achieve a proper exposure.

### Note:

If the red lamp appears, it won't disappear even when you change the aperture setting to infinity. Be sure to use the internal strobe.

The built-in electronic flash may be used indoors or outdoors when ambient light is insufficient for a proper exposure.



(Fig 19)

## How to Use the Built-in Strobe:

- 1) To turn on the strobe, set the Aperture Knob ⑧ at  $f/4.5$  or  $f/1$ , marked with the thunderbolt symbol. The flash will then begin to charge.
- 2) When the flash ready lamp appears, the charge is completed and the unit is ready to fire.
- 3) To achieve proper strobe light and best results, observe the following:

### ASA/ISO 100:

When the Aperture Knob is at 4.5, marked with the thunderbolt symbol, keep a shooting distance of between 1.4 meters and 2.3 meters (4.7-8.3ft).

When the Aperture Knob is at 11, marked with the thunderbolt symbol, keep a shooting distance of between 0.9 meter and 1.3 meters (3-4.3ft).

### ASA/ISO 400:

When the Aperture Knob is at 4.5, marked with the thunderbolt symbol, keep a shooting distance closer than 4.4 meters (14.7 ft).

When the Aperture Knob is at 11, marked with the thunderbolt symbol, keep a shooting distance closer than 1.8 meters (6 ft).

### NOTE:

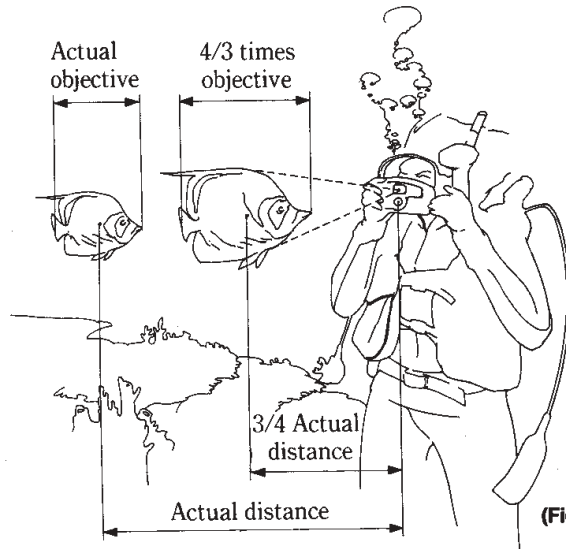
If the camera is left with the Aperture Knob at  $f4.5$  or  $f11$ , marked with the thunderbolt symbol, the batteries will be exhausted. The strobe should not be left on for long periods of time. Be sure to turn it off when not being used.

## UNDERWATER PHOTOGRAPHY

Underwater photography requires a different technique from topside photography for best results.

- **Focusing:**

The index of refraction in the water is 1.33, compared with 1.00 in the air. Therefore, objects seen underwater appear 25% closer than they actually are. Thus, a camera-to-subject distance of 2.0 meters in the water appears 1.5 meters. Fish with a length of 30



(Fig 20)

centimeters appears to have a length of 40 centimeters in the water.

Because lenses see the same apparent distance as human eyes see, camera focus should be set for apparent distance.

- **Ambient light and color absorption:**

Ambient light decreases as depth of water increases. With the decrease in ambient light, warm colors, including red, become invisible until the object becomes totally blue. Strobe photography replaces colors absorbed by the water.

Use the Exclusive External Strobe YS-40A for underwater photography.

You should keep a shooting distance of within one-half or one-third the maximum distance to which the water is clear. (Example: If the water is clear for 20 feet, your shooting distance should be no more than 10 feet.)

- **Taking the Picture:**

Adjust the exposure settings by means of the Aperture Knob ⑧



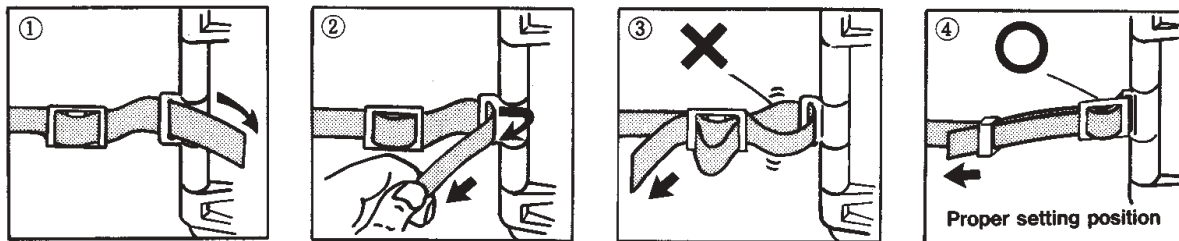
## How to Use

- 1) Install the External Strobe YS-40A and turn the power switch to the "on" position.
- 2) For best results, use a shooting distance of about 1.2 meters (apparent distance underwater).
- 3) Do not take the picture if the subject fills the frame. Subjects underwater should be framed within the parallax correction lines Fig. 21.
- 4) Choose the aperture setting according to the exposure table at the side of the strobe.
- 5) Refer to the following table as to depth of field underwater:

Depth of Field

	F4.5	F5.6	F8	F11	F16	F22
METER	0.91~1.66	0.87~1.8	0.78~2.4	0.7~ 4.0	0.6 ~∞	0.5 ~∞
FEET	3.0 ~5.45	2.85~5.9	2.56~7.87	2.3~13.0	1.97~∞	1.64~∞

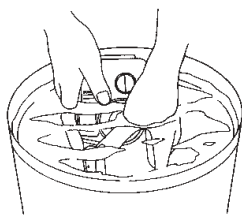
## HOW TO INSTALL THE STRAP



(Fig 21) 32

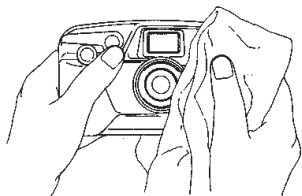
## AFTER USE

- 1) After use underwater (especially on a sandy beach), rinse the camera in tap water (fresh water) to remove dirt, mud, sand and other debris from the surface of the camera.
- 2) Lightly shake the camera in a bucket of fresh water. At this time, to remove any remaining salt or dirt, the camera should be left soaking in water for a day. (Fig. 22)



(Fig 22)

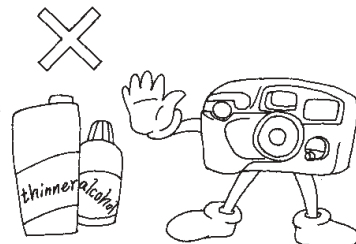
- 3) After soaking the camera in water, dry thoroughly with a clean, dry, soft cloth. (Fig. 23)



(Fig 23)

## CARE AND MAINTENANCE

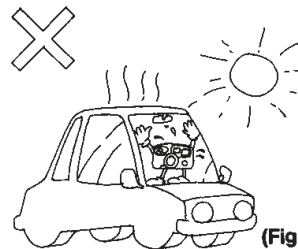
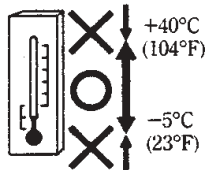
- Never use alcohol, benzene, or thinner to clean the camera body as such solvents can damage the plastic casing.



(Fig 24)

- Never allow water to dry on the camera. Do not leave the camera in direct sunlight or on the back seat of a car. Excessive heat can damage the internal electronic mechanism.

Usable Temperature Range  
Storage Temperature Range



(Fig 25)

## AFTER-SALES SERVICE AND GUARANTEE

- Salt residue on the surface can damage the camera. Be sure to follow proper care and maintenance for long camera life.
  - For long life, the camera should be serviced every year. Contact your local dealer for this service.
  - In case of not using this camera in long term remove batteries and then store it.
  - If keeping this camera at the place which would be with high temperature like dash-board of car or under the direct sunlight, in the condition of closing back cover the pressure inside would be come up and there would be possibility that the shape of body would be transformed or that back cover would be bent backward. These would make the cause of flood or troubles.
1. If you want any repairs on the camera, please contact your local dealer. Include any damaged film, prints, or a detailed written description of problem. This will be very helpful for repairs.
  2. During the guarantee period (1 year after the purchase), please include your warranty card (containing the name of your dealer and the date of purchase). Without your warranty card, you may be charged for repairs even during the guarantee period. Never remove the serial Number seal (which represents manufacturing number seal).
  3. Generally, repairs will be charged after the guarantee period. Read your warranty card for further detail.
  4. Because this unit is used under strict conditions, service once a year is recommended.



Products that display this decal have passed pressure-test in accordance with Sea & Sea's standards.