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July 2009

Dear 40z Owner:

Congratulations on becoming Captain and Owner of the world's best built and most fuel efficient yacht of its size. The enclosed copy of the 40z Owner's Manual should further contribute to your enjoyment and proficiency afloat.

This manual was created jointly with Zurn Yacht Design, Boston BoatWorks and MJM Yachts. Our experience with the first 102 boats (34z's and 29z's included) has been incorporated to make this manual as useful and relevant as possible. Keep in mind that there maybe some variances such as location of the breakers on the panel. And, from time-to-time we will change specifications to keep pace with changes made to improve the boat.

When addressing a problem with a specific piece of equipment, this 40z Owner's Manual is to be regarded only as a preliminary source of information. The equipment manufacturer's own manual with trouble-shooting procedures, etc. is the primary source and authority.

A National Marine Manufacturer's Association (NMMA) publication *Sportfish, Cruisers, Yachts* accompanies, and forms part of, this 40z Owner Manual. This booklet has many universal handling and operating tips worth reviewing.

This Owner's Manual is designed to be a living document, not only for builder updates but for your own use and record. Each boat is provided with a copy of the current Manual organized in a STAPLES "Mini-Ring" type binder that allows you to add pages as needed.

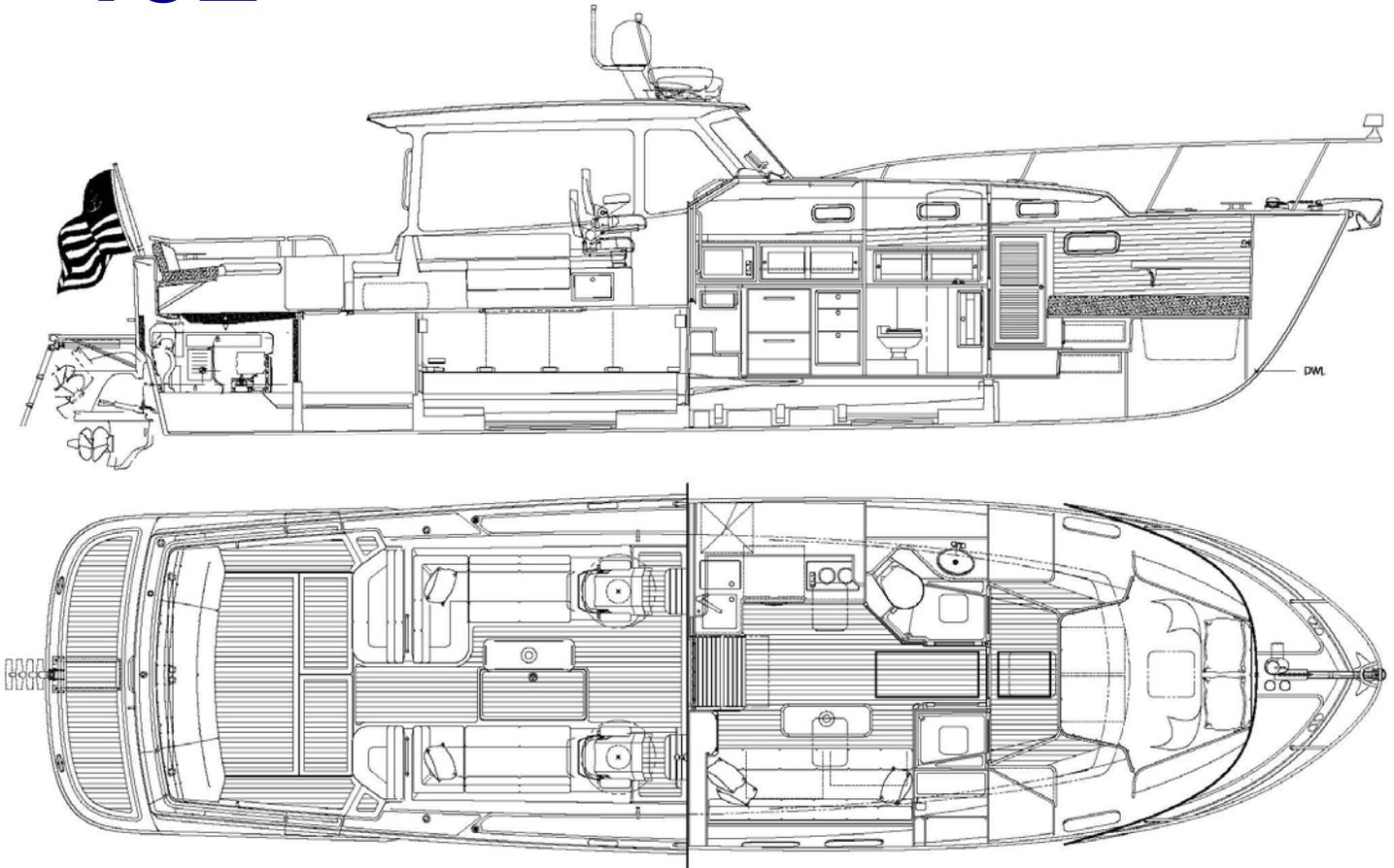
One of the great advantages of purchasing a series-built or semi-custom design is that owners have the benefit of learning from one another. So, with your continued input and comments we can keep adding useful information and helpful hints to this manual.

Part of the ISO CE Mark Certification Program is confirmation by the owner that the manual has been received. Please sign the extra page No. 3 included in the Manual as a receipt and return it in the stamped envelope provided.

Best wishes for fair winds and sunny skies. On behalf of the builder and designer, we are most appreciative, and I am particularly honored, that you have chosen the 40z.

Robert L. Johnstone
Chief Operating Member

40z



Length Overall (Including Swim Platform and Bow Roller)	43.1 ft.
Length on Deck	40.0 ft.
Length Waterline	31.3 ft.
Beam	12.0 ft.
Hull Draft/Max Draft with Drives Down	2.4 ft/3.3 ft.
Displacement (1/2 load)	17,900 lbs.
Fuel Tanks (combined)	350 gals.
Fresh Water Tank	100 gals.
Hot Water Tank	13 gals.
Holding Tank	25 gals.
Height over Water (w/ radar mounted directly on hard top)	Approx 10.0' ft.
Height over Road (w/ radar on trailer) Check, as will vary by trailer.	Approx. 13.4 ft.

Note: This manual is published in accordance with ISO standard 10240:1995E Small Craft - Owner's Manual

BOAT INFORMATION

BOAT

MODEL: 40z Downeast
HULL SERIAL # (HIN): EOU40Z05E909
DESIGN PATENT: Patent No. US D475.338S (3Jun03)
DELIVERY DATE: _____
REGISTRATION #: _____

ENGINES

MAKE: Cummins
MODEL: QSD4.2 350 HP
SERIAL #: 88417170 stbd 88417163 port
Cummins 24 Hour Service Boat Service at 781-329-1750, 781-751-1241 (8am-5 pm)

DRIVES

MAKE: Mercruiser w/AXIUS Controls
MODEL: Bravo 3X Stern Drives
SERIAL #: stbd OW981279 Drive/1A433600 Transom
port OW981279 Drive ?/1A433599 Transom
RATIO: 1.8:1

PROPELLERS

MAKE: Mercruiser
BLADES: 2- 48-82366SL BRV3 15.5/2L24CU
2-48-823666L BRV3 14.5/4R24CU

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1.1 GENERAL

This manual has been compiled to help you operate your yacht with safety and pleasure. It contains details of the yacht; the equipment supplied or fitted, its systems, and information on its operation and maintenance. Please read it carefully, and familiarize yourself with the yacht before using it.

If this is your first yacht, or you are changing to a type of yacht you are not familiar with, for your own comfort and safety, please insure that you obtain handling and operating experience before assuming command of the yacht. Your dealer or yacht club will be pleased to advise you of local schools, or competent instructors.

PLEASE KEEP THIS MANUAL IN A SECURE PLACE ON THE BOAT, AND HAND IT OVER TO THE NEW OWNER IF YOU EVER SELL THE CRAFT.

This Owner's Manual is not intended to be a course in boating safety, boat handling, navigation or general boating skills. It is the responsibility of the user to independently gain these skills. Instead, this manual will serve as a reference for matters specific to the 40z. Standard options are included in the manual with which your particular yacht may or may not be fitted. Custom options may be addressed in an addendum.

1.2 QUICK START GUIDE (See CHAPTER 16)

A separate "Quick Start Guide" is included that briefly reviews the key items to check before departure. Please review the topics in this manual before relying on the checklist – it is simply an "at-a-glance" sheet to insure that you don't overlook anything important.

1.3 OPERATING PROCEDURES – ENGINE INSPECTION

To access the propulsion system, the cockpit engine hatch must be raised. The procedure is as follows:

▲ CAUTION Make sure personnel and equipment are clear of any moving parts before operating.

- Turn ON house battery switch (located under the electrical panel)
- Turn ON DC main disconnect breaker & engine hatch breaker at the DC panel
- Activate the lift with the small black toggle switch located in the starboard cockpit seat locker.

1.4 NAVIGATION

The builder installed navigation system includes autopilot w/compass, depth sounder, chart-plotter, and radar. Modern marine electronics are a subject unto themselves and you should refer to the manuals that came with the equipment you purchased. However, here are a few points to consider:

- If you are unfamiliar with navigation, educate yourself before using the boat. *Electronic equipment is NOT a substitute for dead-reckoning navigation skills.*
- It is not recommended to rely solely on electronic charts- bring paper chart back-ups.
- It is prudent to check (or have checked) your compass alignment once the boat is in your primary area of operation. See the Ritchie instructions for compensation.
- Check that all equipment is functioning, even if you intend not to use it.
- Radar and its overlay projection on the plotter should be properly aligned (Double-check when underway) See manual to adjust, tune and operate.

Compass Heading & Calibration

There are 3 heading references for navigation on the 40z: (1) The compass on the dash, (2) Autopilot digital compass, and (3) GPS COG (Course Over Ground). All of these headings should be within a degree or so of each other when underway. If not, it is recommended that differences be recorded on a deviation card after following the calibration method outlined below or employing the services of a compass adjuster. Use COG as the primary reference at a time when you are not influenced by wind/wave/tidal set. The digital compass sensor is located on a stringer outboard to port under the cabin sole. It is accessible by opening the cabin sole hatch and looking aft and to port. **⚠ CAUTION** Avoid storing steel or iron items such as tools next to it.

Ritchie Ship's Compass Calibration Method

- 1) With the compass in its intended position, but not finally secured, select a course on your chart using two identifiable marks, buoys or landmarks that are within ten degrees (10°) of the north/south line. Try to select this course so that you can maneuver your boat "down range" of the marks selected.
- 2) From a position down range of the North/South marks, and keeping the marks lined up, run the boat visually along the northerly course selected. Turn the port/starboard compensator on the right side of the compass until the compass reads correctly.
- 3) Reversing direction, run the boat southerly, again keeping the marks lined up. If the compass is not correct at this time, there is an alignment error. To correct, rotate the compass itself to remove one half of this error. Repeat Steps 1 and 2 and then recheck this Step 3.
- 4) Simply repeat the procedures of Steps 1, 2 and 3, except this time, using an east/west course and the fore/aft compensator on the aft face of the compass housing, although at this time any alignment error should have been eliminated.
- 5) Upon completing the procedure, secure the compass in its final position.

Boat Speed Rather than a paddle wheel or sonic device, the Raymarine C120 plotter is used to generate SOG (Speed Over Ground) that is displayed by the chart-plotter and may also be shown in larger digits on the Autopilot display. Eventually, you will learn to approximate boat speed through the water by relating it to RPM on the tachometer.

1.5 TOWING

Refer to the included NMMA publication "Sportfish, Cruisers, Yachts – Owner's Manual" for towing instructions.

1.6 HAULING OUT

A facility that is unfamiliar with the 40z may require information before hauling the boat with a Travelift or crane & straps. Refer to the illustration included at the back of this manual. The keel (centerline of the boat) and chines (edges) should be used to position weight-bearing supports. You will note that the fore and aft lift points are located approximately at either end of the pilothouse... e.g. abeam of the windshield and the aft end of the hard top.

⚠ CAUTION Point loading flat areas other than centerline and chine or setting the weight of the hull on supports of insufficient area may result in damage to the hull.

2.1 GENERAL

Spend time reviewing where your safety equipment is and how it functions BEFORE you need it. Remember, the best way to protect yourself and others from accidents is to eliminate potential causes of accidents before they occur. Good seamanship and common sense go a long way in this endeavor. [See Figure 14.1]

Here is a safety checklist derived in part from the USCG Vessel Check List. State Regulations may vary:

PFD's

A wearable USCG approved personal flotation device (life-jacket) must be provided for each person aboard. On the 40z, these can be types I, II, III or V. Also, one type IV throwable PFD must be immediately available for use.

Children under 13 years of age are required to wear a USCG life jacket that fits when underway unless they are in an enclosed cabin or belowdecks.

Visual Distress Signals (VDS)

You must carry VDS's aboard. If operating between sunset and sunrise, they must be suitable for night use and be within the age dates marked on the side of the flares. A minimum of 3 day/night use combination pyrotechnic flares are required. For a list of USCG approved devices, see the USCG recreational checklist.

Fire Extinguisher

In addition to the automatic fire suppression system fitted in the engine space, you are required to carry at least one type B-1 extinguisher aboard, which is located outboard of the starboard helm seat. This should be checked regularly.

EPIRB

Especially if operating offshore, an EPIRB (electronic position indicating radio beacon) is recommended.

Ships Papers & Registration

You should carry the vessel's registration papers and number plate.

Pollution Regulation Plaques

5"x8" Oil Discharge Plaque and a 4"x9" Waste Discharge Placard should be fixed where visible.

Charts & Light Lists

Charts, light lists and a USCG required copy of the Inland "Rules of the Road" Navigation Rules

Horn or Whistle

Recommended to signal intentions or signal position. For instance, when in a narrow channel or the Intracoastal Waterway: To signal which side of another boat you will pass on, blow **1 blast** if you are passing to their starboard side and **2 blasts** if passing on their port side. The Kahlenburg horn has a repetitive automatic fog signal that can be activated for either underway or at anchor.

Life Raft

If you plan to be coastal cruising out of sight of land, it is prudent to carry a Coastal Life Raft which come in compact sizes that can be stored in one of the aft cockpit lockers.

Heaving Line

These floating lines are available and handy to have ready in case of emergency or to simply trail behind the boat when swimming, with the end attached to one of the stern cleats.

First Aid Kit

Not a place to scrimp. It is advisable to carry a good, comprehensive, and well-organized (by injury) marine first-aid kit with manual. We recommend that it be stored in the head and that everyone onboard be informed of its location. (Remember, you may be the one in need of it!)

Companionway Hatch Board or Closure

A teak board is provided with the label, "DO NOT REMOVE WHILE UNDERWAY" to comply with ISO requirements for cockpit draining and construction to prevent large waves from crashing down into the cockpit, running forward into the pilothouse and entering the interior of the boat. It would be far easier and more effective in rough weather – providing more effective full closure of the companionway entrance – to simply close and latch the companionway slider, which has the capability to open from either on deck or from inside should someone be below.

2.2 FUEL SHUT-OFF VALVES

The fuel shut-off valves are located on top of the fuel tanks and are accessible through pilothouse settee lockers. Make sure you know how to shut off the fuel valve. (When the handle is perpendicular to the hose, the valve is closed.) In case of a fuel fire, STOP any machinery and close the valve to cut the supply of fuel to the fire/engine. If you should ever see fuel in the bilges, turn off the valve, clean the bilges, and find the source of the leak immediately. Also note that there are fuel shut off valves, normally left open, on the lower inboard aft corner of the fuel tanks, which connect the two tanks together at the bottom for self-leveling. There is only one fuel level sensor and that is on the starboard tank.

2.3 FIRE

Fire aboard a boat is a serious matter, and fire safety begins with fire prevention. You can reduce the risk of fire by following common sense guidelines:

- Do not allow debris or oily rags to collect in bilges or machinery spaces.
- Understand your electrical system, allow only qualified marine electricians to work on it, and shut down as many circuits as practical when leaving the boat. Do not leave appliances running while unattended.
- Have your fire suppression equipment inspected regularly and learn how to use it.

An automatic fire suppression system is installed on every boat in the engine space. It is heat activated. Read the information that comes with the equipment. The system can also be manually activated at the helm station. [See *Helm Console Section*] Because a diesel engine would evacuate the suppression agent from the affected space, the system will shut down the engine (and generator) when it discharges. If manually activating the system, the engine should be shut down first. After the situation has stabilized, the shut-down feature can be over-ridden to restart the engine. A loud warning alarm will sound when the system has been activated.

The hand-held fire extinguisher mounted outboard of the starboard helm seat is rated to fight type A, B & C fires.

To extinguish a fire, the most effective method is to cut the source of fuel to the fire. In the case of a diesel fuel fire, the fuel tank valves should be closed. In the case of an electrical fire, the main battery switches or main disconnect breakers should be turned off. Fire needs oxygen to burn, so if a fire should occur in an enclosed area, the best course of action may be to exit the area and seal it from the outside by closing all means of air intake

INTRO - THE TOP 10 CAUSES OF ENGINE FAILURE

It doesn't happen often and if you're familiar with the most common causes of engine failure you can cut down on the chances of a breakdown. As an introductory to this chapter, we want to familiarize you with this list of causes, compiled by *Motorboating Magazine* (February 2006). Here are the Top Ten to be aware of:

1. NO FUEL: This is probably less of a problem on a fuel-efficient MJM than on other boats, but lack of owner attention to fuel consumption is the primary culprit for engine failure. A boat's fuel tank can be nearly dry as a bone – even when the gauge claims there's a 1/4 of a tank left. This makes sense when you realize that at cruising speed, the gauge shows the tanks reading higher than when the boat is at rest. A good rule of thumb is to never pass a fuel dock (no matter what the price) if your gauge is showing less than 1/3 full.

1b. AIR IN FUEL LINE: If air gets drawn into the fuel lines because of either a small leak in a fuel line connection or the Racor Filter lid gasket/filter basket tabs have interfered with the lid being secured fully, you may find the engine will turn over, but won't start. Check the Racor to insure the fuel level is within an inch of the top. Check the engine owner manual for the location of a manual primer pump.

1c. COMPUTER SETTING: On the Yanmar electronic engines, we've encountered several instances where after shutting down the engine for several hours (on a picnic); it was only possible to start the engine after many tries or not at all. The problem was that the setting that determines the amount of fuel to be injected into the engine upon starting was not set high enough.

2. DIRTY FUEL: Engine problems are caused by dirt and water in the fuel. Debris, stirred up from the bottom of the tank by wave action, is drawn into the fuel line and clogs the fuel filter element. Starved for fuel, the engine begins to run poorly, and then not at all. Water in the fuel can drive you mad. Moisture condenses out of the highly humid air on the inside walls of a fuel tank, then runs down into the fuel. Water can also be introduced at the fuel dock from a contaminated fuel supply. Fuel floats on top of water and the fuel pick ups are near the bottom of the tank. A fuel/water separator protects against this by handily extracting the water. Check the bowl daily and drain off the accumulated water. For severe contamination, use a fuel drying additive.

3. FUEL BUGS: Diesel engines suffer from microbial bugs growing in the fuel. If left unchecked, these critters clog filters. If you leave the same diesel fuel in the tank for any length of time, a fuel conditioner similar to that supplied with your boat by the builder will kill the bugs and break up any hydrocarbon residue into particles that will burn completely in the combustion process.

4. TIRED/DAMAGED WATER PUMP IMPELLER: As boats age or if an engine isn't operated for a long period of time, a worn-out circulating water pump is another engine killer. Impeller blades are commonly made of a rubberized material that stiffens or distorts over time and can break off entirely, reducing coolant flow and clogging the heat exchanger. Periodic engine maintenance procedures can prevent this problem. A spare is provided in the Yanmar Spares Kit. Shown at right is an impeller that would have soon failed. It was discovered, then replaced during the 50-hour inspection on a 29z that had not been run for 11 months. Another cause for impeller disintegration is running the engine with the raw water intake shut off. By the time that the overheating is discovered and you shut down the engine, the impeller may already have been destroyed or damaged. This happened on a 34z when the operator forgot to be sure that the raw water intake valve was in the proper position.



5. HARD HOSE: Another issue to be concerned about with older boats. As water intake hoses age, they lose their resiliency and collapse under suction, causing a restriction in the flow of engine coolant. This results in over-heating.

Prevention is easy: Visually inspect cooling hoses and squeeze them to be sure they retain shape and set.

6. CLOGGED INTAKE: Floating debris in the water is another culprit. Things like discarded plastic baggies, weeds, etc. can plug up the raw-water intake. You can avoid this problem by visually inspecting the strainer basket. When removing debris, be sure to properly replace the seal, otherwise the pump will lose suction. Smearing the seal with Vaseline or other marine-grade grease helps.

7. HARD KNOCKS: Collision with an underwater obstacle that damages the propulsion system. Often you can still operate the boat at low RPM to return to port, being careful to avoid excessive vibration that might otherwise compound the damage by damaging the transmission. The problem may be corrected in a day or so without hauling by an experienced diver who has access to a prop shop where the blades can be repaired and the prop re-balanced, then re-installed.

8. BAD BATTERY: Marine starting batteries die from old age and neglect. Keep the terminals and posts clean from that green corrosion that builds up, restricting the flow of current – preventing them from fully charging. Periodically have your batteries tested to determine their condition and expected longevity. The 40z is equipped with a “parallel” switch which can be turned on to employ the 400 ampere-hour house bank in starting the engine.

9. STALE GASOLINE: Not applicable

10. SAGGING BELT: As V-belts wear, they stretch and begin to slip. Consequently, alternators and water pumps don't spin to their full speed. Batteries may not fully charge and coolant circulates sluggishly. The solution is to check belt tension regularly and tighten belts when necessary. Drive belts can also snap. The only way to avoid this malady is to replace them once they begin to show wear. Spare belts are provided in the Yanmar spares kit

3.0 PROPULSION SYSTEM

3.1 GENERAL Your 40z is propelled by twin QSD4.2 320 HP Cummins diesel engines with Mercruiser Bravo 3x Outdrives. There are 3 Operating Manuals

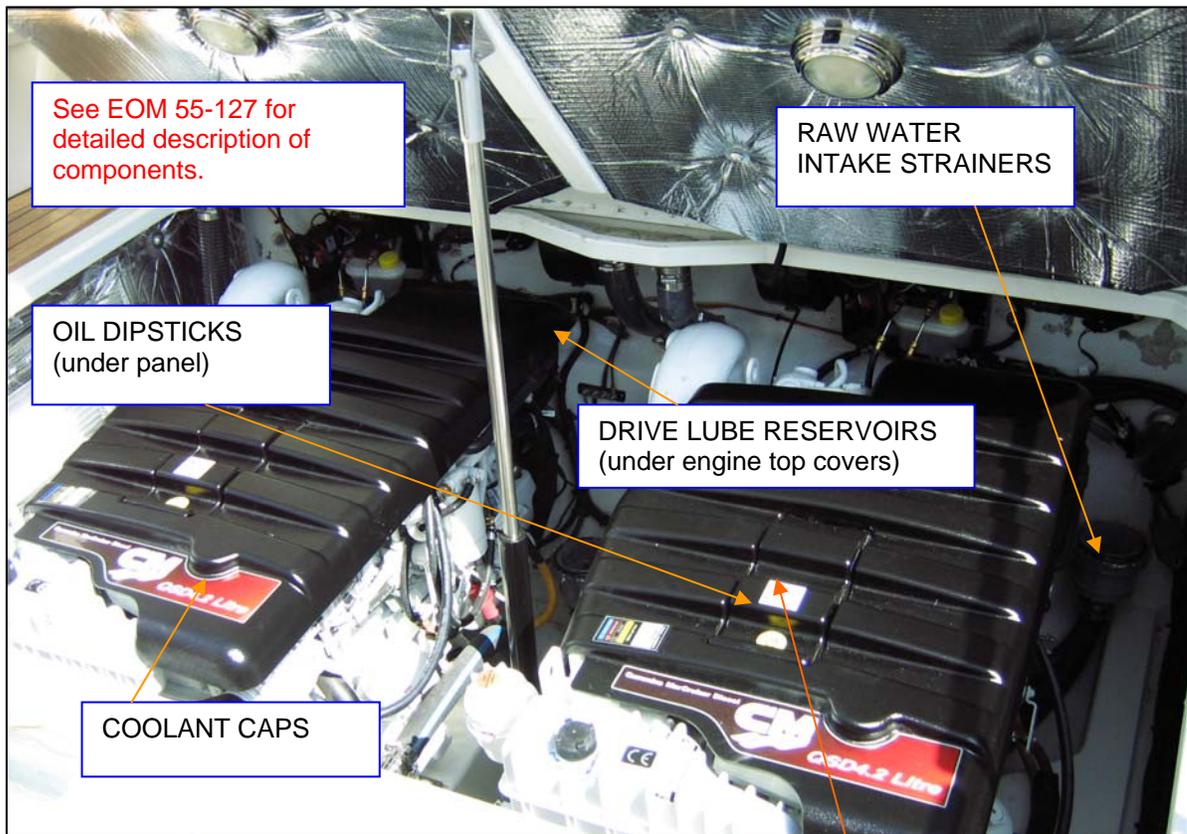
CUMMINS ENGINE OPERATING AND MAINTENACE MANUAL (EOM)

CUMMINS OWNER'S MANUAL FOR SMARTCRAFT (SOM) Shows Control Levers on Cover

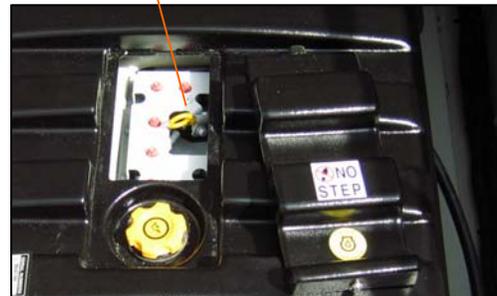
MERCURY OWNER'S MANUAL FOR SMARTCRAFT (MOM) Plain Black

Rather than try to duplicate the excellent instructions in each, this MJM Owner's Manual will refer to the appropriate pages in the following manner: See "EOM 22-23" meaning Engine Operating Manual, pages 22-23.

Engines are accessed by raising the cockpit hatch using the electric lift black toggle switch on the outboard wall inside the starboard cockpit seat locker.



NEW ENGINE BREAK-IN (See EOM 38-39) While running the engine for the first time and after shut-down, check for proper engine oil pressure, diesel fuel leaks, engine oil leaks, coolant leaks, proper operation of the indicators and gauges, proper exhaust color, engine vibrations and sounds, If temperature is high (a) Is the raw water intake seacock properly open (b) Are the raw water strainers clogged?



⚠ WARNING The engine may seize if it is operated when seawater intake is restricted or if load is applied without allowing the water temperature (engine) to warm up.

During the first 10 hours of operation, full load should only be applied for short periods. Never run the engine for a long period at a constant RPM during this period. Higher oil consumption is typical at this time, so carefully observe oil pressure and engine temperature, exhaust color and check engine oil and coolant levels frequently... i.e. daily.

3.2 COOLING

Your engine passes seawater (raw water) through two 3-WAY thru-hulls located forward of the engines, then thru raw water filters (indicated above) then through pumped through the impeller to a heat exchanger where it cools the engine's coolant. This coolant is then circulated through the engine and returns to the heat exchanger. For the engine to keep cool, it must have an adequate supply of raw water and coolant. Periodically check to be sure it's clean and check the coolant level by opening the caps on top of the engine. Coolant should be close to the top. See EOM 55-127.

For details on what type of coolant to use, consult the engine operator's manual or the maintenance schedule included in this manual. As the water and exhaust exit out the back of the drives, it is not as easy to check raw water flow. It is recommended to pay close attention to water temperature (176°-194° F is normal at cruising speed) at the outlet.

⚠ CAUTION Do not attempt to remove the coolant cap of a hot engine.

The 3-WAY RAW WATER INTAKE THRU-HULL VALVES are tricky and counter-intuitive. "Closed" is up, not "ON" as on most thru-hulls. Confusion here has led to a couple of burned out impellers on 34z's. "OPEN" for engine operation is when the handles are pushed down to PORT. "EMERGENCY PUMP" or "FRESHWATER FLUSH" is when the handles are pushed down to STARBOARD. To operate as an emergency pump, connect hose(s) into the top hose connection. In fact, short lengths of hose(s) with a shut-off could be attached at all times.

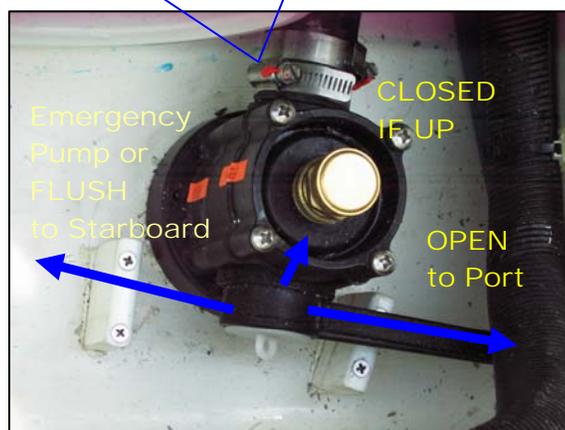
3.3 LUBRICATION

Both the engine and drives use oil for lubrication. The transmission will tend to use less oil than the engine, but both should be checked frequently. For the proper type of oils to use (which may depend on the service area and conditions), see EOM 42-46.

For inspection procedures and maintenance schedule consult EOM 50-52 and 55-127.

The engine oil may be checked on the engines using dipsticks, at least ½ hour after running of the engines to allow the oil to drain down from the upper part of the engine.

The drive lube reservoir is located at the upper aft port corner under the plastic engine cover.

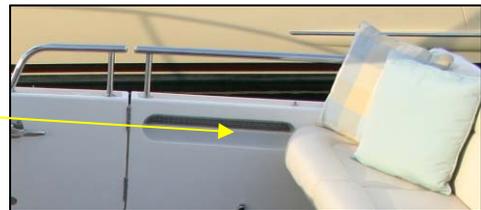


3.4 CORROSION PROTECTION

See EOM 55-127 In addition to transom zincs, there are engine and drive zincs and care must be taken of the drive housing and coating of the propulsion unit. Be sure to inspect and recoat if there are any scratches or whenever the boat is hauled. The timing for replacing zincs varies depending on the characteristics of the seawater, the amount of electrical current in marinas, or could indicate (if excessive wear is noted) an electrical short on the boat, etc. Inspect the engine zinc periodically at the time of oil changes and remove the corroded area on the surface, replacing them when deteriorated to less than 50% of original size. Otherwise corrosion-cooling system will occur and water leakage or parts breakage will result. Be sure to close the raw water before removing a plug to replace an engine's zinc.

3.5 ENGINE AIR INTAKES

Diesel engines use a large quantity of air for combustion. The engine of the 40z gets this air thru grills under the cockpit coaming, both port and starboard.



3.6 ENGINE CONTROL/DISPLAY PANEL

The VesselView Display Screen allows the operator to perform settings and choose information displayed. The entire Mercury SmartCraft Owner's Manual (MOM) is devoted to the operation of this display panel. Ignore the Genset Section which is only for ONAN generators made by Cummins. There is no interface with the optional Northern Lights Generator(s) on the 40z.



3.7 THROTTLE/SHIFT CONTROL (See MOM 22)

The Standard 40z is equipped with the dual-engine, 2-lever DTS Trackpad Yacht Control incorporating SmartCraft electronic remote control (ERC) which has a DTS trackpad integrated onto the base of the control. The DTS trackpad is used to enable or disable features of the DTS system, including auto-synchronization, throttle only, etc. The 40z is NOT equipped with the TROLL feature.

There are 5 positions (front to back).

FORWARD
IDLE FORWARD
NEUTRAL
IDLE REVERSE
REVERSE

⚠ CAUTION **SUDDEN MOVEMENT HAZARD** This control lever governs both throttle and shifting functions. The boat may start to move abruptly when the marine gear is engaged: Ensure the boat is clear of all obstacles forward and aft. Cautiously shift to the IDLE FORWARD position then quickly back to NEUTRAL position. Observe whether the boat moves as you expect.

Adjustment of Control Handle Pressure & Detente See MOM 24

NEUTRAL These neutral lights will illuminate steadily when the engine is in the neutral gear. Lights will flash when the engine is in the throttle only mode.

TROLL -/+ Not applicable as trolling or reduced idle speed functions are not available on the QSD engines of the 40z.

SYNCHRONIZATION – Press to automatically synchronize both engines to match RPM of the starboard engine... if over 900 RPM and handles within 10% of each other. IF LED is YELLOW, conditions are not right for synch to engage. When RED, synch is engaged. To DISENGAGE, press “Synch”.

TRANSFER – Not applicable as it transfers control to a different helm station.

1 LEVER OPERATION – An interesting feature that allows both engine throttle/shift functions to be controlled with the single PORT control handle. To DISENGAGE, shift into neutral and PRESS the “1 Lever” button.

THROTTLE ONLY – When in Neutral, PRESS and advance handle to forward detent. Horn will sound and neutral light will flash. Horn sounds twice when throttle only is engaged. Then advance engine RPM. To DISENGAGE, move control handle to NEUTRAL then PRESS “Throttle Only” button. It’s the only way to turn it OFF. Allow the engine RPMs to stabilize at idle before engaging gears.

There is also a “neutral safety feature” outlined in MOM 19.



DOCKING MODE – Probably not used much with AXIUS, because the joystick will be used for docking. This feature reduces throttle effect on RPM to 50% of its normal capacity. To **DISENGAGE**, shift engines into neutral and press the “dock” button.

3.8 STARTING (See EOM 29-32)

Before starting the engine, make sure (1) the raw water intake seacock handles are OPEN, pushed down and to port. (2) the raw water strainer is clean (3) the engine has sufficient oil and coolant (4) transmission fluid is at the proper level (5) there are no restrictions to the air intake grills (6) the fuel valve over both tanks are OPEN (8) the HOUSE and BOTH ENGINE battery banks (under the electrical panel) are turned ON (9) the throttle is in the neutral position showing the yellow Neutral Lights (9) no one is in the water near the boat and (10) all machinery space hatches are closed.



TURN ON ENGINE IGNITION PANEL Turn the spring-loaded Ignition Keys clockwise to “ON” (ACC stands for Accessories). After the SmartCraft display is activated and the Neutral Lights are on, hold the switches to START.

START ENGINES by holding one then the second Ignition Key to the right with pressure to “START” on the outer key rim, for several seconds until the engine starts. Then release the key, so it springs back to “ON”. The engine will not start unless the shift levers are in NEUTRAL. If repeated start attempts are needed, the key must be turned back to position OFF first.

⚠ CAUTION Never engage the starter motor (turning key hard to the right) while the engine is running. This may damage the pinion and/or ring gear.

IF BATTERY VOLTAGE is low and you have difficulty turning over the engine, a momentary Parallel Switch is located to the left of two Engine Start Battery Switches underneath the electrical panel belowdecks. By turning this switch on, you add the capacity of the house bank to the start battery. Once started, turn OF the Parallel Switch. It is for emergency use only.

3.9 ALARM DISPLAY

When the ignition key is first turned ON to position, you may hear an audible alarm signal A long continuous horn indicates that the self-test function has failed and critical fault has been found. Turn the switch to STOP immediately, if not in a hazardous situation, investigate and correct. See EOM 29-32

MULTIPLE FAULTS DISPLAYED on Vessel View. It may be only ONE. There are five computers that control all the interfaces between the engines and controls and the engines with each other. If you see as many as 14 faults showing on the Vessel View, don't panic. The computers probably need rebooting. Follow this procedure.

1. Shut everything down.
2. Turn the engine keys to ON
3. When the alarm Beeps, Hit EMERGENCY STOP
4. Return EMERGENCY STOP to normal position.

3.10 STOPPING

1. Place the remote control lever in neutral.
2. Operate the engine at idle speed for several minutes to allow the turbocharger and engine to cool.
3. Turn the key switch to the "OFF" position.

EMERGENCY STOP SWITCH See pic in 3.8. This is used to stop both engines simultaneously in emergencies such as man overboard or tangled propeller. There is another emergency stop button on Vessel Interface Panels (VIP) located in the cockpit floor locker forward of the engines.

Starting after Emergency Stop with engine in Gear (See SOM 6)

Avoid stopping the engine if the sterndrive is in gear. If the engine does stop with the sterndrive in gear such as when pushing the Emergency Stop switch:

- (1) Push and pull repeatedly on the remote control handle until the handle returns to the neutral detent position. This may take several tries if the power package was operating above idle RPM when the engine stopped.
- (2) After the handle returns to the neutral detent position, turn the key switches to OFF for at least 30 seconds.
- (3) Resume normal starting procedures.

Make sure to turn OFF Engine Battery Switches under the electrical panel when leaving the boat.

3.11 OPERATION

⚠ WARNING Engine trouble can arise if the engine is operated for a long time under overloaded conditions at max RPM. Recommended "Max Cruising Speed" is at least 10% below full throttle. While running, pay attention to the engine data on the LCD display. A significant change in temperature, oil pressure, or voltage should be investigated immediately, before the engine is damaged.

OIL PRESSURE – Normally between 30 psi when idling to 93 psi

COOLANT TEMPERATURE – Normally between 176 and 185 degrees F.

OIL TEMPERATURE – Normally 192 degrees F.

CHARGING – Normally about 14 Volts when underway.

Depending on hull structure and engine installation, engine and hull resonance may be greater at some speeds than others. This is normal and you will learn to pick the sweet spots. If you hear any abnormal sounds, stop the engine and inspect.

⚠ WARNING If any warning lights or buzzers/horns activate, stop the engine immediately. Determine the cause and repair the problem before continuing to operate.

4.1 STEERING SYSTEM

The 40z has an integrated, electronically controlled hydraulic power steering system which turns the two Mercruiser stern drives. When running, the 40z is steered as with outboards. Thrust of the propellers is directed more immediately and precisely from side to side through a 26° arc to steer the boat.... rather than bouncing the prop wash from a conventional straight shaft propulsion unit off a rudder.

Control of the stern drives is transferred from the throttle/shift levers to the AXIUS computer controlled joystick when the throttle/shift levers are in NEUTRAL and both engines are running.

Emergency Procedure If a fault occurs which prevents one or both of the propulsion units from being operated with the steering wheel or the transmission does not respond See SOM 63.

4.2 JOYSTICK DOCKING CONTROL

This AXIUS control is used only for docking and maneuvering at slow speed. Learn to handle the joystick in a safe and correct manner before you start using the function in tight quarters.

⚠ CAUTION When the joystick is active, the normal engine controls are in Neutral and inactive. A computer operates the drives and shifting. Rotation of the steering wheel is frozen and it should not be turned, as damage may occur.

To **Activate**: Both engines must be running and the engine control handles must be IN NEUTRAL. Lower both drives to the full DOWN position and preferably raise trim tabs as well.

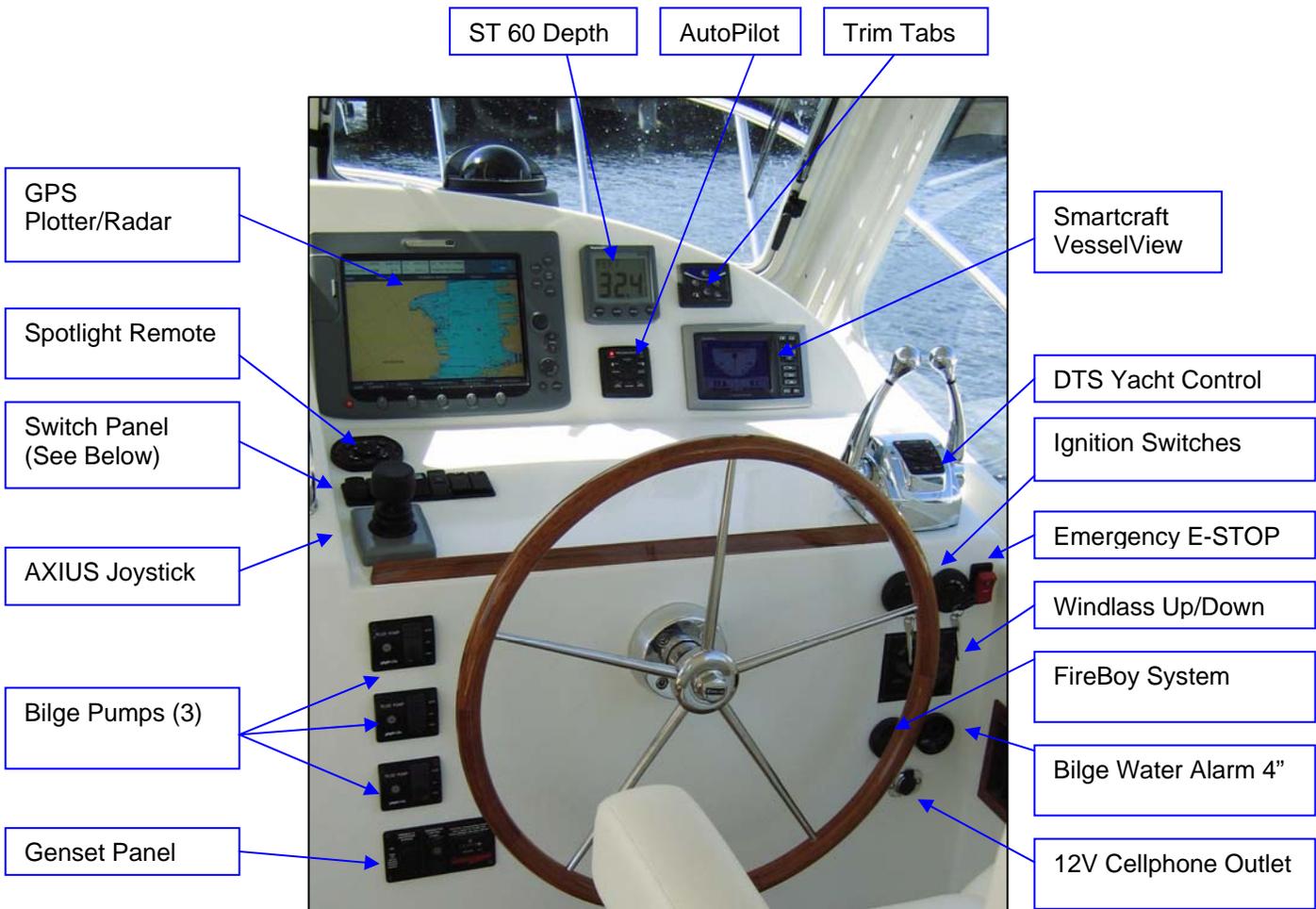
To **Deactivate**: Move the engine controls OUT OF NEUTRAL (forward or reverse).

Maneuvering with Joystick Lean the joystick post in the direction you'd like to go. Release and the thrust stops. The boat may keep moving, so you may have to lightly tap it in the opposite direction to stop it. The top of the joystick is twisted to orient the bow and stern, or to spin the boat completely around on its own axis. Pretty simple Takes some practice until it becomes completely intuitive. See SOM 26 for a more detailed description of how it works.



4.3 HELM STATION

The helm station console is where most of the operational controls of the boat are located. Become familiar with these before you need to use them. In addition, make sure that when you are using the boat, even if you are not using a specific piece of equipment, which the circuit breakers are on for any equipment you *might* need.



4.4 CONSOLE SWITCH PANEL

With the exception of the Anchor Washdown which is activated along with the “Windlass” breaker (and must have the “Water Pressure” switch ON as does the washer function of the “Wiper” switch) functions of this panel on the console are activated by turning on their respective breaker switches on the DC Electrical Panel in the main saloon. Functions of the panel rocker switches are described below the corresponding switch:



Press to Sound HORN	AUTO HORN FWD Underway 1 Blast AFT at Anchor 2 Blasts	NAV LTS FWD Underway AFT At Anchor	WIPERS Washers	Press when Raising Rode, Chain & Anchor to Wash with Fresh Water	PORT - STBD OUTDRIVE TRIM BUTTONS
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4.5 TRIM TAB SYSTEM

The trim tab breaker on the DC panel must be ON for the unit to work. The vertical series of lights, on either side of the Lenco panel are wired intuitively, so by pushing down the starboard tab, the lights appear as the bow leans down to starboard. (What’s physically happening under the boat is: the port aft corner of the boat is going down to lift the port aft corner of the boat to drop the starboard bow).

Normally tabs are adjusted simultaneously with 2 fingers.

Trim tabs aren’t necessary at low or high speeds.

At speeds over 8 knots, trim tabs allow you to trim the boat from side to side to compensate for crew location, gear placement or to counteract wind pressure. The boat leans into the breeze. They are useful in lowering the bow for better visibility or for powering into waves without pounding. Don’t hesitate to apply maximum tabs in the 15-22 knot range. At higher speeds in smooth water, when the boat naturally runs flatter or when running downsea into the back of waves, it’s advisable to raise the trim tabs for dry running and control, allowing the bow to lift.



4.6 PRECISION PILOT & SKYHOOK

For operating instructions, please read carefully the section beginning on SOM 35.

Briefly, when engines are first started the “standby” light blinks. Once the engines are taken out of neutral or the joystick is operated the “standby” light glows steadily.

To operate the autopilot on the current heading, push “Auto Heading” to activate. To de-activate, push “Auto Heading” again (not “standby” as with Raymarine).

To operate “Skyhook”, put the engines in “NEUTRAL”, then push the “Skyhook” button to hold the boat on a constant compass bearing and GPS position. This is very handy for picking up a mooring by putting the bow on the pick-up wand, then pushing “Skyhook”. Walk to the bow and secure the mooring, then deactivate “skyhook” by pushing the button again and shut down the engines. This feature comes in handy when approaching a marina or fuel dock alone and you need to get out the docklines and fenders, or when watching a sailboat race and want to take some pictures of the start or finish... perfectly aligned with the start/finish line. Punch “Skyhook”, let the computer take over while you get some award winning photographs.



4.7 WINDSHIELD OPERATION

While the triple windshield design creates individual windows that are smaller than those on the 34z, some owners have found that a stick with a rubber can tip is a handy way to push the windows out and assist in lowering them, without having to stretch over the console.

We have investigated various electric options but have been unable to find any system that wasn't ungainly, unsightly, tight, or unable to fully raise the windows for the open “flybridge” effect for good ventilation or perfect visibility at night or in fog. To travel at 14-15 knots without being blasted by the wind. Simply move slightly toward the centerline of the boat rather than directly behind the wheel to get out of the wind flow.

WINDSHIELD WIPERS The 40z is fitted with three windshield wipers. To activate the function, turn ON the breaker labeled “Wipers” on the DC Panel and also be sure that the “Fresh Water Pump” breaker is ON for the washer function to operate.

To operate all 3 wipers at once, momentarily push the rocker switch slightly forward to the first detente. To operate just the starboard wiper, push the rocker switch, all the way forward.

To change the wiper speed: While either all 3 or just the starboard wiper is operating, quick push the rocker switch all the way forward. Each quick push changes the speed.

To operate the wash function for either all 3 wipers or just the starboard washer, PUSH and HOLD the rocker switch all the way forward until water jets appear.

⚠ CAUTION If the wiper's washer system is to be used in sub-freezing temperatures, a separate system must be installed which utilizes anti-freeze.

4.8 REMOTE SPOTLIGHT CONTROL

The spotlight is mounted on the bowrail where reflection off the foredeck and stainless fittings is eliminated. To activate, the "searchlight" breaker on the DC panel must be ON and the "S" for spot or "F" for floodlight must be depressed. The center button with the arrows controls the direction. If "SOS" is pressed, a series of dots and dashes will be emitted, signaling, "Emergency, I need help". The double-ended arrow in the upper right is a very handy sweep function. The spot will continuously swing through an arc of about 30 degrees.

**4.9 HELM POSITION TEAK RISER (Option)**

This removable teak & thiokol (to match teak decking) riser raises the level of the helm station sole by 4" to improve visibility over the bow for anyone under 5'6" tall. This riser nicely slides out and may be stored in one of the pilothouse settee lockers when not in use.



5.0 GENERAL

It is important to understand the fuel system aboard your boat. Diesel fuel is different than gasoline. In most respects it is safer, however precautions need to be taken to maintain the safety of your boat. Please study the safety precautions in the NMMA publication "Sportfish, Cruisers, Yachts – Owner's Manual."

Diesel engines need to intake more fuel than they burn, and so they differ from gasoline engines in that they return excess fuel to the tank. Both feed & return of port and starboard engines are to their respective 175-gallon fuel tanks. The two fuel tanks are connected at the bottom by a "compensating" fuel line with isolating shut-off valves at both aft inboard corners.

5.1 FUEL SHUT-OFF VALVES

These valves are located on top of the fuel tanks aft and are accessed through pilothouse seat lockers. In the photos below they are shown in the open position, parallel with the fuel lines.

⚠ CAUTION These valves should be shut down if inspecting a Racor filter, in an emergency or in case of a fire in the engine compartment.



STARBOARD TANK showing fuel shut-off and top of fuel level sensor (right center)



PORT TANK showing fuel shut-off for port engine and generator (center hose).

5.2 FILLING THE TANKS

Deck fills are mounted on the side decks, port & starboard, and are labeled "DIESEL." Each one services only its respective tank, although with the connecting fuel line valve open, you will get some transfer to the opposite tank. As the tank is filled, vapor escapes the tank thru the vent. Overflow is prevented by an in-line fuel/air separator that will not allow fuel to pass.

⚠ CAUTION should be taken while filling. Check the fuel level gauges and listen for the rise in pitch at the deck fill, as fuel reaches the top. Shut off the nozzle immediately. *Do not attempt to "top off" the tanks.* Have an absorbent cloth handy to prevent any overboard spillage. Variations in temperature as well as trim angle could cause overflow or vent-line blockage.

5.3 RACOR PRIMARY FUEL FILTERS



Racor Filters are your first line of defense against bad fuel and are installed just after the shut-off valves in the fuel lines, inside the Systems Room, on either side bulkhead just forward of the generator. Check these filters regularly for any accumulation of water or contamination. Water will appear as a dirty gray, cloudy substance in the clear bowl. You should be able to see thru the pink fuel in the bowl at all times. Also, you should not see bubbles passing through the filter while running. This would indicate a leak on the suction side of the fuel system.

RACOR FUEL FILTERS Starboard and Port in Systems Room under the Pilothouse

FILTER ACCESS LID – Be sure to close fuel shut-off valve before opening. Be careful to seal properly without pinching gasket.

FUEL LINES from tank and to engine

CLEAR GLASS INSPECTION BOWL

WATER DRAIN PETCOCK – If water seen in bowl, hold a paper cup under the petcock and drain until clear fuel seen.



5.4 FUEL CONSUMPTION

You can learn several things from the chart below prepared from 3 separate runs in Jan-Feb 2009 in Boston Harbor, near Captiva FI, and during the Miami Boatshow. Volvo-Penta technicians conducted two of the runs on hull # 1 equipped with D6 370 HP IPS 500s.

Displacement (Boat Weight) Assuming similar hull designs, fuel efficiency is a function power: weight ratios. Less weight equals less fuel for a given HP and we've already seen a difference between Volvo-Penta IPS pod drives and Cummins sterndrives. The test runs done on 40z #1 run were at approximately 21,000 lbs. displacement. Dry and empty scale weight of the boat was 16,000 lbs. The 21,000 lbs. included at least ¾ full tankage and approximately 1400 lbs. of cruising gear and 2-4 people.

Propulsion Systems. The NMPG and Range numbers vary depending on engines installed and the relative efficiency of the propulsion unit. The following chart can be made up for your specific

boat by recording the speed and fuel rate at various RPMs. We've already seen that the lighter Cummins Mercruiser sterndrive installation with 320 HP 6 cylinder QSD4.2 diesels on hull #3 burns approximately 2 gallons per hour less (18 gph) than the Volvo 370's at cruising speeds, achieving 1.4 nmpg at 25 knots. It's anticipated that the standard sterndrives and/or lighter Volvo D4 or the Cummins QSD4.2 engines will improve the efficiency by a tenth or two from those shown below.

Range of Efficient Operation It's interesting to note that it doesn't particularly matter whether you are going 9 knots or 27 knots on a 40z, nautical miles per gallon remain fairly constant.

Cruising Speed Given suitable conditions, 10% below wide-open throttle is generally the top end of the cruising speed range. The data below would indicate that 2900-3000 RPM in the 28-knot range would be a good efficient range.

Sour Spot The 40z seems to have a huge "Sweet Spot" and just one small "Sour Spot" to avoid at about 1600-1700 rpm where the most power is applied in overcoming resistance prior to the boat jumping up on a plane at just over 10 knots. You can see that the boat is no more efficient at that point than at 30 knots. These rpm numbers will vary by engine size and drive type.

RPM	FUEL EFFICIENCY			RANGE	ACCELERATION (secs)		
	Volvo 370s IPS				NMrng*	0-10	0-20
	GPH	KTS	NMPG				
600	0.6	4.8	7.6	2392			
1000	2.3	6.7	3.0	937			
1200	3.5	7.6	2.2	684			
1300	3.9	8.0	2.1	646			
1400	4.7	8.2	1.8	555			
1500	6.8	9.3	1.4	428			
1600	7.8	9.5	1.2	384			
1700	9.5	10.0	1.1	333	2.5		
1800	9.7	13.1	1.4	425			
1900	10.6	14.3	1.3	425			
2000	12.7	15.1	1.2	374			
2200	14.8	17.9	1.2	380			
2400	17.6	20.9	1.2	374		5.3	
2600	20.5	24.0	1.2	370			
2800	22.9	26.9	1.2	370			
3000	26.4	30.0	1.1	357			9.5
3200	30.5	32.8	1.1	339			
3400	35.7	36.1	1.0	319			
3500	38.5	37.7	1.0	308			

⚠ CAUTION Remember that fuel level readings when underway, with the fuel pushing back in the tank where the fuel level sensor is located, could be reading ¼ tank more than what's really there. So, when you get down to 1/3 tank, it's time to top off.... not roll the dice on finding another fuel dock open later in the day.

6.0 GENERAL

The 40z's electrical system may be more advanced than what you are accustomed to. It combines DC and AC power in several ways.

Most of the electrical components on your boat use DC power. 12 volt DC power is stored in two 8D House Batteries and two 31G Start Batteries, totaling 700 Ampere Hours of capacity. This battery capacity is replenished in 3 ways :(1) Alternator output from the engines when running (2) From 110V 60cycle AC shorepower through the Mastervolt Charger or (3) From the Northern Lights Generator which outputs 110V 60-cycle power to the charger.

120-volt AC power, typically found in homes, is supplied to the boat in 3 ways: (1) via 1 or 2 shore-power cords plugged into a shoreside receptacle (2) by an optional generator or (3) by inverting DC power from a battery into AC power through the Mastervolt Inverter. The AC components aboard your boat include the cooktop, microwave, some TV components, the air-conditioning, water heater, inverter, and receptacles (to plug in your own AC equipment).

⚠ DANGER Both AC and DC electrical power sources are potentially dangerous. Do not attempt to work on any part of your boat's electrical system if you are not a qualified marine electrician.

6.1 12 VOLT DC SYSTEM

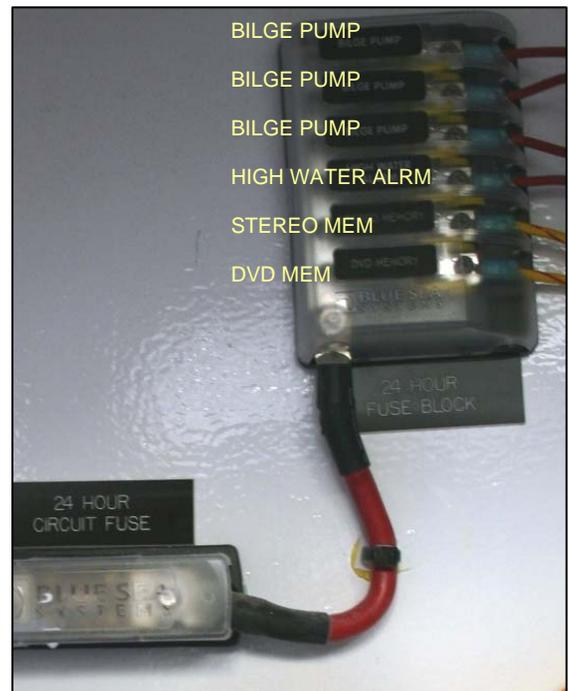
There are two battery banks on your boat. The house bank consists of (2) 245Ah, absorbed-glass mat (D8 AGM) batteries. The engine bank consists of two 105Ah Group 31 AGM start batteries which are also used to run the windlass. Whenever a charging source is present (either from the battery charger or an engine-driven alternator) *both* banks are automatically charged. AGM batteries are essentially no-maintenance.

⚠ CAUTION Do not attempt to open the batteries. Other than keeping them properly charged, stored, and clean (especially between the terminals), there is virtually nothing you need to do to them. The battery charger is factory set specifically for AGMs.

If the engine is not running, the batteries can be charged via the battery charger, which is powered by AC electricity either from your generator or shore-power. It is important to read and understand the inverter/charger manual to be sure that the unit is functioning as you expect.

⚠ CAUTION Never allow your DC system's voltage to fall below 11.2 volts. Sensitive electronics may fail to function. For this reason, it is advisable when leaving the boat to turn off all loads, turn off their respective circuit breakers, and turn off the main DC battery switches.

24 Hour Circuits The only load that remains on when the battery switches are in the OFF position are the "24 Hour" circuits (shown at right) which bypass the panel circuit breakers and are connected directly to the batteries.



DC Breaker Panel This custom MJM panel includes digital readouts for voltage and amperage drain on top.

The three round knobs are dimmers for main saloon and pilothouse overhead lights. If it appears as though a set of lights are not going on when the breaker switch is turned on, check to see that the dimmer switches haven't been turned all the way off.

The breaker switches for all the 12v DC equipment on the boat are clearly labeled and some spares are available for later installations.

AC Breaker Panels The main AC disconnect breakers are located at the top of AC Panel #1 and AC Panel #2. They must be ON for shore-power to supply the boat's AC power.

AC Shore 1 (left half) includes breakers for those items which can be handled by the Mastervolt Inverter. To use the inverter, (1) the house battery selector switch must be ON and (2) the inverter breaker on the AC panel must be ON. Refer to the inverter/charger manual for more information. When the Shore 1 shore-power cable is attached and the Shore 1 select breaker is ON, Shore 1 will supply AC power to AC Panel #1 (forward side of panel). With the inverter ON, the shore-power will override it and the inverter will automatically go into stand-by mode.

AC Panel Shore 2 (right) is designed for those items having too much load for the batteries and inverter, thus requiring either shorepower or the generator to supply AC power. The high amperage water heater and air-conditioning systems are best supplied with a shorepower cord to inlet #2 which bypasses the inverter and goes right to AC Panel #2.

The AC **Transfer** switch allows either Shore 1 or generator to power the AC Panel #2 circuits.

⚠ CAUTION If this function is utilized, be aware that using too many AC appliances at once will cause a shorepower breaker to blow.

Battery Switches are located under the electrical panel. To use DC components, the HOUSE battery bank switch must be ON, the top main DC disconnect breaker on the panel must be ON, and the component's respective breaker must be ON. To start the engines or use the windlass, the engine START battery switches must remain ON



while the engine is running. The generator (if fitted) has its own start battery and a dedicated GENERATOR battery switch which also must remain on when running.

To turn ON a battery switch, slide down the cover and push in the rocker switch until it lights up.

Parallel Battery Switch In the event of a dead or weak engine battery, the parallel battery switch (marked AUTO on the left side) can be switched on to combine the house bank to the engine start bank. This is recommended only as a last resort- if shoreside or genset charging is available; use that to re-charge the start batteries.

⚠ CAUTION *The battery parallel should only be turned ON in emergencies and not left on after the emergency has been corrected.*

Charging The HOUSE battery switch can be switched OFF when the boat is not used, and the batteries will still accept a charge from 110V Shorepower through the battery charger. Leave “Inverter/Charger” breaker ON on AC Panel 1. Note green LCD “Charged” on Link 2000 must be ON. “Invert” LED light must be OFF. If you are leaving the boat plugged into shore-power and you wish to turn off all DC loads but still be able charge batteries. Leave the house switch ON and turn off the top Main DC disconnect breaker on the DC panel.

⚠ CAUTION *Disconnecting shore power with INVERT LED left ON will cause discharge of the house battery bank.*

6.2 AC SHOREPOWER

The first of three ways to supply AC power to boat appliances/systems is through Shorepower #1 (plugged in) and #2 30A 125V connections in the transom. These are shown at right, along with a TV Cable hook-up socket. The cover lid springs back open by pushing sharply in at the bottom,

If two 30A 125V sockets are not available on the dock, very often you will find a 50A 225V socket to which you can connect a “Y” pigtail (West Marine 410373).

If you overload, an AC circuit, one of the two breakers may activate. To reset, locate the shorepower breaker box (shown at right) under the forward port corner of the cockpit hatch covers and be sure both switches are in the UP position.

Hot Water If a second shore-power receptacle is not available and you have not operated the boat recently; there won't be any hot water from the engine's heat exchanger. Simply turn ON the Transfer switch of Shore 2, flick the hot water breaker on, wait 15 minutes and your shower will be ready. The above method can also be used to power the Air Conditioners, but beware that it will be more likely to overload the system if you are trying to use Air Conditioners and Hot Water at the same time.



6.3 AC GENERATOR (Option) See Northern Lights M673L3 6 KW 60 Hz 1800 RPM Generator Operating Manual. Refer to the manufacturer's manual for more information regarding the generator.

Break-In Period Change engine oil and filter at 50 hours and again at 100 hours. Oil consumption is greater until piston rings are seated. Maintain at least a 75% load on the generator for the first 100 hours, varying the load to help seat the rings.

Pre-Start Checks Refer to diagrams of genset on next page.

- (1) Check coolant is 1" below filler cap
- (2) Check oil at dipstick
- (3) Open fuel line lever over fuel tank.
- (4) Close the raw water seacock, check & clean sea strainer & reopen the seacock
- (5) Be sure that the AC Circuit Breaker and AVR Circuit Breaker are both in the "Up" position
- (5) Turn ON battery switch for Generator. Keep ON while running, otherwise, the battery-charging regulator could die.
- (6) Turn OFF all AC Panel 1&2 switches/breakers, including Generator double-handled switch on top of AC Panels 1. You don't want to start the generator with any load.
- (7) Turn OFF the Inverter Function on the Mastervolt MICC Panel.



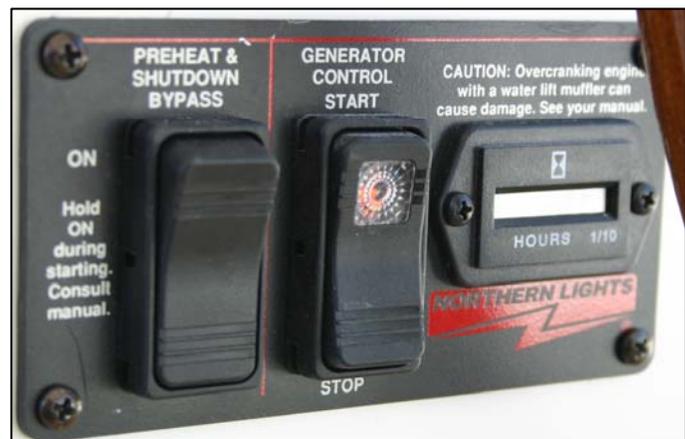
PREHEAT: On the Northern Lights Generator Control Panel on the face of the piloting console depress PREHEAT switch ON for 10-20 seconds to activate control system

START: Then, depress START switch while continuing to depress PREHEAT switch. When generator starts, release both switches. Do not crank for more than 20 seconds at a time. Allow the generator to run for about 15 seconds until LED green light appears next to double-switch "Generator" on AC 1 Panel indicating that the panel is receiving electric current.

Then:

- (1) Turn ON double Generator Selector switch and
- (2) Turn ON Charger/Inverter Breaker on AC Panel 1. There is a delay until Volts (about 115) register in the digital display over AC-1.
- (3) Turn ON the double-transfer switch for AC Panel 2.

Check to see that AC volts are now reading on the digital meter over AC Panel 2 by throwing the toggle switch between the digital displays to "Shore 2".

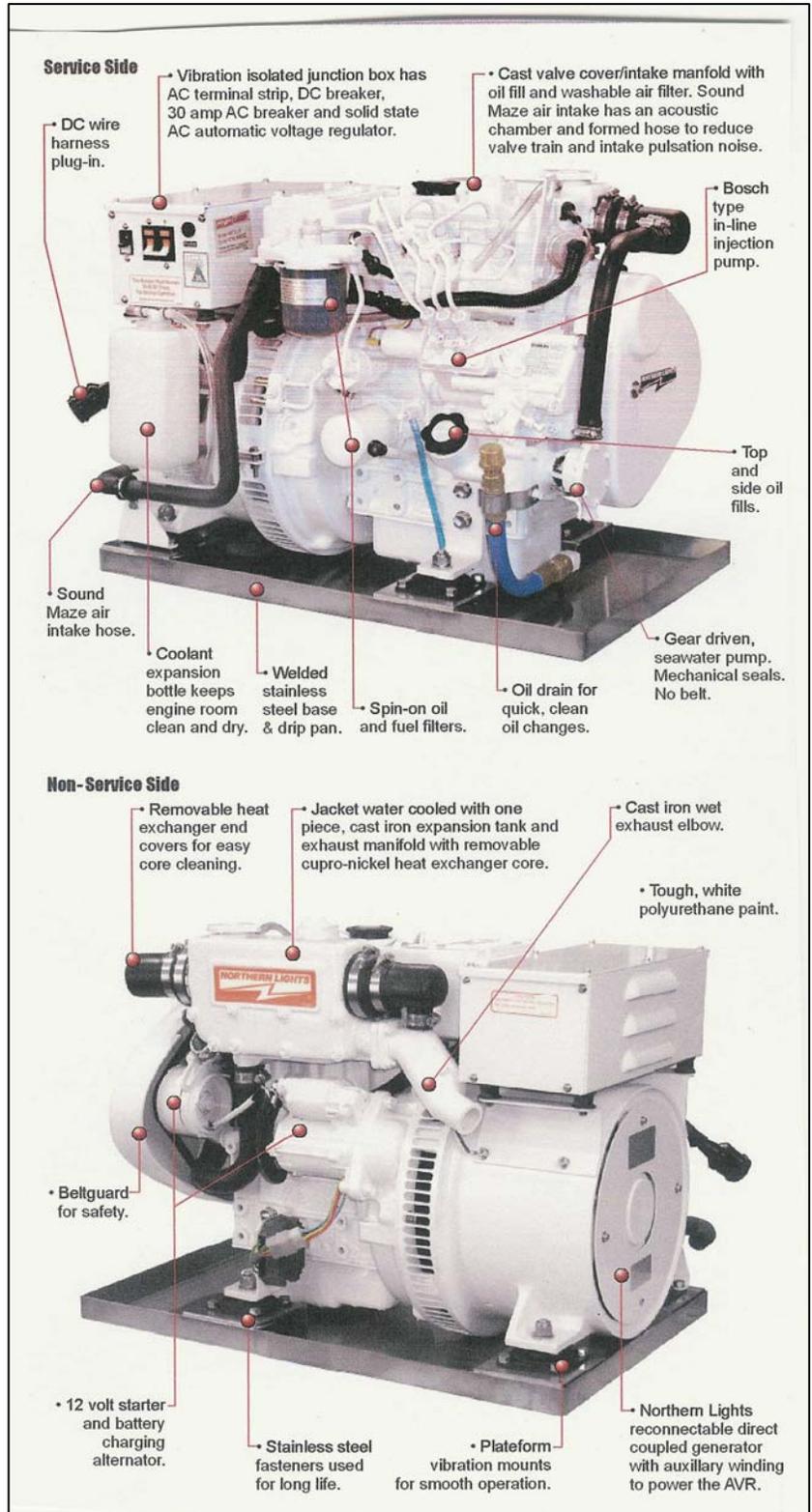


TURN BREAKERS ON for the items you wish to operate.

Note: if the generator starts, but no AC voltage is seen at the panel, check first that the selector switches (sliding interlocks) at the top of the AC panel are ON. If so, there is a possibility the generator was overloaded and the AC breaker on the generator Control Box has tripped due to a momentary overload. Open the generator cover and reset (pull up) the AC Output Circuit Breaker

TO STOP: Remove electrical load from the generator by turning off all breakers. Allow the generator to run for a 3-5 minute cool-down period. Depress STOP momentarily on the lower part of the rocker switch.

Generator Fuel Pre-Filter is located behind the genset against the bulkhead.



GENSET Water/Exhaust Separator Overboard Discharge Thruhull Located aft to starboard, under the waterline, outboard of engine intake grill in engine room

6.4 MASTERVOLT INVERTER/CHARGER

Mastervolt PN 37014005 12/4000-200A Mass Combi Inverter Charger is fully automatic. Under normal circumstances there is no need for adjustment or operation besides switching on and off.

The **Mass Inverter Charger Control (MICC)**, shown at right in the “Charge” mode, is a digital remote panel switches on and off the Mass Combi unit but is a battery consumption meter. The information provided includes: reading voltage, current, consumed Ah, time remaining and remaining capacity as a percent of max available battery capacity. An integrated alarm system is included. (See Mastervolt Operators Manual)



The 40z uses a combination inverter/charger (in a single unit). When a supply of AC power is present (from AC Shore 1 or generator), the unit can charge both the house battery bank and the engine start battery. The “charger/inverter” breaker (on the AC Shore 1) should normally be ON. If no source of AC power is available, the inverter can use DC power from the house bank to create AC power, used for items on AC Shore 1. If AC power becomes available, either from shore-power or the generator, the Mass Combi transfers this power to AC Shore 1. In other words, your batteries will not be used to create AC power if either the generator or shore-power #1 is active and the inverter breaker is ON.

Inverting – When not using generator or shore power, this switch may remain off. It does not control the inverter. Its only function is to turn the charger on when shore power or the generator is in use. It probably makes sense to change the breaker panel label to read CHARGER.

Push INVERTER so the readout shows “Inverter ON” on the MICC remote panel. AC power should now be supplied to the forward AC Shore 1, which includes those items which may be run from the inverter alone...although not necessarily all at the same time for very long. The inverter can only receive 12v current from the house bank, but can monitor both the house and engine start banks. When finished using AC power through the inverter push INVERTER again to so the readout indicates “Inverter OFF”.

Charging – When using SHORE POWER or the GENERATOR, switch the CHARGER/INVERTER breaker on the AC Shore 1 panel to ON. Push CHARGER on the MICC panel to activate the charger. The MICC panel will display CHARGER ON. Push CHARGER on the MICC panel again before disconnecting the shore power or turning off the generator. This will display CHARGER OFF on the MICC panel.

ERROR 06 If you forget to do this, the next time you either connect to shore power or turn on the generator, the current surge will trip the switch on the charger and display **ERROR 06** on the MICC panel. To correct this, open the starboard bridge deck settee hatch and push the rocker switch on top of the inverter/charger unit aft to the ON position. This will allow shore power or generator power to go the charger and other 120 volt circuits.”

⚠ CAUTION DO NOT LEAVE THE INVERT SWITCH “ON” ON THE MICC PANEL ALONG WITH THE INVERTER/CHARGE SWITCH “ON” ON THE AC PANEL IF YOU ARE NOT INVERTING AS THIS MAY DRAW 10-12 AMPS EVEN IF NO AC DEVICE IS TURNED ON. OR, YOU MAY END UP WITH DEAD BATTERIES (All of them if the Parallel Switch is “ON” too.)

6.5 REVERSE POLARITY

⚠ WARNING As a safety precaution, your AC panel is fitted with reverse polarity indicators. If an AC supply were wired incorrectly, either aboard your boat or shoreside, a dangerous shock situation could exist. Normally, the reverse polarity lights should not be illuminated. If they are, disconnect that source of power and alert the appropriate person.

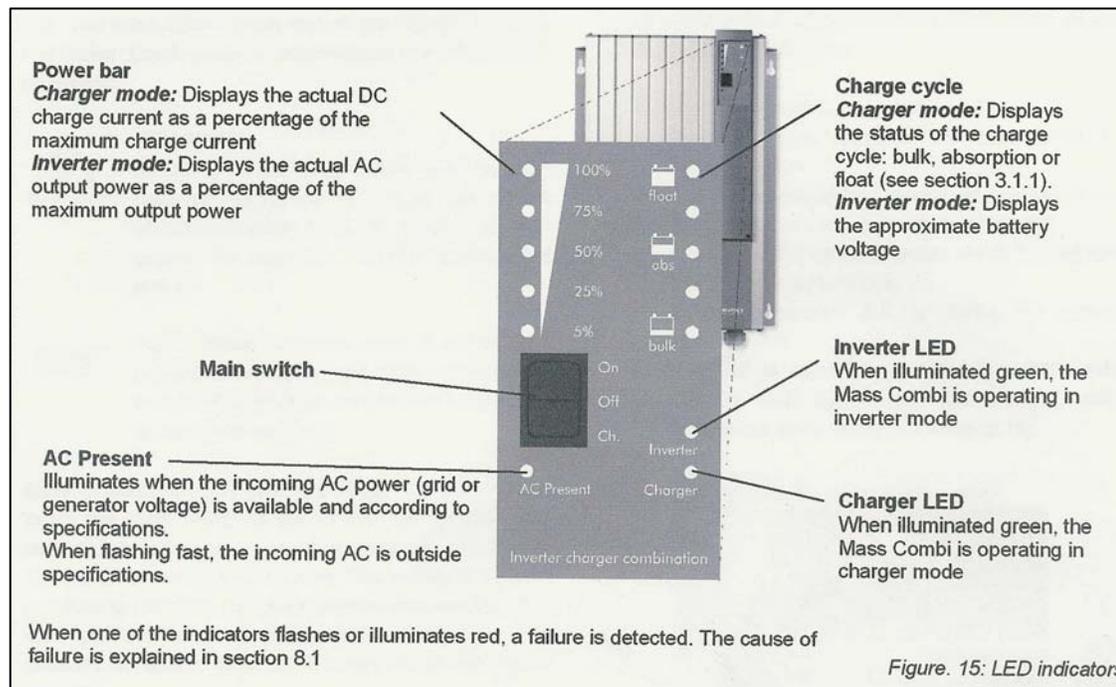
6.6 ELECTROLYSIS & GALVANIC CORROSION

Metallic fittings that are exposed to saltwater are subject to electrolysis and galvanic corrosion. To minimize potential damage, your boat is fitted with a sacrificial zinc at the transom. This zinc is connected to the bonding system of your boat. It should be visually inspected whenever possible and replaced when 1/2 of the zinc has been eroded. Pay special attention to its condition when in new waters and marinas, as environmental conditions affect the rate of deterioration. If the zinc erodes rapidly, current meters can be used to assess possible causes and remedies. See the Cummins Engine Operator Manual (EOM) for sacrificial anode location and inspection on the engine as well as the drives.

6.7 BONDING

The bonding system of your boat connects all underwater metallic fittings to the sacrificial zinc and the boat’s negative bus bar. In order for the zinc to protect an underwater part, the connection must be clean and secure. The green wires that make up this system are not normally current carrying.

6.8



ELECTRICAL SAFETY

CHAPTER 6

ELECTRICAL SYSTEM

Please read and understand the important safety precautions included in the included NMMA publication "Sportfish, Cruisers, Yachts – Owner's Manual" concerning electrical safety.

6.9 FUSE LOCATIONS & SPECIFICATIONS

<u>Item / Fuse Label</u>	<u>Size</u>	<u>Type</u>	<u>Location</u>
Bilge Pump 1	5 amp	AGC	In the Bilge Pump Switch at the Dash
Bilge Pump 2	5 amp	AGC	In the Bilge Pump Switch at the Dash
Bilge Pump 3	5 amp	AGC	In the Bilge Pump Switch at the Dash
Bilge Pump 1	7.5 amp	ATC	Fuse Block next to House Battery 1 (Stbd Settee)
Bilge Pump 2	7.5 amp	ATC	Fuse Block next to House Battery 1 (Stbd Settee)
Bilge Pump 3	7.5 amp	ATC	Fuse Block next to House Battery 1 (Stbd Settee)
Amplifier	40 amp	ATC	Fuse Block next to House Battery 1 (Stbd Settee)
Stereo Memory	15 amp	ATC	Fuse Block next to House Battery 1 (Stbd Settee)
DVD Memory	15 amp	ATC	Fuse Block next to House Battery 1 (Stbd Settee)
Emergency Parallel Supply	15 amp	ATC	Fuse Block next to House Battery 1 (Stbd Settee)
High Water Alarm	20 amp	ATC	Fuse Block next to House Battery 1 (Stbd Settee Hatch)
Sea Fire Supply	10 amp	AGC	House Bus at the Black Fuse Board (Stbd Settee Hatch)
House Switch Supply	15 amp	AGC	Remote Battery Switch next to House Battery 2 (Port Settee Hatch)
House Remote Supply	5 amp	AGC	Remote Battery Switch next to House Battery 2 (Port Settee Hatch)
Start 1 Switch Supply	15 amp	AGC	Remote Battery Switch next to Start Battery 1 (Stbd Settee Hatch)
Start 1 Remote Supply	10 amp	AGC	Remote Battery Switch next to Start Battery 1 (Stbd Settee Hatch)
Start 2 Switch Supply	15 amp	AGC	Remote Battery Switch next to Start Battery 2 (Stbd Settee Hatch)
Start 2 Remote Supply	10 amp	AGC	Remote Battery Switch next to Start Battery 2 (Stbd Settee Hatch)
Generator Switch Supply	15 amp	AGC	Remote Battery Switch next to Generator Battery (Port Settee Hatch)
Generator Remote Supply	5 amp	AGC	Remote Battery Switch next to Generator Battery (Port Settee Hatch)
Combiner 1 Negative	15 amp	AGC	Battery Combiner next to Air Conditioner Control (Bridge Deck Hatch)
Combiner 2 Negative	15 amp	AGC	Battery Combiner next to Air Conditioner Control (Bridge Deck Hatch)
Engine Room Blower	15 amp	AGC	Behind the dash next to the ignition relay
Engine Room Blower	15 amp	AGC	Behind the dash next to the ignition relay
VacuFlush	3 amp	AGC	Top of the Holding Tank (Port Aft Hatch)
ATC - Plastic Fuse			
AGC - Glass Fuse			
<u>Item / Fuse Label</u>	<u>Size</u>	<u>Type</u>	<u>Location</u>
Horn Fuse	40 amps	ANL	Port Settee Hatch (next to the horn compressor)
Main Panel Fuse	100 amps	ANL	Stbd Settee Hatch (fuse board)

Start Battery 1 Fuse	200 amps	ANL	Stbd Settee Hatch (behind start battery)
House Battery 1 Fuse	200 amps	ANL	Stbd Settee Hatch (next to the house battery)
Start Battery 2 Fuse	200 amps	ANL	Stbd Settee Hatch (behind start battery)
House Battery 2 Fuse	200 amps	ANL	Port Settee Hatch (next to the house battery)
House Bank Fuse	250 amps	ANL	Port Settee Hatch (next to the house battery)
House Parallel Fuse	250 amps	ANL	Bridge Deck Hatch (fwd wall off the hatch)
Inverter Charger Fuse	250 amps	ANL	Stbd Settee Hatch (fuse board)
Inverter Fuse	250 amps	ANL	Stbd Settee Hatch (next to the house battery)
Inverter Charger Fuse	250 amps	ANL	Stbd Settee Hatch (fuse board)
Inverter Fuse	250 amps	ANL	Stbd Settee Hatch (next to the house battery)

6.10 VESSEL INTERFACE PANEL (VIP) See. EOM 62

This panel is located in the cockpit locker forward of the engine room and has two circuit breakers to help protect the diagnostics and helm harnesses.

7.0 GENERAL

The 40z incorporates a pressurized freshwater system from either of two sources (1) a single 100-gallon tank under the main saloon sole that supplies a pump which maintains a constant pressure in the system, or (2) a **dock hose inlet** located to port in the cockpit as shown at right. When connected, dock water and pressure is used directly by all outlets in the boat... by passing the freshwater pump and water tank. A check valve keeps the dock water supply from backing up into the boat's water tank and overflowing it.



⚠ CAUTION When using the dock water supply, be sure to turn OFF the “fresh water pump” breaker on the 12V DC Panel, otherwise the ship's water pump may win the battle of water pressure and emptying your water tank into the city system.

⚠ CAUTION When leaving the boat with the dock water supply hooked up, be sure to turn OFF the dock water faucet. If there's a failure of a fresh water fitting or the pressure regulator, the boat could fill up with water and sink... as there is no limit to the amount of water from the city source as there is with the boats own water tank.

7.1 FILLING WATER TANK

A deck fill is provided on the starboard side deck near the helm station and is labeled WATER. As the tank is filled, air escapes thru the vent. This tank cannot be filled using the dock hose inlet.

7.2 FRESH WATER PUMP (at right)

The freshwater pump is turned on at the DC breaker panel. If the pump is heard running continually, check that no faucet has been left open. If this is not the case, turn off the pump and check that the tank has not been emptied. The freshwater system is not a perfectly sealed circuit and it is not uncommon to hear the pump cycle, but if this short cycling occurs more than once per hour, the system and/or pump should be checked for leaks. Some users will want to turn the pump off at night to avoid hearing it cycle.

The pump is protected from sediment by an in-line strainer mounted adjacent to the pump. The strainer should be checked periodically and cleaned if necessary. Status lights on top of the pump housing can be interpreted by reading the Manufacturer's manual in the white binder.



7.3 HOT WATER

Water in the 13-gallon hot water tank is heated in one of 2 ways (1) whenever the engine is operating or when the engine is not running, by turning on the “Water Heater” breaker on the AC Shore 2 panel. It is part of the freshwater system and does not need to be filled separately. There is virtually no need for maintenance, but the connections at the tank should be visually inspected occasionally.

The coolant lines from the engine to the tank have shut-off valves. These need to be OPEN in order for the engine to heat the water in the tank. For service, or in case of a ruptured line, these valves can be closed to stop this water loop.

7.4 GENERAL ECOLOGY SEAGULL WATER PURIFIER

[See also *Seagull owner's manual*] The galley is fitted with the best available water purifier in the world. It is used on 85 airlines. This purifier has a cartridge (in stainless pressure vessel under sink) that should be replaced annually or when reduced water flow indicates that it has become plugged with sediment. It is best to clear the pressure water system of any winter anti-freeze before running water through the cartridge. The filter is rated for 1000 gallons, which is approximately 15 water tanks' worth. Replace it at least once per year.

8.1 GENERAL

Raw water (seawater) is used to cool the engine and the generator. It is also used in the washdown and air-conditioning options. Wherever raw water enters the boat, it does so through a seacock, which is a valved thru-hull penetration with double-clamped hoses.

8.2 ENGINE RAW WATER

The engine intakes are alongside the engines through 3-way seacocks as seen in the chapter on propulsion. The generator (if fitted) use separate seacocks and strainers. Before using the engine or the generator, make sure its seacock is in the INTAKE position. While you are checking this system, visually inspect the strainer to insure that it is not fouled. *Using an engine with restricted raw water flow can cause over-heating and damage to the engine.* When you start an engine, it is advisable to check the exhaust as it exits the boat to make sure water is being mixed into the exhaust gas. You should see a surge of water every few seconds. (It make take more than a few seconds for the first surge.)

9.1 GENERAL

Gray water is liquid that can legally be pumped overboard, generally from sink drains, shower drains, and bilges. Your boat also directs deck run-off to of all gray water through common drains (port & starboard) in the transom.

9.2 GRAY WATER SUMPS

There are two gray water sump boxes aboard your boat located (a) in the storage compartment under the hatch in the cabin sole between the shower and head and (b) below the bottom companionway step. These collect water from the shower drain, the dish locker drain, and the air-conditioning condenser. The sump pump switch on the DC panel operates a bilge pump with normal float switch to empty the tank when any of the above systems are in use. Periodically, the cover of the tank should be removed and the contents/strainers cleaned.

9.3 BILGE PUMPS

There are three automatic electric bilge pumps fitted on your boat, plus an emergency manual pump.

The manual bilge pump is located under the port piloting seat and is operated by opening the plastic cover, inserting the handle, and pumping up and down. There is a noticeable difference when the bilge has run dry. This pump is most often used as a back-up system to the 3 automatic pumps. Its capacity is 15 gal/min.

The automatic pumps are located forward of the engine and under the companionway steps, are wired directly to the house battery bank. This means that even when the main battery switches are OFF, the bilge pump can continue to function properly. A three-way switch controls the pumps. When held in the manual position, the pump will work regardless of whether there is water in the bilge or not. In the OFF position, the pump will not turn on. In the AUTO position operates if the water level rises. If water is detected, the pump continues to run until the water is gone. Generally, the pump should be left in the AUTO position.

9.4 COMMON DRAINS

To eliminate unnecessary thru hull penetrations in the topsides, a common drain system is utilized on both port and starboard sides. Make sure, especially when air-conditioning is running, that the outlets for these drains, located in the transom under the swim platform, are not obstructed. Items that drain into the common drains include: hatch gutters, galley and head sinks, deck drains, sump tank and air-conditioning discharge.

10.1 GENERAL

Although all the exterior equipment on your boat was selected with marine service in mind, it is helpful to rinse the boat with freshwater after exposure to saltwater.

10.2 ANCHOR WINDLASS

Refer to the manual that came with your windlass for specific operating instructions.

The windlass draws power from the engine start battery. It is therefore advisable to only use the windlass when the engine is running, and to allow time for the battery to recharge after windlass use. Never try to move the boat forward with the windlass- it is sized to retrieve the anchoring gear, not to pull the boat forward. If the windlass bogs down, use the boat's engine to move directly over the anchor. If the anchor has become firmly lodged, use the boat's engine to free it, then commence retrieval with the windlass. Note: always let the windlass come to a stop before reversing direction; otherwise, the windlass fuse/breaker may blow.

To use the windlass, the engine start battery switch and house battery switch must both be ON and the windlass breaker on the panel must be ON.

⚠ CAUTION To avoid chafe on the anchor rode when anchoring, it is advisable to remove the rode from the anchor chute by grabbing it below the roller, then pulling it up directly from the anchor, feeding it through a bow chock to a mooring cleat. Never rely on the windlass itself to hold the anchor rode- the chain stopper or a cleat should be used to take the load so as to avoid damaging the windlass' gears.

⚠ CAUTION When not using the windlass or when underway, we recommend securing the anchor and chain with the anchor hook and line provided as standard to one of the mooring cleats. This prevents the anchor and rode from inadvertently running free underway and fouling the props.

ANCHOR WASHDOWN A spray nozzle to wash saltwater or mud from the anchor rode and chain is located under the anchor roller. It is activated, when raising the anchor, by depressing a rocker switch on the switch panel on the piloting console.

10.3 STRATAGLASS PILOTHOUSE CURTAINS

Do not use any chemicals or brushes to clean, only mild soap. If the curtains become scratched a mild polishing compound (a white cream similar to what is used on Awlgrip) can be applied by hand to remove them. Test a small, unobtrusive area first.

Always store curtains rolled together and not folded (to avoid creases).

10.4 PRIVACY/SUNSCREEN CURTAINS (OPTION)

Fine white mesh allows you to see out but makes it difficult to see in as demonstrated below. When installed at night, these curtains convert the Pilothouse to an additional stateroom. The 8 Curtain set comes rolled up in its own carry bag. The aft and windshield curtains attach by Velcro inside. The two large side curtains are attached inside by shock cord, which enables deployment while the standard StrataGlass curtains are rolled up



The advantage of inside curtains is that they don't become dirty over time or require storage wet from dew when departing in the morning.

Rolling of the curtain is best accomplished by laying first an end of the large side curtains over the top of the pilothouse table so that the end closest to you is just about touching the floor – allowing the rest to bunch up on the port settee or outboard side of the table. Continue to lay all 8 sections on top of each other with the ends together. Then roll all sections up together and place in the storage tube.



10.5 TRANSOM DOOR & SEAT (OPTION)

This transom door is intended for swimming, showering or stern boarding. When closed, you'd hardly know it was there.

The starboard section of the optional Transom Seat is removed along with its cushion. A very workable seat remains from which to watch the family swim

Full Removal The entire Transom Seat maybe pulled up out of its stainless brackets for removal.



10.6 STIDD SEAT POSITIONS

The two piloting seats are designed to swivel around and be lowered for a more sociable setting in the pilothouse. Be careful to slide the seats fully forward prior to swiveling so the seat is not jammed into the pilothouse sidewalls.

Optional "Wide" Stidd Seats are available that function in the same manner.

11.1 MARINE VACUFLUSH HEAD SYSTEM

NOTICE Waste discharge regulations vary by location. Check with local authorities.

The waste system aboard your boat employs freshwater and a vacuum generator. The freshwater pump breaker and Vacuflush breaker must both be on (DC panel) for the system to work. Further controls are located on a panel in the head (shown).



Refer to the manufacturer's manual for more details.

When the foot-pedal of the toilet is depressed, waste is drawn through the vacuum generator to the waste tank. Tank capacity is 20 gallons, which may seem small, but since each flush requires about a cup full of fresh water compared to the several quarts of sea-water using a conventional marine pump-head, the capacity is more than adequate and there's no odor. Waste can be discharged two ways:

(a) Via the shore-side pump-out fitting on the after-deck labeled WASTE using marina facilities. To effectively remove all the waste from the holding tank using, be sure to first turn OFF the vacuum pump system and step on the head flush pedal to remove all vacuum.

(b) Offshore beyond restricted waste disposal zones by (1) OPENING the large waste thru-Hull discharge valve, accessible to starboard and aft in the cockpit lockers then (2) TURN & HOLD the switch in the Head to the right to activate overboard pumping using the macerator pump. The control panel lights indicate the level of waste in the holding tank. The level can be double-checked by viewing the dark waste line through the side of the semi-transparent holding tank from the starboard aft cockpit locker.

CAUTION Before activating this discharge, check to insure compliance with local regulations.

11.2 VITRIFIGO RF SERIES DC REFRIGERATION

The double-drawer refrigeration is chilled by a DC powered unit integral to the unit. The refrigerator breaker on the DC panel must be on for the unit to work. The temperature is controlled on the face of the unit with a blue light bar indicating the setting. Once on, the unit will self-regulate. It normally takes overnight for the temperature to stabilize, particularly after initial stocking with food and beverages. For further information and troubleshooting procedures, refer to the Vitrofrigo operating manual.



CAUTION Be sure to secure the drawer lock when operating the vessel

11.3 KENYON TWO-BURNER CERAMIC COOKTOP

The galley cooktop aboard your boat is powered by AC electricity. To use it, make sure the "COOKTOP" breaker on the AC panel is ON and that a supply of AC power is present.



This two-burner unit is unique in that it has flush-mount, pop-up, heat-resistant rubber pot stops instead of an old-fashioned potholder apparatus. **CAUTION** Do not leave the cooktop ON while unattended.

11.4 SHARP GRILL 2 CONVECTION MICROWAVE

This unit offers several cooking modes which maybe operated without shorepower by utilizing the inverter for AC power and turning ON the MICROWAVE switch on AC Panel #1. Please refer to the Sharp Users Manual for operating instructions and precautions. The manual is stored inside the oven when the boat is initially delivered.

**11.5 MARINE-AIR AIR-CONDITIONING UNITS (Optional)**

This 16,000 BTU air-conditioning system can help keep the interior and pilothouse of the boat at comfortable temperatures by either cooling or using reverse cycle heat to act as a heater. The heat works particularly well to warm both the interior and pilothouse if the sea temperature is above 40 degrees. For a full explanation of the A/C controls, see the manufacturer's user's manual.

To adjust fan speed range so that the lowest setting "1" is hardly noticeable and high-speed setting "6" is sufficient:

Push the Fan Control button until "P1" shows.
Then Press Star to select "P2"
Press Up or Down Arrow until reading "65"
Press Star to get to "P3"
Press Up or Down Arrow until reading "40"



The A/C system uses raw water, much like the engine, for heat exchange. There is an intake seacock, strainer & pump located in the Systems Room under the pilothouse. These should be checked frequently, and are the first things to check if the unit fails to deliver cold air.

⚠ CAUTION Be sure to turn on the AC SUMP breaker on AC Panel 2 when an AC unit is operating in order to dispose of any condensate.

11.6 WALLAS 40D DIESEL HEATER (Optional)

This heater is DC powered, controlled by a thermostat on the forward side of the entertainment center and draws diesel fuel from the starboard fuel tank. Please read the manual for instructions

⚠ CAUTION Do not use the Circuit Breaker Switch to turn off the Heater when it is operating. Before turning off the breaker switch, be sure to turn the control panel from heat to vent until the heating element has a chance to cool off.

11.7 CLARION CMD-5 STEREO PLAYER (Optional)

This multi-media unit operates on DC power. The STEREO breaker on the DC panel must be ON before you can turn on the unit. To select the function desired, push the button marked: DISC for CD, "AM/FM for normal broadcast, "SAT" for Sirius/XM satellite radio, or "AUX" for surround sound when the TV is playing, etc., The fore and aft volume balance between interior and pilothouse speakers is controlled by the "Fade" function. See the instruction manual for further operating details.



11.8 SIRIUS SATELLITE RADIO ACTIVATION (Optional)

To activate Sirius Satellite Radio services on the Clarion CMD-5, you will need the serial number:

- (1) Push the "MENU" button in the upper right set...
- (2) Using the up and down scroll to "SID DISP", then press "ENTER".
- (3) The first 6 digits of the serial number will be displayed.
- (4) Turn the rotary dialing knob counter-clockwise to display the last 6 digits of the SID
- (5) Call Sirius at 1-888-539-7474 to activate, conveying the 12 digits of the Serial Number.
- (6) Tell them that you just purchased an MJM 40z motorboat with Sirius installed.

11.9 19" SOLE HD TELEVISION AND DVD PLAYER (Optional)

Sole TV receivers are marinized and operate along with the DVD Changer on 12-volt DC power. To operate the TV turn ON the "TV" Breaker on the AC Panel. Click the "Menu" button and select Source. Video signals maybe acquired from the DVD, from a dockside cable TV outlet, from a conventional local "Air" or from the optional KVH satellite dish system.

An access port is provided for Game Boy or Computer Cords.

Surround-Sound may be achieved using the "AUX" function on the Clarion Stereo Receiver to integrate both TV Audio and the 6 speaker stereo audio. Or, Kids can watch TV with dedicated Audio belowdecks while parents are listening to jazz, with the "Fade" function directing sound to the 2 cockpit speakers.



Shown above is the TV installation in the forward cabin. The optimum angle of viewing from the berth can be adjusted by turning the twist nut on the supporting arm. The cabinet behind the TV holds the "entertainment center" with the CD Changer, DVD Player, Satellite TV Receiver and the KVH Antenna

11.10 KVH M3 SATELLITE TV RECEIVER (Option)

To activate the receiver, turn ON the breaker labeled “Satellite Dish” on the DC Panel. Then be sure that the KVH dish control and receiver are turned on in the Entertainment Center. Follow the instructions in the KVH Owner’s Manual to initiate subscription and enjoy television reception aboard the boat.

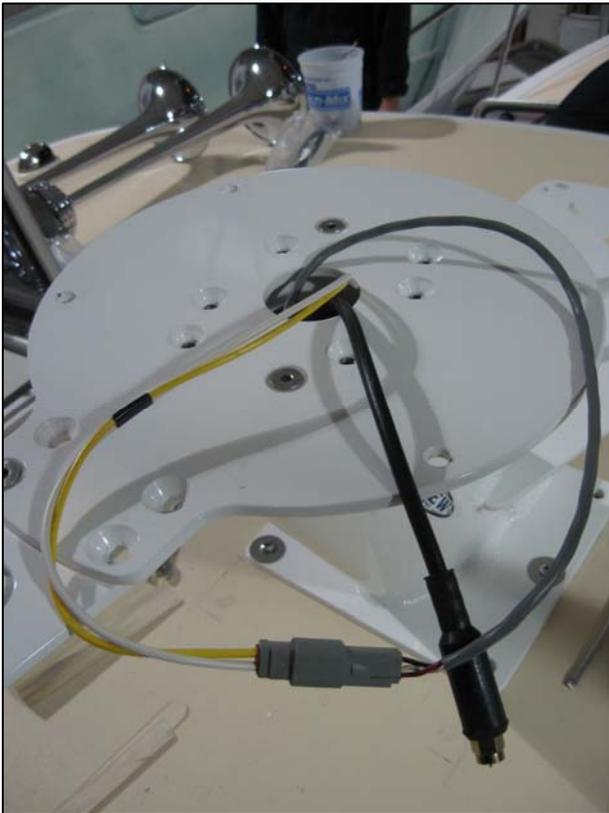
Either DISH Network or Direct TV has been selected prior to installation. It’s advisable to check with locals to determine which system has the better reception in the area where you plan to spend the most time. For instance, in Northeast Harbor ME, the preferred system is Direct TV due to higher satellite elevations.



The Dome and Radar unit mounted on the hard top must be removed for overland truck shipment. The procedure for installing the unit is described below:

KVH / RADAR DOME INSTALLATION INSTRUCTIONS

(1) Run KVH and anchor light wires up through the KVH dome platform then fasten the base to the hardtop. See pic 1 below.



(2) Install the anchor light on the back of the strut and connect the Deutsch connector for the anchor light then push the remaining length of the anchor light wire (yellow and gray in Pic 1)

back inside of the hole. The only cable that remains on top of the dome platform is the black RG6 cable for the KVH dome shown.

(3) Run the radar dome harness through the hole in the front of the strut, just behind where the radar dome will sit. See Pic 2 above.



(4) After installing the radar on it's platform and running the harness inside the radar dome you will need to remove 5 screws from the top of the metal box (the cover will than hinge to the side-- see Pic 3) giving you access to the radar connections). You will have 2 red wires, 2 black wires and a plug with 7 smaller wires attached to it.

(5) With a small flat head screwdriver loosen the positive and negative screws at the white terminal box. Plug the two red wires in the positive side and the two black wires in the negative side. The plug with the seven smaller wires will be plugged right in front of the white terminal box where the red and black wires are. See Pic 4. It can only plug in one direction. Make sure it's connected and pushed in all the way and that the small gauge wires are in good conditions and not making too much of a bend. Slide the cover back in place (See Pic 5) and make sure the shield wires are sitting in the cable groove right at the edge of the opening. The grounding shield wires need to be sandwiched between the cover and the base of the metal box. Reinstall metal plate and radar dome cover.



(6) Look for a yellow tag inside of the KVH dome with a screw; Very important, this screw is for shipping purpose only. This screw needs to be removed before you can run the unit



(7) Connect the RG6 cable to the 90° connector, located in the bottom of the KVH dome. Once this is done, mount the dome on the strut with the bolts provided.

12.1 MAINTENANCE SCHEDULE – STERNDRIVE MODELS

Refer to EOM 50-52, 55-127. Some of the items you may choose to leave to professionals, but many you can do yourself. In particular, it is a good idea to have a certified mechanic perform check-ups from time to time on the engine, generator, and any other key equipment installed onboard. Cummins & Northern Lights engines are assumed – check your manuals if your brands differ.

EACH DAY START

- Check the engine oil level (This task interval can be extended based on operator experience with the product).
- Check the engine coolant level.
- Check the power assisted steering fluid level.
- Check the sterndrive gear lube level in the gear lube monitor.

EACH DAY END

- If operating in saltwater, brackish water, or polluted water, flush the seawater section of the cooling system after each use.
- Drain any water from the primary fuel filter after each use (Drain any water from both fuel filters if operating in freezing temperatures).

WEEKLY

- Drain any water from the fuel filters.
- Check the trim pump fluid level.
- Check the seawater inlets for debris or marine growth.
- Check and clean the seawater strainer.
- Inspect the sterndrive anodes and replace if 50% eroded.

EVERY TWO MONTHS

- Check the battery connections and fluid level.
 - Lubricate the propeller shaft and torque the propeller nut (If operating in only freshwater, this maintenance may be extended to every four months).
- Section 5 – Maintenance, Page 52 CMD-4082020 / 90-866933062 NOVEMBER 2006
- Treat the engine surfaces with Corrosion Guard if operating in saltwater, brackish water or polluted waters.
 - Inspect the air filter (Every two months or every 50 hours, whichever occurs first).
 - Inspect the engine anodes and replace if 50% eroded.
 - Ensure that the gauges and the wiring connections are secure. Clean the gauges (Every two months or every 50 hours, whichever occurs first. If operating in saltwater, the interval is reduced to every 25 hours or 30 days whichever occurs first).

AFTER FIRST 25 HOURS AND NOT TO EXCEED 30 HOURS

- Change the engine oil and filter.

ANNUALLY

- Touch up the power package with paint and spray with Corrosion Guard.

EVERY 100 HOURS OR ANNUALLY (WHICHEVER OCCURS FIRST)

- Change the engine oil and filter.
- Change the sterndrive gear lube.
- Torque the gimbal ring U-bolt locknuts.
- Replace the fuel filters.
- Check the steering system and the remote control for loose, missing, or damaged parts. Lubricate the cables and linkages.
- Inspect and lubricate the sterndrive U-joint splines. Inspect the bellows, the exhaust tube, and check the clamps.
- Lubricate the gimbal bearing and engine coupler (Lubricate the engine coupler every

50 hours if operated at idle for prolonged periods of time).

- Check the continuity circuit for loose or damaged connections. If equipped with MerCathode®, test the unit output.
- Check the engine alignment.
- Torque the engine mounts.
- Check the electrical system for loose, damaged, or corroded fasteners.
- On driveshaft extension models, lubricate the drive shaft U joints, transom end (tailstock) bearings, and engine end (output) bearings.
- Inspect the condition and tension of the belts.
- Inspect the cooling system and the exhaust system for damage or leaks. Check both systems hose clamps for tightness.
- Disassemble and inspect the seawater pump and replace worn components.
- Clean the seawater section of the closed cooling system. Clean, inspect, and test the pressure cap. Check the anodes and replace if 50% eroded.
- Replace the air filter.

EVERY 2 YEARS

- Replace the engine coolant.

EVERY 500 HOURS OR 5 YEARS (WHICHEVER OCCURS FIRST)

- Clean the aftercooler core.

EVERY 1000 HOURS OR 5 YEARS (WHICHEVER OCCURS FIRST)

- Clean the fuel tank.

12.2 FLUIDS See EOM 55-127

13.1 START OF SEASON [commissioning]

13.2 END OF SEASON

Most facilities will not require additional information before hauling the boat with a Travelift or crane, but if this is the case, use the included Lifting Diagram.

The end of the season is a good time to have the bottom power-washed and to check all thruhulls and seacocks for growth. Careful inspection of all underwater hardware at this point may avoid a potential problem in the future. This is also a good time to check the zincs of the boat and replace as necessary.

If the boat is to be stored in a place where the ambient temperature may fall below the freezing point, it must be winterized. Plumbing lines need to be emptied and anti-freeze added where applicable. Consult also the engine operator's manual.

14.1 - EMERGENCY DIAGRAM

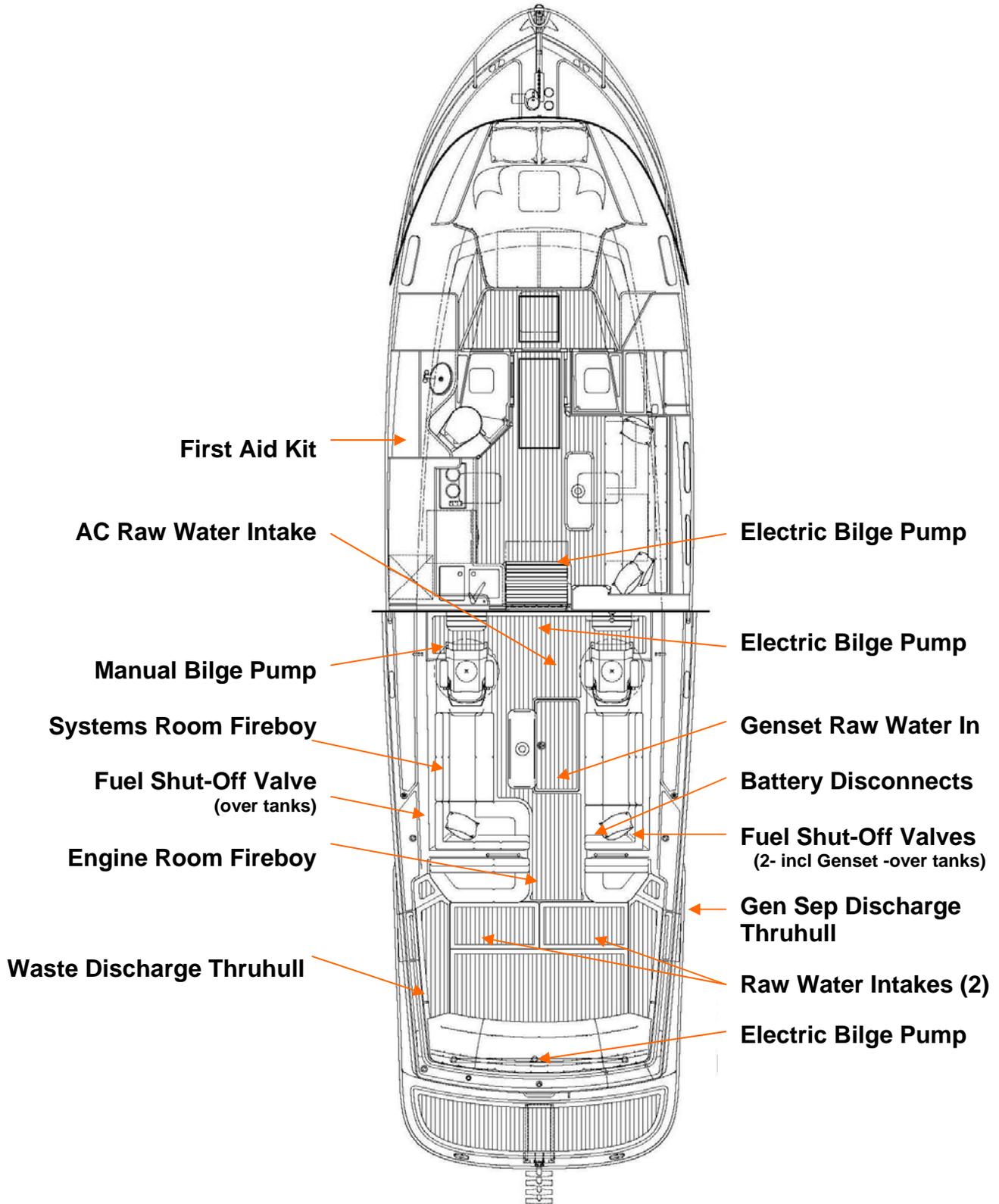


FIGURE 14.2 - 12 Volt DC WIRING DIAGRAM

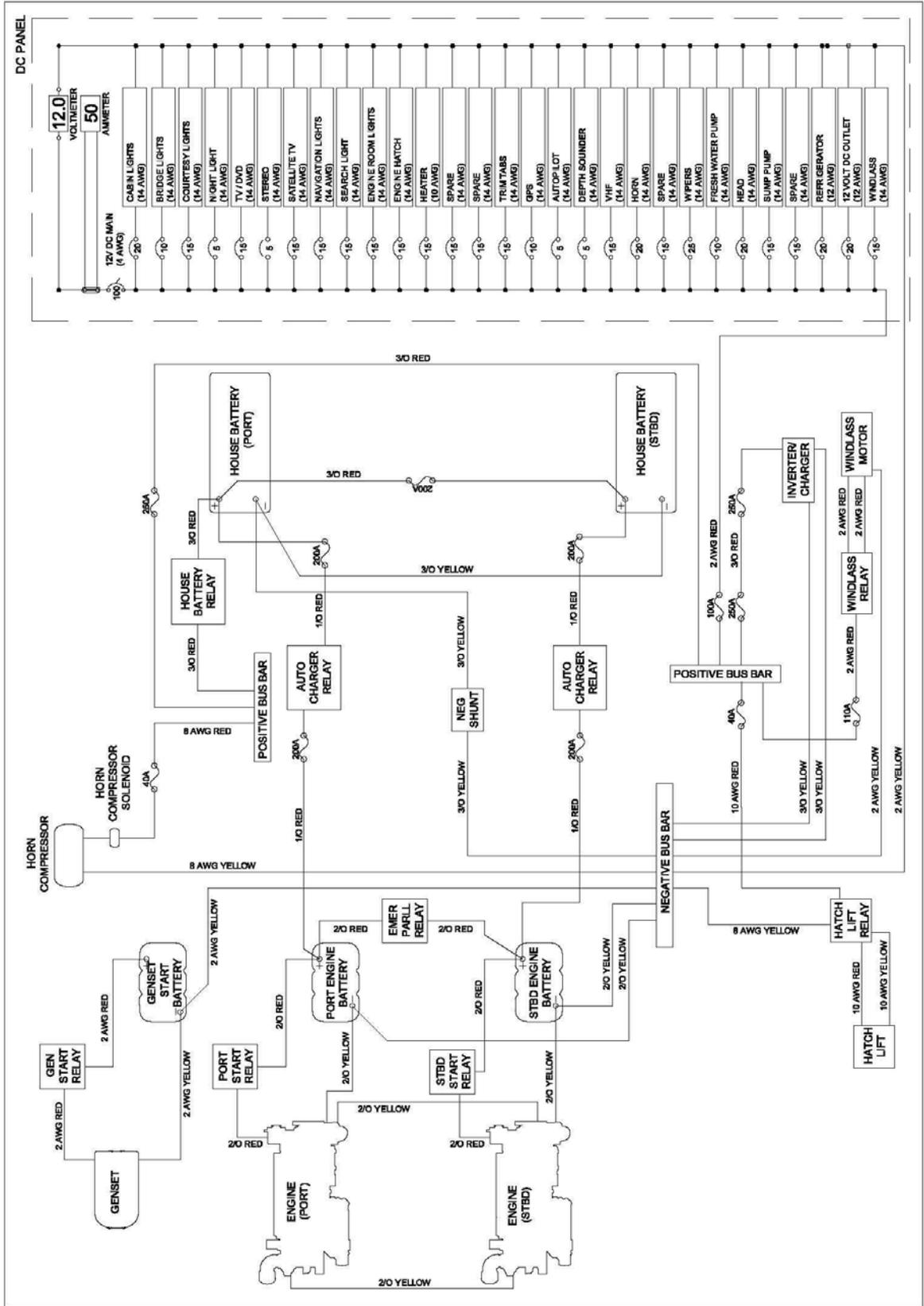
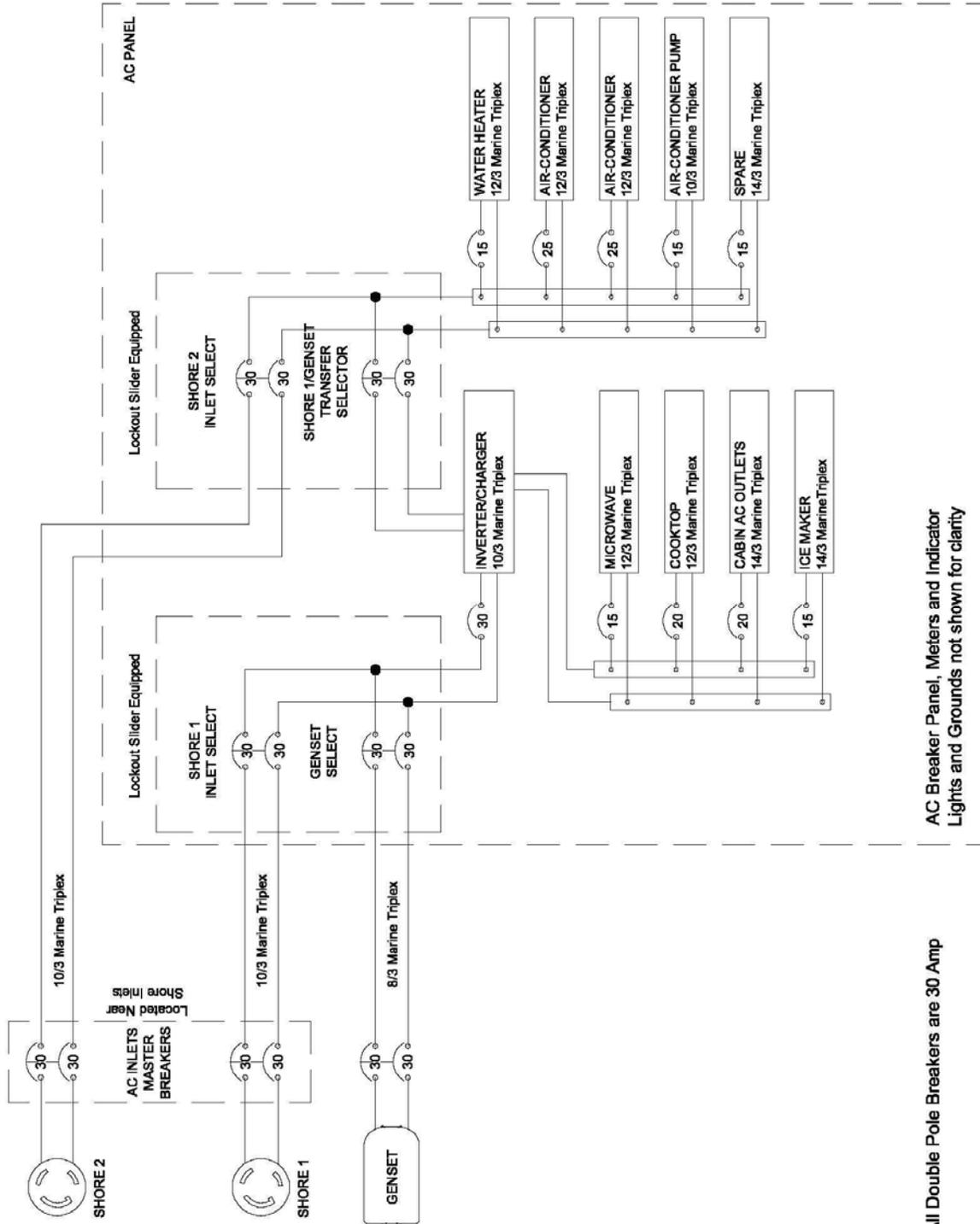


FIGURE 14.3 - 120 Volt AC WIRING DIAGRAM



AC Breaker Panel, Meters and Indicator
Lights and Grounds not shown for clarity

All Double Pole Breakers are 30 Amp

FIGURE 14.4 - SYSTEMS DIAGRAM

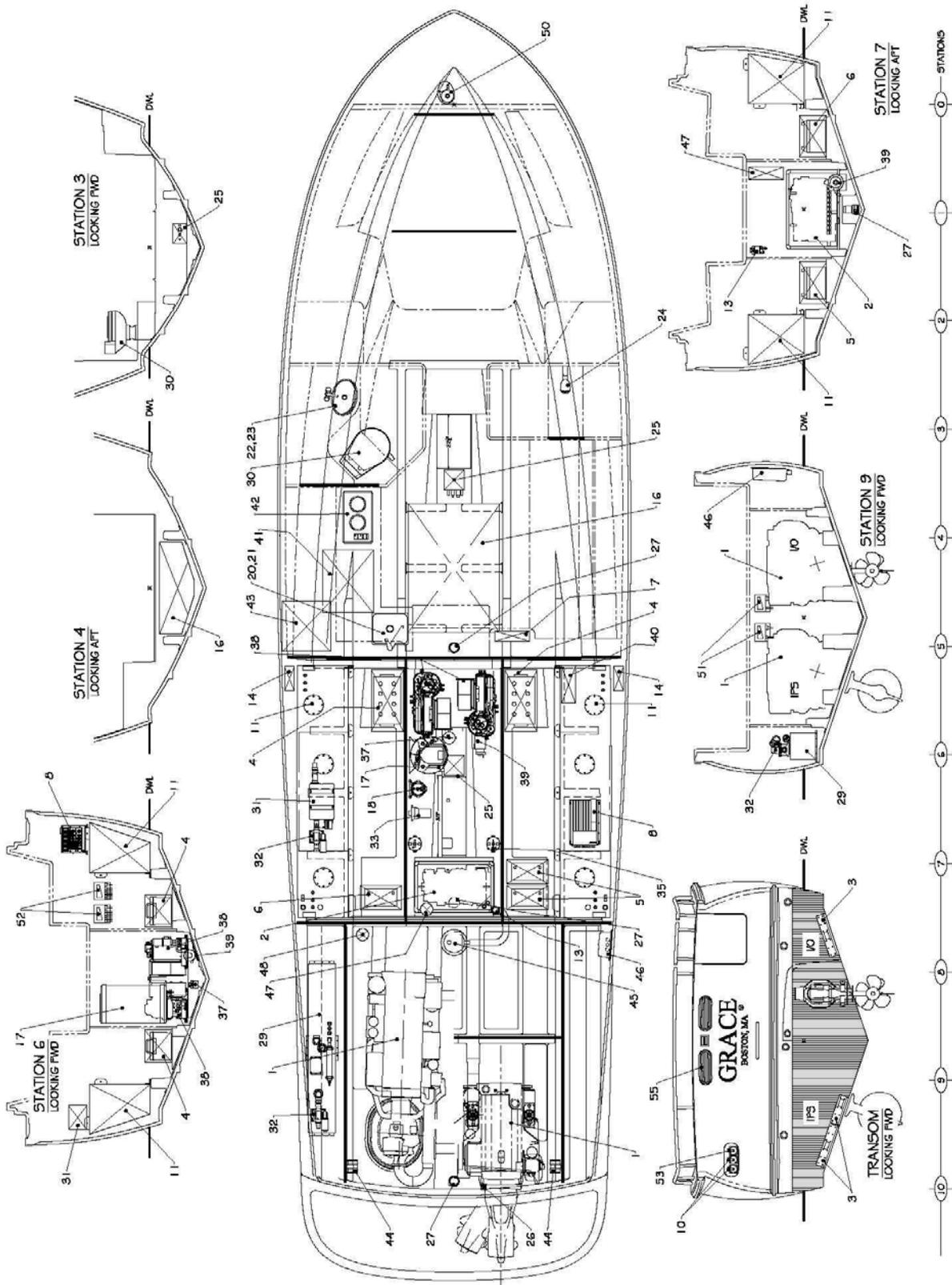


FIGURE 14.5 - SYSTEMS KEY

REF	QTY	DESCRIPTION	MAKE / MODEL	REF	QTY	DESCRIPTION	MAKE / MODEL
1	2	MAIN ENGINE	SEE SPECIFIC WORK ORDER	29	1	B.W. TANK (32 GAL)	SEALAND
2	1	GENERATOR (6KW)	NORTHERN LIGHTS M673L3	30	1	TOILET	SEALAND VACUFLUSH 506
3	2-4	TRIM CONTROL SYSTEM	VOLVO QL 450 (+300 IP5)	31	1	VACUUM GENERATOR	SEALAND
4	2	HOUSE BATTERY	DEKA 8A8D	32	2	MACERATOR PUMP	SEALAND
5	2	START BATTERY (ENGINE)	DEKA 8A31DT	33	1	WASHDOWN PUMP	SHURFLO 5901-2212
6	1	START BATTERY (GENSET)	TBD	34	1	SEACOCK (GENSET)	FORESPAR 931143
7	1	ELECTRICAL PANEL AC/DC	PACER BBW-010011	35	1	STRAINER (GENSET)	GROCO ARG-755-P
8	1	CHARGER/INVERTER	MASTERVOLT 12/4000-200A	36	1	SEACOCK (A/C)	FORESPAR 931263
9	2	BATTERY SWITCH	BLUE SEAS	37	1	STRAINER (A/C)	GROCO ARG-755-P
10	2	SHORE POWER	MARINCO 30359EL-B	38	2	A/C UNIT	MARINE AIR VTD16K-HV
11	2	FUEL TANK (175 GAL)	REFER TO DWG 07106-655	39	1	A/C PUMP	MARINE AIR
12	2	FUEL FILTER (ENGINE)	RACOR 500MA	40	3	HEATER	WALLAS 40D
13	1	FUEL FILTER (GENSET)	RACOR 215R30	41	1	REFRIGERATOR	VITRIFRIGO DW180RFX - DW180RFXAC
14	2	FUEL/AIR SEPARATOR	RACOR LG	42	1	COOK TOP	KENYON B40575LPUPS
15	1	FUEL TRANSFER PUMP	TBD	43	1	MICROWAVE	SHARP R-820J5
16	1	F.W. TANK (100 GAL)	RONCO B400	44	2	EXHAUST FAN	DELTA T 500-3041221P
17	1	F.W. HEATER (13 GAL)	ISOTHERM BASIC 50	45	1	GENSET MUFFLER	CENTEK 1500071
18	1	F.W. PRESSURE PUMP	HEADHUNTER EXCALIBUR	46	1	GASWATER SEPARATOR	CENTEK 1020150
19	1	F.W. PURIFICATION SYSTEM	G. ECOLOGY SEAGULL IV	47	1	FIRE SUPPRESSION (FWD)	SEA-FIRE FG-100M
20	1	GALLEY FAUCET	SCANDVIK 10480	48	1	FIRE SUPPRESSION (AFT)	SEA-FIRE FG-125M
21	1	GALLEY SINK	SCANDVIK 10220	49	2	HATCH LIFT	ACCU-LIFT C-18-33.320, 28
22	1	HEAD FAUCET	SCANDVIK 46010	50	1	WINDLASS	MUIR VR 1250
23	1	HEAD SINK	SCANDVIK 10211	51	2	POWERTRAIN CONTROL UNIT	VOLVO 888997
24	1	SHOWER/MIXER	SCANDVIK 10763/10813	52	2	HELM CONTROL UNIT	VOLVO 3863511
25	2	SUMP PUMP	RULE 98A	53	1	PHONE/TV INLET	MARINCO PH6592TV-55
26	1	COCKPIT SHOWER/MIXER	WHALE D50003	54	1	GENSET DRY OUTLET	ORCAS 9005208
27	3	BILGE PUMP (AUTO)	RULE RM1100	55	2	LOUVERED SUCTION VENT	VETUS ASV 80
28	1	BILGE PUMP (MAN)	BOSWORTH GUZZLER				



FIGURE 14.7 – TRAILER LOADING CHECKLIST

1. Check that bilges are clean and dry and that companionway is dammed or that a trucking drain is installed to prevent rainwater from entering interior if the boat is loaded with bow down and rain forecast for trip.
 2. Check that all cabinet doors, refrigerator latch and drawer latches are pushed shut to the lock position.
 3. Remove ensign and burgee
 4. Leave the bilge pump switch in on position
 5. Do not apply adhesive tape to any part of the boat, especially the Ultra leather cushions.
 6. Lock all hatches and portlights
 7. Cover louvers in companionway door and put covers on instruments on piloting console.
 8. If necessary, remove radar and satellite TV Dome from hard top and waterproof loose connection. Store TV dome in shower wrapped in moving blanket and wedged with cushions. If radar on tower with steaming light, wrap with moving blanket and secure to main saloon table leg, padding any part that may strike wood..
 9. Roll side and back curtains together with paper between, then wrap with aft seat cover and store on settee with no weight on top that would flatten and crease the roll.
 10. Secure VHF antenna with wire tie in “down” position to hard top rail.
 11. Remove all-round light on hardtop and install protective cap.
 12. Fuel tanks must have minimum of 20 gallons each
 13. Are all systems winterized if trip is to freezing weather?
 14. Check to see that all Battery Switches are OFF
 15. Secure and pad all loose gear against movement in transit
 16. Wrap piloting chairs in shrink-wrap or plastic, avoiding get tape on Ultraleather
 17. Do not stack any gear on tables.
 18. Do not under any circumstances load boat stern first on trailer – You’ll be cleaning for weeks.
 19. Shrink wrap is not desirable and can cause more trouble to the hull paint job than it protects. Awlgrip has a new spray on product for the hull (contact Service Manager at BBW for info)
 20. Be sure that the boat is properly blocked and rides level so the cockpit will drain underway.
 21. Be sure that the topmost part of the boat is less than 13’6” over the road.
 22. Take digital photographs of hull, port, starboard and transom and attach copies to the Bill of Lading
 23. Have driver sign off on Bill of Lading with a notation that there is no damage (or indicate existing damage) so as to eliminate arguments upon arrival as to what damage the driver did or did not cause. Retain a copy.
 24. Provide driver with detailed contact information of receiving yard and schedule for unloading.
 25. Lock companionway door and advise driver and receiving yard where the key is.
 26. Attach a copy of this checklist to the BOL, marked, and signed off on.
- Note:** In addition to aft and midship supports in the locations seen on page 55 (for Boatlifts), the boat should be supported under the bow as well to counteract the downward pressure of bow tie-downs.

Manufacturer's Sole and Limited Warranty for Pleasure craft

- A. **General.** This document sets forth the sole and limited warranty, which Boston BoatWorks ("The Manufacturer") is giving you in connection with the "Vessel" which you are acquiring. It is the only warranty being given by the Manufacturer and should be reviewed carefully together with manuals and other instructional material provided by the Manufacturer before you take delivery of the Vessel.
- B. **Basic Warranty.** The Manufacturer warrants that the Vessel (except for Excluded items described below and when Properly Used, will be free of defects in material and workmanship for a period of twelve (12) months from delivery of the Vessel to you by an Authorized Dealer. If you sell the Vessel during this period, your buyer may receive the benefit of the balance of the warranty by agreeing to be bound by its terms.
- C. **Extended Warranty for Structure.** In addition to the foregoing warranty, the Manufacturer warrants that the stringer systems, structural bulkheads and composite laminates of the Vessel (except for Excluded items) and when the Vessel is Properly Used, will be free of defects in material and workmanship for a period of five (5) years from delivery date by an Authorized Dealer. This warranty may be transferred to your buyer in the same manner as the Basic Warranty.
- D. **Extended Warranty Against Osmotic Blistering.** In addition to the foregoing warranties, the Manufacturer warrants that any gelcoat surfaces of the Vessel below the waterline will not blister when the Vessel is Properly Used for a period of ten (10) years from delivery date by an Authorized Dealer. This warranty may be transferred to your buyer on the same manner as the Basic Warranty.
- E. **Dealers.** The name and address of Authorized Dealers is available from the Manufacturer. The Manufacturer does not authorize the Dealer, or any other person, to assume for the Manufacturer any liability in connection herewith or any liability or expense incurred in the repairing of its products other than those expressly authorized by the Manufacturer in writing.
- F. **Excluded Items.** The Manufacturer gives no warranty as to:
- a. Paints, varnishes, gelcoat (except where included in paragraph D above), exterior wood, vinyl, fabrics, glass, chrome plating or anodized or other finishes or surface coatings because of the varying quality of these items manufactured by others and the effect resulting from different climactic and use conditions
 - b. Engines, mechanical equipment, pumps, batteries, heating, plumbing, refrigeration, electronic components, masts, or other components manufactured by other than the Manufacturer, or the cost of removal or re-installment of the part and disassembly, or reassembly of the unit of which it is a component.
 - c. All items not installed by the Manufacturer or altered after their installation, and items installed or altered by Authorized Dealers.
 - d. Other than upon first being delivered, leaks in or around hatches, companionways, deck hardware or other leaks which are above the waterline.
 - e. Damage to the Vessel (including, but not limited to, wet core) caused by leakage around decks, hardware or other accessories attached to, or incorporated into, the Vessel.
 - f. Speed, fuel consumption or other performance characteristics, because they are estimated and not guaranteed.
- G. **Proper Use.** The warranties contained herein are expressly conditioned upon your Proper Use of the Vessel. This means that you must use the Vessel solely as a pleasure craft (no commercial use) and operate it as directed in and after reviewing the Manuals provided by the original equipment manufacturer and the

Manufacturer, and perform maintenance to the Vessel as recommended in the Manuals and as required by periodic inspections by an Authorized Dealer or Service Center.

- H. **Warranty Claims.** To make a claim under this warranty you must do the following
- a. Report the defect to the Manufacturer or Authorized Dealer within thirty (30) days of discovering it, and when possible prior to incurring any expense, identifying the Vessel and submitting photographs (email digital preferred).
 - b. Make the Vessel available for inspection by the Manufacturer or Authorized Dealer when requested.
 - c. Make the vessel available for repairs, if required, by the Manufacturer or Authorized Dealer.
 - d. Major components, such as engines, generators, air-conditioners, electronics, appliances for example are warranted by the manufacturer of the component. They have authorized service dealers in most major boating markets. The Manufacturer or Dealer will identify such service dealers upon request.
- I. **Repair or Replacement.** The manufacturer shall perform its obligations under this warranty by, at its option, repairing or replacing (at Manufacturer's expense) the defective part or component. Parts or components replaced will become the property of the Manufacturer. The replacement of parts or components will not extend the warranty but the replacement parts and components will be covered for the balance of the warranty period. You shall be responsible for returning the Vessel to Manufacturer at its plant or at a designated marina in the State of Massachusetts or to such other repair facility that the Manufacturer shall designate, at your sole expense.
- J. **Specification Changes.** The manufacturer reserves the right to make changes in design, equipment, layout or construction without notice or being obligated to incorporate such changes in previous products.
- K. **Registration Cards.** The Manufacturer recommends that you immediately fill out and return the Warranty Registration Card for the Vessel. The information contained on this card will enable the Manufacturer to more quickly process any warranty claims and to comply with the Federal Boating Safety Act. Should you sell the Vessel, the Manufacturer recommends that your buyer also fill out a Warranty Registration Card.
- L. **Exclusion of Implied Warranties.** The foregoing warranty is intended to be in lieu of all other warranties, express or implied. In part, due to the hazardous, life-threatening environment, capable of overwhelming vessels of any size, that the Vessel will operate in, THE MANUFACTURER OR ITS DEALER DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE. In some jurisdictions, the Manufacturer is prohibited from excluding or limiting implied warranties. In those jurisdictions, the Manufacturer expressly limits any implied warranties to the greatest extent and to the shortest duration allowed by law.
- M. **Limitation of Damages.** THE MANUFACTURER OR ITS DEALER DISCLAIMS ANY LIABILITY TO YOU FOR INCIDENTAL, CONSEQUENTIAL OR INDIRECT DAMAGES TO YOU, including loss of use, loss of revenue, travel expenses, transportation charges, food or lodging charges or loss of personal property. In some jurisdictions, the Manufacturer is prohibited from excluding or limiting implied warranties. In those jurisdictions, the Manufacturer expressly limits any implied warranties to the greatest extent and to the shortest duration allowed by law.
- N. **Whole Agreement.** This warranty is the sole warranty given to you by the Manufacturer. Authorized Dealers are not authorized to make changes to this warranty. Any questions about the warranty should be directed to the Manufacturer. If you do bring a claim against the Manufacturer that is related to the Vessel, you must bring it in the Courts for the State of Massachusetts.

BOSTON BOATWORKS
Pre-Approval for Warranty

Please Fax Claim to: (617) 561-9222 Date _____

Boat Model _____ Boat Name _____ Hull # _____

Dealer _____ Contact Person _____

Phones _____ Fax _____ Email _____

Description of Problem: _____

Description of Resolution: _____

Estimated Completion Date: _____

Labor Rate \$ _____ Total Materials Cost \$ _____

Total Labor Hours _____ Total Estimated Cost \$ _____

AMOUNT APPROVED: \$ _____ **APPROVED BY:** _____

Warranty Claim Application Form

Boston BoatWorks, LLC

256 Marginal Street, East Boston MA 02128

Phone: (617) 561-9111 Fax: (617)561-9222

Date: _____ Boats Name: _____ 40z Hull # _____

Dealer/Service _____ Boat Owner: _____

Address: _____ Address: _____

Phone: _____ Phone # _____

Fax: _____ Boat Location: _____

Contact Person: _____ Delivery Date: _____

Description of Defect (please include photos)

Description of Corrective Action (include invoices)	Labor Hrs:
	Labor Rate:
	Labor Cost:
	Material Cost:
Total amount of claim	\$

All claims require prior approval by BBW Customer Service using the Pre-Approval Form

Date Approved: _____ **Amount Approved:** _____ **Approved by:** _____

1 - Disconnect Shore-side Connections

To disconnect shore power cords, turn off all AC loads on the boat and make sure the main AC breakers on the AC panel (the double breakers) are all OFF. Then disconnect the cord *at the dock end first*. Disconnect the cord at the boat and close the shore power inlet cover. Ditto for any phone/cable lines and dock water hose.

2 - Set Battery Switches

The battery selector switches are under the electrical panel. From left to right: Combiner parallel switch should be OFF. Slide the covers down and Push Start STBD engine switch and Start PORT engine switch, both ON. Be sure that the HOUSE battery switch is also ON position. Unless running the generator underway, the GENERATOR switch should be OFF with the cover slid upwards. If the engine start battery is low the parallel switch can be turned on until underway, then turned OFF.

Remember to turn all switches OFF when leaving the boat, except the HOUSE battery switch, needed to keep the Refrigeration going.

3 - Check Engine

It is advisable to check the engine fluid levels before starting the engine. Refer to the Owner's Manual for instructions on lifting the bridge-deck and checking the oil coolant and transmission levels.

4 - Check Raw Water Seacock

Make sure that the raw water seacock is in the INTAKE position to supply the engine with seawater for cooling. It is also advisable, once the engine is started, to check the exhaust at the transom. You should see a surge of water every few seconds.

5 - Visually Inspect the Engine Room

While doing other checks, it is a good idea to take a look around the engine for loose belts, wires, oil drips or water in the bilge or anything else that may be out of order.

6 - Check DC Panel

Check the DC panel to insure that the house bank has a reasonable charge (12.2V or greater). If there is any problem, now is the time to learn of it. Make sure the DC MAIN breaker is ON, as well as any other circuits that you might need in the course of your trip. If you need the searchlight in a hurry, for instance, it's better to have the breaker already on.

7 - Turn ON Navigation Instruments

Turn on TRIM TABS, GPS (Includes Radar), AUTOPILOT, DEPTH SOUNDER, VHF, HORN, WIPERS.

8 - Check Lights

If the boat is to be operated after sunset or in reduced visibility or fog, TURN on NAVIGATION LIGHTS & SEARCHLIGHT and check that they are working.

9 - Start Engine

⚠ CAUTION See Pages 13-15 of this Owner's Manual for specific instructions on operating the new electronic controlled engine.

10 - Check IPS, Steering and Trim Tab Function

With the engine controls in Neutral, push the left button under the IPS joystick and listen for a confirming beep. Briefly test its operation with a slight tap in any direction.

⚠ CAUTION Make sure that no one is on the foredeck or handling a dock-line when this test is performed. Also check that the trim tabs are working properly, and that the steering turns smoothly.

11 - Final Checks

Before departing, make sure the engine and house batteries are being charged. (Note: by design, there is a delay between starting the engine and alternator charging.) Make sure your navigation plans have been prepared and that all equipment is functioning (even that which you don't necessarily intend to use). Check your fuel and water levels. Be sure the anchor is secured.

12 - Casting Off

When you are confident that everything is in order, cast off all dock lines and when maneuvering with the IPS joystick remember that a light touch (taps) on the joy stick with short bursts are usually sufficient to move the boat in the direction desired.