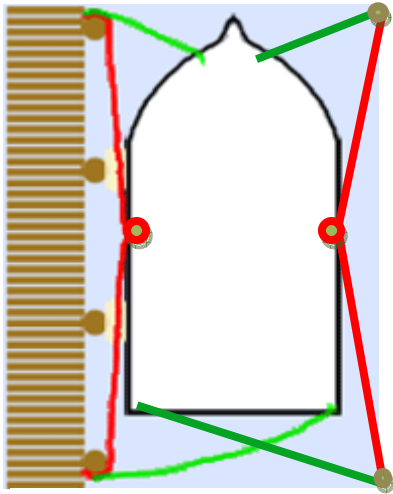


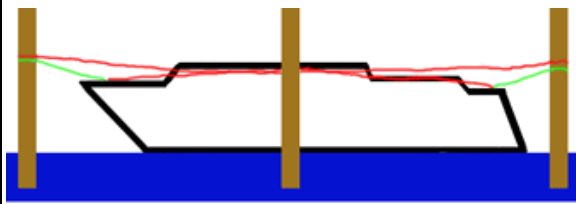
So how do you tie up your boat using Spring Lines?

The answer is to use **spring lines** to prevent fore and aft motion, and **long bow and stern lines** to prevent the boat swinging in and out. It also helps to attach dock lines to cleats or pilings that are at the same level as the cleats on the boat at mid tide, if this is possible.

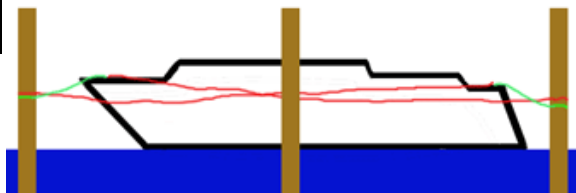


The powerboat lies against two pilings, and has a midship cleat. Spring lines are run fore and aft from that cleat to pilings off the bow and stern.

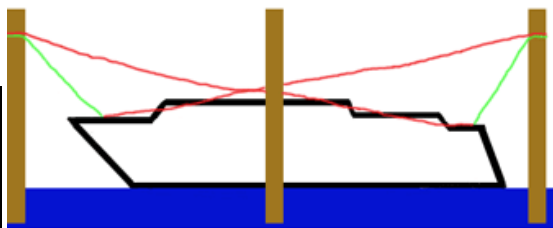
A boat with properly tied spring lines, and one with improperly tied spring lines: Properly Tied Spring Lines and Bow and Stern Lines



A view from the side shows how a boat with **properly tied spring lines and bow and stern lines** will look at low tide and high tide. Note that the lines are attached to the piling **at the level of the boat during a medium tide**, so that they rise up to the boat for high tides and fall down to it for low tides.

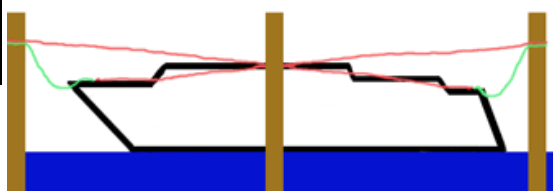


A boat with properly tied springlines at low tide and high tide. The lines are attached to the piling at the level of the boat during a medium tide, so that they rise up to the boat for high tides and fall down to it for low tides.



Lines Too High

The next illustration shows a boat with the lines connected **too high** on the pilings. At low tide, the lines are taut, and the boat will sit still at the dock. At high tide, however, the boat has risen up toward the points where the lines are attached to the pilings, and the **bow and stern lines are slack**. With the much longer spring lines, as you can see, it makes far less difference if they



are attached at the wrong height on the piling. **The shorter a dock line must be, the more important it becomes that the line be attached to the piling so as to be level with the boat cleats at mid-tide.**

With properly set **spring lines** and **bow and stern lines**, any boat can be made to rest alongside a piling or set of pilings. Properly deployed fenders or **fenderboards** will protect the boat from the dock no matter what tide, wind, or current condition may come along.

Controlling Fore and Aft Movement of the boat

These lines will **prevent the boat from moving forward or aft**, keeping the fenders (which are hung from stanchions or lifelines on most boats) in place between the pilings and the boats. As the tide goes up and down, **the long spring lines can remain fairly tight**, since their angle to the dock (and consequently their length) will not change significantly.

The two spring lines (shown in red in the picture) do a great job of preventing the boat from sliding forward and aft along the dock, but they do next to nothing to **prevent the bow and stern from swinging in and out**. To do that, it is necessary to attach bow and stern lines, and those lines should also be run as long as possible, to pilings set far forward and astern of the boat. With **short bow or stern lines** attached to nearby pilings, the tidal changes will result in **too much slack** at high tides, and/or the boat hanging from **taut lines** at low tides.

Longer bow and stern lines set to pilings further away from the boat can be tied more tightly for the same reason long spring lines work well with changing tides: **the angle to the dock changes less as the line used is made longer**, so the length of the line can remain virtually constant through tide changes.

The powerboat in the illustration has a **stern line attached to an outside cleat on the stern of the boat** rather than to an inside cleat, which is another way of using a longer line and getting a better angle to the dock. The bow and stern lines are not as long as the spring lines, particularly in the case of the powerboat in the illustration, and **must have a bit of slack** to account for tide changes, but they will still prevent the boat from swinging out from the dock too much.