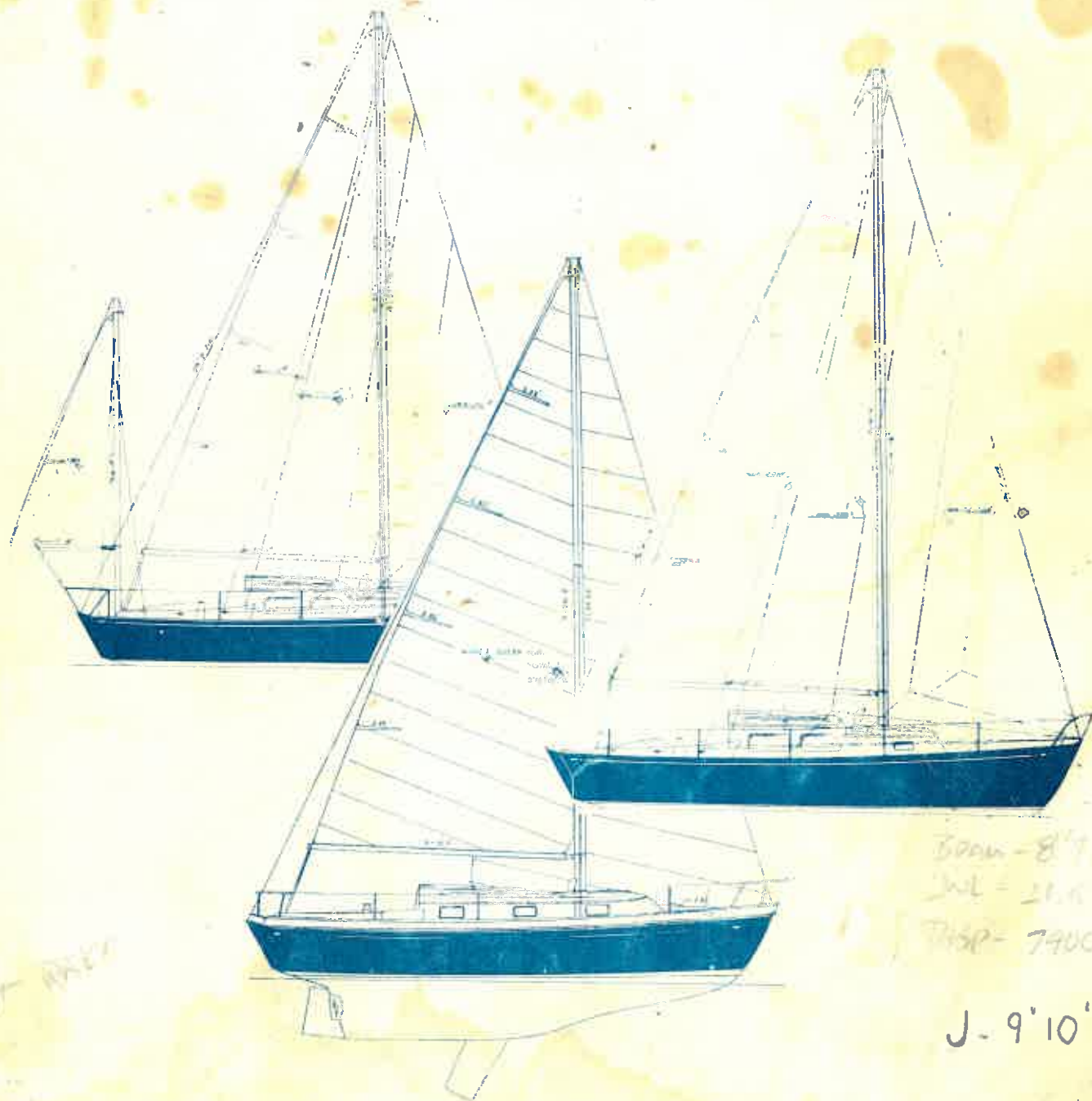


TARTAN 27 HANDBOOK



4" MAST AREA

Full
SPEED
6.2 Kts

Boon - 8' 7 1/2"
Jib - 21.0
DISP - 7400.

J - 9' 10"

38'
Chance



SECOND EDITION



This Handbook is dedicated to the Tartan 27
owner who wants to improve his skills in
handling, maintaining and enjoying his yacht.

To obtain a copy of this Handbook contact:

Hugh B. Wallis
1000 Shore Drive
Chalk Point
West River, Maryland 20778

FOREWARD - FIRST EDITION

The Chesapeake Bay Tartan 27 Association has been in existence some ten years now. During that time much experience has been gained by the members in sailing, improving and caring for the yacht. Much of this knowledge has been recorded in articles in the Association newsletter, "The Jib Sheet," Association symposium papers and other places. The attempt of the editors is to gather all information available, primarily from past Jib Sheets, add minor items where needed and present it in a manner which is easy to use.

The reader may note that there are discrepancies in contributions. This may be error, but rather, we believe, this shows differences of opinion by knowledgeable people on how something should be done. The only answer is try it yourself and form your own opinion.

While the general design of the hull and rig of the yacht has changed very little since 1960, there have been several other changes. Therefore, not all articles here apply to all Tartans. We have tried to indicate by hull number where articles do not apply. Nothing is given here on measurements or specifications of hull or rig. The reader should refer to the current issue of the Chesapeake Bay Tartan 27 Yearbook where the class rules are printed. These include such specifications.

Should you desire more information of a specific subject, contact one of the current officers of the Association who will put you in touch with an available person knowing about the subject.

Eric Bohn
Deborah James
Hugh Wallis
Editing Committee
Spring, 1978

FOREWARD - SECOND EDITION

We printed 200 copies of the first edition. Since our membership is only about 70, we thought that 200 copies would be plenty.

We were most surprised at the reception the book received from Tartan 27 owners all over the country. This was due undoubtedly to advertising by the other Tartan 27 Associations on Lake Erie and Long Island Sound, by Tartan Marine Co., and an ad in the Boats U.S. magazine. We sold out rather quickly and there are many orders unfilled.

Since 1978 we have learned even more about the yacht. There seems to be no end to what can be done with a Tartan 27. We have left as is 31 articles. We have revised or rewritten 28 articles. We have added 30 articles and other miscellaneous information.

We have had to raise the price, but it is still a labor of love - a non-profit enterprise.

David Bourdon
Dean Coston
Jeff Chewning
Dick Rockwell
Hugh Wallis
Editing Committee
Spring, 1981

TABLE OF CONTENTS

TARTAN 27 VINTAGE GUIDE	p. 1
SAILS AND SAILING	p. 3
Sail Trim	p. 5
Sail Trim - Tacking to Windward	p. 6
Down Wind Sailing	p. 7
Balanced, No Hands, Sailing	p. 7
Fly the Right Sail	p. 8-9
Use of Double Head Sails, Down Wind	p. 10
The Main Sheet	p. 11
Jib Sheet Lead to Winch	p. 12
Spinnaker Notes	p. 13
Centerboard Use	p. 14
RIGGING	p. 15
Tuning a Tartan - One Method	p. 17
Tuning the Standing Rigging - One Method	p. 21
Whisker and Spinnaker Poles	p. 22
The Vang	p. 24
Masthead Sheaves	p. 25
Maintenance of Standing Rigging	p. 26
EXTERIOR IMPROVEMENTS AND MAINTENANCE	p. 27
Topsides	p. 29
Bottom Painting	p. 30
Centerboard Inspection	p. 32
Centerboard Failure and Repair	p. 32
Centerboard Pennant	p. 33
Rudder Post Bearing - One Method	p. 34
Lightning Protection	p. 35
Tiller Head Problems	p. 36
Deck Delamination	p. 37
Chain Plate Leakage	p. 37
Adjusting Your Compass	p. 38
Servicing Your Compass	p. 39
Electrolysis	p. 40
Cockpit Cushions	p. 40
Tartan 27 (Mark I) Running Lights	p. 41
INTERIOR IMPROVEMENTS AND MAINTENANCE	p. 43
The New Tartan 27 - Mark III	
Those Little but Necessary Improvements	p. 45
Hints on Comfort Below	p. 46
A Small Item Container for the Head	p. 46
The Main Table	p. 47
The Miller Mount	p. 48
Bulkhead to Bulkhead Carpet	p. 49
The Main Switch - How to Use It	p. 49
Additional Counter Space - Galley	p. 50
Ventilator for Forward Hatch	p. 51
The Water System	p. 52

INTERIOR IMPROVEMENTS AND MAINTENANCE (CONTINUED)	
Fresh Water Tank Connection Leak	p. 52
Water Tank Guage - One Method	p. 53
Water Tank Guage - One Method	p. 53
Winterize Water System	p. 53
Rot in Wooden Members in Mast Area	p. 54
Troubleshooting an Alcohol Stove	p. 56
Gas Cooking	p. 57
Mildew	p. 58
Refrigeration on a Tartan 27	p. 59
MSD - Marine Sanitation Devices	p. 60
 AUXILIARY POWER	 p. 63
The Atomic 4 Engine	p. 65
Atomic 4: Annual Fitting Out	p. 65
Atomic 4, Maintenance, Just a Little Care on Your Part	p. 66
Atomic 4, Winter Layup	p. 68
Gas and the Gas Tank	p. 69
Gas Tank Dip Stick	p. 69
Winter Layup - Gas Tank	p. 69
Gas Tanks	p. 70
Water in Gas	p. 70
Gas Tank Leaks	p. 71
Gas Tank Patch	p. 71
Flushing Your Atomic 4 Engine	p. 72
Fuel System Maintenance	p. 74
Coping with the Messy Oil Change Chore	p. 75
The Farymann Diesel	p. 77
Care, Maintenance and Operation of the Farymann Diesel	p. 78
Troubleshooting the Farymann Diesel	p. 85
Repowering	p. 88
The Exhaust System	p. 89
 RACING	 p. 91
Courses and Currents	p. 93
Wind Tunnel Tests	p. 95
Starting Line Tactics	p. 95
Barging	p. 96
Reaching Between Marks	p. 97
Tacking to the Windward Mark	p. 97
Racing Upwind in a Tartan 27	p. 98
The Spinnaker: Heavy Air Control	p. 100
Race Committee Duty	p. 102
Identification Flag - CBYRA Races	p. 103

SAFETY	p. 105
Safety Requirements	p. 107
V.D.S. (Visual Distress Signals)	p. 108
Man Overboard	p. 110
Hypothermia	p. 111
CRUISING AND MISCELLANEOUS	p. 113
Weather	p. 115
Charts and Stuff	p. 115
Overhead Clearance	p. 115
Fishing	p. 116
Radio Communication for your Boat	p. 117
Ungrounding	p. 121
Documentation vs. Registration	p. 122
Do's and Don'ts for the Tartan 27 Sailor	p. 123
Books for Cruising	p. 124
Tartan 27 Rafting	p. 125
Tying up in a Raft	p. 126

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Special thanks go to Dede King for the art work, to Ida Chewing and Debbie James for the typing, to Nancy Rockwell, current Jib Sheet editor, and to Elsie Wallis for careful proofreading.

TARTAN 27 ASSOCIATIONS

For continuing news and information concerning the Tartan 27, we suggest you join one of the associations nearest you. They are as follows:

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4 Woodland Drive
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West River, Maryland 20881 (Dues \$15.00)

For information concerning this Handbook or to obtain a copy, contact Hugh B. Wallis, Secretary, Chesapeake Bay Tartan 27 Association.

TARTAN 27 VINTAGE GUIDE

From the Long Island Sound Tartan 27 Association Newsletter comes the Tartan 27 Vintage Guide. The guide was compiled from information gained from Tartan Marine and other sources. There are, no doubt, some inaccuracies in this list, but it should be approximately correct.

TARTAN 27 VINTAGE GUIDE

Year	Production of Hull Numbers	No. of Hulls Built in Year	Comments on Changes
<u>TYPE I</u>			
1961	1 to 12	12	Early boats had bronze boards to hull # ?
1962 and 1963	12 to 49	37	<p>ALUM Rudder ?</p> <p>WOOD DORADE Boxes ↑ 195</p>
1964	50 to 134	85	
1965	135 to 195	61	
1966	196 to 255	60	
1967	256 to 335	80	
1968	336 to 399	64	Galley changed to flush stove; keel switched from outside to inside lead ballast; <u>350 lbs. ballast added</u> ; *molded dorade boxes.
1969	400 to 461	62	
1970	462 to 505	44	
1971	506 to 526	21	
1972	--	0	
<u>TYPE II</u>			
1973	527 to 533	7	New deck mold with longer cockpit, raised bridge deck, teak interior, <u>small mast section</u> , boom section from round to teardrop, jiffy reefing added.
1974	534 to 568	35	
1975	569 to 619	51	
1976	620 to 648	28	
<u>TYPE III</u>			
1977	649 to 655	7	Wholly new design for deck and interior.
1979	656 to 712	<u>57</u>	
	TOTAL	711	

SAILS
and
SAILING

SAIL TRIM

General Sailing Characteristics:

Tartan will sail at optimum speed when she is on her bottom. She will begin to lug when heeled beyond 20 degrees. With most headsails she will carry a slight leeward helm in 1-8 knots, balance well in 8-14 knots and experience a weather helm from 14 up. When a weather helm exists and heeling in excess of 20 degrees is experienced, the main should be reefed to keep her on her feet. Do not hesitate to carry a large headsail up to 20 knots of wind, and reef your main accordingly to keep her driving.

The centerboard can be kept up on almost all points of sailing with substantial gain in speed and little leeway. Let the board down a turn or so when running in heavy air to prevent yawing.

Main

1. Let it backwind when over 22 degree angle of heel. Leave the genoa on.
2. Sheet low on traveler in backwinded condition. Heighten above center if you have a lee helm.
3. Try to move draft forward by tightening downhaul in a blow when on the wind.
4. Keep battens standing in light air. Tighten leach line.
5. Use a boom vang all the time - takes load off the leach in a blow and stops movement in light air.
6. If you have a zipper, sail shape is easily altered without outhaul. Leave outhaul tight, unzip, then ease outhaul for desired contour.

176% Genoa

1. Carry until water is being scooped or you are reefed to second batten and cove stripe is in. Regularly - usually 22 knots, plus.
2. Move lead fore and aft between close-hauled and reaching.
3. Keep genoa 2" off spreader.
4. Keep it on a tight headstay - put on adjustable backstay turnbuckle if possible to remove tension while moored.
5. Adjust leechline so there is a small flutter. Don't shake the whole sail.

Working Genoa

1. Working genoa carries well in 22 knots plus with main $\frac{1}{2}$ reefed.
2. Keep the boat on her bottom, and the centerboard can work.
3. Sheet outside shrouds, not actually close hauled. You can't punch high into the waves - they'll stop you. Drive off with sail set outside and fly.
4. Use sail for pleasure to keep the genoa in shape for racing.

Spinnakers

1. Normal procedure, but it is important to know when the air is light enough to reach up with it.
2. If you are questioning whether to put it up - do it. This will always pay.
3. Try to lead downhaul to cockpit.
4. Tartan chutes are narrow so go up with the pole when reaching.
5. The .75 ounce sail is great in light Great Lakes weather.

Last comments are on boat trim. Keep weight out of the ends. Don't let crew sit on pulpit. Keep them on weather rail on short races or long if they'll comply. Sleep or rest to weather. In light going on the wind - weight to leeward. Downwind weight aft. Tilt to weather off the wind to keep spinnaker in clear wind. The most common mistake is letting the boat slide to leeward. By laying over too far. Buy an inclinometer and set some rules.

SAIL TRIM - TACKING TO WINDWARD

1. Heavy Air

Tartan 27's are relatively short, wide boats. They do not go well close hauled, to windward, in a blow. The choppy seas common to the Bay stops them cold and throws the bow to leeward. Ease the jib sheet. Slide the main sheet low on the track (to leeward). Don't point so high; "run off"; keep the boat moving through the seas. Main and jib halyards should be very tight.

2. Medium Air

Tartans are perfect in medium airs. Close haul the jib so that at the top, it is maybe 1"± off of the end of the spreader. The foot should probably be against the stanchions and life line. Adjust the jib sheet leads to make this possible. Do not allow the end of the spreader to distort the shape of the jib. Try not to allow the stanchions and life lines to distort the foot. Carry the main sheet approximately dead center or maybe slightly to windward on the track. Don't trim the main sheet too tight. Try to have the boom near midships to get a desirable mainsail shape, maybe slack the halyard somewhat.

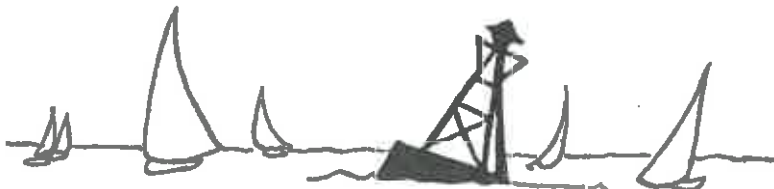
3. Light Air

Slack both jib and main sheets. Carry the main sheet high on the track (to windward). Slack the main sheet and try to "loft" the boom. The boat will probably have a lee helm (in very light air). Carry the centerboard down as far as possible to counter this. Be very observant of light puffs or changes in wind direction. Adapt the attitude that there is always some wind. When it's so light that the usual wind indicators don't work, smoke or watch your crew's cigarette smoke. A perspiring body will pick up the direction of a faint puff by the cooling feeling. Don't give up. Work to find wind. Unfortunately, people will call you "lucky" when your work pays off.

Don't be afraid to play with the set of your sails. With experience, you will "feel" when they are set right.

Some facts on sail trim:

- a tight luff will give you a loose leech and vice versa.
- a tight luff forces the draft forward. (You want draft forward in heavy air, back in light air).
- the boat will not point to windward with a loose headstay or a slack jib halyard.
- don't trim too tight in light air. It will stop the boat. Keep her moving. This is the first priority.
- the two things that will help you most are observation and experience. Get out and sail!!



DOWN WIND SAILING

Some sailors love a broad reach; some like to beat; and some prefer to go with the wind. Down wind sailing in a Tartan 27 can be a completely exhilarating experience when the wind and the following seas are high, because this boat loves to surf! She'll grab a wave, peak with it, and shoot through the water till it dies, already waiting for the next buster to come along and repeat the process.

To enjoy sailing before a heavy wind, you must have the sails firmly anchored. A restrainer, solidly fixed, will hold the boom in place and a whisker pole on the jib is needed with at least a downhaul to keep it steady. With the threat of an unexpected jibe thus under control, all the helmsman needs to do is to avoid yawing (turning broadside to the waves).

When surfing, this often requires quite a bit of movement of the helm. As the wave approaches, you pull the helm to keep the boat at right angles. As the boat lifts, you push the helm to keep the bow from turning. You soon develop a rhythm that becomes part of the wind and the waves and the sea itself - a dance, no less.

Most down wind sailing, however, usually requires less attention than other tacks. But even here, what the helmsman does is very important.

The skipper must be alert to any collapse or luff in the sail and be ready to slightly change heading to fill the sail. Down wind the crew weight should be aft. A slight center-board will act somewhat as a skeg in heavy going and help stop the yawing, but it will bang around in the well.

When racing, the helmsman should stay as near as possible on compass course. There are two schools of thought, however, about this when the wind is directly astern. Some skippers will tack down wind jibing frequently. We know that the boat will go faster with the wind off the quarter, but will it go fast enough to make up for the extra distance it travels by tacking? No one can say for sure.

BALANCED, NO HANDS SAILING

Our Tartans are amazingly well balanced. We are especially fortunate to have an additional tool, the centerboard. In a fairly steady breeze (5-10 knots), the boat will sail to wind by herself as well or better than the average skipper can sail her. If seas are higher and the breeze is stronger, she will still sail herself, but she will luff more and fall off more, not sailing a true course. The way to do it is by trial and error, using the following simple rules:

1. Trimming the jib makes her fall off.
2. Trimming the mainsail makes her point up.
3. Sliding the mainsheet track to windward makes her point-up; to leeward makes her fall off.
4. Centerboard lower, boat points up. Centerboard raised (thus moving the center of board effort aft), the boat falls off.

We found that the boat did not always react to any one of these rules. It's a matter of trying them all together, adjusting with patience until she is set just right. If you don't want to bother with sailing at all, you can trim the jib fairly tight and the mainsail fairly loose. Place the centerboard about halfway up. The mainsail luffs somewhat more but you have more surely eliminated the possibility of the boat putting herself about. Don't go to sleep. Keep a lookout!

FLY THE RIGHT SAIL

The enjoyment of sailing the Tartan 27 is greatly increased for both the skipper and crew if proper consideration is given to carrying the right sails to fit the conditions. Carrying too much sail may be likened to over-driving your headlights or going around a curve on two wheels. It may be daring, but it upsets the crew (especially the cook), gets things wet, wakes people up, generally causes discomfort, and then doesn't get you there any faster. Usually slower. On the other hand, carrying too little sail makes you go too slow and tends to make the crew lazy.

The Tartan 27, to perform properly, should not be heeled more than 20 degrees. A good rule of thumb is to keep "blue water" below the teak rub rail, off the deck.

The Sparkman and Stevens sail plan, as shown on the front cover of our Yearbook, shows four headsails plus the mainsail. The spinnaker should complete the designed sail locker. The largest Genoa shown (probably 196) is illegal for class racing and is almost never owned or used. The next smallest headsail is the 176 Genoa, which we call the "Big Genoa". It is used extensively for racing. The next smallest is the "working genoa", which is used extensively for cruising. The smallest is the storm jib which is very handy when tacking to windward in a blow.

The newer mainsails have jiffy reefing with three reefing points:

- . the flattening reef, approximately 8" above the boom is used almost entirely for racing
- . the second reef, approximately 3' above the boom is the most-used reef
- . the third reef is approximately one-half of the mainsail and is used occasionally in a blow.

The older boats have roller reefing which can be adjusted anywhere to your liking.

For racing, especially if it is puffy, it's a good idea to carry slightly more sail than average (whatever that is). In the puffs, luff the mainsail and keep the headsail driving. In the lulls you have full sail and don't lose time. It never seems practicable to change headsails in a race while you are tacking to wind. Too much lost time. However, the jib can be changed while going down wind, especially if you are flying a spinnaker. While racing, it's best to carry the big genoa as long as possible and reef the mainsail, if necessary, to the second reef.

For cruising, comfort is the name of the game rather than speed. So, if anything, you should be under-rigged. The boat will not go to windward without a jib. So if you are tacking, carry some kind of jib and reef the main. You will know when you have the right combination of working genoa or storm jib and

reefed main because the boat will be balanced with little or no tiller action. Sailing at any point off the wind, the boat goes very well under mainsail alone. So if it's blowing and you are not beating, don't fool with the jib.

Generally while cruising, use the working genoa rather than the big genoa (176%). There is really not all that much difference in speed. Visibility and hence comfort and safety is greatly increased. Save the big genoa for racing.

It is much easier to reef the mainsail at the dock or at anchor. This is also a very good chance to practice reefing. You can start out with two reefs tied in, one on top of the other. If it moderates, shake out the top reef, or both.

A word about hot weather sailing. Quite often in July or August, the sun is so hot that it is uncomfortable without an awning over the cabin and cockpit. This eliminates the use of the mainsail. The boat sails very well at all points with headsails only. If beating to windward, use the big genoa (176) and awning. The boat will hold well to windward and fall off only slightly more than usual when going about. It will not do this with the other jibs, however.

The spinnaker is the nicest hot weather cruising sail of all. It will fly through three quarters of the points of the compass and will carry you along at a good clip. On one cruise, we sailed for most of three days with spinnaker and awning. Should the wind increase, douse the spinnaker and fly a genoa held out with a whisker or spinnaker pole if the breeze is aft.

Keep trying different combinations of sail and avoid that noisy, smelly engine!



USE OF DOUBLE HEADSAILS SAILING DOWNWIND

Sailing downwind on a hot summer day can be very comfortable with awning rigged over cockpit and cabin while sailing with spinnaker set only. This is discussed elsewhere, but for those without spinnakers, there is another easy way to sail downwind at good speed and still keep that awning shading crew and icebox. That is by sailing with double headsails rigged wing and wing. To do this, set the larger of your jibs hanked to the forestay. On the opposite side, set your other jib free flying. (You can hank both to the forestay, but that can be a mess.) Both sails are supported by the same jib halyard.

There are several ways to set the smaller flying jib. One method is to attach the heads of both jibs to the same halyard shackle. Then run a short line from the tack of the smaller sail to the tack shackle on deck. Adjust so that the length of the small jib luff plus line is equal to the length of the large jib luff. Then hoist and adjust as desired.

If you prefer the smaller jib not riding quite so high, lower it by using a one or two foot pendant from the jib halyard to the jib head. The best way, if you have a long enough line (about 60') is to use that line as a halyard run through the jib halyard shackle. After the big jib is hoisted, hoist up the smaller.

For sail control, split your jib sheets and attach one to each jib. Use your whisker pole to hold out whichever sail tends to backwind or collapse, usually the weather sail. Plan ahead if possible so that the smaller jib is on the weather side when not running directly downwind.

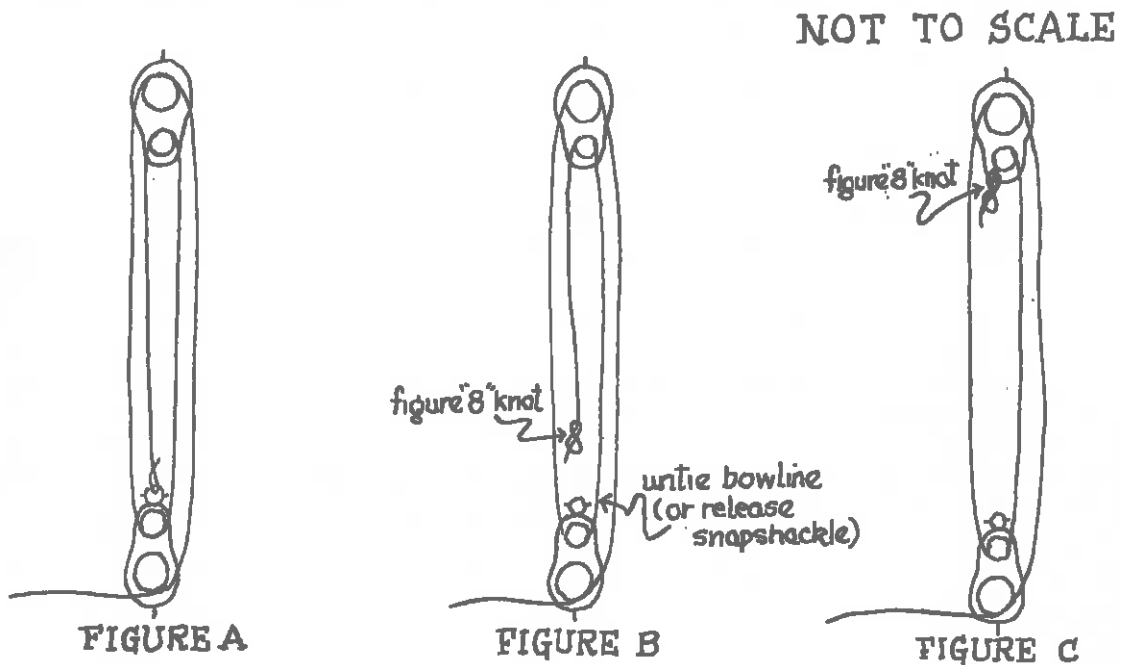
For those boats with spinnaker rigging, the second jib can be hoisted with the spinnaker halyard and the spinnaker pole can be used as a second pole to hold out the jibs.

Double headsails set wing and wing will allow you to sail through an arc totaling about 60 degrees downwind. A spinnaker, of course, because it is free floating and unattached to the forestay, will allow sailing through an arc of at least 180 degrees. Free flying a genoa jib can be done with a whisker pole (don't forget to rig a pole topping life and pole foreguy/downhaul), but under most conditions it is not very efficient.

Using double headsails when sailing downwind affords increased speed while allowing continuous comfort under the cockpit awning. Try it and see!

THE MAINSHEET

Most all Tartan 27's use a four purchase block and fall system for the mainsheet (see figure A). This works fine when we have medium or heavy air, but when the wind is light, the four lines are cumbersome and unneeded. They foul easily and often drag in the water when running fair wind.



These lines can be reduced to three by placing a figure eight knot in the line and untying the bowline or releasing a snap shackle from the lower block (see figures B and C). You would be surprised how much easier it is to handle the mainsheet in light air with this reduced rig.

I haven't tried it, but the system could easily be lightened further by removing one more line. This would, however, take longer to change and replace if a quick thunder squall approached.



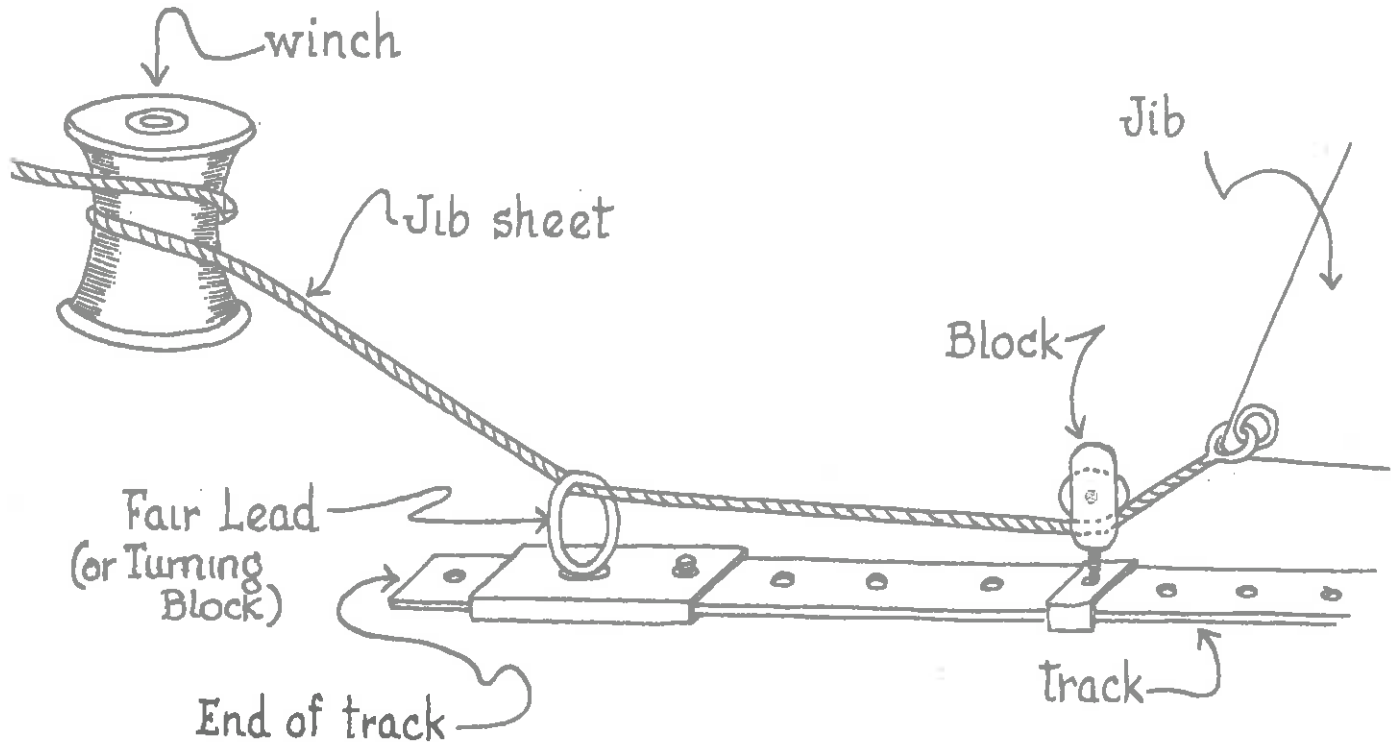
JIB SHEET LEAD TO WINCH

All Tartans between hulls 524 and 651 have problems with back warping on the winches. This is caused by the fact that the winch is too low or the jib sheet lead block is too high. For the winch to work properly, the line must feed up to the winch.

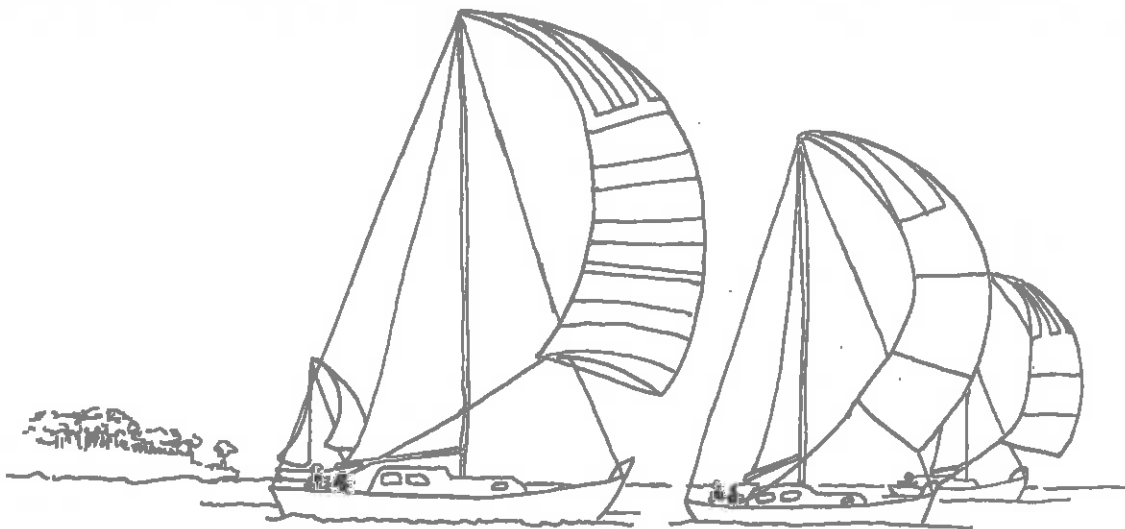
Solutions are one or a combination of the following:

- . raise winch. Place a teak wood block under it.
- . use a jib sheet block of different design that will lead the line closer to the deck.
- . place fair leads or turning block on the aft end of the track to hold the line low before it goes to the winch. (See sketch.)
We found that on an often sailed yacht the jib sheet wears out in one season when a fair lead is used.

Place no more wraps on the winch than the weather requires. The more wraps, the more chance of back wrap and the slower to unwrap when going about.



NOT TO SCALE



SPINNAKER NOTES

Some general rules are as follows:

The pole should be parallel to the water.

The pole should be at right angles to the apparent wind (as shown by your tell-tale on the backstay or masthead wind pennant).

Both clews should be the same height from the water.

Keep the sheet (opposite side from the pole) as slack as possible without luffing the spinnaker.

Alter course to keep the spinnaker full (especially in wind shifts), but be sure you correctly determine which way to turn by the indication of your tell-tale.

When jibing, try to hold the boom in the center of the boat for a few moments while the spinnaker is being jibed. This will give you a better chance to keep the spinnaker full during the jibe.

Keep small light lines aboard (flag halyard) for use as spinnaker sheet lines in very light air. Tie them on and remove the regular ones. The spinnaker will stay full longer without the heavier lines.

Keep weight generally aft. Don't allow the foredeck man to stay on the foredeck any longer than necessary.

Some specific trimming rules are:

On a light run, the pole is kept low and the sheet lead forward in order to tighten the spinnaker leeches a bit and "fan" the sail's head open to project its maximum area.

On runs and broad reaches, a good guideline for pole height and sheet lead is cloth overlapping in the head. Adjust the clews downward (keeping them level) until the cloth overlapping just barely disappears.

When close reaching, the sheet lead should go aft and the pole up about 8-15" compared to the broad reach level. This allows the leeches to be freer and likely will produce vertical cloth overlapping in the head.

The cloth overlapping in the head is simply an indication that the sail shape has been properly adjusted for reaching -- a flatter smaller head and a more freely ventilating leech.

Place a very small dab of vaseline or white grease on the ring on the mast to which the spinnaker pole attaches. This will eliminate hangups at the pole which make a cracking sound and sometimes even break the spinnaker pole fitting.

CENTERBOARD USE

The 116 pound fiberglass steel-cored centerboard housed neatly into its lead ballast is one of the most important tools on board your TARTAN. It is the mechanism behind her extraordinary performance to windward and the equalizer in creating balance of helm on all points of sail.

The windward leg should, in general, be sailed with board down. In this position the top of the board is bearing on the forward edge of the trunk and its leading edge is 15 degrees from vertical. Lateral plane is increased by the exposed surface area of the board and the result should be a slight pressure on the tiller in creating a windward helm. The helm should be no more than enough to "keep you honest", and if excessive, draw the board up and aft a few inches to the point where the tiller is feather light. This is optimum centerboard position.

An opportunity to experiment will clarify any doubts relative to the versatility of the board. When sailing close to the wind try balancing the helm as described. Then, drop the tiller and steer with the centerboard. With the board down, she'll sail closer to the wind, board up, and the bow will run off to leeward. With the board back at neutral position and secured there, your TARTAN will sail to windward indefinitely without need to tend the helm.

Down wind sailing is accomplished with the board housed in its trunk. Lateral surface area is not required to prevent leeway and wetted surface is reduced. A heavy following sea with spinnaker set will at times cause the boat to yaw. Under these circumstances, crack the board a hair (about two feet off on the pennant). This will present some lateral plane wellaft and form a skeg which should inhibit the boat's tendency to skid her transom port and starboard.

Reaching is strictly a compromise. Set the board in a position that offers best balance to the helm. The boat again should have a slight tendency toward weather helm.

In conclusion, use your centerboard; don't be afraid to experiment to find out for yourself the best positions for points of sail on your own boat. Properly handled it will greatly expand your trophy collection.

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RIGGING

TUNING A TARTAN 27 - ONE METHOD

Tuning a Tartan 27, as any yacht, involves making position and tension adjustments to the standing rigging so as to obtain optimum drive from the sails under a variety of wind and water conditions. This requires both transverse (side-to-side) and longitudinal (fore-aft) adjustments to the shrouds and stays.

Among the necessary ingredients for the following procedure are calm wind, calm water, a yardstick, masking tape, a carpenter's level, a plumb, and much patience. And, of course, one beautiful yacht, a Tartan 27. Even where the procedure is undertaken in the calmest conditions, however, you must resign yourself to a couple of hours of repeatedly going aboard, making small adjustments, coming ashore, and waiting endlessly for the plumb-line to settle down.

Transverse Tuning

1. Center foot of mast.

Make sure the foot of the mast is seated in the fore-aft center of the sole plate. There is a possible play of plus or minus $\frac{1}{2}$ inch which can affect mast head position. Hand tighten turnbuckles for the shrouds, forestay and backstay.

2. Level transverse hull.

Verify transverse hull balance by setting a carpenter's level transversely on the forward hatch. Observe the bubble in the carpenter's level. If it is not generally centered, or does not have a balanced deviation from center, your boat has a list and you cannot proceed with the plumb-line tuning procedure until the problem has been corrected. Too much wind, strong current, rough water, dock lines of unequal length, load imbalance below deck, or boom off center are some possible causes of the problem.

3. Set plumbline on mainsail halyard snap shackle.

Connect a plumb (can be any connectable $\frac{1}{2}$ lb. weight such as a wrench) to the mainsail halyard snap shackle so that the resulting plumb-line can swing free just above the boom at the gooseneck. Reset forestay and backstay turnbuckles hand tight so that the plumb just clears the back of the mast. (I usually wrap a towel about the mast, held on by masking tape, just above the boom so that the swinging plumb does not nick the mast).

4. Set transverse yardstick.

Secure a yardstick, as by masking tape, transversely to the mast just above the gooseneck so that the swinging deviations of the plumb can be read out against the yardstick. (I mark my yardstick with a black marker pen every three inches so it can be read more clearly at a distance).

5. Adjust upper shroud turnbuckles.

Next, observe the oscillations of the plumb. Adjust the upper shroud turnbuckles until the plumb deviates equally from mast center as measured

against the yardstick. Tighten down these turnbuckles hand tight plus two full turns each. Recheck for equal deviation of the plumb from center. The top of the mast is now transversely dead center where it should be.

6. Adjust lower shroud turnbuckles.

Next, sight up the mast track to check for straightness. If straight, begin to tighten down each lower shroud turnbuckle, one turn at a time, alternating sides, until hand tight plus two complete turns. Verify straightness by standing on the dock in front of your boat and lining up the forestay with the mast. A good point of reference is the mast head light. As your eye finds the forestay centered with the base of the mast, quickly scan to the mast head light, where you should find the forestay splitting the light dead center.

If your yacht has seen many years, your mast may have taken a set, i.e., developed a slight bend near the spreaders. If you do detect such a bend, adjust the lower shroud turnbuckles by loosening one (closest to the bend direction) and tightening the other, one turn at a time, checking mast straightness between adjustments.

Theoretically, each transverse adjustment of the mast at the spreaders by resetting the lower shroud turnbuckles tends to move the masthead in the same direction due to the rigging inter-relationship. So taking out any major bend might require resetting the upper shrouds several times so that your plumb-line is returned to hang from true transverse center.

7. Pressure-tighten upper turnbuckles.

Finalize transverse tuning by tightening down each of the upper shroud turnbuckles in equal alternate increments seven complete turns after hand tight, which typically yields a tension of 500 to 700 psi. This is substantially more than on the lower shrouds, even though lowers are of a larger diameter.

This is required to uniformly support the mast under the strain of sail loading, which is substantially greater on the lower portion of the mast. If you have a hydraulic backstay and occasionally put 1500 to 2000 psi on your backstay, you will need substantially more tension on the upper shrouds but not exceeding 1000 psi, to maintain the mast straight.

Longitudinal Tuning

1. Trim boat to fore-aft sailing lines.

Our 27 is reputed to perform at her best with an aft mast rake of about 4 inches under average conditions, i.e., with sails of average draft and in moderate winds of about 10-12 knots. Our initial set up, then, would be for four inches of aft rake.

The first step in longitudinal tuning is either to trim the boat to her fore-aft sailing lines, or to determine the exact amount of the out-of-trim and take it into account. With no crew aboard, a Tartan 27 should not be on her sailing lines. Typically, the bow would be two inches lower in the water than the stern but would return to her sailing lines with crew aboard.

You can determine this by taking two measurements, one from the bow rail to the water, and the other from the stern rail to the water. With your yacht on her sailing lines (design water lines), the difference in these measurements should be 12 inches. If the difference is smaller, your yacht is down at the bow. If difference is larger, your stern is low in the water.

You can best determine this difference as follows. With your yacht backed all the way into its slip and with you standing ashore, hang a measuring tape from the top of the taff rail (stern) to the water. Then turn your yacht around in its slip with bow inshore and measure from the top of the teak flat at the breast hook to the water.

With your yacht on her sailing lines, the difference in these measurements should be 12 inches. If you should elect to add weight to the stern so as to trim the boat to her sailing lines, you can proceed with the plumb-line rake calculations discussed hereafter.

As an alternative, you can take fore-aft out-of-trim into account by approximating that with the bow two inches lower than the stern, (which results in a difference measurement of 10 inches), a mast perpendicular to the design water line would actually have a four inch rake, e.g.; a plumb would hang toward the front of the mast. But since we already set up the mast head so that the plumb hangs just to the rear of the mast, we can approximate that we have a built-in four inch rake.

2. Plumb for fore-aft rake.

Next, reset the yardstick by taping it to the mast so that it extends rearward just above the boom. Observe where the plumb sets against the yardstick and read off its average distance from the mainsail track, taking into account the pendulum effect of the plumb about its average position. This average distance represents the amount of the aft rake set into the mast, either as a direct reading where the boat is in fore-aft trim, or by adding to the reading any amount of initial out-of-trim rake (4 inches).

3. Determine rake by on-shore observations.

An alternate, and perhaps simpler, method of determining rake is as follows. With your yacht on her sailing lines and while standing 100 feet or more from the side of your yacht, sight your mast against the mast of an adjacent yacht so that both masts intersect to a V at the lowest visible point preferably below the gooseneck). Judge the distance (which we will call X) from the aft or front of your mast head to a like point (aft or front) on the other mast head, using as a distance guide the fact that the major diameter of a T-27 mast (side view) is six inches.

You must then turn your boat around in its slip, again sighting your mast against the mast of the same adjacent yacht so that both masts intersect to a V at the lowest visible point. Again, judge the distance (which we will call Y) your mast head is from the adjacent mast head. To calculate rake, add the value of X to the value of Y and then divide by 2. The final calculated rake is independent of the rake of the adjacent mast and works whether the mast of the adjacent yacht has more or less rake than your mast.

This technique can be simplified further by sighting your mast against the edge of a nearby building. If the architect did a good job and the building is plumb, you can determine the rake directly without turning your yacht around.

4. Seasonal adjustments.

There are many theories on the subject of mast rake. I like the following as applied to our 27. During the spring and early summer when the winds are generally light, there is a tendency to lee helm. Raking the mast aft, to say 10 inches, reduces lee helm. In the late summer and early fall when the winds are generally strong, there is a tendency to weather helm. Minimum aft rake tends to reduce weather helm. Of course, a heavy air day could be encountered in the spring and a light air day found in the fall, each requiring special consideration.

Adjustment of the mast for helm should be done with both fore and aft turnbuckles. This usually means making a pre-adjustment of the forestay turnbuckle with the backstay loose, then tightening up on the manual or hydraulic backstay adjuster.

Forestay sag must also be considered. Forces from the Genoa in heavier air tend to cause the forestay to bend or sag which reduces the pointing ability of your boat. Such a sag condition is normally prevented by increased backstay tension. Unfortunately, such increased backstay loading causes the forestay to stretch so as to move the mast head aft. This tends to increase weather helm and requires increased rudder angle to hold course. This, in turn, adds drag which tends to reduce boat speed. A preshortening of the forestay turnbuckle would prevent this increase in weather helm and consequent reduction in boat speed.

5. Miscellaneous adjustments

There are other fore-aft rigging adjustments which I consider beyond the scope of this discussion. For example, the mast can be curved aft by high backstay loading to reduce the fullness of the mainsail as often desired in heavy air. But as you can see from the principles outlined above, starting such an adjustment from a minimum aft rake condition would introduce the least weather helm.

After Tuning

1. Test while sailing.

The final test of proper mast tuning lies in how the mast behaves while sailing on the wind on a moderate breeze of about 10-12 knots. Sighting up the mast should confirm that it has remained straight. If on either a port or starboard tack the mast head appears to fall off to leeward, suitable loosening of the windward lower shroud is indicated.

2. Final adjustments.

Be sure to close up your patient with due care. Insert full size cotter pins in the turnbuckle screws and spread the ends about 10-12 degrees. And finally, protect your sails from the cotter pins by using turnbuckle boots or by taping.

TUNING THE STANDING RIGGING - ONE METHOD

A relatively simple approach to tuning the standing rigging on your Tartan is to try the following steps, starting with the shrouds and finishing with the stays:

1. Ease the lower shrouds until they are slack. Ease the stays several turns (each by the same number of turns).
2. Run the rope-wire splice on the main halyard to the truck and cleat it.
3. Put a pencil through the shackle on the halyard, pull the halyard taut and with the pencil make a mark on the fiberglass side of the cabin several feet off the mast on the port side.
4. Take the halyard and pencil to the starboard side and make the mark the same distance aft of the mast.
5. Measure the height of the mark off the deck port and starboard and note.
6. Average the heights. Example: Port $8\frac{1}{2}$ ", starboard $10\frac{1}{2}$ ". Average $9\frac{1}{2}$ ".
7. Make a new mark on the cabin side where the shackle should be (at $9\frac{1}{2}$ " in the example).
8. Adjust the upper shroud turnbuckles until the shackles come on the proper mark. (In the example, trim the port turnbuckle and ease the starboard).
9. Trim both turnbuckles by the same number of turns (take one turn at a time) until they are reasonably taut. Replace the cotterpins.
10. Trim the lowers. They should not be as taut as the uppers. Sight up the mast while adjusting - it should be straight when completed. If it's bent, you can easily determine which to trim by sighting up and pulling on one or the other of the lowers. Replace the cotterpins.
11. Wait for a 12 knot breeze, take your Tartan out and, with the center-board up, sail close-hauled on a steady course and adjust the rake until the boat is balanced - no weather helm, no lee helm). She should have some lee helm in winds below 12 knots, and increasing weather helm in winds above 12 knots. When you find the proper rake, sock 'em down and pin. They should be taut. Don't let your jib luff sag.
12. When you think you've finished, sight up the mast again while close hauled. You may find that you should trim your lowers slightly. Tack, sight again and adjust the opposite lower, if necessary.

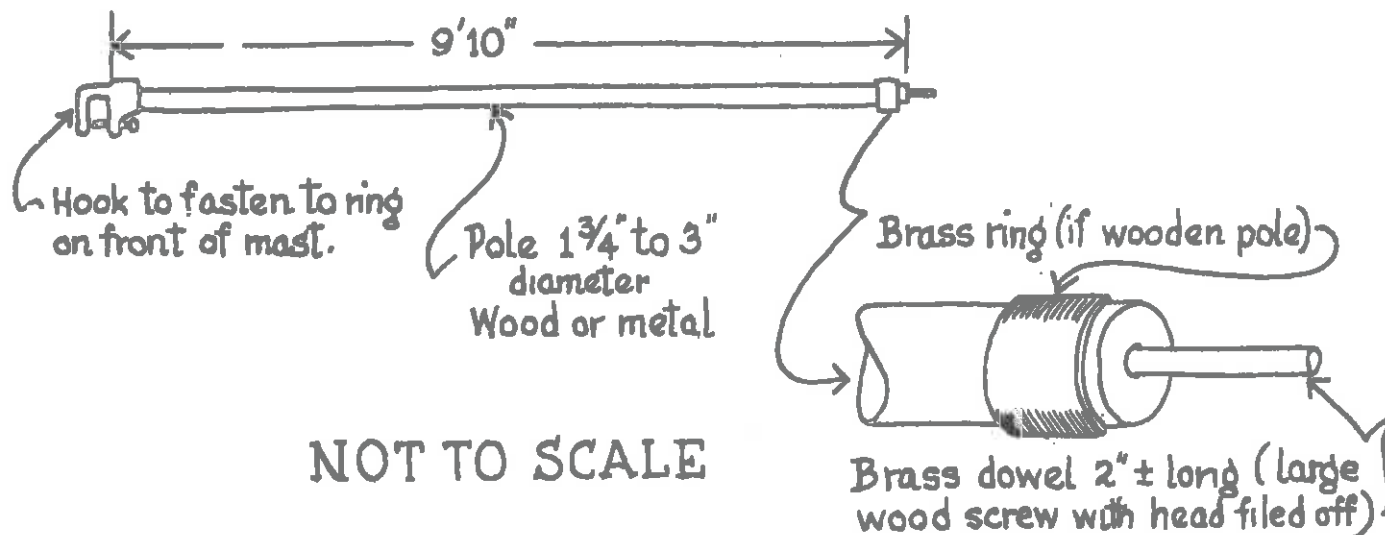
WHISKER AND SPINNAKER POLES

The whisker and/or spinnaker pole must be no longer than the "J" measurement. That is, the distance when measured horizontally from the front of the mast to a point directly above the bow of the boat. Our "J" measurement is 9'10" (see paragraph G, 5, e, of our class rules). Poles must be secured to the mast. They cannot be hand held or hooked on the shrouds, lines, etc. The pole must be carried on the opposite side of the boat from the boom. These regulations are primarily for safety, but in order to carry out the one-design concept of our class, they must be followed. Mishandling of the spinnaker or whisker pole in a race may subject you to protest.

What's the difference between a spinnaker pole and a whisker pole? Not much. They are both the same length. Normally the whisker pole can be used to pole out a jib, while the spinnaker pole can be used to either hold out the jib or the spinnaker.

Spinnaker poles need a lift and fore guy in order to control the free floating spinnaker, which makes it somewhat more complicated. The whisker pole normally needs none of these since the pressure of the jib clew against the pole end caused by the jib sheet will hold it steady. In a rolling sea you may wrap the spinnaker lift shackle and fore guy shackle around the whisker pole to stop the up-down motion, or you may snap them to the sheet at the pole end. If you desire, you can place a ring on the pole to attach the fore guy and lift.

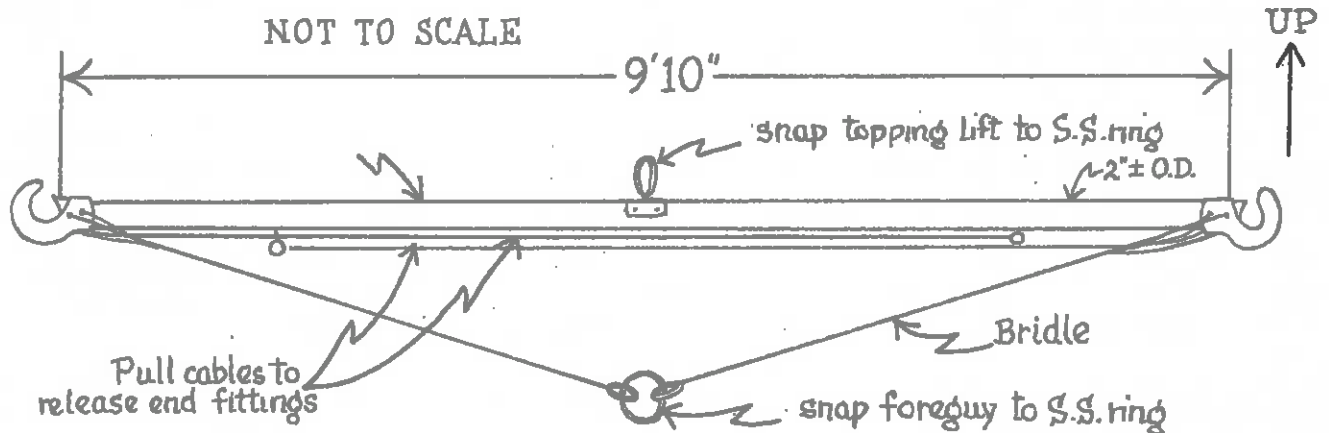
Whisker poles are nice to have since they are less complicated, lighter, easier and quicker to handle, and useful for other purposes such as dept soundings, boat hooks, repelling boarders, etc. A typical whisker pole looks like this:



When the brass dowel is pushed in the grommet at the clew of the jib and the jib sheet is tightened, the pole will hold in place.

When cruising, if on a broad reach, the whisker pole can be used nicely to hold out the jib on the lee side. This is illegal in racing.

A typical spinnaker pole is usually made from an aluminum tube. It's important to get the aluminum alloy tube which is especially made to live in salt water. If you don't, there will be white "rust" around the fittings. A typical spinnaker pole looks like this:



You need the bridle arrangement below the pole to take the forces from the fore guy away from the center of the pole. Especially the lower bridle is needed since there is a tremendous upward pull. Some skippers use a bridle on top for the lift as well, but since there is very little pull here, only the weight of the pole, I don't think it's necessary.

The fitting on either end should be the same so that when jibing you can switch the pole end for end. It's best to use an end fitting which can be released by pulling a cable under the pole. Attach to the mast by striking the latch on the fitting against the ring on the mast (similar to Ronston RF 676 or Shaeffer 91-39). It is sometimes very difficult to reach the end fitting to attach or release it. You don't want your crew to end up chinning on the pole out over the side, or worse, dragging in the water and slowing you up.

Carry the pole with the hook ends up. Don't snap the hook into the clew of the spinnaker but rather on the sheet lines. Should you wish to douse the spinnaker and your crew can't reach the snap shackle on the sheet line (attaching the sheet to the spinnaker clew), you can untie the knot in the end of the sheet and allow all of the sheet line to pass through the hook end of the pole. Be sure to keep a figure eight knot tied in the end of both sheets so they both will not accidentally get away from you. Very embarrassing.

The spinnaker pole end fitting may "wedge" in the ring on the mast. This may cause a cracking sound and will cause the pole to "jerk" as it moves forward and aft. This wedging has on occasion broken the hook end off the fitting. The solution is to file the fitting somewhat to make it better fit the ring and to keep a small amount of Vaseline or white grease on the ring for lubrication.

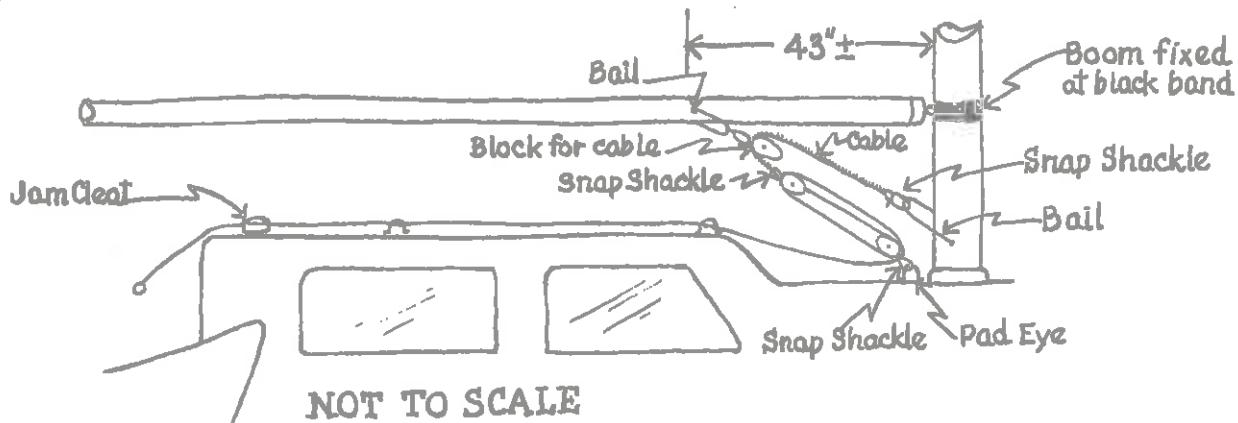
If you are equipped with both spinnaker and whisker poles, you are also ready for wing and wing downwind sailing with two jibs as outlined in another article.

THE VANG

The vang is a must for racers and very desirable for cruisers who take pride in setting their sails right. If the vang is rigged as shown below, it can be used while jibing, thus avoiding the possibility of the aft end of the boom rising and hanging on the backstay. Some also use the vang as an unexpected jibe preventer.

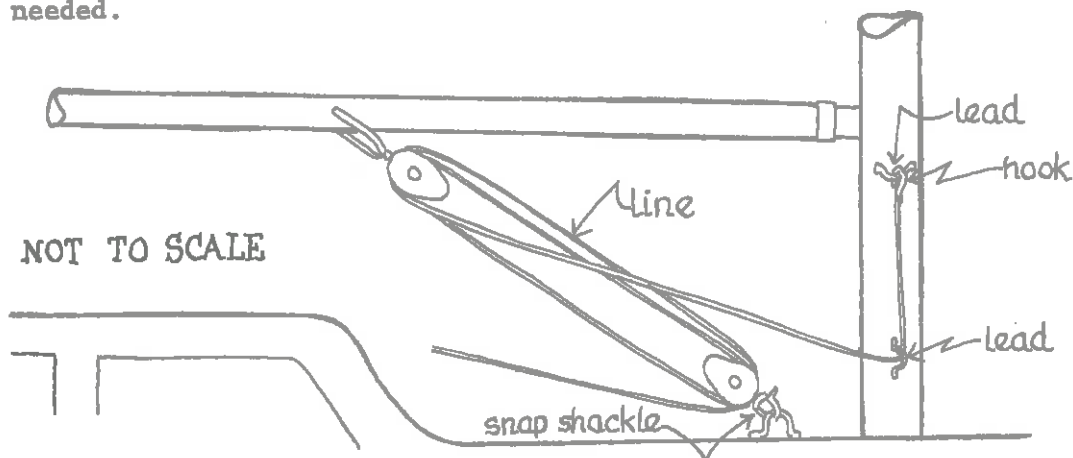
The vang controls the shape of the mainsail when reaching or running. Some use it even when close hauled to help shape the sail. By pulling down on the boom, you remove the twist in the mainsail. This stops air from escaping over the top leach and also gives more sail area at the foot.

Most racers have found the following or similar rig, with the line led back to a jamb cleat on the cabin top, to be the best arrangement. This is applicable up to hull No. 648 and compatible with the jiffy reefing system.



If desired the snap shackle can be removed from the padeye near the mast and snapped to a stanchion base for use as a jibe preventer. Some skippers don't like to fasten anything to stanchion bases for fear of pulling them up. At least one stanchion base has been pulled out. To avoid this possibility, a ring or shackle may be placed through the chain plate. The preventer may be fastened here. Do not fasten it to the top of the shroud turnbuckle because the sudden sidewise pull may bend the turnbuckle.

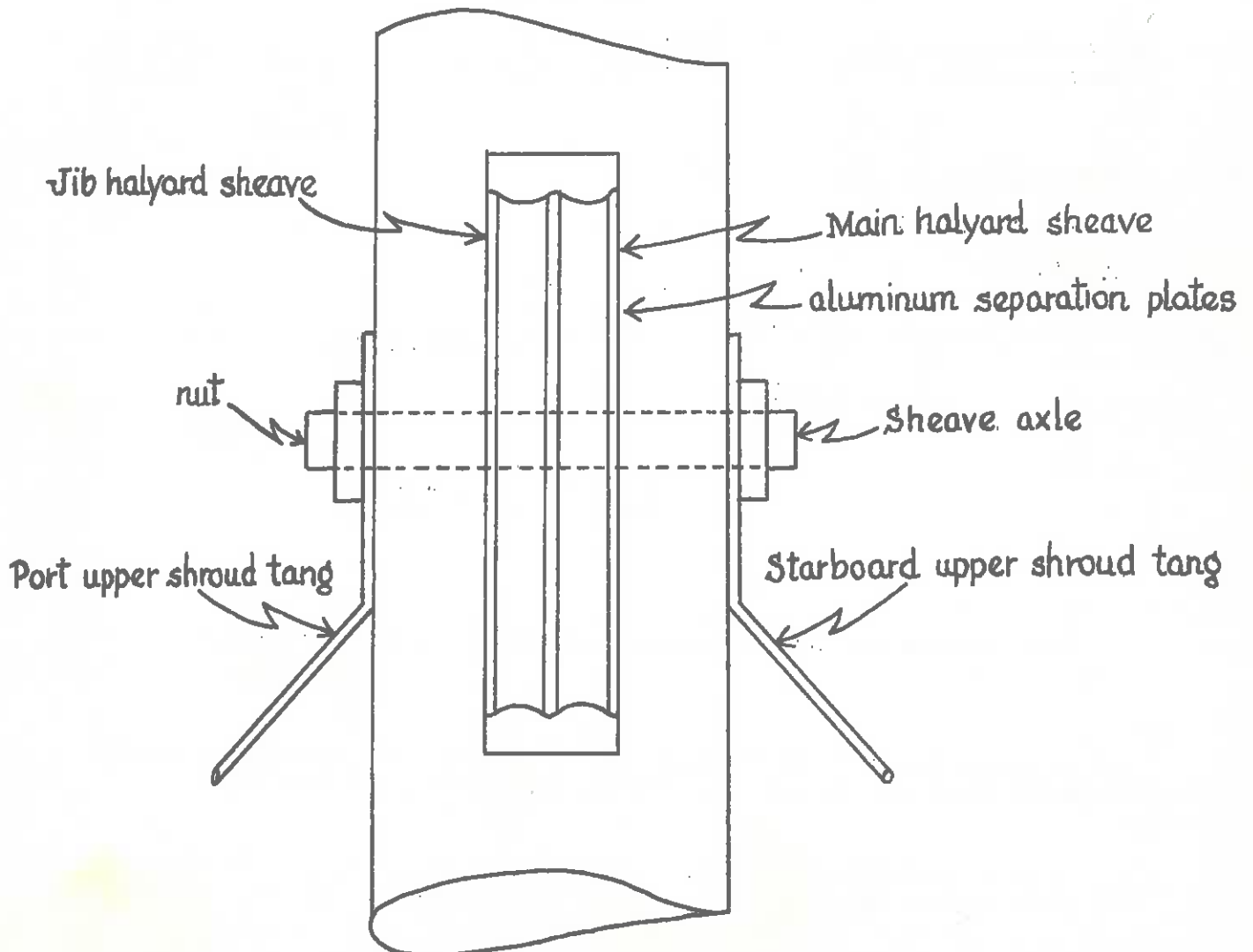
Some skippers use an all line rather than line and cable vang system. In order to reach the chainplate to fasten the vang in the preventer position, more line is needed.



There is considerable creaking and movement in the mast and standing rigging when either of these vang systems is used. We consider this only the soul of the ship complaining because she is being so tightly controlled. We haven't broken a mast yet.

MASTHEAD SHEAVES

The Tartan 27 in its vintage years was one of the few yachts in which the thru-mast bolt to hold the upper shroud tangs also performed as the axle for the halyard sheaves. In modern yachts the sheaves are an integral part of a masthead crane while the shroud tangs are welded to the mast below. Because this particular yard did not have a gin pole or rigging ladder in operation, the mast had to be unstepped. The owner then did three things to free the sheaves: (1) the opening in the mast was widened by filing, (2) the three aluminum separation plates were sanded smooth and anodized to prevent corrosion, (3) the sheaves were sanded smooth and lubricated with WD-40. Rather than pay the costs of unstepping and resteping the mast, it is recommended that the owner go to a yard with a gin pole; i.e., rigging boom to haul a rigger to the masthead in a boatswain's chair.

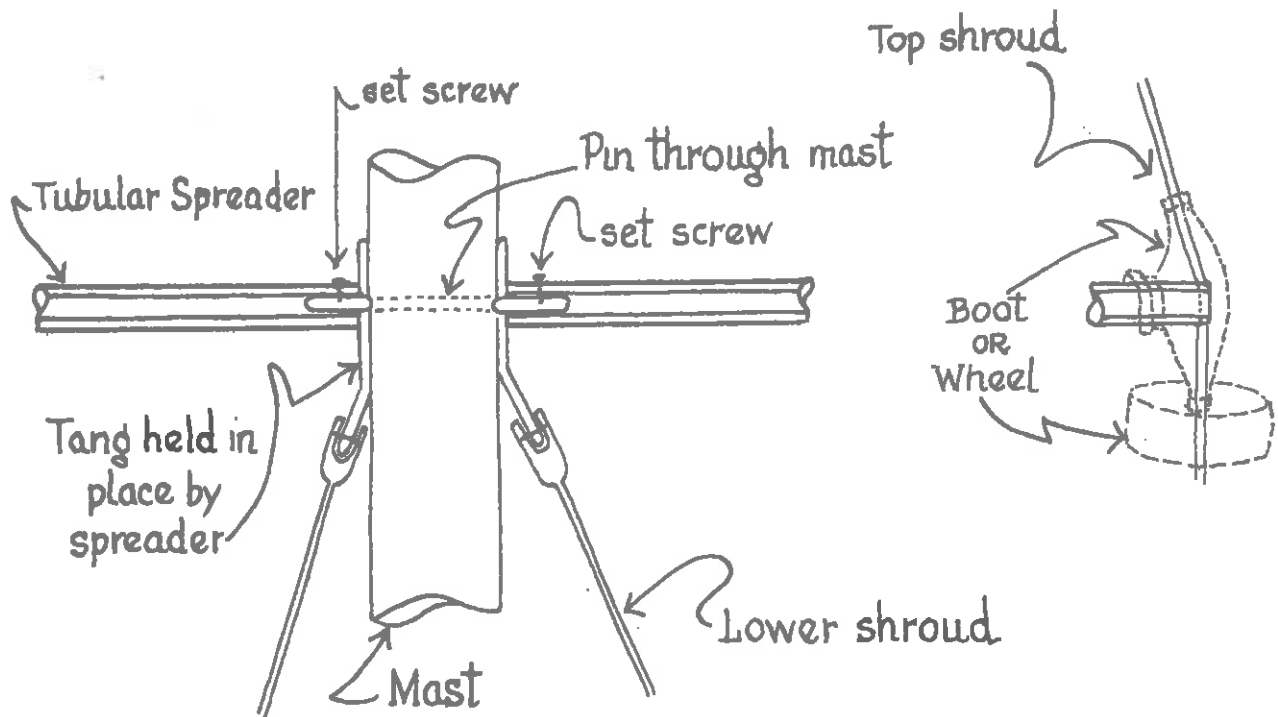


MAINTENANCE OF STANDING RIGGING

Periodically check all pins, shackles and blocks. Every spring, check (or have someone check) masthead sheaves. Aside from bothersome failures and loss of races, it's safer.

Tape lead Niko press fittings to avoid cutting hands and sails on the sharp ends of the cable which protrude from the Niko press fittings.

If you have round, aluminum spreaders (up to hull number 650), check the set screws in the tube which holds it to the mast. If this screw is lost or loose and your lee top shroud is loose, the lee spreader and the lower lee shroud will come loose from the mast.



NOT TO SCALE

Most yachts carry the spreaders slightly above the horizontal.

It is always wise to install boots over the end of the spreader or wheels on the shroud under the spreader in order to protect the jib from wear.

A good lubricant for all track and other rubbing metal or metal and plastic parts is parafin (straight from grandma's jelly jar).

EXTERIOR
IMPROVEMENTS
and
MAINTENANCE

TOPSIDES

Most Tartan 27's over five years old, or less depending on the color, have fading and lackluster topsides. Dark colors will fade and develop a "haze" quicker than lighter colored boats.

The cheapest, quickest, but least lasting method to deal with the problem is to apply plain drug store baby oil. This will last maybe two or three months.

The next step up would be to wash and wax. This should cost approximately \$80.00 at a boatyard, and it should last two to four months depending on sun, rain and color of the hull. Dark hulled boats should be washed and waxed at least twice a year. Light hulled boats may make it through looking fairly good with only one washing and waxing.

The next step up would be to wash, compound, and wax. If the boat is already faded, the compounding will bring out the color. This operation should cost \$150.00 to \$200.00 in a boatyard.

Should the boat be badly faded, it could be wet sanded, compounded and waxed. This would remove the oxidized haze and expose the deeper colored pigment. Sanding is time consuming and expensive. If a boatyard were to do the job, it should cost somewhere around \$550.00.

If you have decided that the original fiberglass finish is too far gone for any of the above or you are tired of constant maintenance, a solution would be to paint the hull with a regular marine enamel. Dick Rockwell and Kay Larsen have both painted their hulls with regular Z Spar Deck/Side enamel with good results. They say the first coat, brushed on, should last two years and a second coat should last three years. If desired, these painted hulls may be washed and waxed.

The top of the line both in cost and quality is the two-part polyurethane finish. Two products we know of and can recommend are "Awlgrip" by U. S. Paint and Lacquer Co. and "Imron" by DuPont. This product is not really suitable for the amateur. It should be done by an experienced mechanic in a properly equipped yard.

Alex Schlegel, manager of Hartge's Yard, stated that sometimes it's cheaper to apply two-part polyurethane by brush, if the color is not a problem (lighter color on darker boat.) If the color is difficult, then several thin brush coats would be required and it would be cheaper to go to spray. Spraying would usually involve one gray prime coat, some sanding and touch up and a final spray coat. With the spray operation, the color of the boat doesn't matter. Alex stated that for a yard to brush paint the hull with two-part polyurethane (Awlgrip), it would cost around \$650.00. To do a top notch "Awlgrip" spray job, it should cost around \$1,350.00.]*

As you can see, there are many variables. Each job is different. If you are interested, get your own estimate. These figures are given only as an approximate guide.

Bill Hitz, owner of faded gray hull No. 275, is having his topsides done this spring at the Yacht Yard, Annapolis. He says they will use "Imron." He reports that he has seen boats beautifully done with this product but that he can offer no experience as to its lasting qualities.

It's interesting to note that Hinkley, a most respected yacht builder, has discontinued the use of colored pigments moulded into the fiberglass. They produce only a boat and then they have it sprayed with a two-part polyurethane to color the hull to the new owner's preference.

BOTTOM PAINTING

Each year the bottom must be painted. A little research on the matter along with help from Nick Schlegel of Hartge Yacht Yard brought out the following:

It normally takes about 2½ quarts of paint to paint the bottom of a Tartan 27 one (1) coat. If the old bottom is to be removed, two (2) coats will be required. Bottom finishes vary from very hard to soft. Generally speaking, racing finishes are hard. Sanding is required to give them that smooth finish. Hard finishes are more likely to crack, blister, or peel. They are usually less anti-fouling.

Soft finishes are generally easier to apply. They usually have a larger percentage of copper and thus have better anti-fouling abilities. They either wear off or can be washed off, thus reducing paint buildup.

Spraying gives a smoother finish because it eliminates brush marks. You can get a smooth racing finish by brushing, but considerable sanding is required to remove the brush marks. The cost of spraying may be less than the cost of sanding.

Care must be exercised when changing the brand of bottom paint. Carefully read the paint can label. It will usually say what you can and cannot do.

You cannot put a vinyl base paint over anything but raw fiberglass or other vinyl paint. Epoxy base paint will go over vinyl, old epoxy, but not over an oil base paint. Oil base paint can go over anything in most cases, as long as it is clean, firm and dry.

When the bottom paint builds up to a point where it begins to flake off causing a rough bottom because of bare spots, cracks or loose spots, it's time to remove the finish down to the fiberglass.

The usual method for removal is either by sanding or dry scraping. In very hard cases, fiberglass paint remover must be used (in warm weather). Vinyl based finishes are usually the hardest to remove.

Caution: If you sand or scrape the bottom yourself, use a face mask and goggles. The copper in the paint is poisonous.

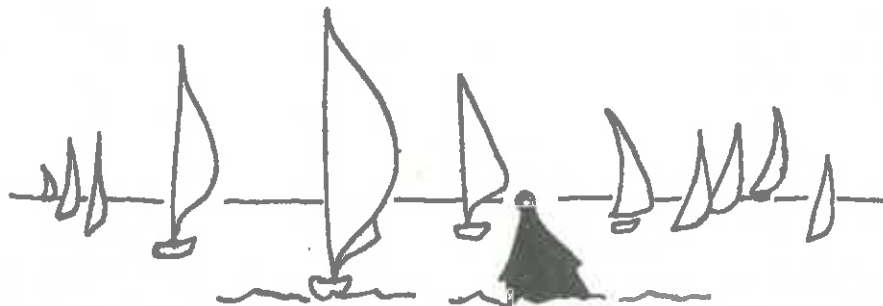
Without sounding too commercial, the following is a list of some of the materials presently being used (1981):

- Pettit "Unepoxy" - a medium hard epoxy anti-fouling paint. This has been the old standby. Sanding is not required, but it helps. The paint will build up and require removal in four to five years if not sanded. Sabre yachts come from the factory with this bottom finish.
- International Paint Company's Interlux, Fiberglass Bottomkote
New Tartan Marine Company boats come from the factory with this finish. It's medium hard. Supposed to stick better and require less sanding.

- US Marine Coatings Company "KL 990" - soft, oil base, anti-fouling paint developed in Florida where fouling is a big problem. Easy to apply, no sanding. It should be washed softly. Supposed to give smooth water-permeated finish.
- KL 990 Graph-cote - a hard finish made from graphite and copper. Requires sanding. Black copperish colored finish. This is the finish used on the larger racing boats. Used on many yachts interested in racing.
- KL 990 Graphcop - Same as graph-cote except it is softer, more reddish in color, more copper and therefore more anti-fouling.
- Baltimore Copper Paint Company "Baltoplate" - a super hard, black only, racing finish. Requires considerable sanding. Vinyl base. It is difficult to get it to stick properly, but when it does, it is a fine racing finish.
- Z Spar Bottom Paint - a hard racing bronze, vinyl base bottom paint.
- Woolsey Company "Super Vinelast" - A hard vinyl finish.
- Woolsey "Blue Streak Vinelast" - A racing finish not requiring sanding. It can be buffed under water with burlap. Apply by spray for best results.
- Woolsey "Neptune" - Epoxy base rather than vinyl base. Fairly hard finish comparable to Pettit "Unepoxy" (in hardness). Not as hard as the vinyls.

The most popular bottom paint at Hartge's Yard is Pettit "Unepoxy." It is used most often on cruising sailboats and power boats.

The most popular racing bottom finish for sailboats is KL-990 "Graph-cote" A close second is Woolsey "Blue Streak."



CENTERBOARD INSPECTION

The Tartan 27 has been around for a long time and many Tartan 27 centerboards are lying at the bottom of lakes, rivers, bays and oceans. It therefore behooves each of us, as owners of Tartan 27s, to save ourselves not only the inconvenience, but also the expense of a centerboard loss by establishing an annual procedure to protect ourselves and our yacht against just such a loss.

Each year at haul-out time, whether you do your own work or have a yard do it, remove the pipe end caps from your centerboard pin sleeve in the bilge of the yacht and lower your centerboard by the pennant completely out of the slot. Check the pennant cable for wear and replace if necessary. Check the pin-hole in the head of the board for wear and repair it if required. (It's a lot cheaper than replacing the entire board).

Clean and paint the entire board, not just the part that shows below the keel. While the board is out, clean out the slot. It's a lot easier to clean when the centerboard is out. Paint up inside as far as you can comfortably reach with a brush (about 4-5 inches). Raise the board back up into the slot with the pennant, align the pin-hole and replace the pin.

Apply pipejoint compound to the pin-sleeve pipe ends and replace the end caps. BE EXTREMELY CAREFUL NOT TO OVERTIGHTEN THESE END-CAPS. If a yard is doing the work, be certain that a competent mechanic does this part of the job.

One Tartan 27 almost sank because the pipe sleeve came loose from the fiberglass. This was probably caused by overtightening the end caps and breaking the bond between the metal and the fiberglass.

Put her back over and you're ready for another year of trouble-free sailing (at least in so far as your centerboard is concerned).

CENTERBOARD FAILURE AND REPAIR

The centerboard is a $\frac{1}{4}$ " steel plate covered with fiberglass. It is pivoted on a centerboard pin and raised and lowered by a stainless steel cable pennant. A rather common problem with the centerboard in the Tartan 27s is the board coming loose from the pin and hanging below the hull only by the pennant. If the pennant breaks, the board is lost.

Usually the pin is not the problem. Rather, the steel plate wears through and the board drops off the pin. Tartan Marine supposedly remedied the problem after hull no. 526+.

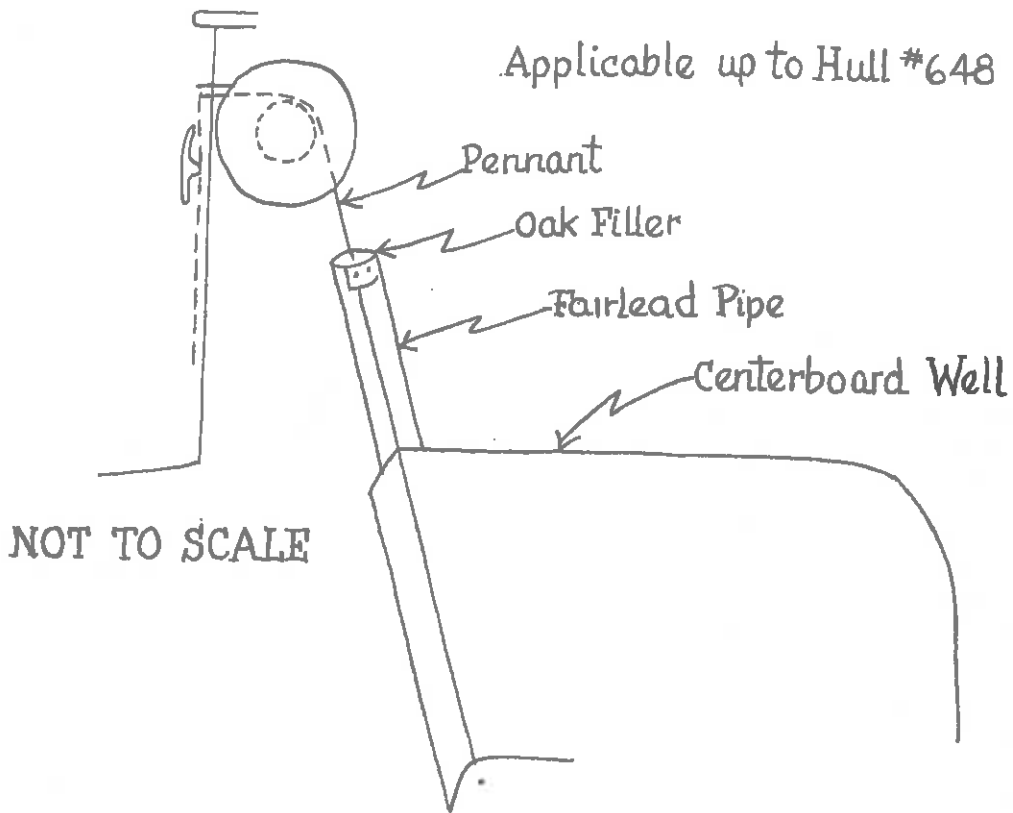
Should the hole in the steel plate wear through (and you didn't lose the board), it can be fixed by having welded into the board a short section of stainless steel pipe to act as a bushing around the pin. Then the disturbed area would have to be refiberglassed.

•WARNING•

When the centerboard fails to go down after easing pressure on it by sailing on proper course - either into or down wind - do not attempt to free it by running your hand or fingers beside it from below the boat. You may get a deep gash from an oyster. Even more dangerous, the centerboard may slip down and fasten your hand so you cannot extricate yourself from below the boat. This actually happened at Fairhaven. At best, you wouldn't last more than four minutes under water.

CENTERBOARD PENNANT

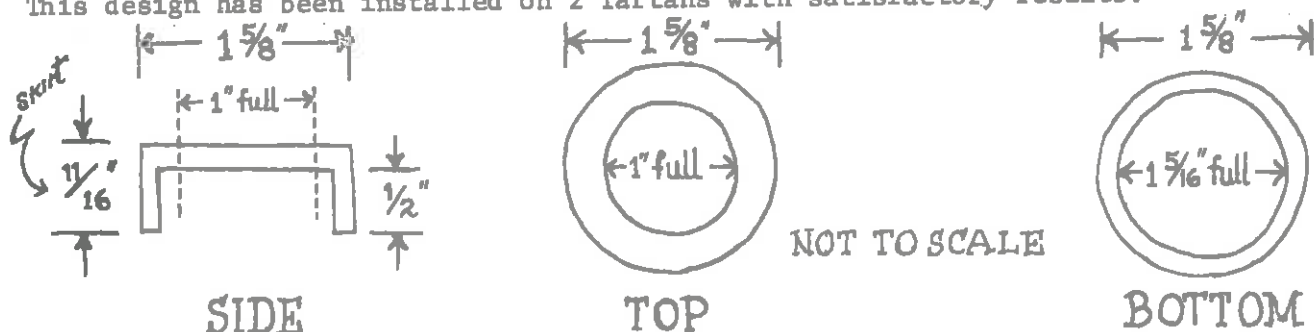
A routine check of the cable for the centerboard indicated that the cable was wearing the side of the fairlead pipe. This could result in the pipe leaking and the boat taking on water with possible serious problems. The problem is caused by the poor lead angle into the pipe. I installed a wear block of oak wood into the pipe, lubricated it with water pump grease. I inspect it each spring to examine the wear on the block.



RUDDER POST BEARING - ONE METHOD

The Tartan 27 rudder is fashioned without a bearing at the top of the rudder post. With the installation of one, the noise and rattle of the rudder shaft is quieted. There is not enough space between the shaft and the tube for installation of an interior bearing so the external bearing shown was constructed. It can be machined from solid stock or fabricated by brazing a washer with a 1" hole in it to a section of 1 15/16" I.D. pipe.

Installation is made by removing the tiller and the fitting at the top of the rudder post. Then the bearing is slipped over the post. The skirt fits over the rudder tube and the shaft fits through the 1" hole. Reinstall the tiller fittings. This design has been installed on 2 Tartans with satisfactory results.

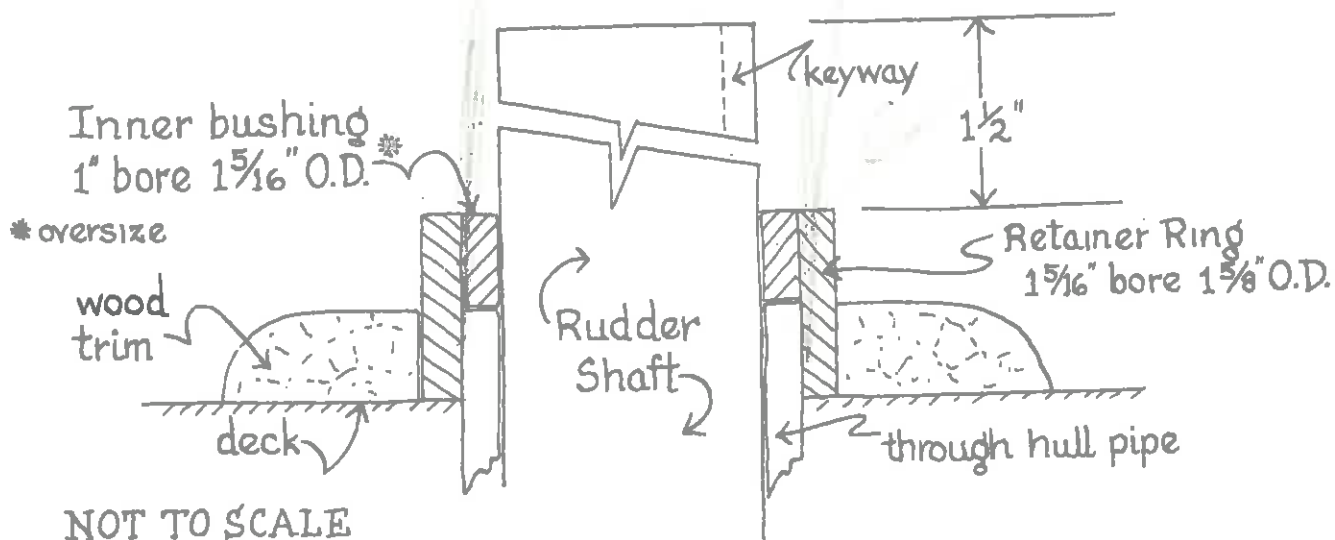


RUDDER POST BEARING - ONE METHOD

With prolonged use, the rudder shaft will wear the sides of the brass retainer pipe which goes down through your boat. This allows objectionable clearance between the shaft and retainer pipe. You can either have the boat hauled and replace the retainer pipe or fix it in the water as follows:

Place an oil impregnated collar, "Oilite" bushing around the one inch shaft. Around this bushing place another Oilite bushing which extends beyond your new inner bushing and around the retainer pipe. This will retain the inner sleeve so there is little clearance.

The bronze Oilite bearings each cost about \$3. They may be cut from four inch lengths purchased at Specialities, Inc. On some boats it may be necessary to cut the sections at an angle. Since the outer section will extend down through the wood on the deck, the hole must be slightly enlarged in the wood block. This is easily done with a round file.



LIGHTNING PROTECTION

There was at least one Tartan 27 struck by lightning during the 1980 season. This brought forth a series of articles in the Jib Sheet dealing with the problem.

The following is a condensation of those remarks so far as prevention is concerned.

Lightning can strike sailboats which have properly grounded masts with little damage to the boat. In the process, however, it can completely destroy your V.H.F. radio. It is recommended that a metal V.H.F. antenna be attached directly to the masthead with a lightning arrestor to protect the inner wire of the V.H.F. antenna cable. The antenna should be disconnected prior to electrical storms or when the boat is not in use.

Recommendations: **GROUND YOUR MAST!** For Tartan 27's with external ballast, this is rather easy, but for newer boats, use as many seacocks as you can (the total exposed surface area should be 1 sq. ft. and don't rely on just one. Remember seacocks have bronze thruhull fittings that have some metal exposed to the sea; your basic gatevalve on the end of a pipe wrapped in fiberglass does not!

An ideal grounding system should include engines, water tank, gas tank, chain plates, headstay, backstay, life lines and stanchions. Think about how close you are to the backstay and lifelines when you are in the cockpit and it might induce you to either strike below during a thunderstorm or ground them.

Another comment: So far as we know all Tartan 27's came from the factory with a copper ground wire approximately 1/4 inch in diameter which was run from a bolt in the mast step plate to the thruhull fitting in the head, sink drain or other drain.

Check your ground wire, make sure it is there and connected properly.

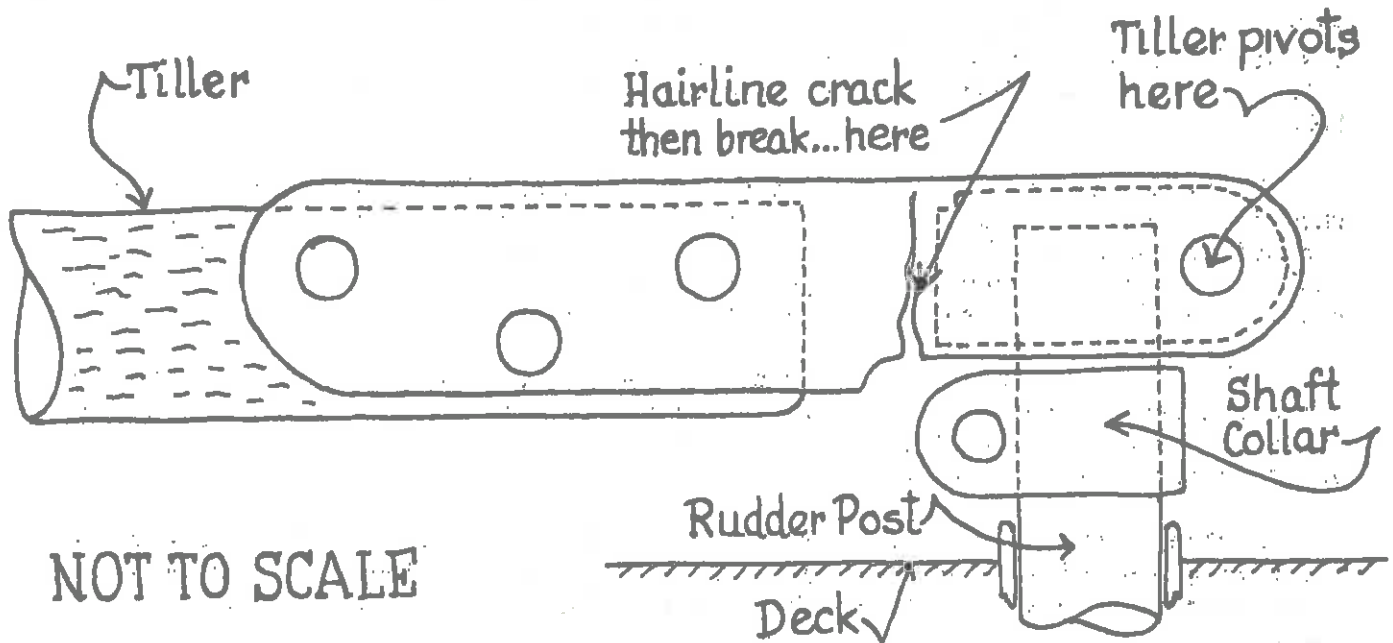


TILLER HEAD PROBLEMS

Perhaps the weakest point on the Tartan 27 is the tiller head fitting. Several have failed through the years, leaving skippers in varying degrees of helplessness. Tremendous pressure must be at play here.

To prevent the problem, try to hold the tiller down low when you exert heavy pressure on it. By doing this you apply the force to a larger area of the fitting and prevent wear and breakage.

Frequent inspection of the fitting is also important. The below sketch shows an often-used fitting on Tartan 27s after hull no. 100 + and before hull no. 526. Note where the hair crack often appears..



Even on newer model boats that are used frequently, the fitting wears, causes considerable tiller play, and must be repaired or replaced in three or four years.

If the fitting is chromeplated brass, the hair cracks may be bronzed. If the hole for the tiller pivot bolt is worn egg shaped, it can also be re-bushed by bronzing.

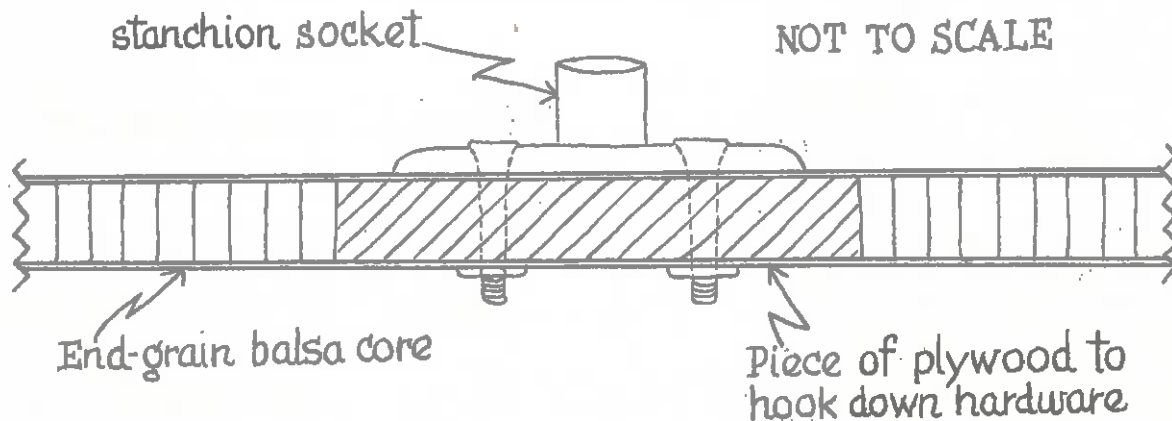
If you buy a new fitting, it is suggested that you buy the stronger chrome-plated brass one rather than the aluminum alloy type. There is a keyway in the top of all rudder posts; however, some keyways are in the forward side of the post and some are aft. Some posts have keyways on both sides. Before you buy a new fitting, check the keyway.

It's always wise to carry an extra tiller aboard with fitting. An old worn fitting with an ax handle attached will do for emergencies.

DECK DELAMINATION

If you find a hollow spot in a Tartan deck, chances are pretty good there has been a delamination between the balsa core and the fiberglass deck. To repair you find the delaminated areas by tapping on the deck. You drill a 1/8" hole on one side and drill one on the other, and you use a ketchup squeeze bottle and squeeze some polyester resin in there, let it harden up, and it's all fixed. The pieces of plywood are not stiffeners but pieces to hook down deck fittings.

DECK SECTION



Remove all deck fittings periodically; let area dry completely, replace fittings with new bedding compound.

CHAIN PLATE LEAKAGE

A common problem encountered in the Tartan 27's is the appearance of reddish-brown liquid seeping through deck areas around chain plates, stanchion sockets, gas vent line, flag pole socket, deck drain plates, etc.

To quote Paul W. Arnold, Jr., Manager, Warranty & Customer Relations, Tartan Marine Company, February 25, 1980: "To address ourselves to your chain plate, which is leaking an orange colored liquid, undoubtedly that is old caulking washing out. The color those days was orange or dark brown. The wise thing is clean out the old caulking and put in some GE silicone seal. Water will not travel very far from the fitting because the balsa core runs vertically;* also every two inches there is a polyester resin wall."

* We are not sure this is true for older boats.

When selling your boat, be sure there is no reddish-brown stain under fittings and around chain plates. Some surveyors take the position (rightly or wrongly) that this shows that water has entered around the fitting and may have caused delamination.

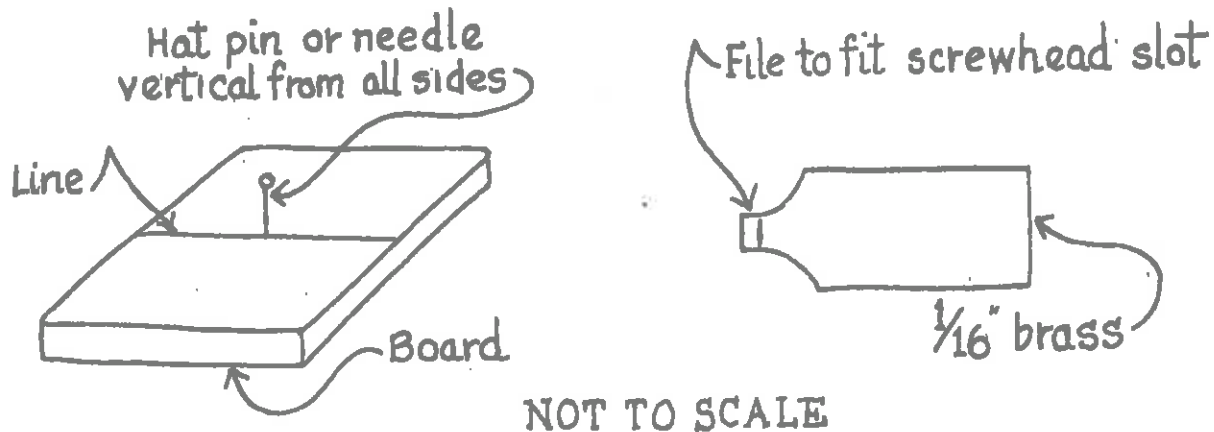
ADJUSTING YOUR COMPASS

Adjusting a yacht compass to provide accurate magnetic headings is a simple procedure within the capability of every skipper. Two people are required.

The only equipment needed is a non-ferrous device for turning the compass adjusting screws and a sun shadow device to accurately turn the yacht 180 degrees.

Obtain a piece of wood 6 to 8 inches square. It can be of any thickness from $\frac{1}{2}$ " to 2". Mark a line across the center as shown on the sketch. Mount a large needle (corsage pin or hat pin) in a vertical position as shown. The non-ferrous device for turning the compass adjusting screws is easily made from a piece of flat brass as shown in the sketch.

To adjust the compass, choose a sunny day in mid-morning or mid-afternoon in order to obtain a long shadow from the vertical needle. Then proceed as follows:



- head the yacht EAST by your compass.
- adjust the board with the vertical needle until the shadow of the needle exactly coincides with the line on one side. The compass must be held on an EAST reading when setting the shadow.
- next turn the yacht 180° by having the needle shadow exactly coincide with the line on the opposite side and carefully hold this position until step 4 is completed.
- observe your compass. If it reads WEST, the compass is accurate and the EAST-WEST corrector should not be disturbed. If it does not read WEST, adjust the EAST-WEST adjusting screw until one half of the error is removed. For example, if the compass reads 280 degrees, adjust to read 275 degrees. This step should be completed within three minutes to prevent error from the sun's movement. Then repeat steps 1, 2, 3, and 4 to determine if a further adjustment is needed.
- next, repeat steps 1, 2, 3, and 4, only this time head NORTH by the compass, swing the yacht 180 degrees and if necessary, adjust any error by removing one half of the error using the NORTH-SOUTH adjusting screw.
- next check your work by repeating the procedure for both the EAST-WEST and NORTH-SOUTH maneuvers.

Most compasses have their adjusting screws marked E-W and N-S. If your compass is not so marked, the instruction sheet furnished with the compass will tell you the location of the E-W and N-S screws. If you do not have this sheet, go to a dealer that sells your make of compass and request to see a sheet packed with one of his stock compasses.

The East-West adjusting screws on the Danforth Corsair and the bulkhead mounted Ritchie S FO-60 compasses are located facing the stern of the yacht. On flush mounted Danforth compasses, the E-W adjuster faces forward. The N-S adjusting screws are located on the port or starboard side for both the Ritchie SFE-6 and the Danforth Corsair.

Caution. After adjustments are completed, do not change or add any iron or steel material within several feet of the compass. The permanent magnet in a speaker of a portable radio placed within several feet of a compass can cause considerable error.

After adjusting, I recommend frequent check by lining up your yacht on a known course. I frequently checked my compass by lining up with West River Flasher #2 and Thomas Point Light. If the compass read 60°, I knew it was right on. I also lined up with West River Flasher #2 and Flasher #73 to check at a different angle. All yachts should select known courses near their home port to check two courses near 90 degrees apart.

On some installations, the compass readings will vary with engine "ON" and "OFF". If this occurs, it is recommended that the compass be relocated. First hand hold the compass at the new location and see that the "ON-OFF" engine has no effect. Also, "ON" and "OFF" running lights may affect your compass.

SERVICING YOUR COMPASS

At one time or another compasses lose fluid. Quite often the rubber diaphragm becomes old and leaks. The plastic dome may be broken by a scrub brush or a kick. It may be abraded by insect spray or turned yellow by the ultra violet rays of the sun. Several skippers keep a plastic bowl over the compass to protect it when not in use.

It is usually difficult to get professional service for our compasses, but we understand that some manufacturers (Danforth for example) have a reasonable repair and rebuilding service if you send it back to the factory.

Most compass parts can be obtained through marine supply stores such as Fawcetts, Annapolis (dealers for Ritchie, Saturn and others.)

The compass fluid is usually sold in gallon cans at a high price. A light drug store mineral oil is a good compass fluid. Varsol can also be used. It's important not to use any toxic liquid since it may eat up the rubber gaskets, turn yellow, or wash off the degree markings.

The compass can be put back together empty, then filled with fluid through a screw hole on the side. The trick is to get all of the fluid in and not have any air bubbles. This takes several trial and error attempts, rocking the compass back and forth and using an eye dropper to squeeze in the last bit of fluid before you carefully replace the screw.

Another method for filling the fluid is to submerge the compass in a bucket of fluid. Move it around to get the last bit of air out and replace the screw.

If the compass card reacts too slowly to a change in direction, you have used too heavy a compass fluid.

ELECTROLYSIS

In our area, electrolysis, i.e., the decomposing of a metal by passing an electric current through it, occurs quite frequently on the propeller and shaft, sometimes in the centerboard pin and other places where metal is exposed to the water and/or comes into contact with another kind of metal.

It is recommended that a zinc plate or pad be attached to the bottom of the boat, probably aft near the propeller, or a zinc bushing be placed around the shaft, just forward of the propeller or a large zinc "nut" be placed on the shaft aft of the propeller. An electrical ground wire from the centerboard pin to the engine may be the answer for electrolysis in the centerboard area.



COCKPIT CUSHIONS

Problem: Most of us use foam rubber vinyl covered cockpit cushions. The vinyl covers usually have zippers for easy removal. In wet weather the foam rubber acts like a sponge. It holds water only to squeeze out later and get your dry pants wet.

Solution: Remove the foam rubber and cover it with plastic bag material. Plastic trash or leaf bags are good. Tape the joints with duct tape. Then replace the vinyl covering and zip up the zippers. This treatment will go a long way to keeping water out of the foam rubber.

There is another more expensive way. Replace your cushions with new ones using a closed cell, P.V.C., poly vinyl chloride foam. The material now comes 2½" thick. Nylon zippers and nylon webbing should be used because the usual cotton webbing will not hold up with marine use. Supported (with backing) vinyl seems to be the best covering. Almo Products, Inc., Glen Burnie, Md., are specialists at this work.

The closed cell material is harder and thus gives you a harder cushion. At any rate, we think the "dry pants" feeling is worth the extra cost and trouble.

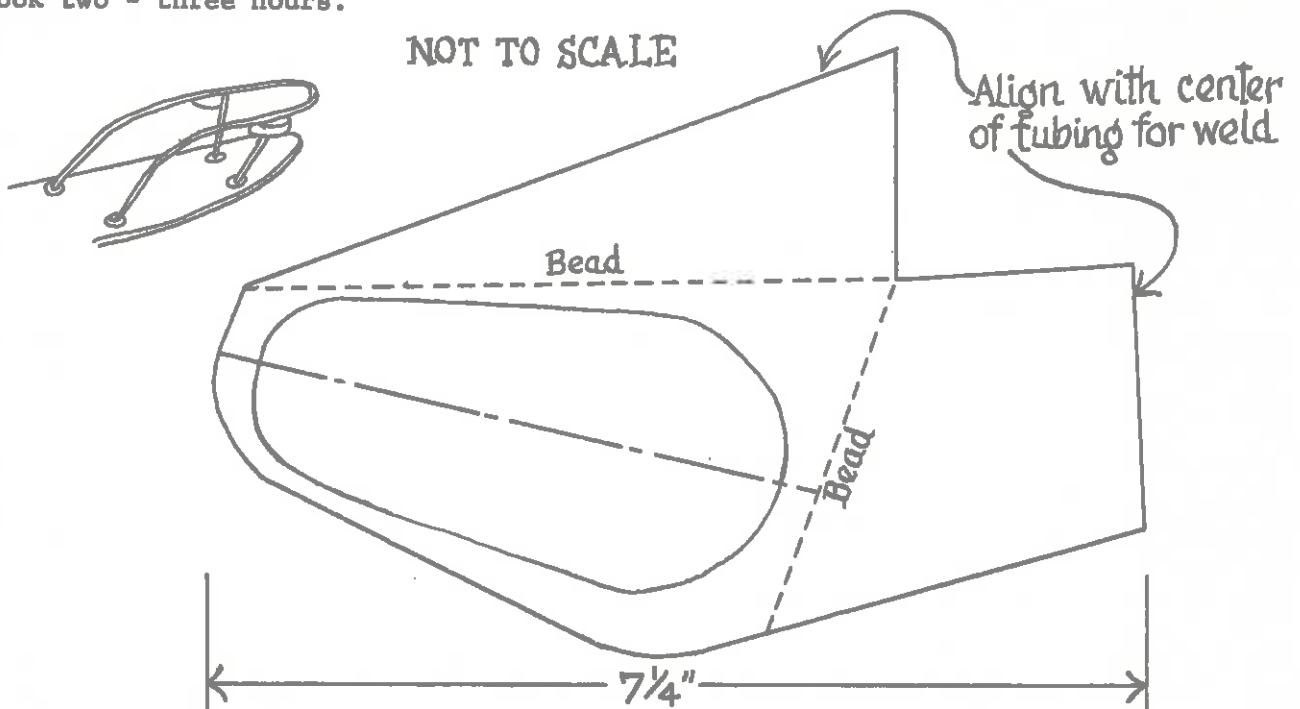
Should you get new cushions, have grommets installed in the back edge. You can then put cup hooks or similar hooks under the edge of the cockpit coaming and with flag halyard type line, hook the cushions so they will not slide out of place when the boat heels. We tried velcron but didn't think it held up well enough in this application.

TARTAN 27 (MARK I) RUNNING LIGHTS
(Applicable to Hull No. 524)

The original version of the TARTAN 27 has the running lights mounted on the dorade vents. This location has two significant disadvantages: First, the No. 1 genoa will blanket the light and second, the deck area illuminated by the lights themselves hinders night vision forward.

In deciding to relocate the lights, I considered hull mounting and pulpit mounting, choosing the latter because the pulpit location raises the level of the lights some 18 inches above the hull mount position - a significant factor when the boat is heeled.

First, I made a succession of templates until I had developed a pattern for a mounting bracket which when bent and welded to the pulpit provided a surface parallel to the boat's centerline and vertical to the plane of the water. This bracket (see attached pattern) is sized to accommodate the original running light fixture. I had the brackets made from 1/16 inch (approximate) stainless steel. It was a simple job to remove the pulpit and take it to the shop for welding. (Yacht Yard did the work in 20 minutes for \$10.00). The wire for the lights goes through the tubing and down through the deck through the back leg flange. The wiring is then fed under the forward berth, over top of the water tank and connects to the original harness under the forward cabin sole. Reinstalling the pulpit, moving the lights and rewiring them took two - three hours.



RUNNING LIGHT TEMPLATE

NOTE: PULPIT SHAPES FOR TARTAN 27'S VARY. CONSEQUENTLY THE PATTERN SHAPE MAY VARY.

INTERIOR
IMPROVEMENTS
and
MAINTENANCE

THE NEW TARTAN 27 - MARK III

HULL NO. 649 to 712

Those Little But Necessary Improvements

1. Install a hook and eye to hold up the ice box lid when in the box.
2. Install a single handle handrail grip over the head.
3. Install 3M fasteners between bulkhead table legs and table to prevent rattle when table is in closed position.
4. Install a rubber chair leg cap over top of centerboard pennant hose to prevent water backup.
5. Install an oil drain petcock at base of engine to improve engine oil drainout.
6. Install a primary fuel filter to remove fuel water.
7. Install rubber washers (six each) between water muffler and bracket and auto radiator hose to reduce vibration of muffler.



HINTS FOR COMFORT BELOW

For those of us who are used to a double bed, it is easy to make the two forward bunks into one. Remove the mahogany or teak pieces at the edges of the cushions, turn them over and replace them 5/8" below the bottom of the cushions. Cut a piece of 5/8" plywood to fit into the area between the bunks. The inverted trim strips will hold it in place. Glue carpet on the plywood if you like. Have a cushion made to fit on top of the plywood. This cushion may be made in two pieces for easier handling when not in use as a mattress. The plywood filler, when not in use, may be dropped flat on the floor and stored there.

Use sleeping bags rather than hassle with sheets and blankets. Get two single sleeping bags, one heavy and one light. Zip them together. When it's cold, put the heavy one on top. When it's warmer, turn it over.

PRIVACY (To Hull No. 648)

Place curtains at the portholes using the Velcro curtain kit.

Hang a floor to ceiling curtain on shock cord across the cabin just aft of the head. The curtain, when open, will bunch nicely beside the settee. (Use shock cord as a holder). The curtain, when closed, will just about split the sink.

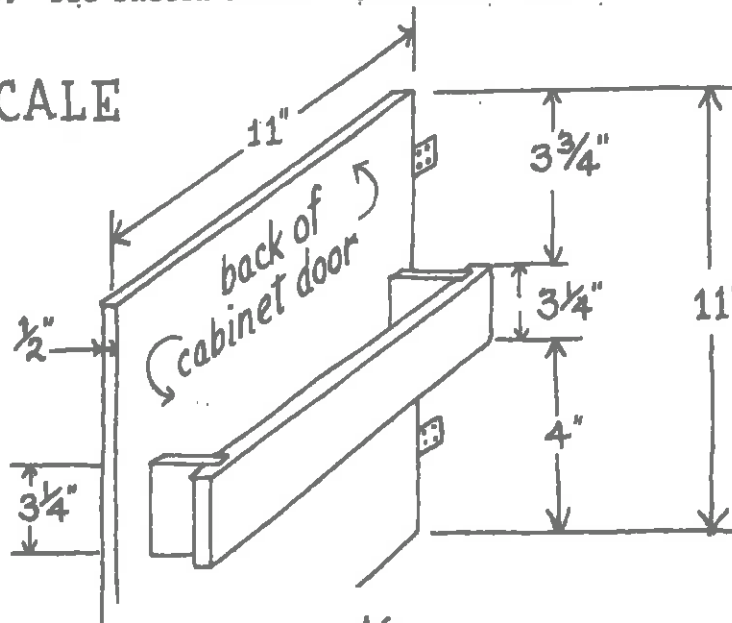
When 2 cabins are used, draw the curtain and open the head door. This forms a "vestibule" for the head. A person may enter the head from either cabin without being seen from the other cabin. The sink can be reached from either side of the curtain.

A blower fan can be installed in the head vent. The ventilating action and the fan noise all help to avoid the feeling of "too closeness".

A SMALL ITEM CONTAINER FOR THE HEAD

Are you tired of looking for small items in the head locker? The small bottles tend to roll in "hard to get at" places. In order to solve this exasperating condition, I built a small enclosed shelf on the aft door. This is now used to contain sea sick pills, bottles, toothpaste, soap, etc. Although mine is made of 1/4" plywood, I believe aluminum would be a more suitable material as it would not add as much weight to the door. Since the manufacturer occasionally makes small changes, it would be wise to check the shelf clearance to be sure it will go in on new models. See sketch below. (Generally applicable to hulls up to #523).

NOT TO SCALE



THE MAIN TABLE

Tartan 27s, up to hull no. 650, have tables mounted on a pipe leg with a socket in the cabin sole (floor). In models up to hull no. 526, the pipe leg is made of aluminum. There has frequently been a problem of the pipe leg becoming stuck in the socket due to corrosion. Never leave the pipe leg in over the winter. In summer, take the pipe leg out occasionally and oil it.

Many people keep a small amount of non-smelling mineral oil in the floor socket - just enough so that when the boat heels the oil will lubricate the sides, but not so much that it will run out on the floor.

If your pipe leg gets stuck in, there is a way to get it out as follows: Drill approximately a $\frac{1}{2}$ " hole through the aluminum pipe about 3" from the floor. Get two large washers about the same diameter as the pipe. Drop the washers over the pipe. Place a bar through the hole you drilled in the pipe. Get at least two, and preferably 4, steel wedges like those commonly used to split firewood. Drive the wedges in between the washers. One washer will push up against the bar; the other will push down against the floor socket. It gives, but very slowly so it takes a lot of hammering and patience. Mark the pipe as you work so you can tell just how much it moved up each time you reposition the wedges.

Many owners are now rearranging the table so that it gives the "dinette" effect as follows: If you are looking for a really steady chart table and more floor space in the main cabin, buy a second table socket and install it on one end of the table. Rotate table 90 degrees and attach the free end to the shelf with a couple of hooks. It makes a cozy dinette arrangement yet doesn't preclude the use of the table for maximum seating, as you can always put the table in the original amidship socket.

Many people remove the table from the cabin and use it crossways of the cockpit for open air dining or partying, if there are no bugs around.]*

New Tartans after hull no. 651 have the table hung on the forward bulkhead.

The socket for the table underside and the floor (identical to the ones which are stock on most all Tartan 27's) can be purchased in most recreational vehicle supply stores. If you go for the dinette table mount arrangement, the R.V stores have the hardware for that also.

The table may be used very nicely outside in the cockpit by installing the same type socket in the cockpit floor. Be careful to exactly locate the gas tank before you cut the hole for the socket. It is just below the cockpit floor and higher on some boats than others.

One skipper has made a smaller kidney shaped table to mount on the pipe leg thus giving more room in the cabin or cockpit for cocktails, card playing, etc.

If you don't want to go to the trouble of placing a socket outside, you can still use the table in the cockpit by placing it crossways between the seats.

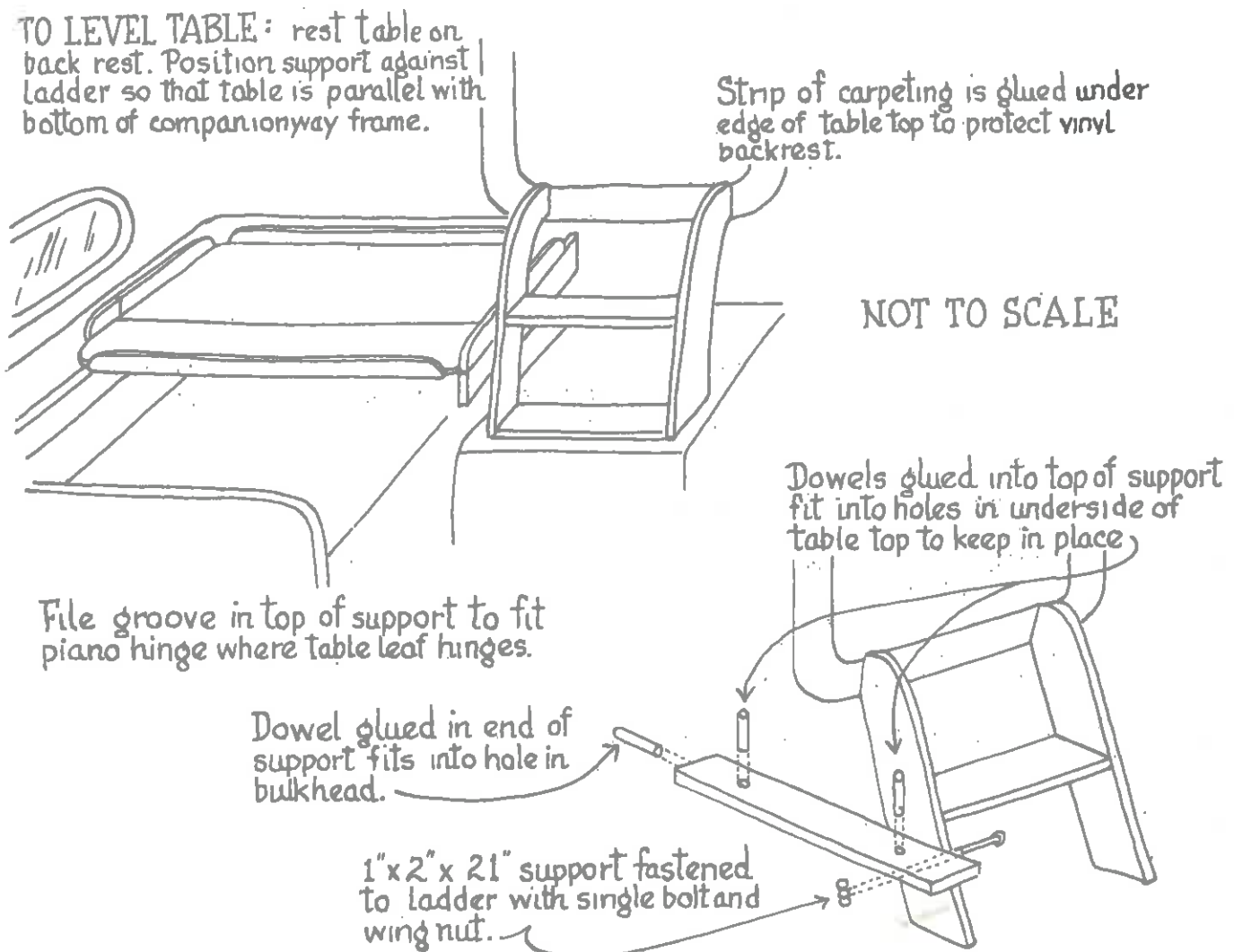
Mark III model Tartans after Hull No. 626 have the table hung on the forward bulkhead.

THE MILLER MOUNT

Stowage of the Tartan table has always been a problem. Left in place underway, it's not particularly useful and takes up valuable sitting room. It also can be a hazard in a pitching boat. (Sue was thrown against ours and the pedestal mount broke off under the cabin sole). Yet stowage of the table top is awkward. There just isn't any good location to pack it away.

The Miller Mount has been a solution to the stowage problem and has made the table top much more useful underway. The table top is mounted athwartships (cross ways for you lubbers) over the quarter berth against the engine room bulkhead. It is supported by the quarter berth backrest and by a support fastened between the engine room bulkhead and the companion way ladder. This places the table at the same level as the galley counter top where it serves as a chart table and additional serving counter, especially when serving a meal in the cockpit. There is sitting room left on the quarter berth for one person.

Note: Applicable only for hulls up to No. 523+.
Also to Hull No. 649 with modification.



BULKHEAD TO BULKHEAD CARPET

The particle board type material used for the cabin sole in many Tartan 27's is quite durable, but for some reason it never looks really clean and bright. Why not cover it with wall to wall (I should say bulkhead to bulkhead) carpet? It's very simple to do. Get one piece of indoor outdoor carpet approximately 4' x 9', usually a remnant in most carpet stores. (Size correct to Hull No. 626). If you think it may shrink, wet it down and let it dry before cutting. Get some large paper (wrapping paper or old blue prints) and masking tape. Make a paper pattern of the area including the head. Don't forget to cut out for the table post hole.

Cut the carpet to the pattern. If the carpet is of the type which melts (try on a scrap first), you can seal the edges with a propane torch. Some people sew edging around the carpet, but that is a lot of work. Usually the carpet will not come unraveled if left as is.

The bulkheads will hold the carpet in place nicely. No need to glue it down. Some people make a separate piece for the head so that if the head overflows or whatever, that piece can be removed and washed.

If you have a large enough piece left over, you can cut it to fit the cockpit sole. When formal dining is enjoyed in the cockpit, a carpet adds to the atmosphere.

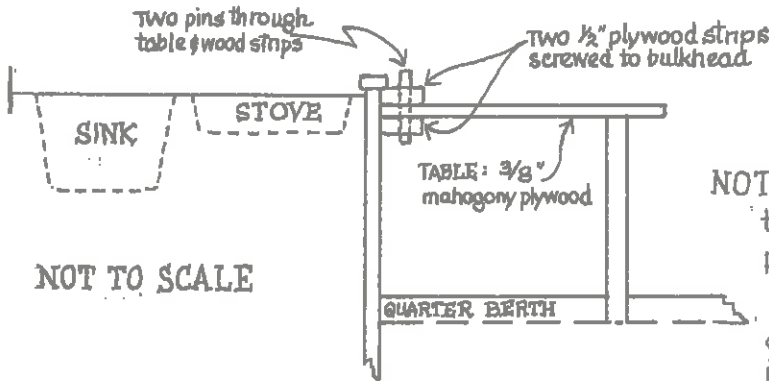
THE MAIN SWITCH - HOW TO USE IT

(Assuming you have 2 batteries)

When under power put the main switch on "All" and charge both batteries. At other times, keep the switch on "1" or "2". By doing this, you use power from only one battery thus reserving the other one for starting the engine. If one battery is weak, you will be able to tell because of the comparative dimness of the lights. Never move the switch while the engine is running, because it will blow out the alternator. Turn off the switch when leaving the boat.

ADDITIONAL COUNTER SPACE - GALLEY

There is just not enough counter space in the galley of the Tartan 27 - at least up to hull No. 649. This can be remedied by adding a portable table aft of the stove. See sketch



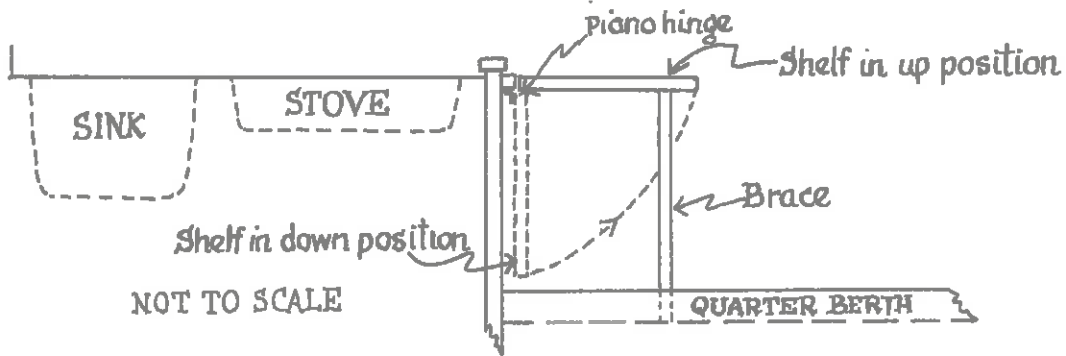
APPLICABLE TO HULL #650

NOTES: The back of the table rests on top of the quarter berth back rest. Table is completely portable and stows under mattress when not in use.

1" x 1" sq. leg also used as gas tank dip stick. 3/16" pin on top of leg fits in hole in table to stop side movement.

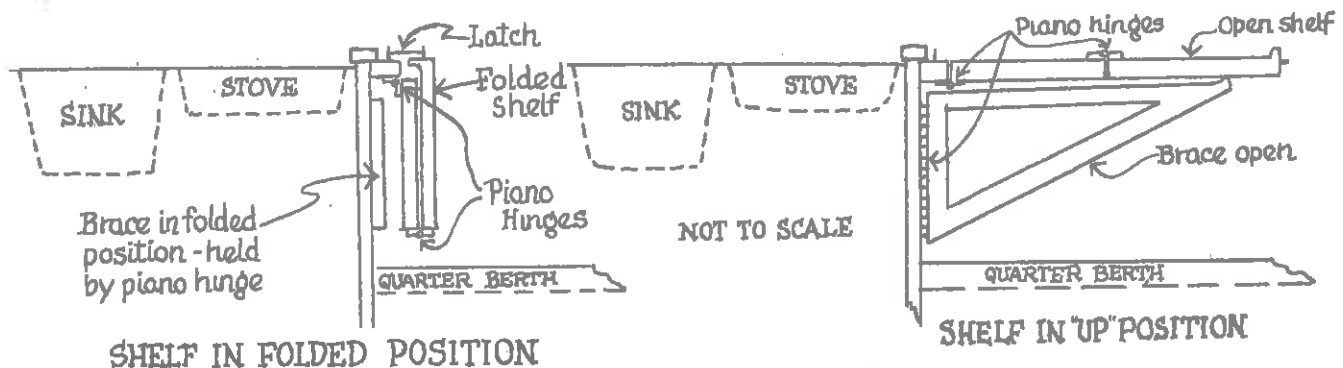
NOT TO SCALE

...Another variation of the shelf for extra counter space is to hinge the counter with a piano hinge and fold it down at the side of the galley thus:



NOT TO SCALE

...Still another variation is to hinge with a piano hinge the shelf itself. This allows you to use a larger shelf than the one shown above. Thus:



SHELF IN FOLDED POSITION

SHELF IN "UP" POSITION

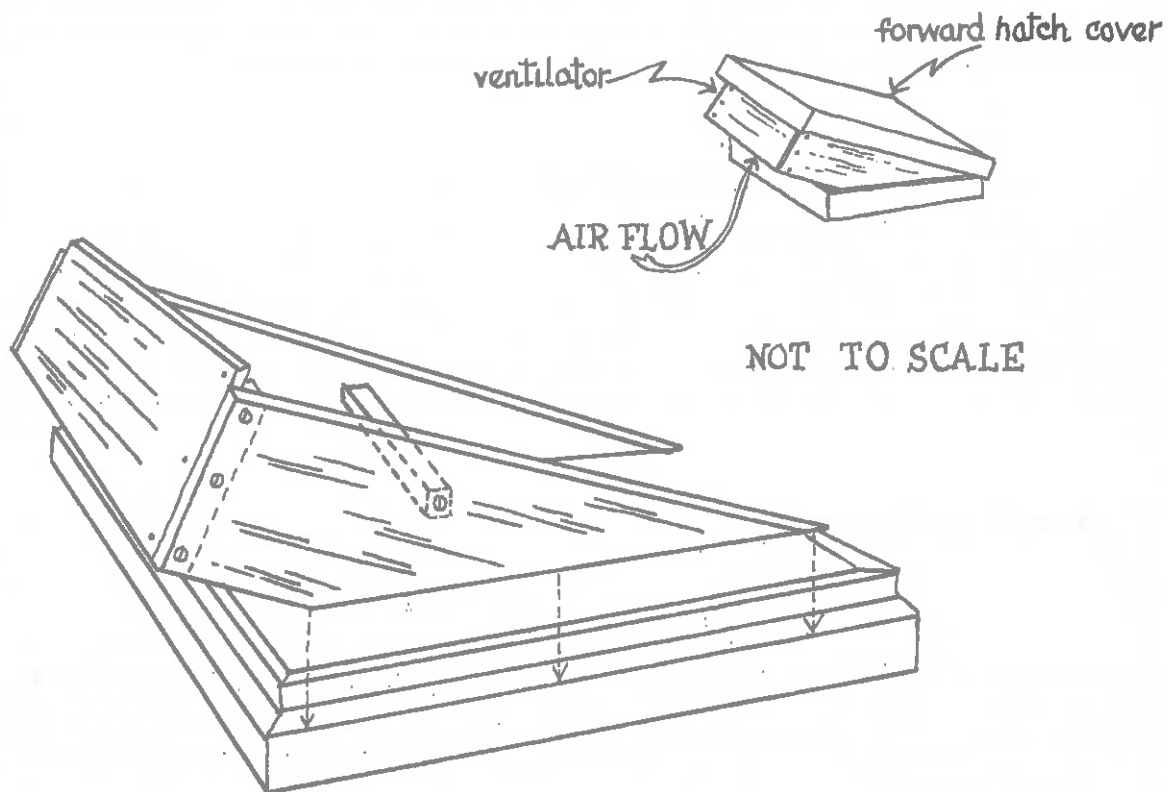
Contact Formica may be used on the shelf top.

VENTILATOR FOR FORWARD HATCH

Bill Hitz has designed a ventilator for his forward hatch, hull No. 275, which provides a steady flow of air to the cabin in any weather (provided you are not taking blue water over the cabin trunk). It is especially useful when the boat is at rest.

The vent can be made of $3/8$ " or $1/2$ " marine plywood, or of plexiglass, or a composite construction of wood sides and plexiglass would admit light in the cabin.

Dimensions may vary since not all Tartan 27 hatches are exactly alike. It should be built so that it will sit on the outer flange. The side should not be so long as to interfere with the hinges. Wooden "stops" should be glued on the inside of the side pieces at their forward ends to prevent this. The forward piece should be approximately 6" high and extend above the side pieces so that it will fit tightly. The spreader between the sides hold the thing together, especially when stowed.



Applicable to hull No. 524 with variation to hull No. 648.

THE WATER SYSTEM

All Tartan 27s prior to hull no. 651 came equipped with hand lever type galley pumps. The biggest problem with these is that they sometimes lose their prime. Suction by mouth, although not very sanitary, will usually restore the prime. Another problem is that the pump is a one-handed affair.

All models after hull no. 650 are equipped with Gusher Galley foot pumps. Some have put electric galley pumps and/or foot pumps on the older boats. In this writer's opinion, foot pumps are better. They are less troublesome, not dependent on battery power, and don't waste water.

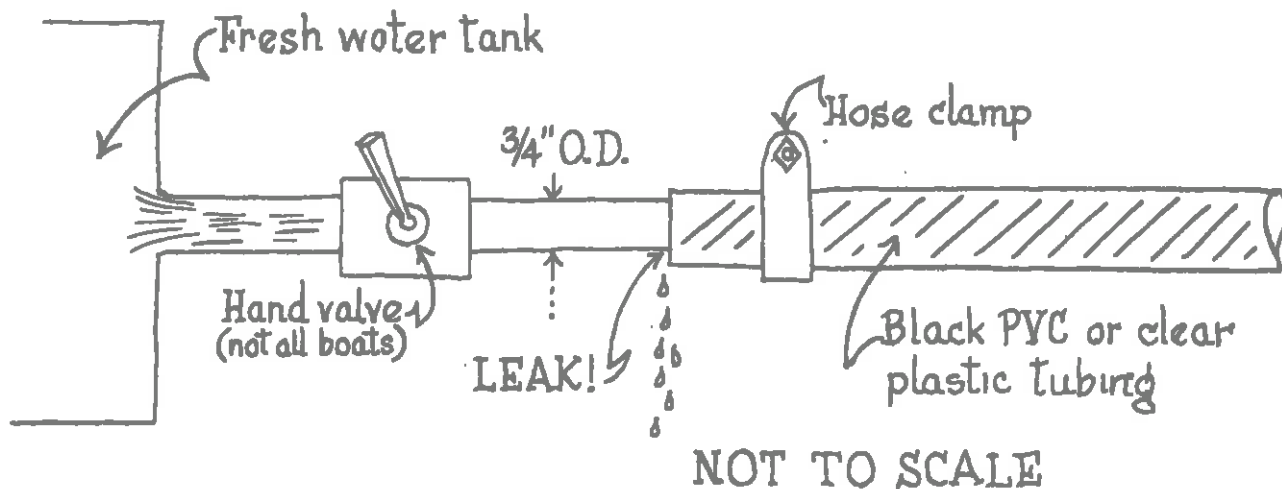
Occasionally, especially if the water has been unused and sitting long in the tank, you will get an odor. Sometimes like "swamp water" or, if your tank is fiberglass, it's a plastic taste. Occasionally put a teaspoon of clorox in your tank to counter this. It hasn't poisoned anybody yet, and it knocks the smell.

Before you take on water, taste it. If it doesn't taste right, don't use it. Sometimes water laying in a marina hose will taste "rubbery", and sometimes water in an area may have a high chemical level that can be very obnoxious.

Most Tartan 27's come equipped with a shut off valve in the sink drain. It is important to have one so that it can be shut off in heavy weather when the boat is heeled to starboard. If not shut off, sea water will back up in the sink and spill out into dish racks, stove and counter. Some people use a weighted stopper in the sink, but this is not nearly as satisfactory as a shut off valve. Some owners have a shut off valve in the fresh water line also so that if the fresh water tank is full, water will not run out of the faucet when the boat is heeled.

FRESH WATER TANK CONNECTION LEAK

All boats seem to have leakage into the bilge. A constant but slow drip from the packing gland around the drive shaft is necessary. Other leaks, however, may be fixed with very little effort. A slow drip has occurred at the fresh water tank connection on Hull 185, Aquarius. This has also been reported in other Tartans. It is necessary to lift the removable cover forward of the mast to examine this. The problem can usually be solved by tightening the hose clamp. *



WATER TANK GAUGE - ONE METHOD

By installing a water tank gauge on the water tank, I can quickly check on the water level. Since I must haul water aboard in 5 gallon containers, the gauge tells me when the tank level is down.

Several years ago, I installed a lengthened drain hose in the water line with a valve on the end. The valve is under the forward cabin sole. It was installed by cutting the water line where it passes under the starboard berth and installing a plastic tee in the line. The water gauge line is connected to the drain line by installing another tee where the valve is located at the end of the drain line.

The gauge line (made of 7/16 clear plastic tubing) passes through the floor frame just forward of the mast, then turns upward to lay along the mast where it is taped. Alternatively, it could be fastened to the head bulkhead.

The line should extend high enough above the top of the tank to allow for a "head" caused by trapped air when the tank is filled. Mine extends up to the overhead so that dust and dirt is less likely to enter the line. The installation is completed by marking the line (magic marker) at known intervals. (I used 5 gallons) as the tank is filled from a measured container.

Most Tartan 27 tanks hold 30 gallons.

WATER TANK GAUGE - ONE METHOD

Tired of guessing how much water is in your tank or of running out of water in some far-off gunkhole? Tired of dismantling your tank drain in order to winterize? Spend 20 minutes and install a combination sight-gauge and tank drain. Buy the following:

- 1 piece clear tubing $\frac{1}{2}$ " I.D. x $\frac{3}{4}$ " O.C. 2 feet long
- 1 plastic "T" fitting for $\frac{1}{2}$ " tubing (Sears, Wards, Etc.)
- 1 block valve for $\frac{1}{2}$ " tubing
- 4 stainless hose clamps.

Cut the water line 6" from the tank fitting under the forward cabin sole. Put the "T" fitting in the line and the 2' length on the extension. Put the valve in the end of the 2' length. Clamp them tightly. Put water in your tank in 5 gallon increments and mark each increment level on the bulkhead under the V berths. When you wish to check your tank level, hold up the tube, open the valve and read the level from your marks. When you winterize, open the valve, drain the tank into the bilge and pump the bilge.

WINTERIZE WATER SYSTEM

To winterize the water system, nearly loosen the hose clamp and pull off plastic tubing where it fastens to the water tank. Allow tank to drain in bilge and pump bilge. Blow out all plastic lines. Pour anti-freeze down the sink drain, and close the valve. It's a good idea to place a drain valve (a plastic one is fine) in the lowest place in the water line. Then it is easier to drain the system.

ROT IN WOODEN MEMBERS IN MAST AREA

Owner of Hull #209, built 1966, discovered that the plywood flooring of the head, and the enclosing bulkheads of the head near the mast, including the wooden cornerposts, had considerable wet rot.

He concluded that rain water had been coming down not only on the outside of the mast but also on the inside, hitting the stainless mast step and seeping into the adjacent plywood flooring and bulkheads.

Looking at the cross section view of the installation, one sees (A) the mast, (B) the stainless step, (C) the plywood sole or flooring, (D) the athwartship mahogany glassed-over timbre supporting the forward part of the mast step, (E) the fore and aft timbres supporting the rest of the mast step and (F) the plywood bulkhead.

He observed the method of construction used in the Tartan 41 and the Hinckley 49 as shown in the Alternative Plan of the Cross Section View. Here the mast step is placed below the cabin sole with a gap between the mast and the flooring so if any water comes down either on the outside or the inside of the mast, it escapes the flooring, hits the mast step and runs into the bilge, where it may be pumped out. Drain holes in the bottom of the mast would help this process.

Looking at the Plan View of the Tartan 27, we see (A) the removable cover of the forward space, (B) the stainless plate mast step, (C) the Dust Pan Space, (D) the head sole or flooring, (E) the removable floor board aft, (F) the door to the head, (G) the head bulkhead and (H) the raised head platform.

After a heavy rain, the owner noticed water in space A as well as in the dust pan. The water would run off the forward part of the mast step into A where some would drain aft through a pipe to Space E aft. With no outlet in Space C, the water would be trapped. After the same rain, the plywood near the mast in Space D and the cabin sole on the other side of the mast would be damp. Moreover, it is believed that Space D has no scuppers to drain off any water.

The yacht's designer stated that there is no need for any watertight compartmentation. Therefore, it is recommended that scuppers be drilled so that all water may drain aft readily to the bilge aft where it may be pumped out. It is also recommended that holes be drilled in the base of the mast and the step so that the water may fall to the bilge below. Moreover, there should be made a gap around the mast step so that any water may drain below without coming into contact with the cabin sole or head bulkheads and corner posts. Water collecting in spaces C and D should have scuppers draining into space E.

Note: The wood block under the mast step on Hull No. 526 rotted out. While sailing the mast dropped and the shrouds became loose. It is suggested that all owners check any wood under and around the mast step for rot.

COPING WITH THE MESSY OIL CHANGE CHORE

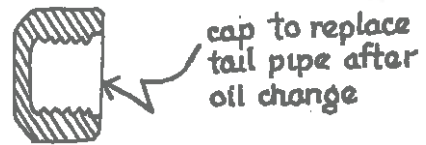
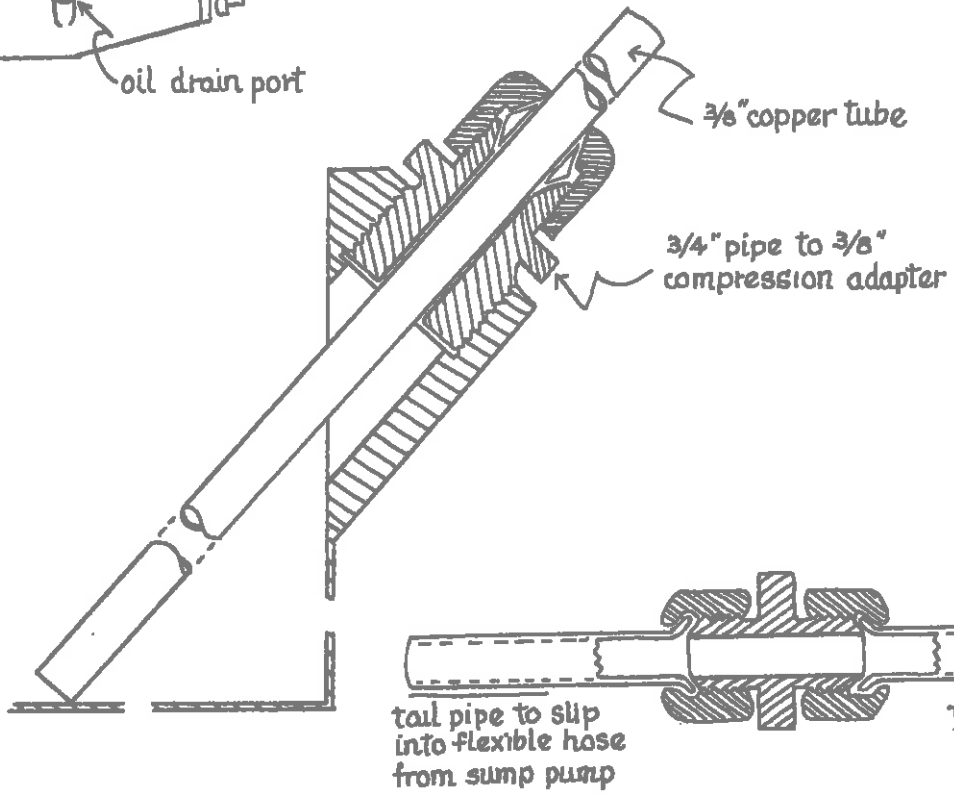
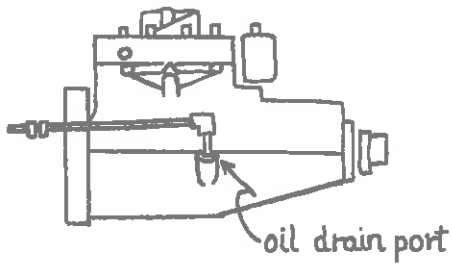
The Tartan 27, like all other boats, requires a never ending program of periodic maintenance that rewards the skipper by way of reliable performance. Be this as it may, some maintenance chores are more unpleasant than others and if a vote were taken on the one having least appeal, changing oil would undoubtedly place near the top. Regardless of how careful one might be, those elusive drops of oil will always end up where they will do the most harm. This is probably a corrolary to the axiom that the probability of a slice of jellied bread landing jelly side up when dropped is inversely proportional to the cost of the rug it is dropped on. Of course, the Mickey Mouse pump and plastic tube device provided with the Atomic 4 (on the older engines) is an iron clad guarantee that the scattering of oil about the boat during an oil change will be optimized, so it behooves one to spend some time getting this system harnessed to the extent that it is somewhat responsive to the manipulations performed by the user.

A giant step forward can be made by installing a permanent drain pipe that terminates in an accessible location. This can be achieved as follows: (See figure).

1. Replace the 3/4 inch pipe plug in the oil drain opening with a 3/4 inch pipe to 3/8 inch compression adapter.
2. Cut a length of 3/8 inch copper tubing long enough (about 12 - 15 inches but determine length by trial and error) such that when it is positioned in the adapter described in step (1) and touching the bottom of the oil pan, enough protrudes beyond the drain opening to clear the carburetor assembly.
3. Now add a compression (or flare) elbow and length of 3/8 inch copper tubing to reach just beyond the forward face of the flywheel cover.
4. Terminate the access end of the tubing so that a piece of flexible tubing can be slipped over it for oil removal and also a cap can be secured to it after use. (One way to accomplish this is to terminate with a flare fitting and add a flare to flare nipple or coupling, now to this coupling may be attached either a cap or another piece of tubing equipped with a flare connector). (See figure).

Now to change oil the cap on the access tube is replaced with short piece of tubing having the flare connector, connect your off engine sump pump and pump the old oil (warm up oil by running engine first) into a convenient container such as an empty one gallon milk (plastic) jug.

The mess can be reduced further by using a plastic rectangular shaped dish pan. By using this as a repository for all the bits and pieces used in this oil changing drill, getting off the boat without dripping oil is made much easier.



THE FARYMANN DIESEL

I talked to Phil Rogers, chief mechanic at Hartge's Yard, concerning the Farymann diesel. He has now had about four to five years experience with the engines. It has proven to be a reliable engine. He says the biggest problem is the vibration experienced when running at 1,000 RPM or less. It shakes things loose. The fuel system must be checked regularly and the fitting tightened to avoid leaks. The muffler shakes loose. The battery cables and other wiring wears and must be checked regularly for worn places in the insulation causing short circuits.

He has had to replace starters. (A \$400.00 item.) The cause of starter failure, he surmises, may be throwing the main switch from one battery to the other or both while in the starting procedure. Corrosion also seems to be a factor which damages the starters. He has found, on occasion, Farymann replacement parts are slow to come by.

Fuel consumption of the Farymann is reported to be one-half gallon per hour.

CARE, MAINTENANCE AND OPERATION OF
THE FARYMANN DIESEL

This is information obtained from the Farymann Engine Manual. It is selected to assist the layman boat owner and is by no means complete.

LUBRICATING OIL: Use only well-known HD brands of engine oil, and keep to the brand selected, if at all possible. Never mix different brands when topping up the oil.

Engine	HD SAE 20 (3)
Gearbox	HD SAE 30

The engine oil can also be used for lubricating the gearbox but not vice versa. Hurth gearbox uses automatic transmission fluid type A or branded HD engine oil.
WARNING: Additives such as molybdenum sulphite or the like must not be contained in the gearbox oil under any circumstances.

FUEL: Obtain fuel only from filling stations equipped with a pump and built-in filtering system, otherwise filter the fuel yourself with a fine strainer (if necessary using a nylon stocking). Always replace the filter cap immediately.

Use clean commercial grade branded diesel fuel according to A.S. No. 2 (American Standards).

The sulphur content must not exceed 0.5% (weight). A lower value is specially important for sea water-cooled engines operating at relatively low temperatures. Never use gasoline diesel fuel mixture or any weight fuel oil.

CAUTION: Bleed the fuel system after the first filling. Never allow the tank to drain completely.

RUNNING-IN: A new or reconditioned engine must be carefully run-in. During the first 20 hours, only use full engine power for very short periods. After first 20 hours engine power can gradually be increased. A first oil change is necessary after 20 hours. Check cylinder head bolts at the same time. Retighten, when engine is cold. Tightening torques see technical data sheet.

DAILY CHECKS BEFORE STARTING: Check oil level in engine and reverse gearbox. If necessary fill to the top mark of the dipstick.

The chromium-plated piston rings may cause a slightly higher lub-oil consumption during the running-in period (80-100 hours).

Screw in the lubricating cup (if provided) on the cooling water pump by half a turn. Check tight fit of locknut on stuffing box.

Check the diesel oil supply in the tank and open the tank cock. If the engine has not been in operation for some time, the fuel system should be bled in accordance with the operating instructions.

After checking the drain cocks and the sea water filter, open the sea cock completely and check flow of sea water through transparent cover of sea water filter.

STARTING UP THE ENGINE: Move gear lever to neutral position (mid-position vertical).

Move the engine speed control lever to the full power position.

With Farymann Unicontrol (single lever) pull hub assembly outwards till the locking pin is clear of slot, thus gear shifting is disengaged and lever can be turned into maximum speed position. (With Morse single lever control pull knob.)

HAND STARTING: Operate lever or pushbutton for starting fuel.

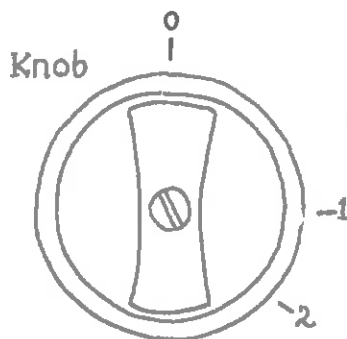
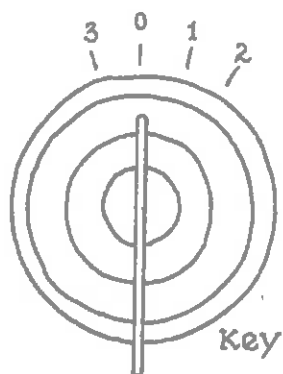
Operate the decompression lever with your right hand and slowly turn the starting crank in the camshaft anticlockwise with your left hand. Listen for characteristic creaking of the injection nozzles.

Turn the crank with your left hand as fast as possible. When the maximum impetus is reached release the decompression lever and carry on turning in order to overcome the initial compression resistance. Rapid turning, not force, is what matters!

When hand-starting engine with electric start, turn ignition key to first notch.

ELECTRIC STARTING: Switch on electric system: turn key or knob of starter switch into position (1). Then pilot lamps for battery charging and oil pressure (2-cyl. only) must light up.

Turn key or knob of starter switch to extreme position (2) and hold it there until first firing stroke. Then IMMEDIATELY turn key or knob back into position (1).



0 = off
1 = on
2 = start
3 = spare position

Attention: Limit each starting trial to 10 seconds maximum and wait for 30-60 seconds before repeating (to save battery). Operate starter only after engine came to a complete stop.

After engine has started and control lamps are out, run engine at medium speed under light load for warm up.

CHECKING AFTER STARTING: For most of the applications, the entire cooling water is injected into the exhaust to cool down the exhaust gases (i.e., reduce the noise level), and to be able to dispose of the exhaust gases by means of rubber hoses. CHECK WHETHER A FINE SPRINKLE OF WATER COMES OUT OF THE EXHAUST AND WHETHER NOISE OF EXHAUST IS NORMAL.

If no water comes out, then the exhaust produces a considerable noise which means that no cooling water is being injected into the exhaust and that cooling water supply on the engine is not in order. In this case engine has to be stopped immediately for checking.

STOPPING: NEVER STOP THE ENGINE BY OPERATING THE DECOMPRESSION LEVER! SWITCH OFF ELECTRIC SYSTEM ONLY AFTER ENGINE HAS COME TO A COMPLETE STOP!

Never completely stop the engine while it is running at speed, but let it idle for a short time.

SINGLE LEVER OPERATION: Farymann Unicontrol - put lever into neutral/idling position and tilt hub pulling lever outwards. Hold until engine comes to complete stop. (With Morse: pull additional stop cable and hold until engine comes to complete stop.)

TWIN LEVER OPERATION: Move the speed control lever beyond the idling position and hold it there until the engine stops.

In either case return the speed control lever to full load position as soon as the engine has stopped.

ELECTRICAL SYSTEM: After stopping the engine as described above, turn the key to the 0-position and remove it or respectively switch off ignition.

Close the SEA COCK (do not forget to re-open before next engine start-up).

After engine halt always engage gear to relieve clutch springs. (Only Nanni gearbox.)

Fill fuel tank after completing a run. Partially filled tank will collect moisture if engine is not operated for any length of time.

FROST HAZARD: Open all drain cocks and ensure complete drainage. Push a wire through the cocks to ensure unimpeded flow. Finally crank the engine by hand until the cooling water pump is empty, too.

In exceptional cases, where lines or water chambers are located below the drain cocks, the appropriate pipe or hose connections must be opened in order to drain them.

Remove intake line with sea water filter from the cock!

If cooling water is injected into the engine exhaust pipe, the water lift silencer must be drained.

BATTERY: When charged, the battery can safely withstand temperatures as low as -15°C ($+5^{\circ}\text{F}$). At lower temperatures it should be removed and stored in a frostproof place.

Attention: Engines equipped with A.C. generators may not be run with battery disconnected (destruction of diodes of voltage regulator). Even extremely short trial runs only with battery properly connected.

CHANGING THE ENGINE OIL: Change the oil only with the engine at operating temperature (scavenging effect) in a new engine after appr. 20 h. Change the oil again after approx. 50-60 hours. Later on every 120 hours.

A separate hand-drain pump with hose and cock is supplied with the Farymann Marine Engine. Engine oil must be changed whenever engine is to be put out of service for extended periods.

CRANKCASE: If during a normal oil change or when cleaning the oil strainer the oil is seen to contain a lot of sludge, the crankcase should be washed out sooner than recommended in the schedule. Flush with diesel oil after removing the crankcase cover.

Absolute cleanliness is essential!

CRANKCASE BREATHER: Crankcase breather (combined with oil filter) should work audibly. Check with the engine running at low speed. The thin steel valve must always be kept clean. It must lie flush on its seat, otherwise it should be replaced. If necessary, take off complete breather housing and wash out thoroughly with gasoline or diesel fuel.

If there are any oil leaks on the engine check this breather valve first.

V-BELT TENSION: Too tight a belt is destructive to bearings of the driven parts. Adjust for $3/8$ " slack from a straight line over outer diameter of drive and driven pulleys, midway between pulleys.

WATER PUMP IMPELLER: The neoprene impeller has a relatively short life and must therefore be inspected regularly. If the water pump is allowed to run dry for more than a few seconds (sea cock closed) the impeller may be completely ruined. Remove cover of pump and release the impeller from the shaft by applying 2 screwdrivers under the hub of the impeller. Remove all traces of rubber and smooth any damaged surfaces. Fit a new impeller. A spare impeller should always be kept on board.

If impeller is held by lock screw, loosen same with screwdriver thru opening or remove complete shaft-impeller assembly after removing V-belt pulley.

STUFFING BOX (JABSCO Pump with plain bearing): Tighten by hand then lock with locknut. To lubricate plain bearing, small water leak is permitted.

THERMOSTAT: Farymann Diesel engines are cooled directly by sea water. The raw water never touches the engine block, but circulates only around the replaceable cylinder liner, head and exhaust system. Cooling water jacket around cylinder is constructed of a non-corrosive, glass-fibre-reinforced-plastic. Outer wall of cylinder is zinc-plated.

In addition, the Farymann diesel has been built to operate at cooling water temperatures below that at which salts and minerals precipitate in sea water.

No separate fresh water cooling system is needed or recommended.

A thermostat with a setting of 55°C (120°F) is fitted to the engine. Any deposits that appear on the thermostat can be removed with dilute hydrochloric acid. Flush afterwards with fresh water.

Caution: During assembly make sure that the small hole (equipped with a tiny cotter pin) in the fitting plate of the thermostat, which permits water to penetrate even in the closed position, is not obstructed.

SEA WATER FILTER: If a sea water filter is installed in the water pump intake line, the cover should be transparent in order to permit observation of the flow of the cooling water and any contamination of the filter.

Attention: After cleaning of filter it has to be checked that the cover is refitted carefully preventing any air to be aspirated by the water pump.

FUEL FILTER: The life of the fuel filter depends entirely on the degree of purity of the fuel used. A loss of engine power may be due to a shortage of fuel brought about by a clogged filter. If this is suspected the air vent screw in the fuel pump should be opened. Unsteady flow, even after pumping, indicates a contaminated filter. Change the filter element. We recommend a PUROLATOR PM 456 filter element.

A water contaminated fuel system causes fuel filter paper element to become water-logged which results in fuel starvation (loss of power).

BLEEDING: Although all Farymann marine engines are equipped with the automatic bleeding system (which requires of course that boatyard has installed a fuel return line to the fuel reservoir) it can occur that fuel system has to be bled. Don't loosen banjo bolts or other connectors of fuel lines but only vent screw on injection pump. Operate hand primer on fuel feed pump until absolutely bubble-free fuel leaks. Retighten vent screw thoroughly.

CHANGING THE GEAR OIL: With new gearbox oil has to be changed after max. 100 hours.

If a line for connecting a hand pump is not provided, the gearbox top cover must be opened and the oil removed by means of a hand drain pump.

GREASING THE STARTER RIM GEAR: The starter pinion should mesh well over the entire length of the teeth. Remove the starter. Lightly grease the rim gear with the aid of a brush. Use e.g. BOSCH FT 1 V 31 grease.

BATTERY: Add only clean distilled water. Protect terminals with a light vaseline coating.

STORAGE OF ENGINE - WINTER LAY-UP: Read this entire section before proceeding with lay-up!

If the engine is to be taken out of service for a lengthy period, e.g., during the winter, protect engine as outlined below:

Frost protection has already been dealt with.

The diesel engine must be protected from rust, irrespective of whether the boat is laid up on land or the engine removed. Rust, e.g., in the fuel injection system, can cause engine failure even where its presence cannot be detected with the naked eye.

LUBE-OIL AND FUEL SYSTEM:

1. Clean the outside of the engine with diesel fuel or white spirit.
2. Drain off the engine oil while it is still warm and fill with anti-corrosive engine oil, e.g., SHELL ENSIS 20 or ESSO RUST BAN up to the lower dipstick mark (MIN.).
3. Drain the fuel tank and clean it thoroughly. Drain the fuel filter. Then fill the fuel tank with several litres of a mixture of diesel fuel and SHELL ENSIS or ESSO RUST BAN at a ratio of 2 : 1. Bleed the fuel system.
4. Allow the engine to run for approximately 15 minutes so that all the pipelines, filters, pump and nozzles are filled with the protective fluid and the anticorrosive engine oil mixture is evenly distributed inside the engine.
5. Remove the rocker arm cover and spray a mixture of diesel fuel and 10% SHELL ENSIS 20 on rocker arms, fit covers again.
6. With the speed lever at full power and the decompression lever actuated, so that the engine will not fire, crank the engine several times so that the cylinder is well sprayed with the diesel fuel anticorrosive mixture. Drain anticorrosive oil from sump.
7. Remove the exhaust piping from the cylinder head or the exhaust manifold and cover the exhaust ports by means of adhesive tape. This also applies to the port of the air intake.

COOLING WATER SECTION: Drain all cooling water. Remove water suction pipe from sea cock and remove waterline, injecting cooling water into exhaust elbow. Take a can with an emulsifying cooling water protection oil, e.g., SHELL DONAX C or equivalent, and insert water suction pipe as well as a piece of rubber pipe fitted to water outlet (which normally injects into exhaust elbow) into can. Let engine run with this "closed circuit" containing the protection oil. Drain off oil and plug or refit both pipes to their proper positions.

Clean outside of engine and coat engine, metal parts of maneuvering controls and cable connections with anti-rust oil.

ELECTRICAL SYSTEM: Remove and store the battery in accordance with battery manufacturer's instructions. Take it to a station for maintenance.

RESTORING TO SERVICE - SPRING START-UP: Fill the fuel tank, test for unimpeded flow with the fuel filter installed and if necessary change the filter cartridge. Fill crankcase with specified HD lube-oil, take battery on board and connect. Coat terminals with vaseline after tightening.

Take out fuel injection nozzle, clean and if possible have them immediately tested by your local BOSCH service station, for correct injection pressure. With injector out turn the engine starter in order to remove anti-rust oil from cylinder. Re-fit injection nozzle.

Bleed fuel system, and connect all fuel, water and exhaust lines, etc. Remember to remove the plugs. Check all water and fuel lines for leaks.

Start engine and make trial run, checking immediately whether the cooling water is flowing through the sea water filter to the engine. Re-check all lines, seals and hose connections for leaks.

TROUBLE SHOOTING: Faults are usually due to inadequate maintenance. In the event of a fault, first check whether all the points in these operating instructions have been followed.

If you cannot detect and remedy the fault even with the aid of the following table, it is essential that you apply to the nearest Farymann dealer or approved service station.

In order to ensure good service, always state engine type and serial number, e.g., 26 A 30 1025.

FAULT	POSSIBLE CAUSE	REMEDY
Engine does not start	Control lever at STOP	When starting always place at MAX. and if necessary operate excess starting fuel
	Fuel tank empty	Top up tank and bleed fuel lines
	Fuel filter clogged or waterlogged	Replace filter element
	Air in fuel system	Bleed
	Starter does not turn freely	Charge battery, examine terminals and tighten. (Emergency: use decompression device)
	Engine oil too viscous, espec. at low ambient temperatures	Use HD SAE 10 Lube-oil
	No compression, valve clearance incorrect	Adjust valve
Engine runs erratically no output	Fuel supply too low, filter clogged	Replace fuel filter element, check contents of tank
	Inadequate supply of combustion air	Engine cowling (housing) must have opening for fresh air supply
	Air in fuel system	Bleed
	Fuel pressure lines leaking	Tighten
	Valve clearance incorrect	Adjust valve
Engine stalls when warm	Gasoline in fuel (gas bubbles are formed)	Empty fuel tank, filter, etc. fill with clean diesel fuel, bleed fuel system.
Exhaust emits excessive smoke: 1) blue	Engine oil level too high	Drain off and re-check oil level, possibly check angle of engine
	Valve clearance incorrect	Adjust valve clearance
	Poor compression due to seized or broken piston rings, worn valve guides, etc.	Have engine overhauled

FAULT	POSSIBLE CAUSE	REMEDY
2) black	Engine overloaded	Reduce propeller diameter
	Excess starting fuel device cannot disengage itself as engine does not reach rated speed (overloaded)	Briefly move speed control lever into idling position, then slowly back to full load
Engine runs too hot.	Engine compartment too hot	Fresh air must be adequately ventilated
	Too little cooling water	Open sea cock completely Clean sea water filter Clean water inlet strainer (outboard)
	Oil level too high	Drain oil; check engine inclination, respective sump capacity and dipstick markings with chart
	Waterpump aspirates air through cover of seawater filter or loose hose clamp	Wing nut tightened, rubber gasket defective
	Cooling water line defective	Check water lines
	Pump impeller defective	Fit new impeller
	Cooling water pump rotates too slowly	Tighten drive V-belt
	Thermostat defective	Clean or replace. In case of doubt continue operation without thermostat.
	Injection nozzle defective	Have nozzle checked by mechan.
	Feed rate of injection pump erratic	Examine by mechanic
Oil pressure pilot lamp lights up.	Engine cooling passages scaled up or clogged with sludge	Dismantle and clean engine (service station)
	Pressure switch defective	Fit a new switch
	Oil pressure too low	Stop engine immediately. Check oil level.
	Oil level too low	Top up

FAULT	POSSIBLE CAUSE	REMEDY
	Oil level too high	Crankshaft action creates oil foam which enters lube-oil pump causing pressure failure. Correct oil level.
	Oil filter clogged	Replace oil filter immediately
	Worn bearings	See service station
Engine races	Centrifugal governor defective	Do not disengage propeller, return with lowest possible speed, apply to service station
Engine knocks	Worn connecting rod bearings	See service station
	Valve sticks	Check valves (lubrication, clearances)
	Fuel delivery timing incorrect, piston tends to seize up	Stop engine, let it cool, turn crank, in case of difficulty have boat towed
Charge indicator lamp lights up during operation	Alternator speed too low	Tighten V-belt
	Terminals loose	Tighten terminals and cable ends
	Voltage regulator defective	Take to repairer
Engine does not obtain its stated speed under load	Engine overloaded	Reduce propeller diameter

REPOWERING

Since Tartan 27's were first built in 1960, there are some of our Universal Atomic 4's approaching 20 years of age. Undoubtedly many of us are thinking about repowering.

Diesel is all the rage these days, principally because of it's greater safety as compared with gas engines. Diesel is also supposed to give you a longer cruising range although this can depend on the make of the engine.

The Universal Atomic 4 gas engine is still in production. And in this writer's opinion, it should still be considered. We all know of the quiet, vibration free, dependable service of the Atomic 4 and the readily available mechanical expertise and spare parts.

When thinking Diesel, we can be of some help with the Farymann. They have been installed by Tartan Marine in a few Tartan 27's between Hulls No. 524 and 650 and in all Tartan 27's after 651. (See other articles in the Handbook about the Farymann.) Tartan Marine is now installing Farymanns in their T-10's.

Frank Palfrey of the Long Island Sound Tartan 27 Association is the only skipper we know who has actually converted to diesel power. He has installed a Yanmar SB12 a 12 HP single cylinder 4 cycle diesel. He got a really good, unbelievable, deal in that the engine only cost him \$2,000.00, less \$200.00 allowance for the old Atomic 4, plus \$400.00 installation.

His comments are as follows: "The manufacturer recommends a 3 bladed propeller, but I have not yet changed, preferring to keep sailing qualities. I may have the pitch changed. 12 HP is very nearly ample for a Tartan 27 but I can only get 5-1/2 knots. Fuel economy is excellent -- 1-2 quarts per hour claimed. Salt water cooling is recommended: the engine is epoxy coated and runs at 110° -- I am told there is minimal rusting at this temperature.

"For anyone considering repowering with a 1 cylinder diesel, I suggest they first get aboard a boat with one installed. I expect I have purchased great reliability and safety but I am not sure I will reduce the noise to a tolerable level. The vibration does not really bother me but it might some."

Another possible candidate would be the Universal 5411 diesel (Japanese made). This engine would mount on the same engine mounts and the propeller shaft alignment is identical to our old gas engines. We read in a magazine that the cost of this engine, installed, would be around \$4,300.00 complete, including a new exhaust system. It's a two cylinder job and should run with relatively less noise and vibration. Fuel consumption is reported to be approximately 3/4 gallon per hour. We don't know anyone who has the engine, so we can't recommend its performance.

When you have the engine out, it would make some sense to replace the old exhaust system, reinsulate the ice box, and renew some of the old wiring. This all adds to the cost but doing it with the engine out is half as costly as it would be later.

THE EXHAUST SYSTEM

Tartan 27's up to Hull No. 526 have a steel pipe riser, several elbows, a cast iron muffler and a metal pipe exhaust to the transom. Hulls up to 648 have a steel pipe riser, several elbows, but a rubber hose exhaust pipe and rubber muffler. Hulls after 649, equipped with Ferymann Diesels have a foot type muffler hereinafter described together with a built in water injector and a rubber hose exhaust pipe.

The older vintage boats have experienced failures in the exhaust elbows or risers primarily due to age, vibration and corrosion. The following is a typical situation and proposed solution.

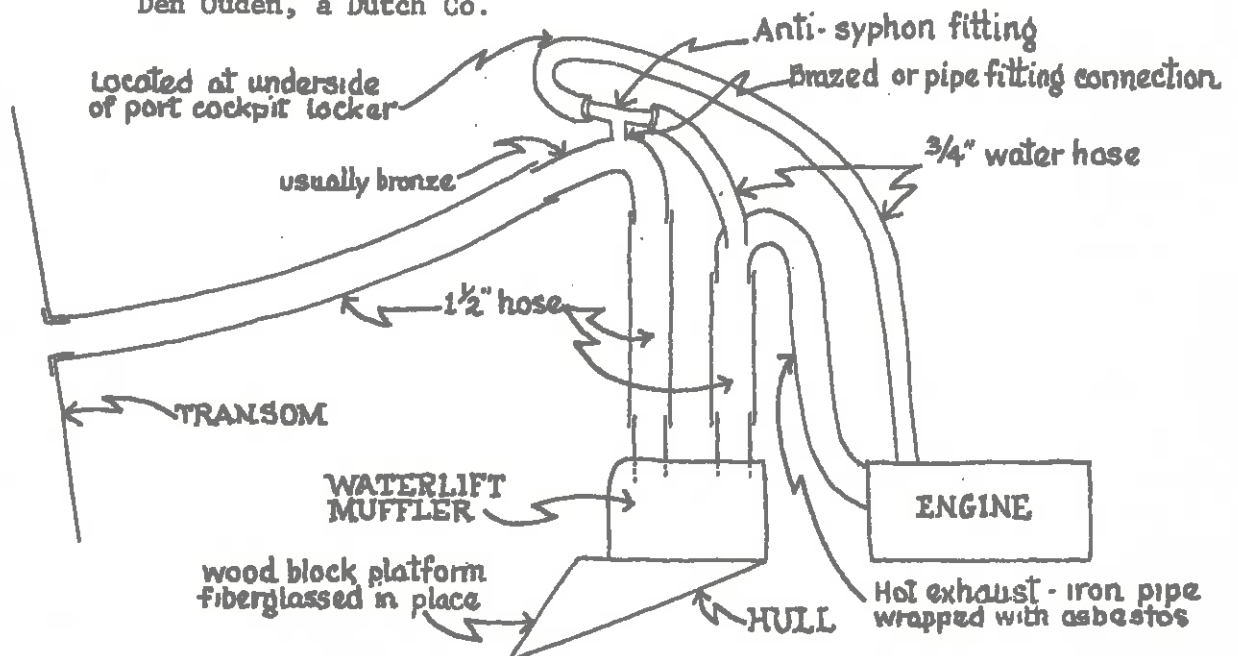
The original installation on our 1967 Tartan #286 sprang a leak at elbow between exhaust manifold and muffler giving rise to visions of the engine room of the Titanic what with blasts of extreme heat, steam, electrical short circuits, fumes and attendant horror if not panic. This failure was caused by corrosion and by the inherent vibration imparted to the fittings from the engine aggravated by the heavy weight of the cast iron muffler that had been supported by the riser loop alone. We have replaced the muffler with a new plastic pot type connected to the riser with flexible radiator hose and clamps. I believe this should last longer than the original system as it removes the weight of the muffler from the rig. The elbow at the exhaust probably cannot be immune from damage by corrosion and vibration at some time in the future.

The best solution to exhaust system failure (and most expensive) is to replace the system from the engine manifold to the transom. (An easier job if you have the engine removed for some reason.)

Hartge's Yacht Yard has done several of these Atomic 4 exhaust system replacements.

The following is a schematic sketch showing how they have done it. The water lift "pot type" muffler may be one of several manufacturers' as follows:

Onan "Aqua Lift" - The first one on the market.
Westerbeake
Den Ouden, a Dutch Co.



RACING

COURSES AND CURRENTS

Before the race it is important to get compass courses between all marks and to figure the current at any given time during the race. Why???

- . If you know compass course and the current, you can make allowances for the current when not tacking in order to stay on that straight line, which we all know is the shortest distance.
- . Current runs fast in deep water and slow in shallow water. You can arrange to be in a place where the current will help you the most or hurt you the least.
- . When tacking it is best to have the current on your lee rail thus pushing you to windward. You can arrange your tacks to accomplish this.
- . When tacking to a mark, if you know the current you will know whether to overstand the mark if the current is against you, or to tack short of the mark if the current is with you.
- . When tacking, if you know the compass course, you will know how far off the straight line you are tacking. This is a factor to consider when deciding when to go about.

How do you get this information?

COMPASS COURSES

Most everyone knows how to chart a compass course, so we won't dwell on it. Be sure to use the magnetic compass rose on the chart (the inside one), not the true one. There is about 7 degrees to 9 degrees variation in our area. It's best to check yourself by charting the course from two compass roses on the chart.

The following is an example of compass courses charted and recorded for the Tred Avon Y.C. - Chesapeake Bay Y.C. Race to Oxford, Friday, August 7, 1981:

<u>Start at</u>		<u>Leg of Course</u>	<u>Course</u>
N"2"	to	Red Nun N"70" (off Poplar Island)	174 degrees
N"70"	to	Black Bell 7 (Off Blackwalnut Pt.)	160 "
Bell 7	to	Choptank River Light (Entrance to Tred Avon River)	90 "
Choptank River Light	to	Finish at T.A.Y.C.	16 "

CURRENTS

In order to calculate the current, you can use the books, "Tidal Current Tables (Current Year) Atlantic Coast of North America" and the "Upper Chesapeake Bay Tidal Current Charts" (second edition). Both of these are put out by the US Department of Commerce, National Oceanic and Atmospheric Administration. The current tables are also printed in the Boating Almanac, Vol. 4 (Chesapeake Bay). The current charts are also printed in the "Guide for Cruising Maryland Waters," put out by the State of Maryland.

The current charts are constant, that is, they do not change from year to year, so the date published is not important. Current tables do change from year to year so you must have the up-to-date tables.

Don't be confused with the tide tables. For racing we are interested in the current tables. We want to know the horizontal movement of water which is current. Tide is the vertical movement of water.

As an example of how to figure current and what to do with the information when you have it, let's again take the TAYC-CBYC Race, Annapolis to Oxford, Friday, Aug. 7, 1981.

With the current table in hand, find the pages entitled "Baltimore Harbor Approach." Then find the month and day of the race. We find that for Friday, August 7, 1981, the maximum current, Flood, at Baltimore Harbor Approach is at 10:35 A.M. E.S.T. We then add one hour for daylight saving time which makes max. flood at Baltimore Harbor Approach 11:35 A.M. E.D.S.T. At the same place we find that Max. Ebb, Baltimore Harbor Approach is 4:33 P.M. E.S.T. Add an hour for daylight saving time and we have 5:33 P.M. E.D.S.T.

Now taking the tidal current charts in hand, we find the chart marked Max. Flood at Baltimore Harbor Approach. We mark on it 11:35 A.M. We find the chart marked Max. Ebb and mark it 5:33 P.M. From these two charts we can then mark all of the other charts by adding or subtracting one, two or three hours from max flood or max ebb.

Study the charts before the race and prepare a probable game plan should the wind be from a certain direction. For example, if the wind is predicted to be southerly (as it often is that time of the year) you can speculate as follows:

At the start (9:25 A.M.), the current will be against us (flooding .03 kts.). In fact, the current will be running up the Bay until around noon. Since we already estimated the wind would be southerly, that means we should be tacking against the current. Therefore, we should try to stay out of deep water and try to get the current on our lee bow. Should I duck into the mouth of the West-South Rivers, or should I duck into Eastern Bay to avoid the current? As I get down the Bay, should I hug the Eastern Shore at Tilghman's Island or should I stay on the western shore all the way down to opposite the Choptank, and then come across? These are all very big questions which will probably decide the race.

I would try to guess what the southerly wind would do. Will it favor SE or SW? Which way might it veer as the day goes on? If I suspect it would favor SW, I would take the western shore. If I thought it would favor SE, I would take the Eastern Shore. I would fully realize that my guess may be wrong and I should be ready to salvage my position early if need be. I would make similar judgments for the runs up the Choptank River and the Tred Avon River depending on all of the factors mentioned.

Weather conditions and other things affect the current. Don't go by the book alone. Watch the current around the buoys, marks, crab pots, floats, etc. Don't over-react because of the expected current. In light air, it is one of the more important variables. In heavy air, it's not nearly as important. Remember current is only one of several variables to consider.

WIND TUNNEL TESTS

Wind tunnel tests show that sails develop the most forward thrust when they are trimmed "just hard". When sheets are eased until the sail is barely luffed, forward thrust increased sharply. When the sail is trimmed in too far thrust dropped as much as 50% while heeling climbed 70%. In other words, let the sheet out until the sail luffs, then pull in slightly to the best trim (what we knew all along).

Wind tunnel tests also showed that a mast upright and raked aft was clearly superior close hauled while, before the wind, a mast upright was slightly superior. Tartan 27 designers, Sparkman and Stevens, show a rake aft of 11 degrees. (Most racing sailors in the Chesapeake Bay don't rake their masts that much).

When running free, wind tunnel tests showed that with a boom vang it is possible to sail as much as 25 degrees by the lee without jibing. Such broad reaching by the lee with the whisker or spinnaker pole pulled far aft produced 5% higher thrust than dead before the wind, but still 10% under what was obtainable by jibing over and resetting the jib or spinnaker on the new windward side. This was quite surprising and good to know when approaching a leeward mark or when in a luffing match (heaven forbid).

STARTING LINE TACTICS

It is advantageous to arrive at the starting line about 30 minutes before the starting time to check in, to stretch out the wrinkles in your sails, check the genoa lead locations, final tuning and the relationship of the starting line with wind direction. The crew must be checked out as to assignments.

If the race committee did their job right the line would favor slightly the port end of the line. This would result in the boats being spread out over the line instead of being bunched up at the starboard end. Some brave souls will attempt a port tack start, a few making it and a few having to yield to the starboard tack boats.

The key to the whole thing is concentration. After the warning signal there should be no conversation on board other than about the race. During this period the skipper should have decided his planned starting tactics and should share this with the crew. You may decide to attempt the number one start at the pin or you may, after sizing up the situation, decide to settle for a more comfortable spot immediately clear of the anticipated crowd at the pin. Or you may, if the line favors the port end, try to run the line and flop over at that end. Anything to get clean air early!

When the preparatory signal has sounded and you're heading for the line, determine your position in respect to other boats. Then adjust your course in order that you will not be forced over the line early, forced above the pin or caught beneath the crowd. During this period it may be necessary to slow down by luffing or fish tailing. At the proper time, if everything works right, you can announce to the crew "trim for speed." If things don't work right, forget it and think about the next phase of the race. In any event the key word is concentration, not only at the starting line, but throughout the race.

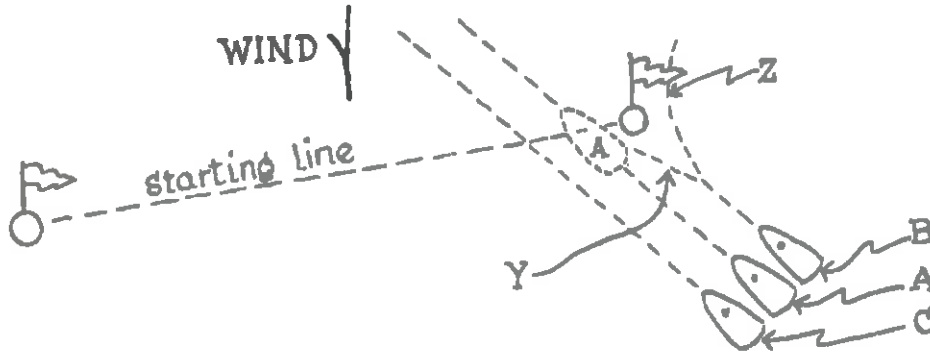
A note to the crew. Unnecessary chit chat can be distracting to the helmsman during the race. At the starting line, conversation must be confined strictly to the subject at hand, i.e., getting the best start.

BARGING

Barging occurs when a boat has arrived early at the line and tries to kill time by sailing down the line without crossing before the bun. There is nothing wrong with this unless he interferes with a leeward boat. If he does, it is a foul under Rule 37.1 (1977) which says a windward boat on the same tack must keep clear. This is always true, before, during and after the start. There is only one exception -- buoy room at a mark of the course or an obstruction (Rule 42 (1977)).

Barging also occurs when a windward boat cannot keep clear of a leeward boat without passing the wrong side of the starting buoy, so the windward boat, instead of keeping clear and passing on the wrong side of the buoy, merely barges through and fouls the leeward boat.

B boat will be barging (route y) unless he passes outside the buoy (route z) or A boat freely gives him room.



If A boat gives B boat room at the buoy, A boat is free to go through and he is not barging. This means that A boat cannot be timid; he may press for his rights by holding the B boat onto a course where he will be forced to pass on the wrong side of the buoy or be found to cause A to alter course to prevent contact. Forcing A to alter course is failure to keep clear of the leeward boat and is a foul under Rule 37.1 (1977), as above.

To make your protest stand up, it is wise to:

- . hail that there is no room
- . that the windward boat is not keeping clear
- . that you are being forced to alter course
- . and have a third party witness hear you.

In a similar situation after the start, boat B could claim buoy room at a mark of the course or an obstruction, under Rule 42.1 (1977). It is clear that to apply the buoy room rule to the start would create chaos. For this reason, it was necessary to make an exception for a starting mark surrounded by navigable water. The Anti-barging Rule is 42.4 (1977).

The rules referred to are in the 1977 U.S.Y.R.U. Rules Book and were effective through 1980. The Anti-Barging Rule (Rule 42.4) will not be changed in 1981.

REACHING BETWEEN MARKS

The shortest distance between two points is a straight line; so, under normal conditions you should know the compass course between marks and stay on it. Vary only in order to get in or stay in clear air. IN CBYRA races, where there are several other classes, mostly larger, clear air is a big problem. Watch out behind. That's where the trouble usually comes from. Handle the tiller in such a way that everybody will have clear air and not feel threatened. It's fun to fight, but it doesn't pay. If a larger or faster boat comes up to windward too close, react immediately. Go up wind as if you are going to take him up all the way to close hauled. If he accepts your challenge (your bluff), drop off quickly and run to lee for clear air. Usually larger boats will not accept your challenge. If you let him go by too close to windward, you suffer.

If the boat overtaking you close on to windward is another Tartan and the one you think you have to beat, you might want to run him to windward in order to delay him as much as possible; but remember, while you two are fighting, your other competitors are gaining (and enjoying the show). Maybe as it turns out, he won't be the one you have to beat.

Don't trim the sails too tight on a reach. Trim them just so they don't luff, centerboard up or nearly so. In heavy air, you will have a heavy weather helm. There's not much you can do about it. Get two hands on the tiller.

You always pick up speed going to windward (above the compass course). Unfortunately, what goes up must come down. When you come back down to course, you slow up.

TACKING TO THE WINDWARD MARK

Try to figure out a "game plan" before the race. Before the start, get up as high as possible and look at the area you are about to cover. Take note of other boats sailing in that area. Consider the current, etc. Go with your game plan, but don't be afraid to change it if you think the conditions have changed.

Almost always one tack is favored because the wind will not be exactly blowing from the mark. There is an old adage "never tack away from the mark." That is, it's most always best to stay on the favored tack longest. With the shifty winds on the Bay, closeness to the mark may be more important than being windward.

Try to come into the mark on starboard tack for obvious reasons. Know the current at the mark and allow for it in your approach. If you come into the mark on port tack, try to over stand somewhat so that if you have to give to a starboard tack boat and duck around his stern, you can still make the mark.

If you are on starboard tack and there is a reasonable chance that you have another boat on port tack, yell!! Yell loud, mean and ugly. This will alert your competitor and avoid collision. If you yell like you are sure you have him, it may help him make up his mind that he must give you the right of way (maybe he didn't even have to). There never was a penalty for yelling!

Clear air is very important. Stay in clear air if you can. If you are ahead, do everything the boat behind you does (the boat you think you have to beat). Get the same air he gets. Play everything safe. If you are behind, do everything different from the leader (within reason). Keep him guessing. Try to make him sail your race to cover you. Try to stay out of luffing matches. War doesn't pay, but still don't be pushed around either.

Keep a lookout looking under the genoa at ALL TIMES.

Keep cool in the race, think, weigh all of the many variables. Remember, the guy who usually wins is the guy who makes the least mistakes, not the one who made all of the fancy moves and luffed up everybody.

RACING UPWIND IN A TARTAN 27

<i>Light Breeze</i> 3 to 7 knots	<i>Moderate Breeze</i> 8 to 14 knots	<i>Fresh Breeze</i> 15 to 20 knots
MAST RAKE - Slight weather helm desired for lift to windward		
Masthead aft 11-15" to induce weather helm.	Masthead aft 4-6" for slight weather helm. Best overall position	Masthead 0-2" forward To reduce weather helm
BACKSTAY TENSION - to keep forestay from sagging aft as wind increases to maintain pointing ability.		
In smooth water, medium 800 - 1000 psi 300-500 in choppy water	Medium - 800 to 1000 psi	Maximum - 1500 to 1800 psi
CENTERBOARD		
Down Full	Down Full	Down Full
MAIN OUTHAUL TENSION		
Light - Eased Full	Medium	Maximum
MAIN DOWNHAUL OR CUNNINGHAM TENSION		
Minimum for full main. Aft 60%	Medium draft with max aft at 50%	Maximum for flat main with max draft forward
TRAVELER		
Full to windward	Half to Windward from Centerline	At Centerline
MAIN SHEET TRIM - So that the curvature of belly of main matches curvature of Genoa Leech. Typical position indicated.		
Boom to center or slightly to weather. Hook leech to weather to induce weather helm	End of boom 2-6" to lee of centerline. Medium trim.	End of boom 2-6" to lee of centerline. Maximum trim.
GENOA HALYARD OR CUNNINGHAM TENSION - Max. draft best 35-45% from luff. Max draft moves aft as wind increases.		
Medium	Medium to hold max draft at 35-45% location	Maximum to hold max draft at 35-45%
CREW POSITION		
Crew weight distributed to lee and forward to reduce lee helm or induce slight weather helm. Typically centered at lee shroud.	Crew weight distributed to keep boat on fore-aft sailing lines. Use level on cabin sole (floor) to check. Typically centered at forward end of cabin outside handrail on weather side.	Crew weight distributed back to reduce weather helm. Typically crew weight centered at mid position of handrail on weather side and bunched.

GENOA LEAD BLOCKS - Determine "home" position for your Genoa by so positioning the blocks that in moderate air the Genoa luff ticks (spaced $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ up luff) will break at the same time.

4" forward of "home" (or, for a 174% Genoa, in line with rear cabin wall). To cause roundness in foot and max drive from rear cabin wall	At "home" position (for a 174% Genoa, this might be 4" back from rear cabin wall	8" back from "home" position to flatten foot and spill air out of head of Genoa
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GENOA SHEET TENSION Varied to hold max draft position at 35-45% from luff. Settings based on 36" spreaders.

Trim to bring Genoa leach 2-6" from spreader depending on smoothness of water	Trim to bring Genoa leach 2-6" from spreader depending on smoothness of water	Trim to bring Genoa 2-6" from spreader depending on smoothness of water
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HELMSMANSHIP - Steer for windward and leeward Genoa ticks to fly as follows. Use tick pair halfway up luff for reference.

In all breezes, for smooth water, keep windward tick at edge of stall and lee tick flat. For Choppy or rough waters, keep windward tick flat and lee tick flat.

HELMSMANSHIP REACTING TO LIFT OR HEADER - In shifting winds, always sail the lifted tack if it can be determined. In gusting winds, since most gusts involve a clockwise windshift, it's best to be on a starboard tack during an extended gust.

In a lift, have crew ease Genoa sheet then trim as boat is slowly brought up to new course. In a header, slowly bring boat down to new course.	Move tiller slowly to return to proper tick flying	Move tiller rapidly to return to proper tick flying
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HELMSMANSHIP COMING ABOUT

Start slowly bringing the tiller across in light or moderate breeze, keeping the tiller in line with the last course. As Genoa breaks, begin straightening out by returning tiller to centerline of boat. Rudder should never be more than 15 degree angle to keel for minimum braking action.

In fresh breeze, start turn at top of wave. Start tiller slowly but accelerate to get the boat around to avoid irons. If very rough, have crew backwind Genoa before releasing sheet.

SAILSMANSHIP "IN ROUGH WATER"

Full sails give more power - like an auto in low gear. Flat sails are like an auto in high gear - you can develop more speed, but you can be stopped or slowed down more quickly by a series of large chuckholes, which are equivalent to impeding wave action. In rougher water, then, fuller sails (like downshifting to a more powerful gear) are in order.

SAILSMANSHIP IN COMING ABOUT

In coming about, some boat speed is lost. To accelerate back to full speed, fuller sails (higher power setting) are called for, with the sails being trimmed flat as boat speed picks up and the helmsman is able to point higher.

THE SPINNAKER: HEAVY AIR CONTROL

Many sailors wonder why their boat gets out of control when their friend or competitor is able to sail on with his spinnaker. In moderate to heavy air there are three areas of concern which may improve your boat's handling: (1) spinnaker time (2) steering (3) crew work. Knowing that most boats can be a bit sensitive in heavy air, let's look at these ways of improving your performance.

TRIMMING. The spinnaker is built to lift, and with more wind the higher it flies, putting more effort higher in the rig. When this is transferred to transverse or sideways effort, a larger amount of leverage is exerted via the masthead. Thus the ease in which boats begin oscillations and finish with a broach or rounding up. Because of this fact, spinnakers cannot be flown in as much wind when reaching as when downwind. If you are having problems with control downwind, keep the following in mind:

- restrict the spinnaker from flying too high by moving the sheet lead forward and keeping the pole no higher than you would in moderate conditions (maybe even lower).
- keep the sail slightly overtrimmed with the sheet to minimize the spinnaker's oscillations
- keep both clews level to keep the sail's effort balanced
- make slight sheet adjustment to help the helmsman. Too much sheet trim will give excessive windward helm and heel the boat to leeward; too much ease will cause leeward helm and the boat will heel to windward. These adjustments must be quick and can actually hamper oscillations after they have begun.

The helmsman usually has his hands full to say the least, but action on his or her part, coupled with the sheet adjustments can alone bring the boat completely under control even when near the "edge of disaster." An easy way to analyze the situation is to compare the spinnaker with a kite. It is going to fly where it wants to with the wind, slight adjustments in its course being made with sheet trim. It becomes the helmsman's job to keep the boat underneath this kite, even though it may not be a straight course.

Anticipation is the key word here. For instance, if you start oscillating to windward, steer quickly to put the boat back under the spinnaker by heading up. Likewise, if a roll to leeward is coming, quickly bear off to follow the spinnaker on its path downward. These tiller movements may need be only quick jerks at the proper time which is best just before the roll actually occurs. Thus the anticipation. Keeping crew members clear of the tiller is important here.

Crew work obviously plays an important part in keeping the boat under control. As we mentioned, the sheet trim is a key item. You may need one person cranking, another tacking.

Someone to keep a hand on the main sheet ready to ease (especially in reaching or broad reaching) prior to rounding up is vital in eliminating some of the helmsman's excessive weather helm. Keeping the crew weight aft as far as possible can significantly help the boat's handling by keeping the rudder deeper in the water, and the bow up enough to help minimize veering one way or another.

No doubt, there comes a time when prudence tells even the best handled boat to not fly a spinnaker at all. The before mentioned ideas, though, may bring you back under control if problems arise. Or at least allow you to fly your spinnaker in conditions you may have been reluctant to before.



RACE COMMITTEE DUTY

Sooner or later most any sailor is asked to help with the race committee chores. This is interesting work. It also gives the sailor some idea of race committee problems, and maybe next time he won't be so quick to criticize the umpire.

The following is probably enough elementary information to enable a relative novice to organize and run a race committee. Much more detailed information is available through CBYRA.

Anchor approximately at right angles to the wind direction and the other end of the line. Hold the starboard tack side of the line back somewhat so that boats starting down the line will not be in poor shape and have clear air. Make the line wide enough so that there will be room enough for all boats to start, but not so wide that you can't see the other end.

Hang up race committee flag as high as possible for distance visibility. Hang plain white (or sometimes yellow) flag on shroud or any other place where you will sight down the line. It and the mark at the other side of the line is the "official line."

You can use your spinnaker pole for raising and lowering the shapes. Put it up as high as you can and swing it forward. You can throw the shape halyards over the pole (no blocks necessary). Make one halyard for each of three shapes, and have another halyard available someplace for a flag - postponement, etc. There are three shapes raised in the following sequence - white, blue, red. The shape hits the top when the gun goes off:

Warning - 10 minutes before start - White shape - One gun

Preparatory - 5 minutes before start - Blue shape - One gun

Start - Red Shape - One gun.

Each shape comes down 60 seconds before the next gun.

Try to look over the Bay and see if there are other races, ocean ships, gatherings of fishing boats, etc. Try to set a course to avoid them. Don't put up the course too soon. Conditions may change before the start and you may have to change it. (This is a hassle because someone doesn't get the word, always). Don't talk to many people while in starting sequence. It confuses you and them.

The work should be divided among four people. Each person is responsible for his job.

Recorder - Takes care of writing down name and number of all boats. Keeps track of all finishers. Writes down times that timer calls out at finish.

Timer - Looks at watch and calls out time. He reads off minutes and seconds so all can hear. He looks at nothing but his watch.

Starter and Finisher - He shoots gun on times given by timer for start, and checks to see if anyone is over the line early. He yells recalls. At finish, he shoots gun or yells "over" as he sights down the line.

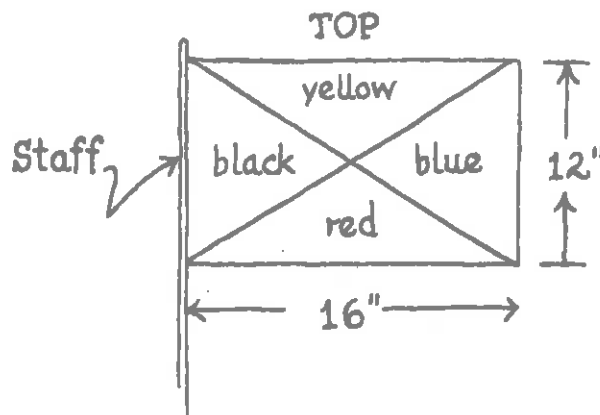
At this finish point, the recorder records the times which are being read off by the timer. In one design racing, it is really not necessary to record elapsed time, but it is interesting to know by how many seconds who beat whom and how long it took to sail the course.

Shape and Flag Raiser - Raises and lowers shapes and flags on cue from starter and/or race committee chairman.

When committee boat is on station at the finish line, it should display a blue shape.

IDENTIFICATION FLAG - CBYRA RACES

The identification flag of the Tartan 27 Class in CBYRA racing is code flag "Z". This flag should be carried on the backstay and on the pulpit in all CBYRA races. Most sailors use size "O" flag which looks like this:



The flags can be purchased from a marine store or can be made by an amateur seamstress.

Don't be embarrassed by some wise guy who tells you your flag is upside down. The yellow side is up.

SAFETY

SAFETY REQUIREMENTS

A number of good lists of safety requirements have been published. One of the best is the 1980 safety requirements required by CBYRA. The are as follows:

- a. Two USCG approved fire extinguishers, readily accessible.
- b. One manual bilge pump.
- c. At least one anchor of not less than 13 pounds with not less than 150 feet of cable of suitable strength. They are to be stowed as desired, but not to be shifted after the preparatory gun except as necessary for use or emergency.
- d. At least one water resistant flashlight with spare batteries and bulb.
- e. First-aid kit and manual.
- f. Fog bell and foghorn (USCG does not approve mouth operated horn (1971)).
- g. Radar reflector.
- h. Shutoff valve at fuel tank.
- i. Compass, marine type, properly installed and adjusted.
- j. Lead line or echo sounder.
- k. Navigation lights, to be shown as required by the International Regulations for Prevention of Collision at Sea, mounted so they will not be masked by sails or heeling of the yacht.
- l. Tools and spare parts, including adequate means to disconnect or sever the standing rigging from the hull in case of need. (A hacksaw or preferably a heavy duty cutter).
- m. Radio receiver capable of receiving weather bulletins.
- n. USCG approved life jackets, one for each crew member.
- o. Safety harnesses for each crew member during night races are strongly urged.
- p. Horseshoe type life ring equipped with a waterproof light (for night races) and drogue within easy reach of the helmsman and ready for instant use.
- q. Four red hand flares stowed in a water proof container.
- r. Heaving line (50 feet minimum length) readily accessible to cockpit.
- s. Soft wood plugs, tapered and of various sizes.
- t. USCG approved engine compartment ventilation system.
- u. Two buckets of stout construction, each with at least nine litres capacity. Each bucket to have a lanyard.
- v. Inside ballast (on some of our yachts) and all other heavy internal fittings (such as batteries, stoves, tanks, engines, etc.) and anchors and chains shall be securely fastened against a capsized.

V.D.S.
(VISUAL DISTRESS SIGNALS)

By now, you have all heard that, effective right now, you have to carry Coast Guard approved distress signals on your boat at all times. When you buy them, be sure that you are getting approved ones. We have encountered some supply houses that are unloading non-approved stock on the unwary sailor.

Because the official regulation is written with the usual government clarity, lots of questions are being asked. Here are a few questions and answers.

Who has to carry the signals?

Any boat over 16 feet in length.

AND between sunset and sunrise, ALL BOATS (like your dinghy) in use have to carry approved night signals.

Are there any exceptions?

1. Persons competing in a recognized parade, regatta, race or other marine event;
2. Manually propelled boats
3. Open sailboats (no engine) under 26'

BUT: No exceptions between sunset and sunrise, or when going to or from a marine event.

What do I have to Carry?

Any combination of devices from the following list which meets the day and the night requirement:

DAY ONLY

Floating Orange Smoke Distress Signals	3
Hand-held Orange Smoke Distress Signals	3
Distress Signal for Boats, Orange Flag	1

NIGHT ONLY

Electric Distress Light for Boats	1
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DAY AND NIGHT

Pistol projected Parachute Red Flare	3
Hand held rocket propelled Red Flare	3
Red Aerial pyrotechnic Flare	3
Hand held Red Flare Distress Signal	3

All of these signals will have a Coast Guard approval number in the 160.xxx series. The pyrotechnics will have an expiration date.

You can comply by having the automatic light (SOS) and the Orange Flag, or with 3 Day and Night Devices, or by having the light (night) and 3 orange smoke's (day).

The Coast Guard approval number requirement also applies to launchers.

What about the signals I have now?

Until July 1, 1982, you can use non-approved devices as follows:

- 1) Aerial red flares, hand-held or pistol projected;
- 2) Orange Smoke, hand-held or floating;
- 3) Signal pistols.

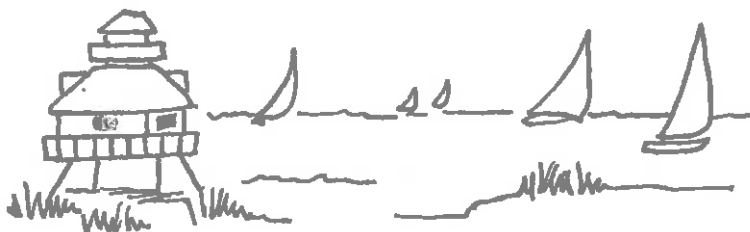
Can I use hand-held red flares (non aerial)?

The Coast Guard added these flares to its approved list after hearing a lot of comment. Approved hand-held flares (bearing a 160.xxx compliance number and expiration date) will satisfy the requirement.

Is there a problem with State law?

The 5th Coast Guard District asked state agencies about this. While the official replies were carefully couched, they probably mean:

- 1) MARYLAND holds that flare pistols (and probably other launchers) are weapons under state law and require a pistol permit. The Maryland DNR has asked the Attorney General to see if a different interpretation is possible.
- 2) VIRGINIA, DISTRICT OF COLUMBIA, NORTH CAROLINA all hold that distress pistols are not weapons and that no permit is required.
- 3) I have not uncovered any instance of a Maryland enforcement action regarding a pistol permit for flare launchers.



MAN OVERBOARD

Inevitably, someone is going to go overboard from your boat. Recovering that person quickly and efficiently will be one of the most difficult operations you will undertake. It is not easy to climb back aboard a Tartan even for swimmers in the best of condition. You need to devise a "man overboard" plan and practice it regularly. The plan will have three parts: 1) getting the boat back to the person overboard, 2) providing immediate assistance, and 3) recovery back aboard. Here is one plan which has worked for at least one skipper:

1) Getting the boat back. Someone aboard needs to keep a constant eye on the person overboard. It is remarkably easy to lose a floating body in the seas, or reflections. If possible, a PFD should be thrown to the victim immediately. (Try not to hit him with it!). If you are under sail, it is probably better to stay under sail than it is to waste time starting the engine, getting sails down, etc. The helmsman should put the boat on a beam reach the instant he hears the "man overboard" signal. He should then count seconds until the crew gets organized for the recovery. He should also note the compass course. As soon as the crew is organized, the helmsman brings the boat about on a reciprocal course and sails back for the same number of seconds. This should bring the boat in the near vicinity of the victim. He can then bring the boat into the wind and let it drift down on the victim. If this happens while you are running under spinnaker, let the sheet fly, collapse the chute and let it fall on deck. Then go on the beam reach.

2. Immediate assistance. If at all possible, avoid putting another person in the water. Then you will have two people to get back aboard. Only if the victim is unconscious, or completely unable to help himself, should you consider sending another person over the side. Get a PFD to the person if he is not wearing one, preferably with a line attached, or get a line to him and bring him alongside. If you have a boarding ladder, rig it. If you don't have a ladder, or if the victim cannot climb aboard, free up a halyard and get a sheet or a dock line to rig a recovery sling. Make a small bowline in one end to clip on the halyard shackle, and tie a "French Bowline" with two large loops in the other end. Put it all together.

3. Recovery back aboard. Get the victim's legs through the bowline loops. have him hang on, and winch him aboard. As the halyard takes the strain, the boat heels enough to haul him straight up. Bring him in, ease the halyard, and he's on deck. Institute hypothermia procedures. You may have to carry the standing end of the halyard back to a primary winch to get enough power. If the victim is unconscious or injured, you may have to deploy a sail and use it as a hammock. In either event, be very careful not to cause additional injury through improper handling. Always bring the victim aboard facing the boat. He can get a serious back injury if he is hauled up with his spine on the gunwale.

Practice your maneuvers in good weather and you'll be prepared for bad weather when most "man overboard" calls are heard.

Better yet, in bad weather, get everyone in PFD's and safety lines.

HYPOTHERMIA

Sailors can suffer from two kinds of hypothermia. Both can be fatal if untreated. Chronic hypothermia occurs when the body is exposed to cold air, damp clothing, or both, for an extended time. Its onset is slow and often unnoticeable. An early symptom may be shivering, but sometimes disorientation, slow responses, or lack of energy signal the onset of chronic hypothermia. The best treatment for it is prevention. In cool weather sailing, keep plenty of warm clothing on, especially a head covering. Keep an eye on the crew and get them warmed up if any signs appear. Chronic hypothermia, in later stages, is accompanied by major electrochemical changes in the body. It can only be treated at a hospital.

Acute hypothermia is usually caused by immersion in cold water. In water below 70°F, the body cannot replace lost heat and hypothermia will eventually result. Mean surface water temperatures in the Bay at Baltimore exceed 70°F only from June to September (four months). Spring and fall sailing accidents or falls overboard are accompanied with extreme danger from hypothermia. When a person is immersed in cold water, the skin and nearby tissues cool very fast. It may be 10 to 15 minutes, however, before the cold reaches the heart and brain. When the body core temperature reaches 90°F, unconsciousness will probably occur. At 85°F, heart failure results.

HYPOTHERMIA IS THE PRINCIPAL CAUSE OF DEATH IN MOST NON-TRAUMATIC BOATING ACCIDENTS.

LETHAL EXPOSURE TABLE

Water Temp (F)	35	45	55	65	70
Swimming	:30	1:15	2:30	4:30	10:00
Floating with PFD	1:30	2:30	3:30	8:30	18:00

As you can see, WEARING A PFD DOUBLES YOUR CHANCES OF SURVIVAL!

But it takes 10 to 20 minutes to put on a PFD in the water, and the effort required burns up body heat at a fast rate. In cold, rough weather, wearing PFDs should be mandatory for all of your crew.

WHAT TO DO IF IT HAPPENS

Incorrect treatment may induce "after-drop", which can be fatal. It is caused by improper warming, allowing cold blood from the extremities to return to the body core and drop core temperature to a fatally low level. Treat the victim gently and do not let him walk around. Move him to shelter and warmth. Remove all wet clothing. Apply heat to the central core of the body (head, neck, sides, groin). Place the victim on a flat surface to permit CPR if needed. Use hot water poured over blankets and towels, or another warm body for rewarming. Even if the victim appears dead, rewarm and apply mouth-to-mouth breathing and CPR.

DO NOT : Give anything to drink, especially alcohol
Rub cold body areas
Rewarm the extremities
Wrap the victim in a blanket without an extra source of heat.

CRUISING
and
MISC.

WEATHER

If you buy a new VHF radio, it will probably have the NOAA weather broadcast channels on it. The three NOAA channels cover most of the East Coast, so you should be able to keep a constant check on the weather. There are very good portable pocket receivers which you can keep at home or in the car to check the weather before you leave. But remember -- the NOAA broadcasts are sometimes taped two or three hours before you hear them and the weather can change very fast. NOAA also publishes a National Weather Services chart which shows the location of weather radio stations, storm warnings, and other weather service information.

CHARTS AND STUFF

NOAA charts can be ordered from
Distribution Division (C 44)
National Ocean Survey
Riverdale, Md 20840

They will send you, free, Chart Catalog No. 1, which lists all current chart printings. Keep your charts up to date.

"Local Notice to Mariners" is published by the Coast Guard. You can get the weekly publication for the 5th District (MD,DC,VA,NC) by writing:
Commander, 5th Coast Guard District
431 Crawford Street
Portsmouth, Va 23705

LNM for the 2nd District can be obtained from the 2nd District HQ at Governor's Island, N.Y.

Tide Tables and Tidal Current Tables are published by NOAA.

The "Light List" is published by the Coast Guard and is available from the Government Printing Office.

The Defense Mapping Agency, Office of Distribution Services, provides many world charts and other publications. Their free catalog can be obtained from:

DMA (Distribution)
6101 MacArthur Blvd.
Washington, D.C. 20315

OVERHEAD CLEARANCE

THE OVERHEAD CLEARANCE OF A TARTAN 27 IS 38'0", UP TO HULL NO. 650.
MODELS AFTER HULL NO. 650 MAY BE 8" HIGHER.

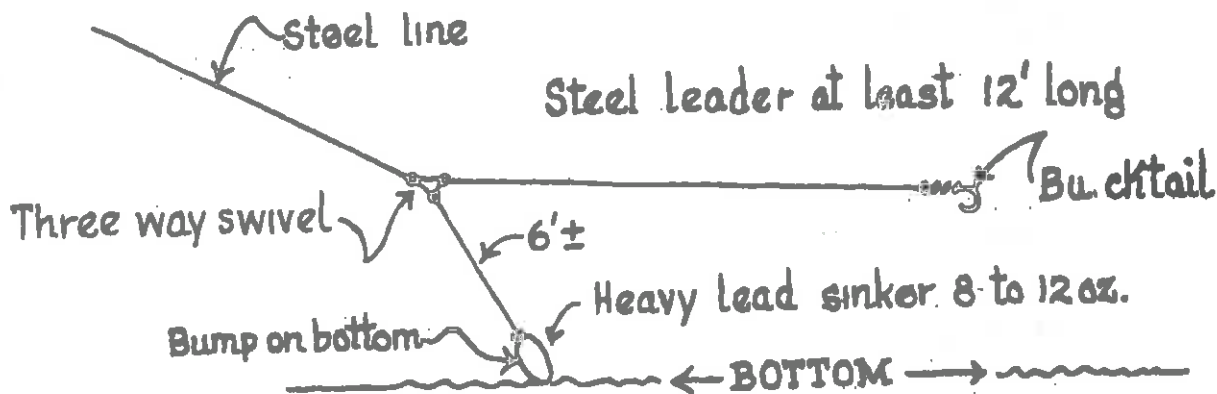
FISHING

Although most sailors leave fishing to the stink-potters, it is fun and an additional cruising activity. Bluefish are plentiful in the Bay most of the summer. There is something new, different and exciting about catching a big fish under sail.

At times the bluefish will school and come to the surface to feed on alewives. If you are in the right place at the right time, they are easy to catch with surface rig and no weights. It is recommended that you at least carry a ball of strong string plus a bucktail or two just in case. Watch those teeth. They are mean fish!

Depending on how involved you wish to get in fishing, you can also have a steel wire leader for your buck tail. Then you will lose only 40% of those you hook.

Bottom trolling can also be done while cruising. This usually requires a rod and reel with a steel wire line rigged something like this:



For perch fishing around the coves, usually from the dinghy, it's nice to have a small, light fly rod for casting or trolling (get crew to row). The best lure is the Mepp's #2.

RADIO COMMUNICATION FOR YOUR BOAT

The modern marine two-way radio or radiotelephone is unquestionably one of the most important items of safety equipment available to owners of pleasure craft, and you are well-advised to purchase an efficient radiotelephone for your boat if you do not already have one. While a radiotelephone can often be a convenience in the sense that you can communicate with other craft or with the shore, its principal purpose is safety. If you encounter difficulties while underway, your call for assistance on your radiotelephone may make the difference between inconvenience and disaster.

A radiotelephone is actually a small radio station. It is similar to a commercial station in the sense that signals transmitted by your radiotelephone can be heard by any radio receiver which is within range and is tuned to the same frequency. It differs from a commercial radio station in that a commercial station broadcasts only. Your radiotelephone has the capability of receiving as well as transmitting, hence the designation "radiotelephone". Since any station within range can receive your messages, these messages become, in a sense, public. For this reason you must be more careful about what you say over the air than you might be in a private conversation over your phone at home.

If you have a boat, you have a choice of three basic types of radiotelephones to install or carry on board: Very High Frequency (VHF) marine; Single Side Band (SSB) marine, and Citizens Band (CB). (As of January 1, 1977, older AM radiotelephones can no longer be used in U.S. waters). Your choice depends on with whom you wish to communicate, range requirements, how far from shore you go and whether or not you wish to have marine radiotelephone service available. If your boat has no electric power source, you can use a portable, battery-powered "walkie-talkie." If there is power on board, you can have a permanently installed transceiver.

Briefly, here is what each type of radiotelephone offers:

VHF Marine. If you operate your boat in an area served by one or more Public Coast stations (marine telephone service), Limited Coast stations (navigation aid, yacht club, marina), and a Coast Guard station, your prime choice should be VHF/FM marine radiotelephone. It may be a permanently installed type (25 watt output) or where short range will suffice, it may be a carry-on walkie-talkie (1.5 watt output). Installation of a masthead antenna will extend the range to approximately 40 miles, i.e., nearly double the distance of a deck located antenna.

SSB Marine. You may also install an SSB marine radio if you already have a VHF marine radio on board. (The FCC requires a vessel to have a VHF set on board before you can get a license for an SSB set). You will only need an SSB set if you require long-range communications (75-1500 miles or more). You can use an SSB set for communicating with the Coast Guard, Public Coast stations, Limited Coast Stations, and other similarly equipped vessels.

CB Transceiver. CB transceivers are used on a great number of recreational vessels. You may be able to communicate directly with the Coast Guard if the nearest station is monitoring CB Channel 9 and if you are within range. You cannot, however, by CB use the marine telephone service. You may be able to communicate with CB'ers on land and afloat depending, of course, on your distance from them.

On a boat with a 12-volt d.c. electrical system, you can install a vehicular-type CB mobile unit. Or, you can use a carry-on CB walkie-talkie. On a vessel not required by law to be equipped with radio communications capabilities, a CB set can be the sole two-way radio on board. Many boats, however, have both a CB set and VHF marine radio.

The past several years have seen an increased tendency on the part of owners of small craft to equip their vessels with radios which operate on CB. This band is crowded with over 700,000 licenses having approximately 3,000,000 radios. This crowded condition is further complicated by the growing tendency of Citizens Band licensees to imitate the hobbying activities of the Amateur Radio Service.

The Citizens Radio Service was established to provide a service for both business and personal use where other means of communications were not available. The CB service has several serious disadvantages compared to the maritime mobile frequencies:

1. There is no distress or calling frequency.
2. The Coast Guard is not equipped in all areas with Citizens Band Radios (Channel 9) and, therefore, cannot always hear a call for help.
3. No broadcasts are made of emergency weather or marine information.
4. No vessels are required to install or monitor Citizens Band Radios.
5. Limited to 5 watts power out and therefore very short range.
6. It is not as reliable as VHF radio.

The Coast Guard in no way supports or encourages use of the Citizens Band for marine safety purposes.

Emergency Position Indicating Radio Beacon (EPIRB). In addition to the three basic types of two-way radios a boat may carry an EPIRB. The EPIRB is basically a small VHF transmitter that operates on 121.5 MHz and 243 MHz, and sends out a distinctive signal on these two frequencies. These frequencies are aeronautical emergency frequencies and are monitored by commercial, private (121.5 MHz) and military (243 MHz) aircraft. The EPIRB may be authorized for use by boats that expect to go beyond normal VHF coverage (usually beyond 20 miles offshore). For use within 20 miles offshore, there is a new type EPIRB on that market that operates on VHF Channels 16/15.

Table. The following table can be used as an aid in selecting the proper channels to install in your VHF radio. The suggested number of channels to be selected from each group is given for recreational vessels equipped with radio-telephones having six and twelve channel capability.

Channel Numbers	Type of Communication	Suggested Channel Selection	
		6 ch.	12 ch.
16	DISTRESS SAFETY & CALLING Intership & Ship to Coast	*	*
6	INTERSHIP SAFETY, Intership NOT to be used for non-safety intership communications	*	*
22A	Communications with U.S. Coast Guard Ship, Coast, or Aircraft Stations	1	1
65A, 66A, 12, 73, 14, 74, 20	PORT OPERATIONS, Intership & Ship to Coast		1
13	NAVIGATIONAL, Intership & Ship to Coast		1
68, 9, 69 71, 78A	NON-COMMERCIAL, Intership & Ship to Coast	1	3
70, 72	NON-COMMERCIAL, Intership		2
24, 84, 25 85, 26, 86, 27, 87, 28	PUBLIC CORRESPONDENCE, Ship to Public Coast	2	2
162.400, 162.500 & 162.475 MHz	NOAA WEATHER SERVICE, Ship Receive Only	**	**

* These channels are REQUIRED to be installed in every ship station equipped with a VHF radio.

** The weather receive channels are half-channels (receive only) one or more of which is recommended to be installed in each ship station. Many manufacturers include one or more of these channels in their sets in addition to the normal six or twelve channel capacity.

For the Annapolis area, a good selection of channels for a six channel VHF radio would be Channels 16, 6, 22A, 68, 26 and 28.

Licenses. You need a ship station license for a marine radio. Use FCC Form 502. If your dealer can't supply this form, you can get one by writing to the Federal Communications Commission, Washington, D. C. 20554. The fee for a five-year license is \$4.00. If you don't want to wait for the formal license to be issued, you can go to any FCC field office and get an interim ship station license for \$10.00. The fee also covers the formal license which is mailed to you later. To operate a marine radio you will also need a Restricted Radiotelephone Operator Permit which you can obtain from an FCC field office or by mail from the FCC in Washington using FCC Form 753. (FCC field offices are listed in telephone directories under "U.S. Government".)

Whether you use only a CB set or both a CB set and a marine radio, you need a CB station license. Use Form 505. The fee for a five-year license is \$4.00. One CB station license can cover all of your CB sets. A separate one is not required for boat use, nor is an operator permit required for using a CB set.

The rules governing marine radio are contained in Volume IV, FCC Rules and Regulations, which is available for \$9.50 from the Superintendent of Documents, Government Printing Office, Washington, D. C. 20402. The FCC has rewritten the rules for marine radiotelephone (VHF) use on pleasureboats. It used to be necessary to own a copy of Part 83 of the FCC rules -- a bulky publication which had little relevance to the pleasureboater. Now, FCC has a very simple rule (Part 83 C which provides all of the rules in an understandable short form. You will have to own a copy of this in order to comply with FCC license requirements. It should be available (free) at most boat stores and marinas by the spring of 1981.

RADIOTELEPHONE HANDBOOK

A handbook to aid boatmen in the proper use of marine radiotelephones has been published by the Radio Technical Commission for Marine Services (RTCM).

The 72-page booklet is titled, "How to Use Your Marine Radiotelephone," and includes sections on radiotelephone licenses and how they are obtained, installation instructions, selecting and using the correct channels for VHF/FM single side-band radios for long-range communications, routine and emergency operating procedures with sample scenarios for ordinary and distress calls, and procedures to place a call to or from a vessel underway through the telephone company.

The appendix includes listing of all FCC field offices, a map of U.S. Coast Guard radio stations ashore, a listing of all stations broadcasting continuous weather forecasts, and the locations, addresses and frequencies of all VHF/FM and medium frequency public coast stations (marine operators).

Copies cost \$2.50 and are available from RTCM, c/o FCC, P. O. Box 19807, Washington, D. C. 20036.

MARINE COMMUNICATIONS

A new free publication is now available entitled, "Mid-Atlantic Marine Communications, Spring 1980." The purpose of this publication is to acquaint the boatmen in Maryland, Virginia and North Carolina with the marine radiotelephone communication systems available for his use. This small booklet published by the U.S. Coast Guard can be obtained by writing: Commander Fifth Coast Guard District, Federal Building, 431 Crawford Street, Portsmouth, Virginia 23705, or by telephoning to: (804) 398-6243.

UNGROUNDING

If you are one of those rare Tartan skippers who runs aground, be sure that you don't do more damage getting pulled off than happened with the grounding. Never let a well-meaning fellow boater pull you off stern first. You will risk serious damage to the rudder and possibly overstrain the transom. Check all around the boat with a lead line to see where the deep water is. Try to get the boat turned around so that the bow is headed toward deep water. And make sure that you are not damaged below the water line, or you can get pulled off and sink.

Depending on the state of the tide, you may be better off to wait for higher water and float off.

Don't forget the centerboard. Sometimes you ground with the board down, and, provided it isn't wedged into the bottom, you can get off by pulling the board up.

Carry a halyard off to leeward and try to heel the boat.

Try to carry an anchor out to deeper water and kedge off, running the rode through a bow chock and back to a winch. If you row the anchor out in a dinghy, take the whole rode with you and pay it out from the dinghy.

Otherwise, it's nearly impossible. No dinghy? You can float the anchor out on one or two lifejackets.

Use your engine, but carefully. It probably will help if the propellor is not fouled.

If you are being helped by a big powerboat, be careful of overstressing the bow cleat. Remember that a nylon towline stretches and eventually breaks like a big rubber band, so keep people off the foredeck when the line is stressed.



DOCUMENTATION VS. REGISTRATION

There has always been much discussion about documenting your boat with the U. S. Coast Guard or registering with the State. Either one is a personal decision.

Vessel documentation is more complicated and more expensive than State registration. A comparison of the two should be carefully considered.

Advantages:

USCG Documentation

Prestige
Better Coast Guard Service
Assistance of a Maritime Lawyer
Clear title certification on resale
Better service in foreign ports

State Registration

Less expensive on both initial and re-registration - \$7.00 and \$5.00, respectively

Disadvantages:

Documentation - Initial Fee \$75.00
Annual Re-Certification \$15.00

Numbers on both sides of bow.
Possible processing problems in foreign ports.

U. S. Coast Guard Vessel Documentation Procedure:

Obtain from boat dealer:

1. Declaration of Officer of Incorporated Company
2. Master Carpenter's Certificate
3. Bill of Sale of Enrolled or Licensed Yacht

Fill out at Coast Guard Vessel Documentation Office - Nearest Coast Guard District Headquarters:

1. Managing Owner's Certificate - signed by spouse if jointly owned.
2. Request for Admeasurement.
3. Designation of Home Port of Vessel.
4. Application of owner for and Notice of Award of Official Number and Signal letters.
5. Affidavit of Good Faith of Mortgagor and have notarized.
6. Declaration of Partner, Joint Owner, or Member of Co-Partnership or or Unincorporated or Association.

State Vessel Registration:

Fill out at State Natural Resources Office an Application of Registration and have available the Certificate of Origin, Bill of Sale. Fees include Titling Fee (\$2.00) and Registration Fee (\$5.00). Annual renewal is \$5.00.

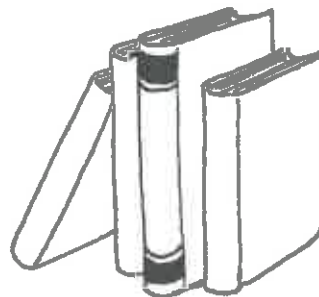
DO'S AND DON'TS FOR THE TARTAN 27 SAILOR

1. Never allow steel wool aboard your boat. The tiny, loose particles will make rust stains and be difficult to eliminate. Bronze wool is fine.
2. Don't clean your ports (windows) with anything abrasive such as Dutch cleanser, dirty rag or mop. The glass or plexiglass scratches easily.
3. Don't get creosote or tar on your lines or bumpers. If you do, get it off immediately with lacquer thinner or other solvent. It will mess up your boat and your friends.
4. Don't put anything open or unsealed in the ice box. Resultant mess and spoilage from the residue is hard to remove.
5. Don't allow gasoline to lay on the deck too long. It will stain the fiberglass.
6. Don't allow boxes or suitcases aboard. Square corners don't fit. Use bags.
7. When shaking out the jiffy reef, don't loosen the tack and clew before you untie the middle reef points. The sail will rip if strain is on middle.
8. Don't allow open candles on board. Use the type like snifter brandy glasses without the stems with bottom filled with wax. Safe if upset and some have citranella in the wax to repel bugs.
9. Don't go out in your dinky without taking cushion type life preservers. Besides being softer, it's a \$20 fine if the Marine Police catch you without them.
10. Don't light your stove unless you first have a sauce pan or coffee pot filled with water in the sink. Water is very effective on alcohol fires and it will not mess up your boat like a regular fire extinguisher. (You'll probably be using the water anyway).
11. Do polish aluminum spars with aluminum jelly rather than wax.
12. For rubber exterior items such as wind scoops, use "Star-Bright" car polish.
13. Check out recreational vehicle stores for many hardware items usefull on the boat. Several interior items such as fresh water lines, pumps, faucets, table hardware, etc., are identical and much cheaper. Be sure, however, that they are corrosion proof.
14. Don't top off your gas tank in cool weather if you expect it to get hot before you use the engine. The gas will expand and run out of the breather on deck or cause a pressure and a leak in the fill pipe.

BOOKS FOR CRUISING

Recommended to have on board for general information and technical assistance, but mostly for pleasure.

- Chart Books: Guide to Cruising Maryland Waters and/or Waterway Guide
Charts - New York to Norfolk
- Boating Almanac - Volume 4 (includes tide and current tables)
- Insignia Guide - Available from Cruising World Publications, Inc.
- Complete Field Guide to American Wildlife - Henry Hill Collins, Jr.
- Guide to the Stars - Any good paperback
- Trees of the Eastern and Central United States and Canada - Wm. M. Harlow - paperback
- Chesapeake Bay in Maryland - Alice Jane Lippson - Johns Hopkins University Press - Complete with drawings and charts in color on salinity, tides, marshes, distribution and life patterns of fish, eels, geese, oysters, crabs
- Understanding the Chesapeake - Arthur W. Sherwood, Tidewater Publishers.
Revised in 1980. Presents points of view of the Bay from a sailor, consumer, businessman, learner; also the economic, geological, oceanographic and biological view.
- Galley Gourmet - Ferne Raveson - Compact and easy to use cook book.
- Beautiful Swimmers - William W. Warner, Pulitzer Prize Winner
- Chesapeake - James Mitchener - Made "Best Seller" list.
- Chesapeake Bay Sailing Craft - Howard Chapelle
- Cruising Guide to the Chesapeake (Revised) Blanchard and Stone
- How to Catch a Crab - Wm. Randolph Poppe
- Rivers of the Eastern Shore (recently back in print) - Hulbert Fostner
- The Racing Cruiser - Richard Henderson
- Wye Island - Boyd Gibbons
- Mid-Atlantic Marine Communications, U. S. Coast Guard, Portsmouth
- Navigation Rules (International-Inland), U. S. Coast Guard
- Piloting - Chapman
- The American Practical Navigator (Publication #9) Government Printing Office
- The Ship's Medicine Chest (Publ. #HSA-78-2024) - U.S. Government Printing Office
- Games: Uno, Checkers, Scrabble, Crossword Puzzle Book, Cribbage, 2 decks of cards.



TARTAN 27 RAFTING

Nothing is more beautiful to some Tartan 27 owners than the sight of a number of Tartan 27's lying side by side in a raft, and much pleasure is found in several Tartan 27's moored together on one anchor.

When arriving at a likely spot, the anchor boat should be given time to set his anchor and pay out ample line before the next boat prepares to tie up. The skipper of the anchor boat should motion for those standing by to come alongside when he is ready to receive them.

As other yachts approach, the skipper should note the anchor boat and go on the side which will keep the raft balanced. Don't come alongside without first getting permission from the rafted boat.

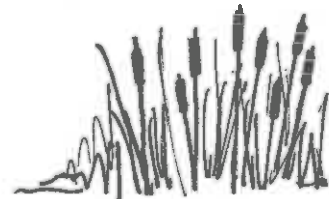
When in the raft, it is polite to walk from boat to boat across the forward decks rather than through the cockpits. Permission to travel thus through the raft is pretty much understood, as owners do not raft if they are not willing to be invaded. Of course, much of the fun comes from visiting up and down the raft.

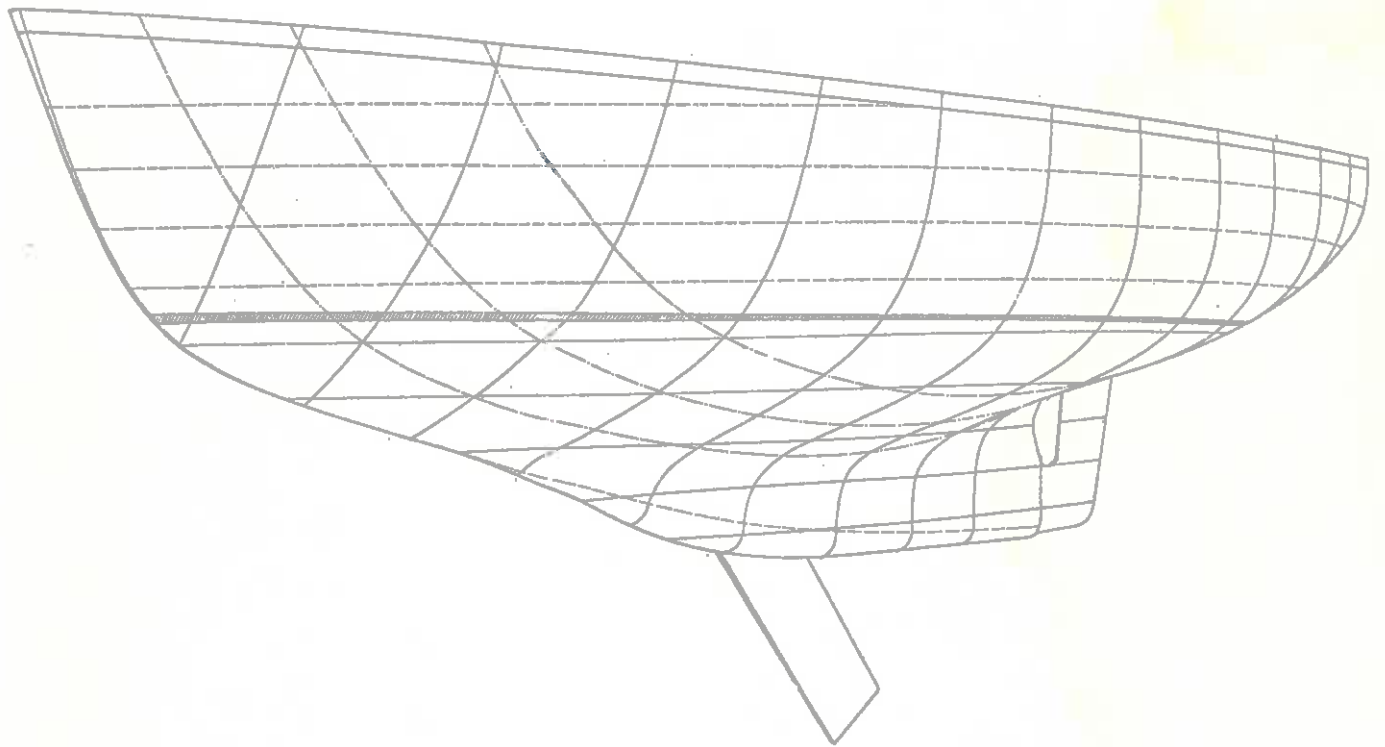
If you wish to leave the raft before it is expected to break, make it known well in advance so that your neighbors can prepare for the change. The best way to leave the raft if you are not the end boat is to back out. Pass your neighbor's bow line over to your other neighbor. Remove spring lines. Get many hands to hold off. Watch the spreaders as you back. After you leave, the other boats will pull together with their lines and close the gap.

If you have a dinghy and some of the other rafters do not, it's nice to offer them the use of yours. Many Tartan 27 racers appreciate such hospitality when they have left theirs behind in the interest of speed.

It is always considerate to find out from the anchor boat when he plans to leave and to make arrangements to leave before then (or for the next boat to anchor). If you are the last to leave, stick around and make sure the anchor boat gets his anchor up. Sometimes, if the raft is large and the wind was up, the anchor digs in very deep and is hard to break loose. You can at least give him moral support and free advice!

If bad weather is forecast, break the raft and anchor separately as the festivities wane. A heavy blow can cause damage and/or loosen the anchor.





SAIL PLAN

This diagram (using a Type III hull) shows the basic sail plan for the Tartan 27. The sail plan is identical for all Tartan 27's except the yawl rig has an additional mizzen sail. Various size jibs/genoas can be used with a 176% genoa maximum size specified for class racing.

