



# Section VII: Part D – Seamanship – Knots and Emergencies

# Lesson Outline



- Lesson Objectives
- Introduction
- Knots
- Magnetic Compass
- Coping with Emergencies
- Summary
- Quiz

# Lesson Objectives



- In this lesson you will learn about some must know knots and when to use them.
- You will also go over what to do when encountering particular emergencies while aboard your vessel.

# Introduction

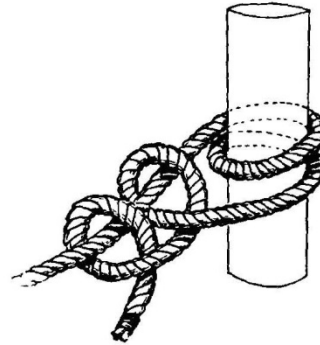


- Seamanship encompasses the knowledge and skill pertaining to the navigation, safety, and maintenance of your vessel.
- Good seamanship and safety go hand in hand!



## Figure 8

Commonly referred a “Stopper Knot”  
Tied in the end of a rope to stop it running through a fairlead or rope clutch



## Round Turn and 2 half hitches

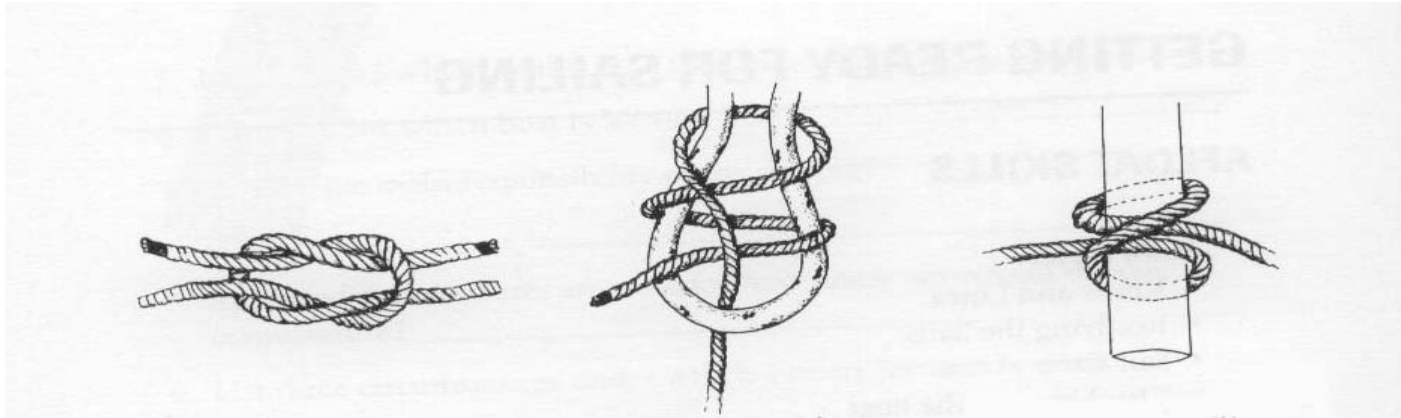
Tied to a spar or railing . Usually used for tying fenders to the side of the vessel toe rail or lifelines. Also used for tying a dock line to a ring or rail



## Bowline

Forms a non slip loop  
Most commonly used for tying sheets to the clew of a sail

# Knots & Uses



## Reef Knot

Used to tie the ends of lines of equal size  
Commonly used to join to ends of the same line or sail tie when securing mainsail to the boom  
Can also be used when securing the clew cringle of a reefed sail to the boom

## Double Sheet Bend

Used for tying together two lines of unequal diameter  
It is often used for extending a line that is too short

## Clove Hitch

Most commonly used for tying the tiller off in the centre of the cockpit

# Knot Tying Tutorial



- Refer to the following website to practice the knots discussed in the previous two slides:

<http://www.animatedknots.com/indexboating.php?LogoImage=LogoGrog.jpg&Website=www.animatedknots.com>

# Magnetic Compass



## Things **not** affecting the compass

- Aluminum
- Brass
- Bronze
- Plastics or Fiberglass

## Items affecting magnetic compass

- Iron
- Steel
- Some Stainless steels
- Motors and other electrical devices like instruments
- Other magnets



# Dealing with Emergencies



- Unexpected events can range in degree of seriousness from mere annoyances to genuine emergencies.
- You must know the immediate action to be taken in each instance below.
- Correct action taken promptly can prevent a bad situation getting worse.

The next slides describe the actions to take for specific emergency situations.

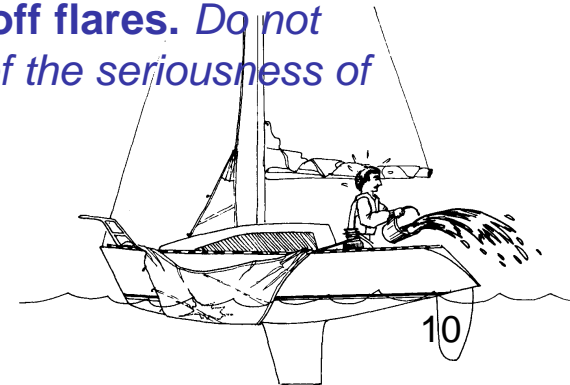
# Emergency – Springing a Leak



**IMMEDIATELY** — Bail or pump to determine the source and extent of the problem.

**THEN:**

- Put on PFDs and ready flares in case you have to abandon ship.
- Reduce speed.
- When you have found the source of the leak, try to stop or slow it. *It may well be a simple matter of closing or plugging a seacock or re-clamping a loose hose. Perhaps the water tank has burst (taste the water to see if it is fresh). If the leak is near the waterline you may be able to heel the boat to the opposite side to raise the area of the leak out of the water. A more serious leak may be plugged with blankets and cushions braced against the hull with paddles or boathook. If the leak is forward of the beam, drape a sail around the bow so the water pressure caused by the forward movement of the boat will hold the sail tightly against the hull.*
- If you are sinking, send a distress call on the radio and set off flares. *Do not abandon ship until the last possible moment. If you are unsure of the seriousness of your situation, radio the Coast Guard, who will advise you.*
- Beach the boat.



# Emergency – Steering Failure



## **IMMEDIATELY** — Devise other control methods.

### **Options to consider:**

- Replace the tiller or wheel, if appropriate, with your emergency tiller.
- If the boat has an outboard motor for auxiliary power, turn it on and steer by turning the engine with the steering handle.
- A well-designed boat can be steered by adjusting the sails to create lee helm and weather helm.

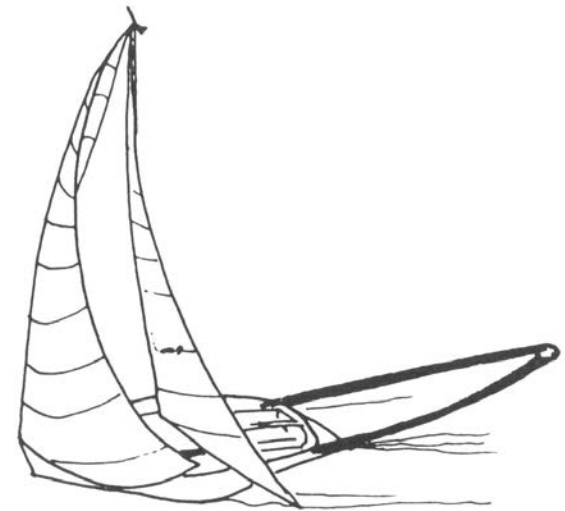
- *To turn away from the wind, create lee helm by hardening the foresail and easing the mainsail.*
- *To turn into the wind, create weather helm by easing the foresail and hardening the mainsail.*
- *To sail a straight course, adjust the sails for a neutral helm.*

*This method of steering can be very satisfactory and you can tack and gybe and sail on all points of sail.*

# Emergency – Steering Failure



- Attach a light weight to the center of a long line. Trail the line with its ends cleated, one on each side of the stern. To steer to port shorten the line at the port cleat; to steer to starboard shorten the line at the starboard cleat. This method only works if you are sailing downwind.
- If you cannot steer accurately enough to dock the boat, sail or motor to the harbour entrance and call for assistance to your berth.



**Using a trailing weight to steer downwind**



## **IMMEDIATELY** — Consult the chart and tide table.

- Grounding at anchor means you are enjoying life at anchor when you become aware of the boat's keel hitting the bottom.
- This embarrassing state of affairs can happen when, before anchoring, you:
  - did not check out the bottom contours of the anchorage
  - did not examine the chart and read the tide table, or
  - misread the tide table.

***Solution:*** Find out whether the tide is rising or falling. If it is rising, or will very shortly be rising, you can breathe a sigh of relief. If it is falling, see *Running Aground*.

# Emergency – Running Aground



## **IMMEDIATELY** — Determine whether the crew and boat are in danger.

**NOTE:** A boat does not have to be moving very fast for injury to the crew and major damage to the hull to be sustained when the boat comes to an abrupt stop.

### **THEN:**

If you have hit a rock or reef hard and the boat is leaking severely or is holed, she is best left where she is until you get professional assistance.

If you have run aground on sand or mud, a soft bottom, there are several methods of freeing the boat, which may be used singly or in combination:

#### ▪ **Motor or sail off**

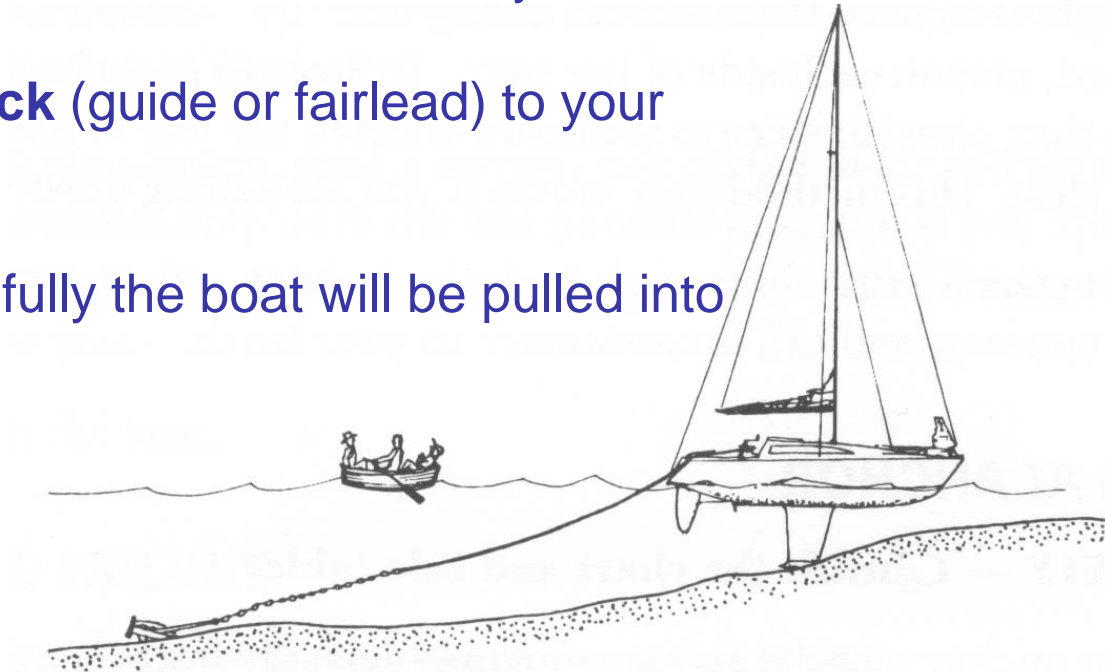
- If motoring off, keep an eye on the engine temperature. Overheating can mean stirred up mud or sand is blocking the cooling water intake.
- If sailing downwind when you run aground, a quick gybe may see you on your way again. If sailing upwind, a quick tack may do the trick.



## Kedge off

**Kedging** is pulling yourself off with your anchor.

- Row or carry your anchor out to seaward as far as you can.
- Lead the rode through a **chock** (guide or fairlead) to your largest winch.
- As you grind the winch, hopefully the boat will be pulled into deeper water.

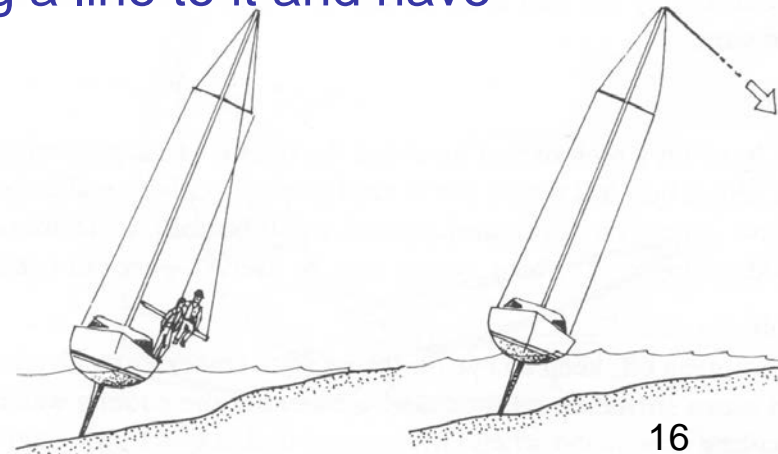


# Emergency – Running Aground (cont'd)



## Heel the boat

- Heeling swings the keel off the bottom and together with kedging, powering or sailing can help you get into deep water again.
- Heel the boat by putting gear and crew on one side or by getting crew out onto the boom.
- If it is windy you may be able to heel the boat by hardening the sails.
- Or, extend your main halyard by attaching a line to it and have another boat pull you over or:
  - attach the line to a tree,
  - to other object on shore, or
  - to an anchor, and winch yourself off.







## Lighten ship

- *Have crew and heavy gear transferred to the dinghy.*
- *This may raise the keel sufficiently for you to sail or motor off.*

## Important Cautions:

- *Having another boat tow you should be a very last resort.*
- *Few pleasure boaters have the skills or gear to tow effectively or safely.*
- *Too often damage is done to one or both boats and snapping lines can injure crew.*

**If these procedures above fail and you cannot expect a rising tide, call a commercial towing company.**

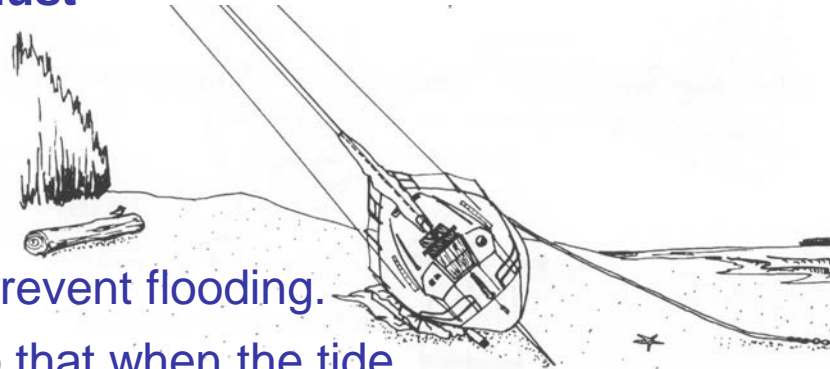
# Emergency - Running Aground (cont'd)



**If you cannot free the grounded boat you must wait for the tide to return:**

## **THEN:**

- Lower and stow your sails.
- Close port lights, hatches and seacocks to prevent flooding.
- Heel the boat with its mast towards shore so that when the tide returns waves can't break into the cockpit.
- Set your anchor out to seaward as far as you can.
- If the water level drops to the point where the hull is about to touch the shore, protect it with a padding of sail bags, cushions or sleeping bags.
- When the tide returns check for leaks and damage. If you have run aground on a soft bottom chances are good there will be no harm done to the boat though you must, of course, report the fact that you ran aground if the boat is rented or chartered.



# Emergency – Fouled Propeller



**IMMEDIATELY** — Stop the engine.

**THEN:**

- Sail to your destination and radio for a tow in.

**OR**

- Sail to a calm anchorage where the water is warm.
- Turn the shaft manually.
- Try to unwind the fouled object.

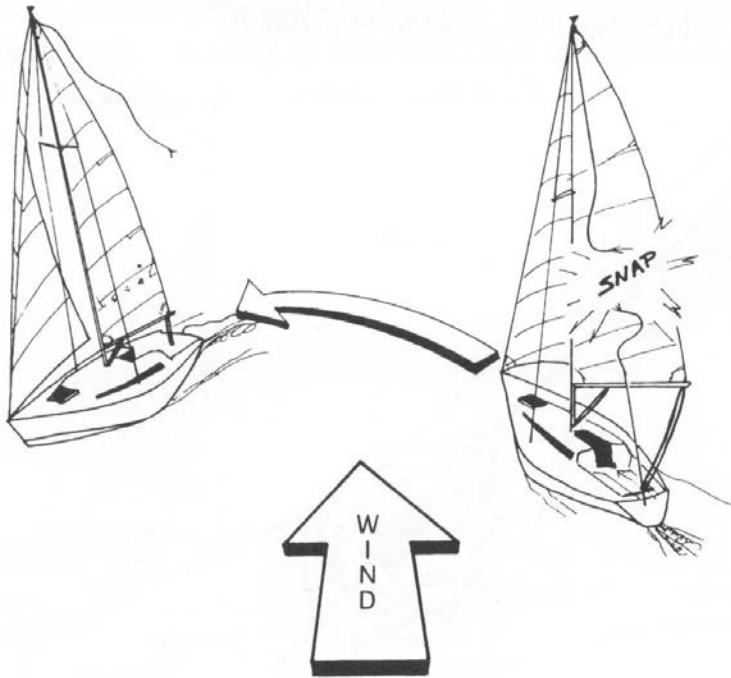
**OR**

- Put a crew member over the side (*with a safety harness and line to the boat*) to cut away the rope, seaweed, fishing line or plastic that is wrapped around the propeller.

# Emergency - Failure of Standing Rigging



**IMMEDIATELY** — Position the boat to reduce strain on the mast.



## THIS MEANS:

- If a windward shroud breaks, tack
- If the forestay breaks, turn downwind.
- If the backstay breaks, harden the mainsheet as much as you can and ***simultaneously*** turn the boat into the wind.

## THEN:

- Reduce or lower sail and attempt repair.
- If you are unable to make a secure repair, motor or sail with reduced sail to a place where the rigging can be properly repaired.

# Emergency – Broken Halyard



**IMMEDIATELY — Ease the sheet.**

**THEN:**

- Lower the sail completely and remove the broken halyard from the head of the sail.

*NOTE: A spare halyard may be rigged ready for use.*

- If there is no spare halyard, proceed under motor or the remaining sail.

# Emergency – Dragging Anchor



**IMMEDIATELY** — Increase scope (the amount of rode you have out).

**THEN:**

- Maintain an anchor watch to see if this has solved the problem.
- If it has not done so or you find you are too close to other boats or the shore, you will have to re-anchor.

*NOTE: Regular boat maintenance, careful navigation and proper anchoring techniques (see Afloat Skills of Section D) will reduce the likelihood of occurrence of the foregoing situations. You are less likely to have a fouled propeller if you practice good seamanship by checking for lines in the water before you start the engine and while motoring.*

*Apart from running aground, and holing the boat, or springing a major leak, the unexpected events above are not real emergencies except if they occur when you are close to a lee shore, in which case, radio for assistance.*

# Emergency – Fire Aboard



**IMMEDIATELY** — Sound an alarm and ensure crew safety  
Use your nearest fire extinguisher. Call for a backup.

## THEN:

- Assess the damage.
- Radio for assistance if required.
- Make for the nearest port.



# Summary



- In this module you learned about different types of knots. Don't underestimate the importance of knots on a boat!
- You also gained an understanding of what you can do aboard your vessel when certain minor or major emergencies occur.



# Let's practice!



- Complete the following quiz to test your knowledge of knots and solutions to emergencies.

# Quiz



- Get a piece of rope and attempt each type of knot.
- What is the best knot to use to tie together two lines of unequal diameter or extent a line that is too short?
- What steps should you take if you run aground and cannot free the boat?
- Name two ways you can steer a boat if the steering fails.