

BOAT CARE & MAINTENANCE

A GUIDE FROM KINGMAN YACHT CENTER

Boating Tip: Commonly Overlooked Maintenance Items

When Kingman Yacht Center decommissions your boat, we perform a careful inspection of any on-board systems that you request us to work on. Additionally, there are important maintenance items that, while not necessarily routine, should not be overlooked:

- ▶ Steam clean and wash the bilge(s). A clean bilge prevents odors and helps to identify any problems quickly.
- ▶ Check for loose fittings or excessive wear on engine mounts and cutlass bearings.
- ▶ Inspect and repack your dripless stuffing box if necessary.
- ▶ Service diesel engine injectors and adjust the valves to proper specifications.
- ▶ Recover worn out cushions.
- ▶ Flush and restore your engine(s) cooling system and any salt water plumbing.
- ▶ Inspect and clean electrical connections at the battery and throughout the boat.
- ▶ Service the windlass.
- ▶ Clean and service your bilge pumps and gray water box.
- ▶ Exercise and lubricate all sea valves.
- ▶ Inspect epirb, life raft, ditch bags, life jackets and other safety equipment. Replace items if necessary.
- ▶ Clean and polish your oxidized aluminum rails and hardware.
- ▶ Replace the gaskets in your leaky hatch(es) and ports.
- ▶ Replace the snaps that have pulled out of the sides of the cabin or hull.
- ▶ Unroll the Isinglass and clean it up before you put it back on the boat.



Kingman Yacht Center provides a comprehensive range of services to ensure that your boat is stored safely for the winter, and ready for trouble-free boating fun in the spring....

Dear Boat Owner,

Welcome to Kingman Yacht Center!

As every owner already knows, a boat requires constant care to keep it performing safely and efficiently. All too often we receive distress calls that might have been avoided from boats that have become stranded off Woods Hole or Cleveland Ledge. Periodic inspection and servicing of the complex mechanical, electrical, and structural systems will prolong the life of your boat -- and minimize the potential for breakdowns at sea.

At Kingman Yacht Center, our boatyard has been serving the needs of New England boaters since 1932. We are committed to providing you with superior services to help preserve and enhance the value of your boating investments. Our goal is to make it as convenient and safe as possible for Kingman Boaters to enjoy their valuable free time on the water.

Kingman Yacht Center has prepared this **Boat Care & Maintenance Guide** to remind you of the importance of routine upkeep of your boat's systems and why we might recommend these procedures for your boat. Whether you choose to do the work yourself, or prefer to have our professional technicians service your boat's systems and inspect, correct and identify potential problems, a few minutes of your time now could save days of aggravation this summer.

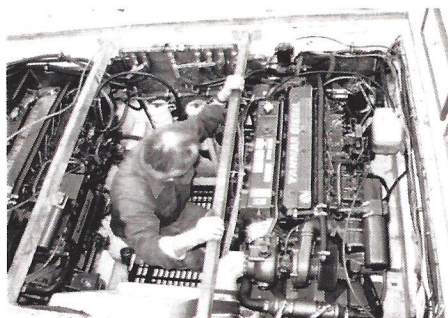
We would be happy to set up an appointment to inspect your boat with you and talk with you about any repair deficiencies and a possible long-term maintenance schedule. If you would like to schedule an on-board consultation, please call Chris Gagne at (508) 563-7136 x105. Or contact Chris by e-mail at chrisg@kyc.us.

Thank you for choosing Kingman Yacht Center for winter storage this year. We look forward to seeing you soon ... *because spring is just around the corner!*

Scott Zeien
President

The Inside Story

Engines & Generators;
Mechanical, Electrical &
Exhaust Systems



The engines on your boat are constantly exposed to the corrosive effects of dampness and a salt water environment. Frequently, boat engines never get a chance to run as designed, operating intermittently or under a continual heavy load. While marine engines are built to withstand these demands, keeping them trouble-free requires good preventive maintenance.

We recommend that engines and generators be serviced periodically as follows:

Fuel System

- ▶ Inspect all connecting fittings
- ▶ Tighten or replace hose clamps
- ▶ Inspect fuel fills and tank vents
- ▶ Clean or replace fuel filter
- ▶ Check and adjust injector nozzles
- ▶ Adjust fuel injection timing

Lubricating System

- ▶ Check oil pressure lamp action. Replace oil filter as necessary
- ▶ Check engine and transmission lubricating oil levels and condition
- ▶ Inspect and repair oil, fluid and/or coolant leaks

Fuel Injectors

Gas fuel injection systems are relatively maintenance-free. Fogging during winterization lubricates pumps and fuel delivery systems. Unfortunately, however, ethanol wreaks havoc on older systems by ruining hoses and clogging fuel systems.

Diesel injectors require testing and rebuilding, most often on a three-year schedule. Leaking, worn nozzles disturb engine timing, dissolve lubricating oil, and often cause a sheen on the water.

Distributors/Electronic Ignitions

Because condensation from salt air can cause serious corrosion of the distributor drive shaft, bearings and counterweights, and oxidation of the cap and rotor, we suggest:

- ▶ Routine inspection of bearings and seals
- ▶ Cleaning and lubrication
- ▶ Replacement of caps, rotors and ignition wires
- ▶ Adjust to factory specifications when boat is commissioned in the spring

Cooling System

- ▶ Check raw water cooling pump, shaft, housing, bearings, cam, end plate for wear; replace rubber impeller, seals, end cover gasket as required
- ▶ Check fresh water cooling pump: remove belts, check end play, bearings, and bushings; inspect weep hole for leaking seals
- ▶ Check anticorrosion zincs that protect the engine from electrolysis; replace routinely during winter service
- ▶ Check thermostat
- ▶ Check all strainers for cracks, corrosion

Heat Exchangers & Oil Coolers

Under normal use salt deposits and sludge can build up resulting in corrosion and accumulation of zinc particles in the tubes. To keep your engine's cooling system running efficiently, we suggest regular cleaning of the cores and renewing gaskets, "O" rings and zincs.

Exhaust System

Intense heat, vibration and pressure can cause exhaust hoses to break down from inside out. A thorough inspection of the entire system is recommended:

- ▶ Open system for interior inspection, paying special attention to exhaust elbows
- ▶ Check mufflers, fittings and clamps for leaks and deterioration
- ▶ Check operation of siphon breaks

Engine Block

It is important to inspect and service this area routinely since a cracked engine mount can cause serious problems resulting in engine movement and shaft misalignment.

- ▶ Check supports, housing and welds for cracking or deterioration
- ▶ Check for oil, water or fuel leaks
- ▶ Tighten cylinder head bolts and nuts
- ▶ Check and adjust valve clearance

Outdrives

By the nature of their design, *I/O's* are vulnerable to salt water ingress at the transom and especially susceptible to corrosion. We recommend annual removal and servicing of these units to check for rust and corrosion of bellows, bolts, bearings and seals.

- ▶ Check gimbal bearing and u-joints
- ▶ Drain oil to check for evidence of water due to leaking prop shaft seal or water pump seal; change oil
- ▶ Align and lubricate gimbal bearing and universal joint on re-installation
- ▶ Inspect raw water cooling system checking impeller, cleaning strainer gauzes and removing salt from passageways; reassemble and paint
- ▶ Split drives to clean water passages

Electrical System

A boat's electrical system is constantly subjected to salt water, dampness and heavy starting loads. Since the electrical system is responsible for starting the engine and running lights, appliances, electronics, gauges, and other basic requirements, annual servicing is critical to ensuring its reliability.

- ▶ Remove alternator, inspect for corrosion and bearing wear, clean belt dust and lubricate, install, re-check V-belt tension
- ▶ Remove starter, disassemble for inspection, clean and lubricate, bench check and re-install
- ▶ Inspect electrical wiring, terminals, and connectors for corrosion

Steering System

- ▶ Mechanical Steering:
Check cables for corrosion, wire stranding, cut jackets, bends or kinks, burns or melted spots, frozen sheaves; check cable ends; examine steering wheel for cracks; lubricate all sliding points and/or chains; check for proper tension, including autopilot activators
- ▶ Hydraulic Steering:
Check tubing, fittings and seals for corrosion; inspect steering wheel for cracks; lubricate all pivot points; replenish hydraulic fluid; set proper air pressure; inspect and lubricate steering rams and autopilot activators

In Addition ...

We recommend inspection of the following areas to check for corrosion, wear and proper operation:

- ▶ Shift & Throttle Cables
- ▶ Fire Extinguishers and Systems
- ▶ Stove and Propane Tanks
- ▶ Windshield Wipers & Motor

Is your bottom paint-sick? Talk with us about stripping heavy paint build-up and protecting your hull with a blister barrier coating before bottom painting this spring!

Below the Waterline

Plumbing & Underwater Hardware

Maintaining plumbing and underwater hardware in top condition can mean the difference between staying afloat and sinking. Our annual servicing inspects all systems for worn hoses, crushed lines, loose fittings, electrolysis and corrosion.

Bilge Pumps

- ▶ Inspect and lubricate diaphragms, casings, belts and gears
- ▶ Clean intake screens
- ▶ Inspect hoses and clamps; tighten and replace as required
- ▶ Check handles and mounting
- ▶ On electric pumps, check wiring connections; clean and inspect float switches

Pumps (Domestic F/W, Shower, Sump & Washdown)

- ▶ Inspect all valves, pressure and float switches, wiring, hoses and clamps
- ▶ Check for proper operation; tighten or replace as required
- ▶ Clean and service gray water sumps and pumps

Toilets

- ▶ Check for proper operation and leaks
- ▶ Inspect discharge hoses
- ▶ Replace pump unit, or overhaul as necessary
- ▶ Inspect and service holding tanks, pump-out plumbing and valves

Underwater Hardware

Annual servicing involves removal of dirt, growth and barnacles from shafts, struts, ground plates, trim tabs, thru hulls, strainers, etc., and checking for corrosion, cracking and electrolysis.

Zincs

To protect against electrolysis, replace zincs on shafts, struts, trim tabs, rudders, hull, etc.

Shafts, Struts & Propellers

To prevent vibration and excessive wear of the shaft and prop and avoid serious problems to the running gear, poor engine performance and fuel consumption:

- ▶ Check shaft straightness
- ▶ Inspect cutlass bearings for wear. Check strut alignment
- ▶ Remove and bench check propellers for correct pitch, balance and tracking; inspect for cracks, metal fatigue corrosion or other defects
- ▶ Treat propellers with Prop Speed

Seacocks

To ensure that all seacocks will be functioning if they need to be closed in an emergency:

- ▶ Disassemble, clean and inspect all seacocks for electrolysis and corrosion; grease and reassemble; check hoses and clamping; inspect and lubricate ball valves

Rudder Ports & Stuffing Boxes

To prevent leaking, it is necessary to service these areas annually. Dripless stuffing boxes require service, bellows and seal adjustment, or periodic replacement. The flaxen packing material tends to dry out and break down, and while tightening may provide a temporary solution, it will lead to shaft wear, erosion, and more leaking. To service, we repack rudder ports and stuffing boxes, inspect and replace hoses and clamps as needed.

Hydraulic System

- ▶ Inspect hydraulic system for leaks at pump, cylinder and hose connections
- ▶ Check trim plates for corrosion and secure mounting
- ▶ Check and clean electrical connections
- ▶ Clean and check hydraulic fluid reservoir, top off and test

Paint Sick Bottoms

After many years of antifouling paint buildup, the weight of the paint causes it to release from the hull. In some cases, poor initial preparation of the bottom causes the separation from the waxy hull.

The answer is to blast the paint from the hull, sand the surface, and apply several coats of epoxy barrier coat. Ablative antifouling paint is then chemically bonded to the final layer of barrier coat. Using ablative paint will help ensure that this process will never need to be repeated.

Above Decks

Spars, Rigging & Winches; Sails & Canvas



Spars

A proper finish is the key to a spar's longevity and good appearance.

- ▶ Clean, wax anodized aluminum spars
- ▶ Inspect painted aluminum spars for corrosion, especially in areas where stainless steel hardware is mounted; insulate corroded areas to prevent further deterioration, then prepare and paint
- ▶ Thoroughly prepare wooden spars and varnish

Winches

Subjected to high loading when in use, winches require regular maintenance and lubrication. We recommend an annual maintenance program:

- ▶ Remove winch, break down, and clean out salt and dry grease
- ▶ Carefully inspect any components for wear and potential failure
- ▶ Check pawls and springs
- ▶ Lubricate, reinstall, and test

Standing and Running Rigging

- ▶ Visually inspect end terminals and swages for fatigue and cracking; dye test if cracking is evident
- ▶ Inspect halyards, topping lifts and other lines for chafe and wear
- ▶ Inspect and lubricate all blocks

Turnbuckles

Without annual cleaning and lubrication, turnbuckles will seize, preventing adjustment and correct tension of the rigging.

- ▶ Thoroughly clean turnbuckles, inspect for stress and corrosion
- ▶ Check clevis pins, toggle assemblies. Lubricate threaded parts, reassemble. Renew cotter pins when commissioning.

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Roller Furling Systems

The key to smooth operation of popular roller furling systems lies in the proper lubrication of bearings located in the drum and halyard swivel units. Over time, exposure to salt water washes out the lubricant, making operation difficult and eventually causing these systems to fail.

While other sealed or dry bearing systems can be maintained by regular flushing with fresh water, we recommend thorough inspection and servicing of all systems dependent on lubrication.

- ▶ Disassemble, clean, inspect and fully lubricate bearings and moving parts
- ▶ Clean, lubricate and inspect extrusions

Outriggers

- ▶ Remove salt and corrosion from metal surfaces, polish and wax
- ▶ Inspect and adjust standing rigging.
- ▶ Check release clips, running rigging
- ▶ Lubricate pivot points

Sails

Annual washing and inspection can greatly extend the life of your sails.

- ▶ Deliver sails to sail loft for inspection; make repairs as needed
- ▶ Wash sails to remove dirt, salt, mildew

Don't forget these additional areas to be checked:

- ▶ Masthead Sheaves
- ▶ Lifelines
- ▶ Spinnaker Poles
- ▶ Canvas Covers, Dodgers, Biminis
- ▶ Standing and Running Rigging

Electronics

Kingman Yacht Center has full electronics sales, installation and servicing capabilities on site. A preventive maintenance program is available to ensure that your communications and navigational equipment is functioning properly. Equipment is removed from your boat for inspection, bench testing, cleaning and alignment.

Kingman also offers upgrade and educational opportunities to keep you on top of the latest, rapidly changing navigation technologies. We are authorized sales and service dealers for Garmin, Raymarine, Simrad, B&G, Standard Horizon, and most other common brands.

All that Glitters Paint, Varnish & Waxing



Painting

Generally after 5-10 years, the gel coat on fiberglass boats will lose its luster and UV resistance. Annually, we inspect for breakdown of the finish on topsides and boot tops.

Kingman Yacht Center specializes in conventional paints, varnishes and lineal polyurethanes including Imron, Awlgrip and Alexseal.

Exterior Varnish

To prevent rot and discoloration of the wood surface, it is important to maintain exterior bright work. If your varnish has broken down over the past season, we recommend a touch up or re-varnish as required.

Cleaning and Waxing

When exposed to ultraviolet rays, the pigment in gel coat surfaces begins to break down. Regular cleaning and waxing will extend the life of the gel coat.

- ▶ Compound gel coat to restore luster and shine; power buff if necessary
- ▶ Inspect surface for voids, cracks and chips; repair as needed to prevent moisture penetration and potential delamination or osmotic blistering

Exterior Hardware

Exterior stainless steel hardware should be checked periodically for corrosion and rust, and polished.

Exterior Teak

To clean and remove mildew from teak decks, rails, etc. wash or sand, then coat with teak oil, Cetol or Simco.

Spring is Here

Commissioning Basics

When boats are commissioned by Kingman Yacht Center, the following basic procedures are recommended:

Engine & Mechanical Systems

Remove batteries from storage, clean terminals, inspect and reinstall; check coolant and lubricant levels

Gas Engines & Generators:

Change sparkplugs, points, condensers, magnetic pickup, rotor, cap, fuel filters; tune up and test run engine; set and adjust timing and dwell; adjust belts, cables, linkages

Diesel Engines & Generators:

Change fuel filters; bleed engine; adjust idle; check belt tightness; adjust and lubricate cables, linkages

Plumbing

Reconnect all disconnected plumbing, flush water tanks and lines, top off; fill and test hot water tank; clean bilge, check bilge pump; test sea cocks; check stuffing boxes for leaks

Electrical/Electronics

Check all engine circuits, AC & DC circuits, auxiliary equipment; test for electrolysis; reinstall electronics

Refrigeration

Add refrigerant, check operation; check thermostats, raw water cooling pump

Mast & Rigging

Check all masthead wiring and bulbs; step mast; tune rigging; check roller furling systems

Prep & Paint Bottom

Kingman Yacht Center requires that these procedures be performed by Kingman personnel only: prep bottom, remove heavy build-ups, mask and apply bottom paint.

Optional warrantied blister protection coatings are available for application prior to bottom painting (requires removal of old bottom paint).

For detailed information on complete Spring Commissioning procedures, please call John Burman at 563-7136, extension 111 or johnb@kyc.us