

Moderate Air Sail Trim

By Stu Walker

As an umpire at the US Match Racing Clinic at Punda Gorda I was struck by the evident need to modify sail trim to adapt to the infighting of match racing. Winds were generally 12-16 knots offshore resulting in smooth water and the potential for high pointing and speed. But the trim that worked well for straight line speed was detective when circling, tacking, and recovering from luffing. Less obvious modifications distinguished the fast from the slower boats in clear air.

Dave Curtis says that in smooth water “you can't get the main too flat nor the jib too full” and this approach worked when up to speed in clear air. But when a boat so trimmed - high travellers, tense backstay, tight leeches, tight sheets - entered a tacking duel or a luffing match or hit a big wave, she was easily passed by a boat with lower travellers, less mast bend, more open leeches, eased sheets. It was obviously essential when conditions became adverse to shift gears from a pointing mode (which gets the most out of the boat to windward in moderate to heavy air and smooth water) to an acceleration mode and evident that pointing is inconsistent with acceleration.

All this is reasonably obvious but the principle can be carried farther. Sails must be trimmed in accordance with two disparate theses: they must accommodate the conditions in which they are set and they must perform the function which the situation requires. The conditions should be the first consideration: flatter in light air (to counteract leeway), flatter in heavy air (to counteract leeway, heeling, and windward yawing), fuller in moderate air, flatter in smooth water, fuller in waves. Needs should be superimposed upon this basic trim; do you want speed/power, pointing, or acceleration? Full sails producing maximum power produce maximum speed (on Garda boats 12 men on the trapeze is faster than 11). Flat sails permit high pointing. Open, twisted sails permit acceleration.

If the conditions permit - smooth water, moderate to heavy air- pointing (by shortening the course) produces the greatest gain and should always be sought. But if the conditions are otherwise - waves, light air, slowing - trim for pointing has the worst possible effect. In light air the greatest gain is from speed and speed, by generating underwater lift, is the best way to diminish leeway and maintain height”. In waves and after induced slowing acceleration is what is needed - and sail trim must be directed to this end with no attempt at pointing until speed is regained. In moderate air (short of heeling) speed is increased in proportion to the power generated - and speed increases both pointing and the maintenance of height.

At Punta Gorda (in addition to the intermittent need to shift gears for acceleration) a compromise was needed between the need to keep the sails flat for pointing in the smooth water and the need to keep them full for power and speed in the moderate air. The fastest boats seemed to use relatively more backstay/fore and aft mast bend (for pointing) and more eased outhauls and lowers (for fullness and power).

This combination seemed to provide a better match between the leech of the twisted jib and the leeward surface of the sagged, fuller mainsail. (The degree to which these matched (as seen from astern) was the element of sail trim best correlated with performance.) The draft in the upper sail, though diminished by the backstay/tore and aft mast bend, was moved aft. This facilitated the maintenance of attached flow and permitted the midsection of the mainsail leech to be brought farther to windward by mainsheet tension without stalling. (See article in October95 “Soling

Sailing" - "The Upper Leech Telltale"). The fullness required for power was provided by the eased outhaul and lowers without adversely affecting the leech. As the wind increased above 14 knots the mast sag needed to be eliminated and the foot brought out to the band with little additional backstay/mast bend.

The worst combination in these conditions at Punta Gorda seemed to be a main made too full by too little backstay tension and/or by too much sag or outhaul ease. With the upper sail too full the leech telltales stall early when the leech is still well off the centerline. The boat not only develops less power and less speed, but it cannot point. Dave Curtis believes that (if presumably the sails have been properly trimmed for speed and pointing) the best response to a boat tacking on the leebow, i.e. to improve pointing at the expense of speed, is to ease the backstay. The jibstay sags more, the jib gets fuller, more draft-forward, and more open and the main leech gets tighter. (He says that what most Soling sailors do - tension the backstay and the mainsheet and/or tension the jibsheet is clearly wrong.) Perhaps the anomaly here is dependent upon where the upper shroud cars are located: if forward of the midline of the mast (in the first 2 holes), as they should be in smooth water under 16 knots, easing the backstay will sag the jibstay more than it will tighten the main leech; if aft, easing the backstay will tighten the main leech more than it sags the jibstay. All of which suggests that in smooth water, moderate air when anything changes or goes wrong, reach for the backstay.