Owner's Manual

Congratulations on becoming the new owner of the world's most prestigious boat. We at Sea Ray® Boats, Inc. welcome you into our worldwide and ever-expanding family of boating enthusiasts.

The Owner's Manual Packet, to be kept on board your Sea Ray, gives you important information on all the features of your Sea Ray, for years of trouble-free boating take the time to carefully review the information in your Owner's Manual Packet and really get to know your boat. **Have everyone who will operate your boat read this manual.**

The Owner's Manual Packet contains the following:

- **Owner's Manual**: The Owner's Manual gives you important operating and safety information, as well as reminding you about your responsibilities as a boat owner/operator.
- **Original Equipment Manufacturer (OEM) Information:** This section of your Owner's Manual Packet contains information from the manufacturers of equipment installed on your boat. Examples include the engine, engine control and steering system. Throughout the Owner's Manual you will be referred to information provided by manufacturers of specific systems.

Because your purchase represents a substantial investment, we know you will want to take the necessary measures to protect its value. We have outlined a program for proper operation, periodic maintenance and safety inspections. We urge you to follow these recommendations. If you have questions which are not fully covered by the Owner's Manual Packet, please consult your authorized dealer for assistance.

Thank You For Selecting A Sea Ray®!

Bon Voyage

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1. THIS MANUAL

The material here and in the rest of the Owner's Manual Packet:

- Gives you basic safety information;
- Describes the features of your boat;
- Describes the equipment on your boat;
- Describes the fundamentals of boat use; and
- Contains service and maintenance information.

You must learn to operate this boat as well as read, understand and use this manual.

What this manual does not give you is a course in boating safety, or how to navigate, anchor or dock your boat. Operating a power boat safely requires more skills, knowledge and awareness than is necessary for a car or truck.

2. YOUR RESPONSIBILITIES

For your safety, the safety of your passengers, other boaters and people in the water, you must:

- Take a boating safety course;
- Get instruction in the safe and proper handling of your boat;
- Understand and follow the "rules of the road";
- Learn how to navigate.

3. SOURCE OF INFORMATION

In North America, contact one of the following for boating courses:

- U.S. Coast Guard Auxiliary
- U.S. Power Squadron
- Canadian Power and Sail Squadrons
- Red Cross
- State Boating Offices
- Yacht Club

Contact your dealer or the Boat/U.S. Foundation at 1-800-336-2628

Outside of North America, contact your boat dealer and/or your governmental boating agency for assistance.

A book that provides a comprehensive background in boating is Chapman - Piloting, Seamanship and Small Boat Handling, by Elbert S. Maloney, published by Hearst Marine.

4. DEALER RESPONSIBILITIES

In addition to a pre-delivery check and service of the boat, your dealer is to give you:

- A description and demonstration of the safety systems, features, instruments and controls on your boat;
- An orientation in the general operation of your boat;
- An "In Service Form" completed by you and the dealer after your inspection of the boat;
- A review of all warranty information and how to obtain warranty service;
- The complete Owner's Manual Packet.

If you do not receive all of these materials, or have any questions, contact your dealer or call: 1-800-SRBOATS (International 1-314-216-3333).

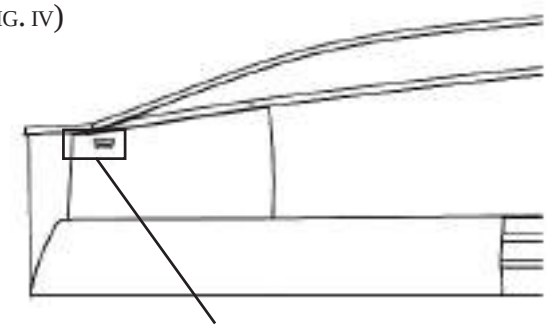
5. WARRANTIES

Your boat comes with several warranties. Each component and/or system on your boat has its own warranty that will be found with the specific information and manual for that component. These are included with your Owner's Manual Packet. Locate and read the individual warranties; then put them together for easy future reference. The Sea Ray® warranty is on the warranty information card in your packet.

6. HULL IDENTIFICATION NUMBER (HIN)

The "Hull Identification Number" located on the starboard side of the transom, is the most important identifying factor and must be included in all correspondence and orders. Failure to include it creates delays. Also of vital importance are the engine serial numbers and part numbers when writing about or ordering parts for your engine. Refer to the Engine Operator's Manual for locations of engine serial numbers and record them for future reference.

H.I.N LOCATIONS
(FIG. IV)



7. MANUFACTURER'S CERTIFICATION

As a boat manufacturer, Sea Ray builds their products to guidelines established under the Federal Boat Safety Act of 1971. The Act is promulgated by the United States Coast Guard who has authority to enforce these laws on boat manufacturers that sell products in the United States. Sea Ray ensures that all of its products comply with these laws.

The NMMA, National Marine Manufacturers Association, provides Sea Ray with a third party certification. The NMMA is an organization that represents the marine industry and assists manufacturers, boat dealers, marinas, repair yards and component suppliers in areas of legislation, environmental concerns, marine business growth and state and federal government agency interaction. The third party certification that Sea Ray participates in, uses the well know Standards and Recommended Practices of the ABYC, American Boat and Yacht Council.

Sea Ray Boats participates extensively in the American Boat and Yacht Council which is a non-profit organization that develops and publishes voluntary standards and recommended practices for boat and equipment design, construction, service and repair. We utilize all applicable ABYC standards in the construction of your Sea Ray boat.

Finally, Sea Ray sells their products world wide and as such must conform to the various rules and regulations required by other countries. Most notably, are the ISO standards in Europe which require the application of the CE (Common European) mark. This mark, much like the NMMA certification here in the US, gives you the boat owner specific information concerning your craft. For more on this, turn to Section 1 • Safety, subsections 8 and 13 which explains in detail the CE plate and its importance.

8. Service, Parts and Repair for Your Boat

When your boat needs service, parts or repair, take it to an authorized Sea Ray® dealer. To find a dealer in your area call:

Domestic: 1-800-SRBOATS
Fax: 1-314-213-7878
International: 1-314-216-3333

To find repair and parts facilities for the equipment installed on your boat, refer to the manual for that component.

If a problem is not handled to your satisfaction:

1. Discuss any warranty-related problems directly with the service manager of the dealership or your sales person. Give the dealer an opportunity to help the service department resolve the matter for you.

2. If a problem arises that has not been resolved to your satisfaction by your dealer, contact Sea Ray® Boats at 1-800-SRBOATS (International 1-314-216-3333) and the appropriate customer service department information will be provided to you.

9. Contact Phone Numbers & Internet Addresses

Sea Ray Boats USA
Phone 1-800-SRBOATS
Fax 1-314-213-7878
Internet ..... www.searay.com

Sea Ray Boats International ... 1-314-216-3333

United States Coast Guard
Phone 1-800-368-5647
Internet ..... www.uscgboating.org

Boat US Foundation
Phone 1-800-336-2628
Internet ..... www.boatus.com/foundation/

Canadian Coast Guard
Phone 1-800-267-6687
Internet ..... www.ccg-gcc.gc.ca/main_e.htm

About Your Limited Warranty

Sea Ray offers an express limited warranty on each new Sea Ray sport boat purchased through an authorized Sea Ray dealer. A copy of the Sea Ray Sport Boat Limited Warranty ¨("Limited Warranty") was included in your owner's packet. If for any reason, you did not receive a copy of the limited warranty, please contact your local dealer or call 1-800-SRBOATS for a replacement copy. This is a summary of several provisions of the Limited Warranty. Please read the Limited Warranty, which is the controlling document.

Under the Limited Warranty, Sea Ray covers: (a) structural fiberglass deck or hull defects which occur within five (5) years of the date of delivery; (b) parts found to be defective in factory material or workmanship within one (1) year of the date of delivery; (c) laminate blisters resulting from defects in factory material or workmanship for five (5) years on a pro-rated basis.

On Sport Boats, Sea Ray provides additional warranty coverage to its five-year structural hull/deck coverage with a limited life-time structural hull/deck warranty. This limited lifetime structural coverage provides repairs of any Structural Fiberglass Hull/Deck Defect for as long as the original owner owns the Sport Boat. Sport Boat models and Hull/Deck Defects are defined in the Limited Warranty.

Sea Ray's obligation under its Limited Warranty is limited to repair or replacement of parts that are judged defective by Sea Ray and does not include transportation, haul out, or other expenses. The foregoing is the **sole and exclusive** remedy provided by Sea Ray.

The Limited Warranty does not cover engines, stern drives, controls, propellers, batteries, trailers, or other equipment or accessories carrying their own individual warranties, nor does the Limited Warranty cover engines, parts or accessories not installed by Sea Ray. The Limited Warranty does not cover cosmetic gel coat finish. Boats used for commercial purpose are excluded from coverage. **See the Limited Warranty for other exclusions.**

SEA RAY EXPRESSLY DISCLAIMS THE IMPLIED WARRANTIES OF FITNESS AND MERCHANTABILITY. NEITHER SEA RAY NOR THE SELLING DEALER SHALL HAVE ANY RESPONSIBILITY FOR LOSS OF USE OF THE BOAT, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS OR CONSEQUENTIAL DAMAGES.

The unexpired term on the limited one-year parts and components coverage and the limited five-year pro-rated blister coverage of the Limited Warranty may be transferred to a subsequent owner upon the new owner's written request. Coverage for Structural Fiberglass Hull/Deck Defects on Sport Boats may be transferred once to a second owner upon the second owner's request, however upon transfer, this coverage will expire ten (10) years from the date of original purchase by the first retail owner, as reflected in Sea Ray's records.

The new owner can submit a request for warranty transfer, free of charge, via the searay.com website. Alternatively, the new owner can submit a written request to the Sea Ray Division of Brunswick Corporation, 2600 Sea Ray Blvd., Knoxville, TN 37914, accompanied by a $50 processing fee.

Thank you for your decision to buy a Sea Ray.

The Limited Warranty is subject to change at any time at Sea Ray's discretion. The information contained herein is general information about the Limited Warranty for the owner's general knowledge, and does not alter or amend the terms of the Limited Warranty.

INTRODUCTION

SECTION 1 • SAFETY

SECTION 2 • GENERAL BOAT ARRANGEMENT

SECTION 3 • USING YOUR BOAT

SECTION 4 • BILGE AND UNDERWATER GEAR

SECTION 5 • FUEL SYSTEM

SECTION 6 • ELECTRICAL SYSTEM

SECTION 7 • ACCESSORIES AND OPTIONS

SECTION 8 • SERVICE INFORMATION

SECTION 9 • CARE & REFINISHING

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Sea Ray Boats, Inc. 2600 Sea Ray Blvd., Knoxville, TN 37914
For information call 1-800-SRBOATS or fax 1-314-213-7878
International phone 1-314-216-3333

Internet Address: http://www.searay.com

SAFE boating means:

- Knowing the limitations of your boat;
- Following the rules of the road;
- Keeping a sharp lookout for people and objects in the water;
- Not boating in water or weather conditions that are beyond the boat's and the operator's capability;
- Never boating when the operator is under the influence of drugs or alchohol;
- Being aware of your passenger's safety at all times; and
- Reducing speed when there is limited visibility, rough water, nearby people in the water, boats, or structures.

Boating in beautiful weather and calm water conditions can be a wonderful experience. Pleasurable boating, however, requires considerably greater skills than operating a land vehicle. To obtain these skills, you must:

- Take a Coast Guard, U.S. Power Squadron or equivalent boating safety course. **Call the Boat/U.S. Foundation at 1-800-336-2628 for information on available courses.**
- Get hands-on training on how to operate your boat properly.

In addition:

- Maintain your boat and its safety and other systems as recommended in this manual.
- Have the boat inspected by a qualified mechanic or dealer, at least annually.
- Ensure that the Coast Guard required safety equipment is on board and functions. (See page 1.2).

1. SAFETY LABELS

Safety precautions are given throughout this manual and labels are mounted at key locations throughout the boat. This safety information advises the owner/operator and passengers of imperative safety precautions to follow when operating and/or servicing equipment.

- Figures 1.19.1, 1.20.1 and 1.21.1 shows the location of the safety labels on your boat.
- Do not remove or obstruct any safety label.
- Replace any label which becomes illegible. Replacement safety labels can be obtained by calling your dealer or Sea Ray at 1-800-SRBOATS for information on how to contact the manufacturing facility for your boat.

The meaning associated with each of the four basic types of label is:

⚠ DANGER

DANGER – Immediate hazards which WILL result in severe personal injury or death if the warning is ignored.

⚠ WARNING

WARNING – Hazards or unsafe practices which COULD result in severe personal injury or death if the warning is ignored.

⚠ CAUTION

CAUTION – Hazards or unsafe practices which could result in minor injury or product or property damage if the warning is ignored.

NOTICE

Information which is important to proper operation or maintenance, but is not hazard-related.

2. LEGALLY MANDATED MINIMUM REQUIRED EQUIPMENT

Consult your national boating law enforcement agency.

The following equipment is the minimum required by the U.S. Coast Guard for a boat 40' to less than 65' [12.2 meters to less than 19.8 meters] in length.

Personal Flotation Devices (PFD's): One Coast Guard approved Type I, II or III device is mandatory for each person aboard. One throwable Type IV device is also required to be on board. A Type V device is acceptable if worn for approved use. See Page 1.4 for a description of these PFD classifications. **Always wear a PFD when boating.**

NOTICE

PFD REQUIREMENTS DIFFER
Depending on the state or country of operation the operator of a vessel may be fined for failure to comply with local or national rules regarding PFD usage.

Fire Extinguisher - Portable: With a fixed fire extinguishing system installed in the engine and generator spaces, the American Boat and Yacht Council (ABYC) recommends that you have **Two** (2) Type B-II ABC fire extinguishers, one each located at the helm station and outside the engine compartment and **Three** (3) Type B-I ABC extinguishers located in the galley, the crew quarters and the cabin, near the cockpit door.

Whistle, Horn: You must have on board some means of making a loud sound signal, for example, whistle or horn.

Visual Distress Signals: If you operate your boat in coastal waters or on the Great Lakes, you must have visual distress signals for day and night use on board. At least three (3) U.S. Coast Guard approved pyrotechnic devices marked with date showing service life must be carried, be readily accessible, in serviceable condition and not expired. Store pyrotechnic signals in a well-marked waterproof container in a dry location.

Other: Your Sea Ray is equipped with the required navigation lights, engine exhaust and ventilation systems.

3. FIRE EXTINGUISHING SYSTEM

Your boat is equipped with an automatic fire extinguisher system. Located in the engine compartment. In the event of a fire, the heat sensitive automatic head in the engine compartment will release a fire-extinguishing vapor, totally flooding the area.

The dashboard contains an indicator light for the automatic fire extinguishing system. The light will be ON when the ignition is on and indicates that the system is ready. If the light goes out while the ignition is on, the system has discharged.

WHEN DISCHARGE OCCURS, IMMEDIATELY SHUT DOWN ALL ENGINES, POWERED VENTILATION, ELECTRICAL SYSTEMS AND EXTINGUISH ALL SMOKING MATERIALS. DO NOT IMMEDIATELY OPEN THE ENGINE COMPARTMENT!! THIS FEEDS OXYGEN TO THE FIRE AND THE FIRE COULD RESTART.

Wait at least fifteen (15) minutes before opening the engine compartment. This permits the fire-extinguishing vapor to "soak" the compartment long enough for hot metals and fuels to cool. Have portable extinguishers at hand and ready to use in case the fire reignites. Do not breathe fumes or vapors caused by the fire.

4. CARBON MONOXIDE

Symptoms of carbon monoxide poisoning are dizziness, ears ringing, headaches, nausea and unconsciousness. A poisoning victim's skin often turns cherry red. Because carbon monoxide gas (CO) is odorless, colorless and tasteless, it is unlikely to be noticed until a person is overcome.

⚠ DANGER

Fumes from engine, generators, and other equipment and appliances using burning fuel contain carbon monxide.

Carbon Monoxide can kill you.

Open all doors, curtains, windows, and hatches to let fresh air circulate, when running engine, generator or burning any fuel when boat is anchored, moored or docked.

Dangerous concentrations of carbon monoxide will be present if:

- the engine and/or generator exhaust systems leak;
- insufficient fresh air is circulating where people are present; and
- fumes move from the rear of the boat into the cockpit and cabin area.

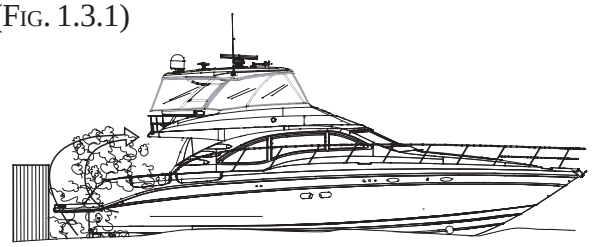
⚠ DANGER

Even in rainy cold weather ventilation must be maintained to avoid Carbon Monoxide poisoning. You will get wet and/or cold.

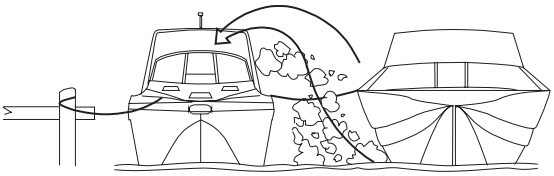
⚠ DANGER

Sleeping on boat requires a operating Carbon Monoxide detection system in each sleeping location.

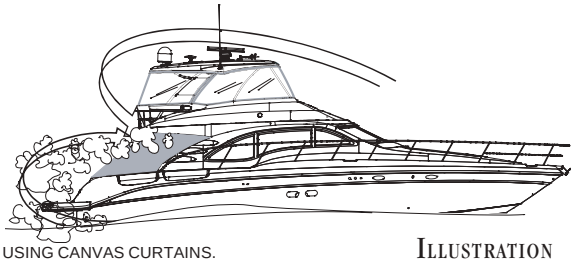
EXAMPLES OF HOW HIGH LEVELS OF CARBON MONOXIDE MAY ACCUMULATE (FIG. 1.3.1)



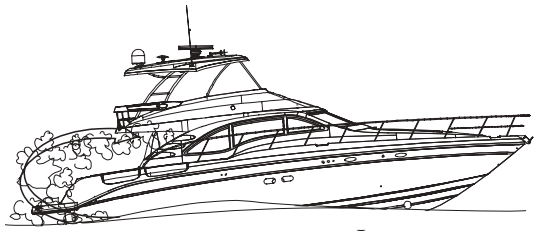
BLOCKING HULL EXHAUSTS. OPERATING AT SLOW SPEED OR DEAD IN THE WATER. ILLUSTRATION #A



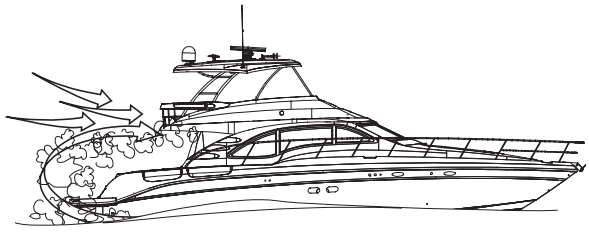
OPERATING ENGINE AND/OR GENERATOR IN CONFINED SPACES. ILLUSTRATION #D



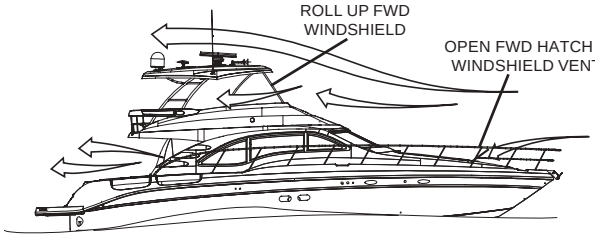
USING CANVAS CURTAINS. ILLUSTRATION #B



OPERATING WITH THE BOW HIGH. ILLUSTRATION #E



WINDS BLOWING EXHAUST TOWARD BOAT OCCUPANTS. ILLUSTRATION #C



GOOD VENTILATION. ILLUSTRATION #F

Figure 1.3.1 gives examples of boat operating conditions that can lead to high concentrations of carbon monoxide gas.

To minimize the danger of CO accumulation when the engine and/or generator are running, or using burning fuel applications.

- Be sure to have sufficient ventilation when using canvas or window-type side curtains when underway, anchored, moored or docked.
- If the convertible top is installed, operate with the forward hatch open and leave cabin door open.
- Operate all burning fuel appliances, such as charcoal, propane, LPG, CNG or alcohol cooking devices in areas where fresh air can circulate. Do not use such devices where there is no noticeable air movement, especially in the cabin, when anchored, moored or docked.
- Do not idle engine without moving boat for more than 15 minutes at a time.
- Inspect the exhaust system regularly. (See Section 8, Required Inspection, Service and Maintenance.

If CO poisoning is suspected, have the victim breath fresh air deeply. If breathing stops, resuscitate. A victim often revives, then relapses because organs are damaged by lack of oxygen. Seek immediate medical attention.

A. Carbon Monoxide Monitor

Your boat has carbon monoxide (CO) monitors mounted throughout the boat . The CO monitor is an electronic instrument that detects CO. When there is a buildup of CO, the monitor will alert the occupants by a flashing DANGER light and alarm. The CO monitor is wired through a breaker on the DC distribution panel.

It is extremely important that you become totally familiar with your CO monitor and its functions.

Read and understand the CO monitor information and operating instructions located in your Owner's Manual Packet.

5. Lifesaving Equipment

Even strong swimmers can tire quickly in the water and drown due to exhaustion, hypothermia, or both. The buoyancy provided by a personal flotation device (PFD) will allow the person who has fallen overboard to remain afloat with far less effort and heat loss, extending survival time necessary to find and retrieve them.

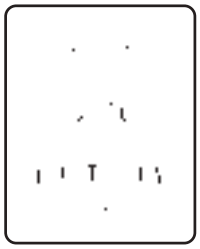
Boat operators are required to carry one wearable personal flotation device (Type I,II,III or V) for every person on board. Boats must also have at least one throwable device (Type IV).

The law requires that PFD's must be readily accessible, if not worn. "Readily accessible" means removed from storage bags and unbuckled. But, children and nonswimmers must wear PFDs at all times when aboard. It is common sense to have everyone on board wearing PFDs. A throwable device must also be right at hand and ready to toss.

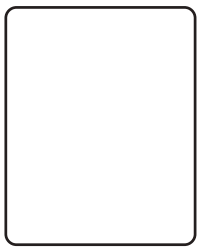
A. PFD Classifications

Off-Shore Life Jacket (Type I) most buoyant, it is designed to turn an unconscious person face up; used in all types of waters where rescue may be slow, particularly in cold or rough conditions.

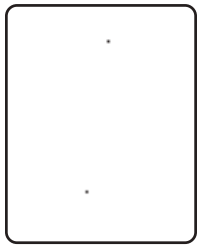
Near-Shore Life Vest (Type II) "keyhole" vest with flotation-filled head and neck support is also designed to turn a person face up, but the turning action is not as pronounced; used in calm, inland waters or where quick rescue is likely.



Flotation Aid (Type III) vest is designed so conscious wearers can turn face up; often designed for comfort while engaged in sports such as skiing.



Throwable Devices (Type IV) horseshoe buoys, ring buoys and buoyant cushions are designed to be grasped, not worn.



Special-Use Devices (Type V) sailboat harnesses, white-water vests, float coats, and hybrid vests which have minimum inherent buoyancy and an inflatable chamber.

Before purchasing PFDs, ensure that there is an attached tag indicating they are approved by the U.S. Coast Guard or by your national boating law enforcement agency.

Children and nonswimmers must wear PFDs at all times when aboard. All passengers and crew should wear them. A loose PFD is often useless in an emergency.

The operator is responsible for instructing everyone aboard on the location and use of PFDs.

Size PFDs for the wearer. Children require special attention in the use of PFDs.

Test PFD buoyancy at least once a year.

6. Additional Recommended Equipment for Safe Operation

In addition to legally mandated equipment, the following items are necessary for safe boating, especially if your boat is out of sight of land.

- First aid kit
- Visual distress signals for day and night use (required in some areas; consult local regulations)
- Charts of your intended cruising area
- Compass
- GPS or Loran position locating devices
- Marine VHF radio with weather channels
- Emergency position-indicating radio beacon (EPIRB)
- Manual bilge pump
- Moisture repellant
- Anchors, chain and line (The anchors must be properly sized for your boat. Ask your dealer or marine supply store for recommendations).
- Mooring lines
- Fenders
- Boat hook
- Waterproof flashlight(s)
- Extra batteries for flashlights and portable electronic devices
- High power spotlight, if you intend to boat at night
- Spare keys
- Instruction manuals for engine and accessories
- Lubricating oil
- Tool kit:
  - Assorted screwdrivers (Phillips and flat blade)
  - Pliers (regular, vise-grip, and tongue & groove)
  - Wrenches (box, open-end, allen, adjustable)
  - Socket set (metric or U.S. Standard as appropriate)

- Electrical tape and duct tape
- Hammer
- Utility Knife

- Spare parts kit (spark plugs, fuses, hose clamps and ask your dealer to recommend other parts)
- Extra propeller

7. IMPAIRED OPERATION

Drugs and/or alcohol will prevent you from operating your boat safely. This single factor is involved in more marine accidents and deaths than any other. The detrimental effects of alcohol and drugs are increased by the wind, waves and sun, quickly impairing your ability to react properly and promptly in an emergency.

⚠ WARNING

Drugs and/or alcohol impair the operator's ability to control the boat safely.

Death or serious injury can result from improper boat operation.

8. LOAD CAPACITY

⚠ DANGER

Never carry more weight or passengers than indicated on the certification plate, regardless of weather or water conditions.

The boat can capsize, swamp or sink.

A. UNITED STATES

Use common sense and sound judgement when placing equipment and/or passengers in your boat. The number of people on board must be reduced if you go out in poor weather and rough water.

- The number of seats does not indicate how many people a boat can carry in poor weather and rough water.
- Above idle speed, all passengers must be seated on the seats provided.

The United States Coast Guard does not provide specific numbers for passenger capacity or cargo weight for recreational vessels larger than 20 feet (6.09 meters). For safety sake, use the following information provided for the international loading standards for maximum number of passengers plus cargo weight.

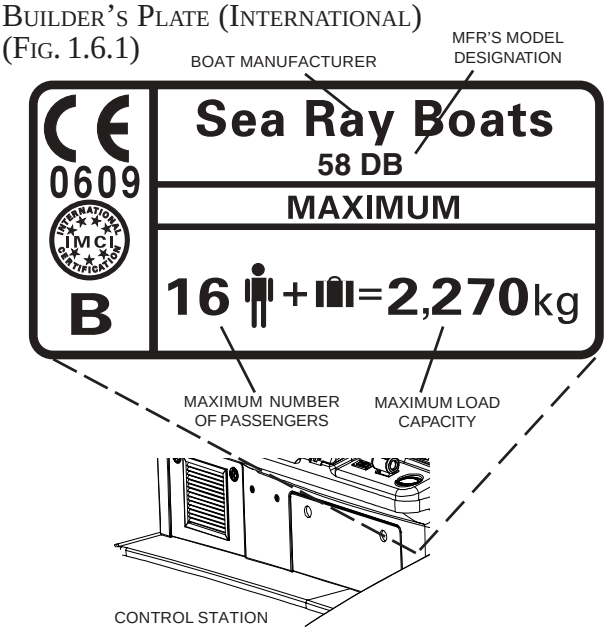
B. INTERNATIONAL

The certification plate (See fig. 1.6.1) located near the helm indicates maximum weight and number of persons your boat can handle under calm sea conditions. **Do not exceed the load capacities stated.** The number of people on board must be reduced if you go out in poor weather and rough water.

The information present on the certification plate does not relieve the operator from responsibility. Use common sense and sound judgement when placing equipment and/or passengers in your boat.

- Do not load to capacity in poor weather or rough water.

BUILDER'S PLATE (INTERNATIONAL)
(FIG. 1.6.1)



- The number of seats does not indicate how many people a boat can carry in poor weather and rough water.
- Above idle speed, all passengers must be seated on the seats provided.

⚠ WARNING

When engine is running, keep passengers away from areas not designed for riding, such as seat backs, bow, gunwales, transom platform, swim platform, front and rear decks and on sun pads.

Passengers can fall overboard if not seated properly on the seats provided.

9. Power Capacity

Do not exceed the maximum engine power rating stated on the certification plate. Your boat will be difficult to handle and will be less stable.

Your Sea Ray® has been equipped with a propeller which our tests have shown to be the best suited for general use with our engine under normal conditions and load. Do not change the pitch of your propeller without getting your dealer's recommendations first. If you change to a different propeller pitch, **under no circumstances use a propeller which allows the engine to operate at higher than recommended RPM.** (your engine manual specifies the maximum recommended (RPM).

To maintain rated power, propellers should be free of nicks, excessive pitting and any distortions that alter them from their original design. Badly damaged propellers should be replaced, but those that are chipped, bent or merely out of shape can be reconditioned by your marine dealer.

It is advisable to carry an extra propeller aboard in case you damage the one in use.

10. Stability

Your boat was manufactured to specific stability and flotation standards for the capacity shown on the certification plate. Any increase from the recommended load capacities will put your boat in jeopardy of capsizing, swamping and/or sinking.

⚠ WARNING

Distribute passengers and gear as uniformly as possible from front to rear and left to right.

The manufacturer's load rating is the maximum allowed under calm conditions.

Reduce boat loading if weather, water or other conditions are adverse.

In addition:

- Stability may be substantially reduced if equipment is added above the deck.
- Stability is substantially reduced by loose fluids or weight within the hull. Keep bilge area as dry as possible, and close all openings, hatches and windows in rough weather.

11. Maintain Control

On the water there are no marked traffic lanes, no traffic signs or lights, and boats have no turn signals. The boat operator must keep her or his attention focused not only on what's ahead but what's on the left, right and behind the boat.

The operator must always be alert to approaching boats (from the rear, right and left sides, as well as those ahead). There can be people in the water, partially submerged debris, and other navigational hazards such as rocks, sand bars, dangerous currents, to name a few.

Your passengers are relying on you to operate and maneuver the boat safely so that they are not in danger of going overboard. If you turn to quickly, increase or decrease speed abruptly, your passengers are at risk of being thrown overboard or thrown about the boat.

⚠ WARNING

Death or serious injury can result if you fail to observe these safety rules:

- **Anyone who controls the boat must have taken a boating safety course and have trained in the proper operation of the boat.**
- **Always operate the boat at speeds that will not put people or property in danger.**
- **Be constantly aware of conditions in all directions when underway and before turning.**
- **Reduce speed, use a lookout to identify possible hazards or difficulties, and turn on navigation lights when:**
  - **visibility is impaired;**
  - **in rough water; and**
  - **in congested waterways.**
- **Watch your wake. It can capsize a small boat or damage moored boats or other property. You are responsible for damage caused by your wake.**

When visibility becomes impaired because of weather, time of day or high bow angle you must slow down so that you have sufficient time to react if an emergency occurs. Nearby boats face similar risks in avoiding a collision with you.

A. General Considerations

- Know how your boat handles under different conditions. Recognize your limitations and the boat's limitations. Modify speed in keeping with weather, sea and traffic conditions.
- Instruct passengers on location and use of safety equipment and procedures.
- Instruct passengers on the fundamentals of operating your boat in case you are unable to do so.
- You are responsible for passenger's actions. If they place themselves or the boat in danger, immediately correct them.

12. Weather

There are four design categories of boats based upon their ability to withstand wind and sea or water conditions:

⚠ DANGER

DO NOT ATTEMPT TO BOAT IN SEVERE WEATHER CONDITIONS DEATH OR SERIOUS INJURY CAN OCCUR GET TO SHORE BEFORE THE WEATHER TURNS BAD.

A. Ocean
Wind speed: above 40 knots (46 m.p.h.)
Wave height: above 4 meters (13 feet)
Boat may be used for extended ocean voyages.

B. Offshore
Maximum wind speed: 40 knots (46 m.p.h.)
Maximum wave height: 4 meters (13 feet)
Boat can be used offshore, but not for extended ocean voyages.

C. Inshore
Maximum wind speed: 27 knots (31 m.p.h.)
Maximum wave height: 2 meters (6.5 feet)
Boat use is limited to coastal waters, large bays, estuaries, lakes and rivers.

D. Sheltered Waters
Maximum wind speed: 15 knots (18 m.p.h.)
Maximum wave height: 0.5 meters (1.5 feet)
Boat use is limited to small lakes, rivers and canals.

Your 58 DB *(585 DB)* is Design Category B.

The wind speed and wave height specified as the upper limit for your category of boat does **not** mean that you or your passengers can survive if your boat is exposed to these conditions. It is only the most experienced operators and crew that may be able to operate a boat safely under these conditions. You must always be aware of weather conditions and head for port or protected waters in sufficient time to avoid being caught in high winds and rough water. **Do not take chances!**

Getting caught in severe weather is hazardous. Bad weather and/or rough sea or water conditions can cause an unsafe situation. Consult local weather information, or listen to the NOAA weather reports for the latest weather conditions or any impending deterioration of the weather before setting out and while underway. Following are a few basic weather-related rules:

- Check the weather forecast and the water conditions before leaving and while underway.
- A sudden change in wind direction or speed or an increase in wave height indicates deteriorating weather.
- Have everyone wear a personal flotation device.
- If a storm approaches, immediately seek a safe harbor.
- If a storm hits, have everyone sit in the cabin or on the cockpit deck in the boat. Head the bow into the wind with enough power to maintain slow headway.
- If you encounter fog, determine your position, set a safe course, slow down and alert other boats of your presence with a sound signal.
- If a lightning storm approaches, the safest action is to dock and disembark. If you cannot return to shore, have passengers go **inside** the cabin and remain there until the storm passes.
- Lightning seeks a ground when it strikes. The best protection is a properly grounded lightning rod placed high enough over the deck to provide a protective umbrella over the hull. Depending upon the likelihood of your being in a lightning storm, consult your dealer for installation of a lightning rod. Stay clear of the lightning rod, all attached wiring and all metal parts of the boat.
- Stay out of the water during a lightning storm. If caught swimming during a storm, get back into the boat and remain there until the storm passes.

13. CHART YOUR COURSE

To avoid boating in unsafe areas where there are underwater obstructions, shallow water, unnavigable conditions such as dangerous currents, and others, **you must chart a course.** This means having and using the National Oceanic and Atmospheric Administration (NOAA) charts for coastal waters, observing and understanding all navigational aids, using the knowledge and guidance of experienced boaters, and being aware of the tide times where appropriate.

If you are in an unfamiliar area without knowledge of the hazards, proceed very slowly and have someone watch for hazards.

! WARNING

Hitting an object in or under the water or boating in dangerous currents can cause serious injury or death to boat occupants.

You must know where the hazards are and avoid them.

In uncharted waters, boat very slowly and post a lookout.

! WARNING

Shut engine off if an object is struck or if you run aground.

Check for hull leaks and drive line damage, before restarting engines.

Use hand pump if bilge pumps don't remove water.

Boat very slowly, if you must proceed with a damaged drive line.

Let others know where you are going. A float plan describes your intended cruising course and itinerary, boat description, and your expected time and date of return. Give the float plan to a friend or relative, so they can give the information to a national boat agency, like the U.S. Coast Guard, in the event you fail to return.

14. WATER SPORTS

A. SWIMMING

- Do not permit anyone to swim from a moving boat, or a boat with an engine running.
- Many localities prohibit swimming from boats except in designated areas.
- Make sure boat's engines are turned off before allowing people to swim anywhere near your boat. Shut the engine OFF and remove the key from the ignition switch so that nobody will accidentally start the engine while swimmers are nearby.
- Turn off engines when taking swimmers or skiers aboard or when they are entering the water. Never permit use of the transom or swim platform while engines are running.
- Slow down and look for swimmers or skiers when cruising in an area where there might be persons in the water.

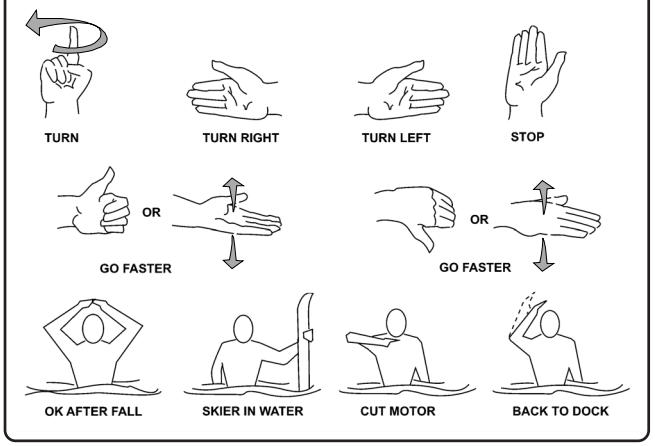
B. SKIING

While it is unlikely that anyone would ski behind your 58 DB, it is advised that you become familiar with water skiing safety and hand signals. You will, on occasion, find yourself in the vicinity of water skiing activity.

- Anyone who water skis must know how to swim.
- Never drive the boat directly behind a water skier. At 22 knots (25 m.p.h.), it takes only 5 seconds to overtake a fallen skier who was 60 meters (200 feet) in front.
- Keep a downed skier in sight and on the operator's side of the boat when approaching the skier. Never back up to anyone in the water.
- Learn the signals to communicate with a skier. The skier is to control the boat through hand signals (Fig. 1.10.1).

  Turn – Arm raised, circle with index finger extended.

SKIING SIGNALS
(FIG. 1.10.1)



Skier in Water – Extend one ski vertically out of water.

Back to Dock – Pat top of head.

Cut Motor – Draw finger across throat.

Slow Down – Thumb pointed down or palm down, move hand up and down.

Faster – Thumb pointed up or palm up, move hand up and down.

OK – Raise arm and form a circle with thumb and index finger.

Stop – Raise arm with palm vertical and facing forward.

Turn Right – Extend arm out from body to the right.

Turn Left – Extend arm out from body to the left.

OK After a Fall – Clasp hands together overhead.

- If the skier suddenly releases the tow rope, it can backlash into cockpit. Spotters who are watching the skier must be aware of this fact and be prepared to deflect the rope by hand to avoid injury.

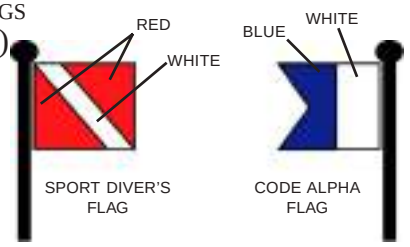
C. DIVING

- Recognize and respect diving flags (Fig. 1.11.1). Keep at least 30 meters (100 feet) away.

  Sport Divers Flag – Red flag with diagonal white stripe marks a diver in the water.

  Code Alpha Flag – Blue and white pennant designates boat being used in dive operations.

DIVERS FLAGS (FIG. 1.11.1)



IN GENERAL

When engaged in water sports, be safe and courteous to others sharing the water:

- Be considerate to fishermen.
- Do not water ski in congested areas.
- Keep the boat and skier away from navigation markers.
- Stay well clear of other boats and skiers.

ASSISTING OTHER BOATERS

All boaters have a legal obligation to help other boaters who are in distress, as long as rendering assistance does not endanger you, your passengers or your boat.

15. EMERGENCY SITUATIONS

Prevention is the safest approach. We hope that you are never involved in an emergency situation.

If you are involved in an emergency situation, it is imperative that you know how to react, in order to protect the lives in your care.

A. MEDICAL EMERGENCY

You may be far from professional medical help when you are boating. At least two people on board your boat should be CPR certified, and should have taken a first aid course. Equip your boat with a first aid kit.

B. WATER RESCUE

A person who has fallen overboard will die from hypothermia in water temperatures below 70°F if not rescued quickly. Water rescue consists of three steps: returning to the victim, making contact with the victim, and getting the victim back on board.

RETURNING TO THE VICTIM

- Immediately make everyone aware of the incident and keep the victim in sight.
- Slow the boat and keep pointing toward the person overboard. At night, direct the best available light source at the person.
- Throw a life preserver, even if the person is wearing a PFD. It will serve as another marker.

MAKING CONTACT

- Stop or slow the boat and circle toward the victim.
- Try to approach heading into the wind or into the waves.
- Keep the victim constantly in sight.
- When almost alongside, stop the engine in gear to prevent propeller "windmilling."

GETTING BACK ABOARD

- Try to reach the victim with a pole, or by throwing a life preserver. Do not swim to rescue the victim, except as a last resort.
- Assist the person in boarding the boat. The person should normally be brought in over the stern.

- If the person is injured or cannot get into the boat, a rescuer should put on a PFD with a safety line attached to the boat and enter the water to assist the victim.
- Handle the victim with care. Spinal injuries may have occurred.

C. FIRE

Fire is a serious boating hazard. Boats will burn quickly. Do not remain on board and fight a fire for more than a few minutes. If the fire cannot be extinguished within a few minutes, abandon the boat.

Have fire extinguishers handy. A small fire can be extinguished quickly with the right size and type of fire extinguisher.

- Extinguish smoking materials, shut off blowers, stoves, engines and generators.
- Throw burning materials overboard, if possible.
- If the fire is accessible, empty the contents of fire extinguishers at the base of the fire.
- If the fire is in the engine compartment and you have an automatic extinguisher for the engine, wait 15 minutes before opening the compartment. Have a portable extinguisher ready in case the fire flares up.
- Signal for help.
- Grab distress signals and survival gear. Put on PFDs. Prepare to abandon ship.

D. FLOODING, SWAMPING AND CAPSIZING

In the event of flooding, swamping or capsizing:

- Try to shut off engines, generators and blowers, before leaving the boat.
- Have everyone put on Personal Flotation Devices (PFD's).
- Account for all who were on board.
- If the boat is floating stay with the boat. Hang on, or climb on the boat and signal for help.
- Only as a last resort should you attempt to swim to shore - it is further away than it looks and you can tire and drown.

E. COLLISIONS AND LEAKING

In the event of collision and leaking:

- Slow down or stop to reduce water intake, unless maintaining speed will keep the hole above water.
- Switch on bilge pumps.
- Operate the manual bilge pump if the powered bilge pumps can't handle the water flow.
- Account for everyone on board and check for injurys.
- Have everyone put on PFDs.
- Stay with the boat.
- Signal for help.
- If a leak patch is attempted, it should be done from the outside.
- In the event of a collision, you are required to file an accident report. Contact a state enforcement agency or the nearest Coast Guard office. If you are boating outside of U.S. waters, consult the nation you are visiting for accident reporting requirements.

F. GROUNDING

In the event of running aground:

- Check for leaks. If water is coming in, stop the intake of water before attempting to get the boat free.
- Inspect for damage to the hull, propulsion and steering systems.

- Determine if the tide, wind and current will drive the boat harder aground or will help to free it.
- Determine the water depth all around the boat, and the type of bottom (sand, mud, rocks, etc.). If it can be done without exposing persons to risk of injury, the boat should be moved away from hard obstructions and toward open water with soft ground.
- Do not attempt to have your boat towed by other than a trained and competent service, such as the Coast Guard or a salvage company. Recreational craft are not designed to tow other recreational craft.

G. Propulsion, Control or Steering Failure:

If the drive train fails, or controls or steering do not respond properly at all:

- Shut off engine.
- Put out the anchor to prevent drifting.
- Determine whether or not you can repair the problem yourself. See the proper manuals for assistance in troubleshooting the engine, steering and engine controls.
- If you are not sure you can fix the problem, or if conditions are adverse, signal for help.

16. Safety Hotlines

The safety information in the preceeding pages gives only the general areas of concern for boating safety. It is not intended to be, nor can it be, exhaustive. You must take a boating safety course, and get hands-on instruction in the proper and safe operation of your boat from experienced persons before cruising.

The U.S Coast Guard offers many pamphlets on safety and other information not covered in this book. Contact your local Coast Guard unit or call the toll-free safety hotlines below for information.

- U.S. Coast Guard 1-800-368-5647
- Canadian Coast Guard 1-800-267-6687

In other countries, ask your marine dealer for information on how to contact the national boating law enforcement agency.

17. International Requirements

This vessel and its systems have been constructed in accordance with standards and specifications in effect at the time of manufacture as published by the various regulatory authorities listed below.

1. Ministere De La Mer - France
2. Registro Italiano Navale - Italy
3. Det Norske Veritas - Norway
4. Securite des Nauires - Canada
5. J.C.I. (Japan Craft Inspection) - Japan
6. N.K.K. (Nippon Kaiji Kyokai) - Japan
7. B.S.I. (British Standards Institute) - England
8. Ministerio Obras Publicas Y Transporters - Spain
9. EC Recreational Craft Directive - European Community.

Further information concerning these requirements may be obtained from Sea Ray® Customer Service: 1-800-SRBOATS.

18. NAUTICAL TERMS

Abeam – object 90 degrees to center line on either side of boat.

Abaft – a point on a boat that is aft of another.

Aft – toward the rear or stern of the boat.

Beam – the width of a boat.

Bow – the fore part of a boat..

Bow Eye – Bolt with looped head mounted on extreme forward part of bow.

Bulkhead – vertical partition in a boat.

Chine – meeting juncture of side and bottom of boat.

Chock – deck fitting, used as guides for mooring or anchor lines. Also, a wedge to stop wheels from rolling.

Cleat – deck fitting with arms or horns on which lines may be made fast.

Cockpit – an open space from which a boat is operated.

Deck – upper structure which covers the hull between gunwales.

Draft – depth of water required to float boat and its propulsion system.

Fathom – six feet.

Fenders – rope or plastic pieces hung over the side to protect the hull from chafing.

Freeboard – height of exposed hull from water line to deck.

Ground tackle – general term referring to anchors, anchor lines, etc.

Gunwale (pronounced gun'l) – meeting juncture of hull and deck.

Hatch – an opening in deck to provide access below.

Head – toilet or toilet area in a boat.

Headroom – vertical distance between the deck and cabin or canopy top.

Helm – steering console.

Hull – the basic part of a boat that provides buoyancy to float the weight of the craft and its load.

Keel – the major longitudinal member of a hull; the lowest external portion of a boat.

Knot – unit of speed in nautical miles per hour.

Lee – the side that is sheltered from the wind.

PFD – Personal Flotation Device; life preserver.

Port – term designating left side of the boat.

Rudder – Movable fixture at the stern used for steering.

Scupper – hole permitting water to drain overboard from deck or cockpit.

Sheer – curve or sweep of the deck as viewed from the side.

Snub – to check or tighten a line suddenly.

Starboard – term designating right side of the boat

Stern – the aft end of a boat.

Stern drive – outboard unit of an inboard/outboard (I/O) engine installation.

Stringer – longitudinal members fastened inside the hull for additional structural strength.

Transom – transverse part of stern.

Wake – disturbed water that a boat leaves behind as a result of forward motion.

Windward – toward the direction from which the wind is blowing.

19. ENVIRONMENTAL CONSIDERATIONS

The following warning is offered for boats sold in the State of California in accordance with California Health & Safety Code §§ 25249.5-.13:

⚠ WARNING

A wide variety of components used on this vessel contain or emit chemicals known to the State of California to cause cancer and birth defects and other reproductive harm.

EXAMPLES INCLUDE:

- **Engine and generator exhaust**
- **Engine and generator fuel, and other liquids such as coolants and oil, especially used motor oil**
- **Cooking fuels**
- **Cleaners, paints, and substances used for vessel repair**
- **Waste materials that result from wear of vessel components**
- **Lead from battery terminals and from other sources such as ballast or fishing sinkers**

TO AVOID HARM:

- **Keep away from engine, generator, and cooking fuel exhaust fumes.**
- **Wash areas thoroughly with soap and water after handling the substances above.**

A. FUEL & OIL SPILLAGE

Regulations prohibit discharging fuel or oily waste in navigable waters. Discharge is defined as any action which causes a film, sheen or discoloration on the water surface, or causes a sludge or emulsion beneath the water surface. A common violation is bilge discharge. Use rags or sponges to soak up fuel or oily waste, then dispose of it properly ashore. If there is much fuel or oil in the bilge, contact a knowledgeable marine service to remove it. Never pump contaminated bilge overboard. Help protect your waters.

Fill tank(s) less than rated capacity. Allow for fuel expansion.

B. WASTE DISPOSAL

- Many areas prohibit overboard sewer discharge. Close and disable flow-through waste systems to prevent discharge in such areas.
- Bag all refuse until it can be disposed of ashore. Regulations prohibit disposal of plastic anywhere in the marine environment and restrict other garbage disposal within specified distances from shore.

NOTICE

- **There is a possibility of being fined for having an operable direct overboard discharge of waste in some waters. Removing seacock handle in closed position, or other means must be used to avoid fine.**
- **It is illegal for any vessel to dump plastic trash anywhere in the ocean or navigable waters of the United States.**

The Coast Guard is requiring any ocean-going boats 40 feet or larger to have a written "waste management" plan on board. While the requirement is aimed at commercial and passenger ships, there is no exception for recreational boats. "Ocean-going" means any boat going beyond the three-mile coastal U.S. boundary. The written plan can be as simple as:

All vessel refuse is placed in trash bags which are stored on board until they can be disposed of in dumpsters on shore. This policy is reviewed by all crew and passengers. The person in charge of carrying out the plan is:

Name:_____

⚠ CAUTION

FOR BOATS WITH VACUFLUSH® HEADS ONLY

Do not place facial tissues, paper towels or sanitary napkins in head. Such material can damage the waste disposal system and the environment.

C. EXCESSIVE NOISE

Many areas regulate noise limits. Even if there are no laws, courtesy demands that boats operate quietly.

D. WAKE / WASH

Power boat wakes can endanger people and vessels. Each power boat operator is responsible for injury or damage caused by the boat's wake. Be especially careful in confined areas such as channels or marinas. Observe "no wake" warnings.

⚠ WARNING

SPEED HAZARD - Watch your wake. It might capsize a small craft. You are responisble for damage caused by your wake.

⚠ CAUTION

Reduce speed in congested waterway.

Be alert for No Wake markers.

20. KEY TO SYMBOLS ON CONTROLS & PRINTS

These symbols may be found on your controls and gauges and/or used in this owner's manual. This page is to help you understand what the symbols mean.

ISO 01

ENGINE

ISO 02

ENGINE START

ISO 03

ENGINE STOP

ISO 04

EMERGENCY START SWITCH (TWIN ENGINE ONLY)

ISO 05

ENGINE EXHAUST CONTROL

ISO 06


ENGINE ROTATIONAL SPEED

ISO 07

ENGINE COOLANT

ISO 08

ENGINE (COOLANT) WATER JACKET TEMPERATURE

ISO 09

ENGINE OIL PRESSURE

ISO 10

FUEL, GENERAL

ISO 11


DIESEL FUEL

ISO 12

FUEL LEVEL

ISO 13

FUEL FILTER

ISO 14


LEADED FUEL

ISO 15


UNLEADED FUEL

ISO 16

BILGE BLOWER

ISO 17

BILGE PUMP

ISO 18

OIL

ISO 19

ELAPSED TIME

ISO 20

LIGHT

ISO 21

INTERIOR LIGHT

ISO 22

RUNNING LIGHTS UNDER POWER

ISO 23

ANCHOR LIGHT

ISO 24

FRESH WATER BASED COOLANT

ISO 25

WASTE WATER/SEWAGE

ISO 26

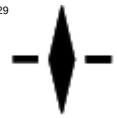
WINDSHIELD WIPER

ISO 27

WINDSHIELD WASHER

ISO 28

WINDSHIELD WIPER AND WASHER

ISO 29

COMPASS

ISO 30

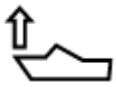
ANCHOR

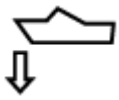
ISO 31

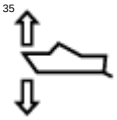
HORN

ISO 32

PROPULSION SYSTEM TRIM

ISO 33

PROPULSION SYSTEM TRIM BOW UP

ISO 34

PROPULSION SYSTEM TRIM BOW DOWN

ISO 35

TRIM TAB TRIMMING OPERATION

ISO 36

SINGLE LEVER CONTROL (THROTTLE & SHIFT)

ISO 37

CONTROL LEVER OPERATING DIRECTION

ISO 38

ROTARY CONTROL (QUANTITY INCREASES WITH WIDTH OF SYMBOL)

ISO 39

BATTERY

ISO 40

WARNING ELECTRICAL HAZARD

ISO 41

FIRE RISK

ISO 42

NO OPEN FLAME NO SMOKING

ISO 43

PROPELLER

ISO 44

LIFT POINT OR PROPER LOCATION OF SLING

ISO 45

LIFT POINT

21. 58 DB WARNING LABEL LOCATIONS

Save Our Seas

It is *illegal* to dump plastic trash anywhere into the ocean or navigable waters of the United States. Violation of these requirements may result in civil penalty up to $25,000, a fine of $50,000 and imprisonment for up to five years.

PLASTIC - Includes but is not limited to: plastic bags, styrofoam cups and lids, sixpack holders, stirrers, straws, milk jugs, egg cartons, synthetic fishing nets, ropes, lines, and bio or photo degradable plastics.

GARBAGE - Means paper, rags, glass, metal, crockery (generated in living spaces aboard the vessel-what we normally call trash), and all kinds of food, maintenance and cargo-associated waste. "Garbage" does not include fresh fish or fish parts, dishwater, and gray water.

INSIDE 3 MILES

(and in U.S. Lakes, Rivers, Bays and Sounds)
PLASTICS
DUNNAGE, LINING AND PACKING MATERIALS THAT FLOAT
ANY GARBAGE EXCEPT DISHWATER/ GRAYWATER/FRESH FISH PARTS

3 TO 12 MILES

PLASTICS
DUNNAGE, LINNING AND PACKING MATERIALS THAT FLOAT
ANY GARBAGE NOT GROUND TO LESS THAN ONE SQUARE INCH

12 TO 25 MILES

PLASTICS
DUNNAGE, LINING AND PACKING MATERIALS THAT FLOAT

12 TO 25 MILES

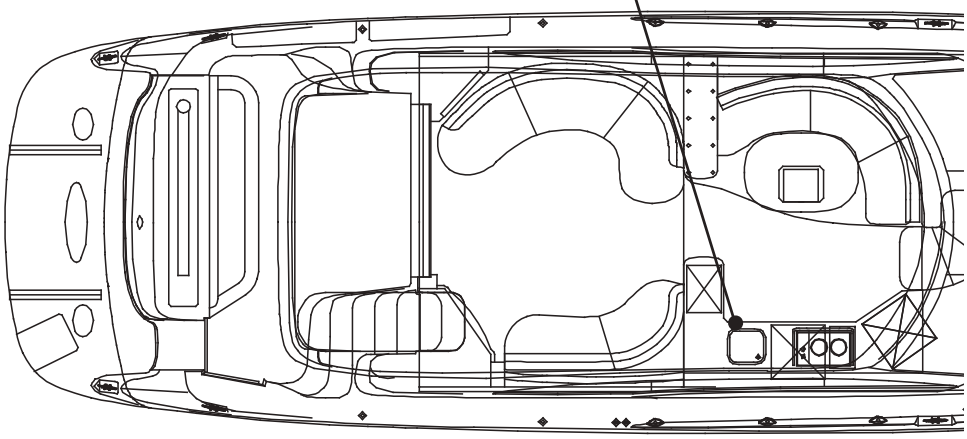
PLASTICS

DUNNAGE- Material used to block and brace cargo, and is considered a cargo associated waste.

DISHWATER- Means the liquid residue from the manual or automatic washing of dishes and cooking utensils which, have been precleaned to the extent that any food particles adhering to them would not normally interfere with the operation of automatic dishwashers.

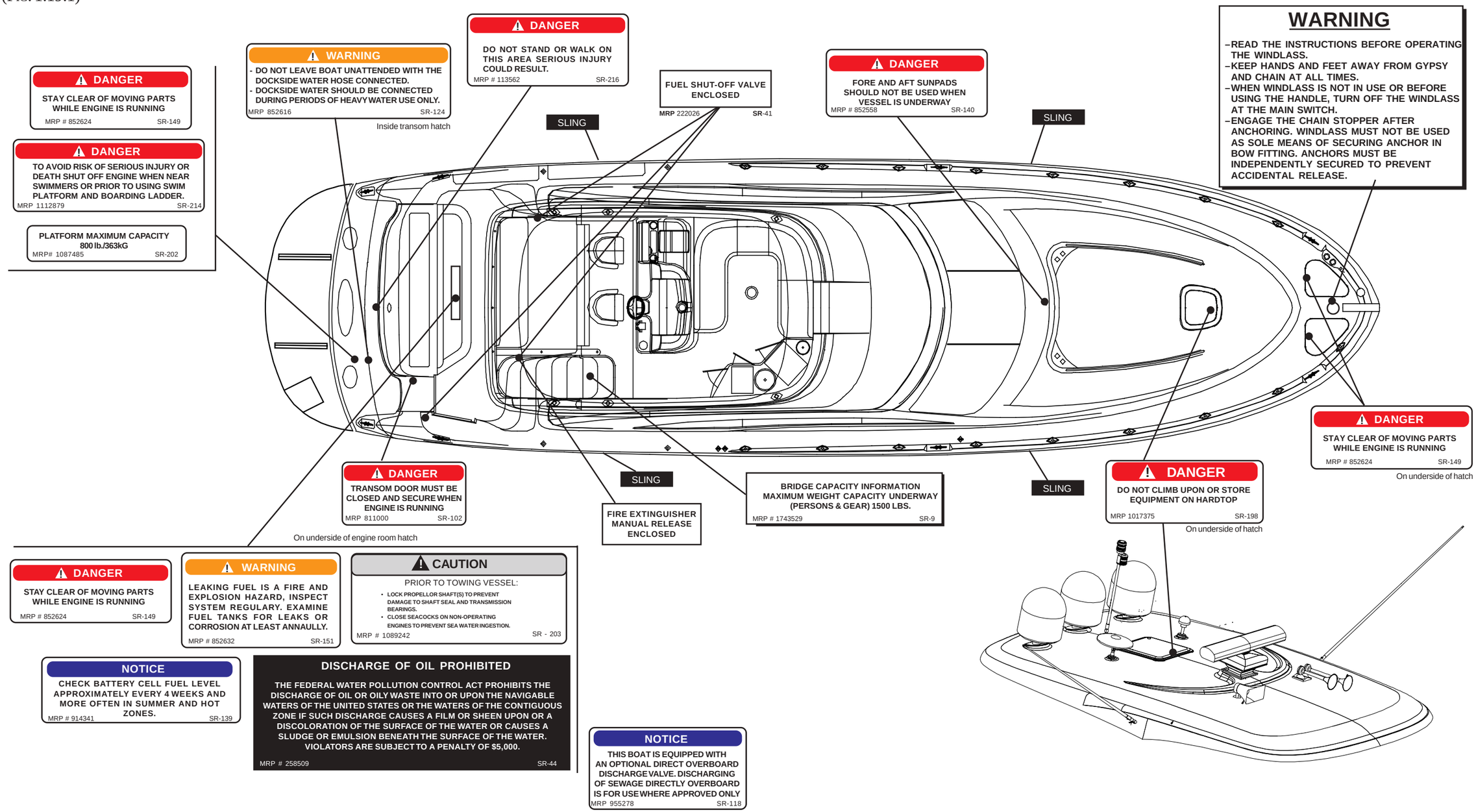
GRAYWATER - Means drainage from a dishwasher, shower, laundry, bath, and washbasin, and does not include drainage from toilets, urinals, hospitals, and cargo spaces.

BEHIND CABINET DOOR



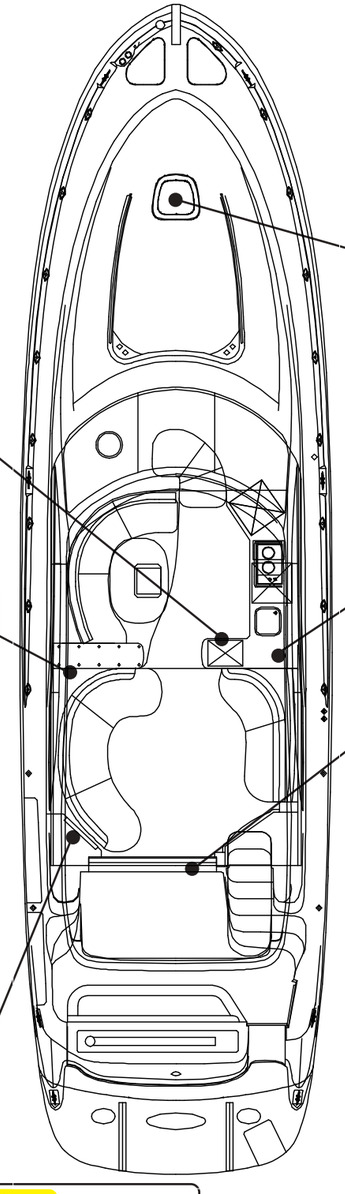
21. 58 DB Warning Label Locations

WARNING LABEL LOCATIONS
(FIG. 1.19.1)



Warning Label Locations (Continued)

Warning Label Locations
(Fig. 1.20.1)



⚠ DANGER

LEAVING WINDOW OPEN COULD INDUCE EXHAUST FUMES INTO CABIN RESULTING IN SEVERE PERSONAL INJURY OR DEATH

MRP 852566 SR-135

ON ALL PORTLIGHTS WHICH ARE ABLE TO BE OPENED

EXHAUST FAN MUST BE ON WHEN COOKING APPLIANCE IS IN USE

MRP 0808840 **SR**-106

12VDC-15A MAX

MRP # 324756 SR-47

12VDC-15A MAX

MRP # 324756 SR-47

⚠ WARNING

RUNNING BOAT WITH DOOR OPEN COULD INDUCE EXHAUST FUMES INTO CABIN. SEE OWNER'S MANUAL FOR INSTRUCTIONS CONCERNING CARBON MONOXIDE.

MRP # 1672112 SR-285

⚠ CAUTION

THIS VESSEL IS EQUIPPED WITH SHORE LINE ISOLATION TRANSFORMERS. THE NEUTRAL AND GROUNDING CONDUCTORS ARE CONNECTED ON A COMMON NEUTRAL/GROUNDING BUS AT THE MAIN DISTRIBUTION PANEL. TO MAINTAIN ELECTRICAL SYSTEM INTEGRITY THE NEUTRAL AND GROUNDING CONDUCTORS SHALL BE KEPT ISOLATED AT ALL OTHER LOCATIONS ABOARD THE VESSEL.

MRP 1589795 SR-507

BEHIND THE AC DISTRIBUTION PANEL

Warning Label Locations
(Fig. 1.20.2)

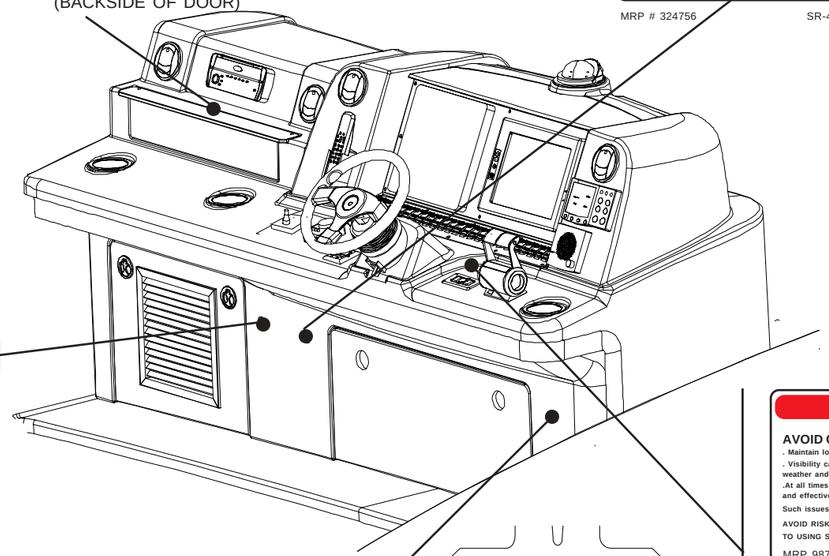
⚠ IMPORTANT SAFETY AND OPERATIONAL INFORMATION ⚠

MRP 1199363 SR-218

SAFETY & OPERATIONAL INFORMATION BOOKLET
(BACKSIDE OF DOOR)

12VDC-15A MAX

MRP # 324756 SR-47



SEA RAY NAV USB PORT

MRP # 1764499 SR-7333

CE 0609

Sea Ray Boats
58 DB
MAXIMUM
16 +=2,270kg

B

THIS TAG INSTALLED WHEN BOAT IS ORDERED WITH CE INTERNATIONAL OPTION

NMMA™ NW501-04

⚠ WARNING

A wide variety of components used on this vessel contain or emit chemicals known to the State of California to cause cancer and birth defects and other reproductive harm.

EXAMPLES INCLUDE:
- Engine and generator exhaust
- Engine and generator fuel, and other liquids such as coolants and oil, especially used motor oil.
- Cooking fuels.
- Cleaners, paints, and substances used for vessel repair.
- Waste materials that result from wear of vessel components.
- Lead from battery terminals and from other sources such as ballast or fishing sinkers.

TO AVOID HARM:
- Keep away from engine, generator, and cooking fuel exhaust fumes.
- Wash areas thoroughly with soap and water after handling the substances above.

California Health & Safety Code §§ 25249.5-.13

MRP 1798084
CALIFORNIA RESIDENTS ONLY
THE ABOVE WARNING IS ATTACHED TO THE STEERING WHEEL PRIOR TO DELIVERY OF ANY BOATS SOLD IN THE STATE OF CALIFORNIA IN ACCORDANCE WITH CALIFORNIA HEALTH & SAFETY CODE §§ 25249.5-.13:

⚠ DANGER

AVOID COLLISIONS

. Maintain look-out as required by the "Rules of the Road".
. Visibility can be limited by high boat trim angles. persons, gear, weather and light conditions.
.At all times proceed at a Safe Speed so that you can take proper and effective action to avoid hazardous conditions.

Such issues are considered under the control of the operator!

AVOID RISK OF INJURY OFR DEATH, SHUT OFF ENGINE PRIOR TO USING SUNPADS, SWIM PLATFORM OR BOARDING LADDER.

MRP 987727 SR-187

⚠ CAUTION

PRIOR TO TOWING VESSEL:

- **LOCK PROPELLOR SHAFT(S) TO PREVENT DAMAGE TO SHAFT SEAL AND TRANSMISSION BEARINGS.**
- **CLOSE SEACOCKS ON NON-OPERATING ENGINES TO PREVENT SEA WATER INGESTION.**

MRP # 1089242 SR - 203

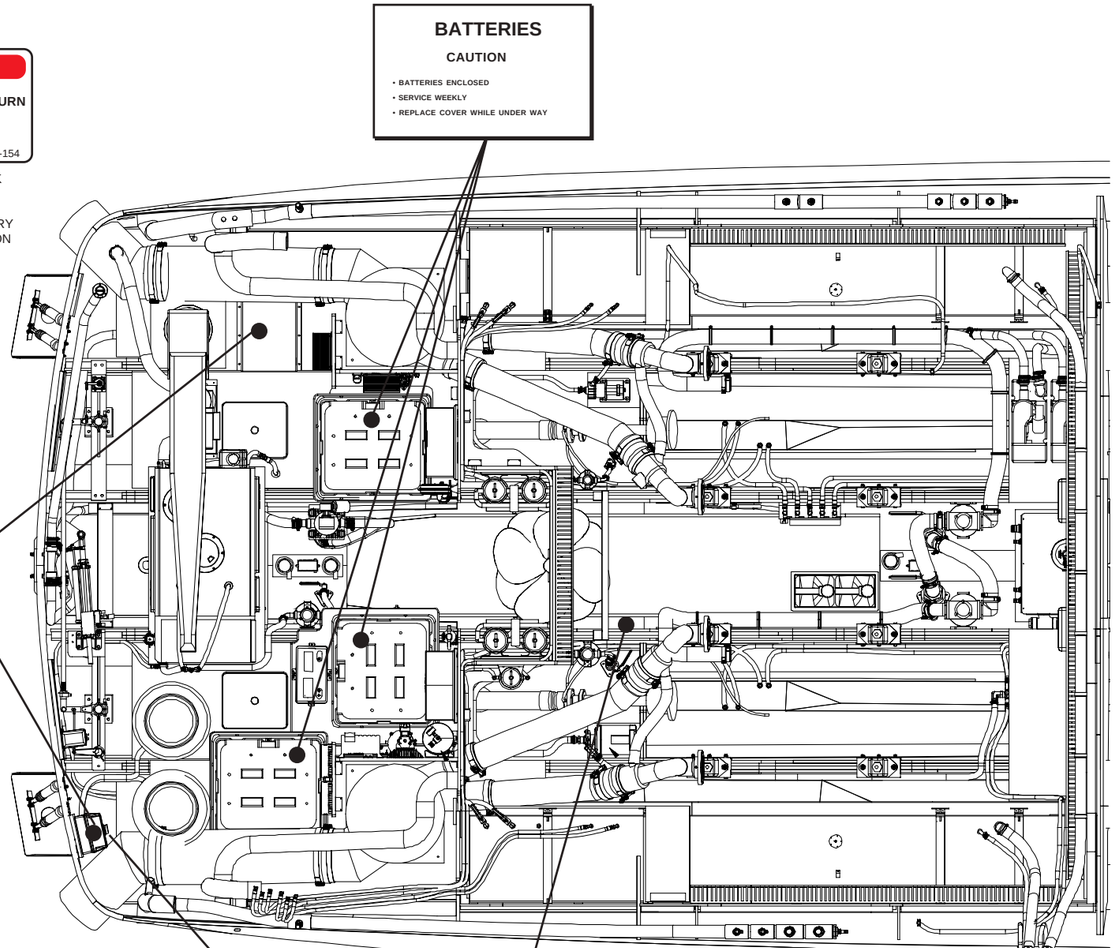
⚠ WARNING

VISIBILITY FROM THIS HELM STATION IS LIMITED AVOID COLLISIONS-MAINTAIN LOOKOUT AS REQUIRED IN 'RULES OF THE ROAD' BY US COAST GUARD

MRP # 1088574 SR-153

Warning Label Locations (Continued)

WARNING LABEL LOCATIONS
(FIG. 1.21.1)



DANGER

UNPLUG SHORE POWER AND TURN OFF GENERATOR *BEFORE* REMOVING COVER.

MRP 852582 SR-154

THIS TAG LOCATED ON BLOCK HEATER, GENERATOR CONVERTER, MAIN BATTERY CHARGER/CONVERTER, BATTERY EQUALIZERS & ALL A/C JUNCTION BOXES

BATTERIES

CAUTION

- BATTERIES ENCLOSED
- SERVICE WEEKLY
- REPLACE COVER WHILE UNDER WAY

CAUTION

THIS VESSEL IS EQUIPPED WITH SHORE LINE ISOLATION TRANSFORMERS. THE NEUTRAL AND GROUNDING CONDUCTORS ARE CONNECTED ON A COMMON NEUTRAL/GROUNDING BUS AT THE MAIN DISTRIBUTION PANEL. TO MAINTAIN ELECTRICAL SYSTEM INTEGRITY THE NEUTRAL AND GROUNDING CONDUCTORS SHALL BE KEPT ISOLATED AT ALL OTHER LOCATIONS ABOARD THE VESSEL.

MRP 1589795 SR-507

A/C MAIN BREAKER

MRP # 1751567 SR-130

DANGER

STAY CLEAR OF MOVING PARTS WHILE ENGINE IS RUNNING

MRP # 852624 SR-149

On underside of hatch

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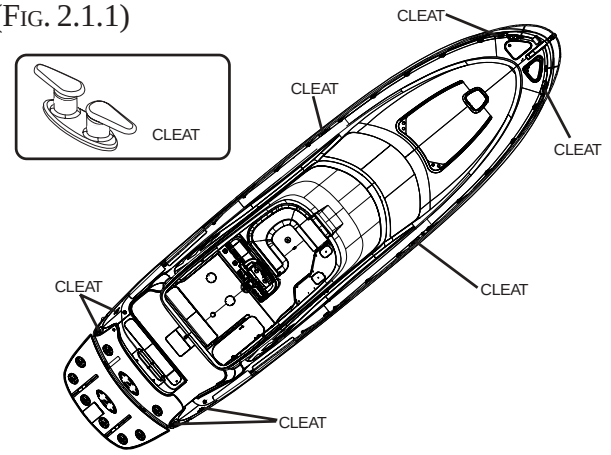
1. DOCKING/LIFTING/STORAGE

BOW AND STERN CLEATS: Cleats must not be used for lifting the boat, they are intended for docking or mooring use only.

CLEAT / BOW & STERN EYE LOCATIONS (FIG. 2.1.1)



⚠ CAUTION

Do Not use cleats for lifting.

When lifting the boat always keep the bow higher than the stern to drain the exhaust lines and to prevent water from running forward through the manifold and into the engine where it can become trapped. It may seem expedient to lift only the stern when changing a propeller, but this can result in water entering the engine cylinders, causing hydrostatic lock and resulting in possible engine failure. Even a small amount of water in the engine can cause rust and is to be avoided.

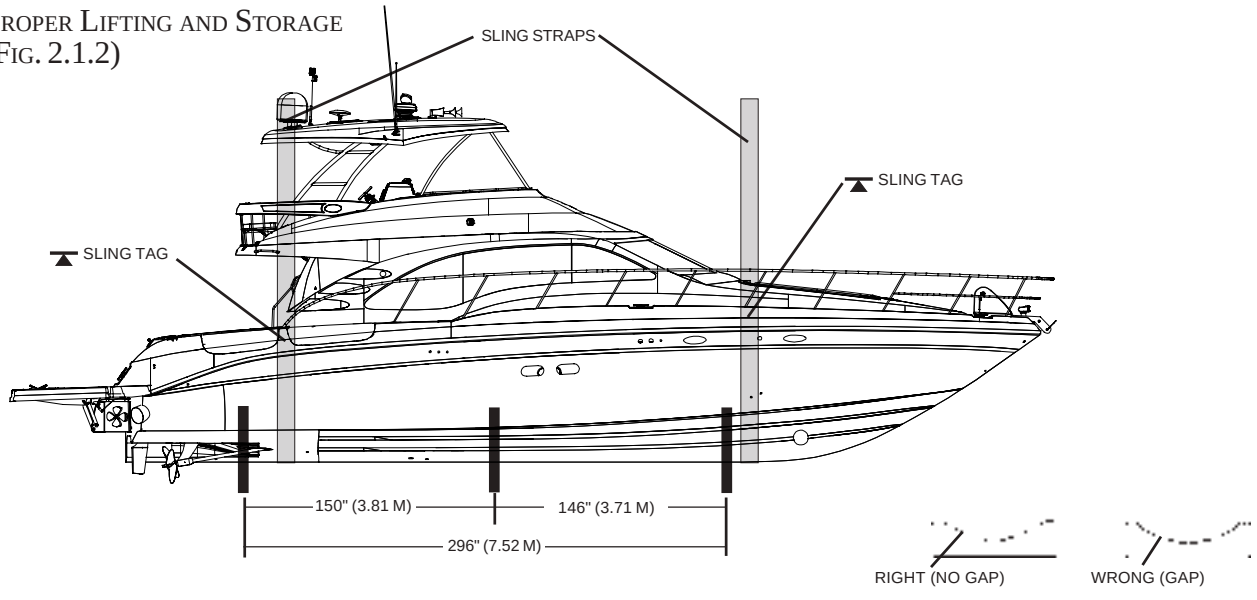
With fiberglass boats, severe gelcoat crazing or more serious hull damage can occur during launching and hauling if pressure is created on the gunwales by the slings. Flat, wide belting-type slings and spreaders long enough to keep pressure from the gunwales are necessary. Cable-type slings should be avoided. Do not place the slings where they may lift on the propeller shaft or other underwater fittings. The slings should be placed directly over the sling tags imprinted on the deck (See Figure 2.1.2) to assure the least amount of stress on the hull.

Never hoist the boat with an appreciable amount of water in the bilge. Fuel and water tanks should preferably be empty, especially if of large capacity.

A. SUPPORTING THE BOAT

A cradle is the ideal support for the boat whenever it is not in the water. Properly designed and constructed, it will provide support at the proper points, which is essential to avoid stress on the hull. Boat placement on the cradle should line up as closely as possible to the sling tags on the side of the deck. Do not rest boat on underwater fittings.

PROPER LIFTING AND STORAGE (FIG. 2.1.2)



2. PASSENGER LOCATIONS

⚠ WARNING

Boat motion can be erratic.

You can fall overboard or be injured by hitting something in or on the boat.

All persons must be in cockpit area or cabin and be prepared for sudden boat movement.

Use front or bow deck area only during anchoring, mooring or emergencies.

⚠ WARNING

Wet decks are slippery.

You can be seriously injured if you slip and fall.

Wear slip resistant footwear secured to your feet and hold on to rails or boat structure.

1. When the boat is moving, all passengers must be in the cockpit area or in the cabin and must be on seating provided or, if standing, holding on firmly (See Figure 2.3.1).

   While the person at the wheel must alert passengers before any sudden or erratic boat movement, such as crossing wakes, rapid turns, sudden acceleration or deceleration, etc., an emergency action may be necessary before passengers can be warned. All passengers must be prepared for rapid boat movement and be able to hold on to prevent loss of balance.

2. When persons are on the working deck area, for anchoring, mooring or in emergencies, they must be holding on and be positioned so as to prevent falling. In bad weather and/or rough water, if it is essential to be on deck, persons should be closely tied to cleats, railing stanchions or other securely fastened boat hardware.

3. Engines must be turned off if the boat is near swimmers or persons are on the swim platform or the swim ladder.

PASSENGER LOCATIONS (COCKPIT & DECK)
(FIG. 2.3.1)

DO NOT WALK ON THIS AREA

WORKING DECK
(DECK AREA INTENDED FOR OCCUPATION DURING ANCHORING, MOORING AND EMERGENCY OPERATION ONLY)

ACCOMODATION DECK
(DECK AREA INTENDED FOR OCCUPATION DURING NORMAL OPERATION)

⚠ DANGER

Rotating propellers can injure or kill you.

Shut off engine when persons are in water, near boat, on swim platform or ladder.

⚠ WARNING

Wet decks are slippery.

You can be seriously injured if you slip and fall.

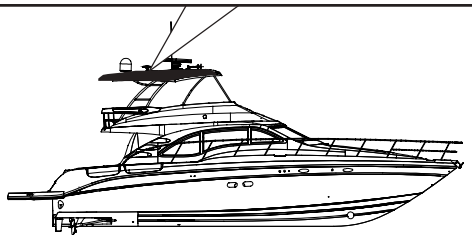
Wear slip resistant footwear secured to your feet and hold on to rails or boat structure.

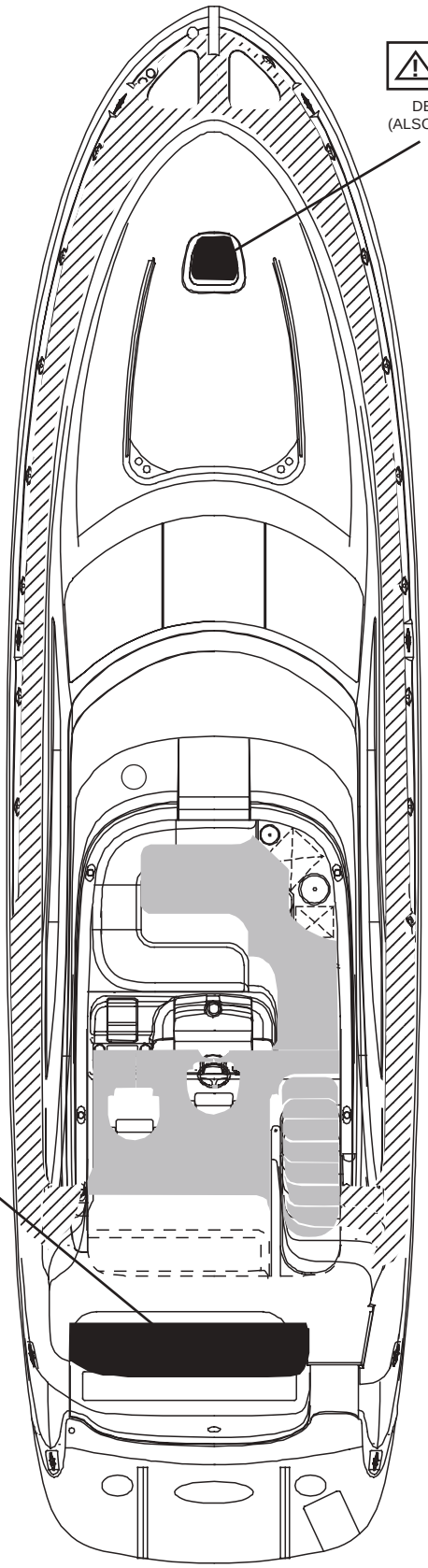
⚠ WARNING

You can be seriously injured if you stand or walk here.

⚠ DANGER

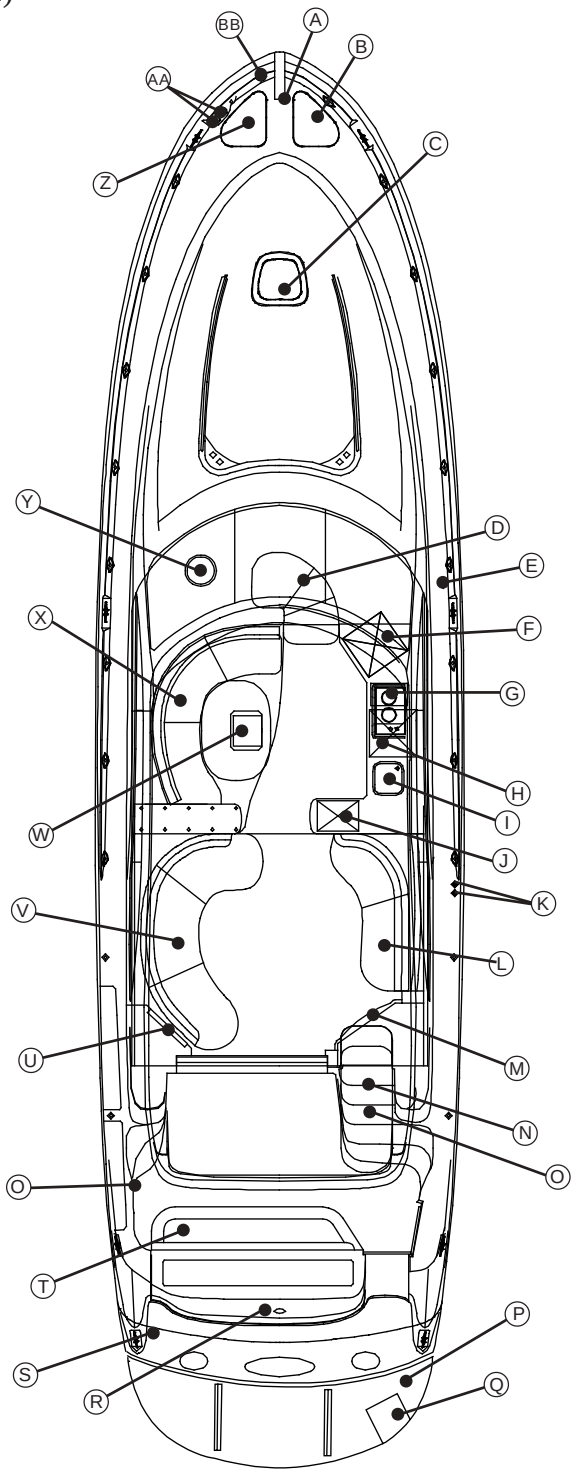
Do not climb on or store equipment on hard top.





3. FLOOR PLAN (DECK & SALON LEVEL)

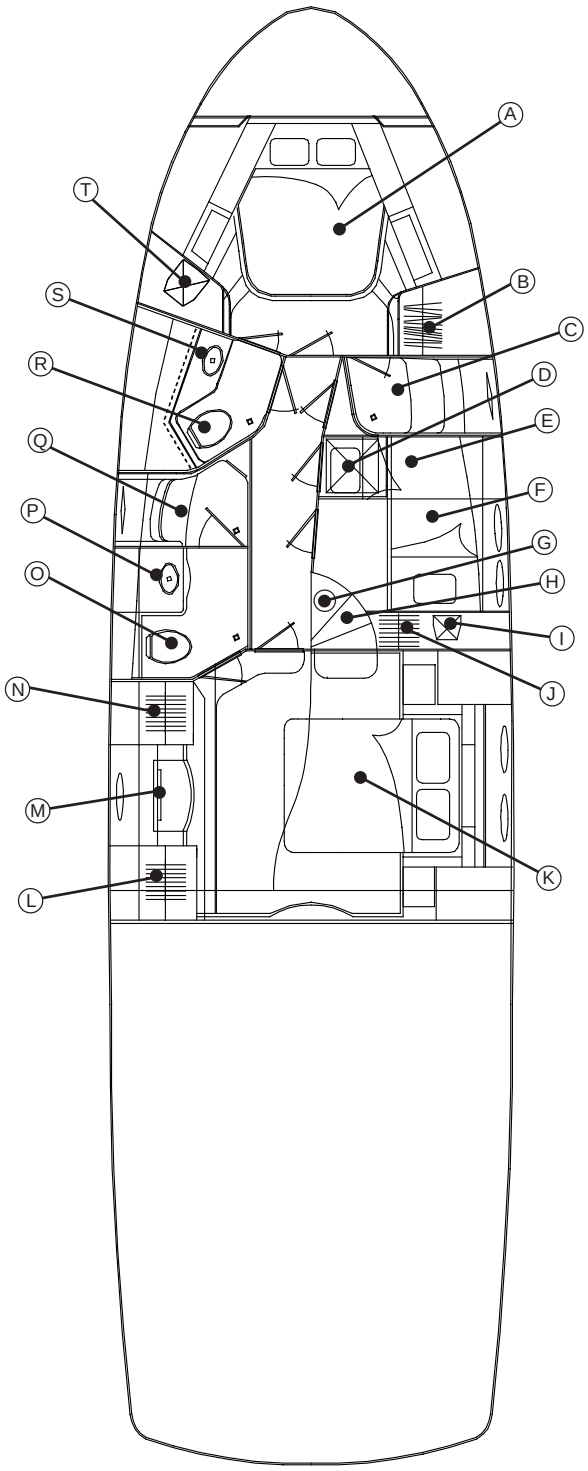
FLOOR PLAN (DECK, SALON & GALLEY)
(FIG. 2.4.1)



- (A) WINDLASS
- (B) STARBOARD BOW STORAGE
- (C) DECK HATCH (EMERGENCY EXIT)
- (D) STATEROOM COMPANIONWAY STEPS
- (E) FRESH WATER FILL
- (F) FREEZER
- (G) TWO BURNER STOVE
- (H) REFRIGERATOR
- (I) GALLEY SINK
- (J) MICROWAVE
- (K) PORT & STARBOARD FUEL FILL
- (L) STARBOARD SALON SOFA
- (M) SALON ENTERTAINMENT CENTER
- (N) BRIDGE STEPS
- (O) ACCESS TO FUEL VALVE (IN PORT AND STARBOARD STORAGE)
- (P) SWIM PLATFORM (BOLT ON STANDARD) (LIFT PLATFORM OPTIONAL)
- (Q) SWIM LADDER
- (R) TRANSOM STORAGE
- (S) WASTE PUMP OUT
- (T) COCKPIT AFT SEATING
- (U) DISTRIBUTION PANELS
- (V) PORT SALON SOFA
- (W) GALLEY DINET TABLE
- (X) GALLEY DINET SEATING
- (Y) SKYLIGHT
- (Z) PORT BOW STORAGE
- (AA) WINDLASS FOOT PEDALS
- (BB) SPOTLIGHT

FLOOR PLAN (LOWER LEVEL)

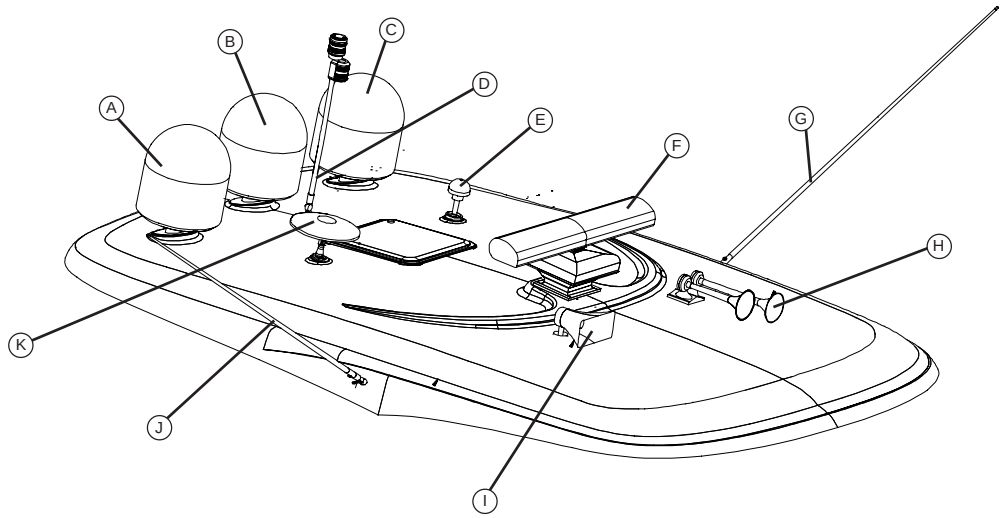
FLOOR PLAN (STATEROOMS & HEAD)
(FIG. 2.5.1)



- (A) FORWARD STATEROOM BUNK
- (B) FORWARD STATEROOM HANGING CLOSET
- (C) GUEST SHOWER
- (D) WASHER/DRYER (OPTIONAL)
- (E) STARBOARD STATEROOM UPPER BUNK
- (F) STARBOARD STATEROOM LOWER BUNK
- (G) VACUUM CLEANER (UNDER STEPS)
- (H) GALLEY COMPANIONWAY
- (I) STARBOARD STATEROOM ENTERTAINMENT
- (J) STARBOARD STATEROOM HANGING CLOSET
- (K) MASTER STATEROOM BUNK
- (L) MASTER STATEROOM AFT HANGING CLOSET
- (M) MASTER STATEROOM ENTERTAINMENT CENTER
- (N) MASTER STATEROOM FORWARD HANGING CLOSET
- (O) MASTER STATEROOM HEAD
- (P) MASTER STATEROOM HEAD VANITY
- (Q) MASTER STATEROOM SHOWER
- (R) GUEST HEAD
- (S) GUEST VANITY
- (T) FORWARD STATEROOM ENTERTAINMENT CENTER

4. HARDTOP

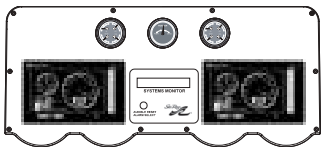
HARDTOP
(FIG. 2.6.1)



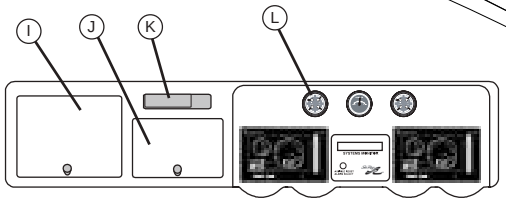
- (A) SATELLITE INTERNET (OPTIONAL)
- (B) SATELLITE TV (OPTIONAL)
- (C) SATELLITE TELEPHONE (OPTIONAL)
- (D) MAST LIGHT
- (E) GPS ANTENNA
- (F) RADAR
- (G) SATELLITE ANTENNA (OPTIONAL)
- (H) HORN
- (I) HAILER
- (J) VHF ANTENNA
- (K) TV ANTENNA (GLOMEX)

5. BRIDGE WET BAR

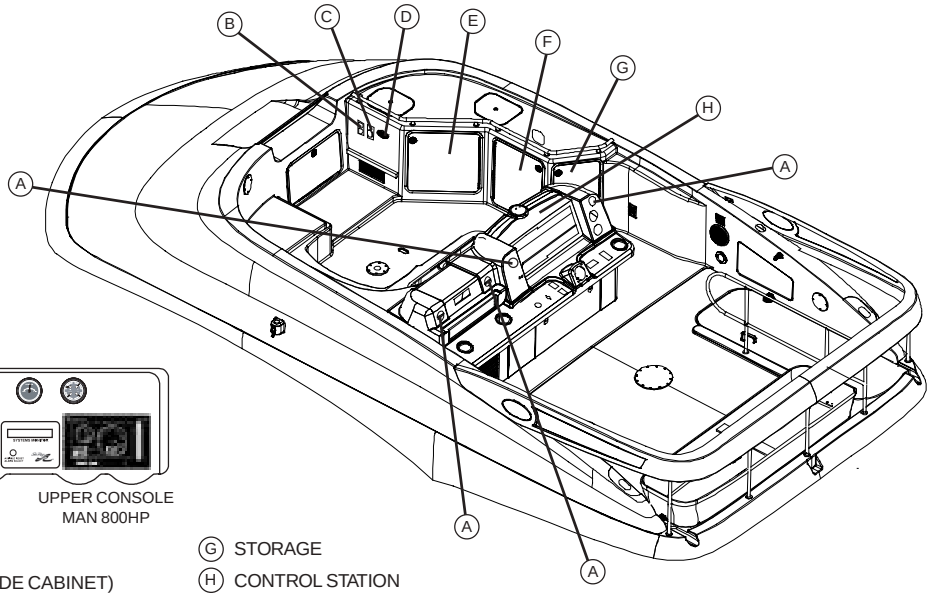
BRIDGE WET BAR
(FIG. 2.6.2)



UPPER CONSOLE
MAN 900HP



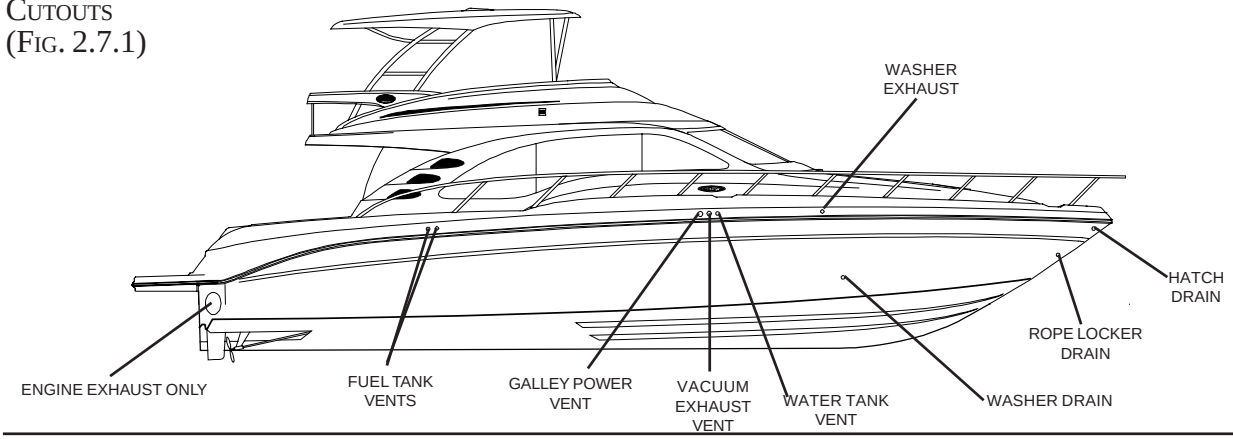
UPPER CONSOLE
MAN 800HP



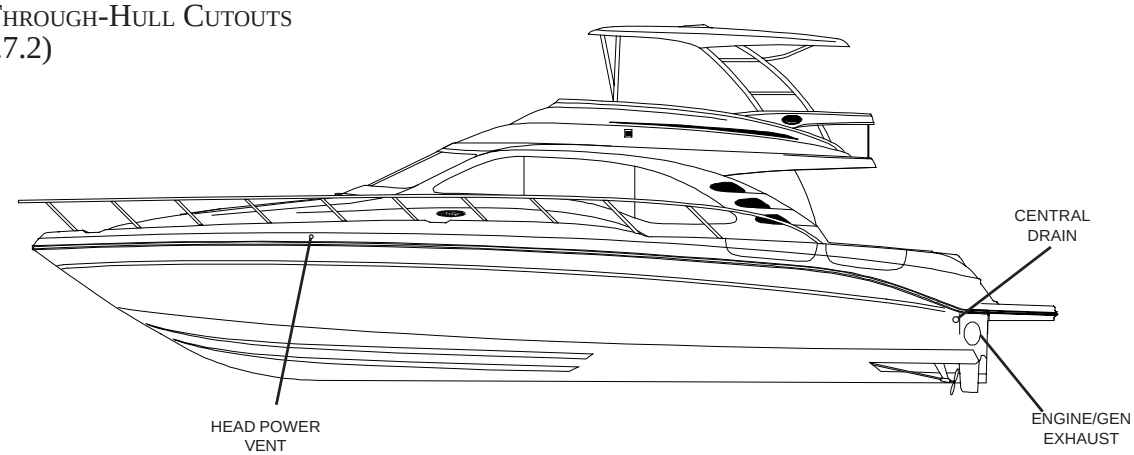
- (A) A/C VENT
- (B) 110 RECEPTACLE (LOCATED INSIDE CABINET)
- (C) DOCKSIDE TV HOOKUP (LOCATED INSIDE CABINET)
- (D) STEREO REMOTE
- (E) REFRIGERATOR
- (F) ICE MAKER
- (G) STORAGE
- (H) CONTROL STATION
- (I) STORAGE
- (J) STORAGE (CONTAINS A/C CONTROL)
- (K) CD CHANGER
- (L) GAUGE PANEL

6. FUNCTION AND LOCATION OF THROUGH-HULL CUTOUTS

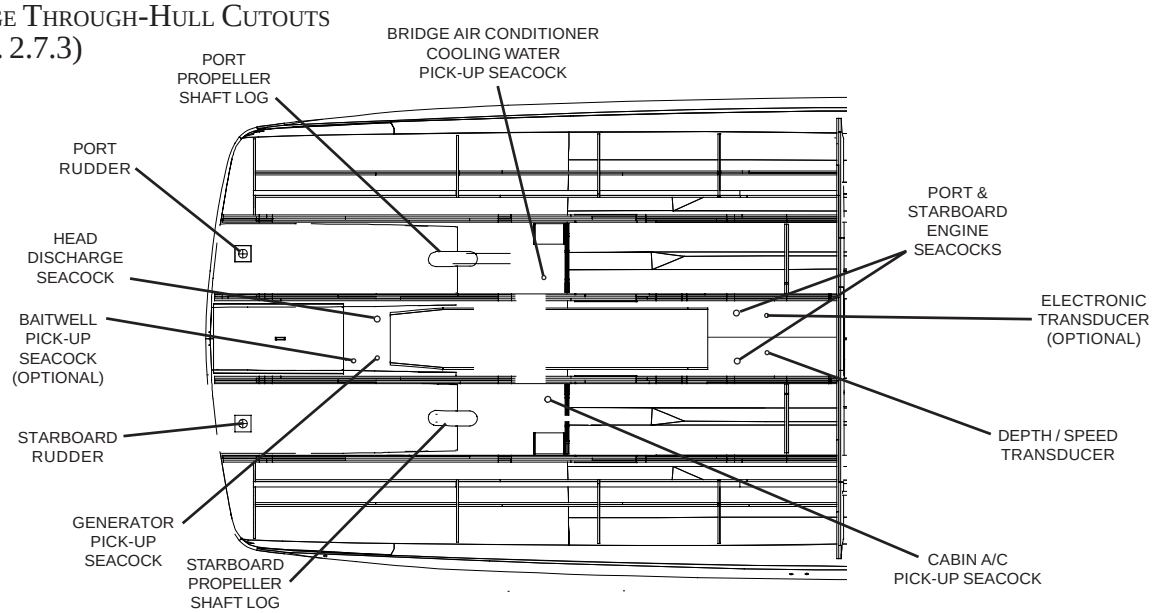
STARBOARD THROUGH-HULL CUTOUTS (FIG. 2.7.1)



PORT THROUGH-HULL CUTOUTS (FIG. 2.7.2)

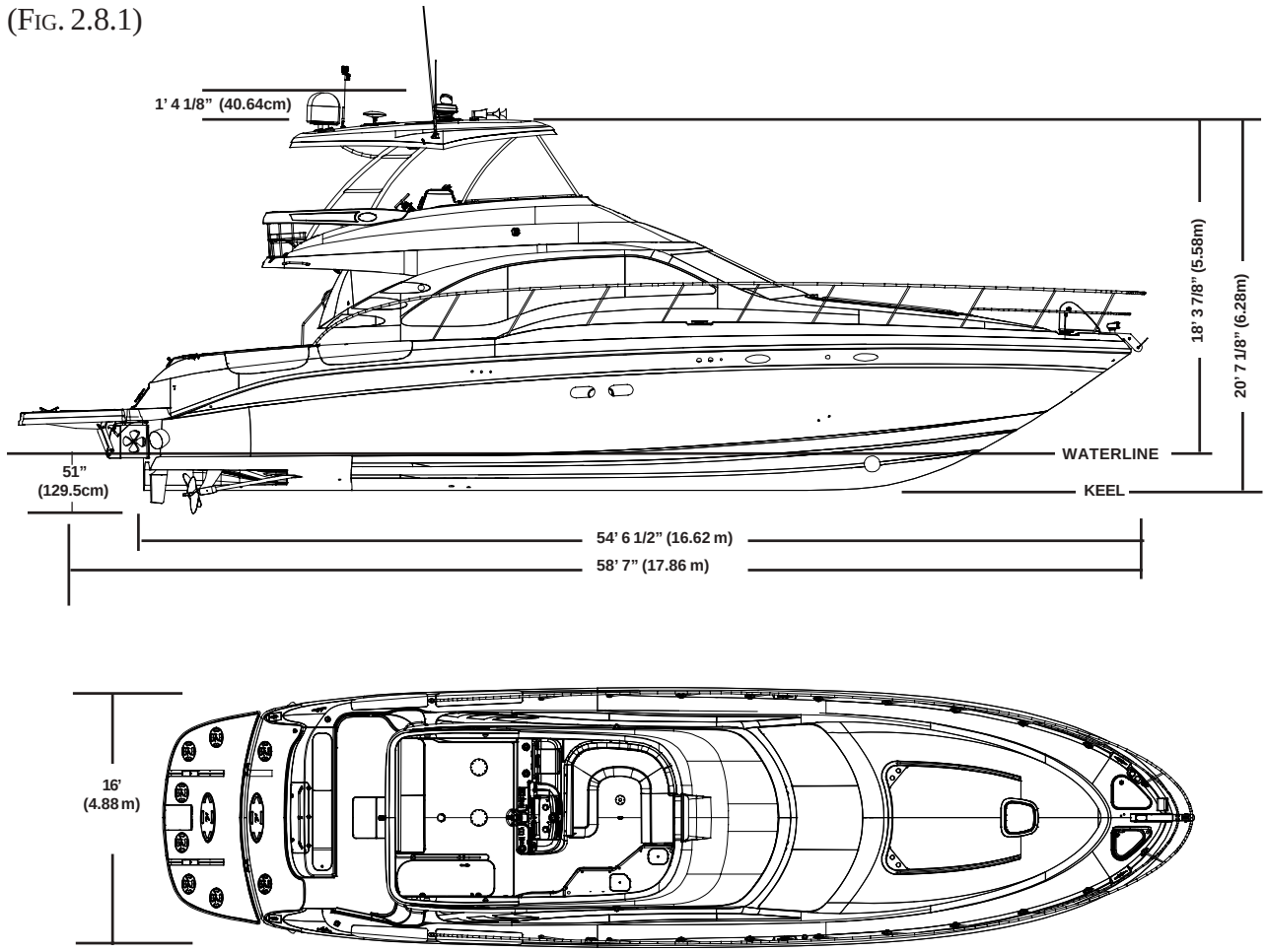


BILGE THROUGH-HULL CUTOUTS (FIG. 2.7.3)



7. BASIC BOAT DIMENSIONS AND CLEARANCES

BOAT DIMENSIONS AND CLEARANCES
(FIG. 2.8.1)



58 SEDAN BRIDGE SPECIFICATIONS

Hull Length	**54ft. 6 1/2in.**	**16.62m**
Overall Length With Std. Swim Platform	**58ft. 7in.**	**17.86m**
Beam (Width)	**16ft. 0in.**	**4.88m**
Draft	**51"***	**129.5cm***

***MINIMUM WATER DEPTH TO PREVENT RUNNING AGROUND**

Dry Weight	**51,500 lbs.**	**23,360 kg.**
Fuel Capacity	**700 gal.**	**2,649.5 liters**
Useable Fuel	**595 gal.**	**2,252.3 liters**
Water Capacity	**150 gal.**	**567.8 liters**
Holding Tank	**68 gal.**	**257.4 liters**
Dead Rise	**17°**	

HEIGHT DIMENSIONS

Keel To Top Of Hardtop	**20ft. 7 1/8 in.**	**6.28 m**
Waterline to Top of Hardtop	**18ft. 3 7/8 in.**	**5.58 m**
HardtopTo Top Of Mastlight	**1ft. 4 1/8 in.**	**40.64 cm**

8. PROPULSION SYSTEM

The inboard engines on the 58 DB are the heart of your Sea Ray® boat. Proper attention to and maintenance of your engines will assure you of many hours of pleasurable, safe boating and will prevent unnecessary engine problems. You must, therefore, become thoroughly familiar with all aspects of the engine's proper operation outlined in the Engine Operator's Manual. A general maintenance program consists of proper lubrication, cleaning of fuel filters, fuel lines and air filters. **When washing down, or at any other time, take care that water does not enter the air inlets.** Water entering the air inlets when the engines are not operating may go directly into the cylinders, resulting in rust and possibly internal engine damage.

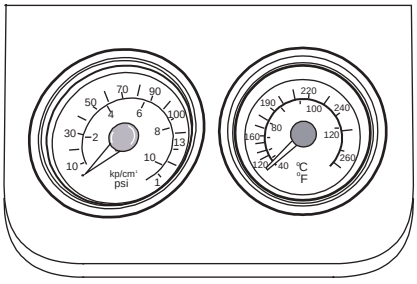
The engines are warranted directly by the engine manufacturer, not by Sea Ray®.

Sea Ray® strongly urges you to fully comply with the manual provided by the engine manufacturer. Follow the recommended maintenance and warranty schedule in your Engine Operator's Manual included in the owner's packet. Engine abuse or improper maintenance may adversely affect the claims made under the independent warranty provided by the engine manufacturer.

A. ENGINE GAUGE PACKAGE

Each of your engines have been equipped with an engine guage package. This package is provided as a safety feature in the event of an electrical malfunction resulting in the helm gauges becoming inoperative.

ENGINE GAUGE PACKAGE
(FIG. 2.9.1)



B. LOCATION

The engine gauge package is located on the inboard side of each engine. Gauge packages may differ with different engine options. Refer to your engine Operator's Manual for proper gauge readings and gauge package location.

9. PROPELLERS

Your Sea Ray® has been equipped with propellers which our tests have shown to be the best suited for general use under normal conditions and load. Under no circumstances use a propeller which allows the engine to operate at higher than maximum RPM for your engine.

REFER TO ENGINE OPERATOR'S MANUAL FOR MORE DETAILED INFORMATION.

10. MAJOR CONTROLS

A. GEAR SHIFTS AND THROTTLE CONTROLS

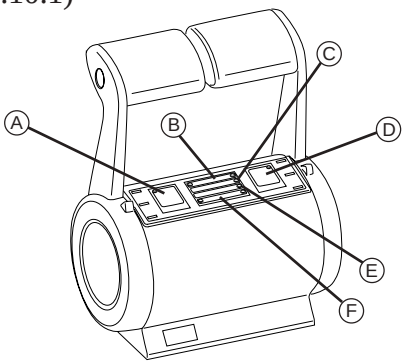
Standard on the 58 DB is the Rex Roth gear shift and throttle engine controls(See Figure 2.10.1). Read and understand the information in the Owner's Manual Packet for your yacht model's gear and throttle control. Also see the Quick Reference Card in your Owner's Packet for additional operational instructions.

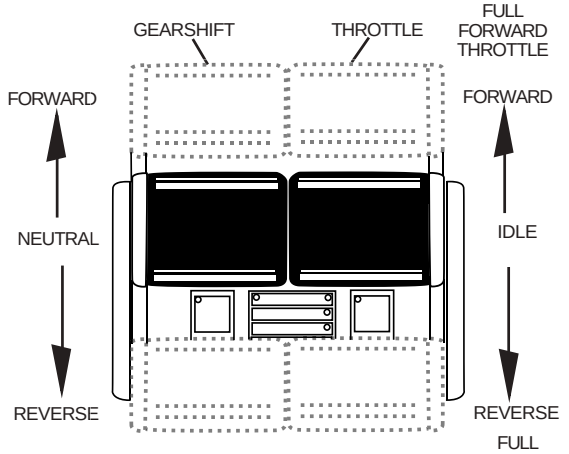
Your yacht has start in-gear protection. For safety's sake and as a good habit to get into, always put the gear/throttle selectors in the NEUTRAL & IDLE position before starting the engines.

Follow the engine START sequence according to the Engine Owner's Manual. Also see Section 3 - Using Your Boat, page 3.4

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

ENGINE SHIFT & THROTTLE FUNCTIONS
(FIG. 2.10.1)





Ⓐ COMMAND/.WARM-UP BUTTON
Ⓑ COMMAND "ACTIVE" WHEN LIT
Ⓒ SYNCHRONIZATION "ACTIVE" WHEN LIT
Ⓓ SYNCHRONIZATION/TROLLING BUTTON
Ⓔ TROLLING "ACTIVE" WHEN LIT
Ⓕ ALARM

⚠ WARNING

Shift selector(s) to NEUTRAL before starting engines.

Shift only when engine is at IDLE.

Reversing at high speeds can cause flooding/ swamping due to water being pushed over the transom.

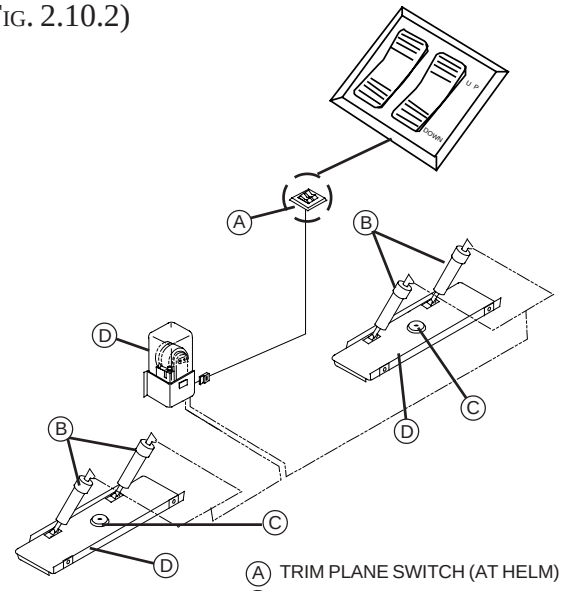
B. HYDRAULIC TRIM TABS

The trim tabs on your Sea Ray® are operated with a rocker type momentary switch at the control station. They are protected by a circuit breaker on the control station breaker panel (See figure 2.12.1) which must be ON to use the trim tabs.

To trim the bow of your boat down, push the top halves of BOTH rockers down in momentary bursts. If you hold the rockers down, you will over trim the boat and the bow will dig in. To correct over-trimming, push bottom halves of BOTH rockers to obtain desired planing angle.

The two trim tabs on the transom of your boat can also be used to trim the list of your boat that may be caused by improper storage of gear, too many people on one side or a strong cross wind (See chart below). Operation of the rocker switch should be momentary bursts to achieve proper attitude of the hull.

HYDRAULIC TRIM TABS
(FIG. 2.10.2)



Ⓐ TRIM PLANE SWITCH (AT HELM)
Ⓑ HYDRAULIC RAMS
Ⓒ TRIM PLANE ZINC
Ⓓ TRIM PLANES
Ⓔ TRIM TAB PUMP

⚠ WARNING

MANEUVERING/CONTROL HAZARD

Ensure continuous visibility of other boats, swimmers, and obstacles during bow-up transition to planing.

When running wide open, most boats do not require any trim unless heavily loaded.

In heavy following seas or when running in an inlet, best maneuverability is obtained with a bow high attitude. To be sure the tabs are full up in the zero position, push the bottom halves of BOTH rockers for several seconds.

RUNNING ATTITUDE	LIST	PUSH
BOW UP	.....	TOP OF BOTH ROCKERS
BOW UP	PORT	TOP OF STARBOARD ROCKER
BOW UP	STARBOARD	TOP OF PORT ROCKER
BOW DOWN	PORT	BOTTOM OF STARBOARD ROCKER
BOW DOWN	STARBOARD	BOTTOM OF PORT ROCKER

The trim tab pump is located starboard, on the transom. To service the units, remove the tinted plastic cover to gain access to reservoir fill plug and motor parts. Hydraulic trim tabs use Type A Dexron II automatic transmission fluid, which should be filled up to the FULL mark on the pump base. **Add fluid with the trim tabs in the up position only.**

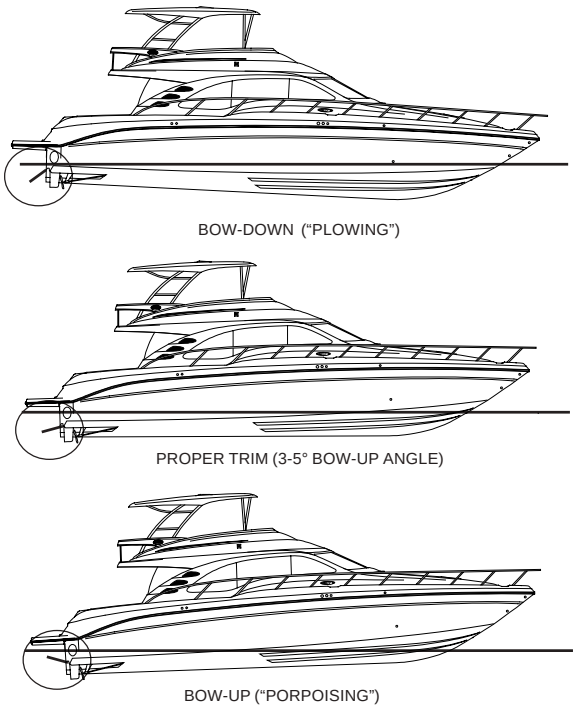
Your boat is designed to plane at a particular speed and weight distribution. As speed decreases or weight increases, the stern will settle lower in the water and the hull will push a hill of water, increasing drag and requiring more power to move through the water.

Hydraulic trim tabs are adjusted independently of each other, enabling adjustment of bow attitude up and down as well as to correct for side to side list. Trim tabs also provide attitude adjustment at lower speeds.

A PROPERLY TRIMMED BOAT:

- Operates at a correct running attitude of a 3 to 5 degree angle to the water (bow slightly up).
- Reduces drag and increases fuel efficiency.

EFFECTS OF TRIMMING
(FIG. 2.11.1)



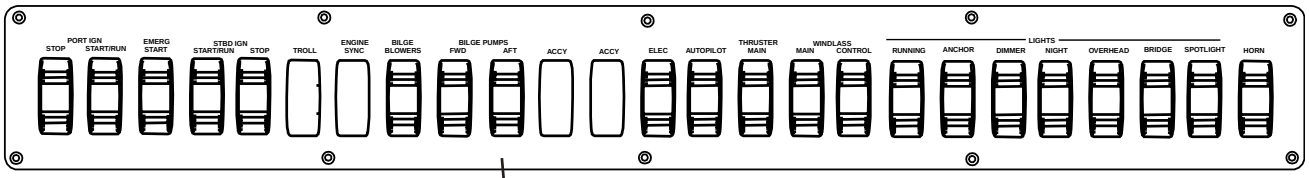
- Preserves good forward visibility.
- Increases safety.

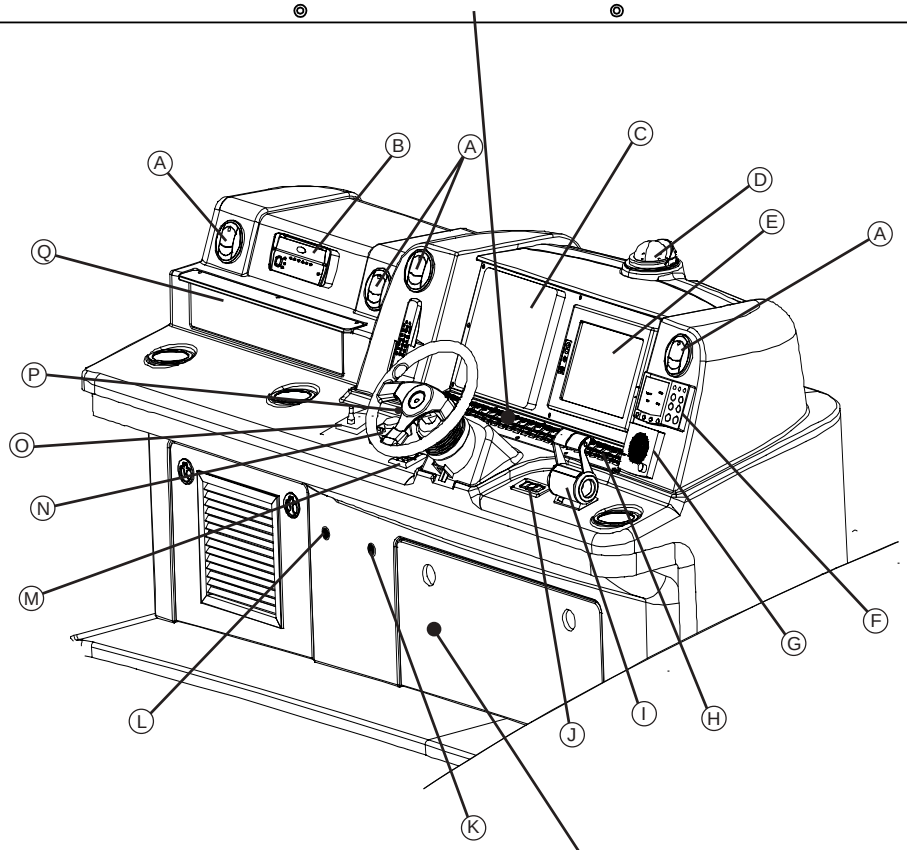
Use short bursts of rocker switches to adjust trim tabs. Pushing switches too far at once may cause sudden steering problems. Adjusting one trim tab mare than the other will adjust list caused by improper equipment storage, too many people on one side or a strong cross wind.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

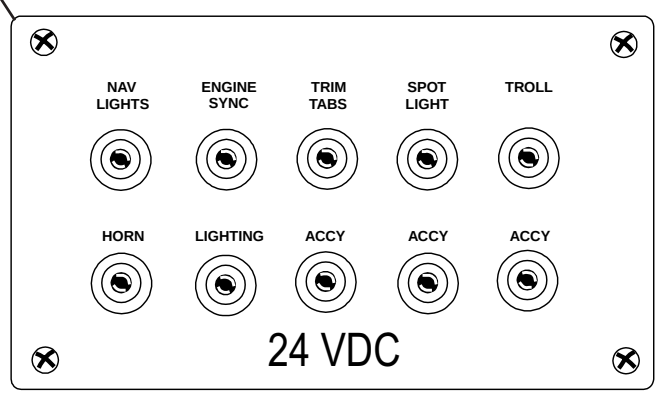
11. CONTROL STATION AND SWITCH LAYOUT

BRIDGE CONTROL STATION
(FIG. 2.12.1)





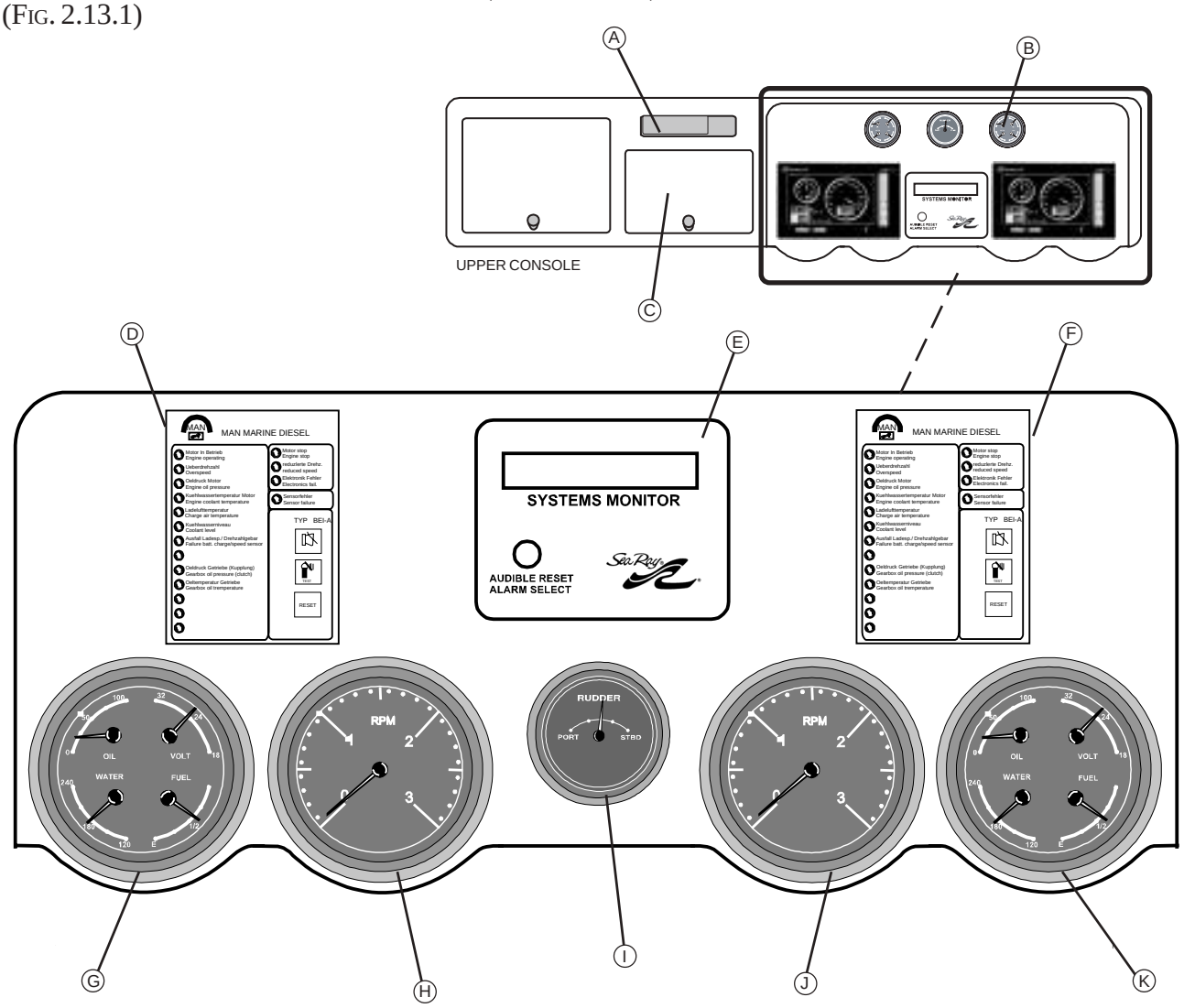
- (A) A/C OUTLETS
- (B) STEREO W/SINGLE CD
- (C) RADAR
- (D) COMPASS
- (E) SEA RAY NAVIGATOR
- (F) AUTOPILOT
- (G) VHF RADIO SPEAKER
- (H) SWITCH PANEL
- (I) GEAR AND THROTTLE CONTROL
- (J) CONTROL (MOUSE) FOR SEA RAY NAVIGATOR
- (K) 12 VOLT ACCESSORY PLUG
- (L) USB INPUT FOR SEA RAY NAVIGATOR
- (M) TRIM TAB SWITCH
- (N) SPOTLIGHT CONTROL
- (O) BOW THRUSTER JOY STICK
- (P) HALON FIRE EXTINGUISHER INDICATOR
- (Q) SAFETY INFORMATION BOOKLET (INSIDE CABINET)



INSIDE CABINET

CONTROL STATION AND SWITCH LAYOUT

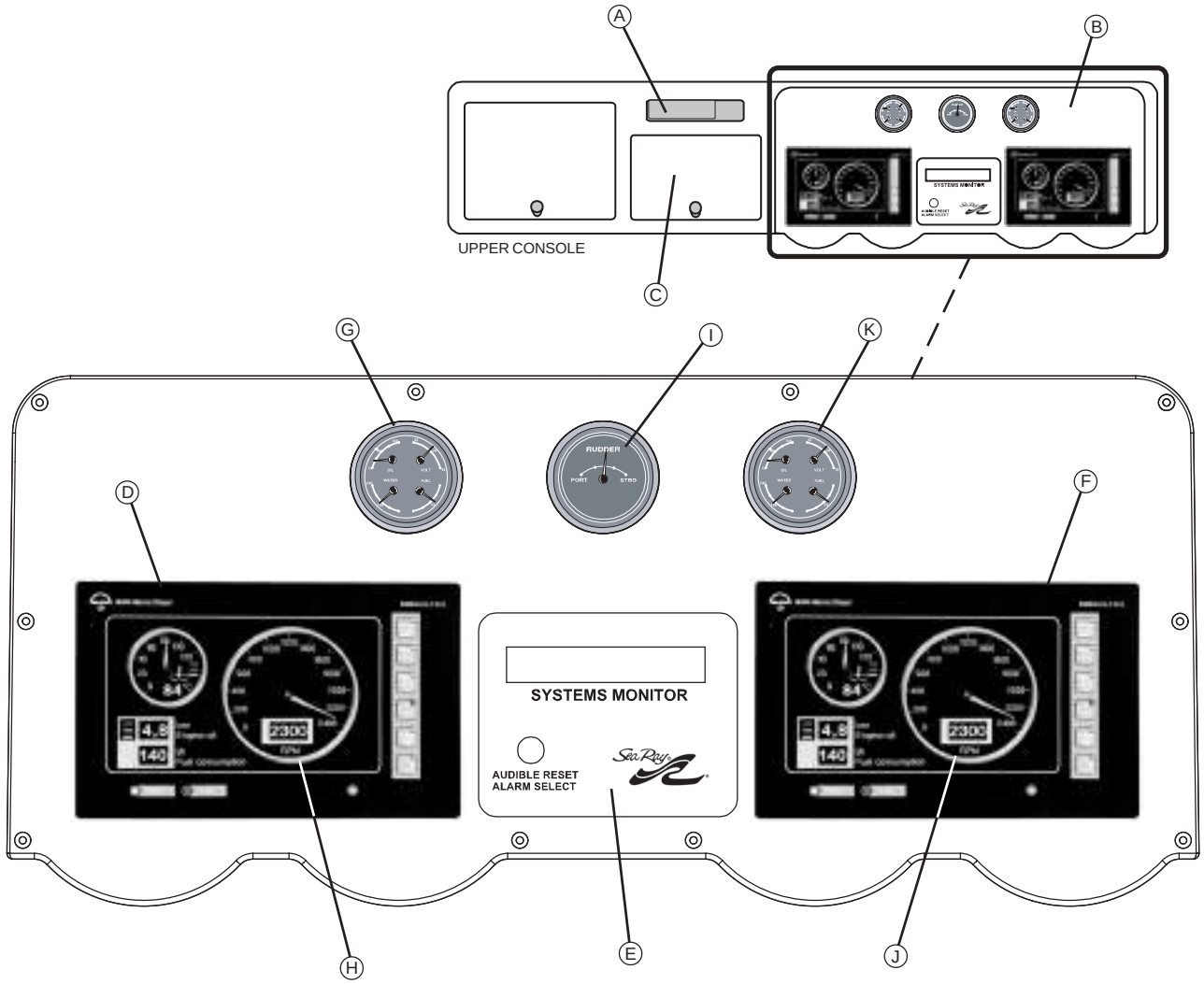
BRIDGE CONTROL STATION UPPER CONSOLE (MAN 800HP)
(FIG. 2.13.1)



- (A) CD CHANGER
- (B) GAUGE PANEL
- (C) CABINET CONTAINS BRIDGE A/C CONTROL & PHONE OUTLET
- (D) PORT ENGINE DIAGNOSTICS
- (E) SYSTEMS MONITOR
- (F) STARBOARD ENGINE DIAGNOSTICS
- (G) PORT ENGINE QUAD GAUGE
- (H) PORT ENGINE TACHOMETER
- (I) RUDDER POSITION GAUGE
- (J) STARBOARD ENGINE TACHOMETER
- (K) STARBOARD ENGINE QUAD GAUGE

CONTROL STATION AND SWITCH LAYOUT

BRIDGE CONTROL STATION UPPER CONSOLE (MAN 900HP)
(FIG. 2.14.1)



- (A) CD CHANGER
- (B) GAUGE PANEL
- (C) CABINET CONTAINS BRIDGE A/C CONTROL & PHONE OUTLET
- (D) PORT ENGINE DIAGNOSTICS
- (E) SYSTEMS MONITOR
- (F) STARBOARD ENGINE DIAGNOSTICS
- (G) PORT ENGINE QUAD GAUGE
- (H) PORT ENGINE TACHOMETER
- (I) RUDDER POSITION GAUGE
- (J) STARBOARD ENGINE TACHOMETER
- (K) STARBOARD ENGINE QUAD GAUGE

12. IMPORTANT GAUGES

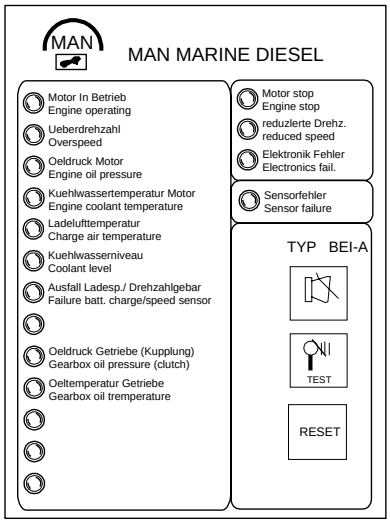
A. ENGINE MONITORING SYSTEM (EMS)

Your yacht is equipped with a Engine Monitoring System (EMS) which incorporates three individual gauge units per engine .

They are:

- Man Marine Diagnostic System (MMDS-LC) Gauge
- Quad Gauge
- Tachometer

MAN MARINE DIAGNOSTIC SYSTEM MONITOR (FIG. 2.15.1)



Refer to the Owner's Manual Packet for more information about your Man Marine Diagnostic System gauge display operation and instructions.

MAIN MMDS-LC DISPLAY

The device serves to visualize analog engine data, as well as visual and acoustic notification of engine alarms. All engine data is entered at the factory in the languages German, English, French, Italian and Spanish.

"Scrolling" with the PAGE key enables the user to call up all the important engine data. Another key is used to show current alarms or warnings. Refer to the Engine Operator / Owner Manual for additional and detailed information.

The parameters monitored by the MMDS - LC include the following functions:

- Engine Oil Pressure
- Engine Coolant Temperature and Coolant Level
- Transmission Oil Pressure and Oil Temperature
- Percent Load (Actuator)
- Fuel Rate (Throttle)
- Engine Hours

B. HOUR METER

The hour meters measure cumulative hours of operating time. There are hour meters on top of each engine and an hour meter readout on the main EMS display by method of scrolling. They should be used to keep a careful log of engine maintenance as well as performance data and fuel consumption. The generator hour meter is located on the remote generator gauge panel (See Figure 5.2.2).

C. TACHOMETER

The tachometer indicates the revolutions per minute (RPM) of the engine. (It does not indicate the speed of the boat.) Your Engine Operator's Manual

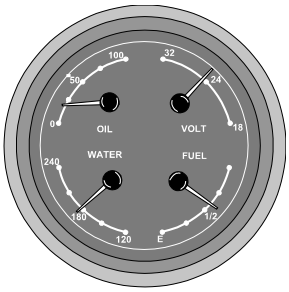
TACHOMETER (FIG. 2.15.2)

indicates the maximum full throttle RPM at which your engine should operate. This must not be exceeded or serious engine damage will occur. The tachometer should also be used to determine the most comfortable and economical cruising RPM.

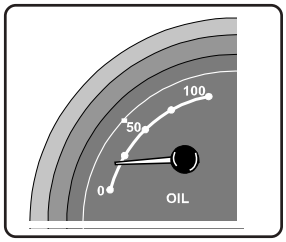
D. QUAD GAUGE (OIL PRESSURE, WATER TEMPERATURE, VOLTMETER AND FUEL GAUGES)

Your yacht is equipped with a quad gauge unit which displays, in analog format, engine oil pressure, water temperature, voltage and respective port and starboard fuel tank levels.

QUAD GAUGE (FIG. 2.16.1)



OIL PRESSURE GAUGE

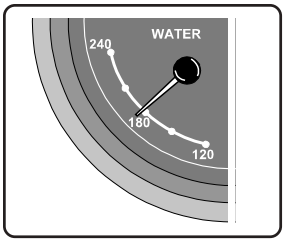


The oil gauge is often the best indicator of engine problems or difficulties. Maximum pressure is controlled by a preset valve in the oil pump. Note the reading which this gauge records after the break-in- period, as it is the "norm" which can be used as reference during the life of the engine.

IF A COMPLETE LOSS OF OIL PRESSURE OCCURS, TURN ENGINE OFF AT ONCE. Continued running after loss of pressure will cause engine damage. First, manually check the oil level. If low oil level is not the cause, consult your Sea Ray ® dealer.

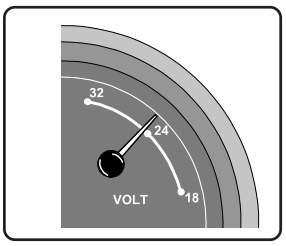
DO NOT RESTART THE ENGINE UNTIL THE PROBLEM HAS BEEN CORRECTED.Slight fluctuations in gauge readings are not uncommon during operation and may be due to the characteristics of the lubricating oil. Greater fluctuations should be investigated. The cause may be a clogged oil filter element which should be replaced with every oil change.

WATER TEMPERATURE GAUGE



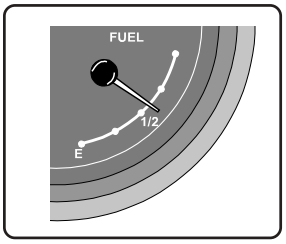
The water temperature gauge indicates temperature of the cooling water circulating inside the engine. Your engine is equipped with a thermostat so a predetermined engine temperature should be reached soon after starting the engine and maintained thereafter while the engine is running. Refer to your Engine Operator's Manual for proper gauge readings. If the temperature approaches above normal on your gauge, shut down engine at once.

VOLTMETER



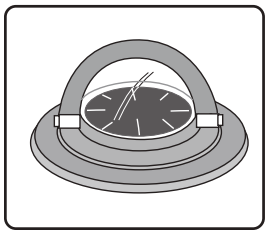
The voltmeter gauge indicates battery bank voltage. Normal engine operating voltage will range between 24.0 to 28.5 volts when the alternator is charging. Significantly higher or lower readings indicate a battery problem, alternator malfunction or heavy battery drain.

FUEL GAUGE



The fuel gauge indicates the amount of fuel in the fuel tank. The most accurate reading of the fuel gauge is at idle speeds when your boat is in an approximately level position. At slow plane, when your boat is in a bow up position the gauge will read inaccurately because the fuel in the tanks travel to the rear of the tanks and away from the fuel sending unit. Because gauge readings are approximate, they should be compared to the hours of use versus known fuel consumption (GPH).

E. MAGNETIC COMPASS



Your compass, properly corrected, will indicate magnetic North (not true North). A compass must be adjusted by a qualified person. The reason for this is that nearby instruments or objects containing magnets or current-carrying electrical wires will influence the compass reading. This is especially true if you add electronic devices to the helm station.

After your compass has been professionally adjusted. You will be given a deviation card or chart indicating the correction to be applied when laying out a compass course or making navigational calculations. **Keep this correction card or chart at the helm.**

NOTE: The compass adjustment is only good for the equipment arrangement that existed at the time of the adjustment. If you place different equipment or remove equipment from the vicinity of the compass, you cannot rely on the compass reading. The compass must be readjusted by a qualified person after equipment is added or removed from the vicinity of the compass.

NOTE: The compass roses shown on navigational charts have both true North and magnetic North directions superimposed. Make certain you plot course compass directions from the magnetic North compass rose. When not in use, the compass should be protected from excessive and prolonged sunlight. If your compass becomes sluggish or erratic, it should be serviced by an authorized repair station. To keep the plexiglass dome free from scratches, remove salt deposits and dust with a damp cloth. An occasional treatment with paste wax will help preserve the dome surface.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

F. SYSTEMS MONITOR

The Systems Monitor consists of a Display Control Module (DCM) located at the control station and a Bilge Interface Module (BIM) located on the bilge component board. The DCM and BIM are connected to each other by a coax cable and the BIM is continuously looking at all inputs for an alarm condition.

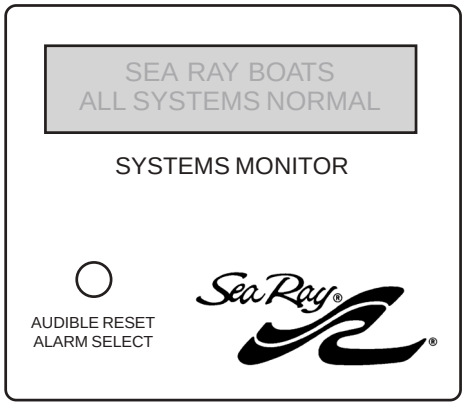
The Systems Monitor is connected directly to the 24 volt battery bank through a circuit breaker and continuously monitors two emergency high water pumps, two bilge pumps and the bilge heat detector. The engine and generator functions are only active when ignition voltage is turned on. The circuit breaker is on the main DC breaker panel located on the bilge component board (See Fig. 6.3.1).

The BIM collects signals from critical engine functions, generator oil pressure, bilge pumps, high water emergency bilge pumps and bilge heat detection and transmits that information to be displayed on the DCM. The features of the DCM include a two line LCD display with backlighting of the display, audible alarm and an Audible Reset/ Alarm Select push button switch.

The LCD display will read in two lines. For example, at normal operation it will read:

SEA RAY BOATS
ALL SYSTEMS NORMAL

SYSTEMS MONITOR DISPLAY CONTROL MONITOR (DCM)
(FIG.2.17.1)



NOTE: Some functions only read on one line. See page 2.18 (DCM functions) for all DCM display readouts.

Backlighting of the LCD is achieved by turning ON the navigation lights switch. Intensity is controlled by the electronic dimmer control. Both are located on the control station switch panel.

AUDIBLE ALARM

An audible alarm will sound to alert the operator to look at the DCM and determine the high level fault. Only high level faults such as critical engine functions, generator, emergency pumps and bilge heat detector will have an audible alarm. The forward and aft bilge pumps do not have an audible alarm, instead the DCM will display those functions.

AUDIBLE RESET/ALARM SELECT

The Audible Reset/Alarm Select push button switch on the DCM is a dual purpose switch. It enables the operator to reset an audible alarm or to manually scroll the display during multiple alarms. The Audible Reset is used to temporarily quiet an alarm that is displayed on the LCD. If that function is not corrected within 30 seconds, the audible alarm will sound again. Pushing the switch again will permanently quiet (turn off) the audible alarm for that function. The LCD will still display that fault until it is corrected.

The Alarm Select is active only during multiple alarms. For example, if the engine oil pressure, forward emergency pump and transmission temperature had faults at the same time, the systems monitor would sound an audible alarm and would display the alarm with the highest priority.

⚠ CAUTION

Never ignore an alarm.

Each push of the switch will show the new alarm and then the LCD will automatically scroll through the multiple alarm functions approximately every three (3) seconds. By pushing on the switch, the operator will be able to manually scroll the LCD for faulting functions. To monitor critical engine functions and generator oil pressure:

1. The 24 volt main battery solenoid switches must be energized either at the main DC breaker panel on the aft port engine room component board or the DC distribution panel in the port aft salon.

2. At the DC distribution panel, turn the port and starboard master ignition key switches to the ON position.

3. At the control station, locate the port and starboard START/RUN switches. Without starting the engines, push the START/RUN switches to the RUN position. The Display Control Monitor (DCM) will display:

SEA RAY BOATS ALL SYSTEMS NORMAL

NOTE: The generator and engines will have an alarm as soon as ignition is turned on.

4. Start the engines per the engine start instructions in Section 3, page 3.4.

5. Start the generator per the generator start instructions in Section 3, page 3.8.

With the main engines and generator engine running, the yacht's Systems Monitor is fully activated. When the engine and generator engine ignition is turned OFF, approximately five (5) minutes display will be blank. Engine and generator functions are disabled because they are unnecessary, however, the bilge heat detector and all pumps are still being monitored.

The following DCM Function Table will name each function, describe the function and show how it is displayed on the DCM.

If your Systems Monitor does not operate or display functions correctly per the instructions provided, recycle the circuit breaker by pushing the circuit breaker to the OFF position and then pushing it to the ON position. Use a small tool that will fit through the hole to push the breaker to the OFF position.

13. DISPLAY CONTROL MODULE (DCM) FUNCTION TABLE

FUNCTION	DESCRIPTION	DCM
Normal Operation	No Alarms	SEA RAY BOATS ALL SYSTEMS NORMAL
BIM Coax Cable to DCM	Cable Connection Fault	DATA LINK FAILURE ALARM SYSTEM OFF-LINE
Forward Emergency *	Forward Emergency Pump Under the Master Stateroom Hatch is Running	PUMP ALARM FORWARD EMERGENCY
Aft Emergency *	Aft Emergency Pump in the Engine Room is Running	PUMP ALARM AFT EMERGENCY
Forward Bilge	Forward of Bilge Bulk Head	PUMP ALARM FORWARD BILGE
Aft Bilge	Aft Bilge Pump in the Engine Room is Running	PUMP ALARM AFT BILGE
Oil Pressure *	Engine Oil Pressure Too Low	PORT (OR STBD) ENGINE ALARM OIL PRESSURE
Water Temperature *	Engine Cooling System Too Hot	PORT (OR STBD) ENGINE ALARM WATER TEMPERATURE
Transmission Temperature *	Transmission Cooling System is Hot	PORT (OR STBD) ENGINE ALARM TRANSMISSION TEMPERATURE
Exhaust Temperature *	Engine Malfunction, Exhaust Too Hot	PORT (OR STBD) ENGINE ALARM EXHAUST TEMPERATURE

* *function has an audible alarm.*

14. NAVIGATION AND ANCHOR LIGHTS

Navigation lights MUST be on while underway from sunset to sunrise or in conditions of reduced visibility. "Underway" means the boat is not docked or at anchor. Trolling or drifting with engine off is considered "underway" and navigation lights must be used.

If you are anchored in open water, i.e. where other boats can approach yours, you must display your anchor light: a white light that can be seen from all possible directions, i.e. 360 degrees.

Read the "Federal Requirements and Safety Tips for Recreational Boats" provided in your kit.

TO OPERATE THE RUNNING LIGHTS:

Push RUNNING switch on control station switch panel to the ON position.

TO OPERATE THE ANCHOR LIGHTS:

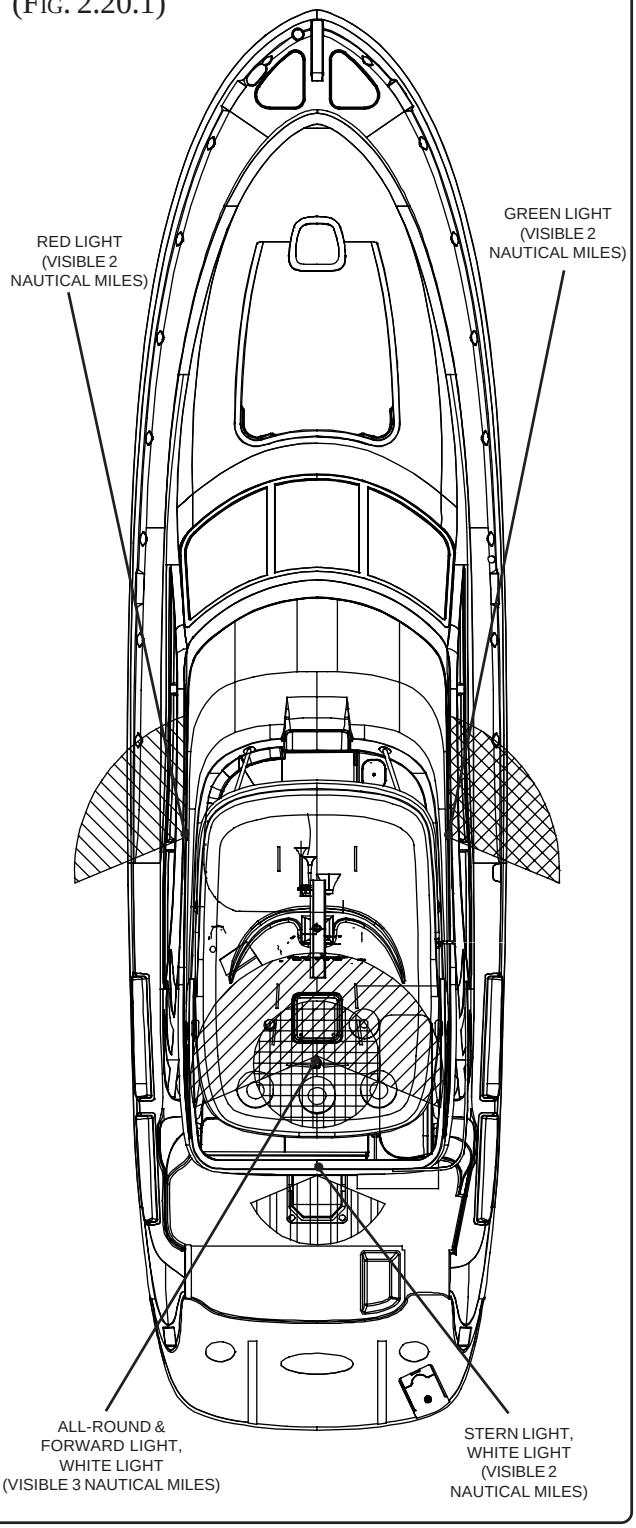
Push ANCHOR switch on control station switch panel to the ON position.

A. CONSOLE DIMMER

There is a DIMMER control switch located on the control station switch panel (See figure 2.12.1) which controls the intensity of the gauge and switch panel lights. The gauge and switch panel lights are energized when the navigation running lights are turned on.

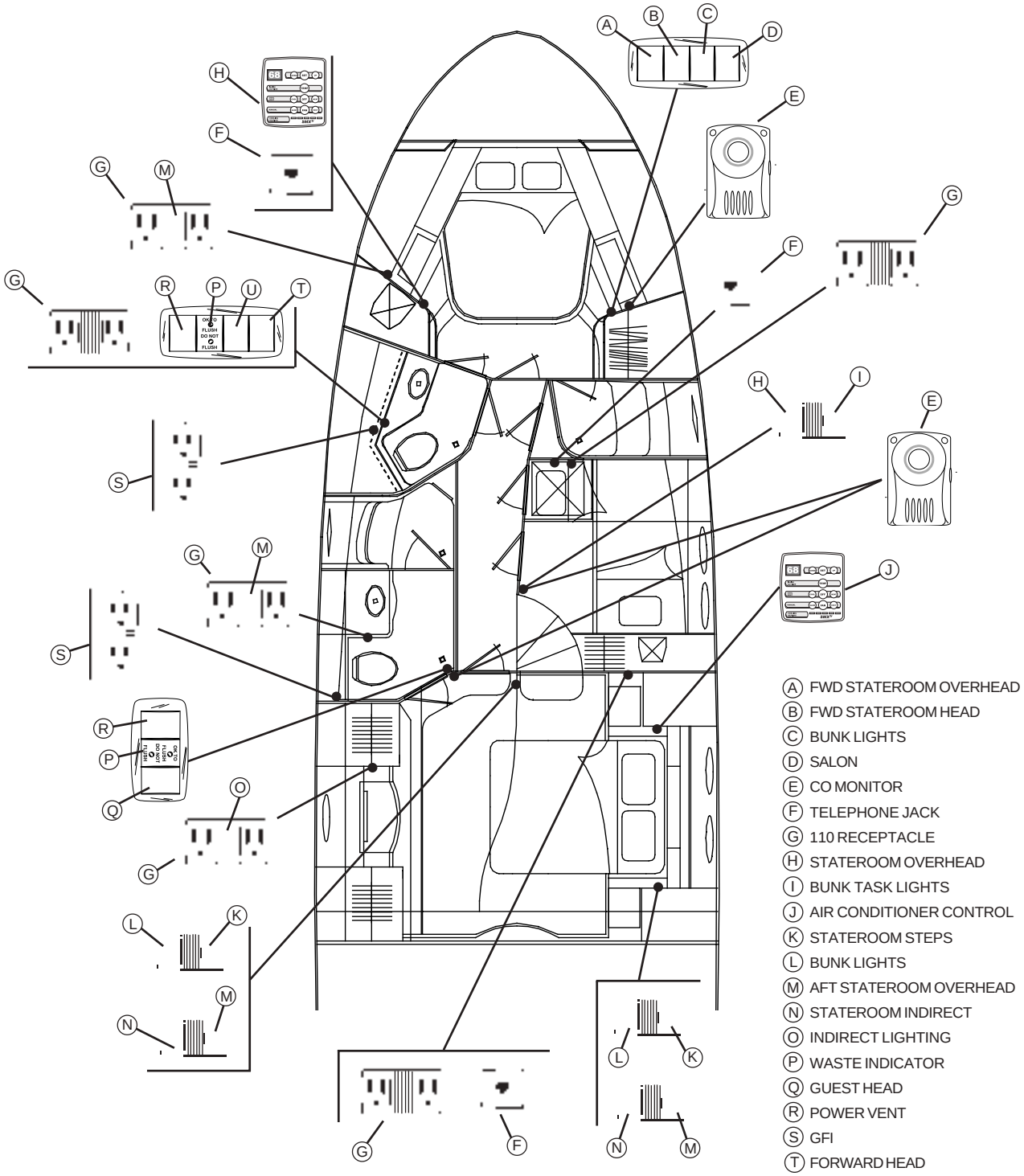
If you opt to install additional equipment on the hard top, it then becomes your responsibility to reevaluate your lighting situation to make certain the navigation lights on your boat meet government navigational lighting requirements. You will most likely have to raise the mast light. Consider the weight of the equipment you install; be certain it is not to heavy for your sport spoiler or optional hard top.

NAVIGATION LIGHTS
(FIG. 2.20.1)



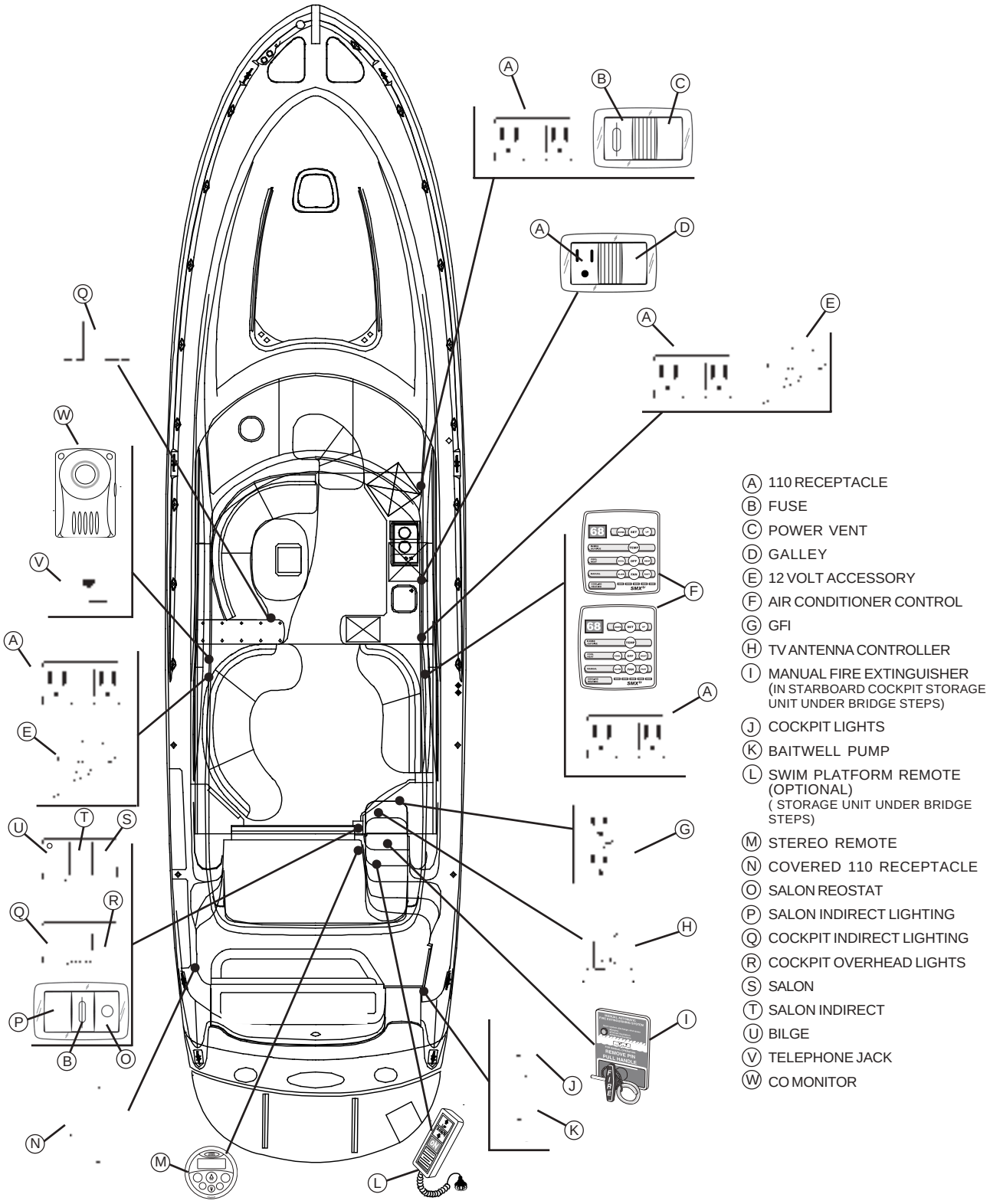
15. SWITCH AND RECEPTACLE LAYOUT

LOWER LEVEL SWITCHES & RECEPTACLES
(FIG. 2.21.1)



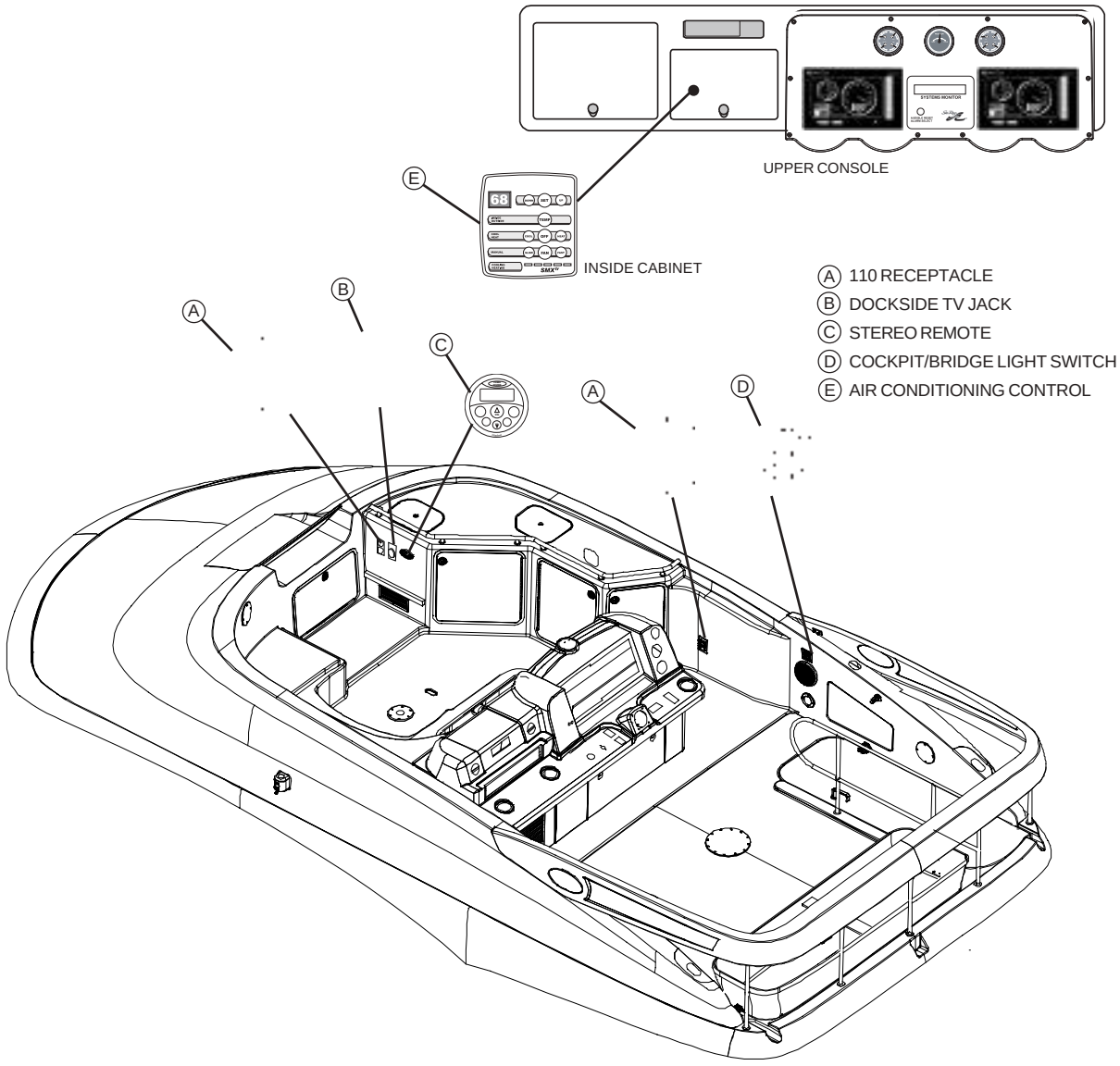
SWITCH AND RECEPTACLE LAYOUT

MID LEVEL SWITCHES & RECEPTACLES
(FIG. 2.22.1)



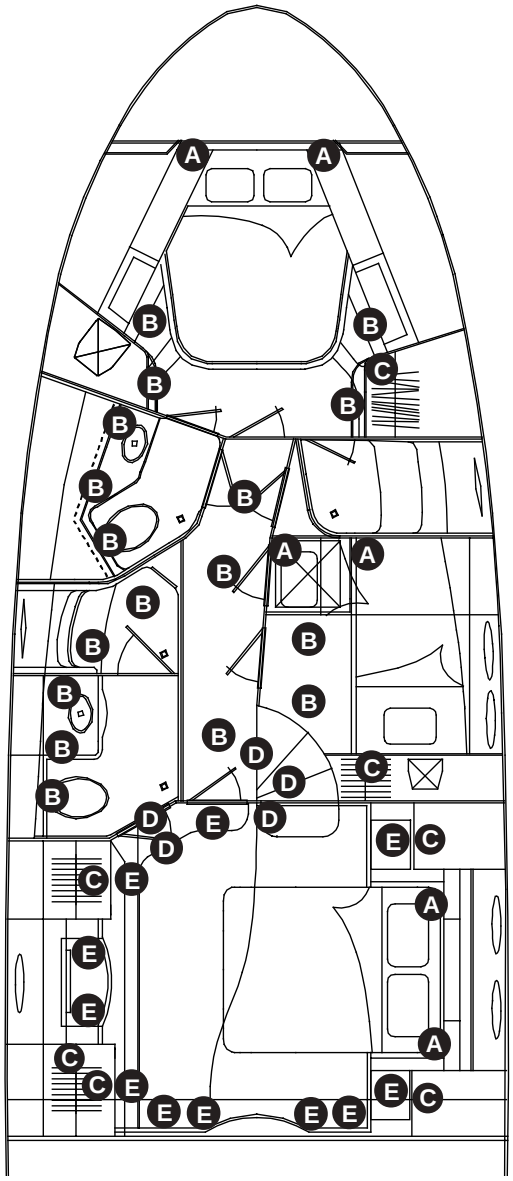
SWITCH AND RECEPTACLE LAYOUT

BRIDGE SWITCHES & RECEPTACLES
(FIG. 2.23.1)



16. LIGHTING LAYOUT

LOWER LEVEL LIGHTING
(FIG. 2.24.1)

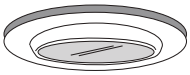


SWIVEL LIGHT

BULB REPLACEMENT
HALOGEN 24V 10W
BI-PRONG

A

ROUND LIGHT



BULB REPLACEMENT
HALOGEN 24V 10W
BI-PRONG

B

STORAGE LIGHT

BULB REPLACEMENT
FUSE TYPE BULB
#12864 24V5W

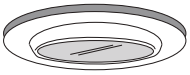
C

STEP LIGHT

LED

D

AC LOW VOLTAGE LIGHT

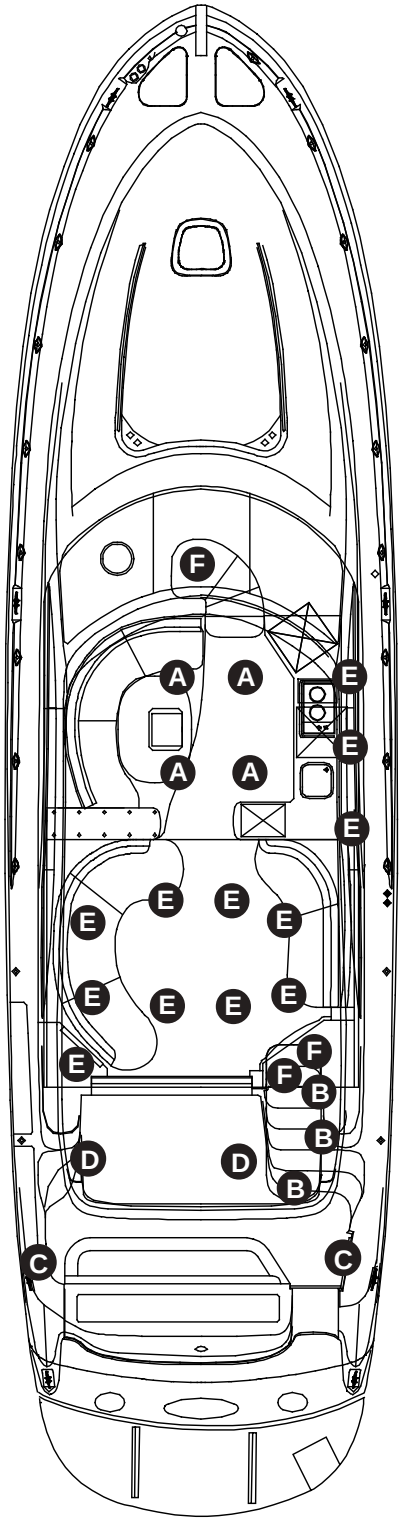


BULB REPLACEMENT
XELOGEN 24V 10W
BI-PRONG

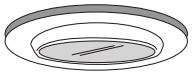
E

LIGHTING LAYOUT

MID LEVEL LIGHTING
(FIG. 2.25.1)



ROUND LIGHT



BULB REPLACEMENT
XELOGEN 242V 10W
BI-PRONG

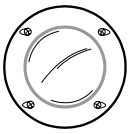
A

STEP LIGHT

LED

B

COCKPIT LIGHT



BULB REPLACEMENT
FUSE TYPE BULB
#24V10WPERKO #70-0

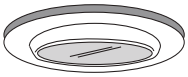
C

COCKPIT OVERHEAD LIGHT

BULB REPLACEMENT
HALOGEN 24V 10W
BI-PRONG

D

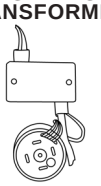
AC LOW VOLTAGE LIGHT



BULB REPLACEMENT
XELOGEN 24V 10W
BI-PRONG

E

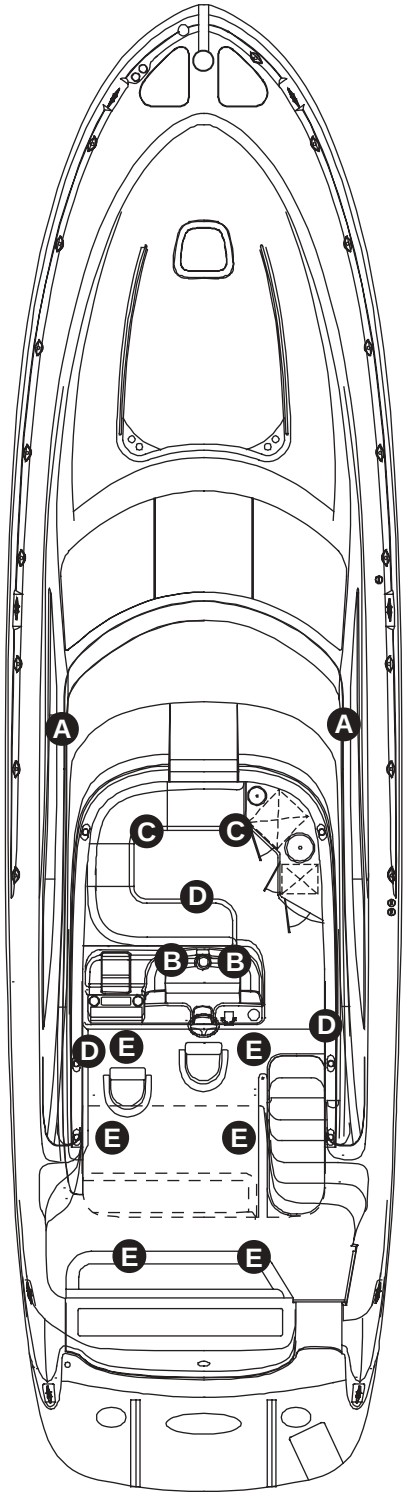
LIGHTING TRANSFORMER



F

LIGHTING LAYOUT

BRIDGE & COCKPIT LIGHTING
(FIG. 2.26.1)

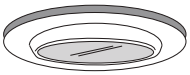


BRIDGE SIDE NAV. LIGHT

BULB REPLACEMENT
BULB #70DP/67DP2

A

ROUND LIGHT WITH RED FILTER



BULB REPLACEMENT
XELOGEN 24V 10W
BI-PRONG

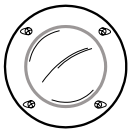
B

COCKPIT OVERHEAD LIGHT

BULB REPLACEMENT
XELOGEN 24V 10W
BI-PRONG

C

COCKPIT LIGHT



BULB REPLACEMENT
FUSE TYPE BULB
#24V10WPERKO #70-0

D

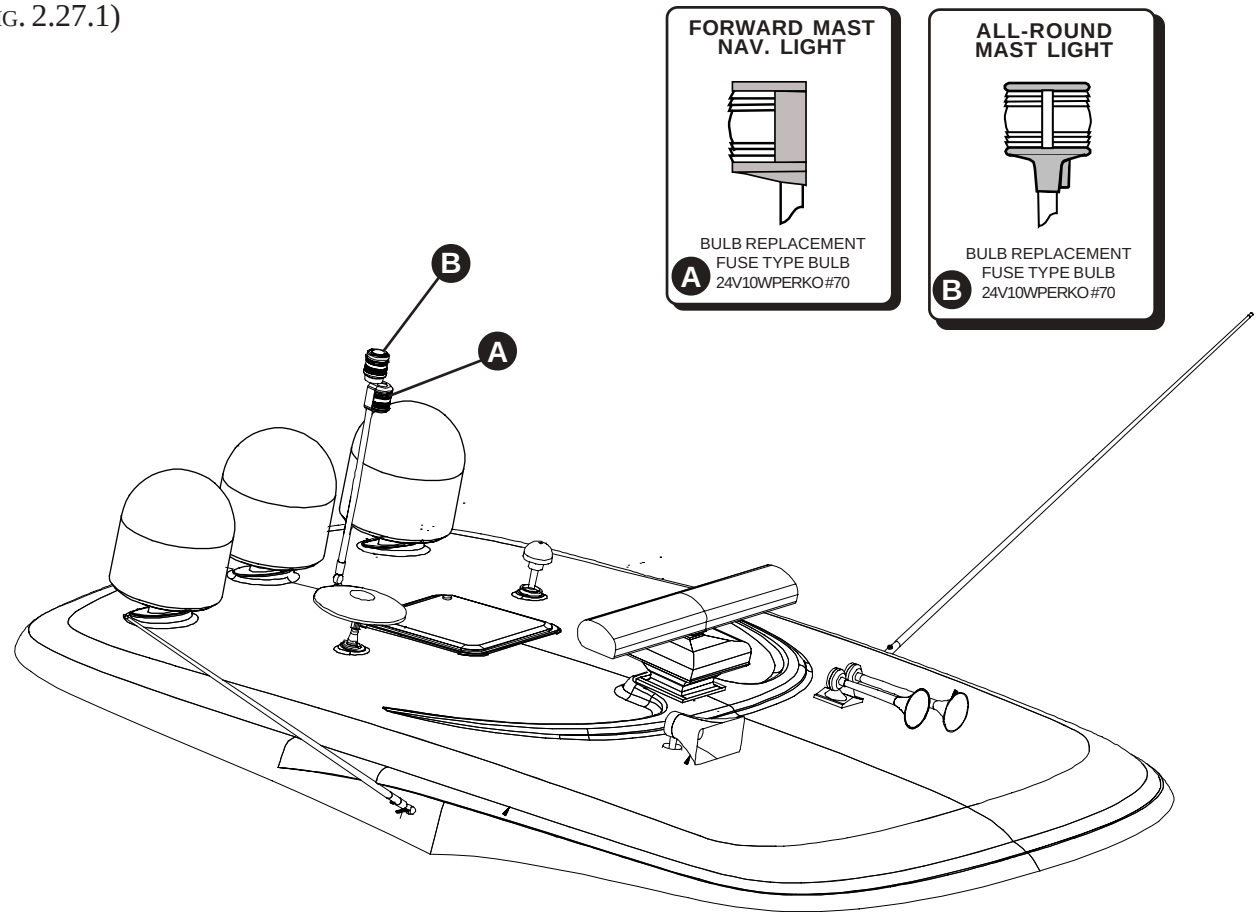
BILGE/STORAGE LIGHT

BULB REPLACEMENT
BULB# CEC1141

E

LIGHTING LAYOUT

MAST LIGHTS
(FIG. 2.27.1)



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1. PREPARING TO DEPART

As the owner/operator of a Sea Ray® yacht, you are responsible for the safe operation of your boat and the safety of your passengers. Always be sure that required documents, navigational equipment and Coast Guard required safety equipment is aboard and in proper working order.

GENERAL

1. **Weather forecast** - Safe conditions existing for length of trip.
2. **Passengers/Crew** - Instructed in duties for getting underway and fitted for a correct size PFD. One (1) PFD for every person aboard.
3. **Tool Box** - Stocked with a variety of appropriate tools.
4. **Lines, Fenders and Anchor** - Ready for use.
5. **Float Plan** - shared with friend or relative not on trip.
6. **Navigation Charts** - Available for trip.

BOAT SYSTEMS

1. **Equipment** - Make sure all equipment is stored properly.
2. **Radio and Navigation Equipment** - Check for proper working condition.
3. **Bilge/Engine Compartment** - "Sniff" the bilge/engine compartment for fuel odor. Run the bilge blowers for at least Four (4) minutes. Confirm air flow through hull vents.
4. **Bilge Pumps** - Assure that all bilge pumps function properly.
5. **Shore Power Cable** - Disconnected from dockside power inlet.
6. **Trim Tabs** - Full range of motion. No excessive play or binding.
7. **Fresh Water Tank** - Filled and sanitized.
8. **Head System Holding Tank** - Empty
9. **Seacocks** - Open (handle parallel to hose).

ENGINE

1. **Fuel -** Be sure that you have sufficient recommended fuel for the trip.
2. **Fuel System** - Check for leaks.
3. **Racor Fuel Filters** - Check that filters are clean, tight and free of water.
4. **Fluid levels** - Check engine oil and steering fluid levels.
5. **Coolant Drain Plugs** - Secured
6. **Batteries** - Fully charged (Check water cell levels).
7. **Battery Switches** - Check for proper working condition.
8. **Fuel valves** - Open
9. **Engine Alarm** - Test. Should sound after a few seconds.
10. **Gear Shift and Throttle Controls** - Full range of motion. In NEUTRAL and IDLE positions.

2. WHILE UNDERWAY

GENERAL

1. **Passengers/crew** - Safely seated with PFD's on or immediately accessible. Keep passengers safe.
2. **Lines, fenders and anchor** - Safely stowed.
3. **Opeation** - Gradual acceleration/deceleration and turning.
4. **Surroundings** - Be aware of other boats, swimmers, floating debris, etc. at all times.
5. **Carbon Monoxide (CO)** - Operate so as to prevent buildup.
6. **Weather** - Monitor frequently.
7. **Navigation** - Adhere to navigational aids in the water and on shore.

8. **Fuel** - Check consumption regularly.

BOAT SYSTEMS

1. **Trim Tabs** - Bring boat to “On Plane”.
2. **Navigation Lights** - On at night or in reduced visibility.

ENGINE

1. **Tachometers** - Engines operating in safe RPM range (refer to the Engine Owner’s Manual for your specific engine).
2. **Engine Gauges** - Monitor continually.
3. **Engine Operation** - Check idle and shift. Listen for abnormal noises and visually check the engine compartment while underway.

3. RETURNING TO PORT

GENERAL

1. **Passengers/crew** - Instructed in duties for line handling.
2. **Lines, fenders and anchor** - Ready for use.

BOAT SYSTEMS

1. **Anchor Light -** ON if necessary.
2. **Bilge/Engine Compartment -** “Sniff” the bilge/engine compartment for fuel odor. Run the bilge blowers if necessary. Check for water in the bilge. Run bilge pumps if necessary.

ENGINES

1. **Gearshift & Throttle Controls -** Bring to NEUTRAL and IDLE positions.
2. **Tachometers -** Idle the engines for five (5) minutes to cool down.
3. **Ignition -** Depress engine STOP switches on the helm switch panel when engines are cooled down.
4. **Engine Operation -** Check idle and shift. Listen for abnormal noises.

4. SECURING THE BOAT

GENERAL

1. **Shore Power Cables -** Connected to dockside power inlet.
2. **Fenders and Lines -** Fenders in place, lines tied securely to dock.
3. **Equipment -** Dry and stored.
4. **Float Plan -** Notify person who had float plan that you have returned.
5. **Canvas -** Properly install canvas covers
6. **Hull -** Inspect for damage

BOAT SYSTEMS

1. **Seacocks -** Closed (handle perpendicular to hose).
2. **Helm Switch Panel -** All switches in the OFF position.
3. **Gearshift/Throttle Controls -** In the NEUTRAL and IDLE position.
4. **Navigation Lights -** Turned OFF.

ENGINES

1. **Ignition -** Switched in the OFF position (lights off) and master ignition keys removed from DC distribution panel.
2. **Battery Switches -** In the OFF position.
3. **Fuel Valves -** Closed (handle perpendicular to hose).

5. FUELING THE BOAT

NOTICE

RECOMMENDED FUEL:

#2 Diesel Fuel

Certain precautions must be carefully and completely observed every time a boat is fueled,

even with diesel fuel. Diesel fuel is nonexplosive but it will burn.

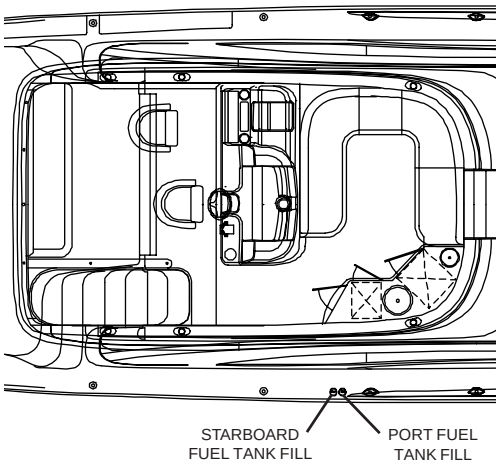
A. GENERAL

- Fuel during daylight.
- Fire extinguisher – close at hand.
- Mooring – boat tied securely to fueling pier.
- Crew – at least one knowledgeable person present.
- Passengers – unnecessary people off the boat.
- Engines – stopped.
- Electrical equipment, including blowers – power off.
- Close all hatches, doors and keep engine compartment closed to prevent fumes from entering the cabin or cockpit areas.
- Smoking material – extinguished.
- Inboard tanks – grounded.
- Filler pipe – marked DIESEL.
- Fuel nozzle – in contact with filler pipe to prevent static sparks.
- Avoid spills – fill less than rated capacity of tank; allow for fuel expansion.
- Trim – fuel weight distributed equally.

B. FILLING THE TANKS

- Check the fill plate label to ensure that fuel is placed ONLY in the fuel tank. The fuel fill plates are located on the starboard deck walkways (Figure 3.3.1).
- Know your fuel capacity and consumption. Record the amount of fuel used since your last fill up, and compute the engine's hourly fuel usage. As a fuel gauge backup check, deduct the average hourly fuel usage from fuel tank capacity.

FUEL FILL LOCATIONS
(FIG. 3.3.1)



- Observe the "Rule of Thirds": one-third fuel for trip out, one-third for return and one-third for reserve.
- Allow an additional 15 percent fuel reserve when operating in rough seas.
- Listen as the tank fills and stop adding fuel before it spills from the fuel fill opening.

C. AFTER FILLING

- Windows, doors, hatches - open.
- DO NOT wash spilled fuel overboard. Wipe up any spill with rags or paper towels and dispose of them properly on shore.
- Sniff test - if fuel fumes remain, operate blowers until fumes are gone.
- Fuel tank - secure filler cap.

6. BOARDING

- DO NOT overload the boat. Refer to builder's plate located near the helm (Figure 1.6.1). Load to less than capacity in adverse conditions.
- Board one person at a time and give assistance as needed.

⚠ WARNING

Wet decks are slippery.

You can be seriously injured if you slip and fall.

Wear slip-resistant footwear secured to your feet and hold onto rails or boat structure.

- Transfer gear and equipment by handing it from a person on the dock to a person on board. You can lose your balance and be injured if you attempt to board while carrying equipment or gear.
- Distribute the weight of equipment and passengers as evenly as possible to keep the boat balanced.
- Stow gear and equipment so that it is accessible, but everything is to be stored in places so as to prevent it from flying about if the boat encounters rough water or weather.

7. PERSONAL FLOTATION DEVICES (PFD'S)

- Operator must instruct all passengers on location and use of PFD's (See *Section 1-Safety, page 5* for type and usage).
- Children less than sixteen (16) years of age and all non-swimmers, adults as well as children, must wear properly-sized PFDs at all times when aboard.
- ALL passengers should wear PFDs. By the time someone falls overboard, it can be to late for them to put on a PFD and fasten it properly. This is especially true in colder waters, below 70°F, where survival time, before hypothermia sets in, is measured in minutes.
- If there are passengers not wearing PFDs, the PFDs must be readily accessible. "Readily accessible" means out of the storage bag and unbuckled.
- All throwable flotation devices (cushions, rings, etc.) must be right at hand.

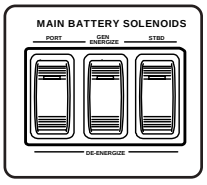
8. PASSENGER INSTRUCTION AND LOCATION

- Everyone on board must be told about the boat's behavior from starting to getting up on plane.
- Before the operator does any high-speed maneuvers or rapidly accelerates or decelerates the boat, passengers must be warned to sit and hold on and must heed the warning.
- The operator may have to make rapid changes in speed and/or direction to avoid a problem, with little or no time for alerting passengers. It is critical that all passengers be seated in the designated seating areas and holding on to prevent falling overboard or getting knocked about in the boat at all times when the boat is underway.

9. STARTING THE ENGINES

The engine operation and maintenance manual furnished with your boat describes pre-start and starting procedures. The following notes are basic reminders and not intended to cover every detail of starting. We urge you to thoroughly read and understand your engine manual. The electric controls offer several modes of operation, see Section 3 - Using Your Boat "Shifting to Drive the Boat" for more details

NOTE: Engine block heaters should be on at all times.

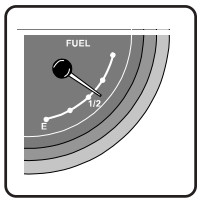


1. Check battery solenoids for ENERGIZED position. Battery solenoid switches are located on the main DC Breaker Panel in the engine room and the DC Distribution Panel located behind an access door in the port aft salon. (see Section 6 – *Electrical System*, Fig. 6.3.1 and 6.12.1). Controls require the station select button on the throttle/shift control to be pressed for one (1) and a half (1/2) seconds. This will silence the alarm and enable the controls.

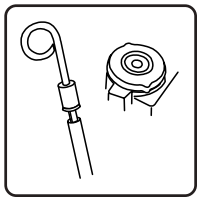
⚠ WARNING

DO NOT run the engine or generator in an enclosed area, such as a closed boat house, as there is the possibility of buildup and inhaling of carbon monoxide.

2. Check the fuel tank levels.

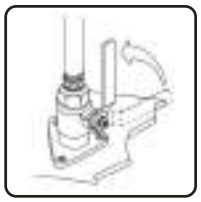


3. Check the oil and coolant levels. See your Engine Operator's Manual for proper readings.



4. Check engines for coolant drain plug installations.

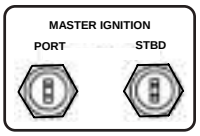
5. Check seacocks for open position



6. Make sure strainers are clean and water tight (see Section 4 – *Bilge and Underwater Gear*, page 4.13).

7. Check the bilge for fuel fumes or liquid. **Do not start the engines until the source of fumes is determined and corrected and the bilge area is safely ventilated.**

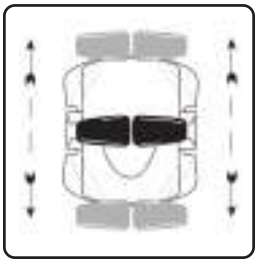
8. Turn on the master key switches located on the DC distribution panel (see Section 6 – *Electrical System*, pg. 6.16). Listen for alarms which indicate ignition power. Controls require the station select button on the throttle/ shift control to be pressed for one (1) and a half (1/2) seconds. This will silence the alarm and enable the controls.



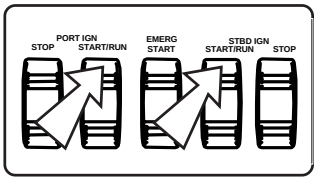
NOTE: Ignition switches on the control station must be in the RUN position.

NOTE: Electric shift and throttle controls require that the STATION SELECT button be pressed while moving throttle control lever ahead of the detent for neutral high idle operation. (Refer to original Equipment Manual).

9. After ignition power is verified, check the gear shift lever(s) in the NEUTRAL position and the throttle lever(s) at IDLE.



10. Push on the top of the ignition switches until the engines start. Do not operate starter for more than 10 seconds without allowing starter to cool for two (2) minutes. This will also allow the batteries to recover between starting attempts. Once engine has started and sufficient oil pressure is achieved, alarm buzzer will stop.



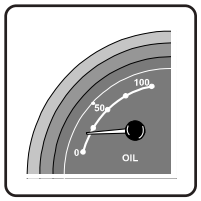
Important: Check engine RPM on tachometer as soon as engine starts. **Do not allow RPM to exceed 1,500.** Move throttle lever down to decrease RPM.

Note: Alarm will sound when:

- Engine oil pressure is too low.
- Engine temperature is too hot.
- Transmission oil is too low.

- Transmission temperature is too hot.
- Engine stalls.
- Exhaust temperature too high.

11. Check the oil pressure and look at exhaust port to assure that engine is pumping water.



12. Let the engines warm up at idle and check for leaks. If engine is cold, run for a short period of time at fast idle speed that does not exceed 1500 RPM.
13. Shut down the engines and recheck fluid levels; top off if necessary.

NOTE: For general operation of the boat, its instruments and the engine, follow detailed instructions on "Engine Break-in" in the Engine Operator's Manual.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

10. SHIFTING TO DRIVE THE BOAT

A. GEAR SHIFTS AND THROTTLE CONTROLS

Standard on the 58 DB is the Mathers ® gear shift and throttle engine controls. Read and understand the information in the Owner's Manual Packet for your yacht model's gear and throttle control. Your yacht has start in-gear protection. For safety's sake and as a good habit to get into, always put the gear selector in the NEUTRAL position and the throttle

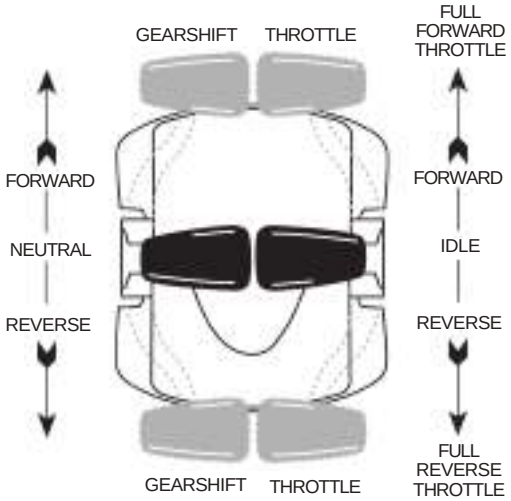
⚠ WARNING

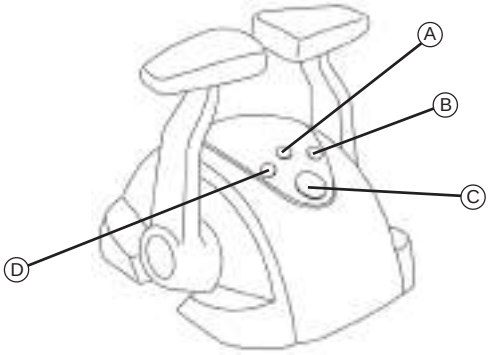
Shift selector(s) to NEUTRAL before starting engines.

Shift only when engine is at IDLE.

Reversing at high speeds can cause flooding/ swamping due to water being pushed over the transom.

ENGINE SHIFT & THROTTLE FUNCTIONS (FIG. 3.6.1)





Ⓐ SYNCHRONIZATION INDICATOR LIGHT
Ⓑ STBD STATION-IN-CONTROL INDICATOR LIGHT
Ⓒ STATION TRANSFER CONTROL
Ⓓ PORT STATION-IN-CONTROL INDICATOR LIGHT

⚠ CAUTION

Cockpit can fill with water if boat is moving forward, when it is put into reverse.

Before shifting into reverse, shift to neutral, wait for the boat to stop moving forward, then shift into reverse.

selector in the IDLE position before starting the engines.

The gear shift lever has three positions: FORWARD, NEUTRAL and REVERSE. The control lever must be in the NEUTRAL (center) position when starting the engine(s). A positioning indent can be felt when the control is in exact NEUTRAL. FORWARD and REVERSE positions should always be in full travel extremes in either direction for a positive engagement and minimum wear.

The throttle control regulates the RPM of the engines. The control lever must be in the NEUTRAL (center) position when starting the engine(s). A positioning indent can be felt when the control is in exact NEUTRAL (IDLE). Moving the lever further forward or backwards increases throttle and boat speed.

NOTE: Prior to starting engines, control levers must be in NEUTRAL.

OPERATION

DC POWER ON

When CruiseCommand control system DC power is turned ON:

- Processor will command Neutral/Idle
- Intermittent ton will sound at all Stations indicating that no Station has command

TAKE COMMAND

To take command at a Station:

- Control Head lever(s) MUST be in the Neutral detent.
- Operator must depress the transfer button for 1/2 second.

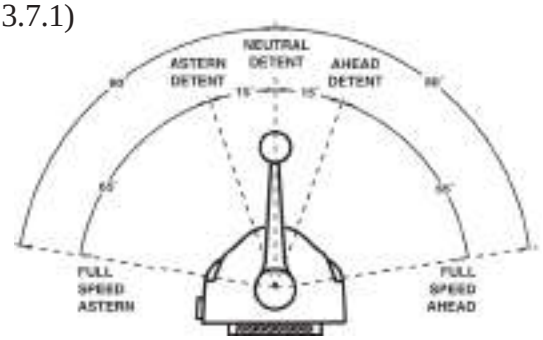
The tone will stop at all stations and the red LED indicator light on the Control Head will light, indicating the Station is in command.

NOTE: Only one Station has command at a time.

BASIC OPERATION

The Control Head has three detents: Astern, Neutral, and Ahead (Figure 3.7.1). With the Control Head lever(s) positioned in the Neutral (vertical) detent, the System will command Neutral and Idle RPM. Control Head lever movement of 15 degrees to the Ahead or Astern detent will command Ahead or Astern clutch engagement while the engine remains at Idle RPM. Further movement of the Control Head lever will increase the engine RPM in proportion to the Control Head lever position.

CONTROL HEAD DETENTS
(FIG. 3.7.1)



MAINTENANCE

The clutch and throttle lever bodies are made of anodized aluminum. To clean them, a warm soapy water solution should be used. DO NOT use an abrasive compound.

NOTE: Refer to your engine Owner's Manual to operate the throttle arm by hand for maintenance.

B. ENGINE SYNCHRONIZATION MODE (OPTIONAL)

The Mathers ® gearshift and throttle control system offers the option of automatic engine synchronization.

When the engine synchronizers are in operation, any engine speed differential is immediately sensed and automatically corrected. A single throttle movement is all that is necessary to ensure that both engines maintain identical RPM.

The system allows the operator the option to disable automatic engine synchronization while in synchronization mode.

TO DISABLE

- depress the station transfer button (See figure 3.6.1) for one second when the Control Head levers are above 10 percent throttle.TO RE-ENABLE:
- Match the Control Head levers above 10 percent throttle in FORWARD, and then depress the station transfer button for one second. Automatic synchronization is again available, and Synchronization Mode is active.

C. TROLL MODE (OPTIONAL)

The optional integrated trolling valve control provides controlled slow speed operation and enhances operator control during docking maneuvers. A selector switch at the Mathers ® control station allows the operator to select TROLL or NON-TROLL. When TROLL is selected, the system commands clutch direction, engine speed and trolling valve position.

TO OPERATE TROLLING FEATURE:

- Select TROLL on the Control Head Position the throttle and gear levers in the idle ahead detent or idle astern detent:- Clutch engagement commanded.

  - Throttle limited to idle RPM.
  - Trolling valve commanded to minimum clutch oil pressure.
  - Propeller shaft turning at minimum RPM

- Move the control lever(s) from the detent through the next 20 degrees:- Trolling valve adjusts to increase clutch oil pressure to increase shaft speed.

  - Throttle limited to idle speed.

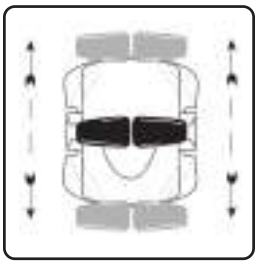
- Move the control lever(s) past 20 degrees.- Trolling valve positioned to the maximum clutch oil pressure.

  - Engine speed increased in proportion to the control lever(s) position.

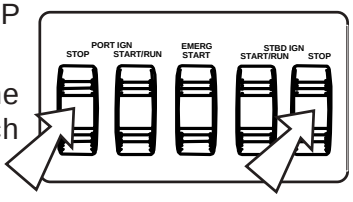
Moving the control head lever(s) back to neutral will reverse the sequence. Operation in astern is the same as ahead. See Section 2 - Major Controls for additional operational information. See Operational reference card in your owners packet for specific details.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

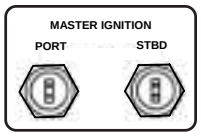
11. STOPPING THE ENGINES



1. Bring throttle controls to IDLE position.
2. Bring gear shift controls to NEUTRAL position.
3. Secure mooring lines.
4. Idle for five (5) minutes to cool the engines.
5. Press engine STOP switch.
6. Press down on the START/RUN switch turning off ignition.



7. Turn battery switches OFF.



A. EMERGENCY STOP BUTTON

Your yacht is equipped with an emergency stop button for each engine located on the control station switch panel. The emergency stop switch gives the boat operator the ability to shut down the engines in an emergency situation.

In any situation which requires the engines to be shut down immediately, press and hold emergency stop switch until engine(s) stops completely. Release switch.

NOTE: Run bilge blowers for 4 minutes before restarting engine(s). Follow engine starting instructions.

12. STARTING THE GENERATOR

Sea Ray® strongly urges you to fully comply with the manual provided by the generator manufacturer. The generator is warranted separately by the generator manufacturer, NOT Sea Ray®. Follow the recommended maintenance and warranty schedule in your Generator Operator's Manual included in the Owner's Manual Packet. Generator abuse or improper maintenance may adversely affect claims made under generator manufacturer separate warranty.

NOTICE

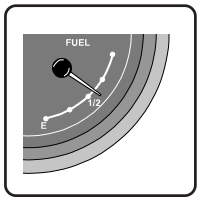
Pre-start generator prior to getting underway as there is a possibility that it will not pick up water if started underway. Make sure the MAIN GENERATOR breaker is OFF and there is no load on the generator before starting it.

⚠ WARNING

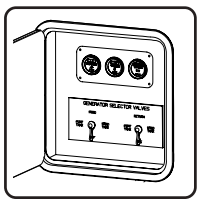
DO NOT run the engine or generator in an enclosed area, such as a closed boat house, as there is the possibility of buildup and inhaling of carbon monoxide.

(Remote control switches are located on the main distribution panel or local switches on the generator.)

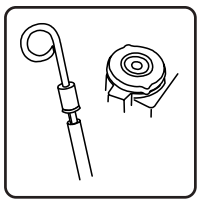
1. Check fuel tank levels.



2. Check remote fuel valves making sure the feed and return valves are operating on the same fuel tank.

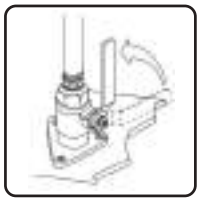


3. Check oil and coolant levels for proper readings.



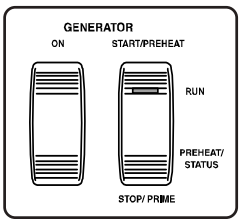
4. Check generator for coolant drain plug installation.

5. Open the generator seacock.



6. Run the bilge blowers for at least four minutes before starting and any time the generator is running. If fuel fumes are detected, do not start the generator until the source of fumes is determined and corrected and the bilge area is safely ventilated.

7. Press the ON switch, then, depress the START switch and hold. The starter motor will have up to a 15 second delay for the preheat mode, engine will automatically start cranking, **As soon as the engine runs, release the START switch.**

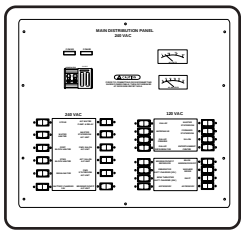


8. Check generator exhaust port (stbd) to verify that water is flowing. If not, shut generator down and refer to your Generator Operator's Manual.

READ THE ONAN GENERATOR'S OWNER'S MANUAL IN THE OWNER'S MANUAL PACKET .

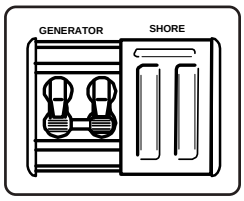
13. SHIFTING FROM SHORE POWER TO GENERATOR POWER

1. Turn all AC systems and branch circuit breakers OFF. Turn both main breakers on the main distribution panel OFF.

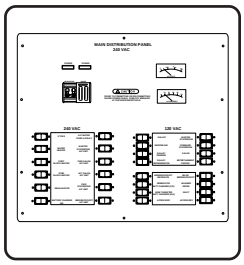


2. Start the generator.

3. Slide the source select shuttle mechanism on the main distribution panel to expose the GENERATOR breaker(s) and turn it ON.

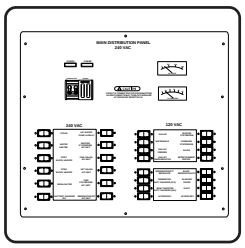


4. Turn the individual system breakers ON.

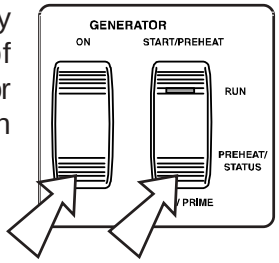


14. STOPPING THE GENERATOR

1. Prior to generator shut down turn OFF all AC equipment and breakers including main breakers and allow the generator to run a few minutes to cool down. If desired, transfer to shore power.



2. Stop the generator by pressing the bottom of both generator switches or pressing the stop switch on the generator.



NOTE: After the generator stops, the multiplex system must reset for 20-30 seconds and then may be restarted at any time.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

15. STEERING SYSTEM

The hydraulic power steering system (See figure 3.11.1) uses the boat's engines to provide the "power" for the steering system, via a mechanical or electrical motor driven hydraulic pump.

A manual hydraulic steering system, consisting of a helm and a hydraulic cylinder (fitted with an integral servo cylinder and a power steering valve), supplies the "control" portion of the steering system.

Under normal conditions, with engines running, a hydraulic oil supply is in a standby mode, ready to be directed to the steering cylinder as dictated by the steering wheel, servo cylinder and power steering valve. Turning the steering wheel left or right makes the system go from "standby" into "operating" mode and move the steering cylinder accordingly.

In the event of a power source failure, hydraulic oil from the steering helm is automatically diverted into the servo and steering cylinder, providing the helmsman with manual backup steering.

An engine room mounted oil reservoir allows easy fill and assists the in-line cooler in cooling the hydraulic oil. An in-line oil filter helps to protect the steering system components against contaminants.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

16. ANCHORING

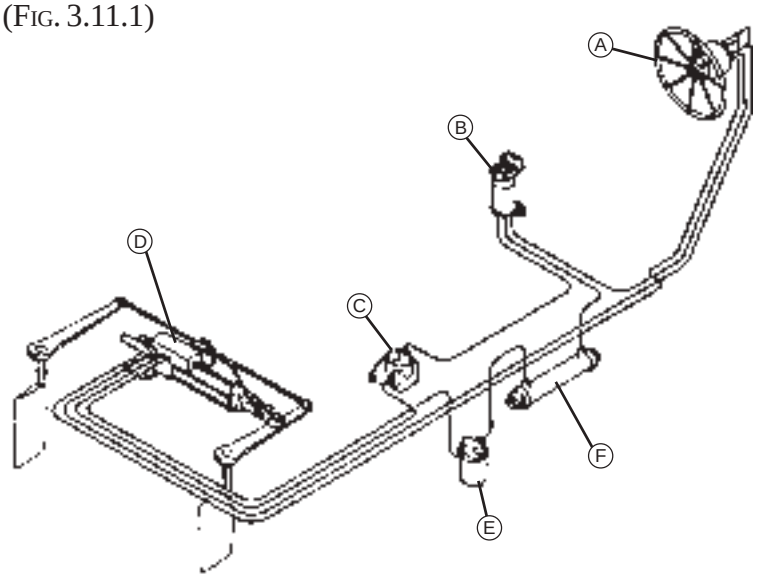
To anchor, bring the bow into the wind or current and put the engine in neutral. When the vessel comes to a stop, lower the anchor from the bow. The anchor line should be 5 to 7 times the depth of the water.

⚠ WARNING

SINKING HAZARD – Anchor from the bow if using one anchor. A small current can make a stern-anchored boat unsteady; a heavy current can drag a stern-anchored craft under water.

COLLISION HAZARD – Anchor only in areas where your boat will not disrupt other boats. Do not anchor in a channel or tie up to any navigational aid. It is dangerous and illegal.

TYPICAL HYDRAULIC POWER STEERING ASSEMBLY (FIG. 3.11.1)



- (A) POWER STEERING HELM
- (B) OIL RESERVOIR
- (C) MECHANICAL OR ELECTRIC MOTOR DRIVEN PUMP
- (D) STEERING CYLINDER COMPLETE WITH INTEGRAL SERVO, CYLINDER & POWER STEERING VALVE
- (E) OIL FILTER
- (F) OIL COOLER

A. ANCHORING ARRANGEMENT

The 58DB is equipped with a windlass and an anchor chute . Stow the anchor in the chute when not in use. See Manufacturer's Operator/Owners Manual for specific details.

NOTE: Before using the anchor, be sure the anchor safety hook is removed from the anchor, the chain stop is released from the chain and the anchor is secured to the windlass chain.

B. ANCHORING

Proper anchoring requires kowledge of RODE and SCOPE. Read this section carefully, understanding the relationship between rode, scope and anchor performance. **The rode** is the line connecting the anchor to the boat. The 58 DB utilizes an all-chain anchor rode.

The scope is technically defined as the ratio of the rode length to the vertical distance from the bow to the sea floor. Since you want to know how much rode to use when anchoring, the formula is:

Rode Length = (Bow Height + Water Depth) x Scope

- Scope depends on the type of anchor, bottom, tide, wind and sea conditions.
- Minimum is 5:1 for calm conditions; norm is 7:1; severe conditions may require 10:1.

EXAMPLE:

Rode Length = (3 feet + 10 feet) x 7*

Rode Length = 13 feet x 7*

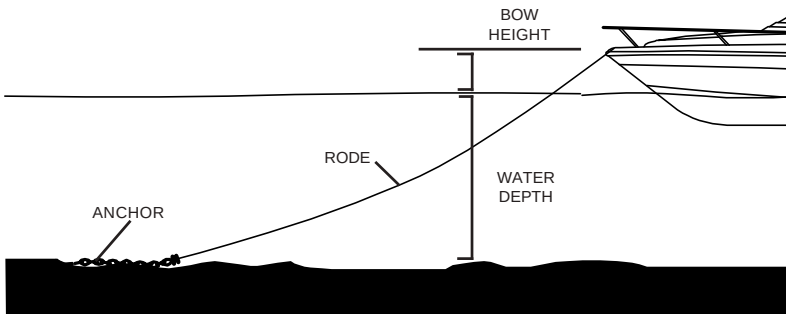
Rode Length = 91 feet

- Scope factor may range from 5 to 10 or more. Less than 5, the anchor breaks out too easily.

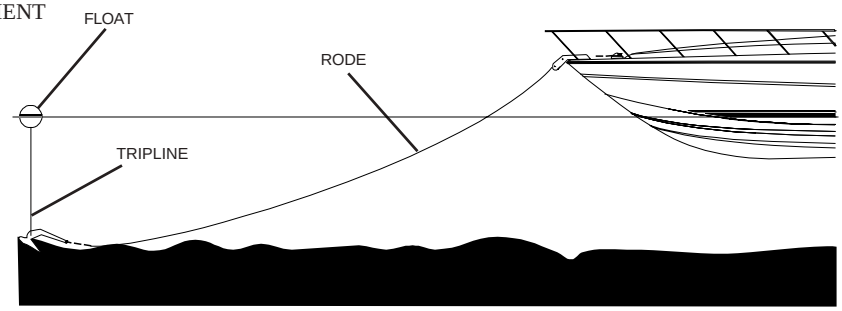
C. LOWERING ANCHOR

- Be sure there is adequate rode.
- Secure rode to both the anchor and the boat.

ANCHORING
(FIG. 3.12.1)



TRIPLINE ARRANGEMENT
(FIG. 3.12.2)



NOTICE

Use the safety hook supplied to ensure that the anchor is held in place should the windlass fail. Do not use the safety hook to support the anchor in a stored position. The windlass should always support the anchor and ensure that it is held in the roller device securely.

- Stop completely before lowering anchor.

$$\text{Scope} = \frac{\text{Rode Length}}{\text{Bow Height + Water Depth}}$$

- If using windlass, refer to windlass operator's manual.
- Keep feet clear of coiled line.
- Turn on anchor light when at anchor or drifting (not under power).

D. SETTING ANCHOR

- There is no best way to set an anchor. Experiment to see how your anchor performs.
- One method is to turn the rode around a bit and slowly pay out as the boat backs from the anchor site. When the proper scope has been reached, snub the rode quickly, causing the anchor to dig into the bottom.
- Reverse engine slowly to drive the anchor in and prevent it from dragging.
- Close chain stop.

E. WEIGHING ANCHOR

- Run the boat slowly up to the anchor, taking in the rode as you go.
- The anchor will usually break out when the rode becomes vertical.
- Be careful that trailing lines do not foul in the propeller.

NOTE: Use the fresh water wash down spigot in the port bow locker to hose down the chain in the locker after haul-in.

F. CLEARING A FOULED ANCHOR

A fouled anchor can test your patience and ingenuity. One of the best methods of breaking free is to set a tripline before you lower anchor.

- Attach a line to the crown or head of the anchor and the other end to a float.
- The line should be just long enough to reach the surface of the water allowing for tides.
- A polypropylene line is a good choice because it is light, strong and floats.
- If the anchor snags, pull vertically on the trip line to lift the anchor by the crown.

G. A FINAL WORD

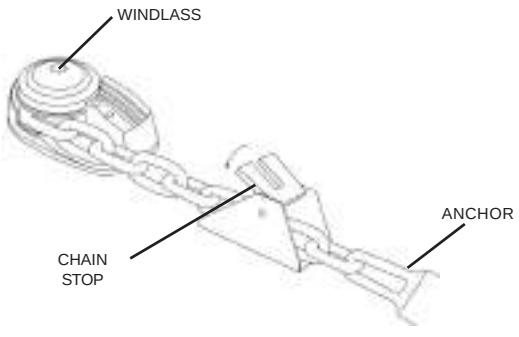
An anchored boat is affected by wind and sea conditions. Because there is no headway, there is no control. Be alert! If leaving the boat, be sure the anchor will hold under all circumstances.

We suggest you read this section on anchoring again and fully understand rode and scope and their affect on anchor performance.

17. WINDLASS

The windlass is wired to the 24 volt system through the WINDLASS fuse in the main DC breaker panel which is located on the port aft component board in the bilge

WINDLASS CHAIN STOP
(FIG. 3.13.1)



The windlass facilitates the anchoring of your yacht by automatically raising and lowering the anchor. To operate the windlass the WINDLASS MAIN switch on the control station switch panel must be ON.

A. TO OPERATE FROM THE HELM:

- Make sure that the safety lanyard and/or chain stop are removed from the anchor chain.
- Turn the WINDLASS MAIN rocker switch ON.
- Push the top of the CONTROL rocker switch (located beside the WINDLASS MAIN on the control station switch panel) to raise the anchor. To lower the anchor, push the bottom of the rocker switch.

B. TO OPERATE FROM THE BOW:

- Make sure that the chain stop is removed from the anchor chain.
- Lift protective cap on foot switches at port bow and depress UP or DOWN switch for the desired result.

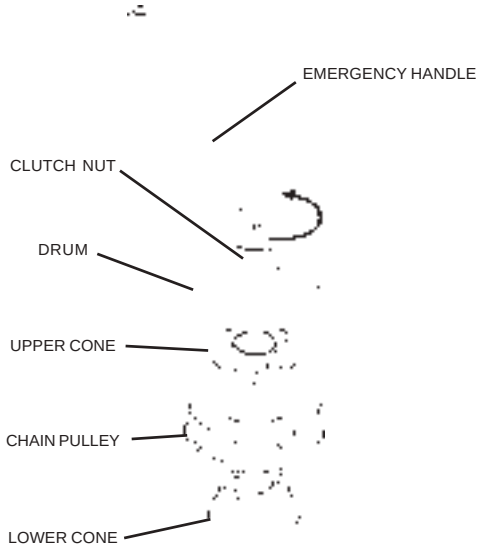
C. TO OPERATE MANUALLY:

- Make sure that the safety chain stop are removed from the anchor chain.
- Insert the emergency handle (located in the stbd bow locker) into the clutch nut.
- Turn handle clockwise to retrieve anchor.

D. MAINTENANCE

- Periodically check the motor and control box electrical connections, remove any residue and cover the connections with a small coating of grease.

WINDLASS (MAINTENANCE PROFILE)
(FIG. 3.14.1)



It is recommended at least once a year to disassemble the windlass and remove any residue build-up.

- Using the emergency handle (located under the stbd bow locker cover), unscrew the clutch nut by turning the handle counterclockwise.
- Remove the drum, upper cone, chain wheel and lower cone.
- Wash down with fresh water and remove any residue.
- Coat contact surfaces with a light film of lubricant.
- Reassemble the unit and tighten clutch by turning the handle clockwise.

NOTE: Use the fresh water washdown spigot in the port bow locker to hose down the chain in the locker after haul-in.

REFER TO WINDLASS OPERATOR'S MANUAL IN YOUR OWNER'S PACKET FOR DETAILED OPERATING INSTRUCTIONS.

20. BOW/STERN THRUSTER

The bow thruster is electrically driven and gives the operator more maneuverability of the bow and stern when docking or maneuvering the vessel in narrow channels or where space is at a premium.

TO OPERATE THE BOW/STERN THRUSTER

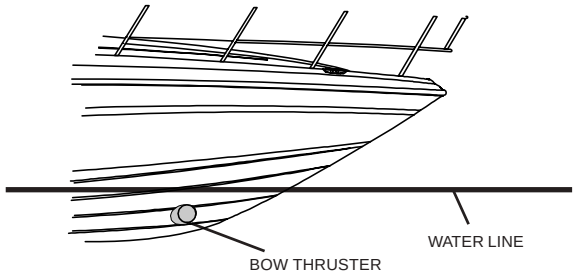
- Activate the bow thruster by turning the "THRUSTER MAIN 24V" switch ON. The switch is located on the control station switch panel (Figure 2.12.1).
- By manipulating the joy stick also located on the control station (Figure 2.12.1) the operator is able to move the bow ore stern slowly to port and starboard.

The bow/stern thruster motors are equipped with an internal thermally activated breaker. The thermal breaker protects the motors from overheating. When the thermal breaker is activated, an alarm in the joystick will sound, thruster operation should be suspended and the motor allowed to cool down for normal operation.

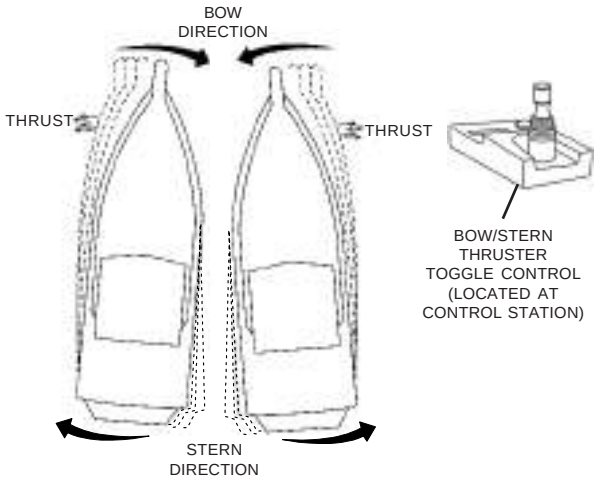
Caution: If thruster motors are not allowed to cool down and use is continued after alarm sounds, the bow thruster motor(s) may be damaged.

REFER TO BOW THRUSTER OPERATOR'S MANUAL IN YOUR OWNER'S PACKET FOR DETAILED OPERATING INSTRUCTIONS.

BOW THRUSTER
(FIG. 3.15.1)



BOW THRUSTER OPERATION
(FIG. 3.15.2)



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1. BILGE

A. FUEL & OIL SPILLAGE

The 58 DB is equipped with four (4) bilge pumps, including two (2) emergency high water bilge pumps. One emergency high water pump is located in the floor hatch in the master stateroom (figure 4.1.2), the other is located in the aft bilge (figure 4.1.3, item “C”). Your yacht is also equipped with a shower sump with pump and float switch (See figure 7.9.1).

2. BILGE PUMPS

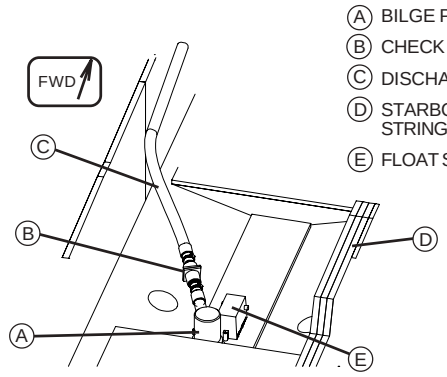
The forward and aft bilge pumps are equipped with switches on the control station switch panel. These switches have MANUAL and AUTO positions. When the switch is in the MANUAL position, the pump will run continuously. When the switch is in the AUTO position, the pump is activated when there is enough water in the bilge to raise the float switch to its highest position; and deactivated when the water recedes. The pumps should NOT be left in the MANUAL mode unless the bilge is being pumped out for servicing. The emergency bilge pump located under the floor of the master stateroom is automatically activated when there is enough water in the compartment to raise the float switch.

The emergency bilge pumps and high water float switches are wired to the systems monitor located on the dash at the control station (see "SYSTEMS MONITOR" in Section 2 - page 2.16).

Whenever a bilge pump turns ON, either manually or automatically, the systems monitor will display which pump is active. Should the high water alarms become activated, immediate attention to the area indicated on the systems monitor panel is required.

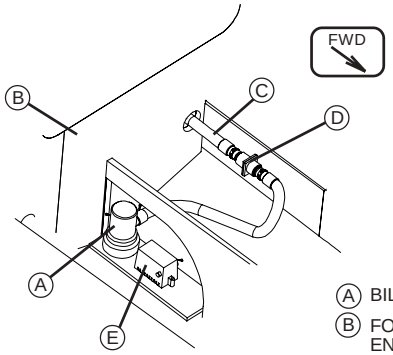
Each pump is protected by a breaker on the main DC breaker panel located on the port aft component board in the engine room (See Fig. 6.4.1).

FORWARD BILGE PUMP & FLOAT SWITCH
(FIG. 4.1.1)



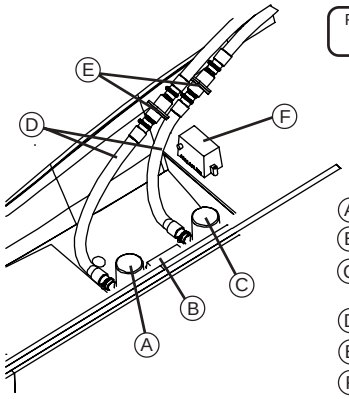
A BILGE PUMP
B CHECK VALVE
C DISCHARGE LINE
D STARBOARD INBOARD STRINGER
E FLOAT SWITCH

MIDSHIP BILGE PUMP & FLOAT SWITCH
(FIG. 4.1.2)



A BILGE PUMP
B FORWARD SIDE OF ENGINE BULKHEAD
C DISCHARGE LINE
D CHECK VALVE
E FLOAT SWITCH

AFT BILGE PUMP & FLOAT SWITCH
(FIG. 4.1.3)



A BILGE PUMP
B FLOAT SWITCH
C HIGH WATER BILGE PUMP
D DISCHARGE LINE
E CHECK VALVE
F HIGH WATER FLOAT SWITCH

MAINTENANCE:

Frequently inspect the area under the float switches to ensure they are free from debris and gummy bilge oil. To clean, soak in heavy duty bilge cleaner for 10 minutes, agitating several times. Check for unrestricted operation of the float. Repeat the cleaning procedure if necessary. Inspect the bilge pump intakes and keep them free of dirt or material which may impede the flow of water through the pump. To clean the pump strainer, depress the lock tabs on both sides of the pump and lift the pump motor.

TROUBLESHOOTING:

If water does not come out of discharge hose:

1. Depress the breaker on the main DC breaker panel located on the port component board in the bilge (see Fig. 6.3.1) to ensure it has not tripped.
2. Remove the motor module to see if the impeller rotates with the power on.
3. Remove any debris that may have accumulated in the nozzle section or strainer base.
4. Check hose and connection on hull side for debris and proper connections.

3. BILGE BLOWERS

The two bilge blowers remove odors and excessive heat from the engine compartment and provide ventilation through the hull vents. The blowers are wired through individual circuit breakers on the main DC breaker panel (see Fig. 6.3.1) with a switch on the control station switch panel (see Fig. 2.12.1) and on the DC distribution panel located in the salon (see Fig. 6.12.1).

Blower switches can be turned ON at one location and turned OFF at the other location.

⚠ WARNING

EXPLOSION/FIRE HAZARD – Run blower at least four (4) minutes before starting engine or generator. Check bilge and engine compartment for fumes.

⚠ WARNING

Do not allow obstructions to interfere with bilge blower or ventilation intake operation. Engine performance may be adversely affected.

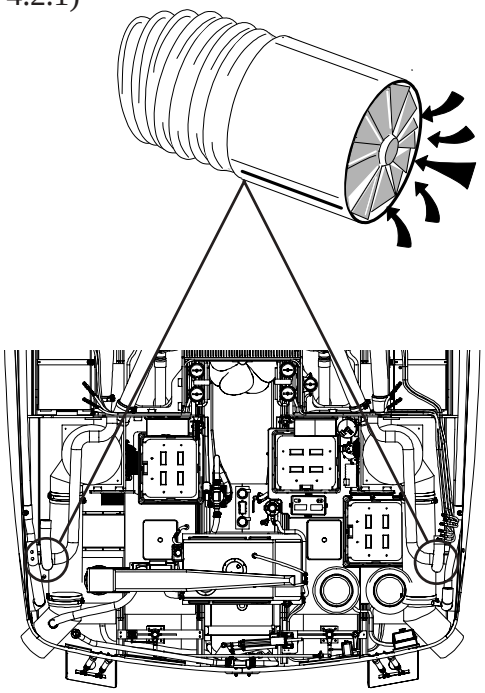
BLOWER SWITCH LIGHT:

Light On: When a blower is turned ON, the light in the switch will come on and stay on, indicating that there is power to the blower.

Light Blinking: If the light is blinking, it is an indication that the blower breaker has tripped. Correct the problem and reset the breaker.

Light Not On: If you try to turn ON the blower and no light comes on, then both breakers are tripped and the blowers are not receiving power. Correct the problem and reset the breaker. Blower switch lights do not indicate that the blower motors

BILGE BLOWERS
(FIG. 4.2.1)



are operating. To ensure blower motors are operating, listen for blower motor noise and confirm air flow at bilge vent.

Run the blowers when operating below cruising speed and when vessel is at rest with the generator running to dissipate heat buildup in the bilge.

MAINTENANCE:

The bilge blowers should be checked periodically to ensure that all electrical connections are secured in place and that the blower motors are operating efficiently.

TROUBLESHOOTING:

If your bilge blowers fail to operate, depress the breakers on the main DC breaker panel on the port component board in the engine room to ensure that they have not tripped.

4. BILGE HEAT DETECTOR

The 58 DB is equipped with a forward bilge heat detection device. The bilge heat detector detects heat buildup in the engine room bilge area. The heat detector alarm is connected to the systems monitor panel on the control station upper console (see Fig. 2.13.1).

⚠ CAUTION

Never ignore an alarm.

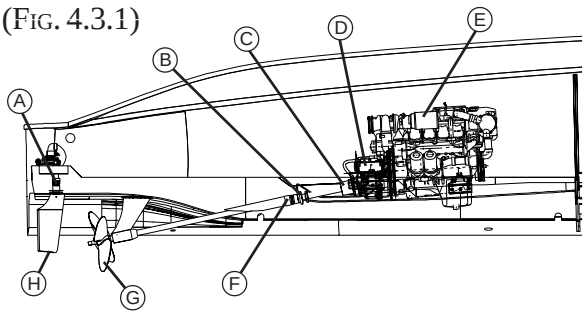
In the unlikely event of a heat detection alarms:

- Immediately shut down engines.
- Feel around engine room hatch for excessive heat before opening (See Section 1 -Safety -C. Fire, pg. 1.12).
- Identify and correct problem before restarting the engines.
- Heat detector must be replaced if it has been activated.

5. ENGINES

The inboard engines on the 58 DB are the heart of your Sea Ray®. Proper attention to and maintenance of your engines will assure you of many hours of pleasurable, safe boating and will prevent unnecessary engine problems. You must, therefore, become thoroughly familiar with all aspects of the engine's proper operation outlined in the Engine Operator's Manual. A general maintenance program consists of proper lubrication, cleaning of fuel filters, fuel lines and air filters. **When washing down, or at any other time, take care that water does not enter the air inlets.** Water entering the air inlets when the engines are not operating may go directly into the cylinders, resulting in rust and possibly internal engine damage.

PROPULSION
(FIG. 4.3.1)



Ⓐ RUDDER STUFFING BOX
Ⓑ SPARE SHAFT SEAL
Ⓒ SHAFT COUPLING
Ⓓ TRANSMISSION
Ⓔ ENGINE
Ⓕ SHAFT LOG & STRONG SEAL
Ⓖ PROPELLER
Ⓗ RUDDER

The engines are warranted directly by the engine manufacturer, not by Sea Ray®.

Sea Ray® strongly urges you to fully comply with the manual provided by the engine manufacturer. Follow the recommended maintenance and warranty schedule in your Engine Operator's Manual included in the owner's packet. Engine abuse or improper maintenance may adversely affect the claims made under the independent warranty provided by the engine manufacturer.

A. PROPULSION

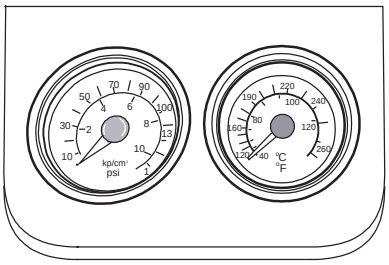
The standard propulsion on the 58 DB consist of twin D2848 LE403 V8 MAN® (T-861hp-571KW) engines.

6. ENGINE GAUGE PACKAGE

Each of your engines have been equipped with an engine gauge package. This package is provided as a safety feature in the event of an electrical malfunction resulting in the helm gauges becoming inoperative.

Gauge packages may differ with different engine options. Refer to your Engine Operator's Manual for proper gauge readings and gauge package location.

ENGINE GAUGE PACKAGE
(FIG. 4.4.1)

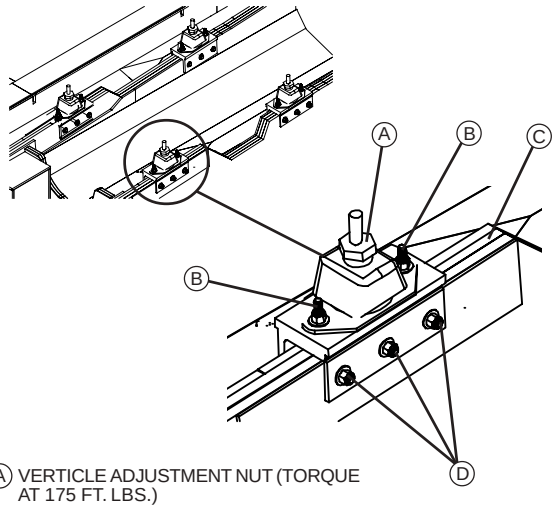


7. ENGINE MOUNTS

The adjustable type engine mounts permit adjustment sideways as well as vertically. Vertical adjustment nuts lock up or down on the threaded vertical stud, with a slot provided to allow side to side adjustment on the engine.

IMPORTANT: The large adjustment locknuts on these mounts must be tightened properly to retain alignment. It is also advisable to spray a protective coating on the studs and nuts to prevent corrosion.

ENGINE MOUNT
(FIG.4.4.2)



Ⓐ VERTICLE ADJUSTMENT NUT (TORQUE AT 175 FT. LBS.)
Ⓑ SIDE TO SIDE ADJUSTMENT NUT (TORQUE AT 150 FT. LBS.)
Ⓒ STRINGER
Ⓓ TORQUE ESNA NUT AT 75-85 FT. LBS.)

8. MARINE GEARS

A. REDUCTION GEARS

A reduction gear reduces the rotating speed of the propeller shaft in relation to the engine RPM. This permits the use of a larger propeller while allowing the engine to attain its rated RPM, thereby increasing efficiency.

B. REVERSE GEARS

The reverse gear incorporates the clutch and controls the rotation of the propeller. The position of the clutch control or shifting lever indicates the motion which the clutch and reverse gear are transmitting. The center position of the lever indicates neutral. **Engine RPM should never exceed 1000 when engaging or disengaging the clutch. Higher RPM will result in unnecessary wear and shortened life of the unit, and perhaps breakage.**

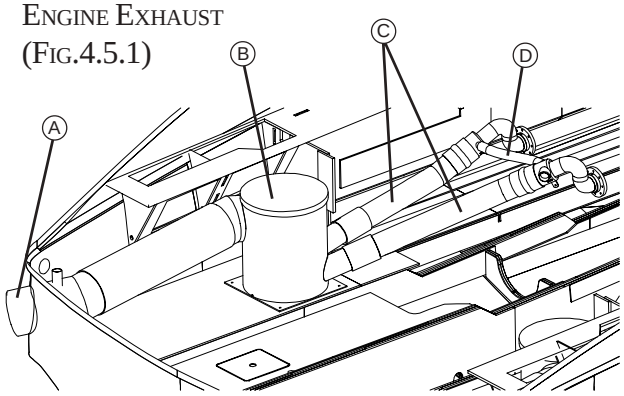
Marine reverse gears are hydraulically operated, thereby making it imperative to periodically maintain and check oil level. If the correct oil level is not maintained, slippage occurs, causing damage to the clutch plates. Too much oil will cause foaming and erratic clutch operation. For additional information see the Engine Operator's Manual.

9. ENGINE EXHAUST SYSTEM

The exhaust system on Sea Ray® boats with inboard engines is designed so that water from the raw water cooling system enters the exhaust system through elbows (engine side) where water and exhaust are mixed. Water and exhaust are then pumped through the mufflers and then overboard through the exhaust outlet. **Make sure water is flowing from the exhaust outlets while the engines are operating.** Prior to every boat use, examine the exhaust system fittings to ensure tightness.

A drain plug is located on each bypass muffler. When servicing or winterizing, remove the plug to drain the water out of each muffler. Replace the plug after all water has drained from the muffler.

ENGINE EXHAUST
(FIG.4.5.1)



Ⓐ PORT EXHAUST ELBOW
Ⓑ MUFFLER
Ⓒ PORT EXHAUST TUBING
Ⓓ CROSSOVER HOSE

⚠ WARNING

Hose clamps must be tight at all times to avoid exhaust leaks.

10. ENGINE REMOVAL

Should the removal of an engine become necessary, **see your Sea Ray® dealer or an authorized service representative of the engine manufacturer.** The following is only a generalized procedure to follow.

Shut off the fuel lines and close the engine seacocks. Remove all electrical wires, fuel lines and raw water intake hoses from the engine. Unbolt the engine coupling from the shaft coupling and slide the shaft and coupling back from the engine. Detach both throttle and shift connections. Cap off hoses to avoid hydraulic fluid loss from steering system. **Do not bend or twist the hoses, as damage may result.** Remove oil exchanger, drain hoses and plug. Remove the mounting bolts for the engine and lift the engine out, leaving the mounts bolted to the stringer caps.

To reinstall, reverse the above procedure. Check the coupling and shaft alignments, as well as water hoses and wiring connections. Also check for fuel and exhaust leaks and make sure seacocks are open before starting engines.

11. VIBRATION & CAUSES

Some vibration is to be expected in your boat because of the action of the engines and the propeller. But excessive vibration indicates conditions which must be promptly corrected to avoid damage. Contact your Sea Ray® dealer immediately if you are experiencing severe vibration.

The following are some conditions which may cause vibrations.

A. FOREIGN OBJECT INTERFERING WITH PROPELLER ACTION

Weeds, ropes, fishing lines or nets can become wrapped around the propeller and/or shaft, causing vibration and loss of speed. Always stop and then reverse the propeller after going through a weedy area to unwrap and clear away any weeds which may have accumulated. Although reversing will sometimes help to unwrap lines and nets, they are difficult to remove without hauling the boat.

Always check for loose or trailing dock lines before getting underway. When towing a dinghy, remember that a long line may easily become entangled with the propeller when backing down.

B. BENT PROPELLER AND/OR SHAFT

A badly damaged or distorted propeller or shaft is an obvious cause of vibration. Even when the propeller appears to be perfect, make sure it has not been pulled off-center by the propeller key.

C. ENGINE AND SHAFT OUT OF ALIGNMENT

Although the shaft is properly aligned when it leaves the factory, after transit and after the boat has been in the water a few days, the alignment should be rechecked. The shaft coupling is the connecting point between the shaft and the engine and the alignment should be set at .005 or less. Refer to SHAFTS (pg. 4.10) in this section of this Owner's Manual.

D. COUPLING OUT OF TRUE

Although an extremely unlikely condition, check the couplings if other efforts to correct the vibration fail. Check the engine half of the coupling (with dial indicator on the face) to see that it runs true with the shaft coupling. Also check the coupling keys. They must fit correctly to prevent forcing the couplings off center.

E. ENGINE PART HITTING BOAT STRUCTURE

Engines are flexibly mounted to reduce transmission of vibration to the hull structure. If some part of the engine, such as the oil pan, reverse gear or reduction gear housing, contacts a stringer, brace or part of the hull, vibration will result. The flexible shaft log allows a limited side motion of the shaft, but an excessive "whip" can cause the shaft to strike the sides of the shaft hole or the shaft log with resultant vibration.

F. OTHER POSSIBLE CAUSES

Other causes of vibration include the following: engine out of tune, a bent rudder, a worn strut bearing, a component of the exhaust system vibrating against the hull or improper contact between shaft taper and the propeller hub bore.

12. FRESH WATER COOLING SYSTEM

The fresh water cooling system is a closed system which helps protect engines from internal corrosion and provides more even distribution of engine temperature. **Change the coolant annually.**

A. COOLANT RECOMMENDATIONS:

The standard mixture of water and coolant is a mixture of 40% environmentally safe, non-toxic antifreeze and 60% water, which protects to 0°F (-27°C). This will allow the coolant to expand properly and maintain normal operating engine temperature. In colder climates, the coolant level should be increased to 50/50, which protects to -10°F (-37°C), for proper coverage. **To find engine coolant requirements for the specific engine on your yacht, refer to your Engine Owner's Manual in the Owner's Manual Packet.**

13. OIL CHANGE SYSTEM

The oil change system, located on the inboard port stringer, center of the port engine, simplifies changing the oil in the engines, transmissions and generator. The pump is self-priming and pumps in either direction. The oil change pump is protected by the 24 volt OIL CHANGE PUMP breaker on the DC breaker panel on the port component board in the engine room.

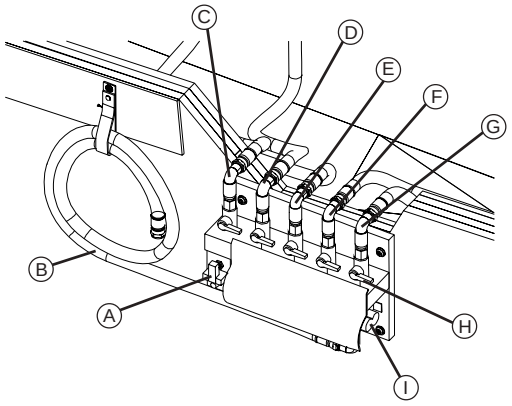
A. OPERATING INSTRUCTIONS: (SERVICE ONE (1) ENGINE AT A TIME.)

1. Run engines or generator for several minutes to warm the oil and mix the sludge.
2. Select the first unit to be serviced. Turn the valve to the open position, in line with valve body.

⚠ CAUTION

Have only one (1) valve open at a time. Make sure other valves are closed to prevent accidental over filling.

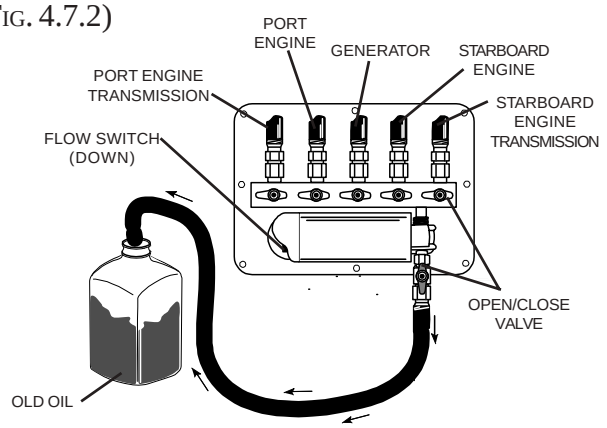
OIL CHANGE PUMP
(FIG. 4.7.1)



Ⓐ FLOW SWITCH
Ⓑ FILL/DRAIN HOSE
Ⓒ PORT TRANSMISSION
Ⓓ PORT ENGINE
Ⓔ GENERATOR
Ⓕ STARBOARD ENGINE
Ⓖ STARBOARD TRANSMISSION
Ⓗ OPEN/CLOSE VALVE
Ⓘ PUMP

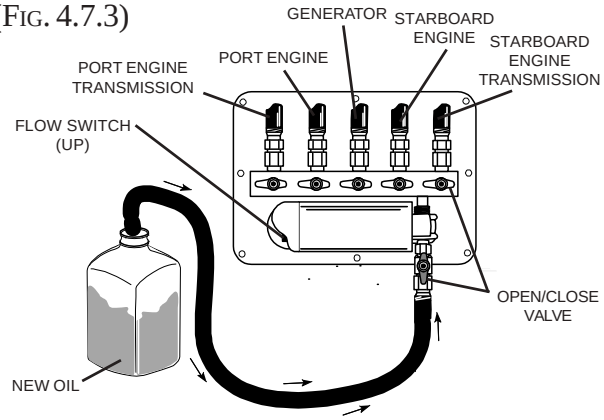
3. Turn the pump on (switch position indicates the direction of flow) and pump the old oil into containers to be disposed of properly.

OIL CHANGE (USED OIL)
(FIG. 4.7.2)



4. After oil has been pumped out of unit being serviced, place the pump discharge hose into a container of pre-measured fresh oil and reverse the pump switch to pump the fresh oil into the engine. **NOTE: Fresh oil should be at least 60° F (16 C).**

OIL CHANGE PUMP (FRESH OIL)
(FIG. 4.7.3)



5. When pumping is complete, shut the pump off and close the valve leading to the unit being serviced. Check oil level and adjust if necessary.
6. Repeat for each engine, generator or transmission to be serviced.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

14. UNDERWATER GEAR

A. PROPELLERS

Propellers should be free of nicks, excessive pitting and any distortions that alter them from their original design. Badly damaged propellers should be replaced, but those that are chipped, bent or merely knocked out of shape can be reconditioned by your marine dealer.

When doing extensive cruising, it is advisable to carry extra propellers aboard. Extra propellers can be stored on the optional propeller mounts in the engine room.

BASIC PROPELLER CHARACTERISTICS

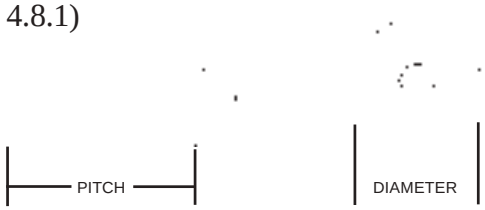
Propellers have two basic characteristics:

- Diameter
- Pitch.

Diameter is that distance measured across the propeller hub line from the outer edge of the 360° that is made by the propeller's blade during a single rotation. Pitch is that distance in inches that a propeller will travel if rotated one revolution without any slippage (Figure 4.8.1).

For example, a propeller with a 12-inch pitch, when rotated 360° would, theoretically, advance 12 inches through the water. Actually, no propeller applied to any boat is 100% efficient. No 12-inch pitch blade will, in a single rotation, advance a boat 12 inches. This variance is referred to as slippage.

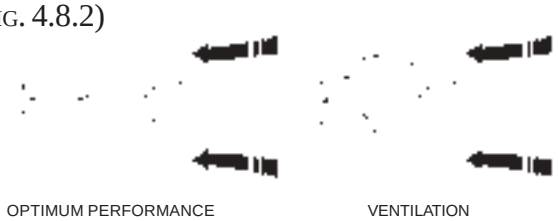
PROPELLER PITCH AND DIAMETER
(FIG. 4.8.1)



VENTILATION, ITS CAUSES AND CORRECTIONS

While often called "cavitation," ventilation is really a different effect. At times when a boat enters or leaves a sharp turn, the propeller seems to slip and lose thrust and the engine may over-speed (Figure 4.8.2). This problem is normally caused by air or aerated water entering the propeller. (A damaged propeller can also cause ventilation.) Ventilation can usually be corrected by one or more of the following:

PROPELLER VENTILATION
(FIG. 4.8.2)



1. Replace the damaged or incorrect propeller with the recommended one.
2. With stern drives, set the outdrive at a lesser trim angle (trim the unit downward).

CAVITATION, ITS CAUSES AND CORRECTIONS

Cavitation is a phenomenon that occurs in all propeller-driven craft under certain conditions. The surface of propeller blades are not perfectly flat, and as water is drawn through the blades to be discharged aft into the propeller's slip stream, the water flowing over the curved surface of the blade encounters areas of greater and less pressure.

In those areas of reduced pressure, air bubbles are formed. When they move out of the low pressure area these bubbles collapse. If they collapse while in contact with an object, such as part of the propeller blade or trim plane, the bubbles create such highly localized forces that they erode the surface of the object. In the case of the propeller, such damage is sometimes called a "burn." It may be caused by an irregularity in the propeller's leading edge, and it should be corrected by reconditioning the propeller or by replacement.

Cavitation is a normal occurrence in modern sport boats, and prop inspection should be part of routine maintenance.

PROPELLER TORQUE AND ITS CORRECTION

Some of the more powerful motors create a considerable torque effect; that is, a twisting motion causing the boat to ride with one sheer lower than the other. This twisting reaction is caused by the direction of propeller rotation lifting one side of the boat. This causes an uneven drag, so that a boat's bow may tend to fall off in one direction or the other from the intended course given by the wheel.

Torque action may occur when maximum or close to maximum rated horsepower is applied. Any slight torque may be offset by shifting passenger or gear weight laterally to the high side of the boat.

COUNTER-ROTATING PROPELLERS

On twin engine yachts, one propeller turns in a clockwise direction while the other turns

COUNTER-ROTATING PROPELLERS
(FIG. 4.9.1)

counterclockwise in order to maintain a straight course through the water.

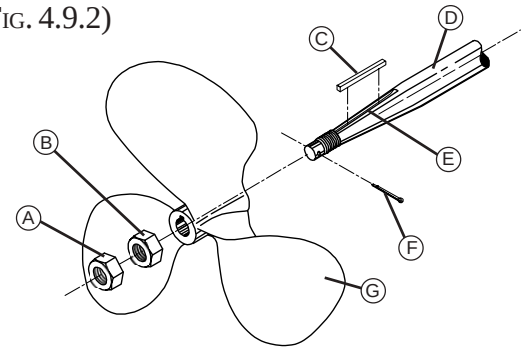
When removing or replacing propellers, be sure to install the correct propeller on the correct drive.

PROPELLER INSTALLATION:

For proper rotation, the installation of propellers on inboard engine boats requires the right hand propeller to be installed on the starboard side and the left hand propeller to be installed on the port side. Install in the following manner:

Step 1: Inspect shafts and propellers to ensure the taper, keyways, keys, prop nut, jam nut and cotter pin meet specifications. **Special attention should be paid when confirming key fit. Key must fit snug in prop hub and propeller shaft. Key must fit flat in bottom of both. If the key radius does not match keyseat properly, stress risers and catastrophic failure could occur.**

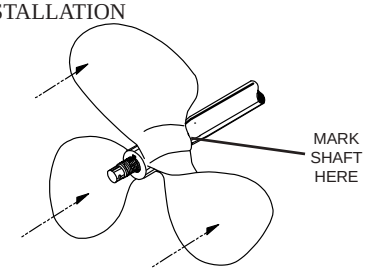
PROPELLER INSTALLATION
(FIG. 4.9.2)



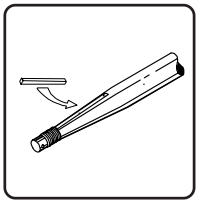
- Inspect propeller(s) to ensure the bore, diameter and pitch meet specifications for specific engine installation (diameter and pitch are stamped on the side of prop hub).

Step 2: Dry fit the propeller on the taper without the key and mark the position on the shaft with a permanent marker. **The distance between the prop and the strut shall never exceed one (1) shaft diameter.**

PROPELLER INSTALLATION
(FIG. 4.9.3)

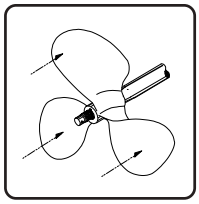


- Remove the propeller and insert the key, rotate the shaft so the key is top dead center.



- Using a clean rag, wipe the bore of the propeller with a small amount of penetrating oil.
- Apply a consistent coating of Prussian blue compound to the surface of the shaft taper. The application should be consistent and have a wet film thickness of 2 mils. (similar to a light coat of polyurethane).

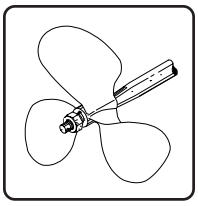
Step 3: Set the propeller on the shaft and slide it up the taper with the full nut ensuring that the propeller hub runs up to the mark.



- Remove the propeller and inspect the pattern transferred from the shaft to the bore of the propeller.
- The pattern should be consistent over the full contact area.

- The pattern will not be complete, but it should show a consistent transfer over at least 80 percent of the contact area.
- If the propeller bore shows an area, with little or no transfer, remove the key from the shaft and apply some lapping compound to the shaft.

Step 4: Set the propeller on the taper with the nut set loosely. Rotate the propeller in 60 - 90 degree increments first clockwise, then counterclockwise.

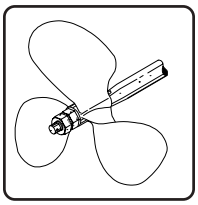


- The propeller will begin to bind as the compound is worked out from between the shaft and propeller. At this stage, clean the shaft taper and propeller bore and repeat the above steps until a transfer showing 80 percent contact is made.

Step 5: Final Installation - apply a light coat of Never Seize® to the shaft taper.

- Set the propeller on the shaft with the key ensuring that the propeller is in full contact and in the proper position on the taper.
- If the propeller is not fitted with a Propsmith® or equivalent, the propeller nut should be used to drive the propeller up the taper.
- Document right hand and left hand prop make/ model installation on the Maintenance Log (Section 8, page 8.15).

Step 6: Install the small propeller nut. Use the slugging wrench making small, but numerous hits on the wrench until the propeller is driven up the taper one quarter (1/4) turn after the nut contacts the propeller.



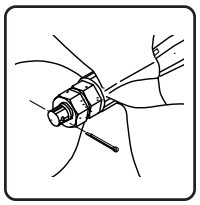
NOTICE

If the jam nut and prop nut are installed properly, the propeller should not loosen. If you tighten both nuts holding only the propeller blade, the nuts could possibly thread back on the shaft to the cotter pin. It is important that the above procedure

Shaft Diameter	Thread Size	Prop Nut	Torque Ft. Lbs.	Jam Nut Torque Ft. Lbs.
1"	3/4"	Bronze	100-125	100
1 1/4"	7/8"	Bronze	150-175	100
1 1/2"	1 1/8"	Bronze	250-275	100
1 3/4"	1 1/4"	Bronze	275-300	100
2"	1 1/2"	Bronze	325-350	100
2 1/2"	1 3/4"	Bronze	400-425	100

Step 7: Remove the slugger wrench, install the larger nut and tighten one sixth (1/6) turn after nut contacts the small propeller nut, using the slugger wrench and mallet.

- Install the cotter pin and bend each side180°.



NOTE: Do not use the propeller blades as stops by wedging blocks of wood between the blade and the hull of the boat.

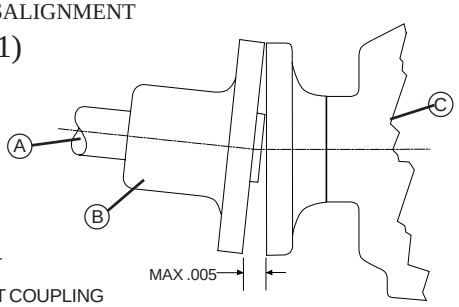
NOTE: The propeller hub may be heated to ease the removal process using a non-oxidizing gas such as propane. The hub should not be heated beyond approximately 150 degrees F.

B. SHAFTS

The shaft coupling is the connecting point between the shaft and the transmission/engine (Figure 4.11.1). The alignment should be set at a maximum of .005" (0.13 mm). A slight misalignment will cause loss of power, excessive wear, noise and vibration and should not be tolerated. When checking for parallel coupling faces (the proof of proper alignment), use a feeler gauge not more than .003 to .005 of an inch thick (0.08 – 0.13 mm).

With coupling faces brought together by hand – not bolted – the feeler gauge should be tightly gripped at all points around the edges of the couplings. Next, hold the engine coupling flange

SHAFT MISALIGNMENT
(FIG. 4.11.1)



Ⓐ SHAFT
Ⓑ SHAFT COUPLING
Ⓒ TRANSMISSION

stationary and rotate the shaft coupling flange 90 degrees in either direction. The feeler gauge should still be tightly gripped at all points around the edges of the couplings.

SHAFT LOG & STRONG SEAL™

The shaft log is a fiberglass tube which provides an opening through the bottom of the boat for the propeller shaft. The Strong Seal™ is connected to it by a short length of special flexible hose which serves to absorb normal shaft vibration (see Fig. 4.11.2). The Strong Seal™ prevents water from leaking around the shaft and into the boat. Shaft alignment and straitness must be correct to assure proper operation of the Strong Seal™. Refer to the Strong Seal™ information for the seal carrier kit in the Owner's Manual packet.

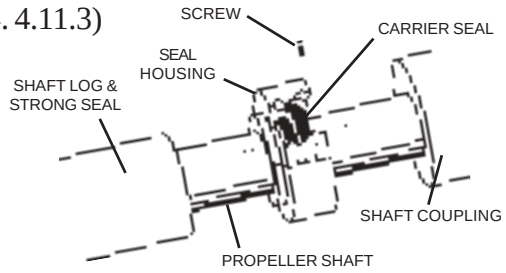
C. CARRIER SEAL KIT

Your 58 DB is equipped with spare carrier seals located on the port and starboard engine shafts (Figure 4.11.2). Seal failure can be corrected by replacing the seal with the spare seals provided.

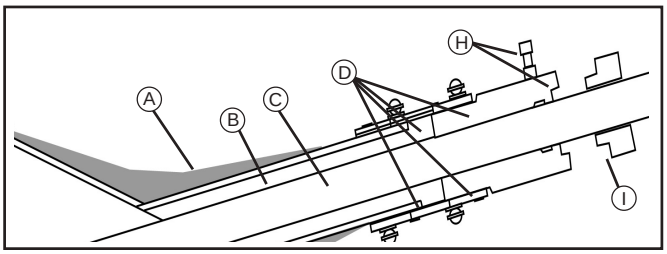
TO REPLACE THE CARRIER SEAL:

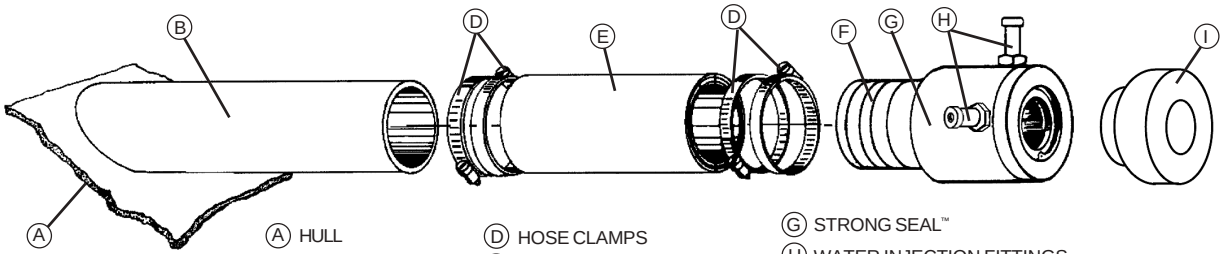
1. Clean any accumulated dirt and scale from the exposed shaft. MAKE SURE THERE ARE NO SHARP EDGES OR BURRS ON THE SHAFT.
2. Separate the two halves of the Carrier Seal Kit housing by removing the screws. If there are two lip seals in the carrier kit, move the forward most one forward on the shaft until out of the way.
3. Remove the retaining ring from the Strong Seal™ using a small screwdriver (for a

CARRIER SEAL KIT
(FIG. 4.11.3)



SHAFT LOG & STRONG SEAL™ ASSEMBLY
(FIG. 4.11.2)





Ⓐ HULL
Ⓑ SHAFT LOG TUBE
Ⓒ SHAFT
Ⓓ HOSE CLAMPS
Ⓔ FLEXIBLE TUBE
Ⓕ STAINLESS STEEL BANDS
Ⓖ STRONG SEAL™
Ⓗ WATER INJECTION FITTINGS
Ⓘ SPARE SEAL & CARRIER KIT

spiral ring) or snap-ring pliers (for a snap ring). Work the retaining ring around the new lip seal and move the ring forward out of the way.

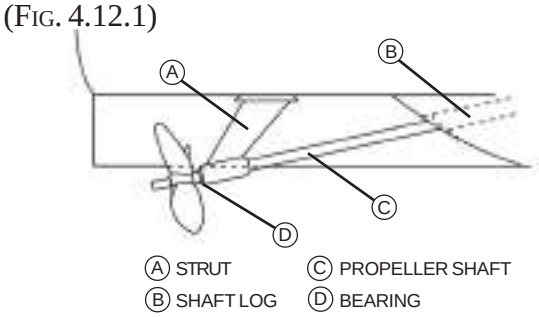
4. Reassemble the empty Carrier Seal Kit housing onto the shaft just forward of the new lip seal with the small diameter facing aft. Leave the screws loose enough that the housing can move along the shaft. The Carrier Seal Kit housing is now ready to be used as a lip seal installation tool.
5. Push needle-nose pliers or a hook into the exposed body of the lip seal and pull it out of the Strong Seal™ housing. Cut the old seal off the shaft with wire cutters. BE CAREFUL NOT TO SCRATCH THE SHAFT.
6. Inspect and clean the inside of the Strong Seal™ housing and the newly exposed area of the shaft that was under the old lip seal.
7. Push the new lip seal and installation tool aft until the lip seal contacts the Strong Seal™ housing. Using a rubber mallet, tap the face of the installation tool until the lip seal is seated within the Strong Seal™ housing. You will know the lip seal is fully seated when the retaining ring groove is exposed.
8. Remove the Carrier Seal Kit housing from the shaft. Reinstall the retaining ring into its groove in the Strong Seal™ housing.
9. If the Carrier Seal Kit came with two lip seals, position the remaining lip seal back onto a convenient location on the shaft at least 2" forward of the Strong Seal™. Reassembly the Carrier Seal Kit housing around the lip seal with the smaller diameter facing forward. Tighten the screws and make sure the assembly is firmly secured on the shaft.

NOTE: As the Carrier Seal Kit is turning with the shaft and the Strong Seal™ is not, it is important that the two do not touch.

D. STRUT

The strut is the bronze casting fastened to the bottom of the hull to support and form a bearing for the propeller shaft (Figure 4.12.1). A replaceable rubber bearing is inserted to minimize wear and protect the shaft where it passes through the strut hub. During lay up periods, squirt castor oil into this bearing to keep it from freezing to the shaft. **Never use machine oil or grease on rubber bearing.** Periodically check all strut fastenings to assure that they are secure.

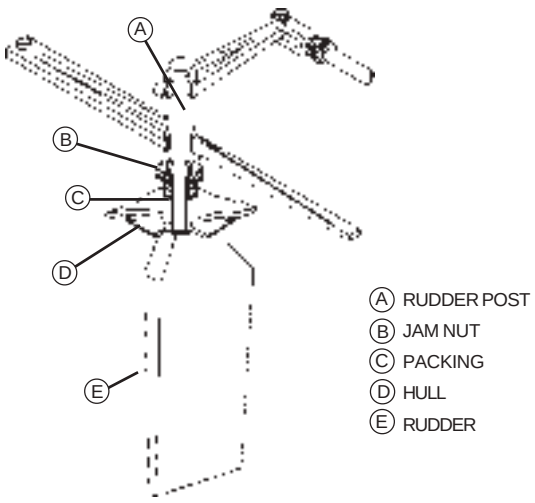
STRUT
(FIG. 4.12.1)



15. RUDDER & RUDDER STUFFING BOX

The rudder is the vertical flat surface aft of the propeller that pivots about a vertical axis and changes the direction of the boat through the water. The rudder stuffing box prevents water from leaking into the boat where the rudder post enters the hull. Spot check for leaks before and after using your boat.

RUDDER & RUDDER STUFFING BOX
(FIG. 4.12.2)



16. SEACOCKS & STRAINERS

Seacocks and strainers provide cooling water to the engines, generator and A/C units located throughout the bilge area.

To open the seacock, turn the handle in line with water flow (vertically). To close, turn the handle against water flow (horizontally). The strainers should be inspected frequently and cleaned out when plugged. If operation of the air conditioning is excessive it is important that the A/C unit strainers are inspected more frequently than other strainers.

⚠ CAUTION

As a safety measure, close all seacocks when leaving boat for any length of time to impede water ingress in the event of water hose failure.

The seacock body should be inspected and lubricated annually.

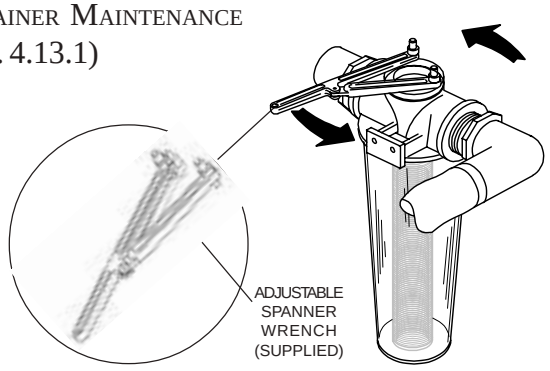
TO CLEAN THE STRAINER

- Close the seacock by turning the handle against water flow direction (horizontally).

  NOTE: Some seacocks are equipped with locking tee handles which must be loosened before operating the handle

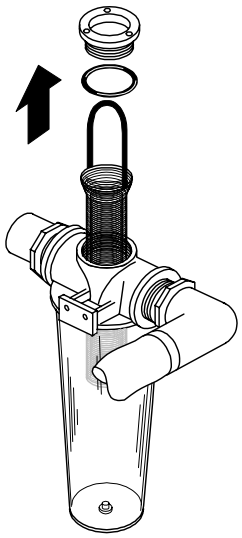
- Loosen strainer cap with the adjustable spanner wrench provided. It is stowed on the forward component board in the bilge.

STRAINER MAINTENANCE
(FIG. 4.13.1)

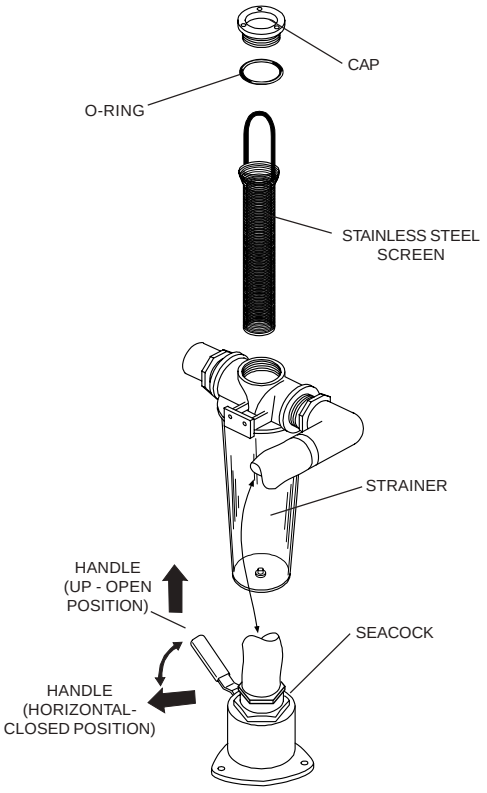


- Rotate strainer cap clear of strainer housing. Pull upward on stainless steel screen basket handle.

STRAINER MAINTENANCE
(FIG. 4.13.2)



SEACOCK & STRAINER
(FIG. 4.13.3)



17. HYDRAULIC POWER STEERING CONTROL

The hydraulic power steering ram ensures identical positioning of the port and starboard rudders. Check that rudder arms are tight and free of play. Ensure that fluid reservoir is up to level and filter is clean. The fluid reservoir and filter are located on the starboard aft side of the engine room (See figure 4.15.1) along with the optional auto pilot pump. Sea Ray ® recommends Sea Star hydraulic steering fluid or Dextron 3 auto transmission fluid for the power steering system.

The hydraulic power steering system uses the boat's engines to provide the "power" for the steering system, via a mechanical driven hydraulic pump.

A manual hydraulic steering system, consisting of a helm and a hydraulic cylinder (fitted with an integral servo cylinder and a power steering valve), supplies the "control" portion of the steering system.

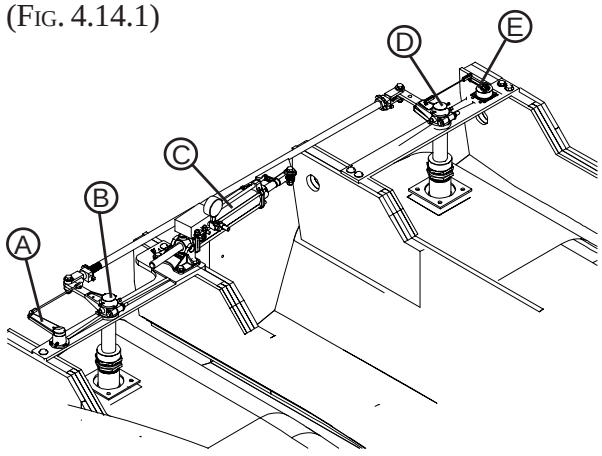
Under normal conditions, with engines running, a hydraulic oil supply is in a standby mode, ready to be directed to the steering cylinder as dictated by the steering wheel, servo cylinder and power steering valve. Turning the steering wheel left or right makes the system go from "standby" into "operating" mode and move the steering cylinder accordingly.

In the event of a power source failure, hydraulic oil from the steering helm is automatically diverted into the servo and steering cylinder, providing the helmsman with manual backup steering.

An engine room mounted oil reservoir allows easy fill and assists the in-line cooler in cooling the hydraulic oil. An in-line oil filter helps to protect the steering system components against contaminants.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

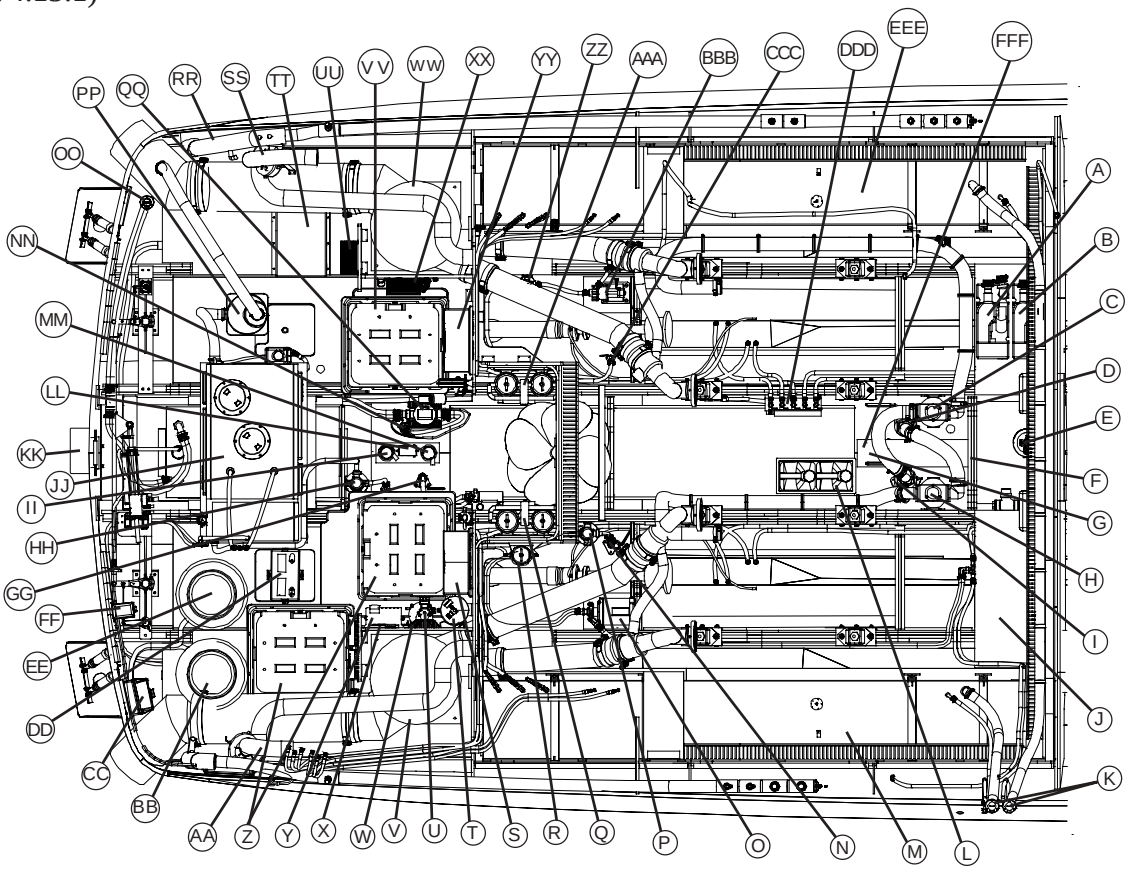
HYDRAULIC POWER STEERING CONTROL
(FIG. 4.14.1)



Ⓐ AUTO PILOT RUDDER REFERENCE
Ⓑ STARBOARD RUDDER POST
Ⓒ STEERING RAM
Ⓓ PORT RUDDER POST
Ⓔ RUDDER SWEEP REFERENCE

18. ENGINE ROOM LAYOUT

BILGE LAYOUT
(FIG. 4.15.1)



- (A) GUEST HEAD VACUUM GENERATOR
- (B) MASTER HEAD VACUUM GENERATOR
- (C) PORT ENGINE STRAINER
- (D) STARBOARD ENGINE SEACOCK
- (E) HALON FIRE EXTINGUISHER
- (F) SHOWER SUMP
- (G) FWD BILGE PUMP FLOAT SWITCH
- (H) STARBOARD ENGINE STRAINER
- (I) PORT ENGINE SEACOCK
- (J) WATER HEATER
- (K) FUEL FILLS
- (L) OIL CONTAINERS
- (M) STARBOARD FUEL TANK
- (N) CABIN A/C SEACOCK
- (O) CABIN A/C PUMP
- (P) CABIN A/C STRAINER
- (Q) STARBOARD ENGINE FUEL FILTER
- (R) GENERATOR FUEL FILTER
- (S) BATTERY SOLENOIDS
- (T) AIR HORN TANK
- (U) AIR HORN COMPRESSOR
- (V) STARBOARD ENGINE MUFFLER
- (W) POWER STEERING RESERVOIR
- (X) MAIN GROUND BUS BAR
- (Y) MASTERVOLT CONVERTER
- (Z) MAIN SYSTEM BATTERIES
- (AA) STARBOARD BILGE BLOWER
- (BB) 220V/50HZ CABLEMASTER TUB (CE OPTION)
- (CC) INTERMEDIATE AC BREAKER
- (DD) GENERATOR BATTERY
- (EE) 240V/50AMP/60 CYCLE CABLEMASTER TUB
- (FF) TRIM TAB PUMP
- (GG) GENERATOR SEACOCK
- (HH) GENERATOR STRAINER
- (II) EMERGENCY HIGH WATER BILGE PUMP
- (JJ) GENERATOR
- (KK) STERN THRUSTER
- (LL) AFT FLOAT SWITCH
- (MM) AFT BILGE PUMP
- (NN) OVERBOARD DISCHARGE SEACOCK
- (OO) DOCKSIDE PUMPOUT
- (PP) GENERATOR MUFFLER
- (QQ) MACERATOR
- (RR) PORT COMMON DRAIN
- (SS) PORT BILGE BLOWER
- (TT) 240V ISOLATION TRANSFORMER
- (UU) GENERATOR CHARGER
- (VV) BOW THRUSTER BATTERY
- (WW) PORT ENGINE MUFFLER
- (XX) BOW THRUSTER CHARGER
- (YY) MAIN DC BREAKER PANEL
- (ZZ) BRIDGE A/C STRAINER
- (AAA) PORT ENGINE FUEL FILTER
- (BBB) BRIDGE A/C PUMP
- (CCC) BRIDGE A/C SEACOCK
- (DDD) OIL CHANGER
- (EEE) PORT FUEL TANK
- (FFF) FORWARD BILGE PUMP

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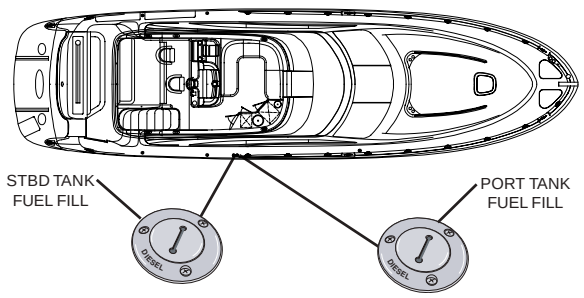
1. FUEL SYSTEM

Section 3 - Using Your Boat contains important fueling information. Take time to read all the fuel related information in the owner's manual.

Fuel lines, filters and all fuel system components should be checked at the start of each season and periodically thereafter, particularly after any work has been done aboard the boat which might have affected any part of the system. Optional engines have fuel safety discharge lines routing from engines fuel systems common rail. In the event of fuel blockage during normal engine operation, fuel from common rail distribution will return to port/ starboard tanks respectively. Be certain that all are in proper condition and that the entire system is fuel tight. Each fuel tank has manual shut-off valves on the top of the tank to close off the fuel system in case of leakage or line failure. Access ports are located in both port and starboard cockpit forward storage units.

FUEL FILL INLETS
(FIG. 5.1.2)



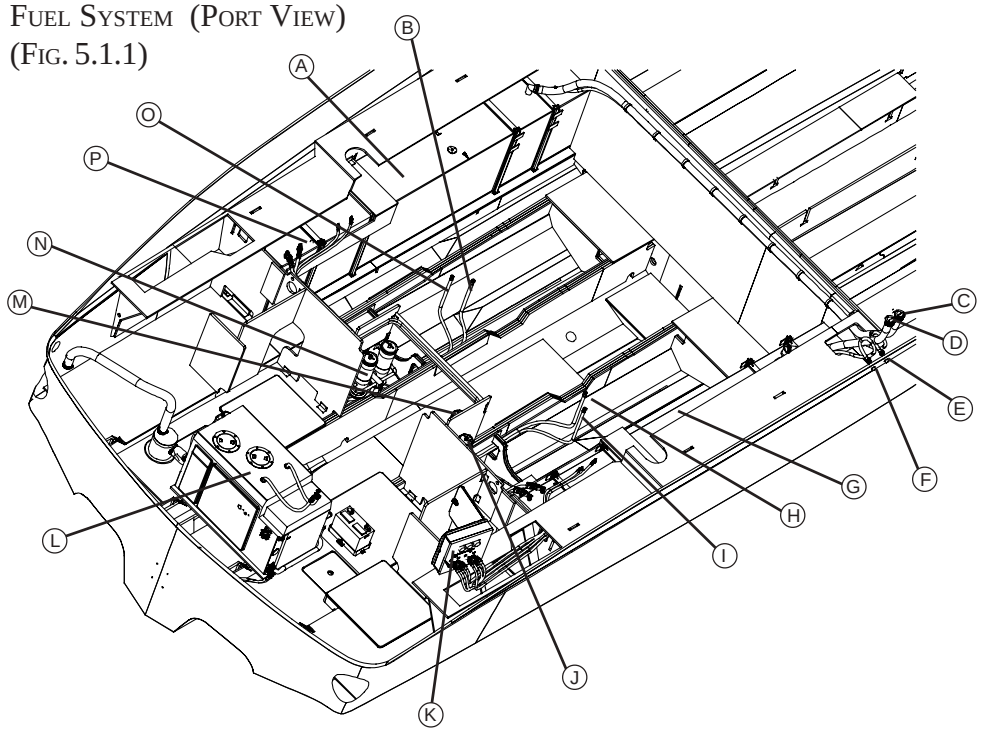
A. FUEL TANKS

The 58 DB has two (2) aluminum fuel tanks with a capacity of 350 gallons (1,325 liters) each, for a total capacity of 700 gallons (2,650 liters). The fuel fill inlets are located on the starboard deck walkway. The selector valves are located in the port and starboard outboard cockpit storage.

B. FUEL FILL INLETS

The fill inlets for the fuel tanks are located on the starboard deck walkway.

FUEL SYSTEM (PORT VIEW)
(FIG. 5.1.1)

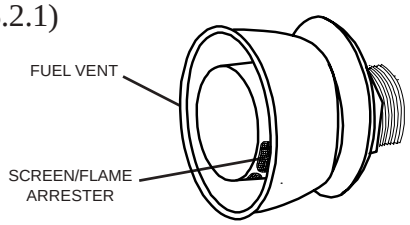


- (A) PORT FUEL TANK
- (B) PORT ENGINE FUEL FEED
- (C) PORT FUEL FILL
- (D) STARBOARD FUEL FILL
- (E) PORT FUEL VENT
- (F) STARBOARD FUEL VENT
- (G) STARBOARD FUEL TANK
- (H) STARBOARD ENGINE FUEL FEED
- (I) STARBOARD ENGINE FUEL RETURN
- (J) GENERATOR FUEL FILTER
- (K) CROSSOVER FUEL BOARD
- (L) GENERATOR
- (M) STARBOARD ENGINE FUEL FILTER
- (N) PORT ENGINE FUEL FILTER
- (O) PORT ENGINE FUEL RETURN
- (P) ENGINE COMMON RAIL SAFETY DISCHARGE

C. FUEL VENT

Your Sea Ray® is equipped with a fuel tank vent for each tank which serves as a pressure/vacuum release and safety overflow. The through-hull fitting has a flame arrester, making it imperative that you keep the screen clean and in excellent repair. Replace the screen immediately if it becomes damaged or displaced. Periodically check the vent to assure that it is not clogged.

FUEL VENT WITH SCREEN/FLAME ARRESTER
(FIG. 5.2.1)



2. CROSSOVER FUEL SYSTEM (GENERATOR)

The generator crossover fuel system allows fuel to be drawn from either port or starboard tank, This allows switching to an alternate tank in case of fuel contamination or for even fuel weight distribution. During normal operating conditions set the feed and return fuel valves to the same tank. Example: If the feed valve is set to the port tank, set the return to the port tank. Remember, fuel will be consumed faster in fuel tank selected for generator use. You might want to select other fuel tank for generator periodically for even weight distribution.

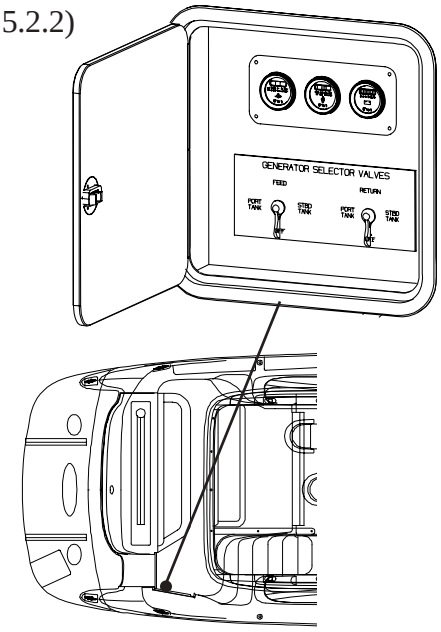
The generator crossover fuel board is located in the starboard cockpit side storage.

A. FUEL RECOMMENDATIONS

The quality of the fuel is very important for satisfactory engine performance and long engine life. Fuel should be clean and free of contamination.

Your fuel tanks should be kept full of fuel whenever possible. This will reduce the amount of water condensation and reduce the possibility of contamination.

GENERATOR FUEL CROSSOVER BOARD AND REMOTE GAUGES
(FIG. 5.2.2)



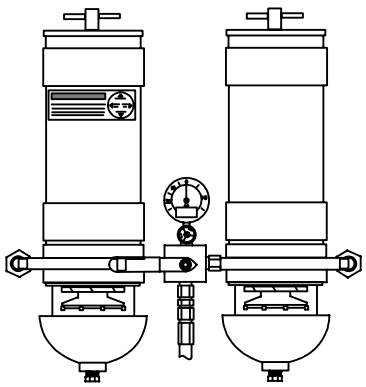
B. RECOMMENDED FUEL: #2 DIESEL FUEL

NOTE: In rough seas, allow approximately 15% reserve when planning fuel consumption.

3. FUEL FILTERS: (DIESEL)

Primary and secondary fuel filters are located on your Sea Ray ® to help keep the fuel as clean as possible. Primary fuel filters are the Racor ® Turbine Series,

RACOR® DIESEL FUEL FILTERS
(FIG. 5.2.3)



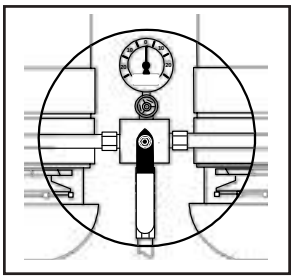
water separating fuel filters and are installed on the port and starboard sides of the engine room. The secondary fuel filters are located on the engines and should be replaced in accordance with the Engine Owner's Manual.

NOTE: Use of any methanol, gasohol or alcohol based fuel additive will damage the fuel filter. Maximum efficiency can be accomplished by the on-line selection of the left or right fuel filter individually. This will give you a clean, efficient filter on-line while allowing maintenance on the off-line filter.

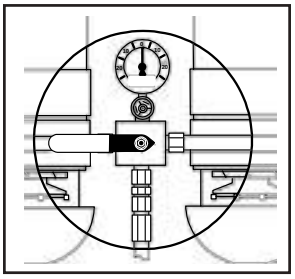
REFER TO THE Racor® Turbine Series AND THE Racor® 500MA Series OPERATOR'S MANUAL FOR MORE DETAILED INFORMATION.

A. PRIMARY FUEL FILTER SELECTION VALVE:

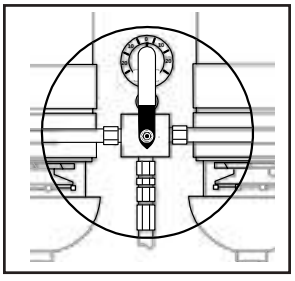
Arrow Up: ALL OFF



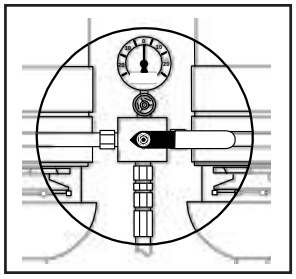
Arrow Right: RIGHT ON



Arrow Down: ALL ON



Arrow Left: LEFT ON



REFER TO THE ENGINE AND FUEL FILTER OPERATOR'S MANUAL FOR MORE DETAILED INFORMATION.

4. FUEL FILTER MAINTENANCE

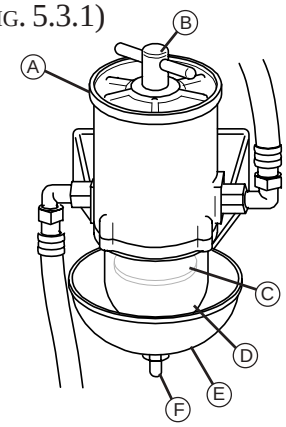
A major cause of poor starting or power loss is the result of a clogged filter element or a fuel system air leak. Check that the filter lid and drain plug are properly tightened. Inspect or drain the collection bowl of water daily.

REFER TO THE Racor® Turbine Series AND THE Racor® 500MA Series OPERATOR'S MANUAL FOR MORE DETAILED INFORMATION.

A. TO DRAIN WATER:

1. Shut down the engine.
2. Loosen the T-handle on the top lid to break the vacuum within the filter.
3. With a suitable collection container in place, remove the drain plug and allow water and contaminants to drain.

RACOR® FUEL FILTER MAINTENANCE
(FIG. 5.3.1)



Ⓐ LID
Ⓑ T-HANDLE
Ⓒ TURBINE
Ⓓ SEE-THRU BOWL
Ⓔ HEAT DEFLECTOR
Ⓕ DRAIN PLUG

4. Replace the drain plug and, if necessary, prime the filter by removing the lid and filling the filter with clean fuel.
5. Replace the lid and tighten the lid T-handle by hand only. Do not overtighten.

Replace the filter element at regular intervals or if a power loss is detected.

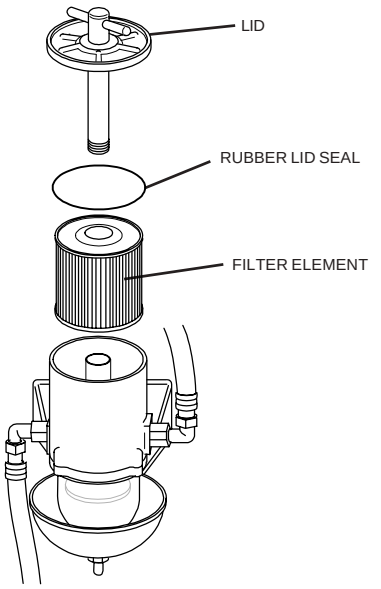
B. TO REPLACE THE FILTER:

1. Shut down the engine.
2. Remove the lid .
3. Remove the old rubber lid seal and dispose of the old seal properly.
4. Apply a coating of clean fuel or motor oil to the rubber lid seal supplied with the new element.
5. Place the new seal in position on the lid.
6. Remove the filter element by holding the molded handle and slowly pulling upward with a twisting motion.
7. Insert the new filter element with a slow downward twisting motion.
8. Fill the filter with clean fuel, then replace the lid. Tighten the lid T-handle by hand only. Do not overtighten.
9. Start the engine and check for any leaks.
10. Correct any leaks with the engine shut down.

It is recommended that spare filter elements be carried aboard as contaminated fuel can easily plug a filter.

REFER TO THE ENGINE OPERATOR'S MANUAL FOR MORE DETAILED INFORMATION.

RACOR® FUEL FILTER MAINTENANCE (FIG. 5.4.1)



5. FUELING PRECAUTIONS

Certain precautions must be carefully and completely observed every time a boat is fueled, even with diesel fuel. Diesel fuel is nonexplosive but it will burn.

A. GENERAL:

- Fuel during daylight.
- Check fill plate label to ensure fuel is placed only in fuel tank. Fuel fill plates are located on the starboard deck walkway by the control station (see Fig. 5.1.2).
- Avoid spills.
- Know your fuel capacity and consumption. Record the amount of fuel used since your last fill up, and compute the engine's hourly fuel usage. As a fuel gauge backup check, deduct the average hourly fuel usage from fuel tank capacity.
- Observe the "Rule of Thirds": one-third fuel for trip out, one-third for return and one-third for reserve.
- Allow an additional 15 percent fuel reserve when operating in rough seas.

B. BEFORE & DURING FUELING – CHECKLIST:

- Fire extinguisher – close at hand.
- Mooring – boat tied securely to fueling pier.
- Crew – at least one knowledgeable person present.

- Passengers – unnecessary people off the boat.
- Engines – stopped.
- Electrical equipment, including blowers – power off.
- Windows, doors, hatches – closed.
- Smoking material – extinguished.
- Inboard tanks – grounded.
- Filler pipe – marked DIESEL.
- Fuel nozzle – in contact with filler pipe to prevent static sparks.
- Fill level – fill less than rated capacity of t ank; allow for fuel expansion.
- Trim – fuel weight distributed equally.

C. AFTER FUELING – CHECKLIST:

- Windows, doors, hatches – open.
- Sniff test – if fuel fumes remain, operate blowers until fumes are gone.
- Fuel tank – secure filler cap.
- Spills – wipe; dispose of rags ashore.

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1. DC SYSTEM

The 24/12 volt direct current (DC) electrical system derives its power from the batteries, which are kept charged by an engine-driven alternator and/or AC converter. The battery voltage is indicated by the voltmeter on the main distribution panel and control station instrument panel. Each battery bank can be checked with the battery voltage test switch only on the DC distribution panel. The batteries supply power to the circuit breakers on the main DC breaker panel in the bilge, then to the control station breakers and DC distribution panel breakers in the salon. The 24/12 volt dash systems are protected by the ELECTRONICS (12V) and CONTROL STATION MAIN (24V) breakers on the main DC breaker panel on the port side of the aft bilge. The 24 volt functions on the salon DC distribution panel are protected by the "CABIN MAIN" breaker on the main DC breaker panel.

All main grounds are connected at the main DC ground buss located on the starboard mid engine room bulkhead (see Fig. 6.1.1). The negative terminal of each bank of batteries is connected to the ground buss, and then on to ground the engines. This negative ground system is the approved system for marine DC electrical systems.

2. BATTERIES

The batteries in your boat have been selected for their ability to furnish starting power based on engine and generator starting requirements as well as their ability to supply power to the DC system.

The main engine cranking batteries consist of two (2) banks located on the starboard side of the engine room. Each bank consists of two (2) 8D 12 volt batteries connected in series to create the 24 volts required for engine start, as well as to supply the electrical system loads.

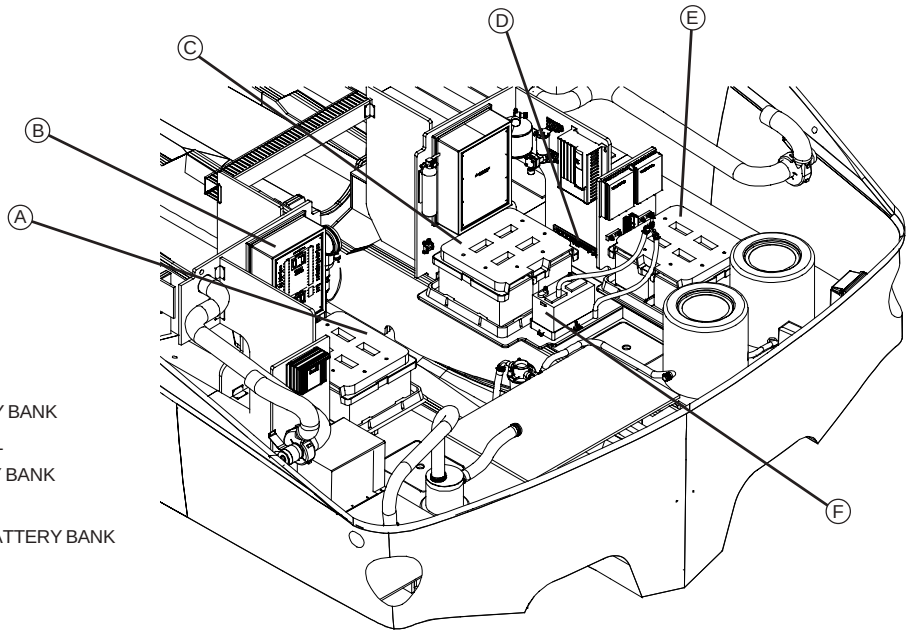
The recommended main engine battery to install in your boat is a Group 8D, 12 volt marine battery with a minimum of 1400 cold cranking amps and 435 minutes reserve capacity.

Application	Group	Volts	CCA*	Reserve	Qty.
Engines	8-D	12	1,400	435	4
Generator	31	12	650	810	1
Bow/Stern Thruster	8-D	12	1,400	435	2

* Cold Cranking Amps

The generator has its own battery for starting and is located on the starboard side of the generator. The recommended battery is a Group 27 12 volt marine

BATTERY LOCATIONS
(FIG. 6.1.1)



Ⓐ BOW THRUSTER BATTERY BANK
Ⓑ MAIN DC BREAKER PANEL
Ⓒ PORT SYSTEMS BATTERY BANK
Ⓓ MAIN GROUND BUS
Ⓔ STARBOARD SYSTEMS BATTERY BANK
Ⓕ GENERATOR BATTERY

⚠ CAUTION

While the engine or generator is running, the battery terminal clamps must not be loosened or detached nor should the battery solenoid switch(es) be turned off. The alternator and other electronic units will be damaged.

⚠ DANGER

- **Never use an open flame in the battery storage area.**
- **Avoid striking sparks near the batteries.**
- **A battery will explode if a flame or spark ignites the free hydrogen given off during charging.**

⚠ CAUTION

Always disconnect battery cables before doing any work on the engine's electrical system or alternator wiring to prevent arcing or damage to the alternator.

battery with a minimum of 575 cold cranking amps and 165 minutes reserve capacity. The generator battery has its own dedicated converter. Sea Ray ® recommended batteries are available through your local Sea Ray ® dealer.

A. To Remove the Battery Cables:

1. Turn OFF all items drawing power from the batteries.
2. Turn OFF the “CONVERTER” breaker at the main distribution panel.
3. Turn OFF battery solenoid switches.
4. Remove the positive cable first, then the negative cable. To replace the cables, reverse the procedure.

B. Battery Maintenance:

- Check the fluid level in the cells approximately every 4 weeks, and more often in summer and hot zones.
- The fluid level must be between the lower and the upper markings.
- Only replenish with distilled water. Do not use metal funnels.
- Coat battery terminal clamps with silicone grease. Keep battery clean and dry.

Only use a battery charger designed to charge automotive/marine type batteries when batteries are disconnected from the boat’s electrical circuit.

3. Main DC Breaker Panel

The main DC breaker panel is located on the port mid bulkhead in the bilge. at the bottom of the bilge steps. The breaker panel contains switches for various equipment plus the 24VDC and 12VDC main battery switches.

The bilge pumps, emergency bilge pumps, bilge blowers, engine event recorder (Caterpillar equipped only), stereo memory and systems monitor remain energized at all times and CANNOT be turned OFF with the battery solenoids. The entire remaining DC system CAN be turned OFF with the battery switches.

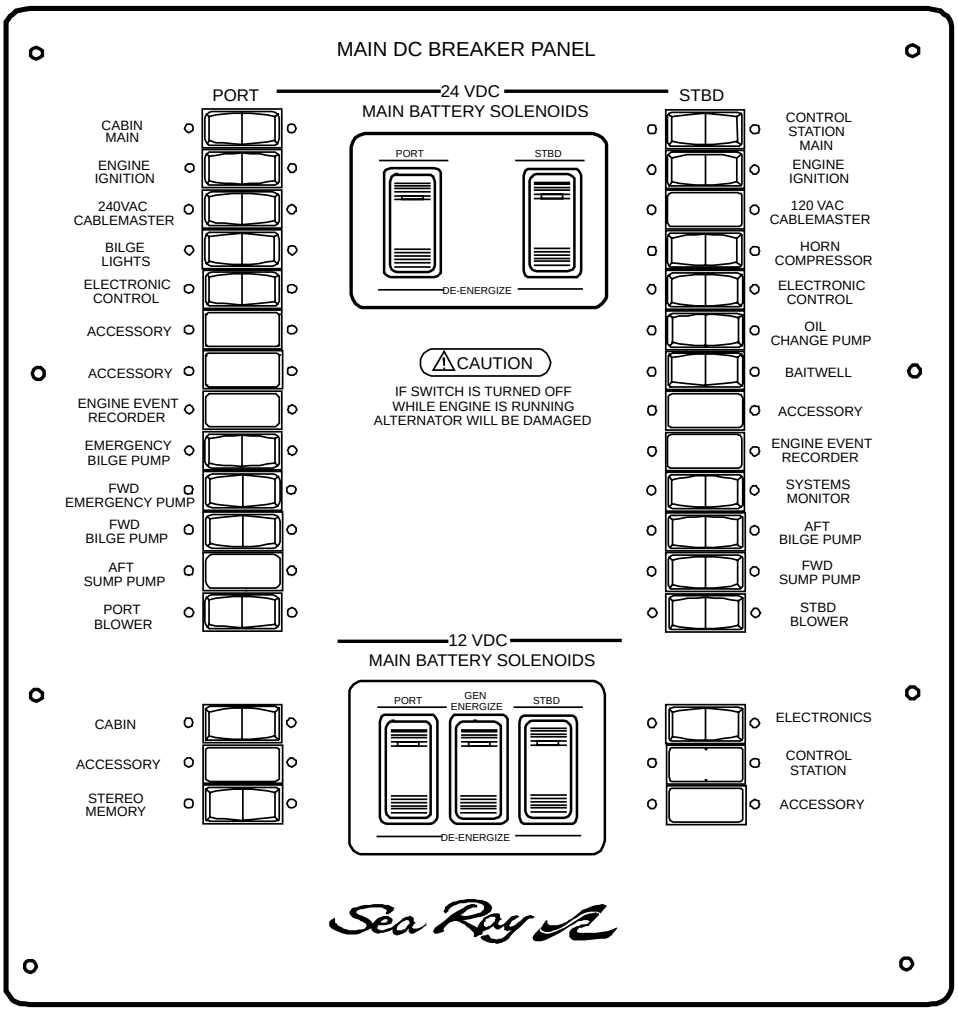
⚠ DANGER

Use ONLY Marine Rated parts to replace such items as starters, distributors, alternators, generators, etc. Do not use Automotive Parts because they are not ignition protected and could cause a fire or explosion.

⚠ CAUTION

Always disconnect battery cables before doing any work on the engine's electrical system or alternator wiring to prevent arcing or damage to the alternator.

MAIN DC BREAKER PANEL
(FIG. 6.3.1)



NOTE: Panel layout and labeling are subject to variance due to customized optional accessories and equipment upgrades

24 Volt DC Breakers	Amperage
Cabin Main	50
Engine Ignition	15
240 VAC Cablemaster#1	10
Bilge Lights	10
Electronic Control	30
Accessory	XX
Accessory	XX
Engine Event Recorder	XX
Emergency Bilge Pump	7.5
FWD Emergency Pump	7.5
FWD Bilge Pump	7.5
Aft Sump Pump	XX
Port Blower	7.5
Control Station Main	50
Engine Ignition	15
120 VAC Cablemaster#2	XX
Horn Compressor	15

24 Volt DC Breakers	Amperage
Electronic Control (MAN engines)	30
Oil Change Pump	20
Accessory/Baitwell (Opt)	7.5
Engine Event Recorder (CAT)	XX
Engine Event Recorder (Cummins)	XX
Systems Monitor	5
Aft Bilge Pump	7.5
FWD Sump Pump	7.5
StBD Blower	7.5

12 Volt DC Breakers	Amperage
Cabin	50
Accessory	XX
Stereo Memory	30
Electronics	50
Control Station	XX
Accessory	XX

4. MAIN BATTERY SWITCHES AND SOLENOIDS

The main engine battery switches for the 24VDC and 12VDC systems are located on the Main DC Breaker Panel in the bilge and the DC distribution panel in the salon.

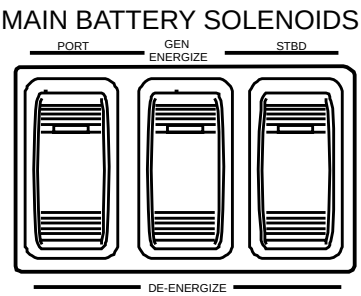
The 12V and 24V battery solenoids are located in the Main Battery Solenoid Access Panel on the starboard mid bulkhead in the bilge.

When the switches are in the OFF position all 24/12 volt current to the engines and accessories are turned off except power to the bilge pumps and other line side circuits (i.e. systems monitor, blowers, etc.). The battery switches must be ON to start the engines or generator. Turn battery solenoids OFF when leaving boat for extended duration.

NOTE: The bilge pumps, emergency bilge pumps and stereo memory CANNOT be turned OFF with the battery solenoid switches.

The entire remaining DC system CAN be turned OFF with the battery solenoid switches.

BATTERY SWITCHES
(FIG. 6.4.2)



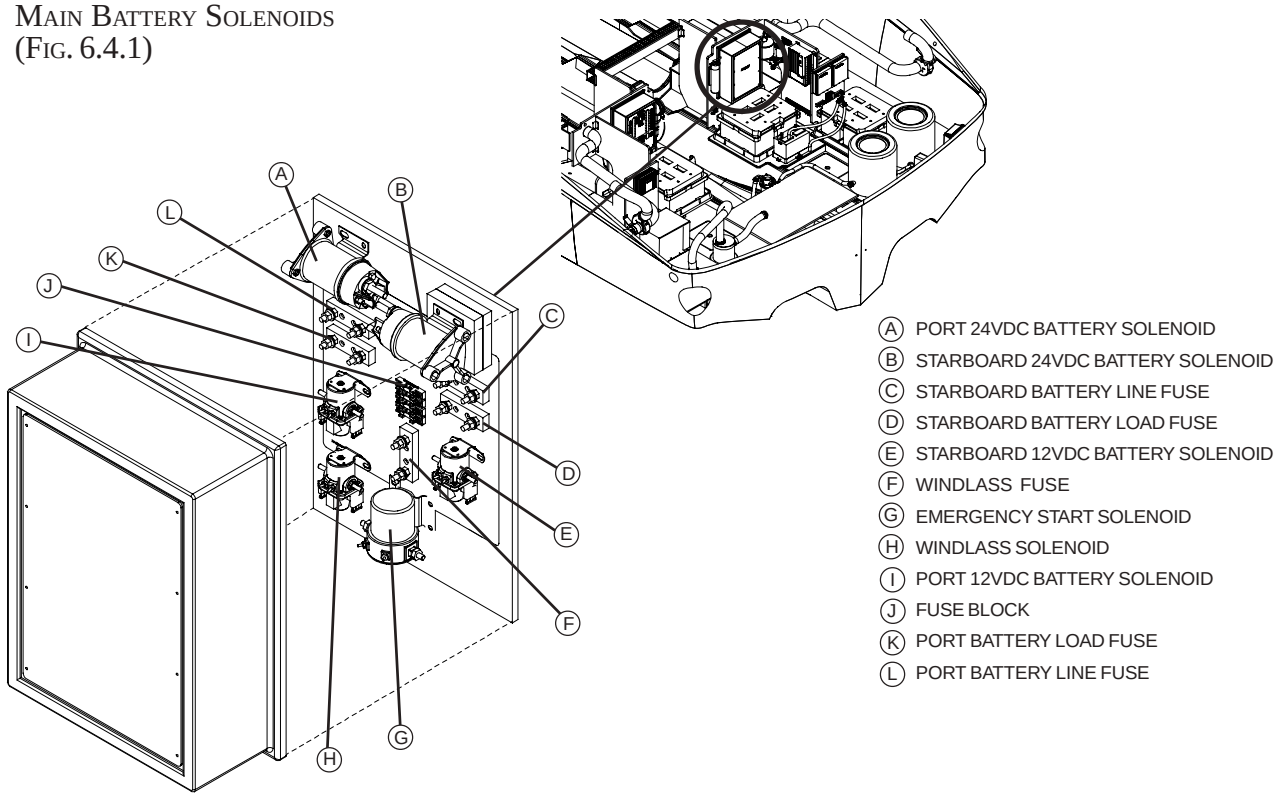
A. WINDLASS SOLENOID

The latching solenoid for the windlass is located in the Main Battery Solenoid Access Panel. See Fig. 6.4.1 below.

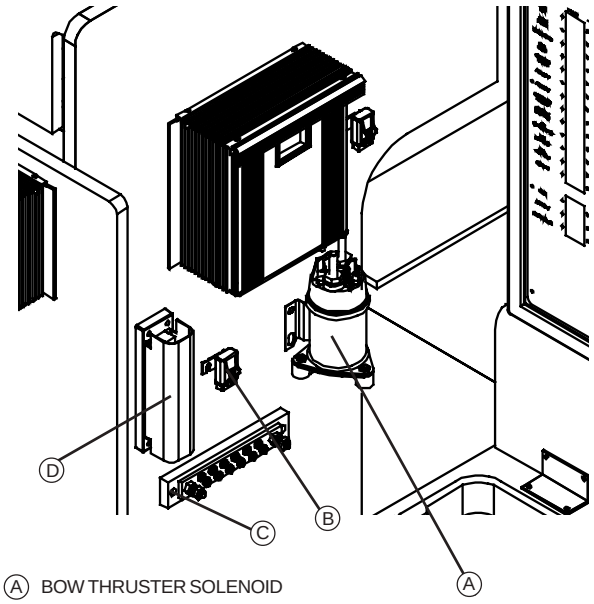
B. BOW THRUSTER SOLENOID AND CHARGER

The latching solenoid for the bow thruster is located on the port mid forward component board in the engine room.

MAIN BATTERY SOLENOIDS
(FIG. 6.4.1)



BOW THRUSTER SOLENOID & COMPONENTS
(FIG. 6.5.1)



Ⓐ BOW THRUSTER SOLENOID
Ⓑ BOW THRUSTER SOLENOID FUSE
Ⓒ MAIN DC GROUND BUS
Ⓓ BOW THRUSTER MAIN FUSE

5. CONTROL STATION BREAKER PANEL

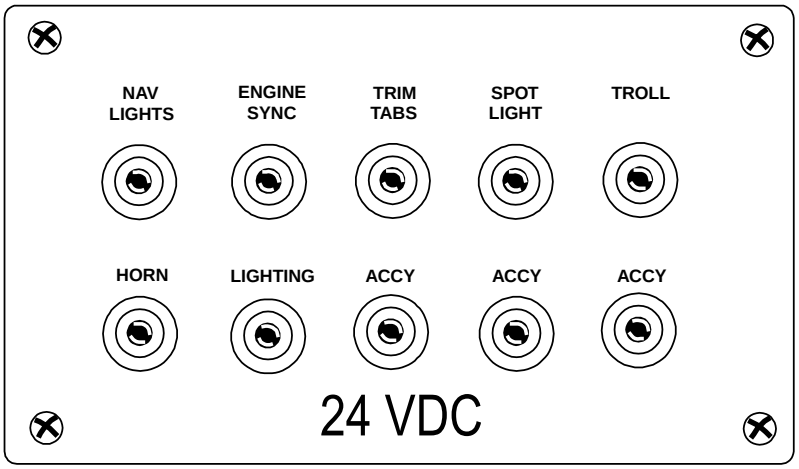
The control station breaker panel is located behind the kick panel door below the steering wheel.

In the event one of the breakers trip, determine and correct the fault, then reset by depressing the tripped breaker.

6. ELECTRICAL SYSTEM FUSE BLOCKS & BREAKERS

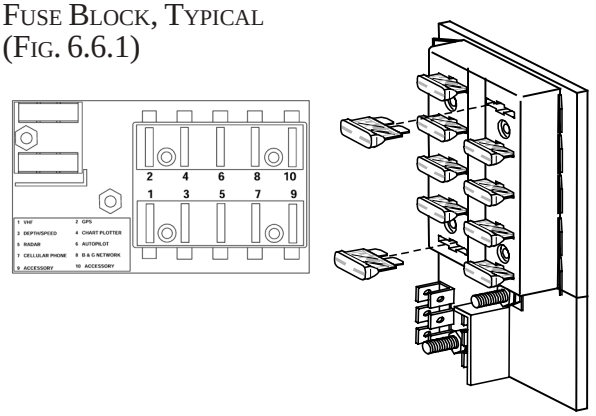
Fuse blocks utilizing automotive type blade fuses (Figure 6.6.1) are used to provide overload protection. The control station accessory fuse block protects the various stereos, 12V receptacle and other accessories. The electronics fuse block protects the VHF radio,

CONTROL STATION BREAKER PANEL
(FIG. 6.5.2)



24 Volt DC Breakers	Amperage	24 Volt DC Breakers	Amperage
Nav Lights	10	Horn	5
Engine Sync (Opt)	7	Lighting	20
Trim Tabs	20	Accessory	Plug
Spotlight	7	Accessory	Plug
Troll (opt)	10	Accessory	Plug

FUSE BLOCK, TYPICAL
(FIG. 6.6.1)



radar, depth/speed indicator, GPS, chart plotter, autopilot and other electronic accessories.

The bridge control station fuse block is located on the forward wall under the control station. It can be accessed by a door directly below the helm.

There is also a set of accessory and electronic fuse blocks on the MDP accessory board located behind the MDP board in the salon.

In the event it becomes necessary to replace a fuse or an electrical breaker, REPLACE THE FUSE OR BREAKER ONLY WITH A FUSE OR BREAKER OF THE SAME RATING. The amperage is marked on the fuse or breaker.

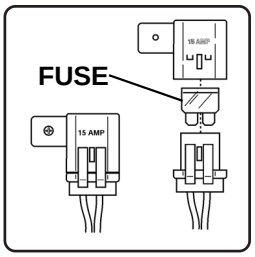
Conversely if a fuse or breaker is replaced with one of higher amperage, it will not provide adequate protection against an electrical malfunction and could create a possible fire hazard. Some of the various types of breakers used on your boat are as follows:

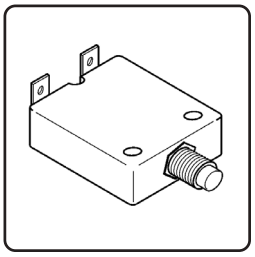
⚠ WARNING

Use of higher amperage fuses or breakers is a fire hazard.

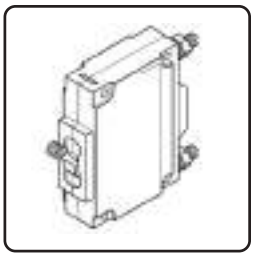
Use fuses and breakers having the same amperage rating as the original or as specified.

This type is an in-line fuse holder and uses an automotive-type blade fuse.

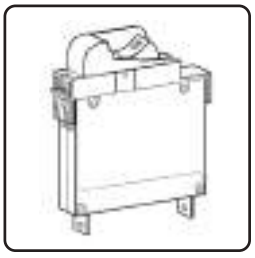




This type of breaker is found on the control station DC breaker panel located behind the access panel below the control station switch panel. These breakers protect the trim tabs, wipers, windshield vent, navigation lights, hatch lift, spot light, engine synchronizer, horn, instrument lights, 12V receptacle and accessories.

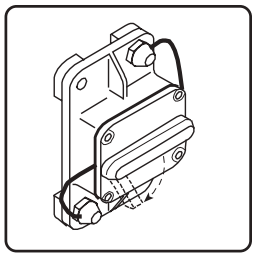


This type of breaker is typically found on the main distribution panel. It selects the electrical power source, either from the generator or from shore power.

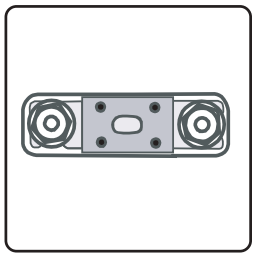


This type of breaker is found on the main DC breaker panel. It is used to protect the bilge pumps, sump pumps, bilge blowers, control station main, electronics, systems monitor, oil change pump, stereo memory and accessories. This is a manual reset breaker. It can be turned off by inserting a small screwdriver in the slot on the toggle switch.

This type of breaker is used to protect high amperage equipment. They are found in the bilge and protect the windlass and the davit.



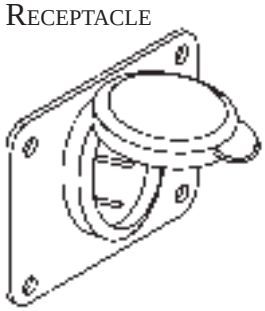
This type is a current limiting fuse which is used to isolate faults in battery operated systems and equipment (motor circuits, panel feeders, etc.).



7. 12 VOLT SYSTEM

Although the boat's DC system is primarily a 24 volt system, the control station electronics require 12 volts to operate. Also operating on the 12 volt system is the control station stereo. The 12 volt system derives its power from the 12V tap of the 24V battery bank and is regulated by the Main Battery Equalizers located on the starboard electrical component board in the bilge.

12 VOLT ACCESSORY RECEPTACLE
(FIG. 6.7.1)



A. 12 VOLT ACCESSORY RECEPTACLE

Your Sea Ray ® is equipped with three (3) 12 volt accessory receptacles. One located at the control station, one in the port side salon and the other at the aft end of the galley. The receptacle is used with any 12 volt accessory using this type of plug.

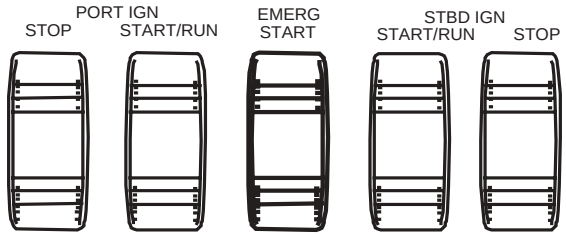
8. EMERGENCY START SYSTEM

The emergency start system utilizes a momentary switch located on the control station switch panel and an emergency start solenoid located in the Main Battery Solenoid Panel. Holding the switch energizes the solenoid which parallels the batteries to assist in starting.

Use the emergency start system when the charge of one bank of batteries is insufficient to start its corresponding engine.

To engage the engine emergency start system, start whichever engine has sufficient battery power, then hold the emergency start switch while starting the other engine.

EMERGENCY START SWITCH
(FIG. 6.7.2)



9. ELECTRONICS CIRCUIT

The 50 amp electronics circuit utilizes a circuit breaker on the Main DC Breaker Panel in the bilge to energize the electronics fuse block at the control station. There is a static ground buss located at the control station for connection of electronic equipment **static grounds only**, not for current carrying grounds.

10. AC SYSTEM

The 58DB AC standard electrical system operates on a 240V/60 cycle, 50 amp shore power system.

⚠ DANGER

EXTREME HAZARD - Swimming near a boat operating on AC electrical system can lead to severe shock and death. Never swim or allow swimming when AC system is in use.

Take time to become familiar with the Main Distribution Panel in the port salon.

NOTE: Actual usage of equipment will depend on the amperage output of the power source available. Line voltage from the generator or shore power is shown by the voltmeters on the AC main distribution panel. The ammeters indicate amperes being drawn through the selected power source's circuit breakers on the main distribution panel.The main breakers located on the main distribution panel are equipped with a source selector slide to prevent the generator and shore power from being energized at the same time and damaging the electrical system. Both breakers must be in the OFF position before switching to an alternate power source.

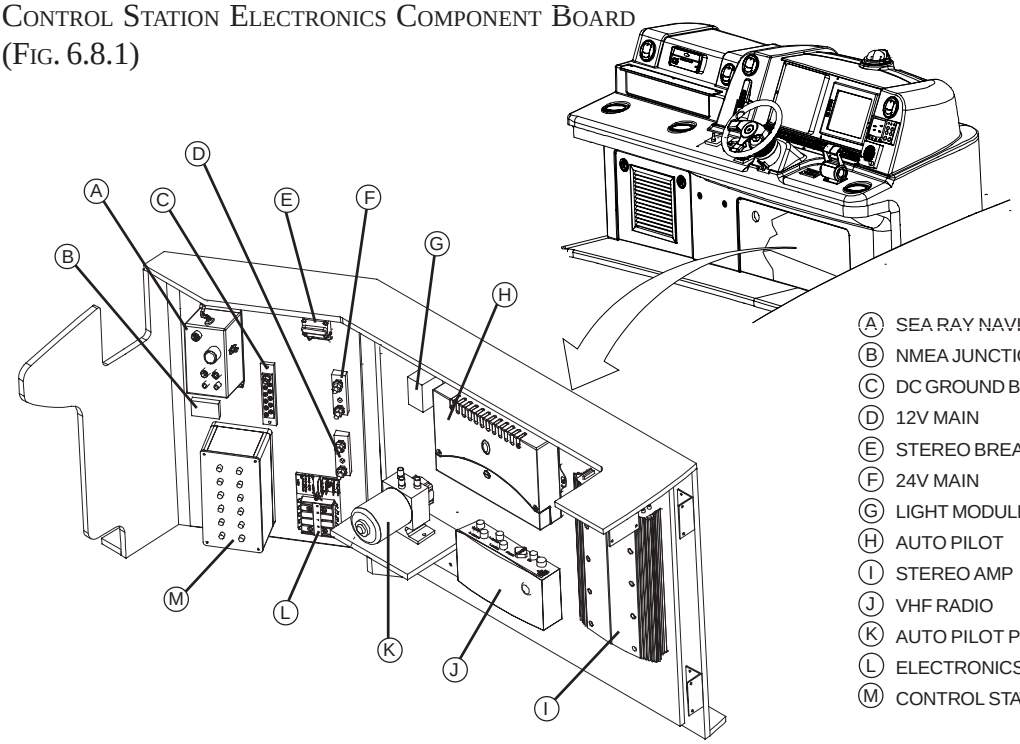
The 240 volt system wiring consists of four (4) color-coded wires. The black and black/red wires are the "hot" feeds, the white is the common, or neutral, and the green wire is the safety ground. The shore main circuit breakers protect the black hot feed wires. All branch breakers and switches for AC equipment are installed on the "hot" wires. The green conductor of the shore power is connected directly to the shield of the isolation transformer and is not grounded on the boat.

⚠ CAUTION

Never operate 240 volt shore power at less than 220 volts.

The 120 volt wiring installed on Sea Ray ® boats consists of three (3) color-coded wires. The black wire is the "hot" feed, white is the common, or neutral, and the green wire is the ground. All branch breakers and switches for AC equipment are installed on the "hot" wire.

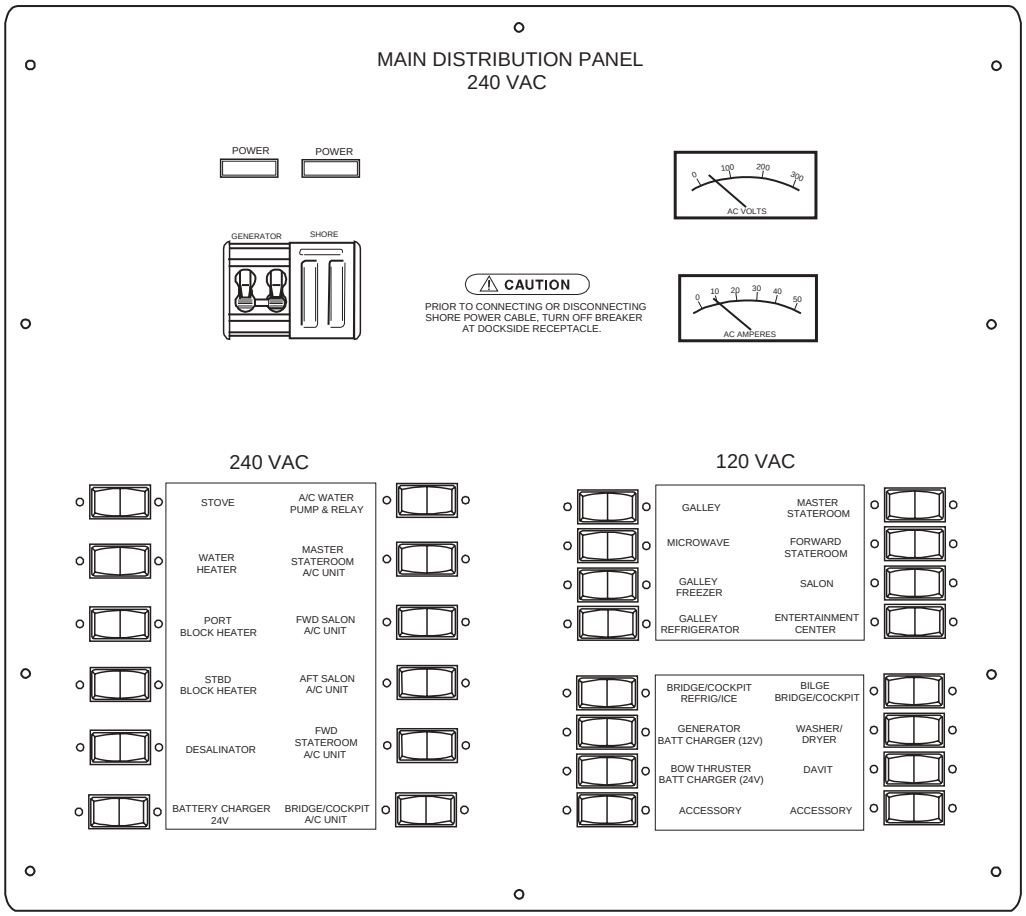
CONTROL STATION ELECTRONICS COMPONENT BOARD (FIG. 6.8.1)



Ⓐ SEA RAY NAVIGATOR POWER SUPPLY
Ⓑ NMEA JUNCTION BOX
Ⓒ DC GROUND BOX
Ⓓ 12V MAIN
Ⓔ STEREO BREAKER
Ⓕ 24V MAIN
Ⓖ LIGHT MODULE
Ⓗ AUTO PILOT
Ⓘ STEREO AMP
Ⓙ VHF RADIO
Ⓚ AUTO PILOT PUMP
Ⓛ ELECTRONICS FUSE BLOCK
Ⓜ CONTROL STATION BREAKER PANEL

AC DISTRIBUTION PANEL

AC DISTRIBUTION PANEL
(FIG. 6.9.1)



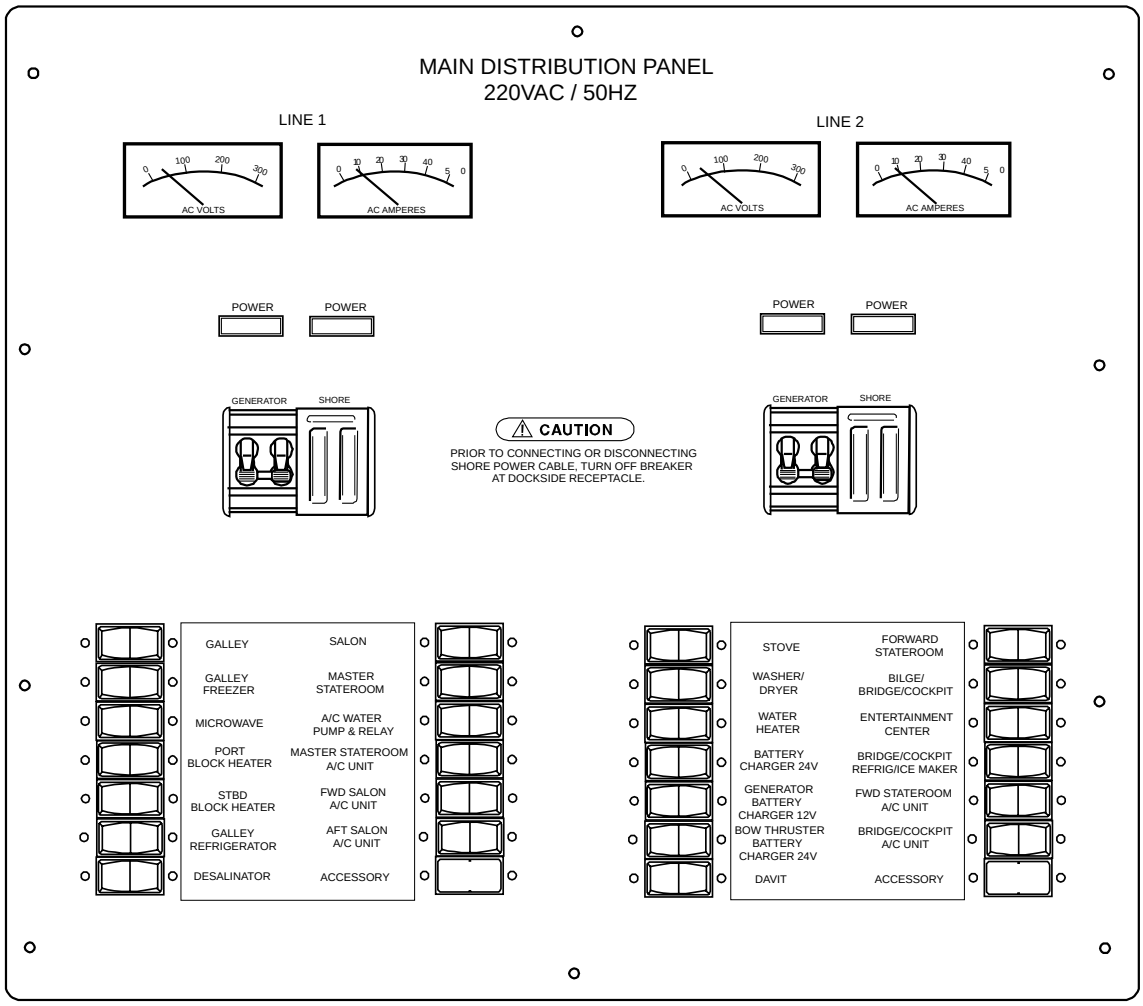
NOTE: Panel layout and labeling are subject to variance due to customized optional accessories and equipment upgrades

240 Volt AC Breakers	Amperage
Stove	20
Water Heater	10
Port Block Heater	15
STBD Block Heater	15
Desalinator	10
Battery Charger (24V)	10
A/C Water Pump & Relay	10
Master Stateroom A/C Unit	20
FWD Salon A/C Unit	20
Aft Salon A/C Unit	15
FWD Stateroom A/C Unit	15
Bridge/Cockpit A/C Unit	20

120 Volt AC Breakers	Amperage
Galley	20
Microwave	15
Galley Freezer	15
Galley Refrigerator	15
Master Stateroom	15
Forward Stateroom	15
Salon	15
Entertainment Center	15
Bridge/Cockpit Refrig/Ice Maker	15
Generator Battery Charger (12V)	5
Bow Thruster Battery Charger (24V)	15
Accessory	XX
Bilge/Cockpit/Bridge	15
Washer/Dryer	20
Davit	30
Accessory	XX

AC DISTRIBUTION PANEL (EURO OPTION)

220VAC DISTRIBUTION PANEL
(FIG. 6.10.1)



Line 1 AC Breakers	Amperage
Galley	15
Galley Freezer	7.5
Microwave	10
Port Block Heater	15
STBD Block Heater	15
Galley Refrigerator	7.5
Desalinator	15
Salon	10
Master Stateroom	10
A/C Water Pump & Relay	10
Master Stateroom A/C Unit	10
FWD Salon A/C Unit	20
Aft Salon A/C Ubit	30
Accessory	XX

Line 2 AC Breakers	Amperage
Stove	20
Washer/Dryer	10
Water Heater	10
Battery Charger (24V)	10
Generator Battery Charger (12V)	5
Bow Thruster Battery Charger (24V)	10
Davit	15
Forward Stateroom	10
Bilge/Bridge/Cockpit	10
Entertainment Center	10
Bridge/Cockpit Refrig/Ice Maker	7.5
FWD Stateroom A/C Unit	10
Bridge/Cockpit A/C Unit	20
Accessory	XX

The main breakers may trip if there is a surge in line voltage, an electrical storm or an onboard system overload. The main breaker interrupts both the neutral and hot feeds in the AC circuit to prevent equipment damage due to internal overloads and external surges.

⚠ CAUTION

Never operate 120 volt shore power at less than 110 volts.

11. SERVICING THE MAIN DISTRIBUTION PANEL

NOTE: Servicing should be referred to a qualified electrician.

A. TO REPLACE A FAULTY COMPONENT ON THE MAIN DISTRIBUTION PANEL:

1. Turn all breakers OFF.
2. Make sure the generator is OFF.
3. Unplug the shore power.
4. Remove screws from all sides except the hinged side of panel. The main distribution panel is hinged to swing open for servicing.
5. Reverse the procedure for closing the panel.

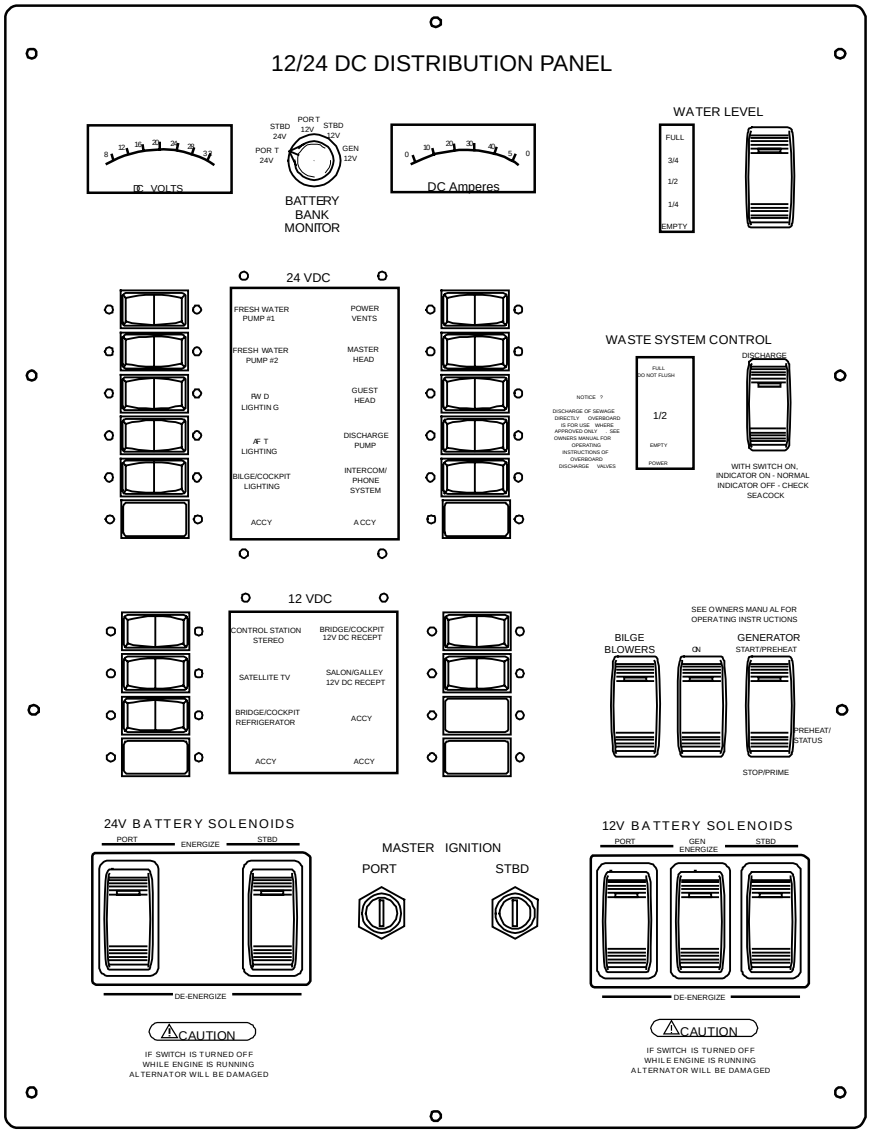
12. DC DISTRIBUTION PANEL

Your boat is equipped with a DC distribution panel located on the port salon. The breaker panel contains switches for various equipment throughout the boat plus the 24VDC battery switch and generator switch.

The bilge pumps, emergency bilge pumps, blowers, engine event recorder, CO monitors, stereo memory and engine ECM remain energized at all times and CAN NOT be turned OFF with the battery solenoids. The entire remaining DC system CAN be turned OFF with the battery switches.

DC DISTRIBUTION PANEL

DC DISTRIBUTION PANEL
(FIG. 6.12.1)



NOTE: Panel layout and labeling are subject to variance due to customized optional accessories and equipment upgrades

24 Volt DC Breakers	Amperage
Fresh Water Pump #1	10
Freshwater Pump #2	XX
FWD Lighting	20
AFT Lighting	15
Bilge/Cockpit Lighting	15
Power Vents	15
Master Head	5
Guest Head	5
Discharge Pump	5
Intercom/Phone System	5

24 Volt DC Breakers	Amperage
Accessory (2)	XX

12 Volt DC Breakers	Amperage
Control Station Stereo	10
Satellite TV	5
Bridge/Cockpit Refrigerator	10
Bridge/Cockpit 12V DC Recept	15
Salon/Galley 12V DC Recept	15
Accessory (3)	XX

13 . SHORE POWER

A. ISOLATION TRANSFORMERS

Your yacht is equipped with an isolation transformer. The boat's electrical system and grounding conductor are not actually connected to the dockside system. The Isolation Transformer transfers power from the dockside electrical system to the boat's electrical system by magnetic coupling. This means there is no direct electrical connection between the earth-grounded shore AC power and boat AC power. Isolating the power this way has several benefits which are listed below:

1. Eliminates shock hazards to people swimming around the boat.
2. Prevents reverse polarity due to a miss-wired shore power pedestal providing futher protection to people onboard as well as sensitive AC appliances.
3. Prevents galvanic current corrosion due to the direct connection to AC shore power.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

B. ISOLATION TRANSFORMER (BOOST OPTION)

The IsoBoost Transformer combines a shoreline Isolation Transformer, described above, with a voltage sensing and switching circuit providing the ability to automatically increase the line voltage on your boat, all in a single unit. The isolation transformer completely isolates input power from output power giving you an improved degree of safety and preventing galvanic current corrosion due to the direct connection to AC shore power. The IsoBoost increases the boat's voltage when it falls below 204 volts due to low shoreline voltage. The IsoBoost gives you the reliability and assurance that adequate voltage is provided for all the AC equipment on the boat.

ISOBOOST TRANSFORMER FEATURES:

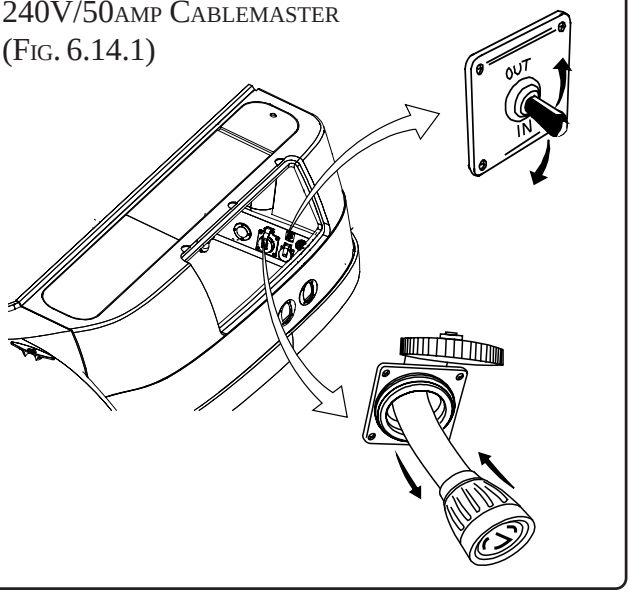
1. The output voltage is boosted (increased) by 15% if the suppied voltage is to low. This low voltage commonly occurs when connecting to marina power sources that are derived from a 208 volt system rather than from a 240 volt system. The IsoBoost Transformer can extend the useful life of many electrical components installed on the boat.
2. Monitors the incoming voltage and alarms to warn you that the shore voltage has dropped to a level outside the boosting range. It will automatically shut down under conditions of extreme low voltage.
3. The remote indicator panel (installed at the main distribution panel in the cabin) allows you to monitor the operating status of your IsoBoost Tranformer without having to go physically to the engine room to look at it. Refer to IsoBoost manual in owner's manual packet for detailed instructions.
4. Boat system protection: if the boat's voltage drops below 192 VAC for more than four seconds, the IsoBoost output is turned off. Power will not be supplied again until shore voltage has increased by at least 20 VAC. If the boat's voltage exceeds 260 VAC for five seconds, the IsoBoost output is turned off. Refer to IsoBoost manual in the owner's manual packet for detailed instructions.

If the IsoBoost Transformer turns off for a prolonged period of time, turn on the generator to supply AC power. Follow generator operating instructions (See *Section 3 - Using Your Boat*, page 3.8).

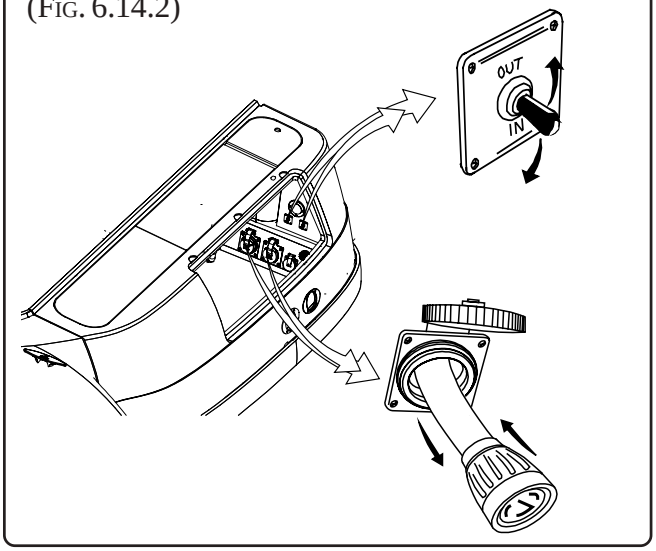
C. GLENDENNING CABLEMASTER

The 58 DB is equipped with 240 volt/50 amp shore power cord for hookup to dockside power. The cablemaster system provides remote control access to automatically advance/retrieve the 240V/50amp power cord The power cable is on the transom of your yacht.

240V/50AMP CABLEMASTER
(FIG. 6.14.1)



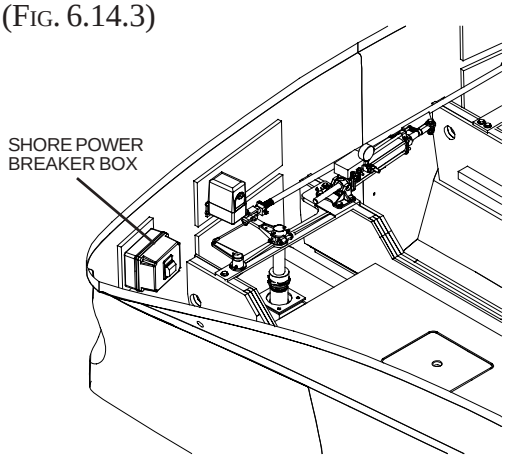
220V/50AMP CABLEMASTER (EURO OPTION)
(FIG. 6.14.2)



D. MAIN SHORE POWER BREAKER BOX

The 58 DB is equipped with an AC Main Shore Power Breaker Box (Figure 6.14.3) mounted on the starboard transom wall.

MAIN SHORE POWER BREAKER BOX
(FIG. 6.14.3)

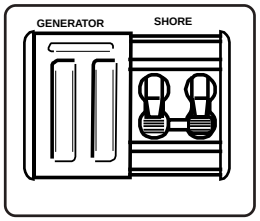


The breaker(s) must be "ON" at all times to operate the shore AC power system.

E. SHORE POWER HOOKUP

The 240/120 volt main distribution panel distributes the required voltage for all the boat's AC equipment and accessories. It is very important to know and understand where the power originates and how the power is distributed to the different voltage equipment and accessories.To access the shore power cable, become familiar with the instructions in Section7 - Accessories & Options for "Cablemaster With Remote," then follow these steps:

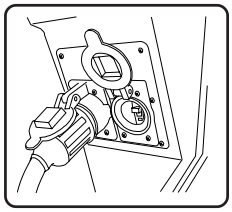
1. Slide the source selector over to expose the SHORE POWER breaker. Make sure the shore power breaker and all branch breakers on the main distribution panel are OFF.



⚠ WARNING

Under no circumstances override the source select system.

2. Advance shore power cord to dockside power box. Ensure dockside breaker is OFF, then plug the shore power cord into the shore power outlet box on the dock and turn dockside circuit breaker ON.



⚠ CAUTION

The use of extension shore power cords is not recommended. Excessive power cord extensions can cause a voltage drop and may prevent some electronic devices from operating correctly.

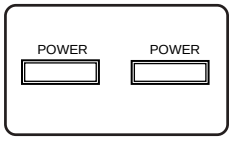
⚠ CAUTION

Shore power cord should be secured or routed to avoid laying or falling into water and to avoid stress on shore power plug and inlet.

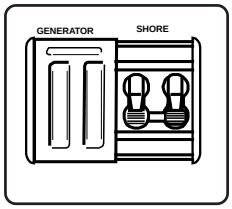
⚠ CAUTION

It is imperative that the shore power outlet is dry before plugging into the dock power inlet.

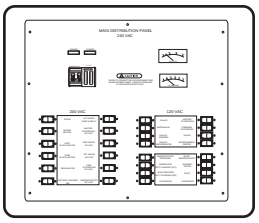
3. Check the POWER lights on the main distribution panel. The POWER lights should be on. If not have the dock master check the dockside power.



4. Turn the SHORE POWER breaker ON.



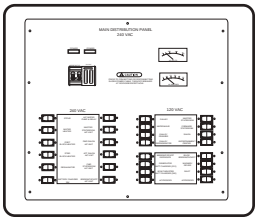
5. Individual breakers and switches can now be energized.



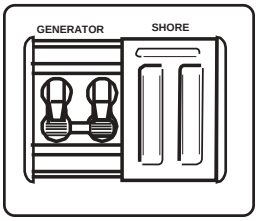
TO USE THE GENERATOR:

1. Start the generator by following the generator start-upprocedures in Section 3 - Using Your Boat, page 3.8 or in your generator owner's manual.

2. Make sure the shore SHORE POWER and all branch breakers on the main distribution panel are OFF.



3. Slide the source selector to expose the GENERATOR breaker and turn the breaker ON.



4. Stop the generator by following the generator shut down procedures in Section 3 - Using Your Boat, 3.10 or in your generator owner's manual.

F. MAINTENANCE FOR SHORE POWER CABLE SET & SHORE POWER INLETS

⚠ WARNING

Disconnect the power cable from power source before performing maintenance.

The metallic parts of your cable set and inlet are made to resist corrosion. In salt water environment, life of the product can be increased by periodically wiping the exposed parts with fresh water, drying and spraying with a moisture repellent.

A soiled cable can be cleaned with grease-cutting household detergent. A periodic application of vinyl protector will help both ends and cable maintain their original appearance.

⚠ CAUTION

It is imperative that the shore power outlet is dry before plugging into the dock power inlet.

In case of salt water spray or immersion: Rinse plug end and/or connector end thoroughly in fresh water, shake or blow out excess water and allow to dry. Spray with a moisture repellent before reuse.

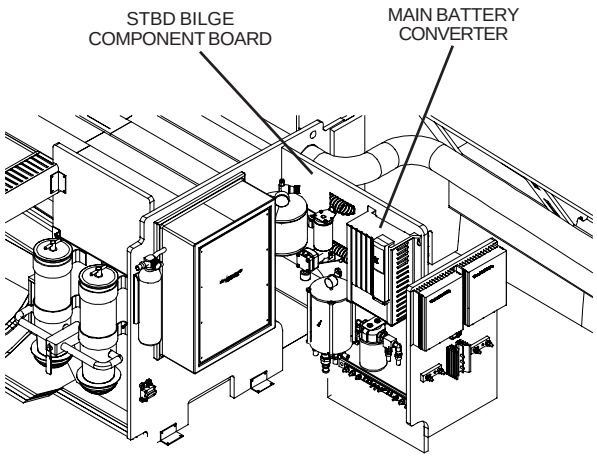
14. BATTERY CHARGER

The battery charging unit located on the starboard bilge component board is fully automatic and is designed specifically for the marine environment. It is powered by the BATTERY CHARGER (24V) breaker on the main AC distribution panel. The high frequency characteristic has allowed these chargers to achieve a huge size and weight reduction over their previously used equipment. Commonly called high frequency or smart chargers, these units bring sophistication to the battery charger field. These units feature built-in LED charge indicators located on the front panel. This gives an accurate reading of the combined battery current and load current. To verify that the charger is functioning properly, turn on lights or other loads. The LED indicators should register and show an increasing output level. . See manufacturer Operator Owners Manual for maintenance and trouble shooting instructions.

Charging characteristics contain three (3) elements:

- Bulk Charge - this is initiated at power up and provides the chargers full-rated current to the battery bank until a predetermined voltage level of 28.4V to 28.8V is achieved and/or a certain time has passed.
- Absorption Charge - this stage immediately follows the bulk charge mode. It maintains the battery voltage at the bulk charge voltage level, but gradually decreases the current as the battery accepts the charge until it reaches a predetermined current level.
- Float Charge - this stage is designed to hold the battery at a safe, low voltage (typically 26.6V) providing up to the chargers full rated amperage to accommodate DC load requirements. The charge will remain in this mode until the AC power is cycled off and then on again.

MAIN BATTERY CONVERTER
(FIG. 6.16.1)



⚠ WARNING

Never block air circulation through the unit. Never store any gear on top of the units.

NOTICE

It is advisable to replace both batteries in the boat even if only one battery is bad. This allows the charge and discharge of each battery to be as close as possible to each other.

Application	Group	Volts	CCA*	Reserve	Qty.
Engines	8-D	12	1,400	435	4
Generator	27	12	810	625	1
Bow/Stern Thruster	8-D	12	1,400	435	2

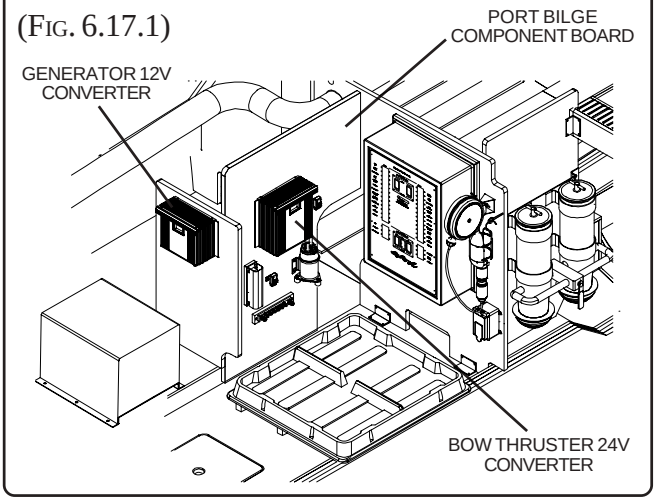
* Cold Cranking Amps

A. CHARGING CHARACTERISTICS OF THE BOW THRUSTER BATTERY CHARGER.

SEE MANUFACTURER'S OPERATOR/INSTALLATION MANUAL FOR DETAILS.

- Bulk Charge - this is initiated at power up and provides the chargers full-rated current to the battery bank until a predetermined voltage level of 28.4V to 28.8V is achieved and/or a certain time has passed.
- Absorption Charge - this stage immediately follows the bulk charge mode. It maintains the battery voltage at the bulk charge voltage level, but gradually decreases the current as the battery accepts the charge until it reaches a predetermined current level.
- Float Charge - this stage is designed to hold the battery at a safe, low voltage (typically 26.6V) providing up to the chargers full rated amperage to accommodate DC load requirements. The charge will remain in this mode until the AC power is cycled off and then on again.

BATTERY CONVERTER
(FIG. 6.17.1)



B. CHARGING CHARCHARACTERISTICS OF THE GENERATOR BATTERY CHARGER.

SEE MANUFACTURER'S OPERATOR/INSTALLATION MANUAL FOR DETAILS.

- Bulk Charge - this is initiated at power up and provides the chargers full-rated current to the battery bank until a predetermined voltage level of 14.2V to 14.4V is achieved and/or a certain time has passed.
- Absorption Charge - this stage immediately follows the bulk charge mode. It maintains the battery voltage at the bulk charge voltage level, but gradually decreases the current as the battery accepts the charge until it reaches a predetermined current level.
- Float Charge - this stage is designed to hold the battery at a safe, low voltage (typically 13.3V) providing up to the chargers full rated amperage to accommodate DC load requirements. The charge will remain in this mode until the AC power is cycled off and then on again.

⚠ CAUTION

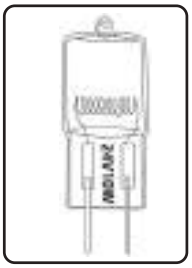
Always disconnect battery cables before doining any work on the engine's electrical system or alternator wiring to prevent arcing or damage to the alternator.

Note: Your boat may be fitted with alternate charger. See manufacturer's Operator/ Installation Manual for details.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

15. XENON LIGHTING

Your 58DB uses 24 volt Xenon lights throughout as the primary lighting system. The system is powered by the 24 volt batteries and the AC low voltage lighting system. It is activated by the lighting breakers on the DC distribution



⚠ CAUTION

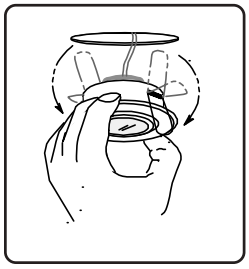
The filament bulbs used in all Xelogen-cycle lamps generate intense heat. To avoid the possibility of fire, do not use lamp at close range to materials that are combustible or affected by heat or drying. Xelogen-cycle bulbs are pressurized and could shatter if scratched or damaged. Glass Xelogen-cycle bulbs should be protected against contact with liquids when operating.

panel as well as the AC distribution panel located in the port salon.

A. CHANGING A BLOWN BULB

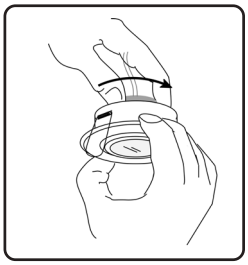
Use appropriate protection, such as a clean cloth or gloves when handling or disposing of all Xelogen-cycle bulbs. Wear eye protection. Turn power off when installing or before removing lamp. Allow lamp to cool before removal. Remove grease or fingerprints from new Xelogen bulbs with a grease-free solvent before use.

1. Grab light fixture housing and pull gently from ceiling or wall.

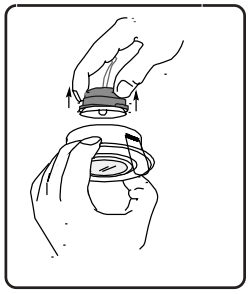


NOTE: Take care when pulling the housing as it is spring loaded in the socket and the clips will snap quickly downward when released from the ceiling or wal

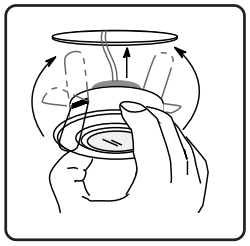
2. Grab the fixture containing the bulb and twist counter clockwise.



3. Pull the fixture out of the housing and replace the bulb with a bulb of equal wattage. NOTE: The glass face plate in the housing is very fragile. Be careful that it remains in place and does not fall out, as it will break easily.



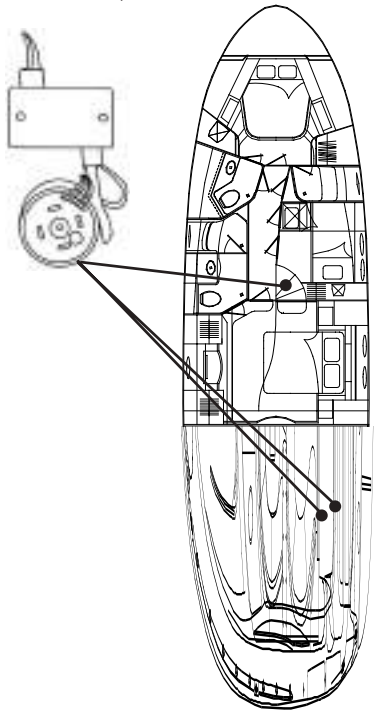
4. To replace the housing, reverse the previous directions. Grab the clips and hold them upwards until the housing is placed into its receptacle in the wall or ceiling. Push gently to seat the light housing securely.



B. AC LOW VOLTAGE LIGHTING

Some overhead lighting in the V-berth, guest stateroom, master stateroom and the port and starboard salon are powered by the generator or the shore power system. Transformers located

LOW VOLTAGE LIGHTING TRANSFORMERS (FIG. 6.18.1)



behind the Entertainment Center and under the stateroom companionway steps reduce the voltage from 120VAC to 24VAC supplying the lighting with a stable, constant power source. AC branch breakers must be on to operate these lights.

16. GROUND FAULT INTERRUPTER RECEPTACLE (GFI)

Ground fault interrupter receptacles are located in the galley inside the outboard aft cabinet, master head aft in the upper storage cabinet above the sink, guest head aft end of the upper outboard cabinet above the sink.

The GFI receptacles are out of sight and wired in-line with the exposed Vmar receptacles throughout the yacht. This allows your yacht to have an elegant exposed receptacle while still providing protection from shock hazards.

Please read and understand the CAUTION block above.

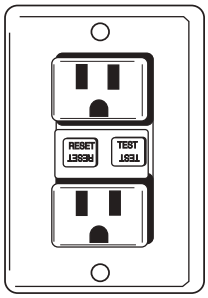
The GFI receptacle is designed to protect people from the line-to-ground shock hazards which could occur from defective power tools or appliances operating from this device, or from down-line outlets protected by it. It does not prevent line-to-ground electric shock, but does limit the time of exposure to a period considered safe for normally healthy persons. It does not protect persons against line-to-line or line-to-neutral faults.

⚠ CAUTION

Persons with heart problems or other conditions which make them susceptible to electric shock may still be injured by ground faults on circuits protected by the GFI receptacle. No safety devices yet designed will protect against all hazards or carelessly handled or misused electrical equipment or wiring.

The GFI receptacle does not protect against short circuits or overloads. This is the function of the circuit breaker.

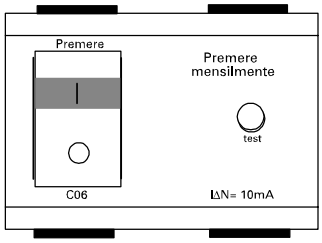
GFI OUTLET
(FIG. 6.19.1)



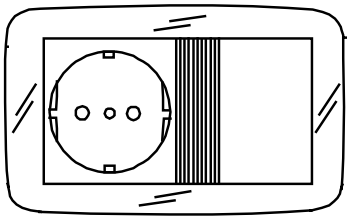
A. INTERNATIONAL RECEPTACLE

All readily accessible 220V outlets are protected by a Residual Current Circuit Breaker (RCCB) . This current breaker is mounted in an accessible, out-of-sight location such as under a cabinet and includes a test switch to verify proper operation. Its function is similar, but not identical to the 120V GFI.

RESIDUAL CURRENT CIRCUIT BREAKER
(FIG. 6.19.2)



INTERNATIONAL RECEPTACLE
(FIG. 6.19.3)



REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

17. GENERATOR

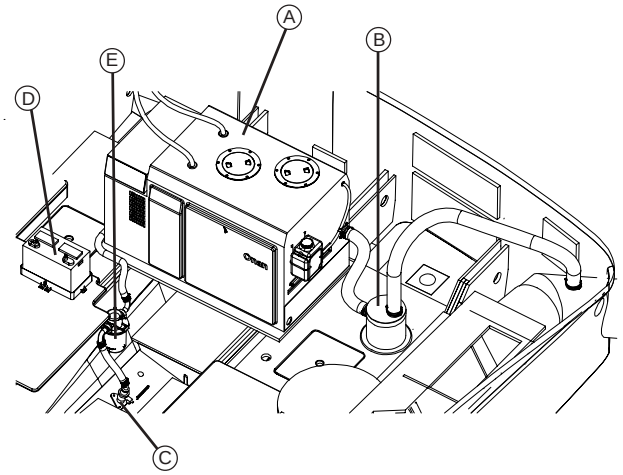
Sea Ray® strongly urges you to fully comply with the manual provided by the generator manufacturer. The generator is warranted separately by the generator manufacturer, NOT Sea Ray®. Your Yacht is fitted with a Onan generator. Follow the recommended maintenance and warranty schedule in your Onan Generator Operator's Manual that is included in the Owner's Manual Packet. Generator abuse or improper maintenance may adversely affect claims made under generator manufacturer separate warranty.The generator is located center and aft in the bilge. Generator gauges are located

NOTICE

Pre-start generator prior to getting underway as there is a possibility that it will not pick up water if started underway. Make sure the MAIN GENERATOR breaker is OFF and there is no load in the generator before starting it.

on the generator and inside the starboard outboard cockpit storage and can be accessed by opening the storage door.

GENERATOR
(FIG. 6.20.1)



Ⓐ GENERATOR
Ⓑ GENERATOR MUFFLER
Ⓒ GENERATOR SEACOCK
Ⓓ GENERATOR BATTERY
Ⓔ STRAINER

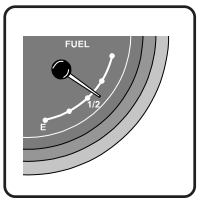
⚠ CAUTION

Do not run the generator in an enclosed area, such as a closed boathouse, as there is a possibility of build-up and inhaling of carbon monoxide.

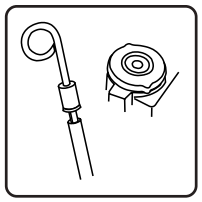
A. STARTING THE GENERATOR (SEE SECTION 3 USING YOUR BOAT)

(Remote control switches are located on the main distribution panel or local switches on the generator.)

1. Check fuel tank levels.

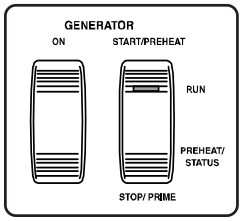


2. Check oil and coolant levels. See Generator Operator's Manual for proper readings.
3. Check generator for coolant drain plug installation.



4. Open the generator seacock.

5. Run the bilge blowers for at least four minutes before starting and any time the generator is running. If fuel fumes are detected, do not start the generator until the source of fumes is determined and corrected and the bilge area is safely ventilated.
6. Press the ON switch. Depress the START/ PREHEAT switch and hold. The starter motor will have up to a 15 second delay for the preheat mode, engine



will automatically start cranking, as soon as the engine runs, release the START switch.

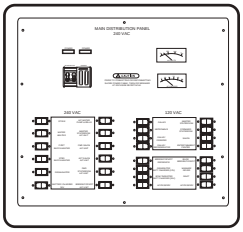
7. Check generator exhaust port to verify that water is flowing. If not, shut generator down and refer to your Generator Operator's Manual. Generator exhaust terminus is located at the port stern of the vessel.

READ THE OWNER'S MANUAL IN THE OWNER'S MANUAL PACKET FOR YOUR GENERATOR MODEL.

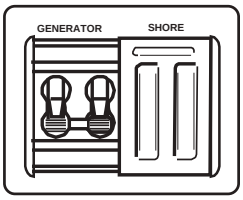
B. SHIFTING FROM SHOREPOWER TO GENERATOR POWER:

1. Turn all AC systems, branch and main circuit breakers OFF.

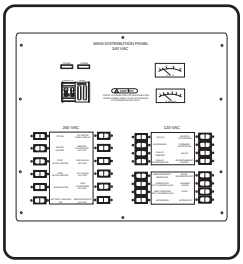
2. Start the generator.



3. Slide the source select shuttle mechanism on the main distribution panel to expose the GENERATOR breaker and turn it ON.

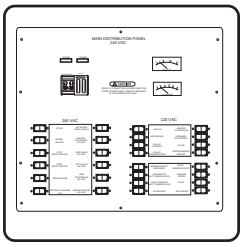


4. Turn the individual system breakers ON.

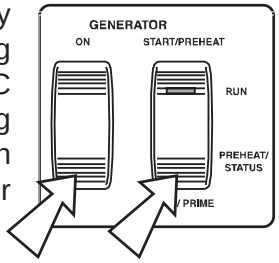


C. STOPPING THE GENERATOR

1. Prior to generator shut down. Turn OFF all AC equipment and breakers including main breakers and allow the generator to run a few minutes to cool down. If desired, transfer to shore power.



2. Stop the generator by pressing down and holding the STOP switch on DC distribution or by pressing the STOP switch on generator until generator stops.



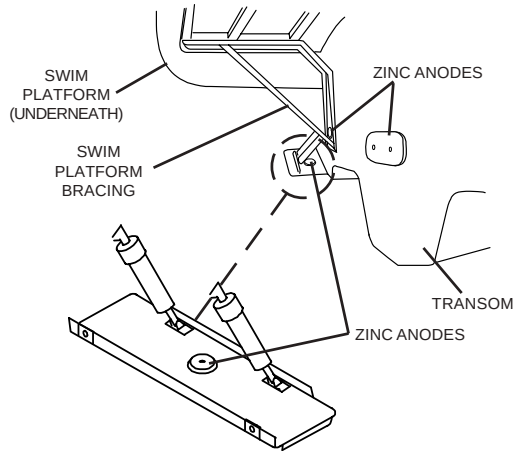
3. After stopping the generator, wait for 20-30 seconds before restarting.

REFER TO OWNER' S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

18. ELECTROLYSIS & ZINC ANODES

Electrolysis corrosion of metals on power boats can result in serious deterioration. The boat owner must be aware of the possibilities of galvanic action (the deterioration of metals due to dissimilar characteristics when placed in salt water), and/or electrolysis. It is the owner's responsibility to check for and replace damaged parts due to galvanic deterioration. Refer to your Sea Ray® dealer to investigate the source of stray corrosive currents. Zinc plates are installed on the transom and trim tabs to protect underwater hardware. Zinc, being much less "noble" than copper based alloys and aluminum used in underwater fittings, will deteriorate first and protect the more noble parts. Zinc anodes

ZINC PLATE LOCATIONS
(FIG. 6.21.1)



PORT SIDE SHOWN STARBOARD IS TYPICAL

generally require replacement about once a year. (In salt water areas, replace every six (6) months). The need to replace anodes more frequently may indicate a stray current problem within the boat or at the slip or mooring. If zinc anodes do not need replacing after one year, they may not be providing proper protection. Loose anodes or low-grade zinc may be the problem.

⚠ CAUTION

Replace zinc sacrificial anodes if they are corroded 50% or more.

DO NOT PAINT BETWEEN THE ZINC AND THE METAL IT CONTACTS, AND DO NOT PAINT OVER THE ZINC.

When an AC shore power system is connected to the boat, the underwater metal fittings will, in effect, be connected through the water to grounded metals ashore. The zincs will be consumed at a faster rate unless the marina maintains a protective system to prevent this. In this case, hanging a zinc in the water bonded to the metal outlet box on the dock will reduce zinc loss on the boat. DO NOT connect this zinc to the boat's ground system.

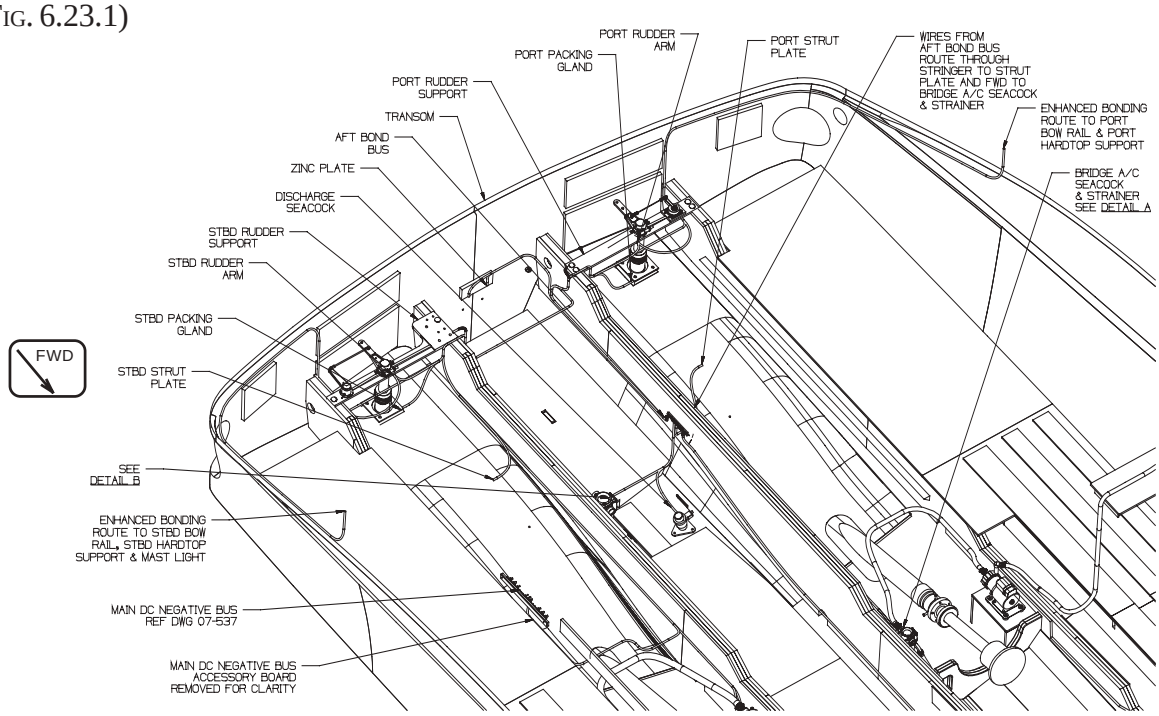
It is extremely important that all electrically operated DC equipment and accessories be wired so that the ground polarity of each device is the same as that of the battery. Sea Ray® boats have a negative ground system, which is the recommended practice throughout the marine industry. All metal items (fuel tanks, underwater gear, etc.) in the boat are connected to the zinc anode by the green bonding wire.

19. AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

This owner's manual contains electrical schematics and wiring harness illustrations for your boat (See pages 6.23 thru 6.78). These electrical schematics were generated by electrical CAD designers at the engineering division for technical reference and service technicians. Sea Ray® does not recommend that you attempt to work on the boat's electrical system yourself. Instead we recommend that you take your boat to your authorized Sea Ray® dealer for service. Sea Ray® reserves the right to change or update the electrical system on any model at any time without notice to the consumer and is NOT obligated to make any updates to units built prior to changes

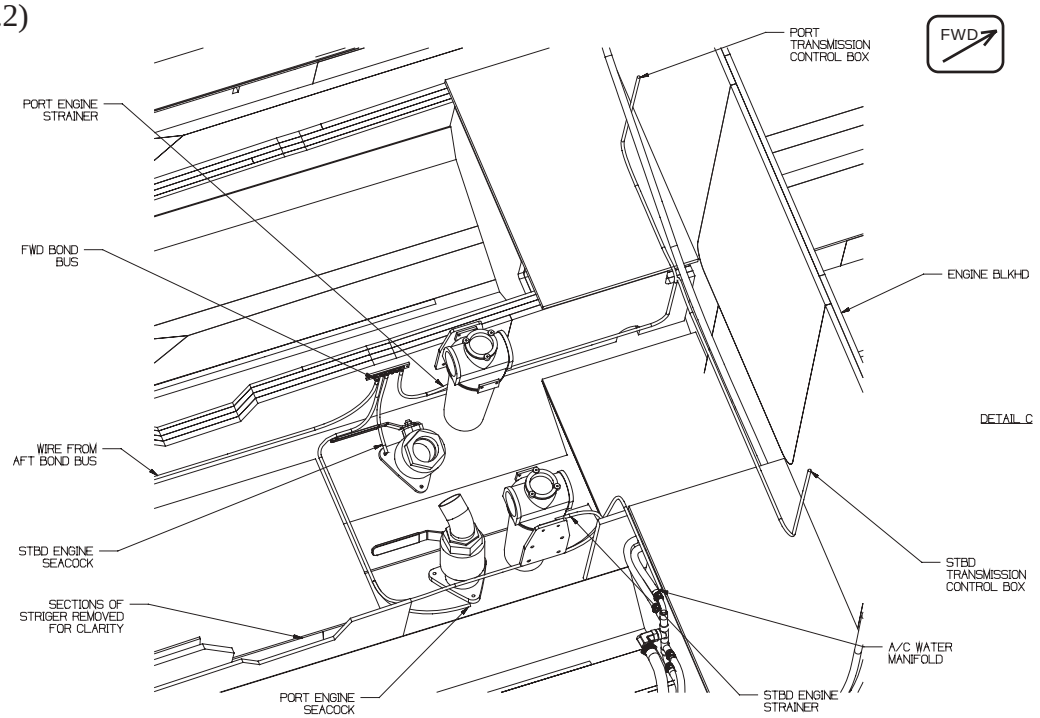
AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

BONDING HARNESS
(FIG. 6.23.1)



DRAWING NO. 09-201 (1 OF 3)

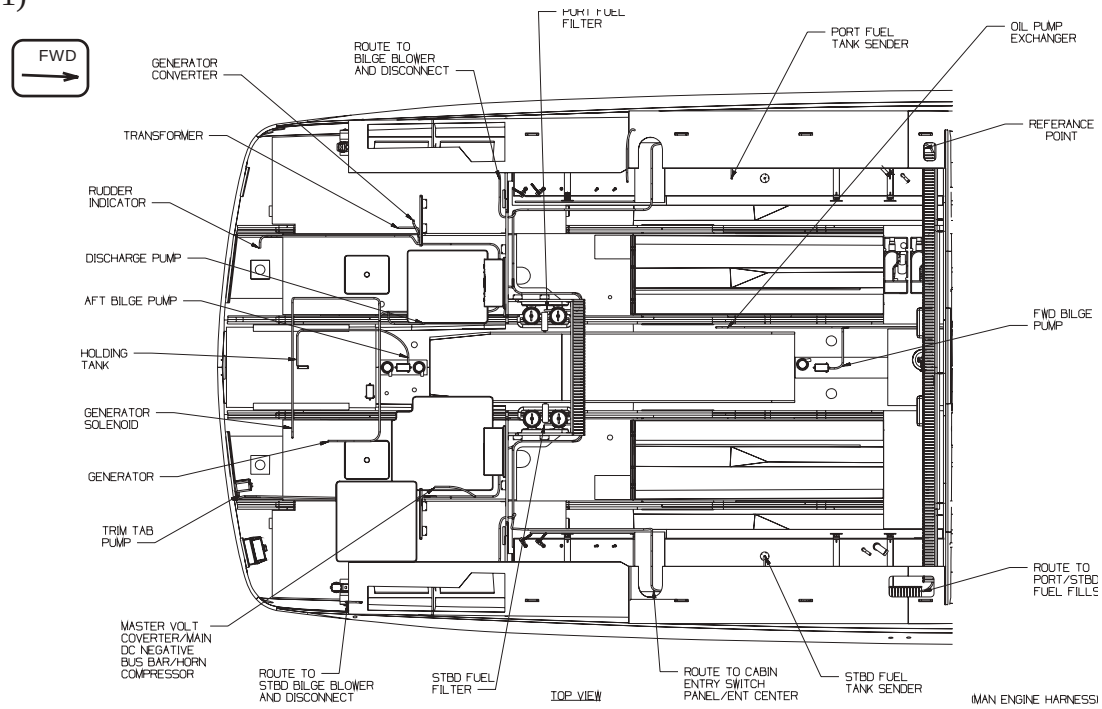
BONDING HARNESS
(FIG. 6.23.2)



DRAWING NO. 09-201 (3 OF 3)

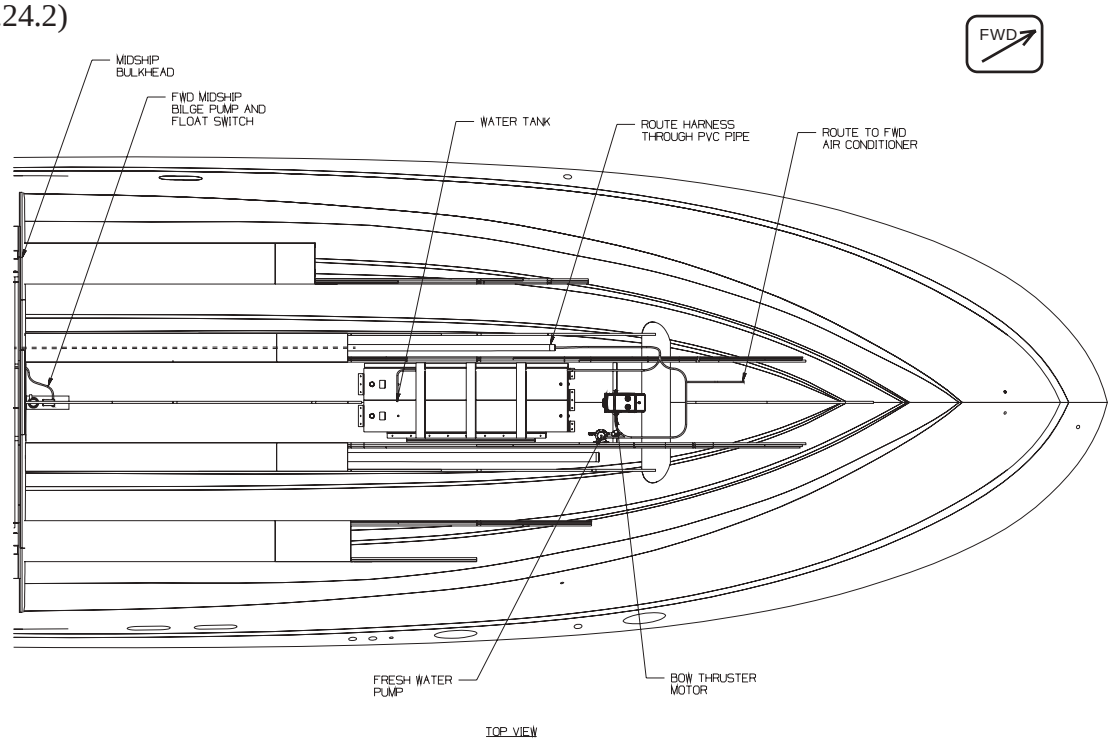
AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

BILGE HARNESS
(FIG. 6.24.1)



DRAWING NO. 09-801 (1 OF 5)

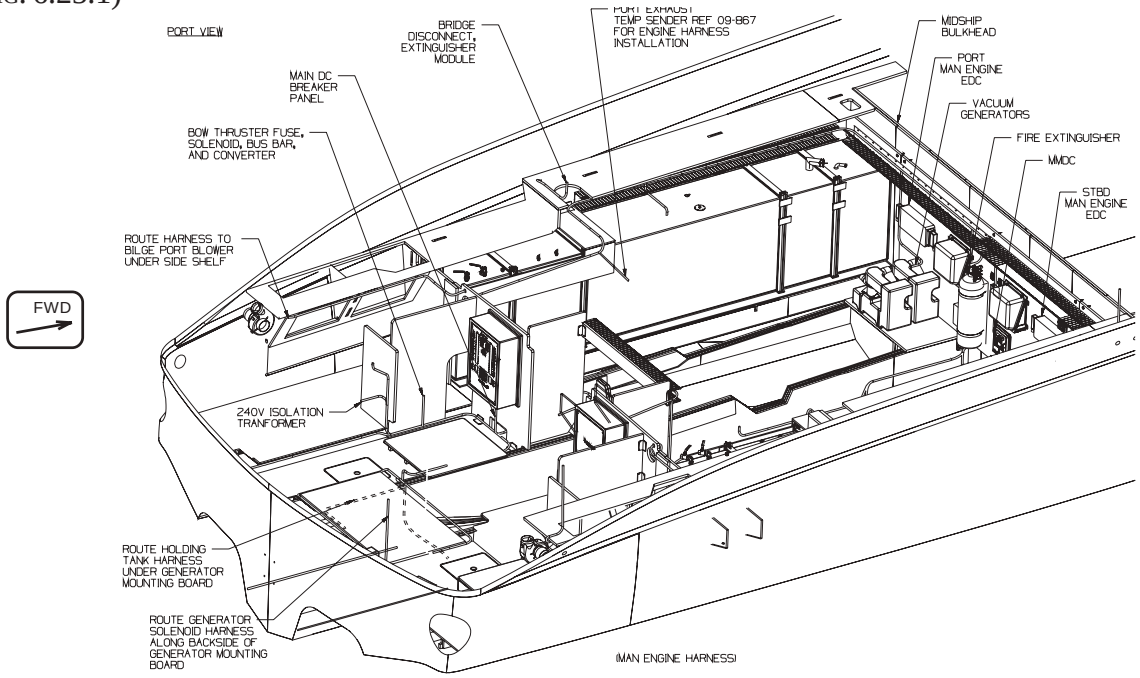
BILGE HARNESS
(FIG. 6.24.2)



DRAWING NO. 09-801 (2 OF 5)

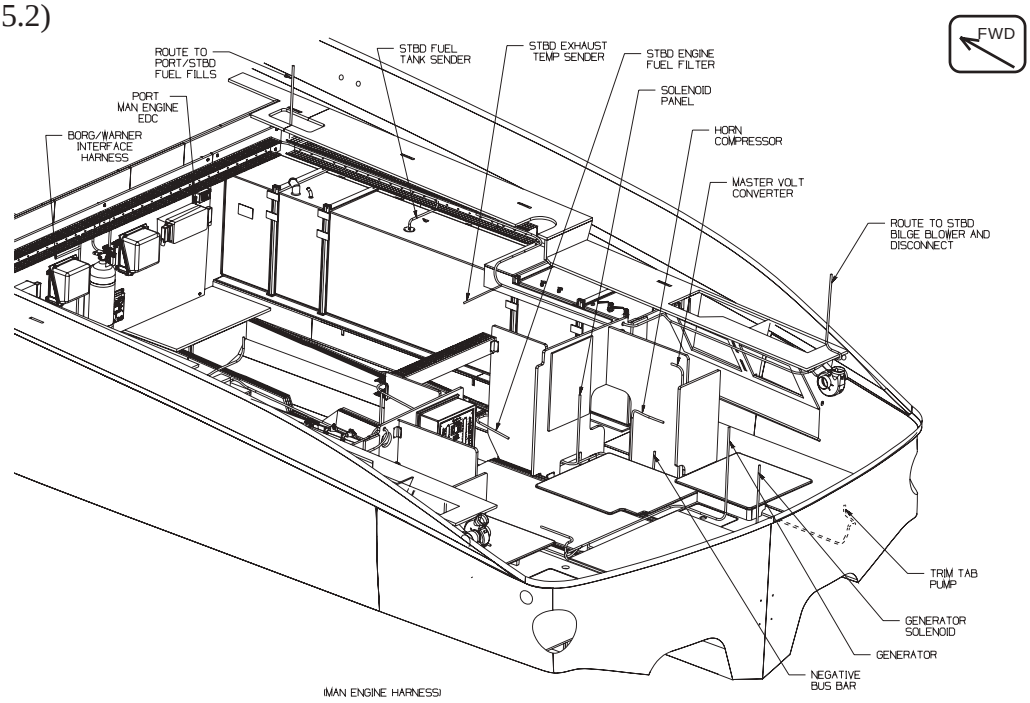
AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

BILGE HARNESS
(FIG. 6.25.1)



DRAWING NO. 09-801 (3 OF 5)

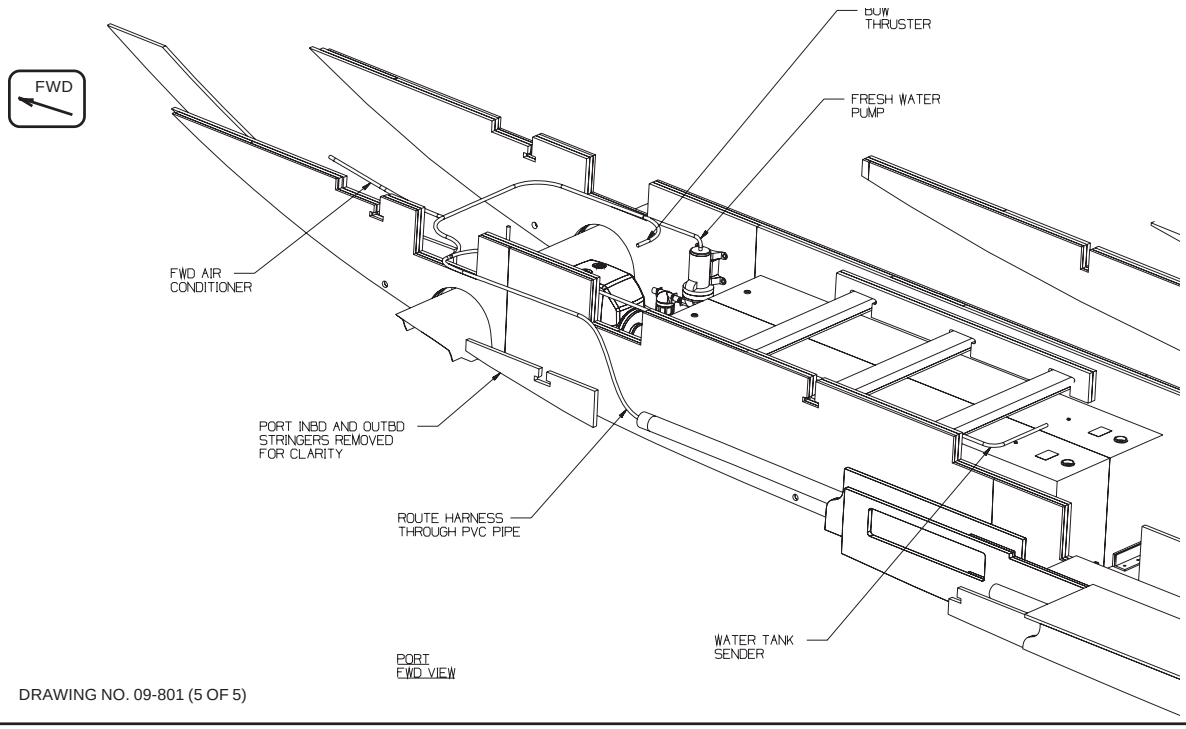
BILGE HARNESS
(FIG. 6.25.2)



DRAWING NO. 09-801 (4 OF 5)

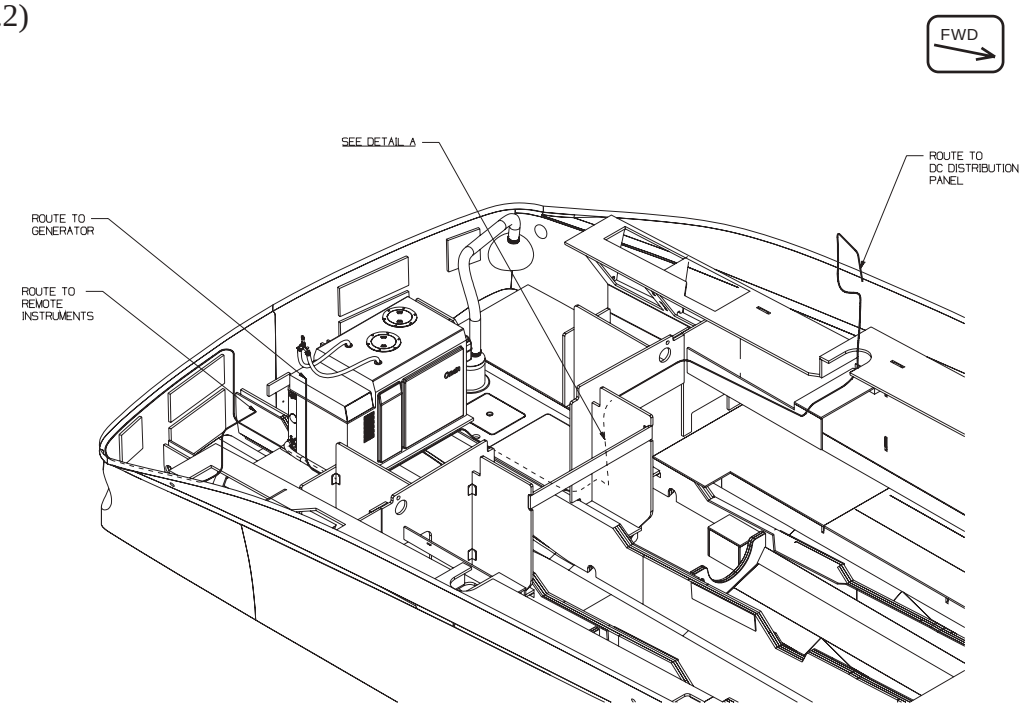
AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

BILGE HARNESS
(FIG. 6.26.1)



DRAWING NO. 09-801 (5 OF 5)

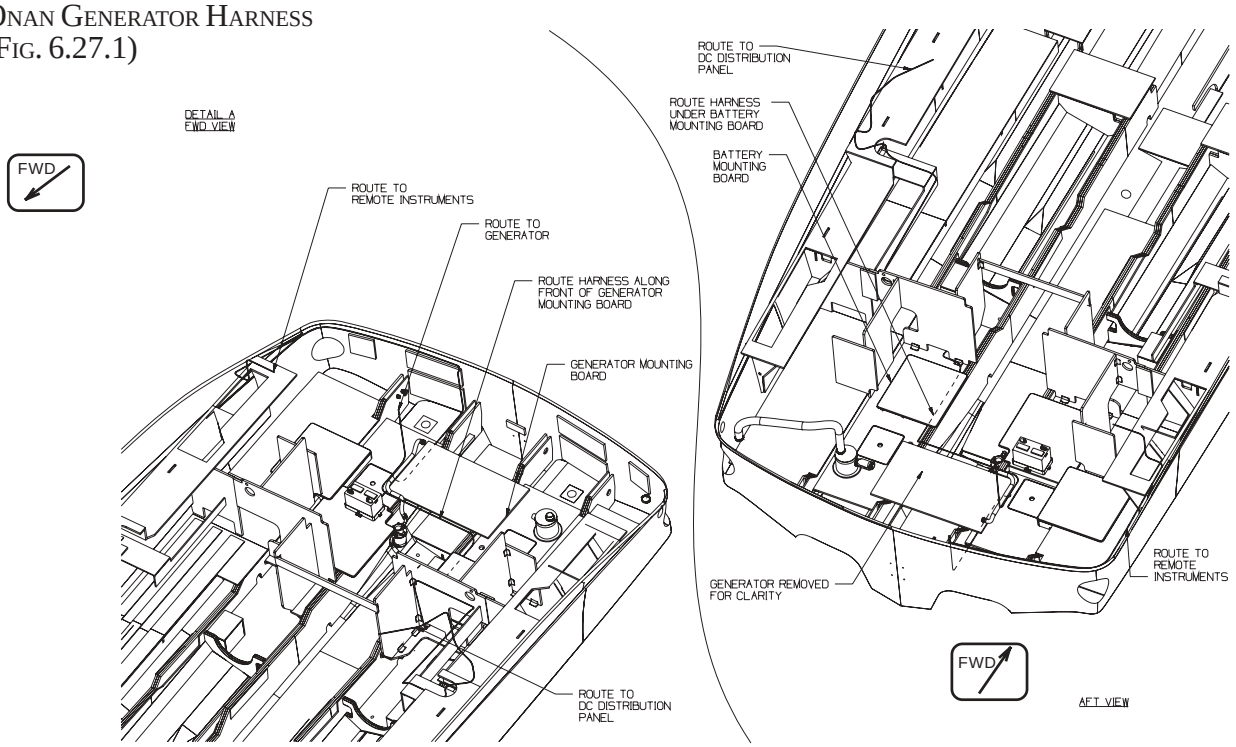
ONAN GENERATOR HARNESS
(FIG. 6.26.2)



DRAWING NO. 09-817 (1 OF 5)

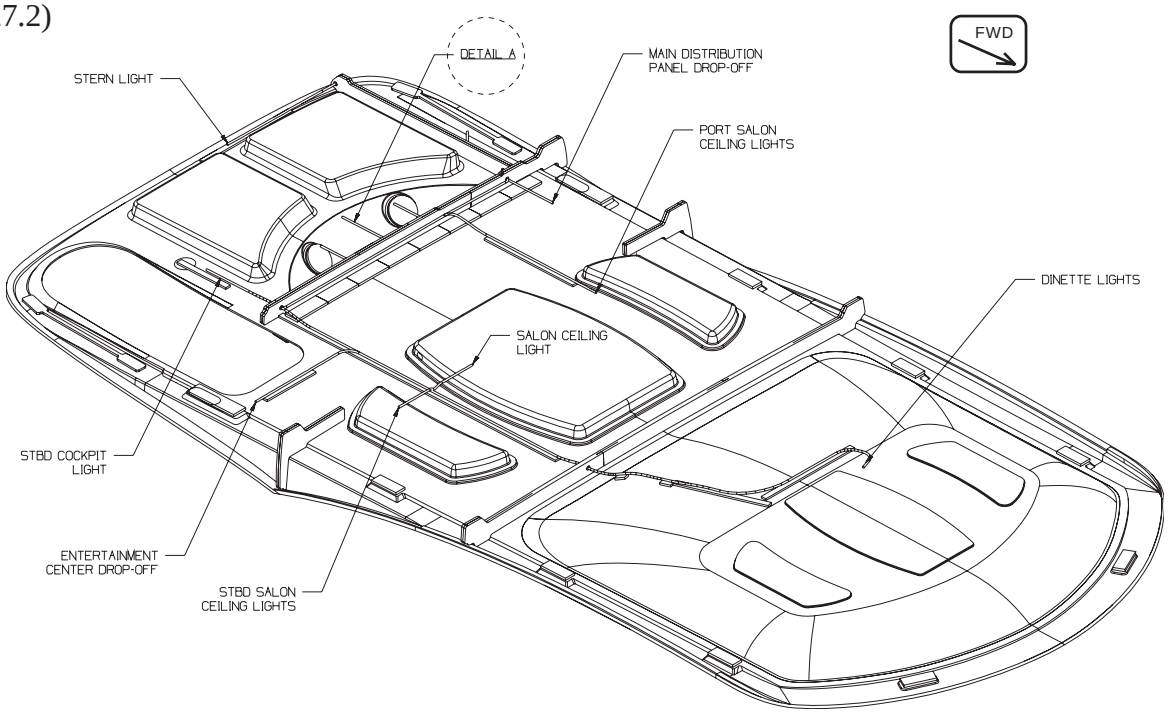
AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

ONAN GENERATOR HARNESS
(FIG. 6.27.1)



DRAWING NO. 09-817 (2 OF 2)

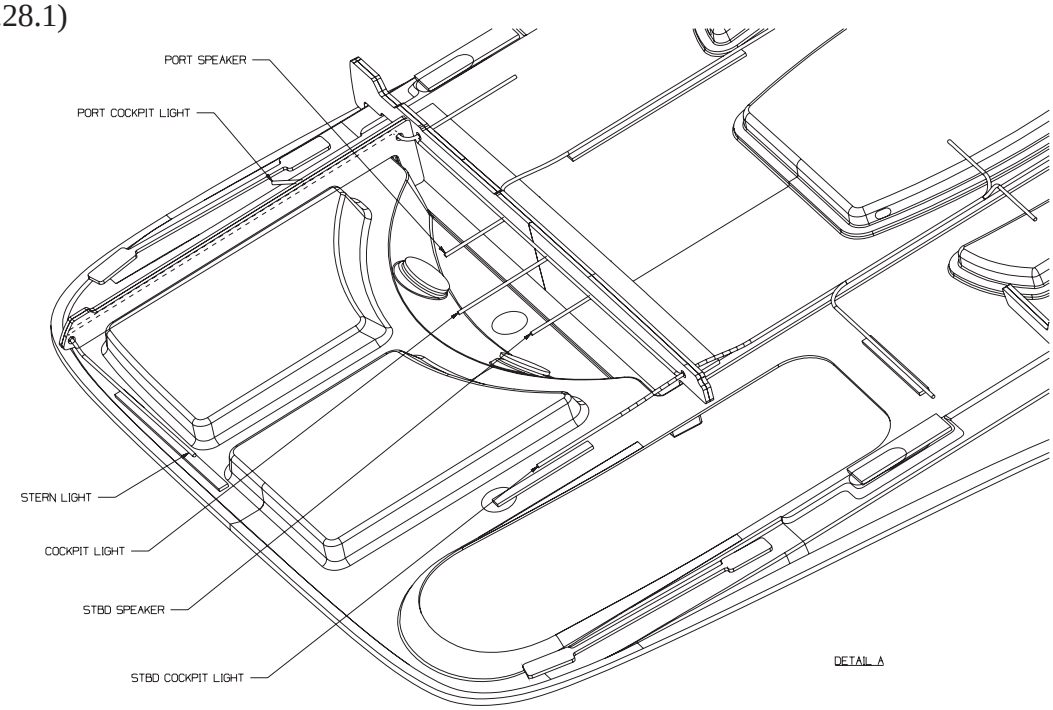
SALON CEILING HARNESS
(FIG. 6.27.2)



DRAWING NO. 09-831 (1 OF 2)

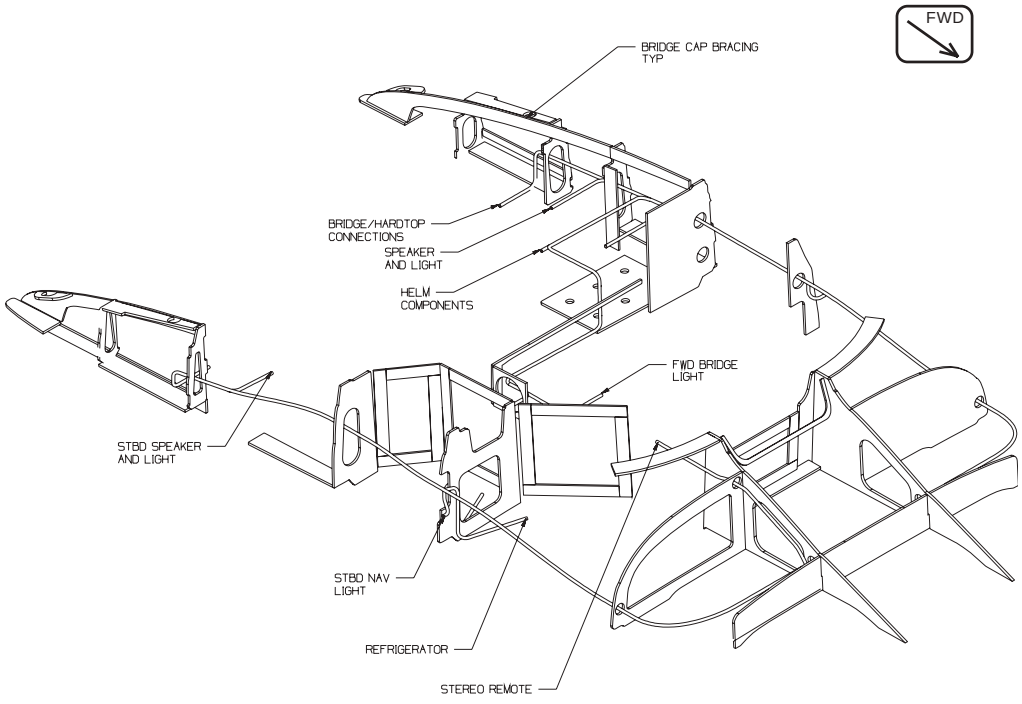
AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

SALON CEILING HARNESS
(FIG. 6.28.1)



DRAWING NO. 09-831 (2 OF 2)

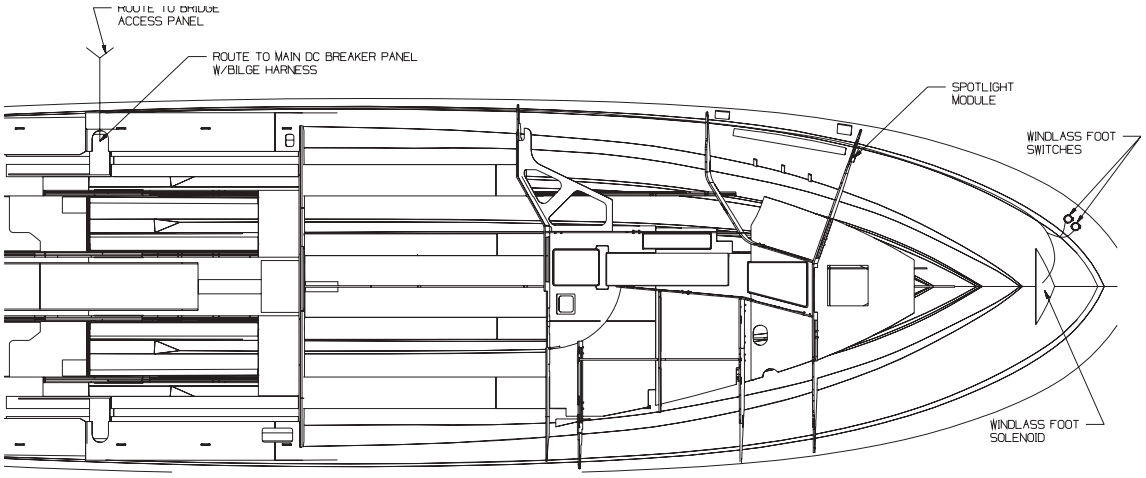
ONAN GENERATOR HARNESS
(FIG. 6.28.2)



DRAWING NO. 09-840 (1 OF 5)

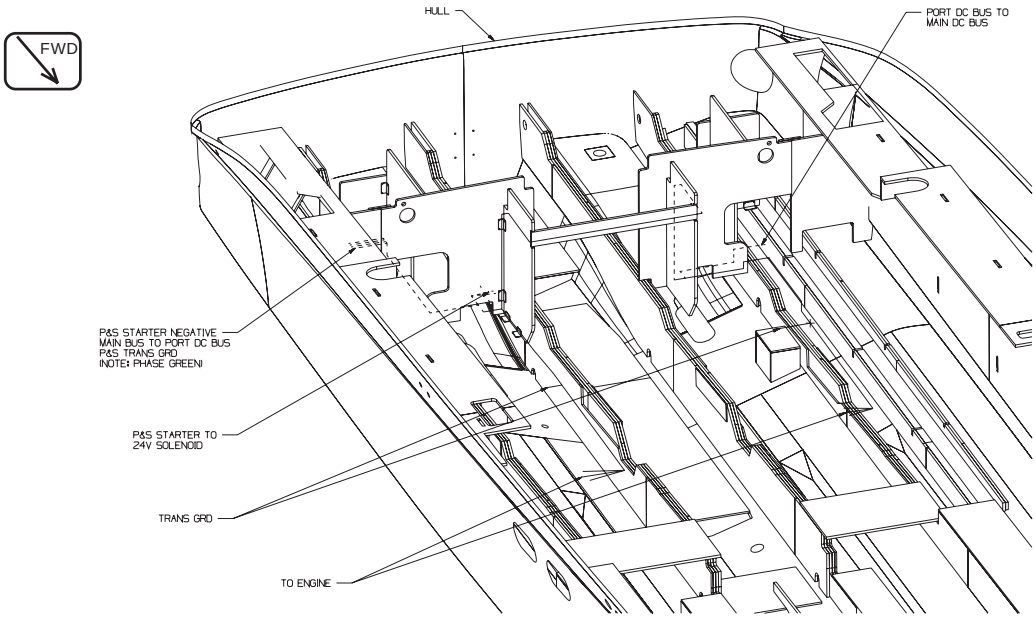
AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

WINDLASS HARNESS
(FIG. 6.29.1)



DRAWING NO. 09-861

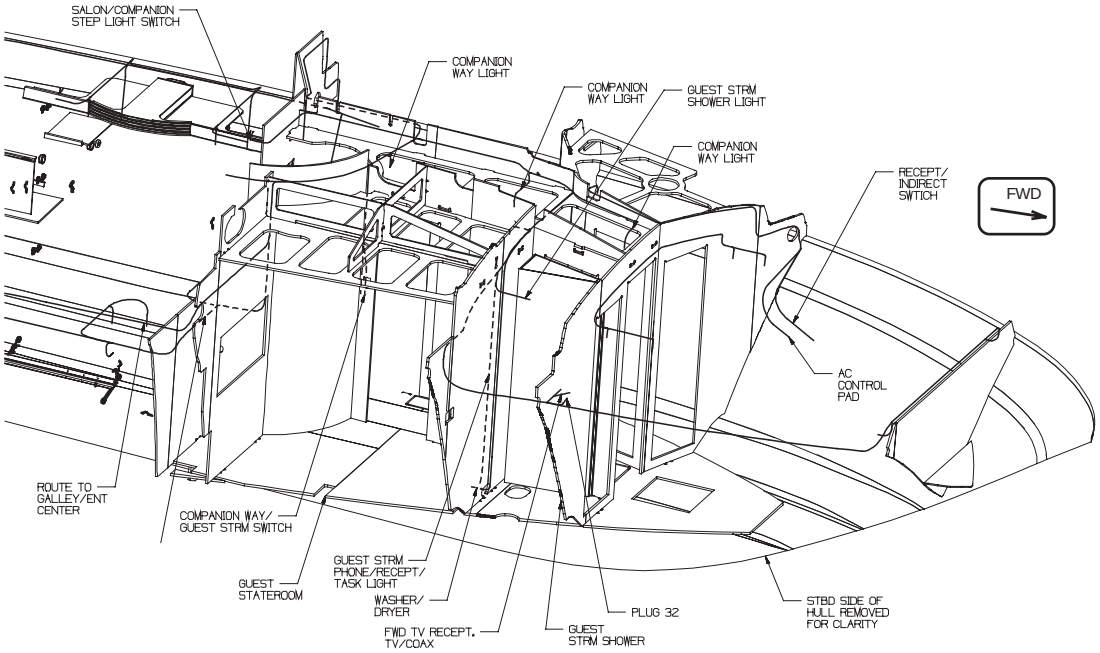
ENGINE HARNESS
(FIG. 6.29.2)



DRAWING NO. 09-867

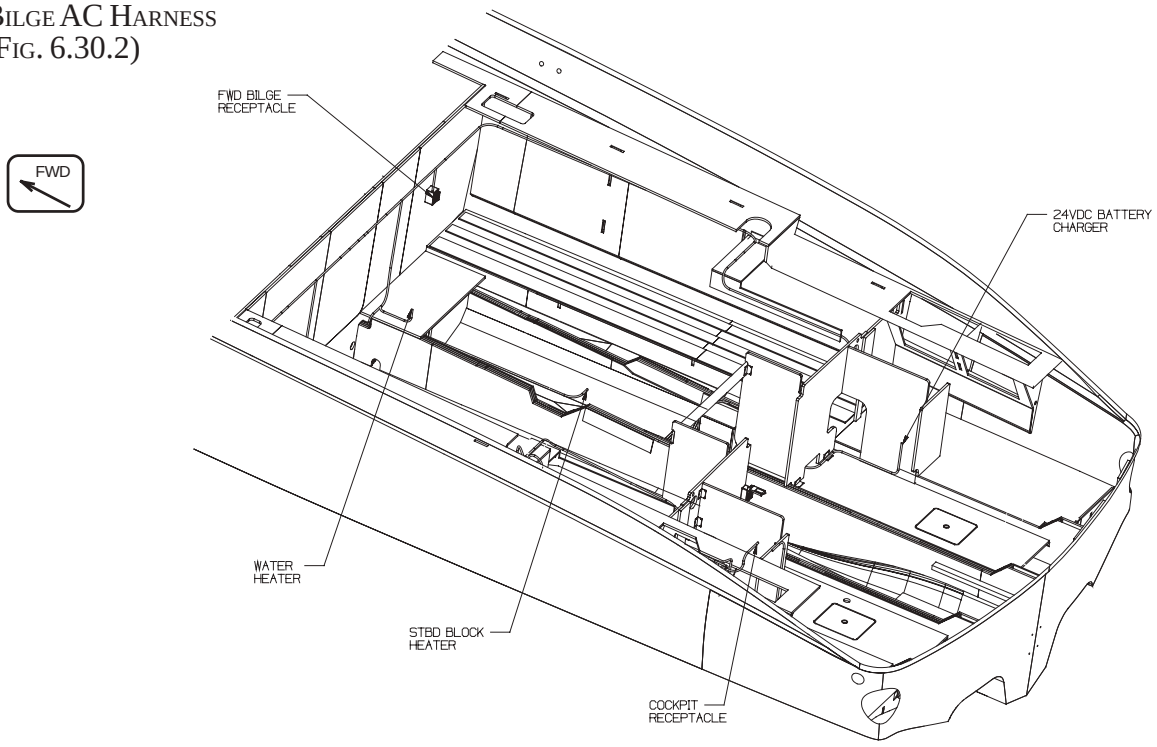
AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

LOWER FORWARD CABIN HARNESS (FIG. 6.30.1)



DRAWING NO. 09-867-2 REV 1

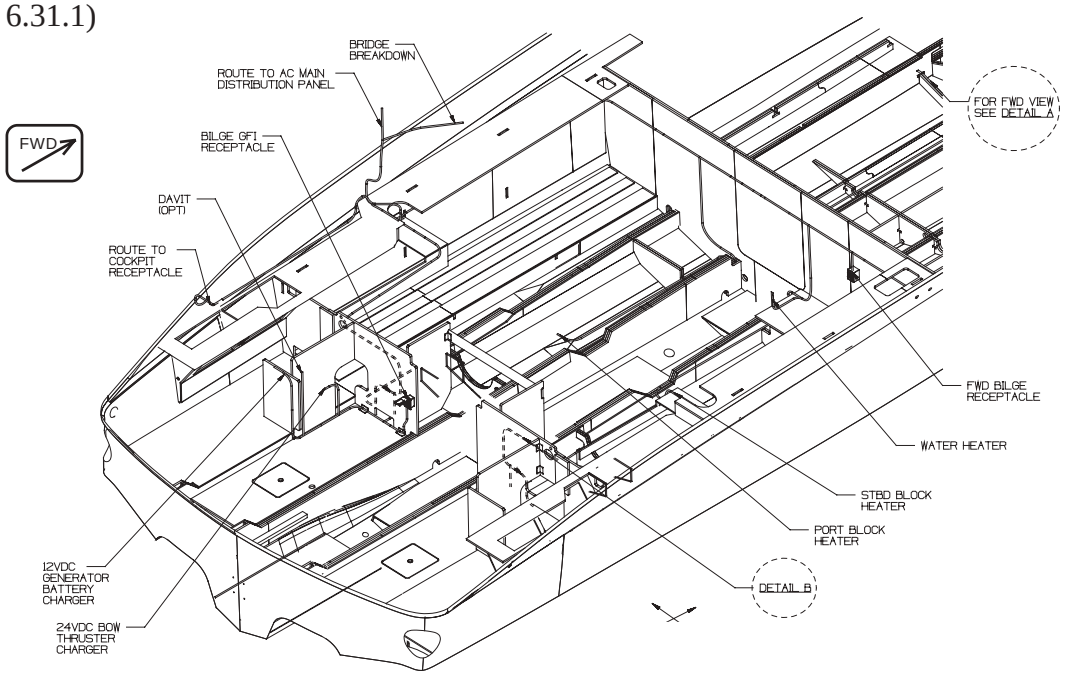
BILGE AC HARNESS (FIG. 6.30.2)



DRAWING NO. 09-873 (1 OF 3)

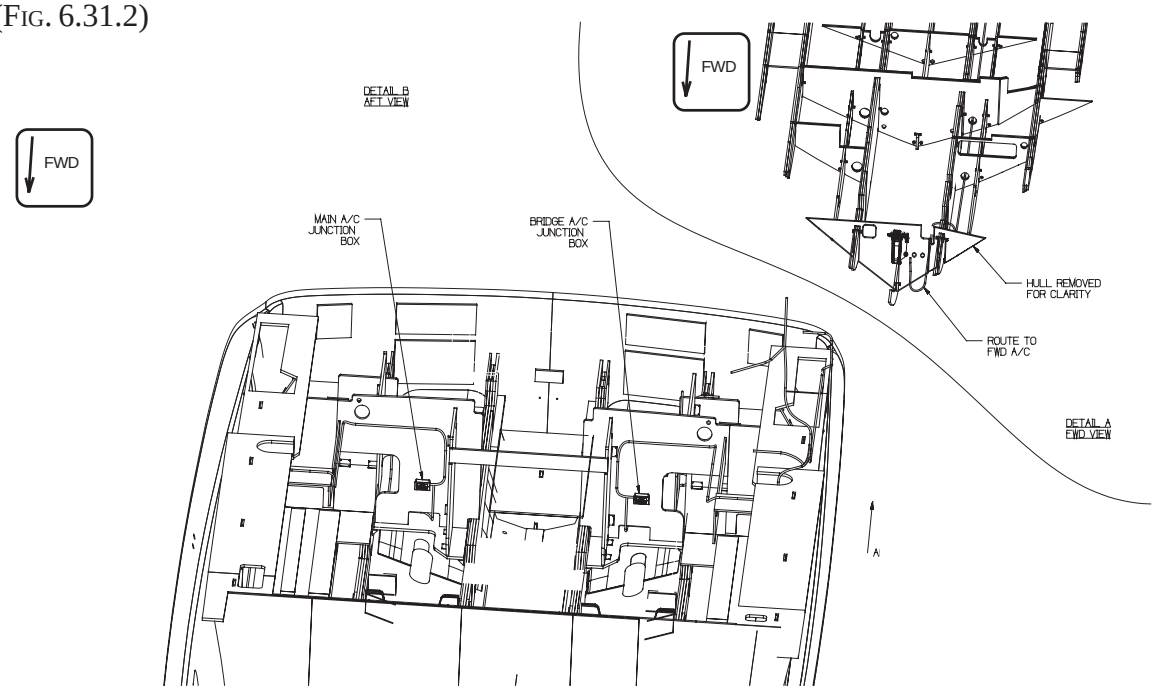
AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

BILGE AC HARNESS
(FIG. 6.31.1)



DRAWING NO. 09-873 (2 OF 3)

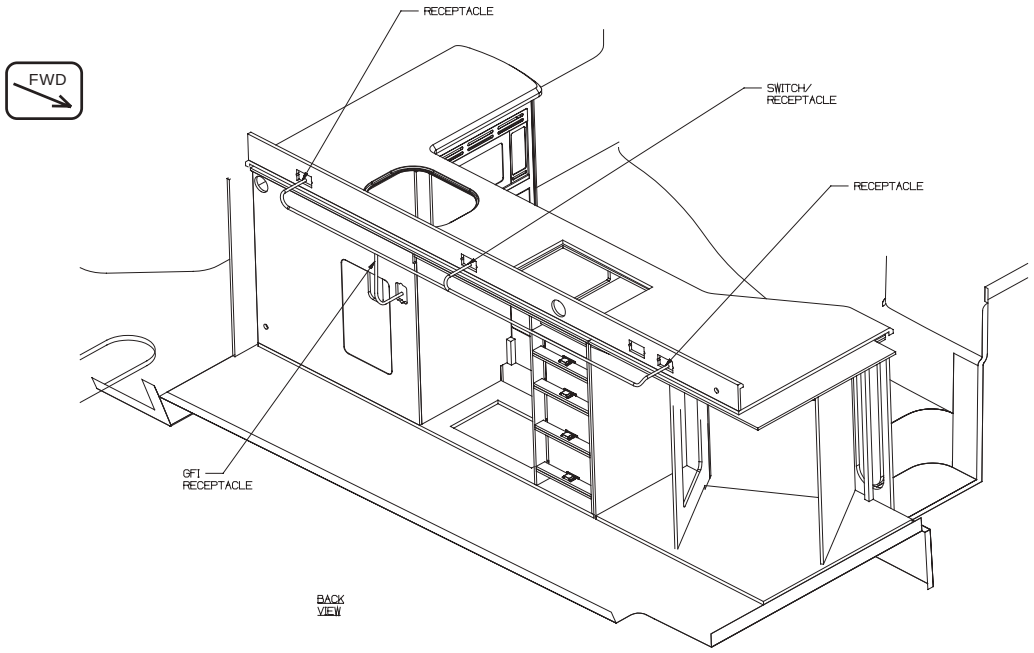
BILGE AC HARNESS
(FIG. 6.31.2)



DRAWING NO. 09-873 (3 OF 3)

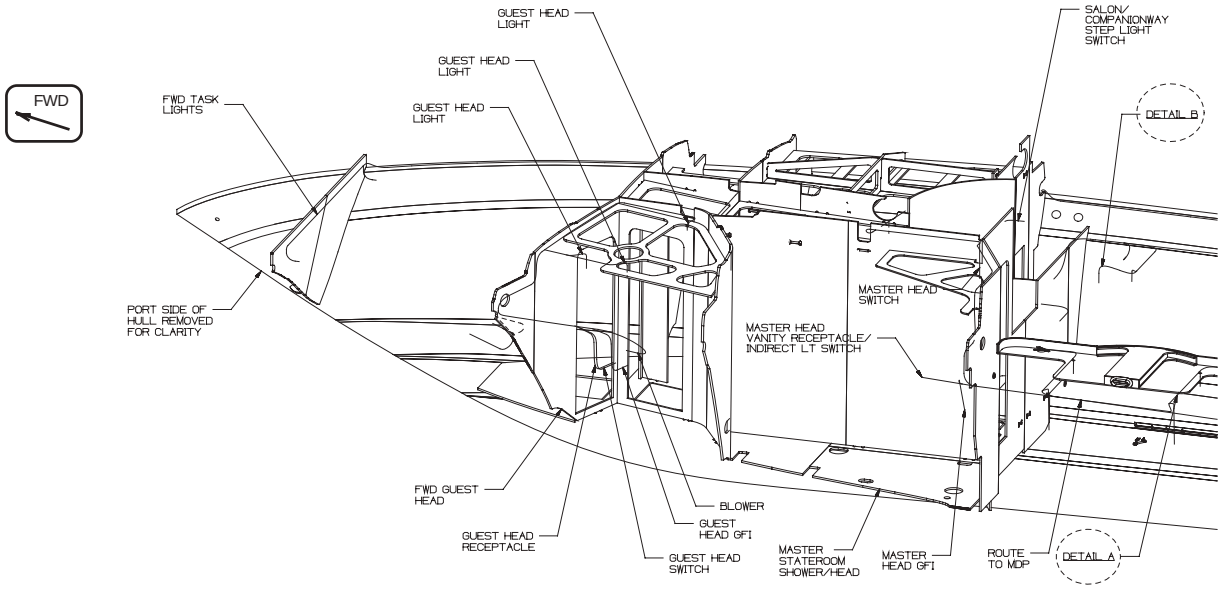
AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

GALLEY AC HARNESS (FIG. 6.32.1)



DRAWING NO. 09-881

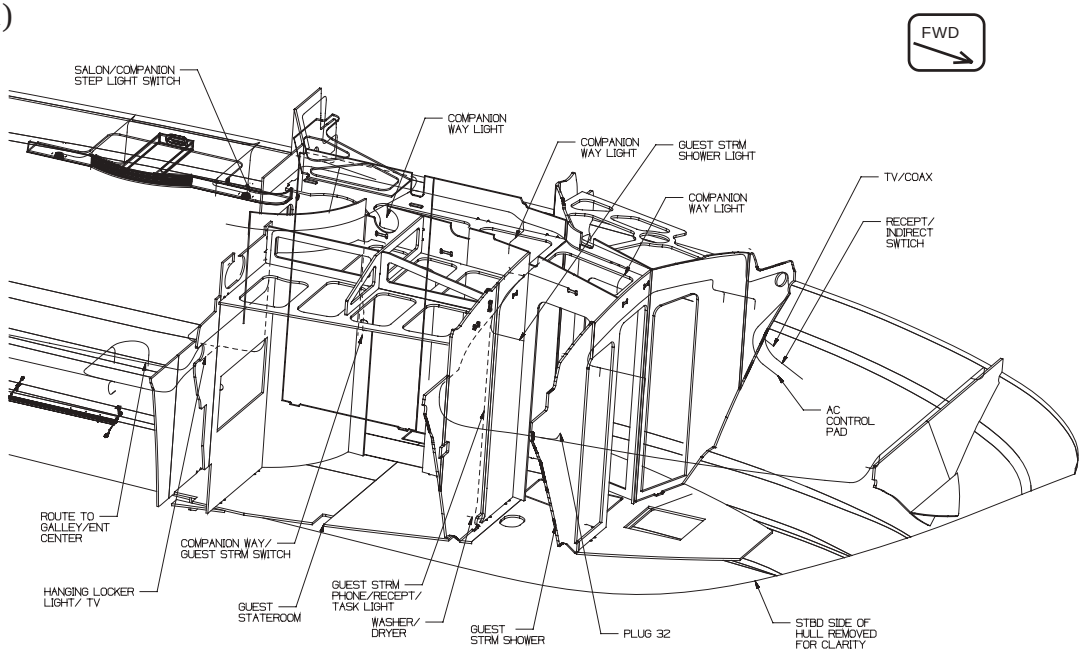
LOWER FORWARD CABIN HARNESS (FIG. 6.32.2)



DRAWING NO. 09-897(1 OF 3)

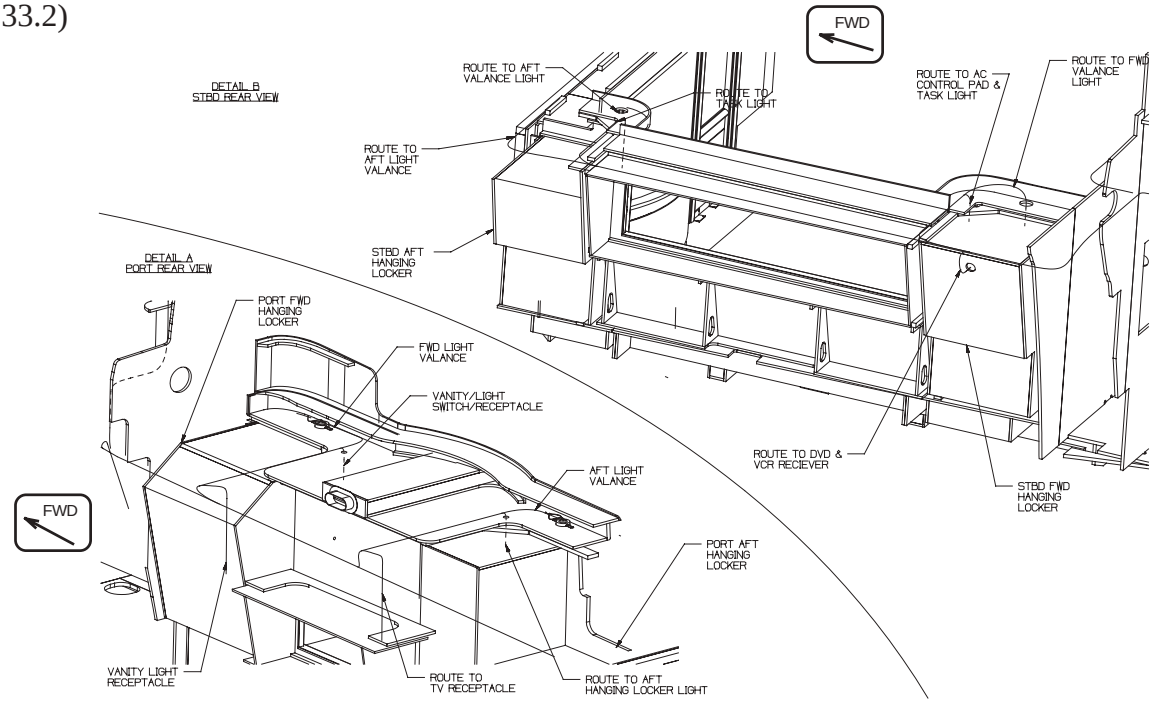
AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

LOWER FORWARD CABIN HARNESS
(FIG. 6.33.1)



DRAWING NO. 09-897 (2 OF 3)

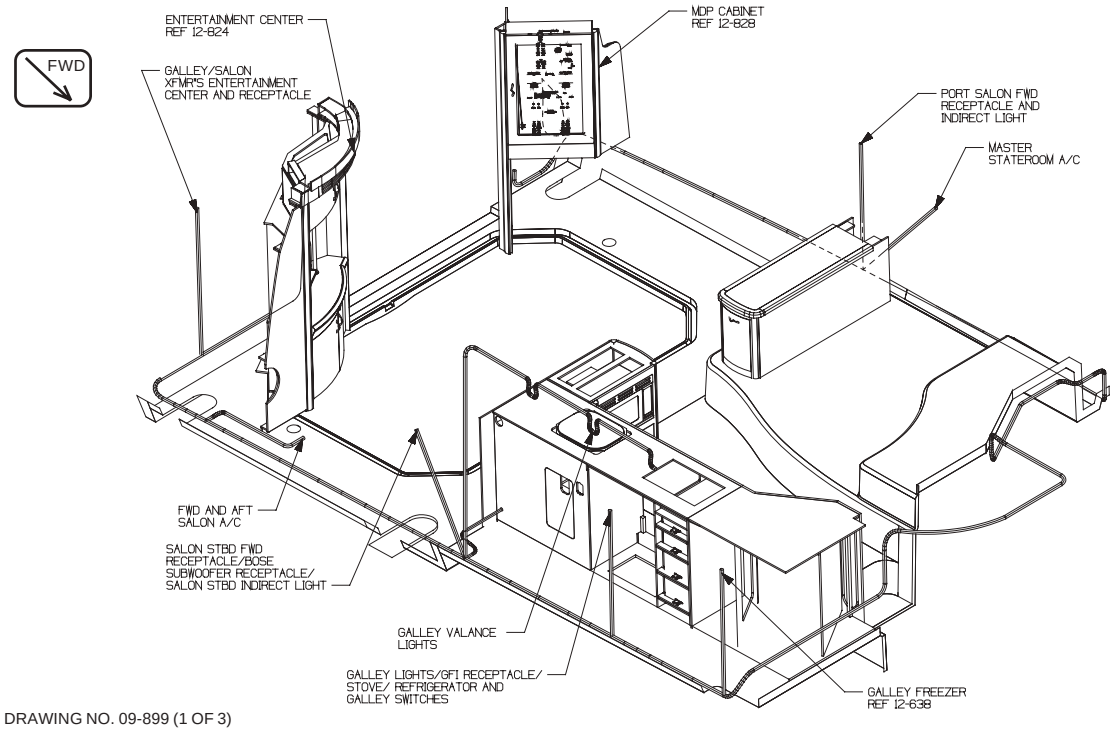
LOWER FORWARD CABIN HARNESS
(FIG. 6.33.2)



DRAWING NO. 09-897(3 OF 3)

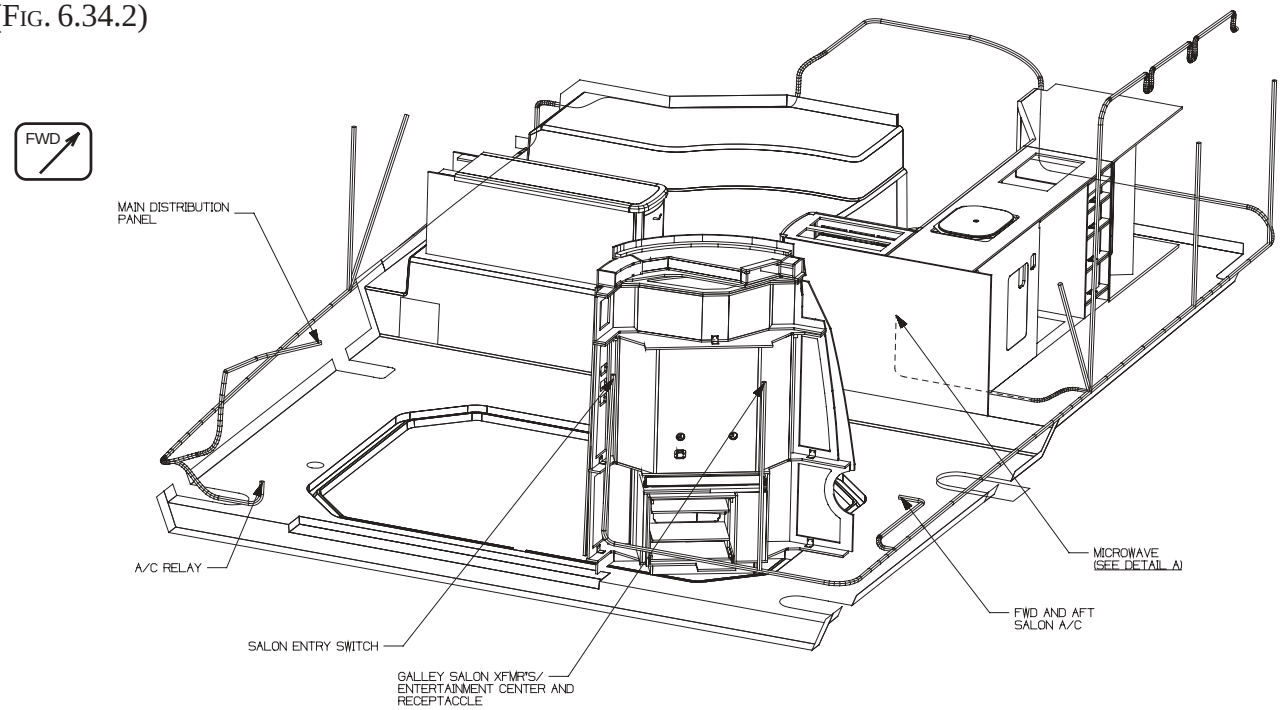
AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

SALON/GALLEY AC HARNESS (FIG. 6.34.1)



DRAWING NO. 09-899 (1 OF 3)

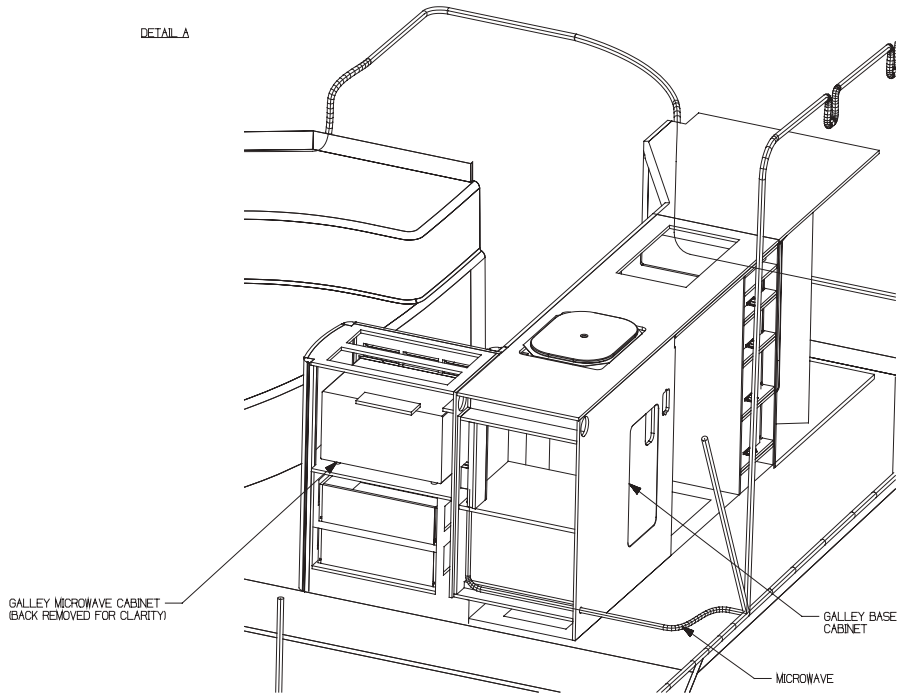
SALON/GALLEY AC HARNESS (FIG. 6.34.2)



DRAWING NO. 09-899(2 OF 3)

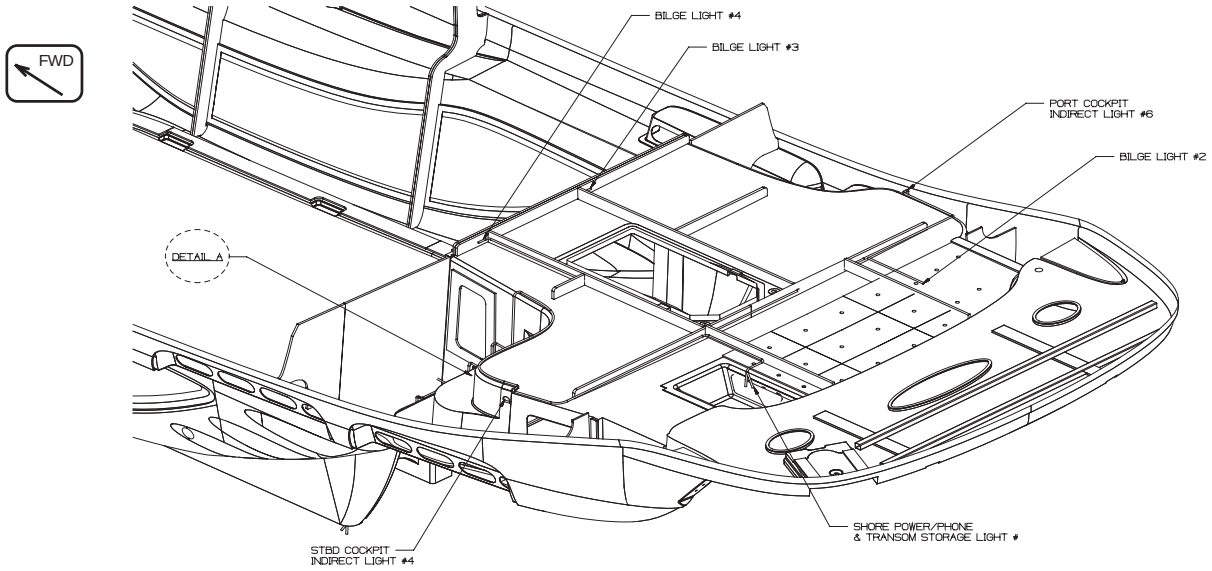
AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

SALON/GALLEY AC HARNESS (FIG. 6.35.1)



DRAWING NO. 09-899 (3 OF 3)

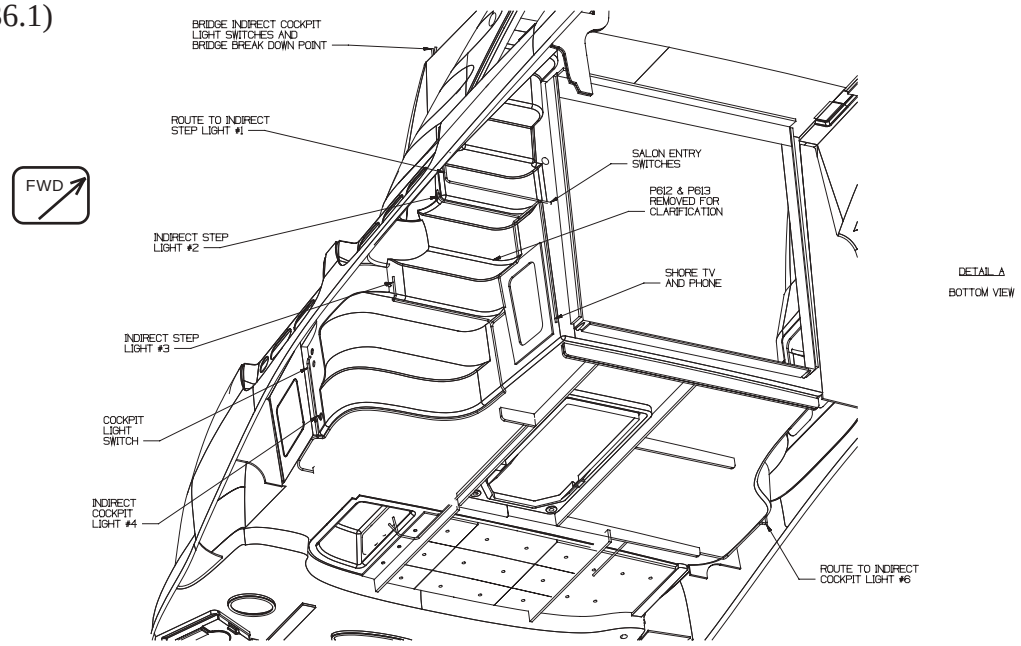
DECK HARNESS (FIG. 6.35.2)



DRAWING NO. 09-907 (1 OF 2)

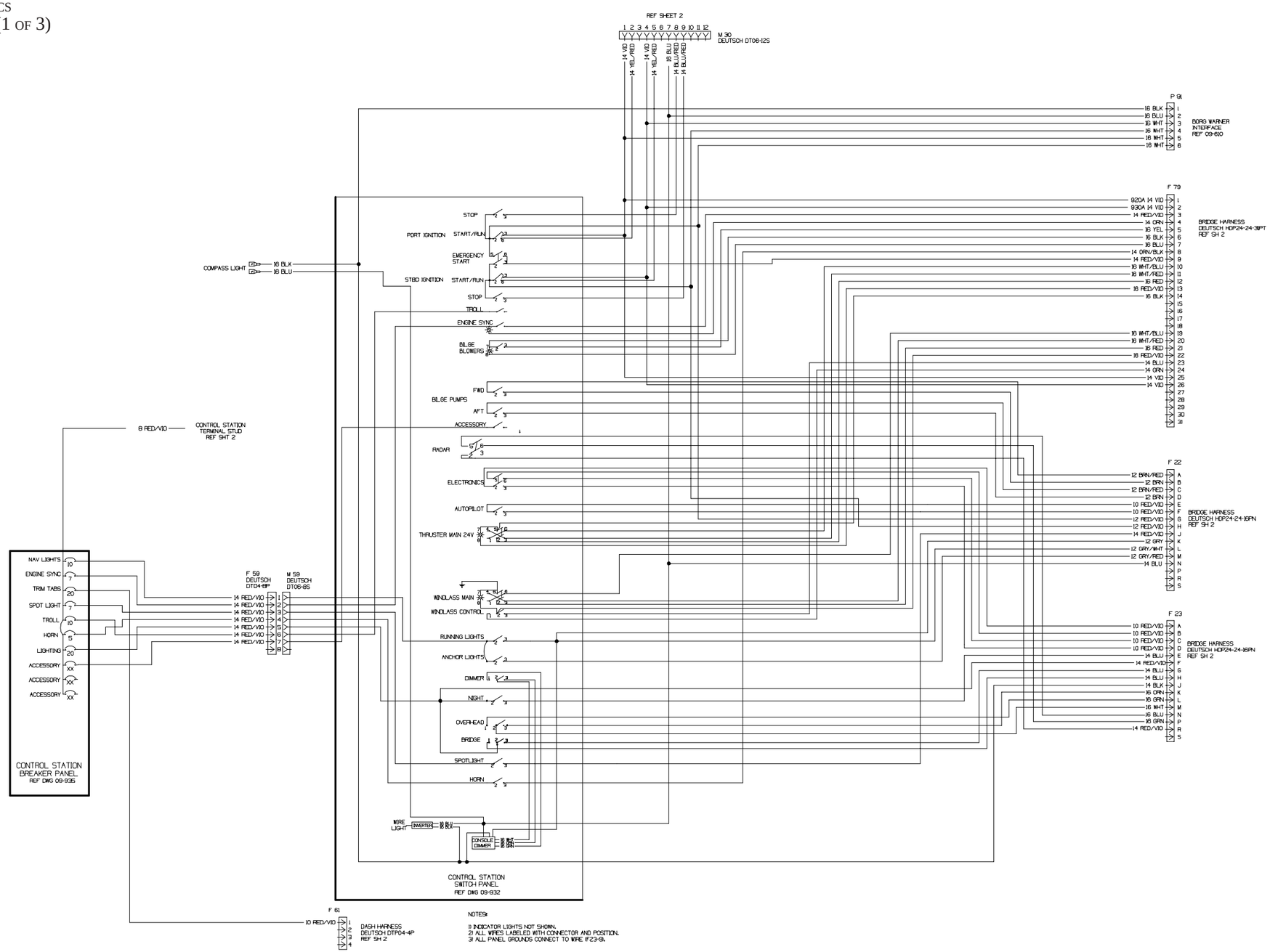
AC & DC ELECTRICAL SCHEMATICS & WIRING HARNESSES

DECK HARNESS
(FIG. 6.36.1)



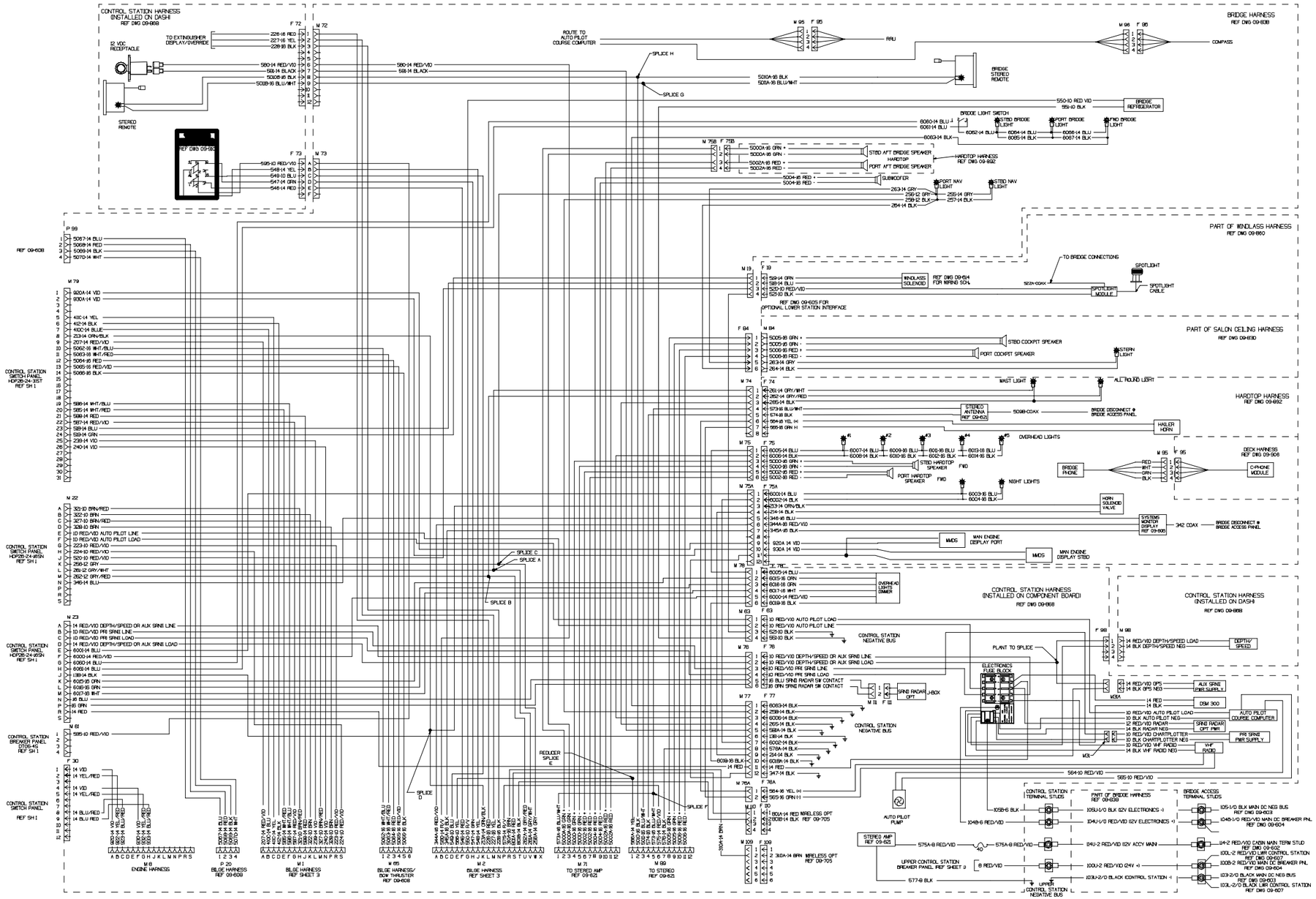
DRAWING NO. 09-907 (2 OF 2)

DC Wiring Schematics
drawing no. 09-601 (1 of 3)
(Fig. 6.37.1)



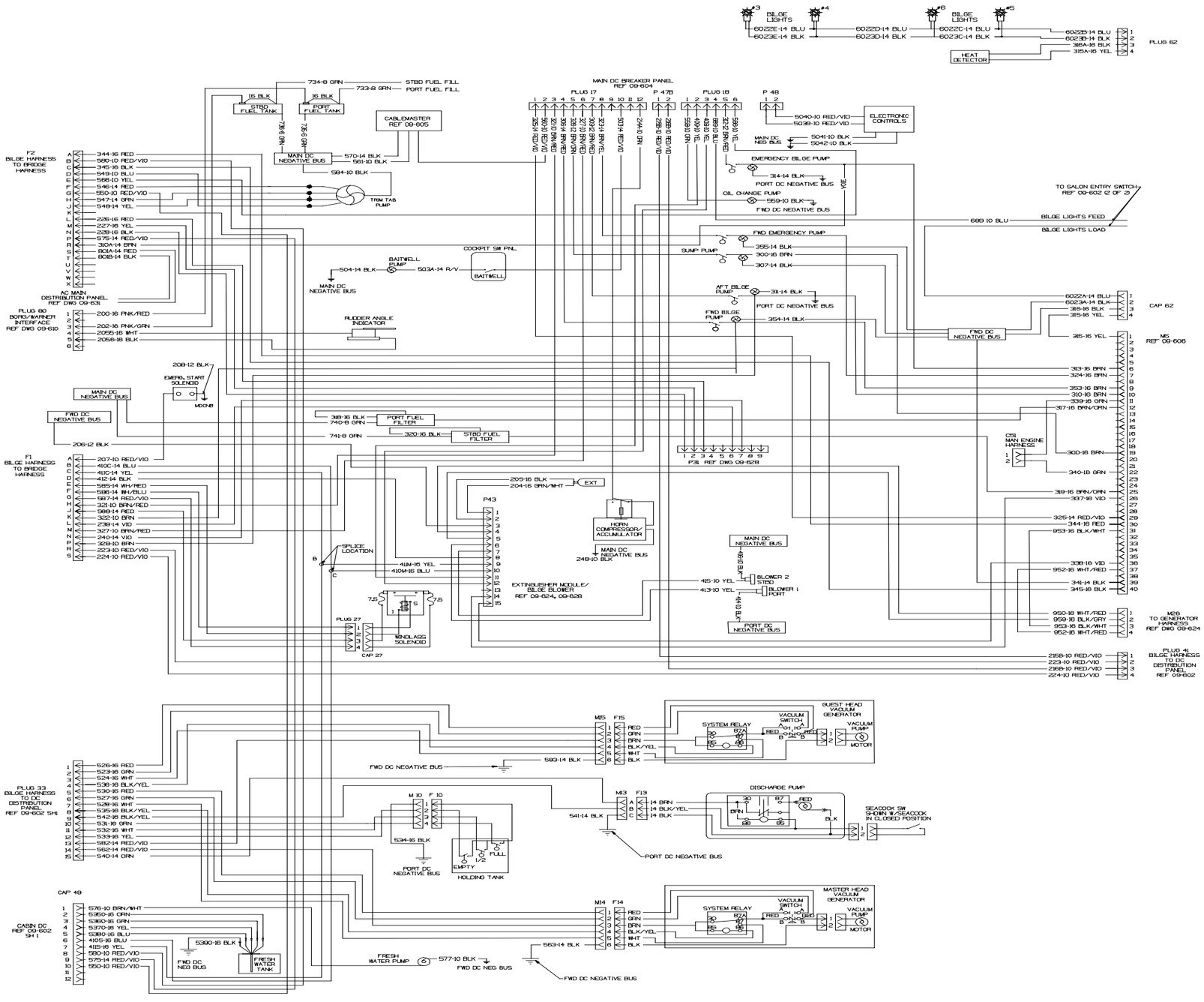
AC & DC Electrical Schematics & Wiring Harnesses (Continued)

DC Wiring Schematics
drawing no. 09-601 (2 of 3)
(Fig. 6.38.1)

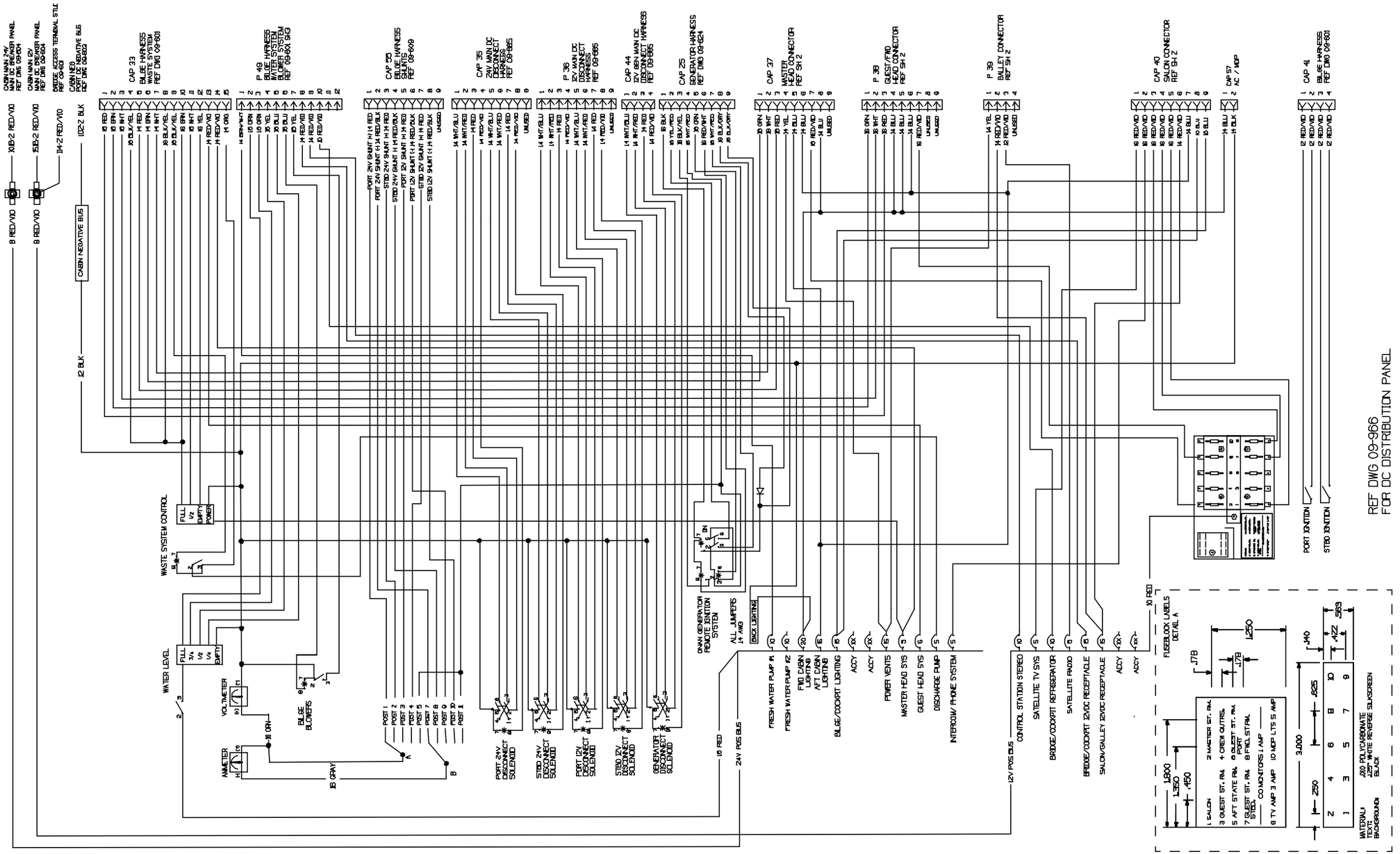


AC & DC Electrical Schematics & Wiring Harnesses (Continued)

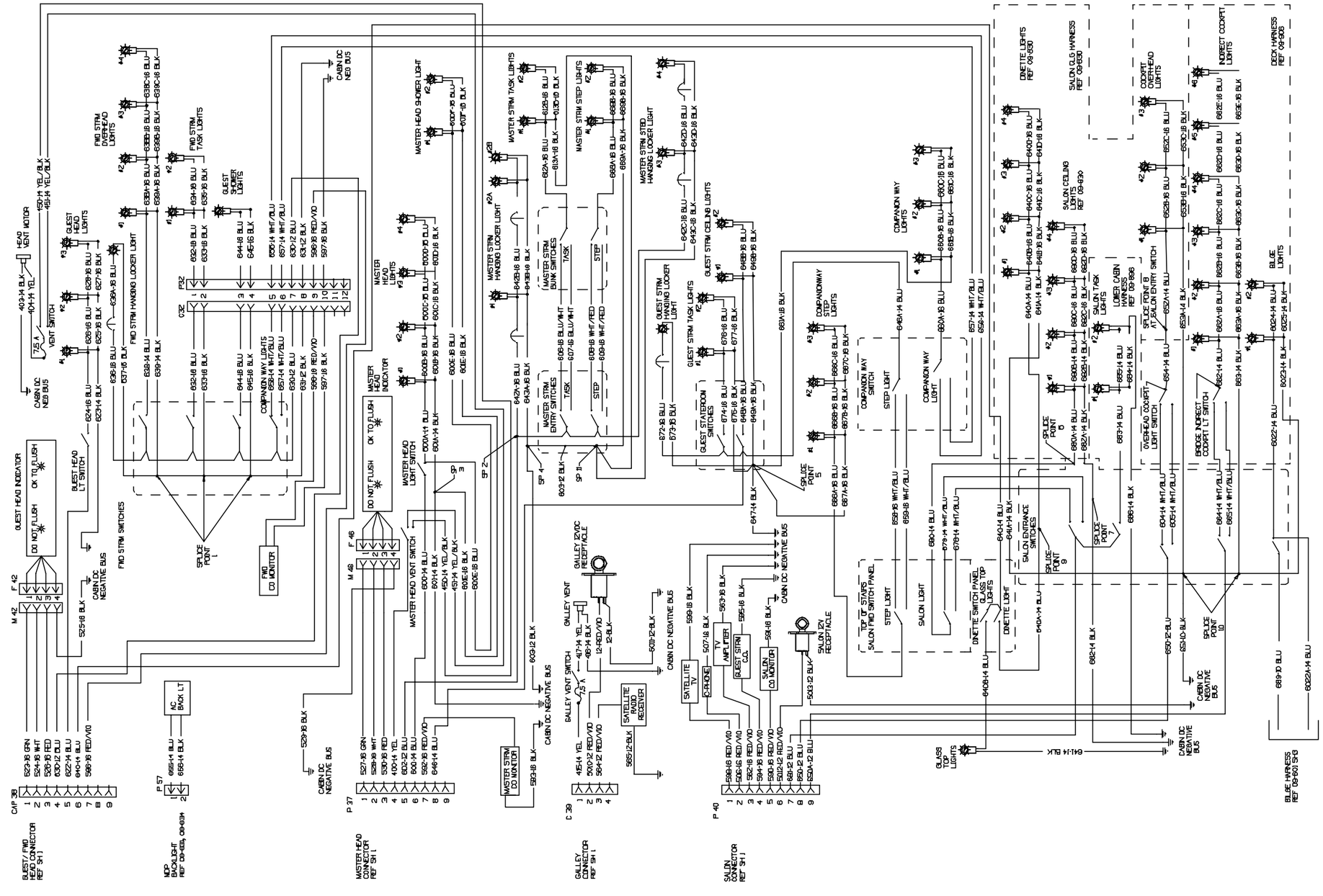
DC Wiring Schematics
drawing no. 09-601 (3 of 3)
(Fig. 6.39.1)



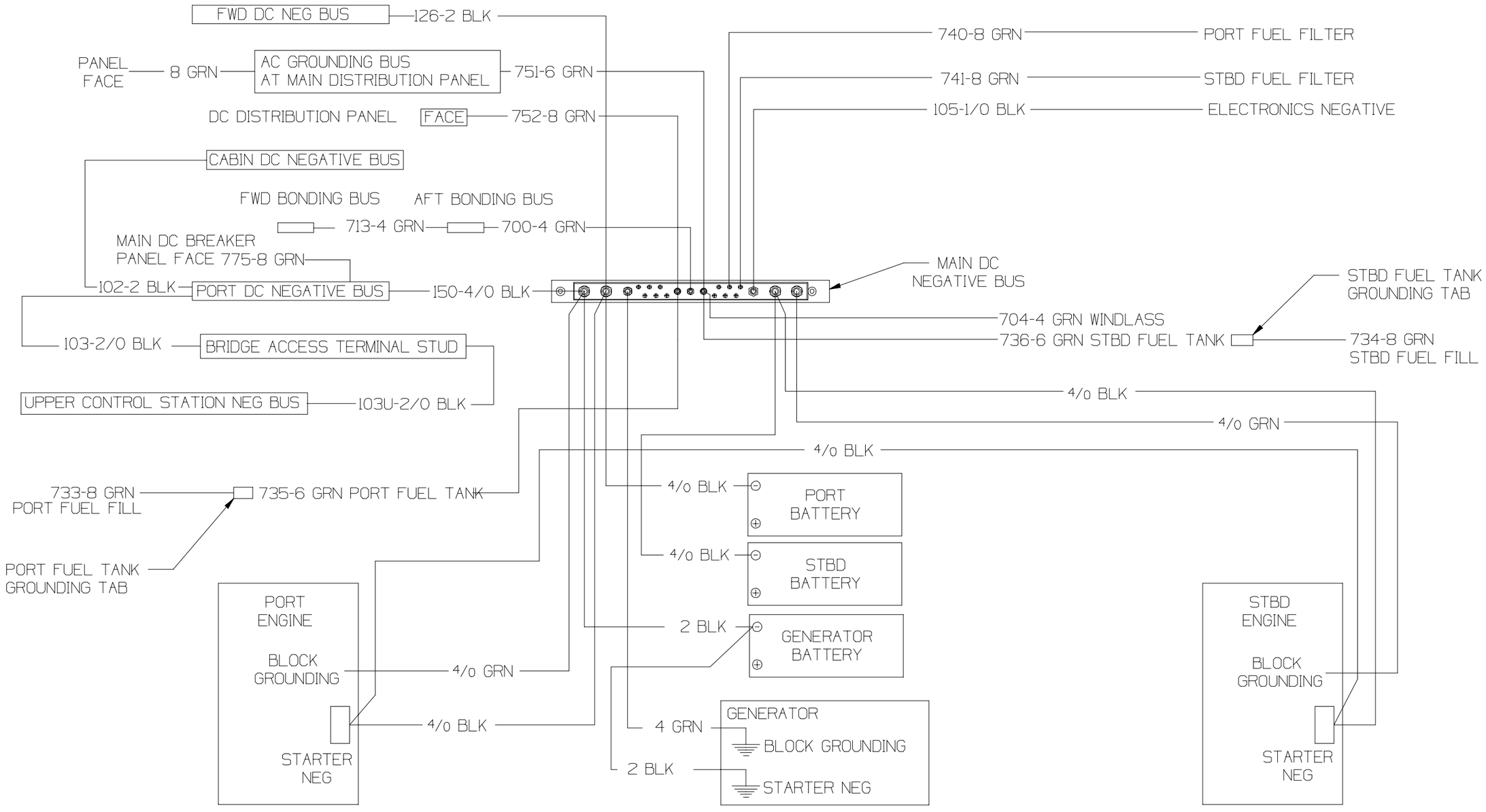
Cabin DC Wiring Schematic
drawing no. 09-602 (1 of 2)
(Fig. 6.40.1)



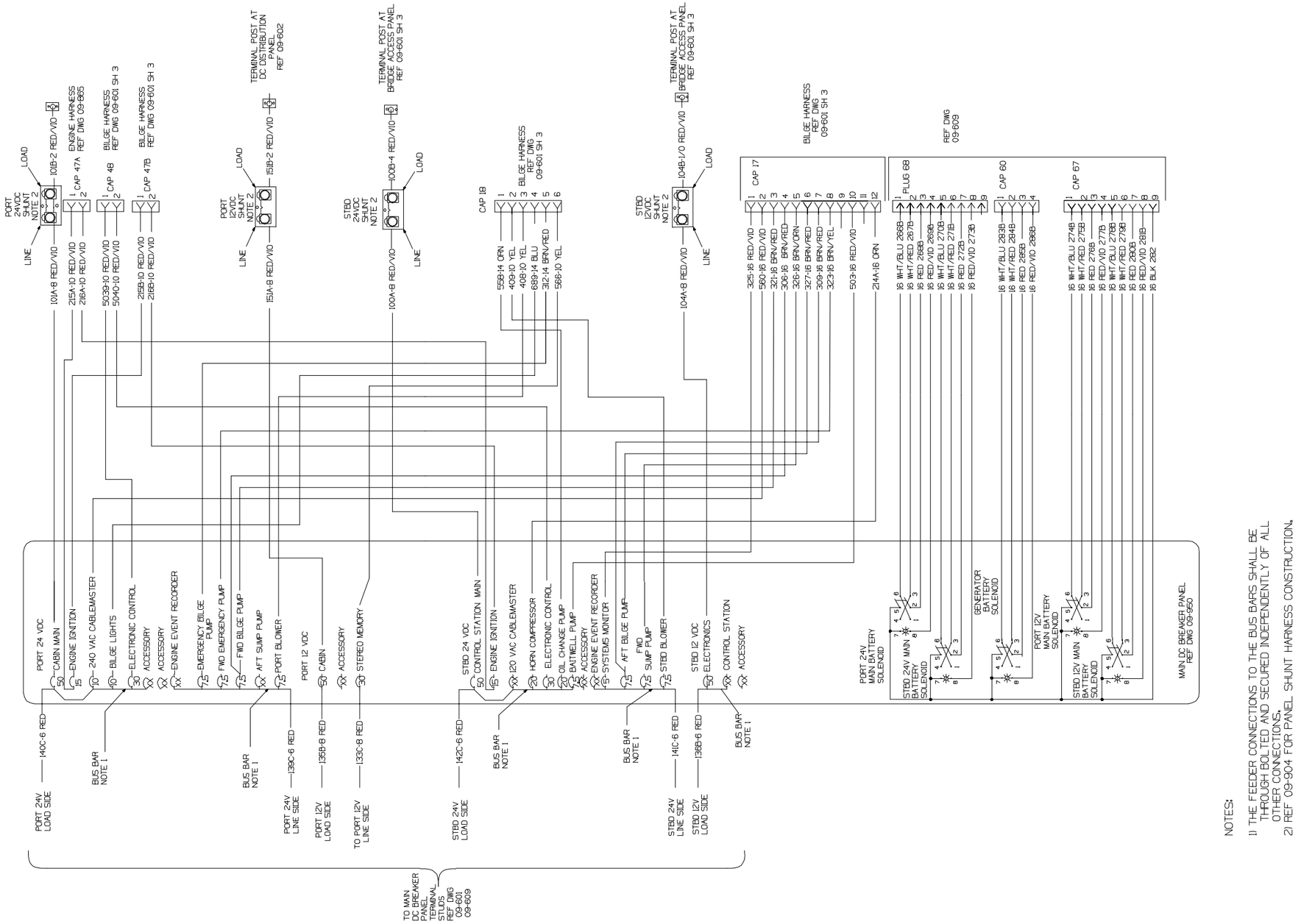
Cabin DC Wiring Schematic
drawing no. 09-602 (2 of 2)
(Fig. 6.41.1)



Main Negative, Grounding and Bonding Schematic
drawing no. 09-603
(Fig. 6.42.1)



Main DC Breaker Panel Wiring Diagram
drawing no. 09-604
(Fig. 6.43.1)



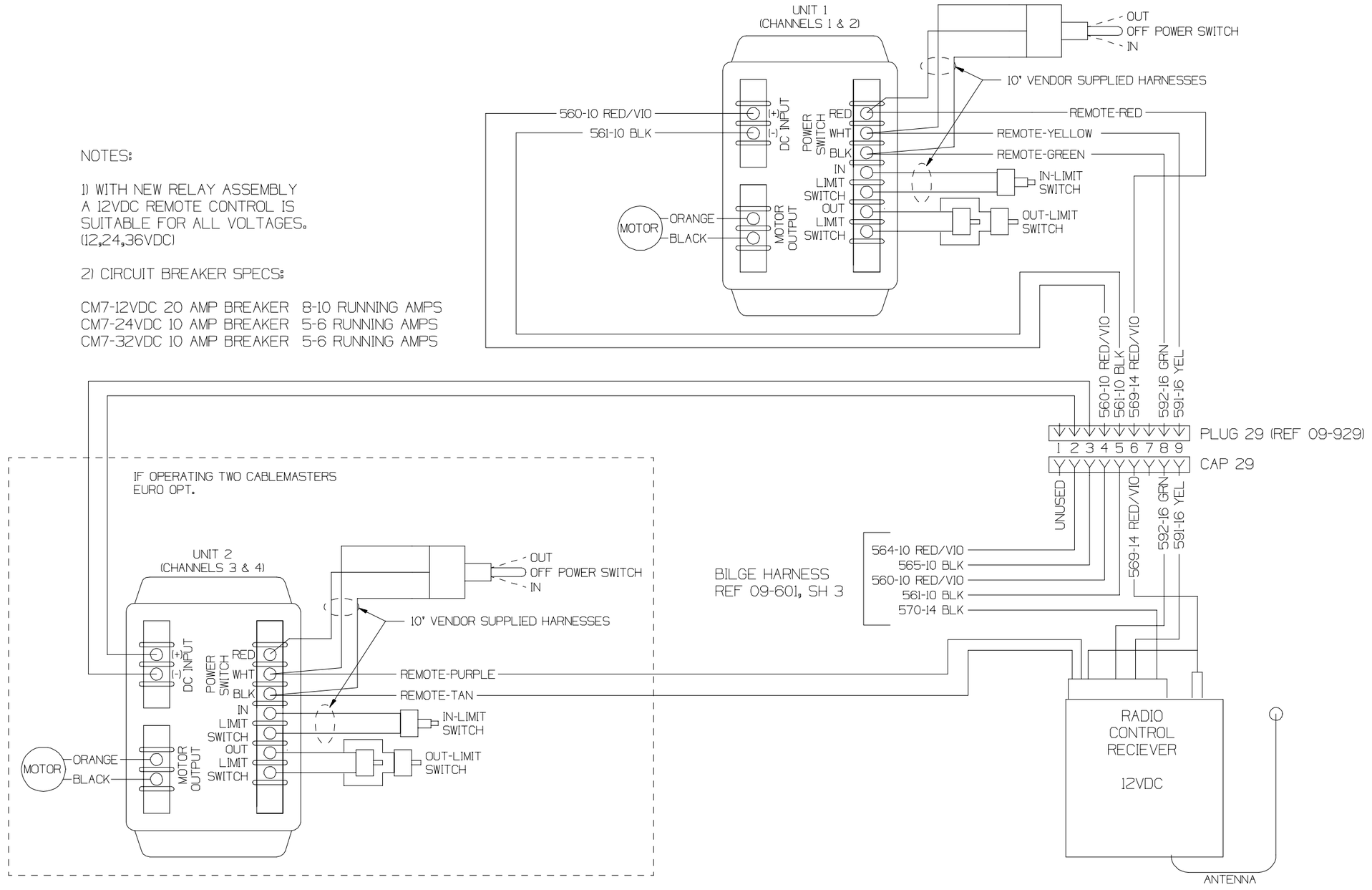
Man Engine Harness Schematic (Optional)
drawing no. 09-605
(Fig. 6.44.1)

NOTES:

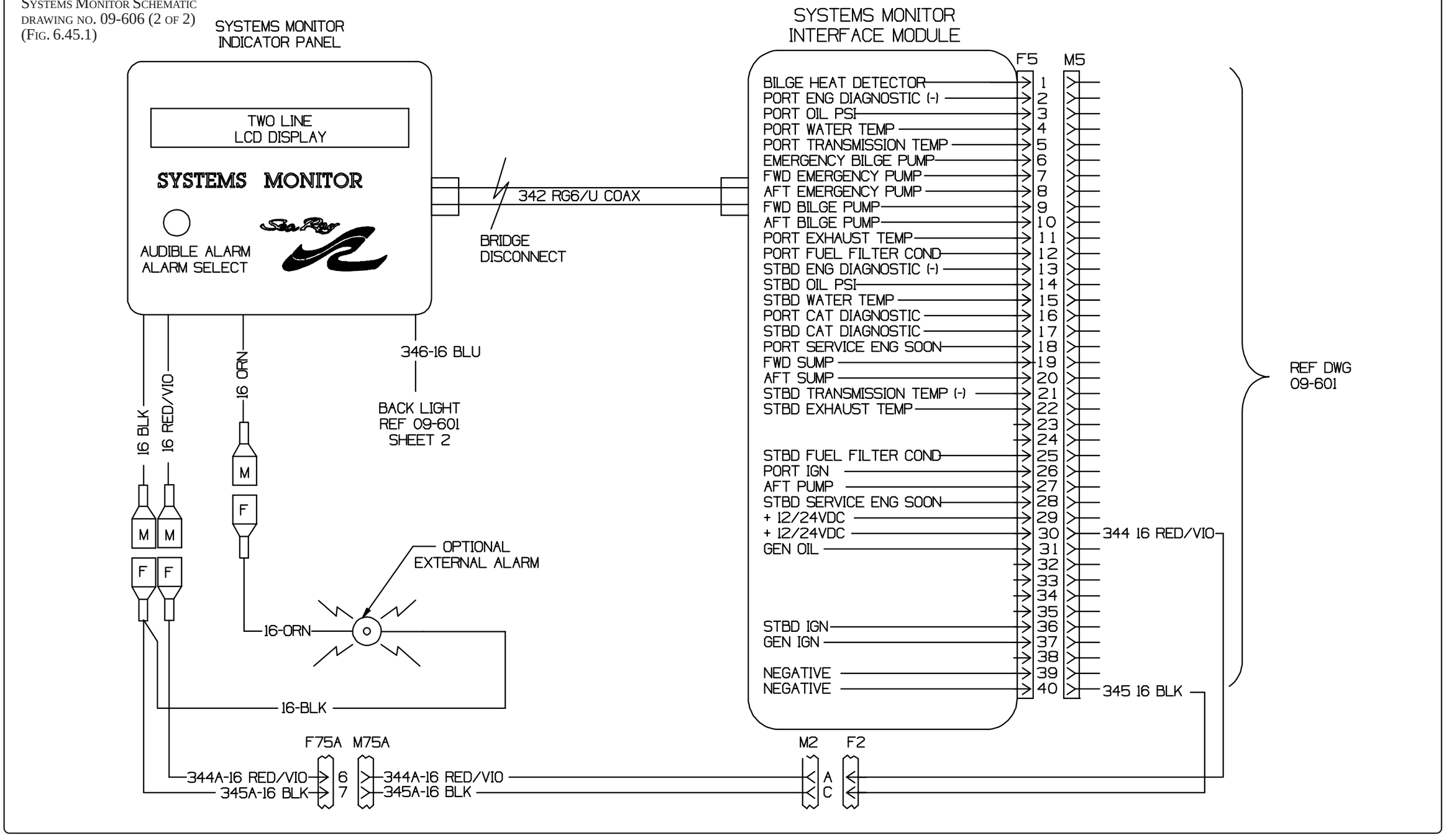
1) WITH NEW RELAY ASSEMBLY
A 12VDC REMOTE CONTROL IS
SUITABLE FOR ALL VOLTAGES.
(12,24,36VDC)

2) CIRCUIT BREAKER SPECS:

CM7-12VDC 20 AMP BREAKER 8-10 RUNNING AMPS
CM7-24VDC 10 AMP BREAKER 5-6 RUNNING AMPS
CM7-32VDC 10 AMP BREAKER 5-6 RUNNING AMPS

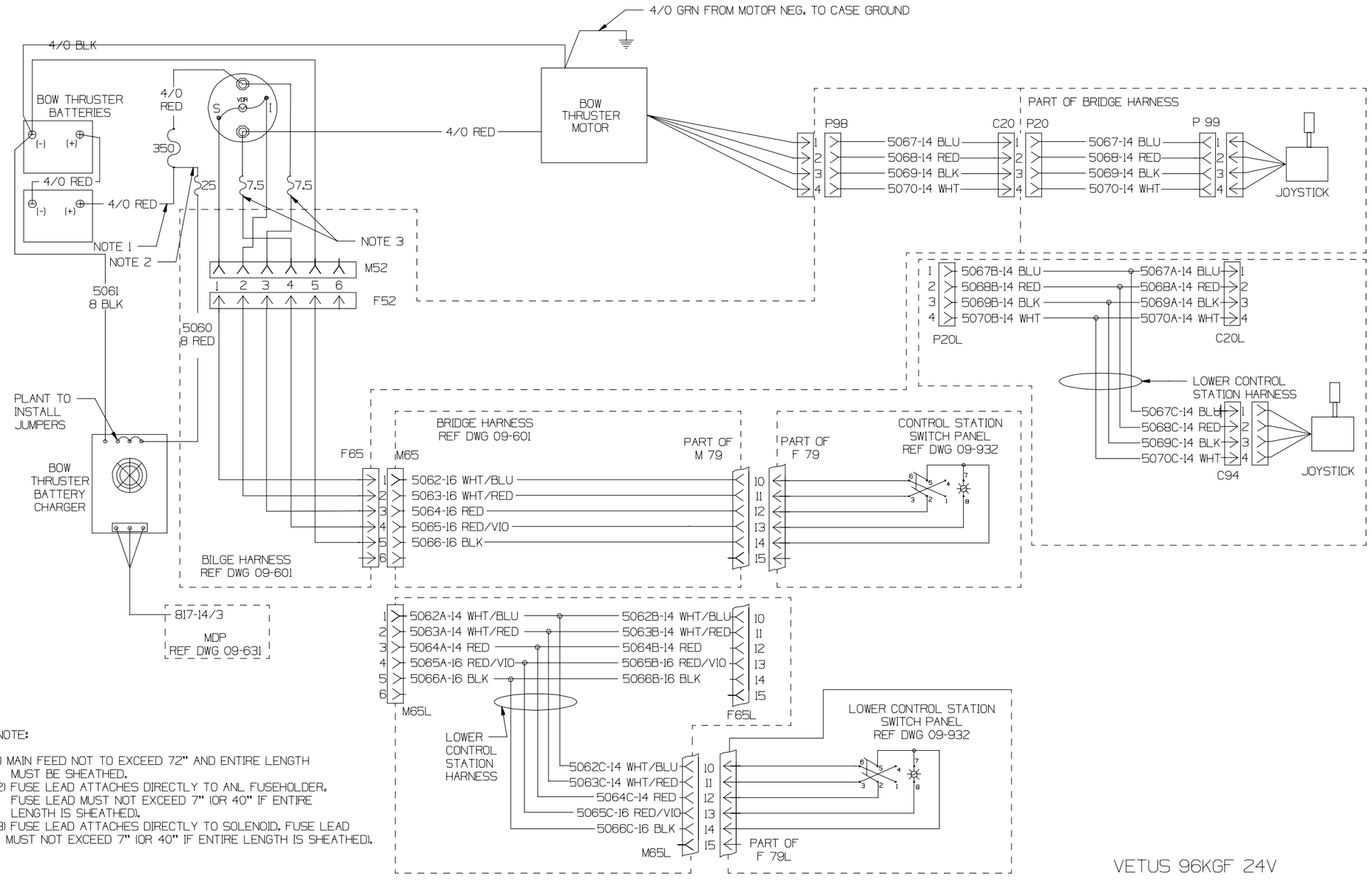


Systems Monitor Schematic
drawing no. 09-606 (2 of 2)
(Fig. 6.45.1)

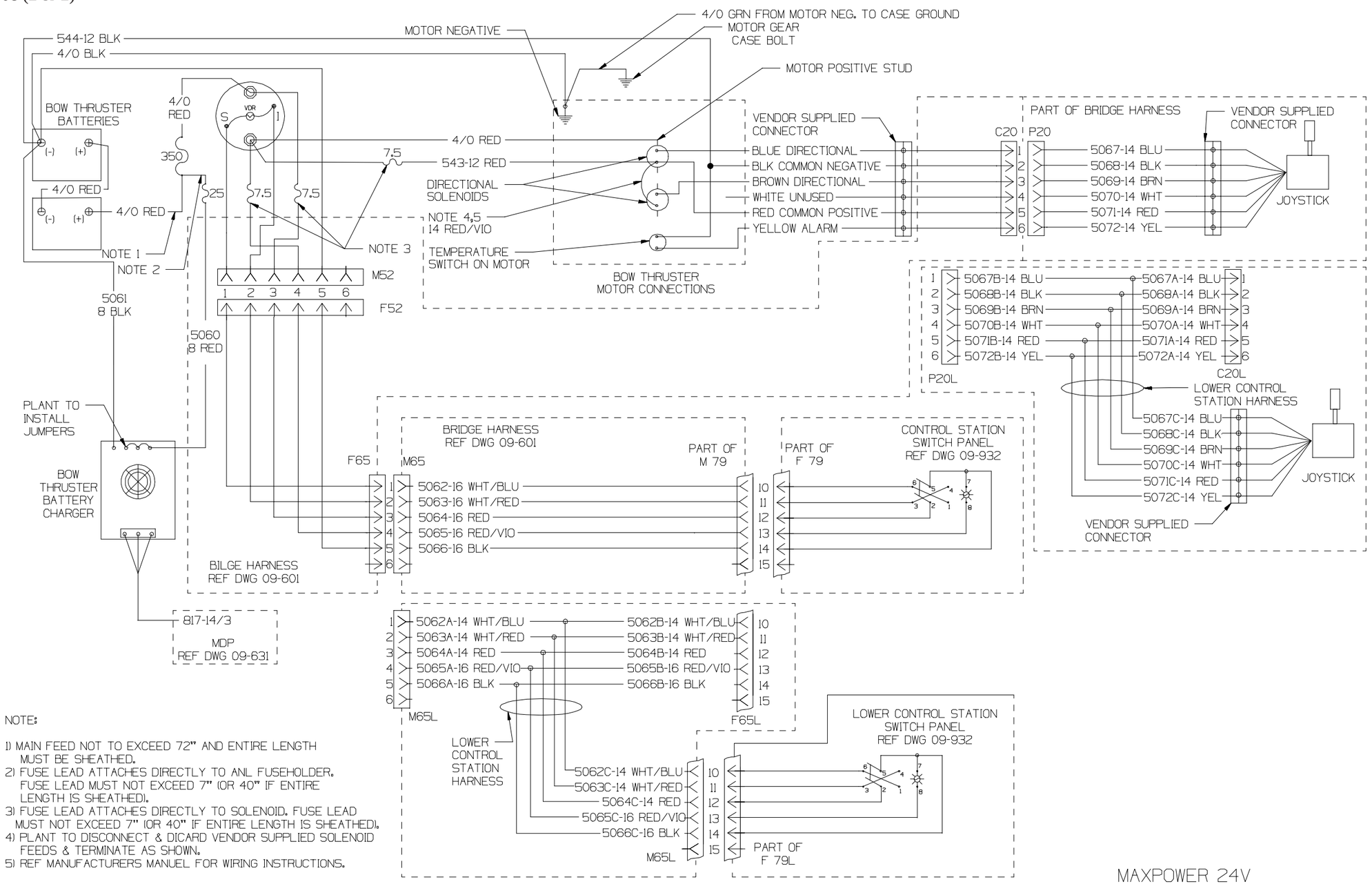


AC & DC Electrical Schematics & Wiring Harnesses (Continued)

Bow Thruster Schematic
drawing no. 09-608 (1 of 2)
(Fig. 6.46.1)



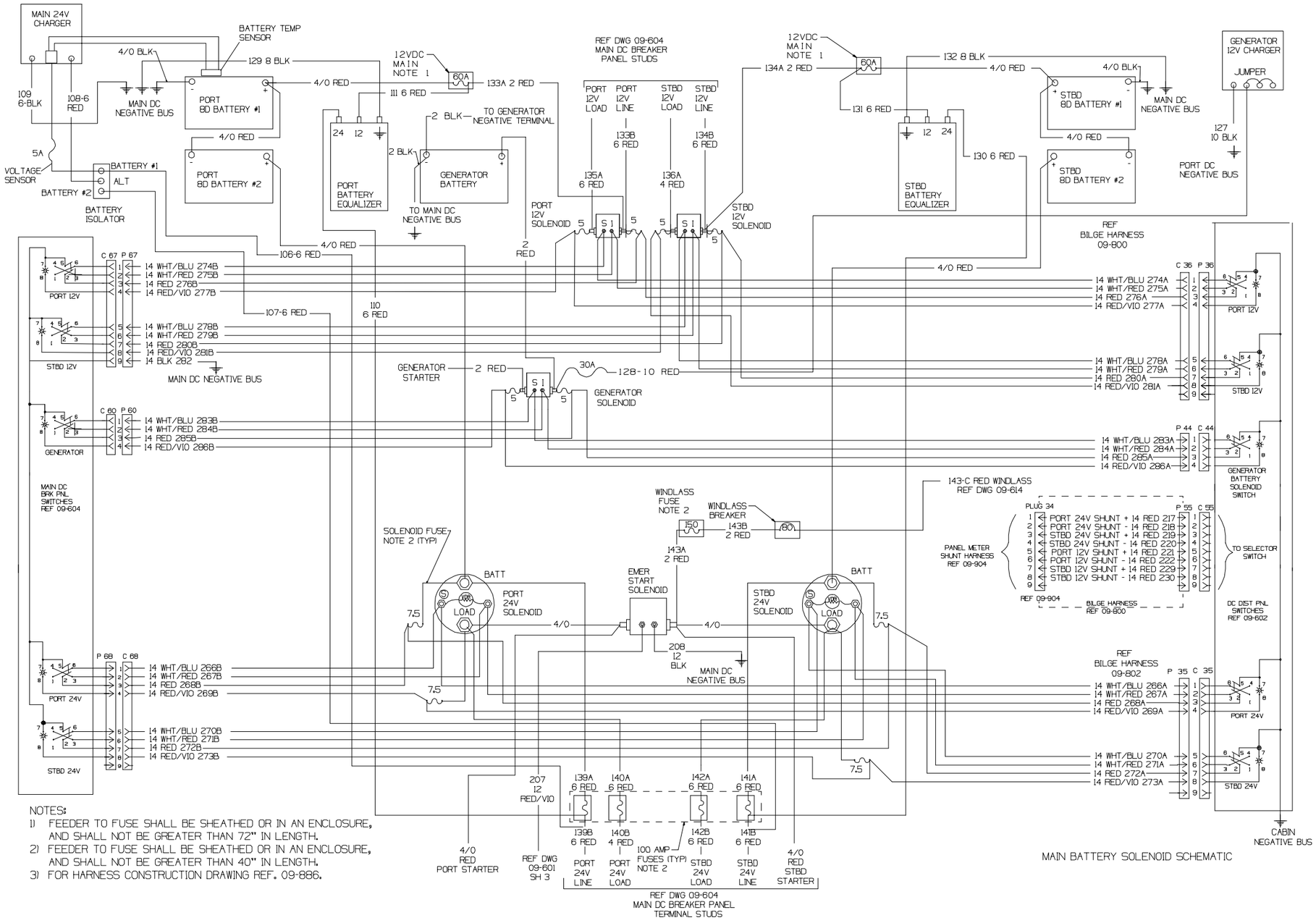
Bow Thruster Schematic
drawing no. 09-608 (2 of 2)
(Fig. 6.47.1)



NOTE:

1) MAIN FEED NOT TO EXCEED 72" AND ENTIRE LENGTH MUST BE SHEATHED.
2) FUSE LEAD ATTACHES DIRECTLY TO ANL FUSEHOLDER. FUSE LEAD MUST NOT EXCEED 7" (OR 40" IF ENTIRE LENGTH IS SHEATHED).
3) FUSE LEAD ATTACHES DIRECTLY TO SOLENOID. FUSE LEAD MUST NOT EXCEED 7" (OR 40" IF ENTIRE LENGTH IS SHEATHED).
4) PLANT TO DISCONNECT & DICARD VENDOR SUPPLIED SOLENOID FEEDS & TERMINATE AS SHOWN.
5) REF MANUFACTURERS MANUEL FOR WIRING INSTRUCTIONS.

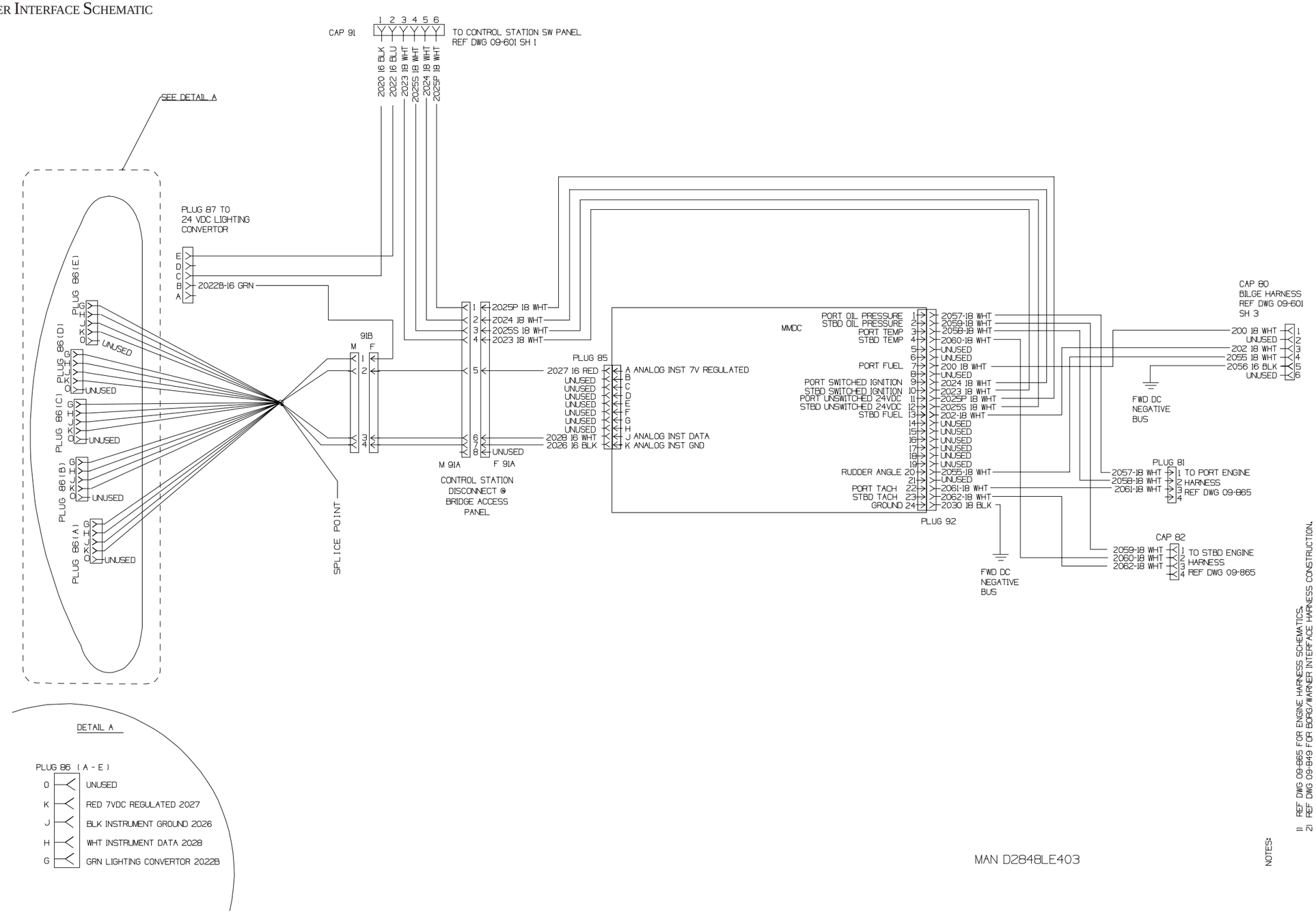
Main Battery Solenoid Schematic
drawing no. 09-609
(Fig. 6.48.1)



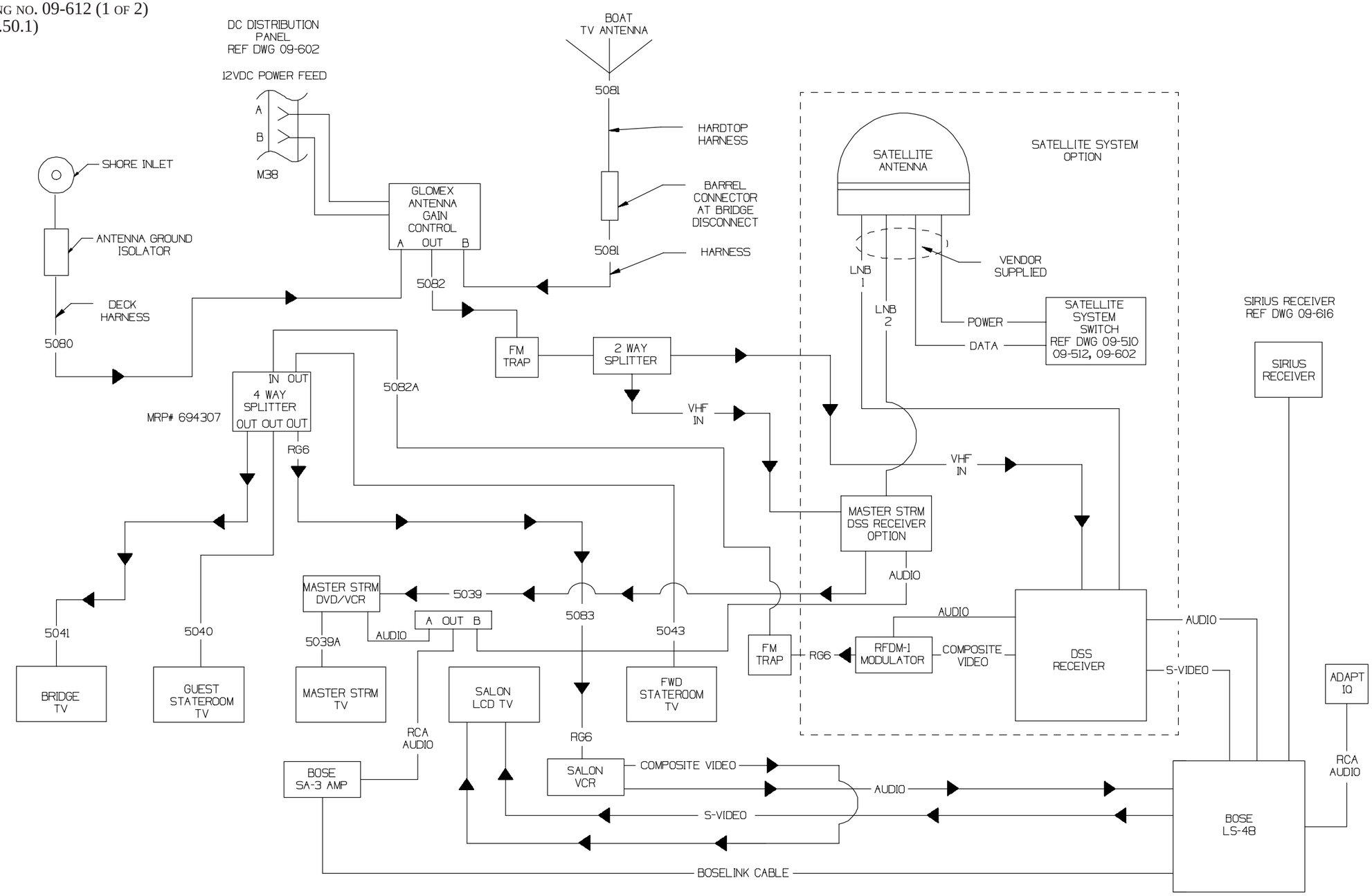
NOTES:
1) FEEDER TO FUSE SHALL BE SHEATHED OR IN AN ENCLOSURE, AND SHALL NOT BE GREATER THAN 72" IN LENGTH.
2) FEEDER TO FUSE SHALL BE SHEATHED OR IN AN ENCLOSURE, AND SHALL NOT BE GREATER THAN 40" IN LENGTH.
3) FOR HARNESS CONSTRUCTION DRAWING REF. 09-886.

Main Battery Solenoid Schematic

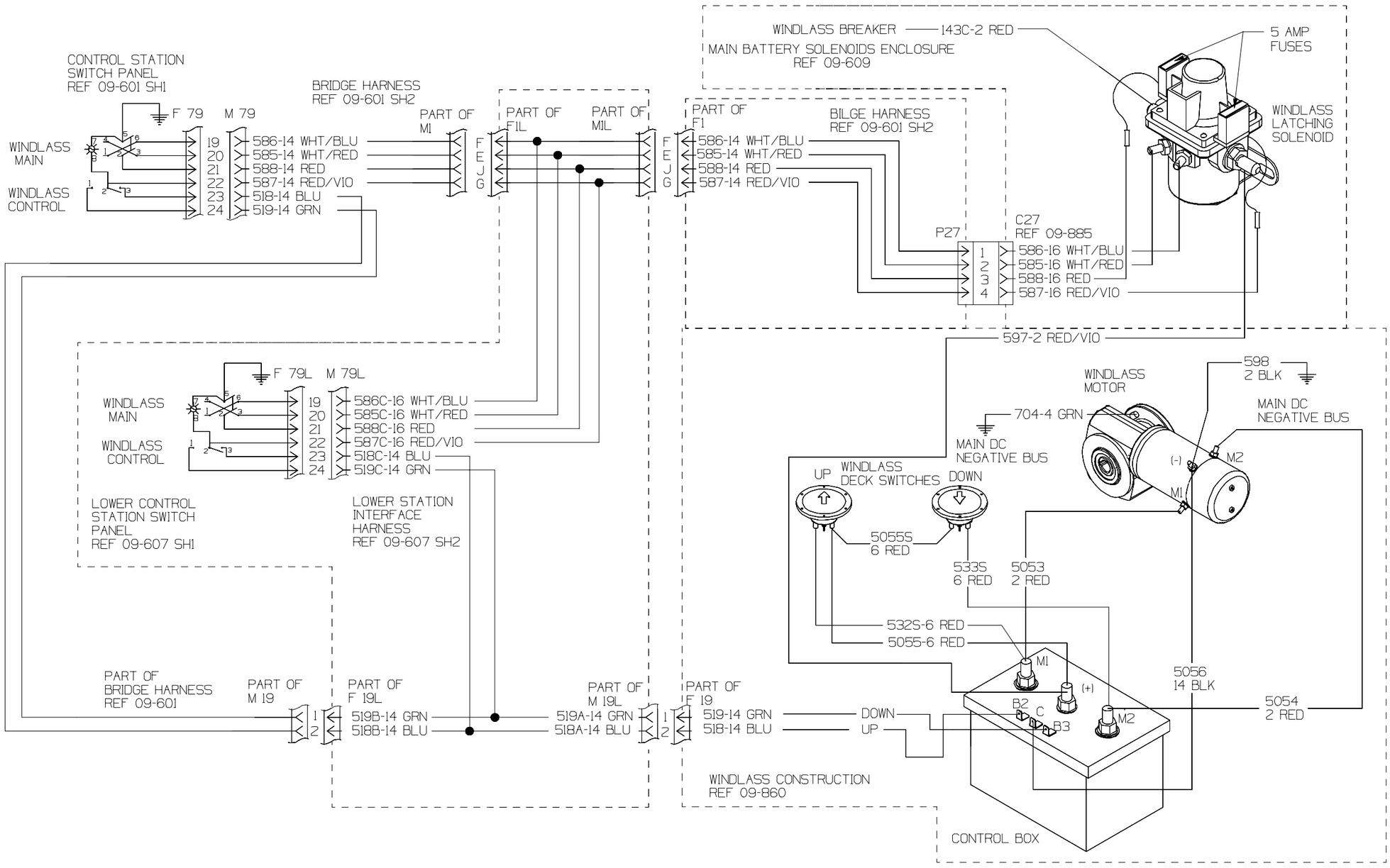
Engine Borg/Warner Interface Schematic
drawing no. 09-610
(Fig. 6.49.1)



TV & Stereo Coaxial Cable Schematic
drawing no. 09-612 (1 of 2)
(Fig. 6.50.1)

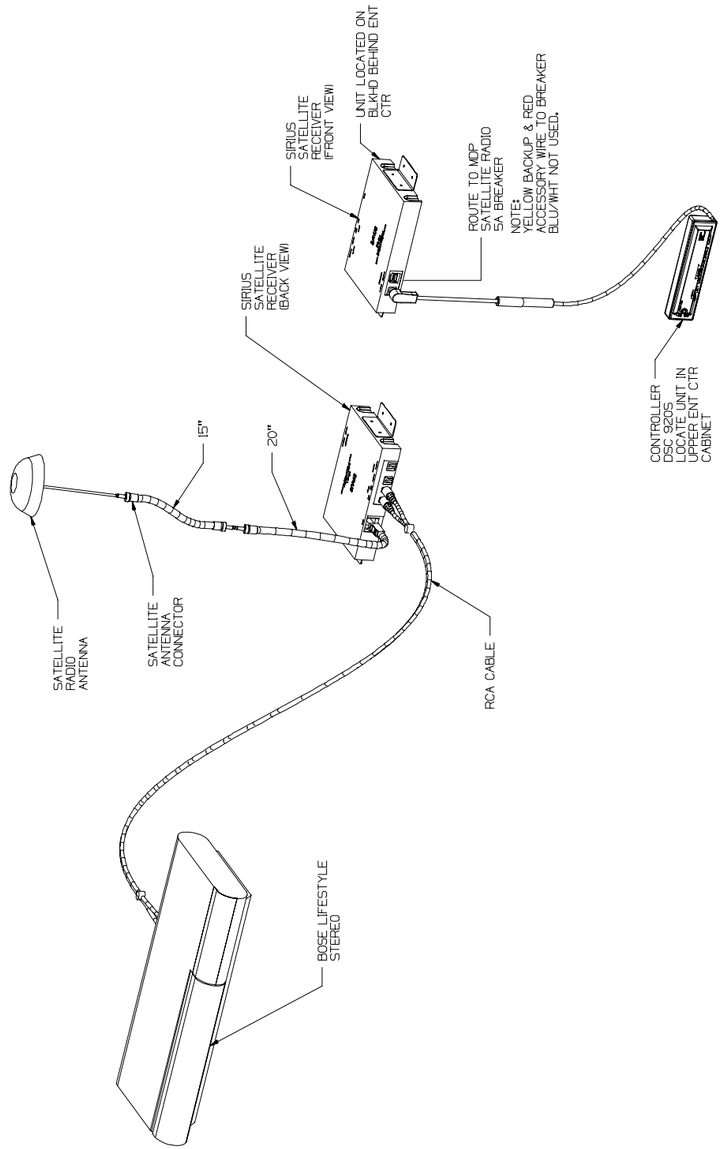


Windlass Schematic
drawing no. 09-614
(Fig. 6.51.1)

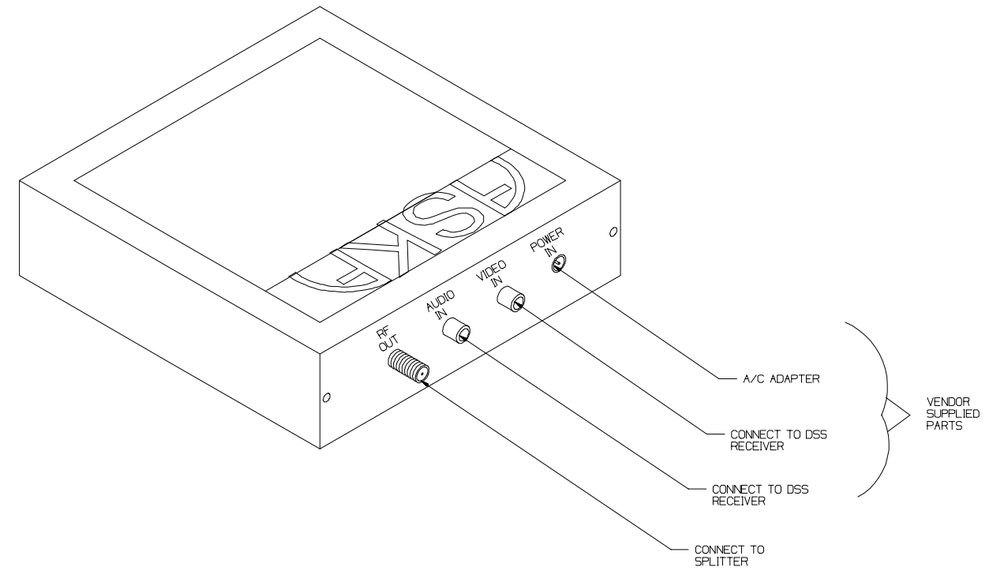


AC & DC Electrical Schematics & Wiring Harnesses (Continued)

Satellite Stereo System (Bose)
drawing no. 09-616 Rev 1
(Fig. 6.52.1)

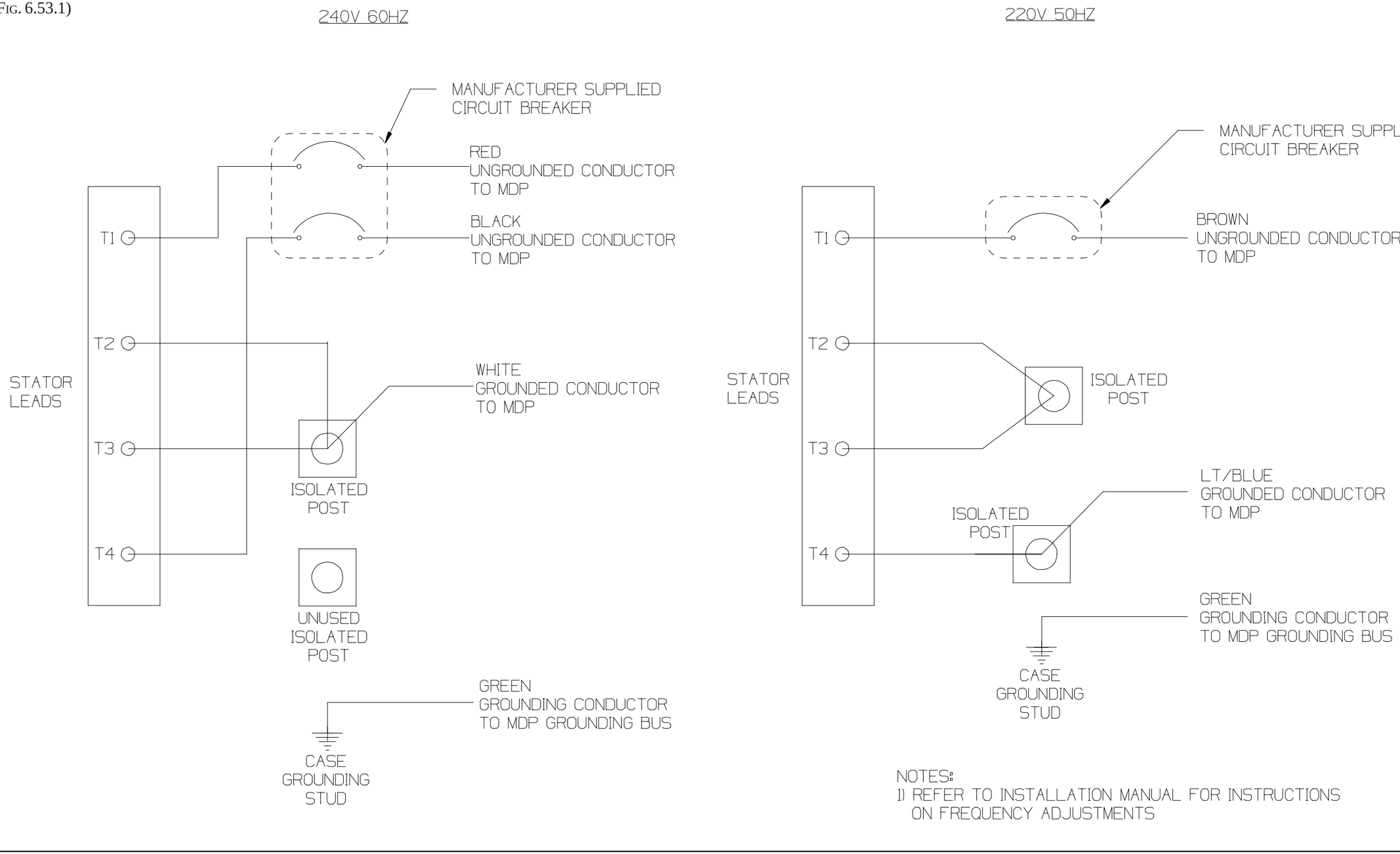


DSS Option (Digital Audio Modulation)
drawing no. 09-617
(Fig. 6.52.2)

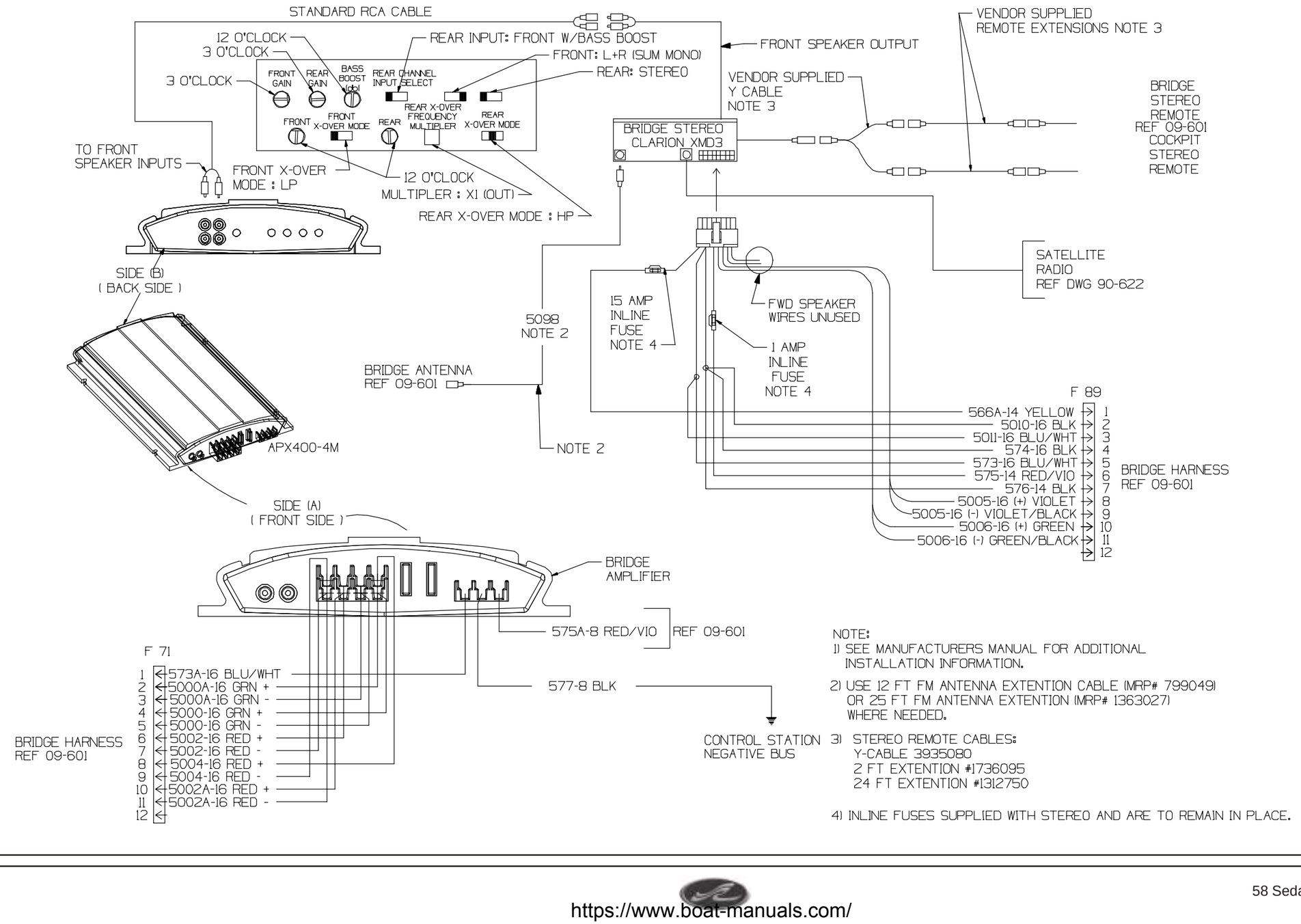


NOTES:
1) DIGITAL AUDIO MODULATOR NOT USED WITH MULTIPLE DSS RECEIVERS.

Onan High Voltage Wiring Diagram
drawing no. 09-618
(Fig. 6.53.1)

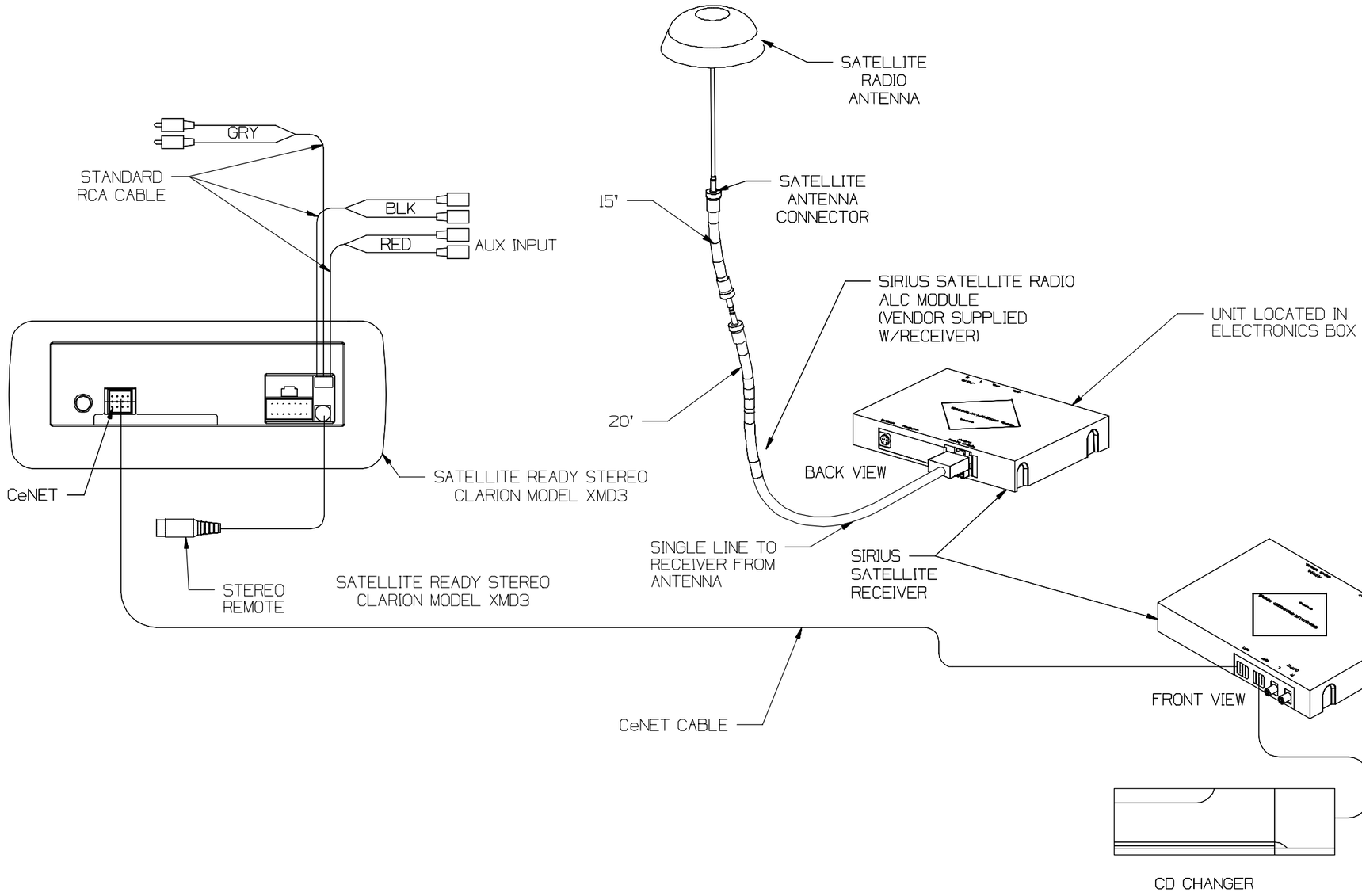


Stereo Schematic (Bridge)
drawing no. 09-621 Rev 1
(Fig. 6.54.1)

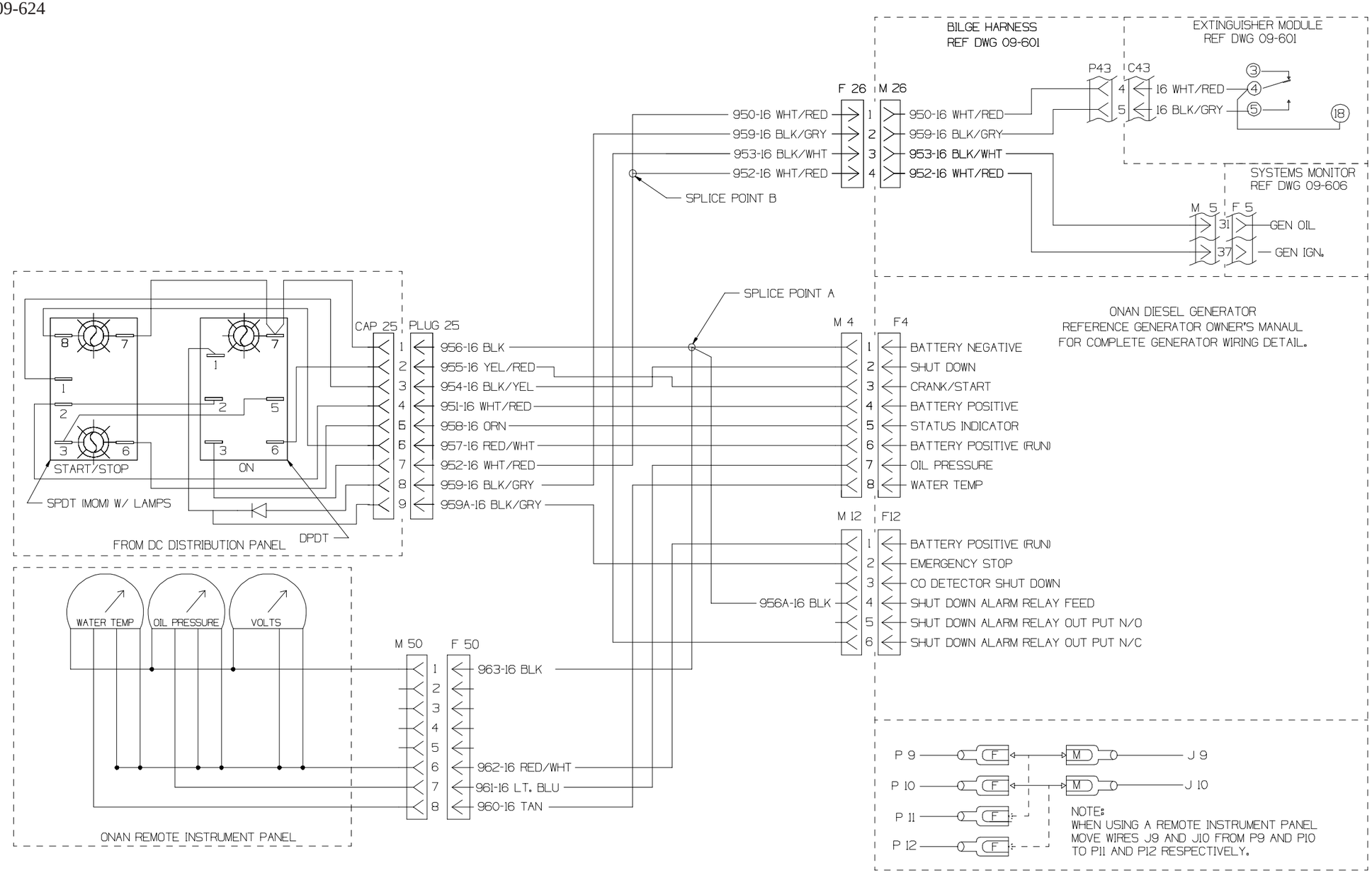


NOTE:
1) SEE MANUFACTURERS MANUAL FOR ADDITIONAL INSTALLATION INFORMATION.
2) USE 12 FT FM ANTENNA EXTENTION CABLE (MRP# 799049) OR 25 FT FM ANTENNA EXTENTION (MRP# 1363027) WHERE NEEDED.
3) STEREO REMOTE CABLES:
Y-CABLE 3935080
2 FT EXTENTION #1736095
24 FT EXTENTION #1312750
4) INLINE FUSES SUPPLIED WITH STEREO AND ARE TO REMAIN IN PLACE.

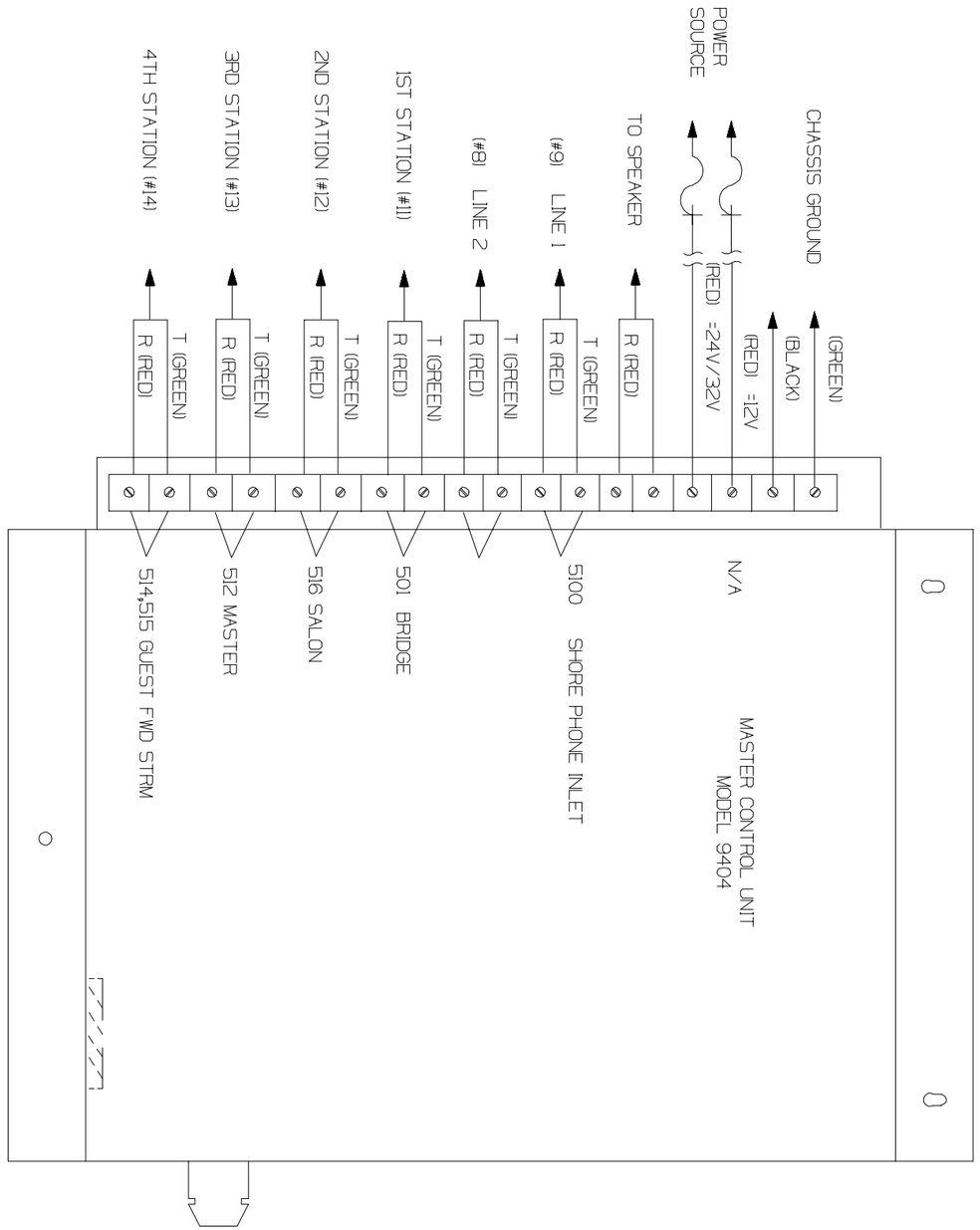
Satellite Stereo System (Optional)
drawing no. 09-622 Rev 1
(Fig. 6.55.1)



Onan Diesel Generator Schematic
drawing no. 09-624
(Fig. 6.56.1)

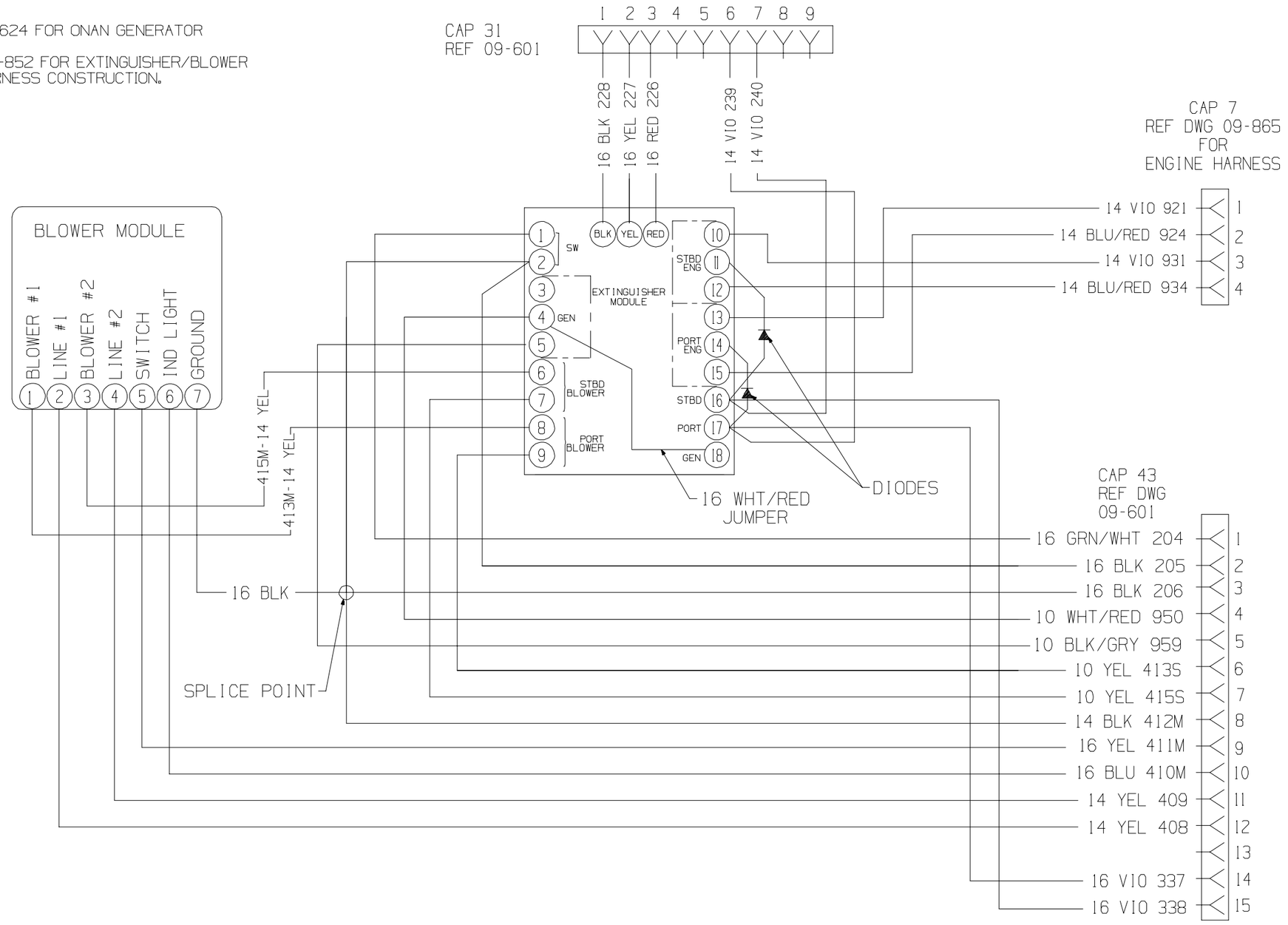


C-Phone Control Diagram
drawing no. 09-626
(Fig. 6.57.1)

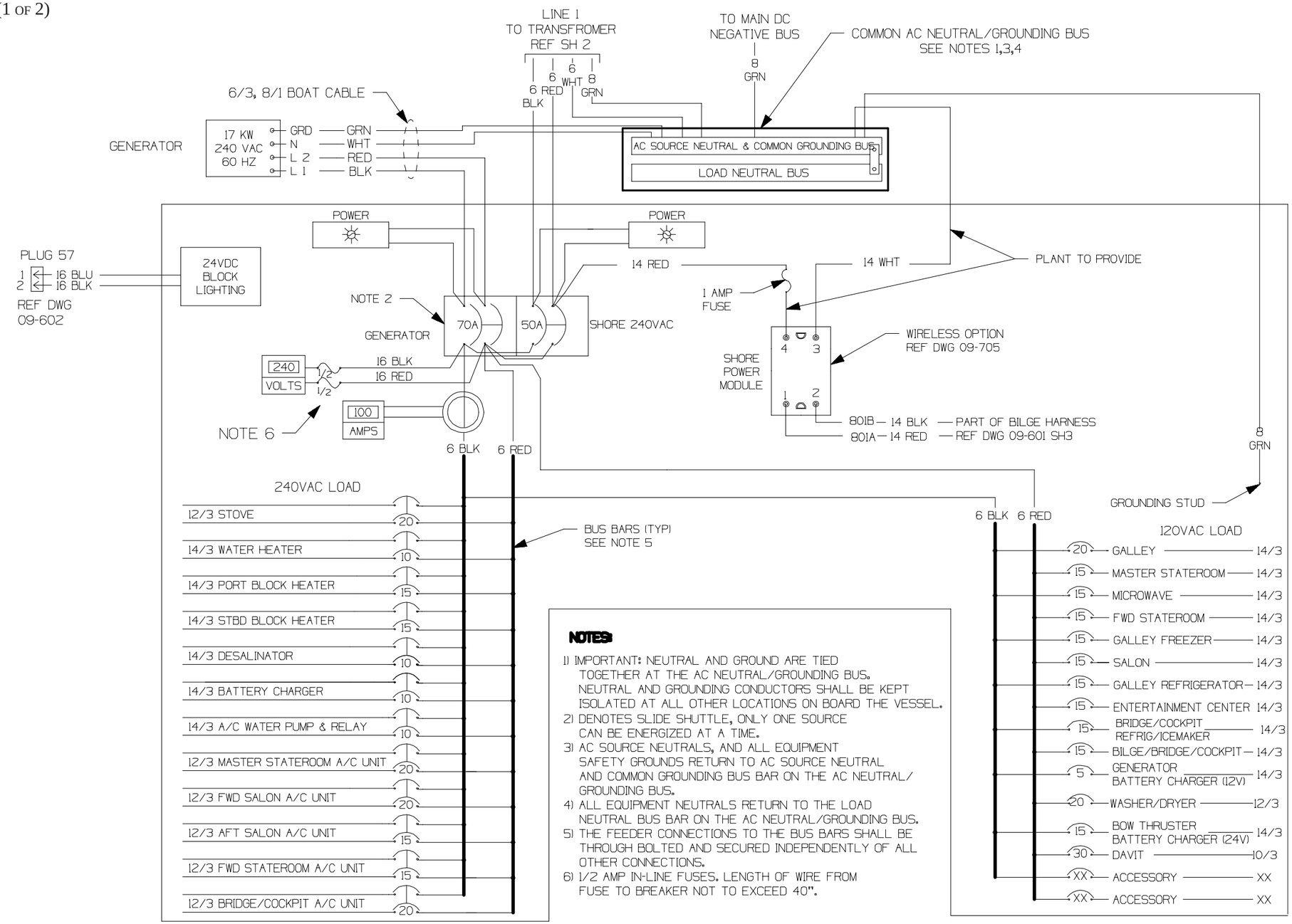


Extinguisher/Blower Module Wiring
drawing no. 09-628
(Fig. 6.58.1)

NOTES:
1) REF DWG 09-624 FOR ONAN GENERATOR SCHEMATIC.
2) REF DWG 09-852 FOR EXTINGUISHER/BLOWER MODULE HARNESS CONSTRUCTION.

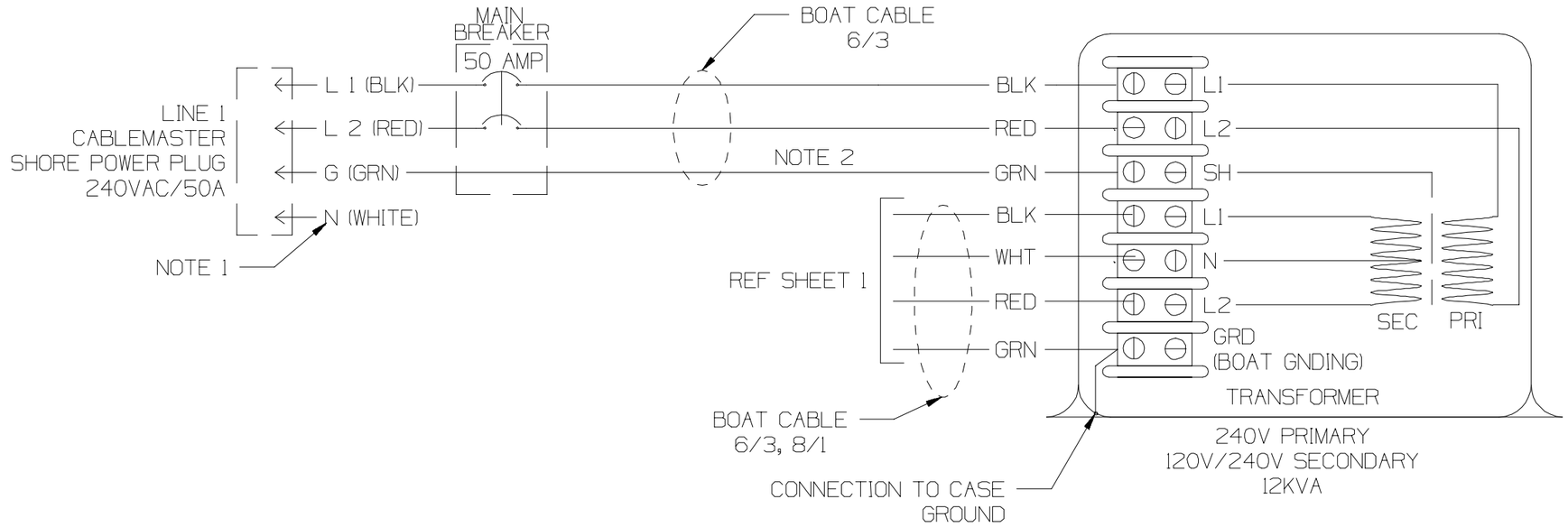


AC Wiring Schematic
drawing no. 09-631 (1 of 2)
(Fig. 6.59.1)

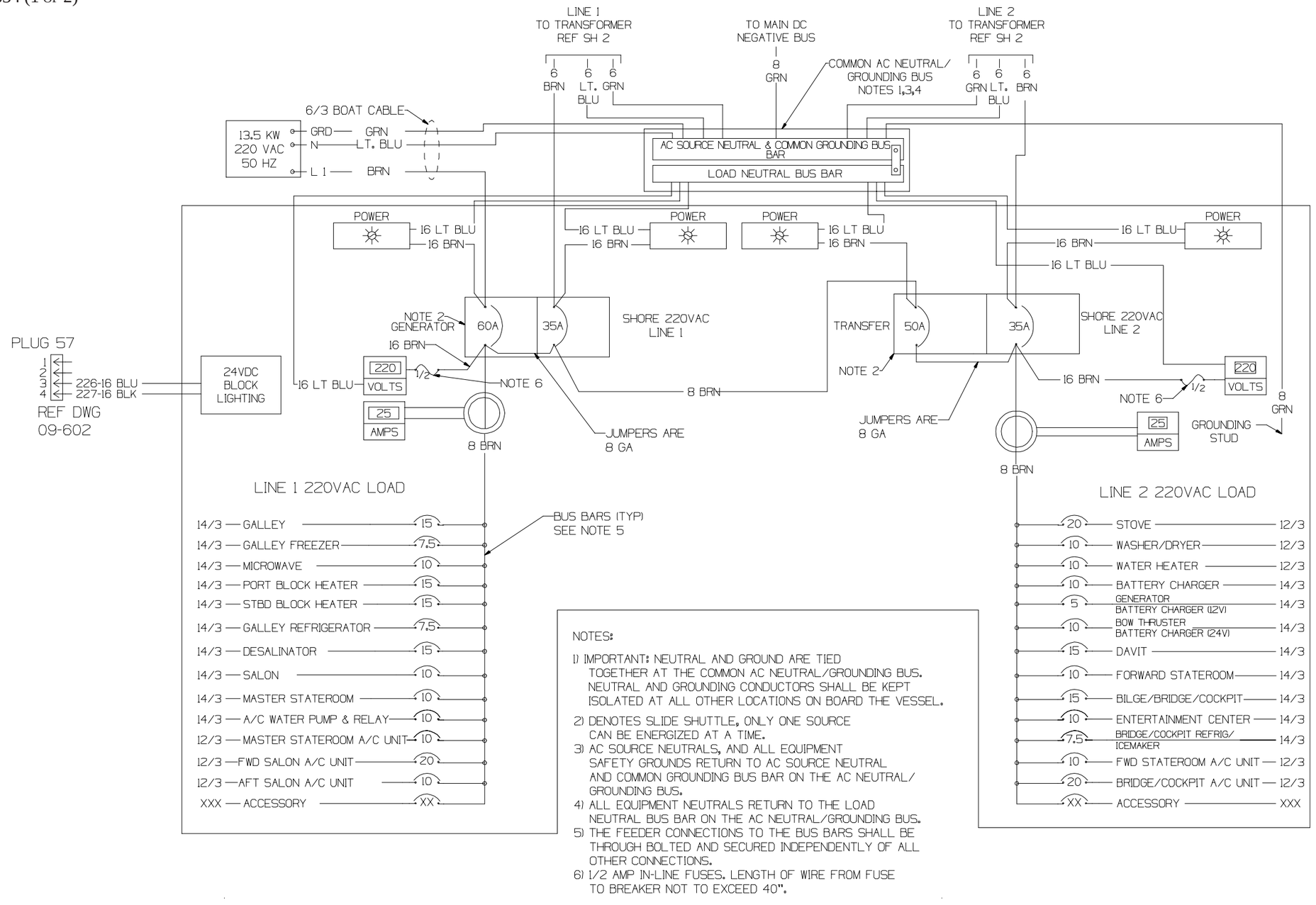


AC Wiring Schematic
drawing no. 09-631 (2 of 2)
(Fig. 6.60.1)

NOTES:
1) NEUTRAL WIRE FOR 120/240VAC INPUT NOT INSTALLED IN CABLEMASTER SHORE CORD ON BOATS W/SHORE POWER TRANSFORMERS.
2) INCOMING SHORE GROUND IS CONNECTED ONLY TO THE SHIELD OF THE ISOLATION TRANSFORMER AND IS NOT GROUNDED ON THE BOAT.



AC Wiring Schematic (220V/50Hz)
drawing no. 09-634 (1 of 2)
(Fig. 6.61.1)

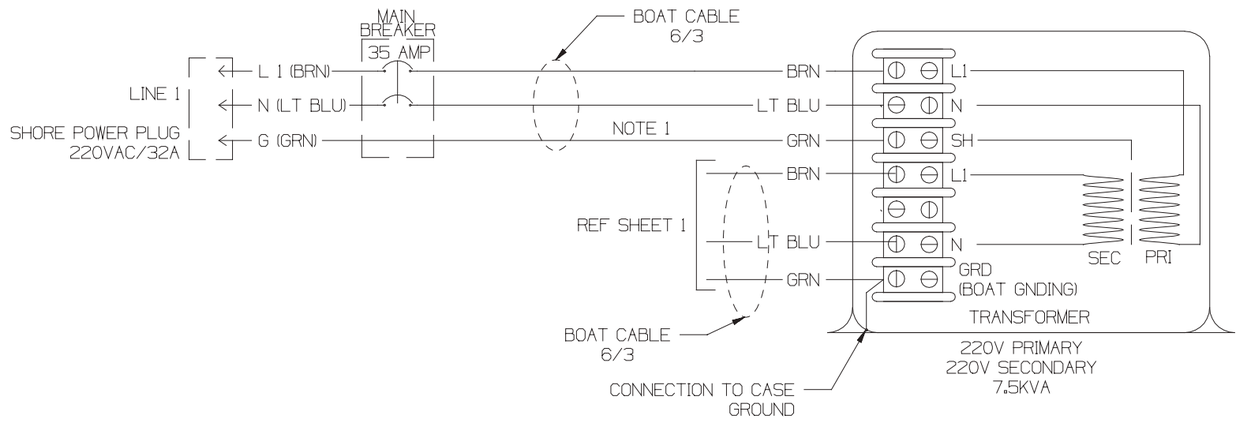


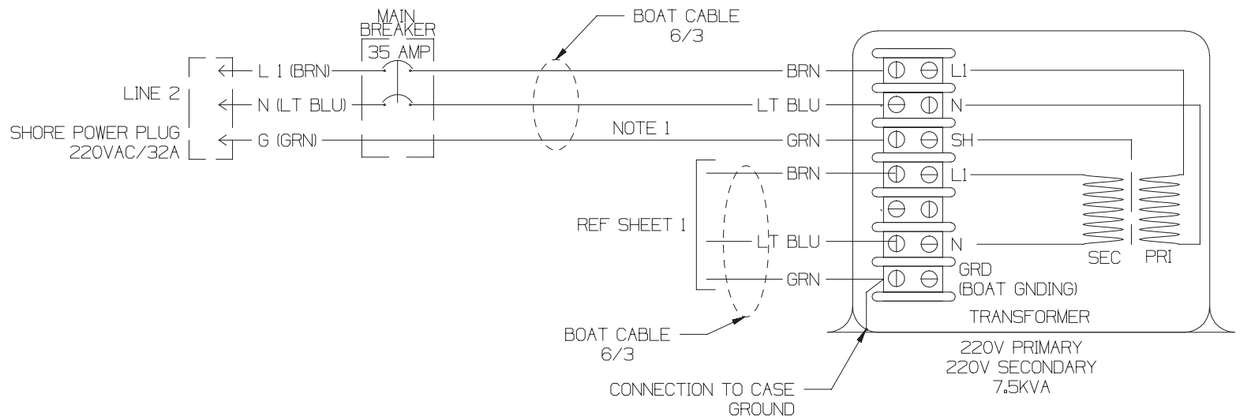
NOTES:

1) IMPORTANT: NEUTRAL AND GROUND ARE TIED TOGETHER AT THE COMMON AC NEUTRAL/GROUNDING BUS. NEUTRAL AND GROUNDING CONDUCTORS SHALL BE KEPT ISOLATED AT ALL OTHER LOCATIONS ON BOARD THE VESSEL.
2) DENOTES SLIDE SHUTTLE, ONLY ONE SOURCE CAN BE ENERGIZED AT A TIME.
3) AC SOURCE NEUTRALS, AND ALL EQUIPMENT SAFETY GROUNDS RETURN TO AC SOURCE NEUTRAL AND COMMON GROUNDING BUS BAR ON THE AC NEUTRAL/ GROUNDING BUS.
4) ALL EQUIPMENT NEUTRALS RETURN TO THE LOAD NEUTRAL BUS BAR ON THE AC NEUTRAL/GROUNDING BUS.
5) THE FEEDER CONNECTIONS TO THE BUS BARS SHALL BE THROUGH BOLTED AND SECURED INDEPENDENTLY OF ALL OTHER CONNECTIONS.
6) 1/2 AMP IN-LINE FUSES. LENGTH OF WIRE FROM FUSE TO BREAKER NOT TO EXCEED 40".

AC Wiring Schematic (220V/50Hz)
drawing no. 09-634 (2 of 2)
(Fig. 6.62.1)

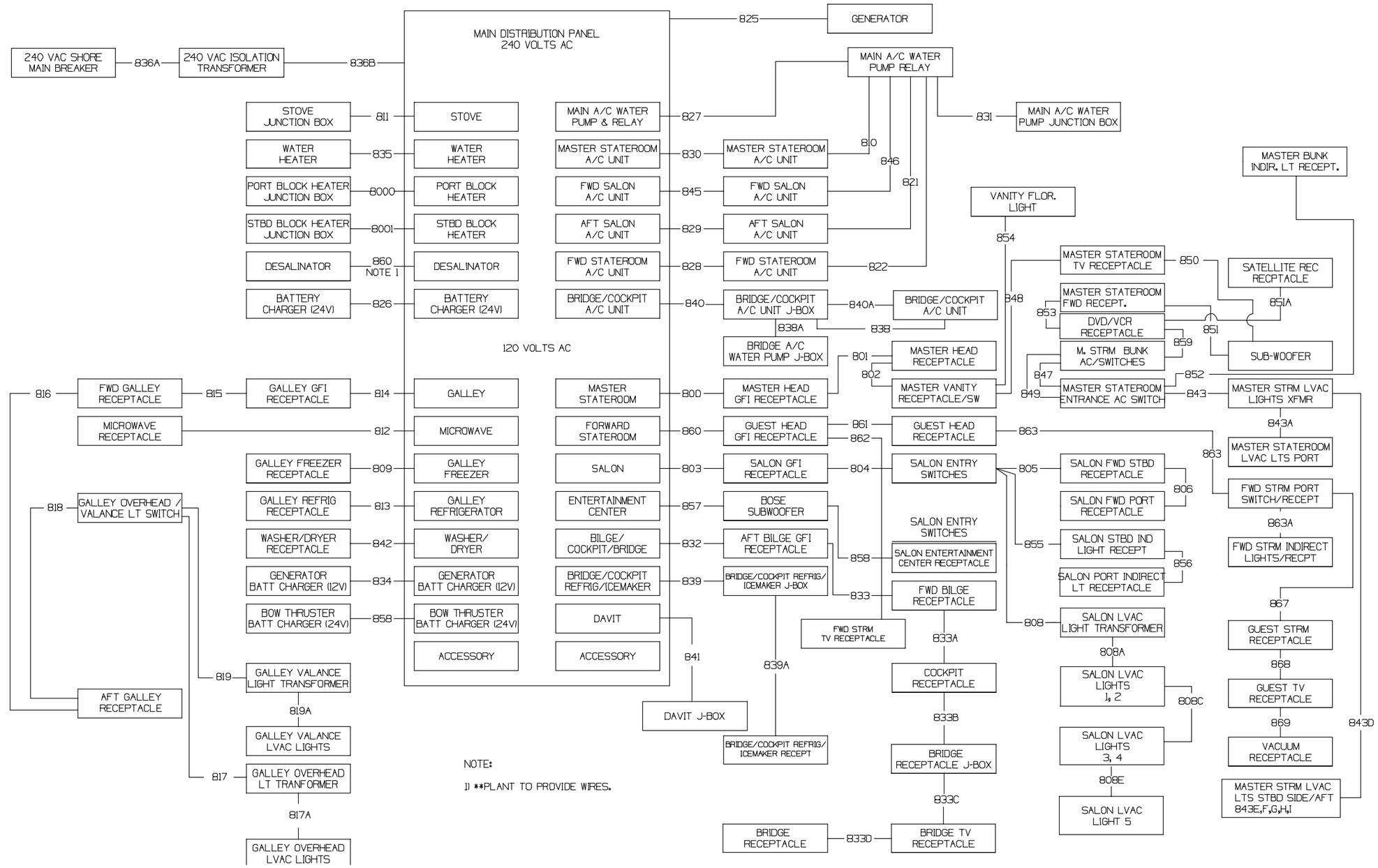
NOTES:
1) INCOMING SHORE GROUND IS CONNECTED ONLY TO THE SHIELD OF THE ISOLATION TRANSFORMER AND IS NOT GROUNDED ON THE BOAT.
2) FOR 220/50HZ APPLICATIONS THE LT. BLUE NEUTRAL TERMINATES ON THE L2 TERMINAL, N TERMINAL IS UNUSED.



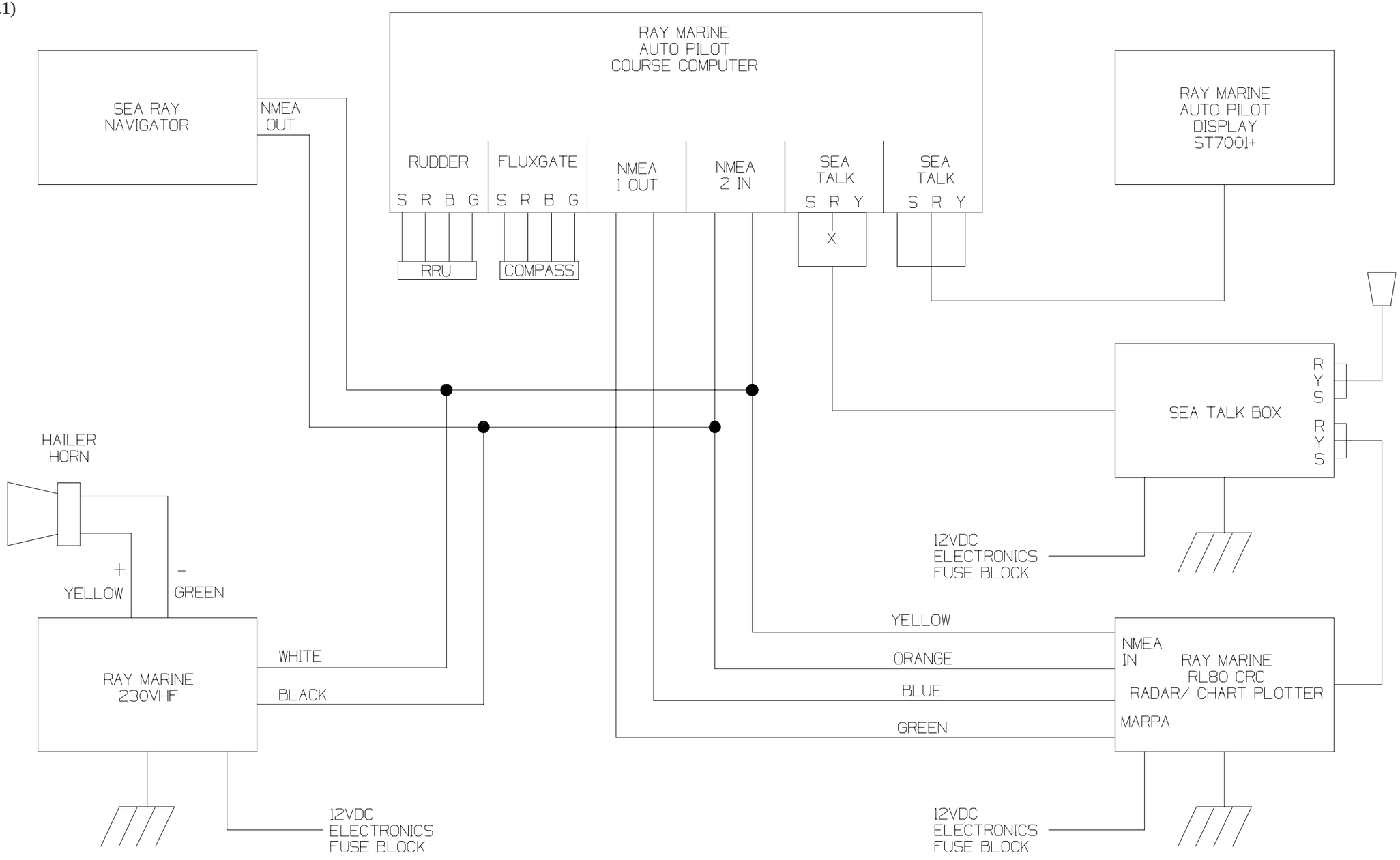


AC & DC Electrical Schematics & Wiring Harnesses (Continued)

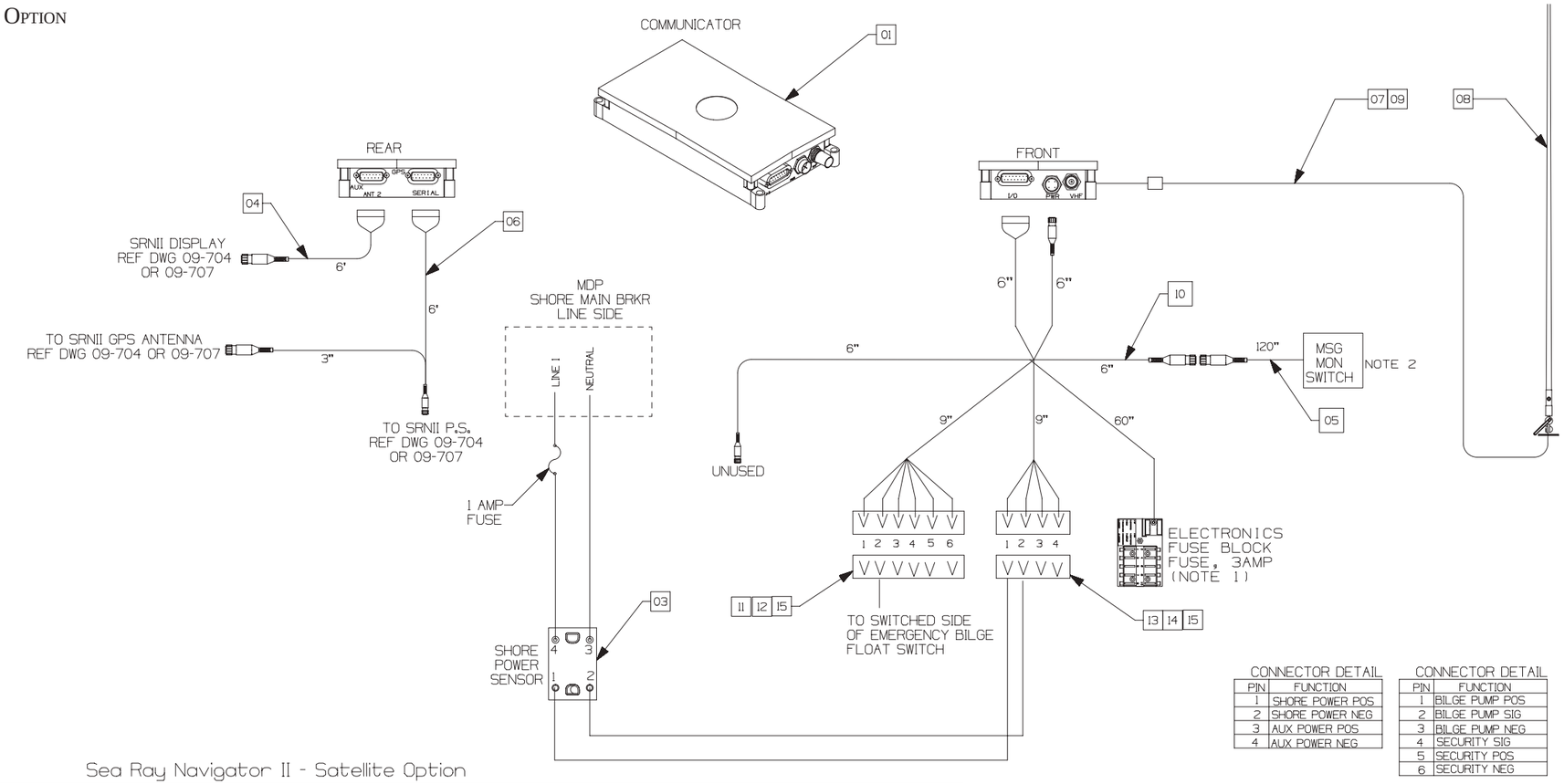
AC System Wiring Diagram
drawing no. 09-640 Rev 1
(Fig. 6.63.1)



Sea Ray Navigator II
drawing no. 09-704
(Fig. 6.64.1)



Sea Ray Navigator II Satellite Option
drawing no. 09-705
(Fig. 6.65.1)



CONNECTOR DETAIL

PIN	FUNCTION
1	SHORE POWER POS
2	SHORE POWER NEG
3	AUX POWER POS
4	AUX POWER NEG

CONNECTOR DETAIL

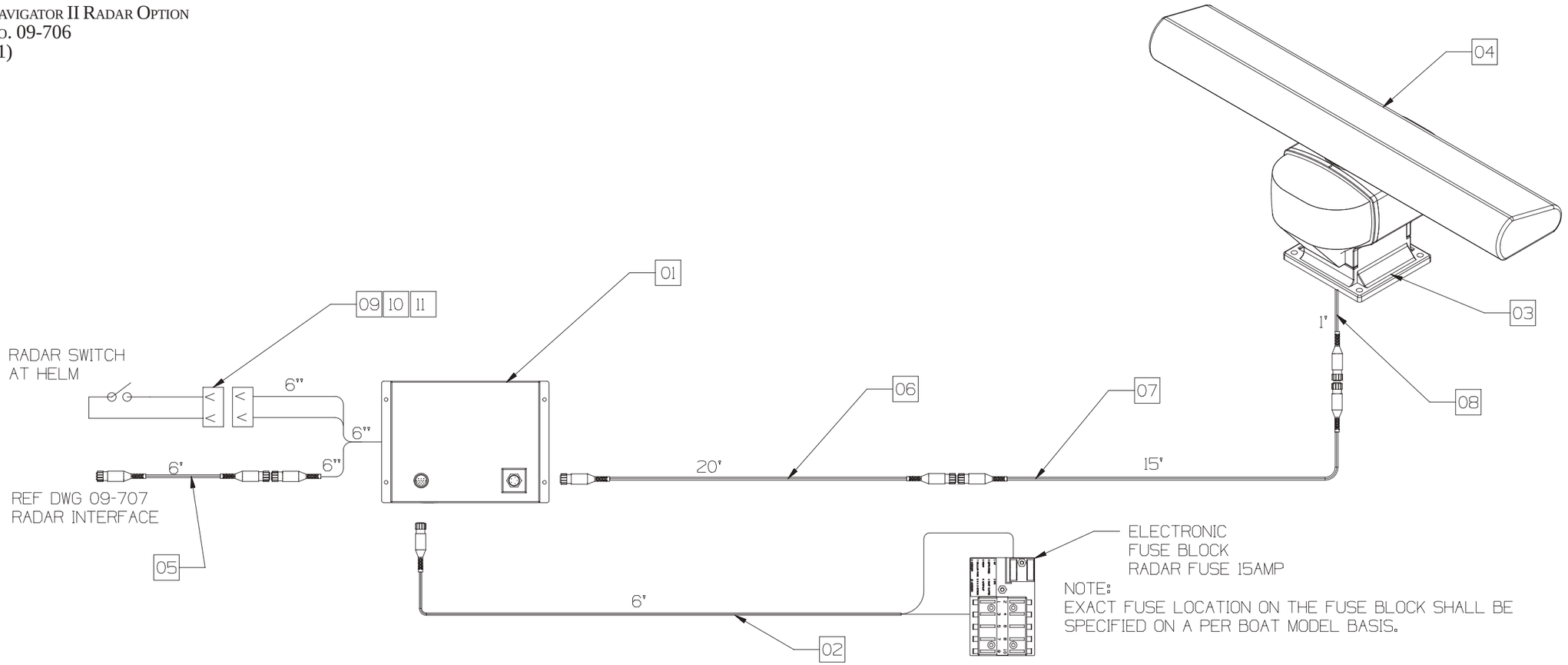
PIN	FUNCTION
1	BILGE PUMP POS
2	BILGE PUMP SIG
3	BILGE PUMP NEG
4	SECURITY SIG
5	SECURITY POS
6	SECURITY NEG

Sea Ray Navigator II - Satellite Option

Item #	Vendor Part Number	MRP #	Sea Ray - AS400 Description
01	SRN2SATELLITESC	1760316	NAVIGATOR, SRN II SATELLITE COMMUNICATOR
02	UNUSED		
03	SRN2SATELLITESPS	1767399	NAVIGATOR, SRN II SATELLITE SHORE POWER SENSOR
04	SRN2SATELLITEPDC	1767400	NAVIGATOR, SRN II SATELLITE DATA CABLE
05	SRN2SATELLITEMSC	1767401	NAVIGATOR, SRN II SATELLITE MODE SWITCH W/CABLE
06	SRN2SATELLITEGPSC	1767402	NAVIGATOR, SRN II SATELLITE GPS INTERFACE CABLE
07	MRG6/U	184713	CABLE, COAXIAL RG58
08	5225XT-CP	1274570	ANTENNA, 8' SHAKESPEARE 5225 GLXY W/CP CONN
09	278-119	1688702	CONN, COUPLER TYPE-914 FEMALE TO FEMALE(GOLD)
10	SRN2SATELLITEWH	1774890	NAVIGATOR, SRNII SATELLITE WIRING HARNESS
11	DTM06-6S	1773033	PLUG KIT, DEUTSCH DTM06-6S PLUG W/SCKT
12	WM6S	1773049	PLUG KIT, DEUTSCH SEC LOCK DTM06-6S
13	1773032	1773032	PLUG KIT, DEUTSCH DTM06-4S PLUG W/SCKT
14	1773047	WM4S	PLUG KIT, DEUTSCH SEC LOCK DTM06-4S
15	1741427	1062-20-0122	PLUG KIT, DEUTSCH S/F 20AWG SCKT
NOT SHOWN	SRN2SATELLITESW	1760319	NAVIGATOR, SRN II SATELLITE SOFTWARE

NOTE:
1) EXACT FUSE POSITION OF THE FUSE ON THE FUSE BLOCK SPECIFIED ON A PER BOAT MODEL BASIS.
2) MSG/MON SWITCH TO BE INSTALLED IN THE CONTROL STATION SWITCH PANEL IN THE ACCY SWITCH LOCATION.

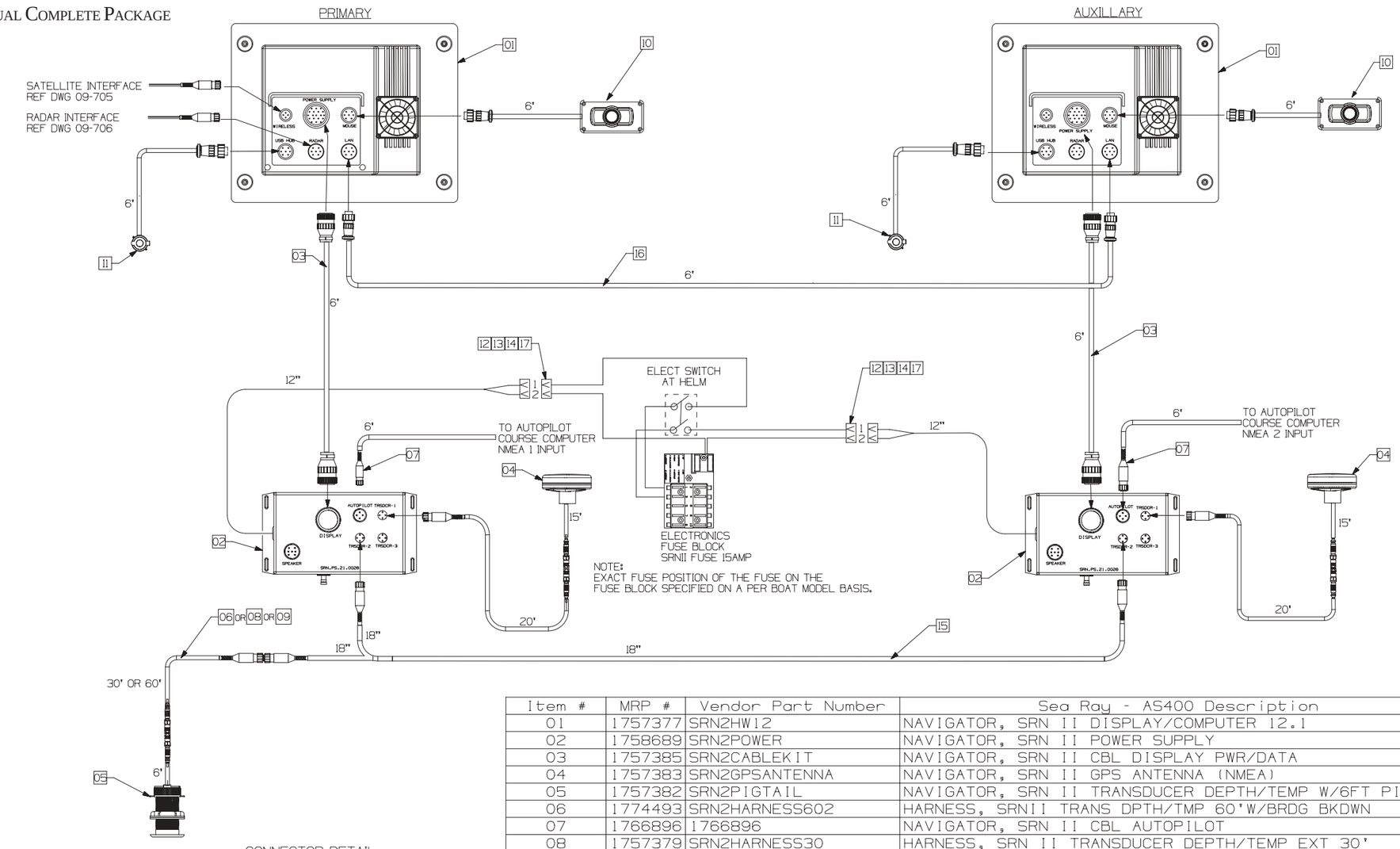
Sea Ray Navigator II Radar Option
drawing no. 09-706
(Fig. 6.66.1)



Item #	MRP #	Vendor Part Number	Sea Ray - AS400 Description
01	1772608	SRN2RADARJCTBOX	NAVIGATOR, SRN II RADAR JUNCTION BOX
02	1772609	SRN2RADARPWRCABLE	NAVIGATOR, SRN II RADAR POWER CABLE
03	1772610	SRN2RADARPEDESTAL	NAVIGATOR, SRN II RADAR PEDSTAL
04	1772611	SRN2RADARARRAY	NAVIGATOR, SRN II RADAR 4KW 3.5FT ARRAY
05	1760323	SRN2RADARINTFCABLE	NAVIGATOR, SRN II RADAR INTERFACE CABLE
06	1770981	WA568-C	Harness, Nstar Radar Cable 20ft
07	1770985	WA569-A	Harness, Nstar Radar Extension Cable 15ft
08	1772612	WA570	Harness, Nstar Radar Pigtail 1ft
09	1773030	DTM06-2S	PLUG KIT, DEUTSCH DTM06-2S Plug W/SOCKET
10	1773043	WM2S	PLUG KIT, DEUTSCH SEC LOCK DTM06-2S
11	1741427	1062-20-0122	PLUG KIT, DEUTSCH S/C 20AWG SCKT

AC & DC Electrical Schematics & Wiring Harnesses (Continued)

Sea Ray Navigator II Dual Complete Package
drawing no. 09-707
(Fig. 6.67.1)

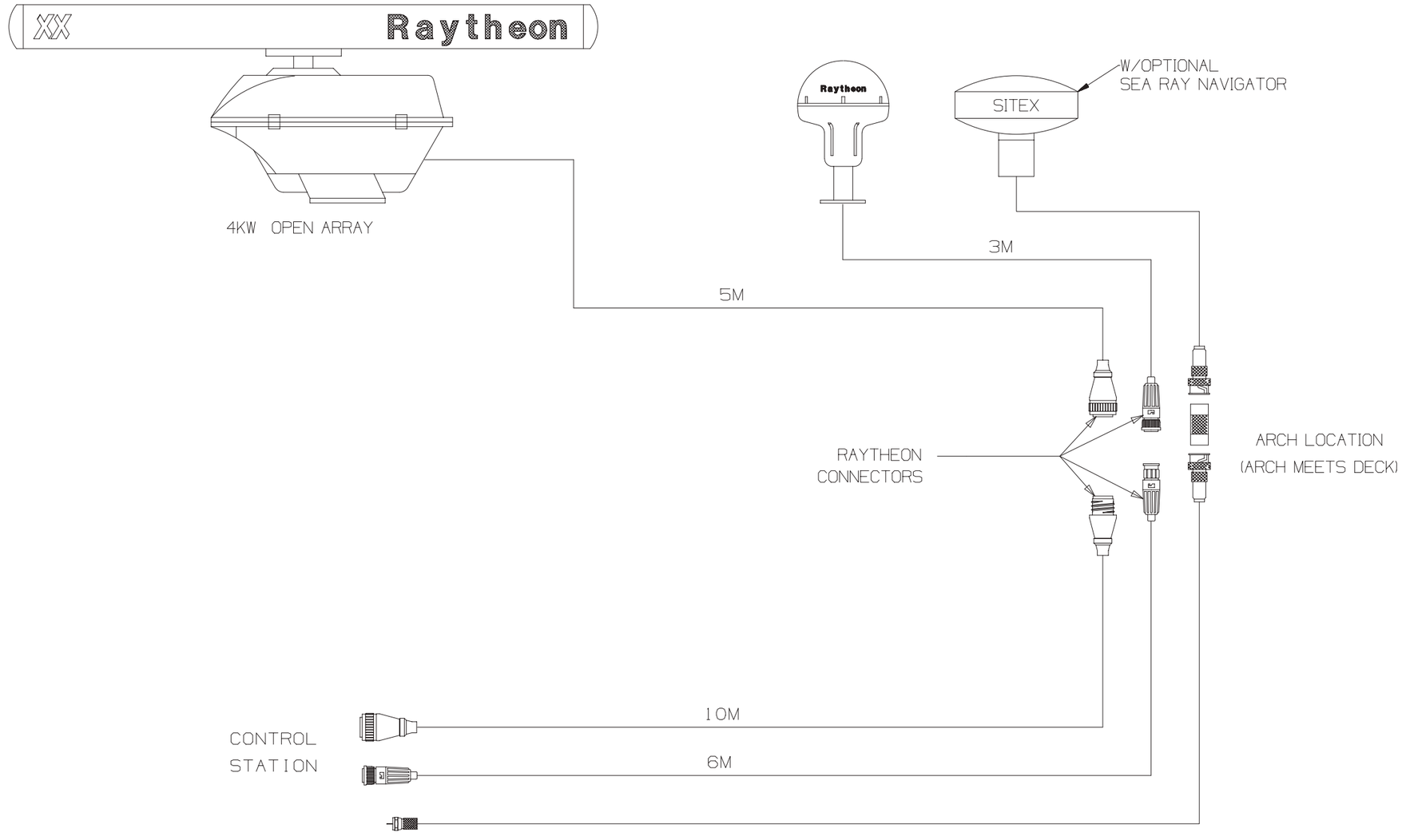


CONNECTOR DETAIL

Autopilot	Pin Function	
1	NMEA Neg In	BLU
2	NMEA Pos In (Heading Sensor)	RED
3	NMEA Neg Out (Combined Data)	BLK
4	NMEA Pos Out (Combined Data)	WHT
Transducer 1-3	Pin Function	
1	NMEA Neg In	N/A
2	NMEA Pos In	N/A
3	12VDC Pos	N/A

Item #	MRP #	Vendor Part Number	Sea Ray - AS400 Description
01	1757377	SRN2HW12	NAVIGATOR, SRN II DISPLAY/COMPUTER 12.1
02	1758689	SRN2POWER	NAVIGATOR, SRN II POWER SUPPLY
03	1757385	SRN2CABLEKIT	NAVIGATOR, SRN II CBL DISPLAY PWR/DATA
04	1757383	SRN2GPSANTENNA	NAVIGATOR, SRN II GPS ANTENNA (NMEA)
05	1757382	SRN2PIGTAIL	NAVIGATOR, SRN II TRANSDUCER DEPTH/TEMP W/6FT PIGTAIL
06	1774493	SRN2HARNESS602	HARNESS, SRNII TRANS DPTH/TMP 60'W/BRDG BKDWN
07	1766896	1766896	NAVIGATOR, SRN II CBL AUTOPILOT
08	1757379	SRN2HARNESS30	HARNESS, SRN II TRANSDUCER DEPTH/TEMP EXT 30'
09	1757380	SRN2HARNESS60	HARNESS, SRN II TRANSDUCER DEPTH/TEMP EXT 60'
10	1763058	SRN2MOUSE	NAVIGATOR, SRN II MOUSE REMOTE CONTROL
11	1776486	1776486	RECEPTACLE, SRN II USB SOCKET W/CONN
12	1767034	DTP2P-BT	BOOT, DEUTSCH DTP 2-POS MALE
13	1408376	DTP06-2S	PLUG KIT, DEUTSCH DTP06-2S Plug W/SOCKET
14	1717517	1062-12-0222	PLUG KIT, DEUTSCH F/C 10-12 AWG SOCKET
15	1772621	OEM Y CABLE NMEA	HARNESS, SRNII TRANSDUCER Y CABLE
16	1772696	OEM Y LAN CABLE NMEA	HARNESS, SRNII LAN CABLE
17	1408400	WP2S	PLUG KIT, DEUTSCH SEC LOCK SOCKET 2POS
NOT SHOWN	1757378	SRN2OWNERSKIT	MANUAL, SRN II OWNERS KIT
NOT SHOWN	1764499	SR7333	LABEL, SEA RAY NAV USB PORT

Hardtop Breakdown Connections
drawing no. 09-720 (1 of 3)
(Fig. 6.68.1)



NOTES:

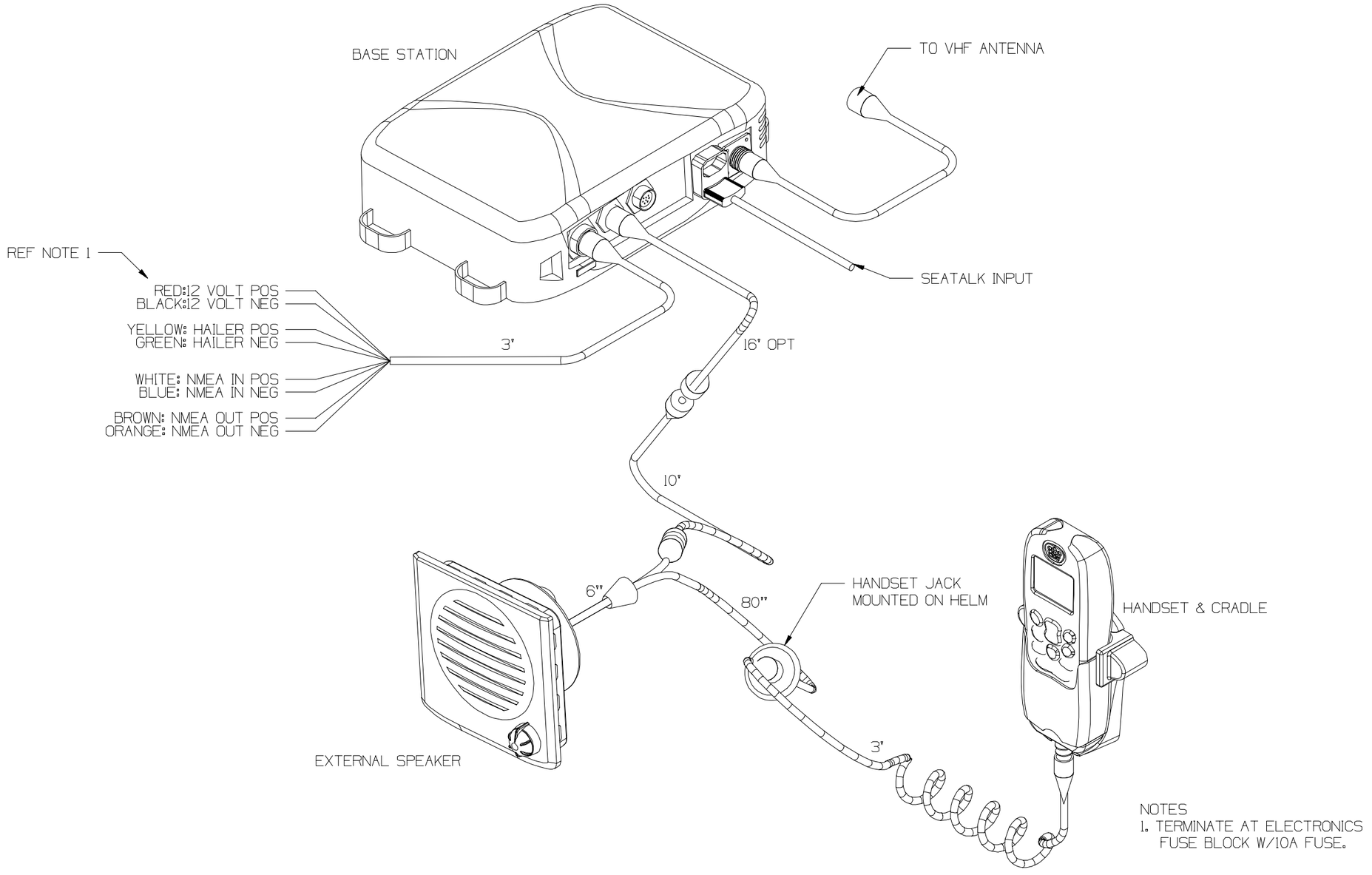
1) ALL ARCH COMPONENTS TO HAVE SPLICE LOCATION WHERE THE ARCH MEETS THE DECK (FM ANTENNA), (TV ANTENNA), (VHF ANTENNA), (CELL PHONE ANTENNA), (SPEAKERS), (RADIO REMOTE), (SPOTLIGHT).

RAYTHEON RADAR / GPS CONNECTION

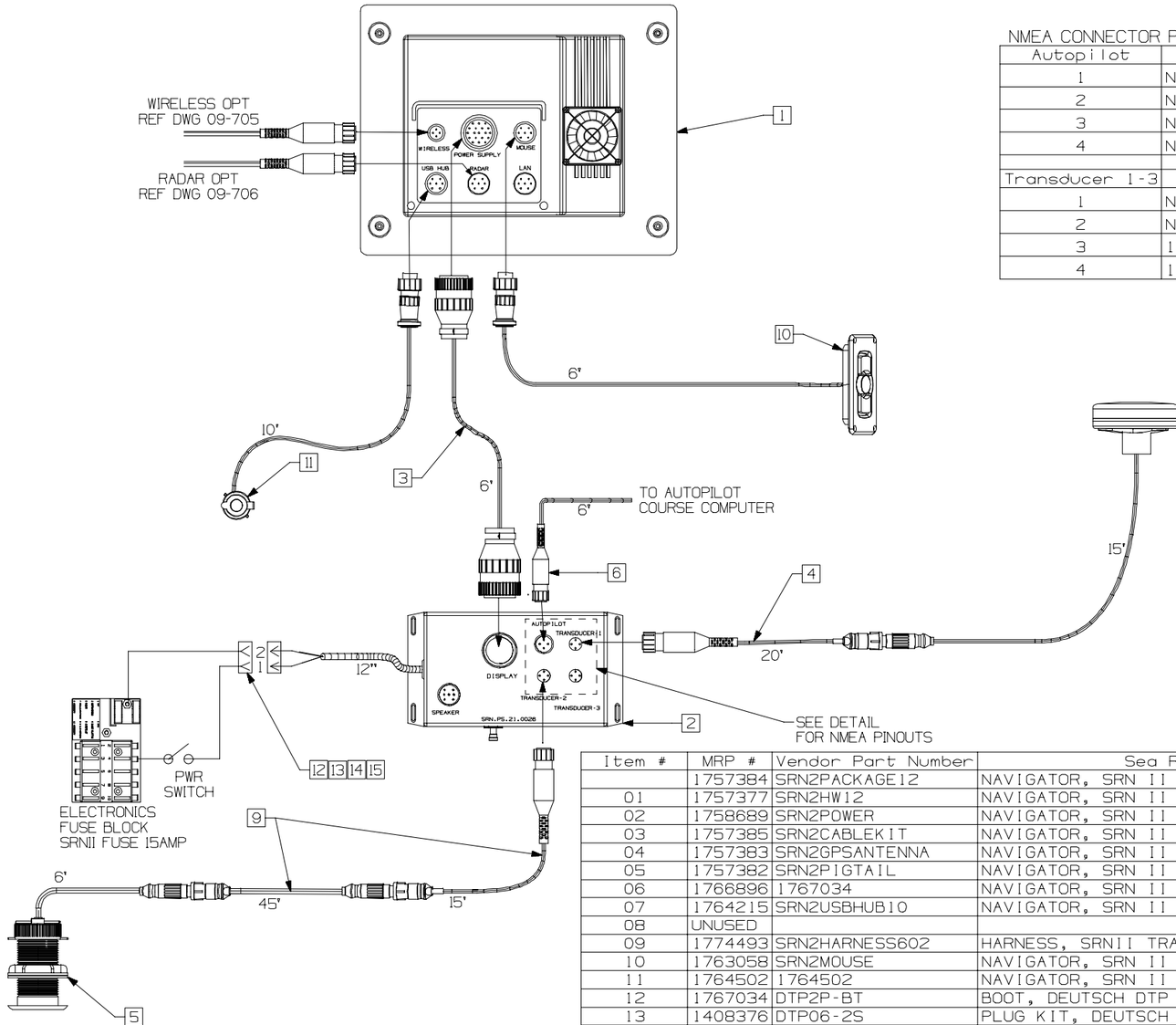
Hardtop Breakdown Connections
drawing no. 09-720 (2 of 3)
(Fig. 6.69.1)

Hardtop Breakdown Connections
drawing no. 09-720 (3 of 3)
(Fig. 6.69.2)

VHF Interconnect Diagram
drawing no. 09-750
(Fig. 6.70.1)



Sea Ray Navigator Interconnect Diagram
drawing no. 09-753
(Fig. 6.71.1)

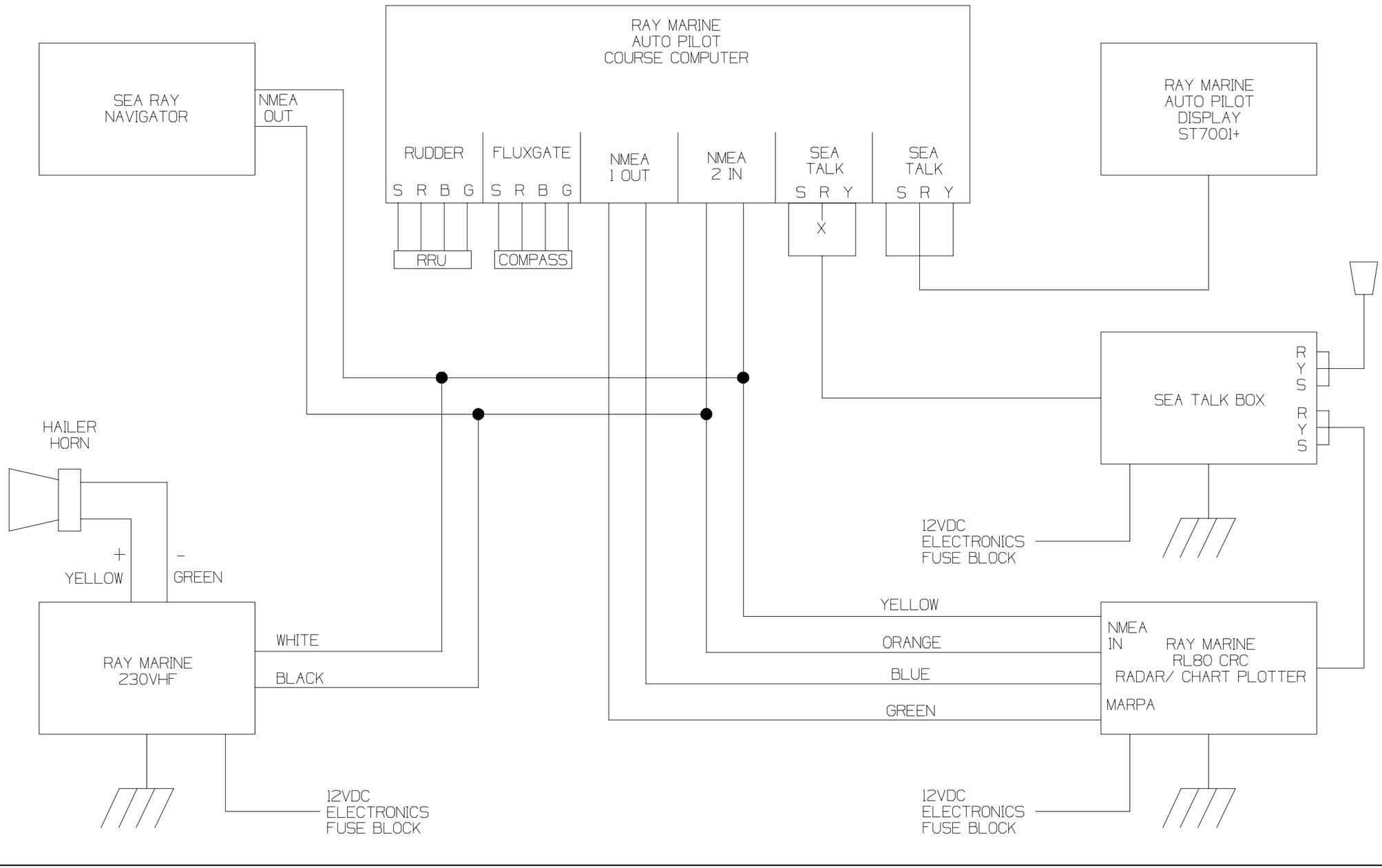


NMEA CONNECTOR PINOUTS

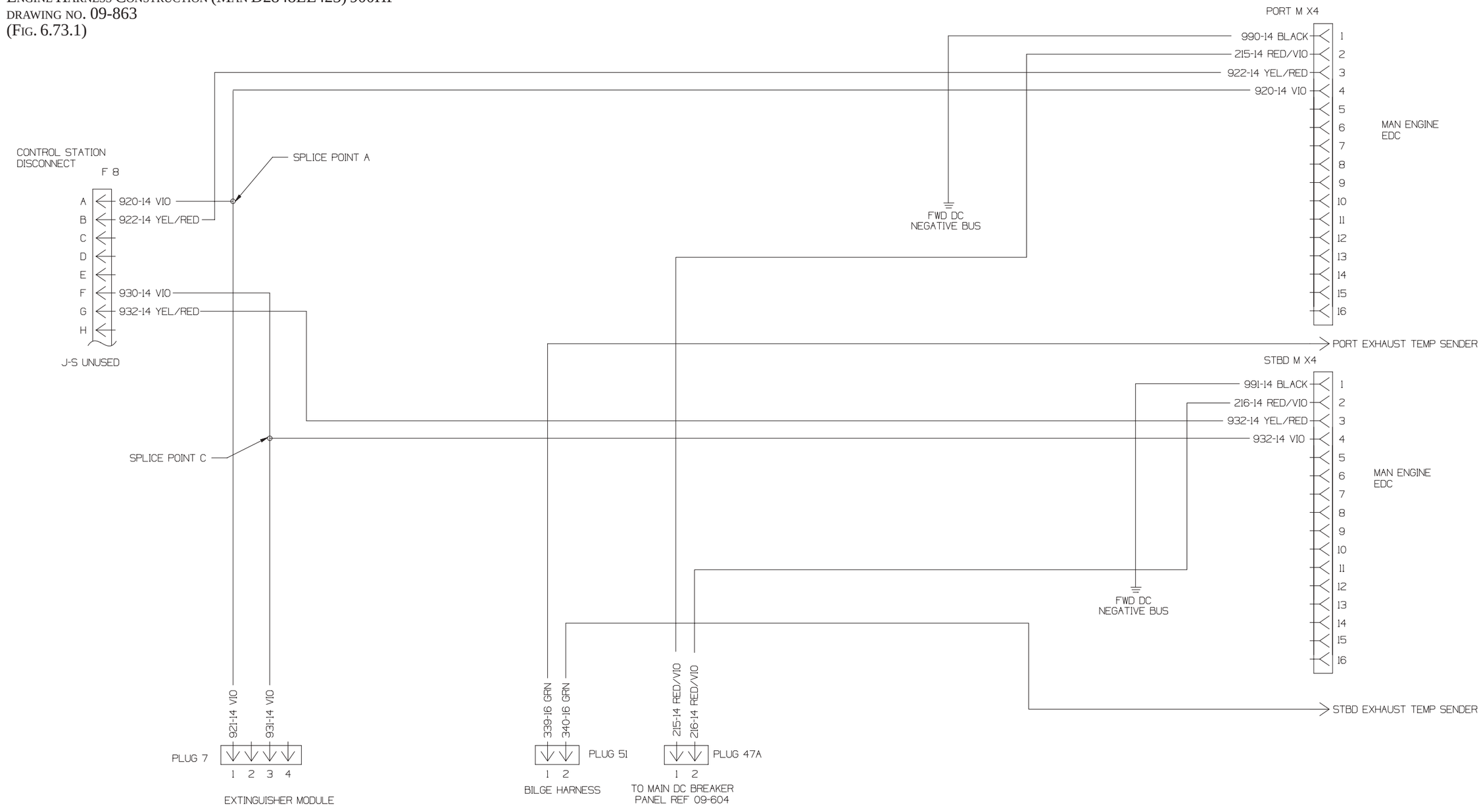
Autopilot	Pin Function	
1	NMEA Neg In	BLU
2	NMEA Pos In (Heading Sensor)	RED
3	NMEA Neg Out (Combined Data)	BLK
4	NMEA Pos Out (Combined Data)	WHT
Transducer 1-3	Pin Function	
1	NMEA Neg In	N/A
2	NMEA Pos In	N/A
3	12VDC Pos	N/A
4	12VDC Neg	N/A

Item #	MRP #	Vendor Part Number	Sea Ray - AS400 Description
	1757384	SRN2PACKAGE12	NAVIGATOR, SRN II COMPLETE PACKAGE
01	1757377	SRN2HW12	NAVIGATOR, SRN II DISPLAY/COMPUTER 12.1
02	1758689	SRN2POWER	NAVIGATOR, SRN II POWER SUPPLY
03	1757385	SRN2CABLEKIT	NAVIGATOR, SRN II DISPLAY POWER/DATA CABLE
04	1757383	SRN2GPSANTENNA	NAVIGATOR, SRN II GPS ANTENNA (NMEA)
05	1757382	SRN2PIGTAIL	NAVIGATOR, SRN II TRANSDUCER DEPTH/TEMP W/6FT PIGTAIL
06	1766896	1767034	NAVIGATOR, SRN II AUTOPILOT CABLE
07	1764215	SRN2USBHUB10	NAVIGATOR, SRN II USB JUNCTION BOX W/10' PIGTAIL
08	UNUSED		
09	1774493	SRN2HARNESS602	HARNESS, SRNII TRANS DPTH/TMP 60'W/BRDG BKDWN
10	1763058	SRN2MOUSE	NAVIGATOR, SRN II MOUSE REMOTE CONTROL
11	1764502	1764502	NAVIGATOR, SRN II USB RECEPTACLE
12	1767034	DTP2P-BT	BOOT, DEUTSCH DTP 2-POS MALE
13	1408376	DTP06-2S	PLUG KIT, DEUTSCH DTP06-2S Plug W/SOCKET
14	1717517	1062-12-0222	PLUG KIT, DEUTSCH F/C 10-12 AWG SOCKET
15	1408400	WP2S	PLUG KIT, DEUTSCH SEC LOCK SCKT 2-POS
NOT SHOWN	1757378	SRN2OWNERSKIT	MANUAL, SRN II OWNERS KIT
NOT SHOWN	1764499	SR7333	LABEL, SEA RAY NAV USB PORT

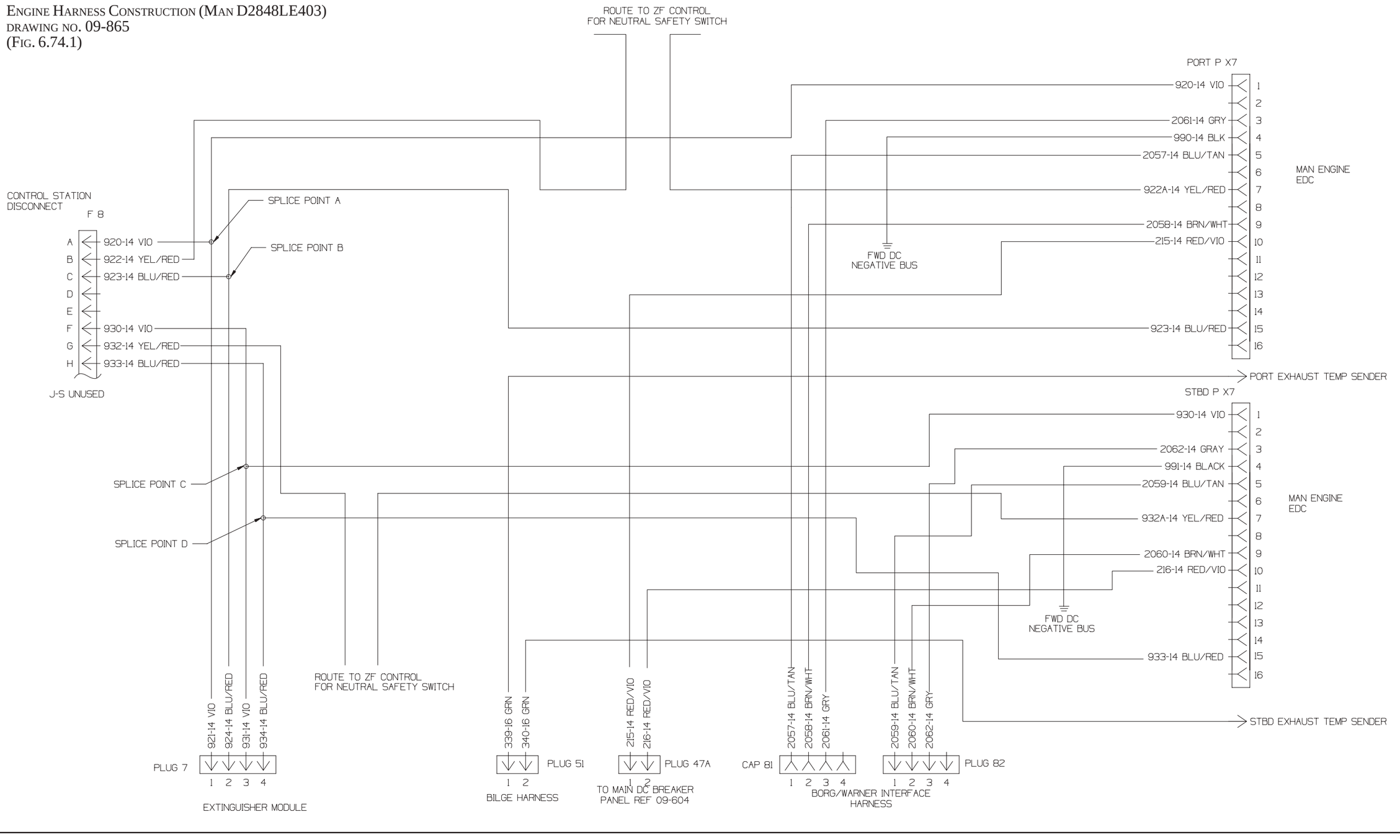
Electronics Interface Diagram
drawing no. 09-754
(Fig. 6.72.1)



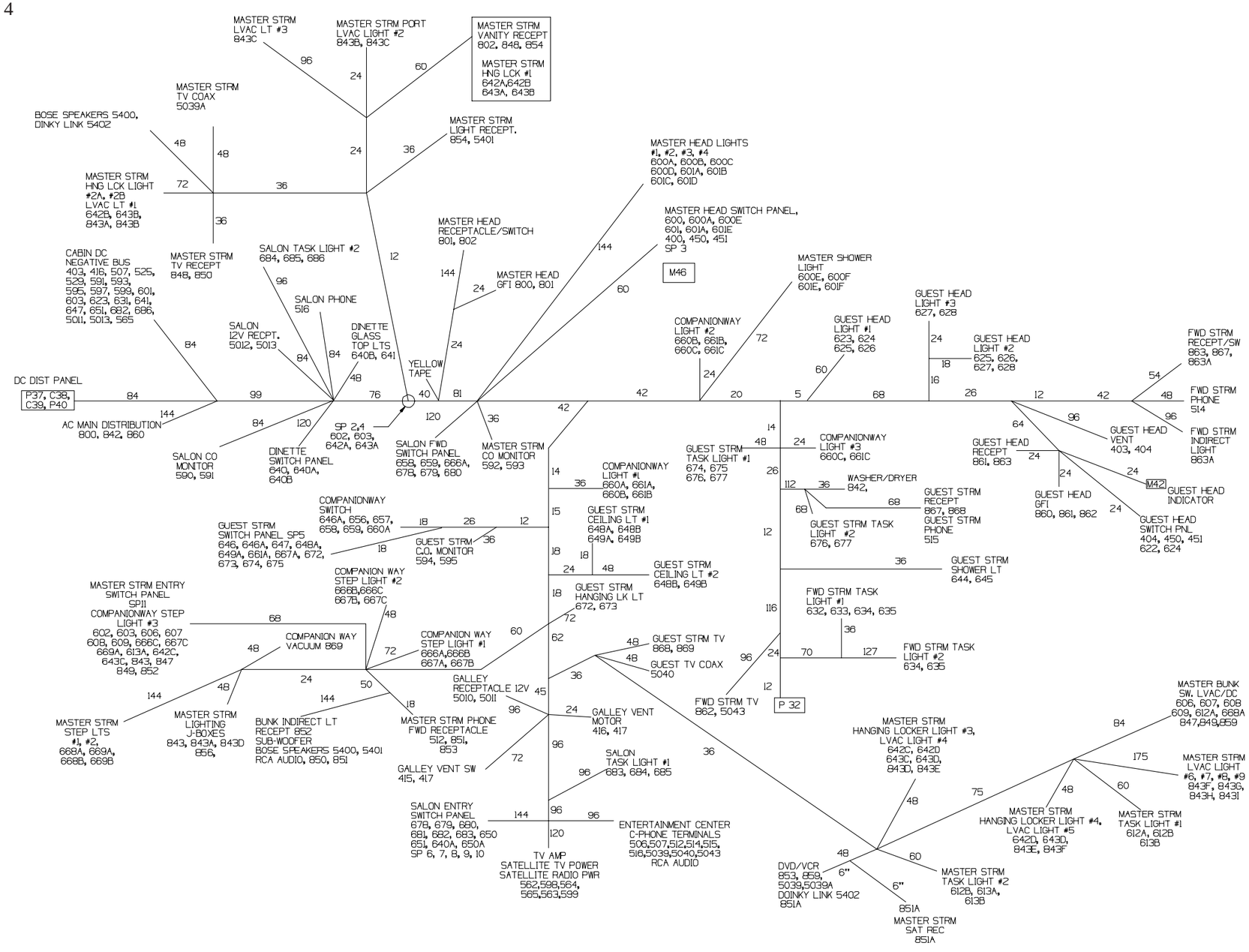
Engine Harness Construction (Man D2848LE423) 900HP
drawing no. 09-863
(Fig. 6.73.1)



Engine Harness Construction (Man D2848LE403)
drawing no. 09-865
(Fig. 6.74.1)



Lower Forward Cabin harness
drawing no. 09-896-6 Rev 4
(Fig. 6.75.1)



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1. LAYOUT AND ACCESSORIES

Section 2 - *General Boat Arrangement* contains the location and arrangement of the equipment and components on your yacht. We strongly suggest that you walk through your yacht, locate the features shown, and become familiar with their operation and maintenance.

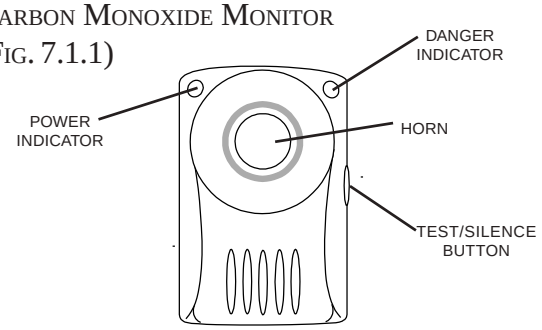
2. CARBON MONOXIDE MONITOR

The 58 DB is equipped with four (4) carbon monoxide (CO) monitors, one on the forward stateroom starboard hanging closet forward wall, one in the master stateroom port side of the entry door and one in the salon above the port sofa(See figures 2.20.1 and 2.21.1).

The CO monitor is an electronic instrument that detects carbon monoxide. When there is a build-up of CO in any room, the monitor in that room will alert the occupants by a flashing a DANGER light and sounding an alarm. The CO monitors are powered through the fuse block behind the salon DC Distribution Panel.

It is important that you read and understand the CO monitor information and operating instructions. It is extremely important that you become familiar with the CO monitor and its functions.

CARBON MONOXIDE MONITOR
(FIG. 7.1.1)



⚠ CAUTION

This detector will only indicate the presence of carbon monoxide gas at the sensor. Carbon monoxide may be present in other areas.

A. TESTING THE CO MONITOR

Test the monitor on your boat at manufacturers required intervals by pushing the TEST button on the side of the unit. If the unit is operating correctly both audible and visual warning indicators will be activated.

⚠ DANGER

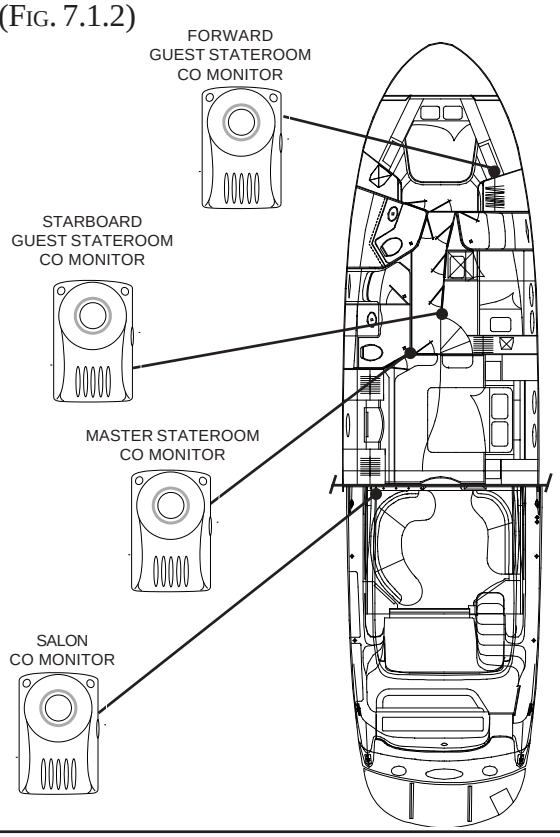
Actuation of the CO monitor indicates the presence of carbon monoxide which can be FATAL.

EVACUATE THE PREMISES IMMEDIATELY. DO A HEAD COUNT TO CHECK THAT ALL PERSONS ARE ACCOUNTED FOR. CALL THE NEAREST FIRE DEPARTMENT AND ASK THEM TO DETERMINE THE SOURCE OF CARBON MONOXIDE. DO NOT REENTER PREMISES UNTIL IT HAS BEEN AIRED OUT AND THE PROBLEM IS CORRECTED.

⚠ CAUTION

To reduce the risk of carbon monoxide poisoning, test the monitor operation when not in use for 10 days or more.

CARBON MONOXIDE MONITOR LOCATIONS
(FIG. 7.1.2)



3. AIR CONDITIONING & HEATING

The self-contained air conditioning system contains the compressor, condenser, evaporator, refrigerant, tubing, electrical box, blower, condensate drip pan and other components on a single chassis. Cabin air is pulled into the unit through a return-air grill, and discharge air is carried through flexible or built-in ducts to a grill, which is normally located on a bulkhead high in the compartment. In a self-contained unit, the refrigerant loop is pre-charged and sealed at the factory, and no additional charging is needed at installation.

The 58DB air conditioning/heating system consists of five (5) standard self contained air conditioning/ heating units, two (2) raw water pumps with seacocks and strainers and a relay unit so the water pumps will be activated by demand when any AC unit comes on. See Cruisair Operators Owners Manual for specific operating troubleshooting information.

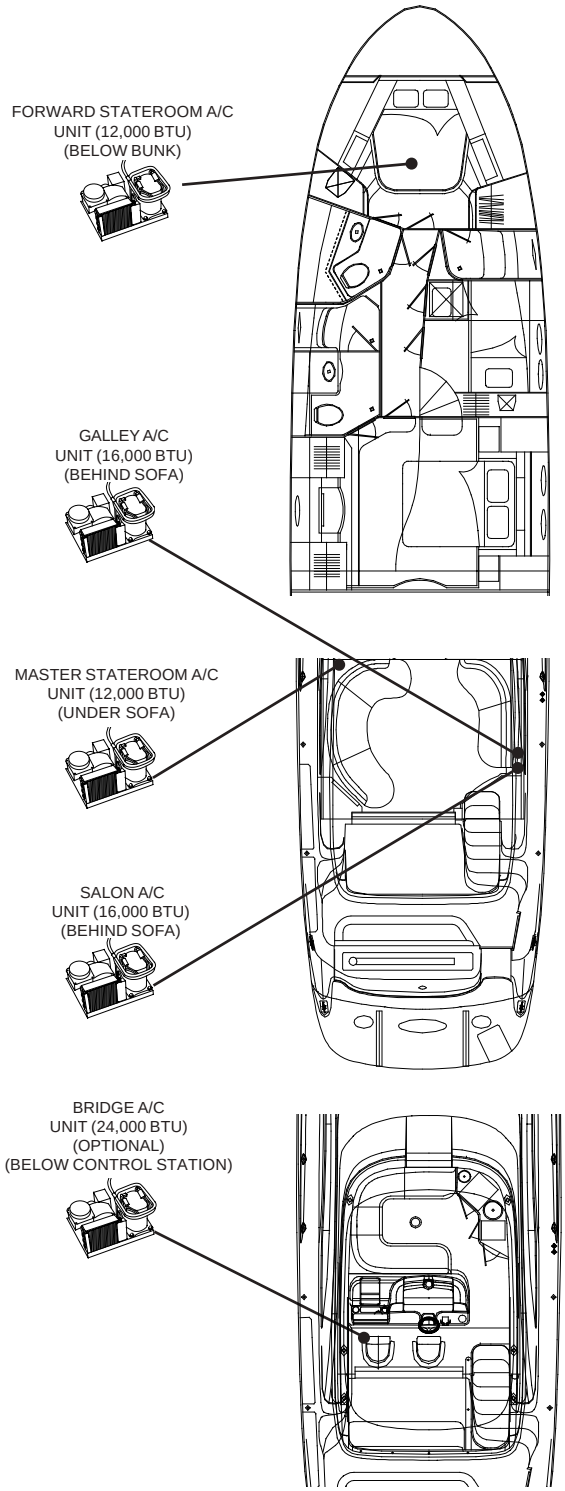
Care should be taken so as not to stow items around the air handlers that may block the return air grill.

The air filters for each unit should be removed and cleaned periodically to assure fresh, clean air circulation and to reduce stress on the unit.

The forward stateroom unit is located under the bunk and can be accessed through a hatch under the mattress. The controls for the unit are located on the port hanging locker. The removable air filter is located on the face of the unit. This unit supplies conditioned air to the forward stateroom, forward head and shower as well as the starboard stateroom.

The master stateroom unit is located under the port salon sofa and can be accessed by removing the sofa cushion. The removable air filter is located on the face of the unit. The return air plenum is built into the port aft hanging locker in the master stateroom. The unit supplies conditioned air not only to the master stateroom but to the master stateroom head as well. The controls for the unit are located on the side of the starboard hanging locker.

AIR CONDITIONER LOCATIONS
(FIG. 7.2.1)



There are two units in the salon located under the starboard sofa. The forward unit supplies conditioned air to the galley and lower companionway through plenums located on the dash and companionway ceiling. The aft unit supplies conditioned air to the main salon through plenums in the starboard entertainment center and mid salon column. The controls for the unit are located above the starboard sofa. The removable air filter is located on the face of the unit and are accessed for service by lifting the sofa cushions.

The Bridge unit is located behind an access panel on the lower port side of the helm. The controls for the bridge unit are located in the upper bridge storage. The removable air filter is located on the face of the access panel.

The system is cooled to maintain optimal operating temperature by the raw water pumps located in the bilge, one for the cabin units, located aft of the starboard engine and one for the bridge unit located aft of the port engine .

The pumps draw water through a seacock and filters it through sea water strainers. The water passes through each compressor cooling the condensing coils, then flows overboard through the common drain. (The sea water strainers should be inspected frequently and cleaned out when plugged. To clean the strainers, refer to Section 4- Bilge & Underwater Gear, pg. 4.13, Seacocks & Strainers).

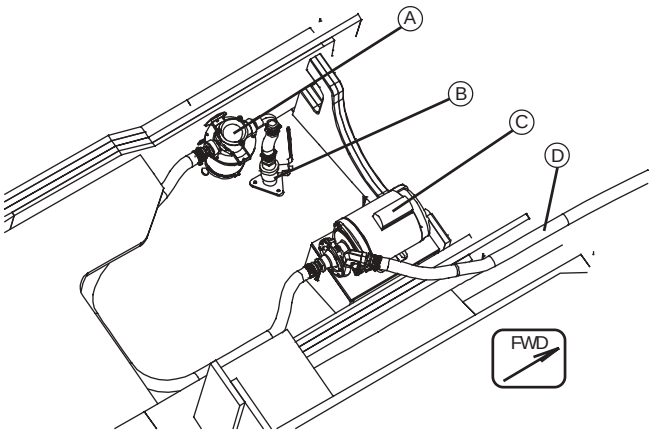
The condensation drains for all the cabin and compressor units connect into the shower sump located in the bilge. And is pumped overboard via the common gray water drain system.

A. TO START SYSTEM:

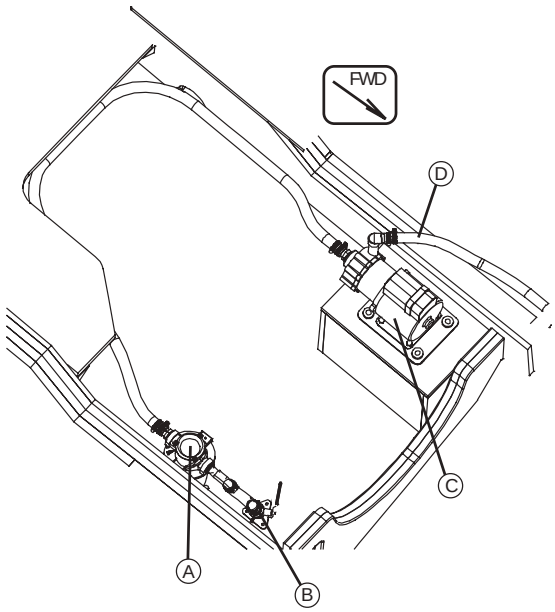
1. Make sure the seacock for the cooling water pump is open.
2. Turn ON the A/C WATER PUMP & RELAY circuit breaker on the main AC distribution panel. Turn ON each A/C UNIT circuit breaker located on the same panel.
3. Refer to air conditioner owner's manual in the owner's packet for instructions on operation of the control panels.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

A/C SEACOCK, STRAINER & SEAWATER PUMP (FIG. 7.3.1)



CABIN A/C PUMP ASSEMBLY



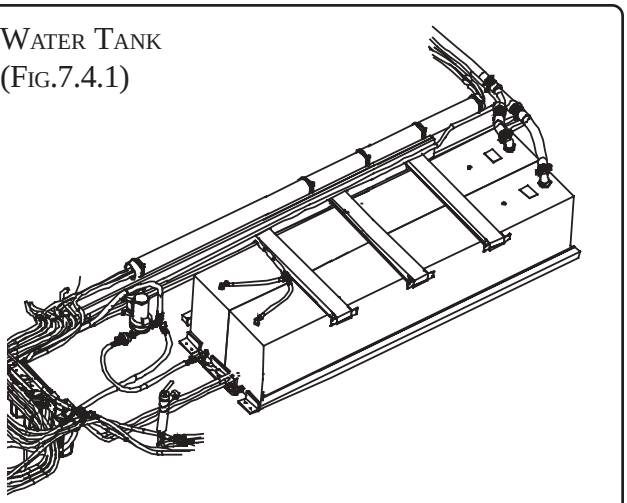
BRIDGE A/C PUMP ASSEMBLY

Ⓐ STRAINER
Ⓑ SEACOCK
Ⓒ WATER PUMP
Ⓓ WATER HOSE

4. WATER SYSTEM

The fresh water system consists of two (2) 72 gallon (272.5 liter) water tanks, a 24 volt water pump with two (2) water filters, one primary on the pump and a secondary water system filter, water heater, and hot and cold distribution manifold.

WATER TANK
(FIG.7.4.1)



The fresh water system can be activated two ways. One by the 24 volt water pump breaker on the salon 24/12VDC distribution panel. Or by the use of the dockside inlet. Ship side operation requires the 24 volt water pump breaker to be ON to operate the head, shower, ice maker, fresh water washdowns or faucets. Dockside operation only requires that dockside pressure be applied to the inlet regulator. See dockside inlet below.

A. WATER TANK

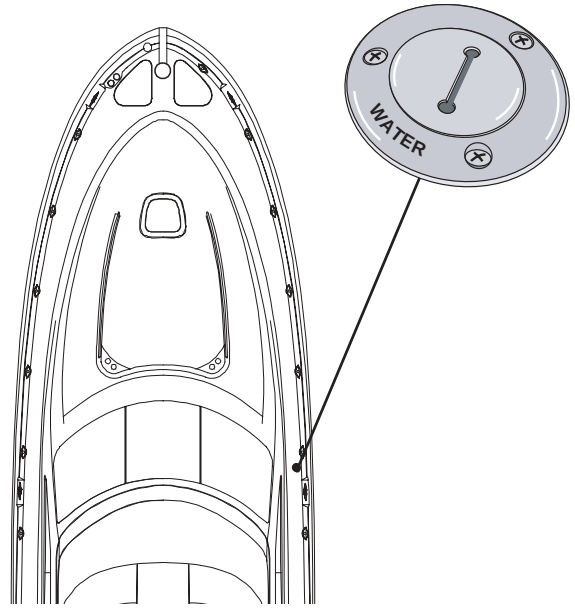
The two (2) 72 gallon (757 liter) water tanks are located between the port and starboard inboard stringers under the companionway steps in the cabin. To check the water level in the tank, press the water level switch on the 24/12VDC distribution panel located in the port salon. The lights will indicate the amount of water in the tank.

In the unlikely event it is necessary to access the tank fittings, roll carpet and padding back from the aft end of the companionway. Remove screws which secure the floor.

FILLING THE WATER TANK

The tanks are filled through a fill plate located on the starboard deck walkway. The two tanks are connected together requiring only one deck fill plate. Fill the water tanks only from a source known to provide safe, pure drinking water. To fill your water tanks you should use a plastic hose. Do not use a rubber hose; it can give the water a disagreeable flavor.

FRESH WATER FILL
(FIG.7.4.2)



The hose should be kept for filling use only. After using the hose it should be emptied. Start at one end and raise the hose to shoulder level and walk to the opposite end of the hose, allowing the remaining water to flow out. You should store your water tank filling hose in a clean dry place. It is also a good practice to cover the ends of the hose to keep the inside clean.

TO BEGIN INITIAL OPERATION:

1. Fill the water tanks with potable water.
2. Switch the water pump breaker to the ON position.

3. One at a time, open all hot and cold faucets to bleed air from the water lines.

4. Once air has been eliminated from water lines, close faucets.

5. Shutting off the last faucet should cause the pump to shut off.

SANITIZING THE WATER SYSTEM

Although your dealer initially sanitizes the water system, if the system has not been used for a long period of time, or you suspect it may be contaminated, use a water treatment additive to sanitize the potable water system. Water treatment additives are available at marine/RV supply stores.

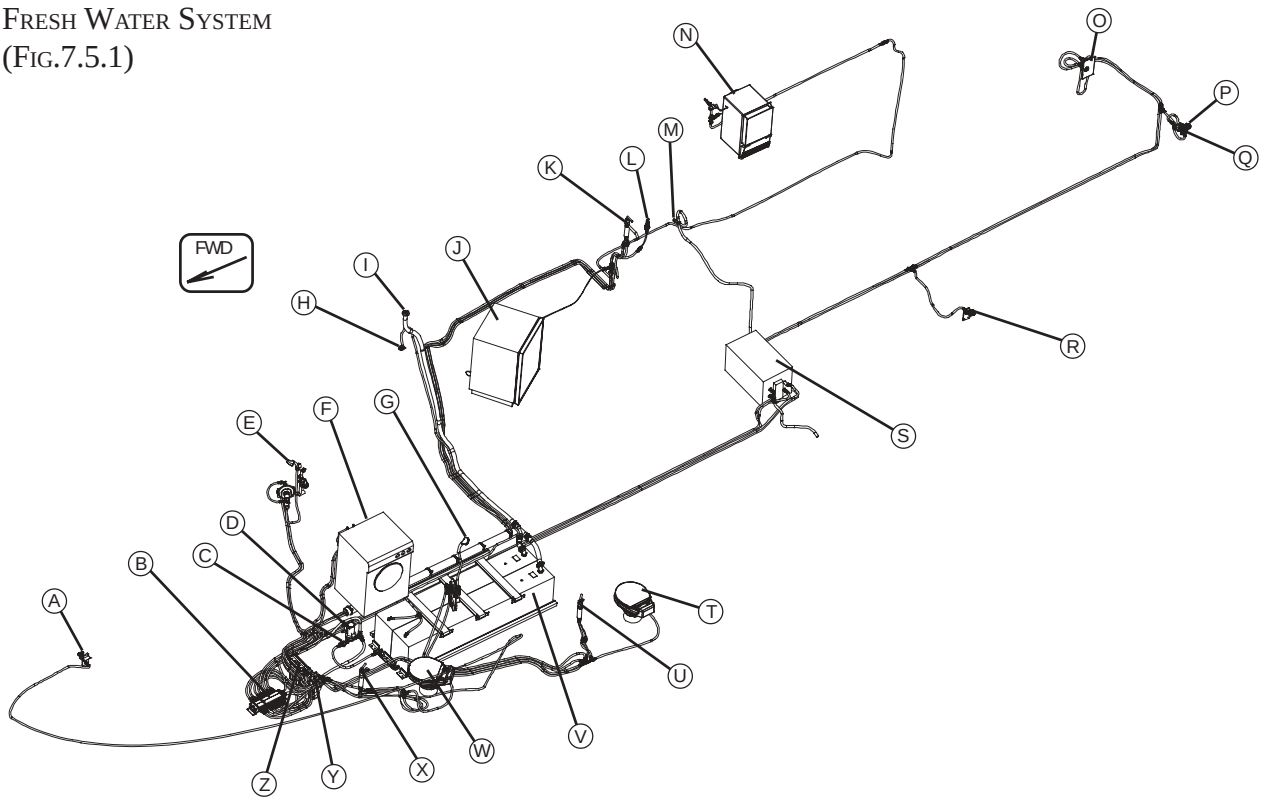
If water treatment additives are not available, adhere to the following procedure for complete sanitation of your potable water system.

1. Prepare a chlorine solution using one (1) gallon of water and one (1) cup Clorox or Purex household bleach (5% Hypochloride solution). With tank empty, pour chlorine solution into tank, using one (1) gallon solution for each sixty (60) gallons of tank capacity.

2. Complete filling of tank with fresh water. Open each faucet untilair has been released and the entire system is filled.

3. Allow to stand for three (3) hours.

FRESH WATER SYSTEM
(FIG.7.5.1)



- (A) BOW WASHDOWN SPIGOT
- (B) WATER MANIFOLD
- (C) PRE- FILTER
- (D) WATER PUMP
- (E) GUEST SHOWER HEAD
- (F) WASHER/DRYER
- (G) MASTER SHOWER HEAD
- (H) FRESH WATER TANK VENT
- (I) FRESH WATER TANK FILL
- (J) GALLEY FREEZER/ICE MAKER
- (K) GALLEY FAUCET
- (L) GALLEY SPRAY HOSE
- (M) WATER HEATER VENT
- (N) BRIDGE ICE MAKER
- (O) TRANSOM SHOWER
- (P) TRANSOM WASHDOWN SPIGOT
- (Q) DOCKSIDE WATER INLET
- (R) BILGE WASHDOWN SPIGOT
- (S) WATER HEATER
- (T) MASTER HEAD
- (U) MASTER VANITY FAUCET
- (V) WATER TANK
- (W) GUEST HEAD
- (X) GUEST VANITY FAUCET
- (Y) WATER FILTER
- (Z) SMART WATER FILTERS (OPTIONAL)

4. Drain and flush with potable fresh water.

5. To remove excessive chlorine taste or odor which might remain, prepare a solution of four (4) quarts of vinegar to twenty (20) gallons of water and allow this solution to agitate in the tank for several days by vehicle motion.

6. Drain tank and again flush with potable water.

7. Replace water filter.

B. WATER PUMP & FILTERS

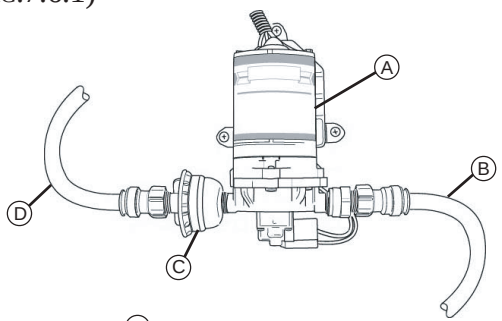
The pump for the fresh water system are located forward in the sub floor of the cabin companionway and can be readily serviced. through the cabin floor access hatch.

The pump is activated by the FRESH WATER PUMP breaker on the salon 24/12VDC distribution panel.

The water system filters are located on the pump and on the side of the port stringer inside of the floor storage. The filters should be checked and replaced periodically.

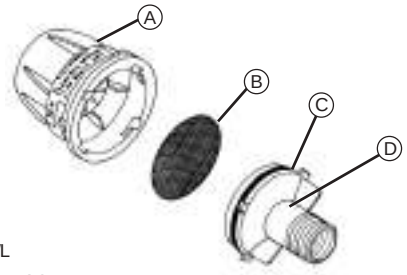
Before servicing the system, turn the FRESH WATER PUMP breakers OFF located on the DC Distribution Panel in the port aft side of the Salon. Turn the WATER HEATER breaker OFF located on the AC Distribution Panel in the Salon as well. Release pressure on the system by opening a faucet.

WATER PUMP AND PRE-FILTER
(FIG.7.6.1)



Ⓐ WATER PUMP
Ⓑ TO WATER FILTER
Ⓒ PRE-FILTER
Ⓓ FROM FRESH WATER TANK

WATER PUMP FILTER
(FIG.7.6.2)



Ⓐ BOWL
Ⓑ FILTER SCREEN
Ⓒ O-RING
Ⓓ COVER

⚠ WARNING

WARNING - Make certain the water heater is turned off prior to servicing the water system. Damage will occur to water heater if water level drops below element while system breaker is turned on.

C. WATER DISTRIBUTION MANIFOLD

The distribution manifold (See Figure 7.7.1) is located under the cabin floor outside the port stateroom, and is accessed by lifting the hatch. The manifold directs fresh water to the various equipment throughout the yacht.

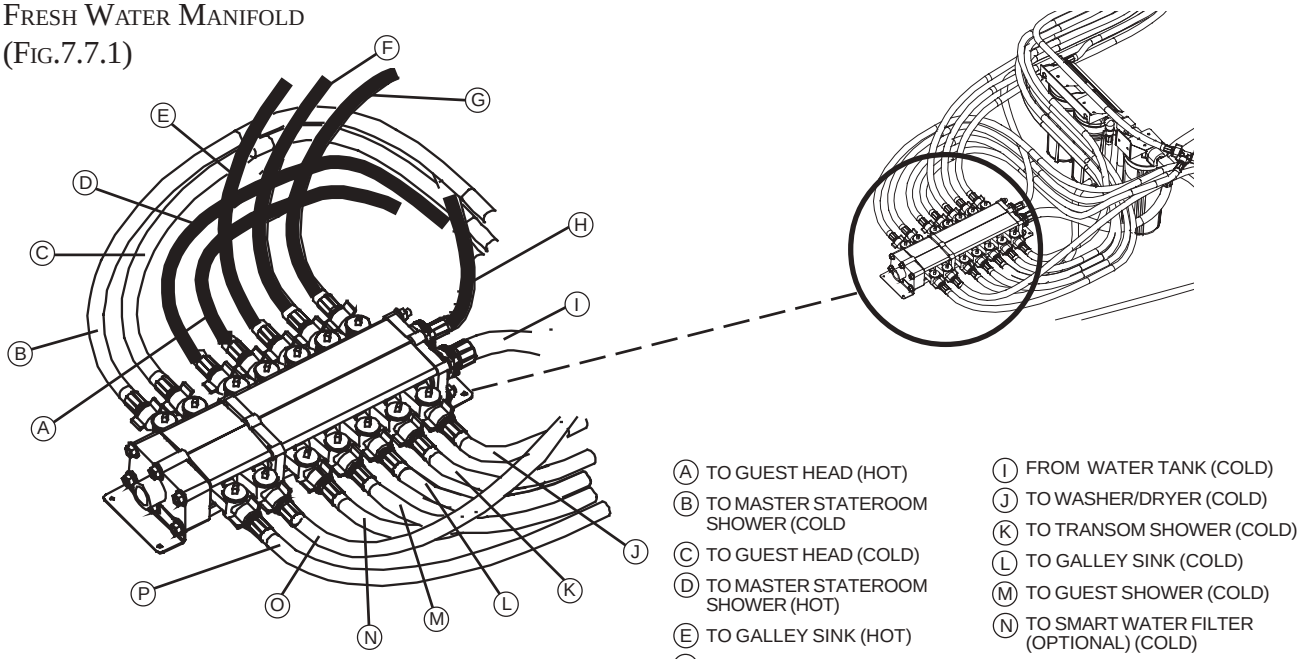
The valves should be shut off when the equipment is not in use.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

D. WATER HEATER

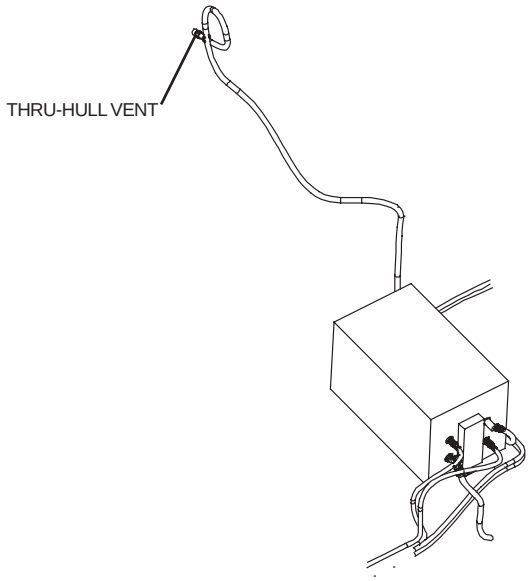
The 18 gallon (68.1 liters) water heater is located forward of the starboard engine in the engine room. It operates on the 240 volt dockside system or generator and has a circuit breaker on the 240VAC Main Distribution Panel located in the salon.

FRESH WATER MANIFOLD
(FIG.7.7.1)



Ⓐ TO GUEST HEAD (HOT)
Ⓑ TO MASTER STATEROOM SHOWER (COLD
Ⓒ TO GUEST HEAD (COLD)
Ⓓ TO MASTER STATEROOM SHOWER (HOT)
Ⓔ TO GALLEY SINK (HOT)
Ⓕ TO TRANSOM SHOWER (HOT)
Ⓖ TO WASHER/DRYER (HOT)
Ⓗ FROM WATER HEATER (HOT)
Ⓘ FROM WATER TANK (COLD)
Ⓙ TO WASHER/DRYER (COLD)
Ⓚ TO TRANSOM SHOWER (COLD)
Ⓛ TO GALLEY SINK (COLD)
Ⓜ TO GUEST SHOWER (COLD)
Ⓝ TO SMART WATER FILTER (OPTIONAL) (COLD)
Ⓞ TO ROPE LOCKER (COLD)
Ⓟ TO WATER HEATER (COLD)

WATER HEATER (SEE FIG. 7.5.1)
(FIG.7.7.2)



The water heater has a check valve at the inlet, to prevent hot water from back-flowing into the cold water source and a pressure relief valve to avoid damage to the heater from over pressure or excessive temperature. The pressure relief line is routed into the forward bilge sump.

INITIAL START-UP OR AFTER WINTERIZATION:

1. Make sure the WATER HEATER breaker on the 240VAC distribution panel is OFF.

⚠ WARNING

Make certain the hot water lines are air free, indicating the water heater is full. Damage will occur to water heater if it is not full when turned on.

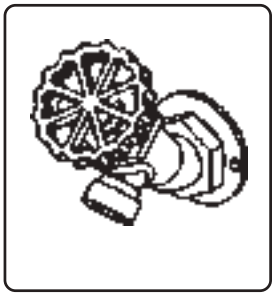
2. Fill the heater with water.
3. Open the hot water faucets until all air is eliminated from the system.
4. Make certain the heater is full of water. COMPLETE FAILURE OF THE HEATING ELEMENTS WILL RESULT IF THEY ARE NOT COMPLETELY IMMERSED IN WATER AT ALL TIMES.

5. Turn the WATER HEATER breaker ON.

To maintain water heater properly, drain whenever the possibility of freezing occurs and frequently inspect lines and connections for leaks.

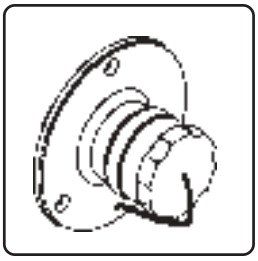
REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

E. FRESH WATER WASHDOWN



The 58DB is equipped with Three (3) fresh water spigots; one in the bilge, one in the transom and one in the bow rope/chain locker. The bilge spigot comes with a 12-foot hose and a strap for storage when not in use. The transom spigot is located in the starboard transom storage. The rope/chain locker spigot is accessible through the bow deck

F. DOCKSIDE WATER INLET



The dockside water inlet, located inside the aft transom hatch, starboard side, allows use of a dockside water source to provide water for the boat's fresh water system.

TO USE THE SYSTEM:

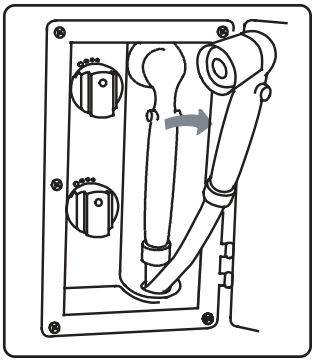
1. Make sure the "FRESH WATER PUMP" breakers are OFF.

2. Remove the plug from the face of the dockside water inlet.

3. Connect a drinking water hose to the water outlet on the dock, then to the dockside water inlet on the boat and turn on the water at the dock.

All fresh water faucets and showers are now usable. To disconnect the system, reverse the procedure, making sure the plug is reinstalled tightly. Remove the dockside water hose when leaving the boat. This is a safety precaution to prevent the unlikely event of a water system failure and the intake of extreme amounts of water to the vessel.

G. COCKPIT SHOWER



The cockpit shower has a hot and cold control and shower wand which are located in a receptacle on the starboard transom. Squeeze the button on the shower wand to dispense water and turn the knob to adjust water temperature. The FRESH WATER PUMP breakers on the main distribution panel must be ON to operate the shower. Unless using dockside water source.

H. WASHER/DRYER WATER VALVE (OPTIONAL)

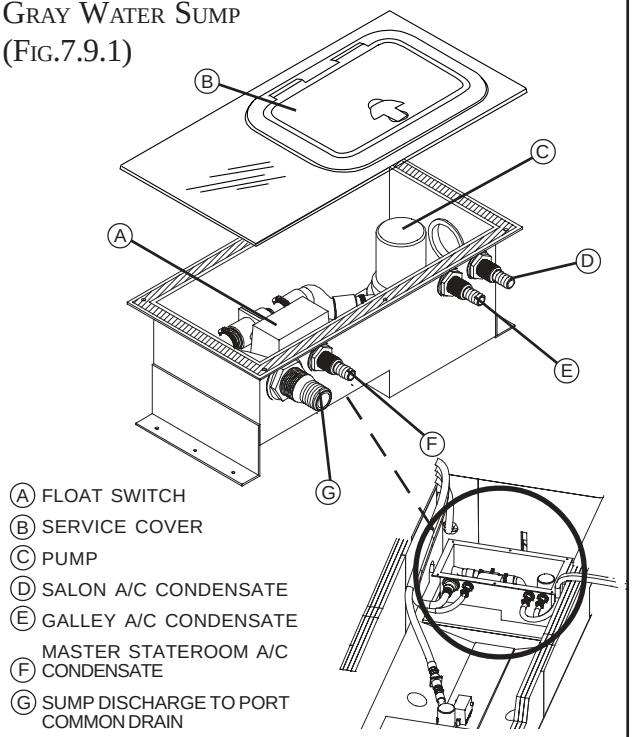
The washer/dryer unit is located in the port guest stateroom. Hot and cold water lines are connected to the back of the unit. Shutoff valves for the unit are on the water system manifold located in cabin floor outside the port stateroom (see Fig.7.7.1). The water valves for the unit should be turned OFF when not in use.

I. GRAY WATER SUMP

Your yacht is equipped with a gray water/ condensate sump located forward in the engine room, between the port and starboard inboard stringers. Gray water from the head systems, galley systems and air conditioner condensation drains into the sump to be pumped overboard through the port common drain line.

The sump pump is fully automatic and protected by breakers on the main DC breaker panel on the port mid bulkhead of the bilge. Periodically open the service cover to check the pump and float switch for obstructions and proper working order. The sump pump comes on when there is enough water in the sump to raise the float switch and start the pump. If

GRAY WATER SUMP
(FIG.7.9.1)



it does not come on after one or two gallons of water drain from the shower, turn the water off and check the pump and float switch for proper operation.

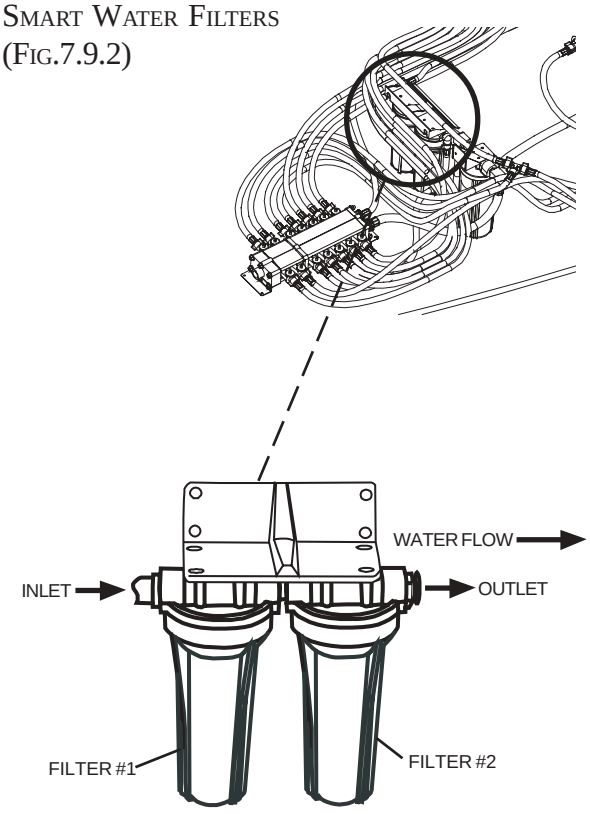
After using the shower, it is recommended that you run a gallon of clean water through the shower drain to clean out soap residue.

J. SMART WATER SYSTEM (OPTIONAL)

If equipped, the optional smart water filtration system is located along side the water system filter on the forward component board in the engine room (Figure 7.9.2). The system incorporates two additional filters which effectively eliminate the water of any sedimentation and unpleasent odors and taste which may be present.

The system is rated for 1,250 gallons of water throughput. However, the filters should be checked and cleaned periodically using the same method described in the servicing of the standard filtration

SMART WATER FILTERS
(FIG.7.9.2)



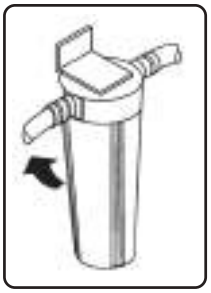
system. The smart water system filter #1 (Figure 7.9.2) reduces unpleasant taste and odor, dirt, rust and sedimentation which may be present.

The smart water system filter #2 (Figure 7.9.2):

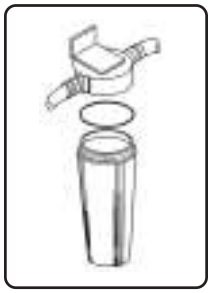
- Absolute 1 micron
- Reduces 97.5% lead
- Reduces 99.98% Filterable cysts (such as cryptostoridium and giardia)
- Reduces 99.5% clorine.

Cleaning The System:

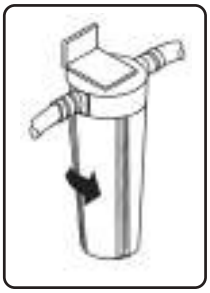
- Close the water supply valve and remove the tank by turning clockwise



- Remove the filter and thoroughly wash the inside of the tank withhot, soapy water and rinse thoroughly.
- Replace filters making sure that the correct filter is installed in the appropriate tank. Filter #1 cartridge (white with no end caps) should always be placed in the #1 tank and filter #2 (white with yellow end caps) in the #2 tank.
- Replace filter and screw tank body onto filter head, making sure the O-ring is fully seated and lubricated with clean food grade silicon grease.



- Tighten the tank by turning counter-clockwise.

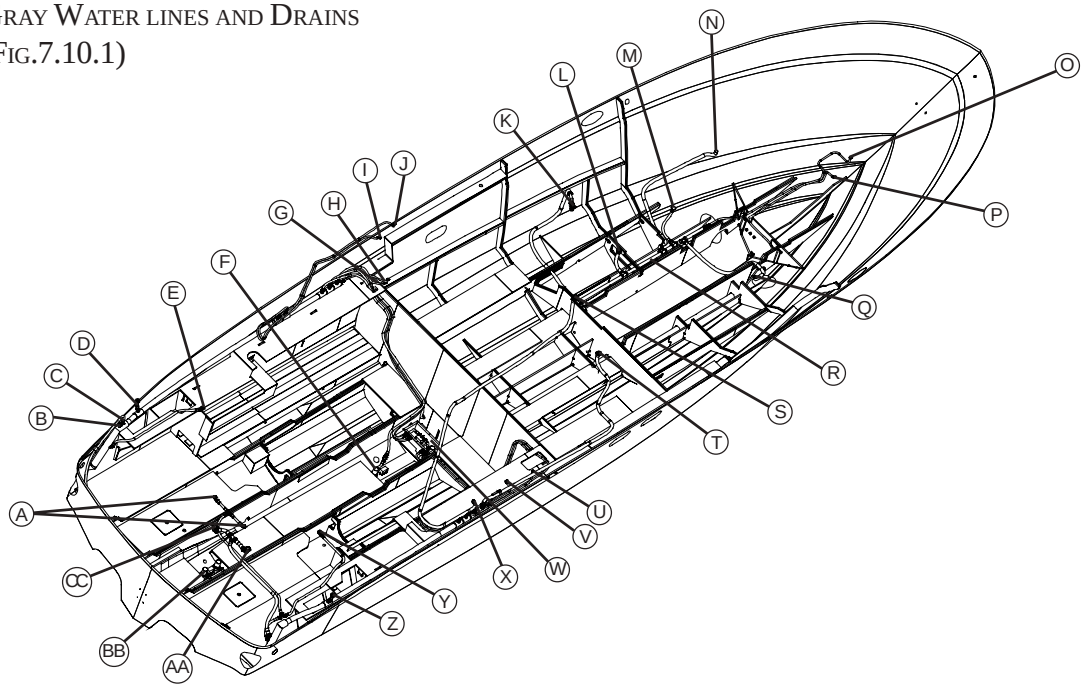


REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

K. GRAY WATER DRAIN LINES

The Gray water from the shower and galley systems plus the air conditioners condensation is carried to the shower sump or common drains by the gray water drain lines located throughout the boat.

GRAY WATER LINES AND DRAINS
(FIG.7.10.1)



- (A) BILGE ACCESS HATCH
- (B) EMERGENCY HIGH WATER PUMP
- (C) AFT BILGE PUMP
- (D) PORT DECK VENT
- (E) PORT COCKPIT STORAGE
- (F) MID BILGE PUMP
- (G) MASTER A/C RETURN
- (H) MASTER A/C CONDENSATE
- (I) BRIDGE A/C CONDENSATE
- (J) BRIDGE A/C RETURN
- (K) MASTER HEAD SINK
- (L) MASTER HEAD SHOWER
- (M) GUEST HEAD FLOOR
- (N) GUEST HEAD VANITY
- (O) FORWARD STATEROOM A/C RETURN
- (P) FORWARD STATEROOM A/C CONDENSATE
- (Q) GUEST HEAD SHOWER
- (R) FORWARD SUMP SYSTEM
- (S) BRIDGE WET BAR
- (T) GALLEY SINK
- (U) GALLEY A/C CONDENSATE
- (V) GALLEY A/C RETURN
- (W) SHOWER SUMP
- (X) SALON A/C
- (Y) STARBOARD COCKPIT STORAGE
- (Z) STARBOARD DECK VENT
- (AA) BAITWELL
- (BB) AFT BILGE PUMPS
- (CC) FISH BOX

5. HEAD SYSTEM

The standard head system on your Sea Ray® includes a holding tank with dockside pump-out and fluid level indicators, with a macerator and overboard discharge seacock available as an option. Below is a description of the head system and options. You should be aware of whether your boat is equipped with the optional overboard discharge system and read the section pertaining to it. The owner's packet in your boat contains information pertaining to your head system that should be read carefully. (See manufacturers installation and operation manual for additional information). Also see manufacturers "Service Manual".

⚠ CAUTION

Do not flush facial tissue, paper towels or sanitary napkins in head.

A. REQUIREMENTS FOR VESSEL OPERATORS

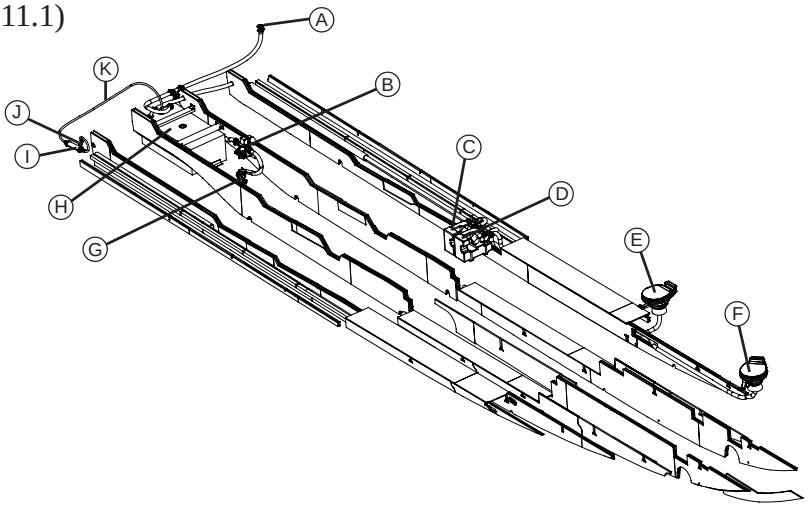
The Environmental Protection Agency (EPA) standards state that in freshwater lakes, freshwater reservoirs or other freshwater impoundments whose inlets or outlets are such as to prevent the ingress or egress by vessel traffic subject to this regulation, or in rivers not capable of navigation by interstate vessel traffic subject to this regulation, marine sanitation devices certified by the U.S. Coast Guard installed on all vessels shall be designed and operated to prevent the overboard discharge of sewage, treated or untreated, or of any waste derived from sewage. The EPA standards further state that this shall not be construed to prohibit the carriage of Coast Guard-certified flow through treatment devices which have been secured so as to prevent such discharges. They also state that waters where a Coast Guard certified marine sanitation device permitting discharge is allowed include coastal waters and estuaries, the Great Lakes and interconnecting waterways, freshwater lakes and impoundments accessible through locks, and other flowing waters that are navigable interstate by vessels subject to this regulation (40 CFR 140.3).

VACUFLUSH® HEAD

B. VACU-FLUSH® HEAD

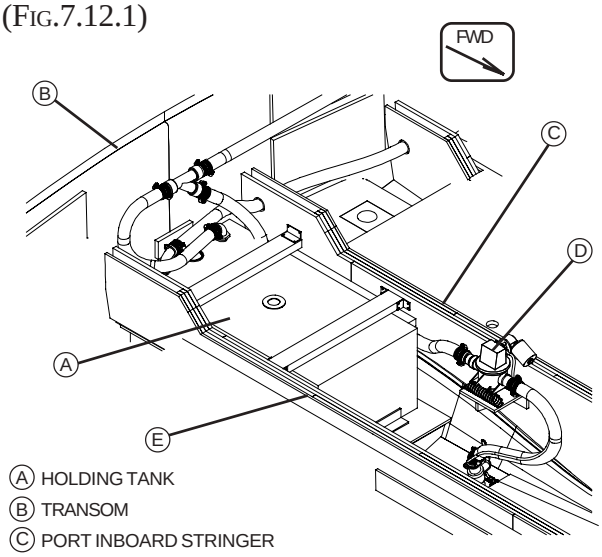
The Vacu-Flush® head utilizes the HEAD breakers on the DC distribution panel in the salon. Individual breakers on the DC distribution panel control the GUEST HEAD and MASTER HEAD. The foot pedal at the base of the toilet opens a mechanical seal and vacuum forces waste through the opening in the bowl to the vacuum generator, through the vacuum pump and then to the holding tank.

WASTE SYSTEM WATER LINE ROUTING
(FIG. 7.11.1)



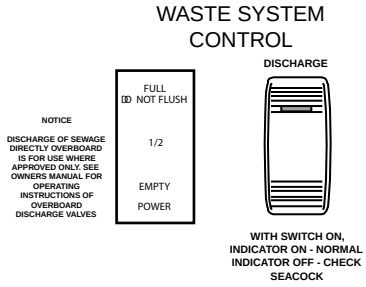
- (A) DOCKSIDE PUMPOUT
- (B) MACERATOR (OPTIONAL)
- (C) MASTER HEAD VACUUM GENERATOR
- (D) GUEST HEAD VACUUM GENERATOR
- (E) MASTER HEAD
- (F) GUEST HEAD
- (G) OVERBOARD DISCHARGE SEACOCK (OPTIONAL)
- (H) HOLDING TANK
- (I) VENT FILTER
- (J) THRU-HULL VENT
- (K) VENT HOSE

HOLDING TANK
(FIG.7.12.1)

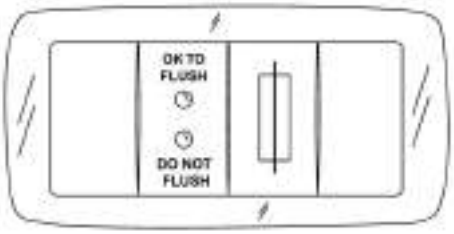


Ⓐ HOLDING TANK
Ⓑ TRANSOM
Ⓒ PORT INBOARD STRINGER
Ⓓ MACERATOR
Ⓔ STARBOARD INBOARD STRINGER

WASTE LEVEL INDICATOR AND DISCHARGE CONTROL
(FIG. 7.12.2)



INDIVIDUAL HEAD, WASTE LEVEL INDICATOR
(FIG. 7.12.3)



TO OPERATE VACU-FLUSH® HEAD:

1. Turn ON the FRESH WATER PUMP breaker.
2. Turn ON the HEAD SYSTEM breaker.
3. If there is no water in bowl, lift foot pedal until enough water fills the bowl.
4. To flush, depress foot pedal to floor until bowl is clear.

C. HOLDING TANK OPERATION

Waste from the head is directed into the 68 gallon holding tank located in the engine room under the generator. Holding tank fluid level indicators are located on the DC distribution panel in the salon and in each head. The indicators read POWER, 1/2 and FULL-DO NOT FLUSH (Figure 7.12.2).

When the FULL-DO NOT FLUSH light is on, the holding tank must be emptied before the head can be reused. However it would be a good practice to empty the holding tank when the 1/2 light is on to avoid overflowing the holding tank and ruining the vent filter.

To empty the holding tank, the services of a dockside pump out station will be needed. Follow instructions at the station and make sure pump out station hose is inserted into the deck plate marked WASTE, located on the port side of the transom.

The holding tank can also be emptied by the optional macerator. See MACERATOR DISCHARGE PUMP.

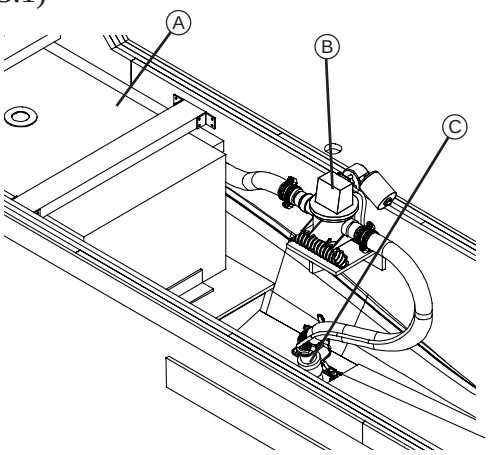
D. VENT FILTER

The vent filter is designed to control odors associated with the head system operations. The vent filter is located on the engine room aft bulkhead. **The filter must be changed at the beginning of each boating season to be effective.** The vent filter is installed in-line on the holding tank ventilation hose (Figure 7.11.1).

NOTE: Do not overfill the holding tank as this will flood the vent filter and render it useless. Filter replacement will then be required. See Parts Manual for correct replacement filter.

6. MACERATOR DISCHARGE PUMP WITH SEACOCK INTERLOCK SYSTEM (OPTIONAL)

MACERATOR
(FIG. 7.13.1)



Ⓐ HOLDING TANK
Ⓑ MACERATOR
Ⓒ OVERBOARD DISCHARGE SEACOCK

NOTICE

This boat may be equipped with an optional overboard discharge valve.

Discharging of sewage directly overboard is for use where approved only.

The optional macerator gives the boat operator the means of discharging the holding tank contents directly overboard through a seacock in the bottom of the hull. This is available in conjunction with the dockside pump out.

Since direct overboard discharge is prohibited in many areas, the macerator seacock is normally closed. The macerator seacock is equipped with a system interlock switch which prevents the operation of the macerator when the macerator seacock is closed. The light on the MACERATOR switch on the DC Distribution Panel will be lighted when the macerator is operational. If the light is not lighted, it is visual confirmation the macerator seacock is closed and that the macerator cannot be operated. Check that the macerator seacock handle is in the open position and the light on the switch is lighted before operating the macerator.

NOTICE

There is the possibility of being fined for having an operable overboard discharge in U.S. waters. Removing handle of seacock while in closed position, or other means must be utilized to avoid fine.

It is illegal for any vessel to dump plastic trash anywhere in the ocean or navigable waters of the United States.

TO OPERATE THE MACERATOR:

1. Turn ON the DISCHARGE PUMP breaker on the salon DC distribution panel and open the waste discharge seacock located on the bilge floor (See Fig. 7.13.1 for seacock location).
2. Operate DISCHARGE switch under the WASTE SYSTEM CONTROL area on the main distribution panel.
3. When tank is empty, turn off the switch, turn off the DISCHARGE PUMP breaker and close waste discharge seacock.

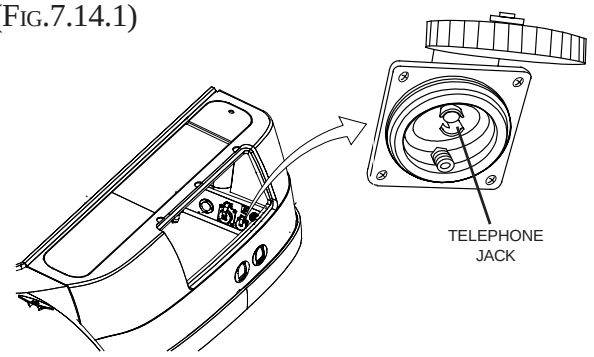
MAINTENANCE

Prior to each use and at regularly scheduled intervals, cycle the macerator seacock handle open and shut to ensure proper operation of the seacock.

7. COMMUNICATION SYSTEM

The telephone system consists of a waterproof inlet located inside the aft transom hatch, a fifty foot shore cord and telephone outlets in various locations throughout the boat. In addition there is an outlet located on the port wall under the dinette for modem access. Hand set connections are located in the forward stateroom, the guest starboard stateroom, salon and one on the bridge. These phones can be operated when hooked up to the dockside telephone connection.

DOCKSIDE TELEPHONE HOOKUP
(FIG.7.14.1)



A. DOCKSIDE TELEPHONE HOOKUP

The dockside telephone hookup is located in the transom. A fifty foot shore cord with waterproof connectors are supplied.

TO CONNECT TELEPHONE SYSTEM:

1. Locate telephone shore hookup inside aft transom hatch.
2. Connect shore cord to dock telephone inlet and then to the boat inlet.
3. Telephone outlets are located in the salon, master stateroom and starboard guest stateroom.
4. Telephone system is now operational.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

8. ENTERTAINMENT CENTERS

A. DIGITAL SATELLITE SYSTEM (OPTIONAL)

If equipped, the digital satellite system antenna is located on the hardtop (See figure 2.6.1). The various digital equipment is located in the salon entertainment cabinet and in the master stateroom.

Because the system configuration is an individual preference the installed equipment will vary. It is important to read and understand the operating manuals for the various components installed on your boat. A data port for computer aided diagnostics of the DSS system would be located inside the salon entertainment cabinet. The data port is for use by qualified technicians only.

REFER TO OWNER' S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

B. SALON ENTERTAINMENT CENTER

The salon entertainment center consists of a 30" flat screen LCD TV, VCR, with remote, coax outlet and gain control panel; and a Bose® LifeStyle 48 Surround sound system with DVD player, and antenna. The 120 volt "ENT" breaker must be ON to operate the Bose LS-48 system.

The system has five (5) speakers in the salon with a subwoofer under the starboard salon sofa. There are also two (2) powered speakers & a subwoofer in the master stateroom.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

Note: The television and stereo systems are plugged into a surge suppression power strip located behind the entertainment center.

C. MASTER STATEROOM ENTERTAINMENT

The master stateroom entertainment center consists of a TV 20" flat screen LCD (120V) w/ DVD/CD/VCR combo w/remote coax outlet, SA-3 amp w/Acoustimas with two (2) cube speakers . To operate, turn ON the 120VAC MASTER STATEROOM SYSTEMS breaker and the 120VAC ENT breaker on the AC Main Distribution Panel.

D. FORWARD STATEROOM ENTERTAINMENT

The forward stateroom entertainment center consists of a 17" LCD/DVD combo unit with remote control and coax outlet. To operate, turn ON the 120VAC FORWARD SYSTEMS breaker on the AC Main Distribution Panel.

E. GUEST STATEROOM ENTERTAINMENT

The guest stateroom entertainment center consists of an optional 13" LCD flat screen television with remote control and coax outlet. To operate, turn ON the 120VAC STARBOARD FWD SYSTEMS breaker on the AC Main Distribution Panel.

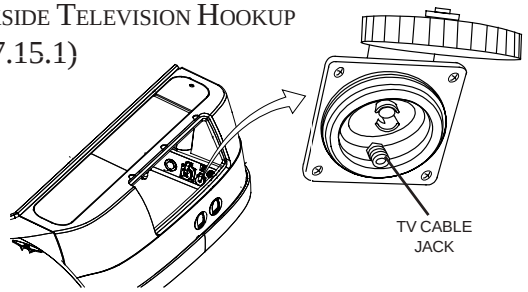
F. BRIDGE ENTERTAINMENT

The bridge entertainment system consists of a 12V stereo with CD changer. To operate the 12V stereo, energize the 12 volt battery switch on the DC Main Distribution Panel. To operate the optional LCD flatscreen TV, turn on the 110V AC breaker located on the Main Distribution Panel in the salon.

G. DOCKSIDE TELEVISION HOOKUP

For television reception dockside, attach the dockside television cable to the inlet located on the starboard transom.

DOCKSIDE TELEVISION HOOKUP
(FIG.7.15.1)



TO CONNECT CABLE TELEVISION:

1. Unscrew and lift cover plate.
2. Screw the TV coax cable into the TV cable connector (See figure 7.14.1).
3. Run the cable to the dockside receptacle and screw coax cable into receptacle.

H. TV SIGNAL SELECTOR

The antenna/cable selector panel is located in the upper entertainment center in the salon. Turn the selector ON (clockwise) to MAX GAIN for onboard TV antenna reception. Turn the selector OFF (counterclockwise) to SHORE for dockside cable reception.

TV SIGNAL SELECTOR
(FIG. 7.15.2)

REFER TO OWNER' S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

9. AUTOMATIC FIRE EXTINGUISHER

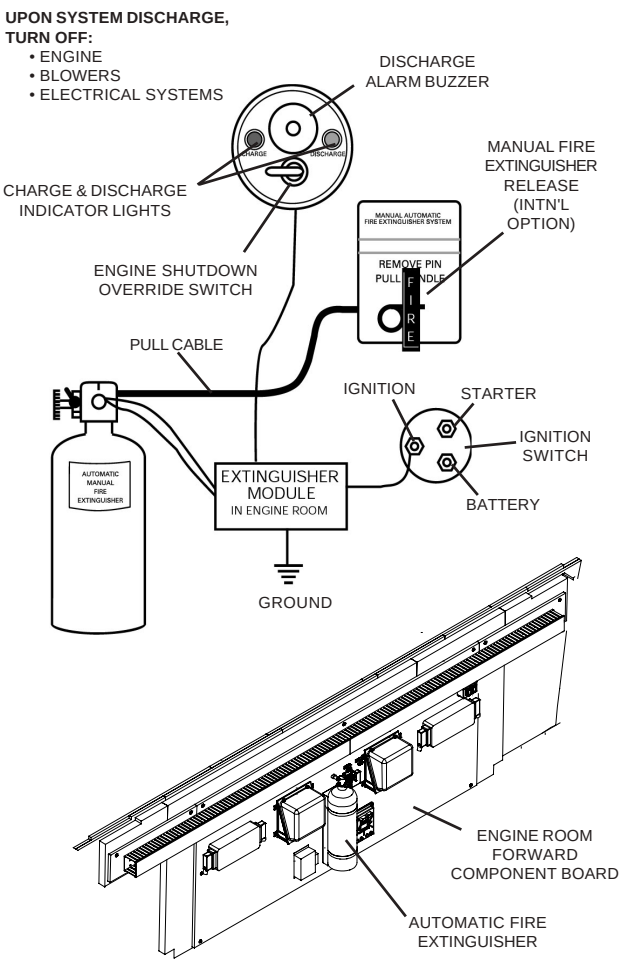
The 58 DB is equipped with dual automatic fire extinguisher systems one (1) located in the engine room. In the event of a fire, the heat sensitive automatic head will release the extinguishant as a vapor, totally flooding the area in fire-killing concentrations. The system indicator light is wired to the ignition and is turned ON when the ignition is turned ON. The system incorporates an engine shutdown switch with override system. The override switch allows the safe restarting of the engines if the event was not of a sufficient nature to preclude the further operation of your boat.

The indicator light, located on the control station instrument panel indicates to the helmsman when the unit has discharged. Under normal circumstances, when the engines are operating, the charge indicator light is lit. If the unit discharges, the charge light will go out and the discharge light will come on.

WHEN ACTUATION OCCURS, IMMEDIATELY SHUT DOWN ALL ENGINES, POWERED VENTILATION, ELECTRICAL SYSTEMS AND EXTINGUISH ALL SMOKING MATERIALS. DO NOT IMMEDIATELY OPEN THE ENGINE COMPARTMENT!! THIS FEEDS OXYGEN TO THE FIRE AND FLASHBACK COULD OCCUR.

Allow the extinguishant to "soak" the compartment for at least fifteen (15) minutes and for hot metals or fuels to cool before cautiously inspecting for cause of damage. Have portable extinguishers at

AUTOMATIC FIRE EXTINGUISHER
(FIG. 7.16.1)



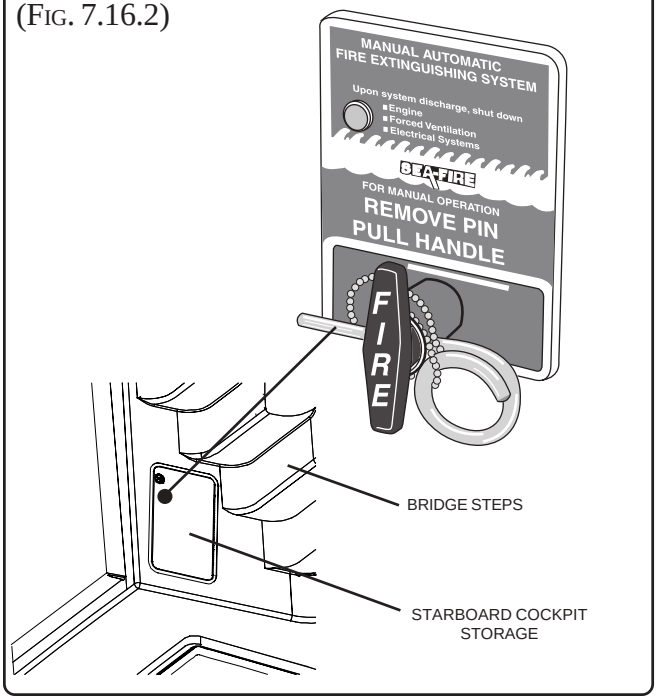
hand and ready. Do not breathe fumes or vapors caused by the fire.

NOTE: See supplier Installation / Operation Manual for additional details.

A. MANUAL FIRE EXTINGUISHING SYSTEM

Located on the forward wall inside the starboard cockpit storage, the manual fire extinguisher system allows the operator to manually activate the automatic extinguisher in the engine room. Early detection and use of the manual override system will reduce fire damage by eliminating the time necessary for heat in the engine room to rise to a temperature necessary to activate the automatic fire extinguisher.

ENGINE ROOM FIRE EXTINGUISHER
(FIG. 7.16.2)



TO OPERATE:

1. Pull pin securing the handle.

2. Pull red FIRE handle quickly and briskly.

SAFETY PIN

The safety pin, located at the neck of the extinguisher bottle (Figure 7.17.1) in the engine room is for shipping and transfer of the bottle only.

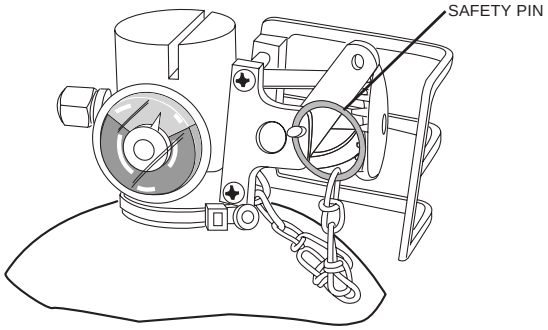
The pin MUST be removed in order to manually operate the system.

This pin should be removed upon installation of the system. Ensure that this has been done. The manual system will not function unless the safety pin has been removed from the fire extinguisher bottle.

⚠ WARNING

THE SAFETY PIN MUST BE REMOVED AFTER CABLE S-HOOK & ATTACHMENT PIN ARE INSTALLED. fAILURE TO DO SO WILL RESULT IN ABILITY TO MANUALLY OPERATE SYSTEM.

ENGINE ROOM FIRE EXTINGUISHER
(FIG. 7.17.1)



NOTE: THE MANUAL SYSTEM WILL NOT OPERATE IF SAFETY PIN IS INSTALLED.

B. HAND HELD EXTINGUISHERS

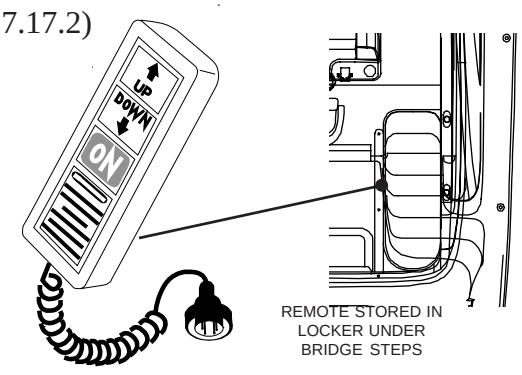
Owner/Operator responsibility (see Section 1 Safety Legally mandated minimum equipment requirements)

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

10. HYDRAULIC SWIM PLATFORM (OPTIONAL)

The swim platform is powered through the SWIM PLATFORM breaker (Figure 6.5.1) located in the engine room on the forward engine room component board. It is operated by the swim platform remote control unit located inside the starboard transom locker (Figure 7.17.1).

SWIM PLATFORM REMOTE
(FIG. 7.17.2)



11. BOW/STERN THRUSTER

The Bow Thruster located under an access panel in the floor of the forward stateroom. The stern thruster is located on the transom of the boat . The thrusters are electrically driven and give the operator more maneuverability of the vessel. See page 3.15 for operational details.

The control panel has a START switch, STOP switch, CHECK SYSTEM indicator light, STATION ENABLED indicator light and a HAND OPERATED joy stick or push pads for thrust direction. (See figure 2.12.1).

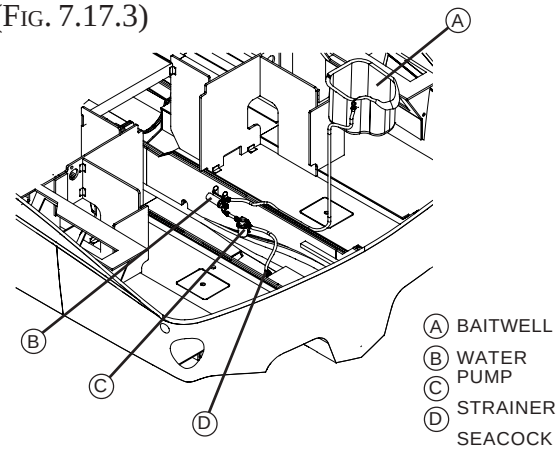
The Bow Thruster motors are equipped with an internal thermally activated breaker. The thermal breaker protects the motor from overheating. When the thermal breaker is activated the thruster motor will not operate and must be allowed to cool down for normal operation.

12. BAITWELL (OPTIONAL)

If equipped the baitwell located on the top starboard of the transom is powered by the BAITWELL switch on the 24V main DC breaker panel (See figure 6.3.1). The baitwell seacock, strainer and water pump provide fresh sea water to the system.

The baitwell can be activated by use of the baitwell switch located in the cockpit on the port transom.

BAITWELL (OPTIONAL)
(FIG. 7.17.3)



13. SEA RAY NAVIGATOR (SRN)

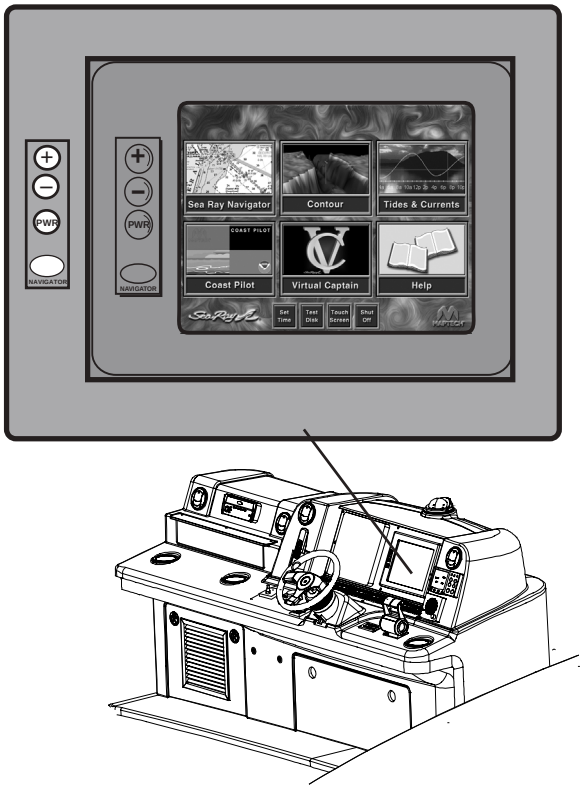
Your boat may be equipped with the optional Sea Ray Navigator. The SRN is an onboard computer touch screen navigation aid capable of navigating you through the waters and your boat.

Some features include:

- Sea Ray Navigator (Charts, GPS, Satellite Views and Navigation)
- Contour (Contour and Depth of Ocean Floor)
- Tides & Currents (For your location & destination)
- Coastal Pilot
- Virtual Captain (Boat Owner's Manual)
- Help (Sea Ray Navigator Owner's Manual)

***Note**: Chart and contour data for your area may need to be installed. Maptech® is continually updating software and systems. Some features may still be under development. Refer to the SRN owner's manual in the boat's owner's packet for all SRN operating instructions.*

SEA RAY NAVIGATOR ON THE CONTROL STATION (FIG. 7.20.2)



To turn ON the SRN press the "PWR" switch on the face of the unit. Under normal operating conditions the power switch on the SRN power supply under the helm should be left in the ON position.

The SRN power supply is powered through the 12 volt electronics fuse block under the helm. If the SRN fails to turn on check the power switch on the SRN power supply and fuse on the fuse block.

REFER TO SRN OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

14. REFRIGERATOR & FREEZER

⚠ CAUTION

Do not cover refrigerator/freezer vents.

The refrigerator/freezer units operate on the 120 volt AC system. The REFRIGERATOR AND FREEZER breaker on the AC Main Distribution Panel supplies power to the units. The 24VDC water system pump breaker must be on to supply water to the icemakers. The water pump breaker is located on the DC Main Distribution Panel in the salon.

TO OPERATE DOCKSIDE:

Connect the shore power system, turn the "MAIN" breaker(s) ON. Turn ON the REFRIGERATOR / FREEZER and Fresh Water Pump breaker at the 120/240VAC and 24/12VDC Distribution Panels in the salon. There are on / off switches at the units that must be on as well.

TO REMOVE THE REFRIGERATOR/FREEZER UNITS:

1. Turn the 120 volt "REFRIGERATOR/FREEZER" breaker OFF. Along with the fresh water pump breaker on the DC Distribution Panel.
2. Remove screws securing units.
3. Pull units straight out and unplug.

4. Shut off the water MANIFOLD valve located in the floor storage of the lower companionway. Disconnect water line at freezer.

5. Reverse the process for installation.

A. BRIDGE REFRIGERATOR/ICE MAKER

The 120 volt "BRIDGE ICE MAKER" breaker located on the AC Distribution Panel in the Salon turns ON the bridge Refrigerator Ice Maker and the stand alone Icemaker. The dockside water inlet must be connected and/or the "FRESH WATER PUMP" breaker must also be ON to supply water to the ice maker. Do not block air flow through the ventilation panels at the bottom of the unit. Both are located inside of the Bridge Entertainment Center. Refer to the manufacturer's owner manual for additional information pertaining to the refrigerator/icemaker and icemaker.

TO START ICE MAKER:

1. Make sure water tank is full.

2. Turn "FRESH WATER PUMP" breaker ON.

3. Turn ON ice maker switch, located at the bottom of the unit. Allow unit to cycle several times before using ice. Refer to water system for more information.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

15. COFFEE MAKER

The drip coffee maker located in the galley cabinet below the microwave is a completely portable unit which can be moved around the vessel wherever fresh brewed coffee is desired. It operates on the 120 volt system.

To keep the coffee maker operating efficiently, the mineral deposits left by water must be flushed out using the cleaning method described in the instruction booklet.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

16. STOVE & MICROWAVE

A. ELECTRIC STOVE

The 240 volt STOVE breaker on the AC Main Distribution Panel located in the aft port of the salon supplies power to the stove and must be ON to operate.

The stove has three (3) burners with control knobs to provide a variation of heat. A stove cover is provided to cover the burners when not in use.

The cover can be stowed on the forward side of the cabinet directly below the stove.

A power safety switch is installed on the cover recess. When the stove cover is installed it depresses the switch turning power OFF to the stove control knobs.

B. MICROWAVE/CONVENTION OVEN

The microwave/convection oven is located aft in the galley. The 120VAC MICROWAVE breaker on the AC Main Distribution Panel supplies power to the microwave and must be ON to operate the unit.

NOTE: Turn on the galley power ventilation system when operating the convection oven.

REFER TO OWNER' S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

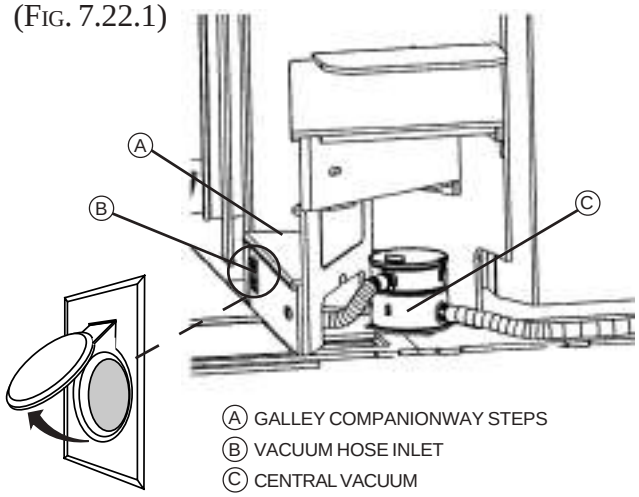
17. POWER VENTILATION SYSTEM

The power ventilation system removes stagnant & foul air from the master stateroom head, guest head and galley by means of 12 volt exhaust fans. They are powered by the POWER VENTS breaker on the salon DC distribution panel and individually turned on and off by the power vent switch in the heads and the galley (See figures 2.20.1 & 2.21.1).

18. CENTRAL VACUUM SYSTEM

The central vacuum unit is located under the stateroom companionway steps (See figure 7.22.1). The 120 volt GALLEY breaker must be ON to operate the system.

CENTRAL VACUUM
(FIG. 7.22.1)



The 24 foot hose located under the salon entertainment center connects to inlets located on the bottom companionway steps and in aft salon. The disposable bag is located behind the removable panel on the top of the vacuum unit. The built in switch on the hose inlet fittings activate the vacuum when the hose is plugged in.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

19. WASHER & DRYER (OPTIONAL)

The washer/dryer is a single front load washing and drying combination unit. The unit operates on the "WASHER/DRYER" breaker on the AC Main Distribution Panel.

The washer/dryer is connected to hot and cold water shutoff valves, located on the fresh water manifold under the center cabin floor hatch. The supply valves should only be on when the unit is being used. The dryer lint filter can be cleaned by opening the access hatch located on the bottom of the cabinet above the washer/dryer unit.

⚠ CAUTION

Washer/dryer should only be used when connected to dockside water.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

20. HORN

The dual air horn is operated by a momentary toggle switch located on the control station switch panel and protected by a"HORN" breaker located on the Main DC Distribution Panel in the engine room. The compressor and accumulator tank are located on the aft side of the starboard mid bulkhead. (see Section 4 Bilge and Underwater Gear). The dual thrumpit horns are located on the top of the bridge.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

21. SEARCH LIGHT

The 58 DB searchlight is mounted on the bow.

TO OPERATE THE SEARCHLIGHT:

1. Turn ON the "SPOTLIGHT" breaker on the control station switch panel.
2. Press the POWER button on the spotlight pad to turn on the searchlight.
3. Press SPEED button to adjust the movement speed of the searchlight.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

22. CANVAS

It is recommended that you read Section 1• Safety and understand the effects of exhaust emissions.

SEDAN BRIDGE ENCLOSURE

Attach the forward enclosure by partially zipping to the top and bottom zipper tracks. Finish by zipping all around.

The aft enclosure is attached similarly, with the zipper tracks on the bridge and hardtop. Attach the side curtains first and then continue by attaching the aft curtains .

WINDSHIELD COVER

The Windshield cover is installed by attaching to the fasteners on the forward bottom edge of the windshield, complete installation by attaching to the fasteners on the side windshield column.

COCKPIT ENCLOSURE

Attach the side curtains first by sliding the curtain into the track at the top, attach the remaining cockpit curtains in the same manner. Next attach the bottom of the curtains to the fasteners around the cockpit and transom. Finish by zipping all around.

A. CARE & MAINTENANCE

Care and maintenance instructions have been provided by the canvas manufacturer for the canvas used on your Sea Ray® . The information can be found in the Owner's Manual Packet. By following the provided instructions, your canvas set will give you protection from the elements and comfort that you expect. Most of all, the instructions provide you with installation and removal procedures that will simplify the task.

Components of your canvas set consist of zipper tracks and snaps. These components can be found in the parts manual located in the Owner's Manual Packet.

B. STORAGE:

- Do not fold or store any of the canvas set pieces while wet. All canvas should be rolled or folded when dry and stored in a clean, dry place.• For clear vinyl pieces, rolling or laying down flat are the recommended methods for storage. The clear vinyl should never be folded or creased as cracking will result. To protect the clear vinyl from rubbing against itself while rolled or stored flat, place a piece of very soft, nonabrasive cloth between the pieces, or rolled up in it. If the surface of your clear vinyl becomes scratched, the canvas manufacturer has provided a canvas care sheet in your

Owner's Manual Packet.C.
INSTALLATION TIPS:

- The zippers attached on the hardtop and cockpit overhead are mounted on a zipper track. Once installed, do not remove these zippers or zipper tracks.• When attaching any of the pieces of the canvas set, attach the top edges first and zip the zippers only partially. This helps to hold the piece in place and relieves tension, helping the other sides to zip or snap easier. After all of the sides of the piece are secure, finish zipping the top of each piece. This will ensure a tight fit.

REFER TO OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

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SECTION 8 • REQUIRED INSPECTION, SERVICE AND MAINTENANCE

Routine inspection, service and maintenance of your boat's systems are vital to assure your safety, as well as for prolonging the life of your boat. You should develop regular routines for inspecting your boat. The chart below summarizes inspection, service and maintenance activities. This section also contains descriptions of some convenient methods for evaluating the condition of some of your boat's systems.

The interval between necessary service or maintenance is highly variable, depending on the environment your boat is in, and on the severity of operating conditions. For example, corrosion of parts on boats operated in salt water proceeds much faster than the corrosion of parts on a boat operated in fresh water. The intervals listed below are recommended maximums, and you must reduce the time between inspections if your observations indicate the need.

1. SUMMARY GUIDE FOR INSPECTION, SERVICE AND MAINTENANCE

			INTERVAL				
ITEM	**REQUIRED MAINTENANCE/SERVICE**	**REFERENCE SOURCE**	**BEFORE EVERY USE**	**AFTER FIRST 20 HOURS**	**EVERY 25* OR 50 HOURS**	**EVERY 50* OR 100 HOURS**	**EVERY 6 MOS. OR ANNUALLY**
Battery	Check water level	Owner's Manual p. 6.1	•	•	•		
Bilge Area	Clean and check	Owner's Manual p. 9.2					•
Bilge Blowers	Hose connections tight	Owner's Manual p. 4.2			•		•
Bilge Pump	Float switch operates freely	Owner's Manual p. 4.1					•
Canvas	Clean	Owner's Manual p. 9.3	As Needed				
Controls							
Steering	Check for proper operation		To be done by Sea Ray dealer every six months				
	Power steering oil level	Engine Manual	•				
Throttle	Lubricate. Include all shift	Engine Manual		•		•	•
	linkage and pivot points						
Electrical							
Connections	Check for looseness		To be done by Sea Ray dealer annually				
GFCI (120V) Outlet	Check for operation	Owner's Manual p. 6.16					•
Engine							
Alarm	Check	Engine Manual	•				
Cooling System	Check for leaks	Engine Manual	•				
Connections	with engine running						
Crankcase ventilating system	Clean	Engine Manual		•		•	
Drive belts	Check	Engine Manual	•				
Exhaust System	Check for leaks	Engine Manual	•	•		•	
Flame Arrestor	Clean	Engine Manual		•		•	
Fuel Filter	Replace	Engine Manual				•	
Mounts (Fasteners)	Tighten	Engine Manual		•			•
Oil and Filter	Replace	Engine Manual				•	•
Oil Level	Check	Engine Manual	•				
Fuel System							
Connections & Lines	Check for leaks	Engine Manual	•	•	•		
Tanks	Check for leaks	Owner's Manual, Section 5	•	•	•		
Water Separating Fuel Filter	Replace	Engine Manual		•			•

**Use in salt water or other severe operating conditions requires shorter maintenance/service intervals*

SUMMARY GUIDE FOR INSPECTION, SERVICE AND MAINTENANCE

ITEM	REQUIRED MAINTENANCE/SERVICE	REFERENCE SOURCE	INTERVAL				
			BEFORE EVERY USE	AFTER FIRST 20 HOURS	EVERY 25* OR 50 HOURS	EVERY 50* OR 100 HOURS	EVERY 6 MOS. OR ANNUALLY
Propeller	Inspect for damage		Always after striking object				
Seaworthiness							
Bilge drain plug	Installed and tight		•				
Hull damage	Check for loose, damaged or missing parts		Always after striking object				
Topside & Supplies	Check for loose, damaged or missing parts	Owner's Manual p. 8.5					•
Transmission							
Oil Strainer Screen	Clean		To be done by Sea Ray dealer annually				
Trim Tabs							
Fluid	Check and add as needed	Trim Tab Manual		•			
Zincs							
Transom	Check and replace as needed	Owner's Manual p. 6.16	Every 25 hours of operation				
Trim Tabs	Check fluid level	Trim Tab Manual	Every 25 hours of operation				

**Use in salt water or other severe operating conditions requires shorter maintenance/service intervals*

2. USEFUL SERVICE INFORMATION

OWNER _____

HOME PORT _____

BOAT NAME _____

REGISTRATION NUMBER _____ STATE _____

HULL SERIAL NUMBER _____

WARRANTY REGISTRATION DATE _____

ENGINE MAKE & MODEL _____

SERIAL NUMBER PORT _____ STARBOARD _____

GEAR MAKE & REDUCTION RATIO _____

SERIAL NUMBER PORT _____ STARBOARD _____

PROPELLER SIZE PORT _____ STARBOARD _____

PART NUMBER PORT _____ STARBOARD _____

SHAFT SIZE (DIAMETER X LENGTH) _____ MATERIAL _____

FUEL CAPACITY PORT TANK _____ STARBOARD _____

WATER CAPACITY _____

KEY NUMBER, IGNITION _____ DOOR _____

SELLING DEALER _____

CITY & STATE _____

LENGTH _____ BEAM _____ DRAFT _____

VERTICAL CLEARANCE _____

ESTIMATED WEIGHT _____

GENERATOR SERIAL # _____ MODEL # _____ KILOWATTS _____

3. INSPECTION, SERVICE AND MAINTENANCE PROTOCOL

A. BILGE AREA

Many of your boat's systems have critical features located in the bilge area. A thorough and organized inspection of the bilge area will address many of these critical features. For example, engine oil leaks and fuel system leaks will show themselves as contamination on the surface of the liquid that remains in the bilge. When you see such contamination, you should look for its source.

Once or twice a year, pump the bilge areas dry and remove all loose dirt. Be sure that all the limber holes are open. Limber holes are the openings in the stringers that allow water to flow from the outboard areas of the bilge to the bilge sump.

Check the bilge pump float switch by moving it manually. (Figures 4.1.1 thru 4.1.3) The bilge pump should start when the float switch is raised and should stop when lowered. If it does not, first try reseting the bilge pump breakers, if the pump will still not run replace the float switch before using your boat. The float switch should also move freely without sticking, if it does not, have it serviced or replaced before boating.

⚠ WARNING

DO NOT USE FLAMMABLE SOLVENTS to clean any part of the bilge.

Fumes can accumulate and can be the source of an explosion.

1. OIL

If there is oil contamination, look for leaks in engine oil lines and engine gaskets. If parts of the bilge have been stained by oil, the stain can be removed using a bilge cleaner available from your dealer or a marine store.

2. ENGINE

Engine failure or malfunction, when away from shore, can be dangerous. Make certain you do the following each time you use the boat:

- Wipe off the engine to remove accumulated dust, grease and oil.
- Check all exposed nuts, bolts and screws for tightness.
- Inspect the belts for wear. If they do not require replacement, check and adjust the belt tension according to the engine manufacturer's recommendation.
- Inspect engine wiring, and clean and tighten the terminals on the engine electrical system.
- Clean and lubricate the battery cables.
- Add distilled water to the battery cells as needed.
- Refer to your Engine Operator's Manual for additional engine maintenance requirements.

3. FUEL SYSTEM

- Inspect the entire fuel system for evidence of leakage, including the fuel tank fill lines and vents. Any stain around a joint could be an indication of a leak.
- Test all fittings with a wrench to be sure they are not loose, but do not forcefully overtighten the fittings.
- Clean fuel filters and vent screens.

⚠ WARNING

Work on electrical wiring can create shock hazards or sparks.

Always shut off battery switch, breakers and/or pull fuses before checking electrical wiring or connectors.

4. WIRING SYSTEM

- Check all wiring for proper support.
- Check all wiring insulation for signs of fraying or chafing.
- Check all terminals for corrosion - corroded terminals and connectors should be replaced or thoroughly cleaned.
- Tighten all terminals securely and spray them with light marine preservative oil.

5. FITTINGS, HOSES AND CLAMPS

- Inspect the entire bilge area for evidence of damage or deterioration. Evidence of deterioration will first appear around hull fittings, hoses and clamps.
- Straighten kinked hoses.
- Replace any hose that does not feel pliable.
- Check all hose clamps for tightness and corrosion. Corroded clamps must be replaced.
- Check the nuts, bolts and screws that retain equipment, hoses, etc. in the bilge for tightness and corrosion. Corroded fasteners must be replaced.

B. TOPSIDE AND SUPPLIES

Once a year, you should undertake a thorough review of the topside equipment, as well as of the critical safety supplies on your boat.

- Check cleats, rings, rails, etc. for loose or corroded fasteners, breaks, sharp edges or other conditions that could lead to malfunction or unsafe use. Repair or replace as necessary.
- Inspect PFDs (life jackets) for tears and deterioration.
- Make certain you have enough PFDs on board for the maximum number of persons you can carry.
- Check your first aid kit, making certain it is complete and that the items in it have not passed an expiration date.
- Check the signaling equipment and emergency flares. Make sure all items are within their expiration dates.
- Inspect the anchor, mooring and towing lines. Repair or replace as required.
- Check fire extinguishers for full charge.

4. DRAINING THE BOAT

In climates where freezing occurs, it is important that the bilge be completely drained and dried out when the boat is laid up for the winter. Some compartments in the bilge may not drain completely because of the position of the boat. They should be pumped out and sponged until totally free of water or add sufficient amount of antifreeze to standing water to prevent freezing.

The boat's entire fresh water system must be drained. Open all faucets, including the shower faucets, throughout the boat. Open a connection at the lowest point in the fresh water lines to completely drain them. Break the connections on each side of the water pump. Drain the heads. Drain the water heater. Break the lower connection if necessary.

The engine cooling system and the exhaust system must be free of water if there is danger of freezing. Drain plugs are provided on the engine for this purpose. It is necessary to open a connection or two in the exhaust system to drain the lowest portions; these should be reassembled securely immediately after draining is accomplished.

CONSULT YOUR ENGINE AND GENERATOR OPERATOR'S MANUAL FOR DETAILED INFORMATION ON PREPARING FOR STORAGE.

5. WINTERIZATION CHECKLIST FOR BOATS STORED ON LAND

A. BOAT STORAGE

- Store boat in a bow high attitude.
- Remove hull drain plug.
- Pour one (1) pint (half-liter) of 50% water/ antifreeze mixture in each bilge pump sump..

B. ENGINES

- Flush engines with fresh water.
- Remove engine drain plugs.

REFER TO YOUR ENGINE OPERATOR'S MANUAL FOR DETAILED INFORMATION ON PREPARING THE ENGINES FOR STORAGE AND WINTERIZATION.

C. BATTERY(IES)

- Remove from boat. Remove the negative (-) cable first, then the positive (+) cable.
- Remove grease and dirt from top surface.
- Grease terminal bolts.
- Store on wooden pallet or thick plastic in a cool dry place. Do not store on concrete.
- Keep under a trickle charge.
- When placing battery back into service, remove excess grease from terminals, recharge as necessary and reinstall in boat.

D. HEAD SYSTEM

- Flush entire system thoroughly with fresh water.
- Pump out holding tank.
- Remove water line from inlet fitting located on back bottom half of water valve on head.
- Flush one gallon (four liters) antifreeze mixed with one gallon (four liters) of water through toilet and let vacuum pump run for one or two minutes.

⚠ CAUTION

Use an automotive or commercial ethylene glycol base antifreeze. Do not use alcohol base products.

- Shut WATER SYSTEM breaker OFF.
- Pump out holding tank.

E. WATER SYSTEM

- Turn ON the WATER SYSTEM switch.
- Open water faucet, let system drain completely.
- Turn OFF the WATER SYSTEM switch.
- Water must be removed from the water lines with air pressure or flushed with a nontoxic antifreeze.

USING PRESSURIZED AIR TO REMOVE WATER FROM WATER LINES:

- You must have an air compressor with air hose and air nozzle.
- Remove water hoses from water pump.
- Alternate opening one faucet at a time to make sure water is removed from each line.
- Blow air through the water lines removed from the water pump.

NOTE: When blowing air be careful not to blow air with all faucets closed. System could be damaged by overpressurization and create water leaks.

- Cover hose ends with screen or broad weave cloth and tape in place to keep out dirt and bugs.

USING NONTOXIC WINTERIZING ANTIFREEZE:

- Purchase a nontoxic winterizing antifreeze for fresh water systems from a marine or RV supply retailer.
- Close all faucets and turn on water system.
- Open one faucet at a time. Close faucet when nontoxic antifreeze comes out of faucet.
- After all faucets and showers have been treated, open all faucets and pump out remaining nontoxic antifreeze.

WATER HEATER WINTERIZATION

- Refer to your water heater Owner's Manual for detailed information on preparing water heater for storage and winterization.

F. FUEL SYSTEMS

GASOLINE:

- Fill fuel tank with gasoline and the recommended amount of stabilizer and conditioner such as "Stabil®".
- Run engine(s) for ten minutes to ensure that all gasoline in the carburetor and fuel lines are treated.

DIESEL

- Fill fuel tank with diesel and recommended amount of biocide, "Biobor®", which prevents bacteria and fungi from contaminating diesel fuel that contains some water.
- Diesel fuel should also get a petroleum distillate additive, such as "Stabil®" or Racor® RX100". This will absorb water in the fuel and prevent freezing problems.

⚠ CAUTION

Do not overfill. Filling a tank until the fuel flows from vents is dangerous. Allow room for expansion.

- Run engine(s) for ten minutes to ensure that all diesel fuel in injectors and fuel lines is treated.

DETAILED WINTERIZING, OPERATING INSTRUCTIONS AND WARRANTY INFORMATION ARE PROVIDED BY THE EQUIPMENT MANUFACTURER AND CAN BE FOUND IN THE OWNER'S PACKET.

6. FITTING OUT AFTER STORAGE

A. FUEL SYSTEM

Check the entire fuel system for loose connections, worn hoses, leaks, etc. and repair. This is a primary safety precaution.

Check fuel lines for damage and make sure that they do not come in contact with any moving parts.

B. BATTERY(IES)

Before installing the batteries, clean the terminal posts with a wire brush or steel wool and then attach the cables. After the cable clamps are tightened, smear the post and clamps with vaseline or grease to exclude air and acid. Do not apply grease before attaching and tightening the terminal clamps. Examine all wiring.

C. MISCELLANEOUS

- Check all thru-hull fittings for unobstructed water passage. Be alert for any deteriorated hoses and/or fittings below the water line which might fail in service and admit water.
- Test the navigation lights.
- Check all wiring for loose connections.
- Check all switches and equipment for proper operation.
- Check bilge blowers for proper operation. Turn ON blowers and place hand over hull blower vent to make sure air is coming from vent.
- Anchor lines and gear should be inspected and replaced if necessary.

- Make sure the hull drain plug is in place and tight.
- Clean bilge thoroughly if it was not done at lay-up.
- Check all engine fluid levels.
- Check fuel lines for damage and/or leaks. Make sure that they do not come into contact with moving parts.

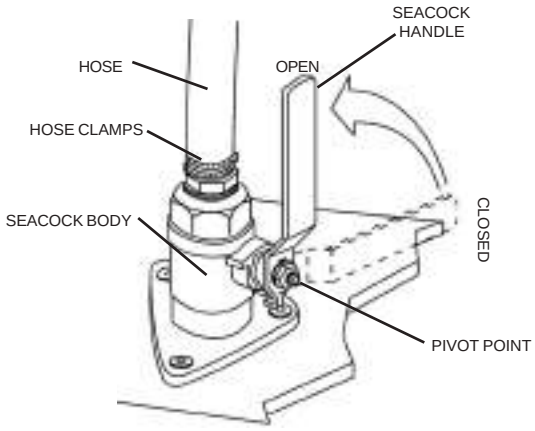
7. SECURITY CONSIDERATIONS

Be conscious of the security of your boat. Always remove the keys from the ignition, lock hatches, lock the cabin door, remove and stow any removable electronic gear (fishfinders, GPS, etc.) and personal gear (fishing poles, etc.) normally left aboard your boat.

8. SEACOCK LUBRICATION

- With boat out of water, remove the hose from top of the seacock.
- Put seacock handle in closed position.
- Add a few drops of lubricating oil inside.
- Work handle back and forth a few times. Add oil as needed.
- Replace hose and tighten clamp.
- Add a few drops of oil to the handle pivot point.

SEACOCK
(FIG. 8.8.1)



9. ENGINE OIL CHANGE SYSTEM

Follow the oil exchange instructions found in Section 4 - *Bilge and Underwater Equipment*, page 4.6.

In each case follow the intervals and oil change instructions provided by the engine manufacturer.

REFER TO THE ENGINE OWNER'S MANUAL FOR INSTRUCTIONS AND WARRANTY INFORMATION.

10. QUICK REFERENCE CHECKLIST

As the owner/operator of a Sea Ray® Sport Boat, you are responsible for the safe operation your boat and the safety of your passengers. Always be sure that required documents, navigational equipment and Coast Guard required safety equipment is aboard and in proper working order.

A. BOARDING THE BOAT*

GENERAL

1.	Weather Conditions	Is it going to be safe to go out
2.	Transom Drain Plug	Installed
3.	PFDs and all other Coast Guard required safety equipment	Available for all children and adults
4.	Ignition keys	Available
5.	Tool Box	Stocked with a variety of appropriate tools

BOAT SYSTEMS

1.	Bilge Pumps	Working. Discharge any appreciable amounts of water overboard
2.	Blowers	Working. “Sniff” the bilge/engine compartment for fuel odor
3.	Navigation Lights	Working. Have spare bulbs (and if applicable fuses) aboard
4.	Radio/Electronics	Working
5.	Horn	Working
6.	Trim Tabs	Full range of motion. No excessive play or binding
7.	Fresh Water Tank	Filled and sanitized
8.	Head System Holding Tank	Empty
9.	Seacocks	Generator Open (handle parallel to hose), Head System Holding Tank Closed (handle perpendicular to hose)

ENGINE

1.	Batteries	Fully charged (Check water cell levels)
2.	Fuel Tank	Filled with recommended fuel
3.	Fuel System	Check for leaks
4.	Fuel Filters	Check that filters are clean and tight
5.	Diesel Racor Fuel Filters	Check that filters are clean, tight and free of water
6.	Engine Coolant Drain Plugs	Secured
7.	Steering Fluid	Full
8.	Throttle & Gearshift Controls Test	Full range of motion

***Note:** If trailering boat, many of these items should be checked before leaving the house.

QUICK REFERENCE CHECKLIST (CONT'D)

B. PREPARING TO DEPART AND AFTER LAUNCHING

GENERAL

1.	Bilge/Engine Compartment	"Sniff" the bilge/engine compartment for fuel odor. Run the bilge blowers for at least four (4) minutes.
2.	Shore Power Cable	Disconnected from dockside power inlet
3.	Lines, Fenders and Anchor	Ready for use
4.	Passengers/Crew	Instructed in duties for getting underway and fitted for a correct size PFD

ENGINE

1.	Battery Switches	In the ON position
2.	Fuel Valves (Diesel Only)	Opens
3.	Engine Alarm	Test. Should sound after a few seconds
4.	Gear Shift & Throttle Controls	In NEUTRAL and IDLE positions

STARTING THE ENGINE*

1.	Gearshift & Throttle Controls	Shift in NEUTRAL (Refer to your Engine Owner's Manual for startup procedures for your specific engine)
2.	Ignition	Turn master ignition keys on DC distribution panel to the ON position. Depress ignition switch on the helm switch panel to START position until engine starts, then release to RUN position (light on).

IMPORTANT: Do not continue to operate starter for more than 10 seconds without pausing to allow starter motor to cool off for 2 minutes. This also will allow the battery to recover between starting attempts.*

⚠ WARNING

Do not run the engine or generator in an enclosed area, such as a closed boat house, as there is the possibility of buildup and inhaling of carbon monoxide.

*If engine fails to start, refer to the Engine Owner's Manual for further troubleshooting procedures

QUICK REFERENCE CHECKLIST (CONT'D)

C. WHILE UNDERWAY

GENERAL

1.	Passengers/Crew	Safely seated with PFD's on or immediately accessible
2.	Lines, Fenders and Anchor	Stowed

BOAT SYSTEMS

1.	Trim Tabs	Bring boat to "On Plane". Adjust as neccessary
2.	Navigation Lights	On at night or in reduced visibility

ENGINE

1.	Tachometers	Engines operating in safe RPM range
2.	Engine Gauges	Continually monitor
3.	Engine Operation	Check idle and shift. Listen for abnormal noises and visually check the engine compartment while underway

D. RETURNING TO PORT

GENERAL

1.	Passengers/Crew	Instructed in duties for line handling
2.	Lines and Fenders	Ready for use

BOAT SYSTEMS

1.	Navigation Lights	Turned OFF when secured
2.	Anchor Light	ON if necessary
3.	Bilge/Engine Compartment	"Sniff" the bilge/engine compartment for fuel odor. Run the bilge blowers if necessary. Check for water in bilge. Run bilge pumps if necessary

ENGINE

1.	Gearshift & Throttle Controls	Bring to NEUTRAL and IDLE positions
2.	Tachometers	Idle the engines for five (5) minutes to cool down

QUICK REFERENCE CHECKLIST (CONT'D)

3. Ignition ..... Depress ENGINE STOP switches on the helm switch panel when engines are cooled down.
4. Engine Operation ..... Check idle and shift. Listen for abnormal noises

E. SECURING THE BOAT

GENERAL

1. Shore Power Cable ..... Connected to dockside power inlet
2. Lines and Fenders ..... Fenders in place, lines tied securely to dock

BOAT SYSTEMS

1. Seacocks ..... Closed (handle perpendicular to hose)
2. Helm Switch Panel ..... All switches in the OFF position
3. Gearshift & Throttle Controls ..... In the NEUTRAL and IDLE positions

ENGINE

1. Ignition ..... Switched in the OFF position (lights off) and master ignition keys removed from DC distribution panel
2. Battery Switches ..... In the OFF position
1. Fuel Valves (Diesel Only) ..... Closed (handle perpendicular to hose)

F. IF THE ENGINE DOES NOT START

NO STARTER MOTOR RESPONSE

1. Check gearshift/throttle control levers in the NEUTRAL positions
2. Check battery condition for sufficient charge
3. Check battery cable connections tight and free from corrosion
4. Check battery switches in the ON position
5. Check starter motor and solenoid connections
6. Check ignition switch connections

STARTER MOTOR RESPONDS, BUT NO IGNITION

1. Check that fuel tanks are not empty
2. Check fuel filters and filter/water separators clean
3. Check electrical connections on engine wiring harness and ignition wiring

QUICK REFERENCE CHECKLIST (CONT'D)

G. OPERATING THE GENERATOR

STARTING THE GENERATOR

1.	Generator Seacock	Open
2.	Bilge Blowers	Run for at least 4 minutes and any time the generator is running
3.	Depress PREHEAT/ON	Preheat time should not exceed 30 seconds
4.	Depress START/RUN Switch	Depress until generator starts
5.	When the Generator Starts	Release the START switch only continue holding PREHEAT/ ON for a few seconds)
6.	Load The Generator	Turn ON the generator main breaker on the Main Distribution Panel. Turn AC breakers ON

STOPPING THE GENERATOR

1.	Breakers	Turn AC breakers OFF. Turn OFF the generator main breaker on the Main Distribution Panel
2.	Generator	Let it run a few minutes to cool down
3.	STOP Switch	Depress to stop the generator set

⚠ WARNING

Do not run the generator or engines in an enclosed area, such as a closed boat house, as there is the possibility of buildup and inhaling of carbon monoxide.

11. AFTER MARKET EQUIPMENT CHECKLIST

Any safety or operational equipment added to your boat after delivery should be checked for seaworthiness and proper working condition. Use the area below to list any equipment and the proper operating condition of that equipment before getting underway.

Equipment	Proper Operating Condition

12. MAINTENANCE LOG

Follow the recommended maintenance listed on pages 1 & 2 of this section and keep a record of this and ALL maintenance performed on your boat.

Date	Maintenance Description	Engine Hours

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1. MAINTENANCE AND RECONDITIONING

Your new boat has been designed to provide you with years of enjoyment and satisfaction. In order to maintain the factory new appearance of your boat, we recommend the use of 3M™ Marine's one step Maintenance and Reconditioning Products designed specifically for pleasure boats. Following proper fiberglass maintenance guidelines will help maintain your boat's performance, value, and enjoyment.

2. PAINT CLEANING AGENTS & OTHER SUBSTANCES

⚠ WARNING

EXPLOSION/FIRE HAZARD

Care and refinishing materials may contain ingredients that are flammable or explosive. Do not use such materials in the bilge

Shut off electrical power and ventilate when using such materials anywhere on the boat or in the cabin.

Do not create sparks or use lighted materials.

Do not use products containing chlorine, phosphates, perfumes and non-degradable ingredients. Consult your marine dealer regarding environmental regulations before painting the hull. Fumes can last for hours, and chemical ingredients can harm people, property and the environment. Common household cleaning agents may cause hazardous reactions. Read and understand directions on all paint, cleaning and polishing materials before using.

3. FIBERGLASS & GELCOAT

The fiberglass hull, deck and some interior parts consist of the molded shell and exterior gelcoat. The gelcoat is the outer surface, often colored, that presents the shiny smooth appearance which is associated with fiberglass products. In some areas, this gelcoat surface is painted or taped for styling purpose.

Wash the fiberglass regularly with clean, fresh water. Wax gelcoated surfaces to maintain the luster. In northern climates, a semiannual waxing may suffice for the season. In southern climates, a quarterly application of wax will be required for adequate protection.

⚠ WARNING

Gelcoat surfaces are slippery when wet. Use extreme care when walking on wet gelcoat.

Always wear non-slip foot gear while washing and waxing boat.

⚠ WARNING

Care should be utilized in waxing commonly walked upon areas of the boat to ensure that they are not dangerously slippery.

NOTE: For colored gelcoats, it is important to follow waxing recommendations in order to maintain the luster of the gelcoat.

A. ABOUT COLORED GELCOATS

Colored hulls add a beautiful contrast to all white boats making them distinctive and attractive. Similar to paint on cars, colors need more care and protection (waxing).

Chemical lab tests have proven that colored gelcoats will show more chalking than white gelcoat due to an eventual degradation from weathering. Chalking results from a breakdown of a gelcoated surface into an extremely fine powder. When this happens, the color of the part whitens. The chalk is strictly on the surface. Most house paints are designed to chalk and then wash off clean with water. Gelcoat chalk, however does not wash off.

One can extend the life of white or colored gelcoat by following Sea Ray's® recommended maintenance instructions. 3M Ultra Performance paste wax or an equivalent marine grade paste wax will help maintain the luster of the original gelcoat.

B. Permanently Moored or Docked Boats

Boats should be rotated in a slip as often as they are waxed. This will eliminate too much ultra violet exposure and degradation to occur on only one side of the boat.

REFER TO 3M ONE STEP MAINTENANCE AND RECONDITIONING PRODUCTS PAMPHLET IN YOUR OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

C. Keep Bilge Area Dry

Water may accumulate in the engine room where it is not able to drain to the bilge pump. Check all areas of the engine room for accumlated water and dry throughly. Water left standing may penitrate through the gelcoated surfaces and wick into the fiberglass affecting the life of the product.

4. Stains & Scratches

Although gelcoat and painted surfaces are resistant to deep stains, a need for cleaning will occasionally arise. But, the use of some common cleaning agents will permanently discolor or otherwise damage the finish on your boat.

- Do not use abrasive porcelain-cleaning powders. These are too abrasive and contain chlorine and ammonia, either of which will permanently discolor gelcoat and paint.
- Never use nail polish remover (acetone) or any ketone solvents.
- Use diluted household detergents to remove surface soil and stains. Before using a given brand, check to make sure it contains no chlorine or ammonia.
- Alcohol can be used to remove difficult stains. But it must be promptly washed off with mild detergent and water.
- Minor scratches and deeper stains that do not penetrate the gelcoat may be removed by light sanding and buffing.

5. Special Care for Boats That Are Moored or Docked Boats

If permanently moored or docked in salt water or fresh water, your boat will collect marine growth on its bottom. This will detract from the boat's beauty and greatly affect its performance. There are two methods of preventing this:

- Periodically haul the boat out of the water and scrub the bottom with a bristle brush and a solution of soap and water.
- Paint the hull below the waterline with a good grade of antifouling paint. **DO NOT paint the engine drive surfaces.**

NOTE: There are EPA regulations regarding bottom paint application. Consult your Sea Ray® dealer for proper application methods.

6. Care for Bottom Paint

From time to time a slight algae or slime forms on all vessels. The bottom painted portion of the hull can be wiped off with a coarse turkish towel or a piece of old rug while the boat is in the water. Do not use a stiff or abrasive material to clean the bottom paint.

The bottom paint should be inspected annually. If it needs repainting consult your Sea Ray® dealer.

7. BILGE/ENGINE COMPARTMENT

1. Pump the bilges dry and remove all loose dirt. Be sure that all limber holes are open. If there is oil in the bilge and the source is not known, look for leaks in engine oil lines or engine gaskets. Oil stains can be removed by using a bilge cleaner available from your dealer or a marina. **DO NOT** use flammable solvents.
2. Check all wiring to be sure it is properly supported, that its insulation is intact, and that there are no loose or corroded terminals. If there are corroded terminals, they should be replaced or thoroughly cleaned. Tighten all terminals securely and spray them with light marine preservative oil.
3. Inspect the entire fuel system (including fill lines and vents) for any evidence of leakage. Any stains around joints could indicate a leak. Try a wrench on all fittings to be sure they are not loose, but do not over tighten them. Clean fuel filters and vent screens.
4. Inspect the entire bottom for evidence of seepage, damage or deterioration, paying particular attention to hull fittings, hoses and clamps. Straighten kinked hoses and replace any that do not feel pliable. Tighten loose hose clamps and replace those that are corroded. Tighten any loose nuts, bolts or screws.
5. Refer to your engine operator's manual for engine maintenance details. Wipe off engine to remove accumulated dust and grease. If a solvent is used, make sure it is nonflammable. Go over the entire engine and tighten nuts, bolts, and screws. Inspect the wiring on the engine and clean and tighten the terminals. Inspect the belts and tighten them if needed. Clean and lubricate the battery terminals; fill the battery cells with distilled water as needed.

8. TOPSIDE AREAS

A. STAINLESS STEEL AND ALLOY FITTINGS

Stainless steel and alloy fittings should be cleaned with soap and water or household glass cleaner. Remove rust spots as soon as possible with a brass, silver or chrome cleaner. Irreversible pitting will develop under rust that remains for any period of time. Never use an abrasive like sandpaper or steel wool on stainless. These may actually cause rust. To help protect the stainless, we recommend the use of a good car wax.

B. SALT CRYSTALS

When instruments are exposed to a saltwater environment, salt crystals may form on the bezel and the plastic covers. These salt crystals should be removed with a soft, damp cloth; never use abrasives or rough, dirty cloths to wipe plastic parts. Clean using fresh water and a clean cloth only.

REFER TO THE OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

9. GAUGE & SWITCH PANELS

No special care is needed. Just wipe off with a soft, fresh water damp cloth to remove dust or salt. Dry after with chamois or soft cloth. Use of protective chemicals is not required.

10. ACRYLIC PLASTIC SHEETING (PLASTIC GLASS)

Never use a dry cloth or duster or glass cleaning solutions on acrylic.

To clean acrylic, first flood it with water to wash off as much dirt as possible. Next, use your bare hand, with plenty of water, to feel and dislodge any caked dirt or mud. A soft, grit-free cloth may then be used with a nonabrasive soap or detergent. A soft sponge, kept clean for this purpose, is excellent. Blot dry with a clean damp chamois.

Grease and oil may be removed from acrylic with kerosene, hexane, white (not aviation or ethyl) gasoline or aliphatic naphtha (no aromatic content).

Do not use solvents such as acetone, silicone spray, benzine, carbon tetrachloride, fire extinguisher fluid, dry cleaning fluid or lacquer thinner on acrylic, since they attack the surface.

Remove fine scratches with fine automotive acrylic rubbing and polishing compounds.

11. LIGNAPAL® CABINETS

To maintain the beauty of the galley cabinet surfaces and to prevent using the wrong cleaning agents, please follow the cleaning recommendations listed below.

The following NOTICE label is placed on the fiberglass area of the galley countertop.

NOTICE

Care and maintenance of your Lignapal® cabinets

- **Never use ammoniated window sprays or kitchen scouring components.**
- **Never use solvents such as acetone, gasolene, benzene, alchohol or lacquer thinner.**
- **Polish with light coat of automobile paste, wax or plastic cleaner/polish.**
- **Failure to follow these instructions will result in damage to your cabinets.**

Clean often with a soft cloth or sponge and mild soap and water. A non-ammoniated spray may also be used. (Examples: Glass Cleaner-Vinegar Glass Works by Miles, Inc.) Never use paper towels, abrasive pads or abrasive cleaners! Hairline scratches and minor abrasions can be removed or minimized by using mild automobile polish, Johnson Paste or Mirror Glaze (M.G.M.10).

These care instructions refer specifically to the a Lignapal ® Cabinets surfaces. Ask your dealer about cleaning any hardware or trim which has been incorporated in your cabinetry.

12. CANVAS AND CLEAR VINYL

Do not fold or store any of the canvas pieces while wet. All canvas should be rolled or folded when dry and stored in a clean, dry place. For clear vinyl pieces, the recommended methods for storage are rolling or laying down flat. The clear vinyl should never be folded or creased as cracking will result. To protect the clear vinyl from rubbing against itself while rolled or stored flat, place a piece of very soft, nonabrasive cloth between the pieces. If the surface of the clear vinyl becomes scratched, the canvas manufacturer has provided a canvas care sheet located in your Owner's Manual Packet. When storing the rear (aft) curtain, fold the canvas over the clear vinyl window (do not fold clear vinyl), then roll or store flat.

The fabric should be cleaned regularly before substances such as dirt, pollen, etc. are allowed to accumulate on and become embedded in the fabric. The fabric can be cleaned without being removed from the installation. Simply brush off any loose dirt, particles, etc.; hose down and clean with a mild solution of a natural soap in lukewarm water (no more than 100°F, 38°C); rinse thoroughly to remove soap. DO NOT USE DETERGENTS. Allow to completely dry.

Wash and clean vinyl windows with a warm soap solution. Use a soft cloth or sponge and do not scratch the surface.

If you have stubborn cleaning cases, call your dealer for proper procedures. Do not try your own cleaning procedures as they may permanently damage the canvas.

After each use, especially in salt water areas, rinse the canvas completely with fresh cold water. Then let the canvas dry completely before stowing.

All metal components of the canvas should be rinsed with fresh cold water and exposed components wiped dry to maintain appearance and working order.

13. EXTERIOR UPHOLSTERY FABRIC

Exterior fabrics should be cleaned with a sponge or very soft scrub brush and a mild soap and warm water solution. After scrubbing, rinse with plenty of cold, clean water and allow the fabric to air dry in a well ventilated place, preferrably away from direct sunlight.

Mildew can occur if your boat does not have adequate ventilation. Heat alone will not prevent mildew; you must also provide for fresh air circulation.

REFER TO THE OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

14. INTERIOR UPHOLSTERY FABRIC

Cleaning and maintenance information provided by the material manufacturer, is in your Owner's Manual Packet.

NOTICE

Always clean spots, stains, etc., immediately. Test an unseen area of fabric before cleaning stain, to insure that cleaning material will not cause damage.

REFER TO THE OWNER'S MANUAL PACKET FOR INSTRUCTIONS AND OTHER CLEANING INFORMATION.

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INDEX

INDEX

INDEX

INDEX