

All about boats

1. The basic boat
2. Skipper and Crew

Skipper

1. SAFETY SAFETY SAFETY

Make sure your crew knows where to find and how to use:

- Life vests
- Fire Extinguishers
- VHF Radio
- First Aid Kit
- Life Ring

2. PROPER VESSEL OPERATION
3. MAINTENANCE OF SYSTEMS
4. TALK TO YOUR CREW
5. PLANNING
6. SHIPBOARD HARMONY

Crew

- Make sure you know where all safety equipment is and how to use it. This includes: Personal Floatation Devices (PFD), Fire Extinguishers, Marine Radio, First Aid Kit, and Life Ring.
- If your skipper doesn't explain all this to you, just ask.
- If you can't swim, make sure you tell your skipper.
- Make sure your skipper discusses and demonstrates man-overboard (MOB) procedures (just in case).
- Listen to the skipper
- SHARE 'DA WORK

3. Federal requirements

Before You Set Sail

1. Sailing checklist
 - Weather report
 - Open hatches for ventilation
 - Check bilges and pump
 - Make sure there is one PFD for each person on board, a Type IV and all essential safety equipment (flares, fire extinguishers, registration)
 - Stow all gear
 - Make sure horn is operational
 - Plan course
 - Check rigging and sails
 - Assign jobs
2. Attaching the sails
3. Rigging
4. Winches

Sailing

1. What makes a boat sail

It is fairly simple to explain how a sailboat sails when going downwind (when the wind is behind you.) You simply let the sails out as far as they will go and the wind pushes on them and the boat's hull follows along. However, when the wind is coming from the side there are some special physics at work.

The force that the wind transfers to the sails actually makes a boat move forward for much the same reason a plane flies. If you were to look down on a sailboat from a helicopter you would see what looks like an airplane's wing, except standing on end.

The air moving across the sails, like air moving across an airplane wing, creates a force called lift. A small amount of this force aims aft and actually pushes the boat forward and some of the force is lost due to friction as it moves over the sail. However, most of the force is sideways which tends to make the boat move sideways away from the wind.

The keel or centerboard keeps the boat from being pushed sideways by the wind. The resistance from the hull and the keel translate the lifting force to forward motion.

If you did not have a keel or centerboard the boat would simply move sideways away from the wind. However, with a well-shaped keel the boat will sail mainly forward while sliding slightly to leeward (away from the direction the wind is blowing). The force works on the keel like a thumb on an orange seed. If you put an orange seed on a table and place your thumb on it and push down, it will squirt forward. The keel, which should be shaped similar to the orange seed, does the same thing when a sideways force is placed on it.

2. Points of sail
3. Getting the boat moving
4. Reaching (wind from the side – 6 points of sail), Running (wind from astern – 3 positions) and close hauled/beating (wind from ahead – 2 position)
5. Jibing (wind from behind) and Coming About/Tacking (wind from front)

Safety

1. PFDs

Type I (Off-Shore Life Jacket)

Type I PFDs are best for all water types, such as the open ocean, if you are in rough or remote water. Type I PFDs should be used if you are in a location where you would have to wait for rescue to arrive. Due to this, Type I PFDs are used as the “abandon ship” life jacket you see on commercial vessels. The minimum amount of buoyancy required for Type I PFDs is 22 lbs.

Type II (Near-Shore Buoyant Vests)

If you are in a location where you have a good chance of being rescued quickly, a Type II life jacket is appropriate. Type II PFDs are good for general boating activities and are meant for calm inland waters. Avoid using this life jacket if you are heading out into the ocean or rough seas. The minimum amount of buoyancy required for Type II PFDs is 15.5 lbs.

Type III (Flotation Aids)

A Type III PFD is also meant for calm, inland waters where you have a good chance of being rescued in a timely fashion. Do not use this kind of flotation device for rough seas or the open ocean. Type III PFDs are meant for general boating, or for specific water-sport activities, such as kayaking, water skiing, etc. The minimum amount of buoyancy required for Type III PFDs is 15.5 lbs.

Type IV (Throwable Devices)

Throwable devices or Type IV PFDs are devices that you throw to someone overboard, who is in distress. You do not wear this type of PFDs, so having wearable life jackets on board is still required. Type IV PFDs include horseshoe buoys, boat seat cushions, and ring buoys. The minimum amount of buoyancy needed for Type IV PFDs is 16.5 lbs.

Type V (Special Use Devices)

Special use devices or Type V PFDs are only used for special purposes and situations and are usually have their limits of use on the label. Type V PFDs are typically used for boardsailing, kayaking, commercial vessels, and law enforcement. Special use devices are used for man overboard situations and also include hybrid inflatables, which can be inflated on demand. The minimum amount of buoyancy required for Type V PFDs is 15.5 – 22 lbs., while hybrid inflatables have a buoyancy of 22 – 34 lbs.

2. Harnesses and crotch straps
3. Clothing
 - Wicking is good!
 - Layering.
 - Stay away from cotton
 - Leave things that can get caught at home.
 - Rain gear!
4. Deck safety -
 - Keep low with knees bent.
 - *'One hand for the boat one hand for yourself'*
 - Close the doors

Knots

Bowline

The bowline almost defines sailing because of its versatility, usefulness, and strength. Since it's a popular knot there are many ways to tie it but you only need to know one. Click image for larger version.

Uses:

- Creates a temporary (as opposed to a permanent eye splice), non-slipping loop in the end of a line. This loop can then be dropped over a piling for docking.
- Tie any two lines together with interlocking bowlines.
- Tie jib sheets onto the clew of the jib.
- Tie a bowline on a bight for a quick bosun's chair.

Round Turn and Two Half Hitches.

This is a great, highly useful, and reliable knot. It is a constrictor knot meaning the tighter you pull on the line the tighter the knot gets. Also, it is one of the very few knots that can be tied or untied with tension in the line. Doesn't jam. Doesn't slip. Click image for larger version.

Uses:

- Secures a dock line to a piling.
- Finishes a line to an object when you want to keep tension in the line.

Cleat Hitch

This knot has one and only purpose but that is a mighty one; Securing a line to a cleat. Usually best to wrap at further end of cleat first then finish knot with bitter end on your side of the cleat.

Uses:

- Secures a line to a cleat.

Rolling Hitch

A knot used to take the strain off another line or object. This second line always runs parallel to the line or object it is tied to. Can also be tied to itself to create a non-slipping loop. Click image for larger version.

Uses:

- Moves tension from one line or object to another line.
- Ties a snubber line to an anchor chain.

Square Knot

Also called a reef knot. Useful whenever you want to tie two lines together of equal diameter but will slip so never use it for critical loads. Instead, use a sheet bend or tie two interlocking bowlines. Click image for larger version.

Uses:

- Tie two lines together of equal diameter.

Figure Eight

This is the knot to tie in the end of a sheet or other line as a stopper. This prevents the line from running out through a block or line locker and escaping from you. Click image for larger version.

Uses:

- Stopper knot.

Clove Hitch

Knot for securing a line to an object but will slip and will jam so never use it for critical loads. Click image for larger version.

Uses:

- Tying fenders to lifelines. To increase strength add two half hitches around the standing part. Or, just tie a round turn and 2 half hitches to begin with.
- Temporary mooring knot. Quick to tie but not to be trusted for any length of time.

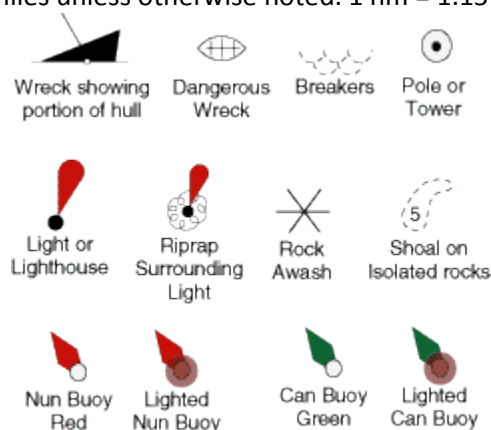
Flemish Coil

Not a knot at all but an attractive way to coil excess line on the dock or boat. Coil the line by starting with the end that will be at the center, twist this end clockwise or counterclockwise until you've taken up all extra line.

Maps & Charts

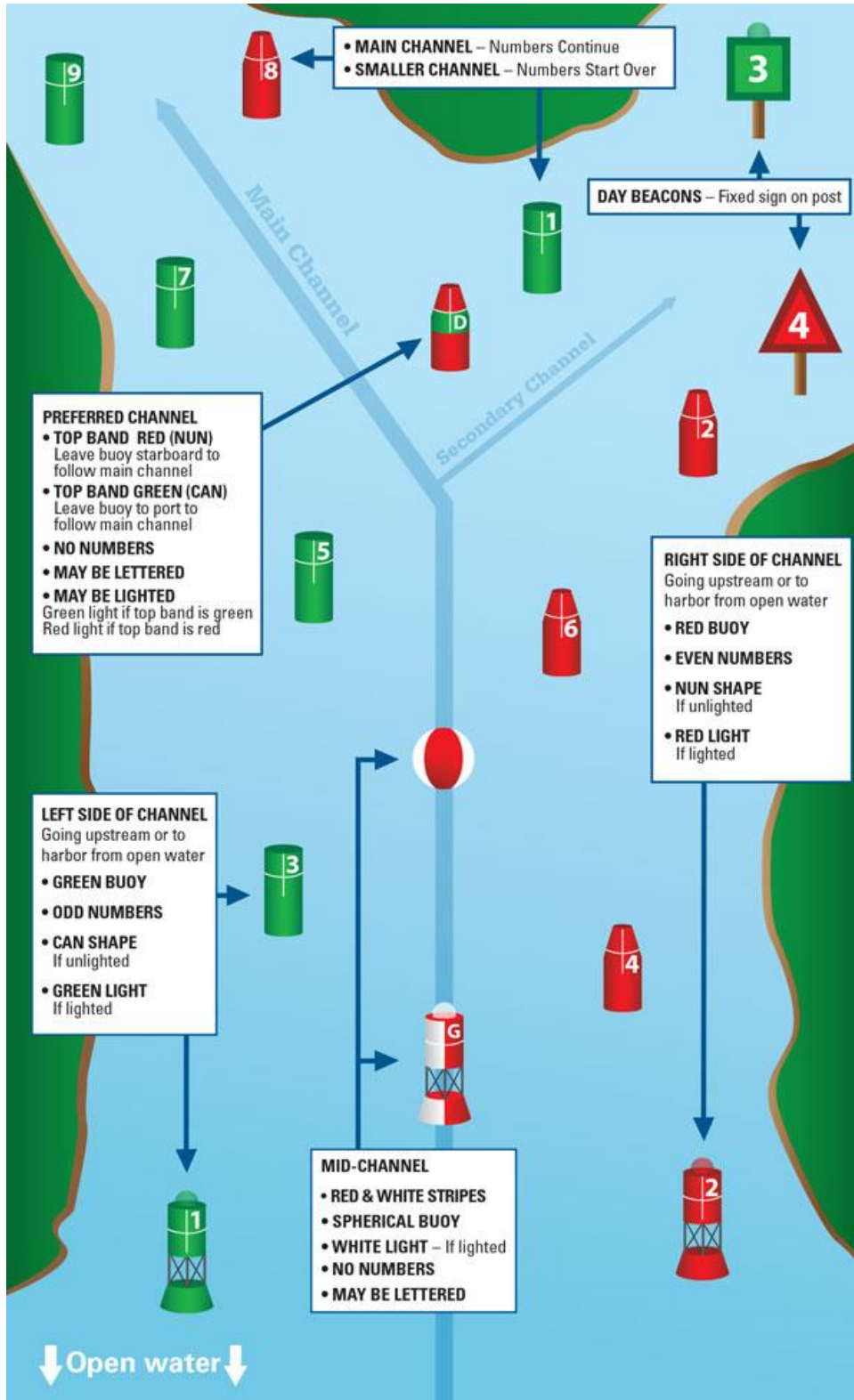
Chart symbols

- **Soundings** – depth symbols in fathoms unless otherwise noted. 1 fathom = 6'
- **Distance** – In nautical miles unless otherwise noted. 1 nm = 1.15 miles



ATONs (Aids to Navigon)

- **Buoys** – floating ATONs identified by color
 - CANS – unlighted green with odd numbers
- **NUNs** – unlighted red with even numbers
- **Beacons** – fixed ATONs



Notes