

Why Does Marine Gear Cost So Much?

It's a refrain heard daily at marinas across the country: *Just because they put the word "Marine" on it, they think they can sell it for twice as much!* The cost of owning a boat is already high enough with slip fees, maintenance, and fuel costs, and the last thing anybody wants is to have to pay what appears to be grossly inflated prices for something that just happens to say *For Marine Use* on it. So why do parts and accessories for boats seem to cost so much, especially compared to their automotive counterparts?

Photo: Alison Mazon



This automotive type battery charger was mounted in an engine room to save a few dollars – a big mistake. Marine rated chargers are not only specially built to better care for your batteries and deal with the high temperatures of an engine space, but more importantly they can't give off sparks, which could cause an explosion if there happens to be a gas leak. The extra cost to build them this way could save your battery—or your life.

For the most part, it's not because manufacturers want to gouge "wealthy" boater owners. A far more likely explanation (with apologies to Adam Smith) has to do with the relatively small size of the boating market versus the cost to manufacture and distribute goods. While a manufacturer can sell millions of its auto widgets to car owners, the potential market for marine widget manufacturers is much smaller and the price to recoup the initial investment (and maybe make a profit) is that much greater.

An even larger point, however, has to do with quality. Cars don't have to deal with flying salt spray, vibration and pounding waves. Those conditions mean that parts and accessories for boats typically have to be made of stouter stuff than for automobiles, or for that matter, houses and RVs. Stainless steel must be substituted for chrome plated brass; aluminum alloys are of a higher quality; and plastics have to be extra strong and UV resistant for marine use.

Electronics and Electrics

Electronics on a boat are subject to some severe conditions, especially if they get used on deck. A handheld VHF and GPS that are used on a flybridge, for example, are designed to withstand rain and salt

spray. Marine electronics are usually rated to the J.I.S. (Japan Industry Standard) and given a score of four (splashproof) to seven (waterproof, up to a meter for a short time). Aside from having to use more expensive components, the cost of waterproofing and testing increases prices.

Battery chargers are another example; while a typical automotive charger only needs to function in a garage, battery chargers for boats may be mounted inside an engine room where the temperatures will be high and vibration can tear apart a cheap charger. Among other things, marine units need to meet the ABYC A-31 standard that requires them to be able to operate continuously in temperatures of 122°F and be able to withstand peaks of 158°F. Car chargers don't have to meet these specs.

Radios and CD players for cars work OK on a boat, but a radio made for boat use usually has circuit boards that have a sealant to protect them from moisture and come with better-quality, non-corroding wiring. Speakers have to have their magnets shielded so they won't affect compasses. All boat electronics have to be able to deal with substantial voltage fluctuations that occur on boats. Even batteries designed for boats are different, made with thicker plates and tougher cases.

Safety, Testing, and Certification

Boats have unique safety requirements and meeting them costs money. In order for a CO alarm to be UL listed for a boat, for example, it has to pass tests for humidity, vibration, saltwater vapor, and temperature extremes. The manufacturer has to submit several samples to a UL lab for testing, which can cost \$25,000. Without the tests, the unit can't be labeled as meeting the safety standards, which is the only way you'll know if it will work safely—

when you need it—on a boat.

A few years ago, a marine surveyor in Washington state surveyed a 30-foot powerboat for a prospective owner. The

Photo: Alison Mazon



Another engine room mistake—a household breaker box purchased at a hardware store. A marine breaker box will cost more, but will last far longer, and more importantly, is built to prevent an errant spark.

survey stopped once he got to the boat's wiring that the previous owner proudly pointed out as new. The problem was the owner tried to save money and bought rolls of Romex-type household wiring and painstakingly routed it throughout the boat. Romex wire is made of solid copper, which is fine for houses, but eventually can work-harden and break with the motion and vibration of a boat. Often, it

partially breaks, which causes heat to build up that could start a fire. Boat wiring must be manufactured to the UL 1426 standard for boat cables, which, among other things, requires that it be stranded, not solid; UL also requires that boat wire sheathing resist oil and heat and be flame retardant. According to a study published by *Seaworthy* a few years ago, nearly a *third* of all boat fires were caused by wiring problems, many of which were due to substandard wiring that chafed or arced. The extra expense associated with safety can save your boat and crew, but wiring isn't the only thing that's critical to safety.

Engine Parts

There's a big reason some marine gasoline engine parts cost more than their automotive counterparts—they're specially built for enclosed engine spaces where, unlike the open spaces in cars, explosive fumes can accumulate. Marine carburetors are designed not to spill gas when they become flooded and they are *not* interchangeable with automotive units. They're also equipped with a backfire flame arrestor that isn't required on cars. In one claim, a fire started when the flame arrestor was taken off by the owner to troubleshoot a rough running engine. The engine backfired and with no flame arrestor, the engine cover ignited and burned most of the engine's wiring and rubber parts (Claim #0111463). Fuel pumps for automotive use have a hole that allows fuel to dribble out if the pump's diaphragm fails—marine fuel pumps don't for obvious reasons. Marine-rated ignition parts and alternators have the added cost of being manufactured to avoid sparks during use, which would prevent an explosion if a leak were to go undetected.

Fuel hoses are far thicker and stronger than their automotive counterparts and have to be able to burn for two-and-a-half minutes without leaking. They also have to be tested to earn the Coast Guard-required SAE J1527 standard, which is costly. *Anything* that goes in the engine compartment of a gasoline-powered boat has to meet at least one important criteria—it can't give off sparks, since they could ignite a gas leak. Bilge pumps, water pumps, lights, battery chargers, inverters, and switches all have to be specially manufactured so they can't spark.

Hardware

Stainless steel costs substantially more than conventional steel, bronze is much more expensive than brass, and both are far

more corrosion resistant, which is why they are so often used on boats. Anyone who has inadvertently bought products made of Zamac, a cheap alternative to stainless that's made with zinc, knows that it looks just like stainless when it's new, but has less strength and will quickly corrode in saltwater. Hose clamps from a hardware or auto parts store are often not stainless (or the soon-to-be-rusting screw is not stainless) and can fail, allowing a through-hull hose to come loose and possibly sink

Photo: Alison Mazon



Saving a few bucks on non-stainless hardware could cost a lot more in the long run. When this piece fails, the boat's steering system will be rendered inoperative. Any fittings that may be exposed to saltwater should be made of stainless steel.

a boat. A magnet that is attracted to the screw and not the band probably means the clamp is cheap and should not be used. (It should be noted, however, that the magnet test is not infallible; Dick Barber, a representative of Crucible Steel, who makes things like stainless prop shafts for boats, says that certain stainless-steels used in tools and kitchen knives are magnetic. Other types, even 304 and 316, which are commonly found aboard, may have some level of magnetic property depending on the way the alloy is made. Cold working, such as forming a part without heat, will introduce magnetic properties in some stainless and areas around welds can also show magnetic properties.)

Here's one reason that through-hulls cost more than kitchen fittings: ABYC standard H 27.6.1, "All materials shall be galvanically compatible and resist degradation by saltwater, petroleum products, UV light, ozone, cleaning compounds likely to be encountered, marine growth, and the effects of heat aging." Brass fittings found at a hardware store won't meet these criteria and even though they might look like more expensive bronze, they will rapidly corrode on a boat. In one case, a cheap garden hose fitting was used as a baitwell through-hull on a small center console. During an inspection, a surveyor gave it a tug and it

BoatU.S. member Cliff Steele was boating on Lake Michigan when clouds of black smoke began billowing out of the hatch of a friend's boat, a beautifully restored, 1957 Chris-Craft ("the queen of the marina"). Cliff says he spent three or four terrifying minutes helping his friend extinguish the fire, which was caused by a short at the generator. The wires themselves had barely burned but the heat scorched the thick foam soundproofing insulation, which caused the aforementioned clouds of noxious smoke.

With the exception of maybe a few floating gearheads, nobody likes a lot of engine noise on a boat. But soundproofing ability isn't the only thing to consider when you're adding or replacing insulation around your engine.

Engines are hot and can throw off flammable vapors that can be absorbed by a porous foam. According to the National Fire Protection Association 302 standard for recreational boats, material used for sound insulation should be fire retarding and designed and installed so that it won't absorb hydrocarbon vapors. If there's one thing worse than a foam that burns readily, it's a foam that burns readily and is soaked with explosive vapors.

The message: Be careful what you install in your boat's engine compartment.

came apart in his hand. The previous owner had just spent the weekend fishing and was lucky the boat had not sunk while he was out. Bronze is not only more expensive to produce than brass, a bronze through-hull must also have passed a UL ammonia test to prove it's capable of handling marine head through-hull duties. Plastic through-hulls have to be tested to withstand sunlight and chemicals. And any marine through-hull has to be able to handle a 500-pound force for 30 seconds in its most vulnerable direction—try that with a hardware store valve.

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