and making a mess of filters. And boats with fiberglass fuel tanks were subject to the added nightmare of ethanol actually eating away the resin, which required replacement of the tank and in many cases, serious damage to expensive engine components like valves, carburetors and injectors.

Why were all these problems manifesting as a result of a simple switch from MTBE to a 10 percent blend of ethanol? As mentioned, ethanol is a form of alcohol and alcohol is a highly efficient solvent. So when it is introduced into older metal fuel tanks, it gradually begins to break down accumulated sediments and washes them into the fuel system. Those same properties can cause resins and fillers used to make fiberglass fuel tanks to leach out into the fuel system where they adhere to internal engine parts. Ethanolblended fuel can also be responsible for the decomposition of rubber gaskets and fuel lines that heretofore had been approved for use in gasoline fuel systems.

Boat and engine manufacturers took on the challenge of upgrading their products to avoid these problems going forward, and have done an admirable job. Yamaha Marine was an early leader in identifying these problems and correcting them in their popular lineup of outboard engines. They upgraded fuel systems with hoses and gaskets that are resistant to ethanol's solvent properties. The company also developed injection systems and revised ignition modules so that Yamaha outboards can run efficiently with E10, which has a lower combustion temperature and therefore a slightly lower power output than gasoline without ethanol. Even though most of the problems with E10blended fuels have been accounted for by outboard

plague boaters.

motors.

systems, marine applications are of significant water is found. moisture and humidity where it from contacts the ethanol in the gas.

your fuel, and when the will restore stale fuel, remove concentration of water molecules water or cure ethanol-related reaches just one half of one issues." percent, those molecules will up is located," said David Meeler, clean and corrosion free. Product Information Manager, 4. Buy your gas where they sell Yamaha Marine Group. "This is a lot of it! Today's ethanolcalled 'phase separation' and blended gasolines have a depending on the amount of notoriously short shelf life and water ingested into your actually begin to degrade in a outboard, it can result in matter of days after refining and everything from rough running blending. Purchasing gas at a to catastrophic engine damage."

"Maintenance Matters

Longevity of Your Outboard," purchase. This will go a long way Yamaha offers the following in helping protect your recommendations for avoiding investment in your outboard the potentially damaging effects engine from ethanol problems. of burning ethanol fuel in your

If you are like many boat outboard engine.

like these from Yamaha can be frequently during the boating the boater's best defense against season, it's advisable to keep your poor quality fuels.

fuel/water separating filter—with Keeping your tank at that level proper flow rating for the helps prevent condensation build

manufacturers, there are still engine—is installed in the fuel some issues that are inherent to line between the tank and the the product that continue to outboard. This will filter out any debris that ethanol might loosen Internal corrosion is among the in the tank, and it will separate issues that can result from use of out and collect any water from high-ethanol fuels in boat the fuel. (Yamaha offers highquality canister filters with large Ethanol is hygroscopic, which water collecting reservoirs for means it absorbs water from the their outboards.) Filters should be air. While this is rarely a problem replaced every 100 hours of in automobiles that live on dry operation or checked/replaced land and have sealed fuel more frequently if the presence

- another story altogether. Boats 2. Add a high-quality, marine live in a moisture- and humidity- specific fuel stabilizer and rich environment, and boat fuel conditioner to every tank of fuel. systems are vented to the Yamalube®Fuel Stabilizer and atmosphere. Without venting, an Conditioner is a non-alcoholoutboard's fuel pump would not based formula that helps counter be able to draw fuel from the some of the problems associated tank. Venting allows outside air with ethanol blended fuels. They to enter the tank along with caution boaters about claims additive manufacturers stating "Water can and will collect in unequivocally that, "no additive
- 3. Add Yamalube®Ring Free bond with the ethanol in the Plus internal engine cleaner to gasoline and sink to the bottom every tank of fuel. It will do the of the tank where the fuel pick job of keeping your fuel system
- high volume retailer helps insure In the new brochure titled you are buying the freshest gas. Then be sure to add stabilizer - A Simple Guide for the and engine cleaner at the time of

owners who only use their boats A 10-micron fuel water filter on weekends or even less fuel tank level at 7/8 full with 1. Be sure to use a 10-micron properly stabilized, fresh fuel.

up in the tank while the boat is not in use. Condensation occurs when any moisture in the air in the tank condenses with changing temperatures. It is another source of water entering the fuel and bonding with the ethanol.

With all of the problems associated with the use of E10 gasoline in marine engines, you would think the federal government might do something to mitigate the effects by reducing ethanol requirements. Unfortunately, that is not the case. The EPA, under the guise of the Renewable Fuel Standard, is mandating a 50 percent increase in the use of E15 gasoline, which will further exacerbate the problems associated with ethanol in marine engines. In an interview with Martin Peters, Manager, Government Relations Yamaha Marine in Kennesaw, Ga., he laid out the case from the marine industry against the ethanol increase, along with a dire warning for owners of existing outboard engines.

"The marine industry has determined through research and testing that E15 harms outboards by doing internal damage to moving parts such as valves and pistons - devastating, irreparable damage,"

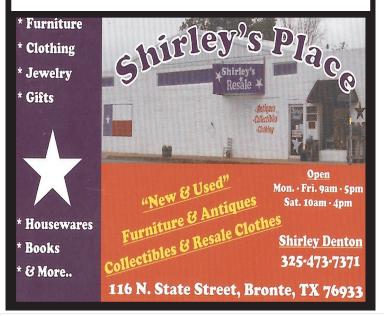
The Observer/Enterprise Friday, October 30, 2015 Page 15 Peters. "While Yamaha could engineer outboards that will run on E15, doing so would increase cost to the consumer without increasing consumer benefits.

> "More importantly, if E15 becomes the predominately available fuel in the U.S., that would leave 'legacy' outboards at risk of damage," he continued. "There are more than 10 million outboards currently in service that would be destroyed by the damaging effects of E15. As an industry, we cannot allow this to happen to consumers.

"We strongly urge consumers and members of the marine industry to make their voices heard and stop the EPA from going forward with a plan to increase the amount of ethanol in the fuel supply. They can do so by contacting the EPA—or their Congressman/Senator—directly over concerns that higher ethanol blends will have on their products or by accessing a number of marine advocacy websites such as the National Manufacturers Association®(www.nmma.org)."

For more information about caring for your outboard engine, check out Yamaha's Maintenance Matters website at: t t p : / maintenance.yamahaoutboards.c

Welcome Hunters!





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