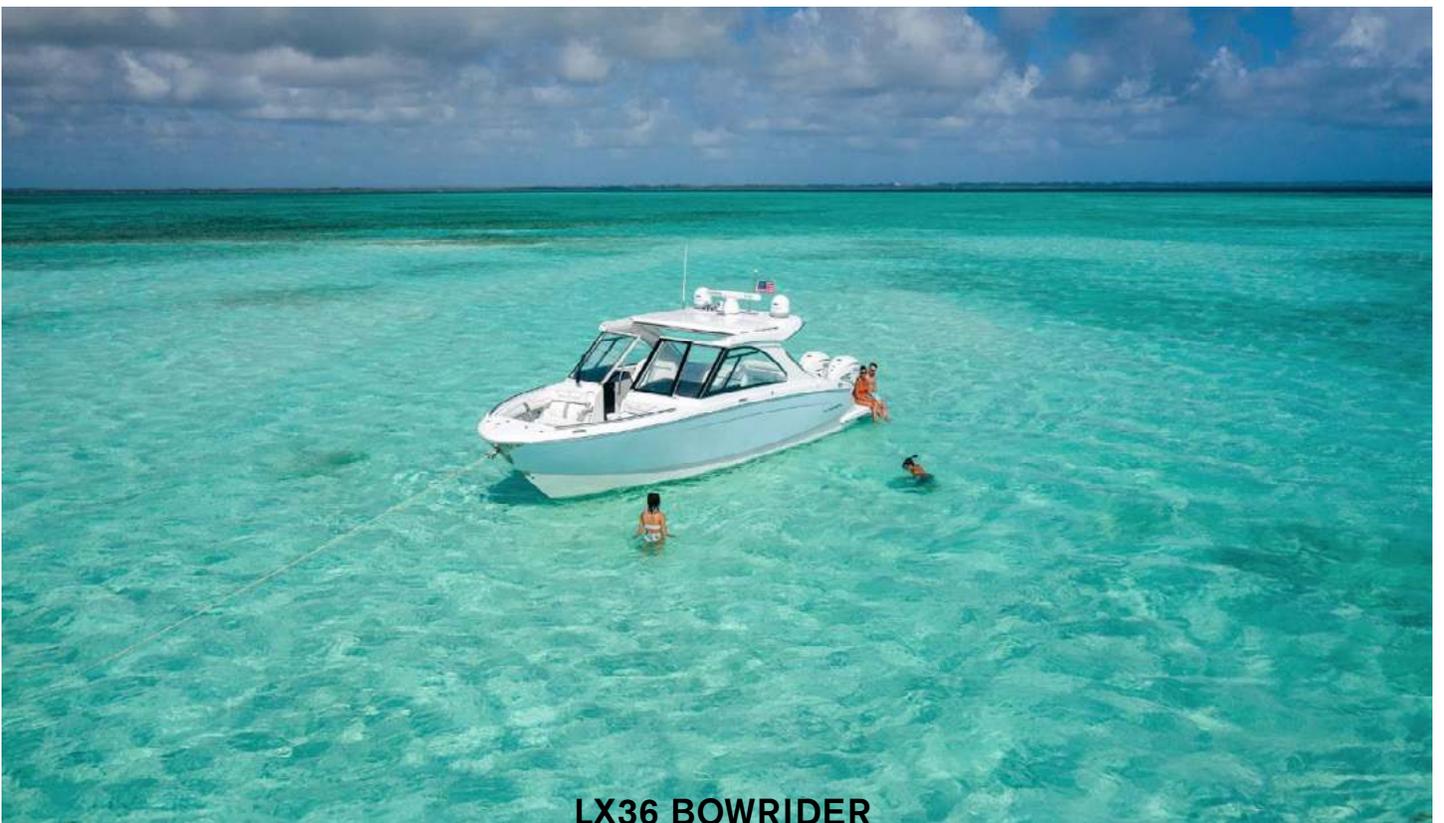


LS36 BOWRIDER



LX36 BOWRIDER

REGAL LS36 & LX36 BOWRIDER OWNER'S MANUAL



MAY 2023 EDITION

Chapter 1

Introduction

Notes

CALIFORNIA PROPOSITION 65

Boats manufactured for use in California for model year 2018 and after meet the California EVAP Emissions regulation for spark-ignition marine watercraft. Boats meeting this requirement will have a label affixed near the helm.

WARNING

Operating, servicing and maintaining a recreational marine vessel can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. To minimize exposure, avoid breathing exhaust, service your vessel in a well-ventilated area and wear gloves or wash your hands frequently when servicing this vessel. For more information go to: www.P65warnings.ca.gov/marine.

The fuel system in this boat complies with U.S. EPA mandated evaporative emission standards at time of manufacture using certified components.

MANUFACTURER'S WARRANTY COVERAGE

This evaporative emission control system is warranted for two years. If any evaporative emission-related part on your spark-ignition marine watercraft is defective, the part will be repaired by Regal Marine Industries, Inc.

OWNER'S MANUAL RESPONSIBILITIES

- Select Regal models are spark-ignition models.
- As the spark-ignition marine watercraft owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Regal Marine Industries, Inc. recommends that you retain all receipts covering maintenance on your spark-ignition marine watercraft, but Regal Marine Industries, Inc. cannot deny warranty solely on the lack of receipts.
- As the owner, you should be aware that Regal Marine Industries, Inc. may deny you warranty coverage of your spark-ignition marine watercraft or a part has failed due to abuse, neglect, or improper maintenance or unapproved modifications.
- You are responsible for presenting your spark-ignition marine watercraft to a Regal Marine Industries, Inc. distribution center or a service center as soon as the problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days. If you have any questions regarding your warranty coverage, you should contact Regal Marine Industries, Inc. at 407-851-4360.

Welcome to Regal

I know I speak for everyone at Regal when I thank and welcome you to the ever-growing family of Regal boat owners. You've chosen a boat that is recognized worldwide for its standard of excellence. Each step in construction has been carefully scrutinized to assure safety, performance, reliability and comfort for both your passengers and yourself.

Your yacht is certified by the National Marine Manufacturers Association. It also complies with the applicable standards set by the United States Coast Guard, American Boat and Yacht Council and the International Marine Certification Institute. Your Regal boat was built with the same attention to detail and quality of construction that we would expect in a craft we would purchase ourselves.

Whether you're a veteran boater or a newcomer, we strongly urge you to read the Regal owner's manual thoroughly. Familiarize yourself with the various components of your vessel, and heed the safety precautions noted herein.

If you have questions that are not covered in this manual, please consult your nearest Regal dealer for assistance, phone the Regal factory at 407-851-4360 or E-mail us at www.regalboats.com.

Again, thank you and welcome to the "World of Regal !"

Duane Kuck
President & CEO

Our Mission

With God's help, we will develop an exceptional team dedicated to enriching lives and providing an awesome boating experience.

Owner's Manual Scope

The Regal LS36/LX36 Owner's Manual is a model specific document being the 2nd segment of a 2 part manual series.

The General Vessel Information Manual is the 1st segment and is located on the Regal website. It is a prerequisite for the REGAL LS36/LX36 model specific manual. **The General Vessel Information Manual** addresses boating information, on board safety, and nautical rules of the road. Being a seasoned skipper or a newcomer, we strongly urge you to read and become familiar with both manuals.

The Regal LS36/LX36 owner's manual includes specific information covering both the LS36 stern drive and LX36 outboard models. Covered are boat systems, auxiliary equipment, vessel operation, care/maintenance, storage/winterization, and troubleshooting tips along with technical data including drawings.

There may be instances where stern drive and outboard information is mixed. In such cases wording such as **typical** is used. In other cases the words **outboard or stern drive** are used to differentiate products for the reader.

Typically, chapter headings are listed alphabetically for easier referencing.

The Regal LS36/LX36 owner's manual should not be thought of as a complete shop or operator's manual as select general subject matter is covered in this document.

In addition, read and become familiar with the engine/propulsion and generator operator's manuals before operating the vessel. These manuals may be a paper document, DVD, or in other formats. Further detailed equipment and propulsion system information can be found in the owner's packet and on the internet.

Your Regal dealer has received training on the product line and their technical services may be employed to solve problems. You can call 407-851-4360 or connect to regalboats.com to find your closest Regal dealership.

In keeping with its commitment to improvement, Regal Marine Industries, Inc. is continually upgrading the product line. Regal notes that all dimensions, specifications, drawings, models, standard and optional equipment noted in this manual are subject to change without notice at any time. No liability is accepted for information correctness and is given to the best of our knowledge.

Note that the word "currently" as used in this manual refers to components, systems, specifications, and procedures in place on the May 16, 2023 release of this manual.

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Chapter 2

Systems

Overview

The system chapter covers general operating information regarding on board equipment. Major systems covered are electrical, fuel, propulsion, water and waste.

In addition, supplementary system equipment information is found in this chapter and manual.

Note that select equipment may be optional and not installed on your vessel. Also, select equipment, photos, and descriptions may be typical and may not be an exact representation of your on board equipment.

Note to read and understand all equipment owner's manuals before attempting to operate any component as they provide detailed safety, operating, and troubleshooting procedures and information not covered in this manual. No liability is accepted for information correctness and is given to the best of our knowledge.

Furthermore, an additional technical information source is your Regal dealer as they have received training on Regal models and systems.



WARNING

PREVENT INJURY, DEATH, AND/OR
PROPERTY DAMAGE!
READ AND UNDERSTAND VESSEL
EQUIPMENT OWNER'S MANUALS
BEFORE ATTEMPTING
TO OPERATE SYSTEM COMPONENTS.

Air Conditioning

The self-contained air conditioner system installed on your Regal boat features both cooling and heating system functions adaptable to a multitude of climatic environments. The system is made up of four main components and a refrigerant gas flowing through the system. The blower gathers warm cabin air across special fins on the evaporator where the heat from the surrounding air is transferred to the refrigerant flowing in the evaporator coil. At this stage refrigerant evaporates from a liquid into a gas and absorbs heat from the main air supply.

The compressor then squeezes the refrigerant gas and pumps it through the outer tube in the condenser coil. Your onboard AC circulation pump passes cool seawater through the inner tube in the condenser coil; this cools the refrigerant and condenses it into a liquid. The heat from the refrigerant is exchanged to the outgoing seawater where it is discharged overboard via a transom hull fitting. The liquid refrigerant is then circulated through the evaporator coil and the process is repeated. Removing heated air from the cabin lowers the temperature. The cooled air is blown through the insulated ducting and out the air grilles installed throughout the vessel.

Reverse Heat

The air conditioning system features a reverse heat cycle. This can be extremely valuable to boaters in colder climates especially for early spring and late fall cruising.

To accomplish reverse cycle heating, the refrigerant flows in the opposite direction through a reversing valve located on the evaporator/condenser unit. Heat is transferred from the seawater in the coil of the condenser to the refrigerant and then to the air as it is blown through the evaporator into the main cockpit and auxiliary air grilles. The temperature of the seawater will affect the air conditioner unit efficiency.

The temperature variance for cooling efficiency is:
Up to 90 Degrees F. (32.2 Degrees C.)

The temperature variance for heating efficiency is:
Down to 40 Degrees F. (4.4 Degrees C.)

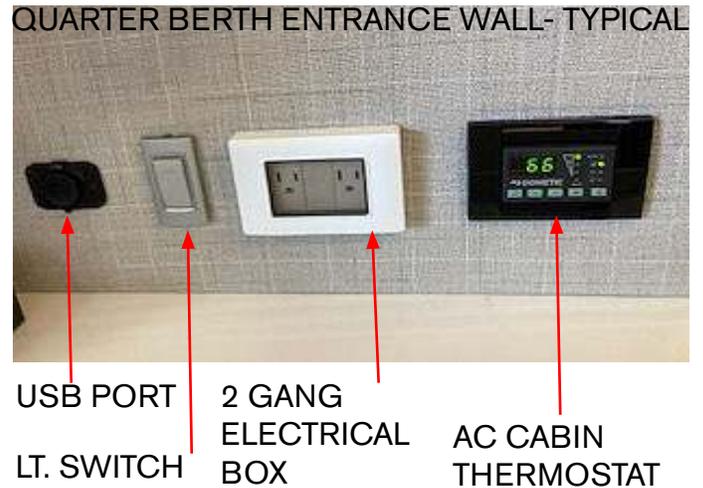
Air Conditioning (Continued)

Currently the on board air conditioning system features balanced zone coverage including the quarter berth and cockpit. The system utilizes a single pump which delivers cooler seawater to the evaporator/condenser unit. The drain pan is a rust free molded composite. Residue water exits through the shower box. Warmer seawater exits the vessel overboard using a thru-hull fitting.

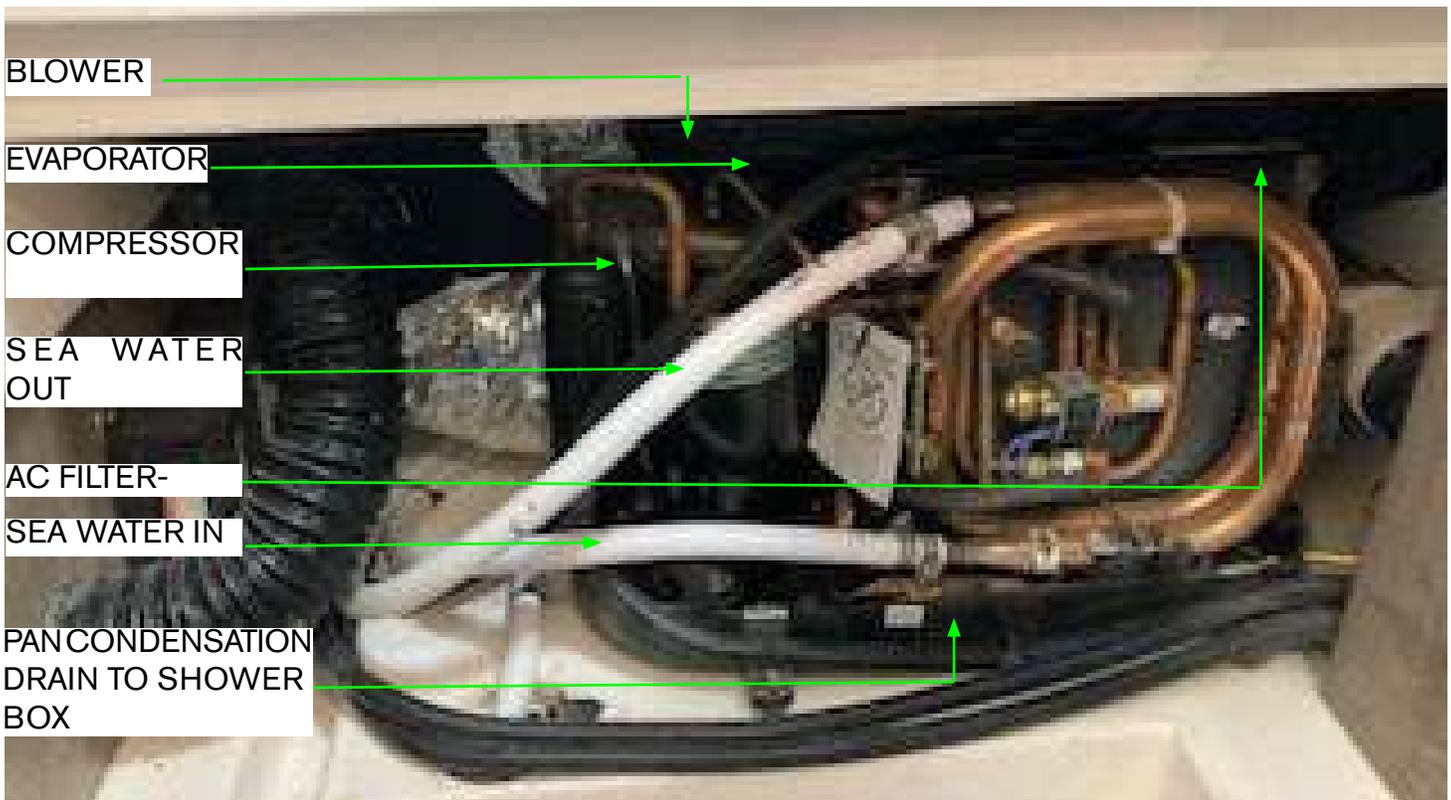
A vibration isolation system reduces noise. The sound cover provides further noise reduction which amounts to multiple decibels. The evaporator/condenser unit incorporates a compressor to compact the environmentally safe refrigerant which is comprised of fluorinated greenhouse gases. Refer to your AC manufacturer's manual for further detailed features.

The evaporator/condenser unit is located behind the head entrance stairway.

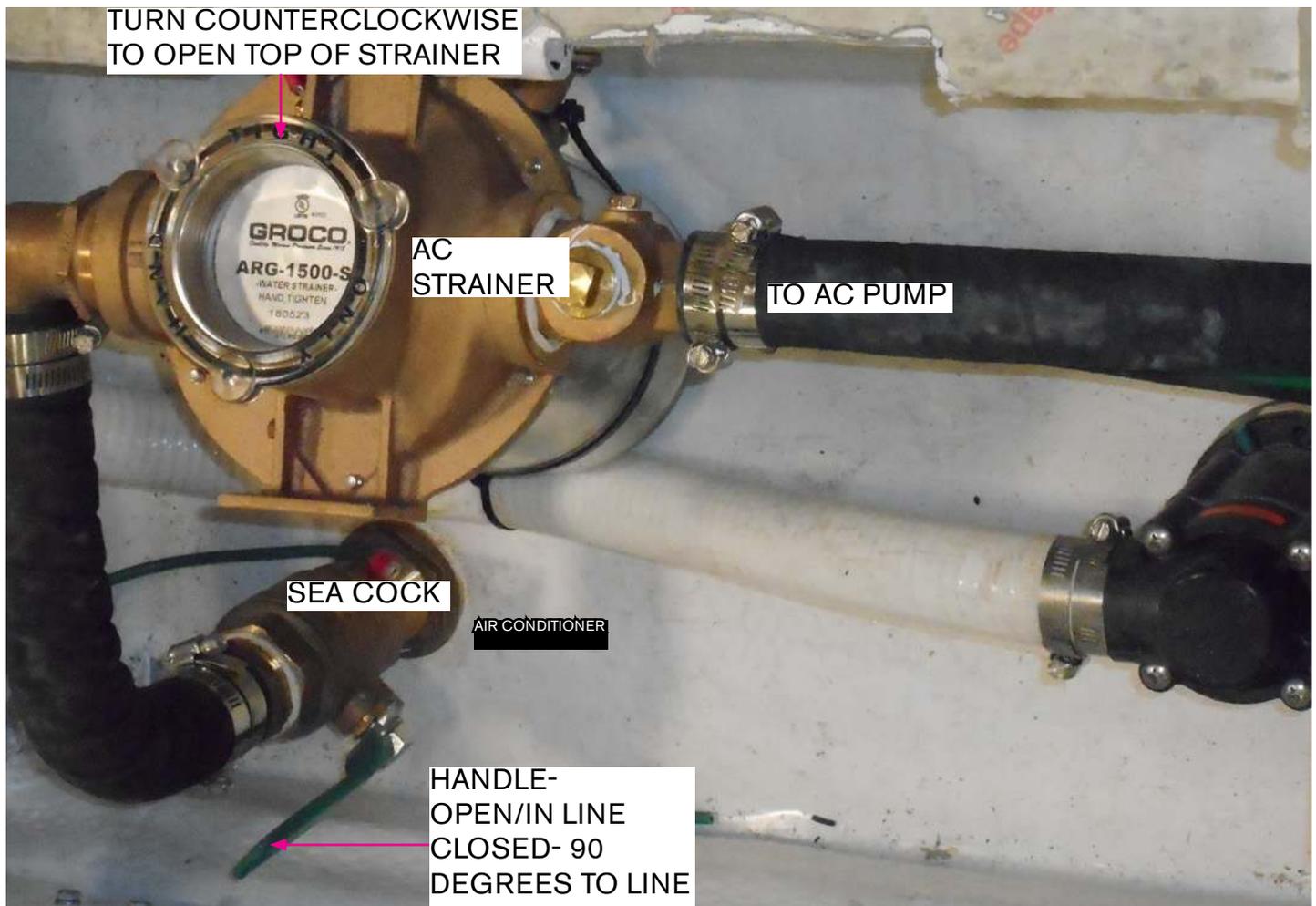
The control panel (thermostat) is located in the quarter berth for complete zone comfort. A set of detailed control panel reference system codes is provided in the operation manual for any service issues.



TYPICAL AIR CONDITIONING EVAPORATOR/CONDENSER UNIT



AC Seacock/Strainer (Typical)



Located in the bilge is the air conditioner seacock and strainer. Always ensure the seacock handle is in-line with the hose indicating an “open” position before attempting to start the air conditioning system. This will permit seawater to circulate through the AC pump and air conditioning unit. Note that the AC seacock is typically labeled for easier identification. See photo above.

NOTICE

CHECK AIR CONDITIONER STRAINER WEEKLY FOR DEBRIS AND CLEAN AS NEEDED.

The 230 volt A/C pump is located in the bilge. It provides sea water circulation to cool the A/C unit. The AC pump sources water from a seacock/strainer unit.



AC PUMP-TYPICAL

WARNING

AVOID DEATH OR BODILY INJURY
DUE TO SHOCK!
AC PUMP LOCATED IN AFT BILGE IS
230 VOLTS AC CURRENT.
IF SERVICE IS REQUIRED CALL A
CERTIFIED MARINE ELECTRICIAN.



CAUTION

AVOID POSSIBLE AC PUMP FAILURE/
SYSTEM DAMAGE
DUE TO SYSTEM LOSING ITS PRIME
CAUSING THE AC PUMP TO QUIT
ON START-UP DUE TO A LACK OF WATER!
IF VESSEL IS HAULED OUT OF WATER
(EXCEPT FOR WINTERIZATION)
ENSURE THE AC SEACOCK HANDLE
IS TURNED TO THE "OFF" POSITION
BEFORE LIFTING THE VESSEL.
REMEMBER TO TURN THE SEACOCK
HANDLE TO THE "ON" POSITION BEFORE
RE-STARTING THE AC SYSTEM.

AC PUMP HARNESS JUNCTION BOX



Note that all equipment, operation, specifications, wiring and or hose routing may be subject to change at any time due to Regal's commitment to product improvement.

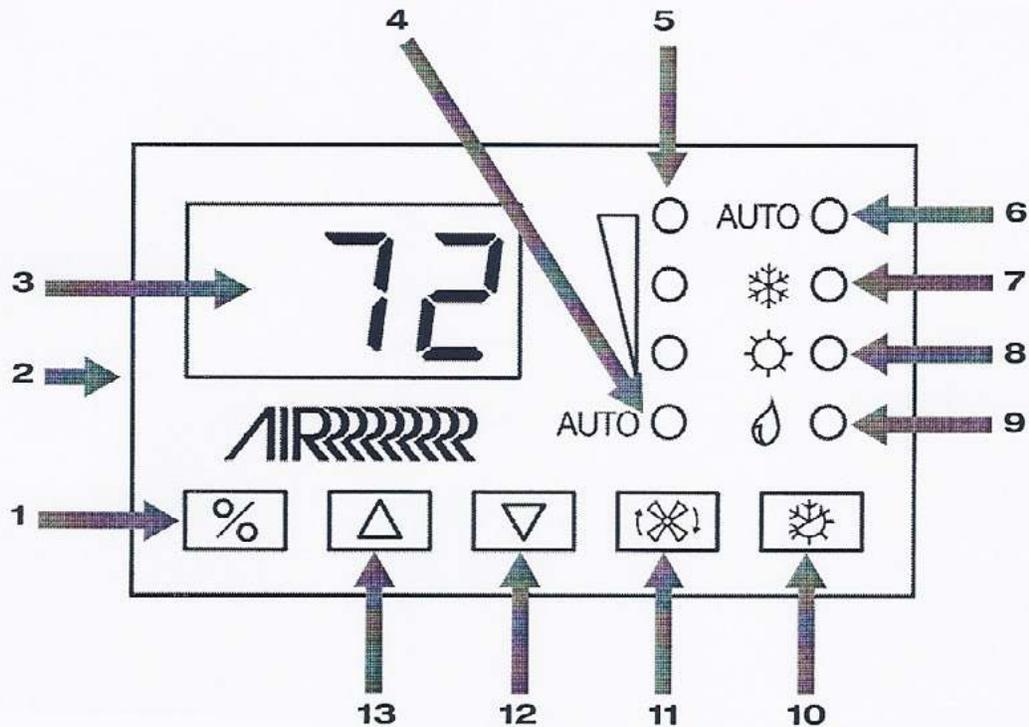
Air Conditioning System/Control Panel Operation

Below is a basic quick start-up checklist for the air conditioning system. For more in depth information, refer to the vendor operation manual.

Operations Quick Start-Up Checklist:

1. Check the AC seawater strainer weekly for debris.
2. Make sure the AC seawater pump sea cock is opened completely (handle should be in-line pointing up).
3. Activate the desired air conditioner breaker on the boat's main AC control panel.
4. Check the hull side for a steady stream of seawater. Seeing water here is normal when the AC pump is running. If stream is diminished or no water emits from the fitting immediately turn the AC pump off and investigate the cause of the problem.
5. Press the thermostat Power button once to activate the air conditioning system. A blank screen displays when system is off and indicates present cabin temperature.
6. For cooling or heating press and release the Mode button until the desired LED is illuminated ie; automatic mode.
7. Press the Up or Down button to set the desired cabin temperature. To view the set point, momentarily press and release the Up or Down button.
8. Auto fan LED lights when Auto fan speed is selected.

Typical Air Conditioning Control Panel



Display - Diagram Legend

1	Power button	8	Heat Mode indicator
2	Temperature sensor	9	Moisture Mode indicator
3	Digital display	10	Mode button
4	Auto Fan indicator	11	Fan button
5	Manual Fan indicator (high, medium, low)	12	Down button - Lower temperature set point
6	Auto Mode indicator	13	Up button - Raise temperature set point
7	Cool Mode indicator		

Note that the AC display continually monitors the system components. Should a problem develop it sends a diagnostic code to the control (thermostat) display. Refer to the vendor air conditioning manual (troubleshooting section) to assist in identifying any problem.

Air Conditioner Tips

Seawater Strainer

The air conditioner seawater strainer is located in the bilge and should be cleaned periodically of debris which can inhibit or stop the fresh sea water supply. Always turn the sea cock handle to the off position (90 degrees to the hose fitting) before cleaning a seawater strainer.

Remove the basket by turning the plastic cap in a counterclockwise direction. Set the cap and the O ring aside. Pull the basket from the unit, rinse with water, air dry and reinstall. Sediment at the bottom can be removed by just turning the plug in a counterclockwise direction. Place a container under the strainer to catch the sediment. Coat the O rings with waterproof marine lubricant containing a silicone or teflon base. Reinstall O rings along with the plug and plastic cap. Rotate the seacock handle to the in-line position and check for leaks.

For location information see the photo shown earlier in this section.

NOTICE

CHECK AIR CONDITIONER STRAINER
PERIODICALLY FOR DEBRIS
AND CLEAN AS NEEDED.



WARNING

PREVENT INJURY OR DEATH!
DISCONNECT
ALL ELECTRICAL POWER SOURCES
BEFORE ATTEMPTING
TO OPEN, REPAIR, OR REPLACE ANY
AIR CONDITIONER COMPONENTS.

Drain Pan

As noted on an earlier page the AC evaporator/condenser features a 2" deep drain pan connected by a hose that runs to a shower box and eventually exits overboard. Periodically just like your home AC, the pan needs to be rinsed clean of debris and possible mold accumulation.

You can use a purchased product made specifically for cleaning AC units. Disconnect the outlet hose from the AC pan and install a made up hose (5/8") that will catch the used solution to fill a small container. Pour the solution into the pan and allow time for it to drain. Reconnect the original drain pan hose when finished. Dispose of the container in accordance with federal, state and local regulations.

Condenser Coil Cleaning

Periodically the condenser coils are recommended to be cleaned. This procedure should be performed by a professional since an acid solution must be used.

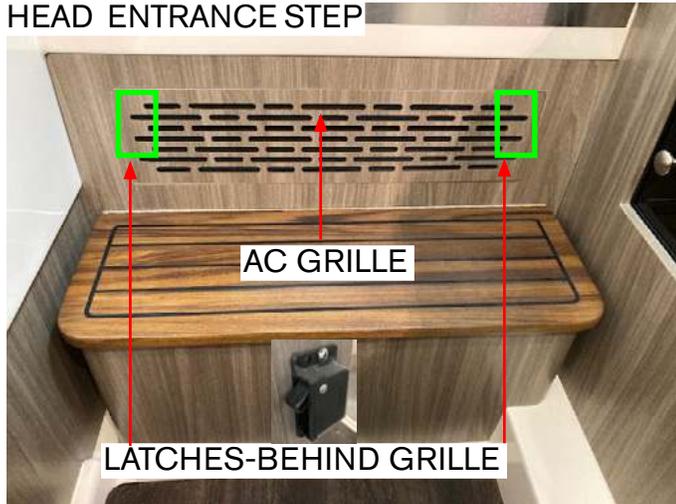
AC Filter

Periodic air conditioner filter cleaning is recommended to maintain maximum system performance. See the photos and information below for accessing the AC filter which is located on the air conditioner unit evaporator.

NOTICE

CHECK AIR CONDITIONER FILTER PERIODICALLY FOR DEBRIS AND CLEAN AS NEEDED.

HEAD ENTRANCE STEP



To access the AC filter follow these steps:

1. At the head entrance note the AC grille in the above photo. The grille is secured with a latch on both ends of the grille.

2. To remove the grille pull with your finger or insert an object into the slotted holes at the middle of one end of the grille. Pull out on grille to release the grille from the latch.



Repeat the procedure on the opposite end to remove the grille. (Note that the grille may be a tight fit and a tool such as a pocket knife with a curved end tool may be helpful to release the grille from the latch).

3. With the grille removed use a flashlight to locate the air conditioner filter at the evaporator. To remove the filter pull up on the top segment of the filter until it is released from the brackets.

4. Clean gently with warm, soapy water and rinse filter with clean water. Allow filter to dry.



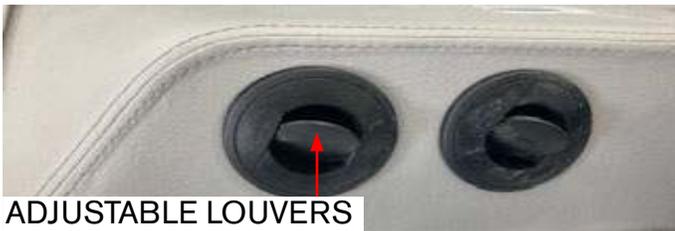
5. Reinstall filter using the brackets to locate it properly. Ensure the filter is seated completely.

6. Place the AC grille in the cutout provided. Push in at both ends to secure the filter in the latches. Note that the grille should fit flush in the cutout indicating it is fully latched.

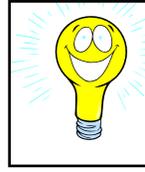
AC Returns & Ducts

1. Never block off any AC return grille or duct. The unit will not operate properly without sufficient return air flow.

2. Adjustable air grilles are found in various locations throughout the vessel. Adjust the AC vent louvers as needed for the most comfortable air flow.



AC System Possible Problems/Solutions



1. No or little water is noticed at the thru-hull fittings and a HPF fault code shows on the display which means the high pressure switch is open.

The strainer or intake hose may be clogged, sea cock may be closed, a hose may be collapsed or the AC pump may be defective.

2. Air conditioner will not start. Ensure the proper AC breaker is activated on the ship's main control panel (MDP).

3. No cooling or heating. Lower or raise set point on thermostat control to offset set point being satisfied. Check for obstructed seawater flow. Remove discharge side of pump hose to purge air (air-lock). Seawater temperature too high for cooling and too low for heating.

4. Fan coil is iced. Raise or lower control set point. Clean return air filter. Switch AC to heat until ice melts or as a last resort use a hair dryer to melt ice as needed.

Bilge Pump

Typically, bilge pumps may be located below the floor in the aft sump, amidships, and forward of the helm area. Before each outing, check the operation of the bilge pump, automatic switch, and manual switch. The bilge pump should automatically activate when water reaches a pre-determined height in the engine compartment. Test the bilge pump manually at the switch or on the plotter. Periodically check for bilge debris around the grates of both the bilge pump and automatic switch, and also bilge pump impeller.

The automatic mode for your bilge pump works similarly to the manual method. Both methods control the bilge pump by a switch, but the automatic mode utilizes a float switch. Float switches feature a device that sits at water level, and when the float reaches a certain height, it trips the switch and activates the bilge pump.

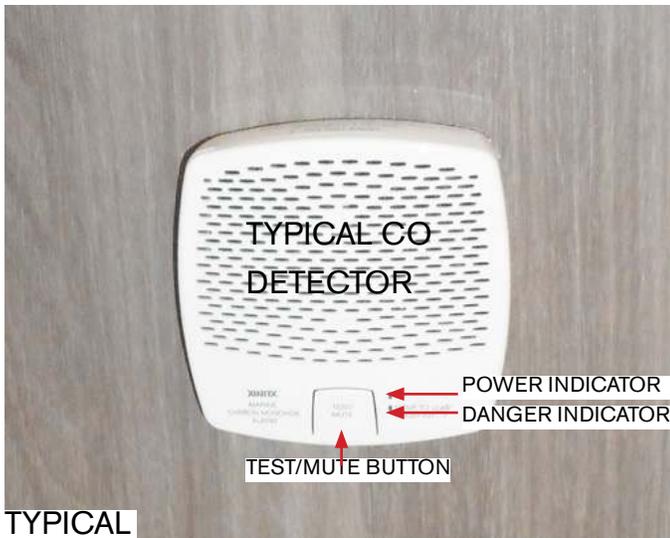
Occasionally on select units it may become necessary to disassemble the bilge pump from the grate in order to clean debris from the pump itself. To remove select bilge pumps, utilize the quick disconnect tabs located on either side of the bilge pump, squeezing them like a backpack clip while pulling up on the pump.

If a bilge pump keeps activating it is recommended to find the cause of the malfunction such as a loose or cracked hose. A loose hose clamp or hull leak could also cause excess bilge water.



Typical Bilge Pump And Automatic Switch

Carbon Monoxide (CO) Detector



The most common forms of CO on board vessels are petrol engines/generators and if applicable, propane heating and cooking devices.

 **DANGER**

CARBON MONOXIDE IS A TASTELESS, ODORLESS AND INVISIBLE GAS THAT CAN CAUSE DISCOMFORT, SEVERE ILLNESS, AND EVEN DEATH. EXERCISE CAUTION WHILE OPERATING GENERATOR OR ENGINES IN CONFINED SPACES OR AT DOCK SIDE. DO NOT ALLOW HULL EXHAUST OUTLETS TO BECOME BLOCKED OR EXHAUST FUMES CAN BECOME TRAPPED IN AND AROUND THE CONFINES OF YOUR BOAT. DURING IDLE AND SLOW CRUISE CONDITIONS, BILGE BLOWERS SHOULD BE USED.

Note to always follow all CO precautions as the vessel moored next to you may be a CO poison contributor.

Note on the plotter there is a 2 step process required to deactivate the onboard CO detectors.

CO (Carbon Monoxide) Detector Operation

The CO detector uses a mini computer to measure and accumulate CO levels. Using the principle of “time weighted averaging” the detector monitors CO concentrations, temperature, humidity and time to calculate COHb levels. To explain COHb, our bodies prefer to absorb CO to oxygen and COHb is the absorbed ratio stated in a percent.

If the detector senses high levels of CO the alarm will sound in a few minutes. If lower levels are sensed, the detector will accumulate the data and sound an alarm when the appropriate level is reached. Read and understand the CO owner’s manual.

The CO circuitry works to its best performance when continually activated plus it accords advanced warning when entering an area high in CO.

The CO detectors operate using 12 volt DC power and over current protection inside the battery management panel.

The test cycle should be activated weekly. Simply press the button. Refer to the CO detectors owner’s manual for an explanation of the test cycle indicators. Note that the green light will flash every 180 seconds which is normal.

For further information read the Regal General Vessel manual available at the Regal web-site.

NOTICE

CARBON MONOXIDE PRECAUTIONARY LABELS ARE LOCATED AT THE HELM, TRANSOM AND CABIN AREAS. ENSURE THAT ALL ABOARD READ AND UNDERSTAND THE SIGNS AND EFFECTS OF CARBON MONOXIDE (CO).

CO Detector Notes

1. The date of manufacture is embossed at the bottom of the detector. Replace unit after 7 years even though battery life is longer.

2. Test weekly. Clean face weekly. Do not use solvents.

3. When CO event occurs alarm beeps 4 times, 5 second pause. Repeats.

4. End of life cycle is 1 beep every 60 seconds. To deactivate unit at life's end hold button down for 1 minute. Red and green LED lite up. Press button 5 times. Red and green LED flash, horn beeps. Unit is deactivated.

5. The detector performs a self-diagnosis of critical components on a integrated schedule. Should a major component fail the unit enters a fault in which both visual and audible indicators activate.

6. If an alarm sounds move everyone to fresh air immediately. This indicates a rate of 10% COHb has been reached. Call your emergency services. Do not re-enter the vessel until emergency personnel have arrived.

Your alarm reactivates within a 24 hour period Call a qualified technician to inspect the vessel. Note that the CO detector will clear when the CO concentration has dropped below 70 ppm (parts per million).

7. Avoid spraying cleaning liquids directly on the alarm.

8. Clean detector face weekly by wiping surface of alarm with clean soft lint free cloth.

Electrical-DC (Direct Current)

In this section, **basic** DC (direct current) electrical systems and components are introduced including select on board system/component function and location.

Note that a majority of system and component drawings are found in the technical chapter providing further circuitry details and troubleshooting assistance.

There may be instances where the stern drive and outboard information is mixed. In some cases wording such as **typical** is used. In other cases the word **outboard** is used to differentiate products/information for the reader.

For more complicated issues outside the scope of this manual contact your closet authorized Regal dealer. They have undergone extensive training on the Regal boat systems.

Be sure to read and follow any danger, warning, caution, or notice labels in reference to the vessel's electrical system or individual equipment components. Also, refer to the owner's packet for further product safety information or the internet.

Note that typical direct current (DC) wiring is found in the drawing chapter.

DC Fuses

Various fuses and fuse blocks onboard use both MIDI and ATC fuses. These style fuses are used frequently in the global propulsion industry.

MIDI fuses are used for system equipment components requiring high amperage protection including the toilet (head), cabin main, and Fusion stereo amplifiers.

MIDI fuses feature the following:

1. Use tin-coated copper blades for best conductivity and corrosion resistance.
2. Has a clear window for the fuse element to be seen easily. Helps in locating a "blown" fuse.
3. Specs for high amperage capacity which is great for many of the vessel DC devices.

ATC fuses feature the following:

1. They are fast acting so when activated they will blow faster causing less damage to components.
2. They are used as standard protection in auto/truck industry.
3. Most are tin-plated blades for corrosion protection.

Note that when a fuse blows always determine the cause before replacing the fuse. Use fuses of correct type and amperage. Identify fuse type and amperage at the metal ends of select fuses.

Note that fuses are normally available at marinas, retail boating outlets, automotive suppliers, and Regal dealers.

Battery Management System Overview Drawings

On the following pages are found electrical schematics for the general battery management systems including stern drive and outboard vessels. For additional information contact your Regal dealer who has received training on Regal boat systems and will be able to address more technical matters far beyond this manual.

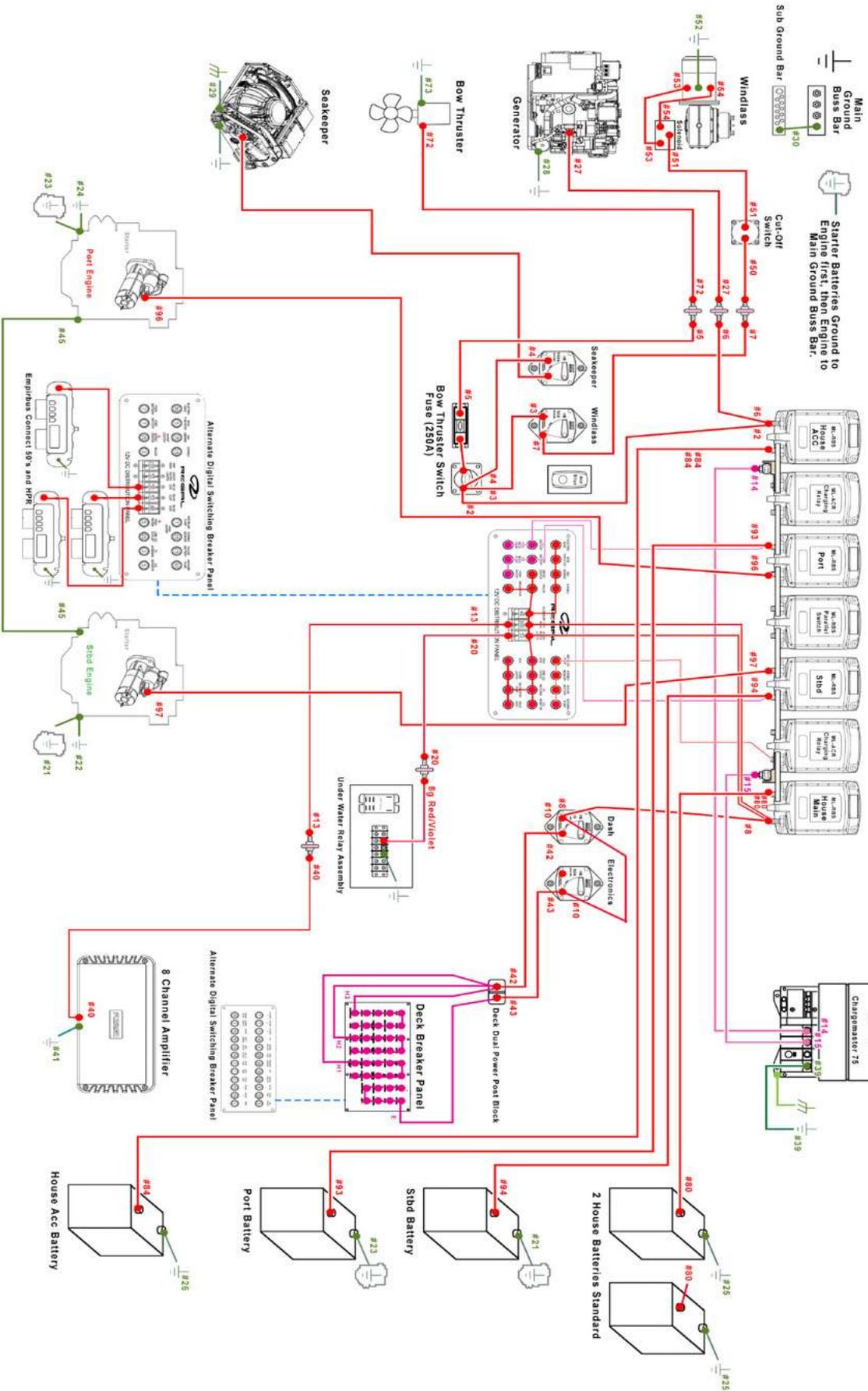
Note: The electrical components shown in these drawings and the actual components on your vessel may appear different as Regal is constantly updating systems, components, and processes as part of an on-going dedication to product improvement. No liability is accepted for information correctness and is given to the best of our knowledge.

NOTICE

THERE ARE VARIOUS DIFFERENCES BETWEEN STERN DRIVE AND OUTBOARD DIRECT CURRENT MANAGEMENT AND DISTRIBUTION SYSTEMS/PANELS, COMPONENTS, AND OPERATION PROTOCOLS. REFER TO THE APPROPRIATE DRAWINGS AND OPERATIONS FOR EACH SYSTEM AS REQUIRED.

Battery Management System- Typical Stern Drive

Subject Work Instruction: VL Battery Management System Generator Option	Issue Date: 05/04/2020	Rev: 1	Document No. EL-173
Approved By: Mark Journey	Written By: Kyle Quatman	Rev Date: 07/23/2020	Page: 1 of 1



Battery Management Box Through-hole Stud

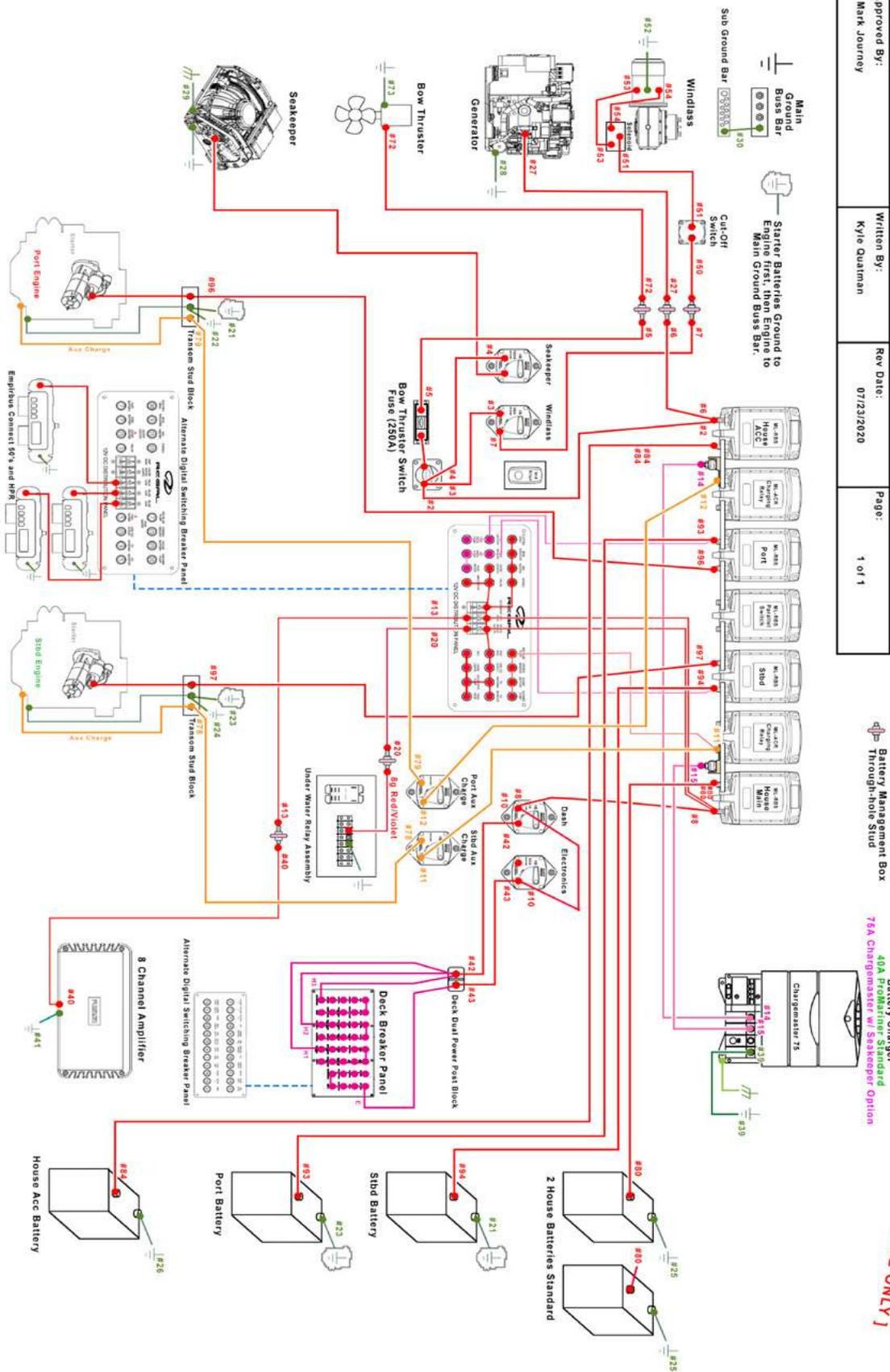
Battery Charger 40A ProMariner Standard 75A Chergemaster w/ Seakeeper Option

[REFERENCE ONLY]

Battery Management System Overview LS36- Stern Drive Propulsion

Battery Management System- Typical Outboard

Subject Work Instruction: VM Battery Management System Generator Option	Issue Date: 05/04/2020	Rev: 1	Document No. EL-174
Approved By: Mark Journey	Written By: Kyle Quatman	Rev Date: 07/23/2020	Page: 1 of 1



Battery Management System Overview LX36- Outboard Propulsion

Batteries- Basic Engine/House Description

All vessel DC equipment and specifications are subject to change at any time, as part of Regal's commitment to product improvement. Note that stern drive and outboard vessels use a specific battery management panel consisting of a series of remote automatic battery switches (RBS) and charging units.

See the technical chapter for more detailed information on battery placement.

Battery Terminology Descriptions

Group- Batteries are divided into groups which identify the height, length, and width of the battery type. This is useful information should a replacement battery become necessary.

Cold Cranking Amps (CCA)- This rating measures the cranking power of a full charged marine battery having the ability to start at 32 degrees F. Basically, the higher the rating the greater starting power of the battery.

Reserve Capacity (RC)- As usage on the boat increases so does the need for more reserve capacity. The reserve capacity represents the length of time in minutes a new fully charged battery can maintain the vessel's electrical needs without the engine running.

Note that all battery types and specifications may change at anytime.

Note that vessels with the power bank option incorporate Lithium-Ion batteries with their own respective specifications.

Currently the 36 bowrider stern drive and outboard vessels utilize 31A series batteries *for engine starting and house functions.*

They feature wet cells and vent hydrogen gas through the top caps. As they are found in the bilge inside a vented battery box care must be taken to ensure ignition protection is followed at all times to prevent an explosion from hydrogen gas.

Never use power tools, wet-dry vacuums or any type of component in the bilge that contain brushes as they give off sparks rotating around an armature while in use. Always vent the bilge by opening all hatches and energizing the blower.

Below are the basic battery specifications of Group 31 A batteries (engine cranking, house type).

BATTERY SPECIFICATIONS			
Battery Type	Group	CCA @32 Degrees F.	Reserve Capacity
Engine Cranking	31 A	1200	185 min.

Note that battery type and specifications may change at any time.

Note that if installed the Seakeeper incorporates one battery dedicated entirely to the Seakeeper system.

Battery Problems/Solutions & Hints



1. Weak battery- This battery problem can be caused by low electrolyte cell levels. Warm, bilge/ sump compartment temperatures will deteriorate a battery's life quicker by evaporating the water from the electrolyte, thus corroding and weakening the positive grids inside the battery. With the house battery low electrolyte levels can be monitored by periodic inspection and filling as needed with distilled water. Boaters in higher climate areas with longer stretches of hot weather will need to check their batteries more often.

The engine cranking batteries require distilled water periodically. They do feature a different chemistry that does consume less water. Inside the cells as gases are released condensation is formed which aids in maintaining the cell electrolyte level. These batteries incorporate a deeper layer of electrolyte over the plates, but eventually it can run dry. On the 31 series engine cranking batteries keep all terminals clean, connections tight and your electrical system in top shape to extend battery life.

2. Dead Battery- Either the battery will not accept a charge, hold a charge or the charging system is not supplying current flow through the battery charging system and/or engine stators.

The battery charger output can be checked by monitoring the lights on the charger front face.

To begin check all battery post connections for tightness and corrosion.

With the engines running the displayed voltage of the port, center (select outboard vessels only), starboard, and house battery(s) should be between 12.5 up to 14.6 volts.

If less than 12 volts check for voltage across the battery terminals.

If less than 12 volts on the house battery use a hydrometer to locate faulty cells in a flooded type battery.

On maintenance free batteries they can be removed from the vessel if necessary and trickle charged. If readings after charging are low replace the battery.

Note when replacing batteries always use the same battery type. For example, never mix lithium batteries with wet cell types.

Battery Management Activation Center- Typical



TYPICAL PANEL DISPLAY SHOWN

Battery Management Activation Center Overview

Each button displays a continuous color ***only when the button is depressed.***

When a battery switch is depressed the switch will emit a blue color.

When an emergency battery parallel switch is depressed the switch will emit a red color (Emergency battery switches are covered above).

Note to read and understand the notices shown in the above photo!

Battery Activation Panel Button Functions

House Battery- This switch when depressed completes a circuit to the house batteries which includes both the house main and house accessory units. Current runs through both the house and house accessory automatic battery switches. ***Note that both house batteries are group type 31.***

Port Battery- This switch when depressed completes a circuit to the port engine battery through the port automatic battery switch on the battery board. This permits port engine starting.

Stbd. Battery- This switch when depressed completes a circuit to the starboard engine battery through the starboard automatic battery switch. This permits the starboard engine to be started.

Macerator- Not used with digital switching system vessels.

Battery Activation Panel- Parallel Switches

Read and understand the notice labels regarding the use of the battery parallel functions on the battery activation panel before energizing the house or engine parallel buttons.

Engine Parallel- This switch when depressed will parallel (combine) the port engine battery to the starboard engine battery for emergency intermittent use.

House Parallel- This switch when depressed will parallel (combine) the “house main” battery to the starboard engine battery.

In addition, it will parallel the “house accessory battery” to the port engine battery for emergency intermittent use.

Panel Introduction-DC

Your vessel utilizes DC (direct current), panels/ displays located in various areas of the vessel depending on the options installed on the vessel. These panels provide equipment switching devices and over current protection (fuses/breakers) for on board equipment systems.

Select DC panel circuitry, function and location information along with individual panel photos may be found in the following section and the technical chapter.

In addition, there may be DC electrical panels dedicated to the digital switching system/battery management, and auxiliary equipment. Select direct current system functions incorporate Garmin display panels.

Note that basic panel information is documented in this manual but your vessel may or may not have that particular panel on board as select panels are option compliant and that option may not of been part of the original production footprint of your vessel.

Where further information is required reach out to your closest Regal dealer. They have received training on Regal systems and are a valuable source of technical information beyond this manual.



WARNING

PREVENT SEVERE INJURY OR DEATH!
DISCONNECT
ALL ELECTRICAL POWER SOURCES
BEFORE ATTEMPTING
TO REPAIR OR REPLACE
ANY ELECTRICAL COMPONENT.

DC Battery Management Panel Components- Continued

Stud Blocks-

At the port side of the battery panel are stud attachment points for heavier amperage components. These feeder studs may be provided for the windlass, generator and bow thruster. The studs are connection points for larger gauge DC feed cables. The stud attachments are accessible by removing the port and starboard panel screws. At this point the hinged door can be opened.

These feeder studs exist by component and your vessel may not incorporate all of the stud attachment points as that component may be optional and not installed on your vessel.

At the starboard side of the battery panel additional stud attachments may be present for stereo amplifiers and underwater lights.

A harness plug-in connection point links the sump harness to the 12 volt distribution panel which is mounted on the battery board (See the battery management panel illustration).

The stud attachments are accessible by removing the 3 port and starboard panel screws. At this point the hinged door can be opened.

Periodically check each stud attachment nut for tightness. Ensure that all remote battery switches (RBS) are off before servicing this connection point.

Cube Fuses-

Typically attached to select remote battery switches are cube fuses. The cube fuse amperage depends on the components originally installed via the factory production order. For reference use the battery management drawing in the technical chapter.

Over current protection using the standard 40 amp battery charger wires for the house accessory and house main circuitry includes a 50 amp cube fuse typically located on the port and starboard remote battery switch stud terminals.

Vessels with the stabilizer (Seakeeper) option typically display dual 80 amp cube fuses.

Vessels with the Seakeeper plus inverter option typically display dual 40 amp cube fuses.

Vessels with the inverter option alone typically display dual 40 amp cube fuses.

Vessels with the power bank/inverter option typically feature dual 100 amp cube fuses found on the port and starboard remote battery switches linked to the battery parallel switch.

Remote Battery Switch (RBS) Description- Typical (See battery management panel layout for locations)

Accessory House Battery Switch-This switch circuitry is connected to the house accessory battery located in the bilge (sump). This battery supplies DC current to the higher amperage components that may be installed on board including the windlass, bow thruster, Seakeeper and generator. On stern drive vessels with the engines running charging is accomplished through the port engine alternator.

On outboard models with the engines running charging is accomplished through the port auxiliary charge unit.

Charge Relay Switch- This is known as an ACR switch which translates to Automatic Charging Relay. This device permits charging current to be shared between the accessory house and port engine batteries bleeding through the tin copper plates attached at the bottom of the remote battery switches. It also allows paralleling of battery banks for emergency starting through the battery activation panel. It isolates batteries when discharging and starting the port engine.

Port Battery Switch- This remote battery switch is connected to the port engine starting battery circuit.

Battery Parallel Switch- This remote battery switch parallels the port and starboard engine batteries for emergency starting by depressing the appropriate parallel button at the battery activation panel.

Stbd Battery Switch- This remote battery switch is connected to the starboard engine starting battery circuit.

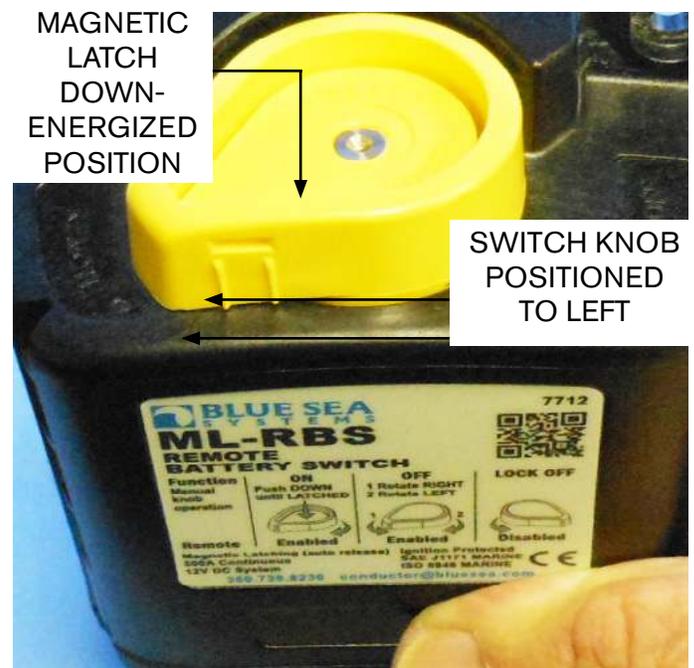
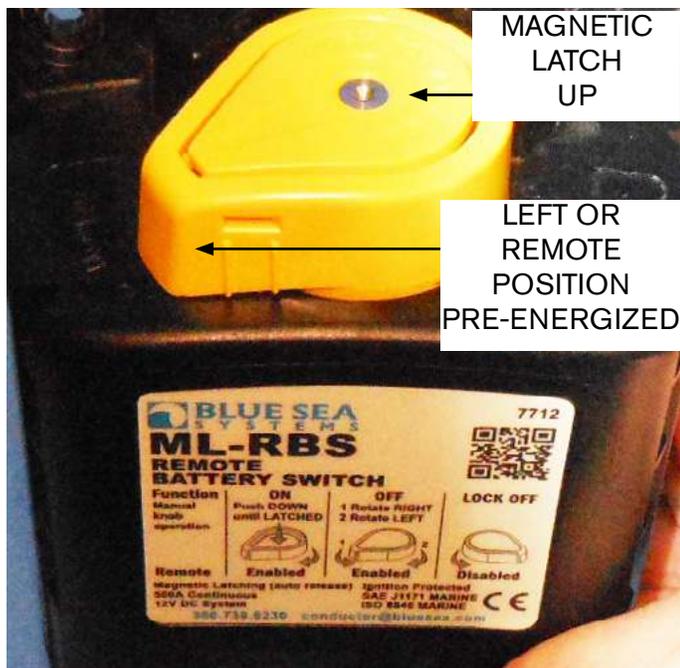
Charge Relay Switch- This is known as an ACR switch which translates to Automatic Charging Relay. This device permits charging current to be shared between the house main and starboard engine batteries. It also allows paralleling of battery banks for emergency starting through the battery activation panel. It isolates batteries when discharging and starting the port engine.

House Battery Switch- This remote battery switch is connected to the house main battery. One of the battery charger legs is connected to this battery switch to provide charging current to the house main battery when the optional power package is installed.

One of the main differences between the stern drive and outboard battery management panel is the outboard panel which includes the Aux. charge circuits.

On outboard vessels with the engine running a dedicated stator charging output wire is connected to an Aux. charge breaker and then supplies current to main house battery.

Remote Battery Switch Operation



1. Normal operation of the remote battery switch is completely to the left in the auto or “remote” position. Notice latch position is up (manually dis-engaged). To energize the house circuit press the appropriate switch at the battery activation panel. Once the switch is energized the magnetic latch will be pulled down in the energized position (photo at top right).

2. If the remote battery system fails for some reason the skipper can override the remote battery switch manually through the magnetic latch which is located on top of the switch. Just turn the switch to the left and push the magnetic latch down until it engages.

3. In the event of servicing the house battery components turn the remote battery switch to the **right** (Lock or Off Position). Pass a tie wrap through hole to secure the remote battery switch knob until servicing is complete.

Remote Battery Switches, Charging Functions, Battery Management

If a remote battery switch is positioned as shown below (straight out, OFF position) that particular battery or connected battery bank will be **inoperative**. This positioning could effect both starting and house battery circuitry. After sump maintenance or electrical repairs always check the battery switches to ensure switches are in “on” remote position.



2. When operating the optional Seakeeper (stabilizer) make sure to charge the house accessory battery with the engines or through the generator.

3. Periodically check all battery hardware for tightness and ensure battery electrolyte is up to required cell levels. Use only distilled water for filling lead acid types of batteries. Wear proper eye wear and gloves when servicing battery systems. Read the maintenance chapter for further battery maintenance information.

4. Periodically check all battery bank hardware for tightness and corrosion. Maintain periodically as needed.

5. **Always deactivate the battery switches at the battery activation panel to the “off” position before leaving the vessel.**

6. For safety sake it is recommended to charge all batteries outside of the vessel to eliminate possible hydrogen gas build-up in the sump and sparks from battery charger leads.

Battery Management System- Related General Charging System Information

The battery management panel features a set of remote battery switches which are connected through the battery activation panel. When activated by the battery activation switches individual engine cranking and house battery functions are energized. Also, battery parallel circuits are connected as the parallel buttons are activated on the battery activation panel.

Located on the bottom of remote battery switches are switch link plates which connect battery switches and assist in charging current bleeding through to all connected battery circuits.

The remote battery switch circuits are charged by the engine alternator system when the engines are running and by the battery charger when a shore power cord is connected from the vessel shore power inlet to a marina shore power supply center.

Remember that a remote battery automatic switch must be in the remote position to be operational. See the information provided on the remote battery switch operation page for further information or contact the closest Regal dealer.

The battery management panel used on outboard vessels features a set of remote battery switches which are connected through the battery activation panel.

When activated by the battery activation switches individual engine cranking and house battery functions are energized. Also, battery parallel circuits are connected as the parallel buttons are activated on the battery activation panel. Notice on the drawing both ACR's (automatic charging relays) and a parallel switch are key players in the outboard propulsion battery charging process.

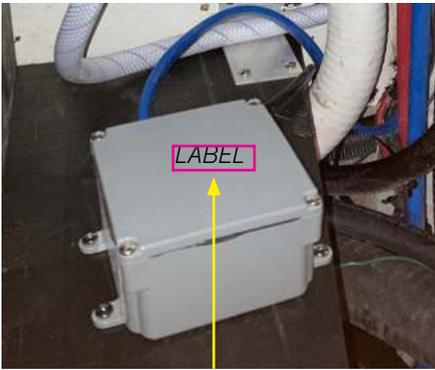
Note that the system includes Aux. charge wiring from each outboard.

Located on the bottom of remote battery switches are switch link plates which connect battery switches and assist in charging current bleeding through to all connected battery circuits.

The remote battery switch circuits are charged by the outboard engine stator system when the engines are running and by the battery charger when a shore power cord is connected from the vessel shore power inlet to a marina shore power supply center.

Remember that a remote automatic battery switch must be in the remote position to be operational. See the information provided on the remote battery switch operation page for further information or contact an the closest Regal dealer.

Battery Charger Information- Typical



BATTERY CHARGER JUNCTION (FEED) BOX-
SEE HIGH VOLTAGE WARNING LABEL ON THIS PAGE

BATTERY CHARGER SYSTEM/ STATUS DISPLAY
(SEE CHARGER USER MANUAL FOR MONITORING INSTRUCTIONS)

BATTERY CHARGER-
(NOTE THAT OPTIONAL 75 AMP O/B CHARGER SHOWN; STD. CHARGER AMPERAGE IS 40)



NOTE THAT LOCATIONS/COMPONENTS MAY VARY BY OPTION

The red wire from the battery charger breaker runs to the hot (positive) side of the house battery. If the breaker blows after determining the cause of the problem slide the handle up to the “on” position to reactivate the breaker. Periodically check all fasteners on the breaker and the battery for tightness. Reinstall any boots on the positive stud.

Read and understand the following 240 volt warning at the battery charger junction box cover. Service only by a certified marine electrician.



WARNING

PREVENT INJURY, DEATH, AND/OR PROPERTY DAMAGE FROM HIGH VOLTAGE!
DISCONNECT SHORE POWER BEFORE SERVICING!



WARNING

PREVENT INJURY, DEATH, AND/OR PROPERTY DAMAGE FROM HIGH VOLTAGE!
SWITCHING THE CHARGEMASTER PLUS TO THE “STAND-BY” MODE DOES NOT CUT OFF THE CONNECTION TO THE BATTERIES OR THE AC SOURCE!
DISCONNECT SHORE POWER BEFORE SERVICING!

Current **standard** battery charger features 40 amp output and universal voltage for multiple battery circuits.

The new electronic battery chargers are “smart”. They will charge the batteries in 3 stages; bulk, absorption, and float formats. The charger is designed to get the maximum life out of your batteries, using micro computer controlled charging.

It is recommended to keep the battery charger “on” at all times when AC power is available for maximum battery life.

We recommend checking battery water levels periodically. Fill batteries to specified levels using only distilled water. The charger is factory set to charge flooded lead acid batteries which are the most common type available. The charger can be reprogrammed to accept gel cell or AGM batteries. In the event the boat battery system is switched over to a different battery footprint, it is important that all batteries are of the same type.

Note on select vessels with optional Seakeeper on board the battery charger currently increases to 75 amps along with another house battery to support electrical demands of the Seakeeper stabilizer.

Remember, changing to a different battery type requires re-programming the charger. Do not mix different designed batteries because they need different charging rates and voltages.

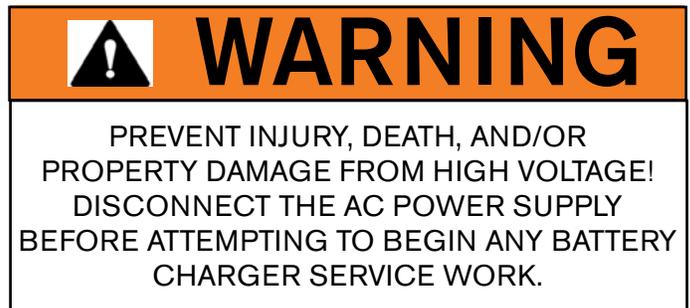
During bulk charge the battery charger brings up the battery charge state quickly, as the battery nears fully charged, it switches over to absorption charge. Absorption charges at a lower rate than bulk, until the battery is just a few % away from full charge.

The battery charger display includes functional LED information for charge current, charge voltage, charge phase (bulk, absorption, float), battery content measurement and/or battery condition measurement as a % of Ah capacity.

Read and understand the warning label below.

It is recommended that an ABYC certified electrical technician perform any repairs or service. Do not attempt to open the battery charger casing.

Refer to the vendor information for far more detailed instructions or contact your authorized Regal dealer.



Following are a few notes regarding the charging system components and battery charging instructions.

1. With the battery charger unplugged from shore power the battery charger is not generating any DC power. The charger breaker could trip if there was a short in the wires that run directly to the battery charger.

A primary cause of the breaker to “trip” would be if the positive and negative battery cables were reversed. The above situation could easily happen if someone was trying to “jump start” an engine with “jumper cables”.

To a lesser degree should a wire delivering current from the battery charger chafe an internal fuse may “blow” and the battery charger would cease its charging operation. See your Regal dealer to order extra fuses for your battery charger.

2. If cruising and one of the engine cranking batteries is weak or “dead” and the engine will not crank depress the engine parallel button at the battery activation panel.

3. If cruising and one of the house batteries is weak or “dead” depress the house parallel button at the battery activation panel.

3A. If cruising start the on board generator to induce charging the battery system.

4. Always deactivate the ship’s main AC/DC breakers when leaving the vessel for extended periods. Select breakers that control specific safety functions of the boat will operate as normal even with the battery management panel off such as the automatic bilge pumps and stereo memory circuits.

5. When leaving the vessel after connecting your dockside power cord turn the battery charger breaker at the ship’s main panel to the “on” position. This will permit the battery charging system to energize the appropriate batteries as needed.

6. Always remove a battery from the vessel before charging a battery.

7. It is not recommended to jump start engines using booster or jumper cables as these cables can produce sparks in the bilge while hooking or unhooking them. Sparks could cause an explosion or fire in the bilge.



CAUTION

AVOID CHARGING SYSTEM DAMAGE
DUE TO REVERSED BATTERY CABLES!
REMEMBER RED TO POSITIVE AND BLACK
TO NEGATIVE WHEN CONNECTING
BATTERY CABLES.

12 Volt Distribution Panel- Typical



Typical 12 Volt Distribution Panel Description

The DC distribution panel located on the battery management panel in the bilge provides over current breaker protection for numerous standard and optional components/wiring. The distribution panel uses thermal circuit protection which utilizes a bi-metallic strip electrically in series with the circuit.

Note that these types of breakers can be reset after tripping and therefore have a significant advantage over fuses. Always find the cause of a tripped thermal breaker before resetting it.

Contact your closest Regal dealer to order breaker replacements as they need match the original equipment amperage requirements.

Note- Your vessel may not have select components installed that match the breaker panel display shown above.

Electric Head- A breaker protects the electric toilet.

Bow Thruster- A breaker protects the module unit. The motor utilizes its own over current protection.

Seakeeper- A breaker protects the DC system circuitry.

Stereo- A breaker protects the Fusion circuitry.

Port Battery- A breaker protects the port engine battery circuitry.

Starboard Battery- A breaker protects the starboard engine battery circuitry.

ENTMT Center- A breaker protects the television circuitry.

Halon- A breaker protects the fire extinguishing system.

Center Battery- Not used on this model.

FWD Bilge Pump- A breaker protects the pump circuitry.

Aft Bilge Pump- A breaker protects the pump circuitry.

Mid Bilge Pump- A breaker protects the pump circuitry.

Stereo Memory- A breaker protects the stereo memory circuit from losing programmed settings.

House Battery- A breaker protects the house battery circuitry.

Shower Pump- A breaker protects the shower sump pump.

High Water- A breaker protects the high water pump circuitry/sensor located in the bilge.

USB/DC Outlet- A breaker protects the USB outlets located throughout the vessel along with the accessory plug circuitry.

TV Antenna- A breaker protects the deck mounted television antenna.

CO Monitor- A breaker protects the carbon monoxide system circuitry.

Acc- A breaker permits adding aftermarket equipment. Always ensure the equipment breaker requirements are correctly matched with installed breaker.

Seakeeper Pump- A breaker protects the pump and related circuitry.

Bunk Actuator- Not used on this model.

AMP Main- A breaker protects the designated stereo system amplifier system.

Underwater Lights- A breaker protects the hull mounted LED light system.

Helm CCM- A breaker protects the Empirbus Connect 50 module/helm functions. It is located in the sump.

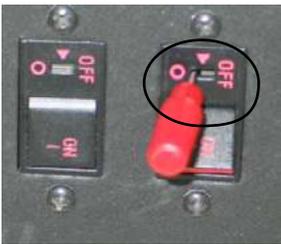
Bilge CCM- A breaker protects an additional Empirbus Connect 50 module located in the sump.

Bilge DCM- A breaker protects the Empirbus HPR (High Performance Routing) module located on the quarter berth port combing.

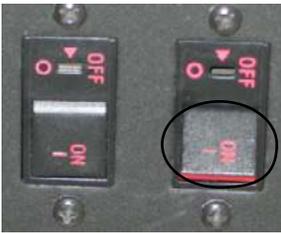
12 Volt DC Distribution Panel- Resetting Center Breakers



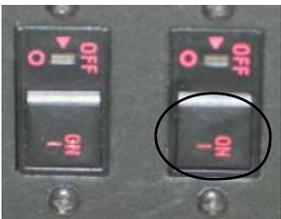
1. It is possible that one of the center D.C. distribution panel breakers may trip from long-term arcing and heat. These thermal breakers function like other breakers but may reset different due to a “soft trip” condition. To trip and reset this style of breaker do the following:



A. Take a small slotted screwdriver from your on-board tool kit and insert it in the breaker slot until it trips. You will hear a snapping type noise. See the illustration.



B. Notice that the breaker has pushed outward from its original flush position indicating the breaker has been tripped. See the illustration.



C. To reset the breaker use your finger to press the breaker down until it locks in the “on” position.

You may hear a slight noise. This is normal. The icon light should be lighted after this procedure. See the illustration.

2. Breaker will not reset- Replace the breaker. Contact the nearest Regal dealer for replacement parts.

3. Breaker continues to “trip”. Check the affected equipment to determine if it is responsible for the excessive draw to trip the breaker. If the equipment is determined to be within specifications check for a “short” in the wiring circuit. Also, the breaker may be faulty. Contact the nearest Regal yacht dealer.

Note: It is possible under certain circumstances that a breaker may perform a “soft” trip on a circuit. The breaker may not appear to be in the tripped position but at this point current to dedicated component or sub system is interrupted.

In this situation insert a screwdriver blade into the breaker slot (A) until it fully trips the breaker. After determining the cause of the overload energize the circuit breaker.

See the previous 12 volt distribution panel for a description of the 4 center breakers.

Note: Various breaker panels may appear different but function in a similar way.

12 Volt Helm Panel Description= Typical

This panel supplies over current protection for select helm/deck equipment. It is located in the quarter berth.

Note that your vessel may not use all breaker positions as select components are optional.



Plotter 1-3- A breaker protects individual Garmin display units. Plotter 3 denotes the passenger side display mounted at the head door.

VHF- A breaker protects the helm mounted Garmin marine radio.

Garmin Weather- A breaker protects the weather module when installed.

Trim Tabs- A breaker protects the helm mounted trim tab circuitry.

Wireless Charger- A breaker protects the cell phone charger mounted at the starboard helm armrest.

Helm Seat 1-4 A breaker protects the fore-aft and vertical helm seat circuitry. Breaker usage here is dependent on vessel model.

Gas Vapor- A breaker protects the gas vapor equipment installed at the helm and the sump sensor unit.

Garmin EXTDR- A breaker protects the helm extender unit used for electronics such as the radar, thermal camera, Seakeeper, and plotters.

Garmin Remote- A breaker protects the helm remote on select vessels.

Radar- A breaker protects the open array radar circuitry.

Night Camera- A breaker protects the FLIR pan and tilt thermal camera.

RGB Lights- A breaker protects the LED red, green, and blue light circuitry.

USB/DC Outlet- A breaker protects the universal serial buss and DC accessory outlet.

Back Light- A breaker protects the helm backlighting circuitry.

Easy View- A breaker protects the easy view cockpit display screen used on digital switching models.

Stove Limit- Not used on these models.

Refrigerator 1- A breaker protects the standard cockpit refrigerator.

Refrigerator 2- A breaker protects the optional 2nd refrigerator or freezer circuitry.

NEMA- A breaker protects the NEMA 2000 backbone circuitry located under the helm cover. There is a service access port at the forward end of the helm.

Auxiliary DC Current Panel Screens

Note that there are additional direct current (DC) panels on board to control lighting, head door/toilet operation, seat operation, etc.

A sampling of these panels follow. Select panels are digitally controlled; others use mechanical switches. Your vessel may not display these panels or they may appear different from those shown.

Helm Switch Panel- (Early panels are mechanically controlled; Later panels are digitally controlled or panel may not exist at the helm).



Horn- This switch controls the signal horn for warning vessels.

Fwd. Bilge Pump- This switch controls the bilge pump circuitry in the forward hull area.

Hardtop Lights- This switch controls the overhead lighting at the hardtop Note the light icon showing this circuit is activated.

Blower- This switch controls the blower system used for bilge ventilation.

Nav/Anc Lights- This switch controls the navigation/anchor light circuitry.

Aft Bilge Pump- This switch controls the bilge pump circuitry normally located at center bilge in front of the engines (stern drive) or in the aft storage area below the floor (outboard).

Deck Lights- This switch controls the deck lighting circuitry.

Wiper- This switch controls the windshield wipers Most operators use the plotter screen buttons

Lighting Panel (3 Gang- Typical)



Typically the first switch will control the overhead lighting. The second switch controls any accent lighting. The third switch with arrows on select 36 bowrider controls the opening and closing of the electric head door. The up and down motion of the television monitor uses similar switching.



Lighting Panel- (Single gang)

This type of switch may control lighting located in the quarter berth.

Electrical- Digital Switching

Overview

Digital Switching has been successfully used for decades in one form or another in the automobile and trucking industry. Today it has blossomed into the marine field eliminating many problems associated with earlier conventional DC mechanical circuit breakers and switches.

Marine digital switching systems are based on networked controlled modules and monitoring components. Typically, Regal vessels feature EmpirBus modules for functionality and longevity. This digital power distribution/switching system operates on a NMEA 2000 network platform/backbone.

Benefits for the boat owner using digital switching systems are multi-faceted including flexibility, reduced weight, weather sealed highly reliable switches, and automation.

Digital switching systems are more flexible than conventional power circuits especially when a boat operator wants to add a system such as an MFD or possibly a switch to a circuit. The NMEA backbone is used as a connection point; dramatically simplifying installations.

Digital switching systems reduce the wire weight used in the vessel. Traditional systems use centralized electrical panels using large cables and long runs from the batteries.

Depending on the circuit, digital switching systems typically use a single source of power and a single load connection.

Digital switching system usage, devices, configurations and operations will vary depending on vessel model. Modifications for improving the Regal product are on-going and undertaken without notice. No liability is accepted for information correctness and is given to the best of our knowledge.

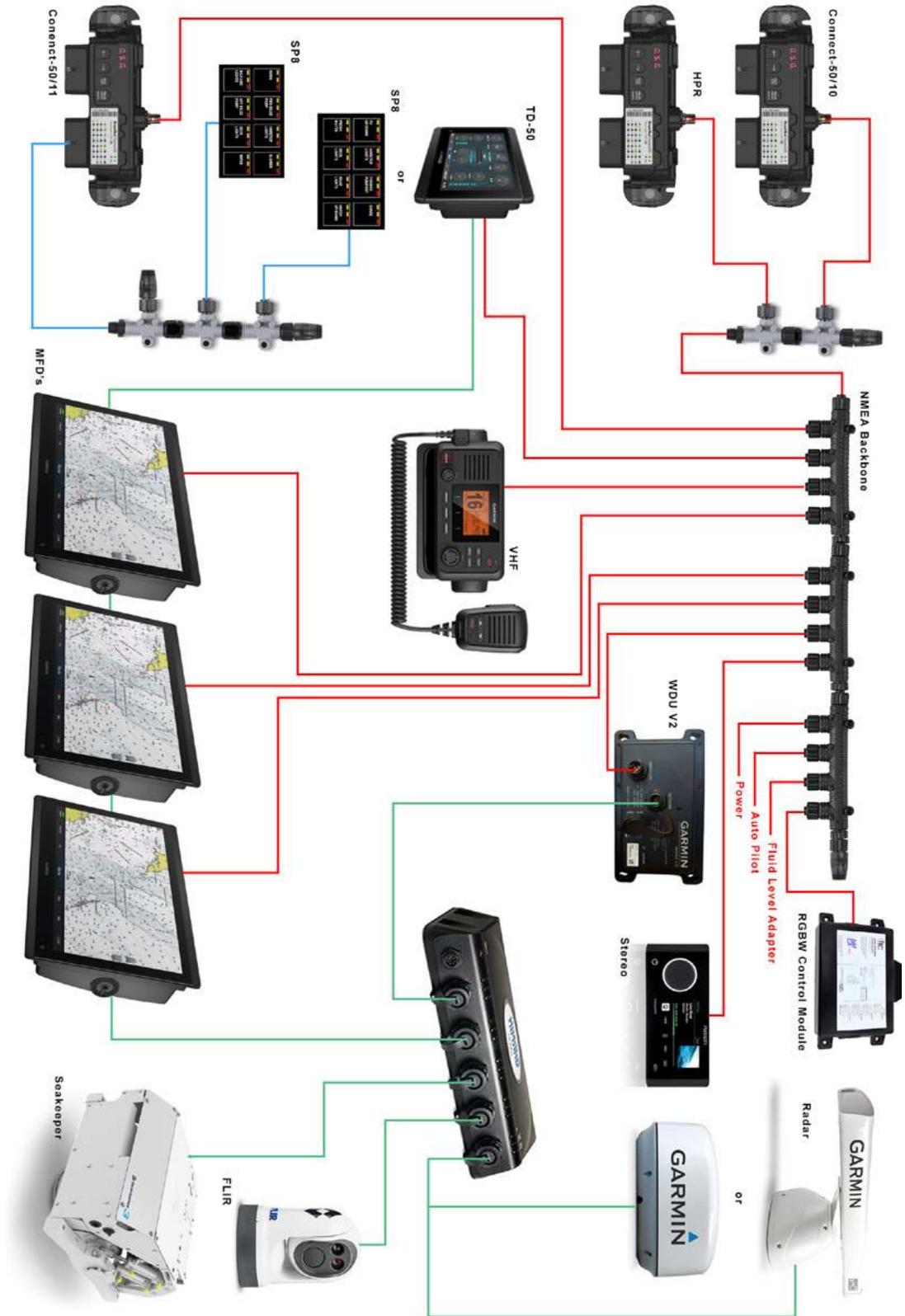
Digital switching modules are well sealed against the harsh marine environment, utilize solid state switching, and offer a high degree of reliability and longevity compared to traditional mechanical switching systems. Traditional systems require numerous connections each one a potential source of corrosion and resistance problems along with mechanical switches composed of moving parts subject to failure.

Digital Switching systems open up a new world of technological advances such as reading tank fluid levels through the NMEA 2000 system, Select circuits have the ability to deactivate after a specified delay. Other circuits feature trip thresholds that can be set. Traditional system automation abilities are nearly non-existent.

Typically, Regal integrates the digital switching system via the NMEA 2000 backbone into the Garmin chart plotter permitting the operator to control onboard electrical functions from the digital helm display “touch” screens. This reduces the shortcomings of traditional switches and fuses.

Note: In the following pages general principles of the Regal digital switching footprint are reviewed. Your vessel may use different components and operation instructions along with a slightly different appearance of display screen. Contact your closest Regal dealer for further information on digital switching systems.

Digital Switching System Network Layout- Typical

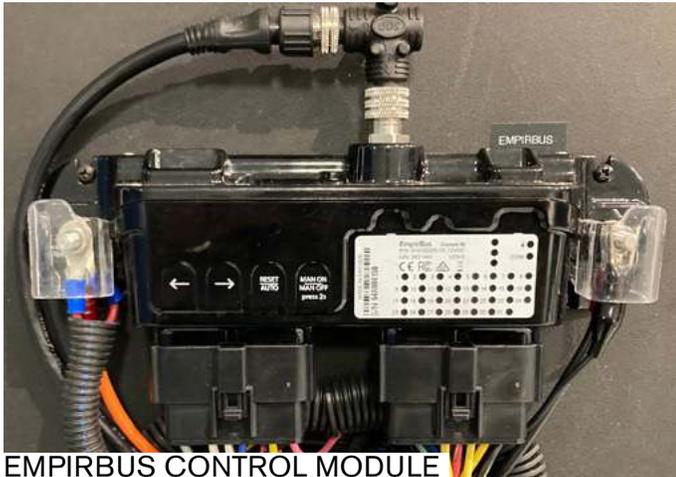


If installed the digital switching system network on your vessel may not appear as above. Also, your vessel may use different components and may operate slightly different as Regal is constantly improving their systems and components.

Digital Switching System Network Components- Typical

Module Overview-

As installed EmpirBus modules are the “heartbeat” of the Regal digital switching system as they control the function of digital onboard components.



EMPIRBUS CONTROL MODULE

The Connect 50-10 module identified as #3 on the device typically controls deck functions. This module is located in the bilge.

The Connect 50-11 module identified as #1 on the device typically controls hull functions and is located in the quarter berth on 36 bowrider models.

The HPR (High Performance Router) module identified as #2 on the device typically controls hull actuator functions. The HPR module is located in the bilge. See the illustration in the next pages.

On the following page is a description and function of basic module operations.

The WDU (Web Display Unit) typically is connected through the NMEA 2000 to the EmpirBus system and Ethernet for HTML5 (Hyper Text Markup Language) supporting devices/software.

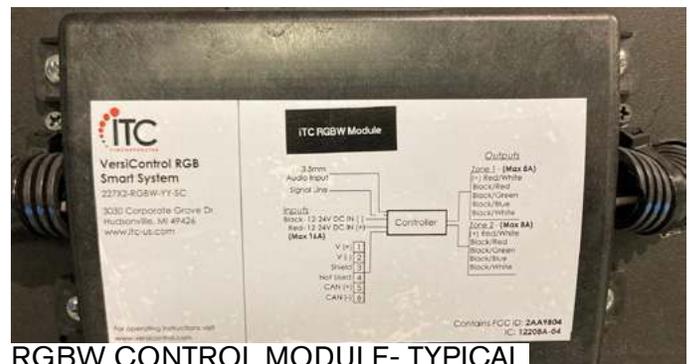
It is typically located inside the helm shroud. Regal vessels with WDU's feature the ability to control select Garmin helm functions using a tablet or smartphones once the “Active Captain” application is downloaded and configured.



EMPIRBUS WDU- TYPICAL

Auxiliary Control Modules-

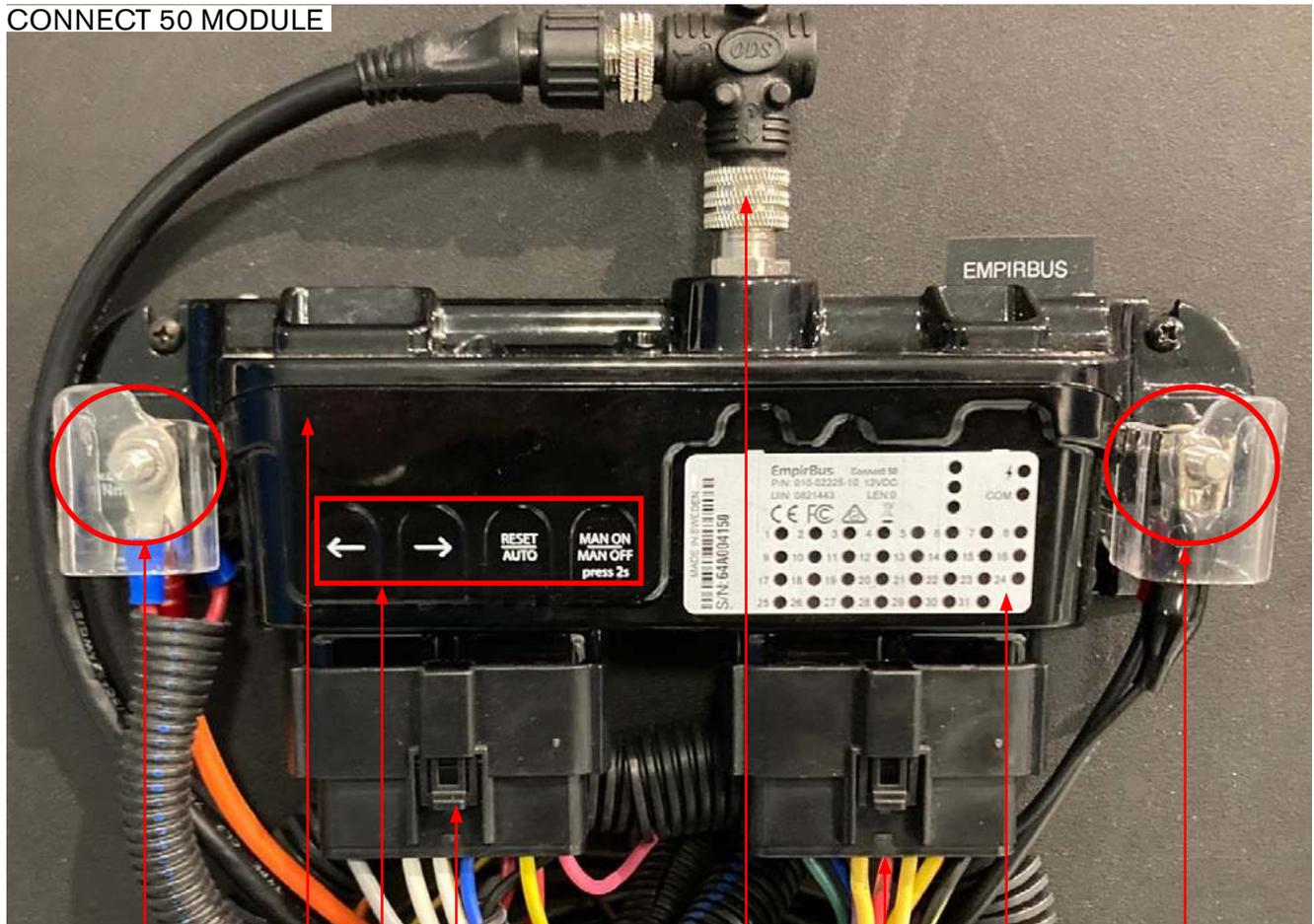
The RGBW (red, green, blue, white lighting) control module under the helm shroud improves light circuit synchronization and prevents dimming while running multiple RGBW zones. The module utilizes multiple input and output channels. This module is connected to the NMEA backbone permitting the vessel operator to control RGBW zones from the Garmin plotter. For additional information, refer to the earlier section on the screen shots.



RGBW CONTROL MODULE- TYPICAL

Connect 50 Module Description/Function- Typical

CONNECT 50 MODULE



DC POSITIVE POST
POWER SUPPLY

MODULE BUS ID 1-3

MODULE BREAKER
RESET BUTTONS

X1 CONNECTOR-1-16
CHANNELS

NMEA 2000 BUS
PORT

X2 CONNECTOR-17-32
CHANNELS

DC NEGATIVE POST
POWER SUPPLY

CIRCUIT PANEL ICONS
(LIGHTED GREEN WHEN
CHANNEL IS ACTIVATED)

Note 1: The digital switching system module on your vessel may not appear exactly as above and may operate slightly different as Regal is constantly improving their systems and components. Basic module functions are found in the following pages. Contact your Regal dealer for detailed information.

Note 2: The Garmin plotter is typically used to reset breakers. An alternate method as shown above is to reset a tripped breaker from the module itself.

Basic Module Description/Function (Continued)

The Connect 50-10 module is located in the bilge. *Device maximum output is 50 amps.* There is a total of 32 input/output channels on this module. This device does not utilize the SP8 which permits more channels for other uses. The 2 half-bridge outputs normally support components with reversing motors. All input/output channel amperages are configured at the factory. Select channels are self limiting and component cycles are timed out. When a channel is activated on the Garmin plotter digital switching screen a green light appears on the module channel circuit display. When a channel is tripped a red light appears on the module channel circuit display until that circuit is reset.

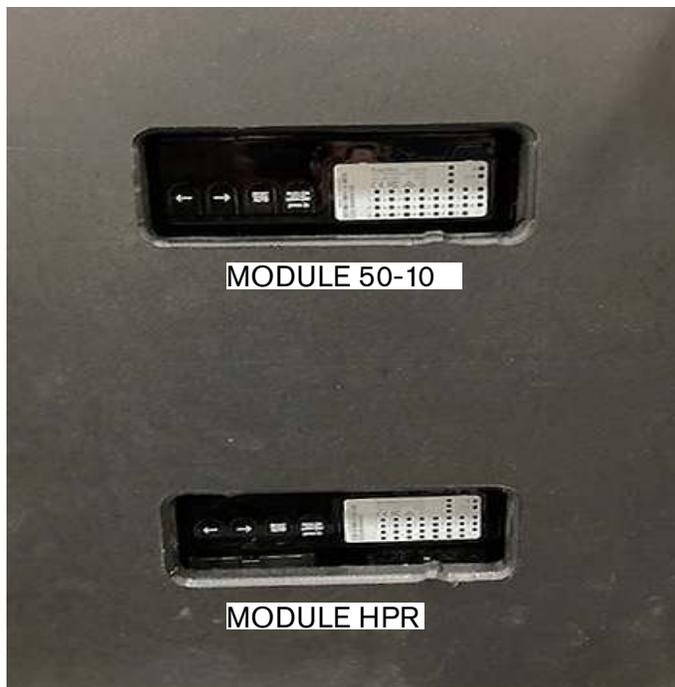
Channel Information- 32 Total Channels

16x10 amp outputs

2x10 amp half-bridge outputs

11x inputs

Module identified as #3



BILGE PANEL

The HPR (High Performance Router) module is located in the bilge and is a higher powered device than the Connect 50. *Device maximum output is 80 amps.*

There is a total of 16 input/output channels on this module. (one half the number of inputs/outputs compared to the Connect 50 module). The HPR features half-bridge outputs with higher amperage channels to accommodate reversing motors such as the engine hatch, sun roof, and sun shade. For this reason the X2 connector is typically inactive.

All input/output channel amperages are configured at the factory. Select channels are self limiting and component cycles such as bilge pumps are timed out for motor protection.

When a channel is activated on the Garmin plotter digital switching screen a green light appears on the module channel circuit display. When a channel is tripped on the HPR a red light appears on the module channel circuit display until that circuit is reset.

Channel Information- 16 Total Channels

2x 5 amp outputs

5x 10 amp half-bridge outputs

4x inputs

Module identified as #2

The Connect 50-11 module is located in the 36 bowrider quarter berth. *Device maximum output is 50 amps.* There is a total of 32 input/output channels on this module. This device supports the SP8 panel used on select vessels through an NMEA network channel. The 2 half-bridge outputs normally support components with reversing motors. All input/output channel amperages are configured at the factory. Select channels are self limiting and component cycles are timed out.

When a channel is activated on the Garmin plotter digital switching screen a green light appears on the module channel circuit display. When a channel is tripped a red light appears on the module channel circuit display until that circuit is reset.

Channel Information- 32 Total Channels

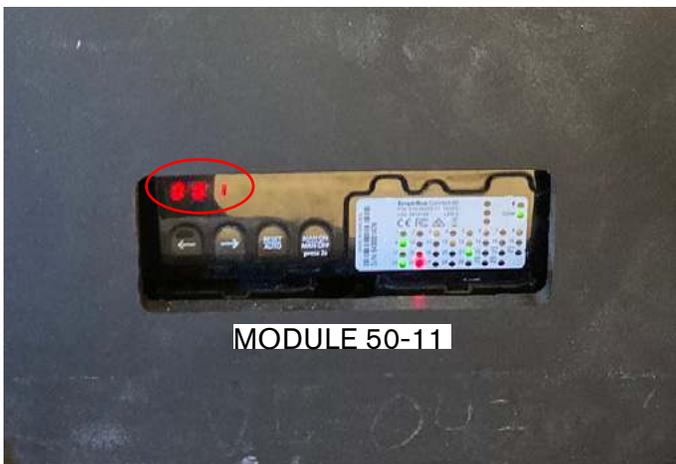
16 x 10 amp outputs

2 x 10 amp half-bridge outputs

7 x inputs

1x NMEA (private for SP8)

Module identified as #1



QUARTER BERTH PANEL

Note the module ID (upper left) along with the activated circuits (channels) displayed in green and an interrupted channel displayed in red.

Basic Module Circuitry (Channel) Function

There are different types of circuits integrated into the Regal onboard digital switching system. Select circuits are based on touch control switches found on the (MFD) Garmin plotter display screens.

In addition, various circuits use actual switches located on various panels on board the vessel that are pressed to activate and deactivate a select circuit/device.

Still other circuits use reversing actuators based on the half-bridge channels typically found on the HPR module.

In this section typical circuits are highlighted to illustrate how basic module channels function and interact with devices. As always, contact your Regal dealer for more detailed information.

Note that your vessel may use different components and operation instructions along with a slightly different appearance of display screens. Contact your closest Regal dealer for further information on digital switching systems.

Digital switching system, devices, configurations and operations will vary depending on vessel model. Modifications for improving the Regal product are on-going and undertaken without notice. No liability is accepted for information correctness and is given to the best of our knowledge.

Basic Module Circuitry (Channel) Function- On/Off Switched Devices



NOTE THAT A LIGHT BULB IS SHOWN BUT MOST SWITCHED DEVICES OPERATE IDENTICALLY.



LIGHTING CIRCUIT 1- OFF



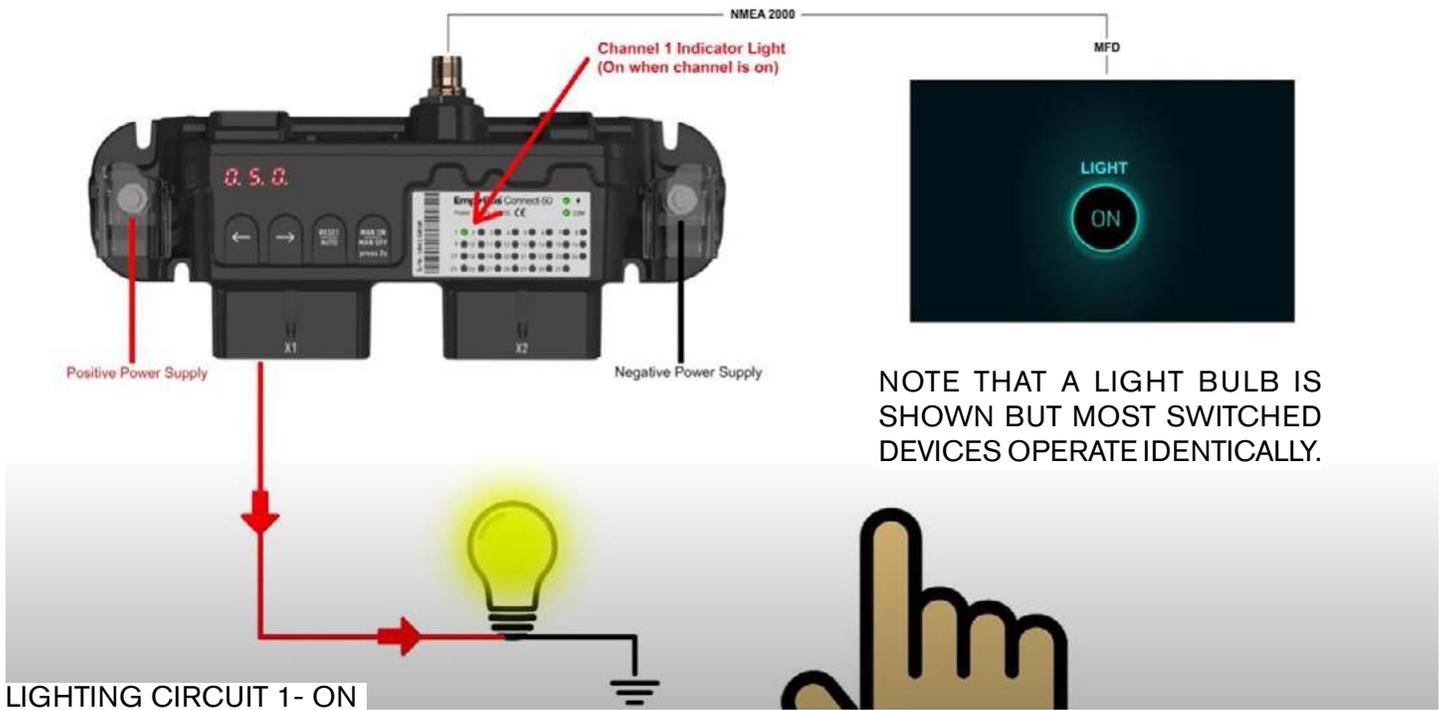
This is an example of a typical deactivated “touch control” switched lighting circuit. Most “ON/OFF switched devices are wired and circuit functions are similar on the vessel.

Notice the module circuit Channel 1 indicator light is not displayed as no current is flowing to the light bulb.

The light switch to the right is shown in the “OFF” position. This touch control switch type is commonly found on the Garmin plotter (MFD) lighting tab “touch” screen under the digital switching menu. Most on board on-off switched devices are programmed in the same manner.

Note that the ground for the light bulb is not connected to the module but like most on board switched devices the ground is typically connected to a sub bus bar.

Basic Module Circuitry (Channel) Function- On/Off Switched Devices



NOTE THAT A LIGHT BULB IS SHOWN BUT MOST SWITCHED DEVICES OPERATE IDENTICALLY.

This is an example of a typical activated “touch control” switch/channel function on an MFD display such as the Garmin plotter.

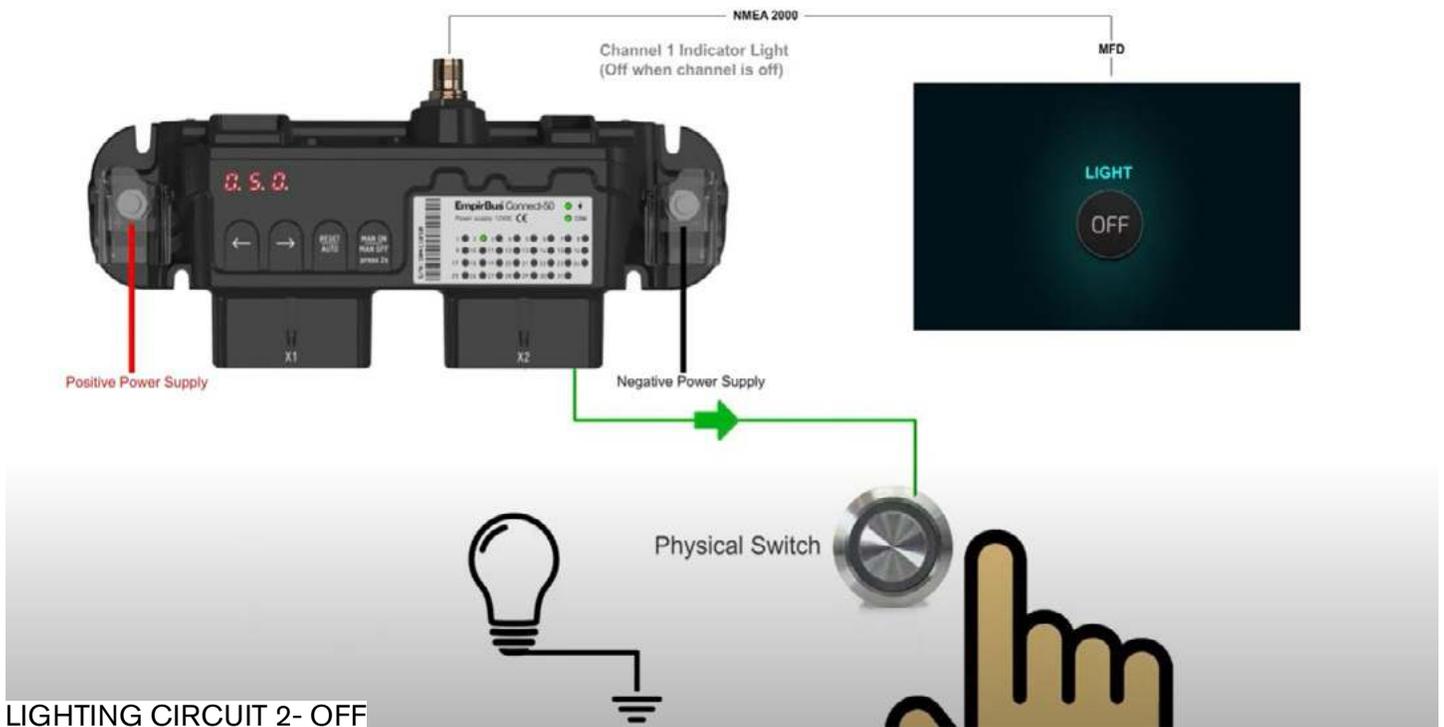
Examples of vessel switched devices are the navigation, head, deck lighting along with the fresh water pump.

This lighting circuit above shows activity on Channel 1. Notice the light switch on the MFD display is lighted after being “touched.” Also, as part of an active channel the module circuit Channel 1 indicator light is activated (lighted green) as current is flowing to the light bulb as displayed by the arrows above.

The MFD light indicator to the right above is shown in the “ON” position.

Note that the ground for the light bulb is not connected to the module but like most on board devices the ground is typically connected to a sub bus bar.

Basic Module Circuitry (Channel) Function- Momentary Switch Device



This is an example of a typical deactivated switch and channel circuit with a physical momentary type switch.

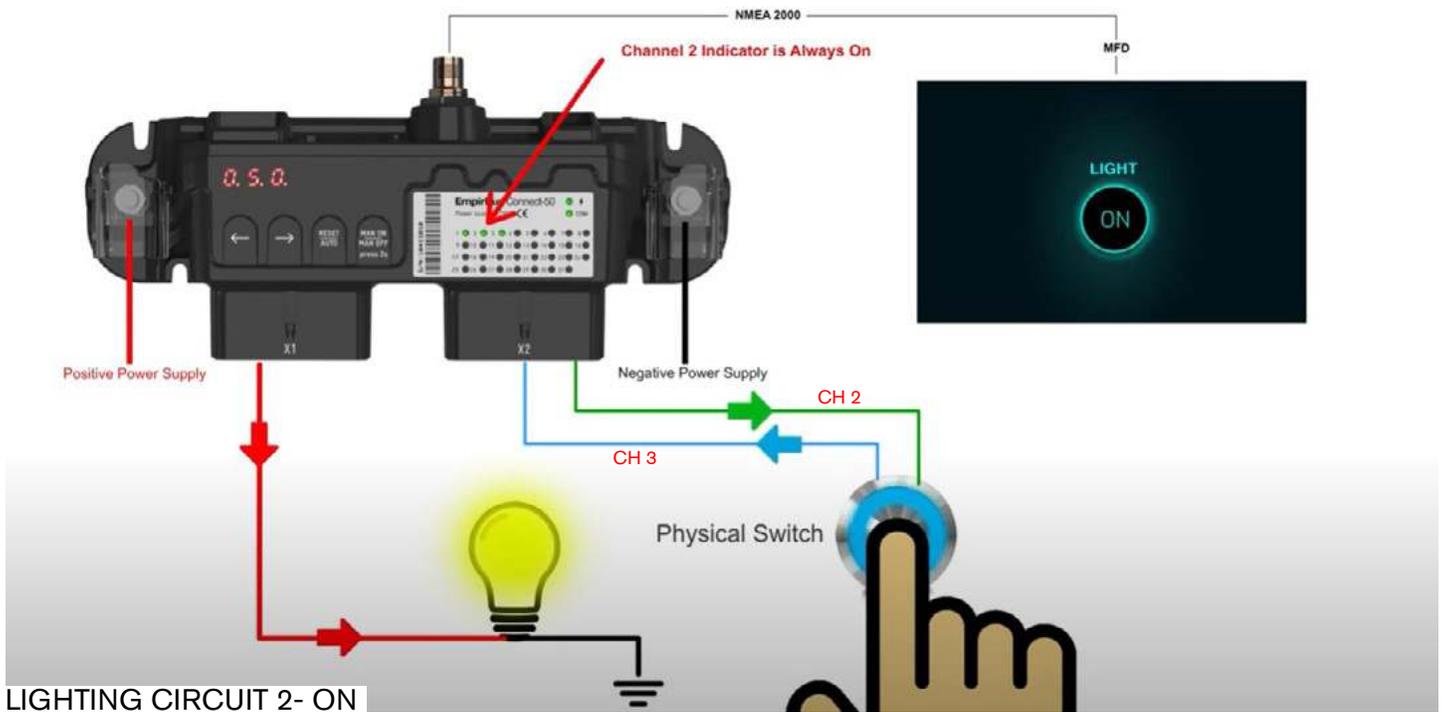
The light bulb is "OFF" as the physical switch is inactive. Channel 1 indicator light is "OFF" when the channel is off.

Also, note the MFD Garmin display light is in the "OFF" position.

Power to the deactivated switch is shown by the green lined circuitry.

Note that these physical switches are momentary by design and only send a brief pulse to the module. These switches typically are not used for 2 way functions such as a secondary lock-out switch.

Basic Module Circuitry (Channel) Function- Momentary Switch Device



This is an example of a typical **activated** switch and channel circuit with a physical **momentary** type switch.

When the switch is pressed a signal wire from the module is applied to the physical switch which results in the light bulb (device) being energized (red arrows). As a signal is received from channel 3 DC 12 volt current is sent to the light bulb (device).

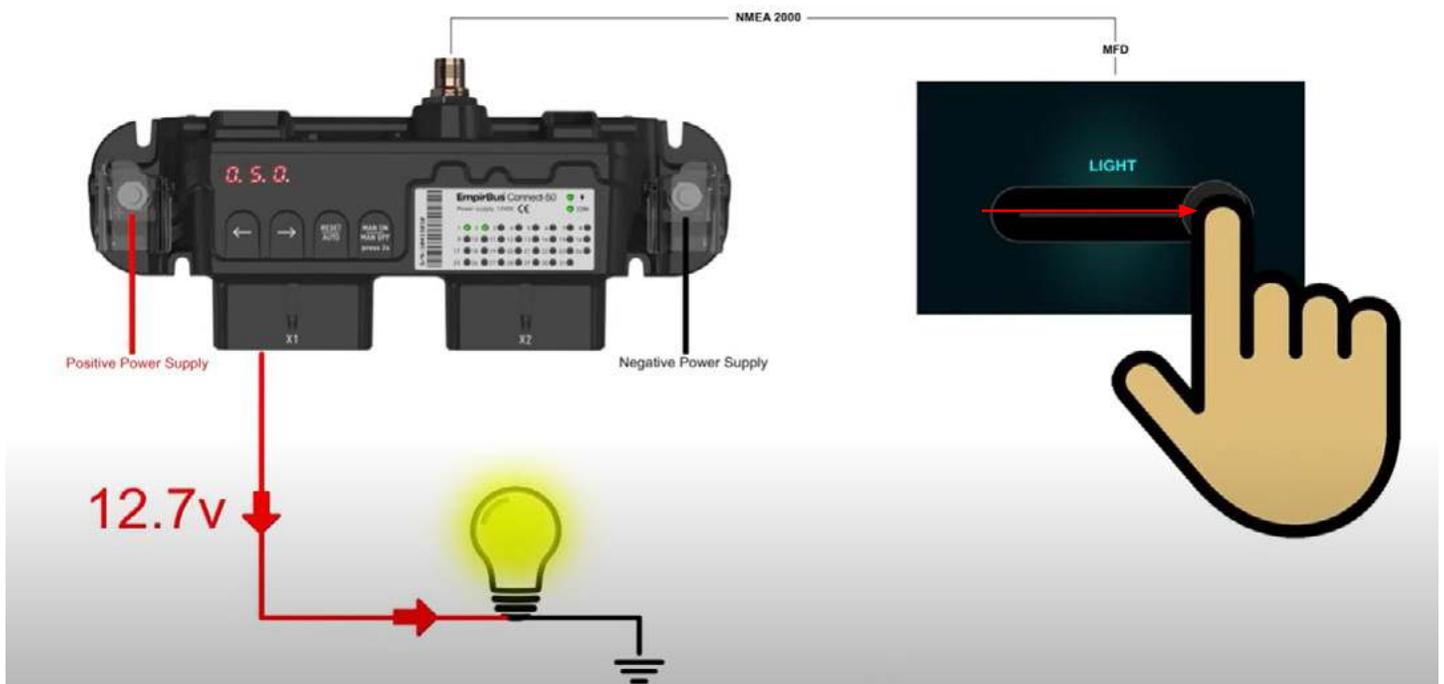
In the example above channel 2 is sending a signal to the physical switch. When the physical switch is pressed a signal is sent back to channel 3 telling the module to change to the opposite state of what channel 1 is currently in; if channel 1 is "off" it will turn "on" and vice versa.

In most applications this physical switch is a momentary type and only sends a brief pulse to the module.

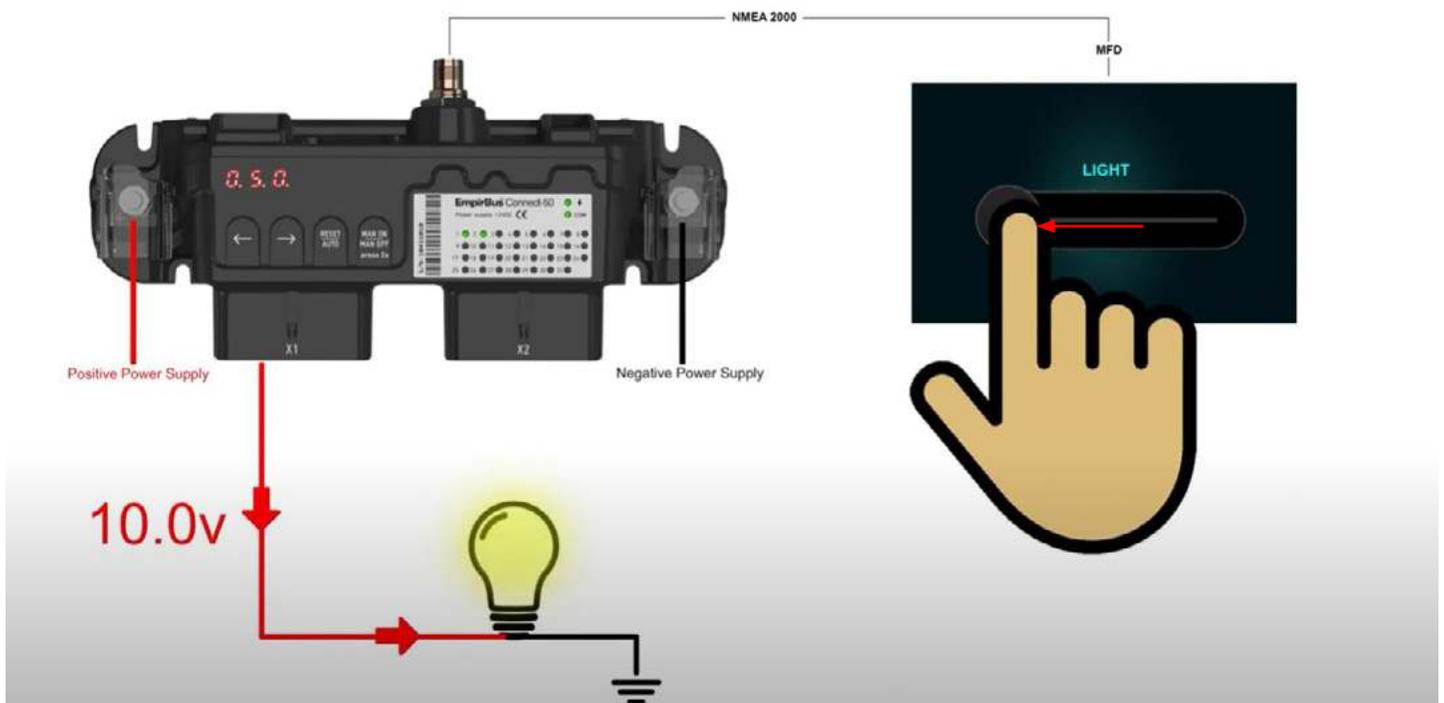
Channel signals can be positive or negative. See the channel guide for channel names, functions and polarity specifications.

Examples of vessel momentary switched devices are the windlass up/down functions and the horn.

Basic Module Circuitry (Channel) Function- Dimmer Switch



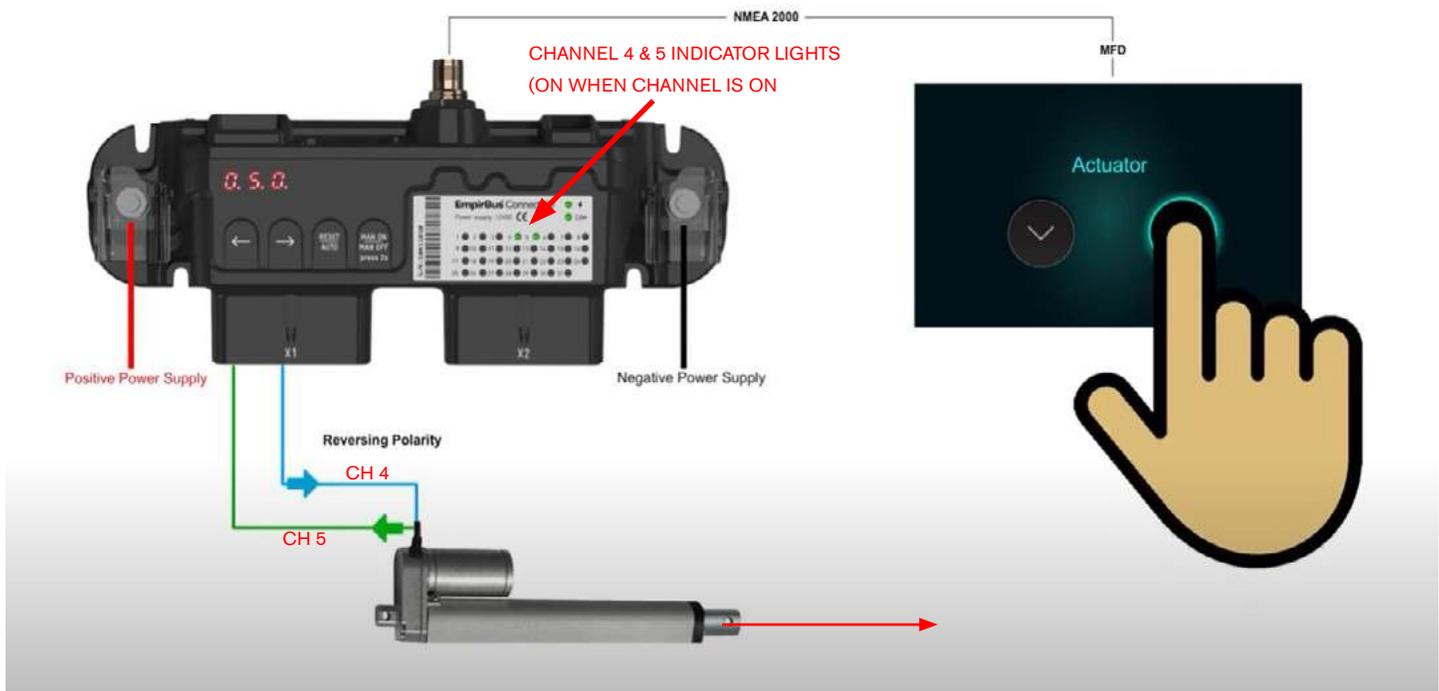
In the example above when the “touch” control dimmer switch is moved to the right module voltage on the bulb circuit positive lead is increased and the light bulb brightness is intensified.



In the example above when the “touch” control dimmer switch is moved to the left module voltage on the bulb circuit positive lead is decreased and the light bulb brightness is diminished.

Note that volt readings shown on this page are for illustration purposes only.

Basic Module Circuitry (Channel) Function- Reversing Actuators Outward



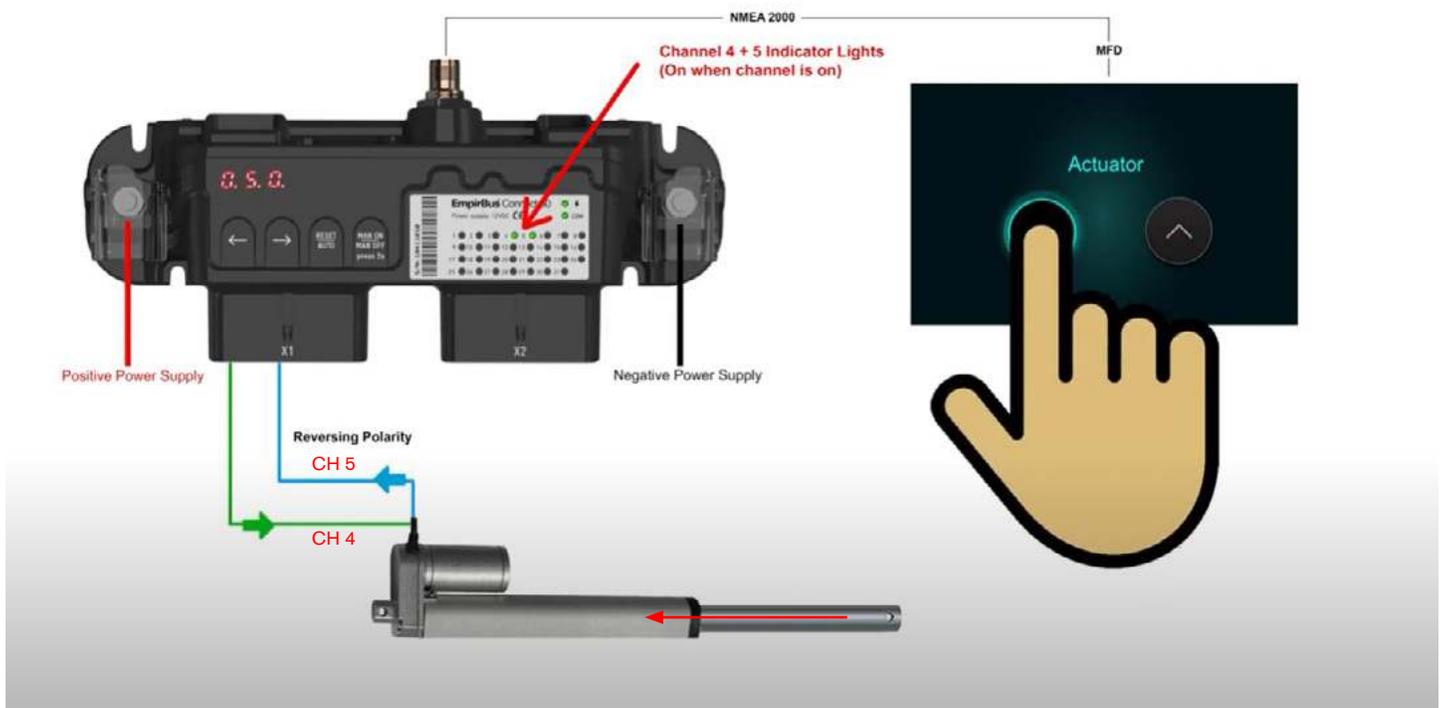
Actuator circuit devices utilize motorized automation for either open/close or in/out functions depending on the device. On board open/close devices may include the head door, engine hatch (requires manual control for down cycle), cockpit television, sunroof, and sun shade.

Control modules use a system of half-bridge channel to cycle individual device circuits. These are 2 channels that are tied together and reverse polarity based on the direction of the button that was pressed.

In the example above when the “touch” control up button is pressed on the MFD indicators for channel 4 and 5 are lighted.

Channel 4 is positive and channel 5 is negative and the motor ram travels outward.

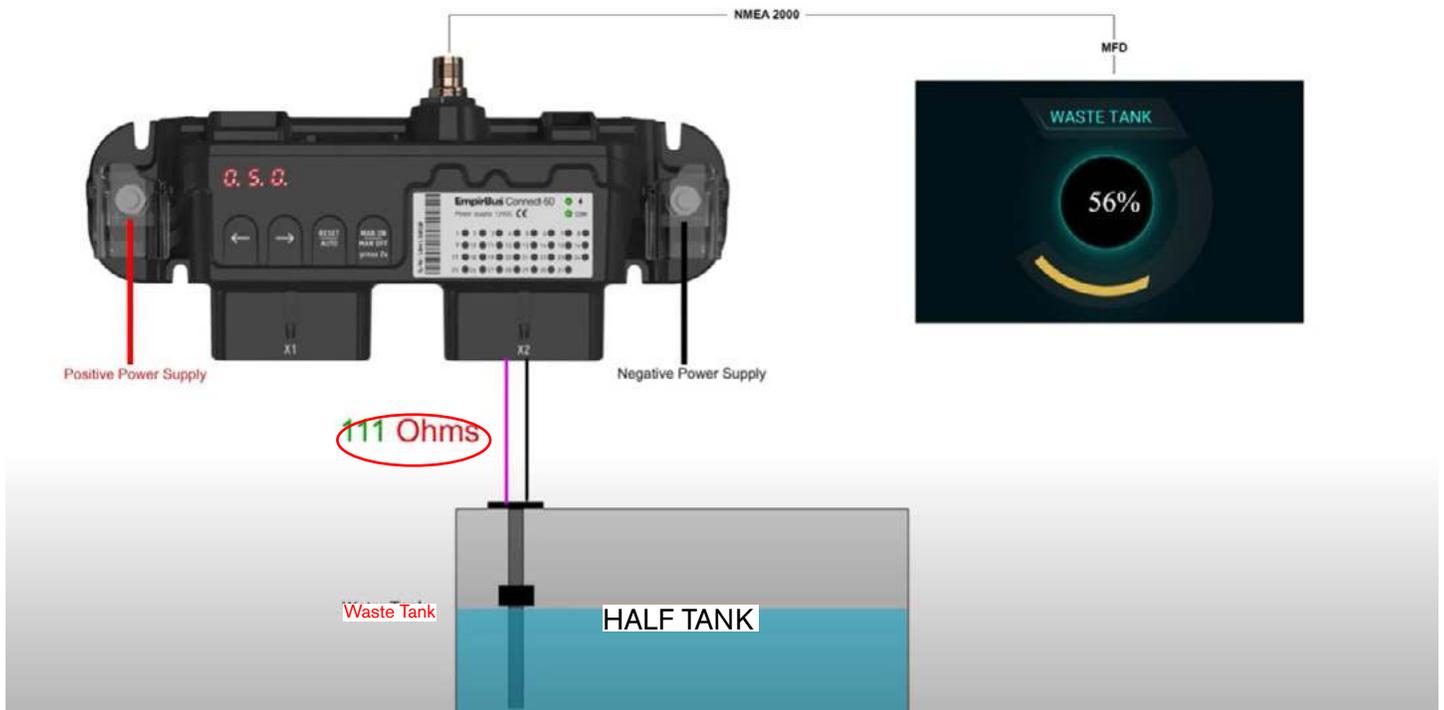
Basic Module Circuitry (Channel) Function- Reversing Actuators Inward



In the example above when the “touch” control down button is pressed channel 5 is positive and channel 4 is negative and the motor ram travels inward.

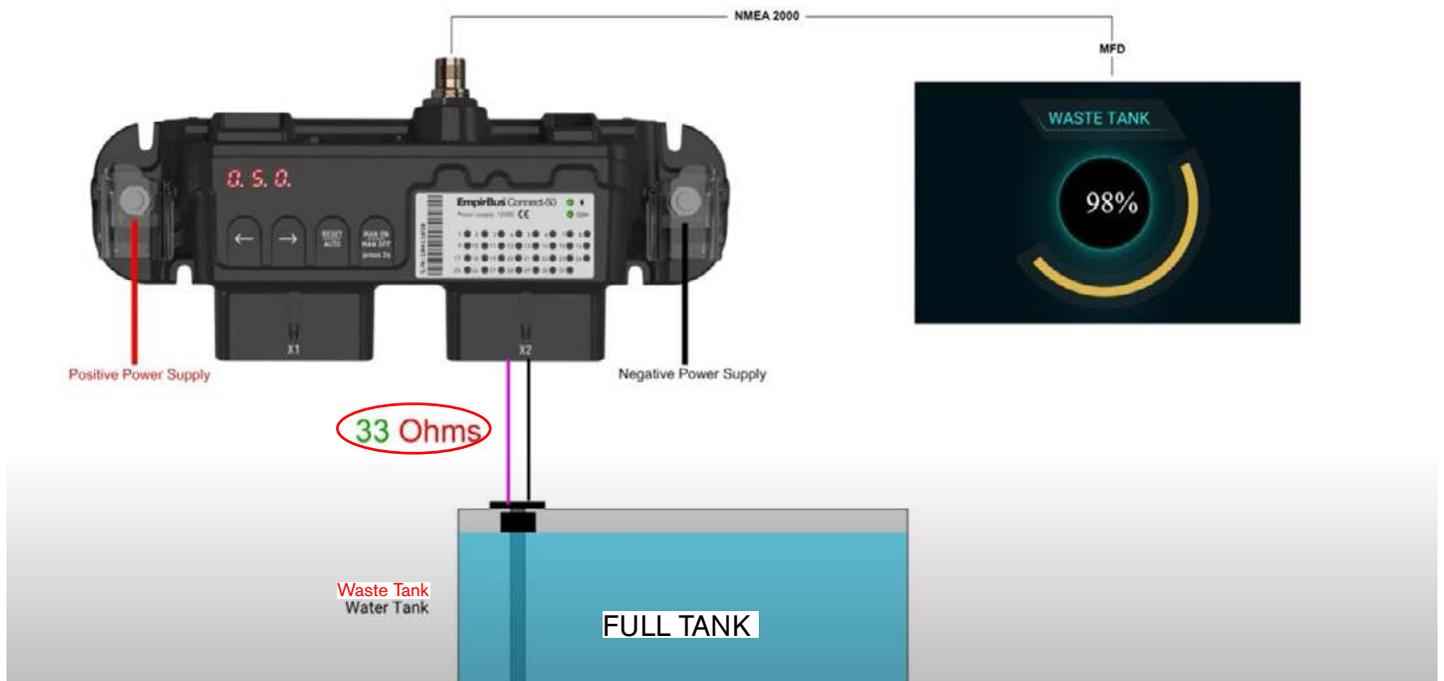
Notice that the channel arrows on the actuator indicate a change in module channel polarity represented by the blue and green colored channels.

Basic Module Circuitry (Channel) Function- Tank Fluid Level



Vessel tanks utilize EmpirBus modules to read fluid levels. Modules read ohms (resistance) from the tank sending unit. The sender is fed from a common ground coming from channel 32 on the module. This is to ensure the most accurate ohm reading and reduce ground loop interference.

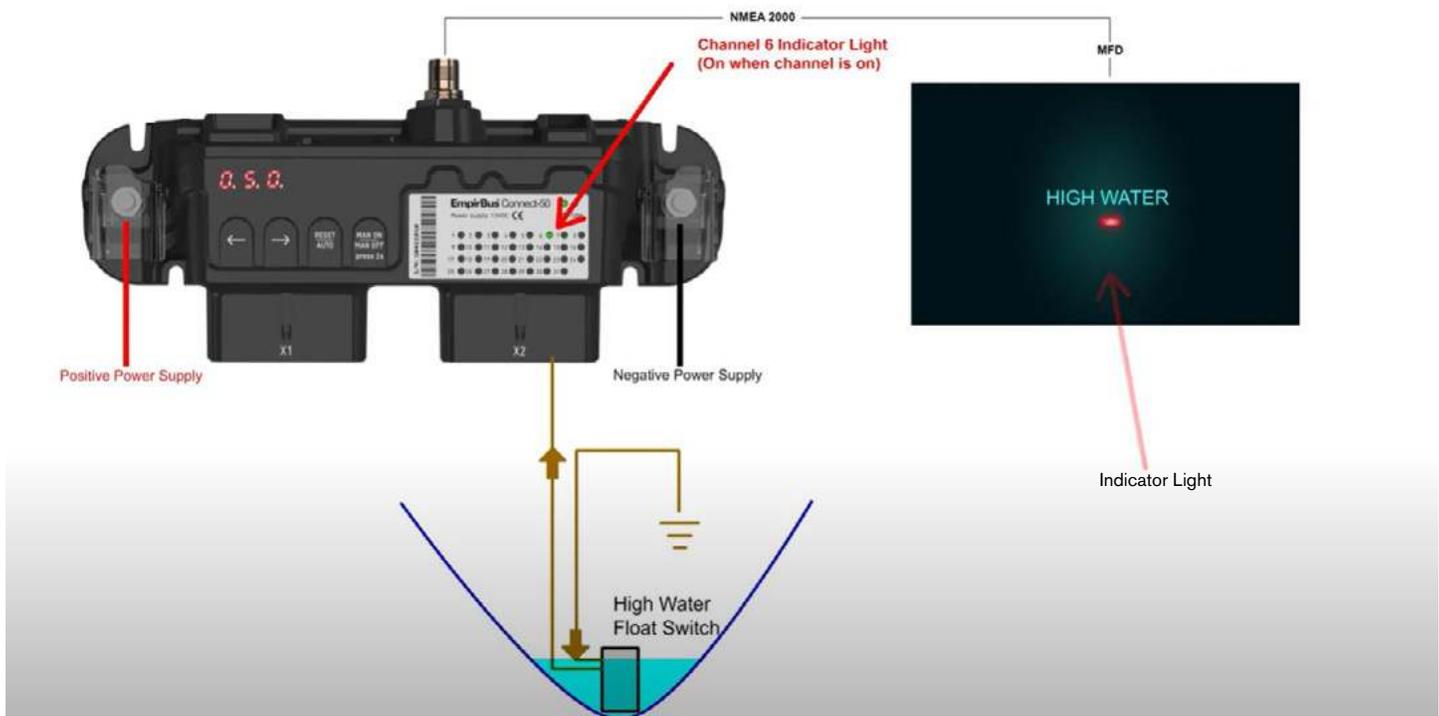
As the fluid level is raised or lowered the ohm reading (shown above) from the sending unit will change. Notice MFD indicator button at the above right displaying a half tank fluid level as a percent and a half arc.



Notice the full tank ohm change to a lower reading and the MFD indicator button at the above right displaying a full tank fluid level as a higher percent and a full arc.

Note that ohm readings shown on this page are for illustration purposes only.

Basic Module Circuitry (Channel) Function- Auxiliary Devices



Select on board auxiliary devices such as the automatic bilge pump system feature a high water float switch that activates when the bilge water level reaches a predetermined level.

The float switch ground wire (negative) originates at a sub bus bar. As the water rises the float switch passes the ground through the switch to the module. When the module receives the ground signal channel 6 indicator light will display green.

A flashing red indicator light will appear on the MFD digital switching page and an NMEA alert will appear on all MFD display screens.

The fire suppression system also uses the indicator/alert displays as part of the vessel warning footprint.

The module channel guide displays individual digital controlled channel functions, pin numbers, names, programming functions, actual amperage loads along with fuse sizes for the VL (LS36) stern drive) and VM (LX36) outboard) models.

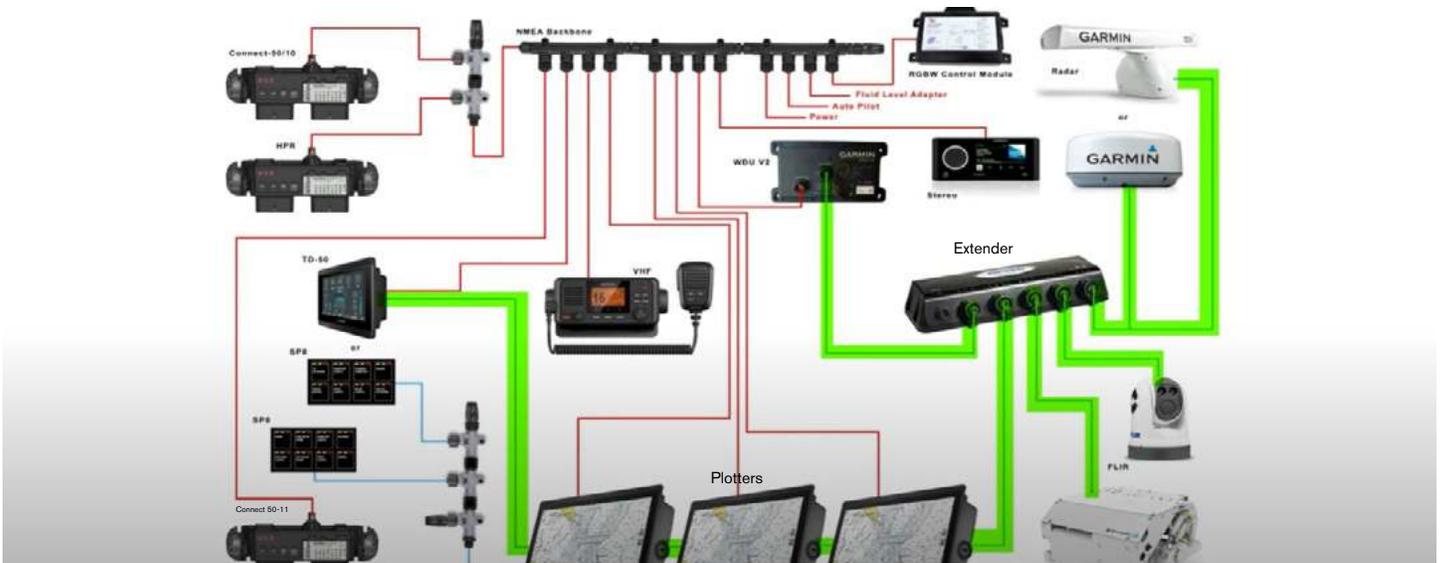
The guide is available using the QR code displayed to the right. Find a QR decoder App through your phone or tablet. Take a screen shot with your device camera and a link will appear. Tap the link to the Regal web-site where the LS36/LX36 channel guide is displayed as a document named; Live Channels & Revision List.

Furthermore, on this link there are topics under the Regal Digital Switching Guide including Interactive Menu Rev 1.0, Video Overview, and Live Channels & Revision List available for further understanding of the Regal digital switching system.

Note that typically the QR label is located at the head door on the underside of the glove box lid, helm, or quarter berth combing .



Basic EmpirBus Network- Ethernet



This is an example of the EmpirBus ethernet network highlighted by green lines which represent the circuit connected components through the private Garmin data communications system.

The WDU (web display unit) shown above is a graphics interface component for the EmpirBus digital switching system. The WDU permits the control and monitoring of the on board digital switching system.

Notice the Garmin extender device (shown above) provides a ethernet connection point for vessel electronic components. The extender is located under the helm shroud.

Digital switching system, devices, configurations and operations will vary depending on vessel model. Modifications for improving the Regal product are on-going and undertaken without notice. No liability is accepted for information correctness and is given to the best of our knowledge.

Basic EmpirBus Network- Ethernet (NMEA Private Network)



Highlighted by the blue lines above is the NMEA private network used for the helm located SP8 display panel found on select vessels.

The SP8 CAN bus panel is used to provide inputs to the system through the switches and status information back to the operator by the individual LED indicators.

The panel is back lit for night cruising, water resistant, and UV stable designed for the rugged marine environment.

Digital switching system, devices, configurations and operations will vary depending on vessel model. Modifications for improving the Regal product are on-going and undertaken without notice. No liability is accepted for information correctness and is given to the best of our knowledge.

Basic EmpirBus Network- Ethernet (NMEA Public Network)



Highlighted by the red lines above is the public NMEA 2000 network. Components including the Connect 50 modules, HPR, stereo, TD-50 display and stereo among others (see above) are an integral part of the vessel digital switching system and are connected to this network. These devices are interfaced typically with the helm plotter displays.

The large NMEA 2000 public backbone is located under the helm shroud. The smaller private network backbone is located in the bilge.

Digital switching system, devices, configurations and operations will vary depending on vessel model. Modifications for improving the Regal product are on-going and undertaken without notice. No liability is accepted for information correctness and is given to the best of our knowledge.

Active Captain App

The Garmin “Active Captain App” may be downloaded to your compatible smartphone or tablet to manage your vessel. The app provides a quick free and powerful connection between your compatible mobile device and your Garmin chart plotters, charts and the community.

You can complete tasks such as sharing data, registering, updating the device software, and receiving mobile device notifications. Also, it permits Garmin plotter functions to be controlled on your device including Regal digital switching functions. At the vessel with the Garmin system activated the active captain app can be paired and setup.

Purchase new charts or access your charts from anywhere whether you are home or on the water by using the “One Chart” feature.

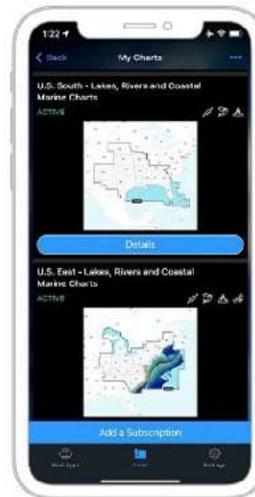
Receive and install software updates without wires from your mobile phone on to your chart plotter.

The community feature permits you to get the inside scoop on marinas, boat ramps, points of interest and more information from fellow boaters.

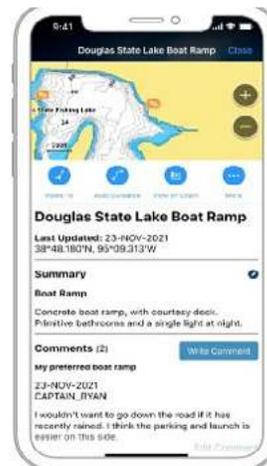
You can plan trips and mark way points, then see them on your chart plotter display.



BUY CHARTS



ACCESS/UPDATE CHARTS



ACTIVE CAPTAIN COMMUNITY

Electrical- Digital Switching Displays (Garmin- (Typical DC)



TYPICAL COMPANION DISPLAY

TYPICAL HELM DUAL PLOTTER DISPLAY

Currently, a dual helm and companion plotter system including the Garmin “glass cockpit” (stern drive) or a Garmin 8616 system (outboard) may be featured on your vessel. The Garmin screens promote wider viewing angles and superior clarity using touchscreens with full high definition (HD). All units are integrated with inland and coastal mapping with Regal world-class customized (NMEA 2000) network connectivity. Everything is designed to afford the operator quick one-touch access to the nautical information you need. ***Note that the outboard Garmin displays are utilized in the following pages.***

Plotter Customizing

Regal has designed the plotter system to be flexible and permits the customer to change certain display functions such as select screen icons (shown as screen rectangles). To change an icon touch and hold down the screen function and “replace” will appear on the screen. Touch replace again and choose the replacement function desired and the old icon/function will be replaced.

Note that the customizing screen functions may change at any time as Regal updates components and configurations as part of an on-going product improvement program. Your screen display and function may appear different from those illustrated and reviewed in this manual.

Home Screen- Typical Dual Helm Station View



Typical plotter system screen shot shown above. Screen shots are universal and may appear different on your Regal vessel display.

Plotter Activation- Typical

To energize the plotter system;

1. Locate the battery activation panel under the cockpit companion seat.
2. Press the battery buttons to activate the individual battery systems.

Note that the “house battery” normally controls the plotter system.

3. Press the desired plotter power button and briefly hold. A dual display screen will appear as the “HOME” screen after touching the “I Agree” provision. Various home screen rectangular tabs for choosing sub screens are located on the display. Also, a line of functions are displayed on the screen bottom. See above.

4. “Touch” the *digital switching rectangle* on the “HOME” screen (Red oval on last page display) and you will navigate to a display with an illuminated tab labeled “HELM” which is illustrated on the following page.

Depending on the vessel model a portion of select equipment functionality may be featured on individual on board switch panels located in the cockpit, quarter berth, head and helm safety systems/alarms.

Note that typical universal digital switching system related Garmin screen shots are illustrated and expanded upon in the following pages. No liability is accepted for information correctness and is given to the best of our knowledge.

Helm Display Tab/Screen



Digital Switching Screen Function

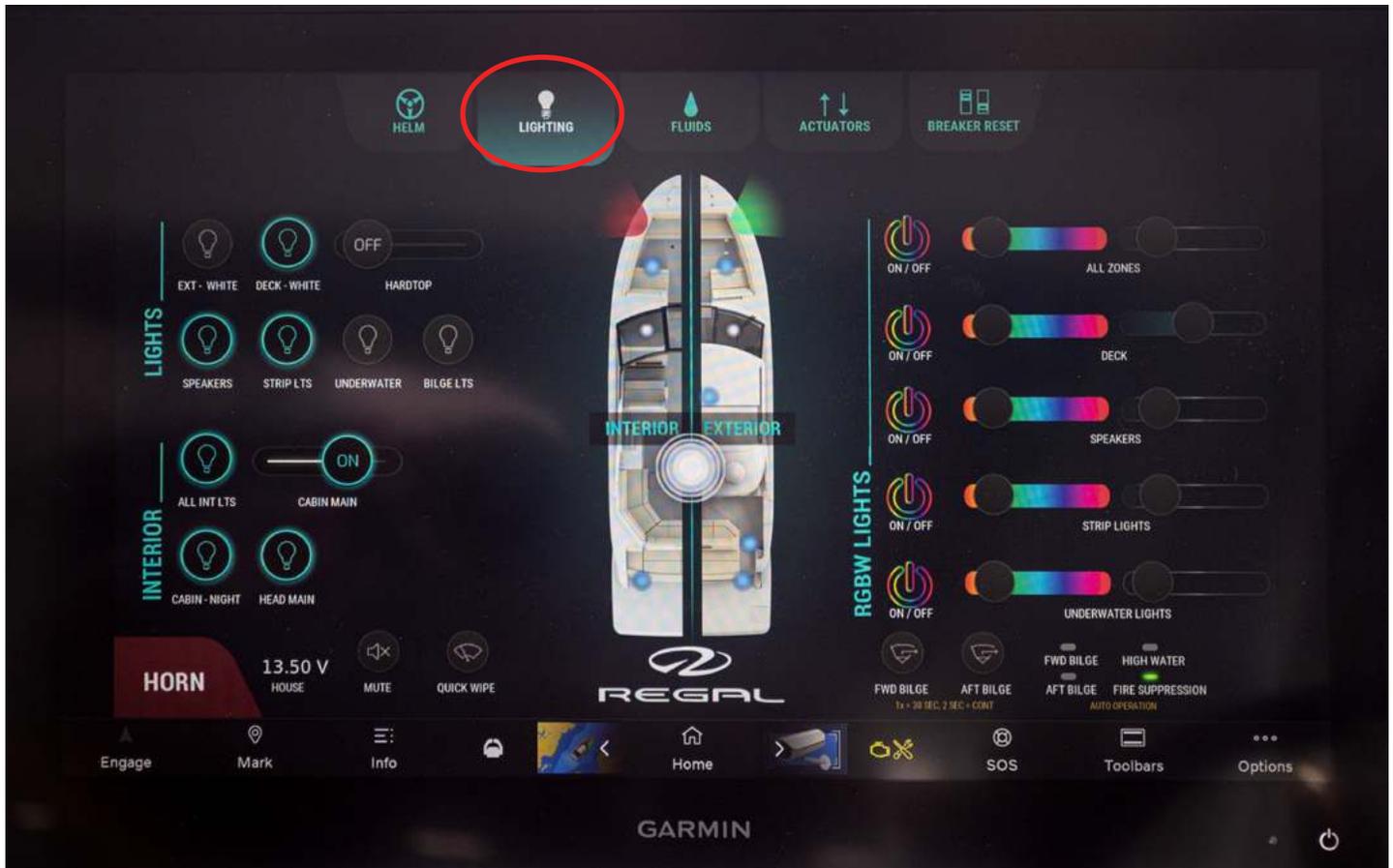
The digital switching system is connected through the plotter display screens via a set of modules and the NMEA 2000 system. “Touch” the digital switching rectangle on the “HOME” screen (red oval on last page display) and you will navigate to the above “HELM” display. When choosing select cluster buttons on the above screen complete systems will energize. *For example, when an individual light system button is touched such as the deck lights all of the system deck lights will illuminate on the vessel and will be displayed on the “top view” illustration in the center of the screen (See above).*

Note that all systems or components activated will display an illuminated button.

Helm Display Tab/Screen

The “HELM” (tab) screen controls select system cluster functions including lights, ventilation, accessories, wipers, windlass, switch panel along with various safety components including bilge pumps, fire suppression and high water alarms. By choosing other tabs using the “touch control” feature on the upper helm screen you will navigate to that digital controlled screen display.

Note that your vessel plotter display screens may appear and operate slightly different due to vessel model, equipment options, and/or on-going system design changes and updates.



The “LIGHTING” (tab) screen displayed above controls the lighting system cluster buttons on the port screen for interior and exterior lighting. When activated the lighting button will illuminate and the desired lighting cluster will be energized.

Note that a designated bar controls the intensity of the hardtop lighting once the “ON/OFF” button is activated. Slide the bar to the desired light intensity. The same process holds true of the cabin main lighting button.

The “RGBW” light (Red, green, blue, white light) buttons control select lighting zones located on the starboard screen.

There is a color control bar next to select “ON/OFF” buttons. When you slide the color control bar button with your finger to the desired color the lighting system will display that color.

The “ALL ZONES” button and bar will activate and control the color of all “RGBW” lighting circuits.



The “FLUIDS” (tab) screen illustrated above displays various fresh water/waste system capacities and operations on board the vessel. There are “touch” buttons to operate the fresh water pump, macerator, forward/aft bilge pumps, and fish box. There are operation tags for select system functions such as the macerator.

Note to turn the macerator seacock handle to the “open” position before energizing the macerator.

The macerator system utilizes a lockout mode. It requires the operator to press and hold the macerator button for 2 seconds to override the system. Next, press the button again to activate the macerator pump.

Note there are various icons that are common on most screens. Normally these icons light “GREEN” to show particular systems are in operation mode such as bilge pumps.

With the fire suppression system a “GREEN” icon indicates the system is armed and in auto operation.

When the high water icon lights red it indicates the automatic bilge pump has been activated. At this point it is recommended to visually check the bilge to determine the high water source.



The “ACTUATOR” (tab) screen illustrated above displays select actuator systems using motorized automation to open and close components such as the head door, engine hatch, cockpit television, sunroof, and sun shade.

Read and understand the warning below before operating any actuator controlled system.

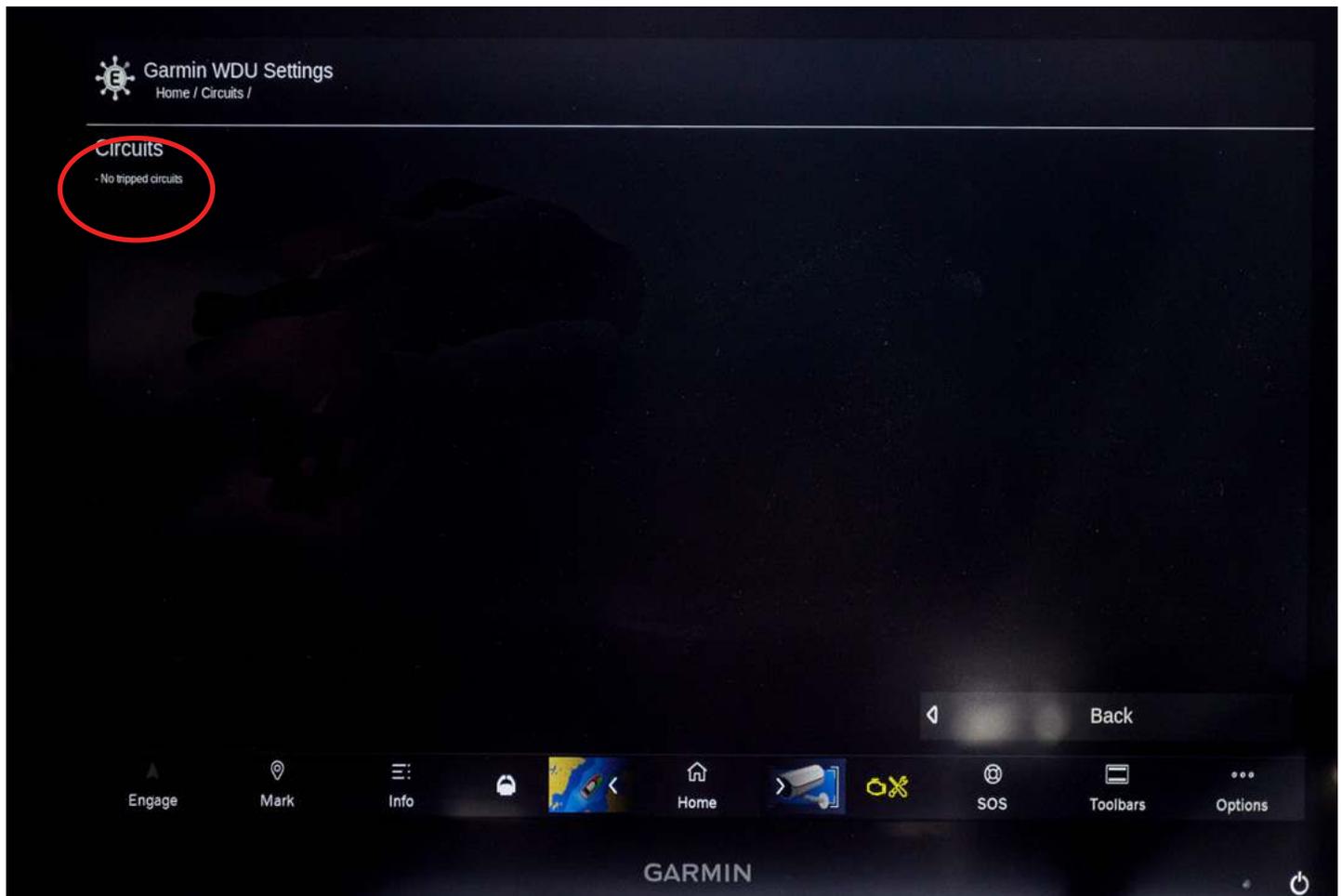
 **WARNING**

PREVENT POSSIBLE INJURY!
BEFORE OPENING OR CLOSING ANY
ACTUATOR CONTROLLED SYSTEM
ENSURE THAT ALL PERSONNEL
ARE CLEAR FROM THE
ACTUATOR OPERATION AREA!

Similar to earlier screens there are “touch” buttons to control the opening and closing of select components. Press the “OPEN” or “CLOSE” button to operate that actuator cycle. Other actuators such as the sunroof press the “STOP” button to position the sunroof at a desired point rather than a complete open or closed position. Sunshade buttons use “EXTEND” (out) and “RETRACT” (in) buttons. There are operation tags highlighted on the display screen for select actuator operations including closing the engine hatch. For safety reasons to close the engine hatch the operator must press the “CLOSE” button and keep the button depressed until the hatch is completely down.

Note that the cockpit television and sunshade operations feature a “DISABLE SWITCH” to lockout those actuator functions on the Garmin Easy View display screen.

Breaker Reset Display Tab/Screen



“Touch” the “RESET BREAKER” tab to navigate to the above screen. The “BREAKER RESET” (tab) screen illustrated above displays breakers that are currently “tripped” (None shown). There are headings at the top screen and breaker failure information is located under the headings in the event of a breaker trip.

Unit ID- The module housing the failed breaker would be listed.

Channel ID- This heading displays the circuit number of the tripped breaker.

Channel Description- This heading denotes the failed breaker channel usage.

Reset Circuit- This heading displays breaker circuit reset information.

The tripped breaker can reset on the above screen. Touch the reset circuit wording to reset breaker/circuit.

Also, the reset function can be performed at the module itself. Use the arrows on the module face to navigate to the failed breaker circuit and press the reset button (Always find the cause of a tripped breaker before resetting it).

Digital Switching Display Screen- Typical (Used Only With Select Digital Switching Vessels)



The Garmin (TD-50) “touch screen” display panel is a customer friendly smart panel which monitors select switching systems usually located at a cockpit combing panel.

To use the display depress the Power button and hold briefly. Press the home button and various system function buttons will appear including deck and bilge lighting, fresh water, and fish box. Press the button to activate individual systems.

There are actuator systems controlled on this panel including opening and closing of the hard top (sun roof), engine hatch, sun shade, and the cockpit TV

monitor screen.

Press the appropriate arrow to operate device in that direction. Select device functions display arrows or “touch” display bar (hard top/sun roof).

Fish box button will activate pump to drain box.

Fresh water button energizes all fresh water components.

Electrical- Alternating Current (AC)

Overview-

The AC power package and generator are options on LS36 stern drive & LX36 outboard models

Alternating current sometimes called AC current is brought on board through the use of a dockside (shore power) cord or produced on board through the optional generator. Just as a residential home uses 120 volts of AC current to run various appliances and equipment so does your vessel.

It is important that you understand and respect the alternating current system used on board.

AC current vessel sheathed cable is sometimes known as or referred to as Romex or boat cable.

AC sheathed boat cable supplies 120 volt AC feeds to on board systems/components including those identified on the AC Ship's Master Control Panel. Typical domestic vessel AC service wiring is based on one of the following wire color coding configurations:

1. Brown-ungrounded conductor

Blue-neutral ungrounded conductor

Green-grounding conductor

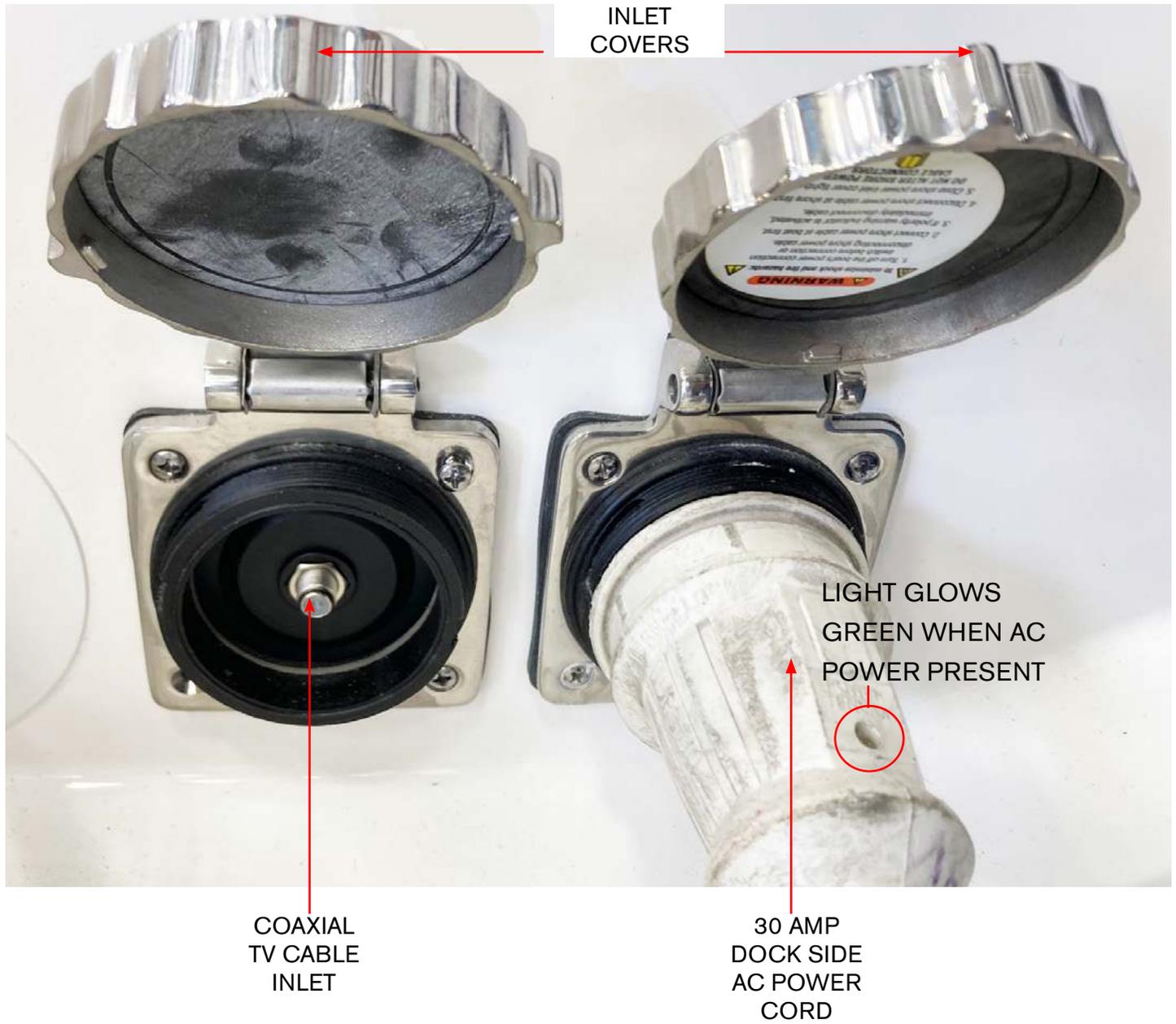
2. Black-ungrounded conductor

White-neutral ungrounded conductor

Green-grounding conductor

Note to read, understand and follow any danger, warning, or caution labels in reference to your vessels electrical system or individual equipment components.

AC Current- Vessel Power Inlet



⚠ WARNING

PREVENT SEVERE INJURY OR DEATH!
ALTERNATING CURRENT (AC) CAN KILL YOU!
DISCONNECT ALL ELECTRICAL POWER SOURCES BEFORE ATTEMPTING TO REPAIR OR REPLACE ANY ELECTRICAL COMPONENTS.

⚠ WARNING

PREVENT SEVERE INJURY OR DEATH!
NEVER USE EXTENSION CORDS OR IMPROVISED CORDS IN SHORE POWER/MARINE INLETS. USE ONLY UL APPROVED MARINE SHORE POWER CORDS MATCHING ORIGINAL WIRE GAUGE AND AMPERAGE.

Note to close all inlet covers when not in use to prevent water ingress/corrosion.

Dock Side Cord Usage

The dock side cord is the basic component used to deliver 30 amp service from the marina dock power box to the vessel itself.

Before plugging in the dock side power cord ensure that all vessel AC breakers are in the “off” position. This includes the ELCI as well as both the main and equipment breakers at the AC ship’s control panel.

When connecting the shore power cord first insert the cord into the vessel power inlet and twist to lock. Next, insert the other cord end into the marina shore power center receptacle and twist to lock.

There may be several types of inlet plugs located at a marina dock power center. Know your footprint. Also, marina dock power centers normally have breakers that must be activated after installing the dock side cord. Make sure the dock side cord has enough slack to weather changing tides if applicable and at the same time does not come in contact with the water.

Check with the marina dock master or the Garmin Active Captain App for additional information on their shore power operation and requirements.

Note that before attempting to disconnect the shore power cord turn “off” all equipment and main AC breakers on the ship’s main AC panel to prevent component/ system damage. Disconnect cord from the marina power supply first. Then disconnect cord from the vessel power inlet.

Store in an on board dry storage locker for easy access.

Tips For Adapter Cord Usage

Follow these 3 tips when using adapter cords;

1. Ground connection and polarity must be maintained.
2. The total amperage draw should never be allowed to go over the amperage of the lowest rating component as part of the connection.
3. Outlet and adapter voltage rating must be identical.



TYPICAL SHORE POWER ADAPTER (PIGTAIL)

Shore Power Possible Problems/Solutions



1. After the dock side cord is connected first to the marina dock power center and then to the vessel power inlet plug no voltage is shown on the main panel AC volt meter (with the main AC ship's panel breaker activated).

Check for a breaker on the marina dock power center to ensure it is activated.

Check the ELCI breaker/voltage sensing device. The "power" icon should show green. If a leakage fault exists a "red" icon will light indicating the breaker is "tripped". If needed, use the test button to reset the breaker. Read the ELCI information following in this chapter.

2. Call the dock master or marina personnel.

3. If needed an adapter cord may be available from the dockage facility. **NEVER IMPROVISE ANY TYPE OF CORD OR POWER INLET CHANGES!**

Additional cord adapters can be found for purchase at retail boating outlets. Note the dockside cord sample shown on this page.

Tips- Marina Shore Power Stations

As you become a more experienced boater you may engage in longer cruises with over night stays. It is most frustrating after a day of hard boating to pull into a marina and find your shore power cord does not adapt to the marina shore power station.

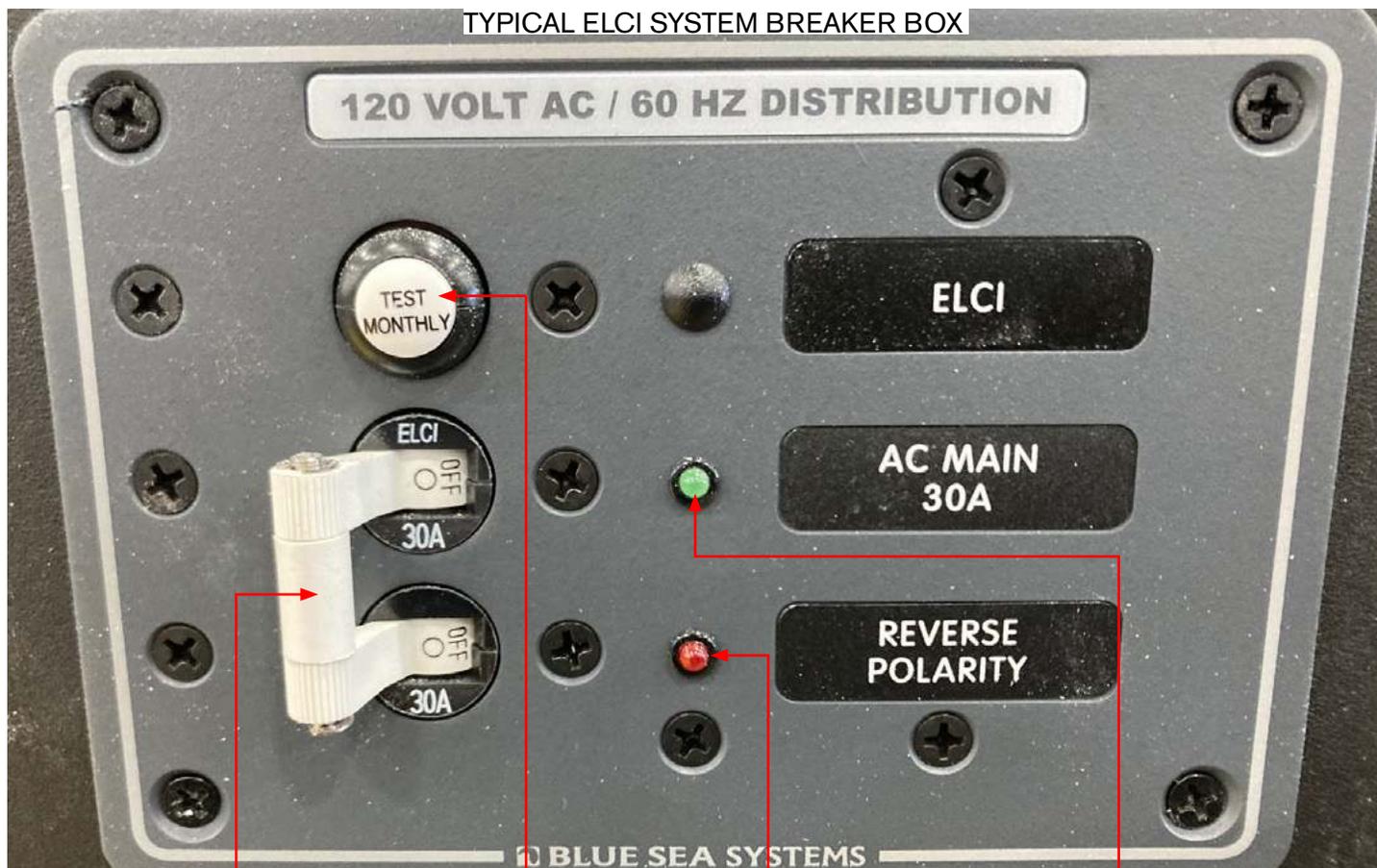


TYPICAL MARINA SHORE POWER STATION

This may be especially true stopping at older marinas built before the 1978 National Electric Code was enacted for these facilities. Therefore, it is recommended that you purchase several shore power adapter (pigtail) cords to meet various marina plug footprints. One such pigtail is a female 3 prong angled twist plug on one end and a 3 prong straight male plug on the other end.

A point to remember is that sometimes a chart plotter will provide local cruising information including marinas and facilities they offer but normally they do not provide the power voltage available at dock side. Call the marina harbor master for specific dock side voltage and services available at that site.

Note that there are many shore power station configurations used domestically. Be prepared to use adapter (pigtail) cords or the on board generator if installed.



ELCI BREAKER
SINGLE THROW
DOUBLE POLE
(30 AMP)

TEST BUTTON
(PRESS BUTTON
EVERY
MONTH)

LEAKAGE FAULT
LIGHTED
(RED WHEN
LEAKAGE DETECTED)

LINE VOLTAGE
LIGHTED
(GREEN WHEN
VOLTAGE PRESENT)

ELCI System Overview

Once the shore power cord is attached to the vessel's power inlet and the marina's dock side power current travels through the shore cord and terminates at a typical ELCI actuator enclosure (shown above). ELCI stands for "Equipment Leakage Circuit Interrupter." It provides ground fault protection for the AC shore power system beyond the ELCI. Once through the ELCI AC power continues to the main AC ship's panel. The main ELCI breaker above features leakage fault technology. **Note If the 30 amp ELCI breaker trips find the cause of the problem before resetting the breaker.**

There are two potential failures in a boat's electrical system that can put people on or around a vessel at risk of lethal electrical shock.

In a properly functioning marine electrical system, the same amount of AC current flows in the hot and neutral wires.

However, should electricity "leak" from this intended path in these two wires to ground, this condition is referred to as a "ground fault". An example of this is an insulation failure in the wiring of an appliance.

ELCI System Continued

Furthermore, a ground fault can occur when the grounding path is broke through a loose connection or broken wire. As an example a shore power ground wire may fail due to fatigue caused by constant motion and stress.

Faulty grounds can go undetected; a simple continuity test may not reveal problems.

When these 2 conditions occur at the same time, it may produce tragic results. The combination of a “ground fault” and a faulty ground could result in the metal parts of the vessel and underwater gear to become energized.

If this condition exists, besides being a hazard to personnel on board there is increased danger to swimmers near the boat. The result could be shocking people on board and swimmers could receive a paralyzing dose of electricity and drown due to loss of muscle control.

An ELCI provides protection for the entire boat and features a trip threshold which provides ground fault protection for the entire shore power system beyond the ELCI.

The ELCI protection on individual shore power lines combined with GFCI'S will reduce the risk to those on the boat, dock, and in the water surrounding the vessel.

Another feature of the ELCI is a “leakage fault” detector located on the side of the ELCI breaker itself. The leakage fault feature detects a change in the neutral wire current.

Should the current change more than 30 Ma or about 1/3 of an amp the unit senses the difference and will “trip” the breaker causing the leakage fault LED to illuminate red. This clearly indicates that the trip occurred as a result of leakage. Before resetting the ELCI breaker determine the cause of the leakage fault.

A proper operating alternating current system will display a green illuminated LED at the “power” marked area of the ELCI.

Periodically test the ELCI by depressing the “test” button. The breaker should “trip” indicating the system is functioning properly. Simply reset the breaker. The leakage hazard helps prevent serious equipment damage and possible fire.

Once exiting the ELCI the 2-120 volt conductors run directly to the ship's main AC master control panel located in the quarter berth.

ELCI Leakage Fault Detector LED Information

As a central segment of the ELCI system there are two LED lights with a “test” button located at the shore power inlet. With the breaker in the ‘on’ position and the shore power cord connected these LED lights may show variations in color to provide system conditions.

ELCI LED indication as follows:

1. Green LED On- Red LED Off

Line voltage is present, the breaker is closed, and the device is protecting the circuits against over current and leakage current.

2. Green LED Off, Red LED On

The device has detected leakage current and has opened the circuit breaker.

3. Green LED flashing, Red LED Off

The circuit breaker has opened due to over current or has been manually turned to the “off” position.

4. Green LED Off, Red LED Off

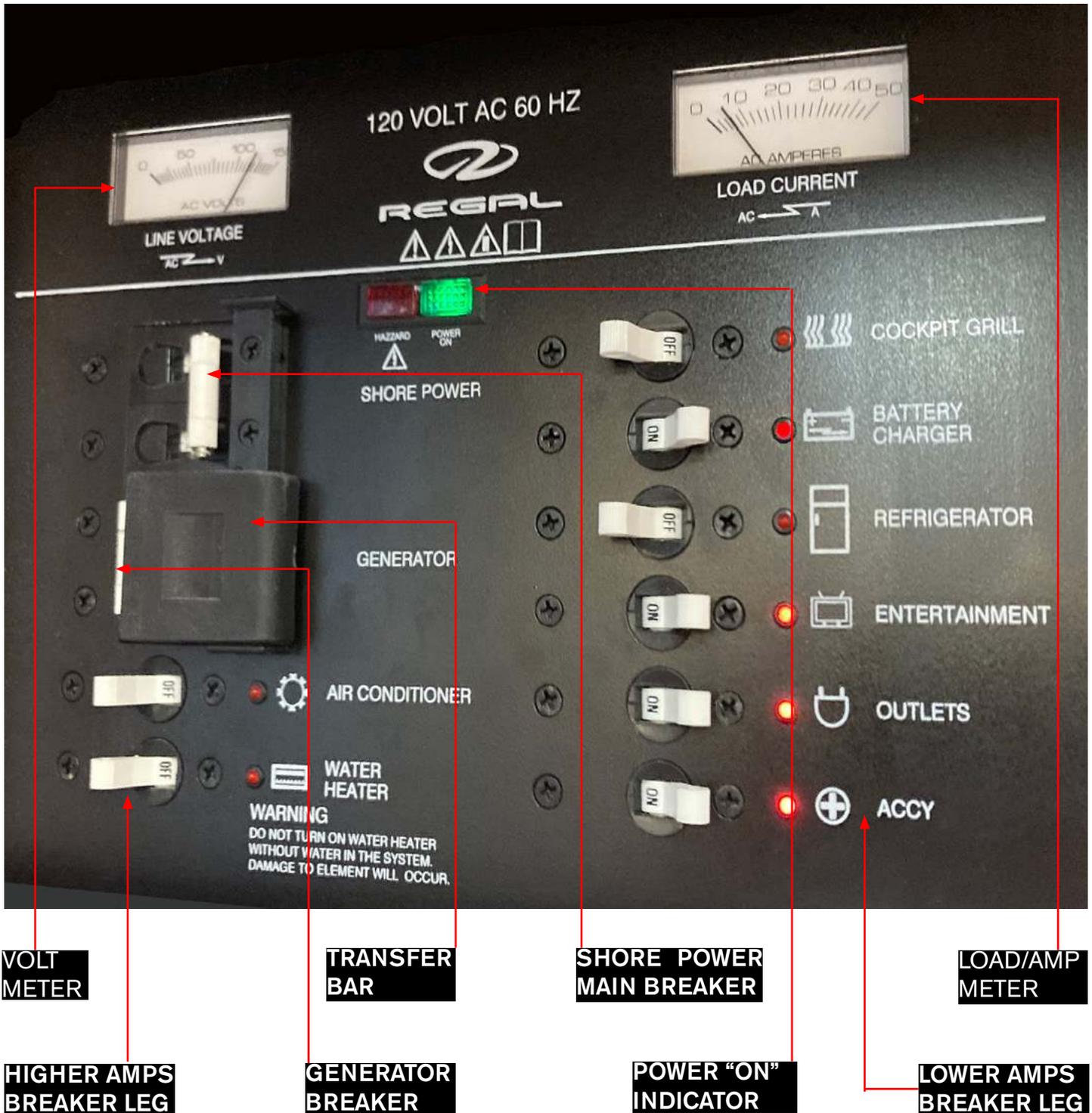
Line voltage is not present. Check cord connections and marina breaker for “on” position.

Note: Check circuit at least monthly by pushing in the white switch marked TEST. When depressed, the breaker should return to the reset position indicating the ELCI circuit is operating properly.

For further information on the ELCI PB- series refer to the Carling Technologies web-site.

The ELCI can at times undergo a process called “nuisance tripping” which can cause a “tripped” breaker. This can be caused by overloads in the electrical draw or sometimes caused from unbalanced loads. One way to minimize the situation should it occur is to closely monitor the energized devices on the vessel which will assist in keeping the total amperage used to a minimum and the loads between panel legs more balanced.

AC/120 Volt Ship's Main Distribution Panel (Typical)



Note 1: Your vessel main distribution panel may appear different due to on board components requiring breaker size changes based on equipment load requirements. Select breakers are for options.

Note 2: When individual breakers are activated a lighted icon activates next to the energized breaker.

120 Volt Main Ship's Main Distribution Panel Breaker Description/Function (Typical)

If installed, the typical AC (alternating current) main distribution panel (MDP) controls all high voltage components on your vessel. This panel domestically, features 120 volts AC at a frequency of 60 cycles. Downstream equipment is controlled by individual breakers using 120 volts and breaker amperage to match components load requirements. Voltage is supplied by either a 30 amp shore power cord (moored) or by an optional generator (at sea) or optional inverter system. The panel features line voltage and load current meter displays.

Reverse Polarity Indicator

After plugging the 30 amp shore cord into a marina receptacle and the vessel power inlet (in that order) check for a green light at the ship's main panel reverse polarity indicator before activating the main breaker. The green light indicates there is no reverse polarity. If a red light appears on the reverse polarity indicator a hot wire and ground wire may be reversed somewhere in the circuit from marina shore power station to the main panel.

In all cases do not activate the main panel breaker. ***Take immediate corrective action to find the cause of the reverse polarity situation.***

At this point, disconnect the shore power cord from the marina power center and call a certified marine electrician.

30 Amp Main AC Panel Shore Power Breaker

The main panel shore power breaker is a single throw, double pole breaker supplying 120 volts to the sub breakers. The sub breakers carry overload protection to individual equipment components.

Before you activate or deactivate the main breaker make sure all sub breakers are in the "off" position. This prevents any excessive equipment motor draws and may eliminate any system arcing.

Assuming at this point that the dockside cord is connected and the reverse polarity indicator displays a green icon, activate the main shore breaker by flipping the single throw main panel breaker to the "on" position. AC power at 120 volts is now available to all sub breakers.

At this point activate desired sub breakers. *Always be conscious of the load current meter and the need to balance the shore power load where possible.*

The other main breaker labeled generator is to be activated after the generator is started. A transfer bar is used to activate the generator circuit. See the generator breaker activation information.

NOTICE

BREAKER SIZE MAY CHANGE
DURING THE PRODUCTION LIFE CYCLE
ON SELECT BOAT MODELS.
ALWAYS CHECK BREAKER SIZE
AS STATED ON SHIP'S MDP PANEL
FOR PROPER AMPERAGE,
ALWAYS REPLACE WITH EXACT BREAKER
TYPE AND SIZE.

120 Volt Main Ship's Main Distribution Panel Breaker Description/Function (Typical)

Left Leg- MDP Panel Layout

Air Conditioner- This breaker controls the air conditioning unit located behind the head aft bulkhead. Always check for AC pump water flow at the transom after starting the unit.

Water Heater- This breaker controls the galley stove located in the salon area.

Note do not turn on the water heater without water in the system as element damage will occur.

Right Leg- MDP Panel Layout

Cockpit Grill- This breaker controls the electric grill. If installed it is located in the cockpit.

Battery Charger- This breaker controls the battery charger located in the bilge. It is recommended that when leaving the boat for extended periods this breaker be left energized in order to keep the ship's batteries in a charged condition (dock side cord must be hooked up).

Refrigerator- This breaker controls the on board cockpit refrigerator circuitry.

Entertainment- This breaker controls the entertainment circuit.

Outlets- This breaker controls the on board 120 volt outlet circuitry. See the following pages for additional information on outlets and the GFCI (Ground Fault Circuit Interrupter) circuit.

Accessory- This breaker is used for after market 120 volt accessories.

Note always match breaker size to equipment load. Contact a certified marine electrician before adding any alternating current component.

GFCI Outlet (Ground Fault Circuit Interrupter)

Typical

Sometimes current in a circuit escapes its normal route and finds a “ground fault”. If that vehicle ends up to be your body and the current passes through your heart the results could be deadly. The outlet contacts close between 4 and 6 milliamperes.

A ground fault interrupter or GFCI senses the difference between the hot and neutral wire current before a fatal dose can be conducted and in a fraction of a second cuts the current.

The GFCI devices used in homes are normally not ignition protected and of the 15 or 20 amp variety. Your boat uses a 15 amp GFCI. If installed in the sump on select vessels the GFCI is ignition protected.

This system uses a GFCI as the first receptacle in the circuit and all the receptacles down stream on the same circuit (known as a daisy chain) are protected by the initial GFCI. This is accomplished by attaching the hot wires to the line terminal of the GFCI receptacle and the out-going hot wire to the load terminal. The neutral wires also use line and load terminals on the opposite side of the GFCI receptacle.

You can identify the GFCI primary receptacle by the test and reset breaker in the center of the device. Check the GFCI protection monthly. If a problem develops with the GFCI circuitry call a marine electrician to access the situation.

The GFCI outlets are especially useful when electrical equipment is employed such as a drill or in the head with the use of personal devices such as curlers and hair dryers.

The GFCI is programed to protect a person from line to ground shock hazards which could occur from various electrical devices operating off of the device or receptacles down stream. It does not prevent line to ground electric shock, but does cut down the exposure time to a fraction of a second before the device trips. It does not protect people against line to line or line to neutral faults. Also, it does not protect against short circuits or overloads; this is the circuit breakers job.

All GFCI's should be tested monthly to make sure they and the receptacles they protect “down-stream” are protecting against ground-faults.

Note to never use any electrical devices when puddling water is present to prevent a possible shock hazard.

GFCI Outlet (Ground Fault Circuit Interrupter)

Typically, newer style GFCI's must automatically monitor ground fault interrupting functionality every 3 hours or less. If the device can no longer provide GFCI protection, it must deny power and provide a visual indication that it can no longer provide protection.

Your boat uses a GFCI's featuring the following:

1. Power indicator (solid green)
2. Trip indicator (solid red)
3. "End of life" indicator (flashing red)

TEST BUTTON

GREEN LED

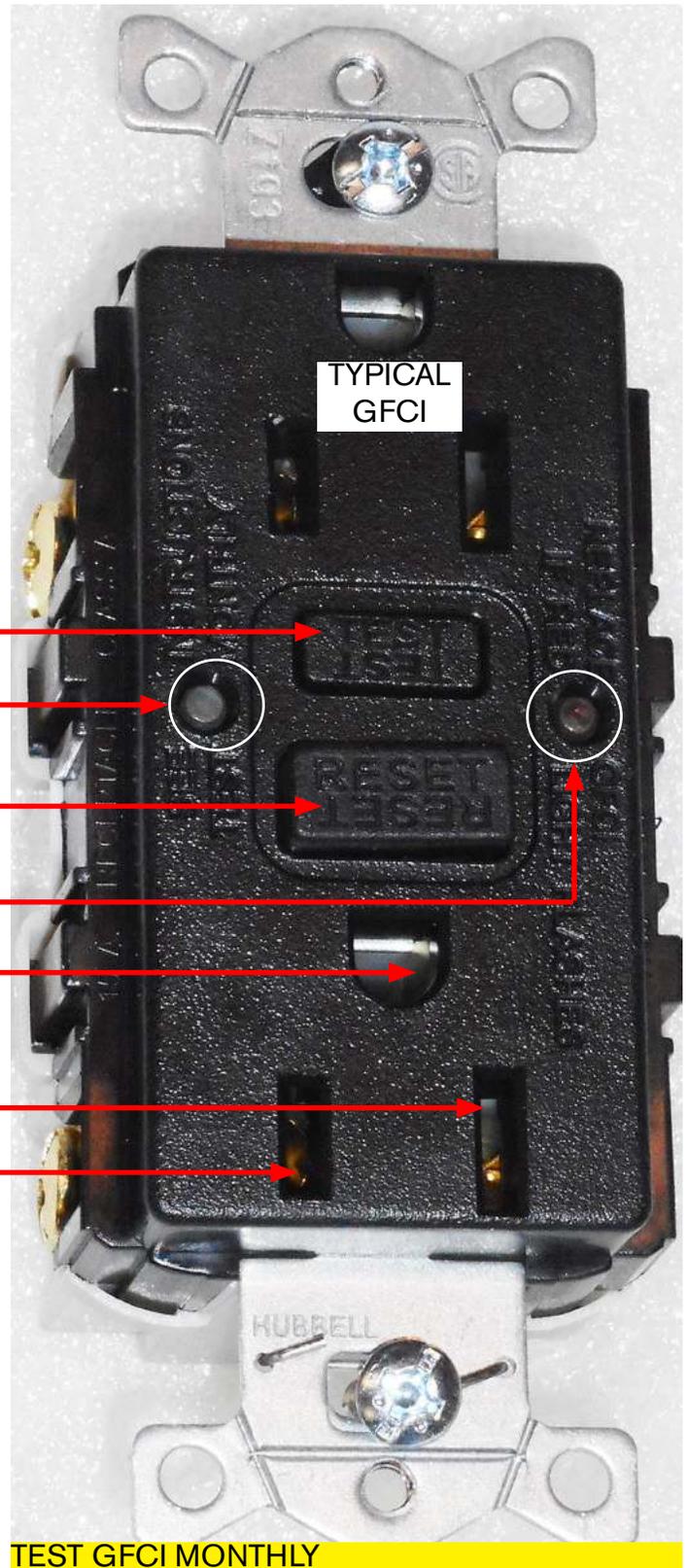
RESET BUTTON

RED LED

EARTH GROUND

NEUTRAL SLOT

HOT SLOT



Normal operation when energized is for the Green LED to light as the outlet breaker is activated at the main AC ship's panel. If Red light flashes replace GFCI receptacle.

GFCI Outlet- Continued

Testing GFCI'S

To test a GFCI find a 120 volt night light or small lamp to plug into the GFCI outlet. Try it in another circuit first to make sure it lights.

After the lamp is plugged into the GFCI outlet the lamp should light. Now press the “test” button at the GFCI receptacle center. The GFCI's “reset” button should pop out and the lamp should go out. This means the GFCI itself is functioning properly. Press the “reset” button to restore power to the outlet. Test each GFCI circuit monthly.

You can use the lamp to check receptacles downstream from the GFCI. All receptacles should light the lamp and should go out when the “test” button is pressed.

GFCI downstream receptacles can be tested with a plug-in type GFCI tester. This tester contains a GFCI test button which accomplishes the same thing as the GFCI receptacle built-in test button. The tester below displays a center and right icon reflecting a correctly polarized circuit.

TESTING GFCI DOWNSTREAM OUTLET



Ignition Protected Devices

Many electrical devices in everyday use tend to “arc” or spark when being used. These include motors, fans, switches, relays, etc.

Boats in general use many of these same devices but they are protected from any sparking that may cause the device to ignite with any vapors that are typically found in the engine room and/or fuel tank compartments.

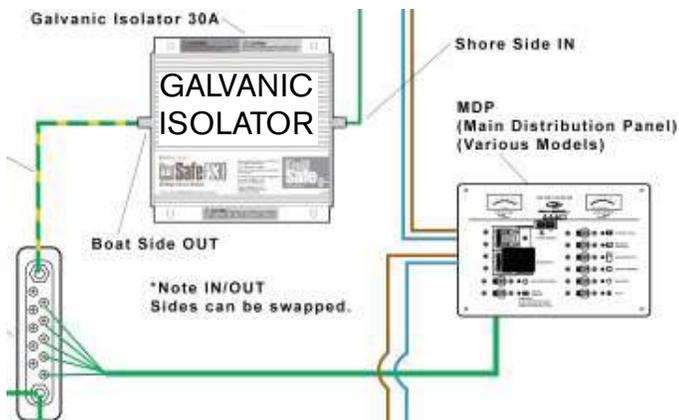
When replacing any electrical device especially in the bilge or engine room make sure it is ignition protected. This means it has been tested and normally the device is stamped with a marking making it safe to use. Most automotive type devices are not ignition protected especially engine starters and alternators.

Possible Problems/solutions (GFCI's)



1. If the “reset” button does not pop out, the GFCI is probably defective and should be replaced.
2. If the “reset” button pops out one time but tends to stick the next the GFCI should be replaced.
3. The GFCI “reset” button pops out when something is turned on. This may indicate an internal wiring problem with the GFCI or there may be a ground-fault downstream.
4. The GFCI “reset” button is in the pressed position and nothing works. Check the appropriate breaker at the main ship's AC control panel to make sure it has not “tripped” or as been deactivated.
5. When “end of life” icon appears replace GFCI outlet with one with the same amperage

Galvanic Isolator (Typical)



As part of the AC boat circuitry the green ground wire takes a different path. It enters via the boat's shore power inlet and travels to a galvanic isolator via the ELCI system.

A (60 hertz) galvanic isolator for domestic use is connected in series with the AC grounding "green" wire. The purpose of the galvanic isolator is to isolate the boat's grounding system electrically from the dock and other vessels below 1.4 volts but to maintain a connection to the shore green ground at high voltage potentials.

The low voltage isolation will prevent the vessel's zinc from protecting the underwater metal hardware on another vessel sharing the same AC common green ground wire. This eliminates the possibility of galvanic interaction from other boats on the same dock circuit and permits your anodes to protect your boat.

Precautions/Galvanic Isolator Warnings

Warning- It is extremely dangerous to swim or be present in the marina water due to potential AC current that may exist in the water. Take all necessary precautions as this may be life threatening.

Caution- This device does not provide a status monitor. Following a lightning strike this unit may not continue to provide galvanic isolation protection.

Warning: The fan will operate only when there is a fault to ground and the isolator is conducting current. If you notice the fan running immediately disconnect the shore power and contact a qualified marine electrician to isolate and repair the problem with the boat or the shore power connection. Remember, never cover the fan holes.

Caution: Never test the galvanic isolator. Troubleshooting the galvanic isolator shall be performed by qualified personnel only. Contact your authorized Regal dealer for more information.

Note that the galvanic isolator is located in the quarter berth, sump or in the aft stateroom depending on vessel model.

Electronics

Note that various components found in this section are optional equipment.

NMEA 2000 Network

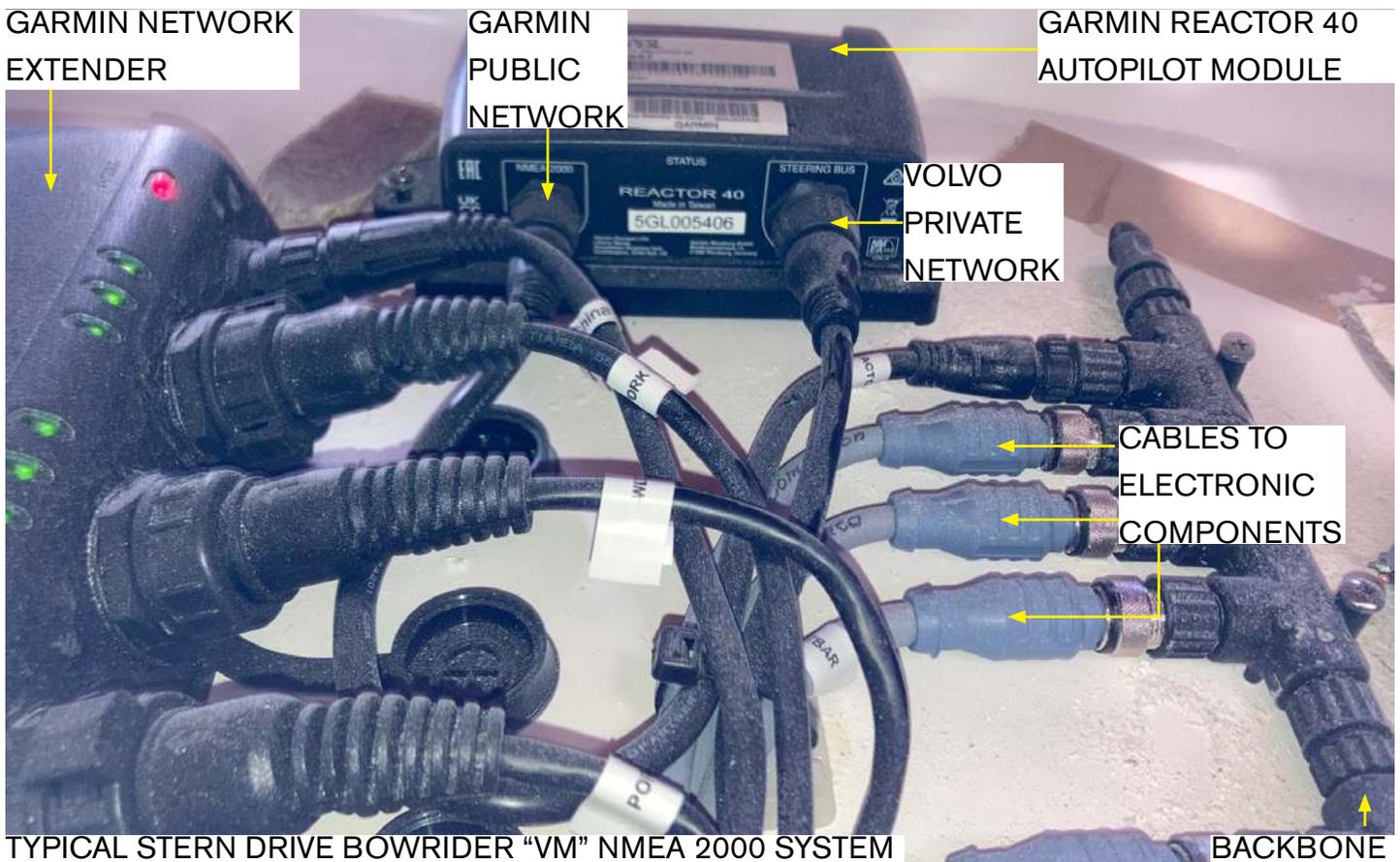
The NMEA 2000 is a communication system between electronic components. There is a main trunk called a “backbone.” Typically, the NMEA backbone is accessible beneath the helm shroud cover access. As electronic components are added to the system a cable is attached to the backbone from each component to permit communication to other equipment on the backbone. It is similar to branches connected to a tree trunk. The Garmin network extender permits other electronic components access to the NMEA network.



NMEA 2000 SYSTEM UNDER HELM ACCESS

This private “Volvo” network is connected to the NMEA backbone.

A typical feature using the NMEA 2000 public network is the Fusion® entertainment media being accessible and controllable from the “Glass cockpit” chart plotter (stern drive) system or Garmin plotter (outboard) system.



TYPICAL STERN DRIVE BOWRIDER “VM” NMEA 2000 SYSTEM

BACKBONE

Radar

Overview



TYPICAL OPEN ARRAY RADAR OPTION

As optional equipment a 4-KW high definition radar dome is located on the hard top. The unit features 24 or 48 revolutions per minute rotation speeds and a 72 nautical mile maximum range setting along with a 20 meter minimum range. Dual range operation provides a fully independent split-screen display of far and close radar views. See chart plotter manual for additional features.

The open array radar option features the ability to better separate targets because of its narrow beam as it relates to its larger antenna size. Also, the open array features higher resolution over similar domed types and thus has the enhanced ability to pick up marginal radar targets.

Operation

To start up the radar do the following:

1. Ensure that the battery activation panel is energized.
2. Depress the power button on the chart plotter to energize the plotter.
3. Choose radar menu on the home screen. You can make it a favorite.
4. Navigate to desired next menu buttons for more specific radar functions.

For additional information refer to the chart plotter manual, internet, or contact your closest Regal yacht dealer or marine professional. Further information may be found on the Garmin web-site. Be sure to read and understand all safety labels related to the radar.

Note that there are some great instructional web based videos that describe the radar screen functions.



TYPICAL PLOTTER RADAR SCREEN



CAUTION

AVOID POSSIBLE EYE INJURY DUE TO
ELECTROMAGNETIC ENERGY.
WHEN RADAR IS TRANSMITTING
DO NOT LOOK DIRECTLY AT THE UNIT
WHEN AT CLOSE RANGE.



CAUTION

RADAR PRODUCTS EMIT
ELECTROMAGNETIC
ENERGY WHICH IS HARMFUL.
TURN THE UNIT OFF WHEN UNIT
IS BEING SERVICED.



CAUTION

AVOID POSSIBLE INJURY DUE TO
REVOLVING OPEN ARRAY ANTENNA!
KEEP ALL BODY PARTS CLEAR
OF RADAR ANTENNA
CIRCULAR MOVEMENT!

Autopilot

The Autopilot is a device that continuously adjusts the steering on a vessel to maintain a constant heading. The system is normally programmable for both automatic and manual steering functions and patterns.

It is popular by mariners who use it to navigate effortlessly in open water environments.

With stern drive (Volvo) propulsion the autopilot is integrated into the “Glass Cockpit System”.

With outboard propulsion the autopilot system is integrated into the Yamaha Helm Master system.

Before using the autopilot system read and understand the appropriate operation manual based on vessel propulsion. Further information is available from your closest Regal dealer, Yamaha, or Volvo Penta.

Entertainment

Overview-

Note that various components found in this section are optional equipment.



TYPICAL COCKPIT TV

Your vessel features a variety of standard and optional components that provide both visual and audio entertainment.

Refer to the individual owner's manuals and the technical section (schematics) for further entertainment system information.

The optional generator or inverter (at sea) or dock-side cord (at mooring) must be activated/plugged in to supply AC voltage to the HDTV monitors and HDMI splitters.

Note as an integral part of product improvement that Regal Marine Industries, Inc. reserves the right to add, delete, or change both standard and optional components at anytime without notice.

Sirius XM Satellite Stereo

With the optional satellite antenna installed and an activated subscription you will be able to program and preset Sirius XM audio stations through the "glass cockpit" chart plotter or Garmin plotter.

Before the subscription can be activated you must have the radio ID on the rear of the Sirius XM tuner. For more information, call 1-866-635-2349 domestically.

Fusion Stereo System



TYPICAL STEREO TOUCH SCREEN VIEW

Regal models feature Fusion stereo units delivering world class audio, sound control and integration.

The system utilizes multiple zones delivering and boosting high quality sound through a powerful amplifier system. The sound at individual zones is controlled through the Garmin chart plotter on outboard vessels and the “glass cockpit system” on stern drive vessels.

The system integrates a touch screen one-piece glass display and digital signal processing (DSP) that expands the sound quality to another level by tuning vessel sound areas to individual speaker profiles and amplifiers.

With Fusion link technology your yacht has been initialized by the factory with the DSP profile to provide a perfectly tuned entertainment on board system.

Bottom line you can enjoy the music you desire to hear on the water customized for your ears and the environment.

Note that you can swipe the stereo head touchscreen screen, use the “glass cockpit” (stern drives) or the Garmin plotter (outboards) for media menu source page system adjustments as both systems are similar. This is possible due to the NEMA 2000 communication system installed on your vessel. Also, you can listen to stereo audio over the optional co cockpit television.

The chart plotter will automatically detect the media player. You can play media from sources connected to the media player and sources connected to the NMEA 2000 network. Refer to your chart plotter manual for additional information. The stereo unit features AM, FM, Bluetooth and USB connectivity supporting many media devices.

Furthermore, another aspect of the NMEA 2000 network may permit the stereo volume to be controlled digitally. Using an appropriate speed sensor device and selecting speed verses volume from the stereo’s settings menu may enable volume to be automatically adjusted based on the vessel’s boat speed.

Note that there are system features such as the Wi-Fi that are available but not used on board. They are part of after market options for the end user to individualize his sound system.

Fusion® Stereo Entertainment Continued

System Start-Up Notes

Stern drive and outboard plotter screen displays may appear different as typical vessel screen shots are used in this manual. The plotter is recommended to access select stereo system screens in addition to the stereo unit itself.

1. Energize the battery activation panel which powers up the helm.
2. Activate the plotter power button.
3. Choose the “Home” screen icon at the right side of the upper menu bar. See photo upper right.
4. From the “Home” screen choose “Vessel”. See center photo.

5. From the “Vessel” page choose “Media”. At this screen display make adjustments to change Fusion audio functions.

6. When “Source” is touched the screen will display all entertainment devices that can be controlled from the plotter.

Typical devices included are Bluetooth, Cockpit TV, AM, FM and AUX/PLOTTER.

Note the home screen displays a media bar.

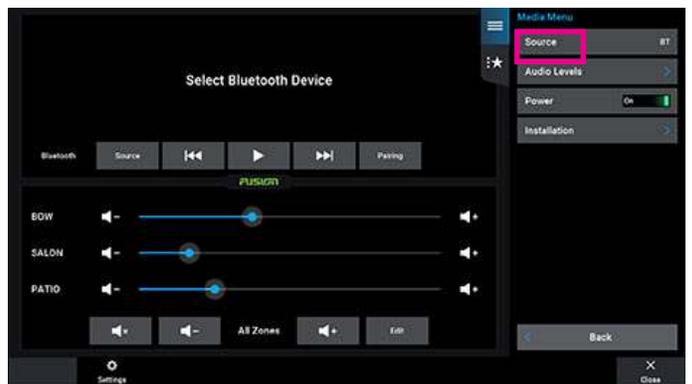
Note that after-market devices may be added by plugging into the stereo head aft ports.



TYPICAL O/B HOME SCREEN/ICON VIEW



TYPICAL O/B VESSEL/MEDIA SCREEN VIEW



TYPICAL PLOTTER MEDIA/FUSION VIEW

Note to swipe “Options” on the menu bar to access “Settings” where select parameters of each system can be modified.

Note that stereo speaker audio is only available at the cockpit TV and controlled at the cockpit TV source setting on the plotter.

Stereo Controls



Note that the stereo head unit start-up guide below may be used verses the plotter to play music and to set up and control source devices.

Note that when stereo is deactivated the stereo memory circuit saves stations and presets.

Dial	<ul style="list-style-type: none"> • Turn to adjust the volume. • When adjusting the volume, press to switch between zones. • Turn to move through the menus or adjust a setting. • When in a menu, press to select the highlighted option. • Press and hold to activate certain functions such as opening the radio presets or muting all connected stereos from the mute screen Note to see illustration above for dial location
⏻	<ul style="list-style-type: none"> • Press to turn on the stereo. • Press to mute the audio. • Press and hold to turn off the stereo or all stereos on the network. • Press and hold for longer than 10 seconds to reset the stereo.
☰	<ul style="list-style-type: none"> • Press to open the menu. • Press to return to the previous screen from the menu. • Press and hold to exit the menu.
↻	<p>Press to change the source.</p> <p>TIP: You can turn the dial to browse, and press the dial to select the source.</p> <p>Press and hold to open the GROUPS menu when connected to a Fusion PartyBus™ network</p>
⏮	<ul style="list-style-type: none"> • Press to skip to the beginning of the track or to the previous track, when using an applicable source. • Press and hold to rewind the track, when using an applicable source. • AM/FM source: <ul style="list-style-type: none"> • Press to tune to the previous station or preset. • Press and hold for faster tuning (manual mode only). • AUX: Press to decrease the gain. • SiriusXM source: <ul style="list-style-type: none"> • In Live Mode, press to tune to the previous station or preset. • In Live Mode, press and hold for faster tuning, in Manual mode only. • In Replay Mode, press to skip to the previous track. • In Replay Mode, press and hold to rewind the current track. • DAB source: <ul style="list-style-type: none"> • Press to return to the previous DAB station in the ensemble. When you reach the beginning of the current ensemble, the stereo automatically changes to the last available station in the previous ensemble. • Press and hold to return to the previous DAB ensemble.
⏸	<ul style="list-style-type: none"> • Press to pause or resume media playback. • AM/FM source: <ul style="list-style-type: none"> • Press to cycle through the tuning modes (Auto, Manual, and Preset). • Press and hold to save the selected station as a preset. • SiriusXM source: <ul style="list-style-type: none"> • Press and hold to switch between Replay Mode and Live Mode. • In Live Mode, press to cycle through the tuning modes (Manual, Category, and Preset). • In Replay Mode, press to pause and play. • DAB source: <ul style="list-style-type: none"> • Press to scan for DAB stations. • Press and hold to save the current station as a preset.
⏭	<ul style="list-style-type: none"> • Press to skip to the next track or station, when using an applicable source. • Press and hold to fast-forward, when using an applicable source. • AM/FM: <ul style="list-style-type: none"> • Press to tune to the next station or preset. • Press and hold for faster tuning (manual mode only).

Photos & text courtesy of Garmin

Note consult the Fusion® owner's manual for more information.

- AUX: Press to increase the gain.
- SiriusXM source:
 - In Live Mode, press to tune to the next station or preset.
 - In Live Mode, press and hold for faster tuning, in Manual mode only.
 - In Replay Mode, press to skip to the next track, if applicable.
 - In Replay Mode, press and hold to fast-forward the current track, if applicable.
- DAB source:
 - Press to advance to the next DAB station in the ensemble. When you reach the end of the current ensemble, the stereo automatically changes to the first available station in the next ensemble.
 - Press and hold to advance to the next DAB ensemble.

Entering Text

- 1 In a field that allows you to enter text, select  to erase the existing characters.
- 2 If necessary, select  or  to use numerals, symbols, or lower-case letters when available.
- 3 Turn the dial to choose a character, and press the dial to select it.
- 4 Select  to save the new text.

Using Dial to Select Items

You can use the dial to highlight and select items on the screen.

- Turn the dial to highlight an item on the screen.
- Press the dial to select the highlighted option.

Stereo Screen

The information displayed on the screen varies depending on the source selected. This example shows a track playing on a device connected using Bluetooth® wireless technology.



- ① Source name
- ② Active zone and status icons
- ③ Track details (if available)
- ④ Album art (if available from a compatible source)
- ⑤ Elapsed time, track duration, and the current track number out of the total number of tracks in the playlist (if available)

Photos & text courtesy of Garmin

JL Audio System

If installed, the JL ultimate audio system raises the bar regarding on the water sound systems. Typically the system footprint includes M6 6.5" speakers, M6 7.5" speakers, M6 10" subwoofers along with 6 and 8 channel amplifiers for turning up the action.

The speaker system is optimized for open air boating environments. All materials, fasteners, and production techniques are engineered carefully to ensure reliability and longevity in real marine applications including saltwater exposure. All systems exceed all marine standards for corrosion and UV resistance.

The system is controlled by the Garmin chart plotter under the "media" tab. System speakers lend themselves to Regal customizing with separate trim-ring and grille-insert components. System speakers integrate LED lighting which is controlled through the chart plotter "lighting" tab.

The amplifiers used on your vessel integrate digital switching technology for increased efficiency, cooler operating temperatures with less strain on the electrical system. Bottom line you will feel the amps impressive power output for an awesome cruising listening experience.



JL AUDIO TYPICAL M6 SPEAKER



JL AUDIO TYPICAL M6 SUB WOOFER



JL AUDIO TYPICAL AMPLIFIER

Television System (Typical)



TYPICAL COCKPIT TELEVISION

Note that when the video plotter menu is selected Fusion audio is available at the cockpit TV.

Note that components, wiring, and specifications can change at any time as Regal updates a vessel during its production cycle.

System Overview/Pre-Operation Notes

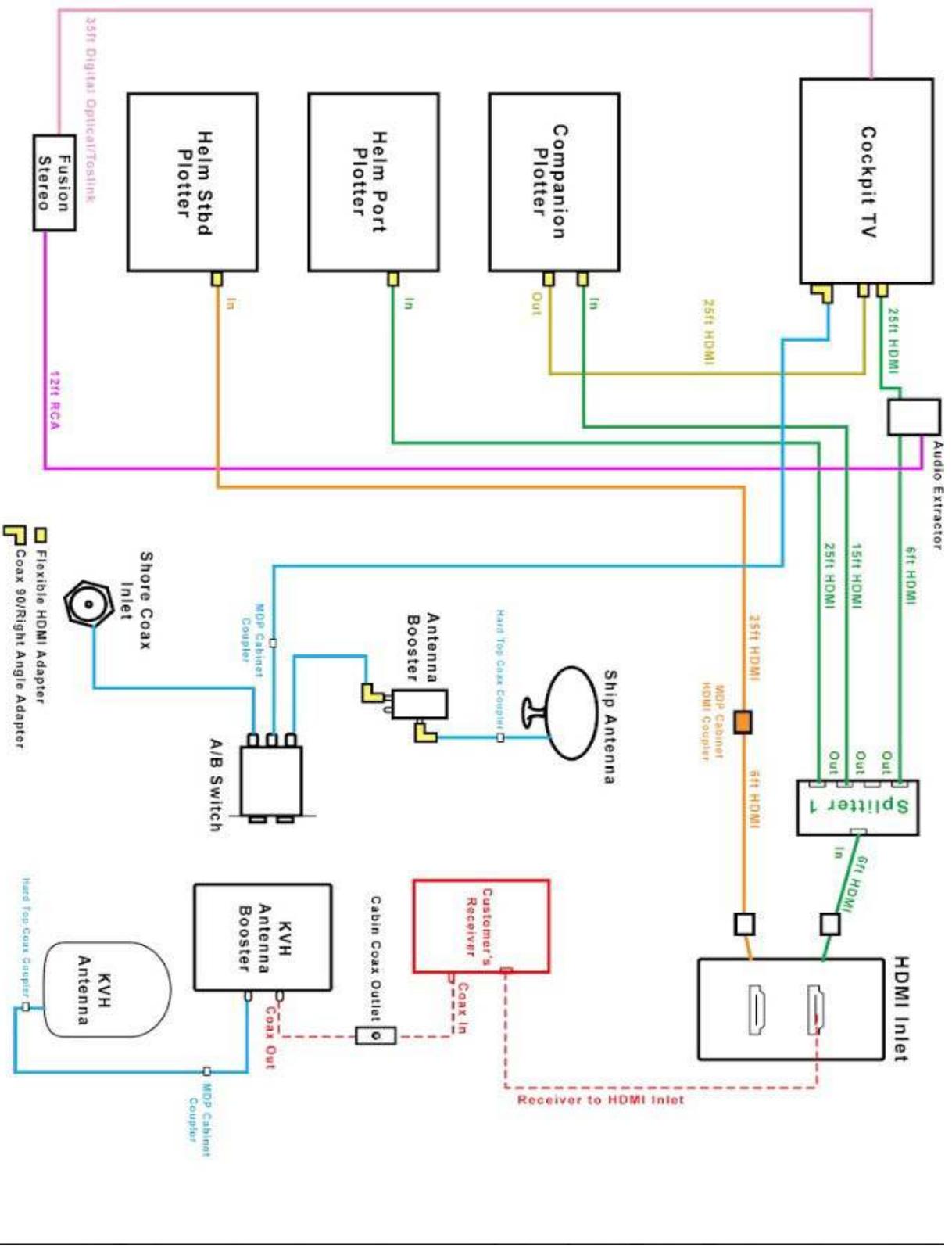
This section describes the on board television system and basic components. Contents may include options not installed on your vessel. Refer to the television and satellite TV operator's manuals for more detailed information or contact your closest authorized Regal dealer.

The LS36/LX36 currently feature an optional television monitor in the cockpit. The power supply is 120 volts of AC current.

The television system can be operated from shore or at sea. Obviously increased signal strength and larger channel selection is available on vessels featuring an optional satellite TV system versus those relying only on a ship's TV antenna and booster.

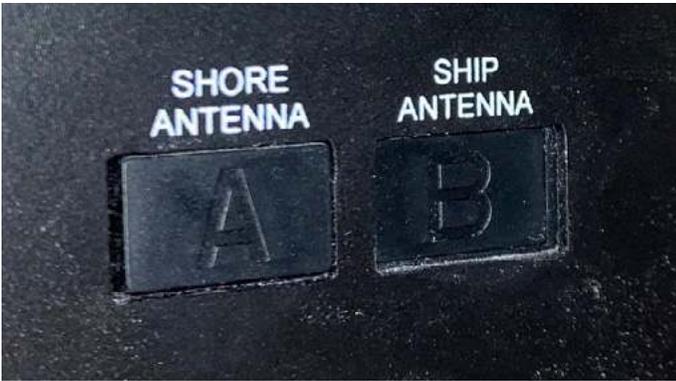
Use the television component description and wiring guide on the following page to orientate yourself to the television system.

As indicated on the system drawing there are HDMI inlets on the vessel for playing additional devices through after-market receivers.



TELEVISION SYSTEM COMPONENTS AND WIRING

Television Antenna Switch- Typical



The antenna switch features 2 buttons labeled A and B to choose the desired antenna signal source for vessels without satellite TV. The antenna switch is located in the head.

Note: To activate the TV antenna follow the instructions below:

At Dockside- After the television coaxial cable is connected to the vessel coaxial receptacle and the marina dock box press the A antenna switch button. At this point the marina TV signal is accessible to view available channels.

At Sea- Press the B antenna switch button to activate the ship's TV antenna and booster (Non SAT TV systems only).

To deactivate either antenna switch, push the switch down to disengage it.

When cruising you may encounter a marina without a suitable or no shore signal so your backup is to use the ship's antenna to view local television signals. This is more common with older marinas located off the more traveled waterways.

Television System Operation- At Shore w/Sat TV

Since the television system requires 120 volts of AC current the 30 amp dockside cord must be plugged into a marina shore station for the television system to operate at a dockside environment.

Perform the following steps **with Satellite TV on board** to enjoy your favorite programs.

1. Prepare the main ship's panel for shore operation. Make sure all main and sub breakers are deactivated.
2. Plug the 30 amp dockside cord into the vessel power inlet first; then plug into the marina shore station. Activate main shore power breaker at ship's main distribution panel.
3. Activate the receiver which will power up the KVH satellite system, antenna, and antenna amplifier (booster).
4. Activate the "Entertainment" breaker at the main ship's panel to supply AC current to the cockpit TV monitor.
5. Use the plotter system and/or remote control to program the cockpit television monitor.

Television System Operation- At Sea w/Sat TV

Since the television system requires 120 volts of AC current the generator must be activated to operate the system away from shore power access.

Perform the following steps **with Satellite TV on board** to enjoy your favorite programs;

1. Prepare the main ship's panel for generator operation. Make sure all sub breakers are deactivated.
2. Start the generator. Slide transfer bar at main panel up. Activate generator main breaker. Let generator idle for short period before activating any sub breakers.
3. Activate the receiver which will power up the KVH satellite system, antenna and antenna amplifier (booster).
4. Activate the "Entertainment" breaker at the main ship's panel to supply AC current to the cockpit TV monitor.
5. Use the plotter system or remote control to program the cockpit television monitor.

Television System Operation- At Shore w/o Sat TV

Since the television system requires 120 volts of AC current the 30 amp dockside cord must be plugged into a marina shore station for the television system to operate at a dockside environment.

Perform the following steps for vessels ***without Satellite TV on board*** to enjoy your favorite programs.

1. Prepare the main ship's panel for generator operation. Ensure all sub breakers are deactivated.
2. Plug the 30 amp dockside cord into the marina shore station.
3. Insert and tighten coaxial cable at coaxial power inlet at transom and marina shore station. This step will activate available shore television signals to in the cockpit TV once AC current and appropriate breakers are activated.
4. Position transfer bar at main ship's panel to a down position. Activate main shore power breaker at ship's main panel.
5. Activate the "Ships Antenna"(A/B panel) button. This action will use the ship's short range antenna to locate available television station signals. Note that results will vary depending on distance from signals and atmospheric conditions.
6. Activate the "Entertainment" breaker at the main ship's panel to supply AC current to the cockpit TV monitor. Use TV remote control for fine tuning.

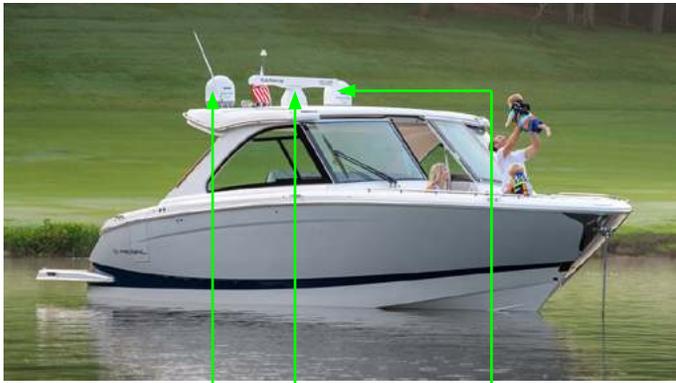
Television System Operation- At Sea w/o Sat TV

Since the television system requires 120 volts of AC current the generator must be activated to operate the system away from shore power access.

Perform the following steps for vessels ***without Satellite TV on board*** to enjoy your favorite programs.

1. Prepare the main ship's panel for generator operation. Make sure all sub breakers are deactivated.
2. Start the generator. Slide transfer bar at main ship's panel to a up position Activate generator main breaker. Let generator idle for short period before activating any sub breakers.
3. Activate the "Ships Antenna" (A/B panel) button. This action will use the ship's short range antenna to locate available television station signals. Note that results will vary depending on distance from signals and atmospheric conditions.
4. Activate the "Entertainment" breaker at the main ship's panel to supply AC current to the cockpit TV monitor.
5. Use the remote control for fine tuning.

Television- Satellite (KVH TracVision)

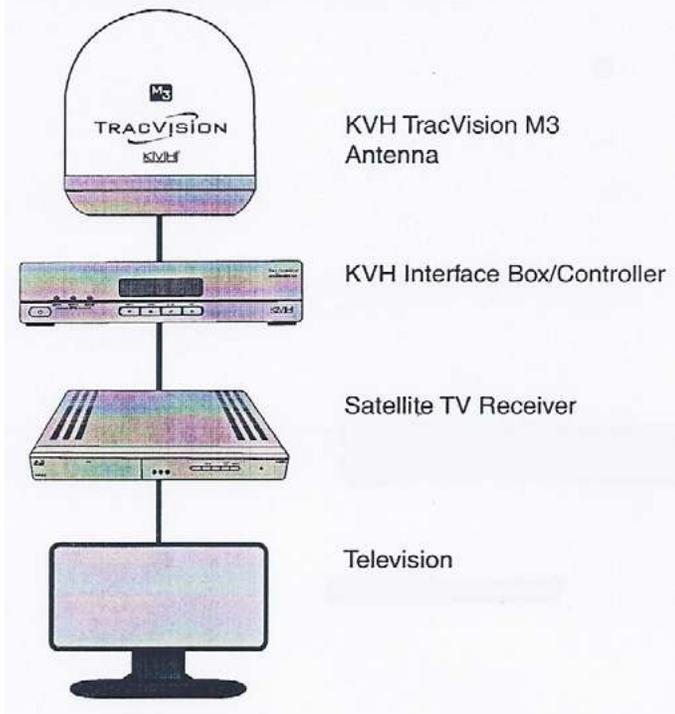


TV ANTENNA
SIRIUS XM AN-
TENNA STBD.

RADAR

KVH SATELLITE-
ANTENNA
PORT

**Components may be optional. Rear view shown.*



Overview

The optional KVH TV3 series uses an antenna which extends service to cruising areas well offshore in North America.

Under the starboard “dummy” dome is the TV saucer-shaped antenna.

Satellite Television Components

If installed, the satellite television option typically features the ability to viewing hundreds of television channels using the vessel 120 volt HD televisions. Basically, the signal is transmitted through an antenna system installed on the hardtop which features a satellite tracking system that automatically finds the satellite for crystal-clear television reception. **To activate satellite television a subscription must be secured. Read notice below.**

NOTICE

SATELLITE TELEVISION REQUIRES SUBSCRIPTION TO OPERATE. CALL 1-800-970-9623 TO INITIATE SUBSCRIPTION. ONCE ENROLLED THE CORRECT REGIONAL RECEIVER WILL BE ISSUED TO YOU.

System Components-Antenna

The antenna uses modern technology to quickly acquire and track the correct satellite, switch between satellites, and send signals to the interface box. Internal gyros allow the antenna to track the satellite at all times, even with the vessel on the move!

Interface Box-Controller

The interface box supplies power to the antenna system and delivers satellite TV signals to the satellite receiver. This component is also used to set-up the LCD display.

Television System Notes

The cockpit television monitor delivers true HD (high definition) reception and are multi-functional with other entertainment components.

Use the remote control to switch between devices/systems. HDMI 1 or 2 (depending on settings) is used to view the plotter information on the cockpit TV monitor.

Note on the following page a service locker in the head located behind the generator panel houses many of the entertainment components. Undo the fasteners and remove the panel to access the electronics.

HDMI Notes

Your vessel features HDMI ports for select auxiliary devices such as gaming systems, fire sticks, movie players and computer devices.

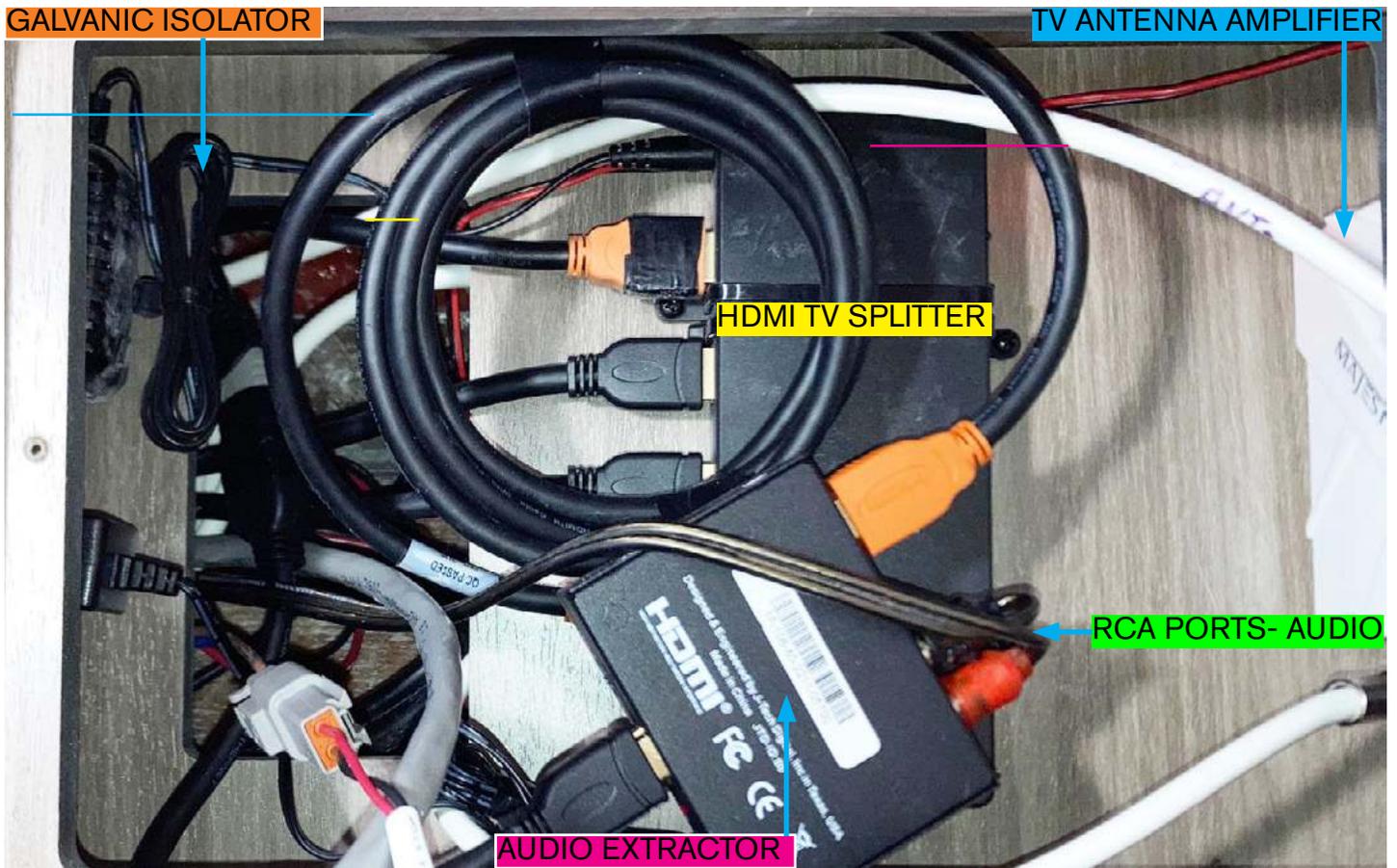
The HDMI ports are located in the head close to the ship's antenna panel. The receiver device HDMI cable is typically connected to the HDMI inlet to operate the device and typically is visible on the port plotter (the one that runs to the HDMI inlet) and/or single plotter system along with the cockpit TV.

Select HDMI devices may play on all plotters and cockpit television monitor. Read and understand the statement below.

Note that there are entertainment copyright laws that may prevent your device from playing select media through the plotter or television system.

Note that the vessel must be connected to dockside power or generator for the HDMI inlets to function since they are energized by 120 volts of AC current.

Television-Typical HDTV Service Locker Components



WARNING

AVOID SERIOUS INJURY OR DEATH FROM HIGH VOLTAGE!
DISCONNECT SHORE POWER CORD, TURN OFF ENGINES AND GENERATOR BEFORE SERVICING COMPONENTS IN THE HEAD ELECTRONICS LOCKER.

NOTICE

NEVER STORE ITEMS IN ANY OF THE ONBOARD SERVICE LOCKERS DUE TO POSSIBLE FIRE FROM CONTACTING HIGH VOLTAGE AND EXCESSIVE HEAT!

Fire Protection

Automatic Fire Extinguishing System & Engine Suppression System (Typical)



AUTOMATIC FIRE EXTINGUISHER CANISTER

Vessels with stern drive engines or any vessel with a diesel generator option may use both a powered ventilation (blower) system and a fire extinguishing system in the sump capable of automatic and manual activation.

With the diesel generator option, an engine shutdown suppression system gauge is found at the helm. In the event of a fire, when the automatic fire extinguisher system discharges the engines and diesel generator ignition systems will be interrupted and are shut down. The engine shutdown suppression system is tied into the automatic fire extinguishing system. The dash engine shutdown system gauge utilizes a display icon that provides the operator with a system status of a charged or discharged condition by an audible alarm and icons. With the ignition switch “on” and a green light the auto suppression system is charged and in operation. With the ignition switch “on” and a no light condition it indicates that the system has been discharged.

Note that the reset button at the engine shutdown system gauge must be reset before engines and generator can be restarted.

TYPICAL LS36 FIRE SUPPRESSION PANEL



TYPICAL LX36 FIRE SUPPRESSION PANEL



Both panels above display a fire extinguisher light. With the ignition switch “on” and a green light the automatic fire extinguishing system is charged and in operation.

Also, the fire extinguisher system light is monitored on the Garmin “glass cockpit” and plotter display.



HELM SCREEN



GARMIN PLOTTER FIRE SUPPRESSION LIGHT MAGNIFIED VIEW

The above display available on a number of the Garmin chart plotter tabs is typically found at the chart plotter lower right screen area. The fire suppression system shown is in the auto operation mode displaying verbiage and lighted icon. See the above photos.



If a fire has started in the engine compartment the system will automatically discharge or the operator can manually discharge the extinguisher. Find the system manual cable assembly located in the starboard cockpit under the seat. To use the manual remote remove

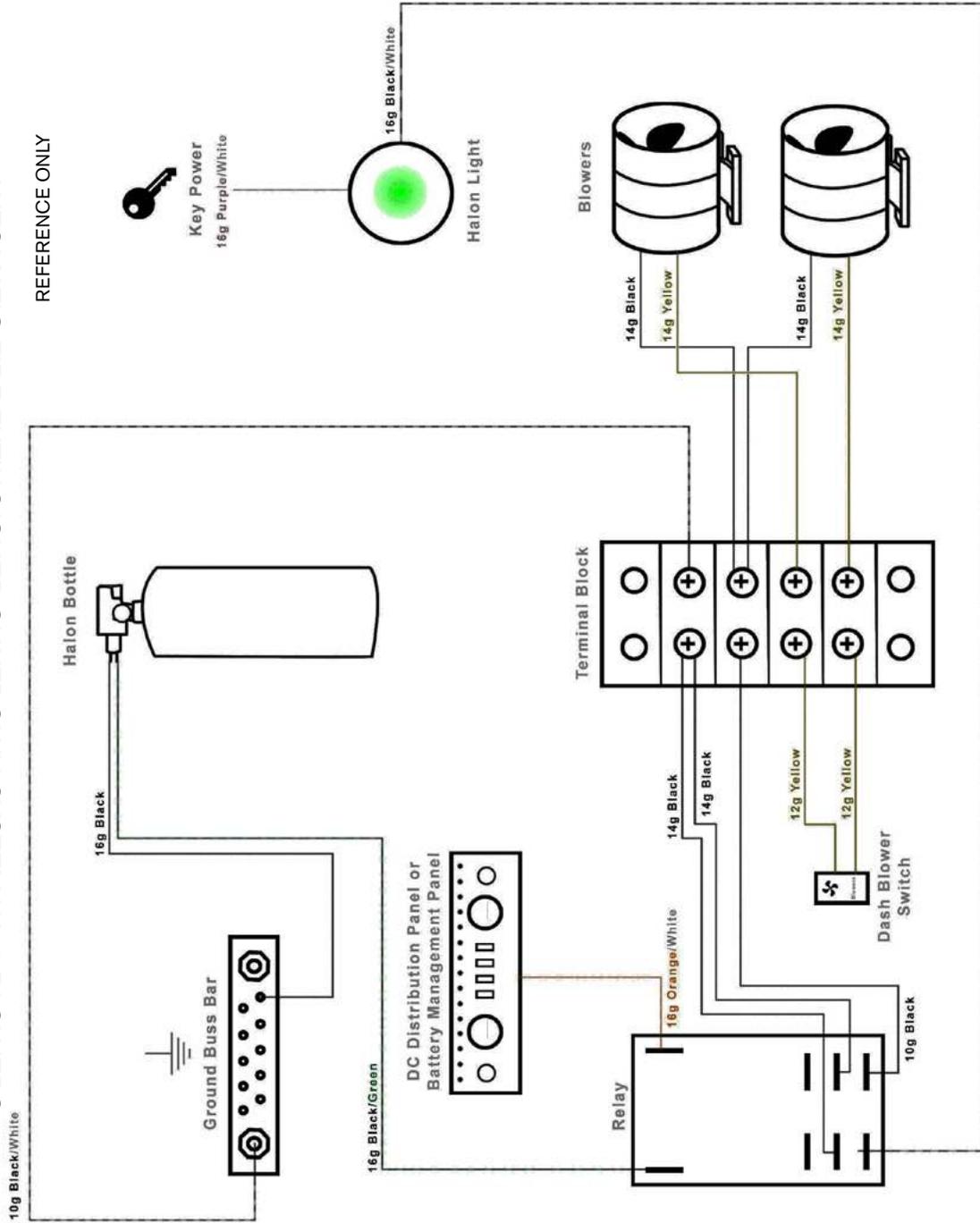
the safety pin from the “Fire T Handle” and pull firmly on the “Fire” handle which will activate the fire extinguisher unit in the engine compartment. A loud “rushing air” sound may be heard. Complete discharge will take several seconds. Keep the compartment closed for a period of time sufficient to permit the agent to soak all areas of the protected space. This allows hot metals and fuel time to cool.

See the automatic fire extinguisher manual in the owner's packet and system shutdown drawings on the following pages for additional details per propulsion/generator installed.

Note: The boat operator shall educate crew and all passengers on fire protection and more specifically the automatic fire extinguishing system in the event that the operator becomes incapacitated. It is recommended to conduct a mock fire drill.

AUTOMATIC FIRE EXTINGUISHER SHUTDOWN SYSTEM W/ 2 BLOWERS

REFERENCE ONLY



REFERENCE ONLY

Fire Extinguishers- Portable

Clean agent extinguishers are primarily for Class B and C fires; (gasoline is a flammable liquid under the Class B group). The extinguisher should be of the 5 lb. capacity and at least 2 are recommended based on the maximum capacity of the fuel tank on board and the boat length. These extinguishers may be available from your dealer, marine speciality stores, or on the internet. It is recommended to carry extra portable fire extinguishers to backup the automatic fire extinguisher system since a fire could take place in an area outside of the sump/ machinery space.

As noted above a clean agent type of liquefied gas is used today in clean agent extinguishers. This gas is colorless and odorless, heavier than air and sinks to the lower parts of the vessel increased ability to extinguish fires. Since the year 2000 ingredients have changed to a more environmental friendly formula.

Fire extinguisher canisters used for both fixed and portable need to be weighed once a year. Also, the canister is engraved with a date which is part of the canister life cycle. Refer to further information regarding fire prevention on the internet. The clean agent fire extinguishers usually cost more than powdered or CO₂ extinguishers.

Note to check local, state, and federal requirements on the type and number of portable fire extinguishers for your vessel.



When adding to existing units, locate portable fire extinguishers where they can be quickly accessed in an emergency. Always inform your passengers of fire extinguisher location and usage.

Fresh Water

Overview

The fresh water supply on board is known as a potable (drinkable) water system. The system includes a fresh water tank/sender, manifold on/off valve (head), fresh water pressure pump/filter along with various hoses, connectors, city water pressure valve, faucets, and drains. The fresh water tank is located center line behind the fire wall. The fresh water system applies to both propulsion types.

Fresh Water Tank (Potable)

Normally the fresh water tank is manufactured from aluminum for increased strength and longevity. The tank utilizes a sender which senses the tank water level and sends the level information to the appropriate plotter display.

Fresh Water Feed Hose

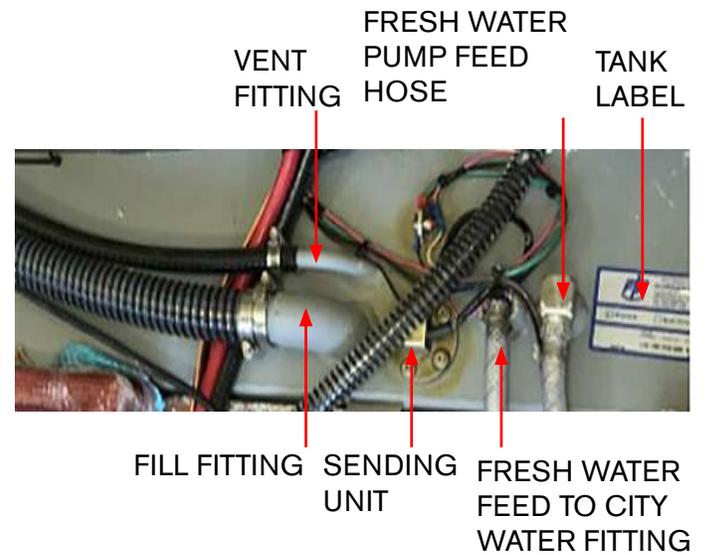
The fresh water feed hose runs from the fresh water tank to the fresh water pressure pump. It is a reinforced hose to resist kinking.

Vent/Fill Fittings

The vent exhausts air as the water tank is being filled. Water fill fitting is on the deck.

Note that various components in the fresh water system require periodic maintenance to ensure the system continues to run effectively. Refer to the maintenance section and the owner's packet for further information.

FRESH WATER TANK DESCRIPTION- TYPICAL



Sending Unit

Note there is a fresh water sending unit located on the tank top. This sending unit measures the amount of available potable water and sends a signal to the Garmin "glass cockpit" or Garmin plotter through an EmpirBus module.

This reading is approximate as there is a margin of error involved. Always check the plotter for fresh water levels before each outing.

Label

The water tank label lists vendor part number along with gallonage information, and tank serial number. Never remove label or use harsh cleaners on it.

Fresh Water Tank (Fill Using Deck Water Fitting)



FRESH WATER FILL- TYPICAL DECK FITTING

The fresh water (potable) system features a deck fitting/vent for filling the fresh water tank. Select a hose rated for fresh water (normally white verses green lawn/garden hose) to fill from a reliable source. Simply unscrew the fitting cap, insert hose, and turn on the fresh water source. When water begins to exit the hullside vent the fresh water tank is full.

When reinstalling the water fill cap turn it until both blue marks line up which is completely closed and the best position to keep foreign debris out of the fresh water system. Check the plotter for fresh water tank capacity.

Note that capacity of the fresh water tank is around 62 gallons.



TYPICAL FRESH WATER DISPLAY-FLUID TAB

The fresh water (potable) tank capacity is displayed on the Garmin plotter as a percentage filled. It may appear on various screens including your home or fluids tab.



TYPICAL FRESH WATER DISPLAY-HOME SCREEN

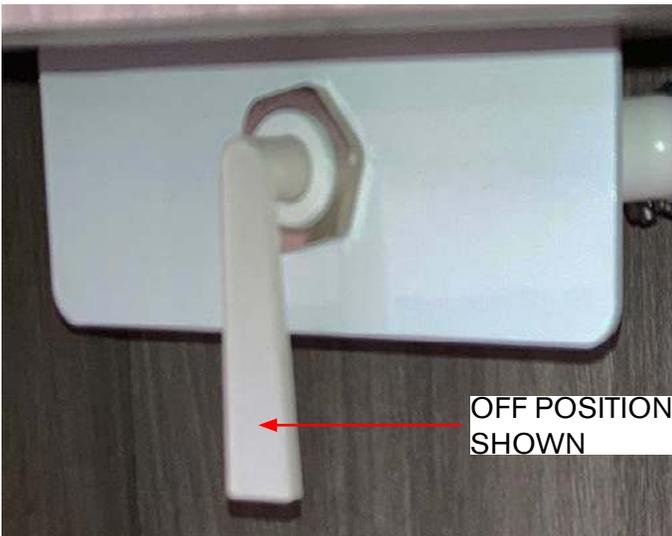
Fresh Water Tank (Fill Using City Water Fitting)

CITY WATER FITTING-TRANSOM LOCATION



TURN COUNTER CLOCKWISE TO OPEN

The fresh water (potable) system features a transom city water fitting which can be used for filling the fresh water tank. Select a hose rated for fresh water (normally white verses garden hose green).



FRESH WATER VALVE LOCATED IN HEAD

The fresh water system valve (shown above in the closed position) is used to fill the potable (fresh water) tank **only** with the city water system connected. The valve is located inside the starboard head vanity cabinet. Rotate the fresh water valve to the “on”(horizontal) position to fill the water tank.

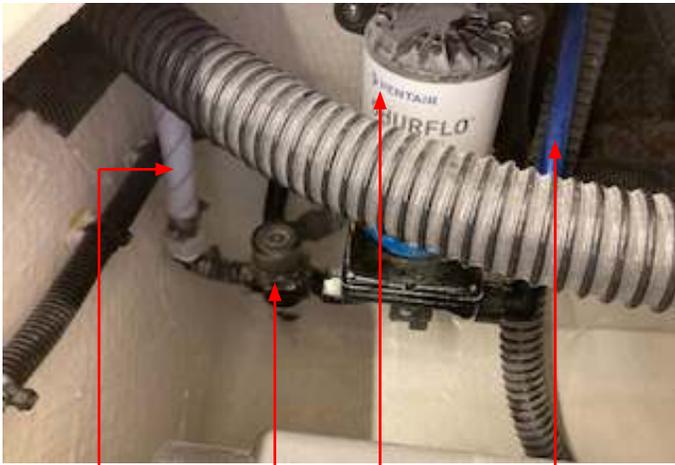
With your hose connected to the city water valve activate the dockside water source to fill the fresh (potable) water tank.

When the fresh water tank is full (water exiting deck vent) or shown as a “full” % display on the plotter disconnect the water supply and rotate the manifold valve to the “off” (vertical) position.

Note not to energize the fresh water pressure pump during the water tank fill procedure as system water may keep recirculating and the tank may not fill up.

Note that the city water valve protects the vessel water system by limiting incoming water pressure to 35 psi's. Higher water pressure could damage water system components.

Fresh Water Pressure Pump (Typical)



HOSE FROM TANK FILTER/STRAINER PUMP FEED HOSE TO WATER SYSTEM HOSE OUT TO WATER SYSTEM COLD SIDE

Water pressure pumps use a switch which disengages the fresh water pump after it reaches a pre-determined line pressure. If the fresh water pump continues to run continuously it may be a result of the following:

- A faulty internal pressure relief valve
- A faucet not turned off
- A broken line or loose line connection

Operation

The 12 volt fresh water pump supplies potable water to various vessel fresh water components.

Also, the transom shower, faucets, and any wash-down components throughout the vessel are part of the fresh water system. The fresh water pressure pump is typically located in the bilge. The fresh water pump is controlled by a plotter button typically found on the fluids tab. It must be activated for any of the above components to operate.

Periodically the water filter strainer located near the fresh water pump needs to be serviced. Inside the filter remove the screen, remove any debris and rinse off with fresh water. Reinstall screen, tighten filter and check for leaks. See photo above.

Fresh Water System- Sanitizing

It is recommended to sanitize your fresh water system at least annually or more often when odors are detected. Contact your closest Regal yacht dealer for more information. He has the tools and factory trained personnel to preform this procedure.

1. Flush entire system thoroughly by allowing potable water to flow through it.
2. Drain system completely including water heater.
3. Fill entire system with a chlorine solution having a strength of at least 100 parts per million, and allow to stand for (1) hour. Shorter periods will require greater concentrations of chlorine solutions. See the table.

TABLE 1 – CHLORINE CONCENTRATIONS

Amount of chlorine compound required for 100 ppm solution

Solution (Gallons)	Chlorinated Lime 25% (ounces)	High Test Calcium Hypochlorite 70% (ounces)	Liquid Sodium Hypochlorite 1% (quarts)
5	0.3	0.1	0.2
10	0.6	0.2	0.4
15	0.9	0.3	0.6
20	1.2	0.4	0.8
30	1.8	0.6	1.2
50	3.0	1.0	2.0
100	6.0	2.0	4.0

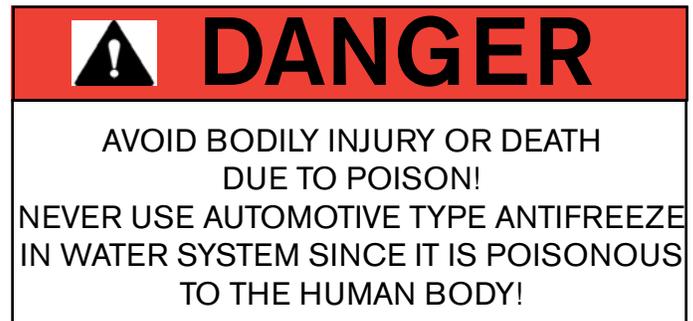
As a rule of thumb quick reference without the use of the table to reach the recommended proportions use a quarter cup of household bleach for every 15 gallons of water in the fresh water tank. Let water tank sit for 30 minutes for the bleach to mix with the water completely and thus be disinfected.

4. Drain chlorine solution from entire system.
5. Flush entire system thoroughly with potable water.
6. Fill system with potable water.

Winterizing Fresh Water System

Note that In freezing climates make sure the fresh water system is winterized to prevent damage to hoses and components.

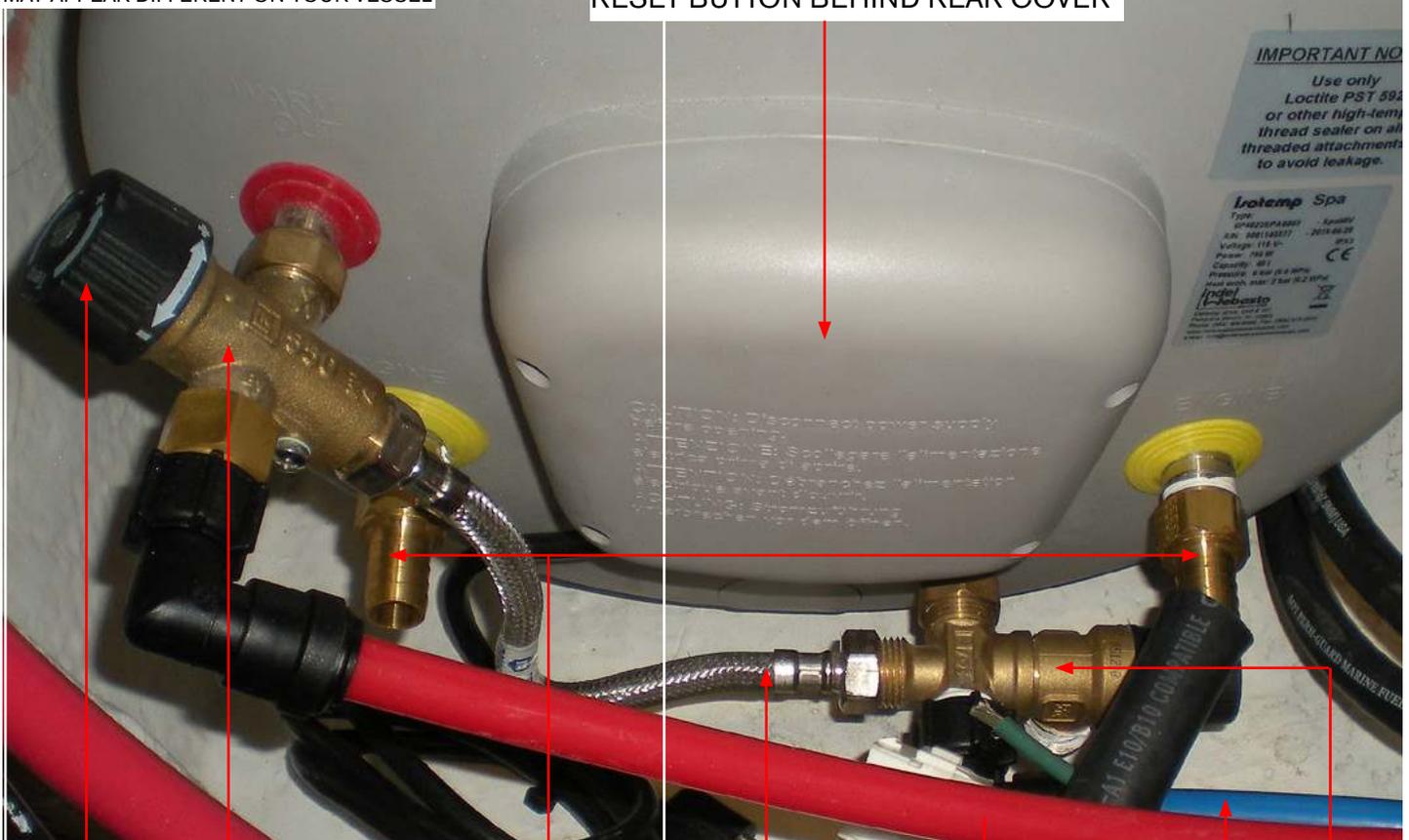
Follow the instructions in the winterizing chapter depending on your system type or contact your closest Regal dealer since only special alcohol based products including "Winter Ban" are approved to be used in the system.



Hot Water Heater (Typical)

MAY APPEAR DIFFERENT ON YOUR VESSEL

RESET BUTTON BEHIND REAR COVER



TEMPERING VALVE

RECIRCULATING FITTINGS

TEMPERING KNOB

TEMPERING VALVE COLD WATER FEED HOSE

HOT WATER OUT FEED HOSE

COLD WATER IN FROM POTABLE TANK

T&P VALVE

Overview

If installed, the ship's water heater requires 120 Volts AC and the unit is located in the sump (bilge). It is a cylindrical shaped unit. The water heater breaker is located on the main ship's AC panel. The system typically features a 6 gallon capacity. The unit draws cold water from the fresh water tank and is heated by using dock side power or by the generator at sea. **Note that the water heater does have a limited hot water capacity as conservation is needed on board.**

Operation

The photo above displays key players in the operation cycle of the hot water heater. The cold (blue) water line transports water from the fresh water tank to the aft tee on the water heater. Water runs through the tank via a tempering mechanism and exits the hot (red) line to the hot side of each sink and to the head shower mixing valve. The recirculating fittings carry warm engine water to heat water heater at sea (stern drive models only).

The tempering valve is attached where the hot water exits the hot water heater for travel to the sinks and shower. You can identify the valve by the arrows on the top of the knob. Make a note of the tempering valve setting and make sure it does not change. The purpose of the tempering valve is to regulate the outgoing heated water to a maximum of 125 degrees. If the output water is of a higher temperature than specified the valve mixes cold water to decrease out going warm water to safe levels through the stainless steel mesh hose.

There is a heat element located inside the rear cover of the hot water heater. These components heat up the water inside the water heater. The element requires that it be immersed in water.

There is a T & P valve similar to home water heaters. If the temperature reaches a pre-determined point in the tank the valve will open and let the over heated water will be exited overboard.

There is a red reset button behind the rear cover plate.

Note to certified marine electrician; Before resetting the red button due to high voltage always disconnect the dockside cord, turn off the water heater breaker, propulsion systems, and the power bank switch (inverter if installed) before removing the rear cover.

At this point remove the screws to reset the red button on the top of the thermostat. Make sure the cause of the malfunction has been identified and repaired before resetting the thermostat button.

For more information contact your closest Regal dealer or refer to your water heater operator's manual.



WARNING

PREVENT INJURY OR DEATH
FROM ELECTRIC SHOCK!
NEVER REMOVE THE TANK REAR COVER.
CALL A SERVICE PROFESSIONAL
AS HIGH VOLTAGE IS PRESENT.



CAUTION

PREVENT HOT WATER HEATER DAMAGE!
DO NOT TURN ON THE WATER HEATER
WITHOUT WATER IN THE SYSTEM!
THE ELEMENT WILL BE DAMAGED!

Fresh Water System-Helpful Hints



1. Fresh water pressure pump cycles on and off. Normally this type of action indicates a water leak in the system. Check all fresh water system related equipment on the deck, head, and engine compartment for leaks.

Look for puddled or dripping water.

2. Using potable water system the water pressure is weak. Check the fresh water pressure pump filter for debris. Also, make sure the potable water tank level is sufficient as indicated on the plotter screen.

3. Water at sink or shower is hammering and has air bubbles in it. Check for air leaks in the system along with low water levels in the potable water tank.

4. Water is backing up in the shower. Find the shower sump pump. If it is full of water even when running there may be a clog at the pump screen.

5. There is no water at any of the fresh water related equipment such as faucets, showers and wash downs. Activate the fresh water pressure pump button on the plotter. Open a faucet and check for flow.

Also, check the chart plotter screen for fresh water tank level.

6. The water system has a bad odor. Use the fresh water pressure pump to drain the fresh water system. Do not drink the water as it may be contaminated. Sanitize the water system.

7. No hot water. Check panel breaker. Check for popped tank element breaker. Reset as needed.

Fuel

Overview

Regal LS36/LX36 models may feature gas and/or diesel fuel systems to match engine, propulsion, and generator options.

The LS36 Volvo stern drive model utilizes gas for engine propulsion. An optional diesel generator with a separate diesel fuel tank system is available. The Regal LX36 Yamaha outboard model utilizes gas for engine propulsion. An optional diesel generator with a separate diesel fuel tank system is available.

This manual covers the basic elements of the stern drive and outboard fuel systems including the tank, filters, and other fuel related components. Other related items may be located in separate sections.

Contact your closest Regal dealer for further information. Dealers have undergone training related to on board systems and can be valuable “go to resources” for technical answers to fuel system problems.

Note that components, operation procedures, and specifications can change at any time as Regal updates a vessel during its production cycle. No liability is accepted for information correctness and is given to the best of our knowledge.

Note that your fuel system may not appear the same as those illustrated or reviewed in this manual.

Read and understand the following safety labels regarding the outboard propulsion gasoline fuel system.



WARNING

PREVENT POSSIBLE INJURY OR DEATH!
READ AND UNDERSTAND ALL
PROPULSION OPERATOR'S MANUALS
BEFORE ATTEMPTING TO OPERATE
PROPULSION/GENERATOR SYSTEMS.



WARNING

PREVENT INJURY, DEATH, AND/ OR
PROPERTY DAMAGE!
INSPECT THE ENTIRE FUEL SYSTEM
AT LEAST ONCE ANNUALLY FOR LEAKS,
LOOSE CLAMPS & FASTENERS.



WARNING

GASOLINE VAPORS CAN EXPLODE!
BEFORE STARTING ENGINES
CHECK COMPARTMENTS
FOR GASOLINE LEAKS OR VAPORS.



WARNING

PREVENT INJURY OR DEATH
DUE TO FIRE OR EXPLOSION!
DO NOT STORE PORTABLE GASOLINE TANKS
OR FLAMMABLE LIQUIDS ON BOARD.



WARNING

USE OF ALCOHOL ENHANCED FUEL,
OR ANY FUEL OTHER THAN GASOLINE
CAN LEAD TO DETERIORATION OF THE
FUEL SYSTEM COMPONENTS. THIS CAN
RESULT IN FIRE AND POSSIBLE EXPLOSION.

Fuel System-Ventilation

Your vessel uses a natural and powered ventilation system to exchange air in the bilge compartment. The cowlings for the intake and exhaust ventilation system is on the aft deck for both stern drive and outboard vessels. See photo below.



VENTILATION DUCTS- STERN DRIVE SHOWN

In the natural system fresh air enters through the aft deck intake ducting and any contaminated air exits through the exhaust ducting.

In the powered system exhaust hoses exit air in the lower 1/3 of the bilge as this is where any contaminated fumes would typically be found. These hoses exit air from this area through a powered blower.

	WARNING
PREVENT INJURY OR DEATH DUE TO FIRE OR EXPLOSION! RUN BLOWER AT LEAST 4 MINUTES BEFORE STARTING ENGINES OR GENERATOR.	

Never block the cowlings as engine compartment air would be restricted and would effect engine and generator efficiency.

Periodically visually check the cowlings for insect nests or foreign debris that may block the ducts.

Note if the automatic fire extinguisher system discharges the optional generator along with the propulsion system will shut down.

Fuel- Stern Drive Propulsion (Typical)

Introduction

The LS36 model features stern drive propulsion with a gasoline fuel system including the fuel tank, fuel supply lines, fill/vent fittings, along with fuel filters, and dedicated ventilation.

In reference to gasoline fuel today it is processed in a different manner than it was a few years ago.

As a result the product shelf life has been shortened and additives such as ethanol are blended into gasoline today. The skipper today needs to be more vigilant as gasoline today is more prevalent absorbing water into the fuel system.

As part of the Volvo product features the engines, fuel systems, and the transmissions are all protected by a fault handling system should a malfunction develop.

Select codes warn the captain with a “buzzer” sound while others will display on the helm “glass cockpit” plotter display.

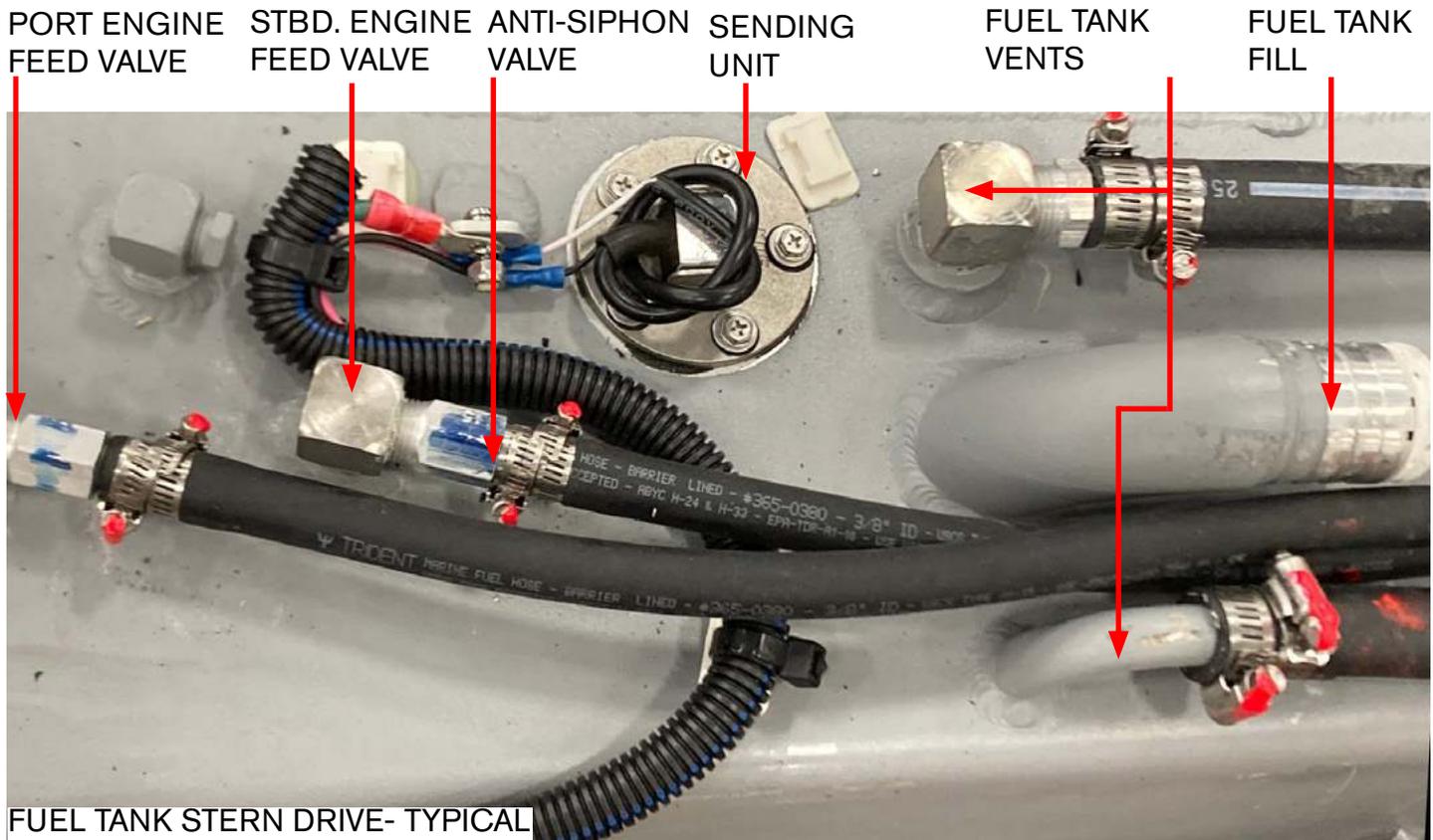
The “pop-up” will alternate between the cause of the fault and a task to perform to aid in eliminating any fuel system malfunctions. See the notice below.

Note that it is important to read and understand your Volvo propulsion owner’s manual in order to react to a fault code should a malfunction display on the plotter screen. No liability is accepted for information correctness and is given to the best of our knowledge.

NOTICE

IF A BUZZER SOUNDS OR AN ALERT
ICON DISPLAYS ON A PLOTTER SCREEN
STOP THE ENGINES
AND INVESTIGATE THE PROBLEM!
CONTACT A VOLVO PENTA DEALER
IF THE PROBLEM
CAN NOT BE LOCATED OR CORRECTED.

Stern Drive Fuel System Component Overview- Typical



Typical Fuel Tank

Vessels manufactured for *domestic* use are now required to be outfitted with an EPA compliant fuel system using an aluminum tank that passes a variety of tests. This system uses special valves and baffles located inside the fuel tank along with special hoses marked for low permeability. Also, there is a carbon canister in-line with the vent hose which functions much like the one in an automobile by filtering gas fumes. The carbon canister rarely needs to be replaced and is not a serviceable item. These tanks are tested and inspected along with the complete fuel system several times for safety requirements and quality by the fuel tank supplier, in house personnel and independent inspections by National Marine Manufacturers Association personnel using ABYC standards.

The fuel tank is located forward of the firewall bulkhead. Check critical fuel system components such as filters and their connections before each cruise. It is recommended to carry extra fuel filters. Store them in a cool and dry environment. Read and understand fuel system warning below!

Note that fuel tank component locations may change over the production life of a model and may not appear as shown above.

Stern Drive Engine Gasoline Fill Fitting



The stern drive engine gasoline fill fitting is found on the deck and it is labeled “gas.” The stern drive fuel tank capacity is around 209 gallons. Air/fuel temperature may effect a fuel tank and its ability to fill to capacity.

temperature and fuel conditions can effect fuel tank capacity. After fueling close the fitting tightly lining up the two dots located on the gas fitting (See photo above). Failure to secure the fuel fitting tightly may allow water to enter the fuel tank and eventually the engine fuel system.

Also, the gas fitting is labeled with the International gas symbol.

Periodically lubricate the fuel fitting O-ring. This will help keep the O-ring pliable and retain its sealing properties.

Fuel Vent Fitting - Typical

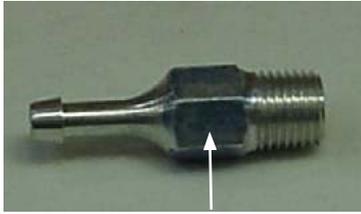
Currently domestic EPA compliant fuel tanks vent fumes back into the fuel tank system. While the tank is filled, air displaced by the incoming fuel is vented through the fuel system charcoal canister. Your vessel uses a combo type (internal vented) fuel fill. Both the fuel fill and vent occupy the same cavity under a protective cover. If fuel overflows through the vent the design forces it back into the fuel fill hose and tank. Be sure to tighten the fuel fill cap to prevent water and debris from entering the fill system.

A seasoned skipper will hear a distinct sound as the tank nears the “top out” or full mode and may see fuel overflowing back into the fuel hose through the vent. On select 36’vessels not using an EPA fuel system (international) there may be a separate vent fitting on the hull side. Periodically check this vent screen for debris and insect activity.

NOTICE

DO NOT OVERFILL THE FUEL TANK!
THIS HELPS AVOID ANY OVERBOARD
SPILLS WHICH MAY HARM THE
ENVIRONMENT.

Anti-Siphon Valve



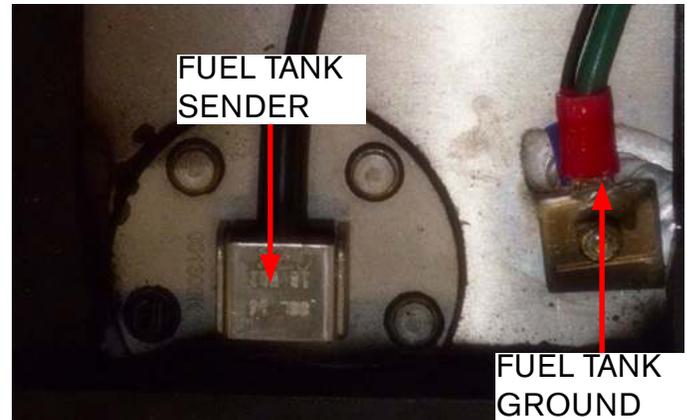
INTERNAL BALL/SPRING

Each gasoline fuel tank feed line that runs from the fuel tank to an engine uses an anti-siphon valve. The valve is threaded into the fuel tank fitting at the feed line (See the photo on the previous page). The valve is pulled off its seat by fuel pump pressure as the engine is cranking or running. There is a ball and spring assembly inside the valve that is activated by fuel pump impulses. It allows a one-way fuel roadway to the engine. It prevents fuel from siphoning out of the tank in the event of a fuel line rupture or disconnected fuel feed hose. When the engine fuel components stop the fuel from cycling the spring forces the ball against the valve opening to prohibit fuel flow.

Never remove an anti-siphon valve as it is a fuel system safety component. Also, never remove the ball and spring from the valve assembly. The anti-siphon valve requires no normal maintenance. Symptoms indicating possible valve problems may be fuel starvation at intermediate or high rpm or in extreme cases an engine that will not start.

Contact your Regal dealer for further information.

Typical Fuel Sender



Placed at the top of the fuel tank is a fuel sender. The fuel tank sender communicates tank level information to the “glass cockpit” display system to alert the operator at all times.

Always use the one-third rule with fuel. One-third for outbound cruising, one-third for inbound cruising, and the remaining one-third fuel supply for reserve.

Check the ground terminal periodically for tightness since a loose connection could result in erratic or no fuel reading.

Fuel Filters

Volvo stern drive propulsion systems use water separator technology to help keep moisture out of the engine fuel system. They look similar to oil filters and are mounted on each engine. Refer to your Volvo engine owner’s manual for location and maintenance schedule along with removing and replacing the fuel filters.

Fuel- Outboard Propulsion (Typical)

Introduction

Regal LX36 features twin Yamaha outboards for propulsion operating from a gasoline fuel tank source. The outboard engine gasoline fuel system features a fuel capacity of around 295 gallons. Air/fuel temperature may effect a fuel tank and its ability to fill to capacity.

The Yamaha outboard gasoline fuel system includes the fuel tank, fuel supply hoses, fill/vent fittings along with fuel filters and a ventilation system.

In reference to gasoline fuel today it is processed in a different manner than it was a few years ago.

As a result the product shelf life has been shortened and additives such as ethanol are blended into gasoline today. The skipper today needs to be more vigilant as gasoline today is more prevalent to problems including absorbing water into the fuel system.

As part of standard Yamaha outboard features the engines and fuel systems are protected by a fault handling system should a malfunction develop.

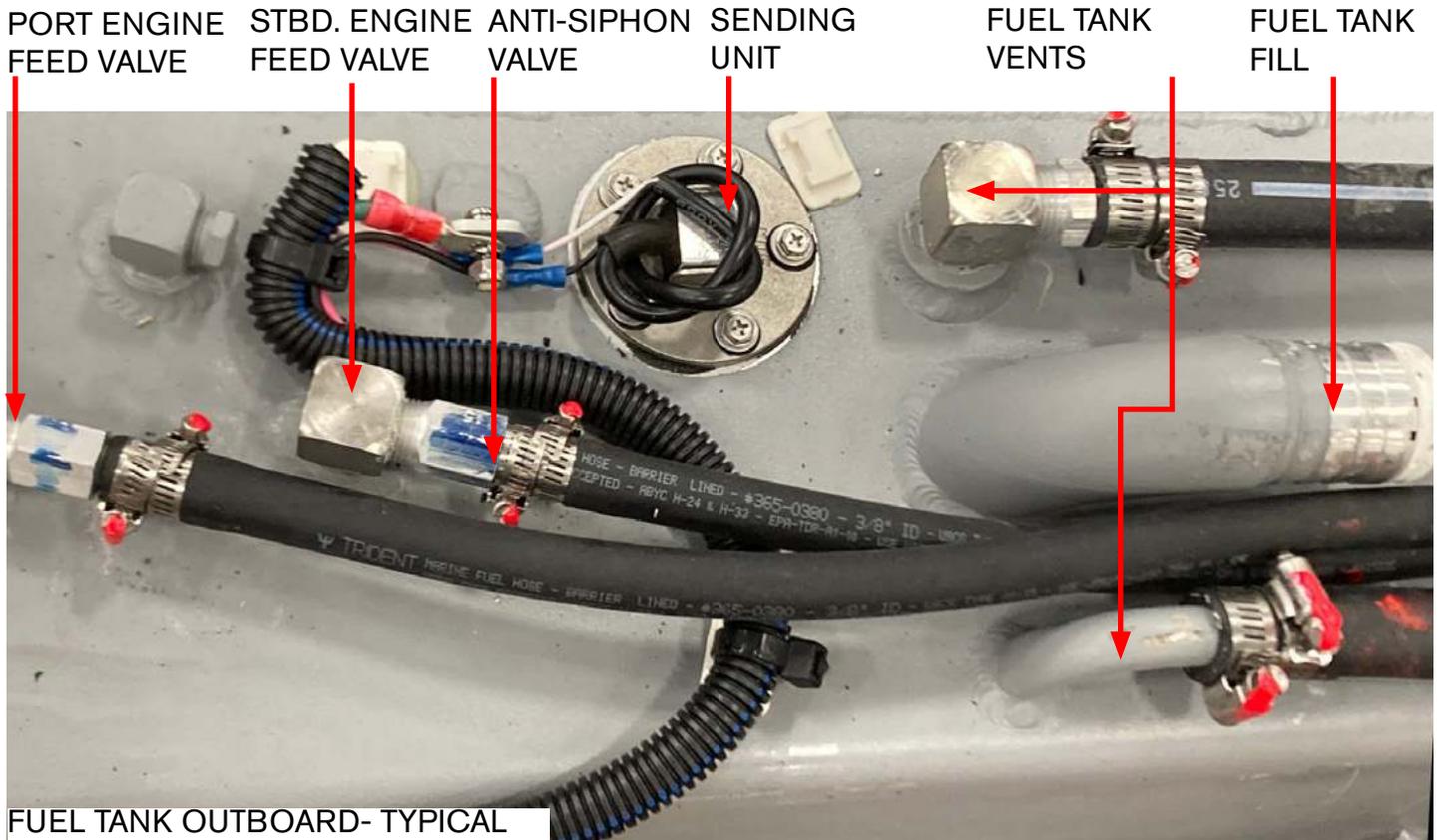
Select codes warn the captain with a “buzzer” sound while others will display on the helm chart plotter display.



NOTICE

IF A BUZZER SOUNDS OR AN ALERT
ICON DISPLAYS ON A SCREEN
STOP THE ENGINES
AND INVESTIGATE THE PROBLEM!
CONTACT A YAMAHA DEALER
IF THE PROBLEM
CAN NOT BE LOCATED OR CORRECTED.

Outboard Fuel System Component Overview- Typical



Fuel Tank

36' bow rider outboard models manufactured for *domestic* use are now required to be outfitted with an EPA compliant fuel system using an aluminum tank that passes a variety of tests. This system uses special valves and baffles located inside the aluminum fuel tank along with special hoses marked for low permeability. Furthermore, there are carbon canisters in-line with the vent hose which functions much like the one in an automobile by filtering gas fumes into the atmosphere.

These tanks are tested and inspected along with the complete fuel system several times for safety requirements and quality by the fuel tank supplier, in house personnel and independent inspections by National Marine Manufacturers Association personnel using ABYC standards.

The fuel tank is located forward of the firewall bulkhead. Check critical fuel system components such as filters and their connections before each cruise. It is recommended to carry extra primary water separator fuel filters. Store them in a cool and dry environment.

Note that fuel tank component locations may change over the production life of a model and may not appear as shown above.

Outboard Fuel System Components

Outboard Fuel Specifications/Octane Ratings:

Gasoline Requirements- Use premium non-leaded gasoline with the following minimum octane rating for Yamaha outboard engines:

▪ **Minimum pump octane number (PON) is 89.**

Gasoline in the United States and other areas is blended with 10% ethanol and is known as E-10 at the pumps. Marine engines used in your Regal boat may be operated with premium unleaded gasoline blended with no more than 10% ethanol and that meets the minimum octane specification.

Do not use ethanol blends greater than 10% such as a newer blend for select motor vehicles called E-15 or E-85. Your marine engine may be damaged by more than 10% ethanol. A loss of performance may occur and the engine will not be covered by the engine manufacturer's warranty.

Refer to your outboard manufacturer's operation manual for additional information regarding the proper octane level for your outboard model. Using the wrong octane level may cause permanent engine damage such as piston detonation.

As an option contact your outboard manufacturer's hot line or text on the web with fuel related questions. Also, additional fuel system information may be found by contacting your closest Regal dealer. He has acquired special training on propulsion and vessel systems.

Fuel Fill Fitting



COMBO FUEL FILL/
INTERNAL VENT

The fuel fill fitting is labeled "gas" and in addition displays the international symbol. When fueling the boat keep the fill nozzle in contact with the fuel fill pipe since it decreases effects of static electricity.

Always use the recommended fuel octane rating as specified in your engine owner's manual.

Periodically lubricate the fuel fitting O-ring. This will help keep the O-ring pliable and retain its sealing properties.

Fuel Vent Fitting - Typical

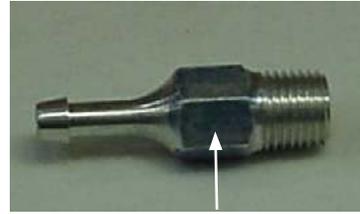
Currently domestic EPA compliant fuel tanks vent fumes back into the fuel tank system. While the tank is filled, air displaced by the incoming fuel is vented through the fuel system charcoal canister. Your vessel uses a combo type (internal vented) fuel fill. Both the fuel fill and vent occupy the same cavity under a protective cover. If fuel overflows through the vent the design forces it back into the fuel fill hose and tank. Be sure to tighten the fuel fill cap to prevent water and debris from entering the fill system. The red dots on the fitting and the cap must align which assures a watertight seal.

A seasoned skipper will hear a distinct sound as the tank nears the “top out” or full mode and may see fuel overflowing back into the fuel hose through the vent. On select 36' vessels not using an EPA fuel system (international) there may be a separate vent fitting on the hull side. Periodically check this vent screen for debris and insect activity.

NOTICE

DO NOT OVERFILL THE FUEL TANK!
THIS HELPS AVOID ANY OVERBOARD
SPILLS WHICH MAY HARM THE
ENVIRONMENT.

Anti-Siphon Valve



INTERNAL BALL/SPRING

The gasoline fuel tank feed line that runs from the fuel tank to each engine features an anti-siphon valve. See

the fuel tank photo. The valve is threaded into the fuel tank fitting at the feed line.

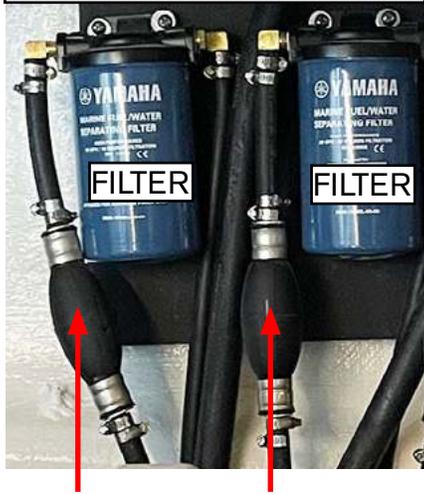
The valve is pulled off its seat by fuel pump pressure as the engine is cranking or running. There is a ball and spring assembly inside the valve that is activated by fuel pump impulses. It allows a one-way fuel roadway to the engine or generator fuel system. It prevents fuel from siphoning out of the tank in the event of a fuel line rupture or disconnected fuel feed hose. When the engine fuel components stop the fuel from cycling the spring forces the ball against the valve opening to prohibit fuel flow.

Never remove an anti-siphon valve as it is a fuel system safety component. Also, never remove the ball and spring from the valve assembly. The anti-siphon valve requires no normal maintenance. Symptoms indicating possible valve problems may be fuel starvation at intermediate or high rpm or in extreme cases an engine that will not start. Contact your Regal dealer for further information.

Fuel Filters Outboard- Primary

TYPICAL

OUTBOARD FUEL FILTERS



TO STARBOARD
ENGINE

TO PORT
ENGINE

Regal LX36 outboard fuel systems feature an in-line 10 micron primary water separator filter for each outboard. They are a spin on/off canister type design similar to an automobile oil filter. Their main purpose is to trap

small dirt particles and condensation (water) in fuel. It is recommended to keep extra fuel filters on board along with a strap style filter wrench, catch container and clean cloths for emergencies.

Never use automotive style fuel filters on your vessel. Dispose of all fuel residue materials in an environmentally safe fashion.

These filters are available on-line, through marinas, retail marine outlets, or can be ordered through your closest Regal or Yamaha dealer.

Fuel Filters Outboard- Replacing Primary

Periodically the in-line 10 micron outboard water separator filters require replacement. Refer to the Yamaha owner's manual for maintenance schedules.

Follow the instructions below to change fuel filters;

1. Place a catch container and clean cloths under the filter canister to catch fuel. Make sure the container has enough volume to catch fuel when poured from the canister to monitor fuel contents.
2. Insert the strap wrench around the canister. Tighten the strap and turn right to left to loosen the canister.
3. Pour the canister fuel contents into the catch container. Visually check for debris and more specifically for cloudy areas at the bottom since water is heavier than gasoline and will sink. It may appear as a bubble when catch container is moved.
4. Dispose of all fuel residue materials in an environmentally safe fashion.
5. Fill the new canister with fresh gasoline. Install by hand only until snug.
6. Pump the fuel line bulb until tight. This assists in removing any fuel line air pockets.
7. Run the blower for at least 4 minutes.
8. Start the engines & check for fuel leaks.

Fuel Filters Outboard- Secondary

In addition, secondary fuel filters are found on outboards under the motor shroud (cover) which should be serviced periodically per the outboard motor manufacturer's instructions.



TYPICAL O/B SECONDARY FUEL FILTER

Outboard Fuel System Charcoal Canisters

Regal 36' domestic models with outboard gasoline propulsion are required to use charcoal canisters for tank vent systems. These canisters purify air exiting the vent hose to the atmosphere. The canisters require no service and are located in the sump.



TYPICAL OUTBOARD CANISTER SYSTEM

Outboard Fuel Line Primer Valve

A special low permeability bulb and hose is supplied by Yamaha to feed the fuel from the tank to the outboard engine. Sometimes it is necessary to pump the gas line hose bulb before starting the engine.

Note that the fuel line bulb and hose for each engine is in the Lazarette storage area connected to the outlet side of the fuel filter.



OUTBOARD HOSE/BULB

If the need arises to replace the fuel bulb be sure to turn the arrow imprinted on the bulb toward the engine side for correct fuel flow. See your Yamaha owner's manual for more details.

Note that due to a possible fire or explosion danger never store flammable liquids and/or portable outboard fuel tanks in any on board storage compartment such as the bilge Lazarette locker.

Generator- (Typical)



GEN-SET W/ SOUND INSULATION CAPSULE

Overview

Currently, a 5KW diesel Fischer Panda generator (gen-set) **option** is available on both stern drive and outboard models to provide on board alternating current (AC) when the vessel is not connected to dockside power. Generator frequency known as hertz is domestically set at 60 while overseas countries normally require a setting of 50. As the generator reaches full rated no load output (amps) at 60 hertz it should display 120 volts. At 50 hertz it should display 240 volts.

The generator is located in the bilge (sump). The typical generator offers a removable sound insulation capsule (see above) which reduces noise and includes access features for remote starting, troubleshooting and routine maintenance schedules.



GENERATOR VIEW OF MAIN COMPONENTS

Refer to your Fischer Panda generator operator's manual for component location, maintenance schedules, and detailed information.

Note that diesel generator models, specifications, and/or technical information may change at any time due to Regal's commitment to constant product improvement.

Note that no liability is accepted for information correctness and is given to the best of our knowledge.

Typical Generator Safety Labels

 **DANGER**

AVOID BODILY INJURY OR DEATH DUE TO GENERATOR HAZARDOUS VOLTAGE AND MOVING PARTS!
OPERATE GENERATOR ONLY WHEN ALL GUARDS AND PANELS ARE IN PLACE.

 **WARNING**

PREVENT POSSIBLE INJURY OR DEATH DUE TO HOT COOLANT/STEAM!
ALWAYS STOP GENERATOR AND LET COOL BEFORE PERFORMING ANY COOLANT FUNCTIONS!

 **WARNING**

PREVENT POSSIBLE INJURY OR DEATH
READ AND UNDERSTAND ALL GENERATOR OPERATOR'S MANUAL SAFETY INSTRUCTIONS BEFORE OPERATING THE GENERATOR.

 **WARNING**

PREVENT POSSIBLE GENERATOR DAMAGE! ALL SHORE POWER BREAKERS AND AC SWITCHES MUST TO BE DEACTIVATED BEFORE STARTING OR STOPPING GENERATOR.

 **WARNING**

PREVENT POSSIBLE INJURY OR DEATH DUE TO ACCIDENTAL STARTING!
ALWAYS DISCONNECT THE BATTERY CABLES BEFORE PERFORMING GENERATOR MAINTENANCE.

 **CAUTION**

PREVENT HEARING LOSS DUE TO HIGH DECIBEL NOISE!
NEVER OPERATE GENERATOR WITH A FAULTY EXHAUST SYSTEM OR WITHOUT A MUFFLER.

 **WARNING**

PREVENT POSSIBLE INJURY OR DEATH DUE TO CARBON MONOXIDE
PERIODICALLY INSPECT THE GENERATOR EXHAUST SYSTEM.

 **CAUTION**

PREVENT GENERATOR AND/OR ELECTRICAL SYSTEM DAMAGE
NEVER DEACTIVATE A BATTERY SWITCH AT THE BATTERY ACTIVATION PANEL WITH THE GENERATOR RUNNING.

**Note that safety labels shown apply to both stern drive and outboard propulsion generator options.*

Generator Seacock/Strainer (Typical)

C. CLOCKWISE
TO OPEN STRAINER TOP



GENERATOR STRAINER W/ MESH BASKET



REMOVING/CLEANING STRAINER BASKET

To check the generator strainer located in the bilge make sure the seacock handle is in the "off" position (90 degree angle to the hose). Turn the strainer top counterclockwise to access the basket. Pull the basket out and remove any debris. Re-install basket by pushing down evenly in place and tighten strainer top. Set the sea cock handle to the "open" position.

Start generator and check for leaks.

Generator Water Separator System (Typical)

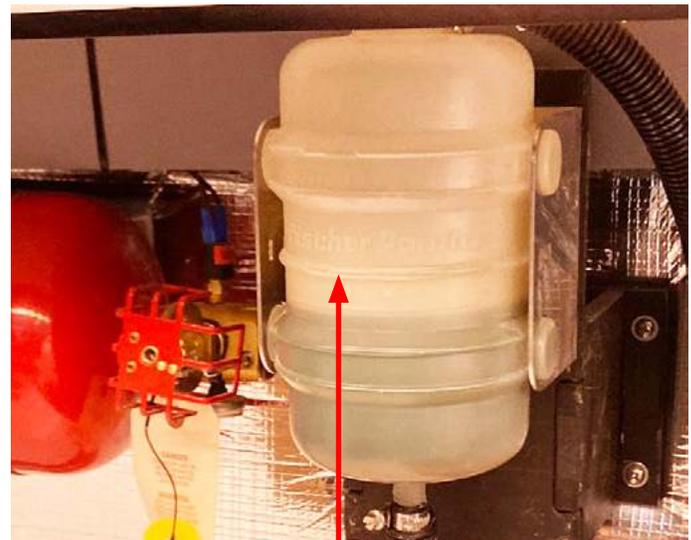


EXHAUST
DISCHARGE
TO
TRANSOM

WATER
DISCHARGE
HULL BOTTOM
SEACOCK

FROM
GENERATOR
MUFFLER IN
BILGE

The generator water separator system is located on the hull side. Diesel generators use similar basic water separator systems. The system softens the generator sound and exits exhaust safely overboard.



COOLING WATER EXPANSION TANK

See the "Max" coolant level as indicated on the arrow above. See the Fischer Panda owner's manual for maintaining proper cooling system levels.

Generator Fuel System

The Fischer Panda generator stand alone diesel fuel tank features a capacity of around 28 gallons. Familiarize yourself with the location of all fuel tank components and valves.

The fuel system features an in-line primary fuel filter located close to the generator. Its job is to keep fine particles and debris out of the generator fuel system. Also, there is a secondary cartridge style fuel filter located on the generator unit. When replacing the secondary diesel fuel filter make sure the arrow on the filter is pointing in the right direction.

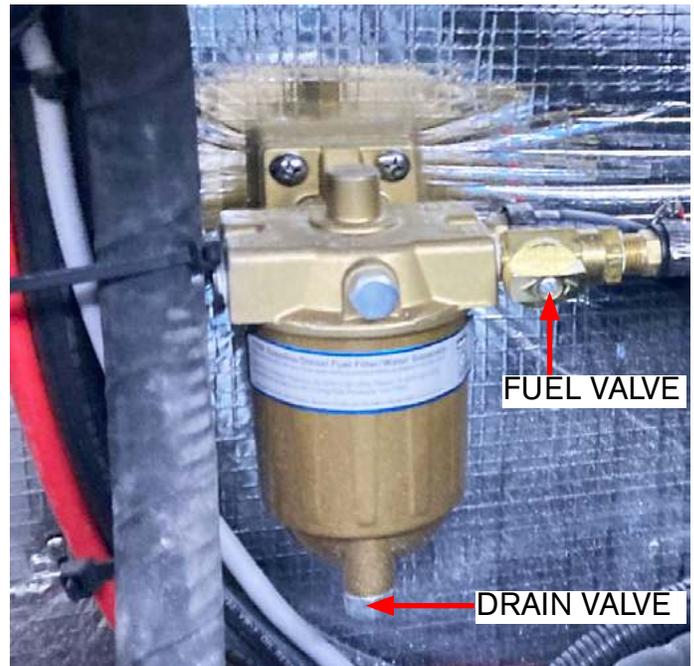
Refer to the the generator owner's manual for periodic maintenance schedules. Clean fuel is the life line of generator performance. Typically, these filters are of the spin "on" and "off" design and can be replaced similarly to a oil filter.

Water will settle at the bottom of the filter housing. Turn the primary fuel valve to the "OFF" (90 degrees to the line) before performing filter maintenance. Periodically, check filters for debris in the fuel supply. Turn the drain valve to remove any settled debris or settled water droplets. Do not use a strap type wrench since it may distort or damage the filter housing.

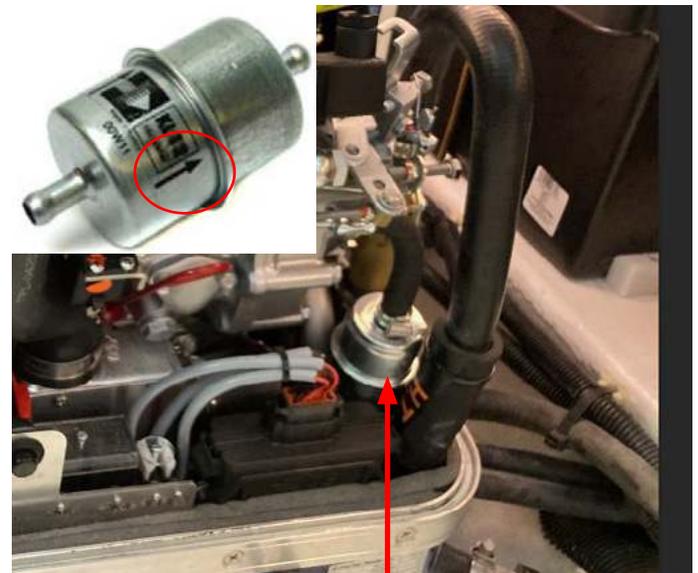
Use an environmentally safe container to catch any contaminated fuel. Dispose of according to local, or state regulations.

Periodically, at specific maintenance intervals the filters need to be replaced. After inspection and any filter maintenance start the generator and check for fuel/air leaks.

Refer to your generator operator's manual for more detailed information.



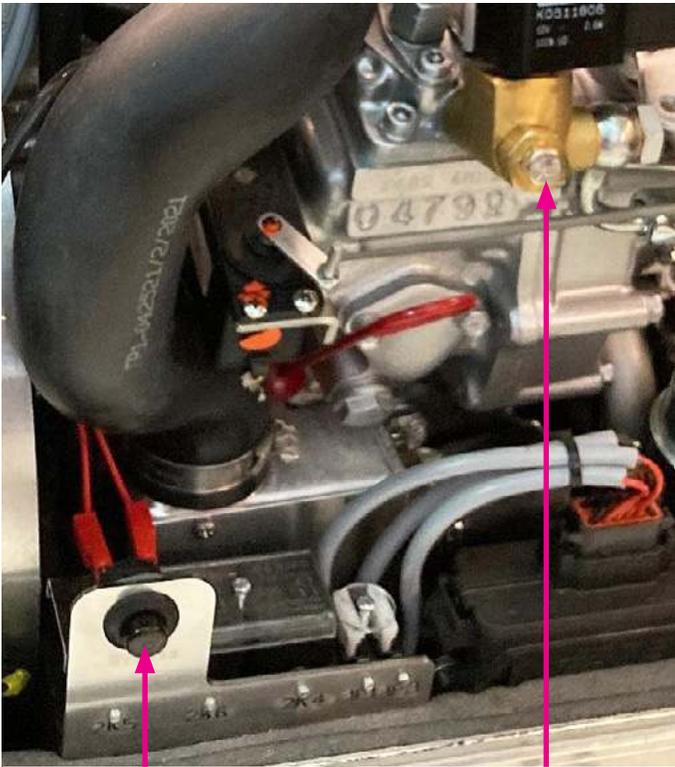
GENERATOR- TYPICAL PRIMARY FUEL FILTER



GENERATOR- SECONDARY FUEL FILTER

Note that it is recommended that you carry extra spin-on replacement primary filters along with a cartridge type secondary filter for the generator itself.

Generator Diesel Fuel System- Purging Tips



DIESEL GENERATOR VENTILATION SCREW
BYPASS SWITCH

A diesel bypass switch is used to purge air from the generator diesel fuel system. An example would be when primary or secondary filters are replaced.

Press the bypass switch for 3-4 minutes. Loosen the ventilation screw at the fuel solenoid valve. As the screw is opened air is purged from system along with fuel. Use a container to catch dripping fuel and dispose of in an environmentally friendly fashion.

For further diesel generator information refer to your diesel generator operator's manual in the owner's information satchel.

Generator Diesel Fuel Quality Solutions

If the vessel is to be stored for over 2 months pour biocide in the semi empty generator fuel tank. Fill the fuel tank with fresh diesel fuel to prevent condensation build up. Run the generator for a short time to better mix the biocide inside the fuel tank and fuel system before storing the vessel.



1. Always ensure the diesel fuel tank fill cap is securely tightened to prevent water infusion.

2. Always buy diesel fuel from a marina or fuel dock that moves a large amount of fuel through the pumps. Ask how often the fuel dock pump filters are changed and if their diesel fuel is blended with a biocide. Always carry a couple of extra primary and secondary diesel fuel filters. Use exact replacements in order to match micron filtering capacity.

3. Count on changing both primary and secondary fuel system filters more often due to today's diesel fuel shorter storage life.

4. Make sure to drain the diesel primary in-line fuel filter and the generator mounted secondary fuel filter before each outing. Look for sludge/water. Dispose of contaminated diesel fuel properly in approved containers. Do not drain diesel fuel in the bilge.

5. Old diesel fuel creates more stress on engine parts and produces more noise resulting in the trademark diesel clatter.

Pour a cetane booster and conditioner in the fuel tank with the new batch of diesel fuel.

Old or contaminated fuel may cause the following:

- Tank sludge-remove manually/chemically
- Dirty generator oil
- Shortened generator component life
- Carbon deposits in the generator
- Incomplete combustion
- Loss of power and performance
- Clogged primary and secondary fuel filters
- Malfunctioning fuel injectors

Note that in severe cases of "algae" the fuel tank may need to be pumped out. To remove the ability to generate new algae, the tank should be pressure washed which removes small deposits of "algae" from the baffle system and hard to reach areas. Add a biocide (not a conditioner) and then top off the tank.

Remember: LESS AIR MEANS LESS WATER AND LESS GROWTH!

Common Terms Relating To Diesel Fuel

Cetane number- This is a measure of a diesel fuel's ability to ignite. An out of range cetane number will provide poor starting and increased hydrocarbon emissions.

Cetane index- This index is calculated from the distillation range and density of the fuel.

Density at 15 degrees C- Low density reduces engine power and increases fuel consumption. Too much density will increase engine power above safe limits.

Viscosity at 40 degrees C- Low viscosity reduces engine power and increases fuel consumption. Excess viscosity will lessen the fuel injection equipment durability.

Aromaticity- Excessive aromatic content will impair exhaust emission content especially particulates.

Oxidation stability- It is a measure of the chemical stability of the fuel, important for biodiesel blends in the 20-30% range.

Sulfur content- It is an inherent factor in fossil fuels. Too much sulfur content will impair the engine and exhaust after-treatment functions and emissions of sulfur oxides and particulates.

Water content- Too much water will cause wear on engine parts, particularly the fuel injection system and corrosion. Water can increase microbial fuel tank growth, which may result in clogging up the fuel filter.

Total contamination- Organic contaminants (fungi, bacteria, etc.) can lead to fuel filter clogging. Inorganic contaminants (dust, rust, sand) can cause severe damage to entire fuel injection system parts.

Cold flow properties- Cloud point is the temperature below which wax crystals begin to form in diesel fuel.
Cold filter plugging point- Lowest temperature at which the diesel fuel still passes through filters.
Pour point- Temperature below which the diesel fuel become semi solid and loses the ability to flow.

Flash point- It is a measure of a fuel flammability; not a measurement for engine operation. It is important for classification of fuels into hazard classes for insurance and transport.

Typical Pre-Start Generator Checklist

- Energize the battery activation panel. Generator is connected to the house accessory battery system.
- Turn generator seacock off. Check strainer for debris. **TURN SEA COCK ON BEFORE STARTING GENERATOR.**
- Ensure that all ship's main panel and equipment breakers are off.
- Check generator engine oil level. Top off with correct type and viscosity as required.
- Check coolant level at bilge recovery tank. Add factory recommended coolant as needed.
- Check the generator diesel fuel tank level on the plotter to ensure there is adequate diesel fuel for the generator.
- Check the batteries per generator manufacturer's recommendations.
- Check drive belts for wear and proper tension per generator manufacturer's recommendations.
- Record the hour meter reading to meet maintenance scheduling.
- Check the blower for proper operation. Start & run at least 4 minutes before starting generator. Run blower continuously while generator is running.
- Inspect the generator for fuel, oil, exhaust or water leaks before and after starting the unit.

Generator Starting System Notes

The generator P4 Fisher Panda control panel along with the generator main breaker are located in the head.

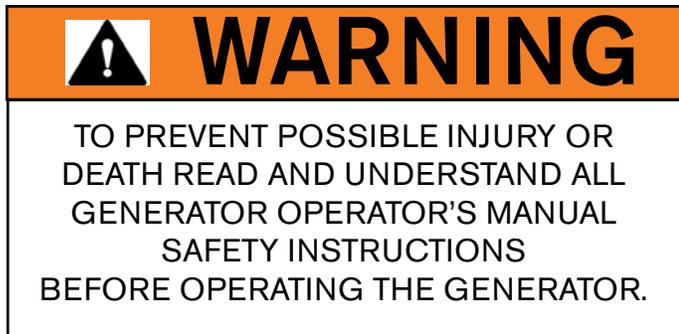
Once the generator is started using the P4 panel and the generator has reached normal operating temperatures the generator breaker at the ship's main control panel (MDP) can be activated. Once energized sub breakers on the MDP can be switched to the "on" position.

Note to never deactivate the generator house accessory battery switch at the battery activation panel while the generator is running.

Note that in the event the generator does not start close the generator seacock to prevent water build-up in the exhaust outlet which may cause further problems. See the Fischer Panda generator operator's manual for further information.

Note that if the generator switches off under load because of temperature reasons find the cause of the malfunction immediately.

Starting Fischer Panda Generator



Conduct the pre-start generator check list on the last page. Remedy any system malfunctions before starting the generator.

To start the generator using the Fischer Panda P4 control panel;

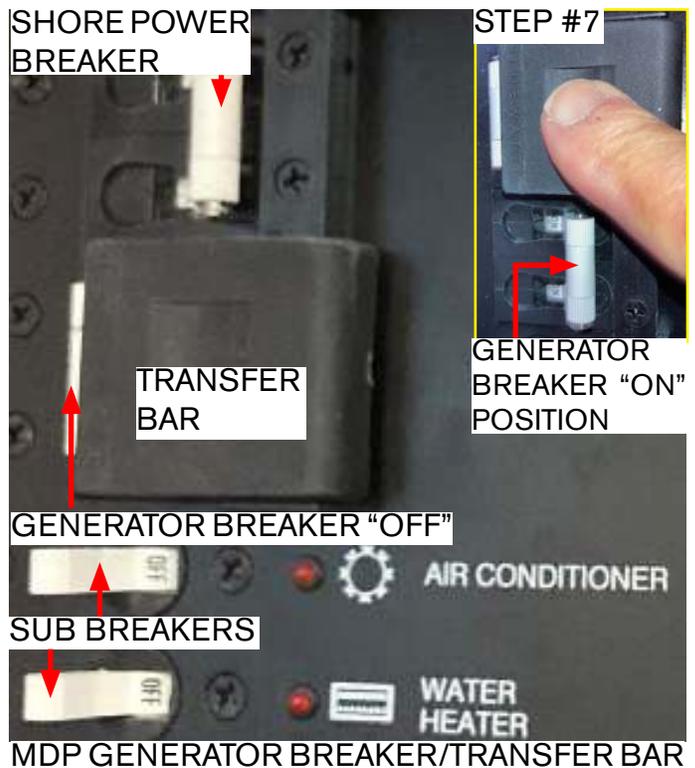
1. Ensure the generator seacock handle is in line with the hose "on" position.
2. Ensure the house accessory battery switch is "ON" at the battery activation panel.
3. At the P4 panel located in the head push the "ON/OFF" button to provide power to the P4 generator panel. Typically, at this point the blower system will be activated.



FISCHER PANDA P4 GEN CONTROL PANEL

4. Next, at the P4 generator panel push the "START/STOP" button to start the generator (gen-set)

5. Once the generator is started let it idle to reach a normal operating temperature before subjecting a load to the system.



6. At the ship's master distribution panel (shown above) if the shore power breaker is activated "ON" flip the breaker handle to the left which is the "OFF" position. (Turn off sub breakers before step 6)

7. Next, slide (push) the transfer bar up and flip the generator breaker to the right which is the "ON" or activated position. At this point AC voltage should display on the AC line voltage meter. See step #7 illustration above.

8. Finally, after the transfer of power to the generator activate desired sub breakers at the MDP. Always check the load current meter for equipment/system amperage draw.

Stopping Fischer Panda Diesel Generator

To stop the generator follow these steps at the ship's main distribution panel (MDP) and generator P4 control panel:

1. Turn all AC (alternating current) equipment sub breakers to the "off" position at the MDP.
2. Flip the MDP AC generator breaker to the "off" position. At this point, no AC line voltage will be displayed at the AC volt meter. Let the generator run for a minimum of 5 minutes to cool down without a load.
3. Press the "On/Off" button on the P4 Fischer Panda control panel to power down the panel.

Note to always refer to the generator operation manual for more detailed starting and stopping information.

Inverter (“Regal Power Bank”)- (Typical)

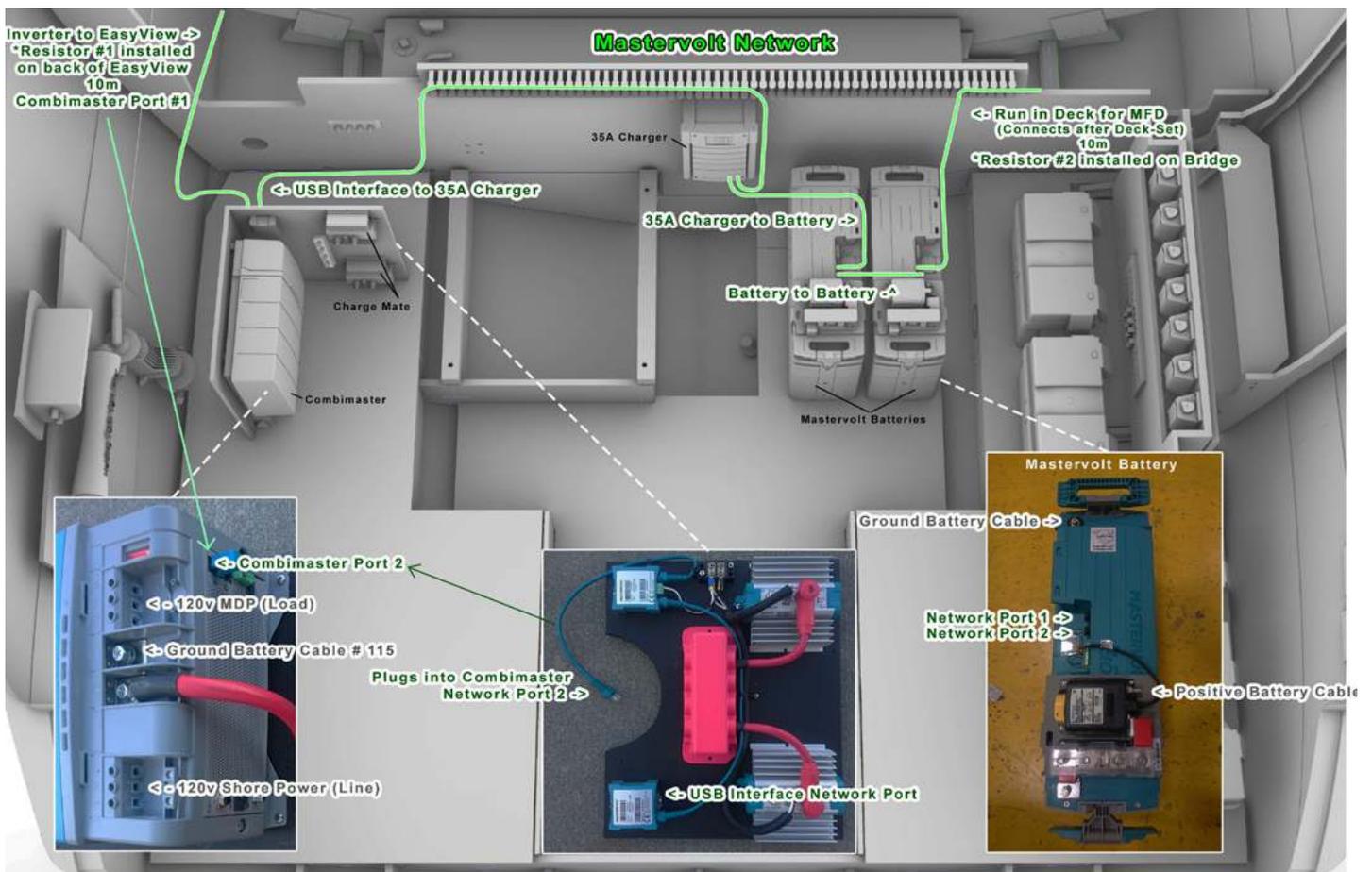
As an option the inverter system is also referred to as the Regal “Power Bank” system. Both system names may be interchanged in this manual. The AC power package option must be installed to support the Power Bank system. In addition to this owner’s manual a Power Bank brochure may be located in the owner’s information sachet and it outlines the major components and basic operations of the system. Go to www.regalboats.com where details are available including battery information.

Note that your system components may not display or operate identically to the ones illustrated and described in this manual. Always contact a Regal dealer for detailed information.

The inverter or Regal “Power Bank” system option provides the operator with an opportunity to relish the benefits of alternating current (AC) on board for entertainment and day boating enjoyment without the need of a generator through storing energy in Lithium-Ion batteries which are charged by the engine alternators and shore power. Battery energy is converted to 120 volts for powering on board AC current devices. The system features a charger/inverter combination unit, battery charger, along with monitoring devices including the plotter and the Mastervolt Easy View “touch” display screen.

Note that Regal Power Bank (inverter) specifications, components, and/or technical information may change at any time due to Regal’s commitment to constant product improvement.

Power Bank System Overview- Typical





WARNING

TO PREVENT POSSIBLE INJURY OR DEATH READ ALL INVERTER MANUFACTURER'S OWNER'S MANUALS BEFORE OPERATING THE SYSTEM.



CAUTION

TO PREVENT POSSIBLE INJURY DUE TO BATTERY EXPLOSION NEVER USE TWO DIFFERENT BATTERY CHARGE TYPES WITH INVERTER SYSTEM.



WARNING

TO PREVENT POSSIBLE INJURY OR DEATH DUE TO HIGH VOLTAGE LOCATE A CERTIFIED MARINE ELECTRICIAN TO SERVICE THE INVERTER COMPONENTS.



CAUTION

TO PREVENT POSSIBLE INJURY WHEN TRANSPORTING BATTERIES TO OR FROM BOAT KEEP BATTERY UPRIGHT, USE 2 PEOPLE AND LIFT ONLY AT THE HANDLES TO CARRY THE BATTERY.
HANDLE WITH CARE!



WARNING

PREVENT POSSIBLE INJURY OR DEATH! TOO HIGH CHARGE CURRENTS, SHORT CIRCUITS, OR TOO DEEP CHARGES WILL DAMAGE THE BATTERY AND FIRE, EXPLOSION, TOXIC GAS OR ELECTRIC SHOCK MAY RESULT!



CAUTION

TO PREVENT POSSIBLE INJURY OR DEATH DUE TO HIGH VOLTAGE NEVER OPEN THE COMBIMASTER INVERTER/CHARGER. THERE ARE NO SERVICEABLE COMPONENTS INSIDE THE CASING UNIT.



CAUTION

TO PREVENT POSSIBLE INJURY DUE TO EXPLOSION THE COMBIMASTER INVERTER/CHARGER IS TO BE USED ONLY FOR CHARGING ON BOARD MASTERVOLT LITHIUM-ION TYPE BATTERIES AND ATTACHED LOADS TO THESE BATTERIES.

NOTICE

IN FREEZING CLIMATES STORE LITHIUM-ION BATTERIES IN A COOL AND WELL VENTILATED ENVIRONMENT. SEEK APPROPRIATE CHARGING INFORMATION FOR EXTENDED STORAGE PERIODS.

Inverter (“Power Bank”) System Main Components & Description

In this section the main (Regal Power Bank) inverter system components are listed and their main functions described. This information along with the manufacturer’s operator’s manuals will aid the vessel operator in understanding the inverter system basic operation and monitoring principles.

Read and understand all safety and operation related information before using the inverter system. For additional information contact your Regal dealer.

Note that other equipment in the inverter system may be located in the following operation section and not part of the main system components.

Note that the Regal Power Bank (inverter) specifications, components, and/or technical information may change at any time due to Regal’s commitment to constant product improvement. No liability is accepted for information correctness and is given to the best of our knowledge.

Lithium-Ion Batteries (2)-

Read and understand all safety information related to the on-board Lithium-Ion batteries. These batteries provide ultimate power for the (Regal Power Bank) inverter system option and are wired as a parallel circuit.

These high energy capacity batteries use phosphate cell technology. The batteries feature a self-learning platform (Smart System) which results in a more efficient battery charge cycle along with a longer battery life. Using battery monitoring devices up-to-date battery system information is integrated into an on board inverter communication system viewable on plotter and touch screen displays.



TYPICAL LITHIUM-ION BATTERY

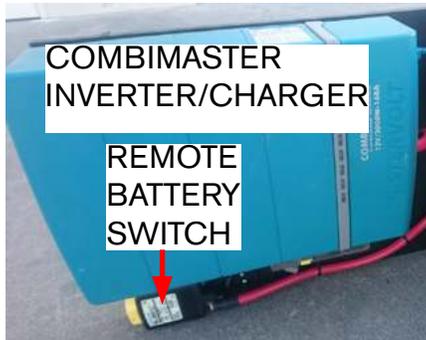
Featuring a “Smart” system, batteries shut off at low voltage and turn on again when charging. Batteries shut off at high temperature. Engine alternators provide a charge to the Power Bank.

The on board Lithium-Ion batteries currently used individually weigh around one hundred three (103) pounds with 460 amp hours of capacity each.

For additional battery information review the vendor manuals in the owner’s information sachet, schematic drawing shown earlier in this section, web-sites, or contact your closest Regal dealer.

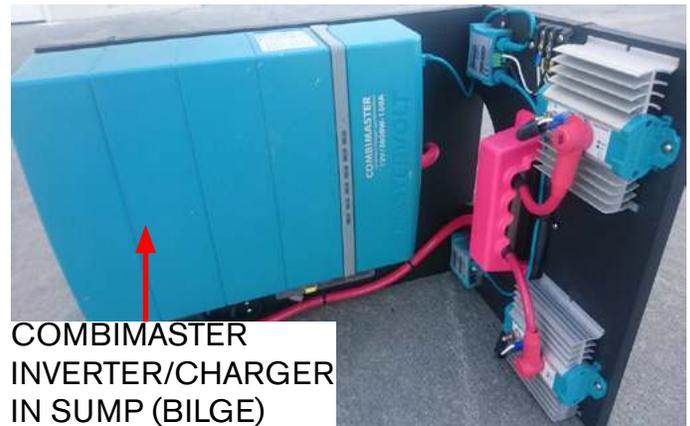
Inverter (“Power Bank”) System Main Components & Description (Continued)

Remote Battery Switches-



There are three (3) Power Bank remote battery switches (RBS) in the sump (bilge). Each Lithium-Ion battery integrates a single battery switch. Below the CombiMaster unit an additional RBS switch is found. These magnetic latched units provide high amperage switching load capability for the RBS to operate the battery switch handle position must be to the extreme left or remote setting). The Power Bank switch located in the head controls the CombiMaster RBS switch. It will engage automatically when the Power Bank switch is toggled to the “ON” position.

CombiMaster Inverter/Charger Combo-



The CombiMaster inverter/charger unit is a major player in the inverter option system as it features automatic switching between shore power mains and inverter mode output maintaining a constant power supply. It handles on board heavy and sensitive loads (sub breakers on MDP panel). The charger side includes a 3 step charging device ensuring a safer and faster charging cycle. As an integral part of the MasterBus communication platform the CombiMaster delivers system charging information to the plotter and MasterVolt EasyView display screen (typically located in the head).

Note not to confuse the inverter system CombiMaster unit with the ChargeMaster battery charger. The ChargeMaster sends a charge to the engine and house battery systems only and does not charge up the Lithium-Ion batteries used in the inverter system.

Read and understand the CombiMaster vendor safety and operation information located in the owner’s sachet before operating the inverter system.

Inverter (“Power Bank”) System Main Components & Description (Continued)

Main Distribution Panel (MDP)-



The main distribution panel is located in the head compartment. As related to the on board inverter option with the dockside cord energized and the ELCI breaker in the “ON” position alternating current will pass through the CombiMaster unit to the MDP panel.

If power becomes too low, run the engines to charge.

Note that if the Lithium-Ion batteries are nearly drained of their charge the MDP sub breakers will assume an “OFF” position.

Power Bank Panel-



The Power Bank panel is located in the head compartment. When the inverter system is energized by positioning the switch to “ON” a green light displays on the panel indicating the CombiMaster is in the inverter mode.

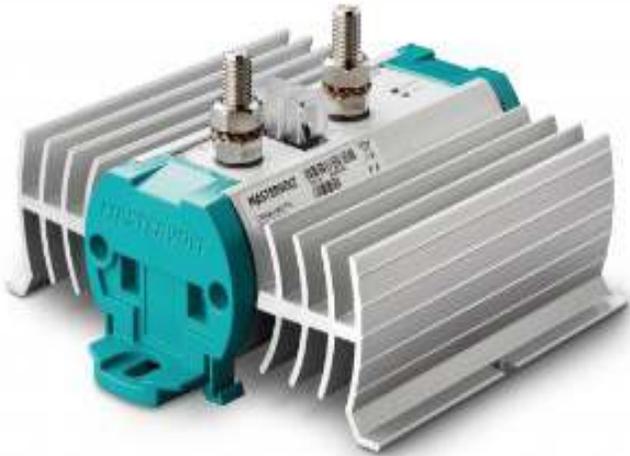
Remember, the Power Bank switch must be “ON” to invert or charge. See photo above.

Remember that when the Power Bank switch is “ON” the system will always be inverting or charging. When the dockside power is energized the system is charging up the Lithium-Ion battery bank as required. When there is no dockside power the system will be in the inverter mode.

With the shore power breaker in the “ON” position at the MDP panel and any desired sub breakers energized the inverter system delivers alternating current via the CombiMaster to the MDP panel and then to the chosen panel sub breakers.

Note there is no need to ever switch to “Generator” at the MDP panel. With the inverter system installed there would be no on board generator system.

Power Bank Charge Mate Relay



The Charge Mate device (2) provides a secondary inverter battery with a dedicated charging source. This device distributes engine alternator charge to the inverter system Lithium-Ion dual battery bank. The Charge Mate connects both batteries during charging and keeps them isolated when discharging. The Charge Mate should charge each battery equally. The return current is automatically blocked even though the second battery may indicate a higher voltage.

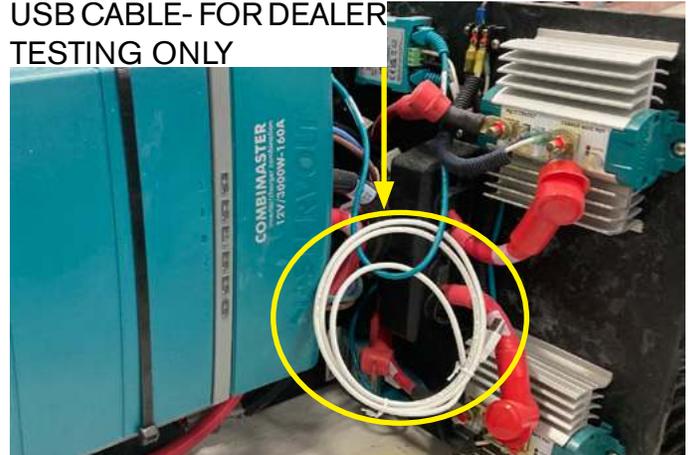
The devices display a LED status indication on the face of each unit for monitoring purposes.

Note with the engines are the only way to charge with the Power Bank switch in the “OFF” position.

Network/Communication Misc. System Information

The Power Bank on board system features network cables to devices and an integrated “Bridge” that permits data to be available on the MFD's along with a USB cable for the dealer to program the system. See the illustration below.

USB CABLE- FOR DEALER TESTING ONLY



Note that the Regal Power Bank is a dealer only service system. There are special software tools for the dealer to program all of the network devices. There are no customer service connection points in the system.

EasyView Display-



The EasyView Display is a 5" touch screen typically located on the head wall. Activate the screen by pressing the button shown above. There are 3 main default factory screens and note display screens can be customized.

The first screen displays the CombiMaster/Inverter data including shore power input voltage and current along with output amperage/power from the CombiMaster unit.

The second screen displays individual battery charge level, amperage being drawn from or provided to the inverter batteries, and the remaining time while inverting.

The third screen displays information related to the battery charger **NOT** the inverter including voltage of the house and house accessory batteries along with output current of the ChargeMaster battery charger.

Note that the example above shows negative amperage being pulled from the battery bank resulting in depleted battery charge figures.

Note the above screen is a sample only and that your EasyView display may not look identical.

Plotter Display- Examples



This "home page" illustration displays voltage being supplied by dockside shore power or the Power Bank with the system in a charging state. Voltage displayed may vary due to a variety of variables such as cable length and marina available line voltage.



This "home page" illustration displays the Power Bank system with with remaining system time/energy available. The inverter batteries are in a in a discharge state.

Also, note there is no shore power incoming displayed at this point.

Note that your plotter displays may not be identical to the examples shown here.

Plotter Display- Auxiliary Screens

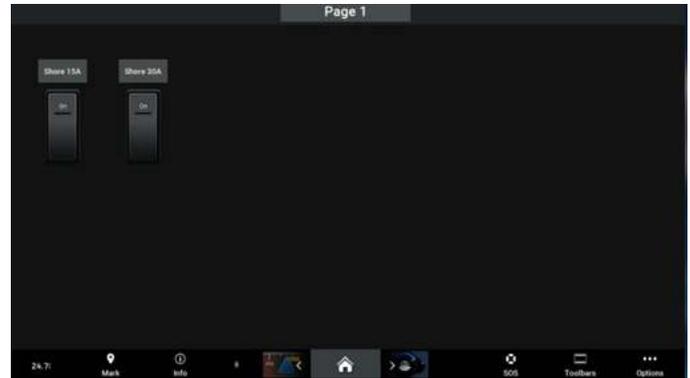


Press the menu button at the bottom center of the plotter “Home screen” and the “Battery Management” menu will appear. When the battery management menu is pressed a screen shown below will be available for battery system charger monitoring.



Note that the screens displayed are sample screens only and your screen display may not be identical.

Plotter Display- Auxiliary Screens



Press the “Menu” button (3 dots) at the bottom center of the plotter “Home screen” and the “Switching” menu will appear similar to the screen above. Choose one of the 2 breakers and enable it.

The smaller amperage breaker limits input amperage to 15 amps to permit the use of a traditional extension cord with appropriate sized adapter for charging.

The larger amperage breaker limits input amperage to 30 amps to permit the use of the marina shore power tower for quicker charging.

Inverter (“Power Bank”) System- Basic Operation/Maintenance Overview

Introduction-

Now that the operator has become familiar with the Regal “Power Bank” components basic operating information regarding the system will be explored. Additional details may be found in the MasterVolt operation manuals located in the owner’s information sachet along with the closest Regal dealer.

Note that the Regal Power Bank (inverter) specifications, components, and/or technical information found in this manual may change at any time due to Regal’s commitment to constant product improvement.

First Time Use & Charging-

Depending on storage and shipping times, the Power Bank may need to be charged before first time use.

Step One-

Verify that all three (3) remote battery switches (RBS) in the engine room (sump/bilge) are in the remote position and are not in the Lock-Out position (See earlier battery switch section for RBS information).

One RBS is located on each of the Lithium-Ion batteries. The remaining RBS is located at the bottom of the CombiMaster unit.

Step Two-

To charge the Power Bank for the first time, plug in the dockside power cord and verify the ELCI displays a green light and the breaker is in the “ON” position. Input voltage from the shore power should be visible on page one (1) of the EasyView display.

Step Three-

Locate the Power Bank On/Off switch located in the head close to the MDP on the wall. Push the switch to the “ON” position and verify the indicator light is lighted green. The Power Bank is now ready and should be automatically charging.

Note that the CombiMaster (Inverter/Charger) unit should not be confused with the ChargeMaster battery charger. The CombiMaster charges the inverter batteries only while the ChargeMaster (battery charger) charges the house and engine batteries only.

Main Distribution Panel (MDP)-

The CombiMaster (Inverter/Charger) is a pass-through system. Plugging in the shore power cable (dockside cord) with the ELCI breaker “ON” will immediately pass power through the CombiMaster to the MDP regardless if the Power Bank switch is “ON” or “OFF”.

While in the pass-through mode if the Power Bank switch is “ON” the CombiMaster is automatically set to Charging Mode . However, the MDP will always be given priority over the CombiMaster charging.

Inverter (“Power Bank”) System- Basic Operation (Continued)

For every device that is “ON” at the MDP, the CombiMaster will reduce the power available to charge the Power Bank batteries, and can result in little or no charge to the Power Bank.

Inverting-

When shore power is not present, positioning the Power Bank switch to “ON” will automatically set the CombiMaster to inverting mode. Verify that the shore power breaker on the MDP is “ON”, as well as the breakers (sub breakers) of the devices you would desire to use. Refer to the EasyView display (earlier) for battery usage and time remaining stats. The Power Bank time remaining will vary greatly depending on the load and can be significantly increased by the engines when running the boat, depending on the battery levels and engine revolutions per minute (RPM's).

Storage & Care Tips-

To prevent accidental inverting and over charging, the Power Bank switch should always be in the “OFF” position when charging or inverting is not required. With the Power Bank switch in the “ON” position, the system will be automatically charging or inverting.

With regards to battery storage, the rate of battery self-discharge is less than 5% per month. However, temperatures can affect this rate. For batteries not being used for a period greater than 3 months, charge batteries to >80%. This is good for up to 6 months, but it is strongly recommended to recharge

to >80% every 100 days. Set the remote battery switches to the Lock-Out position (yellow handle positioned all the way to the right). Power off the EasyView display by holding down the physical circular button for 3 seconds and then selecting “OFF”.

Additional battery storage information is available in the winterization chapter or contact your Regal dealer.

Propulsion/Helm Controls

Overview



Regal LS36/LX36 models feature stern drive or outboard propulsion choices. They all utilize four stroke technology, which is based on the following principles: fuel, compression, ignition, and exhaust.

Note to inquire into detailed engine functions, systems, and maintenance recommendations refer to the engine manufacturer's owner's manual.

For further propulsion information contact your closest Regal dealer. He has undergone training on engine and propulsion systems.



WARNING

PREVENT POSSIBLE INJURY OR DEATH!
READ AND UNDERSTAND
MANUFACTURER'S ENGINE/
PROPULSION OWNER'S
MANUALS BEFORE OPERATING
THE VESSEL.



WARNING

PREVENT INJURY OR DEATH!
READ ALL MANUFACTURER'S HELM
CONTROL MANUALS
BEFORE OPERATING THE VESSEL.

It is highly recommended that the operator of the craft share the owner's manual document location with the crew should they be required to access it for troubleshooting, etc. should the skipper be unable to assist in these needs.

Bottom line; Be prepared!!!

 WARNING
PREVENT INJURY OR DEATH! READ AND UNDERSTAND MANUFACTURER'S HELM CONTROL SYSTEM OWNER'S MANUALS BEFORE OPERATING THE VESSEL!

 CAUTION
PRACTICE REMOTE CONTROL SHIFTING IN A WATER ENVIRONMENT WITHOUT HEAVY BOAT TRAFFIC.

This section of the Regal LS36 owner's manual introduces helm controls for Volvo stern drive propelled vessels.

Typical helm controls are described along with their helm (dash) locations.

In addition, there is a brief section of helm engine starting systems along with remote control and joystick systems. Volvo stern drive helm controls are integrated into the "Glass Cockpit System" Garmin plotter system.

Note that your vessel may not display every helm control device as select equipment is optional. Note that your equipment may not appear or operate the same as components in this manual. Always review the equipment operator's manual before using the component(s).

Regal reserves the right to change components, systems, locations, and specifications at any time during a products production life cycle. No liability is accepted for information correctness and is given to the best of our knowledge.

 CAUTION
PRACTICE JOYSTICK DOCKING AND MANEUVERING IN A WATER ENVIRONMENT WITHOUT HEAVY BOAT TRAFFIC.

Volvo Glass Cockpit- Stern Drive

Typically, the “Glass Cockpit” system on your vessel features plotters integrating dual screens at the helm and a single companion screen.

This system offers one stop shopping for full overviews of navigation and IPS engine data. The “Glass Cockpit” monitors and controls all driver information including: navigation, engine data, and warning features in a single location.

The Glass Cockpit features:

- Multi-touch controls ie; (Pinch-to-Zoom)
- Both Blue Chart G2 and Lake Vu HD Maps
- 10 X per second position/heading refreshment
- View and control from smartphone or tablet
- Sleek flush mounting
- Integrated Glass Cockpit Owner’s Manual

Activating “Glass Cockpit” Plotter

To activate the Glass Cockpit plotter check the following:

1. Activate the “house” batteries from the battery management panel display located near the helm.
2. Energize the glass cockpit plotter power button at the top of the unit. Make sure power button is depressed 3 seconds to power unit up.

Volvo Glass Cockpit Displays (Typical)

Below shown are samples of displays available from the Glass Cockpit home screen. Go to A/V, Gauges, Controls and choose one of the views. Note that we have listed displays that may be found under each view.

Note that your vessel may not include a number of these displays or they may appear different.

Engine View

Engine speed
Engine hours
Exhaust temperature, dry
Coolant temperature
Voltage
Oil pressure
Turbo pressure (Diesel)
Transmission oil pressure
Transmission oil temperature
Load percent (Engine torque)

Vessel View

Active corrosion protection information
Depth with alarm
Fuel level
Fresh water
Boat speed
Power trim angle
Rudder angle
Water temperature

Battery View

Voltage

Fuel Economy View

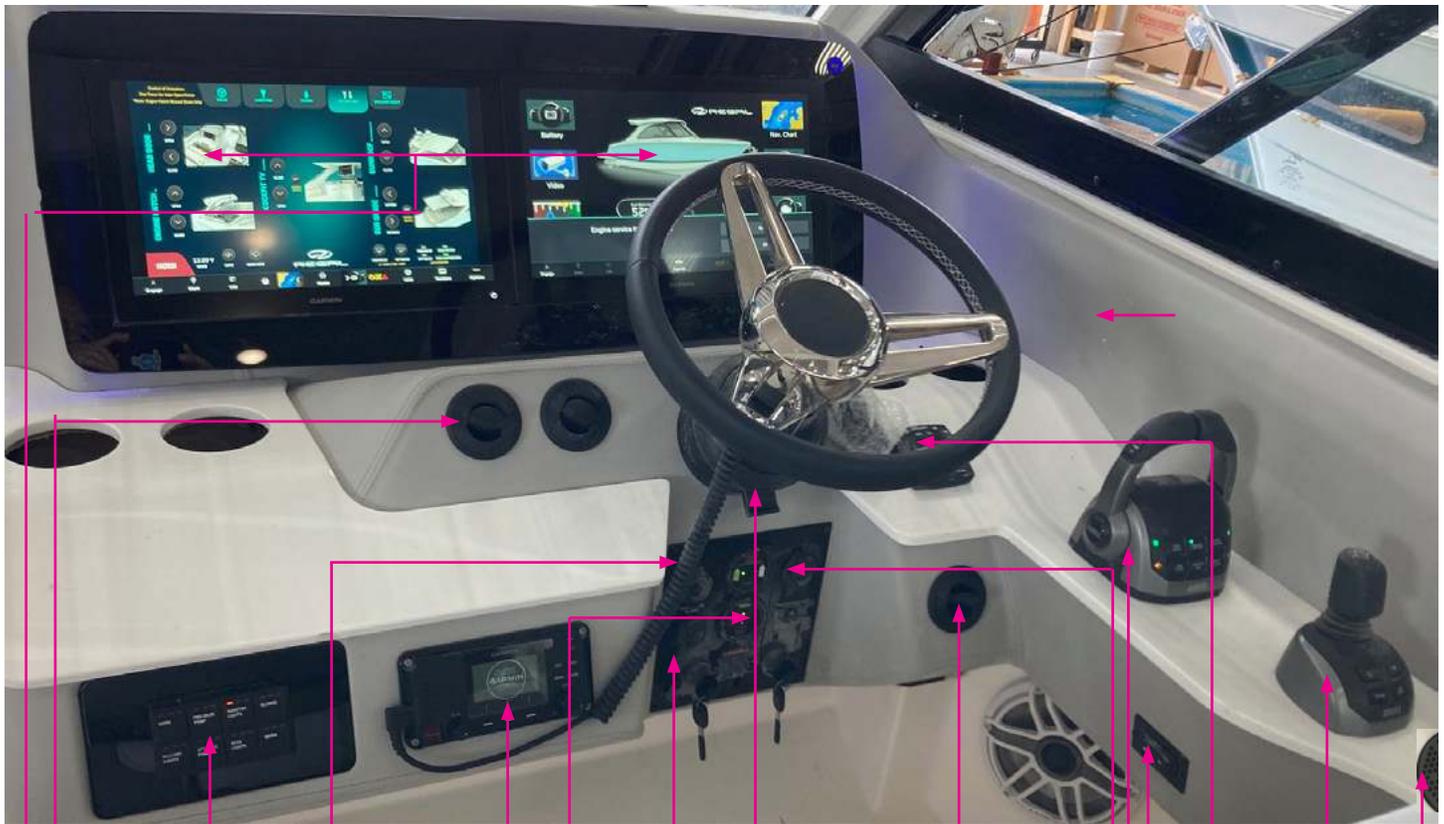
Instant rate fuel
Average fuel rate
Time to empty
Instant fuel economy
Average fuel economy
Trip fuel economy
Distance to empty
Fuel level
Fuel Remaining

My View

Boat speed
Fuel level
Fuel feed pressure
Fresh water level
Seawater temperature
Seawater pressure
Rudder angle
Interceptor position
Low speed mode, slip rate
Propulsion speed
Trip fuel
Total fuel rate
Trip distance
Trip hours
Total fuel economy

For further information refer to your Volvo engine or “Glass Cockpit” operator’s manual.

Stern Drive Propulsion System- Typical Helm Control Display



- SWITCH PANEL
- IGNITION PANEL
- VHF MARINE RADIO
- GAS VAPOR DETECTOR
- A/C VENTS
- GLASS COCKPIT CHART PLOTTERS
- TILT-STEERING WHEEL
- HIGH WATER ALARM
- AUTOMATIC FIRE EXTINGUISHER SYSTEM ALARM/RESET/GAUGE
- VOLVO REMOTE CONTROL
- USB PORT
- TRIM TABS
- HELM SEAT CONTROL
- VOLVO JOYSTICK
- PHONE CHARGER
(passenger & helm side)

Note select items above may be optional & not installed on your vessel. Locations/Displays may vary.

Volvo EVC Remote Control- Typical



TYPICAL STERN DRIVE REMOTE CONTROL

The following zones display control functions:

At Zone **A** the following functions are indicated:

Trim Assist- This button adjusts the trim angle automatically according to engine speed (rpm).

Station- This button is lighted when the helm station is activated.

Cruise Control- when this button is pressed it permits the operator to fine tune engine speed by increasing or decreasing engine rpm with the button on the forward side of the control.

Low Speed- This function reduces the low speed engine capability. Refer to Volvo owner's manual.

Throttle Only button- when pressed it disconnects the shift function. At this point the control lever only effects the engine speed.

Single Engine- Pressing this button permits the operator to control both engines with one lever.

At Zone **B** the following function is indicated:

Trim- Pressing this button with twin engines permits the drives to be trimmed in or out as a synchronized unit.

Neutral position- This symbol shows that the engine and drive are not in gear. Note that a safety device keeps the control from starting in gear.

At Zone **C** the following function is indicated:

Warning triangle- This triangle lights up when a system fault is recognized. It will project on the side where the driveline with the problem exists. If an emissions (MIL) light fault appears contact an authorized dealer.

At Zone **D** the following functions are indicated:

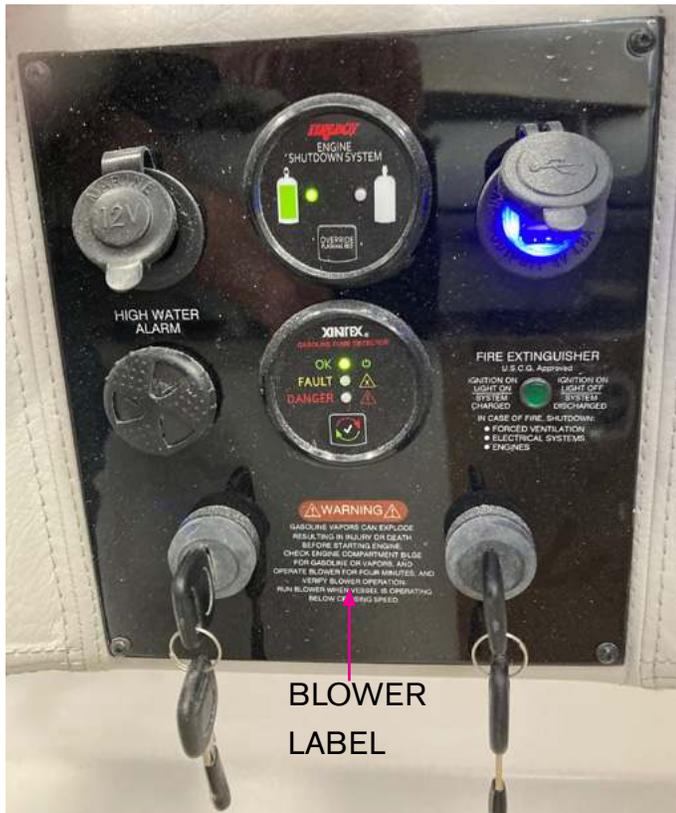
Trim PT- Pressing this button will trim only the port drive unit.

Trim SB- Pressing this button will trim only the starboard drive unit.

Cruise + or - Pressing this button will increase or decrease your cruising rpm's (revolutions per minute) by increments each time the upper or lower portion of the button is depressed in quick bursts.

Stern Drive Engine Starting Information

Typical Volvo Helm Starting Panel



KEYS IN STRAIGHT UP "OFF" POSITION

Blower System- Before Starting Engines

 **WARNING**

AVOID BODILY INJURY OR DEATH!
GASOLINE VAPORS CAN EXPLODE!
BEFORE STARTING ENGINES:
CHECK ENGINE COMPARTMENT BILGE
FOR GASOLINE OR VAPORS, AND
OPERATE BLOWER FOR FOUR MINUTES,
AND VERIFY BLOWER OPERATION.
RUN BLOWER WHEN VESSEL IS
OPERATING BELOW CRUISING SPEED.

Read and understand the blower information before attempting to start the engines. The blower switch is located on the helm switch panel. Before turning on the blower switch do a sniff test by opening the engine hatch. At the same time check fuel tank components.

When assured the bilge is clear of any fumes turn on the blower switch for at least 4 minutes before attempting to start the engines. This will vacate any gasoline fumes that are in the engine room (bilge or sump). Continue to run powered blower system below cruising speeds after starting the engines.

The key switches shown photo typically display three positions.

1. The straight up position is the "OFF" or "stop" position.
2. Turning the key 45 degrees to the right is the "ON" position otherwise known as "ignition" position.
3. Turning the key to the farthest right and holding the key there until the engine cranks and starts assumes a "START" or "spring loaded" position.

 **WARNING**

AVOID POSSIBLE BODILY INJURY, DEATH
AND OR PROPERTY DAMAGE!
ALWAYS REMOVE KEYS
FROM THE IGNITION PANEL
WHEN THE ENGINES
ARE NOT RUNNING.

Stern Drive Engine Starting Information- Continued

To start engines;

1. Turn the ignition key to the right “ON” position and keep turning the key to the spring loaded “START” position. At this point the key position will crank the engine until it starts.

2. To stop the engine make sure the remote control handle is in neutral and return the key to “OFF ” position.

3. Once the engines start use the “glass cockpit” engine data screen to verify engine functions. Allow sufficient warm-up time for engines to reach normal engine temperature before disembarking on a cruise.

Note that since a neutral safety switch is integrated into the remote control it must be in the neutral position for each engine to crank and start.

Note that if an engine continues to crank over but does not start let the starting system cool down to prevent system damage. Find the cause of the malfunction before attempting to restart the engine.

Stern Drive (Volvo) Joystick



TYPICAL STERN DRIVE JOYSTICK

The joystick is used to maneuver/dock the vessel. See the basic device information below:

DPS (dynamic positioning system) A button when pressed assists in maintaining a selected position and compass heading.

Note that your vessel may not have this feature installed.

Joystick Steering- B button is used to steer the vessel at any speed.

Docking Mode- C button used to dock the vessel.

Note when the docking mode is activated, engine speed (rpm) is limited and vessel steering can only be accomplished through the joystick.

To activate the docking mode the following pre-conditions must be met:

1. Both engines must be running.
2. Both remote control levers in neutral.
3. Helm station must be activated.
4. Joystick must be in center position.

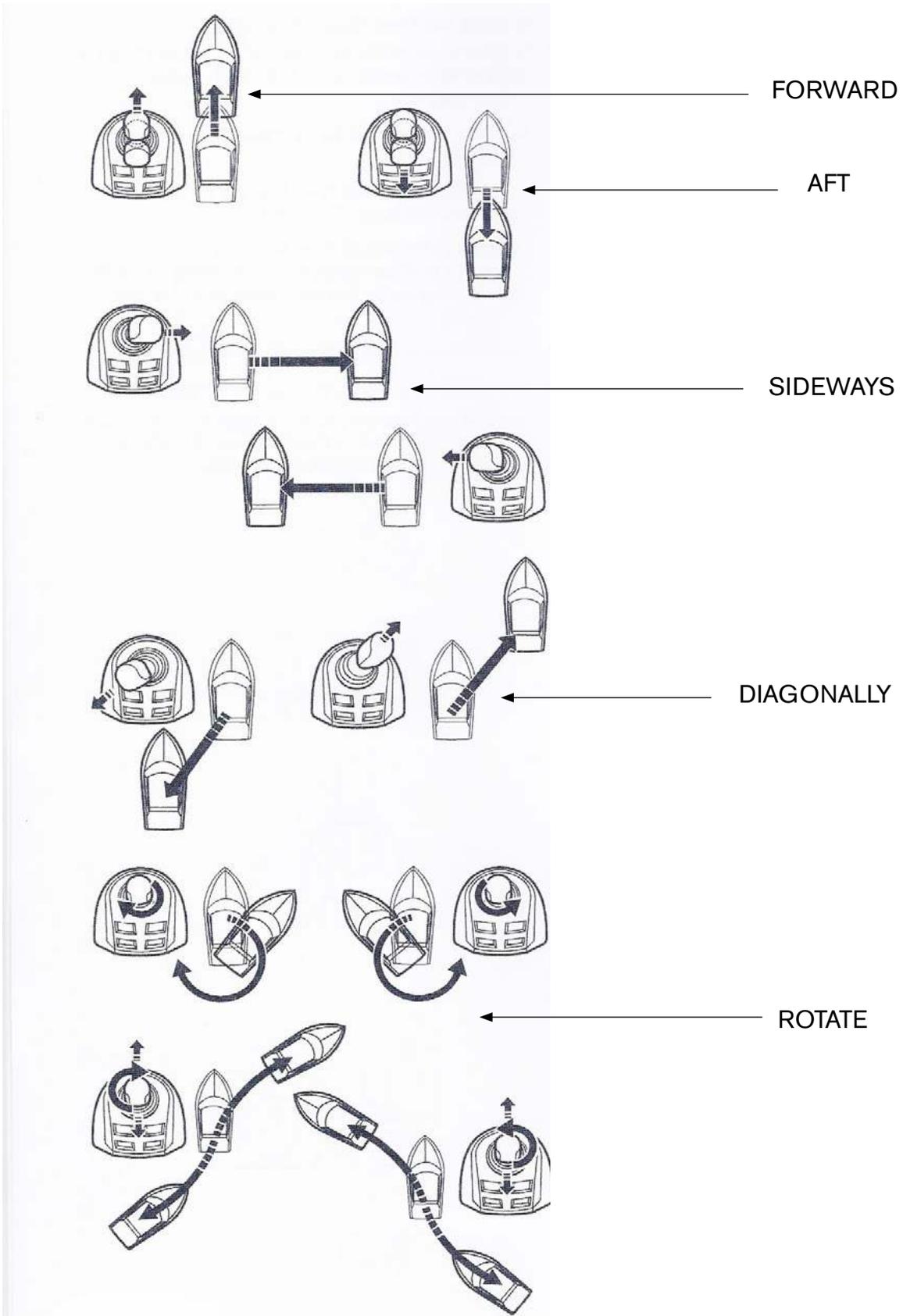
Press the docking button to activate the docking mode. An audible signal will emit and indicate the docking mode is activated. The docking button light will be visible.

To deactivate the docking mode press the docking mode button. An audible signal will be emitted twice to indicate the docking mode is deactivated. The docking light will go out.

Note the docking mode will be activated if the remote controls are moved from the neutral position.

High Mode- D button is used to offset sea conditions such as a strong current or high wind. To use make sure the docking button is lighted. Activate high mode by pressing the high mode button on the lower right side of joystick. An audible signal indicates that high mode is activated and the button perimeter lights up. The high mode function can be deactivated by pressing the button again. An audible signal will sound twice to indicate the high mode is deactivated and the light will go out. At this point the joystick is in the docking mode.

Stern Drive Joystick Functions



 WARNING
PREVENT INJURY OR DEATH! READ AND UNDERSTAND MANUFACTURER'S HELM CONTROL SYSTEM OWNER'S MANUALS BEFORE OPERATING THE VESSEL!

 CAUTION
PRACTICE REMOTE CONTROL SHIFTING IN A WATER ENVIRONMENT WITHOUT HEAVY BOAT TRAFFIC.

This section of the Regal LX36 owner's manual introduces helm controls for Yamaha outboard propelled vessels.

Typical helm controls are described along with their helm (dash) locations.

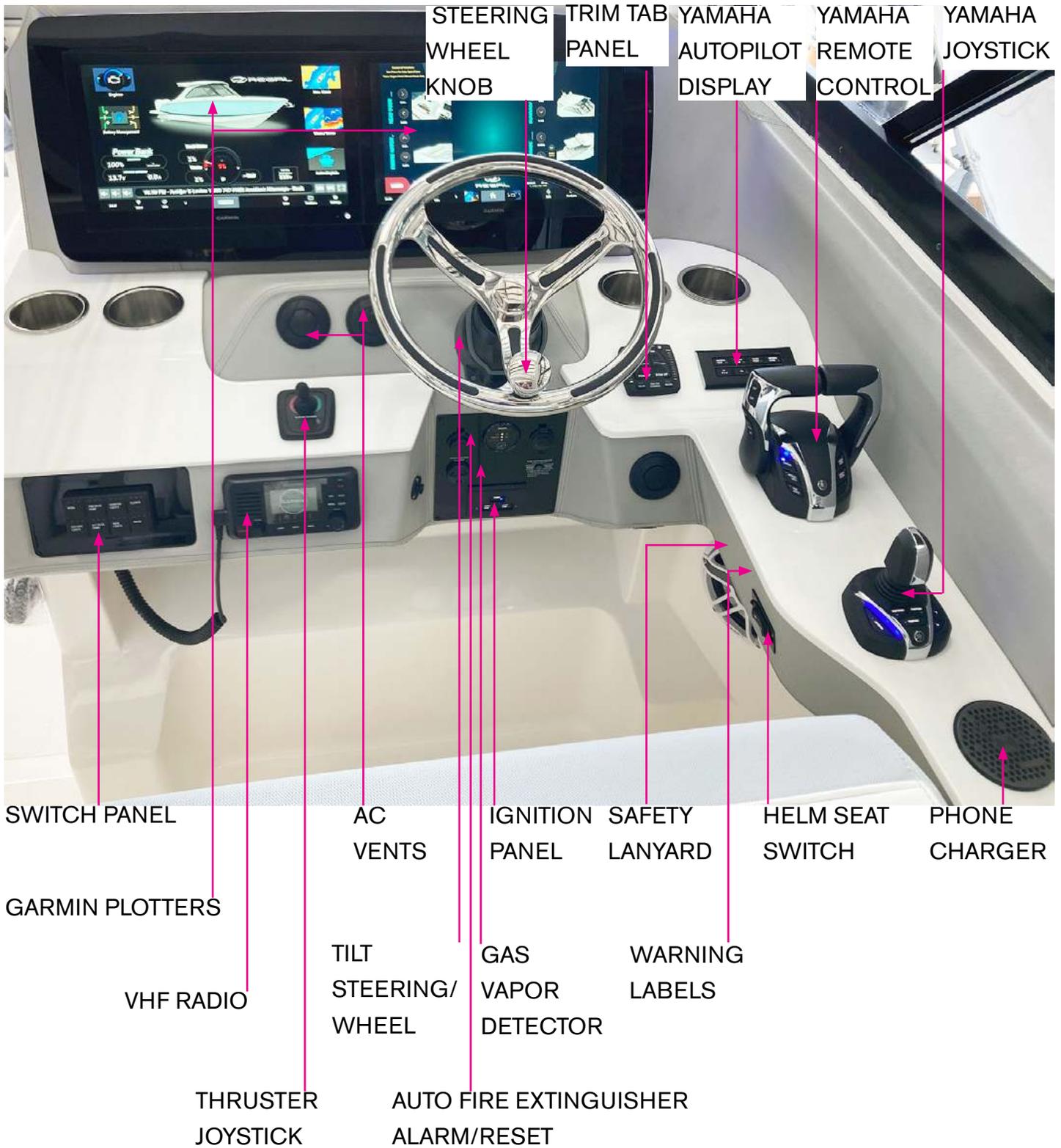
In addition, there is a brief section of helm engine starting systems along with remote control and joystick systems. All Yamaha helm controls are integrated into the Garmin plotter system.

Note that your vessel may not display every helm control device as select equipment is optional.

Note that Regal reserves the right to change components, systems, locations, and specifications at any time during a products production life cycle. No liability is accepted for information correctness and is given to the best of our knowledge.

 CAUTION
PRACTICE JOYSTICK DOCKING AND MANEUVERING IN A WATER ENVIRONMENT WITHOUT HEAVY BOAT TRAFFIC.

Yamaha Outboard Propulsion System- Typical Helm Control Display



Note that select items shown above may not be installed on your vessel. Locations of equipment and displays may vary. Select items shown above may be optional or may have been deleted.

Yamaha Key Fob Overview/Operation Information



1- KEY FOB

2- LOCK BUTTON

3- UNLOCK BUTTON

4- BATTERY (CR2025)

5- KEY CHAIN RECEPTACLE

Note that if the Y-COP system is not unlocked the Yamaha starting panel will not be able to be energized to start the outboard engines.

Note it is recommended to carry extra batteries on board for the key fob. Most retailers carry this type of battery. Store spare batteries in a cool and dry location.

Key Fob Overview- This device is used to unlock the Y-COP theft deterrent system and the ignition panel. There are 2 key fobs programmed on your vessel. Up to 6 can be integrated into the Yamaha system. See your closest Regal yacht or Yamaha dealer for further details.

Key Fob Operation-

1. When the lock button is depressed one beep indicates the system is locked. Ignition panel is not energized.

2. When the unlock button is depressed two beeps indicate the system is unlocked. Ignition panel is energized.

The key fob integrates a proximity sensor which will automatically unlock the Y-COP system at a programmed distance from the helm.

It is recommended that the key fob be removed from vessel for extended periods of non-use. It would be the same as removing keys from the boat.

Read and understand the following safety labels before attempting to start the outboard engines!



WARNING

AVOID A POSSIBLE ACCIDENT CAUSING INJURY, DEATH OR PROPERTY DAMAGE DUE TO A RUNAWAY VESSEL!
BEFORE STARTING ENGINE ENSURE THE SAFETY LANYARD IS ATTACHED TO AN ARM OR LEG AND/OR A SECURE PLACE ON YOUR CLOTHING.



WARNING

AVOID A POSSIBLE ACCIDENT CAUSING INJURY, DEATH OR PROPERTY DAMAGE!
AVOID ACCIDENTALLY DISENGAGING THE SAFETY LANYARD WHILE UNDERWAY AS IT CAUSES LOSS OF STEERING CONTROL.
ALSO, THE BOAT COULD SLOW QUICKLY CAUSING EQUIPMENT AND PASSENGERS TO BE THROWN FORWARD.



WARNING

AVOID A POSSIBLE ACCIDENT CAUSING INJURY, DEATH OR PROPERTY DAMAGE!
BEFORE STARTING ENGINE ENSURE THE BOAT IS SECURE TIGHTLY AT THE MOORING AND THERE ARE NO SWIMMERS IN THE AREA.



WARNING

AVOID POSSIBLE INJURY OR DEATH!
OUTBOARDS EMIT EXHAUST GASES WHICH CONTAIN CARBON MONOXIDE, A COLORLESS, ODORLESS GAS WHICH COULD CAUSE BRAIN DAMAGE OR DEATH WHEN INHALED.
KEEP ALL AREAS OF VESSEL WELL VENTILATED. KEEP PEOPLE OUT OF WATER WITH THE ENGINES RUNNING.
DO NOT IDLE ENGINES FOR EXTENDED PERIODS WHILE IN MOORING.



WARNING

AVOID BODILY INJURY OR DEATH!
GASOLINE VAPORS CAN EXPLODE!
BEFORE STARTING ENGINES:
CHECK ENGINE COMPARTMENT BILGE FOR GASOLINE OR VAPORS, AND OPERATE BLOWER FOR FOUR MINUTES, AND VERIFY BLOWER OPERATION.
RUN BLOWER WHEN VESSEL IS OPERATING BELOW CRUISING SPEED.



WARNING

AVOID POSSIBLE BODILY INJURY, DEATH AND OR PROPERTY DAMAGE!
ALWAYS REMOVE KEYS FROM THE IGNITION PANEL WHEN THE ENGINES ARE NOT RUNNING.

Yamaha Outboard Engine Starting Information

Yamaha Helm Starting Panel- Typical



PORT ENGINE
BUTTON

STARBOARD ENGINE
BUTTON

POWER BUTTON

The natural ventilation system is integrated into the aft deck vents and supplies engine and/or bilge air requirements.

The powered ventilation system features a set of electric motors that are used to supplement the fire extinguisher suppression system should it evacuate.

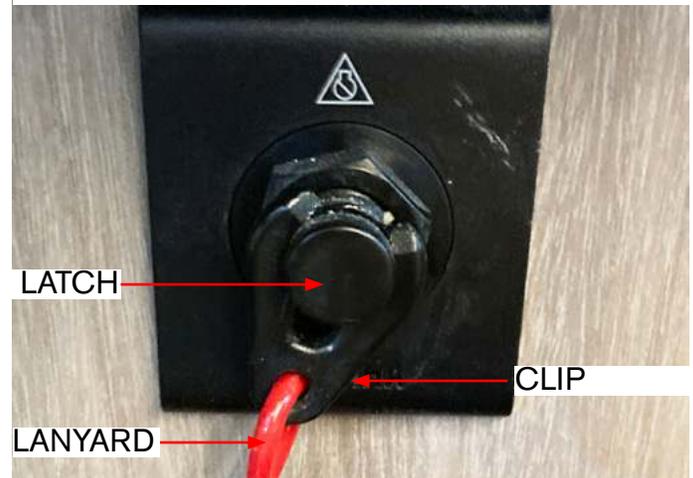
Read and understand the blower information before attempting to start the engines. The blower switch is located on the helm switch panel. Before turning on the blower switch do a sniff test by opening the engine hatch. At the same time check fuel tank components.

When assured the bilge is clear of any fumes turn on the blower switch for at least 4 minutes before attempting to start the engines. This will vacate any gasoline fumes that are located in the bilge or sump. Continue to run powered blower system below cruising speeds after starting the engines.

O/B Safety Lanyard (Interrupter Switch)

Read and understand the safety labels on the previous page regarding lanyards. The switch is attached to the operator thru a lanyard panel. Should the operator lose control of the vessel and become dislodged from his/her seat or fall overboard, the lanyard will shut the engines off. Attach the lanyard to a secured part of clothing that will not tear loose or attach to a body limb. Securely latch into the panel **before** attempting to start the engines.

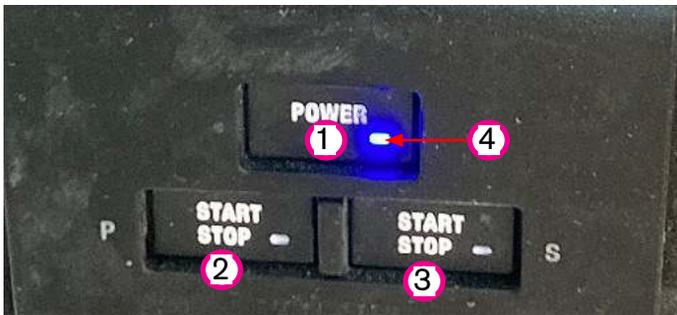
TYPICAL SAFETY LANYARD PANEL



WARNING

PREVENT INJURY OR DEATH!
READ AND UNDERSTAND
MANUFACTURER'S ENGINE
PROPULSION OWNER'S
MANUALS BEFORE OPERATING
THE VESSEL.

Yamaha Starting Panel Overview/Operation



YAMAHA IGNITION/START PANEL

1-POWER BUTTON

2-START/STOP PANEL- PORT ENGINE

3-START/STOP PANEL- STARBOARD ENGINE

4-LED INDICATOR

The panel letter designators are:

P=port engine

S=starboard engine

Yamaha Outboards- Starting Procedure

Once the Y-COP system is unarmed the outboard engines can be started at the ignition/start panel.

Note that since a neutral safety switch is integrated into the remote control it must be in the neutral position for each engine to crank and start.

1. Ensure the safety lanyard is securely latched at the panel and the clip is latched on a secure piece of clothing or body limb. The lanyard panel is located at the starboard helm. See earlier information.

2. Press the #1 POWER button to activate the ignition/start panel. The LED icons will display.

3. Press the #2 START button to crank/start the port outboard engine.

4. Press the #3 START button to crank/start the starboard outboard engine. 5. Press both #2 & #3 buttons simultaneously to start both engines.

6. Once engines are started, press the STATION remote control button to energize the remote control for cruising operations.

7. It is recommended that the plotter be energized and the engine tab be displayed while the engines are warming up to monitor engine systems.

Stopping Engines-

1. To stop engines at the lower station make sure the control is in the neutral idle position before attempting to shut down the engine(s).

2. Press and hold the START/STOP button for each engine or press both START/STOP buttons simultaneously to stop both engines.

For detailed information refer to the Yamaha owner's manual and/or contact your closest Regal yacht dealer.

Yamaha Remote Control- Features/Description

Read the following basic information covering shift/throttle controls. Read and understand all detailed operation and safety information found in the outboard owner's manual before using the (DEC) digital electronic control.

Overview

Twin outboard vessels feature a drive-by-wire twin binnacle digital electronic control (DEC) system for basic shifting and throttle operations. The remote control handles control forward, neutral, and reverse outboard shifting functions at the helm.

The control handles can be used independently for maneuvering in tight quarters. The control features power trim up and down functions for each outboard. and an additional button set that controls all trim functions together.

Integrated into the remote control footprint is an RPM synchronizer similar to an automobile cruise control system.

The DEC features an integrated redundancy system and a separate Electronic Control Unit (ECU) for each outboard.

Select autopilot functions such as course and heading hold along with navigation along way points may be available with the control.

In addition, the DEC control system provides full joystick maneuverability.



WARNING

PREVENT INJURY OR DEATH!
READ AND UNDERSTAND ENGINE
MANUFACTURER'S HELM CONTROL SYSTEM
OWNER'S MANUALS
BEFORE OPERATING THE VESSEL!



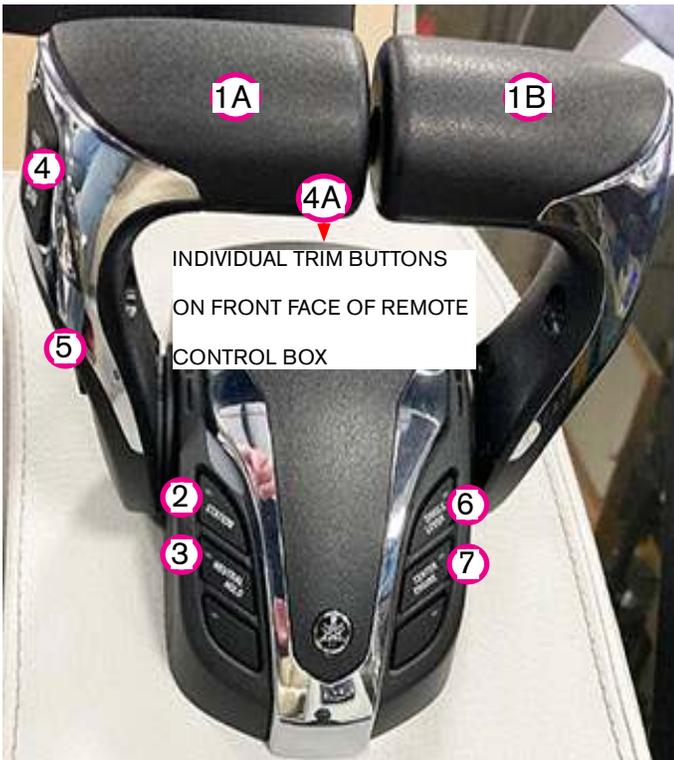
WARNING

AVOID A POSSIBLE ACCIDENT CAUSING
INJURY, DEATH OR PROPERTY DAMAGE
DUE TO EXCESSIVE TRIMMING UP OR DOWN!
STEERING THE VESSEL AND BOAT
INSTABILITY CAN INCREASE ACCIDENT
POTENTIAL. IF CRAFT IS DIFFICULT TO STEER
OR FEELS UNSTABLE SLOW DOWN AND
READJUST THE TRIM ANGLE.



WARNING

AVOID POSSIBLE INJURY, DEATH OR
PROPERTY DAMAGE!
BEFORE SHIFTING THE REMOTE CONTROL
ENSURE THERE ARE NO PEOPLE OR
OBSTACLES IN THE WATER
NEAR THE VESSEL!



YAMAHA DEC REMOTE CONTROL- TYPICAL

Yamaha DEC Remote Control Description

Once the power button is depressed on the ignition panel and the engines are started the STATION control button (2) will illuminate blue indicating the control is ready for shift and throttle operation.

Note at this point if a orange light there is a problem in the connection between the digital electronic control and the outboard unit. Contact your nearest Yamaha outboard dealer or your closest Regal dealer.

1A/1B Control Levers-

The port lever (1A) controls shifting and throttle operations for the port outboard. The corresponding starboard lever (1B) controls shifting and throttle operations for the starboard outboard.

3. Neutral Hold-

This function will prevent a running engine from shifting into gear when the throttle lever is moved. This feature is especially valuable by allowing the engine to rev for additional charging if the batteries are low. This function will stay active until the button is pressed a second time which will deactivate the function.

4. Power Trim-

This function controls all trim operations for 3 engines simultaneously in a corresponding direction with the use of the up or down button.



DRIVER VIEWING DOWN

At the front face of the remote control (4 A) box are 3 trim switches. When individual buttons are depressed that engine alone

responds to up/down trim functions. The individual trim switches can be used in conjunction with the plotter display to fine tune the vessel for the best ride in the conditions that currently exist on the water.

5. Speed Control-

This function permits fine speed changes at 50 rpm increments. If you press the DOWN speed button .You will hear a beep and the LED indicator will light up. Now you can adjust your speed a total of 10 increments up or down. Note that the joystick can be used to adjust speed by bumping the joystick forward or reverse. In addition a pattern shift function permits operating under normal remote control speeds. Basically, trolling functions are enhanced with pattern shift.

6. Single Lever-

This function permits the driver to operate all the outboard throttle and shift by using just the port remote control lever. When in neutral press the single lever button and a warning beep will sound and a blue LED will illuminate. Move the starboard control lever back out of the way and control all of the engines using the port remote control lever.

7. Center Engine-

This function is not used with dual outboard propulsion systems.

Alert Indicator- This LED indicator at the top left of the remote control changes from blue to orange should a problem occur with the engine or remote control system. A beep will sound on and off repeatedly to alert the operator. Should it remain orange return to port and investigate the problem.

Remote Control Levers- The lever friction can be adjusted on the remote control to personal needs. Contact your closest Yamaha or authorized Regal dealer for any remote control adjustments.

Remote Control Detent- The remote control lever movement and click that is felt when the remote control is shifted can be adjusted to fit individual needs .Contact your closest Yamaha or authorized Regal dealer for any remote control adjustments.



WARNING

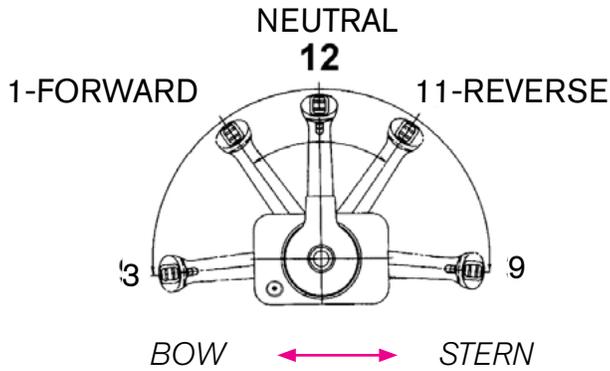
AVOID A POSSIBLE ACCIDENT CAUSING INJURY, DEATH OR PROPERTY DAMAGE DUE TO A TOO LOOSE DETENT SETTING!



WARNING

AVOID A POSSIBLE ACCIDENT CAUSING INJURY, DEATH OR PROPERTY DAMAGE DUE TO TOO TIGHT DETENT SETTING! THIS CONDITION COULD INTERFERE WITH STEERING THE VESSEL.

Remote Control Shift/Throttle Functions- Typical



Profile Of Typical Dual Engine Control Lever Showing Five Positions

The port lever controls all shifting and throttle operations for the port outboard. The starboard lever controls all shifting and throttle operations for the starboard outboard.

The neutral only switch can be used only when the control lever is in neutral. To use in neutral press and hold the switch while moving the throttle control forward. Release the switch when the control active indicator LED blinks blue. During this blinking time you can increase the engine idle either for faster or slower rpm. You can duplicate throttle only positions also in reverse.

When the above actions are completed and the control handle resumes the neutral position the active LED indicator light will remain blue. The control at this point is ready for shifting to forward or reverse gear positions.

Pushing the throttle control lever forward from the neutral 12 o'clock position to the 1 o'clock position will engage a forward gear detent with minimal throttle. From the 1 o'clock position to the 3 o'clock position, the vessel is in forward gear with differing levels of throttle selections.

Pulling the throttle control lever back from the neutral 12 o'clock position to the 11 o'clock position will engage a reverse gear detent with minimal throttle. From the 11 o'clock position to the 9 o'clock position, the vessel is in reverse gear with differing levels of throttle selections.

Number 3 is a forward full throttle position. and the number 9 is a reverse full throttle position.

Refer to the Yamaha owner's manual or contact your closest Regal dealer for further remote control information.

Remote Control Shift/Throttle Functions Continued

Follow these points when shifting:

- DO NOT shift quickly from forward to reverse gear positions. Drive system damage may occur.
- DO NOT “pump” the throttle in neutral as it is normally not needed since today’s engines use an enrichment valve system that requires very little starting throttle.
- DO NOT try to shift into forward or reverse gear at high rpm’s. Personal injury, drive system, or property damage may result.
- Only use idle throttle positions when docking or maneuvering in tight quarters.
- Wear your safety lanyard at all times.
- Never shift the controls with the engines not running. Control, linkage, and/or outboard drive gear damage may occur.
- For more information refer to your Yamaha outboard engine manual before operating the remote control.



WARNING

TO PREVENT BODILY INJURY OR DEATH!
MAKE SURE THE COAST IS CLEAR OF ALL SWIMMERS OR OBSTACLES IN THE WATER BEFORE USING THE REMOTE CONTROL SHIFT FUNCTION!



WARNING

LANYARD MUST BE ATTACHED TO THE OPERATOR WHILE THE ENGINE IS RUNNING. A QUALIFIED OPERATOR MUST BE IN CONTROL AT ALL TIMES. READ AND UNDERSTAND THE OWNER’S MANUAL BEFORE OPERATING VESSEL.



WARNING

IF THE LANYARD IS IN THE “OFF” POSITION, THE ENGINE WILL CRANK OVER BUT WILL NOT START. ENSURE SAFETY LANYARD IS LATCHED SECURELY AT THE PANEL AND ATTACHED TO A SECURE PLACE ON THE OPERATOR’S CLOTHING THAT WILL NOT TEAR LOOSE OR ATTACH TO BODY LIMB (ARM OR LEG)!

Joystick/Auto Pilot

Overview

The joystick permits full maneuverability of your vessel. The joystick handles shift, throttle and steering functions simultaneously.

The joystick is spring loaded so it always returns to its home (center) position. When the joystick is active and in the home position the throttles are at idle and all engines are in neutral.

Start practicing joystick maneuvering in an open water environment before embarking on a longer cruise.



YAMAHA JOYSTICK- TYPICAL

Joystick Description

Following is a basic description of joystick buttons. Refer to the joystick illustration on this page. See the following pages for operational tips and notes along with the Yamaha owner's manual.

1. Joystick Handle- When energized and moved toward the bow the vessel travels forward. When energized and moved toward the stern the vessel travels in reverse. The neutral center position is the home or start-up location.

When energized and twisted partially to starboard the vessel will travel in a starboard heading. When energized and twisted partially to port the vessel will travel in a port heading.

When energized and moved directly to the starboard or port direction the vessel will go sideways.

Note that the joystick is proportional and guided in each axis; the more joystick handle is moved the more throttle is applied.

2. Joystick Mode- This button when activated provides full maneuverability for the vessel for shift, throttle and steering operations. The engines must be started and the remote control in neutral to activate the joystick mode.

3. Driftpoint Mode- This button when activated automatically holds the heading of your vessel and allows it to drift naturally with the wind and current. Position your vessel where you want to start your drift and with your desired heading. With the engines in neutral press the Driftpoint button to start the drift process. If you twist the joystick handle you can change the vessel heading.

Joystick Description Continued

4. Staypoint- This button when activated will hold the position and heading of your vessel. Once the desired position is obtained shift the engines into neutral and press the staypoint button. The system will independently steer each engine and use various levels of throttle in both forward and reverse gears to keep the vessel position and heading. This function is extremely useful when waiting at a bridge or dock.

To exit from staypoint mode press the staypoint button or engage the throttles.

5. Fishpoint- This button when activated will automatically hold the position using minimal shift and throttle to reduce noise. The boat heading may change due to wind and current. Use the plotter to choose fishpoint bow or fishpoint stern. Once your vessel is over the desired spot shift the engines into neutral and press the fishpoint button. The fishpoint button LED will illuminate blue. The system will now steer and use the minimal throttle and shift to maintain the vessels bow or stern position while allowing the vessel heading to naturally change with position. Great for deep water fishing and in situations when you do not want to anchor the vessel.

6. Plus/Minus- This button is used in various modes to increase or decrease throttle and steering settings.

Joystick Operation Notes-

1. To use the joystick start the engines and leave the throttles in neutral.

2. To **enter** joystick mode press the joystick button. The function LED will illuminate blue when active.

3. Pressing the joystick slightly forward will engage forward gear on the engine. Pressing the joystick further forward will induce increased throttle positions. The same above procedure is also used for reverse positions.

4. Press the joystick in the direction you want the vessel to move for sideway movement.

5. If you **twist** the joystick while in the neutral position will cause the vessel to pivot around its center axis. Note that small joystick movements effect thrust and can produce very positive results.

6. Use the joystick for steering operations at slow speeds. While pressing the joystick forward twist the joystick to steer the vessel. Twisting a small amount will produce a small steering angle change. Twisting a large amount will produce a larger steering angle. If you hold the twist the engine will remain in that steering angle until the joystick is released. Releasing the joystick back to neutral position the engines will return to neutral with a straight ahead steering position.

7. While in joystick mode you have the choice of 5 choices in power levels. Level 1 is the least powerful and Level 5 is the most powerful. You can adjust power levels by pressing the + or - button.

signs on the right side of the joystick to increase or decrease the power as needed. A confirmation is displayed on the plotter. Default thrust levels can be set on your plotter.

8. To **exit** the joystick mode press the joystick button or operate the remote control throttle levers.

9. Setpoints can be activated by pressing the appropriate joystick button. Basic setpoints are covered in the following pages.

Refer to the Yamaha owner's manual or contact your closest authorized Regal dealer for further joystick information.

Joystick Usage Tips

1. Remember that the control head must be active at the helm with the joystick and the remote control handles must be in neutral and idle.
2. There is a short shift delay integrated into the system when returning from any gear to neutral. This permits bumping the handle to get a bit more motion in the same direction without causing excessive engine shifting. This delay is gone if the action passes the home area in the opposite direction so you can if desired stop the boat immediately.
3. Plan out your joystick maneuvers before approaching the target; keep it simple and know the boat's limitations.
4. Make it clear to the system what your intentions are to be. Do not make slight movements off of the neutral position. For example: If you desire the vessel to move to starboard, move the joystick well along the starboard axis.
5. Moving the joystick control handle port/starboard, but will not steer the vessel (change heading) Rotating the handle steers and rotates the vessel.
6. It is recommended to return to the center position when switching between primary operational modes.
7. Always practice maneuvers in open water before attempting close quarters docking. This will enhance your understanding of the primary operational modes while underway.



WARNING

TO PREVENT BODILY INJURY OR DEATH!
MAKE SURE THE COAST IS CLEAR OF ALL SWIMMERS OR OBSTACLES IN THE WATER BEFORE USING THE AUTO PILOT SYSTEM JOYSTICK OR CANTRAK DISPLAY.



WARNING

TO PREVENT BODILY INJURY OR DEATH!
NEVER LEAVE THE HELM STATION UNATTENDED.



WARNING

TO PREVENT BODILY INJURY OR DEATH!
MAKE SURE ALL STEERING COMPONENTS ARE IN PROPER WORKING CONDITION BEFORE ENTERING THE WATERWAYS.

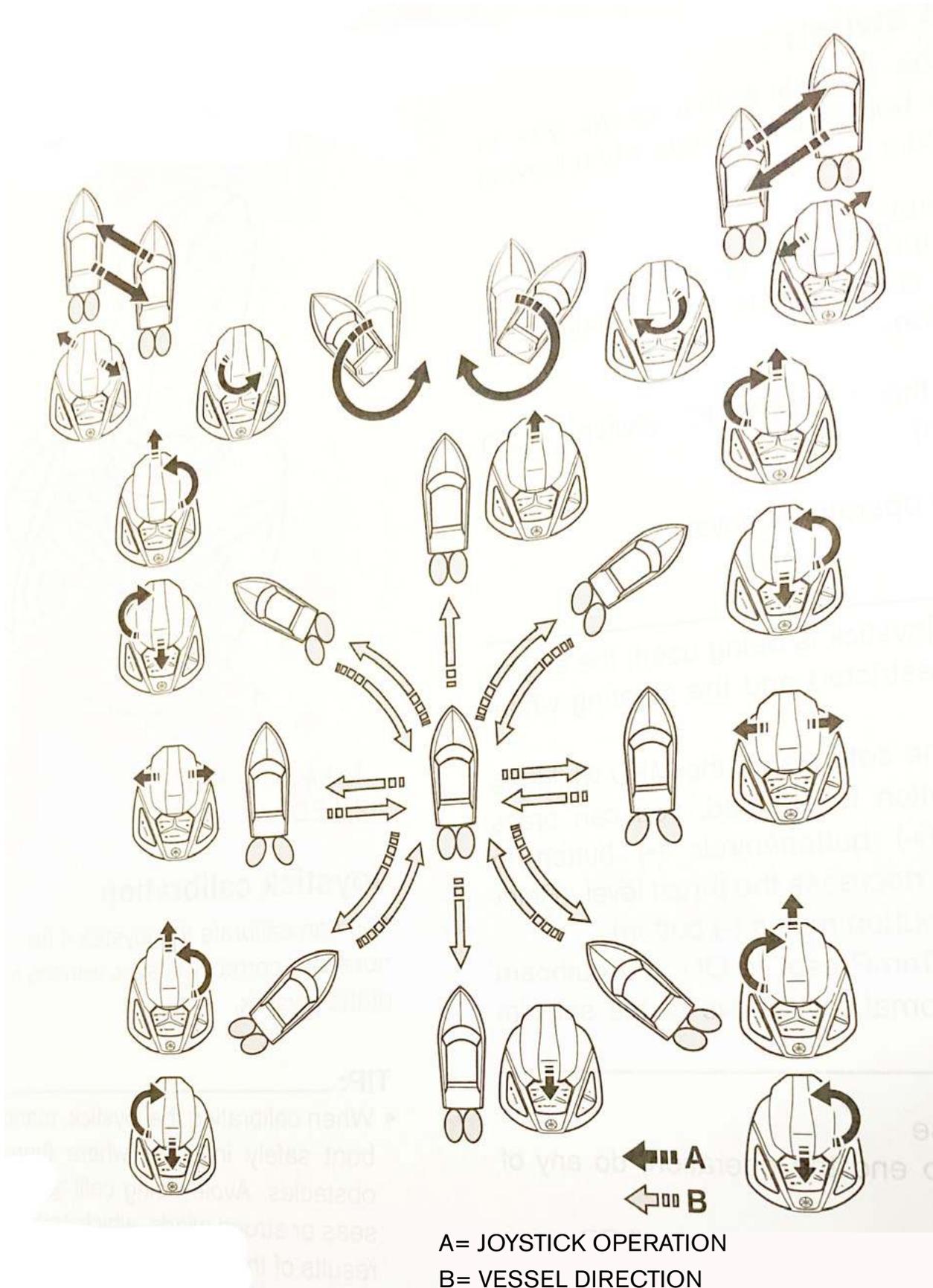


WARNING

TO PREVENT BODILY INJURY OR DEATH!
ALWAYS READ AND UNDERSTAND THE AUTO PILOT OPERATION INSTRUCTIONS COMPLETELY BEFORE ENGAGING THE AUTO PILOT MODE.

8. Read and understand the joystick control system before attempting to use the components. Also be aware of all safety precautions and system safety labels as seen above and in the product literature.

Yamaha Outboard Joystick Functions



Autopilot- Typical

Overview

The Yamaha Helm Master autopilot features 4 modes, and offers an automatic piloting system that assists with throttle and shifting operations for the vessel to obtain a desired heading or point.

The four autopilot modes are heading hold, course hold, track point, and pattern steer.

Note that the autopilot system assists with steering but the operator is responsible for the safe navigation of his vessel, and needs to constantly monitor his vessel while underway.

This manual covers panel descriptions and basic autopilot operations. The Garmin plotter menus and tabs are used to display the autopilot information.

Read and understand all autopilot information before attempting to operate the autopilot system.

Note to refer to your Yamaha owner's manual for more detailed information or contact your closest Regal dealer.

Note that the autopilot will not function if there is no signal from the GPS antenna.



WARNING

TO PREVENT BODILY INJURY OR DEATH!
ENSURE THE COAST IS CLEAR OF
OBSTACLES IN THE WATER
AND SHALLOW WATER
ALONG THE CHOSEN ROUTE.



WARNING

TO PREVENT BODILY INJURY OR DEATH!
MAKE SURE THE OPERATOR REMAINS
AT THE HELM AND MONITORS
SURROUNDING CONDITIONS AS THE
AUTOPILOT SYSTEM DOES NOT
AVOID OBSTACLES OR STEER
THROUGH ALL WAVE CONDITIONS.



#6-F1 SWITCH (Disabled)

#7-F2 SWITCH (Disabled)

Autopilot Panel Feature Description/Operation

The Yamaha autopilot display panel features various operation menus that can be displayed on the Garmin plotter for customer friendly navigation. Refer to the illustration above for button designation.

HEADING HOLD- This autopilot mode (1) keeps the vessel moving in the direction of the bow at the time the button is actuated. After it is set, you can adjust to a desired direction. Note that the vessel direction is followed even if wind or current cause the vessel bow to swing from side to side.

To Set Heading Hold Operation:

1. Keep the desired heading and speed.
2. Press the HEADING HOLD button.
3. The button LED indicator will illuminate and the mode is activated.

At this point the steering is locked and the vessel will move forward toward the bow. The speed and heading are maintained at the time the heading hold button is activated.

To Leave Heading Hold:

1. Press the HEADING HOLD button (1).
2. Use the steering wheel to maneuver the vessel.
3. Place the remote control levers in neutral.

To Adjust Heading:

1. With a short tap, press the arrow switch (5) to adjust your desired heading by 1 degree increments to port.
- Likewise with a short tap, press the arrow switch (8) to adjust your desired heading by 1 degree increments to starboard.

Note that the operator can use the joystick to adjust headings by a short burst twist of the joystick handle.

1. With a long press, depress the arrow switch (5) to adjust your desired heading by 5 degree increments to port.

Likewise with a long burst press the arrow switch (8) to adjust your desired heading by 5 degree increments to starboard.

Note that the operator can use the joystick to adjust headings by a long burst twist of the joystick handle.

COURSE HOLD- This autopilot mode (2) keeps the vessel moving on the vector (data describing where a vessel is located and how it is moving) at the time of setting. After setting, the desired direction can be adjusted. Basically once a hypothetical destination is set, and the course is maintained along a programmed direction compensators are inserted for the effects of wind and current conditions.

Note this function will not be active if the vessel is rotating, or strong wind and currents are causing sideways movement.

To Set Course Hold Operation:

1. Keep the desired speed and vector data.
2. Press the COURSE HOLD button.
3. The button LED indicator will illuminate and the mode is activated.

At this point the steering is locked and the vessel will move on the vector.

To Leave Course Hold:

1. Press the COURSE HOLD button (2) or use the steering wheel to maneuver the vessel or place the remote control levers in NEUTRAL

To Adjust Heading:

1. Press the arrow switch (5) to adjust your desired heading by 1 degree increments to port.
Likewise with a short burst press the arrow switch (8) to adjust your desired heading by 1 degree increments to starboard.

Note that the operator can use the joystick to adjust headings by a short burst twist of the joystick handle.

1. With a long burst, press the arrow switch (5) to adjust your desired heading by 5 degree increments to port.
Likewise with a long burst press the arrow switch (8) to adjust your desired heading by 5 degree increments to starboard.

Note that the operator can use the joystick to adjust headings by a long burst twist of the joystick handle.

TRACK POINT- This autopilot mode (3) keeps the vessel moving along transit (set) points displayed on the Garmin plotter. Depending on the settings, the vessel can slow down and stop when it reaches the final destination. You can change it to a preset mode after the vessel stops.

Note that if a destination route is not set, TRACK POINT can not be activated. In select cases this mode may not be able to follow routes due to their set parameters or the vessel's speed.

To Set Track Point Operation:

1. Set the route on the Garmin plotter.
2. Position the remote control levers for FORWARD.
3. Press the TRACK POINT button (3).
4. The button LED indicator will illuminate and the mode is activated.

To Leave Track Point:

1. Press the TRACK POINT button (3) or use the steering wheel to maneuver the vessel.

PATTERN STEER- This autopilot mode (4) permits steering the vessel along a pattern programmed by the Garmin plotter. Remember to use pattern steer the plotter must be set to the desired steering and directional pattern. See the Garmin plotter manual for setting these parameters.

To Set Pattern Steer:

1. Use the Garmin plotter to set the mode.
2. Position the remote control levers for FORWARD.
3. With a long burst of 3 seconds, press the PATTERN STEER button (4).
4. The button LED indicator will illuminate and the mode is activated.

To Leave Pattern Steer do one of the following:

1. Press the PATTERN STEER button (4).
2. Use the steering wheel to maneuver the vessel.
3. Position the remote control levers to NEUTRAL.

Trim Tabs



TYPICAL TRIM TAB W/ ANODE AT TRANSOM

Typically, Trim tabs are located on the lower outside hull section of the transom. Water is deflected and redirected as the trim tabs are raised and lowered from the starboard helm located trim tab switch. This change in water flow creates upper pressure under the tabs, and raises the stern. When the stern rises the bow is lowered. Lowering the port tab will cause the port stern to rise, making the starboard bow lower. Lowering the starboard tab will cause the starboard stern to rise, making the port bow lower. The pressure originates from a pump and valve system located in the bilge.

When used with the engine power trim a fine tuned ride can be achieved. The trim tabs will compensate for uneven weight distribution, listing, water conditions, and other factors that cause inefficient operation.

Remember, that trim tabs are trimming the hull while power trim is trimming the drive units.

Obtaining A Trimmed Position

Your vessel will reach a planing position at a specific speed. This speed is determined by bottom design, weight distribution, water conditions, and on board equipment. As the throttle is advanced the stern squats and the bow rises initially. The trim tabs allow your boat to plane at a slower speed than natural conditions allow. In short bursts both trim tab rocker switches are pushed simultaneously in the “bow down” position which causes the trim tabs to move down. As the boat breaks over the bow high attitude the boat speed accelerates and visibility increases.

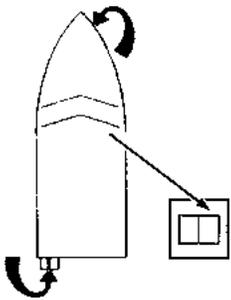
If the boat is over-trimmed, it will plow the bow and the boat will lose maneuverability. If this occurs, simply “short tap” to the “bow up” trim tab rocker switches simultaneously.

In the “learning curve” process, press the tab switches in half second bursts. You will notice a slight delay from the time the switches are pushed until the boat reacts depending on vessel speed. You will know after awhile the optimum planing angle and speed.

When running in heavy seas press the “bow down” position which will assist the vessel to cut through the waves. This will produce a drier and more comfortable ride. In a following sea run the tabs in a fully retracted angle for maximum drive response. Sometimes with outboard propulsion especially you can watch the bow spray or stern wake and the rooster tail (mound of water produced by propellers). In a bow up position the spray is far aft to the hull, the wake is high and the rooster tail is high.

When trimmed or in the bow down position, the bow spray is farther forward, the wake and rooster tail are smaller, and positioned further behind the vessel. Also, when trimmed you will notice that tachometers show an increase in rpm’s.

Rectifying A List



Your vessel can use the trim tabs to rectify a list. The trim tabs adjust the boat’s attitude in the direction the helm rocker switch is pushed.

If the port bow is high, push the left-hand “bow down” direction on the dash rocker and the port bow will lower. If the starboard bow is high, push the right-hand “bow down” direction and the starboard bow is lowered.

Using Power Trim With Trim Tabs

Adjust the trim tabs to achieve a planing attitude. Use the power trim to position the prop path parallel to the water flow. At this point the trim tabs may need a fine adjustment.

One advantage of the trim tab system is that they allow trimming of the hull while the power trim results in trimming the props.



TYPICAL TRIM TAB DISPLAY

The indicator lights display the relative position of both port and starboard tabs at all times. The system features NMEA 2000 compatibility.

FAV1/2- This feature let you store the running angles you prefer. Simply press the button and hold to set/save the desired angle. Then touch the button desired to activate. Note there are 2 angle favorites.

ALL UP/ALL DOWN- This feature automatically retracts the cylinders when ignition is turned off.

Waste- (Typical)

Overview

This section covers the main components of the waste system. Note that your vessel may have other components that are not covered in this section. Refer to the vendor owner's manual located in the owner's information package or your closest Regal dealer for details regarding optional equipment.

The main standard components of the waste system are the toilet, holding tank along with all hoses, fasteners and sea cocks. We will explore each in this section. The waste water system holding tank on your vessel is located in the sump.

The waste system features a pump-out fitting



mounted on the deck labeled waste.

Be sure to rotate the waste fitting to its locked position after the pump-out is completed. The waste tank can be

pumped out at select marinas featuring pump-out stations . Normally a hose is attached to the deck waste fitting and the tank waste is then pumped into a dock side facility storage container.

After the pump out procedure it is always a great idea to use a garden hose to rinse the pump out hose before recapping the waste fitting.

This will help keep residue from building up in the inside of the waste hose.

Note with the overboard discharge option and depending on dumping laws waste can be pumped through the hull bottom via an overboard discharge (macerator) type pump.

Waste Tank Description-Typical



NOTE THAT COMPONENTS & LOCATIONS MAY APPEAR DIFFERENT ON YOUR HOLDING TANK

HOSE FROM TOILET

SENDER- INFO TO PLOTTER

HOSE TO VENT

HOSE TO PUMP OUT FITTING OPT. MACERATOR PUMP AND OVER-BOARD DISCHARGE SYSTEM

LABEL

Checking Waste Tank Levels At Plotter



STERN DRIVE "GLASS COCKPIT" GARMIN DISPLAY-WASTE LEVEL

Note to use the plotter or "glass cockpit" displays to check the waste tank black water level.

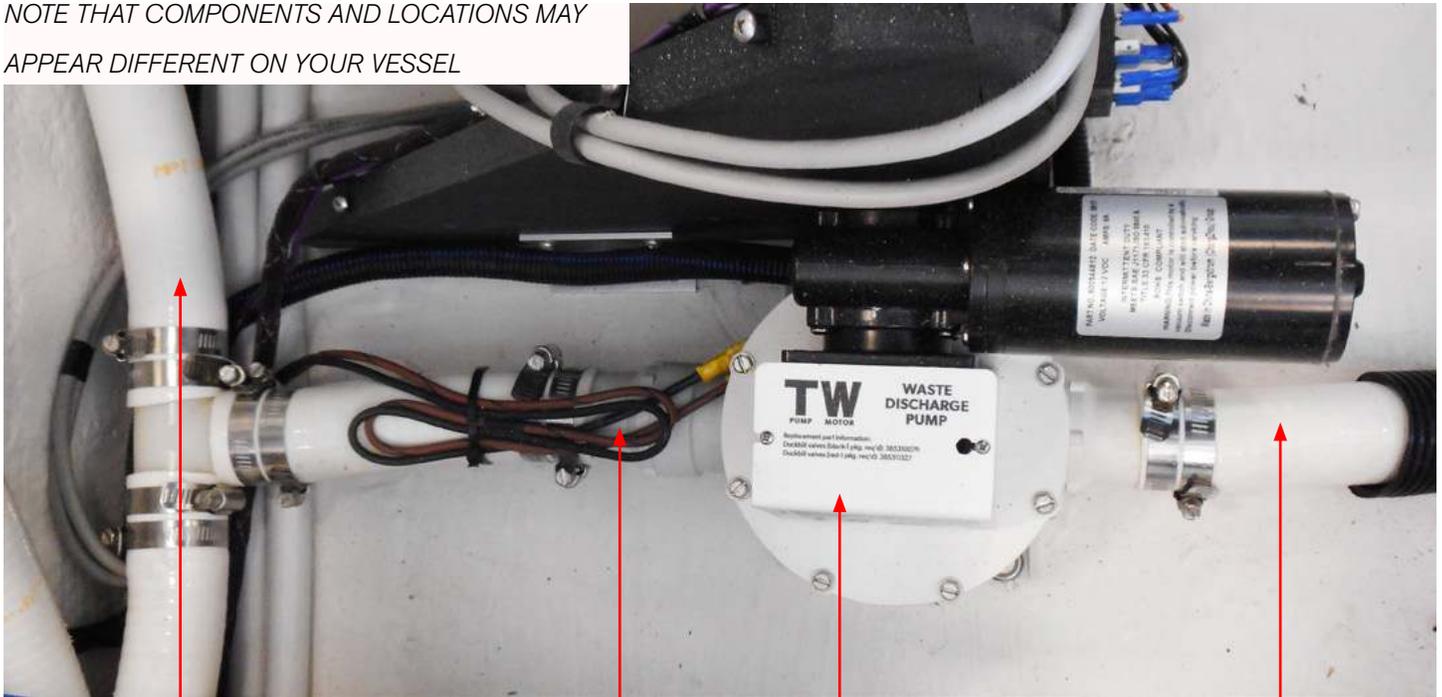


OUTBOARD GARMIN DISPLAY-WASTE LEVEL

It will help you determine when to pump out the waste holding tank. It is recommended to check levels before each cruise.

Overboard Discharge System- Typical

NOTE THAT COMPONENTS AND LOCATIONS MAY APPEAR DIFFERENT ON YOUR VESSEL



HOSE-TANK TO PUMP OUT HOSE TO OVERBOARD DISCHARGE PUMP MACERATOR DISCHARGE PUMP HOSE TO SEA COCK DISCHARGE PUMP OPTION

Overboard Discharge Operation Preface

As an **option** the vessel may be outfitted with an overboard discharge system with macerator. This system will discharge waste through a seacock located in the sump at the hull bottom.

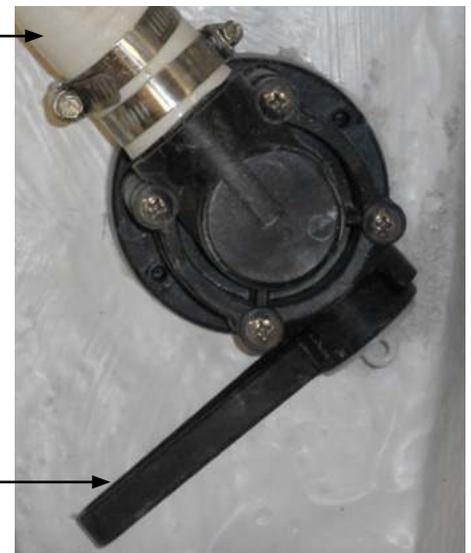
Before attempting to activate the overboard discharge process **always determine you can legally pump overboard. Investigate all applicable national, state, county, and local laws.**

Note that pumping vessel waste overboard is permitted outside the United States territorial 3 mile limit.

After pumping check the plotter to verify the waste (holding) tank is empty.

HOSE FROM MACERATOR

SEA COCK HANDLE IN CLOSED POSITION



MACERATOR SEACOCK THROUGH HULL BOTTOM

Overboard Discharge Operation

Follow the procedure outlined below to use the optional overboard discharge (Macerator) system:

1. Rotate the waste seacock handle to the open position after removing the tie wrap. At this point the handle should be lined up (parallel) with the hose.

2. At the “FLUIDS”plotter display tab locate the “touch” macerator button. The macerator function contains an operation tag as a segment of a two step process that includes a “lock out” mode to evacuate waste water.

3. Next, press and hold the macerator button for 2 seconds to override the “lock out” system.

4. Finally, press the macerator touch button again to engage the macerator overboard pump. The macerator (overboard discharge pump) grinds up the waste and sends it through the hull bottom via the *open* macerator sea cock.

It is recommended to monitor the waste tank level during the pump out process to verify the waste (holding) tank is empty (displays 0%).

5. After verifying the waste tank is empty press the macerator touch button to stop the pump.

6. After pumping out, the sea cock handle must be positioned to the closed or “off” position (90 degrees to the hose) and tie wrapped.

Remember to always check for all local and state laws regarding pumping overboard domestically before attempting to open the sea cock as there may be stiff fines for pumping illegally. It is legal to pump overboard outside the United States 3 mile limit.

Periodically check all system hose clamps for tightness, hoses for cuts/abrasion, and that all components are fastened securely.

Waste Vent Filter-Typical



The waste (holding) tank filter is in-line between the holding tank vent and an overboard fitting and located in the bilge (sump). As the holding tank fills up with waste it gives off odors. The vent filter breaks down the odors as they exit via the overboard vent system.

The waste filter is “customer friendly” as it is designed with a union at each end for changing out the cartridge filter. The unions unscrew counter clockwise for serviceability. It is recommended to change the filter yearly normally at the end of your boating season. Mark the change date on the filter or on your vessel maintenance calendar.

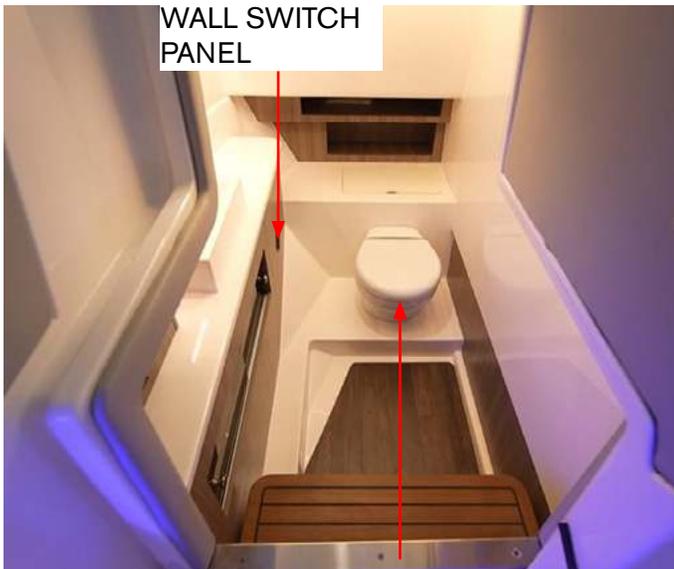
It is recommended to carry an extra filter on board. For further information on availability contact your closest Regal dealer or maine retail outlet.

Head (Toilet) System- Typical Overview

The onboard style head system features a vacuum type toilet. The system features minimal water requirements, easy maintenance, quick cleaning and a user friendly wall switch.

The toilet is powered by 12 volt DC current and is controlled by a breaker located in the digital switching control module system.

Under normal conditions, the head system operates from the onboard freshwater tank. If dock side water is being used the toilet still draws water from the freshwater tank.



TYPICAL HEAD VACUUM TYPE TOILET

A Few Notations Regarding Marine Type Toilets

Only human waste and toilet paper should be put in the toilet. Refer to the toilet owner's manual regarding approved toilet tissue types and where to locate products.

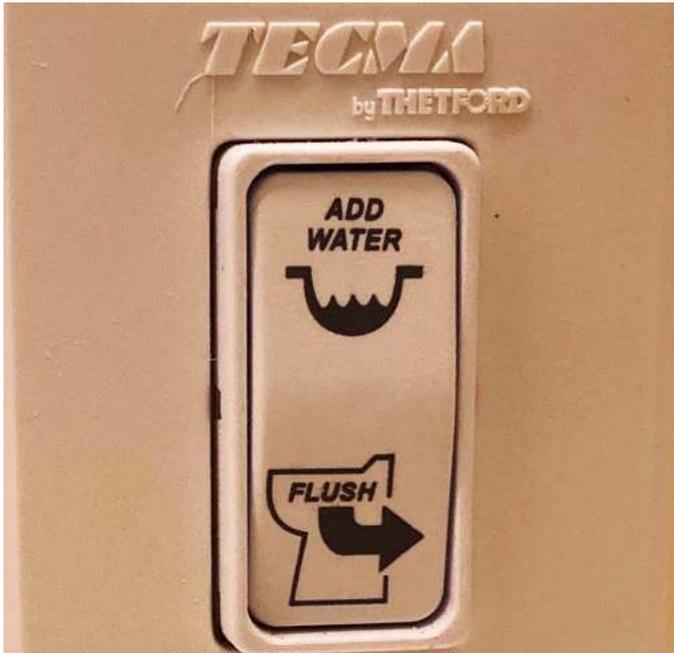
Never flush foreign materials such as paper towels, pre-moistened wipes, condoms, feminine hygiene products, dental floss or household garbage down the toilet.

- Always disconnect the dock side water system if boat is left unattended to avoid property damage due to leakage.
- Refill the toilet as soon as possible after emptying the bowl to prevent objectionable odors.
- Use only RV-Marine toilet tissues that disintegrate rapidly. Do not use household type tissues.
- If repairs are needed, use only a trained and qualified marine technician or electrician.

Operating Vacuum Style Toilet

Follow the information below to use the toilet:

Remember even though you are using dock side water the heads draw water via the fresh water system through the potable water tank.



The wall control switch is used to add water to the bowl and to flush the toilet. Select cycle information is noted here. For more complete information, refer to the toilet vendor information located in the information packet.

1. To add water (est. 17 ounces each cycle) to the bowl press the add water button momentarily and release. The system prevents overfilling the bowl.

2. To flush the bowl press the flush button momentarily and release. The attached bowl motor will macerate the waste and flush it. The cycle ends with a small amount of water being added to the bowl to help prevent odors. This completes the minimal water usage flush cycle.

Wall Control Panel Blue Backlighting Description:

- The holding tank icon in the lower right hand corner of the control panel is not lighted. Toilet system is off or not receiving power.
- The holding tank icon is normally green. This means the holding tank is less than full.
- The holding tank icon is red. The holding tank is full or near full with the flush lockout (prevents Flush operation when holding tank is full) activated.
- Tank icon flashes.
- Sleep mode (non-use for 8 hours) causes the lights to go out. Pushing the fill or flush button momentarily will return lighting cycle.

Single Flush Override of Flush Lockout

1. If the holding tank is full the flush lockout cycle will not allow the bowl to be flushed and the flush button will be lighted red.
2. For emergency use only the flush button can be held for 8 seconds and a flush will occur. This can be accomplished because the full sensor connected to the holding tank is usually placed a bit below the actual full capacity of the tank. Flushing more than 5 times using the override feature may force waste into plumbing system. Regal is not responsible for damage to equipment, injury or death due to overflow of waste when flush lockout is overridden.



CAUTION

POSSIBLE OVERFLOWING OF THE WASTE HOLDING TANK CAN OCCUR DUE TO USING THE SINGLE FLUSH OVER-RIDE FUNCTION. FOR EMERGENCY USE ONLY.

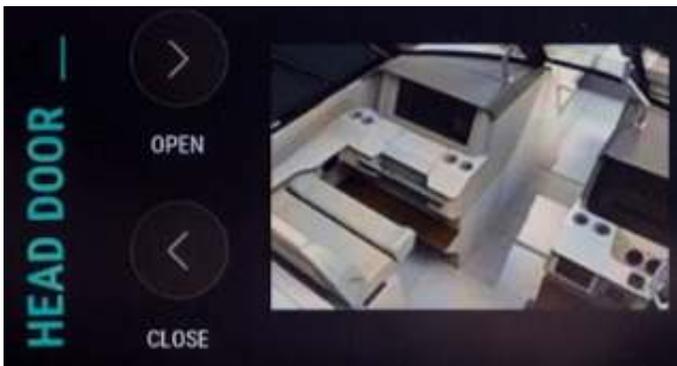
Head Door Operation



HEAD DOOR WITH SWITCH PANEL DISPLAY

Currently the head door features a powered system which can be opened with a switch panel located near the door or on the plotter screen. Press the panel arrow to open or close the head door.

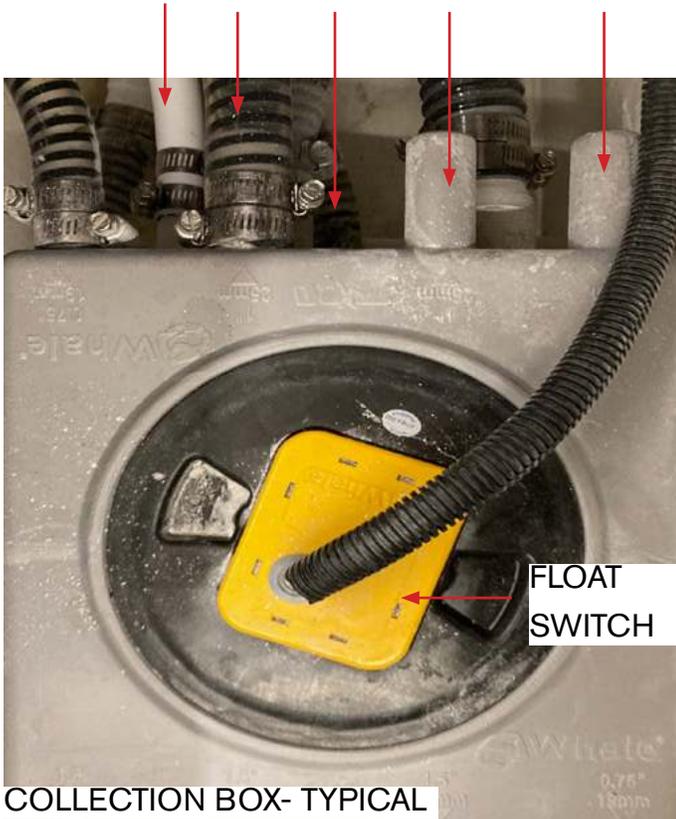
The head door circuit uses a preset amperage setting which adds a safety factor when opening or closing the head door. The door will stop when there is an obstacle on the track.



Also, on the Garmin display navigate from the "Home" screen to the actuator screen by pressing the "Digital switching" menu. Press the appropriate arrow button at the head door plotter display.

Collection Box- Typical

FROM A/C SINK GULPER LINER COCKPIT
 COND. DRAIN PUMP DRAIN DRAIN
 DRAIN HOSE HOSE HOSE HOSE



COLLECTION BOX- TYPICAL

Note that hose connections and locations at the collection may appear different on your vessel due to equipment on board and routing requirements.

The collection box is a receptacle and distribution point for the majority of the water used in the vessel's sinks, A/C system condensation, and cockpit scupper drains. The collection box is normally located under the quarter berth floor access. Accumulated water is pumped overboard traveling from the collection box to a hull side fitting.



As the collection box fills a float switch activates a pump which sends grey water to the holding tank (grey water option vessel only) or overboard on all other vessels.



COLLECTION BOX QUARTER BERTH ACCESS

The collection box access provides adequate space to service the collection box internal components along with the fresh water pump and filter located adjacent to the collection box.

Windlass- (Typical)

Overview- Anchor Windlass



The anchor windlass system features a stainless steel polished "claw" style anchor complete with swivel. This anchor has high holding power in most sea beds.

To lower and retrieve the anchor through the windlass the plotter display, optional remote, or the controls at the windlass anchor locker can be used. *We will review the plotter display windlass operation in this manual.*

A breaker for windlass over current protection is integrated into the digital switching module system. There is a lanyard with a snap hook to add holding power when the anchor is in the stored position.

On rope/chain combo units there is a cleat for tying off the anchor rode rather than maintaining constant pressure on the windlass itself.

Read and understand the following safety labels regarding the anchor windlass system:



WARNING

AVOID BODILY INJURY OR DEATH!
ENSURE THAT ALL BODY PARTS & CLOTHING
ARE KEPT CLEAR OF THE ANCHOR RODE
AND WINDLASS DURING OPERATION.



WARNING

AVOID BODILY INJURY OR DEATH!
DO NOT "PAY OUT" ANCHOR
UNTIL IT IS DETERMINED THAT THERE ARE
NO SWIMMERS OR DIVERS NEAR THE AREA.



CAUTION

AVOID POSSIBLE SERIOUS INJURY!
POWER SWITCH
AT BOW ANCHOR WINDLASS
MUST BE IN "OFF" POSITION
WHEN NOT IN USE.

NOTICE

WITH REGARDS TO RETRIEVAL OF
WINDLASS CHAIN THE OPERATOR
PERIODICALLY MAY BE REQUIRED TO
SPREAD CHAIN OUT IN ANCHOR LOCKER.

NOTICE

PERIODICALLY IT MAY BECOME NECESSARY
TO CLEAR THE PILE OF ROPE
UNDER THE HAWSE PIPE
TO MAKE ROOM FOR THE REMAINING RODE.

Windlass Component Description

The illustration below describes the basic windlass features and components. For additional information see the windlass manufacturer's owner's manual for safety labels and further operational details.

Regal is constantly improving its product line. Therefore, changes in components, specifications, and systems may occur at any time without notice.

TYPICAL WINDLASS



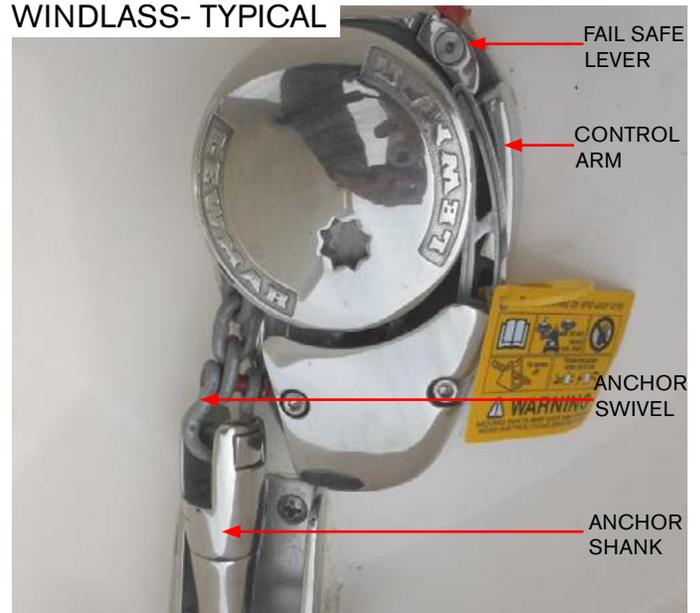
CLUTCH LEVER
HANDLE
STORAGE

CUTOFF SWITCH CLEAT SAFETY CLUTCH UP-DOWN SWITCH

WINDLASS GIPSY SNAP HOOK CABLE LANYARD

Note that your windlass may not appear the same or use identical components as shown above.

WINDLASS- TYPICAL



FAIL SAFE LEVER
CONTROL ARM
ANCHOR SWIVEL
ANCHOR SHANK

Note on all chain units a chain stopper is used to remove the load on the windlass. (Not shown)

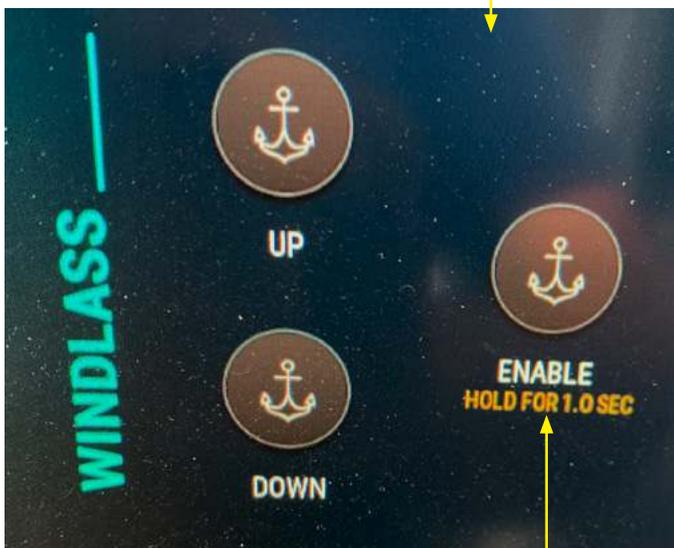
Note: Never use the windlass to break the anchor free from the bottom. This may cause excessive strain on the windlass motor and or hardware.

Windlass Operation With Plotter Control Buttons

HELM TAB GARMIN PLOTTER-WINDLASS CONTROL



Next, press the “up” button to pay out the anchor or the “down” button to retrieve the anchor.



HELM TAB PLOTTER-WINDLASS CONTROL BUTTONS

Before operating the windlass from the plotter ensure that the chain is freed from the snap hook and/or rope components are freed from the cleat.

To operate the windlass from the helm plotter system activate the plotter and locate the “helm” tab. The “touch buttons and operation tags shown on the actual display and the above illustration.

Press and hold the “enable” button for at least 1 second to permit the up and down cycle to be activated (part one of a two step process).

Paying Out Anchor Using Gravity

To let out the anchor release any anchor locks, insert the clutch handle into the gypsy drive cap and turn it in a clockwise direction to tighten the clutch. When in a safe mode, pull back on the clutch until the anchor and rode begin to pay out. Control the rate of anchor descent by pushing the clutch lever forward. When the desired rode is paid out, tighten the gypsy drive cap.

Paying Out Anchor Using Power

Make sure any anchor locks are disengaged such as the lanyard hook. Stand clear of all windlass components when paying out. Activate the plotter touch buttons, optional remote or the anchor windlass locker switch to pay the anchor out.



WINDLASS REMOTE- TYPICAL

Using Anchor Windlass

The windlass may be outfitted with a rode using 1/2" nylon rope along with a short length of galvanized chain or all chain. The chain is connected to the anchor shank which is next to the anchor. The chain acts as a safety margin to protect the rope rode from being damaged by sharp seabed objects such as coral that might sever the rope if it was next to the anchor. If needed for harsh sea bottoms the rode can be converted over to 100' of 6 mm galvanized chain.

The safety clutch is used to "pay out the windlass chain or to retrieve the anchor "rode". There is a handle in the anchor locker that inserts into the gypsy drive cap located on top of the windlass framework.

With the handle inserted in the cap, turn the handle *clockwise* which grips the "gipsy".

When the proper ratio of anchor rode is paid out disengage the dash switch or foot pedal and tie off the rode to a cleat since it is not recommended to let the windlass mechanism be the only source holding the rode to the anchor on the sea bottom (Chain stop accomplishes this on all chain units). Also, do not use the fail safe pawl to hold the anchor load as windlass damage could occur.

Retrieving Anchor-Manual Recovery

Insert clutch handle into the gipsy drive cap and turn clockwise until anchor is fully returned to the bow roller.

Retrieving Anchor-Using Power

One method of retrieval is to activate the windlass cut-out switch in the starboard deck locker. Next, use the windlass rocker switch to haul in the anchor rode.

The fail safe pawl does not need to be disengaged during retrieval as it will act as a ratchet. When the anchor has been retrieved in the bow roller position the fail safe pawl should be left engaged in the gipsy to prevent accidental activation of the windlass while underway. Note that the fail safe pawl does not need to be disengaged from the gipsy before the anchor can be paid out again.

It is recommended that during the paying out process the engines be run to stern before full scope is reached. This will help prevent the rode from being tangled in the anchor on the sea bottom. It is recommended that during the retrieval process use the engine to gather headway.

Do not let the vessel sit directly on top or over the area where the anchor lies because the chain rode could damage the hull topside.

As the anchor raises toward the scuff plate area, retrieve the last few feet very carefully to eliminate any hull damage.

Once the anchor is retrieved, check to ensure the fail safe pawl is engaged in the gipsy which will help prevent accidental activation.

RECEIVER- OPT. REMOTE



The windlass remote receiver shown above left is normally located under the helm access cover. This device communicates with the windlass remote control.

Typically a switch located in the bow area below the deck controls the up and down windlass operation. It is known as a dual direction solenoid switch. Periodically check the switch for tight connections. If the windlass does not move up or down it may be a defective solenoid switch or wiring defects in the circuit.



WINDLASS SOLENOID SWITCH

Windlass Safety Tips

1. Read and understand the windlass owner's manual found in the owner's information packet before attempting to operate the windlass unit.
2. Keep all body parts and clothing away from an activated windlass.
3. Do not exceed the maximum load designated by specifications.
4. Always tie off the anchor rode to the designated cleat.
5. Do not use the windlass to pull or tow another vessel.
6. Always shut off the main battery activation panel before servicing the component.
7. Always use engine power to gain headway before retrieving anchor.
8. Always look for swimmers or divers before deploying anchor.
9. Always secure rode/anchor while cruising or pulling vessel on highway.

Chapter 3

Vessel Operation Basics

Getting Underway

Pre-departure Questionnaire

- Have all fluid levels been topped off?
- Is the fuel tank full?
- Is all safety equipment accounted for and easily accessible?
- Are navigation lights and horn operating properly?
- Is the bilge free of water and does the bilge pump operate?
- Are the engines and propellers in good working condition?
- Is the hull drain plug in place (dry dock storage) ?
- Have all passengers been briefed on emergency procedures and seated for departure? Is the boat load balanced?
- Is the operator sober, alert and ready to skipper the vessel?
- Have all passengers been fitted with life jackets?
- Has a float plan been filed and left with a component person?

- Has the bilge been sniffed and the fuel system leak checked?
- Are sea cocks open (if applicable)?
- Is all communication equipment in good operating condition?
- Has a second person been briefed on operational procedures should the skipper become disabled?
- Are all displays and electrical switches functioning properly?
- Has weather information been gathered and analyzed?

Underway Questionnaire

- After casting off have all dock lines and fenders been stowed?
- Are all passengers seated and all doors closed and latched?
- As skipper are you monitoring the dash displays and/or plotter(s) for changes?
- As skipper are you on the lookout for changing weather?
- Is the remote control safety lanyard tightly secured to your belt or clothing?

Disembarking Questionnaire

Are all key fobs secured and stored securely?

- Have all systems been checked for leaks?
- Has the battery activation panel been turned to the “off” position?
- Are all sea cocks closed (if applicable)?
- Has the fuel tank been filled enough to prevent condensation?
- Is the vessel properly tied and covered with equipment stored?

Fueling- Gasoline Safety/Warnings

 **DANGER**

AVOID SERIOUS INJURY OR DEATH!
GASOLINE IS HIGHLY FLAMMABLE
AND EXPLOSIVE MATERIAL.
PRACTICE “NO SMOKING” AND EXTINGUISH
ALL FLAMMABLE MATERIALS
WITHIN 75 FEET
OF THE FUEL DOCK

 **WARNING**

AVOID INJURY OR DEATH FROM FIRE
OR EXPLOSION
RESULTING FROM LEAKING FUEL!
INSPECT ENTIRE FUEL SYSTEM AT
LEAST ONCE PER YEAR.

 **WARNING**

SINCE GASOLINE IS AVAILABLE
IN SEVERAL GRADES
INCLUDING ETHANOL AND VARIOUS OCTANE
LEVELS,REFER TO THE OUTBOARD ENGINE
MANUFACTURER'S OWNER'S MANUAL FOR THE
CORRECT GAS TYPE/GRADE.
USING THE IMPROPER OCTANE LEVEL
OR THE WRONG GASOLINE TYPE CAN CAUSE
ENGINE DAMAGE AND VOID THE WARRANTY!

Before Fueling- Gasoline

- Make sure a working fire extinguisher is available.
- Stop engines and any device that can cause a spark.
- Disembark all passengers and crew not needed for fueling.
- Fuel if possible during the daylight hours.
- Check to ensure nobody is smoking in the boat or near the fueling dock.
- Close all portholes, hatches and doors to keep vapors from blowing aboard and settling in the bilge.
- Tie up your boat securely at the fuel dock.
- Identify the fuel fill. Unfortunately, people have mistakenly filled the water or waste with fuel.
- Visually inspect all fuel system components before each filling.
- Avoid using fuels with E-15 alcohol additives. It can attack fuel system parts along with hoses and cause deterioration.

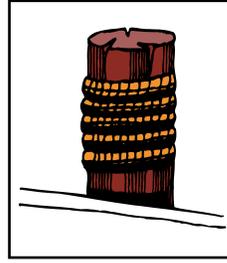
During Fueling

- Keep the fuel nozzle in contact with the fuel fill to guard against static sparks. The fuel fill pipe is grounded through the fuel system wiring to protect against static electricity.
- Avoid overfilling the fuel tank. Leave room for expansion. Also, if fuel exits the fuel vent indicating the tank is full, this situation is dangerous and unfriendly to the environment.
- Avoid spilling any fuel. Clean up any fuel accidentally spilled with a clean rag and dispose of it on shore.

After Fueling

- Close all fuel fill openings tightly. Use a fuel key if needed.
- Open all portholes, hatches and doors if applicable.
- Sniff in the bilge and engine area for gas fumes. If fumes are detected continue to let the area ventilate until the odor is gone. Look for any traces of fuel droplets or spillage. Do not start the engine(s), smoke or run any electrical components until the fumes can no longer be detected.

Dock Line Basics



Most skippers use dock line terminology fairly loose but there is more to the basics than just bow or stern lines. There are several lines that can be secured to the bow and stern and depending on their direction and use, can be called other names. Remember that “forward” and “aft” refer to the direction that a spring line runs from the vessel, and not where it is secured on board.

Bow/Stern Lines

There is only one true bow line. It is secured to the forward cleat and runs forward along the dock to prevent the vessel from moving to the stern. The stern line leads from a rear cleat to a piling or cleat on the dock astern of the vessel. This line keeps the boat from moving ahead. For small vessels these are the only lines needed for normal wind and current conditions. If located in a tidal environment, keep slack in the lines.

Breast Lines

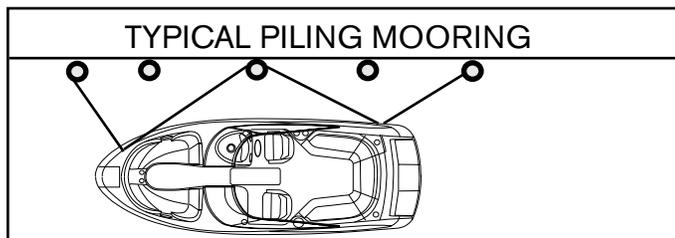
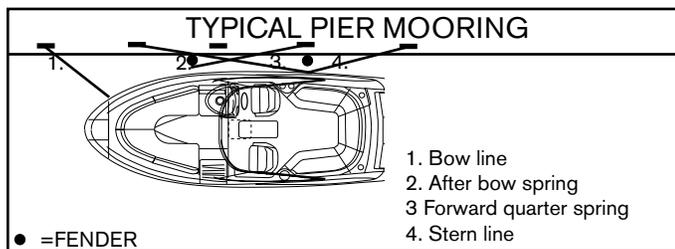
These lines are attached to the bow and stern that lead to nearly right angles from the center of the vessel to the dock. They help keep larger vessels from moving away from the dock, or are pulled in to help people board the vessel. Larger vessels may use bow or quarter breast lines.

Spring Lines

Most boats use two spring lines although it is possible to have four. They are called the after bow spring and forward quarter spring.

Bow springs are secured at the vessels bow area.

Forward spring lines lead forward from the boat to the dock and control movement toward the stern. After springs stem aft from the vessel, and stop movement ahead. Spring lines are used to prevent movement in a berth, ahead or astern. They are really useful in controlling the effects of a real active tidal surge. Spring lines are useful where fenders need to be kept in place against piles.



Boat Docking/Mooring

Most boats can be secured to a dock using four lines. The after bow spring is crossed with the forward quarter spring and secured to individual dock cleats or pilings. This ensures longer springs and can be snugged up tighter for more efficient tidal control.

Remember, if you only have one piling available, position the vessel so this point is opposite amidships. Run both spring lines to it. These lines will be shorter but still useful. The bow and stern lines should be relatively at a 45 degree angle with the dock. The stern line can be attached to the near-shore quarter cleat, but will work more efficiently to the offshore quarter cleat. The longer line will allow the boat flow with the tide with less time checking the vessel.

Dock Line Sizing

Most dock lines today are made of nylon, either of twisted rope or braided core and cover. The most often used material is nylon because of its stretching abilities absorbing shock loads. It is chafe resistant for extended life and is easier on bare hands.

The line's size varies with the vessel. Normally, a vessel in the 20' to 40' boats will use 1/2" diameter nylon lines. Larger yachts use 5/8" and 3/4" diameter nylon lines. Smaller boats can use 3/8" nylon lines.

Dock lines need to have the strength to hold the vessel and have enough density to resist chafing. They shouldn't be too heavy that they lose their shock-absorbing capabilities. Use the right size line for the vessel since a line too large for the boat will pull hard against the vessel since it won't be forced to stretch. If the line is too small for the vessel, there is no margin for wear and chafe when under strain.

Securing Dock Lines

When mooring your boat, make sure the dock lines are secured at both ends. Depending on your situation you may need to loop the eye splice of the dock line around a piling.

Sometimes the mooring line will lead down sharply from the piling to the deck cleat. Loop the eye splice around the piling twice to keep it from being pulled up off the pile.

Pull the line through the looped eye if the mooring line is too small to go around the piling twice or too small to fit over once.

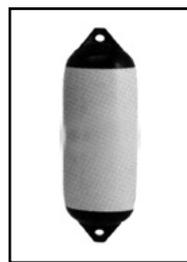
If you must drop a line over a piling that already holds another boat's line, run the eye of the line up through the first eye from below, then loop it over the pile. This will allow either line to be removed without disturbing the other. If another line is dropped over yours, simply reverse the process. Secure a little slack in the other dock line, then slip your eye up through its loop and over the top of the pile. Your line can be dropped through the other eye.

When debarking from a dock, it is easier to release the line from a cleat or piling, from on board the boat, as soon as you leave the dock. Loop a long line around the cleat or pier and leading both ends on board you can release the line easily. Slip one end around the cleat or pile, then pull it back on board. Release the line without the eye splice, so it will run freely from around the pile without hanging up on the splice.

Fenders

Fenders are normally made of a rubberized plastic and are usually filled with air. Most have a fitting like a basketball so they can be inflated or deflated. Fenders are available in a wide range of sizes and shapes to fit both small and large vessels. Fenders are normally designated in inches. They are used between piers, docks, sea walls and the boat. They protect the top sides of the boat from rubbing against rough objects. Most fenders have eyes of attachment which allow a line to be inserted vertically or horizontally. This will permit the fender to be tied off to fit a variety of marina, dock and tidal situations. Be sure the fender is correct for the vessel size. It is a good idea to carry extra fenders but half a dozen is normally an acceptable number. Remember to store fenders on board so they can be easily accessed. Some people incorrectly call fenders "bumpers".

Note that optional fender clips are available for your vessel.



There is a variety of fender styles and types, each selected for specified uses. When choosing fenders, contact a marine dealer or supply house. Explain how you moor and use your vessel so they can recommend the best fender type for you. We suggest the type with a fill plug so you can inflate them with a hand pump like the ones used for bicycles.

Maneuvering

Gathering Headway

When a vessel is not moving forward or reverse in the water and the propeller is not turning, (shift in neutral) the boat will not react to the helm steering wheel.

As soon as the vessel is shifted into forward gear propeller action creates a discharge motion and generates energy in the form of thrust. If the drive is centered, the discharge motion is directed straight back causing the vessel to advance forward.

You may notice that if you advance the throttle quickly in initial take-off (make sure you have a firm grip on the wheel), the boat has a tendency to pull the stern of the vessel to starboard. On select units there is a trim tab (also serves as a sacrificial anode) located on drive housings. This trim tab helps compensate for the low speed steering torque. Once the boat increases headway and the propeller is operating in a faster water flow this torque effect decreases.

Contact your Regal dealer for further information or consult your engine manufacturer's manual.

Turning

Once the boat has gathered headway, with the boat planing at the correct bow angle and the drive unit and helm straight the boat tends to stay on a uniform course heading. To assure the boat trim angle is correct use the chart plotter screen trim gauge as a guide while activating the trim button on the remote control panel or use the favorite buttons with auto tab systems if installed.

When the helm wheel is turned to the right or starboard, the drive unit is turned in the same direction. The propeller's discharge force is directed to starboard forcing the boats stern to port. Water flowing past the hull strikes the stern drive gear housing in its starboard side, creating additional turning torque. The stern starts a move to port, forcing the bow to starboard.

If the helm is turned to the left or port the drive turns to port, the stern of the boat goes starboard as the bow turns to port.

As the vessel operator gains experience, he will better gauge each maneuver and speed situation. In this way he will understand the handling characteristics of his boat. He needs to keep the safety of his passengers in the highest priority.

Backing Down

If your boat has the steering wheel and drive straight with the control in reverse, the stern will be pushed a bit to port by the reversing propeller thrust. This tendency to back to port can be eliminated by turning the drive to starboard.

When the vessel begins to gather speed to stern, the water passing by the lower gear case housing will continue to increase steering torque. If the helm wheel is turned to starboard, and will direct the propeller thrust to port, tracking the stern to starboard.

Wind and current will affect how a vessel backs. Select drive units tend to be light displacements and when backing down in a strong crosswind, the bow will tend to fall toward the windward. This may cause steering problems. Use remote controls and/or joystick on stern drive and outboard models to maneuver in these situations.

Stopping

Remember that your boat does not have any brakes. It uses reverse thrust from the propellers to stop. If the vessel has headway, with the helm and propeller in reverse the propeller thrust is directed backwards, past the lower gear case. Depending on how far the throttle is advanced, the discharged thrust may not be strong enough to reverse the water flowing by the gear case. As the power is increased, the propeller thrust becomes strong enough to stop the flow of water past the lower unit, and, as the throttle is advanced it reverses its flow more completely.

When water is flowing past the gear case, steering torque is increased, but when the thrust stops the water flow, the boat will not respond to the helm. This is a short lived event and is overcome quickly when the water again flows past the gear case. Furthermore, added to the energy of the water hitting the lower gear case, the propeller thrust is directed by turning the drive unit which can add to the steering torque.

The prop tends to throw the stern to port. This is why experienced skippers undertake a port side landing when wind and current conditions permit. They allow the prop to move the stern to port toward the dock. With a forward motion when the helm wheel is turned hard to one side, the vessel pivots around a point about 1/3 its length abaft to stern.

Again, make use of the joystick on stern drive and outboard models.

Power Trim/Trim Tabs

Stern drive and outboard models feature the ability to angle in or out their drive unit.

Purpose of Power Trim

The purpose of the power trim/tilt is to enable the operator to change the angle of the drive unit while at the helm. Changing the angle of the drive or “trimming” provides the following benefits:

1. Improves acceleration onto a plane.
2. Maintains boat on plane at reduced throttle settings.
3. Increases fuel economy.
4. Provides smoother ride in choppy water.
5. Increases top speed.

In short, it is a way of fine-tuning the performance of your boat and will enable you to get the most efficient and comfortable ride possible, whatever the conditions.

With stern drive and outboard models you can use individual engine trim buttons or synchronize dual or triple propulsion with all units to responding together by using the remote control.

Using Power Trim

The power trim is normally used prior to accelerating onto a plane, after reaching the desired RPM or boat speed and when there is a change in water or boating conditions. Position passengers and equipment in the boat so that the weight is balanced correctly fore and aft as well as side to side. Trimming will not compensate for an unbalanced load.

To operate the trim, push the switch until the desired bow position is reached. The trim may be operated at any boat speed or at rest. Avoid operating the trim system when running in reverse. Observe the trim/tilt gauge which indicates the boat's bow position achieved by the trim angle of the vertical drive unit. “Bow-Up” corresponds to the upper portion of the trim range on the gauge while “Bow Down” corresponds to the lower portion of the trim range on the gauge.

If installed use the auto tab favorite buttons to save a desired trim angle; experiment a little until you are familiar with the changes in your boat. The vessel will be properly trimmed when the trim angle provides the best boat performance for the particular operating conditions. A trim position that provides a balanced steering load is desirable.

To familiarize yourself with the power trim in a traffic free environment make test runs at slower speeds and at various trim positions to see and feel the effects of trimming. Note the time it takes for the boat to plane. View the chart plotter screen, tachometer, and speedometer plotter readings as well as the ride action of the boat.

Operation In “Bow Up”

The “Bow Up” or out position is normally used for cruising, running with a choppy wave condition, or running at full speed. Excessive “bow up” trim will cause propeller ventilation resulting in propeller slippage. Use caution when operating in rough water or crossing another boat’s wake. Excessive “bow up” trim may result in the boat’s bow rising rapidly, creating a hazardous condition.

Operation In “Bow Down” Position

The “Bow Down” or in position is normally used for acceleration onto a plane, operating at slow planning speeds, and running against a choppy wave condition. It is also used when pulling water skiers, tubers, knee boarders, etc. In this position the boats’ bow will want to go deeper into the water. If the boat is operated at high speed and/or against high waves, the bow of the boat will plow into the water.

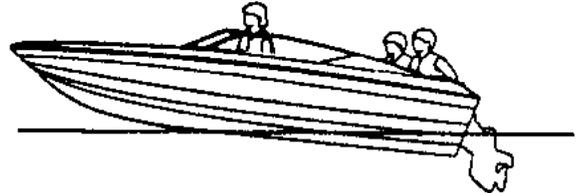
Operation In “Level” Position”

In normal running conditions, distribute passengers and gear so boat is level. At or below cruising speeds, trim the vessel for optimum performance. The trim gauge will show somewhere in the center of the gauge. This position will also enhance running visibility and overall stability. Again, each outing provides different wave, load and running conditions. Be prepared to make trim changes as needed.

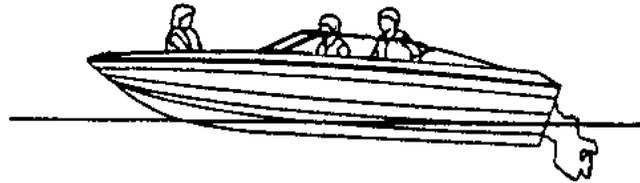
TRIMMED “TO FAR IN” POSITION



TRIMMED “TOO FAR OUT” POSITION



WELL TRIMMED “LEVEL” POSITION



Typical Examples (Stern drive shown here)



CAUTION

THE BOAT TRIM SHOULD BE ADJUSTED TO PROVIDE BALANCED STEERING AS SOON AS POSSIBLE EACH TIME YOU GET UNDERWAY. SOME BOAT/ENGINE/ PROPELLER COMBINATIONS MAY CREATE BOAT INSTABILITY AND/OR HIGH STEERING TORQUE WHEN OPERATED AT OR NEAR THE LIMITS OF THE “BOW UP” OR “BOW DOWN” POSITIONS. BOAT STABILITY AND STEERING TORQUE CAN ALSO VARY DUE TO CHANGING WATER CONDITIONS. IF YOU EXPERIENCE BOAT INSTABILITY OR HIGH STEERING TORQUE SEE YOUR AUTHORIZED REGAL DEALER.

Shallow Water Operation

Operating your vessel in shallow water presents various hazards. You are more apt to hit a submerged object such as a rock, sand bar, stump coral, or other unmarked objects.

Pay close attention to your charts for descriptions of any shallow areas along with marked submerged objects. Always post a lookout when operating in shallow water. Trim your drive up as needed to provide adequate draft. Set the alarm on your depth sounder and travel at a speed that will keep the boat level in these shallow areas.

NOTICE

IN THE EVENT YOUR VESSEL STRIKES A SUBMERGED OBJECT, STOP IMMEDIATELY AND CHECK FOR HULL, DRIVE, AND/OR PROPELLER DAMAGE.

Anchoring

Selecting the correct anchor is an important decision. The anchor style in part depends on the usage and boat type. Regal boats designate an anchor type and or model determined by boat size and windlass model. Some models incorporate chain, line or a combination depending on the option installed. Contact an authorized Regal dealer for more information.

Anchoring is easier with another person on board. First be certain that the line for the anchor is properly attached, to avoid losing the anchor and anchor line overboard.

For most anchors to perform more efficiently, you should attach 3 to 6 feet of chain. The chain will stand up to the abrasion of sand, rock, or mud on the bottom much better than a nylon line. It should be galvanized to reduce corrosion. Next, attach a length of nylon line to the other end of the chain.

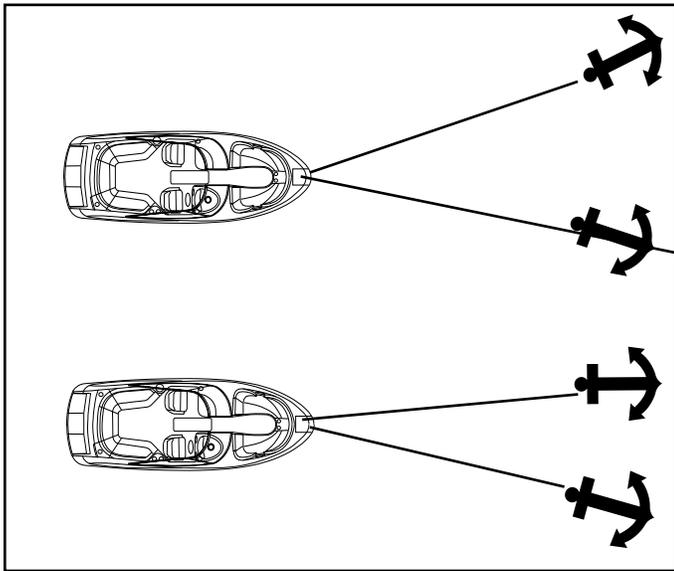
The nylon will stretch under a heavy strain cushioning the impact of waves or wind on both the boat and the anchor.

To anchor, select a well protected area, preferably with a flat bottom. Contrary to modern belief, you do not throw the anchor over while the boat is making headway, or moving forward. In fact, the bow of the boat should be brought slowly backward, while easing the anchor slowly over the side of the boat until it hits the bottom. To “snub the line” means to stop its outward “pay” or movement. Usually the length of anchor line used should be 5 to 10 times the depth of the water.

After you have anchored, check your position with landmarks if possible. You need to continue to monitor landmarks to make sure you are not drifting.

Since anchoring can also be an emergency procedure, the anchor and line should be readily accessible.

For increased holding power in windy conditions, two anchors are sometimes set. If your primary anchor drags, you can run out your secondary anchor without picking up the primary one. The important thing is to lay them out at an angle. When setting two anchors, make sure they are fastened to separate rodes or cleats. This is done in case you need to adjust one later so the line is accessible. If two anchors are used ahead of a boat, make sure to set the rodes at an angle than in a straight line to reduce the chances of tangling as the boat moves in wind and current. See the illustration.



Law Of Salvage

The Admiralty law sometimes referred to as the salvage law was founded primarily on English law fundamentals and basically says that a vessel distressed, in danger of flounder, if rendered assistance from a towing company or private agency, can be forced to relinquish a portion of the vessel's worth for the assistance received.

NOTICE

IN THE EVENT
YOUR VESSEL IS IN DISTRESS,
PRIOR TO ALLOWING ANY TOWING
COMPANY OR PRIVATE AGENCY THE
RIGHT TO PASS A LINE TO YOUR VESSEL,
BE SURE TO ESTABLISH THAT YOU
DO NOT AGREE TO SALVAGE RIGHTS.
ESTABLISH WITH THE CAPTAIN
OR OPERATOR THAT YOU WISH TO BE
ASSISTED IN A CONTRACT BASIS AND
ESTABLISH A PRICE.
OF COURSE IN CERTAIN SITUATIONS, YOU
MAY NOT HAVE THIS OPTION.
USE YOUR BEST JUDGEMENT!

Towing

In case you find yourself aground or in need of a tow, or should you want to tow another vessel, keep in mind that you never use deck hardware or cleats to secure lines for towing!

Deck hardware is intended for mooring and anchoring, and is not designed to withstand the strain and pull of towing. Rather than tie the line to your cleats on deck, it is suggested that you tie a bridle by passing a line completely around the hull of your boat to avoid damage.

When towing, always stand clear of a taut line, as any type of line breaking under stress can be extremely dangerous. The preferred line for towing is double-braided nylon, as it has sufficient elasticity to cushion shock loads. Move slowly and cautiously.

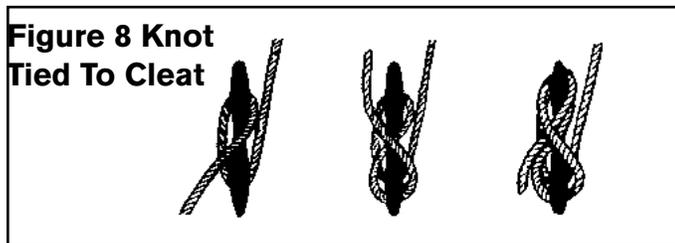


WARNING

AVOID POSSIBLE INJURY OR DEATH!
DO NOT USE DECK HARDWARE
INCLUDING CLEATS
FOR TOWING.

Knots

Knots are useful in docking, towing and other emergency situations. Learning to tie knots requires practice. As they say “ Practice makes perfect”. Some of the knots used in boating are the square, bowline, anchor bend, clove hitch, figure eight and half hitch. There are several periodicals available that explain various knots and how to tie them effectively. An experienced skipper will know the basic nautical knots and will use them when on the water. Take the time to know the basic knots.



A useful knot to learn for general docking is the figure eight with one end reversed. By turning the free end of the line back under, the knot can be released without disturbing the boat. After some practice one person can secure a vessel easily to a dock or pier in a variety of weather conditions. This knot normally is used to tie the bow and stern. Then the vessel can further be fastened by tying the spring line in the figure eight knot. Wrap it around the cleat several times.

Emergencies

Always be ready to help others on the water if possible, but do not take any unnecessary risks. Use equipment to save a life, but do not risk a life to save equipment. Consult earlier information in this manual concerning accidents, etc. Also, read other literature concerning on the water emergencies. Be alert and prepared!

Fires

Fire aboard a vessel can spread quickly and can cause tremendous alarm among everyone. Most fires can be prevented by keeping the bilge free from oil and debris. Keep all equipment stowed and maintained in working order. Carry a backup fire extinguisher on board. If something becomes a possible fire hazard, remove that possibility at once. Never use water on gasoline, oil or electrical fires. When you dump water on an electrical fire you can be shocked since water conducts electricity.

Follow these instructions if a fire breaks out:

- A. Fit everyone aboard with a life jacket. Turn off the engines.
- B. Try to keep the fire downwind. If the fire is to the stern, head the bow toward the wind. If forward, put the stern to the wind.
- C. If the engine should catch fire the automatic fire extinguisher system will activate. Keep engine hatch down to assist in the fire being extinguished due to a lack of oxygen. Be prepared to evacuate passengers from the vessel.

D. Use a hand fire extinguisher. Make sure to point it at the base of the flames. Use short bursts and sweep the extinguisher side to side.

Remember : (4 lb. extinguisher discharges in 20 seconds).

These actions help prevent the fire from spreading to other parts of the boat. You can extinguish fires quickly if you act swiftly. Have a plan of action in motion in case a fire breaks out.

Environmental Awareness

There are numerous vessels operating on our waterways on a daily basis. Each boat has an impact on our environment. Boat operation habits, marine sanitation, and maintenance all play a role in a delicate battle to keep the ecosystem clean. Each of us has a role in doing our part as an environmentally conscious skipper to conserve our waterways.

The National Marine Manufacturer's Association lists their top ten of Eco-Boating Practices as follows:

1. Observe all regulatory agency policies regarding marine toilets.
2. If equipped with a holding tank, use marina pump-out facilities.
3. If used, make sure bottom paints are legal and ecosystem friendly.
4. Use only biodegradable cleaning agents.
5. Dispose of all garbage and litter on shore properly, not on the water.
6. Don't top off fuel tanks. Leave expansion room. Clean up spills.
7. Watch your wake and propeller wash.
8. Make sure your engines are well tuned and maintained.
9. Control your bilge water.
10. Practice the "catch and release" principle.

Follow these basic practices when on the waterways. Treat the environment in a way that you would like to be treated.

Chapter 4

Auxiliary Equipment Operation

Overview

This chapter will assist the boat operator in understanding **select** standard and optional equipment components/systems on the vessel. Regal is constantly improving its product line and will make changes in vendors, parts, and specifications without notice.

Note that select equipment described may not be installed on your boat or the pictorials may not exactly resemble components on your craft. No liability is accepted for information correctness and is given to the best of our knowledge.



Bow Thruster- Typical

General Safety Notices:



1. Be sure to read and understand the safety instructions and all thruster operation information before attempting to use the thruster system. Refer to the thruster manufacturer's operator's manual

for more detailed information.

2. Do not operate the bow thruster system close to swimmers as a high powered suction is produced at the propeller.

3. Make sure the propeller lock nut is torqued to the required foot pound specification. See photo at right.

Thruster Usage

To use the thruster first make sure the component is activated. In the sump there is a on/off battery type switch in-line with the thruster power cable feed. Rotate the switch to the "ON" position.

Note the joystick on the helm. The thruster will assist in slow speed maneuvering especially around a dock or close mooring situations. It operates similar to a gaming or marine propulsion type joystick.

Make sure the helm joystick switch is energized as the black button needs to be depressed and held as a **long burst**. The red light will illuminate.

Never run the thruster dry; it may weld the relay contacts as it becomes a generator in spool down.

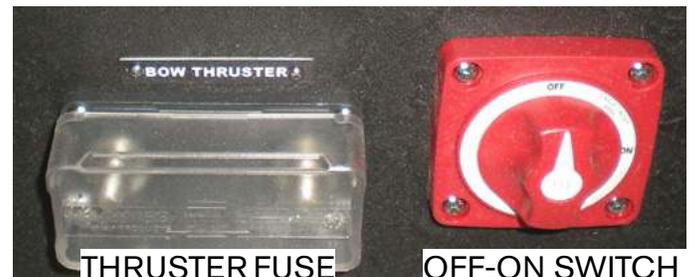
Do not make quick changes from one direction to the other direction, or it will damage the unit. The minimum running voltage for the thruster is 10.5 volts; therefore the engine(s) should be running to maintain this voltage requirement.



THRUSTER PROP AT HULL

There is an in-line ANL type fast activation fuse for over current protection behind the thruster switch panel.

Note that the block style fuse is rated at 250 amps, is controlled by the house accessory battery, and is located in the bilge compartment on the battery management panel.



Should the thruster motor ever become unable to stop its motion turn the bilge located red off-on switch "OFF" to deactivate the thruster system.

Bow Walk-Through Door



The bow walk-through door system is integrated with a heavy duty bi-fold piano hinge for added strength. The lower door section features a weather resistant acrylic finish. Pull the lower door away from the magnetic catch and then across the opening to cover the lower entrance and secure.



PULL TO RELEASE

Use the latch to secure the center window shut. Pull the latch to release the center window. Slide to port to assume an open position. See photo.

NOTICE

WHILE UNDERWAY ALWAYS
CLOSE AND SECURE UPPER AND LOWER
WALK-THROUGH DOOR COMPONENTS.

Bahama Sunshade System- Manual



The Bahama sunshade system affords plenty of bow sun protection for the entire crew. It fastens quickly to the deck and bow surfaces using a tie-down system.

The sunshade features a breathable fabric design which filters the direct sun rays when mooring on your cruise.

Canvas- Bow Cover

As standard equipment the white bow cover encapsulates and protects the entire bow section from the elements. Light weight and easy to install to the deck using a snap fastening system.

Canvas- Palm Beach Cover

As standard equipment the white cover protects the entire cockpit including the upholstery from the elements. Light weight and easy to install to the hardtop and deck using a snap fastening system.



Cockpit Grill (Typical)



Note that the 120 AC power package is a prerequisite for the grill option.

To use the cockpit electric grill (option) you must activate the dedicated breaker on the ship's main (MDP) panel. You must either be on dockside power, run the optional generator, or use the optional inverter as the grill operates on 120 volts of AC current. Locate the grill controller on the face of the cabinet.



Push the center button to activate the grill. Change the grilling temperature by using the plus or the minus buttons on the grill control. Read the grill owner's manual for further information. Always have a fire extinguisher handy. Should there be an emergency situation

close the cover. Power to the grill will be shut down at this point. After grilling be sure to let the element cool before installing the cover.

There is a safety shut-down sensor switch located at the grill top left side which appears as a magnetic disc. It operates through magnetic induction which means with the top in the down position there is no power to the grill controller and it can not be turned on until the top is lifted to its raised position.

See the limit switch circuitry drawing in the stove section.

Note that the grill top is non-removable.

Inside the grill cabinet is a limit switch junction box. This device will shut the grill down if it overheats.



Shown is typical cockpit grille circuit limit switch control box. It is normally located at the inside of the grill cabinet. No periodic maintenance

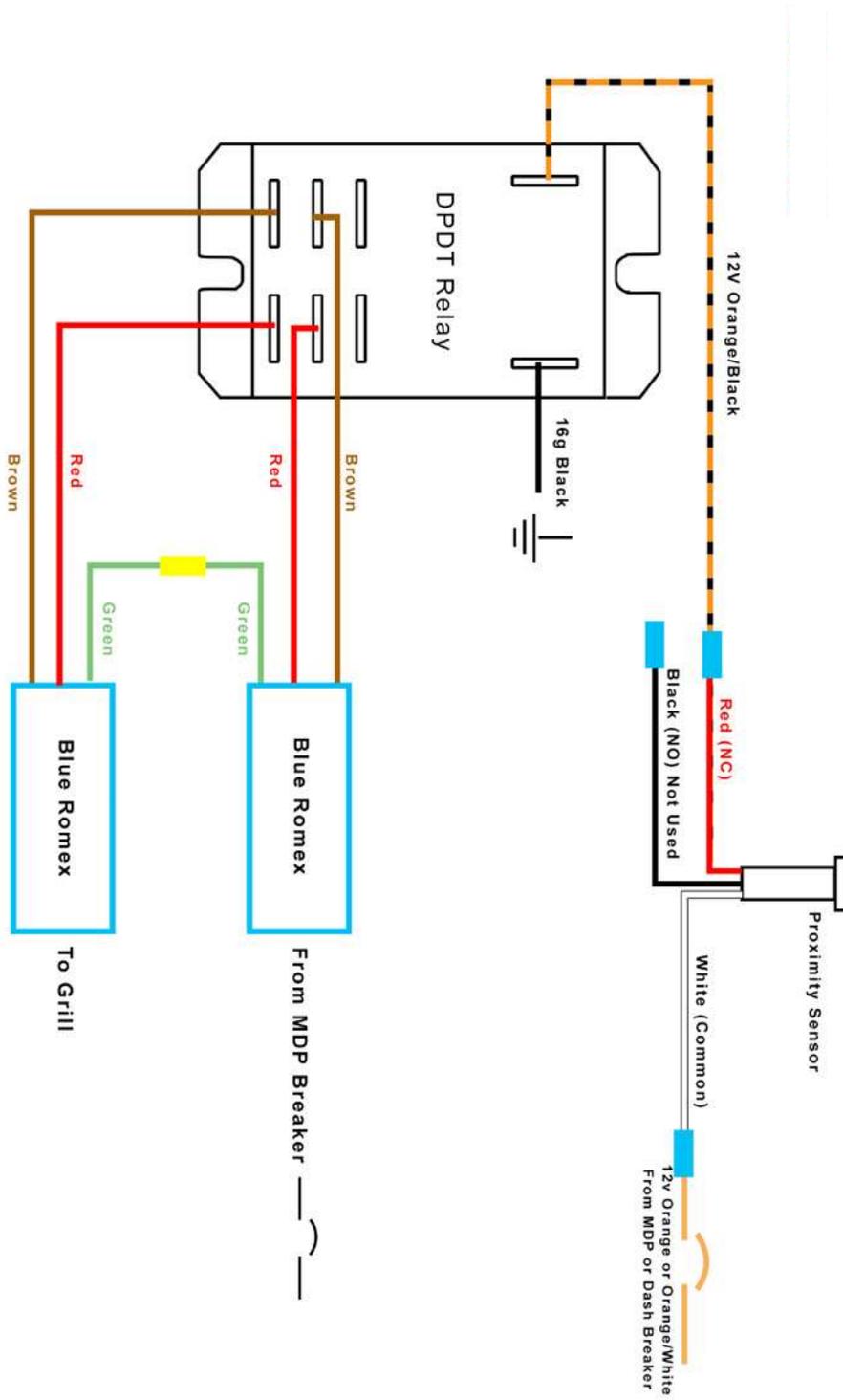
is required. Refer to the drawing of the limit switch system used for the cockpit grill.

Cockpit Grill- Safety Instructions

1. The unit is designed to cook food like meat, fish or vegetables. Do not use it for any other purpose since it could be dangerous.
2. Do not operate the grill in rough seas or high winds.
3. Do not add burning type charcoal briquettes or volcanic stones to the unit.
4. Never operate the grill while making headway (under engine power).
5. Never grill with any canvas in the up position since smoke and odors from cooking could infiltrate the canvas fabric over time.
6. Keep combustible materials away from the grill.
7. Keep children away from a hot grill surface.
8. Let the unit cool down before attempting to cover it.
9. Keep the grill covered when not being used.
10. Let pots and pans cool and then store them before cruising. Never leave cookware on the grill when underway.

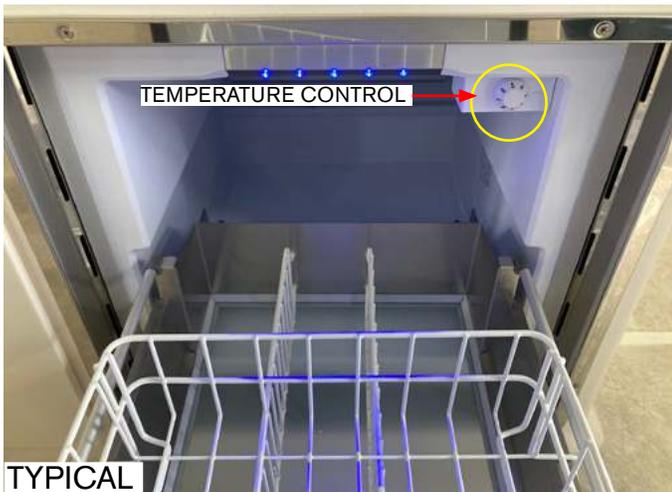


COCKPIT GRILL LIMIT SWITCH ACTIVATION BOX



Cockpit Refrigerator (Typical)

The unit operates at 12 volts DC voltage. The cockpit refrigerator provides chilled and frozen storage areas for food and beverage. It features a brushed 316 grade stainless finish steel door, LED lighting and easy to use thermostat.



Using Thermostat Control

Note the thermostat (temperature control) in the above illustration.

The thermostat sets the refrigerator temperature and includes a power shut-off function when turned counterclockwise to the end position. To adjust the temperature, turn the thermostat clockwise in order to reach the recommended 5-6 degrees Centigrade or 41 degrees Fahrenheit. The cockpit refrigerator typically uses a fuse for over current protection located at the ship's DC panel. When leaving the vessel with goods in the refrigerator make sure the battery charger is on and the dock side cord energized to prevent spoilage.

Usage Recommendations

- If possible, the refrigerator should be turned on for about 6 hours prior to filling food items.
- Frequent opening of the refrigerator door will result in greater consumption.
- Ensure that nothing blocks the refrigerator vent.
- Keep the inside of the refrigerator clean and dry.
- Keep the surface of the door clean and dry.
- The unit has been designed with a product lock protection in the event of low battery voltage. In the event of a compressor block, follow the instruction in the manufacturer's owner's manual or contact a marine technician.
- Note that the compressor can operate up to angles of 30 degrees; greater angles can cause damage to the compressor.
- Note that the unit contains "environmentally friendly" refrigerant types. In the event of a loss of refrigerant contact a qualified certified technician.
- Periodically clean the condenser unit behind the refrigerator. Dust or vacuum the fan from any dust or lint debris.
- See the manufacturer's owner's manual for defrosting instructions.
- Consult the manufacturer's owner's manual for any troubleshooting information or contact your closest Regal dealer.

Cockpit Sea-grass Mating

If installed, cockpit sea grass mats feature urethane backing for marine environments. The mats provide style, comfort and durability as well as additional protection in environments where microbes are a concern.



Chilewich® products contain Microban®. This antimicrobial protection inhibits the growth of stain and odor-causing bacteria, mold and mildew for the product's life.

When storing your sea grass mats, always roll with the face of product out with the backing facing in. Do not fold or crease as the backing may split. Vacuum or hose off for regular cleaning. Dry face up or hang. Do not machine wash.

Matting may be cleaned with a mild detergent and a sponge. Rinse with fresh water. Do not pull on material when removing from cockpit, but rather lift the snap instead to disengage.

Cruise Package

Installed as an option the typical components include portable fire extinguishers, life vests, throwable life ring, dock lines, fenders, boat brush and hook.

As the captain find the best location to store these items for easy access and protection from the environment.

Note not to store life vests but issue and fit the devices to all passengers before setting out on your cruise. Protect all on board by wearing an approved life vest!

Read and understand the life vest information found on the Regal web-site in the General Vessel Information Manual or contact the local maritime community for further details.

Dive/Side Boarding Door

The dive or side boarding door features a stainless steel heavy duty hinge and latching system. It provides easy access for various mooring situations.



With most docking situations the raised and wide opening footprint of the door afford safer and effortless boarding for all passengers and day cruising gear.

To open the boarding door from the inside “press” the center lock button inward while pushing the latch handle down which will release the latch from the receiver plate. See the above photo.

To close the boarding door push inward and hold the center lock button and lift the handle up until it enters the receiver plate. Release the lock button. Check to ensure the door is locked.

The door swings inward and features a magnetic stop. The skipper needs to make sure the boarding door is latched and while underway. Read and understand dive door safety label.

 **WARNING**

AVOID POSSIBLE INJURY OR DEATH
DUE TO FALLING OVERBOARD!
CLOSE AND SECURE DOOR
WHILE UNDERWAY.

Fender Clips

The fender clip option features receivers integrated into the vessel hull side and quick release pins. The quick release pins attach to fenders with lines so they are ready to deploy as needed. When the vessel approaches a mooring the quick release pin with fender is attached to the receiver and pushed into place. This will help protect the boat from dock "rash" which could damage the rub rail or gel coat. When leaving the dock the pins feature a quick release mechanism which detach easily.



FENDER CLIP RECEIVER



FENDER CLIP RELEASE PIN



TIE FENDER HERE

FENDER CLIP COMPLETE- TYPICAL

Power Platform- LS36 Only

The power platform is installed as an option on LS36 stern drive vessels only. The unit hydraulically cycles up and down typically through a switch or it can be controlled on the plotter. It settles down into the water at the ideal height as a seat and can be an easy way for the dog to board. Read and understand all safety labels before operating the power platform.



POWER PLATFORM



CAUTION

AVOID POSSIBLE INJURY
OR PRODUCT DAMAGE
DUE TO IMPROPER OPERATION!
DRIVES MUST BE TRIMMED BELOW 20
DEGREES OR FULLY CENTERED
TO OPERATE POWER PLATFORM.
ENGINES MUST BE OFF.

PowerShade

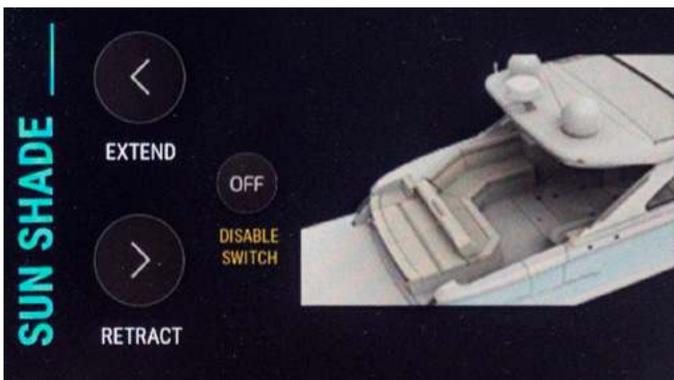


EASY VIEW SUN SHADE SCREEN- TYPICAL

The PowerShade system also referred to as a sun shade extends a sun filtered area into the aft cockpit with the touch of a button. The stainless steel retractable framework is integrated into the sun roof aft body. It features a sun filtering fabric to cover and cool select aft cockpit decking and upholstery clusters.

The system may be extended or retracted at the Garmin plotter actuator tab (Digital switching menu) or at the Easy View cockpit display screen. Press the appropriate arrow button to extend or retract the system.

The system features a **disable switch** as a safety device. When the switch button is pressed it turns "OFF" or locks out the PowerShade operation at the Easy View cockpit display panel.



PLOTTER SUN SHADE SCREEN- TYPICAL

Scupper Drain/Grate



The cockpit scupper drain system includes several drains which will remove any cockpit and residual recess water. These type drains are connected by a hose system that runs to a collection box under the quarter berth liner and/or to transom hose outlets. These drains feature a removable top screen which can be cleaned and reinstalled as needed. Periodically check these scupper drains for debris.



BOW GRATE-TYPICAL

In addition to the cockpit drains there is a trough with a stainless grate located at the walk through bow door floor. Use a slotted screwdriver to remove the grate for accessing the trough drain hole(s).

Periodically clean any accumulated debris from the trough/drains. A brisk rinsing with a hose will remove debris and any built up mildew.

SeaDek



SEADEK- SWIM PLATFORM

If a more thorough cleaning is needed you may use bleach, 409, Simple Green or Soft Scrub. Be sure to rinse thoroughly. Refrain from using any acid base cleaners.

As an option SeaDek® is featured on select vessel swim platforms and cockpit soles. The non-skid, closed cell material is derived from UV protected non-absorbent foam. You will find the product easy to clean with a high stain resistance.

Other features include noise reduction, great traction even when wet, body comfort when standing or walking on the swim platform.



SEADEK- COCKPIT SOLE

To clean small dirt particles first try soap, hot water and a stiff brush. For surface dirt and footprints use glass cleaner with a clean, soft towel.

Seakeeper (Typical)

If installed, the Seakeeper 2 uses gyroscopic principles to reduce boat motions in waves and wakes independent of boat speeds. A typical unit consists of a Gyro assembly, a CAN communications cable, and a helm display.

If installed, the Seakeeper is located under the aft cockpit of your vessel. The unit's cycling is controlled by an electronic controller and a hydraulic brake throughout each roll cycle as to supply maximum anti-roll torque and limits mechanical contact with the hard stops that limit the gimbal angle travel.

The Seakeeper operates from direct current and the unit is part of the house battery accessory circuitry; there is one house battery dedicated entirely to the optional Seakeeper. Read & understand the Seakeeper operator's manual before using unit.

Seakeeper Display

A display located in the head or an identical screen at the plotter is used to start, operate, monitor and shutdown the Seakeeper. Sensors, alarms, and shutdowns are provided to allow unattended operation. The display provides information in the event of an alarm. Select alarms can cause the process to start & stop unit to a coast down cycle.

HOME SCREEN SHOWING POWER SWITCH W/TOUCH CONTROL



WARNING

AVOID SERIOUS INJURY!
ENSURE THAT ALL BODY PARTS & CLOTHING
ARE KEPT CLEAR OF THE SEAKEEPER
WHILE IT IS CYCLING.



WARNING

AVOID SERIOUS INJURY!
DO NOT REMOVE THE COVERS FROM
THE UNIT OR CONTACT ANY PARTS
WHILE THE UNIT IS PRECESSING.
MAINTENANCE SHOULD NOT BE DONE
UNLESS THE SEAKEEPER IS LOCKED AND
FLYWHEEL HAS STOPPED SPINNING.

With DC power activated the Seakeeper display will energize and a "home" screen will appear. Here the ON/OFF touch screen button will appear grey (OFF). Once the button is pressed it will change to blue (ON) and a menu button is used.

Seakeeper Continued

When the menu button is pressed, a menu bar will appear or disappear at the screen bottom. The menu bar is used to navigate between pages.

In the bilge mounted close to the optional Seakeeper unit is a water pump. It is a diaphragm type and it supplies sea water to the Seakeeper unit.

Note to ensure the seacock is open before operating the Seakeeper unit.

Note that an overheating fault on the display may indicate a water pump problem.

The Seakeeper uses a stand alone seacock. Periodically clean the basket of debris. Always check for leaks when servicing the seacock unit.

Also, specifications, troubleshooting, winterization, warranty, and periodic maintenance requirements are found in the Seakeeper operation manual.

Seating Configurations

Your vessel features a upholstery package that fits the needs of the avid day boater. All seating is comfortable for those long cruises, supremely executed, and features easy care fabrics. Below are select seating clusters displaying a wide variety of seating set-up scenarios and operational tips.



BOW SEATING W/ OPTIONAL TABLE

The starboard aft bow opens to quarter berth.



BOW FILLER CUSHION

A bow filler cushion is perfect for facing forward or catching a quick nap.



ARM REST-TYPICAL

down into position.

Select arm rests freely move up and down. Other models you push arm rest button and pull arm rest



HELM & MID COCKPIT L/ LOUNGE SEATING

Typically, helm seats accommodate two adults and provide great visibility. A helm seat riser heightens the captain's view for docking and maneuvering in tight quarters. Mid cabin seating provides seating, lounging, and plenty of storage under the cushions along with select combing storage areas for tables, etc. Upholstery features stainless steel rams for easier storage accessibility and longevity.



FORWARD FACING AFT SEATING

The aft seating features huge versatility for your cruising needs including forward facing seating.



REAR FACING AFT SEATING

Seating Configurations Continued



RUMBLE STYLE AFT FACING SEATING

The “rumble” style seating configuration features lounging and aft stadium seat choices for viewing on the water events and entertaining opportunities.

Read and understand the safety and notice labels below:



WARNING

AVOID POSSIBLE INJURY OR DEATH
DUE TO FALLING OVERBOARD!
NEVER OCCUPY BACK FACING
AFT SEATING WHEN VESSEL IS UNDERWAY!

NOTICE

TO AVOID UPHOLSTERY DAMAGE
NEVER USE HARSH OR CAUSTIC
PRODUCTS TO CLEAN VINYL SEATING.
USE WATER, THOROUGHLY RINSE, AND
WIPE DRY WITH A SOFT TOWEL.

Storage- General

Your Regal vessel solidifies the saying “that there is a place for everything and everything in its place.” Numerous storage opportunities typically exist on your vessel including under seating, behind combing panels, floor lockers, quarter berth, head, glove box, galley, helm drawer system, aft port transom, bilge (outboard models) and cooler storage.

Spend time with your crew finding the best on board locations for all those cruising items.

Ensure that all safety and emergency related items are readily accessible and that the crew is aware of their location should the captain become unable to fulfill his role.



Storage- Helm Drawer System



If installed, the helm seat dedicated storage system features drawers to accommodate remote controls, cooking utensils, silverware and paper supplies.

Storage- Quarter Berth



If installed, the quarter berth dedicated utility storage features a wall system grid to accommodate loose items and to keep them off the floor and to provide quick and easy equipment access. The system features simple to clean surfaces with water and a soft towel or wipes.

Sunroof



The sunroof features a fiberglass frame and the ability to open and close with an electric worm gear drive mechanism. The sunroof slides on a track and is fitted with a water resistant seal. Read and understand all safety labels regarding the sunroof.



WARNING

AVOID BODILY INJURY!
KEEP BODY PARTS CLEAR OF SUNROOF
DURING OPENING AND CLOSING
OPERATIONS.



WARNING

AVOID BODILY INJURY OR DEATH
DUE TO FALLING!
NEVER STAND ON TOP OF THE SUNROOF
OR THE HARD TOP STRUCTURE.



CAUTION

AVOID POSSIBLE SUNROOF DAMAGE!
UNLATCH THE PORT & STARBOARD
CLOSURES BEFORE OPERATING
THE SUNROOF.

Sunroof Operation



SUNROOF LATCH

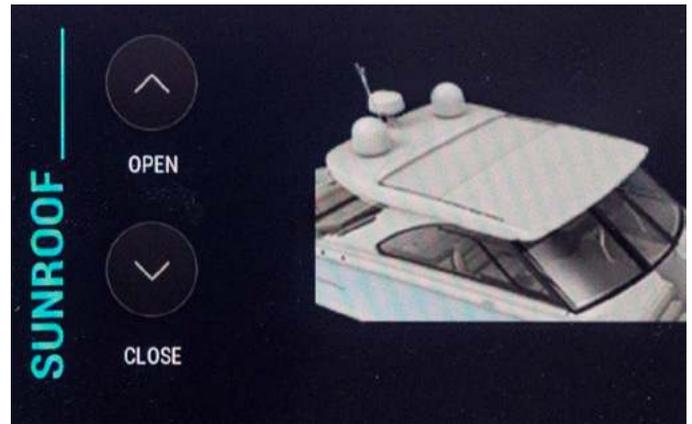
Currently, there are port and starboard latches located at the interior sunroof ceiling. ***As installed, Unlock and turn both latches from the receiver plate before operating sunroof.***

To unlock the sunroof latch press the center lock button inward while pushing the latch handle down which will release the latch from the receiver plate.

To close the sunroof push inward and hold the center lock button and lift the handle up until it enters the receiver plate. Release the lock button. See the above photo.

The captain may use a plotter screen to open or close the sunroof. Locate the “digital switching” menu on the “Home” screen. Once touched a new screen with digital switching tabs is displayed. Choose the “Actuator” tab and the PowerShade buttons will be displayed.

Press the “Open” button to uncover the sunroof. Press the “Close” button to cover the sunroof. The button can be “paused” anywhere during the open and close cycles to achieve the desired amount of opening. See the illustration at upper right.



PLOTTER SUNROOF CONTROL PANEL

In addition to the plotter screen, the sunroof can be controlled from the Garmin Easy View screen. Here a sliding bar displays the sunroof position. Slide the bar touch button to the desired open or closed position.

The bar touch button can be “paused” anywhere during the open and close cycles to achieve the desired amount of opening.



EASY VIEW SUNROOF SCREEN- TYPICAL

When leaving the boat unattended for extended periods of time close the sunroof and secure the latches if installed.

Swim Platform/Ladder



STERN DRIVE SWIM PLATFORM/LADDER



Overview

The swim platform is an FRP (fiberglass reinforced product) component with an anti-skid surface. It is built for longevity and provides easy care. The swim platform and ladder provide a safe haven to disembark to a dock or to enter/exit the water. Always use the ladder hand hold when entering or exiting the water to prevent possible injuries from falling. Never enter or exit the water with the engines running. If installed do not exceed swim platform safe weight limits.

Do not dive from the swim platform. Read and understand any safety labels regarding the swim platform/ladder.



WARNING

AVOID INJURY OR DEATH
FROM DROWNING DUE TO CO POISONING!
NEVER HANG FROM OR ENTER
UNDER THE SWIM PLATFORM
STRUCTURE OR APPROACH THE SWIM
PLATFORM/LADDER WITH ANY ENGINE
OR GENERATOR RUNNING.



WARNING

AVOID INJURY FROM FALLING!
WHEN USING THE LADDER WHILE
ENTERING OR EXITING FROM THE WATER
ALWAYS USE THE HAND HOLD.

Swim Platform/Ladder Usage Tips



Note that select swim platforms may include Regal etched "football" logos which are inset into the swim platform surface. They typically release into the atmosphere any CO contaminated air from engine exhaust that may be trapped under the platform structure. Ensure they are always open enabling them to properly function.

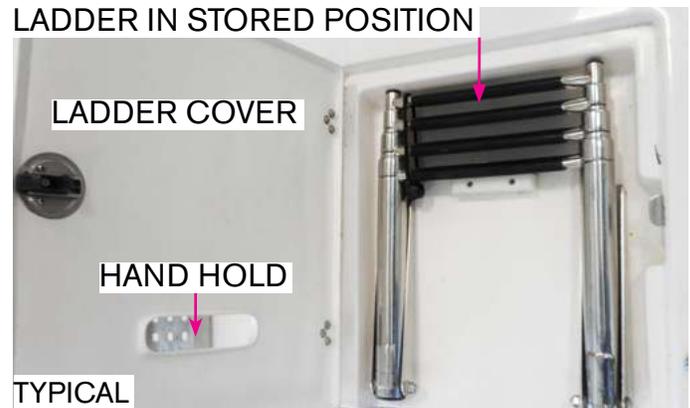
Note not to sit on the swim platform with the engines running to avoid the possible effects of possible CO poisoning as carbon monoxide is odorless, tasteless and is a silent killer!

Additional Swim Platform Tips

If installed, never use cleats for hauling the vessel in or out of the water. Use proper located and sized straps. Contact your closest Regal dealer.

Never wrap lifting straps around the swim platform to lift the vessel. Use designated hull lift locations. Contact your closest authorized Regal dealer.

Periodically check all swim platform parts for tightness and possible corrosion especially in high salt environments.



1. Always keep the swim platform free of any objects. Never store items on the platform as they could cause falling incidents or objects such as lines may become caught in the engine propellers.
2. Always keep the transom door leading to the swim platform latched except when using door. Read the transom door information in the following pages.
3. Always fold up the swim ladder and close the ladder cover when finished using it.
4. Never leave the ladder down when the boat is under power.
5. When opening or closing the ladder framework be careful to keep limbs and fingers free of moving parts.
6. Periodically check all ladder parts for tightness and corrosion.

Table- Cockpit (Typical)



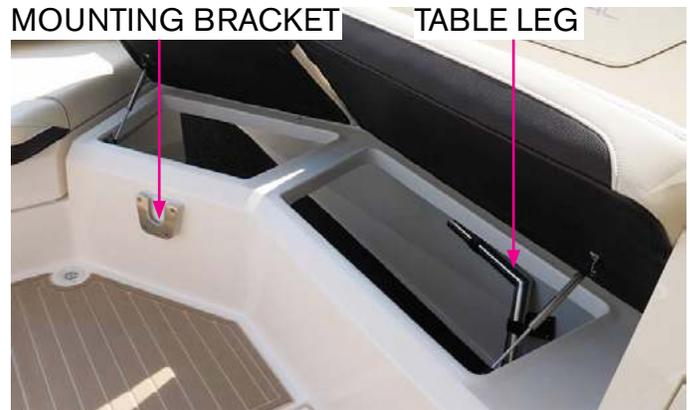
TYPICAL COCKPIT TABLE

If installed port and starboard cockpit tables feature teak a hardwood known for beauty and durability. Typically the tables and select hardware are stored under the seating or in the coaming area as shown in the photo below.



COCKPIT TABLE COAMING STORAGE

Table Set-Up



TYPICAL COCKPIT TABLE COMPONENTS

If installed to set-up the cockpit table(s) remove the teak table from its storage location. There is a table receiver on the bottom side of the table to attach the table leg (shown bottom left photo). Attach the table leg to the table receiver. Push down to secure the table leg inside the receiver. Next, install the table with attached leg to one of the mounting brackets located in the cockpit.

It is recommended to store tables and hardware after each use.

Periodically wipe the stainless steel hardware with fresh water and a clean cloth. Use a metal polish as needed to maintain the beauty and extend the life of the hardware.

Use a teak cleaner and sealer to remove stains and to protect the table teak surface. These products can be found at most retail stores.

Transom Door- Typical



TYPICAL DETENT HINGE POSITION- OPEN

To open or close the transom boarding door pull up on the framework at the top rail of the door. Swing door to a detent which will afford an open or closed position.

Push down to latch in a detent position. See the photo above and to the right.

Read and understand the safety label. While underway and even in mooring to prevent anyone from falling overboard always close and latch the transom door.

The door features an air space underneath which provides room for water to escape the cockpit in rough seas or heavy rain activity.



TYPICAL- TRANSOM DOOR WITH WARNING



WARNING

AVOID INJURY OR DEATH
FROM FALLING OVERBOARD!
CLOSE AND LATCH THE TRANSOM DOOR
WHEN ENGINE IS RUNNING.

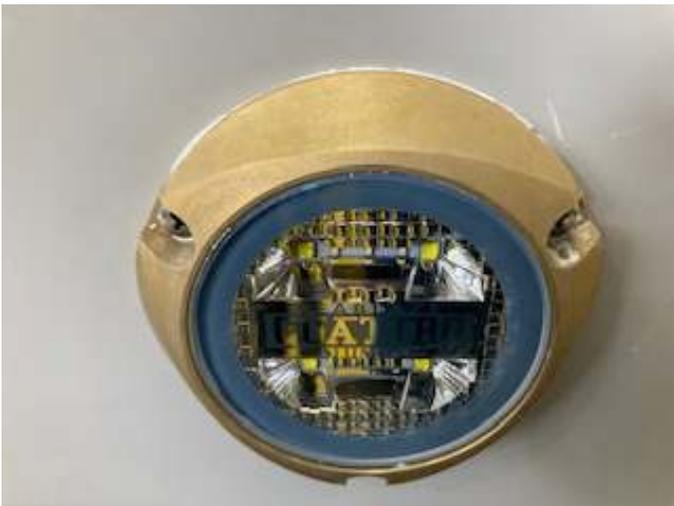
Note that the transom door on your vessel may appear different from the examples shown here.

Underwater Lighting



If installed, lighting fixtures typically with RGBU or blue LED clusters make up the underwater lighting system. The lights may be located on the transom along with the port and starboard hull sides. The light system adds a spectacular evening ambience to your moored vessel. Use the plotter lighting tab for customizing .

These lights operate at daylight lumen specifications on the Kelvin scale and provide maximum illumination, long life, and low operating temperatures.



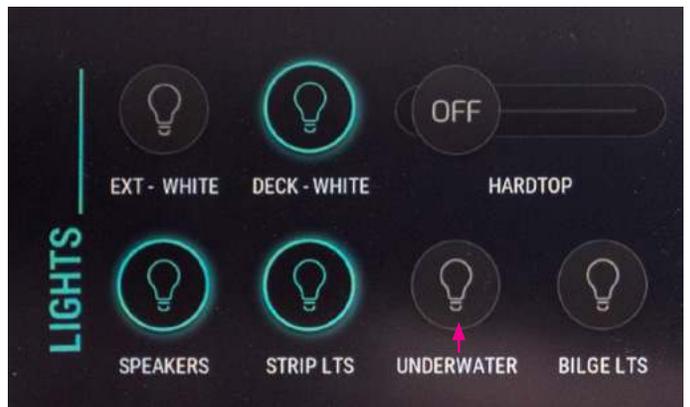
HULL LED UNDERWATER LIGHT SYSTEM

Underwater Lighting System Operation



UNDERWATER TOUCH BUTTON- HELM TAB

To control the underwater lighting system from the plotter navigate to the digital switching menu on the "Home" screen. Press the digital switching menu and the "Helm" screen will appear. Press the underwater button to activate the underwater lights. The button will appear with a lighted circle (On) position. Press the lighted button to deactivate the underwater lights.



UNDERWATER TOUCH BUTTON- LIGHTING TAB

Also, the "Lighting" tab may be chosen for activating and deactivating the underwater lighting system by pressing the lighting tab touch button.

Windshield Wipers/Washer

Port and starboard windshield wipers feature a planographic design which keeps constant pressure or torque on the wiper blade to ensure a more efficient removal of water on each sweep. The wipers utilize a washer system which draws water through fresh water pump via the potable water tank. A solenoid triggers the wiper washer system through touch buttons on the plotter wiper screen.

Periodically check the wiper blade for excessive wear and replace as needed. It is always a good idea in rain prone environments to store extra wiper blades on board.

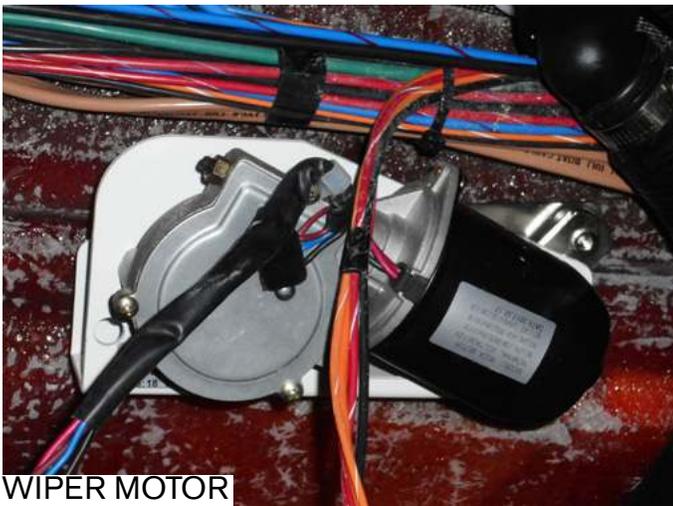
Typically, the wiper motor and washer system are accessible under the sunroof ceiling. Contact your closest Regal dealer for further service information.



TYPICAL PLANOGRAPHIC WIPER

NOTICE

WINDSHIELD DAMAGE MAY OCCUR
IF WIPER BLADES ARE RUN
OVER A DRY WINDSHIELD.



WIPER MOTOR



WIPER WASHER

Windshield Wipers- Switch Panel Operation



TYPICAL WIPER FUNCTION- SWITCH PANEL

Select vessels provide basic “ON” & “OFF” wiper functions from a helm switch panel by pressing “Wiper.” Other vessels use the plotter display to navigate through the wiper functions including washer and intermediate operations.

Note that earlier switch panels use a mechanical switch; later panels are digitally controlled.

Note that the SP8 panel shown above may not exist on your vessel.

Windshield Wipers/Washer- Plotter Operation



TYPICAL WIPER FUNCTION- PLOTTER

Select vessels utilize the Garmin “Glass Cockpit” plotter (Stern drive models) or the Garmin plotter touch control displays (Outboard models) to navigate through the wiper functions.

Press the “Wiper On” touch button to activate the wipers. The button will illuminate green when active. Touch the lighted button again to deactivate the wipers.

Press the “Washer” touch button to activate the washer system. Touch the lighted button again to deactivate the washer system.

With the wiper button activated touch the “UP” arrow to speed the wiper up and retouch to reach the desired wiper speed as indicated by the lighted bar.

With the wiper button activated touch the “DOWN” arrow to slow the wiper speed down and retouch to reach the desired wiper speed as indicated by the lighted bar.

Chapter 5

Care & Maintenance

Cosmetic Care

This section covers the care and maintenance of your Regal boat. Many cosmetic care topics including exterior hardware, upholstery, fiberglass and canvas are covered along with select equipment and systems. Refer to the owner's information packet and the appropriate manufacturer's engine/propulsion manuals for further detailed instructions. Also, contact your closest authorized Regal dealer.

Upholstery

Cockpit and interior vinyl require periodic cleaning to maintain a neat appearance and to prevent the build up of dirt, mildew and contaminants that may stain and reduce the vinyl life if they are not removed. The frequency of cleaning depends on the amount of use and conditions to which the vinyl is subjected. Most common stains can be cleaned using warm, soapy water and clear rinses. Scrubbing with a soft bristle brush will help loosen soiled material from embossed surfaces and under welting. If the stains are not removed with the above method use a mild cleaner such as Fantastic. This cleaner should be used only as needed and not the normal means.

With more stubborn stains, rubbing alcohol or mineral spirits may be tried cautiously. Widespread solvent use can severely damage or discolor vinyl. Try to remove stains immediately before they have a chance to penetrate the surface of the vinyl.

Powdered abrasives, steel wool, or industrial strength cleaners are not recommended for cleaning our vinyl. Lacquer solvents will cause immediate damage. Dilute chlorine bleach before using. Do not wax the vinyl as it may cause cracking. Always wear protective gloves and make sure there is sufficient ventilation when cleaning vinyl. Wear eye protection.

Remember that suntan oil will damage vinyl. Use suntan lotion instead of suntan oil. Exposure to the sun is a natural enemy of vinyl upholstery. Keep the vessel covered with a cockpit cover when not in use.

Plastic

Use plastic cleaners and polishes recommended for marine use only. Use proper applicators. Read all instructions carefully. Test the product in a small area first. Use a soft rag and always rinse the surface with water. Ammonia based cleaners and abrasives will damage plastic parts.

Note that all recommendations and instructions may not apply to your particular model or vessel. Always refer to the component manufacturer's operating manual for more detailed care and maintenance information.

Note that no liability is accepted for information correctness and is given to the best of our knowledge.

Acrylics

The transom door on select models is one item made from a heavy acrylic material. Use warm water and a couple drops of mild detergent, The cleaning rag should be lint free and thoroughly rinsed. Do not substitute paper towels, which could lead to fine scratching of the surface. With the right cleaning materials, you can easily remove most dust and grime without creating an additional static discharge.

Do not use an abrasive or scouring pad. Acrylic must not be exposed to organic, oil-based solvents.

This includes:

- Acetone/nail polish remover
- Paint thinner or comparable
- Benzene
- Rubbing, denatured, or other alcohol-based solutions
- Carbon tetrachloride

For scratches and other marks that do not respond to basic cleaning, polishing is the way to renew your acrylic. Again, use a soft, lint-free cloth. You can hand polish or use a polishing machine.

Apply the polish in a snake like or S pattern across the surface first horizontally and then vertically. Smaller polish jobs can use an L shape followed by a circular motion. If you are still not able to remove the blemish the scratch is probably too deep. In these situations, the only recourse is an incremental wet sanding, finishing with an #800 grit abrasive, and another coat of polish. After polishing any residual product remaining should be removed.

NOTICE

AVOID CLEANING PLASTIC SURFACES WITH A DRY CLOTH OR GLASS CLEANING SOLUTIONS CONTAINING AMMONIA. NEVER USE SOLVENTS OR WIPE WITH ABRASIVES.

Cockpit Sea-Grass Mating

If installed, cockpit sea grass mats feature urethane backing for marine environments. The mats provide style, comfort and durability as well as additional protection in environments where microbes are a concern.

Chilewich® products contain Microban®. This antimicrobial protection inhibits the growth of stain and odor-causing bacteria, mold and mildew for the product's life.

When storing your sea grass mats, always roll with the face of product out with the backing facing in. Do not fold or crease as the backing may split. Vacuum or hose off for regular cleaning. Dry face up or hang. Do not machine wash.

Matting may be cleaned with a mild detergent and a sponge. Rinse with fresh water. Do not pull on material when removing from cockpit, but rather lift the snap instead to disengage.

Interior Fabrics

Clean flat good interior fabrics with dry cleaning fluid style cleaners approved for use with soft fabrics. Allow adequate ventilation and follow the label instructions carefully. Use a soft cleanser with the soft mineral feldspar to clean stubborn marks or stains on fiberglass surfaces.

Normal interior vinyl such as used on the headliner on cruisers and head clean up with a mild soap and water solution. Rinse immediately with clean water and wipe dry. Always test an area with a cleaner before applying it to a larger area.

FREQUENT STAINS/CLEAN-UP STEPS	1	2	3
Coffee, Tea, Chocolate.....	B		
Permanent Marker*.....	E	B	C
Household Dirt.....	A	B	
Grease.....	D	B	
Ketchup, Tomato Products.....	A	B	
Latex Paint.....	A	B	
Oil Base Paint.....	D	B	
Mustard.....	A	B	C
Suntan Oil.....	A	B	
Asphalt/Road Tar.....	D	B	
Crayon.....	D	B	
Engine Oil.....	B		
Spray Paint.....	B		
Chewing Gum.....	D	A	
Shoe Polish*.....	D	B	
Ballpoint Pen*.....	E	B	A
Lipstick.....	A	B	
Eyeshadow.....	E	B	
Mildew*.....	C	B	A
Wet Leaves *.....	C	B	A

A= Soft brush; warm soapy water/rinse/ dry

B= Fantastik cleaner

C= One tablespoon ammonia, 1/4 cup of hydrogen peroxide, 3/4 cup of warm water/ rinse/dry

D= Scrape off residue (use ice to lift gum)

E= Denatured alcohol/rinse/dry

* These products contain dyes which leave permanent stains.

Fiberglass & Gel Coat

Routine maintenance is the only practical way to keep the surface of your boat looking shiny and new. Most objects left outdoors will gradually deteriorate from exposure to the sun, water, dust and pollution. Such outdoor exposure can cause your boat's gel coated surface to change or fade. Darker colors tend to fade more rapidly than lighter colors because they absorb more of the sun's rays (ultra-violet and infrared).

Basic maintenance includes monthly washing of the boat's surface to remove normal accumulation of soil and stain. Use a mild detergent such as dishwasher powder or liquid. Do not use automatic dishwasher detergent. Avoid any kind of alkaline cleaners such as trisodium phosphate (TSP), abrasives, bleaches and ammonia. For best results use cleaners that are recommended for fiberglass.

NOTICE

WIRE BRUSHES, SCOURING PADS, OR OTHER ABRASIVE TYPE MATERIALS AND SOLUTIONS SHOULD NEVER BE USED ON THE HULL OR DECK. THEY CREATE SMALL SCRATCHES THAT COLLECT MARINE GROWTH.

It is recommended that you wax the gel coat surface twice yearly to prevent loss of gloss and to protect the finish. Use only waxes for fiberglass and follow the label instructions. Apply a 3' x 3' section at a time using clean applicator cloths or a buffing bonnet. When a haze develops, use a power buffer at low speeds (1200-2000 rpm) to remove the haze. Keep the buffer moving to avoid heat buildup. The power buffer is very efficient at removing contaminants from gel coat. Never wax in direct sun.

When the washing and waxing as recommended does not restore the shine it may be necessary to use a fine rubbing compound. Do not apply rubbing compound in direct sunlight. A power buffer at low speed does an excellent job to remove impurities from the gel coat that cause dulling. Use light pressure and keep the buffer moving. Re-wax after compounding to buff the surface.

"Hairline cracks" or "spider webbing" could develop in the gelcoat surface of a hull or deck. This can be caused by impact or other factors. Small air pockets or gouges may also occur through normal wear.

These do not affect the strength of the hull or deck and can be repaired by yourself, a marine professional or a Regal dealer.

The affected area should be chipped or sanded away and a thin layer of color matched gel coat applied. This layer is then sanded smooth and buffed to its original luster.

Most minor scratches, nicks, and dents can be removed by compounding the surface. Marine type compounds can be found at most auto body supply stores. Specify a number 25 which is a coarser compound up to a number 55 being less coarse. Various glazes and polishes are available as needed. Ask your marine professional or Regal dealer for more information.

Fiberglass hulls are strong but they can be damaged. A fiberglass hull has virtually no internal stresses. Thus when a part is broken or punctured, the rest of the hull retains its original shape. A severe blow will either be absorbed or result in a definite localized break. A break of this nature should be checked and repaired by a marine professional or a Regal dealer.

Minor Repairs

You will need the following materials for minor repairs:

- Gel coat
- Clear Liquid Catalyst
- Putty Knife
- Razor Blade
- Fine Sandpaper (400,600,1000)
- Wax Paper (to cover repair area)

 **DANGER**

AVOID SERIOUS INJURY!
GEL COAT AND FIBERGLASS RESIN ARE
FLAMMABLE! WORK IN A WELL VENTILATED
AREA FREE FROM OPEN FLAMES.
DO NOT SMOKE!

For minor repairs refer to the following procedure:

1. Clean the area to be repaired and get rid of any wax or grease residues.
2. Clean out scratches, chips, and nicks.
3. Sand area to be repaired so gel coat will bond.
4. In a separate container, measure only the amount of gel coat you will need. Mix a ratio of 2% catalyst to the amount of gel coat being used (a spoonful of gel coat will require only a drop or two of catalyst). Do not pour any unused portions of the gel coat/catalyst mixture back into either original container.

5. Apply gel coat to area leaving a slight lift above the surface.

6. Cover the area with wax paper. It will help the mixture to set up faster.

7. Remove wax paper and shave off any extra gel coat with a razor blade.

8. After the area is shaved smooth, start with the 400, 600, and finally 1000 grit sand papers.

9. Buff the area with compound, polish and a finish wax. You may notice a difference between the repaired area and the original finish due to the natural weathering process.

 **DANGER**

AVOID SERIOUS INJURY!
WAXED GELCOAT SURFACES CAN BE VERY
SLIPPERY! DO NOT WAX NORMALLY USED
AREAS OF THE DECK, LINER, OR GUNWALES.
DO NOT WAX ANY TEXTURED OR NONSKID
SURFACES SUCH AS FLOORS, WALKWAYS,
STEPS, LADDERS, OR SWIM PLATFORMS.
WEAR NON-SLIP FOOTWEAR WHEN WALKING
ON VESSEL SURFACES!

Canvas

Boat canvas is in most cases subjected to more severe punishment than practically any other type of material. Moisture, dirt and chemicals from industrial fallout, heat, ultraviolet rays and salt water are all factors which accelerate the deterioration of your boat canvas. These elements can cause serious damage if left unchecked.

The boat top and other canvas supplied on your Regal boat are manufactured from top quality materials to provide you with years of trouble free service. The following information on the care, cleaning and proper storage of the fabrics and fasteners that make up your marine canvas is being provided to help you maintain the appearance and ease of operation.

General Canvas Cleaning Information

Soak the canvas fabric in a solution that has been mixed to the following proportions.: 1/2 cup of bleach and 1/4 cup of Ivory or Lux soap (liquid or soap) per each gallon of lukewarm water. Allow the fabric to soak until the bleach has killed the mildew and the stains can be brushed out with a common kitchen scrub brush. Rinse the fabric thoroughly in cold water to remove all the soap. This may require several rinsings. Incomplete rinsing can cause deterioration of sewing threads and prohibit the fabric from being properly retreated. Allow the fabric to dry completely. **DO NOT STEAM PRESS OR DRY IN AN ELECTRIC OR GAS DRYER!** Excessive heat can damage and shrink the fabric since it is heat sensitive.

This method of cleaning may remove part of the water and stain repellent that was applied to the fabric during its manufacture. It is recommended to retreat with such water repellency products as Apsel and Uniseal. We do not recommend any wax based treatments such as Thompson's Water Seal or any of the silicone products such as SC-15 or Aqua-Tite. Wax based products prevent the fabric from breathing, and encourage mildew growth while the silicone products interact with the original finish and may cause a loss of water repellency.

Clear Vinyl, Zipper & Snap Care

Never store canvas wet or in an unventilated, moist area. Always roll the canvas instead of folding. This is of particular importance on side curtains or any other part with the clear vinyl “glass”. Roll the top carefully around the bows and cover with the storage boot provided.

The clear vinyl “glass” used in side curtains, aft curtains, visors, and camper enclosures is very susceptible to heat and cold. Keep vinyl curtains from touching metal tubing to minimize burning the vinyl. If the boat is stored with top, side curtains and aft curtain in place, heat build up inside the boat may discolor the vinyl. To clean the clear “vinyl” glass, use a solution of Ivory or Lux soap, liquid or flakes, and lukewarm water. Allow to air dry. Never use any type of abrasive cleaner as it will scratch the “vinyl” glass. There are many cleaners and scratch removers on the market specifically for clear vinyl. Handle the clear curtains carefully. They are soft and prone to scratching.

Canvas parts are designed with zippers. When zippers are new they can be a little difficult to use. Zip carefully without forcing the zipper or the material. They will loosen with use. A zipper lubricant may be used to help new zippers as well as maintaining used ones. The most vulnerable part of the zipper is the starts. Use care when beginning to close the zipper.

Canvas snap fasteners should be unsnapped as close to the button as possible. Never remove canvas by pulling roughly on the edge of the material. This can damage the canvas as well as the fasteners. Use petroleum jelly on snaps to keep them from developing corrosion especially in harsh environments.

Hull Bottom

Never use wire brushes or highly abrasive scouring pads on your hull bottom. It could damage the gel coat surface or the bottom paint. The bottom of your boat needs to be clean since the build up of natural coatings from water or marine life can potentially create drag and affect your boat's performance.

Metal

Keep all stainless steel and other metal parts rinsed and wiped dry. To maintain their finish annually polish the stainless steel and other bright works at least annually. Use commercially available metal products and read the labels carefully before use. Refer to the owners information pouch. Most marinas and boating retail outlets carry metal care products.

Maintenance



WARNING

PREVENT POSSIBLE INJURY OR DEATH!
READ ALL MANUFACTURER'S SAFETY
INFORMATION, ENGINE AND PROPULSION
OWNER'S MANUALS BEFORE PERFORMING
ANY MAINTENANCE FUNCTIONS.

Overview

This section addresses basic maintenance of Regal on board systems. It is not to be thought of as a workshop or repair manual.

Refer to your engine and propulsion manuals for detailed maintenance procedures along with periodic maintenance schedules.

Contact your closest authorized Regal dealer or marine professional for more technical information since they have the training and tools to handle more advanced engine and propulsion issues.

Furthermore, you may find the internet beneficial in troubleshooting named equipment on board your vessel. Many of our product vendor web-sites feature troubleshooting and technical assistance including chat sessions.

Propellers

Out-of-balance and nicked propellers will effect performance or cause vibration. Damaged props should be replaced, but those that are chipped or bent can usually be reconditioned by a marine dealer or a propeller repair facility. When cruising, consider carrying a spare set of props on board because many marinas do not carry a full inventory of replacement propellers. Also, carry an extra set of prop hardware. Refer to your manufacturer's engine manual for appropriate propeller replacement or contact your closest authorized Regal dealer.

On your stern drive or Yamaha outboard model be sure to make a note of the propeller diameter and pitch while the vessel is in dry dock. They are pressed into the prop for easy reading.

Also, note that select propellers feature a hub that is pressed into the center propeller that includes a hole for the prop shaft to slide through. Sometimes as a result of impact the hub becomes damaged and the propeller will not let the boat perform to the rated revolutions per minute (rpm).

In an emergency a stainless propeller blade may be straightened by laying the propeller blade on a 2 x 4 and hammering the bent portion of the blade until straight.

For further propeller information contact your closest Regal dealer.

Batteries

The batteries are located in the bilge (sump). Periodically check your battery terminals for corrosion build-up. If you find a greenish, powdery substance, remove the cable connections and clean both the both the terminals and the connectors with a wire brush and a paste made from baking soda to neutralize any acid. When the cleaning is finished reconnect the battery cables and coat the terminal with a dielectric grease or petroleum jelly to help prevent further corrosion.

Check the electrolyte level at least every 30 days, more often in hot weather. The level should be maintained between the top of the battery plates and the bottom of the fill cap opening.

Add distilled water only as needed to flooded electrolyte batteries after charging the batteries or periodically as needed. Do not overfill because sulfuric acid could run over and cause burns or explosion.

Batteries shall be trickle charged outside the boat. Do not smoke or bring flames near a battery that is being or has recently been charged. The hydrogen gas generated by battery charging is highly explosive. Charge flooded electrolyte batteries to 13.4 volts and 13 volts for AGM batteries.

Check battery manufacturer charging voltage specifications with Lithium-Ion batteries such as used with the optional inverter system.

Do not allow a metal object such as a wrench or loose wires to spark across battery posts while working close to the battery. Contact across terminals will cause a short circuit and personal injury may result. Always recover positive posts with red “boot”.

Tighten all battery connectors securely. Check their tightness by pulling on the connectors. They should not move from their tightened position. Be sure to reinstall the positive boot over the battery terminal after tightening the battery post connection. While using the boat, refer to the volt meter to monitor the charge level of the battery. Monitor the charge with the engines turned off (static condition).

The engine alternators recharge the batteries. Typically a fully charged battery will indicate between 12.3 and 12.6 volts on the voltmeter. Readings below this could indicate a dead battery cell or a charging system malfunction which should be checked by a marine professional.



WARNING

AVOID SERIOUS INJURY!

BATTERIES MAY CONTAIN SULFURIC ACID (POISON) WHICH ALSO CAN CAUSE BURNS. AVOID CONTACT WITH THE SKIN, EYES, AND CLOTHING. IF CONTACTED, FLUSH WITH WATER FOR AT LEAST 15 MINUTES. IF SWALLOWED, DRINK LARGE AMOUNTS OF WATER, OR MILK. FOLLOW UP WITH MILK OF MAGNESIA, BEATEN EGG, OR VEGETABLE OIL. GET MEDICAL ATTENTION IMMEDIATELY!



WARNING

AVOID SERIOUS INJURY!

WEAR GOGGLES, RUBBER GLOVES, AND A PROTECTIVE APRON WHEN WORKING WITH A BATTERY. BATTERY ELECTROLYTE CAUSES SEVERE EYE DAMAGE/SKIN BURNS. IN CASE OF SPILLAGE, WASH AREA WITH A SOLUTION OF BAKING SODA AND WATER.

Remote Control



Check the helm control box and make sure there is no roughness or tightness when shifting. Also, check to make sure the control box hardware is tightly secured. The shifting is done by

a process called “fly by wire” Being the engines use electronics to shift it should be effortless. An application of silicone spray on the handles will help fight any corrosion. Remember there are no actual mechanical shift and throttle control cables on your vessel. There is a friction control which may be altered to personal needs. Refer to your engine/propulsion manual or contact your closest Regal dealer for further assistance on remote control adjustments.

Seating

Care of your seating includes periodic cleaning with products which are non-corrosive and are recommended for vinyl. Select seats use rams and hardware which needs to be periodically checked for tightness. See the upholstery cleaning section for more information.

Periodically check all seat hardware to ensure a good working condition and ensure all moving parts are properly lubricated and all fasteners are securely fastened.

Fuel System

At least annually inspect all fuel system components for loose clamps at the vent, fill and feed locations. Examine each hose for signs of deterioration and leakage. Check the fuel sender for loose bolts, nuts, and leaks at all areas of contact. Also, inspect the fuel tank for signs of leakage or abrasion. Tighten all components as needed.



WARNING

AVOID SERIOUS INJURY OR DEATH DUE TO
FIRE OR EXPLOSION RESULTING FROM
LEAKING FUEL!
INSPECT ENTIRE FUEL SYSTEM
AT LEAST ONCE PER YEAR.

Stereo

The Fusion® stereo head unit requires little maintenance. Keep the stereo head unit covered when not in use. Never discharge water directly at the stereo unit as possible damage may result. Periodically wipe the display surface with a screen saver to remove foreign debris.

For further information, refer to your stereo owner's manual located in the owner's satchel.

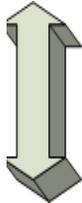
Galvanic Corrosion/Stray Current

Metal parts attached to or under the hull can be subjected to two basic styles of electrolysis: galvanic corrosion and stray current corrosion. Both can damage the drive, propeller, underwater parts, boat and motor if not correctly monitored (testing at 2 week intervals) and avoided.

Galvanic corrosion is an electrochemical reaction between two or more metals. Drive systems consist of several different metals. Some are more active than others.

Galvanic corrosion of the more chemically active metals can occur whenever two or more dissimilar metals that are “grounded” (connected by actually touching each other, or through a wire or metal part) are immersed in a conductive solution (any material that can conduct electricity). Anything but pure water is conductive. Saltwater, fresh water with a high mineral content and polluted fresh water are highly conductive. Conductivity increases with temperature. That is why Florida boats normally experience more corrosion than boats in Maine.

Specifically look at a typical marine drive unit with a stainless steel propeller. The aluminum is the more chemically active metal (called the anode) and the stainless steel propeller is the less chemically active metal (called the cathode).

CORROSION TABLE	
Gold	<p>Least Active</p>  <p>Most Active</p>
Stainless Steel	
Bronze	
Copper	
Brass	
Steel	
Aluminum	
Zinc	
Magnesium	

Typically electrons flow from the anode (the aluminum drive unit), via the external conducting path to the cathode (stainless steel propeller). If there is a very large anode connected to a small cathode, the anode will corrode very slowly. If a very large cathode is connected to a small anode, the anode will corrode very quickly. Obviously, if you do not control galvanic corrosion, over time the aluminum will corrode away.

The first sign of galvanic corrosion is paint blistering (starting on sharp edges) below the water line; a white powdery substance forms on the exposed metal areas. As the corrosion advances, the exposed metal will become deeply pitted as the metal is actually eaten away.

Another condition which will increase galvanic corrosion is the removal or reduction in surface area of sacrificial anodes. Never add aftermarket products that are connected to the engine ground such as stainless steel steering aids and trim planes.

Zinc connected to aluminum will form a corrosion cell but the aluminum (drive) becomes the cathode and the zinc (anode) corrodes.

Even though your boat may not have shore power aboard current from nearby vessels with shore power can produce stray current galvanic corrosion. Stray current corrosion occurs when metal with an electrical current flowing into it is immersed in water that is grounded (lake, ocean, pond). The current can leave the metal and flow through the water to ground. This will cause rapid corrosion of the metal at the point where the current leaves.

When a vessel nearby is plugged into shore power, they can potentially tie your drive unit to their boat via the green grounding shore power lead. Your drive unit could be the receiving end of a large galvanic cell (a battery) interconnected with nearby vessels or even through the marina's metal structures via their electrical system.

The vessel should be tested every couple of weeks to determine the integrity of the anode protection system. Another way to test the system is to measure the hull potential. This is accomplished by immersing a reference electrode, usually a silver/silver chloride into the water about six inches behind the drive. With leads attached to a digital multimeter the hull potential is read on the DC scale and compared to recommended specifications for the water body type. See the owner's information vendor packet for more information or contact your nearest authorized Regal dealer.

Tips To Aid In Maintaining Galvanic Integrity

1. Periodically visually check the galvanic integrity of your vessel. Raise the drives on stern drive and outboard models to inspect anodes/parts for signs of galvanic corrosion, stray current corrosion or loose fasteners. Contact your closest Regal dealer/marine professional where signs of galvanic corrosion exist.

2. Never paint over anodes as they will become inoperative.

Note to always leave at least one inch between bottom paint and any underwater fitting such as sea cocks, swim platform stanchions and all drive and propulsion related underwater parts.

3. Periodically remove vessel from water and clean/pressure wash all outboard, anode and hull bottom areas to remove growth.

4. Ensure vessel is using the correct anode metal for the body of water that it is moored. See the outboard engine manufacturer's manual for more information or contact an authorized dealer.

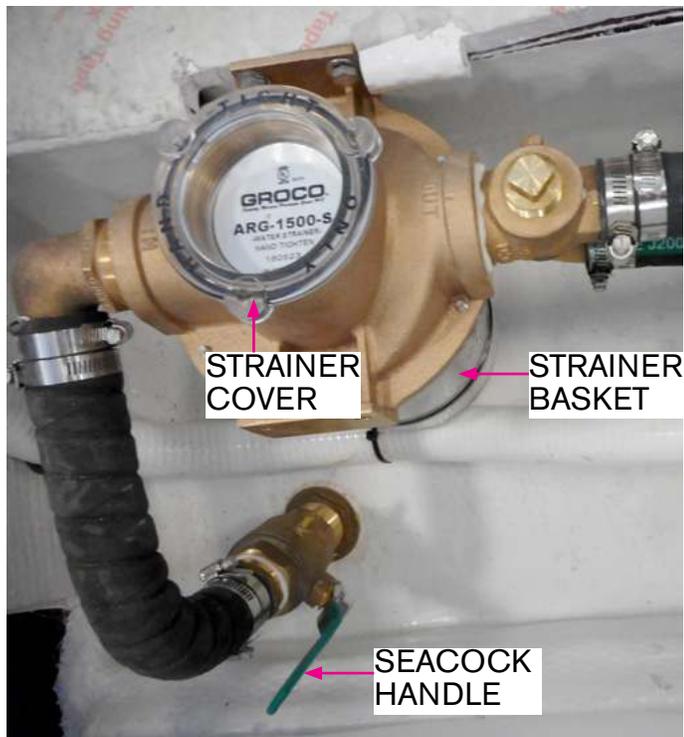
5. Ensure that the drive is completely "in" down to provide more complete anode protection when vessel is moored.

6. Do not attempt to use magnesium anodes in saltwater. They will provide over protection.

7. If marina moored, contact appropriate personnel if signs of galvanic corrosion appear on your drive system. Ask them to check for stray electrical current which may be originating from a nearby vessel's faulty DC wiring or from a marina pier, piling or dock carrying leaking marina ground wiring such as a dock side cord partially submerged.

GALVANIC/STRAY CURRENT CORROSION	
Cause/Observed Condition	Corrective Action
Sacrificial anodes consumed	Replace anodes when 30% consumed
Sacrificial anodes not grounded to drive	Remove anodes, clean contact surface, reinstall, check for continuity
Loss of continuity between underwater parts & ground	Provide good ground connections
Nearby vessel with stray current	Contact appropriate personnel Remove your vessel from water
Paint on drive heavily worn, exposing more metal	Prime and repaint or install additional anodes
Sacrificial anodes painted	Remove paint or replace anodes
Drive tilted/anodes out of water	Leave drive down, install additional anodes below water
Power trim cylinders only corroded	Provide a good ground to drive, all parts must be grounded
Corrosion in area of exhaust outlets	Remove deposits
Corrosion occurring after vessel is removed from saltwater	Wash exterior and flush interior with freshwater
Stainless steel parts corroding	Clean parts, remove foreign material, ensure continuity
Underwater drive parts corroded, sacrificial anodes OK	Oxide film on anode (fresh water only) Replace anode Poor ground. Scrape anode.

Sea Water Strainer- (Typical)



Before servicing a sea water strainer make sure the appropriate seacock has been closed to prevent water entering the boat. Remove the strainer by turning counter-clockwise. Then grasp the strainer handle and lift out the strainer basket. If possible blow out the strainer basket with compressed air or use a metal type brush to remove any accumulated material from the screening material.

Check all parts for wear and possible leaks including any gasket surfaces. Do not overtighten the strainer hold down cover which could cause strainer body damage especially on the newer plastic versions. Use original replacement marine parts only. After all parts are reassembled open the seacock and check for leaks.

Periodically, open and close the seacock handle several times as this will guard against the seacock sticking in an open or closed position due to corrosion.

Ventilation System



TYPICAL VENTILATION DUCTING-STERN DRIVE

Marine engines/generators require large amounts of fresh air to perform their combustion process. The higher the revolutions per minute (sometimes called rpm's) of the engine the more air is required to meet the demand.

A transom ventilation ducting system is used to funnel incoming air for engine and/or generator combustion. Accumulated bilge air is evacuated through the transom exhaust ducts into the atmosphere via a powered ventilation system. See the photo above.

As part of vessel maintenance, ensure the transom ventilation openings are free of debris including animal nests such as wasps and birds. Never modify or obstruct any part of the natural and/or powered ventilation systems.

Chapter 6

Troubleshooting

Overview

The following basic diagnostic information will assist you in identifying minor electrical, fuel, and mechanical problems. Select items listed require technical training and tools only available at a Regal dealer or a marine professional.

Additional assistance is available by referring to the appropriate engine and propulsion manufacturer's owner's manual which is recommended to be stored at a on board location for quick access when a situation develops.

Furthermore, contact your closest authorized Regal dealer or marine professional for more detailed information. Remember that sometimes a problem can be solved by performing a logical sequence of elimination and/or root cause techniques. Many times it is the simple things that are overlooked in troubleshooting procedures.

Note that select information found in this section may not be applicable to your vessel as that particular system or equipment may not be installed on your vessel. System components, specifications, and troubleshooting techniques may change at anytime during the production life cycle of your vessel.

No liability is accepted for information correctness and is given to the best of our knowledge.



WARNING

AVOID SERIOUS INJURY OR DEATH!
BEFORE PERFORMING ANY MAINTENANCE WORK, TURN OFF THE BATTERY ACTIVATION PANEL AND LOCK THE IGNITION SYSTEM WITH THE KEY FOB.



WARNING

AVOID SERIOUS INJURY OR DEATH!
USE ONLY APPROVED MARINE REPLACEMENT PARTS THAT ARE IGNITION PROTECTED.

Note that select diagnostic charts may not differ between stern drive and outboard engine propulsion systems.

ENGINE DIAGNOSTIC CHART

Problem	Possible Cause
Engine Overheating	<p>Water pick-up feeds are blocked by debris</p> <p>Cooling system leak</p> <p>Impeller is worn or blocked by debris</p> <p>Propeller is over propped for the circumstances, causing the engine to work extra hard</p> <p>Debris in oil is holding heat more than normal- defective oil filter</p> <p>Defective thermostat.</p> <p>Faulty temperature sender.</p>
Starter Will Not Crank	<p>Battery weak or dead</p> <p>Starter defective</p> <p>Battery activation panel deactivated</p> <p>Remote control not in neutral</p> <p>Defective start panel button</p>
Excessive Steering Play	<p>System low on power steering fluid</p> <p>Mechanical linkage parts-loose connection</p>

ENGINE DIAGNOSTIC CHART

Problem	Possible Cause
No Power To Helm	Battery activation panel "Off." Batteries are weak or dead. Breaker tripped Loose connection
Engine Cranks But Will Not Start	Fuel flow obstructed/water in fuel Low battery voltage Engine ignition system malfunction No fuel in tank Safety lanyard not attached- outboards
Hard Starting	Vacuum in fuel system Air or water in fuel lines Debris in fuel/clogged fuel filter
Engine Idles/ Runs Rough	Old fuel Engine idle too low Fuel contaminated/ clogged anti-siphon valve (fuel tank) Fuel injectors contaminated/clogged

ENGINE DIAGNOSTIC CHART

Problem	Possible Cause
Power Loss	Damaged propeller Improper trim angle Fuel system malfunction Ignition system malfunction Hull bottom fouled with debris Excess water in bilge (leak) Burnt engine valve Low octane fuel Engine cooling system malfunction Vessel overloaded
Excessive Vibration	Bent Propeller, propeller shaft Bent vertical drive shaft Loose/broken motor mount- stern drives/outboards Steering pivot loose or damaged Debris caught on propeller Damaged drive cavitation plate Boat bottom damaged

ENGINE DIAGNOSTIC CHART

Problem	Possible Cause
Buzzer Sounds/Icon Lights/ Plotter Indicators	Cooling system malfunction Engine oil level low or incorrect type Electrical/fuel malfunction Oil feed pump malfunction

DC ELECTRICAL SYSTEM DIAGNOSTIC CHART

Problem	Possible Cause
No 12 Volt Power At Battery	Charging system inoperative Weak or dead battery Battery cables loose/disconnected Battery terminals or cables corroded
Battery Not Charging While Engine Is Running	Faulty alternator Faulty circuit wiring
Battery Will Not Hold Charge	Faulty/old battery Loose battery cables Corroded battery terminals
12 Volt Device/Equipment Not Working	Breaker tripped/Fuse blown -Take time to investigate why the equipment was drawing too much current or why it had a short circuit. Device failure Faulty controller Corroded/loose wire connection No DC voltage to device

DC ELECTRICAL SYSTEM DIGITAL SWITCHING DIAGNOSTIC CHART

Problem	Possible Cause
Single Component Malfunctions	Tripped Breaker- Check At Plotter Or Module Faulty Device Wiring Connections Check Physical Breaker/Fuse On Device Harness Pin Corroded
More Than 1 Component Malfunctions	Tripped Breakers- Check At Plotter Or Module Battery Voltage Is Inadequate
All Components- No DC Voltage	Batteries Dead Battery Activation Panel Off No Batteries Installed RBS Battery Switches In Locked Mode

AC ELECTRICAL SYSTEM DIAGNOSTIC CHART

Problem	Possible Cause
No Voltage At Main AC Panel	<p>Ships dockside cord not connected</p> <p>Marina dockside breaker tripped</p> <p>ELCI breaker tripped</p> <p>Faulty dockside power cord or plug</p>
AC Panel Indicates Reverse Polarity	Dock side wires reversed at marina power supply.
No Voltage At GFCI Outlets	<p>GFCI outlet tripped (reset)</p> <p>Outlet breaker off at AC main ship's panel</p> <p>GFCI at end of life cycle</p> <p>No power at MFD or ELCI</p> <p>Dockside cord not plugged into inlet or shore side.</p>
Main AC Panel Breakers Trip When All Equipment Is Energized	Turn off equipment as needed to balance load on shore power

AC ELECTRICAL INVERTER DIAGNOSTIC CHART

Problem	Possible Cause
<p>Vessel Won't Charge Or Invert</p> <p>Shore Power At Power Bank Panel On But Vessel Isn't Charging</p>	<p>Power Bank switch off Blown fuse going to inverter Inverter RBS* failed to engage</p> <p>Dock breaker tripped or vessel ELCI tripped</p>
<p>Charging With Extension Cord & Shore Power Immediately Trips</p> <p>Devices Stop Displaying On Garmin Plotters</p>	<p>AC power incoming needs to be reduced to 15 amps (switching page)</p> <p>Network cables unplugged or device offline</p>
<p>Lithium-Ion Batteries RBS* Automatically Disengage</p>	<p>Charge too low; need shore power plugged in to re-engage RBS*</p>
<p>Battery RBS* Switch Won't Automatically Engage</p>	<p>RBS switch in manual mode; twist counter-clockwise, then back clockwise to reset</p>

* Remote battery switch

Chapter 7

Storage & Winterization

Overview

Select basic storage procedures are outlined in this chapter. These are general guidelines to follow before longer periods such as over the winter in colder climates. Be sure to familiarize yourself with all relevant information in the owner's sacht.

Special winterization procedures are necessary for the boat, components and systems. Use the enclosed checklists to help you identify areas of concern and maintenance.

Contact your closest Regal dealer or marine professional for further information regarding storage/maintenance procedures as vessel equipment and systems may be damaged due to freezing weather. Also, more specific information can be found in the engine/propulsion manufacturers operation manual.

Note that all recommendations and instructions may not apply to your particular model or vessel.

Note that no liability is accepted for information correctness and is given to the best of our knowledge.



WARNING

AVOID SERIOUS INJURY OR DEATH
DUE TO FIRE AND EXPLOSION!
DO NOT FILL FUEL TANK TO RATED
CAPACITY. LEAVE ROOM FOR EXPANSION.

NOTICE

REMOVE BATTERIES WHEN VESSEL
IS IN LONG PERIODS OF STORAGE
ESPECIALLY IN COLD CLIMATES
BATTERIES CAN FREEZE AND POSSIBLY
LOSE ELECTROLYTE.

NOTICE

AVOID SERIOUS ENGINE DAMAGE! USE
ONLY FACTORY APPROVED PRODUCTS
FOR ENGINE AND DRIVE DURING STORAGE
PERIODS.

NOTICE

AVOID HULL BOTTOM DAMAGE!
NEVER BLOCK UP THE BOAT BOTTOM AS
DAMAGE TO THE HULL MAY RESULT AND IS
NOT COVERED BY REGAL WARRANTY.

Decommissioning Checklist

Engine Winterization/Maintenance

- Run engines. Pour approved fuel stabilizer/conditioner in the fuel tank. Allow time for it to circulate through the fuel system.
- Change all engine fluids as referenced in the engine manufacturer's owners manual. Contact your Regal dealer.
- Check engine hoses, clamps, and system wiring for loose connections, abrasion, and corrosion.
- Spray all exterior parts with a rust preventative.
- Perform maintenance as referenced in your engine/propulsion manufacturer's owners manual. Contact your Regal dealer.
- Remove propellers. Refurbish as needed at a propeller repair station.
- After cleaning use touch up paint on drive unit as needed.
- Apply a coat of wax to exterior drive parts.

Boat

- Check hull bottom for any fiberglass damage.
- Apply a coat of wax to vessel surfaces except anti-skid areas.
- Remove batteries. Use a trickle charger as needed. See Lithium-Ion battery information for vessels with an inverter option.
- Remove all loose gear and electronics from boat. Inspect all equipment for wear and damage. Store in a clean, dry environment.
- Remove drain plug. Clean drain plug hole of debris as needed. Enclose drain plug in plastic bag and tie to steering wheel.
- Make sure bow is higher than stern to permit proper drainage.
- Clean all upholstery & store to promote breathing.
- Conduct a visual inspection to ensure boat is balanced properly on the trailer or cradle. Read and understand the blocking notice on this page.
- Cover boat with appropriate cover. Tie down for protection from rain, snow and/or wind. Prop up cover to provide proper ventilation. Do not cover up the fuel vents.
- Drain the fresh water system per instructions in this chapter.
- Use sling locations when lifting boat.
- Pour a pint of 50/50 antifreeze into bilge pump.

NOTICE

NEVER BLOCK UP BOAT HULL BOTTOM!
MAY CAUSE STRUCTURAL DAMAGE
TO THE HULL. STORE ON AN APPROVED
CRADLE OR TRAILER
THAT ADEQUATELY SUPPORTS THE HULL.
DAMAGE CAUSED BY BLOCKING HULL
BOTTOM IS NOT COVERED
BY REGAL WARRANTY!

Batteries- Lithium-Ion (Inverter System Option)

Lithium-Ion batteries as used with the Regal Power Bank (Inverter) option on the LS36/LX36 utilize storage/winterization recommendations per the battery manufacturer. Read and understand the recommendations. Contact your Regal dealer for additional information.

The Power Bank option specifies two 460 amp hour Lithium-Ion batteries. The batteries should be stored in a dry and well-ventilated environment. The self-discharge rate is less than 5% per month. Low or high ambient temperature affects the self-discharge rate of the batteries and natural aging.

If a battery will not be used for a period exceeding 3 months, the following is recommended.

- If external AC power is available switch off all the loads and switch on the charger. Apply a float voltage as specified in the following table.

Model	Float Voltage Setting
12V	13.5V

- If no external AC power is available:
 - Charge the battery to >80% of its capacity before storage.
 - Set the safety relay knob (RBS or remote battery switch) to "Lock Off."
 - Make sure the MasterBus powering is not set to "Always On" (see configuration tab in Master Adjust).

In this setup the batteries can be kept 6 months without maintenance. However, it is highly recommended to charge the battery to >80% of its capacity every 100 days.

Typical Fresh Water System

1. Activate the fresh water pump switch.
2. Open all faucets including transom shower and allow tank to empty.
3. Drain the water tank. Shut off fresh water pump switch.
4. Mix **nontoxic antifreeze** with water in accordance with the manufacturer's recommendations. (Available at marina & RV stores)
5. Put solution into the fresh water tank
6. Turn on fresh water pump switch.
7. Open water faucet and purge until a steady stream of **nontoxic antifreeze** flows from the faucet. If equipped, do the same to the transom shower. Turn the fresh water switch to the "off" position.

Waste System

With electric head, pump out holding tank. Add nontoxic antifreeze to toilet and holding tank. Pump from toilet to holding tank to eliminate any water remaining in supply lines.

NOTICE

AVOID VESSEL AND/OR OUTBOARD ENGINE DAMAGE! CONTACT A MARINE PROFESSIONAL FOR WINTERIZATION ASSISTANCE. DAMAGE CAUSED BY IMPROPER WINTERIZATION IS NOT COVERED BY THE VESSEL OR ENGINE MANUFACTURER.



DANGER

AVOID BODILY INJURY OR DEATH DUE TO POISON! NEVER USE AUTOMOTIVE TYPE ANTIFREEZE IN A WATER SYSTEM SINCE IT IS POISONOUS TO THE HUMAN BODY!

Recommissioning Checklist

Engine

- Check all components per engine manufacturer's owner's manual especially fluid levels.
- Start engines and check for fuel, exhaust, oil, and water leaks.

Boat

- Install hull drain plug.
- Install battery(ies) and tighten all terminals.
- Check all equipment, switches, alarms, gauges and breakers for proper operation.
- Add necessary chemicals and water to chemical head.
- Add water to fresh water tank. Turn on faucet to purge tank. Refill water tank.
- Make sure all safety gear is on board and in excellent working condition.
- After launching, check controls, gauges and systems for proper operation.

Chapter 8

Glossary & Index

Below is a brief list of nautical terminology. For more detailed glossaries we recommend you check your local library, book retailer, marine store or internet.

Glossary

Abeam: at right angles to the fore and aft line and off the boat

Aboard: on or in the boat

Above: the part of the boat on a vessel which is above the interior of the boat

Aft, After: aft is the boat section toward the stern or back of the boat

Amidships: toward the center of the boat from either side to side or rear to front

Beam: the width of a boat at its widest part

Bilge: the lower interior of the hull of the boat

Bitter end: the end of a line also the end of an anchor line

Bow: the front, or forward part of the boat

Bulkhead: the vertical partition or wall of a boat

Cast off: to let go or release

Chine: the line fore and aft formed by the intersection of the side and bottom of the boat

Chock: deck fitting used to secure or guide anchor or tie lines

Cleat: deck fitting with protruding arms around which lines are secured

Cockpit: the seating space used to accommodate passengers

Cuddy: a small cabin in the fore part of the boat

Deck: the open flooring surface on which crew and passengers walk

Draft: the depth from the waterline of the boat to the lowest part of the boat, which indicates how much water is required to float the boat

FasTrac: a proven hull bottom design which incorporates a full, mid-beam step that reduces drag by forcing air under the hull to decrease drag and friction.

Fathom: a measurement of depth; one fathom equals six feet

Fender: a cushion hung from the side of a boat to prevent it from rubbing against a dock or against other boats.

Fend off: to push off to avoid sharp contact with dock or other vessel

Fore: the part of the boat toward the bow or front

Freeboard: the height of the top side from the waterline to the deck at its shortest point (The distance from sheer or gunwale to the water).

Gunwale: rail or upper edge of the side of the boat

Head: toilet

Hull: the part of the hull from the deck down

Keel: the lowest point of a boat; the backbone of the vessel

Knots: a measurement of speed indicating nautical miles per hour

Lee: the side opposite that from which the wind is blowing; the side sheltered from the wind

Leeward: the direction toward which the wind is blowing

PFD: personal flotation device; required for each person aboard

Port: the left side of the boat when facing forward (an easy way to remember the difference between “port” and “starboard” is that both “port” and “left” have four letters)

Shank: the main body of an anchor

Sheer: the curve of the boat’s deck from fore to aft when seen from the side

Starboard: the right side of the boat when facing forward

Stern: the aft end of the boat

Stern drive: an inboard/outboard (I/O) propulsion unit

Stringer: strengthening integral unit fastened from fore to aft inside the hull and fiberglass encapsulated for added strength: much like the skeleton system of our body

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Chapter 9

Technical/Drawings

Notice

The following technical information and drawings can be an aid in troubleshooting electrical, mechanical, and system problems along with the charts located in the troubleshooting chapter.

For more information contact your nearest authorized Regal dealer. For the location of your nearest dealer call 407-851-4360 or visit the web-site at www.Regalboats.com.

Your Regal dealer has received training on the product line and his services should be employed to solve technical problems.

Note that all product specifications, drawings, labels, standard and optional equipment including locations, systems, along with technical information are subject to change without notice during the production life cycle of a vessel. Select components and/or systems may not be installed on your vessel. There may not be drawings for select vessel components or systems in this manual. No liability is accepted for information correctness and is given to the best of our knowledge.

Note that drawing titles may use the model designator or the standard configuration numbers as follows: LS36 or VL (stern drive); LX36 or VM (outboard). The VL/VM designators are also located on the vessel hull identification number.

LS36/LX36 TYPICAL LABELS & LOCATIONS- 1 OF 5

Key

- LS36 or LX36 BADGE
- DANGER: CARBON MONOXIDE
- WARNING: TRANSONIC DOOR MUST BE CLOSED
- WARNING: ROTATING PROPELLER/DO NOT USE LADDER
- WARNING: MAX CAPACITY OF SWIM PLATFORM
- SLING BADGE
- WARNING: USE PROPER BLOCKING TECHNIQUES
- DISCHARGE OF OIL PROHIBITED PLAQUE
- WARNING: INJURY FROM FIRE OR EXPLOSION
- AIR CONDITIONER SEACOCK PLAQUE
- RED DISCHARGE OF WASTE PLAQUE
- OVERBOARD DISCHARGE PLAQUE
- DISCHARGE OF PLASTIC PROHIBITED PLAQUE
- WARNING: CLOSE AND SECURE DOOR WHILE UNDERWAY
- NOTICE: FIRE EXTINGUISHER LEVER INSIDE
- OWNERS MANUAL OR CODE
- WARNING: CARBON MONOXIDE
- WARNING: CARBON MONOXIDE
- WARNING: CARBON MONOXIDE
- MEETS U.S. EPA/EVAP STANDARDS
- YACHT CERTIFICATION
- CANADIAN COMPLIANCE NOTICE
- NOTICE: RETRIEVAL OF WINDLASS CHAIN
- CAUTION: POWER SWITCH ANCHOR WINDLASS
- SUNROOF WARNING
- OPEN VALVE TO FILL WATER TANK
- SHORE POWER WARNING
- POWER BANK ELECTRIC SHOCK HAZARD

1 LS36 or LX36 BADGE

2 DANGER: CARBON MONOXIDE

3 WARNING: TRANSONIC DOOR MUST BE CLOSED

4 WARNING: ROTATING PROPELLER/DO NOT USE LADDER

5 WARNING: MAX CAPACITY OF SWIM PLATFORM

6 SLING BADGE

7 WARNING: USE PROPER BLOCKING TECHNIQUES

8 DISCHARGE OF OIL PROHIBITED PLAQUE

9 WARNING: INJURY FROM FIRE OR EXPLOSION

10 AIR CONDITIONER SEACOCK PLAQUE

11 RED DISCHARGE OF WASTE PLAQUE

12 OVERBOARD DISCHARGE PLAQUE

13 DISCHARGE OF PLASTIC PROHIBITED PLAQUE

14 WARNING: CLOSE AND SECURE DOOR WHILE UNDERWAY

15 NOTICE: FIRE EXTINGUISHER LEVER INSIDE

16 OWNERS MANUAL OR CODE

17 WARNING: CARBON MONOXIDE

18 WARNING: CARBON MONOXIDE

19 WARNING: CARBON MONOXIDE

20 MEETS U.S. EPA/EVAP STANDARDS

21 YACHT CERTIFICATION

22 CANADIAN COMPLIANCE NOTICE

23 NOTICE: RETRIEVAL OF WINDLASS CHAIN

24 CAUTION: POWER SWITCH ANCHOR WINDLASS

25 SUNROOF WARNING

26 OPEN VALVE TO FILL WATER TANK

27 SHORE POWER WARNING

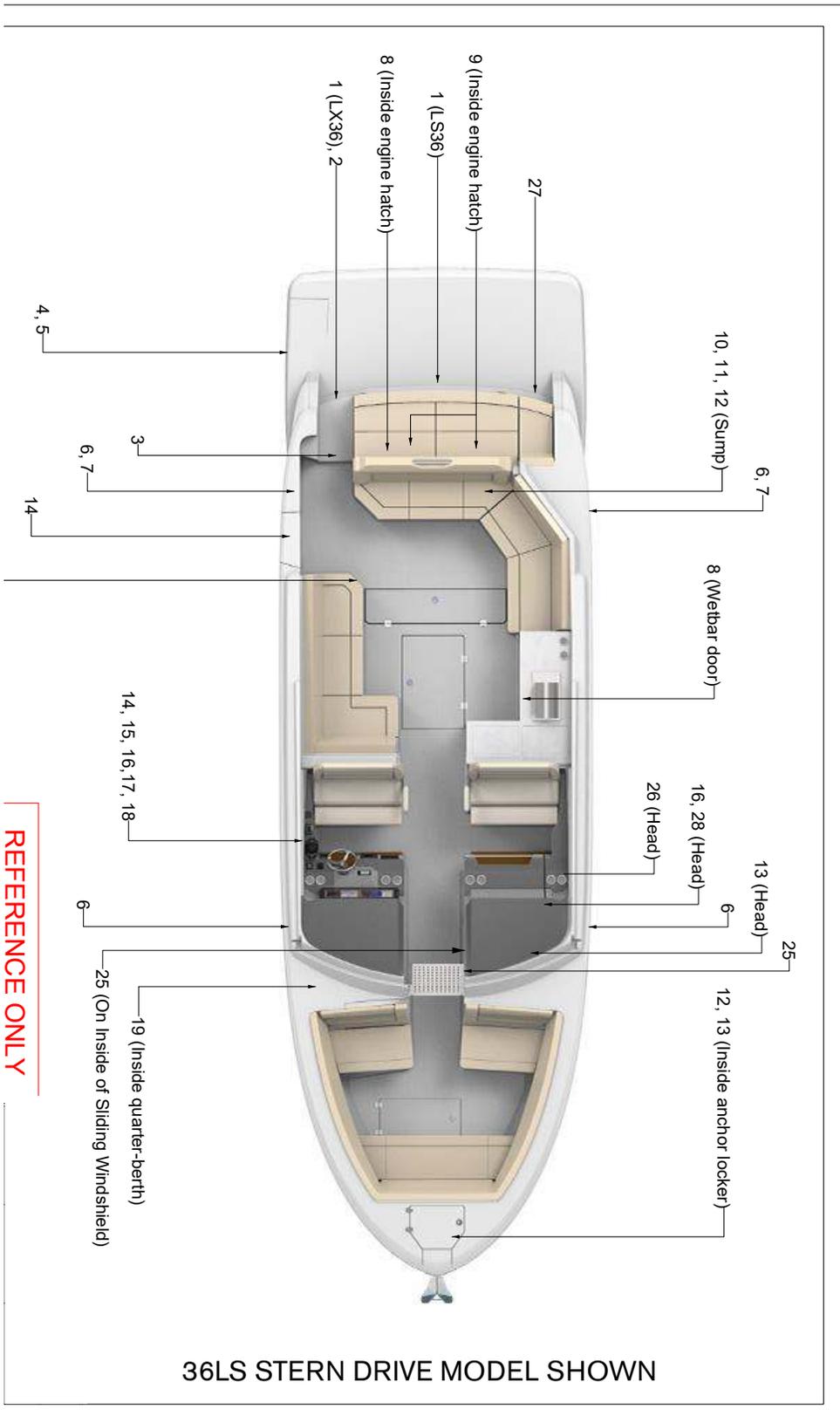
28 POWER BANK ELECTRIC SHOCK HAZARD

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LS36/LX36 TYPICAL LABELS & LOCATIONS- 2 OF 5



Note on the above illustration that label locations, information, and the actual label itself varies by model and can change at any time. Read & understand the safety labels found in the General Vessel Information Manual on the Regal web-site and on your craft before attempting to operate the vessel.

LS36/LX36 TYPICAL LABELS & LOCATIONS- 3 OF 5

Transom

27
1 (LS36)
1 (LX36)
2
3
14

Sump

** Add plaques for seacocks for diesel generator and seakeeper options

12

Dive Door

14
15

9

10

REFERENCE ONLY

INSTALLATION AND CONNECTIONS
SHOULD BE DONE IN ACCORDANCE WITH THE LOCAL REGULATORY AGENCIES
AND THE MANUFACTURER'S INSTRUCTIONS. ALWAYS USE THE CORRECT
PROCEDURES FOR THE INSTALLATION OF THE SEACOCKS.

Note on the above illustration that label locations, information, and the actual label itself varies by model and can change at any time. Read & understand the safety labels found in the General Vessel Information Manual on the Regal web-site and on your craft before attempting to operate the vessel.

LS36/LX36 TYPICAL LABELS & LOCATIONS- 4 OF 5

Helm



18, 19, 20, 21, 22

Webbar Cabinet



13

AFT Cleat



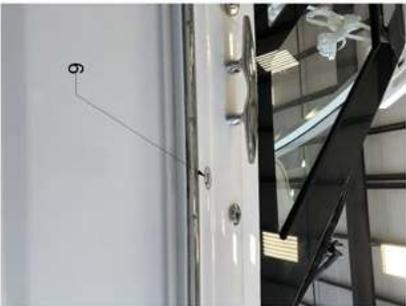
7

Windshield



25

Middle Cleat



6

REFERENCE ONLY

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LS36/LX36 TYPICAL LABELS & LOCATIONS- 5 OF 5

Head



13



26



16



28

Anchor Locker



23, 24

Quarter-Berth



17

REFERENCE ONLY

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Note on the above illustration that label locations, information, and the actual label itself varies by model and can change at any time. Read & understand the safety labels found in the General Vessel Information Manual on the Regal web-site and on your craft before attempting to operate the vessel.

LS36 STERN DRIVE ONLY DRAWINGS

Notice

The drawings on the following pages can be an aid in troubleshooting LS36 **stern drive** electrical, mechanical, and system problems along with the charts located in the troubleshooting chapter. For referencing ease the electrical system drawing group is followed by the mechanical system drawing group.

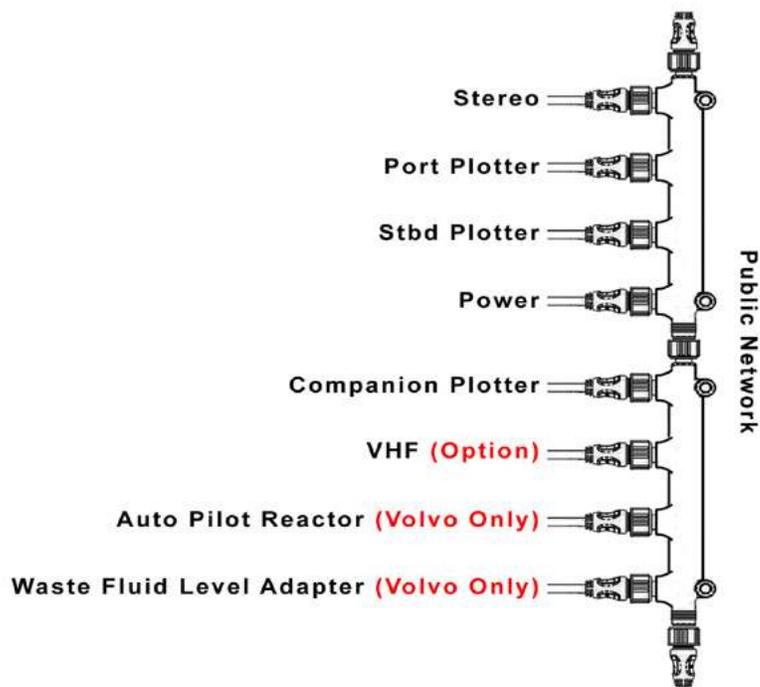
For more information contact your Regal dealer. For the location of your nearest dealer call 407-851-4360 or visit the web-site at www.Regalboats.com. Your Regal dealer has received training on the product line and his services should be employed to solve technical problems.

Note that all product specifications, drawings, standard and optional equipment including locations, systems, and technical information are subject to change without notice during the production life cycle of a vessel. Select components and/or systems may not be installed on your vessel. There may not be drawings for select vessel components or systems in this manual. No liability is accepted for information correctness and is given to the best of our knowledge.

Note that drawing titles may use the model designator/letters LS36 or VL.

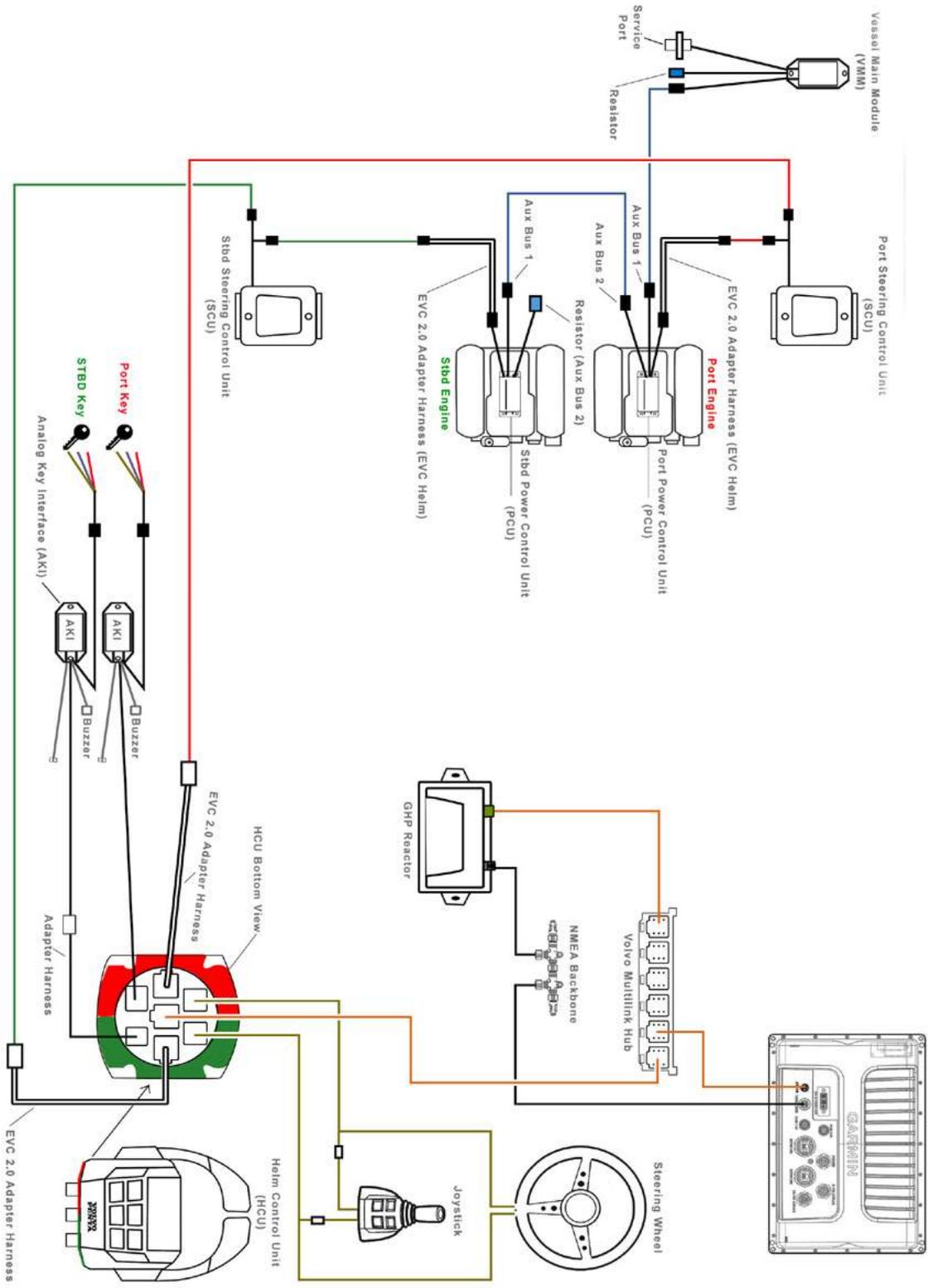


LS36- VOLVO GLASS COCKPIT NMEA NETWORK



REFERENCE ONLY

LS36- VOLVO GLASS COCKPIT- EVC

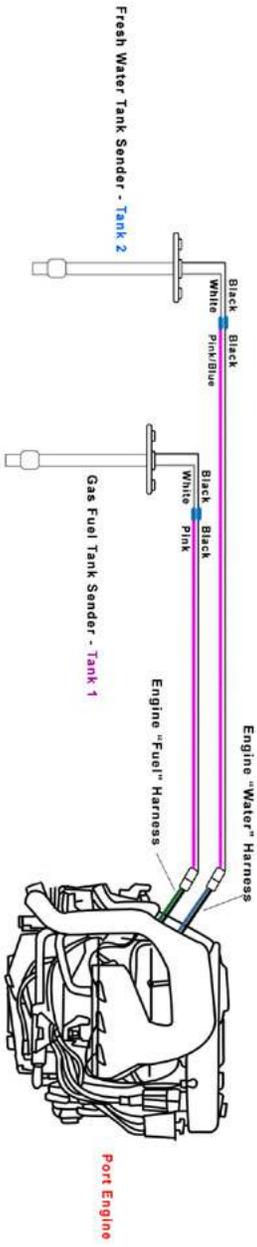
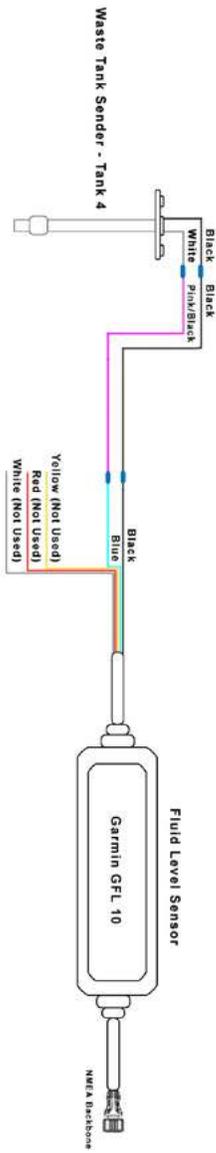
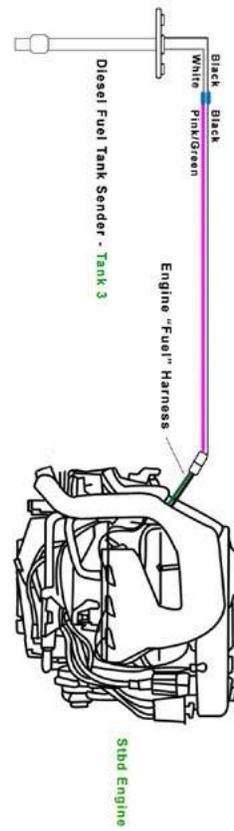


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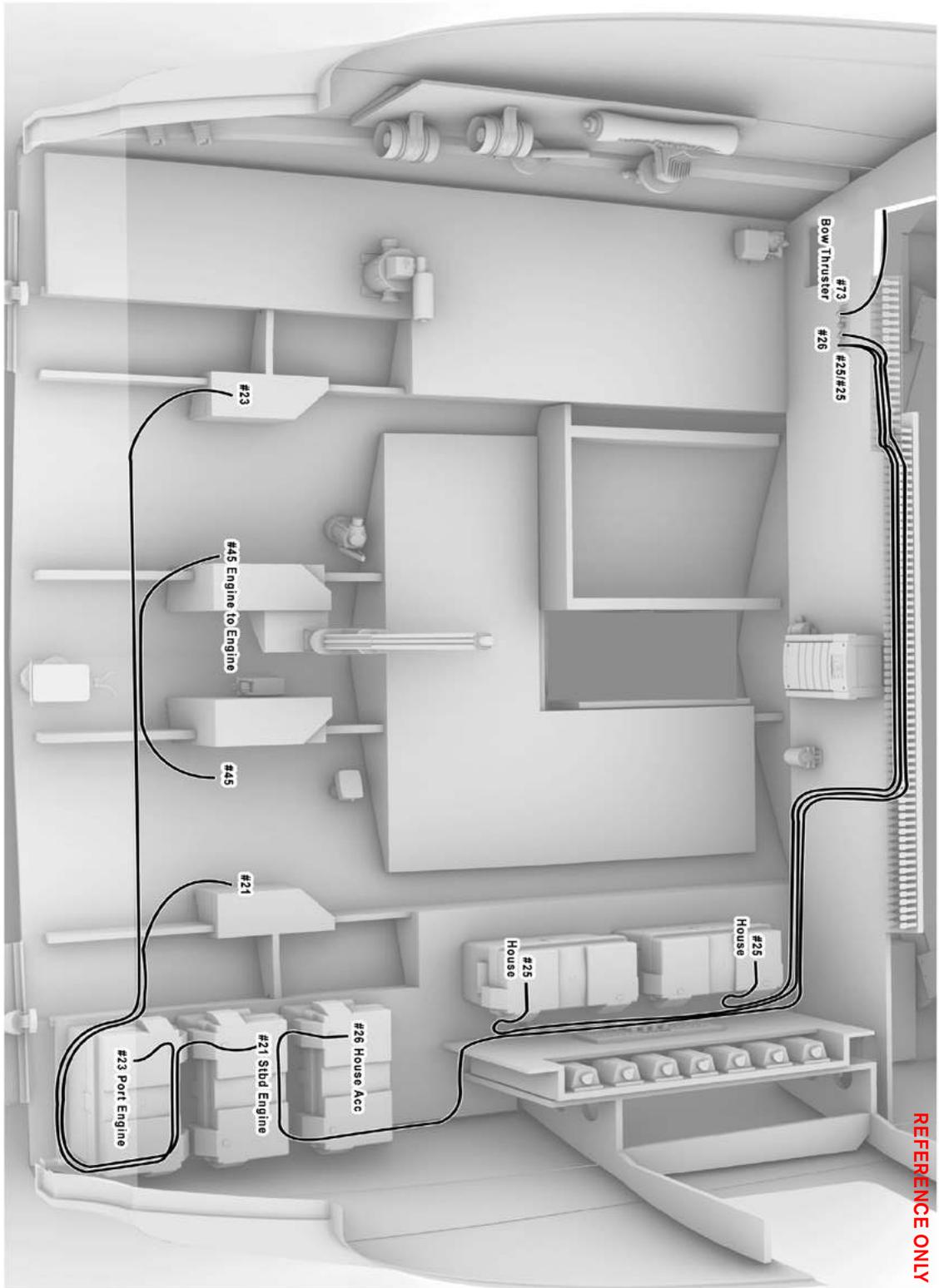
Volvo Glass Cockpit Plotter Multi-Function Display (MFD)

LS36- VOLVO GLASS COCKPIT EVC FUEL/WATER LEVELS

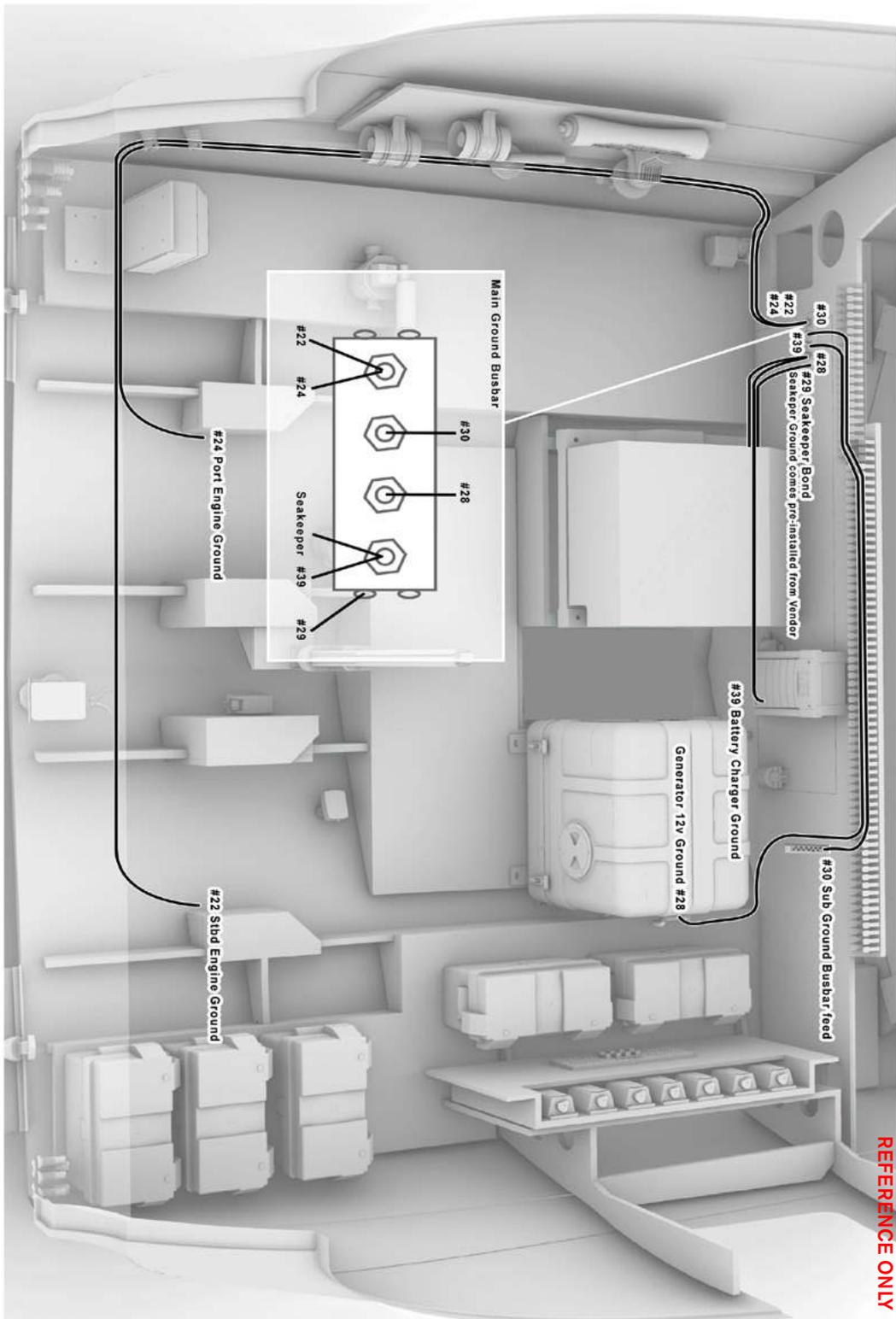
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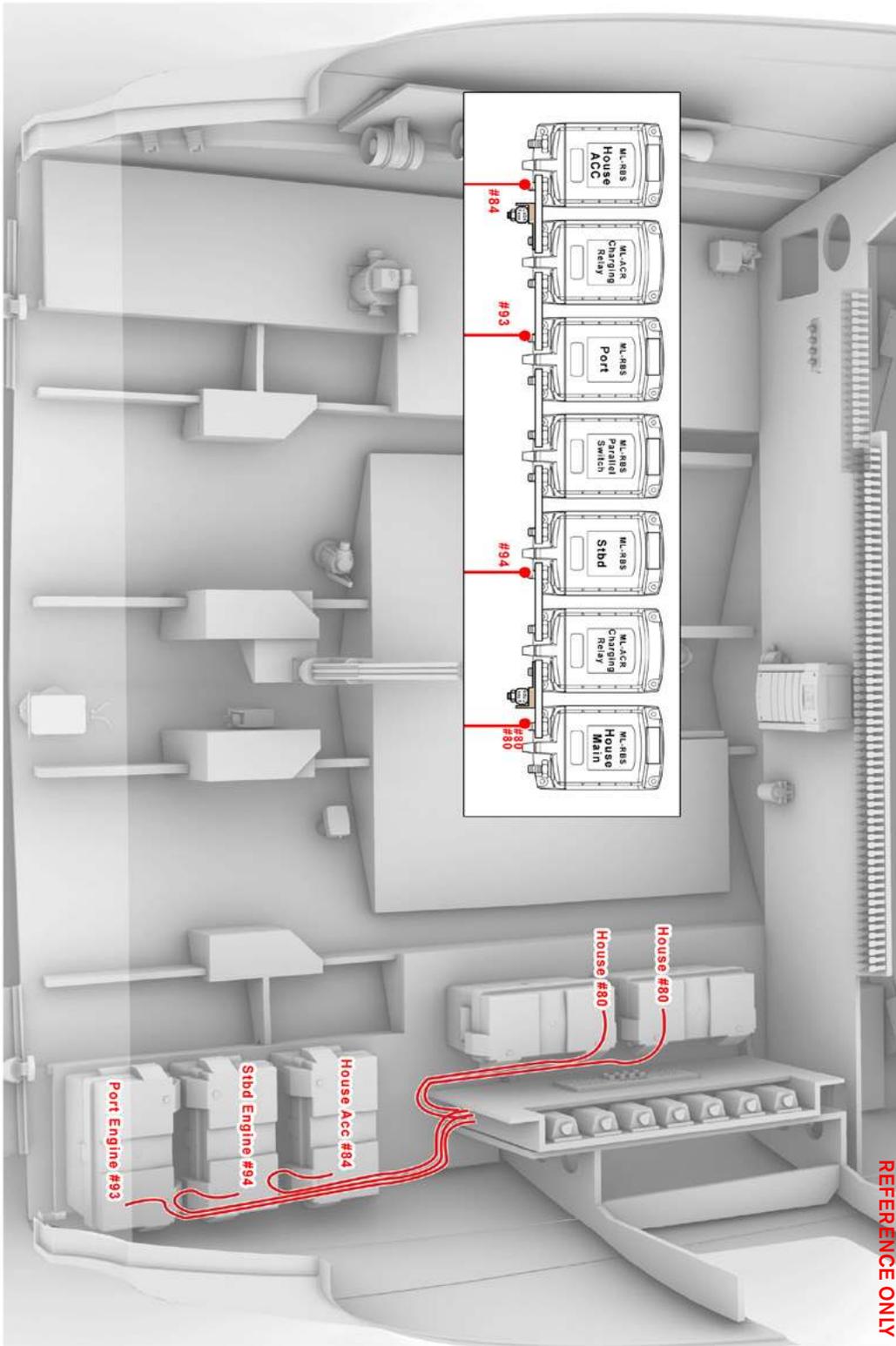
LS36- HARNESS BATTERY CABLES 1 OF 4



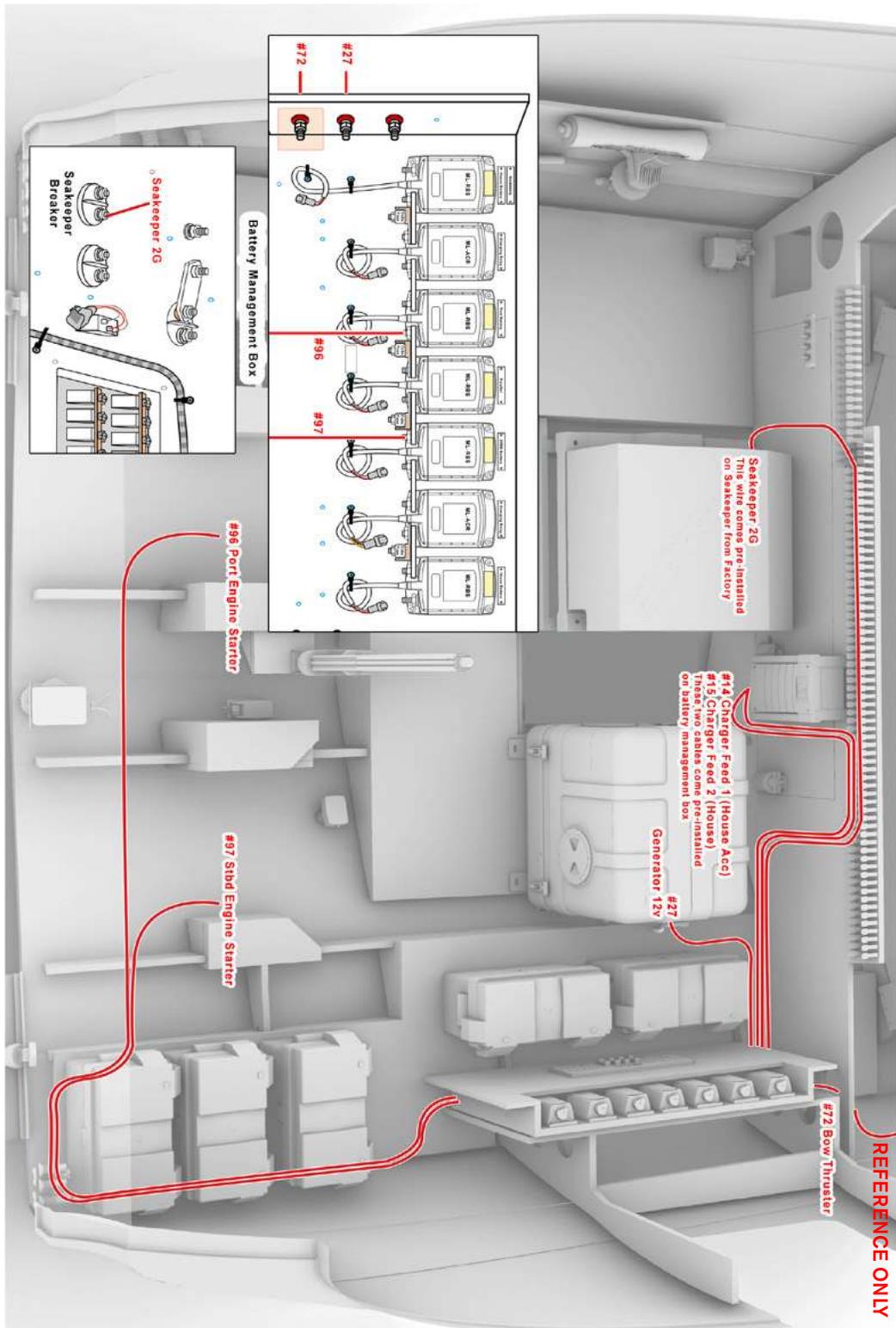
LS36- HARNESS BATTERY CABLES 2 OF 4



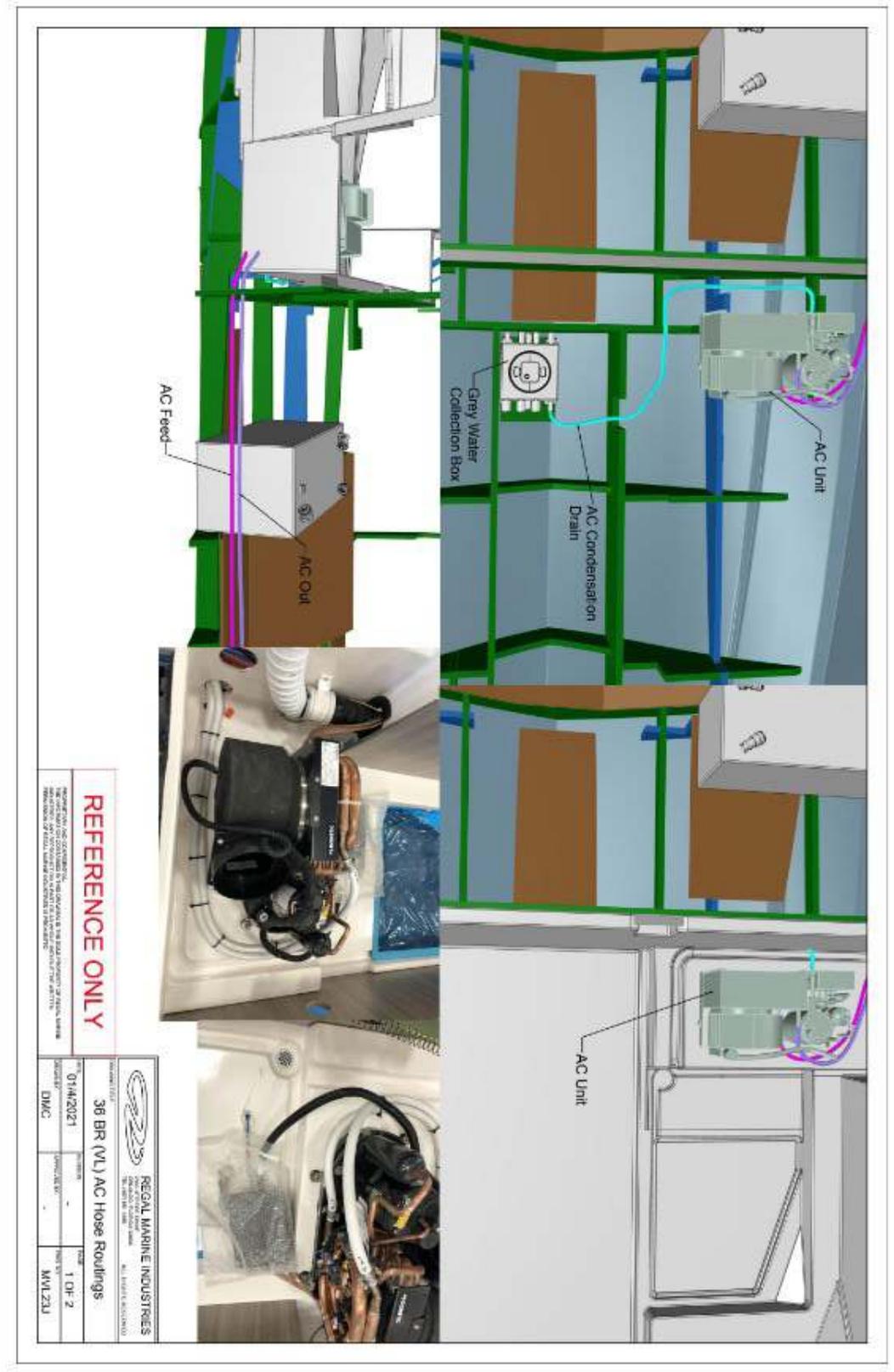
LS36- HARNESS BATTERY CABLES 3 OF 4



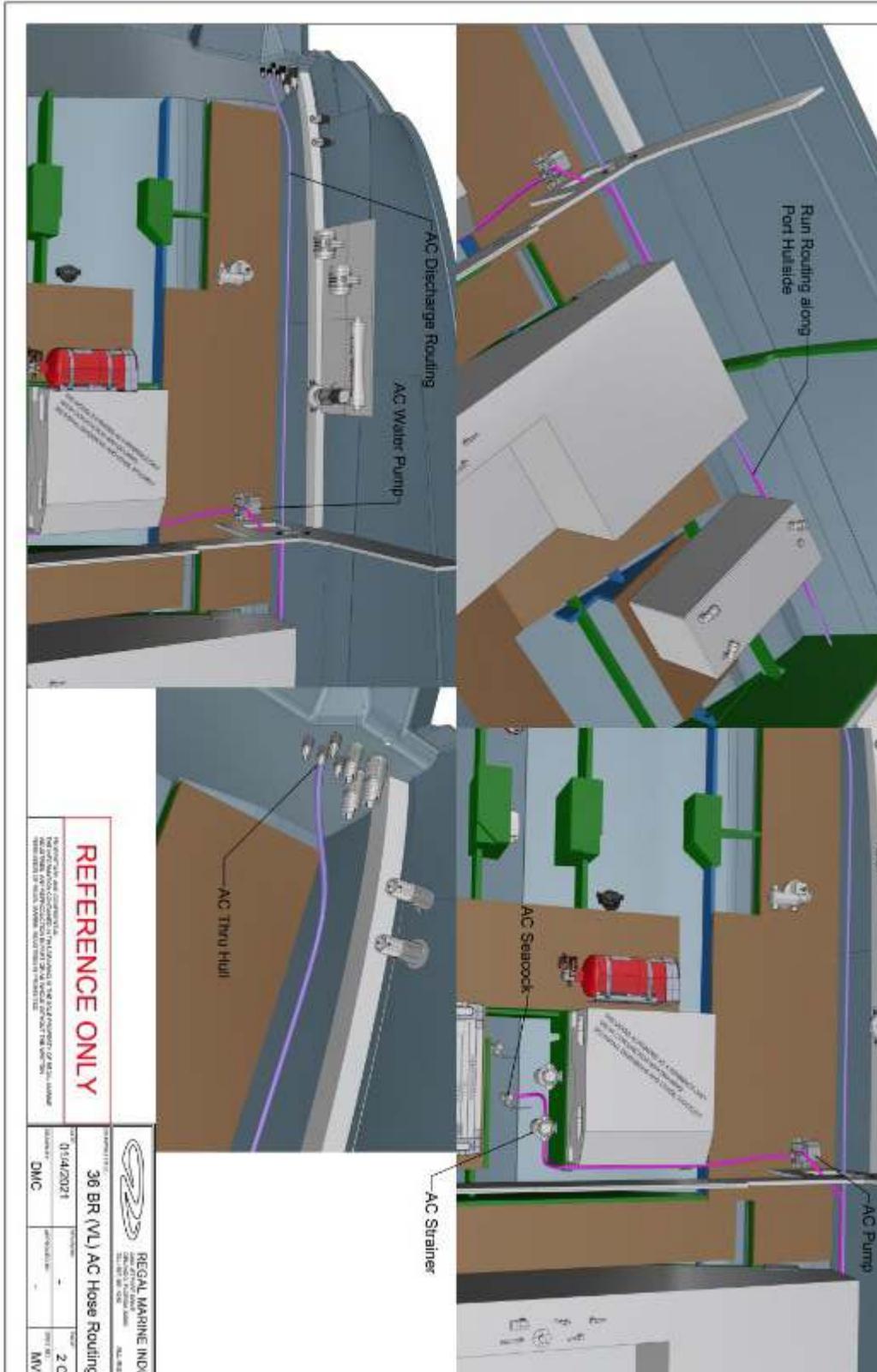
LS36- HARNESS BATTERY CABLES 4 OF 4



LS36- AC HOSE ROUTING 1 OF 2



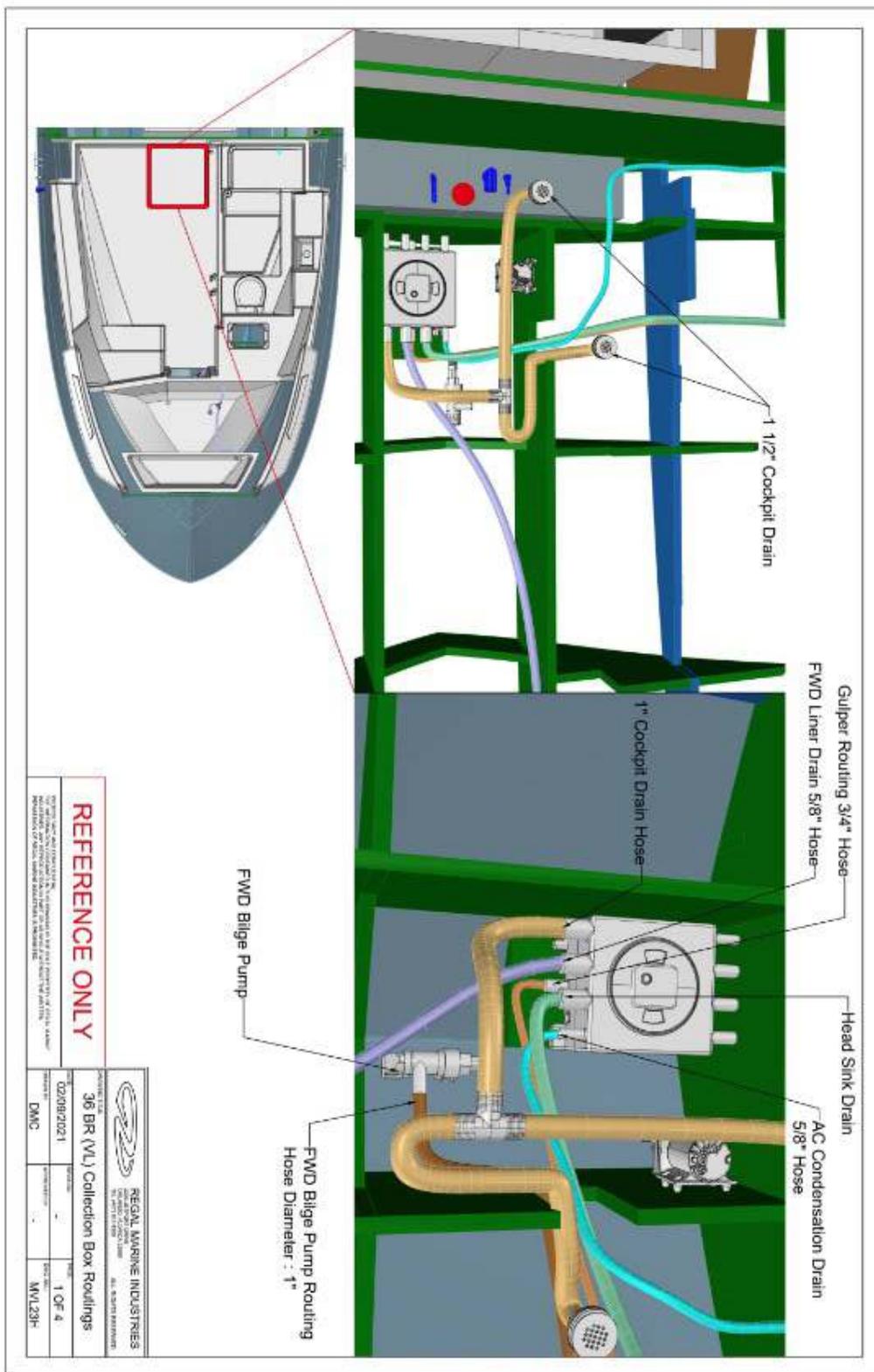
LS36- AC HOSE ROUTING 2 OF 2



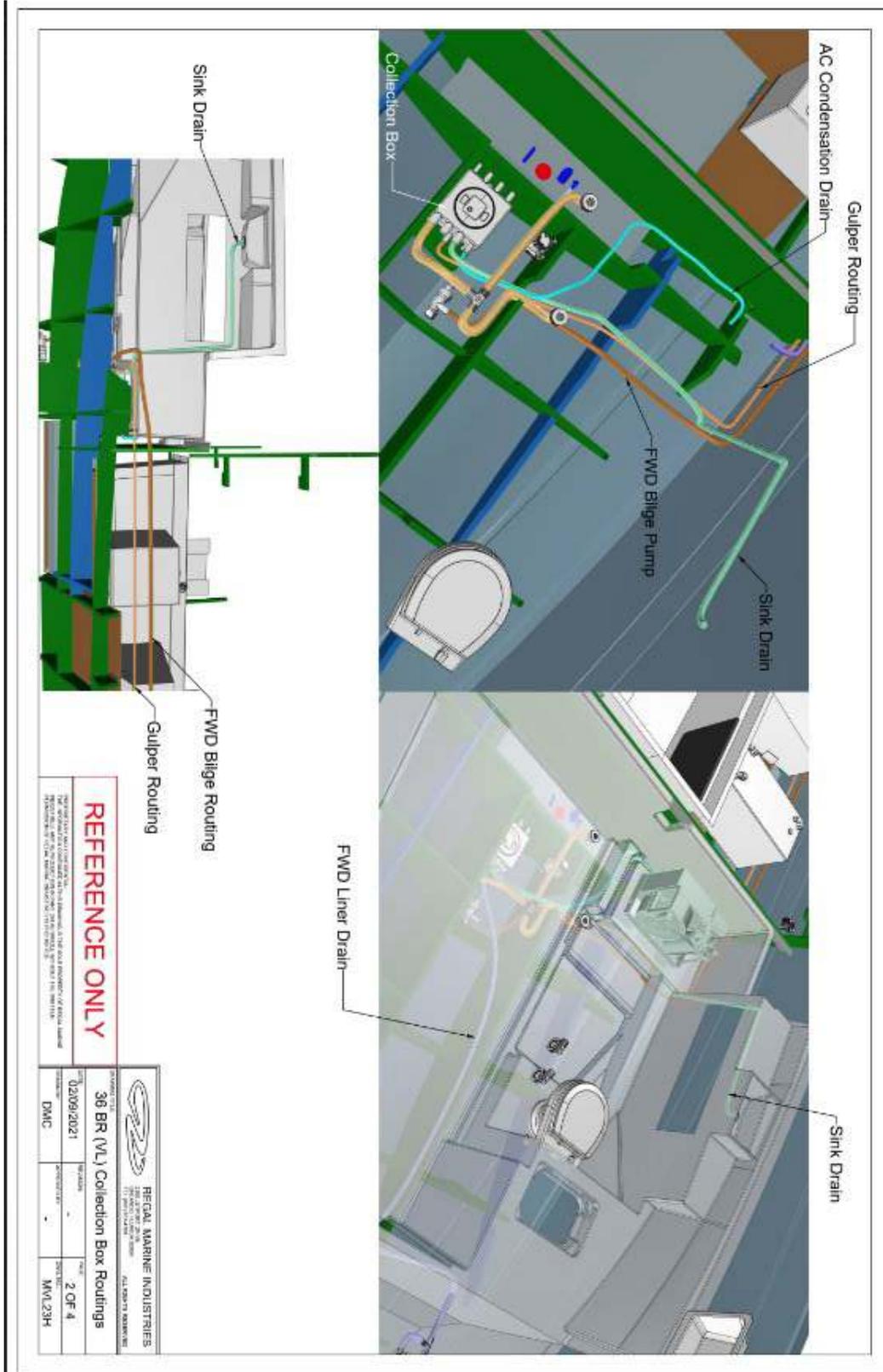
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PROJECT NO: 36 BR (V/L) AC Hose Routing	DATE: 01/14/2021
CLIENT: DMC	SHEET NO. OF 2 20
DRAWN BY: MVI	CHECKED BY: MVI

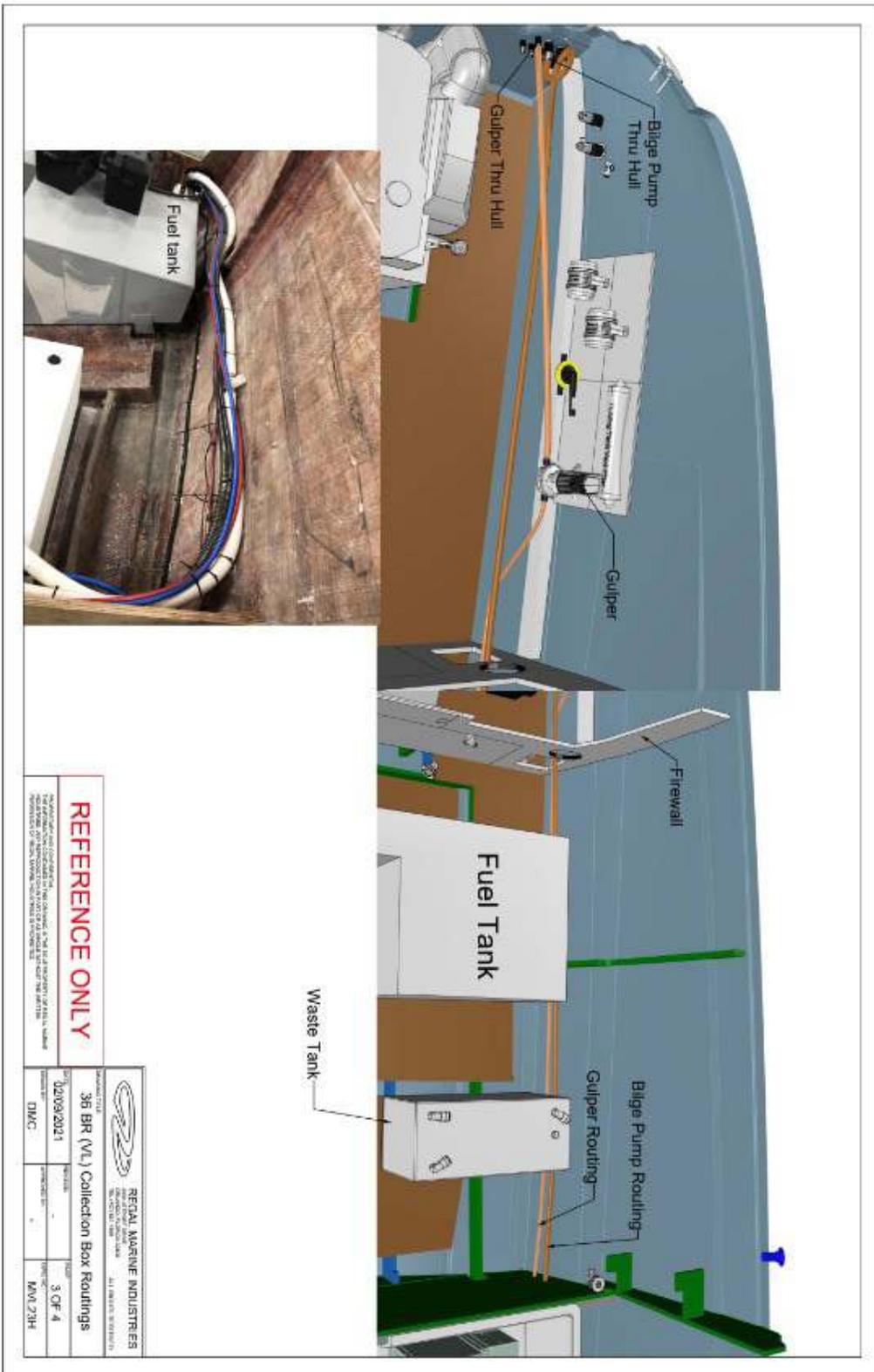
LS36- COLLECTION BOX HOSE ROUTING 1 OF 4



LS36- COLLECTION BOX HOSE ROUTING 2 OF 4



LS36- COLLECTION BOX HOSE ROUTING 3 OF 4

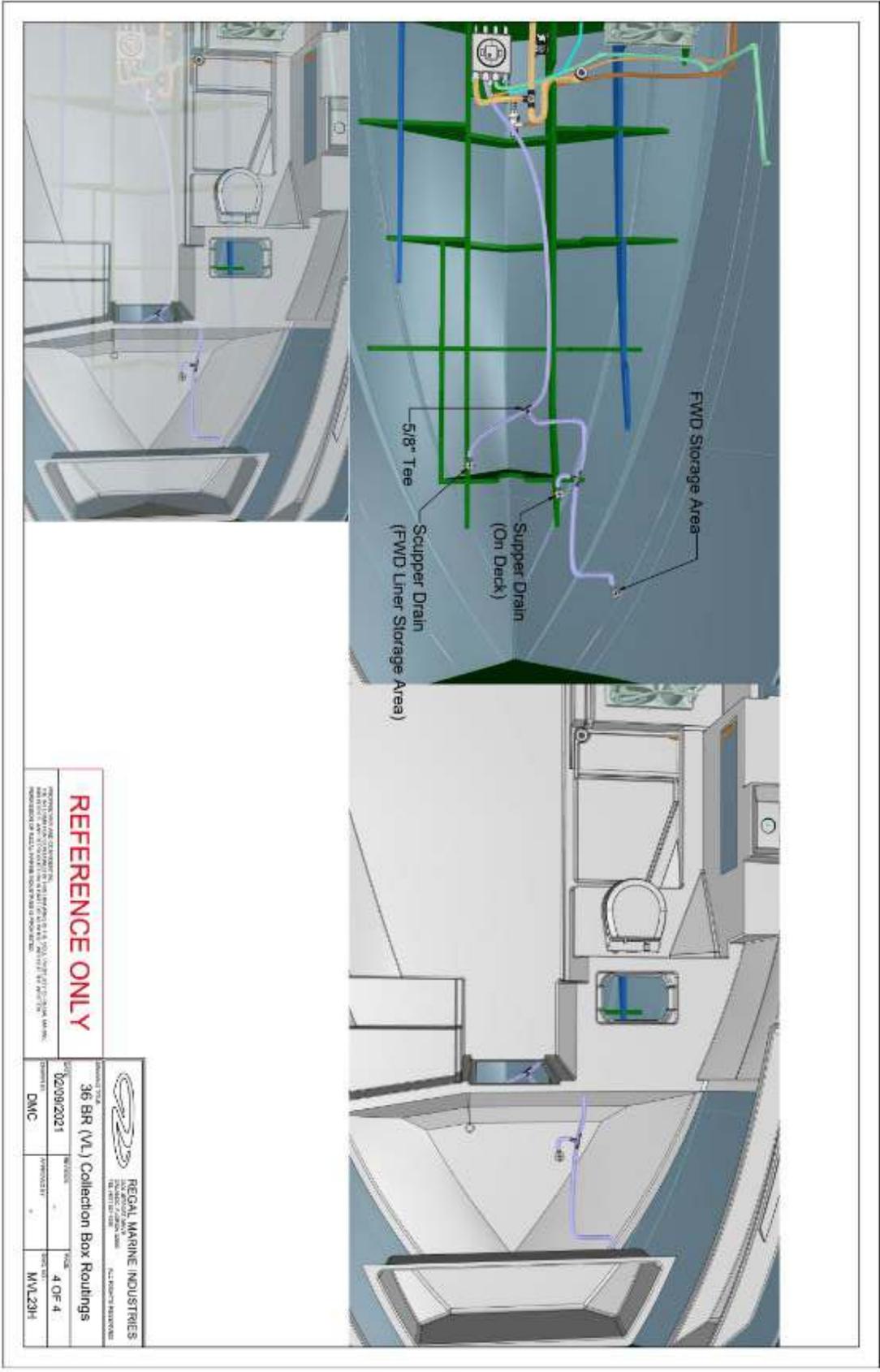


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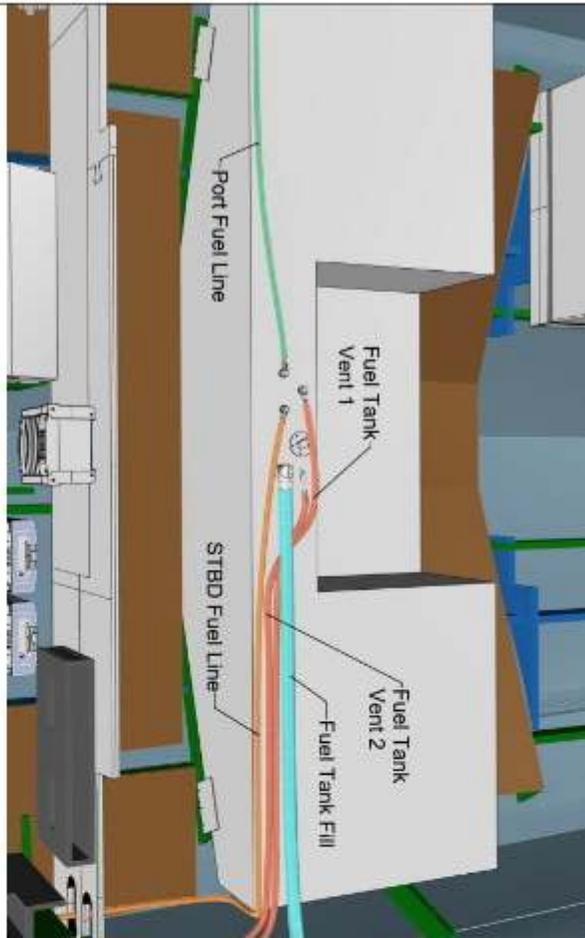
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<p>PROJECT TITLE</p> <p>36 BR (VL) Collection Box Routings</p>	<p>DATE</p> <p>02/09/2021</p>
<p>PROJECT NO.</p> <p>DMC</p>	<p>REV</p> <p>3 OF 4</p>
<p>DATE</p> <p>02/09/2021</p>	<p>REV</p> <p>MAN 23H</p>

LS36- COLLECTION BOX HOSE ROUTING 4 OF 4



LS36- FUEL TANK HOSE ROUTING 1 OF 5



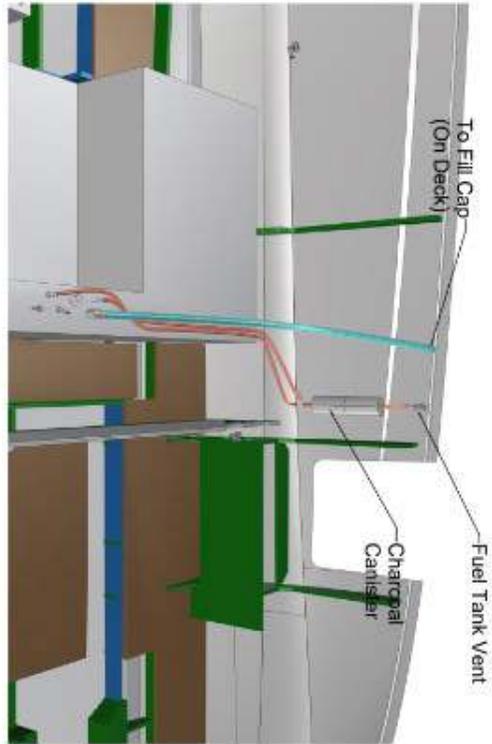
- █ Fuel Vent Routing 3/4" Ø 1
Hose Length: 77 ft
- █ Fuel Vent Routing 3/4" Ø 2
Hose Length: 67 ft
- █ Fuel Fill Routing 2" Ø
Hose Length: 85 ft
- █ Port Engine Fuel Routing 3/8" Ø
Hose Length: 158 ft
- █ STBD Engine Fuel Routing 3/8" Ø
Hose Length: 158 ft

REFERENCE ONLY

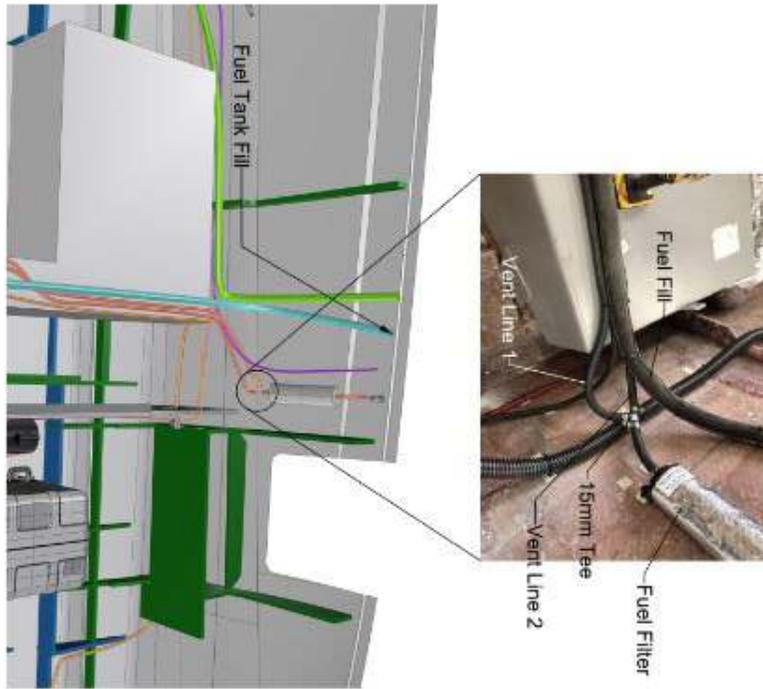
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 BEACON MARINE INDUSTRIES, INC. 2000 PORTLAND AVENUE SUITE 100 PORTLAND, ME 04106-1118 TEL: 603-883-1118	DATE: 12/9/2020 DRAWN BY: DMC	TITLE: 36 BR (M/J) Fuel Tank Routings SHEET NO: 1 OF 4 PROJECT NO: MVL23
	REVISIONS:	SCALE:

LS36- FUEL TANK HOSE ROUTING 2 OF 5



- █ Fuel Vent Routing 3/4" Ø 1
Hose Length: 77 in
- █ Fuel Vent Routing 3/4" Ø 2
Hose Length: 67 in
- █ Fuel Fill Routing 2" Ø
Hose Length: 67 in
- █ Port Engine Fuel Routing 3/8" Ø
Hose Length: 150 in
- █ STBD Engine Fuel Routing 3/8" Ø
Hose Length: 156 in



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DRAWING TITLE 36 BR (WL) Fuel Tank Routings	SHEET NO. 2 OF 5
DATE 12/8/2020	DRAWN BY TMAC
CHECKED BY _____	DATE MVI 2/3C

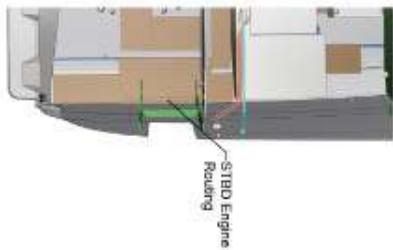
LS36- FUEL TANK HOSE ROUTING 3 OF 5

AFT Facing view



- Fuel Vent Routing 3/4" Ø 1
Hose Length: 77 in
- Fuel Vent Routing 3/4" Ø 2
Hose Length: 67 in
- Fuel Fill Routing 2" Ø
Hose Length: 85 in
- Port Engine Fuel Routing 3/8" Ø
Hose Length: 150 in
- STBD Engine Fuel Routing 3/8" Ø
Hose Length: 155 in

Port Engine Routing STBD Engine Routing

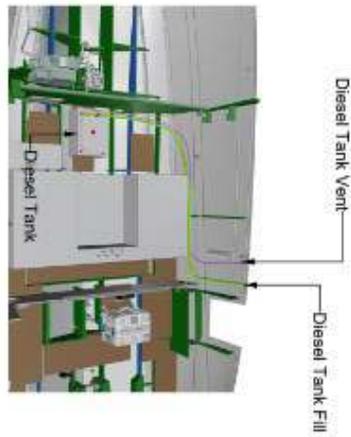


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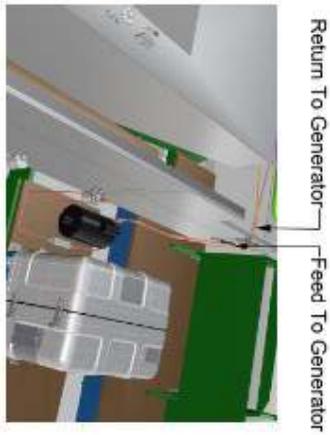
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<small>DESIGNER / DATE</small> 12/9/2020	<small>REVISED BY</small> DWAC
<small>PROJECT / TITLE</small> 36 BR (V/L) Fuel Tank Routings	<small>SCALE</small> 3 CP- 5
<small>DATE</small> 12/9/2020	<small>PROJECT / TITLE</small> MWL29C

Diesel Tank Routings



Top view with generator in place



- █ Diesel Tank Vent: 5/8"
- █ Diesel Tank Fill: 1-1/2"
- █ Diesel Generator Return: 5/16"
- █ Diesel Generator Feed: 5/16"

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PROJECT TITLE 36 BR (VL) Fuel Tank Routings	DATE 6 OF 8
DRAWING NO. 302202	SHEET NO. MW123C
DESIGNED BY SNV	CHECKED BY SNV

LS36- FUEL TANK HOSE ROUTING 5 OF 5

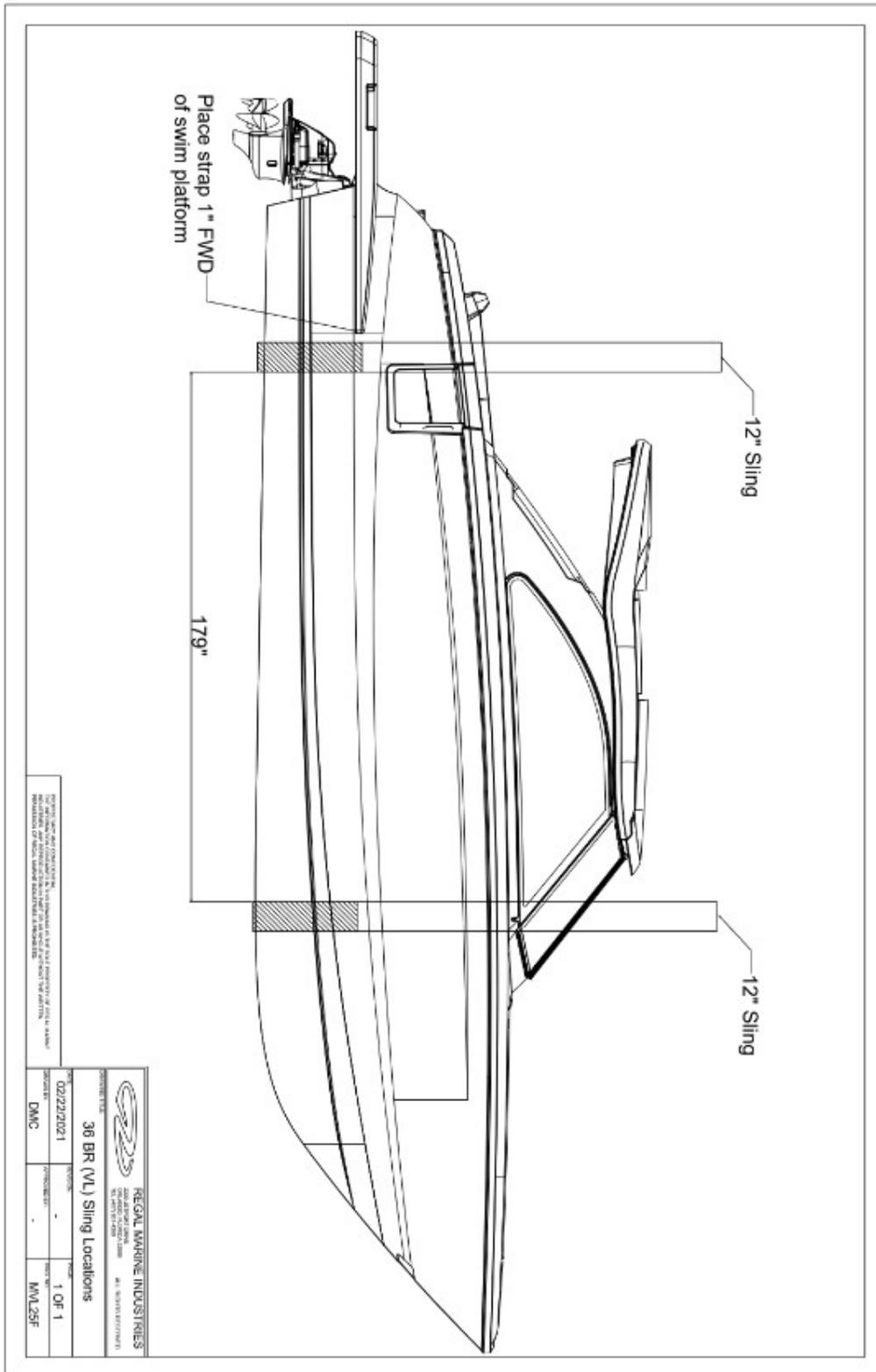


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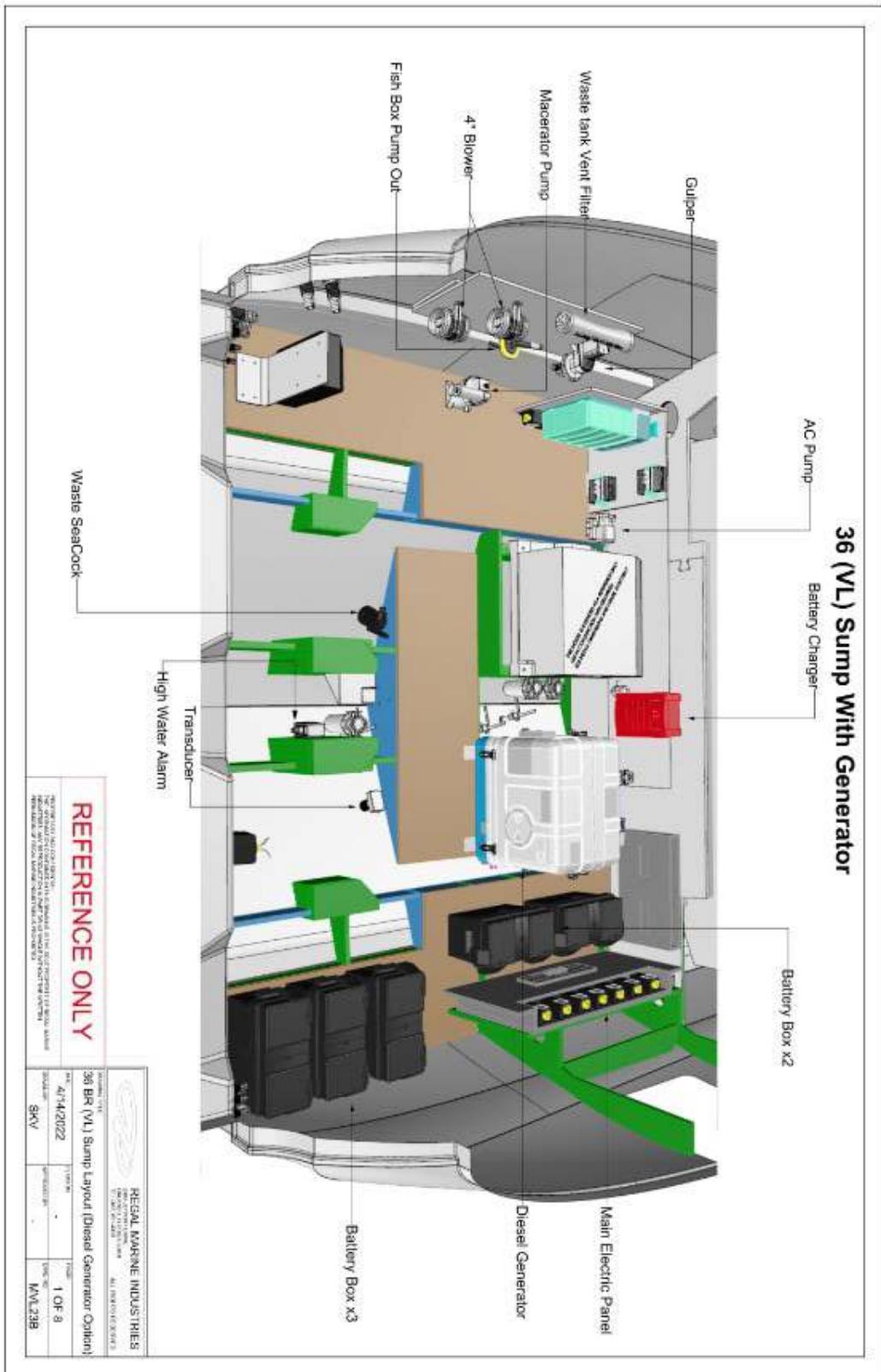
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<small>PROJECT TITLE</small> 36 BR (VL) Fuel Tank Routings	<small>DATE</small> 12/9/2020	<small>REVISED BY</small> DMK	<small>DATE</small> 5 OF 5 MV123C

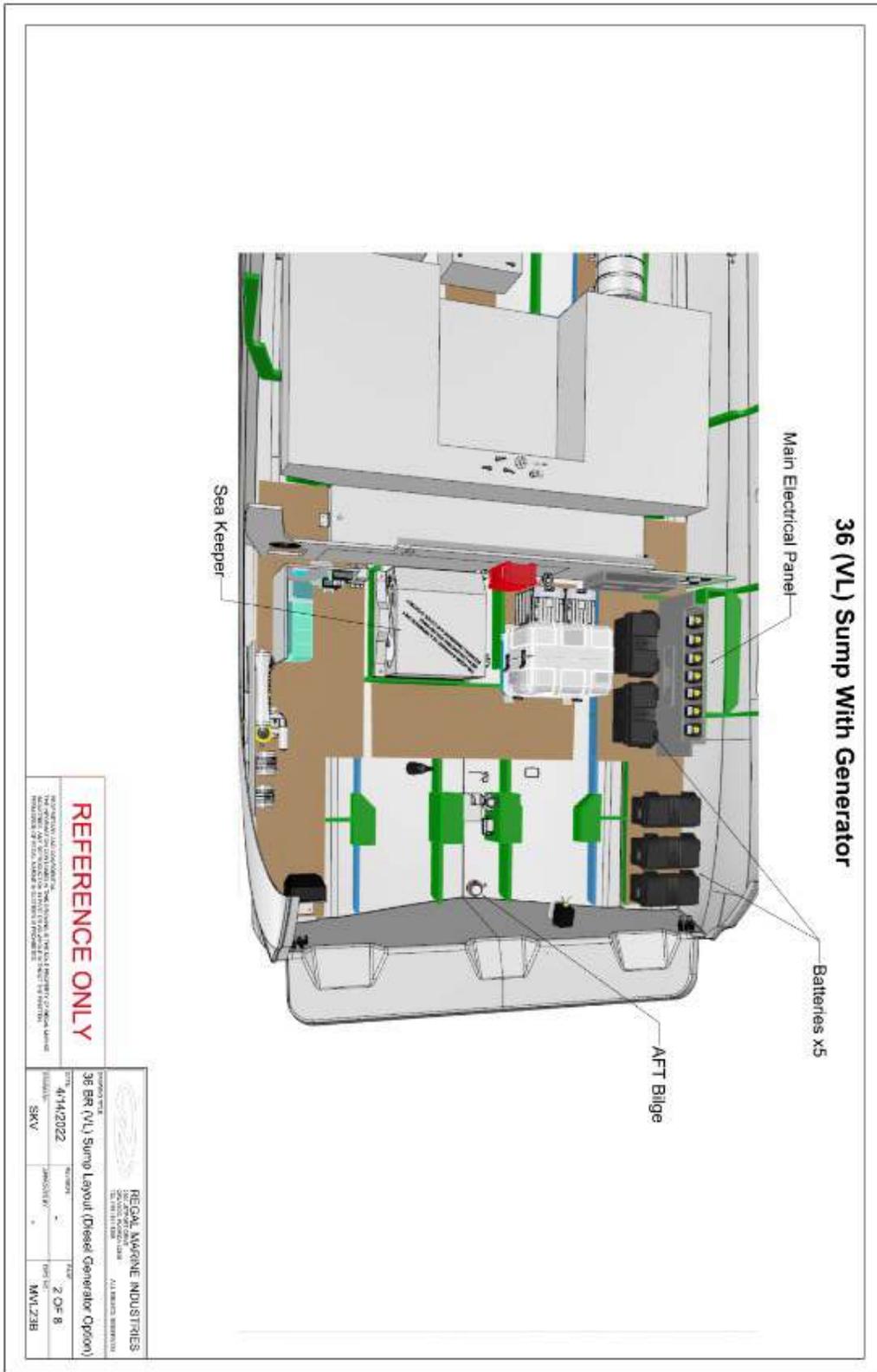
LS36- SLING LOCATIONS



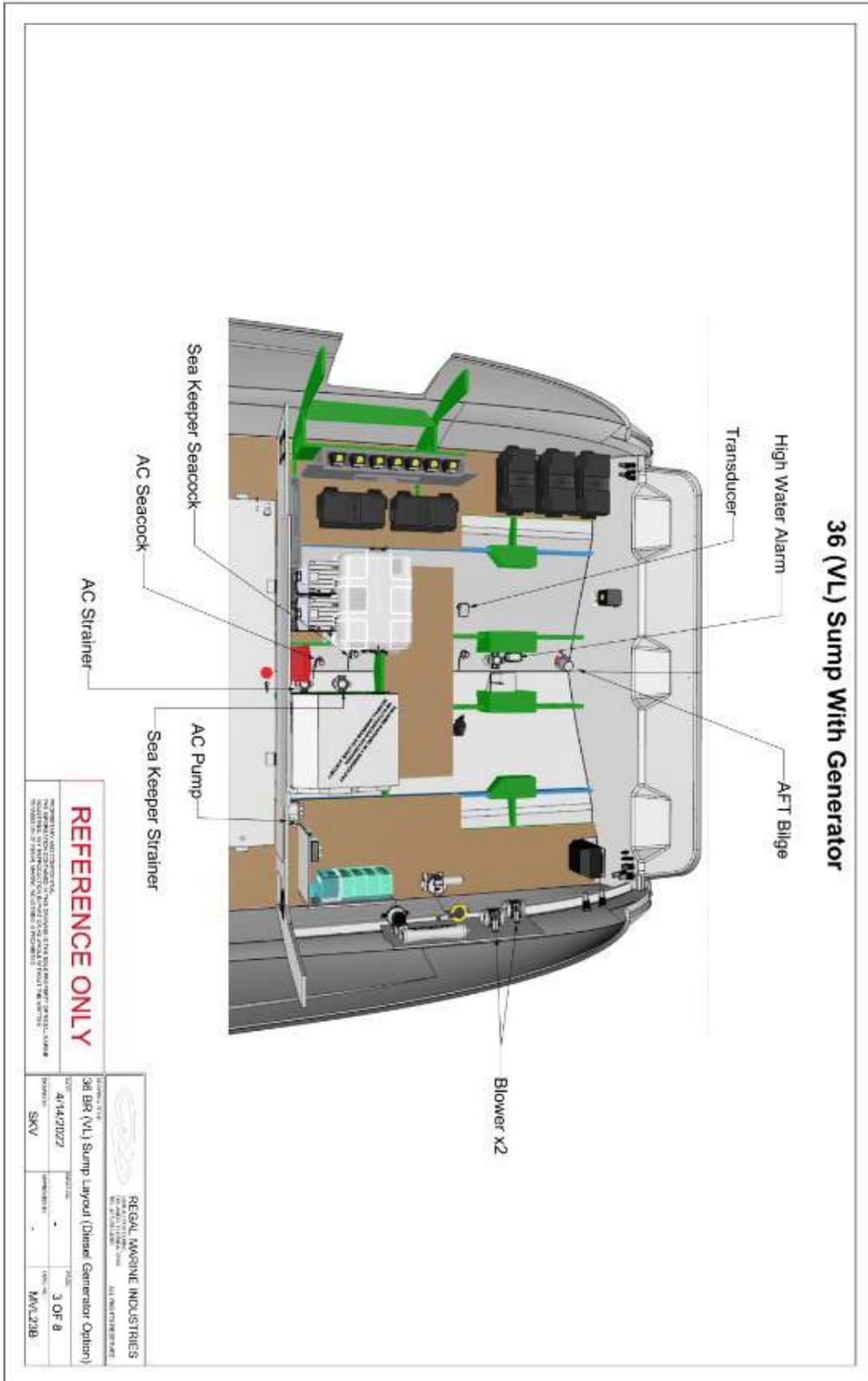
LS36- SUMP (BILGE) LAYOUT 1 OF 8



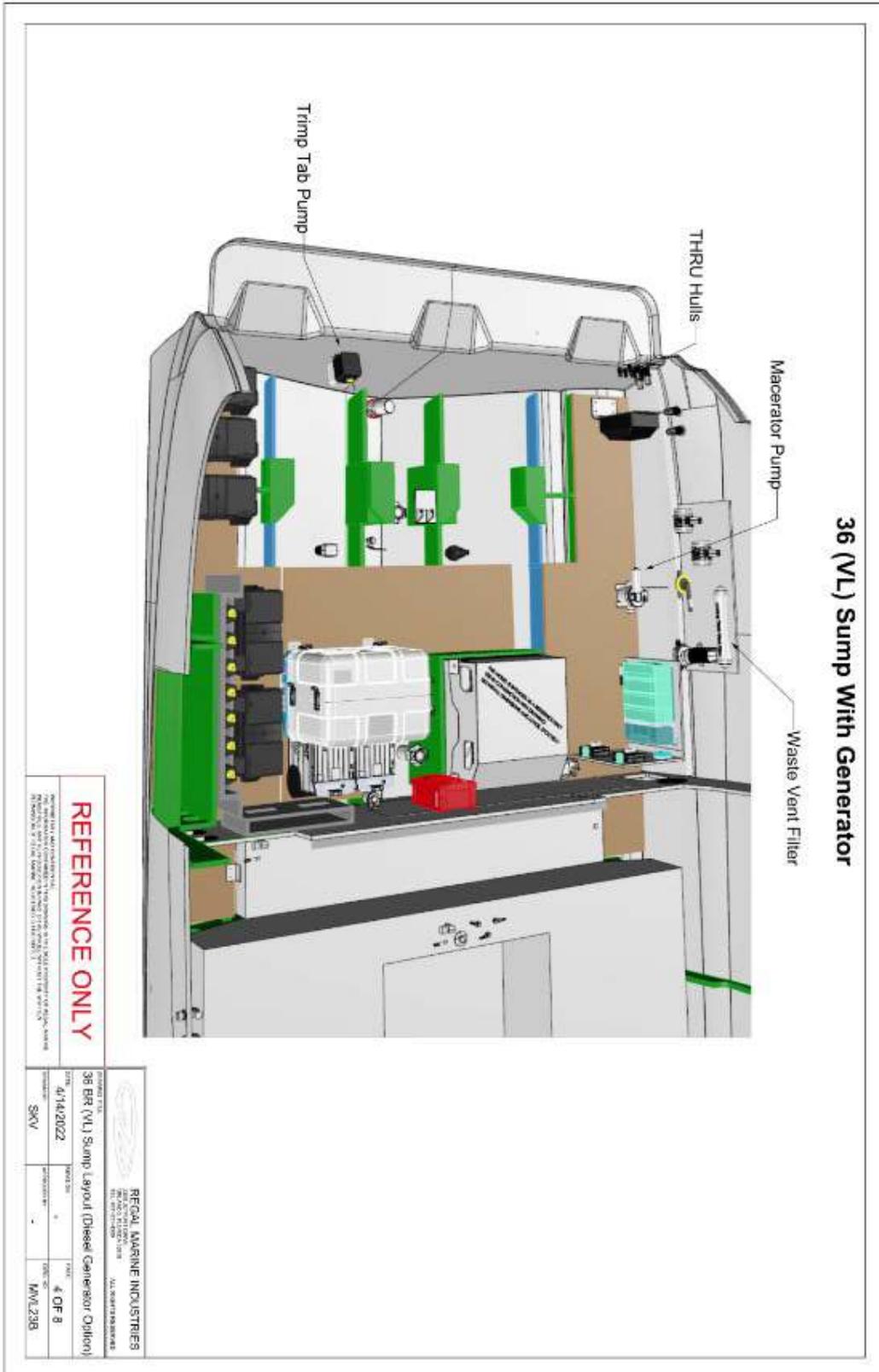
LS36- SUMP (BILGE) LAYOUT 2 OF 8



LS36- SUMP (BILGE) LAYOUT 3 OF 8

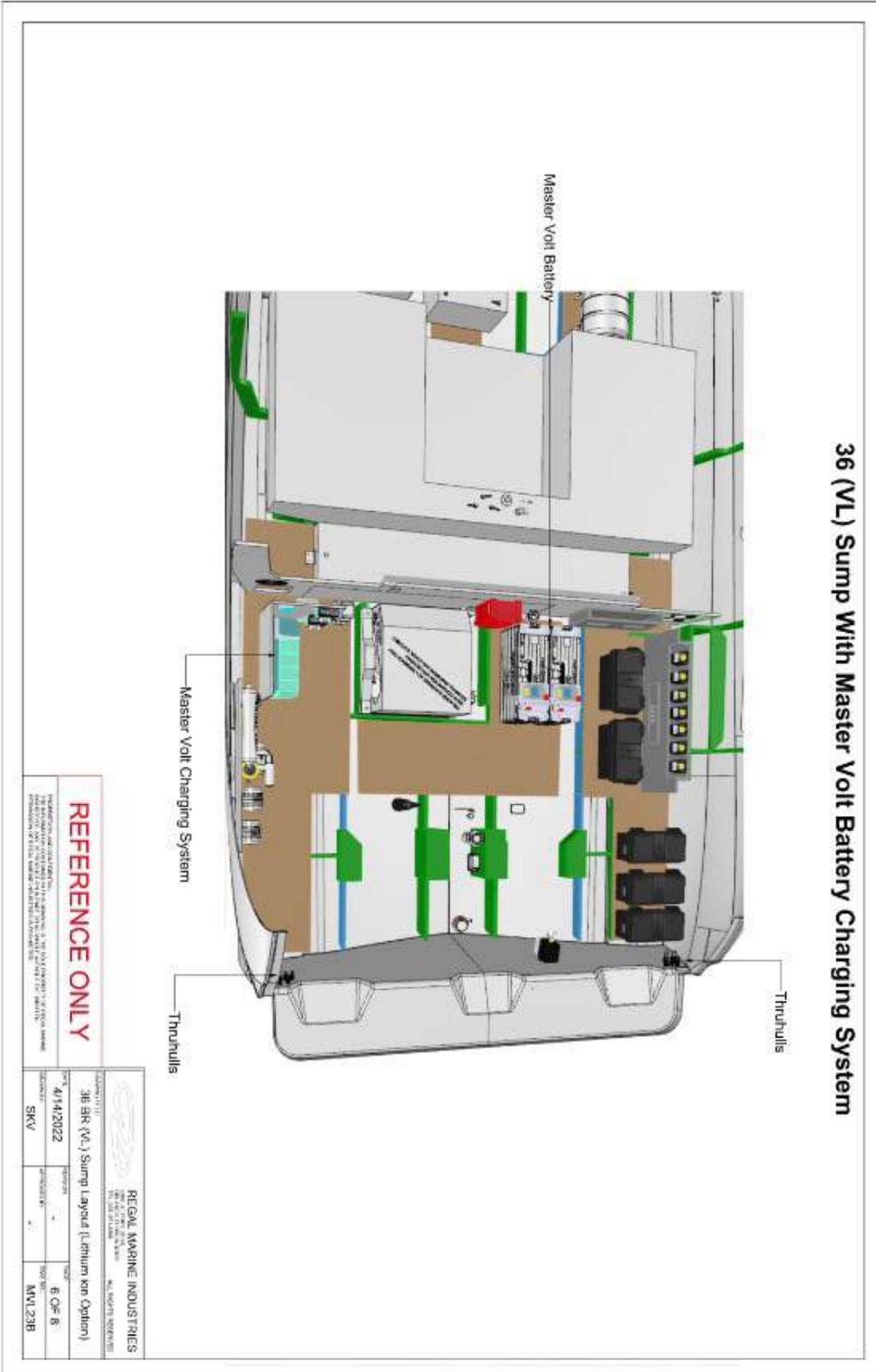


LS36- SUMP (BILGE) LAYOUT 4 OF 8



LS36- SUMP (BILGE) LAYOUT 6 OF 8

36 (VL) Sump With Master Volt Battery Charging System

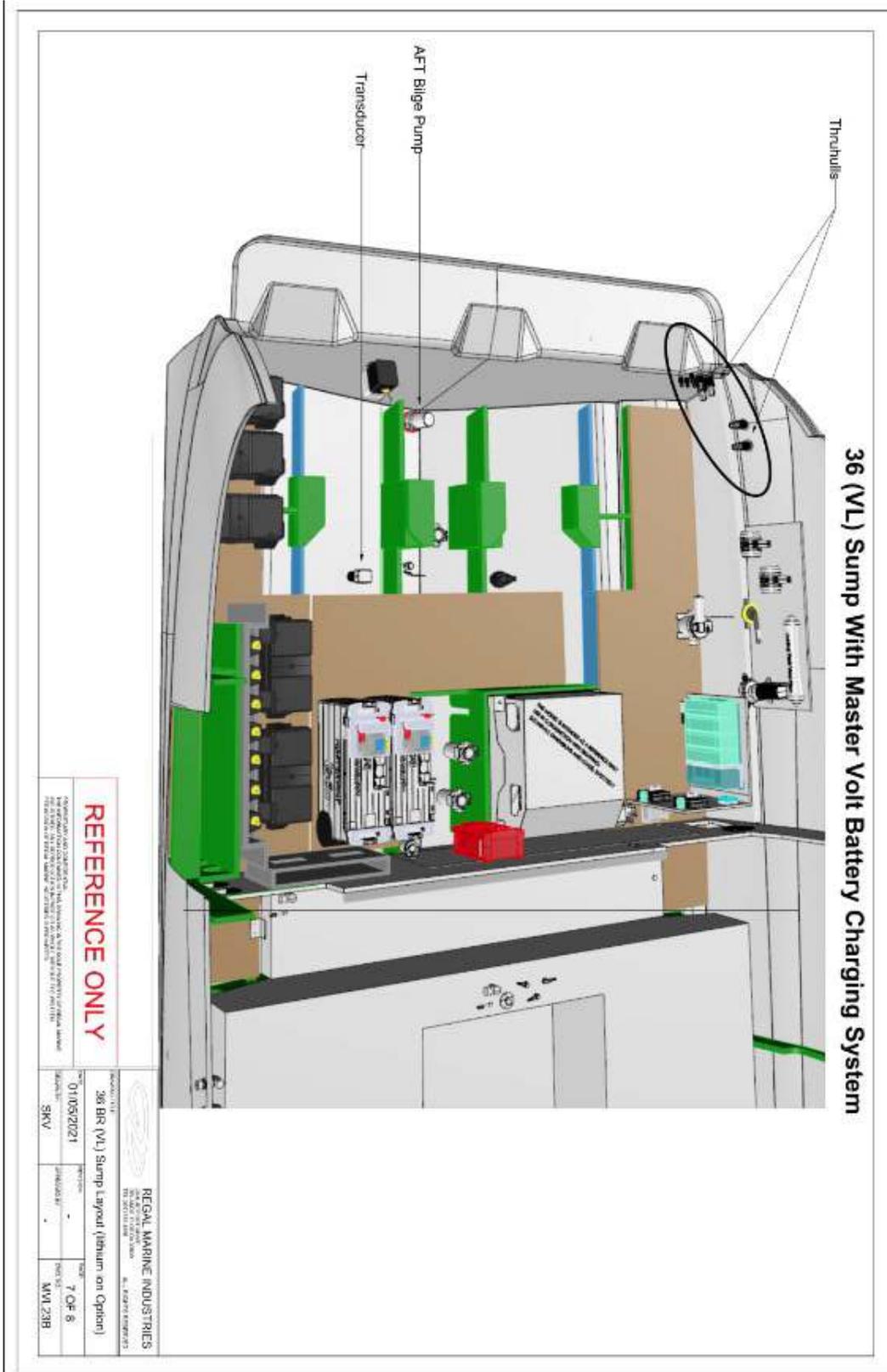


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DATE:	4/14/2022	PROJECT:	6 C# 8
DESIGNER:	SKV	PROJECT:	NW123B

LS36- SUMP (BILGE) LAYOUT 7 OF 8



LS36- SUMP (BILGE) LAYOUT 8 OF 8



LS36- WASTE TANK ROUTING 1 OF 3

Waste Tank Routing

- Waste Tank Vent Routing 3/4" Ø 1
Hose Length: 125 (1/2 ft)
- Waste Tank Vent Routing 3/4" Ø 2
Hose Length: 133 ft
- Overboard Discharge 3/8" Ø 1
Hose Length: 113 ft
- Overboard Discharge Fill Cap 3/8" Ø
Hose Length: 25 ft
- STBD Engine Fuel Routing 3/8" Ø
Hose Length: 143 ft

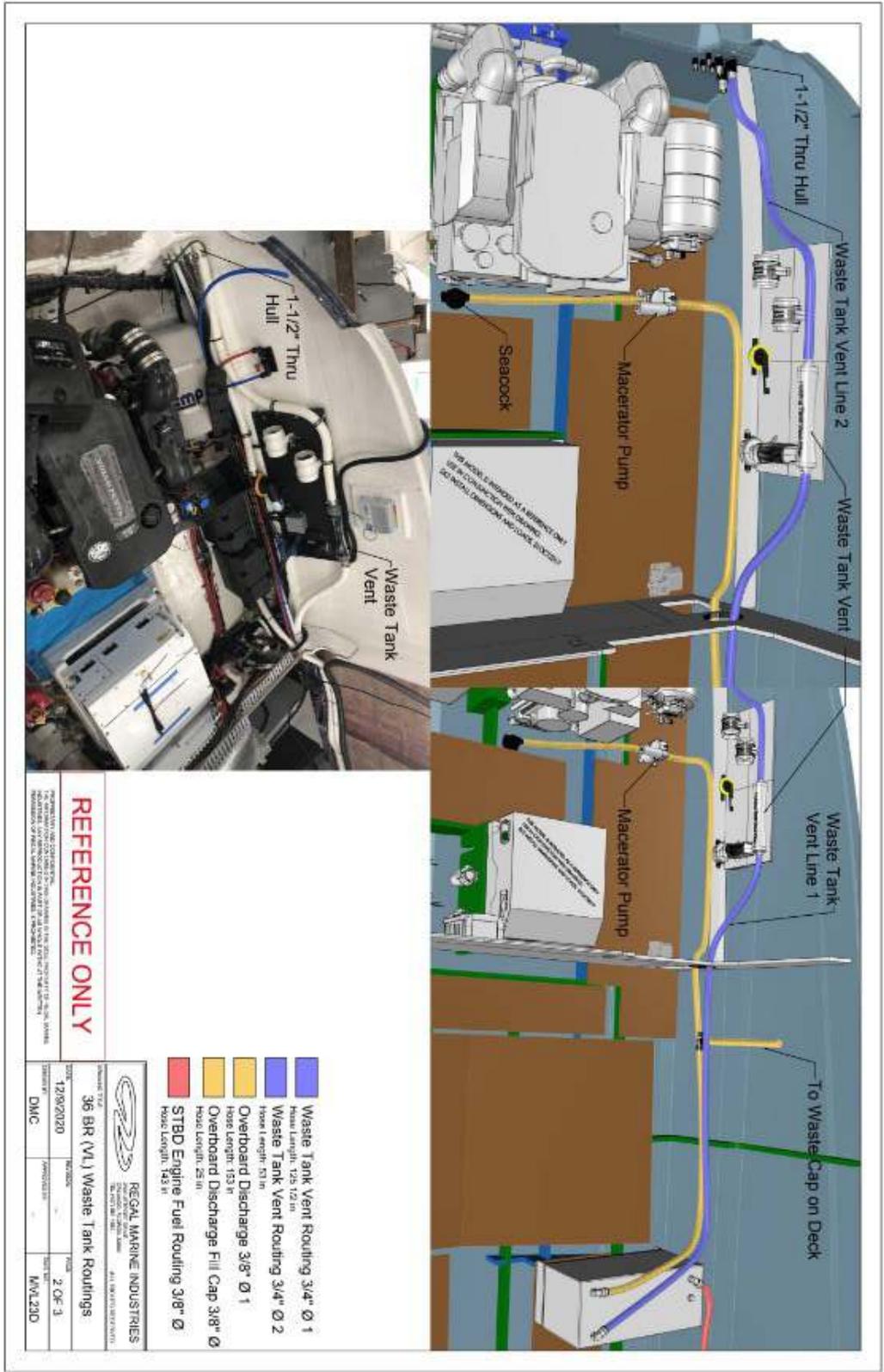
REFERENCE ONLY

REGAL MARINE INDUSTRIES
10000 W. 10th Ave. Suite 100
Denver, CO 80231
Tel: (303) 751-1181 Fax: (303) 751-1182

PROJECT TITLE	36 BR (VL) Waste Tank Routings		
DATE	12/8/2020	REVISED BY	1 OF 3
PROJECT	LS36	APPROVED BY	AWJ/210
DESIGNED BY	LS36	DATE	

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LS36- WASTE TANK ROUTING 2 OF 3



LS36- WASTE TANK ROUTING 3 OF 3



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 REGAL MARINE INDUSTRIES <small>DESIGNERS • FABRICATORS • INSTALLERS</small> <small>12000 W. 40th Street, Fort Lauderdale, FL 33309</small> <small>TEL: 954.343.8888 FAX: 954.343.8888</small>	
PROJECT NO.	36 BR (VL) Waste Tank Routings
DATE	12/8/2020
BY	DMC
SCALE	AS SHOWN
FIG. NO.	3 OF 3
REV.	NAVI 230

LX36 OUTBOARD ONLY DRAWINGS

Notice

The drawings on the following pages can be an aid in troubleshooting LX36 **outboard** electrical, mechanical, and system problems along with the charts located in the troubleshooting chapter. For referencing ease the electrical system drawing group is followed by the mechanical system drawing group.

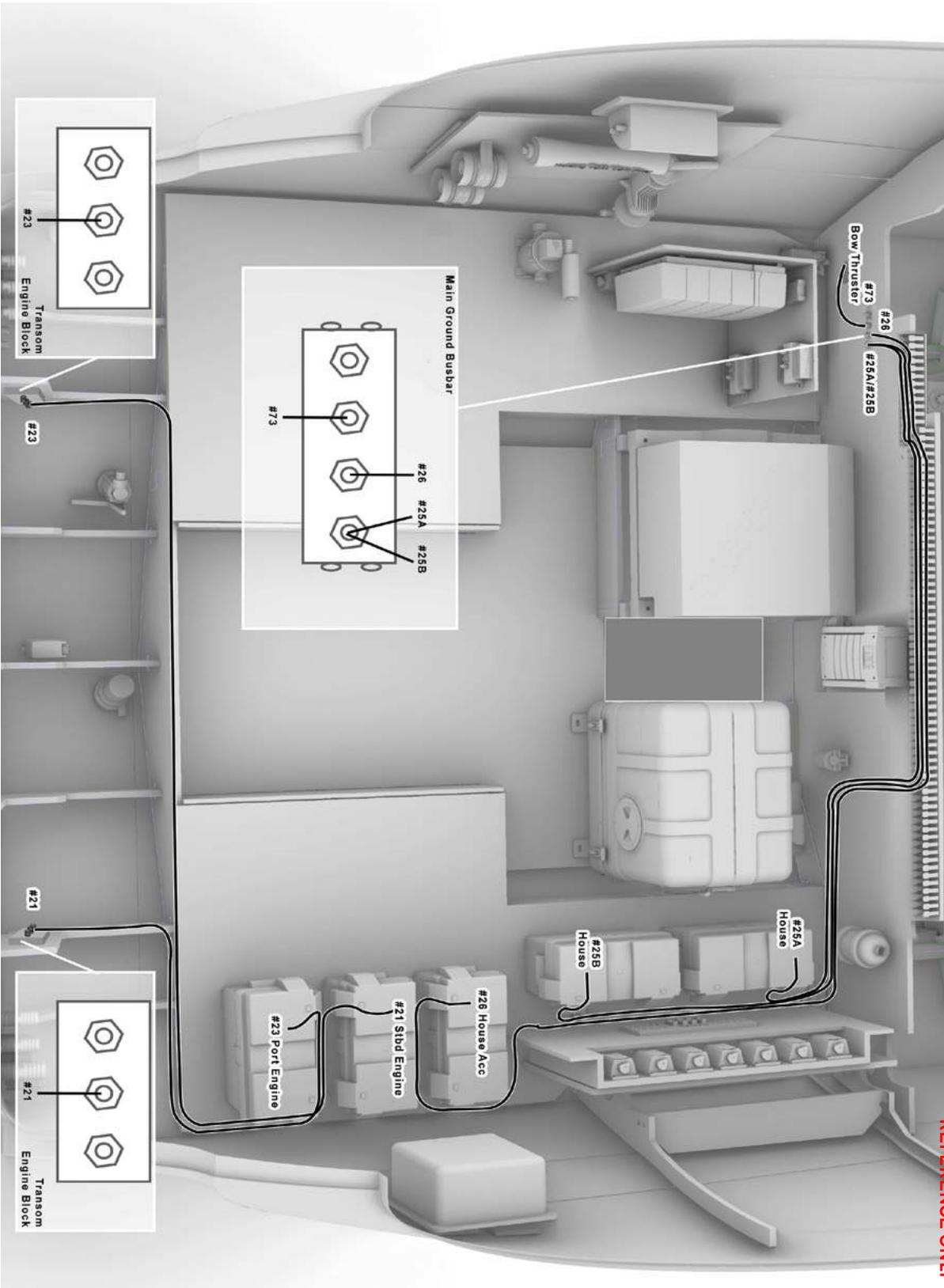
For more information contact your Regal dealer. For the location of your nearest dealer call 407-851-4360 or visit the web-site at www.Regalboats.com. Your Regal dealer has received training on the product line and his services should be employed to solve technical problems.

Note that all product specifications, drawings, standard and optional equipment including locations, systems, and technical information are subject to change without notice during the production life cycle of a vessel. Select components and/or systems may not be installed on your vessel. There may not be drawings for select vessel components or systems in this manual. No liability is accepted for information correctness and is given to the best of our knowledge.

Note that drawing titles may use the model designator/letters LX36 or VM.

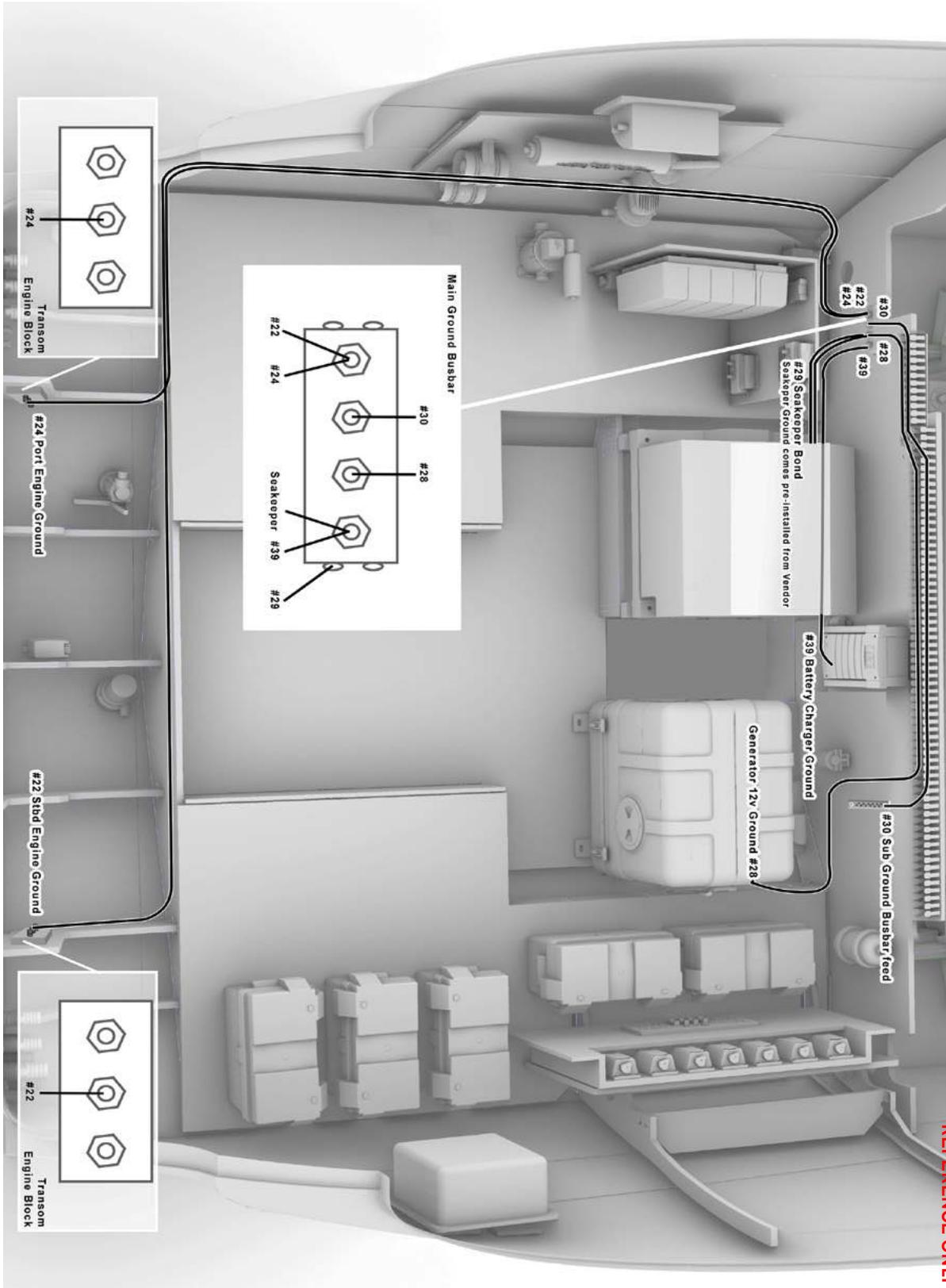


LX36- HARNESS BATTERY CABLES 1 OF 4



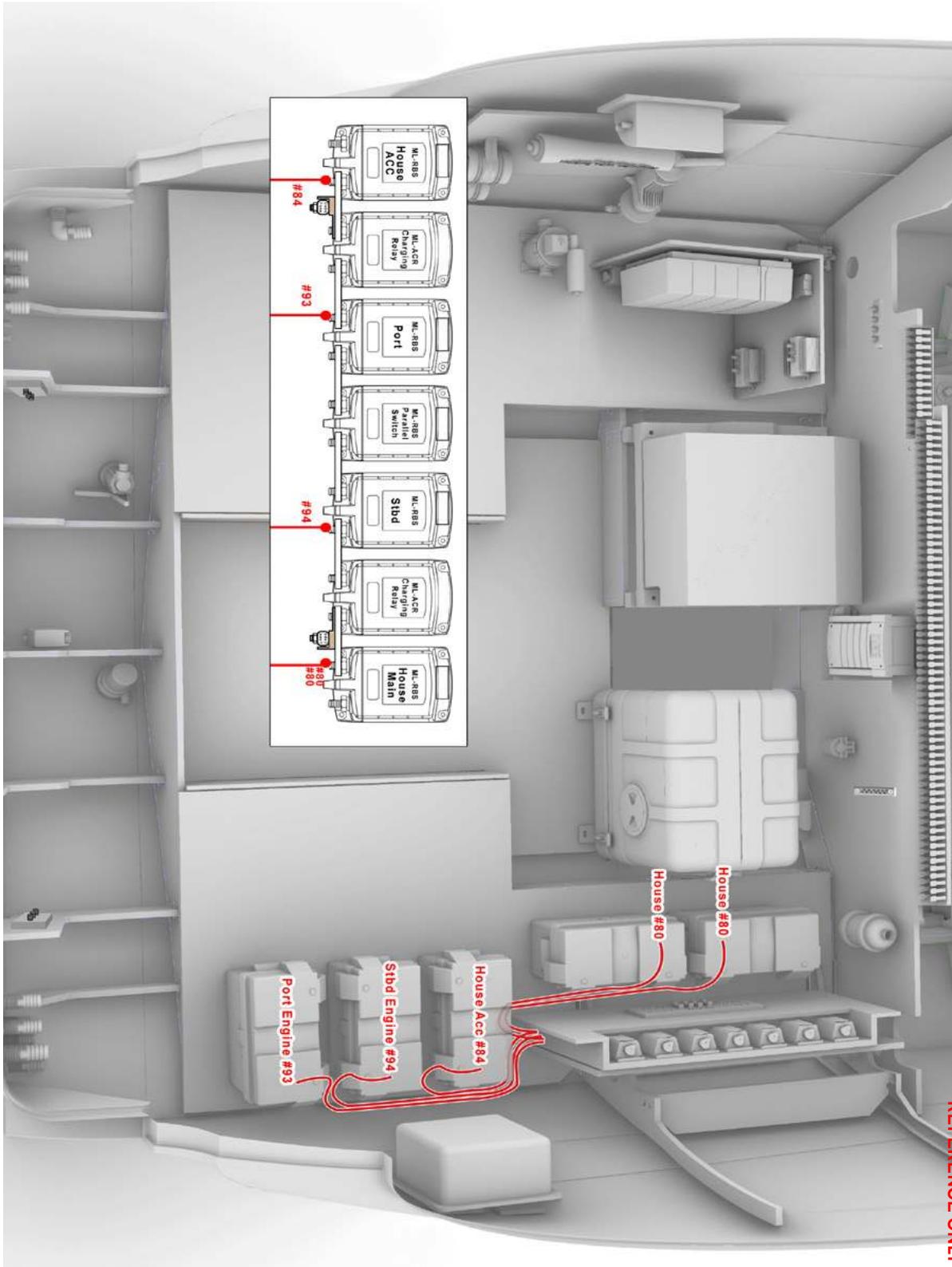
REFERENCE ONLY

LX36- HARNESS BATTERY CABLES 2 OF 4



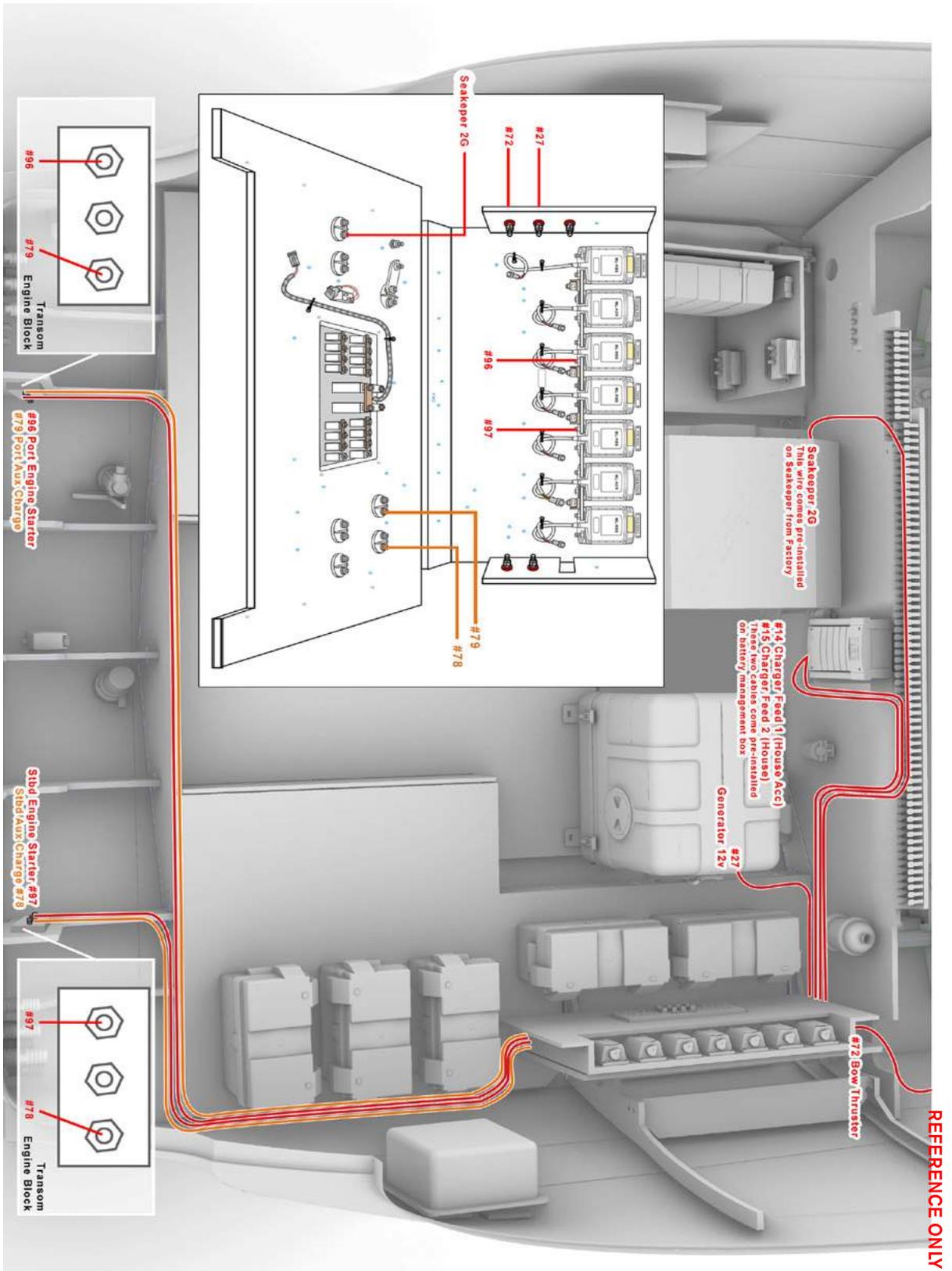
REFERENCE ONLY

LX36- HARNESS BATTERY CABLES 3 OF 4

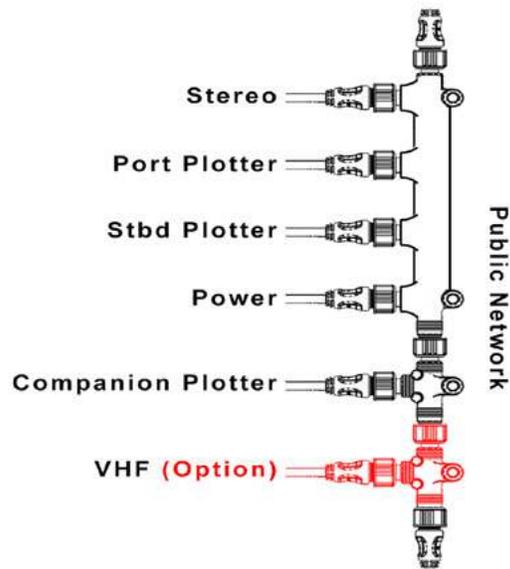


REFERENCE ONLY

LX36- HARNESS BATTERY CABLES 4 OF 4

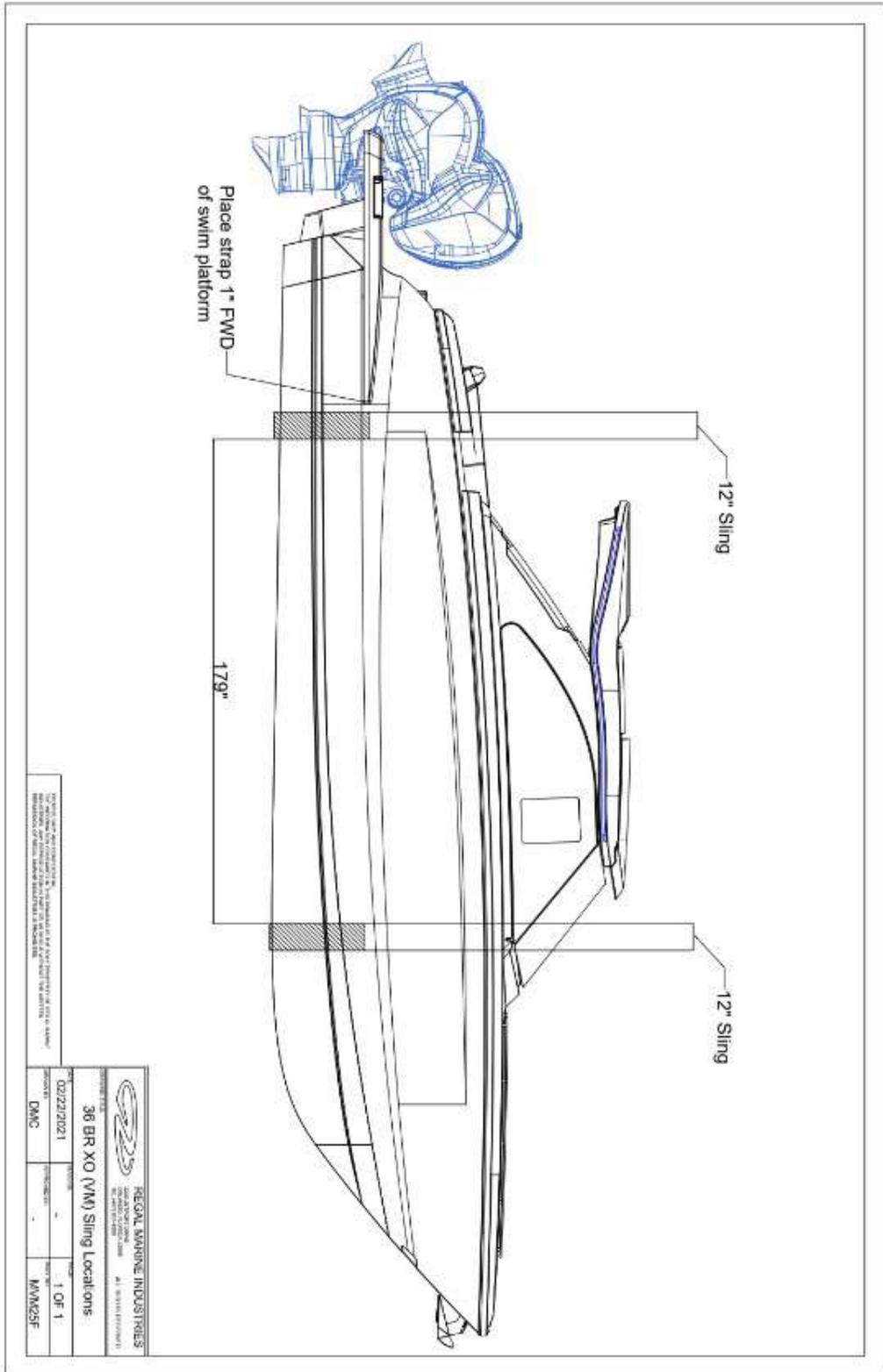


LX36- HELM MASTER EX NMEA NETWORK

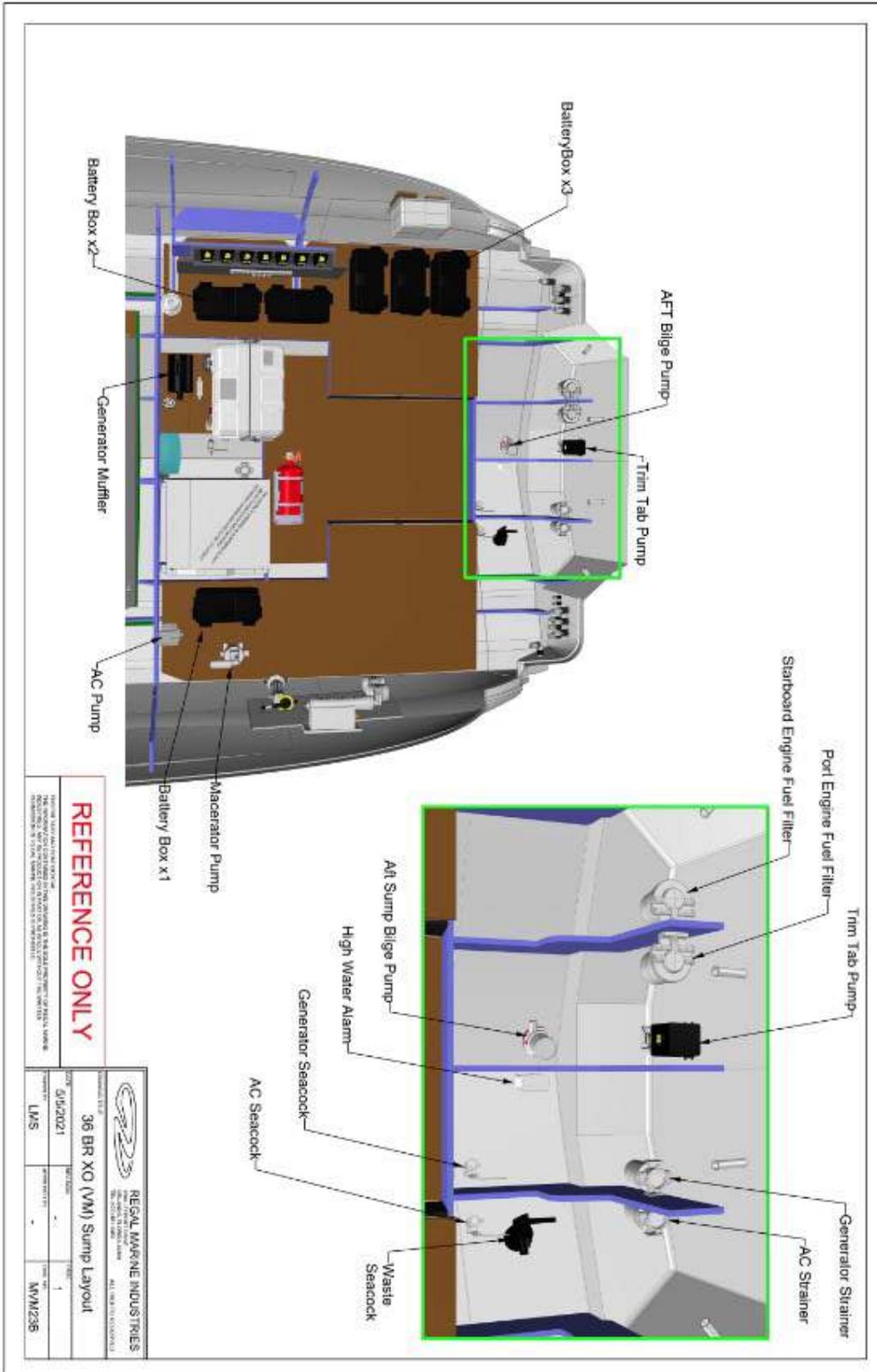


REFERENCE ONLY

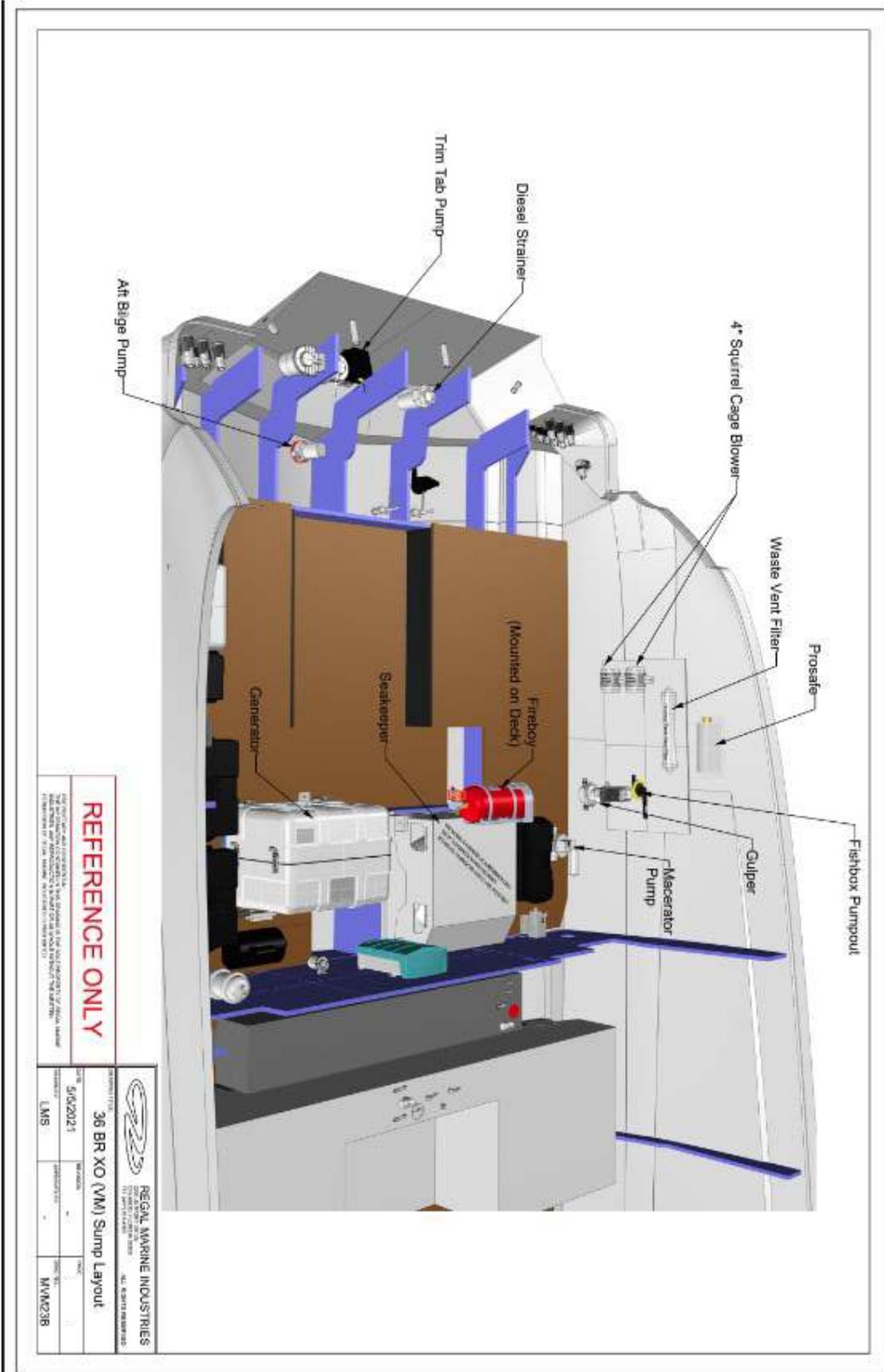
LX36- SLING LOCATIONS



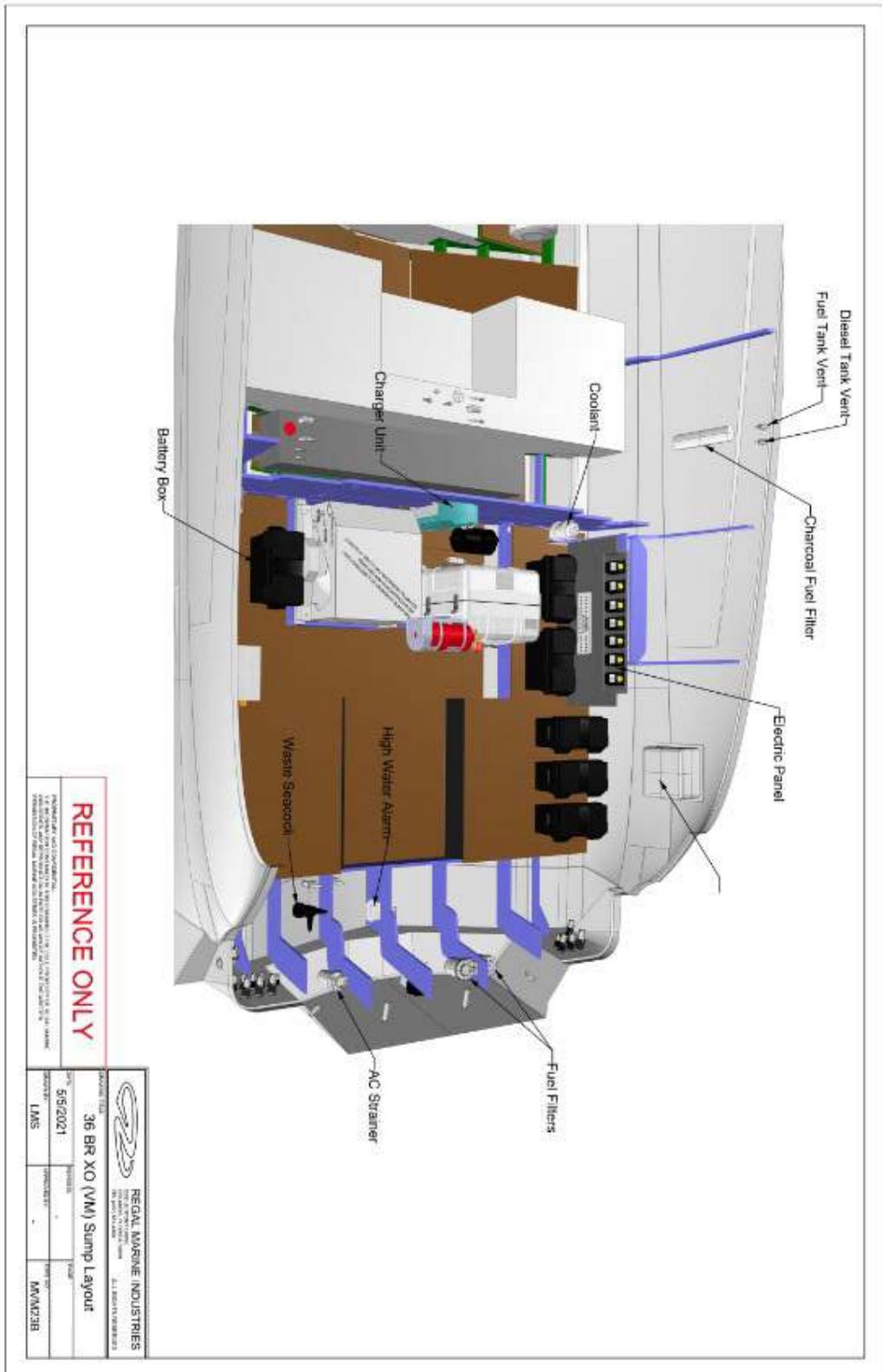
LX36- SUMP (BILGE) LAYOUT 1 OF 4



LX36- SUMP (BILGE) LAYOUT 2 OF 4



LX36- SUMP (BILGE) LAYOUT 3 OF 4

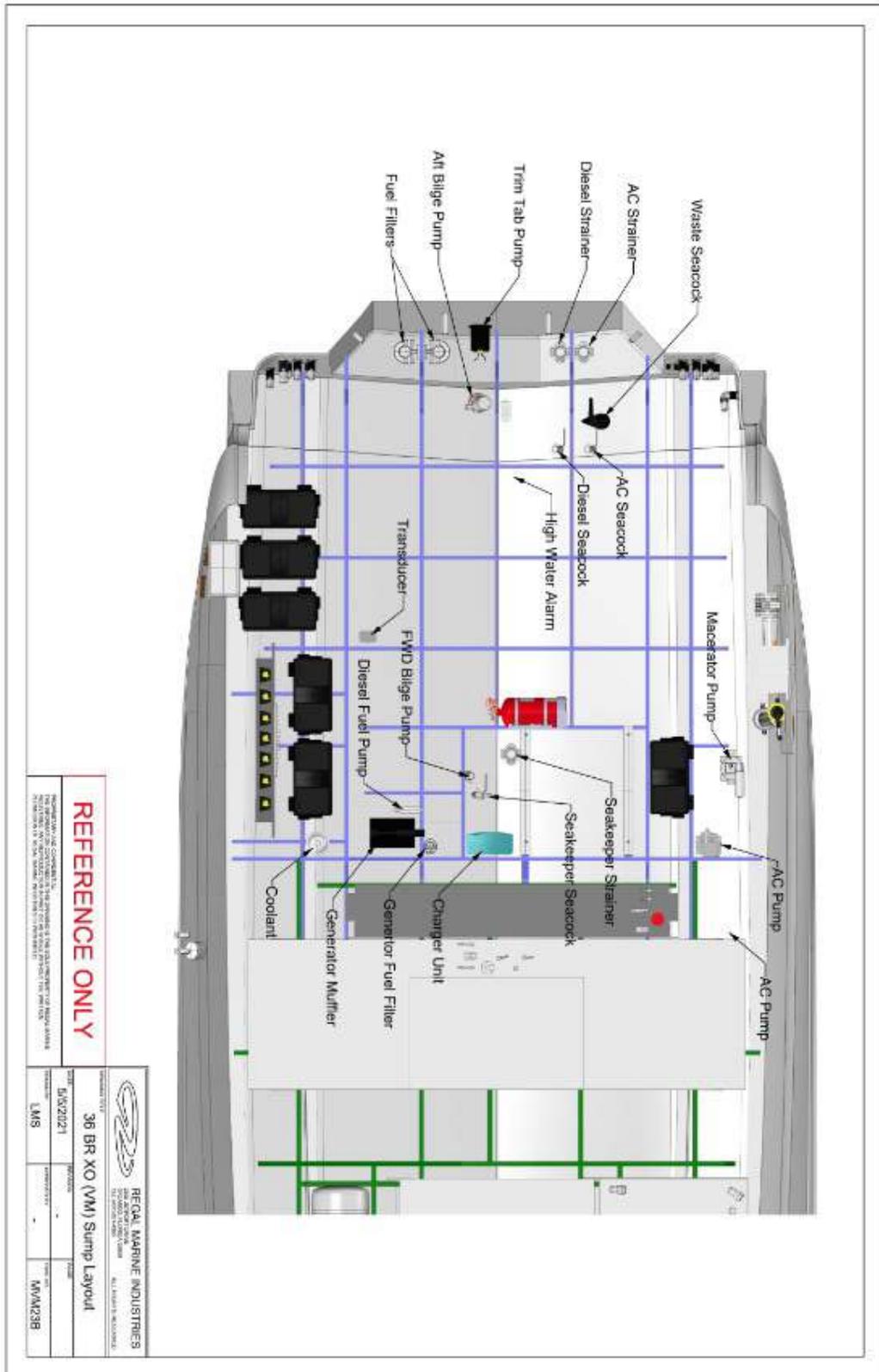


REFERENCE ONLY

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 REGAL MARINE INDUSTRIES 10000 W. 10th Ave. #100 Denver, CO 80202	
PROJECT NO.	36 BR XO (VM) Sump Layout
DATE	5/6/2021
APPROVED BY	LMS
DATE	
BY	MW/MZB

LX36- SUMP (BILGE) LAYOUT 4 OF 4



LS36/LX36 COMMON DRAWINGS

Notice

The drawings on the following pages can be an aid in troubleshooting LS36 *stern drive* or LX36 *outboard* electrical, mechanical, and system problems along with the charts located in the troubleshooting chapter. For referencing ease the electrical system drawing group is followed by the mechanical system drawing group.

For more information contact your Regal dealer. For the location of your nearest dealer call 407-851-4360 or visit the web-site at www.Regalboats.com. Your Regal dealer has received training on the product line and his services should be employed to solve technical problems.

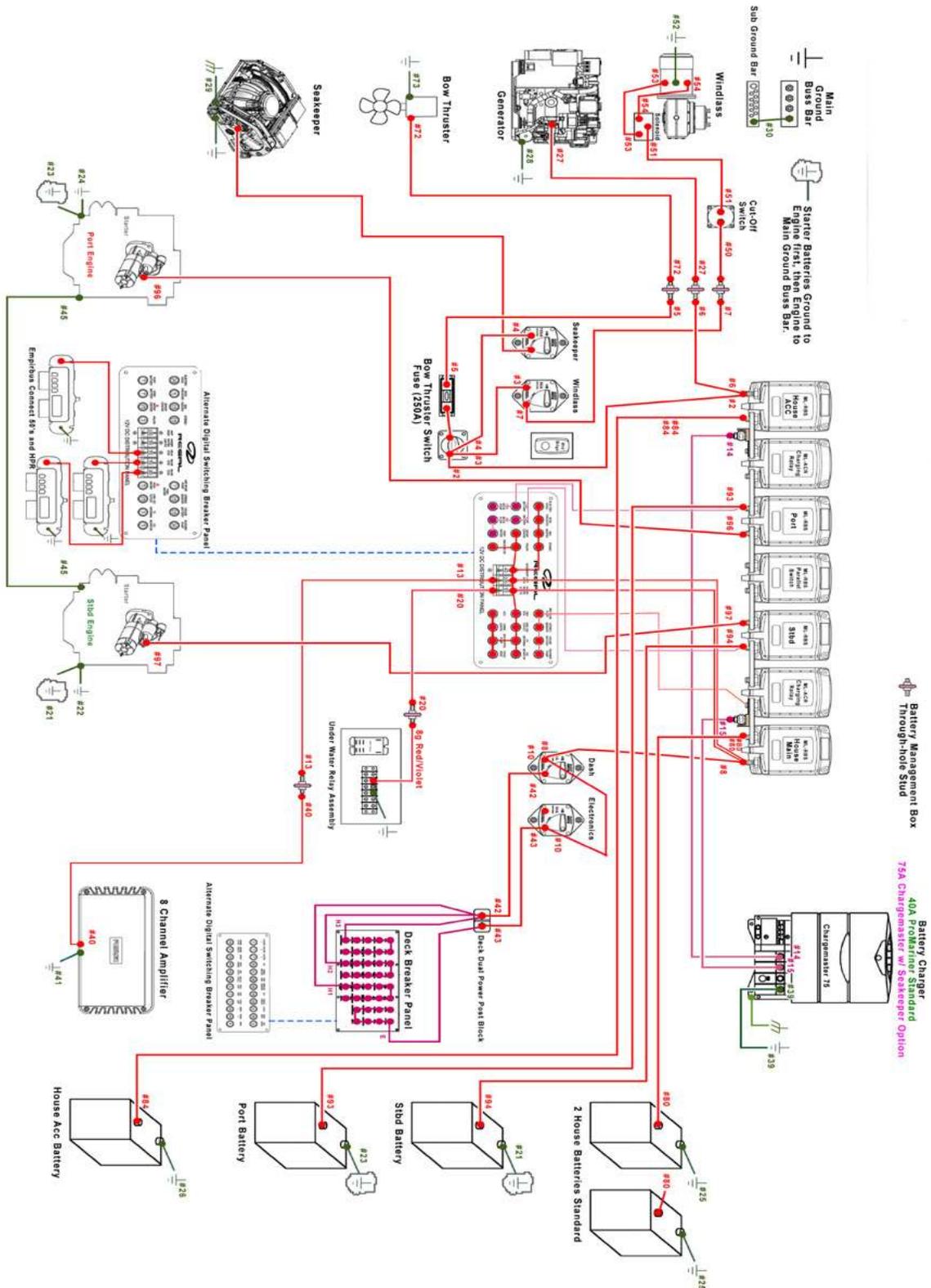
Note that all product specifications, drawings, standard and optional equipment including locations, systems, and technical information are subject to change without notice during the production life cycle of a vessel. Select components and/or systems may not be installed on your vessel. There may not be drawings for select vessel components or systems in this manual. No liability is accepted for information correctness and is given to the best of our knowledge.

Note that drawing titles may use the model designator/letters LS36 or VL (stern drive) and LX36 or VM (outboard).



LS36/LX36 BATTERY MANAGEMENT PANEL- 1

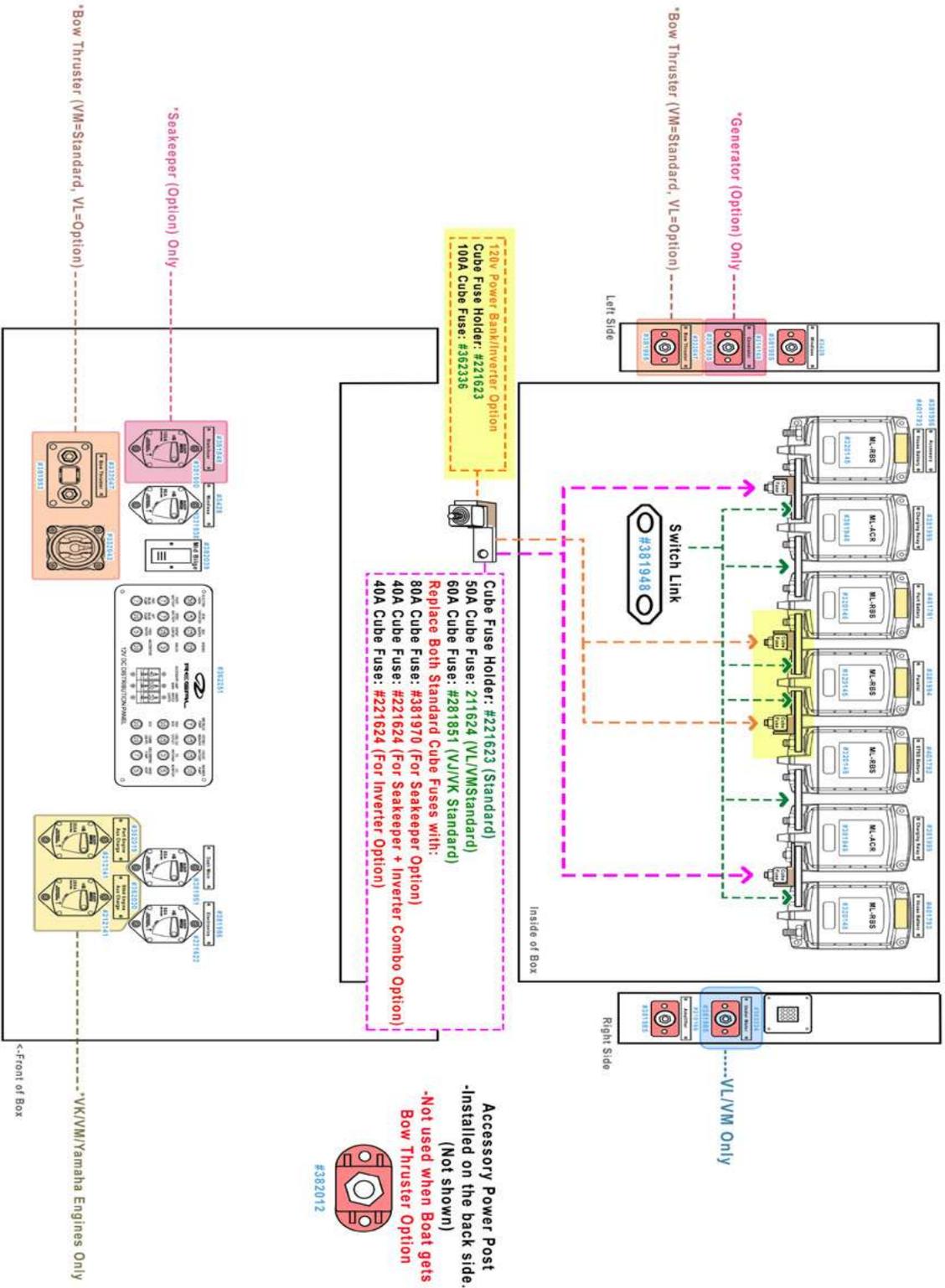
Note that the LS36 stern drive and LX36 outboard battery management overview drawings are both shown in this section for easier referencing to and from the auxiliary related drawings that follow for each model. The #1 drawing is the overview for each model.



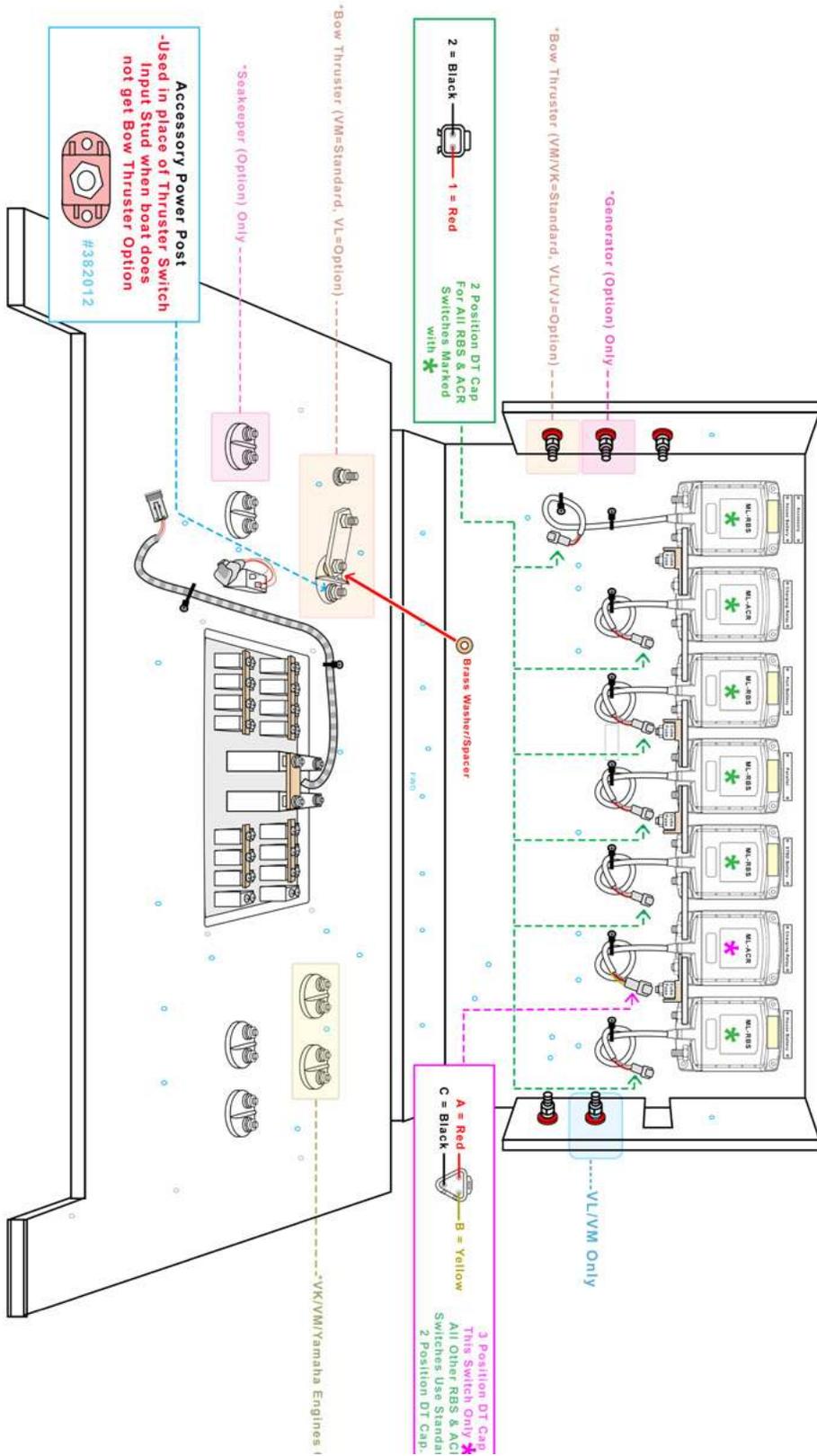
REFERENCE ONLY

LS36/LX36 BATTERY MANAGEMENT PANEL- 2 OF 7

REFERENCE ONLY

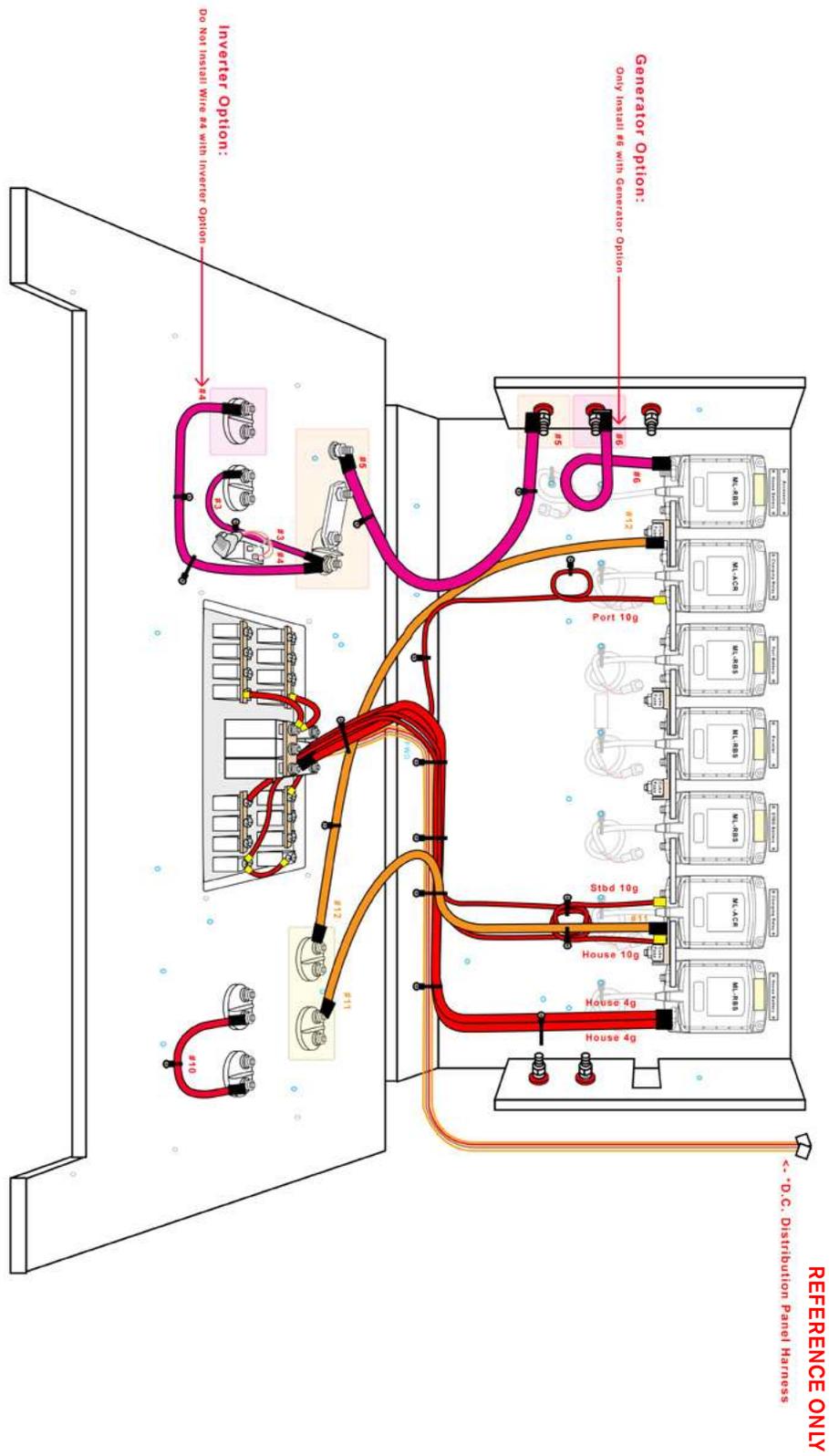


LS36/LX36 BATTERY MANAGEMENT PANEL- 3 OF 7

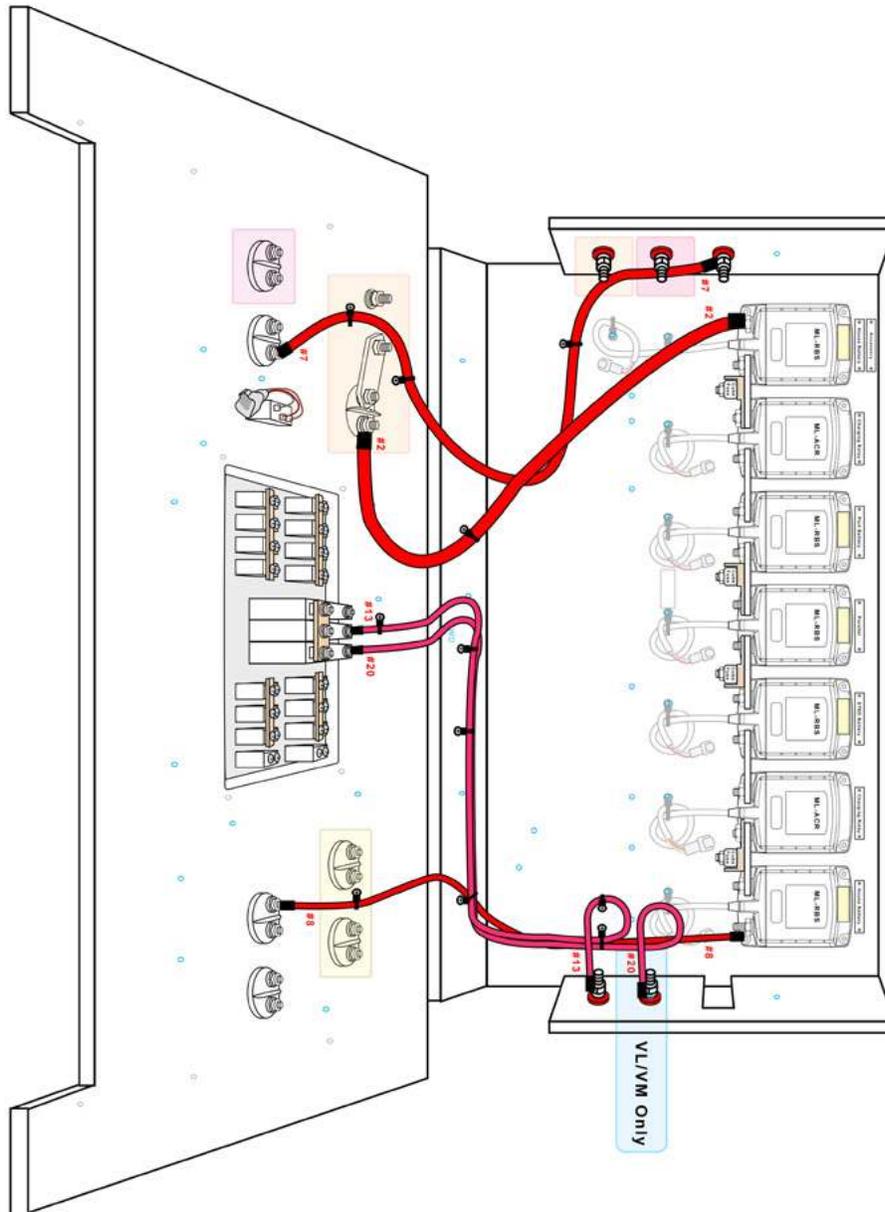


REFERENCE ONLY

LS36/LX36 BATTERY MANAGEMENT PANEL- 4 OF 7

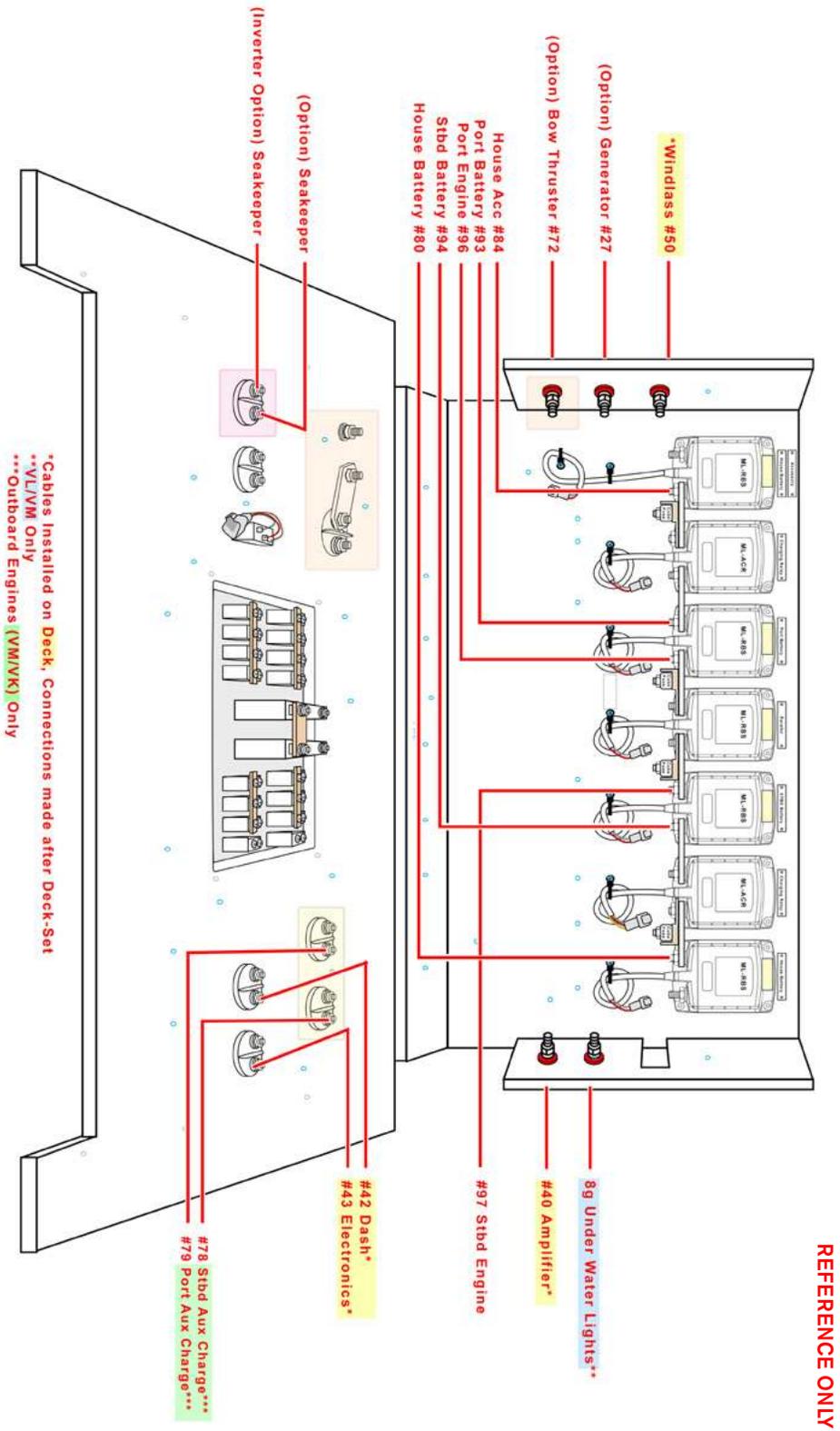


LS36/LX36 BATTERY MANAGEMENT PANEL- 5 OF 7



REFERENCE ONLY

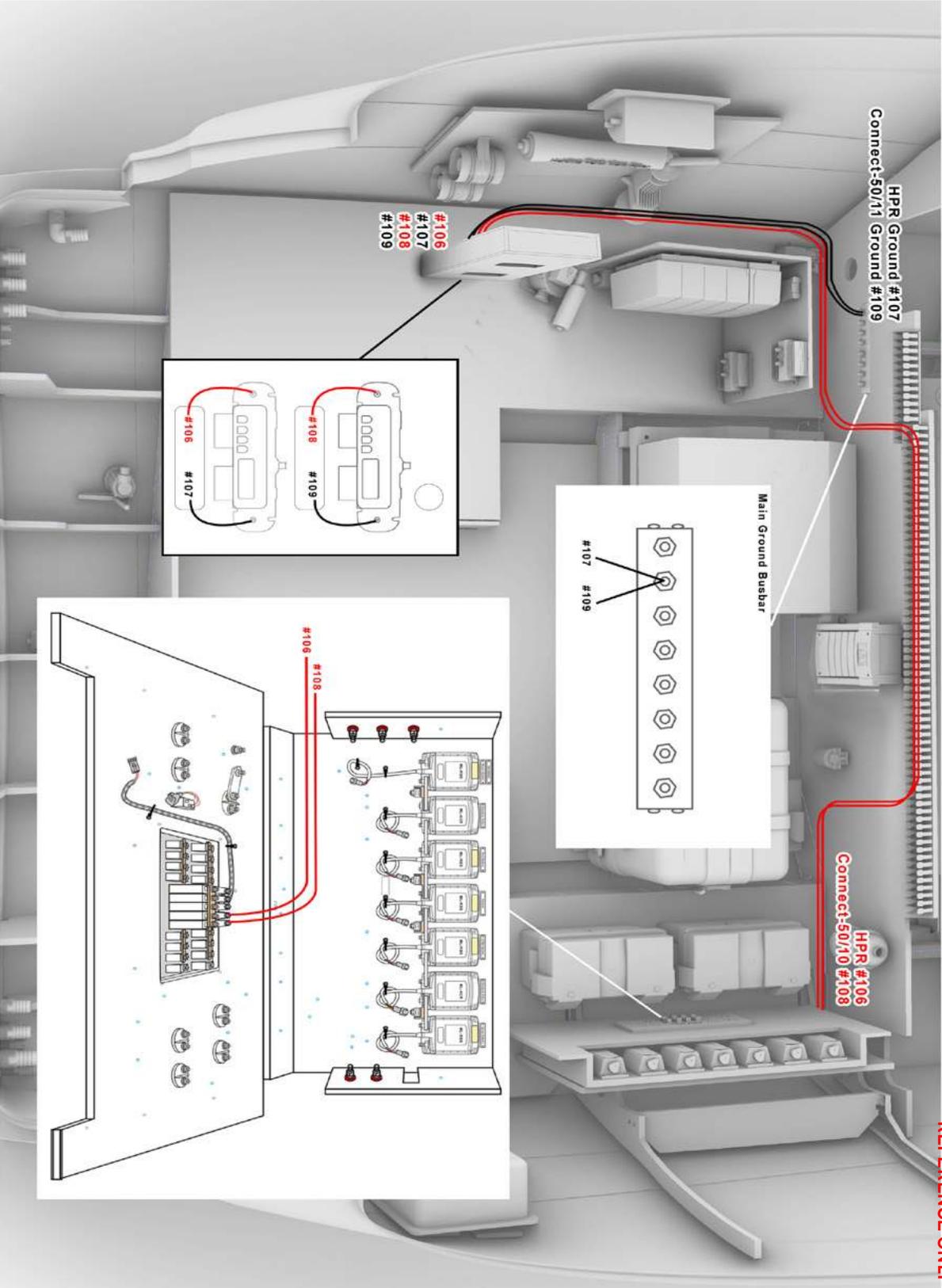
LS36/LX36 BATTERY MANAGEMENT PANEL- 7 OF 7



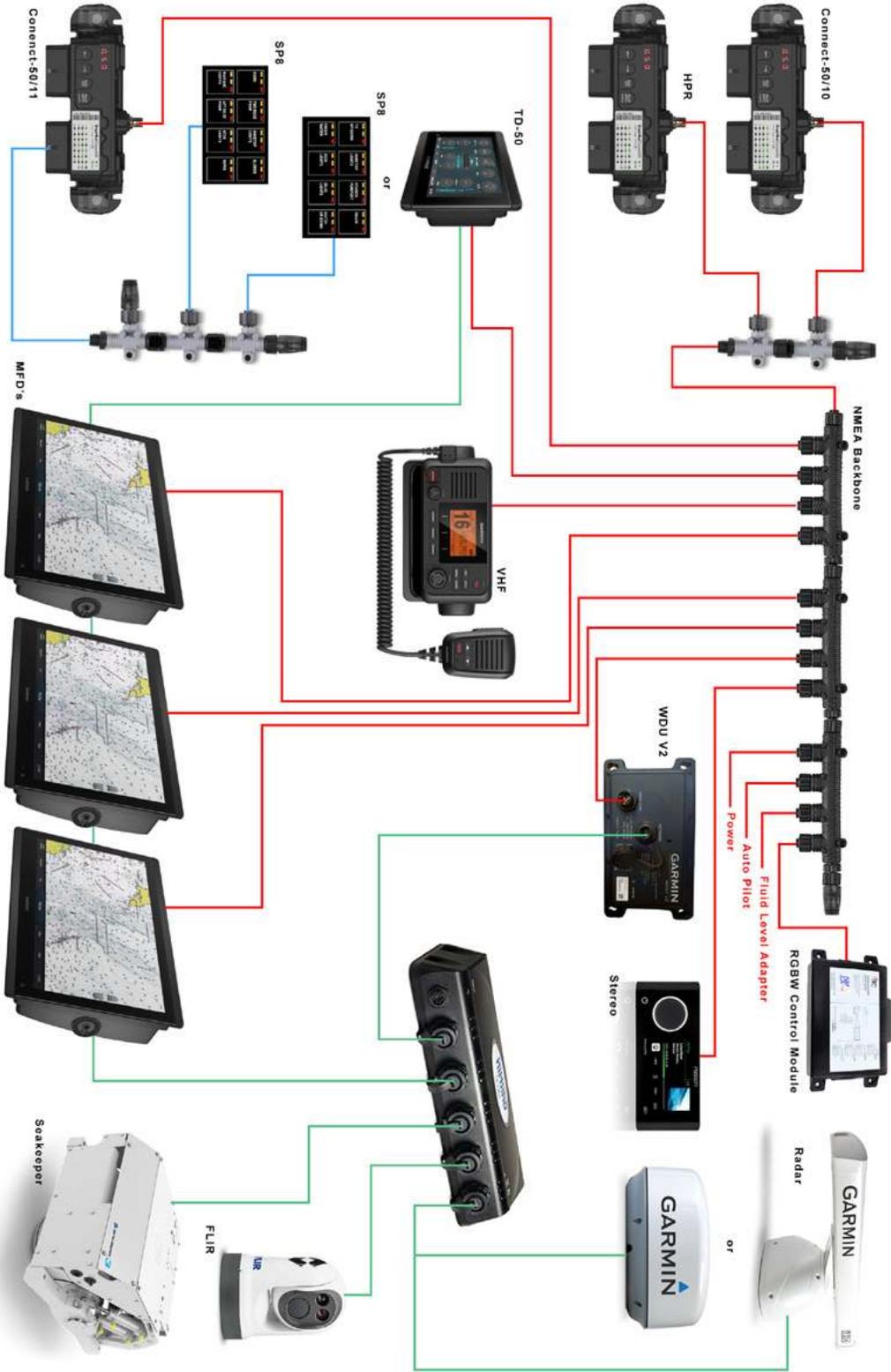
*Cables Installed on Deck, Connections made after Deck-Set
 **V/LVM Only
 ***Outboard Engines (VM/VK) Only

REFERENCE ONLY

LS36/LX36- DIGITAL SWITCHING BATTERY CABLES



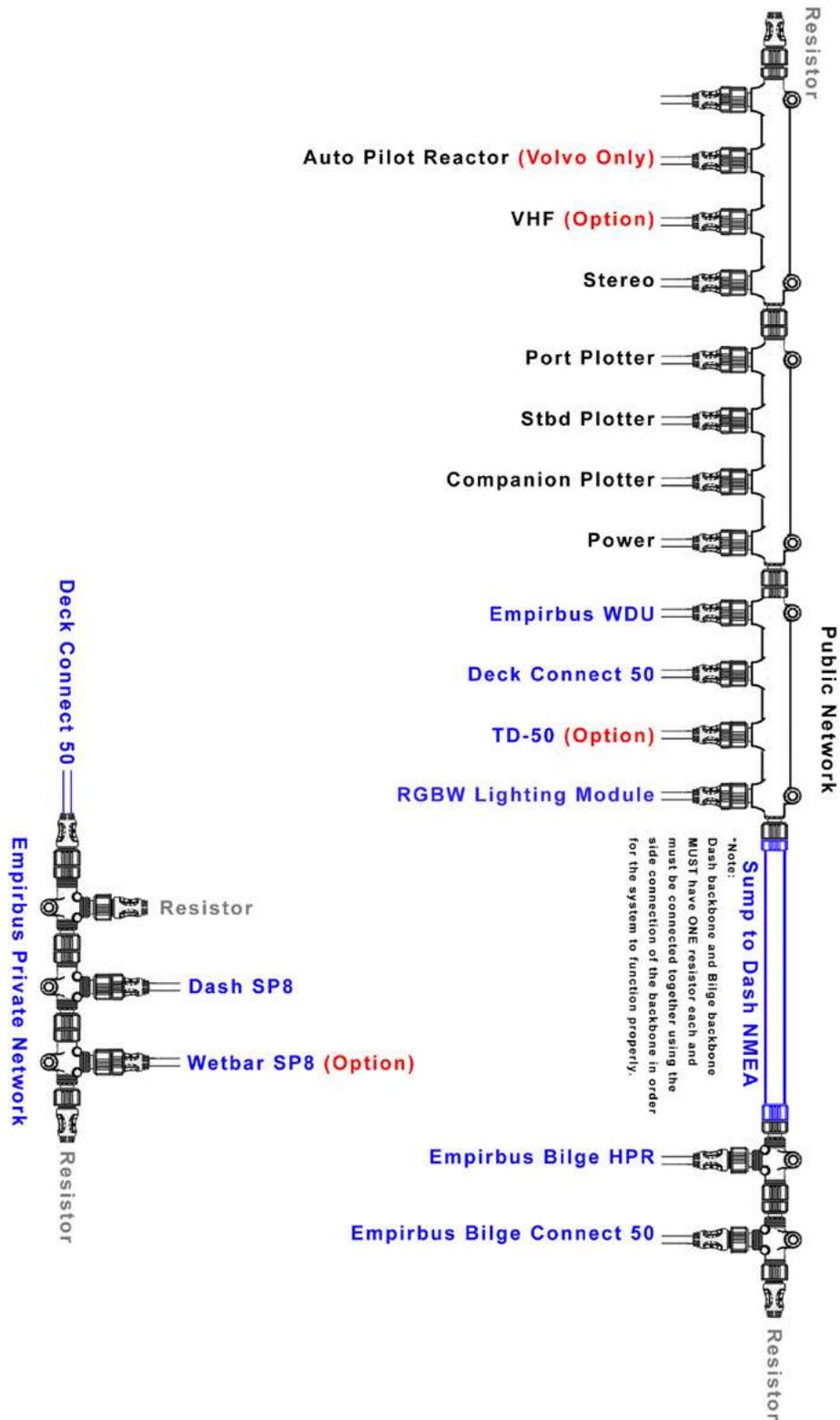
LS36/LX36 DIGITAL SWITCHING- NETWORK



REFERENCE ONLY

Note that the SP 8 panel may not be installed on newer digital switching network vessels.

LS36/LX36 DIGITAL SWITCHING- NMEA NETWORK

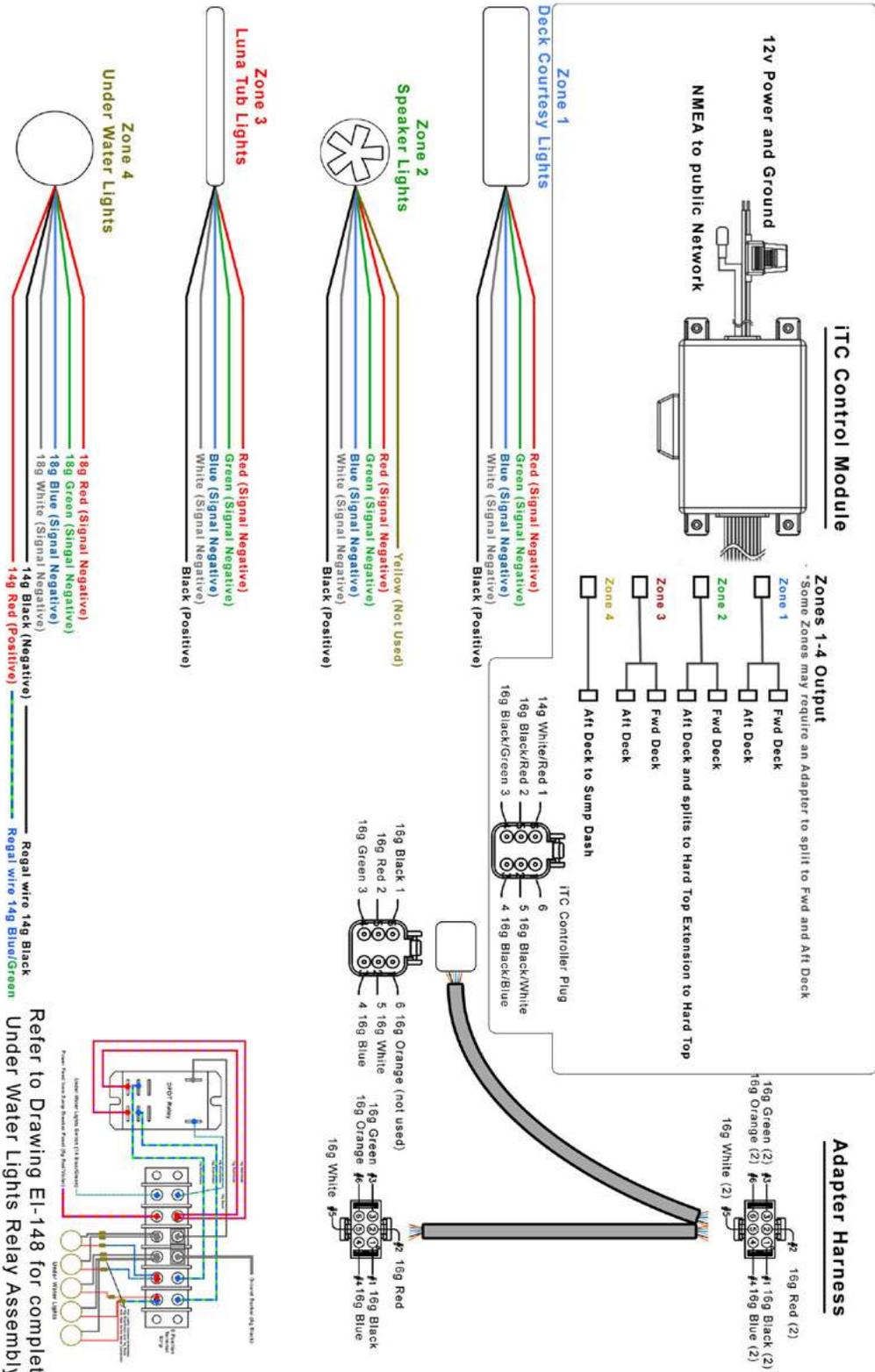


REFERENCE ONLY

LS36/LX36 DIGITAL SWITCHING- RGBW MODULE

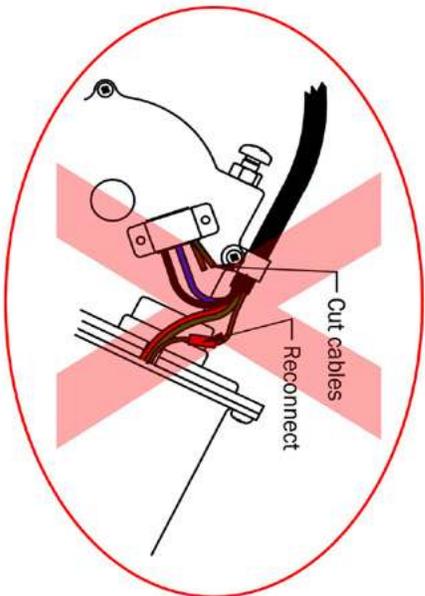
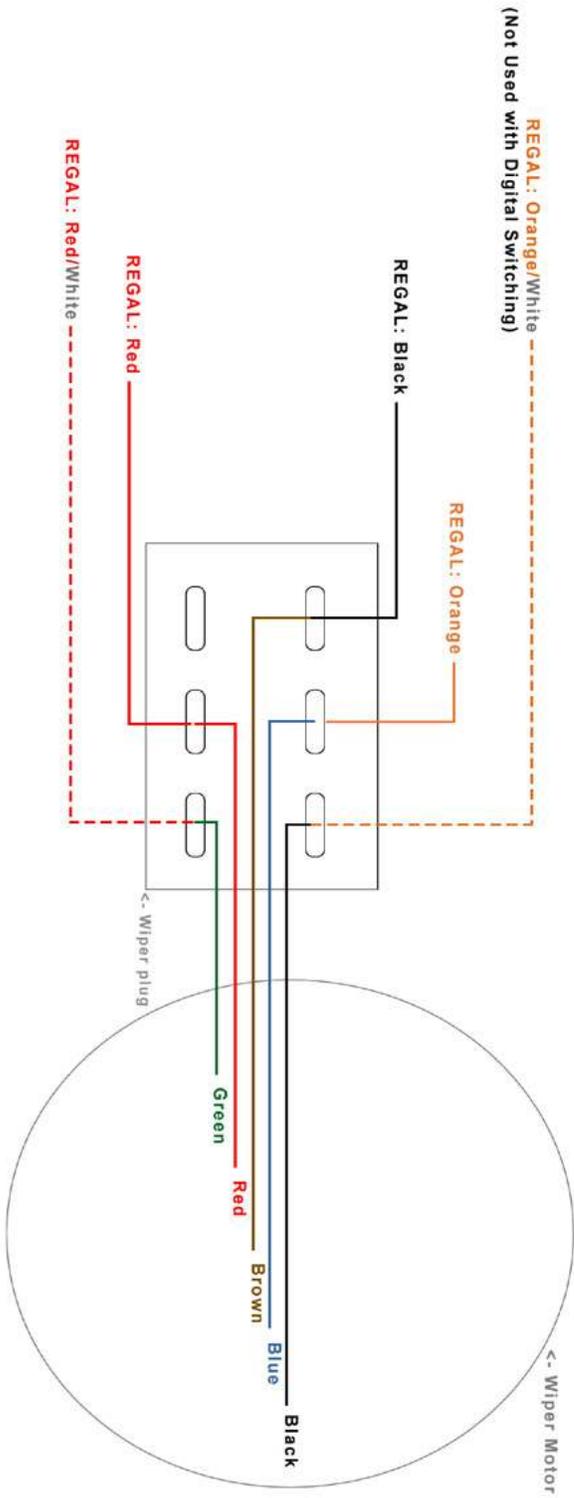
The ITC module required for Empirbus Digital Switching will not be the same as the ITC OneHelm module.

REFERENCE ONLY



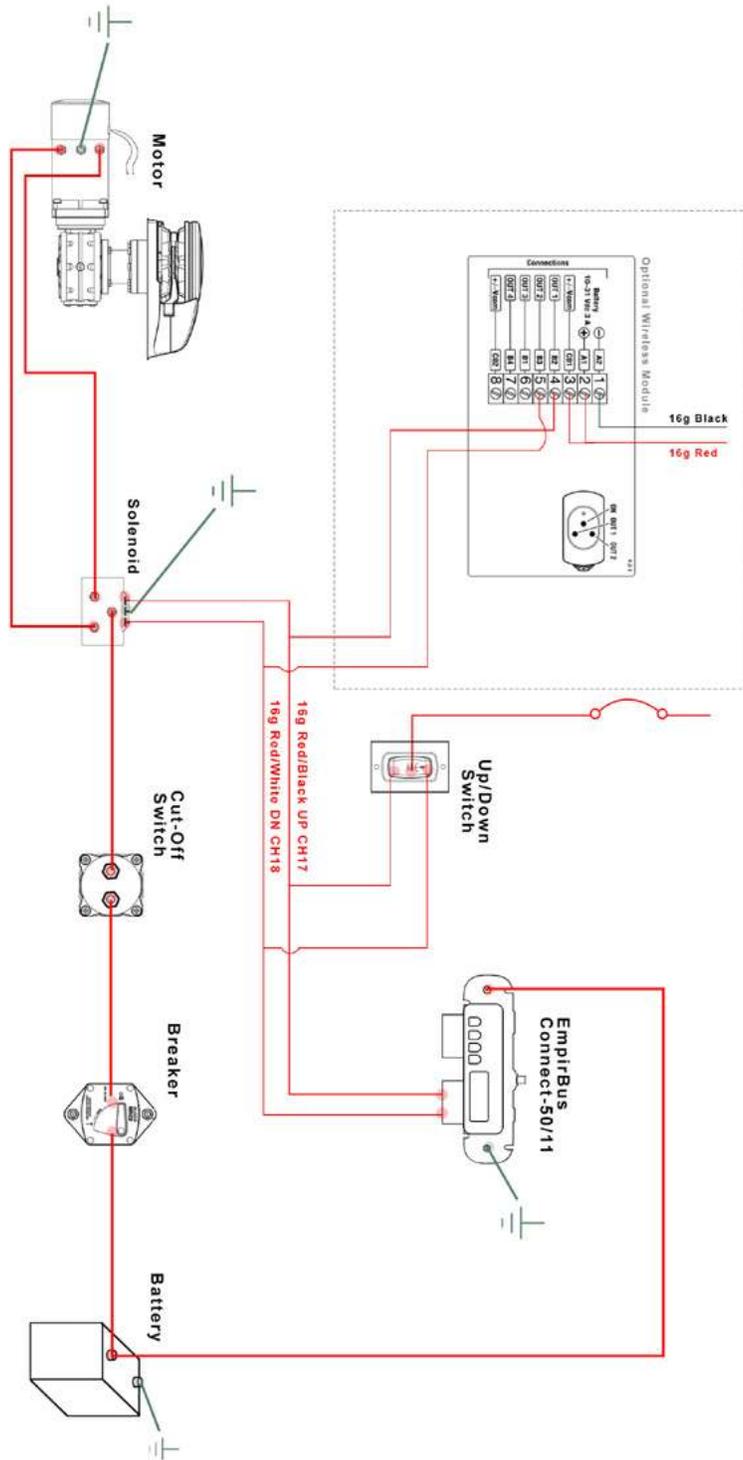
LS36/LX36 DIGITAL SWITCHING- SINGLE WIPER WIRING

REFERENCE ONLY



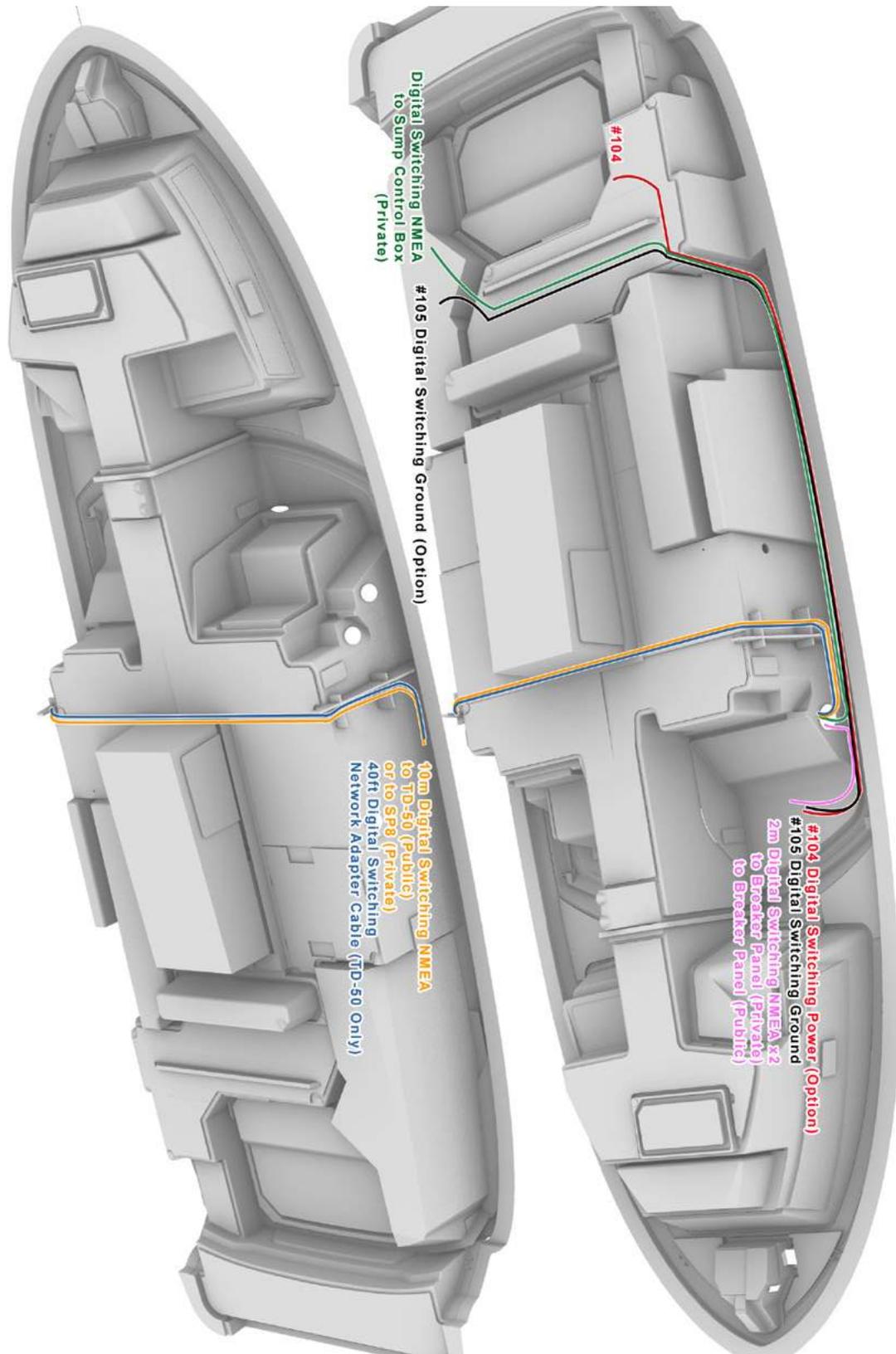
DO NOT cut Sensor wires with Digital Switching

LS36/LX36 DIGITAL SWITCHING- WINDLASS



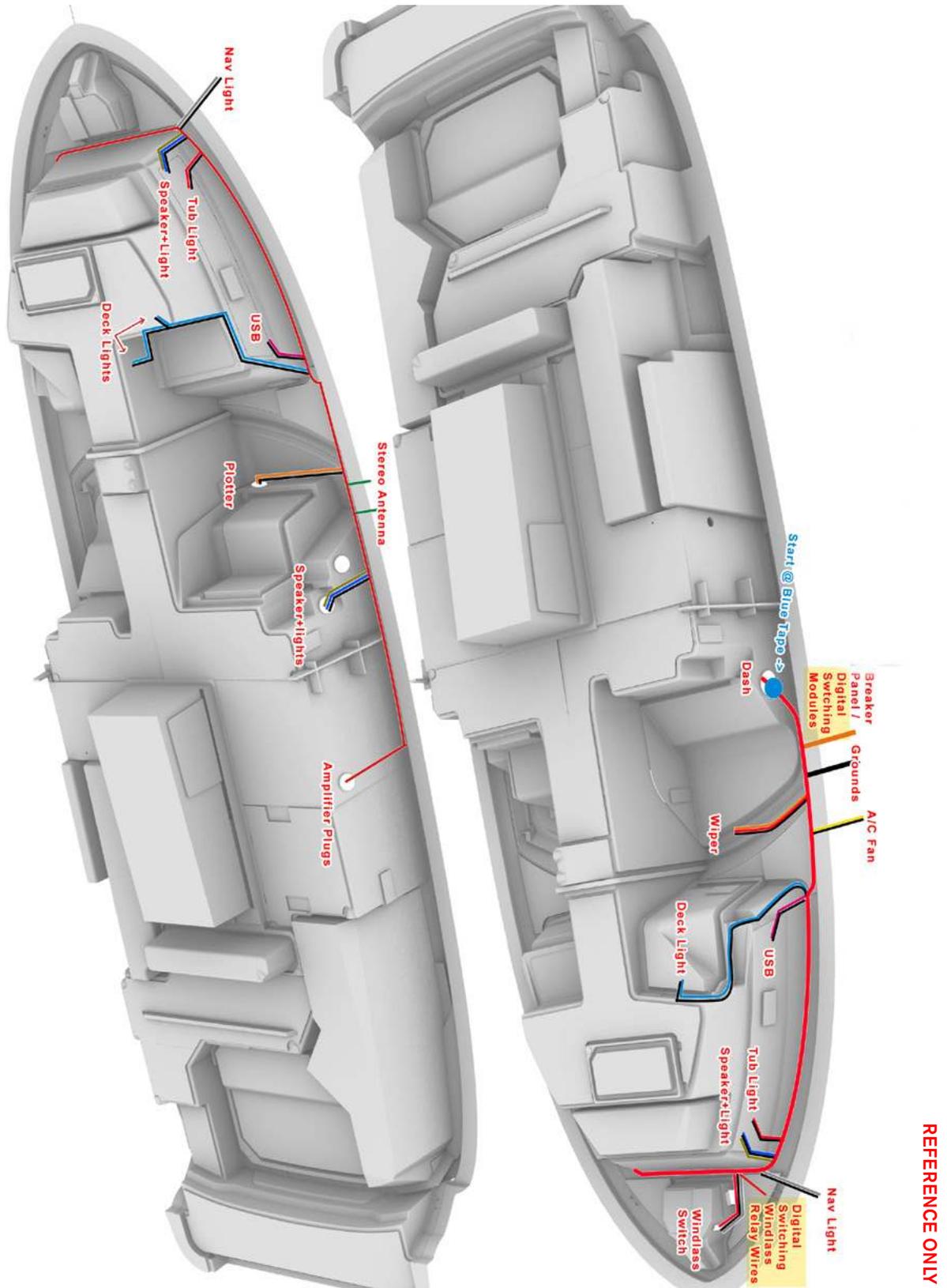
REFERENCE ONLY

LS36/LX36- DECK HARNESS DIGITAL SWITCHING



REFERENCE ONLY

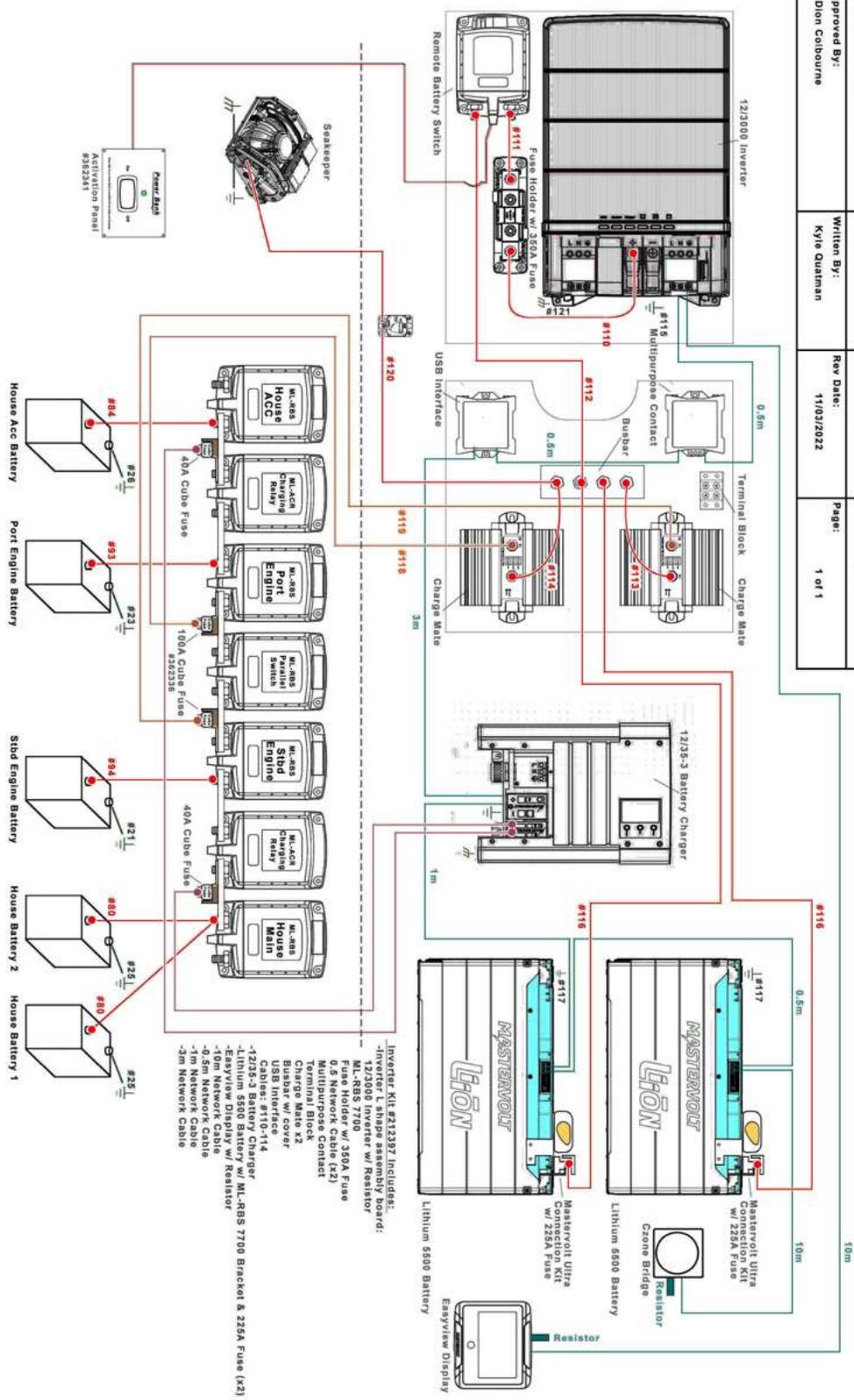
LS36/LX36- FWD. DECK HARNESS DIGITAL SWITCHING



REFERENCE ONLY

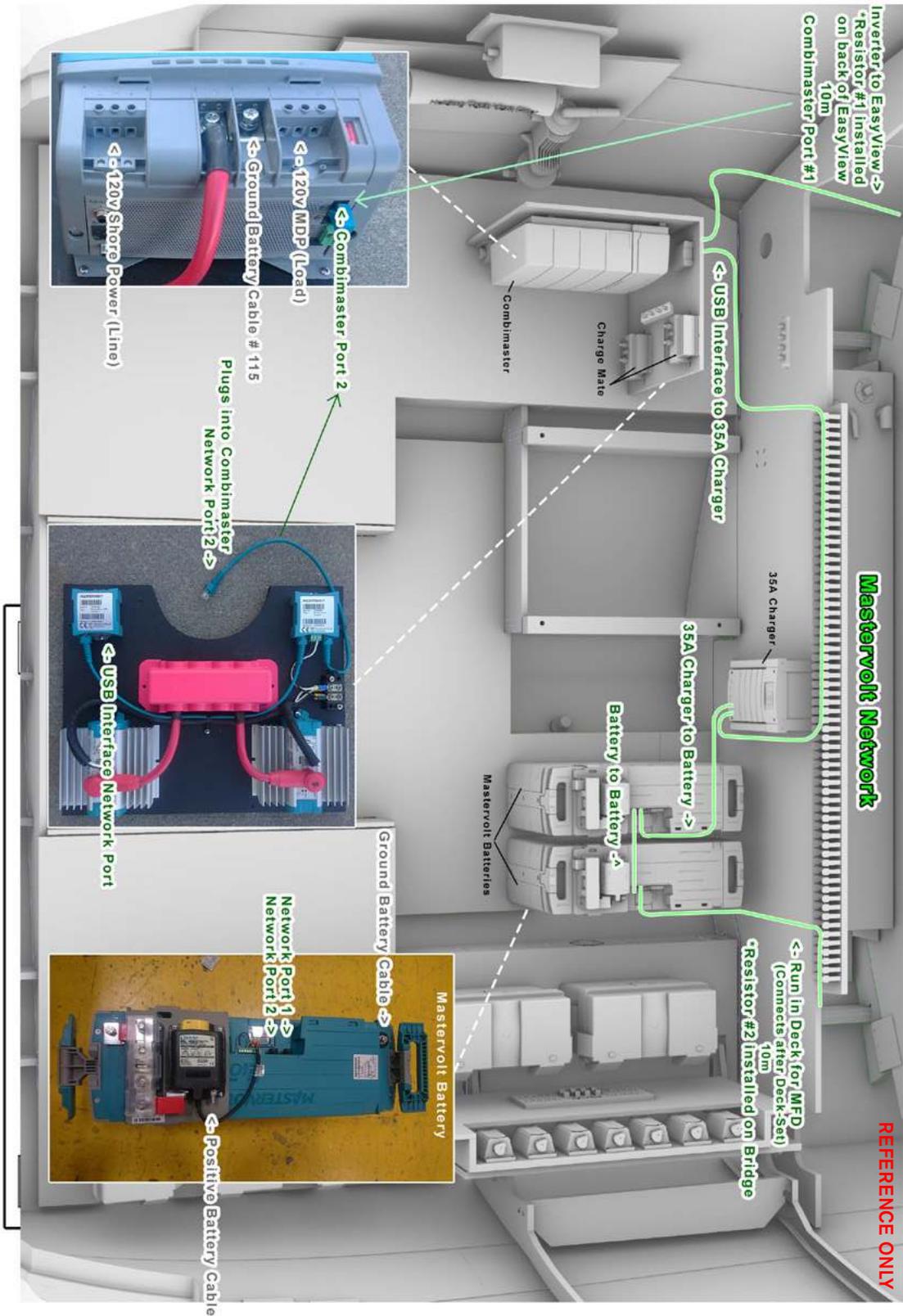
LS36/LX36- INVERTER SYSTEM (POWER BANK) OVERVIEW (OPTION)

Subject Work Instruction: 36 VLVM Inverter System	Issue Date: 04/20/2021	Rev: 1	Document No. EL-163
Approved By: Dion Colbourne	Written By: Kyle Qualman	Rev Date: 11/03/2022	Page: 1 of 1

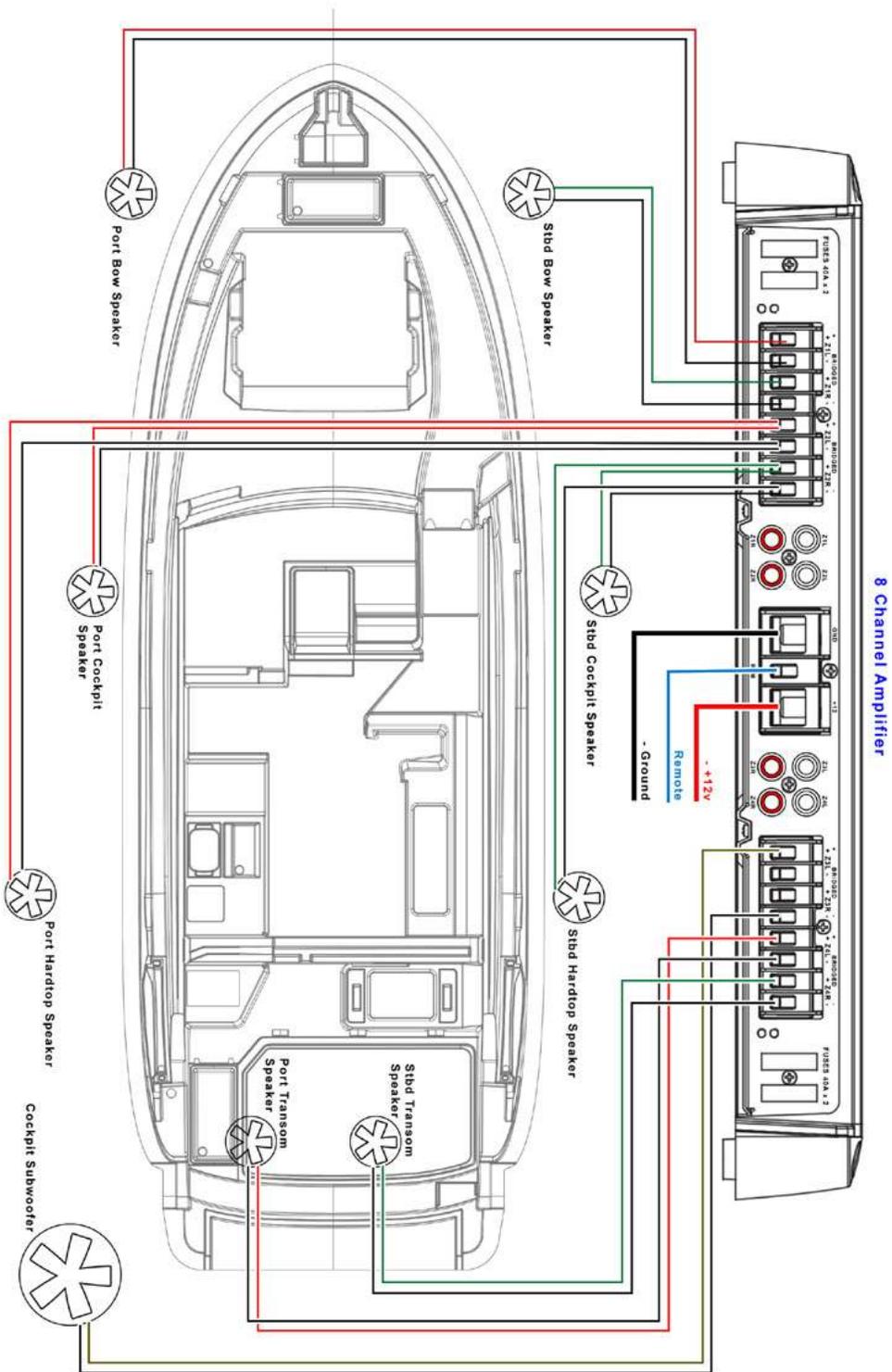


REFERENCE ONLY

LS36/LX36- INVERTER SYSTEM (POWER BANK) LAYOUT 2 (OPTION)

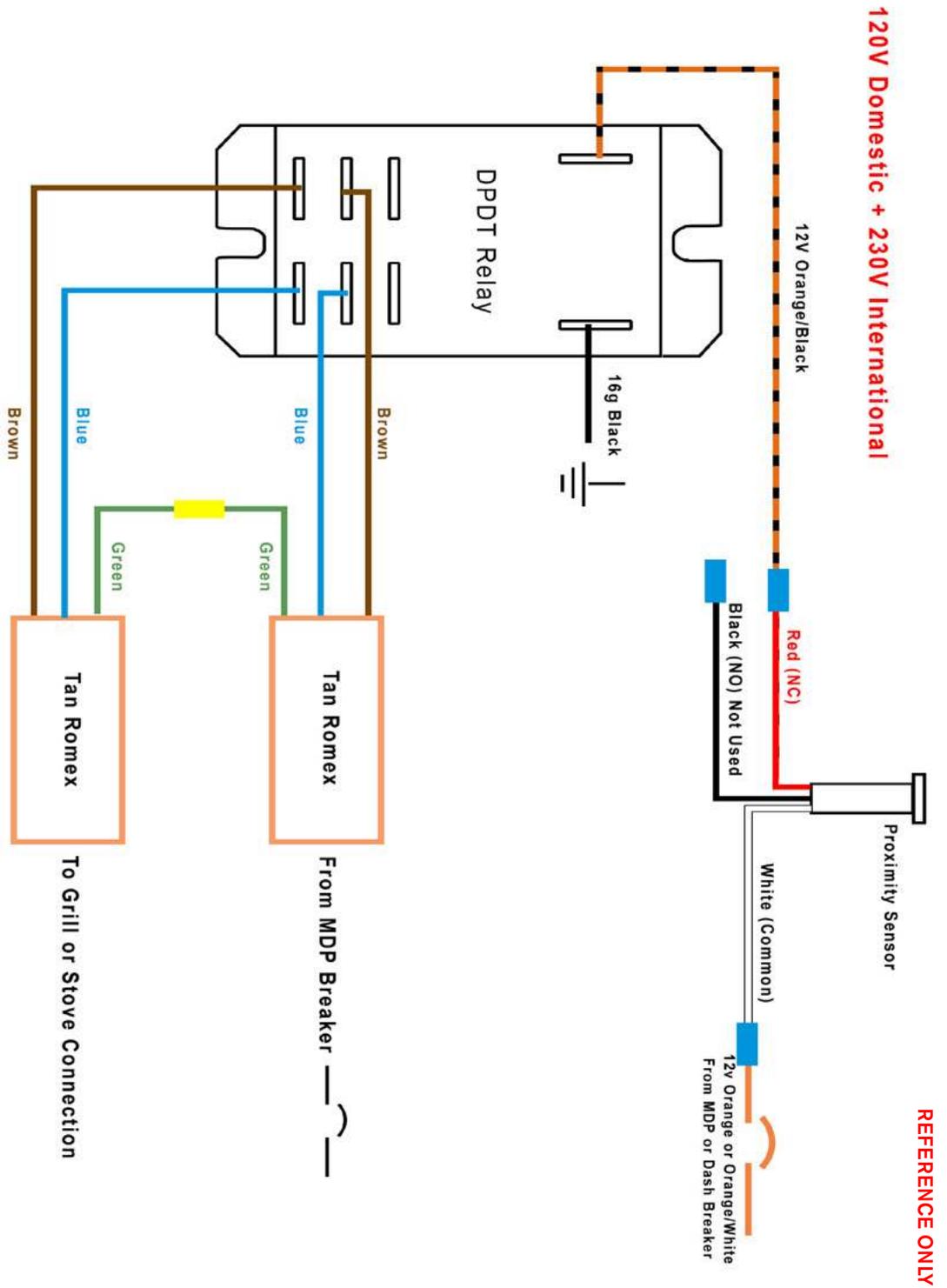


LS36/LX36- AMPLIFIER WIRING/SETTINGS



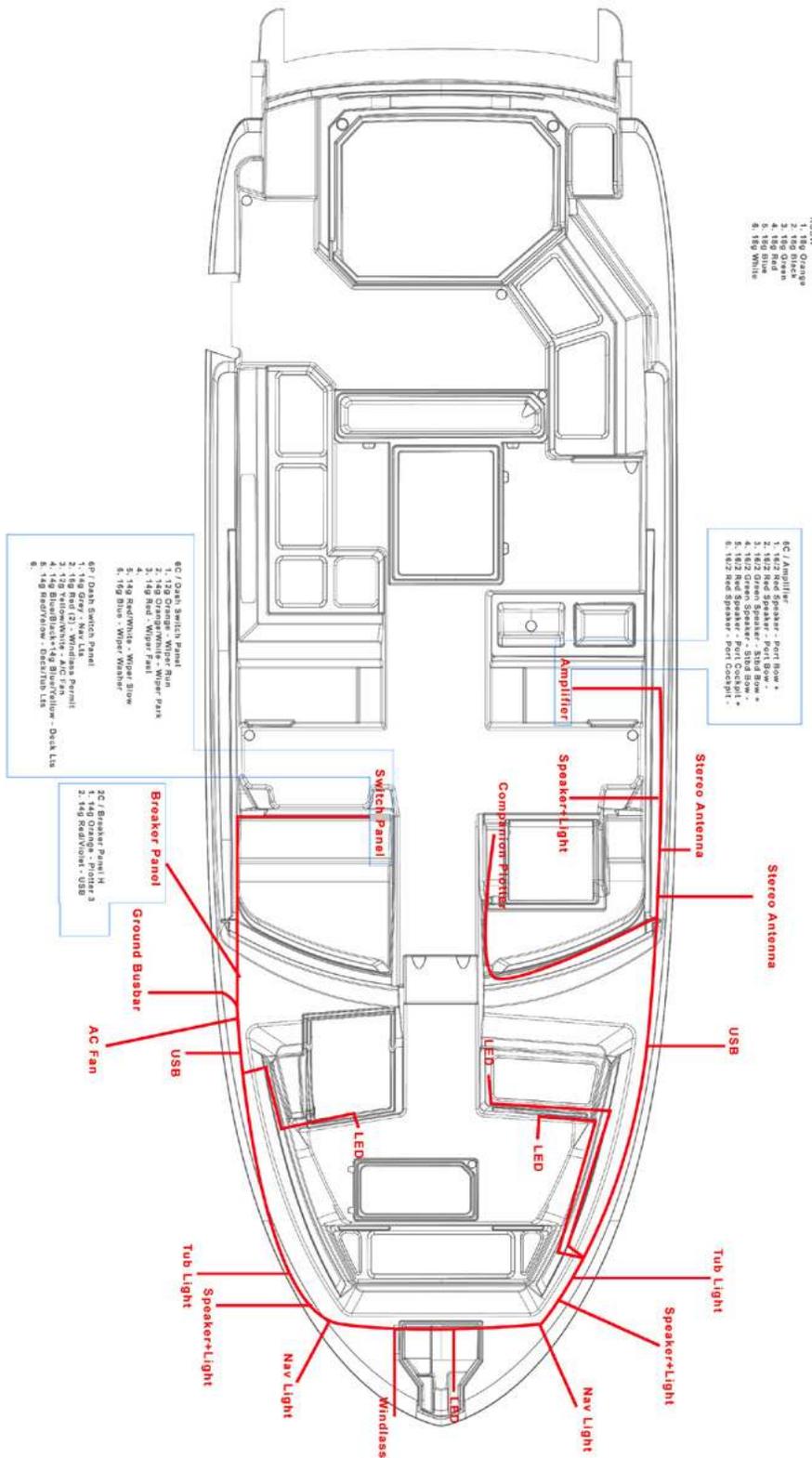
REFERENCE ONLY

LS36/LX36- STOVE/GRILL LIMIT SWITCH-ACTIVATION BOX



LS36/LX36- FORWARD DECK HARNESS ROUTING

All Breakouts, Pinouts, Gauges, and Colors are subject to change.

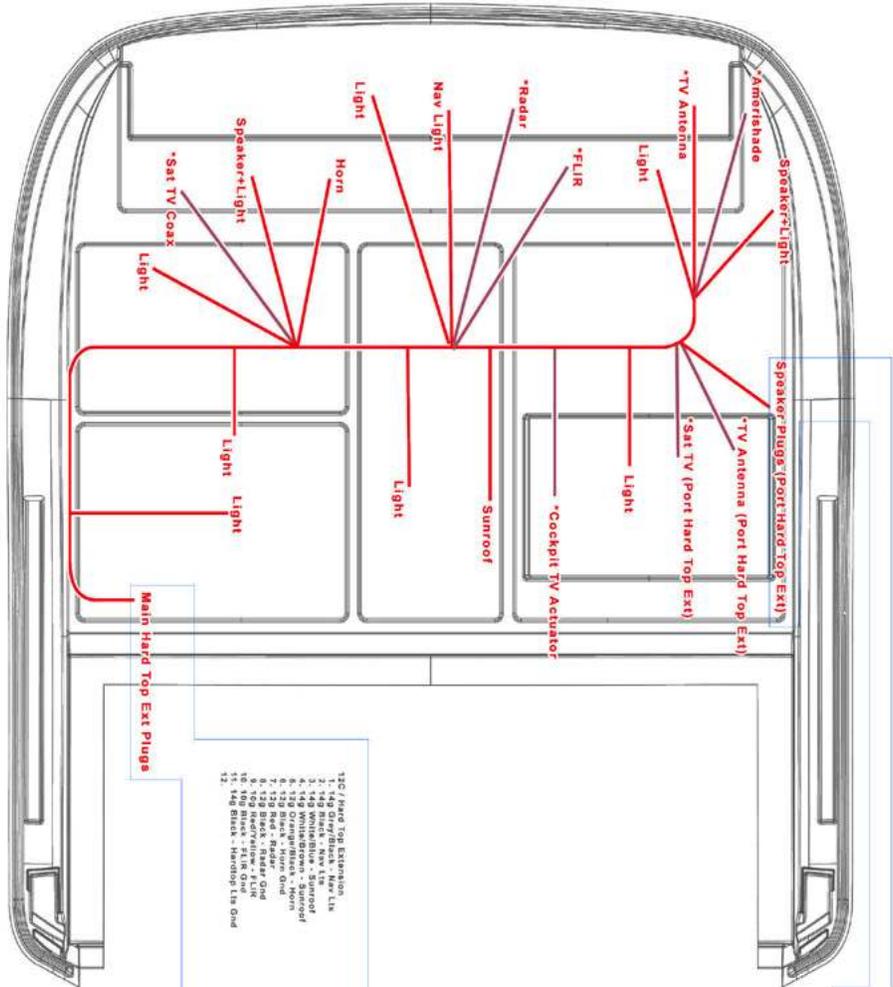


REFERENCE ONLY

LS36/LX36- HARD TOP HARNESS ROUTING

All Breakouts, Pins, Gauges, and Colors are subject to change.

*Some Wires are optional and will not appear in every harness



- 4P / Port Side Speaker Bus Harness
- 1. 142 Red Speaker - Port Hardtop
 - 2. 142 Red Speaker - Port Hardtop
 - 3. 142 Green Speaker - Side Hardtop
 - 4. 142 Green Speaker - Side Hardtop

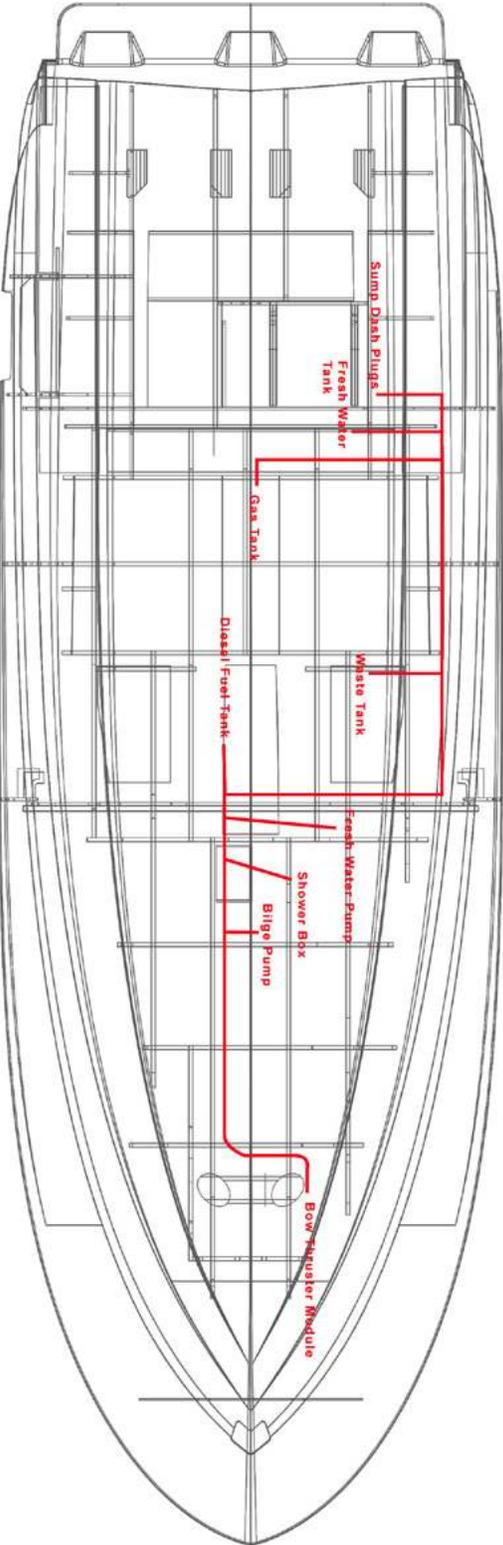
- 13C / Hard Top Extension
- 1. 148 Gray/Black - Nav Lite
 - 2. 148 White/Black - Sunroof
 - 3. 148 White/Black - Sunroof
 - 4. 132 Orange/Black - Horn
 - 5. 132 Orange/Black - Horn
 - 6. 132 Black - Horn Gnd
 - 7. 132 Black - Horn Gnd
 - 8. 132 Black - Radar Gnd
 - 9. 132 Black - Radar Gnd
 - 10. 132 Black - Radar Gnd
 - 11. 148 Black - Hardtop Lin Gnd
 - 12. 148 Black - Hardtop Lin Gnd

- 3C / Hard Top Extension (Optional, ROBW)
- 1. 149 Blue/White - Speaker Light
 - 2. 149 Black - Speaker Light Gnd

- ROBW
- 1. 142 Orange
 - 2. 142 Green
 - 3. 142 Blue
 - 4. 142 Blue
 - 5. 142 Blue
 - 6. 142 White

REFERENCE ONLY

LS36/LX36- HULL HARNESS ROUTING

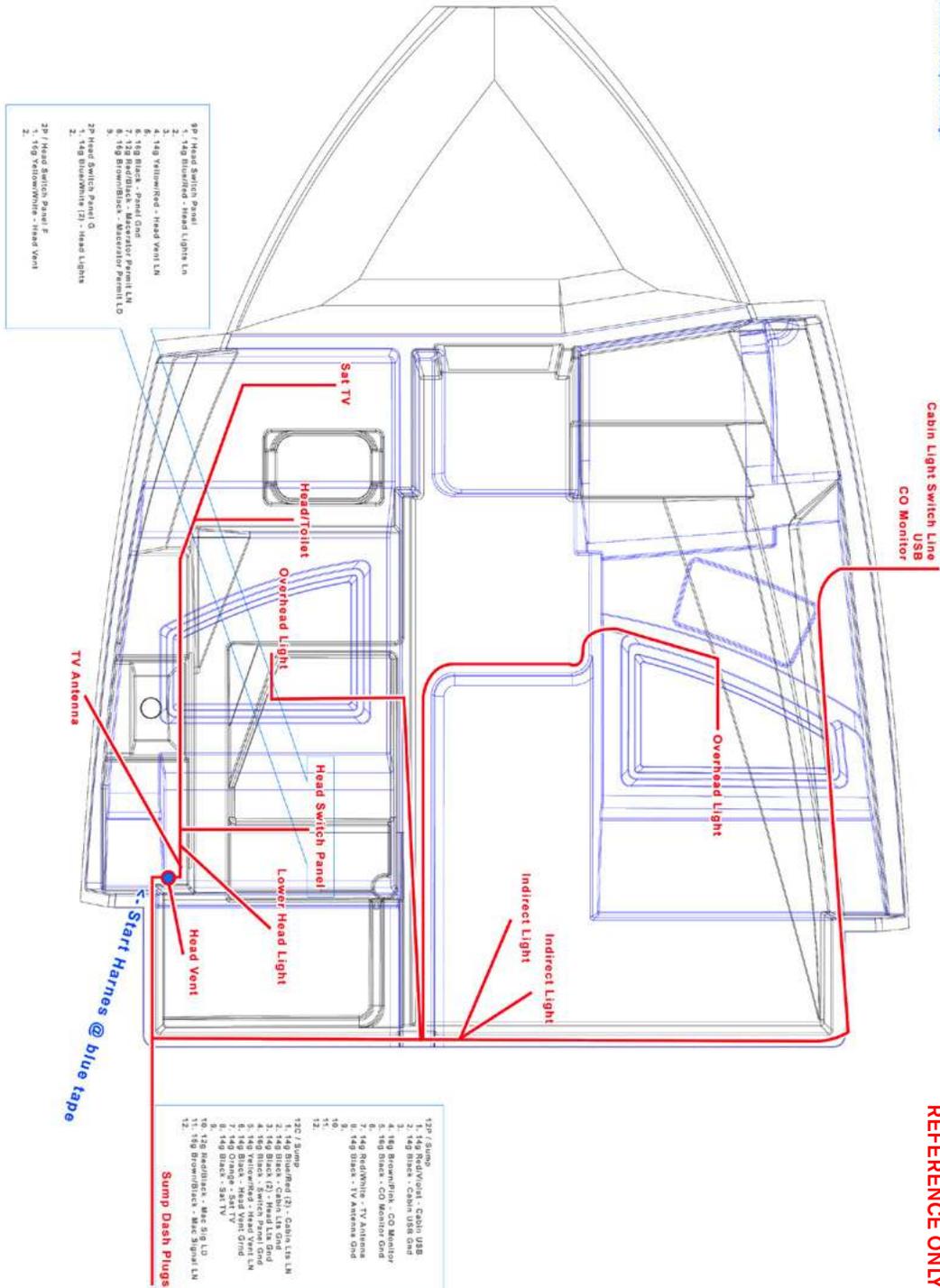


All brackets, plugs, gauges, and covers are subject to change.

REFERENCE ONLY

LS36/LX36- LINER HARNESS ROUTING

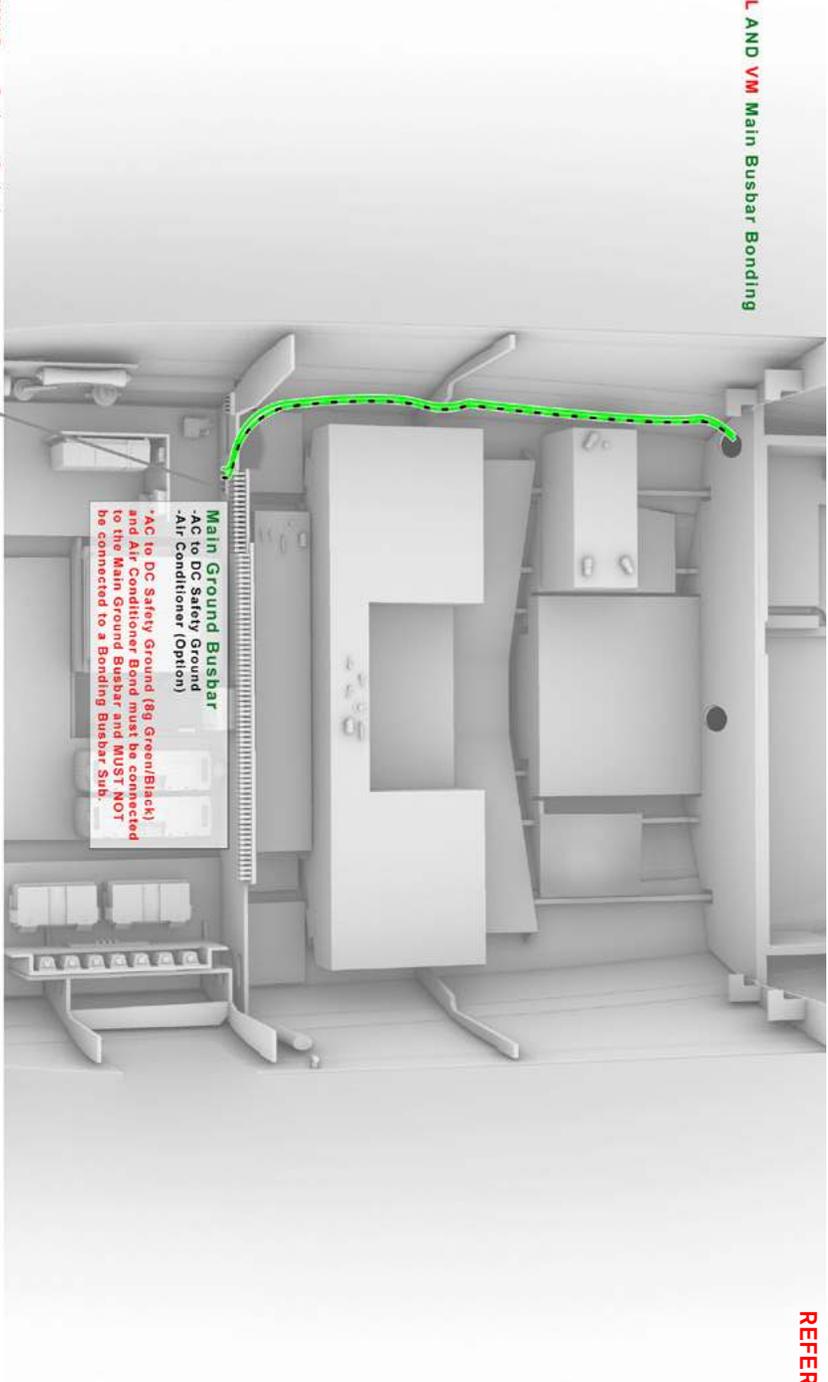
All Breakouts, Pins, Gauges, and Colors are subject to change.



REFERENCE ONLY

LS36/LX36- BONDING SYSTEM 2 OF 3

VL AND VM Main Busbar Bonding

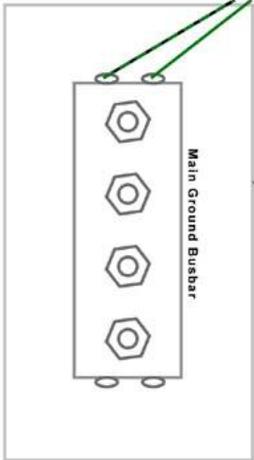


REFERENCE ONLY

410V/220V Power Package (Option):

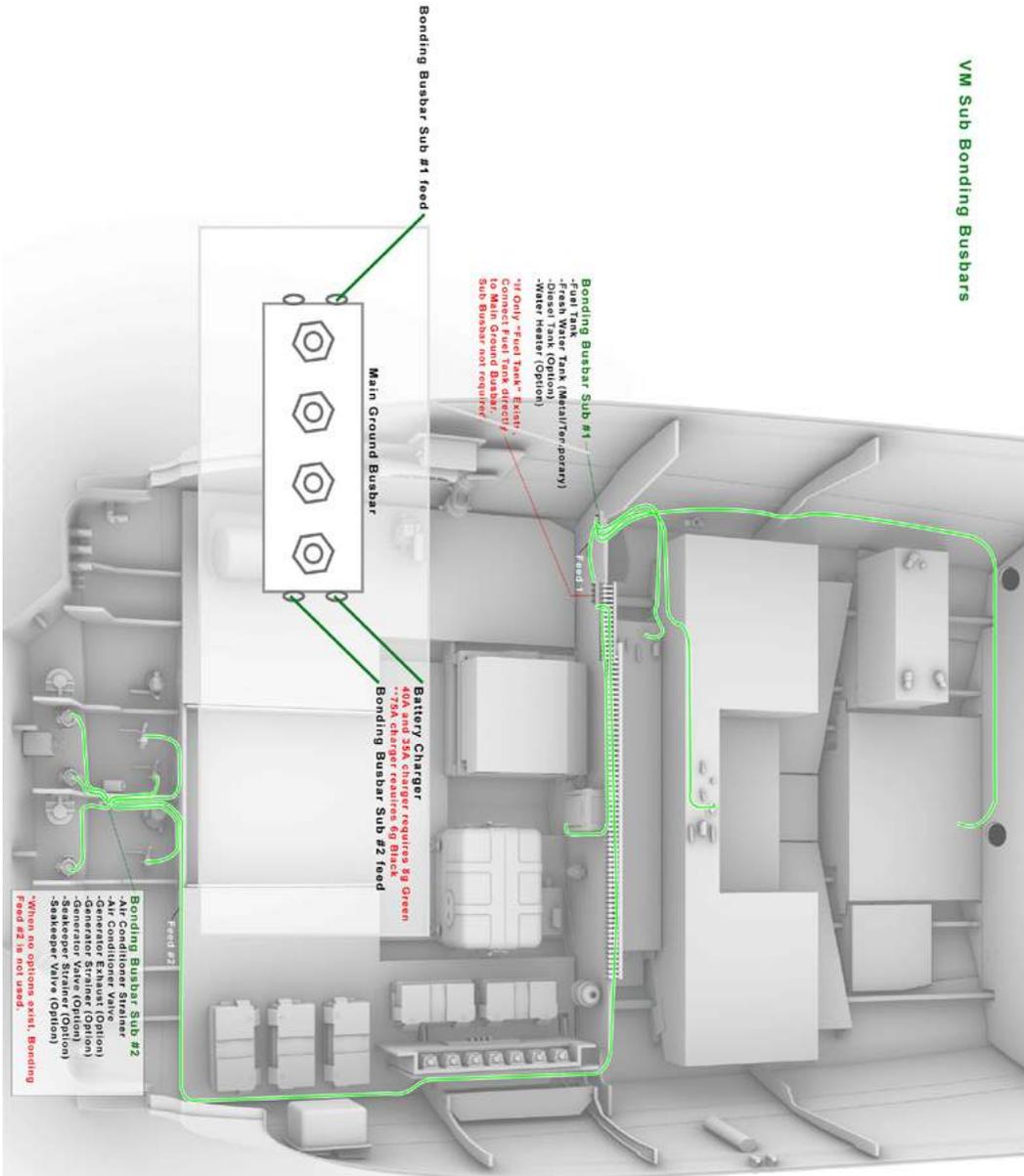
--Air Conditioner

--AC to DC Safety



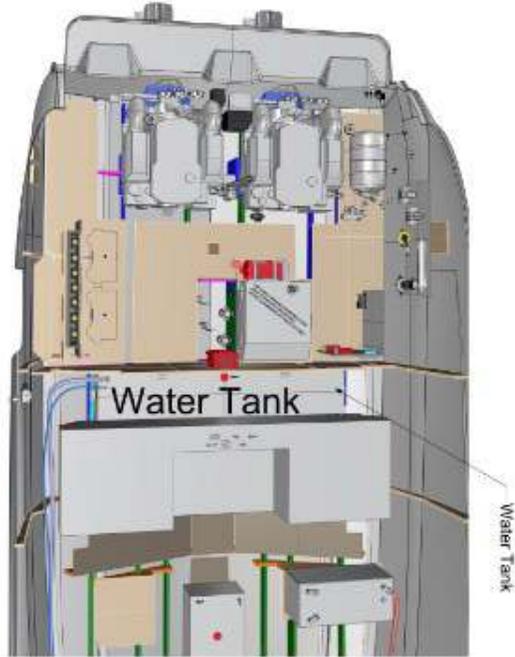
LS36/LX36- BONDING SYSTEM 3 OF 3

VM Sub Bonding Busbars



REFERENCE ONLY

LS36/LX36- WATER SYSTEM ROUTING 1 OF 5



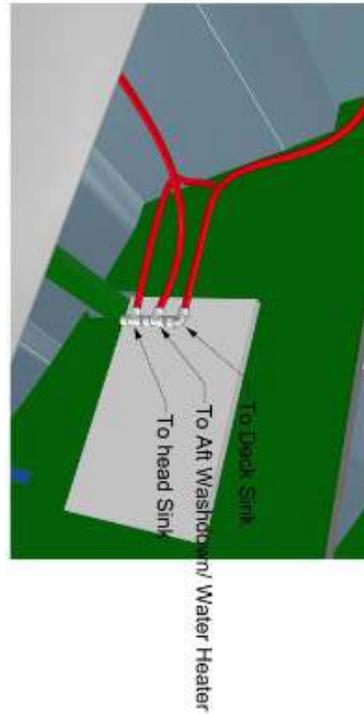
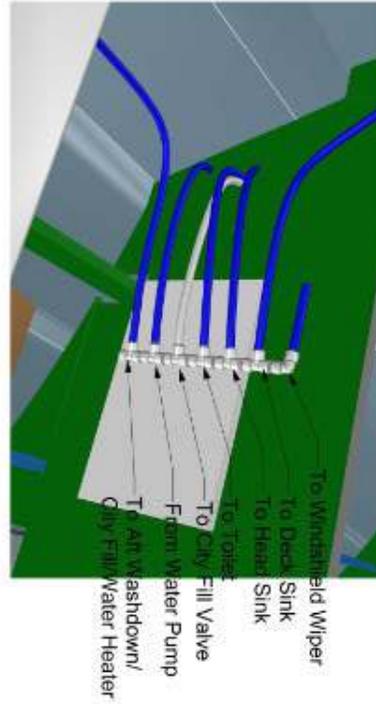
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REVISED TITLE	REVISED DATE	REVISED BY
36 BR (L-VMI) Water Tank Routings	02/16/2022	MM/LAN/20F
DESIGNED BY	DESIGNED DATE	DESIGNED BY
MM/LAN/20F		

REGAL MACHINE INDUSTRIES
 10000 W. 10TH AVENUE
 DENVER, CO 80202
 TEL: 303.751.8888

LS36/LX36- WATER SYSTEM ROUTING 2 OF 5



- To Windshield Wiper
- To Deck Sink
- To Head Sink
- To Water Heater/Aft Washdown/City Fill
- To Toilet
- To Deck Sink
- To Head Sink
- To Water Heater/ Aft Washdown
- To City Fill Valve

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PROJECT NO. 36 BR (VL-VM) Water Tank Routings	DATE 04/15/2021	DRAWN BY DMC	CHECKED BY MAV/VMZP

LS36/LX36- WATER SYSTEM ROUTING 3 OF 5

Water Tank Routings

Routings Run Along Port Side of Hull Behind Fuel and Waste Tank

REFERENCE ONLY

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<small>DESIGNED BY</small>	<small>DATE</small>	<small>REVISED BY</small>	<small>DATE</small>
REGAL MARINE INDUSTRIES <small>10000 W. 10TH AVENUE, SUITE 100 DENVER, CO 80231</small>	36 BR (V-VN) Water Tank Routings	04/15/2021	MML/VKZJF
<small>DMC</small>			

LS36/LX36- WATER SYSTEM ROUTING 4 OF 5

To Sump
Route Along Port Hull Side

To Thru Hull
Reference Document
MVM24B for Specific
Location

VM FWD Bilge Routing

To Thru Hull
Reference Document
MVL24B for Specific
Location

VL FWD Bilge Routing

Bilge Pump Routing

Water Tank

Collection Box
Bilge Pump

Water Tank

Collection Box
Bilge Pump

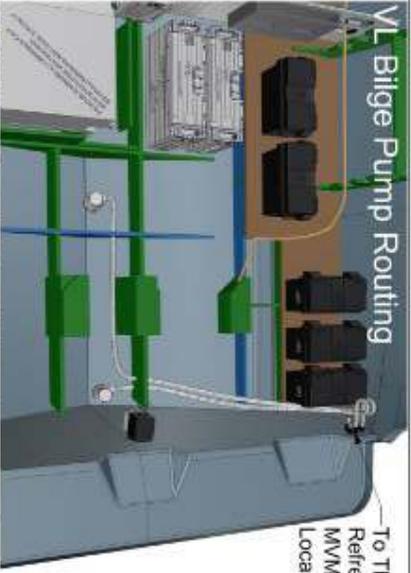
Bilge Pump Routing

REFERENCE ONLY

REGAL MARINE INDUSTRIES
10000 10th Street, Suite 100
Seattle, WA 98148
Tel: 206.451.1000

PROJECT	36 BR (VL-VM) Water Tank Routings	DATE	9 OF 10
REV	04/15/2021	WORKSHEET	MVL24B
DESIGNED BY	DMC	CHECKED BY	MVL24B

LS36/LX36- WATER SYSTEM ROUTING 5 OF 5



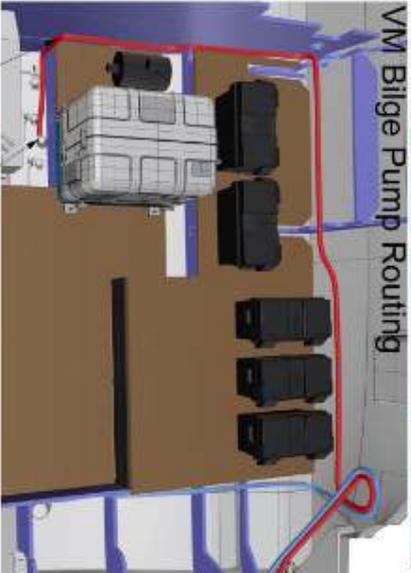
VM Bilge Pump Routing

To Thru Hull
Reference Document
MVM24B for Specific
Location



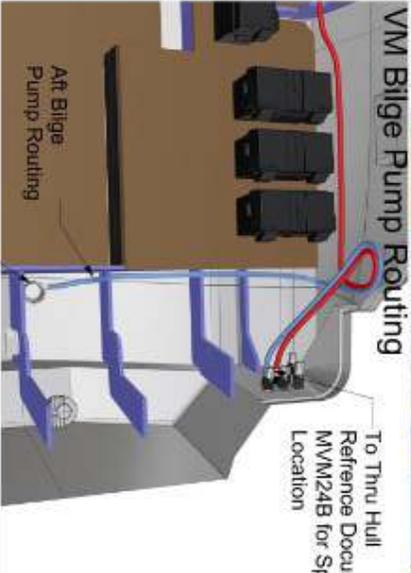
VM Bilge Pump Routing

To Thru Hull
Reference Document
MVM24B for Specific
Location



VM Bilge Pump Routing

FWD Bilge Pump
FWD Bilge Sump Routing



VM Bilge Pump Routing

Aft Bilge
Pump Routing

REFERENCE ONLY

REGAL MARINE INDUSTRIES
36 BR (VL-VM) Water Tank Routings
04-15-2021
DWC

DATE: 10 OF 10
FILE: MVL\VM25F