

A Comparison of Trawler Types - Which One Is Best For You?

Twenty-five years ago there was no question what a cruising boat, or “trawler”, looked like. There were relatively few builders in the market space and all the vessels, whether built by Grand Banks, Willard, Kadey-Krogen or Marine Trader, all operated mainly in the seven to nine knot range. As the number of people interested in cruising exploded in the 1990s thanks to Soundings sister publication, PassageMaker Magazine, so too did the variety of manufacturers and styles. The old salts will vehemently argue that a down east style vessel is not a “trawler”, however I believe I have developed a definition to which everyone will agree: A trawler is any vessel in which you are comfortable **living aboard** for the period of time in which you intend to **live aboard**. With that definition, if you plan on cooking, showering and sleeping aboard a Sabre, MJM, Eastbay or similar vessel for three days at a time and you are able to do that comfortably, then that vessel is just as much a trawler as a Kadey-Krogen cruising the Caribbean for the winter.

One reason that many cruising boats are for sale so soon after purchase is that the owner decides the experience is not what they thought it would be. After months or years of planning, their dream fails to live up to its expectations and crashes around them. What happened? In many cases, they bought the right boat for the wrong purpose. It’s essential to determine what type of boating you plan on doing. Further, understanding what hull form best fits your needs is more important than styling, fit and finish. If you have the right boat for the right situation, you will enjoy it more and keep it longer.

So why is the hull form important to successful cruising? Since a boat is floating in the water, it moves in its environs whether that is at a dock, at anchor, or at sea. How that boat moves will directly influence your state of mind and state of being. How so? Here is an example I think everyone can relate to. Chances are pretty good that one of the reasons you bought your car is because of how it felt to drive. Chances are also pretty good that you could rent just about any car and **survive** for a short period of time. However, if you are used to driving a new or late model Range Rover, are you really going to be happy driving that 1980 AMC Pacer wagon through the Alaskan wilderness? Even if it was a deal? I think you get my point. If you are not comfortable, you will not be happy. Figuring out your boating intentions is an imperative part of the boat-buying process and your intentions in turn dictate the type of trawler with which you will be most successful in fulfilling that cruising dream.

Full Displacement Vessels

Compared to other hull forms, a full displacement boat has a greater beam, draft and load carrying capacity. As an example, the Krogen 44’ AE has a beam of 16’ 4” and draws about 4’ 6”. The Krogen 44’ AE will settle in the water one inch for every 2,200 pounds of gear, fuel and stores you put on board. This measurement of load carrying capacity is called “pounds per inch immersion”. An ocean capable full displacement vessel will also have some form of ballast for added stability. The only thing a full displacement vessel doesn’t do well is go fast. Laws of physics dictate that the maximum theoretical hull speed for a full displacement vessel of 1.34 times the square root of the length of the waterline of the vessel. This formula is referred to as the Speed –to–Length ratio and is abbreviated as S/L. In practice, this ratio is closer to 1.4 and no reasonable amount of horsepower will cause the vessel to exceed this number. (I use the word “reasonable” as yes, with a ridiculous amount of power, you could cause a full displacement hull to go skipping uncontrollably across the water like a duckling attempting to

take flight for the first time.) The Krogen 44' AE has a length at the waterline of 40' 11" which means her top speed is roughly 9 knots. The upside to this phenomenon is that at a speed of 7 knots (S/L of just 1.1) the full displacement Krogen 44' AE burns only 1.9 gallons per hour and has a range of over 3000 nautical miles.

Semi-displacement Vessels

A semi-displacement vessel has a moderate beam, draft and load carrying ability compared to a full displacement vessel. The hull also tends to flatten out as you move aft of center and this difference in hull shape combined with a narrower beam and more horsepower allows the vessel to achieve a S/L of between 1.4 and 3.0. The American Tug 435, with a top speed of nearly 16.5 knots and a waterline length of approximately 38.5 feet, is an example of a semi-displacement vessel. Speed does, however, come with a cost. At 10.1 knots she is burning 11.25 gallons per hour as the large engine (500 hp) uses its might to try and get the boat up and out of the water on the flatter part of the hull. Roughly six times the fuel of a full displacement is used to make the boat go 1.5 times faster. Consumption and range are better at a little over 7.5 knots burning 4 gallons per hour. While this may sound like a reasonable approach, engine manufacturers state unequivocally that running an engine at significantly reduced RPM from the engine's intended cruise RPM (known as under loading and over cooling) will increase maintenance and shorten engine life.

Planing Hull Vessels

Purists would say that a planing hull can't be a trawler, but based upon my definition it certainly can. One just needs to be realistic with his or her expectations as a planing hull vessel is narrower for a given length than the other two hull forms. Simply put, this means you can carry less stuff. On the positive side, a vessel like a Sabre 42 will get you to your destination in a hurry with a top speed of over 30 knots and a comfortable cruising speed of 22 knots. The downside is that it takes a lot of power to get and keep a vessel up and out of the water at that clip. At 22 knots the Sabre 42 burns 26.3 gallons per hour. That's three times the speed of a full displacement vessel of similar length, but burning 13 times the fuel.

The need for speed?

For many cruisers, especially those not yet retired, time is of the essence and speed is a necessity, or at least they think so. What do I know that they don't? Perhaps it's a more adept perspective of time. Follow me through an example with two different boats. Warwick, RI to Block Island is less than 35 miles of which 32 miles a vessel could run at speed. This makes the trip a hair over 4 hours in a full displacement vessel like the Krogen 44' AE or about two hours in a planing hull vessel like the Sabre 42 (remember, the planing hull vessel must run at six knots for approximately three miles of the 35 mile trip). Still, on the surface, it would appear that the owner of the planing vessel has two more hours to enjoy Block Island. Not really. You see the full displacement owner gets underway and makes coffee, showers, and cooks and eats breakfast, all the while making way towards their destination. These activities are completed during the four hour trip. The other boater must make coffee, shower, cook, eat, clean up and stow everything before getting underway. Depending on the habits of your significant other and others aboard, that can actually make the overall trip longer! Regardless, some amount of time must be added as I don't think too many of us are going anywhere in the morning without coffee, a shower and some sustenance in our bellies. I think you get my point.

The need for speed – part 2

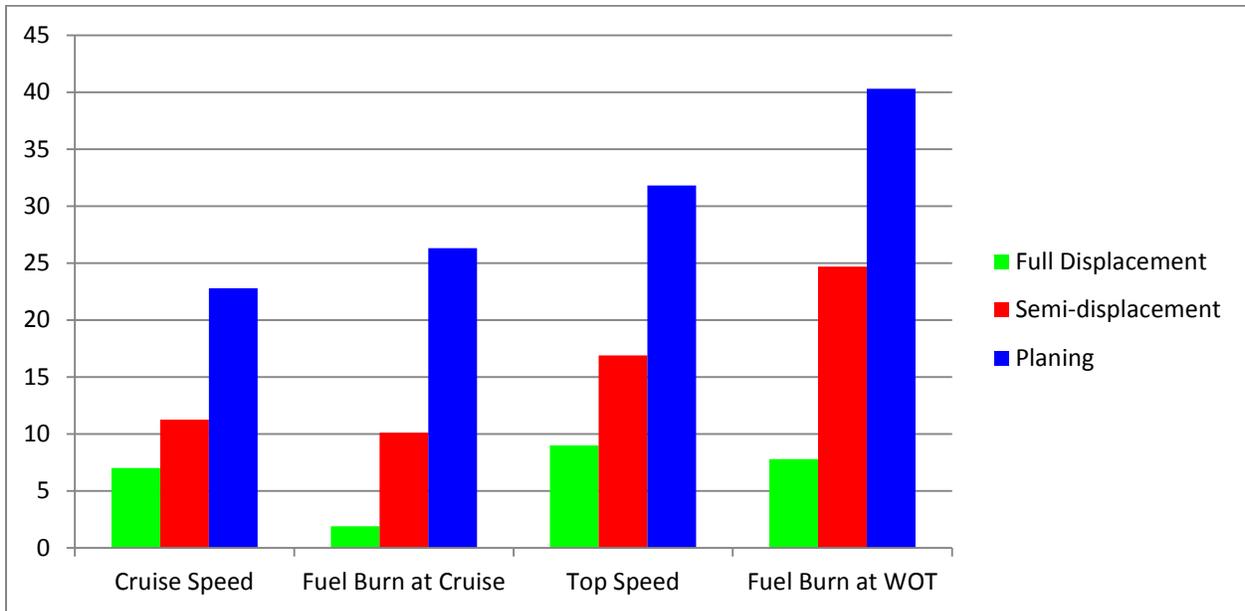
One fallacy I hear a lot at boat shows that relates to hull forms is, “I want a fast boat so I can outrun bad weather.” That statement sends the insurance agents ducking for cover! Why? Because they know that one of the safest places to be in an approaching squall is in a well-found boat away from marinas and traffic. Accidents happen when people feel rushed, especially when its weather induced. We make poor judgments and then people get hurt and property gets damaged. You may get tied up before the squall hits, but if you don’t make it, there’s a good chance your neighbors’ anchors will end up through your saloon window.

So what do I do?

There is a lot to think about when purchasing a cruising boat (or any boat for that matter) and I hope that I have shed some light on the pros and cons of three major types of hull forms. Do your research, ask questions, and determine the type of boating you will be doing. As you make decisions to fulfill your dreams please don’t be sold by a deal, don’t be sold by the sizzle, don’t be sold because they will take your boat in trade, please don’t be sold on thinking you can run a fast boat slow and please don’t buy a boat with a little more speed to outrun a storm. Lastly, please do not wait too long for the perfect moment; I have yet to see an armored car following a hearse to a cemetery.

Data, graph and photos on succeeding pages

	Full Displacement (Krogen 44' AE)	Semi-displacement (American Tug 435)	Planing (Sabre 42)
LOA	49' 0"	43' 7"	42' 3"
LWL	40' 11"	38' 6"	38' 3"
Beam	16' 4"	15' 10"	14'
Draft	4' 6"	4' 10"	3' 11"
Displacement	43,140 lbs	30,000 lbs	26,000 lbs
Top Speed/Length	1.4	2.7	5.14
Total Horsepower	160	500	760
Cruise Speed	7 knots	11.25 knots	22.8 knots
Fuel Burn at Cruise	1.9 gph	10.1 gph	26.3 gph
Top Speed	9 knots	16.9 knots	31.8 knots
Fuel Burn at WOT	7.8 gph	24.7 gph	40.3 gph



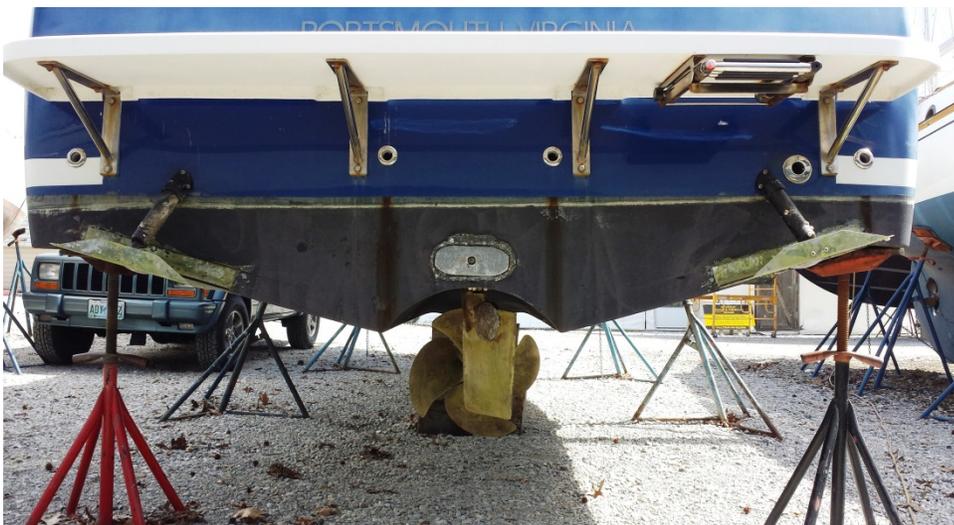
Y axis represents speed in knots and fuel burn in gallons per hour.



Full Displacement Hull



Semi-displacement Hull



Planing Hull