LIGHTNING ROD POLE SPEAR

Your Sea Stinger Pole Spear is the most advanced product in the spear fishing industry. It has been designed, tested, and refined over the last two years. Each Pole Spear is individually crafted using the finest materials available. As with all of our products, we expect our design to go through some evolutionary changes as others use them. The spear and tip are extremely strong but not indestructible. Care should be exercised to prevent a side load from being placed on the tip assembly or the pole. Please carefully read the following directions to insure proper use and care of your Pole Spear.

⚠ CAUTION

Never put the Pole Spear under a major load unless it is under the water. A failure of any critical component where the force is not contained by the resistance of water could cause severe injury to yourself or someone else. Also, an accidental release on the surface could cause the spear to travel a much greater distance than anticipated and cause injury or damage.

SPEAR TIP INSTALLATION:

Your Pole Spear comes equipped with a Sea Stinger 1 tip. We recommend this tip for most occasions, although our other Sea Stinger tips will work with the Pole Spear. Your Pole Spear is designed to work only with Sea Stinger tips. Other tips are not recommended. Secure the tip by threading it onto the spear. Use lock pliers with a piece of leather or some other material to prevent marring the spear shaft while using a 3/8" wrench to tighten the tip.

WHEN STORING BETWEEN USE: Remove the threaded unit and wash in fresh water. Lubricate the entire mechanism including the threads with anti-corrosion oil. ***Make sure to read the instructions that come with the Sea Stinger tip***. If you have any questions about Sea Stinger tips and how they work, ask your dealer or visit our web site at *www.Seastinger.com.*

ADJUSTING THE POWER STROKE:

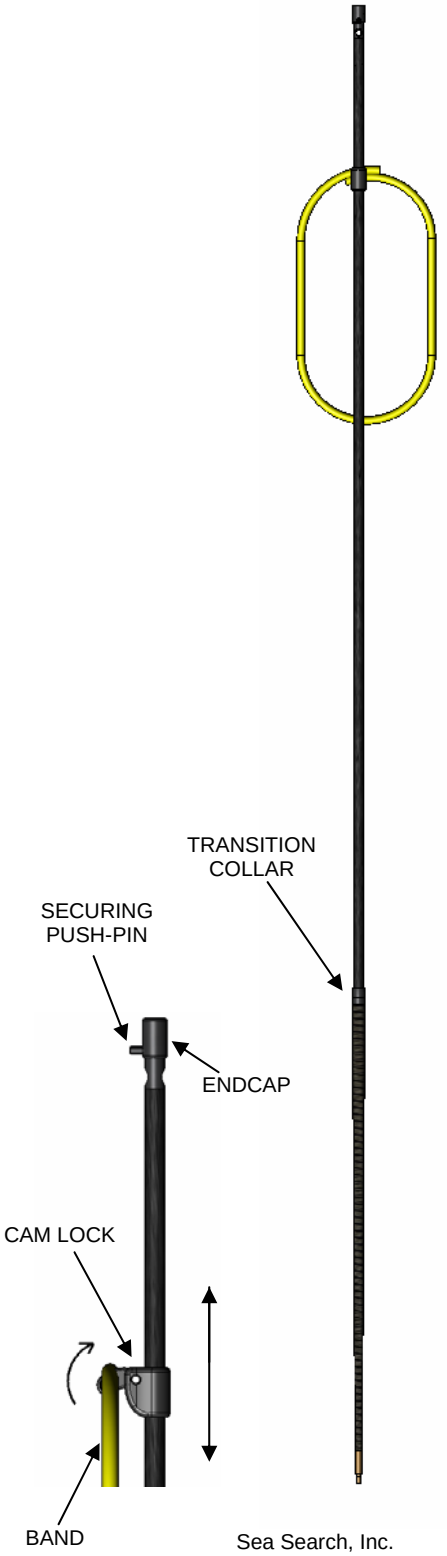
The Cam Lock unit that the band is attached to allows the operator to change the power stroke to match the situation. It also allows the user to move his or her shooting hand closer to the tip for working in close areas.

TO ADJUST THE STROKE: Move the lever of the Cam Lock back toward the end of the Pole Spear to unlock it on the shaft. Give it a slight twist and slide it to where you need it.

TO LOCK IN PLACE: Push the lever forward and apply pressure to the band. The Pole Spear is designed to have maximum efficiency when the Cam Lock is all the way back to the end of the shaft. Your shooting hand should be a few inches past the Transition Collar that joins the forward part of the shaft to the rear section. ***IMPORTANT:*** When loading the Pole Spear prior to making a shot, it is crucial to eliminate the bowing that occurs with any pole spear. Any significant bowing will cause the Pole Spear to "fish tail" upon release and will affect the impact point of the spear. Your Pole Spear is designed such that twisting the spear in your hand approximately 180 degrees after the loading eliminates the bowing. The load and the placement of the Cam Lock on the shaft determine the amount of twist. It is easy to quickly look back as you load the Pole Spear and twist the shaft until the bow is gone. With a little practice the maneuver becomes automatic. Upon release, the twist action of the Pole Spear helps stabilize it in flight.

TO REMOVE THE CAM LOCK AND BAND: Use the sharp end of the releasable tip and push out the securing pin, which passes through the end cap. Remove the end cap and slide the Cam Lock unit off. When replacing the push pin, please note that one end is slightly tapered to make entry easier. With the Cam Lock removed, the spear can then be used in the fixed position by untying the nylon band loop on the Cam Lock, and tying the nylon band loop through the hole in the end plug.

WHEN STORING THE SPEAR BETWEEN USE: it is important to remove the Cam Lock with band attached when not in use. Place the Cam Lock and band in a sealable plastic bag and store in a refrigerator. Your band is made from natural rubber and it is specially coated to help prevent UV damage. However, light and heat will quickly deteriorate the rubber. By proper storage you should get three years service from the unit. The Cam Lock and Band is sold as a complete unit. The rubber and length is matched for maximum efficiency without over stressing the band or the pole. For a replacement Cam Lock and Band, contact your local dealer or visit our website at *www.Seastinger.com.*



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The new Sea Stinger Pole Spear is a revolutionary design that has undergone several years of research, engineering, and testing. To understand its advantages it is necessary to understand the main factors that influence the performance of a pole spear. There are four major factors to consider.

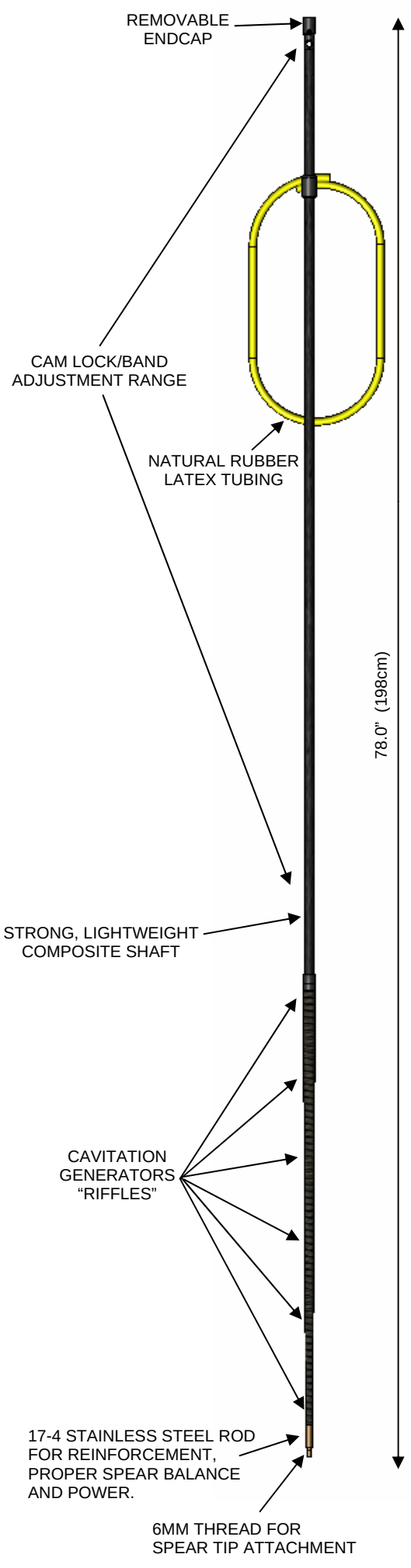
- Over all weight and balance of the pole spear.
- Hydrodynamic shape of the tip and spear.
- Penetration and capture ability of the tip design.
- Propulsion system.

Most conventional pole spears, complete with tips, weigh almost 2 pounds. Overall weight of the spear is critical. The spear must have enough momentum to cause the tip to penetrate the fish. It must also move fast enough to strike the fish before the fish reacts to the shot and moves. A small increase in the weight of the shaft dramatically reduces the acceleration and velocity of the spear. However, a light fast spear with conventional tip designs does not have enough energy, and tends to bounce off the fish. Conventional pole spear designs, therefore, are too slow to successfully engage many fish encountered by a spear fisherman. The Sea Stinger Pole Spear, complete with tip, weighs just over a pound. The acceleration and velocity of the Sea Stinger Pole Spear allows the spear fisherman to engage many fish considered untouchable without the use of a conventional spear gun. The proven design of the Sea Stinger Tip allows penetration even with the reduced mass of the spear. Balance of the shaft is another critical issue. Most spears have a uniform mass over their length. The shaft bows when the band is put under a load. Upon release the rear of the pole straightens and causes "fish tailing" which can affect the accuracy dramatically. Concentrating the mass forward and causing the object to spin has proven to stabilize arrows, bullets, and numerous other projectiles. The Sea Stinger Pole Spear is designed such that twisting the spear in your hand approximately 180 degrees, after loading, eliminates the bowing and produces a stabilizing spin. The Sea Stinger Pole Spear is balanced with 75% of its overall weight in the first 20 inches. The use of carbon fiber to reduce flexing under a load, and the improved balance, greatly increases the stability and overall accuracy of the Sea Stinger Spear.

The hydrodynamic shape of the tip and spear greatly influences the velocity and effective range of a pole spear. The shape of the Sea Stinger Pole Spear was conceived after studying natural underwater phenomena aided by computer modeling. The initial wedge shape, which quickly tapers back down to a smaller diameter, is a proven hydrodynamic concept seen in other man made designs. Similar shapes are also seen in nature such as the shape of a Dolphin or Barracuda. The spiral overlapping bands on the front part of the shaft enhance the gripping surface as well as increase the velocity of the shaft as it passes through the water. The overlapping bands act much like fish scales and disrupt the boundary layer of water passing by the surface of the shaft. These "cavitation generators" lubricate the surface, thus reducing the frictional drag as the shaft passes through the water. Finally, the proven shape of the Sea Stinger Tip provides reduced drag through the water and increased penetration of the target fish.

The Sea Stinger tip, U.S. Patent # 4,896,450, is unsurpassed in performance. It penetrates with less force, captures the fish more securely, and disengages by the user easier than any other tip. Simply put, it is the best tip for spear fishing that has ever been developed. The Sea Stinger Pole Spear is designed to use either the Sea Stinger 1 or the Sea Stinger 2 tip. The use of any other tip on the Sea Stinger Pole Spear will degrade its performance greatly and may cause damage to the pole spear.

When studying the performance of a pole spear, the propulsion system design is probably the most critical factor. So far, elastic bands have proven to be the best choice to store the energy by hand until the release of the shaft. However, most pole spear designers do not understand the basic physics that affect the efficiency of band powered spears. The average adult male can load and maintain around 35 pounds of force for a short period of time. Of course this can very depending on the person and other factors such as the use of neoprene gloves. One could store this 35 pounds of energy in a band stretched to 4 inches long or 6 feet long depending on the design of the band. Upon the release of the 4-inch band, the spear would accelerate and basically expend all of its force in 4 inches of travel. From that point on the spear would immediately begin to decelerate due to frictional drag. With the 6-foot stretched band, the spear will accelerate initially with the same 35 pounds of force but at the end of 3 feet of travel would still have approximately half of its remaining force. An elastic band is rated at a certain load. Pulling more than that force becomes extremely inefficient because the rubber cannot store the extra force. Applying a force up to around 70% of the rated load is the best way to insure efficiency. It is therefore important to design a band that will reach the individual's maximum load strength, be as long as possible, and be around 70% of its rated load at full extension. Another problem of propulsion encountered by the pole spear fisherman is the need to quickly reduce the power of a certain shot, and at the same time, be able to move the shooting hand closer to the tip end of the spear. This normally happens when a fish, such as a grouper, rolls up under a ledge. To control the shot the shooter must position his shooting hand close to his mask and be able to move very close to the fish. At the same time, if the shooter were to release the shot at maximum load, the shaft would likely over-penetrate the fish and lock into the rock behind it. The Sea Stinger Pole Spear allows the user to customize the bands for optimum performance. The Cam Lock band device allows the shooter to quickly adjust the power stroke and hand position of the spear. With the power and speed of the Sea Stinger Pole Spear, a skilled spear fisherman can almost compete with a conventional spear gun and still maintain the flexibility of a pole spear.



SPECIAL INSTRUCTIONS FOR BREAK DOWN MODELS:

If you have a break-down version of the Lightning Rod Pole Spear, you have the ability to disassemble your Pole Spear to aid in shipping and travel. To assemble your Pole Spear, simply insert the front end of the rear section of the Pole Spear into the back end of the front section of the Pole Spear as shown in the diagram. Slide the two halves of the Pole Spear together until it stops. Then, screw the two halves together by simply turning the Pole Spear sections in opposite directions. As you screw the sections together, you will see the distance between the Transition Collar and the large end of the front Pole Spear section start to reduce. Continue screwing the sections together until they bottom out against each other. Be sure the sections are tightly secured using only hand pressure, as use of pliers or other tools can damage or crush the graphite shaft.

Your break-down Pole Spear comes with a PVC shipping tube to protect it from damage in shipping and baggage handling. When the Pole Spear is stowed in the shipping tube, the overall length is 56 inches (1,422mm), allowing it to be checked in as baggage with most commercial airlines. It also allows for easier transportation in smaller vehicles.

WHEN STORING BETWEEN USE: Disassemble the unit and wash in fresh water. Lubricate the threaded end of the metal spear rod including the threads with anti-corrosion oil.