REGAL®

OWNER'S MANUAL

23 OBX

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Welcome To Regal

Dear Regal Owner,

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

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

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

If you have questions that are not covered in this manual, please consult your authorized Regal dealer for assistance or phone the Regal factory at 407-851-4360.

Thank you, and welcome to the "World of Regal !"

Duane Kuck
President & CEO

Mission Statement

With God's help

and a steadfast commitment to integrity,

we will develop a team

of exceptional people and relationships

to provide

exceptional customer satisfaction.

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Introduction

Boating is becoming more popular every year. There are numerous types of recreational vessels on our waterways today involved in an every growing number of activities. Therefore, as a new boat owner it is of the highest priority to learn about general boating practices before operating your craft.

Your Regal dealer will answer many questions and provide valuable "hands on" information during the completion of the new boat delivery process. In addition, your dealer has received special factory training on the product line and his services should be employed to solve technical problems and periodic maintenance beyond the scope of this manual. Also, your Regal dealer carries a line of factory approved parts and accessories.

Your Regal dealer can provide information regarding national training organizations such as the U.S. Power Squadron and United States Coast Guard Auxiliary. Along with other organizations and literature, they can help build your "boating savvy" by developing the necessary skills and awareness to be a safe and component skipper. Your local library can also help in providing recommended boating literature such as Chapman Piloting (Seamanship & Boat Handling by Elbert S. Maloney).

Remember, the waterways can change from normal to abnormal conditions in a heartbeat. Knowing how to react quickly comes from experience and knowledge which can be gained through boating education.

Welcome aboard!

INT-8

YOUR REGAL OWNER'S MANUAL

Your Regal owner's manual has been developed to assist you in operating your vessel with safety and pleasure. Be sure to read and become familiar with the contents before operating your craft. Your owner's manual has been divided into general chapters to assist you in becoming more knowledgeable with your Regal boat. Also, we have added a special technical drawing chapter which can be valuable in maintenance and troubleshooting. This manual is not intended to be a complete source of boating maintenance, boat handling techniques, boating safety or seamanship. These skills require education and experience levels beyond this manual.

In keeping with its commitment to continued improvement, Regal notes that all drawings, specifications, models, standard and optional equipment referred to in this manual are subject to change without notice.

OWNER'S INFORMATION PACKET

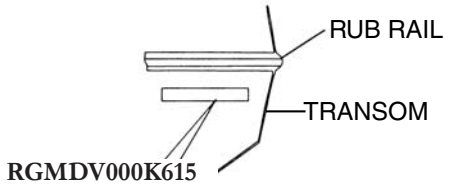
Regal has provided an information pouch aboard the vessel. Read and become familiar with the materials. This packet contains valuable literature on your propulsion package, standard and optional equipment, systems and various care and cleaning instructions. Be sure to store the information pouch in a clean dry area for quick reference.

GENERAL INFORMATION

Hull Identification Number (HIN)

The United States Coast Guard has established a universal system of numerically identifying vessels by using a hull identification number or "HIN." This number identifies your Regal boats model, hull number, month and year of manufacture. The HIN is found on your boat's starboard side, usually below the rub rail in the transom area.

The HIN consists of 12 alpha or numeric characters.
It is recommended that you locate and write down the HIN for future reference. It can be especially useful when ordering parts from your Regal dealer. A second HIN number is found in a hidden location. This second HIN is useful to authorities if for example the boat is stolen and the original transom HIN is modified or eliminated.



HULL IDENTIFICATION NUMBER

Vessel Information Sheet

It is recommended that you fill out the information on the following page. It will supply vital statistics on your vessel. Make a copy of the data for safe keeping at home.

Vessel Float Plan

Fill out the float plan on the following page before departing. Leave it with a responsible person who will notify the United States Coast Guard or local law enforcement authorities if you do not return as planned. If you change your plans be sure to notify this person. Make copies of the float plan and use one each time you go boating. This will help people know where to find you should you not return on schedule. Do not file the float plan with the United States Coast Guard.

VESSEL INFORMATION SHEET

Owner:_____

Address:_____

City & State:_____

Home Phone: _____ Business Phone: _____

In Case Of Emergency Notify: _____

Address:_____

City:_____State:_____

Phone: _____

Insurance Agent's Name: _____

Policy#: _____

USCG Phone: _____ Local Police: _____

Marina Phone: _____ Slip (Dock#): _____

Hull Serial #: RGM __ __ __ __ __ __ __ __ __
Key #:_____ Engine Serial #:_____
Stern Drive Serial #:_____
Key #:_____ Cabin Door: (If Applicable) _____

Selling Dealer: _____
Address: _____
City & State: _____
Phone: _____

Servicing Dealer: _____
Address: _____
City & State: _____
Phone: _____

FLOAT PLAN

Owner: _____

Address: _____

City & State: _____

Telephone#: _____

Cell Phone#: _____

Person Filing Report: _____

Name: _____

Home Telephone#: _____

Cell Phone #: _____

Safety Equipment Aboard:

- ☐ Life Jackets
- ☐ First Aid Kit
- ☐ Flares
- ☐ Flashlight
- ☐ VHF Radio
- ☐ Anchor
- ☐ Compass
- ☐ Food
- ☐ Water

Make Of Boat: _____

Registration#: _____

Length: _____

Boat Name: _____

Gel Color: _____

Trim Color: _____

Inboard/Outboard: _____

Hull I.D.#: _____

Fuel Capacity: _____

Destination: _____

Leave From: _____

Time Left: _____

Going To: _____

Fuel Level: 1/4, 1/2, 3/4, F

Est. Time Of Arrival: _____

Return: _____

Est. Time of Arrival: _____

If not back by___o'clock

call Coast Guard

Other Information: _____

Name Of Person Aboard	Age	Address	Phone#

LAUNCH & CRUISE CHECKLIST

- ☐ Obtain a current weather report.
- ☐ Inspect the hull and outboard propeller for damage.
- ☐ Check all electrical system switches for proper operation.
- ☐ If your boat has been in the water, run the bilge pump until the flow of water stops.
- ☐ If your boat has been out of the water, check to see that all bilge water has drained out. Install the drain plug.
- ☐ Check that all required safety equipment is on board and in good working condition.
- ☐ Check that all other equipment is on board such as mooring lines, first aid kit, tool kit and extra parts.
- ☐ Inspect fuel components, hoses and hardware including all filters for fuel leaks and overall tightness.
- ☐ Visually inspect engine for cracked hoses, defective belts, loose fasteners such as bolts, nuts and hose clamps.
- ☐ Check fuel level. Fuel tanks should be filled to near full capacity.
- ☐ Make sure all navigation charts, equipment and vessel registration paperwork are onboard.
- ☐ Check operation of steering system, navigation lights and horn.
- ☐ Make sure passengers and crew know how to operate safety equipment and react to an emergency.
- ☐ File a float plan with a responsible party ashore.

SUGGESTED TOOLS, PARTS & GEAR

SUGGESTED TOOLS

Allen Wrenches
Jack Knife
Phillips Screwdriver Set
Slotted Screwdriver Set
Regular Pliers
Combination Wrench Set
Ratchet & Socket Set
Hammer
Wire Crimpers
Vise Grip Pliers
Floating Flashlight
Nut Driver Set
Oil Filter Wrench
Fuel Filter Wrench

SPARE PARTS

Fuel Filters
Spark Plugs
Water Pump Belt
Propellers
Alternator Belt
Anti-Siphon Set
Propeller Nut & Hardware
Penetrating Oil
Extra Light Bulbs
Extra Batteries
Duct Tape
Electrical Tape
Power Steering Fluid
Water Pump Impeller
Spare Keys On Floater

BASIC GEAR

Tie Lines
Mooring Lines
Dock Fenders
First Aid Kit
Boat Hook
Foul Weather Gear
VHF Radio, EPIRB, GPS, Cell Phone
Charts & Plotting Instruments
Emergency Water & Food
Bailer Or Hand Pump
Fire Extinguisher
Personal Flotation Devices
Anchor & Line
Life Raft

Maximum Capacity Plate

Close to the helm on Regal boats **up to 26' in length** is a **capacity** plate. A typical outboard capacity plate for domestic vessels is shown below. This plate represents manufacturers who participate in the National Marine Manufacturer's Association small boat certification program. The driver of the craft must read and understand the plate information before operating the vessel.
The capacity plate data applies under normal conditions. **Be sure to read and abide by the capacity limits. Remember, the boat operator is responsible for the vessel and the safety of its passengers.**

Note the typical outboard maximum **capacity** plate information below:

• The plate displays the maximum number of persons or pounds.

• The plate displays the total weight of persons, motors, gear.

• Weight of heaviest production motor.

Note:Overloading, improper loading and weight distribution are well documented causes of accidents. Provide for an extra margin of safety in rough sea conditions.

TYPICAL EXAMPLE SHOWN

Owner's Registration & Systems Checklist

Please note that your Regal boat requires the proper registration by your authorized Regal dealer. To initiate your warranty the dealer must complete the owner's registration form and systems checklist at the time of delivery. The owner must sign the paperwork to acknowledge that the dealer has reviewed the boat systems and warranty provisions with the owner. The owner should keep the original paperwork that features a temporary warranty registration. A Regal express limited warranty certificate containing all relevant boat and engine serial numbers will be sent after the factory receives the paperwork.

Dealer's Responsibility

Your boat has undergone rigid quality assurance inspections before leaving the factory. However, your dealer has been trained to perform final pre-delivery checks and to service your Regal boat prior to your pick-up. Your dealer's responsibilities include:

A complete orientation in the operation of your Regal boat, including matters relating to the safe operation of your craft.

Completion and mailing of your boat registration warranty form to Regal.

Warranties, registration materials, owner's manual, operation, installation and maintenance instructions for all auxiliary equipment supplied with or installed on your Regal boat.

Owner's Responsibility

You are entitled to all the benefits and services outlined in your Regal boat warranty. However, you have certain responsibilities to ensure warranty satisfaction. These are:

To read the warranty materials and understand them fully.
To examine the boat in detail at the time of delivery.

Apply the following: boating rules and regulations, safety equipment, environmental regulations, accident reports and warranty regulations terms and conditions.

To read thoroughly all literature supplied with your boat, including this owner's manual and to follow the recommendations in the literature.

To return the boat after the recommended hours of engine operation for the proper dealer service inspections.

To provide proper maintenance and periodic servicing of your boat and equipment as set forth in the various manuals supplied.

REGAL
Luxury Performance Boats
AN ISO 9002 REGISTERED COMPANY

RUNABOUTS and CUDDY NEW BOAT DELIVERY CHECKLIST

REGAL MARINE INDUSTRIES
2300 JETPORT DRIVE
ORLANDO, FLORIDA 32809
(407) 851-4360

OWNER REGISTRATION INFORMATION

NAME _____ DEALER _____

ADDRESS _____ HULL # _____

CITY _____ STATE _____ ZIP _____ MODEL _____

COUNTRY _____ PHONE # _____ EMAIL _____

INSTRUCTIONS: This checklist is designed to assist dealers in the delivery of a Regal Boat to a new owner. Review the location, operation and maintenance of each item noted below with the owner and acknowledge this by checking the appropriate boxes. Indicate if item is not applicable with "NA". This form must be completed and signed by the dealer's representative and the customer to acknowledge proper receipt of the boat. The warranty will not be activated until a fully completed and signed copy has been received by Regal Marine.

A. NEW BOAT INFORMATION	DEALER	OWNER
1. Review Regal's warranty	____	____
2. Review Engine warranty	____	____
3. Review Regal's owner manual	____	____
4. Review owner's package	____	____
5. Review dealer's service procedures	____	____
6. Review owner's service responsibilities	____	____

B. CABIN (IF APP)	DEALER	OWNER
1. Location of all storage areas	____	____
2. Cabin lighting	____	____
3. Deck hatch	____	____
4. Port hole	____	____
5. Carbon monoxide detector	____	____
6. Dinette table set up	____	____
7. Cabin cushions set up	____	____
8. Electrical panel	____	____
9. Toilet / head	____	____
10. Water system	____	____

C. COCKPIT	DEALER	OWNER
1. Swim ladder	____	____
2. Transom shower	____	____
3. Cockpit seating set up	____	____
4. Engine hatch operation	____	____
5. Cockpit storage areas	____	____
6. Refreshment center	____	____
7. Fishing package	____	____

D. INSTRUMENTATION	DEALER	OWNER
1. Function of all gauges	____	____
2. Function of all switches	____	____
3. Throttle & shifter	____	____
4. Steering	____	____
5. Ignition	____	____
6. Operation of all optional electronics	____	____

E. ENGINE ROOM	DEALER	OWNER
1. Engine fluid check	____	____
2. Trim pump location / fluid check	____	____
3. Battery I	____	____
4. Battery switch (may be in cockpit)	____	____
5. Bilge pump	____	____
6. Trim tab pump	____	____
7. Fire extinguisher	____	____
8. Blower	____	____

F. CANVAS	DEALER	OWNER
1. Canvas set up	____	____
2. Canvas storage	____	____
3. Canvas care and cleaning	____	____

L. CARE & CLEANING	DEALER	OWNER
1. Vinyl uph. care & cleaning	____	____
2. Windshield care & cleaning	____	____
3. Gel coat care & cleaning	____	____
4. Stainless steel hardware care & cleaning	____	____
5. Toilet system care & cleaning	____	____

CAUTION: This checklist is only intended to provide a general overview and does not represent all information necessary for proper operation of the boat. It is very important that persons operating this boat study the various manuals and materials provided with the boat and follow the recommendations contained in these materials. They contain important information including cautions and warnings that are vital to safe and enjoyable operation of the vessel. It is the owner's responsibility to insure that anyone operating the boat has been properly trained.

We have completed a review and orientation of the boat and its systems. The boat is in order and functioning properly with the exception of any items specifically noted above. This confirms that owner has received a copy of the Regal Limited Lifetime Warranty and engine manufacturer's warranty and agrees to these warranty terms and conditions.

_____ DEALER REPRESENTATIVE _____ DELIVERY DATE

_____ OWNER _____ DATE

REGAL MARINE INDUSTRIES, INC.
LIFETIME PLUS LIMITED HULL WARRANTY

Welcome to the Worldwide Family of Regal Owners! We are very pleased that you have chosen a Regal Powerboat!

This document is your Warranty Registration Certificate and Statement of Warranty. Please check the registration information section for accuracy. If this information is not correct or if you change your address at some future date, please notify us at the following address: Regal Marine Industries, Inc. Attention: Warranty Registrations, 2300 Jetport Drive, Orlando, Florida 32809

Please read the warranty carefully. It contains important information on Regal's claims procedures and your rights and obligations under this warranty.

WHAT IS COVERED: This Limited Warranty applies only to Regal boats beginning with model year 2012.

LIFETIME LIMITED STRUCTURAL HULL WARRANTY: Regal Marine Industries, Inc. warrants to the original retail purchaser of this boat if purchased from an authorized Regal dealer that the selling dealer or Regal will repair or replace the fiberglass hull if it is found to be structurally defective in material or workmanship for as long as the *original* retail purchaser owns the boat. For purposes of this warranty, the hull is defined as the single fiberglass casting which rests on the water. This limited warranty is subject to all limitations and conditions explained below.

FIVE-YEAR TRANSFERABLE LIMITED STRUCTURAL HULL WARRANTY: In addition to the Lifetime Limited Structural Hull Warranty, Regal offers a Transferable Five-Year Limited Structural Hull Warranty. Under the Five-Year Transferable Limited Structural Hull Warranty, Regal will repair or replace the fiberglass hull if it is found to be structurally defective in material or workmanship within the first (5) years after the date of delivery to the original retail purchaser. Any remaining term of this Five-Year Limited Hull Warranty may be transferred to a second owner if within 60 days of purchase, the new owner registers the transfer with Regal and pays the established warranty transfer fee. Contact Regal Customer Service at the above address for details.

FIVE-YEAR LIMITED HULL BLISTER WARRANTY: Regal will Warrant to the original retail purchaser, any underwater gelcoated surfaces of the hull against laminate blisters which occur as a result of defects in material or workmanship within (5) years of the date of delivery, provided that the original factory gelcoat surface has not been altered. Alternation would include but is not limited to damage repair; excessive sanding, scraping, sandblasting; or from improper surface preparation for application of a marine barrier coating or bottom paint, any of which shall void this Five-Year Limited Hull Blister Warranty. Regal Marine shall repair or cause to be repaired any covered laminate blisters based on the following prorated schedule. Less than two (2) years from delivery date - 100%, Two (2) to three (3) years from delivery date - 75%, Three (3) to four (4) years from delivery date - 50%, Four (4) to five (5) years from delivery date - 25%.
Reimbursement shall be limited to one repair, not to exceed ($80.00) dollars per foot of boat length prior to prorating. Regals prior authorization for the method and cost of repair, must be obtained before repairs are commenced. All costs to transport the boat for repairs are the responsibility of the owner.

LIMITED GENERAL WARRANTY: In addition to above hull warranties, Regal warrants to the original purchaser of this boat if purchased from an authorized dealer that the dealer or Regal will repair or replace any parts found to be defective in materials or workmanship for a period of one (1) year from the date of delivery, subject to all limitations and conditions contained herein.

LIMITED EXTERIOR FINISH WARRANTY: Regal warrants that the selling dealer or Regal will repair cosmetic defects in the exterior gelcoated finish including cracks or crazing reported to Regal within 90 days from the date of delivery to the original purchaser, subject to all limitations and conditions contained herein. All warranty work is to be performed at a Regal dealership or other location authorized by a Regal Customer Service Manager after it is established to Regal's satisfaction that there is a defect in material or workmanship.

REGISTRATION INFORMATION:

CUSTOMER OBLIGATIONS: The following are conditions precedent to the availability of any benefits under these limited warranties:

(a) The purchaser must sign and the dealer must submit to Regal the "OWNER REGISTRATION AND SYSTEMS CHECKLIST
FORM within ten (10) days of the date of delivery and such information must be on file at Regal.

(b) The purchaser must first notify the dealer from whom the boat was purchased of any claim under this warranty within the applicable warranty period and within a reasonable period of time (not to exceed thirty (30) days) after the defect is or should have been discovered.

(c) Regal will not be responsible to repair or replace any part, (1) if the use of the boat is continued after the defect is or should have been discovered; and (2) if such continued use causes other or additional damage to the boat or component parts of the boat.

(d) Based on the dealer's knowledge of Regal's warranty policy and/or consultations with Regal, the dealer will accept the claim and arrange for appropriate repairs to be performed, or deny the claim if it is not within the warranty.

(e) The dealer will contact the Regal boat owner regarding instructions for delivery of boat or part for warranty repair if it is covered by the limited warranty.
ALL COSTS TO TRANSPORT THE BOAT FOR REPAIRS ARE THE RESPONSIBILITY OF THE OWNER;

(f) If the Regal boat owner believes a claim has been denied in error or the dealer has performed the warranty work in an
unsatisfactory manner, the owner must notify Regal's Customer Service Department in writing at the address listed for further consideration. Regal will then review the claim and take appropriate follow-up action.

WARRANTY EXCEPTIONS: THIS LIMITED WARRANTY does not cover and the following are not warranted:
(a) Engines, metal plating or finishes, windshield breakage, leakage, fading and deterioration of paints, canvas, upholstery and fabrics;
(b) Gelcoat surfaces including, but not limited to, cracking, crazing, discoloration or blistering except as noted above;
(c) Accessories and items which were not part of the boat when shipped from the Regal factory, and/or any damage caused thereby;
(d) Damage caused by misuse, accident, galvanic corrosion, negligence, lack of proper maintenance, or improper trailering.
(e) Any boat used for racing, or used for rental or commercial purposes;
(f) Any boat operated contrary to any instructions furnished by Regal, or operated in violation of any federal, state, Coast Guard or other governmental agency laws, rules, or regulations;
(g) The limited warranty is void if alterations have been made to the boat;
(h) Transportation of boat or parts to and/or from the REGAL factory or service location;
(i) Travel time or haul outs, loss of time or inconvenience;
(j) Any published or announced catalog performance characteristics of speed, fuel and oil consumption, and static or dynamic transportation in the water;
(k) Any boat that has been re-powered beyond Regal's power recommendations;
(1) Boats damaged by accident and boats damaged while being loaded onto, transported upon or unloaded from trailers, cradles, or other devices used to place boats in water, remove boats from water or store or transport boats on or over land;
(m) Water damage to, dry rot to, condensation to, or absorption by interior surfaces, wood structures or polyurethane foam;
interior wood including, but not limited to, bleeding and/or discoloration as a result of condensation or moisture or water continually contacting the plywood causing staining to upholstery, carpet or other interior surfaces;
(n) Costs or charges derived from inconveniences or loss of use, commercial or monetary loss due to time loss, and any other special, incidental or consequential damage of any kind or nature whatsoever.

NO WAVIER OF THESE TERMS: The terms, conditions, limitations and disclaimers contained herein cannot be wavered except by the Customer Service Manager of Regal. Any such wavier must be in writing. Neither the dealer, nor the customer, nor any service, sales and/or warranty representative of Regal is authorized to waive and/or modify these conditions, limitations and/or disclaimers.

GENERAL PROVISIONS:

ALL GENERAL, SPECIAL, INDIRECT, INCIDENTAL AND/OR CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM THIS WARRANTY AND ARE TOTALLY DISCLAIMED BY REGAL. IT IS THE INTEREST OF THE PARTIES THAT THE OWNER'S SOLE REMEDY IS THE REPAIR OR REPLACEMENT OF THE VESSEL OR ITS ALLEGEDLY DEFECTIVE COMPONENT PARTS AND THAT NO OTHER LEGAL OR EQUITABLE REMEDIES SHALL BE AVAILABLE TO SAID OWNER. SOME STATES DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES SO THE FOREGOING MAY NOT APPLY TO YOU.

THIS IS A LIMITED WARRANTY; REGAL MAKES NO WARRANTY, OTHER THAN CONTAINED HEREIN; TO THE EXTENT ALLOWED BY LAW ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARISING IN STATE LAW ARE EXPRESSLY EXCLUDED TO THE EXTENT ALLOWED BY LAW. ANY IMPLIED WARRANTY OF MERCHANTABILITY IS LIMITED TO THE PERIOD OF THIS LIMITED WARRANTY. ALL OBLIGATIONS OF REGAL ARE SPECIFICALLY SET FORTH HEREIN. REGAL DOES NOT AUTHORIZE ANY PERSON OR DEALER TO ASSUME ANY LIABILITY IN CONNECTION WITH REGAL BOATS. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Regal's obligation with respect to this warranty is limited to making repairs to or replacing the defective parts and no claim for breach of warranty shall be cause for cancellation or rescission of the contract or sale for any boat manufactured by REGAL MARINE INDUSTRIES, INC.

Regal will discharge its obligations under this warranty as rapidly as possible, but cannot guarantee any specific completion date due to the different nature of claims which may be made and services which may be required. Regal reserves the right to change or improve the design of its boats without obligation to modify any boat previously manufactured. This limited warranty gives you specific legal rights, and you may also have other rights which may vary from state to state. Regal shall in no way be responsible for any repairs not **PRE-AUTHORIZED** by a Regal Customer Service Manager or repairs performed by a repair shop not **PRE- AUTHORIZED** by a Regal Customer Service Manager.

Safety On Board

Safety awareness can't be over emphasized. Safety on board needs to be the skipper's number one priority. In this manual you will find many safety precautions and symbols to identify safety related items. Heed all safety precaution information. Remember, the skipper is responsible for the safety of his passengers and crew.

SAFETY LABELS

Safety Precaution Definition

Safety precautions are stated as caution, warning and danger signal words. They are highlighted in this manual by font design and symbol usage. Also, a notice heading is included which provides operation and maintenance information but is not hazard-related.

Become familiar and understand all safety precaution labels!

DANGER

IMMEDIATE HAZARDOUS SITUATION THAT,
IF NOT AVOIDED, **WILL** RESULT IN
DEATH OR SERIOUS INJURY.

WARNING

POTENTIALLY HAZARDOUS SITUATION THAT, IF NOT
AVOIDED, **COULD** RESULT
IN DEATH OR SERIOUS INJURY.

CAUTION

Indicates a potentially hazardous situation or unsafe practice that, if not avoided, **may** result in injury or property or product damage..

NOTICE

General or specific information which is important to correct operation or maintenance, **but is not hazard related.**

Precautionary Labels

Read and understand all safety labels affixed to your Regal boat. Most of the safety labels are found close to the helm, aft cockpit and or swim platform. The location of the labels may vary by model and the label list does not cover everything! Use common sense to analyze the result of an action on board your vessel. **Always think safety first!**

NOTICE

DO NOT REMOVE OR COVER ANY
PRECAUTIONARY LABELS.
KEEP HARSH CHEMICALS AWAY FROM LABELS.
IF A LABEL BECOMES ILLEGIBLE,
CONTACT YOUR REGAL DEALER
FOR ORDERING REPLACEMENTS.

GENERAL BOATING SAFETY

We understand that you are eager to use your Regal boat on the water. However, we strongly suggest that you thoroughly familiarize yourself and friends or members of your family with safe boating practices before setting out.
Remember, that along with the freedom and exhilaration of boating comes the responsibility that you have for the safety of your passengers and other boaters who share the water with you.
Boating regulations vary from state to state. Check with your local state and local authorities for the regulations pertaining to your area.

♦ Check with local weather stations, the U. S. Coast Guard, or weather station broadcasts for the latest conditions. Remember getting caught in severe weather is hazardous, Check weather conditions periodically while you are boating and before your outing. If you are forced to operate your boat in a storm condition, take common sense precautions; wear PFD's, store gear, reduce speed and head for safe refuge.

♦ It is best to avoid operating your boat in foggy weather. When fog sets in, take bearings, log courses and speeds. You are required to emit a five second blast from your horn or whistle once a minute. Also, have your passengers wear PFD's and observe for oncoming vessels.

♦ Operating in shallow water presents a number of hazards including sand bars and water levels influenced by tides. If the vessel strikes an underwater hazard, check for boat and engine damage. If the engine vibrates excessively after striking an underwater obstruction, it may indicate a damaged propeller. If you run aground, seek help by radio or flares.

♦ Make sure your boat and equipment are in top condition. Do this by frequently inspecting the hull, engine and gear.

♦ You must provide a Coast Guard approved personal flotation device (PFD) for every person on board. These PFD's should be in good condition and easily accessible.

♦ Insist that non-swimmers and children on board wear a PFD at all times. Any time you encounter rough weather conditions, make sure everyone on board is wearing a PFD, including yourself. Instruct your passengers in how to put on their PFDs and be sure they know their storage location on the boat. Remember, in an emergency, a PFD that cannot be quickly located and worn is useless.

♦ Never allow anyone to sit anywhere on the boat not specifically designed as a seat. While underway, **ALWAYS** insist passengers remain seated.

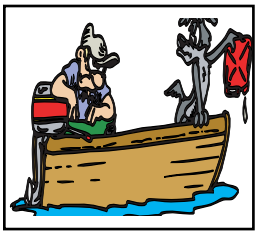
♦ **Use maximum caution when fueling**. **Never** allow any smoke or flame nearby while you are fueling. ALWAYS check for fuel leaks and fumes when fueling is completed.

WARNING

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

♦ **Never drink and drive!** As captain, you are responsible for the safety of your passengers and yourself. Alcohol and boating can be a dangerous combination. **DO NOT** mix them. Alcohol impairs the boat operators ability to make conscious decisions and react to emergency situations quickly.

♦ **Never overload your boat!** An overloaded boat, or one with uneven weight distribution,can be difficult to steer.



♦ **Be certain there is enough fuel aboard for your cruising needs.** Include any reserve that might be needed should you change your plans due to weather or emergency. **Practice the "one-third rule:** (Use one-third of your fuel going out, one-third to return and keep one-third as a reserve).

♦ Check the weather before departure. Be particularly cautious of electrical storms and high winds.

♦ Have up-to-date charts aboard. You will need current charts of the area you'll be cruising to stay on proper course. Charts can be obtained at your closest marine outlet or store or by contacting one of three federal government agencies.

♦ F**ile a float plan.** Leave details of your trip with someone responsible who will be remaining on shore. Include expected return, plus name and phone number of a contact person in case of emergency.

♦ Use care, courtesy and common sense when launching, docking or operating your boat.

♦ **Learn and obey the "Rules of the Road".** A copy of the "Rules of the Road" can be obtained from the U. S. Coast Guard Auxiliary or local Power Squadron.

♦ In case of emergency: Know the international distress signals if you have a VHF radio aboard. The spoken word **"MAYDAY"** is the international signal of distress and is for emergency use only. Under no circumstances should this word be used, unless there is danger at hand.

♦ Posted speed limits, swimming areas, "no wake" zones and other restrictions should be red-flagged. They are so noted for a reason. Sensible boat use plus courtesy fosters enjoyable and safe boating.

♦ It is your responsibility to stay abreast of all federal, state and local rules, as some laws or regulations may change or be different from state to state. Contact your local boating agencies for updated information.

♦ We can not stress safety enough! Remember, there are no brakes on your boat, and the water current and wind velocity all affect your ability to respond. The driver must use caution at all times to maintain control of his vessel and especially to maintain a safe distance from other boats and obstacles.

♦ **Always keep all safety gear in optimum condition.** Pay special attention to attached tags and plates indicating expiration dates on equipment such as fire extinguishers, and personal flotation devices. Encourage a periodic maintenance check on all safety equipment. Contact your Regal dealer or marine professional for more information.

♦ Inspect the fuel system before and after each fueling cycle for fuel leaks. Sniff bilge before outing for fuel leaks.
In addition, inspect the entire fuel system at least once per year.

REQUIRED SAFETY EQUIPMENT

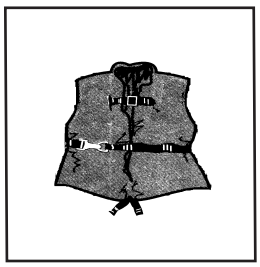
Personal Flotation Devices

All personal flotation devices (PFD's) must be Coast Guard approved, in good working condition, and must be the correct size for the wearer. All PFD's must be readily accessible. This means being able to wear them in a reasonable amount of time in case of an emergency (fire, boat sinking, etc.). They should not be stored or locked in closed areas. Also, make sure that all coverings are removed, such as plastic from any PFD's. Throwable devices such as a ring buoys need to be available for immediate deployment. A PFD should be worn at all times when your boat is operating on the water. A PFD may save your life, but it must be worn to do so.

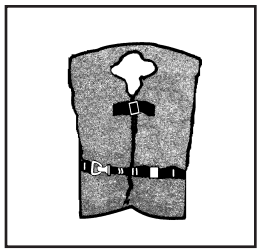
As minimum U. S. Coast Guard requirements all recreational boats must carry one type I, II, III, or V PFD (wearable) for each person aboard. See the explanation following for each type. For type V to be counted they must be used according to the label instructions. In addition, all boats over 16' must carry one Type IV (throwable) PFD. Some states require that PFD's be worn by children of specific ages at all times. Check with state boating agencies for particular requirements in your state before taking children on the water.

Remember PFD's will not necessarily keep you from drowning, even though they are designed to keep a person from sinking. When purchasing PFD's make sure it safely fits the person wearing it. It is a good idea to test PFD's in a shallow pool before trying on the water.

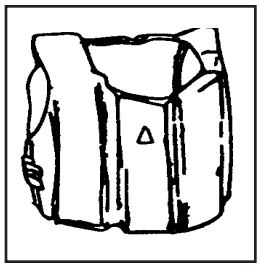
Refer to the USCG minimum equipment requirements at the end of this chapter. It is meant to be a guide only. Contact state and local agencies for additional equipment requirements. Remember as the captain of your vessel you are responsible for its safe operation.



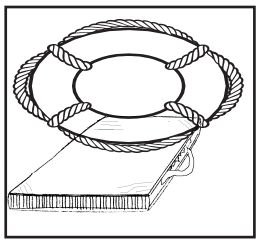
• **TYPE I-** Also known as an offshore jacket, it provides the most buoyancy. It is a PFD for all waters and is especially useful in rough waters where rescue may encompass additional time. It is designed to turn most unconscious users in the water to a face-up position. Type I PFD is available in adult & child sizes.



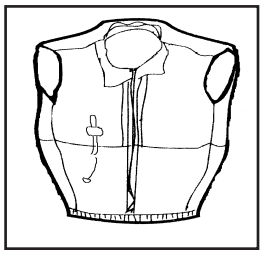
• **TYPE II-** Also known as near-shore buoyant vest, it is recommended for calm, inland water where rescue time will be minimal. It will turn some unconscious people face-up in the water but not as numerous as Type I. They are available in adult, medium child, along with infant and small child sizes.



• **TYPE III-** Known as a flotation aid it is good for calm, inland water or where there is a chance for quick rescue. It is designed so wearers can place themselves in a face-up position in the water. The wearer may have to tilt their head back to avoid turning facedown in the water.



•**TYPE IV-** Intended for calm, inland water with heavy vessel traffic, where help is constantly present. It is designed to be thrown into the water for someone to grab on to and held until rescued. It should *not* be worn. Type IV includes ring buoys, buoyant cushions, and horseshoe buoys.



• **TYPE V-** This is the least bulky of all PFD's. It contains a small amount of inherent buoyancy, and an inflatable chamber. It is rated even to a Type I, II, or III PFD (as noted on the jacket label) when inflated. Hybrid PFD's must be worn to be acceptable.
equipment.

Maintaining your PFD's

A PFD is only useful if it's well maintained. Always be aware of PFD age since it has a life expectancy like any other piece of equipment.

√ Do a periodic operation check of all PFD's in shallow water.

√ Be sure to air dry all PFD's after each use. Store in a dry, easily accessible location.

√ Check periodically for broken zippers, frayed webbing, water soaked kapok bags, missing straps, and sewing that is undone.

√ Clean each PFD with mild soap and water only. Again, let dry sufficiently before storing.

√ Keep PFD's out of grease and oil since they can deteriorate the jacket inner and outer materials.

√ Check any kapok-bagged jackets by squeezing. If jacket loses air the bag is defective and the PFD should be thrown away.

√ Grab the cover with the fingers. If the cover material rips, the PFD is rotted and should be thrown away.

√ If the kapok bag is hard the PFD should be discarded.

CHAPTER 1

FIRE EXTINGUISHERS

General Information

Fire extinguishers are classified by a letter and numeric symbol. The letter references the type of fire the unit is designed to extinguish. For example, type B extinguishers commonly used on boats are designed to put out flammable liquids such as grease, oil and gasoline.
The number indicates the general size of the extinguisher and minimum extinguishing agent weight.

FIRE EXTINGUISHER CONTENTS				
CLASS	FOAM IN GALS.	C02 IN LBS.	DRY CHEM. IN LBS.	HALON IN LBS.
B-I	1.25	4	2	2.5
B-II	2.5	15	10	10

MINIMUM PORTABLE FIRE EXTINGUISHERS REQUIRED		
VESSEL LENGTH	**NO FIXED SYSTEM**	**WITH FIXED SYSTEM**
LESS THAN 26’	1 B-1	0
26’ TO LESS THAN 40’	2 B-1 OR 1 B-II	1 B-1
40’ TO 65’	3 B-1 OR 1 B-II	2 B-1 AND 1 B-1 OR 1 B-II

U. S. Coast Guard approved fire extinguishers are required on all Regal boats. Besides the **minimum** Coast Guard requirements always check state and local agencies for additional requirements and equipment. Coast Guard approved extinguishers are hand-portable, either B-I or B-II classification.

U. S. Coast Guard approved hand-portable and semi-portable extinguishers contain a metal plate that shows the manufacturer's name and extinguisher type, capacity and operating instructions. They have a special marine type mounting bracket which keeps the extinguisher solidly mounted until needed. The extinguisher needs to be mounted in a readily accessible location but one out of being bumped by people while underway. All approved extinguishers need to have an indication gauge.

USCG- Approved Fire Extinguisher Types & Features

The dry chemical agent is widely used because of its convenience and low cost. The extinguisher canister is filled with a white dry chemical power along with a pressurized gas. It is a good idea to shake this type periodically because they tend to "pack" on the canister bottom.

The foam type uses a chemical foaming agent plus water and is best when used for fires involving flammable liquids- solvents, gasoline,oil, grease and various paints. It will work on fires involving rubber, plastics, cloth, wood, and paper. It leaves a messy residue. Not for electric fires.

The carbon dioxide unit uses CO2 gas under high pressure, with a funnel discharge hose usually swivel mounted. This extinguisher leaves no residue and does not cause interior engine harm. To ensure workability, weigh the unit annually. A 10% max. weight variance is allowed.

Another type of liquefied gas used today is Halon. This gas is colorless and odorless, heavier than air and sinks to the lower bilge to extinguish fires. Since the year 2000 ingredients for Halon have changed to a more environmental friendly formula. Halon is used in portable-hand units along with making up the majority of boat automatic fire extinguishing systems. The canister needs to be weighed once a year. Halon units must feature a dash mount indicator.
Refer to the information regarding fire prevention in this manual.

VISUAL DISTRESS SIGNALS

All vessels used on coastal waters, any of the Great Lakes, territorial seas, and those waters connected directly to them , up to point where a body of water is less than two miles wide, must have Coast Guard approved visual distress signals.

Pyrotechnic Devices

Pyrotechnic visual distress signals must be Coast Guard approved, be ready for service and must be readily accessible. They all display a marking which is the service life, which must not have expired. A minimum of 3 devices are required for day and 3 devices for night.
Some devices meet both day and night requirements. Pyrotechnic devices should be stored in a cool, dry location. Most of these devices can be purchased in an highly visible (orange) watertight container. Types of Coast Guard approved pyrotechnic distress signals and associated devices are:

- Pyrotechnic red flares, hand- held or aerial type.
- Pyrotechnic orange smoke, hand-held or floating type.
- Launchers for parachute flares or aerial red meteors.

All in all, each distress signal has certain pros and cons. There is no distress signal that is best under all situations. Pyrotechnics are recognized worldwide as superior distress signals. A downfall is they emit a very hot flame that can cause burns and or ignite flammable materials. Pistol launched and hand-held parachute flares operate consistent with firearms and therefore must be carefully handled. Check with local and state regulations since some of these device are considered firearms and are prohibited.

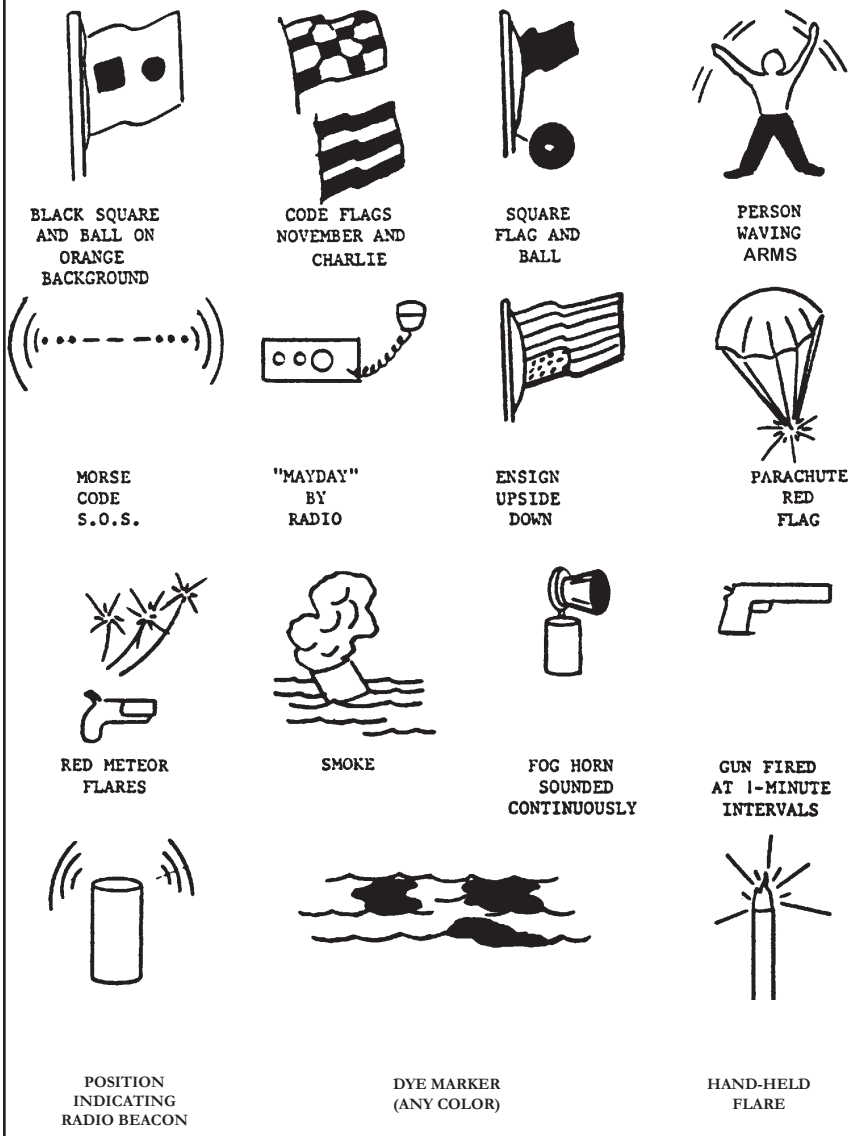
Non-Pyrotechnic Devices

Non-pyrotechnic devices must all be in serviceable condition, readily accessible, and must be certified by the manufacturer to comply with Coast Guard standards. They include:

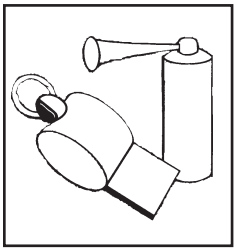
- Orange distress flag.
- Electric distress flag.

The distress flag is for day use only. It must be 3 x 3 or larger with a black square and ball on an orange background. It can be spotted when attached to a boat hook, long fishing rod, or paddle with the person waving the flag back and forth overhead.
The electric distress flag is for night use only flashing the international SOS distress signal (..._ _ _ ...).
Under Inland Navigation Rules, a high intensity white light that flashes at regular intervals from 50-70 times per minute is considered a distress signal.
Remember that regulations prohibit the display of visual distress signals on the water under any circumstances except when assistance is required to prevent immediate or potential danger to passengers on a vessel.

INTERNATIONAL DISTRESS SIGNALS



SOUND PRODUCING DEVICES



According to both Inland and International Rules, all boats **must** carry some way of producing an efficient sound signal. If your vessel is 12 meters (39' 4") or longer, a power whistle, power horn or bell must be carried. The bell must be 7 7/8" in diameter.

Boats less than 12 meters a horn or whistle is **recommended** to signal intentions or signal position. The sound signal made in all cases must be capable of a four or six second blast audible for one half mile. See the section discussing bridge and whistle signals for more information.

RADIO COMMUNICATIONS

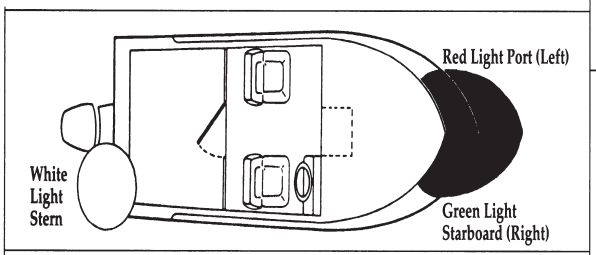
VHF radios are used for distress and ship to shore and ship to ship communications today. Learn the specialized messages such as **Mayday, Mayday, Mayday** is only used when life or vessel is in imminent danger.

NAVIGATION LIGHTS

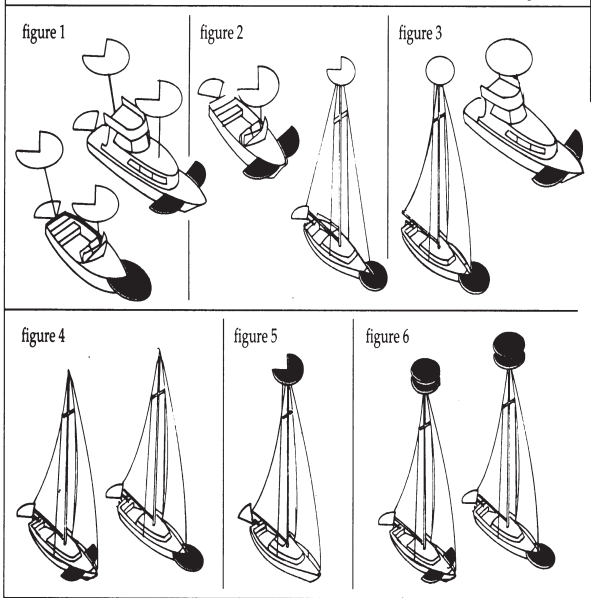
The U. S. Coast Guard requires recreational boats operating at night to display navigation lights between sunset and sunrise. Navigation lights help avoid collisions by improving the night visibility of vessels. Red and green directional lights, white stern lights, white masthead lights and white all-around lights must be displayed in specified positions, depending on boat size, and mode of operation. The configuration of visible lights tells and operator the size, direction of travel and means of propulsion (sail, power, rowing or at anchor) of another vessel. Larger boats are required to carry larger, brighter lights that are visible over longer distances.

CHAPTER 1

NAVIGATION LIGHT RULES



Location of lights on vessel	Visible Range: Less than 12 m.	Visible Range: 12 m. but less than 20 m.	Degrees of arc lights
	in miles		
Masthead	2	3	225°
All-round	2	2	360°
Side lights	1	2	112.5° each color
Stern light	2	2	135°

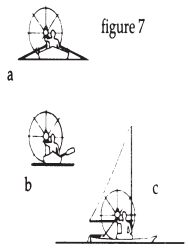


Boats less than 12 meters in length
Motorboats or sailboats using power: The lighting arrangements to figure 1, 2 or 3 may be used.
Sailboat using sails alone: The lighting arrangements in figure 4, 5 or 6 may be used.

Boats 12 meters but less than 20 meters in length
Motorboats or sailboats using power: The lighting arrangements to figure 1 or 2 may be used.
Sailboat using sails alone: The lighting arrangements in figure 4, 5 or 6 may be used.

Location of lights
Lights should be located as shown in the drawings.
The masthead light (forward white light in figures 1, 2 and 7d) must be at least one meter higher than the colored lights on a boat less than 12 meters in length and at least 2.5 meters above the gunwale on a boat 12 meters but less than 20 meters in length.

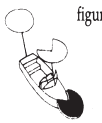
Exceptions
Motorboat or sailboat using power, built before December 24, 1980: The lighting arrangement in figure 1, 2 or 3 may be used. However, the arrangement in figure 3 is not acceptable on a boat that is 12 meters or longer on international waters.



Sailboat using sail alone, less than 7 meters in length: If impractical to display lights in figure 4, 5 or 6, a single white light may be displayed in time to prevent a collision (figure 7c).

Row Boats or Paddle Boats
One all-round white light ready to display in time to prevent a collision (figure 7 a or b).

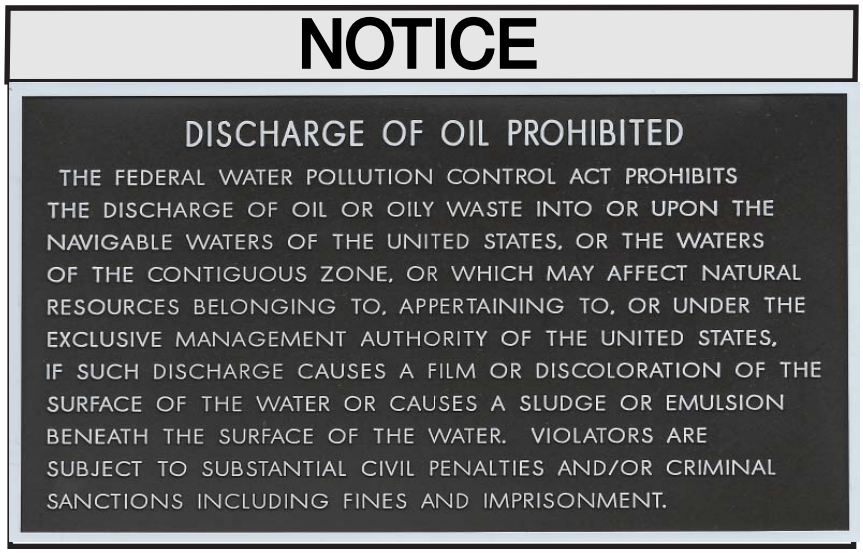
Great Lakes



Motorboat or sailboat using power on Great Lakes: The lighting arrangements in figure 7d may be used instead of the arrangements in figures 1 and 2.

POLLUTION REGULATIONS

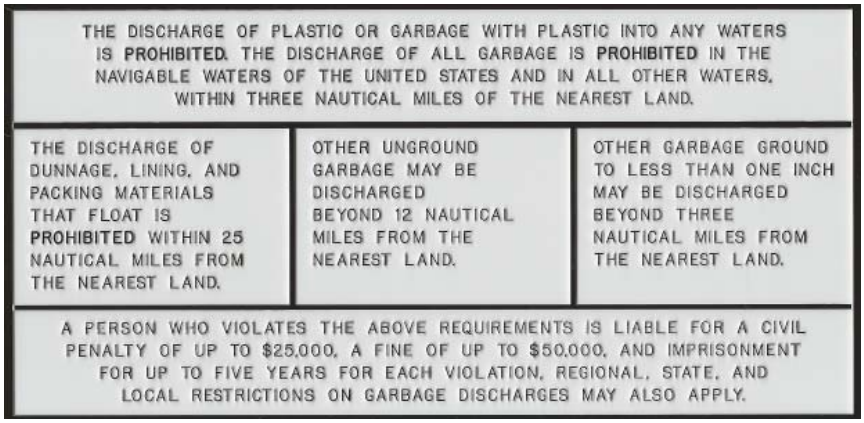
The Federal Water Pollution Control Act prohibits the discharge of oil or hazardous substances which may be harmful into U. S. navigable waters. *Vessels 26' and over* must display a placard at least 5" x 8", made of durable material, fixed in a conspicuous machinery space laocation, stating the following:



You must immediately notify the U. S. Coast Guard if your vessel discharges oil or hazardous substances in the water. Call toll free 800-424-8802. Report the following information: location, source, size, color, substances and time observed. This placard is located in bilge.

Garbage

The Act to Prevent Pollution from Ships places limitations on the discharge of garbage from vessels. It is illegal to dump plastic trash anywhere in the ocean or navigable waters of the United States. Also, it is illegal to discharge garbage in the navigable waters of the United States, including the Great Lakes. The discharge of other types of garbage is allowed outside certain specified distances from shore as determined by the nature of that garbage.



USCG Minimum Equipment Requirements for Recreational Vessels

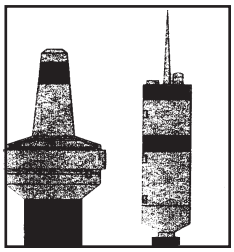
Boat Size in Feet	16'	26'	40'	65'	165'
Personal Flotation Devices[1]	One Type I, II, III, or V per person	One Type I, II, III, or V per person plus one Type IV throwable			
Fire Extinguishers[2]					
No Fixed System	One B-I, any type		One B-II or Two B-I	One B-II and one B-I, or three B-I	One or more B-II (vessels 0-50 tons gross) Two or more B-II (vessels 50-100 tons gross)
With Fixed System	No Portables Required		One B-I	Two B-I or one Class B-II	
Visual Distress Signals	Night signals required when operating at night	Minimum of three day-use and three night-use (or three day/night combination) pyrotechnic devices[5]			
Sound Producing Devices	Horn or whistle recommended to signal intentions or signal position			One bell, and one whistle or horn required to signal intentions or position	
Backfire Flame Arrestor	One CG-approved device on each carburetor of all gasoline-powered engines built after April 1940, except outboard motors				
Ventilation	CG standard system required on gasoline powered vessels with enclosed engine compartments built after August 1980				
Navigation Lights					
Under Power[3,4]	Sidelights, Stern Light and Masthead[6,7]				
Under Sail	Sidelights and Stern Light[6,8]				
Rowing	Same as "Under Sail"				
At Anchor	All-round light, 2nm (at night) or black anchoring ball (during the day) when outside a designated anchorage				
Visibility Range	1nm Sidelights, 2nm all others			3nm Masthead, 2nm all others	5nm Masthead, 2nm all others
Pollution Regulations	"Honor system" (no plaques required)		5" x 8" Oil Discharge placard and 4" x 9" Waste Discharge placard Vessels over 40' with a galley must have a Waste Management Plan		
Marine Sanitation Devices	Vessels with installed toilet facilities must have an operable, CG-certified Type I, II or III Marine Sanitation Device (MSD). **Subject to local laws!**				Type II or III MSD only
Navigation Rules	Familiarity with the Inland Navigation Rules required			The Inland Navigation Rules ("Rules of the Road") must be kept on board	

1. *Pfd's must be CG approved, wearable by the intended user and readily accessible.*
2. *Fire extinguishers required on boats with enclosed engine compartments (not outboards), enclosed living spaces or permanent fuel tanks.*
3. *Sailboats operating under engine power are considered power driven and must follow the "Under Power" rules. During the day, motorsailing vessels are required to fly a motoring cone.*
4. *Power-driven vessels under 23' and under 7 knots can substitute a white lantern or torch in place of the required lights.*
5. *Non-pyrotechnic substitutes: 1 orange distress flag (day-use) and 1 electric SOS signal light (night-use).*
6. *All boats under 65' can substitute a single bi-color light for sidelights.*
7. *Boats under power under 40' can substitute a single all-round light for separate stern and masthead lights.*
8. *Boats under sail under 40' can substitute a tri-color light for separate sidelights and stern light.*

Additions to theses requirements are prescribed by some individual state laws. Check your state's Boating Safety Handbook for a complete list.

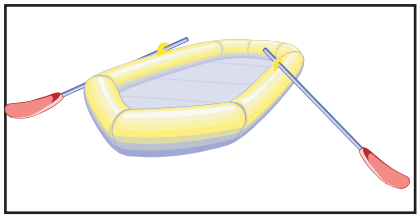
Communications

EPIRB



It is a good idea to carry communication gear such as a VHF-FM and/or HF transceivers set up for your operating area. Also, cell phones are useful in many coastal areas. Be sure to carry extra batteries. Also, mainly for offshore vessels, EPIRB's are designed to quickly and accurately alert rescue forces, indicate an accurate distress position, and guide units to the distress scene. These devices operate from satellite signals sent to a ground station where the signal is downloaded. The downside is that they are relatively expensive but they are reliable even when other communications have been exhausted.

Life Rafts



Inflatable life rafts are recommended for oceangoing and operating a vessel in a large body of water like the Great Lakes. They provide a shelter for extended periods. If used, make sure it is large enough for all aboard and contains the proper emergency equipment pack. Periodically find a professional to service the life raft. Store it on board in an area safe from sharp objects. Make sure the life raft is Coast Guard approved.

Remember the U. S. Coast Guard requirements are minimal standards. They are an excellent starting point. Check with local and state boating agencies for further required safety equipment. You are best prepared for emergencies by a well equipped vessel. Don't skimp when purchasing equipment for your boat!

EXHAUST & CARBON MONOXIDE

Carbon monoxide (CO) in exhaust can be hazardous. It is important for you and your passengers to be aware of the potential safety hazard created by exhaust gases. Familiarize yourself with the symptoms of carbon monoxide poisoning.

For safety sake avoid the following:

1. Do not allow the boat to remain stationary with the engine idling for an extended period of time.
2. Do not disable the carbon monoxide alarms that come with your Regal boat. Test the unit in accordance with the alarm manufacturers instructions.

3. Do not operate the engine for extended periods of time while in a confined area or where exhaust outlets face a wall or bulkhead.

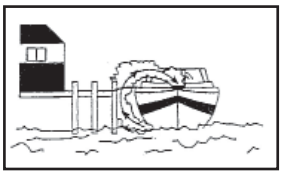
4. Do not operate the engine for an extended period of time with the canvas in the upright and installed position.

5. Have the engine exhaust system inspected when the boat is in for service.

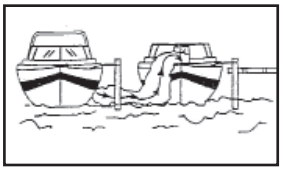
6. Persons sleeping can easily be overcome by carbon monoxide without realizing it. Do not sleep on board while the engine is running or a neighboring boats engine is running.

WARNING

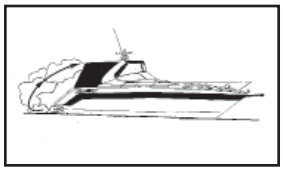
AVOID SERIOUS INJURY OR DEATH
FROM CO POISONING!
DO NOT OPERATE THE BOAT WITH PEOPLE
HOLDING ON TO THE SWIM PLATFORM
WHILE IN THE WATER.



Blockage of exhaust outlets can cause carbon monoxide to accumulate in the cabin and cockpit area even when the hatches, windows, portholes and doors are open.

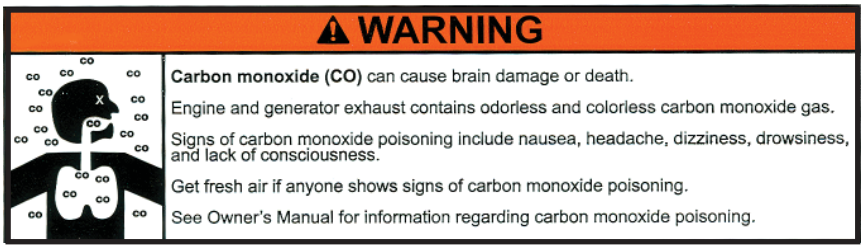


Exhaust from another vessel alongside your boat, while docked or anchored, can emit poisonous CO gas inside the cabin and cockpit areas of your boat.

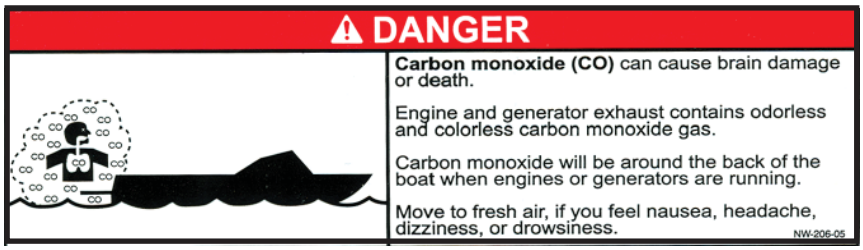


The "station wagon effect" or back drafting can cause CO gas to accumulate inside the cabin, cockpit or bridge areas when the boat is under-way, using protective weather coverings, high bow angle, improper or heavy loading, slow speeds, or when boat is at rest.

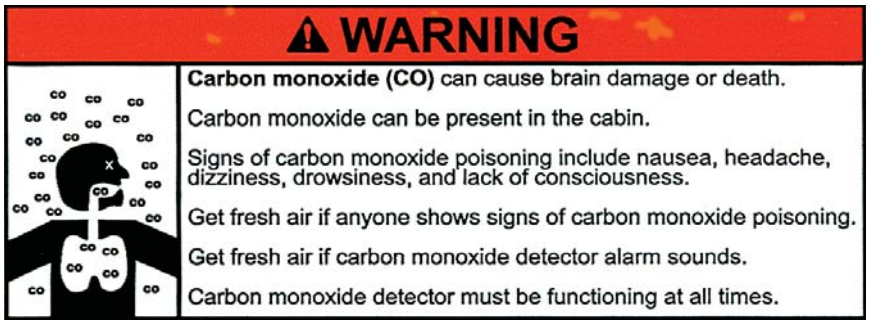
Typical Carbon Monoxide Label At Helm



Typical Carbon Monoxide Label At Transom



Typical Carbon Monoxide Label In Cabin/Head

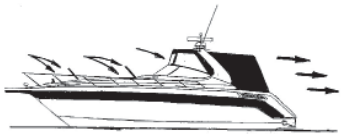


In high concentrations, CO can be fatal in minutes. However, lower concentrations over an extended period of time can be just as lethal.

Symptoms of excessive exposure to carbon monoxide are:

- Dizziness
- Drowsiness
- Nausea
- Headache
- Ringing in the ears
- Throbbing temples
- Watering, itchy eyes
- Flushed appearance
- Inattentiveness
- Incoherence
- Fatigue or vomiting
- Convulsions

Carbon monoxide accumulation requires immediate attention! Thoroughly ventilate cabin and cockpit areas. Determine the probable source of the carbon monoxide and correct the condition immediately. Regal has installed CO detectors on your boat. Have these detectors professionally calibrated at regular intervals.



DESIRED AIR FLOW THROUGH BOAT

To help prevent carbon monoxide accumulation, ventilate your cabin and cockpit while underway. Open a forward hatch, porthole or window to allow air to travel through the boat's interior. See the illustration below for desired air flow.

CHAPTER 1

BOATING UNDER THE INFLUENCE

WARNING

FEDERAL LAWS PROHIBIT OPERATING A VESSEL UNDER THE INFLUENCE OF ALCOHOL OR DRUGS. THESE LAWS ARE VIGOROUSLY ENFORCED BY ALL ENFORCEMENT AGENCIES.

Operating a vessel while intoxicated became a specific federal offense effective in 1988. The ruling set federal standards for determining when an individual is intoxicated. If the blood alcohol content (BAC) is .10% (.08 in some states) or higher for operators of recreational vessels being used only for pleasure are subject to a civil penalty up to $1,000 or criminal penalty up to $5,000, one year imprisonment or both. In some states the fines and imprisonment may increase significantly. The effects of alcohol and drugs account for the highest single cause of marine accidents and deaths. Most deaths in boating accidents occur when someone falls into the water. Balance is one of the first things you lose when drinking alcohol or under the influence of drugs. The problem arises out of not knowing your balance is restricted.

Overall vision is reduced by alcohol especially at night, along with double or blurred vision. Peripheral vision is lessened which restricts seeing vessels or objects on the side. Also, color awareness decreases especially with red and green which happen to be the colors of boat navigation lights, buoys, and channel markers.

Alcohol will greatly increase your heat loss so it increases the effects of hypothermia. Finally, your ability to make correct judgements in emergency situations is greatly reduced. Alcohol takes away the brains ability to process information quickly and delays a persons reaction time. **Don't drink and drive!**

Alcohol Myths And Facts

Myth: Beer is less intoxicating than other alcoholic beverages.
Fact: One 12 oz. can of beer has about the same amount of alcohol as a 5oz. glass of wine or a shot of liquor.

Myth: Black coffee, fresh air, and a shower will sober the effects of alcohol.
Fact: After consuming alcohol time is the only thing that will sober you up. Our bodies average burning 1 oz. of alcohol every hour. If a person is drunk, it will take about seven or more hours to sober up.

Myth: Telling if a person is too drunk to operate a vessel is easy.
Fact: Many experienced drinkers have learned to compensate for the visual effects of alcohol and can disguise their drunk condition.

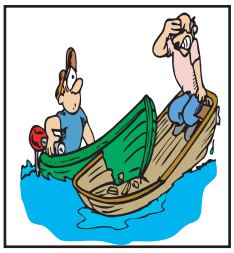
Myth: You're the best person to judge if you are fit to operate a boat.
Fact: Judgement is one of the first elements you lose when drinking.

BLOOD ALCOHOL CONTENT CHART

Body Weight In Pounds	Number of Drinks In A 2 Hour Period (12 oz. beer=5 oz. wine=1 oz. 80 proof liquor)								
100	1	2	3	4	5	6	7	8	9
120	1	2	3	4	5	6	7	8	9
140	1	2	3	4	5	6	7	8	9
160	1	2	3	4	5	6	7	8	9
180	1	2	3	4	5	6	7	8	9
200	1	2	3	4	5	6	7	8	9
220	1	2	3	4	5	6	7	8	9
240	1	2	3	4	5	6	7	8	9
BAC to .05%	Be Careful- Loss of Judgement & Coordination								
BAC .05% to .10%	Abilities Impaired- Accident Chance Increased								
BAX. Over 10%	Do Not Operate A Boat- High Accident Risk								

CHAPTER 1

BOATING ACCIDENTS



The following is a list of common causes of boating accidents. Be aware of them and take the necessary steps to ensure that your crew and yourself are educated and prepared to act in an emergency.

♦ Mixing boating and alcohol. Remember the skipper is responsible for his boat and crew.

♦ Trying to reach the bow by the deck walk-around while the boat is moving too fast.

♦ Someone sitting on the bow, deck, or swim platform while underway.

♦ Choosing a boating outing day with inclement weather, especially with high winds and thunderstorms in the forecast or staying out when bad weather is approaching..

♦ Disembarking without checking all fluids or systems and especially fuel system components.

♦ Not monitoring the boating traffic or possible obstructions around you.

♦ Emergency communications equipment, signaling devices, and navigation lights not working.

♦ Improper boat handling especially high speed turns in rough water. Improper trim.

♦ Being too far from shore with inadequate fuel supply or navigational aids.

♦ Passengers, especially children that are not wearing the proper life saving devices.

♦ Skipper or passengers not seated in the boat.

♦ Running a craft that is mechanically marginal.

Reporting Boating Accidents

According to the Federal Boat Safety Act of 1971 involving collision, accident or other casualty, the operator must make a formal report within 48 hours to the nearest state boating authority when the incident involves:

1. Death
2. Injury requiring treatment other than first aid
3. The disappearance of someone from a boat under death or injury circumstances.

A formal report must be made within 10 days for accidents involving more than $500 damage or complete loss of vessel.
For information regarding accident reporting, please call:

Boating Safety Hotline at 800-368-5647.

Rendering Assistance

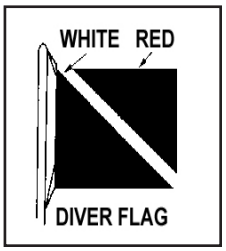
The operator of a vessel is obligated by law to provide assistance that can be provided safely to any individuals in dangerous situation on the waterways. The operator is subject to fine and or imprisonment for failure to do so. Move cautiously and think before acting.

CHAPTER 1

WATER SPORTS

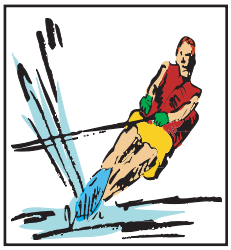
Besides learning the safety precautions for safe boating, as well as understanding and knowing required rules and regulations, you are obligated to be particularly careful around other water sportsman, such as scuba divers, water skiers, wakeboarders, and fisherman.

Skin & Scuba Divers



Whenever you see a "Diver Down" flag, maintain a distance of at least 100 feet on inland waters. In bays and open waters stay 300 feet away. The flag indicates a diver in the water. If a diver is operating from your boat, be certain to use this flag and post a lookout on board for a divers air bubbles. Sometimes divers stray from the flag area.

Water Skiers & Wakeboarders



For information on water skiing and how to get started, we recommend you contact the American Water Ski Association, P. O. Box 191, Winter Haven, Florida 33880. They offer pamphets and instructional materials.

For wakeboarding information there are numerous training schools throughout the country along with instructional videos and the internet.

General safety procedures for towing skiers and wakeboarders include the following:

♦ Know your hand signals and make sure all your passengers know them. See the illustration.

♦ Do not allow non-swimmers to ski or wakeboard. You're asking for trouble!

♦ Always have an observer on board whose sole job is to watch the skier/wakeboarder and communicate with the driver.

♦ If you plan to do alot of skiing/wakeboarding, it is advisable to have a ski pylon and driver's rear view mirror installed.

♦ Acquaint yourself with the ski site before skiing/wakeboarding.

♦ Follow the speed limits and all posted signs- i.e. no wake, etc.

♦ Keep the boat away from swimmers or other people in the water.

♦ Avoid running near the shoreline or in heavily congested areas with skier/wakeboarder in tow.

♦ Do not allow skier/wakeboarder to spray fisherman or other parties.

♦ Keep the engine speed steady while towing a skier/wakeboarder.

♦ Make wide turns with skier/wakeboarder in tow.

♦ Instruct skier/wakeboarder in case of a fall to raise his ski in the air to ensure his visibility.

♦ Always turn your engine off when the skier/wakeboarder is near the platform or transom.

♦ If the skier falls, return promptly to retrieve him, circling wide from

the starboard side, to bring his rope within easy grasp. See illustration.

Ski Tow

Insert the ski tow line as shown for safe operation. It provides a tight fastening for skiing while allowing the line to be readily removed if needed. Check your tow line for abrasion and tow ring for tightness periodically. The illustration shows a typical hookup.

WARNING

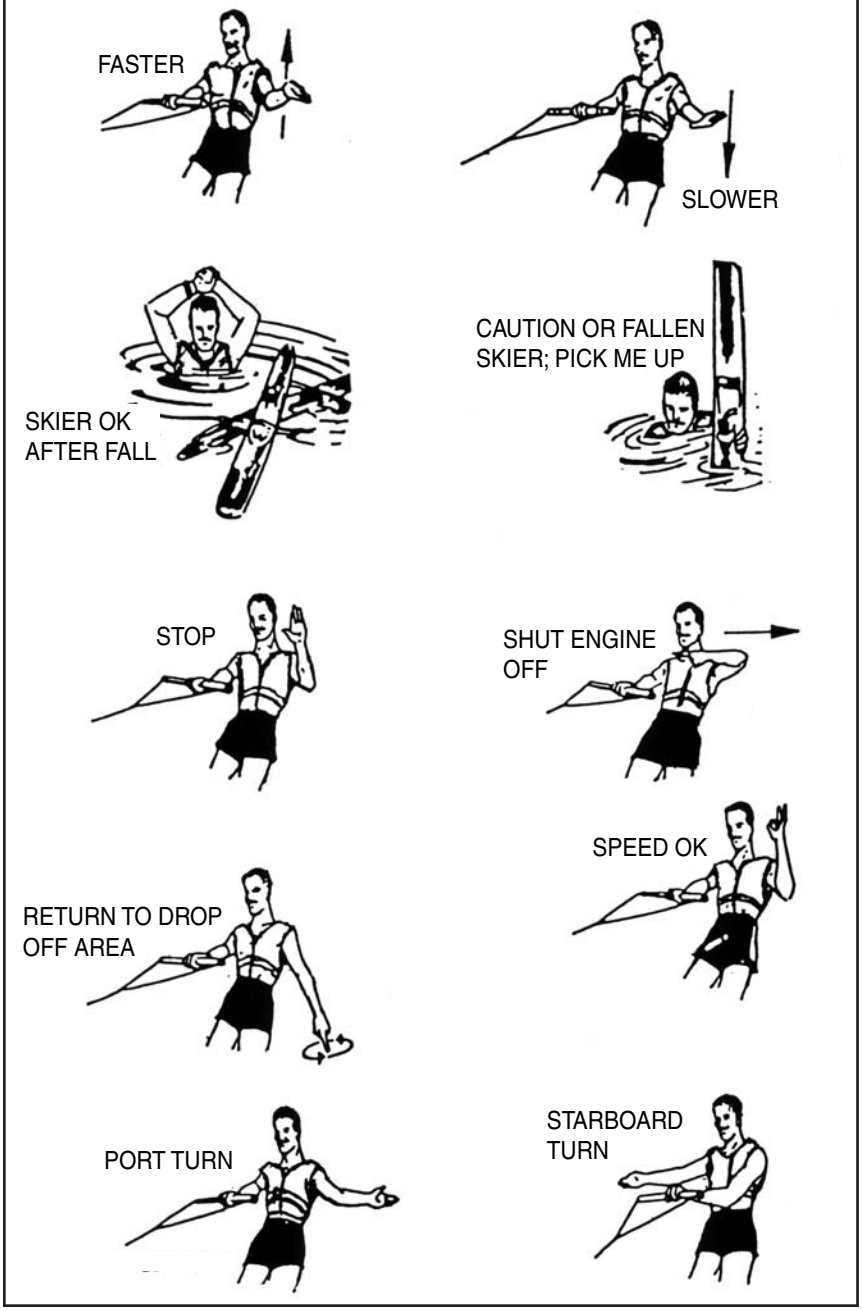
AVOID SERIOUS INJURY OR DEATH!
DO NOT USE SKI TOW FITTING
FOR LIFTING OR PARASAILING.
THE FITTING COULD PULL OUT OF DECK.

Swim Platform

WARNING!
MAXIMUM CAPACITY OF SWIM PLATFORM 500 POUNDS 226 KG

On extended swim platforms you should make periodic inspections of the swim ladder and swim platform hardware to ensure that all connectors and fittings are tight and free from corrosion. Check the laminated fiberglass under platform supports for fatigue and cracks. Never run the boat with someone holding on to or standing/sitting on the platform. Use heed when operating the boat in reverse to insure that water does not accumulate excessively on the platform especially in rough seas or strong currents. Do not exceed the platform recommended maximum capacity **label!**

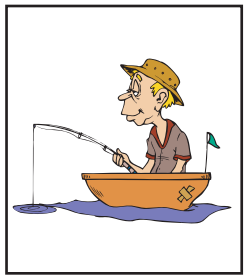
WATER SKI & WAKEBOARD SIGNALS



WARNING

AVOID SERIOUS INJURY OR DEATH!
DO NOT OPERATE THE BOAT
WITH PEOPLE IN THE WATER
OR ON TOP OR HOLDING ON TO
THE SWIM PLATFORM STRUCTURE OR HARDWARE.

Fishing



Most boaters fish from time to time. With the propulsion systems of today it is possible to fish in out-of-the-way places. When cruising, stay clear of fisherman. They may have lines or nets out which might be cut or get caught in your propeller if you come too close. Slow down when approaching fishing boats.

Do not return to cruising speed until the boats have been passed. If a fishing boat should be anchored, a large wake could flip or swamp the boat, upset fishing gear, pull the anchor loose from the bottom or worse yet cause someone to fall overboard.

When fishing from your boat, never anchor in shipping channel or tie up to any navigational aids. These must be kept clear of at all times.

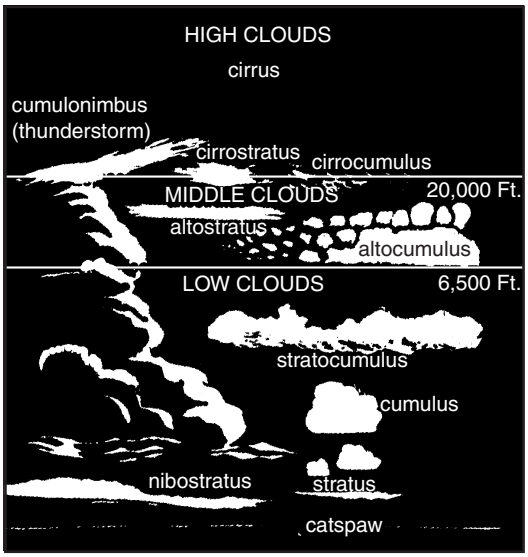
Be sure to carry a chart of the area and be on the lookout for shallow water and hidden obstructions. Pick up a local tidal chart if appropriate so you do not end up grounded.

Remember, the skipper is responsible for any damage caused by his wake. Use common sense and be a responsible captain!

WEATHER & WATER CONDITIONS

Before a boating outing check the weather conditions. As we all know the weather can change rapidly in many parts of the country. It does so sometimes without being predicted. NOAA weather radio reports are continuously available on designated frequencies installed on VHF radios and various handheld devices. Also, many local radio stations carry weather reports.

Cloud Formations



Clouds indicate the type of current weather and upcoming changes in the weather. Knowing the type of cloud formations can assist you in choosing the appropriate boating day or if already on the water will help you understand any upcomingweather changes

Flat clouds (stratus) normally indicate stable air. Cumulus clouds indicate unstable air. Many times a "cotton ball" or cumulus cloud builds vertical height in the afternoon and the result is a thunderstorm with increased winds and waves; sometimes these storms are quite violent. You can find additional information on weather (meteorology) at your local library.

Waves & Fog

As the wind blows across water waves are created. The stronger the wind and increased distance across the water enlarges the wave action.
Other factors that can cause problem situations for vessels are fog, currents, and tidal changes.
Fog can develop inland on clear, calm mornings. Coastal areas see large "blankets" of fog roll in and stay for extended time periods causing sometimes hazardous navigation conditions. If you are caught in the fog, do not panic. Think of the best plan of action and proceed carefully. If you are limited in navigation equipment at the first sign of fog proceed to the nearest shoreline and wait until the fog lifts.
Boats equipped with navigation equipment, local waterway experience and charts should proceed to a safe harbor. Use extreme caution, signal as needed, and reduce to a speed where you can stop within half of your forward vision range.

If foul weather catches you at sea do the following:

1. Slow down. Proceed with caution and put on your life vests.

2. Try to reach the nearest safe shoreline.

3. Navigate your vessel slowly into the waves at a 45 degree angle.

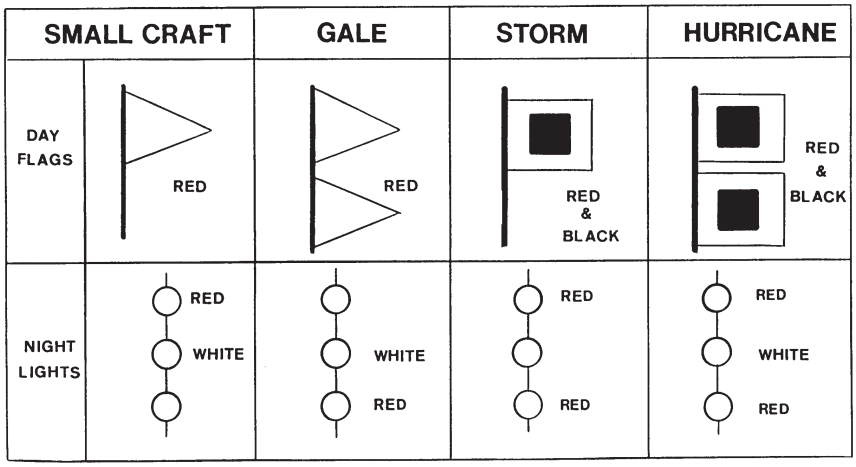
4. Passengers should sit low in the center of the vessel.

5. Monitor your bilge pump. Make sure sump stays free of water.

6. Secure loose gear. Make ready emergency equipment.

7. If the engine stops, throw the anchor over the bow. If needed use a sea anchor. Never anchor off the stern.

Marine Weather Symbols



Although the National Weather Service has discontinued the use of the day flags and night lights, many marinas and ports of call still display them.

Rules Of The Road

NAVIGATION RULES DEFINED

The Navigation Rules set forth actions to be followed by boats to avoid collision. They are referred to as the "Rules of the Road". There are two main parts referred to as the inland and international rules. The inland rules apply to vessels operating inside the boundaries of the United States. The international rules referred to as 72 COLREGS apply to vessels operating on the high seas and all connected waters outside the established demarcation boundaries. Most navigational charts show the demarcation lines by red dotted lines and are published in the navigation rules. Remember to consult state and local agencies since areas such as "no wake zones" , swimming beaches, "diver down flag" and inland landlocked lakes fall under their jurisdiction. This section is only an introduction to the "rules of the road". We strongly recommend additional training before getting behind the "wheel" of your boat.

WARNING

TO AVOID INJURY AND DEATH
FOLLOW THE NAVIGATION "RULES OF THE ROAD"
TO PREVENT COLLISIONS.

You can order the Inland & International Navigation Rules from:
Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402
Telephone: (202-512-1800) Fax:(202-512-2250

CHAPTER 2

NAVIGATION RULES

Right Of Way

1. Cross waves at right angles.

2. When caught in heavy water or squalls, head either directly into the waves or at a slight angle. Reduce speed, but maintain enough power to maneuver your boat safely.

3. Keep your speed under control. Respect the rights of other boaters engaged in all water sports. Give them a "wide berth".

4. Whenever meeting a boat head on, keep to the right where possible.

5. When two boats cross, the boat to the right (starboard) has the right of way.

6. When overtaking or passing, the boat being passed has the right of way.

In general, boats with less maneuverability have right-of-way over more agile craft. The skipper must keep his craft clear of the following vessels:

• A vessel not under command or aground; due to their circumstances, these vessels have no maneuverability.

• A vessel restricted in its maneuverability; these vessels usually are performing work which limits their maneuverability such as surveying, dredging, laying pipe or cable, or servicing navigational markers among others.

• A vessel engaged in fishing; these include boats fishing with lines, trawls or nets, but not trolling lines.

• Sailboats; they have the right-of-way over power boats. However, if a sailboat is using a prop to move forward, it is considered a powerboat even if the sails are up.

• Remember the unwritten "rule of tonnage". Basically a smaller tonnage vessel should take every effort to avoid close quarters with a larger tonnage vessel. One way to accomplish this is to have a designated human lookout to "eyeball" the horizon for any developing collision course.

• Use defensive driving skills on the waterway just as you do on the roadway. The other vessel may not know the "rules of the road" Be alert and ready to take immediate action.

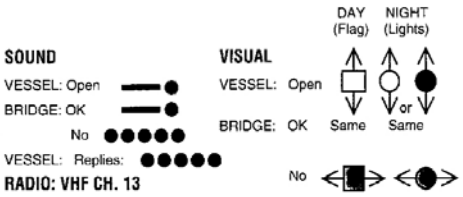
• If a collision course is unavoidable neither boat has the right of way. Both boats must react to avoid an accident according to the rules of the road.

Signals

WHISTLE SIGNALS

ONE LONG BLAST: Warning signal (Coming out of slip)
ONE SHORT BLAST: Pass on my port side
TWO SHORT BLASTS: Pass on my starboard side
THREE SHORT BLASTS: Engine(s) in reverse
FOUR OR MORE BLASTS: Danger signal

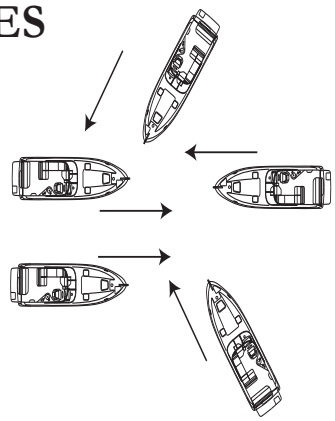
BRIDGE SIGNALS



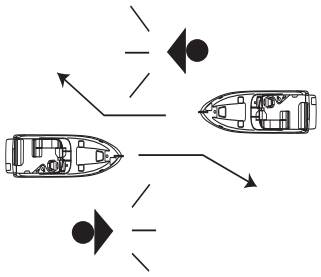
CHAPTER 2

NAVIGATION RULES

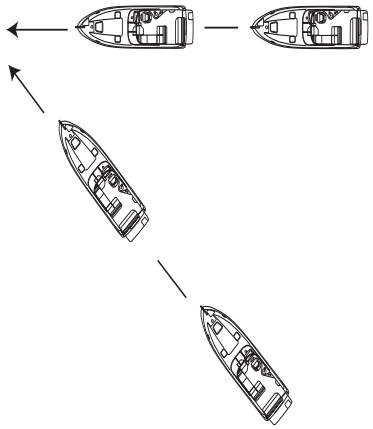
The Navigation Rules set forth 3 types of crossing situations- crossing, meeting, and overtaking. In each case, both boats are governed by special procedures.



In a head-on meeting, both vessels must sound a single blast to give way toward starboard and pass to port.

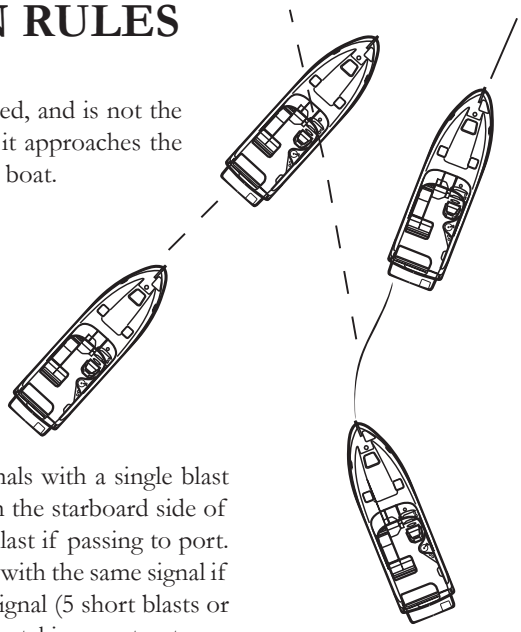


These rules appear when there is a risk of collision. In a crossing situation be aware of the other craft's position. For safety, there should be a noticeable change in the angle, bow or stern; a gradual change in position indicates possible danger.

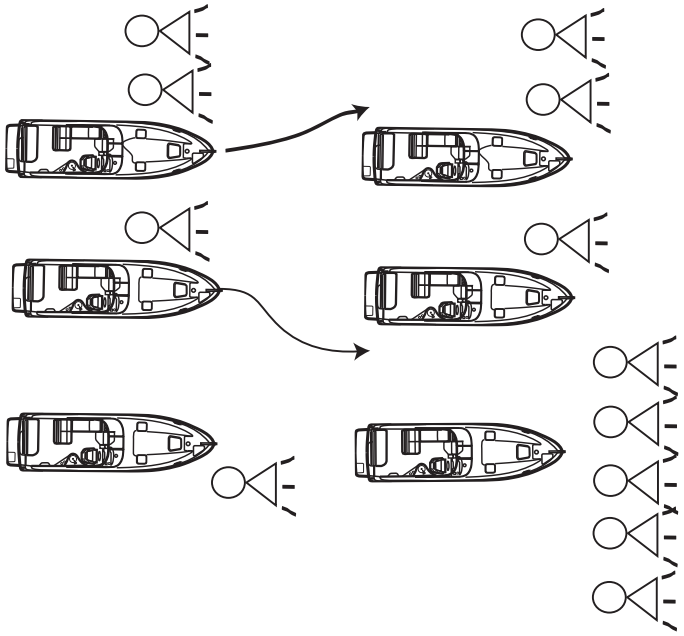


NAVIGATION RULES

An overtaking boat is burdened, and is not the privileged craft, even though it approaches the danger zone of the overtaken boat.



The overtaking boat first signals with a single blast if that boat desires to pass on the starboard side of the boat ahead, or a double blast if passing to port. The overtaken craft responds with the same signal if it is safe, or with the danger signal (5 short blasts or more) if unsafe. The boat overtaking must not pass unless the appropriate signals are sounded.



CHAPTER 2

NAVIGATION AIDS

Navigation aids are placed along coasts and navigable waters as a guide for mariners in determining their position in reference to land and hidden danger. Each aid provides specific information. They form a continuous system of charted markers for accurate piloting on paper and on the water.

Nautical charts are provided by the National Ocean Service (NOS) and are distributed nationwide through marinas and outlet stores. These charts show the geography of the coast, water depth, landmarks, navigation aids (buoys and markers), marine hazards, and port facilities. Use only up-to-date charts for navigation. We recommend when purchasing a chart to look for the weather resistant ones.

Buoys provide a road map to keep the skipper on course and to avoid hazards. Buoys are identified by light, shape, color and in severe weather conditions by sound.

Buoys or beacons called lateral markers indicate the port and starboard sides of the waterway to be followed. U. S markers follow the buoy system known as Red Right Returning. When returning from sea or traveling upstream, the green markers are to port (on your left) and the red markers are to the starboard side (on your right). When traveling downstream or out to sea the marker color would be reversed. The Intercoastal waterway uses a different system of lateral markers for port and starboard. Before operating your vessel, learn to identify the various navigational aids such as lateral aids, mid-channel markers, information and regulatory markers.

NOTICE

SKIPPERS MUST NOT RELY ON BUOYS ALONE
TO MARK THEIR POSITION.
SEVERE WEATHER CONDITIONS
AND WAVE ACTION CAN ALTER A BUOYS POSITION.
NEVER TIE UP TO A BUOY.
IT IS ILLEGAL AND EXTREMELY DANGEROUS.

LATERAL AIDS

Port Side
Odd Numbers

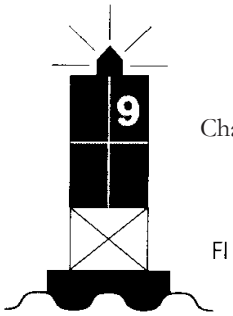


Chart Symbol

G "9"
Fl G 4 sec

Lighted Buoy
(Green Light Only)

Starboard Side
Even Numbers

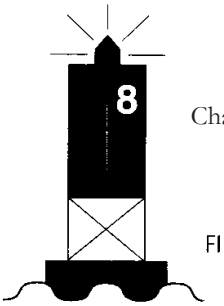


Chart Symbol

R "8"
Fl R 4 sec

Lighted Buoy
(Red Light Only)

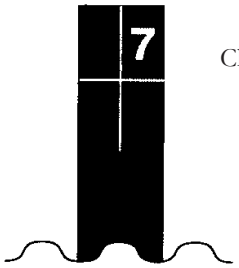


Chart Symbol

C "7"

Can Buoy
(Unlighted)

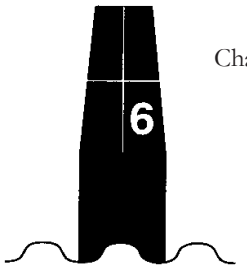


Chart Symbol

N "6"

Nun Buoy
(Unlighted)

Chart Symbol

G "1"

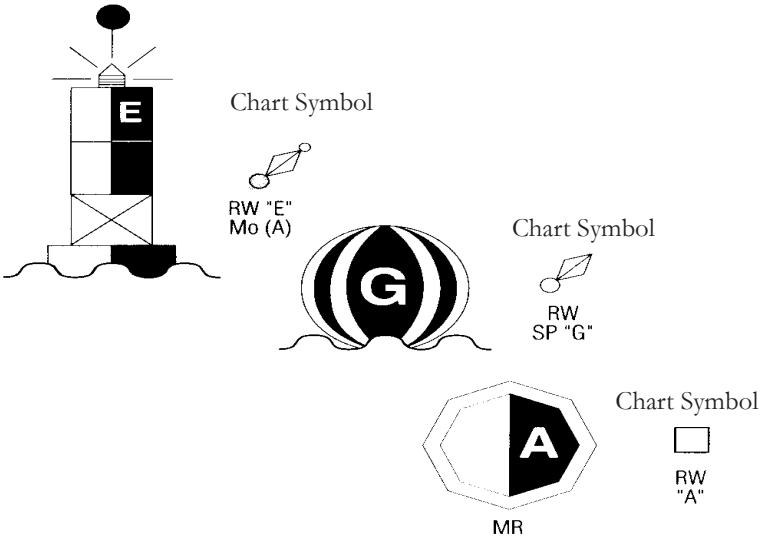
Daymark

Chart Symbol

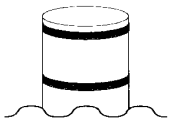
R "2"

Daymark

MID-CHANNEL MARKERS



REGULATORY MARKERS



Diamond Shape
Danger Warning

Diamond Shape With Cross-
Boats Keep Out

Circle Marks Area Controlled
As Indicated

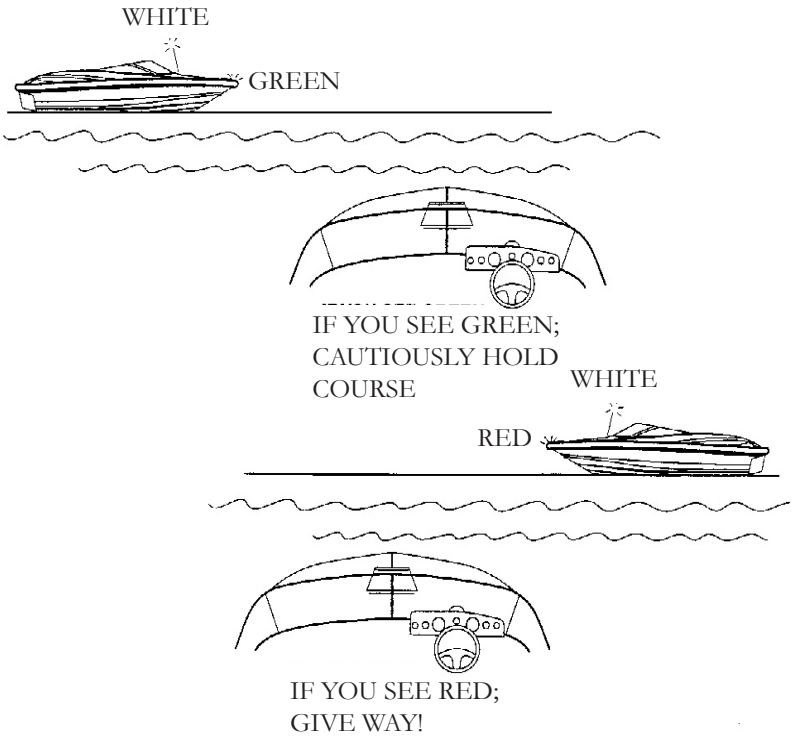
For showing information such as locations, distances and directions

NIGHT RUNNING

Boats operating between sunset and sunrise (hours vary by state), or in conditions of reduced visibility, must use navigation lights. Nighttime operation, especially during bad weather and fog, can be dangerous. All Rules of the Road apply at night, but it is best to slow down and stay clear of all boats regardless of who has the right-of-way.

To see more easily at night, avoid bright lights when possible. Also, it is helpful to have a passenger keep watch for other boats, water hazards and navigational aids.

To determine the size, speed and direction of other vessels at night, you should use the running lights. A green light indicates starboard side, and a red light indicates port side. Generally, if you see a green light, you have the right-of-way. If you see a red light, give way to the other vessel.



CHAPTER 2

BRIDGE CLEARANCE

Be aware that your vessel requires a specified bridge clearance height. This height is a measured estimate from the waterline to the top of the highest object usually the sport arch, radar or the masthead light depending on what arch equipment is installed. All canvas should be in the stored position. The estimated height can change because of variances in the loaded condition of the vessel. Consult the bridge clearance specifications located in Chapter 12 (technical information section). An easy way to measure bridge clearance is to have someone place a long straightedge such as a piece of wood at a 90 degree angle across the highest point of the boat with the boat in the water. Then with a tape rule measure the distance straight down (90 degrees) to the waterline. Take this measurement with the fuel and water tanks 1/2 full and only 1 person besides yourself on board. This will give you a safe measurement. As your boat is loaded down with people the bridge clearance will be slightly lower.

Some bridges are tendered. Know and use the proper bridge signals when approaching these bridges (see bridge signals on page 2-3). You can also monitor and communicate on channel 13 of a VHF radio for bridge information in most domestic locals. Other bridges are marked with a clearance measurement and you are on your own. After determining your vessel will clear the bridge proceed with caution at a safe idle speed. Keep your eye on vessel traffic at all times in order to react quickly. Resume a safe speed once clear of the bridge structure and acknowledgment of clear visibility.

Use common sense regarding bridge clearance because bodily injury and property damage could result if a mishap occurs with a bridge structure.

Engine & Controls

OUTBOARD ENGINE BASICS

It is important that you read the outboard engine manual carefully and become completely familiar with the operation as well as necessary maintenance on the engine and propulsion systems. Pay careful attention to the sections on winterization if you live in freezing climates. Extensive damage can result if proper winter storage is not followed. Contact your Regal dealer for information regarding technical issues and parts. Refer to the maintenance section of this manual for further information.

WARNING

AVOID SERIOUS INJURY OR DEATH! READ ALL MANUFACTURER'S ENGINE AND PROPULSION OWNER'S MANUALS BEFORE OPERATING YOUR VESSELS.

This chapter is intended to give general information about the location and function of a typical engine and controls. Control systems and engines may vary from model to model. Refer to the specific engine owner's manual for your equipment that would include the following information and much more in greater detail and accuracy.

CHAPTER 3

WARNING

AVOID SERIOUS INJURY OR DEATH! USE ONLY APPROVED MARINE REPLACEMENT PARTS THAT ARE IGNITION PROTECTED IN AND AROUND THE ENGINE COMPARTMENT.

Engines function is based from four principles; fuel, compression, ignition, and exhaust. The proper ratio of fuel and air must be drawn into the engine's cylinders in order to be compressed by the pistons and ignited by a spark the force of which pushes the piston back down, providing the energy used to turn your propeller, before the engine kicks into the exhaust stage where it expels the by-products. If any of these four functions fail, so does the engine itself.

Beyond these basic concepts of engine functionality include engine cooling, lubrication, and electrical systems. The specific details of these systems can be found in your owner's manual for the specific engine option you chose on your Regal boat.

Engine Removal

In the event the outboard engine needs to be removed from the transom consult your Regal dealer. He has the factory trained knowledge and equipment to remove the engine safely and efficientely.

Engine Checklist Before Each Outing

Every engine option may require different checks before each use, but a general engine checklist is included here as a guide.

- Check crankcase engine and gearcase oil levels.

- If installed, check power steering fluid level at the pump.

- Check power trim fluid.

At Helm/ Deck

- Check power trim for operation.
- Check control lever for operational defects. Check the clip and safety lanyard for functionality.
- Check gauges for accuracy.
- Check fuel level and ensure it is sufficient for the outboard and inbound trip with a reserve.

ENGINE COOLING SYSTEM

Your typical engine normally utilizes a raw water system for cooling the engine with intakes at the gearcase. It is important that this system continues to run unobstrucrted at all times to avoid hazardous situations and to ensure a safe voyage.

Raw water is drawn up through the outboard vertical driveshaft housing through pick-up feeds in the gearcase vicinity. Water passes through a powerhead thermostat which controls how much water circulates through the engine. The cool water absorbs heat produced by the engine, before being emitted via the coolant exhaust system.T There is a access hole on the port side of the powerhead which shows a visual stream of water at all times. If no water is visible with the engine running shut down the engine and investigate the problem. At times this relief hole can be plugged by debris.

Impeller/ Water Pump

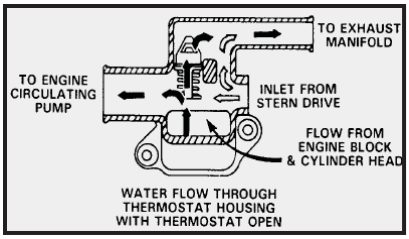
Periodically, the coolant system's impeller and water pump should be inspected for debris, damage or excessive wear due to water chemistry such as mineral or silt conditions. Damaged parts will affect the system's ability to function, and may cause engine overheating or damage. Contact your closest Regal dealer for more information and maintenance schedules of key outboard engine systems.

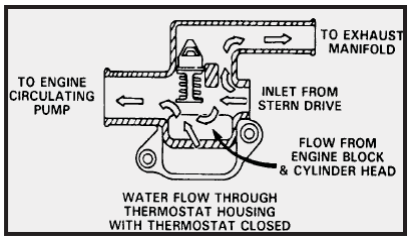
Thermostat

If the temperature gauge starts yielding abnormal readings, it may become necessary to look at or replace the powerhead thermostat after determining whether it is functioning properly. The thermostat reads the temperature of coolant and determines whether to open or close a valve to allow warm sea water to pass into the exhaust manifold. The thermostat may recirculate hot coolant for the purposes of reaching standard operating temperatures. If standard operating temperatures have been reached, the thermostat will open a valve and allow hot raw water to exit through the exhaust manifold. For more information read your outboard engine manual or contact the closest Regal dealer .Dealers have the necessary knowledge and tools to troubleshoot any engine related problems

WARNING

AVOID TOUCHING THE THERMOSTAT OR ITS COMPONENTS WHILE THE ENGINE IS ON / HOT. AVOID RUNNING THE ENGINE WITHOUT A FUNCTIONING THERMOSTAT, AS IT MAY OVERHEAT.





Typical Open Thermostat Diagram
Typical Closed Thermostat Diagram

Freshwater Flushing Attachment

Your outboard features a fresh water flushing system. After linking up to a fresh water hose at the flush port, water can be pumped through the engine's raw water cooling system to flush out all salt and debris that may be left behind. Normally there is a hose thread fitting on the side of the engine. After the connection is opened a garden hose is connected to the fitting and the engine can be flushed. It is best to connect the flushing system up when the engine is warm since the thermostat is open at this time to allow water to circulate through the entire head rather than bypassing the cylinder head areas.

ENGINE ELECTRICAL SYSTEM

Your engine utilizes a great deal of electronic equipment. Some equipment sends signals between the engine and the Garmin, while other systems set off alarms, and still others are used by the engine to generate a spark and ignite the fuel. The battery switch controls electrical power distribution to the boat systems.

To regularly maintain your DC electrical system, inspect the battery charge before each trip. Test all gauges and control equipment prior to departure, and replace as necessary. Spark plugs should be replaced according to your engine owner's manual maintenance schedule. When a fuse blows, investigate the problem before replacing fuse

Gauge Electrical Signals

Your outboard transmits signals through electrical harnesses to different components through the use of NMEA 2000 connections and a "backbone system". A standard Garmin plotter displays the engine functions. The fuel gauge and power trim gauges use stand alone technology to display readings. Also, idiot lights are display tolerances that are classified as being abdormal. Faults in these electrical components should be fully inspected by your Regal dealer.

Alarms

When a malfunction with your outboard engine occurs, the Garmin plotter alerts the skipper of a problem. Common engine problems include overheating, low oil pressure, or a miscommunication with equipment. Learn the alarm systems that apply to your engine by consulting your engine owner's manual.

WARNING

AVOID OPERATION OF THE ENGINE AFTER AN ALARM HAS SOUNDED. USE OF THE ENGINE WITHOUT ADDRESSING THE PROBLEM MAY RESULT IN ENGINE DAMAGE OR FAILURE.

Spark Plugs

The spark plugs are the piece of equipment that make the spark occur. As electrical potential builds on one side of the gap based upon the energy distributed by the distributor, the potential eventually grows large enough to cause the electric current to jump the gap on the spark plug. This spark is what ignites the compressed fuel generating

a controlled explosion that will power the piston down and deliver power to the drive shaft.

Stator

Under normal circumstances, the starter battery would wear down after being used so often to generate a spark for the engine. This isn't an ideal setup because a strong battery is needed for continual operation. A weak battery does no good out on the water. The stator takes care of recharging the battery(ies).
However, in an effort to conserve battery life, the starter battery switch should still be turned off after every trip and turned on at the start of every trip. This limits the drain on the battery while the boat is not in use. The stator will only recharge the battery while the engine is running.

Fuses

Your engine also comes equipped with fuses that will burn out when engine components attempt to draw more power than the piece of equipment or wiring can handle. When the fuse blows, it breaks the circuit, and electricity stops flowing. Before replacing the fuse, investigate the cause of the problem, and why the equipment was overworked. Your outboard engine uses a helm mounted fuse box which is accessible by lifting the starboard bow backrest while others feature in-line fuses, while still others feature a mixture of both. Refer to your outboard engine owner's manual for complete details on your electrical system and the location of any engine mounted over current protection.

ENGINE EXHAUST SYSTEM

Your engine expels the by-products of the engine operation through an exhaust system, just like cars do. In boats however, this exhaust system mixes the debris left over after the power stroke of the engine with the hot water that is expelled after cooling the engine.
Basically the exhaust flows through the powerhead before expelling the exhaust through the vertical drive housing either just above the propeller, or through the prop shaft.

ENGINE FUEL SYSTEM

All engines require a source of fuel in order to run. The fuel that an engine uses, is not only comprised of gasoline (in some cases diesel), but also air. This mixture of gas and air are combined into a ratio, best suited for your engine and boat. If this system fails, the engine will have no fuel to compress and ignite. It is important to make sure your fuel system is functioning properly.

WARNING

GASOLINE VAPORS CAN EXPLODE. BEFORE STARTING THE ENGINE, CHECK ENGINE COMPARTMENT FOR GASOLINE LEAKS OR VAPORS.

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.

Your typical factory installed fuel system is comprised of a fuel fill fitting marked "gas", fuel tank, fuel hoses, fuel vents, anti-siphon valve, water separator filter, fuel gauge, and sender among other items.

You should understand the purposes of each of these components and discover their location by reading this manual along with the outboard owner's manual so that you can fix a fuel system problem when the need arises out on the water. The pictures displayed in this section may not reflect you specific engine.

Fuel Fill Cap

The fuel fill is labeled "gas" and is located along the starboard aft deck. When fueling it is important to keep the fill nozzle in contact with the fuel fill line since it decreases static electricity, which may spark and ignite gasoline vapors. Always use the recommended fuel octane rating as specified in your outboard engine owner's manual. Extinguish all flame producing agents before fueling. The fill cap leads to the anti-siphon valve and fuel tank. Ensure that the gas cap ratchets shut which ensures that vapors are contained within the system.

Anti Siphon Valve

The anti-siphon valve at the base of the fuel feed line is pulled off its seat by fuel pump pressure as the engine is cranking or running. It forms a one-way fuel roadway by sealing off the fuel feed line from the fuel fitting. It prevents fuel from siphoning out of the tank in the event of a fuel line rupture, or disconnected fuel feed hose. It is an important safety item, so **DO NOT** remove the anti-siphon valve.

Fuel Vent

Fuel vents are often combined into the fuel fitting on the deck. Fuel tanks are vented overboard for the fumes to escape. While the tank is filled with fuel, air is displaced by the incoming fuel, and relieved through the fuel vent hose. When the fuel tank is near full, slow down or stop the nozzle flow to keep the fuel from splashing out the vent.

Fuel Hoses

Fuel hoses transport gasoline from one component to another. These hoses are required to be of certain diameters in order to comply with engineering and environmental standards. Hose clamps are often used to seal the hose to a fitting, and these connections should be checked regularly.

Fuel Pumps/ Filter

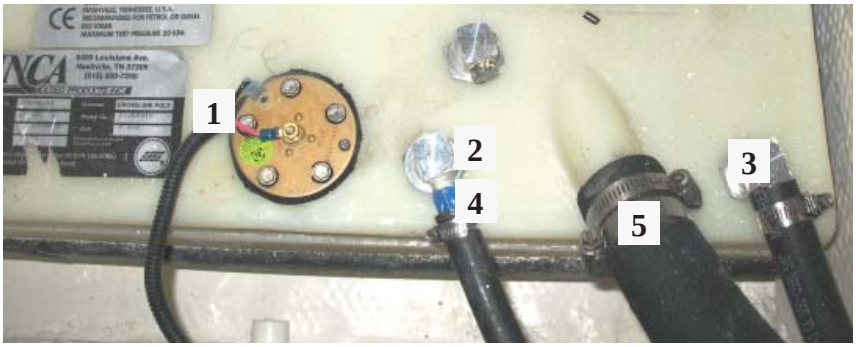
From the fuel tank, gasoline is moved from the tank to the engine by the pressure produced in fuel pumps. Fuel filters are not able to remove large amounts of water. If the fuel becomes contaminated with water, the water separator must be replaced.

Fuel Sender & Gauge

A fuel sender on the fuel gauge uses a dipstick/float system to measure the amount of fuel left in the tank. This measurement generates a specific resistance value in an electronic circuit connected to the fuel gauge at the helm. As different fuel levels are reached, the resistance value in the circuit with the fuel gauge changes which is read by the fuel gauge and is converted to an approximate fuel level.

Fuel Tank

The fuel tank should be inspected for damage before each voyage. This should be done when you check the fuel lines for tightness and leaks. Your Regal boat uses an aluminum or polyester fuel tank that has been tested several times along with other fuel system components for safety requirements and dependability in house, and they are inspected independently by National Marine Manufactures Association personnel. Typical fuel tank shown below.



Typical Fuel Tank

1) Fuel Sender
2) Anti Siphon Valve
3) Fuel Vent Line
4) Fuel Feed Line
5) Fuel Fill Line

CHAPTER 3

ENGINE LUBRICATION SYSTEM

Whenever two components rub together, friction causes wear on both components. To minimize the wear on your engine, a lubrication system has been put in place to help components slide next to each other easier. This is particularly important within the inner workings of an engine. It is important to ensure your lubrication system is working properly at all times.

Your Regal utilizes lubrication and fluids that need regular check ups. These engine fluids are engine oil and power steering fluid. Refer to your outboard engine owner's manual for specific details regarding the proper maintenance procedure of your lubrication system. The pictures displayed in this section may represent a different engine model than the one equipped on your Regal boat.

Engine Oil

The purpose of engine oil is to lubricate the cylinders of the engine and ensure that parts that regularly move against each other have reduced friction to reduce wear and noise between components. An oil filter keeps metal particles and water out of the engine's interior.

Engines performing on regular oil should have the oil drained and replaced every 100 hours while synthetic oil typically should be drained and replaced every 200 hours. In either case, if your Regal boat has endured one year since its last oil change, the oil should be changed again. The oil filter should be replaced every time the oil is changed, or upon damage. It is normal for the first 50 hours of operation to require frequent changes until the engine is seasoned.

Typical Volvo Engine Oil Dipstick And Fil

Power Steering Fluid

If the power steering option is installed the steering fluid should be checked before every trip. It shouldn't require changing unless contaminated with debris or water, in which case a root cause must be investigated. Contact your Regal dealer.

Other Component Lubrication

System components may also require their own lubrication schedule. Steering systems, throttle cable, shift cable, stern drive u-joint splines and o-rings, and the engine coupler may require grease, oil, or other lubrication. Refer to your engine owner's manual for specific details.

LOWER UNIT LUBRICATION

Your outboard uses power trim fluid, drive oil, and propshaft lubricants to reduce wear on moving components. These fluids should be checked according to the recommended maintenance procedures determined by the outboard manufacturer.

Gearcase Oil

Gearcase oil keeps all the mechanical components of the propshaft gear assembly functioning optimally. It reduces friction in the gearcase as the gears revolve. Sometimes gearcase oil is called gear lubricant, as the oil essentially lubricates the gears inside the gear box. Gearcase oil should be inspected periodically according to factory maintenance schedules.

Power Trim Fluid

Power trim fluid allows your outboard to angle up or down. This is particularly useful when trying to get your boat to plane where the hull is as much out of the water as physically possible, reducing friction, and improving ride performance. This power trim fluid is used in hydraulic rams that maneuver the outboard unit, and shouldn't need to be replaced very often, if at all.

Power trim fluid should be checked regularly, despite not requiring replacement unless something serious happens. Discoloration or water presence indicates a water leak in the stern drive. In that case, contact your Regal dealer.

PROPELLERS

Regal has carefully tested and chosen the propellers to give your outboard boat the best possible performance based on the engine and propulsion package you choose. We have allowed for the additional weight in equipment that might be added to the boat. It is a good idea to carry a spare set of propellers and hand tools onboard, in order to handle emergency propeller changes. Refer to the outboard manual for procedures, as the application is unique to the manufacturer. Call a marine professional or your Regal dealer for further information.

Propeller Checklist

At least twice a year, check the propeller for:

- Loose, missing, or corroded hardware.
- Nicks, dings, or missing propeller material
- Bent propeller blades.
- Objects wrapped around the prop such as fish line.
- Decomposing propeller blades (electrolysis symptom).
- Check the propeller rubber hub for slippage

Contact a propeller shop or your closest Regal dealer if any of the above symptoms exist. They have purchased special equipment to refurbish both stainless steel and aluminum propellers.

CHAPTER 3

INSTRUMENTATION

The helm station is equipped with a fuel gauge and depth gauge along with the ability to monitor engine functions through the Garmin unit. Close observation of the gauges may save the engine from damage. Gauges do however have some inaccuracy, so do not rely upon them fully.

Note that with the battery switch in the "off" position, there is no power to the dashboard, and the ignition switch will not function properly.

All electrical features are protected by a main fuse mounted close to the battery switch. A fuse for the stereo memory and the automatic bilge pump system are also located next to the battery switch in the engine compartment. Fuses for the engine are located either in-line, between components, or in a fuse box. All the switches on the dashboard also have a fuse, located in the forward starboard storage area directly in front of the helm. Should a fuse "blow" it is first necessary to figure out the reason and address the cause before resetting it.

Depth Gauge

The depth gauge indicates the water depth under the keel of the boat. It features a shallow water alarm to warn the skipper of hazardous situations. By monitoring the water depth, damage to props, and underwater hardware can be avoided. This gauge is connected to a transducer on the bottom of the hull, accessible through a removable plate in the ski locker. Refer to the equipment operation chapter for details on gauge settings/operation.

Fuel Gauge

The fuel gauge indicates the level of fuel inside the fuel tank sent by the fuel sender. It is a good idea to keep the fuel tank "topped off" when possible to reduce fuel vapors inside the tank. Do not run your fuel too low as this style gauge is not always accurate. Always allow for a "safety" factor. Remember that the Garmin is not set up to monitor fuel tank levels. The dash gauge works independently of the Garmin engine functions.

Garmin Engine Monitoring Display

A Garmin 7" chartplotter is standard equipment on your Regal 23 OBX. It features many GPS features along with the ability to monitor engine system functions including revolutions per minute (rpm's), GPS speed, voltage, fuel flow rate, trim, and temperature along with tracking engine hours.

Note that the Garmin and Fusion circuitry use individual sources to power up the system. **The key switch does not power up these 2 systems. Also, the depth and fuel gauge displays are independent of the Garmin engine displays.**

1. To power up the Garmin GPS press the on button located on the upper display.

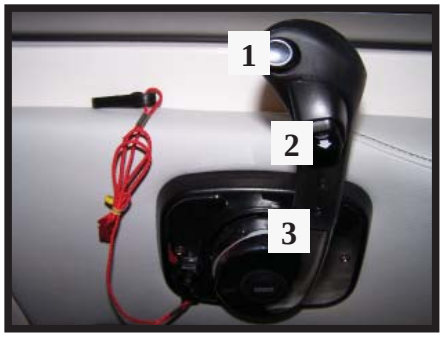
2. The function AV/Gauges,Controls will appear as one of the choice boxes. Press the box. Another screen with engine will appear.

3. Press the engine box and the engine gauge displays will appear (oil pressure is engine code driven only); fuel level uses dash gauge to display fuel levels).

CHAPTER 3

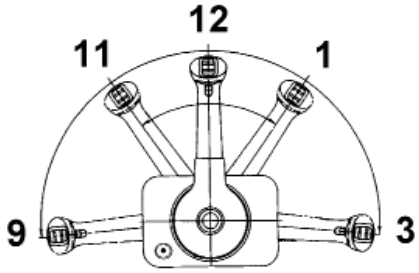
REMOTE CONTROL

Your vessel uses a single side-mount control for shifting and throttle operations. The remote control handle controls forward, neutral, and reverse outboard shifting operations. Also, the control features power trim up and down functions. See the following page for component description and features. Practice docking operations using the remote control in a controlled environment to learn the basic control functions.



Typical Control Lever In Neutral Position

1) Neutral Release Button
2) Trim Control Switch
3) Control Lever



Typical Control Lever Showing Five Positions

Pushing the throttle control lever forward from the neutral 12 o'clock position to the 11 o'clock position will engage forward gear with minimal throttle. From the 11 o'clock position to the 9 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 1 o'clock position will engage the reverse gear with minimal throttle. From the 1 o'clock position to the 3 o'clock position, the vessel is in reverse gear with differing levels of throttle selections.

As you shift from neutral to forward or reverse, push the neutral release button, this allows the control lever to come out of the indented position.

The control lever features a neutral safety switch which ensures the stern drive and control are in the indented neutral position for starting the engine. You will hear a distinct sound and will feel the remote control's rotation lock, once in the proper position. If your turn the key to the start position and the engine starter doesn't crank the engine, ensure the control lever is in the neutral position.

Your control lever also features a trim control switch. This switch allows the captain to set the trim for the drive from the helm either up or down to achieve a plane position. Refer to the vessel operations chapter for further information on trim angle.

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 or flooding will result. The same thing will happen if you keep pumping the automobile accelerator pedal. 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 engine not running. Control, linkage, and/or sterndrive damage may occur.
- For more information, read your engine manufacturer's manual before operating the remote control.

Safety Lanyard (Interrupter Switch)

The safety lanyard (used on selected control levers) sometimes called an interrupter switch is attached to the operator and the remote control panel. Should the operator lose control of the vessel and become dislodged from his/her seat or fall overboard, the lanyard will shut the engine off.

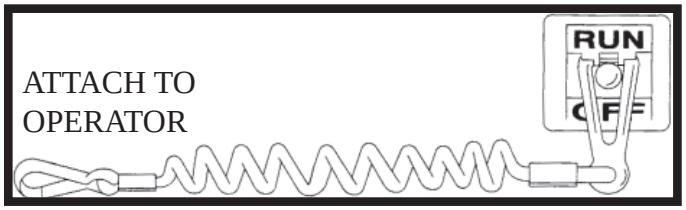
Make sure the lanyard is installed to a part of clothing such as a belt or belt loop before operating the vessel. Flip the switch to the run position before starting the engine.

WARNING

INTERRUPTER SWITCH MUST BE ATTACHED TO THE OPERATOR WHILE THE ENGINE IS RUNNING. A QUALIFIED OPERATOR MUST BE IN CONTROL AT ALL TIMES. READ THE OWNER'S MANUAL BEFORE USE.

NOTICE

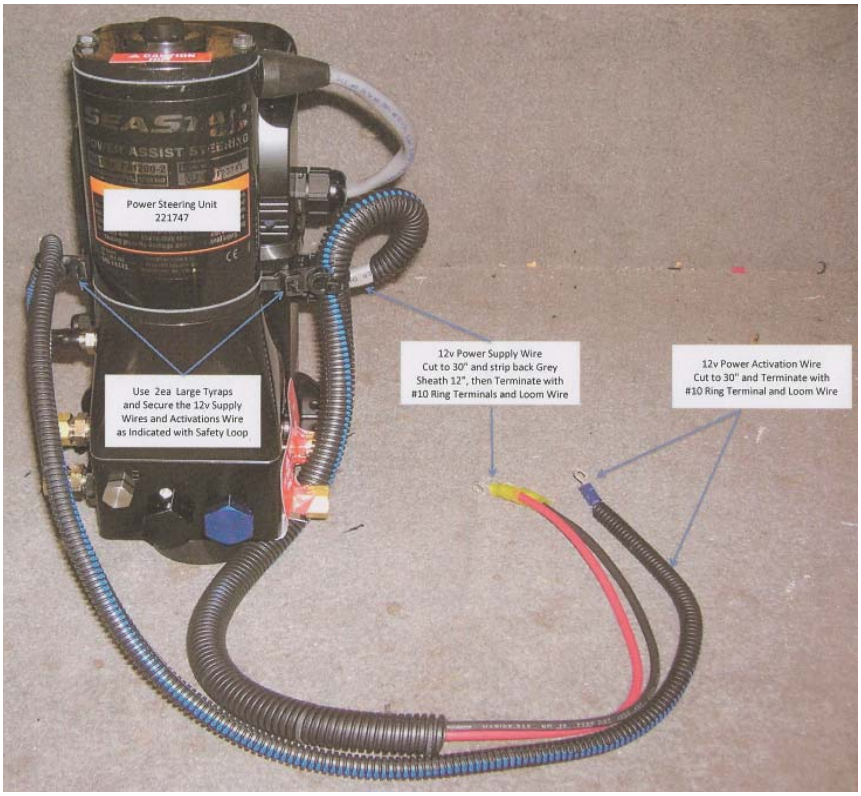
IF THE INTERRUPTER SWITCH IS IN THE “OFF” POSITION, THE ENGINE WILL CRANK OVER BUT WILL NOT START. ENSURE THE SAFETY LANYARD IS ATTACHED CORRECTLY AND SWITCHED TO THE “RUN” POSITION.



STEERING

Your Regal outboard features a mechanical-hydraulic rack style steering system. The unit utilizes valves which permit hydraulic fluid to pass through the system allowing the steering arm at the outboard to turn the vessel to port or starboard. This check valve cluster is located behind the steering wheel. The hardware at both the helm and engine must be checked regularly for tightness, lubrication, and leaks. Check the steering system for full steering to port and starboard before disembarking.

As an outboard option, a power assist steering system is available. The pump used in the optional system is shown below and the system layout is on the following page.



POWER ASSIST STEERING

The following diagram identifies a typical outboard power assisted steering system circuitry.

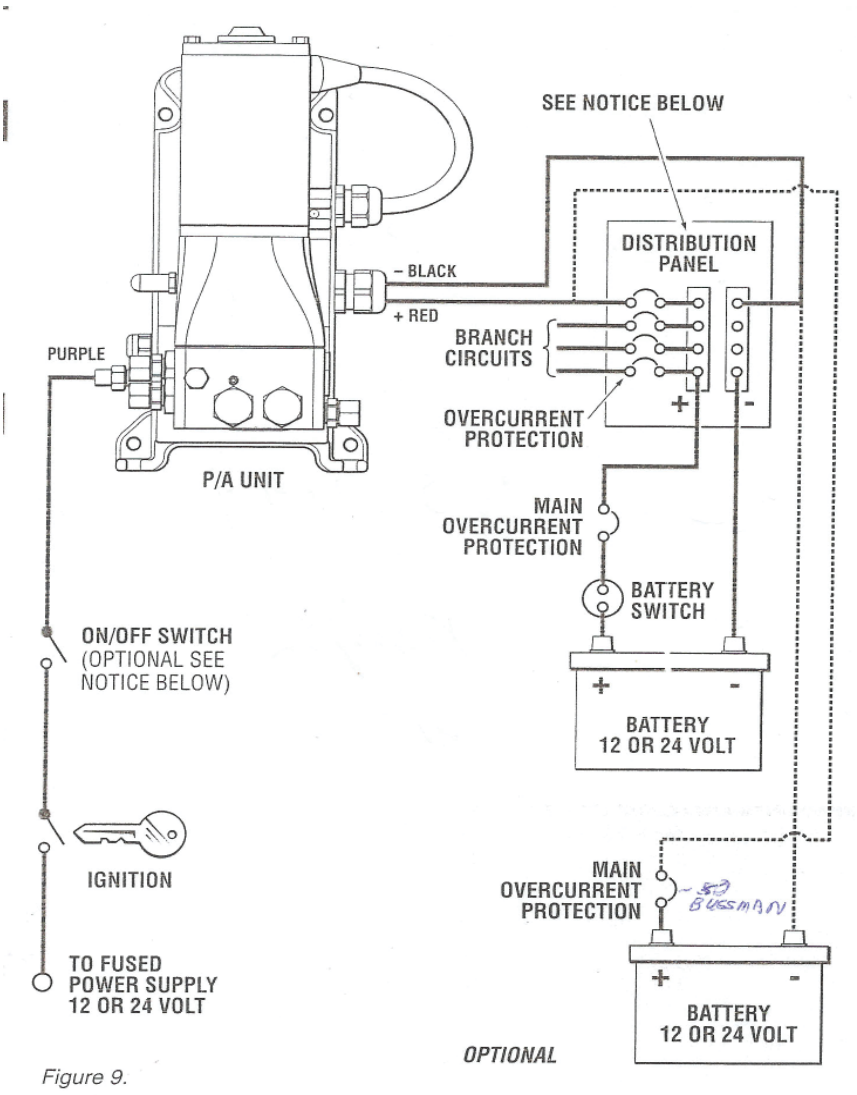


Figure 9.

Port Switch Panel

The port switch panel activates optional docking lights, cockpit lights, Power Tower along with accessories installed aftermarket. Cockpit lights are placed at the bow/transom walk through areas. A red light shows activation on individual switches. Switch names may vary.

Typical Panel

Starboard Switch Panel

The starboard switch panel controls key systems on your Regal boat. It normally features a horn switch, navigation light & anchor light switch, plus a manual bilge pump switch. A red light shows activation on individual switches. Switch names may vary.

Typical Panel

Systems

BILGE/DRAINAGE

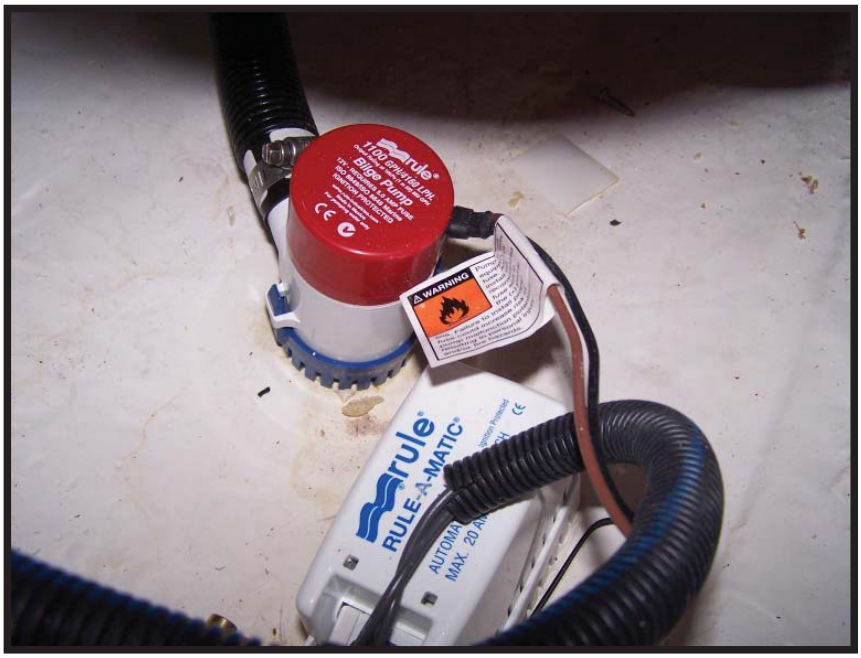
Regal boats are designed with a drainage system so water can be moved to the bilge from the deck where the bilge pump can pump it out. It is important to keep all drains clear of debris so when a wave floods the deck of the boat, all water will leave in an effective manner.

Your boat is equipped with main drains installed near the transom walk-thru on the aft starboard side of your boat, underneath the aft cockpit seats where the cooler normally is set, and a third drain installed in the ski locker. All three of these drains then route back to the bilge pump in the engine compartment. All cup holders and the bow storage compartment drain to the ski locker whereupon it is transferred to the engine compartment bilge pump.

Once the water has been drained to the bilge pump in the engine compartment, the bilge pump can pump it out through a hole located along the aft starboard side of your boat. The bilge pump is connected to a fuse located near the battery switch in the engine compartment and also to an automatic float switch placed directly forward of the bilge pump. The bilge pump receives power from your battery, and the automatic float switch is installed so that the bilge pump will automatically turn on as required. The circuit to the bilge pump receives battery power regardless of the state of your battery switch, so turning off the battery switch at the end of each voyage will not affect your boat's ability to pump water out of the bilge. A manual switch, operated from the dashboard however, requires the battery switch to be activated.

Monitor your bilge pump condition to keep your vessel from sinking

due to taking on large amounts of water. Debris should be cleared from the impeller regularly. Inspect the condition of the impeller and replace the impeller as necessary. To gain access to the impeller, the pump must be disassembled from the bilge pump grate. Simply push the tabs of the grate inward towards the bilge pump, while simultaneously pulling up on the bilge pump. This locking mechanism functions much like a quick disconnect clip. If the fuse for your bilge pump "blows", be sure to investigate why the bilge pump was drawing too much power. Likely causes of bilge pump malfunction are debris in the impeller, bad impeller, debris in the float switch, bad motor, or short circuit.



Typical Bilge Pump And Automatic Float Switch

ELECTRICAL

Your boat runs off direct current (DC), supplied by your battery. Regal boats primarily use 12 volt DC batteries located in your engine compartment. It is called direct current because the current flows one way in the circuit. Your automobile is a typical example of 12 volt DC current

Direct Current (12 Volt DC)

Storage batteries (sometimes called wet-lead cell batteries) furnish 12 volt electricity to boat components. Storage batteries use two dissimilar metals immersed in a liquid (acid) to carry current. The engines require large amounts of battery power for starting purposes. Check the maintenance chapter for battery information.

An automobile battery is charged up by the engine alternator. The same holds true for the marine battery. The dash volt meter displays the battery voltage. If the volt meter shows below 12 volts, there could be a charging system malfunction. This condition needs to be addressed before the voyage and before the batteries become completely drained.

Your battery should be removed for proper winter storage. A battery not properly stored for winter or extended periods of latency may exhibit charging problems. See the storage and winterization chapter for battery storage information.

Wire Color Codes

Utilize the following typical table when looking at your electrical harnesses. Your boat may not feature all of these functions, as some are optional features, while others are not available on your model.

COLOR	GAUGE	FUNCTION
Black	16 to 4	All Grounds
Black / White	16	Halon Automatic Fire Extinguishing System
Blue	14	Interior Lights
Blue	10	Cabin Light Main Feed
Blue / White	16	Transom Courtesy Lights
Blue / White	14	Cockpit Lights
Brown	12	Water Pressure Pump
Brown	16	Aft Bilge Pump / Manual
Brown	16	Fwd. Bilge Pump / Manual
Brown / Black	10	Overboard Discharge
Brown / Pink	16	Carbon Monoxide Detector
Brown / Red	16	Fwd. Auto Bilge Pump
Brown / White	16	Aft Auto Bilge Pump
Grey	16	Bow Navigation Lights
Grey / Black	16	Mast Light (Anchor Light)
Grey / White	16	Mast Light (Fwd. Running)
Green	16	Tank Level Monitor
Green	8	Bonding
Orange	16	Windshield Wiper / Run
Orange	12	Refrigerator, Hatch Run
Orange	10	Spotlight
Orange / Black	16	Horn
Orange / White	16	Windshield Wiper Park
Purple	16	Hour Meter
Red	16	Gas Vapor Detector, Stereo Remote, Breaker To Dash Feed Lines
Red	14	Positive Feed, Electronics
Red	8	Positive Feed, Alternator Charge
Red	8	Positive Feed, Alternator Charge
Red	4	Positive Feed
Red	2	Positive Feed, Starter Battery

COLOR	GAUGE	FUNCTION
Red	2/0	Main DC Panel Feed
Red	2/0	Battery Cable To Engine
Red / Black	16	Windlass Up
Red / White	16	Windlass Down
Yellow	10,12,14	Blower
Yellow / Black	10,16	Stereo Memory
Red / Black	16	Stereo, Regal Vue
Yellow / Red	14	Engine Cranking Circuit

The standard wire color, gauge size, and function shown is used throughout the marine industry. The chart is helpful in identifying wire circuitry during troubleshooting or the adding or marine accessories. **NEVER** replace a wire with a size other than shown in the chart. This practice could result in fire or component failure. Contact your Regal dealer for replacement wires and harnesses.

DC Switches

Switches located at the helm are part of your DC circuitry. Switches are in essence a break in the circuit from the battery to your electrical components. When the switch is turned on, a red light shows activation. See chapter 3.

DC Circuit Protection

As part of the direct current circuitry, depending on the make and model engine you chose, will have either in line fuses or a fuse box for its electrical components. These fuses protect the engine wiring from overloads. Refer to the engine manufacturer's manual for the fuse locations, sizes, and operations.

A dash fuse box protects the individual switch controlled components and is located in the starboard bow storage locker.
The ignition panel is protected by a 20 amp breaker mounted to the panel itself. All gauges and helm electrical systems like the head radio unit are protected by a dashboard protection fuse located underneath the dash connected to the ignition switch. Your fusion stereo is also protected by a fusion installed stereo memory fuse located underneath the dash along the radio wiring, in addition to the Regal provided stereo memory fuse in the engine compartment near the battery switch. Additionally, there is an automatic bilge pump fuse located next to the battery switch in the engine compartment. See chapter 3.

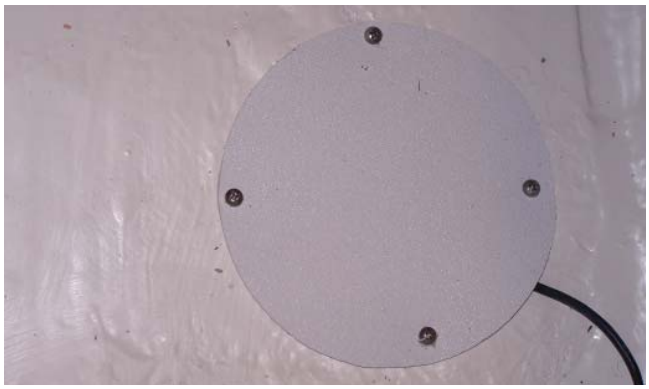
If the fuses "blow" or breakers "pop" due to an overload, the cause should be investigated before replacing the fuse or resetting the breaker. Only replace fuses with the same amperage and type. In emergency situations, fuses installed in the fuse block for features that are not used on your model can be used as replacements when appropriately sized for the fuse your are replacing, but be careful of electrical shock when removing or replacing a fuse.

FUNCTION	AMPS	TYPE	PLACE
Accessory 1 (If Included)	10	Fuse	Dash Fuse Box
Accessory 2 (Not Available)	10	Fuse	Dash Fuse Box
Bilge Pump Manual	5	Fuse	Dash Fuse Box
Bilge Pump Automatic	5	Fuse	Engine Compartment
Cabin Lights (Not Available)	5	Fuse	Dash Fuse Box
Cockpit Lights	10	Fuse	Dash Fuse Box

FUNCTION	AMPS	TYPE	PLACE
CO Monitor (Not Available)	2	Fuse	Dash Fuse Box
Dashboard Protection Fuse	10	Fuse	Underneath Dash
Docking Lights	15	Fuse	Dash Fuse Box
Fresh Water (Not Available)	7.5	Fuse	Dash Fuse Box
Garmin (Not Available)	10	Fuse	Dash Fuse Box
Horn	10	Fuse	Dash Fuse Box
Ignition Breaker	20	Breaker	Ignition Panel
Navigation / Anchor Lights	10	Fuse	Dash Fuse Box
Stereo Memory Fusion Feed	15	Fuse	Battery Switch
Stereo Performance (Optional)	40	Fuse	Engine Compartment
12 Volt Accessory	15	Fuse	Dash Fuse Box

Typical Fuse Listings

Your transducer is the device mounted on the hull bottom that sends out sonar signals that rebound upon hitting the bottom of a lake or ocean. These signals are measured, and converted into a usable depth measurement displayed by the depth gauge at the helm. This system does not register signal deflections due to fish. Access the transducer for removal via an access plate in the ski locker. Note that the transducer is a sealed, non-serviceable unit.



Battery Switch

All of your electrical systems onboard your Regal eventually connect with your battery. This is where electrical power originates. In order for any electrical systems to receive power, with the exception of your automatic bilge pump function and stereo memory require the battery switch to be turned "ON". The two excluded systems have a direct battery feed at all times without the use of the battery switch. The battery switch connects the battery to all deck and engine circuitry. It is important to turn your battery "ON" before each trip, and "OFF" at the end of each cruise to avoid battery drain.

Never turn the battery switch to the "OFF" position when the engine is running as alternator or other electrical system damage will occur. Also, for extended non-use turn the battery switch to "OFF".

The standard battery switch is located in the port sump. With the stereo performance package option a 40 amp breaker protects the system. A 50 amp breaker protects the circuit wiring up to the helm.

The stereo memory and the bilge pump fuses are located near the battery switch box as reference below. The stereo memory fuse is 15 amps and the bilge pump fuse is 5 amps. These circuits will continue to function even with the battery switch in the "OFF" position. It is recommended to turn the red battery switch to the "OFF" position when leaving the vessel for extended periods. See the equipment chapter for further information.

CHAPTER 4

FUEL

Fuel System-General Information

Gasoline Requirements- Use non-leaded gasoline with the following minimum octane rating:

• Inside United States- See outboard manufacturer owner's manual since octane requirements are based on engine horsepower.

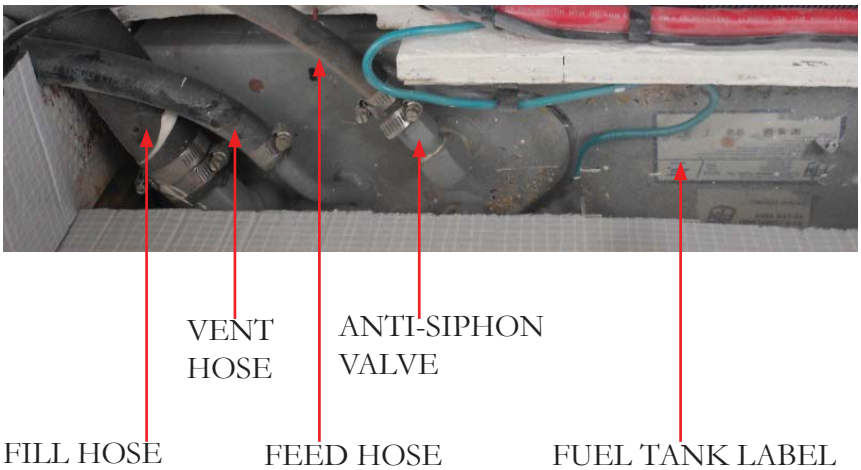
• Outside United States- See outboard manufacturer owner's manual since octane requirements are based on engine horsepower.

The use of leaded fuels can seriously damage the engine.

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 gasoline blended with no more than 10% ethanol and that meets the minimum octane specification. Ethanol in fuel is a strong cleaning solvent that can clean fuel system gum and varnish. As a trade off these released deposits can clogg fuel system parts such as filters and engine fuel injectors.

Do not use ethanol blends greater than 10% such as a newer blend for select motor vehicles called E-15. Your marine engine may be damaged by more than 10% ethanol. This type of fuel can cause a loss of performance, starting problems, serious fuel system and engine damage.

TYPICAL EPA COMPLIANT FUEL TANK



Fuel System

The fuel system consists of a fuel tank, fuel fill fittings, fuel hoses, fuel vents, anti-siphon valve, internal tank valves, fuel filter, fuel gauge and sender. Each one of these components plays an important role in providing an uninterrupted flow of fuel while operating your boat. Refer to the technical drawing section for system specifics.

Fuel Tank

Your boat uses an aluminum or polyester fuel tank. *Boats manufactured for domestic use are now required to be EPA compliant and will be outfitted with an aluminum tank*. This system uses parts such as a valve located inside the fuel tank and can not be serviced. Also, there is a carbon canister which functions much like the one in an automobile located between the fuel tank and hull side vent. This canister under normal usage requires no service. These tanks are tested along with the complete fuel system for safety requirements and quality in house. Also, they are inspected independently by National Marine Manufacturers Association personnel.

Fuel Fill

The fuel fill fitting is labeled "gas" and in addition displays the international symbol (See the next page). When fueling the boat keep the fill nozzle in contact with the fuel fill pipe since it decreases static electricity. Always use the recommended fuel octane rating as specified in your engine owner's manual.

Extinguish all flame producing agents before fueling!

Fuel Vent

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.

COMBO FUEL FILL W/ INTERNAL VENT

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.

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. DO NOT OVERFILL THE TANK. This helps avoid any overboard spills which harm the environment. There is a key that fits the fuel fill. Use it to secure the fitting from leaking fuel. Store the key in a safe place so it can be easily found for fueling. Check the vent fill screen periodically for debris.

Anti-Siphon Valve

The fuel tank feed line use an anti-siphon valve. 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. It allows a one-way fuel roadway to the engine fuel pump . It prevents fuel from siphoning out of the tank in the event of a fuel line rupture or disconnected fuel feed hose. Never remove an anti-siphon valve as it is a fuel system safety component. Clean or replace a clogged or stuck anti-siphon valve. Contact your closest Regal dealer or marine professional for more information.

Fuel Gauge & Sender

The dash fuel gauge is only an indication of the on board fuel supply. They are not exact reading instruments. Therefore, use the one third rule discussed earlier for monitoring your fuel supply. *There are not many filling stations on the open waterways!* The gas sender located in the fuel tank uses a float system which sends a signal to the dash fuel gauge as to the fuel tank level.

Fuel Filters

Fuel filters are installed on outboard engines. Normally there is a fuel filter under the motor shroud (cover) which should be serviced per outboard motor manufacturer. Also, Regal installs an in-line 10 micron water separator filter which is a spin on type similar to an automobile oil filter. Its main purpose is to trap dirt particles and condensation in fuel. It is a good idea to keep an extra fuel filter on board along with a filter wrench, catch container and clean rags for emergencies. Never use automotive style fuel filters on your vessel. Dispose of all fuel residue materials in an environmentally safe fashion.

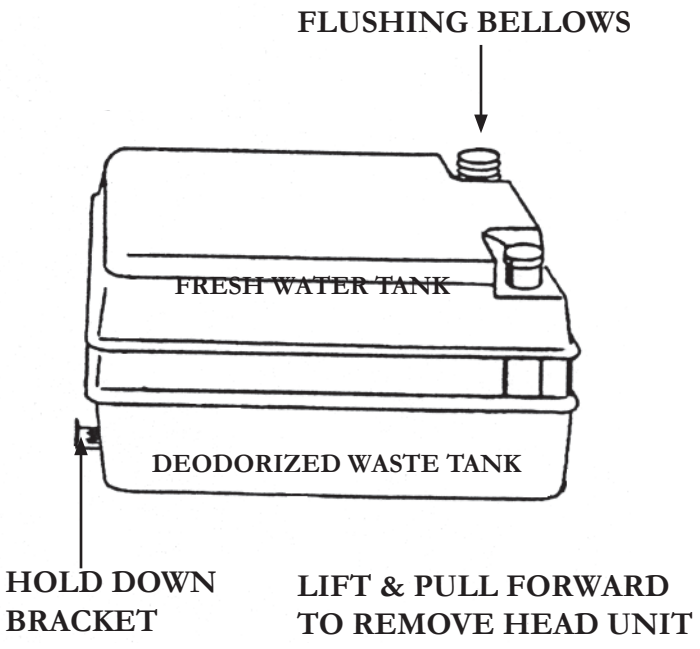
WASTE

Chemical Toilet

As optional equipment is a self-contained sanitation device known as a chemical toilet or portable head which features an upper fresh water tank and a lower deodorized tank. These two components can be separated for waste disposal, cleaning and refilling. The lower tank contains a capacity gauge. Before each outing check the waste level since it is illegal to dump waste within and extending out to the United States territorial limit.

Refer to a typical system shown on the following page. For more information, review the vendor manual supplied in the owner's information packet or visit their on-line location.

TYPICAL CHEMICAL TOILET



Vessel Operation

This chapter explores the many faucets of running your vessel from casting off to docking and handling emergencies. We cover the basics but suggest you read other information on the chapter topics. Also, become familiar with your engine owner's manual since many of the items discussed here are found there in more detail.

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?
- Is the engine, outboard drive and propeller in good working condition?
- Is the drain plug in place ?
- 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 for 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 the seacocks 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 gauges 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 transom doors closed?
- As skipper are you monitoring the dash gauges and or Garmin plotter for changes?
- As skipper are you on the lookout for changing weather?
- Is the remote control safety lanyard (if equipped) tightly secured to your belt or clothing?

Disembarking Questionnaire

- Have you removed the keys from the ignition and secured them?
- Have all systems been checked for leaks?
- Has the battery switch been turned to the "off" position?
- Are all seacocks closed (if applicable)?
- Has the fuel tank been filled enough to prevent condensation?
- Is the vessel properly tied and covered with equipment stored?

FUELING

DANGER

AVOID PERSONAL INJURY OR DEATH!
GASOLINE IS A HIGHLY FLAMMABLE
AND EXPLOSIVE MATERIAL.
PRACTICE "NO SMOKING" AND EXTINGUISH ALL
FLAMMABLE MATERIALS WITHIN 75 FEET
OF THE FUEL DOCK.

WARNING

AVOID SERIOUS INJURY OR DEATH
FROM EXPLOSION OR FIRE
RESULTING FROM LEAKING FUEL.
INSPECT ENTIRE FUEL SYSTEM
AT LEAST ONCE A YEAR.

NOTICE

SINCE GASOLINE IS AVAILABLE IN SEVERAL GRADES INCLUDING ETHENOL & VARIOUS OCTANE LEVELS, REFER TO THE ENGINE MANUFACTURER'S OWNER'S MANUAL FOR THE CORRECT ONE FOR YOUR ENGINE. USING IMPROPER OCTANE FUEL CAN CAUSE ENGINE DAMAGE AND VOID THE WARRANTY.

Before Fueling

- ☑ 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 alcohol additives. They can attack fuel system 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 accidently 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.

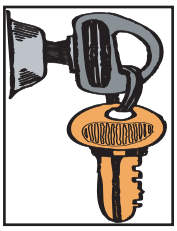
☑ Sniff in the lower bilge and engine compartment for gas fumes. If fumes are detected continue to ventilate until the odor is gone. Look for any traces of fuel droplets or spillage. **Do not start the engine, smoke or run any electrical components until the fumes can no longer be detected.**

WARNING

AVOID SERIOUS INJURY OR DEATH!
THE OPERATOR OF THE CRAFT MUST HAVE COMPLETE CONTROL OF THE HELM STEERING STATION WHILE THE VESSEL IS MOVING.
NEVER LEAVE THE HELM STATION UNATTENDED WHILE THE VESSEL IS MOVING.

CHAPTER 5

STARTING & STOPPING



The following general information covers starting and stopping your engine. Read and understand all previous information on remote controls, fueling and operational procedures. Pay particular attention to all labels. Refer to the engine owner's manual for in depth propulsion system information.

Starting Guidelines

Review all pre-departure information. Before starting your engine make sure all canvas is removed and stored. Start engine only in a well ventilated location to avoid CO buildup. Turn the battery switch to the "on" position.

Set the remote control handle in the neutral position. Advance the neutral throttle position as instructed in the engine owner's manual. Connect the safety lanyard to a belt or secure to clothing such as a pants belt loop. Keep passengers seated and away from controls.

Turn the ignition key to the momentarily start position. You will hear the starter cranking over the engine. When the engine starts release the key switch. It will automatically align itself in the run position (ignition).

If the engine does not start, refrain from cranking the engine over 10-12 seconds. Allow the starter and battery a chance to recover. Advance the remote control in the neutral throttle position as recommended in the engine manual. Do not race the remote control in the neutral position.

CAUTION

TO AVOID ENGINE DAMAGE!
CHECK THE OIL GAUGE IMMEDIATELY AFTER STARTING. IF LOW OR NO READING SHUT DOWN ENGINE IMMEDIATELY AND INVESTIGATE THE PROBLEM.

Shifting Guidelines

Before shifting into reverse or forward gear positions make sure the coast is clear. When shifting to either gear from neutral make sure the throttle is in the idle position. Allow your vessel to lose all headway before shifting into reverse or forward gear. Practice shifting! You will become more familiar with the procedure and self-confidence will build especially in tight docking situations. Stay alert at all times!

Stopping

Before stopping the engine make sure it is in neutral and idle speed. After an outing let the engine cool down at idle speeds for a few minutes before turning the ignition off. Glance at the gauges one last time to monitor their readings. Do not pull on the safety lanyard verses the ignition switch to stop the engine. Never turn off the engine while in forward or reverse gear since water could enter the engine through the exhaust system and cause extensive damage. The same holds true for running the boat in reverse. Above all, use common sense.

STEERING

Your outboard features a hydraulic steering system. These systems transfer helm mechanical motion to the engine. There is a hydraulic steering cylinder located at the helm which uses fluid force to change the course of the boat, depending on the direction the steering wheel is turned.

Since the steering system is the primary link for engine control, it must be periodically inspected and maintained. The hardware at both the helm and engine must be checked regularly for tightness.

Check the steering system for full steering port and starboard before disembarking. Refer to the steering manufacturer's literature in the owner's pouch and the maintenance chapter for more information.

WARNING

AVOID PERSONAL INJURY AND PROPERTY DAMAGE!
LOOSENING OR LOSS OF ONE OR MORE FASTENERS
MAY CAUSE FAILURE OF THE STEERING SYSTEM
OR DAMAGE TO THE STEERING CABLE,
RESULTING IN LOSS OF STEERING CONTROL.
PERIODICALLY INSPECT THE STEERING SYSTEM.

FENDERS

Fender Usage

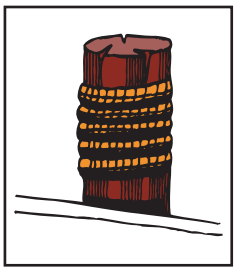
Fenders are normally made of a rubberized plastic and are usually filled with air. Most have a fitting like a basketball so they can be inflated or deflated. Fenders are available in a wide range of sizes and shapes to fit both small and large vessels. Fenders are normally designated in inches. They 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.

Fender Types

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.

CHAPTER 5

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 run 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.

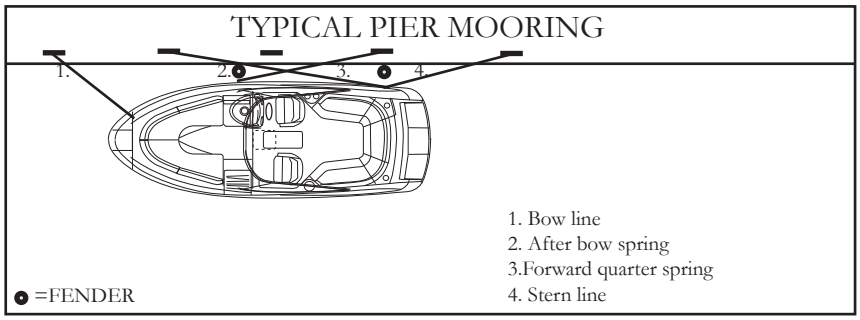
Breast Lines

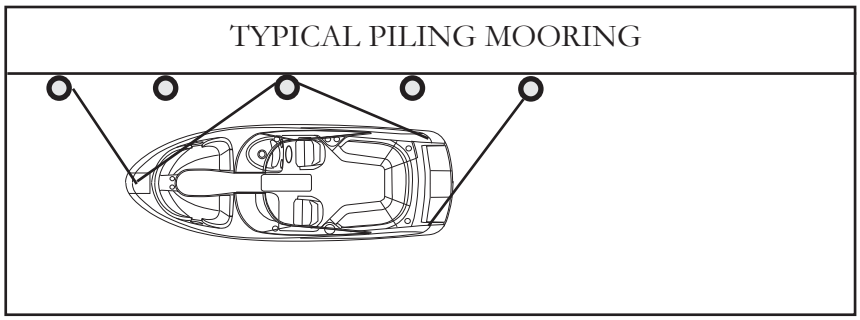
These lines are attached to the bow and stern that lead to nearly right angles from the center of the vessel to the dock. They help keep larger vessels from moving away from the dock, or are pulled in to help people board the vessel. Larger vessels may use bow or quarter breast lines.

Spring Lines

Most small 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 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 admidships. 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 to 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 Lines

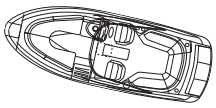
When mooring your boat, make sure the dock lines are secured at both ends. Depending on your situation you may need to loop the eye splice of the dock line around a piling. Sometimes the mooring line will lead down sharply from the piling to the deck cleat. Loop the eye splice around the piling twice 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, the 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.

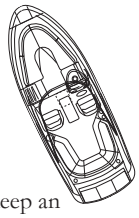
STEPS TO DOCKING

Outboard powered boats are fairly easy to back up and maneuver with a little knowledge and docking practice. One of the most important aspects of the process is to keep your calm in the wake of a busy marina. Basically, the reversing propeller is turned in the direction you want to go by using the wheel.
Some boats tend to be influenced by the wind. When backing down in a crosswind, allow room to maneuver and watch the bow. Try not to overreact or get excited, but use your knowledge and experience. If the wind begins to swing the bow, you need to stop backing, turn the wheel to port and go forward to straighten the boat. Use a quick burst of power but not too much to knock your crew off balance.



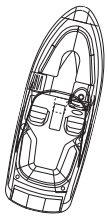
A. Stop the boat by shifting in reverse. Put the wheel over to the port and begin backing in. Slow down your speed by momentarily shifting into reverse.

*** Control in reverse idle position, Outdrive to port.**



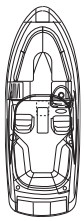
B. Continue backing up the boat with the wheel hard to port. Keep an eye on the bow, and begin to straighten the wheel as the boat enters the slip.

*** Control in reverse idle position, Outdrive to port.**



C. Center the wheel to align the boat parallel with the dock. If the stern is too far from the dock, shift to neutral, then put the wheel hard over to port and then go forward a second or two.

*** Control in neutral idle position. Drive centered.**



D. When the boat is completely into the dock, stop stern movement by shifting into forward. Put the wheel to port to kick the stern over close to the dock if necessary. Shift into neutral and tie up the boat.

*** Control in forward idle position. Drive to port.**

OUTBOARD MANEUVERING

Outboard boats do not have rudders. The boat uses a steering system that directs the propeller thrust, by turning the drive unit where the propeller is mounted.
Directing propeller energy (thrust) makes slower speed maneuvering easier. The propeller discharge current is turned from one side to the other which results in turning forces. Rudder boats need water to flow by the rudder to be efficient. Outboard units are designed to have reduced shaft angle, so the propeller does not produce as much unequal blade thrust and resistance. Large horsepower outboard boats do produce more thrust and steering torque but your vessel has the advantage of assisted power steering. Below is some basic information on how outboard boats handle in normal conditions.

Gathering Headway

When a outboard drive 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 the propellers action creates a discharge motion and generates energy in the form of thrust. If the outboard 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. There is a trim tab (also serves as a sacrificial anode) located on the vertical drive housing just to the top of the propeller blade. 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.
Sometimes the trim tab may need adjustment.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 stern 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 trim gauge as a guide while activating the trim button on the remote control panel.

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

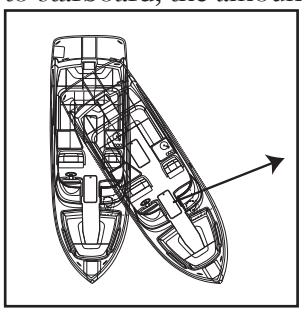
If your boat has the steering wheel and stern drive straight with the control in reverse, the stern will be pushed a bit to port by the reversing propeller thrust. This tendency to back to port can be eliminated by turning the outboard drive to starboard.

When the vessel begins to gather speed to stern, the water passing by the lower gearcase 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. Stern drive boats 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.

Once increased headway is gathered in reverse gear, the force of the lower hull moving through the water is enough to track straight. When backing, the stern will lead as it heads to port or starboard, before the vessel actually starts to turn.

When the control is put in forward gear position, the stern is pushed to starboard; the amount of push depends on the hull design and the amount of throttle advance. See illustration.



Stopping

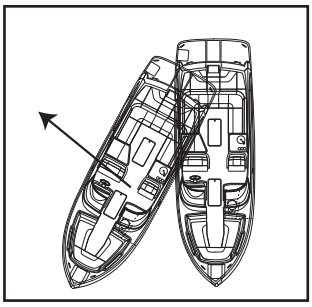
Remember that your boat does not have any brakes. It uses reverse thrust from the propeller to stop. If the vessel has headway, with the helm and propeller in reverse the propeller thrust is directed backwards, past the lower gearcase of the stern drive.

Depending on how far the throttle is advanced, the discharged thrust may not be strong enough to reverse the water flowing by the gearcase. 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 gearcase, 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 gearcase. Furthermore, added to the energy of the water hitting the lower gear case, the propeller thrust is directed by turning the stern drive, 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. See illustration.

TRIM ANGLE



Outboard boats have the ability to angle in or out their drive unit in relationship to the transom. This is accomplished by hydraulic shocks located on the lower unit housing along with an electrical sender unit that reads the drive angle and sends information to the dash trim gauge showing a reading.

Purpose Of Power Trim

The purpose of the power trim/tilt is to enable the operator to change the angle of the outboard drive 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 ride of your boat and will enable you to get the most efficient and comfortable ride possible, whatever the conditions.

Use Of Power Trim

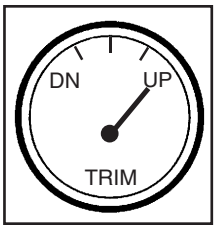
The power trim is normally used prior to accelerating onto a plane, after reaching the desired RPM or boat speed and when there is a change in water or boating conditions. Position passengers and equipment in the boat so that the weight is balanced correctly fore and aft as well as side to side. Trimming 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.

To determine the proper 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, make test runs at slower speeds and at various trim positions to see the effect of trimming. Note the time it takes for the boat to plane. Watch the tachometer and speedometer readings as well as the ride action of the boat.

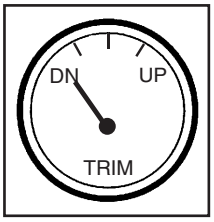
Operation In "Bow Up" Position

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.



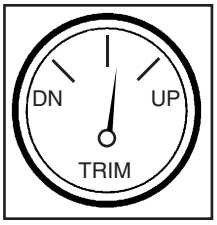
Operation In "Bow Down" Position

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, kneeboarders, 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

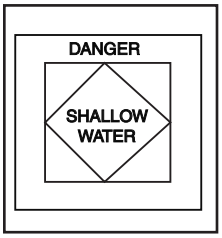
In normal running conditions, distribute passengers and gear so boat is level. At or below cruising speeds, trim the vessel for optimum performance. The trim gauge will show somewhere in the center of the gauge. This position will also enhance running visibility and overall stability. Again, each outing provides different wave, load and running conditions. Be prepared to make trim changes as needed.



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 AND/OR HIGH STEERING TORQUE, SEE YOUR AUTHORIZED REGAL DEALER.

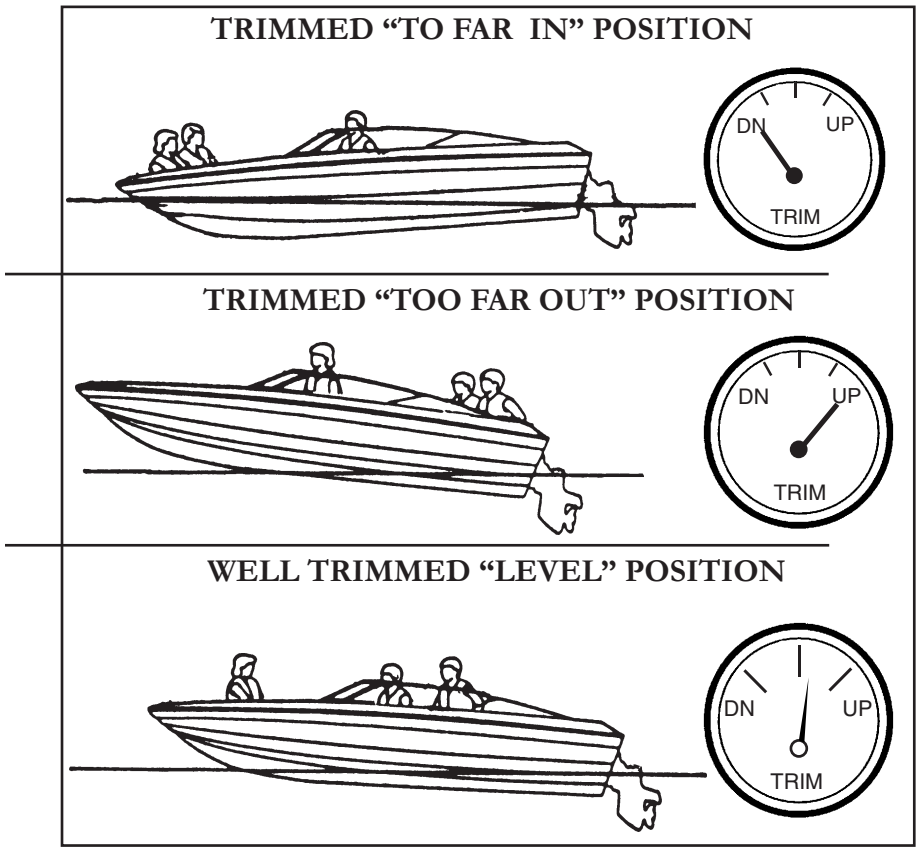
Shallow Water Operation



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 outdrive 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.

If your boat strikes a submerged object stop immediately and check for hull, outdrive and propeller damage.



Typical Example

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. Some models incorporate chain, line with an optional windlass. 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.

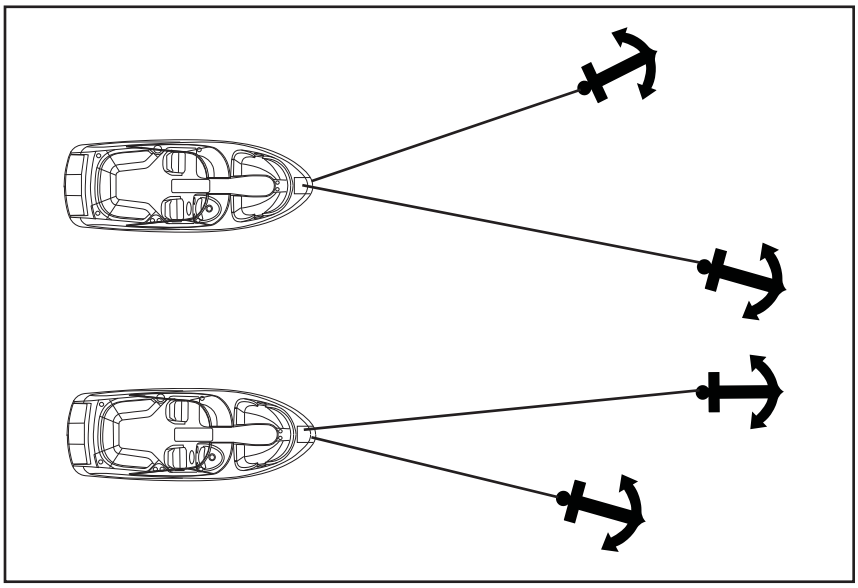
The nylon will stretch under a heavy strain cushioning the impact of waves or wind on both the boat and the anchor.

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 bought 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 these 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 tangeling as the boat moves in wind and current. See the above illustration.



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.

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 vessels' 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 ANY 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!

DANGER

AVOID DEATH OR SERIOUS BODILY INJURY!
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.

Figure 8 Knot Tied To Cleat

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 2 or 3 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!

Fire

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 a 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 ignition.

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, shut off the fuel supply Usually there is a fuel tank access that you can crimp the fuel feed line.

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.

CHAPTER 5

FIRST AID

Knowing first aid can save lives. A first aid kit and the ability to use it are important ingredients for the safety of a skippers' passengers, crew and vessel. Having confidence and competence in handling medical emergencies on board is a must for the skipper. Invest your time in a first aid course available at the American Red Cross.

CPR (Basic Life Support)

If someone is seriously injured have someone call for help while the injured person is being attended.

Check for possible danger signs; loss of breathing, unconsciousness, severe bleeding and heartbeat. If you determine the individual is not breathing or unconscious place the victim on their back on a hard surface and do the following:

1. If unconscious, open the airway. Neck lift, head lift or chin head lift.

2. If not breathing, begin artificial breathing. Pinch the nose. Give 4 quick breaths. If airway is blocked, try back blows, abdominal or chest thrusts and finger probe until airway is open.

3. Check for pulse. Begin artificial circulation. Depress sternum 2". 15 compressions rate 80 per minute. 2 quick breaths. Continue uninterrupted until advanced medical support is available.

Follow up immediately with medical authorities!

HYPOTHERMIA

Hypothermia is a condition where the body temperature decreases because the body can't generate enough heat to maintain its normal temperature. It can be serious and usually occurs where victims have been immersed in water (under 68 degrees) for extended periods of time. If you encounter a possible hypothermia victim call for help on the radio and get the person out of the water.
Symptoms are:

1. Shivering that if condition is advanced may stop.

2. Confusion, clumsiness or slurred speech.

3. Rigid muscles.

4. Semiconscious to unconscious.

Treat hypothermia by the following:

- ☐ Remove wet clothing.
- ☐ Monitor the victim's pulse and breathing.
- ☐ Rapidly apply heat to the body core by using blankets, naked bodies or warm water.
- ☐ Do not give the person any food or drink.
- ☐ Do not warm the arms and legs. Warming of these extremities can be fatal.

Follow up immediately with medical authorities!

CHAPTER 5

ENVIRONMENTAL AWARENESS

There are numerous vessels operating on our waterways on a daily basis. Each boat has as 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 a 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 liter 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. When fishing, practice the "catch and release" principle.

Follow these basics practices when on the waterways. Treat the environment in a way that you would like to be treated.

Equipment Operation

This chapter will assist the boat operator in understanding selected standard and optional equipment components on the vessel. *Some of the equipment described may not be installed on your boat or the pictorials may not exactly resemble equipment on your craft.* Remember, Regal is constantly improving its product line and therefore may make changes in vendor parts and specifications without notice. For detailed information on equipment, please refer to the owner's information packet.

BATTERY SWITCH-STANDARD

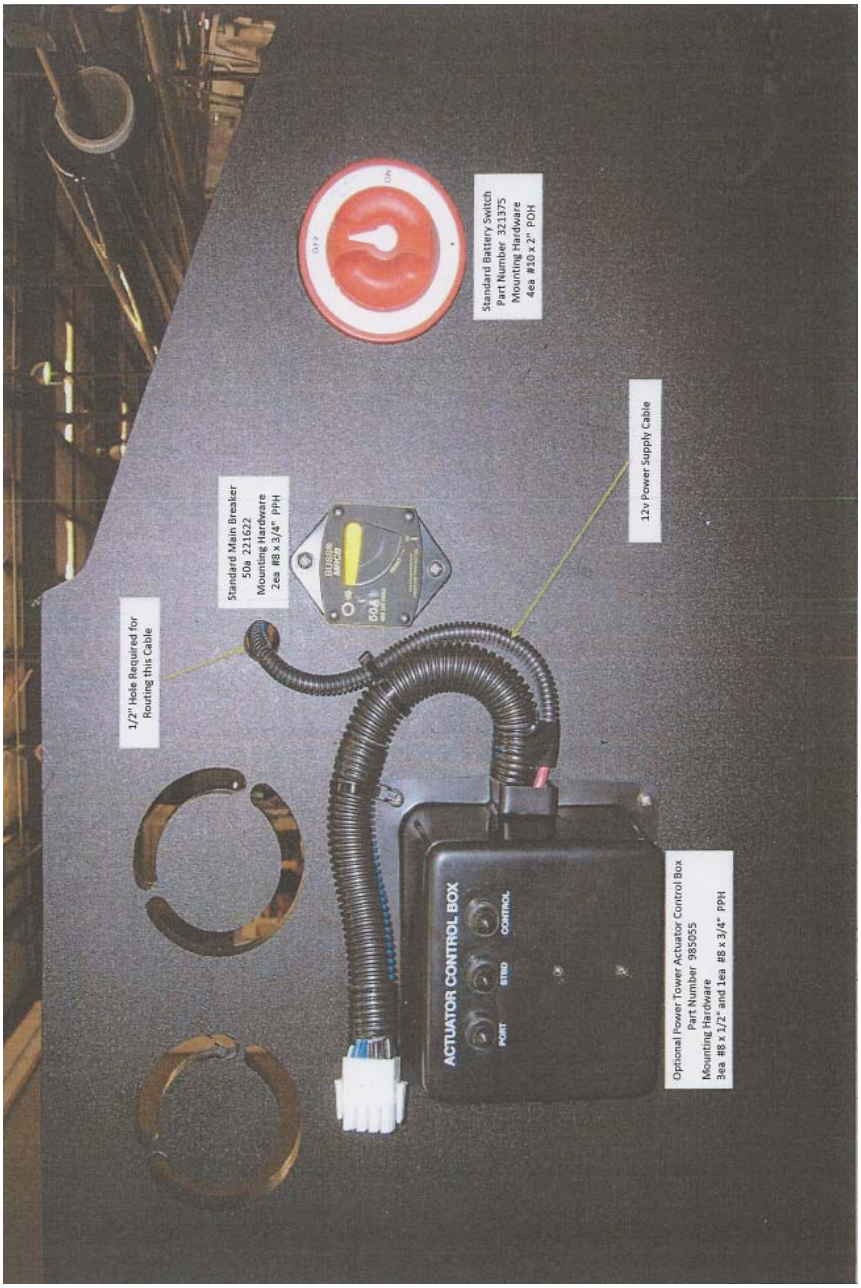
A battery switch is installed as standard equipment. This can be accessed by removing the port aft transom cushion. With this style switch, the operator simply turns the knob to the "on" position before starting the engine and to the "off" position when leaving the vessel. With the battery switch in the "off" position no power exists to the helm circuitry. As part of this system is a main breaker to protect the wire circuitry. Should the breaker "trip" find the source of the malfunction before resetting the circuit breaker. Make sure the knob is fully de-tented when selecting the "on" or "off" functions.

Again, remember to deactivate the battery switch upon leaving the vessel.

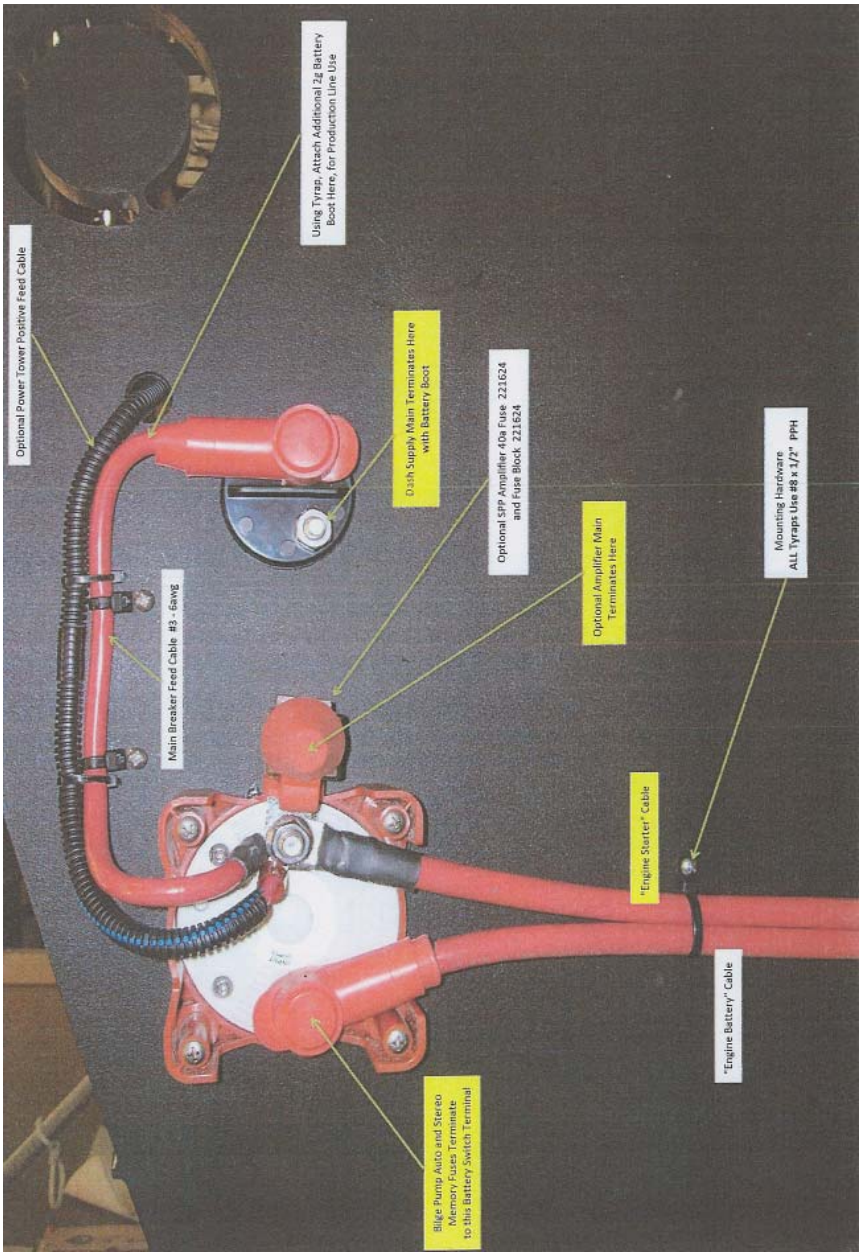
The photos on the next pages describe the system components. Notice there are options included like the power tower actuator with breakers.

WARNING

AVOID DAMAGE TO THE ALTERNATOR AND/OR CHARGING SYSTEM COMPONENTS. NEVER TURN THE BATTERY SWITCH TO THE "OFF" POSITION WHILE THE ENGINE IS RUNNING.

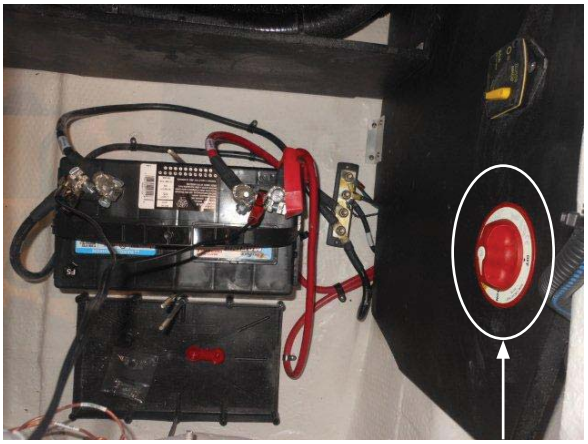


Standard Battery Switch Circuitry- Front View



Standard Battery Switch Circuitry-Rear View

BATTERY SWITCH-DUAL



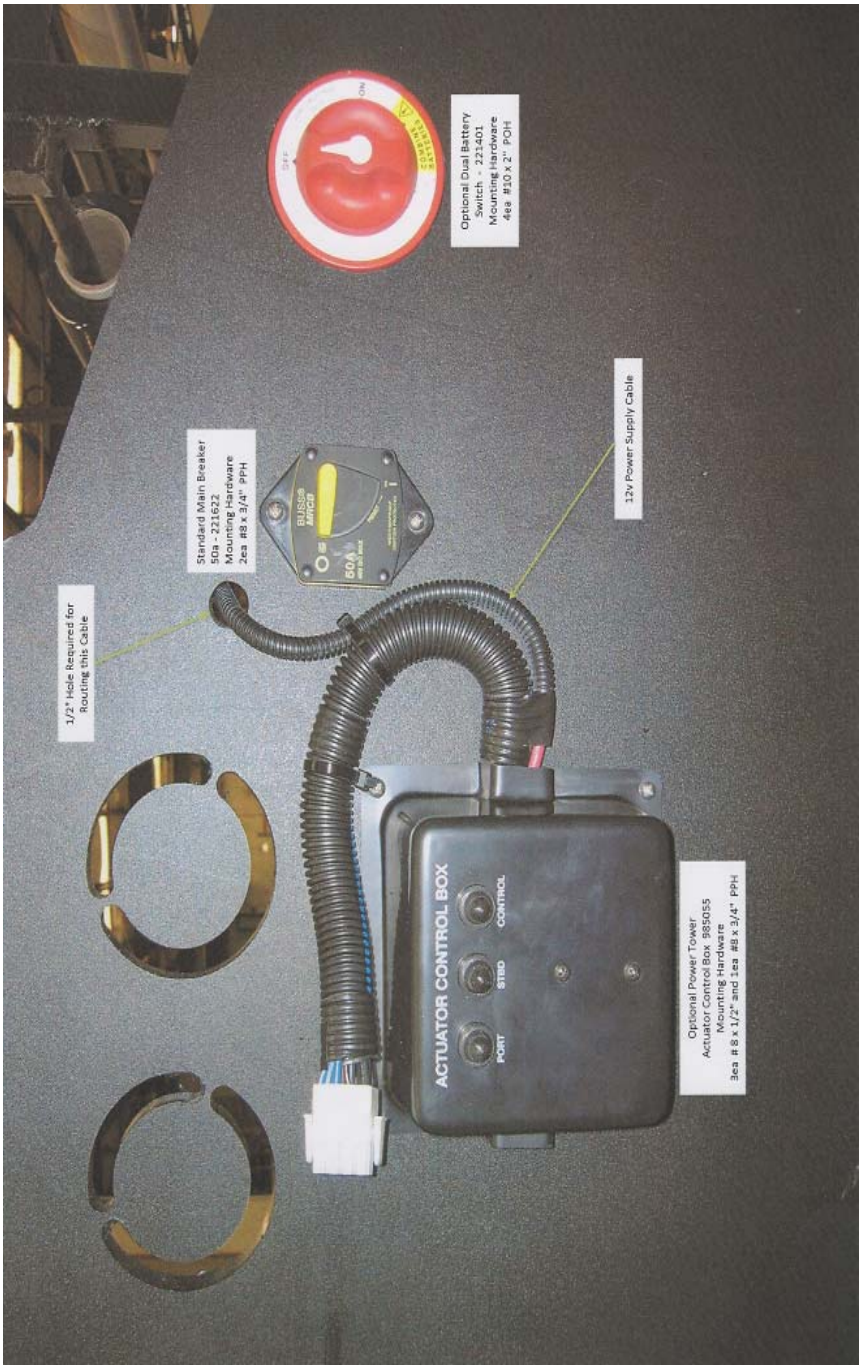
Dual Battery Switch

As an option your vessel may utilize a dual battery switch which controls 2 batteries located in the port aft outboard engine storage locker. This can be accessed by removing the port aft transom cushion. With this style switch, the operator simply turns the knob to the "on" position before starting the engine and to the "off" position when exiting the boat. As part of this system is a 50 amp main breaker to protect the wire circuitry. Should the breaker "trip" find the source of the malfunction before resetting the circuit breaker. Make sure the knob is fully de-tented when selecting the "on" or "off" functions. Again, remember to deactivate the battery switch upon leaving the vessel.

Note that in the "ON" position the switch cranks the engine for starting purposes through the helm key switch.

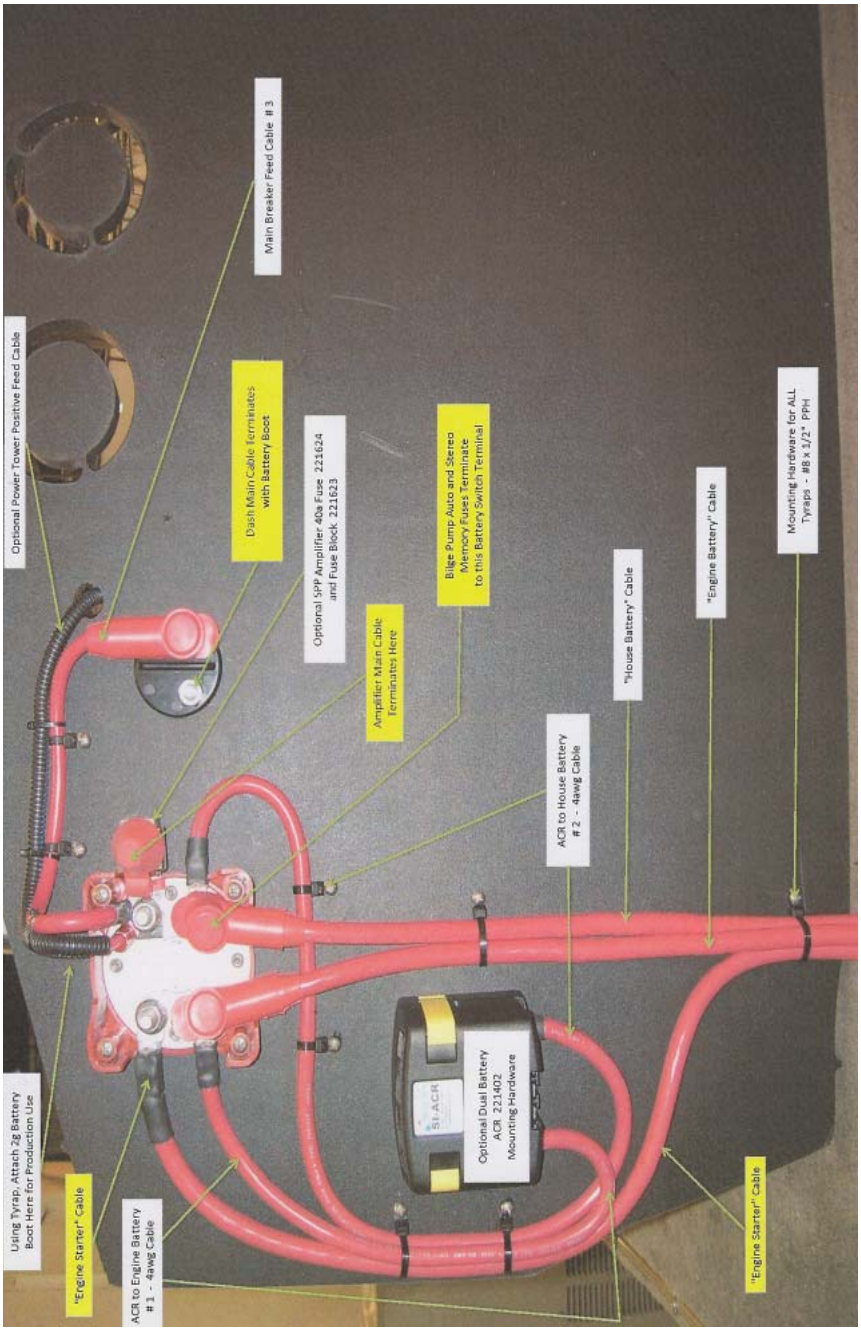
There is an optional dual battery charging switch located on the the aft side of the battery switch bulkhead. Its purpose is the distribute a charge to either battery as needed to keep them at the peak charge condition.

Another feature of the dual battery switch is to supply dual battery cranking energy when needed. Simply turn the battery switch to the "combine batteries" position before cranking over the engines.



Dual Battery Switch Circuitry- Front View

Dual Battery Switch Circuitry-Rear View



BOW FILLER CUSHION

To use the bow filler cushion locate the support bars found under the bow cushions. One is longer than the other. Make sure both bars are seated in the liner detents (Typical bow seating shown).

Place cushion on bars. Make sure the cushion is completely seated on the bars before attempting to occupy the bow cushions.

Typical Bow Filler Cushion

BOW WALK-THROUGH DOORS

Optional walk-through bow doors are great in foul weather. With the tonneau (bow) cover in place, simply open the doors and pull across the bow opening. Secure shut. Close the tonneau cover.

To store, fold against the walk-thru and secure the folding latch. Note there is a starboard side storage drawer along with a hide-away trash receptacle. Periodically wipe the plexiglas doors with fresh soapy water and rinse dry. Do not use any harsh chemicals such as cleanser or ammonia based products on the doors as damage will occur.

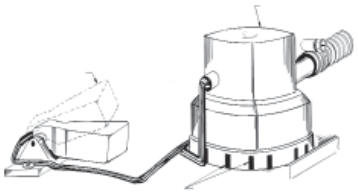
BILGE PUMP

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 pup manually at the dashboard with the switch. 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 have a float that sits at water level, and when the float reaches a certain height, it trips the switch and activates the bilge pump.

You may need to disassemble the bilge pump from the grate in order to clean or access the inner mechanisms. To remove the bilge pump, utilize the quick disconnect tabs on either side of the bilge pump, squeezing them like a backpack clip while pulling up on the pump.

For switch control location, refer to the engine and controls chapter. For bilge and drainage system information and electrical system information, refer to the systems chapter. Refer to the vessel operations chapter for pre0departure use. Maintenance requirements are described in the maintenance chapter of this manual.



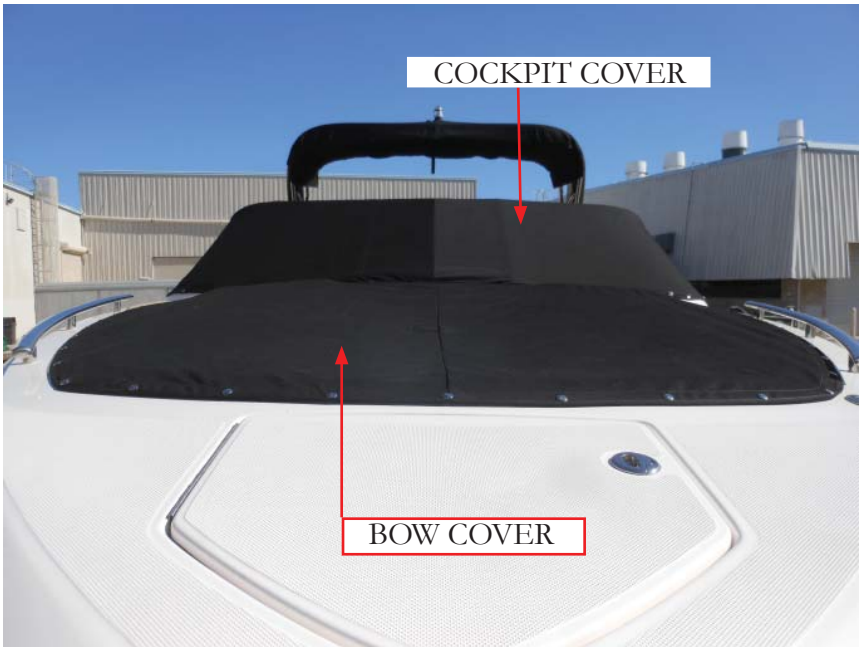
Typical Bilge Pump And Automatic Switch Diagram

CANVAS

The optional cockpit cover installs over the windshield and snaps to the deck. The cockpit cover is meant to protect the cockpit of the boat from weather elements, and is not used for towing purposes. The same is true for the bow cover. The bow cover is a separate option from the cockpit cover available for purchase. The bow cover protects the bow of the boat from weather and snaps to the deck. Likewise, the bow cover should not be used for towing. On select vessels both the bow and cockpit cover options are purchased, the two halves nap and velcro together at the center windshield location.

To install a typical bow/cockpit cover:
First note that on the bow end of the cockpit cover, there is a velcro strip used to attach to an optional bow cover. This strip can be used to align the covers with your boat. Simply align the Velcrod edge with the windshield.
Ensure the center windshield is in the closed position. Start snapping the cover to the deck by use of the eyelet snaps, starting at the bow and working aft.

Notice in the middle underside of your cover, you may find an area of reinforced canvas with an eyelet snap. This snap connects to a cockpit cover pole. This pole is adjustable, and by opening the lock, the pole can telescope out to the desired length. This pole should push the canvas up when standing straight up on its rubber enclosed foot. The purpose here is to prevent the pooling of water.



TYPICAL TONNEAU (BOW) COVER

CANVAS-TRAVEL COVER

⚠ WARNING: To prevent damage to your boat and/or cover please read and understand instructions before attempting to use cover.

It features:

1. **ON SOME MODELS:** A special anti-pooling system is included to prevent large puddles from ruining your cover.
2. The SurLast® all-weather fabric was chosen to allow stability, water repellency and breathe-ability.
3. The Vacu-Hold™ system allows trailering at highway speeds (65 mph) without billowing or buffeting.
4. The new ratchet and drawstrap type attachment will allow easy, tight and secure installation.

CARE, WARRANTY AND INSTALLATION INSTRUCTIONS

Hint-To properly install ratchet strap system.

1. Pull the webbing through the channeled ratchet cylinder and tension while ratcheting to "start" the webbing.
2. Tension the ratchet with about 5 lbs. of pressure (pinky finger). Pull the sides of the cover to even the webbing throughout. Re-tension about 5 lbs. (the ratchet should be tight on the side of the boat lever, perpendicular to the hull).
3. Crank the ratchet approximately 5 full additional times to add tension (based on an 18' boat).
4. Check boat webbing for tension during stops while trailering. (webbing may stretch during first installation and use CHECK OFTEN).

⚠WARNING: Readjust and retighten the cover after trailering and before storage. To prevent pooling do not allow snow and ice to accumulate on the cover. Never trailer at speeds above the speed limit.

CARE INSTRUCTIONS- Wash with warm soapy water (while installed if possible) and allow to air dry. For stubborn stains, mild detergent is recommended.

Storing the boat in constant direct sunlight will shorten the life of the cover and the components used to construct it. We recommend storing the boat in a location that exposes it to some sun and also shades it throughout the day. Preferably morning sun and afternoon shade.

WARRANTY- This cover includes a two-year warranty from date of purchase against any defects in material or workmanship. If you incur any problems or have any comments please contact your dealer or call Commercial Sewing Customer Service directly at (860) 482-5509.

PROPER INSTALLATION-

A. Pooling System Installation:

Note:

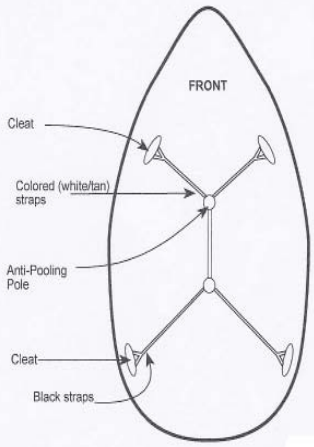
Install anti-pooling system as per illustration putting the front webbing to the cleats, standing pole upright. Pull the other two webbing straps to the two rear cleats. Tighten adjustable buckle strap, until the pole stands upright.

B. Proper Cover Installation:

- Place cover on boat starting at front, use cleats as buttons to keep cover in place, work toward back over pooling system until back cleats are "buttoned" in place.
- Maneuver in place until cover fits over gunwale. Check the symmetry. Connect the confidence straps through the openings on the swim platform to the "U" bolts. Disconnect velcro wrap around ratchet. Begin ratcheting by unzipping ratchet pocket(s) and pulling ratchet(s) handle in right-to-left motion until zippered ratchet pocket no longer sags but rests against the hull.
- Pull on webbing to even the tension around the cover and again tighten the ratchet until it does not sag but rests against the boat. Tighten ratchet four to five more times. The ratchet should be very hard to pull with your pinky finger. Zip ratchet pocket closed and connect velcro wrap around ratchet pocket. **On some models:**Connect the rear strap tiedowns in the back of the boat.

Note: Proper installation and operation of this cover requires that it be very tight at the gunwale. Retighten as necessary before, after and during stops while trailering. **BE SURE** cover is installed below gunwale before final ratchet adjustment. ZIP ratchet pocket closed for final installation.

⚠ Warning: Zippered ratchet mechanism should be hand tightened only. Do not pry or attempt to operate ratchet mechanism with any type of tool.



REMOVAL-

- Disconnect velcro wrap & zip open ratchet pocket.
- Follow instructions on ratchet label to release pressure.
- Once pressure is released pull out webbing to allow simple future installation, then close handle and ZIP POCKET closed (this is important to prevent damage in future installation).
- Diconnect holddown straps. Remove and fold cover working from rear to front.

ANTI-POOLING POLE STORAGE-

- Disconnect anti-pooling pole from either the front (colored webbing) or back.
- After disconnecting collapse poles by pushing buttons and telescoping them down.
  Wrap webbing around poles.

ISBLANKMOORING/R0

TYPICAL TRAVEL/STORAGE COVER

RATCHET STRAP

Ensure the ratchet strap is tight and the velcro flap is closed on the travel cover before pulling boat at highway speeds. Tie cover securely to bow and stern eyes. Do not exceed manufacturer's 65 miles per hour speed limit. Once on the road periodically pull over and check cover, ratchet strap and pertinent hardware for tightness. Note that select covers use dual aft straps.

CANVAS-POWER TOWER

The bimini/sunshade option attaches to provide some sun protection for the helm and companion cockpit area.

For trailering and storage purposes, the PowerTower can be left on the boat, but the sunshade must be rolled up and stored in the boot. The sunshade assembly must be collapsed back against the tower and clipped around the tower with the quick release clips. This is also how the sunshade should be stored with speeds exceeding 35 miles per hour. Be aware of potential carbon monoxide buildup while the sunshade is in use.

Typical Bimini Top/Sunshade With Power Tower

COCKPIT CARPET

Cockpit carpet features a forty ounce weight with a heavy duty backing. As required, snaps are installed.
Note: Before towing roll-up the cockpit carpet and store it in a locker to prevent it from blowing out of the vessel. Do not yank on the carpet to remove it.

COCKPIT SEAGRASS MAT

If installed, cockpit seagrass 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 seagrass 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.

COCKPIT TABLE

COCKPIT TABLE STORED

As an option, a teak cockpit table may be found in the cockpit center storage locker. When using the table ensure the table pedestal leg is installed in the receiver securely. Pull the latch pin and hold until the table pedestal leg slides in the receiver sleeve. Then release the latch pin. When installed, there are normally table receivers located in select areas. Periodically lubricate the latch pins with a silicone lube spray.

BOW LOCATION

RECEIVER

COCKPIT LOCATION

STERN LOCATION

DEPTH GAUGE/SOUNDER

In theory the depth gauge picks up a bottom signal sent through a transducer to the helm gauge unit which is converted to readings in feet, meters, or fathoms, and displayed on the gauge. The unit features shallow or deep water alarms, both of the audio and visual type, and keel offset.

Refer to the engine and controls chapter for gauge use. Electrical systems are described in the systems chapter. Technical drawings are in the technical chapter.

Operation

The depth finder will display depths of 2-199 feet, 1-92 meters, or 1-54 fathoms. To accommodate greater depths to be displayed in the feet mode (ft), the depth sounder will automatically change to the fathoms (f) mode and continue to display depths to around 54 fathoms. When the depth becomes larger than 200 feet, the display will return to the feet mode. Limits on depth will vary depending on transducers and bottom conditions.

If the reading is less than 19.9 feet, meters, or fathoms, 1/10th increments will be displayed. If the reading is more than 19.9 feet, all readings will be in whole numbers.

The depth finder features an audible and LCD displayed depth alarm with adjustable shallow and deep limits and a depth below keel offset feature. These settings once made are stored in memory and will remain, even if the battery is not connected.

POWER ON

When the helm is powered up by the key switch, 12 volt DC energy is available at the depth gauge along with the remained of the instrument cluster. You do not need to press the "ON/OFF MODE" keypad.

The LCD will illuminate showing the depth and the type of units selected; feet (FT), meters (M), or fathoms (F). To deactivate the depth sounder, hold the "ON/OFF MODE" keypad for 4 seconds. Pressing the "ON/OFF MODE" keypad again, reactivates the unit.

DEPTH ALARM SHALLOW MODE

If you press the "ON/OFF MODE" keypad again, the shallow depth alarm setting is displayed. This is the shallowest water that will energize the alarm. Press and hold the up or down arrow keypads to adjust the reading to the desired depth.

DEPTH ALARM DEEP MODE

By pressing the "ON/OFF MODE" keypad again, the deep depth alarm setting is displayed. This is the deepest water that will energize the alarm. Press and hold the up or down arrow keypads to adjust the reading to the desired depth.

When the shallow depth setting is read by the depth finder, the "SH" will flash on the LCD and the audible alarm will sound in a rapid sequence. When the deep depth setting is read by the transducer, the "DP" will flash on the LCD and the audible alarm will sound at two beeps per second.

UNITS

Pressing the "ON/OFF MODE" keypad again displays the units mode "UN". Press either the up or down arrow keypads to set the units to feet (FT), meters (M), or fathoms (F). Once these units are set, they will remain the same for all modes. By pressing the "ON/OFF MODE" keypad again, the depth finder will return to the normal operations screen.

NOTICE

AVOID EQUIPMENT DAMAGE! THE TRANSDUCER IS A SEALED UNIT. DO NOT ATTEMPT TO OPEN IT, SINCE IT IS NOT SERVICEABLE.

To fully deactivate the alarm, reset it to zero. Pressing the "ON/OFF MODE" keypad temporarily deactivates the alarm. To reactivate, press the "ON/OFF MODE" keypad until the depth reading appears.

KEEL OFFSET

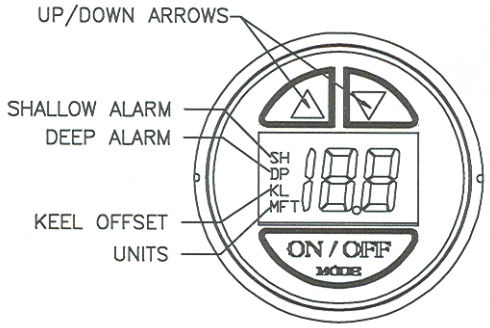
By pressing the "ON/OFF MODE" keypad again, the alarm will display the keel offset setting "KL". It can be set so the depth finder shows the depth below the transducer, or the depth under the keel. Press the up or down arrow keypads to adjust the reading to the desired depth no further than 19.9 feet.

An example would be if the keel bottom is 3 feet below the transducer, and you desire the depth sounder to read the depth below the keel, the keel offset display should be adjusted to 3.0 FT.

Once the keel offset is programmed, the shallow and deep water alarms will be energized by the depth under the keel.

WARNING

AVOID INJURY OR DEATH! THE DEPTH SOUNDER IS NOT TO BE USED FOR NAVIGATION OR AS A DEVICE TO AVOID GROUNDING. USE CAUTION WHEN OPERATING IN SHALLOW AREAS AND MAINTAIN A VERY SLOW SPEED. BE AWARE THAT WATER DEPTHS MAY CHANGE TOO QUICKLY FOR YOU TO REACT AND AVOID GROUNDING!



Depth Gauge With Functions

DOCKING LIGHTS

If installed docking lights are integrated into the hull. They are very useful for night mooring approaches and maneuvering. To operate turn on the helm switch marked “docking lights”. It is recommended not to use the docking lights while navigating in open water at night since the illumination could cause a glare on the bow navigation light possibly causing visibility problems. There is a dedicated “docking light” switch near the helm.

DRAIN PLUG

Your boat is equipped with a drain plug centrally located on the transom below deck level. Make sure it is installed tightly before launching. Tighten with a small amount of machine torque but do not overtighten it as the thread material is nylon and can be stripped. Do not use your fingers alone to tighten it. After your outing, while the boat is angled on the ramp, remove the drain plug to eliminate any bilge water accumulation. If the water stream is diminished, check for foreign objects stuck in the drain hole. Pull the drain plug if dry storing the boat for extended periods, especially in colder climates.
Refer to the vessel operation chapter for pre-departure use. Refer to the storage and winterization chapter for storage information. Review the trailering section for pre-launch and post-trip instructions.

FENDER CLIPS

The fender clip option features receivers integrated into the boat deck and quick release pins. The quick release pins attach to fenders with lines so they are ready to assist the crew 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 other boat parts. When leaving the dock the pins feature a quick release mechanism which detach easily.

FENDER CLIP RECEIVER

FENDER CLIP RELEASE-PIN

HORN

A switch at the helm controls the audible horn signal installed on your vessel. Be sure to test the horn before each outing and learn the horn and bridge signals by reviewing the rules of the road chapter. Hold the button in as needed for on-going signal.

POWER TOWER

As an option the Power Tower hinges forward for tight overhead clearances such as bridges and restricted storage situations.

The tower features a fiberglass framework with overhead lights, all around navigation light and/or ski pylon.

For highway towing the Power Tower shall be upright and all canvas stowed in their dedicated boots. All attached canvas bow hardware shall be checked for tightness before and after towing.

Cockpit carpet shall be rolled up and stored in a dedicated cockpit dry floor locker.

Typical Power Tower Canvas Shown In Booted Cruise Position

Typical Power Tower Shown In (Bridge) Full Forward Position

CAUTION

WHEN OPERATING WAKESPORT TOWER KEEP ALL BODY PARTS CLEAR OF TOWER HINGE MECHANISMS.

The Power Tower can be hinged forward for clearance purposes. Normally one of the switches at the helm area is designated as arch or tower. It connects to a lift motor and a set of hydraulic rams that raise or lower the Power Tower when the switch is activated.
Make sure the operator and all aboard read and understand the above warning. Before energizing the arch switch. Explain to all passengers that they must maintain a safe distance from the tower hinge mechanisms located at the base of the power tower on the deck. As the operator energizes the switch to hinge the tower forward visually monitor the port and starboard deck to ensure all passengers body parts are clear of the hinge mechanism. This same procedure applies for lowering the mechanism to the original position.

The Power Tower features an actuator control box. This component is located in the sump (bilge). The unit provides over current protection through a set of breakers on the face of the actuator box. Facing the box the left reset breaker protects the port power tower lift actuator. The center reset breaker protects the starboard power tower lift actuator. The far right breaker protects the entire circuit wiring. If the Power Tower fails to raise check the box for an "open" breaker. Always find the cause of an open breaker situation before resetting the device.

SEATS, HATCH/STORAGE

Helm Bucket Seat

The bucket helm seat features forward and aft movement, as well as a swivel motion that allows the seat to pivot, and a flip up bolster cushion that allows any user to control his/her comfort and position.

To adjust the fore and aft helm seat position, loosen the black fore & aft adjustment knob located amidships by turning counter clockwise. Then slide the seat to the desired location and retighten the knob.

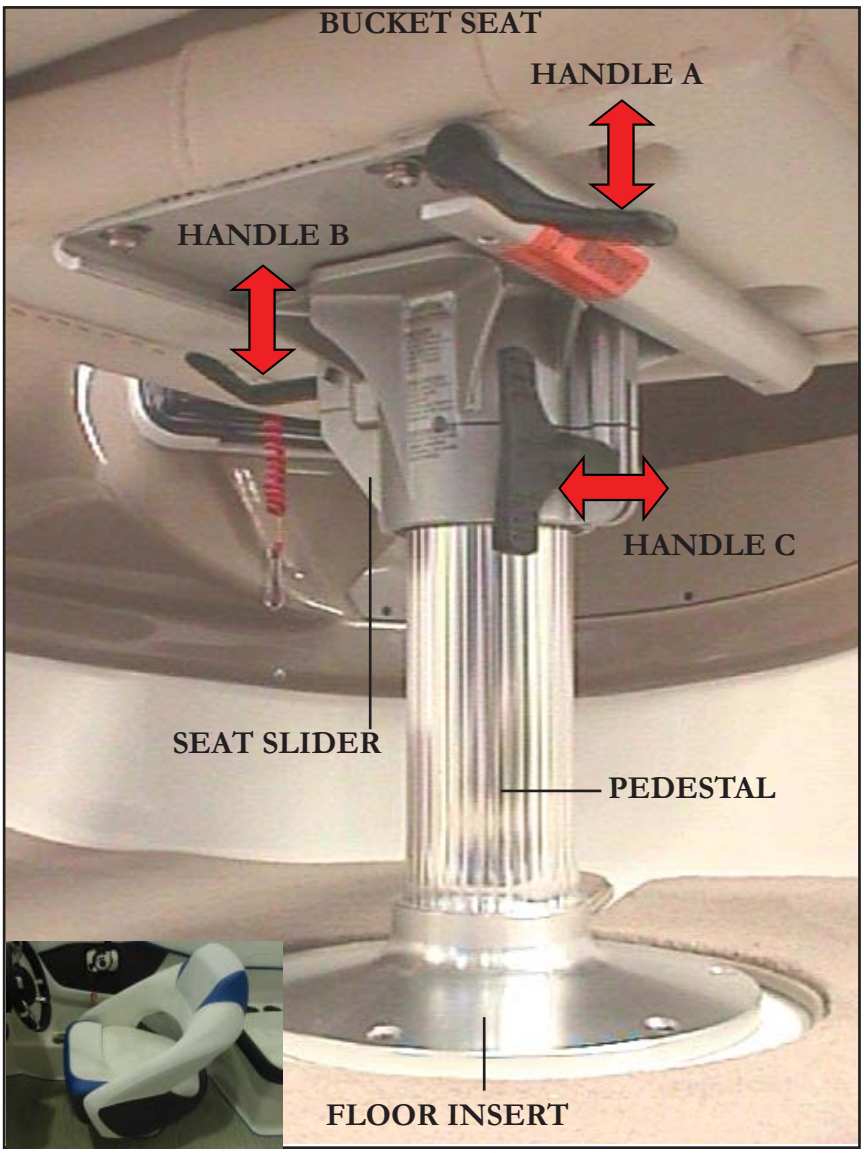
To swivel the seat, pull up on the swivel handle to unlock the detention system. While the detention system is unlocked, pivot the seat to the desired position. Be sure to lock the swivel in the de-tented position by pushing down on the handle and finding a locked position. **DO NOT** run the vessel unless the swivel is in the locked position.

To flip the bolster cushion up, simply grab the front cushion and pull up.

Seat slider fasteners should periodically be checked for tightness. **DO NOT** alter the seat slide system in any way.

CAUTION

TO PREVENT BODILY INJURY! PERIODICALLY CHECK AND TIGHTEN THE MOUNTING BOLTS BETWEEN THE SEAT SLIDER AND THE BUCKET SEAT BOTTOM. ALSO, CHECK THE FLOOR INSERT BOLTS.



TYPICAL BUCKET SEAT LOCK MECHANISM

Aft Cockpit Seat

The aft cockpit seat has the ability to flip up for access to the cooler compartment. It features a hydraulic ram to support the cushion while open. The cooler can be removed by lifting the handles. **ALWAYS** make sure the aft cockpit seat is down when underway.

Seating-Transom Walk-Through Filler Cushion

The standard transom walk-through cushion provides an additional seating position. Simply insert the cushion firmly in place before using.

Ski Locker

Your Regal is equipped with a floor ski locker which is used to store equipment. Its long and narrow profile make it perfect for storing ski equipment. To open your ski locker, pop the handle up, rotate the handle 180 degrees, and pull up on it. Your ski locker opens with the assist of a hydraulic ram. Your ski locker contains its own drain and allows access to the transducer for removal. **DO NOT** open the ski locker while underway. Ensure the ski locker is in the locked position after use.

Bow Storage Locker

For further storage locations, your boat is equipped with bow storage lockers. To access these lockers, firmly grasp the backrest of the forward facing bow seats and lift. The starboard storage locker in front of the helm also features the dashboard fuse box. Close these lockers firmly to secure the backrest.

SKI TOW

Typical Ski Tow

A water sports ski tow is located center line at the stern deck. Double loop the line first through the hole and then around the ski pylon and cinch it tightly. This procedure helps to keep the line intact when there is no strain on it.

Always appoint a person to keep their "eye out" for the tow line when the vessel is running to prevent the line from being caught in the propeller.

The ski tow pole pin can be removed and the component can be stored when not in use. The ski tow pole carries a torque limit of 800 pounds.

TO AVOID POSSIBLE BODILY INJURY AND/OR EQUIPMENT DAMAGE DO NOT USE THE SKI POLE FOR TUBING

STEREO- TYPICAL

Regal boats feature Fusion® marine stereo audio systems. Fusion stereo systems are designed and engineered to perform to the highest standards in the harsh marine environment. The head units feature easy to read displays and use oversized rubber buttons and controls for easier operation on a moving vessel. All components including the speakers comply with the international IP waterproof standards. Selected optional system components include an amplifier and additional speakers.

The unit features a UNI-DOCK for safe charging and playback of the latest Apple iOS and MTP Android/Windows media devices.Also, the unit feature Bluetooth A2DP audio streaming capabilities, Pandora radio and NMEA 2000 conductivity.

The system utilizes a 15 amp automotive style fuse located behind the stereo head unit.

See the amplifier and remote information for vessels equipped with the optional stereo performance package and remote controls.

Note: As standard equipment on Regal sport boats the stereo functions from the auxiliary key switch position which is located to the left of the normally "off" position. Here the stereo can be operated without the typical draw on the ignition circuit which normally occurs when the key switch is in the "on" position.

Stereo High Performance Package

The stereo performance package features extra speakers including a sub-woofer and a 2 channel amplifier to provide leading edge performance in sound and power. The simplicity of design contributes to low distortion and high efficiency. Normally the amp is located under the starboard helm or may be in the cockpit refreshment center. The circuit is protected by twin 25 amp automobile type fuses. It is a good idea to carry extra fuses which are available at local marine or automotive stores. The amplifier does not require any type of maintenance other than periodic checking of the wiring connectors for tightness. Contact your Fusion owner's manual or closest Regal dealer for additional information.
Vessels with the optional Power Tower speakers use an additional 4 channel 500 watt amplifier.

TYPICAL REMOTE CONTROL.

As part of the Fusion high performance package the remote control is normally mounted at the transom area which makes it easier to use during water activities.
It is a plug and play device and uses the same function buttons and rotary encoder as the helm head unit. It features the ability to select various speaker zones on the vessel. Refer to following pages and/or the Fusion owner's manual for more detailed information.

SWIM PLATFORM/LADDERS

Swim Platform

The swim platform is connected to the transom of your boat by hardware that should be periodically inspected for tightness. **NEVER** exceed the maximum weight for your swim platform as described on a label near the swim ladder.

WARNING

AVOID SERIOUS INJURY OR DEATH! DO NOT OPERATE THE ENGINES WITH PEOPLE ON TOP OR HOLDING ONTO THE SWIM PLATFORM OR HARDWARE.

Swim Ladder Aft

Utilize the aft swim ladder for entering and exiting the water. Use the appropriate hand rails and ladder rungs. Be sure all body parts are clear of the ladder when folding the ladder up or down. Keep body parts away from the hinged and sliding parts. Read and adhere to any written warnings posted on the dash or swim platform regarding ladder load limits.

Swim Ladder Bow

Utilize the bow ladder for accessing the beach from the forward bow. It is located under a forward bow deck cover. Use the appropriate hand rails and ladder rungs. Be sure all body parts are clear of the ladder when folding the ladder up or down. Keep body parts away from the hinged and sliding parts.

Swim Platform- SeaDeck®

As an option SeaDeck® is featured on select vessel swim platform and walk through areas. 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, walking or leaning on the swim platform .
To clean small dirt particles first try soap, hot water and a stiff brush.
For surface dirt and footprints use glass cleaner and a clean rag.
If a more thorough cleaning is needed you may use bleach, 409, Simple Green or Soft Scrub.
Stay away from using any acid base cleaners.

TOILET

Before each outing make sure the chemical toilet is filled with the proper chemicals, paper is available, and the holding tank is empty. To fill the toilet follow the manufacturer's recommendations for mixing the solution. Use the fill to pour in the deodorant chemical and water. By pushing down on the bellows the chemical mix in released to rinse and help flush the toilet bowl. When the flush valve is pulled forward the toilet bowl waste water empties into the holding tank. Close the flush valve after each use.

The chemical toilet features a holding tank level indicator. When full the lower holding tank must be emptied by first separating it from the upper toilet bowl assembly. Before proceeding, ensure the flush valve in completely closed. Find the latches that allow the 2 units to be separated. Once separated, find an environmentally friendly facility to dispose of the waste.

Toilet-Chemical/Pump Out Fittings

As an option chemical toilets feature a deck fitting that permits a marina or waste station to pump out the vessel holding tank. A hose attachment screws into the deck fitting and removes the waste in the vessel toilet holding tank when a land pump is activated. The pump-out fittings eliminate the need to remove the holding tank manually from the vessel.

After the pump-out procedure rinse the waste hose briefly to eliminate a build-up of debris and odor before closing the pump-out deck fitting. Refurbish the holding tank chemical per the manufacturer's directions immediately after the pump-out procedure. For extended cruising, carry extra holding tank chemical and paper recommended by the manufacturer since household varieties are not usually "friendly" to the environment.

As part of your pre-cruise inspection monitor the chemical toilet by reading the monitor indicator level located on the toilet holding tank.

UNDERWATER LIGHTING

As an option light bars w/ LED bulbs make up the underwater lighting system. The lights are located on the transom on both port and starboard sides of the stern drive. There is a dash switch for energizing the lights. The underwater lights circuit protection fuse is found in the under dash fuse block and is rated at 10 amp.

WINDSHIELD

The center windshield shall be closed and locked when the boat is making headway. Make sure both locking latches are firmly seated in a horizontal position against the windshield framework. Magnets will secure the center windshield when open.

AUTOMATIC FIRE EXTINGUISHER

Optional Automatic Fire Extinguisher

As an option the automatic fire extinguisher is mounted in the engine compartment. It uses sensors to automatically discharge when a fire occurs, although it can be manually discharged. Upon actuation, you may hear a sound similar to that of a small firearm, followed by a rushing air sound. A charged system shows a light at the dash indicator, while a discharged system shows no light at the indicator - refill accordingly.

Automatic activation will occur at different times depending on the severity of the fire picked up by sensors. **WHEN THE FIRE EXTINGUISHER IS ACTIVATED, IMMEDIATELY SHUT DOWN ALL ENGINES, POWERED VENTILATION (BLOWER), ELECTRICAL SYSTEMS, AND EXTINGUISH ALL SMOKING MATERIALS. DO NOT OPEN THE ENGINE COMPARTMENT UNTIL A SUITABLE AMOUNT OF TIME HAS PASSED SINCE THE EXTINGUISHER STOPPED DISCHARGING.** Opening the engine compartment prematurely may cause a reflash as air is allowed to fill the engine compartment. When opening the engine compartment door, have a hand-held extinguisher ready in case of reflash. Be cautious of hot metal when investigating the cause of the fire.

If a fire has started in the engine compartment, **DO NOT** wait for the automatic fire extinguisher system to kick in. Locate the fire extinguisher manual discharge lever after closing the engine compartment, and turning off the blower and electronic equipment. Remove the safety pin from the "T" handle, and pull firmly to release.

For safety information, refer to your fire extinguisher label. General safety requirements are described in the safety on board chapter of this manual. For system information, refer to the systems chapter of this manual. Maintenance requirements are described in the maintenance chapter of this manual.

WARNING

AVOID SERIOUS INJURY OR DEATH! DO NOT BREATH FUMES OR VAPORS CAUSED BY AN EXTINGUISHING AGENT. VAPORS ARE HAZARDOUS AND TOXIC.

Typical Dashboard Automatic Extinguishing System Light
Typical Mounted Automatic Fire Extinguisher
Typical Manual Discharge Pin For Automatic Fire Extinguisher

Cosmetic 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 major equipment and systems. Refer to the owner's information packet and the appropriate engine manufacturer's manuals for further detailed instructions.

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.

Cockpit Carpet

Use approved cleaners on carpet. Always try on a test area first. Many spots and spills can be removed using a cleaner combined with a clean, white terry towel. Try not to soak an area excessively and do not use solvents because most interior carpet is rubber backed and glued in place. Solvents and abrasives will break down the backing and fibers. **Note: Always roll up cockpit carpet before towing your boat. Store carpet in a locker.**

Plastics

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.

NOTICE

NEVER CLEAN PLASTIC SURFACES WITH A DRY CLOTH OR GLASS CLEANING SOLUTIONS CONTAINING AMMONIA. NEVER USE SOLVENTS OR WIPE WITH ABRASIVES

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 feldspar to clean stubborn marks or stains on wallpaper. 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.

Fiberglass & Gelcoat

CAUTION

AVOID BODILY 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.

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 gelcoated surface to change or fade. Darker colors tend to fade more rapidly than lighter colors because they absorb more of the sun's rays (ultraviolet 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 OF YOUR BOAT. THEY CREATE SMALL SCRATCH MARKS THAT WILL COLLECT MARINE GROWTH AND OTHER FOREIGN MATERIALS.

It is recommended that you wax the gelcoat 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 gelcoat. Never wax gelcoat in the 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 gelcoat 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:

- Gelcoat
- Clear Liquid Catalyst
- Putty Knife
- Razor Blade
- Fine Sandpaper (400,600,1000)
- Wax Paper (to cover repair area)

WARNING

AVOID BODILY INJURY!
GELCOAT & 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 gelcoat will bond.

4. In a separate container, measure only the amount of gelcoat you will need. Mix a ratio of 2% ratio of catalyst to the amount of gelcoat being used (a spoonful of gelcoat will require only a drop or two of catalyst). Do not pour any unused portions of the gelcoat/catalyst mixture back into either original container.

5. Apply gelcoat 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.

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.
Sunbrella is used on most Regal tops, aft curtains, camper enclosures, bow tonneaus and cockpit covers. Sunbrella is a woven fabric made from 100% solution dyed acrylic fiber. It is color fast and will withstand long term exposure to the sun (ultraviolet rays) without excessive fading.
Sunbrella is a woven fabric. Even though it is treated with water repellency some "misting" through the fabric is typical. With new canvas, the greatest potential for leakage is through the sewn seams. Because Sunbrella and the long term thread used is synthetic, the holes created by sewing will not swell up and seal when exposed to water as cotton does. Usually the movement of the fabric in use will move the fibers enough to seal the holes. You may apply Apseal or Uniseal to the seams to speed up this process.
When the canvas is new, the fit will normally be tight. It is designed this way because Sunbrella stretches as it ages, The initial tight fit allows for a suitable fit for the life of the canvas. The Sunbrella fit will vary slightly in the heat, cold, and rain.

Sunbrella Cleaning Instructions

Sunbrella canvas should be cleaned regularly before substances such as dirt, roof particles, etc., are allowed to accumulate on and become embedded in the fabric. The fabric can be cleaned without being removed from the boat. Simply brush off any loose dirt, hose down, and clean with a mild solution of natural soap in lukewarm water. Rinse thoroughly to remove soap. DO NOT USE DETERGENTS! Allow to air dry.
For heavily soiled fabric, remove the top from the frame.

Soak the 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 Apseal 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 fluorocarbon finish and seem to cause a rapid 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.

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 flyer in the owners information pouch. Most marinas and boating retail outlets carry metal care products.

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. Contact a marine professional or Regal dealer for more information.

CHAPTER 7

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.

MAINTENANCE

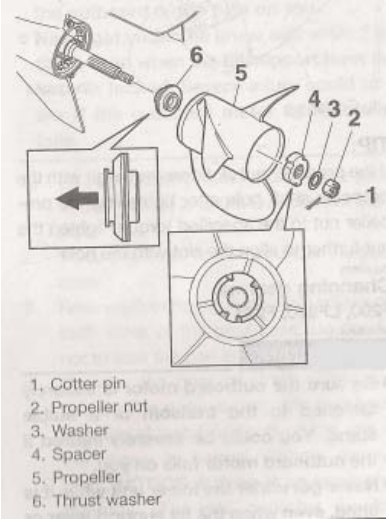
Propellers

Out-of-balance or nicked props 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 the outboard manufacturer's engine manual for appropriate propeller replacement.

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.

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.

It is advantageous to carry the needed tools to change propellers including pliers to pull cotter key and deep socket and ratchet to remove the propeller shaft nut. See the appropriate outboard manufacturer's owner's manual for further information.



Removing the propeller- Before removing the propeller make sure the remote control is in neutral and the ignition keys are removed to prevent the outboard engine starting and possibly causing bodily injury. Always wear gloves when removing or installing propellers since the component blades are very sharlp.

1. Use pliers to straighten the cotter key which will permit it to be pulled through the propshaft.

2. Do not use your hand to hold the propeller while removing the nut.

3. Wedge a 2 x 4 between the skeg and the propeller. Then use a deep socket and ratchet to remove the propeller nut.

4. Next, remove the washer and spacer. Remove the propeller. Remove thrust washer and see note below.

Note: Check the propshaft seal behind the propeller for fish line and debris that could cut the propshaft seal.

Installing propeller- Before installing parts back on to the propshaft make sure you lubricate the propshaft with the recommended lube.

1. Install the thrust washer on the propshaft first as indicated in the illlustration above. Then install the propeller.

2. Align the spacer protrusions with the cutouts of the propeller.

3. Install the spacer, washer, and propeller nut. Tighten the propeller nut to 40 foot pounds with a torque wrench.

4. Next, line up the protrusions on the spacer with the cut outs on the prop itself.

5. Align the propeller nut slot with the propshaft hole.

6. Install a new cotter key and carefully bend the cotter pin ends over .

Note: Using an old cotter key increases the chances of the propeller working itself off the shaft since the cotter pin ends become stressed and weak after being bent over and constant engine vibration weakens the cotter key ends.

Note: If the propshaft nut does not line up to insert the cotter key, tighten the nut to the point where it does line up with the propshaft.

Steering

Your boat uses a power assisted steering system. Refer to the manufacturer's outboard engine manual in the owner's pouch for additional information about maintenance procedures including adding fluid and bleeding the system. See the photo above for bleed valve locations. There is a fill valve at the helm. Be sure to use the recommended lubricant to fill the power steering system. As needed, bnleed the system to purge trapped air.

Battery

Frequently 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. When the cleaning is finished reconnect the battery cables and coat the terminal with an approved 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 as needed after charging the batteries or periodically as needed. Do not overfill because sulfuric acid could run over and cause burns or an explosion.

Batteries should be 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.

Set batteries on a block of wood rather than concrete since this procedure will help the batteries from losing their charge.

Do not allow a metal object 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.

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, use 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. 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

TO PREVENT BODILY INJURY!
BATTERIES CONTAIN SULFURIC ACID (POISON)
WHICH ALSO CAN CAUSE BURNS.
AVOID CONTACT WITH THE SKIN, EYES & CLOTHING.
IF CONTACTED, FLUSH WITH WATER 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

TO PREVENT BODILY INJURY!
WEAR GOGGLES, RUBBER GLOVES
AND A PROTECTIVE APRON
WHEN WORKING WITH A BATTERY.
BATTERY ELECTROLYTE CAUSES SEVERE EYE
DAMAGE AND SKIN BURNS.
IN CASE OF SPILLAGE, WASH AREA WITH
A SOLUTION OF BAKING SODA AND WATER.

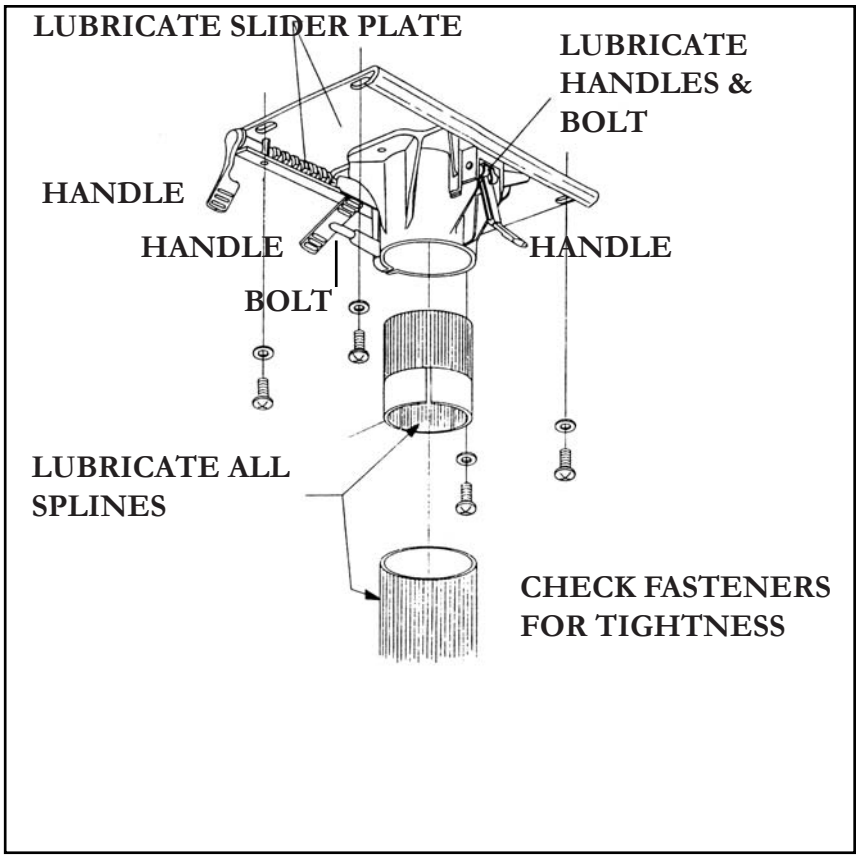
Remote Control

Check the helm control box and the cable attachment at the engine for tightness and shifting without binding. Shift and throttle controls at both the engine and helm areas must be checked on a periodic basis. At the engine end, make sure all control cable hardware is tight and control cable brackets are secure. An application of silicone spray on the cable ends periodically will keep control cables working freely and fights corrosion. At the helm end check to make sure the control box hardware is tightly secured. Contact a marine professional or Regal dealer for further assistance.

Seating

The typical bucket seat slider needs periodic inspection and maintenance. Loosen the swivel knob located on the slider and pull the slider off the pedestal. Inspect all fasteners and metal for fatigue. Lubricate the points shown in the illustration with a marine type grease. type of grease will not run off under warm temperatures. Use a paint brush to apply the grease. Also, use silicone spray for areas that can not be accessed with the grease. Reassemble slider to pedestal with the delrin cup positioned correctly.

BUCKET SEAT SLIDER MAINTENANCE



Bilge Pump

The bilge pump is usually installed in the bilge. Normally the unit features an automatic float switch. Periodically check for foreign materials stuck in the strainer area or discharge hose.

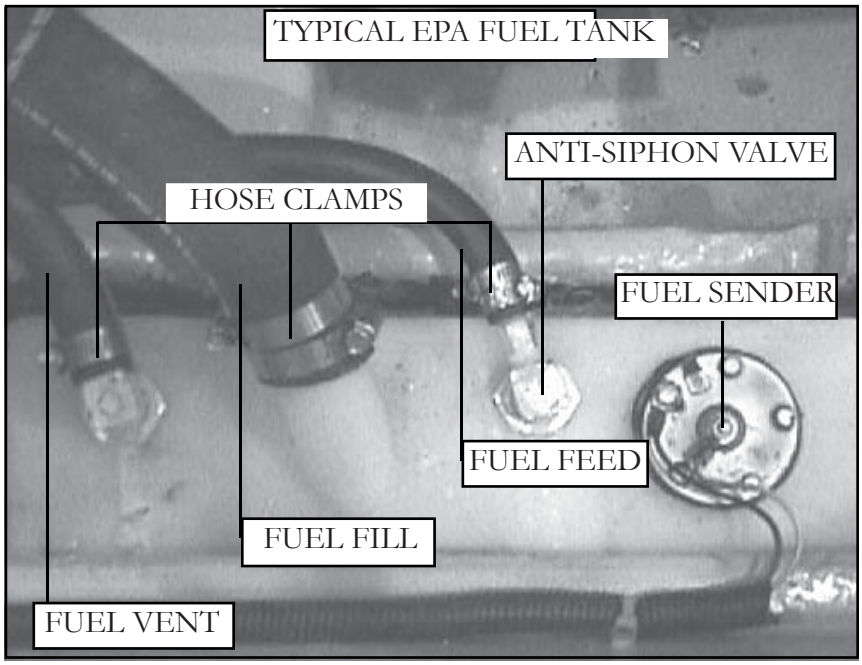
Check all clamps and electrical connections for tightness. A quick check of the bilge pump automatic float switch is afforded by lifting up on the automatic float and listening for the pump operating. Look around the float area for foreign debris and remove as necessary.

Fuel System

At least twice 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

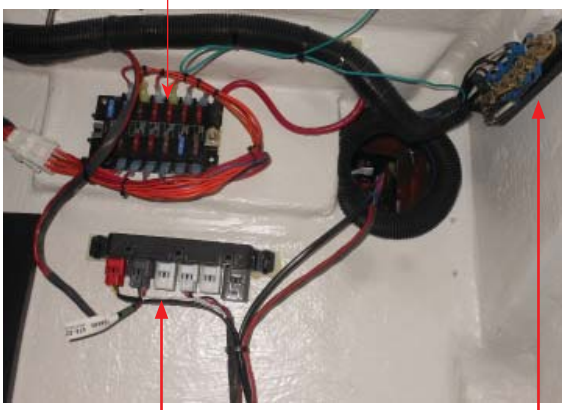
AVOID SERIOUS INJURY OR DEATH
FROM EXPLOSION OR FIRE
RESULTING FROM LEAKING FUEL.
INSPECT ENTIRE FUEL SYSTEM
AT LEAST TWICE ANNUALLY.



Fuse Panel, Helm Wiring, Ground Bus

The fuse panel is located under the dash area. On select models the panel can be accessed on the bow side of the helm. Lift the starboard bow seat backrest to access the fuse panel. Fuses are of the automotive type and can be obtained at most auto aftermarket stores or your closest authorized Regal dealer who can order it as a designated fuse pack. It is recommended that you carry all the different amperages. When a fuse "blows" determine the cause before replacing the fuse. Never replace with a higher amperage fuse since the equipment, wiring or even worse a fire could develop due to an overload. Periodically check all under helm connections on the fuse block, network hub and ground buss bar.

TYPICAL HELM FUSE PANEL



OUTBOARD NETWORK HUB GROUND BUSS BAR

CHAPTER 7

Stereo

The Fusion® stereo head unit requires little maintenance. When washing the cockpit, do not discharge water directly at the stereo unit. Possible damage may result. As with any CD unit clean your CD's to keep them from skipping. This process also aids in keeping dust out of the unit. For further information, refer to your stereo owner's manual located in the owner's packet.

Galvanic/Stray Current Corrosion

CORROSION TABLE	
Gold	Least Active
Stainless Steel	
Bronze	
Copper	
Brass	
Steel	
Aluminum	
Zinc	
Magnesium	Most Active

Metal parts underwater can be subjected to two basic styles of electrolysis: galvanic corrosion and stray current corrosion. Both can damage the outboard 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 freshwater are highly conductive. Conductivity increases with temperature. That is why Florida boats experience more corrosion than boats in Maine.

Specifically look at a typical outboard 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).

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 the 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 outboard drive unit to their boat via the green grounding shore power lead. Your outboard 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 electricial 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 outboard drive. With leads attached to a digital multi-meter 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. *Test the galvanic integrity of your vessel every 2 weeks.* Raise the outdrive and 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. Always leave at least one inch between bottom paint and any underwater fitting such as seacocks, 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 engine/drive manufacturer information packets 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 dockside 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 grd. Remove/scrape anode

Zinc Anodes

Sacrificial zinc anodes are located on the outboard drive housing, trim cylinders and/or prop shaft to protect softer metals exposed to the water. Electrolysis attacks the least noble metals first. Because zinc is a less noble metal, it will decompose before other metals. Check these zinc anodes periodically and have them replaced when they are 30% consumed. Notwithstanding, zinc is the most popular metal used to protect parts that are exposed to saltwater, freshwater or brackish water. See the photos below for anode location on your outboard.

Zinc anodes in brackish or salt water need to be checked more frequently. If the anodes seem to be requiring frequent replacement there may be a boat leaking DC current into the water taxing the anodes. This is especially possible around a marina environment. Contact a marine professional who can measure the galvanic activity with a special electrode and electric VOA meter. Refer to the engine manufacturer's manual for exact anode location and detailed information.

Inspect the ground leads for tightness if attached.

Parts damage due to galvanic or stray current corrosion is not covered under warranty.

CHAPTER 7

Outboard Engine Maintenance

A select portion of maintenance items are covered in this chapter. Since advanced ignition and fuel injection systems are used on outboard engines along with special factory training and tools it is best to contact your Regal dealer for more of the detailed service procedures.

CAUTION

AVOID ENGINE DAMAGE!
FOLLOW ALL ENGINE BREAK-IN PROCEDURES AS RECOMMENDED BY THE ENGINE MANUFACTURER. FAILURE TO FOLLOW THE BREAK-IN PROCEDURE MAY VOID THE OUTBOARD ENGINE WARRANTY.

CAUTION

AVOID ENGINE DAMAGE!
DO NOT RUN ENGINE AT A CONSTANT RPM FOR PROLONGED PERIODS OF TIME DURING BREAK-IN PERIOD. CHECK ENGINE OIL OFTEN.

CAUTION

AVOID ENGINE DAMAGE!
DO NOT RUN ENGINE OUT OF WATER UNLESS YOU HAVE AN OPTIONAL FLUSHETTE. FOLLOW MANUFACTURER'S ATTACHING & RUNNING INSTRUCTIONS.

Fuses- Electric Cover

As part of Yamaha outboards under the motor shroud (engine cover) on the port side of the outboard engine is an electrical cover. Inside this cover is a variety of fuses protecting various engine components. There are also extra fuses stored along with a fuse puller. For further information, refer to the manufacturer's outboard engine manual.

Checking Fuel System Water Separator Filter

Periodically before embarking on a cruise check the fuel filters. A 10 micron in-line water separator filter is installed in the aft bilge. Use an oil spanner type wrench and turn the filter counterclockwise to remove the element. With a clean pan empty the filter contents into the pan. Water in fuel tends to hug the bottom and will show a different color than the fuel. At least yearly or on an as needed basis replace the filter element. Fill the element up with fresh unleaded fuel of the correct octane rating and turn it clockwise until tight. Finish tightening with the spanner wrench. As always check for leaks before starting the engine.

It is a great idea to keep extra filter elements on board in protective wrap for emergency use.

Checking Engine Mounted Fuel Filter

As part of Yamaha outboards under the motor shroud (engine cover) on the lower port side of the outboard engine is a fuel filter. Periodically check to ensure the fuel filter is clean and free of water. When reinstalling the filter tighten to manufacturer's specifications. Check for leaks after starting the engine. For more information refer to the outboard manufacturer's owners manual or contact a Regal dealer or marine professional.

Engine Crankcase Oil

Note that Yahama outboard engines are shipped from the factory without engine oil. Before starting the engine for the first time the correct type and amouut of oil must be added **(See your outboard owner's manual for details before attempting to start the engine).** There is a tag shipped with the engine saying that the engine oil is to be filled. This tag should be removed after the engine oil has been filled for the first time. Also, refer to the following pages and/or the outboard engine owner's manual for the correct procedures for checking the engine oil.

NOTICE

CHECK THAT THE ENGINE IS FILLED WITH OIL
BEFORE FIRST-TIME OPERATION
TO AVOID SEVERE ENGINE DAMAGE!

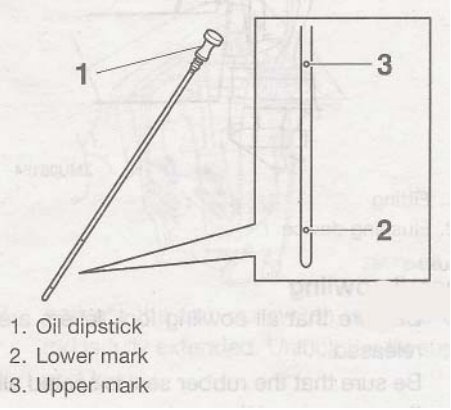
Engine Break-In Procedure

Note that your 4 cycle outboard engine requires a period of break-in for the internal engine parts to wear in properly. Following the break-in procedure will assist in producing longer engine life and increased performance. See your outboard owner's manual for specific break-in procedures for your specific model.

NOTICE

FAILURE TO FOLLOW THE BREAK-IN PROCDURE
COULD RESULT IN SEVERE ENGINE DAMAGE
OR REDUCED ENGINE LIFE CYCLE.

Checking Engine Crankcase Oil



Your Yamaha outboard features 4 cycle engine operation. Unlike 2 cycle outboards which mix gas with oil technology, the 4 cycle engine uses crankcase 4 cycle oil to lubricate internal moving parts. This operation is similar to automobile engine technology.

As part of this process, there is a dipstick placed in the crankcase to offer periodic checking of engine crankcase oil.

To check the crankcase oil do the following:

1. Ensure the outboard is setting in a flat vertical position or the dipstick may not display an accurate oil level.

2. Remove the crankcase oil dipstick and wipe it clean.

3. Reinstall the crankcase oil dipstick completely into the hole. Remove it again.

4. The oil level should be between the upper and lower dipstick holes.As needed add the manufacturer's recommended oil or contact your closest dealer especially if the oil is contaminated with water which will show a milky color verses a clear look. Refer to the outboard manufacturer's owner's manual for oil changing maintenance schedules.

Checking/Filling Crankcase Oil- (Continued)

When adding crankcase oil be sure to utilize the manufacturer's recommended type and visocity. For changing crankcase oil contact your closest Regal dealer for additional information since they have the special tools and knowledge for these maintenance procedures.

Flushing Device

Your Yamaha outboard features a flushing device which when connected to a garden hose circulates fresh water through the engine to purge unwanted debris such as found in salty, brackish, and silty water.

To use open the flushing device by turning it counterclockise. Notice there is a garden hose bib thread. Attach the male end of a garden hose to the fitting and tighten it. Make sure the fitting does not leak as the powerhead could overheat and cause internal damage. Next, turn on the fresh water supply. Start the engine and run in neutral idle speed only. Let the engine warm up enough so that the thermostat opens and permits purging of the powerhead cylinder water jackets. If the thermostat is not open the cylinder head areas normally are bypassed. When flushing completed remove the garden hose from the fitting and reattach the hose connections and of course check for tightness.

Troubleshooting

The following diagnostic information will assist you in identifying minor electrical, fuel, and mechanical problems. Some of the items listed require technical training and tools. Additional assistance is available in the outboard engine manufacturer's owner's manual. Also, you can contact your closest Regal dealer or marine professional for more information. Most defects can be found by doing a logical sequence of elimination.

WARNING

PREVENT INJURY OR DEATH! USE ONLY APPROVED MARINE REPLACEMENT PARTS THAT ARE IGNITION PROTECTED.

WARNING

PREVENT INJURY OR DEATH! BEFORE PERFORMING ANY MAINTENANCE WORK, TURN OFF THE BATTERY SWITCH AND REMOVE THE IGNITION KEY FROM THE SWITCH.

OUTBOARD ENGINE DIAGNOSTIC CHART	
Problem	**Possible Cause**
Engine Overheating	Water pick-up feeds are blocked by debris Cooling system leak Impeller is damaged or blocked by debris Propeller is over propped for the circumstances, causing the engine to work extra hard Debris in oil is holding heat more than normal - bad oil filter Defective thermostat.
Starter Will Not Crank	Battery weak or dead Starter defective Fuse for electric start relay blown Control not in neutral Lanyard not connected to remote control
Excessive play in steering	Air in steering lines (Bleed) System low on steering fluid Mechanical parts-loose connection

OUTBOARD ENGINE DIAGNOSTIC CHART	
Problem	**Possible Cause**
No Power To Dash	Battery switch turned off Battery is weak Main breaker tripped
Engine Cranks But Will Not Start	Fuel flow obstructed Low battery voltage Engine ignition system malfunction Water in fuel Fuel filter clogged Lanyard not connected to remote control
Hard Starting	Flooded Engine Fuel lines obstructed Water in fuel Debris in fuel - bad fuel filter
Engine Runs Rough	Bad fuel quality Faulty spark plugs Water or debris in fuel

OUTBOARD ENGINE DIAGNOSTIC CHART	
Problem	**Possible Cause**
Power Loss	Damaged propeller Improper trim angle Spark plugs fouled Fuel system malfunction
Excessive Vibration	Damaged propeller Damaged propeller shaft Loose motor mount bolt Steering pivot loose or damaged Debris caught on propeller Ignition malfunction

CONTROL SYSTEM DIAGNOSTIC CHART	
Problem	**Possible Cause**
No Reading On Gauge or Gauge Is Inaccurate	Faulty gauge Faulty wiring to gauge Faulty sender
Gauge Reads Erratic	Loose ground or hot wire connection
Control Lever Stiff / Inoperative / Stalls When Shifting	Shift system bushings and seals broken Kinked, broken, damaged cable Friction brake is too tight and must be loosened Control box jammed
Depth Gauge Inaccurate	Blocked transducer sight hole Bad gauge Bad transducer
Outboard Trim Not Functioning	Bad motor in trim control unit Faulty wiring Water in power trim fluid
Steering System Not Functioning	Uneven load Air in steering system Lack of power steering fluid Broken mechanical components

ELECTRICAL SYSTEM DIAGNOSTIC CHART	
Problem	**Possible Cause**
No 12 Volt Power At Battery	Battery switch turned off Weak or dead battery Battery cables disconnected from storage Bad voltmeter or voltmeter connection
Battery Not Charging While Engine Is Running	Loose / damaged serpentine belt Faulty stator Faulty volt meter
Battery Will Not Hold Charge	Faulty / old battery
12 Volt Equipment Not Working	Fuse blown - investigate why the equipment was drawing too much current or why it had a circuit short. Check fuses in dash fuse box, underneath the dash, and in the engine compartment Weak or dead battery if all 12v equipment fails to function Corroded / loose wire connection Internal equipment short / failure

BILGE & DRAINAGE SYSTEM DIAGNOSTIC CHART	
Problem	**Possible Cause**
Bilge Pump Not Functioning Automatically	Float switch jammed - check for debris Automatic bilge pump fuse blown - investigate why the equipment was drawing too much current or why it had a circuit short Battery connection corroded Impeller is damaged or blocked by debris Bad bilge pump motor Bilge pump discharge hose blocked
Bilge Pump Not Functioning Manually	Battery switch turned off Bilge pump dashboard fuse blown - investigate why the equipment was drawing too much current or why it had a circuit short Battery connection corroded Bad bilge pump switch Impeller is damaged or blocked by debris Bad bilge pump motor Bilge pump discharge hose blocked

STEREO DIAGNOSTIC CHART	
Problem	**Possible Cause**
No Power At Stereo	Battery switch turned off Fuse is blown - investigate why the equipment was drawing too much current or why it had a circuit short. Check ignition panel breaker, memory fuse in engine compartment, memory fuse underneath dash, and ignition protection fuse underneath dash Water in unit
Stereo Will Not Play	Water in unit Radio Signal Unavailable Bad antenna Mode selection isn't correct
Stereo Memory Lost	Stereo memory fuse in engine compartment or underneath dash is blown - investigate why the equipment was drawing too much current or why it had a circuit short
No Output Sound / Volume Is Low/ Sound Is Distorted	Balance and max volume settings are limiting the speaker volume - adjust zone settings and setup settings Rotary encoder malfunction Loose speaker wire Water in speakers
Added Performance Package Speakers Working Only	Amplifier fuse blown - investigate why the equipment was drawing too much current or why it had a circuit short

STEREO DIAGNOSTIC CHART	
Problem	**Possible Cause**
	Standard zone max volume settings are low Loose speaker wire connections Water in cockpit speakers
Standard Speakers Working Only	Added speaker zone max volume settings are low Loose speaker wire connection Water in bow speakers
iPod Not Working	iPod not plugged in properly using appropriate sleeves iPod mode not selected Internal iPod problem
LCD Screen Not Displaying	Water in unit

CHAPTER 8

AUDIBLE ALARMS

It is important to read the outboard engine owner's manual to diagnose engine alarms and faults. Depending on the propulsion package installed, alarm sounds can vary.

The engine sounds an alarm in the case of one of the following causes:

- Low Oil Pressure
- Engine Overheating

To quickly diagnose these problems, look at the multi-gauge equipped on your vessel. Monitor the oil pressure gauge and temperature gauge; troubleshoot accordingly. Be weary of faulty gauges however, and investigate the problem at the engine.

1. Cooling system clogged
2. Engine crankcase oil low
3. Wrong engine crankcase oil
4. Clogged oil filter
5. Injection pump malfunction
6. Water pump or thermostat defective
7. Boat load improperly distributed
8. Spark plugs defective

Storage & Winterization

Storage procedures are outlined in this chapter. These are **general guidelines** to follow before longer periods of storage such as over the winter in colder climates. Be sure to familiarize yourself with all relevant information in the owner's pouch. Special winterization procedures are necessary for the boat equipment and systems. Use the enclosed checklists to help you identify areas of concern and maintenance. These lists cover land stored boats either inside or outside. Call a Regal dealer or marine professional for further information.

WARNING

EXPLOSION, FIRE AND POLLUTION HAZARD!
DO NOT FILL FUEL TANK TO RATED CAPACITY
LEAVE ROOM FOR EXPANSION.

CAUTION

REMOVE BATTERY(IES) WHEN VESSEL
IS IN LONG PERIODS OF STORAGE.

CAUTION

TO PREVENT ENGINE DAMAGE!
USE ONLY ETHYLENE GLYCOL BASE ANTIFREEZE.
DO NOT USE ALCOHOL BASE PRODUCTS.

CHAPTER 9

DECOMISSIONING CHECKLIST

ENGINE

☐ Run engine. Pour a 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 a Regal dealer.

☐ Drain cooling and exhaust system by a marine professional Pickle the engine. Contact a Regal dealer for more information.

☐ Spray all exterior parts with a rust preventative.

OUTBOARD UNIT

☐ Perform maintenance as referenced in the manufacturer's owners manual. Contact your Regal dealer.

☐ Remove propeller. Refurbish as needed.

☐ After cleaning touch up paint on unit as needed.

☐ Apply coat of wax to outboard shroud and exterior parts.

BOAT

☐ Check hull bottom for any fiberglass damage.

☐ After cleaning apply a coat of wax to hull and deck surfaces.

☐ Pour a pint of 50/50 antifreeze into bilge pump.

☐ *Never block up boat bottom. May cause structural damage.*

☐ Remove battery. Use a trickle charger as needed.

☐ 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 and store so it breathes.

☐ Conduct a visual inspection to ensure boat is balanced properly on the trailer, cradle or blocks.

☐ 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.

TRAILER

☐ Repack all wheel bearings per manufacturer's specifications.

☐ Check all trailer parts for excessive wear. Replace/refurbish as needed.

☐ Use touch up paint on trailer as needed.

☐ Lubricate all moving parts as needed.

☐ Check all lighting and brakes (if applicable).

FRESH WATER SYSTEM

1. Activate the fresh water pump switch.

2. Open all faucets including transom shower (if equipped) 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. Pour 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

1. With **chemical** heads, make sure to dump both upper and lower tanks. Rinse well with fresh water. Sanitize chemical head as needed.

2. With **vacuum designed** 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 ENGINE DAMAGE!
CONTACT MARINE PROFESSIONAL FOR WINTERIZATION INSTRUCTIONS. DAMAGE IS NOT COVERED BY REGAL WARRANTY.

RECOMISSIONING CHECKLIST

ENGINE

☐ Check all components per engine manufacturer's owners manual especially fluid levels.

☐ Run engine on "ear muffs" (flushette) before launching. Check for fuel, exhaust, oil, and water leaks.

BOAT

☐ Install drain plug.

☐ Install battery 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 and gauges for proper operation.

TRAILER

☐ Make sure all equipment is in excellent working condition.

CHAPTER 9

Notes

Trailering

This chapter covers trailering/towing basics including equipment, maintenance, and techniques of using a trailer. *Check with state and local agencies for detailed information on required equipment, safety issues, and licensing.*

BEFORE TOWING

Before towing your boat, be sure to check the air pressure of your tires for the recommended inflation rating. Also, be certain that your tow vehicle is in good working order.

Install bimini top in its boot before towing. Also, remove and store cockpit and bow cover. Store cockpit carpet along with cockpit/mooring/bow covers in ski locker.

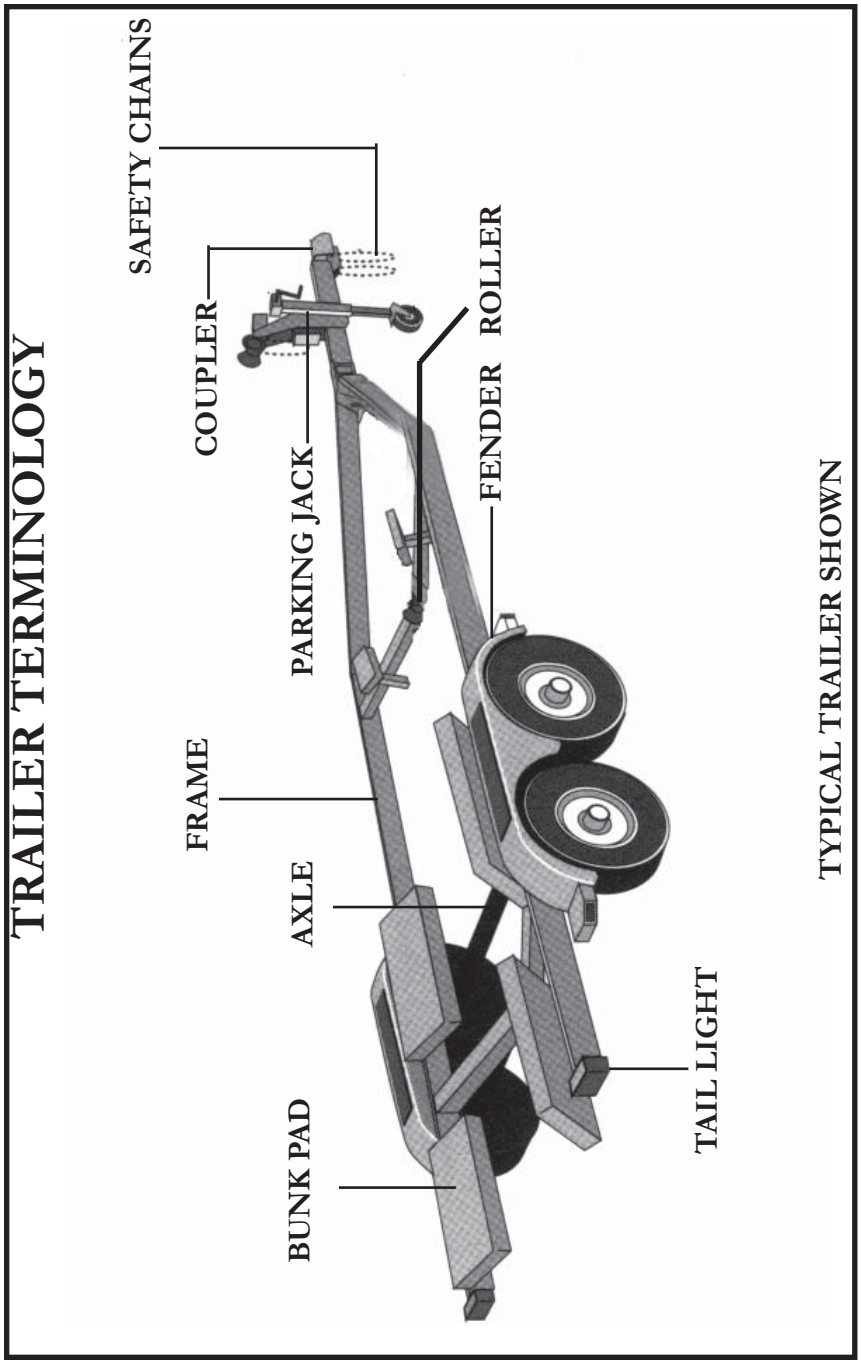
This can make it especially difficult to drive safely, as the hitch may be in danger of striking the road. Also, this situation can be caused by worn vehicle rear shock absorbers. One option is to install a set of air shocks which will assist in supporting the load. As a rule of thumb 5 to 7 percent of the total trailer load should be on the trailer tongue.

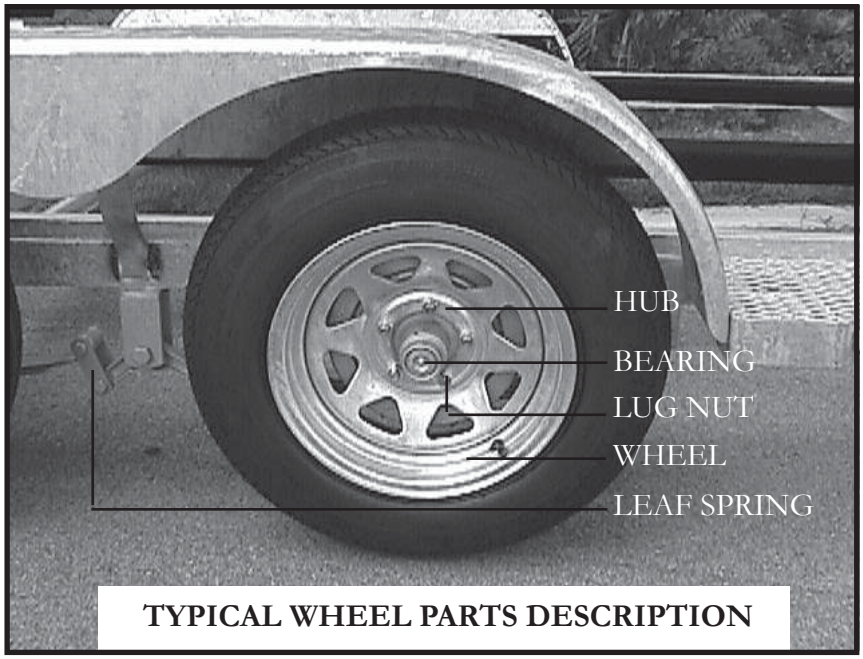
Check all lights to ensure they all work properly. You may find it helpful at ask someone to check your turn signals, brake lights, and towing lights while you remain in the vehicle. Be certain that the trailer winch cable is securely attached to the boat's bow eye and the cable lock is engaged. Make sure the bow of the boat is snug against the bow stop at the winch stand.

It is a good idea to tie another line or secure an extra cable to the winch stand and boat bow eye as a backup system.

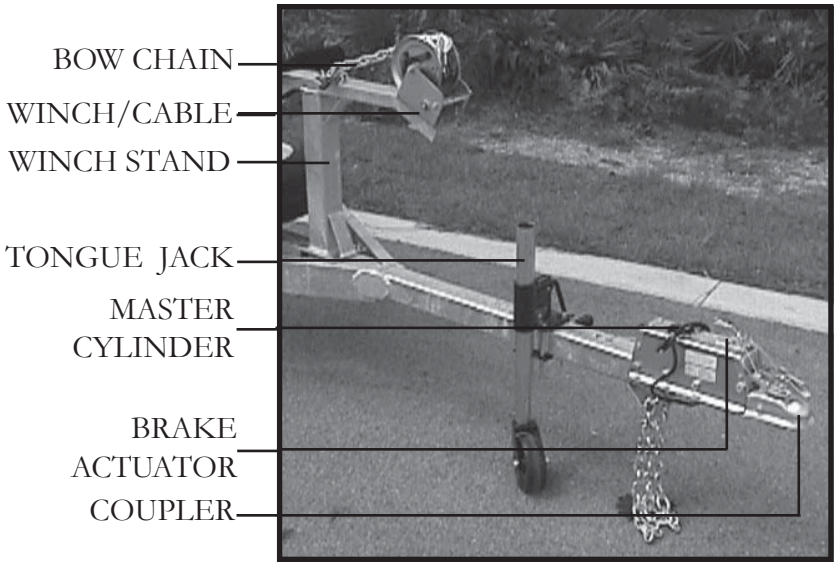
Be certain that your trailer is of rated capacity for the size and weight of your boat, including the weight for all fuel, water and gear. Your authorized Regal dealer can advise you on the proper trailer capacity and tongue weight (the weight exerted on the rear of your vehicle).

Never use a bumper mounted trailer hitch. Always use a bolted or


TRAILER TERMINOLOGY
SAFETY CHAINS
COUPLER
PARKING JACK
FRAME
AXLE
BUNK PAD
ROLLER
FENDER
TAIL LIGHT
TYPICAL TRAILER SHOWN



TYPICAL WHEEL PARTS DESCRIPTION



TYPICAL TONGUE SECTION

welded frame-mounted hitch, class 2 or 3. Consult your Regal dealer for more information.

Should your trailer be equipped with surge brakes, that is brakes on the trailer that cut in with a very slight delay when your brakes are applied, be sure to follow recommended service and maintenance instructions. Be sure that the trailer master cylinder is filled with the recommended fluid before towing your boat. Inspect the trailer brake lines for any leakage. Also, if you notice brake fluid on the inside of the tires, you may have a wheel cylinder leaking. Consult a professional.

Never place your hands between the trailer hitch coupling and the hitch ball on your towing vehicle while hooking up. Be sure the tongue jack is in the full up position before departure. Be certain safety chains are crisscrossed and secured; do not allow them to drag on the road.

Be sure to buy a suitable set of tie downs which can be attached to the boats' stern eyes and the eyelets provided on most trailers. Tighten them securely and neatly fold up the extra strap material and secure it with tape so it doesn't loosen and dangle on the road.

Check the trailer lug nuts for the proper torque. Use a foot pound wrench and torque in a star sequence to the correct poundage as recommended by the trailer manufacturer. Torque the lug nuts at half the poundage on all nuts. Then set the torque wrench to the full poundage and fasten to the last foot poundage figure.

Check the trailer tires often for voids, excessive wear or out of round tire conditions. If the trailer seems to vibrate you may have a bad tire or one that is unbalanced. These wheels can be rebalanced at most automotive or tire shops. Never pull a boat on a patched tire. Buy a spare tire and wheel including a hub and wheel bearing assembly. Mount it on the trailer for speedy installation should a blow out occur.

Check the trailer harness often for signs of fraying. Check the harness connector for corrosion. Make sure the trailer harness when connected to the trailer has enough slack for turning

Check the wheel bearings for wear periodically by a professional. On most trailers, there is a zerk fitting on the wheel hub to add the proper lubricant to the wheel bearing with a grease gun. These wheel bearing waterproof covers for the bearings can be purchased at retail outlets.

SPARE PARTS CHECKLIST

Longer towing trips increase the need for special preparations. Sometimes these extended trips cover areas where it is difficult in locating repair parts due to a breakdown. Following is a checklist of recommended items to add a safety net to your trip.

Trailer-

1. Trailer tire jack
2. Spare hub assembly including wheel bearings
3. Spare tire
4. Lug wrench
5. Jack stand
6. 12 volt air compressor- found at automotive box stores
7. Spare bearing protector
8. Extra tie-down straps
9. Trailer light bulbs
10. Brake pads and brake fluid
11. Grease gun

Tow Vehicle-

1. Tool kit including necessary ratchet and sockets
2. Jumper cables
3. Extra fuses
4. Engine oil
5. Transmission fluid
6. Wheel chocks
7. Highway flares
8. 12 volt spotlight- type that plugs into 12 volt accessory outlet
9. Flashlight & spare batteries
10. Waterless hand cleaner and rags
11. Electrical connectors and crimpers
12. Low voltage electrical tester

Be sure everything is secured in the boat and canvas is down in the towing position with the bimini stored in the boot. Tilt the stern drive up to clear the road and any bumps that might occur while in transit.

DRIVING

Practice maneuvering the vehicle and trailer in a large, empty parking lot or open space. If you practice slowly and cautiously, you will soon develop a feel for maneuvering the trailer .

Test your vehicle and trailer brakes before departure along with the lights. Pack a tool kit with extra bulbs, fuses and fluids.

Drive as smoothly as possible, anticipating your stops and giving yourself plenty of room for turning and stopping. Avoid any quick turns or sudden jerks of the steering wheel.

Remember to maintain safe speed limits. It takes longer to stop your loaded boat. Allow enough room to the front in bad weather.

Keep an eye on your rig through the rear view and side mirrors. If your rear view mirror is obstructed, purchase a set of side mirrors that extend out over the side of the vehicle for increased visibility. In addition, it is a good idea to install a set of round mirrors to the side mirrors as they help identify blind spots.

Plan to stop periodically on your way to check the trailer hitch for tightness, harness connector, tires and wheel bearings. Also, check to make sure the load is balanced.

LAUNCHING

Serious accidents can occur at the launching ramp. Therefore, it is imperative you be alert and attentive during launching and docking activities. Study the ramp area and surrounding water for any potential hazards, such as a short ramp or one with a drop off at the end. If you are uncertain of the conditions, ask someone else who has just used the ramp if there are any peculiarities to the area.

Install the drain plug. Attach 2 lines, one each at the bow and stern, to control your boat once it is off the trailer. If you need additional fenders to keep the sides of the boat from banging against the ramp walls, use those as well.

Unhook the stern tie-downs and the winch line to the bow. Unplug the trailer harness connector so the hot trailer light bulbs won't blow out when they come in contact with water.

When backing in, have someone assist, giving the palms up stop signal when the boat is in deep enough water to float off, or when the rear wheels of your vehicle approach the water's edge.

After your boat is floating freely, position it clear of the trailer before pulling out of the water. If there is no one to help you, secure one of the lines you've attached from the boat to the dock and use the other line to pull the boat off trailer. The process is easier with 2 people.

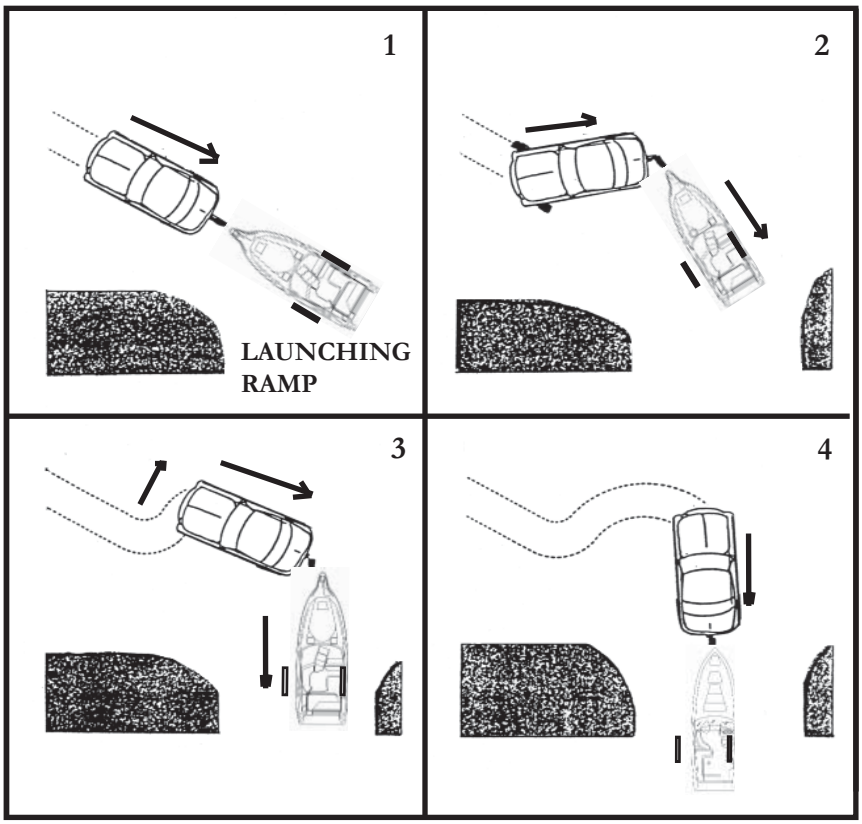
CAUTION

AVOID LOSING VEHICLE TRACTION!
DO NOT ALLOW REAR WHEELS TO ENCOUNTER SAND OR SLIPPERY CONCRETE CONDITIONS.

WARNING

AVOID BODILY INJURY!
RAMPS ARE VERY SLIPPERY. DO NOT ATTEMPT TO WALK OR STAND ON AN ANGLED BOAT RAMP.

BACKING A TRAILER



A trailer backs in a direction opposite to an automobile. In 1, driver swings the rig near the launching ramp. In 2, the driver cuts the vehicle toward the driveway. In 3, the driver cuts the vehicle wheels to the left and then backs into the ramp as the trailer moves to the right. In 4, the driver straightens the vehicle wheels to follow the trailer as it backs down the ramp.

NOTICE

ALLOW TRAILER WHEEL BEARINGS AND LIGHTS TO COOL BEFORE SUBMERGING

LOADING

The most important thing to remember when pulling your boat out of the water is that often the ramp will be crowded. As you approach the ramp, make a visual inspection of the traffic and people, both at the ramp and all around you. This is an important time to use caution, courtesy, and common sense. While you may feel it's your next turn, another boater may not be as courteous. Don't insist on your rightful place in line; it could lead to disastrous consequences in the confines of a crowded boat ramp. If there is any perceived danger, stand off until you can safely approach the ramp.

Back your trailer down to the water's edge. At this point it is a good idea to let a sufficient amount of line out of the winch to reach the bow eye. Make sure you disconnect the trailer harness to keep the bulbs from blowing out due them being subjected to the cold water.

On roller or bunk style trailers back up until the aft roller is just at the water level. This allows you to hook up the winch cable and to start cranking the boat on to the trailer properly. This method gives you a good starting point and helps keep the boat centered on the trailer as it is reloaded. It may be necessary to further back the trailer into the water. This permits cranking the boat easier on to the trailer.

Once the boat is positioned correctly on the trailer have someone hook up the winch cable hook to the bow eye. Also, this will help keep the boat bow against the trailer roller. Shut down the engine and run the stern drive up to the top of the trailer position.

With the bow snug against the roller, start to crank the boat up on to the trailer. Make sure the hull bottom or keel stays in the center of each roller as it is being cranked on the trailer. **Double check** to ensure the hitch is locked tight on the vehicle ball.

Make sure the boat is covered properly and all loose gear is stowed. On bunk style trailers, watch the bunks to make sure the boat is centered as they usually do not touch any rollers other than the aft one because the boat weight is being supported more by the bunks as it is cranked onto the trailer. Stop cranking the winch when the boat bow contacts the bow roller. Be sure the winch is in the locked position. Stand back and visually check to see that the boat is centered on the trailer.
After pulling your boat away from the ramp, be sure to go through all the checks involved before departure. Reinstall the harness connector and check the lights, brakes, safety chain, winch, hitch, and tie downs. Remove the drain plug to exit any excess water in the bilge. Reinstall the hull drain plug and tighten it. For longer storage periods remove the drain plug and keep in a plastic bag tied to the steering wheel.

WARNING

AVOID PERSON INJURY!
DO NOT LET ANYONE STAND NEAR THE WINCH OR CABLE. THE CABLE COULD BREAK.

CAUTION

HULL BOTTOM DAMAGE COULD RESULT FROM THE BOAT NOT BEING POSITIONED ON THE ROLLERS BUT RESTING ON THE TRAILER FRAME.
AVOID BACKING TRAILER TOO FAR INTO THE WATER!

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

CHAPTER 11

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) 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

Top off: to fill up a tank

Transom: the vertical part of the stern

Trim: the boat's balance when properly loaded

Wake: the path of a boat left astern in the water

Windward: the direction from which the wind blows; opposite of leeward

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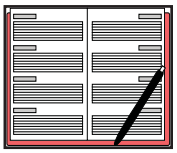
Technical Information

NOTICE



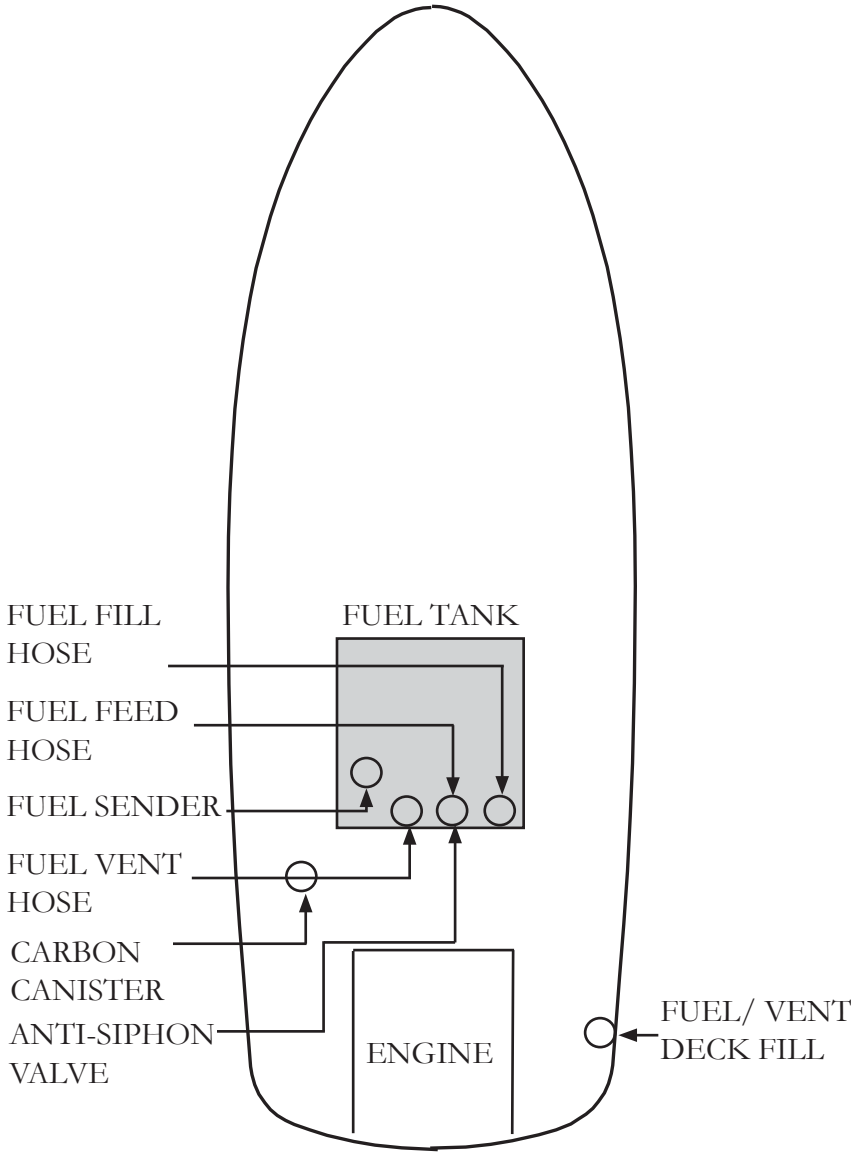
The following technical information and drawings are accurate up to the printing date listed at the beginning of this manual. These drawings can be an aid in troubleshooting electrical and mechanical problems along with the charts located in the troubleshooting chapter.

Note that all product specifications, models, standard and optional equipment, systems, along with the technical information is subject to change without notice.

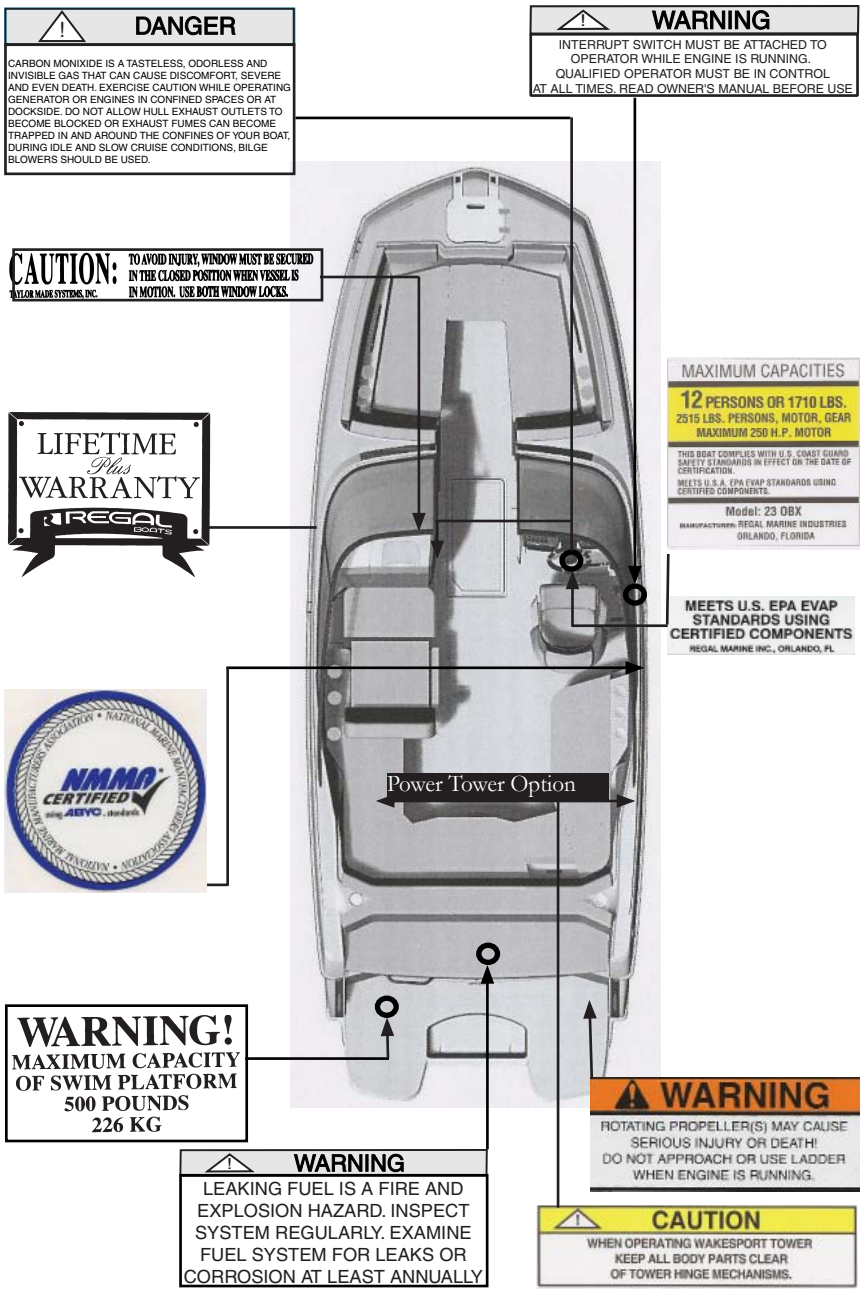
For more information contact your nearest authorized Regal dealer. For the location of your nearest authorized dealer call 407-851-4360. or visit the web-site at www.RegalBoats.com.

Your Regal dealer has received special factory training on the entire product line and his services should be employed to solve technical problems.

TYPICAL DOMESTIC COMPLIANT FUEL SYSTEM



TYPICAL LABELS & LOCATIONS



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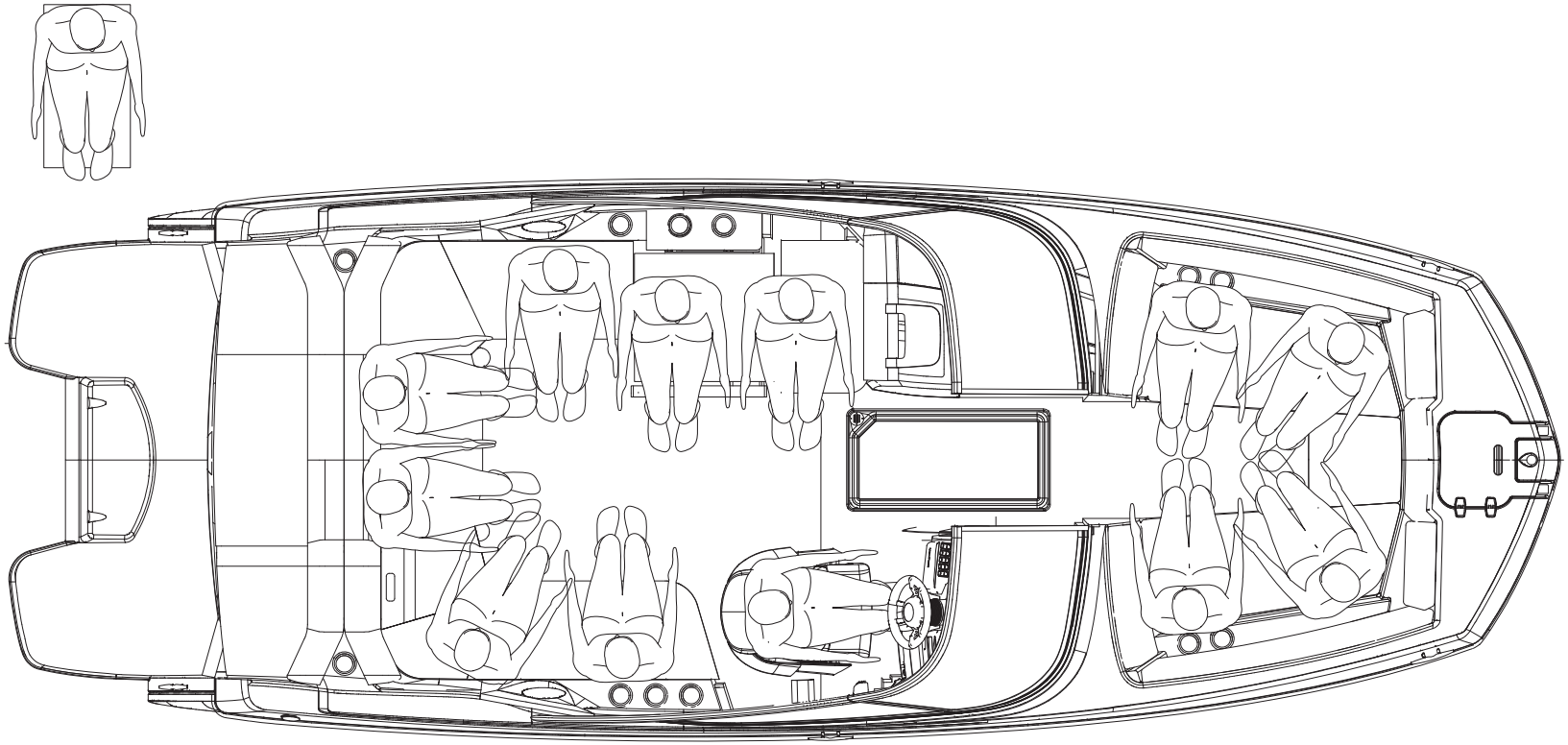
15.5" W X 29.5" L
Allowance Per Person

CE Persons Capacity: 12 Persons



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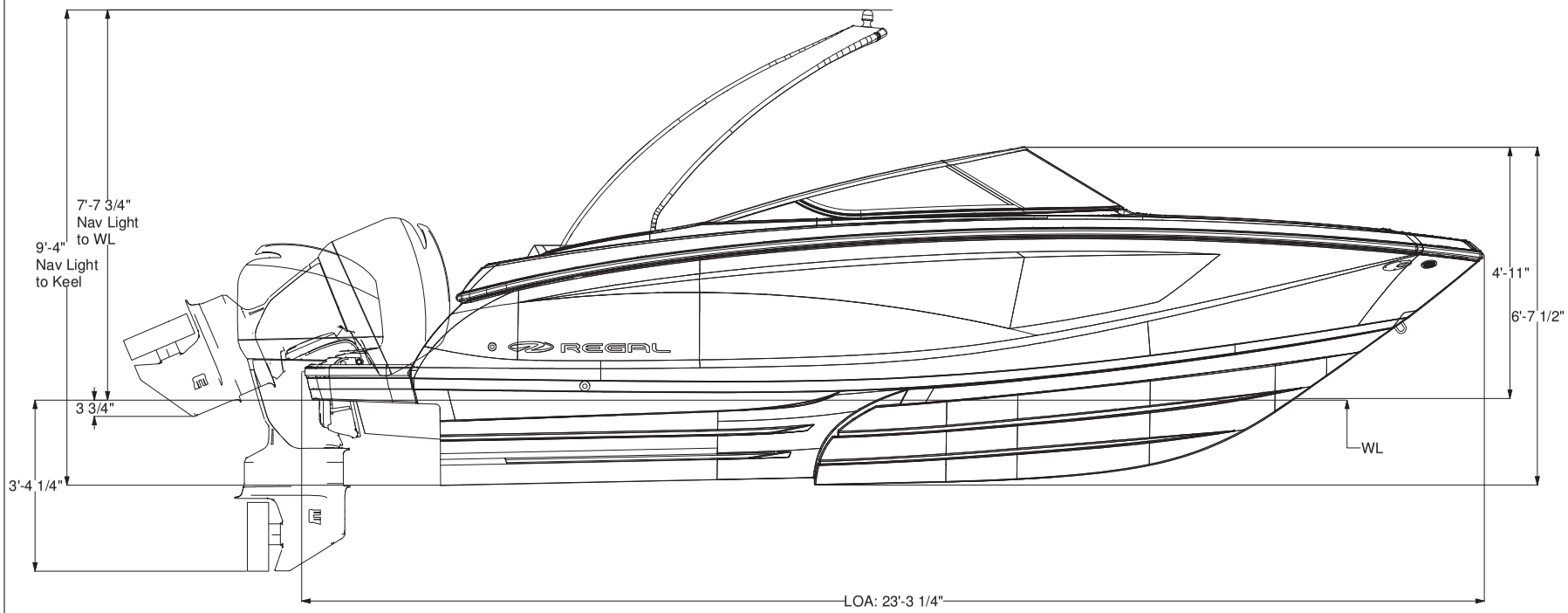

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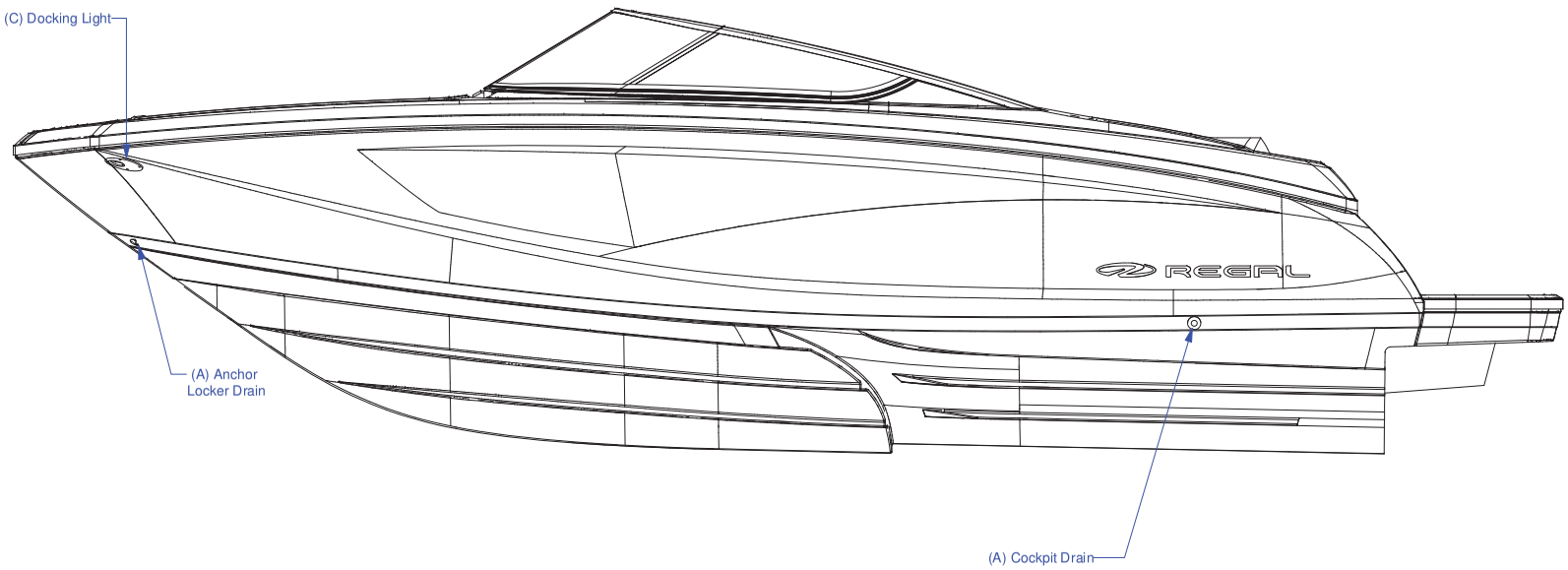
Port Hull Hardware



KEY
A. THRU-HULL FITTINGS
B. TOWING STRONG POINT
C. LIGHTS

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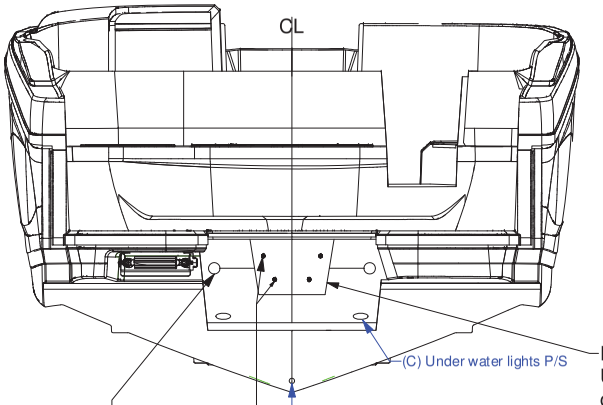
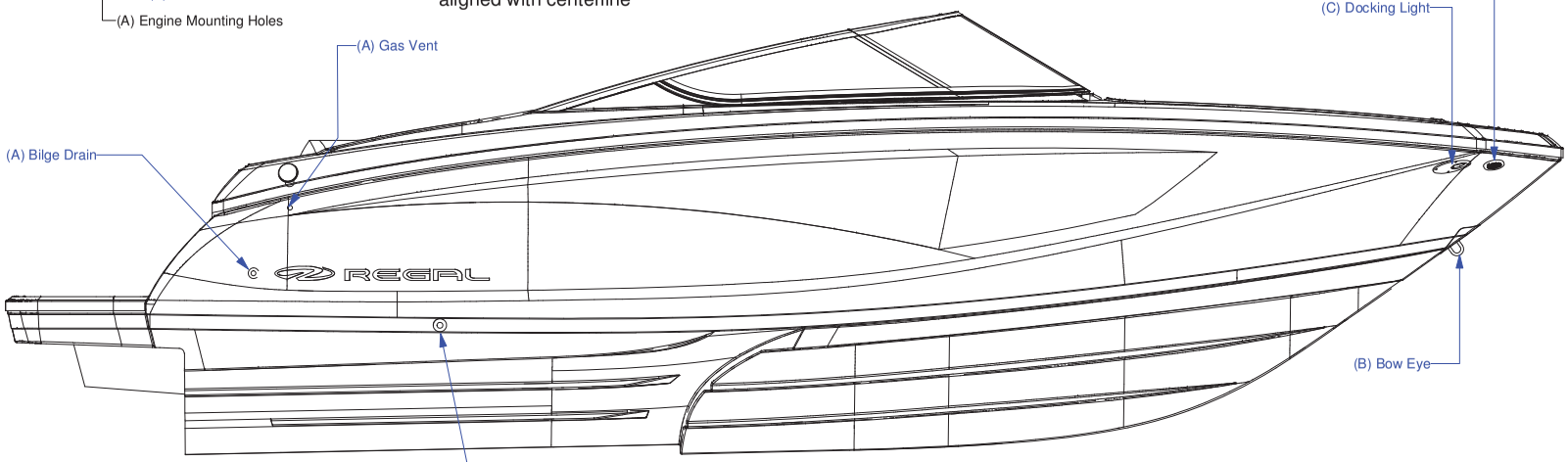
Stern Hull Hardware



Drill Template
Used to drill holes in
correct spot when
aligned with centerline

STBD. Hull Hardware



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B. TOWING STRONG POINT
C. LIGHTS

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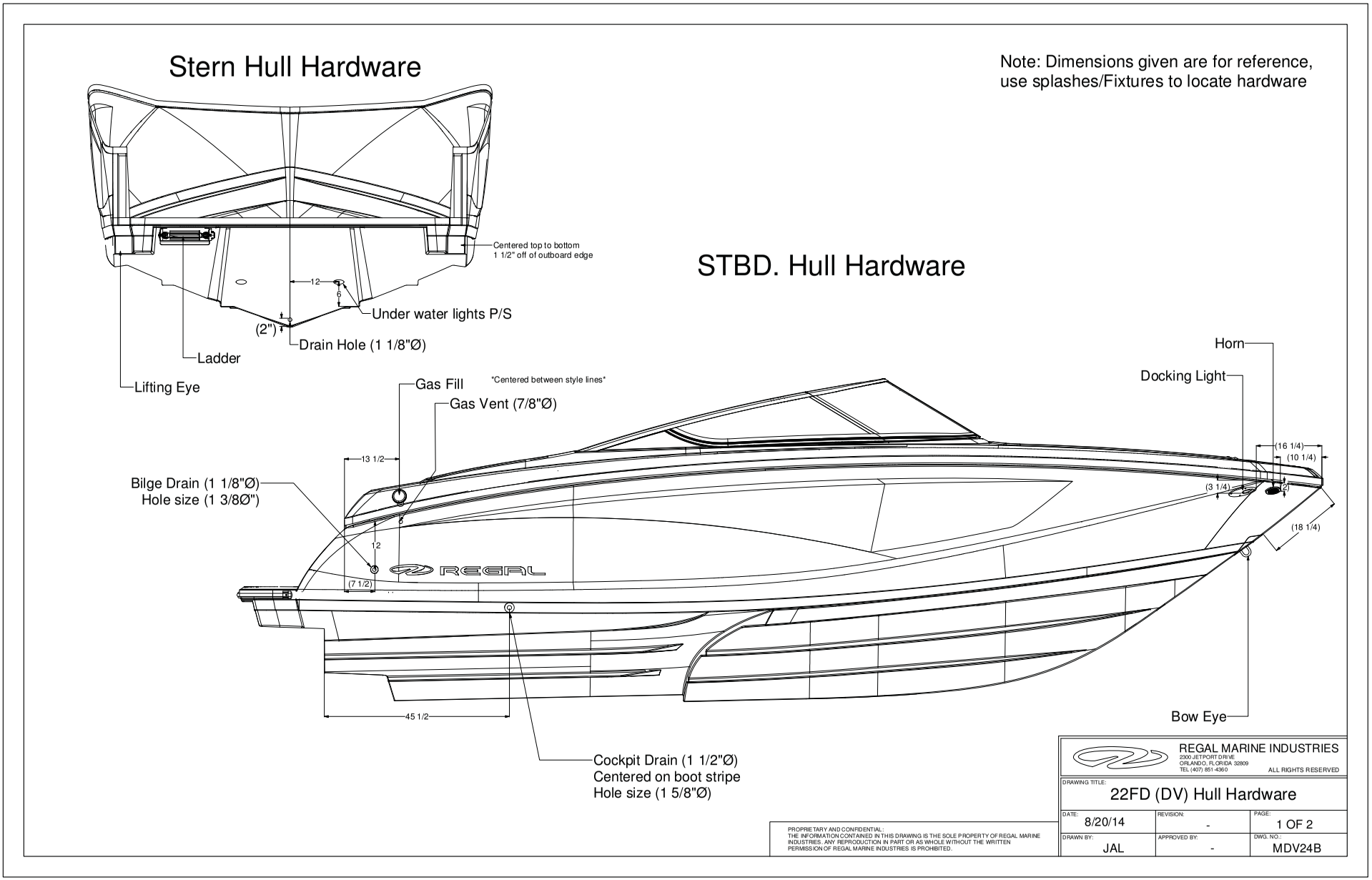
Stern Hull Hardware
Note: Dimensions given are for reference, use splashes/Fixtures to locate hardware
Centered top to bottom
1 1/2" off of outboard edge
12
6
Under water lights P/S
(2")
Drain Hole (1 1/8"Ø)
Ladder
Lifting Eye
STBD. Hull Hardware
Gas Fill
Centered between style lines
Gas Vent (7/8"Ø)
Horn
Docking Light
13 1/2
Bilge Drain (1 1/8"Ø)
Hole size (1 3/8Ø")
(16 1/4)
(10 1/4)
(3 1/4)
(2)
(18 1/4)
12
(7 1/2)
REGAL
45 1/2
Bow Eye
Cockpit Drain (1 1/2"Ø)
Centered on boot stripe
Hole size (1 5/8"Ø)
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22FD (DV) Hull Hardware
DATE: 8/20/14
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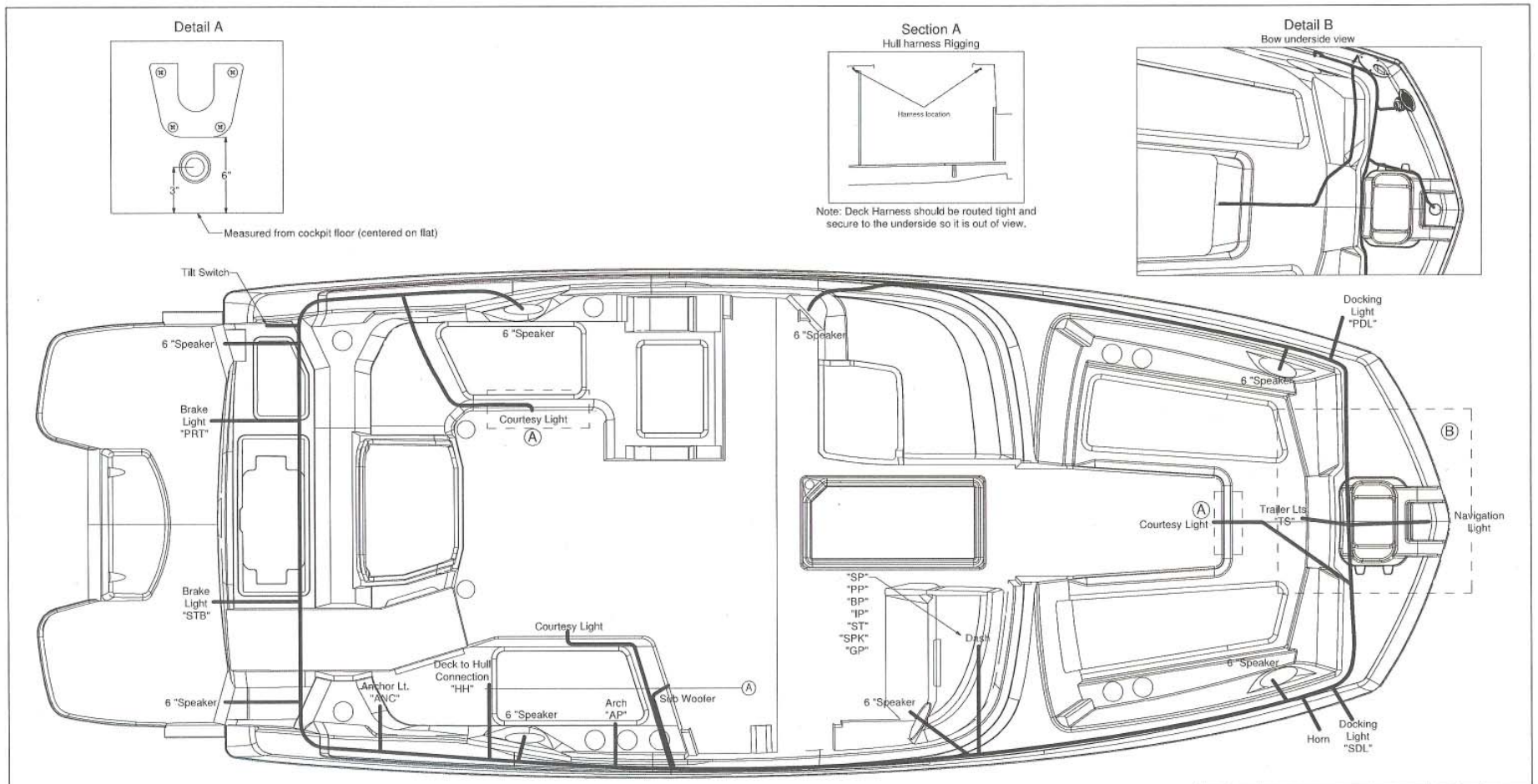
Detail A
6"
Measured from cockpit floor (centered on flat)
Section A
Hull harness Rigging
Harness location
Note: Deck Harness should be routed tight and secure to the underside so it is out of view.
Detail B
Bow underside view
Tilt Switch
6 "Speaker
Brake Light "PRT"
Brake Light "STB"
Courtesy Light
Deck to Hull Connection "HH"
Anchor Lt. "ANC"
Arch "AP"
Sub Woofer
"SP"
"PP"
"BP"
"IP"
"ST"
"SPK"
"GP"
Dash
Docking Light "PDL"
Trailer Lts "TS"
Navigation Light
Horn
Docking Light "SDL"
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23 OBX (DC) Deck Harness Routing
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TRAILER CONNECTOR PLUG INSERTS
INTO BOAT BOW RECEPTACLE

16 GAUGE BLACK

16 GAUGE GREEN

16 GAUGE YELLOW/BLACK

1 4 2 3

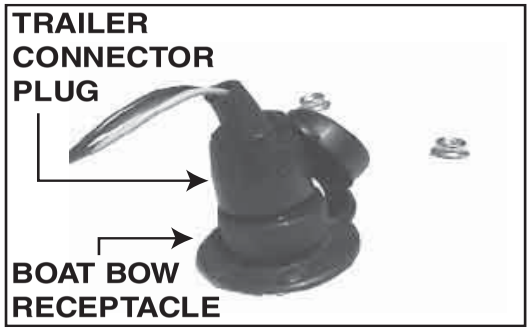
16 GAUGE GREEN

16 GAUGE YELLOW

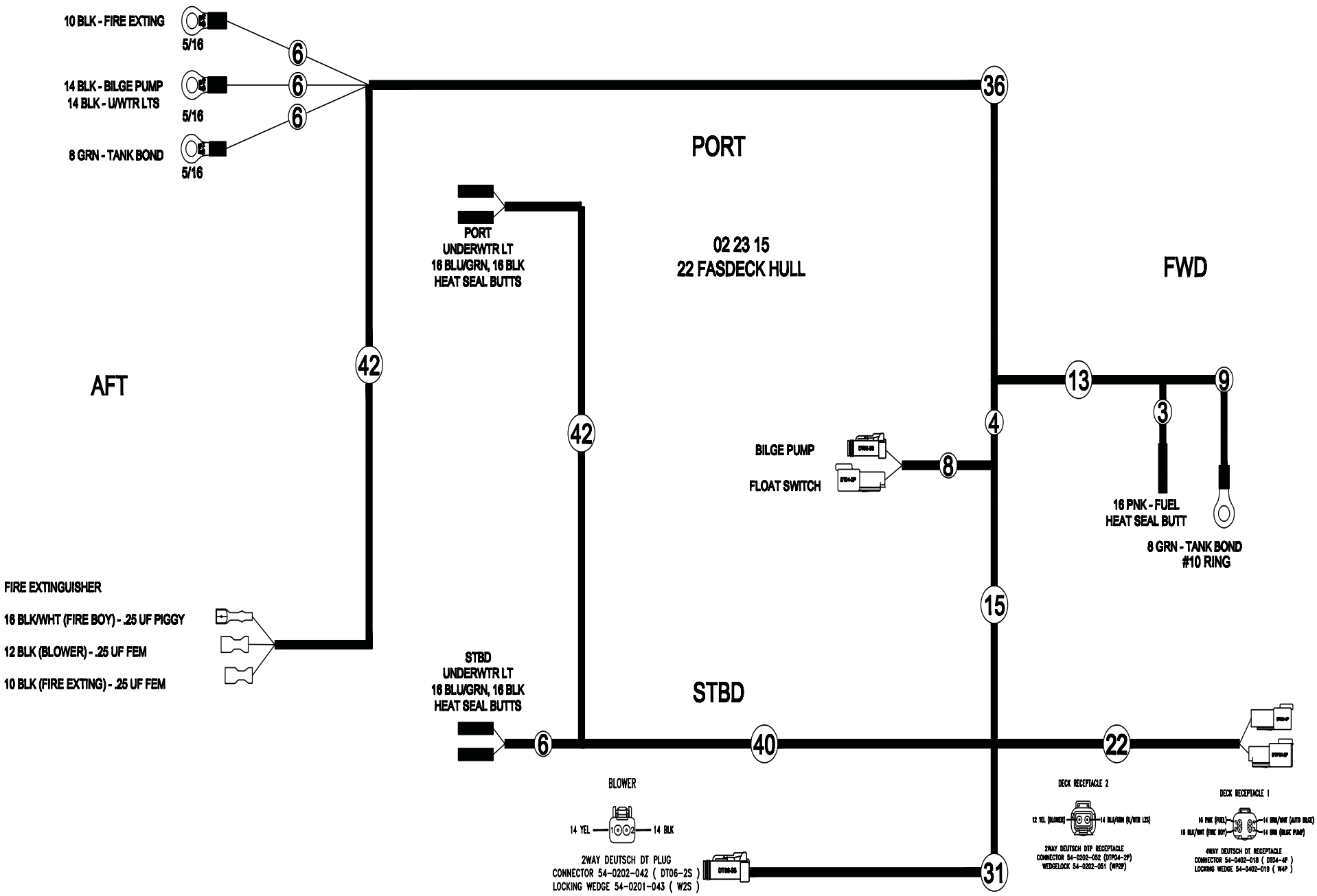
16 GAUGE BROWN

16 GAUGE WHITE

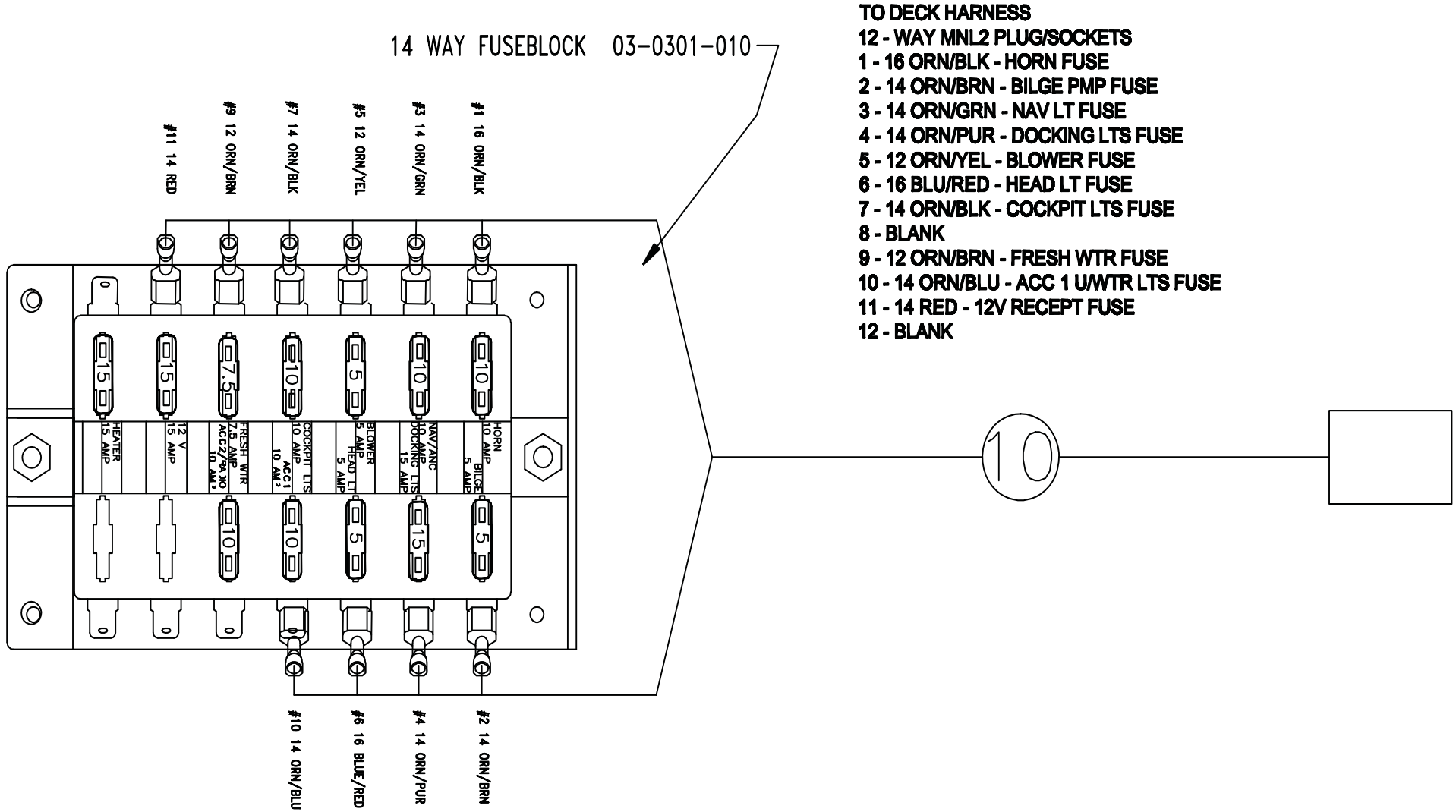
TRAILER HARNESS



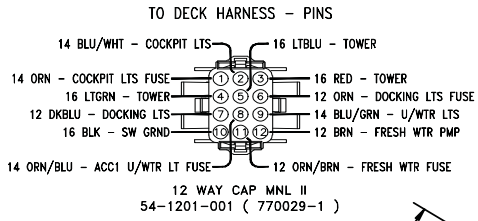
TYPICAL TRAILER PLUG

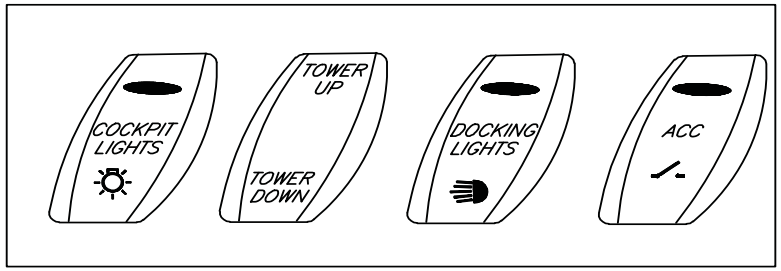


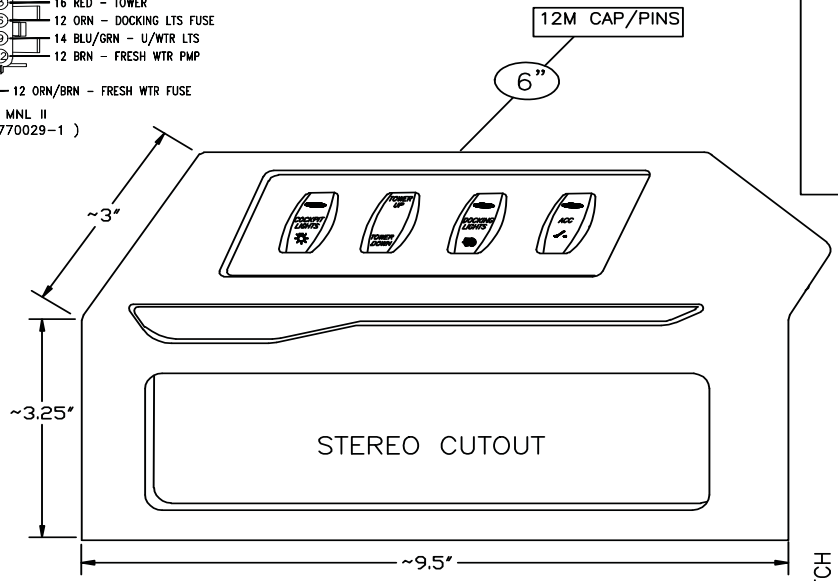
STEREO PERFORMANCE PACKAGE HARNESS RUN



FUSE BLOCK OVERVIEW



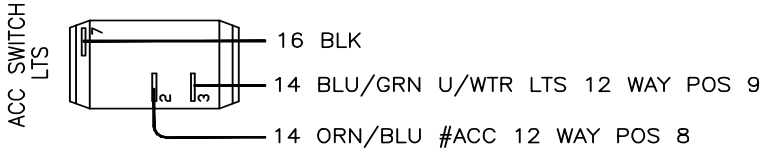




DIMENSIONS ARE APPROXIMATED
PRINT NOT TO SCALE

ADD UNDER WTR LT ACTUATOR IN BAG, TIE BEHIND PANEL.
REGAL WILL REPLACE ACC ACTUATOR WITH THIS IF NEEDED.

TIE BOTH FRESH WATER LT WIRES
BEHIND ACC SWITCH,
TERMINATE WITH .25 UF FEMALES,
REGAL WILL ATTACH IF NEEDED.



SHROUD:

N/A

BIPS:

SW PANEL BLK ABS
VAC FORM SILVER SPARKLE
*120166089 1 PRE-PR VAC FORM PORT SWP
HOUSE OF PLASTICS

ORDERING INFORMATION:

KIT #N/A

M&G P/N	DESCRIPTION	CUST P/N
* 85233437	PORT SWP	221603

GENERAL INFORMATION:

PANEL WIRING:

P/N	QTY.	REV	DESCRIPTION
* 900003665	1	PRE-PR	PANEL WIRING

CIRCUIT PROTECTION:

P/N	QTY.	DESCRIPTION

**CIRCUIT PROTECT FOR THE BOAT IS IN THE PANEL HARNESS
THIS INCLUDES FUSEBLOCK, FUSES, DECALS.

SWITCHES: CONTURA BLACK ROCKER w/ LIGHT

P/N	QTY.	DESCRIPTION
012405008	1	SPDT (ON)/OFF/(ON) NO LT (ARCH)
012401006	3	SPST ON/OFF (ALL OTHERS)

ACTUATORS: CONTURA V HARD BLACK – RED LENS

012408058	1	CONV NOLENS ("Tower Up & Down)
012408787	1	CONV BARLENS ("CKPT LT")
012408788	1	CONV BARLENS ("DOCK LT")
012408789	1	CONV BARLENS ("ACC")

ACCESSORY ITEMS:

P/N	QTY.	DESCRIPTION

REGAL MARINE MY2016
PORT SWP – SILVER SPARK

REV.	ECN#	DESCRIPTION	DATE	BY
		update act print to twr up & down	04-16-15	md
Pre-Pr		PRE-PRODUCTION X20 [SJ#27751]	03-09-15	MD
re-Pr2		PRE-PRODUCTION X20 [SJ#27763]	03-17-15	MD
re-Pr3		PRE-PRODUCTION X20 [SJ#27787]	04-02-15	MD

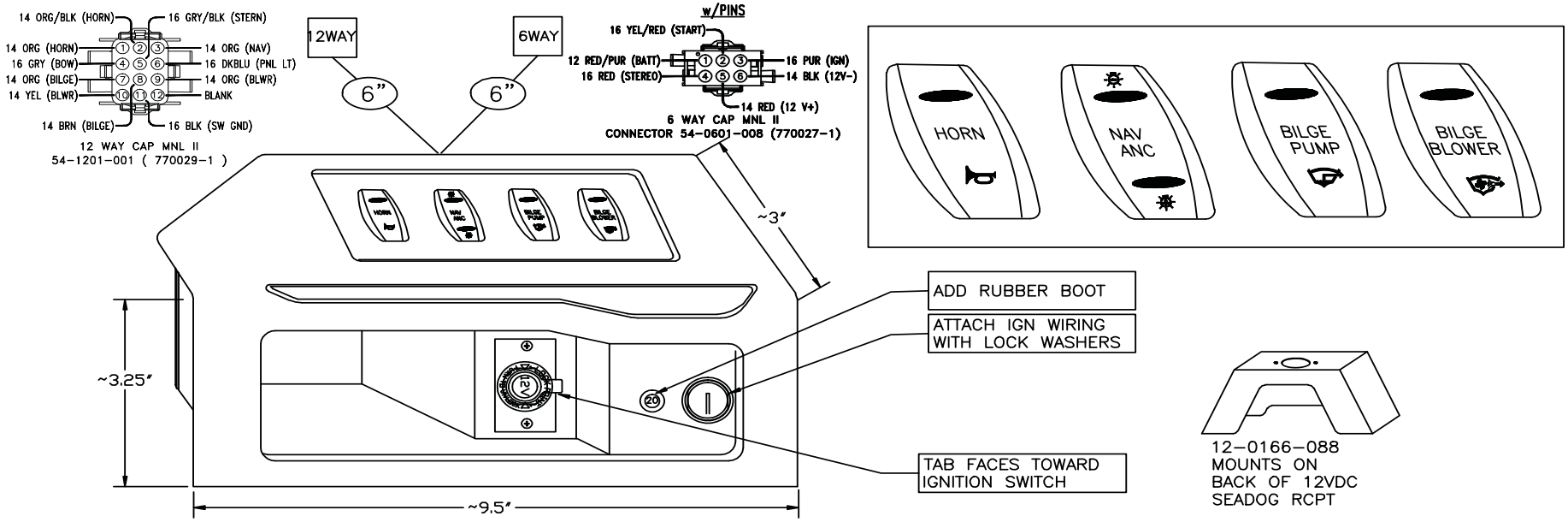
NOTES:

REF: 85033559

MG ELECTRONICS CORP.

85233437
02-04-15 MEM
SHEET 1 OF 1

" NO SAMPLE BUILD ACCDG TO PRINT & CUTSHEET"



DIMENSIONS ARE APPROXIMATED
PRINT NOT TO SCALE

SHROUD:

N/A

BIPS:

SW PANEL BLK ABS GLOVEBOX
SILVER SPARKLE VAC FORM
120166088 1 PRE-PR VAC FORM STBD SWP
REG01-577 HOUSE OF PLASTICS

ORDERING INFORMATION:

KIT #N/A

M&G P/N	DESCRIPTION	CUST P/N
* 85233436	STBD SWP	221604

GENERAL INFORMATION:

PANEL WIRING:

P/N	QTY.	REV	DESCRIPTION
* 900003664	1	PRE-PR	PANEL WIRING

CIRCUIT PROTECTION:

P/N	QTY.	DESCRIPTION
040304020	1	20 AMP BREAKER W/SCRW TERM

**CIRCUIT PROTECT FOR THE BOAT IS IN THE PANEL HARNESS
THIS INCLUDES FUSES AND DECALS.

SWITCHES: CONTURA BLACK ROCKER w/ LIGHT

P/N	QTY.	DESCRIPTION
012402011	1	DPDT ON/OFF/ON 2 INC LTS (NAV/ANC)
012404003	1	SPST (ON)/OFF (HORN)
012401006	2	SPST ON/OFF (ALL OTHERS)
011208006	1	I/O KEYSWITCH ON/OFF/START/ACC

ACTUATORS: CONTURA V HARD BLACK - RED LENS

012408783	1	CONV BARLENS ("HORN")
012408784	1	CONV BARLENS ("NAV/ANC")
012408785	1	CONV BARLENS ("BILGE BLOWER")
012408786	1	CONV BARLENS ("BILGE PUMP")

ACCESSORY ITEMS:

P/N	QTY.	DESCRIPTION
310102002	1	BLACK BREAKER BOOT
080402019	1	IGNITION ANTI-ROTATION L/W
920000141	1	BILGE DIODE ASSY
080402006	4	#8 SS LOCKWASHER (IGN)
150103008	1	12V RCPT SEADOG
080401016	2	#8 FLAT WASHER SS (12V RCPT)
080504001	2	#8-32 NYLOCK NUT SS (12V RCPT)
* 080602159	2	#8-32 X 2 OVAL HD MS SS(12V RCPT)

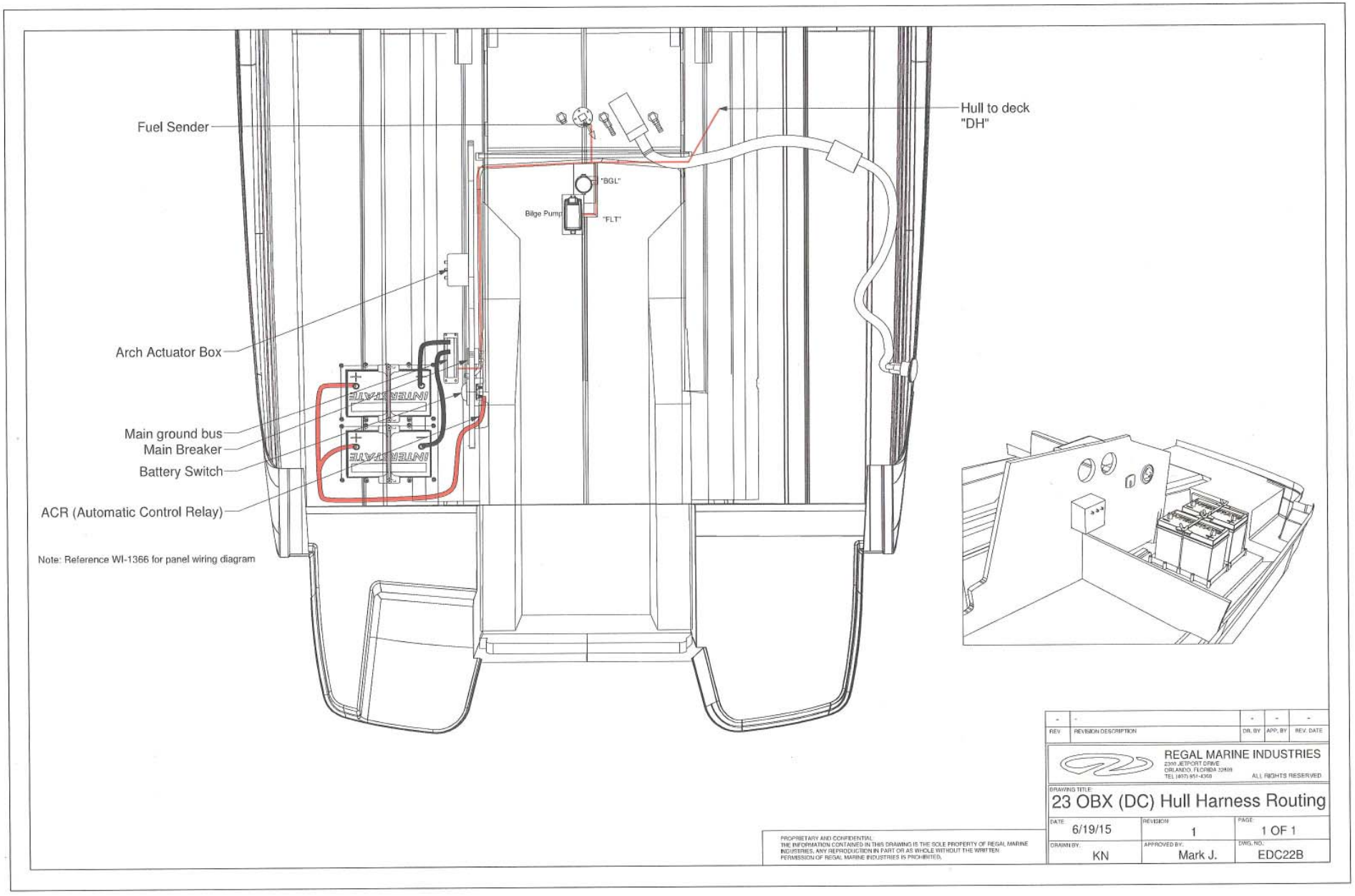
REGAL MARINE MY2016
STBD SWP - SILVER SPARK

REV.	ECN#	DESCRIPTION	DATE	BY
QUOTE	27663	QUOTE ONLY	02-04-15	MEM
Pre-Pr		PRE-PRODUCTION x20 (sj#27751)	03-09-15	MD
Pre-Pr2		PRE-PRODUCTION X20 [SJ#27763)	03-17-15	MD
E		UPDATE 12V RECEPT & hardwares	05-04-15	MD

NOTES:
SAME AS 85233436 (DIF VAC FORM)

MNG ELECTRONICS CORP.

85233436
02-03-15 MEM
SHEET 1 OF


Fuel Sender
Hull to deck
"DH"
"BGL"
Bilge Pump
"FLT"
Arch Actuator Box
Main ground bus
Main Breaker
Battery Switch
ACR (Automatic Control Relay)
Note: Reference WI-1366 for panel wiring diagram
REV.
REVISION DESCRIPTION
DR. BY
APP. BY
REV. DATE
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2300 JETPORT DRIVE
ORLANDO, FLORIDA 32809
TEL (407) 851-4368
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DRAWING TITLE:
23 OBX (DC) Hull Harness Routing
DATE:
6/19/15
REVISION:
1
PAGE:
1 OF 1
DRAWN BY:
KN
APPROVED BY:
Mark J.
DWG. NO.:
EDC22B
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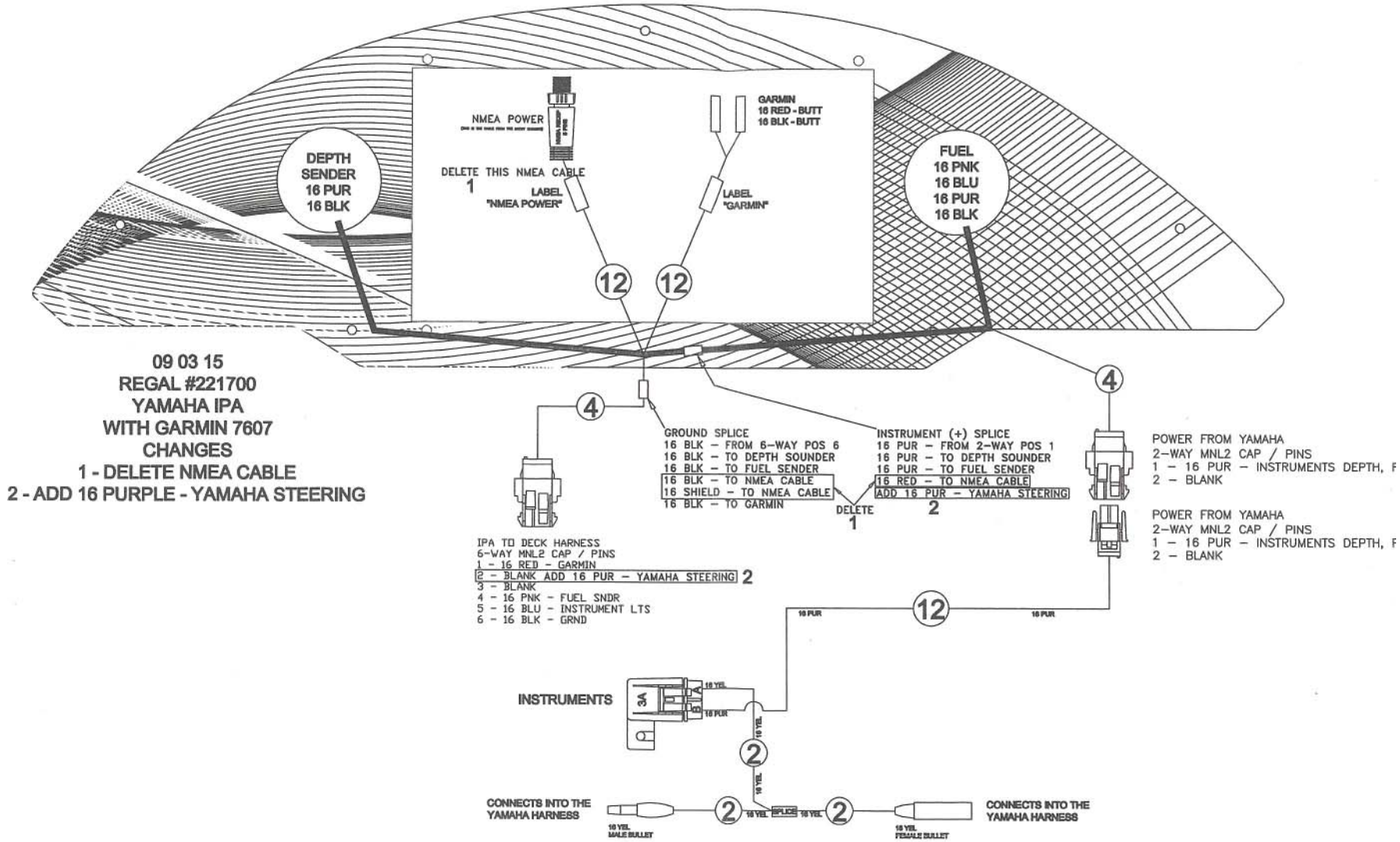
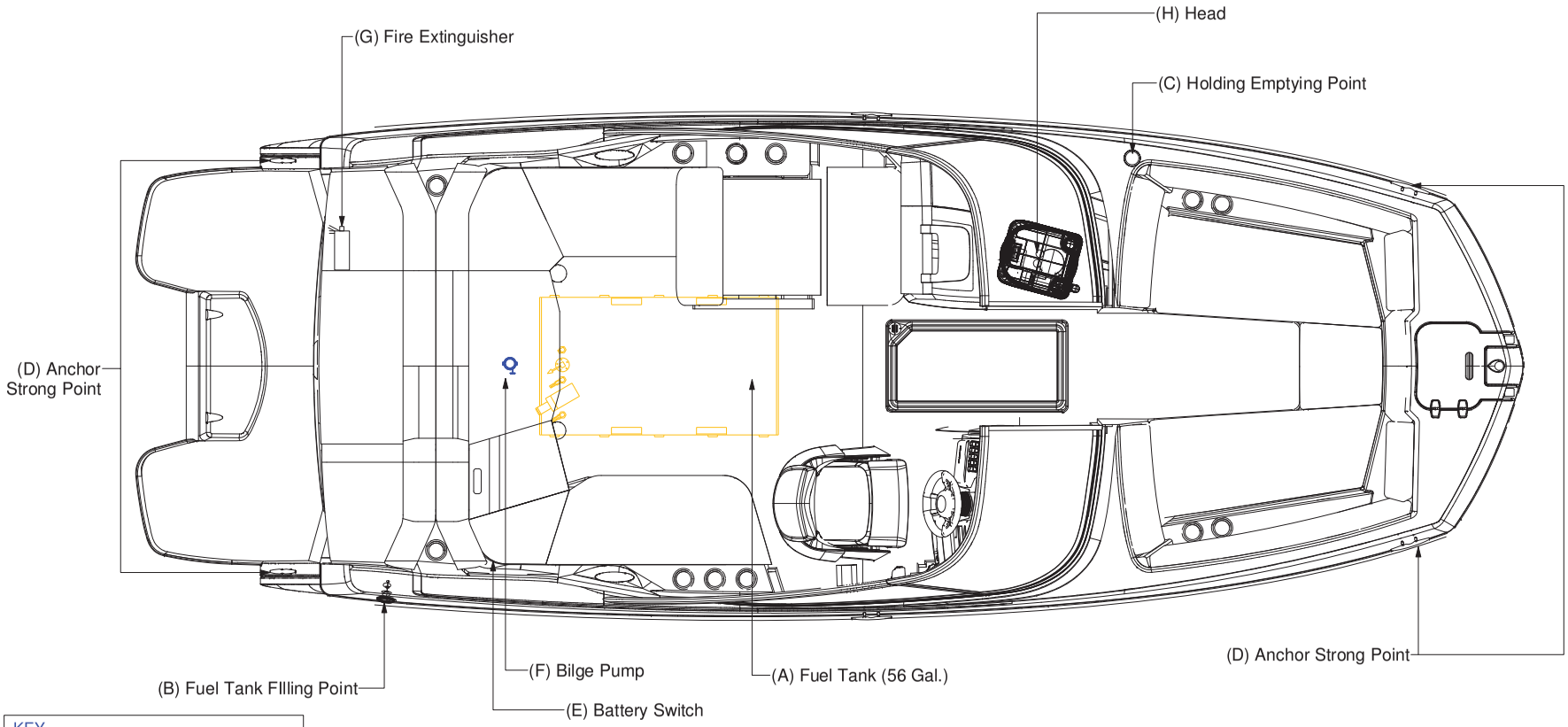


TYPICAL DASH WIRING WITH GARMIN 7606

TYPICAL DECK HARNESS BREAKOUTS



KEY
A. FUEL TANK
B. FUEL TANK FILLING POINT
C. HOLDING EMPTYING POINT
D. ANCHOR STRONG POINT
E. BATTERY SWITCH
F. BILGE PUMP
G. AUTOMATIC FIRE EXTINGUISHER
H. HEAD

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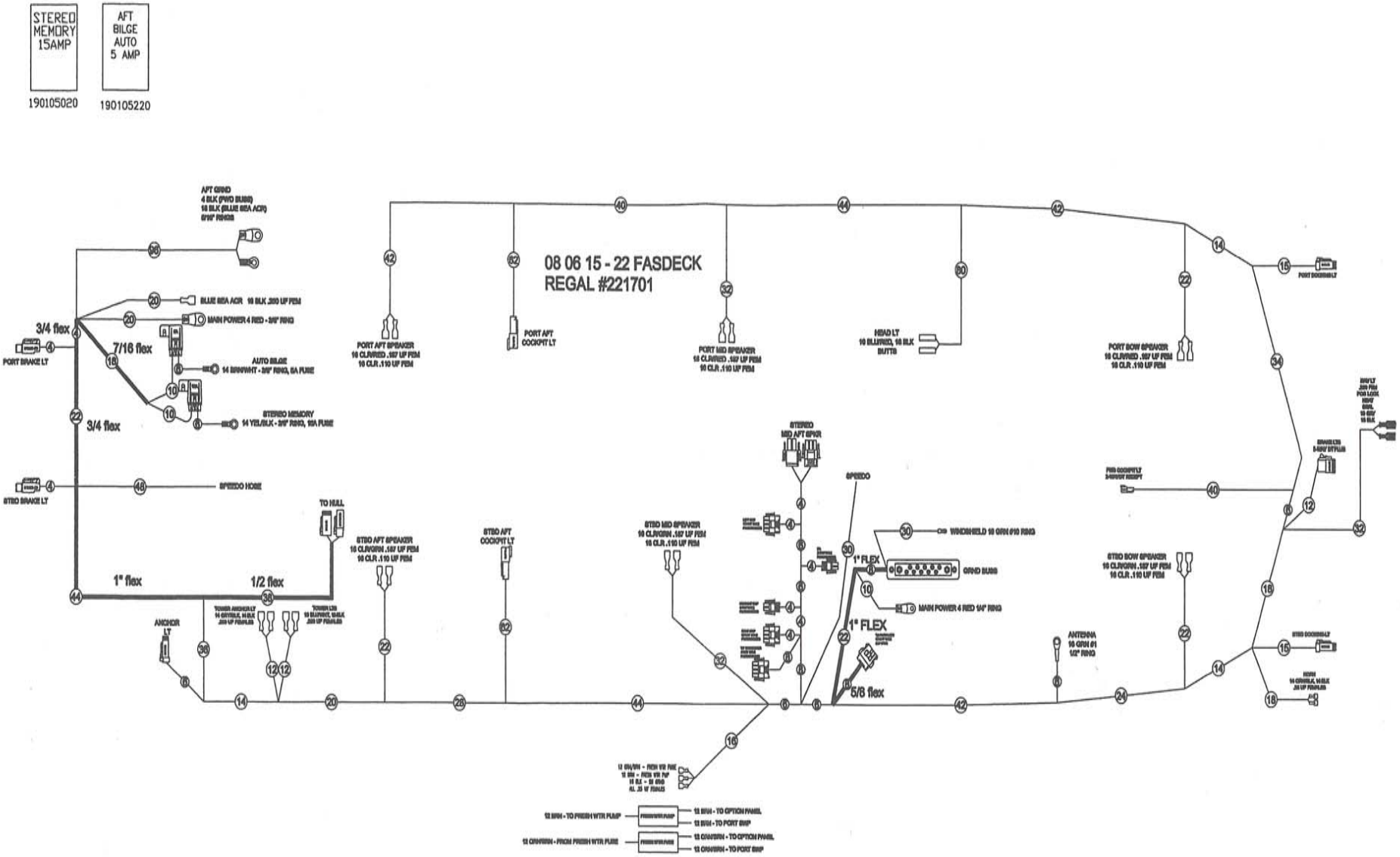
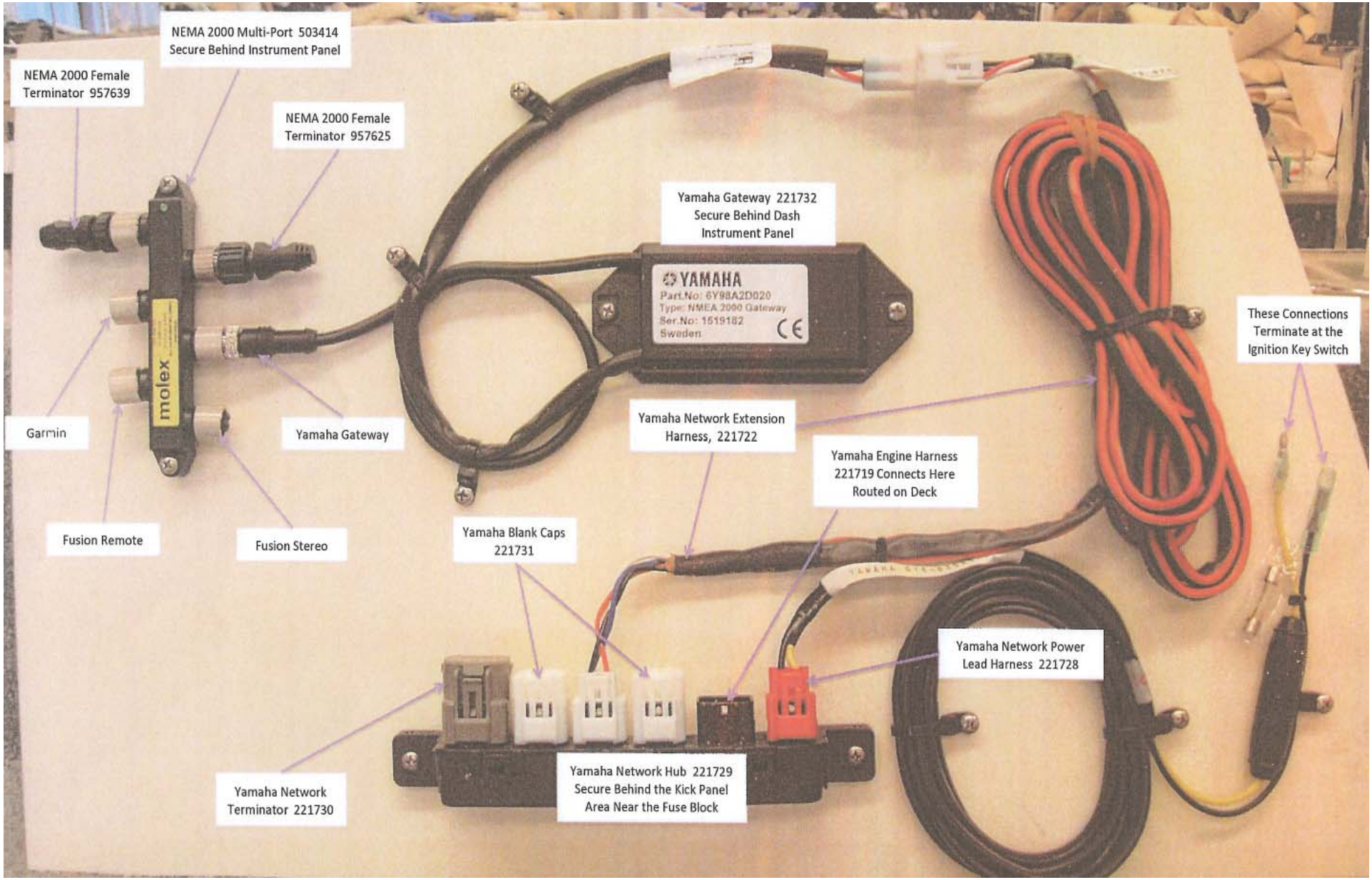
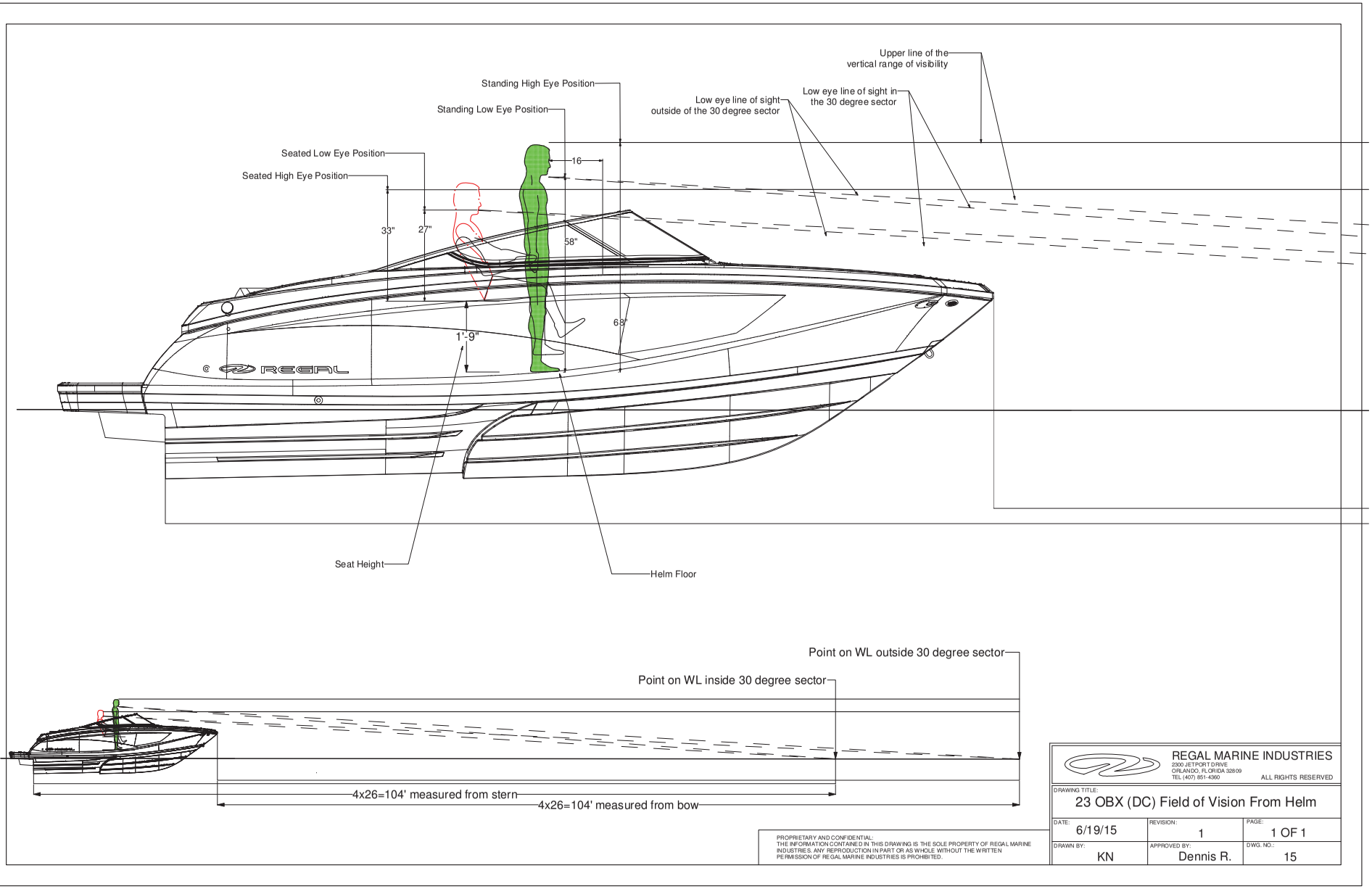
DRAWING TITLE: 23 OBX (DC) Component Locations		
DATE: 6/19/15	REVISION: 1	PAGE: 1 OF 1
DRAWN BY: KN	APPROVED BY: Dennis R.	DWG. NO.: 7



TYPICAL DECK HARNESS OVERVIEW



TYPICAL GARMIN-YAMAHA NEMA 2000 NETWORK


Upper line of the vertical range of visibility
Standing High Eye Position
Standing Low Eye Position
Low eye line of sight outside of the 30 degree sector
Low eye line of sight in the 30 degree sector
Seated Low Eye Position
Seated High Eye Position
16
33"
27"
58"
68"
1'-9"
Seat Height
Helm Floor
Point on WL outside 30 degree sector
Point on WL inside 30 degree sector
4x26=104' measured from stern
4x26=104' measured from bow
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DRAWING TITLE:
23 OBX (DC) Field of Vision From Helm
DATE: 6/19/15
REVISION: 1
PAGE: 1 OF 1
DRAWN BY: KN
APPROVED BY: Dennis R.
DWG. NO.: 15
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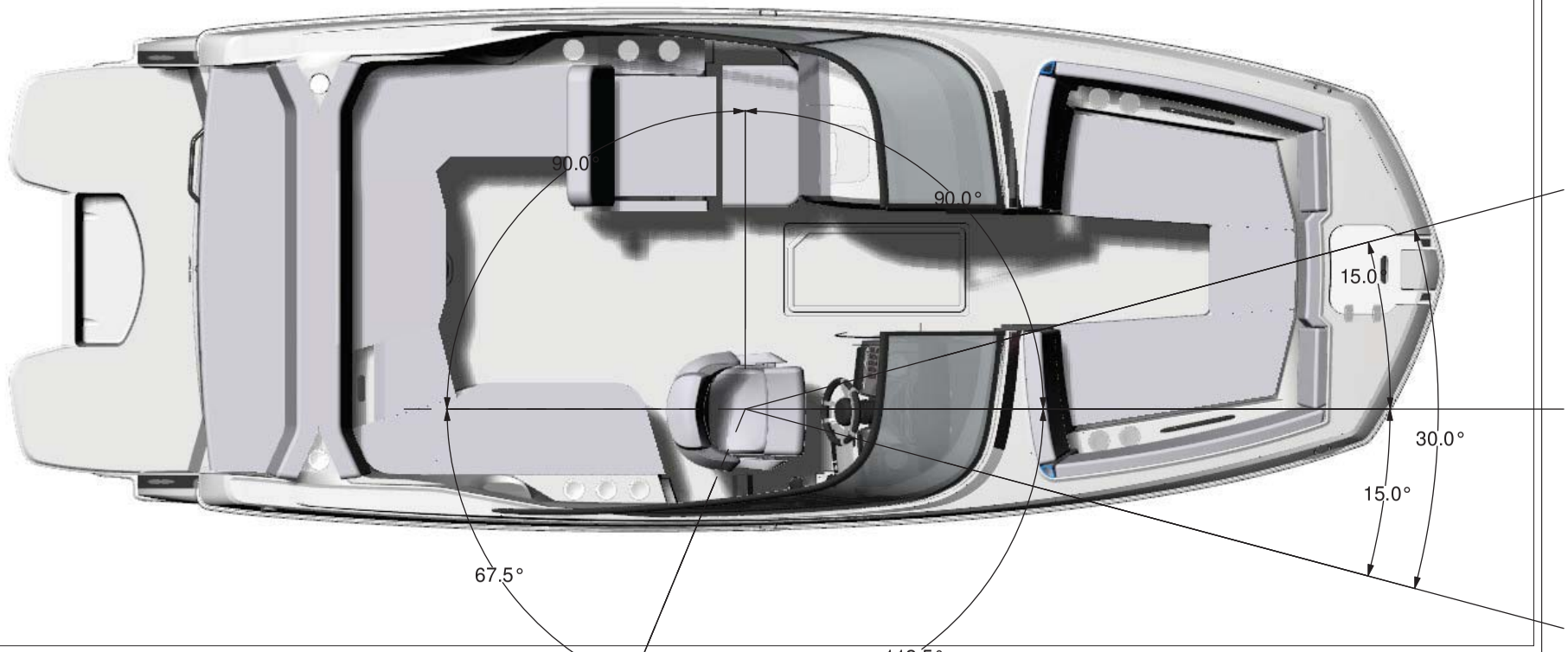

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DRAWING TITLE:
23 OBX (DC) Horizontal Range of Visibility

DATE:	REVISION:	PAGE:
6/19/15	1	1 OF 1
DRAWN BY:	APPROVED BY:	DWG. NO.:
KN	Dennis R.	14

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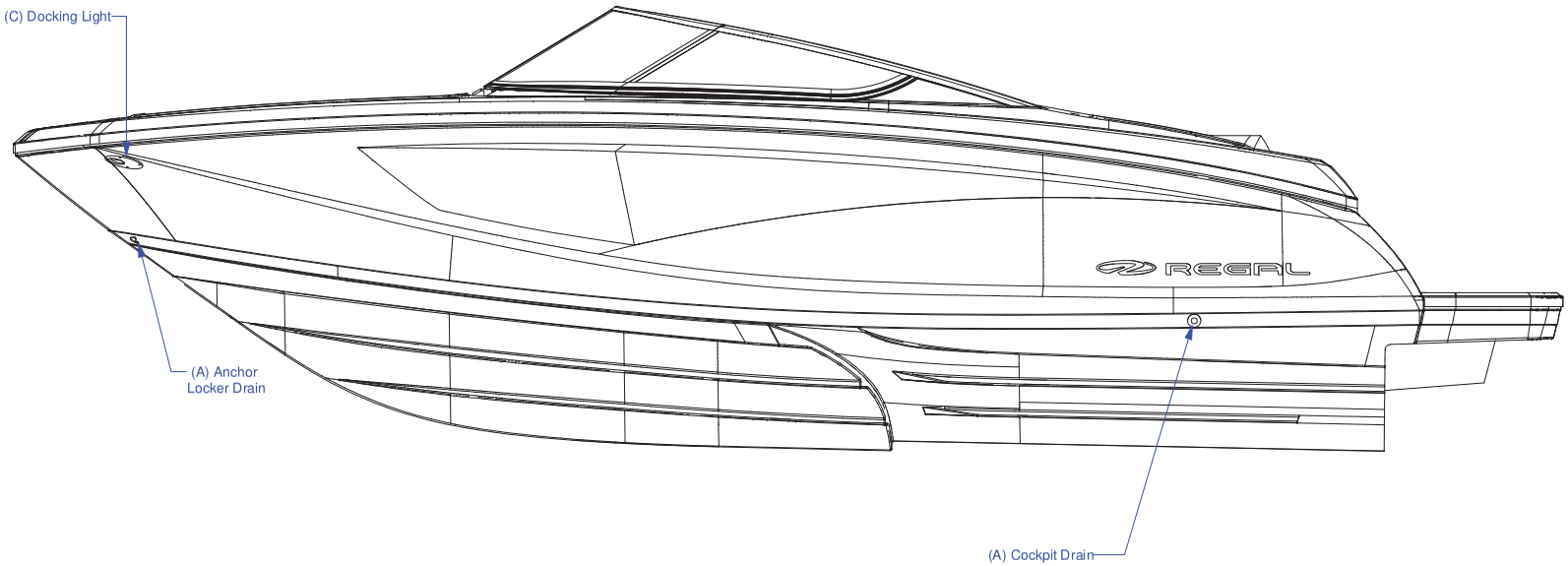
Port Hull Hardware



KEY
A. THRU-HULL FITTINGS
B. TOWING STRONG POINT
C. LIGHTS

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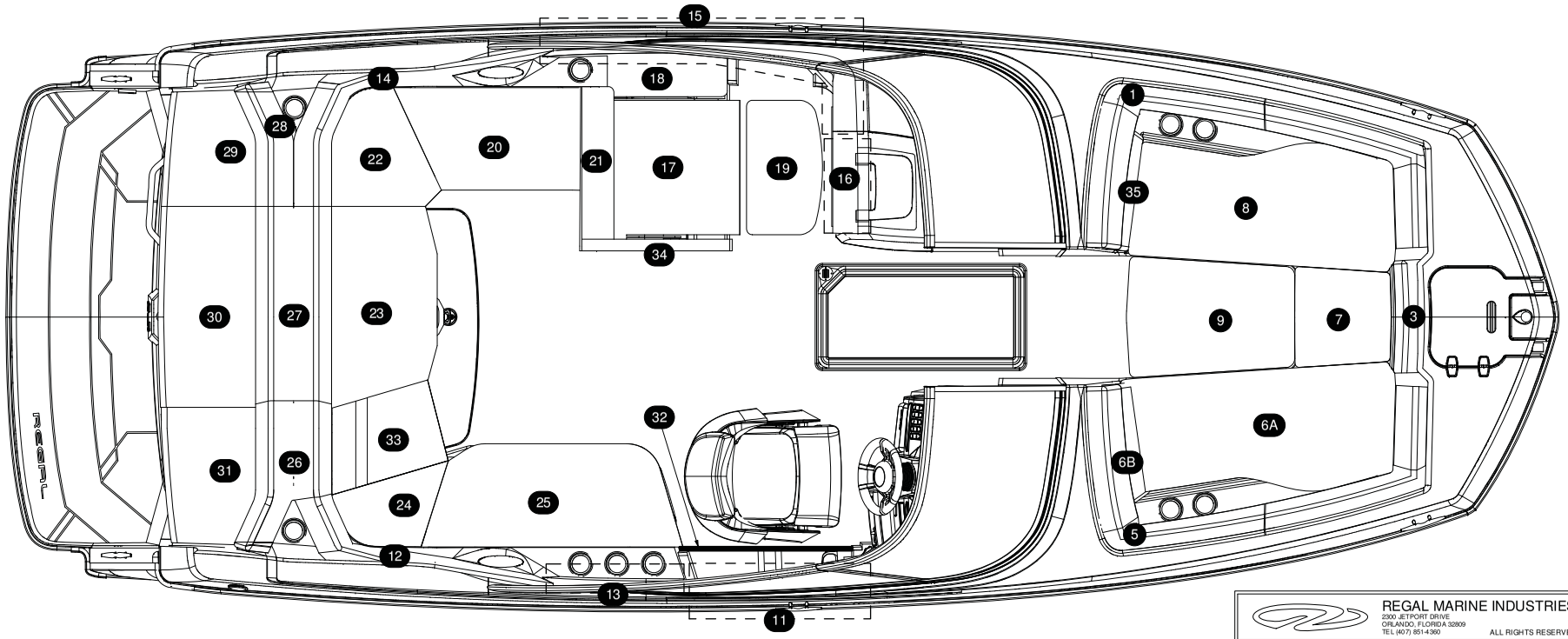
DRAWING TITLE:		
23 OBX (DC) Hull Hardware/ Thru-Hulls		
DATE: 6/19/15	REVISION: 1	PAGE: 2 OF 2
DRAWN BY: KN	APPROVED BY: Dennis R.	DWG. NO.: 6

BILL OF MATERIALS			
ITEM	QTY.	DESCRIPTION	PART NUMBER
1	1	Bow Port Aft Backrest	UDV06A
2	1	-	-
3	1	Bow Forward Center Backrest	UDV06D
4	1	-	-
5	1	Bow Starboard Aft Backrest	UDV06G
6a	1	Bow Starboard Cushion	UDV06H
6b	1	Bow Starboard aft lower Backrest	-
7	1	Bow Center Cushion	UDV06J
8	1	Bow Port Cushion	UDV06K
9	1	Bow Filler (Option)	UDV06L
10	-	-	-

BILL OF MATERIALS			
ITEM	QTY.	DESCRIPTION	PART NUMBER
11	1	Helm Forward Coaming	UDV13A
12	1	Cockpit Starboard Aft Backrest	UDV15A
13	1	Cockpit Center Aft backrest	UDV15B
14	1	Cockpit Port Aft Backrest	UDV15C
15	1	Companion Forward Coaming	UDV14A
16	1	Head Door Backrest	UDV14B
17	1	Companion Cushion	UDV14C
18	1	Companion Drink Holder	UDV14E

BILL OF MATERIALS			
ITEM	QTY.	DESCRIPTION	PART NUMBER
19	1	Companion Backrest	UDV14D
20	1	Cockpit Port Center Cushion	UDV15D
21	1	Cockpit Port Forward Cushion	UDV15V
22	1	Cockpit Port Corner Cushion	UDV15E
23	1	Engine Hatch Forward Cushion	UDV15F
24	1	Cockpit Starboard Corner Cushion	UDV15G
25	1	Cockpit Starboard Center Cushion	UDV15H
26	1	Walk Thru Backrest	UDV15J
27	1	Engine Hatch Backrest	UDV15K
28	1	Transom Seat Port Backrest	UDV15L
29	1	Transom Port Cushion	UDV15M

BILL OF MATERIALS			
ITEM	QTY.	DESCRIPTION	PART NUMBER
30	1	Transom Center Cushion	UDV15N
31	1	Transom Starboard Cushion	UDV15P
32	1	Helm Storage Panel	UDV15Q
33	1	Forward Walk Thru Filler Cushion	UDV15R
34	1	Companion side panel	UDV15S
35	1	Bow Port Aft Lower Backrest	UDV15T



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DRAWING TITLE:
22 FD (DV) Upholstery Identifer

DATE:	REVISION:	PAGE:
1/30/15	-	1 OF 1
DRAWN BY: JAL	APPROVED BY: -	DWG. NO.: UDV25X

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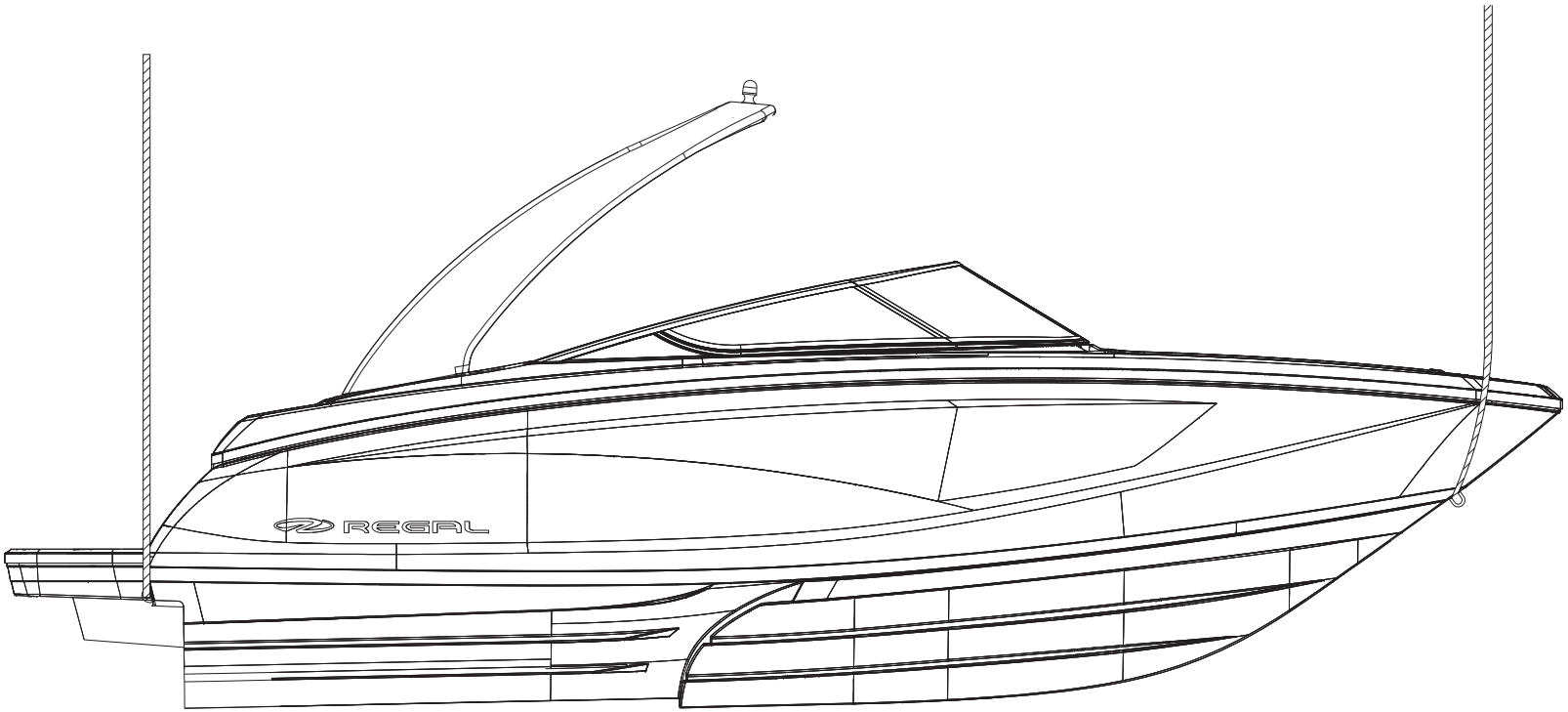

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DRAWING TITLE: 23 OBX (DC) Sling L

DATE:	REVISION:
6/19/15	1
DRAWN BY: KN	APPROVED BY: Dennis R.

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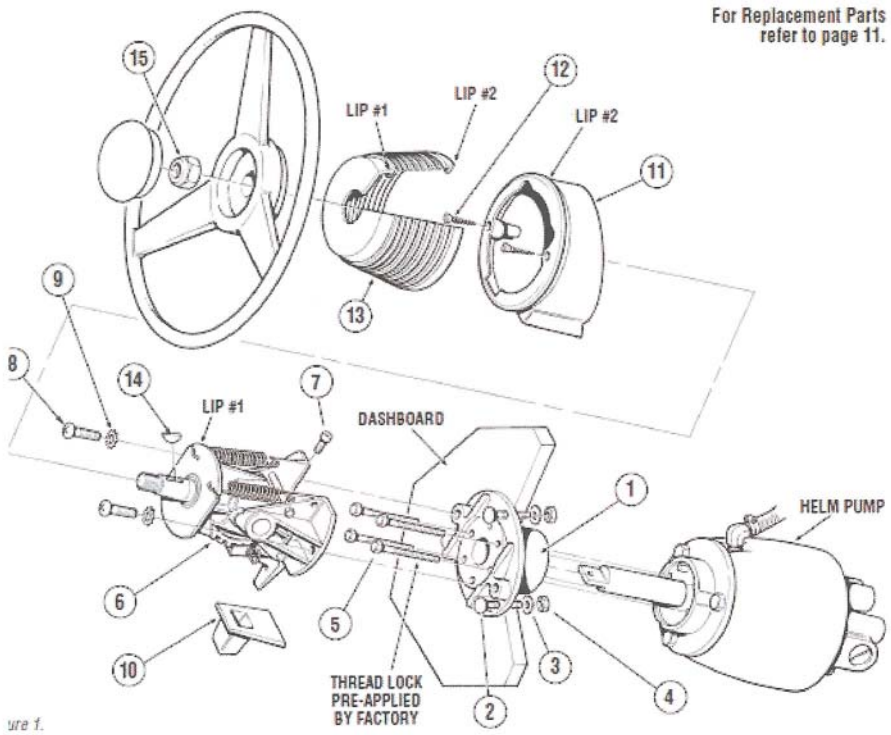

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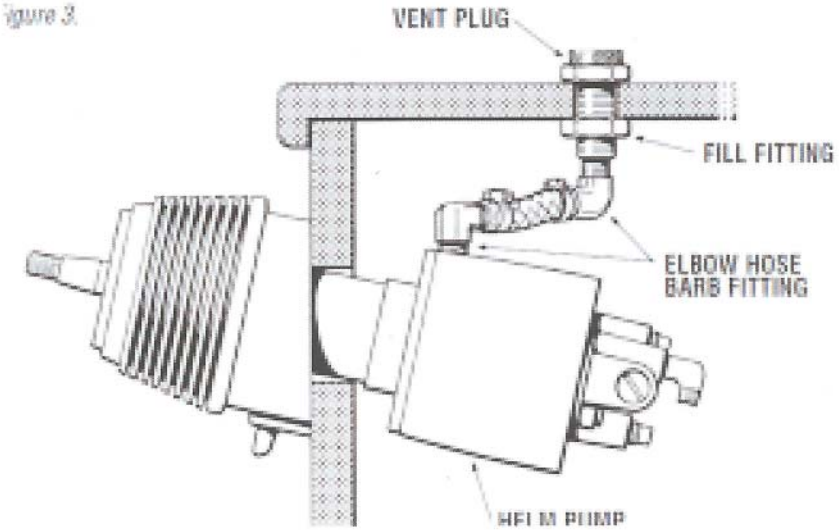

igure 3.

Sea Star Hydraulic Assisted Steering System- Typical Helm Layout