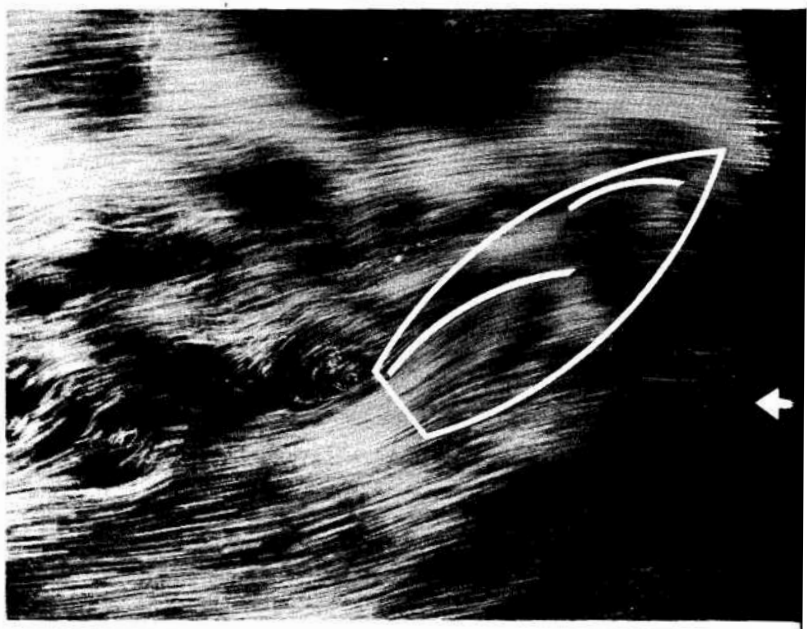
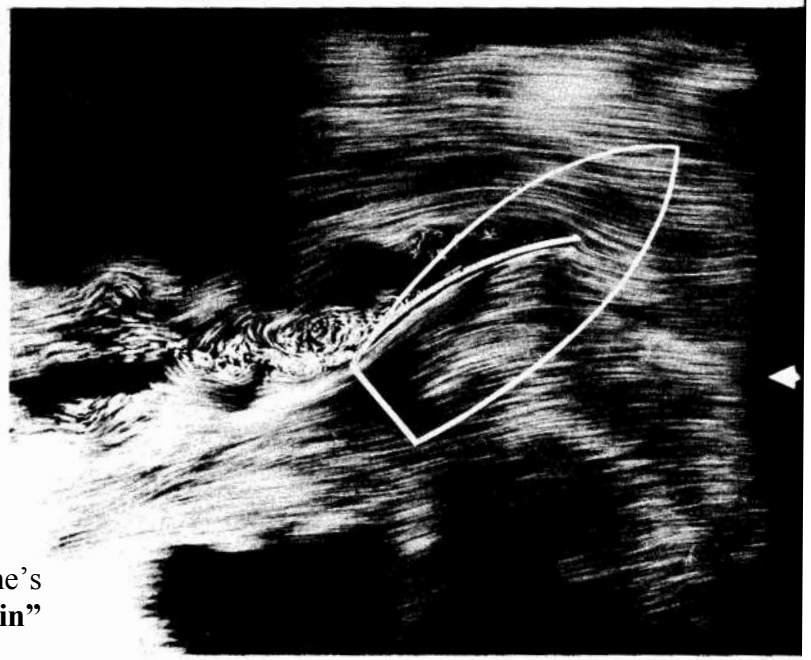
Eric Twiname's wind flow diagrams

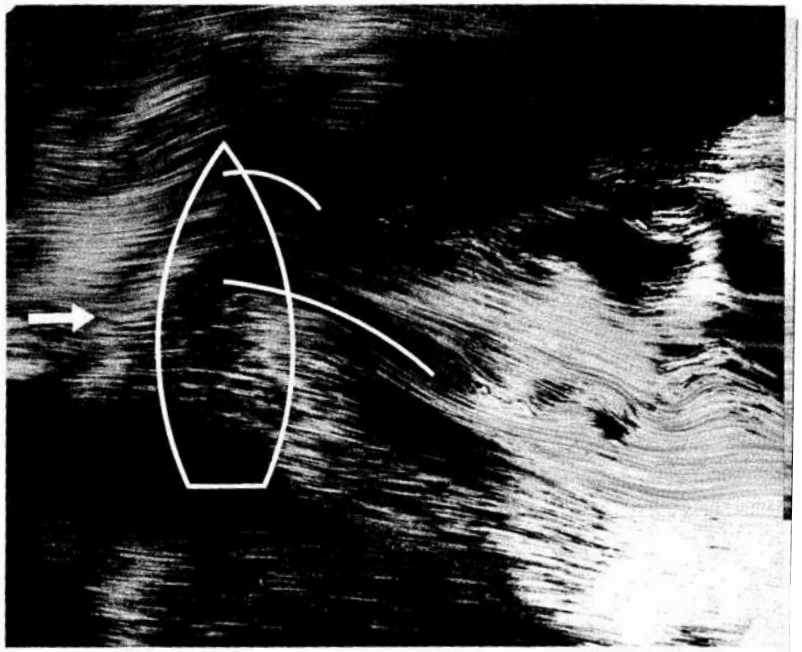


14 A simulation of wind flow round a beating rig using a water model. The flow is quite severely bent by the rig, particularly directly downwind and on the windward side of the boat.

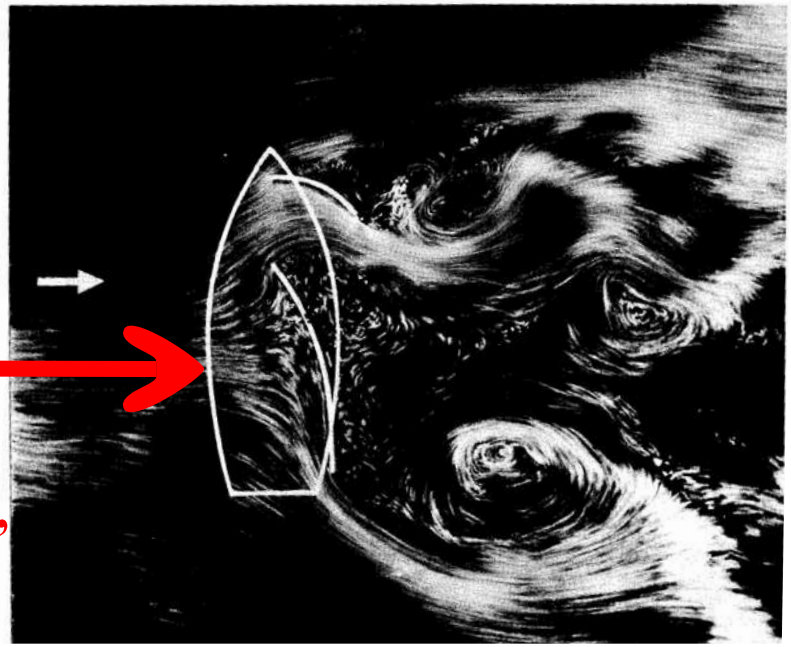


15 The mainsail shape alone set at the same angle to the flow. Without the jib the aft part of the sail is stalled, so turbulence increases and the driving force is reduced. *William Holden*

Diagrams are from Eric Twiname's book,**"Start to Win"**

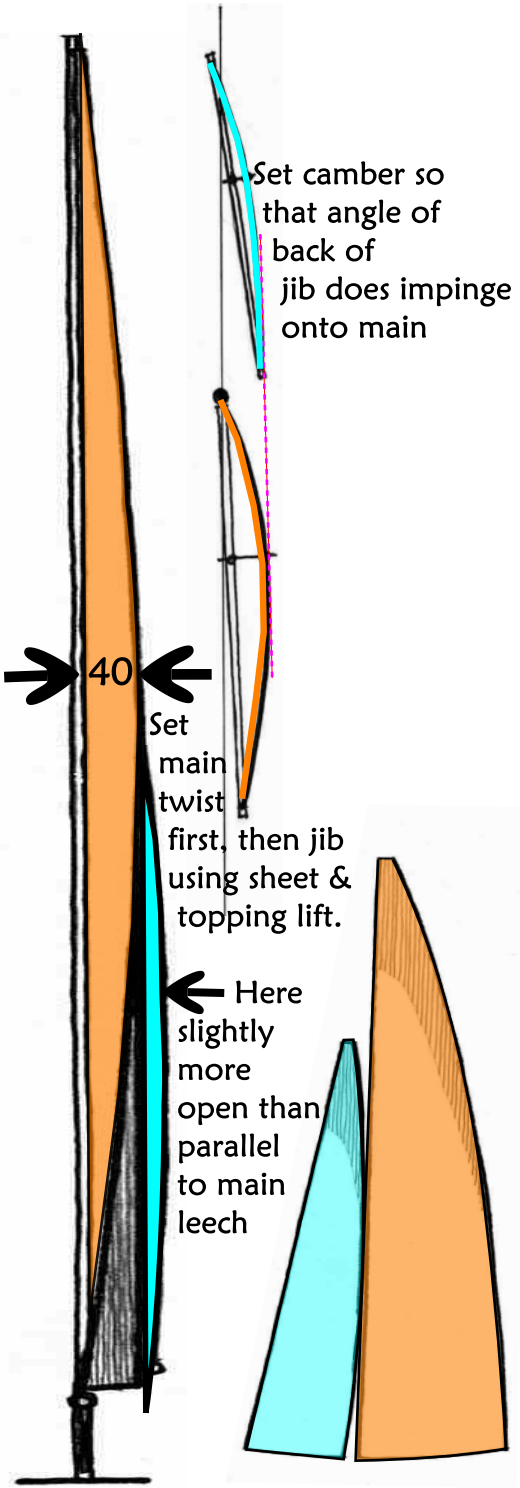


21 Reaching with the apparent wind abeam. The forward driving force comes from bending the wind rather than slowing it. Dirty wind does not slow a downwind boat much on a beam reach where spinnakers aren't being used. *William Holden*



22 The mainsail stalls when sheeted in too hard and the sail's driving force reduces. The force also acts more sideways and less forwards, increasing the tendency to heel and decreasing forward speed. *William Holden*

Shows why **"If in doubt let them out"** works!



SAIL TRIMMING before going afloat

A few tips from Roger Stollery on trimming a two sail rig

Sail camber

The camber in the jib should be slightly less than that in the mainsail, which should vary, very approximately, between 1 in 6 and 1 in 12 depending on the wind strength. As sails have different amounts of fullness cut into them, assess the camber in the area of maximum fullness and not just at the boom. To achieve this there may be little fullness at the boom. In light airs adjust the downhaul tensions from zero to the minimum amount that just removes the wrinkles as the wind increases. As the wind blows harder adjust the backstay to take out any luff curve fullness in the mainsail. Extra downhaul tension will bring the fullness forward and this compressive force will increase the bend in the mast.

Boom angles

When the sails are pulled in to the beating trim, the angle of the jib relative to the main should be parallel or at a slightly greater angle. As the sheets are eased, make sure that the booms go out at an even rate so that the force generated from each sail stays in balance.

For a conventional rig ensure that when the sheeting 'trim' is used, the jib sheet pulls in horizontally whilst the mainsheet pulls in with some downforce at the end of the travel. Adjust the sheet take off points along the booms and/or height of the sheeting pillar until this is achieved. For an M swing rig, the distance between the aft end of the jib boom and the mast should be about 45mm for an 'A' rig and 60mm for a 'C' rig. The sheet should pull in the 'yard' with a horizontal force to avoid upsetting the balance of forces within the rig.

Mainsail twist

Set the twist in the mainsail first, by adjusting the kicker or mainsail clew downhaul or jib halyard on a Stollery swing rig. The leech of the mainsail should twist about 1 in 40 (40mm in a 1610mm leech length) from the straight line between head and clew. No twist makes a boat slow with a tendency to point higher. Too much twist also slows a boat by the drag of a flapping leech, but is less serious than too little twist, particularly in very light and very strong winds or gusty winds like spring and autumn North Westerlies and those blowing around obstructions. If in doubt err towards having more twist.

Jib twist

Pull the sails in to the beating trim and set the twist in the jib to match that of the mainsail twist by adjusting the leech line. The leech should have just a little bit more twist than is sufficient to make the leeches parallel when viewed from aft. If the 'slot' is too small the boat will appear 'dead' without speed to windward. If in doubt err on having the slot more open.

Trim testing

Test your windward trim by holding your boat into the wind as if it were sailing as close as possible to windward with the sails fully drawing.

Rotate the boat closer to the wind and observe which sail luffs or flaps first. With an ideal trim both should flap together as shown by the shaded area in the diagram. If the front of the sails luffs first then reduce the fullness in the sails. If just the main luffs first, open the slot by jib sheet or leech line adjustment or flatten the main. Adjust and test several times until the ideal is approached. Always check your trim before launching and adjust to suit the wind conditions, which will always be changing.

Watch and talk to the experts

The importance of good sail trim cannot be emphasized enough. It is all-important in vane racing and one of the key factors in radio racing. You will rarely see vane sailors racing with a poor sail trim, because vane sailing is all about sail trimming. This has made them masters of this art and therefore they can concentrate on all the other aspects that are required for the best performance. Watch how top skippers set their sails and don't be afraid to copy them. Many will be only too pleased to pass on their knowledge, so don't be afraid to ask questions.

Wind indicators

There are two items of equipment that will help you to 'see' the wind and how to trim your sails to its constantly changing direction and strength: a flag and telltales on the luff of the jib. Without these you are, to some extent, blind to what the wind is doing to your boat out there in the distance.

SAIL TRIMMING once afloat

A perfect trim set up on the shore is only part of getting a good performance. This effort will be wasted if the sail trim is not adjusted to achieve this in the constantly changing winds on our enclosed lakes.

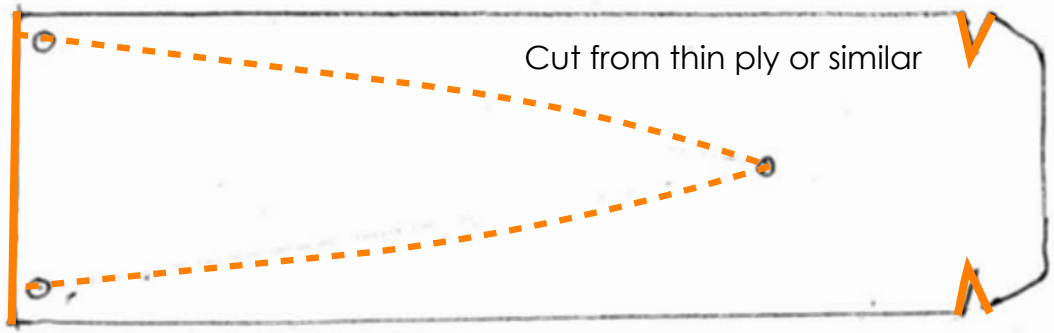
Sailing to windward is not just about pulling the sheets hard in and steering. In all wind strengths, easing the sheets helps to restore speed lost immediately after a tack.

In very light fluky airs your flag and telltales may indicate that the wind has come more off the side and requires the sheets to be eased to gain speed. Steering the whole boat closer to the wind may be too slow to take advantage of such a shift. Speed is everything in these conditions, so avoid using the braking effect of the rudder.

When reaching it is very important to let your sails out as much as possible to prevent them stalling and losing drive. If the flag at the masthead is making a big angle with the top of the mainsail, let your sails out. Lower down if your leeward telltale is not streaming with the sail, let your sails out. Airflow stalled over sails that are pulled in too hard, is the most common fault made by sailors of all sizes of boats, not just models. However it is so easy for radio sailors to pull that winch stick down in the excitement of racing in an attempt to go faster, so don't do it!

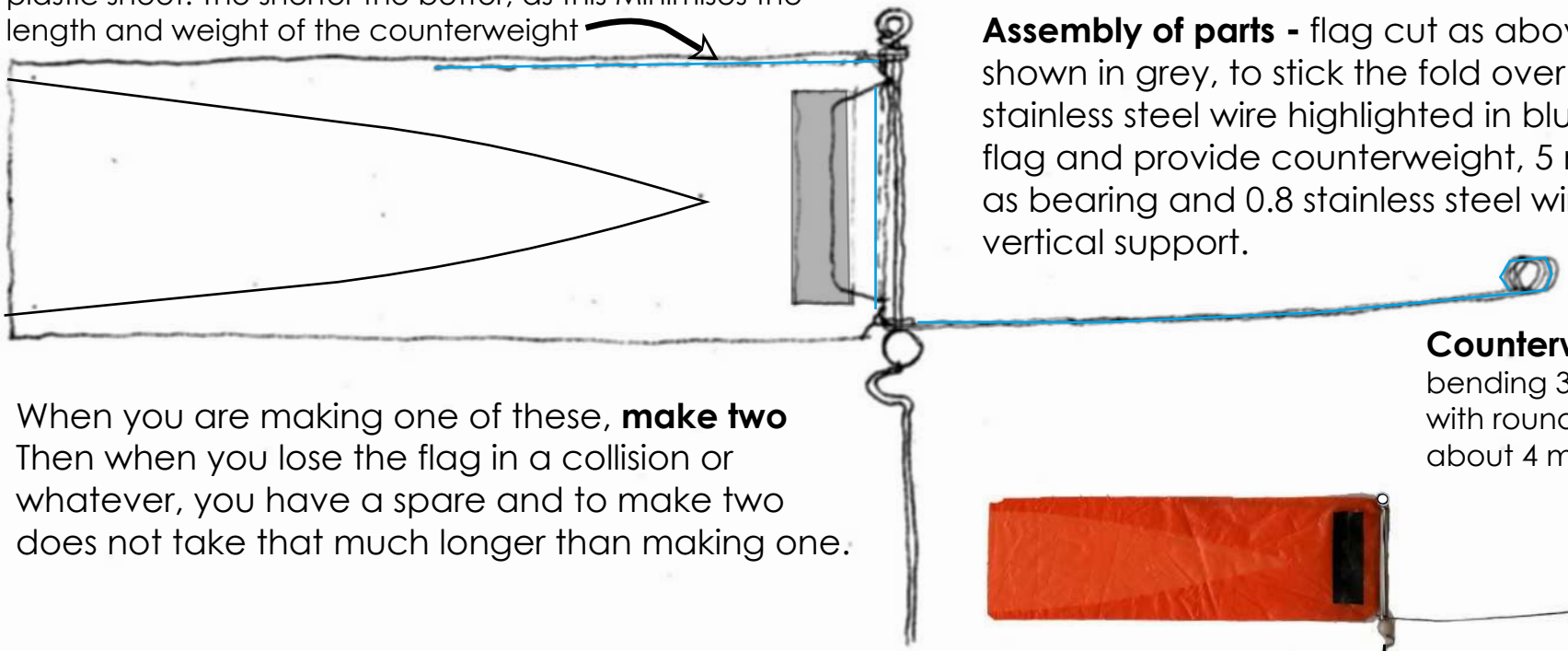
If in doubt let them out!

Lightweight WIND INDICATOR for MYA classes



Pattern for 'cutting' lightweight, colourful polythene or other plastic sheet. Fold sheet and use fold as the top edge and cut other edges with a hot soldering iron, except where indicated in orange. These should be cut with scissors or a sharp knife. Through the holes shown, mark dots and then cut out the vee shape on one side of the flag, as shown dotted.

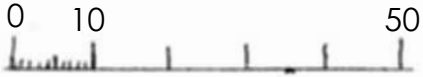
This **length of 0.5mm wire** needs to be just more than half the length of the flag, depending on the stiffness of the plastic sheet. The shorter the better, as this Minimises the length and weight of the counterweight



Assembly of parts - flag cut as above, PVC tape shown in grey, to stick the fold over part, 0.5 mm stainless steel wire highlighted in blue to support flag and provide counterweight, 5 mm fishing ball as bearing and 0.8 stainless steel wire bent to form vertical support.

Counterweight formed by bending 3 turns of the wire with round nose pliers at about 4 mm diameter size.

When you are making one of these, **make two** Then when you lose the flag in a collision or whatever, you have a spare and to make two does not take that much longer than making one.



Scale mm - full-size at A4