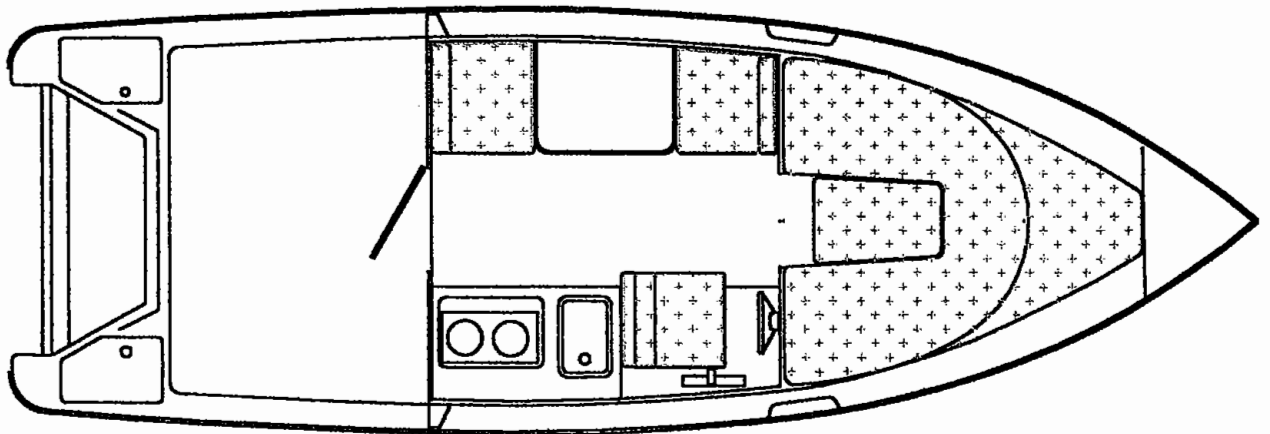
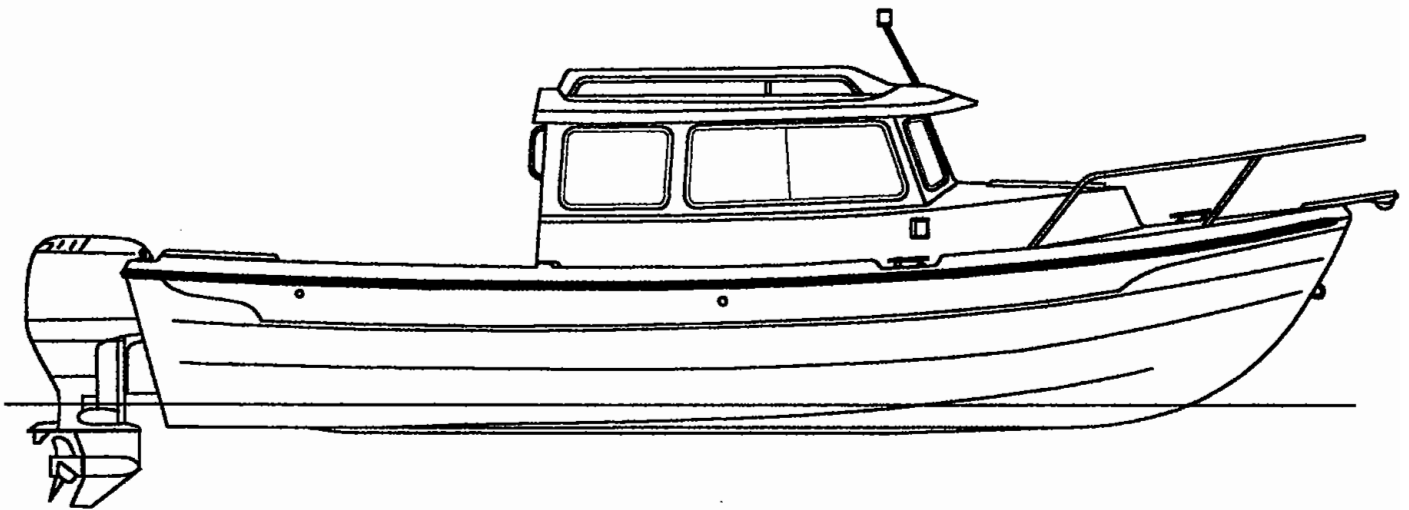


Owner's Manual

22' C-Dory Cruiser



Built by C-Dory Marine Inc., Auburn WA.

C-Dory 22' Cruiser

C-Dory Marine, Inc.

25 37th St. NE, Auburn WA 98002
ph 253.839.0222 fax 253.839.5544

OWNER'S MANUAL

Date of Sale & Registration for Warranty of the Hull _____

Date of Sale & Registration for Warranty of the Motor(s) _____

Date of Sale & Registration for Warranty of the Trailer _____

Vessel Registration Number _____

Gelcoat Manufacturer COOK

Colors White

Accent _____

Deck _____

953WA441

Upholstery (Sunbrella) Color _____

Canvas (Sunbrella) Color _____

Dealer or Broker

- _____
- _____
- _____
- _____

Original Owner

(Phone #) _____

Hull Serial Number _____ (Key # _____) Year _____

Motor Make _____

(1) Model _____ Ser. # _____ Year _____

(2) Model _____ Ser. # _____ Year _____

Trailer Make _____ Year _____

Model _____ Ser. # _____

Specifications: Custom modifications by the factory, dealer and others may alter original specifications.

Hull Weight, dry, less motor(s) _____ 1925 lbs

Motor(s) Weight, including batteries and controls _____ lbs

Trailer Weight _____ lbs

Fuel Weight Gallons ~ ____ 0 x 6.0 # _____ lbs

Water Weight Gallons ~ 20 x 8.3 # _____ 166 lbs

Special Notes:

Safety Precautions

The lawyers would have us point out to you that you should NOT put your finger in an open flame and should NOT forget to untie the boat from the dock before pulling away, and a list of other equally profound safety precautions. If you were so feeble as to need such warnings you would not have the money to buy such a great boat. So we are going to just ask that you exercise reasonable care and caution when you are on or about the boat. If you have any questions or concerns, we are just a phone call away and ready to help you. If you are new to boating or feel a little rusty it would not be a bad idea to take a boating course.

Familiarize yourself with the boat and it's equipment. Read the manuals that came with the various equipment installed on your boat, and read the rest of this Owner's Manual. Acquaint yourself, your crew and your guests with the location of all safety equipment such as life jackets, fire bottles, and the radio and instruct these people in the use of them.

YOU are responsible for the condition of your vessel and the safety of everyone aboard. Have your boat inspected at least once a year by a professional (not the Coast Guard Auxiliary), and make the recommended repairs. Accidents can be easily avoided with good maintenance and a little common sense.

Daily Inspection & Checklist

- The boat and its systems should all be in good repair and properly serviced.
- Inspect the steering system for visible damage.
- With the motor tilted down, rotate the helm from full right to full left several times to check for stiffness or poor response and that the motor can travel without restriction.
- Open battery compartment(s) and check for fumes, loose wires. Check water level in battery(s).
- Cycle the bilge pump switch to test pump. Leave in the On position.
- Test navigation light system, radio and other navigation equipment.
- Inspect safety equipment and insure that they are adequate and in good order.
- If everything checked out "OK" then proceed to the next step. If not, correct problem(s) before proceeding.
- If boat is to be launched from trailer, close all below-water line drains (if any) and close all through-hull valves (if any). Observe trailer manufacturer's precautions and recommendations and launch boat.
- Load passengers & gear; balance load appropriately and safely.
- Follow the motor manufacturer's manual for pre-start-inspection and procedures for startup. Observe all precautions and safety issues listed. Then start and warm the motors.
- If you have plenty of gas and the motor(s) is running well, you are ready to go. Don't forget to untie the boat and bring your fenders aboard before pulling away from the dock!
- The forward deck hatch should be used with caution when under way. If opened for ventilation make certain that both support rods are locked. Do not open forward hatch if operating boat at speeds above 25 knots. Secure hatch and lock latches before towing on trailer.
- Do not operate the boat at speed with passengers on forward deck. Anchoring can be accomplished safely while standing up through the forward hatch.

Safe Loading

- Loads must be evenly placed about the boat.
- Secure all loads; nothing should be tossed about.
- No loads or passengers should be carried on the forward deck.

Maximum Gross Weight = 4500Lbs The maximum gross weight is the total weight of the boat, motors, fuel, gear and passengers. Operating the boat at maximum gross weight requires special care in loading. The boat must be loaded so as to maintain the correct attitude fore and aft, and it must be kept level from side to side. Expect the boat to feel heavy (it is).

Normal Running Weight = 3800Lbs The normal running weight is the total weight of the boat, motors, fuel, gear and passengers. This is the design weight of the hull. If properly balanced this weight will give the best average for speed, comfort and economy.

Note: Many people ask why the C-Dory 22' does not have a Coast Guard capacity label like the 16' C-Dory -

- The Coast Guard requires that all boats under the length of 20', except canoes, kayaks and inflatables, meet the requirements of the Boat Safety Act of 1973. These standards deal with powering, flotation and stability. The label that is attached to these boats certifies that the boat complies with the Coast Guard's regulations for boats under 20'.
- Boats over 20', except those used for passenger hire, are subject to very limited Coast Guard supervision. HP limits are placed on these boats by the manufacturers (based on Coast Guard guidelines) and are stated on a label near the helm. (*Federal regulations prohibit overpowering the boat beyond the limit set by the manufacturer*). Capacity in weight and the number of people that can be carried safely are largely up to the discretion of the boat's captain. The Manufacturer's Load Guidelines are listed above.
- *If you have any questions about the safe loading of your boat, please give C-Dory Marine a call.*

Fueling

It is unlawful to dump or discharge Oil or Gasoline into the water. It is advisable to keep special materials on board to disperse or clean up small spills.

No Smoking! During refueling the motors should Not be running. Shut down ALL electrical equipment. Put out alcohol stove. If equipped with a Wallas Stove turn Off stove at least 15 minutes before refueling. Make certain that no one is smoking. Open deck-fill plates. Insert the nozzle into the deck-fill plate, making certain that the nozzle and deck fill plates have metal to metal contact. Your boat's fuel system is now grounded to the gas pump. Begin refueling, holding a rag or towel lightly over the fuel vent. When the tank is nearly full you will hear the air noise escaping from the vent increase in pitch, slow down pumping and when you get your first gurgle from the vent stop filling the tank. Close the deck fill plate and repeat procedures on the other tank.

Fuel System

Two 20 gallon plastic fuel tanks are installed to make up the standard 40-gallon system. There is also room for two portable 6-gallon tanks between the main tanks. Deck fills are 1 ½". Vents are 5/8". Fuel pickup hoses are sized to match requirements of installed motors. *(The fuel pickup hose, filters, primers, valves etc. are installed by the rigging dealer.)* All hoses and hose connections should be inspected at least once each season for deterioration. Replace deteriorated, cracked, worn or hardened hose.

Custom made tanks by Waylander Inc., 1173 Water Tank Road, Burlington, WA 360.757.0111

Water System

The water system has a plastic 20-Gallon water tank mounted on the port side under the aft dinette seat. The tank is filled through a 1 ½ " stainless deck fill. Water is pumped to the sink via a foot-actuated pump. The drain discharges overboard. The tank should NOT have water in it during prolonged storage, especially during the winter. To empty the tank attach a length of hose (like the cheap clear stuff they sell on rolls at the hardware store) to the facet and hang the other end out the window so that the end is a foot or so below the bottom of the boat. Now pump water until it starts to flow freely from the end of the hose. The tank will now be siphoned dry. For tank cleaning products see an R.V. supplier; they are cheaper than marine stores. Ordinary bleach mixed with water can be used to clean a stale water tank. Be sure flush the tank thoroughly afterward.

If your boat has been fitted with an electric pump, use the pump to empty the water system. Freezing easily damages electric pumps. It is recommended that, if the water lines prevent the pump from being fully drained during cold weather, they be removed from the pump.

Motors

The C-Dory 22' takes 20" (Long) shaft motors. Maximum total horsepower is 100 HP. A normally loaded transom would be about 375 lbs, motors and batteries. The maximum should not exceed 500 lbs.

The issue is not the strength of the transom, but rather the balance of the boat. An over-heavy transom will cause the boat to plane slowly and ride hard, and, of course will reduce the overall capacity of the boat. When selecting motors, physical size must be considered. The motor-well will accommodate either matched twins or a main & auxiliary motor. For the latest in what will fit and what props will work contact your dealer or the factory. *The factory is always interested in what motor & prop combinations you, the owner, are using and how they work.*

Propellers

What prop is the right size? A short precise question; the answer however is rather messy. To be short and blunt, any prop that allows the motor to run flat out within the operating ceiling specified by the motors manufacturer is OK. But what is BEST?

Example: *The prop sizes listed in these examples are not meant as recommendations for your boat's motors.*

- A large diameter prop with a low pitch (14" X 13") is generally better handling weight but at the expense of speed.
- A small diameter prop with a large pitch (13¾" X 15") generally gives better speed at the expense of handling weight.

If the boat in the first example were indeed rather heavy, and if the boat in the second example were rather light, either of these props would load the motor about equally. This is the speed prop-load prop scenario. Simply putting the 13¾" X 15" prop on the example boat does not make the boat faster; it only makes it possible to go faster if the boat is also lightly loaded. If you select a prop that is too small, the motor will turn it too easily and it will overspend (like driving your car one gear too low, the motor makes a lot of noise but you don't go anywhere). If the prop is too large the motor will not be able to turn up to its normal rated RPMs so will not develop its rated horse power (like driving your car one gear too high, the motor lugs and has no power and you don't go anywhere). Your boat's motors cannot shift gears; you have to select the correct gear (select the right prop) in advance.

The number of blades and prop design all will play a part in the performance of your motors and your boat. Factors such as ambient temperature and altitude will also play a role in prop selection. Different props will affect the boats steering system, idle or trolling speed. Acceleration and performance in turning and fuel economy are all affected.

The shop that rigs your boat with motors should be able to help you select the prop that is best for you. If you use your boat for several different purposes you may need to have more than one size prop. Ultimately it is trial and error on your boat under your conditions that will arrive at what prop is best for your use. Factory and dealer recommendations are good starting points. If you really want to fine tune your boat, make friends with a good prop shop and have them tweak your best props a little. Hold off on buying stainless props until you are sure that you know what sizes work best on your boat. It's much cheaper to purchase and modify an aluminum prop.

Steering System

The standard steering system is a “ Teleflex NFB 4.2 Rotary ” cable system. Steering is the single most important system on the boat. A qualified marine mechanic should do all service of the steering system.

Note: Single motor installations require a 19' cable; twin motor installations require an 18' cable.

- **The operator should inspect the steering system for cracks or other damage to the cable before each use** or any time you experience difficulty in turning the helm. The system should be inspected by a professional at least once a year.
- **At frequent intervals** check all fasteners and the complete steering system for security and integrity. Loosening or loss of one or more fasteners may cause failure of the steering system and resulting loss of steering control and could cause personal injury or property damage.
- **Keep all moving parts clean** and free from build up of salt and other foreign material. This will affect their operation and create steering problems. Pay particular attention to the hinge tube of the outboard. Periodically remove the cable from the tube and clean and re-lubricate it with waterproof grease.
- **Inspect periodically for corrosion.** Any parts affected by corrosion must be replaced. When replacing hardware, self-locking nuts must be used.
- **Inspect cable periodically for cracks or other damage.** If any are found the cable must be replaced. **DANGER; do not cover over cracks with tape or other sealant, this will create a hazard in which the cable can fail suddenly without warning.**
- If the boat has twin motors the operator should inspect the tie bar before each use for damage and loose or missing fasteners.

Electrical Systems

The motor has an independent electrical system for Ignition & Starting, Charging, Trim & Tilt, Alarms and Instrumentation. The motor's electrical system should not be tied into the boat's system except as noted. *(Note that instrument lights ARE connected to the "Nav Light circuit of the boats electrical system.)* Crossing of the two electrical systems can result in problems with the motor's alternator and its voltage regulator and over-loading the motor's wiring. **DO NOT take power from the motor's electrical system to run accessories.** Accessories should draw their power directly from the battery(s) (a fuse is required within 50 inches of the battery) or from the Positive buss or fuse block provided behind the dash. *See wiring diagram for amperage capacities. Do not overload the boats electrical system.*

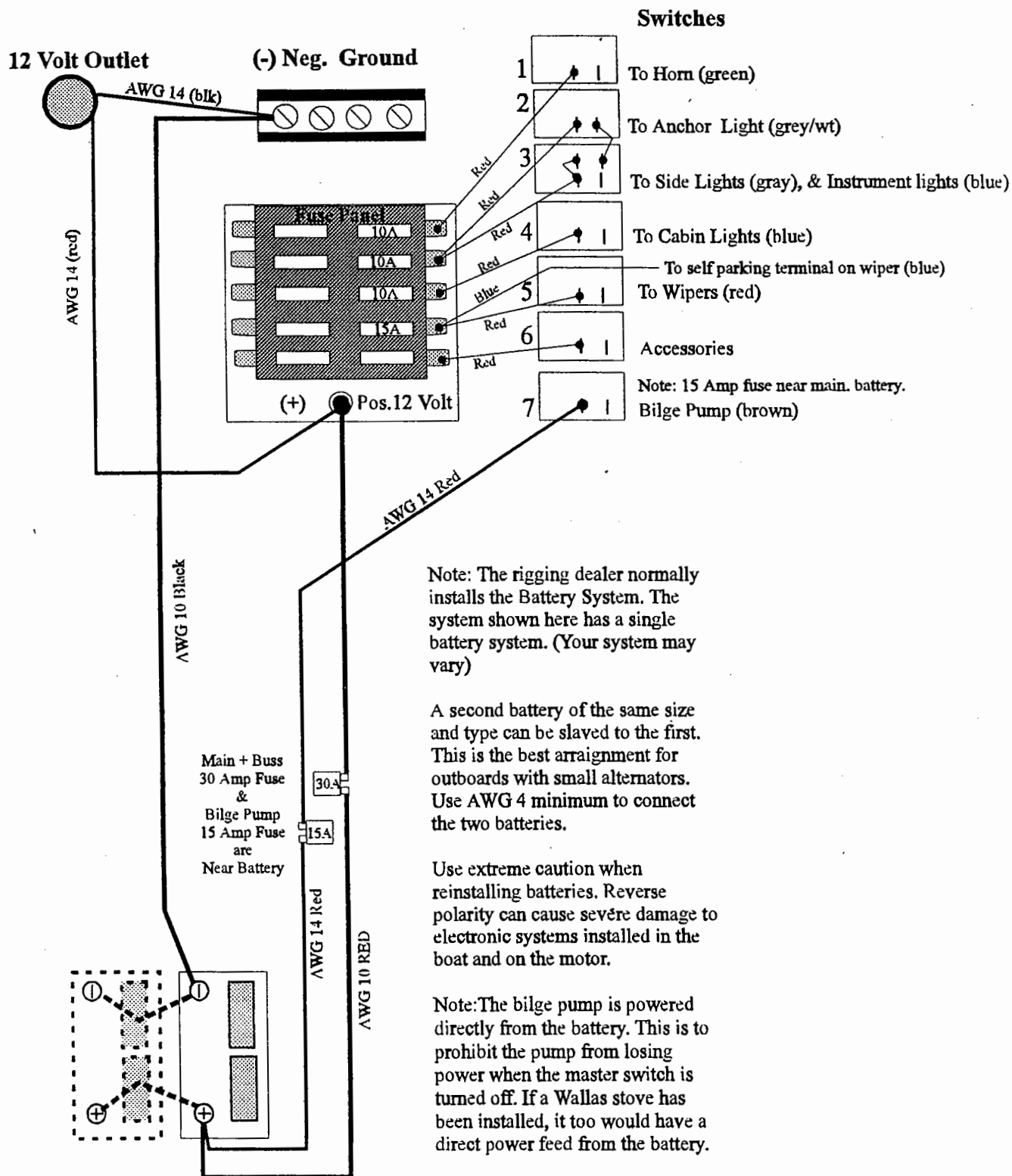
The boat's electrical system is comprised of a Positive power feed from battery(s), and a common Negative ground feed from the battery(s) common ground, to a Positive & Negative Buss located behind the dash. A fuse located near the battery(s) protects this buss. The battery switch (if installed) does not affect un-switched circuits like the bilge pump (don't want to turn those babies off by mistake). Consult the wiring diagram for recommended battery and battery switch systems. The rigging dealer normally installs the Battery(s) system as a part of the motor package. There are a number of good ways to setup a battery system. Several systems are shown in the diagrams that follow.

The boat's standard electrical system is simple. Addition of accessories, electronics and upgrades to standard features will add to the complexity of the electrical system. Most common add-ons are covered in this manual and are illustrated on the wiring diagram. Each C-Dory ultimately ends up with a unique system.

Before installing additional electrical equipment, consider the size of your alternator(s) and the time you spend cruising (Charging), idling, (Not charging) and parked using power. If you spend 10 hours drawing power and only three hours actually running at speed you will ultimately have a dead battery. Length of time depends on the capacity of your batteries, the average rate of draw, and the amount replaced by the motor alternator(s). Just adding capacity (more or larger batteries) may not by itself cure the problem. The only real cure is additional charging of the battery dockside. Adding a battery in parallel (Pos. to Pos. / Neg. to Neg.) to the main battery is recommended as the simplest way to increase your capacity where it will do the most good. The connecting leads should be equal to the cables running to the motor.

Notes: _____

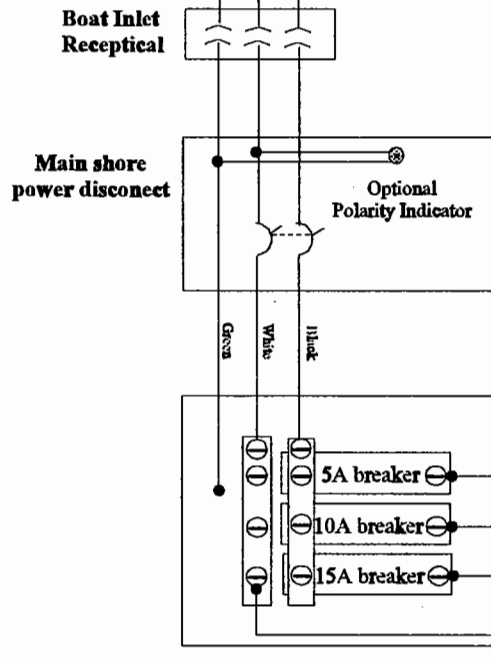
C-Dory's 22' Cruiser Wiring diagram



30Amp 110V Shore Power

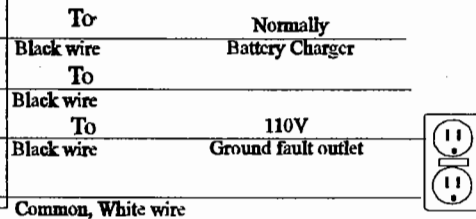
Compatible with dockside 30Amp service

Un-grounded Conductor	Black
Grounded Conductor	White
Grounded Conductor	Green



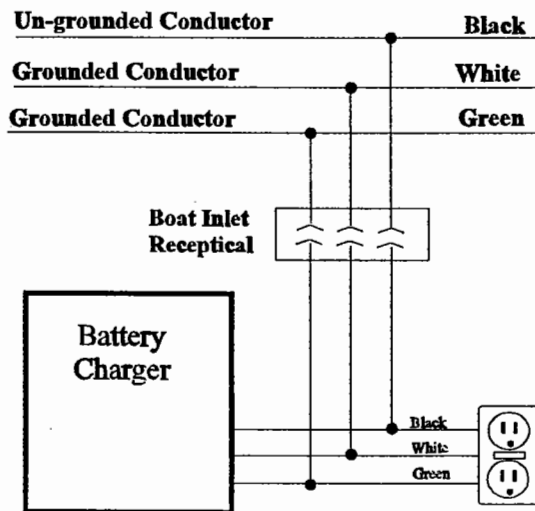
The ground (white) and ungrounded (black) shore current wires are connected via the cable to the boat's AC circuit through a main disconnect circuit breaker. This main breaker, when tripped on overload or manually opened, breaks the circuit to both onboard current-carrying conductors, white and black. Neither current-carrying conductor is ever grounded to the boat at any point.

The shore equipment grounding conductor, green or bare, is connected directly to all non-current carrying parts of the AC system and the boats ground system. Its integrity must



15Amp 110V Shore Power

Compatible with Household outlets



The ground (white) and ungrounded (black) shore current wires are connected via the cable to the boat's AC circuit directly. This power connection must have its own circuit protection. (Most household outlets provide from 10 to 15 amp circuit protection.) The boat's 101 service is directed to a 110 Volt (ground fault) outlet, and if installed a small battery charger.

The shore equipment grounding conductor, green or bare, is connected directly to all non-current carrying parts

Wire Size Tables

AWG Wire sizes based on a 3 percent voltage drop (12V)

Total Amps	Feet					
	20	30	40	50	60	70
5	14	12	12	10	10	8
10	12	10	8	8	6	6
15	10	8	6	6	5	5
20	8	6	6	5	4	3
25	8	6	5	4	3	3

AWG Wire sizes based on a 10 percent voltage drop (12V)

Total Amps	Feet					
	20	30	40	50	60	70
5	16	16	16	14	14	14
10	16	14	14	12	12	12
15	14	14	12	10	10	10
20	12	12	10	10	8	8
25	10	10	10	8	8	8

Nominal CM Area	Size AWG
16	2,583
14	4,107
12	6,530
8	10,380
6	16,510
4	26,250
2	41,740
1	66,370
0	83,690
00	105,500
000	133,100

For figuring the wire size with a 10% drop,
use formula below

$$CM = 10.88 \times I \times L$$

CM = Circular mills

I = Amps

L = Length

10.8 = Resistance of copper

To calculate wire size for a 3% voltage drop,
divide the value prod. by the formula by 3

Use chart to determine AWG wire size.

Batteries

WHAT IS A MARINE BATTERY? The small boat Marine battery differs from an automotive battery only in the type of terminals with which it is equipped. It will have threaded 1/4" or 5/16" studs for terminals. It may come equipped with automotive terminals as well.

The two types of batteries commonly used in small boats are Cranking and Deep Cycle.

Cranking Batteries, designed to withstand very heavy amperage draws for short periods of time, (turning a cranking electric starting motor), must be kept fully charged at all times for their good health. Deep cycling, or bringing the charge down to near zero and then recharging it, will shorten its life. With each cycle the battery becomes weaker than the time before. The voltage in a Cranking Battery will drop off quickly as the battery is discharged.

Deep Cycle Batteries deliver low amperage draws for a prolonged period of time. They can be run down almost completely and recharged without damage and will maintain voltage until the battery is nearly dead. They are great for voltage sensitive electronics, fans, radar, electric down-riggers, lights at night or any prolonged use of current when the motor is not running. Deep Cycle Batteries should not be used to start large outboard motors. A prolonged heavy amperage draw will overheat the battery and the starter motor, possibly damaging both. See your motor manual for starter motor requirements to determine if you may safely use a Deep Cycle Battery to start your motor.

In most cases you can use a marine Deep Cycle Battery rather than a Cranking Battery. When using a Deep Cycle Battery, be careful not to crank a hard starting motor for more than 30 seconds without giving the starter and the battery a minute to cool & rest.

Servicing Batteries

- Keep batteries charged at all times. Replenish water as required.
- Use only distilled water. Never put salt water in your battery, it will produce chlorine gas.
- Keep the terminals clean and tight at both ends.
- Be very careful about removing and reinstalling batteries. Many electrical components can be severely damaged by reverse current.
- As there may be many connections to the battery, carefully label each wire so you can be certain of being able to reconnect everything the way it was.
- Never disconnect the battery from the motor when the motor is running. The motor's electrical system may be severely damaged.
- Do not smoke around the battery compartments. Batteries produce hydrogen gas.
- Battery acid will damage metal and fabrics (like your clothing).

Charging your batteries with a trickle charger once in a while will help keep them in top shape. A trickle charge may take up to 24 hours. Charge your batteries before going on a trip or if you have not used the boat in the last 30 days. Check the water levels in your batteries often, especially the Deep Cycle battery. If you use a boost charger, do not exceed 50 amps, nor boost for more than 20 minutes. Most battery problems are the result of neglect or the battery has exceeded its service life. Consider a built in battery charger for convenience.

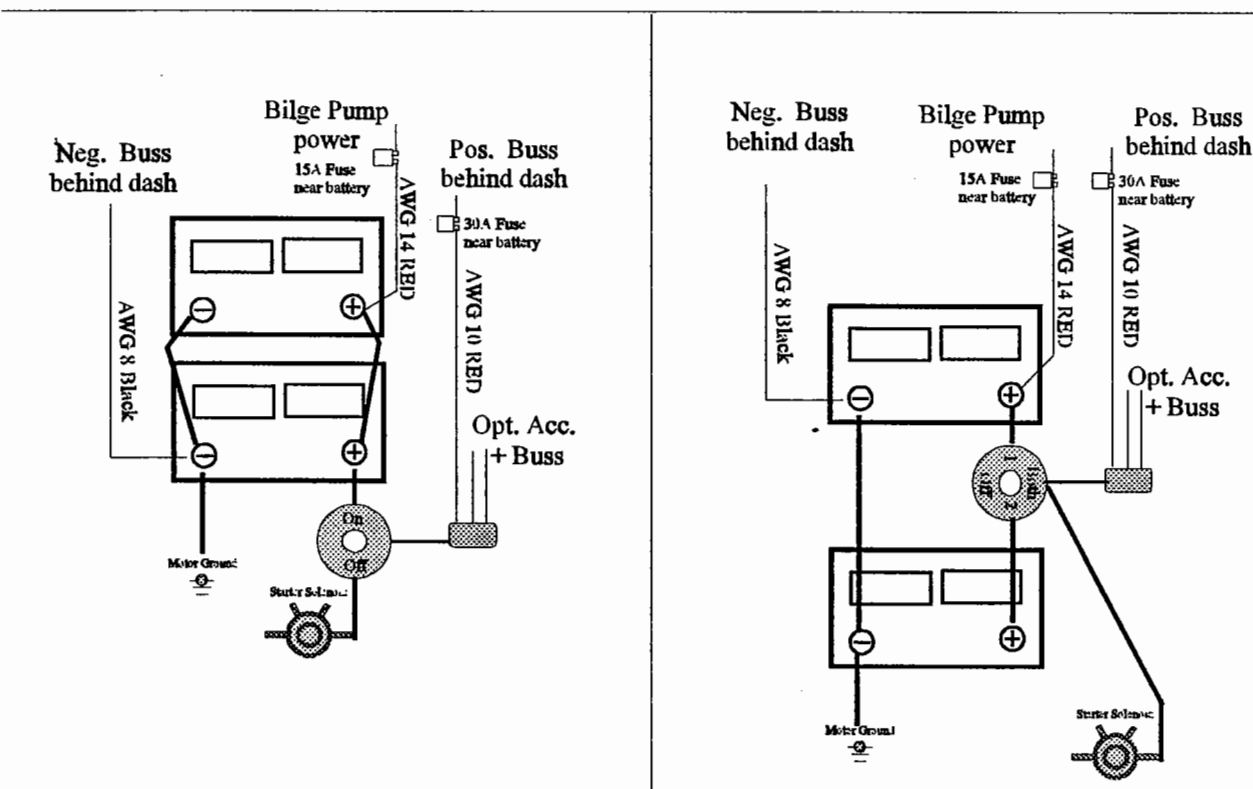
Battery Chargers & 110 Volt AC

See inset on wiring diagram for details on typical wiring for battery chargers. Installation of a battery charger requires a 110V 15Amp service to the boat. The simple system shown on the insert does not provide circuit protection, except for a ground fault outlet. This system must be connected to a circuit protected 110V power source (such as any household duplex outlet). When using a battery charger, pay close attention to the water level in the batteries.

Note:

- All Power feeds from the Batteries must have Fuse protection installed in-line within 50" of the battery.
- If a master shutoff switch is installed to disconnect the batteries, the bilge pumps must be rewired around the switch so that the pumps can stay on even if all other power is shut down.

Two Battery Systems



These are typical dual battery arrangements:

The system on left can simply be added to a single battery system creating a larger capacity battery. Both batteries charge at once; if one battery is damaged, neither will charge properly. This system MUST have identical batteries.

The system on the right shows a typical dual battery system with an On/Off (Both) switch. Only the battery that is selected will receive a charge while the motor is running on this system. Batteries can be of mixed type and size. Note: it is recommended that you have a battery charger installed if you are going to have a dual battery system.

Bilge Pump (Factory Installed)

The Rule Platinum 1100 GPH Pump is an automatic unit that does not use a float switch and is controlled by a small computer installed inside. Once power is supplied, starting and stopping are automatic. If water is present the pump will continue pumping until the water is removed. If no water is present, the pump will run momentarily then shut off. Thereafter the pump will continue to check the bilge. No adjustments are possible or necessary.

Initially the pump will test for water about every two minutes. Testing is done at a very low power level for reduced noise and power consumption. If water is detected the pump will turn on at full power until the water is eliminated. This quiet, low power testing will continue at two-minute intervals until no water is detected for five consecutive two-minute intervals. It will then switch to testing at ten-minute intervals. Once water is detected it will pump the water out and revert to two-minute test cycles, and then recycle as above.

In addition, this pump is equipped with automatic overload protection which will protect the pump from damage should it ever become imbedded in ice or the impeller jammed with debris. Because of this feature, it is not necessary to disconnect power to the pump before freezing occurs. The pump will continue to check for water every few minutes and turn itself off if no water is present or if the impeller is unable to move. (If debris is found to be the cause of the impeller jamming, turn off the pump, remove the debris and turn the power back on so the pump can return to the automatic checking cycle.) If the pump is going to be frozen or out of service for some time, it is best to turn the power off to prevent unnecessary wear. (A break in period of up to ten hours is required to achieve maximum pumping capacity.)

Note: *Inspect and clean pump screens often, and always have the pumps turned on whenever the boat is in the water.*

Cockpit Drain

The cockpit is drained by a 1" drain hole in the transom. The boat is supplied with a standard drain plug and a self-bailing drain plug or check valve. Only use the check valve if you keep the boat out of water. For this plug to be used safely and effectively it must be cleaned every day. Use the standard plug if you are keeping the boat in the water. It is recommended you use a cockpit cover when mooring in an uncovered slip to prevent water from entering the cockpit.

Windows

The windows are a high quality, repairable Laminated Safety Glass with aluminum frames, painted to resist corrosion. Most window repair can be done without removing the frames. An exact template of the window opening in the fiberglass and a tracing of the opposite window's outside outline are required for replacement. Every batch of windows has variations, and we make changes to the original design every so often. Patterns are a must for a proper fit.

Windows by Diamond Sea-Glaze, 19372 94Th Ave. Surrey BC Canada V4N4E4 604.882.9339

Fabrics

Standard cushions are covered with Sunbrella boat canvas. Fabric should be cleaned regularly before dirt & grime accumulates and becomes imbedded. Canvas tops can be cleaned without being removed. Simply brush off, hose down, and clean with a mild solution of natural soap in lukewarm (under 100 °) water. Rinse thoroughly to remove soap. Do not use detergents. Allow to air dry. For more stubborn cases, soak the fabric for approximately twenty minutes in a solution of no more than ½ cup of a non-chlorine bleach and ¼ cup of natural soap per gallon of water at approximately 100 °. Rinse thoroughly in cold water to remove all of the soap. Note: excessive soaking in non-chlorine bleach can deteriorate the sewing threads. This method of cleaning may remove part of the water repellence and the fabric should receive an application of an air-curing fluorocarbon water repellent treatment, if water repellence is a factor.

Sunbrella, Glen Raven Mills, Inc., Custom Fabrics Div, Glen Raven, NC 27217 910.227.6211

Gelcoat

Exposure to sunlight, water, dust and chemicals can be detrimental to the gelcoat surface of the boat, causing chalking, discoloration, yellowing or loss of gloss. Simple periodic maintenance procedures will minimize these changes.

Basic Maintenance

When not in use keep the gelcoat surface out of the sun or covered with a canvas (*see winterizing section , Covering Boat*) tarpaulin.

Wash gelcoat surface with mild detergent. For best results, use cleaner recommended for fiberglass and follow label instructions. **DO NOT use automatic dishwasher detergent, abrasives, bleaches, strong chemicals with acids/bases or ammonia.**

Waxing at least twice a year restores glosses and protects the finish. Use only wax recommended for fiberglass and follow instructions carefully. **NEVER wax a gelcoat surface in direct sun.**

Corrective Procedures

Chalking: A fine rubbing compound as well as a mild detergent will reduce weathering and chalking of the surface. Use only a fine grit compound and follow label instructions carefully. For best results, wax after compounding. **NEVER** apply rubbing compound in direct sunlight.

Scratches and Nicks: Most light scratches will be removed by using a rubbing compound followed by waxing described above. Deep marks or gouges should be professionally repaired. Most do-it yourself repairs look worse, and make a good repair harder to do and more expensive later.

Stains: Most will be removed by washing with mild detergent. For stubborn stains, use a fine abrasive household cleaner followed by waxing to restore original luster. Non water-soluble stains such as grease and oil, rubber heel marks, etc. can often be removed by using a solvent such as acetone, rubbing alcohol, toluene or xylene, followed by mild detergent. If these solvents are not effective, try a rubbing compound or fine sanding followed by waxing.

Alcohol Stove

Consult original installation and operation instructions for complete details.

Fuel Safety

- The standard stove burns denatured alcohol. Do Not use gasoline, kerosene, propane, charcoal lighter, diesel or other flammable substances or fuels. Uncontrollable operation and flare-ups can result and cause serious personal injury.
- Store fuel in an approved container away from the stove, the motors or other heat source.
- Eliminate all sources of sparks or flames in the area where fuel is poured or stored.
- Do not smoke while working with fuel
- Immediately wipe up any spilled fuel.

Filling Fuel Tanks

- Do not attempt to fill fuel tanks while they are still in the stove. Overfilling, spillage, or hot surfaces can cause serious burns and fires.
- Never pour fuel through burner openings in top of stove.
- Remove fuel tanks from stove by carefully following instructions.
- Move fuel tanks to a safe area away from sparks, flames, or other heat sources before filling with fuel.
- Make sure tanks are cool enough to be held in your bare hand before filling with fuel.
- Make sure that flame and heat-glow are extinguished before filling the tanks. Flame or heat-glow will cause alcohol to explode resulting in serious personal injury.
- Do not overfill tanks. Filling instructions must be followed closely. Check the fuel level by tilting (see instructions on side of tank for illustration) the tank vertically. In this position, maximum fuel level occurs when fuel just begins to show in recess inside the tank opening. Alcohol expands when heated. If tank is overfilled, the surplus will overflow into the stove cavity and can cause uncontrollable burning.
- Wipe tanks to remove any excess fuel before replacing tanks in the stove.

Lighting

- An extended stove lighter or a long wooden match are recommended for lighting the stove.
- Slide control lever on top of stove to wide open. Reach down into opening with match or lighter and light. If stove lights and then goes out, blow down into the burner to dissipate alcohol vapor and re-light.
- Use slide control to regulate heat.

Extinguishing

- Slide control lever to closed position.
- Wait a minute, then slide the control lever back to wide open to make sure flame is out.
- Slide control lever to closed position again.
- Wait until stove has completely cooled down before replacing the cutting board.

Storage

- The stove is equipped with a rubber gasket for each burner. Use when stove will not be operated for a period of time to protect against alcohol evaporation.
- To install gasket, open stovetop and place gasket over the tank openings and close the stove.

Origo 1121 Lewis Ave. Sarasota, FL 34237 813.365.3660

Chemical Toilet

Consult original installation and operation instructions for complete details

Instructions for use are printed on a label on the toilet lid. **Note:** *For cold weather use, add anti-freeze to the fresh water tank to prevent the water from freezing. Use a non-toxic (propylene glycol) RV-type anti-freeze. Flush one or two times to winterize the pump and holding tank.*

Prepare the Toilet for Use

Separate the top half of the toilet from the bottom half. With the bottom half (waste tank) sitting flat, open valve by pulling handle out. Remove Thetford holding tank deodorant from built-in holder. Add proper amount to the waste holding tank through the valve opening along with a small amount of water to cover the bottom of the tank. Close the valve.

Attach the top half of the toilet to the bottom half by aligning the “breakaway” hinge with the front interlocking tabs. To secure unit, press downward.... it should click in place. Secure lock tab in back (if equipped).

Remove water cap and fill the top tank. **Never add holding tank chemical to the fresh water tank assembly.** Replace and tighten the cap. The toilet is now ready for use.

Operation of Toilet

Note: *It is recommended that, before each use, you open and close the holding tank valve with the seat cover down. This will vent any pressure that may have built up inside the waste tank as a result of heat or altitude, and will prevent bowl contents from splashing upwards during the flushing operation.*

To flush, pull straight out on the holding tank valve handle on the front side of the waste holding tank. Push & hold down the flush control at the rear of the toilet. The flush will continue as long as you hold the button. A fast, efficient fresh water flush is achieved by pressing the control button quickly several times, resulting in the best available bowl rinse and most efficient use of water.

Empty Tank

The waste tank should be emptied when the level gauge indicator has changed from green to red. **Do not allow the tank to become over-filled.**

Portable Mode

Put waste valve handle in closed position. Slide locking latch to unlock unit and lift fresh water tank (upper section) from waste holding tank. Remove waste holding tank from deck mounts.

Carry the tank to any permanent toilet facility. Remove the cap. Rotate the pour-out spout to desired position. Depress the air relief valve with your thumb while emptying. Rinse with fresh water and recharge unit as covered in “*Prepare the toilet for use*” section.

Cleaning the Toilet

Use Thetford Aqua-Bowl cleaner to clean the plastic seat, tanks and bowl. The seat is removable for cleaning. **Do not use scouring powders, acids or concentrated cleaners, which can damage parts and rubber seals.** Aside from simple cleaning Thetford marine heads require no routine maintenance. If after extended use the holding tank valve blade starts to stick, merely apply a light film of silicone lubricant to the blade.

Thetford Marine 1.800.521.3032 Customer Relations Department

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Optional Equipment

Optional equipment may have been installed by the factory, the dealer or by an owner. Installations may vary. The purpose of this section of the Owner's Manual is to give the owner a quick reference to daily operation and care of some of the more popular options.

Information provided here concerning optional equipment has been taken in part directly from the original installation and operation guides provided with the product. All materials supplied by the original manufacturer of optional equipment have been provided to the original purchaser. For complete information, consult original installation and operation instructions provided by original manufacturer.

Swim Step

The swim step option is a custom hand-laid fiberglass feature. A two-step ladder is folded under the platform.

Use extreme caution when using the swim step platform. The motor(s) must be turned OFF when people are standing on the platform or are in the water near the stern of the boat.

Make certain that the ladder is retrieved and properly stored before starting the motor(s), or the ladder and platform will be severely damaged.

Opening Front Center Window

The center front window can be upgraded to an opening unit. The window swings up and out, providing excellent ventilation and improved visibility in foggy conditions. There are no special instructions for this option.

Wallas Diesel Stove

Consult original installation and operation instructions for complete details.

The Wallas SafeFlame Ceramic is a closed combustion diesel cooker without open flames. The combustion gasses and the water vapors produced by combustion are exhausted outside the house. The oil is drawn from a separate tank below the cooker. No fuel pressure exists either in the cooker or the fuel tank. The cooker draws air from the cabin into the combustion chamber of the cooker and is then vented overboard.

Safety

Use correct fuel. **Use #1 Or #2 diesel fuel.**

Read the original installation and operation manuals included with stove.

Follow startup & shutdown instructions carefully.

Open a window a little when using the stove to allow the cooker to vent easily.

Do not leave the cooker running unattended.

Do not use pots or pans that extend beyond the cooking surface of the cooker.

Note: If the red light starts blinking at times other than shutdown, the stove is over-heating and has shut itself down automatically. Correct the problem before restarting.

Operation

Starting ~ with the hood in the up position, turn the control knob to its maximum setting. Turn the control switch to ON position; in one ~ two minutes the red light should come on to indicate that the stove has started up. Rotate the control knob (*turn the knob slowly* to prevent sooting) to set heat output to desired level. *If* the stove does not start in about one to three minutes turn control switch to OFF and wait for the cooker to cool down, and try to re-start.

A carbonized burner normally causes failure to startup. Low voltage can also cause hard starting. Starting the starboard motor and idling it at about 1800 RPM will give you the voltage to startup the cooker if its a weak battery.

To shut down the cooker, rotate the knob to the lowest setting and turn the control switch to OFF. The red light will blink for about ten minutes until the stove has cooled down.

The stove, if properly installed, is wired directly to the starboard battery with the wire provided with the stove. This is to insure that the cooker cannot be shut down without power to cool itself down. If you interrupt the power to the stove, you will cause damage to it..

The heating zones are marked on the ceramic surface of the stove. The temperature can be adjusted by tuning the control knob. The left zone is twice as hot as the right zone at all settings.

Cabin Heater: With the stove started up, close the hood to the down position. A fan will start to move the air in the cabin across the hot cooker top and return it to the cabin.

Maintenance: The ceramic surface requires careful maintenance to keep it in nice condition. The surface must be wiped clean with a moist cloth and dried after each use. Normal liquid cleaning agents can be used or the special cleaner for ceramic surfaces. Scrape burned on food carefully with a spatula. Stains may be removed with vinegar or lemon. It is important that the surface be dried after cleaning.

Winterizing & Storage

The seasons over, winters on its way and its time to get your C-Dory ready for storage and ready for next year. ***Repair all deficiencies.***

That's right, now may be the best time to take care of preparing your boat for the next season of fun on the water. If you store your boat for the winter, there are some things you should take care of to make sure your boat and motor make it through the winter in good shape. Just parking the boat on its trailer in the back yard with a tarp over the top is not correct winter storage procedure. Protect your investment by putting your boat and motors up properly.

The Motors

- To have the job done properly, take it to an authorized dealer who specializes in your brand of motor. Many boat owners have discovered that it pays to have the dealer give the motor a complete check-up in the fall. During the winter months his mechanics aren't as busy. Come around the shop in the spring, and you'll be waiting in line. Get your boat ready now, and you'll be the first on the water in spring.

The Fuel System

- If your boat is equipped with an accessory fuel filter, clean or replace filter as recommended by filter manufacturer.
- Motor mounted filter should be cleaned or replaced, according to the instructions for your motor. Ask the dealer to check all fuel lines and fittings for leaks or cracks. This is especially important today as refineries and retailers add alcohol to gasoline. Some types of alcohol may adversely affect marine fuel fittings and hoses.
- Inspect all hoses for deterioration, hardening, cracking or leaks.
- Inspect fuel tank bonding system with a continuity tester; all metal components are grounded to each other and the motors.
- If boat is to be stored more than three months, it is best to drain the tanks. Today's fuel goes stale very quickly. If you cannot drain the tanks, use a fuel stabilizer. Old gas will make starting your motors in the spring very difficult. The motors will run ragged until better quality fuel is added to the tank.

The Electrical System

- Inspect the electrical terminals for corrosion and test circuits for proper operation. Remove batteries. Have dealer fully charge them and clean the terminals. Store them in a cool, dry place. If you do not cover your boat while in storage leave one battery installed on the starboard side to run bilge pumps. The pumps are equipped with automatic overload protection, which will protect the pump from damage if ever they become embedded in ice or the impeller becomes jammed by debris. This safety feature allows the pumps to remain in service even in the winter.

The Water System

- Inspect the system for leaks, deterioration of hose, pump and fittings. Drain as per instructions given in the *Water System* section of this document

Canvas

- The canvas should be cleaned and well dried. Inspect for tears or other damage. Store in a dry, well ventilated area.

Electronics

- Test all electronics for proper function. Inspect terminals, antenna, and transducers for damage or corrosion. Electronics should, if possible, be stored inside in a warm dry place.

Ice Box / Refrigerator

- Inspect for damage. Inspect the electrical terminals and test correct operation of refrigerators.
- Clean and leave door open.

The Bottom

- Clean bottom and inspect for damage and repair.
- If your boat has bottom paint, re-touch or redo the anti-fouling paint.
- **Caution!** Do not mix different systems together; remove old anti-fouling paints before using a new system.

General Repair

- Now is also the time to check out and repair all those little things you've been meaning to attend to during the summer; loose screws, cracked windows, torn seats, etc.
- Clean the boat inside and out and give your poor baby a good wax job.
- ***Repair all deficiencies.***

The Toilet

- Inspect the chemical toilet for leaks, cracks. Empty and clean as per instructions given in the *Chemical Toilet* section of this document.
- Inspect the marine toilet for leaks, deterioration of hose, pump and fittings. Cycle the pump with the water supply valve open to flush out and clean the bowl, macerator pump and lines. Close the water supply valve and cycle the pump again to drain the bowl and clear all of the hoses of water. Pump out the holding tank.

Trailer

- Check your wheel bearings and repack them with grease if necessary. Remove a break drum and inspect breaks. Check oil reservoir on break actuator for contamination and service level. Also check the trailer lights. Inspect all rollers and or bunks for deterioration. Inspect for loose hardware, broken parts and corrosion.

Repair all deficiencies. It's worth repeating - Repair all deficiencies.

Covering the Boat

The boat should be kept covered when not in use, especially during long lay-ups. Besides protecting the boat's finish it keeps debris out that will clog the deck drains and cause the cockpit to fill up and overflow into the bilge. Water in your boat during freezing weather can cause severe damage. When covering the boat use a canvas tarpaulin; DO NOT use sheet plastic or other non-porous material that can trap moisture between the cover and the surface of the boat. This will cause a milking of the gelcoat. Make certain that the canvas will allow the cabin to ventilate. Open a window or hatch a little to vent the house, and open the battery locker hatches to help vent the bilge. A Sunbrella canvas cover made to fit the boat is a good way to protect your investment.

C-Dory

C-Dory Marine, Inc. 25028 Pacific Hwy So. Kent, WA. 98032 253.839.0222

LIMITED FIVE-YEAR WARRANTY

Construction and sale of this boat to buyer shall be subject to the terms set forth in C-Dory Marine's limited liability warranty as follows:

- 1) C-Dory Marine, Inc., selling any boat, warrants that it will, without charge, replace or repair at it's option, any part (except as hereinafter provided) which is shown to its satisfaction, to be defective in factory material or workmanship within five years from the date of delivery to the original buyer, provided that the original buyer returns the boat free and clear of all lien and encumbrances and with all transportation prepaid to C-Dory Marine's factory or to the closest marina capable of doing the repair (pre-approved by C-Dory Marine, Inc.) within thirty (30) days of the discovery of the defect. The repair or replacement shall be accomplished within forty five (45) days of the delivery of the boat to the factory or other designated location.
- 2) This warranty shall not apply to:
 - Products not manufactured by C-Dory Marine, Inc. Any warranty provided by the manufacturer of the engine(s) out-drives, controls, or other equipment and accessories installed by C-Dory Marine will be passed onto the original buyer if possible.
 - The effects of installation of any engine(s), accessories, or equipment installed by anyone other than C-Dory Marine, Inc.
 - Glass breakage, color fastness, leakage, gelcoat, upholstery, paint chromium or galvanized finishes.
 - Boat damage due to transportation, accident or neglect including failure to provide reasonable and necessary maintenance.
 - Water damage, dry rot, wet rot, absorption and/or condensation damage.
 - Speed (speeds are estimated and not guaranteed.)
- 3) There are no warranties, expressed or implied, (including any implied warranties or merchantability and fitness), by C-Dory Marine, Inc. which extend beyond the five (5) year term of this warranty. The only remedy under the warranty is the repair of the boat; losses of time, inconvenience, commercial loss or consequential damages are not covered.
- 4) In event that C-Dory Marine, Inc. shall not repair or replace any part covered by this warranty within a reasonable time of its return to the plant or if C-Dory Marine fails to remedy a defect after reasonable attempts to do so, the original buyer may elect to accept a refund or replacement of the defective part.
- 5) This warranty gives you specific legal rights; you may also have implied warranty rights not disclaimed herein. In the event of a problem with warranty service or performance you may be able to go to a Small Claims Court, a State Court or a Federal District Court.

Galvanic Series of Metals in Sea Water

(Progression of metals from Least to Most Noble)

Anodic, or Least Noble (Active)

Magnesium & magnesium alloys
CB75 aluminum anode alloy
Zinc
B605 aluminum anode alloy
Aluminum 7072
Aluminum 5456, 5058, 5052
Aluminum 3003, 1100, 6061, 356
Cadmium
2117 aluminum Alloy
Mild steel
Wrought iron
Ni-Resist
13 % chromium stainless steel (410)
50-50 lead-tin solder
18-8 stainless steel (304) Active
18-8 3% NO stainless steel (316) Active
Lead
Tin
Muntz metal
Manganese bronze
Navel brass (60% Copper 15% Zinc)
Nickel
Yellow brass
Admiralty brass
Aluminum bronze
Red brass (85% copper 15% zinc)
Copper
Silicone bronze
Nickel
18-8 stainless steel (304) Passive
18-8 3% NO stainless steel (316) Passive
Hastelloy C
Titanium
Platinum

Cathodic, or Most Noble (Passive)

“Electrolysis” or “Electrolytic Corrosion”

When two metals of different nobility come in contact (or close proximity) with each other in wet environments (especially salty ones) corrosion results. *An electric potential is created between the two metals causing the “less noble” metal to corrode away. Sacrificial anodes are meant to help reduce damage. Replace your motor anodes as needed to maintain your protection. **Keep motors tilted up when not in use.***

Boating Information Sources

United States Coast Guard Auxiliary

Commandant (G-BAU) Washington, DC, 20593

United States Power Squadrons

PO Box 30423, Raleigh, NC 27622

United States Coast Guard, (Headquarters)

400 7th Street, NW., Washington DC 20591

American Red Cross

17th and D streets, NW Washington DC 20006

Coast Guard Info Line 1-800-368-5647

- Registering a Boat
- Documenting a Boat
- Operator Equipment Carriage Requirements
- Coast Guard Approved Life Jackets
- Visual Signals
- Navigation Lights
- Boating Safety Courses
- USCGAUX Courtesy Marine Examinations.

Useful Stuff

Weight of Fresh Water

- Cubic foot = 62.55 lb.
- Cubic inch = .0362 lb.
- Gallon = 8.340 lb.

Weight of Salt Water

- Cubic foot = 64.1 lb.
- Cubic inch = .0371 lb.
- Gallon = 8.561 lb.

Weight of Fuel by Gallon

- Diesel = 7.1
- Gas = 6.0
- Oil = 7.6

Distance & Speed

- 1 nautical mile = 6076 ft
- 1 statute mile = 5280 ft
- 1 nautical mile = 1.151 statute mile
- 1 statute mile = 0.869 nautical mile

A split second is the time interval between:
a traffic light turning green and the guy behind you honking his horn.

Clean Boating - How To Do Your Part

Environmental Concerns

Petroleum in or on the water is harmful and, in some cases, fatal to aquatic life. Benzene, a carcinogen, is in gasoline. Oil contains zinc, sulfur, and phosphorous.

Once petroleum is introduced into the water, it may float at the surface, evaporate into the air, become suspended in the water column or settle to the sea floor. Floating petroleum is particularly noxious because it reduces light penetration and the exchange of oxygen at the water's surface. Floating oil also contaminates the microlayer, the uppermost portion of the water column. It is home to thousands of species of plants, animals, and microbes. The abundance of life in the microlayer attracts predators; seabirds from above and fish from below. Thus, pollution in the microlayer has the potential to poison much of the aquatic food web. Also worth noting - a single pint of oil released onto the water can cover one acre of water surface area.

The Law

Because of the harm associated with petroleum, the discharge of oil is absolutely prohibited. The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone if such discharge causes a film or sheen upon, or discoloration of, the surface of the water, or causes a sludge or emulsion beneath the surface of the water. The Clean Water Act also prohibits the use of soaps or other dispersing agents to dissipate oil on the water or in the bilge without the permission of the Coast Guard. Soaps, emulsifiers and dispersants cause the petroleum to sink in the water column and mix with sediments where they will remain for years. Also, the soaps themselves are pollutants.

Fueling Practices

Gas or diesel may be spilled during the act of fueling as backsplash out the fuel intake or as overflow out the vent fitting. Spills of this sort harm aquatic life, waste money, and can result in stains on the hull and damage to the gel coat and striping. Follow these tips to avoid problems: Fill tanks to no more than 90 percent capacity--gas that is drawn from cool storage tanks will expand as it warms up onboard your vessel. To determine when the tank is 90 percent full, listen to the filler pipe, use a sounding stick (if possible), and be aware of your tank's volume. Rather than filling your tank upon your return to port, wait and fill it just before leaving on your next trip. This practice will reduce spills due to thermal expansion because the fuel will be used before it has a chance to warm up. Fill portable tanks ashore where spills are less likely to occur and easier to clean up. Use oil absorbent pads to catch all drips. Slow down at the beginning and end of fueling.

Emissions Control

Marine engines--especially 2-stroke outboard motors--produce the highest average level of hydrocarbon exhaust emissions after lawn and garden equipment. Hydrocarbon emissions contribute to ground level ozone, a known health risk. Follow these tips to help your engine operate as efficiently as possible: Use the gas to oil ratio recommended by the engine manufacturer. Too much oil can foul spark plugs and too little can lead to increased engine wear or even failure. Use premium two-cycle engine oil (TC-W3 or TC-W4). Premium oils improve engine performance and reduce pollution because they burn cleaner, contain more detergents, and prevent formation of carbon deposits. Use gasoline with the octane level recommended by the engine manufacturer.

Bilge Maintenance and Oil Changes

Engine oil tends to accumulate in bilges. If no precautions are taken, the oil is pumped overboard along with the bilge water. Discharging oily water is illegal. To avoid fines and to protect water quality, follow these tips:

- Keep your engine well tuned to minimize the amount of oil that is released. Be sure there are no leaking seals, gaskets or hoses.

- If you change your own oil, purchase a non-spill pump to draw crankcase oils out through the dipstick tube and slip a plastic bag over used oil filters prior to their removal to capture any drips. Hot drain the filter by punching a hole in the dome end and draining for 24 hours. Recycle the collected oil. Recycle the metal canister if practical. If not, dispose in your regular trash.

- Place oil absorbent materials or a bioremediating bilge boom in the bilge.

- Place an oil absorbent pad under the engine.

- Replace oil absorbent materials regularly.

- Look for contractors or marinas that offer a bilge pump-out service.

- Do not treat oily water with detergents. Soaps pollute and make clean-up impossible. You may be fined up to \$25,000 for using soaps to dissipate oil.

Disposal of Oil Absorbent Materials

The disposal of used oil absorbent material depends on what type of product it is and how it was used:

- Standard absorbents that are saturated with gasoline may be air dried and reused.

- Standard absorbents saturated with oil or diesel may be wrung out over oil recycling bins (if they are saturated with oil or diesel only!) and reused. Alternately, they should be double bagged with one plastic bag sealed inside of another and tossed in your regular trash.

- Bioremediating bilge booms may be disposed in your regular trash as long as they are not dripping any liquid. Because the microbes need oxygen to function, do not seal them in plastic bags.