

# 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 Rods (or a combination of elastic rods 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 Rods have a more gentle motion, reduced point loads, and are easier to walk on in rough weather.



# Hazelett Marine

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# Hazelett Marine

Elastic Mooring Systems – For Yachts, Docks, Wave Attenuators, Aquaculture Farms



# SINGLE POINT MOORING SYSTEMS



For 4-5 ton boats



For 10-16 ton boats



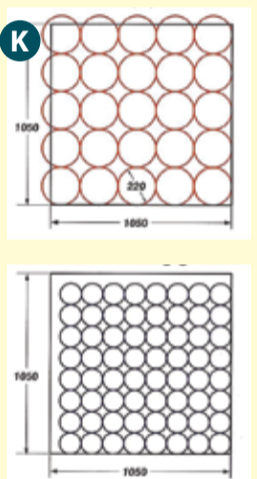
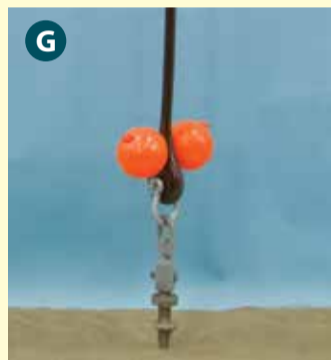
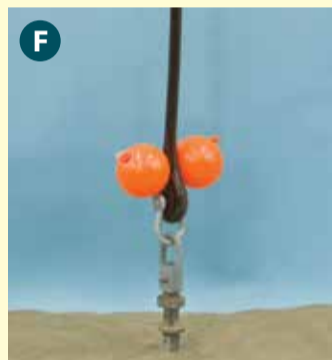
For 15-22 ton boats



For 25-35 ton boats



Rode Lengths



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

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

The Hazelett Conservation Elastic Mooring System (A-D above) is an advanced alternative over traditional ball and chain moorings.

The Hazelett Spar Buoy (J) 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, and, as a result, 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 (I) where bridles or pendants attach, and a removable boot covers the swivel to protect the boat's hull.

Instead of chain, our spar buoy is connected to an anchor by Hazelett Elastic Rode(s). The rodes (E) 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 (F) for a 1 3/4" shaft; a fixed type (H) for a 1 1/2" shaft; and a swivel type (G).

With the traditional ball and chain system, mooring in twenty feet of water will require sixty feet of half-inch chain (based on the usual three-to-one scope). That length of chain will have about 360 moving metal-

to-metal connections that wear and rust. On the other hand, the Hazelett Elastic Mooring, which can be set up with as little as a one-to-one scope, has only one metal-to-metal connection — at the anchor block. Yearly inspections are simplified with the Hazelett Elastic Mooring System and fewer repairs/replacements are needed.

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

Shellfish and finfish need eel grass to spawn and have protection for their young, but chain mooring systems destroy eel grass and other aquatic vegetation as the chain rakes the bottom when the wind and tide change direction. 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.

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 traditional ball and chain systems (K).