CARVER Yachts

1996
440 AFT CABIN MOTOR YACHT

HIN - CDR _____

OWNER'S GUIDE TO SAFE AND PROPER OPERATION

1996 VERSION 1

CARVER

OWNER'S GUIDE TO SAFE AND PROPER OPERATION

SECTION 1

1.1 Letter From Carver
1.2 Using the Captain's Kit
1.3 Warranty and Service Information
1.4 Registration Cards
1.5 Pre-Delivery Service
1.6 OEM Supplier's List

SECTION 2

2.1 Materials
2.2 Construction
2.3 Definition of Terms

SECTION 3

3.1 Exterior Layout
3.2 Interior / Cabin Layout
3.3 Bilge Layout
3.4 Thru-Hull Fittings
3.5 Canvas and Upholstery
3.6 Physical Specifications
3.7 Underwater Gear

SECTION 4

4.1 12 Volt System
4.2 12 Volt Equipment
4.3 Battery Installation and Maintenance
4.4 12 Volt Wiring Standard
4.5 12 Volt Trouble Shooting

SECTION 5

5.0 AC Electrical System
5.1s Single Dockside Electrical System
5.1d Dual Dockside Electrical System
5.2s AC Electrical Equipment / Single Dockside System
5.2d AC Electrical Equipment / Dual Dockside System
5.2-410 Air Conditioning System
5.3 AC Generator
5.4 Stray Current and Galvanic Corrosion
5.5 Bonding System
5.6 AC Trouble Shooting

SECTION 6

6.1 Fresh Water System
6.1 - 277 Transom Shower Option
6.1 - 283 Fresh Water Washdown Option
6.1 - 284 Raw Water Washdown Option
6.1 - 287 Shore Water Connection Option
6.2 Bilge System
6.3 Sanitation System
6.3-141 Grey Water System
6.3-160 Direct Overboard Discharge
6.3-162 Overboard Discharge Option
6.3-163 Overboard Discharge Option

SECTION 7

7.1 Engine Gauges
7.2 Controls and Steering
7.3 Fuel Systems
7.4 Operating Instructions
7.5 Engine Exhaust Precautions
7.6 Trouble Shooting Gauges, Controls and Fuel System

SECTION 8

8.1 General Maintenance Schedule
8.2 Exterior Maintenance
8.3 Interior Maintenance
8.4 Mechanical and Electrical System Maintenance
8.5 Water, Bilge and Sanitation System Maintenance
8.6 Lifting and Winter Storage

SECTION 9

9.1 Propane Stove
9.2 Halon Fire Extinguishing System
9.3 Dual-Voltage Refrigerator
9.4 Select Bill of Materials

CARVER

OWNER'S GUIDE TO SAFE AND PROPER OPERATION

SECTION 1

1.1 LETTER FROM CARVER

1.2 USING THE CAPTAIN'S KIT AND OWNER'S GUIDE

1.3 WARRANTY AND SERVICE INFORMATION

1.4 REGISTRATION CARDS
Carver Limited Warranty Document

1.5 PRE-DELIVERY SERVICE

1.6 OEM SUPPLIERS

1.2 USING THE CAPTAIN'S KIT

The materials concerning the operation and maintenance of your new boat have been supplied to you in the Carver Owner's Guide and a variety of OEM supplied materials.

IT IS IMPORTANT THAT YOU READ AND UNDERSTAND ALL MATERIALS CONTAINED WITHIN THE CAPTAIN'S KIT PRIOR TO OPERATING YOUR BOAT OR ANY OF ITS EQUIPMENT.

A) The Carver Owner's Guide

This guide was prepared and written to serve as an operations manual specifically for your boat. It includes information on your boat and all its systems.

This guide is organized into nine sections, each dealing with a particular facet of your boat's operation. Detailed drawings and diagrams are also included in this guide.

The Carver Owner's Guide was also developed to enhance your boating safety. Safety precautions and operational tips have been organized in the following manner:

! DANGER ! describes a hazard which can cause severe injury, death or substantial property damage if the warning is ignored.

! WARNING ! describes a hazard that could result in serious personal injury and/or property damage if the proper precautions are not observed.

! CAUTION ! is used to describe situations that could damage your boat or its components.

NOTE tells you about problems that can often be avoided by taking preliminary precautions.

TIPS FROM CARVER: There are many people within the Carver organization who are avid boaters. Some of the experience gained during our years of boating are presented in this Owner's Guide. This information will be prefaced with the prefix, "A TIP FROM CARVER."

B) Original Equipment Manufacturer (OEM) Manuals

The second set of manuals that pertain to your new boat are supplied by manufacturers other than Carver. These manufacturers are referred to as OEM suppliers.

Carver Boat Corporation has purchased and installed a variety of equipment which was manufactured by OEM suppliers. Engines, stoves, refrigerators and air conditioners are examples of this type of equipment.

The majority of Carver's suppliers have created operators and maintenance manuals for their products. This information has been assembled and supplied to you.

Virtually all of your boat's components have their own limited warranty. Warranty registration cards have been provided for those products.

These are your materials. Use a colored highlighter to mark sections of the text that are of special interest. Be sure to supplement your guide with information on wiring or installation of additional equipment that you add to the boat during your period of ownership.

The Carver Owner's Guide and all component manuals are a permanent part of your boat. These materials must remain on the vessel during its operation. These materials must also be transferred to the boat's subsequent owners.

NOTE: Information presented in OEM suppliers literature and manuals takes precedence over information presented in the Carver Owner's Guide. If there is a discrepancy between the Owner's Guide and an OEM supplyer's manual, FOLLOW THE INSTRUCTIONS IN THE SUPPLIER'S MANUAL.

Information contained within this Owner's Guide is the most accurate information available at the time of publishing. Carver reserves the right to change without notice materials, part numbers, specifications or system designs.

1.3 WARRANTY AND SERVICE INFORMATION

A) Carver Warranty Policy

Carver warrants every boat we manufacture as detailed in the Carver Limited Warranty Document. Your copy of the Carver Limited Warranty appears in Section 1.4 of this guide. Please review this document carefully.

The warranty on your new Carver is the joint responsibility of the Carver Boat Corporation, your Carver Dealer and yourself. All three parties have certain responsibilities to ensure that the warranty remains in force. Carver's responsibilities are outlined in the limited warranty document that is included within this Owner's Guide.

Carver Dealer Responsibilities:

The Carver Dealer will review the terms of the warranty and make certain the warranty is registered with Carver.

Your Carver Dealer will instruct you on how to obtain warranty service.

The Carver Dealer will prepare your boat for delivery in accordance with the procedures detailed on the Pre-Delivery Service Record. Your dealer will sign the Pre-Delivery Service Record and provide you with a copy.

A representitve from your Carver Dealership will conduct a review of how your boat and its systems operate.

The Owners Responsibilities:

Make certain the boat's pre-delivery service record has been completed and mailed to Carver.

Read and follow all OEM supplied materials. Complete and mail all OEM warranty cards.

Review the Pre-Delivery Service procedure with your dealer. Read the Pre-Delivery Service Record. Be certain you sign a copy of the Pre-Delivery Service Record and retain a copy for your records.

At time of delivery, make a complete inspection of the boat and its systems. Document any work that needs to be completed by the dealer in order to met the terms of your agreement.

Read, understand and follow the Carver Owner's Guide and all materials contained within the Captain's Kit. Contact your dealer if you have any questions.

Perform all maintenance in accordance with the operator and service guides.

Many of the complex components (engines, generators, stoves, etc.) within your boat are warranted by their respective manufacturer. These companies have programs designed to resolve problems with their products. Your Carver Dealer can implement these services as required.

B) Warranty Registration

A Carver Pre-Delivery Service Record is included in Section 1.4 of this Owner's Guide. Registration of your boat and its engines is also required by the Federal Safe Boating Act of 1971. Your Carver Dealer will complete and mail your engine warranty cards as part of the Pre-Delivery Service procedure.

Many of the other complex components installed on your boat must also be registered with their respective manufacturer. Warranty cards have been assembled and are contained in the OEM SUPPLIED MATERIALS packet that is part of your Captain's Kit.

ALL WARRANTY CARDS MUST BE COMPLETED AND FORWARDED TO THE APPROPRIATE COMPANY WITHIN 5 DAYS AFTER TAKING DELIVERY OF YOUR CARVER.

C) Obtaining Warranty Service

The following requirements must be met before warranty work can be performed on your boat:

1) Your boat must be registered with the Carver Boat Corporation .

   Registration is accomplished by completing and submitting the Pre-Delivery Service Record to the Carver Boat Corporation, P.O. Box 1010, Pulaski, WI 54162-1010.

2) Pre-Delivery Service must be completed by your Carver Dealer. See Section 1.5 for information concerning Pre-Delivery Service.The Pre-Delivery Service Record must be signed by both the dealer and the owner.

Your Carver Dealer is the ONLY person authorized to approve warranty work. If warranty service is needed you MUST contact your Carver Dealer first. There are no exceptions to this policy.

Your Carver Dealership is staffed with knowledgeable professionals who are familiar with your boat and are capable of providing the highest level of service. The Carver Dealership service personnel will communicate with The Carver Boat Corporation to ensure you fast and satisfactory solutions to any problem that may arise.

D) Second Owner Registration

A "Second Owner Registration Card" has been provided in Section 1.4. The purchaser of a "pre-owned" Carver should complete this card and submit it to the Carver Boat Corporation, P.O. Box 1010, Pulaski, WI 54162-1010.

Registration of a "pre-owned" Carver does not extend or in any way modify a boat's original limited warranty. However, purchasers of a pre-owned Carver can and should register ownership with Carver. Having this information on file will benefit you should Carver ever need to contact you.

E) Hull Identification Number (HIN)

The United States Coast Guard has established a universal system of numerically identifying vessels by using a hull identification number or "HIN." This number identifies a boat's make, model, hull number, month, and year of manufacture.

The HIN is found on a boat's transom. Look for it on the starboard side, just below the rub rail or on the transom platform.

Provide your Carver Dealer with your boat's HIN when contacting them for parts or service.

The HIN consists of 12 alpha or numeric characters.

A typical HIN for a 1995, 440 AFT CABIN will read CDR-CA001G495.

CDR = Signifies that the boat was made by the Carver Boat Corporation. Every boat manufacturer in the United States has their own three letter designation.

CA = Shows that the boat is a Carver model 440 AFT CABIN. Every different model made by Carver has its own two digit identifier.

001 = These three positions indicate the boat's hull number. 001 shows that his boat was the first boat of this model manufactured during this model year.

G = This letter denotes the month the hull was molded. "A" signifies January, "B" February and so on.

4 = This is the CALENDAR YEAR the boat was made. This boat was made in 1994.

95 = These numbers show the MODEL YEAR of the boat.

Looking at our HIN example of CDR-CA001G495, we see that this boat is a Carver 440 AFT CABIN, is a 1995 model, and that the hull was molded in July 1994. This boat was the first one made as a 1995 model.

1.4 OWNER REGISTRATION

Carver warrants every boat we manufacture as detailed in the Carver Limited Warranty Document. Your copy of the Carver Limited Warranty appears in Section 1.4 of this guide. Please review this document carefully.

The warranty on your new Carver is the joint responsibility of the Carver Boat Corporation, your Carver Dealer and yourself. All three parties have certain responsibilities to ensure that the warranty remains in force. Carver's responsibilities are outlined in the limited warranty document.

The Carver Dealer will prepare your boat for delivery in accordance with the procedures detailed on the Pre-Delivery Service Record. This document is found in section 1.5 PRE-DELIVERY SERVICE. The terms of pre-delivery include proper registration by completing and signing the service record. Your dealer will sign the Pre-Delivery Service Record and provide you with a copy.

This card is a Second Owner Registration Card. The buyer of a previously owned Carver should register ownership with Carver.

SECOND OWNER REGISTRATION CARD

SECOND OWNER REGISTRATION

CARVER

Owner's Name: _____

Street Address: _____

City: _____ State: _____ Zip Code: _____

Telephone: ( ) _____ Date of Purchase: _____

Purchased From: _____

Boat Hull Identification Number: CDR _____

Second owner registration does not extend, alter or transfer the Carver Limited Warranty. Refer to the Carver Limited Warranty for details.

1.5 PRE-DELIVERY SERVICE

Your Carver Dealer will perform a thorough review of your boat and its systems during the commissioning of the craft. The Carver Pre-Delivery Service Record is furnished with each new boat and is used for initial warranty registration. It also serves as a checklist in performing the Pre-Delivery Inspection. Review this completed document with your dealer at the time you take delivery of your boat. Your Carver Dealer will be happy to explain any of the items or procedures included in the Pre-Delivery Inspection.

The Pre-Delivery Service Record requires the owner's signature. Sign this form upon accepting delivery of your new boat. In some cases there may be items that need to be remedied by the dealer after taking delivery. Make a note of these problems and attach a copy to the Pre-Delivery Service Record. This will ensure that these items will be corrected within the terms of the one year limited warranty.

This Pre-Delivery Service Record is a multi-part form. Your dealer will provide you with a copy of this form upon completion of the Pre-Delivery Inspection. Keep your copy of the Pre-Delivery Service Record with your boat's permanent records.

1.6 ORIGINAL EQUIPMENT (OEM) SUPPLIERS

Carver Boat Corporation installs equipment and components manufactured and supplied by a variety of companies. These companies are referred to as Original Equipment Manufacturers or OEM suppliers.

Your Carver Dealer is the best "first source" for answers when you have questions about any of your boat's equipment. If however your dealer is unable to help you, a call to the original manufacturer of the equipment may be in order.

A listing of Carvers OEM suppliers has been included in this Owner's Guide. Use this list to contact the manufacturer of a particular component with regard to operation, service and replacement parts.

Be prepared to provide the serial number of the component when requesting information. A serial number record sheet for your boat appears after this Section.

ENGINES

Mercury Marine
3003 N. Perkins Road
Stillwater, OK 74074
(414) 929-5000

Thermo-Electron / Crusader Corp.
7100 E. 15 Mile Road
Sterling Heights, MI 48312
(313) 264-1200

Volvo Penta of N. America
Building G
Rockleigh, NJ 07647
(201) 768-7300

Cummins Engine Company
Box 3005
Columbus, IN 47202
800-472-8283 (Wisconsin only)
(414) 768-7400

Caterpillar Tractor Company
100 N.E. Adams
Peoria, IL 61629
1-800-447-4986
Illinois (309) 673-3252

DRIVE SYSTEMS

Walters Machine Company
84 - 98 Cambridge Ave.
Jersey City, NJ 07307
(201) 656-5654

Warner Gear
Division of Borg-Warner Corporation
P.O. Box 2688
Muncie, IN 47302
(317) 286-6100

GENERATORS

Kohler Generators / Kohler Company
Kohler, WI 53044
(414) 565-3381

Onan Corporation
1400 73rd Ave. N.E.
Minneapolis, MN 55432
(612) 574-5000

Westerbeke Corporation
Avon Industrial Park
Avon, MA 02322
(617) 588-7700

FUEL FILTERS

Racor Industries, Inc.
P.O. Box 3208
Modesto, CA 95353
(209) 521-7860

STEERING SYSTEMS

Hynautic Marine Systems
1579 Barber Road
Sarasota, FL 34240
(813) 379-0500

Teleflex Steering Systems
640 N. Lewis Road
Limerick, PA 19468
(215) 495-7011

HEADS

SeaLand Technology Inc.
P.O. 38, 201 Wayne Street
Big Prairie, OH 44611
(216) 496-3211

Raritan Engineering Corp.
530 Orange Street
P.O. Box 1157
Millville, NJ 08332
(609) 825-4900

WATER HEATERS

Sea Ward Products
P.O. Box 566
LaPuente, CA 91747
(818) 968-2117

ENTERTAINMENT EQUIPMENT

JVC Service & Engineering Company of America
Division of JVC Corporation
2250 Lively Blvd.
Elk Grove Village, IL 60007
(708) 364-0880
1-800-537-5722

Sentrek Industries Ltd.
751 Racquet Club Drive
Addison, IL 60101
(312) 628-6767

Pandor Corporation
125 Cabot Court
Hauppauge, NY 11783
(516) 434-1200
(Maxxima Stereo)

Kenwood U.S.A Corporation
550 Clark Drive
Mount Olive, NJ 07828
(201) 691-5600

BATTERY CHARGERS

Professional Mariner
1565 Callens
Ventura, CA 93003
(805) 644-1886

Guest Corporation
130 Shield Street
West Hartford, CT 06110
(203) 525-5318

REFRIGERATORS & ICE MAKERS

Norcold Inc.
Division of Stolle Co.
P.O. Box 180
Sidney, OH 45365
1-800-543-1219

Nova Kool Mfg. Inc.
239 East 1st. Street
North Vancouver, B.C.
Canada, V7L1B4
(604) 984-7764

U-Line Corporation
8900 North 55th Street
P.O. Box 23220
Milwaukee, WI 53223
(414) 354-0300

General Electric Company
Consumer Affairs Dept.
Appliance Park
Louisville, KY 40225
1-800-626-2000

RANGES & MICROWAVES

SeaWard Products Inc.
15600 Salt Lake Ave.
City of Industry, CA 91745
(818) 968-2117
(Optimus Princes Stove)

Kenyon Marine
Guilford, CT 06437
(203) 453-4374

Origo U.S.A. Inc.
1121 Lewis Avenue
Sarasota, FL 34237
(813) 365-3660

Riccar America Corporation
Major Appliance Division
3184 Pullman Street
Costa Mesa, CA 92626
(714) 669-1760

AIR CONDITIONERS

Marine Air Systems
2000 N. Andrews Ave.
Pompano Beach, FL 33069
(305) 973-4414

TRIM TABS

Bennett Marine Inc.
550 N.W. 12th Avenue
Deerfield Beach, FL 33442
(305) 427-1400

Boat Leveler Company
7305 Natural Bridge
St. Louis, MO 63121
(314) 385-7470

MISCELLANEOUS ACCESSORIES

Teleflex Marine, Inc.
1816 57th Street
Sarasota, FL 33580
(813) 355-7721
(instruments & controls)

VDO Yazaki Corp.
188 Brooke Road
Winchester, VA 22603
(703) 665-0100
(gauges)

Guest Co. Inc.
48 Elm Street
Meriden, CT 06450
(203) 238-0550

Morse Controls - INCOM
21 Clinton Street
Hudson, OH 44236
(216) 653-9161
(controls, throttle & shift cables)

Sparton Manufacturing Company
P.O. Box 399
Flora, IL 62839
(618) 662-2101

ITT Jabsco
1485 Dale Way
Costa Mesa, CA 92626
(714) 545-8251
(7" & 8" spotlights)

Datamarine International, Inc.
53 Portside Drive
P.O. Box 1030
Pocasset, MA 02559
(617) 563-7151

E.S. Ritche & Sons Inc.
243 Oak Street
P.O. Box 548
Pembroke, MA 02359
(617)826-5131

Alson Corporation
42 Union Street
Hillsdale, MI 49242
(517) 439-1411
(shower controls)

Simpson Lawrence, Ltd.
c\o Jay Stuart Haft Co.
57th Avenue Branch
P.O. Box 11210
Brandenton, FL 33507
(813) 746-7161
(SeaWolf windlass)

Fireboy Systems Division
P.O. Box 152
Grand Rapids, MI 49501-0152
(616) 454-8337

MTI Industries
A Division of Marine Technologies, Inc.
1000 Brown Street
Suite #109
Wauconda, IL 60084
1-800-383-0269

Hurth Marine Gear
1018 Carolina Drive
West Chicago, IL 60185
(708) 231-1680

CARVER

OWNER'S GUIDE TO SAFE AND PROPER OPERATION

SECTION 2

2.1 MATERIALS

2.2 CONSTRUCTION

2.3 DEFINITION OF TERMS

2.1 MATERIALS

Your new boat is constructed from a variety of high quality materials. These materials work together to provide a vessel that is uniquely suited to the marine environment.

A) Fiberglass

Many of the pieces used to build your boat, such as the hull, deck and shower stalls, are made of molded fiberglass. Dozens of fiberglass components are used to make a 440 AFT CABIN. Many of the fiberglass parts in your boat are further reinforced by laminating core materials between layers of fiberglass. Natural materials like balsa wood and plywood are used as are a variety of synthetic materials like "cormat" and aluminum.

The exterior or exposed surface of many fiberglass parts is coated with a layer of gelcoat. Gelcoat acts as a cosmetic and protective layer, much like the paint on your car. Below the waterline hull surfaces have a layer of vinylester under the gelcoat.

The exterior walking surfaces of your boat have been textured with non-skid. This provides a solid footing surface on the boat's deck, walkways, ladder steps and swim platforms.

Information on how to maintain the fiberglass surfaces of your boat are included in Section 8.3 of this Owner's Guide.

B) Wood

Several different types of wood are used in your 440 AFT CABIN.

Fir Plywood:

Several carefully selected types and thicknesses of premium quality, exterior grade plywood are used throughout your boat to construct and reinforce a variety of components.

Teak Plywood:

Teak plywood is used on the interior of your boat to fabricate bulkheads, door panels and cabinets. Teak plywood has outer layers of high grade teak veneer, and a fir or pine inner plywood core.

! CAUTION !

Be careful if you sand the teak plywood portions of your boat's interior. Heavy sanding will damage the veneer.

Solid Mahogany Lumber:

High grade, mahogany lumber is used in a variety of dimensions in areas that provide structural strength to the boat and interior framework.

Solid Teak:

Teak is highly resistant to the effects of high moisture environments and impervious to rot or decay. Teak is used because it adds a warm, comfortable feeling to a boat's interior.

Information on how to care for your boat's woodwork can be found in Section 8.4 of your Owner's Guide.

C) Metal

Stainless steel and aluminum are used throughout your 440 AFT CABIN These metals provide high strength-to-weight ratios, are non-magnetic, and are highly resistant to moisture.

The safety rails on the 440 AFT CABIN are welded from stainless steel rail.

Information on how to care for the rails and hardware of your boat can be found in Section 8.3 of this Owner's Guide.

D) High Pressure Laminate (HPL)

HPL is used within the 440 AFT CABIN to surface bulkheads, cabinets and counter tops. These laminates are selected for their strength and durability, are easy to clean, and add colorful highlights to the inside of your boat.

Information on cleaning your boat's HPL surfaces will be found in Section 8.4 of this Owner's Guide.

E) Formed Plastics

Formed plastic is used in a variety of ways throughout the interior and exterior of your boat. Plastic offers a high strength-to-weight ratio and excellent resistance to the affects of moisture.

A few of the areas where formed plastics are used are in the boats water and sanitation tanks, bridge seat forms, interior mirrors and in electrical circuit breaker panels.

Information on cleaning the plastic and acrylic panels is included in Sections 8.3 and 8.4 of this Owner's Guide.

F) Fabrics, Wall Covering and Carpet

A wide variety of fabrics can be found throughout the interior and exterior of your boat. Woven fabrics are used for interior mattresses and chairs, and vinyl fabrics are used for exterior cushions and helm seats.

The vinyl coating of the interior wall coverings and headliner makes them easy to clean.

The carpet and fabric selected for your boat are of premium grade and have been treated with a popular stain resistant product.

2.2 CONSTRUCTION

Your 440 AFT CABIN was built using a modular construction technique. This method of building boats uses the physical properties of many components to add strength and rigidity to the boat's hull and deck. The interior liners of the boat are securely bonded to the hull and deck to increase strength while minimizing the boat's overall weight.

A) Hull

The hull is made of numerous layers of various types of laminated fiberglass. Its strength is derived from laminating several carefully selected, hand laid layers of fiberglass material that have been impregnated and bonded together with polyester resin. Your hull does not contain any balsa wood coring materials. The actual thickness of your boat's hull varies depending upon the structural requirements of a particular area. The thickness, however, generally increases as you go from the sheer to the keel area of the hull.

Carver protects the underwater portion of your hull from marine growth with a layer of anti-fouling bottom paint.

! CAUTION !

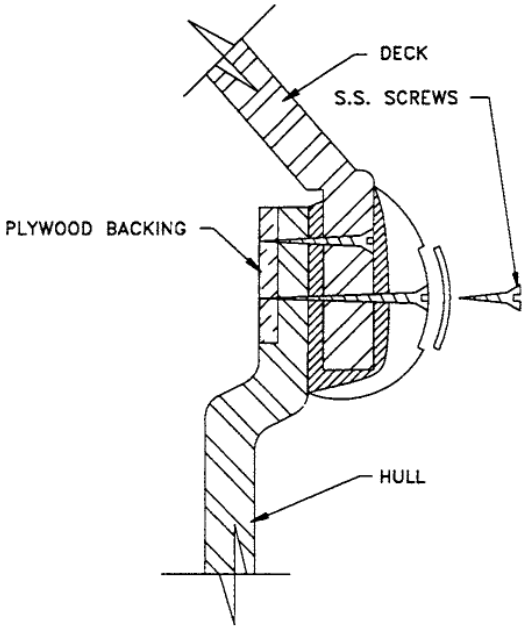
DO NOT install an item into or through the hull without sealing the area penetrated by the fastener or fitting. Improper or inadequate sealing may lead to hull leaks or serious hull damage. Consult your Carver Dealer for recommendations on what type and brand of sealer to use.

B) Deck

The deck of the CARVER 440 AFT CABIN uses a complex system of laminated fiberglass to give it the ability to support the superstructure of the boat.

All exterior surfaces, including the non-skid areas are coated with pigmented gelcoat. Where equipment and hardware are fastened, wooden or metal backing plates are used. Many of these backing plates can't be seen on a completed boat because they are actually laminated into the fiberglass. High stress areas receive additional layers of fiberglass laminates as reinforcement.

The hull and deck are fastened together using the Carver "shoe box" hull-to-deck joint. This joint creates a strong and highly water tight union between these two critical components of your boat.



The Carver "Shoe Box" Hull-to-Deck Joint

C) Interior Modules

Carver utilizes a modular construction process. Major components and cabin modules are built independent of the hull and deck. These components are then fitted into the hull before the deck is positioned and secured.

Modules are designed to work with the hull and deck to add strength to the boat.

2.3 DEFINITION OF TERMS

While reading your Owner's Guide you will encounter many descriptive terms that are unique to seamanship and yachting. The following summary defines these terms as they are used within this Owner's Guide.

ABAFT - Toward the rear of the boat.

ABEAM - At right angles to the boat's keel.

ABOARD - On the boat.

ABREAST - Side-by-side.

ADRIFT - Loose, not on a mooring or tow line.

AFT - Moving toward the stern.

AGROUND - Stuck fast on the bottom.

AHEAD - In a forward motion.

AMIDSHIP - 1) An object or area midway between the bow and stern of the boat. 2) An object or area midway between the port and the starboard side of a boat.

AMPERE - The standard unit to measure the strength of an electrical current.

ASTERN - In the back of the boat.

BEAM - 1) The widest distance across a boat. 2) A transverse structural member that stiffens and supports a portion of the deck.

BILGE - The lowest interior area of a boat's hull, used to collect water that has drained into or entered the vessel.

BILGE PUMP - A pump intended for removal of water that has drained into the boats bilge.

BOW - The front end of a boat.

BOW LINE - A docking line leading from the boats bow.

BREAKER - See “circuit breaker”.

BRIDGE - The "upper most" steering station from which the vessel is controlled.

BULKHEADS - The interior walls of a boat.

BULWARK - The side of the vessel when carried above the level of the deck.

CAST OFF - Let go.

CHINE - The turn of a boat's hull below the water line.

CHOCK - A fitting or hole through a boat's deck through which a mooring or anchor line is routed.

CIRCUIT BREAKER - A device used to interrupt an electrical circuit when current flow exceeds a predetermined level.

CLEAT - A deck fitting to which lines are secured.

COAMINGS - Raised lips around hatches used to keep water from entering through the hatchways.

COCKPIT - an exposed aft deck area that is substantially lower than the forward, adjacent deck.

COMPANION WAY - The steps or ladder leading from the deck to the cabin of the boat.

COMPARTMENTS - Rooms divided by bulkheads.

CRADLE - A wooden framework used to support a boat when it is stored on land.

CURRENT - The movement of water.

DEAD AHEAD - Directly in front of the boat.

DINGHY - A small, open boat used for ship to shore transportation.

DISPLACEMENT - The weight of water displaced by the hull of a vessel.

DRAFT - 1) The depth of a boat from the actual water line to the bottom of the lowest part of the boat (e.g., the propeller tip or rudder). 2) The depth of water necessary to float a boat.

EVEN KEEL - Trimmed evenly from fore to aft.

EXHAUST SYSTEM - The means by which the hot engine or generator exhaust gases are moved from the engine and released into the atmosphere.

FATHOM - Six (6) feet.

FLARE - 1) Outboard curve of the hull as it comes up the side from the water line. 2) A pyrotechnic device used for emergency signaling.

FLOTSAM - Refuse that "floats" when discharged overboard.

FLYBRIDGE - See "bridge".

FORE-AND-AFT - A line, or anything else, that runs parallel to the longitudinal center of a boat.

FORWARD - Toward the bow.

FREEBOARD - The minimum vertical distance from the surface of the water to the gunwale.

GALLEY - The kitchen area of a boat.

GALVANIC CORROSION - A potential electrical difference that exists between dissimilar metals immersed in a conductive solution (e.g. water). If these metals touch or are otherwise electrically connected, this potential difference produces an electron flow between them. The attack on the less corrosion-resistant metal is usually increased and the attack on the more resistant metal decreased.

GASKET - A strip of sealing material used to make joints fluid tight.

GELCOAT - The thin outer layer of pigmented plastic used on exposed fiberglass components.

GLAND - Also referred to as "Packing Gland"." The movable part of a stuffing box, which compresses the packing when tightened.

GROUND - (Electrical Ground) - The electrical potential of the earth's surface, which is zero.

GUNWALE - 1) The line where the deck and the hull meet. 2) The upper edge of a boat's side.

HATCHES - Covers on hatchways.

HATCHWAYS - Access ways through decks.

HARDTOP - A permanent cover over the cabin or cockpit.

HAWSER - A heavy rope or cable used for mooring or towing.

HEAD - A toilet or lavatory.

HEADING - The direction that a vessel is going with reference to true, magnetic, or compass north.

HEADWAY - The forward motion of a vessel through the water.

HEEL - To tip or tilt to one side.

HEADING - The direction that a vessel is going with reference to true, magnetic, or compass North.

HEADWAY - The forward motion of a vessel through the water.

HEEL - To tip or tilt to one side.

HELMSMAN - The individual steering the boat.

HULL - The main body of a boat.

INBOARD - 1) From either the port or starboard side of a boat to the fore and aft centerline of a boat. 2) The dock side of a moored boat.

JETSAM - Refuse that "sinks" when discharged overboard.

KEEL - The centerline of a boat running fore and aft.

KNOT - 1) A maritime unit of speed equal to 1.15 miles per hour. 2) A term for hitches and bends in a line or rope.

LAZARETTE - Storage compartments in the deck at the stern of the boat.

LIST - A vessel that inclines to port or starboard.

LONGITUDINAL - Running lengthwise.

MOORING - an arrangement for securing a boat to a mooring buoy or pier.

NAVIGATIONAL LIGHTS - A set of red, green and white lights which indicate the presence of a vessel and must be shown by all vessels between dusk and dawn.

OVERHEAD - a ceiling or roof of a vessel.

OVERBOARD - Over the side of a boat.

OUTBOARD - 1) From the fore and aft centerline of a boat toward both the port and starboard sides. 2) The seaward side of a moored boat.

PASSAGEWAY - A corridor or hallway aboard ship.

PERSONAL FLOATATION DEVICE (PFD) - A life preserver.

PIER - A loading platform that extends at an angle from the shore.

PILING - Support or protection for wharves, piers, etc.

PITCH - 1) The vertical motion of a boat in a seaway, about the athwartship axis. 2) The axial advance of a propeller during one complete revolution.

PLANING HULL - At slow speeds, a planing hull will displace water in the same manner as a displacement hull. As speed increases, the hull provides a lifting affect up onto the surface of the water.

PORT - 1) Looking forward, the "left side" of a boat from bow to stern. 2) A harbor.

PORT BEAM - The left center of a boat.

PORT BOW - Facing the bow, the front left side.

PORT QUARTER - Looking forward, a vessels left rear section.

QUARTER - The sides of a boat aft of amidships.

QUARTERING SEA - Sea (waves) coming from a boat's quarter.

RODE - The anchor line or chain.

RUNNING LIGHTS - See "navigational lights."

RUDDER - A vertical plate used to steer the boat.

SALON - The main social cabin on a boat, usually the largest area.

SCREW - A propeller.

SCUPPER - A drain from the edge of a deck that discharges overboard.

SEACOCK - A positive action shut-off valve connected directly to the hull seawater intake and discharge piping.

SHAFT - The long, round member that connects the engine or transmission to the propeller.

SHAFT LOG - A fitting at the hull bottom where the shaft connecting an engine to its propeller penetrates the hull. A shaft log permits the shaft to rotate while simultaneously preventing water from entering the hull.

SHEER - The top of the hull's curvature at the deck line from the bow to the stern.

SHEER STRAKE - The upper edge of the hull, immediately below the deck.

SOLE - The deck of a boat.

SPRING LINE - A pivot line used in docking or to prevent the boat from moving forward or astern while made fast to a dock.

STARBOARD - Looking forward, the entire "right side" of a boat from bow to stern.

STARBOARD BEAM - The right center of a boat.

STARBOARD BOW - When facing the bow, the front right side.

STARBOARD QUARTER - When looking forward, the right rear section of the boat.

STEERAGE WAY - The lowest speed at which a vessel can be controlled by the steering wheel.

STEM - The leading edge of a boat's hull

STERN - The back of a boat.

STRINGER - A fore and aft continuous member used to provide a vessel longitudinal strength.

STRUT - A propeller shaft support that is below the hull. The main strut is a large strut that is mounted immediately forward of the prop. An intermediate strut is smaller than the main strut and is mounted between the main strut and the shaft log.

SUMP - A pit or well into which water is drained.

SUPERSTRUCTURE - Flybridge or other structures that extend above the deck.

TILLER - A bar or handle used to turn the boat's rudder.

TOPSIDE - To go to the upper most deck.

TRANSOM - The transverse member(s) forming the stern of a square-ended boat.

UNDERWAY - A vessel that is not moored, docked, at anchor, or aground.

V-BOTTOM - A hull with the bottom section that is shaped in the form of a "V."

V-DRIVE - A drive system that has the output of the engine facing forward and coupled to a transmission. The prop shaft is then coupled to the transmission.

WATER LINE - The line of the water on the hull when the boat is afloat and at rest.

WEATHER DECK - a deck with no overhead protection.

WINDLASS - A devise used to raise and lower an anchor.

CARVER

OWNER'S GUIDE TO SAFE AND PROPER OPERATION

SECTION 3

3.1 EXTERIOR LAYOUT
Deck
Profile

3.2 INTERIOR / CABIN LAYOUT

3.3 BILGE LAYOUT

3.4 THRU-HULL FITTINGS
Below Waterline Fittings
Above Waterline Fittings

3.5 CANVAS AND UPHOLSTERY
Canvas and Exterior Carpet
Exterior Upholstery
Interior Upholstery

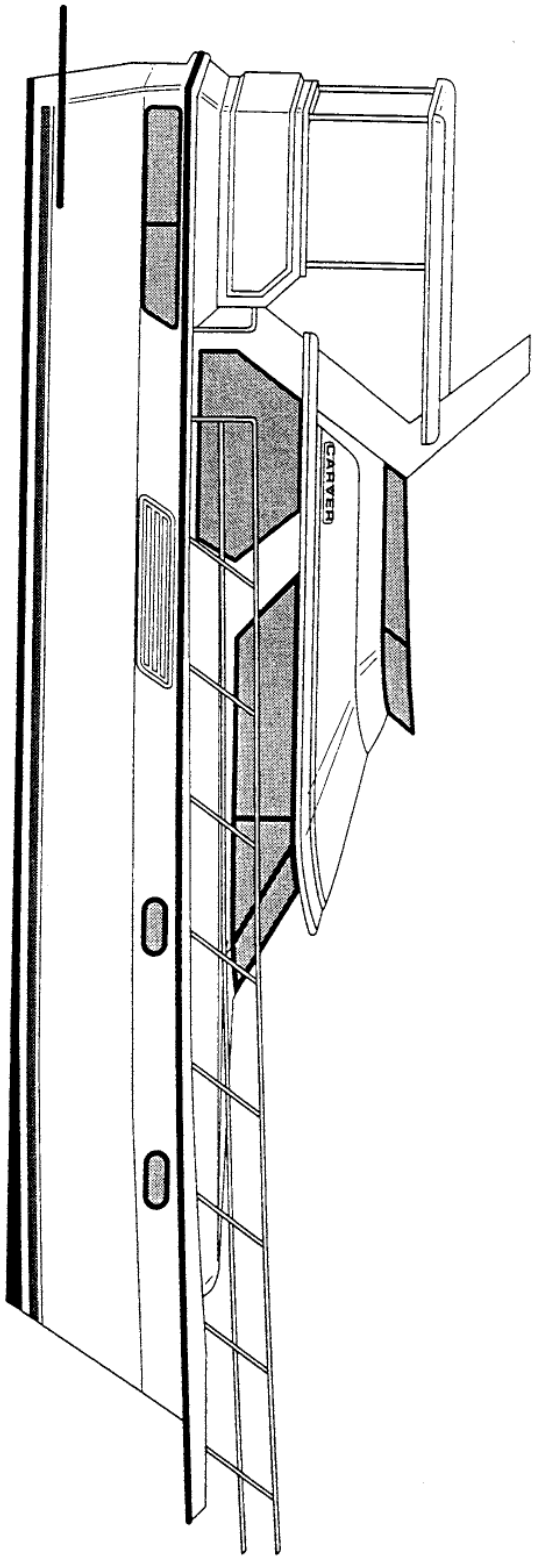
3.6 PHYSICAL SPECIFICATIONS
Length, Height, Weight, Beam
Determining Your Boat's Draft
Tank Capacities

3.7 UNDERWATER GEAR

3.1 EXTERIOR LAYOUT - 440 AFT CABIN

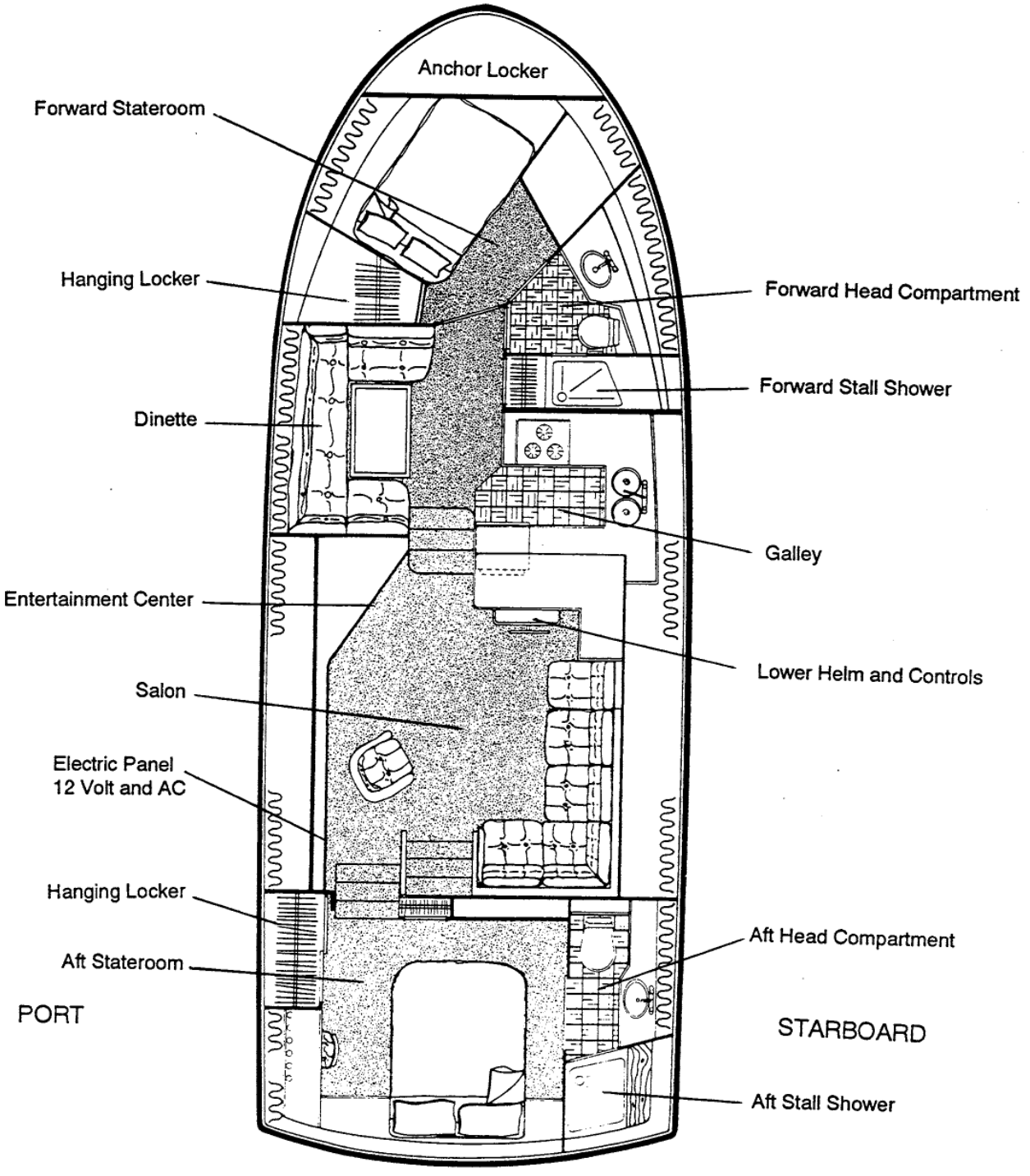
DECK DRAWING FOR THE 440 AFT CABIN WAS NOT AVAILBLE IN TIME TO MEET THIS MANUAL'S PRINTING SCHEDULE.

3.1 EXTERIOR PROFILE- 440 AFT CABIN

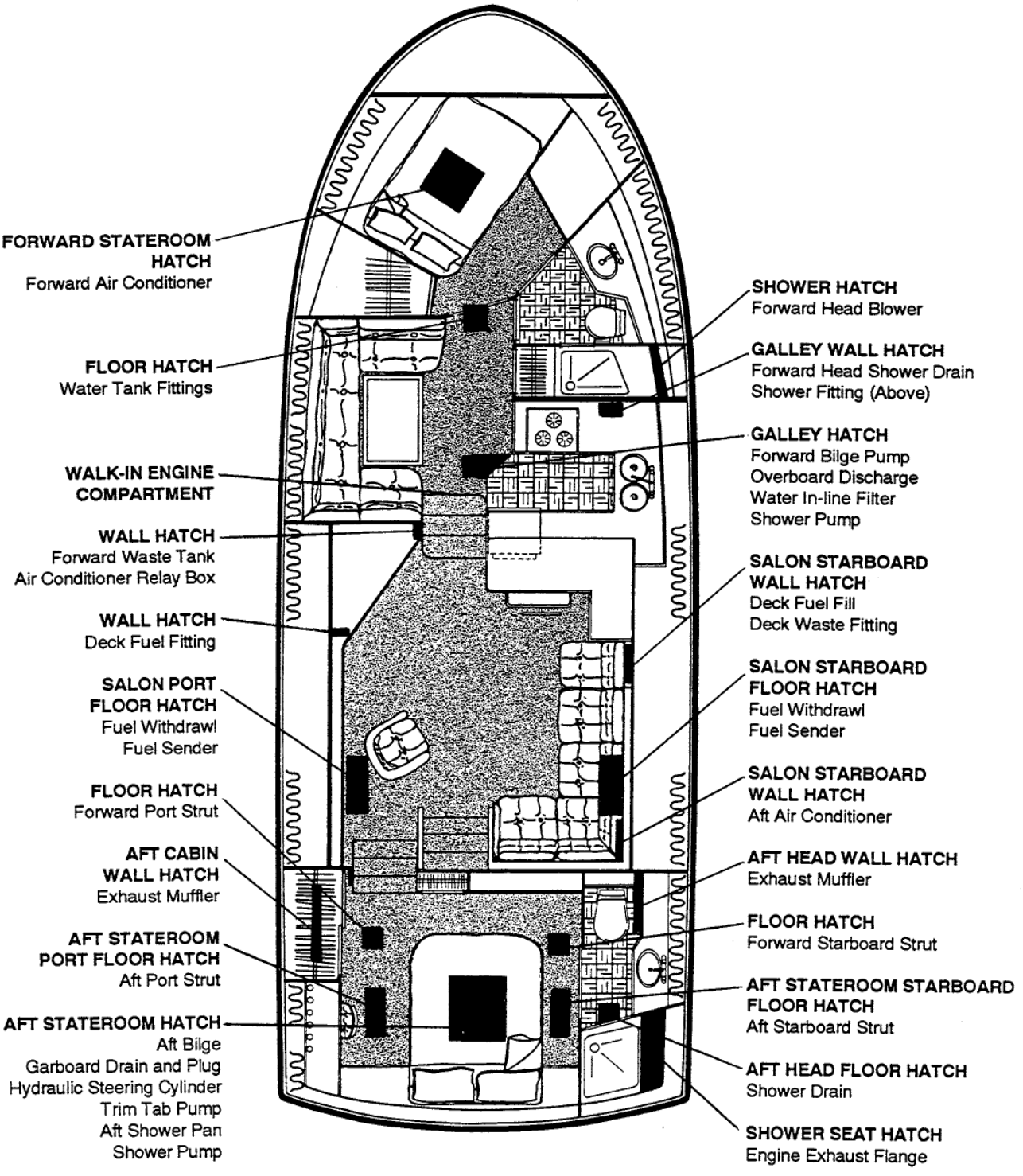


3.1 - 2

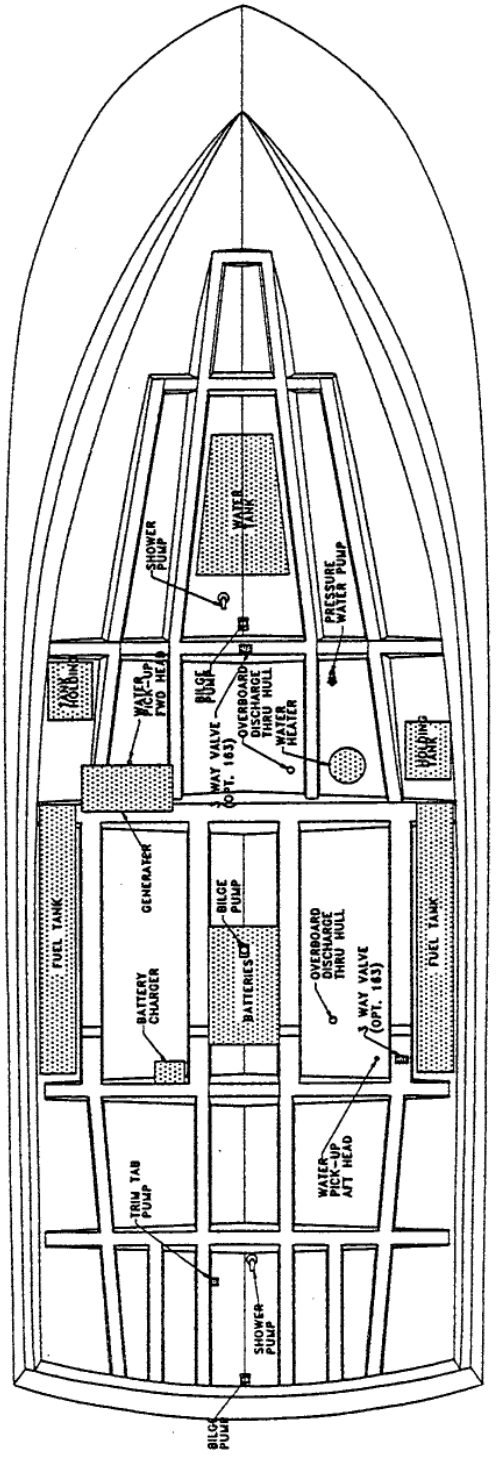
3.2 INTERIOR / CABIN LAYOUT - 440 AFT CABIN



3.2 CABIN / COCKPIT FLOOR ACCESS HATCHES - 440 AFT CABIN



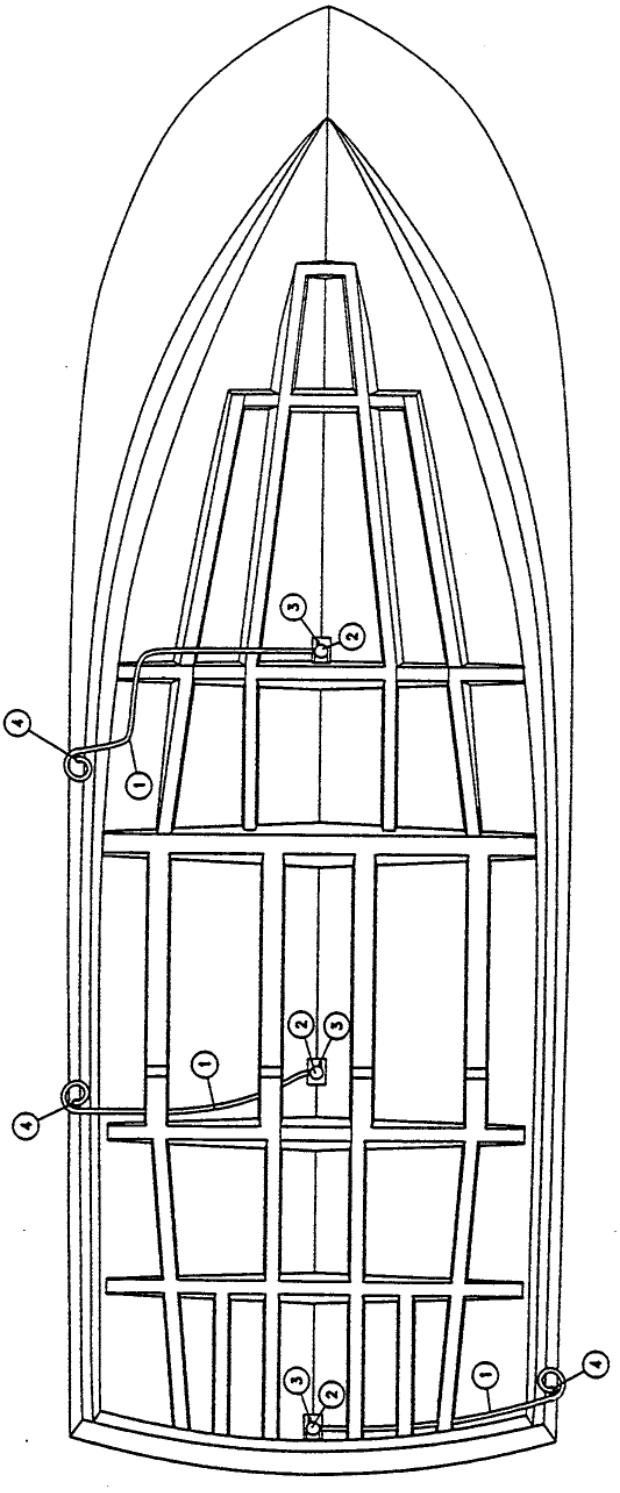
3.2 INTERIOR / BELOW DECK LAYOUT - 440 AFT CABIN



3.3 BILGE LAYOUT - 440 AFT CABIN

BILL OF MATERIALS

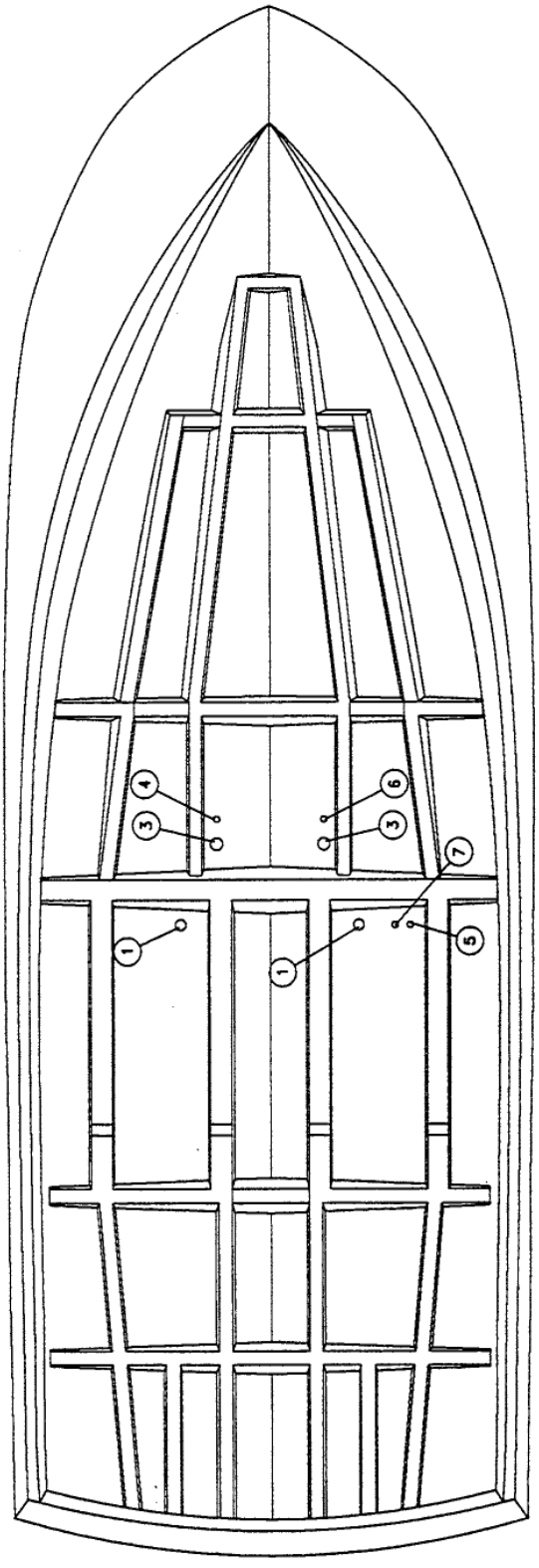
ITEM	QTY.	P/N	DESCRIPTION
1	1	75100000	HOSE BILGE 1 1/8"
2	3	6500100	BILGE PUMP
3	3	6500400	SWITCH
4	3	7103800	THRU HULL 1 1/8" TO 1 1/4" WHT.



3.4 BELOW WATERLINE THRU-HULL FITTINGS - 440 AFT CABIN

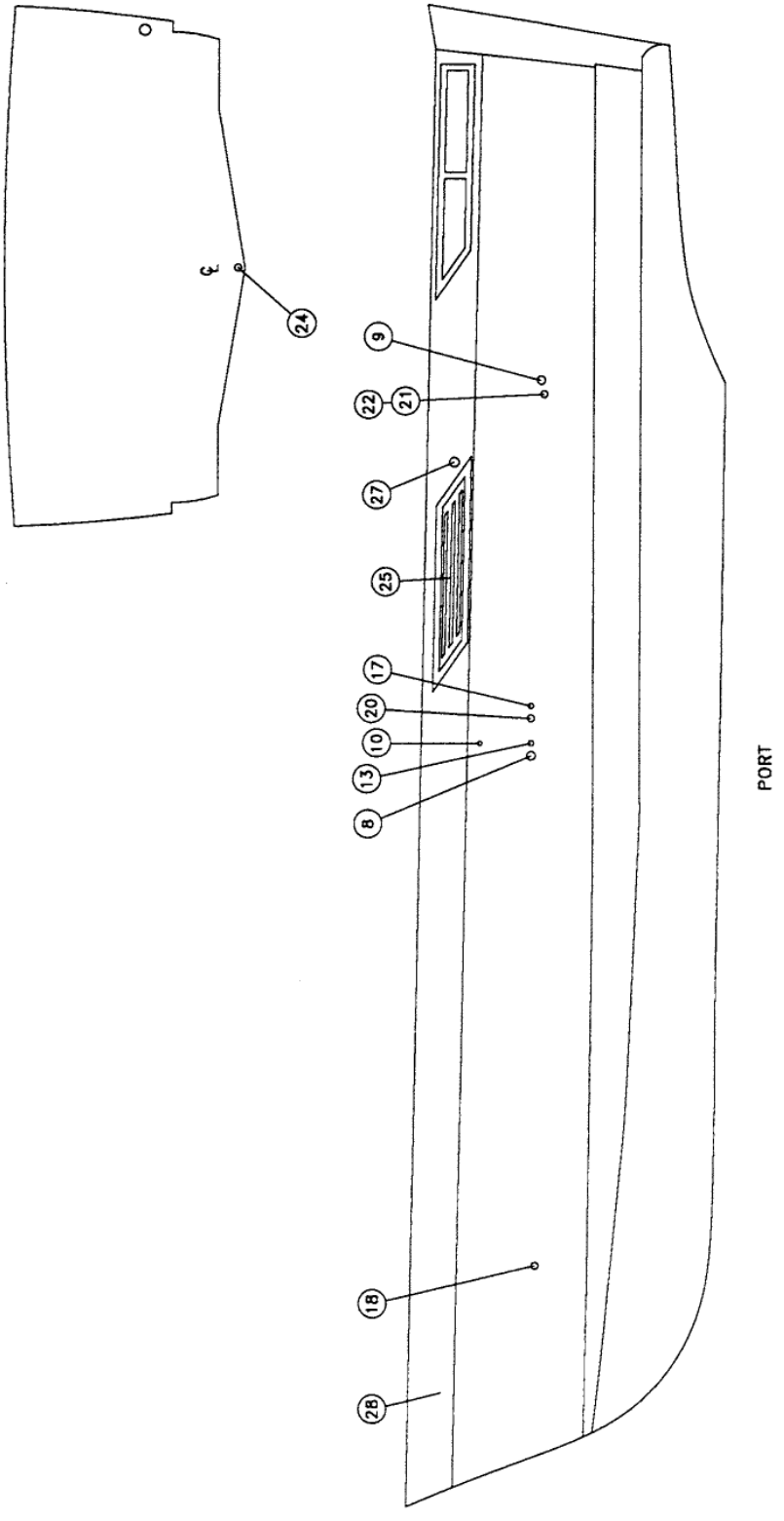
BILL OF MATERIALS

ITEM	QTY.	P/N	PART SIZE	HOLE SIZE	DESCRIPTION
1	2	5100800	1 5/8"	1 3/4"	TWIN ENGINE PICK-UP
2	1	5104500	1/2"	7/8"	GENERATOR PICK-UP
3	1	7109500	1 1/2"	2	OVERBOARD DISCHARGE
4	1	7109400	3/4"	1"	HEAD PICK-UP FWD.
5	1	7109400	3/4"	1"	HEAD PICK-UP AFT.
6	1	7410900	1"	1 3/8"	A/C PICK-UP



3.4 - 1

3.4 ABOVE WATERLINE THRU-HULL FITTINGS - 440 AFT CABIN



3.5 BRIDGE AND AFT DECK CANVAS ENCLOSURE - 440 AFT CABIN With Electronics Arch and Aft Deck Hardtop

The Bridge Enclosure for the 440 AFT CABIN with Electronics Arch and Aft Deck Hardtop consists of the bow set, bimini, three upper aft curtains (Iu,Ju,Ku), three forward curtains (A, B, C), three port bridge canvas curtains (E, F,G) and three starboard bridge canvas curtains (EE, FF, GG). The Aft Deck Enclosure consists of seven curtains (O, P, Q, R, S, T, U) from the port to starboard sides

Install bow set.
Position the folded bow set on the bridge rim and attach the center bow first. To attach, remove the pin from the center hinges on both the port and starboard sides of the bridge rim. Slide the bow end into the hinge and replace the pin.

Lean the bow set back and attach the aft bow support leg to the electronics arch. To attach, remove the quick release pin from the bow end on both the port and starboard side, slide it into the camelback and replace the pin.

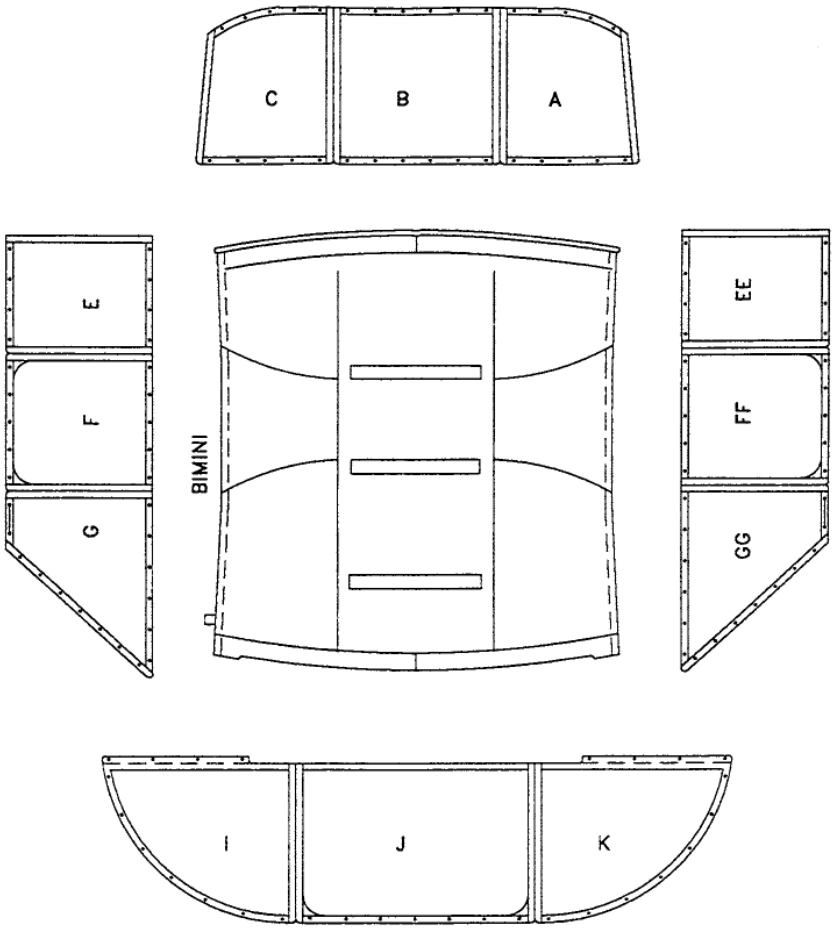
Pull the bow set open. Secure the forward bow support legs in the forward mounting hinges on the port and starboard sides of the bridge rim.

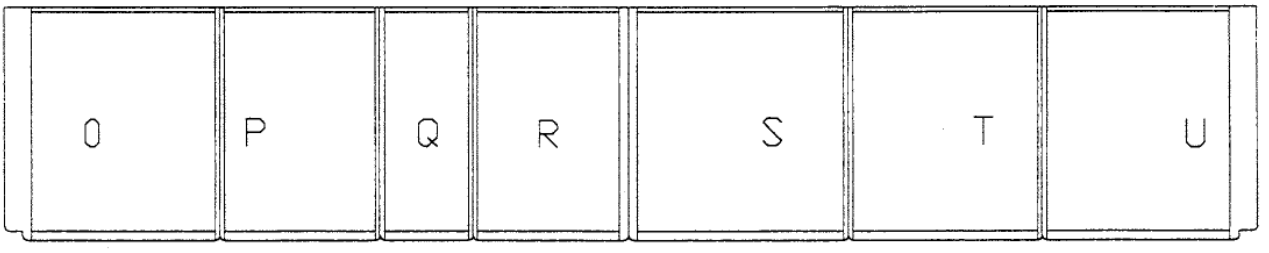
Install bimini.
The bimini has bow pockets with zippers sewn into it. Place the bimini over the top of the bow set with the bow pockets down. Slide the forward bow into the front bow pocket first. Close the zipper. Slide the sail track into place second. Zip forward and aft pockets onto bowset . Attach center pockets to bowset. Bowset may be adjusted by removing pins from hinges.

Attach curtains.
Attach the three forward canvas curtains (A, B, C) to the bimini first. Zipper the top and snap the bottom grommets over the turn knobs and secure. Zip curtains together. NOTE: CENTER BOW SET PORT TO STARBOARD . To center bow set, loosen jaw slides on port and starboard side of forward bow using a 1/8" allen wrench. Center the bow set by pushing it forward or back until forward canvas curtains are taut. Tighten jaw slides with allen wrench.

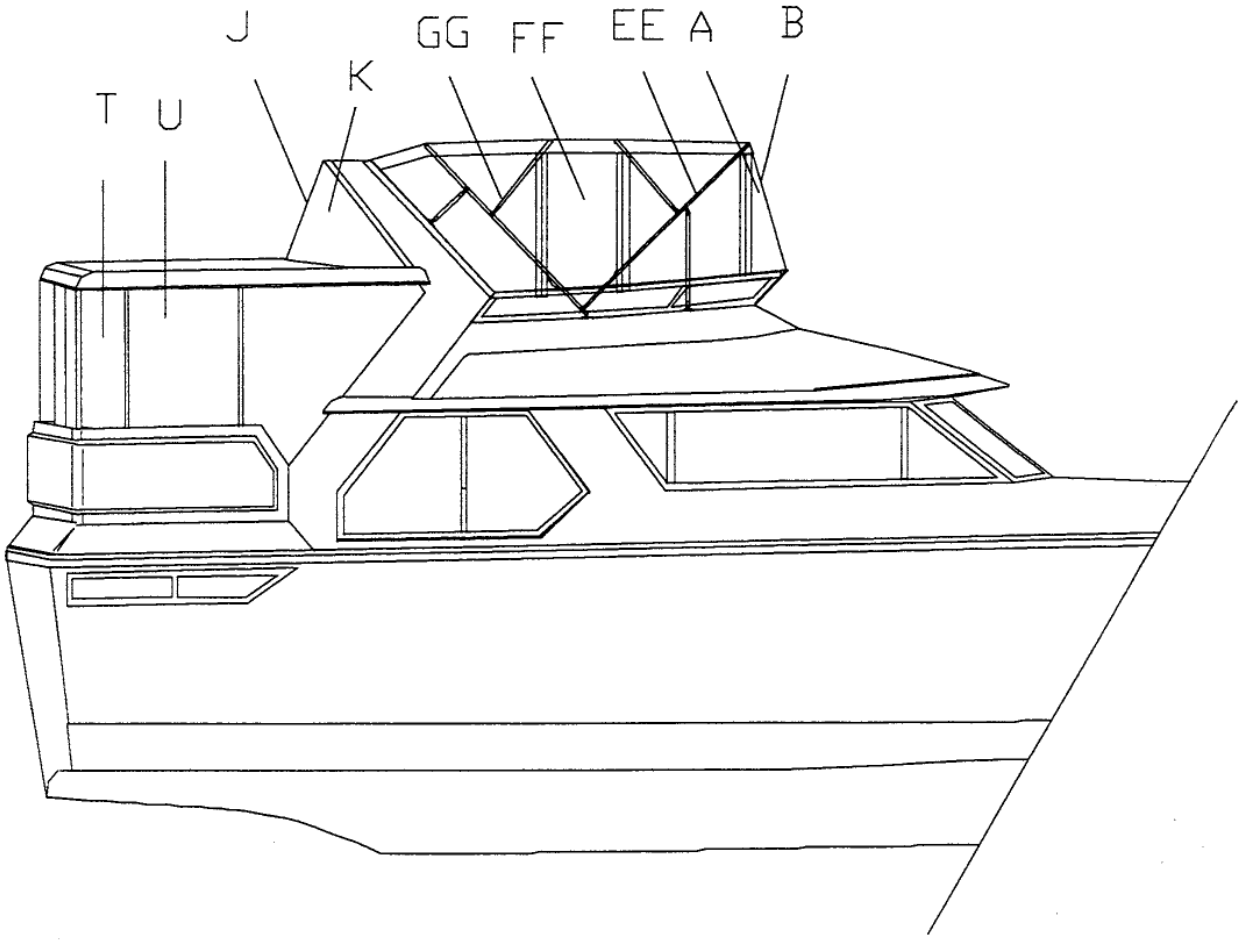
Attach port, starboard and aft canvas curtains to bimini by sliding the grommets over the turn knobs and securing. Zip curtains together. Attach port, starboard and aft canvas curtains to aft hardtop. Zip curtains together.

3.5 BRIDGE CANVAS ENCLOSURE - 440 AFT CABIN

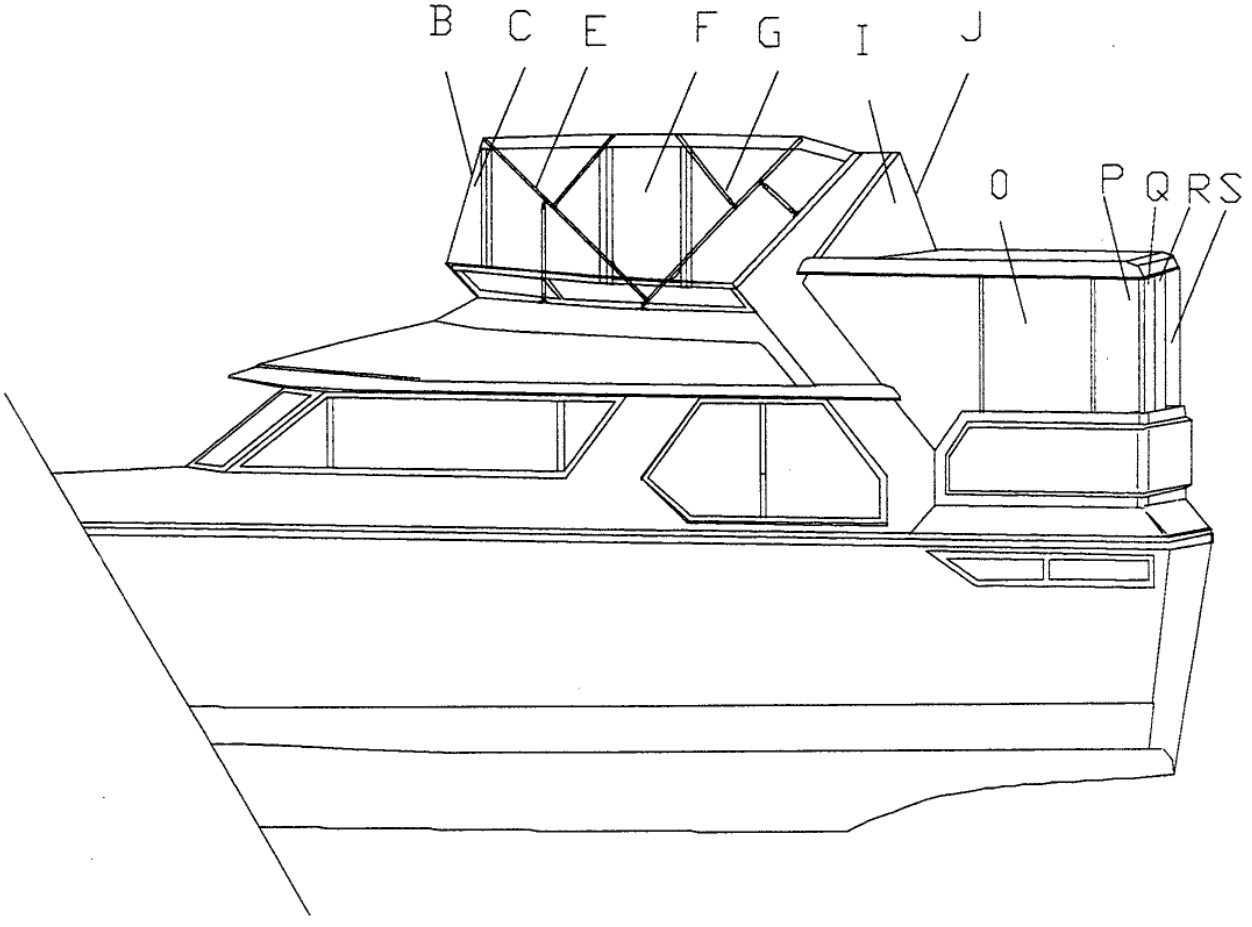




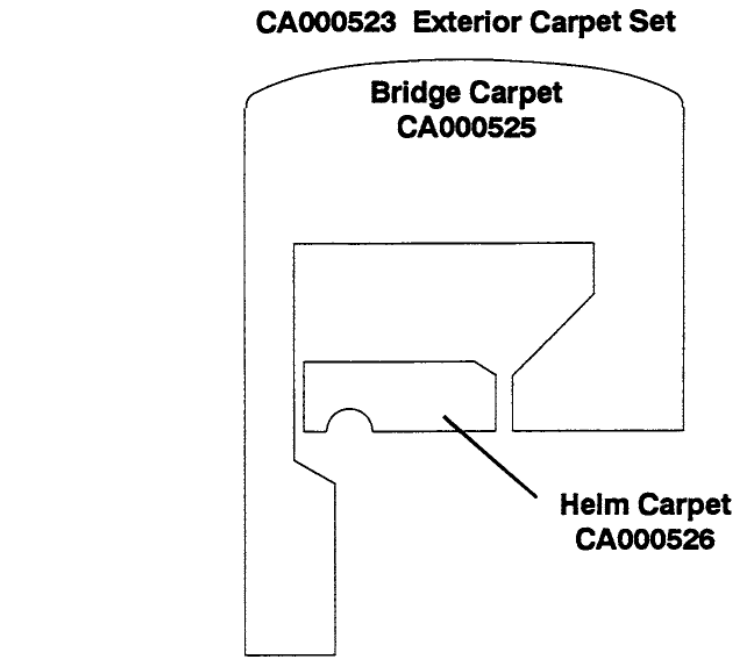
3.5 BRIDGE CANVAS ENCLOSURE - 440 AFT CABIN

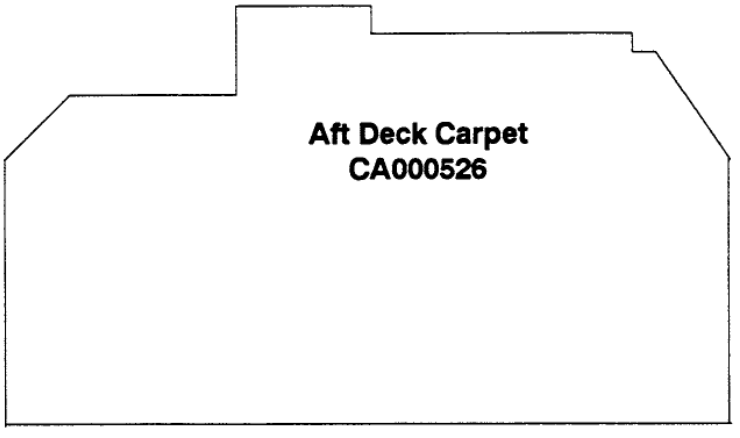


3.5 BRIDGE CANVAS ENCLOSURE - 440 AFT CABIN

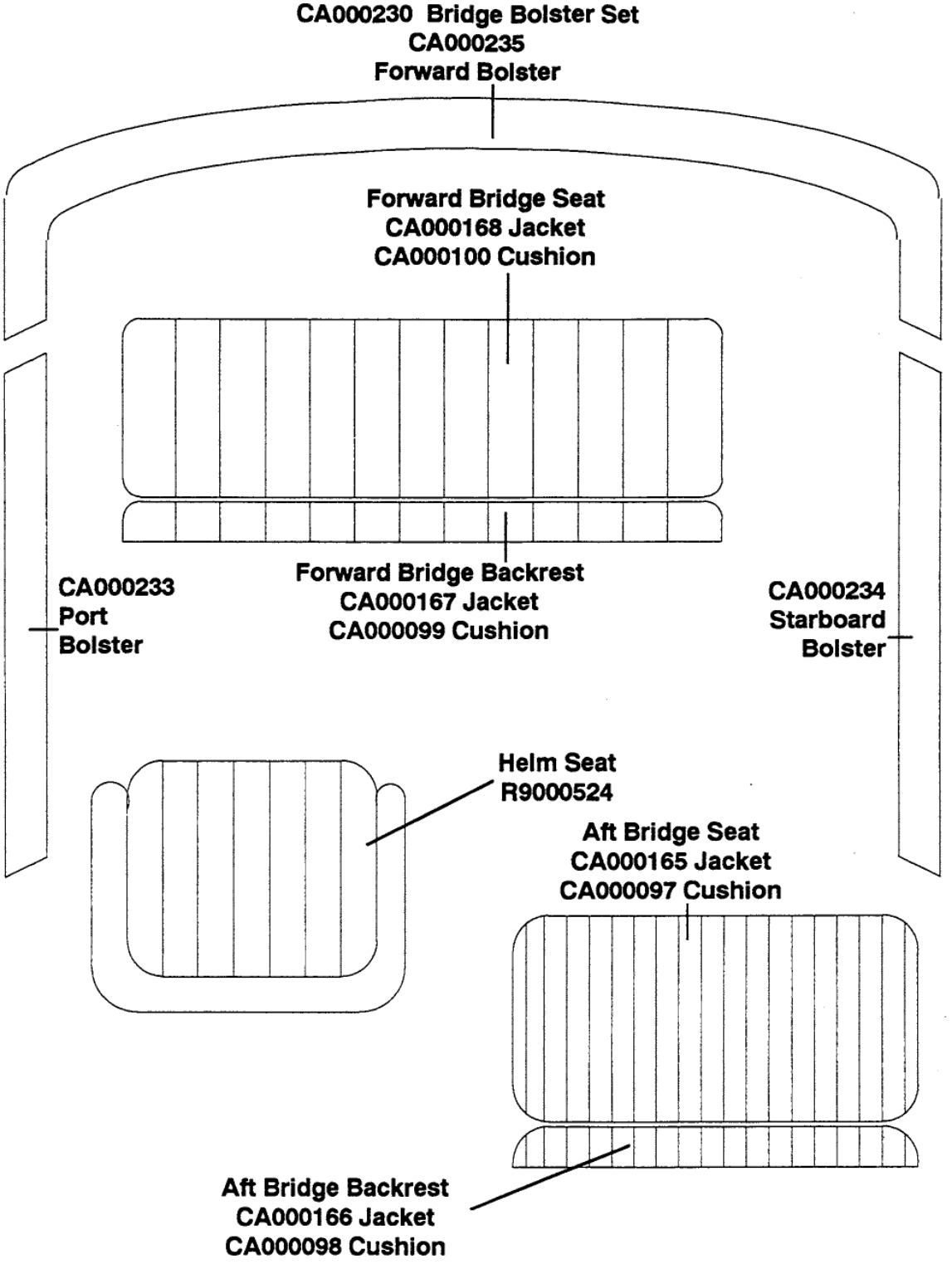


3.5 EXTERIOR CARPET - 440 AFT CABIN





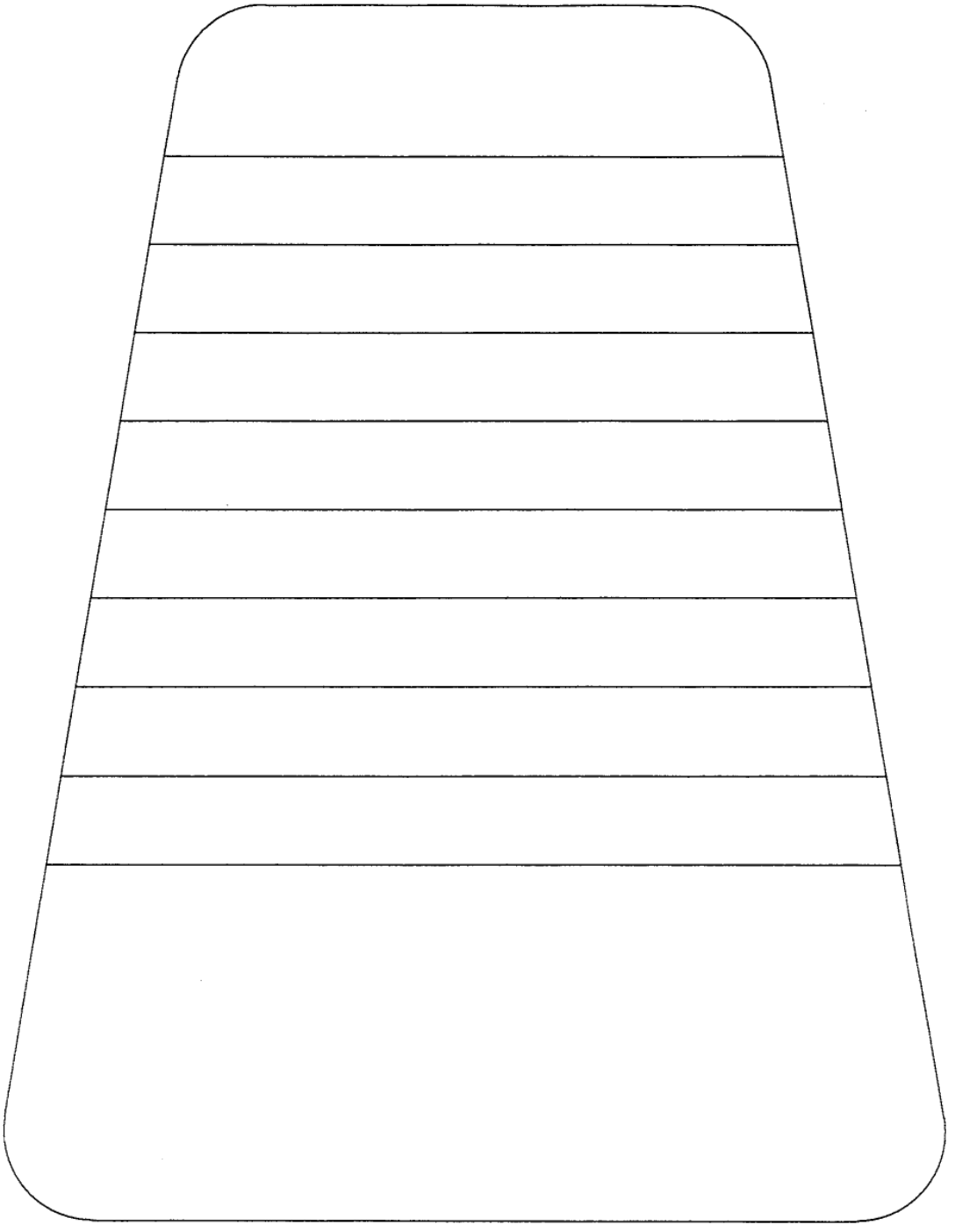
3.5 EXTERIOR UPHOLSTERY - 440 AFT CABIN



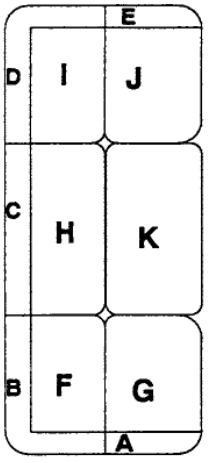
3.5 EXTERIOR UPHOLSTERY - 440 AFT CABIN

Bow Sun Pad

Cushion CA000101
Jacket CA000169



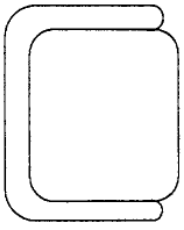
3.5 INTERIOR UPHOLSTERY - 440 AFT CABIN



Dinette Assembly
CA000139

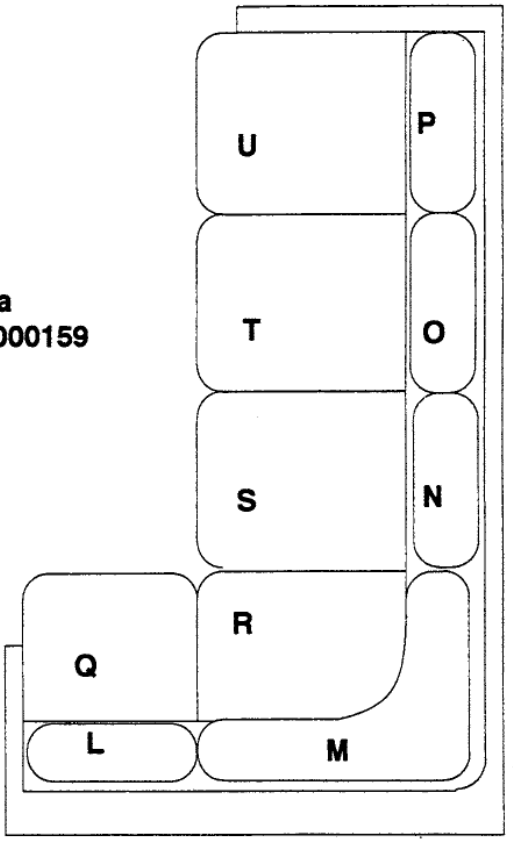
Small Stool
A0016189

Large Stool
A0016189



Barrel Chair
A0016157

Sofa
CA000159



3.5 INTERIOR UPHOLSTERY - 440 AFT CABIN

Dinette Assembly - CA000139

A	Dinette Aft Backrest	CA000142
B	Dinette Aft Corner Backrest	CA000145
C	Dinette Center Backrest	CA000144
D	Dinette Fwd Corner Backrest	CA000146
E	Dinette Fwd Backrest	CA000143
F	Dinette Aft Cushion	CA000155
	Dinette Aft Cushion Jacket	CA000156
G	Dinette Aft Corner Cushion	CA000153
	Dinette Aft Corner Cushion Jacket	CA000154
H	Dinette Center Cushion	CA000151
	Dinette Center Cushion Jacket	CA000152
I	Dinette Forward Corner Cushion	CA000149
	Dinette Forward Corner Cushion Jacket	CA000150
J	Dinette Forward Cushion	CA000147
	Dinette Forward Cushion Jacket	CA000148
K	Dinette Filler Cushion	CA000157
	Dinette Filler Cushion Jacket	CA000158

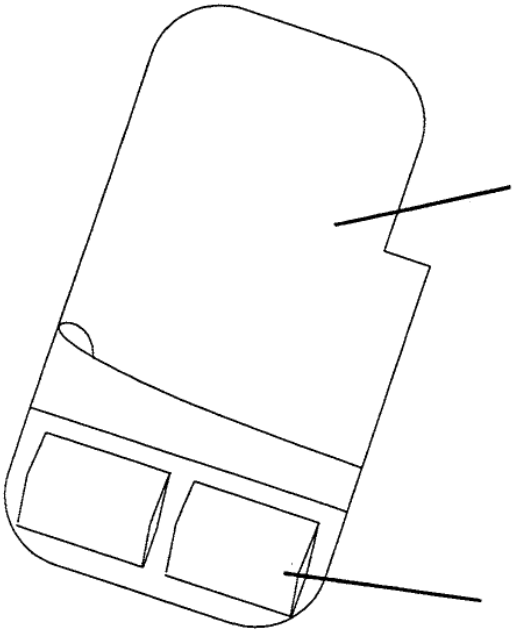
Sofa Assembly 3 X 2 CA000250

L	Sofa Backrest	CA000267
	Sofa Backrest Jacket	CA000268
M	Sofa Backrest	CA000263
	Sofa Backrest Jacket	CA000264
Q	Sofa Cushion	CA000265
	Sofa Cushion Jacket	CA000266
R	Sofa Cushion	CA000261
	Sofa Cushion Jacket	CA000262

Sofa Sleeper Assembly - CA000251

N & O	Sleeper Backrest	CA000258
	Sleeper Backrest Jacket	CA000259
P	Sleeper Backrest	CA000254
	Sleeper Backrest Jacket	CA000255
S & T	Sleeper Cushion	CA000256
	Sleeper Cushion Jacket	CA000257
U	Sleeper Cushion	CA000252
	Sleeper Cushion Jacket	CA000253

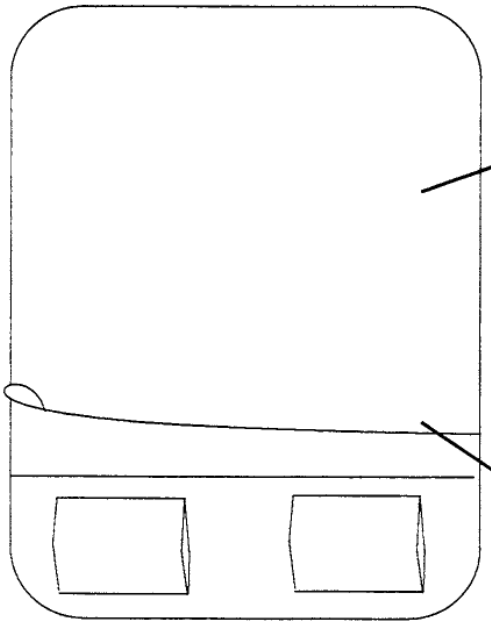
3.5 INTERIOR UPHOLSTERY - 440 AFT CABIN
Master and Guest Stateroom



Forward Matress CA000123
Fwd Matress Pintail Cover CA000124
Fwd Bedspread CA000135

A0016203
Pillow Assembly

Pillow Sham 20 x 24 ..... A0016203
Pillow Pintail Cover A0016202

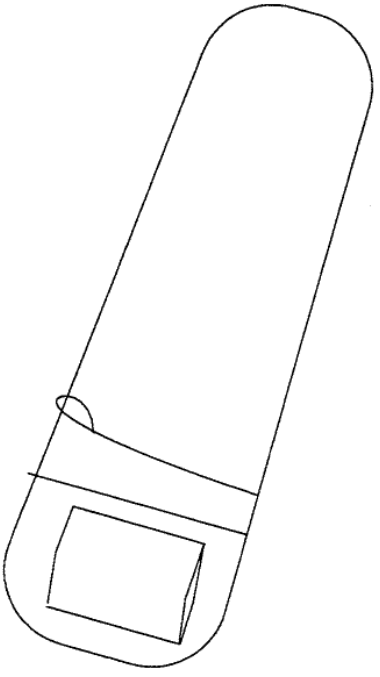


Aft Matress CA000126
Aft Matress Pintail Cover CA000127
Aft Bedspread CA000137

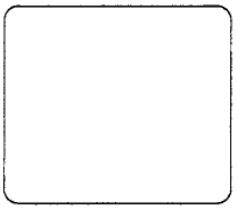
A0016198
Pillow Assembly 20 x 30

Pillow Sham 20 x 30 ..... A0016201

3.5 INTERIOR UPHOLSTERY - 440 AFT CABIN
Master and Guest Stateroom



V-berth upper bunk (option 009) CA000742



Bedside Set Forward

Bed Set Assembly..... CA000203
Bed Set Jacket CA000162

3.6 PHYSICAL SPECIFICATIONS - 440 AFT CABIN

A) Physical Measurements

Length Overall (LOA) with swim platform: 44'7" / 13,59 m

Length Overall (LOA) with swimplatform AND bow pulpit: 47'8" / 14,53 m

This measurement includes the length of the boat when the factory-installed swim platform and bow pulpit have been added.

Beam: 15'0" / 4,57 m

WITH ELECTRONICS ARCH INSTALLED

From waterline to top of arch mounted-anchor light 18'6" / 5,64 m
From bottom of props to top of arch with anchor light removed 16'6" / 5,02m
From waterline to top of arch with anchor light removed 13'0" / 3,96 m

Draft: 42" / 1,07 m

A draft of 42" (1,07 m) has been calculated based upon the boat's 30,400 lb (13,789,44 kg) dry weight. Draft is the depth of water from the water line to the lowest point on the boat, usually the bottom tip of the props.

The draft of a boat will vary depending upon the salinity of the water, the amount of equipment on the boat, the capacity of the fuel, water and waste tanks as well as the number of people on board. Due to these variables, the draft of your boat should be checked when the boat is fully equipped and loaded.

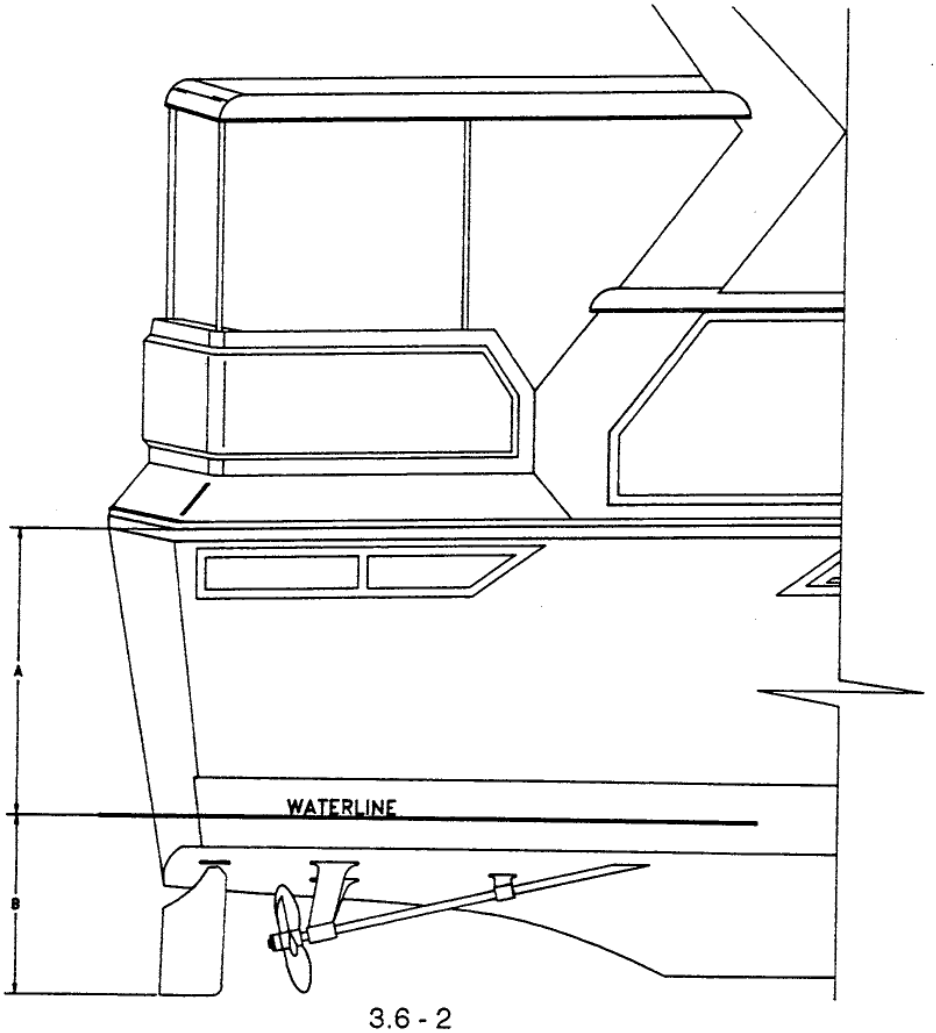
Determining Your Boat's Draft

1. Measure the distance from the bottom edge of the rub rail to the water. Refer to the drawing for the proper place along the hull to measure. Measure both the port and starbord sides.

2) Locate the smaller of the two measurements you have taken on column "A" on the chart below. Read the draft of your boat in column "B."

DRAFT CONVERSION

"A" Sheer to Waterline	"B" Draft
57" (144,78 cm)	42" (106,68 cm)
56" (142,24 cm)	43" (109,22 cm)
55" (139,70 cm)	44" (111,76 cm)
54" (137,16 cm)	45" (114,30 cm)
53" (134,62 cm)	46" (116,84 cm)
52" (132,08 cm)	47" (119,38 cm)



3.6 - 2

Dry Weight: 30,400 lbs / 13,7789 ,44 kg

Dry weight does not include fuel, water, optional equipment, food, beverages, safety gear or anything else a family is likely to have aboard their boat. The actual weight of your boat will be greater than the dry weight figure listed here.

The approximate weight of your boat can be estimated when the actual draft is known. It will require approximately 2,150 lbs (975,24 kg) to increase a 440 AFT CABIN'S draft by 1" (2,54 cm). If a 440 AFT CABIN draws 42" (106,68 cm) at its "dry" weight of 24,500 lbs (11113,20 kg), a boat that draws 44" (101,60 cm) will weigh approximately 28,800 lbs (13063,68 kg).

44" - 42" = 2" X 2,150 lbs = 4,300 lbs + 30,400 lbs = 34,700 lbs est. total weight

(111,76 cm - 106,68 cm = 5,08 cm / 2,54 cm X 975,24 kg = 1950,48 kg + 13789,44 kg = 15,739,92 kg est. total weight.)

We can't over emphasize that this computation is for estimating purposes only. Use it to generate a rough approximation of your boat's total weight.

The 2,150 lbs (975,24 kg) figure used for this draft/weight computation is unique to the shape of the 440 AFT CABIN'S hull. You can not use this figure on boats other than the 440 AFT CABIN.

B) Tank Capacities

Fuel Capacity

Standard Tanks = 500 U.S. Gallons / 1892,70 liters

Water Capacity

Fresh Water = 145 U.S. Gallons / 548,88 liters
Hot Water = 20 U.S. Gallons / 75,70 liters

Sanitation System

Waste Holding Tank = 80 U.S. Gallons / 302,83 liters

Grey Water Holding Tank (optional equipment) = 142 U.S. Gallons / 537,52 liters

3.7 UNDER WATER GEAR - 440 AFT CABIN

A) Propellers

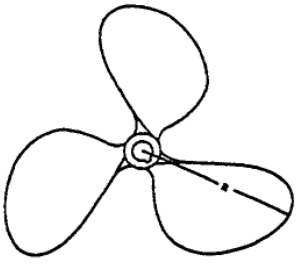
Your 440 AFT CABIN is equipped with two propellers. These props are counter rotating to provide maximum maneuverability and efficiency. Each prop is designated for either right hand or left hand rotation.

Propellers come in a wide variety of shapes and sizes to meet the needs of different performance requirements. The actual size and type of propeller used on your boat has been listed on the Pre-Delivery Service Record and the Select Bills of Material. These documents are found in Section 9.

A basic knowledge of how a propeller works will allow you to better understand the terminology used to describe the aspects of propeller performance.

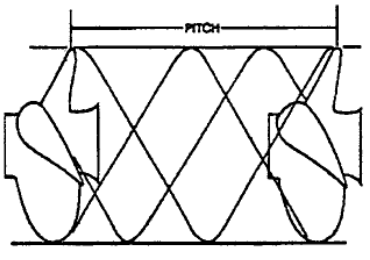
Diameter

Diameter is twice the distance from the center of the prop shaft to the extreme tips of the propeller blades. Increasing or decreasing the diameter of a prop will have a direct bearing on the RPM that the engines will be capable of developing. This is because changing the blade size changes the amount of blade surface that comes into contact with the water.



B) Pitch

Pitch is a measure of the helix angle (or angle of attack) of the rotating blade. Pitch can be better understood by imagining the propeller rotating through a semi-solid such as butter. The distance (in inches) the propeller will travel in one revolution corresponds to the props pitch. Increasing or decreasing pitch will have a direct bearing on engine RPM. Increasing the props pitch will allow it to take a bigger "bite", increasing the load on the engine and lowering engine RPM.



C) Prop Slip

A propeller operating in a low viscosity fluid such as water is subject to a certain amount of slip. The difference between a props theoretical "bite" and its actual "bite" is referred to as prop slip.

Prop slip is expressed as a percent of the computed theoretical speed. Twenty-five to thirty-five percent slip is quite common for a large boat operating at normal cruising speed.

Changing either the diameter or pitch of a prop will have an effect on engine speed and prop slip. The propellers that Carver has selected and included with your boat will provide the best overall performance and efficiency under normal conditions and loads. This has been determined by data obtained through on-water testing.

Under normal conditions the engines should turn within the RPM range listed by the engine manufacturer. If the engines exceed this range a change in prop diameter or pitch may be required. Changes to your boat's propellers should only be made by a qualified individual. See your Carver Dealer before changing or making adjustments to your boat's propellers.

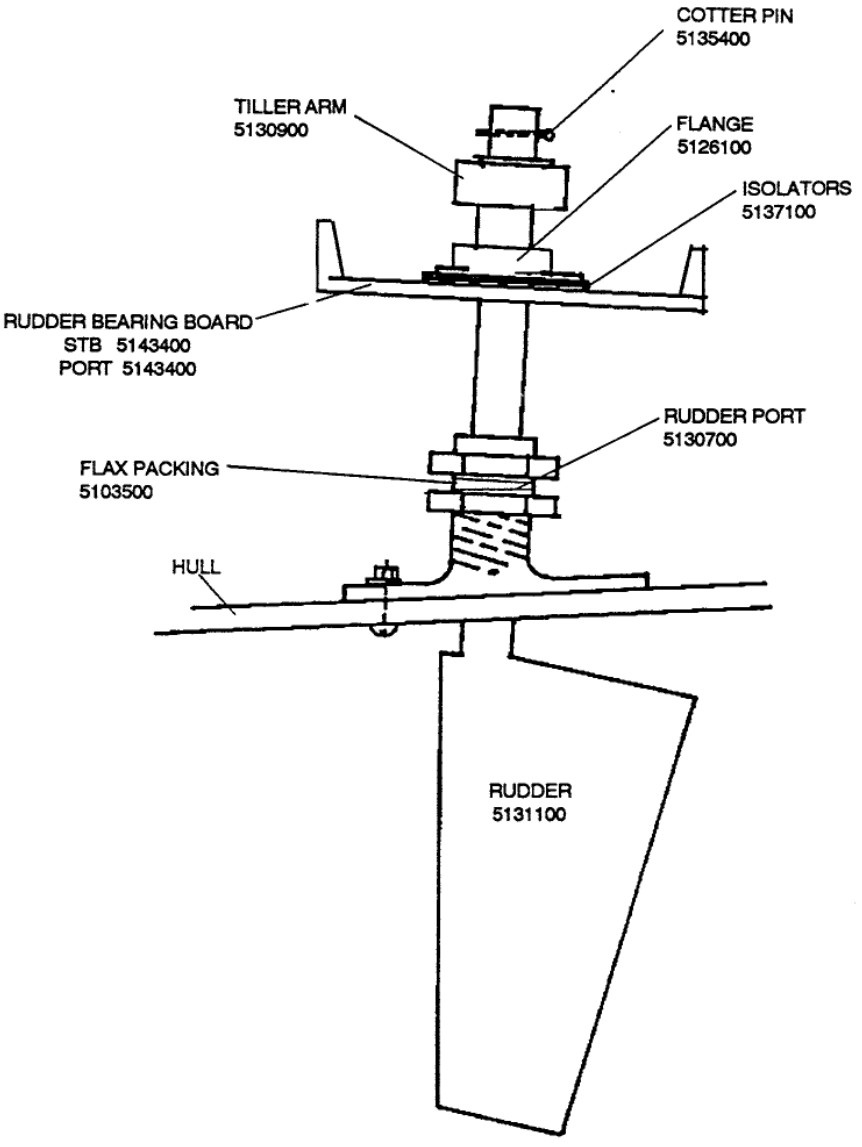
D) Rudder Assembly

Rudders are used to control the direction of the boat while underway. Your boat uses two rudders. These two rudders are connected to your boat's steering system through the rudder shafts, tiller arm and tiller tie bar. Rudder movement is controlled through the boat's hydraulic steering system.

The rudder shaft enters the hull of the boat through a rudder port. This port uses a compressed teflon impregnated flax packing to seal the entry of the rudder shaft. It is normal for a drop or two of water to seep through the rudder port every couple of minutes. Tighting the hex nut on the top of the rudder port will reduce water seepage in cases where seepage increases beyond acceptable levels.

Additional information regarding the steering system can be found in Section 7.2 of this Owner's Guide.

3.7 RUDDER ASSEMBLY - 440 AFT CABIN



TELEFLEX HYDRAULIC STEERING CYLINDER (RAM) 5405100
TILLER TIE BAR 5131000
SEA STAR 1 W/TILT TELEFLEX 5404801

Propeller Shaft

The propeller shaft connects the propeller to the engine output shaft. This shaft is made of a special stainless steel material to exact tolerances. A shaft that is not straight or in perfect balance will create vibrations that may damage certain propulsion system components.

The propeller shaft MUST be properly aligned between the engine output flange, shaft log and struts in order for it to rotate smoothly. Your Carver Dealer aligned your boat's propeller shafts as part of the Pre-Delivery Service. We recommend that you have your Carver Dealer check the shaft alignment after your engines have been run for 25 hours. Alignment must also be checked on an annual basis and every time the boat is lifted and launched.

Proper and precise shaft alignment is critical and should be left in the hands of an experienced marine technician.

Once a shaft has been damaged, usually through an unintentional grounding, it is very difficult if not impossible to repair. Carver recommends replacing damaged shafts in lieu of attempted repairs.

Shaft Log

The propeller shaft extends through the hull of the boat through a water tight fitting called a shaft log. This shaft log is packed with teflon impregnated flax packing material that is 1/2" in diameter. The packing minimizes the flow of water through the shaft log. It is normal for water to seep between the shaft and the flax packing especially while underway. A properly packed and adjusted shaft log will allow water to drip 3-4 times per minute while the shaft is turning.

Proper performance of the shaft log is directly dependant upon proper propeller shaft alignment. Repeated shaft log leakage, packing nuts becoming loose, packing failure, shaft log assembly damage and many other related problems are usually the result of a misaligned propeller shaft.

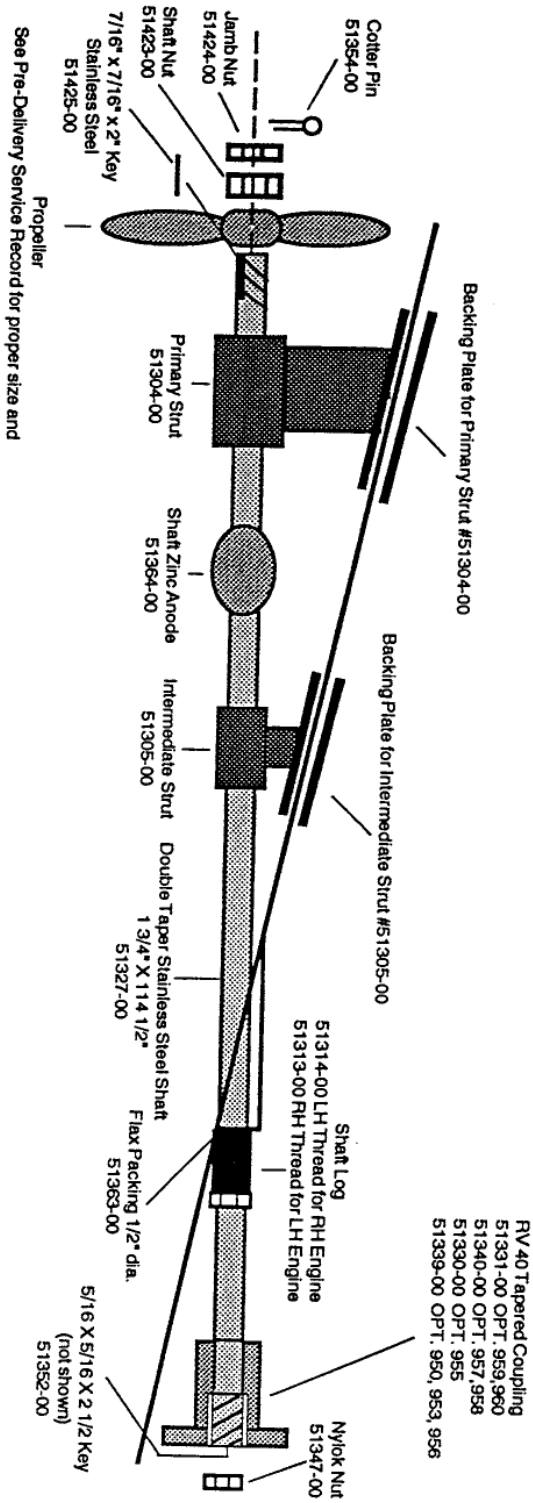
E) Strut Assembly

Struts are fastened to the boat's hull and are used to support the propeller shaft. The 440 AFT CABIN uses both primary and intermediate struts. Primary struts are the larger, aftermost struts. Intermediate struts are installed between the primary strut and the shaft log.

The 440 AFT CABIN uses 90° struts. Using 90° struts allows a strut to be used on either the port or starboard side of the boat. This makes carrying a spare strut easier and more economical.

A rubber bearing within each strut provides a smooth surface for the propeller to rotate. Periodic lubrication of these bearings with an oil made for rubber will help keep the rubber surface from cracking.

3.7 UNDERWATER GEAR ASSEMBLY - 440 AFT CABIN



CARVER

OWNER'S GUIDE TO SAFE AND PROPER OPERATION

SECTION 4

4.1 12 VOLT SYSTEM - DESIGN AND PURPOSE

4.2 12 VOLT ELECTRICAL EQUIPMENT

4.3 BATTERY INSTALLATION AND MAINTENANCE

4.4 12 VOLT WIRE STANDARD

4.5 12 VOLT TROUBLE-SHOOTING

4.1 DESIGN AND PURPOSE

Your Carver 440 AFT CABIN is equipped with a 12 Volt DC (Direct Current) electrical system. This is a comprehensive system that is designed to meet your present and future 12 volt electrical needs.

Wire-runs and connections are placed and positioned to prevent abrasion and exposure to moisture, as well as to remain accessible for inspection, repairs and adding additional electrical components. Electrical wire used throughout your boat is plastic coated, color-coded wire. A guide to the color code system used by Carver can be found in Section 4.4 - 12 volt Wire Standard. Connections are made using crimped connector points.

Your boat's electrical system is virtually maintenance free, with only the batteries requiring periodic inspection and maintenance.

A) Battery Selector Switch

The Direct Current or DC electrical system is powered by two 12 Volt D-8 batteries. Each battery is firmly anchored between the two center stringers within the boat's engine compartment. Refer to Section 3.2 for the exact location of the 12 Volt batteries. Refer to Section 4.3 of this Owner's Guide for information on battery maintenance.

The power within these batteries is controlled by the battery selector switch which is located in the aft cabin's forward hanging locker. The battery selector switch acts as a master disconnect when your boat is equipped with gasoline engines, as well as a selector switch for either battery #1, battery #2, or both batteries together. Refer to the drawing at the end of Section 4.3 for additional battery wiring information.

Battery Selector Switch Positions:

NOTE: **The following information refers only to boats equipped with gasoline engines. If your boat is equipped with diesel engines, the engines are wired directly to the batteries. With diesel propulsion, the battery selector switch should be used only to parallel both batteries together if the charge in either batteries is too low to start your engines.**

OFF With the battery selector switch in the "OFF" position, all 12 Volt AC power to the boat is shut off except for the bilge pumps, voltmeters and battery charger leads. The boat's bilge pumps are "hard wired" to the selector switch so they operate in the automatic mode even when the boat is unattended and the selector switch is in the "OFF" position.

! CAUTION !

NEVER turn the battery selector switch to the "OFF" position while an engine or engines are running. Doing this will damage the alternator or engine wiring.

#1 Position #1 will use battery #1 to power both engines and all other 12 volt equipment. Battery #2 will be isolated and remain in reserve.

#2 Position #2 will use battery #2 to power both engines when your boat is equipped with gasoline engines and all other 12 volt equipment . Battery #1 will be isolated and remain in reserve.

ALL With the selector switch in the "ALL" position, battery #1 and battery #2 are connected in parallel. Both batteries will be used by the engines and all other 12 volt equipment.

A TIP FROM CARVER = *"The use of ONE BATTERY AT A TIME is highly recommended. The only time you should use the "ALL" position is when a single battery is not capable of starting your engines. After starting the engines in the "ALL" position, switch the selector to either the #1 or #2 position.*

Running the boat in the "ALL" position combines the voltage of both batteries and does not permit the alternator's voltage regulator to sense the charge level of an individual battery. This could lead to inadequate charging if one battery has been drained lower than the other."

Alternating between position #1 and position #2 will increase the life of your batteries.

B) Voltmeters

Battery condition is indicated on your boat's voltmeter. Use the voltmeter in the following manner:

When Starting Your Engines:

! DANGER !

Read, understand and follow the procedures described in Section 7.3 of this Owner's Guide before starting your boat's engines. Improper starting procedures may create hazardous situations.

! CAUTION !

TURN OFF all electronic communication and navigation equipment PRIOR TO starting the boat's engines. The large swing in the current supply during engine start-up can damage electronic equipment.

1) Activate the voltmeter by making sure the circuit breakers marked VOLTMETER are in the "ON" position. These breakers are located on the battery selector switch panel.

2) The voltmeter is installed at the helm console. Look at the voltmeter to determine which battery has the LOWEST charge. Charge level is determined by the level of power as indicated in available voltage. The voltmeter is activated by the switch that is installed immediately below the voltmeter. This switch is spring activated. Toggling the switch up or down will activate the voltmeter.

   Toggle the voltmeter switch to battery #1 and battery #2. If both banks are indicating the same level of voltage, use either the #1 or #2 battery selector switch position.

3) If your voltmeter shows that one battery has a lower level of charge than the other, switch the battery selector switch to the battery that has the HIGHEST available voltage.

4) Start one of the boat's engines. When it is idling smoothly, start the remaining engine. Start each engine independently. Never try to start both engines at once.

5) After the engines are running, switch the selector switch to the battery bank that had the LOWEST voltage reading. This will allow the engine's alternator to recharge the low battery.

The voltmeter reads static voltage when the engines are off. When the engines are running, one battery will indicate a higher reading than the other. This is because the voltmeter reads alternator charging rate when the engines are running. The position of the battery selector switch determines which battery will be charged by the alternator.

C) Powering 12 Volt Equipment

While the engines are running, 12 volt equipment can be used with little concern for excess battery discharge. The power generated by the engine alternators is usually more than adequate to replace any power consumed by 12 volt equipment.

HOWEVER, without an engine running, a battery will discharge as it powers 12 volt equipment. Operating 12 volt equipment without charging a battery will eventually completely

discharge the battery. This is why we recommend using either battery bank #1 OR battery bank #2 . The condition of your batteries can be monitored by referencing the voltmeter.

Fully charged batteries that have not been charged or discharged for at least 2 hours should indicate between 12.3 to 12.6 volts. A reading below this level indicates a partly discharged battery.

D) Battery Charger

Your 440 AFT CABIN is equipped with a 60 Amp battery charger. The battery charger uses AC power to recharge the 12 volt batteries. The battery charger is installed on the engine compartment's aft bulkhead, between the two propulsion engines.

Provide AC power to the battery charger by turning the AC breaker labeled BATTERY CHARGER to the "ON" position.

When activated the battery charger automatically monitors the charge of both batteries, regardless of the position of the battery selector switch. When the voltage in a battery drops below a predetermined level the charger automatically recharges the low battery.

With your boat connected to AC power (either through the shore power cord or by operating the onboard generator) and your battery charger operating, you can use 12 volt equipment (such as cabin lights) with little concern for discharging the boat's batteries.

The battery charger will charge the batteries even when the battery selector switch is in the "OFF" position.

More information on using the battery charger can be found in Section 5.2d of this Owner's Guide.

E) Inverter

Your boat is equipped with an inverter which converts 12 volts DC to 110 or 220 volts AC making it possible to operate the stereo and the television. A transfer relay is located in the boat's salon near the entertainment center. Be aware that this equipment exerts a "load" on a 12 volt electrical system when used without the engines running. Refer to page 5.2d-2 for equipment electrical loads

4.2 12 VOLT ELECTRICAL EQUIPMENT

The12V Circuit Breaker Panel manages 12 volt electrical power. This panel is located in the aft, port area of the boat's salon. The 12 volt service is divided into three groups. Group #1 controls interior lights, navigation and instrument lights, and electric flush toilets. Group #2 controls all accessories and pumps. The third group controls exhaust fans, bilge blowers and miscellaneous items such as trim tabs, horn and wipers.

A drawing that illustrates the 12 Volt circuit breaker panel has been included in this section of the Owner's Guide.

The following equipment is included in your boat's12 volt electrical system:

GROUP #1 = Interior lights, navigation lights and heads.

Lights: A group of breakers marked "LIGHTS" is on the left side of the panel and are used to control the boat's interior lights. Each breaker is marked with the group of lights that it controls.

The remaining group of breakers labeled "LIGHTS" are used to control navigation lights, instrument panel lights and the optional spot light.

Head, fore & aft: Breakers are provided for the forward and the aft electric head. Turn these breakers "ON" before using the toilet. A button labeled "FLUSH" is installed near each toilet. Push this button to clear the head of waste. Additional information on using and maintaining the electric flush toilets is included in the OEM material's portfolio.

Waste treatment: The breaker labeled "WASTE TREATMENT" is used on boats that are equipped with overboard discharge (Option #163). This breaker controls the 12 volt pump used to empty the contents of the waste holding tanks overboard. Refer to Section 6.3/163 for more information on using the overboard discharge system.

GROUP #2 = Accessories and pumps.

Bridge: The breaker labeled BRIDGE controls the cigar lighter and can be used to control accessories added to the boat by the dealer and/or owner.

Salon: The breaker labeled SALON controls the cigar lighter at the lower helm (if so equipped) and the fresh water tank monitor. This breaker can also be used to control any after market accessories that will be installed on the boat by the owner or dealer.

Extra: There are five breakers within a group that are labeled EXTRA. The EXTRA breaker that is mounted furthest to the left controls the carbon monoxide detectors.

Carver installs 3 carbon monoxide detectors on the 440 AFT CABIN. CO detectors have been installed in each stateroom and an additional detector is in the boat's salon.

This safety equipment detects the presence of carbon monoxide (abbreviated as CO) within the cabin of your boat. Carbon monoxide is a colorless and odorless gas that is present in engine and generator exhaust fumes. Carbon monoxide is a very dangerous gas that is potentially lethal when inhaled.

Your CO detector will alert you to the presence of carbon monoxide in the cabin by emitting a loud, high pitched sound. When you hear this alarm, determine the cause and correct it immediately. There is a test button on each CO detector. Test each unit on a weekly basis. If you suspect that a CO detector is faulty, have your dealer repair or replace it immediately.

More information concerning carbon monoxide is included in Section 7.5 of your Owner's Guide.

! DANGER !

ALWAYS activate the CO Detectors when the boat's engines and/or generator are running. Carbon monoxide is dangerous. Study Section 7.5 of your Owner's Guide for information on minimizing, detecting and controlling carbon monoxide accumulation.

The optional dual voltage, aft deck refrigerator is controled by the EXTRA breaker that is installed second from the left side of the panel. Refer to Section 9.4 for more information on using the dual voltage refrigerator.

The EXTRA breaker that is mounted third from the left is used to control the fuel transfer pump in boats that are equipped with diesel engines. Refer to Section 7.3 for more information on using the fuel transfer pump.

The remaining breakers labeled EXTRA can be used for dealer and owner installed accessories.

Pumps: Fore, Mid and Aft Bilge Pumps: Bilge pumps are used to remove water from the boat's bilge. Your boat has three bilge pumps, one in each bilge compartment (refer to Section 6.2 for more information on your boat's bilge system). The bilge pumps operate in two manners:

Automatic Operation

Incorporated into each bilge pump is a float switch. The float switch "automatically" activates the appropriate bilge pump when bilge water rises above a predetermined level. Your bilge pumps are "hard wired" to the battery selector switch so they operate automatically via their float switch, regardless of the position of the breakers on the 12 volt circuit breaker panel or battery selector switch.

It's a good idea to periodically test each float switch by lifting the float. The pump should turn on when the float is lifted.

Manual Operation

The bilge pumps can also be operated manually. A set of bilge pump control switches have been installed at each helm station to manually control these pumps.

For manual operation, turn the 12 volt circuit breakers labeled BILGE, FWD, MID and AFT to the "ON" position. At the helm station, turn the bilge pump switches marked FWD, MID or AFT to the "ON" position.

On dual station boats a bilge pump can only be turned "OFF" from the switch that was used to turn it "ON."

A TIP FROM CARVER = *"A certain amount of water will always collect in your boat's bilge especially in the bilge area where the shaft logs are located. The small amount of water that normally accumulates is usually not enough to activate the bilge pump's automatic float switch.*

While underway and on plane, use the helm station switch to turn your bilge pumps on manually and let them run for 30 seconds to a minute. "

! CAUTION !

DON'T FORGET TO TURN YOUR BILGES PUMPS OFF. Leaving a pump on for extended periods of time could cause excessive wear to the pump.

Pressure Water: Your boat's fresh water system is pressurized using a pressure water pump. To activate your boat's pressure water pump turn the 12 volt circuit breaker labeled PRESSURE WATER to the "ON" position. Once the breaker is "ON" the pressure water pump will operate automatically and on demand when the pressure within the water system falls below a predetermined level.

When the fresh water tanks are empty, switch and leave the circuit breaker for the pressure water pump in the "OFF" position.

Shower Pump: The shower drain basins on the 440 AFT CABIN are installed below the boat's water line. Because water can not flow up hill, a pump is needed to drain each shower basin.

NOTE: The air conditioning condensation drains into the shower sump pan. The automatic float switch can only be activated by flipping the shower pump breaker on the 12V distribution panel. If this breaker is not activated, the condensation from the air conditioning unit(s) will overflow the pan(s).

Before taking a shower, turn the 12 volt circuit breaker labeled SHOWER, AFT OR FWD (whichever corresponds to the shower you will be using) to the "ON" position.

The shower sump pumps are controlled by automatic float switches that are installed in each shower sump. When water within the shower sump reaches a predetermined level the automatic switch will start the pump and discharge the drain water overboard (or into the waste holding tank if the boat is built with a grey water system).

Washdown: This breaker is used when the boat is equipped with optional raw or fresh water washdown. The washdown breaker must be in the "ON" position to use the wash-down pump.

GROUP #3 = Exhaust fans and miscellaneous.

Bilge blowers: The 440 AFT CABIN is equipped with three bilge blowers. A breaker has been installed on the panel for each of these three blowers. To use the blowers, turn the circuit breakers labeled BILGE, ONE, TWO, THREE to the "ON" position. A single switch labeled BILGE BLOWER has been installed at each helm station. Turning this switch to the "ON" position activates all three blowers. On dual station boats you must use the same switch to turn the blowers "OFF" as was used to turn them "ON."

! DANGER !

ALWAYS use all three bilge blowers. Separate breakers have been installed to protect the blower and not to permit individual operation.

Head fans: Each of the head compartments has an exhaust fan. This fan should be turned "ON" when the shower is being used and whenever an exchange of air is needed within the head compartment. Turn the 12 volt circuit breaker labeled HEAD, FWD or AFT to the "ON" position. A switch labeled FAN has been installed in each head compartment. Use this switch to turn the fan on when needed.

Defrost: This breaker is not used on the 440 AFT CABIN.

Extra: This breaker is available for dealer or owner installed equipment.

MISCELLANEOUS:

Horn: The boat's horn is controlled by the breaker labeled HORN. A button has been installed at each helm station that when pressed, will sound the horn.

Stereo: This breaker is not used on the 440 AFT CABIN because the factory installed stereo operates on AC power. Use this breaker if you elect to install an additional stereo which operates on DC power.

Wiper: If your boat is equipped with a lower helm station, the salon windshield will also be equipped with a set of windshield wipers.

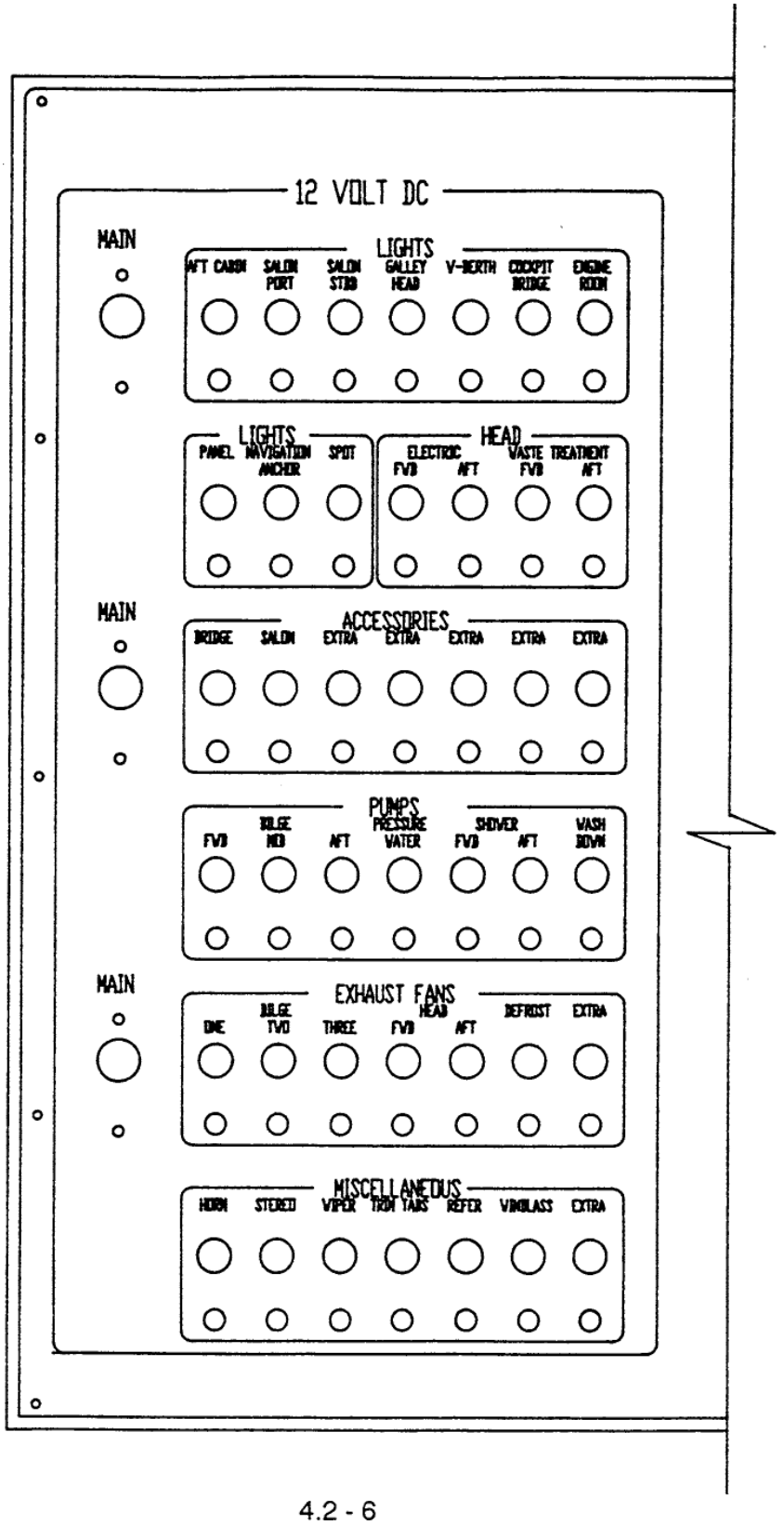
To use the wipers, turn the 12 volt circuit breaker labeled WIPER to the "ON" position. The WIPER switch installed on the lower helm station console activates the wipers when it is turned to the "ON" position. A wiper switch is not installed in the upper station console.

Trim Tabs: The 440 AFT CABIN is equipped with a set of electric/hydraulic trim tabs which are controlled by the breaker labeled TRIM TABS. To use the tabs turn the TRIM TAB breaker "ON." Adjust the tabs with the control that is installed at each helm station. More information on using the tabs can be found in Section 7.4.

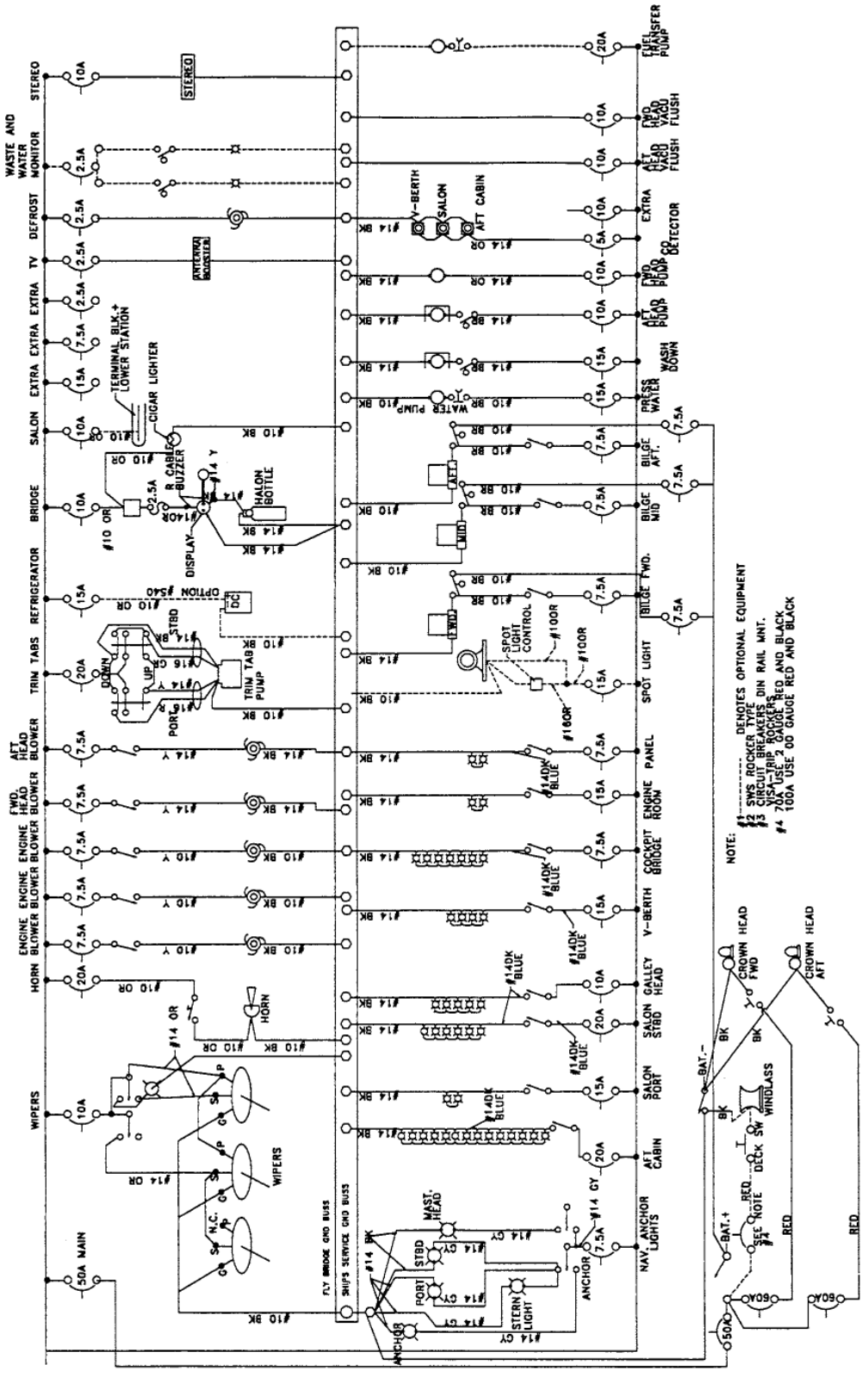
Refer: This breaker is used when a dual volatage refrigerator is installed in the galley in place of the standard AC refrigerator . The REFER breaker controls the 12 volt power for the optional dual voltage refrigerator. Refer to Section 9.4 for more information on using the dual voltage refrigerator.

Extra: This breaker is available for dealer or owner installed equipment.

4.2 12 VOLT ELECTRICAL PANEL DRAWING - 440 AFT CABIN



4.2 12 VOLT ELECTRICAL SCHEMATIC



4.3 BATTERY INSTALLATION AND MAINTENANCE

Your boat's 12 volt DC electrical system is powered with two1400 amp, D-8, heavy-duty batteries.

While your boat's batteries are relatively maintenance free, there are a few things you can do to increase their effectiveness and life.

! DANGER !

Your boat's batteries contain electrolyte which is an acid. Wear gloves and protective eye glasses when working on and around the batteries.

When servicing your boat's batteries avoid spilling electrolyte into the engine compartment or bilge. Also, avoid getting any salt water in or on the battery. Either of these conditions could create a poisonous gas that would be harmful if inhaled.

If you should spill electrolyte ventilate the area. Neutralize the acid in the electrolyte by pouring baking soda on the area of the spill. Neutralized electrolyte can then be cleaned up with a disposable rag or paper toweling.

Maintaining Your Boat's Batteries:

1) Keep your batteries fully charged. Batteries that are kept full or near fully charged will last longer than batteries stored with a partial charge. Battery condition can be monitored using the voltmeter that is installed on the helm console.

2) Inspect your boat's batteries at least every 30 days.

3) Periodically clean the battery terminals and cable connections. DISCONNECT THE BATTERIES BEFORE CLEANING.

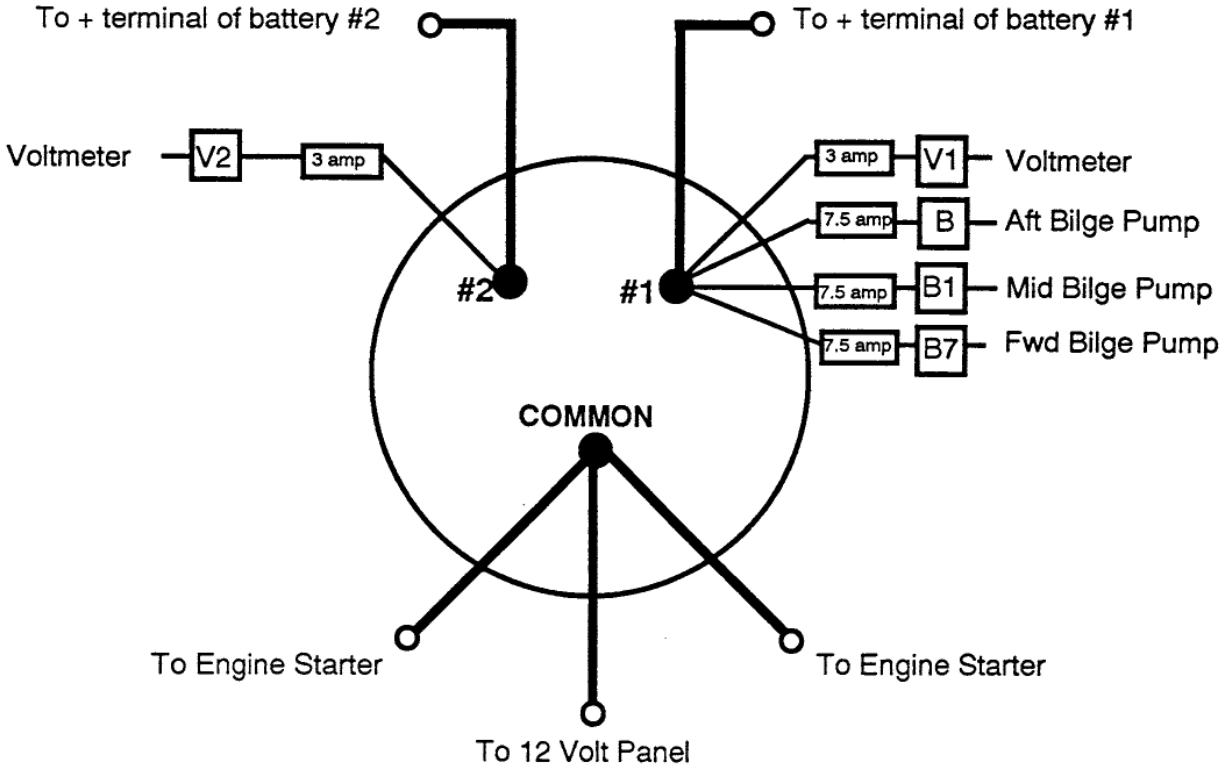
   Remove any accumulation of dirt on the top of the battery case. Use a wire brush to clean the terminals. Coating the terminals with a terminal protectant product will help reduce corrosion that can form in these areas.

4) Check to make sure that the battery cables are securely attached to the terminal posts. Tighten the terminal wing nuts SLIGHTLY beyond finger tight with a pliers.

5) Check the level of electrolyte in each cell of each battery. Correct level is just above the plates. If the fluid level is low, top off the cell with DISTILLED water. DO NOT OVERFILL.

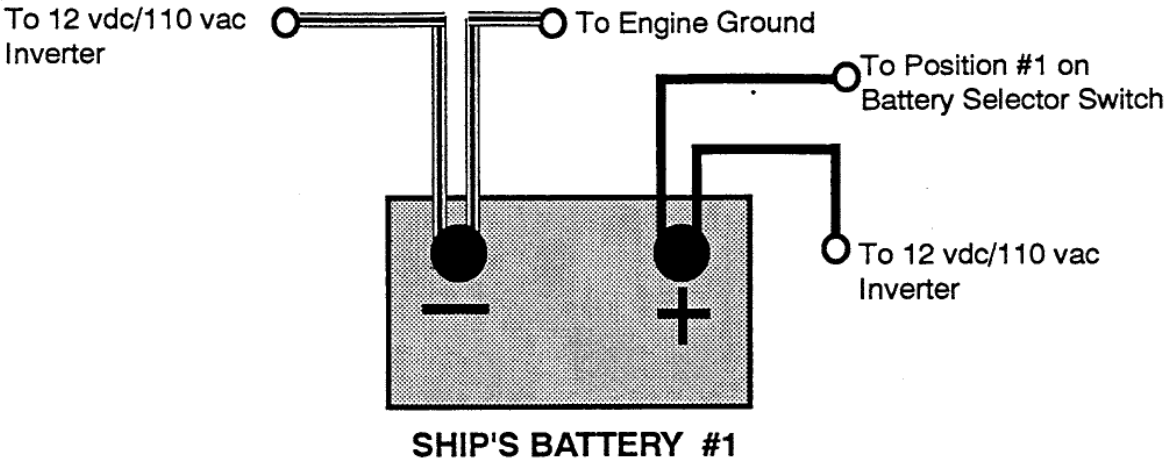
6) Remove the batteries from the boat during periods of extended storage. Store your batteries in a cool (above freezing temperature), dry area. All batteries will lose some charge during storage but the lower the temperature the less loss of charge. Avoid storing the batteries in a humid place. Humidity will lead to corrosion of the terminals.

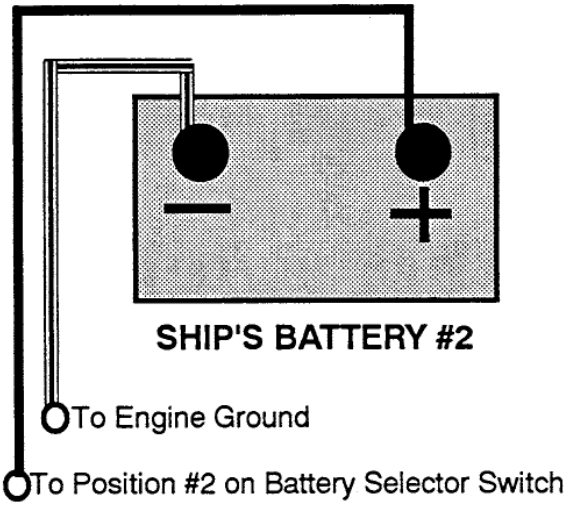
Check the battery charge level every 3 months using a hydrometer or voltmeter. If the specific gravity of the battery is less than 1.225 or voltage less than 12.4 volts charge the battery. Avoid overcharging.

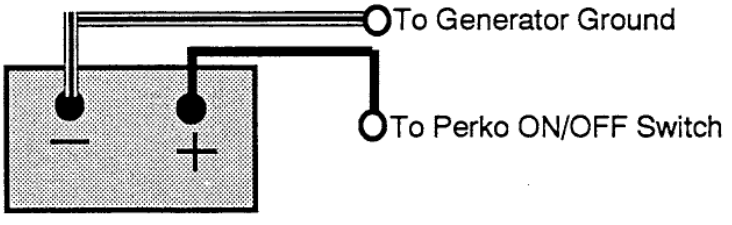


BATTERY SELECTOR SWITCH WIRING - 440 AFT CABIN

4.3 BATTERY WIRING - 440 AFT CABIN







GENERATOR BATTERY

Negative / Black Battery Cable =
Positive / Red Battery Cable =

Note: Propulsion engines are connected together with a black ground cable. Generator is connected to a propulsion engine with a black ground cable.

4.4 12 VOLT WIRE STANDARD - 440 AFT CABIN

CODE	COLOR	GA	USAGE	ROUTING	SWITCH	BREAKER	REMARK
A	Red	2	Primary Input	Batt. main to breaker		50	2 wire cab
A1	Black	10	Ground lead	Upper to lower terminal block			Single wire.
A3	Black	10	Acc. gnd-bridge	Bridge to elect ctr gnd			Single wire
B	Brown	10	Aft bilge pump	Breaker to switch to pump		7 1/2	2 wire cord
B1	Brown	10	Fwd bilge pump	Breaker to switch to pump		7 1/2	2 wire cord
B2	Brown	10	Fwd bilge pump	Batt to breaker to auto switch		7 1/2	Single wire
B3	Brown	14	Shower pump	Breaker to switch to pump	SPST	10	2 wire cord
B4	Brown	10	Aft bilge pump	Batt to breaker to auto switch		7 1/2	Single wire
B6	Brown	10	Mid bilge	Breaker to switch to pump		7 1/2	Single wire
B7	Brown	10					Single wire
B8	Brown	14	Washdown pump	Breaker to switch to pump	SPST	15	2 wire cord
B9	Brown	14	Aft Shower Pump	Breaker to pump		10	2 wire cord
C1	Rd/Org/Blk	8	Battery charger	Charger to breaker to battery #1		40	2 wire cord
C2	Rd/Org	8	Battery charger	Charger to breaker to battery #2		40	Single wire
C3	Rd/Org	8	Battery charger	Charger to breaker to generator battery		40	Single wire
CO	Orange	14	CO detector	Breaker to detector		2.5	2 wire cord
D	Brown	10	Press. water pump	Breaker to pump		15	2 wire cord
E	Ong/Org+Rd/Blk	16	Gen. remote start	Switch to generator			3 wire cord
F	Yellow	10	Bilge blower	Breaker to switch to blower	SPST	7.5	2 wire cord
F1	Orange	14	Head blower	Breaker to switch to blower	SPST	7.5	2 wire cord
F2	Yellow	10	Bilge blower	Switch to switch		7.5	Single wire
F3	Yellow	10	Bilge blower	Switch to switch		7.5	Single wire
F5	Orange	14	Aft head blower	Breaker to switch to blower	SPST	7.5	2 wire cord
H	Orange	10	Trim tabs	Breaker to switch		20	Single wire
J	Ong/Ong+Rd/Blk	14	Windshield wiper	Breaker to switch to wiper	DPDT no off	10	3 wire cord
J1	Orange/Red	14	Windshield wiper	Wiper to wiper			2 wire cord
J1	Orange	14	Windshield wiper	Switch to 3rd wiper			Single wire
K	Orange	10	Horn	Breaker to switch to horn	SPST mom	20	2 wire cord
L	Pink	16	Fuel indicator	Switch to gauge	Note 2		single wire
L1	Pink	16	Fuel indicator	Switch to PORT tank			Single wire
L2	Pink	16	Fuel indicator	Switch to STBD tank			Single wire
L4		10	Fuel transfer pump	Breaker to switch to pump	DPDT	20	2 wire cord
M	Orange	14	Halon system	Fuse to switch to alarm		2.5 in line	2 wire cord
N1	Drk Green	8	Fuel fill gnd	Port fuel tank to deck plate			Single wire
N2	Drk Green	8	Fuel fill gnd	Stbd fuel tank to deck plate			Single wire
O	Gray	14	Side Nav lights	Switch to lights	DPDT	7.5	2 wire cord
P	Gray	14	Stern light	Switch to light			2 wire cord
Q	Gray	14	Masthead light	Breaker to switch to light			2 wire cord
R	Gray	14	Anchor light	Switch to light			2 wire cord
S	Orange	14	Spotlight	Breaker to switch to spot	SPST	15	2 wire cord
T	Drk Blue	14	Interior lights	Breaker to cabin lights		20	2 wire cord
T1	Drk Blue	14	Interior lights	Breaker to V-berth lights		15	2 wire cord
T2	Drk Blue	14	Interior lights	Breaker to bridge or hardtop			2 wire cord
T3	Drk Blue	14	Int lts/Cockpit lts	Breaker to light		7.5	2 wire cord
T4	Drk Blue	14	Interior lights	Breaker to lights		15	2 wire cord
T5	Drk Blue	14	Overhead lights	Breaker to switch to lights	SPST	7 1/2	2 wire cord
T6	Drk Blue	14	Interior lights	Breaker to lights		15	2 wire cord
T7	Drk Blue	14	Interior lights	Breaker to lights		20	2 wire cord

CODE	COLOR	GA	USAGE	ROUTING	SWITCH	FUSE	REMARK
U	Drk Blue	14	Int lights	Breaker to switch to instruments	SPST	7.5	Single wire
V	Purple	16	Voltmeter	Switch to gauge	Note 2		Single wire
V1	Purple	16	Voltmeter	Main switch #1 to breaker to switch		3	Single wire
V2	Purple	16	Voltmeter	Main switch #2 to breaker to switch		3	Single wire
W	Orange	14	Stereo	Breaker to stereo		10	2 wire cord
X	Orange	10	Fwd head	Breaker to switch to head		10	2 wire cord
X3	Orange	10	Aft Head	Breaker to switch to head		10	2 wire cord
Y	Orange	10	Accessories	Breaker to terminal block		10	Single wire
Y1	Orange	10	Accessories	Breaker to bridge terminal block		10	2 wire cord
Y2	Orange	10	Accessories	Breaker to console to terminal block		10	2 wire cord
Z	Orange	10	Refrigerator	Breaker to refrigerator		15	2 wire cord
Z1	Orange	10	Refrigerator	Breaker to refrigerator		10	2 wire cord

NOTE: Some boats may use a DPDT fuel switch when the boat is equipped with two tanks and a single fuel gauge. This may also be the case if the boat is equipped with a single voltmeter. Models with a single fuel tank will not utilize a fuel switch.

4.5 TROUBLE SHOOTING 12 VOLT ELECTRICAL SYSTEM

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
12 volt equipment will not function.	Battery selector switch in the "OFF" position.	Turn the battery selector switch to position #1 or position #2.
	Main circuit breaker in the "OFF" position.	Turn on MAIN circuit breaker.
	Weak or dead battery bank.	Reposition battery selector switch and charge battery.
Individual 12 volt component will not operate.	Circuit breaker for that component in the "OFF" position.	Turn circuit breaker for that component on.
	Weak or dead battery bank.	Reposition battery selector switch.
	Loose or disconnected wire within the 12 volt system.	Repair system as needed.
Cabin lights do not come on OR are dim.	Circuit breaker marked CABIN in the "OFF" position.	Turn on CABIN circuit breaker.
	Weak or discharged battery bank.	Reposition battery selector switch and charge weak battery bank as needed.
	Light bulb burned out.	Replace light bulb.
Battery will not hold a charge.	Faulty or old battery.	Replace with new battery.
Engine is running and voltmeter does not indicate adequate voltage.	Engine alternator belt is loose.	Refer to engine manual for instructions on tightening belt.

CARVER

OWNER'S GUIDE TO SAFE AND PROPER OPERATION

SECTION 5

5.0 AC ELECTRICAL SYSTEM

5.1s SINGLE DOCKSIDE SYSTEM

5.1d DUAL DOCKSIDE SYSTEM (optional equipment)

5.2s AC ELECTRICAL EQUIPMENT / SINGLE DOCKSIDE SYSTEM

5.2d AC ELECTRICAL EQUIPMENT / DUAL DOCKSIDE SYSTEM

5.2-410 AIR CONDITIONING (optional equipment)

5.3 AC GENERATOR

5.4 STRAY CURRENT AND GALVANIC CORROSION

5.5 BONDING SYSTEM

5.6 AC SYSTEM TROUBLE-SHOOTING

5.0 AC ELECTRICAL SYSTEM - 440 AFT CABIN

The AC (alternating current) electrical system in your boat can be configured in one of the following ways:

A) Single 50 Amp Dockside ("Single Dockside")

A single 50 amp service is the standard configuration for the 440 AFT CABIN. This system is powered by a single 50 amp shore power cord or the boat's onboard generator.

Single dockside systems are wired at the Carver factory in either 110 volt AC or 220 volt AC. 110 volt systems are used throughout North American and Pacific Rim countries. 220 volt is primarily used in European countries whose standard electrical system is based on 220 volt power.

These instructions pertain to either 110 volt or 220 volt single dockside systems. Section 5.1-S explains the use of the SINGLE 50 AMP DOCKSIDE SYSTEM.

B) Dual 50 Amp Dockside ("Dual Dockside")

If your 440 AFT CABIN is equipped with air conditioning, dual dockside wiring has been installed to handle the extra current flow .

The dual 50 amp system utilizes two 50 amp services, each service powered by its own 50 amp shore power cord or by the boat's onboard generator.

Dual dockside is available in either 110 volt or 220 volt configurations.

These instructions pertain to either 110 volt or 220 volt dual dockside systems. Section 5.1-D explains the use of the DUAL 50 AMP DOCKSIDE SYSTEM.

Please refer to the following section that pertains to your boat's wiring configuration.

IMPORTANT NOTE: Within Sections 5.1s and 5.1d there are several references made to "reverse polarity." Reverse polarity is a situation that occurs only in boats equipped with 110 volt AC electrical systems. Owners of boats with 220 volt electrical systems should disregard any instructions or references concerning reverse polarity.

5.1s SINGLE 50 AMP DOCKSIDE SYSTEM - 440 AFT CABIN

The single 50 amp AC electrical system is powered through the use of a dockside power source. Once a source of power has been supplied the AC electrical system operates much the same as the system within your home. Your AC system supplies electrical power to items such as dual voltage refrigerator, stove, battery charger, ice maker, and AC receptacles.

! WARNING !

Before using your boat's electrical system be certain that either:

1) **The circuit breaker labeled WATER HEATER, located in the AC circuit breaker panel, is switched to the "OFF" position.**

OR

2) **Your boat's fresh water system (including the water heater) has been filled, pressurized, and primed.**

DO NOT supply electrical power to an empty water heater. Doing so may result in damage to the unit's heating element and could result in a fire.

The shore power or dockside electrical system of your 440 AFT CABIN uses three-wire, color-coded circuitry. The black wire is referred to as HOT and is the current-carrying conductor wire. The white or NEUTRAL wires are grounded and are also current-carrying conductors. GROUND wires will appear as a green plastic color-coded wire OR as bare copper wires. Under normal conditions the ground wires do not carry current.

"Buss bars" are used within the electrical system to help route and organize the wires. The system's white or neutral wires are connected together at buss bars. The ground wires are also connected together at another independent buss bar. Each black (or hot) wire is connected to and protected by a circuit breaker that is installed in the circuit breaker panel.

Power within your boat's AC electrical system is routed and controlled via the AC circuit breaker panel. Your circuit breaker panel has a 50 amp MAIN breaker which protects the overall AC electrical system. Twelve other circuit breakers have been installed in your boat's circuit breaker panel. These breakers protect individual circuits and are explained in Section 5.2s.

Circuit breakers serve two purposes:

1) They enable you to manually interrupt a circuit by switching the breaker "ON" or "OFF."

2) They protect the electrical system by "automatically" breaking or disconnecting the circuit in the case of a short or overload.

! WARNING !

NEVER reset a breaker that has been automatically tripped without first discovering and correcting the source of the problem. Failure to do this may create a dangerous situation.

A) 50 Amp MAIN Breaker

The MAIN breaker protects both the hot and neutral input leads. This SHORE breaker will also trip if reverse polarity should occur. Reverse polarity will be explained in further detail later in this section.

There are two MAIN breakers installed in the AC breaker panel. These MAIN breakers are labeled SHIP and the other SHORE. Use the SHORE breaker when connected to a dockside AC power source. The SHIP breaker is used when powering the boat's AC system with the onboard generator. Only one MAIN breaker should bein the "ON" position at any time.

The 50 amp MAIN breaker has been designed to be very sensitive to power surges. The surge that results when connecting your boat's dockside power cord to shore power may be enough to trip the MAIN breaker. To avoid this situation, turn the MAIN breaker to the "OFF" position BEFORE connecting your boat to shore power. Also, if the shore power connection is made, disconnected and secured, the MAIN breaker will most likely trip.

A TIP FROM CARVER: *"The above paragraph becomes especially important when powering your boat's dual voltage refrigerator. Let's construct the following scene from a typical day in the life of a boater.*

"The refrigerator in your boat is full of perishable items. It's Sunday afternoon and you're packing to go home. But you're coming back to the boat in a few days so you leave the boat plugged into dockside power and the refrigerator running on AC power.

"While you are away, someone disconnects your shore power cord from the dock box. They reconnect it BUT the surge in power trips your 50 amp SHORE #1 MAIN breaker.

"Because the MAIN breaker tripped, all power to your refrigerator has been disconnected. When you arrive back at your boat you find that your perishables have spoiled.

"When your boat is unattended for an extended period, DON'T leave anything in your boat's refrigerator that needs to stay cold to avoid spoiling."

B) Connecting To Shore Power

1) Locate your 50' dockside electrical cord. Be certain that the cord is in good repair. Inspect it for any cuts, nicks or abrasions in its exterior plastic cover.

! DANGER !

DON'T use a damaged cord and DON'T use a cord that is not specifically designed for this purpose. A household extension cord should not be used as a shore power cord for your boat. Using a damaged or improper cord could lead to electrical shock and serious personal injury.

2) Make sure the 50 amp MAIN breaker located within the boat's AC circuit breaker panel is in the "OFF" position.

3) Connect the female end of the cord to your boat's shore power receptacle. This receptacle is mounted on the port side of the boat's cockpit. The power plugs have a non-metallic threaded locking ring that locks the cordset to the inlet.

4) Choose a neat and safe way to route the dockside cord to the dockside electrical box.

5) Turn the breaker that is installed in the dockside electrical box to the "OFF" position. Plug the male end of the dockside cord into the dockside electrical box. The shore power plugs have a non-metallic threaded locking ring that locks the cordset to the dockside inlet. This prevents accidental disconnection or arcing due to a gap be tween plug and inlet. After the cordset is connected, turn the dockside electrical box breaker to the "ON" position.

6) Check for reverse polarity. If the red reverse polarity light is aglow, disconnect the shore power cord and contact marina management. If polarity is okay, turn your boat's 50 amp MAIN breaker to the "ON" position. Monitor the voltmeter and ammeter.

C) Reverse Polarity

The MAIN circuit within your boat's electrical system is designed with a circuit that senses the voltage difference between the neutral and ground terminal blocks. If the dockside electrical power source is incorrectly wired and the polarity is reversed, the red reverse polarity light will light up.

! CAUTION !

Should the red reverse polarity light become illuminated DO NOT try to turn the MAIN breaker "ON". INSTEAD, disconnect the shore power cord immediately. Notify the marina management of the reverse polarity problem and use a different dockside electrical box.

D) Voltmeter and Ammeter Usage

Your boat's electrical system is equipped with a VOLTMETER and an AMMETER. These instruments are located on the AC circuit breaker panel.

VOLTMETER - The voltmeter provides you with an indication of the electrical voltage that is entering your boat's system.

With your boat's shore power cord attached to a dockside power source the onboard voltmeter should read between 110 and 120 volts in a 110 system and between 210 and 240 volts in a 220 volt system. If the voltage indicates a reading of 105 volts (205 volts in a 220 volt system) or less, DO NOT USE THE SYSTEM. If you experience a low voltage reading as described, contact the marina's management to locate the source of the problem.

If the voltmeter is reading zero voltage it is an indication that no current is getting to the AC circuit breaker panel. Check your shore power cord to make sure it is properly attached to both the boat and the dockside electrical box. Also, make sure you have turned the dockside electrical breaker to the "ON" position.

After checking these items, if you are still not getting power to the boat, contact marina management to ensure that the dockside power is operable.

If indications are that the problem is with the boat's electrical system, have the system inspected by a qualified electrician.

AMMETER - The ammeter provides you with an indication of the LOAD that is being put on the boat's 50 amp electrical system.

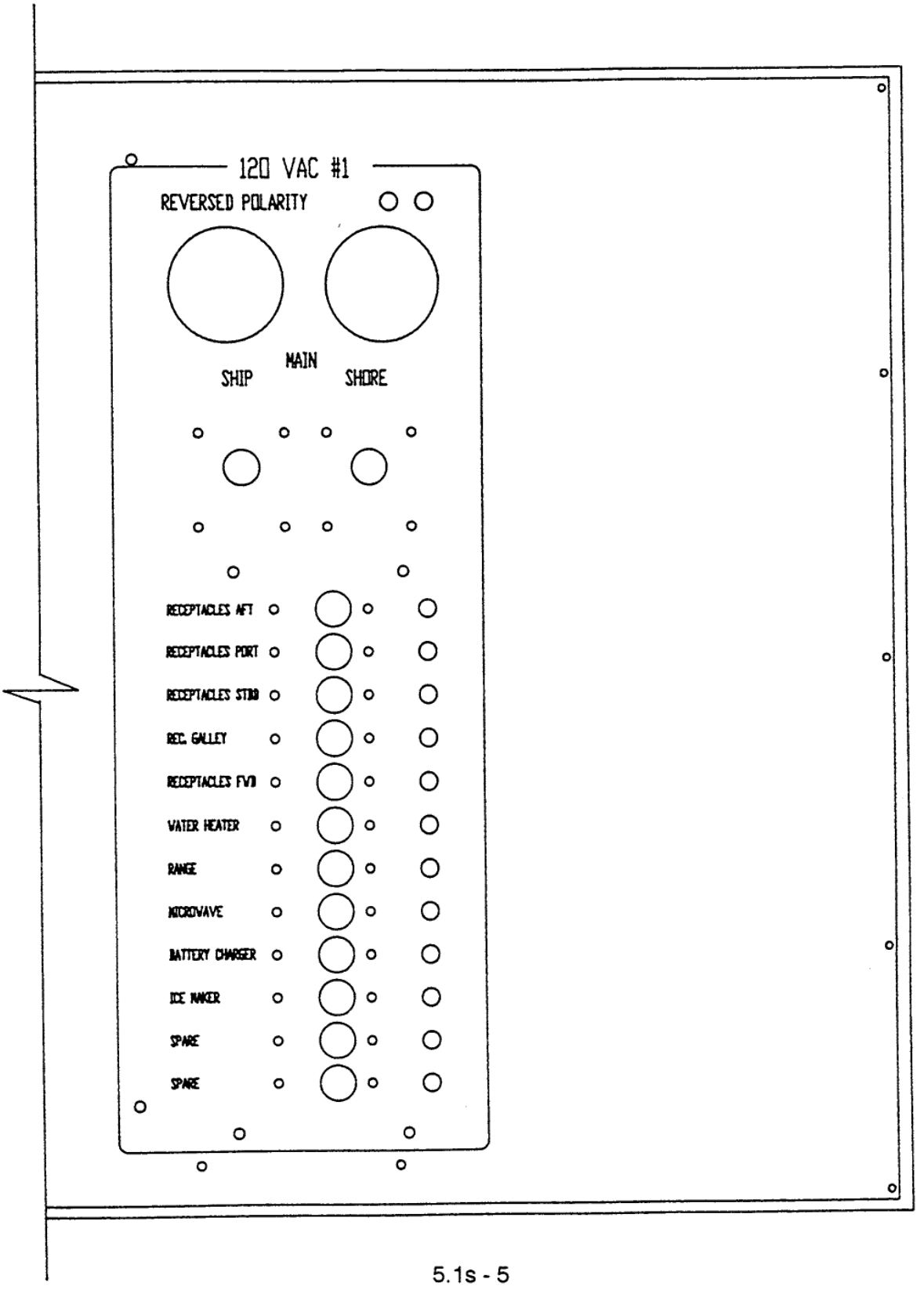
With all other breakers on the AC circuit breaker panel switched to the "OFF" position and only the MAIN breaker in the "ON" position, and a reading of between 110 and 120 volts (210 and 240 volts for a 220 system), the ammeter should be indicating 0 amps.

As you begin to power AC equipment (water heater, battery charger or any other portable equipment powered through the wall-mounted AC receptacles), the ammeter will begin to give readings in excess of 0 amps. Refer to Section 5.2s for more information on amperage and electrical loads.

! DANGER !

ONLY people who are trained and experienced in working with electricity should service your boat's AC system. Inexperienced or untrained people may be harmed by incorrectly servicing a high voltage electrical system.

5.1s AC PANEL / SINGLE DOCKSIDE - 440 AFT CABIN



5.1d DUAL 50 AMP DOCKSIDE SYSTEM - 440 AFT CABIN

Dual 50 AMP Dockside System is included when a boat is factory equipped with air conditioning.

The dual 50 AMP AC electrical system can be powered either by connecting a pair of shore power cords to a dockside power source OR by operating the onboard generator. Once a source of power has been supplied, the AC electrical system operates much the same as the system within your home. Your AC system supplies electrical power to items such as the refrigerator, stove, battery charger, ice maker, AC receptacles, and the air conditioner.

! WARNING !

Before using your boat's electrical system be certain that:

1) **The circuit breaker labeled WATER HEATER, located in the AC circuit breaker panel, is switched to the "OFF" position.**

OR

2) **Your boat's fresh water system (including the water heater) has been filled, pressurized, and primed.**

DO NOT supply electrical power to an empty water heater. Doing so could result in damage to the unit's heating element and could result in a fire.

The AC electrical system on your 440 AFT CABIN uses three-wire, color-coded circuitry. The black wire is referred to as HOT and is the current-carrying conductor wire. The white or NEUTRAL wires are grounded and are also current-carrying conductors. GROUND wires will appear as a green plastic color-coded wire OR as bare copper wires. Under normal conditions the ground wires do not carry current.

"Buss bars" are used within the electrical system to help route and organize the wires. The system's white or neutral wires are connected together at buss bars. The ground wires are also connected together at another independent buss bar. Each black (or hot) wire is connected to and protected by a circuit breaker that is installed in the circuit breaker panel.

Power within your boat's AC electrical system is routed and controlled via four 50 amp MAIN breakers. These services are labeled SHORE 1, SHORE 2 and SHIP 1, SHIP 2. Each service has a 50 amp MAIN breaker which protects the individual circuits within that panel. Sixteen individual circuit breakers have been installed in your boat's circuit breaker panel. These breakers protect specific circuits and are explained in Section 5.2d.

Circuit breakers serve two purposes:

1) They enable you to manually interrupt a circuit by switching the breaker "ON" or "OFF."

2) They protect the electrical system by automatically breaking or disconnecting the circuit in the case of a short or overload.

! WARNING !

NEVER reset a breaker that has tripped without first discovering and correcting the source of the problem. Failure to do this could create a serious and hazardous situation.

A) 50 Amp Main Breakers

Your dual dockside system utilizes two, 50 amp services. Each service is protected by two 50 amp MAIN circuit breakers. These MAIN breakers are labeled SHORE 1, SHORE 2 and SHIP 1, SHIP 2.

The MAIN breakers protect both the hot and neutral input leads. These breakers will also trip if reverse polarity should occur. Reverse polarity will be explained in further detail later in this section.

The 50 amp MAIN breakers have been designed to be very sensitive to surges in power. The surge that results when connecting a dockside cord to shore power is usually enough to trip a SHORE MAIN breaker. To avoid this power surge, turn the SHORE MAIN breakers to the "OFF" position BEFORE connecting your boat to shore power. Also, if a shore power connection is made, disconnected an then resecured, the SHORE MAIN breaker protecting that service will most likely trip.

A TIP FROM CARVER: *"The above paragraph becomes especially important when it comes to powering your boat's refrigerator. Let's construct the following scene from a typical day in the life of a boater.*

The refrigerator in your boat is full of perishable items. It's Sunday afternoon and you're packing to go home. But you're coming back to the boat in a few days so you leave the boat plugged into dockside power and the refrigerator running on AC power.

While you are away, someone disconnects your shore power cord from the dock box. They reconnect it BUT the surge in power trips your Shore #1 AC MAIN breaker. Because the MAIN breaker tripped, all power to your refrigerator has been disconnected. When you arrive back at your boat you find that your perishables have spoiled.

"Our advice is if your boat will be left unattended, DON'T leave anything in your boat's refrigerator that needs to stay refrigerated to avoid spoiling."

B) Connecting To Shore Power

1) Locate the 50' dockside electrical cords. Be certain that these cords are in good repair. Inspect for any cuts, nicks or abrasions in the exterior plastic covers.

! DANGER !

DON'T use a damaged cord and DON'T use a cord that is not specifically designed for this purpose. Household extension cords should not be used as shore power cords for your boat. Using a damaged or improper cord may lead to electrical shock that could cause serious injury.

2) Make sure the SHORE 1 and SHORE 2 MAIN breakers are in the "OFF" position.

3) Connect the female end of the cords to your boat's shore power inlet receptacles.

4) Choose a neat and safe way to route the dockside cords to the dockside electrical box.

5) Turn the breakers that are installed in the dockside electrical box to the "OFF" position. Plug the male ends of the dockside cords into the dockside electrical box. The shore power plugs have a non-metallic threaded locking ring that locks the cordset to the dockside inlet. This prevents accidental disconnection or arcing due to a gap between plug and inlet. After the cordset is connected, turn the dockside electrical box breakers to the "ON" position.

6) Check for reverse polarity. If a red reverse polarity light is aglow, disconnect the shore power cord for that electrical service and contact marina management. If polarity is okay, turn your boat's 50 amp SHORE MAIN breakers to the "ON" position. Monitor the voltmeters and ammeters.

C) Reverse Polarity (110 Volt AC Systems)

The circuits within your boat's electrical system are designed with a device that senses the voltage difference between the neutral and ground terminal blocks. If the dockside electrical power source is incorrectly wired and has the polarity reversed, the red reverse polarity indicator light will light up.

! CAUTION !

Should the red reverse polarity light become illuminated DO NOT try to reset the breaker. INSTEAD, disconnect the shore power cord immediately. Notify the marina management of the reverse polarity problem and use a different dockside electrical box.

D) Powering the AC System Using the Onboard Generator

Refer to Section 5.3 for instructions on starting the generator. Refer to the operating manual provided by the manufacturer of the generator for detailed instructions on how to use and maintain the generator.

When the generator has been started, simply turn the SHORE MAIN breakers to the "OFF" position and turn "ON" the SHIP MAIN breakers.

E) Voltmeter and Ammeter Usage

The dual dockside system includes a set of VOLTMETERS and AMMETERS. These instruments are located at the top of your AC circuit breaker panel.

VOLTMETER- The voltmeter provides you with an indication of the electrical voltage that is entering your boat's system.

With your boat's shore power cords attached to a dockside power source the onboard voltmeters should read between 110 and 120 volts in a 110 system, and between 210 and 240 volts in a 220 volt system. If the voltage indicates a reading of 105 volts (205 volts in a 220 volt system) or less, DO NOT USE THE SYSTEM. If you experience a low voltage reading as described, contact the marina's management to locate the source of the problem.

If a voltmeter is indicating zero voltage there is no power getting to that AC circuit breaker panel. Check the shore power cord to make sure it is properly attached to both the boat and the dockside electrical box. Also, make sure you have turned the dockside electrical boxes breaker to the "ON" position.

After checking these items, if you are still not getting power to the circuit, contact marina management to ensure that the power to the dock is operable.

If indications are that the problem is with the boat's electrical system, have the system inspected by a qualified electrician.

AMMETER - The ammeters provide you with an indication of the LOAD that is being put on that specific circuit.

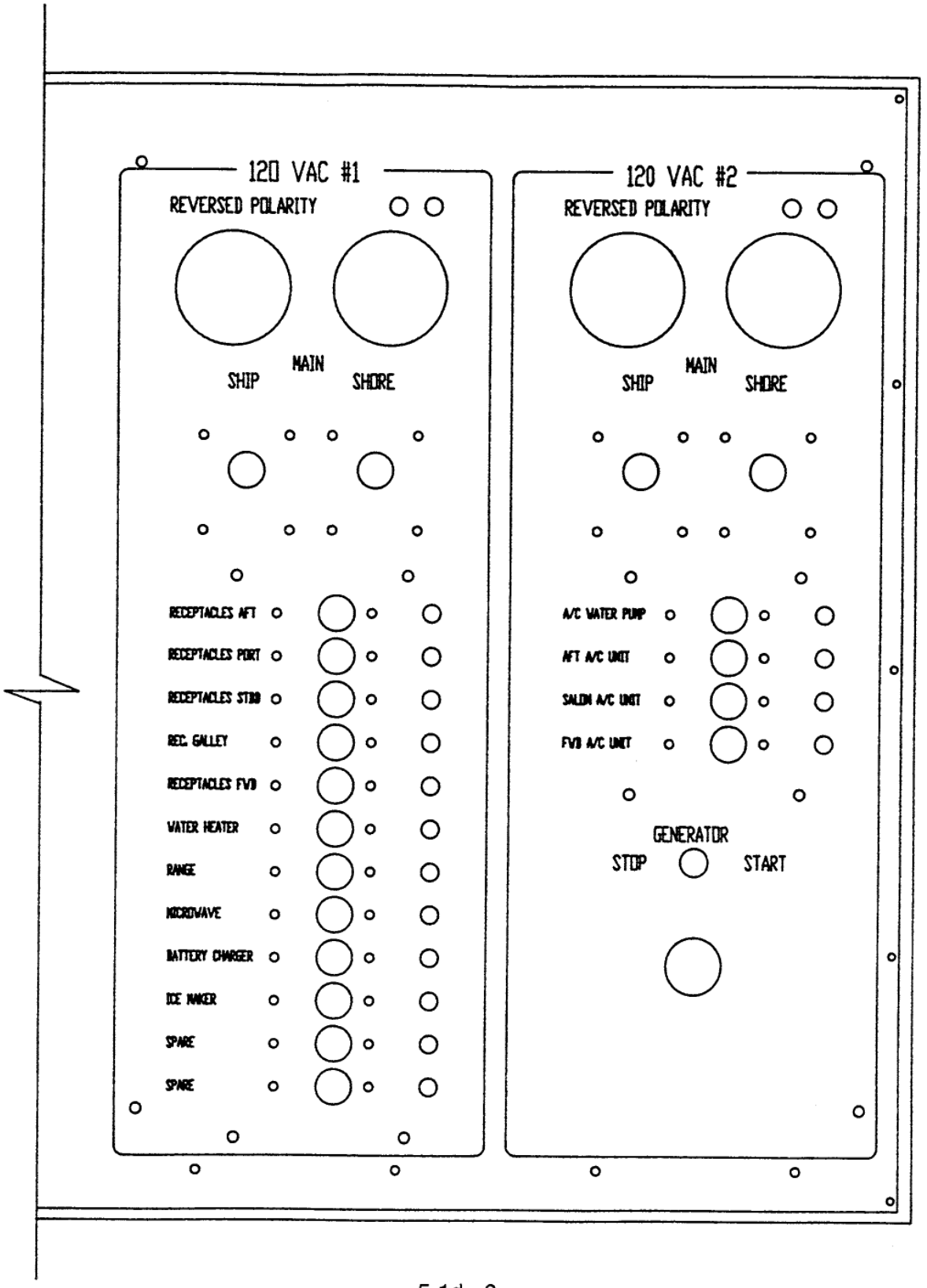
With all other breakers on the AC circuit breaker panel switched to the "OFF" position and only the MAIN breakers in the "ON" position, and a reading of between 110 and 120 volts (210 and 240 volts for a 220 system), the ammeters should be indicating 0 amps.

As you begin to power AC equipment (water heater, battery charger, air conditioner or any other portable equipment powered through the wall-mounted AC receptacles), the ammeter gauge will begin to give readings in excess of 0 amps.

! DANGER !

ONLY people who are trained and experienced in working with electricity should service your boat's AC system. Inexperienced or untrained people may be harmed by incorrectly servicing a high voltage electrical system.

5.1d AC PANEL / DUAL DOCKSIDE - 440 AFT CABIN



5.1d - 6

5.2s AC ELECTRICAL EQUIPMENT - 440 AFT CABIN
Single 50 Amp Dockside System

Electrical power is managed and distributed through the AC electrical panel. This panel is located in the boat's salon.

There are twelve individual circuit breakers mounted within this panel. These individual breakers are controled by a 50 AMP MAIN CIRCUIT BREAKER. The MAIN circuit breaker must be on for any individual circuit to function. There is a MAIN circuit breaker labeled SHORE and another labeled SHIP. Use the SHORE MAIN circuit breaker when connected to dockside power. Use the SHIP circuit breaker when using the on board generator.

The following individual circuit breakers are included in your boat's electrical service:

Receptacles: Receptacles have been installed throughout your boat's interior. These electrical outlets are handy for powering on-board household appliances and AC lights.

There are five breakers that control the boat's receptacles. These breakers are labeled:

RECEPTACLES AFT - This breaker controls the breakers in the boat's master stateroom.

RECEPTACLES PORT - This breaker controls the receptacles located on the port side of the salon.

RECEPTACLES STARBOARD - The RECEPTACLE STARBOARD breaker controls the receptacles located on the starboard side of the salon.

RECEPTACLES GALLEY - This breaker controls the AC outlets in the galley and the galley refrigerator.

RECEPTACLES FWD - This breaker controls the AC outlets in the forward stateroom and forward head compartment.

Certain receptacles are Ground Fault Circuit Interrupters (GFCI). GFCI outlets provide protection against abnormal current flow from a conductor to ground. Ground fault protection is based on the idea that a normal electrical circuit has all the current flowing in the wires designated for that circuit. Ground fault protection is provided by measuring the current in each conductor and seeing that whatever flows "down" one conductor in a circuit, flows "back" through the corresponding conductor of the same circuit. If there is an imbalance in the current, it is considered a "fault" in that circuit. Your boat's electrical system is protected from ground fault through the installation of GFCI receptacles.

When a ground fault current is detected in the AC system, the GFCI outlets will trip and interrupt the flow of current.

The advantage of ground fault protection aboard your boat is that the incorrect flow of current will cause the electrical power to be interrupted BEFORE appreciable damage to equipment or wiring occurs. Ground fault interrupters also provide you and your guests with protection from inadvertent electrical shock.

Testing GFCI Receptacles:

GFCI receptacles are identified by a button that is located between the two outlets. Pushing the button will interrupt the current in that receptacle and all other receptacles on that circuit. If the power IS NOT interrupted do not use the receptacles on that circuit and contact a qualified electrician to make the proper repairs. Press the button to restore power to the receptacles in that circuit.

Test the GFCI receptacles on a weekly basis to ensure proper operation.

When using your boat's AC receptacles be aware that household appliances exert a "load" on an electrical system when they are used. Your boat's system is only capable of carrying a certain electrical load. This load is measured in "AMPs."

The MAIN circuit in your boat has an electrical capacity of 50 amps. If the load on this circuit exceeds the level of amperage it was designed for, a breaker will trip. This is a signal that you have overloaded the circuit.

Below is a list of typical household equipment and the approximate loads that could develop during their use.

AC EQUIPMENT ELECTRICAL LOADS

Fans	Up to 0.7 amps
Electric Blanket	Up to 2 amps
Television	Up to 2.7 amps
Coffee Maker	Up to 6.3 amps
Battery Charger	Up to 7.3 amps
Toaster	Up to 10.5 amps
Fry Pan	Up to 12.3 amps
Space Heater	Up to 13.7 amps
Refrigerator	Up to 15 amps

An appliance that uses an electric motor, such as a vacuum cleaner or electric drill, will have a "motor load plate" mounted on the unit. This motor load plate will provide information on the load that will be created while using the device.

As the chart indicates, appliances that utilize a motor or a heating element create rather high loads. Be particularly careful when using curling irons, toasters, coffee makers, hair dryers, mix masters or any other comparable types of equipment.

! CAUTION !

DO NOT overload the electrical circuits. Use the above chart to judge the load that is being put on an individual receptacle. The galley receptacle is rated for 20 amps. The remaining receptacle breaker is rated for 15 amps. Exceeding these loads will trip the circuit breaker. Reduce the amperage on a receptacle before resetting the breaker.

Water Heater: Your boat's water heater can only be powered by AC power. Turning the breaker labeled WATER HEATER to the "ON" position supplies power to the water heater.

! WARNING !

DO NOT supply power to an empty water heater. Fill, pressurize and prime the boat's fresh water system prior to turning on the water heater. Heating an empty water heater will cause serious damage to the unit's heating element and could lead to a fire.

Refer to Section 6.1 for instructions on filling, pressurizing, and priming the fresh water system. Refer to section 6.1 for information on how to operate the onboard water heater. Information on the proper use and maintenance of your boat's water heater has also been provided by the OEM supplier. This information is in the OEM information packet.

Range: Your 440 AFT CABIN is offered with a three-burner electric stove as standard equipment. To use the stove turn the AC circuit breaker labeled RANGE to the "ON" position. Use the controls mounted on the range to control burners and heat adjustments.

Information on the proper use and maintenance of the range is provided by the OEM supplier. Look for this information in the OEM information packet.

NOTE: If your boat was equipped from the Carver factory with a propane stove refer to Section 9 for operational instructions. Information supplied by the propane stove OEM supplier has been included within the OEM information packet.

Microwave: Microwave ovens are offered for installation as original factory equipment. These ovens operate on AC power.

To power your microwave, switch the AC circuit breaker labeled MICROWAVE to the "ON" position. Refer to the manual supplied by the make of the microwave oven for information regarding operation and maintenance.

Battery Charger: All 440 AFT CABINS are equipped with a 60 amp battery charger. To use the boat's battery charger turn the AC circuit breaker labeled BATTERY CHARGER to the "ON" position.

More information on using the battery charger can be found in Section 4.1 of this Owner's Guide.

Refer to the manual provided by the manufacturer of the battery charger for more information regarding its use and operation.

Ice Maker: The 5 amp breaker labeled ICEMAKER controls power to the icemaker in the boat's salon. Refer to the manual provided by the manufacturer for more information on use and maintenance of that appliance.

NOTE: Power for the icemaker on the aft deck is supplied by the 110 volt receptacle on the aft deck. The breaker for this receptacle is labeled RECEPTACLES AFT.

Spare: These two breakers, 10 and 15 amp, are available for dealer or owner installed equipment.

5.2d AC ELECTRICAL EQUIPMENT - 440 AFT CABIN
Dual 50 Amp Dockside System

Dual, 50 amp dockside systems are used in conjunction with air conditioning.

Electrical power is managed and distributed through four, 50 amp, AC breakers. These breakers are labeled SHORE 1, SHIP 1 and SHORE 2, SHIP 2 and are located in the AC electrical panel.

There are twelve individual circuit breakers mounted within the SHORE 1 / SHIP 1 service and four breakers within SHORE 2 / SHIP 2 service. Each 50 amp electrical service is controlled by a 50 AMP MAIN CIRCUIT BREAKER. These MAIN circuit breakers must be "ON" for any individual breaker to function within its' respective main circuit.

An electrical drawing for a dual 50 amp AC circuit breaker panel is included at the end of Section 5.2d.

A) SHORE 1 / SHIP 1

The following individual circuit breakers are included in your boat's SHORE 1 / SHIP 1 electrical service:

Receptacles: Receptacles have been installed throughout your boat's interior. These electrical outlets are handy for powering on board household appliances and AC lights.

There are five breakers that control the boat's receptacles. These breakers are labeled:

RECEPTACLES AFT - this breaker controls the receptacles in the boat's master state-room.

RECEPTACLES PORT - This breaker controls the receptacles located on the port side of the salon.

RECEPTACLES STARBOARD - the RECEPTACLES STARBOARD breaker controls the receptacles located on the starboard side of the boat.

RECEPTACLES GALLEY - This breaker controls the AC outlets in the galley and the galley refrigerator.

RECEPTACLES FWD - This breaker controls the AC outlets in the forward stateroom and the forward head compartment.

Certain receptacles are Ground Fault Circuit Interrupters (GFCI). GFCI outlets provide protection against abnormal current flow from a conductor to ground. Ground fault protec-tion is based on the idea that a normal electrical circuit has all the current flowing in the wires designated for that circuit.

Ground fault protection is provided by measuring the current in each conductor and seeing that whatever flows "down" one conductor in a circuit, flows "back" through the corresponding conductor of the same circuit. If there is an imbalance in the current, it is considered a "fault" in that circuit. Your boat's electrical system is protected from ground fault through the installation of GFCI receptacles.

When a ground fault current is detected in the AC system, the GFCI outlets will trip and interrupt the flow of current.

The advantage of ground fault protection aboard your boat is that the incorrect flow of current will cause the electrical power to be interrupted BEFORE appreciable damage to equipment or wiring. Ground fault interrupters also provide you and your guests with protection from inadvertent electrical shock.

Testing GFCI Receptacles:

GFCI receptacles are identified by a button that is located between the receptacles two outlets. Pushing the button will interrupt the current in that receptacle and all other receptacles on that circuit. If the power IS NOT interrupted do not use the receptacles on that circuit and contact a qualified electrician to make the proper repairs. Press the button to restore power of the receptacles in that circuit.

Test the GFCI receptacles on a weekly basis to ensure proper operation.

When using your boat's AC receptacles be aware that household appliances exert a "load" on an electrical system when they are used. Your boat's system is only capable of carrying a certain electrical load. This load is measured in AMPs.

Each MAIN circuit in your boat has an electrical capacity of 50 amps. If the load on this system exceeds the level of amperage it was designed for, a breaker will trip. This is a signal that you have overloaded the circuit.

Below is a list of typical household equipment and the approximate loads that could develop during their use.

AC EQUIPMENT ELECTRICAL LOADS

Fans	Up to 0.7 amps
Electric Blanket	Up to 2 amps
Television	Up to 2.7 amps
Coffee Maker	Up to 6.3 amps
Battery Charger	Up to 7.3 amps
Toaster	Up to 10.5 amps
Fry pan	Up to 12.3 amps
Space heater	Up to 13.7 amps
Refrigerator	Up to 15 amps

An appliance that uses an electric motor, such as a vacuum cleaner or electric drill, will have a "motor load plate" mounted on the unit. This motor load plate will provide information on the load that will be created while using the device.

As the chart indicates, appliances that utilize a motor or a heating element create rather high loads. Be particularly careful when using curling irons, toasters, coffee makers, hair dryers, mix masters or any other comparable types of equipment.

! WARNING !

DO NOT overload the electrical circuits. Use the above chart to judge the load that is being put on an individual receptacle. Exceeding these loads will trip the circuit breaker. Reduce the amperage on a receptacle before resetting a tripped breaker.

Water Heater: Your boat's water heater can only be powered by AC power. Turning the breaker labeled WATER HEATER to the "ON" position supplies power to the water heater.

! DANGER !

DO NOT supply power to an empty water heater. Fill, pressurize and prime the boat's water system prior to turning on the water heater. Heating an empty water heater will damage to the unit's heating element and could lead to a fire.

Refer to Section 6.1 for instructions on filling, pressurizing, and priming the fresh water system. Refer to section 6.1 for information on how to operate the on board water heater. Information on the proper use and maintenance of your boat's water heater has also been provided by the OEM supplier. This information is in the OEM information packet.

Range: Your 440 AFT CABIN is offered with a "three burner" electric range as standard equipment. To use the range turn the AC circuit breaker labeled RANGE to the "ON" position. Use the controls mounted on the range to control burners and heat adjustments.

Information on the proper use and maintenance of the range is provided by the OEM supplier. Look for this information in the OEM information packet.

NOTE: Propane stoves were offered as an available option at the time your boat was built. If your boat was equipped from the Carver factory with a propane stove refer to Section 9 for operational instructions. Information supplied by the propane stove OEM supplier has been included within the OEM information packet.

Microwave: A microwave oven has been installed on your boat as original factory installed equipment. This oven operates on AC power.

To power your microwave, switch the AC circuit breaker to the "ON" position. Refer to the manual supplied by the microwave oven's OEM supplier for information regarding operation and maintenance.

Battery Charger: All 440 AFT CABINS are equipped with a 60 amp battery charger. To use the boat's battery charger turn the AC circuit breaker labeled BATTERY CHARGER to the "ON" position

More information on using the battery charger can be found in Section 4.1 of this Owner's Guide.

Refer to the manual provided by the manufacturer of the battery charger for more information regarding its use and operation.

Ice Maker: The 5 amp breaker labeled ICEMAKER controls power to the icemaker in the boat's salon. Refer to the manual provided by the manufacturer for more information on use and maintenance of that appliance.

NOTE: Power for the icemaker on the aft deck is supplied by the 110 volt receptacle on the aft deck. The breaker for this receptacle is labeled RECEPTACLES AFT.

Spare: These two breakers, 10 and 15 amp, are available for dealer or owner installed equipment.

B) SHORE 2 / SHIP 2

There are three individual breakers utilized in the SHORE 2 / SHIP 2 electrical service. These three breakers control the boat's air conditioning system.

A/C Water Pump: The air conditioning system requires the use of a water pump. This pump transfers sea water for use within the air conditioning condensor system. The breaker labeled A/C WATER PUMP turns this water transfer pump "ON" or "OFF." Turn this breaker to the "ON" position before using the air conditioning system.

Aft A/C Unit: This circuit breaker controls the condensor and fan for the aft air conditioning unit which cools the master stateroom, master head compartment and salon. Turn this breaker "ON" to activate the aft air conditioner.

Salon A/C Unit: This circuit breaker controls the condensor and fan for the salon air conditioning unit. Turn this breaker "ON" to activate the salon air conditioner.

Fwd A/C Unit: This circuit breaker controls the forward air conditioning unit. This unit cools the forward stateroom and forward head compartment. Turn this breaker "ON" to use the forward air conditioner.

! CAUTION !

DO NOT use the forward, salon or aft air conditioning units without first turning the A/C WATER PUMP breaker to the "ON" position. Failure to do this may damage the air conditioning system.

5.2-410 AIR CONDITIONING SYSTEM (option #410)

Air conditioning is offered on the 440 AFT CABIN as a factory installed option. The procedures outlined in this section pertain only to units installed at the Carver factory. Air conditioning systems installed as aftermarket accessories may not necessarily operate in the manner described within this section.

Factory installed systems utilize self contained air conditioning units manufactured by Marine Air Systems of Pompano Beach, FL. These systems depend upon a source of AC power (supplied by shore power or an onboard generator) and a supply of sea water (salt or fresh).

The air conditioning units used on the 440 AFT CABIN also have the capability to produce heat in their reverse cycle mode. This reverse cycle operation however is affected by the temperature of the sea water. As sea water temperature decreases so does the units ability to produce warm air. Marine Air recommends that the air conditioning system installed on the 440 AFT CABIN not be used in reverse heat mode when the sea water temperature is below 40 degrees F.

The air conditioning system incorporates three independent air conditioning units. A 6,000 BTU unit is installed under the berth in the aft master stateroom and is used to cool or heat the master stateroom and the head compartment. A second air conditioning unit is a larger, 16,000 BTU unit that is installed beneath the boat's port salon area. It is used to cool and heat the galley, dinette and salon. A third 9,000 BTU unit is installed in the forward berth and is used to cool or heat the forward stateroom and head compartment. Condensation from each unit drains into the nearest shower sump.

To Use The Air Conditioning System:

1) A single pump is used to supply the air conditioning units with sea water.

   Locate and open the thru-hull valve that supplies sea water to the air conditioning pump. This valve is located in the forward, port area of the engine compartment.

2) A strainer is installed between the supply valve and the pump. This strainer stops foreign matter from being ingested into the pump or air conditioning units. Inspect and clean this strainer prior to using the pump.

3) The AC breakers that control the current to the air conditioning units and the pump are located on the SHORE #2 AC panel. If you are utilizing shore power as an AC source you must attach the SHORE #2 power cord to a dockside power box.

   If you are using an onboard generator as your source of AC power it will automatically supply power to both SHORE #1 and SHORE #2 panels.

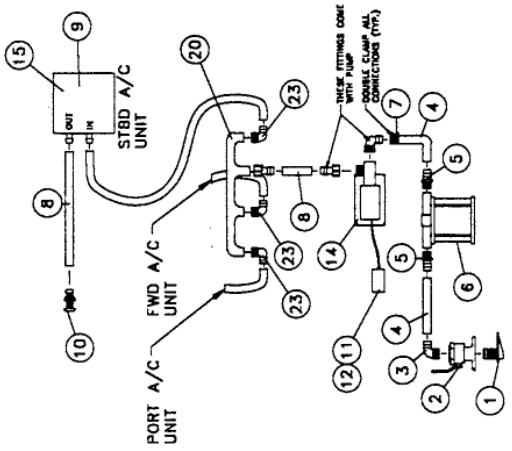
4) Turn the first three MAIN breakers for SHORE #2 to the "ON" position. Turn on the breakers labeled A/C PUMP, A/C SALON, A/C UNIT FWD and A/C UNIT AFT.

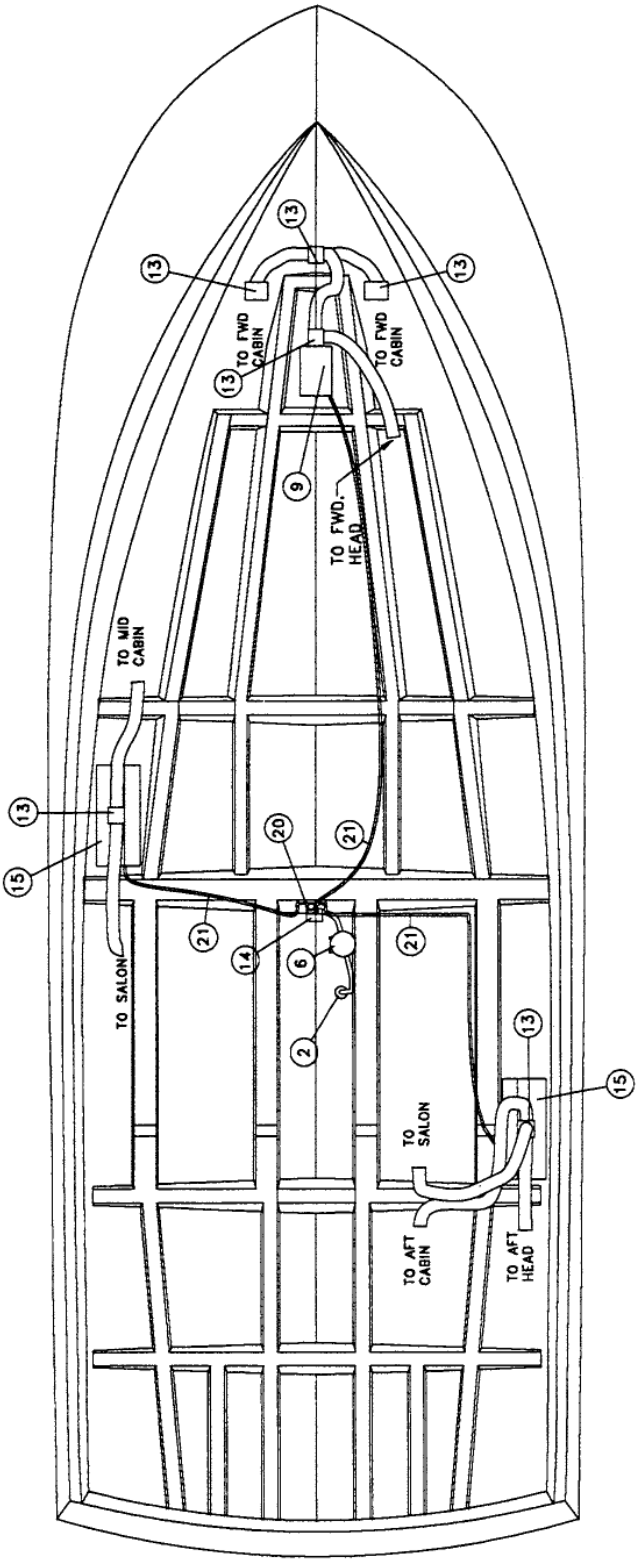
5) Check to make sure that water is being pumped to the air conditioning units. Sea water outlets are installed on the outside of the boat's hull. The outlet for the aft air conditioning unit is found on the starboard side of the hull, just forward of the transom. Water outlet for the salon and the forward air conditioning unit are installed on the port side of the hull, at the midpoint between the transom and the bow.

6) Each air conditioning unit is controlled by its own ECU (Environmental Control Unit). Refer to the instructions provided by Marine Air Systems for detailed information on operating the ECUs and maintaining the air conditioning system.

NOTE: The air conditioning condensation drains into the shower sump pan. The automatic float switch can only be activated by flipping the shower pump breaker on the 12V distribution panel. If this breaker is not activated with the battery selector switch turned on, the condensation from the air conditioning units will overflow the pans.

5.2-410 AIR CONDITIONING SYSTEM (option #410)





5.2-410 AIR CONDITIONING SYSTEM (option #410)

	BILL OF MATERIALS		
ITEM	QTY.	DESCRIPTION	PART #
1	1	INTAKE STRAINER	5104900
2	1	1" SEACOCK	5131600
3	1	ELBOW	7419300
4	1	1" HOSE	7510400
5	2	ADAPTOR	7419000
6	1	3/4" INTAKE WATER FILTER	7410800
7	16	#8 HOSE CLAMP	7500200
8	1	5/8" HOSE	7509700
9	1	COMPRESSOR 9000 BTU	9009900
10	4	5/8" THRU HULL	7100700
11	3	HANDY BOX	6908700
12	3	COVER	6908600
13	6	CONNECTOR BOX	6904300
14	1	CIRCULATING PUMP	9050100
15	2	COMPRESSOR 16000 BTU	9010200
16	1	1" INTAKE WATER FILTER	5112200
17	6	HOSE CLAMP	7500300
18	3	#72 HOSE CLAMP	7501000
19	4	#104 HOSE CLAMP	7501100
20	1	3 WAY MANIFOLD	9052600
21	1	5/8" EXTRA H.D. BILGE HOSE	7509700
22	3	90° 1/2"HB*1/2"MPT PW NL	7411000

5.3 GENERATOR
Option #191 and #206

The 440 AFT CABIN is factory equipped with an AC generator. An onboard generator will enable you to power AC electrical accessories while away from dockside power. The generator is installed in the port, forward area of the engine compartment.

Fuel is drawn from the same fuel tanks used to supply the boat's propulsion engines. Refer to Section 7.3 for more information on the boat's fuel system.

Starting The Generator

1) Read, understand and follow the operator's manual that has been prepared and supplied by the generator manufacturer.

! DANGER !

Operate bilge blowers for AT LEAST 5 minutes and inspect the bilge for fuel vapors prior to starting the generator. If you discover fuel vapors in the bilge - DO NOT START THE GENERATOR. Investigate the source of these vapors and fix the problem before starting the generator. Continue to operate the bilge blowers while the generator is running.

2) The generator starter is powered by a dedicated and separate 12 volt deep cycle battery. This battery is installed in the forward, starboard area of the engine compartment. Power to the generator from this battery is controlled by a "Perko" ON/OFF switch. Turn this switch to the "ON" position prior to starting the generator.

NOTE: The boat's battery charger monitors and charges the generator battery along with the other ship's batteries.

! CAUTION !

NEVER turn the generator battery ON/OFF switch to the "OFF" position while the generator is running. Doing this will damage the generator or alternator wiring.

3) The generator engine uses sea water as a coolant. The sea water intake valve must be opened prior to starting the generator. This valve is located in the forward, port area of the engine compartment.

4) Position the boat's fuel system valve(s) to feed fuel to the generator from the desired tank. Refer to Section 7.3 for more information.

5) Turn the 50 amp MAIN breaker(s) for SHORE 1 and SHORE 2 to the "OFF" position. Slide the "generator lockout plate" down to uncover the generator MAIN breaker(s).

6) The generator START/STOP switch is located near the top of the boat's AC electrical panel. The generator START/STOP switch is a spring-loaded, momentary switch. Push the switch to the "START" position until the generator starts. Release the switch when the generator has started.

! CAUTION !

The START/STOP switch is spring activated. Release the switch when the generator has started. Failure to release the switch after the generator has started may damage the starter. ALSO, do not activate the generator starter for periods longer than 10 seconds. If the generator fails to start after the first attempt, wait 1 minute before trying again.

7) When the generator is running smoothly, switch the generator MAIN breaker(s) to the "ON" position. This connects the generator to the boat's AC electrical system. AC receptacles and accessories can now be used in the same manner as when the boat is connected to dockside power.

8) To turn the generator "OFF", turn the START/STOP switch to the "STOP" position. If the generator will not be used for an extended period (a few days or more) turn the generator battery switch to the "OFF" position.

9) To use dockside power, turn the generator MAIN breaker(s) to the "OFF position. Slide the generator lockout plate to expose the SHORE 1 and SHORE 2 MAIN breaker(s). Connect and use the dockside power system as detailed in Section 5.2d.

! DANGER !

Generator exhaust contains carbon monoxide, a dangerous and poisonous gas. DO NOT INHALE GENERATOR EXHAUST. Refer to Section 7.5 for more information on engine exhaust and carbon monoxide.

A TIP FROM CARVER: *"Dedicating a 12 volt battery to the generator provides an important safety feature. A dedicated battery enables you to start the generator regardless of the condition of the two 12 volt ship's batteries. If the ship's batteries become discharged to the point where they are not able to start an engine, start the generator and turn on the battery charger. This will recharge the ships batteries and will enable you to start the propulsion engines when the batteries have been recharged to an adequate level."*

5.4 STRAY CURRENT AND CORROSION

There are two types of electrically induced underwater corrosion that can have damaging effects on your boat. These two types of corrosion are STRAY CURRENT and GALVANIC CORROSION.

A) Stray Current

Stray current can lead to the decomposition of chemical compounds. Many factors can lead to stray current:

- Reverse polarity of dockside electric power.
- An improperly wired battery installation.
- Boats that are docked close to yours that have electrical power leakages.
- Any source close to your boat that is discharging electrical current into the water.

Stray current can attack a fiberglass hull and underwater gear.

B) Galvanic Corrosion

Galvanic corrosion is produced when two dissimilar metals (such as aluminum and stainless steel) are emersed in an electrolytic solution such as water. Polluted water and salt water are much better electrolytic solutions than clean, fresh water.

To protect against the effects of stray current and galvanic corrosion Carver has installed "sacrificial anodes" on each of your boat's propeller shafts and a zinc plate onto the boat's transom. These zinc anodes will decompose prior to any other metal being affected on your boat. Inspect these anodes every 30 days after your boat is initially launched. Report any excessive deterioration of the anodes to your Carver Dealer.

An electrical component called a “zinc saver” is also incorporated into the boat's electrical system. The zinc saver isolates the ground wire of the dockside inlet receptacle. This offers additional protection from the effects of galvanic corrosion.

! CAUTION !

Monitor the condition of your boat's zinc anodes. Replace zinc anodes when you have determined that they have been reduced from their original size by 50%. DO NOT allow the zinc anodes to completely deteriorate. Replace original anodes with "genuine" zinc anodes. Beware of cheap aftermarket replacement zincs. Improper zinc anodes will not provide adequate protection for your boat.

Do not paint the zinc anodes. When replacing anodes, make sure the mating surface is clean and the anode is tightly secured.

When a boat is in dry storage the zincs may develop a coating that will make them ineffective at protecting against the effects of stray current. Use emery cloth to sand the zincs prior to launching a boat that has been in dry storage. Do not use a wire brush to clean the zincs. Using a wire brush may imbed metal particles in the zincs which will make them ineffective.

If your boat is kept in an area that has a history of excessive stray current, have your dealer install additional zinc anodes or some other form of additional protection from stray current and galvanic corrosion.

NOTE: Damage resulting from stray current or galvanic corrosion is NOT covered under the Carver limited warranty.

5.5 Bonding System

Your Carver is equipped with a comprehensive metallic bonding system to minimize the effects of corrosion caused by stray DC electrical currents. In addition, it will reduce the effects of galvanic corrosion caused by dissimilar metals used in the underwater gear of your vessel.

Sacrificial anodes have been installed on each of the boat's propeller shafts and onto the underwater portion of the boat's transom. These anodes will corrode and deteriorate sooner than the boat's underwater fittings and will provide a visual reference to the level of stray current to which your boat is being exposed. The vessel's physical environment may make it necessary to provide additional anodic protection by installing additional zinc on trim tabs and rudders. See your Carver dealer to ensure that your boat is adequately protected for environmental conditions. Refer to Section 5.4 for more information regarding stray current and galvanic corrosion.

Your boat's 12 volt system, AC system, and the batteries negative leads are all connected to the bonding system. These systems are interconnected through buss bars located in the engine and aft bilge compartments and connected to the transom mounted zinc plate. This system ensures that the "cases" of all metallic equipment on board your boat are at the same electrical potential.

⚠ WARNING

DO NOT tamper with or modify the boat's bonding system. Doing so could threaten the integrity of the system.

⚠ WARNING

Monitor the condition of your boat's zinc anodes. Replace zinc anodes when you have determined that they have been reduced from their original size by 50%. DO NOT allow the zinc anodes to completely deteriorate.

NOTE: Damage resulting from stray current or galvanic corrosion is NOT covered under the Carver limited warranty.

5.6 TROUBLE SHOOTING AC ELECTRICAL SYSTEM

PROBLEM	POSSIBLE CAUSE	SOLUTION
No AC power as indicated by voltmeter.	Shore power cord not connected.	Inspect shore power cord.
	Power not turned on at dock box.	Turn dock box breaker ON.
	50 Amp MAIN breaker tripped or in OFF position.	Reset MAIN breaker or turn to ON position.
	Loose or disconnected electrical wire.	Contact Carver Dealer.
No power at cabin AC outlets.	30 Amp MAIN breaker tripped or turned to the OFF position.	Reset or turn ON the 50 Amp MAIN breaker.
	Breakers labeled REC or REC GALLEY turned to the OFF position.	Turn breakers ON.
	Ground fault interruptor tripped.	Locate and reset ground fault interruptor.
	Shore power cord disconnected.	Re-attach shore power cord.
50 AMP MAIN breaker continues to trip.	Faulty MAIN breaker.	Contact Carver dealer to have breaker replaced.

CARVER

OWNER'S GUIDE TO SAFE AND PROPER OPERATION

SECTION 6

6.1 FRESH WATER SYSTEM

6.1 - 277 Transom Shower Option
6.1 - 283 Fresh Water Washdown Option
6.1 - 284 Raw Water Washdown Option
6.1 - 287 Shore Water Connection Option

6.2 BILGE SYSTEM

6.3 SANITATION SYSTEM

6.3 - 141 Grey Water System Option
6.3 - 160 Direct Overboard Discharge Option
6.3 - 162 Overboard Discharge Option
6.3 - 163 Overboard Discharge Option

6.1 FRESH WATER SYSTEM - 440 AFT CABIN

Your 440 AFT CABIN is capable of carrying approximately 165 gallons of fresh water. Water is carried within the boat's 145 gallon water tank and the 20 gallon water heater.

A) Filling The Tank

The fresh water tank is filled through the water fill deck plate. The water fill deck plate is labeled WATER. The water fill deck plate is located on the boat's starboard beam.

NOTE: Thoroughly flush and sanitize the water system before initial use and at least once each season.

Put only clean, fresh water into your water tank.

Your tank is full when water is discharged from the stainless steel water tank vent fitting installed on the side of the boat's hull. Refer to Section 3.4 for the exact location of the water tank vent fitting.

DO NOT overfill your water tank OR leave a fill hose unattended while the tank is being filled.

B) Priming The Fresh Water System

After filling the tank:

1) Partially open all cold water faucets and the cold water side of the shower mixing valves.

2) Position the battery selector switch (refer to Section 4.1 for information regarding the operation of the battery selector switch) to either the #1 or #2 position.

3) Switch the 12 volt MAIN circuit breaker and the 12 volt circuit breaker labeled PRESSURE WATER to the "ON" position.

The system will be primed by purging all air from the system's pipes. Monitor each faucet and the shower mixing valves. When a steady steam of water is being discharged from the COLD side of a faucet or shower head you may turn the valve controls for that faucet or shower head to the HOT side. As a steady steam of water flows from the hot side of each faucet or shower head, they can be turned off. Pressure within the system will build and the pressure water pump will automatically shut off. Priming the system also fills and maintains the water level within the water heater.

C) System Operation

The fresh water system is designed to operate in the same manner as the water system within your home. After filling the tank and turning on the proper 12 volt circuit breakers, simply turn a faucet valve to receive fresh water.

Sometimes a recently filled system or one that has not been used for some time may need repriming. This is normal and is caused by an accumulation of air bubbles at the pressure water pump.

A TIP FROM CARVER: *"If your boat will be left unattended for an extended period (three days or more) turn the 12 volt circuit breaker labeled PRESSURE WATER to the "OFF" position. Pressure within the system may fall and cause the water pressure pump to engage. If this happens frequently, it could needlessly discharge your batteries."*

D) Water Heating System

A 20 gallon water heater is part of your boat's onboard fresh water system. The water heater is automatically filled by the pressure water pump. Fresh water can be heated two different ways:

1) Water can be heated when AC power is applied to the heating unit. Switch the AC MAIN circuit breaker and the AC circuit breaker labeled WATER HEATER to the "ON" position AFTER the water system has been filled, pressurized, and primed.

! DANGER !

DO NOT supply electric power to an empty water heater. Supplying power to an empty heater will damage the element and may start a fire.

2) Your boat is also equipped with an ENGINE HEAT EXCHANGER. The heat exchanger utilizes the heat from the starboard engine's coolant to heat the water contained within the water heater.

A TIP FROM CARVER: *"If you are at anchor and have no access to dockside power you can still have hot water. Simply start the starboard propulsion engine. After letting the engine run for a short time you'll have water warm enough for a shower."*

For more information on your boat's water heater refer to the information supplied by the unit's manufacturer. This information is contained in the OEM supplied materials packet.

E) Shower

Your 440 AFT CABIN is equipped with two fiberglass stall showers. Stall showers require a minimum of preparation before use and cleanup after showering.

The drain basin of each stall shower is positioned lower than the boat's water line. Because of this, a shower sump pump is needed to drain the basin and to discharge the shower drain water overboard or into a grey water holding tank.

To activate the shower sump pump turn the battery selector switch to position #1 or #2. Turn the 12 volt MAIN circuit breaker "ON." Each shower has its own individual shower sump. Each of these pumps have a breaker. These breakers are labeled SHOWER - FWD and SHOWER - AFT. Turn "ON" the shower breaker that corresponds to the shower you will be using. When these two procedures have been followed a shower sump will operate automatically.

After showering, leave the water flow for 30 seconds to rinse the sump of soap residue.

A TIP FROM CARVER: *"To obtain the most consistent shower temperature, turn the COLD water valve on full, then mix hot water until the desired temperature is achieved. This system will keep the pressure water pump running, eliminating widely fluctuating water temperature."*

F) Water System Maintenance

If the water flow from the shower appears to become restricted, it may be due to the accumulation of sediment at the shower head. If this happens, remove the head, rinse with clean water and clean the discharge holes with a fine wire.

Periodically remove and clean the filter screens from the faucet discharge spouts. Clean the screens with a fine wire if necessary. A build-up of debris in the faucet filter screens can create enough restriction to cause the pump to repeatedly cycle on and off.

There is an in-line filter installed near the pressure water pump. Clean this filter on a monthly basis.

Clean the screen in the water tank vent on an annual basis.

Flush and sanitize your water system at least once per season. Flushing involves draining all water from the system. Sanitizing involves using a commercially made tank sanitizing liquid that is available at any well stocked marine supply store.

G) Winter Lay-up

These instructions are also found in Section 8.6 of this Owner's Guide.

! CAUTION !

Your boat's fresh water system INCLUDING THE WATER HEATER AND HEAT EXCHANGER must be drained prior to winter lay-up. Failure to winterize the water system could lead to damaged pipes, valves, faucets, tanks, or a ruptured water heater.

To drain the water system:

1) Provide power to the 12 volt pressure water pump by switching the appropriate circuit breakers to the "ON" position.

2) Open all faucets and let the water drain through the sinks.

3) Drain the water heater. There is a drain valve installed near the bottom of the water heater. Refer to the operator's manual for the water heater for more information concerning how to drain the water heater.

To winterize the on-board water system:

1) Purchase 10 gallons of NON-TOXIC recreational vehicle antifreeze from your Carver Dealer.

2) Pour this NON-TOXIC antifreeze into your boat's fresh water tank using the water fill deck fitting. Many types of antifreeze call for a dilution rate of 50%. Follow the instructions provided on the label of the antifreeze container.

3) Provide power to the 12 volt pressure water pump by switching the appropriate circuit breakers to the "ON" position.

4) Open the galley sinks hot and cold faucet valve and purge the system until a steady stream of antifreeze flows from the faucet. Repeat this process for the head sinks and the showers.

5) Pour a quart or two of non-toxic antifreeze in each shower basin drain and run the shower sump pumps until a stream of antifreeze flows from the shower sump discharge fitting. Refer to drawing 3.2 for the exact location of the shower sump pump discharge fittings.

6) The engine heat exchanger will also need to be included in the winterization process. A 5/8" heater hose carries engine coolent from an engine to the water heater and back to the engine. This heater hose must be drained prior to winter storage. Remove both heater hose connections from the engine and use air pressure to blow water from the line. Antifreeze can then be poured into the hose.

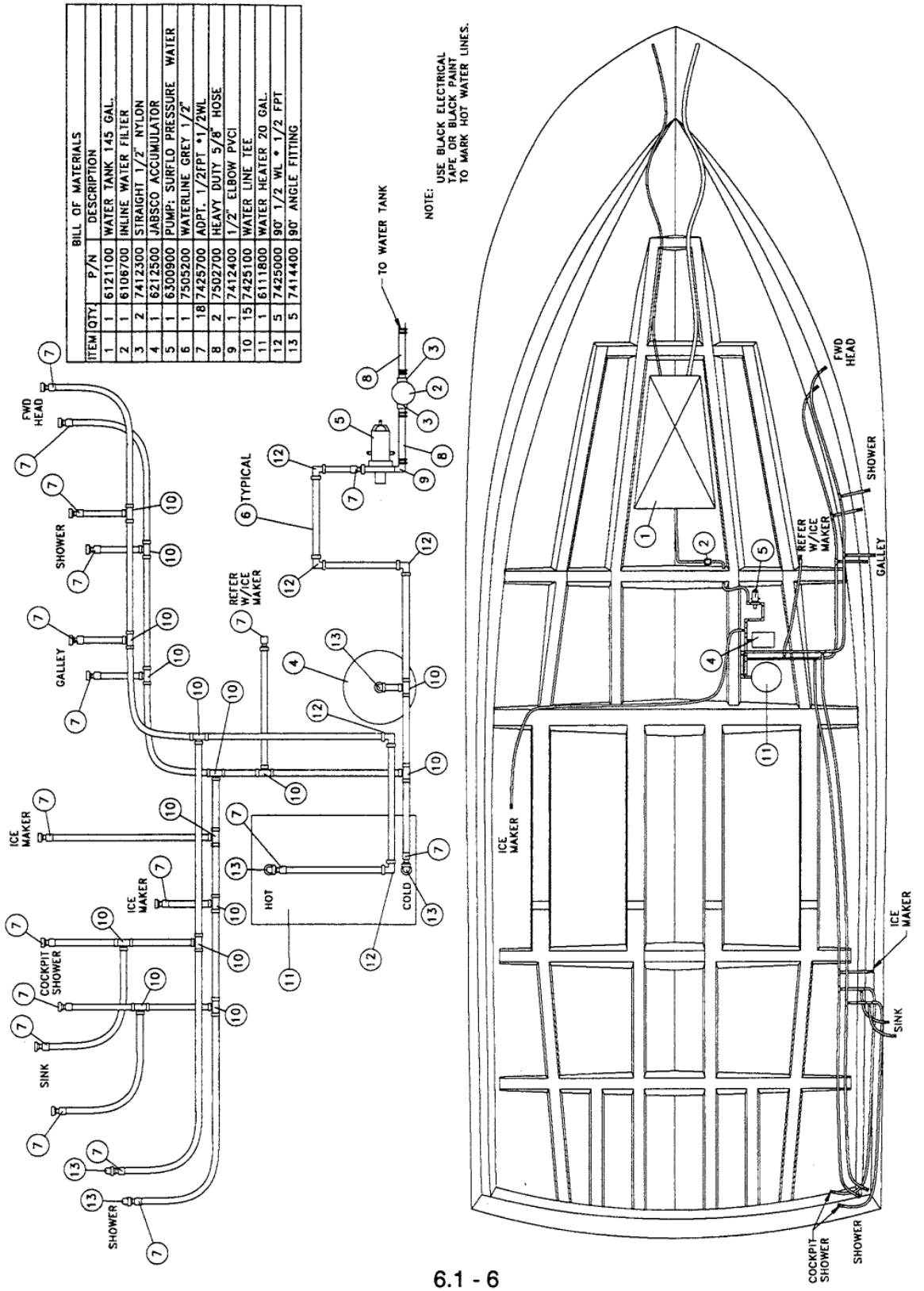
! DANGER !

DO NOT USE AUTOMOTIVE ENGINE ANTIFREEZE to winterize your boat's fresh water system. Automotive antifreeze is poisonous.

H) Spring Commissioning

Flush the complete water system with fresh water during spring commissioning. Non-toxic antifreeze is colored, so your system is adequately flushed when uncolored water flows from the faucets and shower.

6.1 FRESH WATER SYSTEM - 440 AFT CABIN



6.1-277 TRANSOM SHOWER
Option #277

The transom shower option is a convenient item that allows you and your guests to rinse off with warm, fresh water after swimming. This option is especially handy on boats used in salt water.

A) Using the Transom Shower

The transom shower is an integral part of your boat's fresh water system. Use it just as you would use a shower located in the boat's head compartment.

B) Winterizing

To winterize the transom shower:

1) Follow the instructions on winterizing your boat's fresh water system found in Sections 6.1 and 8.6.

2) As you are winterizing the fresh water system, turn the transom shower valves on (first cold, then hot) until a stream of antifreeze flows from the shower head.

3) Be sure to flush the transom shower with clean water during spring commissioning.

6.1-283 FRESH WATER WASHDOWN Option #283

Fresh water washdown enables you to use fresh water from the boat's water storage tank to washdown and clean your boat. Fresh water washdown is particularly useful in salt water areas.

A) Using Fresh Water Washdown

1) Locate the aft deck mounted hose fitting and 12 volt switch labeled "WASHDOWN."

2) Attach a nylon water hose to the aft deck hose fitting. Screw a nozzle to the other end of the hose. The best type of nozzle to use is the "pistol grip" type that can be opened and closed by squeezing your hand.

3) Turn the battery selector switch to position #1 or #2. Turn the 12 volt MAIN circuit breaker and the 12 volt circuit breaker labeled WASHDOWN to the "ON" position.

4) The washdown system uses a 12 volt automatic pump to create water pressure. When the hand nozzle is in the closed position the pressure will build within the washdown system and the automatic pressure pump will shut off when a predetermined amount of pressure has been reached. Opening the hand nozzle will release pressure and will engage the pressure water pump.

! CAUTION !

DO NOT run the washdown pressure water pump when the onboard water storage tank is empty. The pump may become damaged if it is allowed to operate with no water.

A TIP FROM CARVER: *"Remember that the fresh water washdown system draws its water from the boat's fresh water storage tank. Prolonged use will quickly reduce the amount of fresh water contained within the onboard storage tank."*

B) Winterizing the System

The fresh water washdown system is plumbed as an integral part of your boat's fresh water system.

To winterize the system:

1) Follow instructions for winterizing the boat's fresh water system found in Section 6.1 and 8.6.

2) Disconnect the hose from the aft deck mounted washdown hose fitting. Drain all water from this length of hose.

3) After the fresh water system has been winterized, put a bucket under the cockpit mounted washdown hose fitting. Turn the washdown pressure water pump "ON" and run the pump until a stream of antifreeze runs from the fitting. Use the bucket to collect this antifreeze.

6.1-284 RAW WATER WASHDOWN Option #284

Raw water washdown enables you to use sea water for washdown and cleaning.

A) Using Raw Water Washdown:

1) Locate the aft deck mounted hose fitting.

2) Open the seacock that supplies sea water to the raw water washdown pump.

3) Attach a 3/4" nylon water hose to the aft deck hose fitting. Screw a nozzle to the other end of the hose. The best type of nozzle to use is the "pistol grip" type that can be opened and closed by squeezing your hand.

4) Turn the battery selector switch to position #1 or #2. Turn the 12 volt MAIN circuit breaker to the "ON" position. Turn "ON" the 12 volt breaker labeled WASHDOWN.

5) The washdown system uses an automatic 12 volt pump to create pressure. When the hand nozzle is in the closed position the pressure will build within the system. The automatic pressure pump will shut off when a predetermined amount of pressure has been reached. Opening the hand nozzle will release pressurized water and will engage the pressure water pump.

! CAUTION !

DO NOT run the washdown pressure water pump when the seacock that supplies sea water to the system is closed. The pump may become damaged if it is allowed to operate with no water.

B) Winterizing the System

The raw water washdown system must be winterized to avoid damage caused by freezing temperatures.

To winterize your raw water washdown system:

1) Locate and close the seacock that is connected to the thru-hull fitting that supplies your washdown system with seawater.

2) Remove the hose that is connected to the seacock you closed in step #1.

3) Pour a gallon of NON-TOXIC antifreeze into a bucket. Put the end of the hose you removed from the seacock in step #2 into this bucket.

4) Remove the washdown hose from the aft deck mounted washdown hose fitting. Drain all water from this hose.

5) Put a bucket under the cockpit mounted washdown hose fitting and turn the wash down pump "ON." Turn the pump "OFF" when a stream of anti-freeze flows from the hose fitting. Use the bucket you put under the fitting to collect this flow of anti-freeze.

6) Securely refasten the supply hose to the washdown supply seacock.

6.1-287 SHORE WATER HOOK-UP Option 287

Shore water hook-up utilizes dockside city water as the fresh water source while your boat is docked. When your boat is connected to shore water you are not drawing from the fresh water supply stored within your onboard water tank.

To Connect to Shore Water Hook-up

1) Locate the shore water hook-up fitting that has been installed on your boat. This fitting is labeled "SHORE WATER."

2) Attach a water hose between the shore water fitting and the dockside water tap.

3) Turn the dockside water tap "ON."

Connecting your boat to shore water bypasses the boat's water tank and pressure water pump. Connecting the boat to shore water does not "automatically" fill the fresh water tank. The only way to fill the onboard tank is through the water fill deck plate.

6.2 BILGE SYSTEM - 440 AFT CABIN

A) Design

Your boat's design incorporates a bilge that is located beneath the cabin floor. The bilge is the lowest point in the interior of the boat's hull where any liquid that finds its way into the hull will accumulate.

The 440 AFT CABIN bilge is divided into three sections:

1) The forward bilge which starts near the boat's galley/dinette compartment and continues to the bow of the boat.

2) The midship's bilge area which contains the engines, generator, pressure water pump, fuel tanks, and various other gear.

3) The aft bilge which is located under the master stateroom floor. The aft bilge contains the ship's steering linkage, rudder ports, aft waste tank, and trim tab pump.

See Section 3 for bilge layout information.

An 1100 GPH (gallon per hour) automatic bilge pump has been installed in each one of the three bilge compartments.

! CAUTION !

If you keep your boat in a cold climate where temperatures can drop below freezing, make sure that all water within the bilge is drained prior to storing the boat for the winter. Water left to freeze in the bilge could lead to severe damage to your boat and its components.

B) Maintenance

The bilge area should be kept clean by removing any dirt or debris and by using any of the "commercially available" bilge cleaners that are available from your Carver Dealer. Keeping a dry, clean bilge will help reduce moisture and minimize odor within your boat.

The bilge area of your boat should not be used as a storage area. Storing loose items in the bilge could damage pumps, pipes or other components that are essential parts of your boat's operational system.

C) Garboard Drain

Your 440 AFT CABIN is equipped with one garboard drain. This drain has been installed to allow water to drain from the bilge while the boat is in dry storage. The boat and cradle should be positioned in a manner that will allow water to flow towards the garboard drain. The garboard drain is located in the transom in the deepest portion of the hull's "V."

! CAUTION !

Be certain that the garboard drain plug is securely screwed into the garboard drain BEFORE launching the boat.

A TIP FROM CARVER: *"Coat the threads of the garboard drain plug with waterproof grease prior to installing the plug into the garboard drain fitting. This will make it easier to remove at a later date."*

D) Bilge Pumps

NOTE: Before operating your boat's bilge pumps, wipe up any oil that may have accumulated in the bilge area. Pumping oil overboard contributes to water pollution and is in violation of the Federal Water Pollution Control Act. Violators are subject to a substantial penalty.

Your 440 AFT CABIN has been equipped from the Carver factory with three automatic bilge pumps. Each pump has a rated ability to pump up to 1100 gallons of water per hour. These pumps have been strategically installed to remove water that accumulates in each bilge area.

NOTE: The bilge pumps that have been installed on your boat by Carver are designed to remove the quantity of bilge water that will typically be encountered during normal boating activities. They are not designed to keep your boat afloat in the event of an accident that results in damage to the boat's hull.

Your boat's bilge pumps can operate in two manners:

Automatic Operation

Each bilge pump is wired to a push/pull breaker located in the Safety Main panel and then routed to the batteries. The bilge pumps are also wired to an individual breaker in the boat's 12 Volt Distribution panel. Incorporated into each bilge pump is a float switch. The float switch "automatically" turns on the appropriate bilge pump when bilge water rises to a predetermined level. These float switches are wired to the push/pull breakers in the Safety Main panel. The bilge pumps will operate automatically via their float switches, regardless of the position of the breakers on the 12 volt circuit breaker panel or the position of the battery selector switch. Test each switch by lifting the float. Lifting the float should turn the bilge pump on.

NOTE: The push/pull breakers for the bilge pumps in the Safety Main panel should be in the "ON" position at all times so that the pumps will operate automatically via their float switch.

Manual Operation

The bilge pumps can also be operated manually. A set of bilge pump control switches have been installed at each helm station to manually control the pumps.

For manual operation, turn the 12 volt circuit breakers labeled FWD BILGE, MID BILGE and AFT BILGE to the "ON" position.

At the helm station, turn the switches marked FWD, MID or AFT BILGE PUMP to the "ON" position.

A TIP FROM CARVER: *"A certain amount of water will always collect in your boat's bilge, especially in the bilge area where the shaft log is located. The small amount of water that normally accumulates is usually not enough to activate an automatic float switch.*

"While underway and on plane, use the helm station switches to turn your bilge pumps on manually and let them run for 30 seconds to a minute.

"Where possible, the bilge pumps on your boat are located in the aft most section of each bilge. When your boat is on plane bilge water will flow to the aft area of the bilge and be pumped overboard by your manually activated bilge pumps".

! CAUTION !

WHEN OPERATING THE BILGE PUMPS IN THE MANUAL MODE, DON'T FORGET TO TURN THEM "OFF" AFTER WATER HAS BEEN REMOVED FROM THE BILGE. Leaving a pump run dry could seriously damage the pump.

Your boat's bilge pumps will remove the water that may collect within the bilge, but don't expect them to pump the bilge absolutely dry. If you insist upon an absolutely dry bilge you will need to remove the last bit of water with a sponge and bucket.

E) Bilge Pump Maintenance

Periodically inspect and clean the bilge pump strainers. DO NOT allow dirt and debris to clog the intakes of the bilge pumps. Frequently check the operation of each bilge pump switch to ensure that they are operating properly.

6.3 SANITATION SYSTEM - 440 AFT CABIN

Your 440 AFT CABIN is equipped with a self-contained sanitation holding system that, when properly used, conforms to all United States anti-pollution laws.

A) Waste Holding Tanks

The 440 AFT CABIN utilizes two 40 gallon waste holding tanks. These tanks are made of aluminum and are installed below the cabin floor. The waste tank for the forward head is installed under the aft dinette seat. The aft tank is installed under the galley floor. Refer to Section 6.3-5 for the exact location of the waste holding tanks.

A deodorizing chemical must be added to your waste holding tanks before they are used. This chemical should also be used after every pump-out. Use the deodorizer recommended by your Carver Dealer and follow the directions supplied by the manufacturer of the product.

! CAUTION !

DO NOT overfill your boat's waste holding tanks. When a tank becomes full do not use the head until you have emptied the holding tank. Overfilling a waste tank could plug the vent or allow its contents to back up in the system.

B) Emptying The Waste Holding Tanks

1) Locate a dockside pump-out station.

2) Remove the deck fitting cap labeled "WASTE" using the cap removal tool supplied with your boat.

3) Attach the pump-out vacuum hose to an open "WASTE" deck plate. The transfer process uses a vacuum action making a secure connection between the transfer hose and the deck fitting essential.

4) Activating the pump-out vacuum will transfer onboard waste to a dockside holding station.

5) After all waste is removed we suggest filling the waste tank through the deck plate with a few gallons of fresh water. Attach the activated vacuum hose to the deck fitting and remove the water used for flushing.

6) Repeat this process for the remaining tank.

A TIP FROM CARVER: *"The cap for the WASTE deck plate IS NOT connected to the deck plate and it does not float. Be careful that you don't drop the cap in the water when you remove it. But, if you do lose one you can order a replacement cap (Carver part number 62006-01) from your Carver Dealer. Waste fitting caps are dropped overboard frequently enough that we suggest you carry an extra cap in your onboard spare parts kit."*

Each holding tank is vented to the outside of the boat's hull. As the tank is filled, air is displaced and vented outside the boat. Refer to Section 3.4 for the exact location of the waste tank vent.

C) Heads

Crown Electric Head

The Crown electric head is flushed with the aid of a motor powered by 12 volt DC power.

Operate the Crown electric head by turning the battery selector switch to the #1 or #2 position. Switch the 12 volt MAIN circuit breaker located in the 12 volt circuit breaker panel to the "ON" position. Breakers labeled HEAD are mounted on the 12 volt electrical panel. These breakers must be in the "ON" position before using the Crown electric heads. Flush the Crown electric head by pressing the button mounted on the vanity. The head will continue to flush for as long as the switch is depressed.

An attractive feature of the Crown head is that it is capable of dispersing deodorizing fluid every time the head is flushed. To do this you need to be sure that the deodorant reservoir is filled with an adequate supply of deodorizer.

Refer to the materials supplied by the manufacturer of the Crown electric head for more information on using and maintaining the head unit.

Vacu-Flush Head (option # 144)

The Vacu-Flush head uses a combination of vacuum suction and water flow to clear the head of waste. Vacu-Flush heads draw water from the boat's fresh water system.

Before using the Vacu-Flush head turn the 12 volt MAIN breaker and the 12 volt breakers labeled HEAD, ELECTRIC, FWD, AFT to the "ON" position.

The head can be flushed by pressing the button labeled mounted on the head compartment vanity.

Refer to the materials supplied by the manufacturer of the Vacu-Flush head for more information on its use and operation.

A FEW TIPS FROM CARVER: *"Before leaving the boat for an extended period (more than 48 hours) flush the head for at least 10 seconds. This ensures that waste has cleared the sanitation transfer hose and has entered the holding tank. Waste left within the transfer hose tends to dry-out and harden. This could restrict the internal size of the hose and hamper future operation.*

"Make sure that there is always a small amount of water left in the bowl of the head. This acts as a trap and will reduce unwanted odors.

"Sea water is used to flush Crown electric heads. Material suspended in sea water (sea-weed, aquatic organisms, etc.) can become trapped within the passages of the system and lead to bowl staining and unwanted odors. In-line deodorant dispensers are available from your marine supply dealer that will minimize these types of problems."

D) Winterizing The Sanitation System

The sanitation system must be properly prepared prior to storing the boat for the winter.

NOTE: The following instructions serve as an overview and may need to be modified for boats that utilize Vacu-Flush heads. Refer to the instruction manuals provided by the head manufacturer for more information about winterizing the sanitation system.

To winterize the sanitation system:

1) Empty the contents of the waste holding tanks and thoroughly flush the system with FRESH water. Remove as much of the water used in flushing as possible in the final pumping of the tank.

2) Shut off the water supply to the heads by closing the water pick-up valves. Refer to Section 3.4 for the exact location of the water pick-up valves. Remove the water pick-up hoses from the valves.

3) Flush each head until all water is drained from its water pick-up hose. Re-attach the water pick-up hoses to the valves and leave the valves in the closed position.

4) Purchase non-toxic antifreeze from your Carver Dealer. Refer to Technical Bulletin #VF-005 issued by SeaLand Technology (found on pages 6.3 - 6 & 6.3 - 7 of this Owner's Guide) for their recommendations concerning the proper type of antifreeze to use. Mix the antifreeze following the instructions supplied on the antifreeze container label.

5) Flush at least 2 gallons of antifreeze down each head and let it remain in the waste holding tanks during storage.

6) In spring pump at least 5 gallons of water through each head and pump the waste holding tanks. Charge the waste tanks by adding deodorizer.

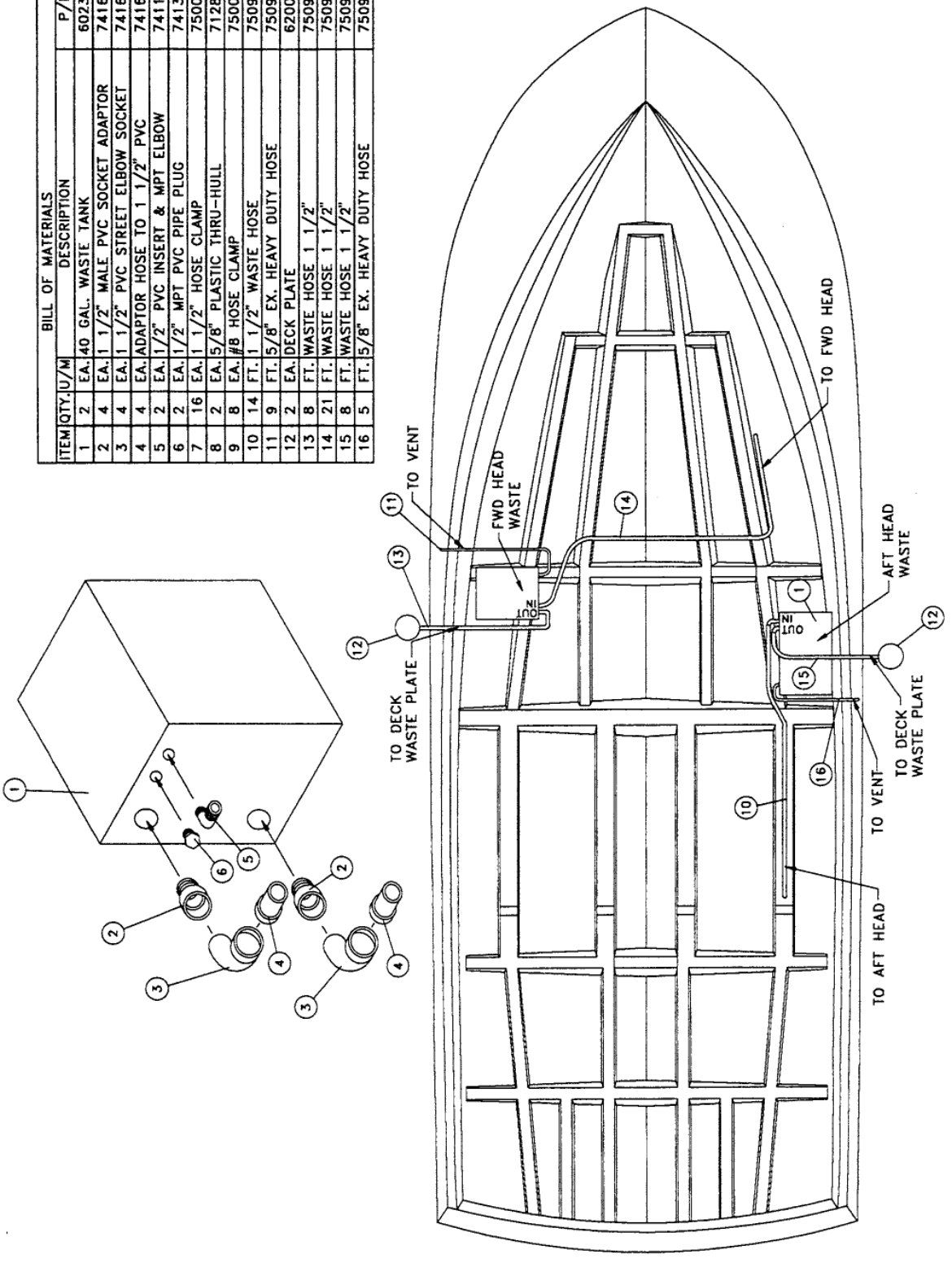
! CAUTION !

Using the wrong type of antifreeze could damage your boat's sanitation system. Refer to Technical Bulletin #VF-005 supplied by Sealand Technologies for information regarding the proper type of antifreeze to use. This technical bulletin can be found on pages 6.3-6 and 6.3-7 of this Owner's Guide. If you have your marina winterize your boat, make certain they are aware of the problems caused by using the wrong type of antifreeze. Damage caused by using improper antifreeze IS NOT covered by Carver or the OEM supplier of the boat's sanitation system components.

6.3 SANITATION SYSTEM - 440 AFT CABIN

BILL OF MATERIALS

ITEM	QTY.	U/M	DESCRIPTION	P/N
1	2	EA.	40 GAL. WASTE TANK	6023400
2	4	EA.	1 1/2" MALE PVC SOCKET ADAPTOR	7416400
3	4	EA.	1 1/2" PVC STREET ELBOW SOCKET	7416500
4	4	EA.	ADAPTOR HOSE TO 1 1/2" PVC	7416300
5	2	EA.	1/2" PVC INSERT & MPT ELBOW	7411000
6	2	EA.	1/2" MPT PVC PIPE PLUG	7413900
7	16	EA.	1 1/2" HOSE CLAMP	7500500
8	2	EA.	5/8" PLASTIC THRU-HULL	7128400
9	8	EA.	#8 HOSE CLAMP	7500200
10	14	FT.	1 1/2" WASTE HOSE	7509400
11	9	FT.	5/8" EX. HEAVY DUTY HOSE	7509700
12	2	EA.	DECK PLATE	6200600
13	8	FT.	WASTE HOSE 1 1/2"	7509400
14	21	FT.	WASTE HOSE 1 1/2"	7509400
15	8	FT.	WASTE HOSE 1 1/2"	7509400
16	5	FT.	5/8" EX. HEAVY DUTY HOSE	7509700



SeaLand TECHNOLOGY, INC. Technical Bulletin

P.O. Box 38, Fourth Street, Big Prairie, Ohio 44611 • Telephone: 216/496-3211 In Ohio • 800/321-9889 • Fax: 216/262-1727

Bulletin Number: VF-005
Effective: February 15, 1990

SANITATION HOSE MALODOR: ALCOHOL ANTIFREEZE

Affected Installations: Any pleasure craft sanitation systems utilizing SeaLand heavy duty, smooth wall hose (identified with "SeaLand" marked in blue on outer surface).

Symptoms: A strong malodor is evident from a non-specific source. No indication of leakage or a loose fitting is present.

Cause: SeaLand heavy duty, smooth wall sanitation hose is especially formulated with a malodor resistant ingredient. This ingredient is designed to prevent malodor molecules from permeating the hose wall. If an alcohol based antifreeze is used, the malodor resistant ingredient in the hose is removed and failure will result sometime later.

One brand which has been found to definitely cause this type of failure is **ARTIC BAN** from Camco Manufacturing Company. This statement is supported by gas chromatography and scanning electron microscopy studies at the Institute of Polymer Science, University of Akron.

Note: Other liquids such as petroleum solvents, fuels and pine oil cleaners will also produce similar results.

Troubleshooting: 1.) Carefully inspect all fittings and joints to assure malodor is not coming from a loose fitting or hose joint. 2.) With a clean paper towel or cloth, rub the outside of the hose. At regular intervals check the cloth to determine if malodor has been transferred to cloth or paper. 3.) Determine if boat has been winterized using antifreeze, and if so, determine the type. SeaLand can verify if the hose has failed due to chemical attack by examination of a small sample.

Corrective Action: Once a hose has been degraded by exposure to an alcohol based antifreeze, it cannot be repaired. The only remedy is to replace the contaminated hose. It is clearly stated in the SeaLand Owner's Manuals that alcohol based products should never be used (see exhibit on reverse side). Hose failure for this reason is considered misuse and is not covered by SeaLand's warranty policy.

The recommended antifreeze is propylene glycol base without alcohol. Brands recommended by SeaLand are listed on the reverse side.

Information concerning proper hose care should be given to all boat owners. An information card with this information is enclosed. Instructions for ordering copies are on the card.

Winterizing

At the end of each boating season, the VacuFlush® system must be winterized for storage. The following procedure should be used:

CAUTION: DO NOT use chlorine, alcohol or alcohol based products in the system.

1. Thoroughly flush system with fresh water.
2. Pump out holding tank.
3. Shut off water supply to toilet(s), remove water line.
4. Press flush lever until all water is drained from toilet.
5. For each toilet, flush 4 gallons of permanent type anti-freeze and water in a 50:50 mixture through toilet. Each installation is different so amounts may vary. User discretion is required to assure adequate protection.
6. Turn off electrical power.

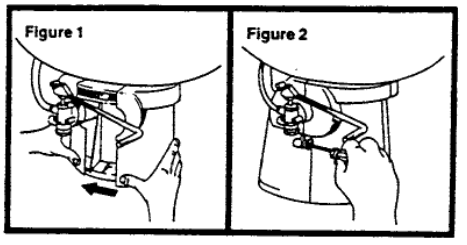
Maintenance

SeaLand Technology has endeavored to provide the boatowner with a toilet system which provides "at home" convenience and reliability. As with any quality product, satisfactory use depends on proper maintenance.
Maintenance intervals and normal parts replacement vary widely depending on numerous factors such as; type of vessel, frequency of system use, quality of flushing water, etc. The chart below is intended strictly as a general guideline. Owner discretion and consideration of actual usage must be the first basis for determining proper maintenance levels.

Pedestal Cover Installation

Before installing pedestal and pedal covers, unit must be mounted to floor flange and water supply line connected.

1. Install pedestal cover around base and snap bottom into place (see Figure 1).
2. **Tall base unit only.** Install (2) mounting screws (see Figure 2).
3. Slide pedal cover onto foot pedal rod (see Figure 3).
4. Attach pedal cover side plate and secure with (2) mounting screws (see Figure 4). For short base units, secure front screw, then press foot pedal down completely to secure second screw.
5. To remove, reverse above procedure.



RECOMMENDED ANTIFREEZE PRODUCTS

"WINTER-PRUF"

CENTURY CHEMICAL PRODUCTS
28790 C.R. 20 W.
P.O. Box 1442
Elkhart, IN 46515

219/293-9521
800/348-3505 (Outside Indiana)

Fax: 219/522-5723

"FREEZE BAN"

CAMCO MANUFACTURING, INC.
121 Landmark Dr.
Greensboro, NC 27409-9626

919/668-7661
800/334-2004

Fax: 919/668-2049

6.3-141 GREY WATER SYSTEM - 440 AFT CABIN Option #141

A) Design And Purpose

Certain areas of the United States and Europe have initiated antipollution regulations that require the installation of a grey water waste system. This system drains all sink and shower drain water into on board holding tanks, rather than directly overboard.

Boats equipped with grey water systems have two additional holding tanks, each with a capacity of 18 gallons. The forward head compartment sink, shower and galley sink drain into the forward grey water tank. The aft shower and head compartment sink drain into the aft grey water tank. Sink and shower water drains into a sump which then transfers the drain water to the grey water tanks. Holding tank deodorizer should be used within each grey water tank between pump-outs.

Grey water tanks can be emptied through the deck plate fittings labeled "WASTE" that are installed on the boat's port beam. The forward fitting is used for the forward tank, the aft fitting for the aft tank.

! CAUTION !

DO NOT overfill the grey water or waste holding tanks. Monitor the level of fluid within the tanks and empty them when they become full. Overfilling could clog the vent or rupture the tank.

B) Winterizing The Grey Water System

1) Empty each grey water holding tank using a dockside pump out facility.

2) Pour 2 quarts of non-toxic antifreeze into the galley sink drain, one quart into the head compartment sink and one more quart into the shower drain. This antifreeze will drain into the forward sump which will transfer the antifreeze to the forward grey water tank.

3) Pour 2 quarts of antifreeze down the "WASTE" deck fittings used to empty the forward grey water tank.

4) Winterize the aft grey water tank by pouring 1 quart of antifreeze down the aft shower drain and another quart down the aft sink drain. This antifreeze will drain into the shower sump and will be transfered into the aft grey water tank.

5) Pour 2 quarts of antifreeze down the WASTE deck fitting used to empty the aft grey water tank.

6) In spring pour a gallon of fresh water into each sink and shower. Allow the shower sump to pump this water into the grey water tanks. Empty the grey water tanks using a dockside pump-out facility. Charge the tanks by adding deodorizer.

! CAUTION !

Using the wrong type of antifreeze could damage your boat's grey water sanitation system. Refer to Technical Bulletin #VF-005 supplied by SeaLand Technologies for more information regarding the proper type of antifreeze to use. This technical bulletin can be found on pages 6.3-6 and 6.3-7 of this Owner's Guide. Damage caused by using improper antifreeze IS NOT covered by Carver or the OEM supplier of the boat's sanitation components.

6.3/160 SANITATION SYSTEM - 440 AFT CABIN DIRECT OVERBOARD DISCHARGE - OPTION #160

Option #160 allows the owner of a 440 AFT CABIN to discharge waste directly from the head into the sea. This option is only available on boats that will be exported from the United States.

A) To Use Direct Overboard Discharge:

1) Open the water pick-up valves and the thru-hull overboard discharge valve for each head. The forward valves are located under the galley floor hatch. The valves for the aft head will be found under the aft hatch that is on the starboard side of the master stateroom berth.

2) Use the heads in accordance with the instructions provided by the OEM supplier of the unit.

B) Winterizing The System:

NOTE: The following information serves as an overview. Please refer to the instruction manual provided by the head manufacturer for more information about winterizing the sanitation system.

1) Close the water pick-up valves. Open the overboard discharge thru-hull valves. Remove the end of each water pick-up hose from the thru-hull valve. Flush each head until all water is removed from the pick-up hose.

2) Fill a bucket with 1 gallon of non-toxic antifreeze and put the end of the pick-up hose for each head into the bucket. Flush each head until all antifreeze is removed from the bucket.

3) Re-attch the water pick-up hoses to the water pick-up thru-hull valves.

4) Close the overboard discharge thru-hull valves.

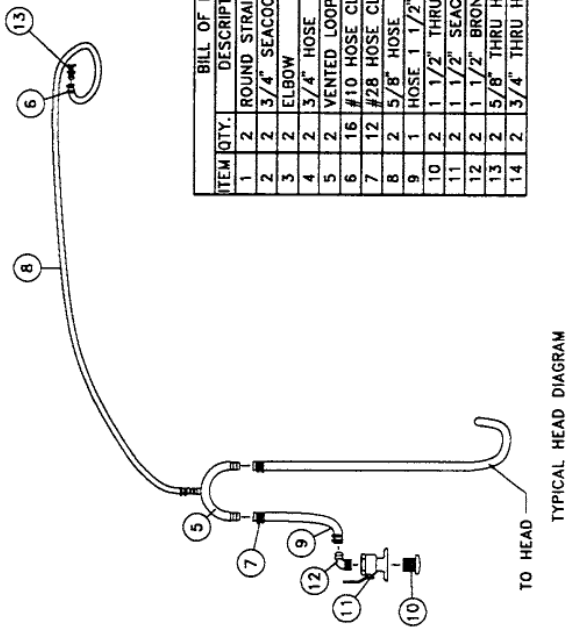
NOTE: Some brands of antifreeze recommend diluting the antifreeze with water before use. Follow the instructions provided by the maker of the antifreeze.

! CAUTION !

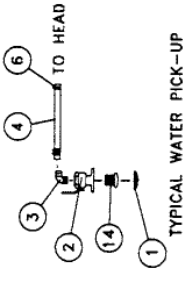
Certain types and brands of non-toxic antifreeze can damage the sanitation hose used within the boat. Refer to Technical Bulletin #VF-005 provided by SeaLand Technology. This bulletin lists the best brands of non-toxic antifreeze to use when winterizing your boats waste system. Bulletin VF-005 can be found in Section 6 of this Owner's Guide.

6.3/160 SANITATION SYSTEM - 440 AFT CABIN
DIRECT OVERBOARD DISCHARGE - Option #160

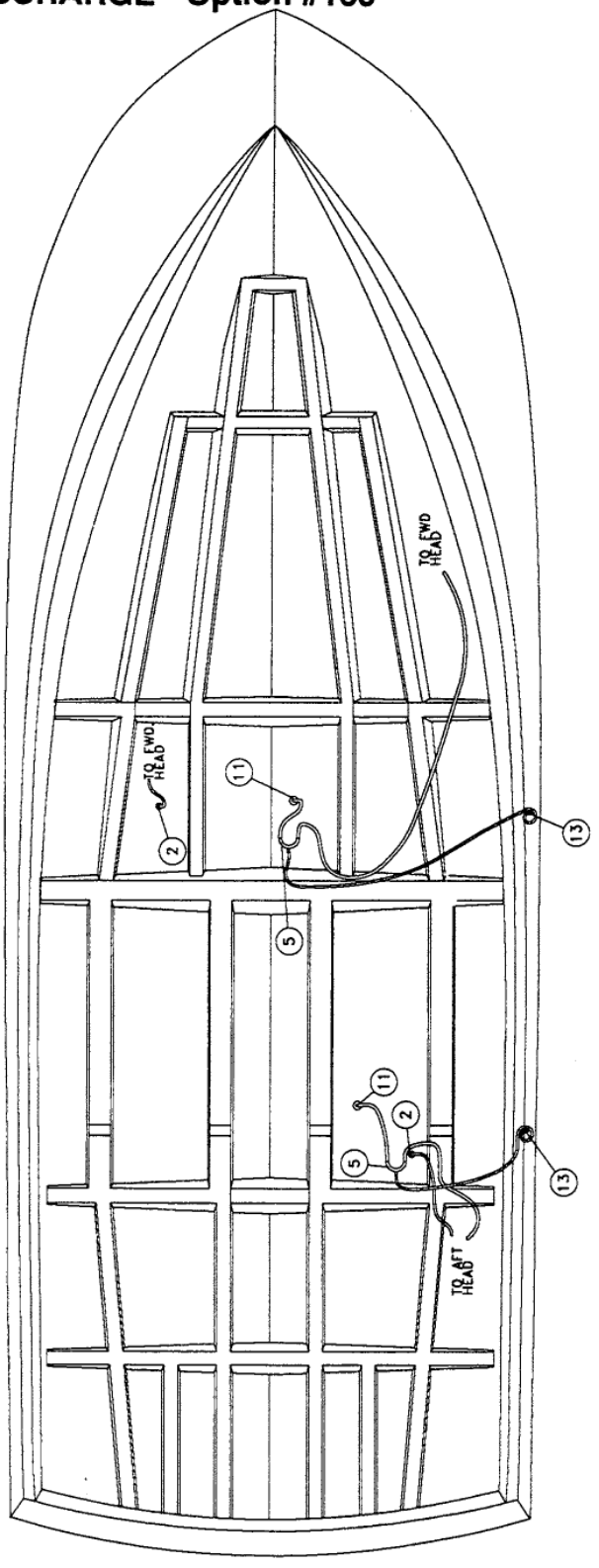
BILL OF MATERIALS			
ITEM	QTY.	DESCRIPTION	PART #
1	2	ROUND STRAINER	5110000
2	2	3/4" SEACOCK	5131500
3	2	ELBOW	7419100
4	2	3/4" HOSE	7502800
5	2	VENTED LOOP	6211500
6	16	#10 HOSE CLAMP	7500400
7	12	#28 HOSE CLAMP	7500600
8	2	5/8" HOSE	7509700
9	1	HOSE 1 1/2" HVY DUTY	7509400
10	2	1 1/2" THRU HULL	7109500
11	2	1 1/2" SEACOCK	5131800
12	2	1 1/2" BRONZE ELBOW	7419700
13	2	5/8" THRU HULL	7100700
14	2	3/4" THRU HULL	7109400



TYPICAL HEAD DIAGRAM



TYPICAL WATER PICK-UP



6.3/162 SANITATION SYSTEM - 440 AFT CABIN OVERBOARD DISCHARGE - OPTION #162

Option #162 is available on boats that will be exported or used in the coastal areas of the United States only. Option #162 permits the owner of a 440 AFT CABIN to use the onboard holding tanks and then to empty the tanks using a dockside waste facility or by discharging waste overboard from the holding tanks.

Sanitation systems equipped with overboard discharge option #162 can be used in any of the following ways:

A) Dockside discharge where waste is stored within the two 40 gallon waste holding tanks. Tanks are then emptied using a dockside waste pump-out facility.

1) Locate a dockside pump-out station. Remove the deck fitting caps labeled "WASTE" using the cap removal tool supplied with your boat. The forward and aft waste tanks both have caps.

2) Attach the pump-out vacuum hose to an open "WASTE" deck plate. Activating the pump-out vacuum will transfer onboard waste to a dockside holding station.

3) After all waste is removed, fill the waste tank through the deck plate with a few gallons of fresh water. Attach the activated vacuum hose to the deck fitting and remove the water used for flushing. Repeat this process for the remaining tank.

B) Overboard discharge where waste is transferred to and stored in the 40 gallon waste holding tanks. These tanks are then emptied overboard through the use of an onboard 12 volt transfer pump.

1) Locate and open the overboard discharge thru-hull valve. The valve is located under the cabin floor hatch in the galley.

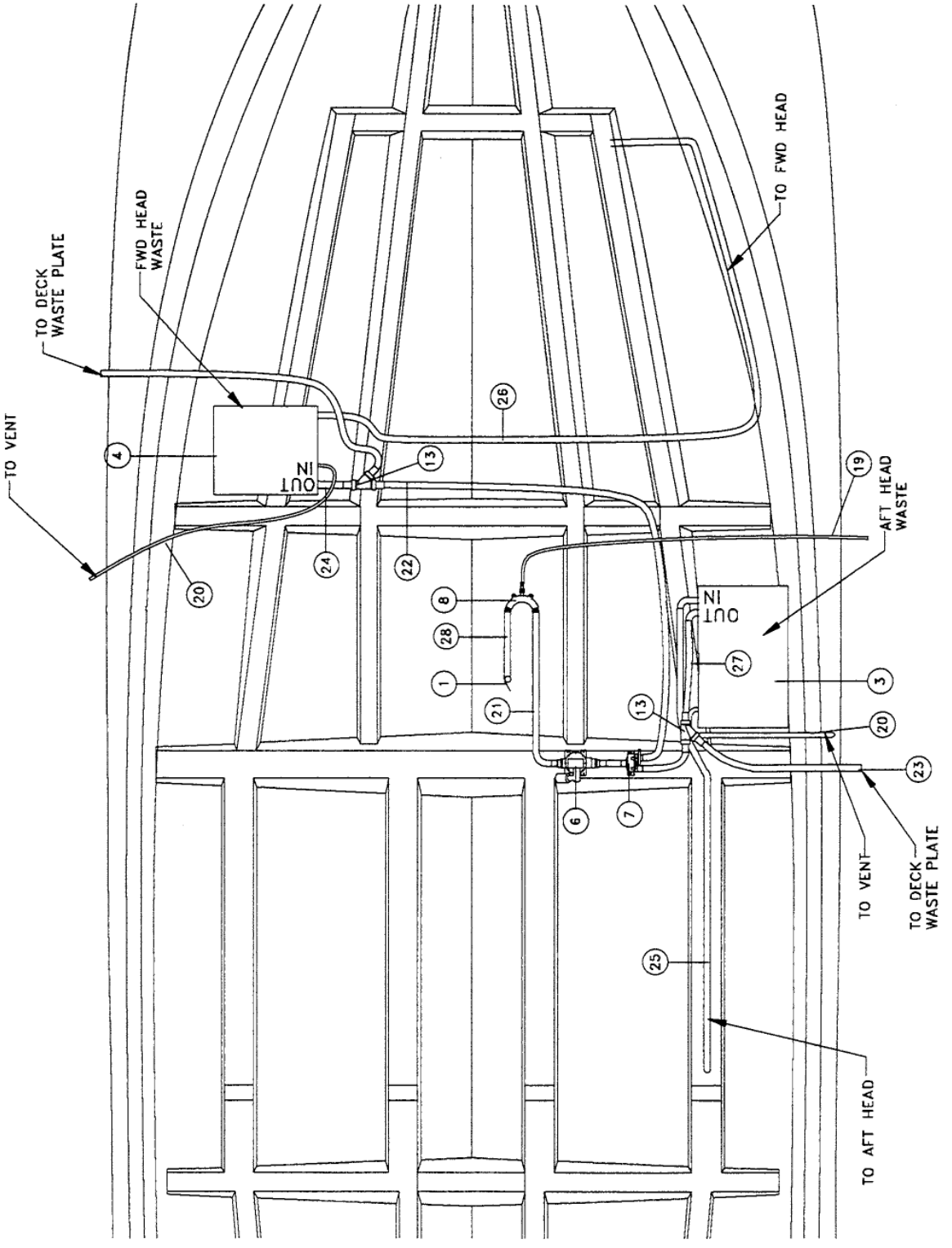
2) Locate the 3-way valve. To empty the forward waste tank, turn the valve handle forward.

3) Turn "ON" the 12 volt MAIN breaker and the breaker labeled WASTE TREATMENT, FWD. Locate the overboard discharge switch which is mounted near the overboard discharge pump. This is a push/pull switch. Pull the switch knob to turn on the overboard discharge pump.

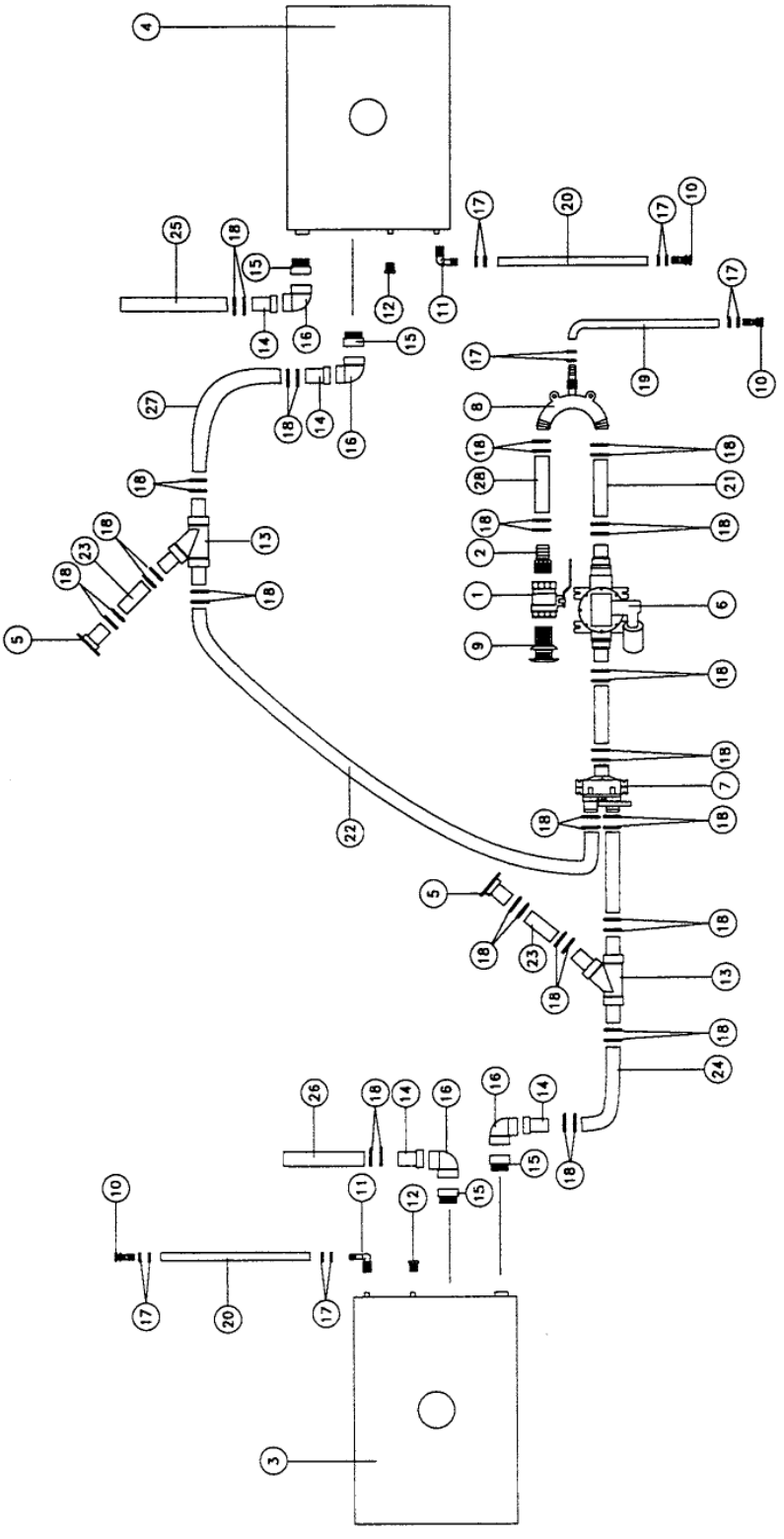
4) To empty the aft waste tank, turn the 3-way valve handle aft and repeat the process.

Using the sanitation system in this manner allows you to utilize the 40 gallon waste holding tanks when in restricted discharge areas. You can then empty the tanks using the onboard transfer pump when the boat enters an unrestricted area.

6.3/162 SANITATION SYSTEM - 440 AFT CABIN OVERBOARD DISCHARGE - Option #162



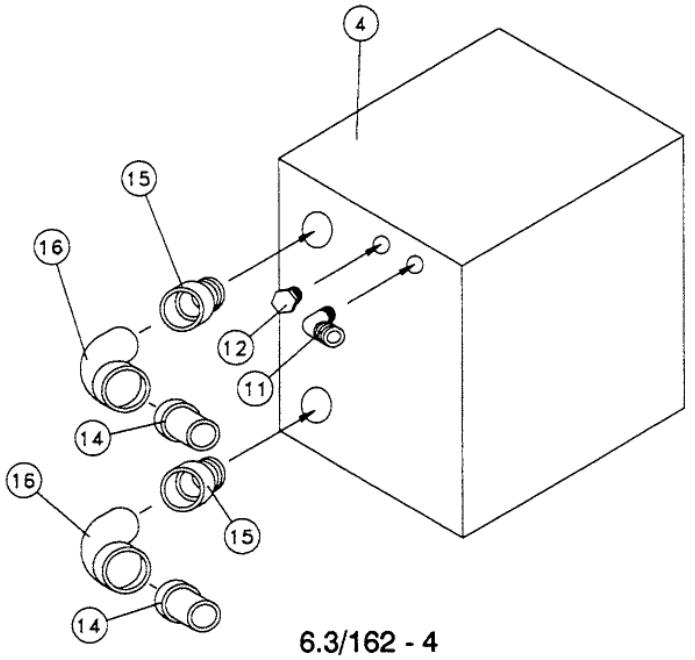
6.3/162 SANITATION SYSTEM - 440 AFT CABIN
OVERBOARD DISCHARGE - Option #162



6.3/162 - 3

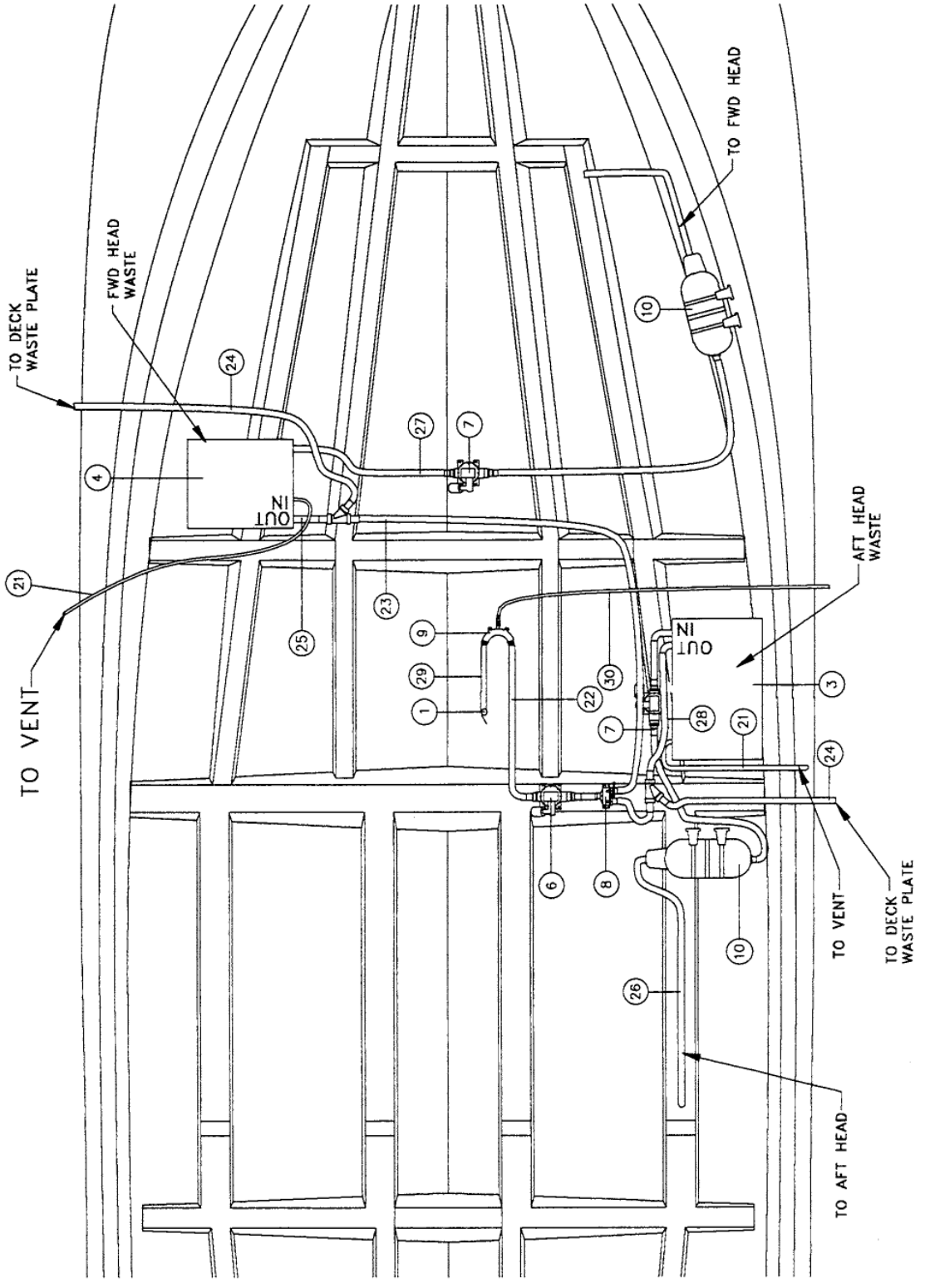
6.3/162 SANITATION SYSTEM - 440 AFT CABIN OVERBOARD DISCHARGE - Option #162

ITEM	QTY	DESCRIPTION	PART NO	OPT
1	1	VALVE: BALL 1 1/2" W/DRAIN	5131800	162
2	1	FIT: 1-1/2" BRONZE BARB	5137300	162
3	1	TANK: WASTE 40 GAL 4207	6109000	162
4	1	TANK: WASTE 40 GAL	6121400	162
5	2	PLT: DECK WASTE FITTING	6200600	162
6	1	PUMP: T-SERIES DISCHARGE	6206800	162
7	1	VALVE: 3 WAY 1-1/2" UNIDIR	6211400	162
8	1	LOOP: VENTED 1-1/2" W/5/8"	6211500	162
9	1	THRU HULL: 1-1/2" BRONZE	7109500	162
10	3	THRU HULL: 5/8 PLASTIC FITTING	7100700	162
11	2	FIT: 90 1/2HB x 1/2MPT PW NYLON	7411000	162
12	2	FIT: PLUG 1/2MPT NYLON	7413900	162
13	2	FIT: 'Y' 1-1/2MS (KIT)	7415100	162
14	4	FIT: 1-1/2HBx1-1/2MS PVC	7416300	162
15	4	FIT: 1 1/2FSx1 1/2MPT PW P	7416400	162
16	4	FIT: 90 1-1/2FS x 1-1/2MS,DM	7416500	162
17	12	CLAMP: HOSE #8	7500200	162
18	40	CLAMP: HOSE #20	7500500	162
19	1	HOSE: BILGE EX HD 5/8" x 10'	7509700	162
20	2	HOSE: BILGE EX HD 5/8" x 7.5'	7509700	162
21	1	HOSE: 1 1/2 x 6' HD VACUUM	A0000084	162
22	1	HOSE: 1 1/2 x 14' HD VACUUM	A0000090	162
23	2	HOSE: 1 1/2 x 8' HD VACUUM	A0000092	162
24	1	HOSE: 1 1/2" x 5' HD VACUUM	A0000095	162
25	1	HOSE: 1 1/2 x 25' HD VACUUM	A0000099	162
26	1	HOSE: 1 1/2" x 28' HD VACUUM	A0000100	162
27	1	HOSE: 1 1/2 x 12" HD VACUUM	A0004204	162
28	1	HOSE: 1 1/2 x 3' HD VACUUM	A0004242	162

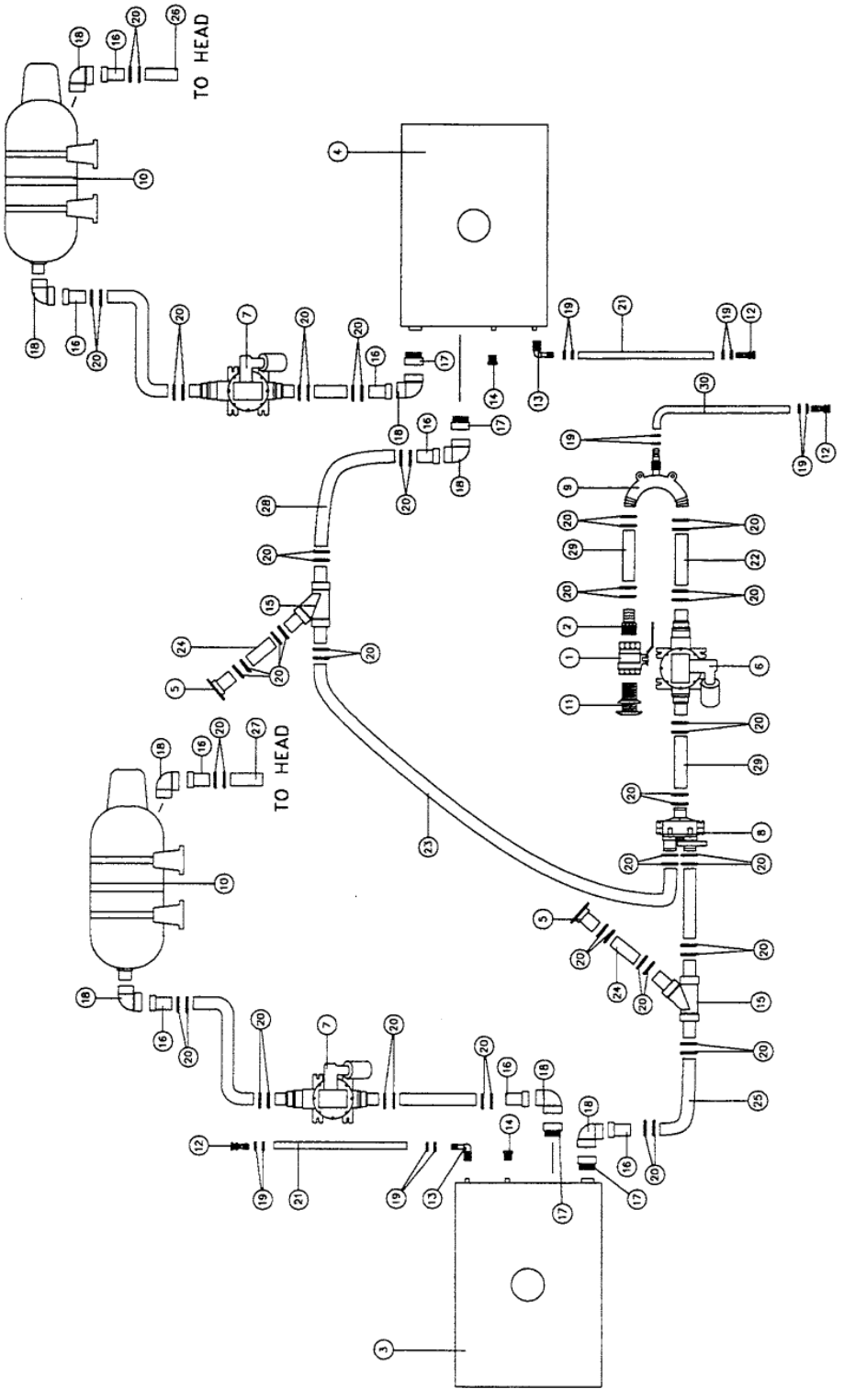


6.3/162 - 4

6.3/162 SANITATION SYSTEM - 440 AFT CABIN OVERBOARD DISCHARGE W/VACUFLUSH - Option #162

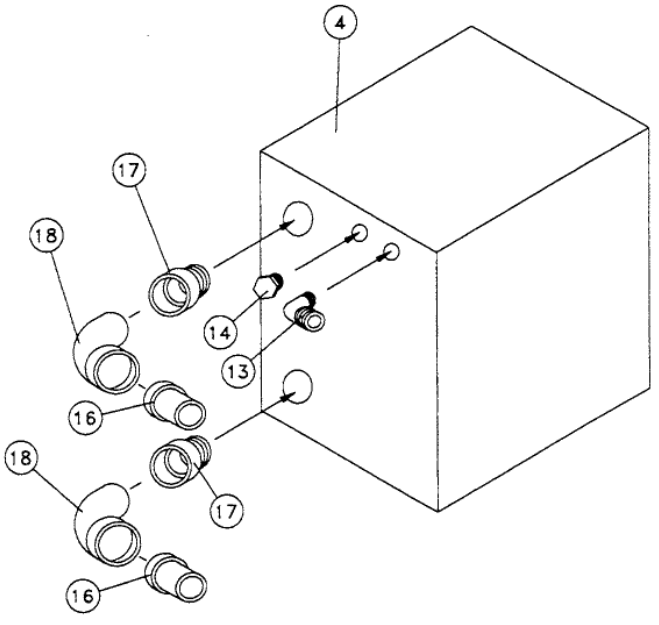


6.3/162 SANITATION SYSTEM - 440 AFT CABIN OVERBOARD DISCHARGE W/VACUFLUSH - Option #162



6.3/162 SANITATION SYSTEM - 440 AFT CABIN OVERBOARD DISCHARGE W/VACUFLUSH - Option #162

ITEM	QTY	DESCRIPTION	PART NO	OPT
1	1	VALVE: BALL 1 1/2" W/DRAIN	5131800	STD
2	1	FIT: 1-1/2" BRONZE BARB	5137300	STD
3	1	TANK: WASTE 40 GAL 4207	6109000	STD
4	1	TANK: WASTE 40 GAL	6121400	STD
5	2	PLT: DECK WASTE FITTING	6200600	162
6	1	PUMP: T-SERIES DISCHARGE	6206800	162
7	2	PUMP: VACUUM 12V DC	6208800	162
8	1	VALVE: 3 WAY 1-1/2" UNIDIR	6211400	162
9	1	LOOP: VENTED 1-1/2" W/5/8"	6211500	STD
10	2	TANK: VACUUM SEALAND	6215800	162
11	1	THRU HULL: 1-1/2" BRONZE	7109500	STD
12	3	THRU HULL: 5/8 PLASTIC FITTING	7100700	STD
13	2	FIT: 90 1/2HB x 1/2MPT PW NYLON	7411000	STD
14	2	FIT: PLUG 1/2MPT NYLON	7413900	STD
15	2	FIT: 'Y' 1-1/2MS (KIT)	7415100	162
16	8	FIT: 1-1/2HBx1-1/2MS PVC	7416300	162
17	4	FIT: 1 1/2FSx1 1/2MPT PW P	7416400	162
18	8	FIT: 90 1-1/2FS x 1-1/2MS,DM	7416500	162
19	12	CLAMP: HOSE #8	7500200	162
20	56	CLAMP: HOSE #20	7500500	162
21	2	HOSE: BILGE EX HD 5/8" x 7.5'	7509700	162
22	1	HOSE: 1 1/2 x 6' HD VACUUM	A0000084	162
23	1	HOSE: 1 1/2 x 14' HD VACUUM	A0000090	162
24	2	HOSE: 1 1/2 x 8' HD VACUUM	A0000092	162
25	1	HOSE: 1 1/2" x 5' HD VACUUM	A0000095	162
26	1	HOSE: 1 1/2 x 25' HD VACUUM	A0000099	162
27	1	HOSE: 1 1/2" x 28' HD VACUUM	A0000100	162
28	1	HOSE: 1 1/2 x 12" HD VACUUM	A0004204	162
29	1	HOSE: 1 1/2 x 3' HD VACUUM	A0004242	162
30	1	HOSE: BILGE EX HD 5/8" x 10'	7509700	162



6.3 - 163 SANITATION SYSTEM - 440 AFT CABIN OVERBOARD DISCHARGE - Option #163

In certain coastal areas of the world it is lawful to directly discharge waste into the sea. To accommodate this procedure Carver offers three overboard discharge options.

Option #163 is available on boats that will be exported or used in the coastal areas of the United States only. Option #163 allows the the owner of a 440 AFT CABIN to use the onboard holding tanks **or** discharge directly overboard and bypassing the holding tanks.

! CAUTION !

It is against the law to discharge waste overboard in many areas of the United States. It is your responsibility to make sure that you are in compliance with Federal and local laws when using your boat's overboard discharge system. People who discharge waste overboard in restricted areas are subject to sizable penalties.

Sanitation systems equipped with overboard discharge option #163 can be used in any of the following ways:

A) **Dockside discharge where waste is pumped into and stored within the two 40 gallon waste holding tanks. Tanks are then emptied using a dockside waste pump-out facility.**

1) Locate the forward head's 3-way valve in the forward center area of the engine compartment. The discharge side of this valve is labeled "WASTE HOLDING" and "OVERBOARD DISCHARGE." Turn the valve handle to the "WASTE HOLDING" position.

2) Locate the aft head's 3-way valve under the aft floor hatch on the starboard side of the master stateroom berth. This valve is also labeled "WASTE HOLDING" and OVERBOARD DISCHARGE." Turn the valve handle to the "WASTE HOLDING" position.

3) Positioning the 3-way valves in this manner diverts all waste to the waste holding tanks. Refer to Section 6.3 for instructions on how to empty the holding tanks using a dockside pump-out station.

B) Direct overboard discharge where waste is pumped directly overboard whenever the head is flushed, bypassing the waste holding tank.

1) Locate and open the overboard discharge thru-hull valves. The valve for the forward tank is located in the forward center area of the engine compartment, near the water heater. The valve for the aft tank is located under the aft cabin floor hatch on the starboard side of the master stateroom berth.

2) Position the handles of both 3-way valves so that they point toward the side labeled "OVERBOARD DISCHARGE."

3) Flushing the head bypasses the holding tank and immediately transfers waste directly overboard.

NOTE: There are certain restrictions governed by Federal laws regarding when your sanitation system can be used in the above described manner. Consult your local authorities concerning these restrictions.

C) Overboard discharge where waste is transferred to and stored in the 40 gallon waste holding tanks. These tanks are then emptied overboard through the use of an onboard 12 volt transfer pump.

1) Position the forward and aft 3-way valves so their handles are in the "WASTE HOLDING" position. This will divert all waste into the waste holding tanks.

2) To empty the holding tanks overboard, open the overboard discharge thru-hull valves.

3) To empty the forward waste tank, turn "ON" the 12 volt MAIN circuit breaker and the breaker labeled WASTE TREATMENT, FWD. Locate the overboard discharge switch which is mounted near the forward overboard discharge pump in the aft center of the forward bilge. This is a push/pull switch. Pull the switch knob to turn "ON" the overboard discharge pump.

4) To empty the aft waste tank, turn "ON" the breaker labeled WASTE TREATMENT, AFT. Locate the overboard discharge switch which is mounted near the aft overboard discharge pump in the starboard area of the engine compartment.

Using the sanitation system in this manner allows you to utilize the 40 gallon waste holding tanks when in restricted discharge areas. When the boat enters an unrestricted area, you can then empty the tanks using the onboard transfer pumps.

! CAUTION !

DO NOT run an overboard discharge transfer pump for an extended period after waste has been transferred from the tank. Letting this pump run when dry will damage the pump.

A TIP FROM CARVER: *"The overboard discharge system incorporates a good deal of sanitation hose and numerous sanitation components. If waste is permitted to remain within the sanitation hose for extended periods it may dry out and harden. This will reduce the interior size of the hose and reduce the efficiency of the system. We suggest you clear the lines by flushing each head for at least 10 seconds prior to leaving the boat for an extended period (48 hours or more). Also, when using the system in the direct overboard or overboard transfer mode, allow the head to flush or the transfer pump to run long enough to clear the sanitation hose of all waste."*

D) Winterizing The Overboard Discharge Sanitation System

NOTE: The boat must be pulled from the water and stored on land to utilize the following procedure. The following instructions serve as an overview. Please refer to the owner's instructions supplied by the head manufacturer for more information about winterizing the sanitation system.

1) Empty the waste holding tanks. Flush the tanks with FRESH water and empty the tanks again.

2) Close the water pick-up valves. Remove the water pick-up hose from the valve fittings. Flush the heads until all water is removed from the water pick-up hoses. Re-install the water pick-up hoses onto the water pick-up valves.

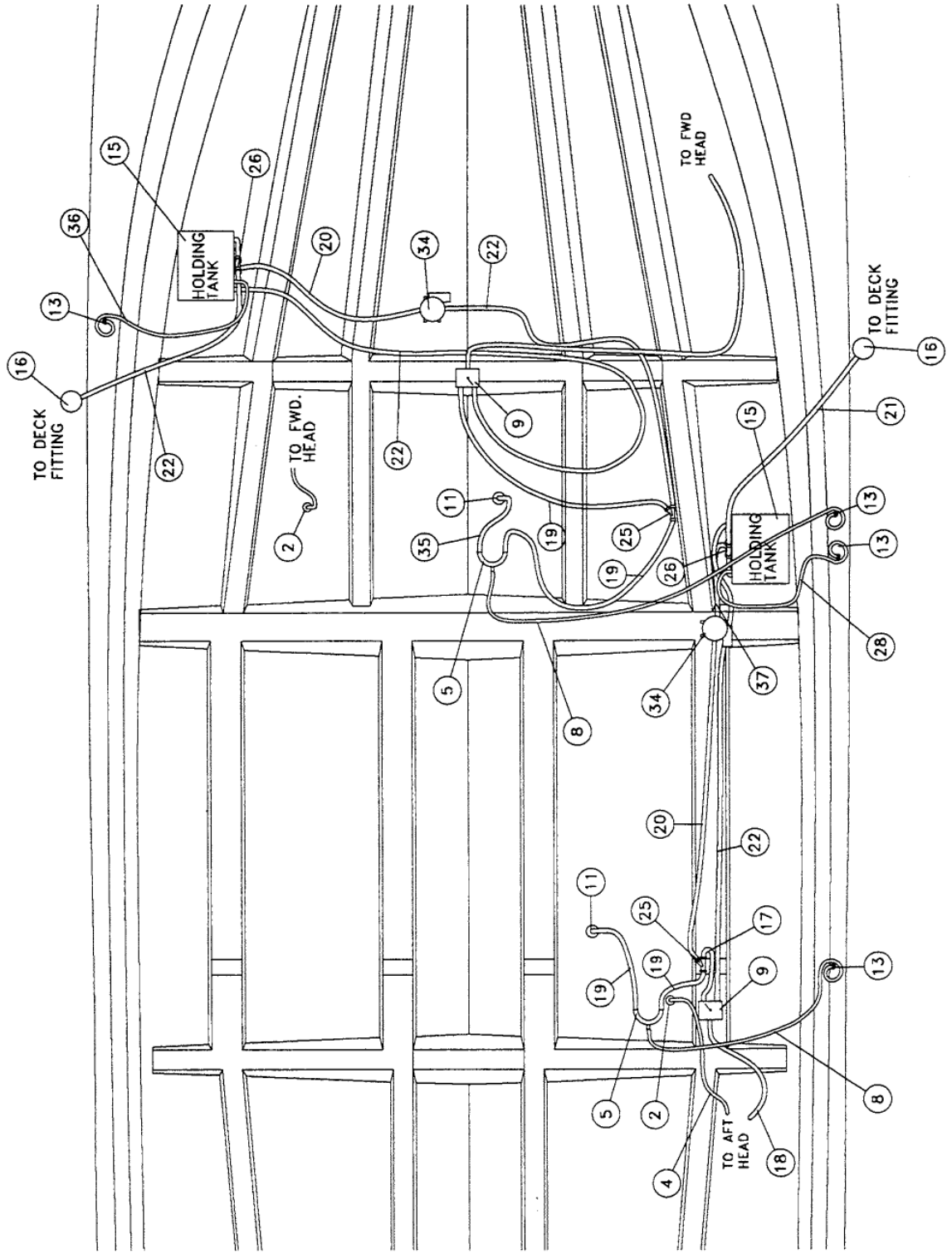
3) Purchase 20 gallons of non-toxic antifreeze from your Carver Dealer. Follow the recommendations provided in Technical Bulletin #VF-005 by SeaLand Technology regarding the type of antifreeze to use to avoid damaging the lining of the sanitation hose. This technical bulletin can be found on pages 6.3 - 6 and 6.3 - 7.

4) Position the forward and aft 3-way valves in the "WASTE HOLDING" position. Flush 10 gallons of antifreeze through each head and into the holding tanks.

5) Open the forward thru-hull overboard discharge valve. Turn the forward waste transfer pump "ON" and let it run until a stream of antifreeze flows from the overboard discharge fitting. Turn off the pump but leave the valve open. Repeat for the aft discharge valve and transfer pump.

6) Turn the forward and aft 3 way valves to the "OVERBOARD DISCHARGE" position. Pour antifreeze in each head and flush the heads until a stream of antifreeze flows from the thru-hull overboard discharge valves. Close the valves.

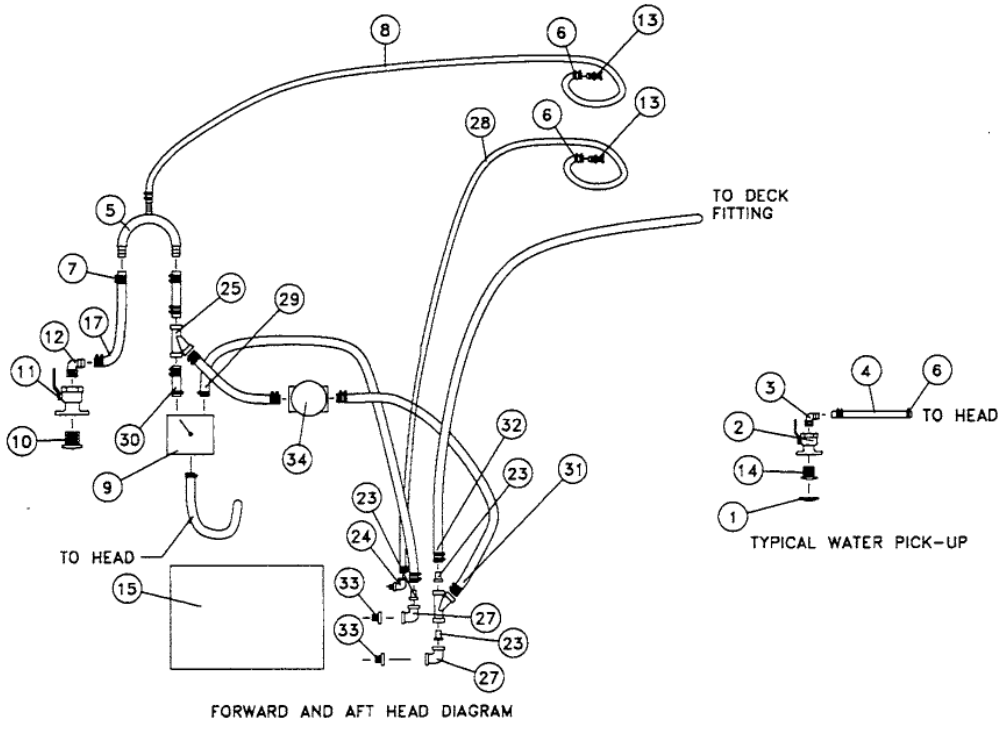
6.3/163 SANITATION SYSTEM - 440 AFT CABIN OVERBOARD DISCHARGE - Option #163



6.3/163 SANITATION SYSTEM - 440 AFT CABIN OVERBOARD DISCHARGE - Option #163

BILL OF MATERIALS

ITEM	QTY.	DESCRIPTION	PART #	ITEM	QTY.	DESCRIPTION	PART #
1	2	ROUND STRAINER	5110000	22	4	HOSE 1 1/2" HVY DUTY 13'	7509400
2	2	3/4" SEACOCK	5131500	23	6	ADAPTOR HOSE TO 1 1/2" PVC	7416300
3	2	ELBOW	7419100	24	2	90° 1/2" FITTING	7411000
4	1	3/4" HOSE 5'	7502800	25	2	KIT WYE	7415100
5	2	VENTED LOOP	6211500	26	2	1 1/2" PVC SOCKET TEE	6510900
6	24	#10 HOSE CLAMP	7500400	27	4	1 1/2" PVC ELBOW SOCKET	7416500
7	50	#28 HOSE CLAMP	7500600	28	1	5/8" HOSE 6'	7509700
8	2	5/8" HOSE 8'	7509700	29	2	HOLDING TANK LABLE	7143300
9	2	VALVE: 3 WAY	6211400	30	2	DIRECT DISCHARGE LABLE	7143400
10	2	1 1/2" THRU HULL	7109500	31	2	DIRECT O.B. DISCHARGE	7143500
11	2	1 1/2" SEACOCK	5131800	32	2	DECK DISCHARGE LABLE	7143600
12	2	1 1/2" BRONZE ELBOW	7419700	33	4	1 1/2" MALE PVC SOCKET	7416400
13	4	5/8" THRU HULL	7100700	34	2	PUMP T-SERIES DISCHARGE	6206800
14	2	3/4" THRU HULL	7109400	35	1	HOSE 1 1/2" HVY DUTY 2'	7509400
15	2	WASTE TANK 40 GAL.	6023400	36	1	5/8" HOSE 13'	7509700
16	2	CAP: WASTE	6200600	37	1	HOSE 1 1/2" HVY DUTY 40"	7509400
17	1	HOSE 1 1/2" HVY DUTY 1 1/2'	7509400	38			
18	1	HOSE 1 1/2" HVY DUTY 3'	7509400	39			
19	4	HOSE 1 1/2" HVY DUTY 6'	7509400	40			
20	2	HOSE 1 1/2" HVY DUTY 7'	7509400	41			
21	1	HOSE 1 1/2" HVY DUTY 10'	7509400	42			



FORWARD AND AFT HEAD DIAGRAM

CARVER

OWNER'S GUIDE TO SAFE AND PROPER OPERATION

SECTION 7

7.1 ENGINE GAUGES

7.2 CONTROLS AND STEERING

7.3 FUEL SYSTEM

Gasoline / Petrol
Diesel

7.4 OPERATING INSTRUCTIONS

Fueling
Pre-Start Checklist
Starting The Engines
Getting Underway

7.5 ENGINE EXHAUST PRECAUTIONS

7.6 TROUBLE-SHOOTING GAUGES, INSTRUMENTS, CONTROLS AND FUEL SYSTEM

7.1 ENGINE GAUGES

Each helm station is equipped with a complete set of gauges. These instruments allow you to monitor the operation and condition of your boat's engines. Gauges located on the starboard side of the helm station correspond to the starboard engine, port side gauges correspond to the port engine.

Familiarize yourself with these gauges before running your engines for the first time.

! CAUTION !

Engine operator's manuals have been included within your boat's OEM supplied materials package. The engine manual is a detailed and comprehensive manual that will provide you with information on proper operation and maintenance of the engines. DO NOT START OR OPERATE YOUR BOAT'S ENGINES WITHOUT FIRST READING THE ENGINE OPERATOR'S MANUAL.

A) The Following Gauges Are Installed On The Instrument Panel

Tachometer

The tachometer monitors and indicates the speed of an engine as measured in "revolutions per minute" or RPM. This speed has no relationship with your boat's speed over the water nor does a tachometer necessarily indicate the speed of propeller rotation.
The tachometer may not register zero RPM when the respective engine's ignition key is turned off. This is normal.

NOTE: The engine manufacturer has established a maximum RPM rating for your engines. This rating can be found in the engine's operator's guide. Refer to your engine operator's guide for further information concerning maximum RPMs. DO NOT EXCEED THE MAXIMUM RPM RATING.

Temperature Gauge

A temperature gauge monitors the cooling system of an engine. Every engine is designed to operate within a specified temperature range. A sudden increase in an engine's temperature could indicate that the cooling water intake system has become blocked, a water intake hose has failed, or the engine's water pump has malfunctioned.

Your engines are equipped with alarms that will sound when an engine's temperature rises beyond a predetermined level. If this alarm sounds shut down the overheated engine immediately.

Also, while your engines are equipped with high temperature alarms you should still visually monitor each temperature gauge. If an engine's temperature gauge indicates excessive engine temperature, shut down that engine immediately.

NOTE: The engine manufacturer has established a safe operating temperature rating for your engines. This rating can be found within the engine operator's guide. Refer to your engine's operator's guide for further information concerning engine temperature. DO NOT EXCEED THE ENGINES SAFE OPERATING TEMPERTURE.

A TIP FROM CARVER: *"A cold engine has a tendency to stall when first put into gear. Let your engines warm up a few minutes before departing your dock or anchorage. "*

Oil Pressure Gauge

Each engine has an oil pressure gauge. This gauge provides an indication of the pressure within the engine's lubrication system. The oil pressure reading will change as engine speed changes. However, a drop (either sudden or gradual) in an engines oil pressure while you are maintaining a constant speed, may be an indication of an oil pump failure or leak in the lubrication system.

Your boat is equipped with audible alarms that will sound when oil pressure drops below a predetermined level. These alarms will sound upon initially starting an engine or anytime an ignition switch is "ON" and the engine is not running. The alarm sounds under these situations because the engine does not yet have adequate oil pressure. The alarm will cease as soon as oil pressure rises to the proper level.

If this alarm sounds when the boat has been running, or if the alarms fail to become silent within 15 seconds after starting the engines, look at your engine oil pressure gauges. If either gauge indicates abnormally low oil pressure shut down the corresponding engine immediately.

Also, while your engines are equipped with low oil pressure alarms you should still visually monitor each oil pressure gauge. If an oil pressure gauge indicates low pressure, shut down that engine immediately.

NOTE: The engine manufacturer has established a safe oil pressure rating for your engines. This rating can be found within the engine's operator's guide. Refer to your engine operator's guide for further information concerning oil pressure. DO NOT OPERATE AN ENGINE BELOW ITS MINIMUM OIL PRESSURE RATING.

Voltmeter

The voltmeters monitor the condition of your boat's batteries. A fully charged battery will indicate approximately 12.5 volts. As power within a battery is used, the indicated voltage for that battery will decrease as indicated on the appropriate voltmeter.

The 440 AFT CABIN utilizes a voltmeter gauge for each battery.

Voltmeters are protected by circuit breakers located on the battery selector switch panel.

A detailed explanation on how to use the voltmeters to monitor battery capacity is included in Section 4.1 of this Owner's Guide.

Fuel Gauge

The fuel gauge displays an approximate indication of the level of fuel that is held within the fuel tanks. This gauge is not calibrated and should not be regarded as a precise or highly accurate method of measuring available fuel quantities.

The fuel gauge will display a reading when the ignition switch for the port engine is turned to the "ON" position.

Engine Synchronizer

The engine synchronizer is a gauge that compares the speed of both of your engines. The gauge responds to changes in engine speed. When the needle is centered, your engines are in proper synchronization.

Use the synchronizer to match engine speed rather than the position of the throttle controls. The synchronizer gauge needle will point to the engine that is operating at the higher RPM level.

B) Gauge Maintenance

The gauge panel should be protected from the sun and weather when not in use. Instrument gauges are not waterproof. Protecting them from the elements will prolong their life.

NOTE: Some gauges can collect condensation within the gauge assembly. This condition is indicated by small beads of moisture behind the gauge's glass bezel. This moisture does not indicate a defective gauge. The Carver Limited Warranty does not include replacing gauges that are cosmetically affected by condensation.

Electronic gauges can be affected by static electricity that may build up on the glass face of the gauge. Periodic washing of the gauge face with warm water and mild liquid detergent will help reduce the static electricity problem and improve gauge accuracy.

7.2 CONTROLS AND STEERING - 440 AFT CABIN

A) Gear And Throttle Controls

The gear shifts and throttles consist of three major components:

Shift Levers

Shift levers are installed on the port side of the steering wheel. The outside lever controls the port engine and the inside lever controls the starboard engine.

The shift levers allow you to shift from neutral to forward or reverse. These levers are designed to permit independent shifting of each engine. This improves maneuverability in tight quarters.

! CAUTION !

DO NOT shift into, or out of, gear while the engine speed (as indicated on the tachometers) is above 900 RPM. Costly damage to your boat's drive train could result.

A neutral safety switch is incorporated into the linkage of each gear shift. When properly adjusted, this safety switch will not permit you to start an engine while it is in gear.

A TIP FROM CARVER: *"If you turn the ignition switch key and the engine starter fails to engage it may be because the neutral safety switch for that engine is slightly out of adjustment. If this happens, wiggle the gear shift for that engine fore and aft until the starter engages."*

Throttles

The throttles are installed on the starboard side of the steering wheel. The inside throttle lever controls the port engine and the outside throttle controls the starboard engine.

The throttles allow you to increase or decrease the speed of each engine. These levers are also designed to permit independent control of each engine's speed.

! CAUTION !

ALWAYS return a throttle to its extreme low speed position before shifting the engine into, or out of, gear. Failure to follow this procedure may result in drive train damage.

On a dual engine boat such as the 440 AFT CABIN it is recommended that both engines be operated at the same speed while cruising. This reduces engine noise and vibration and improves engine efficiency. Use the engine synchronizer gauge to monitor the speed of each engine. Adjust the throttles so the synchronizer gauge needle is centered. Attempting to synchronize the engines by aligning the throttle levers will seldom work. When the engines are properly synchronized the throttle levers may not necessarily be aligned.

Glendinning Throttle Synchonizer

The 440 AFT CABIN is equipped with a throttle synchonizer manufactured by Glendinning Marine Products. This throttle synchonizer allows you to electronically and mechanically interconnect BOTH engine throttles. Interconnecting the throttles allows you to increase and decrease engine speed by using one throttle lever. This also allows you to maintain precisely synchonized RPM levels.

To operate the Glendinning Synchonizer (the following instructions have been extracted from the Glendinning Synchonizer operators manual):

1. Have both engines running and advance speed slightly above idle.

2. Switch SYNCHONIZER "ON" - Pilot light will be "ON."

3. Move "SLAVE ENGINE" lever to maximum speed position - since the SYNCHONIZER is now controlling the slave engine, the lever is "limp" or non-effective. Advancing the slave engine lever eliminates the SYNCHONIZER of undue strain in moving the entire control cable system.

4. Both engines are now under the control of a single movement of the lead engine control and may be advanced and retarded through the entire cruising range.

5. To disengage - switch OFF SYNCHONIZER - move slave engine lever back towards idle. It will automatically re-engage with the engine control. A safety collar assures positive return to idle when switching OFF and moving lever back.

Use of the SYNCHONIZER at minimum and maximum engine speeds call for engine speed settings to be as follows:

SLAVE engine IDLE set LOWER than LEAD engine.

SLAVE engine MAXIMUM set HIGHER than LEAD engine.

Automatic deactivation of the SYNCHONIZER will result from conditions contrary to the above settings. The pilot light will go OFF, the SYNCHONIZER will be deactivated. To re-engage, switch OFF and ON again.

Additional operating instruction can be found in the instruction manual provided by Glendinning Marine Products. This manual is included in the OEM Supplied Materials Portfolio.

Control Cables

Push - Pull type cables are used to connect the shift and throttle controls to the engine. Refer to the information provided by the control manufacturer for more information on adjusting and maintaining your boat's engine controls.

B) Steering

The 440 AFT CABIN utilizes a Sea Star II hydraulic steering system manufactured by Teleflex Marine Products. Hydraulic steering provides better response than mechanical steering when used on large boats like the 440 AFT CABIN.

The boats helm is connected to the rudders through a hydraulic pump, a network of hydraulic lines, an oil reservoir, a hydraulic cylinder, and a tiller tie rod. By turning the helm, oil is pumped through the hydraulic line which activates the hydraulic cylinder. This cylinder is connected to the tiller tie rod. Extending and retracting the cylinder moves the rudders and enables you to steer the boat. With hydraulic steering the effort needed to turn the helm remains the same regardless of the speed of the boat.

Your hydraulic steering system depends upon a proper and adequate source of hydraulic fluid and sufficient pressure within the hydraulic pump and lines. Refer to the operator's manual for the Sea Star II hydraulic steering system for more information on its operation and maintenance.

A TIP FROM CARVER: *"The Sea Star system does not include a rudder position indicator. Use the following procedure to center the rudders prior to departing your slip or anchorage."*

1) *With the engines in neutral and the boat at rest, turn the wheel clockwise until it stops.*

2) *Turn the wheel counterclockwise until it stops counting the number of rotations the wheel makes going from "rack-to-rack."*

3) *Divide the number of "rack-to-rack" rotations in half and turn the wheel clockwise that number of turns.*

4) *The rudders are now centered.*

7.3 FUEL SYSTEM - 440 AFT CABIN

The 440 AFT CABIN utilizes twin 200 gallon fuel tanks. Fuel systems installed by Carver meet or exceed the requirements of the U.S. Coast Guard, the Boating Industry Association, and the American Boat and Yacht Council during the time your boat was constructed. Each tank must pass a rigid test conducted by the tank manufacturer. In addition to this test, all fuel systems are inspected and pressure tested by Carver.

Your Carver Dealer also makes a full inspection of the fuel system prior to delivering your boat. An entry on the Carver Pre-Delivery Service Record will attest to the dealer's performance of this fuel system inspection.

The fuel system of the 440 AFT CABIN can be configured several ways depending upon the propulsion system and optional equipment that has been installed on the boat. To determine the fuel system that has been installed you must answer the following questions:

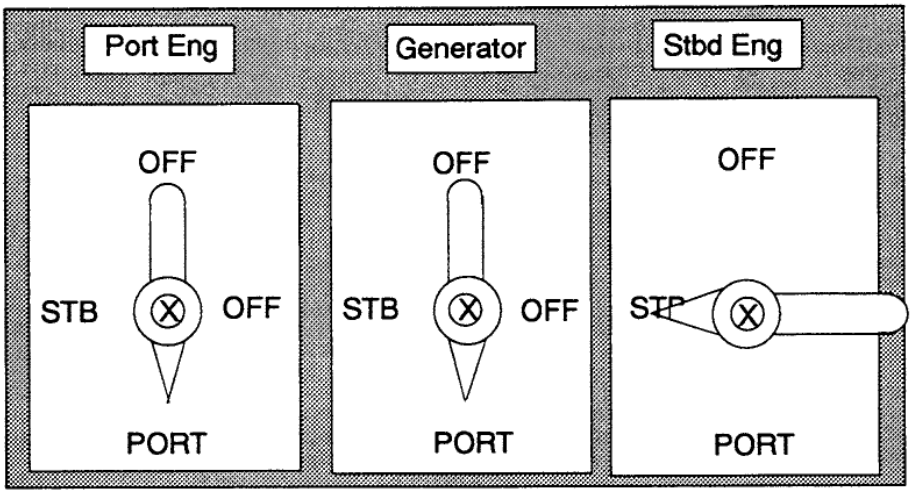
1) Is the propulsion system gasoline or diesel?

2) Is the boat equipped with an optional generator?

Refer to Section 7.4 for information on filling the fuel tanks.

A) Gasoline Fuel Systems

Fuel supply valves are used within gasoline fuel systems to control the flow of fuel from each tank to the engines and generator. Each engine has its own supply valve. If the boat is equipped with a generator, it will also have its own fuel supply valve. The valve system within the 440 AFT CABIN allows each engine and the generator to select from either port or starboard fuel tank.



Gasoline Fuel Supply Valve Panel - 440 AFT CABIN

The illustration on the preceding page shows how the engine fuel supply valves should be positioned for the port engine to draw from the port tank and the starboard engine to draw from the starboard tank. This is the most commonly used position for the engine fuel supply valves. The generator valve is alternated between the port and starboard fuel tank, whichever contains a greater amount of fuel.

Anti-syphon check valves are installed in gasoline fuel systems between the fuel hose and the fuel tank withdrawal tube. Anti-syphon check valves are spring loaded and will "automatically" stop the flow of fuel in the case of a ruptured or disconnected fuel hose.

! DANGER !

Anti-syphon check valves are important safety components. DO NOT remove anti-syphon valve(s) from the fuel sytem. Clean and or replace clogged or sticky valves.

B) Diesel Fuel Systems

Diesel propulsion systems utilize fuel "supply" and fuel "return" lines. The supply lines feed fuel to the engine. Return lines transfer fuel not burned by the engine back to the fuel tank. Each engine in the 440 AFT CABIN is plumbed to its nearest fuel tank (ie. port engine to port fuel tank, starboard engine to starboard fuel tank). The generator draws fuel from the port tank.

A fuel transfer pump is included within diesel fuel systems. This pump can be used to equalize the volume of fuel between the two tanks.

The fuel transfer pump and control switch is located in the forward center section of the engine compartment. The control utilizes a three position, center "OFF" switch. To transfer fuel monitor your fuel gauges to identify the tank that has the highest volume of fuel. Turn "ON" the 12 volt MAIN breaker and the circuit breaker labeled EXTRA that is installed on the 12 volt panel. Turn the fuel transfer switch towards the fuel tank to which you want the fuel to flow. Monitor the fuel gauges and continue to transfer fuel until the tanks are equalized.

Fuel shut-off valves are installed in diesel fuel systems between the fuel line and the fuel tank. Both supply and return lines incorporate fuel shut-off valves. Refer to the diesel fuel system drawing at the end of Section 7.3 for more information on diesel fuel system components.

! WARNING !

DO NOT operate a diesel engine with its fuel "RETURN" line valve in the closed position. Failure to allow unburned fuel to return to the tank will create excessive pressure within the fuel system that could lead to fuel system failure.

C) Fuel Tank Vents (Gasoline and Diesel)

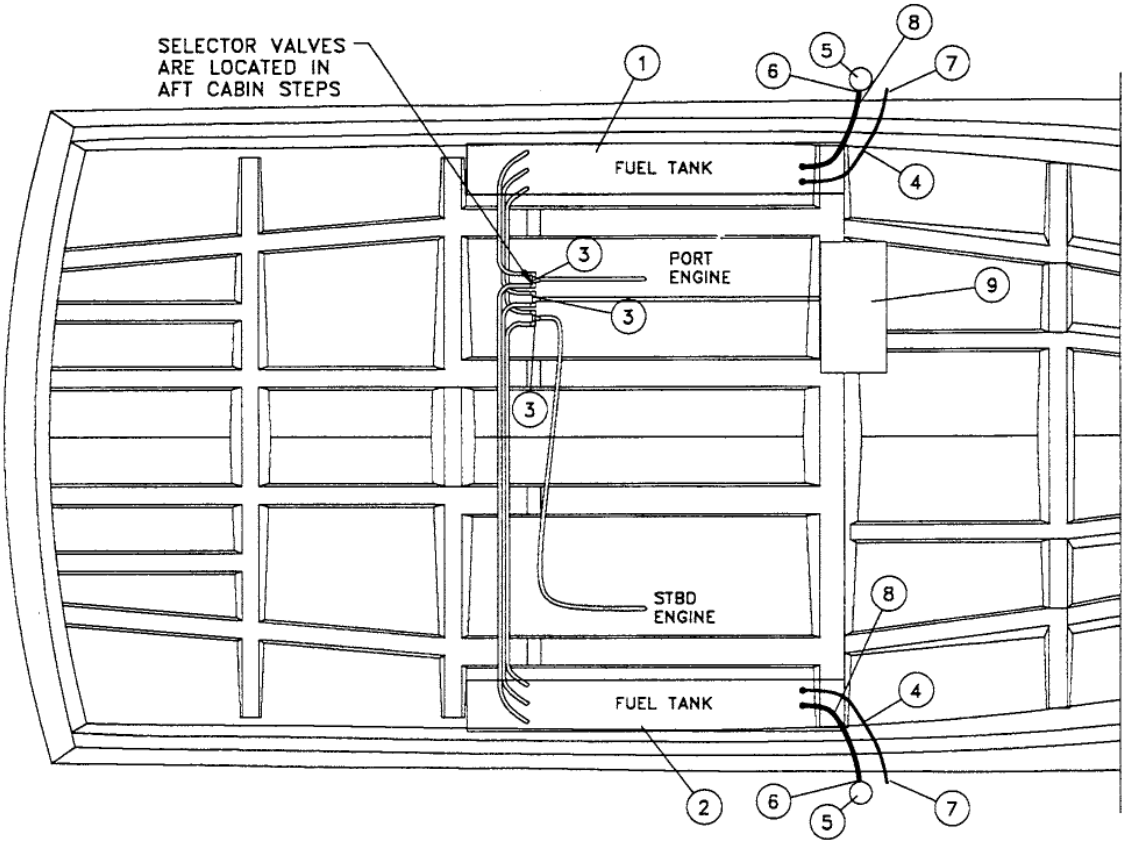
Each fuel tank is vented overboard. While the tank is being filled, air is displaced by fuel and escapes through the vent. When fueling, fuel will spurt through the vent when the tank is nearly full. Periodically remove and clean the vent screen. The screens prevent insects and dirt from clogging the vent hose and from contaminating fuel.

D) Fuel Gauges (Gasoline and Diesel)

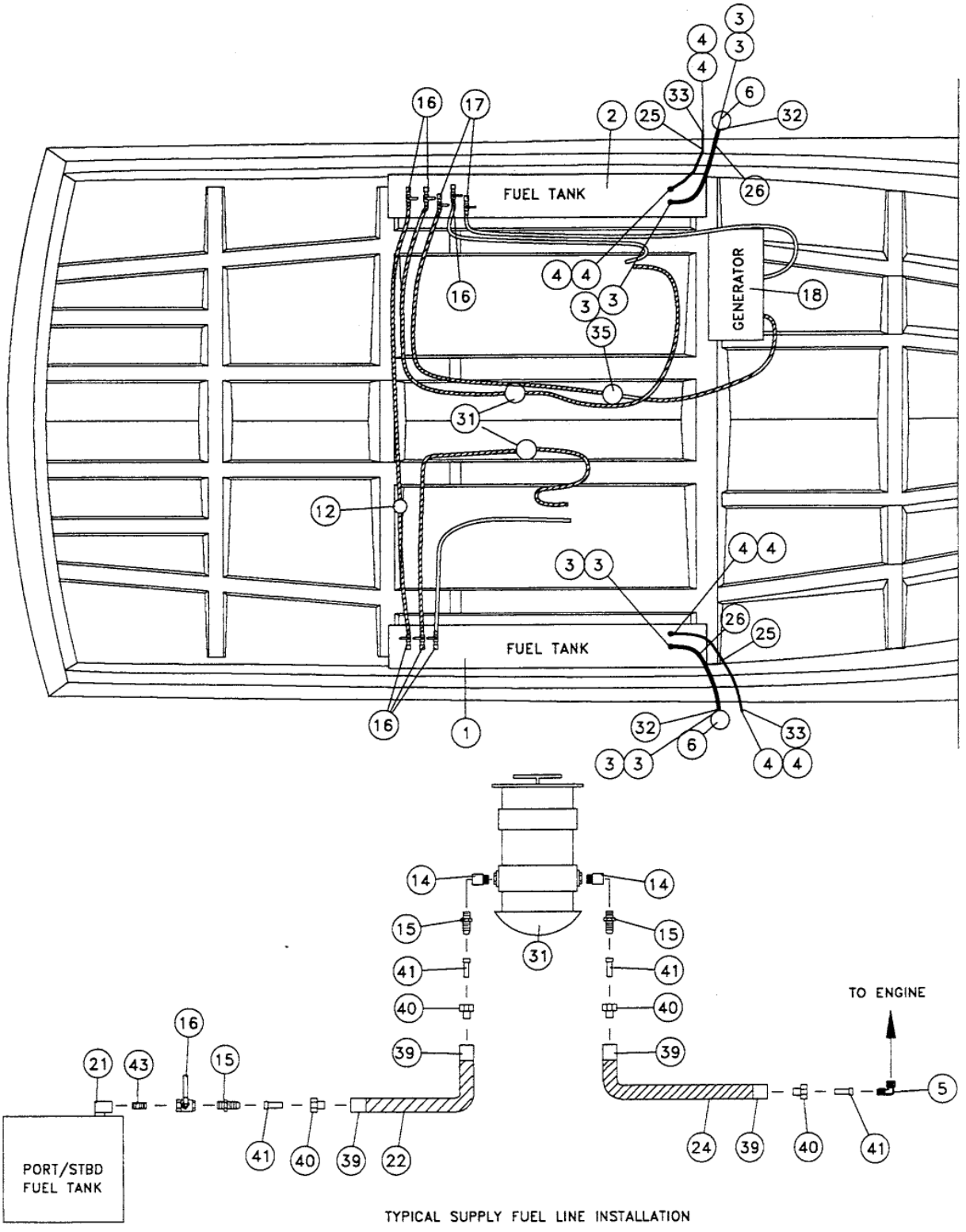
Fuel gauges are installed at the helm console for each tank installed on the boat. While underway, the "reading" on the gauges may vary due to the movement of fuel within the tanks. The fuel gauge will provide only a relative indication of the amount of fuel that remains in a tank. They are not calibrated instruments. The port engine ignition must be in the "ON" position for fuel gauges to provide a fuel level reading.

7.3 GASOLINE FUEL SYSTEM - 440 AFT CABIN

BILL OF MATERIALS			
ITEM	QTY.	DESCRIPTION	PART NO.
1	1	FUEL TANK PORT	6011800
2	1	FUEL TANK STBD	6011700
3	3	FUEL VALVE SELECTOR	6005400
4	2	5/8" VENT HOSE	7535000
5	2	FUEL FILL DECK PLATE	6007200
6	2	HOSE BARB	7408000
7	2	THRU HULL VENT	6002600
8	2	1 1/2" FILL HOSE	7525000
9	1	GENERATOR	6936500
10	1	3/8" FUEL HOSE	7530200



7.3 DIESEL FUEL SYSTEM - 440 AFT CABIN

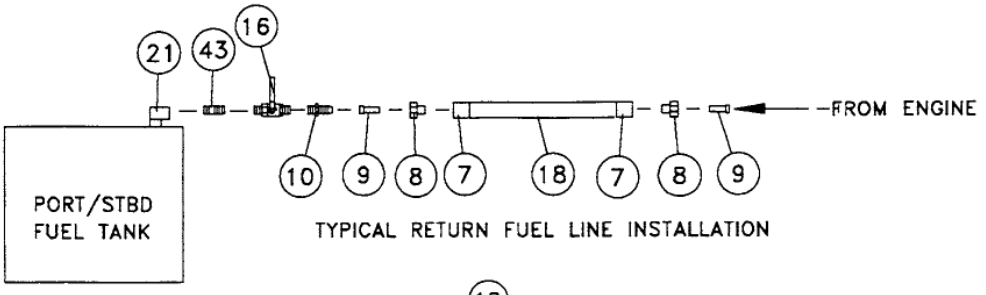


TYPICAL SUPPLY FUEL LINE INSTALLATION

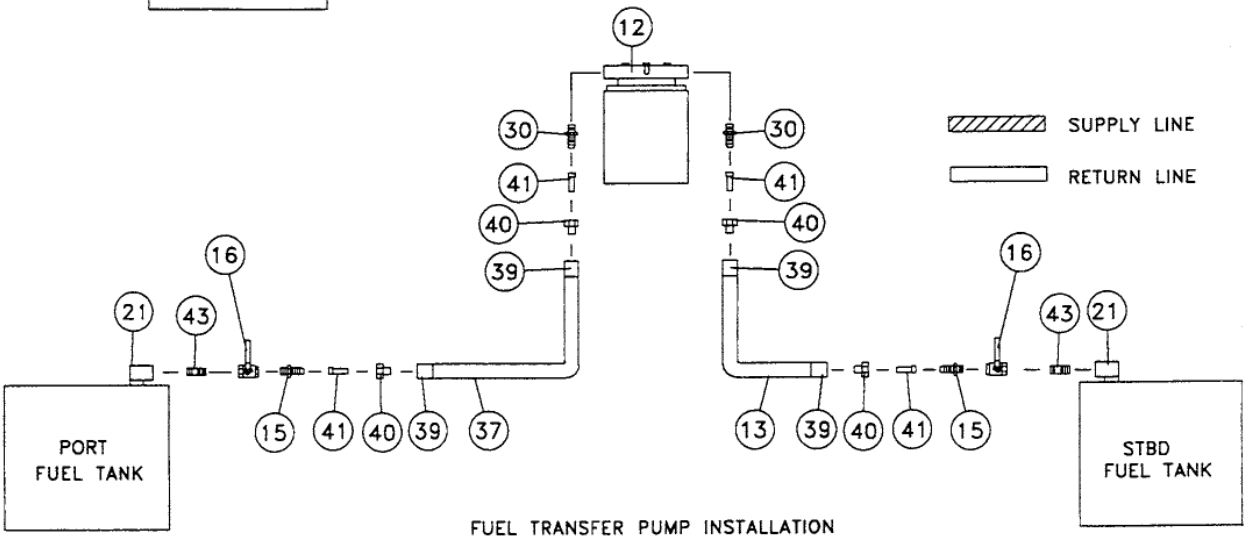
7.3 DIESEL FUEL SYSTEM - 440 AFT CABIN

BILL OF MATERIALS				
ITEM	QTY.	DESCRIPTION	PART NO.	OPTION
1	1	TANK: FUEL 200 GAL STBD	6011800	
2	1	TANK: FUEL 200 GAL PORT	6011700	
3	8	CLAMP: HOSE #28	7500600	
4	8	CLAMP: HOSE #10	7500400	
5	2	FIT:EL 90DEG 1/2"MFLR x1/4MP	7431600	
6	2	PLT:DECK DSL 2"	6003200	
7	4	FIT: FURREL 3/8"	7413400	
8	4	FIT: NUT FOR 3/8" SWIVEL	7513701	
9	4	FIT: SWIVEL 3/8"	7413700	
10	2	FIT:3/8"MPT x 3/8F BRS	7433700	
11	2	NIPPL:3/8"x1 1/8" RED BRASS48	7422200	192,548
12	1	PUMP:FUEL TRANSFER	6007400	
13	1	HOSE: 1/2"X17' FUEL	A0015695	
14	4	FIT:RACOR ADTR 9/16-18x3/8FPT	7410200	
15	4	FIT:1/2"FLARE x 3/8"MPT BRASS	7410300	
16	6	VALVE:3/8" BALL	7421800	
17	2	VALVE:3/8" BALL	7421800	192,548
18	1	GEN:13.5KW DSL KOH 120V	6934300	192,548
19	2	HOSE: 3/8"X 5' FUEL	A0000043	
20	2	WTHDRWL: FUEL RIDGE 31 1/2"	6020705	192,548
21	4	WTHDRWL: FUEL RIDGE 31 1/2"	6020705	
22	2	HOSE: 1/2"X9' FUEL	A0000060	
23	1	HOSE: 3/8"X6' FUEL	A0000029	192,548
24	1	HOSE: 1/2"X12' FUEL	A0000058	
25	2	HOSE: 5/8"X9' FUEL VENT	B0001031	
26	2	HOSE: 1 1/2"X5' FUEL FILL	A0013608	
27	4	FIT: FURREL 3/8"	7413400	192,548
28	4	FIT: NUT FOR 3/8" SWIVEL	7513701	192,548
29	4	FIT: SWIVEL 3/8"	7413700	192,548
30	2	FIT:1/2MPT x 1/2FLR	7410000	
31	2	FLTR:FUEL RACOR 900MA	6003500	
32	2	FIT:2HB x 2MPT NYLON	7408000	
33	2	VENT:90 DEG THRU HULL	6002600	
34	1	HOSE: 1/2"X 6' FUEL	B0003189	
35	1	FLTR:FUEL RACOR 200FGM	6009100	192,548
36	4	CLAMP: HOSE #10	7500400	192,548
37	1	HOSE:1/2"X3' FUEL	A0004196	
38	1	HOSE:3/8"X2' FUEL	A0000046	192,548
39	12	FIT:FURREL 1/2"	7414702	
40	12	FIT:NUT FOR 1/2" SWIVEL	7414701	
41	12	FIT: SWIVEL 1/2" FLARE	7414700	
42	2	FIT:3/8MPT x 3/8FLR	7433700	192,548
43	6	NIPPL:3/8"x1 1/8" RED BRASS48	7422200	

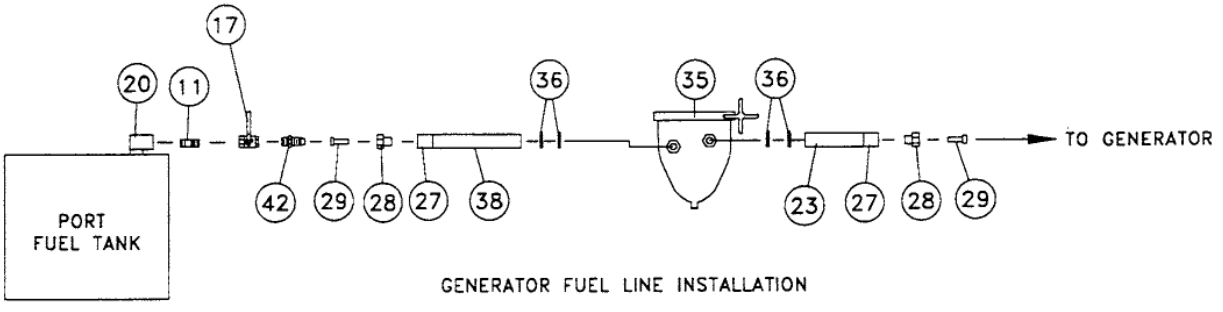
7.3 DIESEL FUEL SYSTEM - 440 AFT CABIN



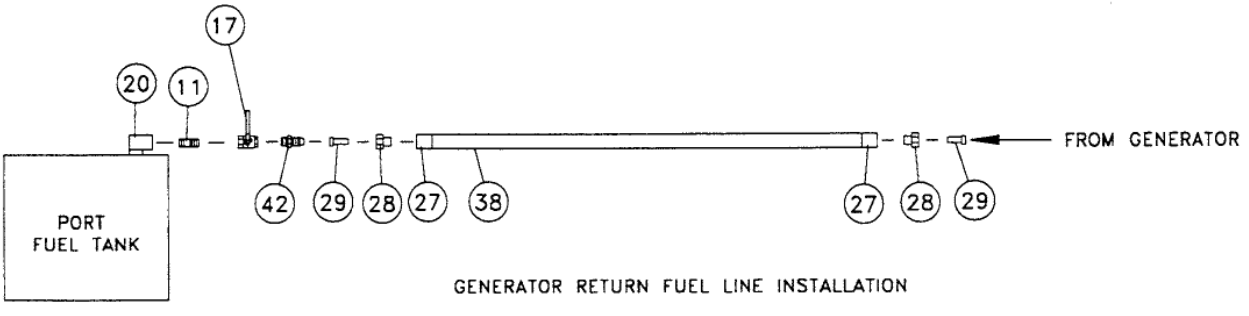
TYPICAL RETURN FUEL LINE INSTALLATION



FUEL TRANSFER PUMP INSTALLATION



GENERATOR FUEL LINE INSTALLATION



GENERATOR RETURN FUEL LINE INSTALLATION

7.4 OPERATING INSTRUCTIONS - 440 AFT CABIN

Before starting the engines become familiar with the various systems that relate to their operation.

A) Fueling

Refer to the engine manual for the fuel type and octane rating recommended for your boat's engines.

Prior To Fueling:

1) Ensure that the boat is securely moored.

2) Close all ports, windows, hatches and doors.

3) Stop fans, motors or any other device that could create a spark. Turn off the stove and oven. Shut down the generator.

4) DO NOT SMOKE OR ALLOW ANYONE NEAR THE FUEL DOCK TO SMOKE.

5) Turn the battery selector switch to the "OFF" position.

6) Have all guests and passengers leave the boat. Only the fuel handlers should be in the area.

Fueling:

1) Locate the fuel fill deck plates and remove the deck plate caps.

2) Be certain that the fuel you are about to pump into your boat is the proper type recommended by the engine manufacturer.

3) Have an approximate idea how many gallons of fuel you will be taking on.

4) Pump fuel into the fuel tanks. While fueling, keep the fuel hose nozzle in contact with the metal fuel fill deck plate at all times. This is a safe guard against static spark.

! CAUTION !

Avoid spilling fuel on the gelcoat surface of your boat. Fuel can stain the gelcoat and damage the hull accent stripes.

5) Monitor the fuel tank air vents. When the fuel tank is almost full, fuel will spurt out of the vent.

After Fueling:

1) Replace the fuel fill deck plate caps.

2) Wash down or wipe up all spilt fuel.

3) Ventilate the cabin by opening ports, windows, doors and hatches.

4) Turn the battery selector switch, the 12 volt MAIN breaker and the BILGE BLOWER breaker to the "ON" position.

5) Turn "ON" and run the bilge ventilation blower for at least 5 minutes prior to starting an engine or generator.

6) Inspect the engine compartment. Sniff the engine compartment for fuel vapors.

7) Operate onboard equipment ONLY after you are sure that the boat is free from all fuel vapors.

B) PRE-START CHECK LIST

1) Read and understand the information contained in the Owner's Guide and all OEM supplied literature.

2) Open and inspect the engine compartment.

-Sniff for fuel fumes.
-Check the bilge water level.
-Check for oil in the bilge.
-Check the crank case oil level in each engine.
-Check transmission oil level.
-Make an overall inspection of the engine compartment to look for signs of potential problems.
-Follow all periodic maintenance instructions as detailed in Section 8.2.

3) Turn the battery selector switch to either the #1 or the #2 position.

4) Go to your 12 volt electrical panel and turn the MAIN breaker, the BILGE BLOWER breaker and any other breakers for equipment you may need (horn, trim tabs, etc.) to the "ON" position. Turn the helm console bilge blower switch "ON".

5) Check the output level of the bilge ventilator by holding your hand over the bilge vent grill installed on the port side of the boat's hull. You will feel air being blown from the output bilge vent if the bilge blower is operating properly.

! DANGER !

Operate the bilge blower for AT LEAST 5 minutes prior to starting an engine or on-board generator AND whenever running the boat at idle speed. Check bilge blower output before starting engines or on-board generator.

During the 5 minutes the bilge blower is running you can complete the following steps:

6) Position the fuel tank selector valves (if so equipped) to draw from the desired fuel tank. Refer to Section 7.3 for additional information concerning the boat's fuel system.

7) Be sure that all safety gear is on-board and operative. Check out items such as navigational lights, VHF radio, depth sounder, etc. Make sure your boat carries the safety equipment required to meet Federal and local regulations.

8) Check to make sure you have an adequate supply of fresh water. Check level of waste holding tanks.

9) Remove and store shore power cords and dockside water line.

C) STARTING THE ENGINES:

1) Read, understand and follow the operator's manual that has been prepared and supplied by the engine manufacturer. The information supplied in the engine manual takes precedence over information presented in the Carver Owner's Guide.

! CAUTION !

TURN OFF all electronic communication and navigation equipment PRIOR TO starting the boat's engines. The large swing in the current supply during engine start-up can damage electronic equipment.

2) Put both gear shift controls into NEUTRAL.

3) Select the engine you will start first. NEVER start both engines at the same time.

4) When starting cold engines, advance the throttle lever to the full speed position and return to full idle position. All throttle linkages and controls must work smoothly. Advancing the throttle in this manner also primes the engine for easier starting.

There is no need to conduct this full throttle advance when starting warm engines. Doing so could flood the engines, making start-up difficult.

5) Slightly advance that same throttle. Keep one hand on the throttle and engage the engine starter by turning the ignition key with your other hand. Release the key

! CAUTION !

The ignition switch is spring activated. Release the key when the engine has started. Failure to release the ignition key after the engine has started may damage the starter.

! CAUTION !

DO NOT operate the starter by engaging the ignition key for more than 10 seconds. If the engine does not start after engaging the starter for 10 seconds, release the key and try again.

The oil pressure warning buzzer will sound for the first few seconds after the engine has started. This is normal. When oil pressure builds the buzzer will stop.

A cold engine may run rough and require some slight pumping of the throttle lever to start the engine and keep it running.

6) When the engine has started, advance the throttle slightly beyond idle speed.

7) Repeat these starting procedures for the remaining engine.

8) As the engines warm-up retard the throttles to their lowest idle speed setting.

D) After Your Engines Have Started:

1) When both engines have started check your engine gauges. Make sure the oil pressure complies with the engine manufacturers recommendations. Voltmeters should read about 12.5 volts.

2) Check your fuel gauge to make sure you have adequate fuel for your trip.

3) Take a look into the engine compartment. Visually inspect the engine coolant lines, fuel system hoses and exhaust hoses. If you discover a leak or suspect that anything is out of order, shut down the engines and investigate.

! WARNING !

The engine compartment contains moving, hot machinery. KEEP YOUR HANDS, FEET AND BODY OUT OF THE ENGINE COMPARTMENT WHILE ONE OR BOTH ENGINES ARE RUNNING.

E) Getting Underway

It takes training and experience to become an "expert yachtsman." Reading and understanding this Owner's Guide is only part of the knowledge you'll need to operate a boat safely and skillfully.

Carver owners have a wide range of abilities, from seasoned yachtsman with years of experience to absolute beginners with a new found love for the water. Be honest with yourself in appraising your level of skill.

If you are new to boating ask your Carver Dealer where you can obtain some training in yacht handling, rules-of-the-road and navigation. There are numerous publications available that are on the "must reading" list for a new boater.

Also, we recommend that you attend a safe boating course offered by the U.S. Coast Guard Auxiliary, U.S. Power Squadron or any other boating education agency. Many of these organizations offer classes that will benefit an experienced yachtsman as well.

It's a thrill for the skipper to complete a perfect docking maneuver. But you can rarely depend upon luck to help dock your boat. The only way to acquire this skill is through practice and experience.

<u>The Shakedown Cruise:</u>

Before taking your boat on its first outing be sure that the following tasks have been completed:

1) Dealer has completed Pre-Delivery commissioning. This inspection has been documented on the Pre-Delivery Service Document and has been signed by the dealer and the owner.

2) ALL warranty registration cards have been completed and mailed.

3) You have read and understand The Carver Owner's Guide and all other literature pertaining to your boat's systems.

4) Safety equipment on board your boat is in compliance with Federal and local regulations.

5) Your boat has been documented or registered and displays the appropriate identification on the hull.

6) A representative from your Carver Dealer has reviewed the operation of the boat and its systems with you and answered your questions.

If possible, pick a calm day for your first outing. The shake-down cruise with a new boat is not the best time to bring friends or guests along. Entertaining guests will distract you from the real purpose of the cruise, that is to familiarize yourself with your new boat. Bring only those people (wife and children) who will makeup your regular crew. Invite the sales person who sold you the boat or a member of your Carver Dealer's service staff along for the ride.

Carry a pad and pencil with you during this first outing. Write down any questions that come to mind during the cruise so you can discuss them with your dealer.

Follow the procedures outlined at the beginning of this section for fueling and starting the boat's engines.

This may be the first time you have been in total command of your new boat. Proceed slowly. Have fun but remember that the objective of the cruise is to learn more about how your boat operates and handles. Operate at different RPM settings. Try different trim angles. Monitor the gauges. Practice backing down and turning slow (idle) speed tight corners to simulate maneuvering in tight quarters. Write down any questions you may have so you can review these items with your dealer when you return to the dock.

Operating the Boat "At Planing Speed":

The 440 AFT CABIN utilizes a "planing" hull. Planing hulls skim "over" the water rather than "through" the water. To do this however they first have to reach a certain hull speed, called "planing speed".

When you first accelerate from a dead stop, the trim angle of the boat will increase and cause the bow of the boat to rise and the stern of the boat to drop. Continue to accelerate and the boat will eventually achieve plane and the bow will slowly drop to a more level attitude.

! WARNING !

It is important to get on plane as soon as possible and avoid speeds that cause the boat to plow through the water with the boat in a bow high attitude. A bow high attitude will obstruct your vision from the lower helm (if so equipped) and limit your handling and performance capabilities.

Once the boat is on plane you can back the throttles off to a point where the hull is still planing and the engines are operating at a fuel efficient speed. In boats equipped with gasoline engines, efficient cruise speed is between 3000 and 3200 RPM's. The 440 AFT CABIN is equipped with diesel engines will cruise efficiently at a RPM setting of between 2300 and 2500.

Trim Tabs:

Your boat is equipped with a set of electric / hydraulic trim tabs. Trim tabs allow you to trim the boat to adjust for variables such as load, passengers, seas or wind. Under normal conditions the 440 AFT CABIN will not need adjustments to the trim tabs to achieve plane. Use the tabs at planing speeds to make minor adjustments in the fore and aft and beam to beam angle of the boat.

Use the trim tabs in the following way:

1) Turn the 12 volt circuit breaker labeled TRIM TABS to the "ON" position.

2 The trim tab control is mounted at the boat's helm console. The control has two rocker switches. The port switch corresponds to the port tab and the starboard switch to the starboard tab. The control is labeled "BOW UP" and "BOW DOWN." Before advancing the throttles, depress both switches on the BOW UP side for 5 seconds. This lifts the tabs to the full "up" position.

3) Advance the throttles to bring the boat on plane. Adjust engine RPM for cruising speed.

4) Use the trim tabs individually to make beam to beam adjustments. If the majority of your passengers are sitting on the port side, you may find that the starboard side of your boat is riding higher than the port. Push the BOW DOWN side of the starboard trim tab control switch for a ONE-HALF SECOND interval. Continue to adjust in half second intervals until the desired trim angle is achieved.

   If your passengers decide to shift to the other side of the boat level your boat by pressing the BOW UP side of the starboard trim tab control for a few seconds. This neutralizes your prior adjustment. Next press the BOW DOWN side of the port tab control switch to adjust the trim of the boat.

5) Trim tab switches can be used together to bring the bow of the boat to a lower attitude. Press both switches together at HALF-SECOND intervals to bring the bow down.

! WARNING !

DO NOT OVERTRIM. Make your adjustments in HALF-SECOND intervals and allow the boat to adjust to trim tab input. Over trimming could cause the bow to veer and may lead to loss of control.

ALWAYS reset both tabs to the BOW UP position BEFORE advancing throttles to achieve plane. Initial acceleration with lowered tabs could lead to a loss of control.

A TIP FROM CARVER: *"Get into the habit of retracting the tabs (full BOW UP position) whenever the boat is not at planing speed or when the boat is at rest. This habit provides the following benefits:*

1) *If you attempt to back out of your slip with one tab up and the other down your boat will not back straight. The drag from the lowered tab will make the boat veer to one side.*

2) *Tabs are controlled by a hydraulic cylinder that extends and retracts to change the angle of the tab. Leaving the tabs in the BOW UP position retracts the arm of each cylinder and protects them from marine growth. "*

7.5 CARBON MONOXIDE WARNINGS FOR GASOLINE ENGINES

⚠ DANGER

WARNING: Carbon monoxide (CO) is a colorless and odorless poisonous gas which is emitted in engine and generator exhaust. Prolonged exposure to CO can result in unconsciousness, brain damage, and death.

In high concentrations, CO can be fatal in minutes; however, the effects of lower concentrations can be just as lethal.

Symptoms of excessive exposure to carbon monoxide are:

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

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

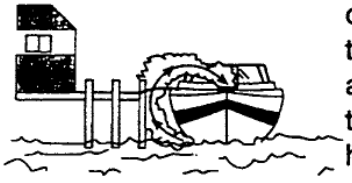
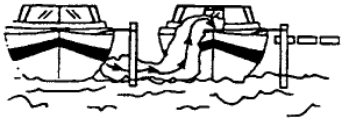
⚠ WARNING **Persons sleeping onboard can easily be overcome by carbon monoxide without realizing it. Sleeping while the engines or generator are running is NOT recommended!**

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

Desired airflow through boat

Have a trained marine technician inspect the boat's exhaust systems whenever the boat is in for service or if you notice a change in the sound of an engine or generator. Maintain proper engine adjustments, condition, and performance.

The following page describes some possible situations where CO may accumulate. Become familiar with these examples and the suggested precautions to help prevent a dangerous accident.

⚠ DANGER THESE CONDITIONS MAY CAUSE CARBON MONOXIDE TO ACCUMULATE.	PRECAUTIONS
 Blockage of exhaust outlets can cause carbon monoxide to accumulate in the cabin and cockpit area -even when the hatches, windows, port-holes, and doors are closed.	Never operate generator while boat is moored against any other boat, dock or wall structure that could block the exhaust outlet.
 Exhaust from another vessel alongside your boat, while docked or anchored , can emit poisonous CO gas inside the cabin and cockpit areas of your boat.	Be alert for generator and engine exhaust from other vessels alongside your boat. Provide adequate ventilation.
 The "station wagon effect" or backdrafting can cause CO to accumulate inside cabin, cockpit and bridge areas when operating the boat at a high bow angle or with im-proper or heavy loading.	Provide adequate ventila-tion, redistribute the load or bring your boat out of high bow angle. Open forward hatch or window.
 CO gas can accumulate in the cabin, cockpit and bridge areas when operating your boat at **slow speeds or when the boat is stopped in the water**. A tail wind can also increase accumulation (force of wind entering from aft section of yacht).	Provide adequate ventila-tion or slightly increase speed if possible. Open forward hatch or window.
 The "station wagon effect" or backdrafting can cause CO gas to accumulate inside the cabin, cockpit or bridge areas when the boat is underway using protective weather coverings.	Provide adequate ventila-tion when the canvas top, side or back curtains are in their closed, protective positions. Open forward hatch or window.

7.6 INSTRUMENT, CONTROLS AND FUEL SYSTEM TROUBLE-SHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Gauge not operating.	Faulty gauge.	Replace gauge.
	Wiring to gauge is faulty.	Inspect gauge wiring. Refer to 12 volt wiring standard found in Section 4.4.
Gauge not giving accurate readings.	Incorrect or faulty sender.	Inspect and replace sender.
Gear or throttle lever is difficult to move.	Worn control cable.	Replace control cable.
	Cable binding.	Follow cable routing and make sure cable is not pinched or bent at too sharp of angle.
	Control worn or in need of cleaning and lubrication.	Refer to information supplied by the control manufacturer. Clean and lubricate control.
Engine not starting or not running properly - fuel starvation suspected.	Fuel tank vent obstructed.	Clean vent hose and vent fitting. Make sure there are no "kinks" in the vent hose.
	Fuel line obstructed.	Inspect fuel lines. Make sure fuel line is not "kinked."
	Fuel filter on engine is clogged.	Refer to engine manual for instructions on cleaning engine fuel filter.
	Fuel supply valve is left "open" to empty fuel tank.	Close the supply valve to the empty fuel tank or fill the empty tank.
	Anti-syphon valve stuck in "closed" position (gas only).	Clean or replace anti-syphon valve.

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Water or moisture in fuel supply.	Fuel fill deck plate cap not secured properly.	Inspect and tighten cap.
	Condensation formed in partially filled fuel tank.	On boats equipped with diesel engines, inspect and drain "Racor" fuel /water separators.
		Gasoline equipped boats should treat the fuel supply with a "fuel dry" product. Consult your Carver Dealer.
	Poor quality fuel delivered from marina fuel tanks.	Follow instruction given for fuel tank condensation.
Engine starter will not engage when key is turned.	"Neutral safety switch" needs adjustment.	Wiggle gear shift lever for the affected engine while turning the ignition key. Have the neutral safety switch adjusted next time your boat is in for service.

CARVER

OWNER'S GUIDE TO SAFE AND PROPER OPERATION

SECTION 8

8.1 GENERAL MAINTENANCE SCHEDULE

8.2 EXTERIOR MAINTENANCE

8.3 INTERIOR MAINTENANCE

8.4 MECHANICAL AND ELECTRICAL SYSTEM MAINTENANCE

8.5 WATER, BILGE AND SANITATION SYSTEM MAINTENANCE

8.6 LIFTING AND WINTER STORAGE

8.1 MAINTENANCE SCHEDULE

This section provides guidelines that will make you aware of the areas within your boat that need periodic attention. Time periods listed in this section are only rough guidelines. The more frequent your boat is used, the more often periodic maintenance needs to be performed. Boats used in salt water will require more maintenance, especially on the exterior of the boat.

OEM supplied manuals include information on detailed maintenance procedures that you should follow. Read these manuals and follow the component manufacturers suggestions.

Maintenance tasks have been divided into 4 categories:

TYPE "A" MAINTENANCE

Type A maintenance should be performed 48 hours after a new boat has been launched AND 48 hours after a boat has been launched following a period of storage on shore.

TYPE "B" MAINTENANCE

Type B maintenance should be performed after the first 25 hours of operation following initial launching and after periods of storage on shore.

TYPE "C" MAINTENANCE

Type C maintenance should be performed twice each season, every 6 months or every 100 hours, whichever period is more frequent.

TYPE "D" MAINTENANCE

Type D maintenance is performed seasonally, every 12 months or after every 200 hours of use, whichever period is more frequent.

GENERAL MAINTENANCE SCHEDULE

	TYPE A 48 hours after launching	TYPE B 25 engine hours after launching	TYPE C 6 months or 100 engine hours	TYPE D 12 months or 200 engine hours
ENGINES & DRIVE SYSTEM				
Maintenance as outlined in engine manual	As recommended by the manufacturer			
Inspect water intake hoses and connections		X	X	X
Inspect exhaust system hoses & connections	X	X	X	X
Inspect exhaust guard cover				X
Check prop for balance and nicks				X
Check strut bearings				X
Check rudder alignment				X
Check all thru-hull fittings				X
Inspect shaft log packing nut	X	X	X	X
Check engine and shaft alignment	X	X	X	X
Spray ignition switch with contact cleaner				X
CONTROL SYSTEM				
Throttle and shift adjustments		X		X
Test neutral safety switch				X
Lubricate cables and controls				X
STEERING SYSTEM				
Inspect linkage and connections		X		X
Inspect hydraulic fluid level	X	X	X	X
Inspect rudder packing nut	X	X	X	X
Inspect tiller tie bar linkage		X		X
ELECTRICAL SYSTEM				
Inspect and clean batteries			X	X
Check battery fluid level		X	X	X
Check operation of all 12volt equipment	X	X	X	
Check operation of all AC equipment		X	X	X
Inspect shore power cord			X	X
Inspect generator water intake and discharge		X	X	X
Generator maintenance	As recommended by the manufacturer			

	TYPE A 48 hours after launching	TYPE B 25 engine hours after launching	TYPE C 6 months or 100 engine hours	TYPE D 12 months or 200 engine hours
FUEL SYSTEMS				
Clean engine fuel filters		X	X	X
Inspect for fuel leaks	X	X	X	X
Inspect fuel hoses for signs of chafe		X	X	X
Check propane system for leaks		X	X	X
Inspect propane storage system			X	X
FRESH WATER SYSTEM				
Flush water tank and system			X	X
Clean in-line water filter			X	X
BILGE SYSTEM				
Check and tighten garboard drain plug	X	X		X
Check and test bilge pumps	X	X	X	X
Check and test bilge blower	Each time before starting engines or generator			
INTERIOR				
Head maintenance	As recommended by head manufacturer			
Inspect thru-hull fittings	X	X	X	X
Clean refrigerator			X	X
Clean stove			X	X
Lubricate door hinges and locks			X	X
Clean vinyl fabrics and wall coverings				X
Spot clean woven fabrics				X
Spot clean carpet				X
EXTERIOR				
Check compass for magnetic deviation				X
Check trim tab reservoir		X	X	X
Check trim tab system for leaks		X		X
Clean vinyl upholstery			X	X
Lubricate hinges, latches and locks			X	X
Wash weather covers				X

	TYPE A 48 hours after launching	TYPE B 25 engine hours after launching	TYPE C 6 months or 100 engine hours	TYPE D 12 months or 200 engine hours
FIBERGLASS SURFACES				
Clean fiberglass				X
Wax hull and all non-tread areas				X
Repair chipped fiberglass			X	X
WOODWORK				
Clean interior teak				X

8.2 EXTERIOR MAINTENANCE

A) Fiberglass Surfaces

The exterior fiberglass surfaces of the 440 AFT CABIN are coated with a protective layer of gelcoat. Gelcoat offers a hard, smooth and durable surface. It does, however, contain very small pores that will collect dirt and discolor if the surface is not kept clean.

Washing the boat with fresh water after each outing will help keep the gelcoat clean. This is especially important for boats that are used in salt water. Periodically wash the boat with fresh water and a mild soap solution. DO NOT USE ABRASIVE CLEANERS. Abrasive cleaners will scratch and dull the gelcoat surface. Use a sponge to wash smooth surfaces and a stiff nylon or natural bristle brush to wash non-skid surfaces.

Wax all non-tread areas at least once a season. Use a high quality, non-yellowing, marine wax. Waxing your boat will provide a shiny surface and it will seal the pores in the gelcoat surface and make it easier to keep clean.

! WARNING !

DO NOT wax the non-skid surfaces. It will make them slippery and dangerous to walk on.

Gelcoat will eventually become dull with age, much like the paint on your car. When it becomes dull we suggest cleaning the gelcoat with an electric buffer and a fine grade polishing compound. Be careful, as the continued and overly frequent use of abrasive polishing compounds will eventually erode the gelcoat surface. Use the finest grade compound that will accomplish the task. Ask your Carver Dealer what brand and grade of polish to use.

Stress cracks are a common occurrence on all fiberglass boats. In the majority of instances these cracks are cosmetic and limited to the gelcoat surface only. Gelcoat stress cracks are rarely an indication of structural failure. If you discover stress cracks on your boat contact your Carver Dealer.

NOTE: The repair of cosmetic non-structural gelcoat stress cracks is not included under the terms of the Carver Limited Warranty.

Gelcoat Repair:

Cosmetic repair of minor gelcoat nicks and scratches is not difficult nor does it require the use of special or unique tools. Any boat owner with a little practice can make visually satisfying repairs. Repairs to fiberglass laminates or structural fiberglass components are best left to the experienced technicians at your Carver Dealer.

A gelcoat repair kit is available from your Carver Dealer (Carver part number 82036-03). This kit includes color matched gel, gel hardener, and detailed instructions on making gel repairs.

Gelcoat Blisters:

While fiberglass is a durable and economical material, it is not indestructible as is often assumed by many boaters. The most commonly known problem associated with fiberglass is blistering. These blisters generally form in the gelcoat or in the outer most layer of laminate. They can range in size from microscopic, to two inches or larger in diameter.

The appearance of fiberglass blisters does not indicate structural problems or faulty hull lamination. Gelcoat blisters are formed through a natural process and are quite common.

If you discover blisters on the underwater portions of your boat's hull, contact your Carver Dealer.

B) Anti-Fouling Bottom Paint

The underwater surfaces of your boat are coated with a high-quality, factory-applied coat of anti-fouling bottom paint, applied after the hull has been carefully dewaxed and primed. Carver uses Rule KL-990 Epoxycop, a tough, abrasion-resistant paint for moderately-fouling water conditions. The paint has a high copper load and antifouling elements that will retard the growth of marine life on the bottom of your boat's hull. The anti-fouling elements within this paint have a limited life span, usually about 12 months. Because of this, Carver suggests you repaint the hull with a fresh coat of bottom paint on an annual basis. Be sure to use Rule KL-990 Epoxycop to avoid compatibility problems. Failure to do so can void your bottom paint warranty.

To prep the boat for painting, lightly rough up the existing paint with 80 grit or 100 grit sandpaper. Paint can be applied by brush, roller or spray. For multiple-season protection in moderately-fouling waters, apply an additional medium to heavy coat of KL-990 Epoxycop (Mfgr's #K52 black). For severely-fouling conditions, apply an additional medium to heavy coat of KL-990 Super Epoxycop (Mfgr's #K62 black). For both products, allow a 3 to 6 hour dry time between coats if two coats are applied. KL-990 paints are available through most marine distributors nationwide.

C) Caulking and Sealants

Deck fittings, rail bases, window frames and all underwater fittings have been sealed with the finest quality sealants available. These sealants however will not last indefinitely. The working action of the boat and the expansion and contraction caused by variations in outside temperature will eventually break down the sealant.

Fittings that have begun to leak must be resealed. Remove the fitting and clean the old sealant from both mating surfaces. Reseal the fitting using the sealant recommended by your Carver Dealer.

D) Stainless Steel Rails and Hardware

Stainless steel is not rust resistant nor is it stain resistant. When left in contact with the marine environment it will rust and corrode. Proper care will help keep the stainless fittings on your boat looking bright and shiny.

Wash your boat with fresh water after each outing. Boats used in salt water should be washed with fresh water at least once per week, even if they have not been used. Clean stainless rails and fittings with soap and water. Glass cleaner is also good for cleaning stainless steel. Rust must be removed as soon as it is discovered. Failure to remove rust will lead to irreversible pitting. Use brass, silver or chrome polish to remove rust on stainless steel. Waxing stainless fittings and rails will help keep them in top shape. Use the same wax you use on the fiberglass surfaces of the boat.

! CAUTION !

NEVER use abrasives like sandpaper or steel wool to clean stainless steel fittings or rails. NEVER use mineral acids or bleach to clean stainless steel. NEVER let stainless steel come into prolonged contact with iron, steel or other metals which cause contamination leading to rust or corrosion.

E) Decorative Striping Tape

A variety of decorative stripes are used on the exterior of the 440 AFT CABIN. Striping tapes are custom made to Carver's color and size specifications. Replacement striping tape is only available through authorized Carver Dealers. To remove a damaged section of tape, heat the area with a hair dryer. This will soften the adhesive and make the tape easier to remove. Adhesive residue can be removed with acetone.

! CAUTION !

Be careful when fueling your boat. Avoid spilling fuel on the decorative boot stripe or any other tape. Spilling fuel on the striping tape will damage the tape.

F) Windows

The window and hatch frames on your 440 AFT CABIN are fabricated from aluminum. Some of these frames are painted with enamel. Clean painted and unpainted frames with fresh water and a mild soap solution. Use a sponge to clean window frames. Using a brush or abrasive cleaner will scratch and damage the appearance of the painted frame surface.

The cabin windows on the 440 AFT CABIN are made from tempered glass. Clean these surfaces with a soft rag and glass cleaner. The bridge wind screen is made from formed plexiglass. DO NOT use glass cleaner to clean plexiglass. Use a mild solution of soap and fresh water.

G) Exterior Vinyl Upholstery

The exterior vinyls on the 440 AFT CABIN are made to withstand the effects of sun, heat, acid rain, and soiling under normal conditions. Exterior vinyl can be cleaned with a mild solution of soap and water or use any commerically available vinyl cleaners. Please consult the cleaning recommendations on the following insert. All cleaning methods must be followed by a thorough rinse with water. An occasional treatment with a vinyl protectant will enhance the appearance of your boat's exterior cushions and upholstery.

Avoid saturating the exterior cushions with water.

Cleaning Supplies Include:

Ivory Dishwashing Liquid and water
Clean, white towels
Medium-soft brush
Fantastik Spray Cleaner
Denatured Alcohol
3M Citrus Cleaner (order call 404-447-7132)
Ammonia and hydrogen peroxide

1) Basic Stains, Grease, Pencil, Dirt:
   - Use Ivory Soap and water or Fantastik Spray Cleaner applied with a medium-soft brush
2) Tough Stains, Adhesive, Teak Oil, Rust:
   - Use 3M Citrus Cleaner; rinse with soap and water
3) Ink
   - Use Denatured alcohol
4) Mildew Stains:
   - To kill bacteria creating the mildew, vigorously brush the stained area with a 4-to-1 mixture of water and ammonia; rinse with water
5) Tough Mildew Stains:
   - Apply a mixture of one teaspoon ammonia, one-fourth cup of hydrogen peroxide, and three-fourths cup of distilled water; rinse with water.

Always clean stains immediately. DO NOT use 409 Cleaner or Armor-All.

H) Exterior Carpet

Rinse the bridge and deck carpet with fresh water when cleaning the other portions of the boat's exterior. When the exterior carpet becomes soiled remove the carpet from the boat and wash with hot water and any brand of carpet detergent suitable for hot water extraction.

To remove stains refer to the materials provided by the manufacturer of the carpet, which is included in the OEM materials pouch.

VINYL CLEANING & CARE

Important information concerning your G&T vinyls. G&T vinyls are made to withstand the effects of sun, heat, acid rain, and soiling under normal conditions. Please consult these cleaning recommendations.

Steps	1	2	3
Betadine	B	A	
Chewing Gum	D	A	B
Eyeshadow	B		
Motor Oil	B		
Spray Paint	B	E	
Mildew or Wet Leaves*	C	A	B
Shoe Polish*	D	B	E
Yellow Mustard	A	B	C
Oil Base Paint (fresh)	D	B	E
Oil Base Paint (dried)	D	A	B
Suntan Lotion*	A	B	E

Steps	1	2	3
Tar/Asphalt	D	A	B
Lipstick	A	B	
Latex Paint	A	B	E
Crayon	D	B	
Ketchup	A	B	
Grease	D	B	E
Ballpoint Ink*	A	B	E
Household Soil	A	B	
Permanent Marker*	B	C	E
Coffee, Tea, Chocolate	B		

A. Medium-soft brush, warm soapy water/Rinse/Dry

B. Fantastik Spray Cleaner/Rinse/Dry

C. One (1) tablespoon ammonia, one-fourth (1/4) cup of hydrogen peroxide, three-fourth (3/4) cup of water/ Rinse/Dry

D. Wipe or scrape off excess (Chill gum with ice)

E. 3M Citrus Base Cleaner Rinse/Dry (617-733-1110 #55)

F. Denatured Alcohol/Rinse/Dry

Note: All cleaning methods must be followed by a thorough rinse with water.

*Suntan lotion, shoe polish, wet leaves, and some other products contain dyes that stain permanently.

Certain household cleaners, powdered abrasives, steel wool and industrial cleaners can cause damage and discoloration and are not recommended. Dry cleaning fluids and lacquer solvents should not be used as they will remove the printed pattern and gloss. Waxes should be used with caution. Many contain dyes or solvents that can permanently damage the protective coating. Alway remove stains immediately.

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DO NOT USE
409 CLEANER
OR
SILICONE BASE PRODUCTS!!!

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IMPORTANT INFORMATION REGARDING YOUR VINYL

WHILE YOUR VINYL IS MADE TO WITHSTAND THE ELEMENTS, IT IS IMPORTANT TO CARE FOR IT BY KEEPING IT CLEAN AT ALL TIMES. MANY SUBSTANCES MAY STAIN YOUR VINYL IF LEFT ON OVER A PERIOD OF TIME. REMEMBER TO REMOVE ANY CONTAMINANT AND CLEAN VINYL IMMEDIATELY.

l) Canvas

White Vinyl

White exterior enclosures are made from vinyl coated materials. Clean this material with a sponge and mild soap solution. Heavy dirt can be removed using a vinyl cleaner. Treat the vinyl with a vinyl protectant product twice each season.

Sunbrella

Colored canvas enclosures are made from Sunbrella fabric. Sunbrella should be cleaned regularly before dirt is allowed to accumulate and become embedded in the fabric. The fabric can be cleaned without removing it from the stainless steel bow supports. Brush off all loose dirt and hose down with a mild solution of natural soap and lukewarm water (no more than 100 degrees F.). Rinse with fresh water to remove soap. DO NOT USE DETERGENTS.

For stubborn stains: Remove the fabric from the bow supports. Soak fabric for 20 minutes is a solution of no more than 1/2 cup (4 oz.) Clorox and 1/4 cup (2 oz.) natural soap per gallon of lukewarm water (no more than 100 degrees F.). Rinse with fresh water to remove soap.

! CAUTION !

Excessive soaking in Clorox can damage sew threads. Cleaning Sunbrella using the method described above may remove part of the fabric's water repellency. Treat the fabric with an application of an air-curing fluorocarbon water repellent treatment to restore water repellency.

DO NOT SUBJECT CANVAS FABRICS TO EXCESSIVE HEAT. Fabric must be dry before storage and stored in a dry, ventilated area.

Enclosure Curtains

The enclosure curtain's clear vinyl windows are easily scratched if cleaned incorrectly. Because of this, use only NON-ABRASIVE cleaners and a soft cloth to clean these surfaces. Glass cleaner and a clean , soft cloth can be used to remove water spots. Dirt and dust can be removed with a very mild soap solution and a clean, soft cloth. DO NOT use paper towel to clean the clear vinyl enclosure windows. Paper towel will scratch the windows.

There are several cleaners available that are made specifically for vinyl windows. If you elect to purchase and use one of these cleaners, try the product on a small, inconspicuous area to make sure the product does not damage or scratch the vinyl surface.

A TIP FROM CARVER: "Clear vinyl that is allowed to rest against the canvas top's stainless steel bows will eventually discolor in the area of contact. Carver suggests purchasing foam insulation that is made for insulating water pipes. Carver uses 7/8" stainless steel tube for canvas bows. Buy foam insulation made to fit 1" water pipes. This insulation can be purchased at hardware stores or home improvement centers. Wrap sections of this insulating foam around the stainless steel bows to keep them separated from the clear vinyl windows. Use nylon wire ties to hold the insulation in place."

J) Exterior Painted Surfaces

Several external components of the 440 AFT CABIN are coated with special paint. Some of these components are:

- Salon window frames
- Sliding salon entry door
- Engine compartment ventilation grills
- Wind deflector mounted on the aft quarter of the salon window frames

Consult your Carver Dealer before attempting to paint or retouch any of these surfaces. The type of paint used to coat these surfaces is Awlgrip White (Carver part number 8691400) It is a very durable paint that needs to be mixed and applied in a specific manner. Alwgrip White is available through any Carver Dealer.

Use only mild soap and fresh water to clean the painted surfaces. DO NOT use abrasive cleaners or stiff scrub brushes.

K) Exterior Plexiglass

The sliding cabin entry door and the aft deck weather boards are fabricated from plexiglass. DO NOT USE CLEANER OR ABRASIVE CLEANERS TO CLEAN THESE SURFACES. Using the incorrect cleaner on these surfaces will etch the polished surfaces.

Clean plexiglass with water and mild detergent. Avoid use of abrasive cleaners and aromatic solvents.

8.3 INTERIOR MAINTENANCE

One of the best things you can do on a continued basis to maintain the interior of your boat is to make sure the cabin is well ventilated. Do not allow moisture to accumulate in the boat's interior. This will lead to a damp, musty environment. Mildew will form if the interior of the boat is damp. Ventilate the boat's interior whenever possible.

A) Interior Woodwork

Solid teak and teak veneer is used throughout the interior of the 440 AFT CABIN. Treat the interior woodwork of your boat like you treat your finest furniture. Dust the interior teak on a regular basis with lemon oil and a soft rag. Avoid using wax based furniture polish.

Avoid laying wet or damp towels or clothing on or against the finished teak surfaces.

Carver finishes interior teak with MOHAWK POUR-N-WIPE FINISH #603-3017. This is an industrial/commercial grade finish that is not commonly found at local paint and hardware stores. You can order MOHAWK POUR-N-WIPE (Carver part number 81069-00) through your Carver Dealer.

Instructions for Using MOHAWK POUR-N-WIPE:

The following information appears on the outside of the Pour-N-Wipe container...

"The finish can be easily rejuvenated by cleaning the surface with MOHAWK WAX WASH. Then, lightly sand the surface and apply a thin coat of Pour-N-Wipe following directions. The surface will be dust-free (dry to the touch) in 20 minutes, recoatable in four (4) hours and hard enough in twelve (12) hours to put the piece into service."

DIRECTIONS: Pour-N-Wipe is self-sealing. No sealer or primer is needed. The surface must be clean, dry and finish-sanded. Mix well before using. Apply with a soft, lint-free rag and in easy, even strokes finishing with the grain of the wood. Allow four hours before re-coating, sanding lightly between each coat. Apply as many coats as desired to achieve appearance. Use mineral spirits for cleaning up.

B) High Pressure Laminate (HPL)

HPL is used on many of the cabinet faces and counter tops within the boat's interior. HPL is extremely durable and is easy to clean.

Clean the laminated surfaces with a cleaner made for use on household counter tops.

Avoid using the counter tops as cutting surfaces. Cutting or slicing on the HPL surfaces will permanently scratch them.

C) Woven Fabrics

The fabrics used on the interior of the boat have been treated with a popular stain retardant product.

The manufacturer of many of the fabrics used on the 440 AFT CABIN has provided Carver with the following recommendations on cleaning interior woven fabrics. Woven fabrics are used to make drapes, pillow shams and bed spreads. Sofas and barrel chairs are also covered with woven fabrics. The following instructions can also be used to clean woven (fuzzy) headliner.

Cleaning Supplies Include:

Westley's Clear Magic (order call 1-800-545-0982)
Lendow Glass Cleaner (order call 1-313-777-2236)
Lift-Off-Spot Remover (order call 1-216-881-4070)
Clean white towels
Clothes shaver
Source of compressed air (if available)

1) Basic Stains, Ink, Grease, Pencil, Dirt:
   - Use Westley's Clear Magic

2) Adhesives, Teak Oil, Gum, Tar:
   - Use Lift-Off Spot Remover

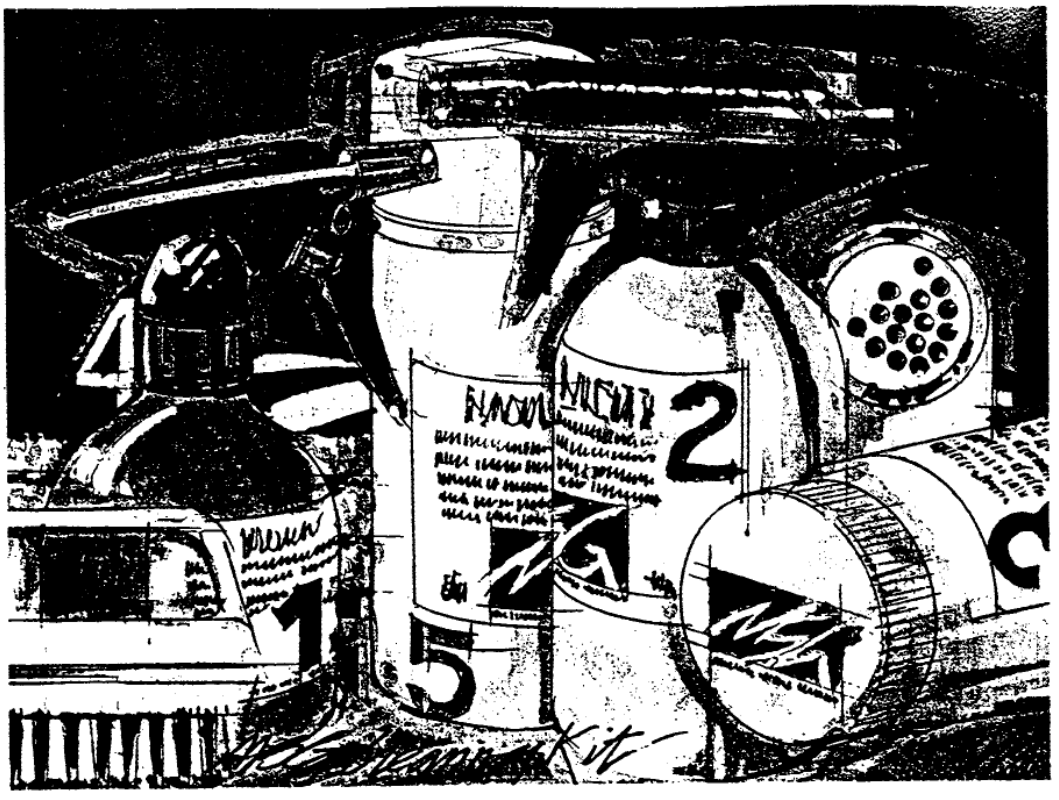
3) Water Stains:
   While fabric is still wet, use an air hose and nozzle to go over the wet area. This will force the stain into the back of the fabric.

   For stains that have dried, spray Lendow Glass Cleaner over the stained area. Let the foam dissipate, then rub the area with a clean white towel. Repeat.

4) Tough Stains, Set Water Stains:
   Always try the technique outlined in #3 first. If that doesn't remove the stain...

   Spray Westley's Clear Magic on the area, going 2" around the stain or, if possible, bring wetness to a break point, such as a bulkhead. Spray water on the area as directed on the product bottle. Let set about 5 minutes. Rub the area with a clean towel, rotating the towel as the stain is removed. As you rub, go a little beyond the wetness with the towel, flaring the edges.

   Allow to dry or blow complete area with compressed air. Repeat if necessary or try the Lendow cleaner. After the stain is removed, use the clothes shaver to remove "fuzzies".



FABRIC CLEANING & CARE

Important information concerning your G&T Marine Headliner and Fabrics

Steps	1	2	3
Water Stain	B	C	E
Motor Oil	A		
Spray Paint	A	D	F
Mildew	A	E	
Yellow Mustard	A	D	
Wet Leaves*	A		
Oil Base Paint	A	D	F
Suntan Lotion*	A	F	
Chewing Gum	D		
Tar	D	A	
Lipstick	A		

Steps	1	2	3
Ketchup	A		
Grease	A	D	
Ball Point Ink	A		
Household Soil	A		
Permanent Marker*	A	F	
Coffee, Tea	A		
Chocolate	A		
Adhesive	D		
Teak Oil	D		
Latex Paint	A	D	F
Crayon	A	D	

A. White cloth - Westley's Clear Magic. 1-800-545-0982

B. White cloth - Westley's Clear Magic - air hose.

C. Lendow Glass Cleaner. 313-777-2236

D. Lift Off Spot Remover. 216-881-4070

E. Clothes shaver to remove lint.

F. Follow instructions of staining agent manufacturer.

*Suntan lotions, wet leaves, permanent markers and some other products contain dyes that permanently stain.

Always clean immediately. Test an unseen area of fabric before cleaning stain.

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G&T INDUSTRIES

D) Interior Carpet

The carpet used on the interior of the boat has been treated with a popular stain retardant product. Care for this carpet as you would care for the carpet within your home. Vacuum often, shampoo as needed.

When your boat is new, the carpet will shed and need to be vacuumed frequently. This is normal. The shedding will stop after a few weeks.

E) Interior Fiberglass and Plexiglass

Interior Fiberglass:

Gelcoated fiberglass is used to form interior components such as the shower stall, lower station helm module and the master stateroom bed platform. Interior fiberglass can be cleaned with any household cleaner that has been made for cleaning fiberglass. Many of these types of cleaners are marketed as "tub and tile" cleaners. Do not use abrasive cleaners on the interior fiberglass surfaces. Abrasive cleaners will scratch and dull the shiny gelcoat surface.

Plexiglass:

Plexiglass is used to fabricate the shower door and mirrored face of the head compartment medicine cabinets. DO NOT USE GLASS CLEANER TO CLEAN THESE SURFACES!!! Glass cleaner will etch the polished surface.

Clean plexiglass with water and mild liquid detergent. Avoid use of abrasive cleaners and aromatic solvents. Remove fine scratches with fine automotive acrylic rubbing and polishing compound.

8.4 MECHANICAL AND ELECTRICAL SYSTEMS MAINTENANCE

A) Mechanical System

Engines / Generator

Maintain engines and generator in accordance with the instructions provided in the respective manufacturer's owner's manual.

There is an in-line sea water strainer installed in each engine and generator water intake lines. These strainers must be opened and cleaned at least every 30 days. If you are operating the boat in dirty waters or areas with a high degree of aquatic vegetation, inspect these strainers more frequently. A clogged strainer will restrict the intake of sea water which could lead to an overheated engine.

Thru-Hull Valves

Inspect the thru-hull valves on a monthly basis. Make sure the connections between the hose and the valve are tight. Look for water leaks around the area where the valve and hull meet.

Every 30 days open and close each valve two or three times. This will guard against the valve seizing in the open or closed position. While doing this make sure the valve handle is securely fastened. Tighten any loose handles.

Propeller Shaft Stuffing Box

! WARNING !

Inspect propeller shaft stuffing boxes ONLY when the engines are off. The engine compartment contains moving and hot machinery. KEEP YOUR HANDS, FEET AND BODY OUT OF THE ENGINE COMPARTMENT WHILE ONE OR BOTH OF THE ENGINES ARE RUNNING.

The propeller shaft extends through a water tight fitting called a shaft log or stuffing box. The shaft log is packed with teflon impregnated flax material that is 1/2" in diameter. Check the shaft log every month. A slight seepage of water through the shaft log while the shaft is turning is normal and helps lubricate the packing. However, there should be minimal, if any seepage when the shaft is not turning. Tighten the shaft log packing nut if more than 6 drops of water seep through the shaft log in a minute.

Use two wrenches to tighten the packing nut. Use one wrench on the packing nut and the other on the jam or lock nut. The propulsion system on your boat is "counter rotating." The thread rotation utilized in the shaft log packing nut is specified in accordance with the propeller shaft rotation. If the shaft rotates clockwise (viewed from the stern), the packing nut utilizes a left hand thread. A right hand thread is used on packing nuts where the shaft turns counterclockwise. In the case of the 440 AFT CABIN the port shaft log uses a right hand thread and the starboard shaft log is left hand thread.

Slightly tighten the packing nut and tighten the lock nut. DO NOT OVER TIGHTEN THE PACKING LOG. Make minor adjustments and tighten just enough to reduce the seepage to a drop or two a minute. Over tightening the packing log will damage the shaft log.

Rudder Port

The rudder port provides a water tight fitting for the rudder shaft. It is normal for a slight amount of water to seep between the rudder shaft and the rudder port packing. The rudder shaft port packing nut should be tightened if more than 6 drops of water seep through the port every minute.

Tighten the rudder port packing nut using the same technique used to tighten the shaft log packing nut. Make note however that both rudder port packing nuts use right hand threads. Tighten the packing nut ONLY ENOUGH to bring the seepage to 1 or 2 drops a minute. If you tighten the nut too tight it will make steering difficult.

Props

Nicked or out-of-balance props will affect performance and smooth operation. Damaged props also can develop serious vibrations that may lead to drive train damage.

Inspect your props often. Carry a swim mask in the boat so you can take a look at the props while swimming. Have the propellers balanced by an established propeller repair shop at least once a year. Repair or replace damaged props.

A TIP FROM CARVER - *"Consider purchasing and carrying a spare set of props onboard your boat. Many marine dealers do not carry a full inventory of replacement propellers. A spare set will allow your vacation or cruise to continue in the event you should damage your boat's primary set of props."*

! WARNING !

The blades of a propeller are sharp. Wear gloves when handling a propeller.

Struts

Propeller shaft struts require very little maintenance.

Within each strut is a strut or cutlass bearing that provides a smooth surface for the shaft to rotate. These bearings occasionally need to be replaced. Replacement will be needed more often in water that has a lot of sand or abrasive material suspended in it.

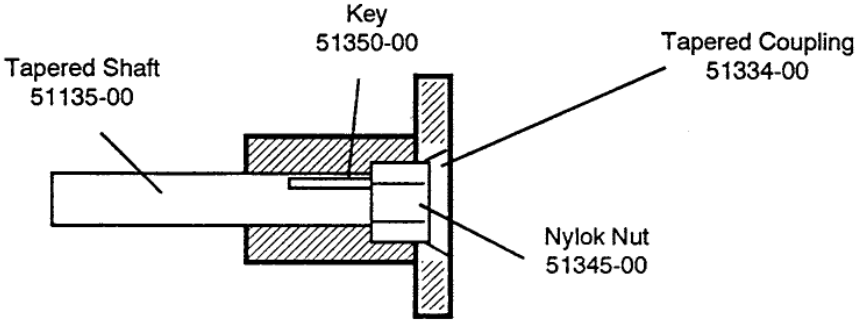
Have your marine technician inspect the strut bearings whenever the boat is pulled. Have the bearing replaced upon the technician's recommendation.

Propeller Shaft

Inspect the fasteners used to connect the prop shaft to the engine output flange on a monthly basis. These bolts must be tight to provide a secure and vibration free connection between the shaft and the engine.

The alignment of the propeller shaft is critical to good performance and smooth, trouble-free operation . Shaft alignment should be checked every time the boat has been pulled from the water and before launching.

The propellor shaft end is tapered and fits precisely into a matched, tapered coupling. The coupling is machined from hardened steel and zinc plated to protect against corrosion. Shaft and coupling are aligned by means of a keyway and hardened steel key. The shaft end is threaded and a nylok nut secures the coupling to the shaft. This design allows precision alignment and balancing of the propeller shaft.



Tapered Shaft/Tapered Coupling Assembly

Engine and shaft alignment is an exact and critical procedure that should be left to an individual experienced in making these types of adjustments.

B) Electrical Maintenance

AC System

The Ac electrical system in your boat needs very little maintenance.

! DANGER !

Make sure the boat is disconnected from shore power and the generator is OFF before conducting inspection or maintenance procedures on the AC electrical system. Working on a HOT electrical system is dangerous and can cause electrical shock that may injure or cause death.

Inspect electrical connections and breaker terminals for corrosion on an annual basis. Spray the terminals with an electrical terminal protection spray.

Service the generator in accordance with the manufacturer's recommendations.

Inspect the shore power cord(s). Look for cuts or nicks in the plastic insulation. DO NOT attempt to repair a damaged cord with electrical tape or any other similar material.

12 Volt System

The majority of 12 volt difficulties that are experienced on a boat are caused by poor battery maintenance. The factory installed batteries on the 440 AFT CABIN should provide several years use if properly maintained. Factory installed batteries are heavy duty, deep cycle batteries that have the ability to be discharged and recharged repeatedly without damaging the battery.

Avoiding the following two situations will dramatically extend the useful life of your boat's batteries:

1) Do not store batteries that are only partially charged. Recharge batteries to a voltage reading between 12.3 and 12.6 volts before storing. Monitor the voltage reading every 30 days during storage and recharge if the voltage drops below 12.3 volts.

2) Don't overcharge your batteries. Stop charging the batteries when voltage is between 12.3 and 12.6 volts. Don't continuously trickle charge the batteries. Even trickle charging a fully charged battery will reduce its useful life.

While using the boat, use the voltmeters to frequently monitor the charge level of each battery bank. Monitor the charge level with the engines turned off (static condition). Use the onboard battery charger or the engine alternator to recharge the batteries when they are not fully charged. A fully charged battery bank will indicate between 12.3 and 12.6 volts on the voltmeter.

Avoid charging batteries that are already fully charged. Engine alternators will not overcharge the batteries. The AC battery charger installed on your boat however will switch to a trickle charge mode but will not "automatically" turn itself completely off.

! WARNING !

Disconnect the batteries when performing maintenance tasks on the 12 volt system. Failure to do so could lead to electrical shock.

Inspect the batteries every 30 days. Clean any corrosion that has developed on the battery terminals. Spray a terminal protector on the terminals and battery cable eye connections. Make sure the battery cables are securely fastened to the terminals. Tighten the wing nuts SLIGHTLY beyond finger tight with a pliers.

Check the level of fluid in each battery cell. Top off low cells with "distilled" water. The fill level is marked along the side of the battery case.

Spray the connections for the bridge instruments and switches with an electrical connection protector every 6 months.

8.5 WATER, BILGE AND SANITATION SYSTEM MAINTENANCE

A) Water System Maintenance

Maintain your boat's water system by emptying, flushing, and sanitizing the system at least once per season. Products are available at your local marine supply store that are made to sanitize fresh water systems.

Clean the in-line water filter every 6 months or twice per season. This filter is located near the pressure water pump.

The outlet for the water tank vent is installed on the port side of the boat's hull. This vent includes a screen over the opening to prevent dirt and insects from entering the vent hose. Clean this vent screen every 6 months or twice a season.

Clean the shower sump frequently. Hair, dirt and soap scum will collect in the sump and if left unattended will eventually clog the sump pump system.

B) Bilge

Keeping your boat's bilge clean is important. A dirty bilge will lead to clogged bilge pumps and unwanted cabin odors.

Wipe all oil and dirt from the bilge. Treat the bilge with a commercially available bilge cleaning detergent twice a season.

Clean the bilge pumps twice a season. Wipe any dirt or oil from the exterior surface of the pump. Clean the float switch so that it operates freely. Remove dirt from the bilge pump inlet screen.

C) Sanitation System

A marine sanitation system that is not maintained properly can create a variety of unpleasant problems. Unlike other systems within the boat that only require periodic attention, sanitation system maintenance is an ongoing process that must be maintained to avoid problems.

Always use waste system deodorizer. Use the brand recommended by your Carver Dealer.

A boat's head and sanitation system is not like the toilet and sewer in a home. Do not flush any items down the head that the head was not designed to accommodate. Instruct non-boating guests on how to use the head before problems arise. Refer to the OEM supplier's manual for further advice on how to use, service and maintain the head.

Flush the holding tank with clean water EVERY TIME IT IS EMPTIED. This will help remove the last remnants of waste that may collect within the tank. Empty the holding tank often and when you know the boat will not be used for an extended period.

If your boat is equipped with a grey water system, the grey water holding tank should be maintained in the same manner as the waste holding tank.

8.6 LIFTING, DRY STORAGE AND WINTERIZATION

A) Lifting And Dry Storage

Lifting:

Proper support of the hull during lifting is imperative. Improper lifting can lead to serious and permanent hull deformation.

Only people experienced and trained in lifting yachts should perform the lifting operation. Use proper lifting straps. "SLING" tags have been installed on the side-deck of the boat. These are the only places where slings should be positioned for lifting. Caution must be taken not to position a lifting sling around the boat's shaft or any other underwater gear component.

Never stand, sit or crawl under a boat that is suspended in a lift.

Dry Storage:

Carver has designed a cradle made specifically for use with the 440 AFT CABIN. We recommend using this cradle to support the boat during off-season storage.

The forward end of the cradle or trailer should be slightly elevated to position the boat in a bow high attitude. This will allow water to flow to the back of the aft bilge compartment and drain through the garboard drain. Always store the boat with the garboard drain plug removed.

Protecting the boat from the elements during winter storage is advised. Have your marina shrink wrap the boat or have a winter storage cover made. Check the boat throughout the storage period to make sure that it is in good condition.

B) Winterization

Start the winterization process by draining and winterizing the following systems:

Engines:

Proper procedures must be followed to prepare the boat's engines for winter storage. Detailed winterizing instructions are included in the engine operators manual.

Fresh Water System:

! CAUTION !

Your boats fresh water system INCLUDING THE WATER HEATER AND ENGINE HEAT EXCHANGER must be drained prior to winter lay-up. Failure to winterize the water system could lead to damaged pipes, valves, faucets, tanks or a ruptured water heater.

To drain the water system:

1) Provide power to the 12 volt pressure water pump by switching the appropriate circuit breakers to the "ON" position.

2) Open all faucets and let the water drain through the sinks.

3) Drain the water heater.

To winterize the onboard water system:

1) Purchase 10 gallons of NON-TOXIC recreational vehicle antifreeze from your Carver Dealer.

2) Pour this non-toxic antifreeze into your boat's fresh water tank using the water fill deck fitting.

3) Provide power to the 12 volt pressure water pump by switching the appropriate circuit breakers to the "ON" position.

4) Open the galley sink cold water valve and purge the system until a steady stream of antifreeze flows from the faucet. Repeat for the hot water valve. Repeat this process for the head sinks and the showers.

5) Pour a quart or two of non-toxic anti-freeze into each shower basin drain until the shower sump pump turns ON and a stream of antifreeze flows from the shower drain discharge fittings. Refer to drawing 3.4-2 and 3.4-3 for the exact location of the discharge fittings.

The engine heat exchanger will also need to be included in the winterization process. A 5/8" heater hose runs from an engine to the water heater and back to the engine. This heater hose must be drained prior to winter storage. Remove both heater hose connections from the engine and use air pressure to blow water from the line. Antifreeze can then be poured into the hose.

Transom Shower (optional equipment):

The transom shower is an integral part of your boat's fresh water system. Winterize the transom shower along with the boat's fresh water system. As you winterize the water system, turn the shower cold water valve on until a stream of antifreeze flows from the shower head. Repeat this procedure for the hot water valve.

Fresh Water Washdown (optional equipment):

Fresh water washdown is an integral part of the boat's fresh water system. Winterize the fresh water washdown system along with the boat's fresh water system.

Remove the hose and nozzle from the washdown fitting. Turn the washdown pump on until a stream of antifreeze flows from the washdown fitting. Catch this antifreeze in a bucket.

Raw Water Washdown (optional equipment):

1) Locate and close the thru-hull valve that supplies the washdown pump with sea water.

2) Remove the hose that is connected to this valve. Put this end of the hose into a bucket that contains about a gallon of antifreeze.

3) Remove the washdown hose from the cockpit mounted washdown fitting.

4) Place a bucket under the cockpit mounted washdown fitting. Turn the washdown pump on and leave it on until a stream of antifreeze flows from the washdown fitting.

5) Turn the washdown pump off and resecure the hose to the washdown supply valve.

Bilge:

Open the garboard drain. Leave the drain open throughout the storage period.

Clean the bilge, removing all dirt, oil, etc. Remove all water from the bilge.

Sanitation System:

To winterize the sanitation system:

1) Empty the contents of the waste holding tanks and thoroughly flush the system with FRESH water. Remove as much of the water used in flushing as possible in the final pumping of the tanks.

2) Shut off the water supply to the heads by closing the head water pick-up valve. Refer to Section 3.4 for the exact location of the head water pick-up valves. Re move the water pick-up hose from the valve.

3) Flush the heads until all water is drained from the water pick-up hoses. Attach the water pick-up hoses to the valves and leave the valves in the closed position.

4) Purchase at least 4 gallons of antifreeze from your Carver Dealer. Refer to Technical Bulletin #VF-005 issued by SeaLand Technology for their recommendations concerning the proper type of antifreeze to use. This technical bulletin can be found on pages 6.3-6 and 6.3-7 of this Owner's Guide. Mix the antifreeze following the instruction supplied on the antifreeze container's label.

5) Flush the antifreeze through the heads and leave it remain in the waste holding tanks during storage.

6) In spring pour 5 gallons of fresh water through the heads and pump the waste holding tanks. Open the water pick-up valves. Flush the heads a few times to prime the systems.

7) Charge the waste tank by adding deodorizer. Use the brand of deodorizer recommended by your Carver dealer.

! CAUTION !

Using the wrong type of antifreeze could damage your boat's sanitation system. Refer to Technical Bulletin #VF-005 supplied by SeaLand Technologies for information regarding the proper type of antifreeze to use (see pages 6.3-6 and 6.3-7). If you have your marina winterize your boat make certain they are aware of the problems caused by using the wrong type of antifreeze. Damage caused by using improper antifreeze IS NOT covered by Carver or the OEM supplier of the boat's sanitation system components.

Sanitation Systems Equipped with Overboard Discharge (optional equipment):

1) Empty the waste holding tanks. Flush the tanks with FRESH water and empty the tanks again.

2) Close the water pick-up valves. Remove the water pick-up hoses from the valve fittings. Flush the heads until all water is removed from the water pick-up hoses. Re-install the water pick-up hoses onto the water pick-up valves. Leave the valves closed.

3) Purchase 10 gallons of non-toxic antifreeze from your Carver Dealer. Follow the recommendations provided in Technical Bulletin #VF-005 by SeaLand Technology regarding the antifreeze to use to avoid damaging the lining of the sanitation hose. A copy of this technical bulletin can be found on pages 6.3-6 and 6.3-7 of this Owner's Guide.

4) Flush 10 gallons of antifreeze through the heads and into the holding tanks.

5) Open the overboard discharge valve(s). Turn the waste transfer pump)s) on and let it run until a stream of antifreeze flows from the overboard discharge fitting(s). Turn off the pump(s) but leave the valve(s) open.

6) Position the 3-way valves in the manner required for overboard discharge. Pour antifreeze in the heads and flush the heads until a stream of antifreeze flows from the overboard discharge valve(s). Close the valve(s).

7) In spring, flush and pump the holding tanks to remove the antifreeze and continue to use the system in the normal fashion.

Exterior:

The boat should be cleaned prior to winter storage. This will make preparing the boat for the next season that much easier. Wash the exterior of the boat, particularly the underwater portions. Remove as much aquatic growth as possible while it is still wet. Once it has dried it will be more difficult to remove.

Check the zinc sacrificial anodes for deterioration. If the zincs shows signs of deterioration have them replaced before spring launch. Check stainless steel rails and fittings for signs of rust. Remove rust prior to winter lay-up.

Inspect the underwater portions of the hull. Review anything that looks out of the ordinary with your Carver Dealer.

If you intend to cover your boat for the winter, do not use the bridge enclosure, aft deck enclosure or bimini camper. These are not designed for long-term storage purposes. If you shrink-wrap your boat for storage, make sure that the cover is properly vented as moisture can collect beneath it and promote the growth of mildew or mold.

Interior:

The boats interior should be cleaned prior to winter lay-up. Air out the cushions and make sure they are dry. Storing damp cushions will lead to mildew. Position the cushions so air can circulate around them. Purchase and position moisture accumulators throughout the boat. This will help reduce the amount of moisture that accumulates during storage. Remove everything from the boat that could spoil or freeze during winter storage. Also remove all dried food. Food attracts mice and insects.

CARVER

OWNER'S GUIDE TO SAFE AND PROPER OPERATION

SECTION 9

9.1 PROPANE STOVE
Option 260

9.2 HALON FIRE SUPPRESSION SYSTEM

9.3 DUAL-VOLTAGE REFRIGERATOR

9.4 PART NUMBER REFERENCE LIST
Select Bill Of Materials

9.1 PROPANE STOVE
Option 260

The propane stove option includes the installation of a two burner propane stove and a liquid propane storage tank.

For information on using the propane stove refer to the owner's manual provided by SEA-WARD PRODUCTS. This manual can be found in the OEM supplied materials for your boat.

An ASME LPG fuel tank has been installed in a fiberglass box, on the boat's swim platform. The system is designed to be used with LPG (liquid propane gas) only. DO NOT USE ANY OTHER TYPE OF FUEL.

The LPG tank must be firmly secured to the boat with the tank in a horizontal position. The ABYC (American Boat and Yacht Council) has developed specific standards on how LPG tanks must be installed. Carver has installed this tank according to those ABYC standards. DO NOT relocate or reposition the tank.

NOTE: The LPG tank valve outlet fitting and the regulator system nut, by law, have LEFT HAND THREADS. The nut is so marked with a slot.

Checking the System For Leaks:

Propane systems are inspected and pressure checked as part of Carver's quality assurance process. We do however suggest that you use the following system inspection process every time you remove and reinstall the LPG tank.

The following information has been taken from the SeaWard Products Owner's Manual For Gas Operated Stoves:

1) After the LPG tank has been installed, the regulator system connected, the hose run and connected to both appliance and regulator, slowly crack open the LPG tank valve and observe the pressure gauge on the regulation system. The gauge should read approximately 110 psi at 70 degrees F. (higher if warmer, or lower if cooler atmospheric temperature.)

2) Close the LPG tank valve and observe the pressure gauge. It should hold a constant reading. If you can detect a falling in pressure over a 15 minute period of time, there is a leak. LEAKS CAN BE DANGEROUS.

    a. If a leak occurs, check all appliance burners to see if they are in the "OFF" position.

b. Check all fittings with a soap and water solution. NEVER USE FLAME TO CHECK FOR LEAKS.

3) If you cannot find the leak, contact SeaWard Products or your Carver Dealer promply.

! DANGER !

LPG is heavier than air and if allowed to leak, settle, and accumulate LPG could ignite and explode.

9.2 HALON FIRE SUPPRESSION SYSTEM

A SEA-FIRE automatic Halon 1301 fire suppression system is installed in the engine compartment of your 440 AFT CABIN. This system provides an added measure of fire safety in the event of an onboard engine compartment fire.

A Halon tank and monitor is installed on the engine compartment's aft bulkhead. A system monitor is installed near the helm station. The system monitor is wired to an ignition switch. The monitor's light should be "ON" when the ignition switch is turned "ON."

Read the instruction booklet provided by SEA-FIRE for more information on the Halon 1301 system. This booklet is included with the OEM materials for your boat.

Halon systems installed in boats equipped with diesel propulsion engines incorporate an engine shut-off circuit. When the Halon system is activated, the diesel engines are automatically shut down. An override switch is incorporated in the monitor for starting the diesel engines after the system has been activated. Read the SEA-FIRE manual for further instructions.

9.3 DUAL VOLTAGE REFRIGERATOR

The aft deck of the 440 AFT CABIN can be equipped with a dual-voltage refrigerator which operates on 12 volt DC while the boat is cruising and 120 volt AC when it is docked and using shore power. The dual-voltage refrigerator automatically switches from AC to DC or DC to AC. When a power supply of 120 volts AC is connected to the boat, the voltage selection relay is energized and disconnects the unit from DC operation. This feature assures 120-volt operation when available and permits the power converter to concentrate its charging facilities to the batteries and other DC appliances.

When the AC supply is disconnected, the refrigerator automatically reverts to DC operation. Turning the thermostat knob to the "off" position will prohibit operation on AC or DC.

9.4 PART NUMBER REFERENCE LIST

The following is a select list of "purchased parts" that were used to construct your 440 AFT CABIN. The list is "select" because it does not include every part that went into your boat, just the parts that are commonly ordered by Carver Owners and Carver Dealers.

This list is unique to your boat and is the most accurate summary ot parts and part numbers used. If you find a discrepancy between a part number shown on a drawing and a number used within this parts list, the parts list number will be the correct number.

Contact your Carver Dealer to order replacement parts for your boat. Refer to this list and order parts by their Carver Part Number.