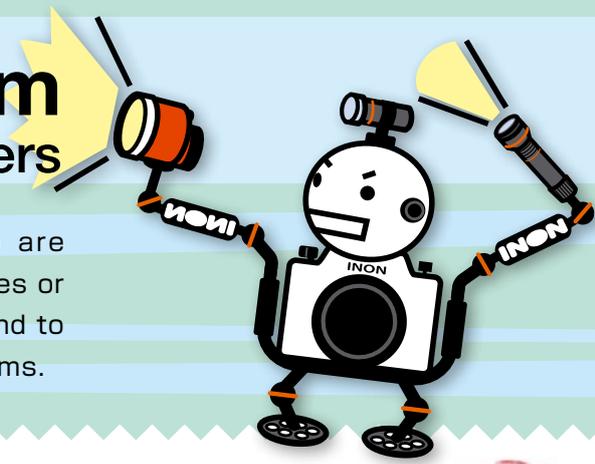
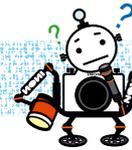


How to Select INON Arm for Underwater Photography Beginners



An arm is an essential part especially for beginners who are struggling to take satisfied images of sea slugs, schools of fishes or corals. Using arms makes you control lighting effect as you intend to get desired images. Let's explore how to select and combine arms.

Q1 What is an arm?



A part to hold a strobe or a flashlight to illuminate a subject.

A lightweight aluminum arm has "arm ball" on both ends. An arm body is an arm and the arm ball is a joint. A clamp links joints and attach a strobe or other lighting device on the edge which corresponds to a hand.

Yes, an arm is a part to give a strobe or other lighting device flexible position just like a human arm to illuminate a subject for intended lighting effect.



Set-up example using an arm to hold a strobe

Q2 Why do I need an external strobe or flashlight?



To reproduce color of a subject to get beauty image.

Small marine lives, swimming fishes or soft corals are looked bluish underwater since long wave colors like red, orange or yellow will dismiss as we get deeper and only blue remains for its short wave length. So using an artificial light is a key to reproduce vivid and complicated color which inherits in marine lives.

Almost every compact digital camera has a tiny flash unit. This flash unit will do for land photography but its effectiveness is rather limited underwater since light attenuates underwater which dramatically limits its effective range. Also the built-in flash emits light just besides a lens to cause reflection of suspended particles in front of the lens resulting in white spots in an image. Using a close-up lens or wide conversion lens could block the built-in flash. Recent compact digital cameras provide "high sensitive mode" but some of them tends to get bluish image since the mode prioritize ambient light. If you are not satisfied with your images, it is worth to try to use an external strobe or other lighting device. They dramatically improve your images.

● When using the built-in flash only...



[Light does not cover entire image]



The built-in flash does not provide sufficient light to entire area and suspended particles are exposed in an image as white spots.

[Bluish exposure]



Strong blue ambient light underwater makes the subject and background in blue.

● When using an external strobe...



[Illuminate entire area]



An external strobe illuminates entire area evenly making suspended substances less visible.

[Reproduce natural subject color]



Powerful strobe light recreates natural color of the subject.

Q3 Is an arm useful?



Yes, an arm is essential for flexible lighting.

As discussed an arm is as like human arm. Instead of hands and arms holding a camera, an arm holds a strobe or torch to illuminate a subject from various angles. Changing aiming angle alters how shadow appears enabling you to create your own image. We can see how shadow changes when we illuminate a subject by a desk light from up, right beside or obliquely

upward. In poor visibility, we can suppress exposure of small particles by using long arm to locate a strobe away from a camera. Also dual strobes on extended arms from both sides of a camera, enable to illuminate larger area or change balance between two strobes. Thus, an arm is an essential part to manipulate lighting to enjoy underwater photography.

● Adjust subject atmosphere

When we take a portrait outside, shadows appeared under eyes, side of a nose or on cheeks differ depending on the height of the sun or direction of the sun. In same way, we can change atmosphere, texture and special effect of an image with different strobe positions to change amount or dense of shadow. The right images are just one example showing how the subject is captured in variety of ways in different strobe positions. Using arms enables to put a strobe on an ideal position to suit to a subject.

● Soften shadow of subject

Single strobe lighting always has a shadow around a subject. Marine lives do not strike a pose for you because shadows wash out beauty or cuteness. So it is necessary to adjust strobe position to suit to subject orientation or surroundings. If you still feel the shadow is too strong, go for dual strobes from both sides to soften the shadow. Three dimensional appearance and entire atmosphere of an image can be manipulated by balancing light amount between two strobes or changing their positions.

● Shoot water clearly

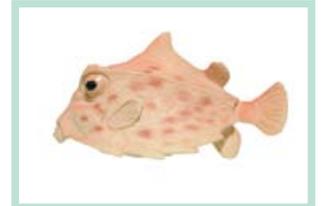
Not so many occasions we can dive in the clear water. We could have rich planktons or muddy condition. Normally there are many of suspended substances hanging around and they will be exposed as white dots on an image when we use a strobe in proximity of a camera, which is very annoyed. Don't worry. We can get rid of such problem by using long strobe arm to put a strobe away from a camera.

【Lighting from upper right/left】



Faint shadow on the back of scales and fins presents texture of the subject

【Lighting from top】



Less special effect but even lighting overall

【Lighting from side】



Dark shadow on the other side of the strobe, which accents rough skin of the subject



【Single strobe from the right】



Strong shadow behind the subject



【Dual strobe from both sides】



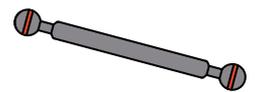
Shadow around the subject gets soft



【Short arm】



Suspended substances can be exposed



【Long arm】



Suspended substances can be obscured

Q4 What kinds of arm parts are there?



First comes a base

It is necessary to prepare a part so-called "base" to attach a strobe or flashlight on compact digital camera housing. Fundamental part is the Grip Base D4 which has dual function of base tray and grip to hold a strobe or flashlight on top edge of the grip via an arm or adapter.

Essential Grip Base D4

Let's start basic single strobe set by attaching the Grip Base D4 on a housing. Then fix a strobe or flashlight with necessary arm or adapter to suit to intended subject.

When needed... D Holder

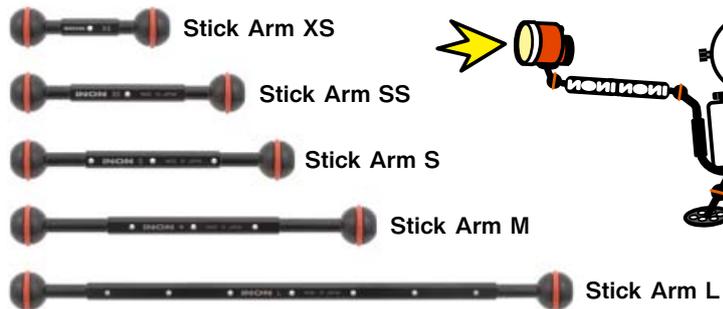
By attaching extra D Holder on the Grip Base D4, we can have strobes/flashlights on both sides.



Short arm and long arm

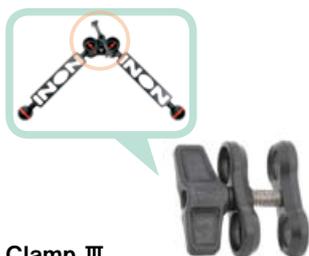
INON Arm line-up offers different lengths to select most appropriate arm length for different size of subject like a sedentary creature, swimming fish or ultra wide landscape, shooting conditions like visibility and lens configuration (close-up lens or wide conversion lens) to use.

Wide range of Stick Arm from XS (75mm/3.0in) up to L (320mm/12.6in).



Parts to connect base and arm, arm and strobe/flashlight

There are various parts to attach an arm on the Grip Base D4 and to attach a strobe or flashlight on the arm. Some are to attach a strobe or flashlight directly on the Grip Base D4 or housing accessory shoe without arm. Let's see popular basic parts.



Clamp III

A part to connect any two of ball-joint products including Arm body, Z Adapter MV and Direct Base III etc. Securely clamp with less power and easy to adjust arm angle when loosening a little.



Z Adapter MV

By attaching the Z Adapter MV, an INON strobe can be connected to Arm or Direct Base III etc. The ball-joint is made from plastic to provide flexible strobe positioning without loosening a clamp.



Z Joint

By attaching the Z Joint, an INON strobe can be directly linked on top edge of the Grip Base D4 or Shoe Base to create most compact set.

Single Light Holder LE

A part to hold single INON LE series LED flashlight on the Shoe Base or Grip Base D4.

Shoe Base

A part to mount a strobe or flashlight on a housing accessory shoe to set-up minimum lighting system in combination with the Z Joint or Single Light Holder LE.



Direct Base III

A metal type ball adapter to attach on top edge of the Grip Base D4 or D Holder to connect an Arm Body or Z Adapter MV. Also usable as strobe adapter instead of the Z Adapter MV for an INON strobe to lock strobe position securely by a clamp.

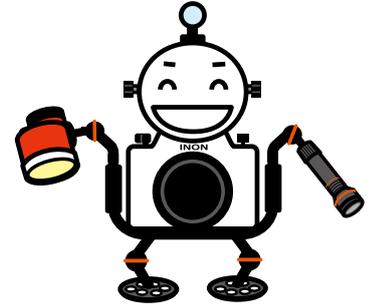
Q5 Got it that an arm is useful and strobe or flashlight is beneficial. However I still hesitate to make my rig bulky and be tired to carry it...



No problem. We have minimum set.

Various compact sets are available for those who prefer diving and taking underwater photographs/films with handy gear. Install your strobe or flashlight on an underwater housing directly or without an arm. When shooting a nudibranch or commensal shrimp

with a close-up lens, built-in flash may be blocked by the lens. Let's add an LED flashlight in such case to shine close range for macro photography. If you shoot a subject at short distance away as well, use a strobe which emits more powerful light.



Shoe Base + Single Light Holder LE

If you put priority on size and usability, an LED flashlight would be a good start. An LED flashlight can deliver sufficient steady light for a subject in front of a lens and assist comfortable focusing. Usable together with the built-in flash as well.

Shoe Base + Z Joint

Set the Shoe Base on a housing accessory shoe then install a strobe with the Z Joint on top edge of the Shoe Base. Strobe lighting is limited from above only but this is most compact single strobe set.

Grip Base D4 + Z Joint

Attaching a strobe on the top edge of the Grip Base D4 via Z Joint provides basic strobe lighting from upper oblique angle. This is minimum single strobe set for an underwater housing which is not equipped with an accessory shoe.

This image was taken with single strobe attached on a housing accessory shoe. An external strobe can reproduce vivid color of soft corals even with minimum equipment combination.

These minimum sets always deliver strobe light from fixed position and have to accept narrower range of expression. Also shooting little marine life using a close-up lens at minimum focus distance with this set-up could have strobe light on its top side but shadow

on its lower side. However these minimum sets would be rather suitable as a starter for beginners of underwater photography to illuminate a subject by strobe light for sure, and then expands equipment with optional accessory once they get advanced.



Shooting with a close-up lens from minimum focus distance could have strobe light on top of the subject but shadow on its lower side.

Housing with an accessory shoe

Some OEM housings from camera manufactures have an accessory shoe. Once Shoe Base is attached here, it is easy to install a strobe or flashlight for the housing. For Canon PowerShot S90, S95 or S100 OEM housing, INON offers a Mount Base which is equipped with an accessory shoe to support compact lighting system as well.



Housing with an accessory shoe



Mount Base with an accessory shoe

For more flexible strobe movement

When a strobe is directly attached on the Grip Base D4 via Z Joint, we can change strobe aiming up and down but not sideways. However it is easy to move the strobe sideways by using the Shoe Base Adapter D4 and Shoe Base on top edge of the Grip Base D4 to hold the strobe on it.



Shoe Base Adapter D4



Using the Shoe Base makes the strobe move from side to side and up and down

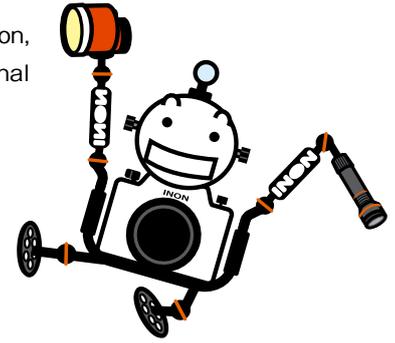
Q6 Is there any way to get better images?



Yes, combination of appropriate parts will do.

Once you get used to shoot with your compact digital camera underwater, let's move on to advanced lighting system for more flexible

and better imaging or filming. In this section, we would like to show you various optional accessory parts for different subjects.



● Shoot beauty image of tiny subject and surroundings

With a minimum system, we could have unexpected shadow beside the featured subject or insufficient strobe light on its surroundings due to limited strobe aiming and movement. So it is necessary to add optional parts to capture a subject with its living environment clearly.



Single strobe set with a close-up lens

Short yet flexible macro shooting set connecting the Direct Base III and Z Adapter MV with the Clamp III, delivers sufficient strobe light to a subject in front of the lens. You will find appropriate strobe position to add moderate shadow of the subject or background by shooting with different strobe positions. Additional Stick Arm XS or Stick Arm SS further enhances flexibility of strobe lighting. Using dual strobe on both sides enables you to control dense of shadow and spatial effect to create your own image.

Example set below contents;

Grip Base D4, Direct Base III, Clamp III, Z Adapter MV, S-2000 strobe



● Shooting beauty image of school or seascape

When shooting ever changing school or broad seascape, it is required to locate a strobe behind the lens or away from a camera to cover wide area with strobe light or not to cause backscatter. To make this possible, we need longer strobe arm.



Single strobe set with a wide conversion lens

Attach a strobe on the Grip Base D4 via Stick Arm S. When swimming you can fold the arm towards camera side to make it compact, and when shooting extend the arm oblique upper side to deliver strobe light to wide shooting area. Bit longer Stick Arm M would work well in poor visibility condition to avoid backscatter by putting the strobe further away from the camera.

Example set below contents;

Grip Base D4, Direct Base III, Clamp III x 2, Stick Arm S, Z Adapter MV, S-2000 strobe



● Shooting beauty image of ultra wide subject

When using super wide lens like a dome lens unit or fish-eye conversion lens, let's add another strobe to cover wider area. Use long strobe arms to locate strobes away from the camera and adjust strobe positions to deliver strobe light entirely.



Dual strobe with a dome lens unit

Add extra D Holder on the Grip Base D4 to hold another strobe. Extend the Stick Arm M or longest Stick Arm L sideways and put strobes on them little above the lens level. Since the lens covers wider area, set strobes little behind the lens surface to avoid flare.

Example set below contents;

Grip Base D4, D Holder, Direct Base III x 2, Clamp III x 4, Stick Arm M x 2, Stick Arm Float S x 2, Z Adapter MV x 2, S-2000 strobe x 2



Q7 Little bit tired with my heavy rig underwater...



Let's use appropriate Float Arm

Total underwater weight becomes heavy as your equipment expands with strobes, arms and other accessories to create ideal lighting system. Now it is the time to use Float Arm system. The Float Arm system is made from lightweight rigid ABS resin and provides ample buoyancy

with its hollow construction. Once you decide strobe arm length to suit to intended subject, choose a Float Arm of same length range. It is not good idea to use too long or too thick Float Arm for sake of underwater weight since it could interrupt intended lighting.



Float Arm S



Float Arm M



Float Arm ML



Mega Float Arm S

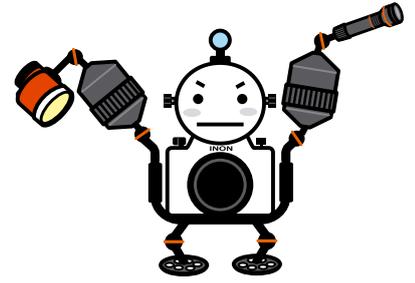


Mega Float Arm M



Stick Arm Float S

Made from special rigid foam sponge to attach on an aluminum alloy arm to lighten underwater.



Caution for accidental ascent!

By using Float Arm system, we can make total underweight of the equipment neutral (the equipment stays there without holding). But if it is for wide setting and once heavy wide conversion lens is removed underwater, the housing will burst to the surface and we could put ourselves in danger if we chase it. So select appropriate Float Arm based on intended usage.



Danger to have too much buoyancy

Q8 I want to shoot still and video...



There is a part to carry both strobe and flashlight.

Recent compact digital cameras have movie function so those users may want to film unique behavior of marine lives like swimming anemone fish or snapping shrimp coming in and

out of host goby's nest. It is necessary to use a flashlight to shoot video in addition to still imaging and we have an accessory to carry both strobe and flashlight.



Strobe Light Holder LE

Holds one or two LE series LED flashlight together with a strobe on a strobe arm. Optional Z Joint or Z Adapter MV is required to attach on the strobe arm.



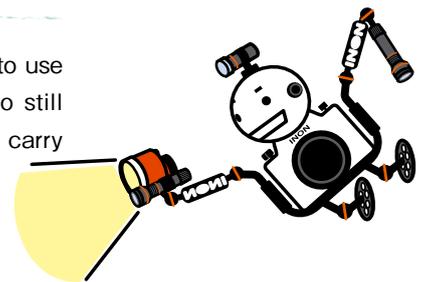
Example set-up using Shoe Base

A strobe and LE series LED flashlight are held on the Strobe Light Holder LE then attached on a housing accessory shoe with the Z Joint and Shoe Base.



Example set-up using Grip Base D4

A strobe and LE series LED flashlight are held on the Strobe Light Holder LE then attached on the Grip Base D4 via Z Adapter MV, Clamp III and Direct Base III. This example set adds the D Holder Extension Bar on the top edge of the Grip Base D4 to hold a lens holder.



Not using Underwater Mode!?

Some of compact digital cameras have Underwater Mode which would be useful to reproduce vivid natural colors when shooting with natural light or built-in flash only. However once it comes to use an external strobe or flashlight, resulting image could have reddish spots. In such case, it is recommended to use standard mode.



This sample shows how reddish spots appear when firing an external strobe in Underwater Mode.

INON ARM SYSTEM

Securely Holds Camera and Strobe Universal and Expandable Arm Base

A base stay with strobe arm function for compact digital camera housings. When attaching an INON strobe directly, you can set up compact and simple strobe system. Optional wide variety of INON arm system further provides customized camera system to suits to your shooting style.

Shoe Base

Just attach the Shoe Base on an underwater housing or INON Mount Base equipped with an accessory shoe enabling you to shoot with an external strobe or other lighting device in compact and handy system.

■Weight: 41g(1.4oz)[air] /
approx.20g(0.7oz)[underwater]



Shoe Base Set
(A set of the Z Joint and Shoe Base)

■Hook plate

Easy installation with the hook plate which has nails to prevent accidental separation.



■Move back and forth

The Z Joint can move back and forth to accommodate with different strobe distance.



■Rotate 360°

You can move strobe not only up-and-down but also sideways to adjust strobe aiming.



Grip Base D4

The Grip Base D4 is equipped with newly developed SPS (Slide Plate System) and directly attached on more than 100 different water-proof housings. The Grip Base D4 offers great expandability from standard single strobe set to advanced multiple lightning set.

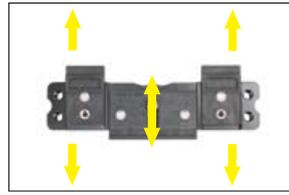
■Weight: 250g(8.8oz)[air] /
approx.142g(5.0oz)[underwater]



Grip Base D4 Set
(A set of the Z Joint and Grip Base D4)

■No loose ! No rattle !

To-and-fro sliding main plate and two sub plates firmly hold leg part of an underwater housing and when attaching on a Mount Base to use an attachment lens, the Grip Base D4 is attached via two M6 screws. The Grip Base D4 helps you to focus on shooting without worrying loose or backlash.



■Wireless strobe shooting

It is easy to start external strobe shooting simply by attaching an INON strobe directly on the Grip Base D4 Set. Powerful and highly accurate wireless S-TTL Auto exposure control of Z-240 Type4/ D-2000 Type4/S-2000 strobe delivers vivid underwater world.



Wide variety of optional parts for unlimited expandability

INON base system carries broad range of optional parts to extend a strobe arm or to add secondary strobe or other lighting device. You can easily expand your system from basic set to high-end system.

D Holder

An additional grip on the Grip Base D4 to make multiple lighting system by attaching strobes or flashlights on both ends.

■Weight: 150g(5.3oz)[air] /
approx.77g(2.7oz)[underwater]



D Holder Extension Bar

Extends an arm of the Grip Base D4 to attach the M67 Lens Holder S, LD Lens Holder S or AD Lens Holder.

■Weight: 53g(1.9oz)[air] /
approx.34g(1.2oz)[underwater]



Clamp III

The Clamp III links and locks ball-joints of Arm Body, Direct Base III or Z Adapter MV.

A perfect combination between material and design provides secure clamping with less power and comfortable adjustment by loosening it only a little bit.

■Effective length: 36mm(1.4in)
■Weight: 53g(1.9oz)[air] / approx.33g(1.2oz)[underwater]



Direct Base III

A base adapter with aluminum alloy ball-joint. Attached on top edge of the Grip Base D4 to connect Arm Body or Z Adapter MV, or on an INON strobe as strobe adapter to lock strobe position securely by a clamp.

■Effective length: 32mm(1.3in)
■Weight: 35g(1.2oz)[air] /
approx.23g(0.8oz)[underwater]



YS Adapter MV

An adapter to attach the INON Z-22 strobe, or SEA&SEA YS series strobe. Combination with the Single Light Holder LE or Z Joint, enables to hold an LE series LED flashlight on an arm via clamp. The ball-joint is made from plastic to provide flexible strobe positioning without loosening a clamp.

■Effective length: 45.5mm(1.8in)
■Weight: 20g(0.7oz)[air] / approx.7g(0.2oz)[underwater]



Z Joint

Directly holds compatible INON strobe on the top of the Grip Base D4 or Shoe Base. The Grip Base D4 Set and Shoe Base Set includes the Z Joint as a package.

■Effective length: 26mm(1.0in)
■Weight: 45.5g(1.6oz)[air] /
approx.23g(0.8oz)[underwater]



Shoe Base Adapter D4

An adapter to attach the Shoe Base on the top of the Grip Base D4 to have lighting source from various angles.

■Weight: 10g(0.4oz)[air] /
approx.6g(0.2oz)[underwater]



Z Adapter MV

An adapter to attach the INON Z-240 Type4/D-2000 Type4/S-2000 strobe. The ball-joint is made from plastic to provide flexible strobe positioning without loosening a clamp.

■Effective length: 58mm(2.3in)
■Weight: 35g(1.2oz)[air] /
approx.16g(0.6oz)[underwater]



Single Light Holder LE

Holds single LE series LED flashlight in combination with the Shoe Base or Grip Base D4.

■Weight: 56g(2.0oz)[air] /
approx.31g(1.1oz)[underwater]



INON ARM SYSTEM

High precision machined aluminum alloy Rigid setting with lightweight strobe arm



Stick Arm XS

- Effective length: 75mm(3.0in)
- Weight: 41g(1.4oz)[air] / approx.25g(1.0oz)[underwater]



Stick Arm SS

- Effective length: 120mm(4.7in)
- Weight: 51g(1.8oz)[air] / approx.31g(1.1oz)[underwater]



Stick Arm S

- Effective length: 150mm(5.9in)
- Weight: 57g(2.0oz)[air] / approx.34g(1.2oz)[underwater]



Stick Arm M

- Effective length: 200mm(7.9in)
- Weight: 71g(2.5oz)[air] / approx.43g(1.5oz)[underwater]



Stick Arm L

- Effective length: 320mm(12.6in)
- Weight: 101g(3.6oz)[air] / approx.63g(2.2oz)[underwater]

INON Arm series is manufactured by machined lightweight aluminum alloy to benefit high-precision, light weight and extraordinary strength. Unlike molding or casting, this manufacturing system obtains accuracy of "0.01mm" providing very smooth fitting between ball-joint and clamp. The ball-joint is equipped O-ring providing firm and reliable clamping but you never feel any stress when you adjust arm position by loosening a clamp.

M5 Joint

The M5 Joint is an optional product to attach compatible lens holder or the Shoe Base (via Shoe Base Spacer) on a Stick Arm Body or Multi Ball Arm Body.



- Weight: 14g(0.5oz)[air] / approx.8g(0.3oz)[underwater]
- Compatible Arm:
Stick Arm XS/SS/S/M/L
(Stick Arm XS is not compatible with a lens holder)
Multi Ball Arm S/ML/L/LL/XL
(Multi Ball Arm S is not compatible with a lens holder)

M6 Joint

The M6 Joint is an optional product to attach the Direct Base III on Stick Arm Body or Multi Ball Arm Body to hold a strobe or LED flashlight on the middle of arm.



- Weight: 24g(0.8oz)[air] / approx.15g(0.5oz)[underwater]
- Compatible Arm:
Stick Arm XS/SS/S/M/L
Multi Ball Arm S/ML/L/LL/XL

Stick Arm Float S

An optional attachment made from special rigid foam for a Stick Arm or Multi Ball Arm to provide comfortable gripping and add approx.84g buoyancy underwater to lighten total underwater weight of combined camera system.



- Buoyancy: approx.84g(3.0oz)[underwater]
- Weight: 82.0g(2.9oz)[air]
- Compatible Arm:
Stick Arm S/M/L
(Stick Arm L can have two Stick Arm Float S)
Multi Ball Arm ML/L/LL/XL
(Multi Ball Arm LL and XL can have two Stick Arm Float S)



Float Arm S

- Buoyancy: 75g(2.6oz)[underwater] ■Effective length: 150mm(5.9in)
- Outer diameter: 52mm(2.0in) ■Weight: 142g(5.0oz)[air]



Float Arm M

- Buoyancy: 135g(4.8oz)[underwater] ■Effective length: 200mm(7.9in)
- Outer diameter: 52mm(2.0in) ■Weight: 181g(6.4oz)[air]



Float Arm ML

- Buoyancy: 210g(7.4oz)[underwater] ■Effective length: 260mm(10.2in)
- Outer diameter: 52mm(2.0in) ■Weight: 235g(8.3oz)[air]



Mega Float Arm S

- Buoyancy: 390g(13.8oz)[underwater] ■Effective length: 150mm(5.9in)
- Outer diameter: 97mm(3.8in) ■Weight: 219g(7.7oz)[air]



Mega Float Arm M

- Buoyancy: 650g(22.9oz)[underwater] ■Effective length: 200mm(7.9in)
- Outer diameter: 97mm(3.8in) ■Weight: 295g(10.4oz)[air]

The Float Arm uses weather-resistant ABS material for its component arm body to lighten total weight creating extraordinary buoyancy comparing to existing solid arm type float system together with its hollow arm body design.

Other compatible accessories are available from INON besides listed items. Please visit INON web site for more detail.

INON

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