

Pacific Cup Offshore Academy

Seminar #1 June 13, 2015

Hull & Rudder Integrity

Jim Antrim, N.A.

www.AntrimDesign.com

Steering

AVOID USING YOUR EMERGENCY STEERING

- Rudders are the most common problem in Hawaii races.
- Check your primary rudder before you leave.
- If your rudder has not been pulled for inspection in last 3 years, do it now!

POST TWISTS IN UPPER BEARING
MAY CAUSE BINDING IN STEERING
OR STRUCTURAL PROBLEMS WHERE
BEARING IS MOUNTED AT DECK

GREEN IS UNDEFORMED SHAPE
OF HULL AND RUDDER POST
WITH RUDDER UNDER NO LOAD.

POST MOVES TO THE SIDE AT TOP OF
HOUSING. WILL LOAD STUFFING BOX,
CAUSING LEAK OR FAILURE

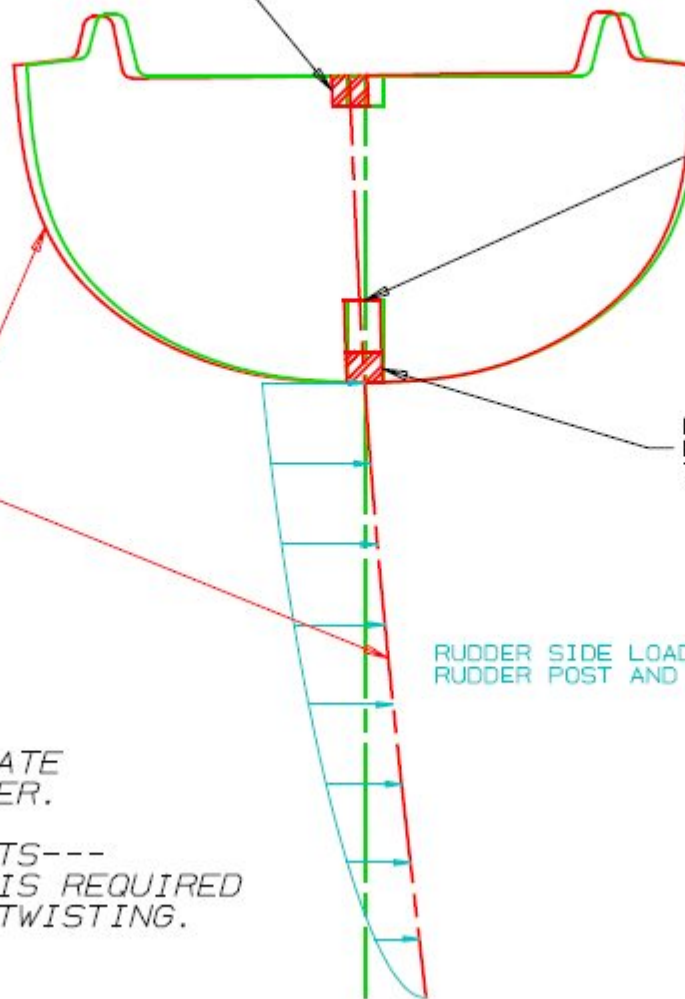
POST TWISTS IN LOWER BEARING.
BEARINGS WILL BIND, UNLESS
THEY ARE SELF-ALIGNING.

RED IS SHAPE OF HULL SECTION
AND POST UNDER STEERING LOADS

RUDDER SIDE LOAD BENDS
RUDDER POST AND TWISTS STERN

*THE RESULT OF INADEQUATE
BRACING NEAR THE RUDDER.*

*BULKHEAD, KNEES, STRUTS---
SOME FORM OF BRACING IS REQUIRED
TO PREVENT HULL FROM TWISTING.*

















Emergency Steering

MER 4.1.1 A boat's crew shall be aware of multiple methods of steering the boat with the rudder disabled, and shall have chosen and practiced one method of steering the boat with the rudder disabled and be prepared to demonstrate said method of steering both upwind and downwind.

Steering Test Certificate

4.1p Certificate required.

Steering under sail in no less than 10 knots of wind.

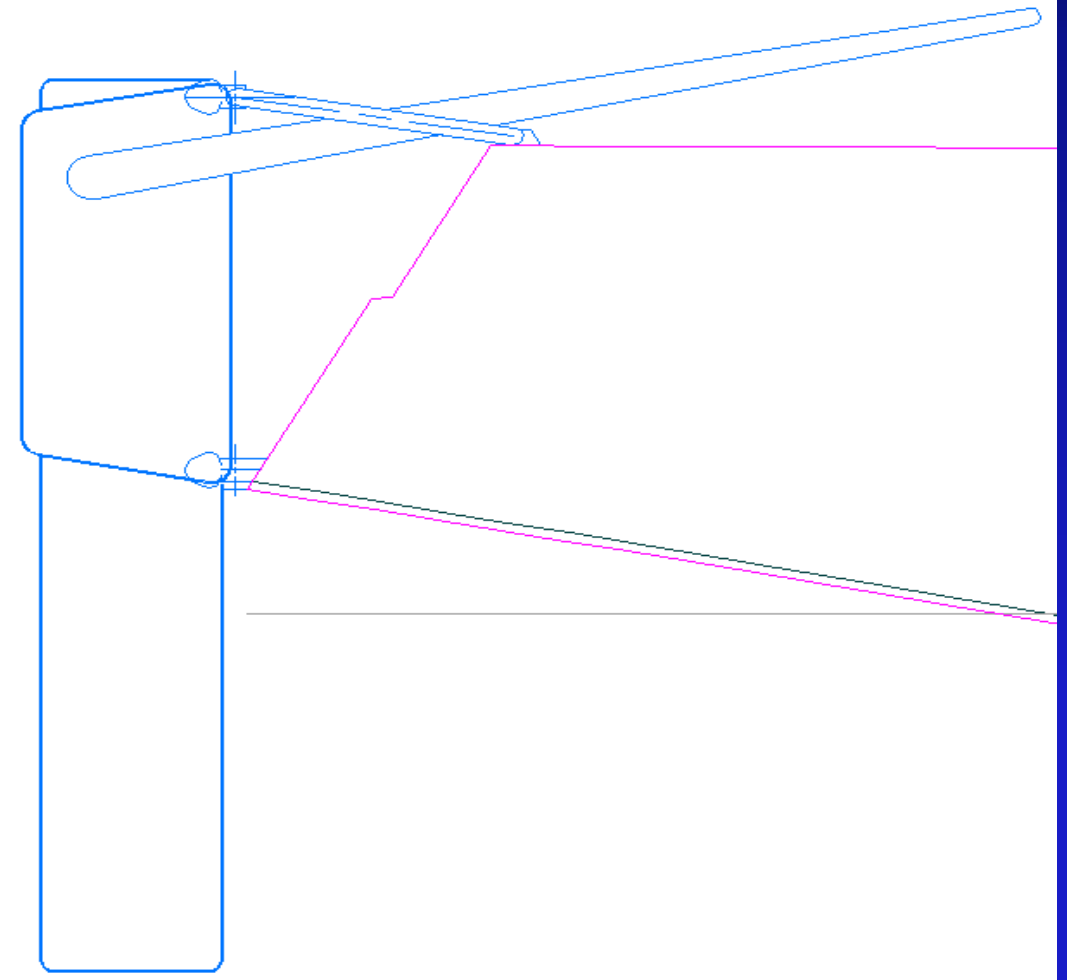
Both upwind and downwind.

Cassette style easiest to deploy

Cassette must be very strong!

Mount the cassette
(better yet have it mounted
for the whole voyage.)

Slide the Blade down



Scanmar SOS

SCANMAR SOS Rudder™

NEW

**Buy It, Mount It, Store It...
And hope you never have to use it!**

Most modern sailboats have unprotected spade rudders. These designs have dramatically increased the chance of losing the boat's rudder. If you carry a life raft, shouldn't you also have an emergency rudder system?

The SCANMAR SOS RUDDER is designed for:

A. The racing sailor who has to satisfy the racing rules which protect both lives and boat.
"crews must be aware of alternative methods of steering the yacht in any sea condition in the event of rudder loss. At least one method must have been proven to work on board the yacht. An inspector may require that this method be demonstrated."

ORC safety recommendations for offshore sailing, paragraph 4.14 Emergency Steering

B. The cruising skipper who has no windvane that can be used as a backup rudder.
"We've all seen articles about how to rig jury steering with floorboards lashed to the end of running booms and such like, but in reality it is very difficult indeed to make these lash-ups work even half efficiently..."

Geoff Pack in his book, Blue Water Countdown

- Designed to steer a boat up to 50 ft LOA. Rudder successfully tested in Around Alone for 2000 nm.
- Custom designed mounting system for your boat
- All 316L stainless steel rudder and mounting hardware
- Average weight 35 lbs. (16 kg.)
- All components store easily below deck
- Only four small brackets permanently mounted on boat

LIST PRICE
Standard \$2,295.00
Large Model \$2,495.00

The orange bag for the SOS rudder contains all the mounting tubes, rudder and hardware. Only four mounting brackets are left on the boat.

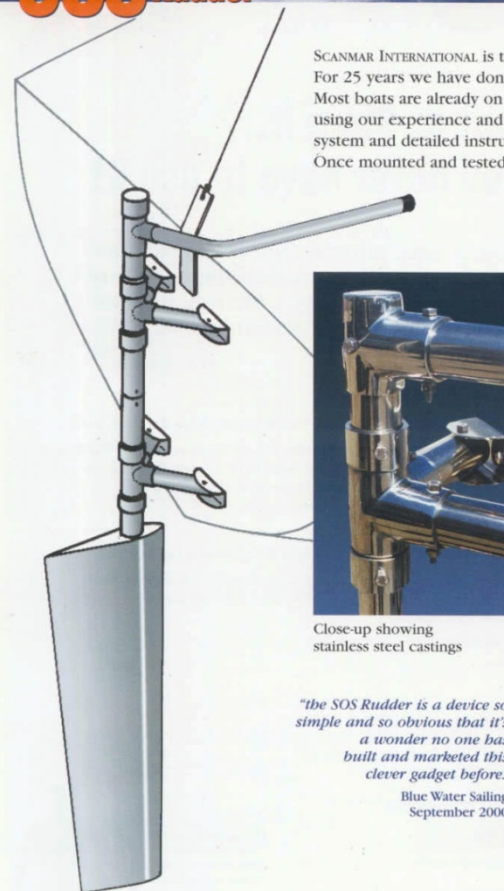
Average space needed for the bag: 48" x 18" x 6"



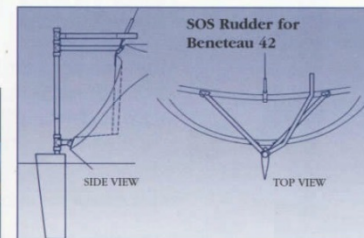
- Good seamanship
- Peace of mind
- Protection of lives and boat

SCANMAR SOS Rudder™

SCANMAR INTERNATIONAL is the world's leading windvane manufacturer. For 25 years we have done installation drawings for our windvanes. Most boats are already on file. When you order a SOS rudder you are using our experience and expertise. The custom made mounting system and detailed instructions will make it easy to install. Once mounted and tested it goes back in the bag.



Close-up showing stainless steel castings



SOS Rudder installation on a Beneteau 42

"the SOS Rudder is a device so simple and so obvious that it's a wonder no one has built and marketed this clever gadget before."

Blue Water Sailing
September 2000

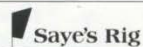
SCANMAR
INTERNATIONAL
FACTORY DIRECT

432 South 1st Street, Point Richmond, CA 94804 USA • Tel: 510 215-2010 • Fax: 510 215-5005 Toll Free: 888-WINDVANE (946-3826)

www.selfsteer.com



auto-helm

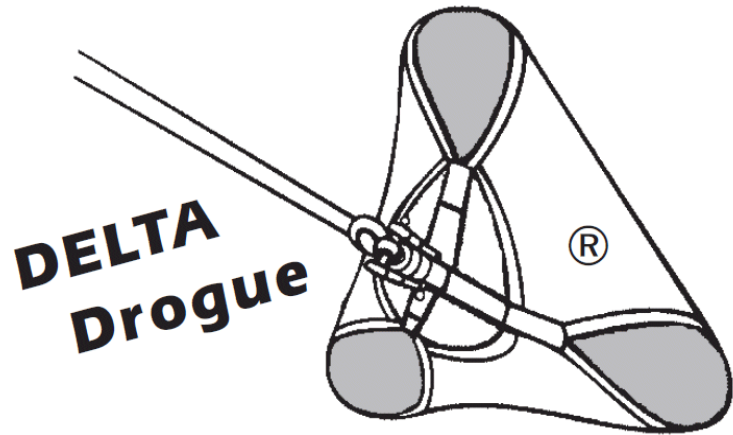


CPT
AUTOPILOT

SOS Rudder

PARA-TECH®

<http://www.seaanchor.com/>



Jordan series drogue



Seabrake

www.seabrake.com/

<http://www.jordanseriesdrogue.com/>

<http://www.seriesdrogue.com/>

<http://www.hathaways.com/galerider/>

<http://www.paraanchor.com/>



Galerider

Keel area problems

- Check the bilge, keel floors, keel sump area for fatigue cracks inside and outside the hull
- Keel bolts in good condition?
- Keel problems show up most often on the return from Hawaii

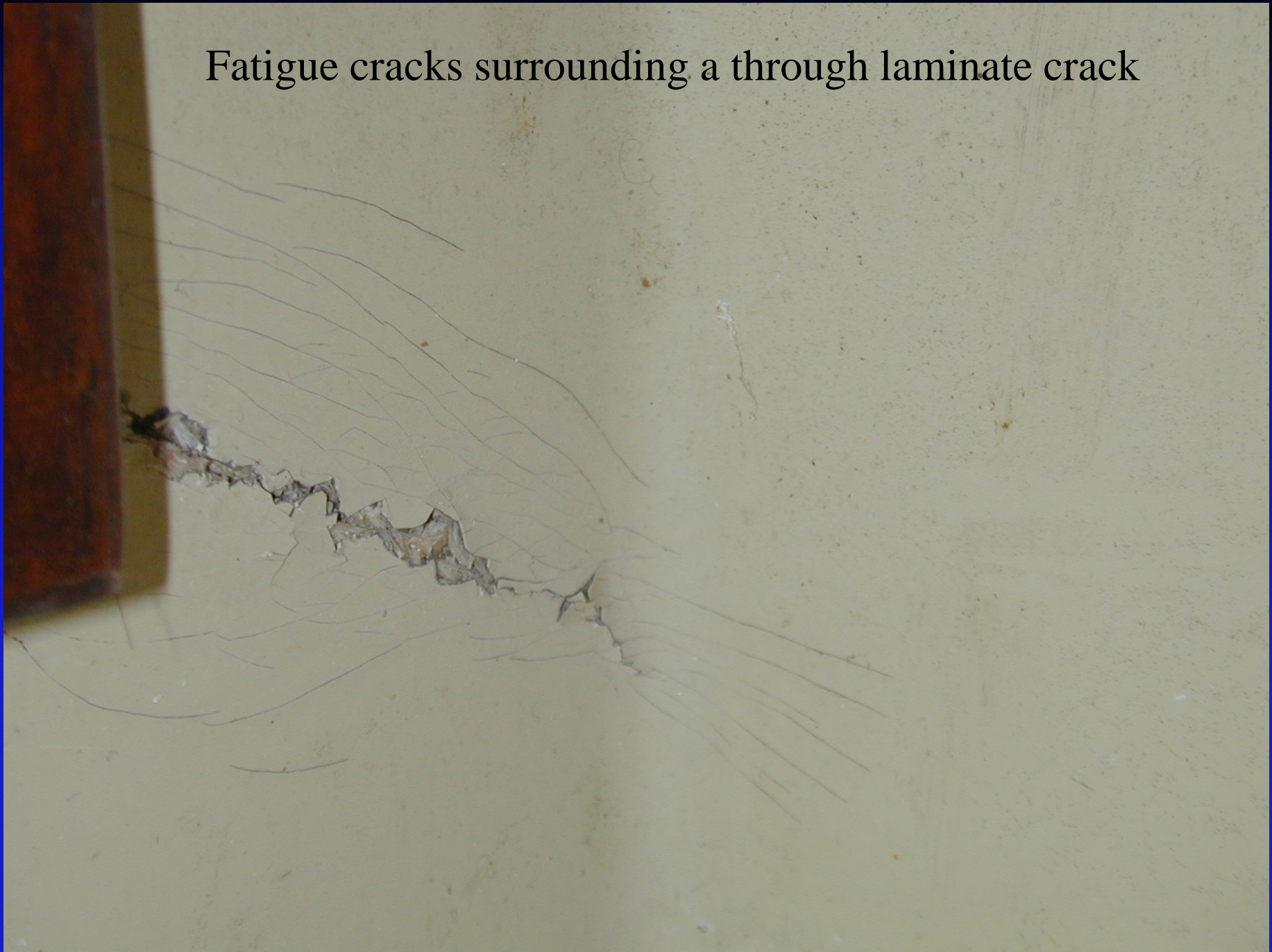


Severe cracking in keel sump



Grounding damage (two different boats)

Fatigue cracks surrounding a through laminate crack



Keep the salt water
outside the boat

This is for safety AND comfort.

Check your deck for leaks!



Companionways

(a.k.a. giant holes in your boat)

Companionway

- 2.1.1 A boat's companionway(s) shall be capable of being blocked off to main deck level. The method of blocking should be solid watertight and rigidly secured, if not permanent.

Hatch Boards

- 2.1.2 A boat's hatch boards, whether or not in position in the hatchway, shall be secured to the boat (e.g. by a lanyard) for the duration of the race to prevent their being lost overboard.



A seriously dry companionway
on Yippee Kai Yay

Through hulls

- 2.1.6 A boat's through-hull openings below the waterline shall be equipped with sea cocks or valves, except for integral deck scuppers, speed transducers, depth finder transducers and the like; however a means of closing such openings shall be provided.



Why I'm not fond of bronze seacocks.

Note: USCG requires them for "inspected vessels"

Forespar “FlowTech” Seacocks



Neat installation in head (above); but plastic through hulls may need better protection from kicking & abuse

Plugs

Plugs 3.22p

A boat shall carry plugs of soft wood or an appropriate material of a design previously approved by the Technical Committee, tapered and of the appropriate size, attached or stowed adjacent to every through-hull opening.



Say Good Bye to Wooden Plugs

Form Fitting Emergency Plug

STAPLUG™

It Grips



Hose or Fittings

Hull Damage

NEW

Unique Edge Gripping Riblets Help Hold It In Place To Minimize The Leak

Fits Your Leak To Hold Water Out

- Soft Foam Fits Irregular Shaped Leaks & Hoses
- Can Easily Be Cut With A Knife To Fit Smaller Holes
- Ridged Edge Helps Hold Plug In Place
- Form-Fitting Foam Fills Small Gaps
- Fits Into Hard-To-Reach Spaces
- Can Be Stuffed In Place Using A Tool

For Installation Video Visit: forespar.com/staplug

FORESPAR®

Other big holes in your boat that you may have forgotten about.





Your rudder post breaks.
The rudder falls out.
Now you can't steer to the site of the sinking!



Shaft coupling was loose.
Engine in reverse.
Propeller pulls the shaft out of the boat!

Bilge Pumps

MER 2.5.1, 2.5.2

Two bilge pumps; one above decks and one below

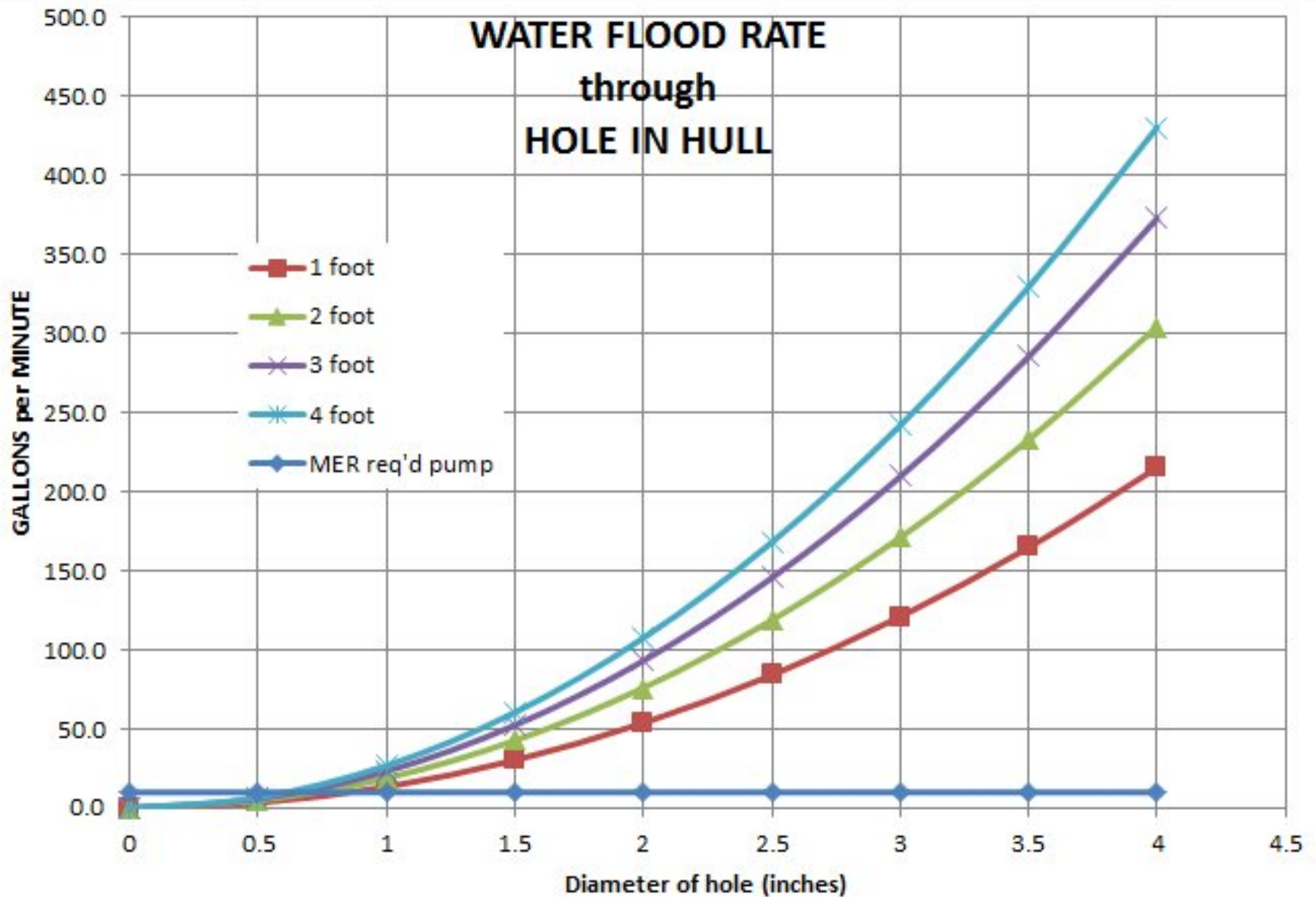
Pumps may not discharge into cockpit drains, or into cockpits (unless open transom)

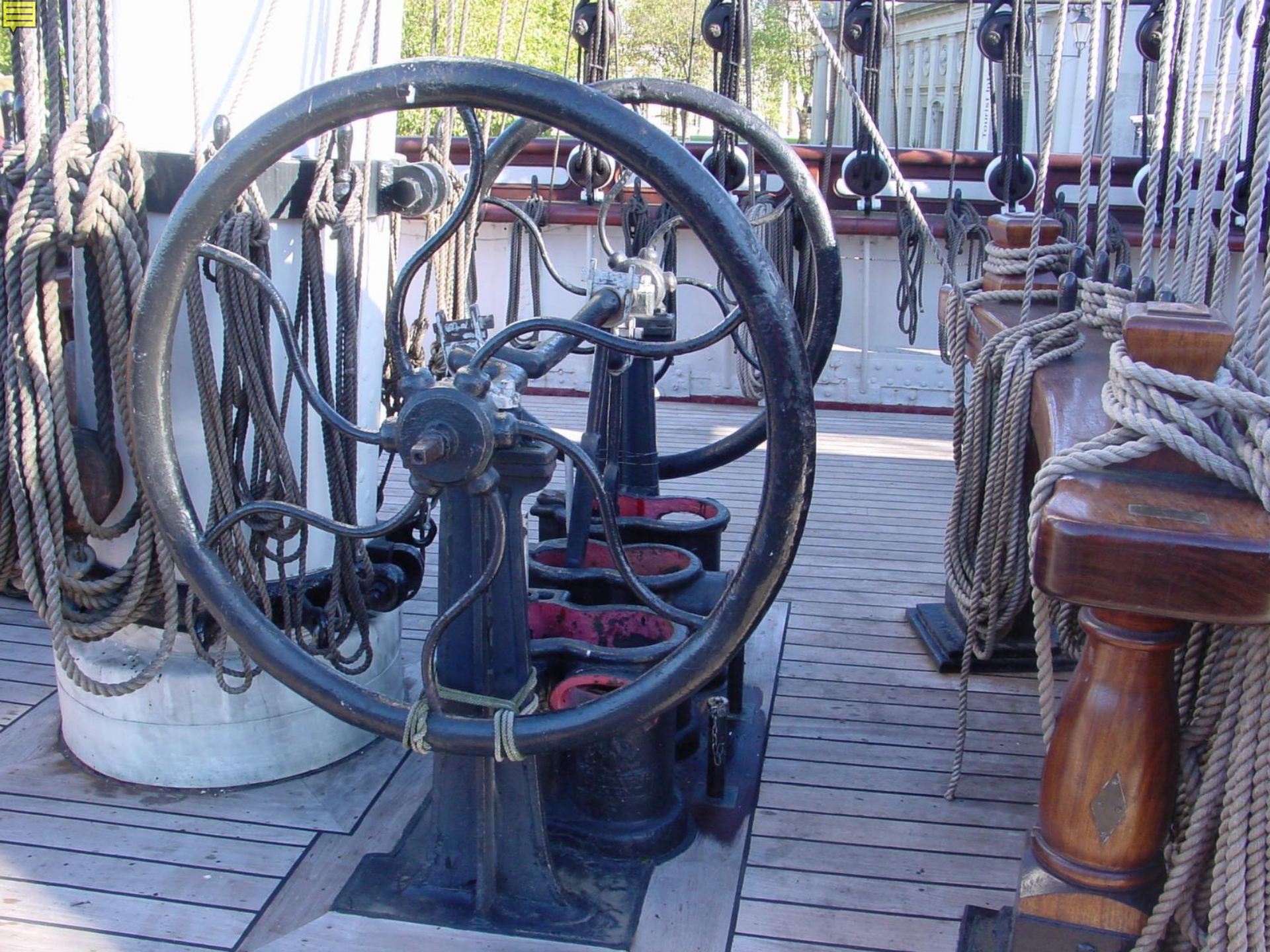
Bilge pump handles attached

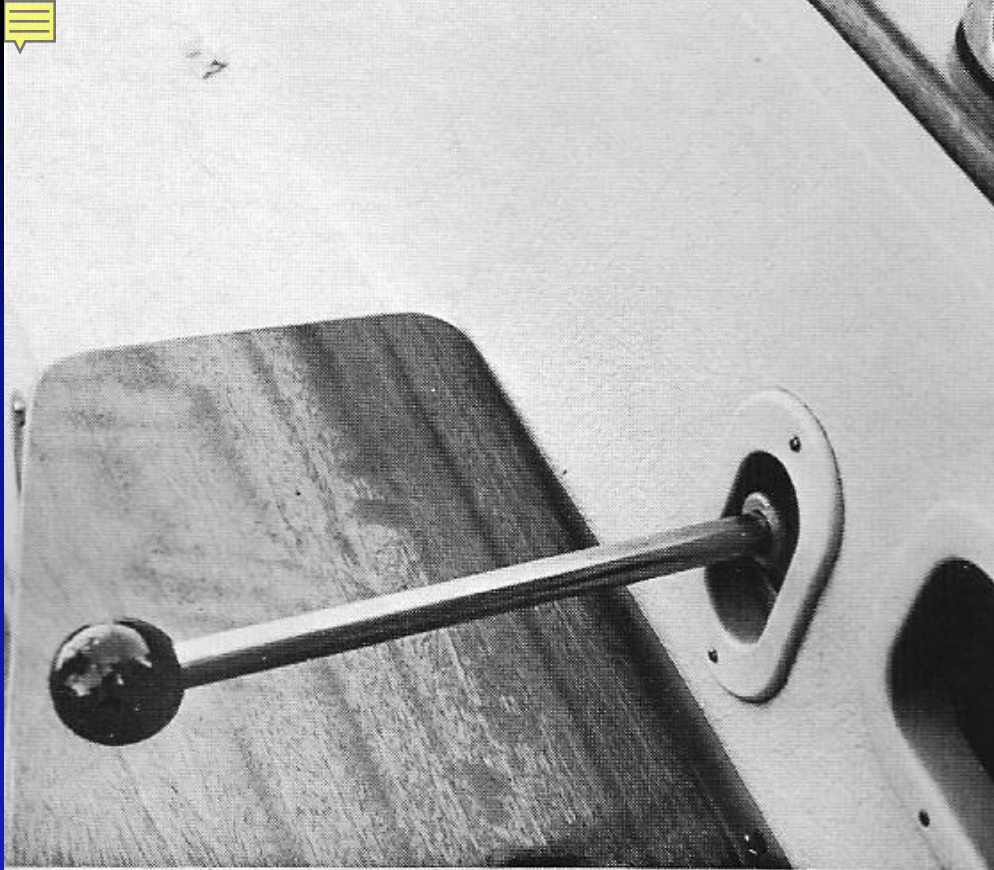
MER 3.2.7

Two sturdy buckets with lanyards attached

WATER FLOOD RATE through HOLE IN HULL







Read the book! Found on line at

www.pacificcup.org

www.AntrimDesign.com

Hull and Deck Integrity

Pacific Offshore Academy

By Jim Antrim, NA

Antrim Associates, Naval Architects

also more information on rudders and
emergency steering on my web site