Attitude problem?

There are two types of boater: those who take pride in the skills required to handle a high-speed craft and those who think the simpler a boat is to drive the better. For the second type, a device that keeps you flat and level will probably hit the jackpot. Tony Jones checks out the Attitude Correction System from Mente Marine.

If you think adjusting your trim to maintain the correct running angle or fiddling with your tabs to stay level is a bloody nuisance, Mente Marine's Attitude Correction System might be for you.

The ACS does exactly what it says on the tin. It takes all that stuff off your hands.

Once you've 'told it' what the correct running attitude is during the once-only commissioning and calibrating process it will do its best, by manipulating the drive trim and tabs, to maintain that attitude whenever you are up on the plane.

Already I can hear the experts protesting that there's no such thing as a single correct trim attitude and that it depends on speed and waves and conditions and bla bla bla bla bla . . .

Strictly speaking that's true, but for most modern planing boats there's a fore and aft trim setting that suits a fairly wide range of cruising speeds in the conditions we most commonly encounter. And there is, of course, only one correct lateral attitude - dead upright.

In any case, the Mente Marine system allows you to fine tune things either side of the preset datum simply by pressing a single up or down button. To use the most obvious example, bow down when going upwind in a chop and bow up when travelling downwind in big waves. And you can assume full manual control at any time simply by pressing the 'disengage' button.

One of the clever things about ACS is that during turns, a heading sensor freezes the lateral trim tab control, allowing the boat to heel naturally inwards while still holding the correct fore and aft trim. Some degree of roll is inevitable when running across the waves but ACS senses this longer period of lateral oscillation and doesn't try to fight it.

The system is also speed sensitive, so it won't beat the tabs to death trying to stop the boat rolling when off the plane.

Inside the black box

At the heart of the ACS are three MEM (Micro Electro Mechanical) sensors. Two of them, for roll and pitch, are inclinometers; the third is a yaw-sensing gyro and it's this that disengages the roll channel during turns. These very small gyros were originally developed for use in guided missiles and other aerospace applications and were, until quite recently, hideously expensive. But increasing use by the automotive industry for computerised handling aids for powerful cars has made them more affordable.

The system is speed sensitive so it won't beat the tabs to death to stop you rolling when you're off the plane

All three gyros and the necessary mini-computer are housed in a black box about six inches square and four inches deep. The compact control panel is surface mounted and has four membrane switches arranged around a central on/off switch. Two vertical rows, each of six LEDs, indicate tab position and a further three show leg trim. These flash when the tabs or leg are actually moving.

On sterndrive and outboard boats, ACS uses leg trim as the primary control for pitch. If it can't keep the bow down sufficiently by trimming right in it resorts to symmetrical tab deployment. >

Most modern boats don't need it. Lateral control is by asymmetric tab deployment and unless fore and aft trim demands otherwise one tab will always be fully up, which is as it should be.

There's some value here, as with manual tabs, it's surprisingly easy to get it wrong. You can often put more and more tab down as you make fine lateral adjustments until you find yourself running too far bow down. The ACS provides that easy fine-tuning.

Hands on

I tested the ACS on a Crownline 23CC (Cuddy Cabin) powered by a Mercruiser 5.0 EFI and Bravo III leg over a period of several hours, and was extremely impressed.

When you come off the plane, the system seems a bit slow to trim back in and re-establish grip

The first thing I noticed was the tremendous practicality of the combined control panel – even with the attitude control facility disengaged.

Conventionally, you control heel with two rocker switches, wired diagonally. If you want to lift the starboard side, you can do it by depressing the starboard tab or lifting the port one – assuming it's not already fully up. Either way, you will affect fore and aft trim. But ACS has just two buttons for this job - left and right.

The computer always ensures that one tab is fully retracted while the other goes down just far enough to hold the boat level, which is exactly what you want. Any resultant change in fore and aft trim is picked up and corrected by the computer, using the leg. Brilliant.

Acceleration

When accelerating from rest, it's normal to start off with the drive (or outboard) trimmed fully in to help the boat over the hump.

Once up on the plane you trim out progressively – either for maximum rpm at full chat, or for the most comfortable ride at cruising speed.

If you have a boat that gets up on the plane very quickly, you may find the bow goes down a little too far before the ACS trims the drive out to the correct the attitude. You can, of course, beat the system by manually trimming out as the boat accelerates but the delay is only a couple of seconds anyway.

Slow speed

Coming quickly off the plane, the pitch up isn't as marked and the ACS pitch sensor doesn't always pick up the transition. This results in the boat coming back down into the water with the drive still trimmed out. If I didn't trim back in manually before the next acceleration the prop would ventilate and the boat would stick its nose in the air.

But even if you forget to take charge manually, the sensors quickly figure out that something is wrong, pull the leg in and sort it out.

This is the only situation in which manual intervention is really necessary, but even then it's only to be tidy.

At low speed – which is detected raather cleverly by an acoustic sensor in the engine compartment set to about 1500 rpm – ACS is disabled and the tabs are retracted. My suggestion would be to link this sensor to the leg trim output as well so that the drive gets trimmed in automatically when off the plane, regardless of hull attitude.

Contact

Manufacturer:
www.mente-marine.com.
UK Sales: Keypart
Tel: 01923 330570
www.keypart.com.

Conclusion

Mente Marine says ACS is suitable for boats of up to 60-feet, but it's obviously aimed more squarely at sports boats of up to about 35-feet. There's an 'A' version for shaft drive craft that costs £395, where the primary benefit is of course automatic lateral levelling.

But it's the A+ version at £612 for outboard and sterndrive-powered craft of up to 40-feet that will be the big seller. If fiddling with tab and leg trim controls is simply one of those things you'd rather not have to bother with, ACS is indeed the answer to your prayers.