



53z OWNERS GUIDE



“Believe me, my young friend, said the water rat solemnly, there is nothing, absolutely nothing, half so much worth doing as simply messing about in boats. Simply messing...nothing seems really to matter. That's the charm of it. Whether you get away, or whether you don't, whether you arrive at your destination or whether you reach somewhere else, or whether you never get anywhere at all, you're always busy, and you never do anything in particular...”

...*The Wind in the Willows* by Kenneth Grahame

Dear 53z Owner,

Congratulations on becoming the owner of an MJM 53z, awarded the distinction of being the “Best New Powerboat Over 35 Feet” at the Newport International Boat Show the year she was introduced. We’re dedicated to making you not only proud owners of the world’s best in class, but to you having the most pleasurable boating experience possible. As you read this guide and share cruising adventures, we hope you’ll discover our mission has been accomplished. Your MJM is built of the highest quality materials, a composite of epoxy, E-glass and Corecell, that contributes to MJMs being the most fuel-efficient yachts of their type by a wide margin.

The same is true in the selection of equipment suppliers and cabinetmakers. MJM 53z is certified as ISO Category A Ocean. 53z leads the outboard market with unusually complete standard specifications and amenities. The boats are safe, reliable, easy to handle by one person, and high performers. Last but not least, and our number one design mandate, they turn heads everywhere they go.

In addition to this Owner’s Guide, and primary in terms of authority, are two large binders filled with equipment supplier manuals and warranties. These documents contain an enormous amount of important information. Please keep them accessible for reference when you have an issue or question not covered in sufficient detail by this guide. You can download most from supplier websites and install them on your display. This guide reflects our experience from building over 300 MJMs. I personally have spent more than 6000 hours cruising on MJM yachts, so I want to impart some advice and background information, along with the “how to do it.” See comments in the blue sidebars. As you enjoy your new boat, remember that much of the equipment contains computer chips that can sometimes have glitches, which are often corrected with a re-boot.

With proper safety precautions and good weather planning, may you spend many enjoyable hours on your new vessel!

Peter L. Johnstone

Chairman

(252) 599-0223

peterj@mjm-yachts.com

Boat Information

MODEL 53z Downeast

HIN NUMBER EOU53z

DESIGN PATENT US D475 338S (3 June 2003)

DELIVERY DATE _____

AIS MMSI NO. _____

REGISTRATION NO. _____

ENGINES Quad Mercury Verado

MODEL _____

SERIAL NUMBERS _____

PROPELLORS _____

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John Clermont

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DEALER _____

BROKER _____

PHONE _____

EMAIL _____

MJM 53z QUICK START GUIDE

Here's a checklist for an experienced captain, familiar with operation of Mercury Verado outboards equipped with Joystick Piloting. Reference information in this guide and accompanying binders.

Check that:

- ☐ Raw water strainers of GENSET and AIRCON units are clear and oil level of GENSET is OK in Genset compartment under hatch aft of pilothouse sliding door.
- ☐ Raw water strainer of SEAKEEPER is clear in aft large hatch w/lift operated by rocker switch in cockpit seat locker. Place deck chairs under table facing inboard against table legs. Shut side doors.
- ☐ Outboard Engine oil levels (4) are up into the hash marks on the dipsticks.
- ☐ HOUSE BATTERY switch is ON with at least 12.2V showing on the electrical panel.

Start Generator to use SEAKEEPER or AIR CONDITIONER underway.

- ☐ Turn ON GENERATOR BATTERY switch. Wait 3 minutes (programmed delay for exhaust fans)
- ☐ Push START on Westerbeke Genset Panel under helm console. Don't hold down the switch.

Disconnect 50 Amp Shore Power –

- ☐ Turn OFF the SHORE POWER breaker at top right of 240V AC panel and slide up the cover to expose
- ☐ Turn ON the GENERATOR breaker to power 240V and 120V circuits with TRANSFER switch ON.
- ☐ Turn OFF the Dock Pedestal breaker, then using small gray fob or rocker switch under cockpit seat locker retract the 50A power cord with Glendinning reel. Glendinning 12V breaker should be ON. t

Activate Inverter - If 240V SEAKEEPER or AIR CONDITIONER will not be used underway.

- ☐ Turn OFF GENERATOR breaker if running. Let it cool for a minute then: Push STOP on the Westerbeke Panel to shutdown GENERATOR.
- ☐ Flip ON the PHOENIX INVERTER CONTROL toggle switch
- ☐ Rotate TRANSFER Lever to INVERTER for 120V AC circuits.

Activate 12 Volt Equipment on Raymarine Digital Panel

- ☐ Turn ON TRIM TABS, ELECTRONICS, HORN, WIPERS, FW PUMP, HEAD, BOW THRUSTER, GYRO and other breakers for equipment used underway... such as NAVI LIGHTS and SEARCHLIGHT if at night.

CAUTION If batteries are low, don't leave the dock until you diagnose and correct the problem.

Start Engines

- ☐ Turn ON red ENGINE BATTERY switch (to all 4 engines) above the 240V AC panel.
- ☐ Insert TPS key fob (Theft Prevention System) into its slot above the electrical panels.
- ☐ Turn to ON ENGINE KEYS above electrical panels (ignore START as that happens on deck).
- ☐ Wait for for Green "Systems OK" Light on Mercury Vesselview.
- ☐ Select "Engine Page" on VesselView and check engine battery voltage in top center.
- ☐ Lower ENGINES using rocker switch on port control handle, confirmed by trim bars on VesselView
- ☐ Momentarily TOUCH engine start buttons to starboard of wheel. Don't hold them in. It's automatic.
- ☐ Tap JOYSTICK lightly in any direction to insure it is functioning. The rim lights up GREEN.
- ☐ Push BOWTHRUSTER side-by-side buttons simultaneously to activate.

Cast Off **CAUTION** Confirm that no one is on the foredeck or in the water.

- ☐ When clear in open water, Move SHIFT LEVER forward out of neutral to automatically disengage the JOYSTICK. The JOYSTICK is automatically ready to use when SHIFT is in neutral.

CE CERTIFICATION

CERTIFICATE NO.

AUTHORITY: ADDRESS:

PHONE

WEBSITE

CLASSIFICATION

BBBW

International Marine Certification Institute

Rue Abbe Cuypers 3

B-1040 Bruxelles, Belgique

+32-2-741-2418

www.imci.org

ISO CE Mark Design Category A Ocean (EC Directive 94/25/EC) for craft designed for offshore voyages (1) where the vessel is correctly handled in the sense of good seamanship and operated at a speed appropriate to the prevailing sea state and (2) with significant wave heights above 4 m (calculations are based on 7 m) and wind speeds in excess of Beaufort Force 8, but excluding abnormal conditions, e.g. hurricanes.

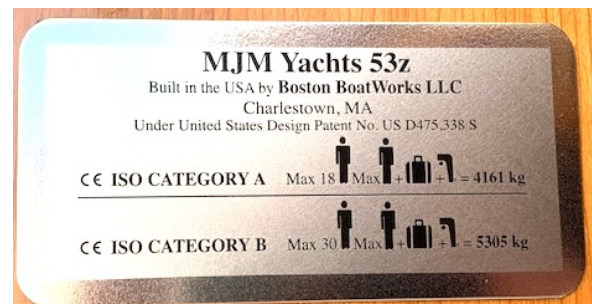
CAPACITY

PERSONS

PERSONS/GEAR

Maximum 30 Persons when Offshore and 18 Persons for Ocean.
Maximum Load 5365 kg and 4161 kg respectively

RECEIPT BY OWNER In compliance with ISO 10240:1995(E) the owner hereby certifies receipt of this manual and has read and agrees to the terms of the Builder's Limited Warranty included herein.



NAME

Signature

Printed Name(s) and Date

BOAT

Boat Name and Hull Number

CONTACT INFORMATION

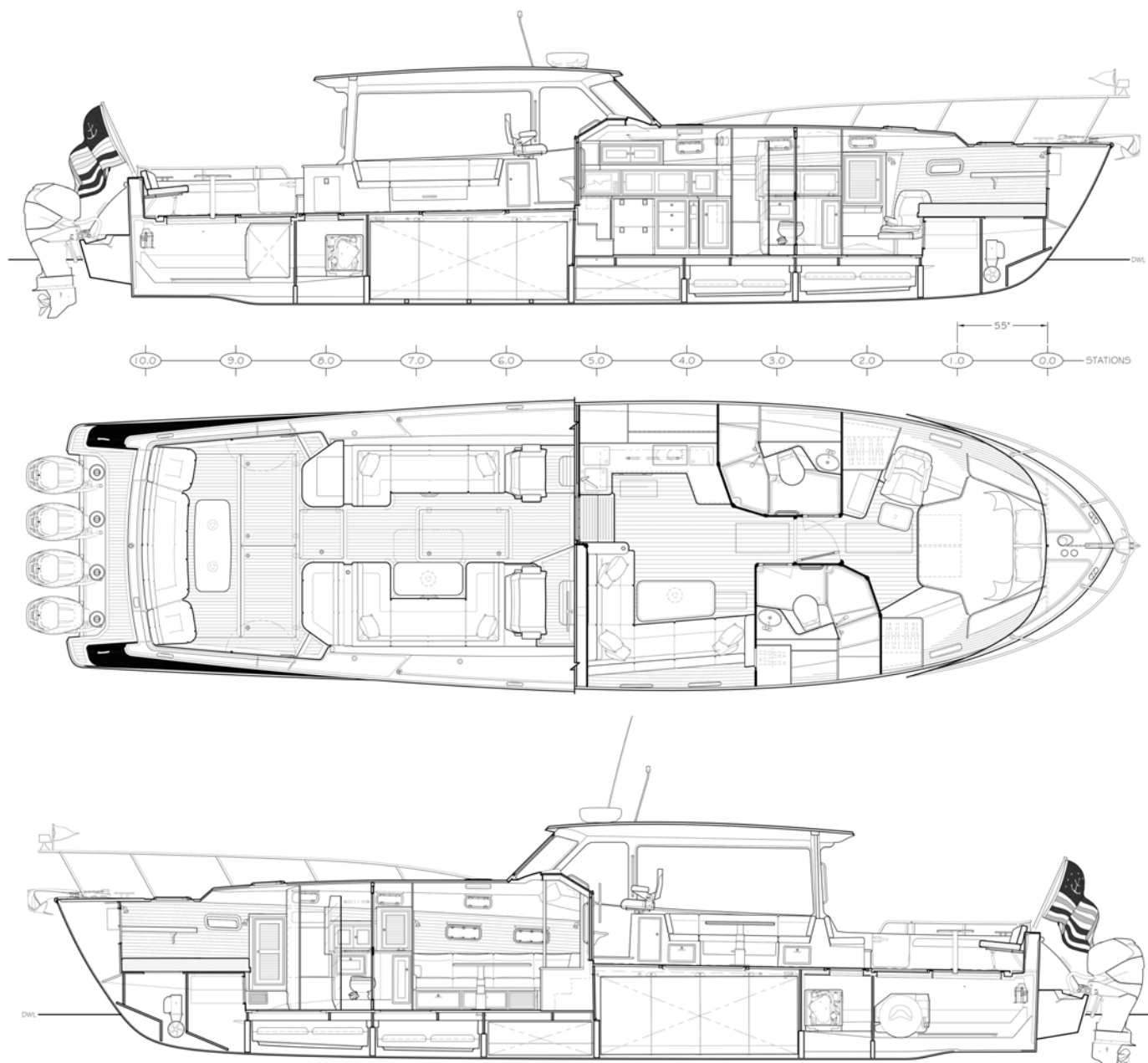
Street Address

City, State, Zip

Mobile Phone

e-Mail

Please sign a copy of this page, scan it and return it via email to info@mjmyachts.com.



MJM 53z

LOA: Length Over-All including engines down & bow roller 56.3 ft.
 LOD: Length on deck (LOD)..... 53.0 ft.
 Beam (Maximum width on trailer) 15.0 ft.
 Maximum Lift weight (full tanks, no crew).....37,500 lbs.
 Draft with Engines (Up) Down (27") 37"
 Displacement (1/2 Load).....33,669 lbs.
 Fuel tank.....910 gal.
 Fresh water tankage (including hot water tank).....120 gal.
 Holding tank2x30 gal.
 Air height above water to top of radar dome mounted on hard top 11.0 ft.

1 INTRODUCTION

1.1 PURPOSE AND LIMITATIONS

This purpose of this *Owners Guide* and the equipment suppliers' manuals in the accompanying binders is to provide you with an overview of the yacht's equipment, operation, systems and maintenance. The staff at MJM and Boston BoatWorks have taken pains to edit this guide for accuracy in good faith. Most of these topical require further study and learning by the captain of a vessel who assumes extensive responsibilities for safe operation of the vessel and for safety of the crew.

This summary guide of yacht equipment and operation will never be complete or accurate in all respects. And, since we frequently make improvements, we assume no responsibility for missing information or errors contained herein. This document doesn't replace common sense nor qualify the reader in safety practices, boat handling or navigational skills. Mastering these systems and the skills of seamanship is each owner's/captain's responsibility. If this is your first yacht, or if you're changing from a different type of yacht, please get instruction and experience before assuming command. Your dealer, yacht club, marina or the US Power Squadron <https://www.usps.org> are all good resources that can recommend licensed captains, schools or other instructional entities.

Although this guide and the accompanying binders describe systems on the boat, they don't qualify you to work on them. When they need attention, please use qualified and certified trades personnel. If you question the information or are unsure about an action, check with the equipment supplier, a qualified person or us.

The *Appendix* includes other useful information. And there's a chapter on the people who create MJM yachts you can contact if you need help. Study these resources to understand how to operate your yacht safely.

DANGER The operation of a powerboat can be dangerous. Pay careful attention to safety notices in this guide and in the manuals in the binders.

Keep this guide in a secure place on the boat. If you sell the yacht, please give this copy to the new owner.

1.2 STANDARD SPECIFICATIONS

You may download the latest version of this guide and the standard specifications for a MJM 53z from <http://www.mjmyachts.com/53z> to install on your computer, an iPad or navigational display.

1.3 CONVENTIONS

When we reference a specific device or item of equipment on the boat, it will be in all caps, such as HOUSE BATTERY.

As we describe each device we often use the following order.

1. BREAKER PANEL settings
2. Function, what it does
3. Directions for use
4. Advice or comments in a sidebar
5. The URL for the manual if available

This guide is published in accordance with ISO standard 10240:1995E Small Craft - Owner's Manual. Please contact us if you have a question about the material in this book, if you find a conflict between this material and the material in the binders or if you find an error or important omission on the following pages please contact Customer Service at Boston Boat Works.

...R.L.J.

2 SAFETY and some USCG REQUIREMENTS

2.1 BINDER MANUALS

The equipment suppliers' manuals in the accompanying binders have many safety notices that relate to their products, their operation and maintenance and their use in the boat. Ensure that you understand this essential information before you operate the boat. Spend time reviewing the safety procedures, how safety equipment works and where it's stowed. Instruct guests in safety procedures.

2.2 STANDARD EQUIPMENT

VHF Radio BREAKER PANEL settings: ELECTRONICS breaker on. The VHF RADIO may be used for receiving weather broadcasts, communicating with harbors, locks (ch13), bridges (ch 9), marinas, the U.S. Coast Guard (USCG), rescue services boats and other boats. The USCG monitors channel 16. If you normally have your radio tuned to channel 16 you can listen for emergency calls from nearby boats or be able to make an emergency call quickly. Don't use Channel 16 for a private conversation.

MMSI Number The radio has Digital Selective Calling (DSC). It's arguably the most important piece of safety equipment on the boat. There's a one-button emergency transmit button that sends a Maritime Mobile Service Identity (MMSI) number to the USCG. The signal identifies the boat. It's interfaced with GPS so your position will be sent with the emergency message. The Automatic Identification System (AIS) will report your MMSI number to other vessels and you will see their MMSI number. If you sell your boat, log onto your account to cancel the MMSI number, so the new owner can register, acquiring a new MMSI.

In addition to the safety function, an MMSI number is like a phone number. You can make a call to another DSC-equipped vessel if you know its MMSI number. Only the vessel being called will receive the hail.

BoatUS <http://www.boatus.com/MMSI/> is authorized by the Federal Communications Commission and the USCG to assign MMSI numbers. The *Installation and Operation Instructions* for the VHF RADIO included in the binder explains how to install the MMSI number in your radio. It also explains how to use the VHF RADIO. It may be downloaded at:

<https://raymarine.app.box.com/s/grwg60669c5sozf6iolq/1/2757682985>

The Horn BREAKER PANEL settings: HORN breaker on. The USCG requires a "Sound Producing Device" for signals under many circumstances. The HORN is operated from a switch on the CONSOLE SWITCH PANEL at the helm. The adjacent UNDERWAY HORN/ANCHOR switch has programmed signals. (See page Error! Bookmark not defined..)

CAUTION Electronics fail. It's wise to have a portable VHF radio, GPS receiver, SEARCHLIGHT and HORN that are battery operated and hand held.

Fire Extinguishers See *EMERGENCY DIAGRAM* page 5 for Fire Extinguisher locations when the boat is delivered.

Carbon Monoxide Detector See *EMERGENCY DIAGRAM* page 5.



To send a distress call (without specifying its nature) press and hold the red distress key for 3 seconds. See *Ray218E/Ray55E Installation and Operation Instructions*.

Companionway Hatch Board or Closure A companionway board with the label "DON'T REMOVE WHILE UNDERWAY" is provided to comply with ISO requirements for cockpit draining and to prevent large waves from crashing down into the cockpit, running forward and entering the interior of the boat if the companionway door is not securely closed.

Better to just secure the companionway slider and lid. It's quieter, prevents someone from being pitched below and provides a Chart Kit navigation surface.

---R.I.J.

Going Onto the Foredeck in Rough Weather. Primary access to the foredeck is intended to be via the forward cabin hatch... for instance to secure an anchor that has come loose from the windlass and poses a hazard. ISO requires that a Jackstay be fitted to access the foredeck in heavy weather. The jackstay should be secured to a foredeck cleat prior to entering rough seas then led aft port or starboard inside the bowrail stanchions and anchored to a secure point aft of the pilothouse. A proper offshore harness with lifejacket should be worn to secure yourself to the jackstay.

2.3 COMMISSIONING PACKAGE SAFETY ITEMS

The Commissioning Package Option, if purchased with your boat, will have:

- A copy of the U.S. Department of Homeland Security United States Coast Guard Navigation Rules to be on board. It also may be downloaded at: <http://www.navcen.uscg.gov/pdf/navrules/navrules.pdf>
- A First Aid Kit
- Twelve wearable USCG approved personal flotation devices (life-jackets) and one type IV throwable PFD
- A 12-Gauge Flare Kit
- A Hand-held Bilge Pump
- A Hand-held LED Flashlight
- Paper Charts

2.4 USCG REQUIRED EQUIPMENT

A Boater's Guide to the Federal Requirements for Recreational Boats, published by the USCG, lists required safety items. The Guide may be downloaded at: <http://www.uscgboating.org/images/420.PDF>. Check state regulations where you cruise for other requirements.



2.5 ADDITIONAL SAFETY EQUIPMENT

There are many other items of safety equipment to consider such as:

EPIRB (Emergency Position Indicating Radio Beacon) alerts search and rescue services by transmitting a coded message and is detectable by satellite anywhere in the world. Although the USCG doesn't require them, EPIRBs are essential offshore and desirable anywhere.

Inflatable Life Raft isn't required but prudent. Rafts come in compact sizes that can be stored in a cockpit locker. A dinghy isn't a substitute for a life raft.

Heaving Line is handy to have for emergency or to simply trail behind the boat (if the engines are off) attached to one of the stern cleats when people are swimming. Polypropylene is good because it floats.

A Storm Anchor is useful as a back up and for situations when two anchors are prudent or necessary.

2.6 SOME ADDITIONAL USCG REQUIREMENTS

In addition to the above safety equipment, the USCG requires:

Ships Registration and Documentation Carry the Vessel Registration, either the state-issued Certificate of Number or Vessel Documentation if federally documented with the USCG. It's wise to have your insurance as well.

Pollution Regulation Plaques You are required to post three visible placards in the boat that stipulate that waste must be managed; that oil discharge is prohibited and deposit of any refuse matter of any kind into the waters of the US is prohibited. West Marine has such plastic placards with adhesive backs that are available at little or no cost.

2.7 FUEL SHUT-OFF VALVES

The first thing to do if there is a fuel fire or leak is stop engines, turn off ignition and engine battery switches and close fuel shut-off valves by turning them perpendicular to the hose. They are located under the large central hatch in the pilot house sole. If there is fuel in the bilges, close valves, find the source of the leak and then clean bilges.

2.8 FIRE SUPPRESSION

An automatic, heat-activated, fire suppression system is installed in the generator compartment. It can be activated manually at the helm station. To prevent the engines from evacuating the fire suppression agent when it discharges, the system will shut off blowers and generator. Refer to the manual for maintenance instruction.

Hand-held fire extinguishers (see *Emergency Diagram* following for locations) are rated to fight type A, B & C fires. To extinguish a fire, first cut the source of fuel to the fire. In a fuel fire, turn off the fuel tank valves. In an electrical fire, turn off the BATTERY switches.

Fire safety begins with prevention. Reduce fire risk with these guidelines:

- Don't allow debris or oily rags to collect anywhere.
- Check bilges for oil or fuel regularly.
- Shut down unnecessary circuits when leaving the boat.
- Don't leave heat-producing appliances or equipment unattended.
- Inspect fire suppression equipment regularly and learn how to use it.

DANGER Exhaust gas contains carbon monoxide. It's colorless, odorless and lethal. Avoid inhaling. Inspect the exhaust system regularly. Idling engines at a mooring or at a dock isn't good for the engine and may allow gasses to accumulate in the cockpit or cabin.

DANGER Don't work on any mechanical or electrical equipment unless you're qualified. Electrical current and moving parts are dangerous and can be lethal.

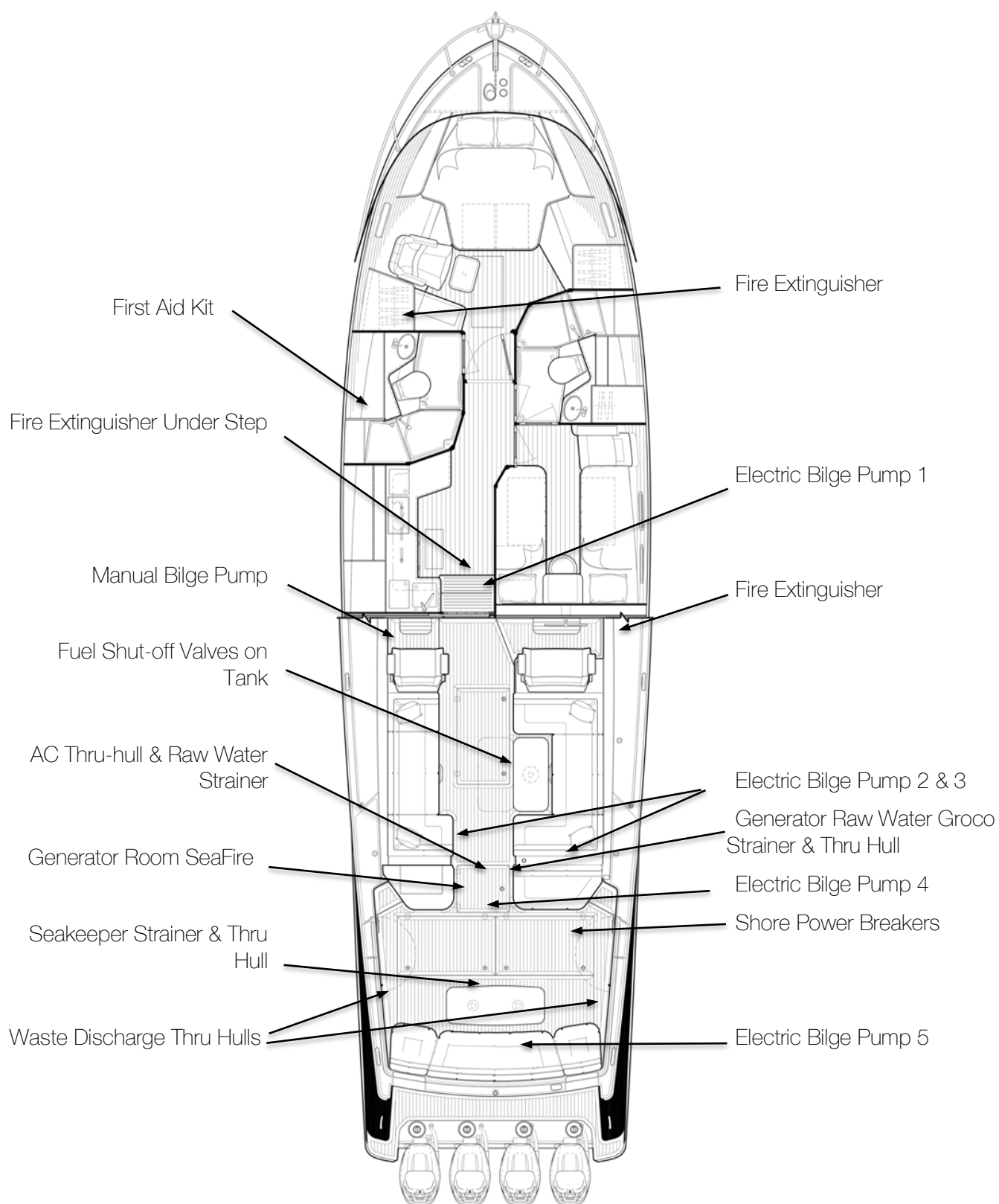
2.9 NOTICES

CAUTION Denotes a reminder of safety practices or directs attention to unsafe practices which could result in personal injury or damage to the craft or components.

WARNING Denotes a hazard that exists which can result in injury or death if proper precautions aren't taken.

DANGER Denotes an existing extreme intrinsic hazard that would result in high probability of death or irreparable injury if proper precautions aren't taken.

2.10 EMERGENCY AND THRU HULL DIAGRAM



3 PROPULSION

3.1 3.1 ENGINES

The MJM 53z is propelled by quad Mercury Verado 400 HP 4-stroke, 6-cylinder in-line outboard engines with HD heavy duty drives with 4-blade Evolution-4 stainless steel propellers. When raised, engines are out of the water, except for the tip of the two center engines. Mercury advises that's not to be a fouling issue.



3.2 ENGINE CHECKS

See "Mercury Operation & Maintenance Manual (MOMM)" provided with your MJM. Before long trips, check hydraulic steering fluid level under the rear cockpit seat and engine oil level by removing the top cowl.

Top Cowl Removal to access most maintenance points. To tilt the engine closer, making this easier, use the small black AUXILIARY TILT SWITCH on the port side of the engine just below the top cowls.

Pull up on the top cowl latch on the back of the engine.

Pull the top cowl forward and lift off.

Remove dipstick on port side of engine to check oil, then securely reinsert.

To put the top cowl back on: Position the top cowl loosely in place on the rubber seal all way round.). Push down on the cowl until it clicks into place. Make sure it's secure by pulling up on the back.

Carbon Streaks rub off with a swipe of the hand when hosing down boat.

Water Separating Fuel Filters should be replaced every 100 hours or annually. They are located, port and starboard on the forward bulkhead of the generator compartment. If there is water in the fuel an alarm will show on the Vesselview display. If you "OK" and it remains off for awhile, keeping an immediate dumping of the water may not be



necessary. If persistent, shut down the engines and fuel lines (under the cockpit sole hatch), detach wire to the filter, unscrew filter and dump water out. To replace, reverse procedure.



Check Fuel Level The primary cause of engine failure is running out of fuel. There's a fuel level sensor in the 910 gallon tank and read out on VESSEL VIEW.

3.3 FIVE STEPS TO STARTING THE ENGINES

CAUTION Ensure there are no lines and hoses in the water near the props.

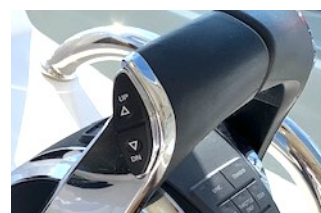
1. Turn on the MASTER ENGINE BATTERY rocker switch over the panels.



2. Insert the TPS fob into its slot between the 4 engine ignition keys which are then turned to ON (not "Start" as that's done at the console).



3. Be sure the Mercury Vesselview is activated and press OK to acknowledge.



4. Lower engines using the rocker switch on the port control handle. Ensure the ENGINE/SHIFT CONTROL LEVERS are in neutral. The engines won't start if either lever is in gear.

DANGER Don't start the engine if people are in the water nearby.

5. Start engines Push and immediately release the engine start button for each engine to starboard of the wheel. Do not hold them in as process is automatic until engine starts.

If you don't hear the engines (these are quiet boats) look at the VESSEL VIEW DISPLAY panel to see they read 500-600 rpm idle. Also check to see if the Joystick base rim lights up GREEN indicating that it is active. See JOYSTICK PILOTING



CAUTION The boat may move abruptly when the 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.

WARNING If a warning light or buzzer activates, stop the engine immediately. Determine the cause and repair the problem before continuing to operate.

3.4 STOPPING THE ENGINES

Put ENGINE/SHIFT CONTROL LEVERS in neutral. Push the lower STOP buttons on START/STOP Panel. The green base of the Joystick goes out and RPMs go to "0". Once the engines have been raised, Reverse the Start process by turning of Ignition Keys, pulling out the TPS fob (and hiding it) then truning off the two ENGINE BATTERY SWITCHES.

It is unnecessary to remove the ignition keys, since they are below and the TPS fob is hidden ENGINE BATTERY SWITCHES are off and the cabin is locked.

A reboot can solve mysterious issues and even obvious ones like after wrapping a stern line around a prop. after which the joystick control starts acting crazy. Electronic engine controls are computers. Mysterious problems may be caused by unusual switching sequence. They can often be fixed with a reboot. Stop the engines. Turn everything off—shut down the entire boat. Wait at least 10 seconds. (My printer and router call for 25 seconds.) Then turn HOUSE BATTERY and ENGINE BATTERY switches on (but not the ENGINE EMERGENCY, PARALLEL switch). Go on deck. Turn Ignition switches on at the helm. Wait until the Vessel View shows data and has gone through its initial warm up. Then start the engines and check the Joystick Control functions.
...R.I.J

WARNING Engine work should not be done with the engine running unless specified by the manufacturer for a specific reason and done by a qualified marine mechanic. Stop engines before opening engine hatch.

3.5 NEW ENGINE BREAK-IN

When running the engine for the first time, frequently check oil pressure, coolant temperature (normal is 145°), exhaust color, engine vibration, sounds and the operation of indicators and gauges. Don't run the engine at a constant RPM for long periods of time or apply full throttle for more than about 30 seconds.

Lubrication During the first 10 hours of operation, high oil consumption is typical. Change oil between 50 and 100 hours. Consult the MOMM for the proper oils for the climate where the boat will be operating.

3.6 OPERATING PARAMETERS

Pay attention to the engine data on the VESSEL VIEW or displayed on the Raymarine Axiom Pro 16S data bar. A significant change in oil pressure, coolant temperature or pressure, or voltage drop should be quickly investigated before the engine is damaged. Data should read approximately:

- Oil Pressure: 50 psi at 3000 RPM or more.
- Coolant Temperature: 145° F to 165° F
- Coolant Pressure over 3000 RPM: 15-25 psi.
- Charging: 13-14 Volts underway

While Mercury has run their engines for 300 hours straight at max RPM without damage, a good fast cruising speed is 34-35 knots where 80 gph fuel consumption on the Verado 400's can be optimized to achieve about .43 nmpg at 5100-5300 RPM. Listen and feel for sweet spots. If you hear abnormal sounds, stop the engine and inspect.

3.7 LEAVING THE BOAT

With SHOREPOWER connected - Leave 12v HOUSE BATTERY switch on, as well as HOUSE BATTERY AND START BATTERY CHARGERS and REFRIGERATOR breakers on And, on AC Panel: leave AIR CONDITIONER and AIR CONDITIONER PUMP breakers on.

Check that BILGE PUMP switches are set to AUTO

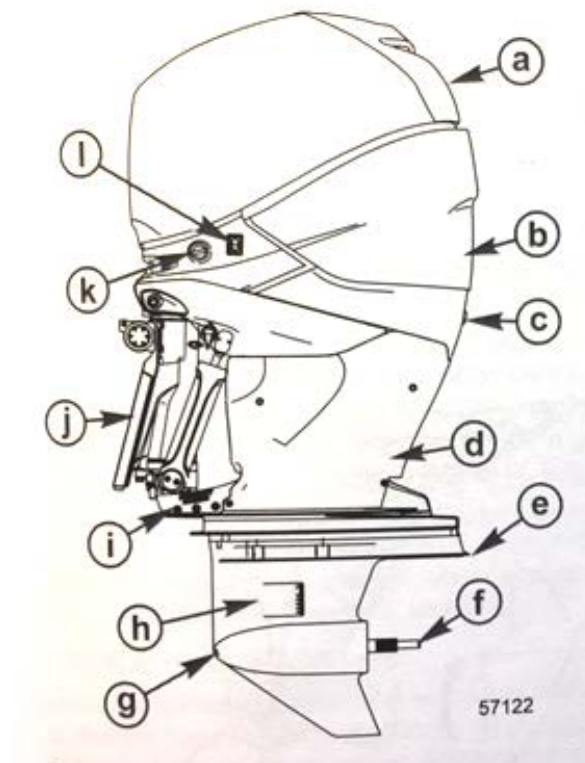
Turn INVERTER toggle switch on PHOENIX CONTROL to "Off"

If moored or with no shore power or , If gone for more than a week, it's best to turn everything off, including the MAIN INVERTER UNIT itself under the starboard forward cockpit locker, to avoid the risk of having dead batteries when you return.

Or, take advantage of the optional **156W SOLBIEN SOLAR PANEL**. With INVERTER on It is designed to keep REFRIGERATOR and FREEZER going with a trickle charge to the HOUSE BATTERIES if not connected to Shore Power.

3.8 FLUSHING THE Engines If you plan to let the boat sit for more than a few days, MOMM advises to flush the engines by hooking up a dock hose to the flush connector on the port side of the engines next to the auxiliary lift button and letting it run for about 15 minutes. See MOMM page 70.

3.9. MERCURY VERADO ENGINE



- a. Top Cowl
- b. Rear Cowl
- c. Idle Relief Exhaust
- d. Lower Cowl Chaps
- e. Anti-Ventilation Plate
- f. Propeller Shaft
- g. Low Water Intake Holes
- h. Water Intake Holes
- i. Trim Guide Plates
- j. Pedestal
- k. Engine Flush
- l. Auxiliary Lift Switch

3.10 PERFORMANCE DATA

The official Mercury Marine performance chart below was compiled June 19, 2019 on Narragansett Bay with Founder, Bob Johnstone and Mercury technician Travis Hayes aboard BREEZE, 53z #1. A computer was hardwired to the engine and GPS, so that human interpretation/error, as with many magazine boat tests, was eliminated.

Mercury's software program produces the tables.

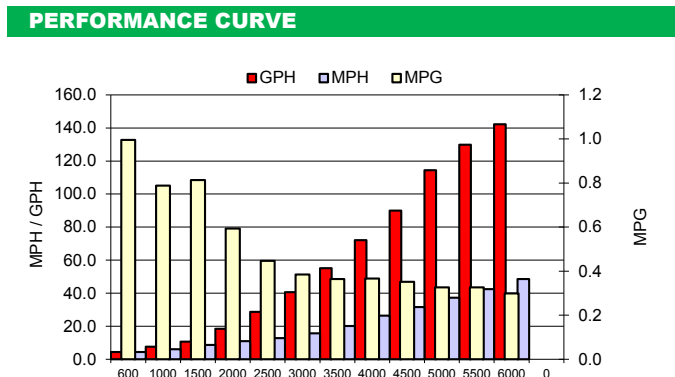
Subsequent experience on extended runs indicates that the boat can sustain cruising speeds of about 34 knots, consuming 80 gallons/hour with half-load of about 34,000 lbs.... which is better than the boat's initial seatrials. Easy enough to check on your own boat by comparing RPM with fuel consumed on VesselView

TEST CONDITIONS	
Test Date	6/19/2019
Test Conductor	thayes3
Boat Weight as Tested (lbs)	37500
Air Temperature (degrees F)	64
Elevation (ft)	0
Sea State	calm
Wind Velocity range (mph)	5
Fresh/Salt Water	Saltwater
Fuel Level at Testing (gal)	800

ENGINE SPECIFICATIONS	
Number of Engines	4
Engine	L6SC Verado
Horsepower	400
Cylinders	6
Drive or gear model and ratio	HD Camber 1.75
Mounting Bolt Hole	3,2,2,3
Engine Height (in)	0.0,0.0,0.0,0.0
Engine Setback (in)	0.0,0.0,0.0,0.0
Engine Length (in)	20,30,30,20

PERFORMANCE SUMMARY		
Top Speed (mph @ rpm)	51.1	6464
Acceleration 0 - 20 mph (seconds)	6.65	
Acceleration 0 - 30 mph (seconds)	11.97	

PROPELLER SPECIFICATIONS	
Mercury Name	Revolution 4 XP
Material	Stainless Steel
Pitch	17.0,17.0,17.0,17.0
Number of Blades	4



BOAT SPECIFICATIONS	
Region/s sold	
Manufacturer	MJM
Website	
Boat Model	53z
Boat Type	Sport Yacht/Yacht
Material	Material
Length (ft)	56.2
Beam (ft)	15
Max hp Capacity	Yacht
Fuel Tank Capacity (gal)	910
Steering Type	Joystick
Dry Boat Weight (lbs)	33669

PERFORMANCE DATA				
RPM	SPEED	FUEL CONSUMPTION	FUEL CONSUMPTION	RANGE
RANGE	MPH	GPH	MPG	MILES
600	4.4	4.4	1.0	906
1000	6.1	7.7	0.8	718
1500	8.7	10.7	0.8	740
2000	11.0	18.5	0.6	540
2500	12.8	28.7	0.4	407
3000	15.6	40.7	0.4	350
3500	20.1	55.2	0.4	331
4000	26.4	72.1	0.4	333
4500	31.6	90.0	0.4	320
5000	37.3	114.4	0.3	297
5500	42.4	129.8	0.3	297
6000	48.6	142.3	0.3	272
0	0.0	0.0	0.0	0
0	0.0	0.0	0.0	0

4 INSTRUMENTS AND CONTROLS

The following material includes selected summaries of Mercury *Operator's Manual (MOM)* included in the binders. Please read the entire manual for safety instructions.

4.1 HELM STATION

Most of the boat's controls and instruments are at the helm station. Below is the layout on BREEZE #1. The respective circuit breakers must be on for the equipment to operate.

53z power steering rotates outboards through a 20° arc. The steering is more positive and immediate than deflecting prop wash off a rudder from a propeller on a straight shaft and far more positive than directing a jet of water at water passing the hull..

...R.I.J.

- 1 Ritchie Compass
- 2 Raymarine Axiom Pro S 165 (2)
- 3 Mercury VesselView
- 4 Console Switch Panel
- 5 Multi-display w/Large Depth
- 6 Seakeeper Control Panel
- 7 Searchlight Control
- 8 Mercury Joystick Piloting
- 9 Humphree Manual Trim
- 10 Flip Down Drink Holder
- 11 PH Light Switches (uncer 13)
- 12 Bilge Pump Controls (5)
- 13 Wiper Controls
- 14 Engine Start/Stop (4)
- 15 Anchor Counter Up/Down
- 16 Genset Control Panel
- 17 Pilot House Air Con
- 18 Bow Thruster.



ESTHEC RISER (OPTION) This 4" high removable riser improves visibility for someone shorter than 5'5". It locks into place with a barrel bolt and can be stored in one of the settee lockers.

4.2 MERCURY FEATURES AND CONTROLS (PAGES 56 -71)



4.3 JOYSTICK PILOTING



The Mercury Joystick Piloting functions very much like the Volvo Penta IPS, except it's more automatic.

MOVE Engine Controls to Neutral. The ring at the base of the JOYSTICK lights up Green to show that it's active.

TWIST Joystick to turn the boat or LEAN Joystick in direction desired or do both at same time While PUSHING Joystick forward or aft... without going back to center.

PUSH ADJUST “+” for 100% torque (shows 2 lights). PUSH “-“ for 50% torque (1 light). “+” is recommended.

ENGAGE Engine Controls to deactivate.

AUTOPILOT Press boat outline button (Lower Left of Joystick) to engage Autopilot.

TAP Joystick port or starboard to alter course by 1 degree increments. Beep confirms.

TWIST and RELEASE to alter Course in 10 degree increments.

In an emergency, you can forcibly TURN the wheel to disengage the autopilot

WAYPOINT TRACK Press “Tri-circle” diagram on starboard side of joystick to set course to WP-1 of course plotted on Raymarine display. Upon arrival at WP-1, there will be an audible beep. Push “Tri-circle” button again to set course to WP-2, etc.

SKY HOOK PUSH “SKYHOOK” button to hold heading and GPS position. GREEN necklace turns BLUE to indicate it is active. Seakeeper gyro helps greatly here, too, so waves don't readily throw the bow around.

Bow Hook With SKYHOOK activated, PUSH “Bowhook” on Vessel View screen to hold GPS position, but unlock compass heading allowing boat to point into direction of wind/current so engines don't have to work so hard to keep boat in position. See illustration at LEFT.



4.4 MERCURY VESSELVIEW 703.

The Mercury VESSELVIEW lets you choose settings and information to be displayed. *Refer to the following VesselView 703 Quick Guide.* This panel is activated when the engine ignition keys are turned on.

Please read Raymarine Axiom Display Operating Instructions, available on Axiom display, in Manuals supplied or at:
<https://raymarine.app.box.com/s/rb0rijlwkwla2h16k4d9iuf7tzbw2bs7>

4.5 BOAT SPEED over ground (SOG)

This is GPS derived data displayed in the bar at the top of the Axiom Pro 16, on the MULTI Or on VESSELVIEW. Wind and current affect speed over ground so SOG isn't the same as speed through the water using a paddlewheel sensor.

4.6 HEADING The yacht is equipped with three devices that should display a bearing within a degree or two of each other. If not, employ a professional adjuster.

1. The RITCHIE COMPASS on the dash
2. A DIGITAL COMPASS
3. The GPS COG (Course Over Ground) on the MFD or VESSELVIEW

CAUTION Don't store ferrous items near the DIGITAL COMPASS SENSOR.

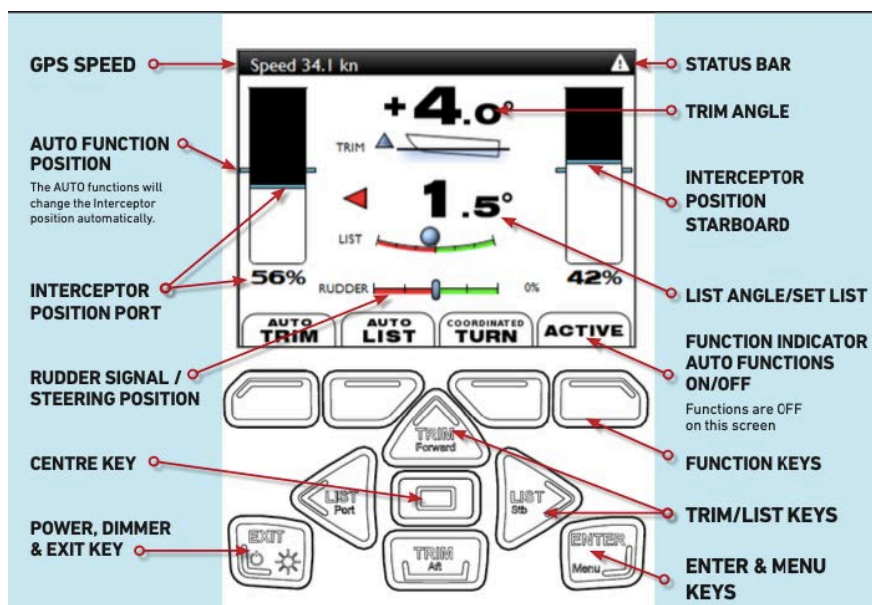
4.7 TRIM

There are 2 inter-related WAYS to control trim.

ENGINE TRIM Bow up or down trim can be achieved by tilting the outboards, using the buttons on the top of the ENGINE CONTROL LEVER. Best to first use this method of lowering the bow rather than trim tabs, as the boat will be quieter running if the exhaust coming out of the prop hubs is kept deeper in the water. The degree to which they are angled down is displayed graphically by horizontal red bars on VesselView.

HUMPHREE INTERCEPTORS At DC Panel Turn TRIM TABS on. With no side wind or leaning of the boat, initial trim can be achieved by adjusting bow up or down angle using the buttons on the top of the ENGINE CONTROL LEVER to change the angle of the outboards. They are quieter when all the way down to submerge the exhaust from the hub.

I usually start with the engines all the way down with the Trim Tabs at 3-4 degrees to minimize bow rise when accelerating. At higher 30+ knot speeds, the angle can be reduced. .
 ...R.I.J.



MERCURY ACTIVE TRIM ON VESSELVIEW The engines can be set up to trim automatically in accord with settings which you can adjust based on experience. SEE THE ACCOMPANYING INSTRUCTIONS FOLLOWING THIS PAGE.



4.8 SEARCHLIGHT

DIGITAL PANEL > HELM CONTROLS > push SEARCHLIGHT on. Then turn on the light by depressing the on/off button on the control panel..

The SEARCHLIGHT is a powerful LED appliance that may be operated with its joystick on the helm console. The LEDs draw less power (only 2.8 amps at 13.8V) than previous incandescent devices.

With the joystick on the dash control, rotate your light to the desired location.



4.9 MULTIFUNCTION DISPLAY (CONSOLE DIAGRAM #5)

ACTIVATED when ELECTRONICS turned on at Digital Panel in Companionway

The primary purpose of the MULTI FUNCTION DISPLAY (MFD) is to show depth in big numbers. The depth transducer is installed on the hull under the companionway steps. Depending on loading, speed and wave action it's about 2 feet below the waterline.

The MFD may be calibrated to show the water depth from the boat's waterline or from the bottom of the propeller. However, we do not recalibrate depth settings during sea trials and recommend keeping the 2-foot safety margin rather than recalibrating. The bottom can come up fast and it's helpful to buy seconds to react.

4.10 HELM CONTROL PAGE ON DIGITAL SWITCH PANEL

Push buttons to activate SEARCHLIGHT and WINDLASS switches on CONSOLE rocker switch array, if you plan to use. Many of the functions on this page are redundant to the DC BREAKER page.

NOTE: This panel can also be displayed on the Raymarine Axiom 16 Pro S multi-function displays on the helm console.

Best to double-check the DEPTH reading with an extended boathook. The reading from the factory should be from the bottom of the hull where the sensor is located, not from the waterline

if you aren't familiar with navigation, please learn. Electronic equipment can fail. Have paper chart back-ups and learn dead-reckoning skills. ...RLJ



4.11 HELM CONSOLE ROCKER SWITCHES



Displayed above from L to R

3 - Windshield Synchronous Actuators fully open the front windshields

Blank Aft Window Control Up/Down

Pilothouse Table & Double Berth Base ConControl Up/Down

Anchor Washdown With windlass switch on, press switch to spray fresh water on the anchor rode when retrieving anchor.

Navigation and Anchoring Lights

Underway Horn / Anchor Press forward end of rocker switch to automatically sound a one prolonged blast every 2 minutes when operating in low or restricted visibility. When at anchor or stopped and making no way through the water, press the aft end of the rocker switch to sound 2 prolonged blasts every 2 minutes.

Horn. Press to blow.



4.12 POWERED WINDSHIELDS

DIGITAL DC BREAKER PAGE settings: Push WINDSHIELD breaker on. Console Switch Array to operate.

CAUTION Be sure to open all the dogs (securing levers) prior to raising the windows, otherwise you will snap off the dogs. The lifters are that powerful!

The windows may be opened to any angle. If they are left closed for some time, they tend to stick and then pop up when opening. The remedy is to coat the gasket with Teflon grease, such as Snap & Zipper Lube. The windows shut with a solid thunk. It's not necessary to dog them down at the bottom, except possibly in the roughest weather.

4.13 WINDSHIELD WIPERS

- One push to any wiper button will activate it.
- Push left and right arrows to slow or speed up wiper action.
- Push lower right button to activate washer.
- Push lower on/off to turn OFF all wipers.

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

For improved ventilation or visibility, you can travel comfortably at 14-15 knots without being blasted by the wind if you open the starboard windshield and move slightly toward the centerline of the boat to get out of direct wind flow



5 ELECTRICAL SYSTEMS

DANGER AC and DC electricity can be lethal. Don't work on the boat's electrical system if you aren't a qualified marine electrician..

WARNING When swimming from boat, be sure to turn off generator and inverter that produce 110-volt current. Please read safety precautions in NMMA, *Sportfish, Cruisers, Yachts: Owner's Manual*. For more reading: *Boat Owner's Mechanical and Electrical Manual* by Nigel Calder and *Boat Owner's Illustrated Electrical Handbook* by Charlie Wing.

5.1 ELECTRICAL POWER

The MJM 53z includes 12-volt direct current (DC) and both 120-volt and 240-volt alternating current (AC). Two different sources provide AC power to charge batteries and provide direct power to AC circuits.

1. SHORE POWER
2. WESTERBEKE 9KW GENERATOR

When neither of the above AC sources is turned on:

BATTERIES provide 120-volt AC power via the VICTRON INVERTER or direct 12-volt DC power direct to most boat equipment. Batteries are no maintenance, AGM absorbed-glass-mat batteries as follows:.,

- Two Group 8D, 245 amp-hour HOUSE BATTERIES
- Five Group 31, 105 amp-hour ENGINE & BOWTHRUSTER BATTERIES
- One Group 27, 92 amp-hour GENERATOR BATTERY

CAUTION Don't let voltage drop below 12 volts. Sensitive electronics may fail.

5.2 BATTERY SWITCHES

Engine, Parallel, Generator, and House Battery switches are located over the electrical panel. Turning it on connects the battery to individual engine starter switches over the electrical panels. The AUTO EMERGENCY PARALLEL switch combines ENGINE BATTERIES with the HOUSE BATTERIES. The AUTO position is the same as off.

5.3 SHORE POWER

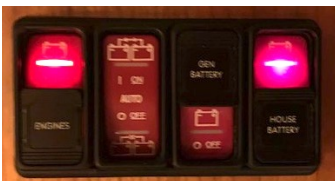
A single 50A shore power cord goes through the transom to Glendinning reel, operated by a small gray hand fob or rocker. Switch under the starboard cockpit locker

A shore power Breaker Box is located under the starboard forward cockpit deck hatch. If you lose power on the boat, check here to be sure it hasn't tripped. Then check the shore power dock connection and switches.

A single 50A shore power cord goes through the transom to Glendinning reel,



SHORE POWER INLET



BATTERY SWITCHES



SHOREPOWER BREAKER BOX



If the 120-VOLT BREAKER on the electrical panel is on and there is no power at an AC OUTLET/RECEPTACLE, the circuit interrupter may have tripped. Press the reset button on the GFCI OUTLET/RECEPTACLE.

...R.L.J.

Charging The batteries will accept a charge from SHORE POWER through the INVERTER/CHARGER even if the HOUSE BATTERY switch is off.

Transfer Lever transfers SHOREPOWER or GENERATOR AC direct to 120V AC BREAKERS or indirectly via the INVERTER when the PHOENIX CONTROL toggle is ON.

Circuits on the left side of the 120V AC panel can be also be supplied from the HOUSE BATTERIES with the INVERTER.

5.4 FUSE LOCATIONS (SEE MAINTENANCE 9.12)

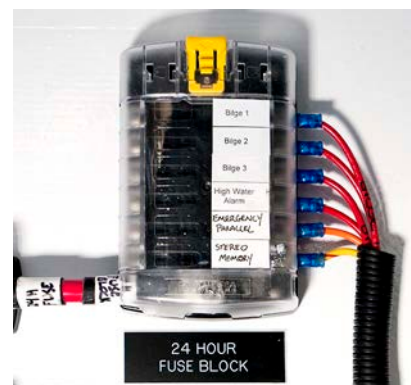
5.5 24-HOUR CIRCUITS

The connection block for the 24-hour circuits is forward in the starboard pilothouse settee locker. The 24-hour circuits (shown in the sidebar) bypass the breaker panel, HOUSE, ENGINE and GENERATOR switches and are connected directly to the HOUSE BATTERY. They are:

- BILGE PUMPS
- HIGH WATER ALARM
- EMERGENCY PARALLEL
- STEREO MEMORY

The EMERGENCY PARALLEL connection enables the EMERGENCY PARALLEL switch on the 12V DC panel. The STEREO MEMORY connection provides a trickle charge to maintain the clocks and user settings.

CAUTION Disconnecting shore power with INVERTER left on will discharge the HOUSE BATTERIES over time. When leaving the boat for more than a few days without shorepower connected, be sure to turn off the Inverter on the unit itself under the starboard settee



RESET TRIPPED BREAKER

If a breaker trips it will show RED instead of GREEN on this Raymarine Panel, it will also momentarily indicate the plug number on one of five (5) MP buses found behind the inboard upper panel of the aft bulkhead in the 2nd cabin.

* Check the various MP buses until you see one with a red LED light over the circuit that tripped.

* Press the RIGHT arrow on the MP bus so it cycles (showing on small display) through all the circuit numbers until it gets to the number panel where you saw the red light of the tripped circuit. (#15 in the case of the Glendinning)

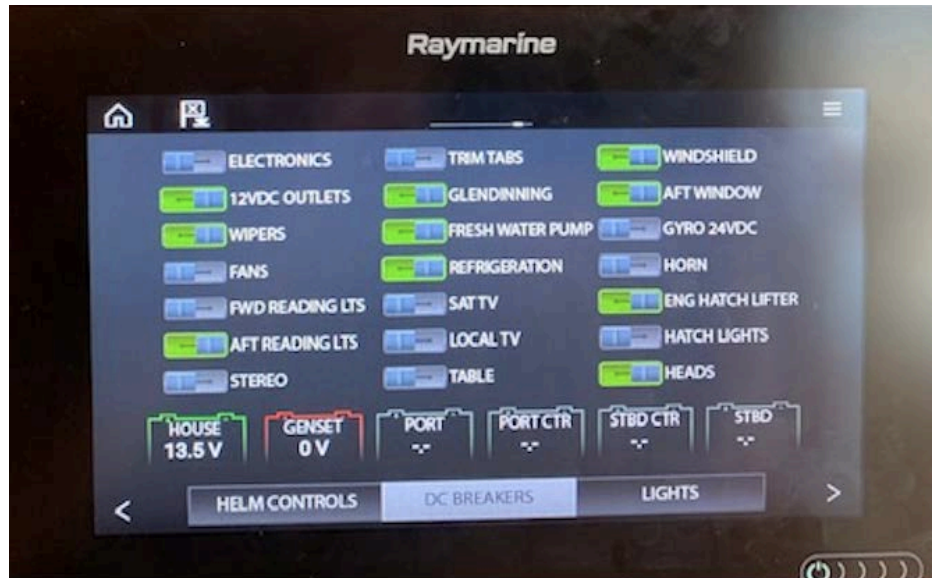
* Then PRESS and HOLD "Reset Auto" button on the MP bus and the circuit light will turn Green.

* Then PRESS the LEFT arrow to cycle back to the beginning... 002 or whatever.

The three buttons below the digital readouts select volts, amps or watts for presentation on the digital display. The TOGGLE switch selects which side of the panel is reported in the digital display. Information from the left side of the panel is displayed in the up position, and information from the right side of the panel is displayed in the down position.

5.6 THE 12V DC PANEL

The Raymarine digital 12V DC touchscreen panel includes circuit breakers for all 12V DC equipment except the 24-hour circuits that are permanently connected to the HOUSE BATTERY. Below, GENSET BATTERY voltage was not connected and ENGINE BATTERY switches were off.

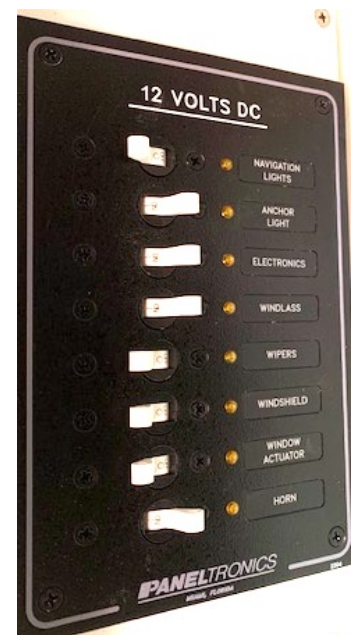


The slider at the bottom of the display brings up other control screens. These screens can also be pulled up and displayed and operated at helm and copilot Raymarine Axiom displays on deck.

Primary 12V DC Switches/Breakers

Under the companionway steps are found conventional primary breakers for some of the 12v equipment. Check here if one of the circuits on the digital panel isn't functioning.

There is also a RED master House Battery switch which can be useful in rebooting a questionable circuit.



5.7 THE 120V AC PANEL

The 120V AC panel receives power from the INVERTER, SHOREPOWER or from the GENERATOR and is the power source for the Outlets, TV, Ice maker, Oven and Central Vac.

WARNING Higher AMP drawing Cooktop, Water Heater, Air Conditioning and GYRO require 240V AC power and should only be turned on when 240V sources, Shore Power or Generator, are in use.

WARNING The 120V AC panel has reverse polarity indicators. If an AC supply is wired incorrectly, either aboard the boat or shoreside, a dangerous shock situation could exist. If the reverse polarity lights are illuminated, disconnect that source of power and engage a qualified marine electrician and notify the marina dock master if in a slip.





5.8 VICTRON INVERTER/CHARGER

Under normal circumstances there is no need for adjustment other than switching the INVERTER on at 120V AC Panel and flipping the toggle of the PHOENIX CONTROL to ON. 12v DC Battery power is then converted to 120V AC power...or to OFF when 120V is sourced from SHORE POWER or GENERATOR.

CAUTION Although INVERTER/CHARGER specifications claim it will automatically shut off the inverting process if the battery voltage drops, it's unwise to count on it. If you leave the boat with the DIGITAL MULTI CONTROL switched to INVERTER ON, it may draw amperage even if no AC device is turned on and discharge your batteries. When you leave the boat, keep the PHOENIX CONTROL units switched to OFF and the switch on the INVERTER itself, mounted under the cockpit sole hatch to "Charge Only"

Charging When SHORE POWER is connected or when the GENERATOR is on, the INVERTER charges the HOUSE BATTERIES, the ENGINE START BATTERIES, the THRUSTER (Option) BATTERY and the GENERATOR START BATTERY. Push the toggle switch to "charge only" to activate the charger.

5.9 THE 240V PANEL



This panel is for circuits having too much load for either batteries or 120v service via the Inverter. 240v is sourced from either the 50A SHOREPOWER cord or Westerbeke 9.6KW GENERATOR to power Air Conditioning units, Water Heater and Seakeeper Gyro cooling pump through breakers on this panel.

5.10 WESTERBEKE 9.6 MCG GENERATOR

The *Westerbeke Operator's Manual* is included in the binders.

Pre-Start Check List The daily pre-start checklist:

1. Close seacock clean the sea strainer (the cap should be just hand tightened) and reopen the seacock.
2. Check the coolant level visually.
3. *To open the face panel on the genset: Pull out and lift the black latch so the face rises, then allow the bottom to hinge inboard and slide out from under the upper frame.*
4. Check that the oil level is at the "FULL" mark on the dipstick.
5. Look to see that there are no loose belts or wires and that there is no oil or fuel beneath the GENERATOR.

CAUTION Don't remove the coolant cap from a hot engine.

To Start Turn on the GENERATOR BATTERY switch, next to the Auto Combiner switch above 240v panel. Wait 3-5 minutes while the blowers (you'll hear them) in the generator compartment remove any gas fumes. *There's a preventative safety interrupt which will prevent starting prematurely.* Push and quickly release your finger from START on the panel rocker switch.

Once you know you have generator 240V power available, turn off the SHOREPOWER rocker switch and slide up the INTERLOCK to expose the GENERATOR BREAKER switch. Turn it on.

Apply a light load until the generator warms up.

Keep the GENERATOR BATTERY switch and GENERATOR BREAKER on while the generator is running so its alternator will charge its battery. (Without a load on the alternator, the battery-charging regulator could be damaged.)

To Stop Turn off the GENERATOR BREAKER switch and run the generator for 2 or 3 minutes without a load to allow it to cool. Press STOP on the rocker switch and release. The Green light will go off.

Then turn off the GENERATOR BATTERY switch and either:

- a) Slide down the cover to turn on the SHOREPOWER BREAKER for 240V and 120V service, or
- b) Turn on the INVERTER for 120V service.

The ENGINE BATTERY switch is the leftmost of the battery switches.

Turning it on connects the battery to individual engine starter switches over the electrical panels. The AUTO EMERGENCY PARALLEL switch combines ENGINE BATTERIES with the HOUSE BATTERIES.

The AUTO position is the same as off.

Follow this Start sequence precisely or the Generator may not start.

...R.L.J.

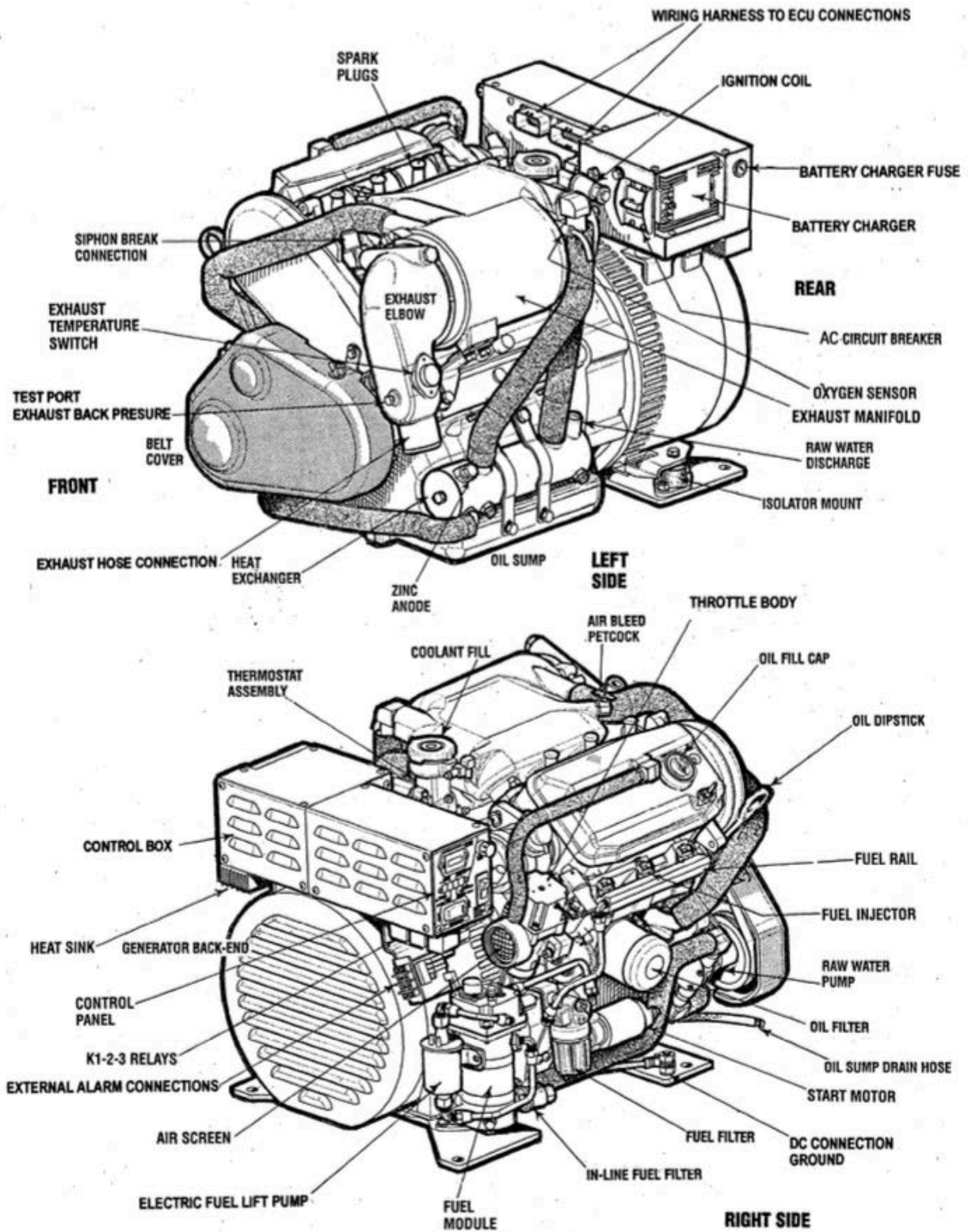


GENERATOR FUEL PRE-FILTER on the bulkhead next to the genset.

5.11 GENERATOR COMPONENT LOCATIONS

A photograph of Westerbeke's new 9.5A Generator on MJM 53z 24 (1) is shown below, followed by two useful views of their smaller genset with similar components to serve as a guide.



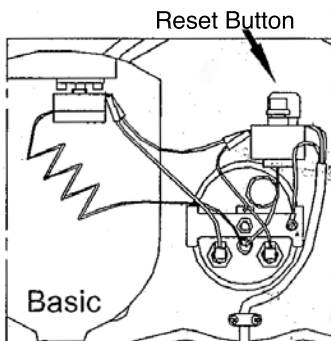




DOCKSIDE HOSE INLET with hose connected.



Johnson Aqua Jet WPS 10.4 Duo 12V FRESH WATER PUMP



6 WATER SYSTEMS

6.1 FRESH WATER

Raymarine DC Digital Panel setting: FRESH WATER PUMP on.

Fresh water may be supplied from two sources:

1. Dual 50-gallon FRESH WATER TANKS under the pilothouse settees filled through a fill fitting labeled WATER on the starboard sidedeck forward of the fuel fills. Air is vented as the tank fills. The FRESH WATER GAUGE is located in the center bottom of the 240 V AC breaker panel.

2. A DOCKSIDE HOSE INLET in the cockpit (see sidebar) bypasses the FRESH WATER TANK and the FRESH WATER PUMP to provide dockside water and dockside pressure. A check valve keeps the boat's pump from emptying the boat's tanks into the city, if its pressure is greater than that of the city.

CAUTION Don't leave the boat for any length of time with the DOCKSIDE HOSE INLET connected. If it were left on and a fitting failed, the boat's bilge pumps would be working continuously to keep the boat from sinking.

Fresh Water Pump

A JABSCO 42755-0092 12V FRESH WATER PUMP provides fresh water pressure. The pump is in the pilothouse port settee locker. It runs when a faucet, the head, anchor chain wash, wiper wash, showers, etc., are used. It has two switches to maintain pressure in a useable range, so the pump doesn't switch on every time fresh water is used. When pressure drops below the minimum, the pressure switches turn the pumps on and build pressure to the maximum. The pumps have outlet check valves that maintain pressure when pumps are off. The pump is protected from sediment by an in-line strainer mounted adjacent to the pump. Check and clean the strainer periodically.

If the pump runs continuously, a faucet might be open. The transom shower valve is a frequent culprit. Also, the anchor washdown can drain the tanks if its solenoid valve control fails. If nothing is on, check that the FRESH WATER TANK has water. Then look for leaks in the lines. An air bubble in the line may defeat a pressure switch and cause the pump to fail to operate. Opening a faucet and turning the FRESH WATER breaker off for a moment and on may fix it. If that doesn't work, attach a hose to the DOCKSIDE HOSE INLET and run water through various fresh water outlets.

6.2 HOT WATER

Water is heated in the 13-gallon INDEL ISOTEMP HOT WATER TANK only via the 240V circuit powered by Shorepower or the GENERATOR.

The 13-gallon HOT WATER TANK is under the port pilothouse settee. It's part of the freshwater system and doesn't need separate filling. There is no specified periodic maintenance, but it's wise to inspect connections and clamps periodically.

If you don't get hot water from the immersion heater, press the reset button under the white cover at the right side of tank. See sidebar and the *Indel Isotemp Owner's Manual* in the binders.

6.3 WATER PURIFIER

The General Ecology Seagull WATER PURIFIER in the galley is an excellent water purifier. It's used on many airlines and by the military.

General Ecology, Inc., states that Seagull IV purification systems meet the EPA guide standard protocol for microbiological purifiers for bacteria, cysts and viruses and excels at removing chemical and aesthetic contaminants, including herbicides, pesticides, chlorine and foul tastes, odors and colors.

The purifier has a cartridge in a stainless pressure vessel under the sink. Replace it if reduced water flow indicates that it's clogged, if any particulates are seen in the water, if there is any taste in the water or at least annually. The replacement cartridge is Seagull IV X-1 Residential Replacement Cartridge RS-1SG and can be bought online.

https://generalecology.com/category_products.php?category_name_url=in-home

Clear the fresh water system of any antifreeze before running water through the cartridge.



GENERAL ECOLOGY SEAGULL
WATER PURIFIER

*Mary and I credit our good health to
using this system in all our boats and
homes for the past 37 years.*

...R.I.J

6.4 GRAY WATER

Sumps A GRAY WATER SUMP BOX collects water from the shower drain, sinks, the dish locker drain, and AIR CONDITIONER condensate. Gray water can be legally discharged overboard. The sump pump breaker switch, under the companionway steps, provides power to a pump with a float switch to empty the tank. Remove the tank cover and clean tank and strainers periodically. It is located below _____

Common Gray Water Drains To minimize through-hull penetrations, a common drain pipeline is used on port and starboard sides to drain SIDE DECK DRAINS and HATCH GUTTERS at should be checked regularly.



GRAY WATER SUMP

6.5. BILGE PUMPS

There are five (5) automatic BILGE PUMPS

Located under the companionway steps, port and starboard pilothouse settee lockers, in the generator compartment and aft at the transom. They are wired directly to the HOUSE BATTERY, so they function even if all battery switches are off. (See *24-Hour Circuits*.) 3-way switches at the helm control the pumps. The pump will run in the AUTO position if water is present. The pump will run in the MANUAL position whether there is water in the bilge or not. The switches are wired so that the off position functions the same as the AUTO position.

The emergency MANUAL BILGE PUMP (under the port pilot seat) is a backup to the automatic bilge pumps. You may operate it by opening the plastic cover, inserting the handle (supplied loose) and pumping up and down. Its capacity is 15 gal/min.



Aft BILGE PUMP and
BILGE PUMP SWITCH

6.6 RAW WATER

Raw Water (seawater) is used for heat exchange for the GENERATOR, SEAKEEPER and the AIR CONDITIONER



VACUUM FLUSH HEAD AND WASTE DISCHARGE control panels



6.7 VACUUM FLUSH HEAD SYSTEM

Raymarine DC BREAKERS PANEL > FRESH WATER PUMP > HEADS on.

Press the Upper Left switch until desired water level is achieved. (It will shut off automatically to avoid overflow.)

Press the FLUSH switch down for a moment, then release it. It activates a macerator pump that siphons water and waste from the bowl, macerates, and propels the effluent to a 20-gallon waste tank. The capacity is generous since, unlike conventional marine heads that use several quarts of seawater, each flush uses about a cup of fresh water.

Toilet can flush when the green “OK TO FLUSH” light is on. If the red “DO NOT FLUSH” light is on, the system is either recharging the vacuum, or the holding tank is full.

See the Sealand Vacuum toilet system Instruction manual for instructions on safety, changing flush modes, service mode, cleaning, maintenance, spare parts, clearing hoses during extended periods of non-use, clearing blockage, locating leaks, winterizing and more.

The lights on the DISCHARGE PUMP control panel (see adjacent image) indicate the level of waste in the holding tank. The level can be double-checked by looking at the semi-transparent holding tank. Waste is discharged in one of two ways:

1. Pumped out at an authorized pumping facility from the WASTE deck fitting. To remove all the waste, turn off the vacuum pump system and press the SERVICE BUTTON to remove the vacuum.
2. Discharged overboard with the DISCHARGE PUMP. Open the large through-hull discharge waste valve, accessible under the cockpit hatch, aft and starboard. Then insert the key in the WASTE DISCHARGE control panel (see sidebar). Turn and hold the switch clockwise to activate overboard pumping using the macerator pump.

Don't leave the key in the switch. Waste discharge regulations vary by location. And, don't lose it either. May be worth making a duplicate.

CAUTION Ensure compliance with federal, state and local regulations before discharging.

WARNING Normal household toilet tissues don't dissolve or flow well in low water consumption toilets. These tissues build up in a tank and eventually the toilet system fails. Use rapidly dissolving single ply Scott tissue. To determine that a tissue will dissolve, immerse a square of tissue in a jar of water and shake five times. It should disintegrate.

7 SEAKEEPER 9 GYROSTABILIZER

7 SEAKEEPER 9 GYROSTABILIZER

The SEAKEEPER 9 has a 900lb. rotor spinning at 9,000 rpm in a vacuum inside the sphere which is gimballed fore and aft. It's anchored to a reinforced structure low in the boat to stop 93% of the side-to-side roll.

To activate the Seakeeper: With either Shorepower or the Generator running, turn on the GYRO breaker of the 240V panel and the GYRO 12V control panel on the DC Digital Panel which turns on the Seakeeper Control panel (shown below) on the helm console. Then follow instructions below:



Before starting check its raw water strainer then later the overboard discharge to insure flow of cooling water.

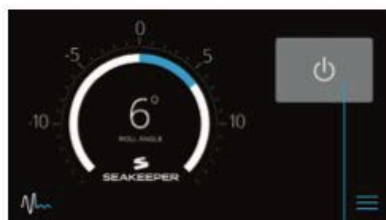
For more info
<http://www.seakeeper.com/technical-library>

Start-up

Turn on the power to the Seakeeper. The Display will initialize and the Home screen will appear.

Seakeeper On

To turn the Seakeeper on, press the Power On/Off Button. The button will turn blue.



Power On/Off Button

Spool Up

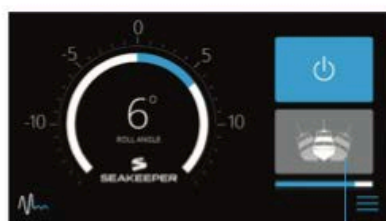
The Progress Bar will appear in the bottom right and will indicate when the Seakeeper is available for stabilization.



Progress Bar

Ready to Stabilize

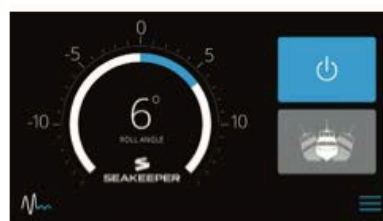
When the Seakeeper reaches its minimum operating speed, the Stabilize Button will appear. At this point, the Seakeeper is available for stabilization.



Stabilize Button

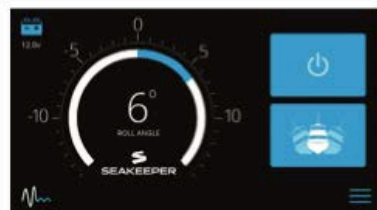
Maximum Stabilization

When the Seakeeper reaches its maximum operating speed where maximum stabilization is available, the Progress Bar will disappear and the Seakeeper is available for maximum stabilization.



Initiate Stabilization

Press the Stabilize Button. The button will turn blue indicating that the Seakeeper is stabilizing the roll motion.



Information Screen

Press the Menu Button (≡), then the Information Button (i), to access the Seakeeper model, serial number, run hours, sea hours, and more.



Information Button

8 EQUIPMENT, APPLIANCES and FINISHES

8.1 ANCHOR WINDLASS

RAYMARINE TOUCH SCREEN DC PANEL > FRESH WATER PUMP and HELM CONTROLS PANEL > WINDLASS breaker on.

It's prudent to have the engine or GENERATOR running when using the windlass; it draws considerable battery power from the HOUSE BATTERIES.

To retrieve the anchor, use the engine to move the boat over the anchor, not the windlass; it's sized to retrieve the anchor and rode, not pull the boat. If the anchor is lodged, motor over the anchor to break it loose, then retrieve it with the windlass.

Stop the windlass before reversing its rotation, otherwise the windlass fuse may blow or the breaker may trip. Refer to the windlass manual in your binders for specific operating instructions.

The WINDLASS can be operated from the WINDLASS CONTROL panel at the helm or from the ANCHOR COUNTER/WINDLASS CONTROL (see #15 on the Helm Control Photo).

<http://www.muir.com.au/product-page/6145c752-d6cb-2bea-5d0e-6d4ab1547832>

CAUTION When anchoring, don't rely on the windlass to hold the anchor rode. Remove the rode from the anchor chute and feed it through a bow chock to a bow mooring cleat to avoid chafe on the anchor rode and to avoid damaging the windlass gears.

CAUTION When underway or when leaving the boat, secure the anchor and chain with the retainer clamp. This prevents the anchor and rode from running free and fouling the props. If the anchor chain slips, use the winch handle in the top of the windlass to tighten.

8.2 ANCHOR WASHDOWN

WINDLASS DC switches and FRESH WATER PUMP breaker must be on.

A spray nozzle under the anchor roller washes salt water and mud from the anchor rode and chain as the anchor is raised when the rocker switch at the CONSOLE SWITCH PANEL is pressed.



MUIR Anchor Windlass



There is good advice on anchoring and retrieving lodged anchors at
<http://fortressanchors.com/resources/safe-anchoring-guide>

...R.I.J.



PRIVACY/SUNSCREEN CURTAINS

8.3 PRIVACY/SUNSCREEN CURTAINS (OPTION)

The optional PRIVACY/SUNSCREEN CURTAINS provide privacy so the pilothouse can serve as an additional stateroom for sleeping at night.

The two large side curtains remain rolled up in place. The other curtains roll up in a carry bag. The aft 3 curtains, 2 small side helm curtains and large front windshield curtain hook up inside. An advantage of inside curtains is that they don't get dirty or need storage when wet from dew when departing in the morning.



A good way to store the loose curtains is to lay them on top of each other on the table, then roll them up together and put them in the storage tube. Don't fold them.

8.4 CENTRAL VACUUM CLEANER

120V BREAKER PANEL > CENTRAL VAC breaker on,



Dirt Devil states that the HEPA filter bags capture particles that cover common allergens, from mold and animal dander to dust mites and pollen, along with some small particles from smoke and pollution.

The vacuum hose is stored in a companionway step.



Change the filter bag frequently in the beginning to determine the proper interval. The filter bag canister is located forward under the starboard pilothouse seat locker. Lift the lid and pull bag collar off connector. Open new bag and expand pleats and slide collar onto the inlet connector. To reorder bags, check bag for instructions or go to www.rvbags.com.

The VACUUM CLEANER has a thermal protector to prevent overheating. If it doesn't operate, turn the VACUUM breaker off, let it cool and turn it back on.

If the motor brushes or bearings are worn, the thermal protector will trip after a short period. An authorized representative should perform service.

See the Dirt Devil Owner's Manual in the binders for safety notices and detailed operating instructions.



8.5 WOLF INDDUCTION COOKTOP

240V Panel > COOKTOP breaker on.. The COOKTOP has flush-mount, pop-up, heat-resistant rubber potholders. You must push on them for several seconds for them to respond. Refer to the *Installation Guide & Operation Manual* included in the binders. **CAUTION** Don't leave an unattended cooktop on.

8.6 MICROWAVE

BREAKER PANEL settings: MICROWAVE breaker on. The MICROWAVE in the galley requires 120V AC from shore power connected to SHORE POWER 1, the GENERATOR or the INVERTER.



8.7 REFRIGERATOR

12v DC BREAKER PANEL settings: REFRIGERATOR breaker on.

The thermostat has an on/off button and a temperature adjustment button. Each time the temperature adjustment button is pressed, the LED indicator advances from left to right indicating a cooler setting.

It can take a while for temperature to stabilize, particularly after initial stocking with food and beverages.



8.8 FREEZER

12v DC BREAKER PANEL settings: REFRIGERATOR breaker on.

The FREEZER in the galley requires 12V DC stainless steel inner lining, plastic bottom section, wire basket and interior light. It has a range of 0 °C to -20 °C. <https://www.indelwebastomarine.com>:



8.9 FUSION MULTI-MEDIA PLAYER

BREAKER PANEL settings: STERO breaker on.

The Fusion multi-media player has a single slot to play audio CDs and video DVDs on the TV. It has a SiriusXM receiver. You may install a Pandora app, tune in DAB stations and pair up to eight Bluetooth media devices.

See the instruction manual in the binders for operating instructions and for connecting to Internet media services.

<https://www.fusionentertainment.com>

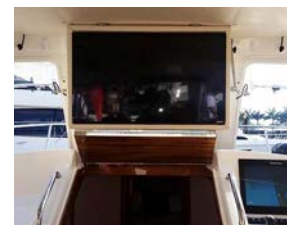


8.10 TVs (OPTIONAL)

BREAKER PANEL settings: GENERATOR on, or SHORE POWER 1 on, or INVERTER on and TV breaker on.

See the manual in the binders. The picture in the upper sidebar is of an optional TV installation in the forward cabin. The cabinet behind the TV holds the "entertainment center" with a CD changer, DVD player or satellite TV receiver. The second picture is of a TV in the pilothouse that hinges up against the overhead.

Video signals may be acquired from the Fusion DVD player, from a dockside cable TV outlet, from the optional Glomax TV antenna that will receive local HD stations, from the optional KVH satellite dish system or from other devices you choose. Antenna breakers need to be activated for reception.





Depending on options you select, Surround-Sound may be achieved using the AUX function at the FUSION MULTI-MEDIA RECEIVER to integrate both TV Audio and the six-speaker stereo audio. Or kids can watch TV with dedicated audio below decks while parents are listening to jazz, with the "Fade" function directing sound to the two cockpit speakers.

8.11 AIR CONDITIONING (OPTIONAL)

BREAKER PANEL settings: AIR CONDITIONER breakers on, and 12V SUMP PUMP breaker on. You must have the GENERATOR on, SHORE POWER on

There is a 16,000 BTU heat pump that heats or cools the interior and pilothouse as all one or separate zones, if AC grates are closed off its direct air flow into one zone or the other. They use raw water (seawater) much like the engines, for heat exchange. The heat exchangers extract heat from the refrigerant for the cooling cycle, and by reversing the flow of refrigerant they extract heat from seawater for heating. The heating cycle is effective if the sea temperature is above 35 degrees.

There's an intake seacock, RAW WATER strainer and pump located in the cockpit seat locker and port cockpit sole locker aft. They should be checked frequently and are the first things to check if the unit fails to deliver heat or cooling.



Programming Procedure There's a wide range of options for controlling the AC system. You can set it to heat mode, cool mode or automatic mode; set it to cycle on and off for humidity control when the boat is unused; control fan speeds, view service history and hour meter and set many more options. For a full explanation of the options, controls and the programing procedure, see the user's manual.

Programmable Parameters The default parameters may be changed. Once new values are entered and memorized, the factory defaults are overwritten, and the new parameters become the default values. You can restore the original factory default parameters manually. A summary of the parameters, the permitted values and original factory default settings are listed in Table 2, page 12 of the manual in the binders. When used with optional electric heat, the fan remains on for four minutes after the heater cycles off even if fan is set to cycled operation.

8.12 FINISHES

Hull paint The 53z hull is painted with Awlcraft 2000 color and three coats of clear Awlcraft. Awlgrip states that while it doesn't hurt to wax it, it doesn't help and can create a maintenance problem.

The interior cabin sole and cabinetwork are finished in clear Awlgrip. See the Awlgrip website for care and maintenance advice.

<http://www.awlgrip.com>

Corian Instructions for maintaining Corian counter tops are in the binders.

Strataglass Don't use chemicals or brushes to clean; use only mild soap and a sponge or a soft rag. If the curtains are scratched a mild polishing compound (a white cream similar to what is used on Awlgrip) can be hand applied to remove them. Test a small, unobtrusive area first. (See the Strataglass Care and Maintenance website.)

<http://www.strataglass.com/strataglass-care-and-maintenance>

It's best to leave the curtains in place, even when trucking. If they're removed, store them flat or rolled together with towels or paper between layers. To avoid creases, don't fold.

UltraLeather Upholstery The standard UltraLeather upholstery is water resistant, but don't use chemicals or brushes to clean, only mild soap and a sponge or a soft rag.

Stidd Seats See <http://stidd.com/support/> for maintenance recommendations. The Stidd seats swivel and lower for a sociable setting. Slide the seats forward before swiveling so the seat doesn't jam into the pilothouse walls.

*Gull droppings on the hardtop that
drizzle down the side curtains after a rain
or heavy dew have an acid that can,
over time, etch the Strataglass curtains.
Be sure to clean frequently. There is one
known instance with a 36z that was
moored in Chilmark on Martha's
Vineyard.*

...R.I.J.

9 MAINTENANCE

9.1 CAUSES OF ENGINE FAILURE

It doesn't happen often and if you're familiar with the common causes of engine failure you can cut down on the chances of a breakdown. RLJ

No Fuel Lack of owner attention to fuel consumption is the primary culprit for engine failure. A boat's fuel tank can be nearly dry – even when the gauge shows 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 due to the aft location of gauges. A good rule: don't pass a fuel dock (no matter the price) if the gauge shows under 1/3 full.

Water in Fuel Line Maybe after taking on a bad \ fuel, or condensation in the fuel tank after the boat has been sitting a long time with a nearly empty tank. This will read with a warning on VesselView. If it persists, turn off the fuel valves and unscrew the water traps to empty water out. These can be tough to unscrew. Keep a powerful strap wrench aboard.

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 drives. 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 and recoated with PropSpeed, then re-installed.

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 z is equipped with a “parallel” switch, which can be turned on to employ the 400 ampere-hour house banks in starting the engine.

9.2 STARTING WITH LOW BATTERIES

Each engine has a dedicated ENGINE BATTERY. They are connected with the ENGINE EMERGENCY PARALLEL (EEP) switch. (Normally the EEP switch should be off.) Each ENGINE ALTERNATOR provides 12V DC current to charge its battery.

ENGINE BATTERIES are also connected by an AUTOMATIC CHARGER RELAY (ACR) switch to the HOUSE BATTERIES. When an ENGINE BATTERY reaches 13.2V the ACR switch closes and the ENGINE BATTERY shares charging current with HOUSE BATTERIES and other ENGINE BATTERIES, by means of the ACR switch. The GENERATOR BATTERY is separate and dedicated to the generator only.

Normally when underway, all ENGINE ALTERNATORS and the GENERATOR (if running) provide charging current to both ENGINE BATTERIES and HOUSE BATTERIES. However, if a battery falls below 12.3V, the ACR switch opens to separate it from the rest of the bank. That prevents a low or shorted battery from draining the entire battery bank. For instance:

Starting engines with one low engine battery

If the PORT ENGINE BATTERY is depleted and ENGINE doesn't start: Start the other ENGINES to boost their batteries. (the depleted PORT ENGINE BATTERY will be disconnected from the house batteries by the ACR switch to prevent draining them.)

With other ENGINE ALTERNATORS now charging, evidenced by voltage climbing, push the PORT ENGINE BATTERY switch on and slide the ENGINE EMERGENCY PARALLEL switch on. Then turn the PORT ENGINE IGNITION switch on. Check to see that the voltage on each engine display reads above 12 volts. If so, start the PORT ENGINE. After the engine starts, turn off the ENGINE EMERGENCY PARALLEL switch and reset the port

ACR switch, tripped when voltage dropped below 10.8V. It then returns to normal automatic functions 10 minutes after manual resetting.

Starting with multiple low engine batteries Ensure the GENERATOR battery is on. Wait 2-3 minutes for fans to vent the compartment, then push START on the GENERATOR panel. Ensure the GENERATOR is showing a charge on the voltage display on the 12V DC breaker panel. Normally, the GENERATOR would provide charging current to both HOUSE BATTERIES and ENGINE BATTERIES. However, if the ENGINE BATTERIES have failed to start the engines, they have likely dropped below 12.3V and tripped their ACR switches so the GENERATOR'S charging current is charging the HOUSE BATTERIES but current will not flow to the ENGINE BATTERIES.

To reconnect HOUSE BATTERIES to ENGINE BATTERIES, reset the ENGINE REMOTE SWITCHES for each engine on top of small black boxes located _____ (see adjacent illustration) by pushing the yellow switch.. Then turn on the ENGINE BATTERY switches and ENGINE IGNITION switches. Check to see that the voltage on the VESSELVIEW CONTROL DISPLAY is reading above 12 volts. If so, start the ENGINES.

When it starts, check voltage and when adequate, use the ENGINE EMERGENCY PARALLEL switch.,



The ACR switches are in the black housing under the yellow buttons.

9.3 DECOMMISSIONING

Review the equipment supplier manuals in the boat's accompanying binders... in particular, refer to "Short Term Storage" and "Long Term Storage" advisories in ENGINE, GENERATOR, AIR CONDITIONING, SEAKEEPER and WATER HEATER manuals and all areas needing lubrication.

Drain water Flush the engines and the generator engine and the heat exchangers with fresh water. Remove engine drain plugs to prevent freezing water from damaging the engine.

Drain the FRESH WATER TANK, WINDSHIELD WASHER, WATER HEATER, HOLDING TANK, GRAY WATER TANK, ANCHOR WASHDOWN, AIR CONDITIONER, HEAD, ICE MAKER and the plumbing lines and run non-toxic antifreeze, through the systems to purge water that could freeze.

Replace oil Drain and replace oil in Engines, Generator, Drives, and Seakeeper and change filters. Engine oil can away in storage, leaving engine components exposed and vulnerable to corrosion. Moisture and acids in old oil pit bearings and internal engine parts. Use a fogging oil to coat internal components. Warm up the engine to 185° before draining oil so heavier metal particles are picked up and flushed out.

Lubrication Find grease fittings and service them with marine grease. Most fittings are in the steering mechanism area.

Fuel Fill the fuel tank (a full tank prevents water condensation). Add fuel stabilizer to prevent deterioration.

Batteries Set a trickle charge to keep batteries topped off.

9.4 RECOMMISSIONING

Commission engines and drives Review the manuals in the accompanying binders.

Fresh water system Commission the fresh water system: the FRESH WATER TANK, WINDSHIELD WASHER, WATER HEATER, HOLDING TANK, GRAY WATER TANK, ANCHOR WASHDOWN, AIR CONDITIONER, HEAD and ICE MAKER. Check pumps operate the systems and check for leaks.

Paint Apply anti-fouling paint to the bottom if needed.

9.5 HAULING OUT AND BLOCKING

Refer to the *Boat Lift & Bunk Offsets* before lifting the boat with a Travelift or a crane with straps.

The fore and aft lift points are approximately abeam of the windshield and the aft end of the hard top respectively. Weight-bearing supports should be at the keel and chines (edges).

CAUTION Point-loading flat areas other than centerline and chine or setting the weight of the hull on supports of insufficient area may damage the hull. A 6-8 ft. metal "V" Channel should be placed fore and aft under the keel forward of the transom, on top of a trailer support point or shore blocking, to avoid point-loading the laminate..

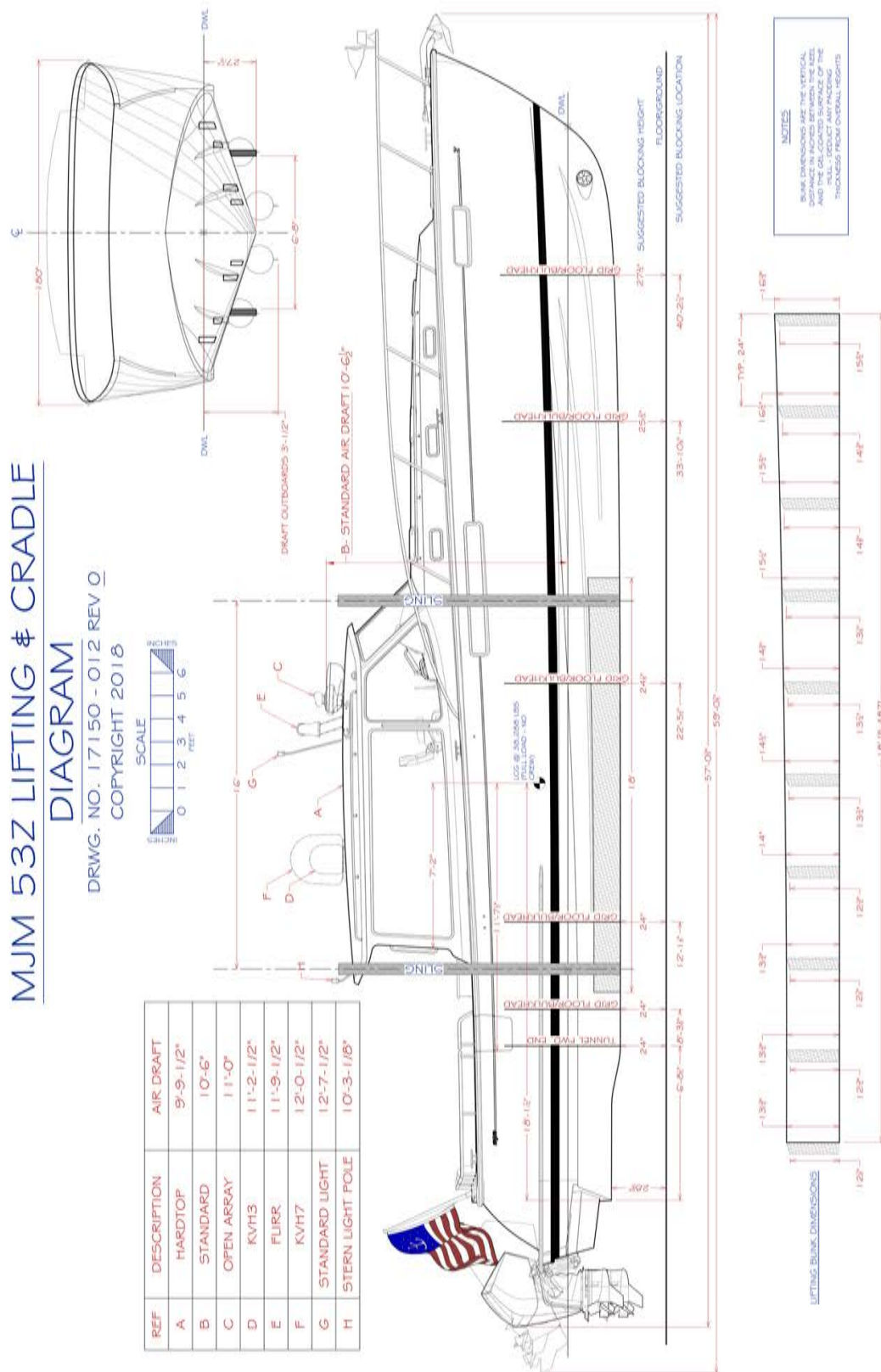
9.6 TRAILER LOADING CHECKLIST

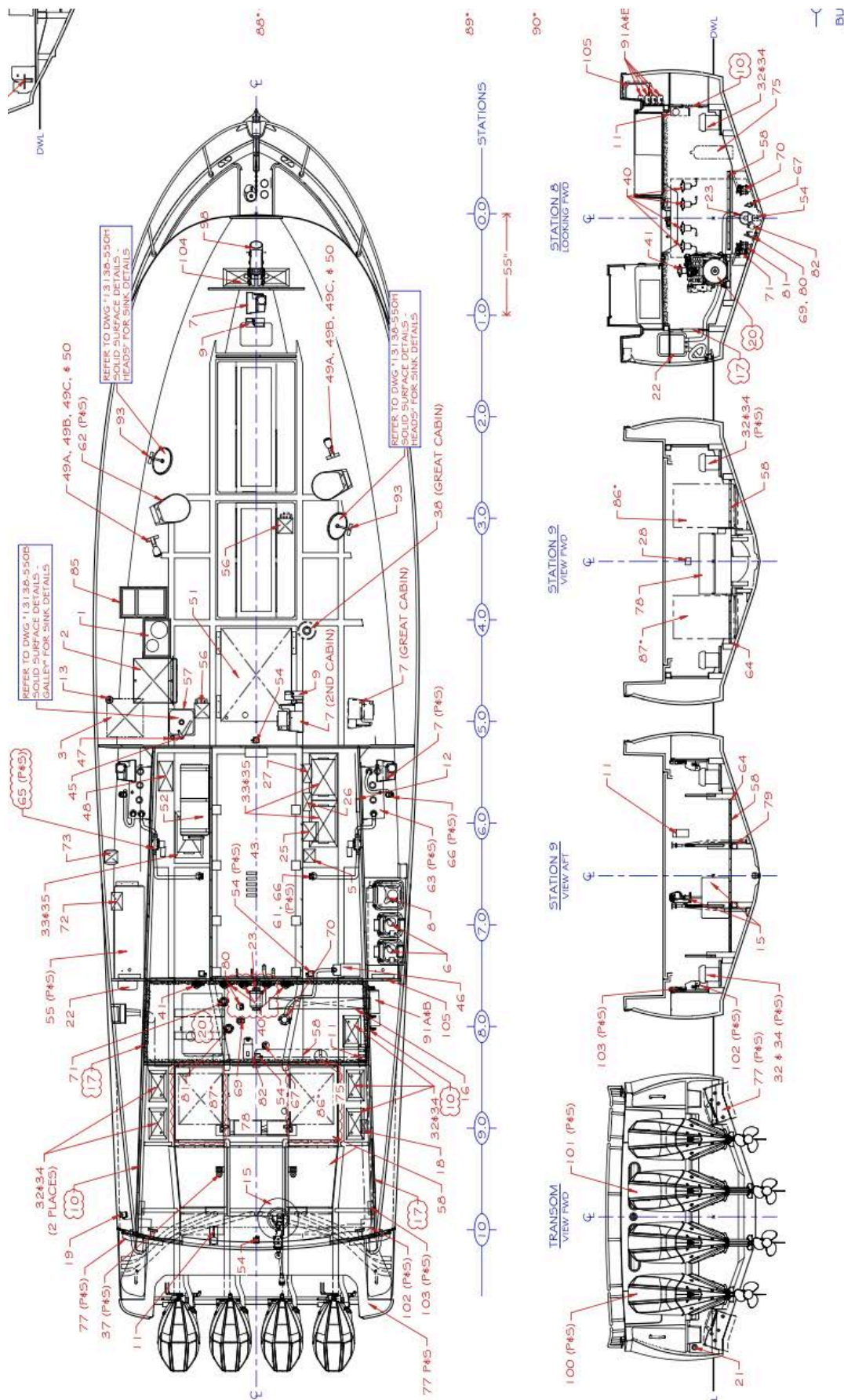
1. Stack cockpit & pilothouse cushions forward on top of the island berth.
2. Remove canvas from bimini, detach aft legs and hinge the main hoop forward against the hardtop. Secure the short legs, pad the main hoop where it touches the hardtop (AC hose), secure the hoop to handrails with fender whips.
3. Hinge down VHF antennas and reverse tape it to starboard handrail. Hinge down running light and tighten.
4. Remove KVH or FLIR tower and seal hardtop openings and wire connections. Wrap domes and strut in blanket. Park it in a pilothouse locker, or shower, braced with throw pillows.
5. Max height over road is 13'6" if standard radar dome is bolted to hardtop without strut.
6. Wrap plastic around horn trumpets.
7. Face searchlight aft and secure the anchor chain grabber.
8. Latch all cabinet doors, drawers and fridge.
9. Don't apply adhesive tape directly to any surface, particularly ultra leather.
10. Turn off all battery switches and make sure the INVERTER switch on the inverter itself, is off.
11. Never permit the boat to be loaded stern first or you will spend a lifetime cleaning the boat!
12. Shrink-wrapping isn't recommended. It can do damage if it breaks loose.
13. Exchange contact information with the driver and the destination yard so they and you may maintain contact.
14. In addition to aft and midship supports in locations seen on the previous page, support the boat under the bow, forward of any straps.
15. Leaving side and aft pilothouse curtains secured in place protects the boat interior.
16. Lock companionway door. Advise driver and receiving yard where the key is hidden.

9.7 ROUTINE MAINTENANCE

ENGINE		
Oil level	Check before long trip	Change after 1 st 100 hrs., then ea. 200 hrs. or annual
Drive unit oil level	50/200 hrs.	Replace after 1 st 50 hrs., then ea. 200 hrs.
Oil leakage in water near	Check daily	Identify source. Correct. Clean-up
FUEL SYSTEM		
Tanks/valves/connections	Monthly	Inspect for leaks and ease of valve operation
Water Traps (4)	When alarm sounds	Empty water Change filters. 200 hrs.
Initial in-line filter at engines		Remove at 100 hour service
Fuel system	When necessary	Bleed
OTHER		Refer to Mercury Owner Manual
GENERATOR		
Oil level	Check every 8 hrs.	Add if necessary
Oil	100 hrs.	Change after 1 st 50 hrs. then ea. 100 hrs.
Raw Water Strainer	Daily or ea. 8 hrs.	Check for contamination and clean
Fuel filter	Ea. 100 HRS.	Check drain and replace filter ea. 100 hrs.
Engine hoses	Inspect for leaks weekly	Tighten and secure if necessary
Exhaust system	When detected.	Inspect for leaks. Check anti-siphon
FRESH WATER SUPPLY		
Water tank	Annually	Flush & clean
Water pump strainer	Monthly or less	Remove & clean
Hoses and valves	Daily	Observe leaks or note recycling of pressure system
Seagull purifier cartridge	Annually	Replace more frequently if reduced flow
GRAY WATER SYSTEM		
Sumps	Annually	In main cabin floor hatch & systems room
Automatic bilge pumps (3)	Check daily	Test with manual switch
Manual bilge pump	Monthly	Check operation
Bilge area	Check daily	Clean as needed
ELECTRICAL SYSTEM		
Batteries	Monthly	Remove lids, check for loose cables, clean
House and Engine batteries	Check voltage daily	
Connections	Inspect annually	Clean, tighten or repair
Transom & drive anodes	Inspect quarterly	Replace if 50% eroded
MISCELLANEOUS		
Fire Suppression system	Mon/Bi-annual/5yrs	Check gauge, canister weight, replace canister
Trim tabs	Check Daily/monthly	Remove barnacles
Bottom Paint	Monthly/annually	Repaint
OTHER		
REMINDERS		

The chart above is an approximation. Refer to the equipment manuals for specific instructions. Perform most maintenance items annually even if hour levels aren't reached. You may choose to do many yourself, But. its a wise to have a qualified mechanic check on the engine, generator, and other key equipment. Volvo Penta & Northern Lights engines are assumed. Check the respective manuals if your brands differ.





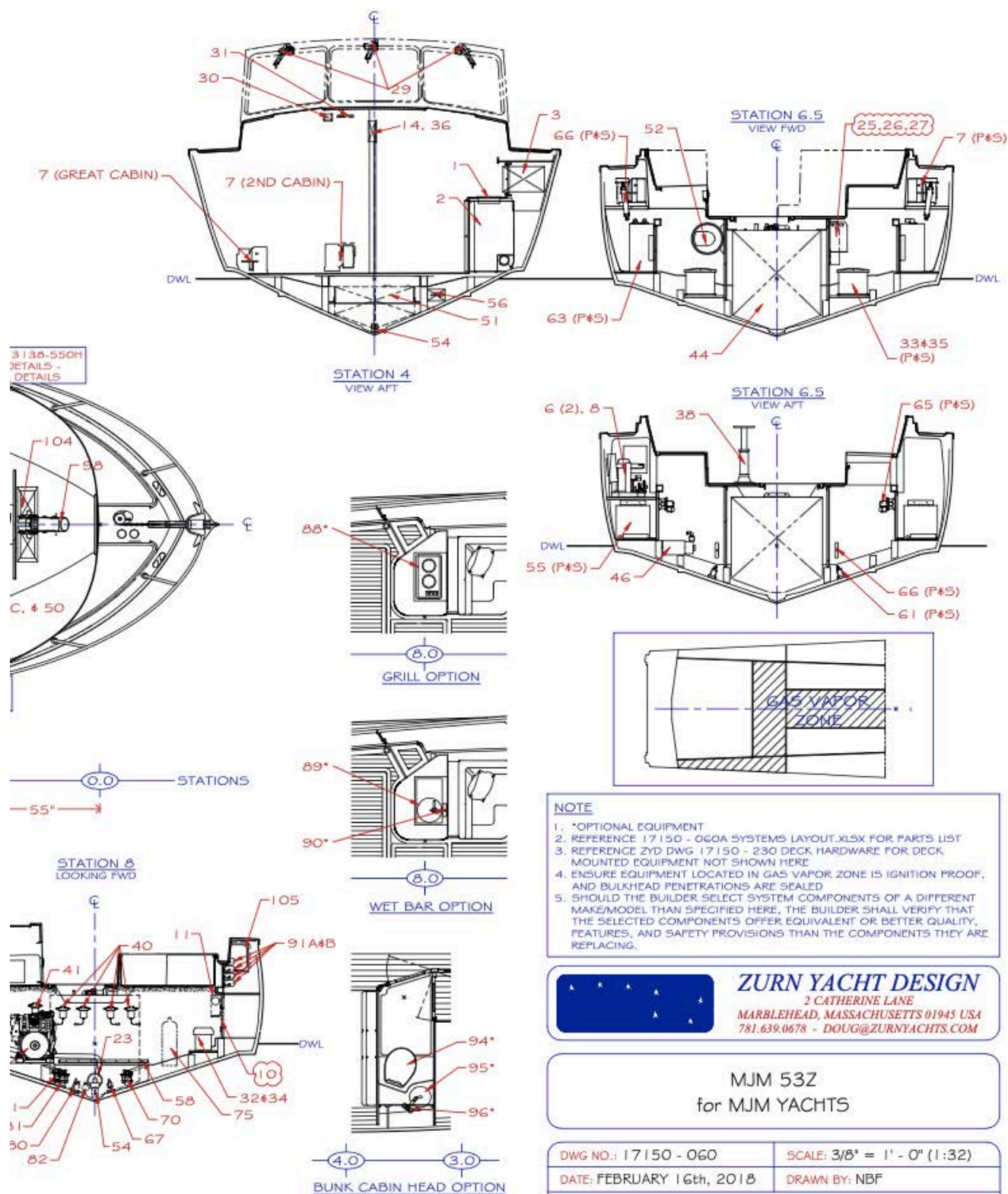
9.10 SYSTEMS KEY

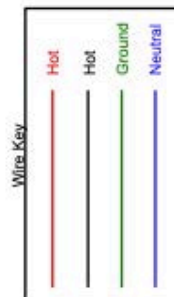
The System Location Plan (above) and the System Key are the baseline configuration for the MJM53z. There are modifications due to continuous improvement and individual customization. Your boat will have some differences.

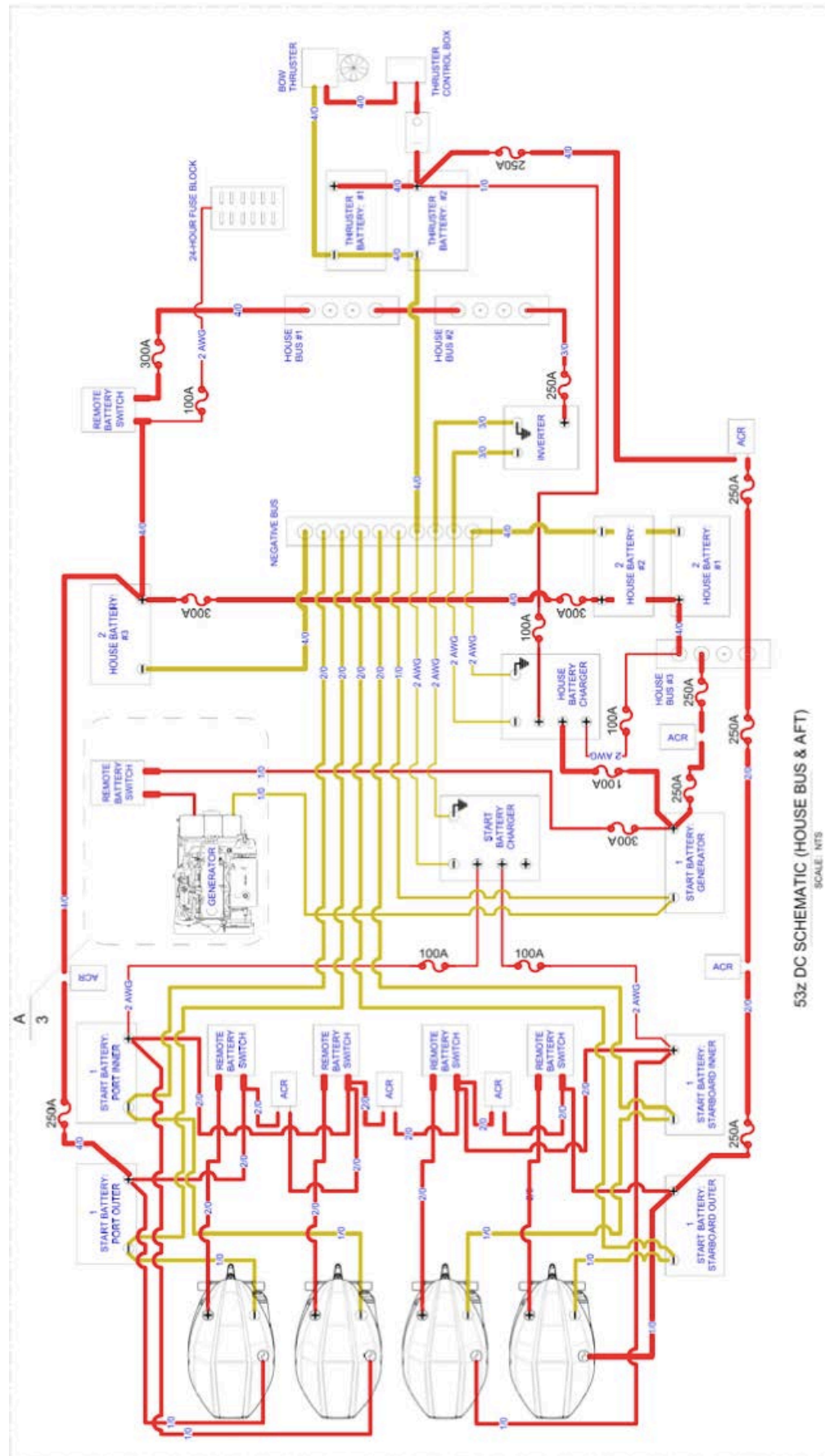
REF	QTY	DESCRIPTION	MAKE	MODEL
1	1	Cooktop - Induction	Wolf	C1152TF5
2	1	Fridge - Galley	Vitnfrigo	DW1A01XP4-F5-1
3	1	Microwave/Convection Oven	Sharp	R-83CDS
4	1	Ice-maker - Service Bar	Vitnfrigo	IMXTXN1-F
5	2	Central Vacuum	Dick Devil	CV1500
6	2	Aircon - Condenser	Marine Air	EMERALD DR112
7	4	Aircon - Air Handler	Marine Air	EMERALD TVE12
8	1	Aircon - Condenser	Marine Air	EMERALD DRU24
9	2	Aircon - Condensate Pump	Aspen	Maxi 230V D55
10	2	Engine Ventilation - Delta 1 Grill (28"x9-1/2")	Delta 1	AOO-095537-01
11	2	Engine Ventilation - Exhaust Fan	Delta 1	500-304121
12	1	Pump Relay Panel	Gometric	2-6PRP 55
13	1	Galley Exhaust Fan	Indel	SBFDD105AA
14	1	Air Panel	Blue Sea	360
15	1	Shore Power Cord Feeder 50A	Glendinning	Cablemaster CM-7
16	1	Electric Drop Down Window - Starboard	BBW	15x22" DRUM
17	2	Access Hatch	Romar	281-062
18	1	Galvanic Isolator 50A	Promann	71030
19	1	Genset - Wet Exhaust Seacock 1-1/2"	Forespar	22074
20	1	Genset - 5 kW	Westerbeke	931185
21	1	Genset - Dry Exhaust Outlet 2"	Marine Town	5.5 MCMGA w/c-over
22	1	Genset - Exhaust Separator	Centek	104863
23	1	Genset - Muffler	Westerbeke	1020200
24	0	RESERVED	Westerbeke	Hydro Flush 34936
25	1	Inverter	RF5FRVFD	RF5FRVFD
26	1	Battery Charger - House	Victron Phoenix	12/3000
27	1	Battery Charger - Start	Victron Centaur	12/100
28	1	Converter 12VDC to 24VDC	Victron Centaur	12/50
29	3	Wiper/Washer Assembly - Exalto Type 1 System	Imtra	12/24-10
30	1	Wiper/Washer Control Box	Imtra	Motor EX2165.30
31	5	Wiper/Washer - Solenoid Valve (12V)	Imtra	Motor Cover 2101
32	5	Battery - Engine AND Genset Start	East Penn	Arm EX2136A5
33	3	Battery - House	East Penn	Blade EX216120
34	5	Battery Box - Engine AND Genset Start	Atwood	EX2163246
35	3	Battery Box - House	Bonar	EX-5V1/4-12V
36	1	DC Electrical Panel - Digital Switching and Touchscreen	Raymarine	G31-AGM (105 Ah)
37	2	Engine Hatch Lift	Thompson	40671
38	2	Electric Table Pedestal (for Cab Layout)	Scandvik	4023
39	2	Stereo System w/ DVD/CD	Fusion	M5-AV750
40	4	Filter - Engine Fuel	Mercury	Provided by Merc.
41	1	Filter - Genset Fuel	Racor	450R-RAC
42	0	RESERVED	RF5FRVFD	RF5FRVFD
43	1	Tank - Fuel 910gal - 1/4" AI	FMT	ZYD 17150 - G55

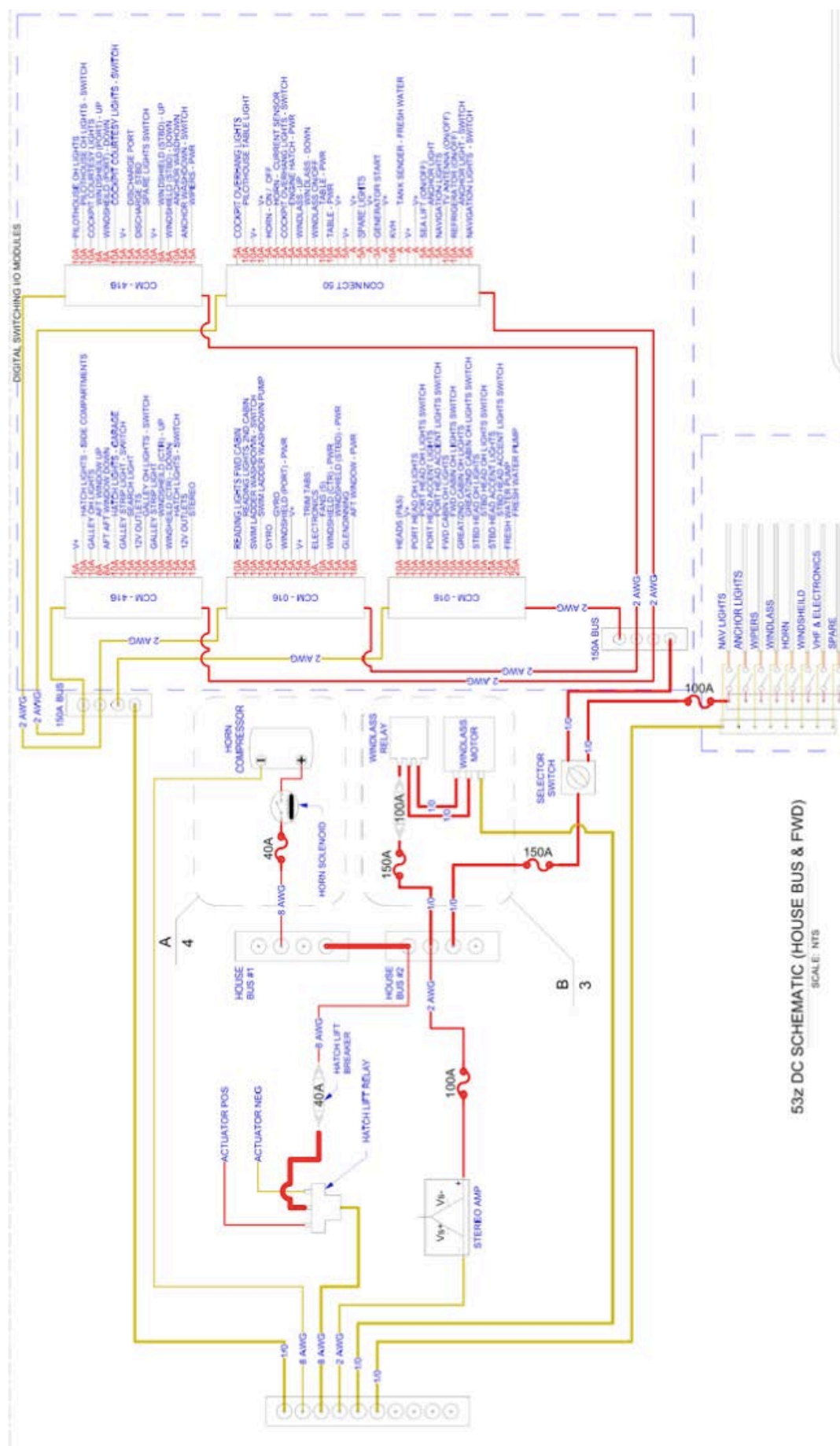
REF	QTY	DESCRIPTION	MAKE	MODEL
44	0	RESERVED	RESERVED	RESERVED
45	1	Faucet - Galley	Scandvik	10871
46	1	Pump - A/C Raw water	TBD	TBD
47	1	Freshwater Purification system	General Ecology	Seagull IV X-1F
48	1	Pump - Water Pressure	Johnson	Aqua Jet Duo
49A	2	Shower - Spray Handle	Scandvik	14341
49B	2	Shower - Hose for Spray Handle	Scandvik	14360
49C	2	Shower - Bulkhead Swivel Holder	Scandvik	10013
50	2	Shower - Mixer	Scandvik	16201
51	1	Tank - Fresh Water 128 Gal.	Builder Spec	355-032
52	1	Water Heater - 20 Gal.	Isotherm	Basic 75
53	1	Blue Strainer	Whale	SB4222
54	5	Pump - Bilge Auto	Rule	1100
55	2	Tank - Fresh Water 50 Gal.	Ronco	B416
56	2	Pump - Sump w/ Tank	Rule	98
57	1	Sink - Galley	Scandvik	10220
58	14	FRP Grating 4x2'	McMaster-Carr	GG035T53
59	5	Thru-Hull - Bilge Water Auto 1-1/8"	Marine Town	Builder Spec
60	0	RESERVED	RESERVED	RESERVED
61	2	Seacock - Black Water Discharge	Forespar	931146
62	2	Toilet	Sealand	Masterflush 8939
63	2	Tank - Black Water Holding 30gal	Moller	WT3001
64	36'	FRP Angle 2"	McMaster-Carr	8542K51
65	2	Pump - Black Water Discharge	Sealand	T-Series
66	2	Filter - Black Water Tank Vent	Sealand	Saniqard 5/8"
67	1	Seacock - Air Conditioning Intake 1-1/4"	Forespar	931145
68	9'	FRP Angle 3"	McMaster-Carr	8542K56
69	1	Seacock - Genset Intake 1"	Forespar	931144
70	1	Seawater Strainer - Air Conditioning	Groco	ARG-1250 P
71	1	Seawater Strainer - Genset	Groco	ARG-1000 P
72	1	Air Horn - Compressor	Kahlenberg	P449-18
73	1	Air Horn - Tank	Kahlenberg	P449-3
74	4	Fire Extinguisher - Portable	Kidde	KID-466628
75	1	Fire Suppression System - Engine room	Sea-fire	FD-450A
76	1	Automatic Engine Shutdown (5 circuit)	Sea-fire	FSR5 V
77	1	Trim Interceptors	Humphree	Custom HAF 0500 - M
78	1	Gyro Stabilizer	Seakeeper	9
79	7'	FRP Tubing 3"x3"	McMaster-Carr	8548K25
80	1	Seacock - Gyro Intake 1"	Forespar	931144
81	1	Seawater Strainer - Gyro	Groco	ARG-1000 P
82	1	Pump - Gyro Cooling Water	Marine Air	PML500C
83	1	Thru-Hull - Gyro Cooling Water Discharge 3/4"	Marine Town	Builder Spec
84	N/A	Omitted	-	-

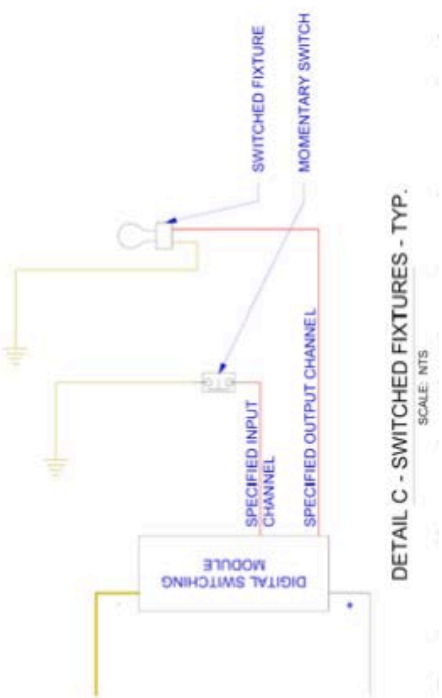
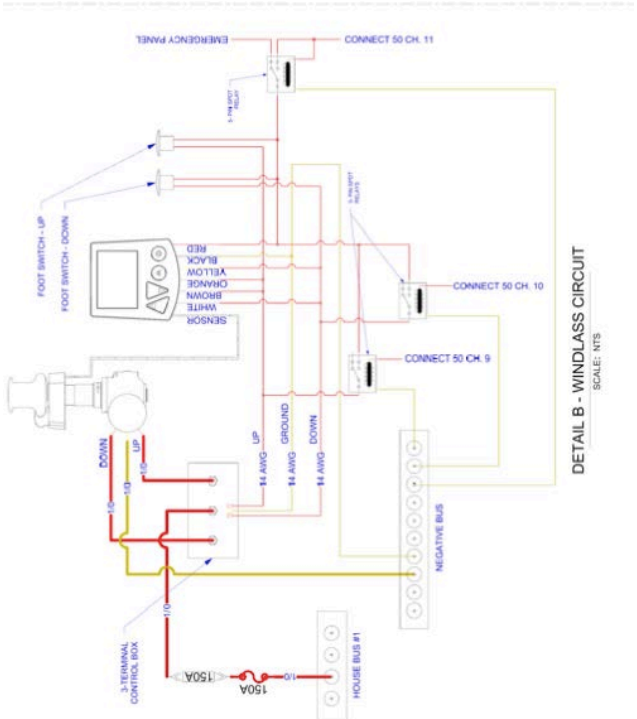
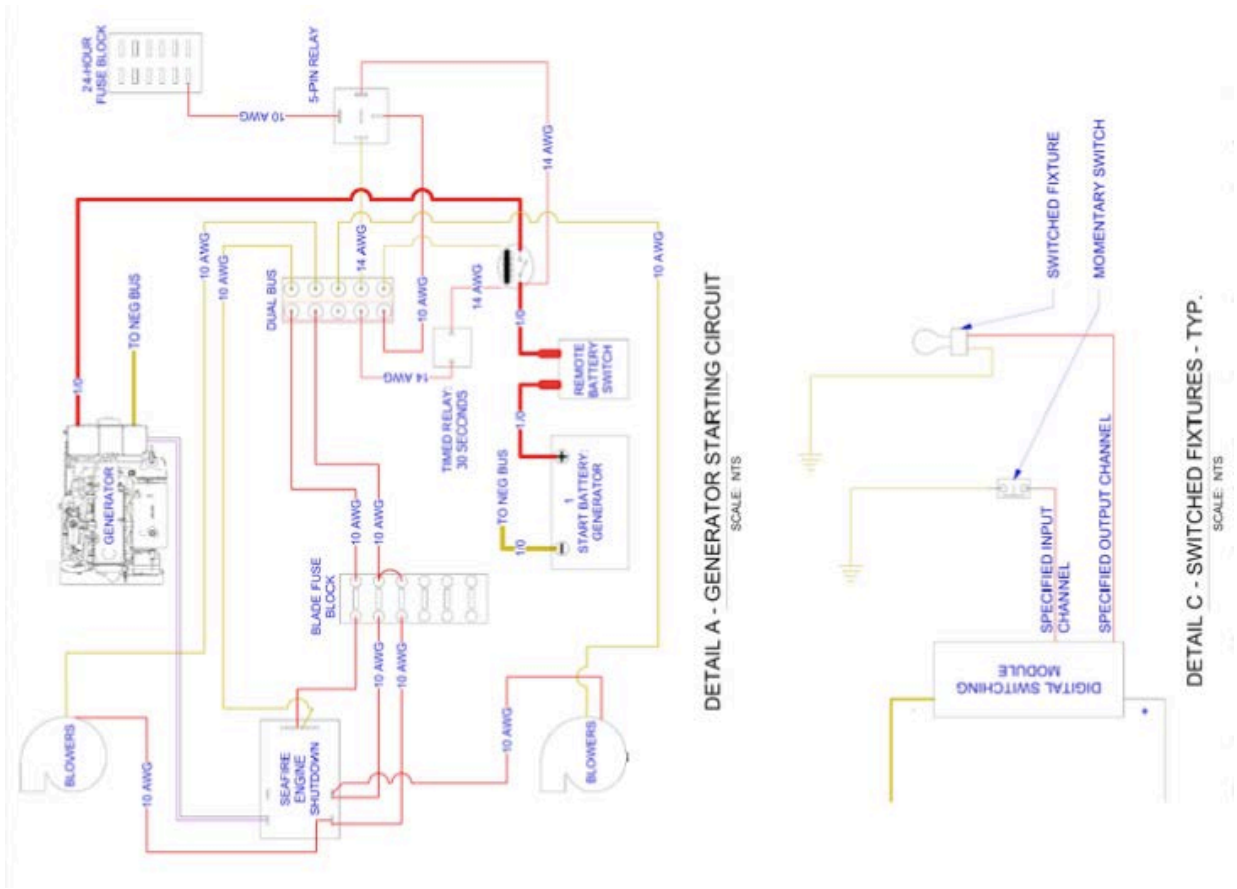
REF	QTY	DESCRIPTION	MAKE	MODEL
85	1	Built-in Box Freezer	Isotherm	BI53 F
86	1	Washing Machine	Miele	W16055
87	1	Clothes Dryer	Miele	PT 7138
88	1	Electric Grill	Kenyon	B70057
89	1	Sink - Wet Bar	Scandvik	10242
90	1	Faucet - Wet Bar	Scandvik	10622
91A	2	Carbon Canister 660gal	Atwood	99CC150-1
91B	2	Carbon Canister 350gal	Atwood	99CC085
92	1	SealIt - Hydraulic Pump	SealIt	TBD
93	2	Faucet - Head	Scandvik	10476
94	1	Toilet - Bunk Cabin Head	Sealand	Masterflush 8939
95	1	Sink - Bunk Cabin Head	Scandvik	10201
96	1	Faucet - Bunk Cabin Head	Scandvik	46010
97	2	Fuel Vent Filter	TBD	TBD
98	1	Thru-hull	Hyde Power	5F100 / 45mm 12V
99	2	Interceptor Servo	Humphree	SU 501
100	2	Engines - Outboards	Mercury	Verado V8 30"
101	2	Engines - Outboards	Mercury	Verado V8 30"
102	2	Mercury Steerina Power Pack	Mercury	832440
103	2	Thrust Vector Module	Mercury	8M3002696
104	2	Battery - Side Power	East Penn	G31-AGM (105 Ah)
105	1	Access Hatch - Stbd	Romar	7812

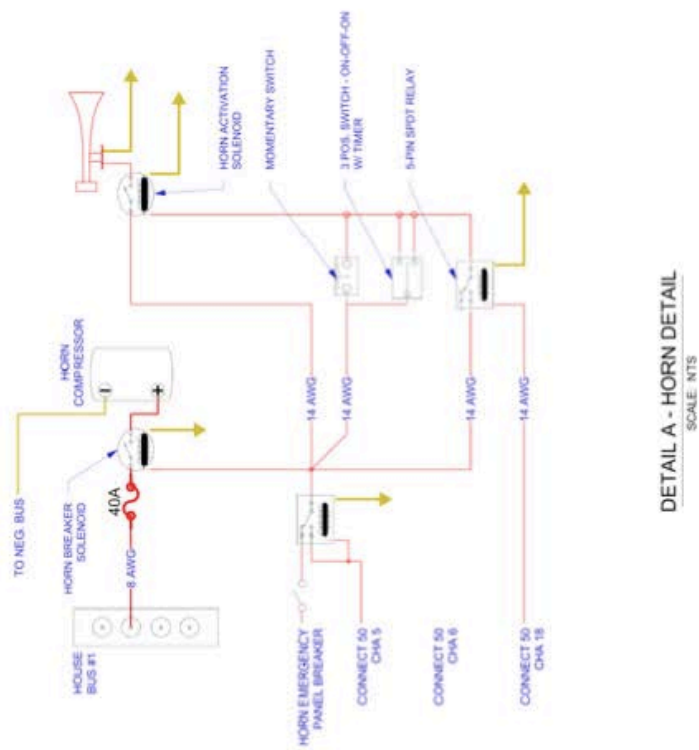
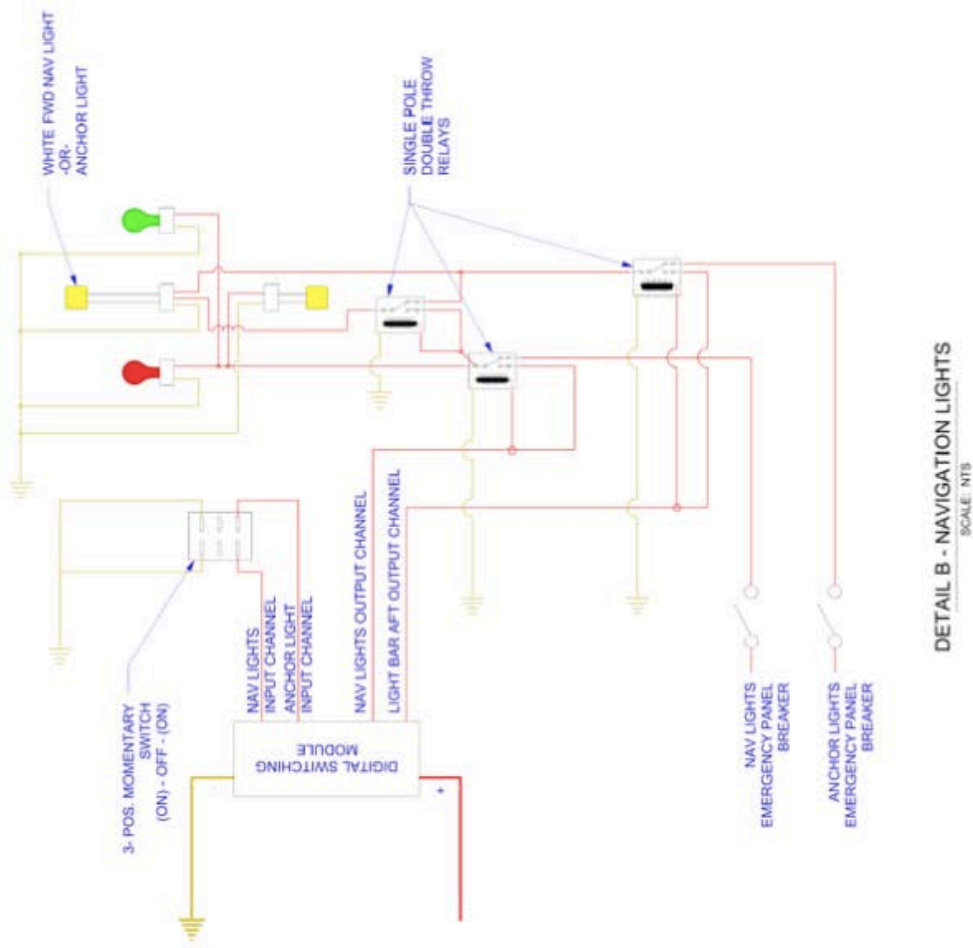












9.12 FUSE LOCATIONS & SPECIFICATIONS

In-Line and Fuse Block

#	Description	Size	Type	Location
1	Bilge Pump 1 Switch	5	AGC	In the BILGE PUMP SWITCH at the dash
2	Bilge Pump 2 Switch	5	AGC	In the BILGE PUMP SWITCH at the dash
3	Bilge Pump 3 Switch	5	AGC	In the BILGE PUMP SWITCH at the dash
4	Bilge Pump 1	7.5	ATC	Fuse Block next to House Battery 1 starboard settee hatch
5	Bilge Pump 2	7.5	ATC	Fuse Block next to HOUSE BATTERY 1 starboard settee hatch
6	Bilge Pump 3	7.5	ATC	Fuse Block next to HOUSE BATTERY 1 starboard settee hatch
7	Stereo Memory	15	ATC	Fuse Block next to HOUSE BATTERY 1 starboard settee hatch
8	Emergency Parallel Supply	15	ATC	Fuse Block next to HOUSE BATTERY 1 starboard settee hatch
9	High Water Alarm	5	ATC	Fuse Block next to HOUSE BATTERY 1 starboard settee hatch
10	House Switch Supply	15	ATC	Remote Battery Switch next to House Battery 2 port settee hatch)
11	House Remote Supply	5	ATC	Remote battery switch next to HOUSE BATTERY 2 port settee hatch
12	Start 1 Switch Supply	15	ATC	Remote battery switch next to START BATTERY 1 starboard settee hatch
13	Start 1 Remote Supply	5	ATC	Remote battery switch next to START BATTERY 1 starboard settee hatch
14	Start 2 Switch Supply	15	ATC	Remote battery switch next to START BATTERY 2 starboard settee hatch
15	Start 2 Remote Supply	5	ATC	Remote battery switch next to START BATTERY 2 starboard settee hatch
16	Generator Switch Supply	15	ATC	Remote battery switch next to GENERATOR BATTERY port settee hatch
17	Generator Remote Supply	5	ATC	Remote battery switch next to GENERATOR BATTERY port settee hatch
18	Combiner 1 Negative	15	ATC	Battery combiner next to AIR CONDITIONER control bridge deck hatch
19	Combiner 2 Negative	15	ATC	Battery combiner next to AIR CONDITIONER control bridge deck hatch
20	Engine Room Blower	20	ATC	HOUSE BUS starboard settee hatch
21	VacuFlush	3	ATC	Top of the HOLDING TANK port aft hatch
22	Echo-Charge	25	ATC	Inverter / Charger starboard settee hatch
23	Trim Tab Retract Wire	30	ATC	Inside Electrical Panel (line side of the DC Panel)
24	Generator Voltage Sense	2	ATC	Next to GENERATOR BATTERY port settee hatch
25	Power Windows	10	ATC	POWER WINDOWS fuse block behind dash

ANL Fuses

#	Description	Size	Type	Location
1	Horn Fuse	40	ANL	Next to HORN COMPRESSOR port settee hatch
2	24H Fuse Block	100	ANL	Next to HOUSE BATTERY 1 starboard settee hatch
3	Main Panel Fuse	100	ANL	Wall above FUEL TANK starboard settee hatch
4	Windlass Fuse	130	ANL	Wall above FUEL TANK starboard settee hatch
5	Start Battery 1 Fuse	200	ANL	Above START BATTERY 1 starboard settee hatch
6	House Battery 1 Fuse	200	ANL	Next to HOUSE BATTERY 1 starboard settee hatch
7	Start Battery 2 Fuse	200	ANL	Above START BATTERY 2 starboard settee hatch
8	House Battery 2 Fuse	200	ANL	Next to HOUSE BATTERY 2 port settee hatch
9	House Bank Fuse	250	ANL	Next to HOUSE BATTERY 2 port settee hatch
10	House Parallel Fuse Stbd.	250	ANL	Next to HOUSE BATTERY 1 starboard settee hatch
11	House Parallel Fuse Port	250	ANL	Next to HOUSE BATTERY 2 port settee hatch
12	Inverter Charger Fuse	400	ANL	Wall above FUEL TANK starboard settee hatch
13	Inverter Fuse	400	ANL	Next to HOUSE BATTERY 1 starboard settee hatch
14	Amplifier	100	ANL	Wall above FUEL TANK starboard settee hatch

AGC fuses are a glass, ATC fuses are plastic, ANL fuses for main circuit protection can take a brief overload.

FUEL CONSUMPTION LOG

[illegible]

9.13 BOSTON BOATWORKS WARRANTY

Manufacturer's Sole and Limited Warranty for Pleasurecraft

A. General. This document sets forth the sole and limited warranty, which Boston BoatWorks, LLC ("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 and Maintained, 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. *Improper over-the-road trucking of the vessel can cause local damage to the centerline of the boat requiring a localized FRP repair. Use authorized MJM trucking companies for moving your boat or contact Boston Boat Works' customer service managers for proper trucking information PRIOR to engaging with another trucking provider for boat transport.

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 won't blister when the Vessel is Properly Used for a period often (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 doesn't 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, gelcoats (except where included in paragraph D above) exterior wood, vinyls, 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 48 hours after discovery, 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, and 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 won't 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 marina 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. Cards should be sent to:

Boston BoatWorks, LLC
333 Terminal Street
Charlestown, MA 02129
ATTN: Customer Service

L. 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.

M. 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.

N. 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.

O. Whole Agreement. This warranty is the sole warranty given to you by the Manufacturer. Authorized Dealers aren't 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.

Limited Warranty Registration Card

Within 30 days after delivery or transfer to new owner, this form must be sent to:

Boston BoatWorks, LLC
333 Terminal Street
Charlestown, MA 02129
ATTN: Customer Service

_____ / _____ / _____
M/JM Model Hull # (HIN) US-EOU Authorized Dealer Date Purchased

Owner(s):

First name Last name

First name Last name

Address City State Zip

Primary phone Mobile phone email

Boat Name Hailing Port

I have read and agree to the conditions outlined in the Limited Warranty, which was attached hereto:

Owner(s) Signature(s) Date

Warranty Claim Application Form

Boston Boat Works, LLC This form has the same info as the Pre-Approval form.

333 Terminal Street, Charlestown MA 02129

Phone: (617) 561-9111 or (207) 400-7182

Date:

Boat name	Hull #
Dealer/service	Boat Owner
Address	Address
Address continued	Address Continued
Phone # & email	Phone Number & e-mail
Fax	Boat Location
Contact person	Delivery Date

Description of Defect (please attach photos)

Description of Corrective Action (please attach invoices)

	Labor hrs
	Labor rate
	Labor cost
	Material cost
	Total Cost

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

Date Approved	Amount Approved	Approved by
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10 THE MJM TEAM



10.1 BOB JOHNSTONE

Bob is the Founder and a member of the Advisory Board of MJM Yachts. A Princeton graduate, he co-founded J/Boats in 1977, the leading performance brand worldwide with 20 Boat-of-the-Year awards and 14,000 sailing. In 1999, Bob and his wife, Mary, sought a power boat for more comfortable cruising. Bob figured innovation was needed for performance and solo handling ease, comparable in power to what J/Boats achieved in sail. In 2016, he received Mystic Seaport's *America and the Sea Award* and was inducted into the National Sailing Hall of Fame and cited by *Yachting Magazine* as one of 7 key Innovators in the marine industry.



10.2 PETER JOHNSTONE

Peter became Owner and CEO of MJM Yachts in 2019. He is a USSailing Youth Champion in boardsailing, a collegiate All-American and member of the Connecticut College Athletic Hall of Fame. He launched his first business while still an undergraduate: Johnstone One-Design, which introduced the retractable bowsprit and asymmetric spinnaker to production sailboats with the One-Design 14 dinghy. He has been a partner with North Sails in Edgewater Boats, Sunfish-Laser and Escape Sailboats as President and is creator of Gunboat Catamarans.



10.3 DOUG ZURN

Doug grew up sailing on Lake Erie on his family's boats. He graduated with honors from The Westlawn School of Yacht Design in 1993 and promptly established Zurn Yacht Design. He is a member of the Society of Naval Architects and Marine Engineers, the American Boat and Yacht Council and the Yacht Brokers Association of America. Doug believes that it is very clear that form and function need to work together when designing a yacht. With over 350 power and sailboats built in the last 20 years it's difficult not to recognize a Zurn Design as she passes in the water.



10.4 SCOTT SMITH

Scott is the Owner and CEO of Boston BoatWorks, which he co-founded with late master builder legend, Mark Lindsay. He studied bio-medical engineering at Boston University and previously worked at Shawmut Bank. He has been a Director of the East Boston Chamber of Commerce, Chairman of the East Boston Economic Development Council, Founder and trustee of East Boston's not-for-profit sailing program, Piers Park Sailing, Inc., Member of the Boston Redevelopment Authority's Municipal Harbor Planning Advisory Committee and Trustee of The Boston Harbor Association,



10.5 STEVE BURKE

Steve is the structural engineer for MJM boats. He graduated from the University of Michigan in Naval Architecture and Marine Engineering. He started out designing hydrofoils, ships and submarines for General Dynamics and Boeing. Then in 1990, he got into composite materials for the aerospace, naval, oceanographic and offshore energy fields. Becoming the marine composites engineer at TPI, he engineered J/Boats where he met Bob Johnstone. Steve has been a key consulting structural engineer for Seakeeper retrofits. He serves as MJM's primary contact with the International Marine Certification Institute in Brussels to implement ISO standards for MJM yacht certification.

