

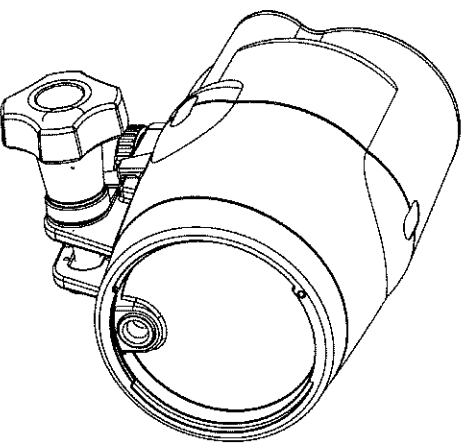
**SEA&SEA**

**UNDERWATER STROBE**

**03106**

**YS-110**

Instruction Manual



**SEA&SEA**

SEA&SEA PRODUCTS LTD.

3-2-20 Saiwaicho, Kawaguchi-shi, Saitama, 332-0016 Japan  
TEL.048-256-2251

<http://www.seaandsea.co.jp>

0521-Z-01

**Yellow Sub**

# YS-770

Thank you for your purchase of SE&SEA product. For proper operation of the product and safe handling, please read the following instructions carefully before use. This manual should be retained for future reference.

## Table of Contents

Safety Precautions .....	2
Safety Precautions for Use of Battery .....	6
Identification of Parts .....	8
Accessories .....	9
Before Taking Photographs .....	
Battery Requirements .....	9
Battery Installation and Removal .....	9
Sync Cord Connection .....	10
Fiber Optic Cable Connection .....	12
Operation .....	13
DS-TTL .....	16
Taking Photographs .....	
TTL Photography .....	17
Manual Photography .....	18
Calculation of Exposure Value .....	19
Diffuser .....	20
Attaching the Fixing Bolt .....	21
About the PASSED Label .....	21
Maintenance and Storage .....	22
Specifications .....	23

## Safety Precautions

- For safe handling of the product, please read the following precautions carefully before use.

\* Failure to heed the precautions listed below could result in serious consequences. To prevent injury or damage to yourself and/or others, please observe the precautions as they contain highly important information related to personal and product safety.

⚠ **DANGER** : Situations that involve a high risk of severe injury or death.

⚠ **WARNING** : Situations that could result in severe injury or death.

⚠ **CAUTION** : Situations that could result in property damage or personal injury.

### ⚠ **DANGER**

- Never attempt to disassemble, repair or alter the product yourself to prevent significant electrical hazard due to the high-voltage circuitry in the product. Do not heat the product or put it into a fire, this could result in explosion or fire. Unauthorized disassembling and/or modification could result in malfunction or flooding, and avoid product warranty. Take the product to a SE&SEA authorized service center for repair or inspection.
- Never short-circuit the terminals of batteries installed in the product, as it could result in battery leakage, heat generation, fire, explosion, or product malfunction.
- Move leaking batteries away from fire or open flames immediately. The leaked fluid and its vapor are combustible.
- If the battery leakage contacts your skin or clothing, flush the affected area repeatedly with clean water. Should it get into your eyes, immediately rinse them with plenty of water avoid rubbing and seek medical advice.

### ⚠ **WARNING**

- Use only batteries approved for use in this product. Do not mix old and new batteries or batteries of different types.

- Remove batteries before transport or storage, or when you are not going to use the product for an extended period of time, to prevent unexpected activation.
- Pay particular attention to opening the battery cap to avoid injury. Heat from the batteries may cause pressure buildup inside the battery compartment, and could result in cap explosion with unexpected force.
- Avoid water or foreign objects inside the product. Discontinue use and turn it off immediately should you notice flooding or leakage. Continuous use could result in complete damage to the product.
- Do not handle batteries wet hands to prevent shock hazards.
- Do not use the product in the presence of flammable gas, as this could result in explosion or fire.
- Do not fire the strobe/light with the reflector touching a person or object to prevent heat generation. Touching the reflector immediately after firing could result in burns.
- Do not fire the strobe or illuminate the light towards a driver of a vehicle to avoid causing accidents.
- Do not operate the product while driving a vehicle. Inattention could result in accidents.
- For use on land, do not operate the product at precarious foothold. It may cause falling, injury or product damage.
- Do not leave the product on a slope or an unstable surface. It may be broken after falling or injure someone below it.
- Keep out of reach of children to prevent accidental ingestion. If swallowed, seek medical advice immediately.

### ⚠ CAUTION

- Read the instruction manual and observe proper precautions before use of this product.
- Should you notice smoke or an unusual smell coming from the product, turn it off and remove the batteries immediately, taking care to avoid burns. Continued operation could result in injury. After removing the battery, take the product to a SEAS&SEA authorized service center for inspection.
- Discontinue use and turn the product off immediately should you notice flooding or leakage.
- When the product is flooding, interior pressure may build up. Please be careful when opening the product as water may spurt out or the cap may open explosively and cause injuries.

- Do not open the chassis or battery cap in the vicinity of open flames.
- The product has been constructed with an airtight seal. When packing the product for airplane travel, do not seat-up the product to alleviate pressure build up due to atmospheric changes.
- Do not open the product in a wet or sandy environment. Protect the interior from moisture and debris in order to prevent malfunction or flooding.
- Keep away from strong magnetic fields. Do not use or store this product in the vicinity of equipment that generates strong electro-magnetic radiation or magnetic fields. Strong static charges or the magnetic fields could cause malfunction, or affect the product's internal circuitry.
- Before using the product in an airplane or a hospital, check if it is allowed. Electromagnetic waves emitted by the product may interfere with the measuring instruments or medical equipment.
- Do not cover or wrap the product with a cloth. This could result in deformation of the product or in fire.
- Using the strobe close to your subject's eyes could cause temporary visual impairment. Particular care should be observed if photographing infants, the strobe should be no less than one meter (3 feet) from the subject.
- Be careful when touching the product immediately after firing repeatedly or lighting for a long time. The product may get hot enough to burn you.
- Avoid strong shocks/impacts or excess stress to prevent malfunction, damage or breakdown. Make sure that the product has been securely mounted to other products in order to prevent injury, fall or missing.
- Do not carry the camera or housing by holding the accessories such as arm, cable, strobe, etc. Heavy components may fall and cause damage or injury.
- Do not rest heavy weight on the product. It might deform the outer casing, damage internal parts, make the waterproofing fail, or result in fire or electric shock.
- Rinse the product with fresh water, after underwater use. Ensure that the product is waterproofed before rinsing. Refer to [Maintenance and Storage] for details.
- Make sure that the connectors have been secured with the connector caps before rinsing the product with fresh water, after removal from other products.

- Never use chemicals, cosmetics, any petroleum solvents such as paint thinner, or neutral detergent on the product. They may deform and damage the product.
- Do not leave the product in places with hot temperatures such as inside of a car or in a car trunk in summer. The heat may deform plastic parts of the product, damaging internal parts and resulting in potential fire or electric shock. If the product is sealed tight in hot conditions, heated air expanding inside the product may deform the casing and ruin the waterproofing.
- Do not store the product in wet or high humidity place, to avoid mold, rust, corrosion or malfunction.
- Do not store the product with naphthalene or camphor mothballs, or in locations such as a laboratory where chemicals are used. This environment can cause mold, rust, corrosion or malfunction.
- If you do not use the product for an extended period of time, periodic maintenance will keep internal electronic parts from deterioration. Once a month, install batteries and fire a test flash/light on. Operate all other switches as you would in normal operation. Turn the power off, then remove batteries while the ready light (red) is on for the strobe.
- SE&SEA assumes no liability for compensation of loss of captured images or expenses caused by loss of images, even if you are unable to shoot due to a product defect or malfunction.
- SE&SEA will not be responsible for the replacement or compensation for cameras, lenses or those accessories damaged due to your invalid operation.
- SE&SEA assumes no liability for errors or discrepancies in this manual.
- Specifications and appearance are subject to change without notice.

## 【Safety Precautions for Use of Battery】

### ⚠ DANGER

- Never expose the battery to flame or fire, or to excessive heat.
- Never attempt to disassemble, alter or directly solder the battery. There are no user-serviceable parts. Tampering with battery may expose you to dangerous voltage, battery acid, or electrical shock.
- Never short-circuit the terminals of a battery, as it could result in battery leakage, heat generation, fire, or explosion. Avoid contact with all metal objects during transporting and storage.
- When recharging batteries such as nickel metal-hydride or lithium-ion batteries, use a charger designed specifically for them and follow the recharging instructions. Recharging in an inappropriate charger may cause battery leakage, overheating, and explosion.
- Move leaking batteries away from fire or open flames immediately. The leaked fluid and its vapor are combustible.
- If the battery leakage contacts your skin or clothing, flush the affected area repeatedly with clean water. It may irritate your skin. Should it get into your eyes, immediately rinse them with plenty of water, avoid rubbing and seek medical advice.
- Never attempt to insert the battery upside down or backward, as it could result in battery leakage or explosion. Always confirm the direction of plus and minus before installation.
- Never connect a battery directly to a plug outlet or car cigarette lighter.

### ⚠ WARNING

- Keep dry. The battery is not waterproof, and may malfunction if immersed in water or exposed to high levels of humidity. Rusting of the internal mechanism can cause irreparable damage.
- Do not remove and/or damage the case of a battery. It may cause battery leakage, overheating or explosion.
- Do not charge a rechargeable battery beyond the specified charging time, it may cause battery leakage, fire hazard or explosion.

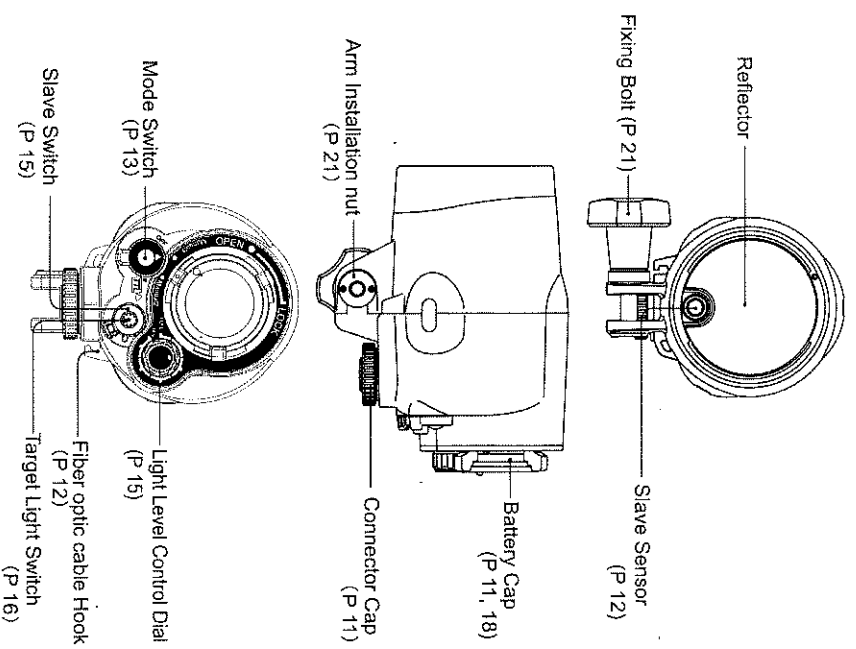
- Never use batteries should you notice any changes such as leakage, discoloration or deformation. When you notice the situation as abnormal, discontinue use immediately and take the product to a SEA&SEA authorized service center for inspection.
- Keep out of reach of children to prevent accidental ingestion. If swallowed, seek medical advice immediately.
- Do not leave or use batteries in an extreme hot environment. This may cause battery leakage, overheating or battery performance deterioration.

### ⚠ CAUTION

- Avoid strong shocks/impacts or excess stress to batteries.
- For handling and recharging of a battery, refer to the instruction manual of the battery/dedicated charger.
- Do not use or discharge the battery at ambient temperatures below 0° C (32° F) or above 50° C (122° F).
- During recharging, the temperature should be in the vicinity from 0° C to 40° C (32° to 104° F).
- Always recharge rechargeable battery before use after an extended time of storage.
- Do not recharge battery in a cold environment below 0° C (32° F). Severe cold may cause battery leakage, deterioration in performance, or shortened life.
- Dirt on the battery terminals can prevent the product from functioning. Should the battery terminals become dirty, wipe them with a clean, dry cloth before use.
- Turn the equipment off after use. Remove batteries from the equipment when not in use. Store in dry area with temperatures ranging from -20 to 30° C (-4 to 86° F)
- Used/rechargeable batteries are valuable resource. Please recycle used rechargeable batteries in accordance with local regulations.

## Identification of Parts

※P/Part numbers are in parentheses.



## Accessories

Before using this product, check to make sure that all accessories are present.



## ● O-ring Maintenance Manual

## Before Taking Photographs

### Battery Requirements

This product is powered by four AA alkaline, Ni-MH, oxyride, lithium, nickel-cadmium batteries.

### Battery Installation and Removal

1. To remove battery cap, turn part ① counterclockwise to the OPEN position and pull the cap ② straight out. (Fig. 1)
2. Make sure that the mode switch is in the OFF position. Insert four batteries with the polarity shown in the battery compartment. (Fig. 2)
3. Examine O-ring on battery cap for cuts or debris. Lubricate O-ring lightly. Fit battery cap in place, aligning the "O" marks on part ① and ② to the OPEN position. Turn part ① to the LOCK position; you will hear it click into place. (Fig. 3)

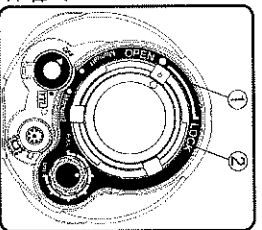


Fig. 1

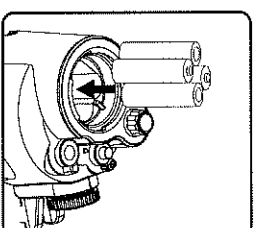


Fig. 2

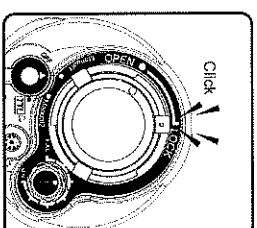


Fig. 3

### ⚠ CAUTION

- Never install/remove batteries with wet hands. Pay particular attention not to allow water from your hair or wetsuit to drip into the battery compartment, in order to prevent an electrical hazard, mold, malfunction or flooding.
- Always replace all batteries with fresh batteries at the same time. Never mix old and new batteries or batteries of different types.

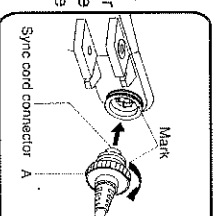
### Sync cord Connection

(Photography with an underwater camera/SLR housings)

When you want to use this strobe with an underwater camera/SLR housing which has strobe bulkhead connectors, connect the strobe to the camera/housing with a sync cord (option).

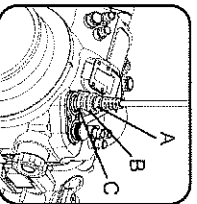
### 《How to connect the sync cord with the strobe》

1. Examine O-ring on sync cord connector for cuts or debris. Lubricate O-ring lightly.
2. Align the salient of the strobe bulkhead connector and the notch on the sync cord connector. Insert the sync cord connector straight into the strobe bulkhead connector and push in until the O-ring is seated. Rotate the threaded retaining ring (part A) clockwise until it is secure.
3. To disconnect, turn the threaded retaining ring (part A) counterclockwise, then pull the connector straight out. Never pull, twist or bend the cord for disconnection.



## 《How to connect the sync cord with an underwater camera/SLR housing》

1. Examine O-ring on sync cord connector for cuts or debris. Lubricate O-ring lightly.
2. Align the notch in the sync cord connector with the index mark on the camera's bulkhead connector. Insert the sync cord connector into the camera's bulkhead connector. Push the cord in until the O-ring is seated.
3. Rotate part (B) clockwise till secure.
4. Turn part (C) till it securely holds the camera to stay.
5. To disconnect, loosen and release the connector end by reversing steps 1-4 above. Pull the connector straight out. Never pull, twist or bend the cord for disconnection.



### CAUTION

- Do not touch the connector's contact pins with fingers. Do not apply silicone grease to the connector pins. Silicone grease will impair the electrical connection. If contaminated accidentally, clean the pins by a cotton swab moistened with alcohol.
- Whenever a sync cord is not connected to a camera, housing and/or strobe, protect the ends of the cord and bulkhead connectors with their plastic protective caps. (Fig. 4)
- Before rinsing a detached sync cord and/or strobe, be sure to put the connector caps on the exposed ends.
- Observe the instruction manual for the sync cord before use.

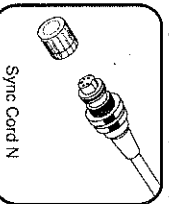


Fig. 4

## Fiber optic cable Connection

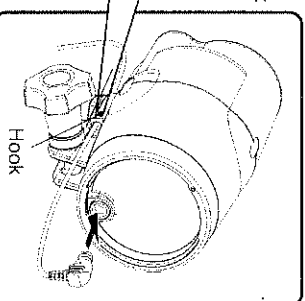
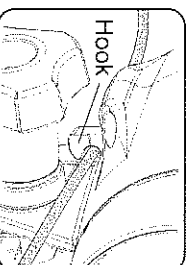
(Photography with a compact digital camera)

This strobe is triggered by sensing the light from a built-in flash in a digital camera. We recommend to use SEA&SEA fiber optic cable (option) when the strobe cannot make cordless synchronization with the camera's built-in flash.

※Some housings are not compatible with SEA&SEA fiber optic cable.

### 《How to connect the fiber optic cable with the strobe》

1. Insert one end of the fiber optic cable into the slave sensor socket of the product.
2. Secure the cable by the hook.



### 《How to connect the fiber optic cable with a compact digital camera housing》

Connect the other end of the fiber optic

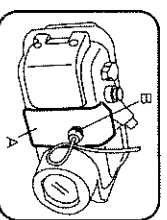
cable to the receptacle/socket of the digital camera housing or the strobe mask attached to the housing.

※When you shoot with a compact digital

camera, set the built-in flash of the camera to the forced-flash mode. The product will

not fire unless the built-in flash of the camera will fire.

※Observe the instruction manual of the digital camera for the setting of the forced-flash mode.



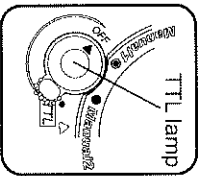
### CAUTION

- Observe the instruction manual for the fiber optic cable before use.

## Operation

This strobe has four controls: the Mode switch, the Slave switch, the Target light switch and the Light level control dial.

### 《Mode switch》



**[OFF]** Turns the power off. Set the mode switch to this position when you are not using the product.

**[Manual 1]** Activates the strobe for manual flash output. Set the mode switch to this position when you shoot with a digital camera that pre-flashes, or an underwater camera/SLR housing with connecting the product with a sync cord.

**[Manual 2]** Activates the strobe for manual flash output. Set the mode switch to this position when you shoot with a digital camera that does not pre-flash, or an underwater camera/SLR housing with connecting the product with a sync cord.

※The number of pre-flashes of a built-in flash of a digital camera differs among models and manufacturers, so check settings before shooting by conducting test flashes.

※[Manual 1] and [Manual 2] have the completely same performance when the strobe is connected to an underwater camera/SLR housing with a sync cord.

**[TTL]** Activates the strobe for TTL flash output. With a compact digital camera, it activates DS-TTL flash output. (Refer to the 「DS-TTL」 on the page 16 for the details.)

※TTL photography is the automatic light control by the strobe based on the camera's photometric data of the correct light amount for the proper exposure for the subject. You can get the proper exposure accurately even if the distance from the subject has changed. When the correct amount of light is detected for a proper exposure, the TTL lamp (green) will illuminate for approx. 3 seconds. If the subject is out of the proper strobe-to-subject range, the TTL lamp will not change to green (keep red = READY). If this occurs, recheck the distance and the aperture (referring to the 「Calculation of the Exposure Value」 on the page 19), and switch to Manual photography.

**[TTL lamp]** Illuminates in red when the strobe is ready to fire. Also illuminates in green for approx. 3 seconds after firing with TTL flash output.

### 《Pre-flash》

With some types of digital cameras, the exposure is adjusted with a first pre-flash and the picture is taken with the second (main) flash. This strobe fires synchronizing the second (main) flash by selecting [Manual 1] position only.

※If you are not sure if your camera pre-flashes or not, start by setting the mode switch to the [Manual 1] position and triggering your camera flash. If the camera pre-flashes, the strobe will fire on the second (main) flash. If the camera does not pre-flash, the strobe will not fire at all.

※When you conduct test flashes and check settings, set the built-in flash of the digital camera to the forced-flash mode.

※Release the red-eye-reduction function. (Set the red-eye-reduction function of the built-in flash of the camera, if provided, to the off position.)

### 《To check the settings》

You can check the settings of the mode switch by shooting the strobe with a compact digital camera.

1. After choosing a setting of the mode switch as described above, point the digital camera at the front of the strobe and take a picture.

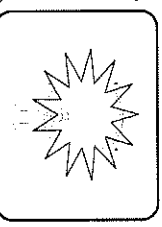
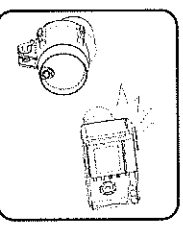
※Keep at least 1 meter (3 feet) of distance between the strobe and the digital camera when taking the picture.

※Set the slave switch (P 15) to [ON] position, and the built-in flash of the digital camera must flash.

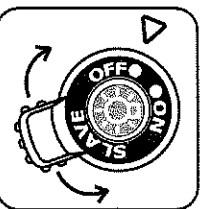
2. Look at the image captured by the camera (using replay mode on the camera). If you see a white flash in the strobe or an image that is completely white, then the strobe has fired and the setting is correct.

●A single digital camera may ---in different modes--- pre-flash or not pre-flash. If you change the mode of the camera, check the strobe setting again for that mode.

●If the distance between the camera and the strobe is too great or underwater conditions are too murky, the strobe may not detect the camera's built-in flash and may not fire. In these conditions we recommend using a fiber optic cable (option) to connect the strobe and the camera's built-in flash.



### 《Slave switch》



[ON] Activates the slave function. Set the slave switch to this position when you want to use this strobe without a sync cord as a slave, such as shooting with a compact digital camera, or as a sub-strobe.

※Set the slave switch to [ON] position when you use this strobe connecting with a SEA&SEA fiber optic cable.

※When you shoot with a compact digital camera, set the built-in flash of the camera to the forced-flash mode. The product will not fire unless the built-in flash of the camera will fire.

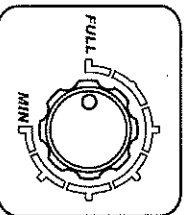
[OFF] Turn the slave function off. Set the slave switch to this position when you use this strobe connecting with a sync cord.

### △CAUTION

●Set the slave switch to [ON] position when you use this strobe without connecting a sync cord. If the switch is set to the [OFF] position, the strobe will not fire even if the mode switch is set to [Manual 1], [Manual 2] or [TTL].

### 《Light level control dial》

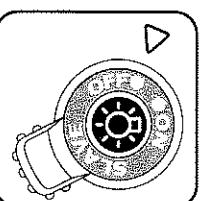
Manual flash exposure can be adjusted in 12 increments with the light control dial. The mode switch must be set to [Manual 1] or [Manual 2]. ※In the DS-TTL mode (refer to the [DS-TTL] on the page 16 for the details) with the mode switch set at [TTL] position using with a compact digital camera, you can micro-adjust (dimming only) the light amount.



### △CAUTION

●When you use this strobe connected to an underwater camera/SLR housing with a sync cord, by setting the mode switch at [TTL] position, you cannot adjust the light amount with the light control dial. In this case, the TTL is controlled by the camera automatically.

### 《Target light switch》



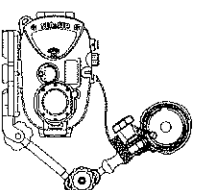
Turn on the target light when you push the target light switch. Turn off the light when you push the switch once again. The light turns off when the strobe fires, and lights up again when the strobe is ready to fire (when the TTL lamp lights up in red). The target light continues to be illuminated until the light is turned off by pushing the switch or the strobe is turned off by setting the mode switch to the [OFF] position.

### DS-TTL

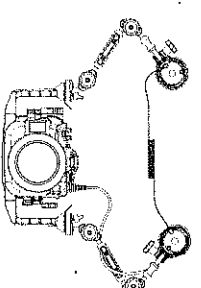
### 《DS-TTL system》

DS-TTL system on this strobe is the slave TTL system with flash exposure compensation. This system is activated only when you are using another main TTL flash/strobe such as a camera's built-in flash or other functioning TTL strobes.

When you shoot with a compact digital camera, set the mode switch to [TTL] position and the slave switch to [ON] position, and set the light level control dial to the FULL position. When you release the shutter, the main flash/strobe will start firing. This strobe also starts firing by sensing the light from the main flash/strobe. Then the camera calculates the total light amount to get the correct exposure, and it controls the main flash/strobe to stop firing (TTL is activated). This strobe also stops firing by synchronizing with the main strobe. In the DS-TTL mode, you can micro-adjust (dimming only) the light amount. Adjust the light level control dial to decrease the light amount when you get an overexposed image for macro photography etc.



compact digital camera



underwater camera/SLR housing

### ⚠ Tips for DS-TTL mode

1. When you use this strobe connected to an underwater camera/SLR housing with a sync cord, DS-TTL mode will NOT be activated.
2. DS-TTL mode is activated only when you are using another main TTL flash/strobe such as a camera's built-in flash or other functioning TTL strobes. Use this strobe as a sub-strobe of the main strobe.
3. The GN of the main TTL flash/strobe should be bigger than this strobe.
4. If the GN of the main TTL flash/strobe is smaller than this strobe such as camera's built-in flash, use a SEA&SEA fiber optic cable to secure synchronization.
5. When you shoot with a compact digital camera, set the built-in flash of the camera to the forced-flash mode. The product will not fire unless the built-in flash of the camera will fire.

### ⚠ CAUTION

- This strobe is triggered by sensing the reflected light from the subject. If the light is too weak to trigger the strobe, strobe will not fire.
- This strobe may be triggered when other strobes fire around you.
- You cannot increase the light amount with the light level control dial higher than that the camera has detected.

## Taking Photographs

### TTL Photography

- When shooting with a compact digital camera, set the mode switch to [TTL] position and the slave switch to [ON] position. DS-TTL mode is activated.
- ※ In the DS-TTL mode, you can micro-adjust (dimming only) the light amount. Adjust the light level control dial to decrease the light amount when you get an overexposed image for macro photography etc.

- When shooting with an underwater camera/SLR housing, set the mode switch to [TTL] position and the slave switch to [OFF] position. The normal TTL mode is activated.
- Please use a SEA&SEA TTL converter (option) for TTL photography with a Digital SLR housing.
- ※ In normal TTL mode, you cannot adjust the light amount.
- ※ Observe the instruction manual for the TTL converter before use.

### Manual Photography

- Manual flash exposure can be adjusted in 1/2 increments with the light control dial.
- When shooting with a compact digital camera that pre-flashes, set the mode switch to [Manual 1] position and the slave switch to [ON] position.
  - When shooting with a compact digital camera that does not pre-flash, set the mode switch to [Manual 2] position and the slave switch to [ON] position.
  - When shooting with an underwater camera/SLR housing, set the mode switch to [Manual 1] or [Manual 2] position and the slave switch to [OFF] position.
  - ※ [Manual 1] and [Manual 2] have the completely same performance when the strobe is connected to an underwater camera/SLR housing with a sync cord.

## 《Strobe Setting Guide》

Camera	Manual			TTL			Connection
	mode switch	slave switch	light level control dial	mode switch	slave switch	light level control dial	
compact digital camera (that pre-flashes)	Manual 1	ON	12-step	TTL	ON	FULL	fiber optic cable
compact digital camera (that does not pre-flash)	Manual 2	ON	12-step	TTL	ON	FULL	fiber optic cable
underwater camera/SLR housing	Manual 1 or Manual 2	OFF	12-step	TTL	OFF	—	sync cord

## Diffuser

### Attaching

Align the O mark (A) on the diffuser and the ◎ mark (B) on the reflector of the strobe. Lightly push and fit the diffuser in the strobe reflector, then turn the diffuser in the direction of the arrow until stops. (Fig. 5)

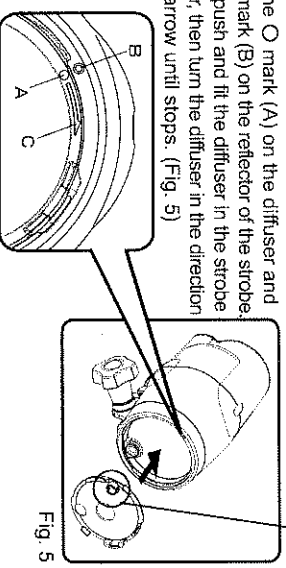


Fig. 5

The diffuser has an additional receptacle/socket for a SEA&SEA fiber optic cable (option). When using this strobe as a main strobe, another strobe can be added as a slave, using a fiber optic cable. (Fig. 6)

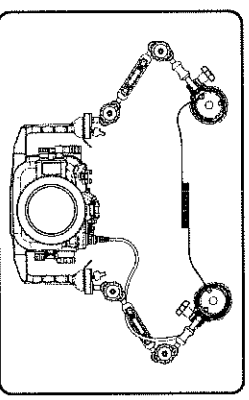


Fig. 6

### CAUTION

- Always make sure that the diffuser is properly attached before use. If not properly attached, it may fall off.
- ※ Both the diffuser and the strobe have tether holes in them. Attach the diffuser tether (including in this package) to each of these holes. (Fig. 7)

### Detaching

To detach the diffuser, turn it in the reverse direction of the arrow (C).

## Calculation of Exposure Value

Aperture = GN/Distance

※ Film speed ISO100

Since more light will be absorbed underwater the guide number should be treated as 1/2 of that on land

Guide number for multi-strobe lighting will be obtained by the following formula

Multi-strobe GN =  $\sqrt{GN^2 + GN^2 + \dots}$

### TTL Operating Range (reference only)

Aperture		ISO				DISTANCE			
		100	50	25	m	ft	1/2	1/4	1/8
400	200	4	2.8	2.5	0.7~3.9	2.3~13			
5.6	4	2.8	2.5	2.2	0.5~2.7	1.6~9			
8	5.6	4	2.8	2.5	0.3~1.9	1~6.3			
11	8	5.6	4	2.8	0.3~1.3	1~4.3			
16	11	8	5.6	4	0.3~1.3	1~4.3			
22	16	11	8	5.6	0.3~0.6	1~2			
	22	16	11	8	0.3~0.6	1~1.6			
UNDERWATER EXPOSURE TABLE									

※ You may have to further adjust from the above reference table depending on the reflectivity of the subject, the underwater conditions, visibility etc.

### Manual Exposure Calculation Table (reference only)

Calculated at Guide Number 11 (1/2 of FULL guide number)

DISTANCE (m)		ISO				DISTANCE (ft)			
		25	50	100	200	400	1/2	1/4	1/8
0.2	1/2	22	22	22	22	22	0.6		
0.3	1/2	16	22	22	22	22	1		
0.5	0.2	11	16	22	22	22	1.6	0.8	
0.6	0.3	8	11	16	22	22	2	1	
1	0.5	5.6	8	11	16	22	3.3	1.6	
1.3	0.6	4	5.6	8	11	16	4.3	2	
1.9	1	2.8	4	5.6	8	11	6.3	3.3	
2.7	1.3		2.8	4	5.6	8	9	4.3	
3.9	1.9			2.8	4	5.6	13	6.3	

※ You may have to further adjust from the above reference table depending on the reflectivity of the subject, the underwater conditions, visibility etc.

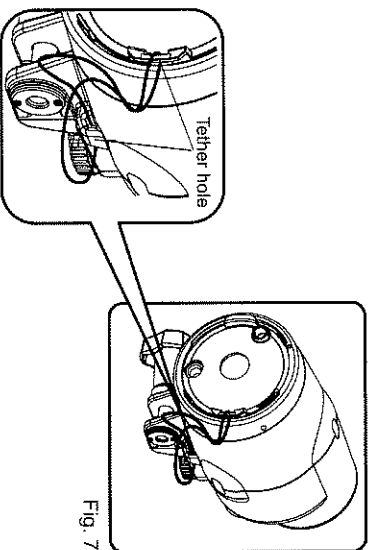
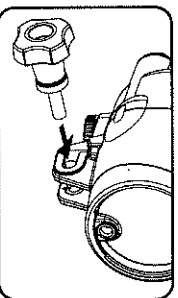


Fig. 7

## Attaching the Fixing Bolt

### ⚠ CAUTION

To mount the strobe to an arm, use the fixing bolt (included in this product package). Insert the bolt through the non-threaded side, as shown.



## About the PASSED Label

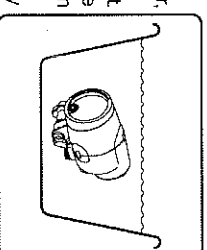
The Pressure Test Passed label on a product indicates that the product has passed the SEAS&SEA pressure test and is waterproof at depth.



## Maintenance and Storage

### ⚠ CAUTION

- Never use chemicals, cosmetics, any petroleum solvents such as paint thinner, or neutral detergent on the product. They may deform and damage the product.
- After each use in salt water, make sure it's watertight, then soak it sufficiently in fresh water.
- Insufficient soaking causes damage by salt to the product. Salty residue may be left on the product where it will crystallize as it evaporates. Crystallized salt is hard to dissolve and difficult to be removed once formed, and it will result in water leakage.
- After rinsing, dry the product well with a soft dry cloth, then let the product dry in the shade, out of direct sunlight.
- Do not dry the product by heating (using a hair dryer, for example). Heating can deform and damage the product.
- If you will not use the product for an extended period of time, store it away from high temperatures, high humidity, direct sunlight, or extreme cold.
- Do not store the product with naphthalene or camphor mothballs, or in locations such as a laboratory where chemicals are used. This environment can cause mold, rust, corrosion or malfunction.
- Remove batteries from the product before storing.
- After using the product, maintain the O-rings before storing. Examine the O-rings before and after each dive. We recommend early exchange of the O-rings, at least once a year.
- Every two years we recommend a complete overhaul of O-rings regardless of the frequency in use, for the best performance of the product.



## Specifications

【Controls and functions】	Mode Switch (OFF/Manual1/Manual2/TTL) Slave Switch Target Light Switch Light Level Control Dial
【Indicators】	Illuminates in red when the strobe is ready to fire. Illuminates in green for approx. 3 seconds after firing with TTL flash output. 21 (land, at full flash, 1/50-1/100/meters)
【Guide number】	105° x 105° (with Diffuser)
【Beam angle】	5400° K (land, at full flash)
【Color temperature】	5100° K (with Diffuser)
【Battery life】	Alkaline: Approx. 160 flashes Ni-MH (2700mA): Approx. 320 flashes Oxryde: Approx. 230 flashes Alkaline: Approx. 6 sec. Ni-MH (2700mA): Approx. 3 sec. Oxryde: Approx. 3 sec.
【Recycle time】	
【Battery requirements】	4 x AA Alkaline (1.5V x 4 = 6V), or 4 x AA Ni-MH (1.2V x 4 = 4.8V), or 4 x AA Oxryde (1.5V x 4 = 6V), or 4 x AA Lithium (1.5V x 4 = 6V), or 4 x AA Ni-Cd (1.2V x 4 = 4.8V) 60m (200ft)
【Depth rating】	88x115x150mm / 3.2x4.6x6inch
【Dimensions】	700g / 24.5oz (incl. batteries)
【Weight】	-10g / -0.35oz
【Weight underwater】	0°C-40°C / 32° K-104° K
【Operating temperature】	Acrylic resin, Polycarbonate resin
【Construction】	

※Specifications and appearance are subject to change without notice.

※The performance values above may change depending on variables such as frequency of use, battery consumption, recharge level, and so on.

※The above specifications are based on normal room temperature(25° C/ 77° F).

## MEMO

# SEASEA

【DX-750G】と組み合わせてご使用されるお客様へのお知らせ  
本製品と弊社製品【DX-750G】を組み合わせてご使用される場合は、  
本製品のターゲットライトはご使用できません。

ATTENTION: Important notice to users of the YS-110 strobe with  
the 750G underwater camera / housing system.

When using the YS-110 strobe with the DX-750G system,  
do not use the target light as the light from the  
target light may appear in the images.

0521-Z-02