September 2016 Newsletter

Text and photos by Steve D'Antonio

From the Masthead

I want to hear your thoughts…
Customer care, it's a subject about which every boat owner is concerned, and about which many are deeply frustrated. As a student of customer service I pay attention to the details, I have been accused of obsessing over them, when it goes right, and when it doesn't. I keep a "customer care file", which is filled with examples of both, I added to it just this afternoon after having lunch at a local cafe with clients (the service was excellent), sadly though too many stories are the those with unhappy endings.
I spent the better part of my career as a service provider, managing boat yards, endeavoring to provide the very highest quality customer care, and learning a great deal about what works, and what doesn't. Since then, I've spent the last nine years as a consultant and advocate for boat owners and buyers, helping make certain these folks are treated properly by the marine industry, boat builders, brokers, boat yards, and marine equipment manufacturers.
As an experienced troubleshooter, I'm a firm believer in finding the source of the problem and correcting it, rather

than reacting to the symptom. Customer care is no different, and as such, when given the opportunity I leap at the chance to write, or lecture on this subject at the source, for my marine industry colleagues. I'll do just this when I deliver a lecture at the annual International Boat Builders' Exhibition (IBEX), held in Tampa Florida in October. The title of the presentation is "Customer Care – Building Relationships". I want to make sure I share with attendees the very latest from the front lines. Toward that end I'm asking Marine Systems Excellence readers to share with me your thoughts and experiences on customer care, what is important to you, what frustrates you most, and most important of all, what makes you want to return, what builds loyalty? Send your thoughts to asksteve@stevedmarineconsulting.com

I'll share a selection of these responses, leaving out all names, in an upcoming column. If you don't want your comments shared, even anonymously, please indicate this with your note.

Thank you.

Photo Essay: Expansion Tank Corrosion

Not to be confused with a recovery tank or bottle, the expansion tank on closed cooling system engines is part of the pressurized cooling circuit; it’s typically where the pressure cap is located.

In applications where a coolant recovery bottle is not use, an air space must remain within the expansion tank. As the engine warms up, the coolant expands, filling this void, and when it cools off after being shut down the coolant contracts, at which point air from the engine room is drawn into this area through a check valve in the pressure cap. When the coolant level is checked in an engine set up in this manner, when cold, the coolant cannot be filled to the level of the pressure cap neck.   If it is, when the engine warms up, coolant will overflow via the cap’s pressure relief mechanism, leaking out beneath the engine. While undesirable, this is normal. Thereafter, when the engine is cool, an air gap will remain in the expansion tank.

Coolant contains corrosion inhibitors, which prevent the formation of rust and corrosion; however, they are only effective if the metals they are protecting are submerged. When exposed the protection is forfeited, and in this environment, corrosion is sure to ensue. Fortunately, the bulk of the cooling system's passages, especially those within cast iron blocks, exhaust manifolds and cylinder heads are, or should be, submerged in coolant at all times. However, an expansion tank that is *not* equipped with a coolant recovery bottle exposes its upper regions, the expansion zone, every time the engine cools off, after shut down, which can lead to corrosion, particularly in the case of cast iron expansion tanks, like the one shown here.

This scenario is yet another reason to equip closed cooling systems with a coolant recovery bottle, and the appropriate pressure cap for that application. When so equipped, the expansion tank remains filled with coolant, and air-free, regardless of whether or not the engine is running or stationary, hot or cold.

Ask Steve

Steve,

[For inverters] Since the negative 12V cable is going to the negative bus bar, and the chassis ground needs to go to the negative bus bar, why can't you jump from the chassis ground to the negative 12 terminal? I have a Magnum 2812 inverter/charger, and when I posed this question to their technical support person (since mine has the smaller green wire), he really didn't have an answer for me or could tell me why the larger cable is recommended in marine applications but not necessarily for non-marine applications.

Jim Wolfe

Jim:

This is an excellent question and one that isn't asked often enough. I'm a little disappointed the Magnum employee couldn't answer it, however, in all fairness, it's not their mandate, it's ABYC's.

Think of it this way, and to use an analogy, in household wiring, for a receptacle for instance, there are three wires, the black hot (similar to DC's positive), the white neutral (the "negative"), and the green safety ground. You could jump the safety ground connection to the neutral and effectively achieve the same end, the neutral is ultimately grounded (called a bootleg ground), however, doing so is prohibited. The notion is, the safety or chassis ground is so important, it has to be its own, dedicated, normally mon-current carrying wire, whose only job is to carry fault current and then only long enough to trip a circuit breaker or blow a fuse. And, of course that wire needs to be large enough to carry the maximum possible fault current, that which could be supplied by the DC positive.

I hope that explanation helps clarify the reasons why this is required.

Steve,

I recently purchased a "vintage" 1973 Tartan 41 with a bare aluminum spar. The mast and hardware are substantial and appear to be in great shape except for the many streaks and bare spots cause by the halyards chafing against the aluminum over the years…. not a pretty sight but only cosmetic. I was thinking of painting the spar until I read your article in Cruising World "Bare is Better" (the article was referred by Rick at Jamestown Distributors) and have decided to hold off on the painting project.

What would you recommend as an alternative to painting as a way to spruce up the old aluminum spar and reduce the streaking and bare spots to provide a more unified appearance, as well as a way to help protect the sails from additional gray spots caused by contact with the aluminum mast?

Any suggestions are greatly appreciated and I look forward to your newsletter.

Best regards,

Tom Regan

Tom:

It’s a truism, paint and aluminum, for the most part, make for a less than permanent bond. It’s important to remember, however, while the bond is tenuous, there are a variety of ways to improve its durability and longevity. If cosmetics are important, then paint for a spar may be an acceptable choice. However, it’s anything but necessary from a corrosion perspective, it may even hasten corrosion should water make its way between paint and the spar’s surface, and it’s far more maintenance intensive. You can read a more detailed article on the subject on my website at http://stevedmarineconsulting.com/paint-and-aluminum-how-to-ensure-a-good-mix-2/

Most modern unpainted spars are anodized. Unfortunately, that’s not a practical alternative after the spar has been manufactured.

As another alternative, you might simply choose to polish the spars surface. Doing so would give it an appearance not unlike a modern, unpainted commercial aircraft (or many fighters and bombers built during WWII, in the later stages of the war, when painted and camouflage were no longer deemed necessary), many of which are completely or partially unpainted (saving in build and maintenance costs, as well as improving fuel economy as unpainted aircraft weigh less). A high polish will slow down the oxidation process, and it will reduce aluminum “shedding” to sails and lines.

Yet another alternative would be for a uniform mat finish. This would look a little bit like the nose of the Spirit of St. Louis, Charles Lindbergh’s aircraft, although that finish had a uniform swirl pattern. While slightly less corrosion resistant, the dull finish will be easier to maintain and “touch up”.

Steve,

Is there a particular battery tester you recommend?

Ann Evans

Ann:

I’ve been testing batteries for my entire 28-year career, and during that time I’ve developed, not surprisingly, some strong opinions.

I’ve followed the thread on the Nordhavn Owners’ Group forum and have not weighed in, primarily because I’m not a true believer in conductance type testing for large, deep cycle batteries. Conductance, sometimes called digital, testers were designed to test automotive and truck starting batteries. The primary manufacturer, Midtronics, own website says, “Automotive OEM dealers and service organizations around the world choose the Midtronics PBT-200 professional battery tester for its proven conductance technology and test algorithms.” The key word is ‘automotive’. The primary market for these tools was, and remains, auto and light truck dealerships and auto parts stores.

I was an early adopter of the technology, when I ran a boat yard I invested in two units, first and second generation models. The results they provided for deep cycle batteries were all too often peculiar at best and suspicious at worst, condemning batteries that worked well, and passing batteries I knew to be defective. The results they provided for starting batteries were more consistent. Therefore, for anything other than start batteries, my preferred tool has been a carbon pile tester. This essentially applies a 'real-world' load to a battery using a large resistor. Two gauges clearly show the voltage and current the battery is carrying, and the operator measures the time they carry it (typically 15 seconds). In short, carbon pile test results don't lie, the battery either has the actual amps or it doesn't. There is a price to be paid for this accuracy, however, carbon pile testing can be hard on batteries, especially older or borderline batteries. If the batteries are flooded, and the electrolyte is low (batteries with low electrolyte should never be load tested, or used for that matter) the heavy load can induce a spark, which can ignite hydrogen gas within the battery case, which in turn can cause an explosion. This can't happen with AGM and gel batteries.

Having said all this, there's still hope for conductance testers. The challenge is, the manufacturers of these products have had to come up with algorithms that work for a variety of battery sizes, brands and internal design (flooded, gel and AGM); that's no easy feat. Over the years the manufacturers of these tools have learned and refined the algorithms, which means false results are far less common. Midtronics now offers a tester, the EXP-1000 HD,battery tester specifically designed for heavy duty, deep cycle and large battery bank applications. While still not as reliable as the carbon pile tester, it is now reliable enough to use in applications like yours, and it's smaller and safer. However, don't be lulled into a false sense of security, while conductance testers are safer, it would be very difficult for them to induce an explosion, you still must use caution when working around batteries. Remove all metal jewelry, including rings, and wear eye protection, an inadvertent short can send a blob of molten metal sailing through the air.

Steve,

I have been in the marine world my entire career starting in commercial fisheries and crew boats in the Louisiana oilfield and have always used an ant-seize compound when installing anything on a rotating shaft. That's just the way it was. The goal was to make the boat propeller easy to remove from the shaft whenever necessary including by a SCUBA Diver. I realize there are now more environmentally friendly compounds but the goal remains the same, make it easy to remove the prop when needed.

Recently I helped a new boat owner launch his boat and the props were installed incorrectly, port was on starboard and vice versa. We had to pull the boat to remove the props. The props sit on a tapered shaft with a key way with 2 nuts and a cotter pin to secure the prop on the shaft to prevent slippage.

Since the boat had only been it the water less than 5 minutes there was no marine growth to blame for the props being stuck on the shaft. A prop puller was required with a little extra ump on the puller bolts. I asked the guy why they did not use never seize and he answered, "We never do." When I followed up with why not, no one seems to have an answer. So Steve, what IS the answer? And while we are on this subject, which nut goes on first, the half nut or the whole nut?

Captain Chris Caldwell

Chris:

This is a great question, and one many professionals ask. Propellers do get stuck on shaft tapers, and that’s precisely the goal. Putting aside the fact that the props were reversed, a neophyte error to be sure, and one I hope a professional yard didn’t make, the fact that the props were “stuck” on the shaft after just five minutes in the water is a good sign, it means they were installed properly, and the yard worker’s answer regarding the prohibition against anti-seize was one I would have been relieved to hear.

Given the choice, a propeller that comes loose from a shaft when it’s not supposed to is far worse than a propeller that’s stubbornly stuck when it comes time for removal. In fact, if it’s not stuck at the time of removal, something is wrong. The tapered shaft and bore for propellers and shafts, as well as for all machinery applications, is used to ensure no movement occurs between the two components once they are fully engaged. While the inclination to ease disassembly is understandable, it flies in the face of the very goal of the taper, a semi-permanent connection between two components that are under considerable load. Automotive differential flanges often use the same approach.

Assembling these components using grease or anti-seize can have two possible deleterious effects. First, a lubricant can allow the prop and shaft to move independently of each other. After all, that’s what lubricants do, they reduce friction and promote movement. Clearly, in the case of props and shafts that’s undesirable. Second, a viscous and incompressible material like grease or anti-seize can create a hydro-lock scenario, preventing a propeller from fully engaging the shaft taper. In either case, the prop and shaft will ultimately move independent of each other every time the engine is shifted into and out of gear. Once the prop begins to move in this manner, it will gall the shaft key as well as its own keyway. Eventually the key may sheer, allowing the propeller shaft to spin freely within the propeller bore, inducing a permanent neutral scenario. I've encountered greased shaft tapers on relatively new boats, the grease having been installed by the boat builder for the very purpose you noted, to ease disassembly, which resulted in wallowed out prop and shaft keyways, the former irreparably.

Prop shaft tapers should be lightly oiled, to prevent binding when the propeller is pushed onto the taper, no other lubricant should be used. The prop should be pushed fully onto the taper *without the key installed first*, the shaft should then be scribed at the forward end of the taper. Remove the prop, install the key (again lightly oiled), and then the prop. Using the full height nut tighten it using a smooth jaw wrench (never a pipe wrench), drawing the prop onto the shaft taper. The prop should go up to or past the scribe line, ensuring the key is not creating a bind. Then remove the large nut, install the half-height nut, tighten it, then install the full height nut, and tighten it. The reason for the nut order is as follows, the second nut, when tightened, will unload the first nut, transferring the majority of the load in the process. Thus, it's desirable to have that load carried by the nut that has more threads. Also, the half-height nut is better able to conform to the face of the prop hub than the full height nut, ensuring better engagement. The 'half height nut first' arrangement is specified by a variety of government, manufacturing and standards setting bodies, including ABYC, SAE, USCG, most propeller manufacturers and the US Navy. If the prop nuts are brass (manganese bronze actually, which is a form of brass), then their threads require no lubricant. If, however, the nuts are stainless steel, and the shaft is as well, there is a risk of galling, and as such the threads should be lightly oiled or, better still, coated with low tension thread locker such as blue LocTite 242, which will act as a thread lubricant until it sets.