

PERMANENT MOORINGS

Permanent moorings, as distinguished from ordinary ground tackle in daily use, consist of the gear used when boats are to be left unattended for long periods, as at yacht club anchorages. The traditional system often consists of a mushroom anchor, chain from the anchor to a buoy, and a pennant of stainless steel or nylon from the buoy to a light pickup float at the pennant's end.

Mushroom anchors, especially the type with a heavy bulb cast in the shank can, through suction, develop great holding power under ideal conditions, if they have enough time to bury deeply into bottoms that permit such burying. Unfortunately, ideal bottom conditions are not always present. Often large cast concrete blocks, similar to those used by the Coast Guard to moor buoys, are put down in lieu of mushroom anchors.

Complicating the problem is the fact that anchorages are becoming increasingly crowded, so that boats cannot have adequate scope because of overlapping swinging circles. Add to this the threat of abnormally high hurricane tides that reduce scope to a less-than-safe ratio, and you have the explanation for the devastation wrought by several hurricanes along the Atlantic Coast.

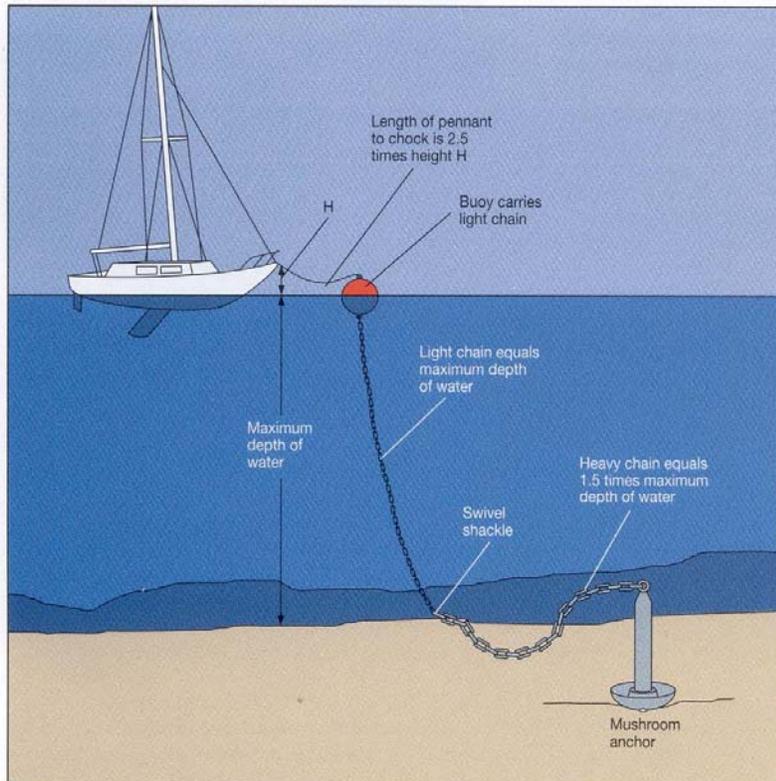
Typical systems

The problem faced by the Manhasset Bay Yacht Club at Port Washington, New York, is typical. Here about 200 boats are moored in a limited space. If each boat could use a length of chain equal to five to seven times the depth of water (maximum 30 feet/9.1 meters), safety would be assured. However, this would require a swinging radius of several hundred feet for each boat, which is not possible. After exhaustive study the Manhasset boaters prepared a set of recommended standards. A generally similar system was adopted by the Lake Michigan Yachting Association, as shown below.

Guest moorings are often available at yacht clubs and some marinas. The launch operators will know which of those not in use for the night are heavy enough to hold your boat. As a rule, it's easier and safer to pick up such a mooring. In some places, a charge may be made.

A multiple-anchor system

One hurricane that ravaged the North Atlantic Coast swept through an anchorage in the New York area and tore almost every boat from its moorings. Only two survived. What these two had in common was an "unconventional" mooring sys-



In this diagram of mooring practice recommended by the Lake Michigan Yachting Association, total scope is the combined length of heavy chain, light chain, and pennant. Minimum space between moorings should be 1.25 times total scope plus boat length.

<http://www.westmarine.com/webapp/wcs/stores/servlet/WestAdvisorView?langId=-1&storeId=11151&catalogId=10001&page=Mooring-Systems>

Constructing a Permanent Mooring

A permanent mooring must remain secure for long periods while unattended, occasionally under adverse conditions. For peace of mind, it should be properly sized for the job. Below are the basic components.

Anchor

The most common type of mooring anchor is the mushroom, which, under ideal conditions, can dig in, create suction and develop good holding power. A weight of 5-10 times boat length is a good rule of thumb. The heavier the better, as long as you don't have to move it. Heavy objects like concrete blocks and engine blocks can't dig in, so their holding power is not as great.

Chain

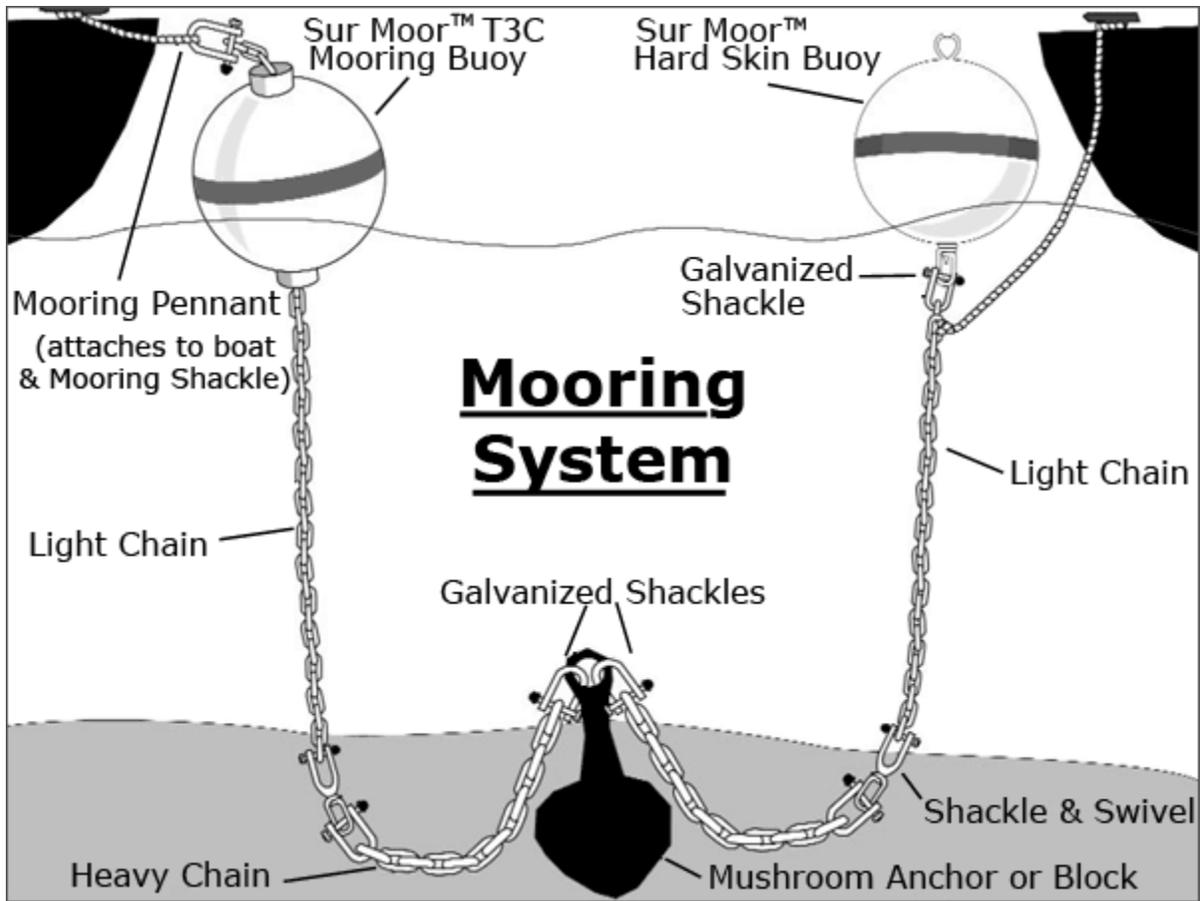
Chapman's recommends two sections of galvanized chain: a heavier, primary chain and a lighter, secondary chain. The primary (ground) chain lies on the bottom. Its length should be 1 1/2 times maximum water depth. The secondary (riding) chain, is connected to the ground chain with a galvanized shackle or swivel. It's usually half the size of the ground chain and equal in length to maximum water depth. The heavier chain is not used for the entire run so that the mooring buoy does not have to support an excessive amount of weight. Chain should be as large as possible-make the riding chain at least double the size of the chain on your anchor rode.

Buoy

The buoy must have about twice as much flotation as the suspended chain has weight in order for it to ride high enough in the water to be visible. The Taylor T3C buoys on this page allow you to pass the chain through the center of the buoy, and attach the pennant on top.

Pennant

The pennant attaches the chain to the boat. Large-diameter 3-strand nylon line is used because its inherent elasticity allows it to act as a shock absorber. Polyester line or stainless steel wire is preferred by some for better chafe resistance. Length should be about 2 1/2 times freeboard. Diameter should be as large as is practical-it must be able to fit through bow chocks and around a bow cleat. Chafe protection is recommended for the point where the pennant passes through a chock. A light pick-up buoy at the boat end makes it easy to grab the pennant.



MOORING



Atlantic Highlands Yacht Club Mooring Recommendations

Approved by the Board of Governors on April 18, 2002

AHYC recommended minimum sizes for anchors,
chain and pendants.

Boat Length	Anchor Size	Chain Size	Pendant Diameter
24' or less*	10 lbs per ft	1/2	5/8
25' to 27'	10 lbs per ft	1/2	5/8
28' to 30'	11.5 lbs per ft	5/8 & 1/2	3/4
31' to 35'	12.5 lbs per ft	5/8 & 1/2	3/4
36' to 40'	14 lbs per ft	3/4 & 5/8	1
41' & up	15 lbs per ft	3/4 & 5/8	1

* For day sailors and craft under 22', please consult Atlantic Highlands Harbor guidelines.

Mooring Inspections

All moorings should be inspected at least annually. This is probably best done in August. Chains tend to wrap around anchor shafts reducing scope. Maximum scope is needed during storm season. Chains and fittings should be replaced as soon as any wear is noticed. Other clubs are recommending chain replacement at a loss of 10% in diameter. We feel this to be a reasonable tolerance. Inspecting late in the season will allow you to make emergency repairs before the heavy storms arrive. This also gives time to schedule spring maintenance. Mooring chains will last much longer if dropped to the bottom for the winter.