FREEDOM YACHTS - DIVISION OF TILLOTSON-PEARSON

October 26, 1987

FREEDOM 30 SERVICE NOTICE

MAST HEIGHT

Please be advised that the mast height above the water is 47' 6". The original Freedom 30 boat specifications listed this incorrectly at 44' 0". Please adjust your paperwork and carefully navigate bridges accordingly.

Again, Freedom 30 mast height above the water is 47' 6" (antennas not included).

Mark L. Edwards
Customer Service

MLE: lmc

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

9-2-86

FREEDOM YACHTS - DIVISION OF TILLOTSON-PEARSON

FREEDOM 30 SPECIFICATIONS
****

LOA	29'11 1/2"	ENGINE: YANMAR	SAIL AREAS:
LWL	25'5"	2 GM 2 CYL. 18 HP	MAIN 348 SQ. FT.
BEAM	10'9"	FRESH WATER COOLED	JIB 137 SQ. FT.
DRAFT - SHOAL	4'6"	DIESEL	
- DEEP	5'6"		
BALLAST - SHOAL	3150	HEAD ROOM:	MAST HEIGHT ABOVE
DEEP	3000	(MAIN CABIN) 6'4"	WATER: 47'-6" ~~44'0~~"
DISPLACEMENT - SHOAL	7660		
- DEEP	7510	TANKAGE: WATER - 50 GAL.	FUEL - 20 GAL.
		WASTE - 20 GAL.	

****

GENERAL

The Freedom 30 is a sleek, fixed keel sloop built by Tillotson-Pearson and designed by Gary Mull with a modern day stable hull driven by a powerful full battened mainsail set on an unstayed carbon fiber spar.

The Freedom 30 looks and, most importantly, feels like her stablemate, the Freedom 36. Some people feel oceangoing yachts must start at 40 feet and go p, others know you start with Freedom and go anywhere!

SAIL CONTROLS

Two Barient #21 chrome winches control the main and jib halyards, main and jib sheets, first and second reef lines and vang. Each line passes through a sheet stopper. The traveler is controlled by 3:1 traveler control lines led through cam cleats. Main halyard is 7/16" Kevlar dacron composite for minimum stretch. The custom fabricated boom provides an internal 5:1 main-sail outhaul, as well as a single line cockpit controlled reefing system.

HULL

The hull is constructed to ABS standards and consists of a laminate of isophtalic neopentyl gel coat, .75 oz. E glass mat and layers of stitched unidirectional fiberglass. Outer underwater laminates utilize vinylester barrier resins to eliminate the worry of blistering. All laminates are hand laid with endgrain balsa as a core in the hull for strength with minimum weight. Balsa core also provides acoustical and thermal insulation.

DECK

A similar hand-laminated, cored construction is used in the deck. Heavy reinforcing is built in for deck hardware. Molded in non-skid areas are available in several colors as an option. The cockpit is integral with the deck with two large scuppers draining through the transom. Two cockpit seat ockers to port provide storage for decklines, fenders, and optional propane tanks.

* SPECIFICATIONS, OPTIONS & PRICES SUBJECT TO CHANGE WITHOUT NOTICE

FREEDOM YACHTS - DIVISION OF TILLOTSON-PEARSON

MAST

Tillotson-Pearson has pioneered the use of carbon fiber in unstayed masts. Although carbon is more expensive than aluminum, it provides the added strength and durability to allow all Freedom masts to carry a lifetime warranty to the original owner.

INTERIOR

Standard teak joinery is handsomely fitted throughout, and accented with teak trim. The cabin sole is teak and holly. Interior finish is hand rubbed oil.

GALLEY

The galley is located to port, aft of the main saloon. A 10" deep stainless steel sink is located close to centerline to permit draining while under sail. Outboard of the sink is a 5 cubic foot icebox with two-level storage. There is dish storage aft of the icebox and a storage locker outboard of the two burner alcohol stove with oven. A propane stove with oven is available as an option.

Garbage: Indicative of the thought which has gone into the Freedom 30 is the clever trap door in the galley to a waste receptacle located in the lazarette, isolating garbage from living areas.

AFT STATEROOM

The most unique feature of this new 30-foot Freedom is its private aft stateroom, located in the starboard quarter. Featuring a 6'4" large double berth, it has its own hanging locker. Ventilation is provided by an opening port into the cockpit, with two additional ports as an option.

MAIN CABIN

This cabin is very suitable for entertaining or just lounging on its two opposing settees. To starboard is a standup chart table with a storage cabinet beneath. Outboard of the starboard settee is shelf storage. Outboard of the port settee is a bookcase and two storage lockers with louvered doors. The finely crafted teak table folds up against the bulkhead.

HEAD

Located forward of the main saloon to port, the head features a marine toilet with china bowl plumbed to a 20 gallon holding tank, a one piece fiberglass pan for ease of cleaning, a molded fiberglass sink, and a large storage locker outboard. Ventilation is provided by an overhead deck hatch and an opening port.

* SPECIFICATIONS, OPTIONS & PRICES SUBJECT TO CHANGE WITHOUT NOTICE

FREEDOM YACHTS - DIVISION OF TILLOTSON-PEARSON

FORECABIN

A 6'4" long V-berth with insert filler has storage below. A large hanging locker is located to starboard. A bi-folding door turns this cabin into a pleasant private stateroom for two. Ventilation is provided by an overhead deck hatch and an opening port.

LIFELINES AND PULPITS

A custom stainless steel bow pulpit with anchor roller and a stern rail are standard with double lifelines running through six 24" high stainless steel stanchions. Optional boarding gates are available.

MECHANICAL

Engine: A Yanmar 2GM20F fresh water cooled 18 HP diesel with 35 AMP alternator drives a two blade propellor through 2.14:1 reduction gear. A 3/4" stainless steel shaft passes through a Syntron dripless shaft seal. A removable insulated engine box gives complete access to engine and machinery space and incorporates tool storage in the top step. The 20 gallon aluminum fuel tank is located under the aft bunk.

Electrical: One 90 AMP hour battery is standard with a selector switch. A Bass 12 volt DC panel with five breakers is located outboard of the nav table. Five brass swivel reading lights plus four overhead lights provide interior illumination.

PLUMBING

All apertures below the waterline are fitted with Marelon(R) flanged through hull fittings installed in solid laminate, with ball valve Teflon seated seacocks. Hoses below the waterline are double clamped with stainless worm drive clamps. Fresh water distribution is through FDA approved water hose from polyethelene tank.

* SPECIFICATIONS, OPTIONS & PRICES SUBJECT TO CHANGE WITHOUT NOTICE

9-2-86

FREEDOM YACHTS - DIVISION OF TILLOTSON-PEARSON

FREEDOM 30 HULL # _____ DEALER NAME _____

DATE OF ORDER _____ DEPOSIT AMOUNT _____

****

HULL STANDARD COLORS: WHITE ✓ IVORY _____ GULL GRAY _____

OPTIONAL COLOR** _____

KEEL: DEEP** _____ SHOAL _____

HULL STRIPES: SINGLE BOOT TOP AND COVE COLOR MAROON BLUE

DOUBLE BOOT TOP AND COVE COLOR** _____

BOTTOM PAINT: RED _____ GREEN _____ BLUE _____ BLACK _____

INTERIOR CUSHIONS: _____

DECK: COLOR _____

CONTRASTING NON-SKID** ✓

** DENOTES ADDITIONAL COST

****

COMMENTS: _____

OUR ITEM NO.	QTY	DESCRIPTION	RETAIL PRICE/UNIT
F30	✓	FREEDOM 30 SLOOP PER STANDARD SPECIFICATIONS	58,900.00
98410		OPTIONAL HULL COLORS AVAILABLE: BEIGE, COCOA, MAROON, VIP RED, BRITISH RACING GREEN, REGATTA BLUE, CAPTAINS BLUE, OR BLACK	500.00
98411		DOUBLE BOOT TOP	300.00
98412	✓	DECK CONTRASTING NON-SKID	400.00
98421		DEEP KEEL	300.00
		DECK ****	
98430	✓	LIFELINE GATES PORT & STARBOARD	525.00/PR
98431		REPLACE STANDARD #21 WINCHES WITH BARIENT #24 SELF TAILING CHROME	890.00/PR
98432		SPINNAKER GUN MOUNT PACKAGE: INCLUDES REINFORCED PULPIT, SPINNAKER POLE, DECK HARDWARE, SHEETS AND HALYARDS	2,200.00

* SPECIFICATIONS, OPTIONS & PRICES SUBJECT TO CHANGE WITHOUT NOTICE

ALEXANDER ROAD, MELVILLE, NEWPORT, R.I. 02840 / TEL. (401) 683-3500 TELEX 952 134 TPI WARI

9-2-86

FREEDOM YACHTS - DIVISION OF TILLOTSON-PEARSON

98438	✓	REINFORCED BOW PULPIT ONLY	330.00
98433		NICRO 4" SS SOLAR VENT INSTALLED ON MIDSHIPS HATCH	250.00
98434		HINGED SS SWIM LADDER W/TEAK TREADS INSTALLED ON TRANSOM	425.00
98435	✓	CAST ALUMINUM OPENING PORT IN AFT STATEROOM HULL SIDE	395.00
98436	✓	OPENING PORT INTO AFT CABIN FROM CABIN HOUSE AFT END	240.00
		INTERIOR	
98440	✓	FILLER W/CUSHION TO CONVERT DINETTE TO DBL. BERTH.	250.00
		ELECTRONICS/ELECTRICAL	
98451	✓	DELUXE SHOREPOWER SYSTEM W/3 GFI PROTECTED OUTLETS, 50' CORD & 20 AMP PROFESSIONAL MARINER BATTERY CHARGER, ADDITIONAL 90 AMP BATTERY	895.00
98453		STEREO CASSETTE W/AM/FM RADIO INSTALLED W/SPEAKERS	475.00
98454		ELECTRIC FAN-SPECIFY CABIN - AFT, MAIN, FWD	135.00/EA
98455	✓	INSTALL COAXIAL CABLE IN MAST FOR VHF RADIO	140.00
98456		FOREDECK FLOOD LIGHT	150.00
		MECHANICAL/PLUMBING	
98460		OVERBOARD DISCHARGE SEACOCK FOR HEAD, W/Y VALVE	350.00
98462		12 VOLT REFRIGERATION - ADLER BARBOUR COLD MACHINE INCLUDING ADDITIONAL BATTERY	1,500.00
98464	✓	DELUXE PRESSURE HOT AND COLD WATER INCLUDING SS HOT WATER TANK, GALLEY & HEAD FAUCETS, SHOWER WITH AUTOMATIC SUMP PUMP	995.00
98465	✓	ELECTRIC BILGE PUMP	325.00
98467	✓	2 BURNER PROPANE STOVE W/OVEN IN LIEU OF STANDARD ALCOHOL 2 BURNER STOVE W/OVEN	525.00
		MISCELLANEOUS	
98490		EXTRA ALUMINUM PROPANE TANK	95.00
98491	✓	STEEL CRADLE	815.00
98492		FOLDING MARTEC PROP IN LIEU OF STANDARD FIXED 2 BLADE	400.00
98493		COCKPIT CUSHIONS - 2" FOAM, WHITE VINYL COVERED	215.00/PR
98494		COCKPIT DODGER - SPECIFY COLOR	950.00
98495		ELK HIDE 32" WHEEL IN LIEU OF STANDARD WHEEL	220.00

* SPECIFICATIONS, OPTIONS & PRICES SUBJECT TO CHANGE WITHOUT NOTICE

6 5720
+ sail upgrade
+ radio

ORIG. SALE PRICE
W/OPTIONS: $68,130.
+ ADDS ≈ $ 70,000.

ALEXANDER ROAD, MELVILLE, NEWPORT, R.I. 02840 / TEL. (401) 683-3500 TELEX 952 134 TPI WARI

TILLOTSON - PEARSON INC.

BEND BOAT BASIN
MELVILLE, NEWPORT, RI 02840
401-683-3500

WELCOME ABOARD!

Congratulations on the purchase of your new Freedom. She is designed for optimum performance, ease of handling and will accomodate you and your crew in ultimate comfort and safety. Freedoms utilize only the best materials resulting in solid construction that is well executed throughout.

Properly cared for your Freedom will give you years of safe and pleasurable sailing. Your owner's manual provides you with information including commissioning, safety and maintenance. Please take the time to review the information yourself and with your dealer.

For safe, pleasurable sailing DO NOT operate your boat without a knowledgeable, experienced skipper and crew. It is not our intent to provide ALL of the information in this manual that you will need to operate your boat safely. This manual will acquaint you with SOME of the features onboard that you may find unusual. If you are not experienced you are strongly encouraged to take courses in boating skills and safety. Also, update your knowledge by reading from the many books and magazines available.

HAPPY SAILING!

Everett A. Pearson
President
TPI

TABLE OF CONTENTS

Freedom 30

INTRODUCTION

Freedom Yachts has prepared this Owner's Handbook which will provide you with some information for the safe, enjoyable use and maintenance of this proper cruising yacht. Warranty Registration Cards from the factory and the engine manufacturer are included with this manual. These cards should be filled in and returned as soon as possible.

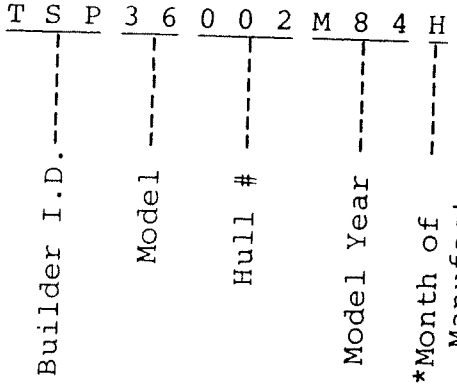
Freedom Yachts are produced in Tillotson-Pearson's Warren and Melville, Rhode Island, plants where fine sailing yachts such as Aldens, J-Boats and Rampage Sportfishing Boats are also manufactured. Our staff is comprised of craftsmen and engineers experienced in all areas of the boating industry. Each boat produced is thoroughly inspected and tested by our rigid quality control procedures.

Freedom is always seeking new and better ways to make our product the best it can be. Therefore, you may find your Freedom has equipment that differs from equipment shown in this manual. Whenever changes have been made in the specifications or equipment, they have been carefully developed and tested to be sure they meet our high quality standards.

HIN NUMBERS

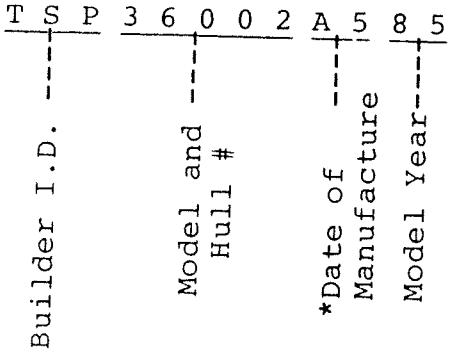
In accordance with Coast Guard Regulations, your Freedom is identified by a Hull Identification Number or "HIN". This HIN is molded into the upper starboard corner of the transom. Please have this number handy whenever contacting your dealer or Freedom Yachts for any reason.

On boats molded before August 27, 1984 the HIN number appears as follows:



*July 16- Aug 15	"A"
Aug 16- Sept 15	"B"
Sept 16- Oct 15	"C"
Oct 16- Nov 15	"D"
Nov 16- Dec 15	"E"
Dec 16- Jan 15	"F"
Jan 16- Feb 15	"G"
Feb 16- Mar 15	"H"
Mar 16- Apr 15	"I"
Apr 16- May 15	"J"
May 16- June 15	"K"
Jun 16- July 15	"L"

On boats molded after August 27, 1984, the Coast Guard changed the format so that the HIN number appears as follows:



*Letter identifies month, number identifies last digit in year manufactured.

January	"A"	July	"G"
February	"B"	August	"H"
March	"C"	September	"I"
April	"D"	October	"J"
May	"E"	November	"K"
June	"F"	December	"L"

TSP 30070C787

TILLOTSON-PEARSON, INC.

Statement of Limited Warranty Of
Carbon Fiber Spars

Tillotson-Pearson, Inc. warrants all carbon fiber masts installed on Freedom Yachts to be free from defects in material and workmanship under normal use and circumstances and with normal care and maintenance for the ownership of the original consumer.

What is Covered:

In the event of a failure due to a defect in the manufacture of the mast(s), TPI will supply a replacement at no cost to the original consumer. TPI will also transport the mast(s) to any city or port in the continental United States at no cost to the original consumer.

What is Not Covered:

TPI does not, under any circumstances, assume responsibility for the loss of time, inconvenience or other consequential damages, including but not limited to, expenses for transportation and travel, telephone, lodging, loss or damage to personal property, such as electronics , or loss of revenue. In addition, TPI will not assume responsibility for commissioning expenses including but not limited to stepping, rigging, rewiring, and deck boss and collar adjustments to accomodate diameter variation.

PLEASE NOTE:

Some states do not allow limitations on how long an implied warranty lasts, and/or the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you. Moreover, this warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

*_____(cut)_____

Tillotson-Pearson
Limited Warranty
W578

THIS SLIP MUST BE SENT TO THE BUILDER WITHIN 30 DAYS AFTER DELIVERY.

Model _____ Hull Number _____

Date Purchased _____ Dealer _____

Name of Owner(s) _____

Address _____
street city/state zip

Phone Number(s) _____(H) _____(B)

Name of Boat _____

I have read, and agree to the conditions outlined in the Limited Warranty which was attached hereto.

_____
owner's signiture(s)

RESPONSIBILITY OF THE OWNER

To obtain maximum safety and pleasure from your Freedom, particular attention must be paid to proper maintenance of your boat. A partial list of Owner Responsibilities follows, which is only intended as a partial guide. Please contact your local U.S. Coast Guard and Power Squadron offices for safety information on the operation of your boat.

1. Complete the Warranty Registration Cards and return them to Freedom Yachts and the engine manufacturer. Please mail any change of address or ownership to Freedom Yachts so we may keep an accurate list of owners.
2. Ensure that all items listed as the Responsibility of the Dealer are completed by your dealer. If your boat has been delivered to any address other than that of your dealer, the responsibilities of the dealer become yours, unless specific arrangements are made with your dealer.
3. Operate your boat following the instructions provided in this owner's handbook, instructions from our suppliers and applicable U.S. Coast Guard and other regulations.
4. Keep all additional safety equipment on board as required or recommended by the U.S. Coast Guard for the size of your boat and nature of use.
5. Have your boat serviced by a competent marine agency. All service should be carried out in accordance with the specifications in this owner's handbook, our supplier's manuals, and preferably by an authorized Freedom dealer.
6. Before each operation of your boat review the SAFETY section of this manual. Also, review the ANNUAL SAFETY MAINTENANCE RECOMMENDATION - p 8.3.

RESPONSIBILITY OF YOUR DEALER

Freedom Yachts are sold only through Authorized Freedom Dealers. Our dealers have been selected because of their knowledge and expertise in the boating industry and because of their dedication to the provision of a high level of service and attention.

Your Freedom dealer is responsible for the commissioning of your boat according to the Freedom Commissioning Procedure. Please be sure your dealer completes the Commissioning Check List and returns it to Freedom Yachts. Failure to do so will complicate warranty procedures. Your yacht commissioning is as follows:

1. Clearly explaining and accurately describing the Freedom options that are best suited to enhance your needs and planned use of your new Freedom.
2. Inspecting the boat upon receipt to assess any losses or damages; filing and following through all claims against the carrier transporting your Freedom. Should you notice any loss or damage you must notify your dealer immediately or , at the latest, within 30 days after receiving your boat.
3. Inspect all equipment, installed or shipped loose, to assure that all items are received.
4. Commissioning the boat per the Commissioning Check List. Dealer's responsibility includes completing the following (p 4.2) Commissioning Check List and reviewing the same with the owner.
5. Checking all mechanical systems during actual use on a trial run.
6. Instructing you on the use of your boat and its equipment.
7. Providing assistance and service, including processing of claims, under the terms of our Limited Warranty.

CONSTRUCTION DETAILS

The technology we use for designing and constructing our boats is the most advanced in the marine industry. Only top quality, top performance materials which are thoroughly tested in our own lab are used.

Materials:

1. All Freedoms utilize Glidden Neo Pentyl Glycol (NPG) Isophthalic Gelcoat. NPG Iso Gelcoats yield a denser, more frequently branched molecular network which inhibits migration of water molecules. Because of their structure, NPG Iso Gelcoats offer superior resistance to moisture penetration, blistering and fading. They are formulated to yield slightly more flexibility than most gelcoats which aids in resisting cracking. Testing also indicates that Glidden NPG Iso Gelcoats produce the highest gloss and retain it through environmental exposure.

2. High performance glass fabrics are used throughout the sandwich laminate. They offer superior strength and stiffness when compared to conventional cloth and woven roving materials used by many other builders. Unidirectional fabrics require less resin and therefore produce stronger structures without excess weight. The fibers can also be oriented to yield maximum hull and deck strength and stiffness.

3. The resins used by Tillotson-Pearson are properly engineered to incorporate the correct balance of properties based on required performance. A special vinyl ester resin is used as a barrier coat behind the gelcoat to arrest moisture penetration. By arresting moisture permeation blistering cannot occur.

This vinyl ester in combination with Glidden NPG Iso Gelcoats and properly specified fibers generate the most blister resistant hull available today. The vinyl ester used by Tillotson-Pearson is also resilient like the gelcoat to further aid in crack resistance.

A high quality polyester resin is used to complete the rest of the laminate. Again the correct balance of properties are designed into the resin to assure resistance to cracking and fatique. These designed-in properties assure that high strength and stiffness will be retained throughout the life of your vessel.

Sandwich Construction:

Sandwich construction is used in all Freedom Yachts' hulls and decks to produce lighter, faster performance boats. A fiberglass sandwich functions similarly to an "I" beam. "I" beams are used for construction because they make the most efficient use of materials based on structural criteria at reduced weights. The inner and outer skins of the sandwich function in the same way as the top and bottom flanges of the "I" beam, and the core functions similarly to the web of the "I" beam. This means lighter hulls and decks can be produced which are actually stiffer and stronger than a solid glass hull or deck.

Many different cores are available for use in sandwich construction. We choose end grain balsa core because it has superior physical properties in performance over all others. It has excellent thermal stability in warm climates or direct sunlight. When compared with foam cores, the end grain balsa core's fatigue properties are far superior. It also has excellent impact and puncture resistant properties.

Production Control:

Great care is taken in the quality control of the production of laminated parts. The following steps are necessary to guarantee that the physical properties used to design are the same as those which are built into the part.

1. Ultrasonic inspection is used to measure thicknesses as well as to count individual plies of material in the laminate.
2. Weights are checked on a regular basis.
3. Resin burn off tests are run randomly to check on the ratio of resin to glass built into the laminates.

Gelcoat application is carefully controlled to ensure the proper coating thickness and performance. This is important when considering

Production Control Cont'd.

blister resistance. Proper catalization, thickness, and low porosity are key in producing a finish that will best resist the osmotic passage of moisture. Control of catalization is also very important for weatherability. Barcol hardness testers are used to check the relative cure of both resins and gelcoats.

Assembly:

Major structural framing and bulkheading are glassed to the hull and deck using non-woven biaxial glass fabric. This provides for an integral bond between the hull, deck and frames.

By using both mechanical and adhesive fastenings, hull to deck joints of reliable integrity are achieved. Glass thicknesses are increased in the hull and deck flanges which are joined together primarily with through-bolts, capable of handling the high local stresses that are produced as loads are transmitted through the hull and deck.

Before bolting, 3M-5200 high strength urethane adhesive sealants are applied to the flanges to totally seal the joint. This combination of bolting and bonding with 5200 creates an unusually strong water-tight hull to deck joint.

All internal and external hardware connections are engineered individually for long lasting integrity. Backing plates are designed as required for all deck hardware as well as additional laminate backups to ensure reliable hardware fastenings.

Through hull fittings are engineered using the highest quality bronze and glass reinforced nylon fittings available. Each metal fitting is individually grounded to protect against galvanic corrosion. 5200 sealant is used to create a watertight seal. All hull core is terminated several inches from the through hull fitting

Construction Details Cont'd.

Assembly Cont'd.

and replaced with solid glass to prevent water from contacting the core.

The keel sump area is designed using solid glass laminates to accomodate the locally high loads induced by the keel. Heavy duty stainless keel bolts are utilized in the keel. When the bolt holes have been bored in the sump, a potting layer of resilient epoxy is placed on the bottom of the sump and top of the keel. The keel is then snugged up to the sump as the keel bolt nuts are tightened. When epoxy hardens a perfect fit has been produced which is water tight. Fairing is done on the keels with a special epoxy which was formulated to provide long lasting adhesion to lead. It also resists water permeation and cracking which may occur as a result of thermal cycling.

Carbon Fiber Masts:

Carbon fibers are produced by the thermal decomposition of poly-acrilonitrile or "pan" for short. The "pan" precursor is spun into a filament and then stretched to orient its molecules. The filament is then subjected to 220° C to stabilize its orientation. Once stabilized the filaments are heated (carbonized) at 1500° C in a nitrogen atmosphere. The process in effect burns off all the compounds and chemical structure which are inherent in the pan precursor leaving only the carbon backbone of the pan molecule. The carbonized filaments are then bundled together in groups of approximately 12000 forming what is referred to as a tow of carbon. The tow is similar in size to yarn used for knitting.

Carbon Fiber Masts Cont'd.

Tillotson-Pearson purchases the fiber in tow form. The fibers are then oriented on a loom and woven with very small cross fibers to hold the tows together in a form which can be handled in production. The carbon fiber is then precisely impregnated with a special resin system and laminated on an aluminum mandrel. Precise application of heat and pressure is required to cure the composite while yielding maximum physical properties. The process used by Tillotson-Pearson is the only one of its kind in existence. All spar manufacturing is done at the same facility which produces Freedom Yachts FRP structures.

Of course no spar can be produced until it has been properly designed and engineered to perform in its specific application. The key to the success and reliability of the Freedom spars is a culmination of design, manufacture and quality control expertise. Many complex techniques are used in design which require computer assistance. Every one foot length of spar is extensively analyzed in the design process so that laminates can be determined with precision and weights optimized. Each fastening and hole is analyzed for stress concentrations and potential local failure to assure reliable hardware attachment design.

Before production can begin to build a part, the quality control team checks all resin, fiber and process set points to assure that all performance requirements will be met. Skilled operators then produce the bare shaft of the spar. It is then weighed and sampled by quality control to check its physical integrity. The spar then undergoes final finishing and hardware application after which quality control will give their final seal of approval.

Construction Details Cont'd.

Carbon Fiber Masts Cont'd.

A specially designed system is used to monitor stress levels in the mast under harsh conditions. Twenty-four channels are simultaneously monitored by a computer which records strains, wind data, and gravitational acceleration due to slamming. This information is vital in confirming the actual stress and load conditions in the spar. It has also helped us to refine our design techniques to project actual performance more closely. This unique blend of testing, design, manufacture and quality control has been the driving force behind the driving power of the Freedom spar. It is truly a technological masterpiece.

SAFETY GUIDELINES

We strongly recommend that you contact your local U.S. Coast Guard office for up to date safety requirements. Basic requirements which should be observed include the following equipment: Distress signals, flotation devices, fire extinguishers and an emergency tiller. Also, include spare parts kits - winches, engines, steering, etc. For the safe operation of your boat, we urge you on a routine basis to check all running rigging, electrical equipment, fire extinguishers, running lights, diesel & propane fuel lines, and steering cables.

SAFETY EQUIPMENT

U.S. Coast Guard regulations require certain safety and emergency equipment to be kept aboard. For the safety and comfort of all passengers, it is the owner's priority responsibility to learn and procure the equipment and to maintain it in proper working condition. Contact your local U.S.C.G. office for more complete required and recommended equipment lists. The following is not intended to be all inclusive.

Distress Signals: The U.S.C.G. requires visual distress signals be kept aboard boats 16 feet or more in length, and by all boats operating at night. Be familiar with their employment and keep them up to date.

Flotation Devices: One approved life preserver is required for each passenger aboard by the U.S.C.G. It is also recommended that a horseshoe life ring or floating seat cushion be kept ready in the cockpit in case of a man over-board situation. It is also prudent to carry safety harnesses and to wear these at night and in foul weather.

Fire Extinguisher: Two fire extinguishers are required and should be located for quick access.

Ground Tackle: Please refer for anchor and rode size suggestions to the table on the following page. In general, at least two anchors with proper size rodes should be carried. One can be stowed in a locker while the other should be ready to use. The length of the rode should be determined by the depth of the water where you sail. A ratio of 7 ft. rode to 1 ft. water depth is desirable. In some areas an all chain rode is recommended to prevent chafing on a rope. In general, an all chain rode is more suitable for use with an anchor windlass. It is common practice to carry a small "lunch hook" for easier short term anchorage with someone staying aboard.

Additional Equipment: Other items, some of which are required, that should be kept on board include: soft wood plugs for the seacocks, bell, hand and air horns, flashlights, first aid kit, bucket with lanyard, radar reflector, heaving line, and tools and spare parts.

ANCHOR RODE RECOMMENDATIONS

Working Anchor (Winds up to 30 knots)

	RODE		ANCHOR	
	Nylon	Chain	Plow	Danforth
Freedom 36	250'-½"	18'-3/8"	35#	20 H
Freedom 32	250'-½"	15'-3/8"	25#	20 H
Freedom 30	200'-7/16"	15'-3/8"	25#	12 H

Lunch Hook

	RODE		DANFORTH TYPE	
	Nylon	Chain	Standard	Hi-Tensile
Freedom 36	150'-3/8"	6'-¼"	13 - S	12 - H
Freedom 32	150'-3/8"	6'-¼"	8 - S	5 - H
Freedom 30	125'-5/16"	6'-3/16"	8 - S	5 - H

The above recommendations are taken from Danforth and Jay Stuart Haft literature and from Chapman's Piloting, Seamanship and Small Boat Handling. TPI publishes these suggested sizes for guidance only and accepts no responsibility whatsoever. The number and size of anchors and rodes to be carried aboard must be conditioned upon the size of the boat, location, weather conditions, and anchor and rode types. The suggestions above all assume fair holding grounds, adequate scope, and reasonable protection from seas.

RECOMMENDED TOOLS FOR ONBOARD MAINTENANCE

1. Screw Drivers
   a) Straight - stubby - offset - jewelers set
   b) Philips - stubby - offset - jewelers set
2. Wrecking Hammers
3. Ball Peen Hammer
4. Crow Bar
5. Set Adjustable Wrenches
6. Small Sledge Hammer
7. Rubber Mallet
8. Set Wood Chisels
9. Set open/box standard & metric to 1" and 19 mm
10. Socket set standard & metric to 1" and 19 mm
11. Pipe wrench - small & large
12. Channel locks: 12" and largest available
13. Pliers
14. Needlenose--small & large
15. Wire strippers/crimps
16. Drift punch set
17. Small level/combination T-square
18. Hand Plane
19. Hack Saw
20. Back Saw
21. Vise grips - large/small
22. Caulking Gun
23. Utility Knife
24. Plumbers Snake 25'
25. Set Files
26. Electric drill
27. Multi-meter
28. Spare parts kits - engine, winches, steering, etc.

COMMISSIONING

On Arrival

The boat should be inspected while still on the trailer. Make sure all items listed on the bill of lading are on the trailer undamaged. Any damage or loss should be recorded on the Bill of Lading in the presence of the truck driver and prior to signing the document.

Before Launching

Read owner's manual to familiarize yourself with your boat. Check through inventory sheet and commissioning checklist.

Check that the engine and head(s) have been de-winterized, and that all drain plugs are in place. Check all hose clamps and tighten as necessary. The engine fresh water cooling system is filled with permanent anti-freeze solution at the factory. Check for evaporation and add more anti-freeze solution if required.

Mark propellor shaft with fixed prop vertical and folding prop with blades opening horizontally. For best sailing speed, set shaft to this position while sailing. Never leave engine out of gear and allow the shaft to rotate while sailing. Transmission should be set in reverse while sailing with engine off.

After Launching

Refer to commissioning checklist. Please note that all boats are shipped with shaft couplings disconnected. Engine alignment and shaft coupling hook-up must be performed prior to operating the vessel.

If water does not come out the exhaust thru hull on the transom when the engine is initially started, check that the engine water intake seacock is open and not blocked. Then check the water pump impellor. (Consult the Engine Owner's Manual)

Halyards - (Refer to appropriate block; running rigging lists)

The main, spinnaker and jib halyards run inside the mast on the cat sloop. Staysail halyards are external on the cat ketch and schooner rigs. Ribbon tape messengers have been installed to facilitate pulling the halyards through.

Flag halyards are provided for each spar. These run through small mast head padeyes.

Pre-Rig Masts

All halyards, running backstays, and lazy jacks should be rigged before hoisting the spars. All shackle pins should be tightened with pliers, wired shut, and taped for extra security. A sail luff slide should be slid up and down the luff track and lubricated with a silicone based lubricant to insure that it is free of dents, burrs and dirt.

Prior to hoisting a spar, slide the aluminum mast collar up the mast and tie it under the gooseneck. It is important that the collar is placed on the mast right side up prior to stepping. Assure that the mast collar does not bang against the mast causing damage.

All wiring for masthead wind indicators, antennas, and lights should be installed prior to hoisting the spars. If antennas and wind instrument sending units are installed prior to stepping the mast great caution should be taken to avoid damaging them while hoisting mast.

Hoisting Spar

Because Freedom spars lack hardware to which to attach a lifting line, hoisting the spar must be done by a skilled rigger. One procedure is to pass a lifting line twice loosely around the spar, to which a crane hook may be attached. Tie the free end of the line with a bow line back around the standing part of the

Hoisting Spar Cont'd.

line. The standing end of the line can be led down the spar to a position just under the gooseneck, and secured with a series of half hitches. Care must be exercised in lifting the spar so that the half hitches remain tight and do not slip as they accept the weight of the spar. As with any crane load, personnel should not place themselves in a position which would result in injury if the load falls.

The overhead trim pieces around the mast opening in the deck should be removed at this time so that they are not damaged as the spar is lowered through the deck partners.

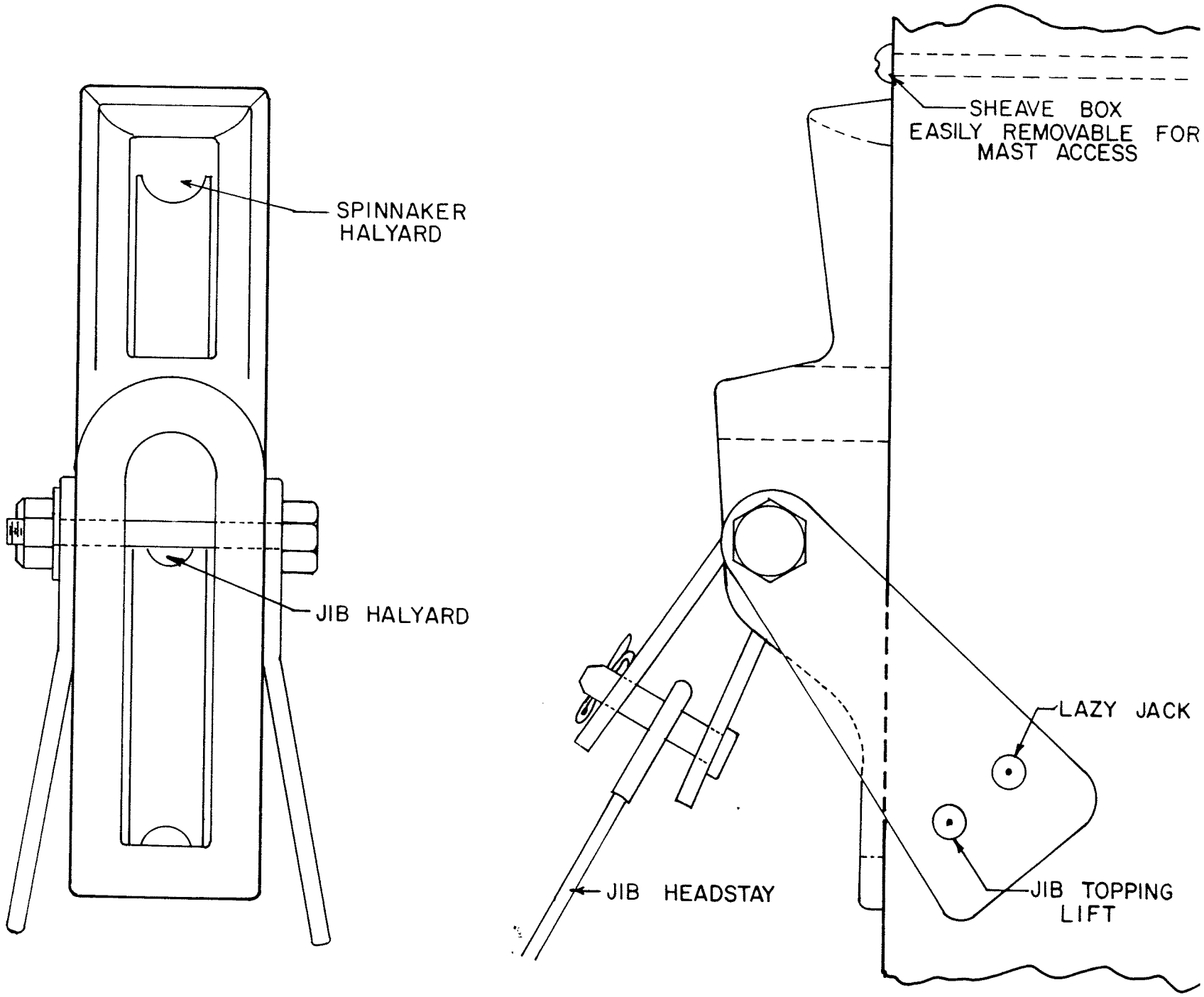
Completion of Spar Installation

After the spar is stepped, rotate the spar to align the track fore and aft in the vessel.

The wedges must be driven so the top of the wedge is snug with the mast, and flush with, or slightly below, the deck boss level. Use extreme care in driving the wedges to avoid hitting the spar, which can be damaged by a careless hammer blow. Use a length of soft wood to direct blows to the wedge rather than attempting to hit it directly.

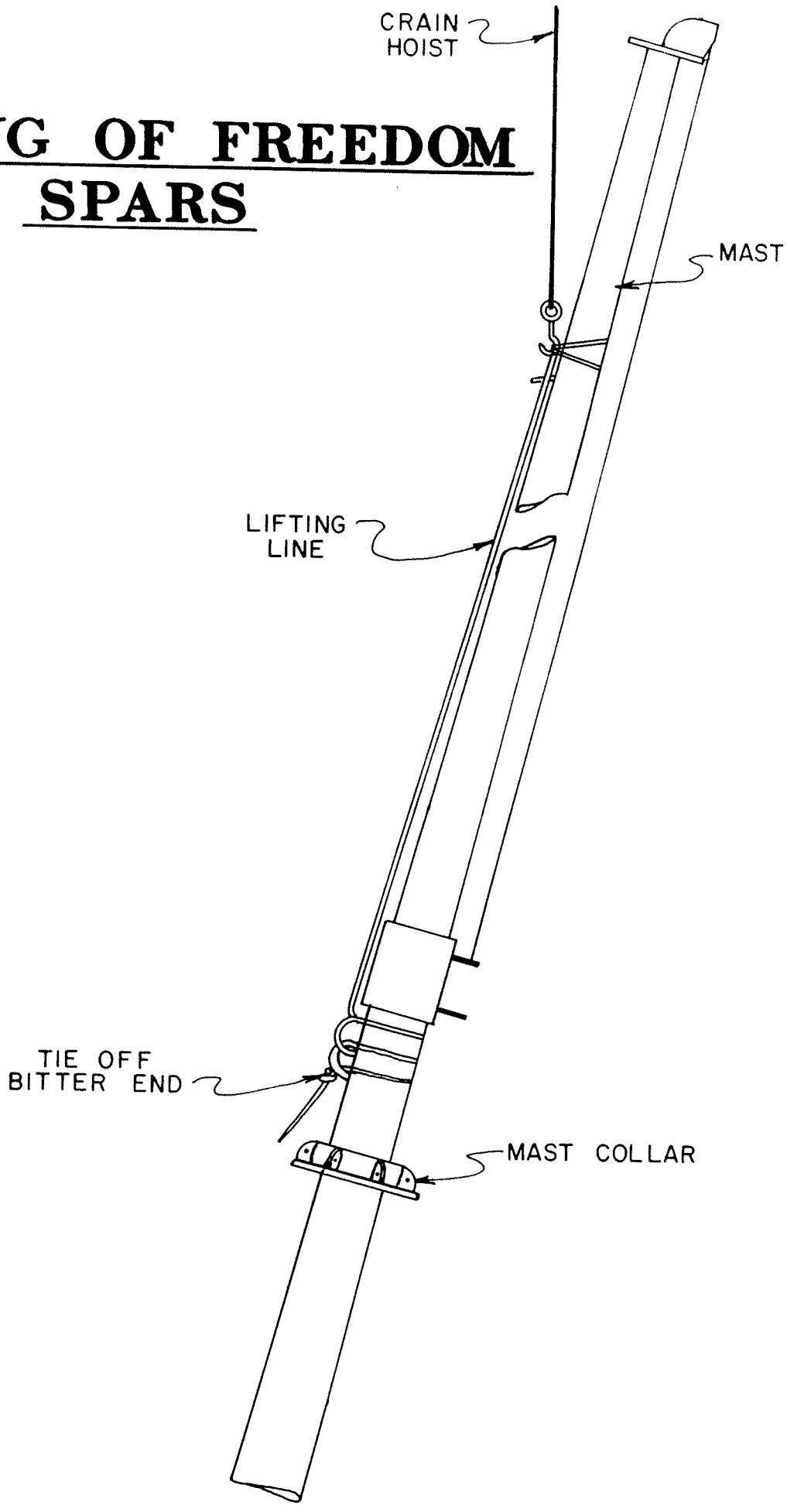
After the wedge is fully driven, caulk the seams between the deck and wedge, and wedge and spar. Bolt the deck collar down with caulking under the bottom flange and under each nut. Lightly sand the mast at the collar for better sealant adhesion and then add silicone. Do not use caulking with a high amount of adhesive quality (like 3M #5200), as the adhesive will make removal of the collar and wedge difficult. A tube of silicone sealant RTV is supplied for this purpose.

NOTE: DO NOT SUBSTITUTE mast wedges other than the polyurethane wedges shipped with the boat. The use of any other wedges will void all warranties of the spars. Replacements are available through TPI.

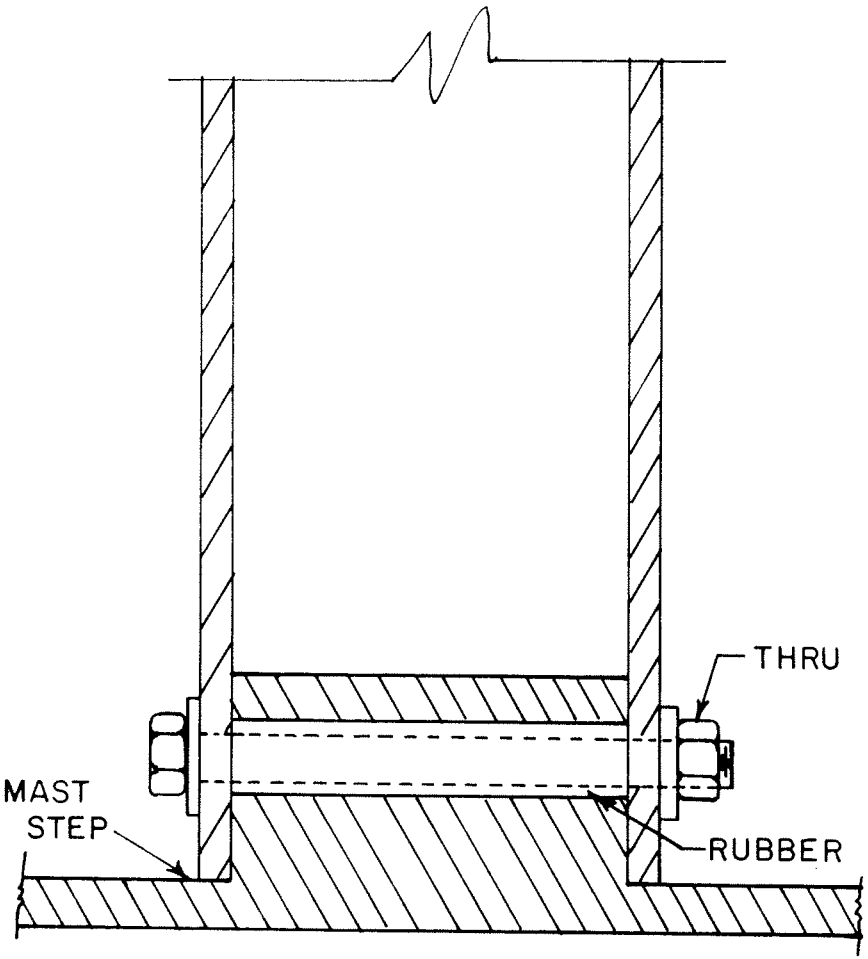


JIB AND SPINNAKER EXIT BOX

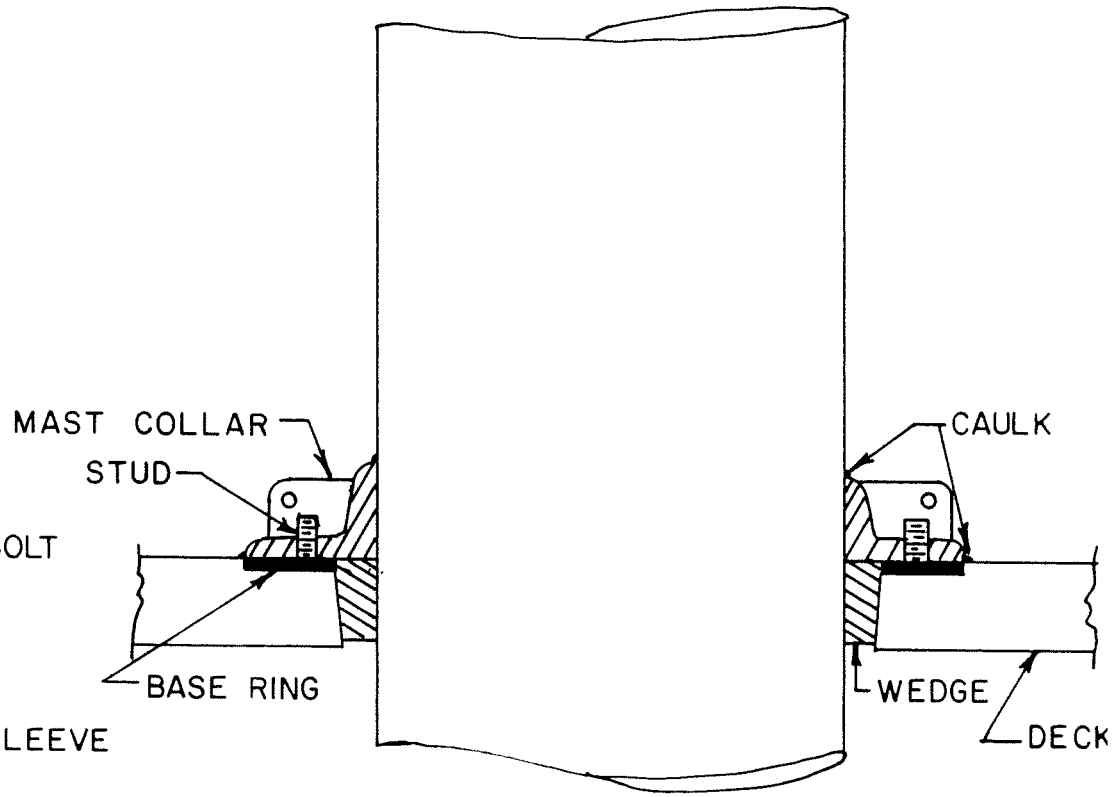
HOISTING OF FREEDOM SPARS



FREEDOM MAST INSTALLATION



MAST STEP



MAST COLLAR

BOOM(S)

To install boom(s), secure the tack bracket to the gooseneck. Then connect the lazy jacks as described and shown in the Lazy Jack Detail diagram. Lead reef lines as shown on the Main Sail Rigging diagram.

LAZY JACKS

Port and starboard side lazy jack wires are shackled to tangs on either side of the mast. The lazy jack blocks are shackled to the eye on the bottom end of the wire. After the mast(s) are stepped and the boom(s) connected at the gooseneck (s), the lazy jack lines are run. There is one line per mast which begins dead-ended at the cleat on the boom underside, then runs up through the port lazy jack block and down to a fairlead on the underside aft end of the boom then up through the starboard side lazy block and finally down to be cleated off at its point of origin. This single line system allows for easy adjustments in boom height. Refer to Commissioning Diagram.

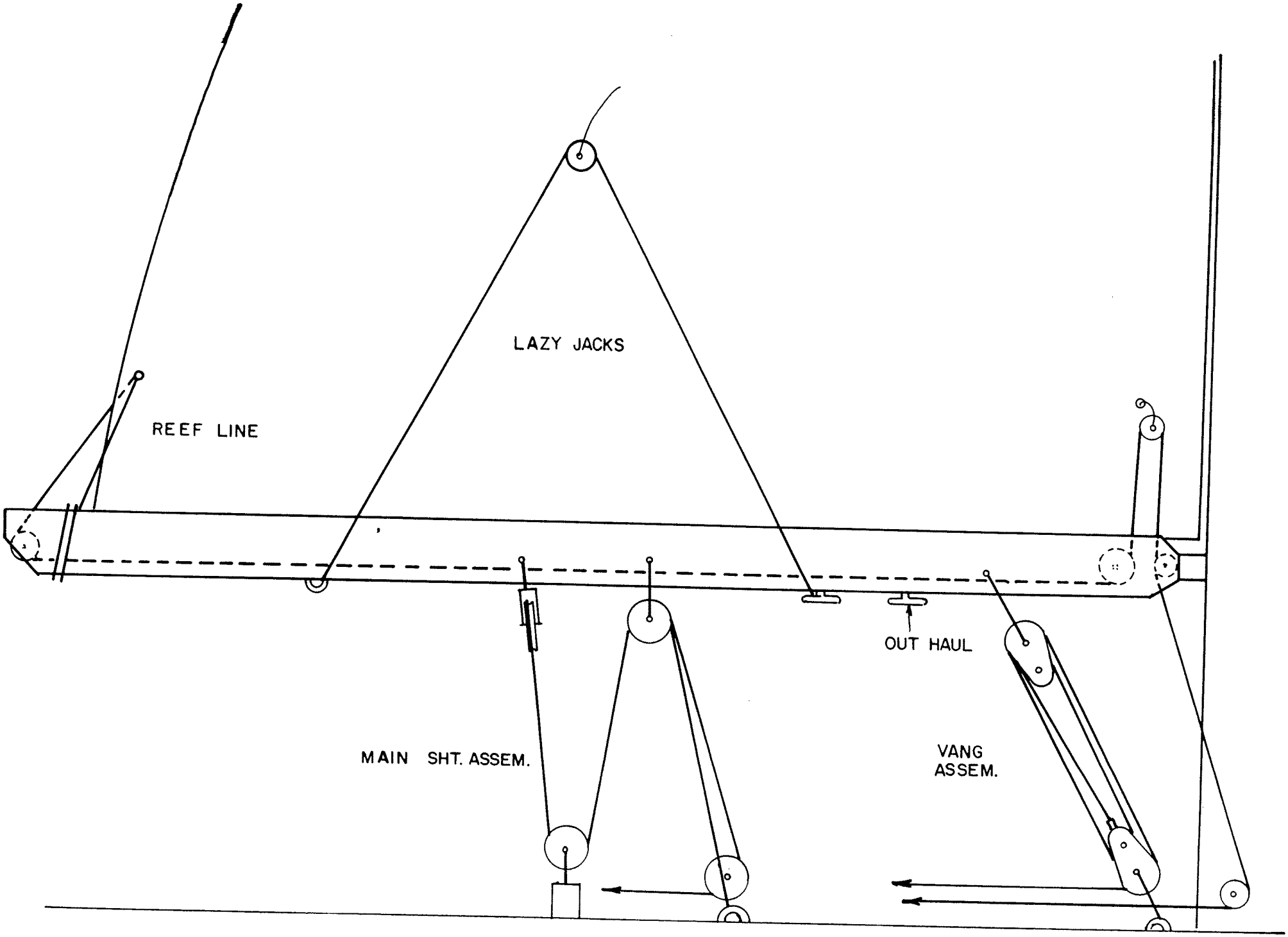
SHEETS

The arrangement of the sheets is shown in rigging diagrams.

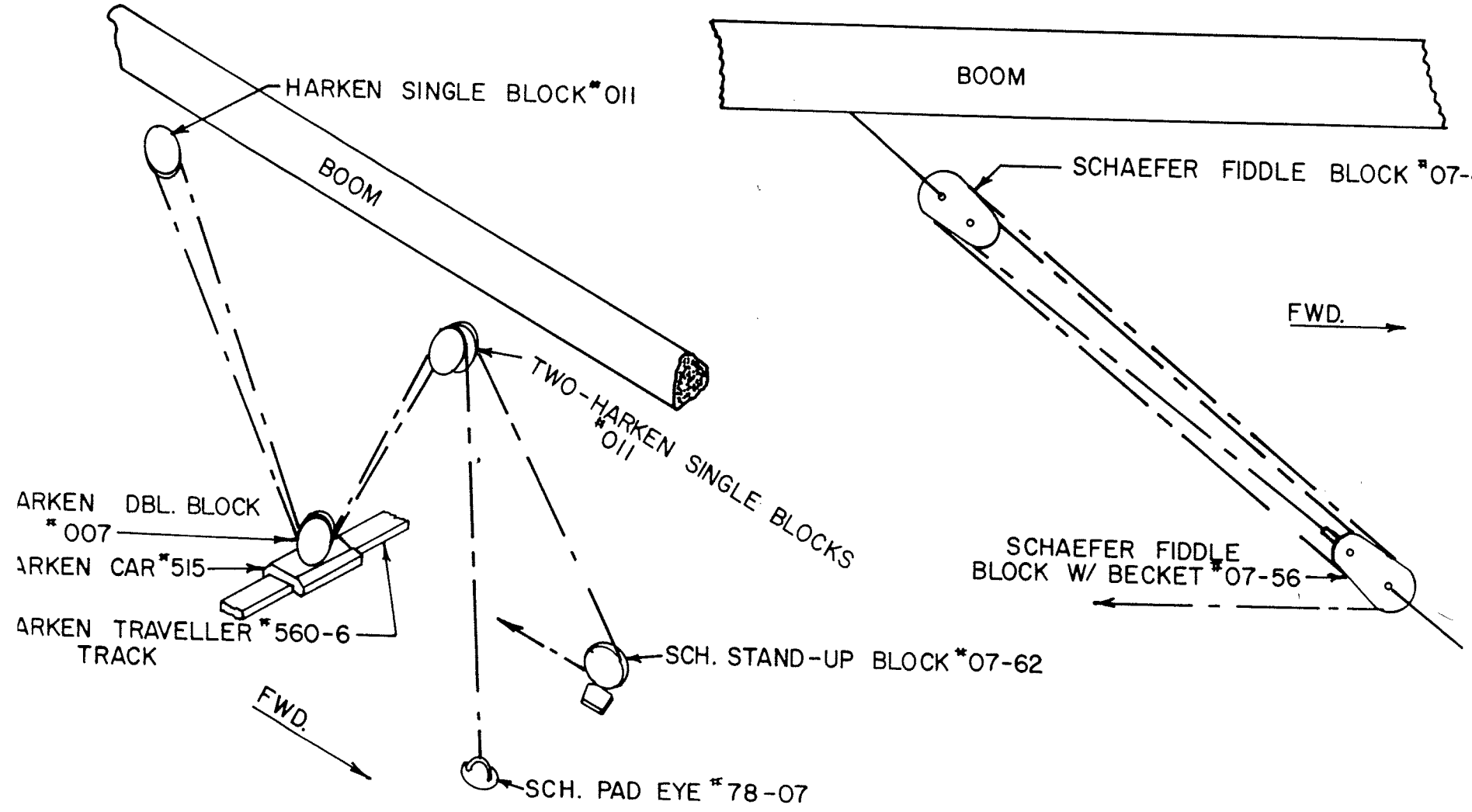
Note: On ALL Freedoms one MUST tie a knot in the main and mizzen sheets in order to restrict the travel boom to 90°. Allowing the boom to travel further than 90° is not efficient, and will subject the boom gooseneck bracket to excessive strain, which after multiple incidences will cause a failure.

VANGS

Run vangs per diagram. Run all lines along deck to cockpit per line identification. Refer to following block and running rigging lists.



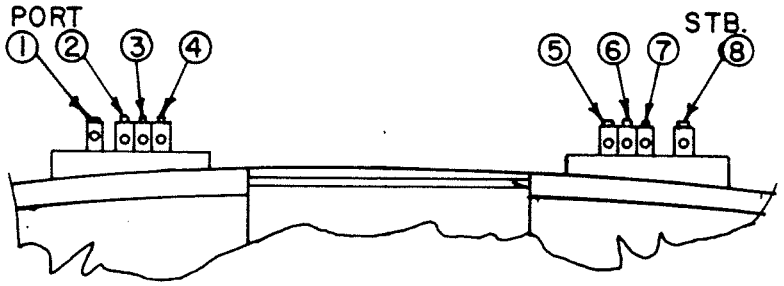
F-30 MAIN SAIL RIGGING



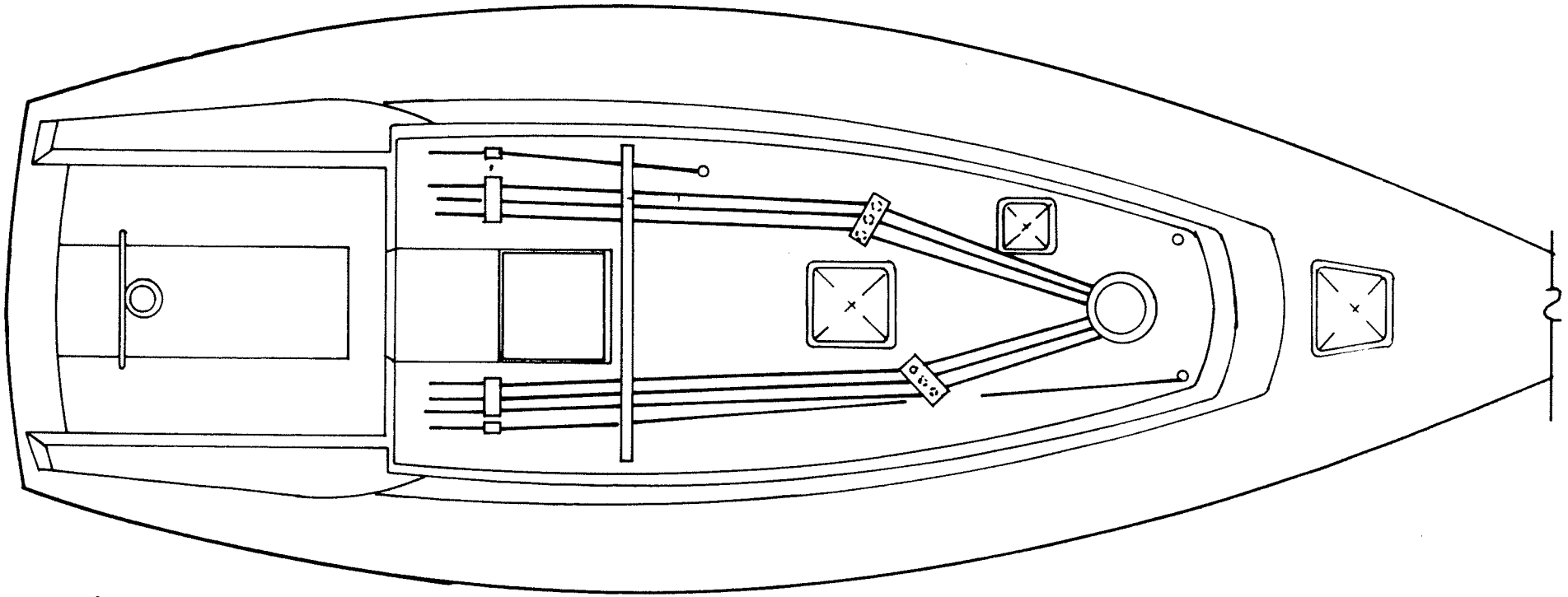
MAIN SHEET SET-UP STARBOARD VIEW

FREEDOM - 30

STOPPER ARRANGEMENT AS VIEWED FROM COCKPIT

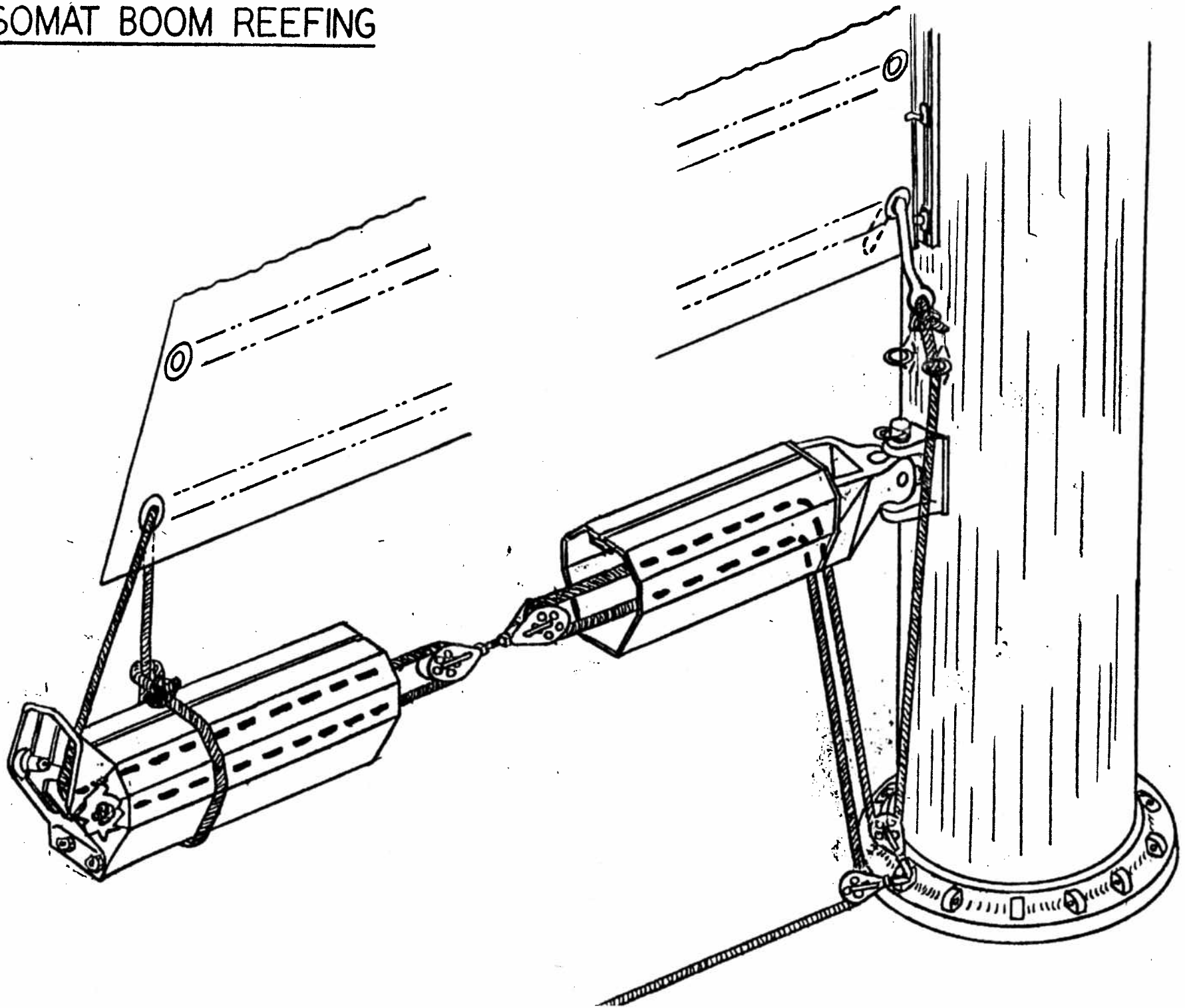


1, MAIN SHEET
2, PORT REEF
3, VANG
4, STBD REEF
5, MAIN HALYARD
6, JIB HALYARD
7, OPT. SPINNAKER HAYLARD
8, JIB SHEET



FREEDOM 30 LINE ARRANGEMENT

ISOMAT BOOM REEFING



COMMISSIONING CHECKLIST

PRELIMINARY

___ Read owner's manuals

___ Check propeller, nut, cotter pin and zinc

___ Install transducers

___ Close seacocks

___ Check all hose clamps and tighten as required

___ Touch up bottom paint

___ Install wheel

___ Dewinterize engine and heads, if so supplied

___ Check engine oil, transmission and coolant levels

___ Check battery charge with battery test switch on electrical panel

___ Remove mast hole covers

___ Pre-rig masts - run halyards; install headstay, lazy jacks, topping lift and mast collar

___ Cover the cushions or remove them from boat in order to protect them during commissioning.

___ Mark prop shaft (see 4.1)

LOOSE GEAR

___ Fenders w/lines ready

___ Dock lines ready

___ Winch handles

___ Ignition keys

___ Bilge pump handle

___ Install portlight screens

___ Sink strainers

___ Mast wedges ready on mast

___ Mast retaining bolt ready

___ Stow remaining loose gear

COMMISSIONING CHECKLIST

LAUNCH

___ Check for leaks
___ Check operation of seacocks
___ Check stuffing box

ENGINE START

___ Read engine owner's manual
___ After launching, check alignment and hook up couplings
___ Start engine
___ Check exhaust for cooling water flow
___ Check oil pressure, water temperature, charging guages - stop engine immediately if not in proper ranges per engine manual.
___ Check transmission operation
___ Check stuffing box (see p 5.5)

STEP MASTS

___ Pre rig masts w/halyards, lazy jacks, collar, alignment bolt, etc.
___ Install electronics wiring in masts
___ Remove headliner trim pieces around mast opening in deck.
___ Hoist spar and lower carefully into boat
___ Install wedges while aligning masts
___ Install deck collars - place on mast prior to stepping mast
___ Install overhead trim
___ Make electronical connections at mast base

RIGGING

___ Install boom and attach lazy jacks
___ Lead all sheets and halyards to stoppers on deck house
___ Rig reefs and vangs
___ Bend on sails
___ Install battens

COMMISSIONING CHECKLIST

SYSTEMS CHECK

___ Fill water tanks- flush tanks twice to eliminate non-toxic anti-freeze

___ Check water pressure system. Bleed air from hot & cold water lines to insure that the hot water tank is full (if so equip.)

___ Fill and check L.P. Have LP tank filled and then check system per p 9.1.

___ Fill fuel tanks

*___ Run engine under load

___ Check operation of electrical systems and pumps

___ Check electronics (opt)

___ Check refrigeration (opt)

TRIAL SAIL

___ Raise and Lower sails

___ Monitor engine performance

___ Check bilge for leaks

___ Check electronics (opt)

___ Check autopilot (opt)

___ Check reef points and lines for proper installation

CLEAN UP

___ Vacuum interior including all lockers

___ Clean bilge

___ Oil sole (if not varnished)

___ Washdown Deck

___ Install sail covers

* Tie boat securely to dock and run in gear forward and reverse for 1 hour each. Check temp, volt, pressure and vibration.

FREEDOM 30

RUNNING RIGGING

STOCK #	QTY	DESCRIPTION	LENGTH
25851	1	Main Halyard Package : Parts included are as follows -	
25644	1	Low Stretch Dacron 7/16" - Green	102'
25068	1	Headboard Shackle, 3/8" dia., #3900-112	
One end of rope spliced to shackle; the other end whipped.			
25852	1	Jib Halyard Package : Parts included are as follows -	
25643	1	Low Stretch Dacron 7/16" - Red	72'
25069	1	11000S Snap Shackle	
One end of rope spliced to shackle, the other end is whipped.			
25853	1	Boom Vang Package :	
25066	1	Low Stretch Dacron 7/16" - White	38'
One end of rope spliced, other end whipped.			
25854	1	Stbd Reef Line :	
25065	1	Low Stretch Dacron 3/8" - Green	52'
Both ends whipped.			
25855	1	Port Reef Line :	
25064	1	Low Stretch Dacron 3/8" - Red	72'
Both ends whipped.			
25856	1	Main Sheet :	
25154	1	Low Stretch Dacron 1/2" - White	70'
A 2" long eye splice is made, the other end is whipped.			
25857	1	Jib Sheet :	
25066	1	Low Stretch Dacron 7/16" - White	43'
A 2" long eye splice is made, the other end is whipped.			
25858	1	Jib Headstay : Parts included are as follows -	
25045	1	Wire, 3/16", (1x19), SS	30'
25026	1	Turnbuckle, 5/16" Body x 5/16"Pin X 3/16"Wire	
25031	1	Eye, Marine, SS, 3/16"Wire	

Running Rigging Cont'd

STOCK #	QTY	DESCRIPTION	LENGTH
25859	2	Lazy Jacks : Parts included are as follows -	
10121	1	Toggle, LL, 3/16" & 1/8" Wire	
10120	1	Wire, 3/16", (7x7), SS, White Vinyl Coated to 5/16"	21'
25206	2	Nicropress, Oval, 3/16"Wire	
25077	1	Thimble, SS, 3/16"Wire	
25049	1	Low Stretch Dacron Braid, 5/16" - White	25'
24642	2	Traveler :	
25066	1	Low Stretch Dacron Braid, 7/16" - White	26'

A small eye splice is made on one end. The other end is whipped.

26229	1	Flag Halyard :	
25219	1	Low Stretch Dacron Braid, Solid, 1/8" Luff Line	88'

Both ends have been burned.

26230	1	Jib Boom Topping Lift :	
25049	1	Low Stretch Dacron Braid, 5/16" - White	28'

A small eye splice is made on one end while the other end is whipped.

FREEDOM 30

BLOCKS

STOCK #	QTY	MFR/PART #	DESCRIPTION
25997	2	Harken 025-S	Traveler control dbl.blocks on car.
25907	3	Harken 011	Mainsheet sgl. blocks on boo
25634	1	Harken 007	Mainsheet dbl. block on car.
25628	1	Sch 07-56	Vang fiddle block on mast collar.
25629	1	Sch 07-46	Vang fiddle block on boom.
25626	2	Sch 05-05	Reef blocks on mast collar.
25626	2	Sch 05-05	Reef blocks shackle to reef hook.
25072	2	Hook 195120	Reef hook shackle to #25626.
25627	3	Sch 07-05	Halyard blocks on collar.
25653	5	Sch 93-14	Shackles for blocks on colla
25078	1	Sch 93-12	Shackle for topping lift.

STEERING SYSTEM

Your vessel is equipped with an Edson pedestal steering system. Information on maintenance of this system is included on the next two pages. Following is a list of Freedoms indicating which Edson system each model has installed. This will make the Edson Pedestal Maintenace Guide more useful.

Freedom 44	-	Standard System
Freedom 39 Pilot	-	Pull-Pull System
Freedom 39 Express	-	Pull-Pull System
Freedom 36	-	Radial Drive System
Freedom 32	-	Radial Drive System
Freedom 30	-	Radial Drive System

Additionally, an emergency tiller is provided. This is generally stowed in either cockpit locker.

The emergency steering system may not allow as much rudder angle as the pedestal steering system, and the force on the tiller can be considerable, as the mechanical advantage in the pedestal system is not used. Steering with the emergency tiller may be more convenient if the steering wheel is removed from its hub. This is readily done by unscrewing the nut which holds the wheel on the hub, and pulling the wheel off the hub. Each time the steering system is inspected, check that the wheel has not seized on the hub, and can still be readily removed. A light coating of grease on the hub is recommended to prevent seizing.

Be certain to try out the emergency steering system while you are becoming acquainted with your boat, and develop the procedures necessary to rig the system quickly in the event of failure of the pedestal system.

ENGINE OPERATION

TO START ENGINE: Read Engine Owner's Manual before operating.

1. Battery switch must be ON. On any boat with two or more batteries, battery select switch should be placed in number one (1) position.
2. Turn on "MAIN" D.C. breaker on electrical panel, if applicable.
3. Be sure gear shift is in neutral.
4. Advance throttle to approximately ¼ position.
5. PREHEAT - if engine is so equipped. If engine has not been started for some time, or in cold weather, use "PREHEAT" switch on engine control panel in cockpit to facilitate starting.
6. Turn key switch to the "ON" position. At this time the oil pressure and electric discharge warning lights and alarms will come on.
7. Turn key to 'START' position.
8. If the engine start, check oil pressure, ammeter charge rate and discharge of cooling water. It may be necessary to momentarily speed up the engine to cause a charge to be shown on the ammeter, if so equipped. Warning lights and audible alarms should now go off. If they do not the engine should be stopped immediately and the engine manual consulted.
9. Let the engine warm up at a fast idle, perhaps 20% above minimum idle speed.
10. If engine doesn't start due to a lack of battery power, momentarily reposition battery select switch to 'BOTH'.
11. Do not crank engine for long periods of time. Extended cranking may cause cooling water to fill the muffler and back flow into the engine.

NOTE: If it is necessary to crank engine for a long time drain exhaust system at water lock before attempting to

Engine Operation Cont'd.

TO STOP ENGINE:

1. Pull stop knob and hold it until engine dies, then push knob back fully or push electric stop button on engine panel, if so equipped.
2. ONLY AFTER ENGINE HAS STOPPED - Visual and audible alarms will be effected until key is turned to 'OFF" position. Shut off key switch or ignition breaker. Turning off the switch while the engine is operating will NOT stop the engine, and may damage the alternator. Be sure to shut off the switch after the engine has stopped, as leaving the switch on will maintain a flow of current to the alternator.

SAFETY PRECAUTIONS WITH DIESEL ENGINES

Diesel engines used in the marine industry today operate with very high exhaust temperatures. The result is that any defect or restriction of flow anywhere in the cooling water system running to the exhaust line can cause excessive build up of heat, which in turn could burn the exhaust hose. Also, due to high temperatures it is recommended that after running the diesel for a period of time it should be brought back to the idle position and allowed to operate for a few minutes to dissipate any excess heat.

DIESEL ENGINE SYSTEM

The most common cause of trouble with a diesel engine is contaminated or dirty fuel. Your boat is equipped with a primary fuel filter located in the engine compartment and a secondary filter on the engine. The wise skipper carries replacement filter cartridges.

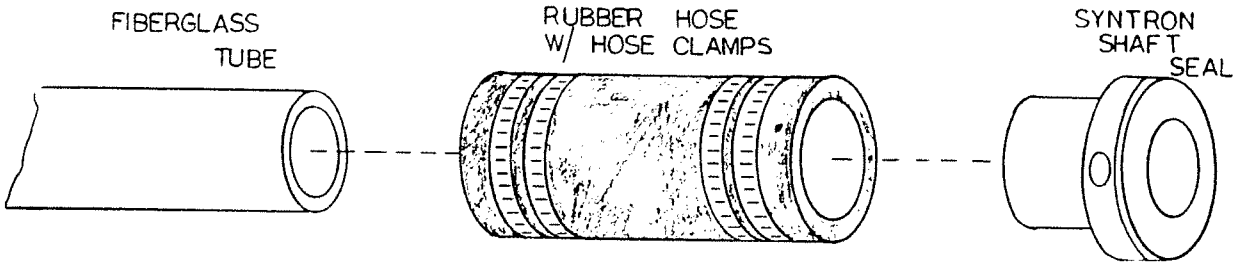
Familiarize yourself with the bleeding procedure for the engine and try bleeding it yourself. The procedure only takes five minutes after you are aquainted with what to do, but can be exasperating to the uninitiated.

As with any engine, do not shift from forward to reverse at high engine RPM. Keep engine gear shift lever in "Reverse" position while sailing. The engine manufacturer's owner's manual contains a wealth of information about the engine. Take time to read the manual BEFORE you need the information due to a malfunction.

SYNTRON SHAFT SEAL

Where the propellor shaft passes throuh the hull from the engine to the propellor, a syntron shaft seal is installed to prevent the ingress of water. This shaft seal consists of a number of O-rings. Owner's maintenance is limited to inspecting the clamps that hold the hose to the seal and to the fiberglass shaft log and periodic application of grease to the syntron shaft seal.

FREEDOM SHAFT SEAL



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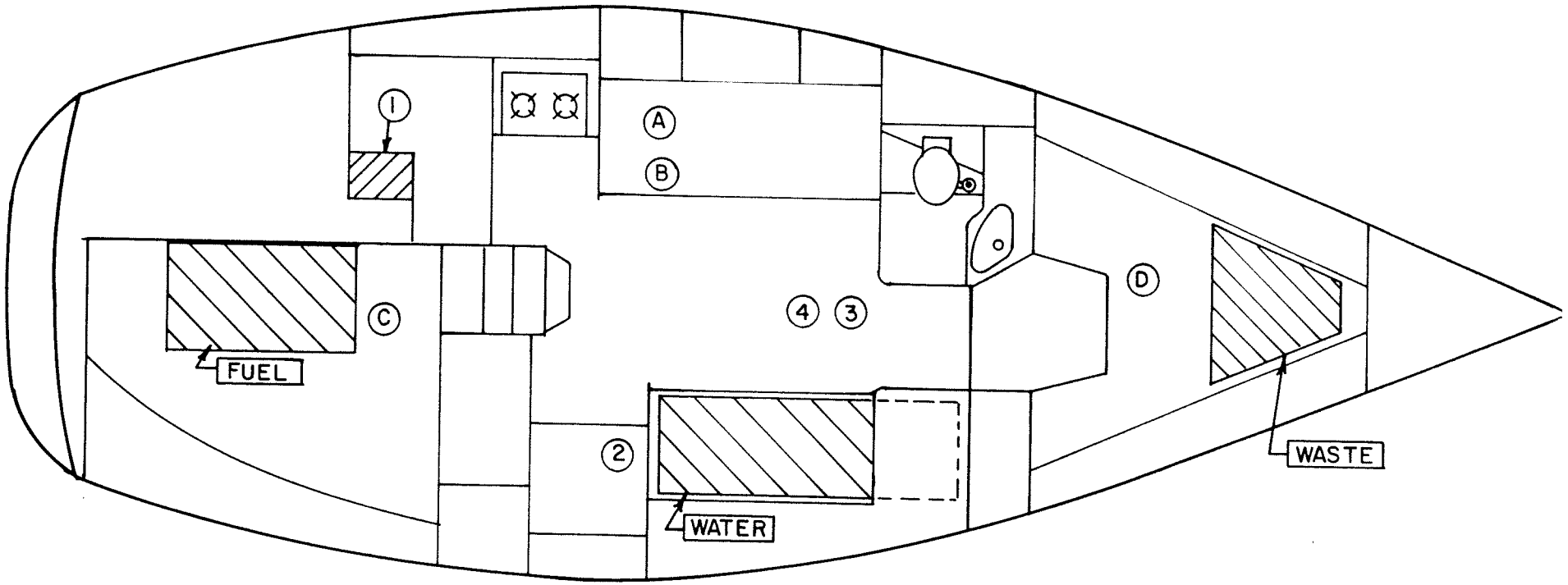
FUEL TANK

(For the following locations refer to Thru-Hull and Tank Location Diagrams)

The fuel tank is an aluminum tank that has been pressure tested by the manufacturer and securely installed by TPI. Connected to each tank are the following hoses: (a) Fuel Fill; (b) Engine Feed; (c) Tank Vent; (d) Engine Return. The tank is included in the boat bonding syst A guage is mounted on the tank top to display fuel status. Please note, however, that due to the asymmetrical shapes of the fuel tanks, the gauges register tank levels not remaining capacity.



TANKAGE

WATER — 50 GAL

WASTE — 20 GAL.

FUEL — 20 GAL.

PUMP LOCATION

1 — OPT. HOT WATER HEATER

2 — OPT. WATER PRESSURE

3 — OPT. SHOWER SUMP PUMP

4 — OPT. ELEC. BILGE PUMP

SEACOCK LOCATIONS

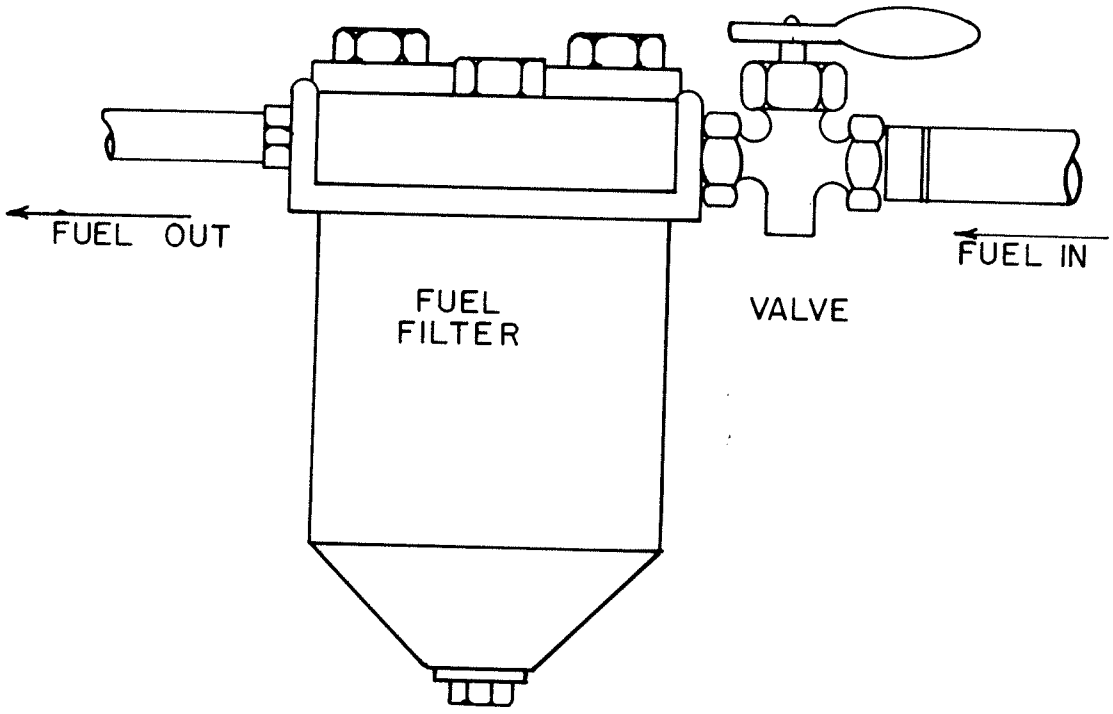
A — HEAD INTAKE

B — SINK DISCHARGE

C — ENGINE INTAKE

D — OPT. SOLID WASTE DISCHARGE

PUMP, TANK & SEACOCK LOCATION



FUEL FILTER

NOTE: FUEL FILTER LOCATED ON FWD. FACE OF THE FUEL TANK.

FUEL SYSTEM

Fuel Tank:

Since diesel engines require bleeding after they have been deprived of fuel, it is important the shut-off valve be in the "ON" position (lever parallel to piping) anytime the engine is started.

Fueling:

When preparing to take on fuel, the following safety precautions should be followed at all times:

1. Properly secure boat to dock using bow, stern and spring lines.
2. Close all hatches and ports.
3. DO NOT SMOKE.
4. SHUT OFF ALL EQUIPMENT...ENGINE, GENERATOR, MASTER BATTERY SWITCH, STOVE, CABIN, HEATER, RADIOS, LIGHTS, ETC.
5. If possible, all personnel not involved in fueling should leave boat.
6. Keep a fire extinguisher handy.
7. Remove fuel fill plug and clean threads of both plug and deck plate carefully so no dirt falls into filler aperture.
8. Place the nozzle of the fuel hose in the fill pipe. Keep it in contact with the deck plate rim to avoid a static electric charge.

Fueling Cont'd.

9. Fill slowly. DO NOT OVERFILL. Marine fuel expands with an increase in temperature. Therefore, fill only to approximately 95% capacity.

10. If you cannot see the fuel pump, ask the attendant or a crew member to call out the gallonage.

11. If fuel tank is overfilled, fuel will leak out the tank vent, generally located on the transom. This spillage should be cleaned up immediately.

12. After fueling, replace fill plate and wash up any spillage. Go below deck and check for fumes or leakage. Check bilge. IF EITHER FUMES OR LIQUID FUEL ARE PRESENT, CORRECT THE SITUATION BEFORE PROCEEDING.

13. Open all hatches and ports to facilitate ventilation.

14. Only after you are totally satisfied that no potentially dangerous condition exists, leave the fuel dock. Be considerate of your fellow yachtsmen.

15. In the event of serious spillage, STOP FUELING IMMEDIATELY. Replace fill plate, notify attendant so he may warn others and wash down thoroughly until all traces of fumes or fuel have disappeared.

16. Do NOT fuel during electrical storms.

NOTE: In remote areas, be sure to check fuel before filling tank(s) to be sure it is water free, clean, diesel oil. Once contaminated by dirt, water, or gasoline, the tank(s) can be difficult to clean.

ENGINE FRESH WATER COOLING SYSTEM

The engine utilizes a closed system in which a mixture of water and anti-freeze is circulated within the engine for cooling. This liquid is cooled by a heat exchanger which uses sea water, in a similar fashion to the radiator on a car, using air to cool a contained liquid. The filler cap for the fresh water (closed) cooling system is located on the top of the engine manifold, and looks like a radiator cap. Use the same precautions in removing the cap from a hot engine as are appropriate for the radiator cap on an automobile - open cap slowly to allow steam to escape. Check the level in the manifold frequently. If additional liquid is needed, the liquid should be anti-freeze and a fresh water mixture.

If the fresh water system is drained, or has a substantial leak, an air lock may develop in the fresh water cooling system, especially on boats having the water heater option. It may be necessary to disconnect a hose running from the engine to the water heater and fill the hoses and exchanger inside the water heater with coolant mixture.

In northern latitudes where freezing may occur over the winter, be sure to test the coolant anti-freeze/water mixture for freezing point and add anti-freeze as needed if the system is not drained for winter lay-up.

EXHAUST SYSTEM

Your boat is equipped with a water injected exhaust system which cools the exhaust as it exits from the engine. See following page for description and a diagram of this system. If the flow of cooling water is interrupted and the engine overheats severely, the rubber hose coming from the engine exhaust elbow may melt. Always check this hose after an occurance of overheating.

There will always be a little water in the bottom of the water lift "pot". In fall decommissioning, the pot should be drained using the drain plug, or anti-freeze added to the pot so the residual water will not freeze.

If the engine is cranked for a prolonged period of time the engine cooling water may build up in the pot. In this very unlikely situation, the drain on the pot should be opened.

Before engine cooling water is injected into the exhaust elbow, it runs up to a point above the waterline, where either an anti-syphon valve or an overboard vent admits air to the line when the engine is off, to prevent syphoning. Especially if operating in dirty water, the anti-syphon valve may clog, and fail to admit air at engine shutdown. Check the operation of, and lubricate the antisyphon valve frequently.