Hazelett Marine

2017 PRODUCT CATALOG

ELASTIC MOORING SYSTEMS — FOR YACHTS, DOCKS, WAVE ATTENUATORS, AQUACULTURE FARMS

A BRIEF HISTORY OF HAZELETT MARINE

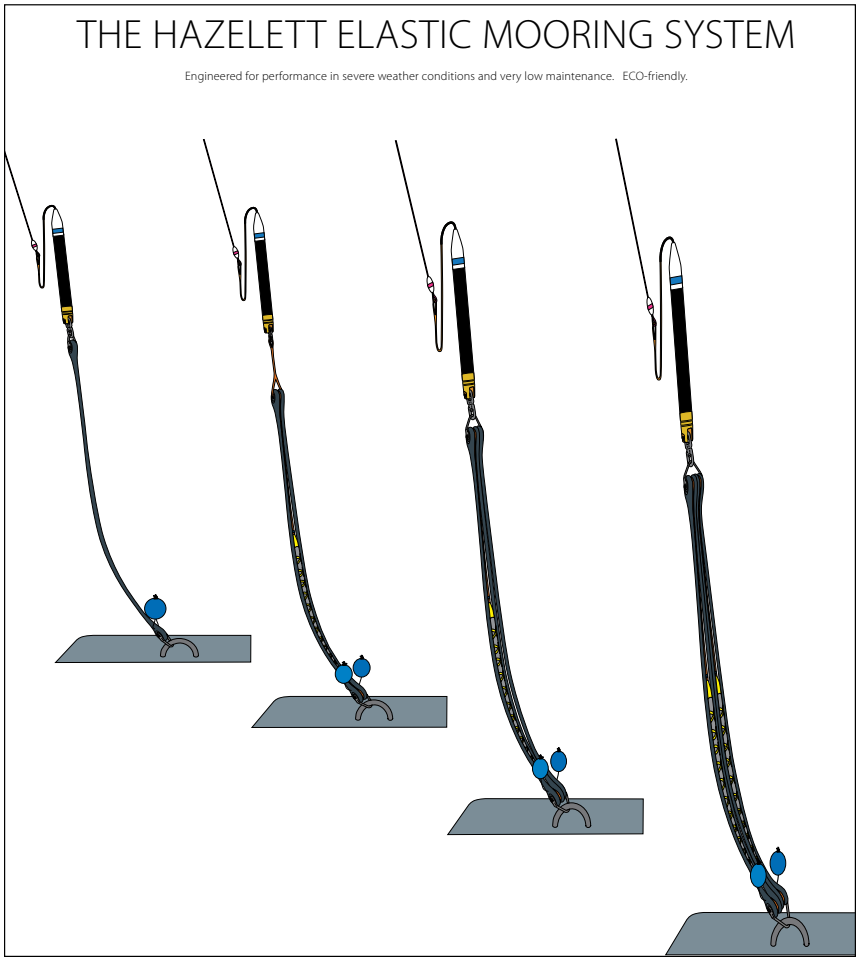
The Hazelett Elastic Mooring System is an advanced alternative to traditional ball and chain moorings. When riding out "The Hurricane of 38" and then Gloria in 1985, on two different vessels anchored with chain, Vermont-based inventor and industrialist Bill Hazelett had ample time to observe the stresses and motions of vessels anchored with chain in extreme weather.

Bill Hazelett was determined to develop an elastic mooring system that would reduce point loads on deck hardware, eliminate the jerking motion when chain becomes taut and keep the vessels pointed straight into the wind. Mr. Hazelett spent a lot of time and resources in the following years developing the Hazelett Elastic Rodes. Environmentally friendly mooring systems were not thought about in the early stages of the Hazelett elastic mooring development.

A typical chain mooring system usually has at least a 3: to 1: scope. When boats swing with wind and tidal changes, the chain on the seabed rakes the bottom killing the eelgrass. Shellfish and finfish need eelgrass to spawn and have cover for their young to hide in.

A Hazelett Elastic Mooring System connected to a Helix screw anchor floats above the seabed with a minimal footprint. Many New England harbors are requiring conservation moorings and Hazelett Marine is involved in several eelgrass restoration projects.

Hazelett Marine is the largest manufacturer of elastic mooring systems in the U.S.A. and thousands have been sold worldwide.



PRODUCT BENEFITS

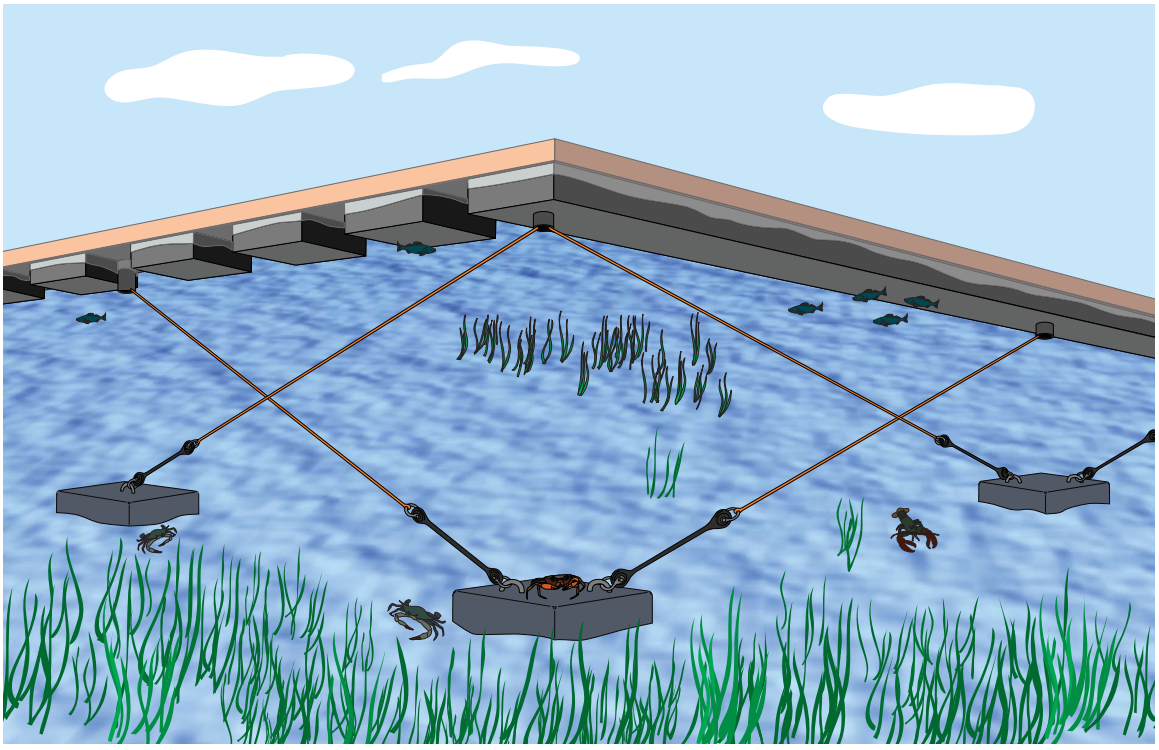
Environmental Conservation
The Hazelett Elastic Mooring System, connected to a block or Helix screw anchor, floats above the seabed with a minimal environmental footprint. Hazelett Marine is involved in several eelgrass restoration projects.

Point Load Reductions
Securing vessels with Hazelett Elastic Rodes will reduce point loads at connection points (from docks to anchors and from deck cleats to anchors) by approximately fifty percent.

Wind Load Reductions
Boats secured with Hazelett Elastic Rodes stay pointed directly into the wind with a more constant, gentle pull.

Increased Mooring Density
Hazelett Elastic Mooring Systems can be set up with as little as one-to-one scope at high water. More than twice as many boats can be moored in the same square footage compared to boats on chain with three-to-one scope.

More Gentle Dock Motion
Docks and wave attenuators anchored with Hazelett Elastic Rodes are tensioned at low tide, so they stay put at low tide. As the tide rises, the elastics stretch. Docks and wave attenuators secured with Hazelett Elastic Rodes have a more gentle motion and are easier and safer to walk on in rough weather.



SINGLE POINT MOORING SYSTEMS

The Hazelett Conservation Elastic Mooring System is an advanced alternative over traditional ball and chain moorings. From the anchor upwards, our system consists of galvanized hardware for attaching to the anchor or block, hard trawl floats to keep the components afloat, one or more elastic rodes, a spar buoy, and a stainless steel swivel.

We recommend Helix anchors or concrete blocks for securing to our elastic rode(s) system. We stock a custom top termination fitting for 1½" Helix anchor shafts, providing the easy connection of the elastic rode to a Helix anchor.

Instead of chain, our spar buoy is connected to an anchor by Hazelett Elastic Rode(s). The rodes are manufactured of cast polyurethane, with polyethylene thimbles pressed into the ends. The design is based on over twenty years of research and development. All Hazelett Elastic Rodes are inspected, serialized, and load tested at our plant.

Hazelett Marine makes two types of spar buoys:

1) The first type is made of 4" aluminum tubing with cast aluminum ends welded on. They can be ballasted with steel shot. They are recommended for use in fresh water only.

2) The second type is made of polyethylene. It is pre-ballasted with concrete and then filled with foam. This type of spar buoy has a pocket molded into the top that houses a stainless steel swivel, and it also has a tube through the center to allow a rope connection from the swivel to the elastic rode.

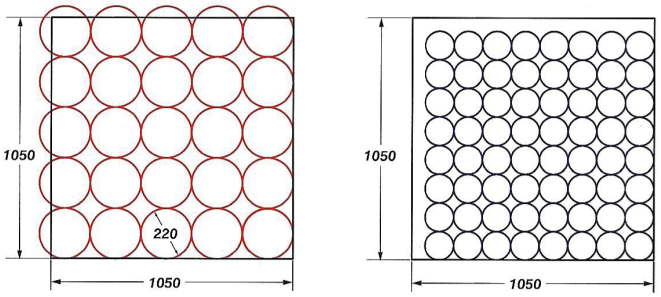
A protective boot can be added to protect the hull of the boat from the stainless steel high-strength swivel.

Our mooring systems can be left in year round, reducing costly winter removal and spring reinstallation. The spar buoy(s) also works as a "winter stick" that can slip under the ice.

Hazelett Elastic Moorings can increase mooring field density by about forty percent, since our mooring system can be installed with a scope as short as one-to-one instead of the three-to-one scope of the traditional ball and chain systems.

Mooring in twenty feet of water requires sixty feet of chain (based on the three-to-one scope) with the traditional ball and chain mooring system. That length of chain will have about 360 moving metal-to-metal connections that can wear and rust. On the other hand, the Hazelett Elastic Mooring has only one metal-to-metal connection-at the anchor. Yearly inspections are simplified with the Hazelett Conservation Elastic Mooring System and fewer repairs/replacements are needed.

MOORING GRID OPTIONS



There are usually 25 boats in a traditional mooring grid (left).

Up to 64 boats can fit in a Hazelett Marine mooring grid (right).

Shellfish and finfish need eel grass for spawning and for protecting their young. However, traditional chain mooring systems destroy eel grass and other aquatic vegetation when the chain rakes the bottom with the direction changes of winds and tides. With chain systems, water clarity is also diminished when the chain stirs up sediment, blocking precious sunlight to the plants. In contrast, the Hazelett Conservation Elastic Mooring System protects the sea bed because our elastic rodes are floated off the bottom. We have had many reports on the regrowth of eel grass and the repopulation of lobsters and scallops within two years of replacing chain systems with our elastic system.

RETAIL PRICES

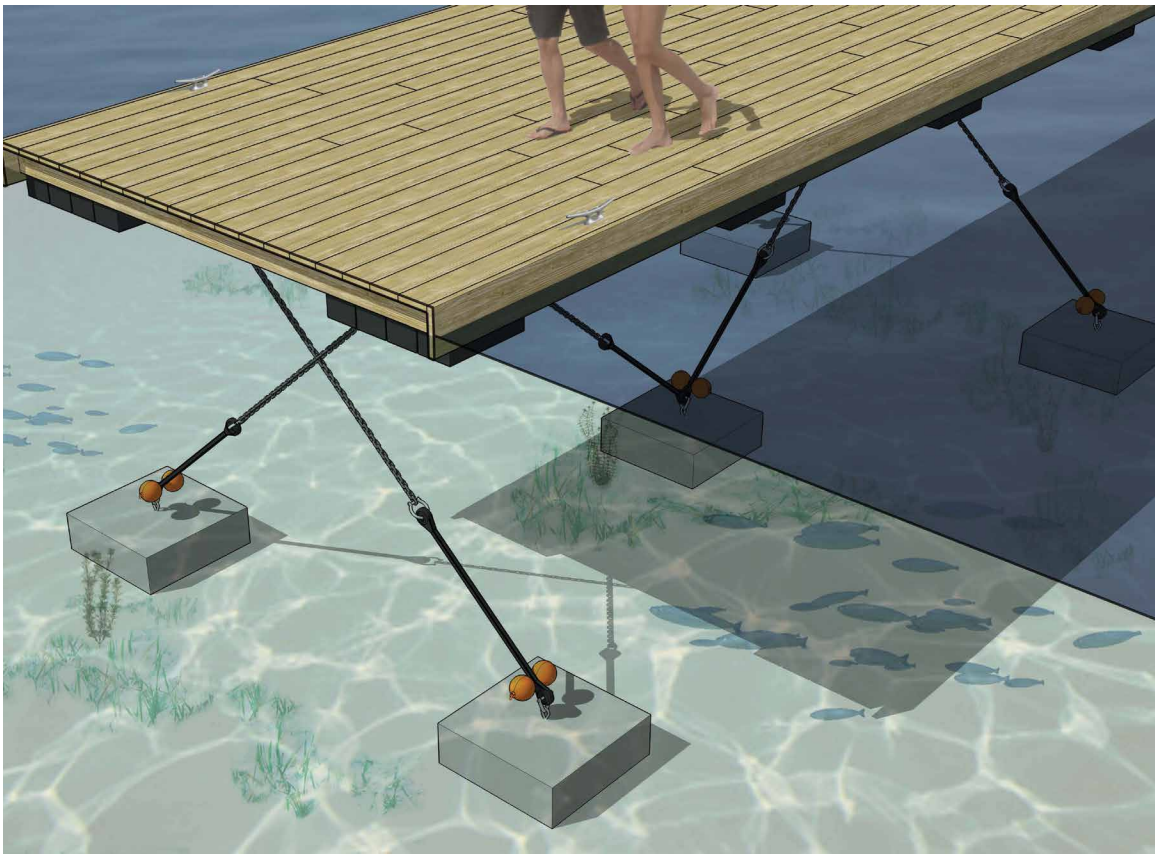
Item	Single	Double	Triple	Quad
10 ft rode assembly	$1,849	$2,552	$3,453	$4,223

*Other lengths and configurations available upon request
*Dealer pricing available upon request

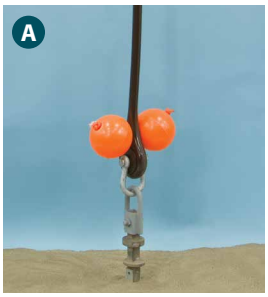
DOCKS AND WAVE ATTENUATORS

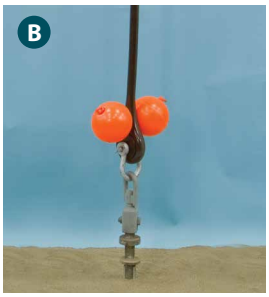
Docks and wave attenuators anchored with chains tensioned at high tide will wander at low tide when the chain becomes slack. When wind and waves build, chain-anchored structures will jerk violently as the chain becomes taut. Peak loads at the windward chain-to-dock connections can cause them to fail.

Docks and wave attenuators anchored with Hazelett Elastic Rodes (or a combination of elastic rodes and chain) are tensioned at low tide, so they stay put at low tide. As the tide rises, the elastics stretch. Docks and wave attenuators secured with Hazelett Elastic Rodes have a more gentle motion, reduced point loads, and are easier to walk on in rough weather.



OTHER SPECS AND QUICK REFERENCE





Instead of chain, our spar buoy is connected to an anchor by Hazelett Elastic Rode(s). The rodes are manufactured of cast polyurethane elastics with polyethylene thimbles. The design is based on over twenty years of research and development, and all Hazelett Elastic Rodes are inspected, serialized, and load tested at our plant.
We recommend Helix anchors or concrete blocks to secure our elastic rode(s) system. We currently have three top terminations for Helix anchors: a fixed type (A) for a 1¾" shaft; a fixed type (C) for a 1½" shaft; and a swivel type (B).

The Hazelett Spar Buoy (E) is a 6-inch diameter polyethylene tube that is filled with foam and concrete for ballast. Wave action does not have as much of an impact on our spar buoy as it does on a ball floating on the surface, so wear on the metal-to-metal connection between shackle and anchor is minimized. Our spar buoy has a pocket molded into the top that houses a stainless steel swivel (D) where bridles or pendants attach, and a removable boot covers the swivel to protect the boat's hull.

PERFORMANCE PARAMETERS FOR RODES

This column represents the four different sizes of our most popular elastic rodes. The loads are an average of two for each size. Loads are for single elastic rodes.	The long-term life of our elastic rodes has been previously determined with vigorous testing in the 30% stretch range.			Our elastic rode performance will not be affected with brief elongation in the 40% to 50% range.		The elongation of our elastic rodes beyond the range of 50% may occur briefly during uncontrolled and severe conditions. Engineering to stretch in this range as a normal occurrence is not allowed.				
5 FT X 1.75 (Length in Feet)	5.5 FT	6 FT	6.5 FT	7 FT	7.5 FT	8 FT	8.5 FT	9 FT	9.5 FT	10 FT
1.52M X 1.75 (Length in Meters)	1.67 M	1.82 M	1.98 M	2.13 M	2.28 M	2.43 M	2.59 M	2.74 M	2.89 M	3.04 M
Average Load (KGs)	54	122	175	215	251	278	303	323	342	361.51
Average Load (LBs)	120	268	385	473	553	613	669	711	755	797
Stretch %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
6.5 FT X 1.75 (Length in Feet)	7.15 FT	7.8 FT	8.45 FT	9.1 FT	9.75 FT	10.4 FT	11.05 FT	11.68 FT	12.35 FT	13 FT
1.98M X 1.75 (Length in Meters)	2.17 M	2.37 M	2.57 M	2.77 M	2.97 M	3.16 M	3.36 M	3.56 M	3.76 M	3.96 M
Average Load (KGs)	48	113	159	199	230	256	276	297	314	329.76
Average Load (LBs)	106	249	350	438	506	564	608	655	692	727
Stretch %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
8 FT X 1.75 (Length in Feet)	8.8 FT	9.6 FT	10.4 FT	11.2 FT	12 FT	12.8 FT	13.6 FT	14.4 FT	15.2 FT	16 FT
2.43M X 1.75 (Length in Meters)	2.68 M	2.92 M	3.16 M	3.41 M	3.65 M	3.90 M	4.14 M	4.38 M	4.63 M	4.87 M
Average Load (KGs)	56	114	162	201	235	263	284	306	323	339.96
Average Load (LBs)	124	252	357	444	517	579	626	674	713	749.5
Stretch %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
10 FT X 1.75 (Length in Feet)	11 FT	12 FT	13 FT	14 FT	15 FT	16 FT	17 FT	18 FT	19 FT	20 FT
3.04M X 1.75 (Length in Meters)	3.35 M	3.65 M	3.96 M	4.26 M	4.57 M	4.87 M	5.18 M	5.48 M	5.79 M	6.09 M
Average Load (KGs)	62	115	161	198	229	254	274	293	310	326.35
Average Load (LBs)	136	253	354	436	505	560	604	646	684	720
Stretch %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

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