



ASPEN

POWER CATAMARANS

C90 Owners Manual



Shore Power Disconnect



Switch Off Breaker First

Never leave hot (breaker on) a loose cord on dock could shock swimmers If it was to drop in water.



Battery Switches Normally On

In Engine Room

The C90 has three main battery switches , **House On/Off ,Engine On /Off, and Emergency Parallel.** The normal operation position is to leave both Engine and House switches in the On Position, Emergency Parallel is Off. Emergency parallel is rarely used, the boat has a Blue Sea 's Voltage Sensitive relay (black box near switches) it disconnects the House Batteries from the Start Battery. When the voltage on the Start Battery drops below 12.7 volts it disconnects, once the charging system has brought the Start Battery back up to 12.7 volts it reconnects to the house battery bank. The Batteries have three charge sources, First, 2 ProMariner Chargers (8A for Start Battery and 20A for House Battery) Shore Power is connected and AC Breakers at dash are switched on. Second, two 80W Solar Chargers (10A) while anchored-automatic, Third is a 125A engine driven Alternator.



Thruster Battery Switches, These are mounted below the main battery switches and are normally on. **These must be switched off when swimmers are in the water or for service.** The thrusters are very powerful and will suck objects in the water toward them. Do not operate Thruster for more that 30 seconds at one time or motor may over heat.

Fuel System – Filters - Priming



The C100 fuel system includes two filters and a electric switching valve at the dash. In normal operation there is no owner/operator activity other than to inspect the Raycore Filters clear glass bowl for water (clear liquid) and drain in to cup through petcock at bottom if present. If the boat has set unused for several days you will need to wait for the engines electric fuel pump to stop before cranking (light buzzing noise). The engine has its own fuel filter assembly but this is not typically changed as it is protected by the Raycore unit. The engine has a manual fuel pump activation button on its port side fwd near the top. The Raycor uses a 10 Micron 500 series diesel filter.



Fuel Tank Switch is located to the left side of dash. Its is labeled Main and Aux, Main is the engine side tank, Aux is the port tank. Depress toggle for tank desired. You typically will run on one tank for 3 hrs then switch, so tanks drop equally while underway. Each tank is 40 gallons approximately 36 is usable. With full fuel at 14Kts you should have approximately 16 Hrs running time. This switch also swaps the engines fuel return lines at the same time.

Full Time Power Breaker



Always On 12V power Fuse is just inside engine room door. It supplies power to the boats 6 automatic bilge pumps, heater, Co censor and other devices that need power to save memory settings. It is not affected by battery switch position. If Fuse is Burned Out, there is no bilge pump protection from leaks. To change the fuse the Philips screws need to be loosened for removal.

Engine Oil

Transmission Oil



Note the engine dip stick is on the port side aft-laying horizontal. It has a flip top lever to open. **You must re-flip to lock in-place, or it will blow oil out.**



The Volvo D3 150 engine uses premium **15-40 oil**. It's best to check oils prior to use. Be careful not to spill or overfill. Change oil and filter when new at 50 hrs then every 100 hrs after.



The ZF Transmission uses ATF (automatic trans fluid) oil for its gear lubrication and to engage its clutch. Check oil engine warm/Idling in natural with dip stick pushed against the threads but not screwed in to the housing. If the oil is low the clutch will drop out and the boat will stop-find leak-refill. To top off, it's easiest to fill through the dip stick opening with supplied funnel check frequently while filling as overfilling can damage the transmission. Change after 50 Hrs and then every 100 hrs, clean wire mesh filter.

Voltage Sensitive Relay



This **Blue Seas Systems** unit separates the house batteries from the start batteries automatically when the house voltage is below 12.4 volts. No user activity is required.

These **ProMariner automatic chargers** are wired to come on when the boat's shore power is connected and the A/C breakers at the dash are switched on. The chargers are 4 stage smart units that charge aggressively if the battery is low and then ramp down as it fills. They then drop out completely when full and then do a small topping charge weekly. The design greatly extends battery life and over charging and subsequent battery damage. Check battery water levels monthly, lower water levels/ exposed plates will damage the batteries lead plates requiring replacement.



Under Dinette Hatch

Note: Chargers will only charge if they see voltage. If batteries have been run dead flat you will need to use Emergency Parallel Switch, charge for 10-15 minutes to charge batteries enough for Charger to see voltage.

Sea Water Ball Valves

There are two raw water valves on the boat both in the Starboard Lazarette (inside hull side fwd). The smaller one 1/2" is for the head and the aft deck wash down. The larger one 1.5" is for the engine cooling water.



Raw Water Valve OFF



Raw Water Valve On, 45 degrees

1/2 Inch raw water valve is run typically at 45 degrees to reduce its pressure while underway and stop head overflow. These valves are typically left on as running the boat with valves closed will damage the engine and impellers.



Engine Cooling Water Ball Valve Off



Engine Cooling Water ON

Starboard Lazarette



House Batteries 2ea G27 12V Deep cycle, wet lead acid, 4" water lift muffler to left, drain muffler when stored for winter with drain bolt at bottom, re-silicone bolt after.

Engine start battery G27 (Center), Teliflex SeaStar hydraulic steering ram. Note: Rudder packing should be re-tightened/checked with each oil change.

Drip-Less shaft seal

Propane Tank Storage and Operation



Propane tank is in the Port Cockpit storage locker. Note: Locker is plumbed with a hose to a through hull overboard so a gas leak would not enter the boat. If you ever smell gas stop-turn off valve and open boat to clear fumes. Find leak.

To use, make sure hose connection is tight, **open valve**, gauge will show approx 90 Psi. If you hear a hissing or smell gas turn valve off ,check connections w/ soap 50/50 water solution.. 15 pound tank will typically last 2+ weeks.



Electric shut off valve only comes on if gas controller by sink is on and sniffer smells no gas.



The tank must be centered in compartment to latch lid in place.

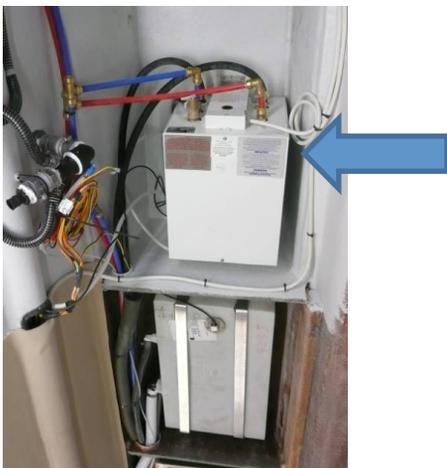
Port Lazarette Equipment



28 gallon holding tank (black water) This tank as are both water tanks are equipped with a density sensor gauge system located to right side of dash, press right hand button to check holding tank level. If tank is full the head will not flush. You must be 3 miles off shore and in a area with current that will flush to use the macerator switch at dash. Note :shut boat off to hear change in tone when tank is empty, running pump dry will damage its rubber impellers. The tank can also be emptied at a pump out station using the fitting near the transom door. The tank includes two dip tubes so there is no Y-Valve to switch.

Pressure Water Pump and Strainer:

The C100 has two water tanks (24 gallons port side and 26 gallons Starboard side) each has a dedicated pump. The fresh water pump switch is located on the dashes lower DC switch panel. Two tanks are provide so owners can use water to trim the boat port to starboard if needed. Water like fuel is a heavy cargo, top off only if you need it. Water Tanks must be drained and system primed with RV antifreeze during winter storage.



6 Gallon Seaward Hot water heater SS is located in the hull under the refrigerator. It runs on 120 V while at dock. Note it draws 2000 watts so you will not be able to run large additional loads while water heater is on. Switch its breaker on only when hot water is needed. While cruising the engines hot water is plumbed through the heater to heat water.

Getting Ready To Go



Stow fenders and dock lines in aft compartment

Note: Switch Fuses are behind cover plate.



Fill Water tanks as needed (port and starboard) Cockpit fwd walls. Be sure water is good ,taste it! Ask fellow boaters. During long inactive periods ad a little chlorine to keep fresh.



Switch on Engine Blower, a cool engine is more efficient.



Switch on Refrigerator, lower left DC panel.

Propane Control - Sniffer



The propane sniffer control unit is just fwd of the sink. This units power may be switched with the black switch just forward of it. The sniffer is very sensitive and false alarms can be disconcerting, when its off the solenoid valve in the tank is closed. When stove is not in use tap the control button and turn the gas off . It will take about 30 seconds before the sensor can be turned to ON position.



Gas is on when the green Light is ON.

Green light When Power is on but unit is off



DC / AC Panels

DC Panel: This panel is fed from the house batteries . It includes both voltage (pressure gauge) and Amp gauge (volume) to manage your power during the day, reducing amps used is most important to extending battery life. **While boating turn all the breakers on as shown.** The small silver toggle switch will show battery voltage engine (left #1) and House (#2 center), #3 is not connected as we have only two battery banks. These breakers then feed both dash DC switches panels and the fuse blocks for electronics and pumps. A DC shunt is standard for the amp meter.

AC Distribution Panel: This panel is fed from the 30 Amp shore power connection. **Typically, all the breakers but the hot water heater are left on energizing the boats outlets.** If you see the red reverse polarity light lit (2nd bulb down) see your dock master before continuing some boat systems could be damaged. Turn on hot water only when needed. Both panels are Blue seas systems premium panels.



Tank Gauges

Solar Panel Control



To read tank level:
Left Gauge = Left Water Tank
Right Gauge = Right Water
Center Gauge = Waste Tank

Solar Panel Charge Controller: The Solar Boost 2000 is a premium charge controller that helps capture all the sun's peak mid day energy. **The unit is automatic and requires no operator input** as the battery's become fully charged it automatically ramps down its charge so batteries are not over charged. It also automatically shuts down if it sense another charge source (engine or battery chargers) The slide switch is useful to see battery banks volts and current input. Note: If it seems not to be charging while out, the batteries maybe full or the Kayaks are blocking the sun. If batteries are low and the sun is bright the unit will put out up 11 amps.



Getting Started

Thrusters-Radio-Wipers



Thrusters: these Side Power units are very handy while docking. Once battery switches are on depress both ON buttons at the same time, green light will come on. Now the joy sticks are ready press bow stick left boat goes left. Use in 20-30 second bursts never more than 3 minutes of use to keep motors cool. **Be certain no one is in water near boat the thrusters work like vacuum cleaner sucking from a large area.** Unit shuts off automatically after 3 minutes of inactivity. A wireless remote is available for solo docking.

Icom VHF Radio. To turn on rotate top right knob, most conversations with other boaters will be on low power, use Ch 16 only for hailing ,then switch to 72 or 68, weather also available by pushing WX button. Lower Knob is squelch use it to turn down background static.



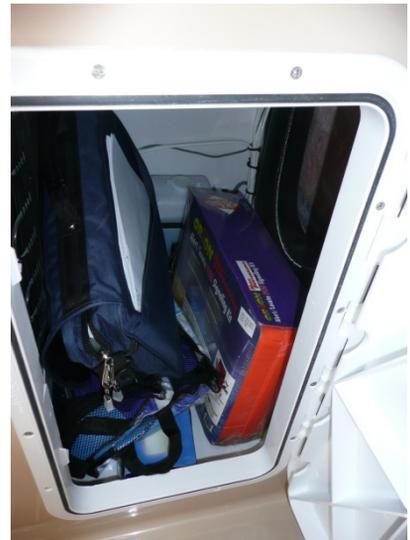
Wiper Motor -Washer Control, These are on left side of dash, two speed push to wash, Wash tank is in back corner of storage bin behind refrigerator under helm seat you will have to remove safety gear for access. Rain - X works great on front and side windows to aid in visibility

Getting Started Engine and Safety Gear



STARTING ENGINE: Once batteries and blower are on you can start, engine (starter will time-out after 20 seconds), switch off-re crank. If motor does not start open engine room door and push primer plunger on white fuel filter until hard, then restart. **Important you must warm engine up slowly over 10-15 minuetts at RPMs under 2,000 prior to running at cruise RPM Do not go above 2,000 Rpm until motor has reached 176 degrees.** 80% of engine wear is while motor is cold.

Engine Computer: This is a very useful instrument. Toggling the propeller button shuttles you to a variety of data. It's fine to push the boat and horizon button for additional information. Oil pressure while running will be about 90 Psi, water temperature will be about 176-180. **If you hear a horn or beeping while underway you must stop and determine the cause.** Engine manuals are under helm seat in blue bag.



DC Panel Layout



Pumps Panel: This panel controls the boats bilge pumps and shower sump pump. Most of these are automatic but these switches allow you to turn each of the 6 pumps for each water tight compartment on manually. Other than fresh water these switches are normally in the off position . This panel is fed from the pumps breaker on the DC main panel. **The automatic portion of the bilge pumps is not affected by this panel.** Note: The engine room has a 7th pump (1100GPH emergency pump) this pump is wired to a very loud horn behind the dash. Should you loose an engine hose and begin to fill the engine room this pump and horn will come on automatically.



Ships Systems Panel: This panel includes navigation lights, blower and many other ship systems. It is also fed from the main DC panel breaker. At dash center. These panels have separate automotive blade fuses under the plastic snap cover ranging from 5-20 amps. If a fuse has blown determine cause possibly debris in pump ,shorted wire . Fix then replace fuse. **To access fuses carefully pop grey cover off with tape wrapped dinner knife or flat blade screw driver-pull rubber gasket over fuses and replace fuse.**

Trim Tabs

Lenco Electronic

The C90 is equipped with large trim tabs. These tabs are primarily used to trim the boat for maximum efficiency and comfort while cruising. Due to their size and positioning, they can lift a great deal while creating very limited drag. **Typically after setting for a given throttle RPM you will level and trim down to find the maximum speed for that RPM.** If the seas are choppy you may find that less trim is a softer ride and dryer. Use your discretion. I find in 0-12" seas full tabs is often most efficient and a good ride. In 12-24" seas you will need to reduce tabs to 2/3 or less and let the bow float through the seas. **In larger seas you may find no tab is best. Please note your best ride in heavy seas will often be at 14-17Kts.** If the boat is bouncing or thumping try something different.



Zero Tabs: Used for large seas 14-20 Kts

1/2 Tabs used in 2-3ft seas 14-20 Kts

1/2 Tabs used in 2-3ft seas 14-20 Kts



Full Tabs used in 0-1 ft Seas 14-17 Kts

Note: Retract tabs when not in use to protect actuator shaft from marine growth - barnacles.

Shower Sprayer - Curtain

First mixer is set to temp, The sink wand lifts to hanger near door, curtain from shelf behind door is snapped into ceiling buttons, auto sump pump under head evacuates water. Dry door and shower area when done. Door can be left open or closed when showering. Note: Boat showers are recommended to conserve water. IE get wet, turn off, soap up, rinse off.



Sprayer has three positions, Off, On with button, On full time.



Boat Cleaning Products



Maguire's Marine Boat Soap with wax, keeps boat wax intact, great for gel coat.



Boat Protection Products



Meguiars Flagship Wax, This is a premium wax and UV protectant. Hand wax once per year in Northern climates, twice in southern. Wax both deck and hull. In the south, even the non skid maybe waxed with a brush.

T-9 Bowshield, This is wonderful for your engine rooms metal parts, all of them, bronze, SS clamps, Cummins metal parts, battery connections, bonding system connections, Honda 2hp . Keep away from plastic, and belts. Light re-coat every 6 months. Wipe up any excess while wet.



303 Aerospace Protectant, This material is for plastic that's out in the sun, I.E. Vinyl seats, Zodiac boats, recoat every 3 months.



Wallas 30D Furnace



The Wallace furnace control is located to the left of the helm, to turn on push toggle switch to right and rotate fan-heat control knob to desired level. The controller has no thermostat due to size of space heated.

The unit is located under the sink. Note: When first warming up, it may howl for a few moments, adjust speed to stop. During its first operation, it may time out as the fuel pump did not prime, -restart unit.



Note: If a vent is not flowing, pop grill off, twist valve inside open.

The vents are located in the salon, at the dash and in the master stateroom. Do not block the flow as this will shut the unit down from overheating. There is a boost fan for defrosters, switch it on at DC panel to left of helm. We have found at times on the lowest flow setting it may shut off after 4-6 hrs. To reset, trip the constant hot power breaker in the engine room and then reset breaker on.

Garmin Chart Plotter

Also please refer to your Garmin Manual

To Start, push and hold power button at top right for three seconds. Unit will come on in 10 seconds.



Next press Charts



Next Press Navigation Charts



Screen will come up with chart and data fields. To zoom in or out press + or -. To change page to sounder press home button and toggle to desired page.



Note :To dim unit at night tap power button and use active button to adjust light level. You must turn back up when done or the screen will be black the next day, very hard to see buttons.

Tilt Helm - Curtains



Tilt Helm, lever under wheel, hydraulic fluid (Teliflex) fills at top, under rubber boot



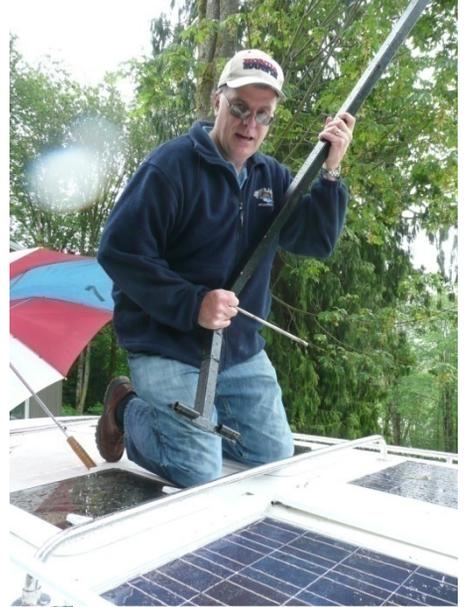
Running attitude, 16 Kts tabs down



Master Curtain snap in,
labeled Port -
Starboard ,arrow shows Fwd.
Roll and store in headboard
bookshelf.

Folding The Mast for Trailering

(On a very wet day)

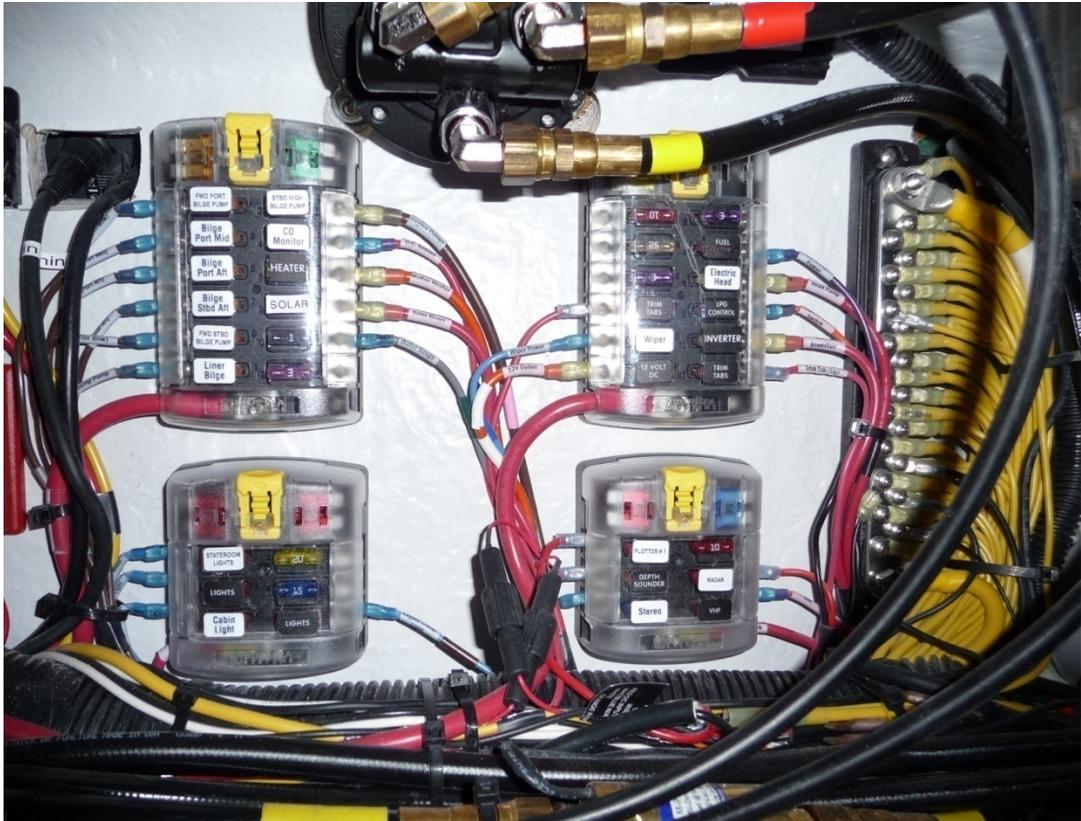


While folding be careful not to lean on Solar Panel glass, rest support tube carefully on SS Mast, tip in to cockpit, then lift forward to corner for towing. Note: It's best to close door before placing support.

Fuse Panels Behind Dash

Blue Seas Panels-Auto Blade Fuse type

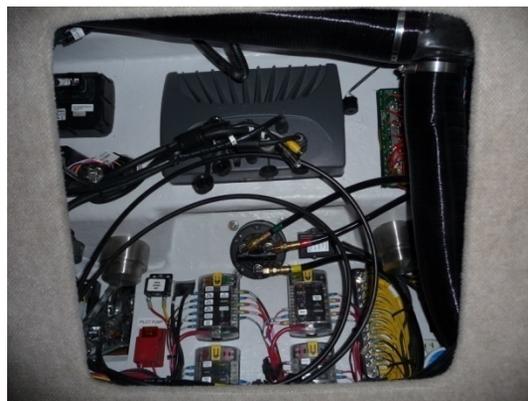
(Not: mini blades)



Each of these 4 fuse blocks are dedicated to a specific system and are powered by a dedicated breaker at dash or in engine room. Hot Float (8 gang right) Electronics (6 gang top) House equipment (6 gang middle), House lights (6 gang bottom) Black box to right of helm is Blue seas dimmer for dash lights. Fuses 3amp-20amp, most 5-10 amp.



300 Watt 12V to 120V inverter for lap tops and charging phones , Carbon monoxide detector standard.



Fuse Panel located behind dash under helm station.

Trailer Info



Aspens Trailer is built by Float On Trailers in Vero Beach Florida. It is a 10,000 pound capacity aluminum trailer. The minimum tow truck size is $\frac{3}{4}$ Ton. When the ball weight is set to 6-7% of the towed weight (600-800 pounds) she tows like a dream. Includes a solid winch stand assembly with stair for access while loading. Shown are the optional mag wheels and electric hydraulic breaks (nice for hilly terrain and backing up steep driveways). The design is self centering and loads under power to the winch stand.



Shown are the guide bunks, Note: when off loading the fenders will typically be 8-10" underwater. On west coast ramps the tow truck tires will typically be at the waters edge. On east coast ramps which are steeper you will back in less to get the correct depth.

Shown is the keel capture and guide pads to center hull as it pulls out of the water. Be sure tires are inflated to within 5 PSI of the recommended capacity. Check bearing and tire temperature with a touch at each fill up. Increased temperature is a sign of bearing problems, low air pressure will heat up the tires.

Lifting Strap Location

Note: you will need 24" carpeted 2x6s just under the gunwales to spread the compression load from the straps and reduce damage to the gunwale rubber.



Arrows show location of the lifting straps. On the stern the goal is to lift on the keel (Fiber Glass) about 6" forward of the Stainless Sand Bar. **Be sure to preload the starboard side as tension is brought up by pulling the cross bar down closer to the deck/engine load (approximately 10").** This will keep the boat level as it lifts

The forward Sling goes just forward of the port light well clear of the thruster. The cross bar is typically level for the bow. **Note: If you lift one end at a time to put blocks in to place the straps be sure to block the trailer frame to support it or you will bend the frame. Add pinch pads if necessary.**

Windlass, Simpson Lawrence

The Simpson Lawrence windless mounted on the front deck has power controls at both the helm and front deck for ease of use. The unit uses ¼" chain typically 40' and 250' of ½ " line typically triple braid that's been woven to the chain. The capstan can handle both chain and line, transitioning automatically as the line move through. When the line is new it's often a good idea to remove the anchor at its swivel and run the line up and down 2-3 times to clear any kinks in the line

The Windlass has a friction clutch built into the capstan. Its tension is adjusted by inserting the wrench in the box socket and tightening clockwise for more friction counterclockwise for less (wrench is in owners briefcase). This is a delicate procedure as to little tension and the clutch slips when lifting under-load. To much tension as the anchor comes up into the roller assembly it can be bent. When the anchor rode has been purchase from Aspen it includes depth markers every 30 ft to aid in anchoring.



The Windlass Breaker is located in the master staterooms hanging locker just forward of the bow thrusters service hatch. Note the anchor line end must be secured to the bitter end cleat in the anchor locker. Be sure to secure the anchor up with a bungee or line when underway.

Anchor Details



Anchor with snubber bungee



Line after Stacking-de-tangle



Tighten/Loosens clutch, capstan.
Note the wrench is key to adjusting
how much force the windless pulls
in with. Too tight and you will
damage roller assembly.



Anchor Depth Markers

Details



Electrical junction box is behind enclosure.



Kayak with ratchet straps and foam pad. Be sure to remove Kayak while towing



Tender Snubber line for medium range towing to take wind buffeting out. Long hauls it is best to deflate tender. Line also used to lower-raise tender.

Zodiac Launch



Un-clip SS support rods



Store Rods on transom clip



Tip Tender in, leave clipped to boat while mounting motor.



Un buckle engine in Port laz.

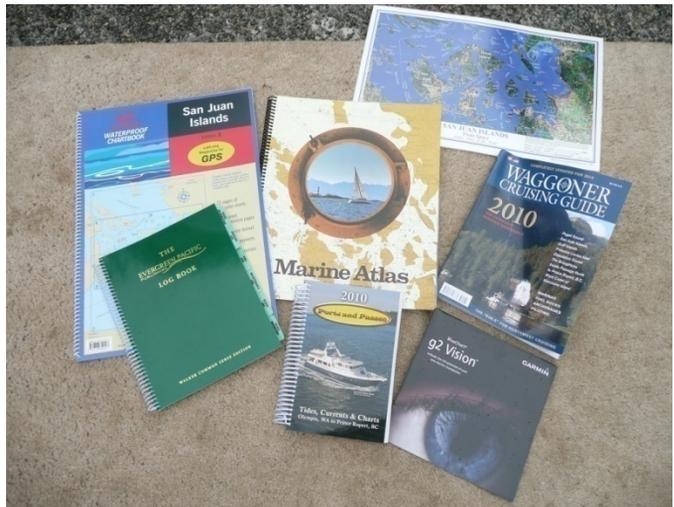


Rinsing engine with hose

Getting Ready, The Fit Out!



Getting Ready, The Fit Out



Getting Ready, The Fit Out



Getting Ready, The Fit Out



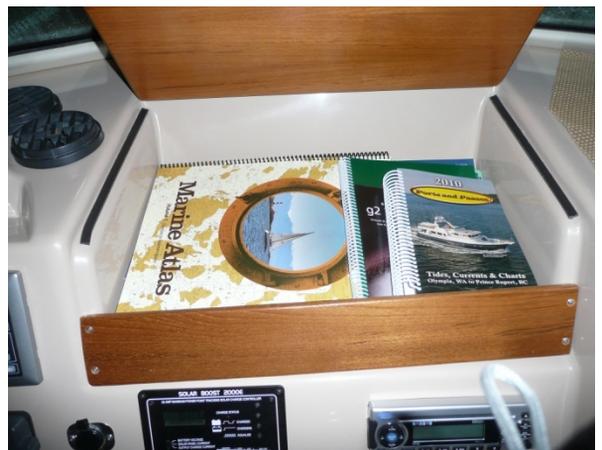
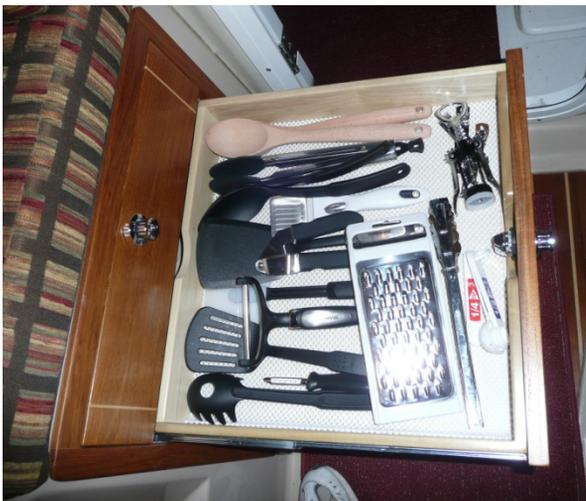
Getting Ready, The Fit Out



Getting Ready, The Fit Out



Getting Ready, The Fit Out



Getting Ready The Fit Out



Getting Started, Fitting Out



Aspen 28' Color Codes

16 AWG WIRE

Primary	Color Code #1	Color Code #2	Description
Blue			Dimmer (Up)
Blue			Dimmer (Down)
Blue	Black		Deck Lights
Blue	Blue		Wiper Park
Blue	Brown		Misc. Lights
Blue	Purple		Headlights
Blue	Red		Cabin Lights
Blue	White		State Room Lights
Brown	Blue	Blue	Bilge Pump Float (Port Mid)
Brown	Blue		Bilge Pump Float (Star Mid)
Brown	Grey	Grey	Bilge Pump Float (Port Bow)
Brown	Grey		Bilge Pump Float (Star Bow)
Brown	Green		Washdown Pump
Brown	Pink		Wiper Wash Pump
Brown	Red	Red	Bilge Pump Float (Port Aft)
Brown	Red		Bilge Pump Float (Star Aft)
Grey	Black		Anchor Lights
Grey	Blue		Dimmer Light
Grey	Brown	Brown	Bilge Pump (Port Bow)
Grey	Green		Tank Monitor
Grey	Red		Navigation Lights
Grey	Yellow		Tank Sensor Power
Orange	Black		Propane Stove Switch
Orange	Green		Refridgerator
Orange	Pink		Trim Tabs
Orange	White		Horn
Orange			Windlass
Orange			Up
Orange			Down
Pink	Black		Fuel Sensor (Port)
Pink	Grey		Fuel Sensor (Star Aft)
Purple	Brown	Brown	Bilge Pump (Port Mid)
Purple	Brown		Bilge Pump (Star Mid)
Red	Black		O.C. Sensor
Red	Brown	Brown	Bilge Pump (Port Aft)
Red	Brown		Bilge Pump (Star Aft)
Red	Green		Volt Meter Battery #2
Red	Purple		Volt Meter Battery #1
Red	White		Stereo
Red			VHF
Red			Shunt Signal Wire
Red			Dimmer Power
White	Green		Engine Blower
White	Orange		Propane Sensor Switch
White	Red		Defrost
Yellow			Ground

10 AWG WIRE

Primary	Color Code #1	Color Code #2	Description
Brown	Green	Green	Washdown Pump (Port Aft)
Brown	Pink		Bilge Pump Float (Engine Comp)
Brown	Yellow	Yellow	Fresh Water Pump (Port)
Brown	Yellow		Fresh Water Pump (Star)
Brown			Macerator
Orange	Purple		Wallas Heater
Orange	White		12v Outlet
Red	Black		Toilet
Red			Sub Panel
Red			Pump Switch Panel
Red			Fuse Block #4
Red			fuse Block #3
Red			400v Inverter
Red			Solar Boost
Red			Solar (Port)
Red	Pink		Buzzer 1600 Pump
Yellow			Ground
Yellow			Solar (Star)

Wiring

A-28 Fuse Block #1 (Pumps)



A-28 Fuse Block #2 (Misc.)



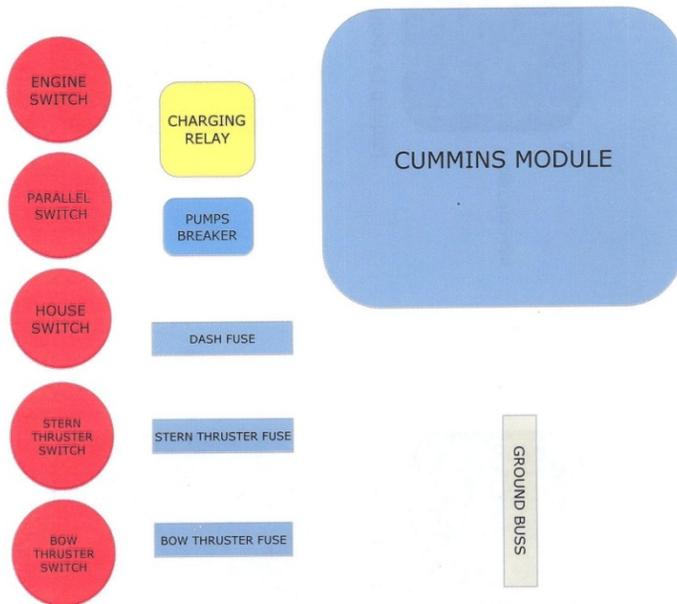
A-28 Fuse Block #3 (Lights)



A-28 Fuse Block #4 (Electronics)



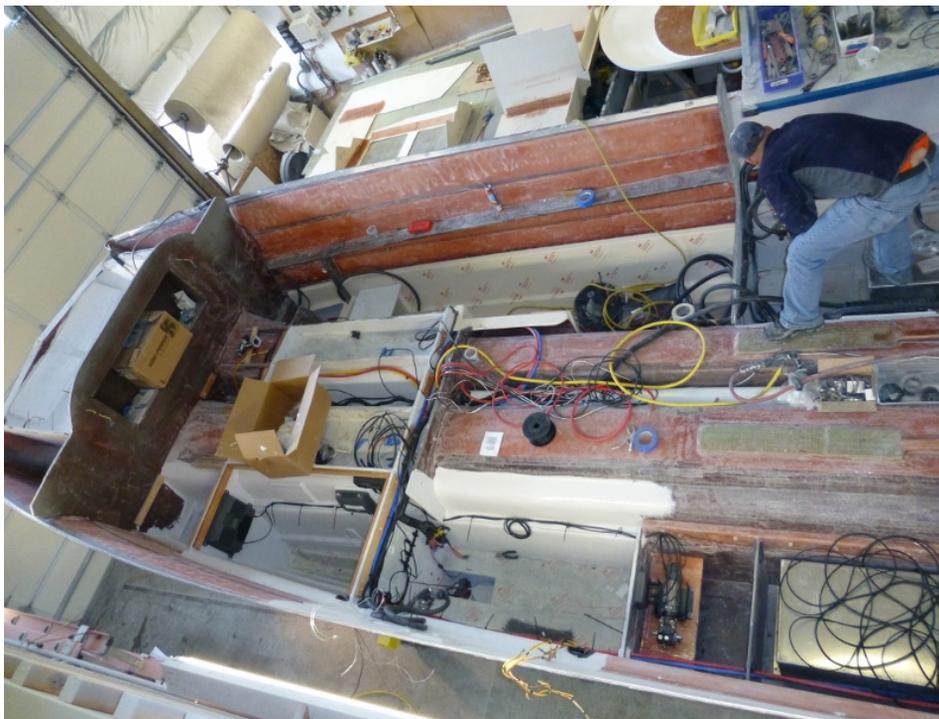
A-28 POWER DISTRIBUTION PANEL



LIQUID INDUSTRY LLC

3-25-11

Open Hull



Port Open Hull



Optional Auto Pilot
“Pump Location”

Hot Water Heater

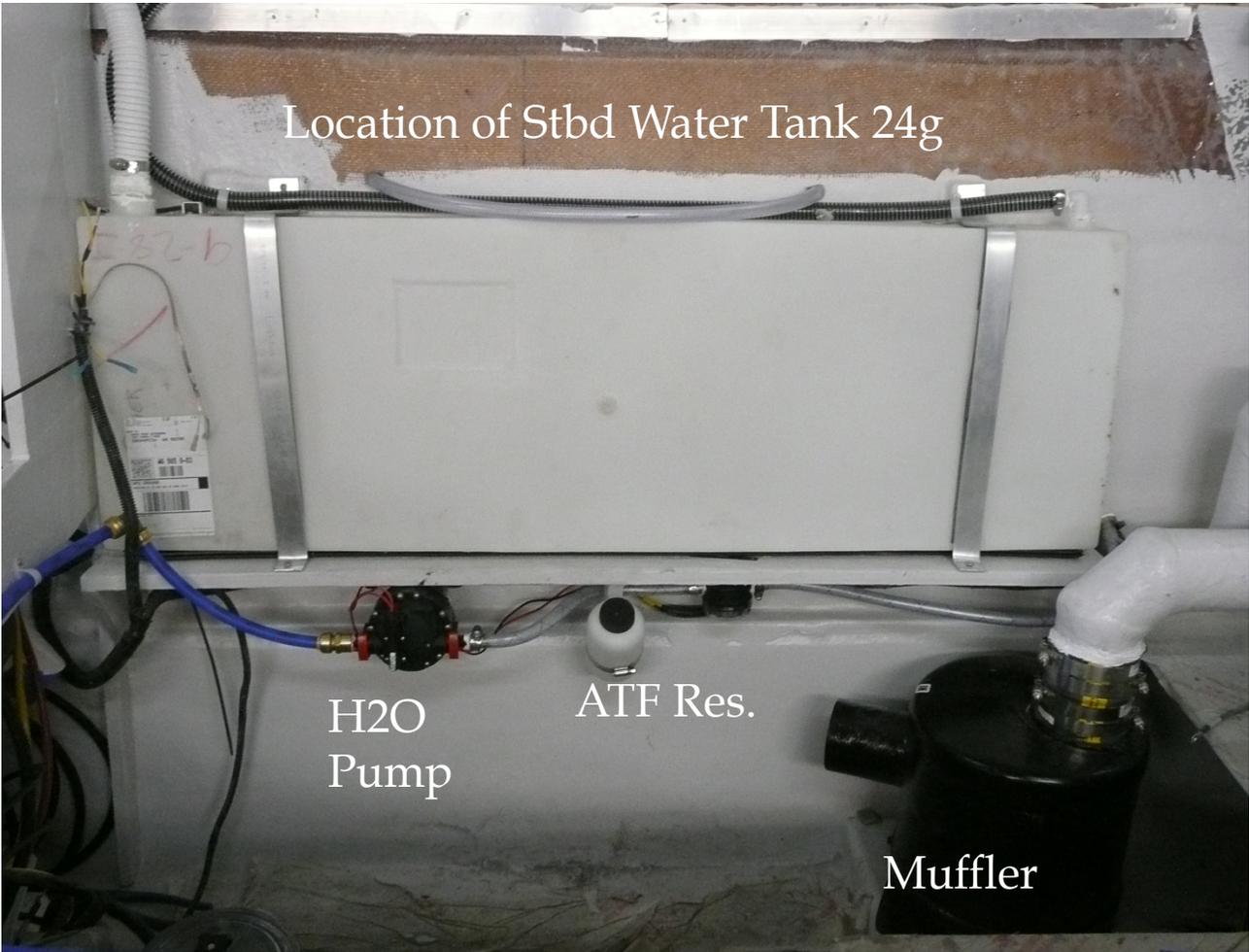
26g Water Tank

40g Diesel Fuel
Tank

Port Lazerett Open Hull



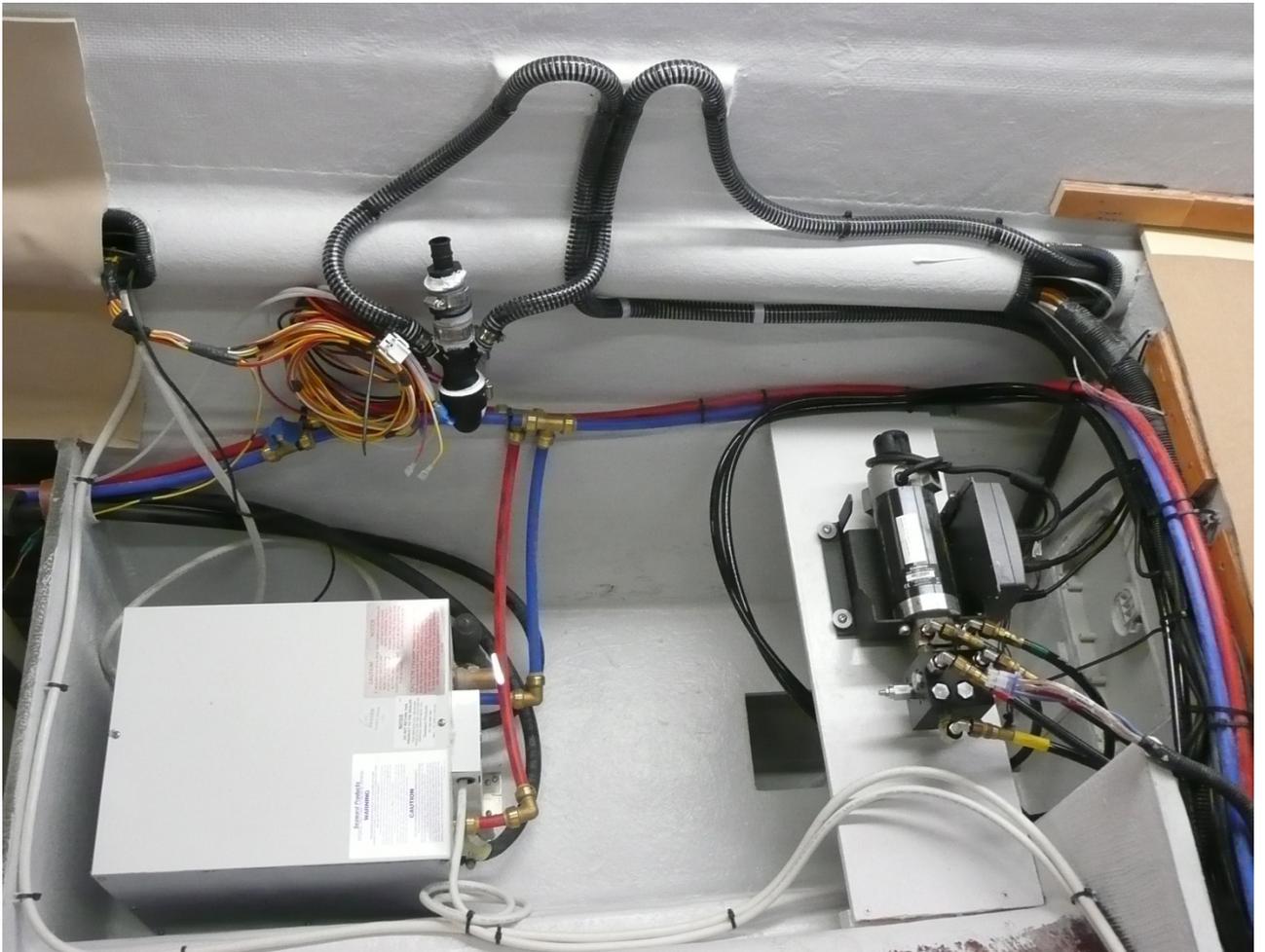
STBD Lazerett Pre- Decking



Stbd Hull looking Aft



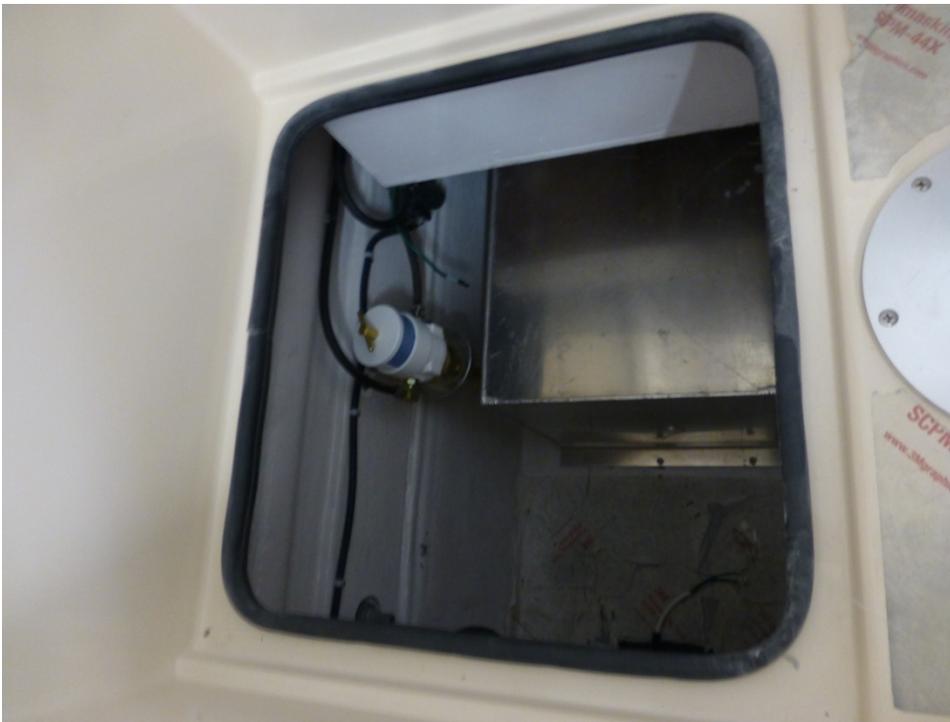
Port Mid Ship



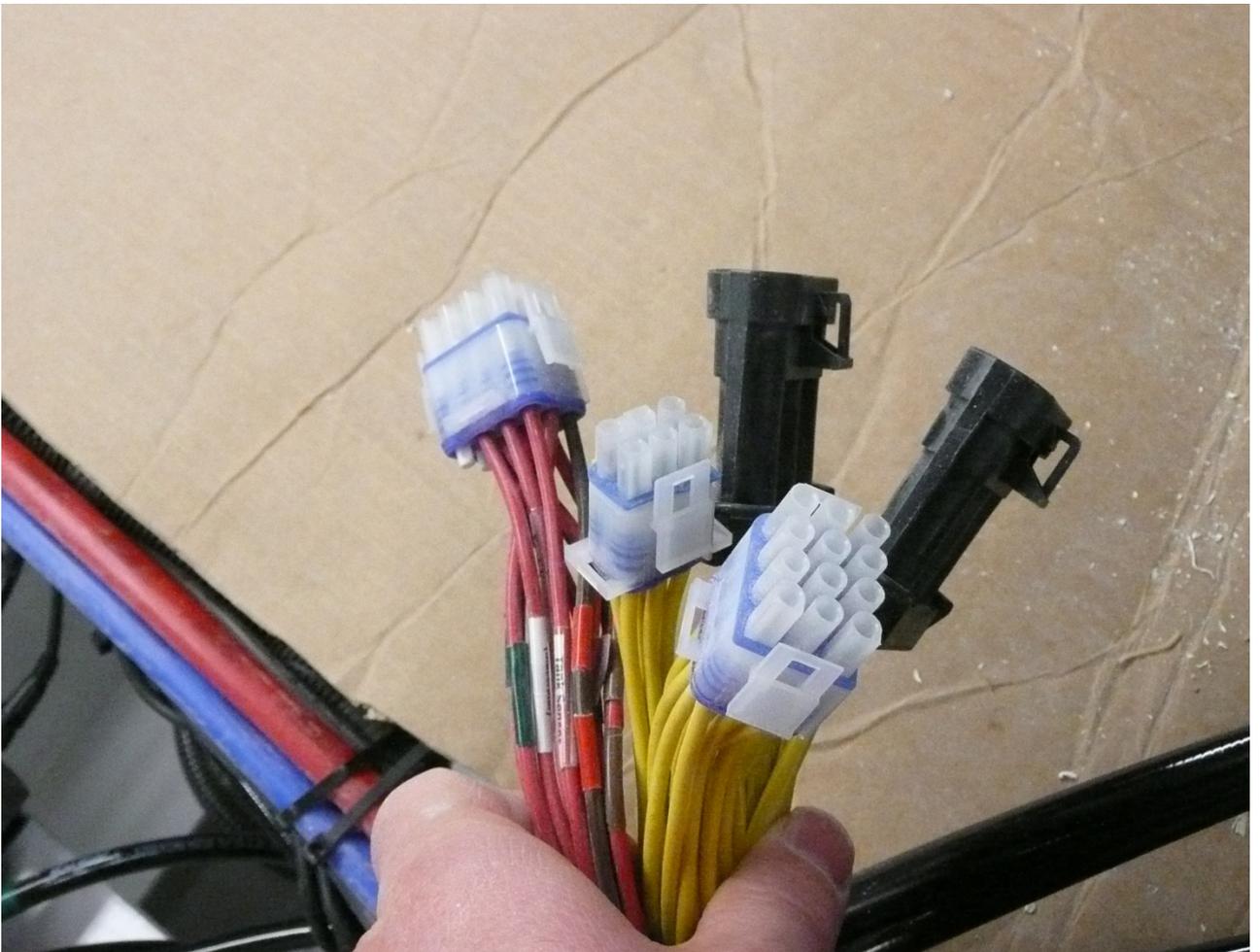
Macerator



Engine & STBD Fuel Tank



Water Proof Plugs



STBD Transom



Pocketed Prop, Rudder



Sandbar, Prop & Rudder Protection



Thruster

Bow Thruster









Removable Kicker Bracket





