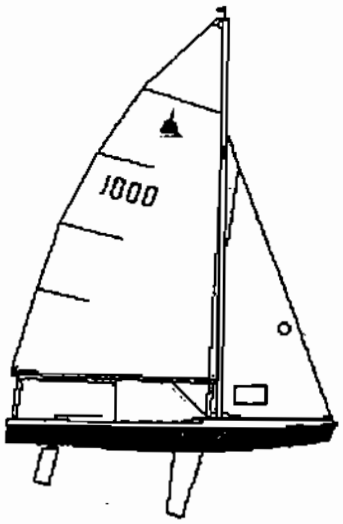


**"Flattie"**

BECAUSE YOU ASKED……

The following package contains 36 "How-To" articles, plus some miscellaneous writings about the Geary 18 , nee "Flattie", the popular club racer/trainer sailboat that originated in Seattle in 1928. While it did not have the famous-name magazine sponsorship enjoyed by such designs as the Snipe, Lightning, Comet, or Star, it caught on with young and old alike, and fleets were formed on the west coast of the U.S. and Canada, in Texas, and on Long Island Sound. Originally cross-planked in cedar, most were built of plywood, and later, of fiberglass. Over 1500 have been built, many by high school students, and some of the earliest are still racing competitively today.

Attributes:

Relatively inexpensive and easy to build with hand tools. No compound curves or steaming
High performance, yet easy to sail. Planes in 10-knot winds. Has been clocked at 20 mph
Safe, unsinkable, recoverable from capsize
Unique removable inboard rudder provides responsive steering
Transported on light-weight trailer pulled by less than V-8 power
Can be built, stored, and worked on in the home garage
Established class organization with by-laws, newsletter, and web-site. (www.flattie.org)
Fleet, District, and International racing programs

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~~e-mail: giancarlo@thegrid.net~~

## How-To Articles

1. Whisker Pole
2. Vang and centerboard winches
3. Rigging an aluminum mast
4. Traditional vs. mid-boom sheeting
5. Make your own aluminum boom
6. Jib sheets
7. Cleating jib sheets
8. Mainsheet travelers
9. New twist on a boom vang
10. Ski pole tiller and hiking stick
11. "Cel" finish
12. Hoisting out
13. A regatta-goer's checklist
14. A disappearing bow painter
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16. An upholstered centerboard trunk
17. A swivelling clam-cleat
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21. Some wire and control line lengths
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30. Hi-tech protest flag
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## **How-To:** Whisker Pole #1

The Geary 18 Specifications call for a whisker pole 7 ft. 6 in. long. This has been understood to mean the distance between the mast and the sail, so the pole and its fittings may actually occupy a little more space than that.

The pole may be of any material. Wood, such as spruce, with a cross section of at least 1 ½ in. is adequate. Aluminum tubing of about 1 1/8 in. diameter makes a good pole. Be sure it is a hard type such as 6061-T6 rather than the soft, weaker hardware store variety. If sealed at the ends with foam, the aluminum pole should float.

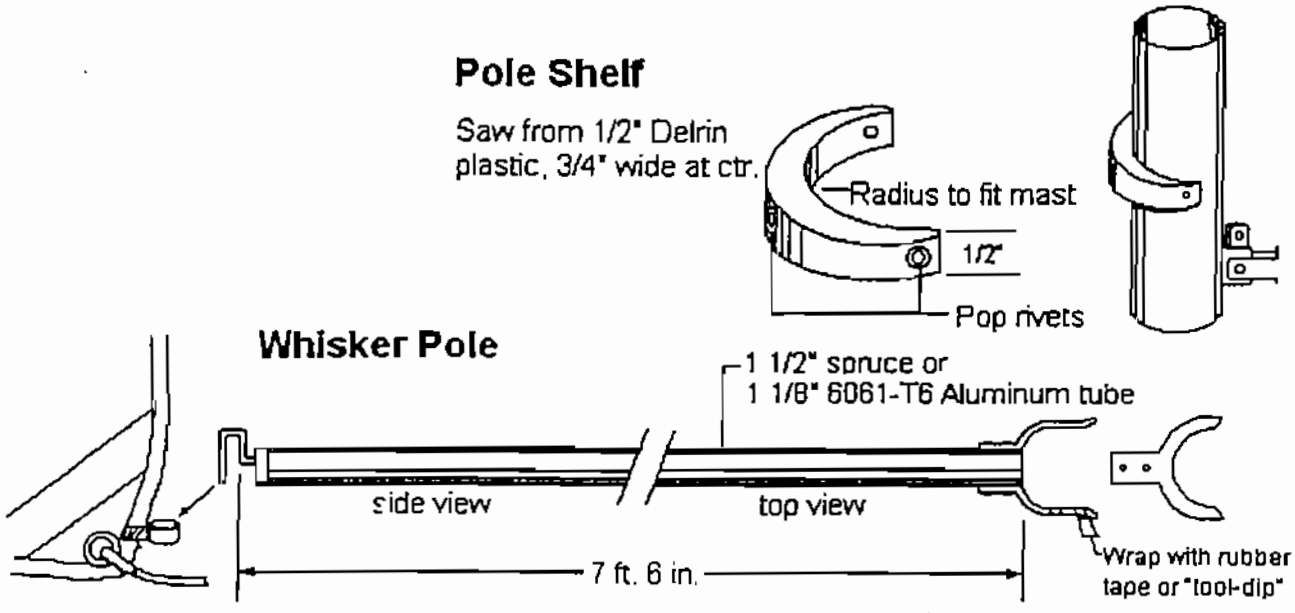
When setting the pole while on a plane and bouncing over 3-ft. waves, the crew should not have to thread a hook through an eye on the mast or operate mechanical jaws. The latter are for big-boat spinnaker poles with more weight, force, and safety factors involved. I have found the quickest and easiest-setting device is the yoke as shown in the drawing. It can be made of stainless steel straps or sawn from ¾ in. delrin and bolted to the pole. The edges should be rounded and padded with rubber tape or tubing to soften the blow to the skipper's eye when the crew pulls the pole too enthusiastically, and it should rotate easily on the mast without striking other fittings or halyards.

A shelf, sawn from ½ in. delrin and pop-riveted to the front of the mast, keeps the yoke from slipping down the mast. It should be attached at the same height as the clew of the jib, but clear of the gooseneck.

At the sail end of the pole, the fitting should be easy to attach and remove quickly, and capable of being jibed without removing the pole from the sail. A hook on the pole dropped into a horizontal eye or strap-loop on the clew of the sail should allow this pivoting action, without fouling the sheets or folding over the sail clew. When jibing, a downward pressure on the pole keeps the hook from jumping out of the eye on the sail.

The weight of the pole is a consideration in total boat weight and in flotation of a dropped pole. But an argument could also be made for a heavier pole, in that it applies downward pressure on the leech of the sail, steadying it and assuring a fuller shape.

A telescoping pole might be easier to stow, but it imposes an extra chore for the crew to extend and collapse it when he or she ought better be doing other things. Some inventive-minded soul might consider the challenge and create a superpole for us.



# How-To: Vang and Centerboard winches #2

Both the vang and centerboard hoist systems require a mechanical advantage, the loads being more than the average crew member should be expected to handle.

The boom vang -- primarily used to hold the boom down when sailing downwind -- typically should have an 8 to 1 system. That is – pulling on the line with one pound of force should apply eight pounds of force to the boom. Drum winches can be purchased and will do the job with anywhere from a 6 to 1 to a 12 to 1 ratio.

The centerboard hoist can have a similar winch, but even for a heavy iron board the ratio should not exceed 8 to 1. Remember that an 8 to 1 system means pulling 8 times as much "pendant" line as is taken in on the load wire. Aluminum boards should not require more than a 4 to 1 ratio. Even that is more than needed at rest in calm water, but keep in mind the side pressures acting on the board when sailing before deciding on something less, like a 2 to 1 pulley system. Think twice before choosing an aluminum board to reduce total boat weight. I guarantee more frequent capsizes.

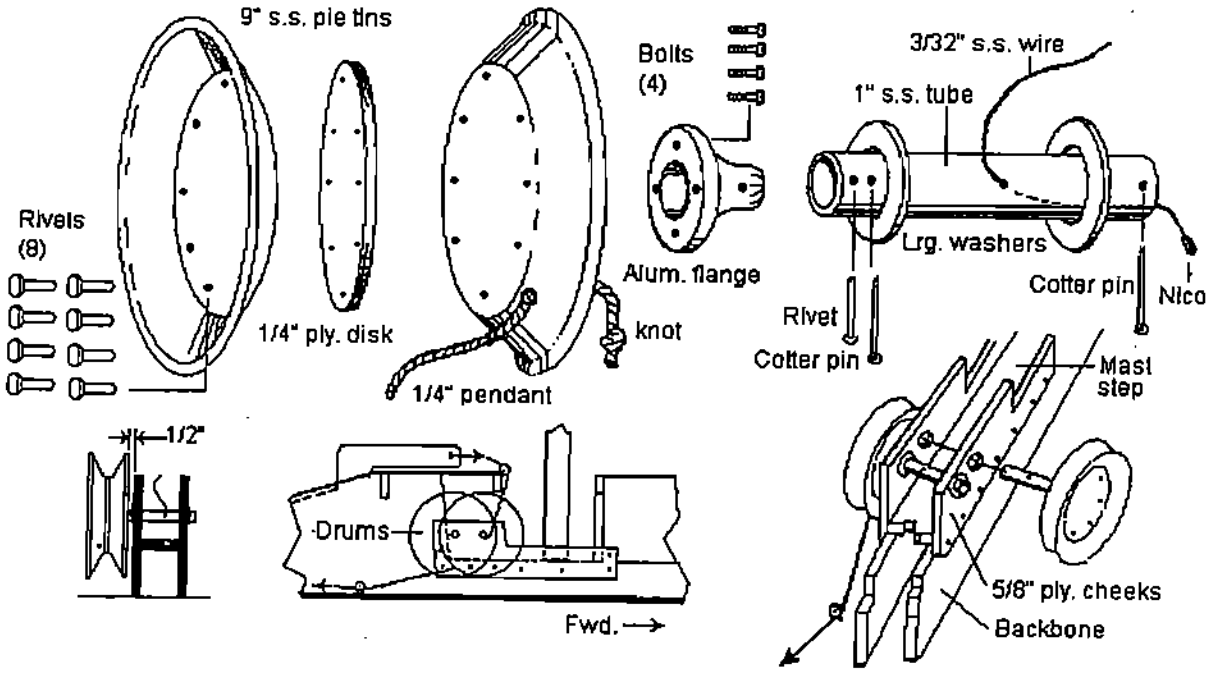
If you have average hand-tool skill, you can make your own winches very inexpensively (our class motto) as shown in the sketches. Basically, this simple approach consists of two pie tins of stainless steel or aluminum (not the flimsy variety, but the heavyweight anodized non-shiny aluminum), a waterproof plywood disc the same diameter as the bottom of the pie tins, and a "do-it-yourself" aluminum flange to fit inside the stainless or aluminum shaft. Also, non-rusting cotter pins, washers, a ¼ in. pulling line or pendant, and proper cheek pieces on the backbone to accept the shaft tubes.

The pie-tin/plywood sandwich is riveted or bolted together with eight or more fastenings in a circular pattern. Locate the center and attach the aluminum flange. The latter may be hard to find these days. Reynolds used to make one, as shown, with an internal bolt and lock washer of iron (which should be thrown away or assigned to your iron bolt drawer). Do not use soft "SO" hardware store aluminum for the shaft. Use 6061-T6 aluminum or stainless steel, available from junkyards near airplane manufacturers or bulk metal suppliers.

If the bottom of your pie tin is 8 inches and your shaft is 1 inch, you have an 8 to 1 winch. That is, you are unwinding line from an 8-in. drum as the shaft winds up wire on a 1-in. shaft. Determine the ratio you want and buy pie tins and the flange to suit, then tubing to fit the flange. If you can't find material for a snug fit, you might use an extra shim of tubing to fill up the slack space between the tubing and flange.

Drill through the tubing and flange and fasten with a bolt, long rivet, or stainless tubing, flared and peened.

Drill holes in the cheek pieces for bearings. Wipe a little Bondo or other hard plastic in the holes to limit wear, or get fancy and make teflon tube bearings. Measure carefully for clearances before laying out, cutting, and drilling.


9" s.s. pie tins
Rivets
(8)
1/4" ply. disk
1/4" pendant
knot
Bolts
(4)
Alum. flange
3/32" s.s. wire
1" s.s. tube
Lrg. washers
Cotter pin
Nico
Rivet
Cotter pin
Mast
step
1/2"
Drums
Fwd.
5/8" ply. cheeks
Backbone

HOW TO - - -"Rigging the Aluminum Geary 18 Mast. #3

In building your own boat or in replacing an old wooden mast with an aluminum one, you realize considerable savings by doing the work yourself. I have done the whole job in one evening, but is more typically a week-end project. Tools needed are an electric hand drill sabre saw, screwdriver, pop-rivet tool, wire cutters, files, a hammer, and a pliers or wren A Nico-sleeve tool can be borrowed or rented from marine supply shops. You should also hav the drawing on mast rigging that accompanies the official plans. All operations explained are illustrated on that drawing. (For those registered before these drawings were included the plans, copies may be gotten from the Geary 18 office for $1.00 each). (Revised 9-75)

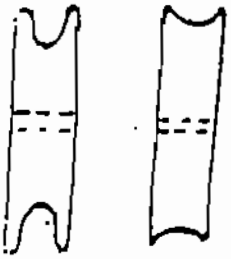
The Spar-Tech mast by Alan Holt (Not to be confused with England's Holt-Allen) is the dimension as the Proctor or Spar-Craft but has a little more metal in it, and is therefore a little stiffer. The aluminum is 6061-T6, which is the same as the early Spar-Craft masts. This is the most economical mast to put on a Geary that I know of. Some of the fellows are using these extrusions without taper or anodizing. If you do not sail all the time around water, anodizing is not necessary. Many skippers have as much boat speed or more than anyo with their un-tapered Spar-Craft sections, so tapering is not required either, but the sail should fit this stiffer mast or the leech will be too tight.

The blank extrusion comes 25 feet long. It is recommended that you buy the aluminum bu casting that is made for this section and adapt the slide on the casting to fit your step arrangement. Measure up from your step to locate the mast-deck intersection. Locate the to of the lower black band 27" ± ½" above the deck. Cut away the mast for a sail entry slot by drilling ½" holes into the back walls of the slot area 2" and 8" above the black band and cu away the metal between the holes with a saber saw or router. Smooth the sharp edges of the upper end of this sail-entry slot, but do not remove too much metal. If the transition of t wider slot into the narrow slot is too gradual, the sail will jamb and not feed easily. The Spar-Tech gooseneck is a non-slider bolted thru the slot into holes threaded through the for ward wall of the sail groove. Locate the gooseneck on the mast by sighting along the top ed of the boom so it aligns with the top edge of the black band.

(If you have a large bank account, the English Proctor mast is very pretty.)

Next, locate the top black band, its lower edge 21' above the top of the lower black ba A 2½" micarta sheave is mounted with a hole drilled for its pin 2" above the black band. (s sketch) Cut away just enough metal through the groove area to insert the sheave into the ma A sloppy fit will allow the wire to jump off the sheave. A 10-24 bolt (stainless steel) is adequate for the pin but should have a piece of S.S. tubing around it to prevent the threads from chewing up the bearing surface of the sheave. Or the pin can be a S.S. tube flared and peened at the ends. A long thin stainless bolt run through the mast at the same height as t pin for the sheave, just forward of the sheave and close to it, will help keep the halyard f jumping off the sheave inside the mast. The mast metal just above the sheave will serve as keeper on the aft side of the mast. Cut the excess mast length off ½" above the upper edge o the sheave.

Cross-section of masthead sheave



Like this Not this

Spar-Tech sometimes has Star class mast seconds that are already tapered and anodized. In my opinion, the extreme taper at the tip is too limi so I have trimmed about 5ft off the top. The ~~Star~~ holes positioned for the Star rig can be covered with tape, and new holes drilled.

of these masts & have rigging

If you want to use your old stays, lay the two masts alongside and transfer measurements to the new mast. If mounting new wire, it is a little neater to run the stays through holes in the mast and hang them on a single 5/16" through-bolt about five or six inches above the holes. Locate the holes ~~according to~~ where you want your stays to intersect the mast. The plan says the jibstay must be from 16' 7" to 17' above the deck. I recommend within 1" of the upper limit, just low enough to play it safe. Drill a hole (5/16"), at that point and another one ~~one inch~~ below it. Cut away the metal between the holes, making a slot. Drill similar hol for the side shrouds about an inch higher, one on each side of the mast. The holes should be just a little aft of the through bolt hole, as the stays lead at a slight angle aft going toward the deck. About 1/2" aft should do it. The 3/32" trapeze wires also go thru these holes. Make a loop about three inches long in the end of each stay and secure each with a Nicopress sleeve (or two on each just to play safe). The stays are then shoved into their respective holes and, with a little dexterity and luck, fished onto the through bolt. A stainless tube over the bolt just long enough to come flush with the outer surface of the mast will allow tightening the bolt without compressing the mast section. If the tube is used, the hole in the mast will have to be expanded to accept it. 5/16".

About three inches below the jibstay hole mount a small purchased sheave box, sometimes called a "thru-deck" sheave box, either the stainless kind with side mounting wings or the black plastic Holt-Allen type with single mounting holes top and bottom. The box can be mounted with stainless sheet metal screws or 3/16" pop rivets.

Down below, cut another slot hole on each side of the mast a few inches below the gooseneck. The halyards come back out through these holes and secure on sliding halyard locks, the kind that slide on sail track and have a knurled locking bolt. Mount a piece of sail track 8 or 10 ~~inches~~ long on each side of the mast just above the deck. These can be mounted with 3/16" pop rivets, but the sides of the heads of the rivets must be filed down so they will fit down into the sail track.

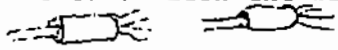
The spreaders are mounted 7' below the stay/mast intersection or a little lower. The plan recommends 9' 8", above the deck, which is alright. L-shaped brackets may be made out of 7/8" stainless strap with a ~~one-inch~~ leg with a single hole in it and a 1 1/2" leg with two holes in it. A pair of these hold each spreader, one with the two-hole leg above the spreader, the other with the two-hole leg below. They should be mounted, leaving a fat 1/2" between them for the spreader, fastening to the mast with stainless sheet metal screws or pop rivets. They should be located toward the rear sides of the mast, just forward of the sail-slot metal. The spreaders can be 1/2" stainless ~~tubing~~ or ~~a~~ thick-walled hard aluminum ~~tubing~~ 17 to 18" long. The book recommends 17. Mine are 18. To fasten them to the stays, drill a 1/8" hole with its center 1/2" in from the end of the spreader. This hole is in the same (vertical) allignment as the 3/16" hole at the inner end where it fastens to the brackets on the mast. Now saw a vertical slot from the outer end, through the 1/8" hole and on for about 1". This allows the spreader to open enough to take the stay wire. After inserting the wire, pinch the ends together a little with the pliers. File down the sharp edges and tape over and around the wire, locating the spreader on the wire so that the spreader runs at a slight uphill angle, making an equa-angular intersection of the angle formed by the stay above it and below it.

The headstay should end in a swedged eye about a foot above the deck, ~~being of~~ 1 by 19 ~~wire~~. A matching swedged fork goes on the flexible 7 by 19 wire going the rest of the way down to the deck, through a bent tube mounted in the stem, then back to the cockpit for adjustment. This fork and eye detachment is for threading on "stuff-luff" jibs. The side stays may end above the deck with swedged turn-buckle ends or swedged or Nico-pressed eyes attached to stay-adjuster straps or channels.

If a boom vang pulley is attached at the deck line or a little below on the aft side of the mast, it should be mounted very strongly with stainless straps held by several stainless sheet metal screws. A shelf for a whisker-pole yoke is mounted on the front of the mast at the same height as the ~~gooseneck~~ if using the newer "deck-sweeper" jibs. or above, but above the gooseneck.

Halyard wires should be 3/32" 7-by-19 stainless wire, though 7-by-7 will work almost as well and is cheaper. Halyard shackles are mounted on the upper ends, either with swedged ball or Nicopress sleeves. If using Nicopress sleeves, be sure both holes are filled, either by bending the wire back on itself or inserting a short piece of a pop rivet nail be-

length so that a swedged ball or Nicopress sleeve falls at the right length for attaching the halyard lock. A small Nicopressed loop in the end of the wire holds the 3/16" rope tail. The tail should be either back-spliced or sewed back on itself so the whole thing will run easily through the exit-holes in the mast. The sharp shoulders on the Nicopress sleeves can be filed down a little if great caution is taken not to scratch the wire with the file. Even small nicks may lead to later wire breaks.



If at some future date you decide you would like to taper the mast, it can be done either by cutting curved V-slots down each side, or by a single V-slot down the front of the mast, working the edges together and taking it to a shop that does Helium arc welding. The excess weld metal should be filed down flush. If the mast is bent in the welding process, it can be straightened, usually by leverage and body weight. I straightened mine by putting the tip under the back of the car tire, then the high spot over a crate, and then heaved on the butt.

While it is a messy job, a slick (fast?) finish can be put on the mast by rubbing it down with an automobile cleaner or polishing compound and giving it a buffed wax coating of automobile wax.

and clamping

~~Pelin Moitoret~~

HOW TO - Traditional ~~or~~ vs. Mid-Boom Sheeting? # 4

Perhaps this shouldn't be in the "How To" series, because it is a controversial subje with strongly expressed opinions and polarized positions. So I will just discuss my own observations and what led me to a compromise arrangement.

I think it is generally agreed that the rig - sails and spars - must be rigid. We mu try not to interfere with the flow of air moving across our motor - the sails. If waves sl the boat, if we move around too rapidly or jerkily, thereby shaking the boat, we are also shaking the sails and spoiling the airflow. The trend to heavier sailcloth (~~5 oz. vs. 3 oz.~~ to improve the rigidity of the foil, especially in conditions of light wind with waves, wh light cloth waved like a flag, turning the foil inside and out. I sometimes wished I coul bury the foot of the mast in concrete, like a fencepost, but have settled for a collar at t deck to fill up the space at the sides and in front of the mast to prevent it from slopping around, absorbing energy.

Now for the boom. At one time, bendy booms were in favor, like spaghetti masts, to fl ten the sail in heavier winds. Of late, the trend is to stiff booms - light, but stiff. W light? Partly to save overall boat weight, but also to lift a bit in light-to-medium air t keep the leech free. Stiffness helps provide regidity. However, in stronger winds it woul seem beneficial to allow the aft end of the boom to bend up a little on a beat, to assure f run-off and avoid a hard leech. Yet, it should be stiff enough to assure fullness off the wind.

We we are led to wondering how to arrange our mainsheet to make all these good things happen without allowing any of the bad things to happen. Actually, the arrangement in the plan does a pretty good job. It puts a "hand" on the end of the boom, another a little farth in, a third at the middle, and, with the vang on, downwind, a fourth up forward.

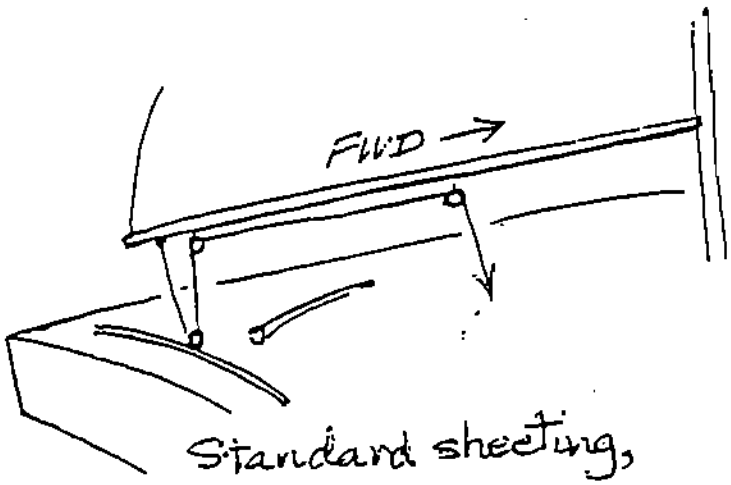
The mid-boomers came along ~~a few~~ some years ago, following the trend set by light, high-per formance Olympic classes. However, our low-aspect sailplan gives us a relatively long boom which led the mid-boom experimenters to go for booms made from mast sections to achieve cont and stiffness. In most conditions these very heavy booms seemed to do the job, but require a very precise sail shape to give optimum performance over a range of wind velocities and d ections. Super-stiff spars provide rigidity, but don't provide much variation in shape. O advantage of mid-boom sheeting is the shorter length of line, making it quicker to harden u onto a beat while rounding a leeward mark. Another is the more direct traveller control. sheet is strapped in and cleated in heavy winds, and the fine trimming of the traveler to s the gusts is immediately at hand, without the complex maze of pulleys and lines typical of stern-traveller controls.

I discovered one disadvantage that unsold me when I tried mid-boom sheeting on Lake Washington. The wind was light but stinkpots had raised a chop. We were on a broad reach with boats behind us, close aboard, to leeward and to weather, both of whom steadily overtook and passed us. I noticed my boom end meandering around as powerboat wakes went by. Finally, I reached up and held onto the boom to steady it, and promptly passed both windward and leew boats. My conclusion was that my mid-boom sheeting was not controlling the boom-end in these conditions.

My current variation is back to a stern traveller, like the plan, but moved forward of the rudder post and bolted to a raised aluminum bridge (designed by Chuck Cleveland) to avoid interfering with the tiller. This provides good boom control, but leaves the aft 18 inches free, to ease the leech in a blow. My boom is almost as stiff as a mast section, but weighs only six pounds.

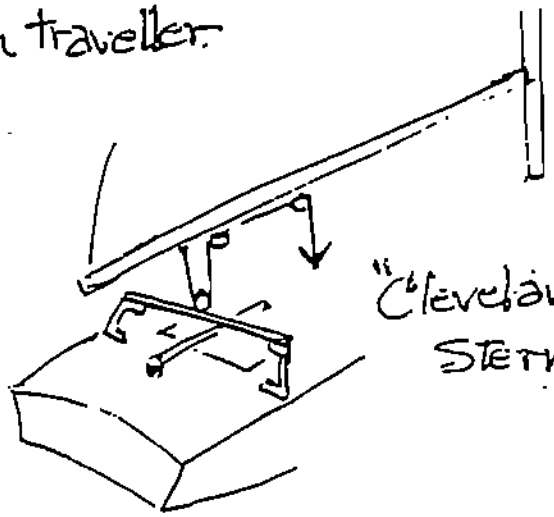
~~I'll tell you how you can make one in~~ (See the next "How To" article.)

~~Felix~~




Standard sheeting,
stern traveller.

Mid-boom sheeting,
Mid-boom traveller.



"Cleveland-Modified,"
Stern traveller.

HOW TO - Make Your Own Aluminum Boom #5

In the last issue I discussed sheeting the boom. Design of the boom itself hasn't been the subject of much discussion (or argument). The last controversy I can recall was in the 50's over someone trying to go with a plank boom that added a few extra feet of area downwind. That brought on the restriction in the vertical dimension to 3 inches.

I have tried round wooden booms, rectangular multi-laminated aircraft-spruce booms, aluminum mast sections from smaller boats, and finally made my own to get the desired combination of lightness and stiffness. As shown in the sketch, I chose an aluminum tube of alloy 6061-T6. This has proved to be the best alloy for boat spars. It will pit somewhat if constantly exposed to salt water without annodizing or painting, but it has the needed strength, and is readily available in 12-foot lengths at metal supply companies. I selected a 2 inch tube with a .060-inch wall. The boltrope-groove extrusion may take a little more shopping. Originally this was an imported item, and I got my first one in a 10-foot length from Ericksen Spars in Sausalito. More recently, I picked up a couple from Allen Holt at his SparTech plant in Redmond, Washington (phone (206) 883-2126).

While at the metal company, pick up some stainless-steel 1/8 inch pop rivets ½ inch long. Then buy an equal number of cheaper, aluminum 1/8-inch rivets 3/4-inch or longer. This is to acquire the longer pull-nails to trade for the too-short ones in the steel rivets. Replace the short nails with the long nails. The problem is that the rivet gun won't fit down into the boltrope groove to hold the rivet down while setting it. A semi-flattened tube collar is slid over the longer nail to provide a bearing surface as high as the top of the extrusion. Aluminum rivets are not strong enough. (I speak from experience.)

Layout the tube per drawing. The forward end is drilled, sawn, and bent to taper it narrower to make a better fit to the gooseneck, and to avoid fouling the mast when wung out downwind. The aft end can be cut and bent as shown to accept an outhaul sheave, or to suit the fitting of your choice. Rivet the groove extrusion to the tube every 6 inches.

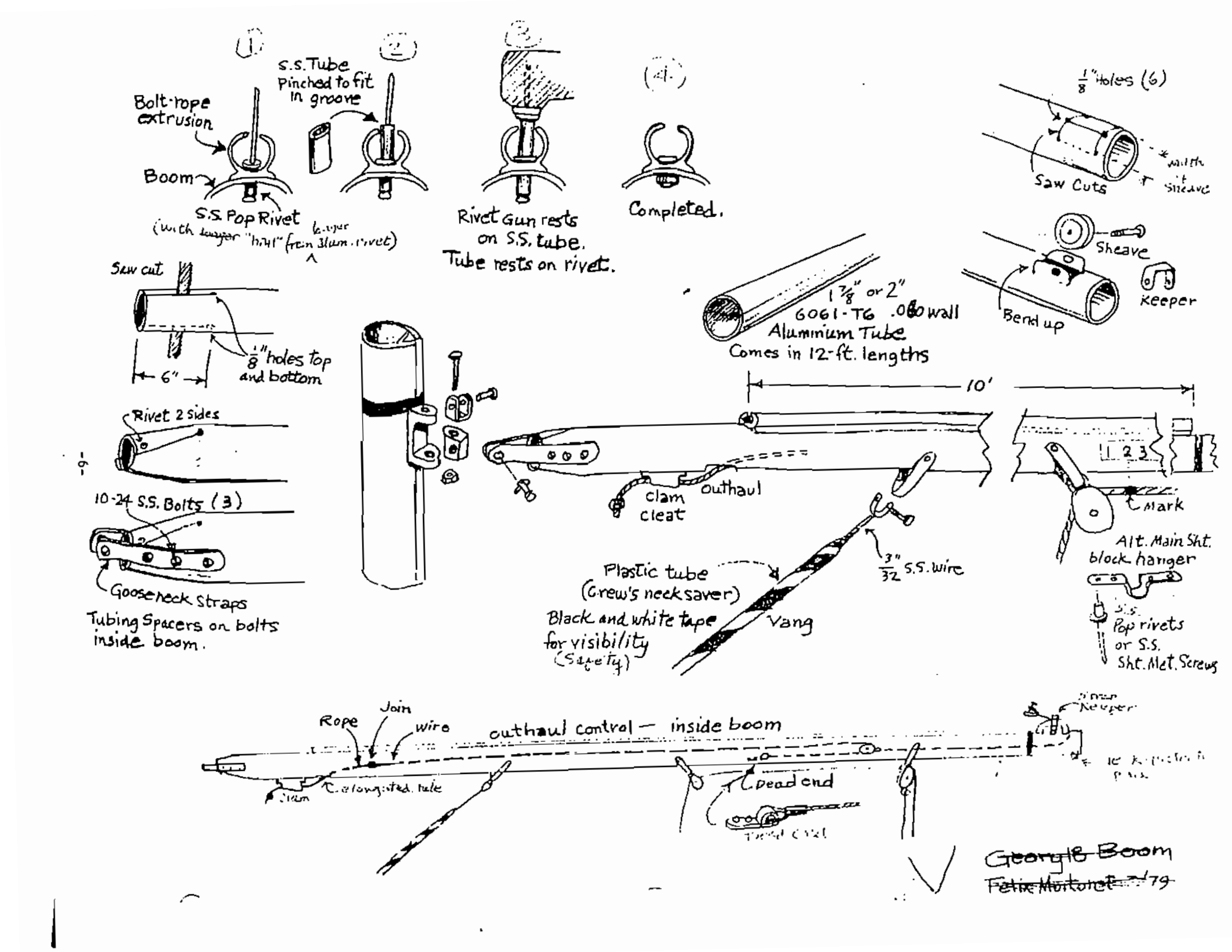
If an internal 2-part outhaul control is used, the outhaul shackle is nico-pressed or swedged to a 3/32-inch stainless wire (7X7 is cheaper than 7X19) about 30-inches long. A small bullet block is attached to the other end.

The control wire assembly has a small loop nicopressed on each end. A rope extension of about 18 inches is tied, sewn, or back-spliced to the wire, providing a tail for cleating. A stainless back-loop eye with two screw holes secures the loop at the other end. This is the deadend of the pulley system and must be riveted to the inner wall of the boom. To do this, lay it on the surface and mark the two hole locations and drill 3/16-inch holes. Now, pass a piece of string or cord through one of the holes and feed it out the aft end of the boom. Now push the cord through the corresponding hole on the eye-loop from the bottom up and tie it to something like a nut or washer. Next pull the cord back through the boom till the eye-loop homes on the two holes. Rivet the free hole, remove the cord, and rivet the second hole. Feed the rope end through the pulley, then push it through the boom, emerging through a round-ended slot in the bottom of the boom a foot aft of the gooseneck and thence to a clam or jamb cleat on the lower boom surface just forward of the round-ended slot. At the aft end, add a strap keeper, so the outhaul shackle doesn't fall off the sheave while un-rigged. Or, use any other outhaul device of your choice; adjustable or fixed.

Estimate the angle (under load) of the sheet-block hanger straps, and attach each to the boom with single 3/16-inch S.S. thrubolts. Repeat for the vang strap. Saw or cut bolt ends off 1/16-inch from nut and tap around edges with a ball-peen hammer to lock the threads.

Gooseneck straps are attached with 3/16-inch (No. 10) S.S. bolts, with tubing spacers inside the boom to keep the boom from distorting when the bolts are tightened. Keep in mind that the top of the assembled boom (sighting along the top edge of the groove extrusion) must not fall below the upper edge of the black band on the mast. With the boom attached to the mast, locate and paint the black band on the boom 11 ft.-2 inches from the aft edge of the mast.

The bare metal can be rubbed down with polishing compound and waxed - a messy job, but cosmetically and psychologically pleasing. (Dare I add, "less parasitic drag"?) —Bob


1.
2.
S.S. Tube Pinched to fit in groove
Bolt-rope extrusion
Boom
S.S. Pop Rivet (with lawyer "hat" from Slum rivet)
Lawyer
3.
Rivet Gun rests on S.S. tube. Tube rests on rivet.
4.
Completed.
1/8" Holes (6)
Saw Cuts
Width of sheave
Sheave
Keeper
Bend up
Saw cut
6"
1/8" holes top and bottom
1 7/8" or 2" 6061-T6 .080 wall Aluminium Tube
Comes in 12-ft. lengths
Rivet 2 sides
10-24 S.S. Bolts (3)
Gooseneck Straps
Tubing Spacers on bolts inside boom.
10'
clam cleat
outhaul
1 2 3
Mark
Alt. Main Sht. block hanger
S.S. Pop rivets or S.S. Sht. Met. Screws
Plastic tube (Crew's neck saver)
Black and white tape for visibility (Safety)
Vang
3/32" S.S. wire
Rope
Join
wire
outhaul control — inside boom
Slam
Elongated hole
Dead end
Keeper
George Boom
Felix Mottonet 79

How To -- Jib Sheets #6 ✓

Jib sheets and their leads and cleating methods are probably the area of the greatest variety on our boats. Some highly innovative ideas have shown up over the years, but I won't attempt to cover them all. A word of warning - while ideas may be copied, many folks make the mistake of taking precise measurements for the location of the sheet lead on deck from a boat that is going well. This location is a fickle thing and will probably not be the same for two boats or even one boat with two different jibs. More on that later.

As for the sheets (the rope or line controlling the sail), the most popular on Gear's seem to be 5/16" braided spun dacron. This material is large enough and soft enough to be easy on the hands, does not tangle easily, and stays cleated without slippage better than most. This is an item where you shouldn't compromise for price. It costs a little more, but is worth it. Don't use ¼" line, clothesline, or polypropoline. Nylon stretches under load and is known to slip through jamb cleats.

It is best to get a single length of line to serve for both sheets. The sketches suggest several methods of attachment to the sail. Avoid heavy metal shackles that beat on the mast. The length must accomodate the downwind setting with the whisker pole, with plenty left for handling after cleating. I usually buy a piece 38-~~feet~~ long. Measure your own rig and estimate a little more than "just long enough". Make the measurement with the whisker pole in place.

Most fairlead systems try to provide an infinite number of positions for the fairlead, or turning block. Some of these are: 1. Several parallel tracks bolted thru (not screwed to) the deck, with a slide or "car" for the turning block. The crew must loosen a knurled thumbscrew on the car and slide it or move it to another track as conditions change. 2. A single track bolted thru the deck at an angle, trying to be in the right position to allow the car to go foreward and inboard in light winds and back and out in heavy blows. 3. The "H" track, with the cross-member track being able to move on the other two, and the car able to move on the center track. The whole thing can be committed to the deck at any particular angle to start with. 4. A fixed position or a track for the turning block, with effective lead position controlled by an adjustable "Barber-haul". The Barber twins were hotshots in Lightnings in Oregon some time back, and their name stuck with the idea since. Roughly, it involves a ring or pulley that goes on the sheet forward of the fairlead block. A line attached to the ring can be pulled to deflect the angle of the sheet coming from the jib. By running port and starboard haulers together under the deck up forward, they can be trimmed by a single line coming back to the cockpit from a turning block in the bow. Most Barberhaulers pull inboard, but some of us use a variation for reaching to pull the clew down (to harden the leach) and outboard (to keep the "slot" open). I use these from thru-deck eyes located along the rail and about 9 inches forward of the ~~side~~ shroud stay, back through turning blocks to cockpit cleats, crossing the boat so the weather line trims the leeward sheet.

The only sure way of locating the fairlead position on deck (or at some point in space if using Barberhauls), is to sail the boat. Or, rather, have someone else sail the boat and you be the crew. In light winds (about 3 to 6 knots), sit to leeward and hand-hold the jib sheet so it contacts the deck. Study the slot and try to get it even - that is, not narrower at the top or bottom. The leach of the jib and the fullness of the lee side of the main should scribe similar arcs. The most frequent error in jib setting is closing the top of the slot. Don't be overly impressed by people who say they can sheet in to the 7-degree line. A degree or two in or out at deck level are not nearly as important as tension on the sheet and making sure the head doesn't hook. When tacking, the leeward sheet comes in easily until the slack is out of the line, then the final few inches make all the difference. Adjustments while beating are in ½" increments. Tell that to your crew, ~~that~~.

Experiment. Push the sheet forward on deck and watch what happens. The lower sections assume a deeper foil. Pull it aft and the foot gets more taut until it shows strain wrinkles. Pull down too hard, and most jib heads will hook and close the upper part of the slot. Not enough downward tension will loosen the leach until it flaps, or you lose

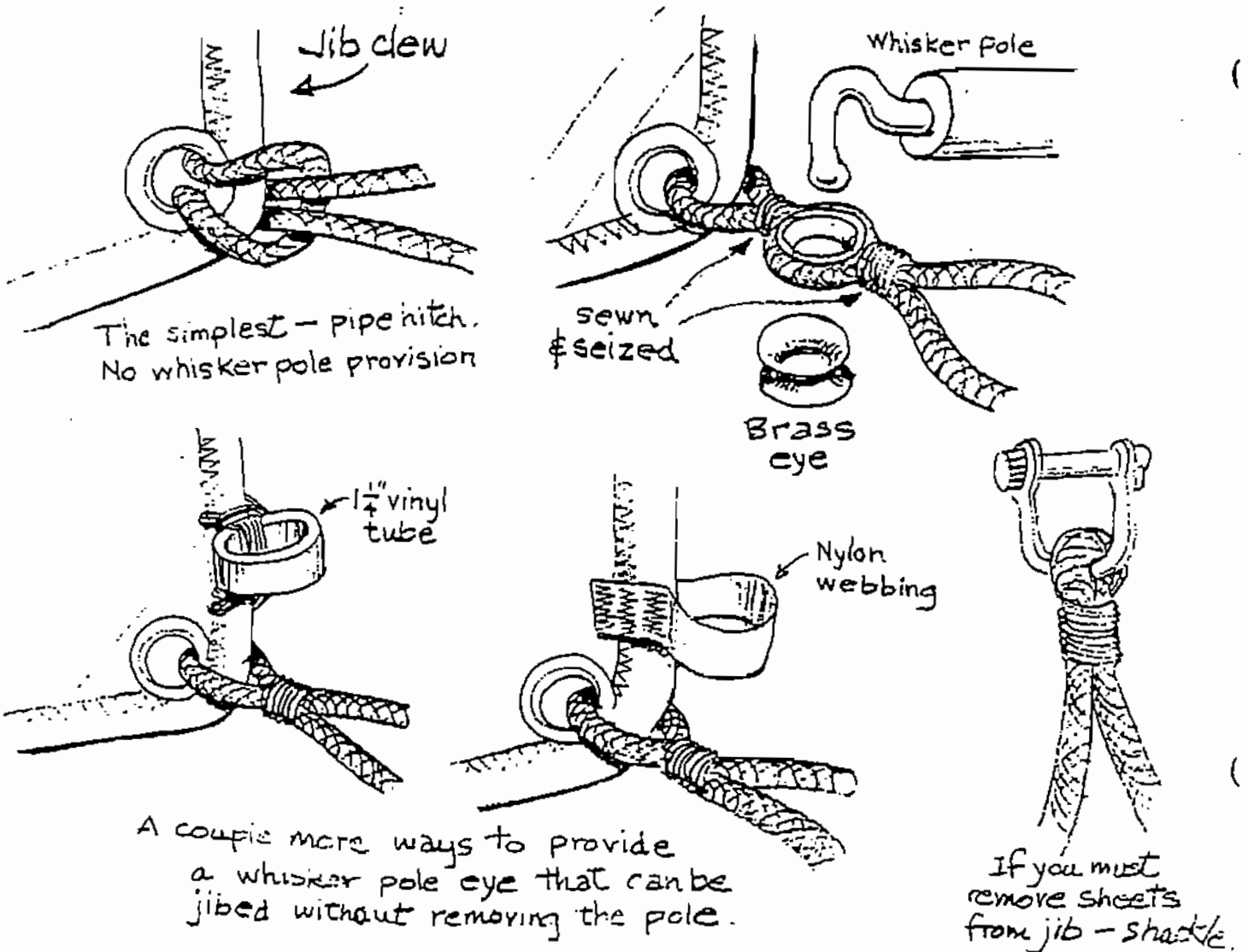
pointing ability. No two sails are identical, so there are no standards in inches anyone can give you for locating the fairlead. It is a pragmatic problem solved only by observation and judgement. Having said that, I'll give you some ballpark numbers, but consider them only as parameters for experiment. Incidently the old rule of thumb of disecting the clew angle with the sheet lead isn't the answer either.

Try a forward position of about 14 inches out from the centerline and 88 inches back from the headstay. Try a heavy wind position of about 26 inches out from the centerline and about 102 inches back from the headstay. That's the ballpark - only for the new jibs - not for the old, if you still have one. Somewhere in that stripe or an inch or two to either side or fore and aft should take care of anything. If you rake your masthead aft, the point moves foreward. If you like loose shrouds, it moves outboard. I would rather err in having the foot a bit too tight than risk a hooking leech, because I believe the most important thing about a jib is that it not hook at the head.

Once you have the magic points located and have installed the hardware, take a waterproof magic marker and mark a stripe around the sheet somewhere near the fairlead block. Then at the same distance from the clew, mark the other sheet. It doesn't matter exactly where, just so they can be seen easily and provide a reference point for the crew. Once he hits the right setting you can tell him to remember where the mark was, and make it look that way again on the next tack. Or, paint a numbered scale on the deck. Whether you use it or not, it provides a psychological weapon when the boat is on the trailer in the parking lot.

Next time we'll talk about some ways of cleating jibsheets.

~~Felix~~



How To -- Cleating Jib Sheets - #7

Last issue got the sheets onto the jib and through the fairleads on the deck. So now what do you do with them?

It takes a good crew who understands when to pull and when to ease the sheet to tend it by hand much of the time. (And a strong crew when the wind blows!) It requires a He has to continually observe my the sail shape, the upper leach, the slot, the wind, the competition, etc., all the while flat out on one's back on a trapeze on the opposite side of the boat from the jib. But even an experienced crew uses cleats from time to time.

The minimum service a skipper expects from a novice crew is to cast off one jib shee and pull in the other one when tacking, and to set and remove the whisker pole. The skipper may want his The crew to get the sheet in to the proper point of trim and then cleat it, making adjustments only when asked. Nothing will spoil a skipper's day as much as a hand-tended jib that is always too far out, too strapped in, or bouncing in and out. With the sheet cleated, he the skipper has a fixed value to work from, and can feather into the wind, and alter helm on the puffs without having to worry about an unstable jib setting.

The Geary's centerboard arm has always presented a problem for jib sheet cleat placement. The sheet comes from the fairlead on one side of the boat, across the trunk, to the crew on the opposite side. Most boats balance best in moderate wind when the crew sits on the side deck at the forward end of the cockpit. If the sheet comes directly from the fairlead, the centerboard tongue cannot be operated without interfering with the jib sheet.

If cleats are placed on the trunk, aft of the slot for the centerboard, they are too far aft. It is more difficult to pull a line sideways than straight toward your body. Straight toward the crew's body from the fairlead is fine, but what about that centerboard tongue?

One answer is the fitting at the fairlead that combines the fairlead eye or pulley and a cam cleat. This requires careful placement so the crew can pull the sheet upward out of the cleat while seated on the weather deck or out on the trapeze wire without having to raise his or her hands above his or her head.

In the "early days" the crew was given a small winch on the trunk. A wrap of the sheet on the winch allowed it to be ratcheted in and held onto without letting it slip back out too easily. Not too many of these are around any more, but they are still a good way to go for reaching - the point of sail where the sheet requires the most tending by hand, rather than cleating.

Another method is the jibsheet "horse" - a structure on the trunk raising a pair of cleats high enough to clear the centerboard. A slot in the structure lets the centerboard tongue pass through without interference. An eye on the side deck close to the cockpit assures the sheet always being in line with the cleat on the horse, no matter whe the fairlead pulley travels on its track. The direction of pull is directly in line with the crew's normal seating position.

Another variation is a clam cleat on the weather deck, close at hand for easy tendin as long as the board remains down. Cleats, like everything else, have become expensive - always about double what you expected to pay. Before going to the cashier, take one over to the spools of line on the other side of the store and try it out with the same size line as your sheets. It is safer to bolt cleats and fairlead tracks through the deck, rather than screwing them on. If one of the holes lines up with a deck rib or bulkhead, use a long screw, or better, bolt clear through with a long bolt. (Also, never trust screws for mainsheet travelers.) Always use stainless steel bolts and screws. Bronze ar OK, but avoid soft brass, and <u>never</u> use cad-or zinc-plated iron unless you enjoy the contrasting color of rust.

[illegible] than putting the sheets on the boat: tie a figure-eight knot in eac

HOW TO - MAINSHEET TRAVELERS #8

I won't go deeply into why a mainsheet traveler. It is obvious when you sail in heavy wind that your boat will heel excessively and not go ahead very fast if you leave the mainsheet centered. Looking at the plan view of the boat, a centered boom aligns with the long for-and-aft dimension of the hull - the most "tippy" combination of sail and hull. By letting the boom swing off center, the sail's force is working on a more angular hull alignment that is more stable. If we only released the mainsheet to increase this angle, the boom would rise and the sail would become too full for heavy-wind sailing. So we tighten the sheet, which bends the mast and flattens the sail. To swing this barn door in and out we need another line - the traveller control.

Traditional travellers consist of a piece of 5/8" sail track long enough to come within an inch or two of the sides of the boat when it is bolted through the last deck rib aft - the one that ties into the back of the rudder well. Notice, I said bolted. Screws won't do. Bend down the ends of the track so the slide can't come off.

The slide, or "car", on the track can be as simple as a sail slide, preferably the one larger than 5/8" pinched down to fit the 5/8" track. Fancier travellers can be purchased with circulating ball bearings and sheaves for control lines. The mainsheet pulley attached to the slide should not be allowed to swivel, as a twisted loop of mainsheet could result.

The simplest control is a single line tether - a ¼" braided line attached to the slide, running through a hole in the center of the deck, around a turning block, and forward to a cockpit cleat.

Things get more complex for skippers who think they point better in light wind if the traveller slide is pulled a few inches to weather. This requires two lines to the slide running through holes in the deck at the outer ends of the track. Felt-tip pen (permanent ink) marks on the lines near their cleats or blocks help in keeping things consistent.

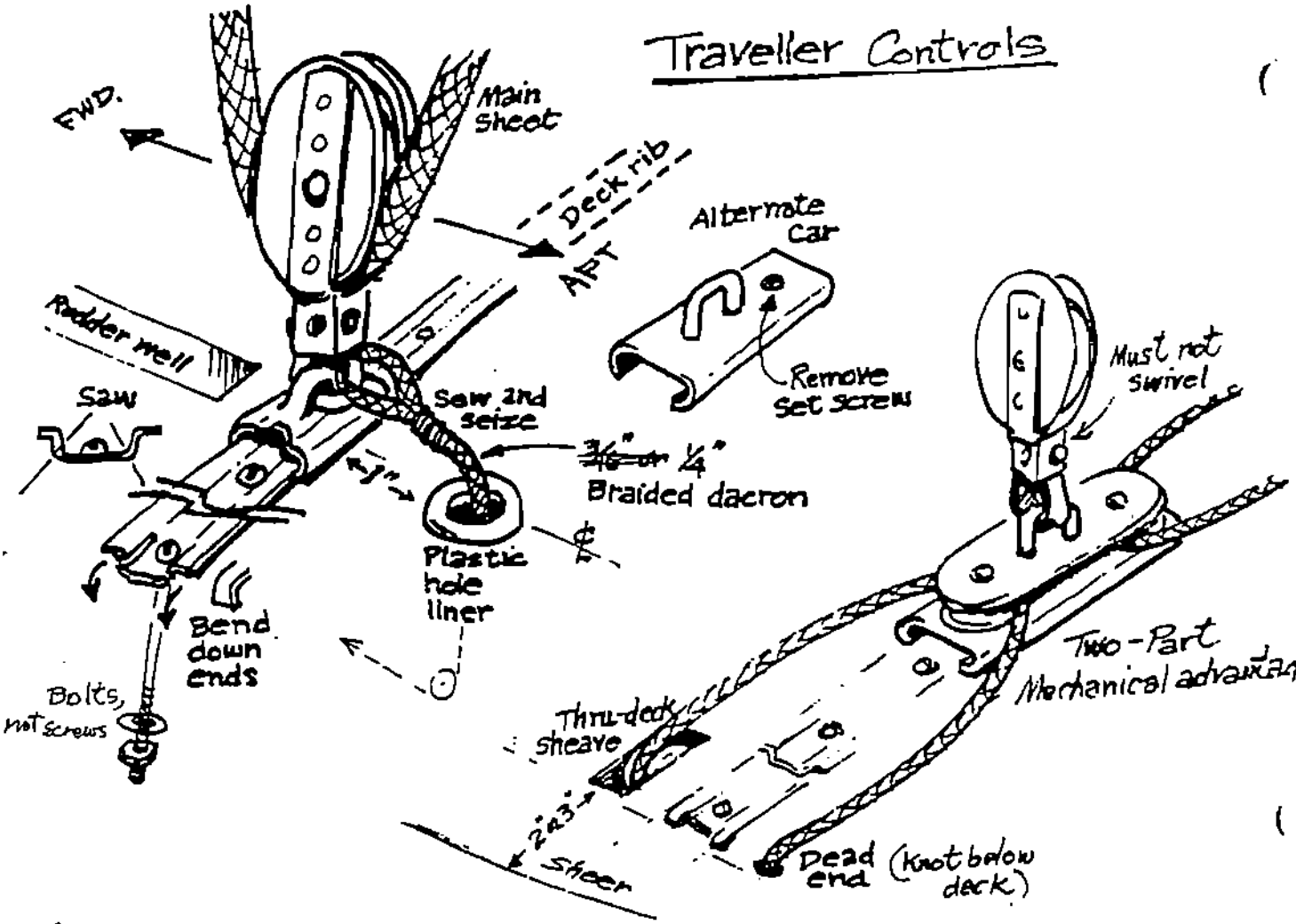
Racing skippers have innovated numerous clever traveller controls to be easily operable while hiking on the weather deck. The rig should be such that it should never be necessary to go back to the other side of the boat to release a traveller control line. The handiest arrangement I have seen was that on Bud Everett's boat, which idea I promptly stole for myself It brings the control lines up just below the mainsheet control block, and is handled just lik a mainsheet, with its own cam cleat. There is one on each side, and the sheave on the traveller car allows a two part system for a mechanical advantage of 2 (½ the effort) by dead-ending the control line at the weather end of the track, passing it through the sheave on the slide, then back around a turning block at the weather end of the track, through the deck to a turning block at deck center, down to the bottom of the boat, through a turning block, forward through turning blocks at the base and near the top of the mainsheet control post, then through a cam cleat and finally to the skipper. All these blocks must be ball bearing such as mini Harkens or there would be an unacceptable amount of friction for easy operation. My variation on Everett's system requires crossing the port and starboard lines twice so the ends will come out of holes (over turning blocks) in a hollow box mainsheet control post or "horse", with the cam cleats on shelves just outside the holes. (See drawings.) Skippers with mid-boom travellers avoid all these blocks because they sit right next to the traveller track, which bridges the cockpit. I didn't copy them because I don't like mid-boom sheeting on the low aspect Geary sail plan.

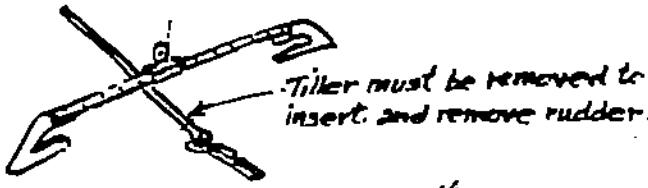
How far to ease the traveller is something you must figure out by sailing. Sails with tight leeches require easing the traveller out farther than with open leeches. Excessive easing in not-too-strong winds will mean less pointing ability. A fearless stab at a rule of thumb might be to keep the slide centered in up to 10 knot winds, halfway out up to 15, play it from halfway to all the way out in 15 to 20, and leave it all the way out in winds over 20 knots.

Remember that the jib must also have its fairlead set farther outboard in heavy wind or the wind would be trapped coming off the jib against the back of the mainsail. Chuck Cleveland moved the mainsheet traveller track forward, mounting it on a bridge over the tiller. This leaves the end of the boom unsupported so the boom can bend up a little at the end to relieve the leech of the sail. I copied that one too, but didn't go as far forward so my tiller can still pivot upwards without hitting the bridge.

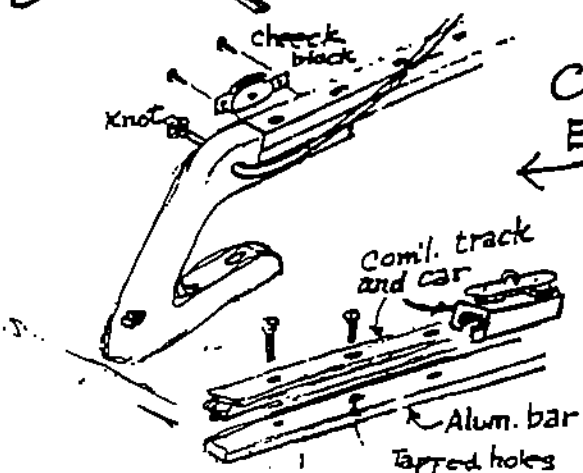
... better than Bud's or Chuck's, please tell me about it so ...

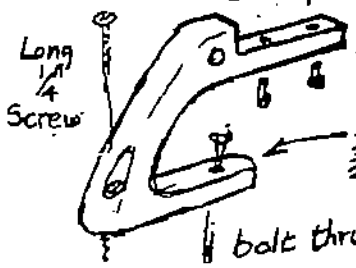
# Traveller Controls

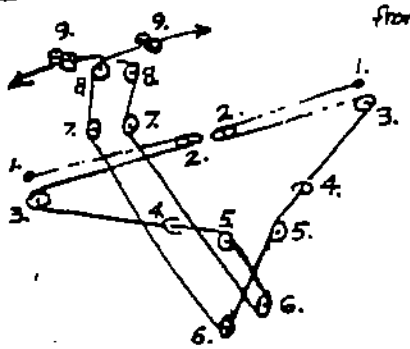



## Chuck Cleveland Elevated Traveller

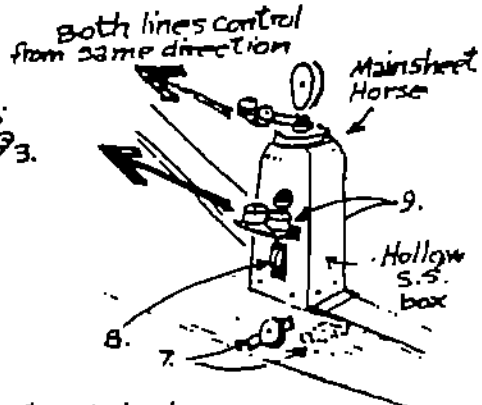


1. Dead end
2. Sheave on car
3. Traveller-end cheekblock
4. Hole in deck
5. Underdeck turning block
6. Boat bottom " "

## Mainsheet Control Lines on "Cleveland" traveller




8. Thru-hole sheave
9. Cam cleat on shelf

How To: New Twist on a Boom Vang # 9

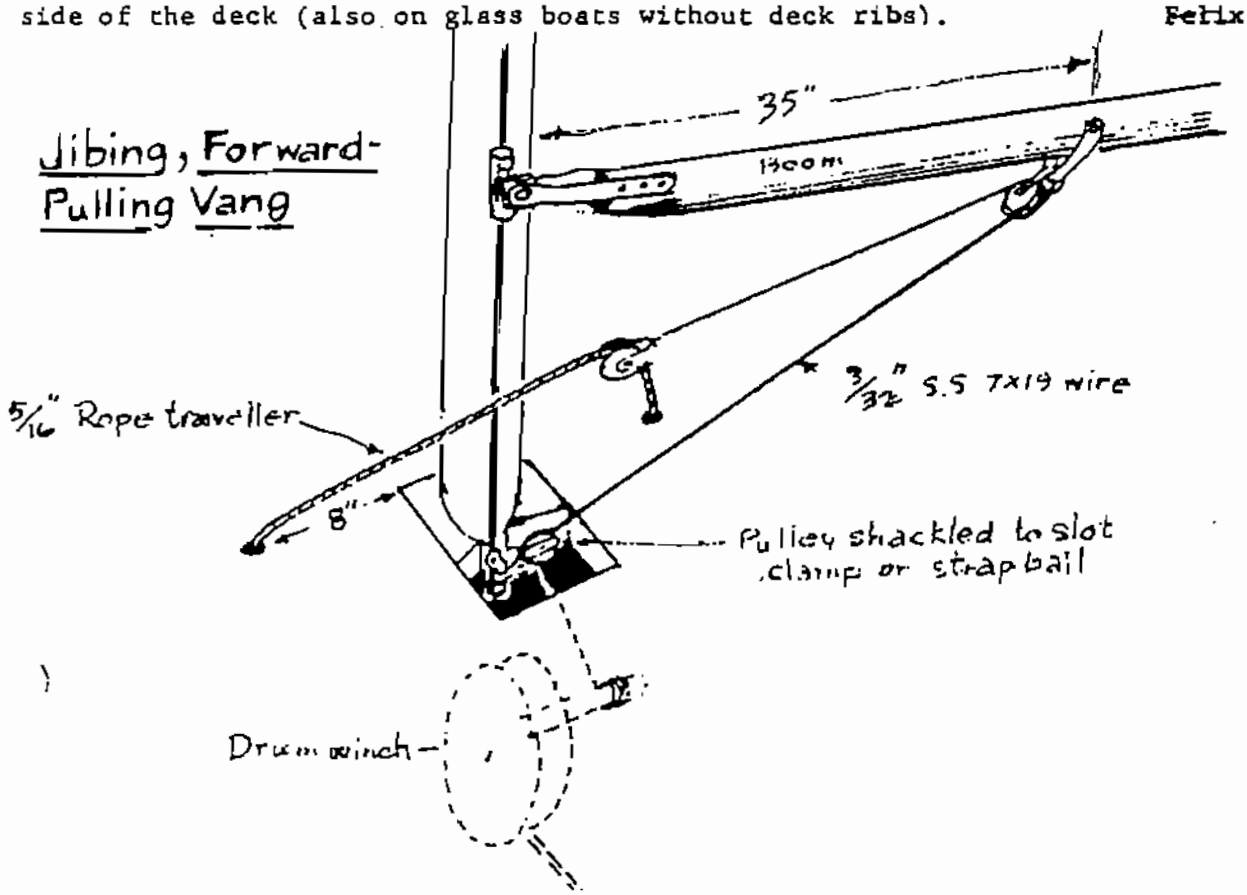
As any novice knows, when sailing downwind, a meandering boom can only ruin the set of the mainsail. So various means of holding the boom down and stabilizing the mainsail have been tried. Some crews are seen sitting on the boom, which does a fairly good job of holding it down, but it puts weight high on the boat, adds to hull instability, and the crew isn't in a good position to tend to other chores.

Years ago, it was popular to vang the boom with a tackle to the chainplate. This held the boom down alright but if a quick jibe was called for, it had to be cast off quickly or a "chinese jibe" and capsize were guaranteed.

All this led to the jibing vang - a system with a rope or wire from about three feet out on the boom running to a pulley on the mast below the deckline. These systems usually had either a multiple part block and tackle or a drum winch (see an earlier article) to provide a mechanical advantage of something like eight to one, with the tail controlled from a cockpit cleat.

The new twist is to hold the boom forward as well as down when wung-out before the wind, without the crew having to hang from the boom with both hands like laundry hanging out to dry. The drawing explains the rig. A 5/16" rope traveler allows one part of the system to run on a traveling pulley. The attaching points of the rope traveller at the deck are forward of a drawn line between the chainplate and the mast, so while part of the strain is pulling the boom down, part is also pulling it forward against the stay. One end of the rope traveller can be dead-ended by running it through a hole in the deck (and through a deck rib, for strength) and tying a knot on the end. The other end runs through a corresponding point on the other side of the deck, then is tied off or run to a cleat so the length can be experimented with.

When jibing, the heaviest tension will occur as the boom passes the mid-ship point, so if using heavy vanging, it may require easing the control line a little while jibing to avoid excessive strain on the boom. If the mast butt is pulled aft downwind, the geometry changes and the traveller ends should not be as far forward. However, if attached at a point not backed up by a deck rib, a backing block of wood should be attached to the under side of the deck (also on glass boats without deck ribs). Felix



How To - Ski Pole Tiller and Hiking Stick. #10

Racing skippers enjoy a year-round open season on weight reduction. Not the waistline variety (although that is also a commendable pastime), but rather in boat hardware, especially from high in the rigging and from items at the forward and aft ends of the boat. The rudder and tiller, being near the aft end of the boat are therefore targets for this attention.

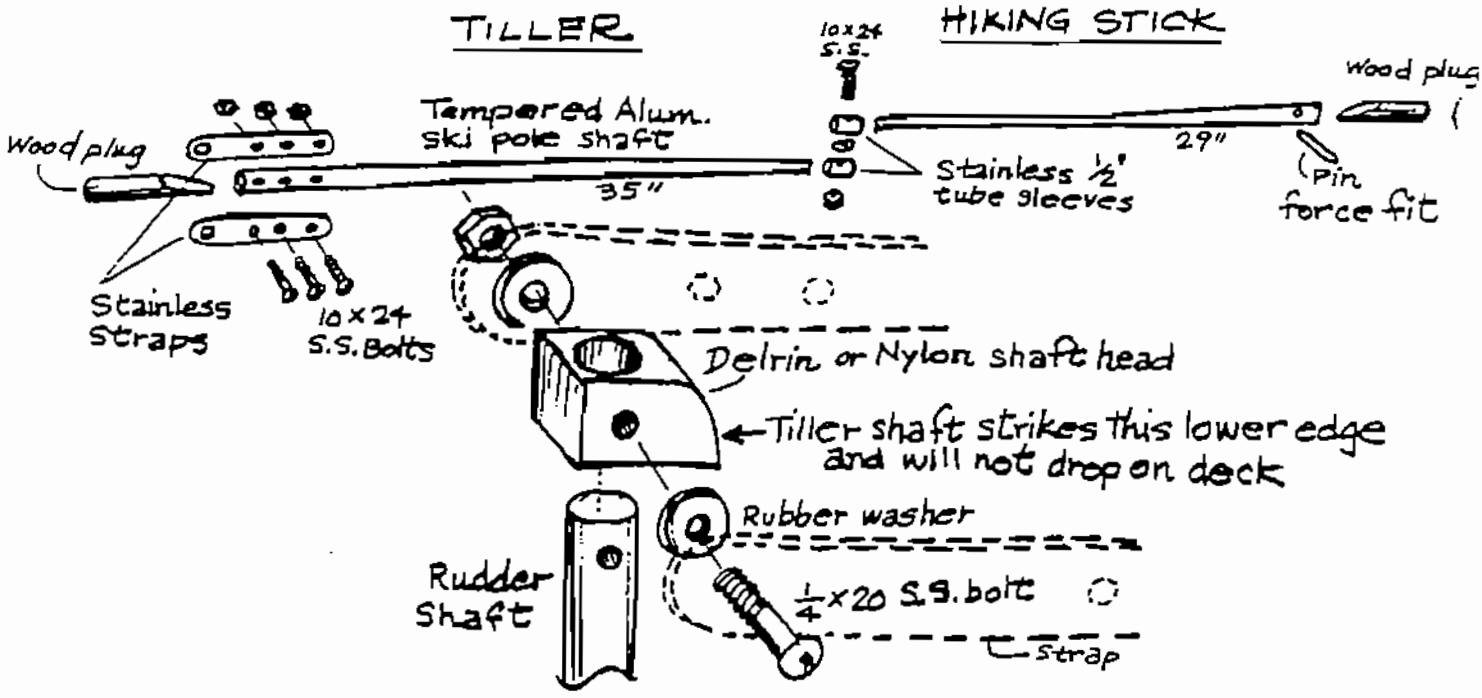
Many of ~~we~~ summer sailors also became addicted to skiing at an early age, so when looking for a strong, light-weight material for tillers and hiking sticks, the aluminum ski pole just popped out as a natural solution. Not all poles are suitable. They don't have to be tapered, but you could probably rationalize a good reason like less windage, and even being more esthetically pleasant. What they must be is tempered; otherwise they won't stand the strain. You can judge the temper by trying to bend the pole. A tempered pole will take several inches of bend and spring back straight like a piece of spring steel. An untempered pole will bend, but may take a permanent set and have to be bent back to straighten it. A tempered pole will also give off a high "ping" when struck against metal. Another measure is price. Tempered poles cost more.

Sport shops may have poles that were damaged at the ends (the parts we don't need), or if you have access to a manufacturer, the unfinished, annodized shafts could be purchased - you will need two.

As shown in the drawings, ~~one inch~~ 1-in. lengths of ½ inch stainless tubing are slipped onto the small ends of the tapered shafts and slid up the taper until they bind; then forced a little farther up, so they grip the shafts tightly. Saw off the excess - the skinny ends. Drill a 3/16 inch hole through each stainless tube (and the shaft inside it). Saw one shaft off 35 inches long. This becomes the tiller. Saw the second off at 29 inches. This is the hiking stick. Lengths of the tiller and hiking stick may be altered to personal preference - these lengths are only suggested. Plug the big ends with wooden dowels (a force fit). Cut the inner ends of the dowels off on a slant, like a slice of salami, so the strain isn't localized at one point. Stainless straps attach the tiller to the rudder shaft. Three 10-24 stainless bolts through 3/16 inch holes keep the straps on the tiller, and a ¼-inch stainless bolt keeps the tiller on the rudder. Rubber grommets provide friction to keep the tiller from bouncing up and down too loosely. A nylon or delrin block on the rudder shaft, as shown, provides a positive lower stop, so the tiller stays off the deck. A 10-24 bolt connects the hiking stick to the tiller. The business end of the hiking stick is wrapped with yacht tape and drilled to take a ¼-inch by 1 3/4-inch horizontal stainless or aluminum pin - just to remind you where the end is. A sewn loop of shock cord on the tiller serves as a keeper for the hiking stick when the rudder is off the boat.

~~Felix~~

(see ~~boat at photo~~ drawing)


TILLER
HIKING STICK
10x24 S.S.
Wood plug
Tempered Alum. ski pole shaft
Wood plug
29"
35"
Stainless ½" tube sleeves
Pin force fit
Stainless Straps
10x24 S.S. Bolts
Delrin or Nylon shaft head
Tiller shaft strikes this lower edge and will not drop on deck
Rubber washer
Rudder Shaft
¼x20 S.S. bolt
Strap

How To: "Cel" Finish. #11

Refinishing a boat bottom is probably the biggest maintenance job on a Geary in terms of elbow grease, sweat, and anxiety. We want a surface that is not only smooth at any one spot, but one that is fair - smooth all the way, without humps or hollows. No boat bottom is immune from the problems, whether it be cedar cross-planked, plywood, glass over wood, or all fiberglass. All these materials are plastic in the sense that you can't count on them to stay fair from season to season or even month to month.

One method of refinishing that avoids many hours of dabbing putty and hours of fine sanding is the "cel" or mylar finish. It probably got the cel name for the days when cellofane film was floated on synthetic varnish to finish tables and doors. Today, the material used is clear mylar sheets, acquired from a fiberglass supply store.

The boat need not be taken down all the way to bare wood for this treatment. A disc or belt sander can be used to roughen the surface and achieve a degree of fairness. Keep the sander moving and try to avoid deep gouging. The beauty of this system is that all the little dips and scratches don't matter at this stage. Use a batten occasionally, wrapped with carbon paper or sprayed with flat black, to locate the high spots by sliding it over the surface and leaving black smudges on the spots to be sanded.

When things are generally smooth and no local highs can be detected, you are ready for the magic treatment. First mask off the sides at the chine to save them from runs of resin. The plan is to work on the bottom a section at a time - from the centerline out to the chine and as wide as your mylar sheet - typically two to three feet. If the boat hasn't much convex curvature, larger areas may be covered.

Starting at either end, lay the mylar on the boat with one edge at the centerline and the opposite side extending beyond the chine. Tape the mylar down with masking tape on the centerline edge. Now mix about a cup full of polyester coating resin, add color, pigment and catalyst, following directions as to amounts depending on temperature, as printed on the can, or as supplied by the store you bought it from. Lift the mylar and pour the resin on the boat a few inches outboard of the tape. Now drop the mylar over the resin and use a brayer (a rubber roller) on top of the mylar to move the resin evenly over the surface. Don't lean too heavily on the brayer. We don't want to squeeze all the resin out. But you should try to maintain a fairly even thickness over the area. It should be allowed to run beyond the mylar on the three free sides and wiped off before it sets.

Now relax and let the resin "go off". Check what's left in the mixing can. When it turns to thick jello, try lifting a corner of the mylar. If it comes away clean, remove the whole sheet and the tape, then admire it for a while. Proceed down one side of the boat and up the other. The mylar should overlap the previous resined area and the resin forced out over the old surface. Try not to add to the thickness, but let the fresh resin butt up to the old. If the surface is convex, you may experience some wrinkling, which is hard to avoid, but the ripples can be sanded out later.

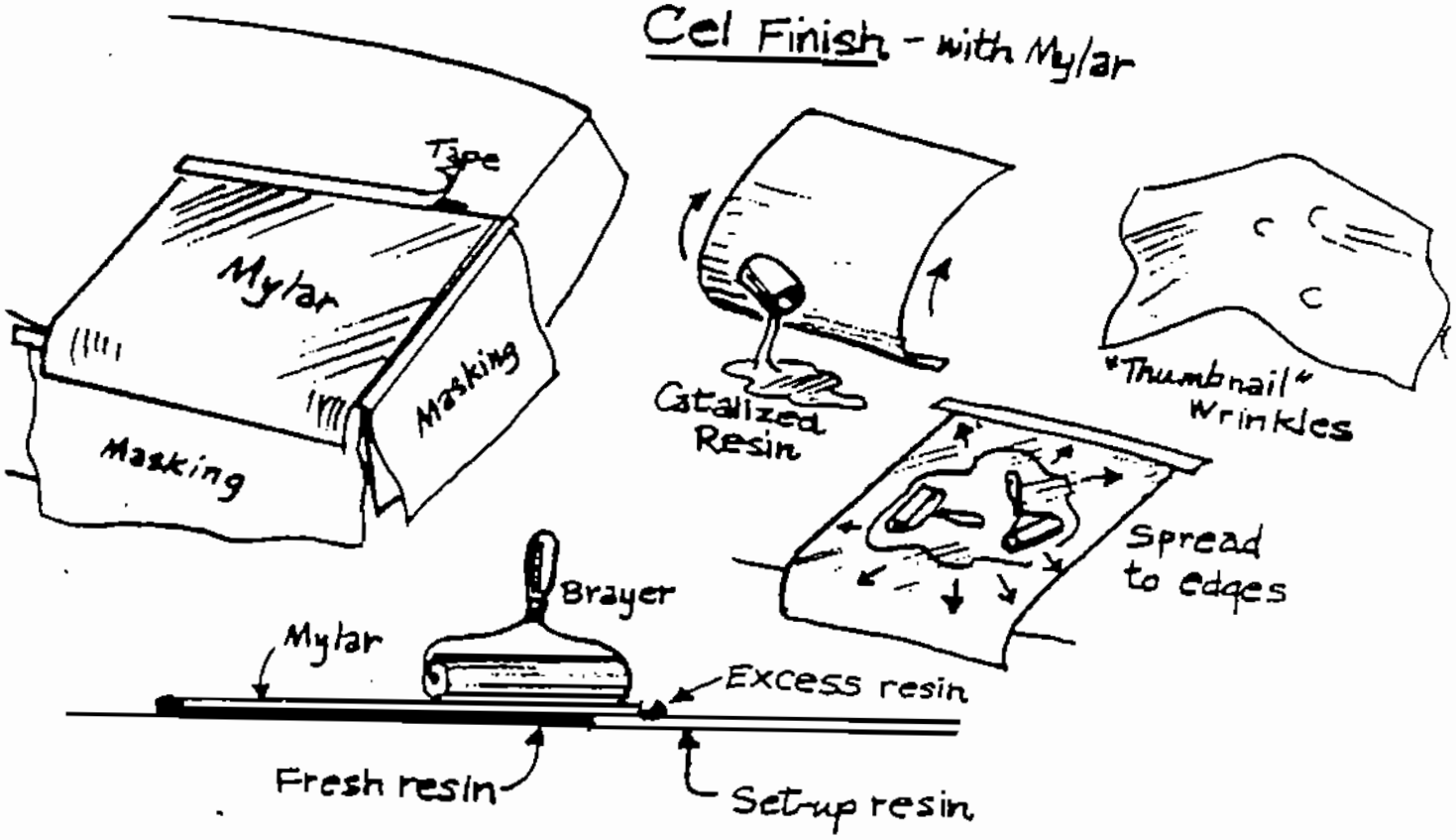
Sorry about that, but we are going to sand all that beautiful slickness, and paint over it. That is, unless you want to go for broke and attempt to do the whole boat in one trip. I have heard it can be done, but haven't seen it done. I'd suggest help from an experienced professional, assuming you have a source for very large mylar, before attempting it. The smaller pieces can be reused for several passes before the styrene in the resin attacks the mylar surface and dulls it so the resin sticks. In handling the mylar, try to avoid letting it sag, forming little thumbnail wrinkles as these will result in little thumbnail humps and hollows in the surface. Humps can be sanded off but hollows will have to be filled with surfacing putty.

A little sanding and puttying will still be required at the overlaps, chines and centerlines, and an overall light sanding of the whole bottom before painting. It is surprising how this method will smooth out a very scratchy, gouged, dented, and otherwise imperfect surface. It goes on thin over high spots and fills in the lows, the resin evening out in contact with the fair mylar surface until it sets up and the film is peeled off.

The same process can be used over most of the surface of a foiled rudder, detailing the rest by painting with resin and fairing the edges prior to finish painting.

Polyurethane marine enamel provides a high-gloss finish to these surfaces without oxidyzing (chalking) as quickly as epoxies or gel coats.

~~Poltx~~



How To: Hoisting Out #12

If your Flattie sailing consists of an occasional Sunday afternoon in a water-logged wooden antique covered with algae, you may never have the need to hoist out. "Hot shot" racers (an ~~Ed Schibler~~ appellage), on the other hand, wouldn't think of leaving their racing machines in the water an hour before or after a race, and where the equipment is available, that means hoisting out.

There are some basic requirements for the hoist-out gear. First, it must be stron enough to lift the boat, a reasonable amount of bilge water, and in some cases, a crew member whose life insurance premium is paid. Secondly, it should be as light as possib as it goes with the boat and doesn't want to add much to hull weight. (Heavy stainless straps and cast iron shackles make me cringe.) Thirdly, it should be arranged so that once clear of water or trailer, the boat does not do a head-stand or roll over.

At one time, it was popular to use a three point lift - one point from the backbon at the aft end of the cockpit, and the other two from the chainplates. This tended to be hard on chainplates, and put the deck ribs into heavy compression, which was hard on tired wooden hulls. It is now more popular to lift from two points on the backbone, th forward point on an extension of a line from the hook on the hoist and the mast cutout in the deck. To keep things centered, the forward line becomes two lines, one from each side of the backbone, step, and mast. This also provides a slight degree of lateral stability, but lanyards snapped to the stays are recommended for making things less tippy.

My preference is ½ inch twisted polypropylene line, very light weight for its strength. The attachment to the backbone forward should be low--within an inch of the bottom--to my favorite fitting--a drilled hole. A hole is the only bit of (non) hard-ware that subtracts weight from the boat. The forward line is simply continuous, pass-ing through the hole, with an overhand knot on each side to prevent movement. The single line aft can be eye-spliced through a hole low in the backbone, or, if the back-bone is shallow, to the center of a 5/16 inch stainless bolt passed through the back-bone and stainless steel or micarta reinforcement plates to distribute the load. A plastic pipe liner can be used in these holes if water seepage is a problem.

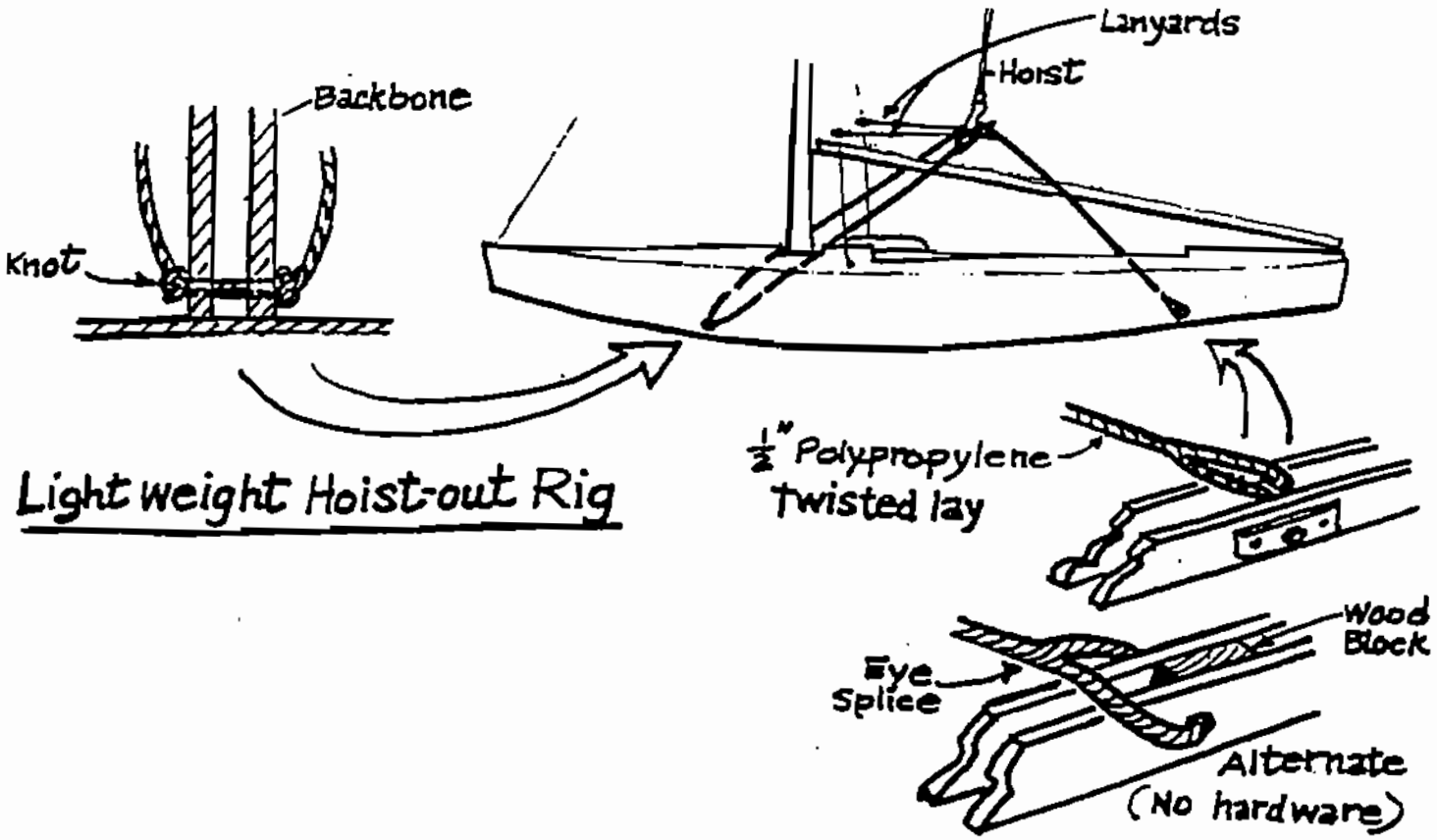
The lines should be attached first to the boat, then led to the approximate bal-ance point for attachment to the hoist hook - about 2½ feet above the boat and a little forward of the center of the centerboard trunk. The three hoisting ends are then tied in loops temporarily until the precise lengths are determined by trial hoisting, then measured and back spliced to become three individual loops each about eight inches long

And don't forget the other line - the bow painter - to keep the boat from drifting off after it is launched. Anticipate in which direction you want the boat ~~the~~ to point when it hits the water, and allow for the 180 degree swing of the hoisting davit when hooking up. The reverse holds true when positioning the empty trailer for hoisting out With or without the mainsail on the boom, it is advisable to cleat the mainsheet to pre-vent the boom from sliding off the side of the boat.

The small lines to prevent the boat from tipping sideward are ¼ inch, attached either to the two hoisting loops on the forward two hoisting lines or both to the singl loop of the aft line. Small, non-rusting snap hooks are attached to the other ends at the proper length for attaching to chainplates, turnbuckles, other deck fittings, or directly to the shroud wires.

If you have access to a hoist, it can be handy, even when not launching, to check the rudder or centerboard action or to scrub the bottom.

~~Petty~~




## Light weight Hoist-out Rig

How To - A Regatta-goer's Check List #13

About once a year I replace the writing pad in my wallet and carefully tape one page from the old into the new - and that page is my go-to-regatta check list. Such a list can be a godsend to avoid leaving things home, but it had better be complete. One tends to trust it rather than one's brain, as I learned last year at Cultus Lake. But now, the whisker pole has been added to the list, so my memory can go back to its normal lethargic state. I share the following with you:

Boat, mast, centerboard, rudder, tiller (I confess, these aren't on my list.)
Anchor, towline, paddle, bailing can, sponges, whistle (My whistle is two fingers in my mouth.)
Life jackets - 2 government-approved, plus a throwable cushion (sometimes a requirement in Calif.) Vests or approved flotation jackets, like parkas, are most comfortable.
Sails, sheets, battens (plus extras), whisker pole (re-christened "jib-stick" by Canadians)
Protest flag (with Velcro edge for quick attachment)
~~USYRU~~ Rulebook (current)
Geary 18 Handbook (with all rule changes)
Measurement Certificate
#600 wet or dry sandpaper, liquid detergent
Telltales, masthead fly, magic marker
Stopwatch
Dark glasses, binoculars
Flashlight, camera, film
Suntan Lotion
Visored cap
Tools, hardware, spare parts, yacht tape, seizing thread, needle and palm.
Life savers (For pre-start dry mouth)
Canned pop (For post-race perspiration replacement)
Rain gear and rubber boots
Trailer bearing grease, lights checkout
Trailer license registration
Battery jump cables
Radio - with a weather band
Alarm clock
Auto insurance agent's phone number
First aid kit
Aspirin and prescription medication
Van water, propane, coolant, oil, battery, windshield washer liquid, cassette tapes, food, utensils, bedding, pillows, ice, jacks, toilet water, paper, chemical, road maps, tire pump, lug wrench, registration.
Towel, soap, shaving gear, etc.
Perpetual Trophy won last year!!!!!!!!!
MONEY

Also don't forget your crew. What else did I leave out? Please write and tell me or you can bet I won't have it at ~~Elk Lake this year~~.

~~Polly~~

How To - A disappearing bow painter # 14

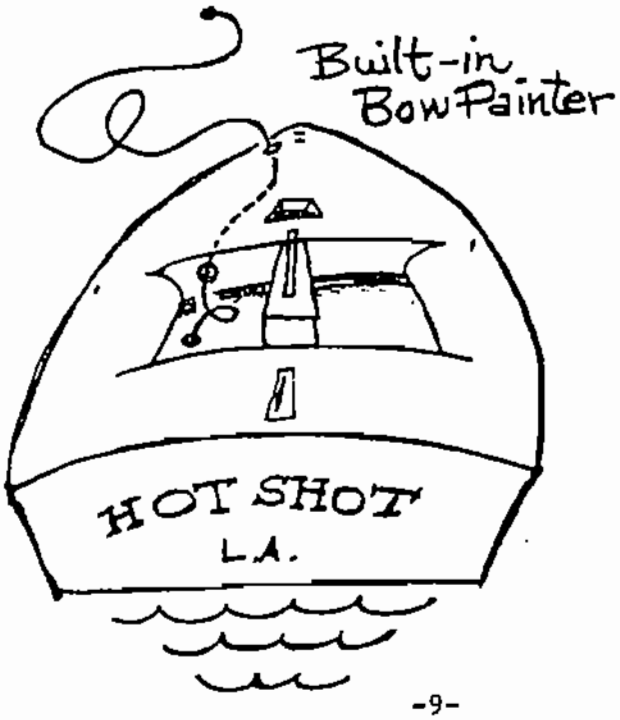
No, Virginia, a bow painter is not a guy you hire to paint the bow of your boat. It is the line you use to tie the boat to the dock between races. Derivation of the word slips me, but it is a handy item. This one is designed to be ready in a hurry - as when you are the crew standing on the bow, and the skipper has the boat closing rapidly on the dock in a fresh breeze. About this time he also usually hollers, "Fend off and hang on!". This is no time for the crew to be trying to remember how to tie a bowline around the headstay.

This painter can be as simple as one 18 foot piece of 5/16 inch line and two drilled holes. One hole, about 7/16", is drilled diagonally through the foredeck alongside the headstay. The other is drilled through the deep deck rib that is the firewall or dashboard at the forward end of the cockpit. The line is fed through the two holes, a knot tied at each end, and voila! - a disappearing painter.

A fancier version calls for a plastic knob at the bow end of the line that homes into a recess in the deck, so the foot of the jib doesn't foul it when tacking. To keep the fo'csle watertight, the line can run through a plastic tube and emerge from the bulkhead through a nylon hole liner. A deluxe line would be braided dacron or nylon. An inferior choice would be polypropolene. It is light and it floats, but it doesn't hold well on cleats or when knotted.

In use, the crew has only to grab the knob from the foredeck and jump on the dock, remembering to fend off along the way. The line feeds out of the hole for 10 feet until the knot on the cockpit end comes up against the hole in the bulkhead and stops - if you remembered to tie the knot in the end. To retrieve the painter, just pull on the cockpit end. If you like a longer painter, buy a longer line. Just remember, about 8 feet is used up inside the boat between bow and cockpit.

Remember, also, to tie up to the downwind side of the dock - pull up your centerboard, and set the whisker pole to hold the boat off the dock. Avoid banging the next boat by using a life jacket for a bumper. ~~—Felix~~



How To - Rounding Marks in a Geary 18 #15

Here's a tongue-in-cheek shot at sorting things out around a mark. The times are unscientific wild shots and in most cases can be shortened. Race winners will shorten them a bunch. Skipper and crew jobs will vary according to placement of fittings and control lines.

Going downwind approaching leeward mark:

15 seconds before reaching mark - Crew tighten main sail outhaul on boom.
13 " " " " - Crew release barberhauler, if set.
11 " " " " - Skipper tighten cunningham if breeze is fresh and/or tighten halyard.
7 " " " " - Skipper drop centerboard. (hoping it drops all the way)
4 " " " " - Crew move mast butt forward if it was aft on the run.
2 " " " " - Crew drop whisker pole, pole into cockpit (stow later), start setting sheets.
0 " " " " - Round mark, bringing sheets in during rounding.
2 seconds after rounding - Store whisker pole, crew onto trapeze if breeze is fresh.
4 " " " - Skipper adjust vang.
7 " " " - Skipper adjust traveller, cover competition, and go fast.

Approaching weather mark, before downwind run:

15 seconds before reaching mark - Determine downwind course, wind direction, side for pole.
5 to 10 sec. " " " - Pole out of storage, on side of boat it will be set.
0 " " " " - Crew off trapeze, round mark, let sheets out.
1 second after rounding - Skipper pull weather jib sheet so crew can set pole, then ease it till pole is set, then give to crew. Crew stays in cockpit.
2 " " " - Skipper set boom vang.
4 " " " - Skipper raise centerboard, crew set barberhaul if reaching, crew pull mast butt aft.
6 " " " - Crew let off outhaul on boom.
8 " " " - Skipper let off cunningham, and/or ease main halyard.

~~Fabian Hoitsma~~ t

How To - An upholstered Centerboard trunk #16

This item is offered with the promise that the next article won't promote fake fur floormats for the cockpit or rows of ball-tassles hanging from the boom. Rather, the appeal is to the veterans of the Order of Skinned Shins. It may look fancy, but the inspiration was pure black-and-blue functional. If you have made enough quick trips back and forth across that blasted trunk cap, you'll understand the problem.

This is one of the simpler how-to's and one of the cheapest. After measuring your present trunk cap, go to your local fabric shop that handles roll-ends and odd lots and get a piece of naugahyde. Go for the best quality stretchy type - the amount you need won't break the bank. The same shop will probably carry urethane upholstering foam. Get half-inch thick, preferably in the firm rather than soft density if there is a choice.

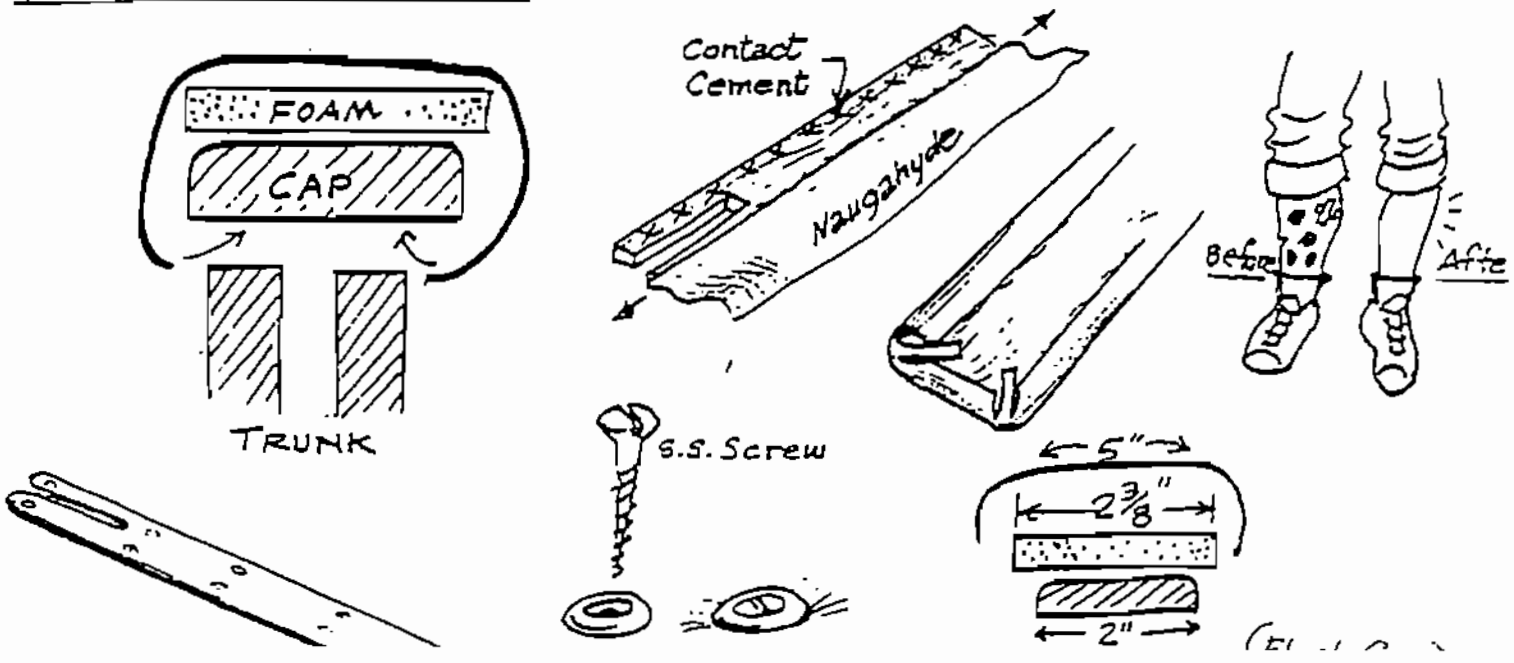
Your present wood cap may do, or you might want to go for a lighter weight one such as ¼ in. plywood if the old one is a heavy plank. If you carried cleats for halyards, centerboard, etc. on the cap, you might consider moving them down to the top edge of the side of the trunk. If jibsheet cleats are to stay on the cap, bolt them through after upholstering. The new cap should be at least as wide as the trunk, but leave about 1/8" for-and-aft where it butts up against any other structural member to allow room for the upholstery. If the new cap is bare wood, it should be painted or sealed against collecting moisture. The naugahyde should be cut wide enough and long enough to wrap well onto the underside of the cap. Apply contact cement to the underside of the cap and to the underside edges of the naugahyde. When tacky (read the directions on the container) bring one edge in contact while stretching a little lengthwise, lay the foam in place and starting at the center, stretch the naugahyde evenly over the foam and into contact with the other side of the cap. By carefully trimming some of the excess at each side of the corners but leaving a narrow strip at the very corner, stretch the narrow strip onto the bottom so no voids show. You might practice a corner or two with scraps first.

If the trunk is fiberglass with protruding angles at the top, the cap could be screwed on from below, otherwise stainless flathead or oval head screws with stainless trim washers have kind of a custom look, even though they dimple the surface.

With reasonable care, the cap should last as long as the vinyl top on your car. It would appreciate an occasional waxing, but don't capsize too often or the foam may take a while to dry out. Your friends will be envious, and your shins will thank you.

~~Felix~~

Upholstered Trunk Cap



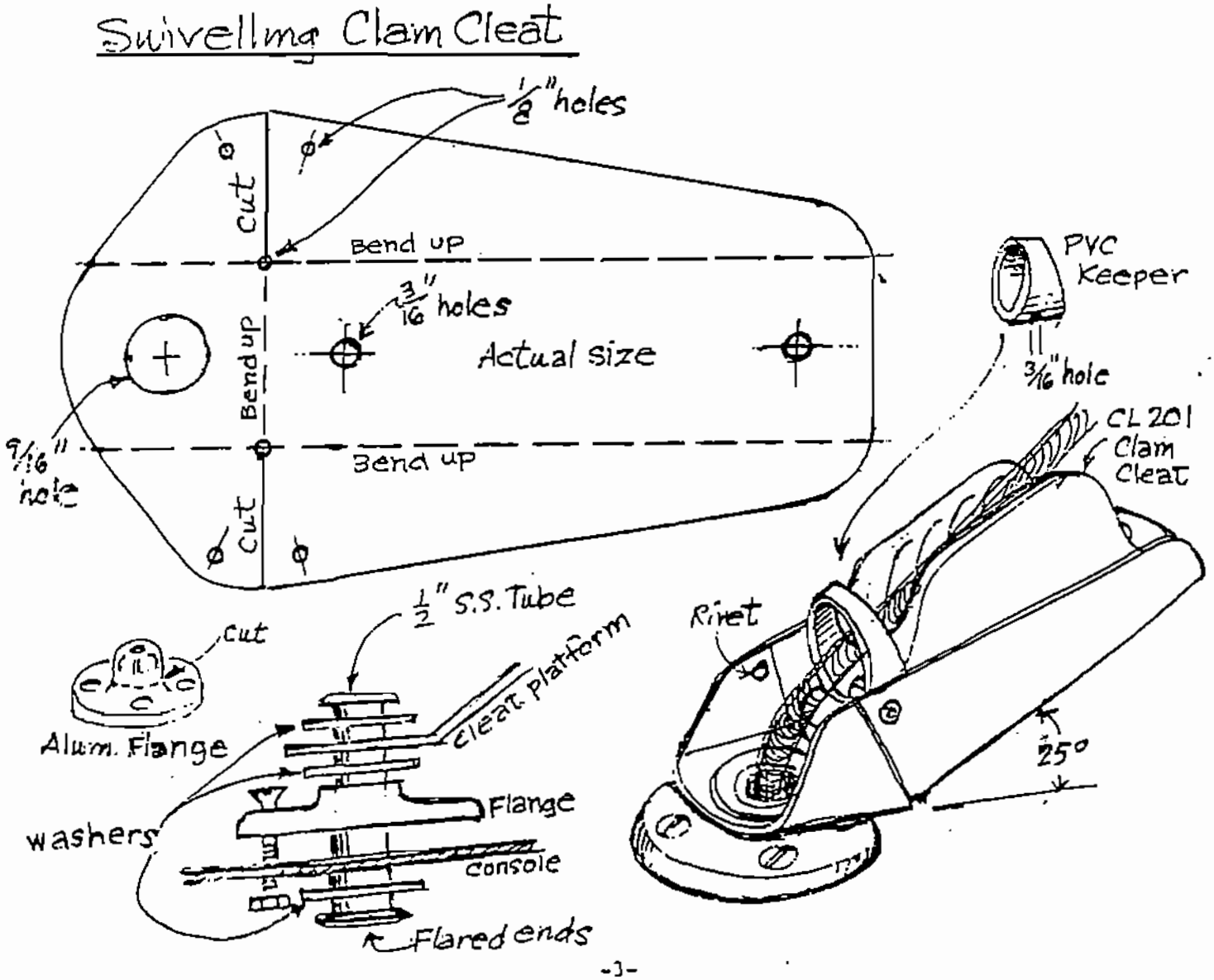
How To: A Swivelling Clam Cleat #17

This fitting may not appeal to everyone, and requires some do-it-yourself metal work. However, it solves the problem of tending a centerboard or vang control line from both sides of the boat with a single fitting. It requires a vertical penetration of a horizontal surface, such as a mid-cockpit console, which will be described in the next ~~Tell Tale~~ article.

The cleat is a CL-201 vertical clam cleat. If you have an older one, the dimensions will be a little different than shown. The two major operations are sawing out the stainless steel platform, and flaring the ends of the vertical tube.

In operation, the control line comes up from a turning block on the side of the centerboard trunk, through the tube and the retaining eye, then through the jaws of the cleat. As it swivels, it is only necessary to grab the line and the fitting will rotate toward you, ready for cleating or slacking off.

The length of the tube will vary according to the thickness of the platform it is mounted on. ~~Tobin.~~



How To: Mid-Cockpit Console #18

Reference was made in past articles to a mid-cockpit console. You like it or you don but don't knock it until I explain it. Some folks have mental blocks because their shins get so bruised on the old wooden boats with a brace across the cockpit at the aft end of t trunk. Those were abominable knee-breakers.

The new cut-down board and trunk created a location for a different kind of brace, farther forward, that also serves as a console for numerous control lines. At 23 inches forward of the aft end of the trunk, it partitions the crew's working space apart from the skipper's executive office, and puts most of the working lines within easy reach of both. Of course skipper and crew each own various control lines of their own, but I have heard that some lesser organized boats are known to experience an occasional emergency when all lines are up for grabs.

This console can be bent from aluminum or carved from wood. It can be mounted horizontally or just slapped on at the trunk angle. Side deck attachment will vary according to the amount of deck roll. On some boats it will bolt up through the cockpit lip. On others, metal brackets or wood cleats may be required.

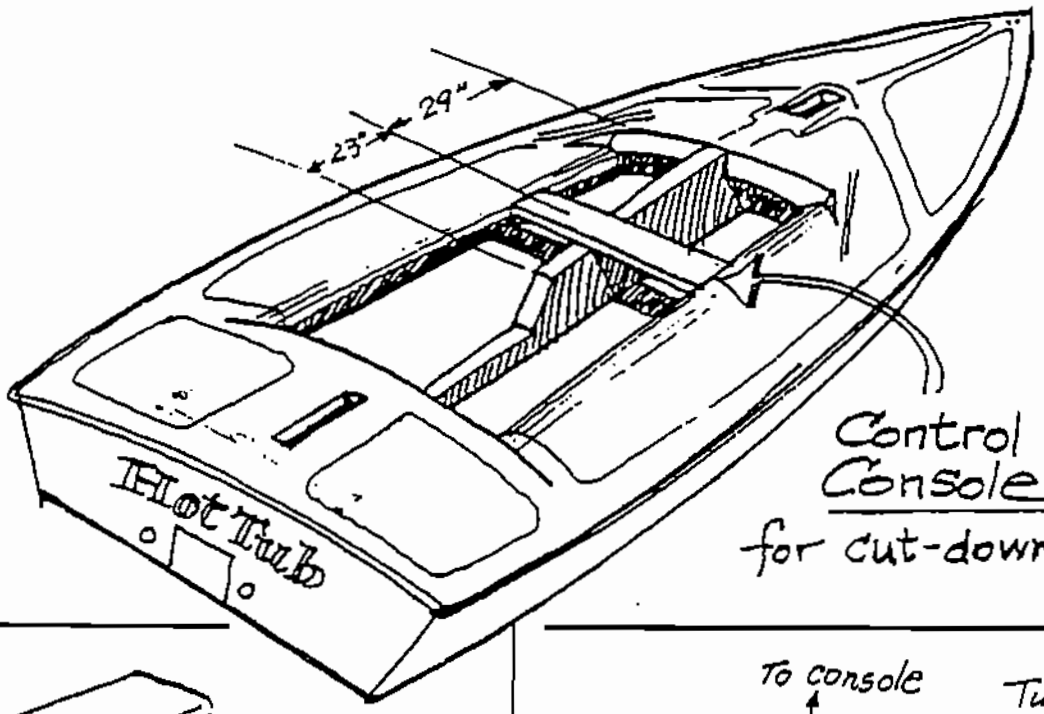
Control lines coming aft alongside the trunk can round grouped turning blocks and lea up to cam cleats mounted on the sides of the console, or up through the console to cleats mounted on top. (See the previous article ~~Face/Tell-Tale~~ for a pivoting clam cleat.) Reaching barber-haulers can come aft under deck along the sheers, around cheek blocks to cross the trunk under the console, then emerge to cleats on the opposite (uphill) sides of the boat.

Suggested lines for the console are centerboard pendant, boom vang, cunningham luff tensioner, barberhaulers, halyard tensioners, and transom-flap bailers. Large contrasty labels next to all the cleats help those of us with poor memories.

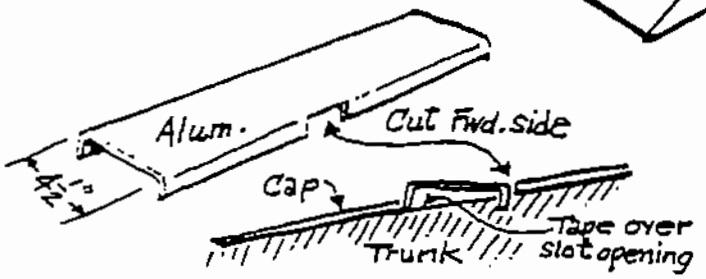
And it really doesn't get you in the shins. Honest.

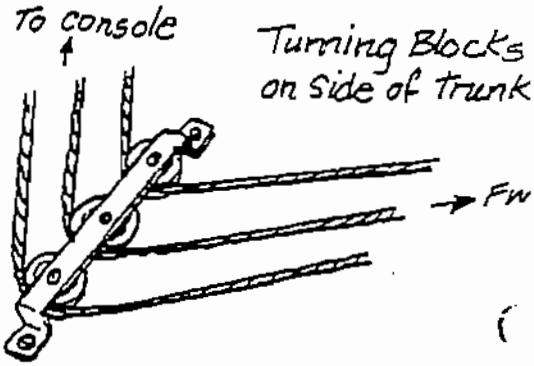
~~Felix~~

(See ~~other side of page for~~ drawings.)

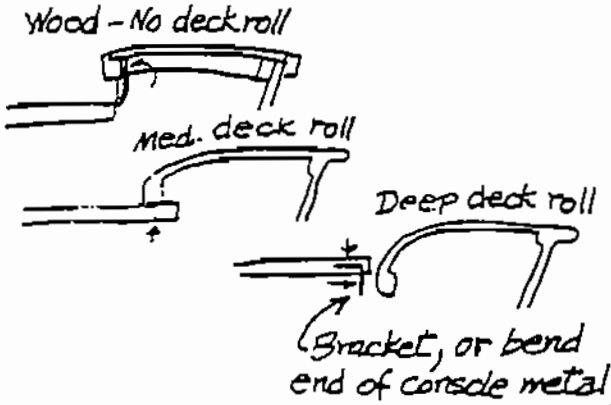



## Control Console
for cut-down trunk

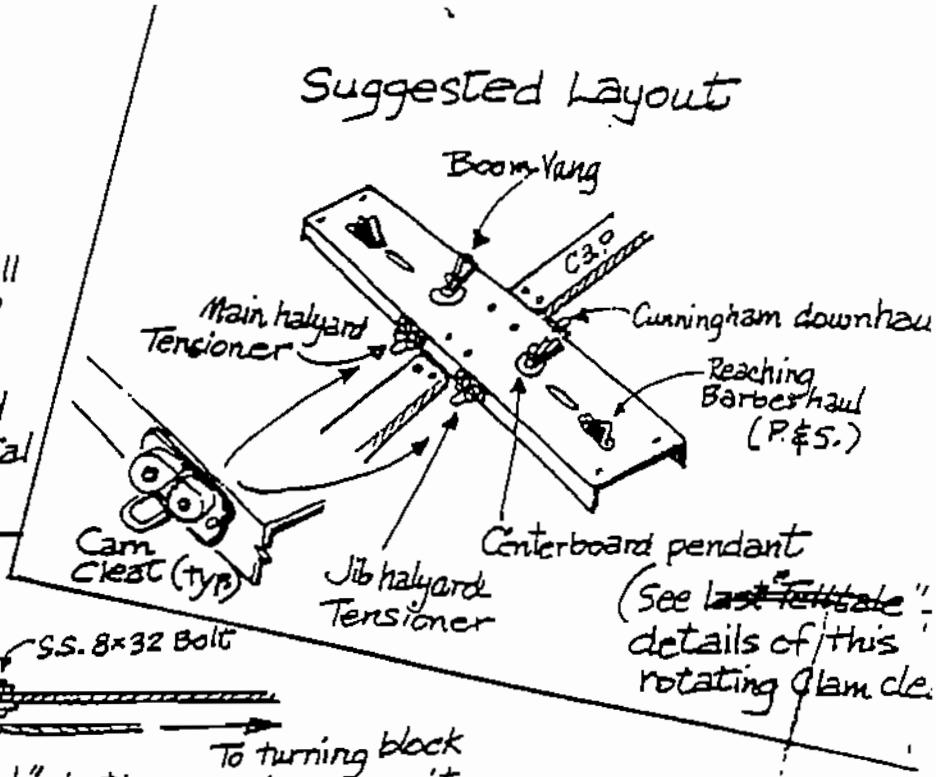


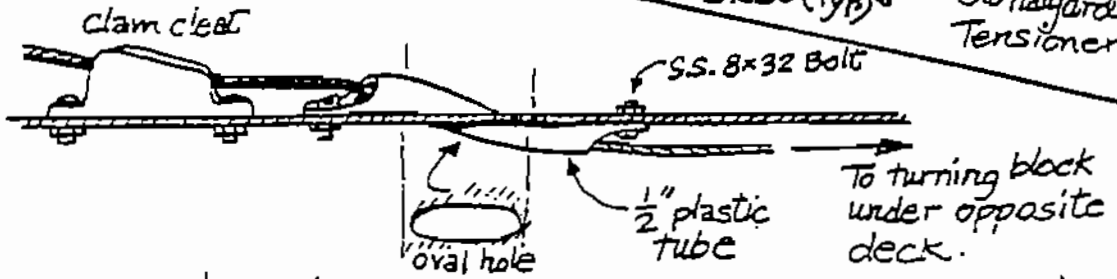




## Attaching to deck




## Suggested Layout




Leading reaching Barberhauls through Console deck.

How To: Chainplates #19

Whether building or outfitting a new boat or repairing an old one, a recurring problem is that of proper installation of shroud chainplates. The main questions seem to be how strong do they have to be and how do you fasten them into the boat so they don't let go?

One fiberglass boat builder (who will go un-named) poked a few strands of fiberglass roving through a couple of holes in a Racelite stainless strap, fanned the strands out on the inner hull surface and glassed a patch of glass cloth over the area. I watched several of those boats lose their rig while sailing, and one fall from a hoist while launching. In each case, the chainplate simply pulled out of the boat. There were no metal fasteners to handle the shear load, and the straps cut through the skimpy fiberglass strands.

Some of the older wooden boats went to the other extreme, with large ugly carriage bolt heads stuck clear through the side plank, a heavy backing board, and a horsey steel chainplate -- or worse, with the chainplate on the outside of the side plank. Strong doesn't hav to be ugly.

An adequate chainplate can be fashioned from the stock stainless steel straps, at least 12 inches long, carried by most small boat hardware shops. They are typically about 7/8" wide, about 3/32" thick and come with a 3/16" hole in each rounded end. One end pokes up through the deck about 1" to take either a turnbuckle end fork or a direct shroud attachment with a swedged fork terminal. Below deck, the strap should be slanted aft, so it is in line with the shroud as it runs up to the mast. This puts all the load in a shear line with the strain. If mounted straight up and down, there would be a twisting side load that could wor the fasteners loose. The part protruding above the deck should also be bent inward to align with the shroud.

If the boat is old, with cedar or other lumber side planks, it would be better to first mount a ½" marine plywood backing plate four or five inches wide and a foot or more long to the inner surface of the side plank, at the same angle as the chainplate. Five countersunk 10 X 32 stainless flathead bolts 1" long spaced 1 3/4" apart will provide secure fastening through additional matching 3/16" holes drilled in the chainplate strap. With the bolts projecting through from the back, the plywood is then fastened to the side plank, using waterproof glue or resin and about a dozen randomly spaced stainless screws, at least 1" long but not penetrating the outer surface of the sideplank. If you can handle fiberglass, it could be fiberglassed to the side plank, first taking a long bevel off the sharp edges, so that several alternating layers of matte and cloth adhere smoothly. The strap is then attached to the protruding bolt ends with stainless lock washers and nuts.

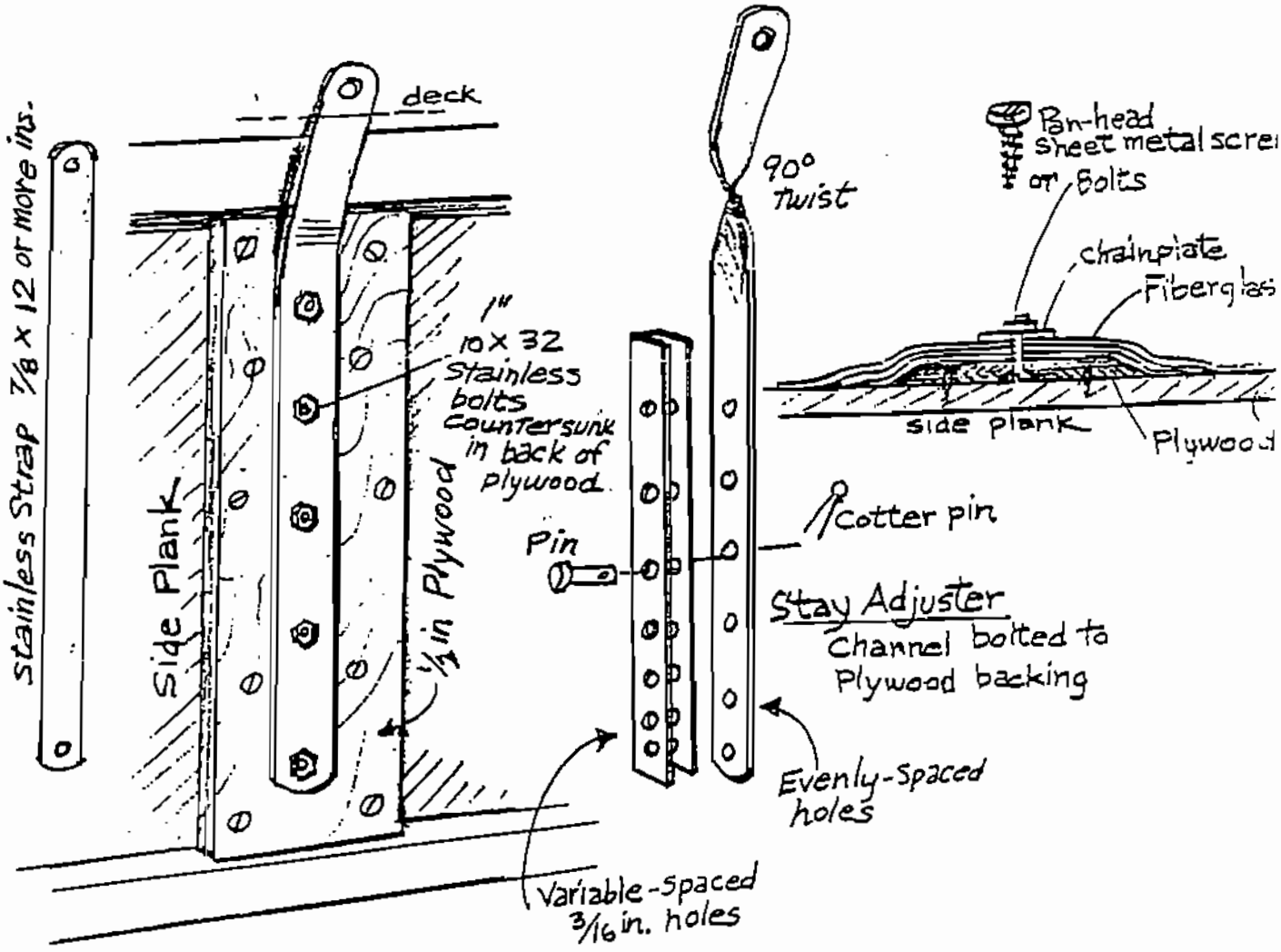
An alternate method would be to mount a stay-adjuster channel or two stainless angle sections below deck, drilled with alligned pairs of holes, but irregularly spaced, reducing the distance between each successive pair by 1/8". The regularly spaced holes in the strap will then provide a vernier scale so a rigging pin can be inserted through any set of holes that line up. Small adjustments can be made by removing the pin, sliding the strap up or down, looking for another set of holes that allign, and reinserting the pin. The strap will have to be twisted 90 degrees before going through the deck to have it line up fore and aft above deck.

On a fiberglass cored-sandwich hull, a few layers of matte and roving will add enough skin strength to screw chainplates directly to the inner surface of the sideplank with number 10 or 12 pan-head stainless sheet metal screws. The new boats from Port Townsend have

internal bulkheads running from the chainplate area to forward of the mast, with the advantage that the chainplates or stay adjusters can be bolted through the bulkhead rather than attach to the surface of the side plank.

As to fore-and-aft location of the chainplates in the boat, the plan recommends a range of from 88" to 98" from the stem measured on the boat's centerline. Racers like to carry them as far forward as possible to keep the shroud from cutting too deeply into the foil of the mainsail when running down wind, and also to allow the boom to swing as far forward as possible to increase frontal area. California sailors determined (probably the hard way, by losing some masts) that the critical distance aft of the mast was about 9½ to 10", and that was with the mast butt pulled aft to the legal limit. Any lesser dimension and you'd better not try to sail downwind.

~~Felix~~



HOW TO - Odds and Ends - # 20

V

1. Whisker Pole Orientation If you have a hook or other fitting on your whisker pole tha gives the pole a right-side-up or a wrong-side-up, a contrasting color tape or paint stri on the top will help the crew set it right on the first try.

2. Jib-sheet Witness Marks You don't need a calibrated scale or a computer to assure a consistent position for setting the jib-sheet, but some kind of a mark on the sheet gives the crew a visual picture of where the mark should be relative to a cleat or fairlead. Don't try to get too scientific, because the position changes with different jibs, fair-lead settings, and as a result of varying mast rake. But on a long beat it helps to reme ber "on the last tack, the mark was about an inch behind the fairlead". A permanent laun marking felt tip or other waterproof marker will do. Paint, or a yarn sewn in and out of the line may last longer without fading, but beware they are not located right where they may interfere with the gripping jaws of a cam cleat. They make a hard spot on the line that tends to slip through cam cleats. And how about using heat-shrink tubing (intended insulating electric wiring) for whipping sheet ends?

3. Quick Disconnects If operating off a trailer, setting up the rig for launching can b quicker by throwing away those pesky wire rings meant to keep the rigging pins in the cha plate/shroud connection. A 6" piece of stainless wire around the head of the pin and att ched to the chainplate in a way that makes the pin want to stay in its home position does the trick. Just spring it out, drop the shroud fork in place and let the pin snap back i its hole. Mating brummel hooks (those hooks with the v-shaped openings on their sides) make good quick disconnects for the shock cord retainers on the trapeze wires. The vang can attach to the boom with a ball on the vang hooking into a reinforced keyhole on the boom. Be sure the strain is distributed over a broad area on the boom and that the boom strong enough (you're right if you detect the voice of experience - make those homemade booms with .060" wall tubing, not .049").

4. Identify your Gear Paint the boat name on paddles, whisker poles and other loose gea that could get away from the boat through carelessness or capsizes. Paint your own name on life vests or trapeze harnesses that you would keep if trading that slow wooden boat i on a new fiberglass one.

5. Jumbo Course Charts If you are over 40 and your aging eyeballs can't focus on those typewritten course charts (the ones that bio-degrade on the first leg of the course), try duplicating the data with a permanent magic marker on the floor of the boat in nice big letters, along with a line drawing of the lake and mark locations. It doesn't guarantee rounding the markes the right way, but at least it won't be from not being able to read them. When the boat floor gets covered with courses, use lacquer thinner or other solven to erase them and start over.

~~Peter~~

HOW TO: Some Wire and control line lengths - #21

Ever get down to the marine supply store and remember you wanted to replace that stay with the broken strands sticking out, then wonder how long a piece of wire to buy? So you make a ballpark guess, take it home, and ---6 inches short, right? Not to guarantee anyth but if you had some close measurements to start with, then your ballparking might come clo

So here are some fearless dimensions taken from Whippet. Other boats may be rigged different, in fact no two boats are identical. It is always safer to buy a foot or two than to be a few inches short. These shroud dimensions will be from chainplate eye to the point of intersection with the mast. If you use a fork swedge at the bottom and a swedged fork or eye attached to an external tang at the top, the wire may be a few inches shorter. If the upper end disappears into a hole and is swedged into a loop end that hangs on a thr bolt, you'd better add about an extra foot. The headstay dimension assumes you use a fork and-eye detach about a foot above the deck. The long piece is 1/8" 1X19 and the adjustabl end is 7X19, assuming it disappears into the boat and is adjustable from the cockpit. You are on your own for that short piece. ~~Mine has an eye loop somewhere foward of the mast, where it attaches to a screw crank.~~ Some use a block and tackle system with rope attached to ~~the wire eye~~ a loop in the end of the wire.

| | | | | |
|---|---|---|---|---|
| Main Shrouds - Chainplate to mast intersection | 17 ft | 1/8" | 1X19 | |
| Headstay (upper) - Mast intersection to detach above deck | 17 ft | 1/8" | 1X19 | |
| Headstay (Lower) - From detach one foot above deck, into fo'castle | 6 to 8 ft | 1/8" | 7X | |
| Main Halyard - From deck, over sheave to headboard | 24 ft | 3/32" | 7X7 | * |
| Jib Halyard - From deck, over sheave box to sail head | 19½ ft | 3/32" | 7X7 | * |
| Trapeze - Mast intersection to handle | 16 ft | 3/32" | 7X7 | |
| Boom Vang - Boom to mast to drum | 7 ft | 3/32" | 7X7 (or rigid vang. Also see how ?) | |
| Vang pendant - Drum to cockpit to cleat | 10 ft | 5/16" | braided dacron | |
| Centerboard wire - Tongue to drum | 6 ft | 3/32" | 7X7 ~~or 7X19~~ | |
| Centerboard pennant - Drum to cockpit to cleat | 10 ft | 5/16" | braided dacron | |
| Cunningham wire - Sail to block just above deck | 3 ft | 3/32" | 7X7 | |
| Cunningham control line - Side of step to block to other side below step to cockpit to cleat | 13 ft | 5/16" | braided dacron | |
| Main Sheet - With stern traveller | 50 ft | 3/8" | braided dacron | |
| Jib sheet - One continuous piece | 36 ft | 5/16" | braided dacron | |

* Plus 3/16" dacron or nylon line halyard tails.

Wherever 7X7 wire is indicated, 7X19 may be used. 7X19 is more flexible over small sheaves, but costs more.

The next problem is to get down to precise dimensions so when you go to the swedging you can say, "Swedge that eye exactly here." If you don't have the stay you are replacing lay alongside, the safest way is to stand the mast up in place in the boat after securing end of the tape measure to the contact point to be measured. Once swedged, an inch-short shroud can be corrected by extending the chainplate strap. If it got swedged too long, th is naught but to cut the fitting off and swedge another one on, unless you had long tangs aloft that could be trimmed shorter. If you are using loops inside the mast, you could carefully remove the Nicopress sleeve, without nicking the wire, and adjust the loop size.

See the plan drawings for fitting suggestions.

~~Felix~~

How To: Rigging a Trapeze - # 22

The trapeze was approved for the Geary 18 since the plans were drawn, so if you are a do-it-yourselfer, you either had to look around at other class boats or re-invent the wheel. Some of us did both and bungled our way through by trial and error.

There are many methods of rigging a trapeze, and some are complex with adjustable blocks and tackles and tacking-without-unhooking rigs. I prefer the K.I.S.S. method (Keep it simple, stupid!), but then I don't have to use the dang thing - the crew does. Because the thing is there, many people use it when conditions don't really require it, and waste time and concentration when they should be attending to something else. One other reason skippers are negative on them is that it takes their protective wave-stopper out of the boat, so now the skipper gets wet instead of the crew.

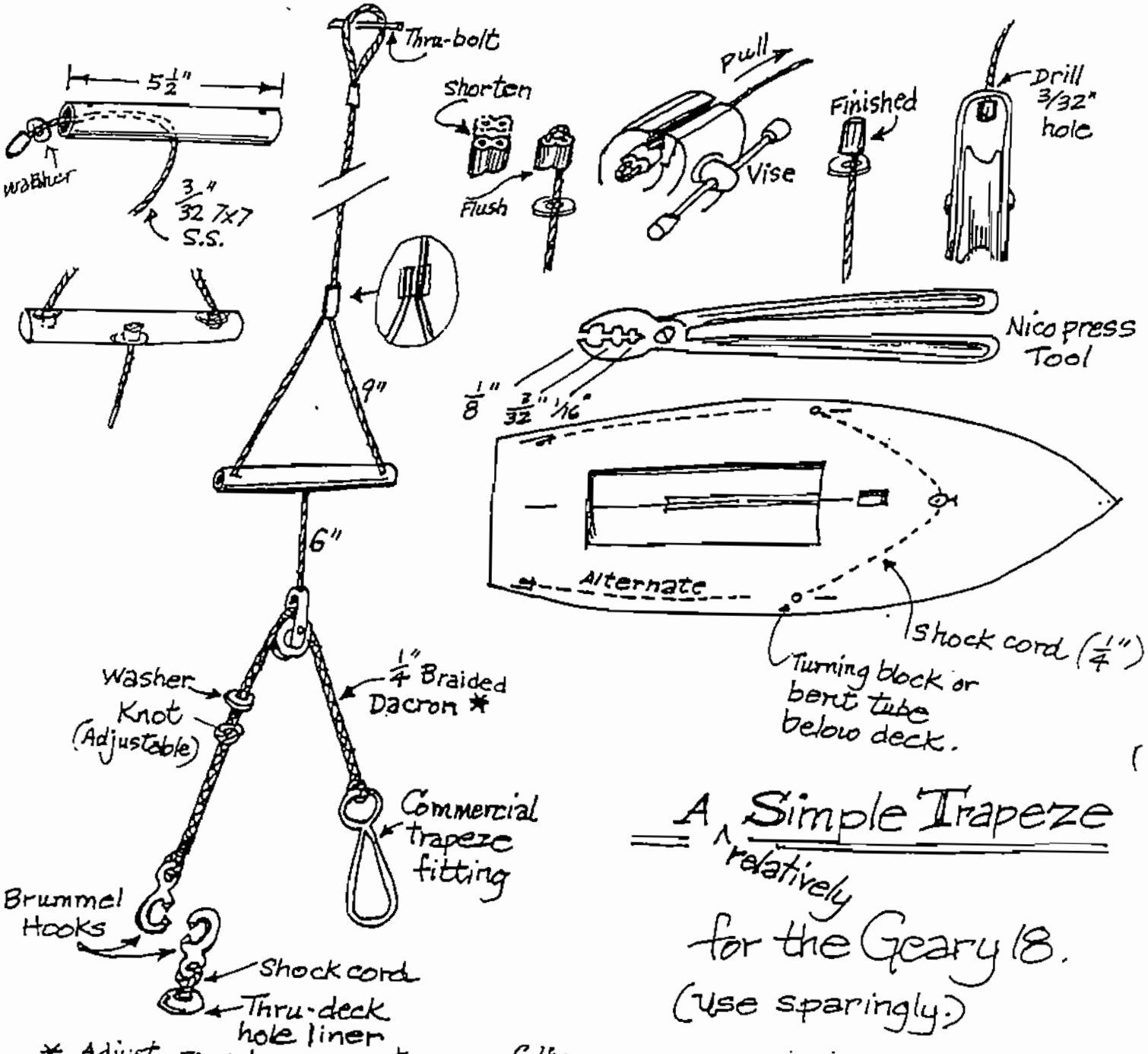
Building a trapeze is simple. The only tool you may not have at home that you will need is a Nicopress swedging tool for pinching Nico sleeves on the wire. The tool can usually be borrowed from the store that sells the wire and sleeves.

Start with the handle, which can be 3/4 in. stainless tubing or thick-wall hard aluminum, ~~such as a piece of ski pole~~, but not the soft tubing sold in hardware stores. Drill 3/32 in. holes 3/8 in. from each end on the top and one in the center on the bottom. A 3/32 in. 7X7 stainless wire (cheaper than 7X19) will emerge from each of these holes, anchored inside the tube by a nicopress sleeve and washer. I like to shorten these internal sleeves by about a third of their length on the bench grinder so they fit into the tube easier. Start with the center hole. Push a piece of wire into the hole after bending the end a little so you can make it feed out one end of the tube, and press a sleeve on the end, then pull it back until the sleeve-anchor homes inside against the hole (put on a small S.S. washer). For these end-stop sleeves, put the wire in one hole of the sleeve, loop it and bring it back through the other hole, but just flush. Open your bench vise about 1/8 in., lay the wire in the opening and pull. This will tighten the wire loop down snug on the sleeve before you pinch it with the big Nicopress pliers. The other end of this wire is attached to a small block, such as a Mini-Harken, either with a swedged loop or by drilling the block strap and swedging an end-stop sleeve with washer on the wire similar to the one in the handle.

Anchor another wire 9 in. long in one of the remaining holes in the tube. The third one will be the long one going up to the mast attachment. These two wires are swedged together with equal lengths (9 in.) forming a Y-yoke above the handle. Attach to the mast alongside (the aft side) of the shroud, either to an external tang or, if a metal mast, into a hole with a swedged loop hanging on the same thru-bolt as the shrouds. Make the length such that the handle is about 24 inches above the deck (or lower for a short crew). Commercial eyes for the harness hook have two holes, allowing a selection. Length is also adjustable on the rope tail by a washer in front of an overhand knot that homes against the block. The lower end of the tail has a brummel hook attaching to a similar hook on a shock cord that goes through the deck aft of the chainplate. The shock cord keeps the rig from flopping around when not in use, and can be continuous to the other side, detouring through a block below deck forward of the mast, or can be single, running below deck and dead-ended aft.

You'd best buy the harness with the hook, unless you are handy as a canvas seamstress and have a heavy-duty sewing machine. Check out the commercial models for details before tackling a home-made. Some include flotation, but may not be Coast Guard legal as a substitute life vest.

~~Felix~~




# A Simple Trapeze

relatively

for the Geary 18.

(Use sparingly.)

* Adjust rope length so trapeze fitting rides against block when not in use.

How To - Mast Bend, Rake, and other Thoughts. #23

In answer to a request (finally got one) this will be mostly discussion, with a lit: "how-to" thrown in. Mast bending, like sail design, is still an inexact science, so the: are several schools of thought.

Years ago, an Olympic Star-class sailor bent his mast to flatten his full, light-ai: sail to provide a shallower foil for heavy winds. Other experiments and theories have flourished since. Sail fullness used to come mostly from luff roach - the extra curve o: cloth protruding forward of the straight line - that fed the excess back into the sail wh the sail was hung on a straight mast. In strong winds, with taught sheet and vang, the mast would bend forward in the middle and back at the tip, flattening the sail. Fine, ex cept the forward part of the sail was then flat, with any curved foil shape left only in the after-part. Science told us that a flatter, high-wind foil should have its deepest point moved well forward, so sail designers built in more permanent shape by tucking the forward ends of the seams. The combination of luff roach, seam-tucking, and mast bending seemed to provide a good optimum solution, but still open to opinion as to how much of each should be provided.

Some sailors went for stiff masts, feeling that rigidity transmitted force more posi tively to the hull. Some went for a rigid lower mast with a limber tip that would flick aft with the gusts, thereby relieving the leech. Rigidity was achieved with a larger section, more wall thickness, or a longer fore-and-aft dimension, stiffened athwartships by jumper stays.

The major difference of opinion today in Geary mast bending appears to be between the diagonal benders and the fore-and-aft benders. The former like to handle heavy wind by allowing the lower mast to bow forward and to weather, thus opening the slot between main and jib, while letting the tip sag to leeward and allowing the excess healing force to spill off the top of the leech.

The fore-and-afters prefer less lower bend, with the tip bending aft, believing that the spilled wind will then come out of the leech, but in an aft-flowing direction 2/3 to 3/4 up the sail, which pushes the boat ahead rather than causing it to heel. The sail must be cut flatter in its lower forward part to avoid excessive backwinding from the jib

The direction of tip bend would also appear to depend on the extrusion design. The Holt Spar-Tech section with its tubular containment of the bolt rope (a tube within a tub has no flat surfaces, and may therefore bend more to leeward, the direction the wind is trying to make it go. The SparCraft and the Proctor sections, on the other hand, contain the boltrope with a flat, cross-web wall that separates the bolt rope cavity from the res of the mast. My unproven, but observed feeling is that this flat web becomes the fulcrum of the bend, urging the mast to bend aft rather than to the side. The mast tip, being pulled back by pressure exerted by the downward moment of the mainsheet, transmitted up the straight line of the leech cloth, bends aft more than the lower mast bends forward. This is also because the mast tip is unsupported above the stays, while the lower mast is contained at both ends. The fulcrum or pivot point of this bend is at the stay attachmen The lower bend forward is in reaction to the aft bend of the tip, operating around this fulcrum.

To understand the theory of the relieved leech, think of the headstay pulling forwar on the mast at the tangs. Then, rather than a smooth curve, imagine that the upper and lower parts of the mast both remain as straight sticks, folding aft from the tangs. Obviously, the leech will go slack. The slackest point will be directly aft of the pivot point, or the tangs. This is the part of the leech that alligns with the hull in a fore-and-aft direction when the mast bends in a strong puff. Air leaving the sail, as mention above, exits directly aft, forcing the boat ahead. A hooking leech, with too much sewn-i: shape aft of the numbers and insignia will not release as well as one cut relatively flat

in this area.

Mast rake theories also vary. The rule of thumb used to tell us that raking the top of the mast aft also moved the center of effort aft, thereby increasing weather helm. It makes sense when drawn on paper or cranked through a computer. However, out on the water we find that aft rake releases that taught leech that was giving us weather helm when the mast was vertical. Some of the weight of the sail is now hanging from the full length of the mast rather than entirely from the halyard. Less tension on the leech means a softer leech, which means less weather helm as the air gets more easily out of the "bag". A boat moving ahead fast doesn't wait around to be heeled over or pivoted to weather. Think of your sail as a balloon you have just blown up and let go. The opening on that balloon is the open leech of your sail, and you are going so fast you can hardly steer.

I turned 60 today, so just be quiet and believe me. I know.

78

~~Felix~~

How To: Rudder Keepers - #24

What appears to be one of the simplest parts of the Geary turns out to be a constant source of nagging problems. Typically found on the older boats, the solid wood rudder keepers built to fit the rudder well snugly, gradually got to fit too snugly. They would warp, get wet and swell, defying all attempts to pull them out. The gripping handle on top was screwed into the end grain of the keeper and pulled off with the first hard tug.

Understanding the function is the first step. Some folks called them wedges, but they don't really wedge anything. They merely fill the hole the rudder goes through and provide the aft bearings for the rudder shaft. There are two because most rudders have a large washer under the head. The forward keeper is cut away at the top so it can be inserted, then slid forward under the washer. Then the second keeper slides in behind it. Assuming the rudder well ends are parallel, the keepers edges are also parallel - not wedge-shaped. The fit is neither tight nor sloppy - just easy.

The plan shows one wide keeper and one very thin one. The only reason I can think of for one being thinner than the other is to identify one from the other quackly when inserting them

Solid wood keepers are adequate and simple to make, but what red-blooded Flattie lover is satisfied with adequate? The drawings describe a fancier pair that will use up much more of your spare time to construct, will be lighter, look spiffy, and lead you to believe your boat is going faster; the latter being the best reason for tackling the project.

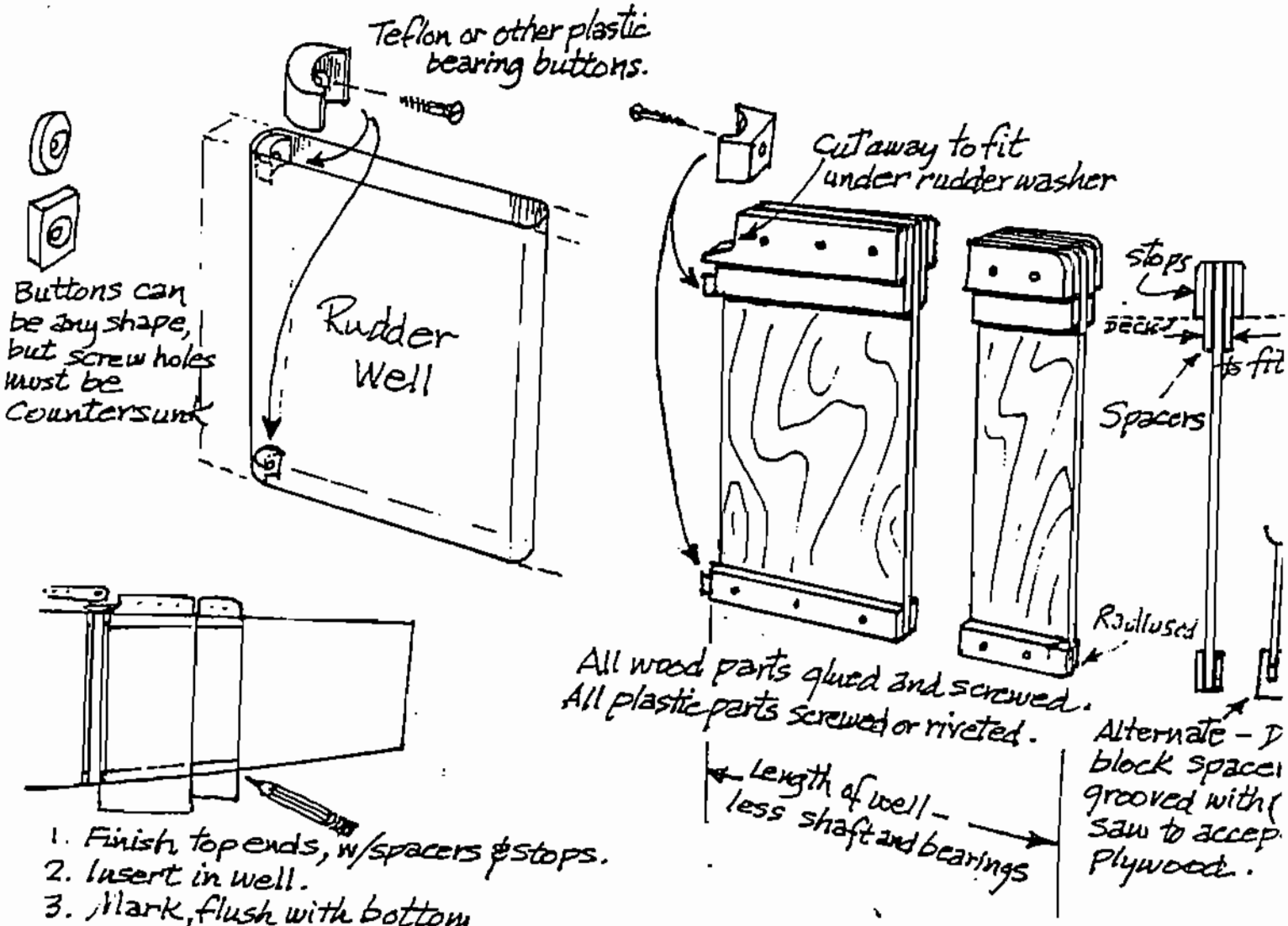
Note the bearings. One pair at the top and one pair at the bottom. We used to insert a piece of sail track the full height of the well, which just added a lot of friction. Bearing buttons of Teflon, Delrin, Nylon, Micarta, or almost any other plastic are screwed into the boat at the top and bottom of the forward end of the well. Similar buttons go on the front of the forward keeper. These four small bearings are all that contact the rudder shaft, letting it turn freely. With a light hand on the tiller, the rudder can now float as the waves lead it except when you interfere to alter course.

In making the keepers, take measurements of the well on your own boat - they're not all the same. If your rudder shaft is a full 7/8", then the opening is slightly wider. Shim the upper and lower spacers to take out excess slop, but don't make a tight fit. It's nice to have the bottom spacers fill most of the hole to avoid the drag of wide cracks or protruding corners.

How about a prize for the fanciest rudder keepers - laminations of 16 exotic South African woods with 15 coats of hand-rubbed varnish? I confess - it's only a ploy to keep you in your shop all Spring instead of out on the water practicing for the regatta.

~~Bob~~

(See next page for drawings)




1. Finish top ends, w/spacers & stops.
2. Insert in well.
3. Mark, flush with bottom.
4. Trim to length.
5. Add lower spacers.
6. Finish bottom surfaces smooth to go fast.

# Rudder-Well Keepers

How To - Rub Rails - # 25

This is primarily for the novice who picked up old No. 252 from the guy down the stre for 400 bucks and wants to spruce it up and go sailing next week. A dab of paint, scrape out some of that soggy rot around the centerboard pin and patch the dents around the rail, right? Shall we tell him it is more like months, and that he won't need jogging or that aerobics class - just money, sweat, and some lights for night work?

Rotted cheek stringers aren't as much fun as rub rails, so lets talk rub rails. Some boats don't have any. That saves weight, and may be the answer the hot shot gets from his racing computer as a trade-off for some more precious go-fast. But there are several good reasons for having them:

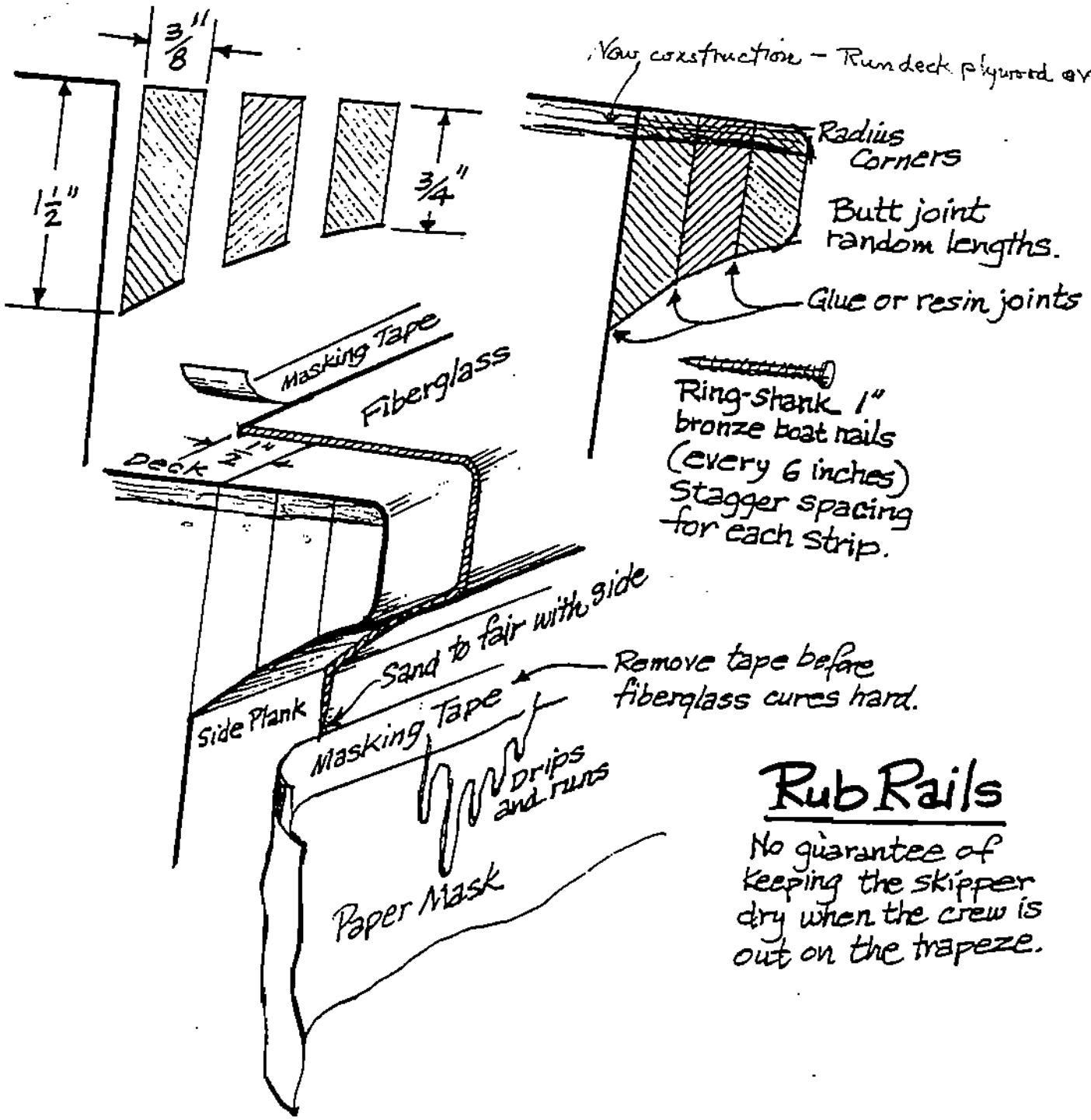
1. Deflecting water - When a Geary sails to weather, with a little heel to prevent b slapping, a wave hitting the forward weather side plank bends upward. When this sheet of water flies above the side plank, the wind catches it and slam-dunks it into the cockpit with disgusting accuracy. The same wave striking a projecting rub rail is turned back on itself and loses its unfriendly attitude. Rails offer the same protection from other wave from all angles, providing a drier boat.

2. Hiking platform - Sure, its only an inch and a quarter, but every little bit help in lengthening the athwartship righting moment in a blow. Some boats, having deflected th bow wave and given the skipper a wider seating platform figure they've done enough, and leave the rail off between the skipper and the transom to save a little weight.

3. Protection - Either someone hits you or you hit a dock, no matter, you're bound t ding the rails of a boat. Rub rails can provide some protection. Metal extrusions are expensive, can corrode, require unsightly joints and fasteners, and take permanent bends when struck, usually passing the dent along to the wood behind. And please, please, don't put kitchen sink trim on a Geary - its obscene! Wood rails don't look bad, but unless you a throwback wooden-boat nut who loves the patina, they mean almost annual stripping and varnishing. Many racing classes with fiberglass boats find that fiberglass is a good fini for the rails too. It can bounce off docks and other boats without splintering or denting usually not even scratching too badly. Local dings can be repaired with fiberglass putty patching at little cost.

If you have decided to add or replace rails, consider this method. Use the full allowable 1½ inches. The drawing shows a suggestion on shape. If you try ripping a singl piece with a constant shape, it won't fit without steaming. The ends would stick up, beca the rail takes a compound curve. You can coax several thinner pieces on, however, one at time, with waterproof glue and 1 inch copper ring-shank boat nails. Rip the three pieces 3/8" fir, mahogany, or spruce to the cross sections shown. If a choice must be made in aligning the edges when fastening, favor the lower edges, as it will be easier to smooth t top surface than the under surface. If nailing near the ends or edges of the strips, dril holes for the nails to prevent splitting. Rough sand to shape and apply one layer of 5-ou fiberglass cloth, five inches wide, with enough resin to fill the weave. That usually mea two or three coats of laminating resin, including the one under the cloth, and another coa of coating resin, or a little wax in the last coat of laminating resin to make it set up t If you've never done any fiberglassing, read a little on it - its not a hi-tech skill in this size. Just remember, all those spills and drips eventually get hard. As Joey says, "Wear sacrificial clothing". If you mask the deck about 1 5/8 inches in (your new rail pl ½") from the edge, you can lay the cloth up to the masking tape. When you are through gla and sanding the rail, rather than trying to fair the abrupt edge into the deck, just leave the hard edge as tho it was intended, and paint the hull color that far onto the deck. Sa the lower edge of the fiberglass so it fairs smoothly into the side plank.

~~Fotix~~




# Rub Rails

No guarantee of keeping the skipper dry when the crew is out on the trapeze.

How To: Rolled Cockpit Sides # 26

A number of features on the Geary have evolved over the years in an informal way. Some of these didn't find their way into the official plans, but were approved, or "allowed to evolve" by the measurement committee. One of these is the rolled cockpit - definitely more comfortable than the higher sharp edges on the earlier unenlightened cockpits. Lest an uninformed, isolated new member blindly followed the plans and built a new obsolete boat, the following is a suggested way to refurbish an old cockpit or to build a new boat that isn't old.

The rework chore starts with removing the old side decks completely. Saw them off flush with the deck ribs that define the forward and aft ends of the cockpit and remove the deck ribs and diagonal supports. Lay out new deck ribs per the drawing. Note that they follow the old deck shape most of their length before curving downward. The amount of curve is limited by the amount ¼ in. plywood wants to bend - which is not much. Domestic ¼ in. fir plywood isn't too fond of letting itself be bent at all. The imported metric woods will cooperate a little more. It might be well to rough out your deck material and s how much bend you can persuade it to take before cutting out the deck ribs. Some have managed to induce more by scoring the underside with numerous parallel cuts on the table saw. Another method is to use thinner wood and add fiberglass for strength - at least two layers of 5 oz. cloth or equivelent roving and matte. Arrange it so the finished surface near the rail is the same height as the decks forward and aft of the cockpit.

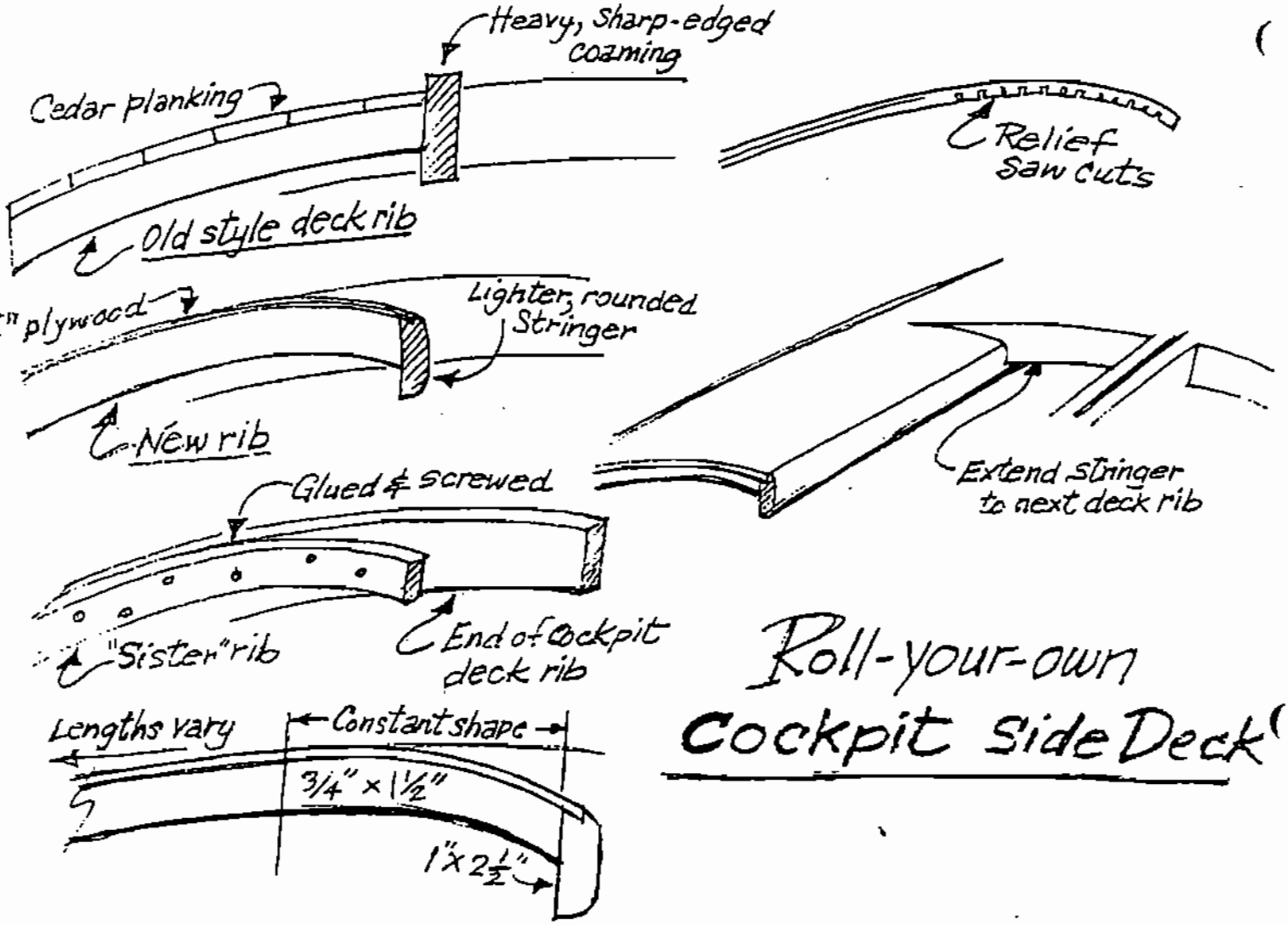
Radiusing the inner edges of the cockpit stringer will further the philosophy of making the boat more friendly to the anatomy.

The new stringer, lower than the old one, should extend one deck rib beyond the cockpit ends. Whether building a new boat or reworking an old one, additional ribs are needed at the four ends of the cockpit. In builder's language, these "sister up" to the full deck ribs at the cockpit ends as securely as possible using glue and screws, or even bolts through both. Apply the new decking to the ribs, sheer stringer, and cockpit stringer with waterproof glue and bronze ring-shank boat nails.

Finish the deck on the reworked older boat to match the rest of the deck, or get jazzy and make it a contrasting color, or roll on some polyester resin thickened with cabosil to provide a non-skid surface, sanding or scraping the surface if the texture is too agressive.

On the new boat, fiberglassing the entire outside of the boat is recommended. A plywood boat with ½ in. bottom, 3/8 in. sides and ¼ in. deck should still come in at minimum weight with a skin of 5 oz. cloth and resin.

~~Felix Moitoret~~




# Roll-your-own Cockpit Side Deck

How To - SPEEDY RIGGING #28

If you keep your boat at home and go trailering to the water or to out-of-town regattas you have no doubt experienced the time consuming problem of rigging the mast, boom, and all those wires and ropes and pesky cotter pins before you can go sailing - only to have to reverse the process to trailer home.

There are several things you can do to simplify your rig to get more time on the water and less in the parking lot.

1. Death to all cotter pins - but particularly to those infernal wire rings that were invented to keep anyone with cold, stiff fingers from ever getting a fitting apart. (They coo almost qualify as theft prevention.) The clevis pins that attach the main-shroud swedged forks onto the chainplates can be kept in their holes with a piece of stiff stainless steel wire as shown in the drawing. The springiness of the wire makes the pin want to stay in the hole, but allows you to pull it out long enough to attach or detach the fork.

2. Gooseneck tack pin. If the pin is not the captive type, use a clevis pin that has a swing-gate to hold it in. If that runs over your budget, use a straight cotter pin through the clevis, but bend it so there is a hump to keep it in without bending it each time. A nylon twine will keep it attached to the fitting to prevent loss.

3. Brummel Hooks. Somebody named Brummel should get a medal for these quickies. Just line up the V-slots and your vang cunningham, outhaul, trapeze wires, or whatever are together or apart. They come in several sizes in flat stainless steel or bulkier cast aluminum.

4. Single-handed mast raising. This is easy if you have the bow painter that tends from th cockpit and emerges from the deck next to the headstay. With the bow of the boat higher tha the stern and the jib halyard attached to the bow painter (with a foot or two of slack), stand on deck with the mast vertical, butt on the ground alongside. Lift the mast, keeping vertical, drop it into the step, and cleat the bow painter, which acts as a temporary head stay. If you have a collar on the mast at deck-height, you can then let go and nothing fall down while you attach the shrouds. Now take the mast down again and remove the red trailer flag from the masthead and install the masthead wind-direction indicator, like you should ha in the first place, you idiot!

If all these things work as they should and Murphy's Law doesn't apply, you should be i the water hoisting sails within 15 or 20 minutes after driving into the lot - believe me, I' done it once or twice.

~~Folds~~

~~See book of page for drawings.~~

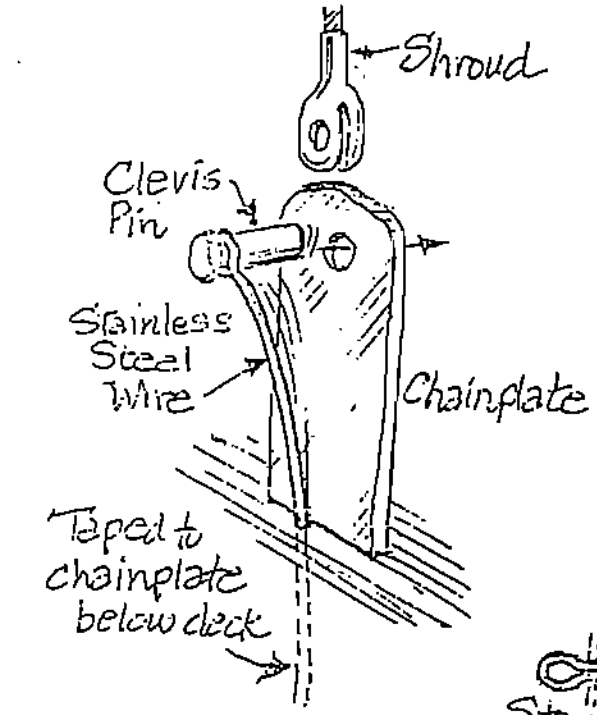
~~Answers to page 2, 5, 7. See definitions of luffing, Tacking, and On a Tack~~

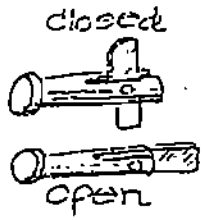
~~Happy Sailing Everyone.~~

~~Jean~~

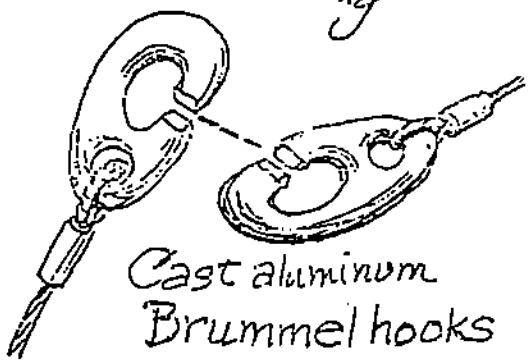
# Speedy-Rigging Gadgetry

"The right stuff"

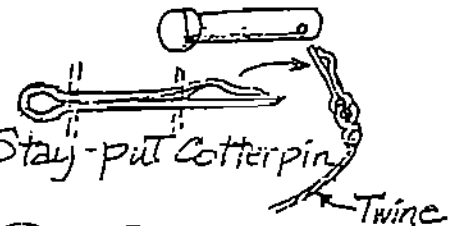


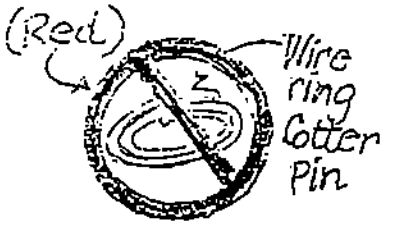




Swing-gate Clevis pin for Mainsail tack



Cast aluminum Brummel hooks



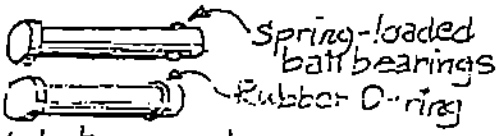

Down With Wire Rings!

(Bumper Sticker)

One-legged pin

(Make your own with Stainless steel wire)

Flat stainless steel




Not too good.

(They wear out and require precision-fit holes.)

How To: A Compact Float for Geary 18 Moorage - #29

When Bernard Moitessier was leading and nearing the finish of the single-handed around-the-world race, he had second thoughts about re-entering a sick world society. So instead of finishing the race, he returned to the South Atlantic, where the sailing was enjoyable. The welcoming committee at the local English pub thereupon awarded him the Harbor Deconges of the Year trophy in absentia. The shortage of adequate moorage for our growing sport abounds worldwide.

If your fleet is having growing pains due to running out of places to keep boats, and can't or don't want to ramp into the water from trailers, this may be for you.

In Seattle, the Park Department quadrupled the rates for spaces on the 9-boat floats we originally had built ourselves. The Army Engineers discourage the building of any new docks or floats on the lake because marine life would be deprived of sunlight. However, they are concerned only when the float or dock exceeds 100 square feet in deck area.

Dan Lees, of the currently defunct Seattle fleet, with my free advice and about $200. of his money, built the Lees Compact Geary Support Device as detailed in the drawings. 96 square feet on deck, the float easily supports a Geary, with bow and stern overhanging, but keeps the bottom relatively dry and free of blistered paint or waterlogging. By finding friendly folks with waterfront property, an entire fleet could conceivably be moored in the same locality and get on with serious racing activity.

Dan's float is of 2 x 8 lumber with 3/4" plywood decking. The large roller is a peeler core from a plywood mill turning on 12 in. galvanized lag screws and supported by a welded bracket. All timber joints are bolted with galvanized angle iron cut to 7 in. lengt The smaller roller on deck is a surplus rubber printing press roller. Old washing machine rollers will also work if mounted in pairs. Loops of heavy rope passed through pairs of drilled holes and tied inside provide loops for mooring lines, boat tie-down lines, and, to a degree, as protective fenders.

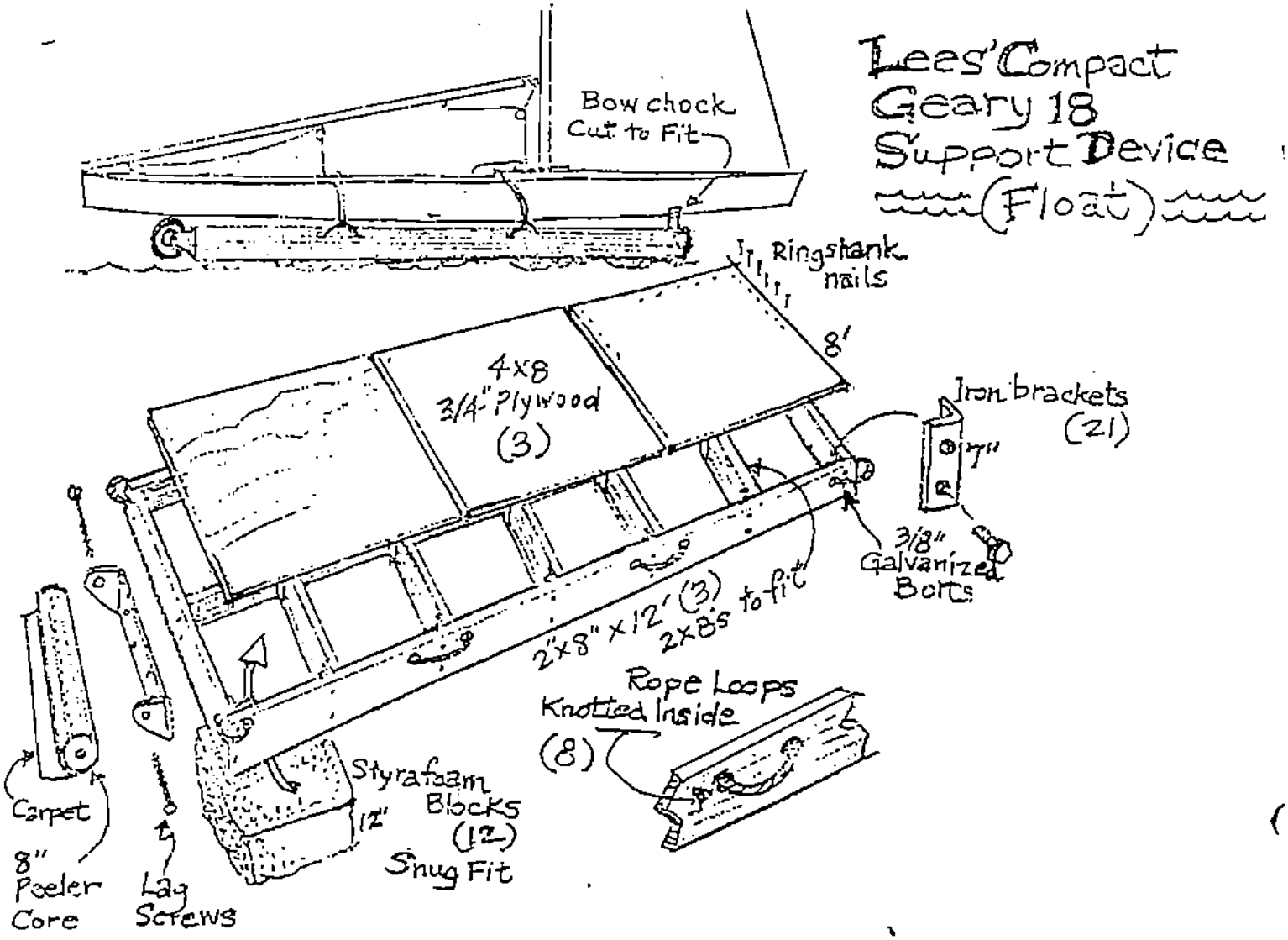
Expect some lively movement from wind waves or passing boat wakes, so be sure to tie the boat down snugly, with lengths of vinyl tubing or garden hose protecting the lines at chafing points. Lighter line strung through holes in the lower edges of the 2x8's keep the styrofoam logs in place. A few spikes could also be driven through the 2x8's into the foam to prevent movement and the resultant crumbing.

The peeler log roller is covered with indoor/outdoor carpeting applied with copper or galvanized tacks, which should last for a couple seasons. Ideally, the float is moored with the roller on the down-wind side. Returning from a sail, the boat can be sailed onto the roller, the sails luffing into the wind. With the skipper sitting aft, the crew can then pull the bow part way onto the float, stabilizing it until the skipper comes forward to help complete the haulout.

Try a rough assembly of the parts at home to be sure things fit, then haul the parts down for final assembly next to the water, then have a launching party.

~~Eelin~~

# Lees' Compact Geary 18 Support Device (Float)



How To: Hi-Tech Protest Flag # 30

This one comes from Dean Ratzlaff of the Cultus Lake fleet. ~~And watch out for that young Canadian. He gets my vote as some day sneaking off with the Ted Geary trophy.~~ Dean got the idea from a regatta he attended on the inter-collegiate circuit. The borrowed boat he was sailing had one of these gadgets hanging from the boom. He pulled on it and was surprised to find he had inadvertently displayed his protest flag.

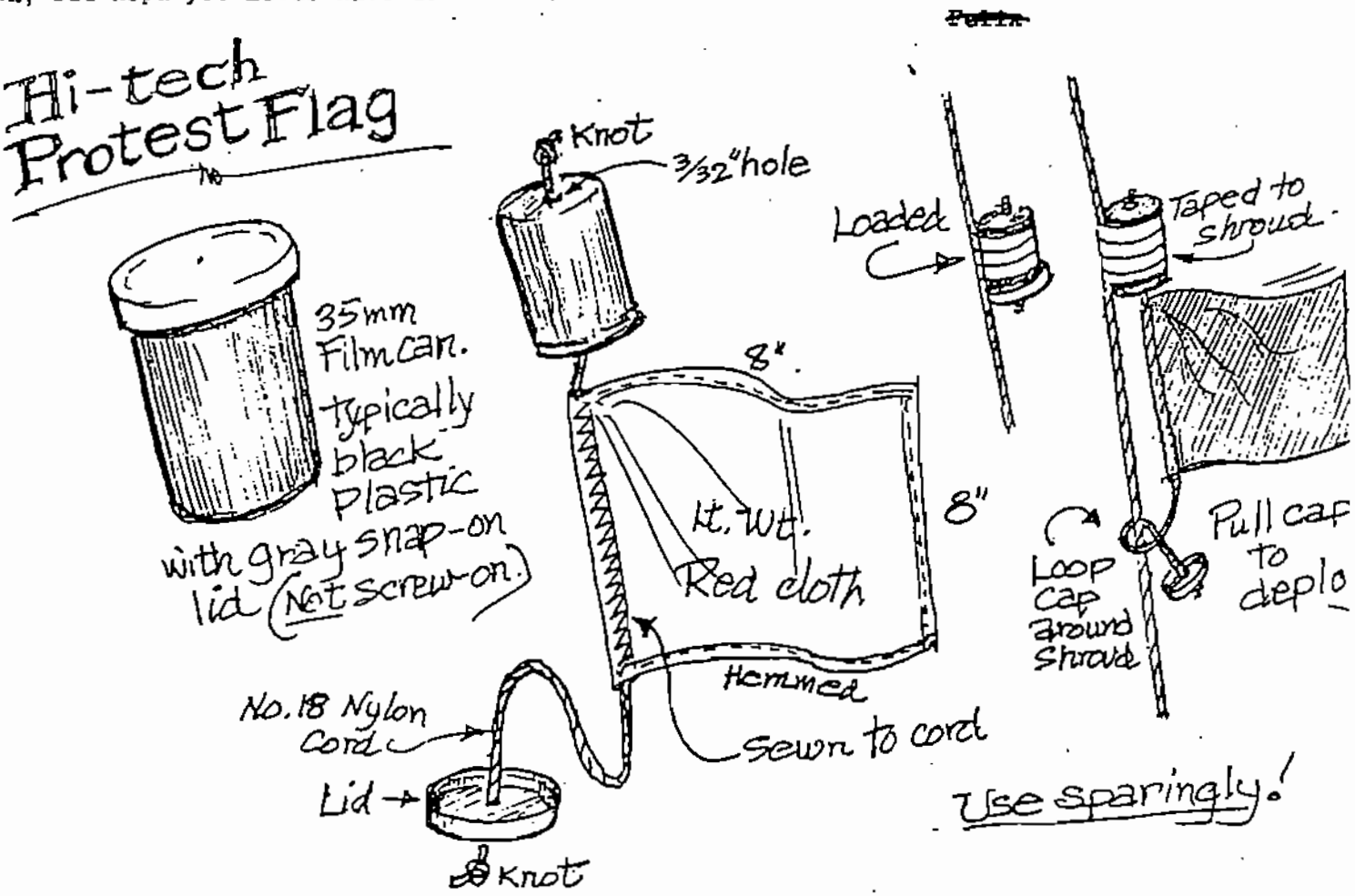
The gadget was a simple way of stowing a protest flag so it could be broken out quickly and easily during those frantic moments when you've just been gashed by a port tacker. Your blood pressure is up and somewhere under a soggy sweatshirt and some rusty tools lies the protest flag, always in the way until you need it and can't find it.

As the drawing shows, it is simple. A plastic 35mm film container (usually black or gr. with the press-on rather than screw-on cap) containing a piece of light-weight red cloth abo eight inches square. It could be nylon acetate, rayon, silk, or the like, and flourescent color if possible. A length of nylon cord completes the assembly which is then all stuffed into the container and the lid snapped on.

The film can is taped upside down to the starboard shroud, about gooseneck-level. Dean must have been on an unstayed mast, as it was hung from the boom.

At the final moment of decision, and you feel committed to start nuclear warfare, a tug on the plastic cap pulls it loose from the container allowing the flag to eject and flutter for all to see. The extra line below the flag should be long enough so the cap can be wrapped around the stay and poked back through the loop to keep the whole assembly from getting in the crew's way, and it will give the flag a better set.

No excuse for not showing the flag soon enough to satisfy the rules with this set up. And don't forget to call the race committee's attention to it when you finish the race. Best way of looking at it is to consider it as a life insurance policy - it's comforting to own, but hope you never have to use it.



# How-To: Converting Slotted Centerboards

#31

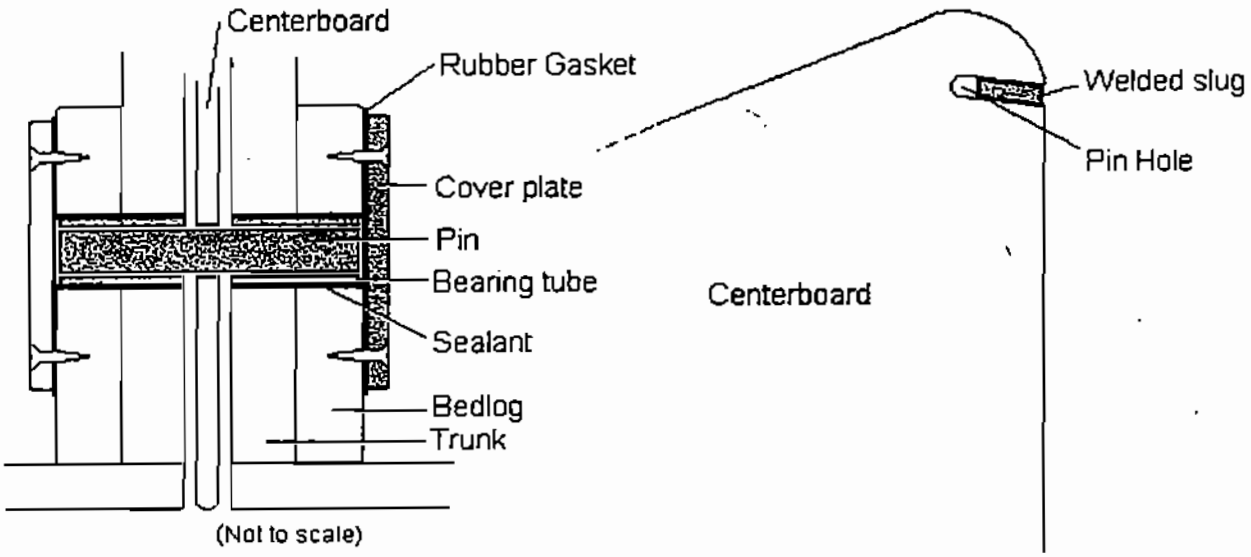
Two more boats recently succumbed to the slotted centerboard sickness. It seemed like a good idea at the time - a slot in the centerboard instead of a hole. That way, the board can be pulled out or installed while the boat is in the water - right? But what happens when the boat is upside down? A board with a hole rather than a slot for the pin might fall back into the trunk when turtled, but it doesn't get lost. But, you say, the hoisting cable should have saved it from going to the bottom? Apparently not, if the cable is a tired 3/32" -inch wire — and breaks.

The fix is to convert the board and pin. The board should be taken to a local welding shop where a little slug can be welded in to close off the slot opening, but leaving the hole open. It doesn't have to be cosmetically pretty. It is always hidden in the trunk and won't be seen by beauty contest judges - only you will know.

With this system, the pin is pulled out to free the board for extraction. After removing whatever old pin arrangement was installed, replace it with two stainless steel tubes having an internal diameter to allow a 1/2 inch stainless steel pin to pass through comfortably. Each tube is as long as the thickness of one side of the centerboard trunk, including the bedlog. Make the holes for the tubes slightly oversize, and spread a coat of Bondo or epoxy putty around all the exposed internal surfaces before inserting the tubes, which will become the bearings for the pin. They should not protrude into the open slot, and any excess putty should be removed from the internal trunk surfaces. On fiberglass boats, be sure the bearing tubes are will bedded and sealed so water cannot get into the laminate. Test the alignment by inserting the pin before the putty hardens. The pin is a 1/2" stainless steel rod or a machine bolt with the head and threads sawed off. It is just long enough to come flush with the surface of the trunk and/or bedlong. After lining up the hole in the board with openings in the tubes, insert the pin. It isn't fastened to anything and just hangs in there supporting the board. Cover plates, about 4 inches in diameter of 1/4 inch plywood or metal, are fitted with rubber gaskets and attached over the cover. A wooden cleat, the same thickness as the bedlog, and about 6 inches long, will have to be glued and screwed to the trunk. On some boats, the bedlog has been scooped out to allow a cover to be attached directly to the trunk.

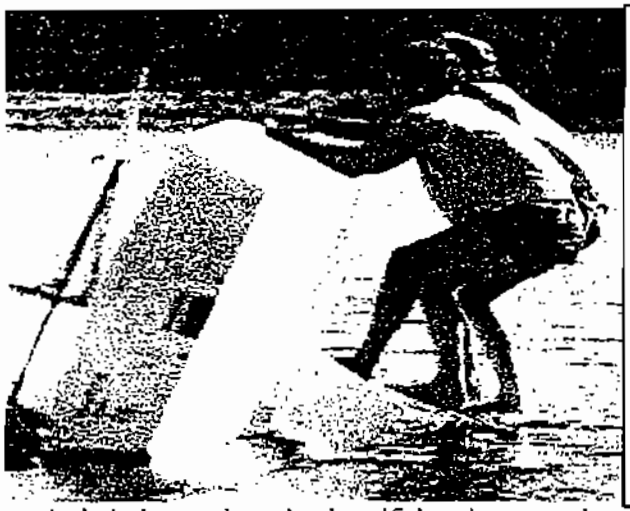
Note that this method does not compress the sides of the trunk. (Some of the old boats used a threaded bolt with a nut for the pin. When leaks occurred, the nut was tightened, which led to worse leaks.) This "floating", captive pin supports the board, but puts no lateral pressure on the trunk. To remove the board from the boat, one or both of the cover plates are removed, and with the board lifted slightly to relieve the friction on the pin, the pin is fished out of its hole. If you have the help of a second pair of hands and work quickly, and you enjoy taking risks, have paid up life insurance and have a favorable horoscope, you can remove or install the board while the boat is in the water. However, your warranty is invalidated if you get your feet wet.

Felix Moitoret



## How-To: Disaster at Sea --- Recovering from a Capsize

#32



Our cutdown centerboards, especially the aluminum ones, have taught us how easy it is to capsize. Ted Geary would not have liked it. We used to advertise our boat as a "stable platform". But no use crying; it is done, so we just have to live with it.

Once the mast hits the water (or sooner), serious sailors know they have to act quickly. Over the side and onto the board in seconds, pulling on the sheer rail to right the boat. This is musical chairs, and you've lost if the air trapped under the sail escapes, and water floods the top of the sail. Our new skinny centerboard doesn't offer lots of standing room for two people. Don't try standing on the rudder, or you'll be singing soprano.

Assuming you won, with enough weight far enough out on the board to break the sail free, the boat rolls back up, (unless you left the mainsheet cleated), you hop back in and you're back in the race.

On the other hand--- move too slowly and pay the price, as you watch the sails sink, and the mast becomes a 24-foot keel. Without extra flotation, the battle is lost. This is called "turtleing". You have become a disabled, swamped cripple, dependent on a powerboat to tow you to shore. With any luck, you were observed, and help is on the way. While waiting, you might try to get the sails down, or in this case, up, so they are depowered when the boat is righted. And if the sea condition isn't too rough, retrieve the paddle and any other floating gear that came loose. Then climb onto the slippery bottom and wait. Your troubles aren't over, however.

Very few powerboat drivers know how to help you without fouling your rigging and/or sails, or clobbering your hull. They should be directed to approach you slowly from the windward side, and to throw you a line. Tie it around the mast. Many bow fittings are too weak for the heavy strain of a swamped boat. The towline should be kept in line by retaining it at the bow with the jib downhaul shackle or a piece of line attached to something at the stem. Now, use your weight at the chine, while pulling sideways on the tip of the board, to roll the boat back to vertical. Maintaining that unstable attitude requires a balancing act by shifting body weight to prevent rolling over again. Now, finish removing the sails. Forget folding or rolling for now.

At last, you get underway. If you didn't lose your bailing bucket, try to at least reduce the volume of water in the hull to regain a little stability. Pull the board up halfway or the boat may want to take a different course than the towing boat. Finally, swear that before the next race you will add some flotation (See the next "How-To" article) to the hull. Upside down Flatties are slow.

## How-To: Proper Telltales

#33

Of all the go-fast accessories we decorate our boats with, I would vote the jib telltale window as my all-time number one favorite. I can attribute one or more championship victories to this little super-navigator. Sailors like to plaster yarns all over their sails, searching for the perfect set and spending a lot of time making text-book adjustments according to wind direction, velocity, humidity, cloth weight and stretch, and who knows what all else, when time would be better spent "outside the box" looking upwind for the next puff or whether that nuisance behind has an overlap. In fact, our new firm sailcloths on our relatively small rigs are so stiff and stable that you just aren't going to make much difference in foil shape other than using a little cunningham tension on the luff upwind and letting off the outhaul and pulling on the vang downwind. We just aren't like America's Cup boats. A well-designed sail has an optimum shape that should do the job under most of the conditions we encounter. Numerous yarns might be interesting in setting up the boat for the season, but once tuned, they can be a distracting overkill.

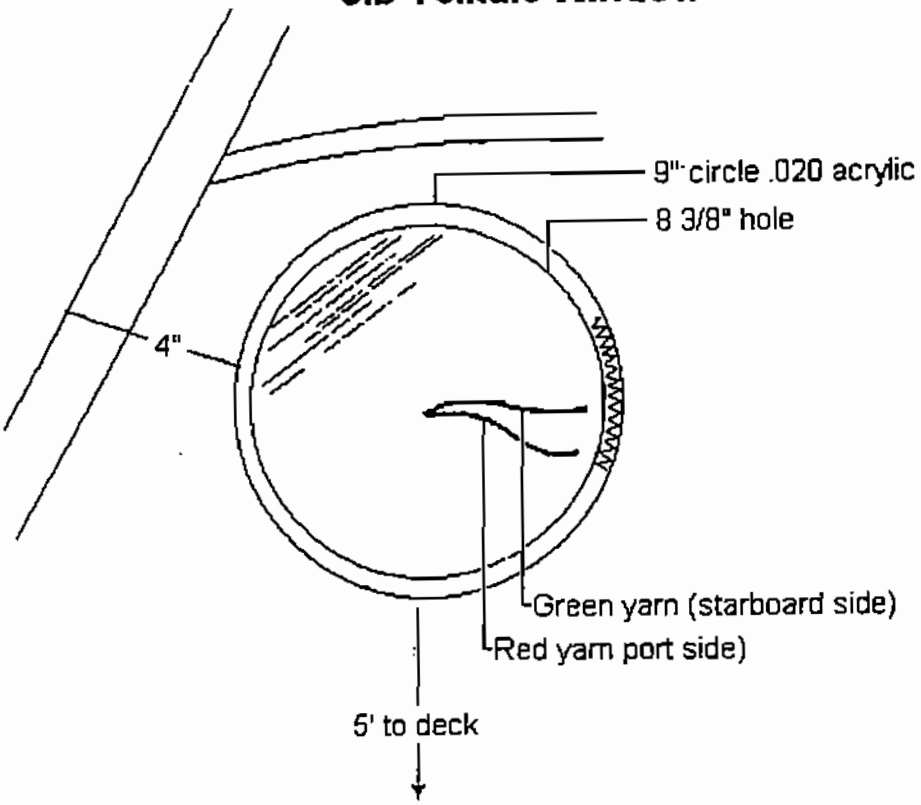
The only telltale that I have found to be indispensable is near the leading edge of the jib, about five feet off the deck. As shown in the drawing, it is actually two telltales: one green and one red. (You guessed right – for starboard and port) These beauties pick up the wind shift before the wind even reaches the main and most of the jib. If the apparent wind is coming straight at the luff, both yarns stream back horizontally. If the puff is a lift, the leeward yarn gets starved of air and goes vertical while the weather yarn stays rigidly straight. If the puff is a stalling header, the weather yarn falls loose or goes bananas while the leeward yarn stays on viagra..

You see these paired yarns on a lot of sails but most are wrongly applied. If they are not mounted on a window, the leeward yarn can't be seen unless there is enough light to make the cloth translucent. If they are attached to a window, they tend to snag on the threads that sew the window to the sail, especially if attached to the front edge of the window or if the radius of the window is less than the length of the yarns. The yarns in the drawing are just short of the window radius and can spin in happy circles without fouling on the stitching. Also, note they are acrylic rather than wool, so they aren't subject to the electrolysis that makes wool yarn stick to the surface of the plastic.

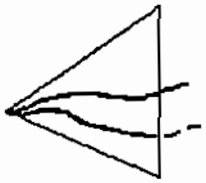
We invented another trick while night racing on the big boats. If the yarns are florescent, they will glow like neon when illuminated with a 12-volt spotlight focused on the window and taped to the deck. ← with a purple celophane filter

I haven't found an answer to what to do when it rains. I've gotten spoiled. When the window and the yarns get wet, the whole system shorts out, and I dumb out, not knowing where I am going or where the wind is. I can be had. Just pray for rain.

## Jib Telltale Window




**WRONG** Yarns hang up on stitching.



**WRONG** Same reason.

**WRONG** Yarn can't be see thru sail unless back-lighted.

## How-To: A Bailer Idea

#34

Felix Moitoret

The article below appeared in the July, 1971 issue of Yachting Magazine. It worked but slowly, and in this configuration did not remove enough water fast enough to be practical.

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By DICK ROSE

**On bailers**

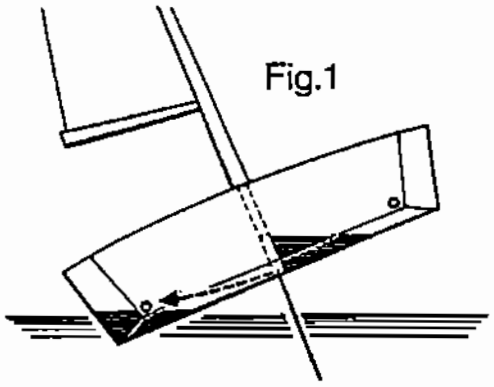
► Almost every competitive small racing boat has some sort of automatic bilge bailer or pump. Geary 18 champion Felix Moitoret has contributed a description of a bailer he has installed on his Geary that has several advantages. Unlike a pump, it does not need any attention from the crew. It never has to be touched during a race—when the boat is in the right position, it bails water out, but it does not permit water to get back in. Unlike the common trough or tubular bailers, it creates no drag. Felix' description of his invention follows.

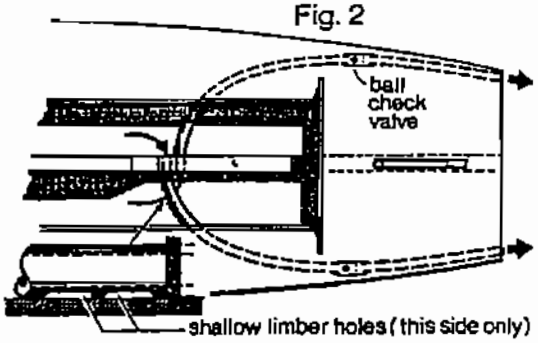
"If you race a flat- or shallow-V-bottomed open-cockpit sailboat, here is an automatic bailing device that bails while going to weather with the boat heeled. It requires no pumping by the crew, or anyone having to remember to close it after a planing reach.

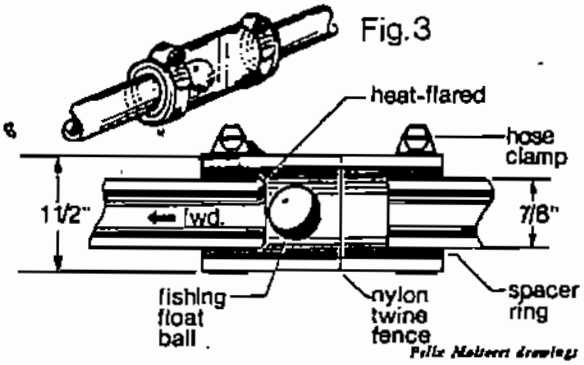
"A requirement is that the boat must have a vertical separating member running fore and aft like the backbone of the Geary 18. Unlike round-bottomed dinghies which are sailed flat to windward, hard-chined boats sail best if allowed some heel. This, coincidentally, raises the windward bilge and its unwelcome accumulation of bilge water (Fig. 1). This bailer simply lets the water drop through a vinyl tube out the corner of the transom on the lower side (Fig. 2). The tubes cross as they pass through the backbone, each tube draining the bilge on the opposite side. One-way check-valves made with fishing float balls are added to remedy the tendency for occasional following waves to push small quantities of water back into the boat (Fig. 3). Alternatively, the system can be sealed off on light-weather days by plugging the inboard ends with rubber bottle stoppers.

"One drawback is that one must tack occasionally to elevate each bilge. This is only a problem if the race course is so poorly arranged that it only provides a one-tack beat, in which case a short 'bailing tack' may be required."

I might add that Felix' bailer requires the skipper to handle his boat skillfully. If the boat is allowed to dip the leeward rail, then any water that comes aboard must be carried on the leeward side until the next tack is made. Also, some modern boats have so little freeboard that they are continually taking water aboard on both windward and leeward sides while beating or fast planing. Such boats will do better to install the conventional trough suction bailers.




Felix Moitoret drawings

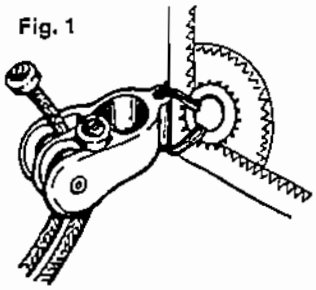
How To #35

# racing clinic racing clinic racing clinic racing clinic™

YACHTING 12/71

By DICK ROSE

Fig. 1



*Felix Moitoret drawing*

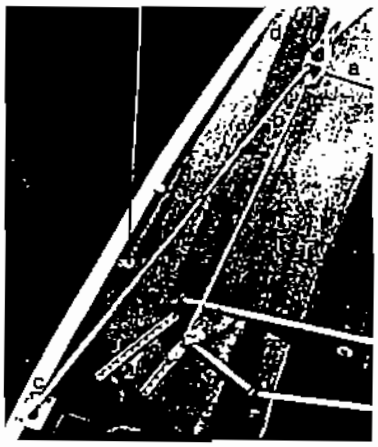



Fig. 2

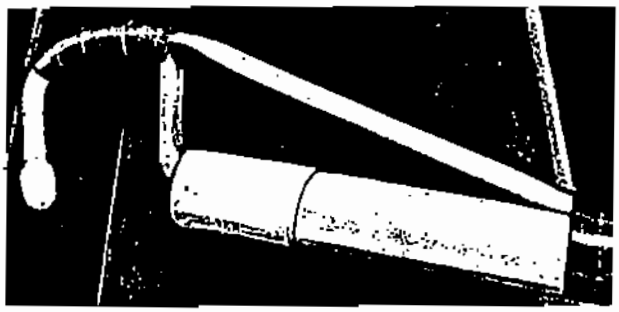


Fig. 3 *Paul Einarsen photo*

**Clever gadgets for '72**

► With another round of regattas under my belt and a long winter during which you can refit your boat, it's the right time to present some of the most interesting fitting ideas that I saw during the year. Early in the season, Felix Moitoret invited me aboard his Geary 18. Felix has been National Champion of this class several times and now makes his own sails and many of his own fittings. The Geary 18 or Flattie is a fast two-person boat that is often sailed by husband-wife or parent-child pairs. When it blows up, the jib can become quite a handful. Felix has developed a clever rig for his jib sheets which helps him to get both the mechanical advantage and the proper lead angle that he needs as the wind builds. Here is his description of how it works.

"For the small-boat skipper faced with lightweight crew problems, this variable jib-sheet arrangement for light or heavy winds may be an answer. The jib clew fitting (*Fig. 1*) is formed from a block of nylon and contains two small sheaves turning on a stainless tube. In light winds the sheet lead, (a) in *Fig. 2*, is single with a knob on the end holding it from slipping through the clew fitting. The port sheet (b) is shown in the two-part heavy-wind arrangement in which the end knob has been pulled aft and outboard to lock in a keyhole in a deck plate (c). The resultant control point on deck is halfway between the track fairlead and the keyhole plate, thus trimming the jib aft and outboard of the normal fairlead, opening the slot between main and jib, freeing the jib leech, and, most importantly, cutting the strain in half for the crew. The whisker pole hook shown in *Fig. 3* fits into the vertical hole (d) in *Fig. 2* in the clew fitting and pivots when jibing so that the pole can be left attached to the jib during the jibe. The extra tubing attached to the hook with black tape prevents the hook from fouling or pulling other lines with it when the pole is being removed from the bilge."

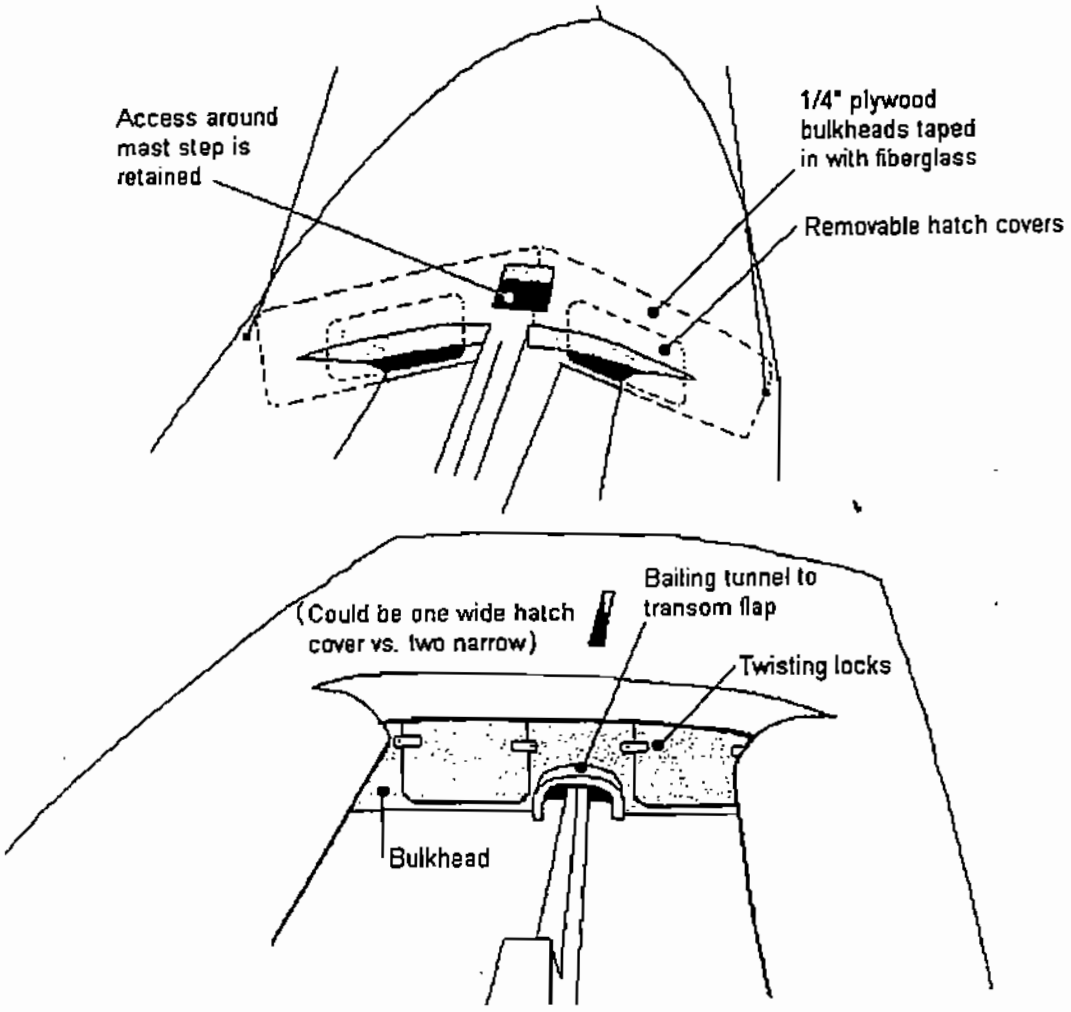
#36

# **How-To:** Do-it-yourself Watertight Bulkheads

By Felix Moitoret

No more tows. Sail away from any capsize without outside help.

Here's a practical weekend project to avoid the mess and embarrassment of a turtled boat requiring a tow. Use cardboard patterns to cut out the plywood bulkheads, and tape them in place with 3-inch fiberglass tape. Look at Tommy Germin or Sam Roth's Port Townsend "Whipper" hulls as fiberglass examples of the arrangement. There is very little added weight, but lots of added safety and convenience. What little water that could leak in around control line penetrations of the bulkhead would take hours to become a problem. At Coos Bay, we kept going without a tow, and the cockpit water draining out through bilge bailers and transom flaps. Just remember to dog the hatches. You will also now have a dry locker for your lunch, sweater, and camera. Hey, guys, it works! Why do without? Maybe some folks just like to go swimming instead of finishing the race--- Or maybe they just have urgent need of a bathroom?



# Letters To The Editor...

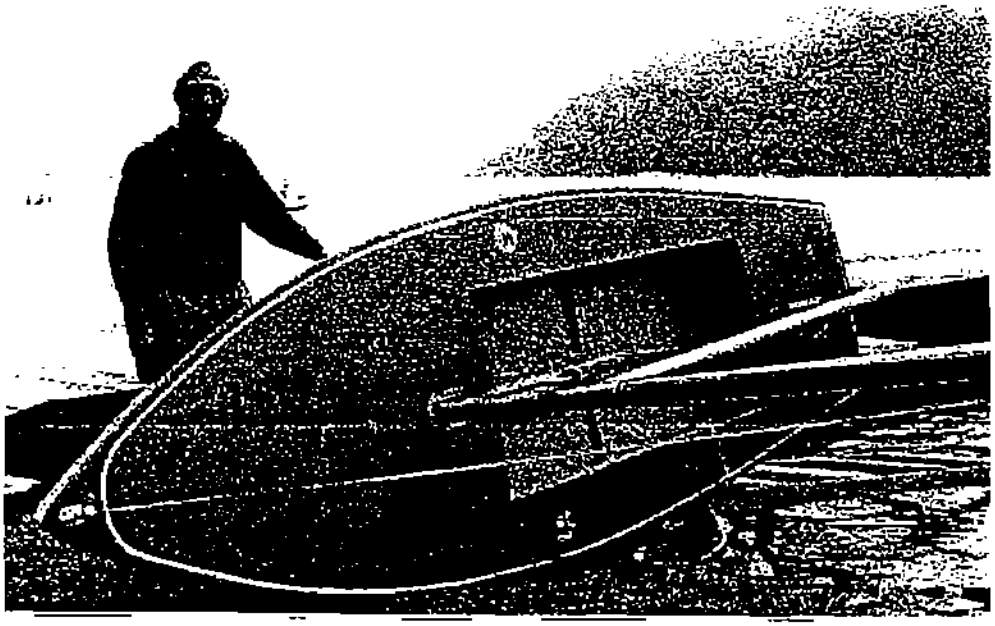
The following letter was sent by International Champion Michael Rodde....

"Just thought I would pass on a story of interest along with a photo. Late last summer I arrived at our summer cabin to find a new Geary parked out front. My first thought was 'great, someone restored an old woody!'. I moved in for a closer look, only to realize, to my surprise, it was brand new! After studying it, I realized something was quite right. It seemed short, yet everything was perfectly proportioned. Still, I was perplexed. As I was going for my tape measure, Ron Wood arrived laughing. He found me there scratching my head trying to figure this thing out. Rod Wood is a long time Geary enthusiast. Since his retirement from the sport I think he misses it a little. It took him two weeks to build this new boat and it looks just great.

Here are the stats:
-the hull is 14 feet long
-it weighs in at 160 lbs.
-it was built to .77 scale
-built for about $325
He & I have plans for a match race next summer!

Mike Rodde

*Ghost*



**Corinthian Fleet** Fleet Captain Felix Moitoret

SAIL AREA REVISITED

You can find publications around that still list our Geary 18/Flattie sail area as being 157 square feet. I addressed the problem in a 1976 TellTale, and what I reported then is still valid today. Someone had written to ask how it was that the Thistle had 175 square feet of sail while we had only 157 square feet. We were getting a promotional brochure ready for printing, so I did some careful measuring and triangulating from scaled drawings of our sail plan as it is now measured. As accurate as I could get, measuring to finely inked lines, I came up with a total area of 201.33999 square feet! I think we could safely say that the boat carries 200 square feet.

Where did the extra 44.33999 feet come from? Well, it started by carrying larger roaches on the mainsail, before girth controls were applied. Then, when we stopped measuring the luff and foot of the main and used limiting black bands on the spars, we picked up some more. The most dramatic growth came when a San Diego sailmaker (I won't name) used all the loopholes in our jib measuring procedure, and packed on large leech and foot roaches and projected the upper leech aft with a wide "headboard" made up of numerous layers of heavy sailcloth. These jibs typically did not hang quite right and were difficult to trim properly. They also flogged against the mast and were short lived. Our girth controls were only added after too many of that style jib had been made to outlaw them. The present jib used the square footage of those jibs converted back into a more basic triangle. Owners were given five years to continue using the old jibs in the championship regatta..

A boat could conceivably carry more than 200 square feet by going beyond the black bands, but it would not be practical manageable area, and therefore of no advantage. My scale drawing carried a conservative roach on the foot and luff and just met the black bands on the spars. A jib area of 53.125 square feet represents the floor triangle, which is the maximum allowable area. No one cuts a jib exactly that shape, but allowable deviations do not result in any extra area. The mainsail, incidentally, came to just about 148.215 square feet. Try that on your Thistle friends.

WHO ARE WE?---an editorial.

There have been a number of suggestions lately about making changes to the Geary 18 to rescue the class from oblivion:

1. modernize it to make it more like some of the newer, lighter, high-tech racers
2. make it more attractive to new young racers
3. compete in the new-boat market with boats like the 49er and the Johnson 18
4. make it go faster

NOT!

These folks are well-meaning, but maybe they are overlooking something.
The Geary18/Flattie has been around for over 70 years, and while the numbers are fewer, it has survived, and with help, should continue to do so.

It is not an Olympic class. It is not a super-high-performance boat. It is not, and will never be the type of boat that attracts the professional class-jumping, trophy-hungry hot dog.

The Flattie was designed as an inexpensive, easy-to-build, safe, fast, daysailer/racer for the Juniors of the Seattle Yacht Club. Many of those early Seattle boats were built in garages by high school kids. However, they quickly caught on in other areas as adults recognized their attributes. There have been a few limited changes, mainly to take advantage of new materials, or to control excursions by sailmakers and overly creative builders.. But the radical changes that have decimated other classes and driven costs out of sight have been avoided. A 60-year-old Flattie recently won the 5-race series at Lake Margarita, competing with best skippers and equipment in the class. That is the very essence and definition of a good "club-racer" class boat. And some of the same skippers that were active in the class 40 or 50 years ago are still active and dedicated. It is that kind of loyalty and integrity that will attract new blood if the right communications can get out to them.

I believe it is this stability that keeps us alive --- the organization, communication, and above all, the people and the lasting friendships that are worth more than winning a race. We don't need the hotshot who acquires a fast boat and races until he wins the championship, then leaves with no "put-back". We are not an open development class like the International 14 (anything you want that isn't over 14 feet long). We have ample opportunity for creativity in inventing clever gadgets and fittings and in line-handling without introducing radical changes that either make all other boats obsolete or require large expenditures to keep up.

If we correct the bad experiment with measurement committee management and possibly consider some tightening of the hull measurement tolerances, we should be able to get back on track in those areas. A few boats might need a grandfather clause to stay with us. But anyone favoring total purity without tolerances or ANY individuality might better join the Lasers, where even all the sails are cut by the same computer-driven laser cutter. Most small sailboat classes are having trouble these days in a market that has too many classes and too many competing distractions for young people. Lets hope a return to better judgement and values will come along with better morals working down from new blood in the White House. Amen.

Felix Moitoret

CHRONOLOGY OF CHANGES By Felix Moitoret

Since Ted Geary drew the original Geary 18/Flattie plans prior to 1928 that were accepted in that year by the Seattle Yacht Club, the class has resisted the type of major changes that have threatened the continued existence of some classes. The Snipe class experienced a traumatic weight reduction that obsoleted hundreds of boats, nearly scuttled the class, and caused some defections. Skip Etchells did a total redesign of the Star class hulls within the tolerances that revolutionalized that class. He performed the same redo on the Lightning class and a couple others, each time winning the class championship with his "optimized" hulls. Today, a Star sailor must import a $30,000.-plus boat from Italy to be competitive. (There are no Star class builders left in this country). At some point, one would expect the optimum design to be reached that would stabilize that type of craziness, and people could settle down to level one-design racing. While Geary builders have arced boat bottoms under the mast, within the tolerance, to be competitive with older boats that had bottoms that punched down under sail to over an inch or more, I don't know of any that were totally tolerance-designed throughout as an advantage.

The Geary 18's have managed to stay alive, even though going through minor evolutionary changes, usually to accept more modern materials at lesser expense, but always trying to protect the longevity of older boats. The following is a history of some of the class milestones:

1. First meeting at Seattle Yacht Club to select a one-design class boat.
2. First International Championship series – 1935. Won by Phil and Sid Miller of Vancouver, B.C.
3. International Flattie Yacht Racing Association formed – 1935.
4. " " " " " incorporated – 1936.
5. Grooved mast approved – 1947. Replaced antiquated sail track and slides..
6. Ted Geary died – 1960. He used to say he knew of 100 ways to make the Flattie faster, but he wouldn't tell anyone what they were.
7. Name changed from "Flattie" to "Geary 18" to honor Ted – 1961.
8. District IV established in Texas – 1962. They grew quickly to include four fleets.
9. Mainsail girth dimensions established – 1962. Huge luff and leech roaches had produced some monster sails.
10. Aluminum masts approved – 1965. Spar spruce was getting difficult to find. The SparCraft section S-103 and the Proctor F-Section were selected as being closest in dimension and performance to the wood masts. The pear-shape cross section tended to bow to weather, so spreaders were added.
11. Foil cross-section rudders approved – 1968. At higher speeds, the flat-plate steel rudders had noisy harmonic vibrations, causing mental discomfort, if not lower speed.
12. Building plans updated and published – 1970.
13. New jib design approved – 1972. Sailmakers had exploited loopholes to build oversize odd-shaped jibs. The same area was converted back to a simple triangle, with girth controls. Old jibs could still be used for five years.
14. Cut-down centerboard and trunk approved – 1974. Experiments found equal performance with a narrower board that allowed opening up the cockpit by cutting down the trunk.

15. Aluminum 3/8" centerboard approved – 1974. As a diet to help overweight boats be more competitive, the light boards cut total boat weight, but caused more capsizes.
16. Trapeze approved – 1975. Crews complained of strained legs and abs from sit-hiking. Now, more ladies crew, skippers get wetter, and the boats plane upwind past the Thistles.
17. Six-race International Championship series with one throwout – 1976. Five races with no throwout used to mean a minor foul in the first race would send a skipper home after travelling 1500 miles to race.
18. First 7-Seas fiberglass hull built in Port Townsend – 1980. Only 7 boats produced before molds went to Canada.
19. Optional full-length top batten in mainsail approved – 1989. Properly sized and sprung, insured a smoother set for the top of our low-aspect sails.