

THE INTERNATIONAL SOLING CLASS

by STU WALKER

Jan Linge designed and built the first Soling in 1964. Three years later in the second of two trials, its remarkable range of performance, easily controllable in a gale, responsive in a drifter, resulted in its selection as the IYRU's Three-Man Keelboat. Sixty boats were built in 1967, 300 in 1968, and, with the impetus of Olympic selection, another 1600 in 40 countries between 1968 and 1972. Buddy Melges and Paul Elvstrom, the dominant figures in the early years of the Class, met at Kiel in the '72 Olympic Games and Melges won the Gold Medal.

As the intensity of competition and the standard of performance increased, the large number of local fleets which characterized the Class in the '70's gradually gave way to concentrations in major yachting centers. However, the efforts of the top sailors to support the newcomers maintained a relative homogeneity and the Class became known for its singular success in mixing all levels of competence in its many regattas. With a single mainsail and shrouds mounted on tracks, sailors of all ages - from 16 to 60 - and weights from 70 to 90 Kgs (average all up crew weight 255 Kgs) compete successfully. A new surge of boat construction from three very active builders has resulted from the recent opportunities for sponsorship.

Today in Europe Olympic aspirants participate in a year-round circuit of twenty major regattas and from April to October European Lake sailors travel from country to country competing in regional regattas almost every weekend. In North America and Australia several major regattas each year draw boats from opposite coasts together, but club racing is typical. Solings are also sailed in many Asian countries and in the larger countries of South America. The Olympic Regatta attracts entries from 22 to 25 different nations.

Match racing was introduced to the Class with the donation of the Ken Berkeley Cup in 1979. Since then interest has steadily increased and, with the announcement of the new Olympic match racing format, Soling match racing regattas are being conducted in North and South America, Europe, Asia, and Australia. The majority of the world's ranked match racers are present or former Soling sailors.

The most important advance in the management of the Soling in the past decade (perhaps since its design) has been the attachment of the shrouds to cars mounted on tracks to facilitate use of the fixed spreader rig. This innovation permits the use of but one mainsail in all conditions (without reefing) and facilitates the adaptation of which ever of the two permitted jibs is in use to a wide range of wind velocities and waves. The purpose of the shroud adjustment is to maintain jibstay sag within the range appropriate to the jib without altering mast bend beyond the range appropriate to the mainsail.

In light air this requires "pre-bend" - the induction of jibstay sag and modest mast bend (the amount for which the mainsail was designed) with or without only minimal backstay tension. A light air jib such as the North V-i needs 3"-4" of jibstay sag to properly distribute the draft while modern mainsails require only 1" of mast bend. By pushing the upper shroud cars to the forward legal limit the spreader tips and the mast at their level are forced forward, bending the mast about two inches (without backstay tension). The resultant shortening of the mast column eases the jibstay into a 3"-4" sag with minimal

wind pressure. In the lower wind ranges variations in mainsheet tension are sufficient to keep the jibstay from excess sag and from 6-8 knots a little backstay tension can be added without excessively bending the mast. At some increased wind velocity (usually between 3 and 8 knots) the shroud cars must be moved aft (to a position midway between full forward and mid-mast) - sooner in waves, later in smooth water.

In light air to windward jib shape is the most important determinant of success and is achieved primarily by control of jibstay sag, the jib trimmer calling for more or less and the main trimmer responding with more or less mainsheet and backstay tension. When these adjustments are insufficient (without adversely affecting mainsail shape) to control the jibstay sag, the shroud cars are moved aft. The attachment of the sheet to the clewboard and the position of the luff of the jib on the jibstay are based upon the response of the telltales, up and down the luff, responding simultaneously to variations in heading (erring toward the lower telltales reacting first - the bottom of the jib slightly flatter than the top). It is best to use a clew hole in moderate air that permits the tack to be an inch or so above the deck so that sheeting angle adjustments can be made by moving the jib luff down the stay if the wind velocity increases (and up the stay if it decreases) without changing the clew hole. (All modern boats have multi-part controls of tack downhaul and halyard (uphaul) led to each rail for easy adjustment - as well as jib traveller and a fine jibsheet adjustment.)

The jib should always be twisted - more in light air and in waves. The chord of the foot, with the centre of the traveller car set between 11 1/2" and 14" from the centerline, should be 10°-15° inside of the position of the upper batten. A telltale attached to the leech at the latter position should (according to Dave Curtis) "never, never, never stall". A window in the mainsail is usually provided through which this telltale can be observed. "When in doubt, let it out (the jib sheet)". The resistance of the jib leech to stalling is improved by using clew holes farther forward or displacing the sail down the jibstay, i.e., by increasing its twist.

In light to moderate air to windward the mainsail should be set on a mast that sags to leeward (achieved by slack lower shrouds). With only the amount of fore and aft bend (2") for which the sail was designed. If the jibstay sags or pumps excessively despite sufficient mainsheet and backstay tension to bend the mast more than 2", the responses should be, first, to bring the shroud cars aft and, second, to increase the lower shroud tension. The concept of the "Kostecki Wobble" is that some (but very little) jibstay pumping is desirable, i.e., trim to just, but no more than just, eliminate it. With the jibstay controlled the mainsheet/traveller couple should be adjusted to bring the boom to the centerline (or in ideal conditions slightly to windward of it) and to keep a telltale on the leech at the upper batten just flowing. This telltale is almost as critical as that on the upper jib leech. Only in optimal moderate air, smooth water conditions when the boat is up to speed should it be completely stalled; when slowed by tacking, dirty air, waves, etc., it must be flowing. The outhaul should usually be trimmed hard to prevent the lower leech from hooking (particularly in light air), and the Cunningham left without tension until the boat is overpowered.

In heavy air to windward the shroud tracks are used primarily to reduce jibstay sag by stiffening the mast. By pulling the upper shroud cars aft the spreader tips are moved aft preventing the midmast from bending forward. At the same time lateral mast sag is

eliminated by tensioning the lower shrouds and/or pulling their cars aft. Above 18-20 knots the most important adjustment is the tensioning of the lower shrouds above the tension of the uppers (upper tension 600-800 pounds) and pulling them full aft (to a tension much greater than the uppers). The result is that the top of the mast falls to leeward, eases the upper mainsail leech, and permits the mainsail to be set with its lower portion on the centerline (for pointing) and its upper portion twisted off 20° or more to reduce heeling and improve balance.

In heavy air the jibstay will always sag more than is desired so that all shroud cars should usually be full aft and the backstay tensioned to both flatten the main and control the jibstay. It is possible to move the shroud cars too far aft, however, resulting in a tight jibstay but too full a mainsail and possible to use too much backstay, resulting in too flat a mainsail and, through excessive mast bend, an eased jibstay. The jib tack should be trimmed down to the deck and, if necessary, the sheet attached at a hole farther forward to facilitate twist. If the boat is not driving through the waves, lies over and wallows when a gust hits, the most important adjustment is to ease the jibsheet. The jib top should be more open, the upper telltale even more resistant to stalling. The traveller car should be eased slightly and eased farther in gusts.

The mainsail should be flattened through the tip fall-off discussed above and through fore and aft mast-bend of 5"-6" induced by backstay tension. The boom can be carried close to centerline with adjustments for gusts in smooth water made by (slightly) easing the traveller and heading up and in waves by tensioning the backstay. The mainsheet should be close to two-blocked. The usual rake (approximately 29" - measured by the amount that the jibstay length (when under tension to windward) exceeds the hounds to deck mast length) should be decreased if necessary (though usually not) to permit adequate mainsheet tension. The lowers should be tensioned and the sheet eased until the boat seems lively, shoots ahead, rather than wallowing, in gusts. The outhaul should be full out and the Cunningham tensioned only enough for balance - usually some horizontal wrinkles persist even in heavy air. The mainsail may luff in a smooth inward bulge, but should never slat or flog. The vang should be tensioned, if necessary, to flatten the lower portion of the main and stop the mast from pumping. If the mainsail continues to flog, the jibsheet will need to be eased and the jib traveller dropped until the jib leech conforms to the mainsail's leeward bulge and the flogging stops.

The control of jibstay sag/mast bend is influenced by the tension in the shrouds, the angles, both horizontal and vertical, which the shroud tracks make with the mast, by the length (optimal forward movement is limited by Class Rule, aft not significantly affected) of the tracks, by the position of the spreaders in the mast, by the angle of the spreaders to the mast, by the position of the shrouds in the spreader tips. The usual arrangement is to have the tracks parallel to the centerline, at a slope perpendicular to the mast rake, and with the spreaders perpendicular to and in the middle of the mast. However, increased pre-bend, optimal for light air, smooth water sailing, can be achieved by high upper shroud tension, slack lowers, upper shroud tracks with minimal rise forward (or toeing out), and spreaders set (or swept) back in the mast or shrouds set back in the spreader tips. Increased stiffening, optimal for heavy air and waves, can be achieved by moderate upper and high lower shroud tension, upper shroud tracks with increased rise forward

and/or toeing in, and spreaders set (or swept) forward in the mast or shrouds set forward in the spreader tips.

Offwind speed is primarily dependent upon good crew work particularly by good spinnaker sheet control. On the reach many (but not all) have the middle man control the sheet and the foredeck man control the guy which comes forward above him. By pumping the guy the foredeck man can aid the initiation of surfing (not more than twice per wave) and prevent broaching (for which purpose unlimited pumping is permitted). The guy should never allow the pole to be less than one foot off the jibstay (which sags to leeward). When the pole is farther forward the spinnaker becomes too full and in strong winds the boat goes slower and makes more leeway. When reaching the pole should (except in very light air) always be fully elevated (to the upper ring or to the upper legal limit) but should not be angled more than 15 above the horizontal as this diminishes the sails projected area and, in heavy air, shifts the draft aft to increase heeling and windward yawing. (And in very strong winds makes the sail more difficult to manage.) Except in very strong winds - above twenty-five knots - even on tight reaches the large spinnaker can be carried by an experienced crew. (The small spinnaker is now limited to use in very strong winds on tight reaches particularly in crowded conditions and in very light air downwind when it permits the boat to make a net gain by sailing lower). When the first reach becomes too tight standard practice is to set the big spinnaker and ride fast as far down the leg as possible. Then on the mark approach (with sheet and guy tightly trimmed) the spinnaker halyard is eased to permit the sail to float out ahead and to leeward while the boat is brought back on course. The halyard is rehoisted just before the jibe.

Some have the spinnaker halyard led aft for the helmsman to hoist - most at the mast base for the forward crew to hoist immediately after he throws up the spinnaker roll (packed neatly for easy opening). In the latter case the helmsman pulls the guy aft rapidly and the middle man takes the sheet. In strong winds it is essential that as the spinnaker is trimmed, the crew (at least the big one), hop over the rail into a full hike, the vang is released (or in hand for release), and the foredeck man pumps the guy for that first important wave. Thereafter, the boat is hiked sufficiently to keep it "on its feet", the spinnaker man keeps the luff folding (at least a foot) to assure that the spinnaker is facing as far forward as possible, the foredeck man pumps the guy as necessary, and the vang is played to maintain the optimal angle of heel (in, if the crew are dragging, out, if the crew are not!). Keeping the boat bolt upright (with the main ragging completely, if necessary) is essential to proper wave riding - which in strong winds is the determinant of reaching success.

Reach to reach jibing is the most difficult maneuver in the Soling - and even the best periodically fail - particularly in a crowd. In light air it is essential to move the spinnaker across the bow of the turning boat at a speed greater than the turn - as the apparent wind shifts rapidly. In heavy air the keys are to keep the spinnaker choked - the old guy trimmed full aft (and in very strong winds, cleated), with the old sheet minimally eased, and for the new guy to be held down by the tight sheet, the middle man's hand, or best, by a tightened twing line - so that the foredeck man can reach it easily (after taking the pole completely off the spinnaker). The foredeck man should attach the pole to the new guy and with his outboard hand slam the pole forward against the tack. This maneuver

brings the inner end of the pole up into position so that in coordination with the easing of the previously tight (in very heavy air, cleated) guy, it can be easily reattached to the mast. In very heavy air a wide gradual swing, even giving up a couple of boat lengths in order to be outside, with both sheets cleated, the spinnaker choked, the middle man only needing to bring the boom across, and the helmsman only needing to steer, down slowly to the jibing point, briefly back against the swinging of the boom, and then gradually up to the new course, will pay large dividends.

Downwind the boat must be balanced - free of rudder drag. To avoid the usual windward yawing moment this means releasing the backstay and pulling (with the jibstay) the mast 2'-3' forward of vertical, heeling the boat slightly to windward, pushing the bow down by moving crew weight forward (in light to moderate air putting one crew on the foredeck), and keeping the spinnaker shifted to windward of the centerline (to the extent possible). The spinnaker is the important sail (unless the jib is pulling significantly it is best dropped); the mainsail needs only to have sufficient vang to remove twist and be displaced so that most of it is approximately perpendicular to the apparent wind. On broad reaches the boom should be brought inboard until the leech telltales begin to flow as any aerodynamic lift is valuable.

The spinnaker should always be set so that the maximum area is exposed to windward of the centerline - out from under the mainsail. The pole should always be carried as far back as possible without flattening the spinnaker foot excessively -without pulling it against the jibstay. It should also be carried as low as possible so that the spinnaker moves to windward with its centre seam vertical. The sheet must always be maximally eased, the luff always breaking - the bigger the break the better as it means more of the sail is to windward and less of it is driving the boat into the wind. In light air the helmsman may take the guy and nurse it back as he bears away in the puffs, ease it forward as he goes up in the lulls. In moderate to strong air it is better to keep the guy fixed (as that transmits the force of the sail directly to the boat) and the course changes can be read as indicators for jibing to the more directly downwind jibe. The top of the spinnaker is creating lift from the overflow and in moderate air, to improve the angle of the sail's upper surface, the halyard may need easing.

The Soling must be tacked downwind at fairly high angles. Up to 15° to the dead downwind course there is no significant increase in distance sailed so it is rarely desirable to sail closer than 15 to that course (always up in the lulls, down in the gusts). In light air it is essential to keep the spinnaker pulling, to sail (with the pole down sufficiently) as high as is necessary to keep it so, to avoid the luff sagging into a J-shape. In very light air the little (mini) spinnaker may be useful downwind. Its small area permits it to lift at a lower sailing angle than the big sail and, if the sailing angle required to keep the big one full is more than 30° to the dead downwind direction resulting in a large increase in distance sailed, the mini will provide net gains, On reaches even in the lightest air the big sail will usually function - but if the mark cannot be laid, without a jibe consider the mini.

