

# Sharp Marine Surveys

**Marine Survey Glossary** not comprehensive but if there's anything on this site or in your report which you don't understand and it's not here, get in touch.

**Beam shelf** - on a wooden boat the timber that runs around the inside of the hull beneath the deck edge which supports the beams. Inboard of this is the carling which supports the side deck where it meets the coaming or the coachroof (the cabin). When you are taking an initial look at a wooden boat try and feel around here for deck leaks and any problems they may have caused. It's not the only thing that can go wrong but it's a good indicator.

**Calorifier** - an insulated water tank through which hot seawater from the engine is piped via a coil, transferring part of its heat to the cold fresh water within the tank. They usually also have a 240v electrical immersion heater which can be plugged in to the shore supply when alongside.

**Cathodic protection** - lumps of zinc (in seawater), magnesium (in freshwater) or aluminium (in brackish water) which can be attached to the hull, rudder, stern shaft or outdrives. The idea is that these can erode and be replaced instead of expensive metal under water fittings such as propellers or skin fittings. To do this they have to be electrically bonded and reasonably close to the things they are supposed to protect.

**Cavitation** - where the propeller spins faster than water can be drawn into it, causing a drop in pressure and either vapour bubbles forming or air being sucked down from the surface either way a loss of power. Hence anti cavitation plates on some double ended boats built around the stern and on outdrives and outboards above the propeller.

**Chine** - the corner between the sides and bottom panels on a 'hard chine' hull, usually a power boat or plywood dinghy. As opposed to round bilge hull.

**Coach roof** - any raised structure on the deck which allows greater headroom below.

**Copper nails and roves** - square section copper nails hammered through pilot holes and then drawn tight by riveting them over copper washers or roves.

**DZR brass** - dezincification resistant brass, often used now used to replace bronze in through hull fittings. They usually have a ball valve which turns within a nylon bearing. It is important to buy fittings that are marked DZR or CR. They look identical to and are often confused with chrome plated brass fittings which will only last about 5 years before failing.

**Doublers** additional plating welded over the top of damaged areas on steel or iron hulls or decks to make good any damage. If it is done over large areas then slots should be cut in the plating so that it can be welded to the frames. This is a common way of renovating old steel and iron hulls. A better quality job involves cutting out all the damaged plating and welding in new plate, but it involves far more labour.

**Eberspacher diesel heater** - the most common form of heating system on small boats where a fan forces air over an element, within which is an electrically ignited diesel burner, and from there to the cabin.

**Electrolytic decay** - of wood, refers to the breakdown of wood cells by an electrical current. In a wooden boat if there is copper or copper alloys (e.g. bronze) and iron then there will be an electrical potential between the two metals. Wood that is saturated with seawater will allow a small current to flow which, over years, will cause the wood to decay.

**There are other forms of wood decay** wet or dry rot from the many different types of mould spore often occurs where rainwater can get in and the wood cannot dry out or ventilate. Some softwoods will simply collapse if they become saturated and the cell walls burst. Boats kept up muddy creeks can get infested with gribble (a wood borer). However all of these things take time to develop and can be prevented or stopped.

**Epoxy resins** - created a breakthrough in wooden boatbuilding they allow wood to be encapsulated (no moisture = no rot), mixed with various powders they make a waterproof glue that sticks to virtually anything and mixed into a stiff paste they make a filler that is far quicker to apply than the traditional method of cutting in 'graving' pieces of replacement wood. They are expensive and a potential cause of allergies (they contain organic peroxides). The most popular brand is 'West' which comes in a two pack kit. A clear resin is mixed 5 parts to 1 with a yellow hardener resin and then filler powders or even fine sawdust added to get the desired thickness. Neat resin can be used to harden up softened wood.

**Fractional rig** - where the forestay runs to a point short of the top of the mast so that the backstay can be tightened in order to bend the mast and flatten the mainsail. Sails are like wings, the flatter they are, the less drag and so more efficient which is what you want going to windward. 7/8 fractional rig refers to the proportion of the mast's height the forestay terminates at.

**Frames** - on a wooden boat, the transverse members, either steam bent or sawn timbers, which support the planking. On older GRP boats, the same purpose is served by plywood bulkheads or half bulkheads which are glassed in to the hull. Newer GRP boats have internal mouldings which glued into the hull.

**Ground tackle** - general term for the anchor, its chain, any cable, possibly a spare anchor. Anchors can be a Bruce design (like a three pronged rounded shovel), a CQR or plough shape, a Danforth (two trailer prongs all of which folds flat) or a fisherman which is the classic anchor shape.

**Gudgeons and pintles** are used to pivot the rudder when it is set on the transom as opposed to pivoting with a tube built into the hull. Gudgeons have holes and pintles, pins, the one pairing the other.

**Heads** - compartment or space for a sea toilet.

**Insurance survey** - a survey required by insurance companies on boats over 10 years old, wooden boats or anything else they may want reassurance upon. Usually presented as an abridged form of a condition survey. It will not cover cosmetic or non-safety related items.

**Keel** - The main centreline timber on a wooden boat, but usually only refers to the cast-iron or lead ballast keel on GRP boats.

**Laminate** - general term for GRP ( glass reinforced plastic), named because layers of glass are bonded or laminated with polyester resins within a mould to create the hull or the deck. Resins can be polyester or epoxy. The latter are far stronger and far more expensive. Polyester resins used to be orthophthalic types up to the early 90s. These tended to absorb more moisture than the later isophthalic types. Vinyl ester resins are even more moisture resistant and often used for gelcoats.

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**Osmosis** - process by which water molecules move through the gel coat and, over time, combine with fibreglass chemicals within existing voids or air bubbles to form pressurised blisters. Build quality is everything; poorly made hulls will have numerous voids in the laminate or bubbles in the gel coat which allow the osmosis to begin. The blisters will eventually burst, exuding an acidic fluid or solute and exposing the underlying laminate. The process does not cause the hull to absorb any significant quantity of water or go 'spongy' and it can take years, even up to the useful life of the boat, to advance to a stage at which the hull is significantly weakened. In short, for most boats osmosis is a cosmetic problem that makes them difficult to sell rather than a danger to sail.

**Outdrive** - also known as stern drive. Where the drive unit (propellers and gearbox) is located outside the hull bolted to a strengthened transom. Maintaining these in line with manufacturer's recommendations is vital. Any insurance claim based on leaks from an outdrive will have to be backed by evidence of this.

**Pad welding** - filling small holes or pitting on steel plating with weld metal. This is ok for areas up to about 10mm across, beyond that you need to weld a doubler (a patch - see above) or replace the plating.

**Pulpit** - is the stainless steel handrail at the front of the boat. Pushpit is the same thing on the back of the boat. Stanchions are the upright posts around the side of the boat which are fitted with guard wires to cover all other eventualities. Failing all else, most well set up sailing yachts will have a jack stay which is a length of webbing or wire which runs along the deck to which the crew can snap on their safety harnesses.

**Recreational Craft Directive (RCD)** - any boat sold new in the EC since 16 June 1998 should be built to standards that comply with the EC's recreational craft directive and have a 'CE' plate marking which will show the number of people it should carry and the conditions in which it can safely be used. Category A is ocean going (winds greater than force 8, waves higher than 4m), category B is offshore (up to force 8, waves up to 4m), category C inshore (up to force 6, waves to 2m) and D is sheltered (up to force 4 and waves to 0.5m). Most small planning power boats become impossible to use safely or comfortably above force 4 on exposed coastlines (like Sussex) but will nonetheless be marked as category B.

**Rigs** - There are many but the most common are a sloop which is one jib or genoa and one mainsail. A cutter has two jibs. A ketch has two masts, the aft one (the mizzen) is smaller and forward of the rudder post. A yawl is the same with the mizzen aft of the rudder post. Gaff rigs were used on all sailing boats up to the start of the 20th century, after which the Bermudan rig became prevalent.

**Rudder types** - can be balanced or semi-balanced which means part of the area of the blade is forward of its pivot point. A spade rudder is one which is partially supported or unsupported beneath the hull, the alternative being a transom or skeg hung rudder which pivots on pintles (spikes) and gudgeons (holes for the spikes). A spade rudder is attached to a rudder stock which will go through a hull gland to keep the water out and is controlled by a tiller or by a wheel. If the latter, there will be a quadrant on the top of the rudder stock to which wires are fixed or a tiller arm to which a hydraulic ram or cable steering is attached.

**Sandwich or cored deck** - used on virtually all GRP decks, two panels of solid GRP separated by and bonded to a core made of end grained balsa wood or foam. The point to check is that the three layers have not become de-bonded due to holes in the deck allowing water in which will cause them to separate.

**Scarph** - slopes cut into a timber, usually 1:6 to 1:8 angle, to increase the joint area where the available timber has to be joined to make up the required length. Can be a hooked scarph where a step is cut into the slope to add strength.

**Skin fittings** - usually refers to any hole through the hull to allow seawater in (e.g. for engine cooling) or waste water out. These must be fitted with a sea cock (a valve) if beneath the waterline so that they can be closed. They must be bronze, dezincification resistant brass (DZR, usually marked CR) or

reinforced nylon (usually Marelon). Beware of plated brass domestic water valves being pressed into service or of 'Tonval' fittings which are brass by any other name. Bronze is an alloy of copper and tin which is relatively stable in seawater, brass is copper and zinc and is not the zinc leaches or erodes out leaving weakened copper.

**Spray rails** longitudinal ridges moulded into the underside of a planing hull to improve directional stability and add strength.

**Stern gear** - general term for the propeller, the propeller shaft and any supporting brackets or bearings.

**Tabs or tabbing** - sometimes used to describe the short sections of glassed in cloth or tape that secures plywood bulkheads and frames to a GRP hull.

**Topsides** - the hull from the waterline to the edge of the deck. The height is the freeboard.

**Windlass** - mounted on the foredeck to hoist the anchor as opposed to winches which are mounted around the cockpit or on the mast to hoist and trim the sails.