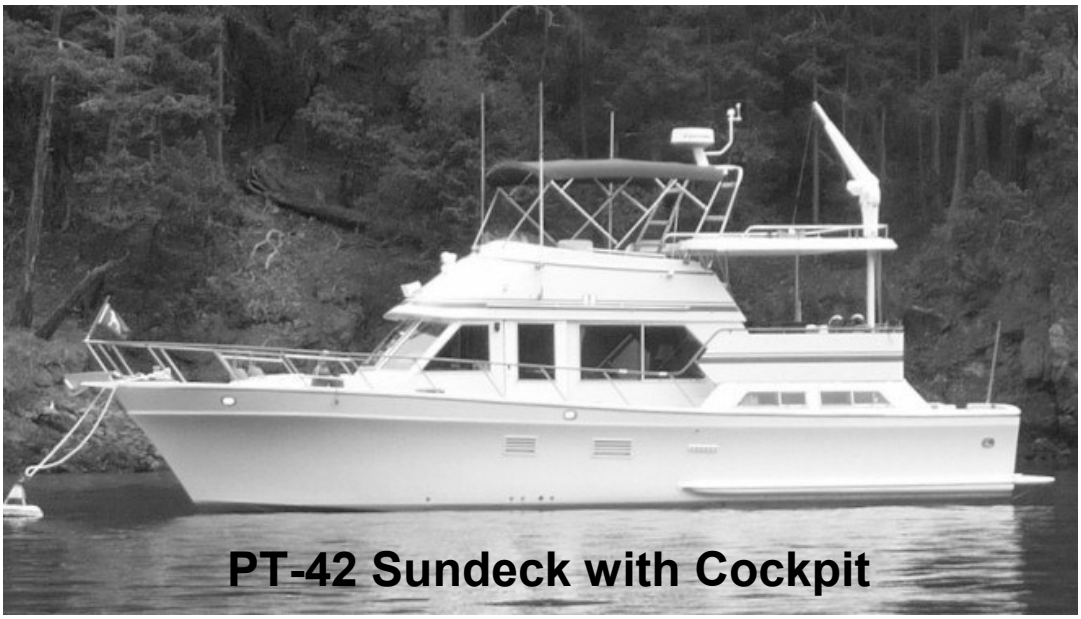
PT-38 Sundeck and PT-42 Sundeck with Cockpit

Owners Guide



PT-38 Sundeck and PT-42 Sundeck with Cockpit Owners Guide

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1.00 INTRODUCTION

This Owner's Guide is designed to assist you with understanding your new PT Motoryacht, and to guide you in commissioning, factory-installed systems check-out, and general maintenance.
The Guide is meant to supplement the owner's manuals and installation and maintenance publications of your factory-installed marine equipment (which may or may not supplied with your boat.) If no literature arrived on board your boat concerning the installed appliances and equipment, please contact your dealer or write directly to the equipment manufacturer requesting literature. Where differences in this Owner's Guide and the equipment manufacturer's publications occur, then you should follow the equipment manufacturer's instructions. The owner is urged in every case to always seek additional professional assistance and literature from an equipment manufacturer should any questions or problems develop with any equipment on board.

Complete and turn in the Warranty Registration Card within 15 days of taking delivery of your boat. See section 5.10.

Since this Owner's Guide is continually updated, you may find that your PT has different details or equipment than shown in this Guide. Please consult your dealer with any questions.

As the pleasure boat waterways become more crowded with vessels, obstructions, and aids to navigation, and the trend toward faster and more performance-oriented boats continues, it is imperative that owners and crew handle their PT Motoryacht with appropriate caution and knowledge of the hazards to boating. More than one person aboard should understand and be capable of the safe operation of the vessel, the emergency equipment and emergency signals, instruments, and communications equipment. Novice owners and their crew are encouraged to enroll in Power Squadron, U.S. Coast Guard Auxiliary, yacht club, and other association's boat-handling, boating safety, and navigation courses. Owners are urged to join boating organizations which promote boating safety, navigation, maintenance, handling, and pleasure boating in general. some of these organizations are listed in section 4.00.

2.00 Disclaimer and Limitation of Liability,

While this Owner's Guide is written in a spirit of professional thoroughness to be of assistance to the PT Motoryacht owner, the author, the publishers, the PT dealers end distributers accept no responsibility for any error, omission, negligence, or failure to completely cover or explain the material encompassed in this Guide, and that the information, instructions, drawings, and sketches herein constitute professional opinion only and are not to be construed as representations, warranties, or guarantees. To the extent allowed by law, this statement is made in lieu of any other obligations or liability on the part of the author, the publishers, and the PT dealers and importers. Final determination of the use and suitability of the material in this Guide and whether the suggested use infringes any patents is the sole responsibility of the buyer.

3.00 ACKNOWLEDGEMENTS

Several people have contributed material to the writing of this Owner's Guide. They include Mr. Bud Lowrie, PT distributer and father of the PT program; Mr. Sinclair Wen, distributer and builder of PT motoryachts; Jay DeBeaubian for valuable material on General Maintenance, Safety, and Dealer's and Owner's Responsibilities; and Ship and Sail, Inc., of Houston, Texas contributed valuable material on Maintenance and trouble-shooting. Inspiration for the manual came partly from the excellent *Sabre* sailboats Owner's manuals and from *Fantasia "Commissioning* Procedures and final Inspection by Mr. David Halperin and Todd Harris.

4.00 USEFUL REFERENCES AND ASSOCIATIONS:,

4.01 REFERENCES:

American Boat and Yacht Council, Inc., Standards and Recommended Practices for Small Craft, available from A.B.Y.C., Inc., P.O. Box 806, Amityville, N.Y., 11701. This association produces guidelines "for the aid of the manufacturers, consumers, and general public in the design, construction, equipage, and maintenance of Small craft." These voluntary standards are used and referred to by several authorities and national associations in the writing of certifications and standards for the industry. (obtain latest available edition.) Invaluable information and recommendations.

Cook Paint and Varnish Company, Applications Manual for Cook's Polycor Polyester Resins and Gel Coats, Cook Paint and Varnish Company, P.O. Box 389, Kansas City, MO. 64141. ©1981. This manual is very useful for gelcoat and fiberglass repair techniques and 83 a general FRP reference.

Kinney, Francis S., Skene's Elements of Yacht Design Dodd, Mead & Company New York, N.Y. Largely concerned with sailing craft but invaluable as a reference.

Miller, Conrad, Your Boat's Electrical System published by Motor Boating & Sailing Books, N.Y., N.Y. (obtain latest available edition) Indispensible for understanding A.C. and D.C. power circuitry, bonding system, lightning grounding, radio grounds, marine batteries and on- board generation, corrosion, marine electronics, and adding to your electrical system.

Nicolson, Ian, Boat Data Book, published by Yachting Magazine, U.S.A., in association with Nautical Publishing Company Ltd, Hampshire, England. An excellent quick-reference guide to boat equipment recommendations, materials and fastenings specifications and engineering, and complete with tables and formulae for the boat owner and shipwright.

United States Government, Public Law 92-75, 92nd Congress, H.R. 19, August 10, 1971. The Federal Boat Safety Act of 1971.- Every boat owner should read this and be aware of the law applying to boating safety. It is also reprinted in A.B.Y.C. Standards and Recommended Practices for Small Craft.

Warren, Nigel, Metal Corrosion in Boats, Stanford Maritime Limited, 01980, London

4.02 MARINE ASSOCIATIONS:

American Boat and Yacht Council, Inc., P.O. Box 006, Amityville, FLY.., 11701.

American Power Boat Association, 22811 Greater Mack, St. Clair Shores, MI 48080

Boating Safety Advisory Council, U.S.C.G., 400 Seventh Street, S.W., Washington, D.C. 20590

National fire Protection Association, 470 Atlantic Avenue, Boston, Mass., 02210

National Boating Safety Advisory Council, see Boating Safety Advisory Council. North

America Yacht Register, 17 Battery Place, New York, New York 10004

United States Coast Guard, Boating Technical Division and Office of Booting - Safety, 400 Seventh Street, S.W., Washington, D.C. 20590

United States Coast Guard Auxiliary, Coast Guard Headquarters (BAU), 400 Seventh Street, S.W., Washington, D.C. 20590

United States Power Squadrons, P.O. Box 30423, Raleigh, N.C. 27612

5.00 P.T. MOTORYACHTS ONE YEAR LIMITED WARRANTY

5.10 VALIDATION OF THE WARRANTY

Owners must complete the enclosed Warranty Registration Form within 15 days of the delivery of the yacht and turn it in to the P.T. dealer to validate the warranty. It must be co—signed by the Dealer or Authorized PT Motoryachts Service Agent. The buyer should retain a copy for his records. See 5.30.

5.20 LIMITED WARRANTY

DEALER warrants to the original retail purchaser, herein called the OWNER, for a period of one year from the date of sale to the original consumer purchaser, 18 months from the date of completion at the factory, or upon two hundred (200) hours of operation, whichever comes first, the following:

That the DEALER will replace or repair, at the discretion of the DEALER any part or component, manufactured by PT Motoryachts, which is proven to the satisfaction of the DEALER to be defective, and which has occurred under normal use and service within the warranty period, except as limited herein.

THERE ARE NO OTHER WARRANTIES EXPRESS OR IMPLIED THAT EXTEND BEYOND THIS DOCUMENT, AND INTENDS NO IMPLIED WARRANTIES. IF ANY IMPLIED WARRANTIES ARE FOUND TO EXIST, SUCH IMPLIED WARRANTIES WILL BE SUBJECT TO THE TIME LIMITS NOTED IN THIS WARRANTY. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. THIS WARRANTY IS RESTRICTED TO REPAIR OR REPLACEMENT IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. PT MOTORYACHTS SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR INDIRECT DAMAGES CAUSED AS A RESULT OF ANY DEFECT IN WORKMANSHIP, REPAIR, OR REPLACEMENT. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

This warranty shall not apply to: yachts without proper warranty validation/registration; others than the original purchaser; yachts in commercial use; leaks at windows or stanchions or deck fittings or hull and topsides fittings due to day to day operation of the boat which are considered part of normal maintenance; any boat subject to misuse or misapplication, including operation in unsafe weather conditions or unusually rough seas; negligence or accident; products or components altered in any manner from original manufacture, or products and components not manufactured by the DEALER or PT Motor yachts, including:

- varnishes and gelcoats including such damage as crazing, discoloring, stress cracking, arid weathering,
- paints, fabrics, metal plating, end stainless steel finishes because of differing climatic conditions,
- electronics or electronics installations,
- shaft, shaft alignment, shaft- bearings, stuffing boxes, stern tubes, struts, rudders, and propellers which have not been properly inspected, aligned, and maintained as part of commissioning and regular maintenance,
- engines, generators, batteries, controls, instruments, toilets, anchor windlasses. stoves, pumps, or other equipment and accessories which carry their own individual warranties.

< WARRANTY CONTINUED ON NEXT PAGE>

5.10 LIMITED WARRANTY, continued

The DEALER does not authorize any other person or corporation to initiate any warranty repair or replacement for THE DEALER or to assume for the DEALER any liability in connection herewith or any liability or expenses incurred in the repair or replacement of its products of its products other than those expressly authorized herein. Authorization must be granted by the DEALER before any work is carried out under this limited warranty. After **on** authorized yard or repair contractor has been assigned for warranty work by the DEALER, reimbursement for parts and labor costs will be based upon rates and schedule established by the DEALER. Any claim for reimbursement under this warranty must be fully documented, providing full details of all materials, quantities, and labor rates and hours.

The defect must be reported to the DEALER within 30 days of discovery of the defect, together with the following information:

- Owner's name and address;
  - Boat size, model, and I-11N number from transom identity number;
  - Date of sale of the boat and Dealer's name and address;
  - Hours of service accumulated;
- Full documentation and description of the defect. Include photos where appropriate.

Inspection of the defect must then be carried out by the DEALER, or authorized PT Motor yachts Service Agent.

The DEALER assumes no responsibility for loss of use of the boat, loss of time, benefit, profit, inconvenience, or other damage, consequential or otherwise, including, but not limited to, the cost of transporting the yacht to and from the Authorized Service Yard, travel, lodgings, iO33 of revenue, and or loss or damage to personal property. Some States do not allow the exclusion of limitation of incidental or consequential damages, so these limitations may not apply to you.

The DEALER and PT Motoryachts reserve the right to make changes in design, materials, standard equipment, and specifications without notice and without obligation to incorporate such changes in boats of previous manufacture. There is no "Model Year" 83 Such for PT Motor yachts and changes and improvements are made from time to time.

5.30 PT MOTORYACHTS WARRANTY REGISTRATION FORM:

Owners must complete the enclosed Warranty Registration form within 15 days of the delivery of the yacht and turn it in to the P.T. dealer to validate the warranty. The Commissioning Sign-off also needs to be signed. Thank you.

PT MOTORYACHTS WARRANTY REGISTRATION FORM

NAME *AND* ADDRESS OF OR PURCHASER: _____

_____

_____

THIS PART TO BE FILLED OUT BY DEALER:

NAME AND ADDRESS OF SELLING DEALER: _____

_____

_____

BOAT LENGTH AND MODEL: _____

FACTORY INSTALLED ENGINE(S): _____

"HIN NUMBER" (HULL IDENTIFICATION NUMBER) ON THE STARBOARD TRANSOM

UPPER CORNER: _____

DATE OF SALE-_____ 19_

DATE OF COMPLETION OF COMISSIONING - _____ _____ , 19

DATE OF DELIVERY TO CUSTOMER: , 19_

COMMISSIONING WAS DONE BY: □ DEALER □ CUSTOMER

I HEREBY CERTIFY THAT THE ABOVE INFORMATION IS CORRECT, AND THAT THE CUSTOMER LISTED IS THE ORIGINAL CONSUMER PURCHASER. PLEASE SIGN BELOW. OWNER SHOULD KEEP A COPY FOR HIS RECORDS. •

DEALER SIGNATURE* _____ DATE:_____

OWNER'S SIGNATURE- _____ DATE _____

14.00 SAFETY EQUIPMENT

14.10 Minimum Required Safety Equipment

You are required 83 a boat owner/operator to carry on board at all times certain safety equipment. Refer also to the Federal Boat Safety Act of 1971, the Motorboat Act of 1940, and current Coast Guard regulations for specific requirements, all of which may be re-issued and updated from time to time.

PT Motoryachts fall under the Class 2 and Class 3 Minimum Required Equipment, as follows:

-all boats are to carry a bell, which, when struck, produces a clear, bell-like tone of full round characteristics.
-all boats are to carry one Type 1, 11, or III personal floatation device for each person on board plus one Type IV throwable device.
-all boats are to carry one power-operated whistle audible at least 1 mile. Boats under 40 feet can use a hand operated whistle, audible at least 1 mile.
-when NO fixed fire extinguishing system is installed in machinery spaces, all boats are to carry at least two (on boats over 40 feet, at least 3) 13-1 type approved hand portable fire extinguishers, **OR** at least one B-11 type (on boats over 40 feet at least one B-1 type AND one B- II type) approved hand portable fire extinguishers.
-when a fixed fire extinguishing system IS installed in machinery spaces, all boats ire to carry one B-1 type (on boats over 40 feet, at least two B-1 type) approved hand portable fire extinguisher(s.)

14.20 Safety Inspection Equipment

The U.S.C.G. Auxillary, your bank, or your insurance company may want to make a safety boat inspection. Some of the items they might require or recommend are:

-Proper size anchor and rode for the size of your boat. (see section 30.00 Anchoring) -
Day and night distress signals, i.e. flare kit.
-First aid kit. Bandages, pressure dressings, salt pills, antibiotic ointment and/or topical disinfectant, tweezers, scissors, sunburn cream, aspirin, etc., should be included.
-Minimum of four dock lines recommended in 5/8" or 3/4," 3-strand or plaited nylon. -
At least two boat fenders per side.
-*Discharge of Oil Prohibited" sign posted in highly Visible location in the engine room. -
One VHF radio capable of sending and receiving and transmitting on Channel 16.
-A halon automatic/manual fire-extinguishing system in the engine spaces, is highly recommended or requested by insurance companies.

The conscientious owner should be capable of administering basic First Aid for typical boating accidents including basic cardio- pulmonary resuscitation (CPR), clearing an airway, hypothermia in northern waters, heat stroke in warmer waters, burns, sunburn, food poisoning, and cuts and abrasions.

15.00 SAFETY MAINTENANCE CHECKLIST

You must take care to keep your safety equipment complete and in top condition. A complete inspection and inventory of all safety equipment should be a part of regular maintenance. Don't hesitate to cancel a boating trip or even a short cruise if everything is not 100% shipshape. Your safety and that of your family and guests depend on it.

The prudent owner will keep record of Maintenance and Safety Maintenance checks and dates, items found at fault, description of repairs made, and costs involved. Such a record can be invaluable as a reference for future maintenance, and as a big plus in re-selling the boat.

15.10 Liferails, Grabrails, Gates, Stanchions, Transom Doors, etc.

A thorough examination of these components should be made frequently. Check fasteners for tightness and check components for weakness or damage. Check hinges and fittings for wear or early signs of failure. Replace any defective parts without delay. A fair bit of strain is put on these items through normal wear and tear. Be careful however not to overtighten and strip the threads of fasteners. Keep all moving parts lubricated with marine lubricant to allow smooth operation and to avoid corrosion. Look especially for crevice corrosion at fasteners and joints in metallic fittings.

15.20 Bilge Inspection.

The bilges should be checked for oil, steering fluid • and fuel regularly. If you find any, do not discharge oil overboard. It should be properly disposed of ashore. The presence of these fluids may indicate a leak in that respective system, necessitating inspection and repair. After determining the source of any accumulated bilge water, pump the bilges dry so that on your next inspection, maybe only a short time later, you can readily see if additional water is reaching the bilges, and the rate at which it is entering the boat.

When boarding and when leaving the boat, check the bilge also for water. More than a few quarts of water in the bilge after a trip is cause for concern. The propeller shaft packing gland(s) will normally allow several drops per minute of raw water into the bilge. Too much water in the bilge may mean they need tightening or servicing. Other sources of bilge water include loose rudder shaft packing glands, leaking underwater fittings, including possible seacock or raw-water hose or fitting leaks, and the possibility of a leaking fresh water system.

Keep your bilges and limber-holes as clean and dry as practical, and freshly painted as needed. The purpose of the limber holes in bulkheads and stringers is to allow any accumulated water to quickly reach the lowest part of the bilge at centerline to maintain fore-and aft and athwartships trim, and 30 that the water can be pumped overboard via the pump(s.)

15.30 Manual Bilge Pump Inspection.

The bilge pumps, both manual bilge pump and automatic/manual 12-volt bilge pump demand frequent inspection.

The manual bilge pump consists of a reinforced plastic and neoprene diaphragm pump mounted near the lower steering station. A removable handle is also provided, and it should be stored convenient to the pump itself. A reinforced suction hose snakes down into the bilge where it terminates with a strainer end-fitting. The discharge hose leaves the pump body and exits via a seacock above waterline.

The strainer in the bilge will often clog with debris and needs to be scraped clean. With extended use, the diaphragm or valves within the body of the pump may need replacement. Check also that fasteners are tight end that there are no leaks in the clamps or hoses in the suction line. Check that the hoses are secured from excessive movement or chafe. Replace hoses whenever they show signs of getting brittle or of softening at the ends of the hose or along their lengths. Bilge pump hoses are occasionally exposed to spilled diesel fuel. Some hoses are affected by diesel fuel over time. If the hoses need replacement, use USCG approved diesel-proof hoses and double, ell-SS, hose clamps.

As part of this safety inspection, fill the bilge from a dockside hose with several inches of water and pump it out via the manual bilge pump, thoroughly testing the system.

Remember that to use the manual pump, the pump outlet seacock at the hull side needs to be opened. This is one of the few seacocks that might be left opened at most times, except when the boat is entirely unattended.

15.40 Electric Bilge Pump Inspection

Your boat's electric bilge pump **requires frequent inspection** and testing to ensure that it is ready to discharge bilge water overboard when required. The electric bilge pump is typically a diaphragm-type pump with reinforced suction hose to the bilge with a strainer at the end. The pump is discharged through a loop end a seacock positioned above the waterline. The electric bilge pump on PT boats is controlled in two ways.

First, it can be turned on and off manually by first supplying power via the Bilge Pump DC circuit breaker on the master panel, and then by operating the toggle switch at the smaller accessory panel at the lower steering station console. When the toggle switch is turned on, the bilge pump will operate (seacock should normally be left open.) An indicator light next to the toggle switch indicates that the pump is functioning. Turn the toggle switch off after pumping the bilge dry.

15.40 Electric Bilge Pump Inspection, continued

Secondly, the bilge pump can work automatically via a second circuit protected with a fuse. The presence of high bilge water (two or more inches near the sensor) will trip a float switch mounted near the bilge pump's hose strainer in the keel area. The float switch turns on and off the bilge pump as required, automatically. When correctly operating, the bilge pump will work automatically even when the boat is unattended, since this second circuit is wired direct to the "hot" side of the master panel battery selector switch.

To test the first circuit, make sure the bilge pump discharge seacock is open. Again, this is one of the few seacocks that *should normally be left opened.* Check that the pump is still firmly mounted in its flex feet. Check that the driving belt on the pump is still in place and in good condition. Check for loose or damaged wiring. Check that all hoses are secure and in good condition. Check that the strainer at the bilge end of the suction hose is clear of debris on its sides and lower-end screen, and reposition it in the bilge. Make sure the batteries are connected. Make sure the master DC panel battery selector switch is turned to One, Two, or All. Turn on the Bilge Pump circuit breaker. Operate the Bilge Pump toggle switch on the accessory panel at the lower station steering console. You should note the operation of the Bilge Pump indicator light next to the toggle switch. You should also *be* able to hear the pump operating. Turn the switch off. Run a few inches of water directly into the bilge from your dockside "garden hose." Again turn on the toggle switch and go down into the engine room to observe the pump in action, checking for leaks, etc. Turn off the toggle when the inspection is completed. If any defects are found, they should be repaired without delay.

To inspect the second, automatic circuit, first locate and check the fuse for it, inside the electrical wiring locker behind or below the master D.C. panel. Check that the fuse and fuse holder is in good condition and that you have spare fuses on hand. It should be a 15 or 20 amp ”Slo-blow” type. Now turn off the master battery selector switch at the DC service panel, and go to the bilge area where the hose strainer and float switch are located. Lifting the hinged float switch by hand should have the result that the electric bilge pump starts right up, and continues until the float switch is returned to its level position. Check also that the bilge pump indicator light (mentioned above) is ON when the pump is operating.

If the bilge pump does not work automatically 83 described, the fault must be immediately found and corrected. This second, automatic circuit should be wired directly to the BATTERY ONE or BATTERY TWO lugs of the master battery selector switch on the DC panel. If it is wired to the "common" or "output" lug on the battery selector switch, then the bilge pump would only operate automatically when the battery switch is ON. This Guide recommends testing the automatic bilge pump operation frequently as described, and then turning off the battery selector switch when the boat is unattended.

Regarding the automatic bilge pump system's float switch, be sure to check that its base is securely fixed to the bilge, and that its hinging is unobstructed by bilge debris, loose wires end hoses, etc. Ideally the hinge should bean the forward side, not aft side. Once in a while the automatic bilge pump might stick in the UP position. This is undesirable because any prolonged dry pumping can damage the pump.

Check and service the rudder shaft packing glands as required. Do not overtighten the packing glands. Check the fit of the emergency tiller. Note you won't be able to turn the rudder(s) with the emergency tiller except when the hydraulic system has failed or been disconnected

18.00 Engine(s),

An engine owner's manual has been supplied with your boat and should be read thoroughly before operating the engine. If for any reason a copy of the manual is missing, obtain a replacement from your dealer. The engine owner's manual is to be followed carefully, from the types and grades of oil to be used, to the regular maintenance instructions. Should there be any conflict of advice between this PT Owner's Guide and the engine manufacturer's literature or with other marine equipment literature, the manufacturer's literature is to be followed.

Make sure you have filled out your engine warranty card(s), kept copies, and sent in the original(s).

18.10 Engine Life and Engine Ratings

The most important factors affecting engine life are the attention paid to routine preventive maintenance, not over pitching the propellers, and not running the engines for extended periods over the recommended maxi mum "continuous duty" RPM rating.

Your propellers are over-pitched if you find yourself running the boat with (a) propeller(s) which are so sized that the engines are not able to achieve the minimum engine RPM for propeller matching. Such 'minimum propeller matching RPM' is often shown on the engine manufacturer's literature and would certainly be available verbally from the engine manufacturer. In this case you would be 'lugging' the engine(s) as you would a cars engine going up a hill in too high a gear. Excessive dreg from an overloaded boat, or when towing another boat, or when the hull bottom is heavily fouled with marine growth can 8130 have you 'lugging' the engine(s).

Marine pleasure boat engines often have several horsepower ratings listed on their literature. "Continuous duty" is a heavy-duty rating in which the engine can be run mostly constant at rated load at an intermediate RPM range on the marine engine horsepower rating literature curve. "Pleasure Craft" or "Intermittent Duty" ratings are full-power ratings which are usually limited to short (some manufactures set a 5-minute time limit) periods, to be immediately followed by extended periods at Continuous rating RPM's and below. You should never run your engine(3) at Pleasure Craft top RPM's for very long.

A few additional words about power ratings; the engine power output will be different when the engine is new than when it has some hours on it. (perhaps the horsepower output will even increase for a period of time.) In general, the brake horsepower actually created may vary 83 much as three to five percent of the advertised output. Shaft horsepower is the power actually available to the propeller. Several factors cause the significant drop between the brake horsepower rating and actual shaft horsepower, including:

-transmission losses;
-loss at each bearing and packing gland averaged at 1 % each;
-high engine room and sea water temperatures. For example, deduct 1% of horsepower rating for each 9° F. air temperature over normal engine room temperatures;
-high altitudes on inland lakes and waterways. Subtract 2 to 4 % for each 100 ft. above sea level;
-power take-offs including pumps, alter miters, compressors, etc.
See also section 31 .00, Performance and Trim.

18.20 Before Starting the Engine(s)

-Be sure you have read the engine owner's manual. Make sure for example you know how to bleed the fuel lines of air.

-CAUTION: ALL TURBOCHARGED ENGINES are subject to serious damage of the turbocharger bearing if it is inadequately lubricated. Whenever the engine has been sitting idle for 4 weeks or more or *after an oil change,* or if the oil line to the turbocharger has been disconnected, you should ensure your turbocharger housing is filled with engine oil before starting. Read the owner's manual. On some engines such as the Lehman 225SP and 275 SP, the procedure is to manually fill the turbocharger housing (read the instructions) or to crank the engine starter for 1 5 seconds while simultaneously pressing the STOP and START buttons.

-Each time before starting the engine, it is necessary to do the following:

1. Check sea water strainer for debris, foreign material, and clean if necessary. Check for water in the bilge arid for presence of fuel or steering fluid in the bilge water.
2. Open sea water seacock. Check for flammable vapors in the engine room.
3. Check the coolant level in the engine's expansion tank. Refer to the engine owner's manual for instructions.
4. Check transmission and engine oil levels. If a white froth or coloring is noted on the engine oil dipstick, do not operate the engine since this usually means water contamination, and serious engine damage may occur. Contact your engine dealer.
5. Check fuel level in the fuel tanks. Open the appropriate fuel valves. Remember, at least one feed valve end one return valve needs to be open. Cross-over piping valves connecting the lower levels of port and starboard fuel tanks should be normally closed. (see also section 19.00)
6. Check for loose, leaking or damaged hoses, loose belts, and loose wiring and control cables. Don't forget to check the hot water hoses linking the engine to the hot water heater. (See also section 28.00, under "water heater.")
7. Turn on the appropriate battery disconnect switch, if installed on your model.
8. Check the instrument panel alarm system, according to the owner's manual instructions, to insure all the alarms and warning lights are functioning correctly.
9. Check that the transmission Morse control is set at NEUTRAL.
10. Your engine starting instructions may differ from these. Please consult your engine owner's manual.

18.30 Starting the Engine(s)

A typical starting procedure is as follows:

Place the throttle control level slightly advanced.

Place the starter key in the "ON" position.

Press the start-button or rotate starting key to start the engine.

As soon as the engine starts, release the start button and reduce the throttle to warm-up (idling) speed of 700 to 800 RPM. Once the engine has attained a coolant temperature of 170° F or greater, the engine can be run in the cruising or top RPM range.

18.30 Starting the Engine(s), continued

Notes: 1.) The alarm device will typically sound from the point of turning the key to "ON" until the engine has started for a few seconds or the engine is not started and the key is "OFF,"

2.) When the engine is already warm, starting the engine may require half throttle until the engine starts, then reduce to idle.

3.) In cold weather, please refer to the engine owner's manual for cold-starting procedures.

18.40 After Starting the Engine.

1. Check for normal idling oil pressure. Shut down the engine if normal oil pressure is not present within 15 seconds of starting.
2. Check immediately for sea water flow through the exhaust outlet(s)
3. Check the engine panel warning lamps. If any of the warning lamps or buzzers don't turn off over 1000 R.P.M. they may be malfunctioning. You should stop the engine and contact the engine dealer.

CAUTION: Never shut off the engine battery switch (if fitted on your model) or disconnect the battery cable while the engine is running as serious alternator damage may result.

18.50 Stopping the Engine(s)

Place the shift control in the neutral position.

The engine should be allowed to idle slowly for two minutes or more before stopping, **especially after long hours of operation. This is particularly important on turbocharged engines.**

Then use the stop control with the engine idling until the engine stops. Return the key to the "OFF" position. Close the intake seacock and turn off the engine battery switch (if fitted) when the engine is not in use. Closing the fuel feed valve can ensure that air won't be introduced Into the fuel feed lines during the time that the engine(s) is (are) not being used. Again check the bilge for bilge water level and the presence of fuel or steering fluid.

PT OWNERS GUIDE

28.00 FRESH WATER SYSTEMS

CAUTION: THE NEW PT WATER SYSTEM WILL NEED DISINFECTION. SEE SECTION 28.07.

28.01 Water Tanks

The water tanks on current PT Motor yachts are made of stainless steel. They are of different sizes, capacities, quantities, and locations on different models. Most have an identifying label on them indicating the year of manufacture, the tankage capacity in U.S. gallons, and the fact that it has been tested to 3 PSI at the factory. Some will have sight gauges in the form of clear tubing installed vertically on the side of the tank to allow the tank level to be read. If not, dipsticks are built-in to the tank upper inspection plates to allow sounding of the tanks. You can calibrate the dipsticks and/or sight gauges. Fill the tank directly from a 5, 10, or 20-gallon container with fresh water, marking with indelible ink on the sight gauge or with a file on the stainless dipstick, at each 10 gallon level.

28.02 Water Tank Fills and Vents

The water tank fills are marked "WATER" and are positioned on the decks or topsides. There may be more than one. The water tanks are vented through flexible hoses which run through the hull side, with a SS vent fitting and often a hose loop to discourage sea water spray from entering the water tanks. Be careful when hosing down the boat that you don't spray dirty or soapy water into the vent openings.

When filling the water tanks, you can have someone inside the boat observing the dipstick or sight gauge, or simply wait for water to appear at the vent fitting, which indicates the tank is full.

CAUTION:

Avoid putting fuel or any non-potable fluid or substance into the water tanks. Avoid mistakenly putting the DIESEL deck fill cap onto the WATER tank fill inlet. Replace as necessary the O-rings at all tank deck-fill fittings as a part of **regular maintenance.** Should at any time the water become accidently contaminated, the system will have to be drained, purified, flushed, and re-filled with potable water.

28.03 Shut-off Valves

Each water tank has a shut-off valve low at the side of the tank. Some tanks are also fitted with a drain valve which makes it simple to drain the water tank for cleaning or winterizing. Only one water tank valve should be open at a time, to feed water to the water pressure pump for delivery thence to faucets and sinks. When water is desired to be taken from a certain tank, simply close the valve(s) at the other tank(s) and open the desired tank valve.

If you leave open more than one feed valve at a time, water can run from one tank to another, increasing a list if the boat is already slightly off level. Since water weighs over eight pounds per U.S. gallon, the increase in list or out-of-trim can be very noticeable. You should keep one tank in reserve such that when the water is all used up in the first tank through normal use or through a leak in the system, another tank is still available. Having more than one tank feed valve open at a time may have the result that you are suddenly out of water in all tanks without realizing that you were even low on water.

Caution: Be sure to turn off the water heater when air is present in the system or the tank has run dry, or damage can result to the water heater element. See section 28.06

28.04 Pressure Water system

At least one tank valve should tie open when the 12-volt fresh water pressure pump is used, or damage to the pump may occur. Do not allow the pressure pump to run dry for more than a few minutes. If air is present in the system, the pump might run on unattended indefinitely, and will overheat and be damaged. Always turn off the pump when out of water. It can be turned off by switching off the Pressure Water circuit breaker on the D.C. panel.

If the pump cycles on and off when all taps are closed, there may be a leak in the system or air present at the pump. Another possibility is a leak in the pump's output valve. The cause must be found and corrected to prevent water loss, pump damage, and loss of battery charge. Refer to the pump manufacturer's literature for additional trouble-shooting information.

To bleed air out of the system, open one water tank valve (there must be sufficient water in the tank) and turn on the Pressure Water circuit breaker. Open all faucets, hot and cold. Close each faucet, cold water tap first, one at a time, as it starts to deliver a steady stream of water. Once all taps are closed, the pump should stop pumping. You may have to make one more trip around to all the faucets, opening one at a time and shutting it again as water comes out in a steady stream. The pump should start when a tap is opened, and stop when the tap is closed.

When the boat will be unattended do the following; turn off the Pressure Water circuit breaker; turn off the hot water circuit breaker; disconnect the city water inlet hose; open a faucet to relieve the built-up pressure in the system. (see also section 28.06 Water Heater.)

28.05 Accumulator Tank Option

A factory option or dealer-installed accumulator tank can be mounted in line just after the pressure pump. This tank can reduce water system pulsation and prevent rapid on/off pump cycling. It also acts to cushion sudden surges of water pressure and ensures a smooth flow to all fixtures. Make sure that manufacturer's instructions are followed with special attention to location of the accumulator tank in the boat's system, charging air pressure if required, and that it will withstand the pressure of the standard water system and the regulated pressure of city water hook-up if such a system is also installed. (See section 28.07) 35 PSI is the maximum recommended regulated pressure.

28.06 Water Heater

A water heater is installed, which utilizes 110 volt A.C. power and heat exchange from the engine cooling water system. A.C. power from the generator or shore power will power the water heater when the appropriate circuit breaker is turned on.

On boats with twin engines, only one engine is connected to the water heater heat exchange loop. It should be also noted that the engine while idling may not generate enough heat to warm the water in the water heater significantly. Increasing RPM with the engine under load will increase heat output.

28.06 Water Heater, continued

The water heater should have a pressure relief valve on it. This should be inspected and tested regularly. It should be rated at no more than 150% of the normal working pressure of the system. (35 PSI is the maximum recommended normal system pressure.). Maximum temperature relief should be no more than 99°C (21001.)

Ideally the water heater should have a one-way check valve installed in-line on the incoming piping (cold) inlet side, such that water cannot flow back to the water tanks from the water heater. This will increase the efficiency of the heater, as water in the water tanks will not be affected **83** much by backflow residual heating from water heater operation. The A.C. water heater has an adjustable thermostat. Read the manufacturer's literature for instructions.

CAUTIONS:

1. The water heater is supplied with A.C. power and constitutes a **severe electrical shock hazard** to anyone working on or near it with power supplied. Turn off power to the water heater at the service breaker panel at those times. Any electrical work required should be carried out by a competent marine electrician.

2. The heater coils will be **permanently damaged** if the 110V heater is energized without water in the tank. This means that air must be purged from the hot water system by opening a hot water tap whenever air enters the system from an empty tank. (See section 28.04, pressure water system.)

3. A leak in the heat exchanger or its connecting line from the engine cooling water could cause loss of coolant and subsequent **engine failure**. We recommend that the user make frequent inspections of the connection line and the heater to insure that a leak has not developed. These hoses should be changed one a year as a part of regular maintenance. Make sure also that the water heater is securely fastened to its sub-floor, that hose clamps are tight, and that hoses are routed and secured properly and protected from chafe.

4. With some types of water heaters, a leak in the engine coolant circulation heat exchanger coil can allow engine coolant into the potable water system. Thus the heat exchange loop itself also needs **regular inspection.** Engine coolant additives can be **poisonous.**

5. In checking the pressure relief valve and working around the hot water heater piping, beware of **extremely hot** water and piping.

6. Setting the hot water heater thermostat above 140° f. can result in painful and possibly serious scalding, especially with older people and children who might have slower reaction times. With small children aboard you might best set the thermostat to 125° F. or lower for safety.

28.07 Optional Shore Water Inlet Installation and CAUTION

If a shore water inlet is installed, it must have a pressure-reducing valve installed at the fitting to reduce the city water pressure down to a lower pressure than the water heater relief valve, and preferably to the boat's normal water system pressure. (35 PSI is the maximum recommended system pressure.) Such a system needs **thorough inspection** and testing.

City water pressure should never be left connected with the boat unattended. A leak in the system, faulty or incorrectly sized pressure-reducing and pressure relief valves **can lead to the sinking of the boat** at the dock from internal **flooding** by city water.

28.08 Potable water system disinfection

The new boat's fresh water system will need to be disinfected upon arrival from the factory. This must be done in commissioning to make the water system safe. Disinfection should also be done when water has been sitting stagnant in the system for some time or when non-potable fluids or materials have entered the system. The A.B.Y.C., inc. (section H,- 23, 1983) suggests the following method of disinfection:

a) Flush entire system thoroughly with potable water.
b) Drain system completely. This includes water tanks, water hoses, water heater, accumulator tanks, etc.
c) Fill entire system with chlorine solution having a strength of at least 100 parts per million and allow to stand for one hour.
d) Drain chlorine solution from entire system.
e) Flush system thoroughly with potable water and fill with potable water.

To mix up 100 gallons of the correct 100 ppm chlorine solution, A.B.Y.C., Inc. says:

- add to 100 gallons of clean water 6 ounces of 25% chlorinated lime
- or, add to 100 gallons of clean water 2 ounces of 70 % high test calcium hypochlorite
- or, add to 100 gallons of clean water 4 quarts of liquid 1% sodium hypochlorite.

NOTE: Please refer to the latest A.8.Y.C. inc. section H-23 for any change in the above, or consult the U.S. Public Health Service publication 274.

29.00 GENERAL PLUMBING SYSTEMS

29.01 Marine Heads and Waste System

All PT Motoryachts come equipped with a marine head or heads and holding tank as standard equipment. The marine heads are each provided with a "Y" valve which &lows the operator to divert waste into the holding tank or directly overboard via the discharge seacock. The old saw about not putting anything into the toilet unless it has been eaten first generally applies. Never try to flush hard items as this will damage the marine toilet or plug up a hose or fitting.

As a safeguard against a spoiled vacation, it is essential for every yachtsman to understand his inane toilet system, carry spare parts, and thoroughly brief his guests on the system's proper use.

29.10 Operating a Manual-type Toilet

Make sure the salt water inlet and discharge seacocks are open and that the holding tank is not full. If the Y-valve is switched to Holding Tank, then the discharge seacock need not be opened. Move the valve lever to the "Flush" position and operate the pump. Return the valve lever to the “Dry bowl” position and pump the bowl empty. Leave the valve lever in the "Dry bowl" position when the toilet is not in use. Be sure to close the two sea-cocks and the macerator pump seacock when boat is unattended.

29.11 Operating an Electric-type Par Toilet

Make sure the salt water inlet and discharge seacocks are open and that the holding tank is not full. If the Y-valve is switched to Holding Tank, then the discharge seacock need not be opened. Turn on the DC circuit breaker at the master panel. This may be specifically labeled or may be on the DC OUTLETS or FWD / AFT circuit breaker. Operate the push button positioned near the electric heed. An electric head requires between 15 and 20 amps, so that operating more than one electric head at the same time may trip the circuit breaker.

If a bowl begins to fill quicker than it is being pumped out, partially close the inlet seacock valve until the bowl is completely cleared. Then operate the electric pump again with the inlet seacock opened to clear and discharge the system.

Be sure to close the sea-cocks and the macerator pump discharge when boat is unattended.

29.12 The Holding Tank

Do not overfill. Most PT Motoryacht holding tanks have a capacity of at least 30 U.S. gallons, but obviously with frequent use they will fill shortly, particularly with electric heads. You should not over-fill the holding tank or you risk a terrible mess from a burst hose.

29.1 Discharge of the Holding Tank

A macerator discharge pump is provided for overboard discharge of the holding tank. Check first with local, state, and international regulations governing discharge of waste to see where and whether you can use the overboard pump. First open the discharge seacock end then operate the macerator via the main DC panel breaker so labeled. The macerator pump should be pumped until waste is totally removed and air is heard flowing through the pump. Close the seacock after use.

Alternatively, the holding tank can be pumped out via the standard deck fitting marked WASTE, if a dock-side pumping service facility is available-in your area.

It is recommended that after emptying the holding tank of waste, a disinfectant and deodorizer solution be pumped through the head(s) to fill the holding tank. After pumping the chemical and water solution into the tank, re-empty it as described.