
410 SUNDANCER

OWNER'S MANUAL SUPPLEMENT

MRP #1256049

This Owner's Manual Specific Information booklet has been written to provide additional information about your boat and should be read carefully.

The owner's manual packet has been compiled to help you to operate your craft with safety and pleasure. It contains details of the craft, the equipment supplied or fitted, its systems and information on its operation and maintenance. Please read the information in it carefully, and familiarize yourself with the craft before using it.

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

PLEASE KEEP THIS OWNER'S MANUAL PACKET IN A SECURE PLACE, AND HAND IT OVER TO THE NEW OWNER WHEN YOU SELL THE CRAFT.

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(This booklet contains 77 pages.)

Warranty Information

Sea Ray's® warranty is better than ever. Find the warranty information card in your owner's manual packet for complete details. If for some reason the card is missing, contact your Sea Ray dealer for a new one.

Construction Standards

Sea Ray's® commitment - Excellence by Design - has enabled us to create a superior craft providing you with comfort, performance, safety and dependability. All our boats comply with the safety standards set by the United

States Coast Guard and are designed, engineered and manufactured in accordance with applicable recommendations and guidelines of the American Boat and Yacht Council (ABYC) certified by the National Marine Manufacturers Association (NMMA).

Servicing Your Sea Ray®

When your boat needs service beyond regular maintenance it should be taken to an authorized Sea Ray® dealer.

To find a Sea Ray® dealer in your area call Sea Ray® Customer Service at:

1-800-SRBOATS.
Fax: 1-314-213-7878

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 and the appropriate customer service department information will be provided to you.

To find repair and parts facilities for equipment installed on your boat, refer to the original equipment manuals (OEMs) found in the owner's manual packet.



1-800-SRBOATS
www.searay.com

Sea Ray® Owner's Manual Supplement • 410 Sundancer • MRP #1256049

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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.
Internet address: <http://www.searay.com>

Note: Not all accessories shown in pictures or described herein are standard equipment or even available as options.
Options and features are subject to change without notice.

Life Saving Equipment

(Personal Flotation Device (PFD))

STORAGE: The 410 DA offers lifesaving equipment storage in the helm companion seat compartment.

OPERATION: Wear PFD according to manufacturer recommendations. See pamphlet *Federal Requirements And Safety Tips For Recreational Boats* in the owner's packet or get one from your dealer.

MAINTENANCE: Rinse with fresh water and let dry thoroughly. Do not store in a damp compartment. Avoid the possibility of mildew.

Boat Storage

WET STORAGE PROCEDURES: Special care for boats that are moored: If permanently moored 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 marine paint dealer for proper application methods.

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, LORAN, etc.) and personal gear (fishing poles, etc.) normally left aboard your boat.

Troubleshooting

List of Reference Manuals and Drawings

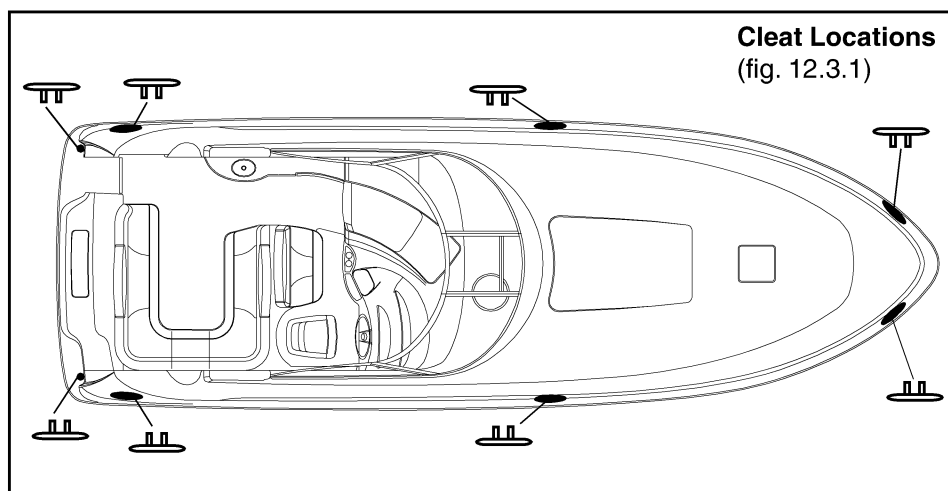
PERFORMANCE: Refer to the owner's manual.

ENGINE: Refer to the owner's manual and/or the engine manual.

ELECTRICAL: Refer to electrical section of the owner's manual and electrical schematics in this owner's manual supplement. Only a qualified marine electrical technician may service the boat's electrical system.

Cleats

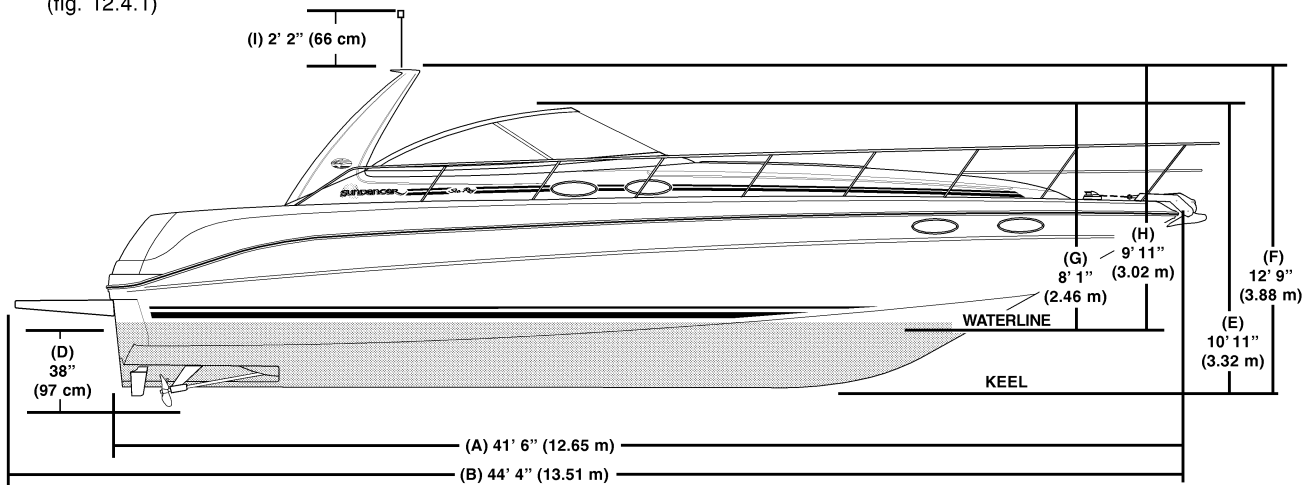
Cleats are intended for mooring use only. Do not use cleats for towing or lifting the boat. Figure 12.3 illustrates the location of cleats on your boat.



SPECIFICATIONS & DIMENSIONS

Profile

(fig. 12.4.1)

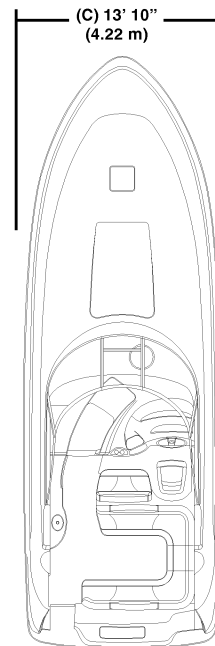


SPECIFICATIONS & HEIGHT DIMENSIONS

(A) Overall Length	41' 6" (12.65 m)
(B) Overall Length w/ Swim Platform	44' 4" (13.51 m)
(C) Beam	13' 10" (4.22 m)
(D) Draft w/Inboard Engines	38" (97 cm)
Dry Weight – Standard Power	22,000 lbs. (9,979 kg)
Fuel Capacity	335 gal. (1,268 liters)
Usable Fuel	318 gal. (1,205 liters)
Water Capacity	100 gal. (378.5 liters)
Holding Tank	42 gal. (160 liters)
Dead Rise	19°

HEIGHT DIMENSIONS

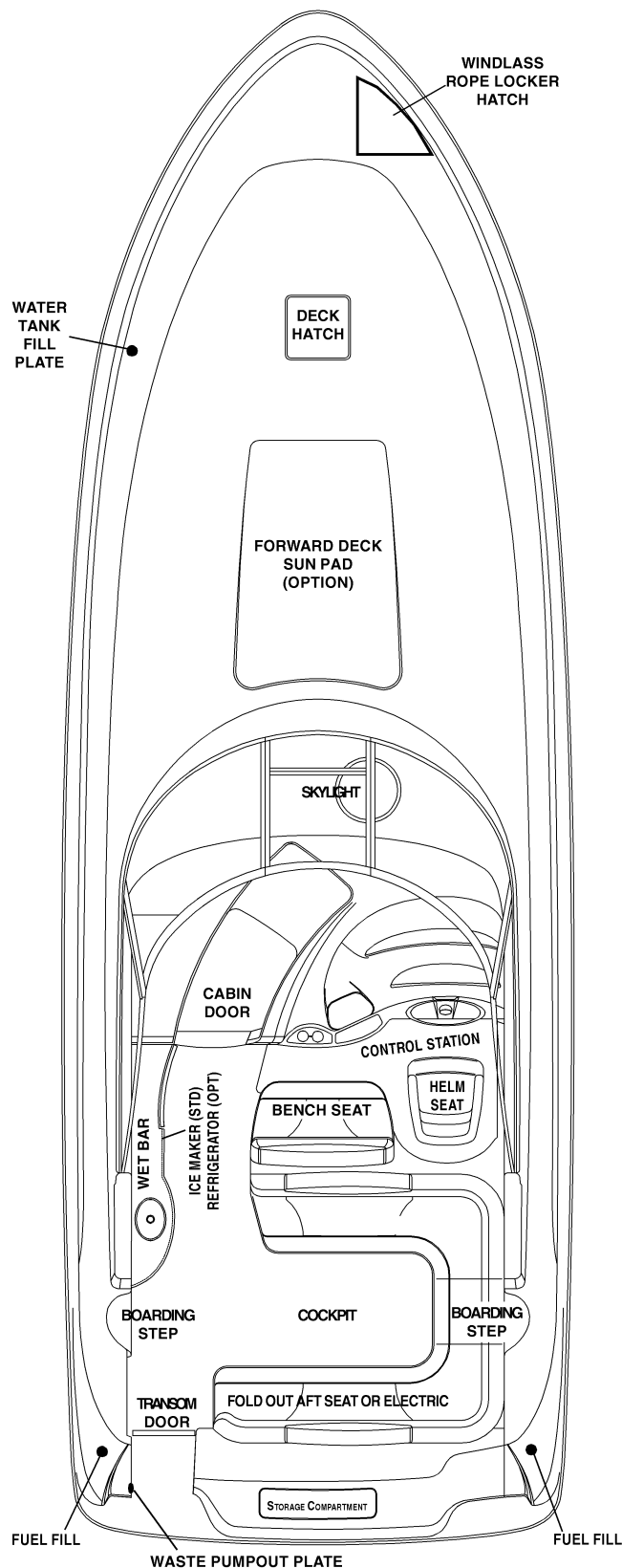
(E) Keel To Top Of Windshield	10' 11" (3.32 m)
(F) Keel To Top Of Spoiler	12' 9" (3.88 m)
(G) Waterline To Top Of Windshield	8' 1" (2.46 m)
(H) Waterline To Top Of Spoiler	9' 11" (3.02 m)
(I) Spoiler To Top Of Mastlight	2' 2" (66 cm)



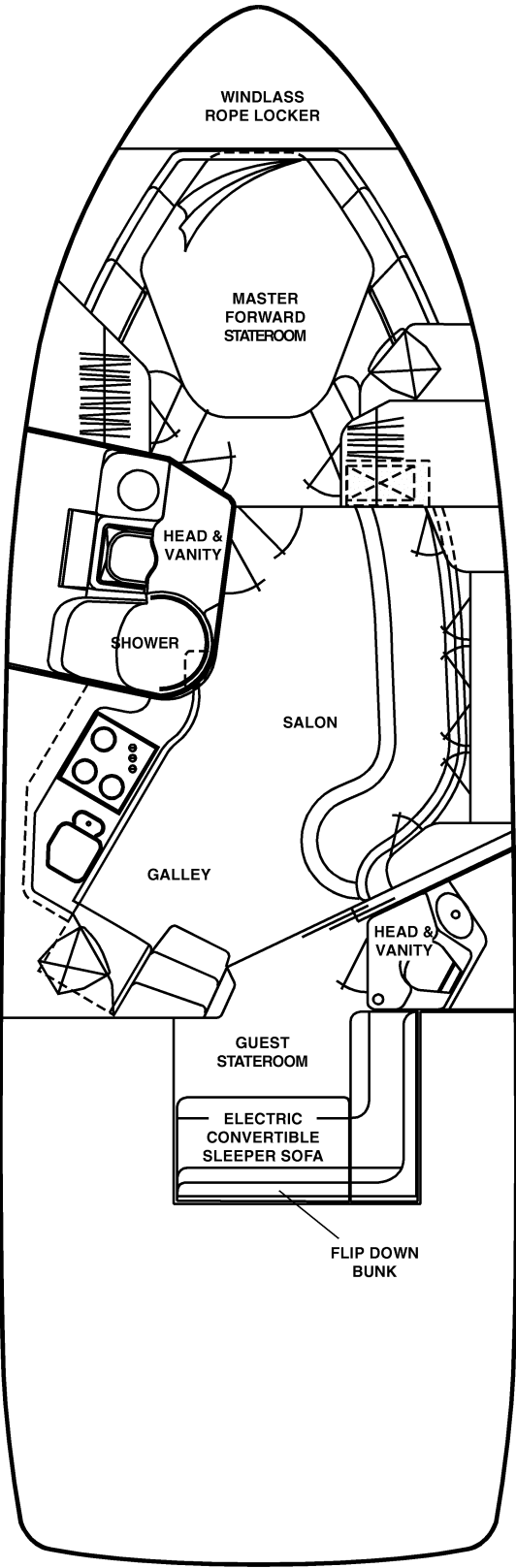
(fig. 12.4.2)

ACCOMMODATION PLANS

Main Deck (Floor Plan)
(fig. 12.5.1)



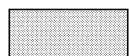
Mid Deck (Floor Plan)
(fig. 12.5.2)



DECK OCCUPANCY PLAN



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



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



DO NOT WALK ON THIS AREA



WARNING

Anchor should be independently secured to prevent accidental release.

ATTACH THE SAFETY LANYARD TO THE ANCHOR to insure that the anchor is held in place should the windlass fail. DO NOT use the safety lanyard to SUPPORT the anchor in a stored position.



DANGER

DO NOT USE SUN PAD WHEN BOAT IS UNDERWAY.



WARNING

PERSONAL INJURY HAZARD
When underway, keep passengers clear of areas not designed for riding. Especially hazardous areas include seat backs, bow, gunwale, transom platform and fore and aft decks.



WARNING

SLIPPING HAZARD - Wet decks are slippery. Wear proper footwear and use extreme caution on wet surfaces.



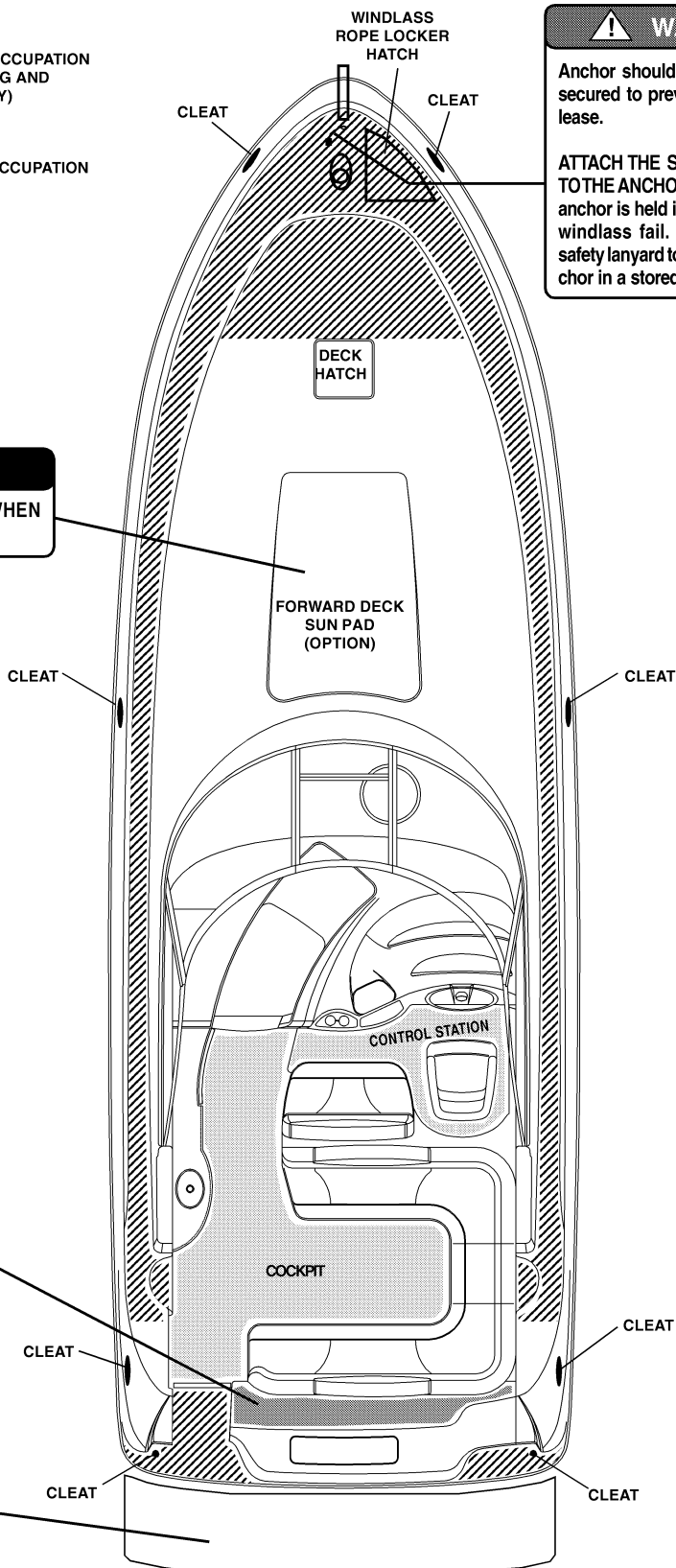
WARNING

DO NOT STAND OR WALK ON AREAS SHOWN IN THE DARKEST SHADING. SERIOUS INJURY COULD RESULT.



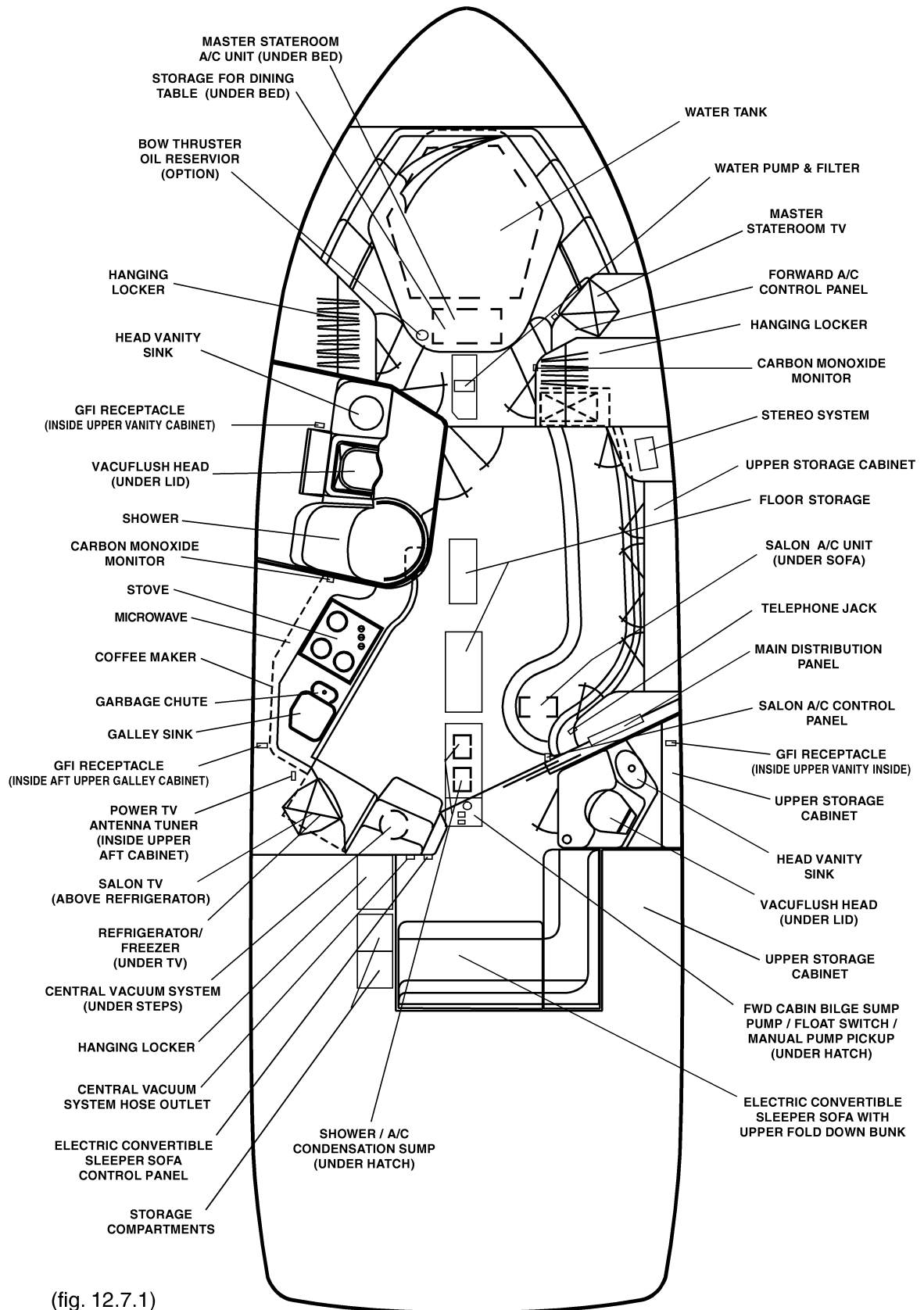
DANGER

TO AVOID RISK OF SERIOUS INJURY OR DEATH SHUT OFF ENGINE WHEN NEAR SWIMMERS OR PRIOR TO USING SWIM PLATFORM AND BOARDING LADDER.



(fig. 12.6.1)

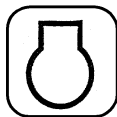
ACCESSORY LOCATIONS



(fig. 12.7.1)

GENERAL INFORMATION

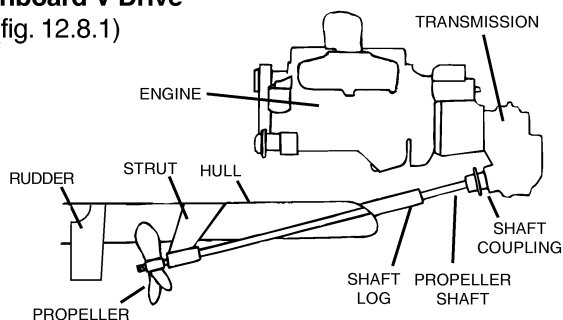
Propulsion System



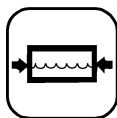
The standard engine is an inboard V-drive type propulsion system. This system incorporates an inboard engine with an angled transmission that allows the drive shaft to pass through the hull under the engine.

REFER TO THE OWNER'S MANUAL AND ENGINE OWNER'S MANUAL FOR OPERATING INSTRUCTIONS AND WARRANTY INFORMATION.

Inboard V-Drive
(fig. 12.8.1)



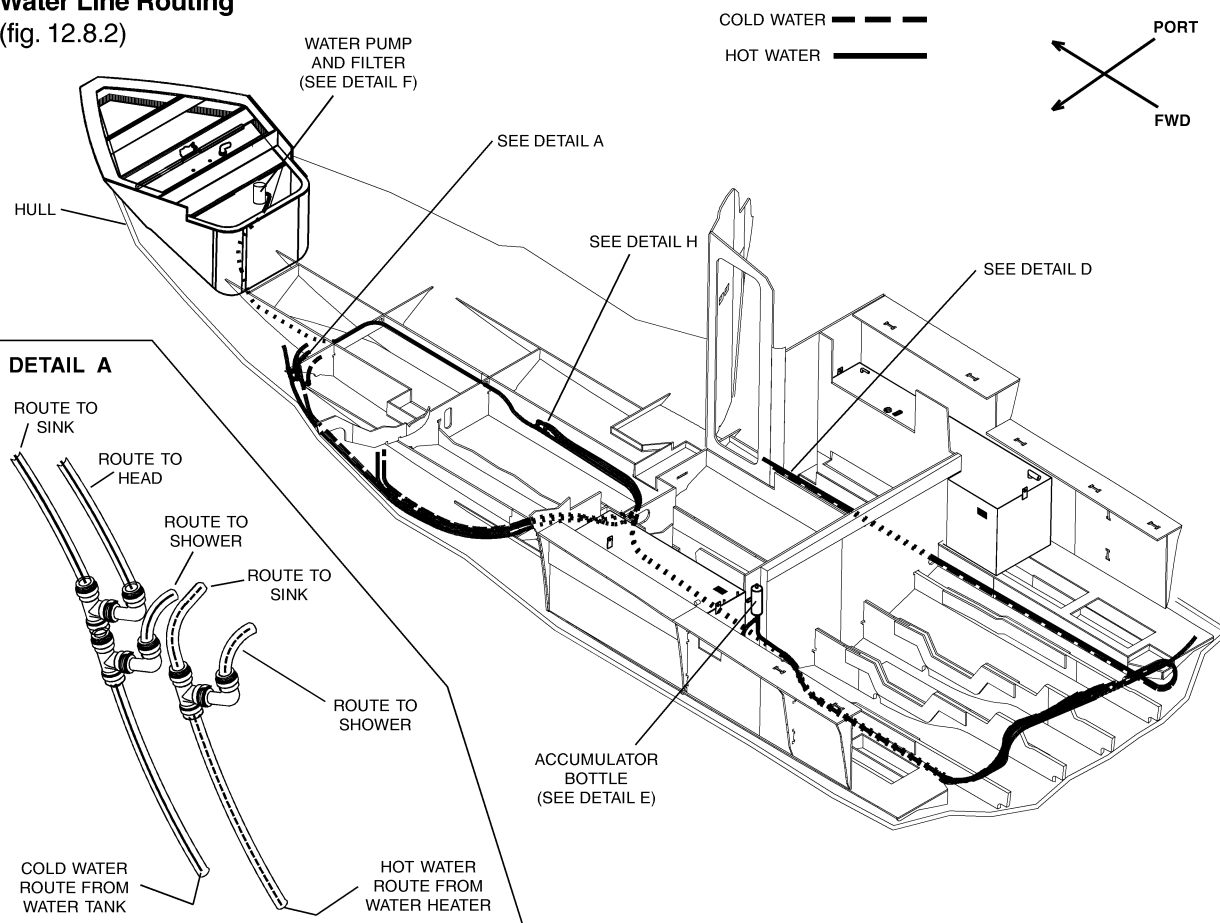
Water System



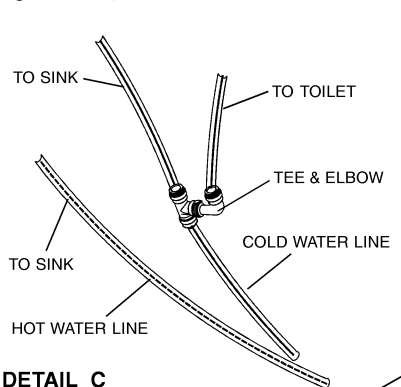
Water system information can be found in *Section 5 • Water System* of the owner's manual.

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

Water Line Routing
(fig. 12.8.2)

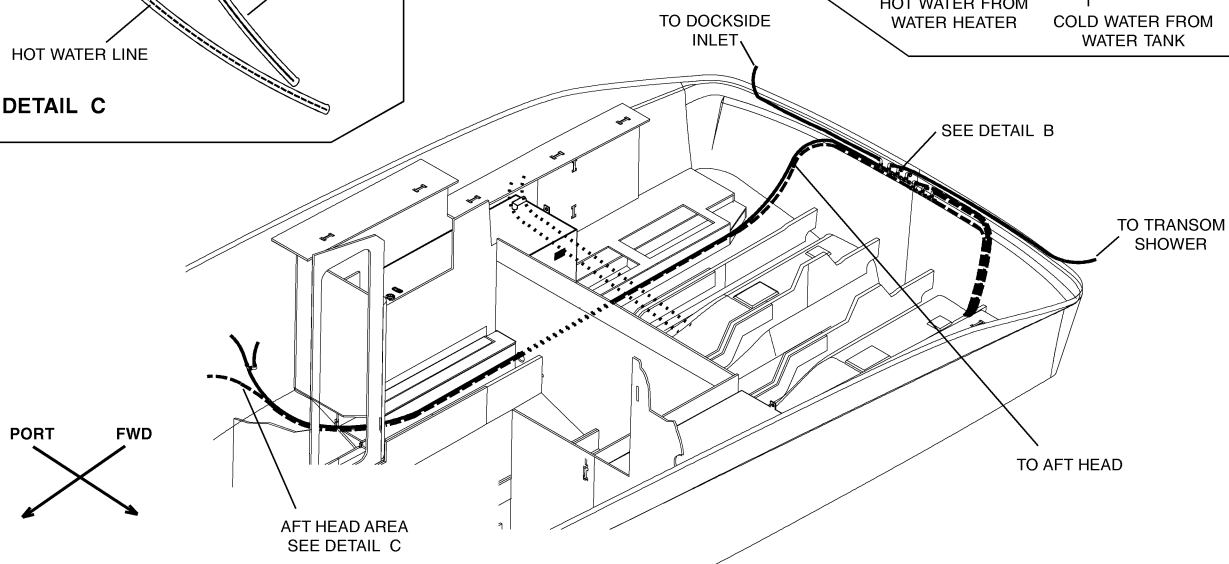
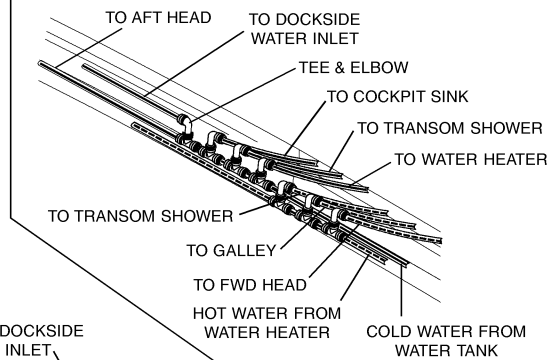


Water Line Routing (fig. 12.9.1)

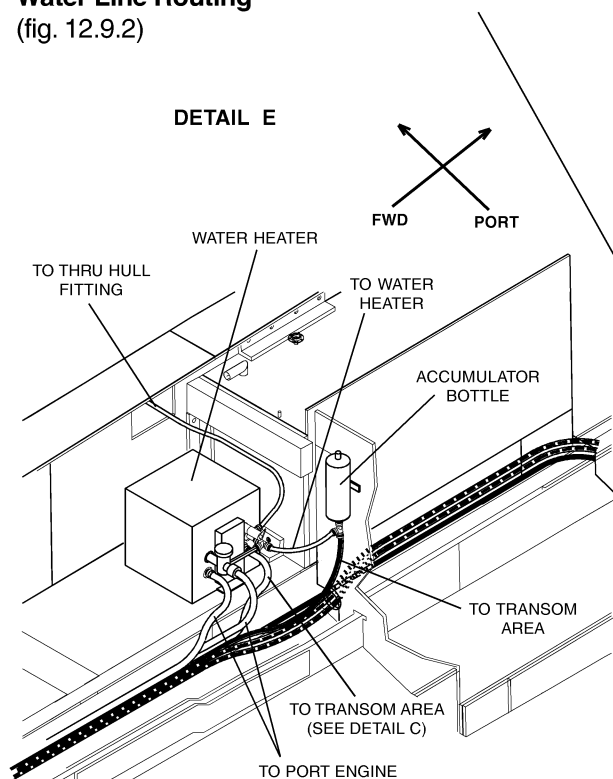


DETAIL C

DETAIL B

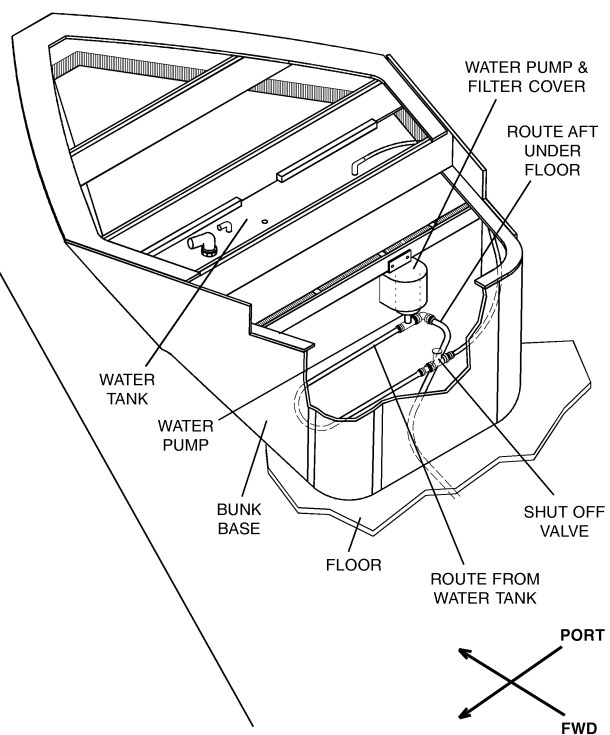


Water Line Routing (fig. 12.9.2)

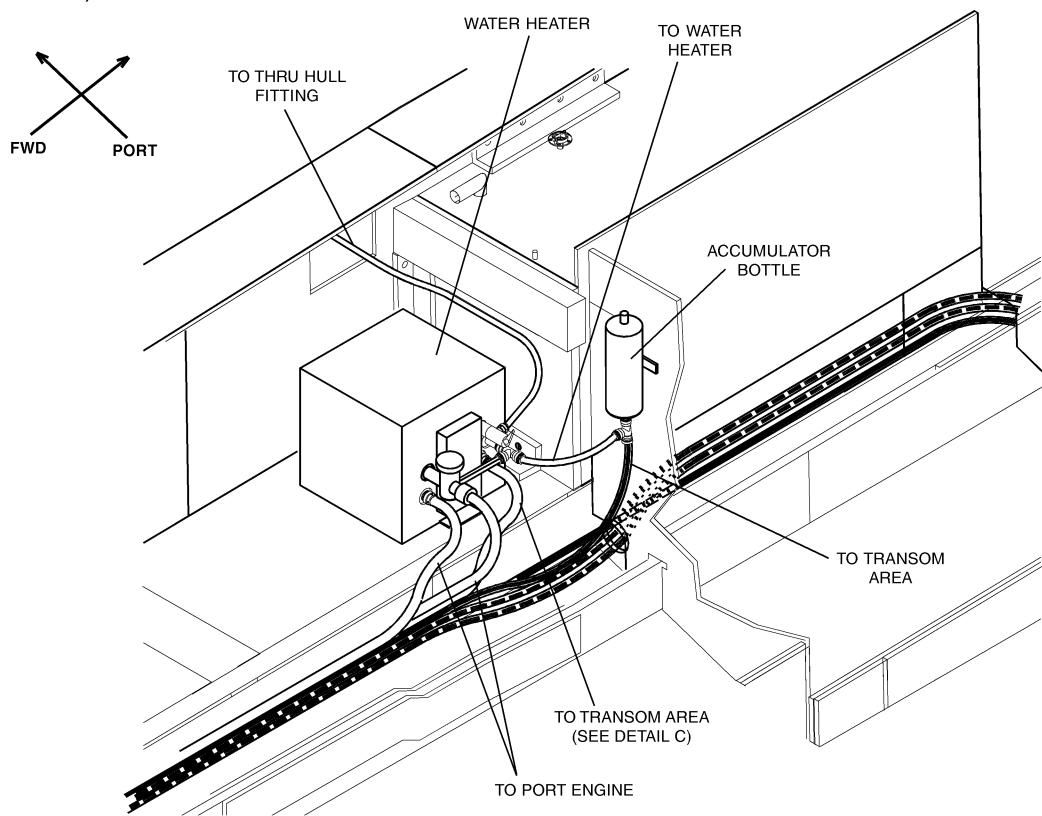


DETAIL E

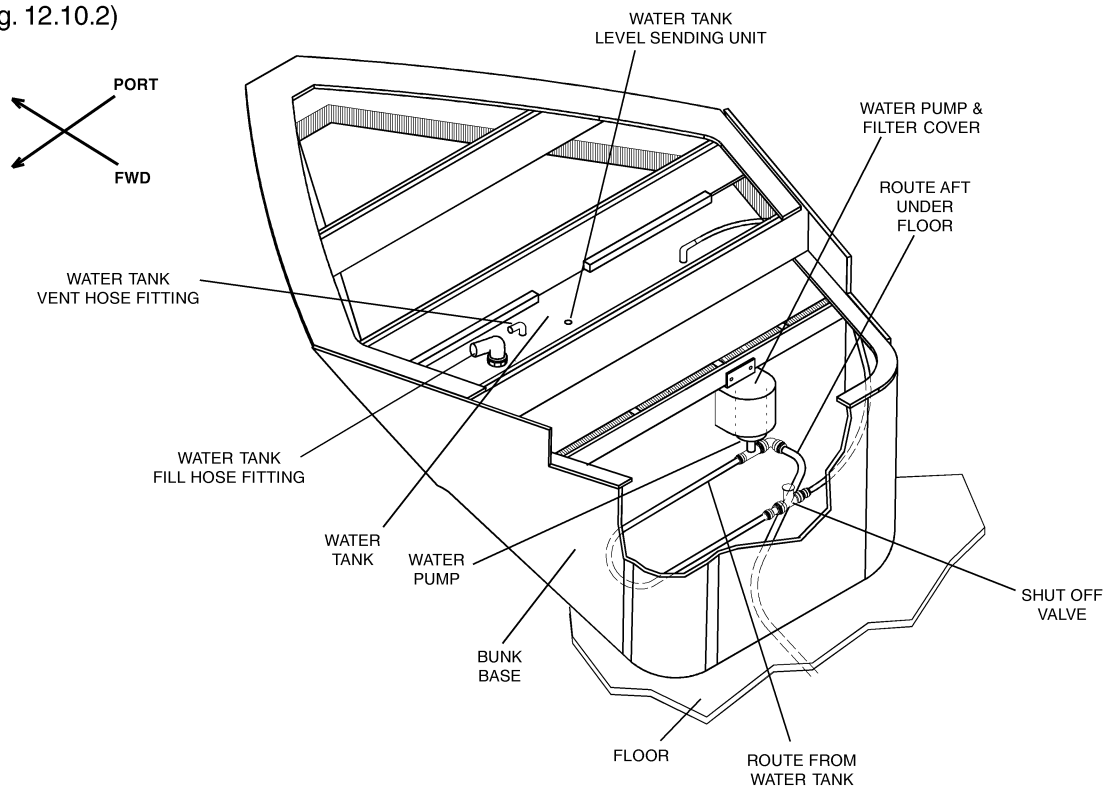
DETAIL F



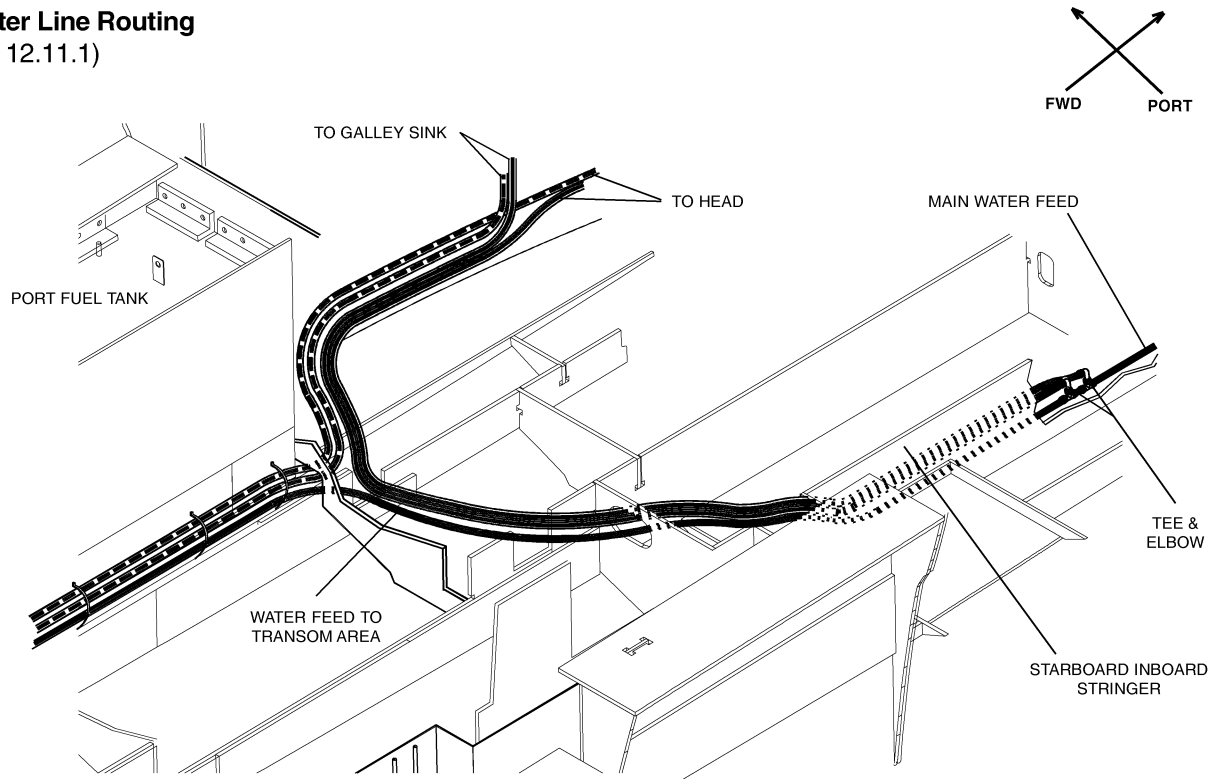
Water Line Routing (Detail E)
(fig. 12.10.1)



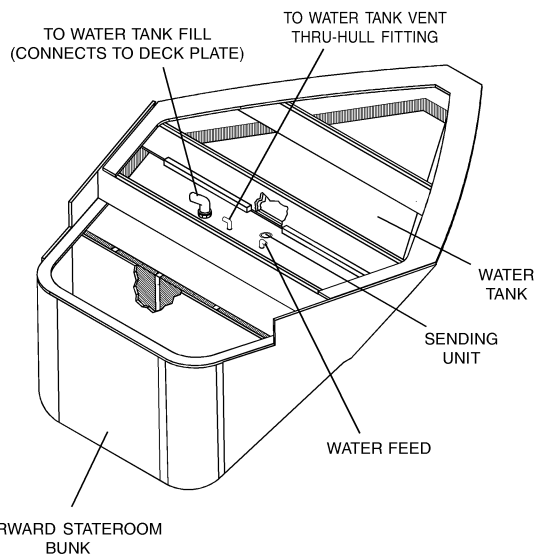
Water Line Routing (Detail F)
(fig. 12.10.2)



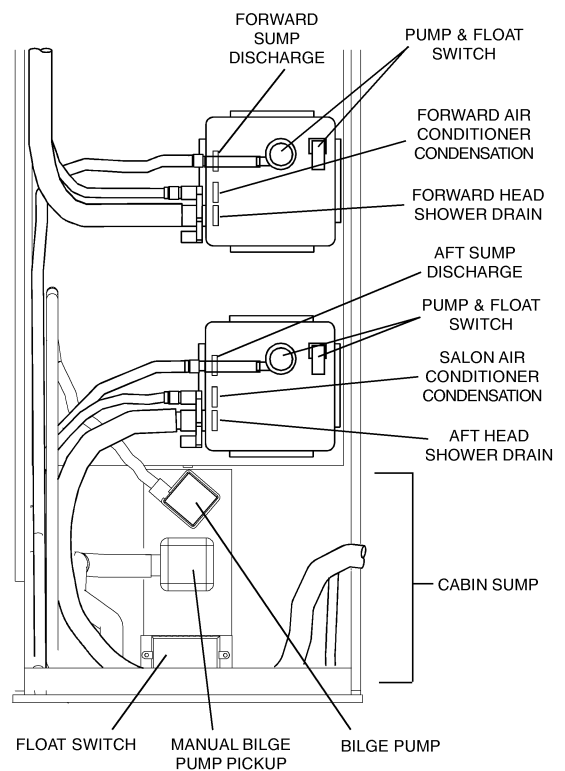
Water Line Routing
(fig. 12.11.1)



Water Tank (Under Forward Stateroom Bunk)
(fig. 12.11.2)



Cabin Sump Detail (Under Aft Cabin Floor Hatch)
(fig. 12.11.3)



Head System



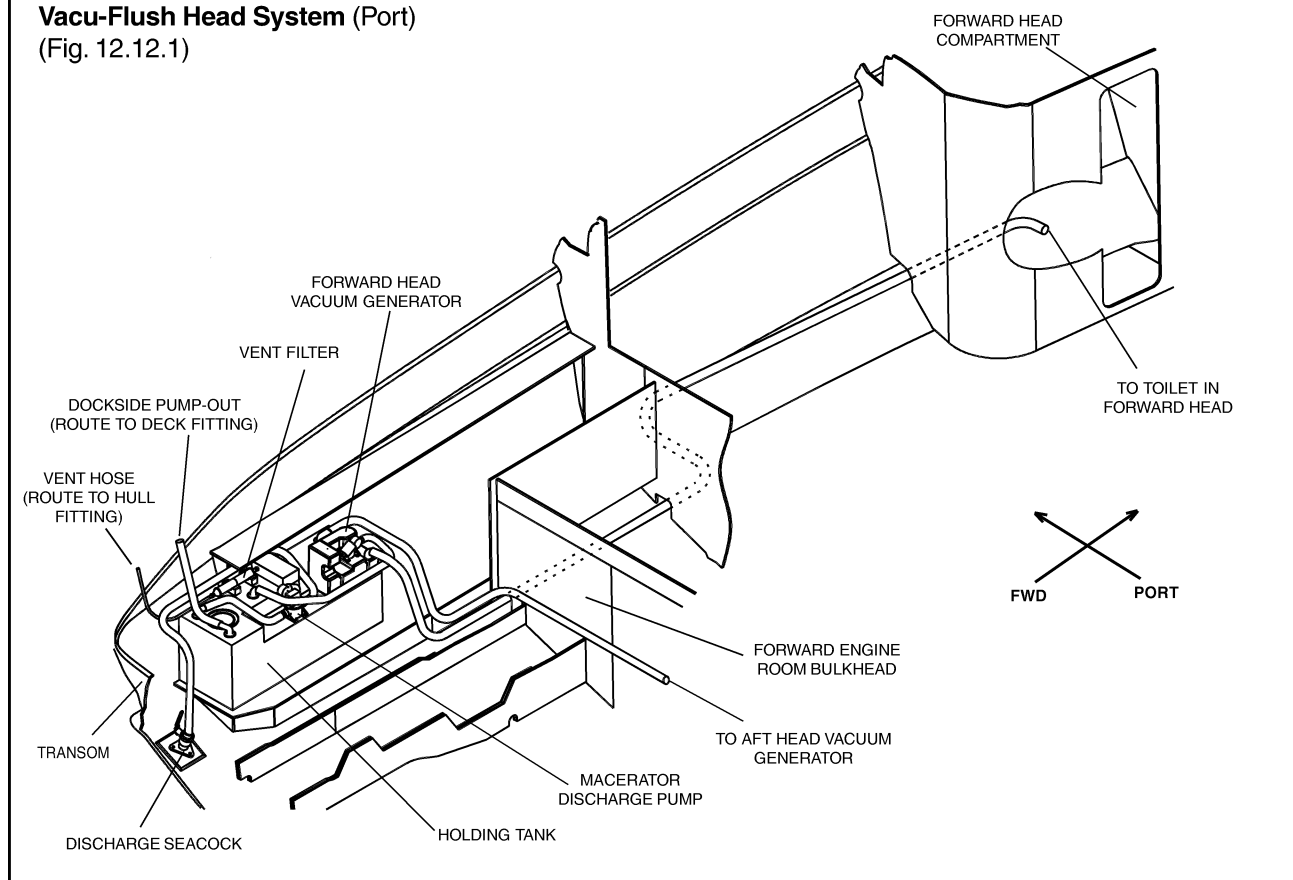
Head System information can be found in *Section 6 • Head System* of the owner's manual. The Owner's Manual Packet in your boat contains information pertaining to your head system that should be read carefully.

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

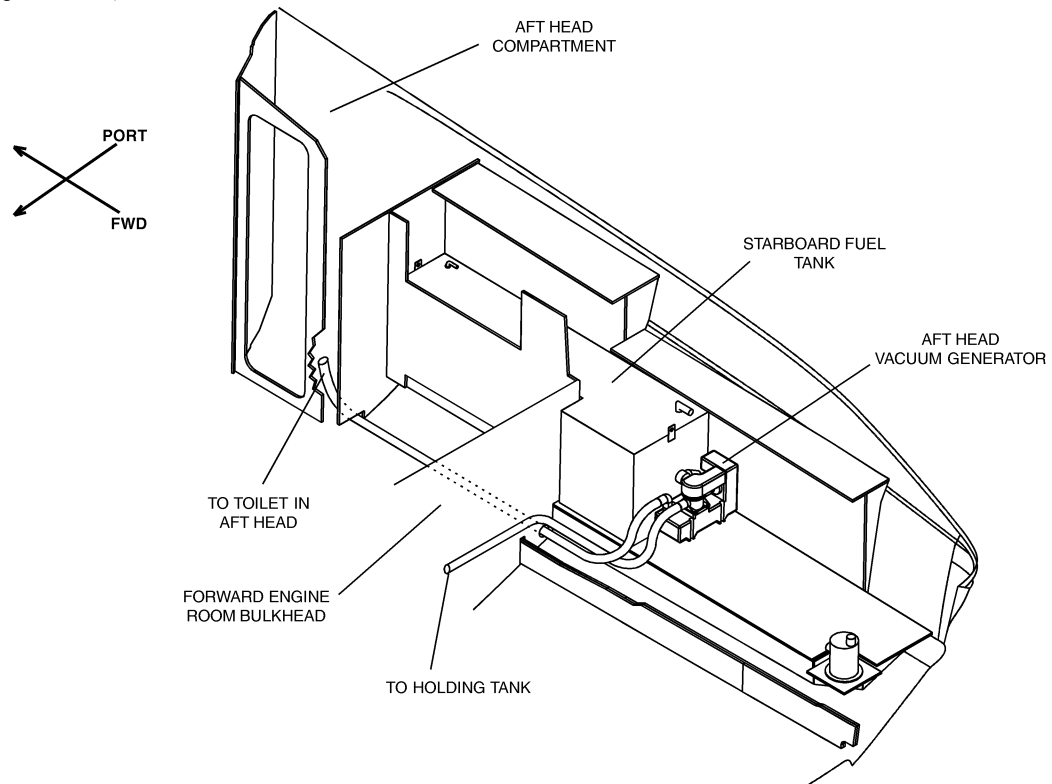
CAUTION

Do not place facial tissue, paper towels or sanitary napkins in head.

Vacu-Flush Head System (Port)
(Fig. 12.12.1)

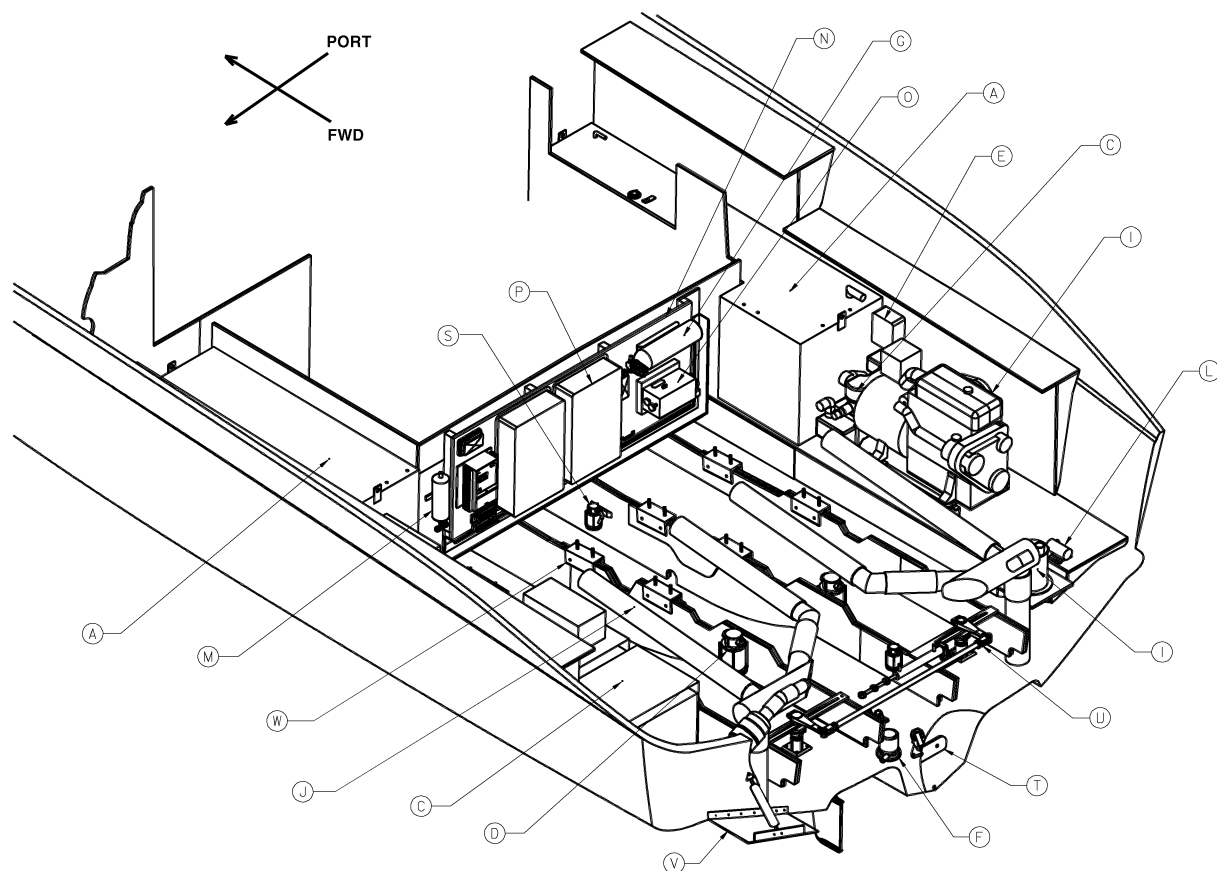


Vacu-Flush Head System (Starboard)
(Fig. 12.13.1)



410 Sundancer Bilge Layout (With Gas Inboard Engines) (Drawing 1 of 2)

Bilge Layout
(fig. 12.14.1)

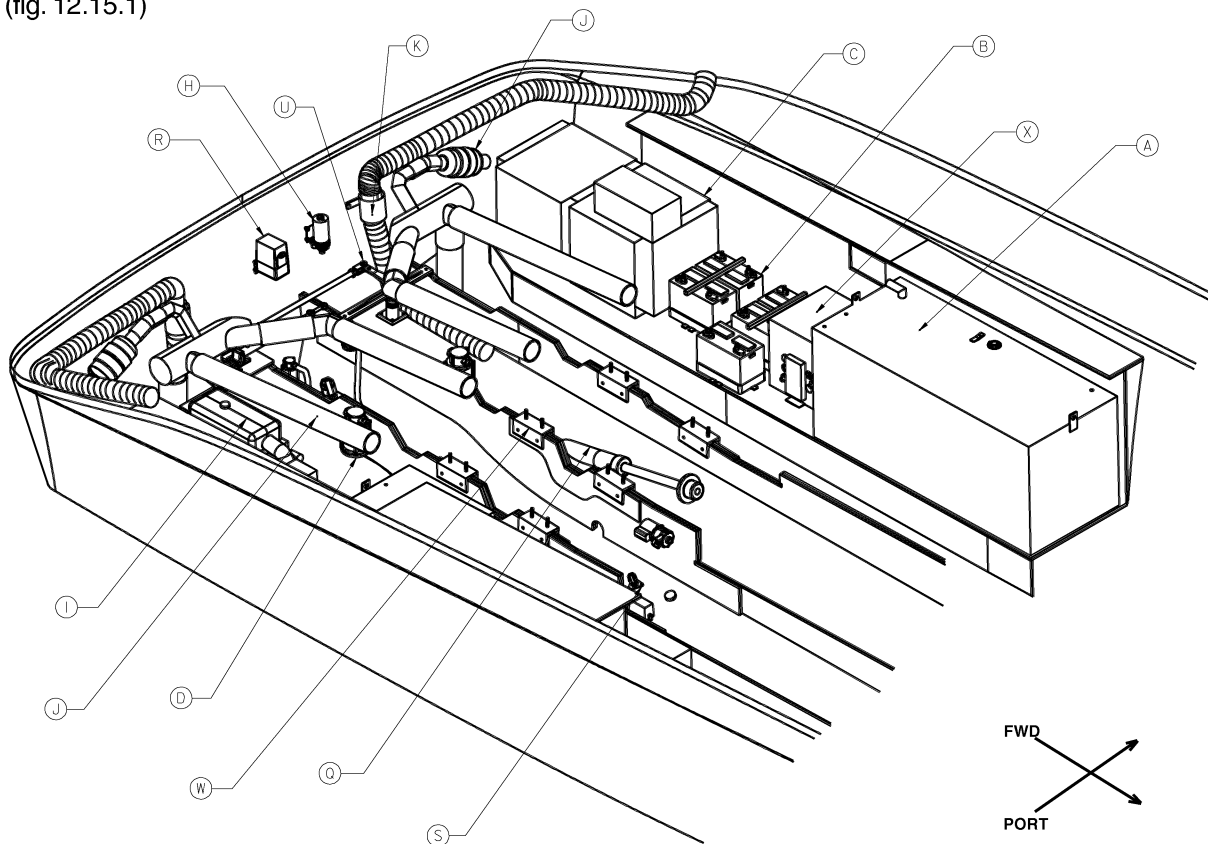


Note: Some of the letters listed are shown on the next drawing.

- | | |
|-------------------------------------|--------------------------------------|
| A FUEL TANK | P MAIN DC BREAKER PANEL |
| B BATTERIES | Q SHAFT LOG TUBE |
| C WASTE SYSTEM | R TRIM TAB PUMP |
| D ENGINE STRAINER AND SEACOCK | S AIR CONDITIONER SEACOCK & STRAINER |
| E GENERATOR COOLANT RECOVERY BOTTLE | T GARBOARD DRAIN & ZINC PLATE |
| F BILGE PUMP AND FLOAT SWITCHES | U RUDDER ARM, TIE BAR, STEERING |
| G FIRE EXTINGUISHER | V TRIM TAB |
| H LIVE BAITWELL SYSTEM PUMP | W STRINGER CAP |
| I GENERATOR | X WATER HEATER |
| J EXHAUST LAYOUT | |
| K BILGE BLOWERS | |
| L AUTO PILOT PUMP (OPTION) | |
| M ACCUMULATOR TANK | |
| N BILGE COMPONENT BOARD | |
| O ENGINE SYNCHRONIZER (OPTION) | |

410 Sundancer Bilge Layout (With Gas Inboard Engines) (Drawing 2 of 2)

Bilge Layout
(fig. 12.15.1)

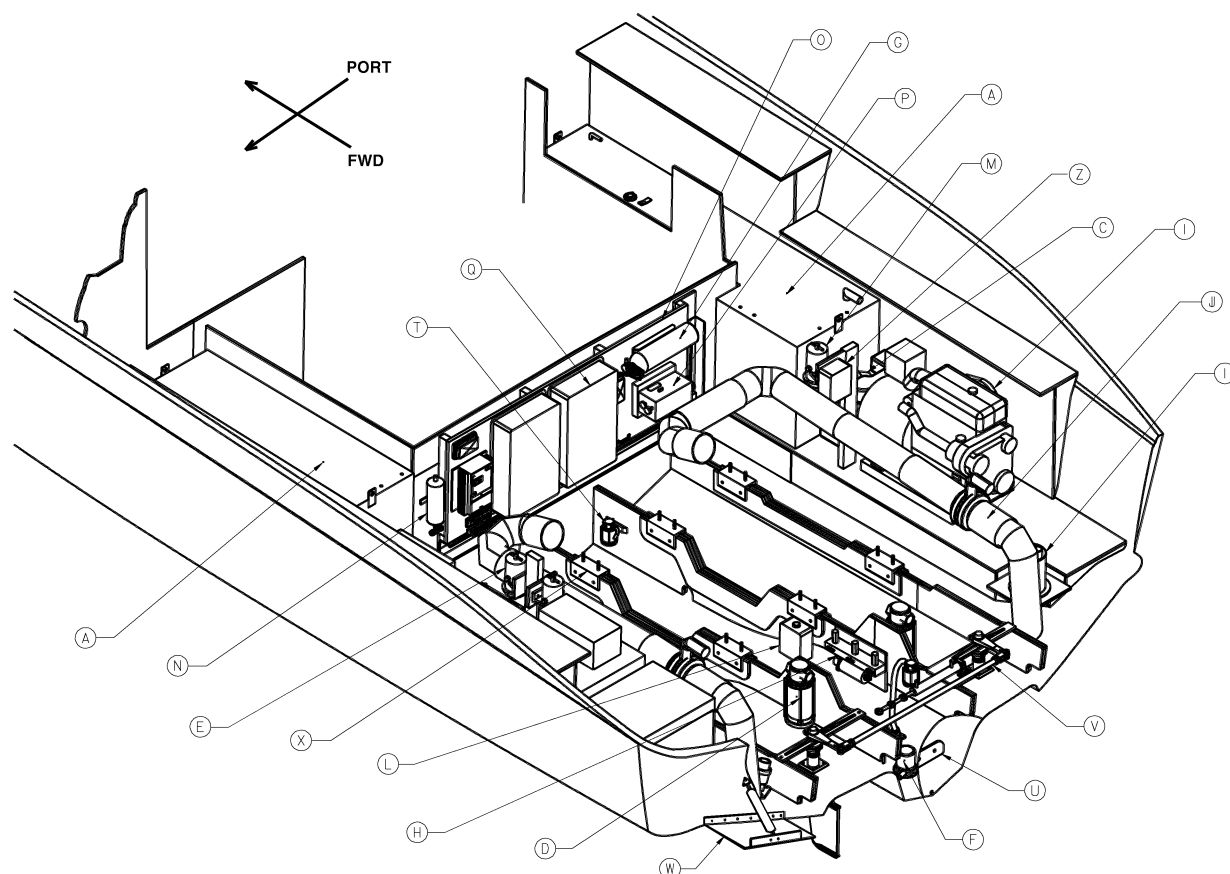


Note: Some of the letters listed are shown on the previous drawing.

- | | |
|-------------------------------------|--------------------------------------|
| A FUEL TANK | P MAIN DC BREAKER PANEL |
| B BATTERIES | Q SHAFT LOG TUBE |
| C WASTE SYSTEM | R TRIM TAB PUMP |
| D ENGINE STRAINER AND SEACOCK | S AIR CONDITIONER SEACOCK & STRAINER |
| E GENERATOR COOLANT RECOVERY BOTTLE | T GARBOARD DRAIN & ZINC PLATE |
| F BILGE PUMP AND FLOAT SWITCHES | U RUDDER ARM, TIE BAR, STEERING |
| G FIRE EXTINGUISHER | V TRIM TAB |
| H LIVE BAITWELL SYSTEM PUMP | W STRINGER CAP |
| I GENERATOR | X WATER HEATER |
| J EXHAUST LAYOUT | |
| K BILGE BLOWERS | |
| L AUTO PILOT PUMP (OPTION) | |
| M ACCUMULATOR TANK | |
| N BILGE COMPONENT BOARD | |
| O ENGINE SYNCHRONIZER (OPTION) | |

410 Sundancer Bilge Layout (With Diesel Inboard Engines) (Drawing 1 of 2)

Bilge Layout
(fig. 12.16.1)

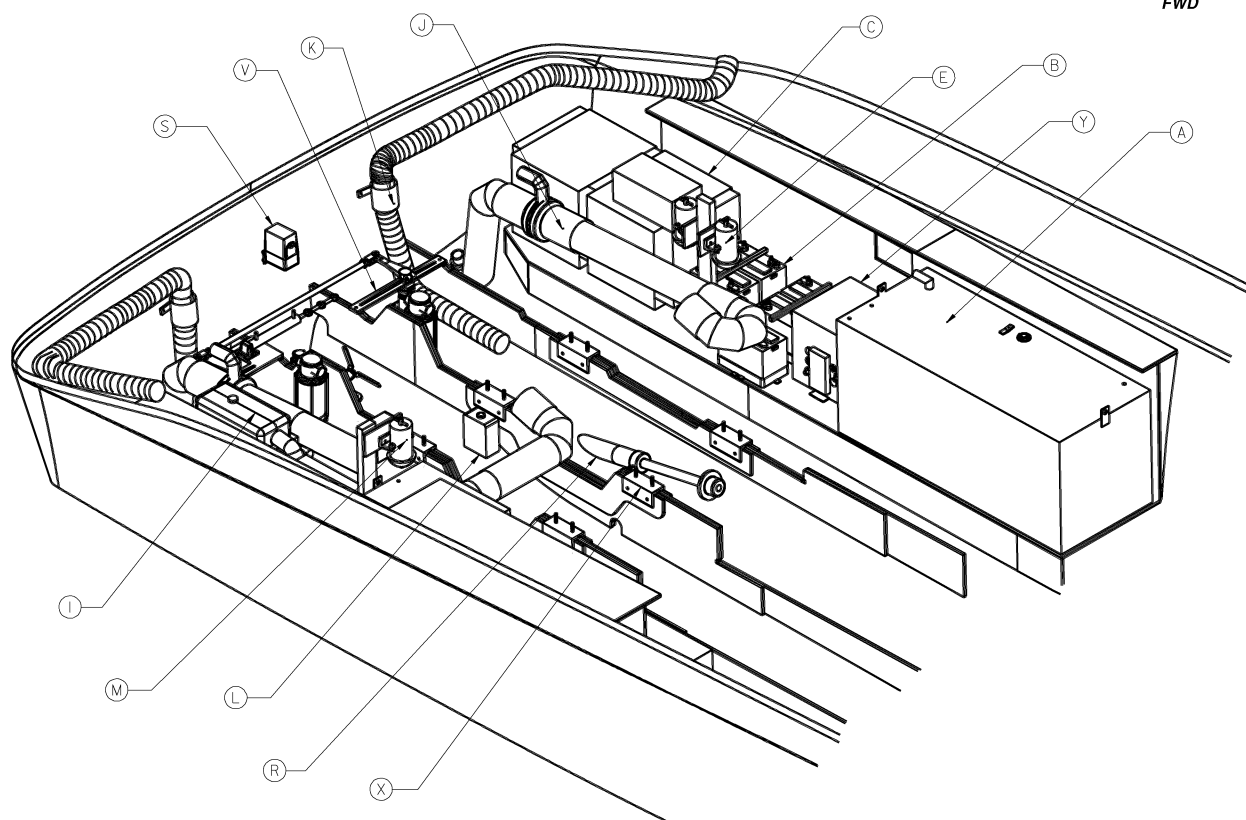


Note: Some of the letters listed are shown on the next drawing.

- | | |
|---------------------------------|-------------------------------------|
| A FUEL TANK | P ENGINE SYNCHRONIZER (OPTION) |
| B BATTERIES | Q MAIN DC BREAKER PANEL |
| C WASTE SYSTEM | R SHAFT LOG TUBE |
| D ENGINE STRAINER AND SEACOCK | S TRIM TAB PUMP |
| E ENGINE FUEL FILTERS | T A/C SEACOCK AND STRAINER |
| F BILGE PUMP AND FLOAT SWITCHES | U GARBOARD DRAIN & ZINC PLATE |
| G FIRE EXTINGUISHER | V RUDDER ARM, TIE BAR, STEERING |
| H OIL EXCHANGE PUMP (OPTION) | W TRIM TAB |
| I GENERATOR | X STRINGER CAP |
| J EXHAUST LAYOUT | Y WATER HEATER |
| K BILGE BLOWERS | Z GENERATOR COOLANT RECOVERY BOTTLE |
| L COOLANT RECOVERY BOTTLE | |
| M GENERATOR FUEL FILTER | |
| N HEAD SYSTEM ACCUMULATOR TANK | |
| O BILGE COMPONENT BOARD | |

410 Sundancer Bilge Layout (With Diesel Inboard Engines) (Drawing 2 of 2)

Bilge Layout
(fig. 12.17.1)



Note: Some of the letters listed are shown on the previous drawing.

- | | |
|---------------------------------|-------------------------------------|
| A FUEL TANK | P ENGINE SYNCHRONIZER (OPTION) |
| B BATTERIES | Q MAIN DC BREAKER PANEL |
| C WASTE SYSTEM | R SHAFT LOG TUBE |
| D ENGINE STRAINER AND SEACOCK | S TRIM TAB PUMP |
| E ENGINE FUEL FILTERS | T A/C SEACOCK AND STRAINER |
| F BILGE PUMP AND FLOAT SWITCHES | U GARBOARD DRAIN & ZINC PLATE |
| G FIRE EXTINGUISHER | V RUDDER ARM, TIE BAR, STEERING |
| H OIL EXCHANGE PUMP (OPTION) | W TRIM TAB |
| I GENERATOR | X STRINGER CAP |
| J EXHAUST LAYOUT | Y WATER HEATER |
| K BILGE BLOWERS | Z GENERATOR COOLANT RECOVERY BOTTLE |
| L COOLANT RECOVERY BOTTLE | |
| M GENERATOR FUEL FILTER | |
| N HEAD SYSTEM ACCUMULATOR TANK | |
| O BILGE COMPONENT BOARD | |

Fuel System

The 410 DA is equipped with either a gasoline or diesel fuel system. A detailed drawing of the fuel system can be found in the *Parts Manual*. Fueling instructions and precautions can be found in the *Owner's Manual General Information*.

NOTE: IN ROUGH SEAS, ALLOW APPROXIMATELY 15% RESERVE WHEN PLANNING FUEL CONSUMPTION.

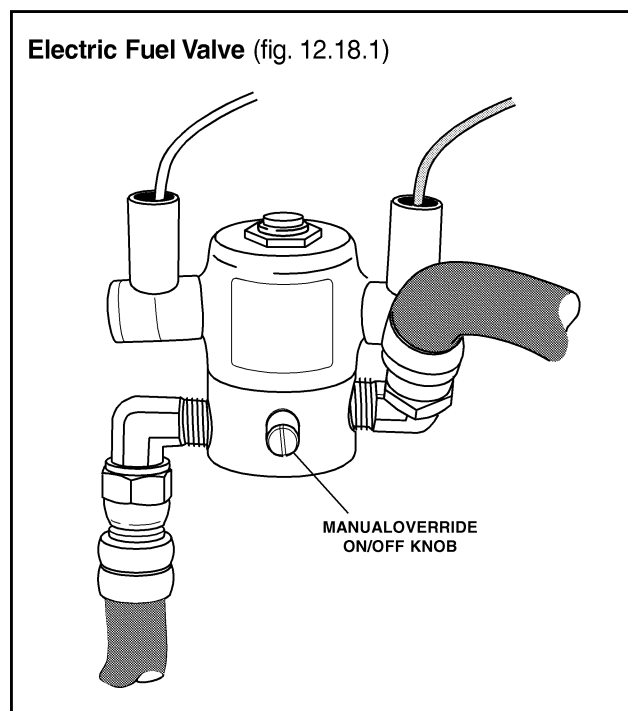
REFER TO THE ENGINE OPERATOR'S MANUAL FOR MORE DETAILED INFORMATION.

Electric Fuel Valves (Gasoline Systems)

The valves are wired to the ignition switch. When the ignition is turned ON the valve opens, when the ignition is turned OFF the valve closes. The manual override knob on the side of the valve should be left in the OFF position at all times.

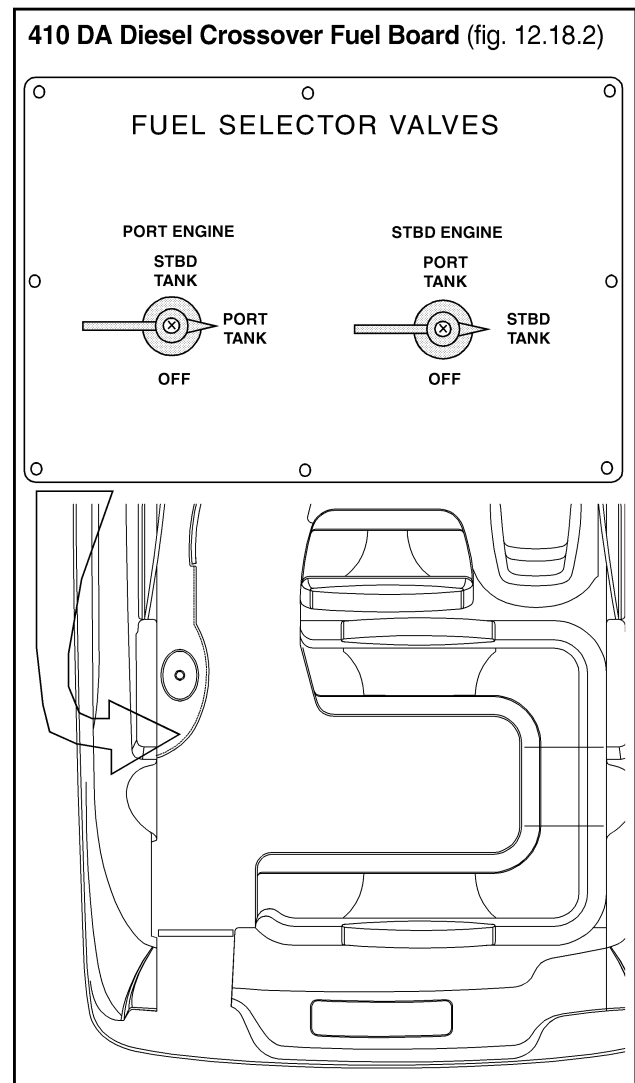
In the event of an electrical malfunction, the valve can be opened and closed manually by turning the manual override knob.

The electric fuel valve is installed in-line on the fuel hose between the fuel tank the engines and generator.



Crossover Fuel System (Diesel)

The crossover fuel system allows the engines to draw fuel from either tank. This allows switching to an alternate tank in case of fuel contamination or for even fuel weight distribution. Each engine is equipped with valves on the crossover fuel board. The generator only draws fuel from the port fuel tank. The crossover fuel board is located on the port side of the cockpit aft of the entertainment center.

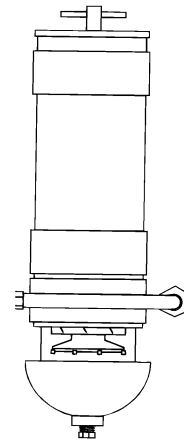


Fuel Filters: (Diesel)

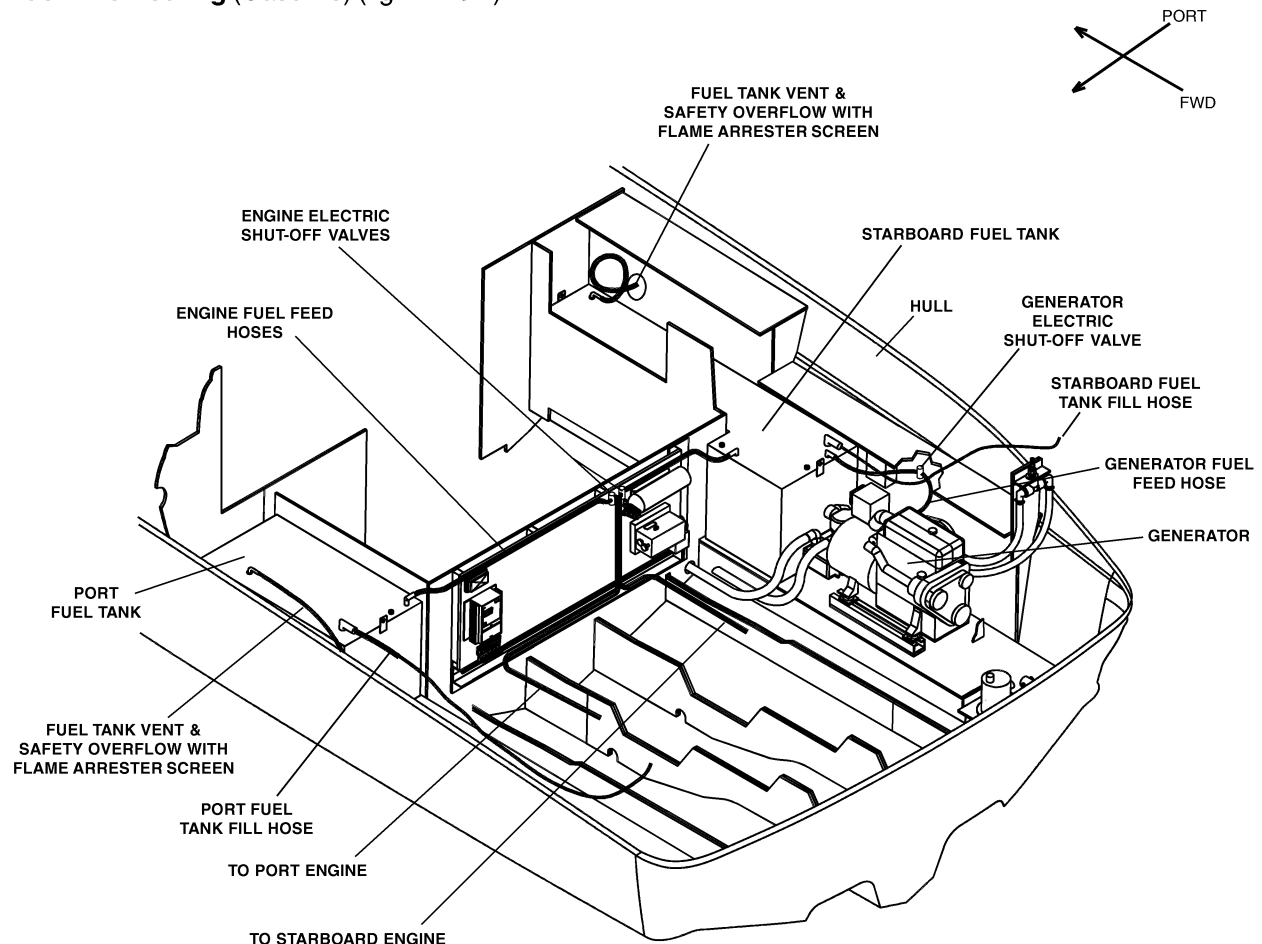
Primary and secondary fuel filters are installed on your Sea Ray® to keep the fuel as clean as possible. Primary fuel filters are the Racor® water separating fuel filters installed on the port side of the bilge. The generator filter is located on the starboard side of the bilge adjacent to the generator. The secondary fuel filters are located on the engines and should be replaced in accordance with the Engine Owner's Manual.

Use of any methanol, gasohol or alcohol based fuel additive will damage the fuel filter.

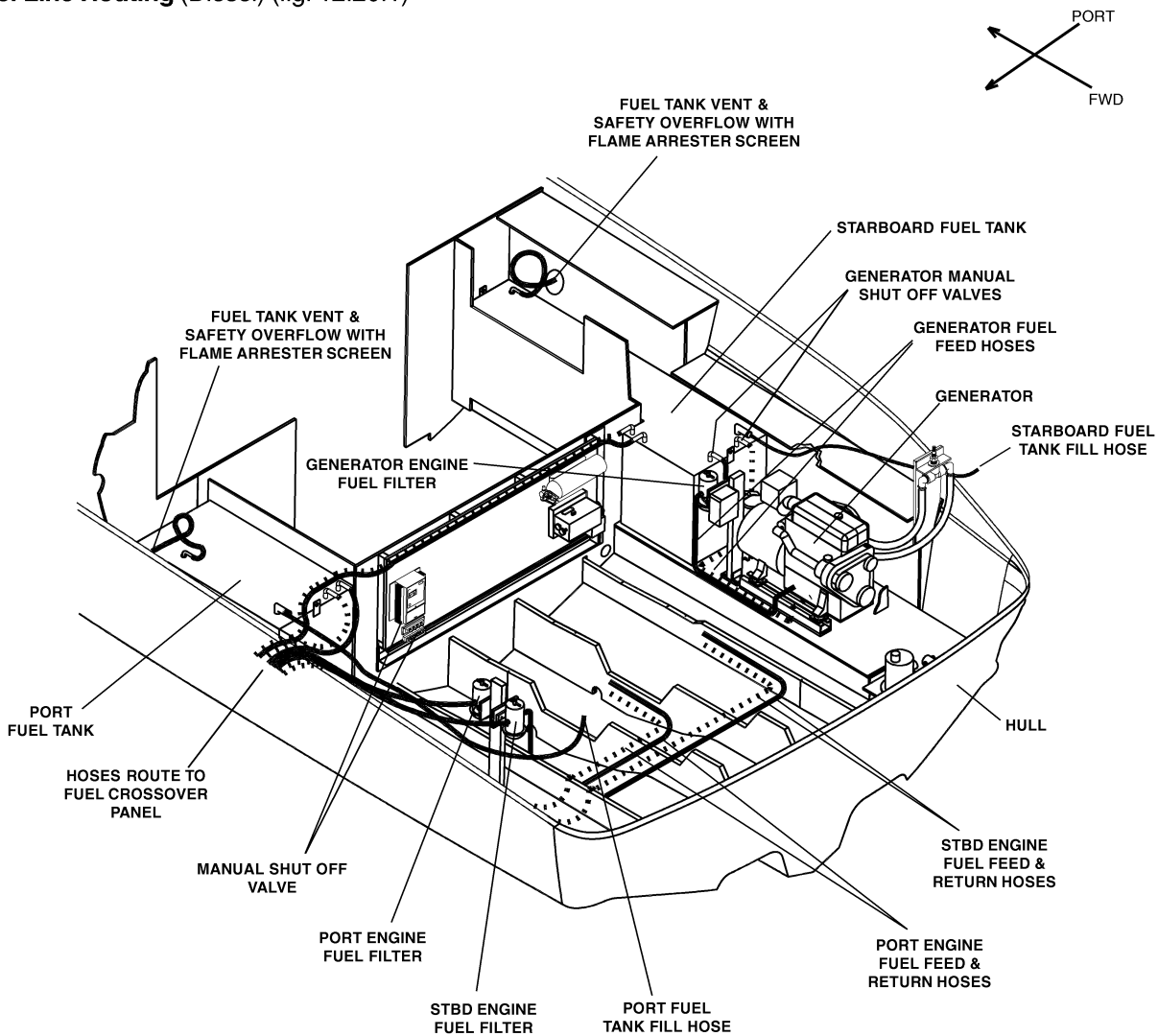
Racor® Water Separating Fuel Filters (fig. 12.19.1)



Fuel Line Routing (Gasoline) (fig. 12.19.2)

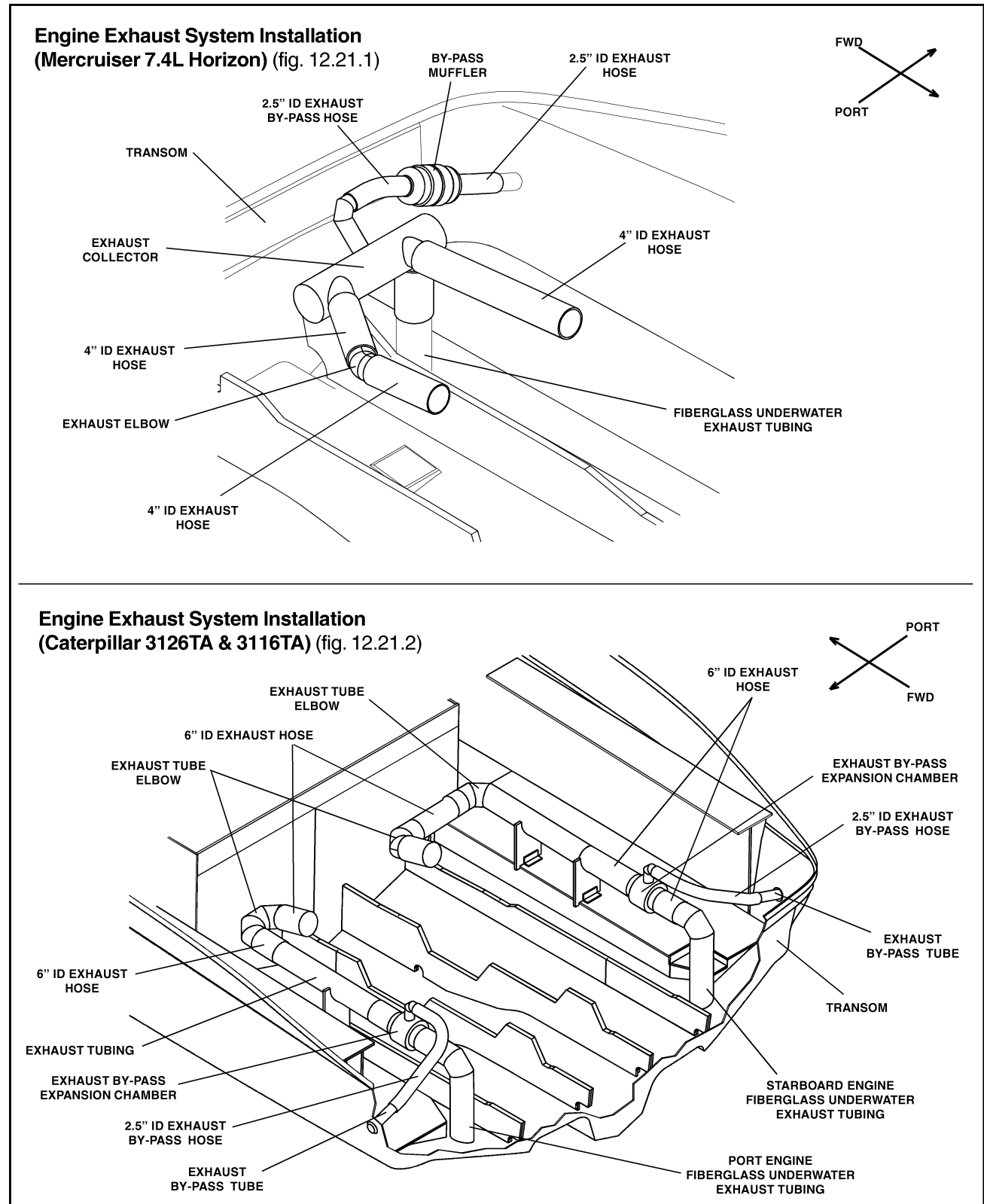


Fuel Line Routing (Diesel) (fig. 12.20.1)



Exhaust System

General exhaust system information can be found in *Section 2 • Bilge & Underwater Gear* of the owner's manual. Below are illustrations of the optional engine exhaust systems. REFER TO THE OWNER'S MANUAL AND ENGINE OWNER'S MANUAL FOR INSTRUCTIONS AND WARRANTY INFORMATION.



Ventilation System / Bilge Blowers



Sea Ray® Sport Yachts are equipped with electric bilge blowers to remove fumes from the engine compartment and provide ventilation through the deck vents before starting the engine and when operating below cruising speeds. The bilge blowers are located in the engine compartment on the port and starboard sides of the transom.

Bilge blower switches are located on the helm switch panel and the cabin DC distribution panel. Bilge blower breakers are located on the main DC breaker panel in the engine compartment.

The blower switches have a two way switching capability. The blower module allows the blowers to be turned ON and OFF at either the control station or the cabin DC distribution panel. Also, they can be turned ON at one station and turned OFF at the other.

Blower Switch Lights:

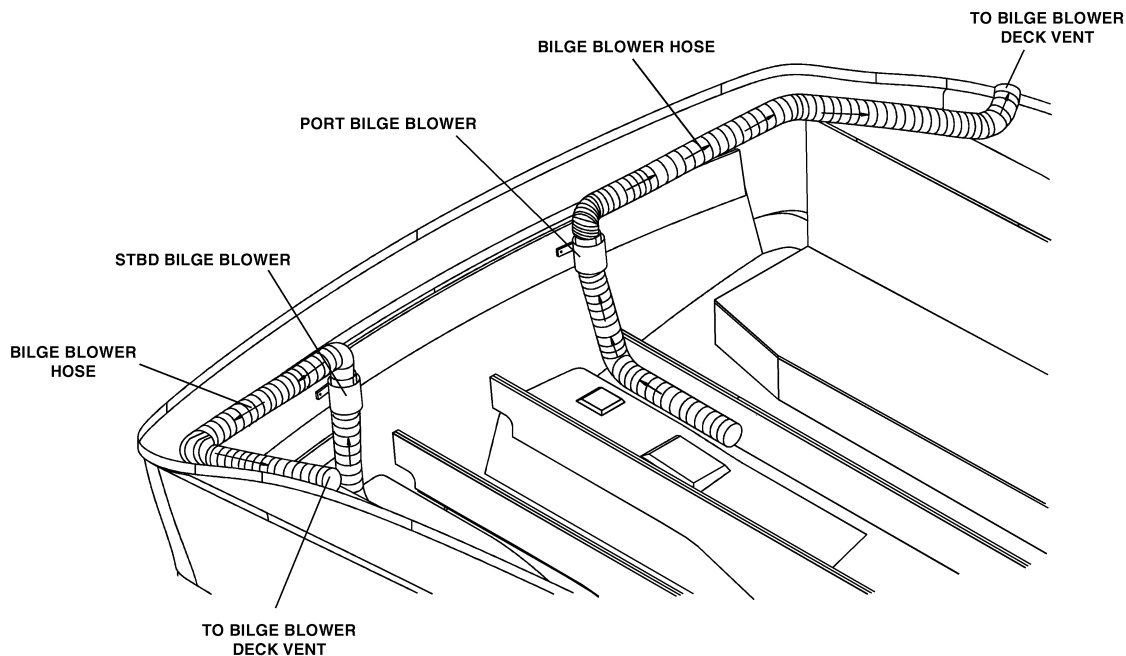
Lights On: When the blowers are turned ON, the lights in the switches will come on and stay on, indicating that the blowers are functioning correctly.

Lights Blinking: If the lights are blinking, it is an indication that one of the blower breakers has tripped. Reset the tripped breaker. Blower breakers are located on the main DC distribution panel on the forward engine room bulkhead.

Lights Not On or Blinking: If you try to turn ON the blowers and no lights come on then both breakers are tripped and the switch is not receiving power. Reset the tripped breakers.

REFER TO *OWNER'S MANUAL* AND *OWNER'S PACKET* FOR OPERATING INSTRUCTIONS AND SAFETY PRECAUTIONS.

Bilge Blower Installation (fig. 12.22.1)



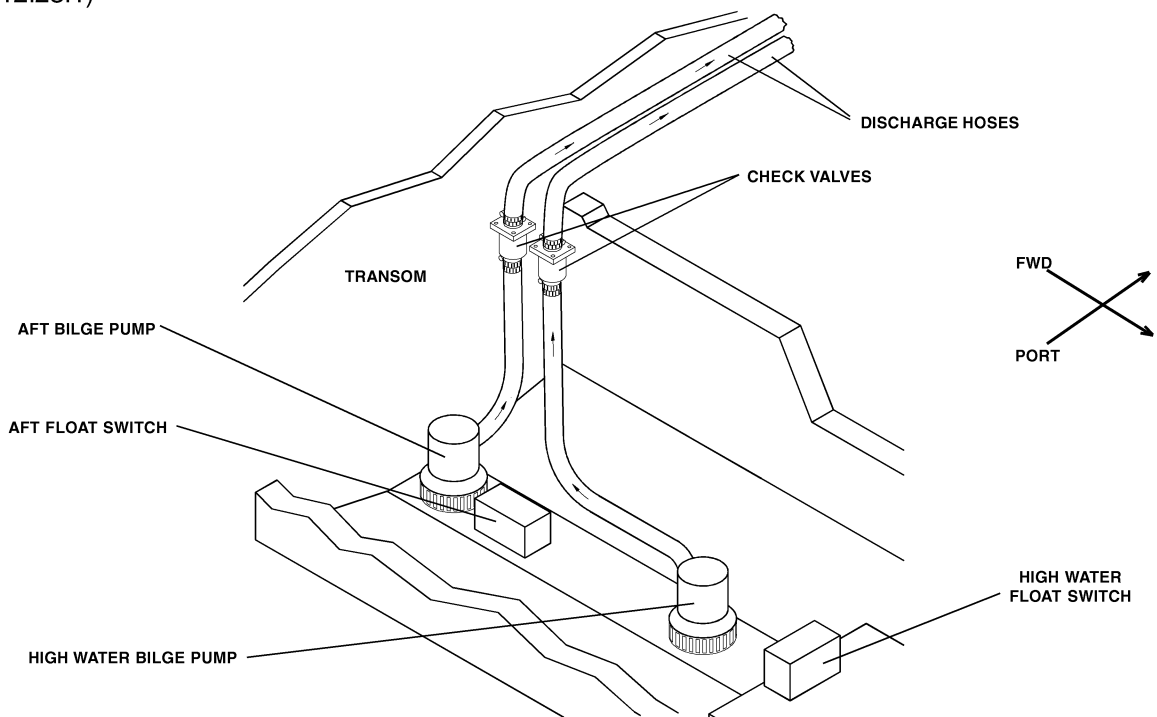
Bilge Pumping System



The 410 DA is equipped with an automatic bilge pump system. A manual bilge pump system is available as an international option to comply with CE standards.

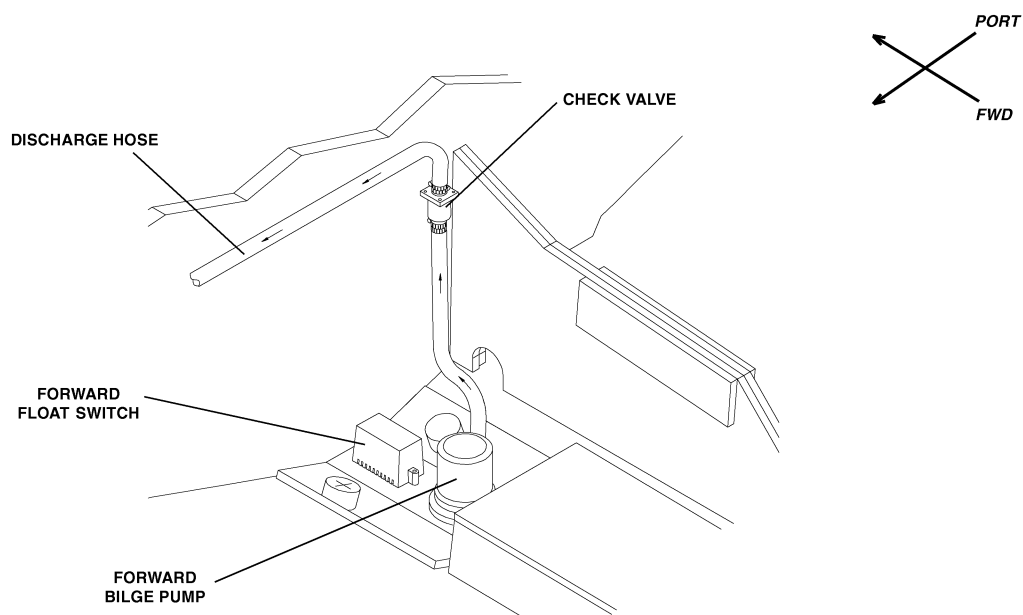
Aft Bilge Pump & Float Switch Installation

(fig. 12.23.1)



Forward Bilge Pump & Float Switch Installation

(fig. 12.23.2)



Manual Bilge Pump (With International CE Option)

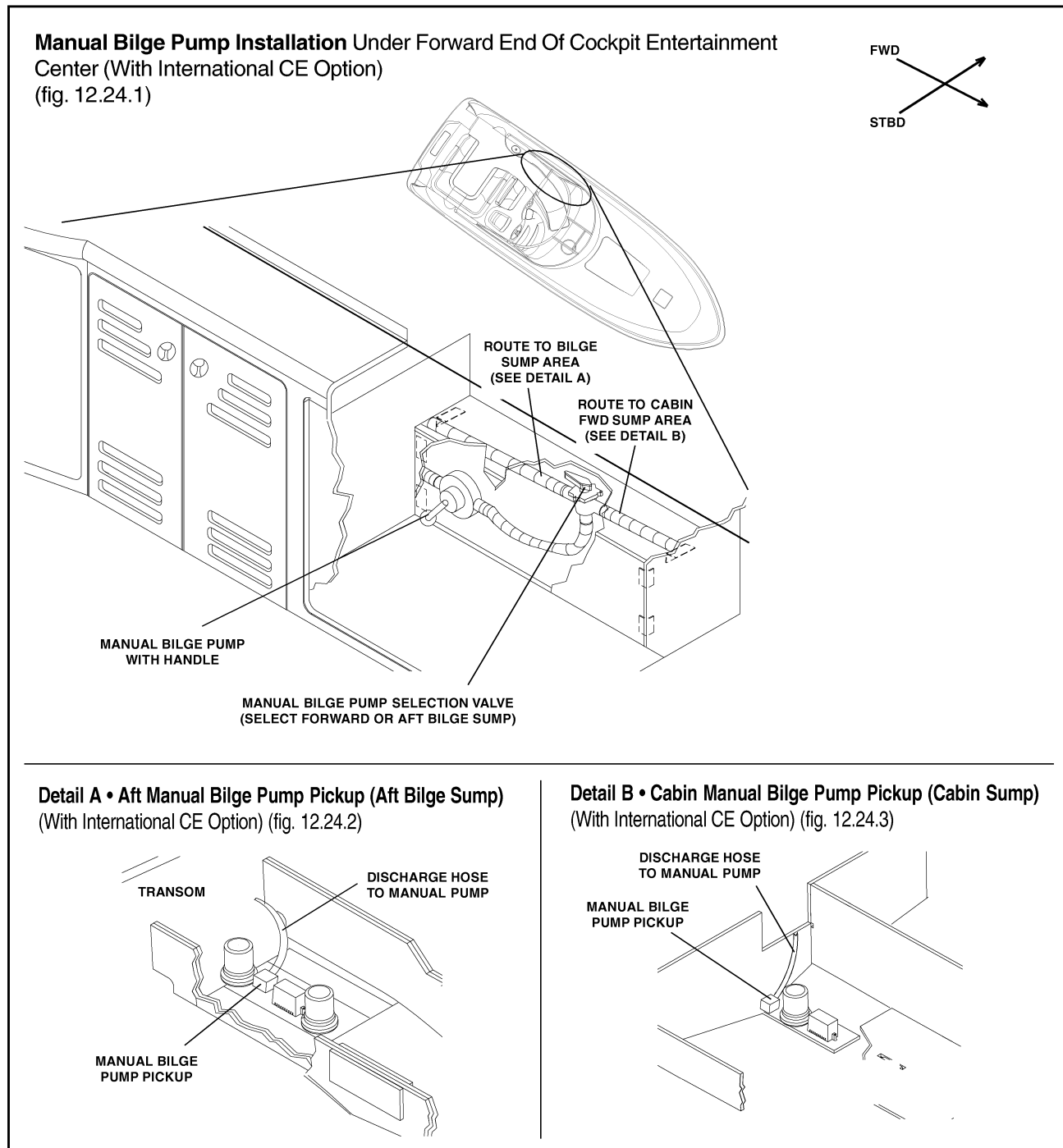
The manual bilge pump system is located on the forward port side of the cockpit under the wet bar.

To Operate:

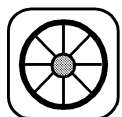
1. Rotate valve to select forward or aft pump.
2. Place handle into pump.

3. Move handle up and down to actuate pump.

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



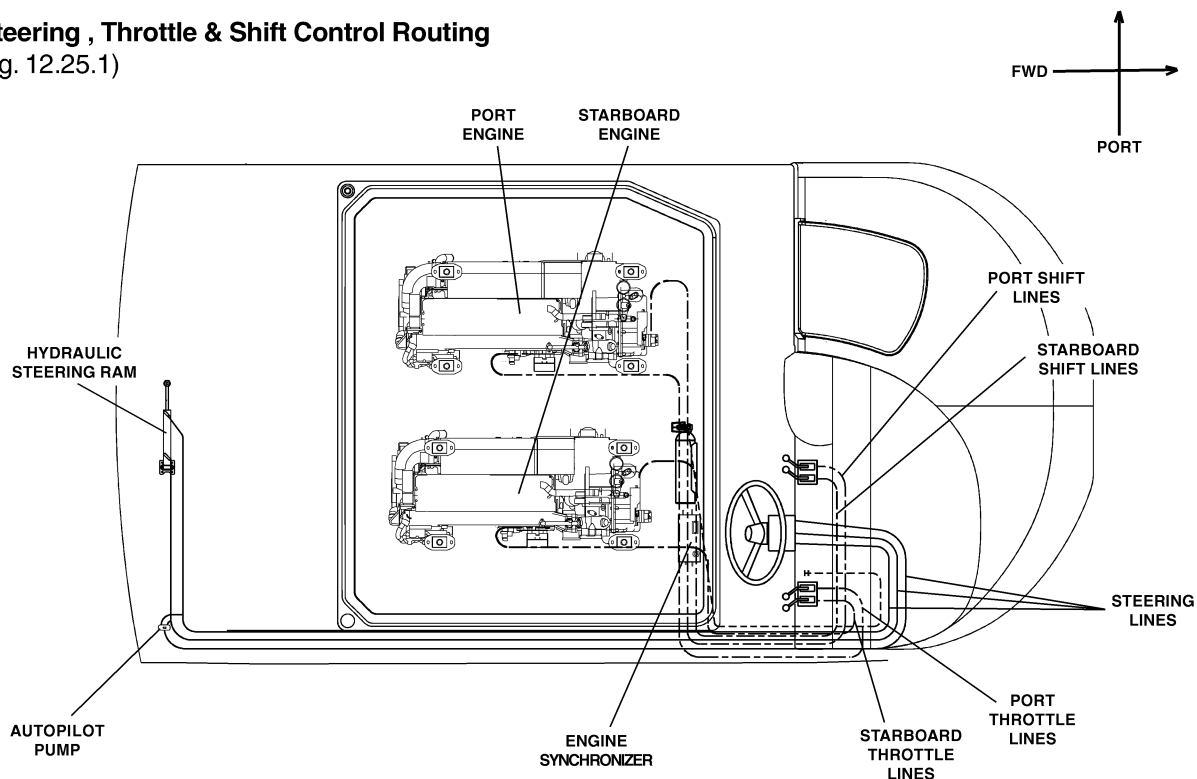
Steering System



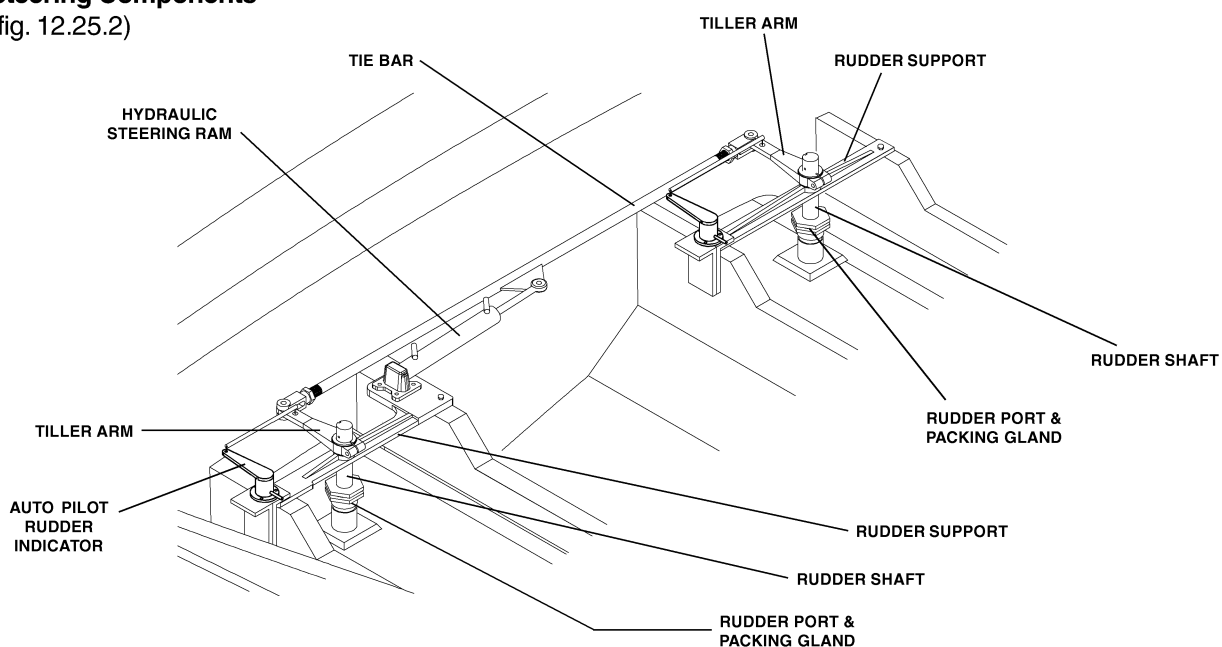
The 410 DA is equipped with a hydraulic steering system.

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

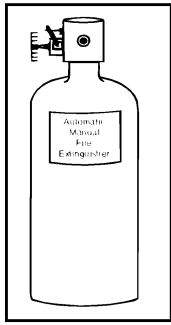
Steering , Throttle & Shift Control Routing
(fig. 12.25.1)



Steering Components
(fig. 12.25.2)



Fire Extinguishing System



The 410 DA is offered with the standard automatic fire extinguishing system. Your boat also needs to be equipped with approved portable fire extinguishers. It is your responsibility to equip and maintain fire extinguishers.

Following are United States Coast Guard (USCG) requirements and American Boat & Yacht Council (ABYC) recommendations for boats

over 40 feet (12.1 meters) but less than 65 feet (19.8 meters).

		<u>No Fixed System</u>	<u>*With Fixed System</u>
<u>Standard</u>	<u>Boat</u>	<u>Qty. - Type</u>	<u>Qty. - Type</u>
USCG	410 DA	3 - B1 ABC or	2 - B1 ABC or
		2 (1 - B2 ABC & 1 - B1 ABC)	1 - B2 ABC
ABYC	410 DA	4 - B1 ABC	

*Boats with approved fixed extinguishing system, (automatic fire extinguisher system).

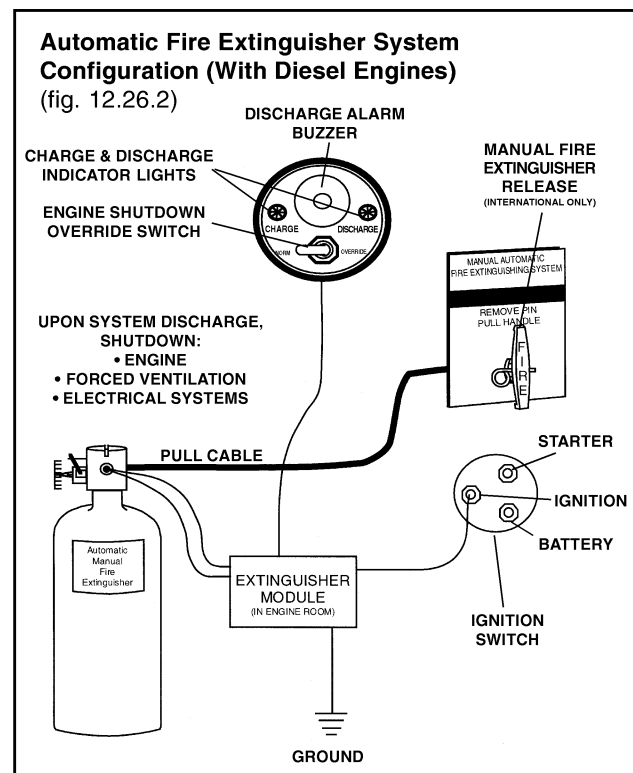
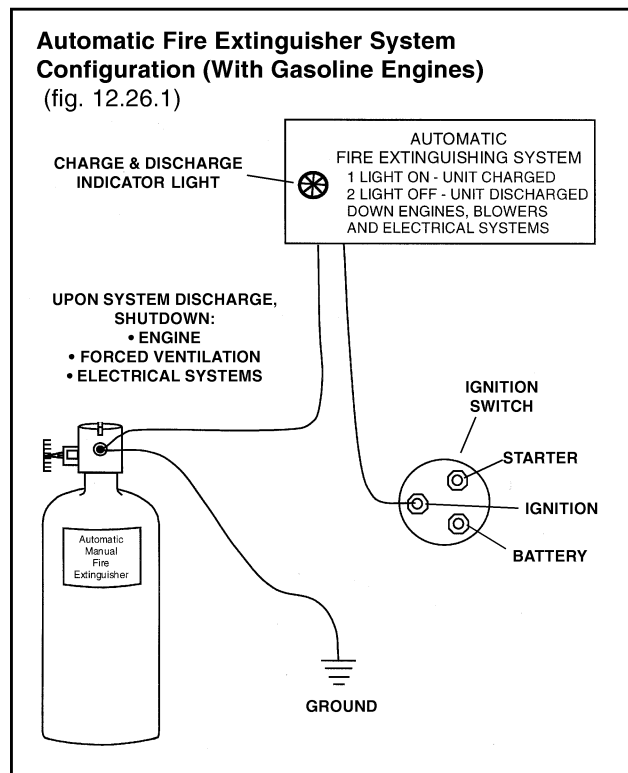
Location: Outside engine compartment, steering position, crews quarters and galley.

Note: To be ABYC compliant Sea Ray Boats, Inc. follows ABYC construction standards and recommendations.

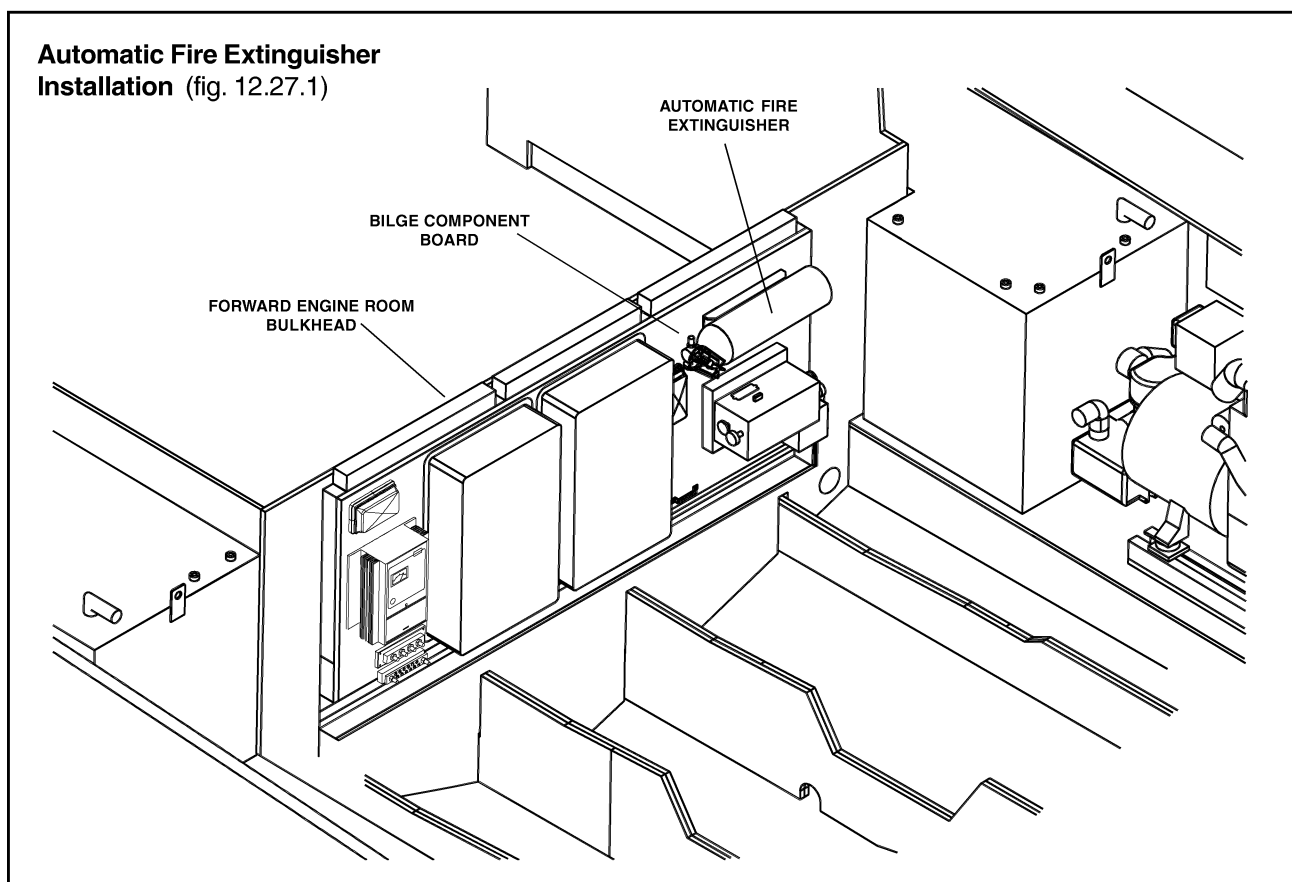
REFER TO THE OWNER'S MANUAL AND OWNER'S PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.

! WARNING

- In case of fire DO NOT open engine compartment.
- Shut down engines, generator and blowers.



Automatic Fire Extinguisher Installation (fig. 12.27.1)



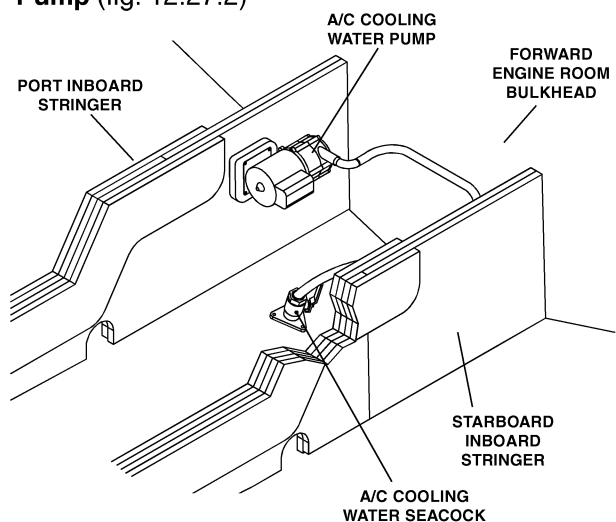
Air Conditioning / Heating System



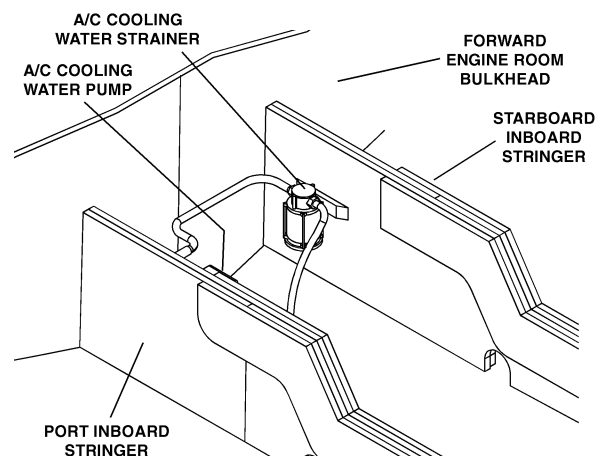
Air Conditioning and Heating System information can be found in *Section 8 • Accessories* of the owner's manual.

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

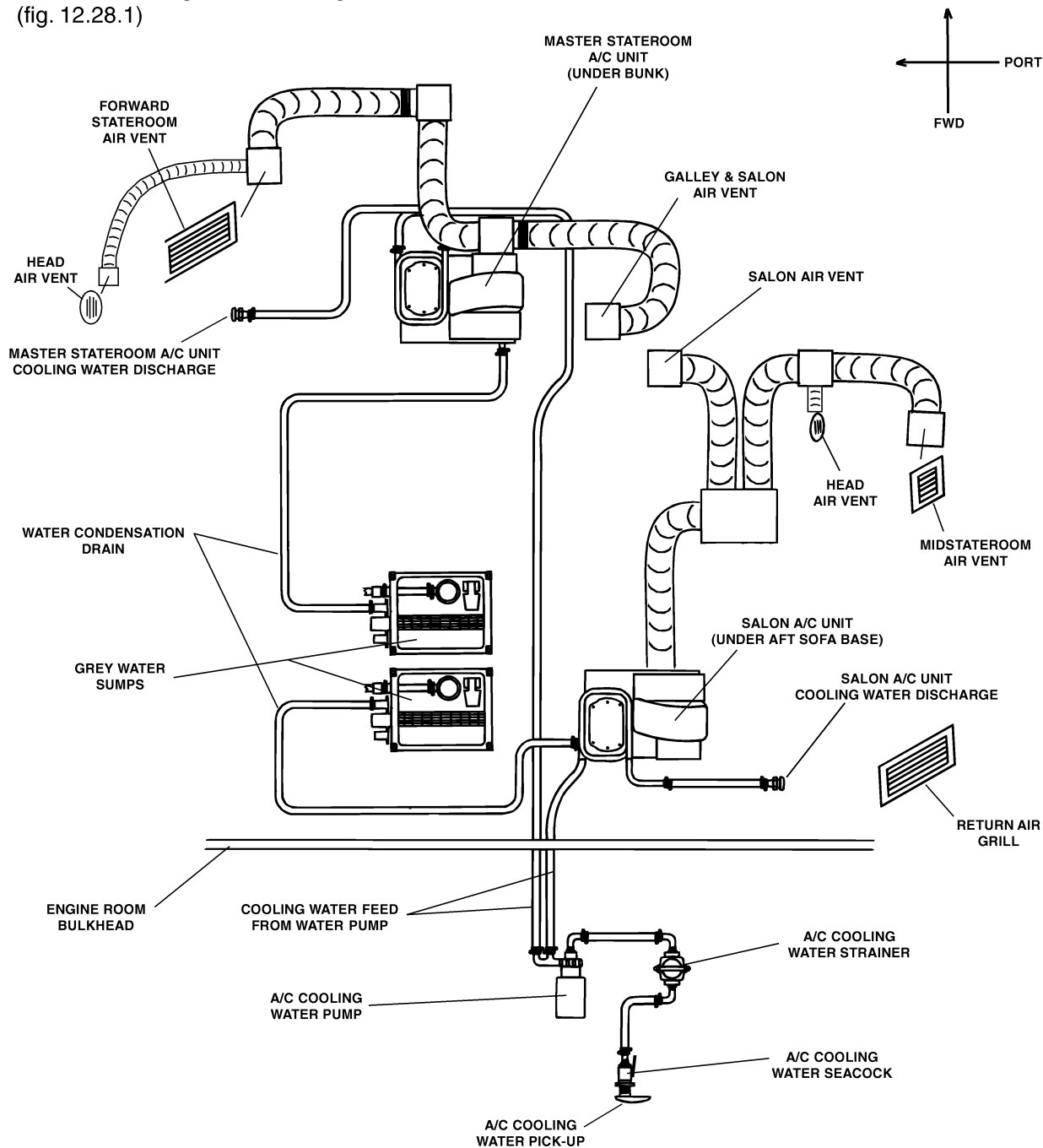
Air Conditioning Water Cooling Pump (fig. 12.27.2)



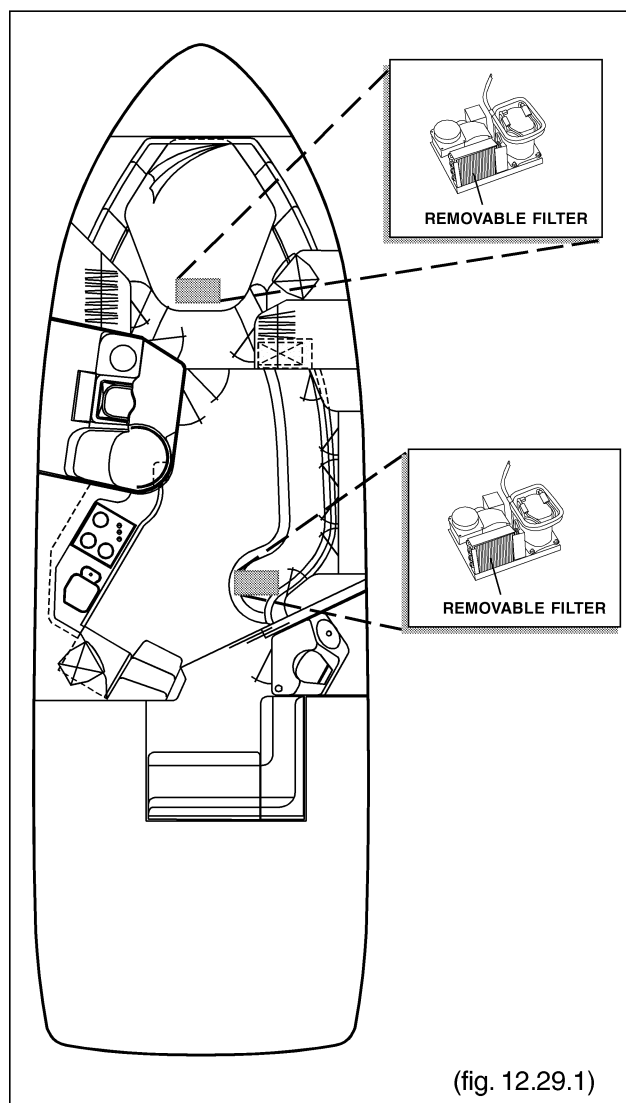
Air Conditioning Water Cooling Pump Strainer & Seacock (fig. 12.27.3)



Air Conditioning Hose Routing
(fig. 12.28.1)



Air Conditioner / Heater Locations

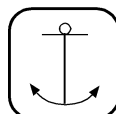


Engine Cooling System

The engine cooling system is an integral part of the propulsion system.

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

Anchoring



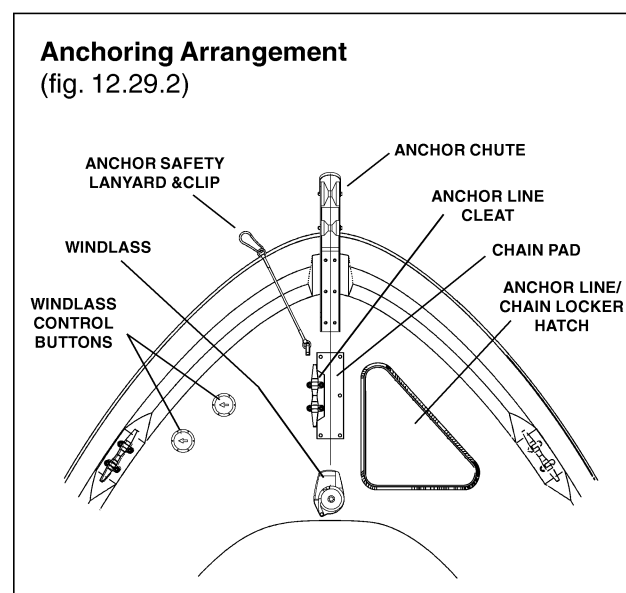
To anchor, bring the bow into the wind or current and put the engine in neutral. When the vessel comes to a stop, lower, do not throw, the anchor over the bow. The anchor line should be 5 to 7 times the depth of water.

Anchoring Arrangement

The 410 DA is equipped with a windlass and an anchor chute. Stow the anchor in the chute when not in use. Note: Before using the anchor, be sure the anchor safety lanyard or that the chain stop are removed from the chain and the anchor is secured to the windlass chain.

The boat is equipped with an anchor line/chain storage hatch. Inside the hatch is a drain, fresh water rinse connection and manual winch handle.

REFER TO *SECTION 8* IN THE OWNER'S MANUAL AND THE WINDLASS OWNER'S MANUAL IN THE OWNER'S PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.



GENERATOR SUPPLEMENT

Generator Information

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's separate warranty.

CAUTION

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

DANGER

GASOLINE VAPORS CAN EXPLODE

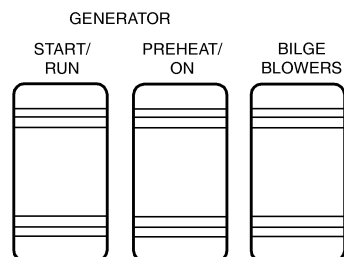
Before Starting Generator:

- Check machinery compartment for gasoline vapors.
- Operate blower for four (4) minutes.

Run Blower At All Times When Generator Is Running.

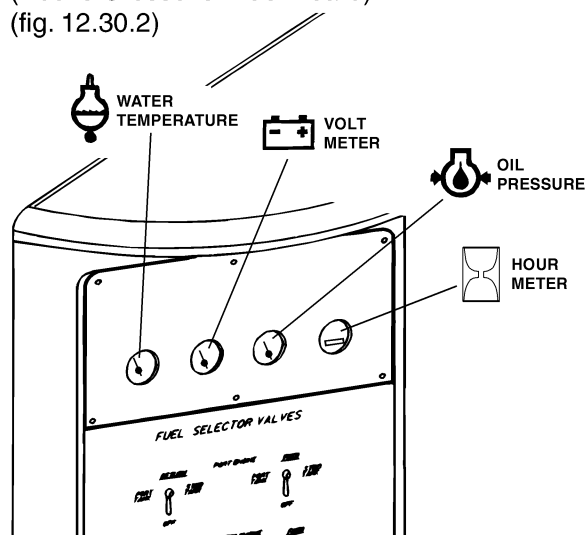
Generator Switches

(Located on DC Distribution Panel in the Cabin and on the Generator in the Bilge)
(fig. 12.30.1)

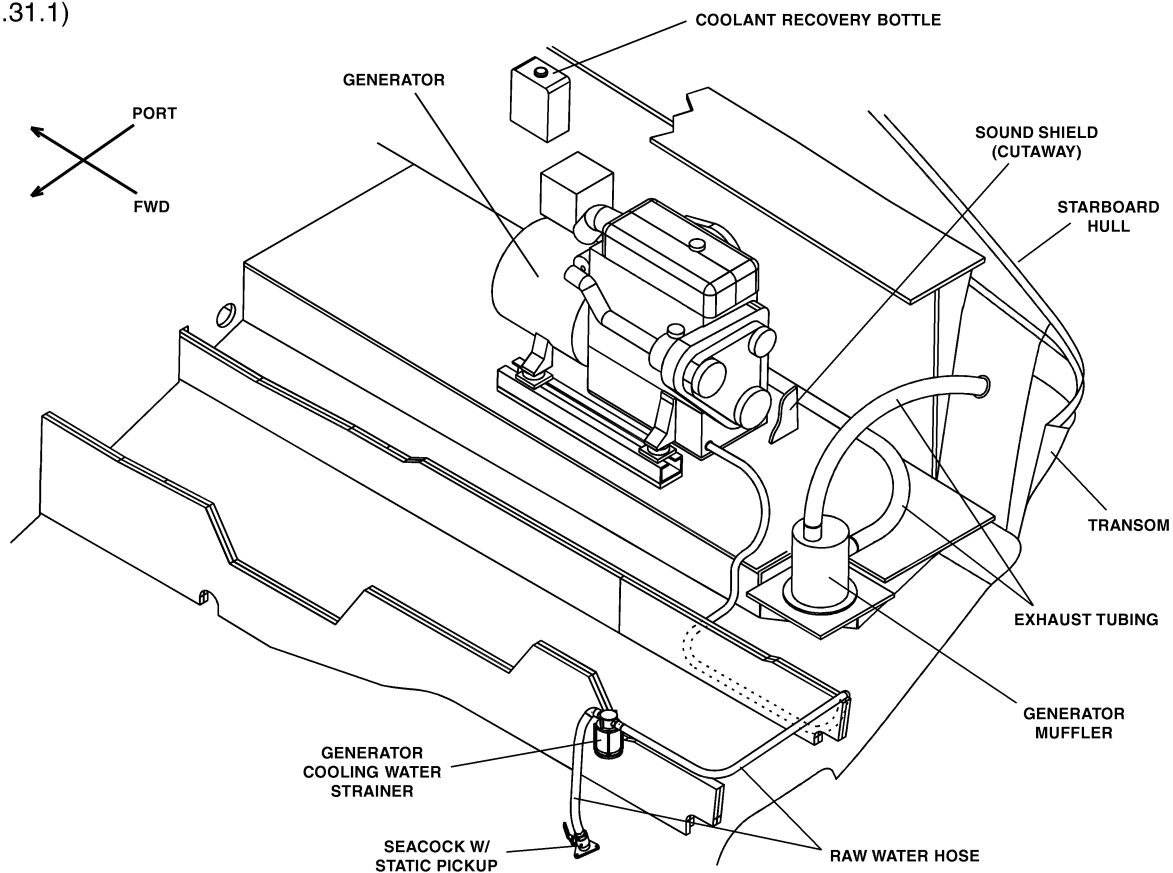


Generator Gauges

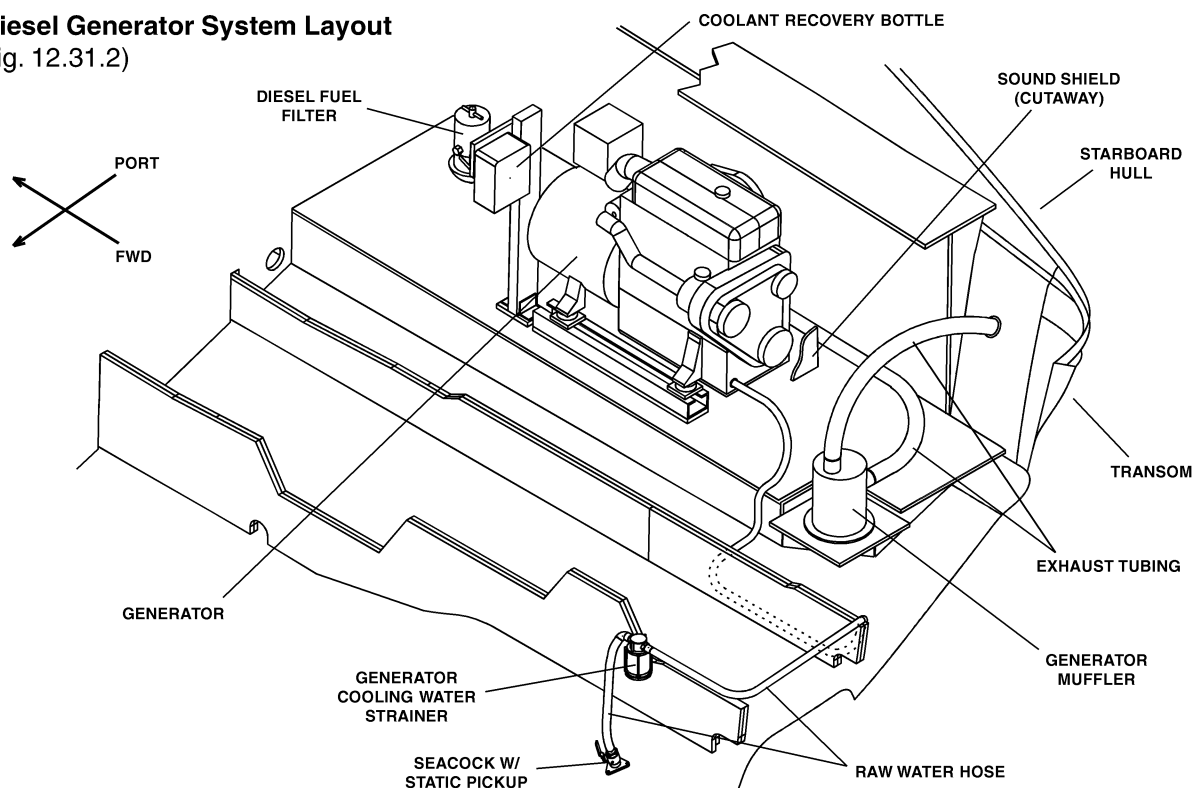
(Above Crossover Fuel Board)
(fig. 12.30.2)



Gasoline Generator System Layout
(fig. 12.31.1)

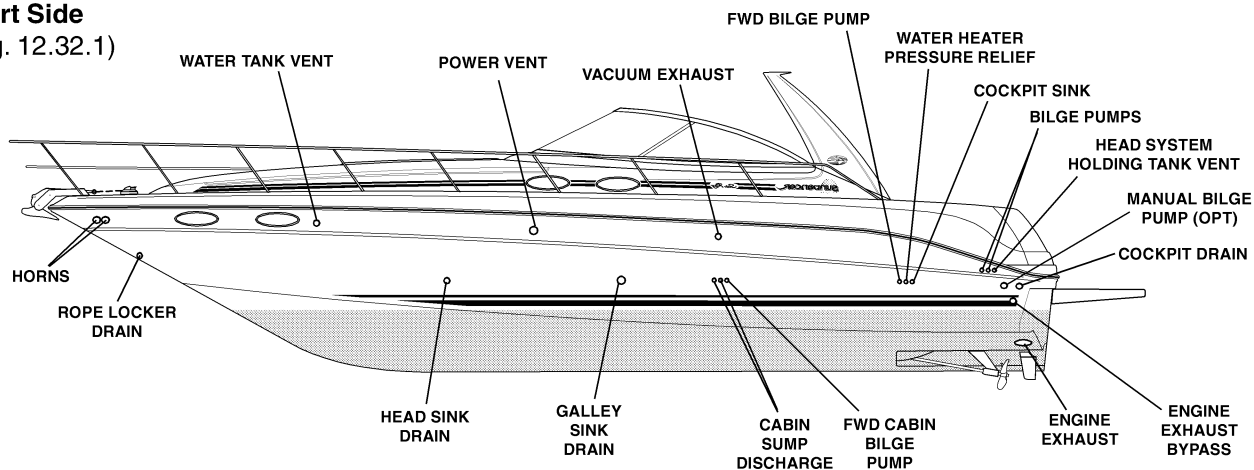


Diesel Generator System Layout
(fig. 12.31.2)

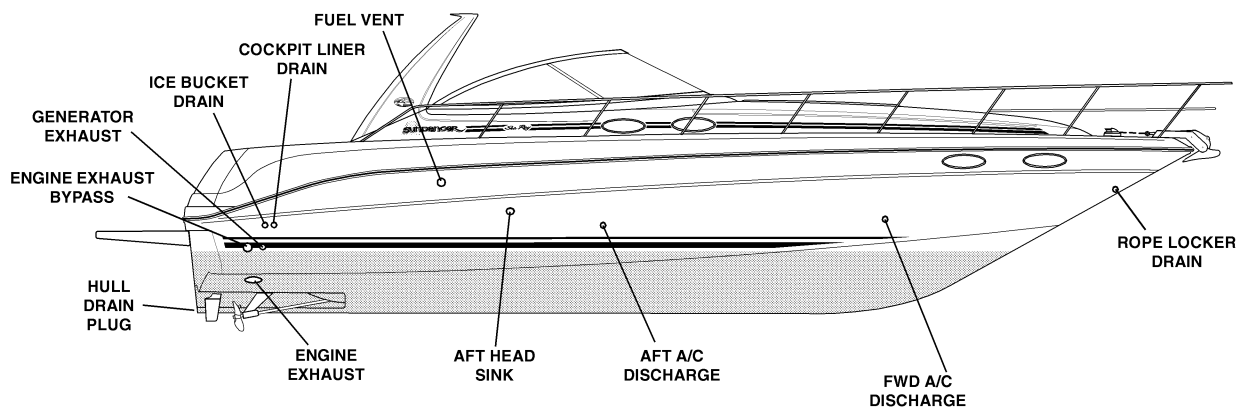


LOCATION OF THROUGH-HULL FITTINGS

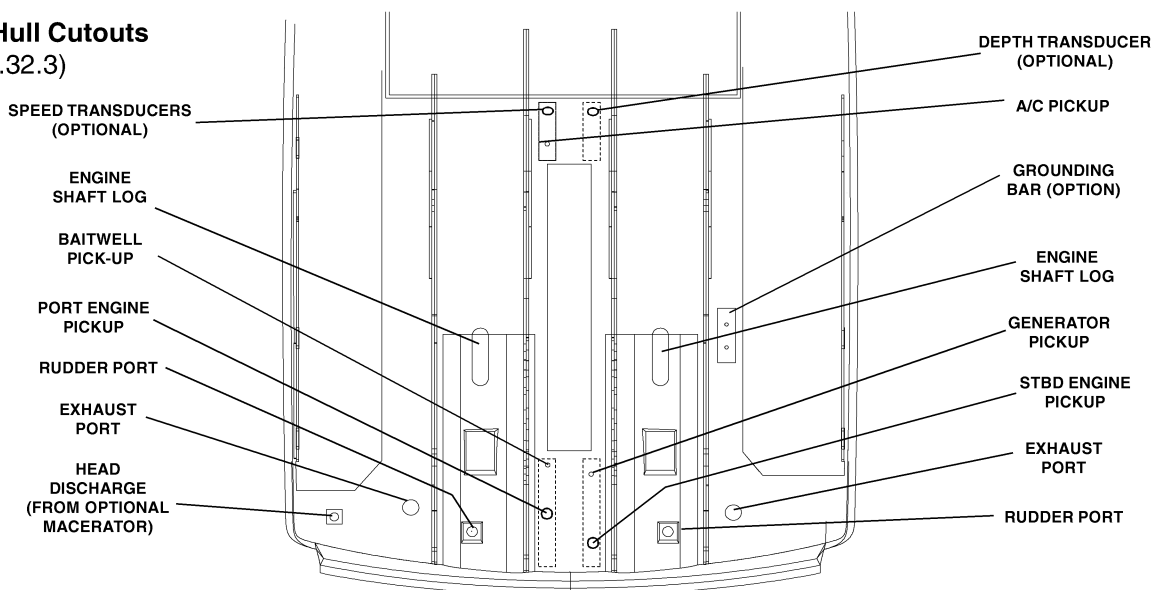
Port Side
(fig. 12.32.1)



Starboard Side
(fig. 12.32.2)

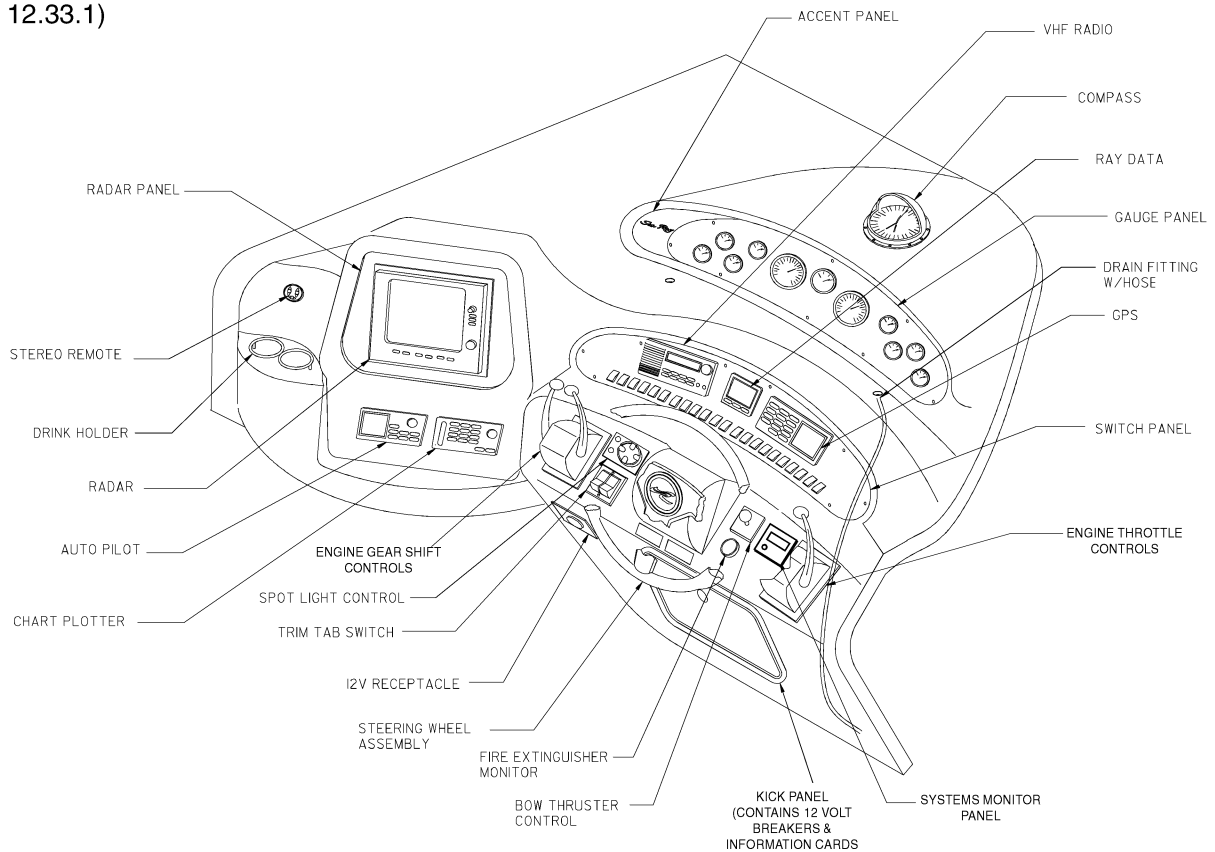


Bilge Hull Cutouts
(fig. 12.32.3)

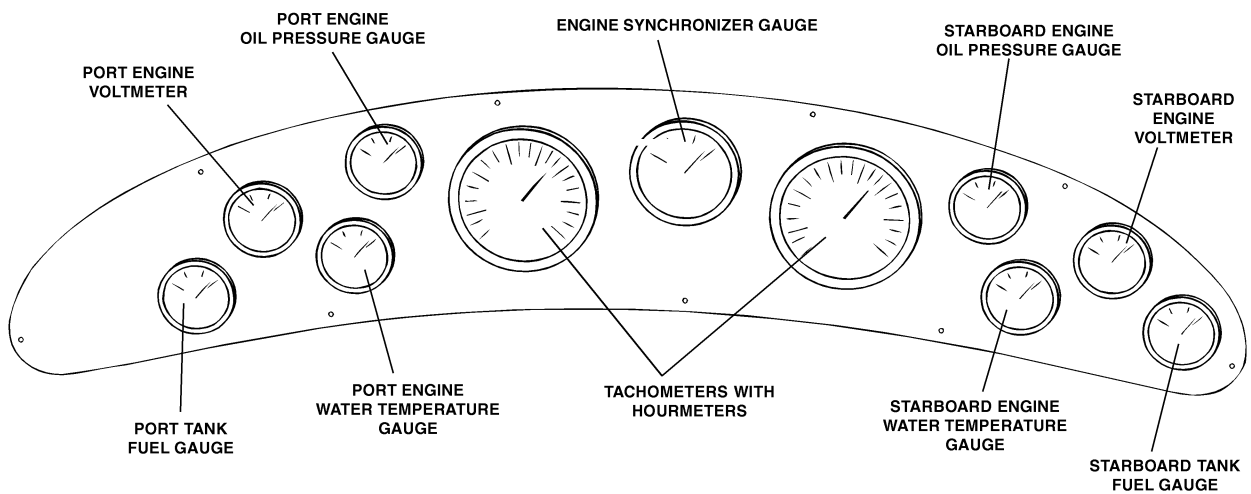


CONTROL STATION LAYOUT

Control Station
(fig. 12.33.1)

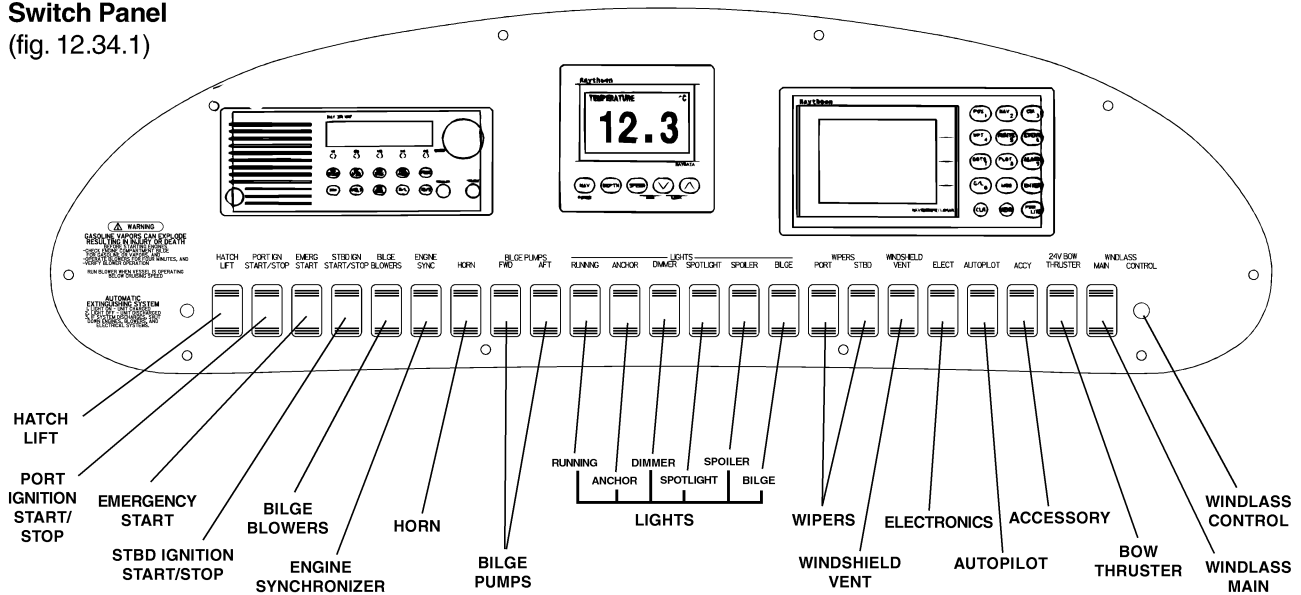


Gauge Panel
(fig. 12.33.2)

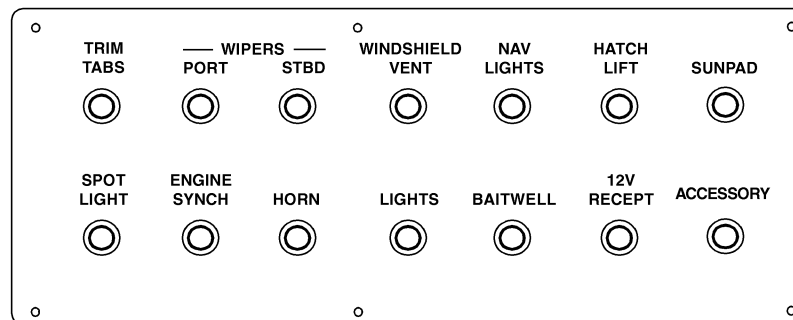


CONTROL STATION LAYOUT

Switch Panel
(fig. 12.34.1)



Breaker Panel
(Behind Kick Panel)
(fig. 12.34.2)



INSTRUMENTS & CONTROLS

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 forward bilge bulkhead 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.



CAUTION

Never ignore an alarm.



CAUTION

IF THE ENGINE INDICATOR(S) AND ALARM COME ON WHILE RUNNING, QUICKLY CHECK AND NOTE THE OIL PRESSURE AND WATER TEMPERATURE GAUGE READINGS. TURN OFF ENGINE IMMEDIATELY. Check for leaks and see if the cooling water pickup is blocked or clogged. If necessary, clear the water pickup of any foreign matter. DO NOT RESTART THE ENGINE UNTIL CAUSE FOR ALARM SOUNDING HAS BEEN FOUND AND CORRECTED.

The Systems Monitor is connected directly to the 12 volt battery bank through a circuit breaker and continuously monitors the emergency high water pump, two bilge pumps and forward cabin sump pump. 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 port bilge component board (see fig. 12.44.1).

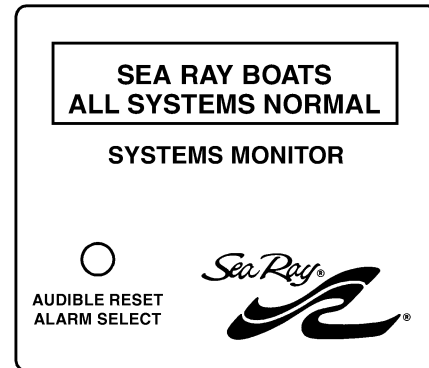
The BIM collects signals from critical engine functions, generator oil pressure, bilge pumps, high water emergency bilge pump and bilge heat detection and transmits that information to be displayed on the DCM. The features of the DCM include a two line LCD display with backlighting of the display, audible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

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

SEA RAY BOATS
ALL SYSTEMS NORMAL

NOTE: Some functions only read on one line. See page 12.34 (DCM functions) for all DCM display readouts.

SYSTEMS MONITOR DISPLAY CONTROL MONITOR (DCM)
(FIG. 3.35.1)



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

Audible Alarms

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 pump 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. 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 12 volt main battery solenoid switches must be energized either at the main DC breaker panel on the bilge component board or the DC distribution panel in the cabin.
2. At the DC distribution panel turn the port and starboard master ignition key switch 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 switch(es) to the RUN position. The Display Control Monitor (DCM) will display:

SEA RAY BOATS
ALL SYSTEMS NORMAL

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

4. Start the engines per the engine start instructions in Section 4.
5. Start the generator per the generator start instructions in Section 7.

With the main engines and generator engine running, the boat's Systems Monitor is fully activated. When the engine and generator engine ignition is turned OFF, approximately five (5) minutes later the LCD will go into a "Sleep Mode" and the display will be blank. Engine and generator functions are disabled because they are unnecessary, however, 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. An * by the function indicates that function has an audible alarm.

NOTICE

If an engine stalls during docking or slow maneuvering, the buzzer will sound until the engine is restarted. The buzzer will also sound while the engines are cranking and will continue until they start.

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 Bilge Pump in the Engine Room is Running	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
Fuel Filter Condition *	Fuel Filter Needs Cleaning	PORT (OR STBD) ENGINE ALARM FUEL FILTER CONDITION
Generator Alarm *	Generator Oil Pressure is Low Generator Stopped Running	GENERATOR ALARM (No Second Line Reading)
MerCruiser® Diagnostics * Electronic Engines Only	For MerCruiser® Diagnostic Engines	PORT (OR STBD) ENGINE ALARM MerCruiser® DIAGNOSTIC
CAT® Diagnostics * Caterpillar® Electronic Engines Only	For CAT® Diagnostic Engines	PORT (OR STBD) ENGINE ALARM CAT® DIAGNOSTIC
<p>The CAT® Diagnostic feature is for Caterpillar® electronic engines and will refer the operator to look at the port or starboard Caterpillar® Engine Monitoring System (EMS) on the gauge panel at the helm. If your boat is equipped with the Caterpillar® EMS gauges refer to section 3 for more information on the EMS gauge unit.</p>		

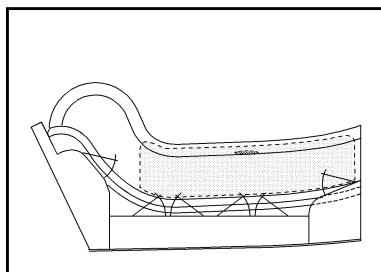
* Function has an audible alarm.

If your Systems Monitor does not operate or display functions correctly per the instructions provided, reset by pressing and holding the Audible Alarm/Alarm Select button on the face of the monitor. If problems persist, recycle the circuit breaker on the Main DC Distribution Panel in the bilge 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.

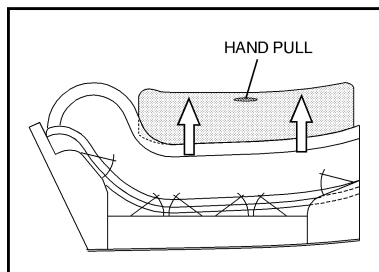
SPECIAL FEATURES

Salon Sleeping Arrangements

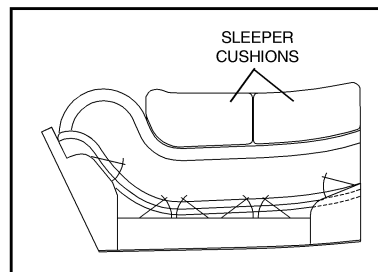
To convert the salon sofa to a sleeper:



1. Salon sofa in normal position with sleeper board in stowed position. (fig. 12.38.1)



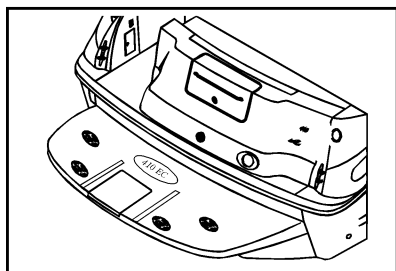
2. Salon sofa with sleeper board pulled out. (fig. 12.38.2)



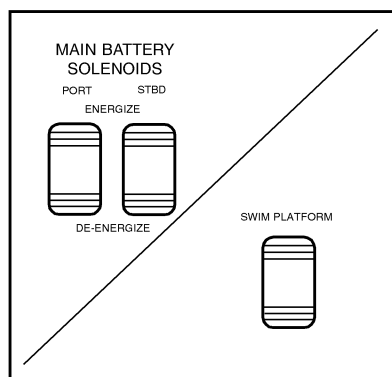
3. Place sleeper cushions on sleeper board. (fig. 12.38.3)

Hydraulic Lift Swim Platform Operation (Optional Accessory)

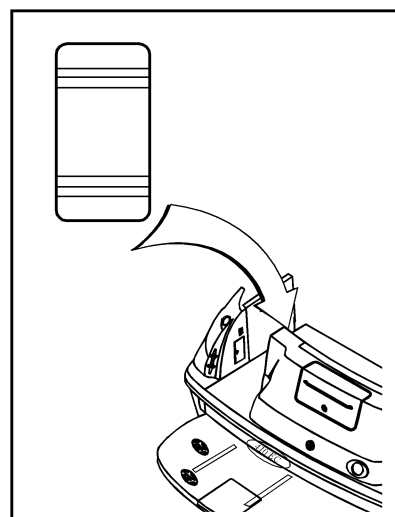
To lower and raise the hydraulic swim platform:



1. Platform in up position. (fig. 12.38.4)



2. Battery solenoid switches in the engine room and "SWIM PLATFORM" switch on the dash must be ON. Platform electrical system is protected by the "SWIM PLATFORM LIFT" breaker on the main DC breaker panel in the engine room. (fig. 12.38.5)



3. Platform control switch is located next to the transom door. Press UP or DOWN to control platform. (fig. 12.38.6)



DANGER

STAY CLEAR OF MOVING PARTS

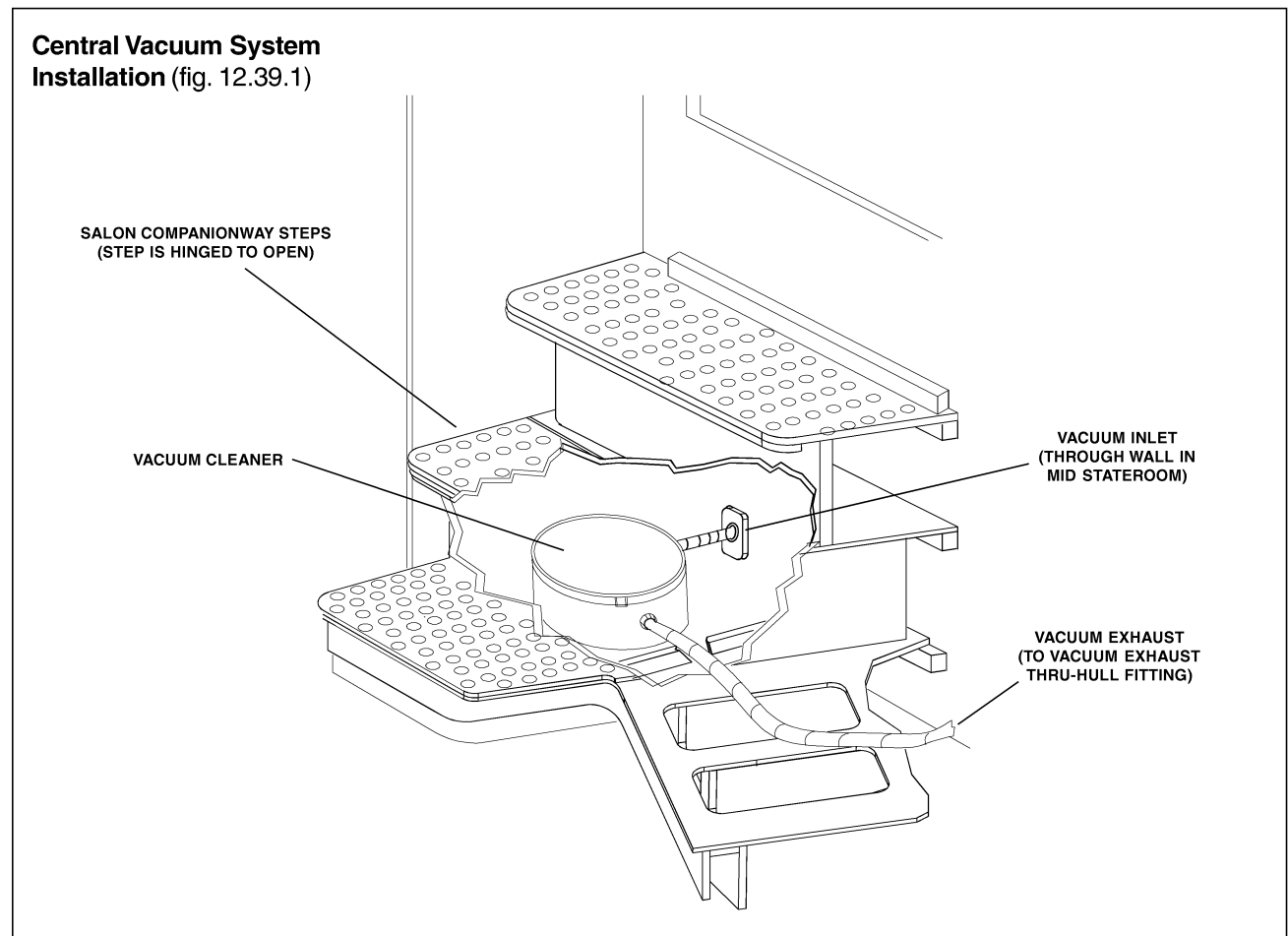
If equipped with powered swim platform keep clear when being raised or lowered. Platform is powerful enough to cause serious injury or death.

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

Central Vacuum System

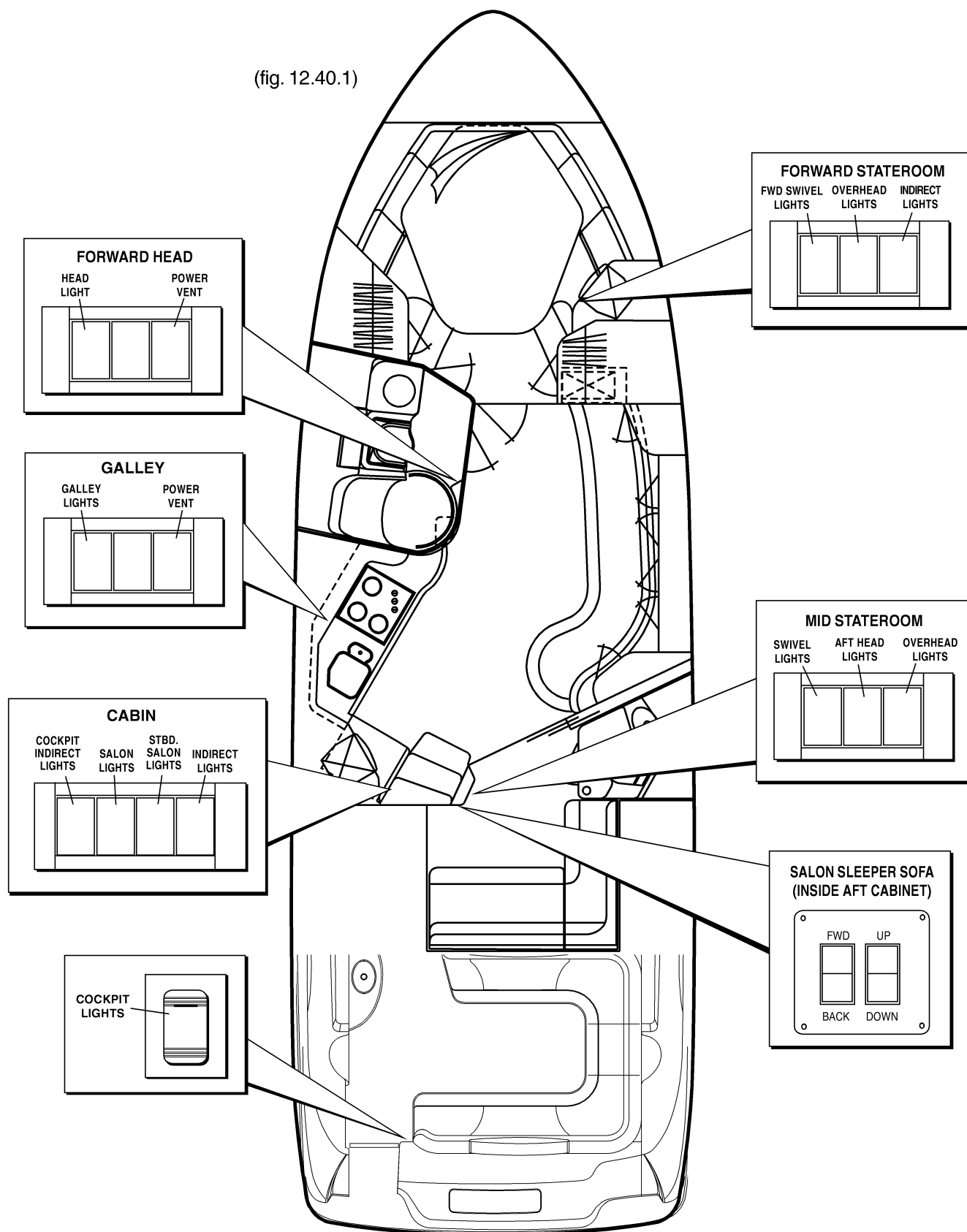
The central vacuum unit is located under the salon entry steps. The “STBD SYSTEMS” breaker must be ON to operate the system. The 24 foot hose connects to the inlet located in the mid stateroom. The built in switch in the hose inlet fitting activates the vacuum when the hose is plugged in.

REFER TO THE OWNER’S PACKET FOR INSTRUCTIONS AND WARRANTY INFORMATION.



CABIN & COCKPIT SWITCH LOCATION & FUNCTION

(fig. 12.40.1)

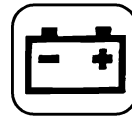


Electrical Installations

This owner's manual supplement contains electrical schematics for your boat. These electrical schematics were generated by technicians 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.

Battery

Refer to the owner's manual for battery disconnect and maintenance.



Battery Specifications:

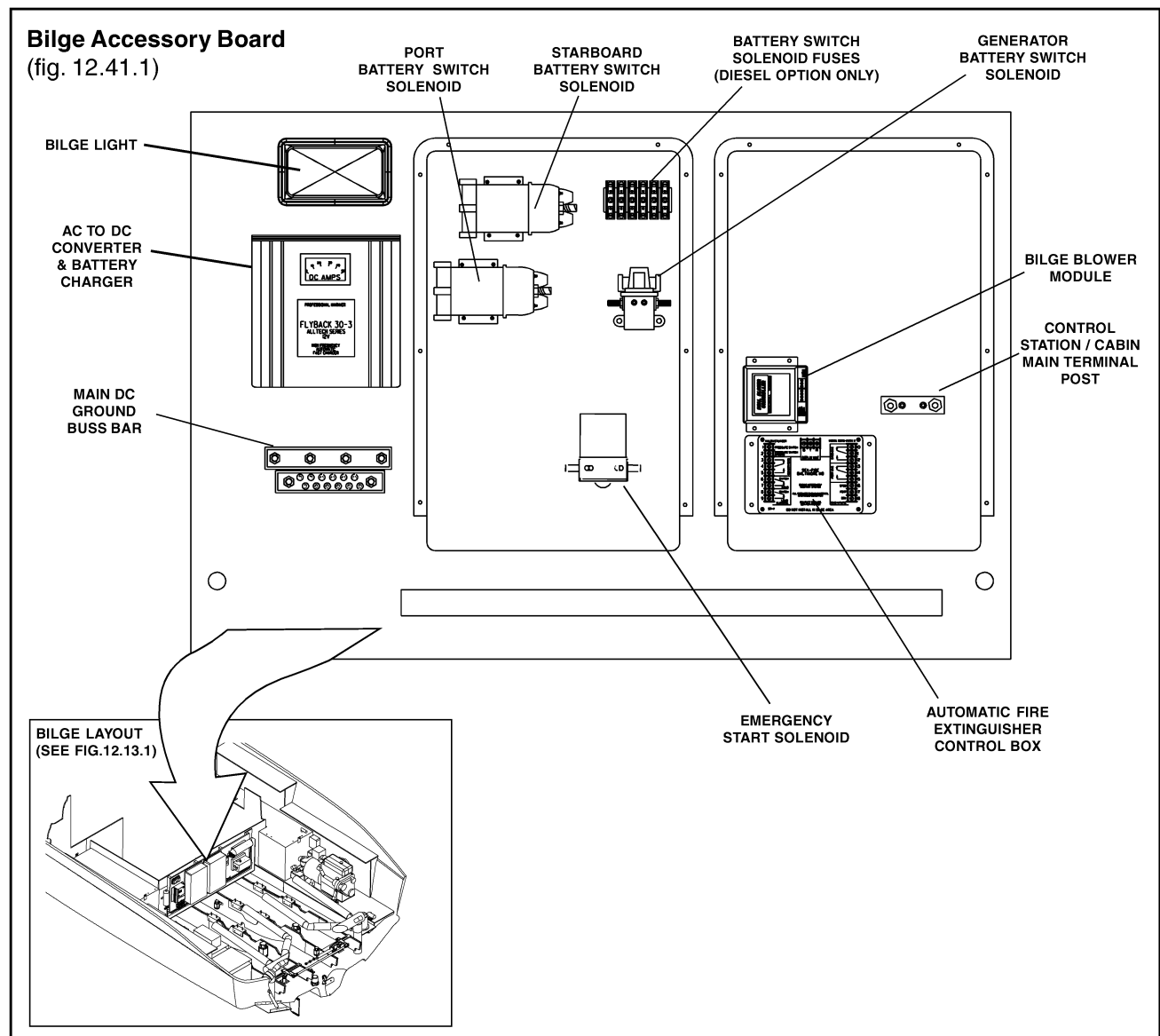
Group: 27

Cold Cranking Amps: 575

Reserve Capacity: 165 Minutes

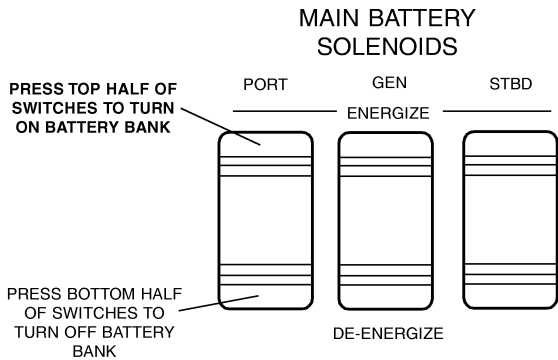
Sea Ray® recommended batteries are available through your Sea Ray® dealer.

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 Switch

(Located on DC Distribution Panel in the Cabin and on the Main DC Distribution Panel in the Bilge)
(fig. 12.42.1)



CAUTION

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

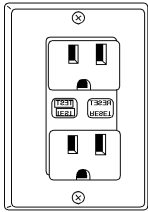


DANGER

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

Ground Fault Interrupter (GFI) Outlet Locations & Associated Loads

Ground Fault Interrupter Outlet (GFI) (fig. 12.42.2)



Refer to the electrical system section of the owner's manual for operation and function information of the GFI's.

If any of the accessories on your boat fail to turn on, check the associated GFI outlet breaker first.

GFI Location

A: Forward head, inside cabinet above sink.

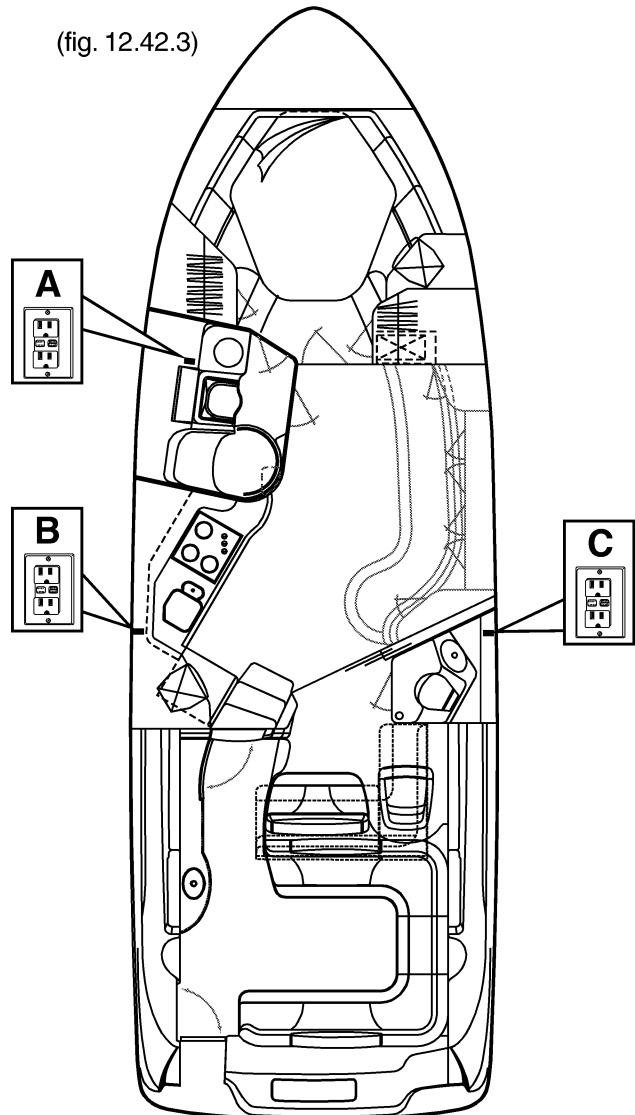
B: Galley, upper aft cabinet.

C: Aft head, inside cabinet above sink.

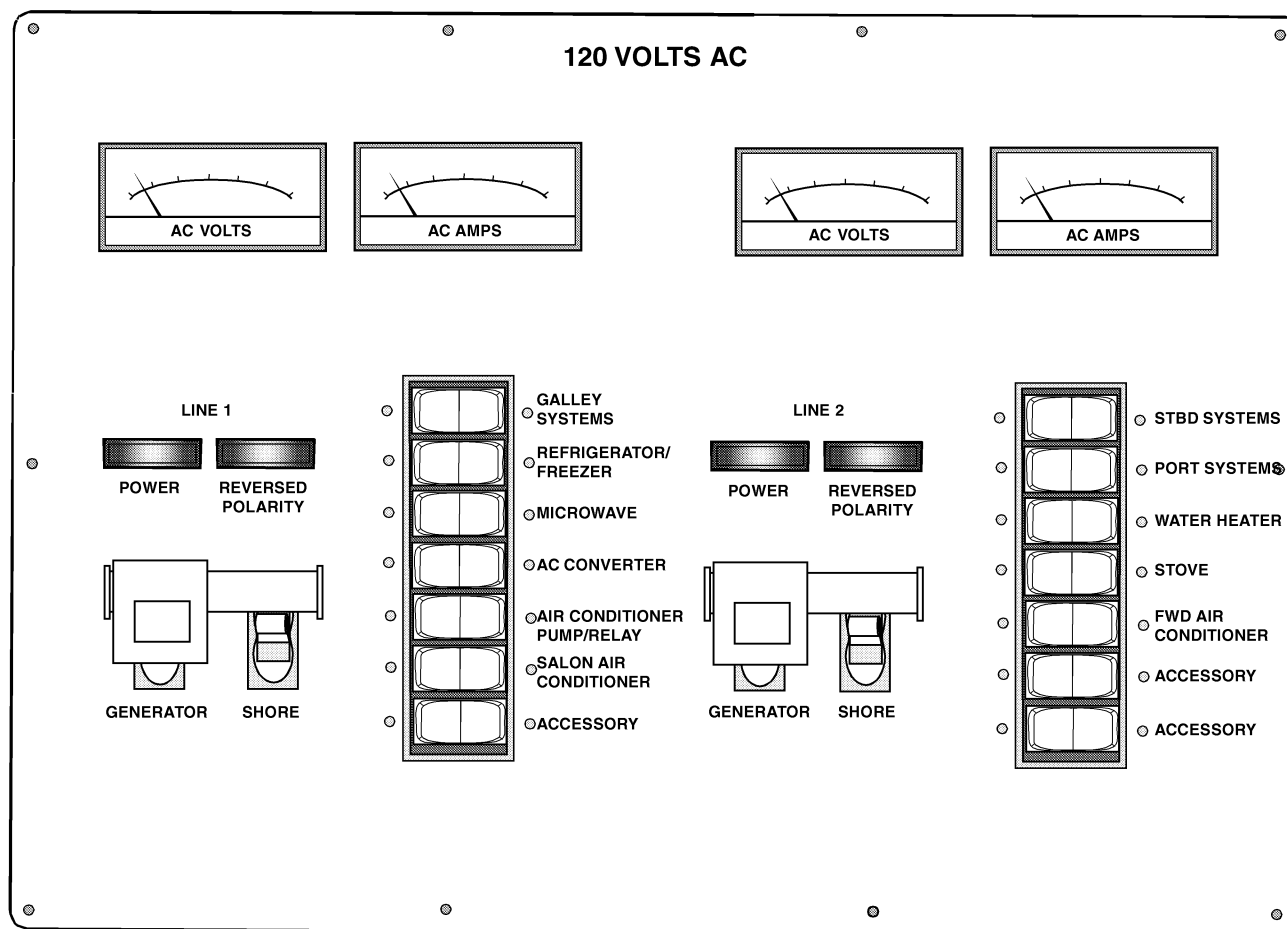
Associated Loads

- Head Receptacle
- Galley TV
- Ice Maker
- Cockpit Receptacle
- Galley Receptacle
- Coffee Maker
- Head Receptacle
- Salon Receptacle
- Central Vacuum System
- Forward TV
- Forward Stateroom Receptacle
- Aft Berth Receptacle
- Aft TV

(fig. 12.42.3)

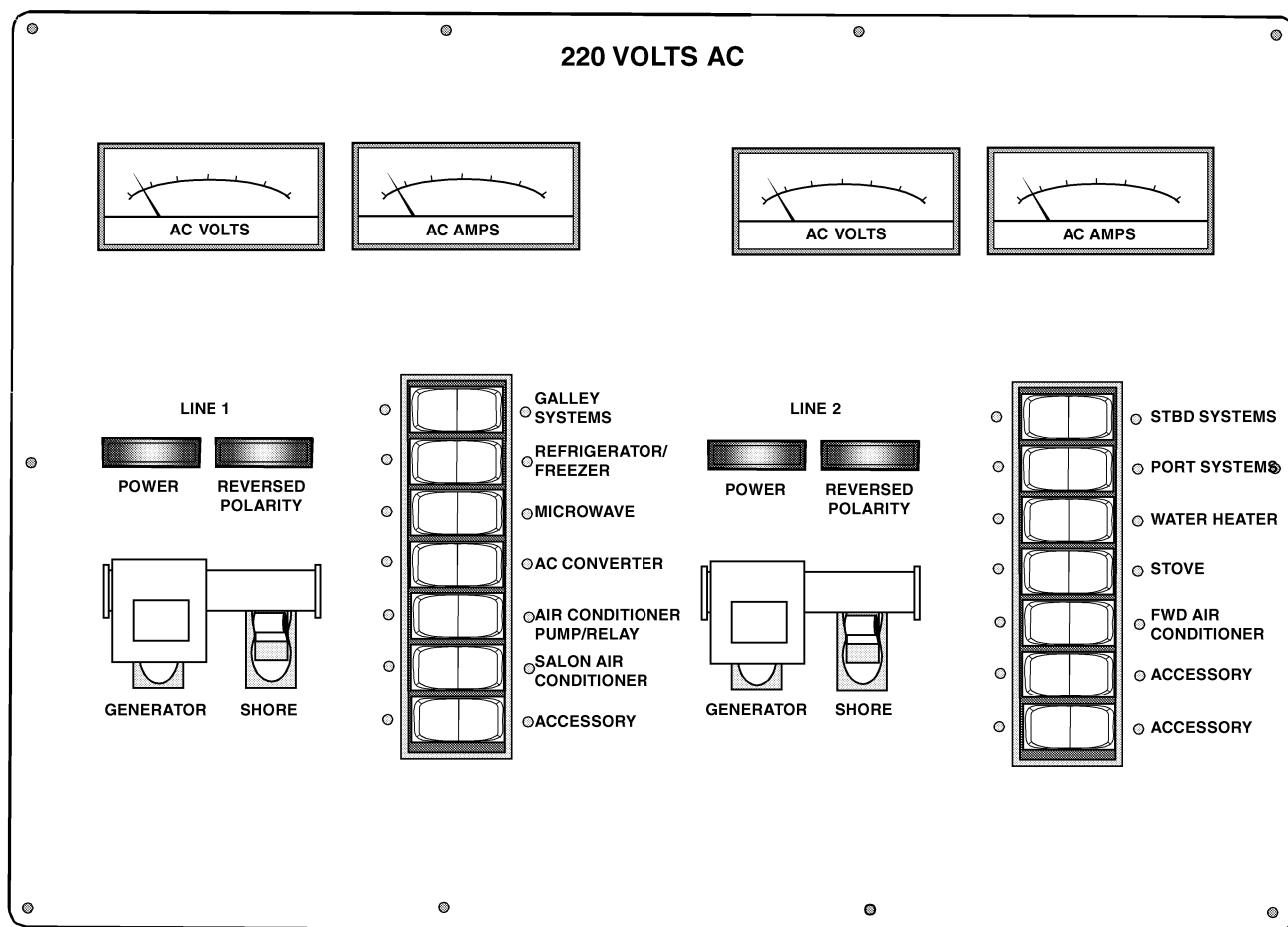


STANDARD AC MAIN DISTRIBUTION PANEL (120V)



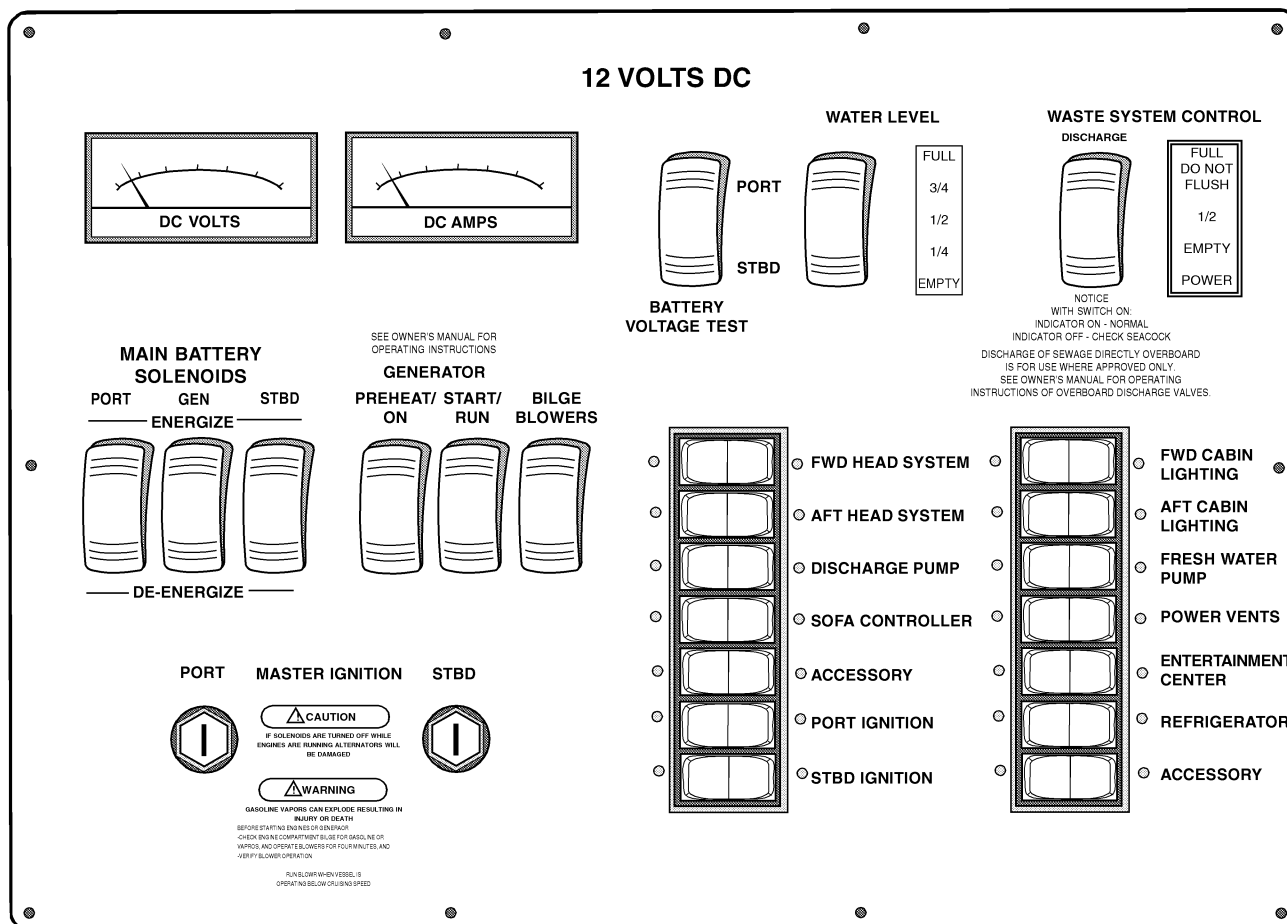
(fig. 12.43.1)

OPTIONAL AC MAIN DISTRIBUTION PANEL (220V)



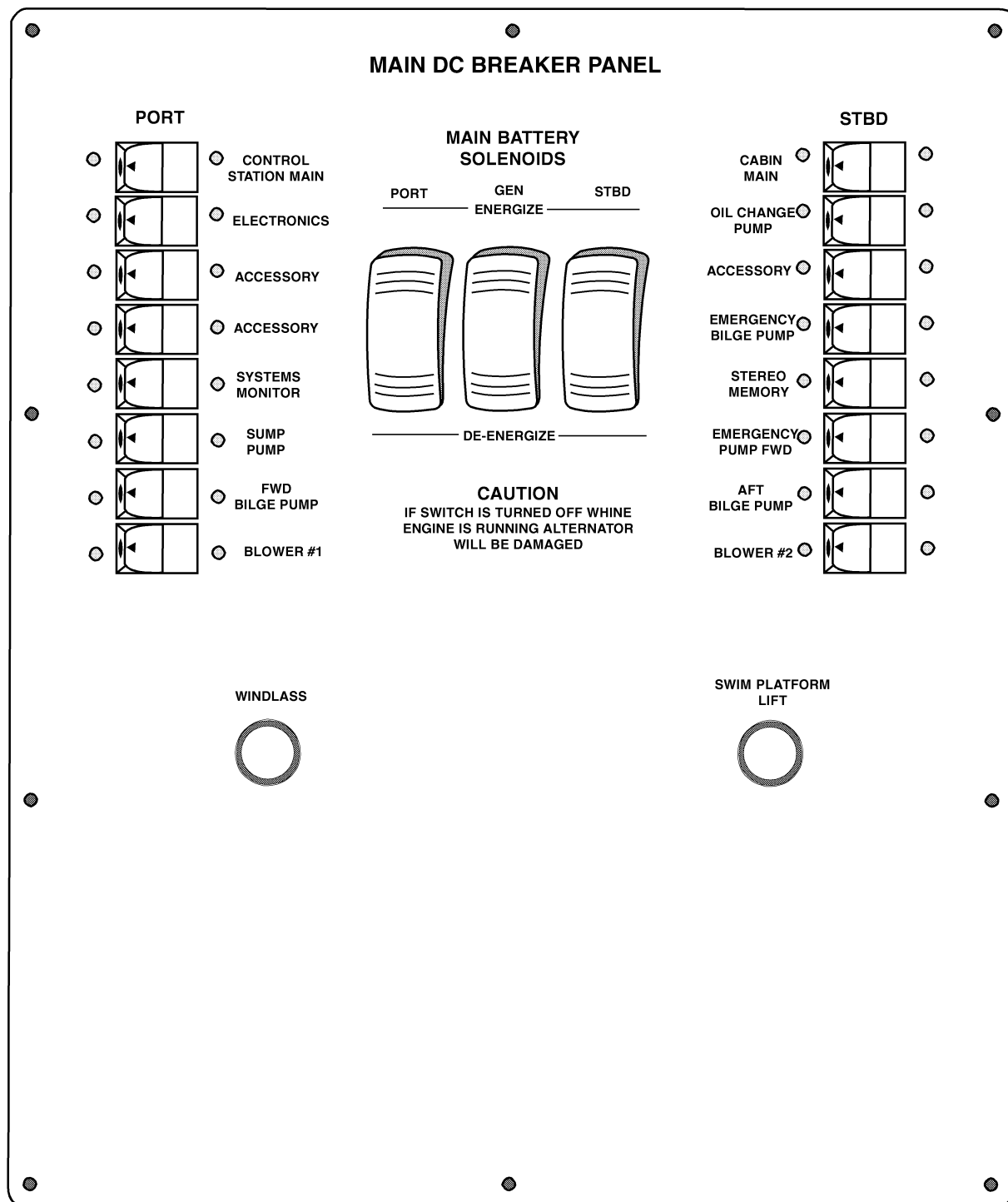
(fig. 12.44.1)

CABIN DC DISTRIBUTION PANEL (12V)



(fig. 12.45.1)

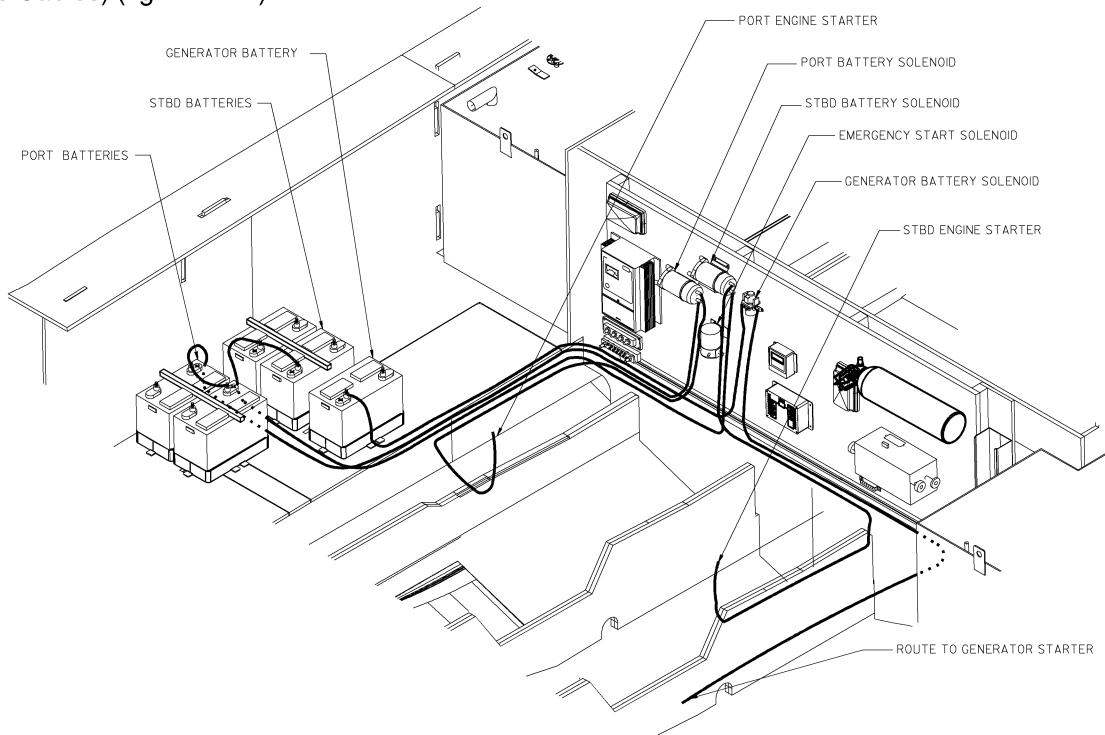
MAIN DC BREAKER & BATTERY SWITCH PANEL



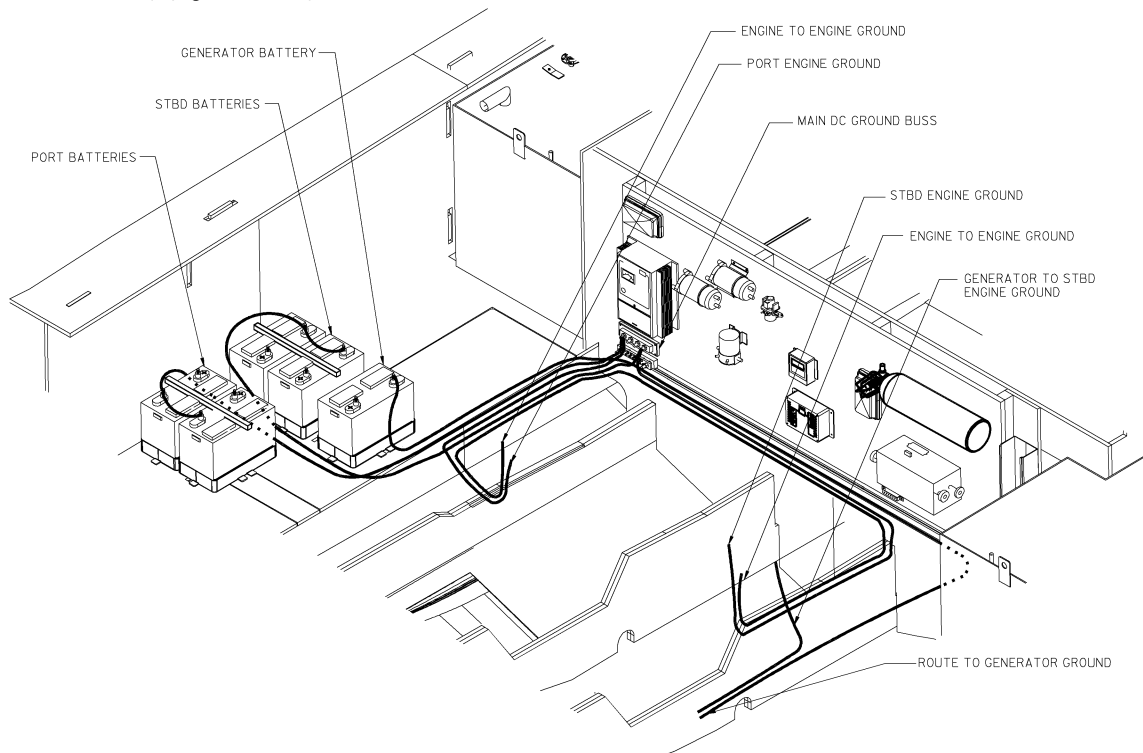
(fig. 12.46.1)

BATTERY CABLE INSTALLATION

Battery Cable Installation (Positive Cables) (fig. 12.47.1)

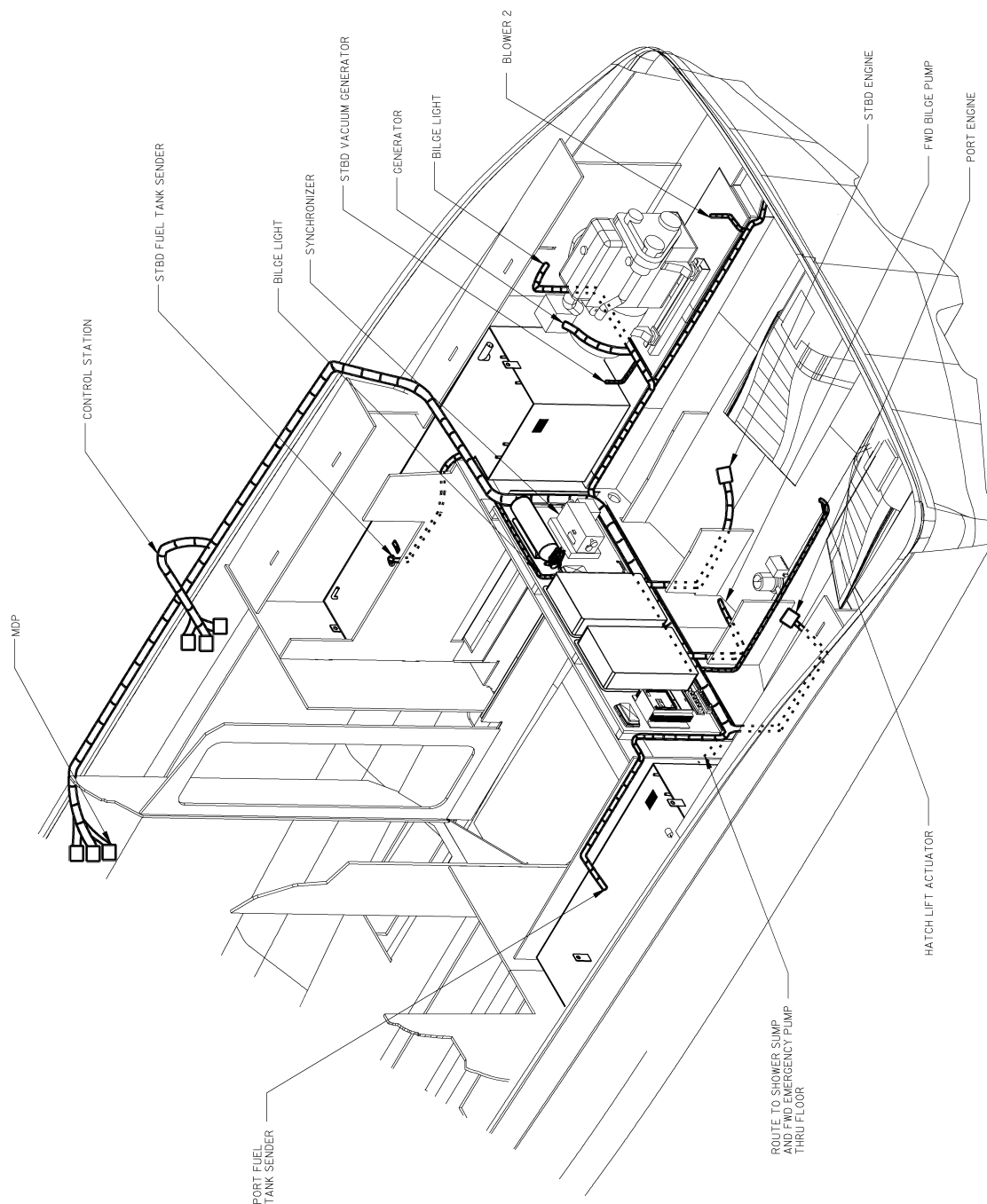


Battery Cable Installation (Negative Cables) (fig. 12.47.2)



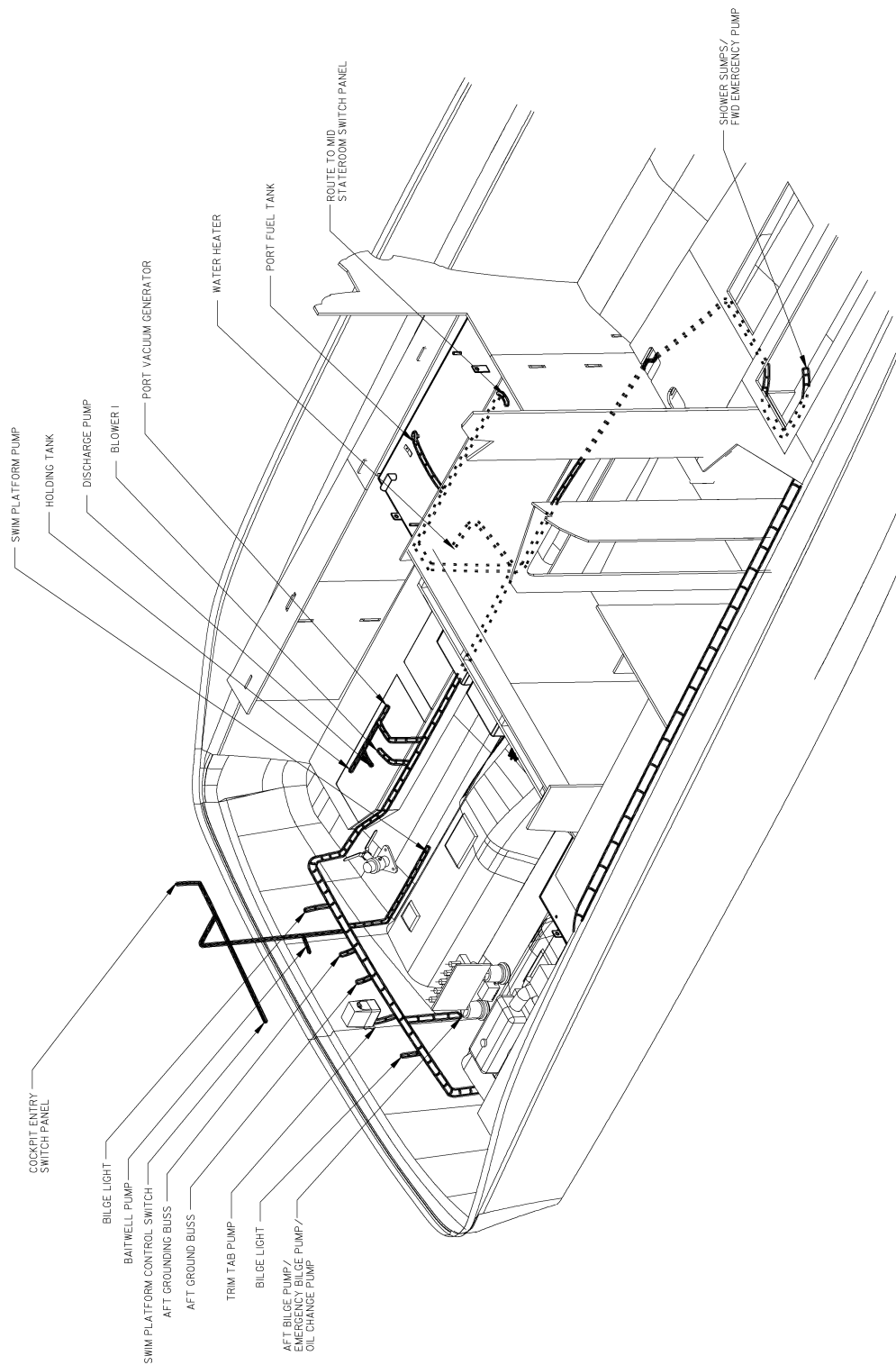
BILGE HARNESS INSTALLATION (1 OF 2)

(fig. 12.48.1)



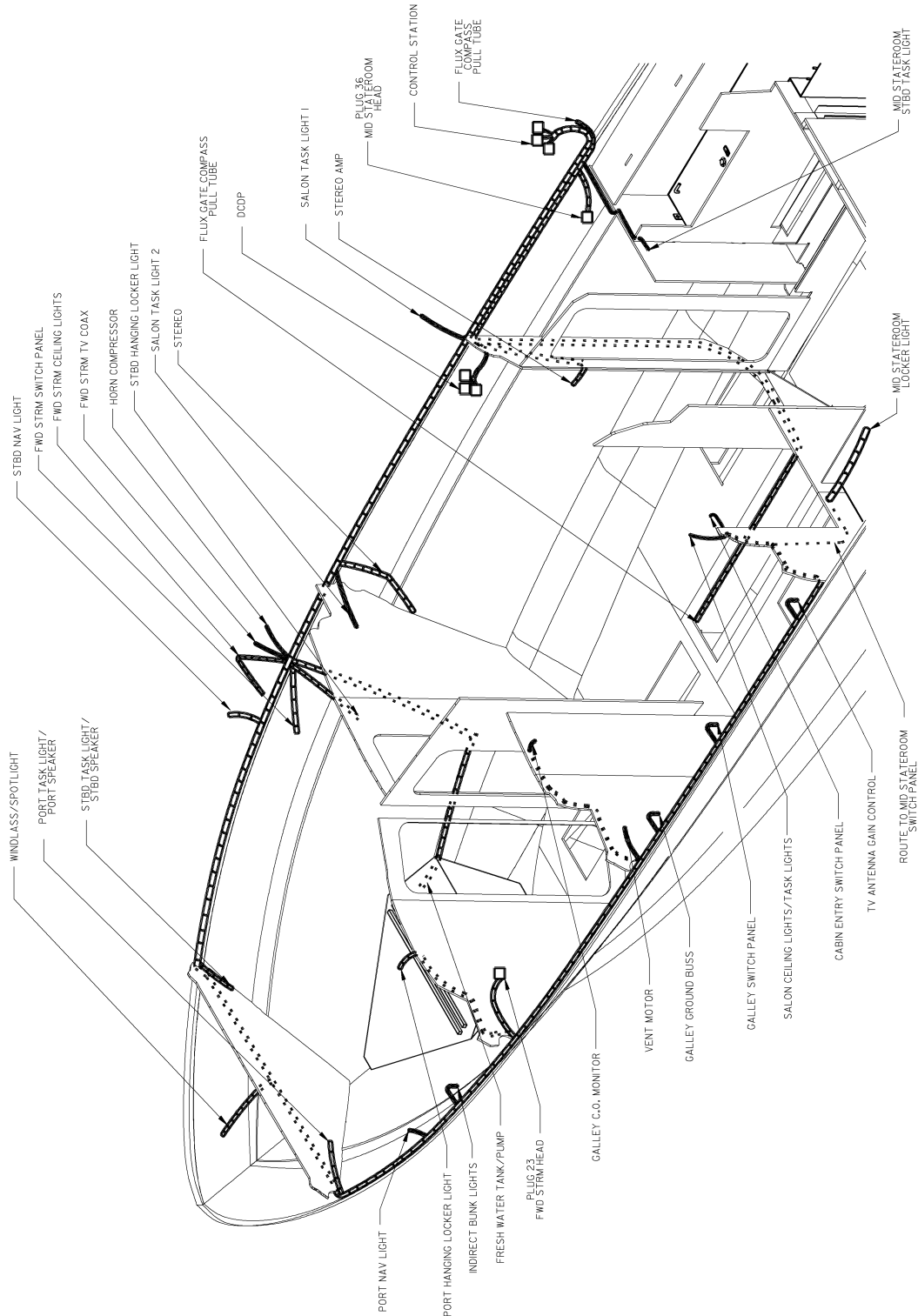
BILGE HARNESS INSTALLATION (2 OF 2)

(fig. 12.49.1)



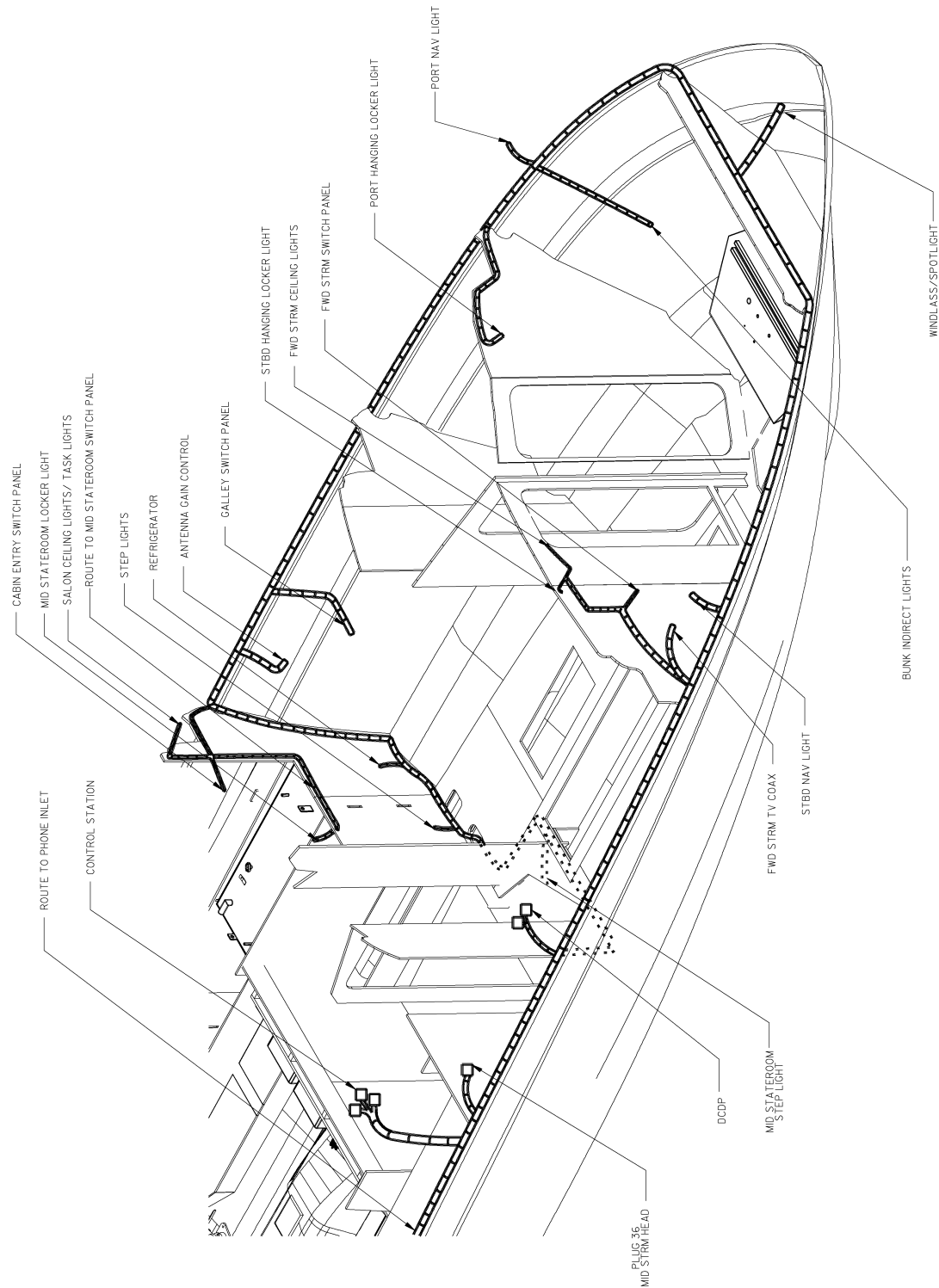
CABIN DC HARNESS INSTALLATION (1 OF 2)

(fig. 12.50.1)



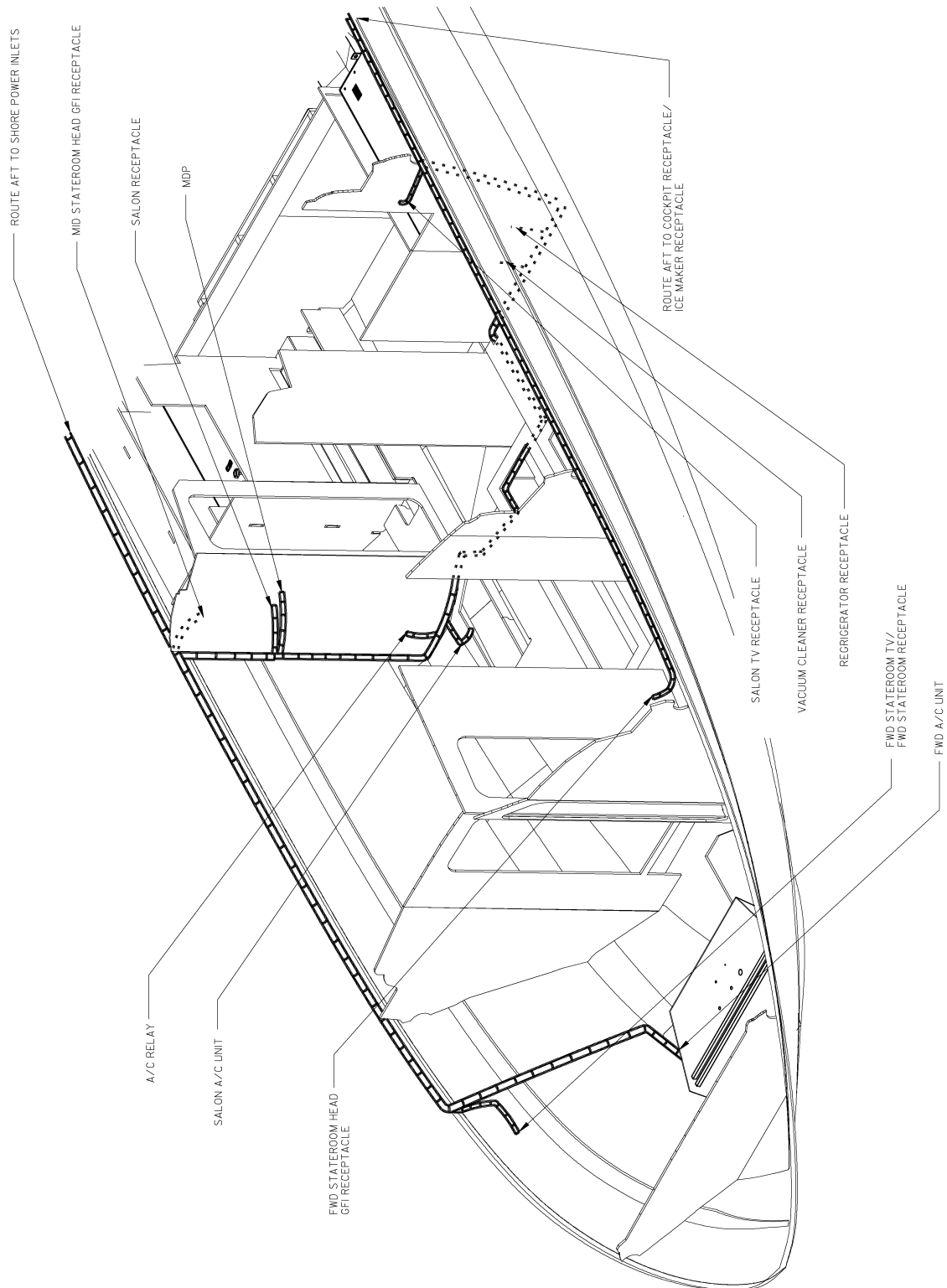
CABIN DC HARNESS INSTALLATION (2 of 2)

(fig. 12.51.1)



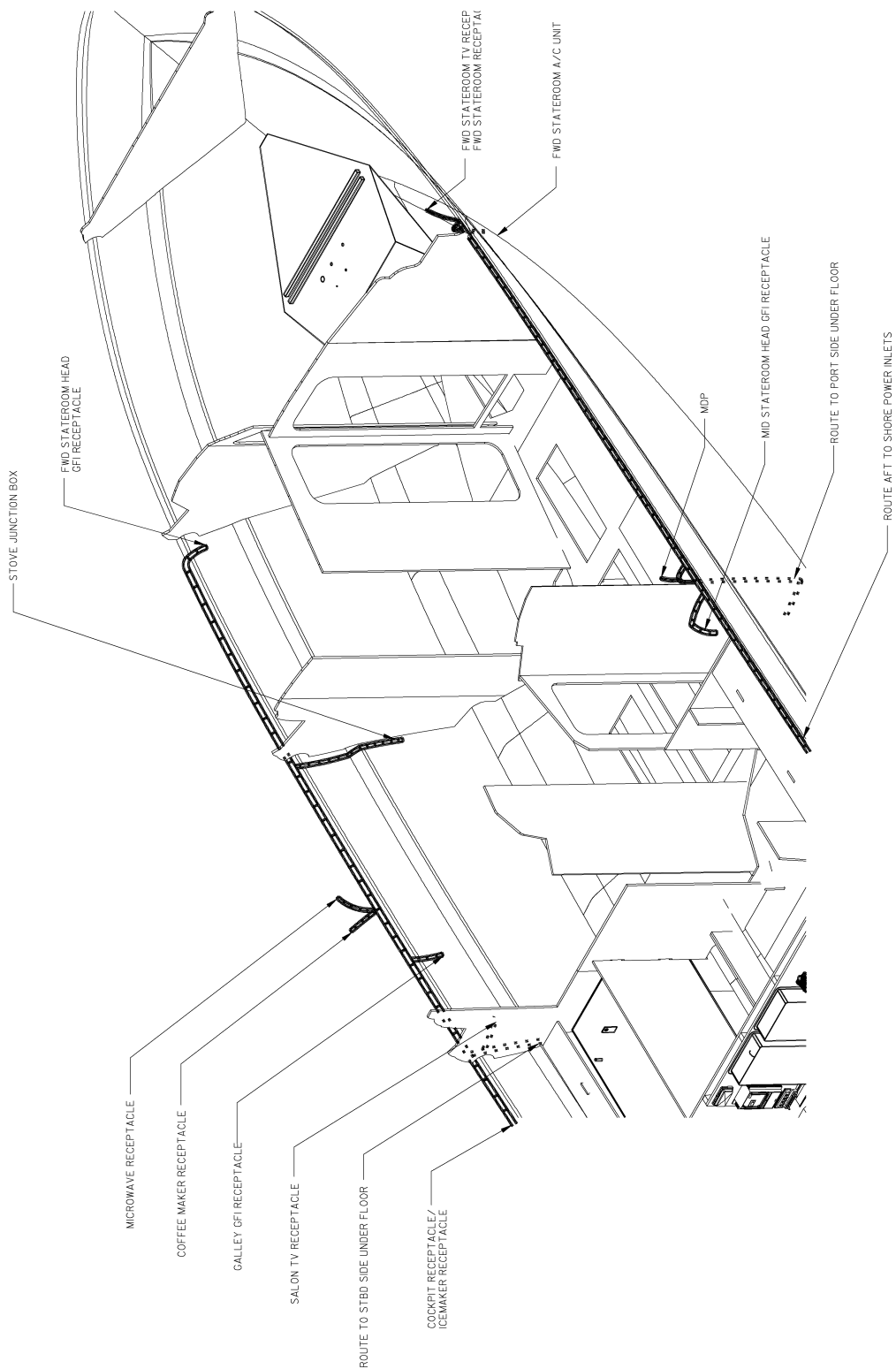
CABIN AC HARNESS INSTALLATION (1 of 2)

(fig. 12.52.1)



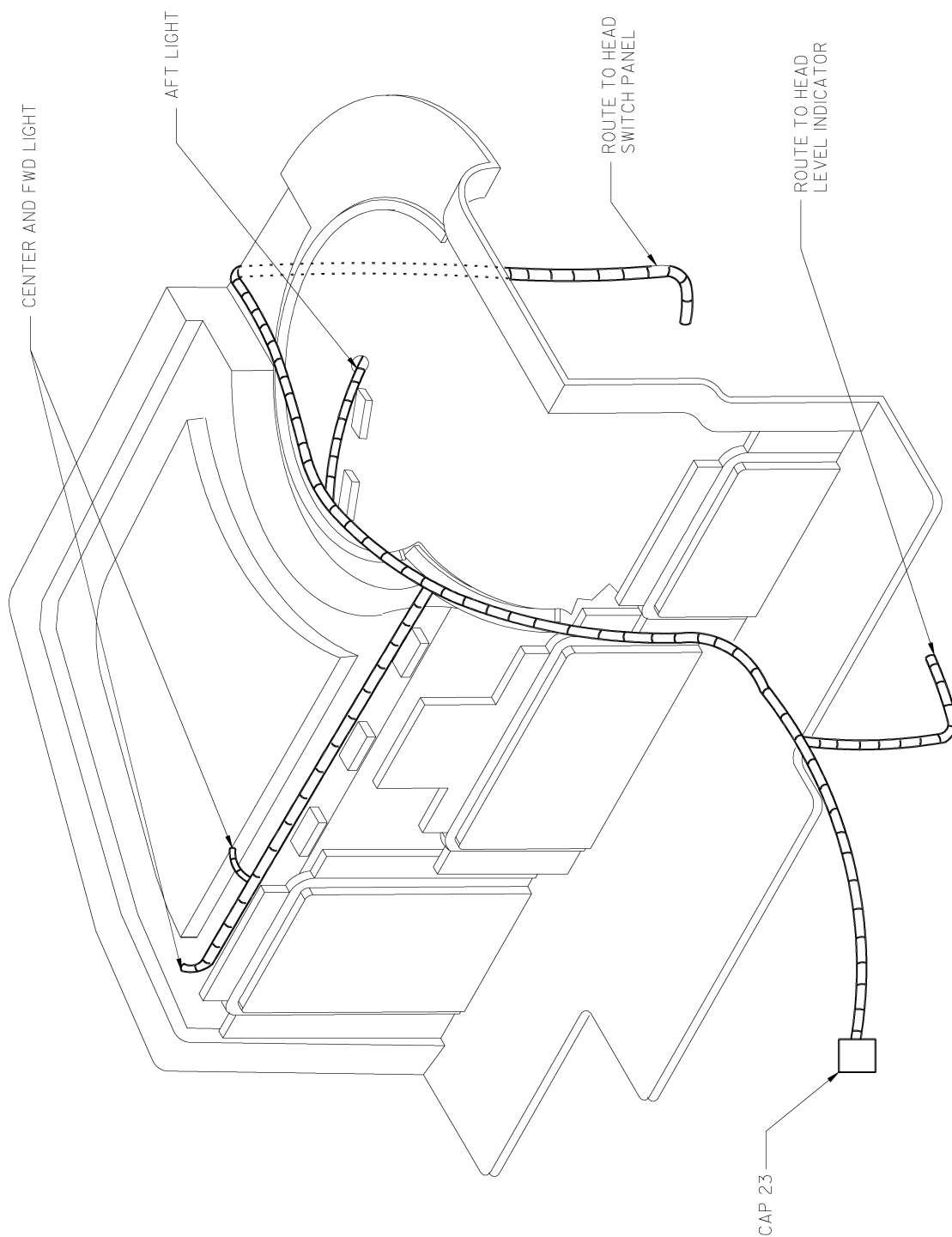
CABIN AC HARNESS INSTALLATION (2 of 2)

(fig. 12.53.1)



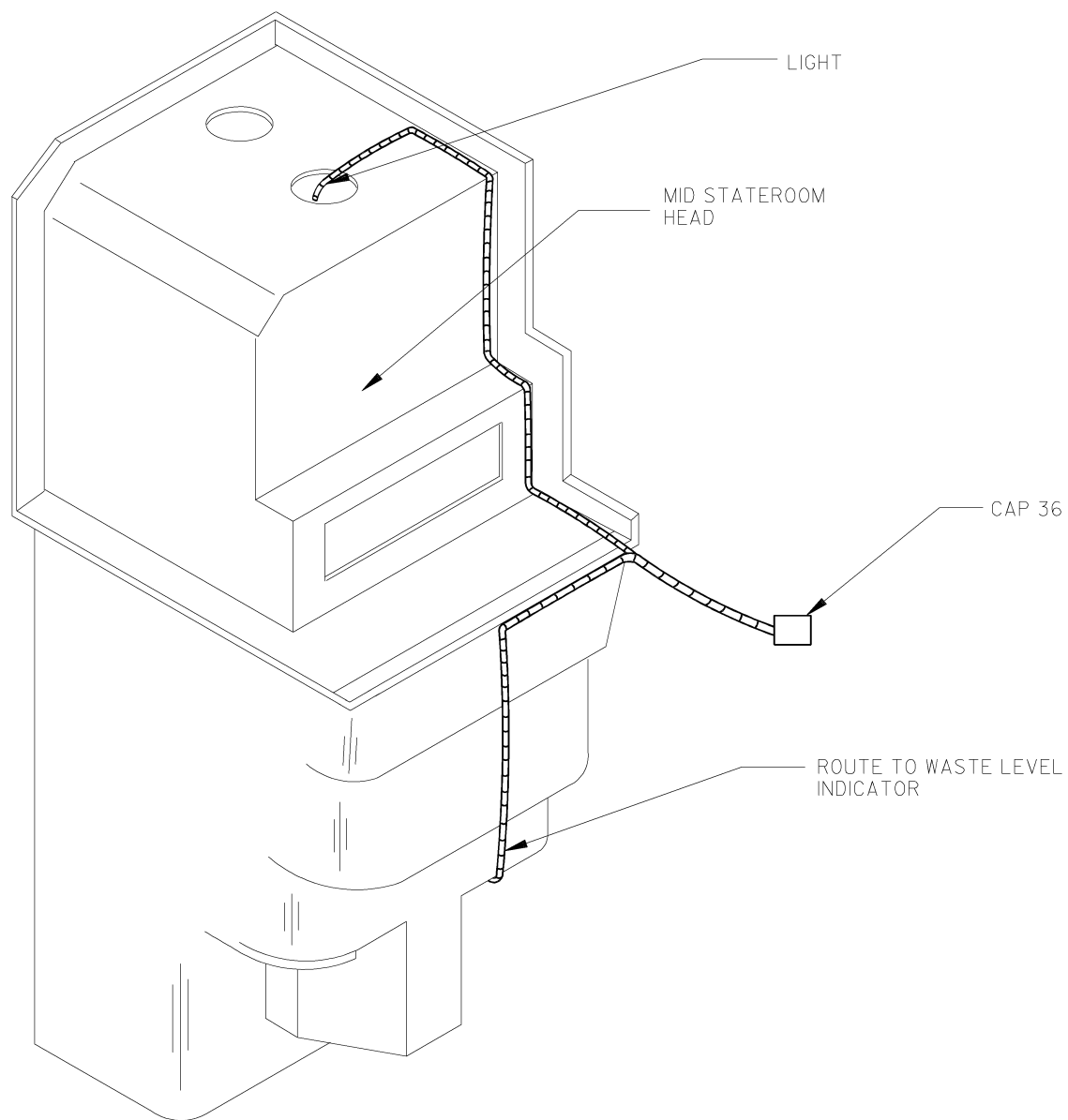
FORWARD HEAD HARNESS INSTALLATION

(fig. 12.54.1)



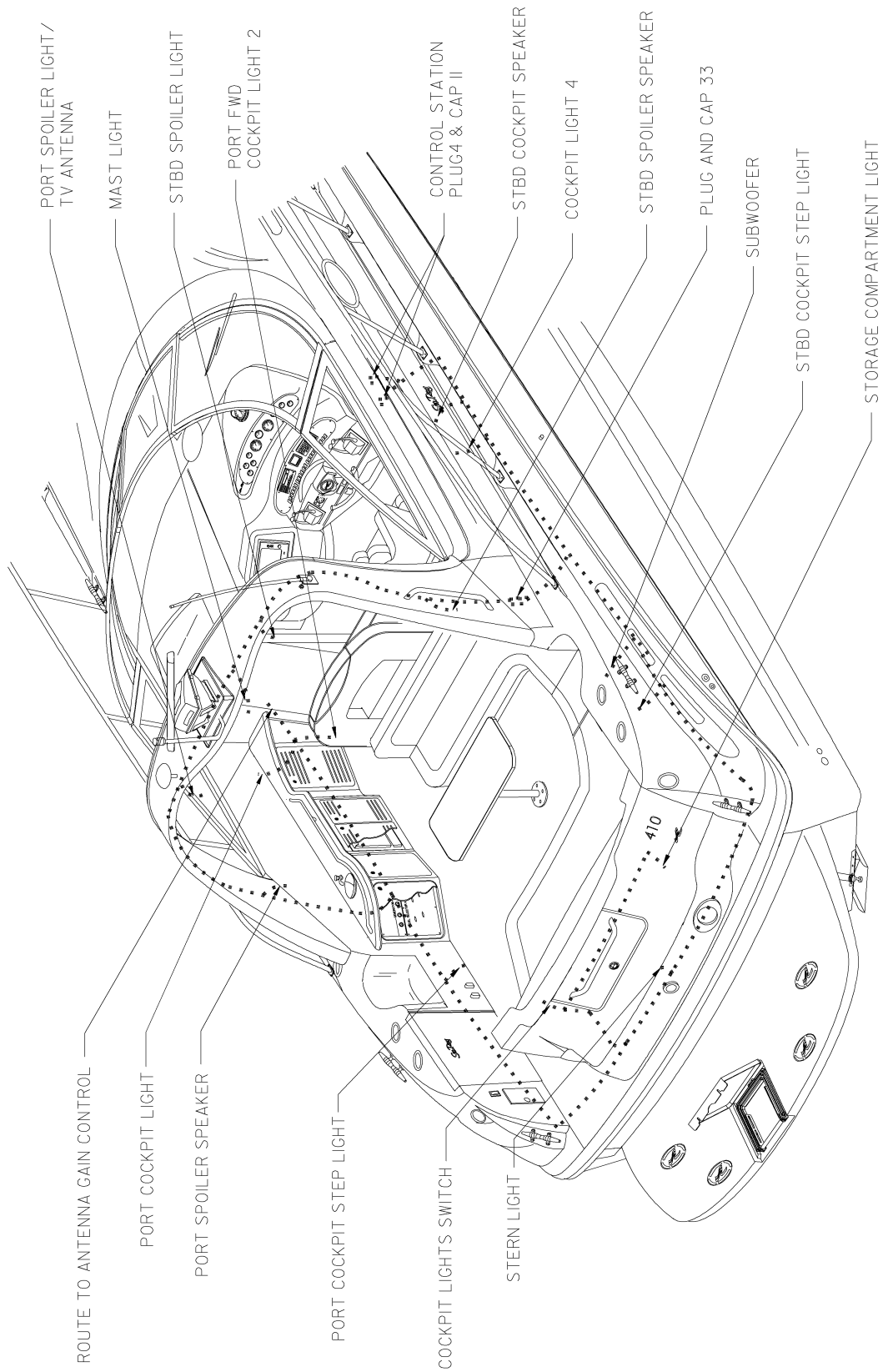
MID STATEROOM HEAD HARNESS INSTALLATION

(fig. 12.55.1)



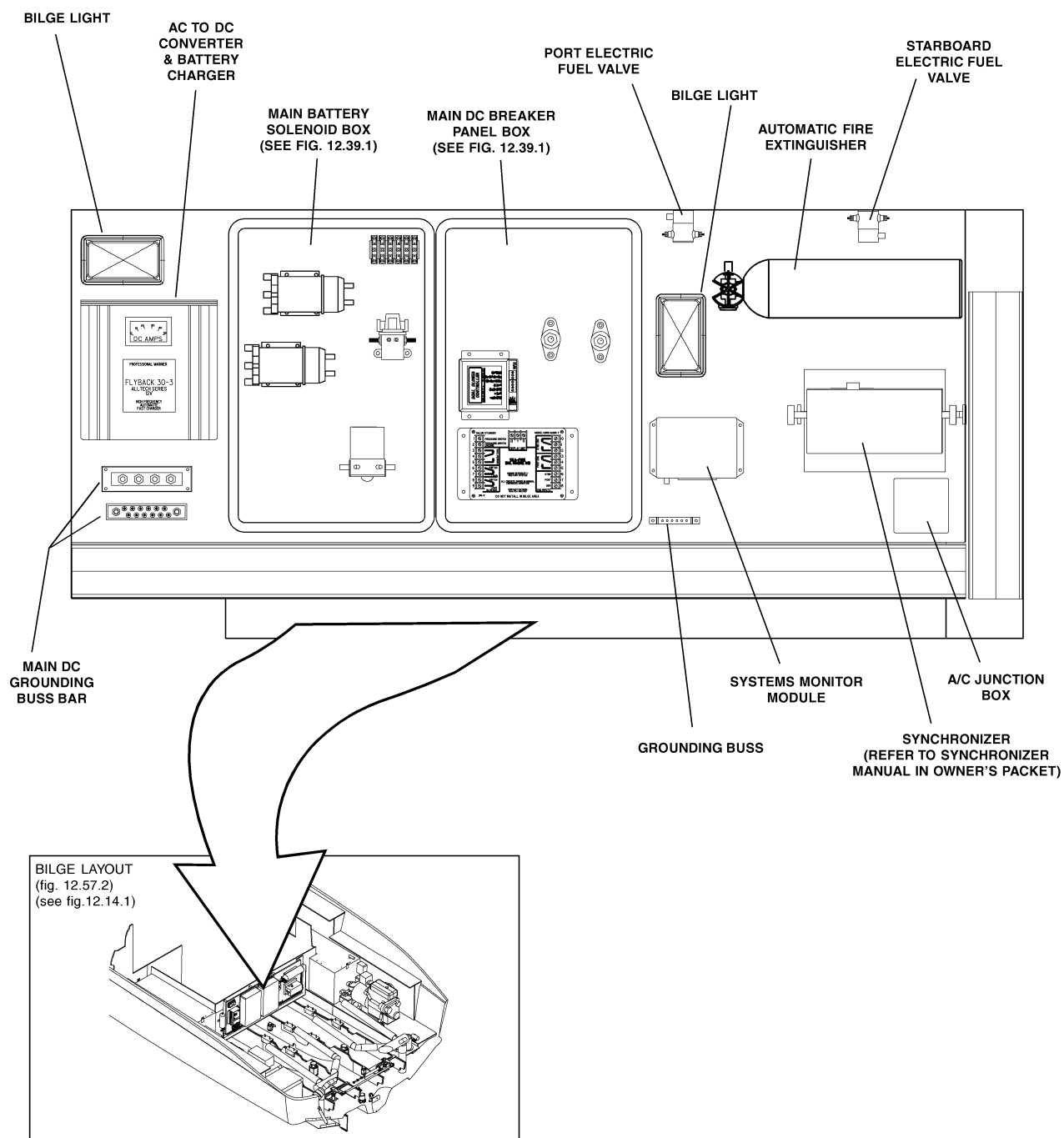
COCKPIT / SPOILER HARNESS INSTALLATION

(fig. 12.56.1)



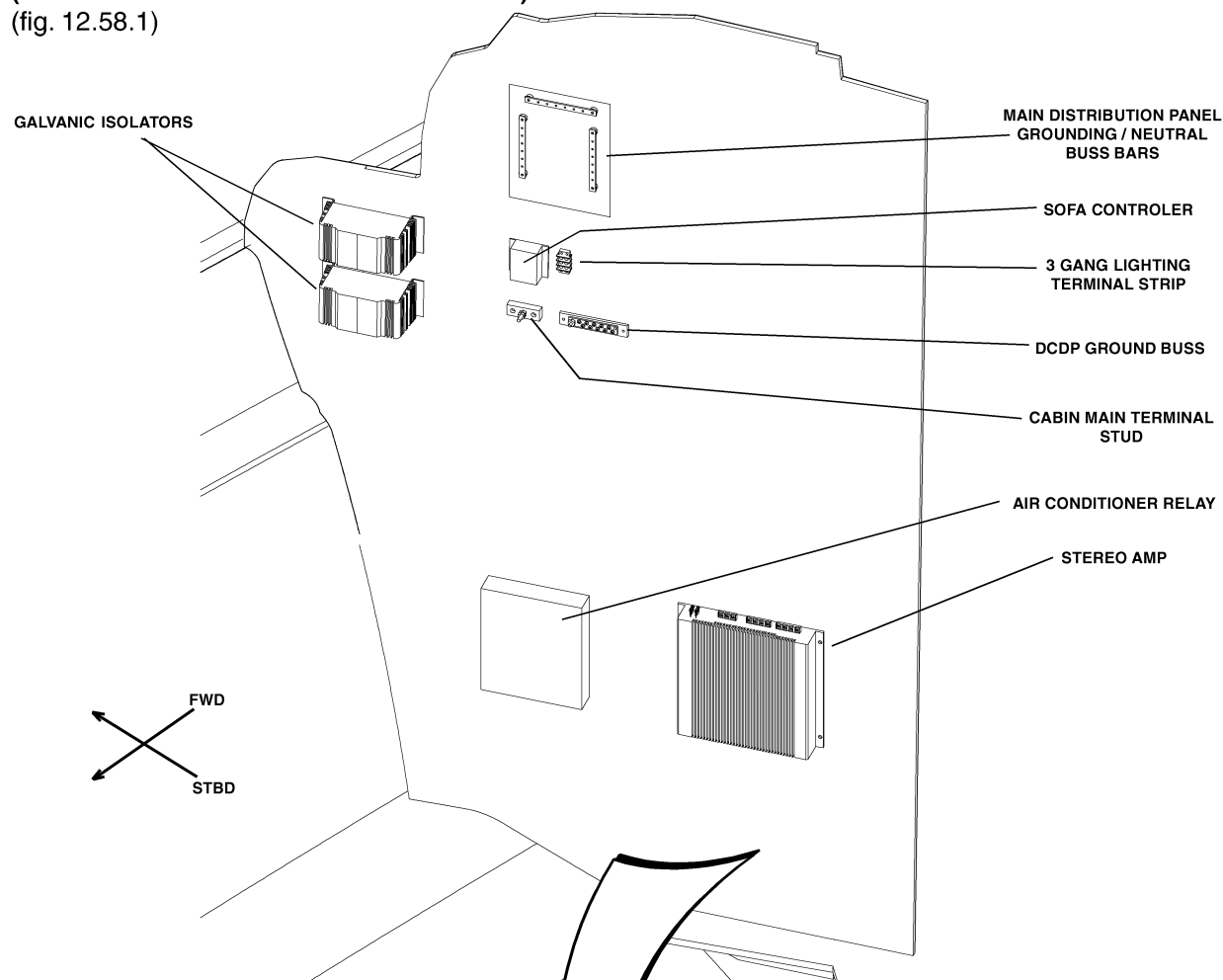
BILGE COMPONENT BOARD ASSEMBLY & LAYOUT

Bilge Component Board
(Located on forward bilge bulkhead)
(fig. 12.57.1) (also see fig. 12.40.1)

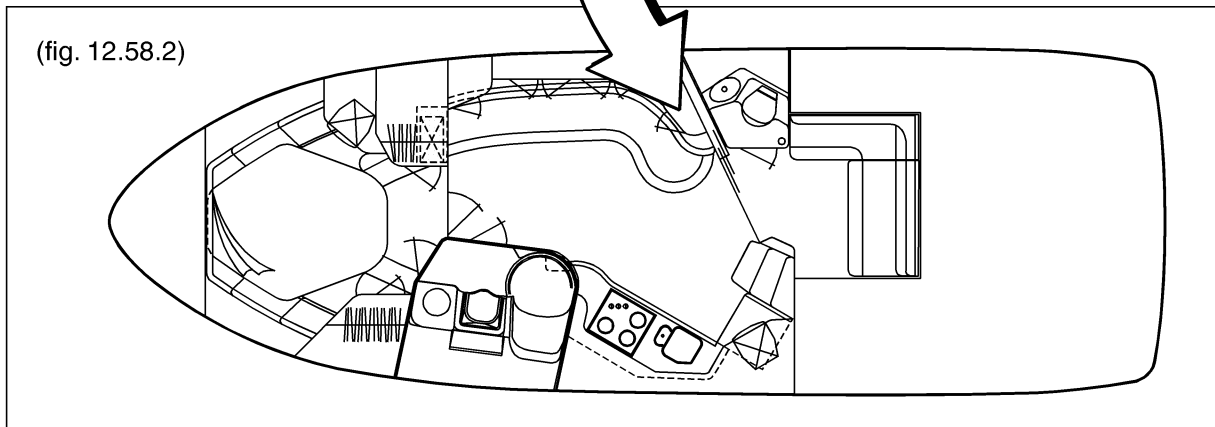


MAIN DISTRIBUTION PANEL COMPONENTS LAYOUT

**Main Distribution Panel Components Layout
(Located Behind Main Distribution Panel)**
(fig. 12.58.1)

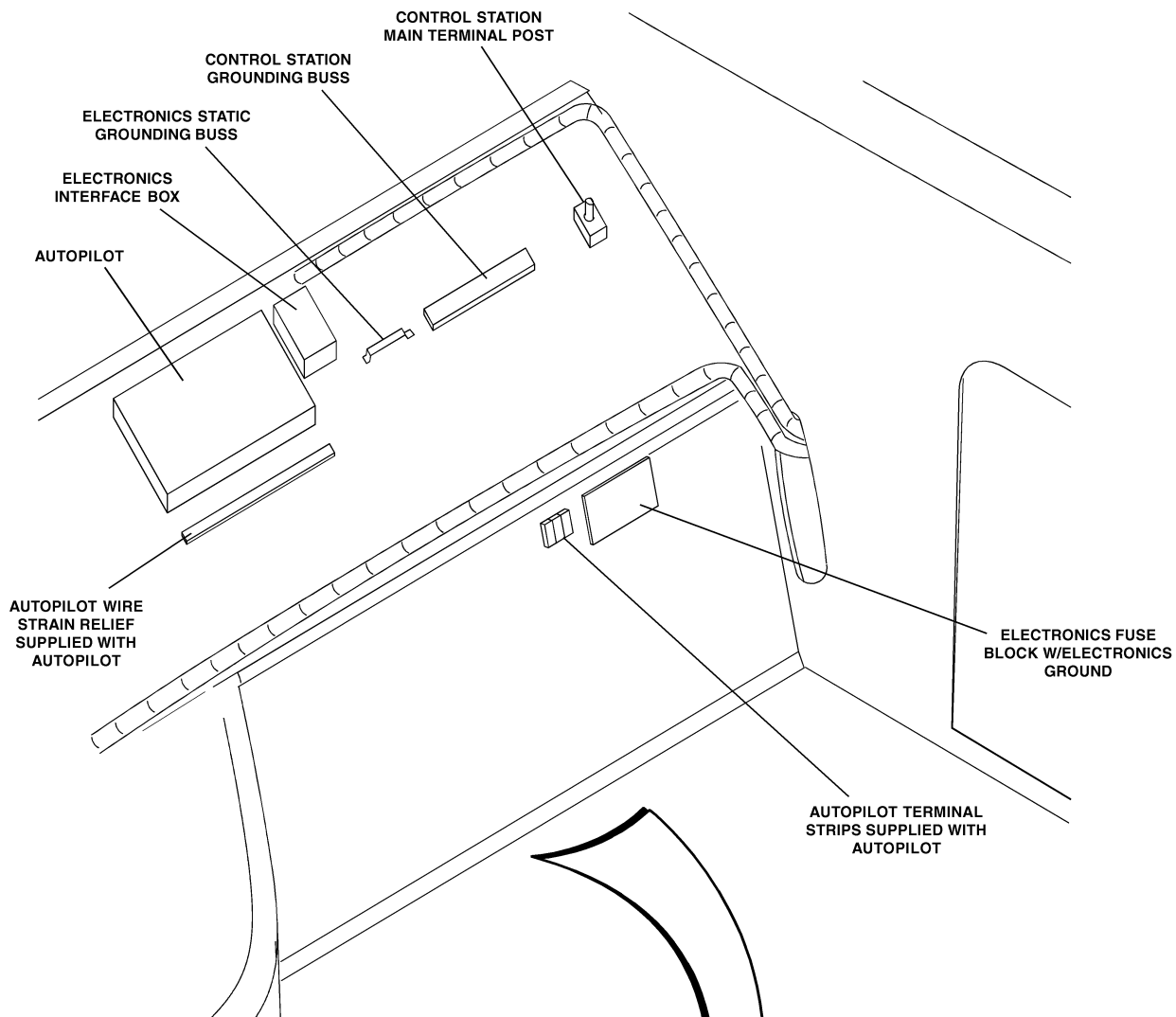


(fig. 12.58.2)

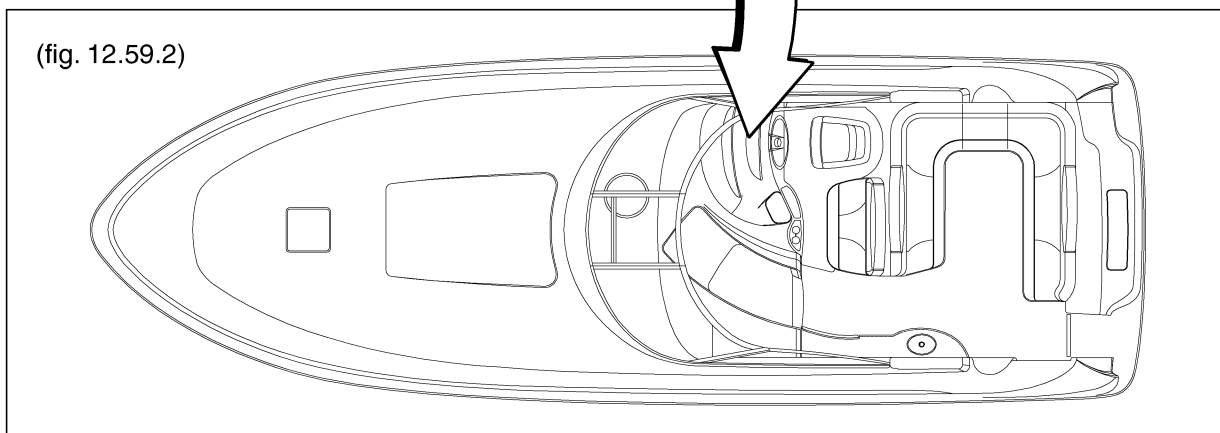


CONTROL STATION COMPONENTS LAYOUT

**Control Station Components Layout
(Located Behind Dash Panel)**
(fig. 12.59.1)

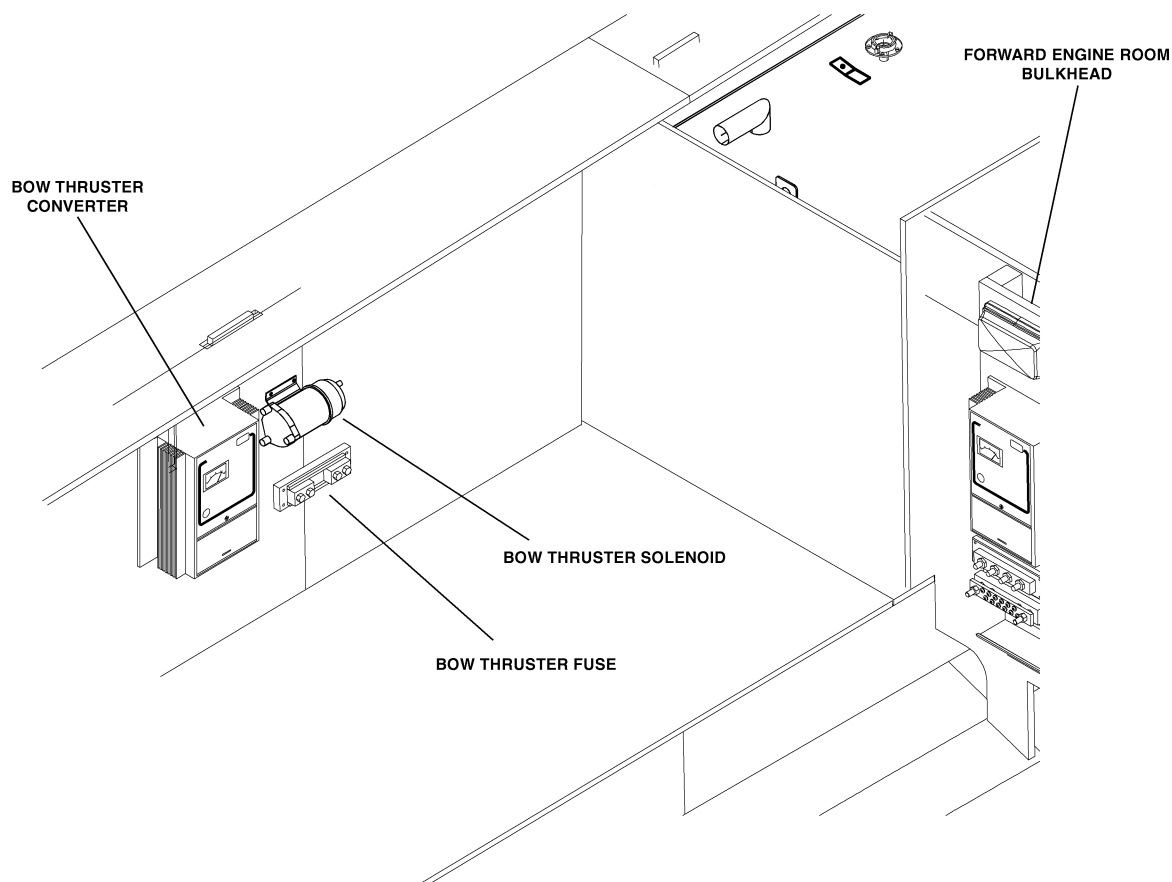
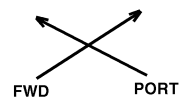


(fig. 12.59.2)

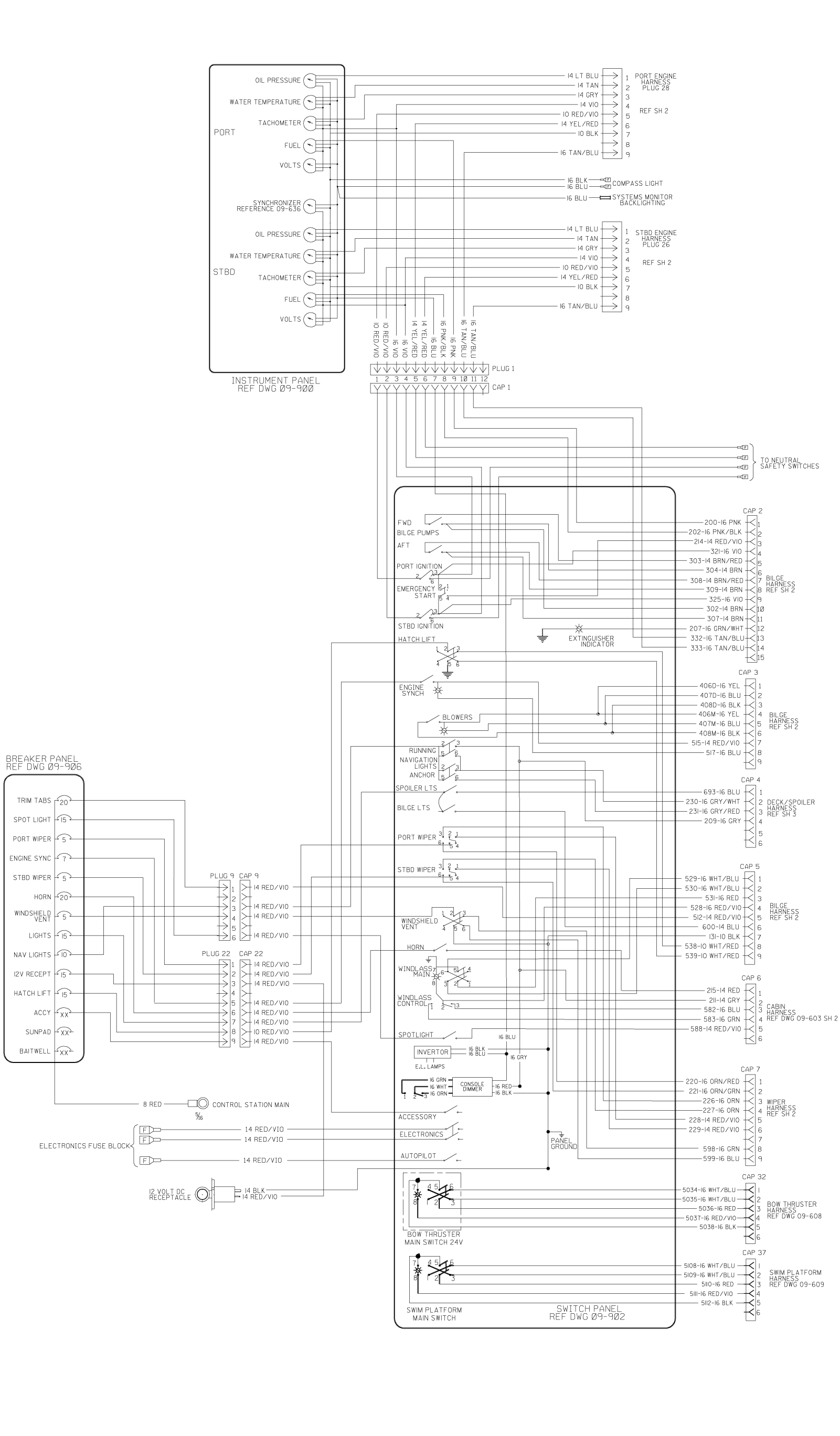


BOW THRUSTER COMPONENTS INSTALLATION (OPTION)

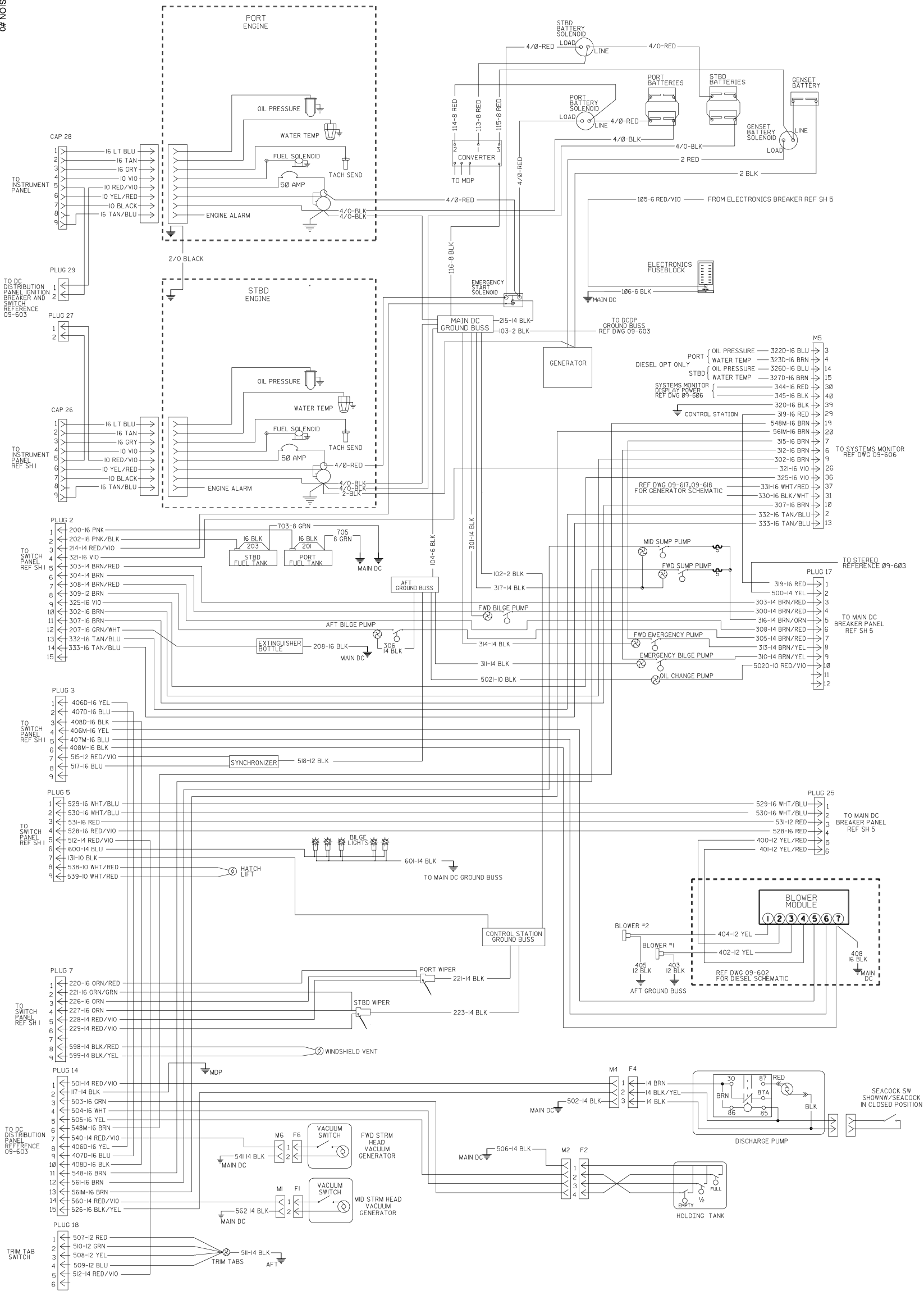
Bow Thruster Components Installation
(Located On Port Side Of Engine Compartment)
(fig. 12.60.1)



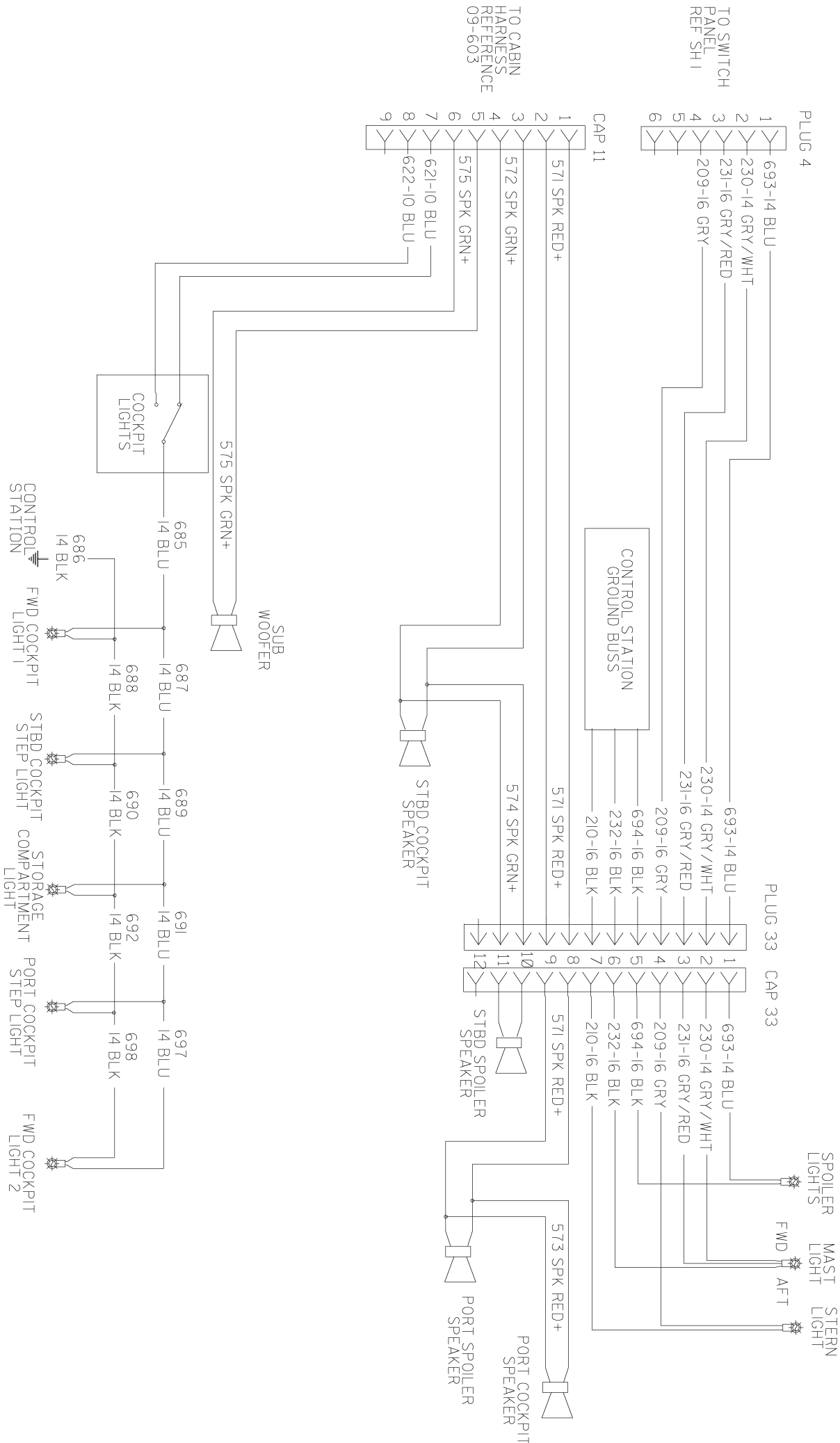
DC WIRING SCHEMATIC (1 OF 5)



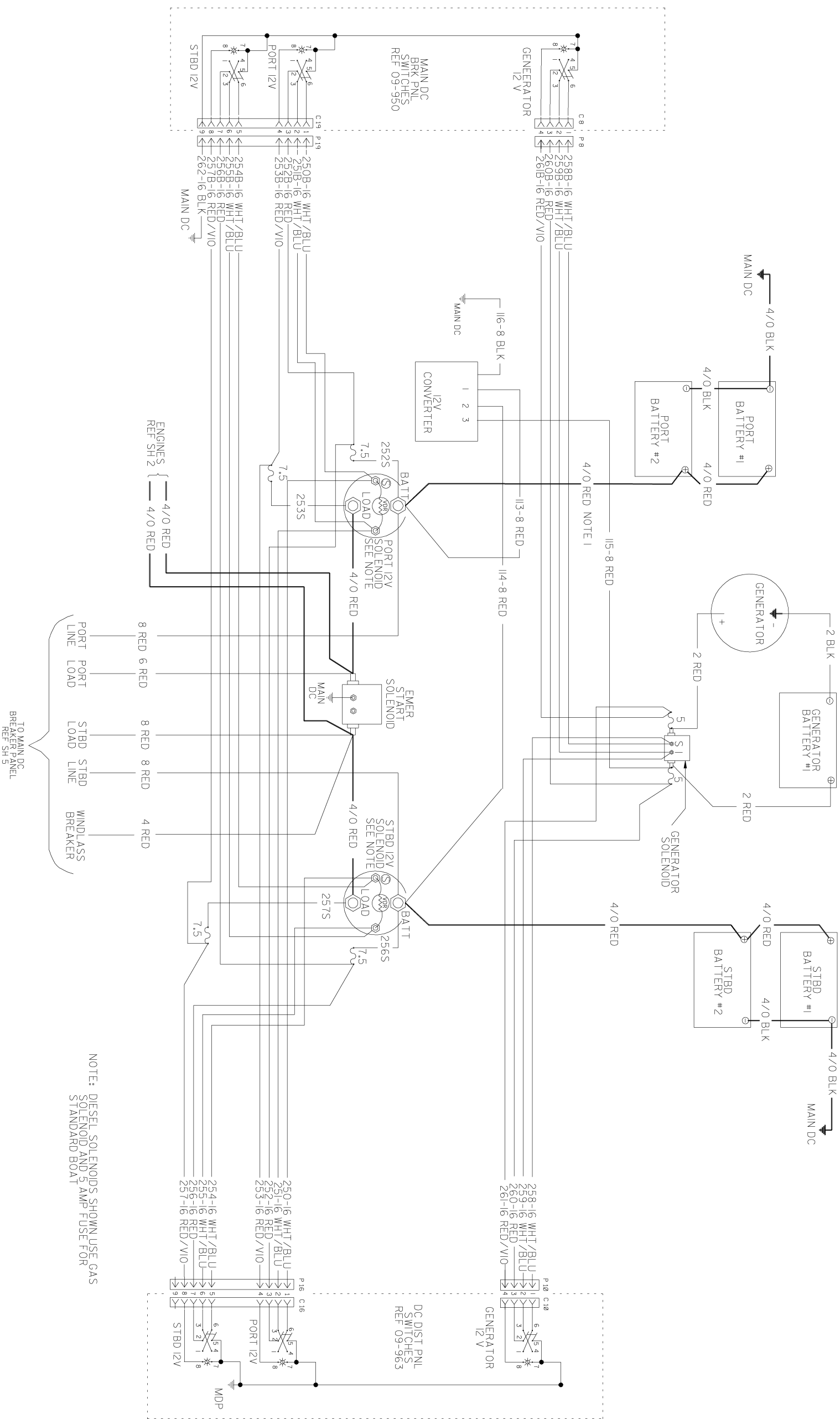
DC WIRING SCHEMATIC (2 OF 5)



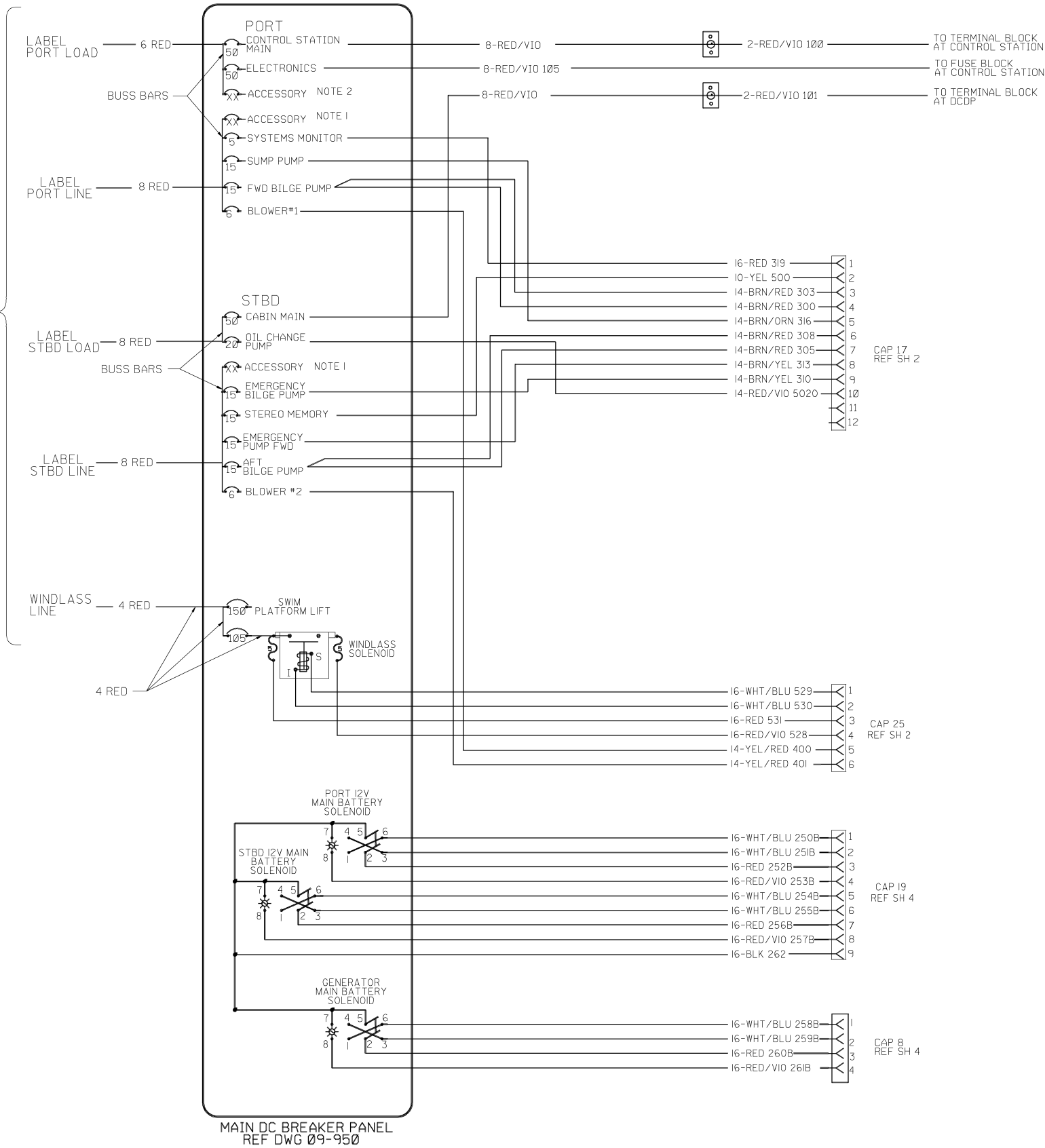
DC WIRING SCHEMATIC (3 OF 5)



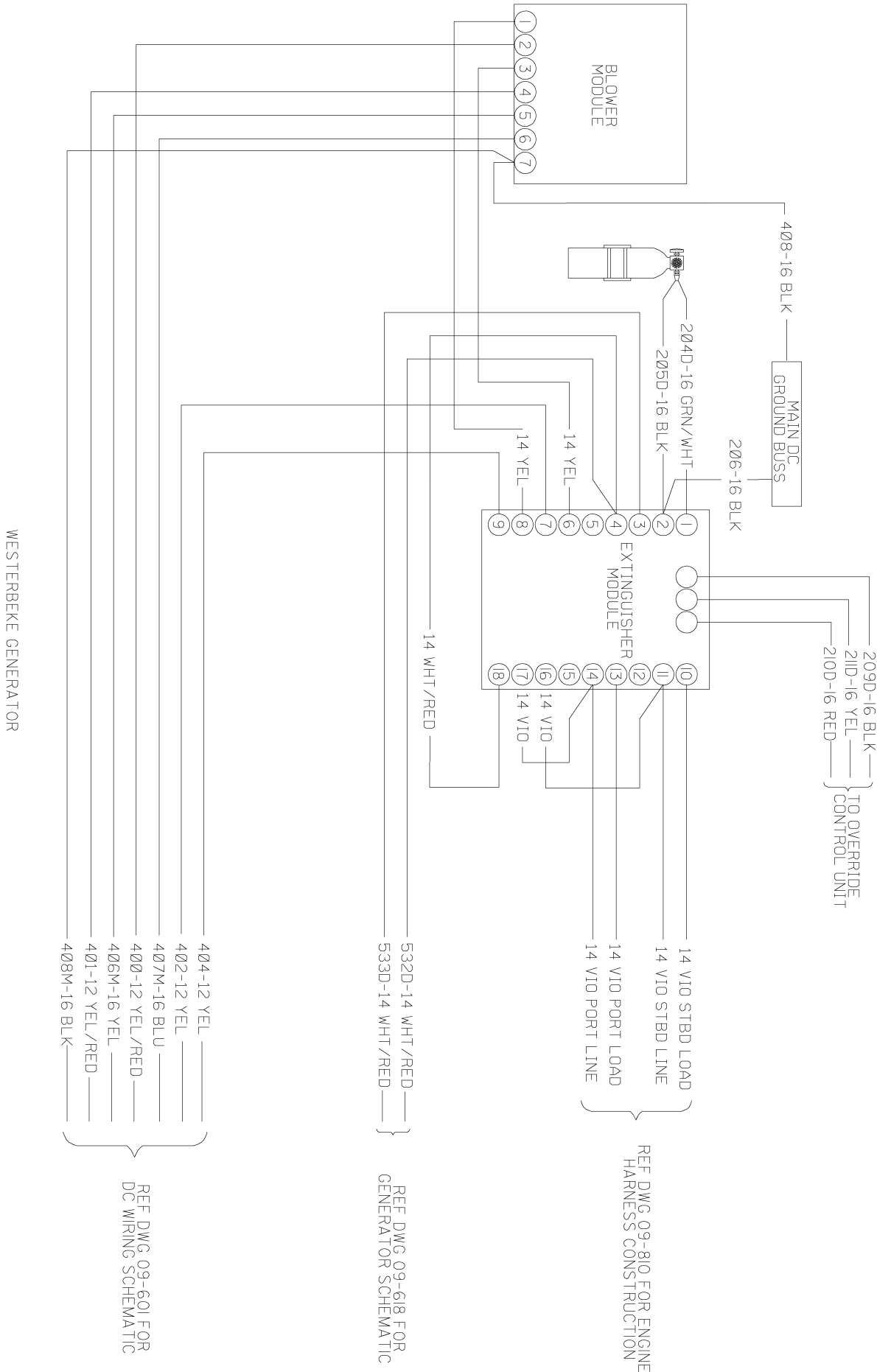
DC WIRING SCHEMATIC (4 OF 5)



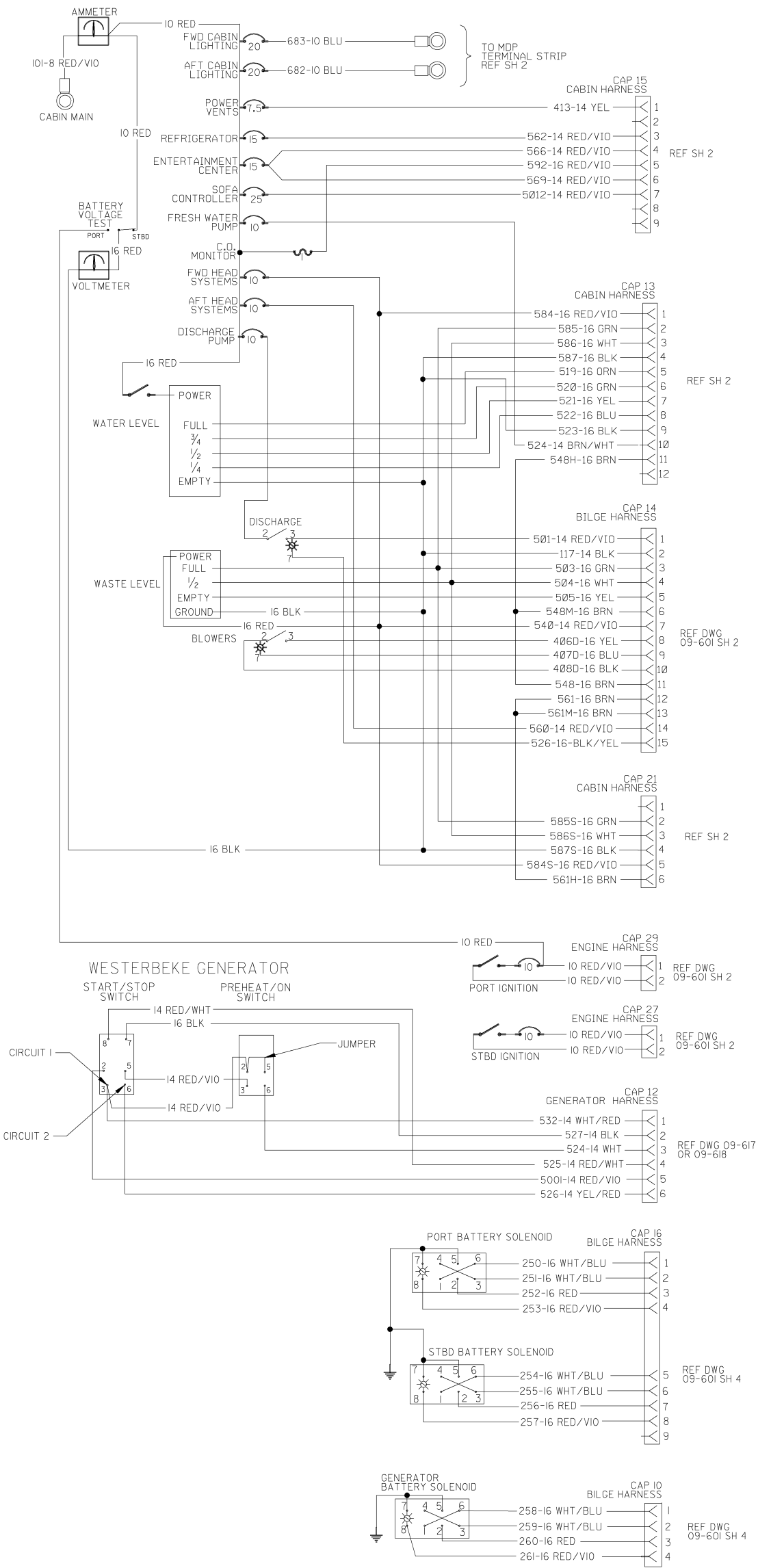
DC WIRING SCHEMATIC (5 OF 5)



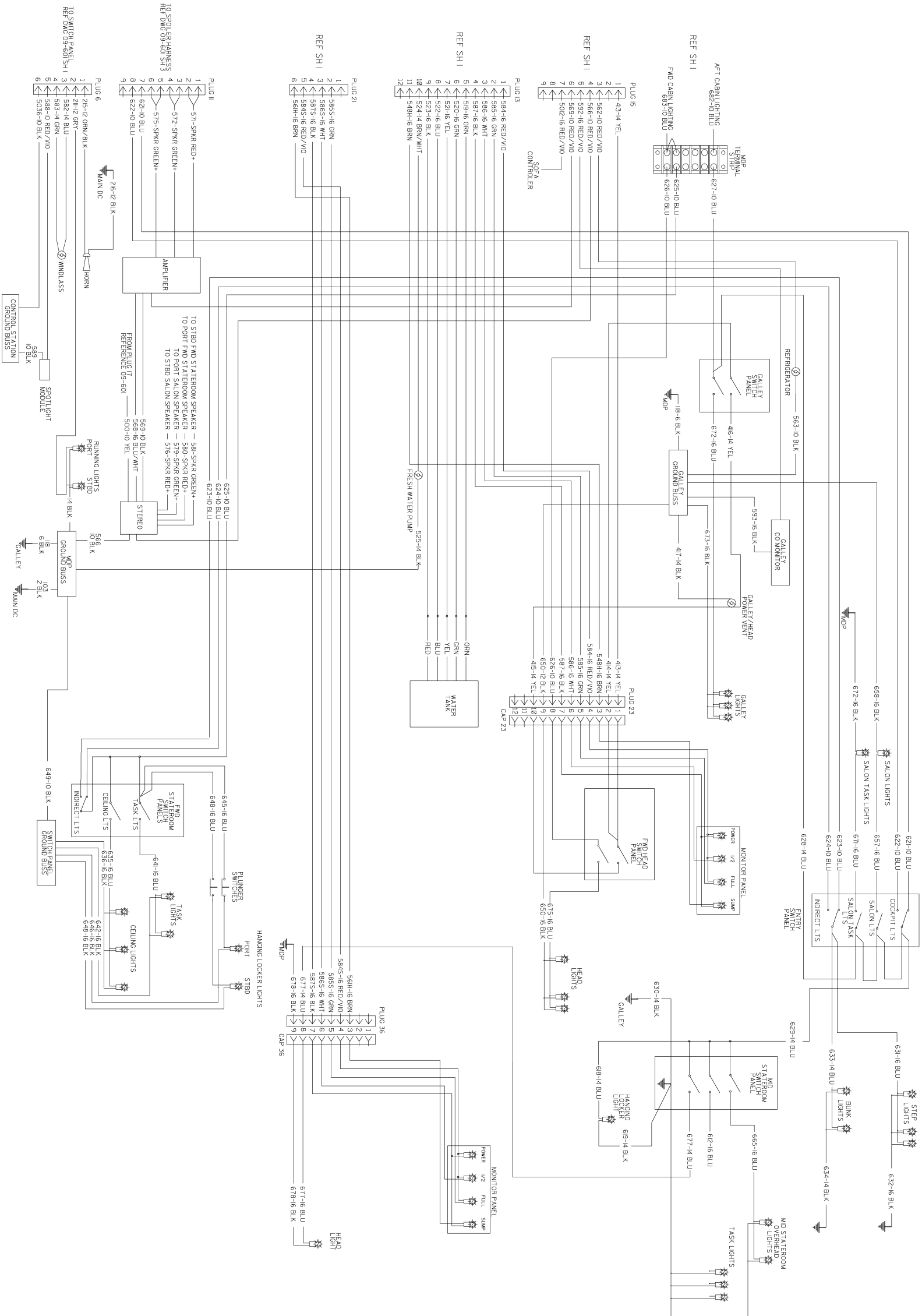
DC WIRING SCHEMATIC (DIESEL)



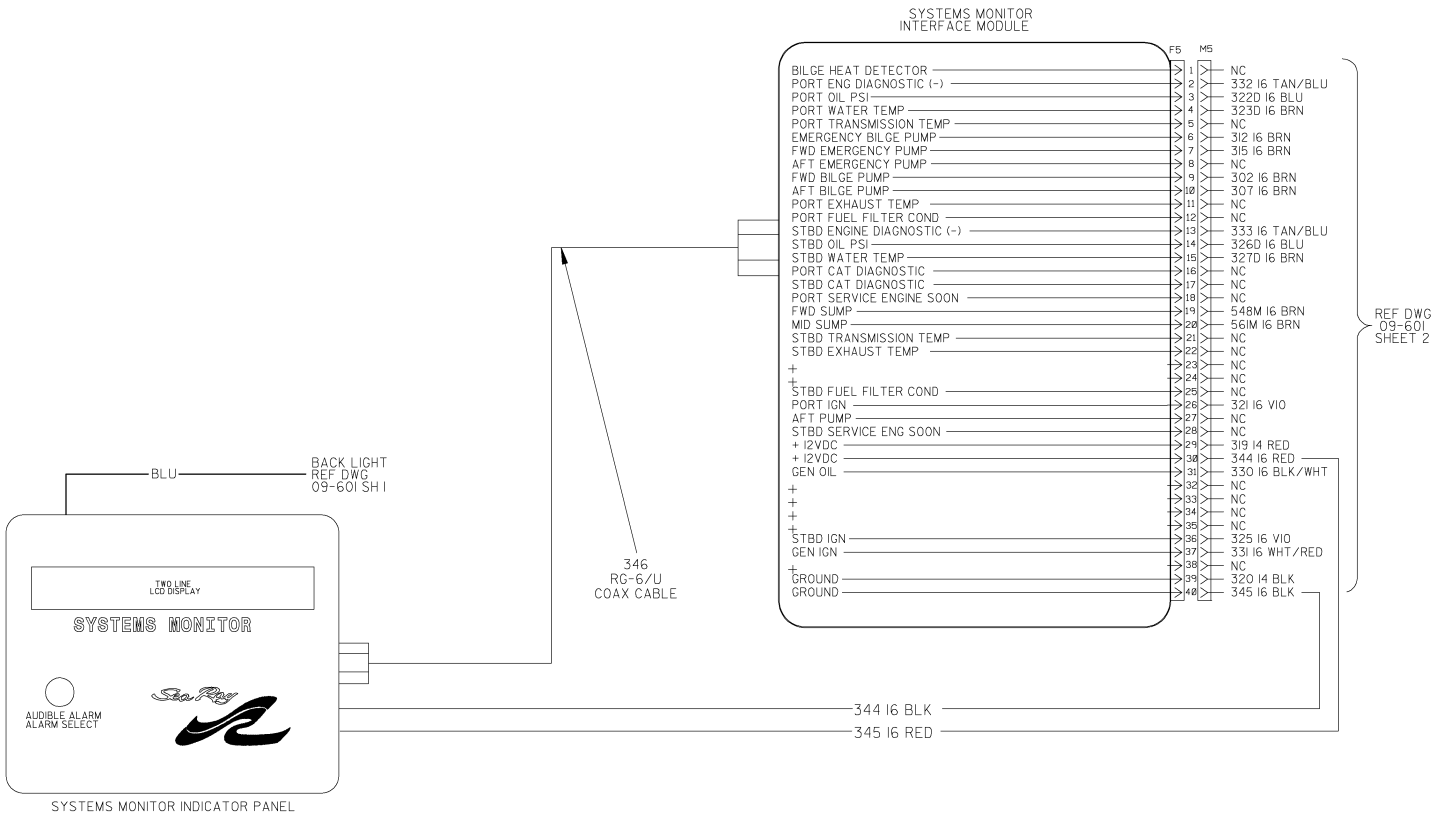
CABIN DC WIRING SCHEMATIC (1 OF 2)



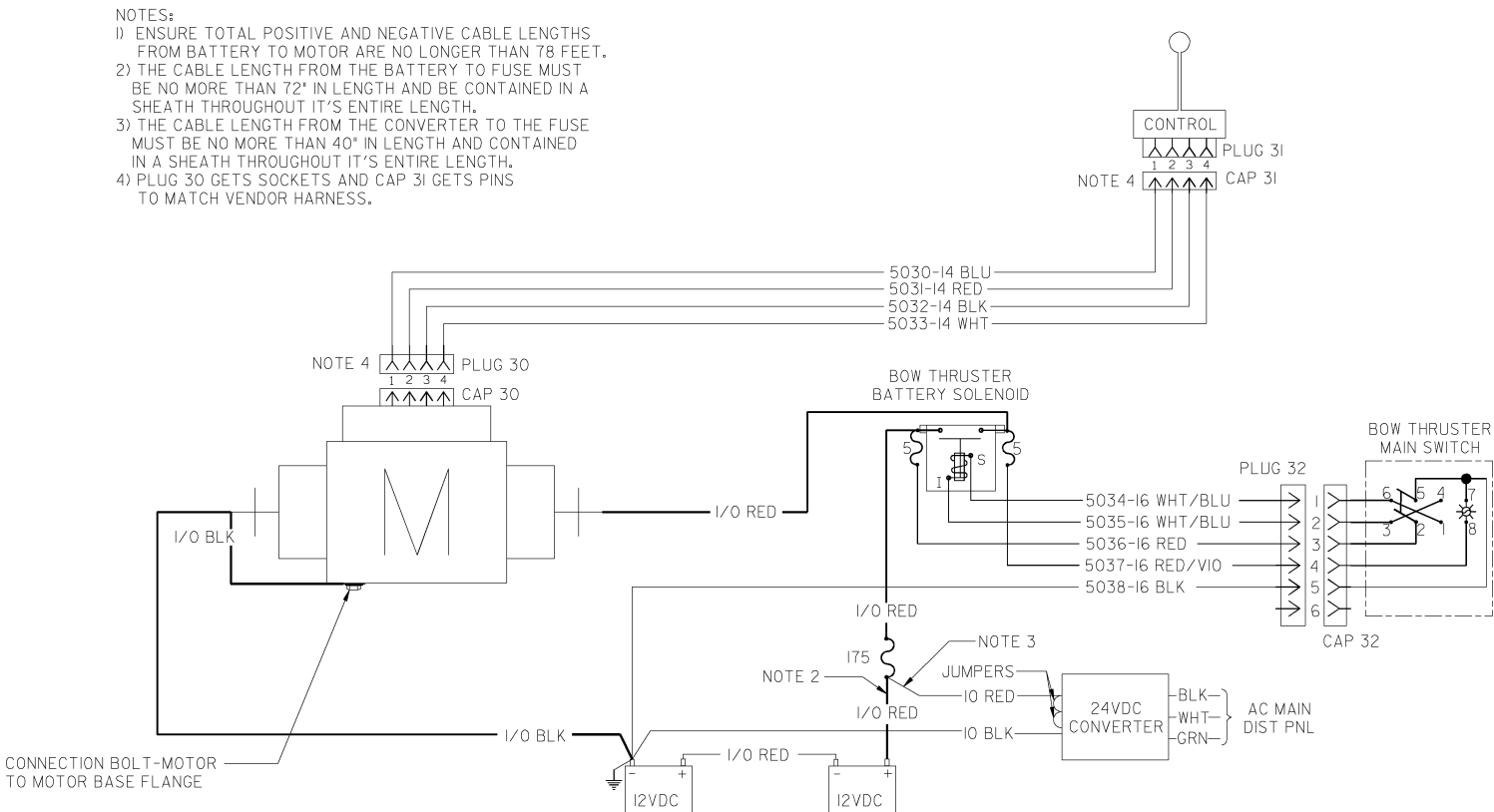
CABIN DC WIRING SCHEMATIC (2 OF 2)



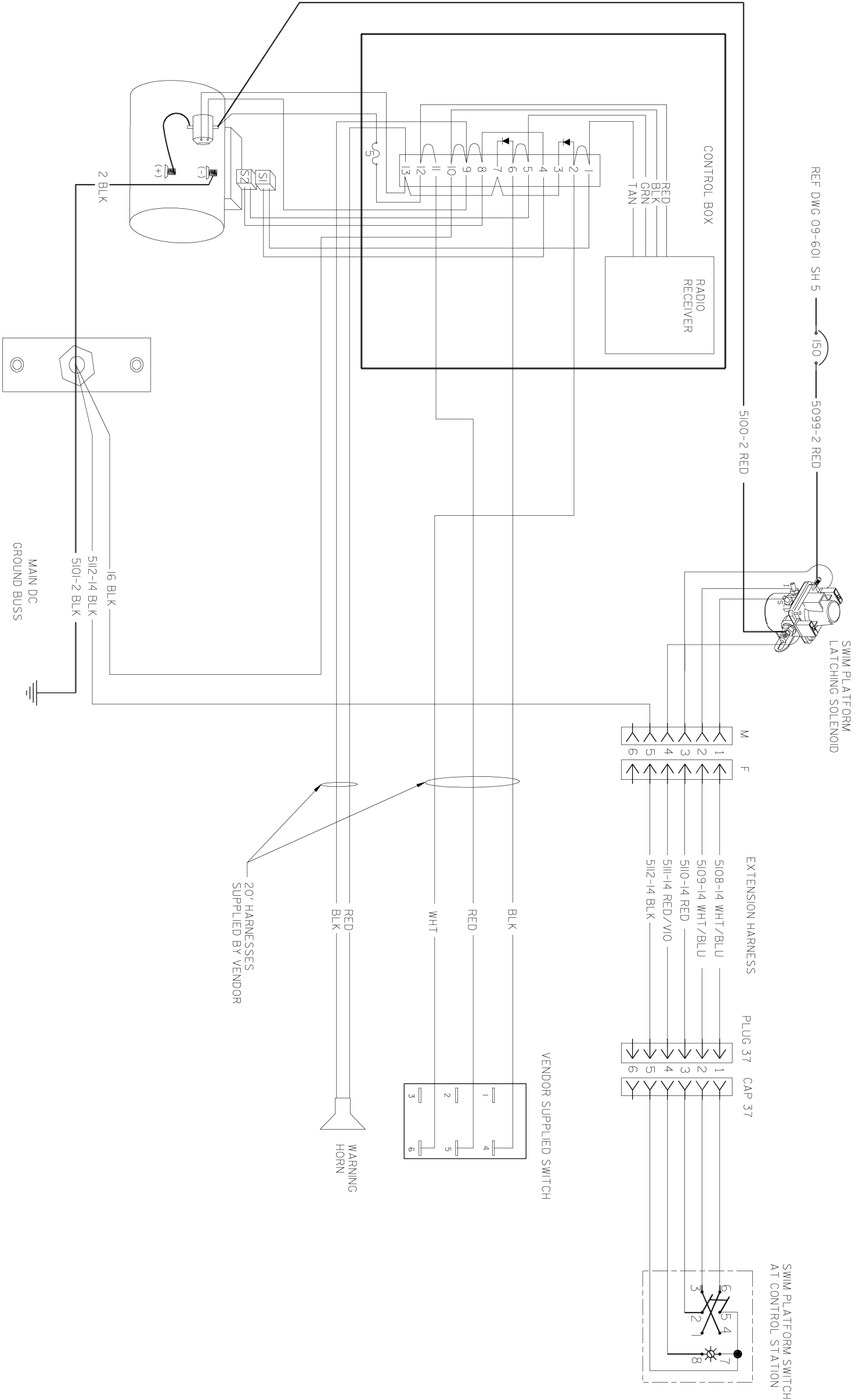
SYSTEMS MONITOR SCHEMATIC



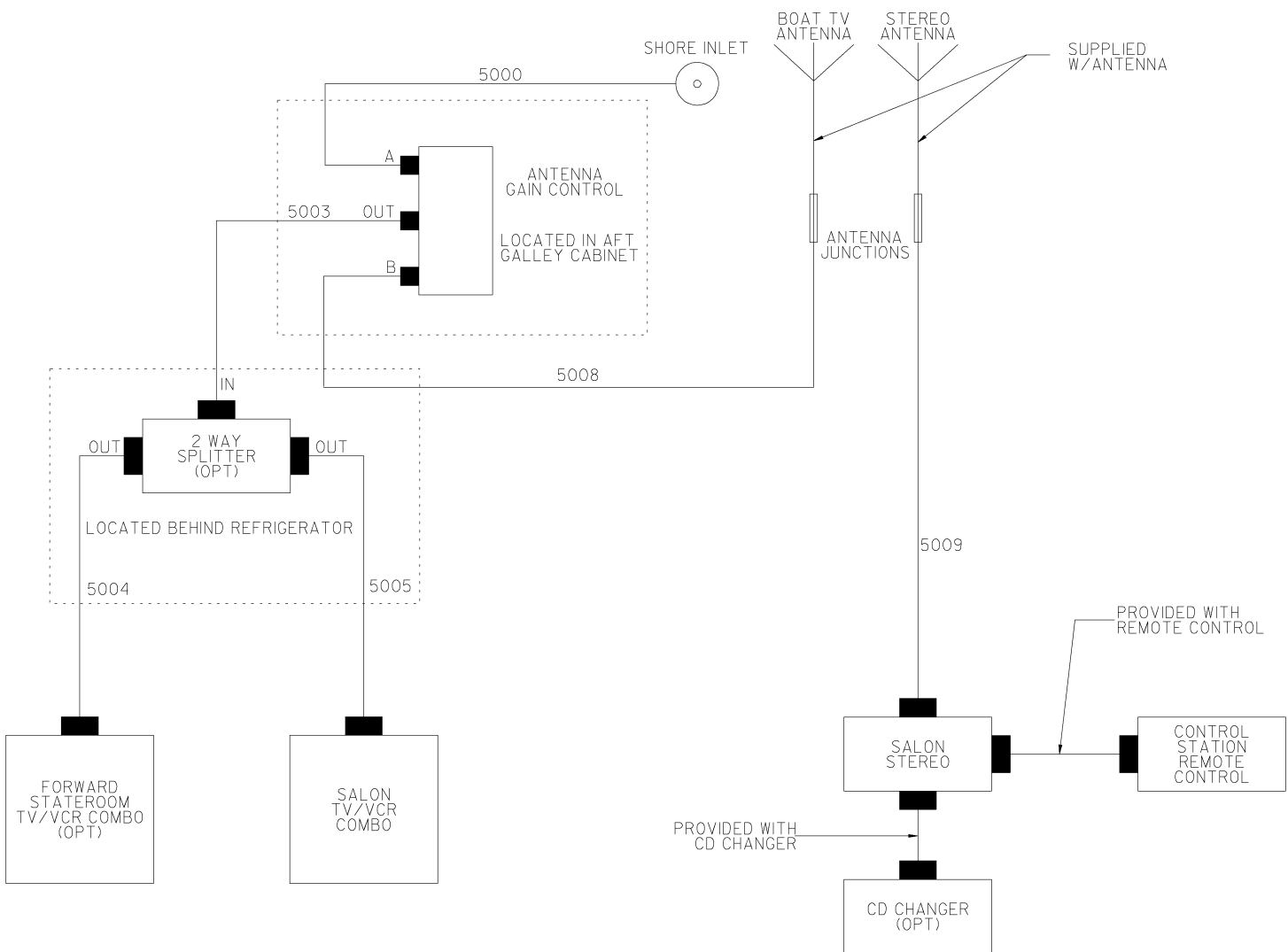
BOW THRUSTER SCHEMATIC (VETUS 80KGF)



SWM PLATFORM LIFT SCHEMATIC



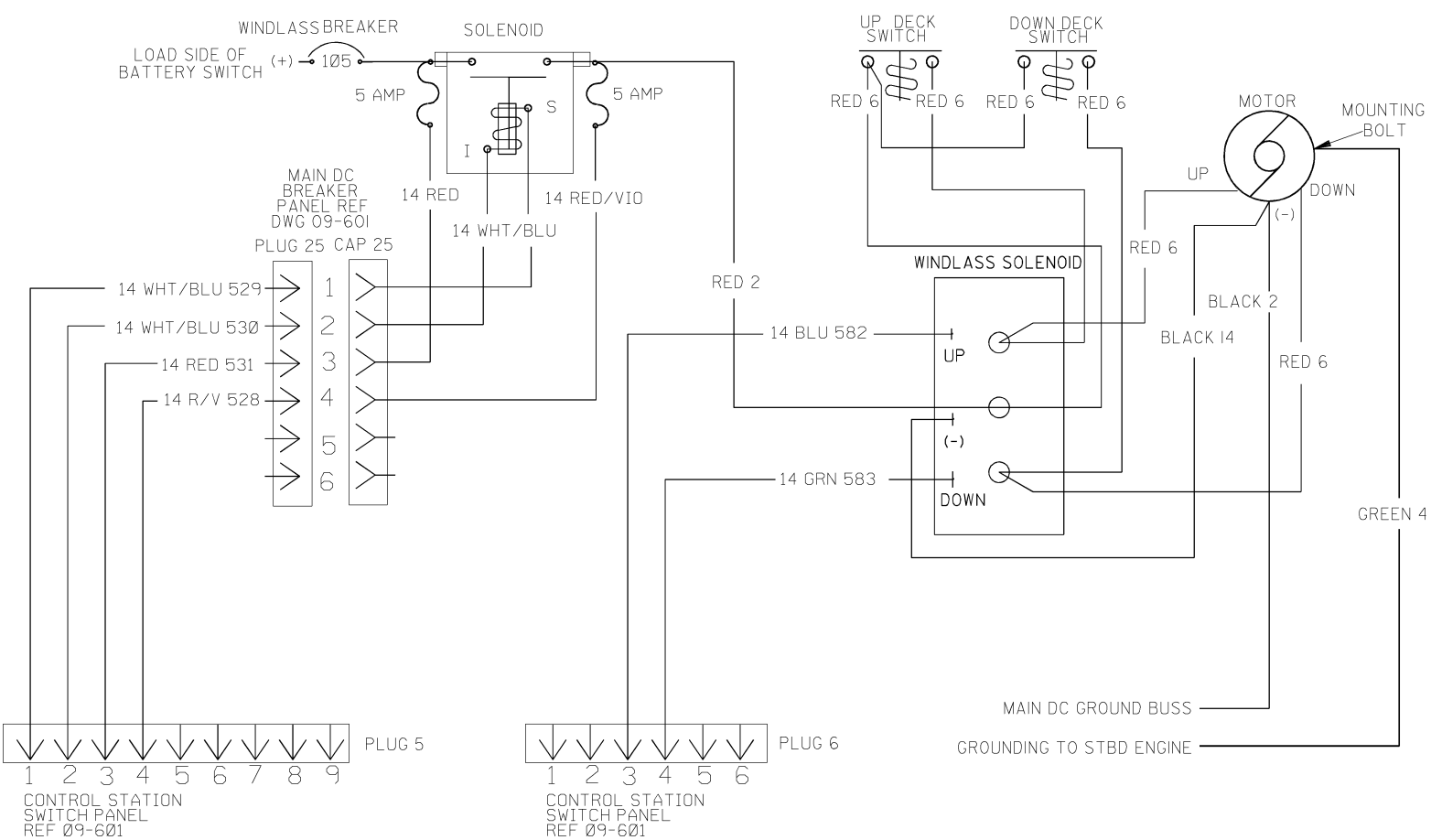
TV ANTENNA SYSTEM SCHEMATIC



PRINT #09-612, 1 of 1, REVISION #0

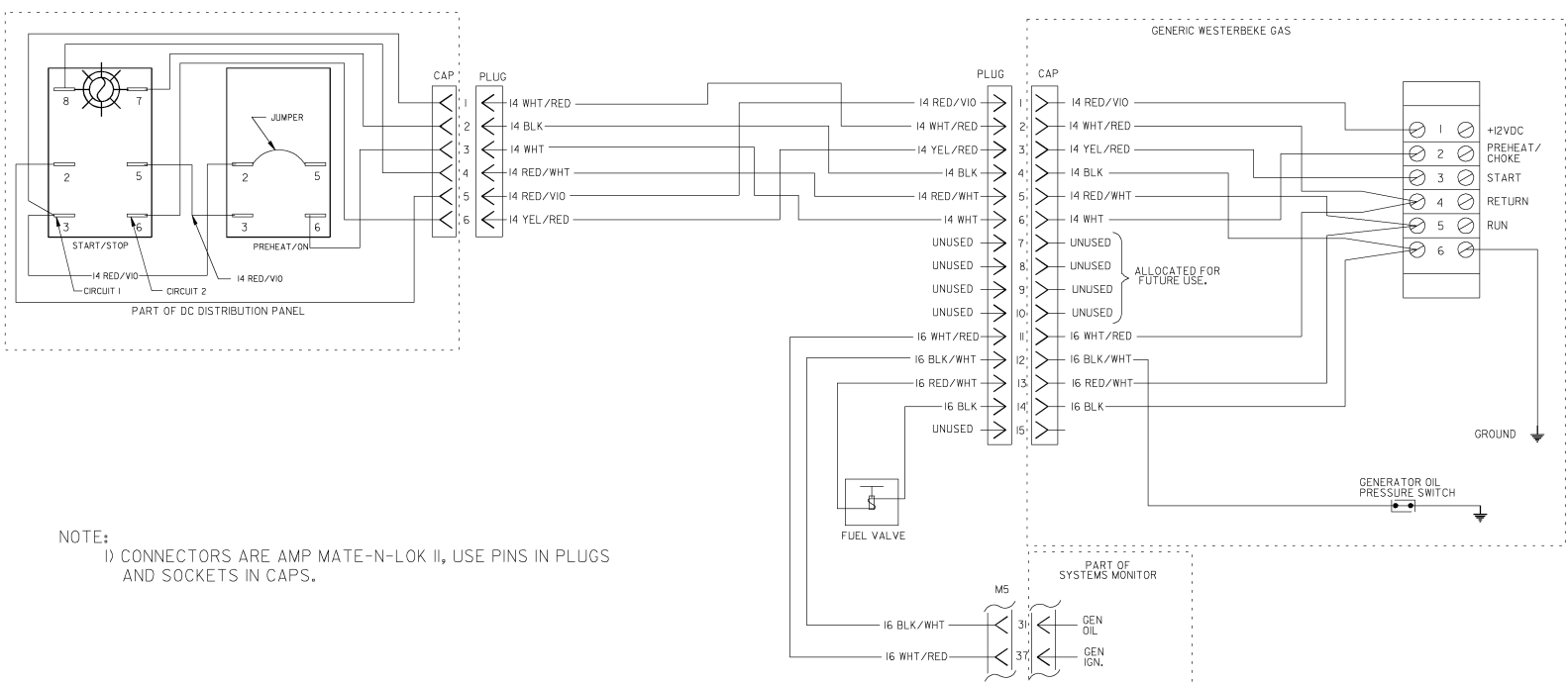
410 Sundancer

LOFRANS PROGRESS I WINDLASS WIRING SCHEMATIC



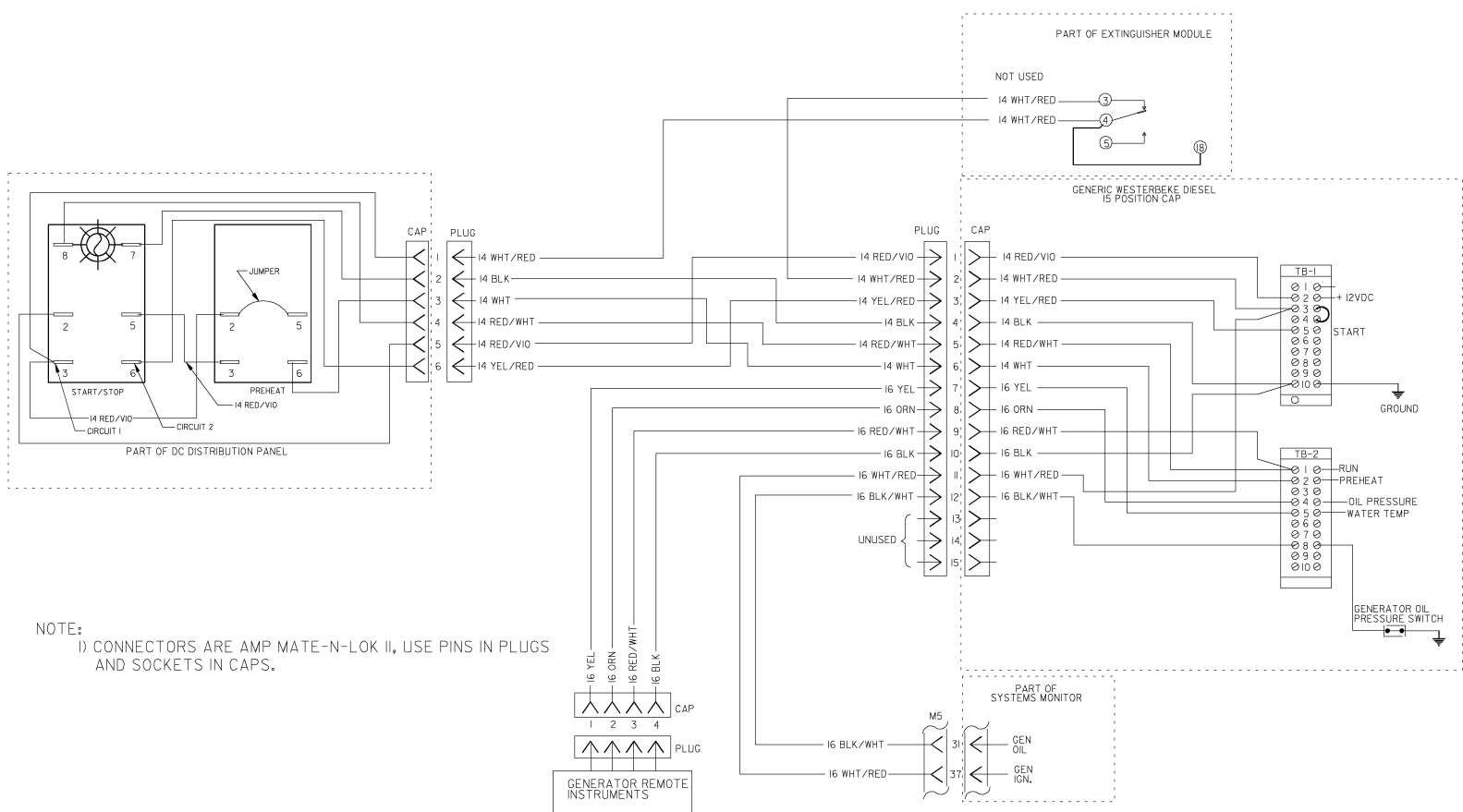
PRINT #09-614, 1 of 1, REVISION #0

WESTERBEKE GAS GENERATOR SCHEMATIC 4.5KW THRU 9.6KW



NOTE:
1) CONNECTORS ARE AMP MATE-N-LOK II, USE PINS IN PLUGS
AND SOCKETS IN CAPS.

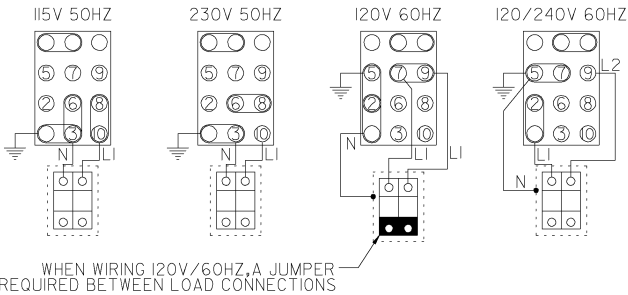
WESTERBEKE DIESEL GENERATOR SCHEMATIC 5.0KW THRU 20.0KW



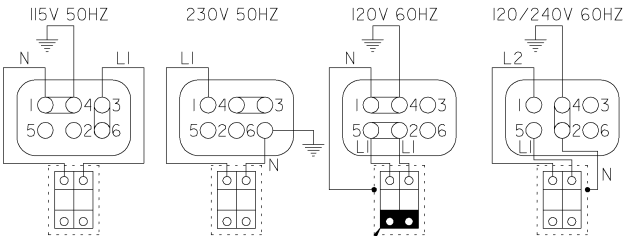
NOTE:
1) CONNECTORS ARE AMP MATE-N-LOK II, USE PINS IN PLUGS
AND SOCKETS IN CAPS.

WESTERBEKE GENERATOR HIGH VOLTAGE WIRING

DIESEL GENERATOR INSTRUMENT PANEL SCHEMATIC (OPTIONAL)



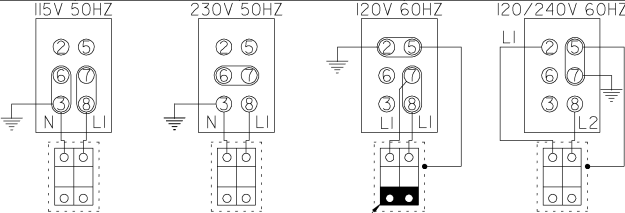
WHEN WIRING 120V/60HZ, A JUMPER IS REQUIRED BETWEEN LOAD CONNECTIONS



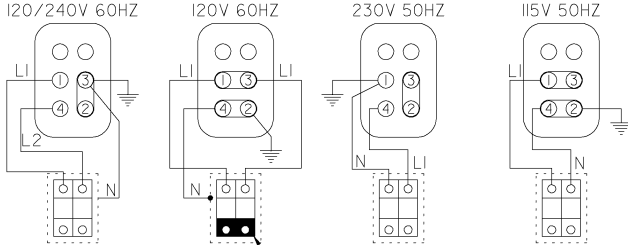
WHEN WIRING 120V/60HZ, A JUMPER IS REQUIRED BETWEEN LOAD CONNECTIONS

MODEL	RATING	BREAKER	VOLTS/HZ
3.5KW BCG+A+B	15 AMP	42712	230V/50HZ
5.0KW BCG	25 AMP	42713	230V/50HZ
4.0KW BCDA+B	20 AMP	42704	230V/50HZ
7.0KW BCG	30 AMP	42714	120V/60HZ OR 120/240V/60HZ
4.5KW BCG+A+B	20 AMP	42232	120V/60HZ OR 120/240V/60HZ
5.0KW BCDA+B	25 AMP	42705	120V/60HZ OR 120/240V/60HZ

MODEL	RATING	BREAKER	VOLTS/HZ
5.7KW BTD	25 AMP	42705	230V/50HZ
6.0KW BTD	30 AMP	42706	230V/50HZ
6.8KW BTG+A	30 AMP	42714	230V/50HZ
7.0KW BTG	35 AMP	42715	230V/50HZ
7.6KW BTD	35 AMP	42707	120V/60HZ OR 120/240V/60HZ
8.0KW BTD	35 AMP	42707	120V/60HZ OR 120/240V/60HZ
8.5KW BTG+A	40 AMP	42236	120V/60HZ OR 120/240V/60HZ
9.0KW BTG	40 AMP	42236	120V/60HZ OR 120/240V/60HZ



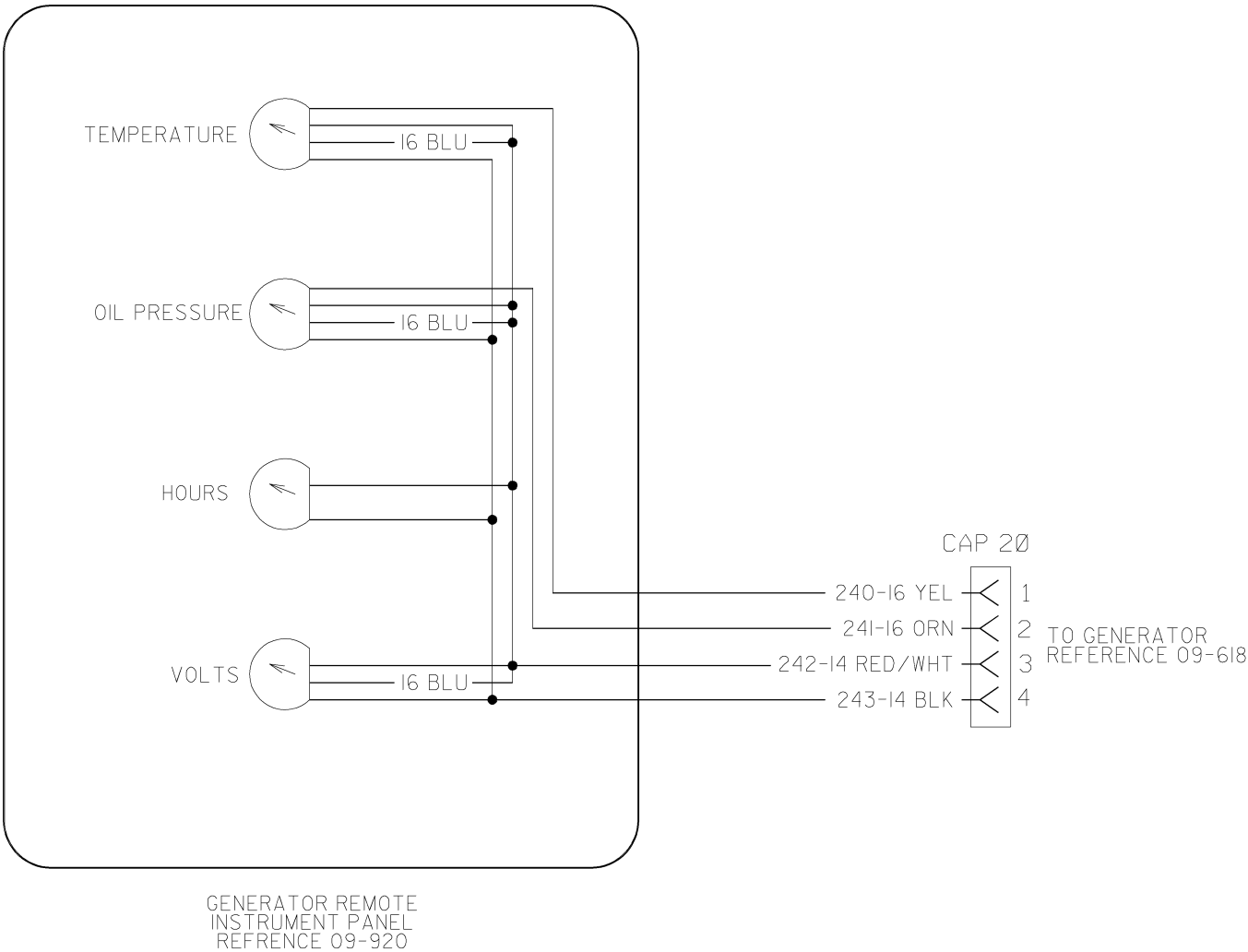
WHEN WIRING 120V/60HZ, A JUMPER IS REQUIRED BETWEEN LOAD CONNECTIONS



WHEN WIRING 120V/60HZ, A JUMPER IS REQUIRED BETWEEN LOAD CONNECTIONS

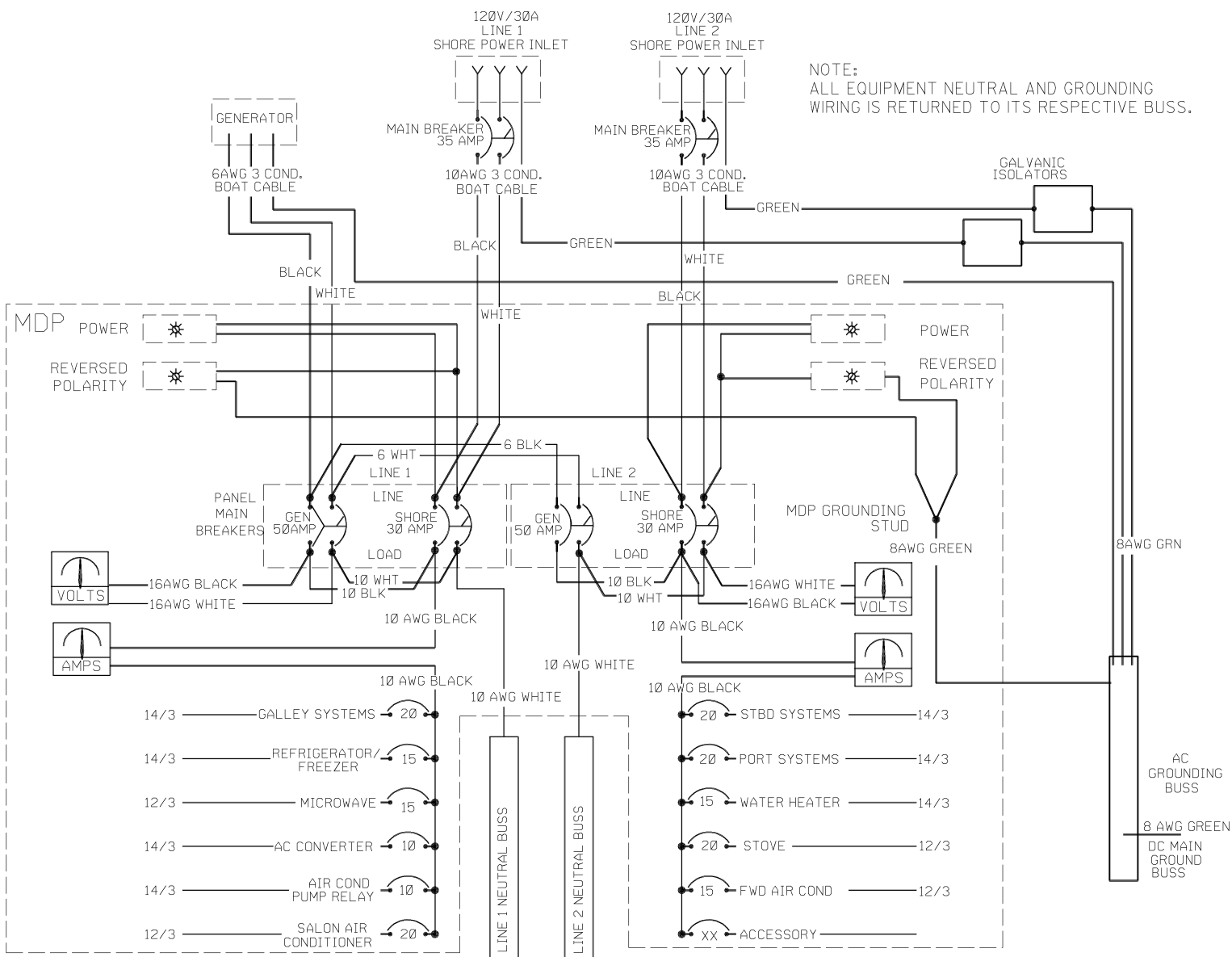
MODEL	RATING	BREAKER	VOLTS/HZ
10.0KW BTG	50 AMP	42716	230V/50HZ
12.0KW BTG	60 AMP	42717	230V/50HZ
7.5KW BTD	35 AMP	42707	230V/50HZ
8.3KW BTD	40 AMP	42708	230V/50HZ
9.4KW BTDA	40 AMP	42708	230V/50HZ
12.0KW BTDA+B	60 AMP	42709	230V/50HZ
10.0KW BTD	50 AMP	42698	120V/60HZ OR 120/240V/60HZ
11.0KW BTD	50 AMP	42698	120V/60HZ OR 120/240V/60HZ
12.5KW BTDA	60 AMP	42709	120V/60HZ OR 120/240V/60HZ
15.0KW BTDA+B	70 AMP	42710	120V/60HZ OR 120/240V/60HZ
12.5KW BTG	60 AMP	42717	120V/60HZ OR 120/240V/60HZ
15.0KW BTG	70 AMP	42718	120V/60HZ OR 120/240V/60HZ

MODEL	RATING	BREAKER	VOLTS/HZ
16.0KW BEDA	70 AMP	42710	230V/50HZ
16.0KW BEG	70 AMP	42718	230V/50HZ
25.0KW BEDA	120 AMP	TBD	230V/50HZ
20.0KW BED	90 AMP	42711	230V/50HZ
32.0KW BEDA	150 AMP	42703	120V/60HZ OR 120/240V/60HZ
20.0KW BEDA	90 AMP	42711	120V/60HZ OR 120/240V/60HZ
25.0KW BED	100 AMP	42702	120V/60HZ OR 120/240V/60HZ
20.0KW BEG	90 AMP	42696	120V/60HZ OR 120/240V/60HZ

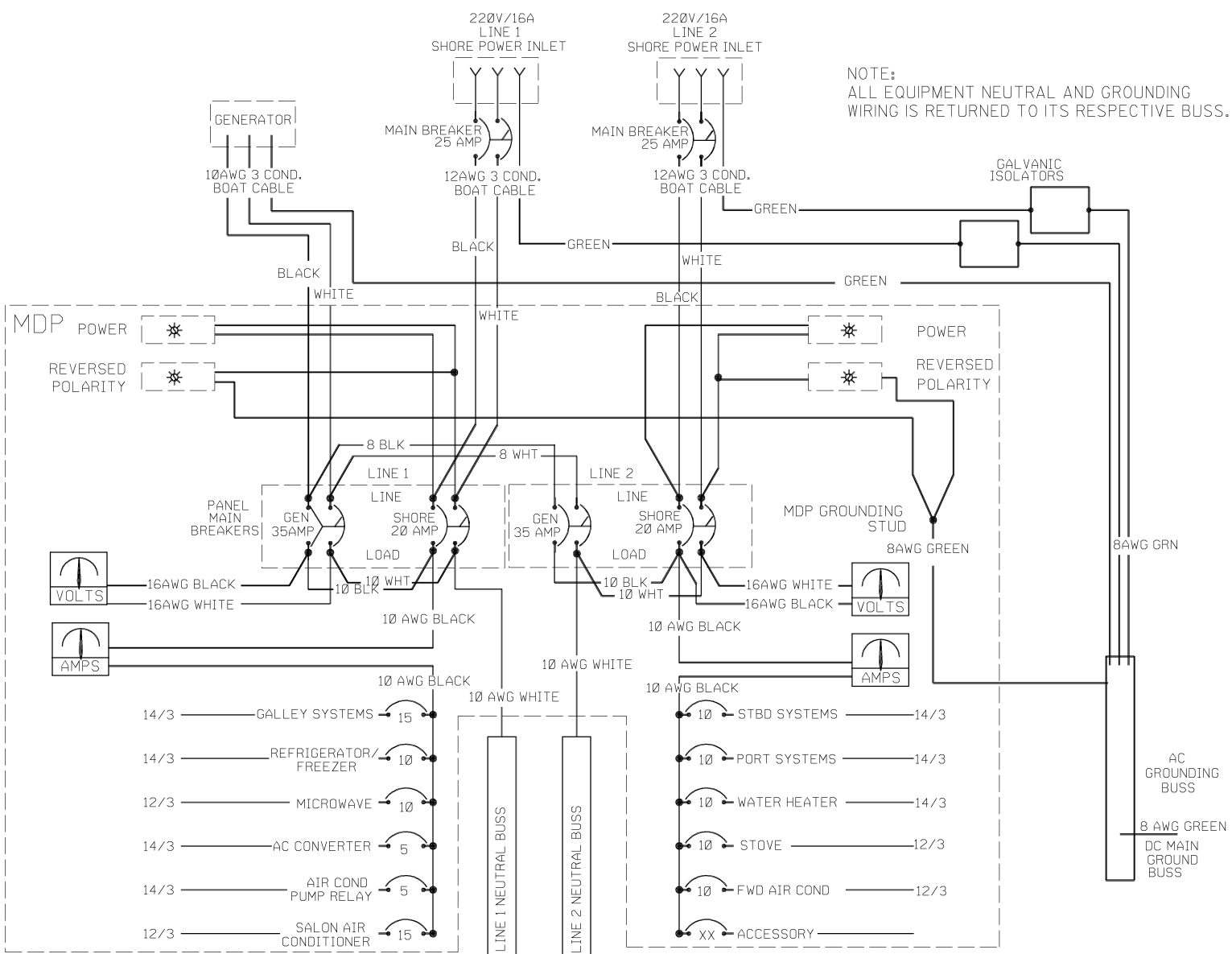


GENERATOR REMOTE INSTRUMENT PANEL REFERENCE 09-920

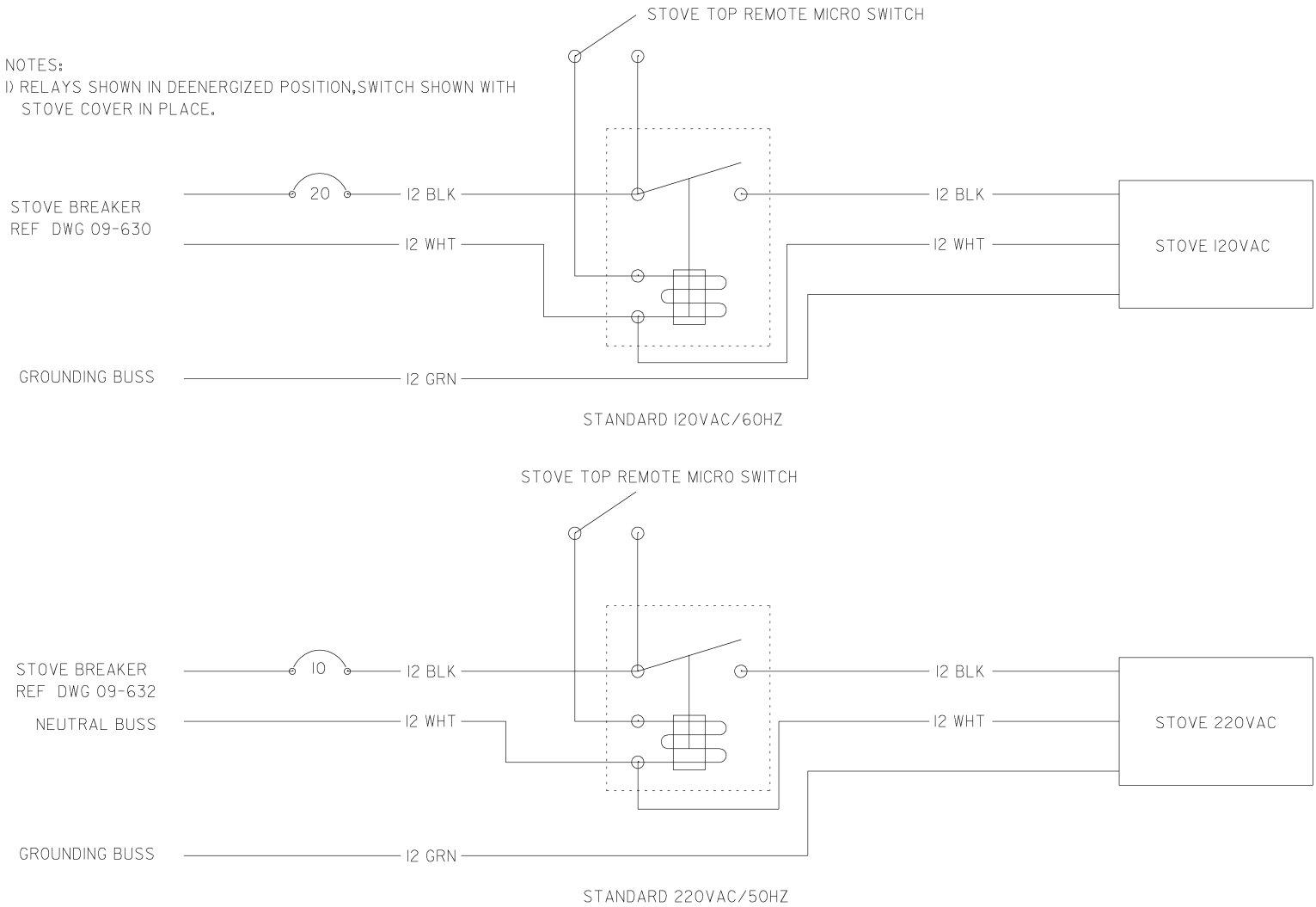
AC WIRING SCHEMATIC



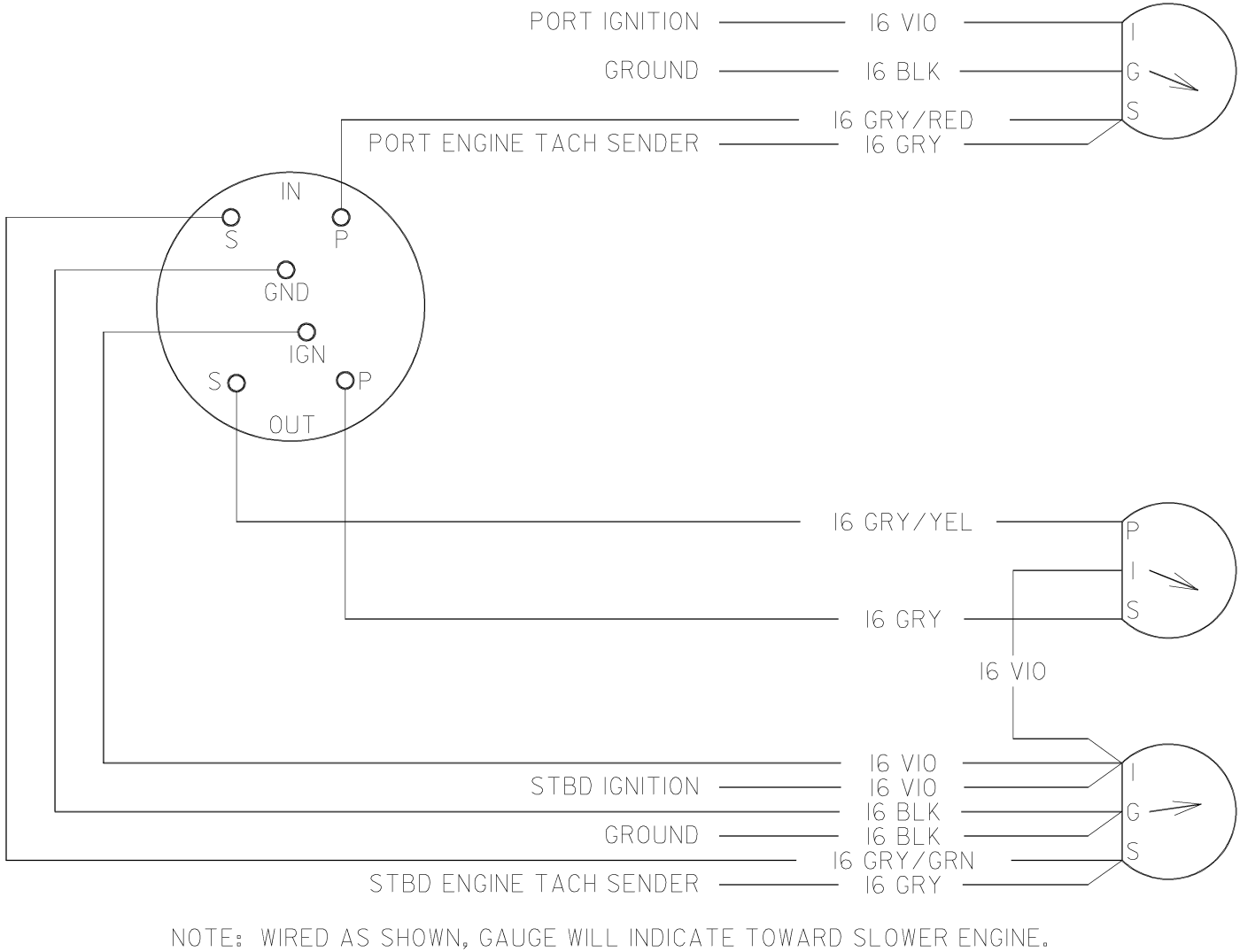
AC WIRING SCHEMATIC (220 VAC 50 HZ)



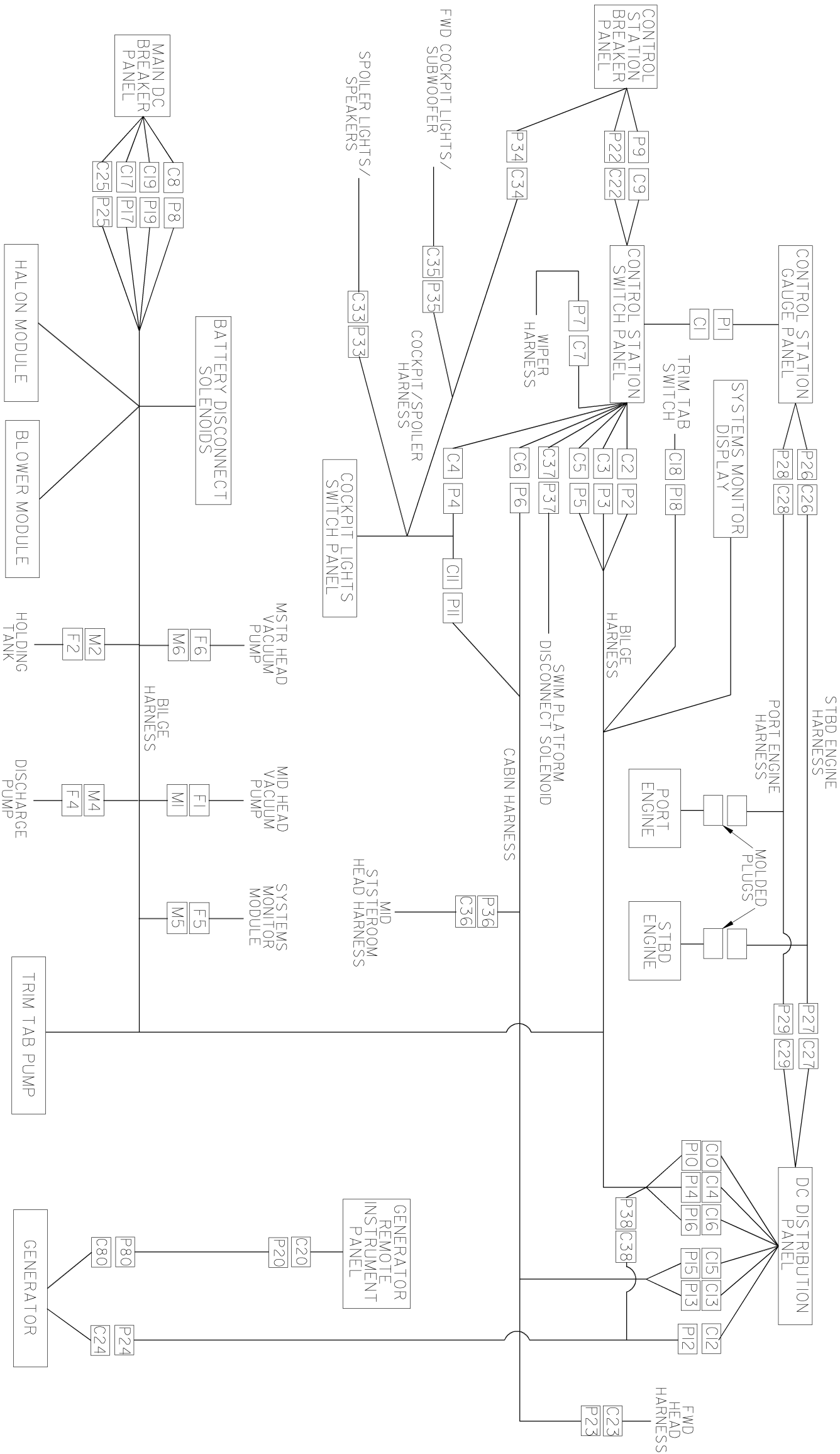
STOVE TOP SWITCH WIRING DIAGRAM



TELEFLEX ENGINE SYNCHRONIZER MODULE SCHEMATIC



INTERCONNECT DIAGRAM



INTERNATIONAL HOMOLOGATIONS

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 Directive - European Community

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

Sea Ray ®