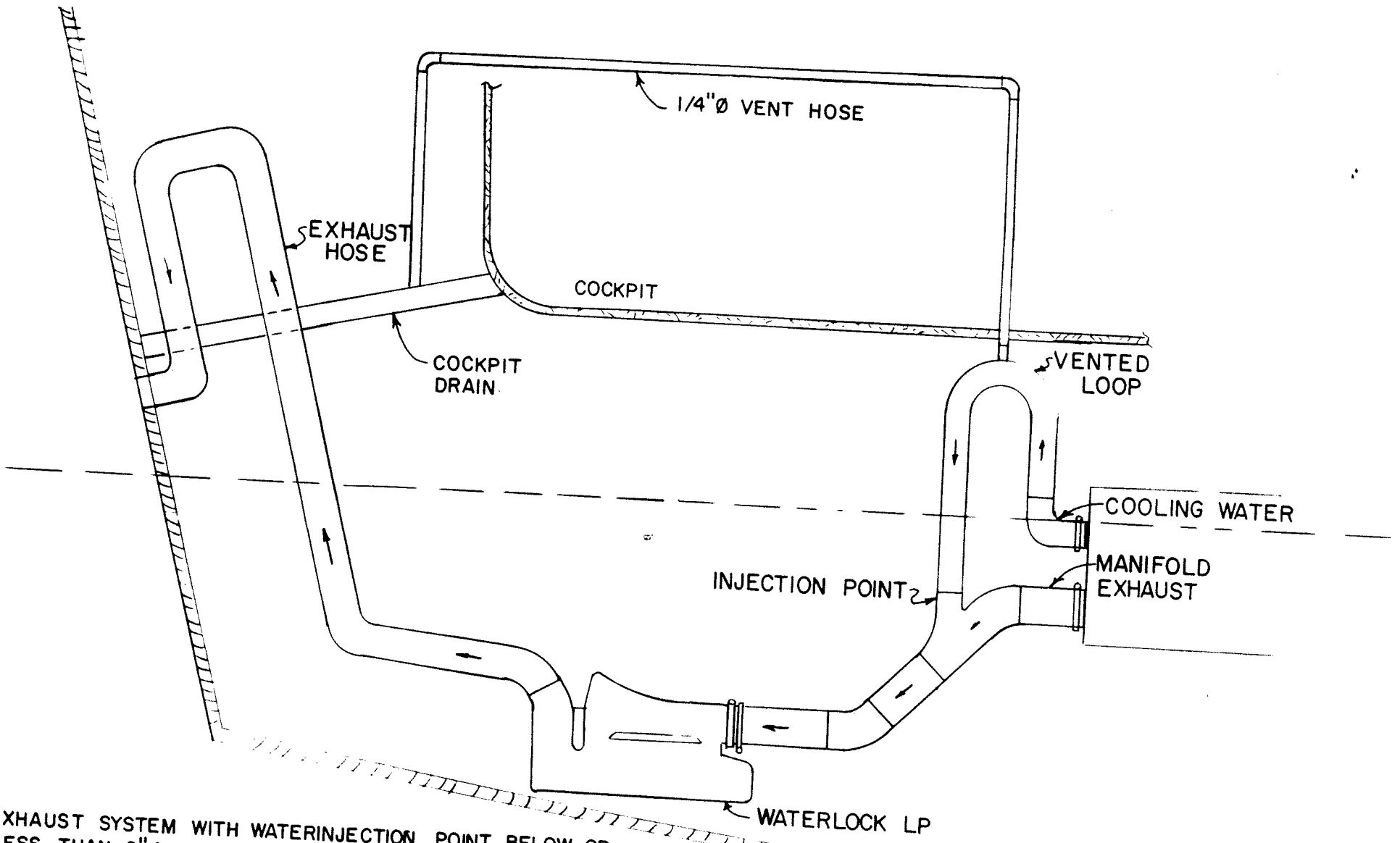


EXHAUST SYSTEM WITH WATERINJECTION POINT BELOW OR LESS THAN 6" ABOVE THE WATERLINE.
THE TWO MAIN FUNCTIONS OF THE WATERLOCK ARE:

1.) TO COLLECT THE WATER, WHICH IS PRESENT (by injection) IN THE HOSE, AFTER THE ENGINE IS SWITCHED OFF.
2.) TO REDUCE THE EXHAUST NOISE TO A MINIMUM.

ELECTRICAL SYSTEM

A 12 V D.C. electrical system is used throughout the vessel for lighting and operation of pumps and various accessories. For any 12 V current to be delivered, the following criteria must be met:

1. Charge in the battery
2. Master switch in "Batt. 1" - "Batt. 2" - or "Both" position
3. Master circuit breaker on the electrical panel - 'ON' (if vessel so equipped)
4. Circuit breaker for the individual appliance - (cabin lights, running lights, etc.) - 'ON'
5. Switch on the appliance (if there is one, such as cabin light) - 'ON'

The battery monitor installed on the electrical panel will give an indication of the charge status of the battery, or bank of batteries when optional battery installed, to which the battery selector has been switched. The battery monitor will show a high reading, between 13.6 and 14V when the engine is on and the alternator is charging. When the battery is fresh and fully charged, the battery monitor will read between 12.8 and 13.2V.

The amount of charge going into the batteries is shown on the ammeter in the engine panel in the cockpit, if so equipped. Generally, this meter will show a high rate of charge as soon as the engine starts, and the charge will taper off as the batteries come up to full charge. The voltage regulator automatically regulates the amount of charge going into the batteries, and reduces the level to prevent the batteries "boiling" over as they reach capacity. For this reason, even though an engine has a 55 amp alternator, charging the batteries for an hour will NOT put a full 55 amp-hours back into the battery.

On boats equipped with three or more batteries, the #1 position on the battery bank select switch indicates the "primary" use or

Electrical System Cont'd.

"house use" battery bank. This #1 bank has two or more batteries wired in series and should be for general use. Battery bank #2 has one single battery and is reserved for starting the engine when bank #1 has an inadequate charge. In the event that neither bank #1 nor bank #2 has sufficient charge to start the engine, the battery select switch can be turned to "Both". This will combine the total available power output from both banks of batteries. In order to protect the two banks of batteries from each other and to prevent the inadvertent consumption of all power from them, we recommend minimal use of the "Both" position of the battery select switch. Remember - the engine will charge only the battery that is switched on at the selector switch.

110 Volt A.C. Shorepower System (Optional)

The 110 volt AC shorepower system is functional only when the vessel is plugged into suitable power from shore. The cord provided has the standard end for the amperage service. Depending on the wiring in your facility, various adaptors may be required to plug the shore end of the cord in. The vessel end of the cord plugs into the inlet located inside the cockpit. The cord should be inserted with the socket holes matching those in the inlet, and turned to lock the socket. The outside ring on the cord should then be screwed into the flange of the inlet to give the cord additional protection from pulling out.

The switch panel for the shorepower system is located next to the DC panel.

Functions of the panel are as follows:

A. Orange Light: Indicates that the shore power is hooked to an active shore system.

B. AC Voltmeter: Indicates line voltage being received from the shore circuit.

C. 110 VOLT A.C. SHOREPOWER SYSTEM CONT'D.

The line voltage will vary with the number of appliances operating on the same circuit. In large marinas there may be a large number of boats on the same circuit, causing fluctuations.

CAUTION: Operation of AC motors with less than 90 volts is likely to result in damage to the motors.

D. AC Normal/AC Reverse: The AC panel has a red light to show when the polarity is reversed. Care should be taken not to operate 110 AC systems on board with reversed polarity. Notify dockmaster of this problem so the shore plug can be repaired.

NOTE: Even though the switches are in the appropriate position, the shore power system in no way assures safety of personnel using electrical apparatus.

E. Water Heater: Supplies power to the water heater 110 AC element for hot water while dockside. Note the cautions regarding the use of electrical power to heat water are contained in the plumbing section of this manual.

F. Outlet: Supplies power to the outlets placed throughout the cabin.

CAUTION: These precautions should be taken to avoid shock and fire hazards:

1. Turn off the boat's shore connections switch before connecting or disconnecting shore cable.
2. Connect shore-power cable to the boat first.
3. Disconnect shore-power cable at shore-outlet first.

Reprinted from ABYC Safety Standard (E-8 5-1-77)

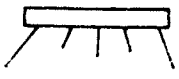
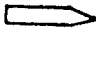
FREEDOM 36 BOAT WIRING COLOR CODES

WIRE SIZE	COLOR CODE	ITEM
#12/2	Black and White	Pumps
#14/2	Blue and Black	Cabin Lights
#16/2	Red and Black	Navigation Lights
#14	Tan	Propane Solenoid
#8	Green	Bonding System

MAST WIRING COLOR CODE

#14	Orange	Tricolor
#14	Red	Strobe
#14	Green	Anchor
#14	White	Steaming
#14	Black	D.C. Negative

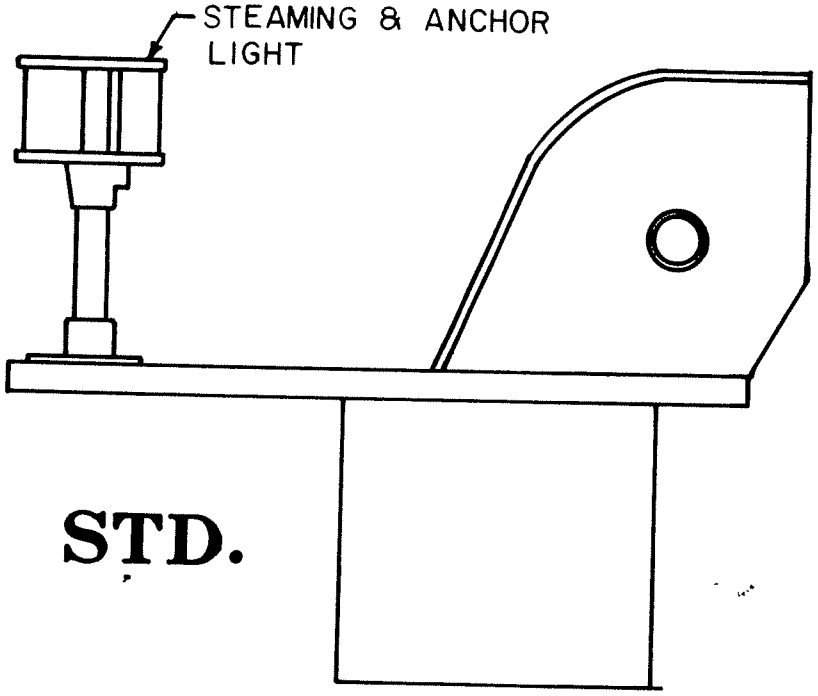
ELECTRICAL SYMBOLS

SYMBOL	ITEM	SYMBOL	ITEM
	Fluorescent Lights		Propane Solenoi
	Dome Light		Compass Light
	Brass Swivel Light		Starter
	Bow and Stern Light		
	Water Pressure Pump		

MAST HEAD WIRING

F-36, F-32 & F-30 (TYP.)

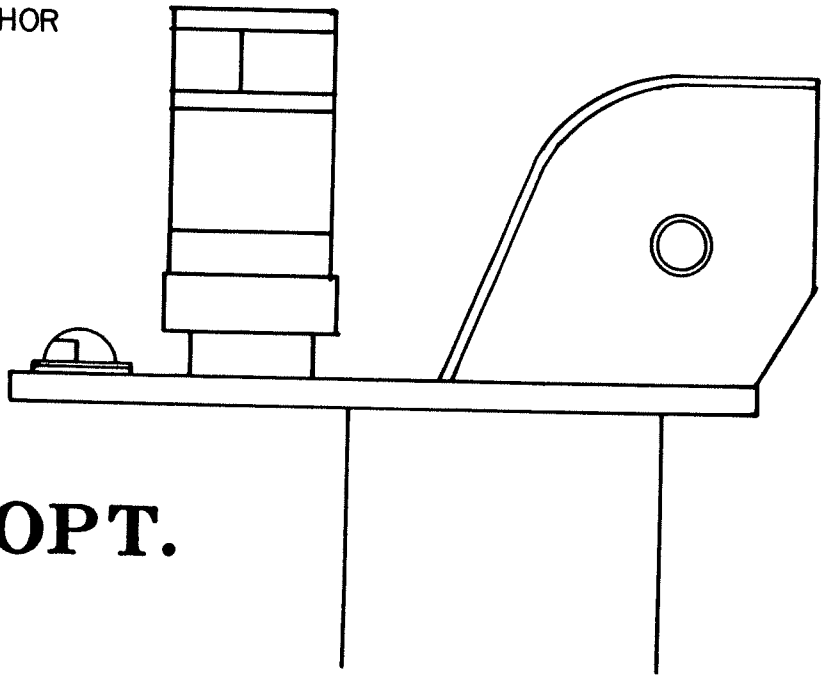
WIRING COLOR CODE	
ORANGE	— TRICOLOR
RED	— STROBE
GREEN	— ANCHOR
WHITE	— STEAMING
BLACK	— D.C. NEG.



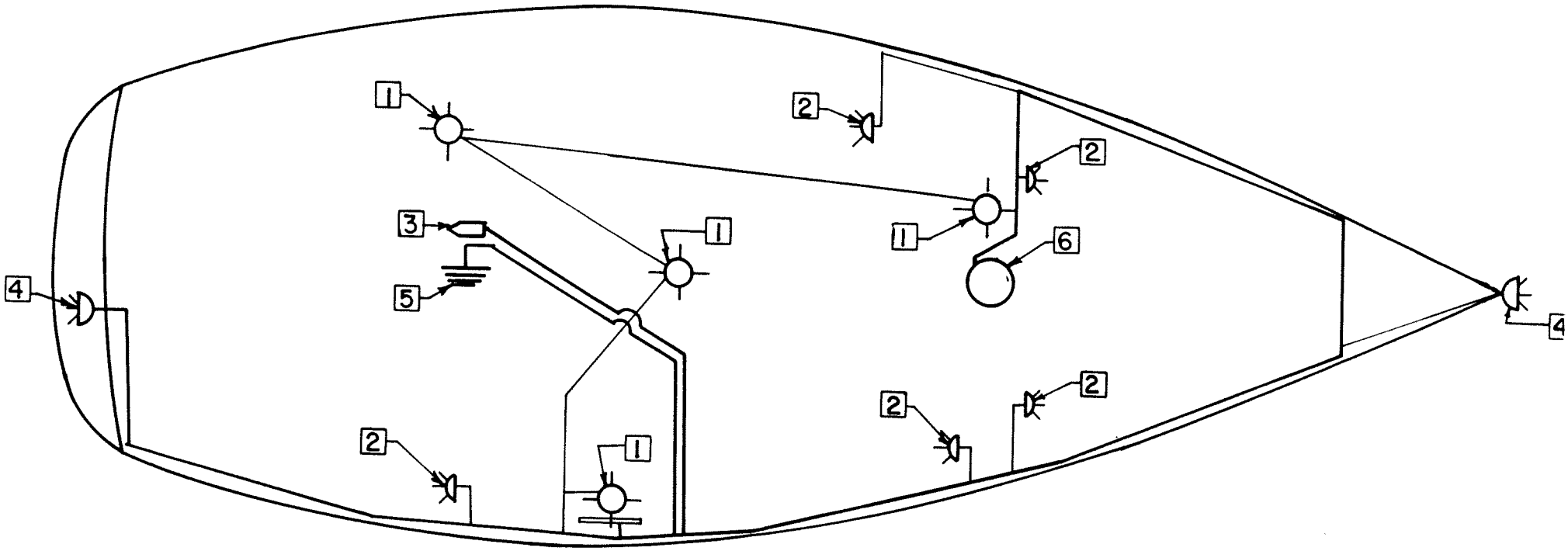
STD.

TRICOLOR, STROBE & ANCHOR LIGHT

STEAMING LIGHT



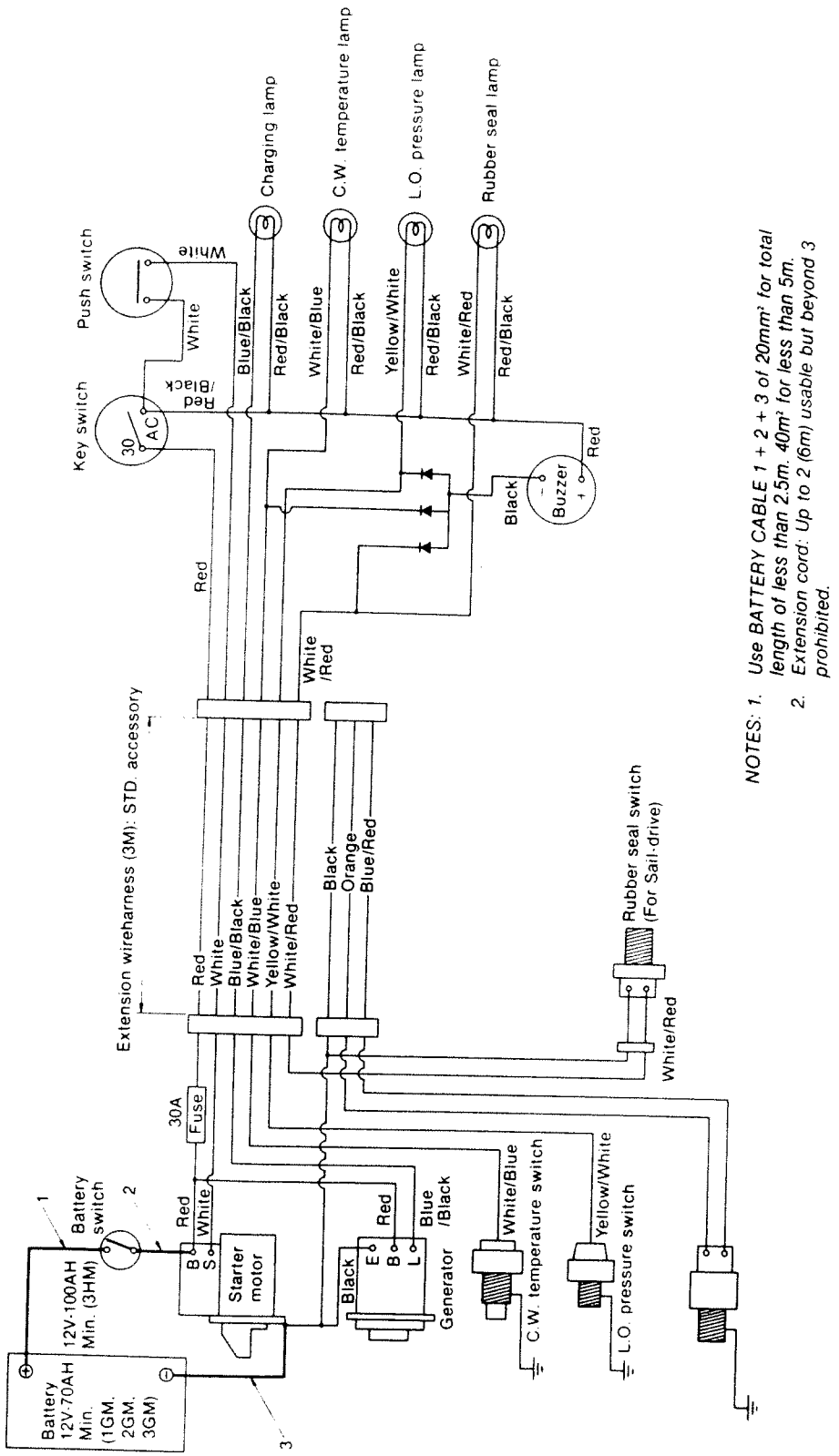
OPT.



1) DOME LIGHTS
2) BRASS SWIVEL LIGHTS
3) STARTER
4) RUNNING LIGHTS
5) GROUND
6) MAST

STANDARD ELECTRICAL HARNESS

1-2.2 For the A-type (small) instrument board



NOTES: 1. Use BATTERY CABLE 1 + 2 + 3 of 20mm² for total length of less than 2.5m. 40m² for less than 5m.
2. Extension cord: Up to 2 (6m) usable but beyond 3 prohibited.

Batteries

Batteries will last longer if they are kept charged during periods when they are not used. Be sure to check the water level in the batteries at least every two weeks. Adding water to a partially charged battery will lower the charge in the battery. Never add water to a battery which is charging, either via the engine alternator or a separate charger. Be careful in adding water so that the battery acid does not splash. Never add salt water to a battery. Most boat batteries have a shortened life from improper storage during lay up periods, lack of water, and the use of "quick" chargers. Distilled water is preferable for batteries, if available.

Battery Chargers

A proper marine battery charger is strongly recommended. The use of inexpensive automotive type battery chargers which do not have built-in isolation transformers can cause electrolysis to the vessel. One safeguard is to disconnect the NEGATIVE battery lead from the engine when using any charger other than a high quality marine charger with a built-in isolation transformer.

Always ventilate the battery compartment when using a battery charger.

Electrical Leakage Analysis

A useful tool for checking your boat's electrical system is a Volt-Ohm-Milliameter (commonly abbreviated VOM). Various electronic stores (one large chain is Radio Shack) sell inexpensive VOMs in the realm of $9.00 to $40.00. A high quality meter is not required, and will corrode in the marine environment almost as fast as a less expensive model. Most meters will show a negative current if the leads are reversed. In making any tests, reverse the tester leads if the needle moves under zero.

To test the vessel for leakage of battery current to the ship's ground system, disconnect the negative battery cable from the engine. Turn the master switch to the 'OFF' posistion, and place all circuit breakers on the electrical panel in the 'OFF' position.

Set the VOM to the lowest DC voltage scale available. Place one test lead from the VOM on the engine at the location from which the negative battery cable was removed. Connect the other test lead to the end of the disconnected battery cable. An indication of current will indicate an electrical leak, probably in the wiring running from the batteries to the master switch.

Keep all circuit breakers on the electrical panel in the 'OFF' position and move the master switch selector to battery #1 then to battery #2 position. An indication of electrical current from either battery switch position is resultant from an electrical leak either the wiring running from the back of the battery switch to the engine starter motor or the wiring running from the switch (or wire connected to the same terminal of the engine starter motor as the large red battery cable) to the electrical panel.

Frequently the source of electrical leakage can be located by selectively wiggling the wiring having the possibility of causing the leak.

A further discussion of electrical leakage may be found in a book titled THE TWELVE VOLT DOCTOR, published by Spa Creek Development Corp., Third St., Annapolis, Md 21403. Mention that you own a Freedom and recieve a 10% discount.

LIGHTNING PROTECTION

The masts are grounded to the keel and engine in accordance with industry practice. In spite of this grounding, there can be no assurance that personnel or the boat will not suffer injury if the vessel is hit by lightning.

The following are adapted from the ABYC safety standards, are suggestions only, and in no way guarantee safety.

1. If possible, remain inside a closed boat during a lightning storm. Do not contact any metallic objects inside the vessel.
2. Avoid making contact with any items connected to the lightning conductive system (mast step support, etc.) and especially in a way to bridge between two of them.
3. No one should be in the water during a lightning storm.
4. If the boat has been struck by lightning, compasses and electrical gear should be checked to determine that no damage or change in calibration has taken place.

Fresh Water System

The vents for the water tank(s) are located below deck to prevent seawater from entering the tanks while heeling. The overflow when the tanks are full will run into the bilge. The overflow when filling the tanks can be misconstrued to be indicative of a structural leak, since this water also ends up in the bilge. Tank(s) fill through separate fill fittings located on the deck. Each time a tank is filled, it is wise to wipe off the threads on the deck fitting to remove dirt which may prevent a good seal.

Please note that on boats which have more than one water tank, only one valve should be kept open at a time. This is especially important while sailing at significant angles of heel where the water from one tank will drain through the open valves to the tank on the low side and will overflow through the vent into the bilge. It is possible to lose an entire tank of water if this restriction is not observed.

When a tank has run dry, be sure to close the valve to the empty tank before opening the valve to the full tank. This will minimize the amount of air sucked in by the pressure water system when a tank has run dry; the pressure system may have difficulty overcoming the air in the water lines. After the valves have been changed so that there is water available to the pressure pump, and the pump is turned on at the electrical panel, open a water faucet to allow air to escape. Eventually, there will be a trickle of water. When this happens, close the faucet momentarily to allow the pump to build up pressure; then open the faucet until a steady stream of water issues from the faucet. It may be necessary to repeat the process several

Fresh Water System Cont'd.

times to bleed all the air from the system.

Read the caution regarding the hot water system, if the vessel is equipped with shorepower.

The water in your tanks may develop a taste after a period of time. This will happen to any water in any tanks, as it grows "flat". The addition of a commercial water preservation agent such as Sudbury Aqua Fresh crystals will greatly improve the taste of water stored for a long period.

Water Heater Caution

When the water heater is operating from shore power, a continuous supply of water must be available to the heater. Be certain that the pressure water pump in 'ON', and that the tank from which water is being withdrawn does contain water. If the electric element in the water heater is allowed to operate without water even for a few minutes, it WILL BURN OUT. Due to this potential risk, water heater elements are excluded from warranty.

Before taking a shower, check that the sump pump is operational so the shower drain water will not flood the bilge.

Head & Galley Sink Drains

The head and galley sink drains connect near a common seacock for overboard discharge.

WATER TANK(S)

This tank is rotationally molded from polyethylene. Connected to this tank are the following hoses: (a) Fill hose; (b) Feed Hose; (c) Vent Hose. The vent hose is internal and any overflow ends up in the bilges.

(See Thru-Hull and Tank Location diagrams - 5.5-1 for the tank location.)

HEAD SYSTEM

HEAD

It is always good seamanship to close the intake and discharge seacock (if installed) for the head when leaving the vessel. Also, be certain, while sailing, that the flush control valve or lever on the head is not left in the flush position so as to prevent the head from filling with water which will spill as the boat heels.

Y VALVE - Opt.

If your vessel is operated outside the territorial waters of the U.S., the "Y" valve may be shifted to pump toilet effluence directly overboard. Note that this practice is illegal in U.S. waters and will result in a substantial fine. Some waters prohibit the existence of a "Y" valve, so the device should be removed for navigation in these waters. Conformance with sanitation laws is an owner responsibility. Please see the diagram showing the direction of effluent flow to be sure the handle on the "Y" valve is properly positioned (see p. 7.3-1)

HOLDING TANK

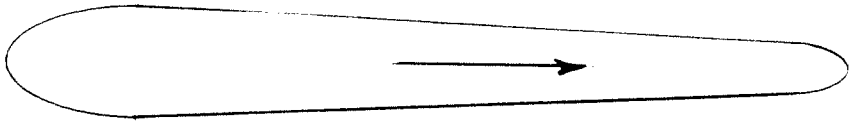
Your vessel is equipped with a holding tank for retention of sewage. The holding tank, like the water tank, is also made from polyethylene and is connected to the following hoses: (a) Waste Discharge Hose from the Head; (b) Pump-out Hose leading to deck plate; (c) Vent hose. This tank vents overboard.

Sea water is used to flush the head, and the sea water and effluent are pumped into the holding tank by pumping the toilet. A deck fitting is provided through which the holding tank may be evacuated by a shoreside pump-out station.

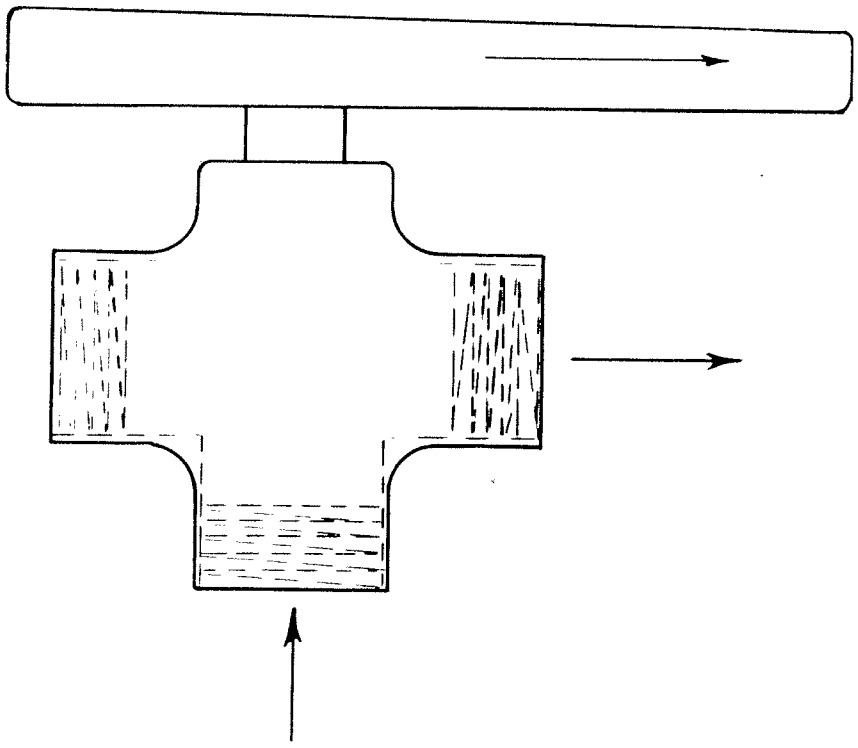
With the standard holding tank, it is not necessary to "precharge" the tank by adding water before using the system. Be certain that the pump on

Y VALVE POSITIONING

TO REDUCE CONFUSION WITH THE DIRECTION OF FLOW WITH THE HEAD DISCHARGE Y VALVE, THE LONG END OF THE HANDLE ON THE Y VALVE INDICATES THE DIRECTION OF FLOW.



DIRECTION OF FLOW →

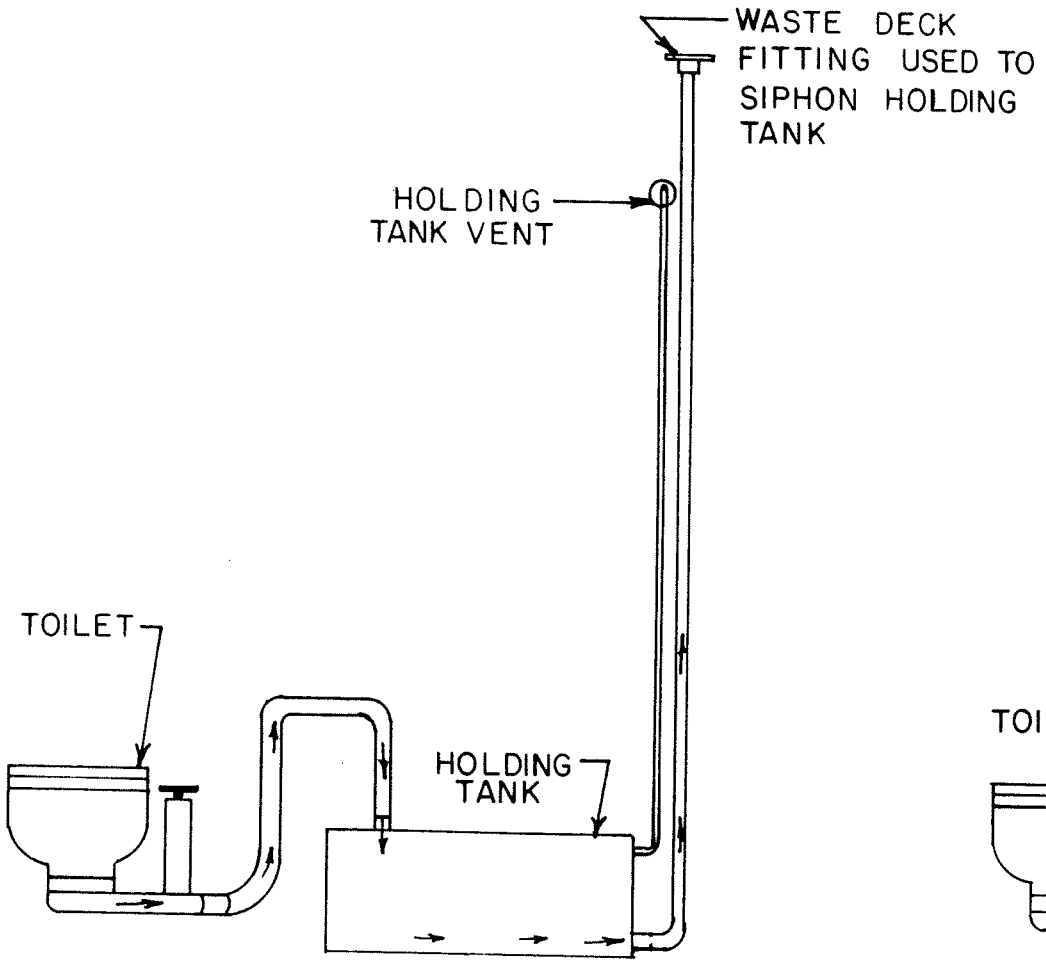


HOLDING TANK CONT'D

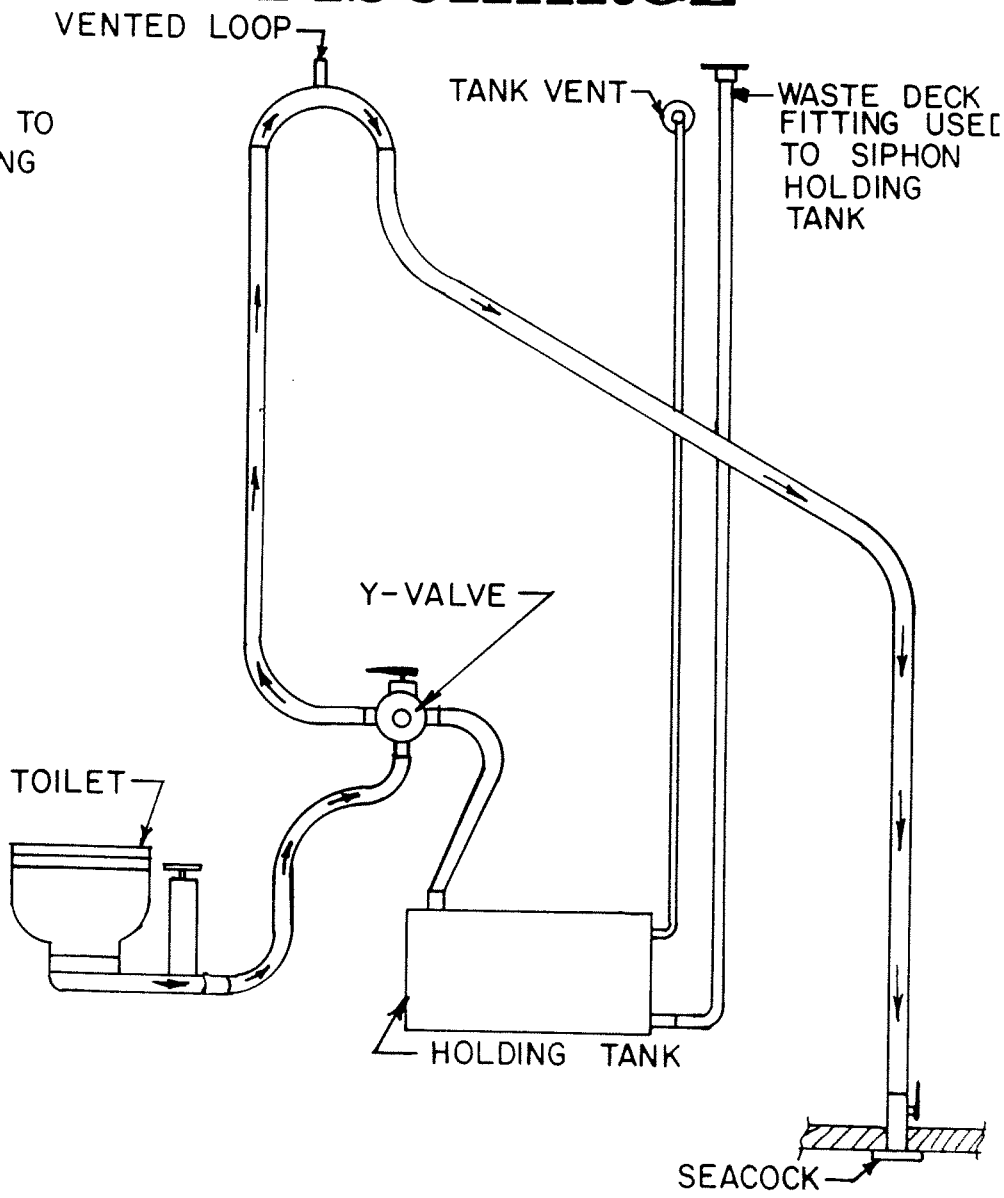
the toilet is pumped several additional strokes after waste has been evacuated from the bowl to insure that the effluence is pumped through the hoses and into the tank.

Care should be taken not to overfill the holding tank as effluent will block the vent hose and may damage the tank. If the toilet is difficult to pump, check to see if the holding tank is over filled. The holding tank must be pumped out before winter storage, and a small amount of potable anti-freeze added to the residual water.

STD. HEAD DISCHARGE



OPT. OVERBOARD DISCHARGE



FREEDOM YACHTS - DIVISION OF TILLOTSON-PEARSON

March 4, 1987

FREEDOM 30 SERVICE NOTICE

OPTION HEAD DISCHARGE Y-VALVE

The head discharge selector Y-valve has recently changed type and location. The new valve is flush mounted in the liner wall next to the head.

Freedom Yachts is required by Coast Guard regulations to provide a means by which the boat owner equipped with a selector Y-valve in the head discharge system can lock the handle in the holding tank position or secure the valve from inadvertent mispositioning on the overboard side while in U.S. Territorial waters (3 miles). To accomodate this requirement, we have removed the valve handle and stored it with the loose gear. With the handle the valve is effectively locked into position.

To operate the valve, simply insert the handle over the valve shaft and turn to the desired position. It is solely the responsibility of the owner to ensure the valve is in the correct position.

Mark L. Edwards
Customer Service

225 ALEXANDER RD., PORTSMOUTH, RI 02871/TEL. (401) 683-3500 TELEX 952 134 TPI WARI

EXTERIOR MAINTENANCE

Attention should be given regularly to the maintenance of the exterior of your boat to keep its appearance looking new. The following guide will be helpful.

Fiberglass

Even though fiberglass construction has vastly reduced upkeep, some attention to gelcoat surfaces is necessary to maintain the appearance of the finish. After a few years exposure with no protection, the finish may begin to fade or chalk. The twice annual application of a good commercially available wax containing an ultra-violet shield will preserve the appearance of this finish for many years. Be sure fiberglass surfaces are clean and free of salt before applying wax. Abrasive cleansers should not be used for general cleaning. A cleaner with no abrasive properties, such as Spic and Span, is preferred. On the non-skid areas which are difficult to wax, a coating such as Armor All, which is used for coating vinyl tops, will restore the finish.

In the fiberglass molding process, a wax is used on the mold to prevent the part from sticking to the mold. Some of this wax will end up on the fiberglass part. Especially during the first year, the residual wax on the deck may yellow a little, as it is affected by sunlight and airborne contaminants. Eventually, normal washings will remove this wax. If more rapid removal is required, a commercial wax stripper can be carefully applied.

Bottom Paint

One coat of bottom paint is applied at the factory. Generally, a second coat applied before launching will afford the best protection. Check with your dealer for a paint compatible with the factory applied paint. A non-compatible paint may lift the factory applied paint.

Bottom paint should be lightly sanded before recoating. Always

Bottom Paint Cont'd.

wear a respirator when sanding bottom paint - it is toxic. After several coats, it will be necessary to remove the accumulation of bottom paint, preferably by sanding with a rotary sponge-backed pad, or with paint remover designed for use with fiberglass.

Zincs

Every boat should have a shaft zinc installed as a sacrificial anode to protect the propellor and shaft from electrolysis. These zincs can deteriorate very quickly so frequent inspections should be made.

Exterior Teak

If left untreated, exterior teak will discolor rapidly, turning a dull grey color. Teak is relatively open grain wood, and eventually mildew may form in the grain, resulting in a very dark color.

If you wish to maintain the warm brown color, the teak must be kept clean and oiled. The grain of the teak will raise as the wood is wetted. The job of keeping up the teak will be much easier if the wood is sanded very smooth. Use sandpaper for this purpose, and be careful not to scratch the gelcoat. The best routine for bringing back discolored teak is to scrub thoroughly with a teak cleaner and water, allow to dry, and sand. Then apply multiple coats of a high grade teak oil. Some teak cleansers will stain the gelcoat, so be sure to hose off the deck and topsides thoroughly.

A good applicator for teak oil is a small piece of a sponge, perhaps 1" square by about 3" long, with one end tapered to allow application close to the deck without touching the gelcoat. Most teak oils will stain the gelcoat and are difficult to remove. Therefore, be careful and clean up drips promptly.

CAUTION: Some teak oils are extremely flammable. Be sure that

Exterior Teak Cont'd.

any rag used with teak oil is taken off the boat and disposed of in proper containers for rags with flammable substances. If left in open containers, rags may spontaneously combust. Many fires have been started through combustion of teak oil soaked rags.

Deck Hardware (Blocks, stoppers, etc. excluding winches)

As frequently as possibly, wash deck hardware with fresh water to remove accumulated salt and general grime. Lubricate sheaves, bearings, etc. with silicone spray (WD 40 is a popular brand). Avoid overspray on deck as it will get slippery.

Winches

Like all fine machinery, winches do require periodic maintenance to assure their proper operation. Failure to properly maintain winches may result in their malfunction, which may cause injury.

Specific instructions for the winches installed on your vessel are included with the other manufacturer's literature. At least twice a year, winches should be disassembled, cleaned, and lubricated. Note that the gears and bearings are lubricated with grease, but pawls and pawl springs should have only light oil applied. Kits of spare parts for winches are available and we recommend you obtain appropriate kits for your vessel.

Deck Hatches

Non-skid tape is a good idea on the translucent deck hatches as they become slippery when wet. The tops of the hatches are made from plastic, which will be scratched by ground-in sand, coral, etc. If more privacy is desired, sand the inside of the hatch cover with#120 sandpaper which will "frost " the surface.

Portlights

The ports are glazed with "Plexiglass" or "Lexan", noted for their high impact resistance. Gritty cleaning agents with abrasives, such as cleanser, will scratch. Use only mild soap and water to clean the ports.

Some chemical solvents, notably Acetone, will also injure the port lights.

INTERIOR MAINTENANCE

As on the deck, the interior gel coat surfaces should be cleaned periodically with non-abrasive cleansers and smooth areas should be waxed. Use a coating such as Armor All to maintain the non-skid areas.

All solid and plywood teak surfaces have been oiled prior to delivery. If more oil is desired, it can be easily applied with a foam brush or sponge. For an even finish the oil should be rubbed with a rag shortly after application. The factory applied oil finish on the teak makes a good base for varnish if so desired. (Be sure any rag having even a trace of teak oil is removed from boat.)

The bilges are painted with epoxy paints. They should be washed regularly to prevent the growth of mildew which can foul the bilge pumps.

The interior and exterior stainless steel surfaces can be treated with Neverdull or other light abrasive stainless steel cleansers. Toothpaste also works well as a cleanser for this purpose.

ANNUAL SAFETY MAINTENANCE CHECK LIST

The following list has been compiled as a guide to check critical safety related components of the boat. It is very important that this maintenance inspection be completed each year to assure the ongoing safety of your boat. This list is not all inclusive. It is intended as a guide only.

RUNNING RIGGING

___Check running rigging lines for wear at splice, turning blocks, etc.
___Inspect blocks & shackles for wear and tear.Clean and lubricate or replace as required.
___Service winches, per enclosed guide, check for free operation and ratchet stop function.

DECK HARDWARE

___Check lifeline integrity, stanchion, and rail attachment to deck.
___Check all cleats for signs of fatigue. Tighten fasteners or replace as required.

STEERING SYSTEM

___Consult Edson maintenance guide (p 5.1-1)
___Check rudder for cracks from fatigue or impact damage.
___Check rudder post play in bearing tube.
___Check that radial drive wheel is securely attached to rudder post.
___Check integrity of cables, chain and fittings.
___Check steering wheel shaft lubrication and condition of shaft/ wheel key and nut.

THRU HULL AND SEACOCKS

___Disassemble seacocks and ballvalves. Clean and check for any sign of deterioration and replace/reassemble and lubricate as required.
___Check seacock integrity.
___Check seacock attachment to hull.
___Check for free operation and lubrication frequently.
___Check hose, integrity, attachment and clamps.

ELECTRICAL

___Disconnect power source when effecting repairs or adjustments to electrical systems to avoid potential electrification.
___Check battery charge, terminal connections, and electrolite level.
___Check electrical panel, breakers and switch condition and operation; tightness of wire connections.
___Check running light operation.
___Check ground wire attachment to keel, mast step, thru hulls, and engine.
___Propane system - check the seal of the electrical solenoid valve and make sure it closes when switched to 'OFF' position.

MECHANICAL SYSTEMS

___Check stove fuel system, hoses, clamps and shut offs.
___Check heating stove - clearances and exhaust pipes.

ENGINE AND DRIVE TRAIN SYSTEM

___Consult engine owner's manual maintenance guide.
___Check engine fluid levels and systems for leaks - shut off controls.
___Check throttle action - start and stop controls, cable clamps, and locknut.
___Check shifter cable clamps and locknuts.
___Check exhaust system soundness, hose clamps, and waterlock cannister.
___Check coolant system, hose clamps, intake, and filters.
___Check transmission shift lever action, control cables, clamps and locknut; fluid level and alignment.
___Check alignment of shaft, coupling, and prop attachment - key, nuts and cotterpin.
___Check shaft log tube integrity, packing, hoses and clamps.
___Check strut bolt attachment, cutlass bearing and shaft bolts.
___Check all engine wire connections.

KEELS

___Check keel bolt nuts for tightness.*(on cradle to 90 foot pounds)

PLUMBING

___Check bilge pump function, hose clamps, and strainer. Clean, disassemble, repair/replace and lubricate as required.

REPAIRS

All necessary repairs should be completed before continuing to use the boat. To replace with new equipment is often a much safer course to take. If it is not possible to return equipment to a new condition thru repairs, equipment should be replaced for safety sake.

*Do not arbitrarily tighten keel bolts. Adjustment may break bedding compound bond and cause leakage.

PROPANE STOVE - OPTIONAL

(Refer to Propane System Diagram)

The propane (LP) gas stove installed on your vessel will give heat comparable to a home gas stove.

In the interest of safety it is important that the properties of liquefied petroleum gases be understood and that safe practices for their use be followed. Under moderate pressure the gases liquefy; upon relief of the pressure they are readily converted in to the gaseous state. Advantage of this characteristic is taken in their usage, and for convenience they are shipped and stored under pressure as liquids. In their gaseous state they present a hazard comparable to any flammable natural or manufactured gas, except that they are heavier than air. Although the vapors tend to sink to the bottom of an enclosed compartment into which they are released, they will diffuse throughout, and are not readily dispelled by overhead ventilation. Safety requires the prevention of escape of any liquefied petroleum gases, for when mixed with air in certain proportions they will explode if ignited.

*Reprinted from A.B.Y.C. Safety Standard #A-1-70

In addition to the manual shut-off valve located on L.P. tanks, the vessel is equipped with an electrically operated solenoid valve which shuts off the flow of gas at the tank. This valve is a "normally closed" valve; therefore electrical power must be provided so gas can flow to the stove.

Typical Stove Operation Routine

1. Check that all burner (including oven) knobs are off.
2. Check manual valve on tank and open if necessary. Make sure selector valve is on full tank. (if so equipped)
3. Be sure battery switch is on and 12 volt power is available.
4. Turn on circuit breaker for solenoid valve, and separate control for stove (if provided).

Stove Operation Cont'd.

5. Open burner valve on stove slightly and light burner. Note - some stoves may have a device which shuts off the flow of gas until burner is hot. On these stoves, an override button is provided which must be held in until the burner is lighted and hot. Refer to stove manufacturer's instructions provided with the vessel.

6. Never, ever, leave a lighted burner unattended. A gust of wind may blow flame out and allow gas to continue to flow from burner. L.P. gas is heavier than air and may explode.

7. If gas odor is observed, immediately open floor boards and vacate vessel. Do not do anything which may cause a spark. Do close manual valve on tank. Open all hatches and seek aide immediately.

8. When cooking is completed:

   A. Turn off electrical power at switch for stove, and at panel (if separate).

   B. After flame of burner in use has gone out, turn off knob for burner. (This will purge gas from lines).

   C. If you are leaving vessel, good seamanship dictates also turning off manual valve on tank.

CAUTION:

1. Keep container valves closed when boat is unattended. Close them immediately in any emergency.

2. Be sure all appliance valves are closed before opening container valve.

3. Always apply lit match or other flame to burner before opening valve.

4. Close master valve on appliance whenever appliance is not in use.

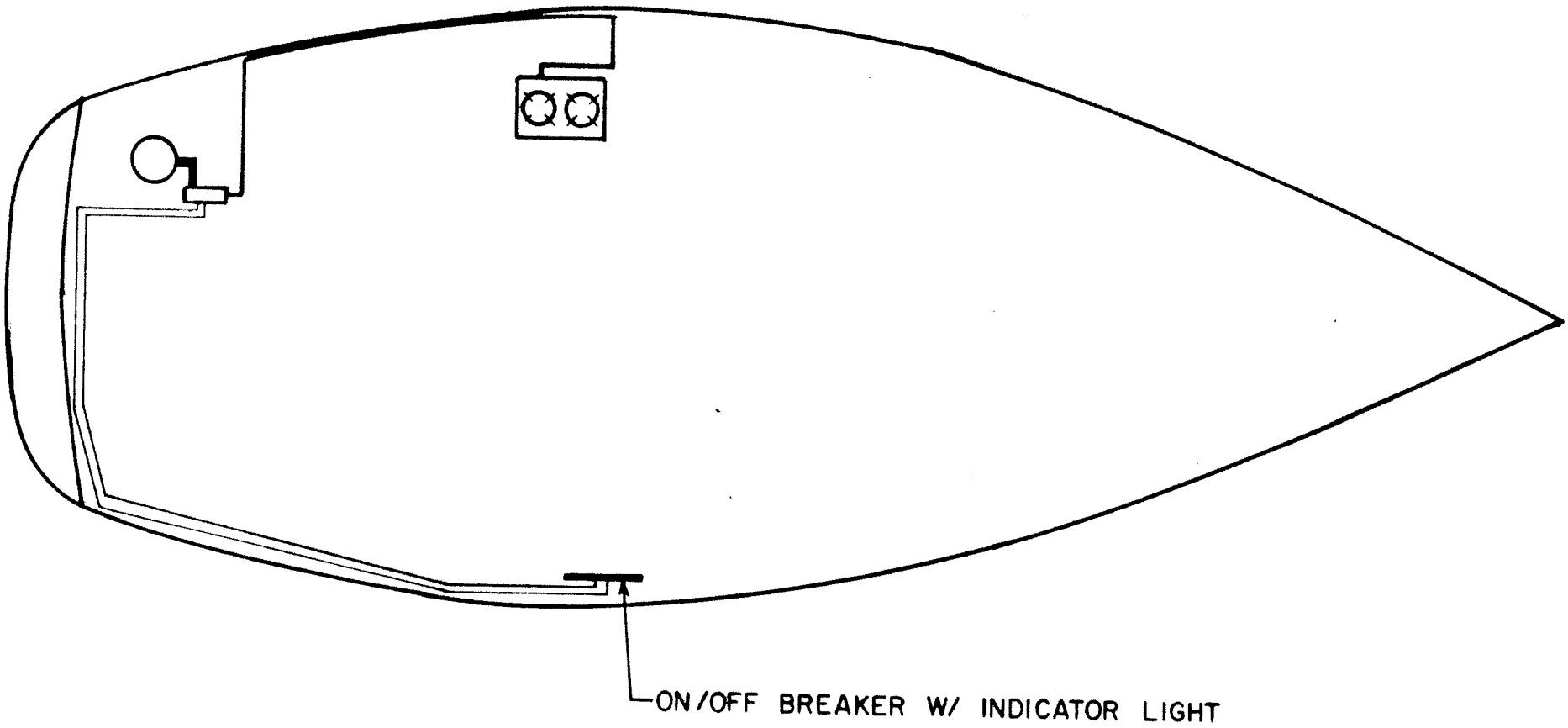
Propane Leak Test: All of the connections in the propane system should be checked during the initial commissioning, at least twice a month thereafter, and every time a bottle is refilled.

Locate leakage by the application of liquid detergent or a soapy water solution at the connections. Repeat the test for each container in a multi-container system.

Also check for leaks by watching the propane gauge. If the pressure drops while no one is cooking then retest all connections until the leak is discovered.

NEVER USE FLAME TO CHECK FOR LEAKS

*Reprinted from A.B.Y.C. Safety Standard A-1-70



OPT. PROPANE SYSTEM

WINTER STORAGE

Sails, Sheets and Lines

Sails and lines should be removed at the end of each season and stored in a warm, dry place. If it is possible to dry them thoroughly, they should be rinsed with fresh water before storage.

Engine and Fuel System

Check the engine manual for maintenance guidance during the season and for the specific haul out procedures necessary to winterize the engine. Fill fuel tank(s) to minimize condensation and add an anti-bacterial agent.

Batteries

If the vessel is equipped with an automatic battery charger and a reliable power source is available, batteries may be left on "Charge" onboard throughout the winter (in latitudes below 40 degrees North). Check batteries for electrolyte level at least once per month, but add water sparingly, as the water may freeze before going into solution with the existing electrolyte.

Preferred treatment is to remove the batteries from the vessel, and store in a heated area, recharging periodically to maintain full charge status. (Required treatment in latitudes above 40^{o} North.)

Head

As with the engine, the specific procedures for preparation for winter storage and recommissioning are contained in the manufacturer's manual.

Fresh Water System

Drain all tanks in preparation for winter storage. Be sure to drain the water between the heater and the check valve installed in

Fresh Water System Cont'd.

the supply line. Add an anti-freeze solution specifically designed for Marine/RV potable water systems to the residual water in the water tanks, and pump with both manual and pressure pumps until all lines are full of anti-freeze solution. DO NOT use automotive radiator-type anti-freeze, as most are poisonous and may damage the plumbing.

Bilges

Be sure to pump the bilge completely dry.

Ventilation

Leave the dorade vents in place and open so that the boat can get air during the winter. If a winter cover is used, it is recommended that the hatches be left partially open to enhance air circulation. This will help to prevent mildew. Also, it is recommended that boat cushions be removed and stored indoors for this same reason.

Winter Cover

If storing outdoors, a winter cover is recommended. It can be as simple as a rectangular piece of canvas forming a tent over the boat. A rige pole (formed by 2" x 4"'s along the centerline) several feet above the cabin top, well supported at several places along its length, is sufficient to support the center. The stanchions can be removed from their sockets, and ropes tied from the rige pole to the sockets to help support the cover. Use carpeting to pad any areas of chafe. Lash the cover tightly to the cradle, avoiding any grommets in contact with the gelcoat.

If at all possible, use a cover which does not extend partially over the gelcoat. Uneven covering with winter covers may cause color variation in topsides. Plastic covers may trap water in between the hull and the cover, causing premature failure of the gelcoat.

Winter Cover Cont'd.

Cradle

Make sure that the boat is adequately supported and that any suspected weakness has been reinforced. The keel of the boat must rest solidly on the main beam. The vertical risers are not intended to carry the load, merely to stabilize the boat.

Storing of Masts

While carbon fiber spars are exceedingly strong along their long axis, they can be damaged by crushing of the tubular section. Always store masts on well padded supports and do not place any weight on top of the mast(s). Do not use tape directly on the mast surface, or the paint may lift when the tape is removed. Plastic coverings can also abrade the paint coating and should be avoided. There is no harm in leaving carbon fiber spars installed in the boat through the winter providing the boat hull is adequately supported and a large build up of ice does not occur on the spar.

SAILING CHARACTERISTICS

Simplicity is one of the key ingredients in any Freedom Yacht. This is most obvious in the absence of stays. Consequently, there are no complex tuning instructions normally associated with the average stayed rig. There is only one place to put this mast--just place it in and forget it. The apparent confusion of lines in the cockpit quickly dissipates when you familiarize yourself with the function of each line. The purpose of so many lines is to give you complete and safe control from the cockpit. For your convenience rope hooks are installed so each line can be hung up out of the way.

TO HOIST SAIL

Remove the sail cover, untie the stops and hook up the halyard to the head board. Be sure the halyard is inside the two lazy jacks. Check batten tension - basically you want the battens to be tied in tightly for light to medium winds and looser for heavier winds. This does not mean that you have to adjust batten tension every time you go sailing. Set them only once for the most consistent weather in your sailing area. Release the main sheet and ease the boom vang. Haul the main halyard up by hand for at least two-thirds of the way, then switch to the winch. Care should be taken to maintain the sail, headboard and battens between the lazy jacks. This is best accomplished by keeping the bow of the boat head-to-wind. Winch the halyard up until the luff has the tension you desire. The top of the headboard should be about 3 inches below the mast top. Adjust outhaul tension (more tension in heavy winds, less tension in lighter winds).

SAILING CHARACTERISTICS CONT'D

Check the lazy jacks, which are adjustable and double as a topping lift. You may want to ease off the lazy jacks slightly so that the sail leech supports the boom. Otherwise when you trim down on the boom, you will be trimming against the lazy jacks. **

**Be sure to re-tension the lazy jacks before lowering the sail,or reefing, to keep the boom from falling or possibly injuring crew underneath.

TRIMMING SAILS

Start with the traveler in the center position. In any sort of a breeze you will want to carry the traveler down slightly - about over the edge of the companionway. If you wish to reduce heeling, let the traveler down further. The main sheet controls the basic angle of the sail, but when close hauled, the main sheet also governs leech tension. If you haul hard on the main sheet you will tend to close the leech; this puts the sail in one plane and is good for developing full power in lighter winds and flatter seas. If you ease the sheet slightly, you will note the top battens fall off slightly. The sail now has "twist" - that is, it is operating in several vertical planes. This kind of trim is useful for moderate breezes with choppy seas. Traveler adjustment is another variable here, and you really have to experiment to find what works best for your style of steering - with any particular wind/sea combination.

For offwind performance it is very important to set up sufficient vang tension. It is easier to set up the vang when the sail is trimmed to windward. remember, on all Freedoms you must tie a knot

in the sheets, in order to restrict the travel of the boom to 90°. Allowing the boom to travel further than 90° is not efficient, and will subject the boom gooseneck bracket to excessive strain, which after some time will cause a failure.

Reefing

We've made reefing just about as simple as it can be and it's all done from the cockpit. There are two reefing lines - one to port and one to starboard. The procedure is to ease the main sheet and vang to relieve pressure on the sail. Lower the main halyard to the first reef position (you can mark this on the halyard) and then simply winch in the reefing line. Being continuous, the reefing line will first bring the new tack down to the boom. Check that reef block drops into the proper position. Then the line will pull the new clew down. Because of the stabilizing influence of the batten, you should not have to lash the sail further.

Hoisting and Trimming the Jib

Remove the sail cover and sail ties, shackle jib halyard to head of sail and release the stopper on the jib sheet so that sail will luff when hoisted. Halyard tension should only be sufficient to flatten luff. The jib boom system is designed to automatically increase tension on the head stay in order to maintain an efficient leading edge. The headstay should not be pretensioned. Tighten turnbuckle only to remove slack in the wire. The rig will provide all the tension

required. When the sail is up, adjust jib boom topping lift as required to allow for proper sheeting.

Use telltales to govern sheet trimming. When windward side telltale flutters up or down the boat is sailing too close to the wind. Disturbance of leeward telltale is resultant from the jib being trimmed in too far or the boat heading too much away from the wind. Perfect sail trim will be indicated by all telltales on both sides of the jib streaming aft horizontally.

Do not overtrim. To achieve proper leech tension and an even slot with the mainsail, the wire in the foot of the sail can be slacked to let the top of the sail fall off or be tightened for the reverse effect.