2021 UPDATES

All updates for 2021 have now been inserted into all courses.

Houseboat Marine Insurance Surveys

If you're contemplating a houseboat purchase, I would recommend getting access to a recent survey, if not, at least having your own survey done. Surveys are becoming a requirement for Loan and Insurance companies. They also have an additional value to a perspective buyer in showing the boat condition, current value, and to identify any necessary repairs.

Marine Survey Cost can vary but a ballpark figure is @ 10-30$ foot, and depends on the extent of inspection needed. A survey will give you an indication of the current value, condition, and seaworthiness of the boat, therefore a survey can be extremely beneficial in all stages of either purchasing, financing, or insuring.

You can save yourself some money by following the Houseboat Buying Guide before calling in a professional surveyor.

Survey Advantages are that for a low-cost the purchaser/owner can know the value, condition, seaworthiness of a boat, and can use this information while financing, purchasing, or insuring a vessel.

Find a qualified Houseboat Marine Surveyor by visiting http://navsurvey.com/

Basics on Insuring your Houseboat

What Types of Boat Insurance?

Two of the most popular types would be Actual Cash Value and Agreed Amount Value.

You want to ask your insurer about things like navigation limits, lay-up period, deductible amounts, boating course discounts, and accessory coverage,

When it comes to Boat House Insurance, there's some important questions to ask to ensure the expected insurance coverage should a future claim arise.

Marine Surveys are generally expected, and at what yearly intervals?

Navigation limits are part of policies, what are your territorial limits?

Lay-up period is for Winter Storage, what dates are they using?

Liability types & amount for property damage and personal injury?

Deductible amount is usually 1-2% of the insured boats value.

Live aboard coverage is a policy condition that should be discussed?

Discounts for courses are available for Power Squadron graduates?

Coverage for Dinghy's or PWC is included, or needs to be added?

Fiberglass Boat Inspections
https://www.dco.uscg.mil/Portals/9/DCO%20Documents/5p/5ps/NVIC/1987/n8-87.pdf

- You have a duty to customer to properly address fiberglass wear & tear.

Fiberglass boat construction was experimented with as early as the late 1930s.

Fiberglass is a form of plastic that is reinforced using glass fiber. The glass fiber is usually woven into a fabric. This makes the fiberglass superior when it comes to durability.

Fiberglass material is relatively lightweight, extremely durable, and less brittle than standard glass or plastic.

Fiberglass can be easily molded and is often used to make more complex shapes. Standard uses for fiberglass are boats, aircraft, bathtubs, etc.

For a boat to be considered a fiberglass boat, the hull, deck, liner, and even large parts of the console are made from fiberglass.

Fiberglass boat construction in a mold first uses a gel coat; fiberglass cloth layers are applied, with resin applied on each layer.

Before fiberglass, boats were constructed from bark, wood, animal skin, iron, or steel. Today, larger ships are still constructed from aluminum or steel, while smaller recreational boats are made from fiberglass or GRP.

Some boaters believe that fiberglass "does not need maintenance. This is not true.

Compared to other types of boats, especially wooden boats, fiberglass is much less maintenance. This does not mean that there is no maintenance involved, and you must keep up with it.

See specific checklist

NavtechUSSA 1-800-245-4425

- # The Surveyor Checklist for Fiberglass Boats

1) <u>Small Cracks</u>
   To find aging damage, look for microscopic, hairline, minor cracks.

These cracks should not be ignored as they can get bigger with time—the bigger the cracks, the more pressure is applied to the fiberglass's structure and integrity.

This break in the integrity of the fiberglass can further compromise the vessel structure (fiberglass boat owners need to monitor their boats for cracks constantly.)
Recommendations
When cracks are found, if small, they need to be filled in.

2) Fatigue
Vibration and impact on the fiberglass cause stress and fatigue. Repetitive waves, engine vibrations, and other activities will cause strain on the fiberglass. Weak and brittle hulls are unacceptable.

3) Water Damage
The most susceptible area of the boat to damage is the part of the hull that is below the waterline, the bottom that is constantly exposed to water. Eventually, after enough water is absorbed, the damage will apply more and more pressure, which can cause wear, blisters, and cracks. Evidence of overexposure is algae growth and bio toxins and, certain barnacles and mussels. To prevent this, there are certain protectants and bottom paints. Recommend scraping, sanding and applying growth repellent for the area and body of water you plan on having your boat in. Before application, recommending properly sanding or cleaning

4) Heat and Sun:
With enough heat and UV rays, the fiberglass in the hull can become rigid and brittle. This can even cause warping.

One major issue with a fiberglass hull is that warping or major damage to the fiberglass itself can be challenging and expensive to repair.

Vigilance, maintenance, and preventative care are the best way to maintain your fiberglass's structural integrity.

If boat is left in the water for even a few days, it needs protection from algae and other growth. To prevent this, there are certain protectants and bottom paints you can apply.

Recommend whatever growth repellent works for the area and body of water. Before application, recommend to properly sand or otherwise prepare fiberglass.

The area between the railing and the waterline needs to have regular maintenance done because this part of your boat takes on most of the waves, spray, and sun. Without proper care, this area will fade, oxidize, and get hazy. To combat this wear, make sure was has been maintained.

If waxing for large areas recommend a buffer to enhance the process and make it easier to complete.

The deck of a boat also sees a lot of wear. This comes from sun, dirt, grime, spills, and other general wear and tear. The main way to combat this is regular washings and a good stiff brush.

Watch for wax buildup in non-slip areas. Non slip areas should not be coated in wax. Highly important on the deck where people walk. Safety should always be priority.

- How to Spot Aging Signs On Used Fiberglass Boats

  When inspecting or buying an old fiberglass boat, especially a “fixer-upper,” there are some things to keep in mind.

  Unlike wooden trim items, fiberglass boat structural issues are more difficult to repair/restore. Inspect gunnels/rails for water intrusion.

  Restoring a fiberglass hull can be almost impossible, depending on the wear accrued. Because these hulls are made all at once, patching them is an option for simple solutions ONLY.

Make sure to check for cracks, fading, wear, growth, or damage. Look at the high-stress areas for cracks, wear down, or other signs of damage.

Make sure the hull is not chipped, blistered, or starting to flex excessively.

Stress on a fiberglass hull can cause flexing as degradation occurs. This can cause major cracks and severe hull issues.

Always recommend maintenance and damage restoration if obvious.

NavtechUSSA

Marine/Vessel Sanitation Review

Know the Law

All boats operating in US waters with permanently installed toilets are required by federal law to have a Marine Sanitation Device (MSD) on board that either stores human waste until it can be transferred ashore, or reduces the coliform count to such low levels that discharged sewage poses no public health hazard—even in populated harbors. While the MSD must satisfy Coast Guard regulations, the boat owner still has a lot of choices of product types and overall system design.

More than three miles from the coast it is legal to discharge raw (untreated) waste overboard, either directly from the toilet or by emptying the holding tank. We think the most sensible sanitation system design gives you the choice of both a dockside pump-out and the ability to empty the tank yourself when offshore (see illustrations below).

Inside the three–mile limit, it is illegal to dump raw sewage. In these areas, boaters may discharge waste only if it has been treated by an onboard treatment device like the Raritan Electro Scan (Type I or II MSD). Otherwise, it must be contained on board in a Type III MSD—a holding tank—and transferred ashore at a pump–out station (which, in many cases, sadly, means it will get a modest amount of treatment before finding its way back into the water).

All non–navigable inland freshwater lakes and the Great Lakes (under an agreement with Canada that predates US federal marine sanitation laws) are No Discharge Zones (NDZ) under federal law. All navigable interstate inland waterways—except for a few specifically designated

NDZ such as impoundments that are municipal reservoirs—are areas where treated discharge is permitted, making Type I and II MSDs legal to use. In NDZs overboard discharge of any kind is illegal and subject to fine. This means you must have a holding tank. And in some places you may not even be allowed a Y-valve, (common in saltwater regions) between the toilet and holding tank for emergency pump-outs or a macerator to dump the tank. Installing a means of locking the Y-valve in the tank position may or may not satisfy local authorities.

A rapidly increasing number of coastal areas have been designated as No Discharge Zones. To qualify under the federal Clean Water Act, states must show that sufficient pump-out facilities exist for boaters to empty holding tanks. In Michigan, New Mexico, Rhode Island and Vermont all waters are no discharge. There remains considerable opposition to NDZs from boaters who feel both inconvenienced and unfairly singled out as sources of pollution (miniscule compared to typical sewage treatment overflow following rainstorms, runoff, and industrial effluents), but the political tide definitely favors the proliferation of NDZs.

SANITATION TYPES

CASSETTE TOILETS

A cassette toilet is simply a loo with a removable waste tank. Although there is a great deal of variety, it comes in two basic forms: integrated (built into the boat as a permanent fixture) and freestanding (in which case you can tuck it into which ever corner suits your fancy). In the former case, rinse water can be taken from the boat's own water system, whereas in the latter, a limited quantity of rinse water is contained in the upper (seat and bowl) part of the structure.

The cassette toilet now encompasses everything from a simple two-part box that stows away beneath a seat to far more elaborate

models, with swivel seats and electric flush that in appearance (if not in function) closely resemble a home toilet. Cassette toilets are appreciated for their affordability, their simplicity and their reliability. Basic models can cost as little as 100 dollars and they require very little space or upheaval on board. The waste tank can be taken to a disposal point instead of the whole boat.

However, the rinse reservoir must be topped up. The cassettes can get extremely heavy and they can also be quite agricultural to use, both in terms of smells on board and in terms of the practical undertaking of emptying your tank by hand. The flow is generally very good with modern cassettes when emptied.

PUMP-OUT TOILETS

The pump-out toilet abandons portability altogether. Instead, it uses a larger holding tank that is permanently fixed to your boat. This means that, when the time comes to empty it, use a marina's pump-out facility. The emptying process itself also feels much more civilized because the closest you get to the waste itself is watching it disappear via a viewing window in the pump-out hose.

The pump-out toilet comes either as a 'Dump-Through' unit (where the tank sits directly beneath the toilet) or with a remote tank, where the waste has to be transported away by pumps or vacuums via a pipe network. They can often involve a macerator, which chops the waste into smaller parts before sending it through the pipes. This of course is in a bid to prevent blockage, but you still need to be careful to use only the bare minimum of lightweight, biodegradable toilet paper or you could well incur a blockage that requires expert attention.

Pump-out toilets tend to be relatively complex and expensive compared to cassette toilets, but there are plenty of people in the boating world who would be reluctant to opt for anything less. They can operate with either a manual or an electric flush but those who find product popularity reassuring should take a look at Jabsco's best-selling manual model. It comes with a china bowl and a wooden seat; it's simple and reliable; it's tailor-made for tight spaces, civilized in

operation, quiet in the middle of the night (unlike most electric flush toilets) and it's even affordable enough to replace at fairly regular intervals.

NEW-AGE ALTERNATIVES

Liquid chemicals are the primary method of dealing with the smells that inevitably occur when waste is stored in a tank. They can either be put directly in the waste tank or they can be mixed with the toilet's rinse water. Either way, our increasingly eco-conscious age has seen the emergence of several more sustainable nitrate and enzyme-based alternatives that aim to replace these chemicals by speeding up the decomposition process. There is also a new breed of loo known as the composting toilet, which uses sawdust or peat moss to dry out the waste, negate any smell and render it harmless. They use no water, they require virtually no maintenance and there is no prospect of traumatic blockages.

Configurations and Installations

Direct Discharge

The least complicated configuration has the head's inlet connected to a 3/4-inch through-hull and the outlet to a 1 1/2-inch through-hull. But direct discharge of untreated sewage into the coastal and inland waters of the United States has been illegal since 1972. If your head discharge hose is connected directly and only to a through-hull fitting, you are long overdue for corrective measures.

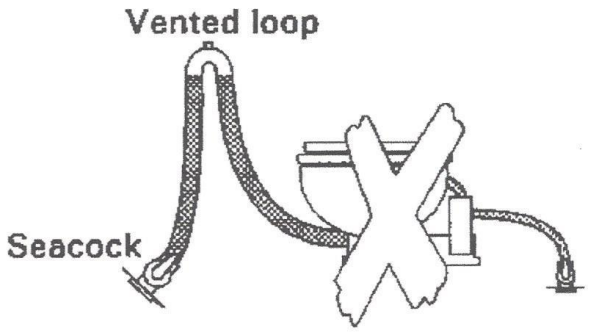
Holding Tank

A holding tank is the most common means of compliance with discharge laws. A holding tank has the advantage of being the only sewage handling method universally acceptable to all governing authorities, and it adds the least complication to sewage handling.

A holding tank does not require any change to the head's inlet connection. In fact, the inlet connection is the same for all head

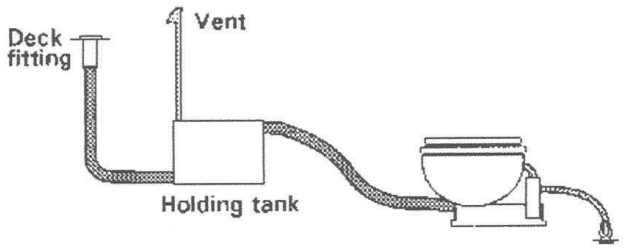
configurations detailed here. Use heavy-duty suction hose between the inlet fitting on the head and the through-hull; this need not be sanitation hose since sewage does not pass through it. Secure both connections with dual hose clamps.

If possible, the inlet through-hull should be on the opposite side of the keel from the discharge. If they must be on the same side, the inlet should be forward of and as far from the discharge as practical. A head inlet should not share a through-hull with any other inlet connection, but it can be teed off a discharge line — a sink or cockpit drain, for example — provided they are forward or on the opposite side of the keel from the head discharge.



Coastal Use

If the boat never leaves inland or coastal waters, connecting the head directly to the tank is the only legal option. The tank itself will require two additional connections, one to a pump-out fitting on deck All three of these hoses must be sanitation hose to resist gas permeation. Using the wrong hose on the discharge side of the toilet is the primary cause of smelly head compartments. Check existing hoses by wiping them with a clean, damp rag, then sniffing the rag. If it stinks, replace the hose and the other to an outside vent fitting to prevent a build-up of explosive gas inside the tank.



Offshore Use

Beyond the three mile limit, direct discharge is legal, and unless an offshore boat is equipped with an onboard treatment system.

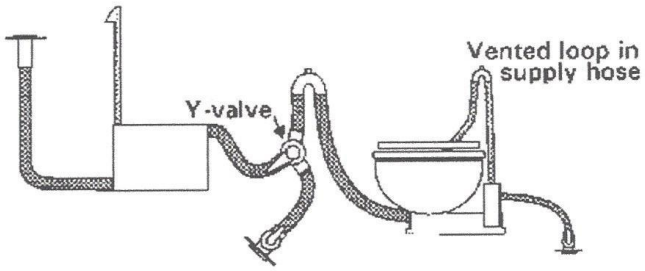
Offshore boats need the ability to pump sewage overboard rather than retaining it. This is most easily accomplished with a Y-valve in the head discharge line. Sewage can be directed into the holding tank or overboard via a through-hull fitting. Inside the three-mile limit this Y-valve must be locked in the holding-tank position or there is a substantial fine.

Vented Loop

If the head is mounted below the waterline, or if it moves below when the boat heels, there must be a vented loop in a discharge line that connects to a through-hull fitting. Otherwise, if the head's internal valves are held open by debris — an inevitable occurrence — water will siphon back into the boat. Poor head installations sink boats every year.

Mount the vented loop so it will remain above the waterline at all heel angles. Clean the anti-siphon valve regularly to keep it functioning.

A vented loop in the inlet line can interfere with the proper functioning of the head, and its omission poses less risk because of the positive-action valve on the inlet side of the head. If the lop is leftout leave the inlet valve must be in good working order. A screen filter to exclude grass and other debris is highly recommended. For a vented loop on the inlet side, install it in the hose between the pump and the bowl.

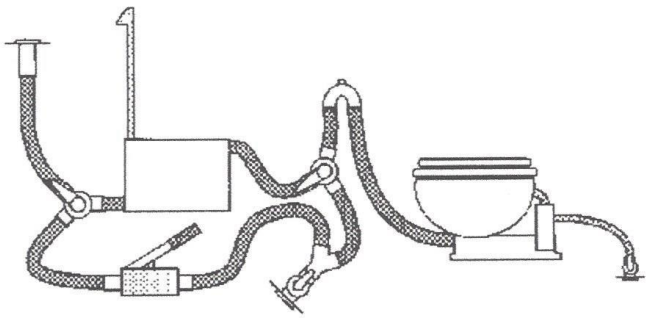


Through-the-Tank Discharge

Putting the Y-valve after the tank instead of before it allows you to empty the tank offshore when a pump-out station is unavailable. It also necessitates an additional pump, one designed to handle sewage.

Duality of Purpose

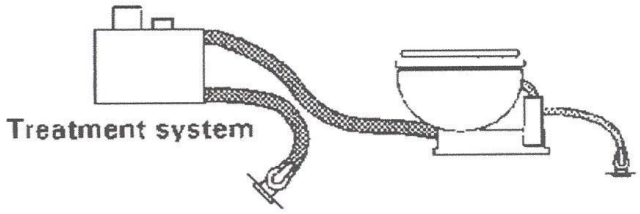
Combining these last two systems into one that provides total flexibility for the varying circumstances. With a Y-valve before the tank and one after, direct head discharge into the holding tank or directly overboard. A simple Y-connector allows both overboard discharge hoses to share the same through-hull fitting.



Treatment System

A treatment system offers nearly the same plumbing simplicity as direct discharge. Connect the head's discharge hose to the inlet side of the treatment unit, and connect the outlet side to the discharge.

A number of state governments are moving toward declaring all state waters a No-Discharge Zone. NDZ, boats will still need a holding tank. See interactive link below from the EPA for updated NDZ's.



https://www.epa.gov/vessels-marinas-and-ports/no-discharge-zones-map

THIS IS AN EXCELLENT TEMPLATE FOR INSPECTION. NEED A TEMPLATE FOR ENGINES! Look at page 5-6.

file:///C:/Users/User/OneDrive/Desktop/NF57-19-01%20Annual%20Inspection%20Examination.pdf

Good Reminder:

Part of our interest in acrylic hull restorers is due to the wide range of opinions on these products. Marketing materials often position these products as "miracle cures " for aging gelcoat, and the examples of restored boats appearing on the Internet or in brochures often seem too good to be true. While user reports are generally positive, some disappointing reports also crop up on sailing forums.

So what's the difference between acrylic coatings and conventional waxes and polishes? Waxes and polishes fill in minor surface imperfections and give the gelcoat a reflective surface. Acrylic fiberglass coatings – an alternative when waxes and polishes won't revive your gelcoat – leave a hard, clear plastic coating on gelcoat.

Acrylic coatings differ significantly from ordinary bottle or paste waxes in both their chemistry and how they are applied. Conventional carnauba paste waxes (those made from the carnauba bean) mechanically stick to the surface of the hull and usually require rubbing to get them to crystallize and shine. Buffing drives wax into the surface pores.

Synthetic polymer "waxes" penetrate pores and chemically bond to the boat's surface. Some synthetics resist abrasion and chemicals better than true waxes, but the line between conventional waxes and polymer waxes is fuzzy. Even products that are true carnauba waxes often rely on polymer technology.

The Surveyor Walk Around

The first thing you do on any boat. With or without the customer present.

NavtechUSSurveyors

800-245-4425

When you climb on the boat, resist the temptation to go below deck right away. Instead, take some time to slowly walk around the deck. Keep an eye out for anything that looks wrong or out of place. Check for additional caulking or sealant that may have been applied around windows, stanchion bases, chain plates, and other deck fittings. Make a note to check these areas when you go below to see if, and how, water was getting into the boat.

One of your priorities when topside will be to determine if any water has found its way into the wood core of the fiberglass deck. Most decks are stiffened with a wood core of end-grain balsa or plywood which is sandwiched between inner and outer layers of fiberglass. More often than not, water will get in through holes used to hold deck fittings in place, and this is especially true of equipment that may have been poorly installed by one of the previous owners. Older boats may have slightly elevated moisture readings in a few areas of the deck, but if enough water does get in, it will eventually cause the wood to rot, and there will be additional damage when everything freezes during the winter. This will lead to delamination between the wood core and fiberglass skin, and will result in an area of the deck that may have lost much of it stiffness. Depending on how large an area is affected, and its location in relation to the cabin and other structures, repairing delamination and rotten core can be difficult and expensive.

When walking around on deck (and cabin top), use your weight to see if you can feel soft or mushy areas in the deck under your feet. A little spring in the deck is often normal on many boats, but you'll have a good idea that something is wrong if the deck on one side of the boat feels a soft, while the corresponding area on the other side is nice and stiff. You can use the back end of a screw driver handle to tap any suspect areas of the deck. If the tapping produces a crisp sharp sound, it suggests that the deck is probably okay, while a dull thump sound indicates that some delamination may have taken place. It can sometimes be difficult to figure things out, and ultimately, the report on the condition of the deck may have to wait for an assessment by a competent surveyor.

Your walk around the deck will also give you the chance to verify the condition of the winches, stanchion bases, bow pulpit, stern rail, hatches, windows, running lights, and other fittings. The gelcoat and anti-skid areas of the deck should be given a close look. You may find some stress cracks which could be an indication of some sort of structural problem. However, on many boats the cracking and crazing in the deck gelcoat may only be superficial and cosmetic in nature, although the larger of these cracks will eventually have to be repaired before they develop into anything more serious. Such superficial cracking and crazing is often the result of a fiberglass deck that was built with a gelcoat that was a little too thick.

Don't forget to check out the cockpit, the area where you and your crew will probably spend more time than any other part of the boat. Look for cracks and verify the stiffness of the seats, cockpit locker covers, and cockpit sole (floor). Be sure to open those cockpit lockers to look around. They can sometimes be full of sail bags and other equipment, and you may have to empty them so that you can get your head into the lockers for a good view of nooks and crannies of a part of the boat that is often

ignored. Also inspect any arrangements for storing the propane tanks. Such tanks should be in their own self-contained locker which vents overboard (above the waterline).

The mast and rigging should also be given a once over before going below. Depending on the off season practices of a particular club or marina, the mast may be left standing on the boat, it may be taken down and stored across the top of the boat from bow to stern, or it may be stored off the boat on a mast rack. Whatever the case, you'll want to check the stainless steel rigging wire for any broken strands (also known as meat-hooks because of what happens if you grab one with your bare hand). Equally important is the close inspection of swaged eye terminals at the ends of the rigging wire for signs of corrosion, minute cracks, or any evidence that the terminal fittings have been bent slightly out of shape. Any defects with wire or swaged terminals is an indication that some or all of the boat's stays and shrouds may have to be replaced.

If possible, check the top of the mast. Problems are less common with the swaged eye terminals at the upper end of the rigging wire, but the tangs to which they are connected should be verified. These tangs will either be bolted to the top of the mast or incorporated in the mast cap. Look for cracks in welds in the mast cap and any corrosion where a stainless steel bolt comes into contact with the aluminum mast. And while you are inspecting the top end of the mast, make sure that the halyard sheaves (pulleys) are rotating freely and that they do not have too much side to side play. It's also a good idea to take note of what accommodations have been made for a masthead wind indicator and VHF antenna.

The spreaders are another area worthy of some attention. The fittings which hold the spreaders in place are often attached to the aluminum mast with stainless steel bolts and screws. Again, it's a question of corrosion where two dissimilar metals come into contact. And finally, if a keel stepped aluminum mast is allowed to sit in bilge water, the bottom end will eventually show signs of corrosion. The same holds true if the lack of a drain hole allows water to collect inside the base of a deck stepped mast.

- Inside the Cabin and Below Decks.

When you go below on a boat that has been laid up for the winter, you may discover that its main cabin and V-berth area are cluttered with all sorts of equipment that has been stored for the off season. It may be necessary to move all of this out into the cockpit in order to get a good look around.

Start your inspection of the interior by opening up the bilge and the lockers and compartments under the settees and V-berth. Now is time to revisit, from the inside, any suspicious areas that were identified during your examination of the exterior hull. Verify the condition of seacocks and thru-hull fittings along with the hoses and hose clamps. When examining the bilge, keep and eye out for any repairs or cracks in the floor boards (keel supports) which suggest the boat might have been involved in a severe grounding. Also, if there's evidence that standing water was allowed to sit in the bilge for long periods of time, look for signs of osmotic blistering in the fiberglass of this part of the interior of the boat.

By peering into the various lockers and compartments, you should be able to check the tabbing (strips of fiberglass material) which keeps the main bulkheads and other interior components firmly attached to the hull. If the tabbing has separated from the bulkhead or the hull, you may be on a poorly built boat or one which has been subject to some serious strain and twisting. Less critical are problems with the fiberglass tabbing for interior components such as the settees and V-berth structure. As long as the

problem areas are easily accessible, repairing tabbing that has separated from interior components is relatively easy, although it can be a messy job.

If the boat has a deck stepped mast, verify that it is well supported by the main bulkhead and internal post, and that the downward force of the mast is properly distributed to the keel and over the lower part of the hull. Also try opening and shutting any door in the bulkhead or nearby head (toilet). An out of alignment door could be a sign that pressure from the mast or something else is causing flexing in the shape of the hull and bulkhead. Note that a small degree of distortion in the shape of the hull may occur when a boat is sitting on land, but this often disappears when the boat is floating in its natural element. It is not all that unusual to see doors that may be slightly out of alignment on many older structures, including boats.

Closely examine the windows and the entire length of the hull-deck joint for possible leaks by looking for barely noticeable water stains. It will also be time to see if any of those suspicious looking fittings you spotted on deck or the cabin structure are letting water into the boat. Because many boats are built with inner liners (fiberglass shells), the entry point for water on deck can be far removed from the spot where it actually emerges in the boat. And of course, when water does leak into a cabin, it always seems to drip from an area above one of the berths.

Inspect the chain plates during your search for possible leaks. Chain plates are often bolted on the main bulkhead, and they protrude through the deck to provide an attachment point for shrouds which hold the mast up. If the sealant around them fails, water will find its way down along the chain plates and onto the wooden bulkhead. If the bulkhead starts to rot, it can suddenly let go of the chain plates and the boat will lose its mast.

Although cabin cushions are not really a factor in determining seaworthiness, they have a major impact on a boat's livability. Take a good look at the cushions' covering material, and see if the zippers are still serviceable. The foam inside the cushions may also finished, and this isn't obvious when you are hurriedly inspecting a boat. So take some time to judge the comfort of the cushions by sitting down on the settees or lying on the berths. Unfortunately, the various custom fitted cushions on a sailboat can be quite expensive to replace, but it's an investment that can do wonders to rejuvenate a rundown interior.

- Plumbing and the Electrical System.

The plumbing systems on larger boats can start to become quite complicated. Check the fresh water tank(s), hoses, hose clamps, and any hand, foot, or electric pump(s) in the system. You will probably find the tank(s) are due for a good cleaning, and that some hoses and hose clamps should be replaced.

Take a close look at the waste system if the boat is equipped with a separate holding tank and head (as opposed to the smaller system consisting of self-contained toilet/tank). Make sure the holding tank is vented outside, and that the line isn't blocked. Unless it is relatively new, you can assume that seals and joker valve in the head should be replaced (they sell kits for this). The same holds true for the large hose between the tank and the head. These jobs are not pleasant, but they help to ensure that boat does not develop any odor problems.

Determining if the 12 volt electrical system is adequate and in good working order can be relatively easy on an older boat. Unless it has been refurbished, you can assume that most of it should be replaced. Many boats built in the 1970s and early 1980s came with electrical systems that were barely adequate

two decades ago. Today's boats are often loaded with all sorts of additional electric and electronic equipment, and they often require new wiring and upgraded fuse or breaker panels. Another problem is that previous owners may have piggybacked all sorts of extra equipment onto existing wiring and circuits on the electrical panel, and figuring out what's what may be next to impossible. Rewiring such a boat is a project which can take place over one or two seasons, and the survey report should point out any work that has to be done on an urgent bases.

In the meantime, you should check the system for potential short circuits by looking for frayed wiring, lose wires in lockers or compartments that easily become frayed, and electrical panels whose back is completely exposed to the interior of a locker. Also note that 18 gauge wire may be inadequate for runs over 15 feet (5 meters), especially when powering 12 volt equipment which draws a fair amount of current. Sixteen and even fourteen gauge wire is often the best choice for many applications onboard.

Mistreated batteries will not have much life left in them, but this may only become evident once you start using them and discover they no longer hold a charge. The use of a hydrometer can reveal if the voltage of any one cell is substantially lower than others, a sign that the battery should be replaced. Whatever the case, look for indications that the batteries have been well maintained. They should be relatively clean, each cell should have the correct fluid level, and their terminal post and clamps should be corrosion free. And needless to say, heavy batteries should be securely strapped into place.

- The Sails and Engine.

Proper inspection of sails and engines will require the services of a sailmaker and mechanic. In most cases, but qualified professional surveyors can give cursory examinations.

Start the engine to verify that it works. This is easy to do if the boat is in the water, but if it is stored on land, it will be necessary to find a way of supplying water to the engine's cooling system. Outboard motors can be started away from the boat with the help of a garden hose and flusher attachment (which looks like rubber ear muffs). If the hose is long enough, it is also possible to start an inboard engine on a boat that is stored on land. This assumes that the starting battery is onboard and that the engine is no longer winterized.

Generally speaking, and if the belts on an inboard engine appear to be old and worn out, if the engine compartment is dirty and does not look like it has been opened regularly, it is very likely that the motor has been poorly maintained. If, by comparison, you find spare engine parts stored away on the boat (filters, impellers, etc.), an engine compartment that is relatively clean, and belts that are in good shape, it's likely the motor has been well looked after and is in good condition. Beyond this, you'll probably have to rely on a mechanic to learn more about the condition of the engine.

The sail inventory also deserves a quick once over. If you find any Mylar sails, assume they will have to be replaced sooner than later. A mistreated Mylar sail can be destroyed in one season, and even one that has been cared for with kid gloves will have a life expectancy that will be considerably shorter that its Dacron equivalent. But unless you are looking at boats that have been raced a lot, you'll probably come across Dacron (polyester) sails most of the time. Twenty year old Dacron sails that have been well maintained and not subjected to abnormally heavy use, can still have some life left in them for casual day sailing and short cruises (although it will be on its last legs). Also note that even if an older sail is holding together reasonably well, it can no longer be expected to have an optimal aerodynamic shape.

As a general rule, the more a sail feels crisp and stiff, the more life it has left in it. Conversely, the more a sail feels soft and limp, the sooner it should be replaced. If there's enough open space nearby, you may want to unfold the mainsail and genoa for a closer inspection. Keep an eye out for any damage or signs of repair, and be sure to check the stitching. On the mainsail, pay attention to the area around the batten pockets and the slugs which slide up the mast track. With the genoa, double check the area about half way up the leech that sometimes rubs against the spreaders. Many older sails can use some restitching and minor repairs, and this is usually not too expensive.

Your inspection will help you determine if the condition of the boat justifies the seller’s asking price, and whether or not you want to move on to the next step in the purchasing process. This should involve making an "offer to purchase" which is conditional on you being satisfied with the condition of the boat as described in a surveyor's report. If your offer is accepted, the boat will be conditionally sold, and you'll be in a position to engage the services of a professional surveyor to produce the necessary report.

Most surveyors give a verbal summary of the condition of the boat shortly after completing the survey, and will provide a detailed written report within a few days. Good surveyors are even capable of finding a surprising number of shortcomings on a brand new boat. Many surveyors will issue their report in terms of

Items requiring immediate attention,

Matters that should be taken care of in the next year or two,

Projects that can be carried out at some point in the future at the owner's discretion.

Although the items requiring immediate attention are obviously the important ones, they often involve problems that are relatively easy to correct. For example, it is not unusual for a surveyor to recommend that the hoses and hose clamps on seacocks and thru hulls be replaced as soon as possible. If, on the other hand, the report does identify a major defect or problem which had not already factored into price of the boat, you may want to renegotiate your offer or see if the seller is willing to make the necessary repairs. The guidance of the surveyor in determining the extent to which such a defect or problem should influence decision on whether or not to purchase the boat are paramount.

Inspecting Sails in Practice for the Marine Surveyor

The easiest way to inspect sails is to lay them out flat on an even clean surface. Walk around the edges and look carefully over the belly of the sail. Pay special attention to the points where the sail is attached to the spars and rigging.

The Head - examine the headboard (the reinforced part at the head of the sail). Enbsure rivets are in place and that the stitching is not weak anywhere. The latter may be worn around the head and you will need to check the reinforced patches in this area.

The Tack is subjected to a great deal of strain and can distort. Broken stitching means the whole sail will become misshapen. On a main sail, look for signs of wear on the bolt line (rope edging) where it rubs on the boom and stitching damage.

The Clew is subjected to the same type of wear as the tack, but on headsails is particularly vulnerable to chafe against the standing rigging.

The Luff - on a mainsail, check that all the slugs are properly attached and not broken and that the reefing cringle is not distorted. The hanks on a headsail must be firmly attached and free from any corrosion. Notice any chafe along bolt line on a mainsail and for strands of broken wire on a headsail luff

The Foot - on a mainsail with a roller reefing system, check for signs of chafe where it has been rolled around the boom. Check or wear, tearing, pulling on any slab reefing points.

The Leech - examine the batten pockets for damaged stitching and if there are any leech line attachments make sure they are in position. Genoa leeches on cruising boats are particularly vulnerable to chafe against the lifelines or shrouds.

Notes: Always be vigilant to the possibility of deterioration of the fabric due to sunlight. If the cloth is thin or brittle over a small area it can be patched, but with larger areas, the sail should be replaced.

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