

Dock line made fast to a yacht's cleat — neat, flat turns and the tail led clear. *1

LINE HANDLING / PRACTICAL GUIDE

Dock and Mooring Lines

Secure alongside, control every direction of movement, and protect the boat through wind, surge and tide.

A boat at the dock wants to move in three directions: forward, aft and away from (or into) the pier — and up and down with the tide. A good line plan restrains each movement with the right line, lets the boat ride without snatching, and keeps the hull off the dock. The right arrangement depends on the dock, the tide range, the wind and current, and where the cleats are on your boat.

AT A GLANCE

Bow line Holds the bow in; leads forward from the bow cleat.	**Stern line** Holds the stern in; leads aft from the stern cleat.
Forward (bow) spring From a forward boat cleat aft to the dock — stops the boat moving ahead.	**Aft (stern) spring** From an aft boat cleat forward to the dock — stops the boat moving astern.
Breast lines Short, roughly perpendicular — hold the boat in, but need tide allowance.	**Fenders** Placed at the widest point of the hull and adjusted to the dock height.

*General guidance only. Always follow vessel manuals, current regulations and the judgment of the vessel's master. * See photo & reference credits.*

The Basic Line Plan

For a typical side-tie, start with four lines: a bow line, a stern line and two spring lines. Springs do most of the work of holding position fore-and-aft, and because they run at a shallow angle along the dock, they can be long — which is exactly what allows the boat to rise and fall with the tide without the lines going bar-tight or slack.[1]

TYPICAL SIDE-TIE LINE PLAN (PLAN VIEW)

Springs cross; gold = fenders. Long springs allow the boat to rise and fall with the tide while staying in position.

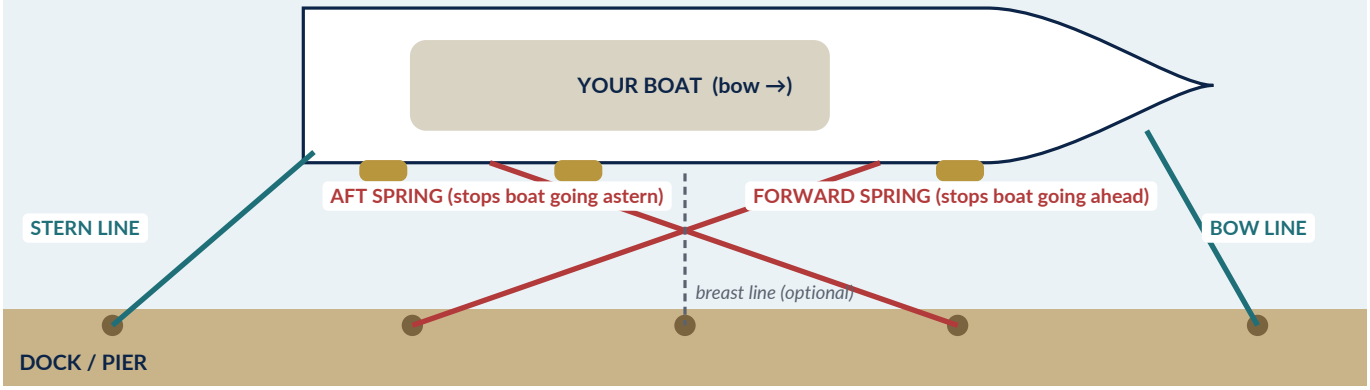


Diagram: Atlantic Yacht Delivery. Line names vary by region; "forward spring" here means a spring that prevents forward motion.

Line	Leads from → to	Controls	Notes
Bow line	Bow cleat → dock cleat ahead of the bow	Bow in/out; some forward motion	Lead it well forward, about 45°, so it doesn't act only as a breast line.
Stern line	Stern cleat → dock cleat aft of the stern	Stern in/out; some aft motion	Cross stern lines in a slip to gain length and tide allowance.
Forward spring	Forward/midship boat cleat → dock aft	Forward movement	The key line against wind or current from astern — and for springing off.
Aft spring	Aft/midship boat cleat → dock forward	Aft movement	Also used for springing the bow or stern out when leaving.
Breast line	Boat cleat → dock directly abeam	Movement away from the dock	Short lines need constant tending in tidal water; often omitted.

Sizing Lines and Choosing Material

Nylon (three-strand or double-braid) is the standard dock-line material because it stretches and absorbs shock loads. Polyester stretches far less and is better suited to running rigging; do not use it for dock lines on a boat that will see surge. A common rule of thumb is about **1/8 inch of line diameter for every 9 feet of boat length**, sized up for heavy displacement, exposed berths or storms.[2]

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Boat length	Typical nylon diameter	Bow / stern line length	Spring line length
Up to 27 ft	3/8 in	About 2/3 of boat length	About boat length
27–35 ft	1/2 in	About 2/3 of boat length	About boat length
35–45 ft	5/8 in	About 2/3 of boat length	About boat length
45–60 ft	3/4 in	About 2/3 of boat length	About boat length, or more
60 ft +	7/8–1 in	Per vessel / marina guidance	Per vessel / marina guidance

These are starting points. A heavy trawler or sportfisher in an exposed slip may need one size larger. Always carry at least two extra lines long enough to serve as a spring or tow line.

Making Fast to Cleats, Pilings and Bollards



Dock cleat: lead the line to the far horn and take a turn around the base before the figure-eights. *2



Spliced eye dropped over a bollard — simple, quick, and easy to release from the boat. *3

Securing on a cleat

01	Lead the loaded part fairly to the cleat; take a full turn around its base, starting at the far horn.
02	Lead across the top and under the far horn, then cross back under the opposite horn to form a figure-eight.
03	Finish with a single locking hitch, dress the turns flat, and coil or flake the tail clear.

Eye through a dock cleat (the “pass-through”)

01	Use an appropriately sized spliced eye, or a correctly tied bowline.
02	Feed the eye up through the opening beneath the cleat horns, then bring it back over both horns and pull taut.
03	Check the eye cannot lift off, the line has a fair lead, and the dock hardware is sound. Adjust length from the boat cleat.

Pilings

On a fixed pier with large tidal range, drop an eye over a piling or use a round turn and two half hitches, and set the line long enough to allow for the full tide. If the eye can ride up a slick piling, add a turn or use a piling hitch below a fitting. Where two boats share a bollard, pass your eye up through the other boat’s eye before dropping it over (“dipping the eye”) so either line can be removed without disturbing the other.

Allowing for Tide, Wind and Surge

- Check the tide range before you set lines. On a fixed dock, a short line set at low water can hang the boat or pull a cleat out at high water.[3]
- Longer lines at a shallow angle allow more vertical movement than short lines at a steep angle. Springs are your best friend in a tidal berth.
- In a floating-dock marina the dock rises with the boat, so lines can be shorter and snugger.
- If wind or current is pushing you off the dock, the bow and stern lines and springs take the load; if it is pinning you on, the fenders and fender boards do the work.
- Add chafe protection wherever a line crosses a fairlead, chock, toe rail or dock edge. Chafe, not breaking strength, causes most dock-line failures.
- Snubbers or rubber mooring compensators reduce shock loads in surge. Check them regularly; they wear out.



Dock cleats vary in size and condition — inspect fastenings before relying on them. *4



A yacht coming alongside: crew should have lines led, coiled and ready before the final approach. *5

Fenders

- Place fenders at the widest part of the hull, and at the height where the hull meets the dock or pilings, not on the waterline.
- Against pilings, a fender board (a plank hung outside two fenders) bridges the piling so the fenders cannot roll off.
- Tie fenders with a clove hitch backed by a half hitch, to a stanchion base or rail, and readjust after the tide changes.
- Bring fenders aboard before getting under way; dangling fenders look careless and can be lost.

Storm and Hurricane Preparation

WHEN A NAMED STORM THREATENS

Double up every line, using lines one size larger where possible, and add extra springs. Use the longest practical lines so the boat can ride a storm surge. Protect every chafe point. Remove canvas, windage and loose gear. Follow your marina's hurricane plan and your insurer's requirements, and decide early whether hauling out or moving the boat is safer.[4]

Captain's Checklist

- Lines led fair with no sharp edges; chafe guards in place.
- All four primary lines set; springs adjusted to hold position.
- Tide range checked; lines adjusted for the next high and low water.
- Fenders at the right height; fender boards at pilings.
- Spare lines aboard and accessible.
- Shore power cord with a drip loop and not acting as a dock line.
- Never assume a line length remains safe through a large tide change or a wind shift — check the boat after any significant change.

Further Reading & Official Sources

[1] USCG Boat Crew Seamanship Manual — Mooring and line handling — https://www.uscgaux-ocnj.org/Training/Crew%20Manuals/BOAT%20CREW%20HANDBOOK%20-%2016114.4A_Seamanship%20Fundamentals.pdf#page=40

[2] BoatUS — Dock lines and docking guidance — https://www.boatus.com/expert-advice/expert-advice-archive

[3] NOAA Tides & Currents — tide predictions for your harbor — https://tidesandcurrents.noaa.gov/

[4] BoatUS Hurricane Preparation Guide for boat owners — https://www.boatus.com/expert-advice/safety-and-prevention/hurricanes

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*2 Boat Cleat.jpg — Roman Tokman. License: CC BY-SA 4.0. Wikimedia Commons: https://commons.wikimedia.org/wiki/File:Boat_Cleat.jpg

*3 Bollard, mooring line, Malmö 2026.jpg — Lars A. License: CC BY-SA 4.0. Wikimedia Commons: https://commons.wikimedia.org/wiki/File:Bollard,_mooring_line,_Malm%C3%B6_2026.jpg

*4 Cleat Tie-Down Point on Lake Dock for Boats (29617729357).jpg — Tony Webster from Minneapolis, Minnesota, United States. License: CC BY 2.0. Wikimedia Commons: https://commons.wikimedia.org/wiki/File:Cleat_Tie-Down_Point_on_Lake_Dock_for_Boats_(29617729357).jpg

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