

HUNTER OWNER'S MANUAL

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Welcome To

THE HUNTER MARINE FAMILY

Congratulations on your new sailing yacht manufactured by Hunter Marine. We have engineered and constructed your boat to be as fine a yacht as any afloat. In order to get the best performance and most enjoyment from your boat you should be familiar with its various elements and functions. Please take the time to study this manual and its recommendations for your sailing pleasure.

We stand behind the quality of your boat with a warranty which you should also review. To insure your warranty is valid, please fill out the attached card and send it to us within ten (10) days of the purchase date. Section 15 of the U.S. Federal Boat Safety Act requires first owners to be registered. The warranty data should also be recorded in the space below for your own reference.

This manual has been compiled to help you to operate your craft with safety and pleasure. It contains details of the craft, the equipment supplied or fitted,

its systems, and information on its operation and maintenance. Please read it carefully, and familiarize yourself with the craft before using it.

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

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

You also need to fill out and mail the warranty cards on your engine, stove, head, electric water pump and other accessories. These are enclosed in the manufacturers' manuals which are included with your owner's manual.

OWNER INFORMATION CARD

**HULL IDENTIFICATION NUMBER IS ON THE STARBOARD AFT SIDE OF THE HULL OR TRANSOM
THIS NUMBER MUST BE GIVEN IN ALL NECESSARY COMMUNICATIONS.**

HULL NO.		DATE DELIVERED TO OWNER
YACHT NAME		
OWNER NAME		
STREET ADDRESS		
CITY	STATE/COUNTRY	ZIP CODE
HOME PORT		
ENGINE MODEL	SERIAL NO.	PROPELLER SIZE
DEALER	PHONE	
STREET ADDRESS		
CITY	STATE/COUNTRY	ZIP CODE

HUNTER MARINE LIMITED WARRANTY

LIMITED ONE YEAR WARRANTY

Hunter Marine warrants to the first-use purchaser and any subsequent owner during the warranty period, that any part manufactured by Hunter will be free of defects caused by faulty workmanship or materials for a period of twelve (12) months from

the date of delivery to the first-use purchaser under normal use and service. During this period, Hunter will repair or replace any part judged to be defective by Hunter.

LIMITED FIVE YEAR HULL STRUCTURE AND BOTTOM BLISER WARRANTY

Hunter warrants to the first-use purchaser and any subsequent owner during the warranty period that the hull of each boat will be free from structural defects in materials and workmanship for a period of five (5) years from the date of delivery to the first-use purchaser under normal use and service.

This limited warranty applies only to the structural integrity of the hull and the supporting pan/grid or stringer system. Hulls, pan/grid or stringers modified in any way or powered with engines other than the type and size installed or specified by Hunter are not covered by this limited warranty. The obligation of Hunter under this limited warranty is limited to the repair or replacement of hulls, that it determines to be structurally defective. This is your sole and exclusive remedy.

Hunter also warrants to the first-use purchaser and any subsequent owner during the warranty period that the boat will be free from gel-coat blistering on underwater surfaces of the hull, excluding the keel and rudder, for a period of five (5) years from the date of delivery to the first-use purchaser under normal use and service. During this period, Hunter will

supply or reimburse an authorized Hunter dealer for all of the parts and labor required to repair a blistered underwater surface of the hull. The labor cost reimbursement will be based on the Labor Allowance Schedule established by Hunter from time to time. However, if the repair is performed by a non-Hunter dealer, the repair cost must be authorized by Hunter in advance and be based on a reasonable number of hours as determined by Hunter. Transportation, hauling, launching, bottom paint, storage, dockage, cradling rental, rigging and derigging, or other similar costs will not be paid by Hunter. It is recommended that the repair be done during a seasonal haul out for service or storage.

The following circumstances will void the bottom blister limited warranty:

- (1) If the gel-coat has been sanded, sand-blasted, or subjected to abrasion or impact.
- (2) If the instructions provided in the Hunter Owner's Manual are not followed according to Hunter's required bottom preparation procedures.

RESTRICTIONS APPLICABLE TO WARRANTIES

These limited warranties do not cover:

(1) Paint, window glass, gel-coat, upholstery damage, plastic finishes, engines, engine parts, bilge pumps, stoves, blowers, pressure water pumps, propellers, shafts, rudders, controls, instruments, keels and equipment not manufactured by Hunter. Any warranty made by the manufacturer of such items

will be, if possible, given on to the first use purchaser.

(2) Problems caused by improper maintenance, storage, cradling, blocking, normal wear and tear, misuse, neglect, accident, corrosion, electrolysis or improper operation.

HUNTER MARINE LIMITED WARRANTY

RESTRICTIONS APPLICABLE TO WARRANTIES (continued)

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY AND ALL OTHER REMEDIES AND WARRANTIES EXPRESSED AND IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS. SOME STATES OR COUNTRIES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. THE PURCHASER ACKNOWLEDGES THAT NO OTHER REPRESENTATIONS WERE MADE TO HIM OR HER WITH RESPECT TO THE QUALITY AND FUNCTION OF THE BOAT.

ANY CONSEQUENTIAL DAMAGES WHICH MAY BE INCURRED ARE EXCLUDED AND JUDGED DEFECTIVE BY HUNTER. SOME STATES OR COUNTRIES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE OR COUNTRY TO COUNTRY.

WARRANTY REGISTRATION

These limited warranties shall not be effective unless the Hunter Warranty Registration Form and Pre-Delivery Service Record, which are furnished with each new boat, are filled out completely and returned to Hunter within fifteen (15) days of delivery. Responsibility for sending the completed Registration Form remains with the dealer.

Return to the Warranty Registration Form to Hunter, signed by both Dealer and Owner, is critical. Warranty coverage cannot be initiated until the completed form is received at Hunter.

All repairs and/or replacements will be made by an authorized Hunter dealer, or at the option of Hunter, at the Hunter plant. If the repairs are of such a nature that the warranty work must be performed at the Hunter plant, transportation costs to and from the Hunter plant shall be paid by the owner. The labor cost reimbursement will be based on a Labor allowance Schedule established by Hunter and where not applicable, on a reasonable number of hours as determined by Hunter. Any repairs and replacements must be approved in advance by an authorized Hunter service representative.

TRANSFER OF LIMITED WARRANTIES

Limited warranties will be transferred to a subsequent purchaser of the boat if:

(1) A notice of the transfer of ownership of the boat is given by the subsequent purchaser in writing to Hunter within thirty (30) days of the transfer.

(2) The notice shall include the name, address and telephone number of the subsequent pur-

chaser, the date of purchase, the hull number and the name of the seller of the boat.

Hunter will mail to the subsequent purchaser notice of the expiration dates of the limited warranties. The transfer of the ownership of the boat will not extend the expiration dates of the limited warranties.

HUNTER MARINE LIMITED WARRANTY

EPOXY BARRIER COAT

Should a customer wish to have an epoxy barrier coat applied to his hull, example Interlux Interprotect 1000, 2000 or West Systems or Vc Tar, this will not void the Five Year Blister Warranty.

Hunter Marine refers to epoxy barrier coatings as mentioned above, not epoxy primer paints.

If an epoxy barrier coat is applied to a Hunter vessel, it must be registered with the Warranty Department prior to application of the product. If the dealer applies bottom paint only, sanding will not be allowed and the no sanding system must be used.

CUSTOMER SATISFACTION SURVEYS

During the first year of ownership, the first purchaser will receive two Customer Satisfaction Surveys - the first (CSS#1) will be received shortly after taking delivery and focuses on the dealer's ability to sell and commission the boat, and the Owner's initial satisfaction. The second survey (CSS#2), nine to ten

months into ownership, "measures" dealer service capability and allows the owner to evaluate most of the boat's functional systems and characteristics. Both surveys are dependent upon receipt of the first purchaser's Warranty Registration Form.

WARREN R. LUHRS

BRIEF HISTORY

Born in 1944 in East Orange, New Jersey, Warren R. Luhrs' ancestry goes back to his great-grandfather, Henry, who helped pioneer railroading and clipper ships in America, and to his great-uncle, John, who helped build the famous St. Petersburg-to-Moscow railroad for Czar Alexander II.

Henry Luhrs owned shares in twenty-two different ocean-going vessels - barks, brigs and schooners - and was principal owner of the bark, *Sophia R. Luhrs*, named after his wife. He was also a partner with Albert Sprout, who managed a shipyard in Melbridge, Maine, where the *Sophia R. Luhrs* was built.

The Luhrs' family sea tradition was carried on during the great depression by Warren Luhrs' father, Henry, who worked at a small boat manufacturer in Morgan, New Jersey, and later started his own company. When war broke out in Europe, the Coast Guard asked Henry Luhrs to repair their boats and install ice sheathing on their bows.

After World War II, Henry built 27-foot fishing boats and in 1948 began to construct custom-built pleasure craft. He then turned to skiffs and in 1952 incorporated as Henry Luhrs Sea Skiffs. He constructed lap strake sea skiffs using assembly-line techniques. Henry personally "shook down" his prototypes with family trips up the Hudson River to Lake Champlain.

The sea skiff is a class of boat which has been very popular, owing to its seaworthiness. It features a sharp bow, which reduces pounding in surf or choppy seas, and a hull whose forward section is rounded

below the water line to increase stability in rough water or a following sea. Such skiffs can either be smooth-sided or of lapstrake construction.

Henry Luhrs' basic philosophy was to emulate the late Henry Ford in building an inexpensive boat for the average man, thus enabling him to enjoy the luxury of boating. He was both designer and engineer, creating innovative and progressive new models. He designed the change in the line of the bow from straight to curved at a time when all boats were being built with the straight square effect. It is believed he was also the first designer-builder to popularize a small boat with a fly-bridge.

In 1960, Luhrs acquired the Ulrichsen Boat Company, Marlboro, New Jersey. It was here, too, that the Luhrs' Alura fiberglass Division was located. In 1965, Henry sold his company to Bangor Arrostock Railroad, which was to become the recreational conglomerate, Bangor-Punta. It was also during this period that Silverton of Tom's River, New Jersey was purchased by John and Warren Luhrs.

Today, Warren R. Luhrs and his brother John, own Hunter Marine Corporation, Silverton Marine Corporation, Mainship Motor Yachts and Luhrs Fishing Boats with its Alura division. Hunter Marine produces sailboats while the other companies produce powerboats.

In January of 1996, Warren and John transferred a portion of the Luhrs Group to its employees through an ESOP program.

GLOSSARY OF SAILING TERMS

A

Aback: describes a sail when the wind strikes it on its lee side.

Abaft: towards the boat's stern.

Abeam: at right angles to the *center-line* of the boat.

Aft: at or near the stern.

Amidships: the center of the boat, *athwartships* and fore and aft.

Anti-fouling: a poisonous paint compound used to protect the underwater part of a hull from marine growths.

Apparent wind: the direction and speed of the wind felt by the crew. It is a combination of *true wind* and that created by the movement of the boat.

Astern: behind the boat; to go astern is to drive the boat in reverse.

Athwartships: at right angles to the fore and aft line of the boat.

B

Back: when a wind backs, it shifts anticlockwise.

Back a sail: to sheet it to windward so that the wind fills on the side that is normally to *leeward*.

Backstay: a stay that supports the mast from aft and prevents its forward movement.

Ballast: extra weight, usually lead or iron, placed low in the boat or externally on the keel to provide stability.

Ballast keel: a mass of ballast bolted to the keel to increase stability and prevent a keel boat from capsizing.

Batten: a light, flexible strip fed into a batten pocket at the *leech* of the sail to support the *roach*.

Beam: 1, the maximum breadth of a boat; 2, a transverse *member* which supports the deck; 3, on the beam means that an object is at right angles to the *center-line*.

Bear a way: to steer the boat away from the wind.

Bearing: the direction of an object from an observer, measured in degrees true or magnetic.

Beat: to sail a *zigzag course* towards the wind, *close-hauled* on alternate *tacks*.

Belay: to make fast a rope around a *cleat*, usually with a figure-of-eight knot.

Bend: 1, to secure a sail to a *spar* before hoisting; 2, to moor a boat; 3, a sleeping place on board.

Bight: a *bend* or loop in a rope.

Bilge: the lower, round part inside the hull where water collects.

Block: a pulley in a wooden or plastic case, consisting of a *sheave* around which a rope runs. It is used to change the direction of pull.

Boot-topping: a narrow colored stripe painted between the bottom paint and the *topside* enamel.

Bottlescrew: see Rigging screw.

Broach: when a boat *running* downwind slews broadside to the wind and *heels* dangerously. It is caused by heavy following seas or helmsman's error.

Broad reach: the point of sailing between a beam *reach* and a *run*, when the wind blows over the *quarter*.

Bulkhead: partition wall in a boat normally fitted *athwartships*.

C

Caulk: to make the seams between wooden planks watertight by filling with cotton, oakum or a compound.

Cavitation: the formation of a vacuum around a propeller, causing loss in efficiency.

Center-board: a board lowered through a slot in the *keel* to reduce *leeway*.

Center-line: center of the boat in a fore and aft line.

Center or effort (COE): the point at which all the forces acting on the sails are concentrated.

Center of lateral resistance (CLR): the underwater center of pressure about which a boat pivots when changing *course*.

Chain pawl: a short lug which drops into a toothed rack to prevent the anchor chain running back.

Chain plate: a metal plate bolted to the boat to which the *shrouds* or *backstays* are attached.

Chart datum: reference level on a chart below which the tide is unlikely to fall. Soundings are given below chart datum. The datum level varies according to country and area.

Chine: the line where the bottom of the hull meets the side at an angle.

Cleat: a wooden, metal or plastic fitting around which rope is secured.

Clevis pin: a locking pin through which a split ring is passed to prevent accidental withdraw.

Clew: the after, lower corner of a sail where the foot and *leech* meet.

Close-hauled: the point of sailing closest to the wind; see also *beat*.

Close reach: the point of sailing between *close-hauled* and a beam *reach*, when the wind blows forward of the *beam*.

Close-winded: describes a boat able to sail very close to the wind.

Coamings: the raised structure surrounding a *hatch*, cockpit etc., which prevents water entering.

Cotter pin: soft, metal pin folded back on itself to form an eye.

Course: the direction in which a vessel is steered, usually given in degrees: true, magnetic or compass.

Cringle: 1, a rope loop, found at either end of a line of *reef* points; 2, an eye in a sail.

D

Dead run: running with the wind blowing exactly aft, in line with the *center-line*.

Deviation: the difference between the direction indicated by the compass needle and the magnetic *meridian*; caused by object aboard.

Displacement: 1, the weight of water displaced by a boat is equal to the weight of the boat; 2, a displacement hull is one that displaces its own weight in water and is only supported by buoyancy, as opposed to a planing hull which can exceed its hull, or displacement, speed.

Downhaul: a rope fitted to pull down a sail or spar.

Draft: the vertical distance from the *waterline* to the lowest point of the *keel*.

Drag: 1, an anchor drags when it fails to hold; 2, the force of wind on the sails, or water on the hull, which impedes the boat's progress.

Drift: 1, to float with the current or wind; 2, US the speed of a current (rate UK); 3, UK: the distance a boat is carried by a current in a given time.

GLOSSARY OF SAILING TERMS

Drogue: a sea anchor put over the stern of a boat or life raft to retard *drift*.

Drop keel: a retractable *keel* which can be drawn into the hull, when entering shallow waters and recovering on to a trailer.

E

Eye of the wind: direction from which the true wind blows.

F

Fair: well-faired line or surface is smoother with no bumps, hollows or abrupt changes in direction.

Fairlead: a fitting through which a line is run to alter the direction of the lead of the line.

Fathom: the measurement used for depths of water and lengths or rope. 1 fathom = 6 ft. = 1.83 m.

Fid: a tapered tool used for *splicing* heavy rope and for sail-making, often hollow.

Fiddle: a raised border for a cabin table, chart table etc., to prevent objects falling off when the boat *heels*.

Fix: the position of the vessel as plotted from two or more *position lines*.

Forestay: the foremost stay, running from the masthead to the stemhead, to which the headsail is hanked.

Freeboard: vertical distance between the *waterline* and the top of the deck.

G

Genoa: a large headsail, in various sizes, which overlaps the mainsail and is hoisted in light to fresh winds on all *points of sailing*.

Gimbals: two concentric rings, pivoted at right angles which keep objects horizontal despite the boat's motion, e.g. compass and cooker.

Go about: to turn the boat through the *eye of the wind* to change *tack*.

Gooseneck: the fitting attaching the boom to the mast, allowing it to move in all directions.

Goosewing: to boom-out the headsail to *windward* on a *run* by using a *whisker pole* to hold the sail on the opposite side to the mainsail.

Ground tackle: general term used for anchoring gear.

Guard rail: a metal rail fitted around the boat to prevent the crew falling overboard.

Gudgeon: a rudder fitting. It is the eye into which the *pintle* fits.

Guy: a steadying rope for a spar; a spinnaker guy controls the fore and aft position of the spinnaker pole; the foreguy holds the spinnaker pole forward and down.

Gybe: to change from one *tack* to another by turning the stern through the wind.

H

Halyard: rope used to hoist and lower sails.

Hank: fitting used to attach the *luff* of a sail to a stay.

Hatch: an opening in the deck giving access to the interior.

Hawse pipe: see Navel pipe.

Head-topwind: when the bows are pointing right into the wind.

Headfoil: a streamlined surround to a *forestay*, with a groove into which a headsail *luff* slides.

Heads: the toilet.

Headway: the forward movement of a boat through the water.

Heave-to: to *back* the jib and lash the tiller to *leeward*; used in heavy weather to encourage the boat to lie quietly and to reduce *headway*.

Heaving line: a light line suitable for throwing ashore.

Heel: to lean over to one side.

I

Isobars: lines on a weather map joining places of equal atmospheric pressure.

J

Jackstay: a line running fore and aft, on both sides of the boat, to which safety harnesses are clipped.

Jury: a temporary device to replace lost or damaged gear.

K

Keel: the main backbone of the boat to which a *ballast keel* is bolted or through which the *centerboard* passes.

Kicking strap: a line used to pull the boom down, to keep it horizontal, particularly on a *reach* or *run*.

L

Lanyard: a short line attached to one object, such as a knife, with which it is secured to another.

Leech: 1, the after edge of a triangular sail; 2, both side edges of a square sail.

Leehelm: the tendency of a boat to *bear away* from the wind.

Lee shore: a shore on to which the wind is blowing.

Leeward: away from the wind; the direction to which the wind blows.

Leeway: the sideways movement of a boat off its *course* as a result of the wind blowing on one side of the sails.

Lifeline: a wire or rope rigged around the deck to prevent the crew falling overboard.

Limber holes: gaps left at the lower end of frames above the *keel* to allow water to drain to the lowest point of the *bilges*.

List: a boat's more or less permanent lean to one side, owing to the improper distribution of weight, e.g., *ballast* or water.

Log: 1, an instrument for measuring a boat's speed and distance travelled through the water; 2, to record in a book the details of a voyage, usually distances covered and weather.

Luff: the forward edge of a sail. To luff up is to turn the boat's head right into the wind.

Luff groove: a groove in a wooden or metal spar into which the *luff* of the headsail is fed.

Lurch: the sudden roll of a boat.

M

Marlin spike: a pointed steel or wooden spike used to open up the strands of rope or wire then *splicing*.

Mast Step: the socket in which the base of the mast is located.

Measured mile: a distance of one nautical mile measured between buoys or *transits/ranges* ashore, and marked on the chart.

Member: a part of the skeleton of the hull, such as a *stringer* laminated into a fiberglass hull to strengthen it.

Meridian: an imaginary line encircling the Earth which passes through the poles and cuts at right angles through the Equator. All lines of longitude are meridians.

Mizzen: 1, the shorter, after-mast on a *ketch* or *yawl*; 2, the fore and aft sail set on this mast.

N

Navel pipe: a metal pipe in the foredeck through which the anchor chain passes to the locker below.

Noon sight: a vessel's latitude can be found, using a sextant, when a heavenly body on the observer's *meridian* is at its greatest altitude. The sight of the sun at noon is the one most frequently taken.

O

Off the wind: with the *sheets* slacked off, not *close-hauled*.

One the wind: *close hauled*.

Outhaul: a rope used to pull out the foot of a sail.

Overall length (LOA): the boat's extreme length, measured from the foremost part of the bow to the aftermost part of the stern, excluding bowsprit, self-steering gear etc.

P

Painter: the bow line by which a dinghy, or *tender*, is towed or made fast.

Pintle: a rudder fitting with a long pin which slips into the *gudgeon* to form a hinged pivot for the rudder.

Pitch: 1, the up and down motion of the bows of a boat plunging over the waves; 2, the angle of the propeller blades.

Point of sailing: the different angles from the wind on which a boat may sail; the boat's *course* relative to the direction of the wind.

Port: the left-hand side of a boat, looking forward (opp. of *starboard*).

Port tack: a boat is on a port tack when the wind strikes the port side first and the mainsail is out to *starboard*. A boat on the port tack gives way to a boat on a *starboard tack*.

Position line/line of position: a line drawn on a chart, as a result of taking a bearing, along which the boat's position must i.e.. Two position lines give a *fix*.

Pulpit: a metal *guard rail* fitted at the bows of a boat to provide safety for the crew.

Pushpit: a metal *guard rail* fitted at the stern.

Q

Quarter: the portion of the boat midway between the stern and the beam; on the quarter means about 45 degrees *abaft* the beam.

R

Rake: the fore and aft deviation from the perpendicular of a mast or other feature of a boat.

Range: 1, see **Transit**; 2, of tides, the difference between the high and low water levels of a *tide*; 3, the distance at which a light can be seen.

Rating: a method of measuring certain dimensions of a yacht to enable it to take part in handicap races.

Reach: to sail with the wind approximately on the *beam*; all sailing points between running and *close-hauled*.

Reef: to reduce the sail area by folding or rolling surplus material on the boom or *forestay*.

Reefing pennant: strong line with which the *luff* or leech *cringle* is pulled down to the *boom* when reefing.

Rhumb line: a line cutting all *meridians* at the same angle; the *course* followed by a boat sailing in a fixed direction.

Riding light to anchor light: an all-round white light, usually hoisted on the *forestay*, to show that a boat under 50 ft. (15m) is at anchor. It must be visible for 2 mls. (3km).

Rigging screw: a deck fitting with which the tension of *standing rigging*, e.g. *stays*, *shrouds*, is adjusted.

Roach: the curved part of the *leech* of a sail which extends beyond the direct line from head to *clew*.

Run: to sail with the wind *aft* and with the *sheets* eased well out.

Running rigging: all the moving lines, such as *sheets* and *halyards*, used in the *setting* and *trimming* of sails.

S

Scope: the length of rope or cable paid out when *mor anchoring*.

Scuppers: holes in the *toe rail* which allow water to drain off the deck.

Seacock: a valve which shuts off an underwater inlet or outlet passing through the hull.

Seize: to bind two ropes together, or a rope to a *spar*, with a light line.

Serve: to cover and protect a *splice* or part of a rope with twine bound tightly against the lay.

Serving mallet: tool with a grooved head, used when serving a rope to keep the twine at a constant and high tension.

Set: 1, to hoist a sail; 2, the way in which the sails fit; 3, the direction of tidal current or steam.

Shackle: a metal link with a removable bolt across the open end; of various shapes: D, U.

Sheave: a grooved wheel in a *block* or *spar* for a rope to run on.

Sheet: the rope attached to the *clew* of a sail or to the boom, enabling it to be controlled or *trimmed*.

Shrouds: ropes or wires, usually in pairs, led from the mast to *chain plates* at deck level to prevent the mast falling sideways; part of the *standing rigging*.

Sloop: a single-masted sailing boat with a mainsail and one head sail.

Spar: a general term for any wood or metal pole, e.g., mast or boom, used to carry or give shape to sails.

Spindrift: spray blown along the surface of the sea.

Spinnaker: a large, light, balloon-shaped sail set when *reaching* or *running*.

Splice: to join ropes or wires by unlaying the strands and interweaving them.

Split pin: see **Cotter pin**.

Spreaders: horizontal struts attached to the mast, which extend to the *shrouds* and help to support the mast.

Stall: a sail stalls when the airflow over it breaks up, causing the boat to lose way.

Stanchion: upright metal post bolted to the deck to support *guard rails* or *lifelines*.

Standing part: the part of a line not used when making a knot; the part of a rope which is made fast, or around which the knot is tied.

Standing rigging: the *shrouds* and *stays* which are permanently set up and support the masts.

GLOSSARY OF SAILING TERMS

Starboard: right-hand side of a boat looking forward (opp. of *port*).

Starboard tack: a boat is on the starboard tack when the wind strikes the starboard side first and the boom is out to *port*.

Stay: wire or rope which supports the mast in a fore and aft direction; part of the *standing rigging*.

Steerage way: a boat has steerage way when it has sufficient speed to allow it to be steered, or to answer the helm.

Stem: the timber at the bow, from the *keel* upwards, to which the planking is attached.

Sternway: the backward, stern-first movement of a boat.

Stringer: a fore and aft *member*, fitted to strengthen the frames.

T

Tack: 1, the lower forward corner of a sail; 2, to turn the boat through the wind so that it blows on the opposite side of the sails.

Tacking: working to windward by sailing *close-hauled* on alternate *courses* so that the wind is first on one side of the boat, then on the other.

Tack pennant: a length of wire with an eye in each end, used to raise the tack of a headsail some distance off the deck.

Tackle: a purchase system comprising of rope and *blocks* which is used to gain mechanical advantage.

Tang: a strong metal fitting by which *standing rigging* is attached to the mast or other spar.

Tender of dinghy: a small boat used to ferry stores and people to a yacht.

Terminal fitting: fitting at the end of a wire rope by which a *shroud* or *stay* can be attached to the mast, a *tang* or a *rigging screw/turnbuckle*.

Tide: the vertical rise and fall of the oceans, caused principally by the gravitational attraction of the moon.

Toe rail: a low strip of metal or moulding running around the edge of the deck.

Topping lift: a line from the masthead to a *spar*, normally the boom, which is used to raise it.

Topsides: the part of a boat's hull which is above the *waterline*.

Track: 1, the *course* a boat has made good; 2, a fitting on the mast or boom into which the slides on a sail fit; 3, a fitting along which a *traveller* runs; used to alter the tension of the *sheets*.

Transit: two fixed objects are in transit when seen in line; two transits give position *fix*.

Traveller: 1, a ring or hoop which can be hauled along a *spar*; 2, a fitting which slides in a *track* and is used to alter the angle of the *sheets*.

Trim: 1, to adjust the angle of the sails, by means of *sheets*, so that they work most efficiently; 2, to adjust the boat's load, and thus the fore and aft angle at which it floats.

True wind: the direction and speed of the wind felt when stationary, at anchor or on land.

Turnbuckle: see *Rigging screw*.

U

Under way: a boat is under way when it is not made fast to the shore, at anchor or aground.

Uphaul: a line used to raise something vertically, e.g., the spinnaker pole.

V

Veer: 1, the wind veers when it shifts in a clockwise direction; 2, to pay out anchor cable or rope in a gradual, controlled way.

W

Wake: the disturbed water left *astern* of a boat.

Waterline: the line along the hull at which a boat floats.

Waterline length (WL): the length of a boat from *stem* to *stern* at the *waterline*. It governs the maximum speed of a *displacement hull* and affects a boat's *rating*.

Weather helm: (opp. of *lee helm*).

Weather side: the side of a boat on which the wind is blowing.

Wetted surface: the area of the hull under water.

Whisker pole: a light pole used to hold out the *clew* of a headsail when *running*.

Winch: a mechanical device, consisting usually of a metal drum turned by a handle, around which a line is wound to give the crew more purchasing power when hauling taut a line, e.g., a *jib sheet*.

Windage: those parts of a boat which increase *drag*, e.g., *rigging*, *spars*, crew, etc.

Windlass: a *winch* with a horizontal shaft and a vertical handle, used to haul up the anchor chain.

Windward: the direction from which the wind blows; towards the wind (opp. of *leeward*).

Y

Yawl: a two masted boat with a *mizzen* stepped *aft* of the rudder stock/post.

EXPLANATION OF SAFETY PRECAUTIONS

This book contains safety precautions which must be observed when operating or servicing your boat. Review and understand these instructions.



DANGER

Denotes an extreme intrinsic hazard exists which would result in high probability of death or irreparable injury if proper precautions are not taken.



WARNING

Denotes a hazard exists which can result in injury or death if proper precautions are not taken.



CAUTION

Denotes a reminder of safety practices or directs attention to unsafe practices which could result in personal injury or damage to the craft or components.

SAFE BOATING TIPS

BE PREPARED

Take a safe boating course. In the U.S., contact your local Coast Guard office for information. Outside the U.S., contact your local Boating Industry for details.

Carry all safety equipment required by the laws that apply to your area. Requirements are generally available from the Coast Guard or your local Boating Industry.



WARNING

As the owner of the craft, obtaining and maintaining necessary safety equipment is your responsibility. For more information about equipment required, contact your local boating authorities.

MINIMUM RECOMMENDED SAFETY EQUIPMENT

- Required life saving equipment including life vests and throwables
- Required fire extinguishing equipment
- First Aid kit
- Emergency Position Indicating Radio Beacon (EPIRB)
- Manual bailing device
- Anchor with sufficient line and/or chain
- Flashlight with good batteries
- Binoculars
- VHF radio
- Navigational charts for the appropriate areas
- Flares
- Fog bell
- Noise emitting device
- Radar reflector
- Sufficient food and water provisions
- Auxiliary starting battery
- Spare fuses and bulbs
- Sunglasses and sunblock
- Blanket

The required safety equipment you must have on board may vary by region or body of water. Therefore, please check with the local boating authorities prior to leaving on your trip for a safety examination.

LIFE JACKETS

A life jacket may save your life, but only if you wear it. Keep jackets in a readily accessible place — not in a closed compartment or stored under other gear. Remove them from their packaging, if so provided. In addition, throwable floatation devices must be immediately available for use.



WARNING

LIFE SAVING HAZARD: It is especially important that children, handicapped people and non-swimmers wear a life jacket at all times. Children and non-swimmers need special instruction in the use of life jackets.

FIRE EXTINGUISHERS

Approved fire extinguishers are required on most boats, therefore check with your local authorities. All passengers should know the location and operating procedure of each fire extinguisher. Fire ex-

tinguishers are normally classified according to fire type. Be familiar with what type of fire extinguishers are on board.

SAFE BOATING TIPS

FLARES

Most boats operating on coastal waters are required to carry approved visual distress signals, therefore check with your local authorities as to which type are required.



WARNING

FIRE/EXPLOSION HAZARD; Pyrotechnic signaling devices can cause injury and property damage if not handled properly. Follow manufacturer's directions regarding the proper use of signaling devices.

DRUGS AND BOATING

Do not drink alcohol while boating. The combination of noise, sun, wind and motion all combine to produce fatigue on the water. The effects of alcohol are greater on the water than on land.



WARNING

IMPAIRED OPERATION HAZARD; Operating any boat while intoxicated or under the influence of other drugs is both dangerous and illegal. Impaired vision or judgment on the water may lead to accidents and personal injury.

BEFORE GETTING UNDERWAY

- Leave a Float Plan (example included).
- Perform a Pre-Departure Checklist (example included).
- Check the weather. Do not venture out if the weather is, or will be, threatening.

WHILE UNDERWAY

- Keep a good lookout. This is especially true of sailboats. Keep a watch to leeward under the headsail. Keep away from swimmers, divers, and skiers.
- Know and obey local boating laws.
- Respect bad weather, and be prepared for quickly changing conditions.



WARNING

COLLISION HAZARD; Use extra caution in shallow water or where underwater/floating objects may be present. Hitting an object at speed or severe angle can seriously injure people and damage your boat.

PRE-DEPARTURE CHECKLIST

- Check bilge for excess water
- Check weather conditions and tides**
- Check food supply
- Foul weather gear
- Linen, sleeping bags
- Fuel
- Water
- Sunscreens and sunglasses
- Tools
- Docking and anchor gear
- Check radio operations
- Navigation charts and instruments
- Float plans to a friend or Coast Guard** (*See next page*)
- Fuel for stove
- Cooking and eating utensils
- Check battery water level
- Oil level, tight Vp-belts
- Check for loose electrical connections in engine compartment
- Secure tools or any loose equipment in engine compartment so as not to get fouled in engine
- AC systems off; electrical cord stowed
- Doors and drawers secured
- Check steering lock to lock
- Check mast for rigging irregularities and tightness
- Halyards and sheets are clear and ready to run
- No lines or other obstructions near the propeller or bow
- Anchor ready to run
- Check lifelines for tightness
- Turn on fuel and water lines
- Stow all loose gear
- Open engine cooling water intake thru-hull valve

FLOAT PLAN

1. Name of person reporting and telephone number:

2. Description of boat:

NAME	TYPE	
MAKE	LENGTH	REGISTRATION #
HULL COLOR	STRIPE COLOR	DECK COLOR
OTHER DISTINGUISHING MARKS		

3. Persons aboard: _____ NUMBER

NAME	AGE	PHONE #
ADDRESS		

NAME	AGE	PHONE #
ADDRESS		

NAME	AGE	PHONE #
ADDRESS		

4. Engine: _____ TYPE _____ H.P. _____ FUEL CAPACITY _____

5. Safety Equipment: PFDs Flares Mirror Flashlight
 Food Water EPIRB Raft/Dinghy

6. Radio: _____ TYPE _____ FREQUENCIES _____

7. Trip Expectations:

DEPARTING AT (APPROX. TIME)	ON (DATE)	FROM (LOCATION)
GOING TO (LOCATION)	RETURNING (DATE)	IN NO EVENT LATER THAN (TIME & DATE)

8. Automobile: _____ LICENSE # _____ STATE _____
MAKE _____ COLOR _____ PARKED AT _____

9. If not returned by _____, call the Coast Guard or:
at: _____

AFTER SAILING CHECKLIST

When leaving your Hunter at the dock for more than a short time, it is a good idea to review the following checklist to make sure everything is in order.

This will help protect the various parts of your boat and add considerably to their attractiveness and usable life.

- Flake or furl mainsail and cover, or remove and bag.
- Remove and stow all portable deck hardware such as snatch blocks, winch handles, etc.
- Secure the boom to the topping lift and set it firmly amidships with the mainsheet purchase. (It is also a good idea to rig a line from the steering wheel or tiller to a convenience cleat to keep the rudder from swinging back and forth with the motion of the water or employ the wheel brake if so equipped.
- Attach the shackle ends of all halyards to convenient fittings and take up slack. Find a location leading away from the mast to keep the halyard from slapping the mast.
- Coil and stow all lines in line lockers
- Cover the winches and steering pedestal when leaving the boat for several days or more.
- Close all fuel lines and seacocks.
- Switch off the electrical system.
- Pump out the bilge.
- Check air vents, secure ports and hatches, swab the deck, and clean deck stainless, particularly if you have operated in saltwater.
- Make a final check of mooring lines, chafing gear, fenders, etc.

SAFE BOATING TIPS

DOCKING

Docking your boat should be handled carefully to avoid potential damage. Under normal wind and water conditions, the following considerations should be made:

1. Whenever possible, your approach should be made against the prevailing wind and current to assist in stopping the boat. Where these conditions are contrary, the strongest should be used to determine approach.

2. Approaching the dock: Dock lines and fenders should be at ready, loose gear stowed and decks cleared. Determine the direction of wind and current, and, once you decide which side of the boat will be against the dock, rig dock lines and fenders

on the appropriate side. One dock line should be attached to the bow cleat, another to the stem cleat opposite the side that will lie against the dock.

NOTE: If the boat is to lie against a piling, rig a fender board across two or more fenders.

3. Tying up: Attach bow and stern lines to dock, hauling boat in with fenders against dock. Rig crossing spring lines to limit motion forward and aft. Be sure to allow some slack in all lines to compensate for tidal activity if present. Never use bow rail, stern rail or stanchions to secure vessel, even for brief periods. For other types of moorings, or for abnormal wind or water conditions, consult an approved boating guide.

ANCHORING

Your Hunter comes with an on-deck anchor well and a Danforth type anchor as standard equipment. The anchor is selected to suit the size and weight of your boat under normal anchoring conditions, and provides its best holding characteristic in muddy or sandy bottoms.

When anchoring, pay particular attention to the scope of your anchor rode (i.e., the relationship between the depth of the water and the length of the rode). A good rule of thumb is to allow a scope of about 7:1 (a rode seven times as long as the vertical distance from the bow to the bottom). A helpful aid is to mark the rode every 20 feet or so with knots or other types of indicators. Before dropping anchor, make sure the bitter end is secured to the cleat in the anchor well.

Also, be sure to consider wind direction, currents, mean low tide depths and other local conditions when anchoring, as well as the positions of any boats already anchored nearby.



CAUTION

Anchoring in unusual water and/or weather conditions will require additional precautions. Consult an approved guide for suggestions.

To weigh anchor, motor or sail (under main only) forward slowly. When at a point directly above the anchor, a quick tug should free it from the bottom. Take care not to damage the topsides when hauling.

SAFE BOATING TIPS

DIESEL ENGINE

An engine owner's manual is supplied with your boat and should be read thoroughly. The manual contains technical specifications, running instructions and a maintenance schedule on lubricants and fluids. For long engine life, follow routine maintenance schedules.

You should check engine oil, transmission fluid and coolant levels. Water, rust, scale and dirt will cause serious damage to the injectors on diesel engines. You should check your filters frequently and change when necessary. Check fuel line connections for proper tightness.



WARNING

EXPLOSION/FIRE HAZARD - Fuel system connections that are too loose or too tight can leak, resulting in fuel loss, environmental pollution and explosion/fire hazard.



DANGER

EXTREME HAZARD: Carbon monoxide gas (CO) is colorless, odorless and extremely dangerous. All engines and fuel burning appliances produce CO as exhaust. Direct and prolonged exposure to CO will cause **BRAIN DAMAGE** or **DEATH**. Signs of exposure to CO include nausea, dizziness and drowsiness. Refer to **BOATING SAFETY** for more information.

When you start your engine, run it a minimum of 15 minutes to bring it up to operating temperature. This insures that any condensation is evaporated. Your engine should "run-out" at 3/4 throttle at least once a month to clean out carbon buildup and moisture.

FUELING YOUR DIESEL ENGINE



WARNING

EXPLOSION/FIRE HAZARD

- Store flammable material in safety-approved containers. Keep containers in a locker designed by the boat manufacturer for that purpose. Never store flammable material in a non-vented space.
- Observe "No-Smoking" while fueling.
- Run exhaust blower at least 4 minutes before starting engine. Check bilge and engine compartment for fumes.
- Keep ventilation system free of obstructions. Never modify the vent system.
- Fill less than rated capacity of tank. Allow for fuel expansion.
- If fuel enters bilge, do not start engine. Determine cause and severity. Contact a knowledgeable marine service to remove fuel. Do not pump bilge overboard. Contact Coast Guard for additional advice. (See *Environmental Considerations - Fuel & Oil Spillage*.)
- Inspect fuel system regularly for leaks.



CAUTION

Follow engine manufacturer's recommendations for types of fuel and oil. Use of improper products can damage the engine and void the warranty.

Notice: Use fresh fuel. Fuel that has been in a tank too long can form gum and varnish, which may affect performance.

Inspect diesel fuel filters regularly. Diesel fuel must be kept as clean as possible.

SAFE BOATING TIPS

STARTING YOUR DIESEL ENGINE

1. Visually check engine compartment to see that the throttle linkage, shifting controls, electrical connections and fuel lines are properly secured.
2. *Before each start* check oil in engine and transmission, and check to ensure coupling bolts are tight.
3. Insure that engine shut-off cable is properly secured and operating.
4. Place the shift lever in the neutral position. Pull out the button beside the shift lever to disengage the shift. On single lever controls, lift the collar under the shift lever knob and move the lever forward to advance the throttle for neutral warm-up.
5. Insert the starter key and turn to the "on" position.
6. Press the starter button and hold until engine starts, then release. The buzzer and/or light should then go off. **Press the starter button no longer than 5 seconds continuously.**
7. Allow cold engine to warm up a minimum of five minutes.
8. When warm-up is completed, return the hand le-

ver to neutral position, and push the button back in to re-engage the shift. The shift is ready for shift and throttle operation.

9. Check that the lube oil pressure warning light and the charge lamp go off. If any of the warning lamps do not go off above 1,000 rpm, the engine is malfunctioning and should be stopped immediately. Consult your nearest engine dealer.

NOTE: To stop engine at any time, pull "engine stop" lever all the way out.



CAUTION

Follow engine manufacturer's recommendations for types of fuel and oil. Use of improper products can damage the engine and void the warranty.

MOTORING YOUR DIESEL ENGINE

Upon departure, remember to unplug the shorepower. When the engine is warm, but prior to releasing the dock lines, move the shift lever to forward and to reverse to insure that it engages properly. To increase RPMs, push throttle lever forward and pull back to decrease RPMs.

IMPORTANT: When sailing, it is best to start the engine before the sails are lowered. This way, it is still possible to maneuver if the engine should not start.



CAUTION

Your rigging will conduct electricity. Always check for overhead high tension wires before proceeding. Once clear, you may increase your speed in a reasonable and safe manner as desired.

ELECTRICAL SYSTEM

Your Hunter is fitted with an electrical system designed for both AC and DC. While in port, you can operate any tool, appliance or other device designed to function on regular house current simply by plugging your dockside power cord into a convenient outlet on shore and turning your AC main breaker on.



WARNING

ELECTROCUTION HAZARD: If polarity is reversed, **DO NOT** use the shore power source. Immediately turn off the power source and disconnect the shore power cord. Reversed polarity is a dangerous and potentially lethal condition which may cause shock, electrocution, or death.

SAFE BOATING TIPS

ELECTRICAL SYSTEM (continued)

To minimize shock hazard, connect and disconnect cable as follows:

1. Turn off the boat's shore connection switch before connecting or disconnecting shore power cable.
2. Connect shore power cable at the boat first.
3. If polarity warning indicator is activated, immediately disconnect cable and have the fault corrected by a qualified electrician.
4. Disconnect shore power cable at shore outlet first.
5. Close inlet cover tightly.

DO NOT ALTER SHORE POWER CABLE CONNECTORS.

Storage: Your shore power cable set is intended for use outdoors. To prolong the life of the set, store indoors when not in use.

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

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

In case of salt water immersion, rinse plug end and/or connector end thoroughly in fresh water, shake or blow out excess water and allow to dry. Spray with a moisture repellent before re-use.

WARNING

Do not allow your dockside power cord to come in contact with the water. Never operate any AC power tool or other electrical equipment while you or the device are in contact with the water, as this may cause electrocution resulting in shock or death.

When leaving port, disconnect the dockside power cord and turn the main DC breaker on. This allows

you to use the ship's lights and other equipment designed to operate on direct current. Keep in mind that your DC power source is a 12-volt battery, just as with your automobile, and it must be charged regularly by operating the engine (or by running the battery charger, if you have that option installed). Unless a state of charge is maintained, there may not be enough power to operate the starter motor. Dangerous situations can result if the engine cannot be started when needed.

Make a regular visual check of batteries to insure proper water level and inspect terminals for signs of corrosion. If your boat sits for long periods without use, it is often a good idea to remove the batteries and attach them to a trickle charger to keep them fully charged and ready to use.

WARNING

EXPLOSION/FIRE HAZARD - Ensure adequate ventilation of battery to prevent buildup of gases, especially hydrogen.

WARNING

WHEN CHARGING THE BATTERY:

- Battery electrolyte contains sulfuric acid. Protect your eyes, skin and clothing. In case of contact, flush thoroughly with water and get prompt medical attention, especially if your eyes are affected.
- Batteries generate hydrogen gas which can be highly explosive. Do not smoke or allow flames or sparks near a battery, especially during charging.
- Charge the battery in a fully ventilated place.

SAFE BOATING TIPS

COOKING STOVE

LPG is a popular choice in cooking fuel aboard sailboats. LPG is an explosive gas however, and should be treated with great care. Please refer to the stove manual for detailed instructions.



WARNING

EXPLOSION/FIRE/ASPHYXIATION HAZARD

- Open flame cooking appliances consume oxygen. This can cause asphyxiation or death.
- Maintain open ventilation.
- Liquid fuel may ignite, causing severe burns.
- Use fuel appropriate for type of stove.
- Turn off stove burner before filling.
- Do not use stove for comfort heating.

FIRE/ASPHYXIATION HAZARD

Use special care with flames or high temperatures near urethane foam, if used in construction of your boat. Burning, welding, lights, cigarettes, space heaters and the like can ignite urethane foam. Once ignited, it burns rapidly, producing extreme heat, releasing hazardous gases and consuming much oxygen.

TOILET

IMPORTANT; When not in use, lever must be left in the "dry" position to prevent flooding.

Before using, place the lever in the "wet" position and pump slowly to partly fill and wet the inside of the bowl. Return to "dry" position.

After using, return the level to the "wet" position for flushing and pump until the bowl is thoroughly cleaned. Continue with several more full strokes to flush discharge lines. Return lever to the "dry" position and pump slowly until bowl is empty.

NOTICE:

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



CAUTION

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

SAFE BOATING TIPS

PUMPS

All pumps should be checked frequently to insure proper operation. This is an especially important regular maintenance item since functioning of a pump could save your vessel from serious damage at some future time.

Bilge pump — Inspect all hoses for chafing and dry rot. See that the hose clamps are tight. Check the the bilge pump impeller area is clean and free of obstructions. Inspect electrical wiring for corrosion. Make sure float switch moves freely and is making an electrical connection.



WARNING

SINKING HAZARD - Ensure proper bilge pump operation.



CAUTION

Run pump only as long as necessary to remove water. Running dry can damage pump motor.

WATER SYSTEM OPERATION

Fill fresh water tank at deck fill. The tank filler cap will be marked "water". When tank is full, water will back up through the vent hose and exit through a vent located on the side of the hull.

To activate the water system, flip the "water pressure" switch on the electrical panel. This will start the pump and pressurize the system. When the pressure builds, the pump will shut off. With continued use of fresh water the pressure in the system is reduced, automatically restarting the pump. Make sure there is water in the system while pump is in operation to prevent damage to the motor.

The water heater operates either on 120 or 240 volts AC or when the engine is running. To obtain hot water from the engine, it must run a minimum of one-half hour.

Pressure water pumps are the demand type. Once the circuit breaker switch is on, opening the faucet will produce water flow.

NOTE: Intermittent operation of the freshwater pump while all faucets are closed usually indicates a leak somewhere in the lines. Trace the lines to locate the leak and repair.

To operate shower, turn on hot and cold faucets until desired temperature is reached, while shower head is retracted at sink. Pull the shower head out and use. The faucets must be turned off to prevent system drainage.

Opening the faucet will allow the pump to empty the tank. Flushing the tank and lines will be necessary for winterization. Refer to Maintenance & Winterization section for more information.



CAUTION

Run pump only as long as necessary to remove water. Running dry can damage pump motor.

SAFE BOATING TIPS

WASTE DISCHARGE

The Hunter is equipped with a head waste holding tank, hose lines, and thru-hull fittings for either overboard discharge, using the standard equipped handpump, or deck pumpout at dockside. Tank levels will be indicated on the gauge located below the main electrical panel. Familiarize yourself with the

locations of the deck pumpout, overboard discharge thru-hull, and vent locations pictured in the Waste Water System section, as well as your local boating regulations concerning the overboard discharge of raw sewage.

ENVIRONMENTAL CONSIDERATIONS

FUEL AND OIL SPILLAGE

The spilling of fuel or oil into our waterways contaminates the environment and is dangerous to wildlife. Never discharge or dispose of fuel or oil into the water as it is prohibited and you could be fined. Two common, accidental types of discharge are — overfilling the fuel tank, and pumping contaminated bilge water into the sea.



WARNING

EXPLOSION/FIRE/POLLUTION HAZARD: Fill fuel tank to less than rated capacity. Overfilling forces fuel out the tank vents which can cause explosion, fire, or environmental pollution. Also, allow for fuel expansion.

DISCHARGE AND DISPOSAL OF WASTE

Waste means all forms of garbage, plastics, recyclables, food, wood, detergents, sewage, and even fish parts in certain waters. We recommend that you bring back everything you take out with you for proper disposal ashore.

Your marine toilet holding tank (if so equipped) must, in many areas, be pumped out by an approved pump-out facility, normally found at marinas.

EXHAUST EMISSIONS

Hydrocarbon exhaust emissions pollute our water and air. Keep your engine properly tuned to reduce

emissions and improve performance and economy.

ANTI-FOULING PAINTS

The use of anti-fouling paints is common for boats kept in the water. Be aware of environmental regulations that may govern your paint choice. These regulations may affect which paint may be used, and also the application or removal. Contact your local boating authorities for information.



WARNING

EXPLOSION/FIRE/ HAZARD: Ventilate when painting or cleaning. Ingredients may be flammable and/or explosive.

CLEANING CHEMICALS

Cleaning chemicals should be used sparingly and not discharged into waterways. Never mix cleaners and be sure to use plenty of ventilation in enclosed areas. Do not use products which contain phosphates, chlorine, solvents, non-biodegradable or petroleum based products.

Common household cleaning agents may cause hazardous reactions. Fumes can last for hours, and chemical ingredients can attack people, property and the environment.

INSTRUCTIONS FOR PREPARATION FOR BOTTOM PAINTING

WARNING!

Do not use any sanding, sandblasting or other abrasive preparation of the bottom as this will void your hull blistering warranty. More information on the warranty is available in this owner's manual.

BOTTOM PAINTING

Choose a bottom paint system that suits the environment in your area. Follow the procedure recommended by the manufacturer of the paint, while making sure not to void the Hunter Hull Blistering Warranty. The procedure for preparing for and painting the bottom varies between paint manufacturers, but should always include dewaxing, etching and sometimes priming of the surface.

EPOXY BARRIER COAT

Sanding of the gel-coat bottom surface will be permitted should a customer wish to have an epoxy barrier coat applied to the hull, (example Interlux Interprotect 1000, 2000, West System or VCTar). This will not void the five Year Blister Warranty. If the dealer applies bottom paint only, sanding will not be allowed and the no sanding system must be used.

Hunter Marine refers to epoxy barrier coatings as mentioned above, not epoxy primer paints.

If an epoxy barrier coat is applied to a Hunter vessel, it must be registered with the Warranty Department



WARNING

Cleaning agents and paint ingredients may be flammable and/or explosive, or dangerous to inhale. Be sure to use adequate ventilation, and appropriate safety clothing (gloves, safety glasses, respirator, etc.).

ENGINE, TRANSMISSION and DRIVETRAIN

ENGINE

Follow the fuel and lubrication requirements in the Engine Manual. Check the engine oil level before and after operation and use quality motor oil (refer to Engine Manual). Be certain the proper amount of oil is in the crankcase at all times.

Engine Alignment: The engine should be aligned by experienced marine service personnel. Final alignment should be done after launching, with all normal gear aboard. A description of the procedure follows:

The coupling flanges must come together evenly at all points, a feeler gauge is used to check the gap. If adjustment is necessary, the engine is tilted up or down and/or side to side until the flanges meet equally. Severe vibration will result from misalignment and can cause strut bearing and shaft damage. Alignment should be checked again after several weeks of use. Routine checks of coupling bolts are a must to ensure they are tight.

Shaft alignment:

1. Separate the coupling, move the shaft end back

to clear the pilot in the center.

2. Establish the shaft in the center of the shaft log by raising the shaft until it touches the top of the log — note position — lower the shaft until it touches bottom of the log — note position — repeat side-wise and locate shaft in the center; block shaft in this position, using a block of wood under the shaft packing gland.

3. Now, adjust the engine mounts to allow the pilot on the coupling halves to slip together without moving shaft up, down, or sideways.

4. Adjust the engine mounts as necessary until a 0.004" feeler gauge will not enter anywhere along the edge of the flange between the faces.

5. Tighten the locks on the adjustable mounts.

6. Recheck coupling with feeler, readjust if necessary.

7. Check stuffing box (allow to drip 3 to 5 drops per minute).

Any questions or problems concerning the engine, please contact the U.S. distributor, Mack Boring at (201) 964-0700, or your local Yanmar service agent.

TRANSMISSION

Follow the lubrication requirements of the Engine Manual. The oil level should be checked immedi-

ately after operation.

STUFFING BOX

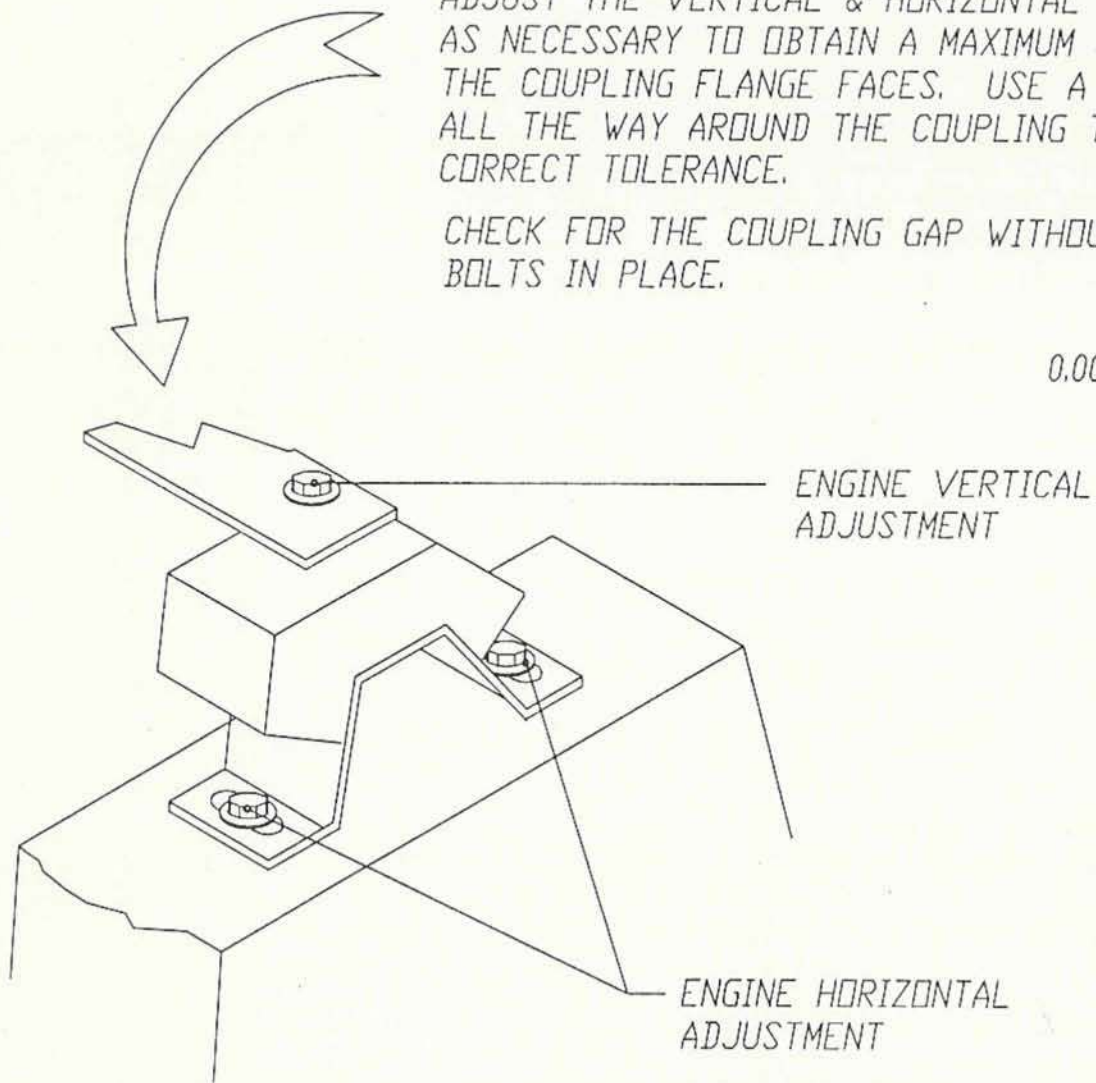
The stuffing box is held to the stern bearing by a rubber hose secured with hose clamps. (See the Shaft and Propeller section) The clamps should be tight and no water should leak from this location. While underway a slight drip from the stuffing box at the shaft exit is necessary (three to five drops a minute) and is normal.

To adjust, loosen the locknut, tighten the gland nut one quarter turn, and retighten the lock nut. If excessive water flow persists after adjustment, replace the packing with 3/16" (or 5mm) square flax packing and then adjust as above.

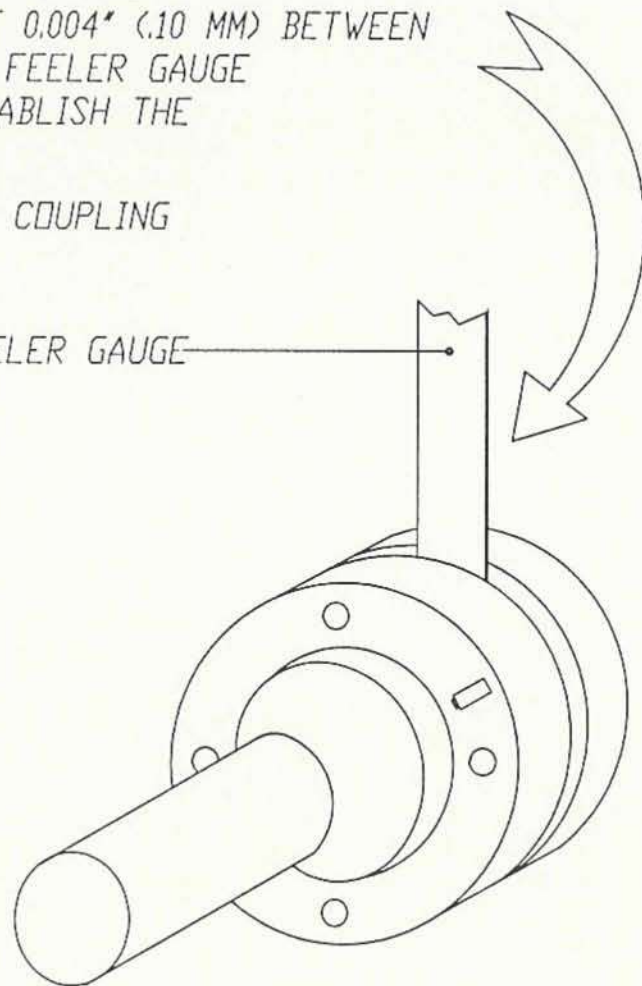
NOTE: Some models use a packless sealing system. Page 56 or Pages 56A, B, C reflects the type of stuffing box used on this model.

ADJUST THE VERTICAL & HORIZONTAL ENGINE MOUNTS AS NECESSARY TO OBTAIN A MAXIMUM GAP OF 0.004" (.10 MM) BETWEEN THE COUPLING FLANGE FACES. USE A 0.004" FEELER GAUGE ALL THE WAY AROUND THE COUPLING TO ESTABLISH THE CORRECT TOLERANCE.

CHECK FOR THE COUPLING GAP WITHOUT THE COUPLING BOLTS IN PLACE.



0.004" FEELER GAUGE



STEERING

Refer to the manufacturer's instructions for maintaining pedestal steering system. Cables should be routinely inspected for proper tension. Lightly oil all cables.



WARNING

CONTROL HAZARD - Inspect and maintain steering system regularly. An improperly maintained system may fail, causing sudden loss of steering control, resulting in personal injury and property damage.

ELECTRICAL SYSTEMS

The electrical system is a 12-volt, negative ground installation, plus a shore power system of either 110V or 240V. The owner should inspect batteries, terminals and cables weekly for signs of corrosion, cracks, and electrolyte leakage. Battery terminals are to be kept clean and greased. Refer to separate instructions on batteries, wiring diagram, and electronics.



WARNING

SHOCK/FIRE HAZARD

- Disconnect electrical system from its power source before performing maintenance. Never work on the electrical system while it is energized.
- Electrical appliances must be within the rated amperage of the boat circuits.
- Observe boat carefully while the electrical system is energized. The only electrical components which can be left unattended are the automatic bilge pump, fire protection and alarm circuits.
- Only a qualified marine electrical technician may service the boat's electrical system.



WARNING

SHOCK/FIRE HAZARD - Replace breaker or fuse with same amperage device. Never alter overcurrent protection.



CAUTION

- Turn off engine before inspecting or servicing battery.
- Disconnect battery cables before working on electrical system to prevent arcing or damage to alternator.

PLUMBING SYSTEMS

All pumps should be checked frequently to insure proper operation. This is an especially important regular maintenance item since proper functioning of a pump could save your vessel from serious damage in the future.

Inspect all hoses for chafing and deterioration. See that hose clamps are tight. Check that the pump impeller area is clean and free of obstructions.

Inspect electrical wiring for corrosion. Make sure float switches move freely and are making an electrical connection.

The owner should become familiar with the layout

of the water and waste systems by walking through the boat with the diagrams provided in this manual. It is especially important that the owner knows all thru-hull valve locations and inspects for leaks frequently. Refer to plumbing diagrams in Specifications and Technical section of this manual.

General Thru-hull List (varies from boat to boat — see diagrams in Systems and Circuits section).

- 1) Engine cooling system
- 2) Galley sink
- 3) Head sink
- 4) Head toilet (water intake)
- 5) Holding tank discharge
- 6) Scupper drains

FUEL SYSTEM

The owner should inspect the condition of fuel lines for cracks or leaks. A primary source of fuel-related problems is water in the system. The owner should use only well maintained fueling facilities and make sure fuel fill caps are tightly secured after filling. Check and maintain fuel filters periodically. Refer

to your Engine Manual for additional information. Periodically, add biocide to prevent bacteria and fungi from contaminating diesel fuel which may contain some water. Carefully follow manufacturer's instructions and clean filters regularly.

GENERAL CARE

CLEANING FIBERGLASS SURFACES:

Fiberglass surfaces should be cleaned regularly. Normal accumulations of surface dirt can be removed simply by occasional rinsings with water. If your boat is operated in salt water, more frequent rinsing will be required. To remove stubborn dirt, grease or oil, use a mild detergent and a soft brush. Rinse with clean fresh water. Avoid the plexiglass companionway slider, windshield, deck hatches and fixed ports when using a deck brush, since these surfaces can scratch.

It is a good idea to wax the fiberglass once or twice a year to maintain a deep, glossy appearance. Your

local marine supply should be able to provide an appropriate wax.



WARNING

Cleaning agents and paint ingredients may be flammable and/or explosive, or dangerous to inhale. Be sure to use adequate ventilation, and appropriate safety clothing (gloves, safety glasses, respirator, etc.).

CLEANING ACRYLIC:

Use only mild soap and water to clean acrylics. Do not use products containing solvents such as ammonia, which is found in many window cleaners.



CAUTION

Use care when cleaning acrylic. Dry cloth and many glass cleaners will scratch. Solvents will attack the surface.

GENERAL CARE (continued)

Sail Care

Sunlight is a sail's worst enemy, so **cover the main sail when not in use.** (An ultraviolet guard, fitted down the leech of a roller headsail, will protect the exposed part from the weathering effect of the sun and from dirt and grit). Mildew, which discolors, is prevented by storing sails dry and by hand washing twice a season. Check all sails regularly for chafe, particularly where they chafe on deck fittings or rigging, at reef points, batten sleeves and the foot of

the headsail. Sail batten pockets should be inspected on a regular basis.

To stow the mainsail, start at the leech and flake it on to the boom, left and right, in about 18-in. (46-cm) folds, while pulling the leech aft. Secure with a sail tie and continue to the luff. Lash to the boom with sail ties or shock cord.

FABRIC CARE

Vinyl: Clean with mild soap and water. Wipe with vinyl or upholstery cleaner monthly, and especially before and after storage.

Leather: Mild soap and water. Blot dry. Do not scrub as this will stretch and scratch. Wipe with leather cleaner/oil to preserve and help prevent cracks before and after storage.

Fabric: Blot dry. Do not machine wash. Use only mild soap and water. Wipe with a clean white cloth. If stain persists, dry clean. Be sure to treat cleaned

surfaces with Scotch Guard. Stretched or loose covers may be steam cleaned. If foam is removed they will restuff easier if wrapped with thin plastic.

Storage: Cover with airflow fabric to reduce dust built up. Do not use plastic as this will cause cushions to sweat and mildew.

Cushions: If wet, prop cushions vertically to promote airflow around each cushion. Cushions can be cleaned by most dry cleaners. **Dry clean only.**

GENERAL HARDWARE MAINTENANCE

Check all fittings regularly to be sure screws are tight. Occasionally lubricate (use silicone lubricants) all moving parts on such fittings as blocks, turnbuckles and cam cleats, as well as the locking pins of snatch blocks, track slides, spinnaker poles, etc. Inspect cleats and fairleads for roughness and smooth

with fine grained emery paper if necessary. Also, replace any missing or damaged cotter pins in turnbuckles and shackles, and either tape them or use protective covers manufactured for that purpose. Grease winches a minimum of once yearly.

ELECTROLYSIS AND GALVANIC PROTECTION

Salt water allows electric current to flow from anodic to cathodic material. Any two metals from two components, and their relative positions in the galvanic rating table, will determine which loses material (the anode) and which remains largely undisturbed (the cathode). The rate of wear is determined by the distance apart on the galvanic table of two metals. Thus a sacrificial zinc anode is often fitted to the underwater area of a boat to attract any destructive currents away from bronze or steel propeller shafts, for example.

It is not enough to know that your boat does not suffer from electrolysis: a newcomer in the adjacent

marina berth may start a too-friendly association with metal components on it. An easy place to fit an anode is on the propeller shaft, or covering the propeller nut. The anode should not be painted because this will only defeat the purpose.

To prevent electrolysis in sea water, the difference between the voltage of two adjacent metals should not exceed 0.20V. Zinc and carbon steel, for example, used together, risk corrosion, while lead and active stainless steel are compatible. Metals with a high voltage corrode faster and need a larger area to diffuse the electrochemical reaction.

TEAK CARE

Teak wood is a high quality, extremely durable wood with a high oil content. In order to help you protect the original beauty of your teak interior, we have sealed the beauty of your interior with a 3 to 4 coat finish system of high quality Seafin Teak Oil, manufactured by *Dalys* (wood finishing products). This material is a penetrating oil that dries to a low sheen to seal and protect the wood from moisture and

weathering. It creates a durable, nonslip surface to repel water and resist wear. It won't chip, peel or blister. It reduces work and maintenance cost because it is easy to maintain and repair. With proper maintenance it will outlive urethane varnish on interior and even exterior surfaces. (Floor, bulkheads, trim wood and furniture).

MAINTENANCE

When oiled surfaces require renewing, simply wipe the surface area free of loose dirt, dust or other contaminants. Dampen a cloth with the Seafin Teak Oil

and wipe on. Let stand for 5-15 minutes, then polish dry. If your dinette table has an epoxy finish, simply clean with furniture polish.

REPAIRS

When woodwork is damaged from scrapes or abrasions that go into or thru the finish, take the following steps:

1. Take 180 to 200 grit wet/dry sand paper to smoother out rough spots.
2. Wipe clean of dust and dirt with a clean rag. Note — before applying oil, wood surface must be dry.
3. Wipe or brush on oil, allow to penetrate 5-15 minutes while surface is still wet.
4. Sand until smooth with a 400A wet/dry sandpaper.
5. Wipe dry with a clean rag. Allow 8-12 hours drying time.

6. Apply second coat, sand, repeat above procedure.

This process may be repeated as many times as needed to bring damaged area back up to its original finish. If you have trouble with getting the same sheen, you may apply with a completely dampened/rung out cloth, a very light coat over this area and/or whole surface area to get an even sheen.

Dalys
3525 Stoneway North
Seattle, WA 98103
(206) 633-4200

STORAGE/WINTERIZATION

IMPORTANT

Winter storage is recommended to be done in one of the following three ways, either: 1) by blocking the boat via a cradle; or 2) with chained stands on level ground; or 3) by storing the boat in the water with a bubbler system to prevent icing. Damage to your boat, including engine misalignment caused by twisting, is not covered by the warranty.

SAILS

Sails should be properly folded and stowed in a dry, well ventilated place. Many sailboat owners send their sails back to the sail manufacturer at the end of each season. The sailmaker will check the stitching and sailcloth for wear and store the sails until the start of the next season.

ELECTRICAL

Remove battery from boat. (Refer to Engine Manual) and charge. It is a good idea to also remove the electronics (radio, radar, etc.) and store in a safe place.

CUSHIONS

Cushions should be removed and stored at home if possible. If not, prop them vertically to promote airflow around each cushion. *Dry Clean Only!*

HATCHES

Tenting the deck during storage will help prevent ice from forming and damaging hatches and deck fittings. The installation of a passive vent will help with ventilation while the boat is in storage.

WATER SYSTEM

Open a faucet and allow the pump to empty the tank. Then add approximately two gallons of nontoxic antifreeze solution to the tank and repeat the pumping out procedure.

A second method is to disconnect the hoses at the pump, allowing them to drain. Find the lowest point in the system and disconnect the fitting. Open all faucets to allow the lines to drain. If possible, use a short piece of hose on the faucet to blow through the lines to clear all water. A diluted solution with baking soda will help freshen the system.

WATER HEATER

Open valve and drain fully. Leave valve open during lay-up time.

TOILET AND HOLDING TANK

Drain and flush toilet. Using non toxic antifreeze in a 50/50 mixture with water, pump through toilet and into holding tank.

OUTBOARD ENGINE

Take it home and store it in a safe place. Be very careful storing the gas tank as the gasoline is very flammable. Refer to "Engine Manual" for specific maintenance schedule.

INBOARD ENGINE

Winterizing Fresh Water Cooled Diesel Engines

Step

1. Drain crankcase and transmission and refill with fresh lubricant as specified in owner's manual. Change oil filters.
2. Drain and clean all fuel filters and change elements, gaskets and seals. Bleed all air from fuel systems.
3. Start engine and bring up to operating temperature. Slowly remove the radiator cap on expansion tank. Using an antifreeze hydrometer, check the antifreeze for proper protection (add antifreeze to lower the freezing point of the antifreeze solution). If the antifreeze solution is dirty, more than 2 years old, or weak it should be completely drained and replaced with proper mixture of permanent antifreeze and water.
4. Close the sea cock, remove the raw water pick up hose from the raw water pump and immerse one end into a 5 gallon bucket of antifreeze solution. Start engine and run till antifreeze solution comes out exhaust stack or until bucket is empty. Attach the raw water pick up hose to the raw water pump. Tighten all clamps. **Note: This procedure bypasses the sea strainer to prevent antifreeze from crystallizing sea strainer which warranty will not cover.**
5. Loosen water pump and alternator belts to lessen tension on belts during winter.
6. For engines equipped with a hand crank - pull compression release levers and turn engine slowly with the hand crank. Slowly pour about 2 ounces of engine oil into the intake pipe or manifold while hand cranking the engine. This will allow for a thin coat of oil on the valves

and upper cylinder. **DO NOT USE** the starter to turn engine or serious engine damage may result.

7. Tape the openings of the intake and exhaust manifolds with duck tape to help prevent corrosion of the upper cylinder during lay up.

8. Scrape all rust or corrosion from exposed metal parts and surfaces. Scrub all metal surfaces with detergent and rinse thoroughly. Paint any bare metal.

9. Place a dust cover over engine. Do not leave the engine exposed to rain and sea breeze.

10. Disconnect the battery cables, remove the battery from the boat. Clean the terminal ends and battery with a solution of baking soda and water, rinse thoroughly with clean water. Apply a light coat of grease on the terminal end of the battery and cables. Store the battery in a cool dry place. Use a trickle charger to keep battery charged. Do not charge battery near any open flame or in a confined area.

CAUTION: Wear safety goggles and rubber gloves to protect your eyes and skin.

Winterizing Raw Water Cooled Diesel Engines Step

1. Drain crankcase and transmission and refill with fresh oil as specified in owner's manual. Change oil filters.

2. Close sea cock, remove raw water pick up hose from water pump, attach a 4-foot length of hose to water pump and immerse in a 5 gallon bucket of antifreeze solution. Remove hose from engine or manifold that leads to exhaust elbow. Attach about a 4-foot length of hose and immerse one end in the bucket of antifreeze solution. Start engine and run until water begins to warm up (about 3 to 5 min.) and thermostat opens. Stop engine. Replace hose that leads to exhaust elbow. Start engine and let run till water comes out exhaust pipe. Stop engine, remove hose from water pump to bucket, attach hose from sea cock to water pump and tighten all hose clamps. **Note: This procedure bypasses the sea strainer to prevent antifreeze from crystallizing sea strainer, which warranty will not cover.**

3. Loosen water pump and alternator to lessen tensions on belts during winter.

4. Drain and clean all fuel filters and change elements, gaskets and seals. Bleed all air from fuel systems.

5. Pull compression release lever and turn engine slowly with hand crank. Slowly pour about 2 ounces of engine oil into the intake pipe or manifold while engine is turning. **DO NOT USE** the starter to turn engine or serious engine damage may result.

6. Tape the openings of the intake and exhaust manifolds with duck tape to help prevent corrosion of the upper

cylinder during lay up.

7. Scrape all rust or corrosion from exposed metal parts and surfaces. Scrub all metal surfaces with detergent and rinse thoroughly. Paint any bare metal.

8. Place a dust cover over engine. Do not leave the engine exposed to rain and sea breeze.

9. Disconnect the battery cables, remove the battery from the boat. Clean the terminal ends and battery with a solution of baking soda and water, rinse thoroughly with clean water. Apply a light coat of grease on the terminal end of the battery and cables. Store the battery in a cool dry place. Use a trickle charger to keep battery charged. Do not charge battery near any open flame or in a confined area. **CAUTION: Wear safety goggles and rubber gloves to protect your eyes and skin.**

DEPARTURE FROM THE BOAT

The check list for leaving a boat unattended is very important because items overlooked often will not be remembered until you are far from the boat and corrective actions are impractical or impossible. Primary choices for this list are items relating to the safety and security of the unattended craft—turning off fuel valves, the proper settings for electrical switches, pumping out the bilge and leaving the switch on automatic (or arranging for periodic pumping out). Other departure check list items are securing ports, windows, hatches, and doors.

ROUTINE MAINTENANCE

Routine maintenance check lists should include items based on how much the boat is used (usually in terms of engine hours) and on calendar dates (weekly, monthly, or seasonal checks). Typical of the former are oil level checks and changes, and oil and fuel filter changes.

On a calendar basis the lists should note such matters as electrolyte levels in storage-batteries, pressure gauges on dry-chemical fire extinguishers, and all navigation lights. Check the operation of automatic bilge alarms or pump switches by running water into the boat. Periodically close and open sea cocks several times to ensure their free and easy operation in case they are needed in an emergency. Equipment and supplies carried on board for emergencies should be inspected for any signs of deterioration.

CERTIFICATION DETAILS

CE CERTIFIED

Your Hunter has been manufactured in the United States and has been certified by IMCI to be in compliance with the relevant parts of the Recreational Craft Directive 94/25/EC from the European Parliament. The CE mark means your craft meets or exceeds all current International Organization for Standardization (ISO) standards and directives in effect at the time of manufacture. The builder's plate (copy provided on page 35 of this manual), affixed to your boat, describes various parameters involved in the design of your boat. Please refer to it regularly when operating your boat.

Following are the Design Categories, established by the Recreation Craft Directive, which is to be considered a guideline of use application as per the Directive's criteria. This criteria is NOT established by Hunter Marine Corporation, and the category assigned is only a reference to the assigned category. The safety of the captain and crew of any vessel is not measurable by such categories, and you should not interpret these categories as an indication of your safety in such conditions. The skill of the captain and crew, together with proper preparation, appropriate safety equipment for the given conditions, and a well maintained vessel are critical to safe sailing.

CE CRAFT DESIGN CATEGORIES

Category A - "Ocean": Craft designed for extended voyages where conditions experienced may exceed wind force 8 (Beaufort Scale) and include significant wave heights of 4 m, for vessels that are largely self-sufficient.

Category B - "Offshore": Craft designed for offshore voyages where conditions up to and including wind force 8 are significant wave heights up to and including 4 m may be experienced.

Category C - "Inshore": Craft designed for voyages in coastal waters, large bays, estuaries, lakes and rivers, where conditions up to and including wind force 6 and significant wave heights up to and including 2 m may be experienced.

Category D - "Sheltered Waters": Craft designed for voyages on small lakes, rivers and canals, where conditions up to and including wind force 4 and significant wave heights up to and including 0.5 m may be experienced.

For additional information, contact:

International Marine Certification Institute (IMCI)
Treves Centre, rue de Treves 45
1040 Brussels, Belgium
FX: (32) 2238-7700

NMMA CERTIFIED

Your Hunter has been judged by the National Marine Manufacturers Association (NMMA) to be in compliance with the applicable federal regulations and American Boat and Yacht Council (ABYC) standard and recommended practices in effect at the time of manufacture.

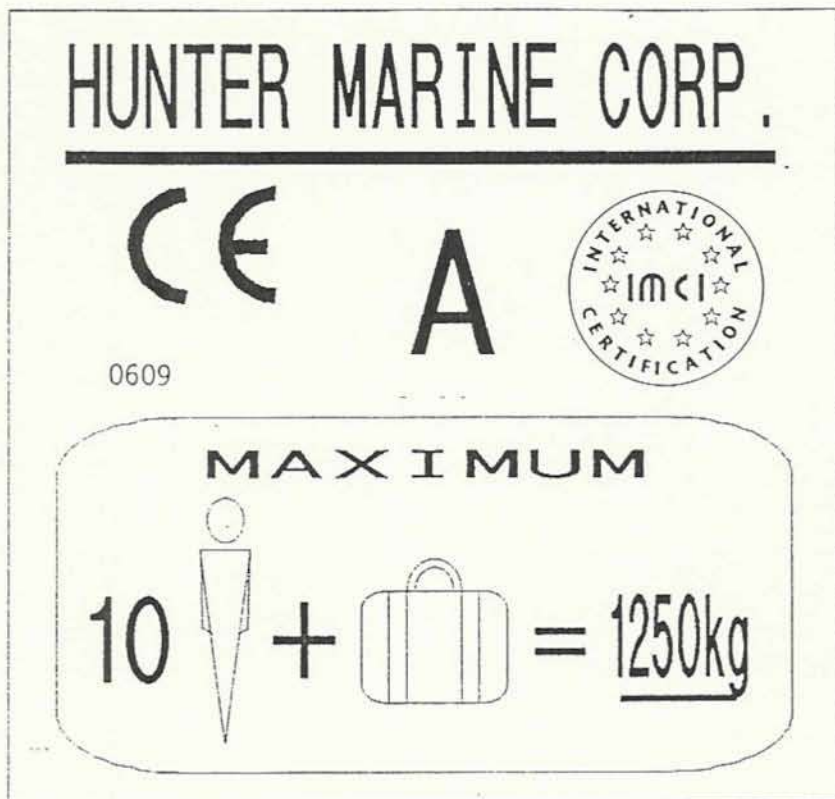
For additional information, contact:

National Marine Manufacturers Association
200 E. Randolph Dr., Suite 5100
Chicago, IL 60611
PH: (1) 312-946-6200 FX: (1) 312-946-0388

BUILDER'S INFORMATION PLATE

HUNTER MARINE CORPORATION

H430



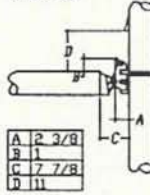
LIGHT SHIP DISP. = 11037kg (24282#)

FULL LOAD DISP. = 13259kg (29170#)

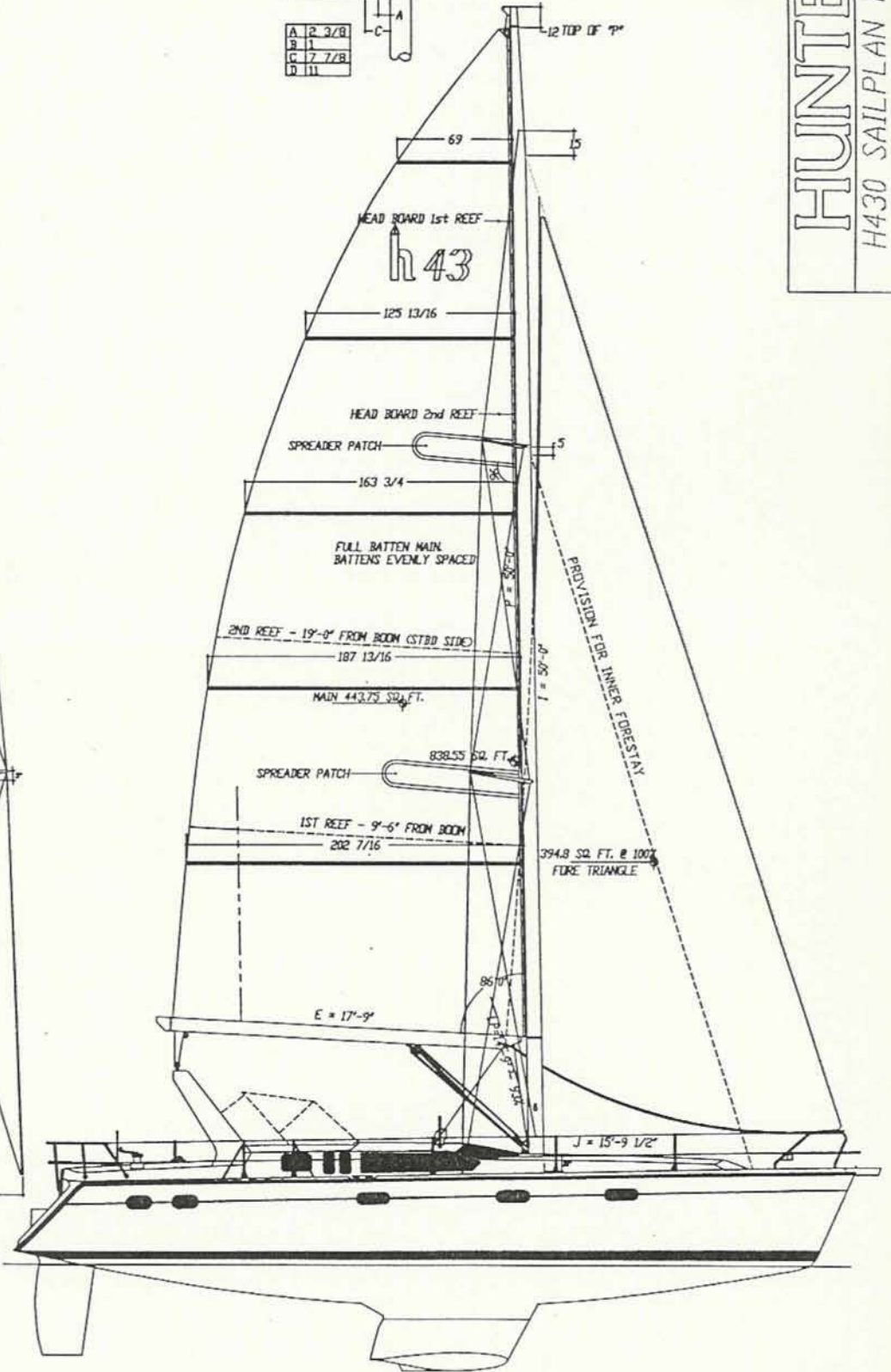
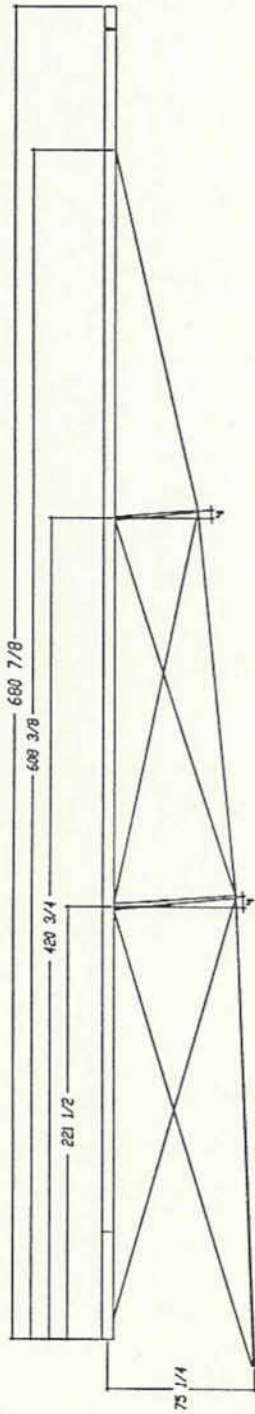
SINK @ FULL LOAD DISP. = 73mm (2.87")

Each Hunter 430 model with the CE Mark is and will continue to be identical to the individual unit of that model which was officially inspected and approved.

Z SPARS
SAILMAKERS INFORMATION
MAST: Z701A
BOOM: Z480



A	2 3/8
B	1
C	7 7/8
D	11

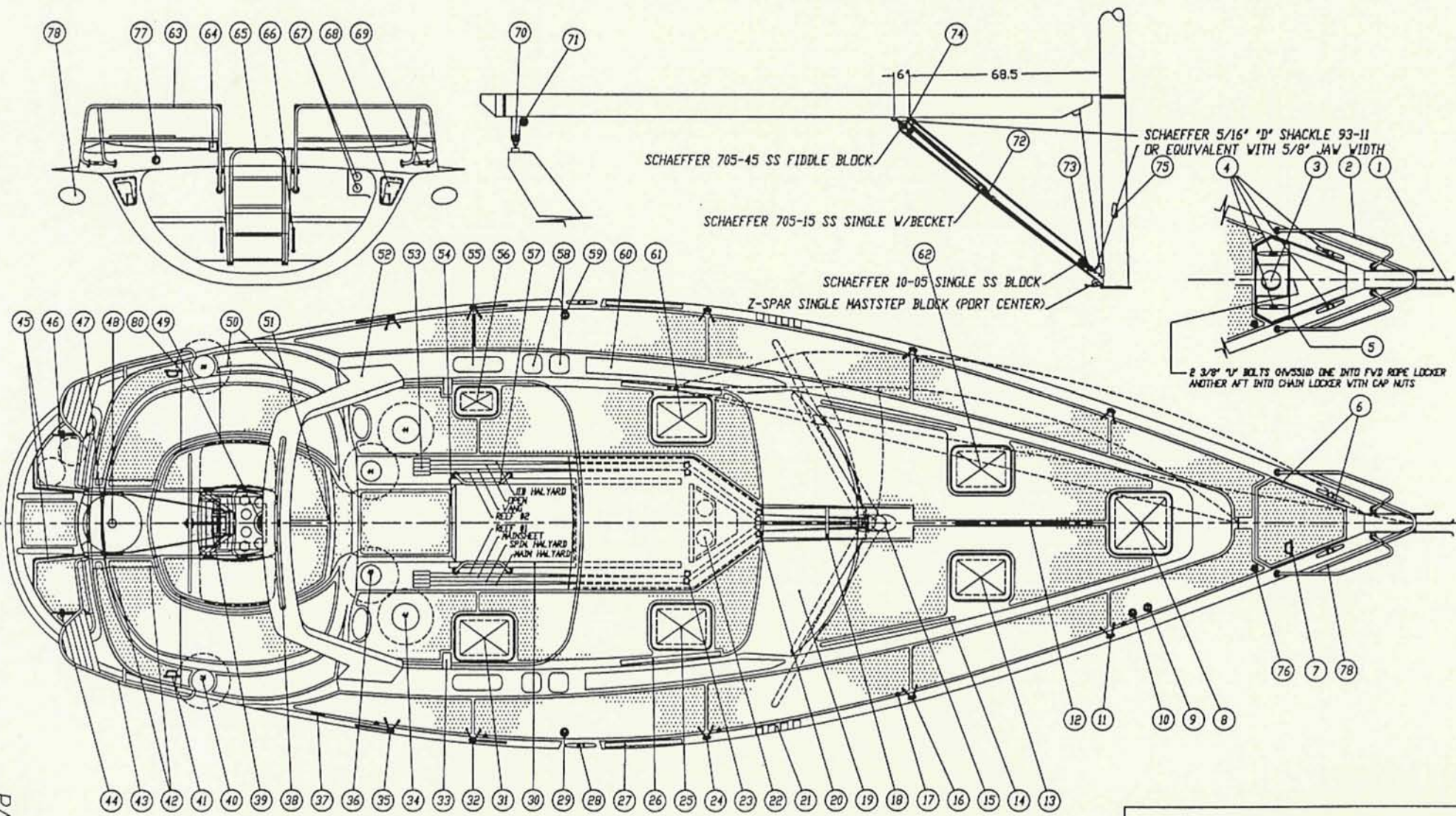


HUNTER
H430 SAILPLAN H43B2652

DIMENSIONS, CAPACITIES, ETC.

HUNTER 430

Length overall (LOA)	42'6"	12.95 m
Length of waterline (LWL)	38'0"	11.58 m
Beam (max)	14'0"	4.27 m
Draft	4'11"	1.50 m
Displacement	23,800 lbs	10,800 kg
Ballast	7,600 lbs	3,450 kg
Sail Area (100%) triangles	845 sq ft	78.53 sq m
Sail Area (actual w/standard sails)	970 sq ft	90.15 sq m
I	50'0"	15.24 m
J	15'9.5"	4.81 m
P	50'0"	15.24 m
E	17'9"	5.41 m
Mast height (from waterline)	62'5"	19.05 m
Headroom	6'6"	1.98 m
Water capacity	125 U.S. gal.	475 liters
Holding tank capacity	25 U.S. gal. x 2	94 liters x 2
Fuel tank capacity	50 U.S. gal.	190 liters
LPG tank capacity	10 lbs.	4.54 kg
Battery capacity	dealer supplied	
Electrical voltages	See Electrical Drawings	
Inboard engine	50 hp	36.8 kw
Maximum loading	10 people	1,250 kg luggage
Lifting points	Indicated by "Sling" labels on hull	



HUNTER 

H430 DECK HARDWARE H43A2682

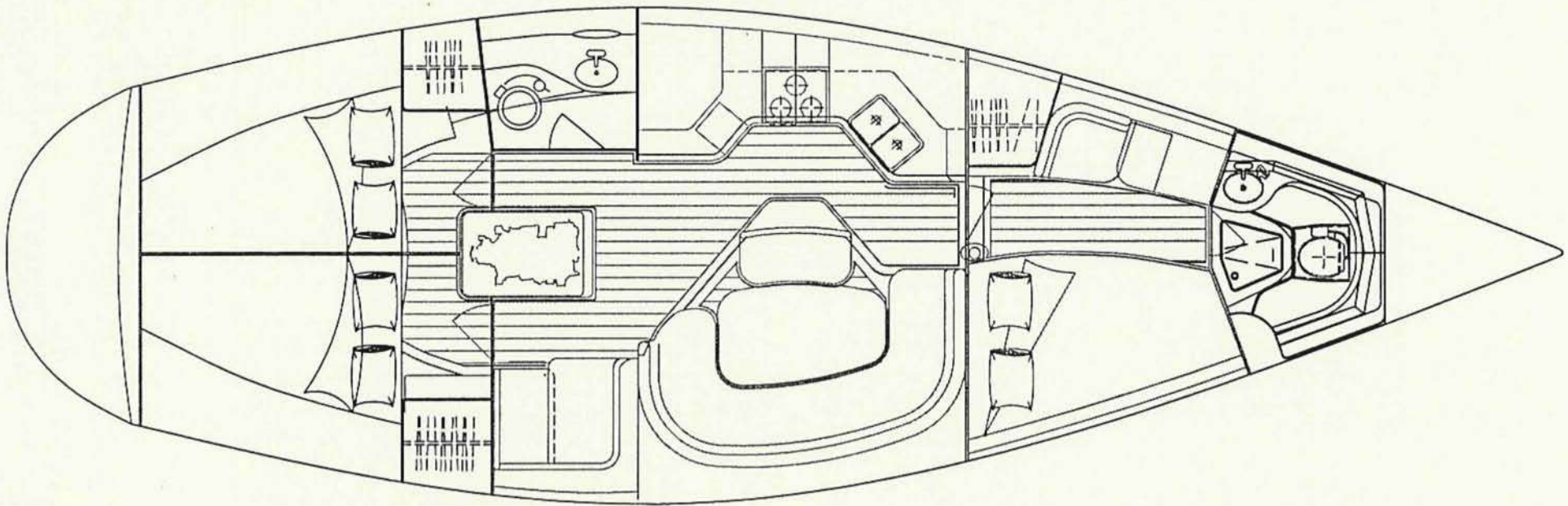
HUNTER 430 DECK HARDWARE LAYOUT

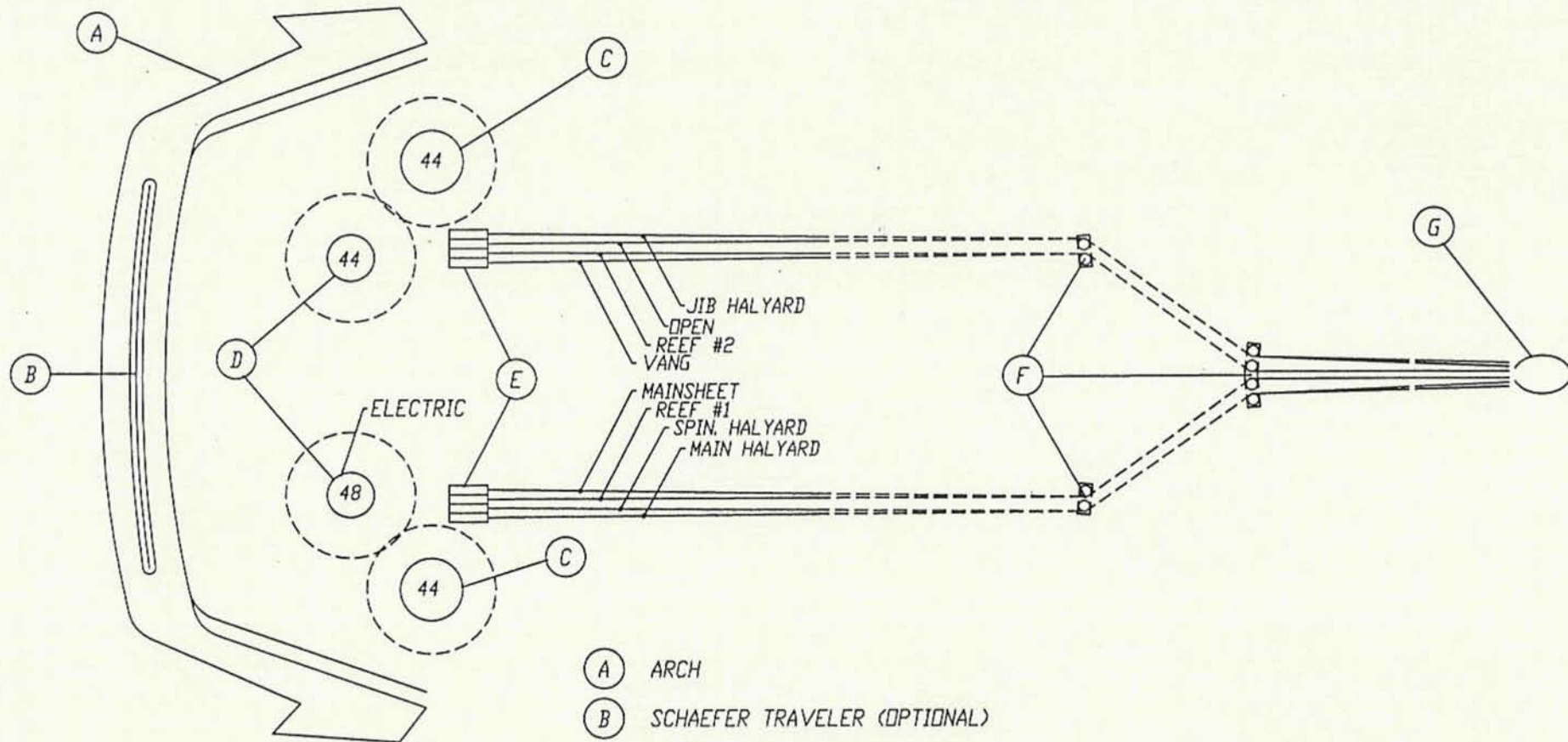
*OPTIONAL EQUIPMENT

ID	QTY	PART	MFG.	MFG.#	HUNTER#
1	1	STEM PLATE	KEN'S WELDING		HW1618
2	1	BOW RAIL	SOUTH COAST		HW2409
3	1	WINDLASS	LEWMAR	69000035	HW3190
4	2	CLEAT	YS HOLT	YS7107F-10	HW0977
5	1	STRIKER PLATE	SOUTH COAST		HW2308
6	2	HINGES (ANCHOR)	SOUTH COAST		HW4250
7	1	HANDLE (ANCHOR)	SOUTH COAST		HW4479
8	1	FWD. HATCH	BOMAR	1011-10	HW0121
9	1	DECK PLATE (WASTE)	SCANDVIK	106146	PL1140
10	1	DECK PLATE (WATER)	SCANDVIK	116I44	PL1130
11	2	STANCHION (FWD)	SOUTH COAST		HW2050
12	1	HANDRAIL	SOUTH COAST		HW2440
13	1	HATCH	BOMAR	1040-10	HW0118
14	2	HANDRAIL 48"	SOUTH COAST		HW2440
15	1	MAST STEP	Z-SPAR	RI0554	RI0554
16	2	STANCHION	SOUTH COAST		HW2050-A
17	5	FURLING BLOCKS	SCHAEFER	300-34	HW0186
18	1	ROLLER (WINDSHIELD)			HW1713
19	1	WINDSHIELD	VIPLEX		PX0009
20	2	ORGANIZER	SCHAEFER	05-30	HW0196
21	2	CHAINPLATE	KEN'S WELDING		HW3209
22	2	DORADE	NICRO FICO	NF109654	HW4856
23	2	ORGANIZER	SCHAEFER	05-30	HW0196
24	2	STANCHION	SOUTH COAST		HW2050-B
25	1	HATCH	BOMAR	10-40-10	HW0118
26	2	GENOA TRACK	SCHAEFER	40-24	HW0213
27	2	GENOA TRACK	SCHAEFER	40-24	HW0213
28	2	MIDSHIP CLEAT	YS HOLT	YS7107F-10	FS0485
29	1	DECK PLATE (WATER)	SCANDVIK	116144	PL1130
30	2	COMPANIONWAY TRACK	BOMAR	N26-L43	HW0138
31	1	HATCH	BOMAR	1040-10	HW0118
32	2	STANCHION GATE	SOUTH COAST		HW2050-C
33	2	CHEEK BLOCK	SCHAEFER		HW0277
34	3	WINCH (PRIMARY #44)	LEWMAR	49044001	HW2521
35	2	STANCHION GATE	SOUTH COAST		HW2050-D
36	1	WINCH (HALYARD #48)	LEWMAR	49048401	HW2573
37	1	CLEAT (FURLING)	SCHAEFER	70-80	HW0840
38	1	TRAVELER	SCHAEFER	SK6820	HW0194
39	1	STEERING SYS.	EDSON		HW3290
40	2	WINCH (SPINN OPT. #50)	LEWMAR	49050001	HW2523
41	2	HANDLE	SOUTH COAST		HW4479
42	4	HINGES	SOUTH COAST		HW4250
43	1	STERN RAIL	SOUTH COAST		HW2296
44	4	HINGES	SOUTH COAST		HW4250
45	5	LATCHES	SOUTH COAST		HW4358

HUNTER 430 DECK HARDWARE LAYOUT - Continued

ID	QTY	PART	MFG	MFG#	HUNTER#
46	2	PROPANE TANKS #10	SEWARD	143-A	HW4940
47	1	COCKPIT SHOWER	SAILING SPECIALTIES	48500	PL0189
48	1	STEERING RADIAL	EDSON	800-10	HW3291-G
49	1	COMPASS	RITCHIE	FN-201	LG0130
50	2	HINGES	SOUTH COAST		HW4250
51	1	PORT (OPENING)	LEWMAR	38902	HW0008
52	1	ARCH	HUNTER		
53	2	SHEET STOPPER	GARHAUER		HW1285
54	3	PIN BOARD TRACK	BOMAR	N25-L43	HW0139
55	2	PORT	LEWMAR	38902	HW0008
56	1	HATCH	BOMAR	1011-10A	HW0117
57	2	COMP. HAND RAIL	SOUTH COAST		HW2330
58	4	PORT	LEWMAR	38902	HW0043
59	1	DECKPLATE (WASTE)	SCANDVIK	106146	PL1140
60	2	WINDOW (PLEXI)	NO. FLA GLASS		PX0290
61	1	HATCH	BOMAR	1040-10A	HW0118
62	1	HATCH	BOMAR	1040-10A	HW0118
63	1	STERNRAIL (PORT)	SOUTH COAST		HW2296
64	1	STERN LIGHT	AQUA SIGNAL	62243B	EL0390
65	1	SWIM LADDER	SOUTH COAST		HW2180
66	2	HANDRAILS	SOUTH COAST		HW2404
67	2	SHORE POWER INLET	MARINCO	302SSIB	LG0100
68	2	VENTS	HUNTER		PL1602
69	2	STERN CLEAT	YS HOLT	YS7107F-10	HW0977
70	1	MAINSHEET BLOCK	SCHAEFER	10-62UC	HW0248
71	1	MAINSHEET BLOCK (BOOM)	SCHAEFER	10-05UC	HW0031
72	1	VANG BLOCK	SCHAEFER	701-13	HW0232
73	1	VANG BLOCK	SCHAEFER	10-05	HW0231
74	1	VANG BLOCK	SCHAEFER	701-45	HW0296
75	2	STEP	MAST WALKER		
76	1	FURLING SWIVEL BLOCK	SCHAEFER	03-62	HW0186
77	1	DECK PLATE (FUEL)	SCANDVIK	106149-03	PL1126
78	4	HULL PORT	LEWMAR	39132090	HW0074
79	1(SET)	BOW LIGHTS	AQUA SIGNAL	62244,45B	RI0548
80	2	STRIKER PLATE(GULL WINGS)	SOUTH COAST		HW2125

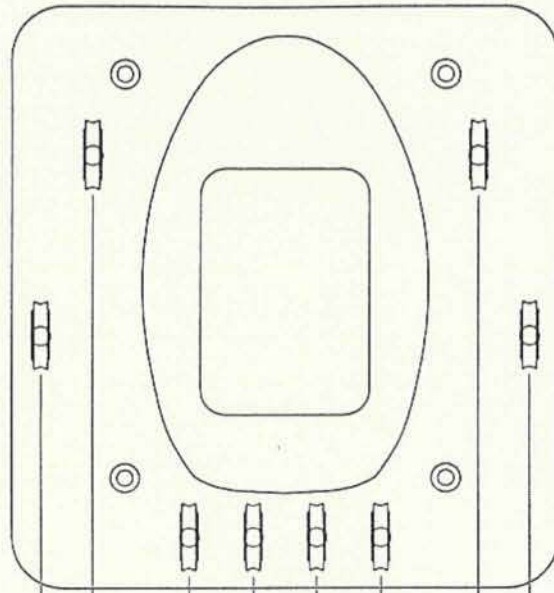




- (A) ARCH
- (B) SCHAEFER TRAVELER (OPTIONAL)
- (C) LEWMAR SHEET WINCHES
- (D) LEWMAR HALYARD WINCHES
- (E) GARHAUER SHEET STOPPER
- (F) SCHAEFER ORGANIZER
- (G) MAST STEP

HUNTER 

H430 RUNNING RIGGING H43A2651



JIB HALYARD

OPEN

REEF #1

VANG

MAIN HALYARD

SPINN. HALYARD

REEF #2

MAINSHEET

POLE LIFT
Z-SPAR PN294
ON L-BRKT PN702

SPINNAKER HALYARD
Z-SPAR PN294
ON L-BRKT PN702

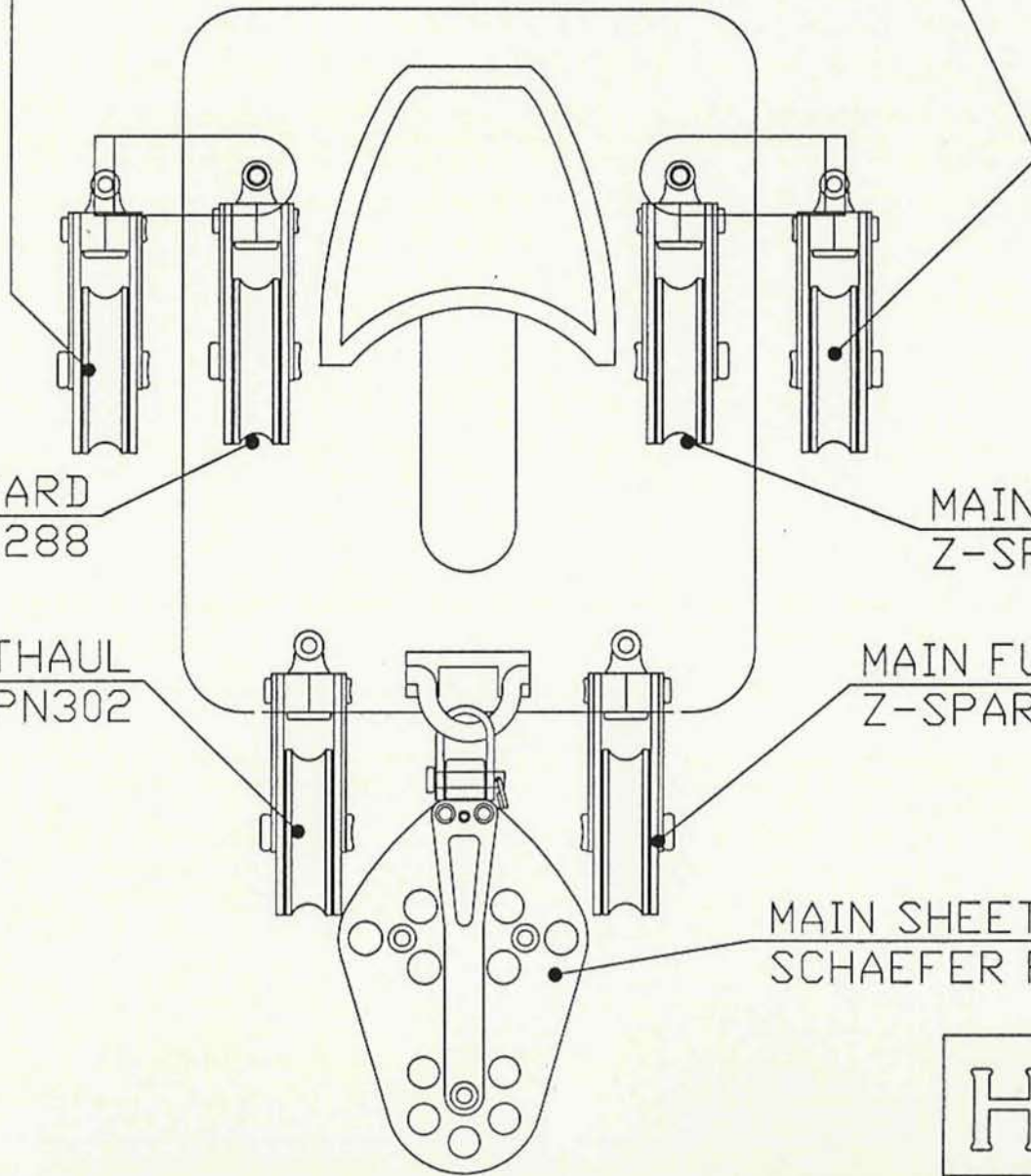
JIB HALYARD
Z-SPAR PN288

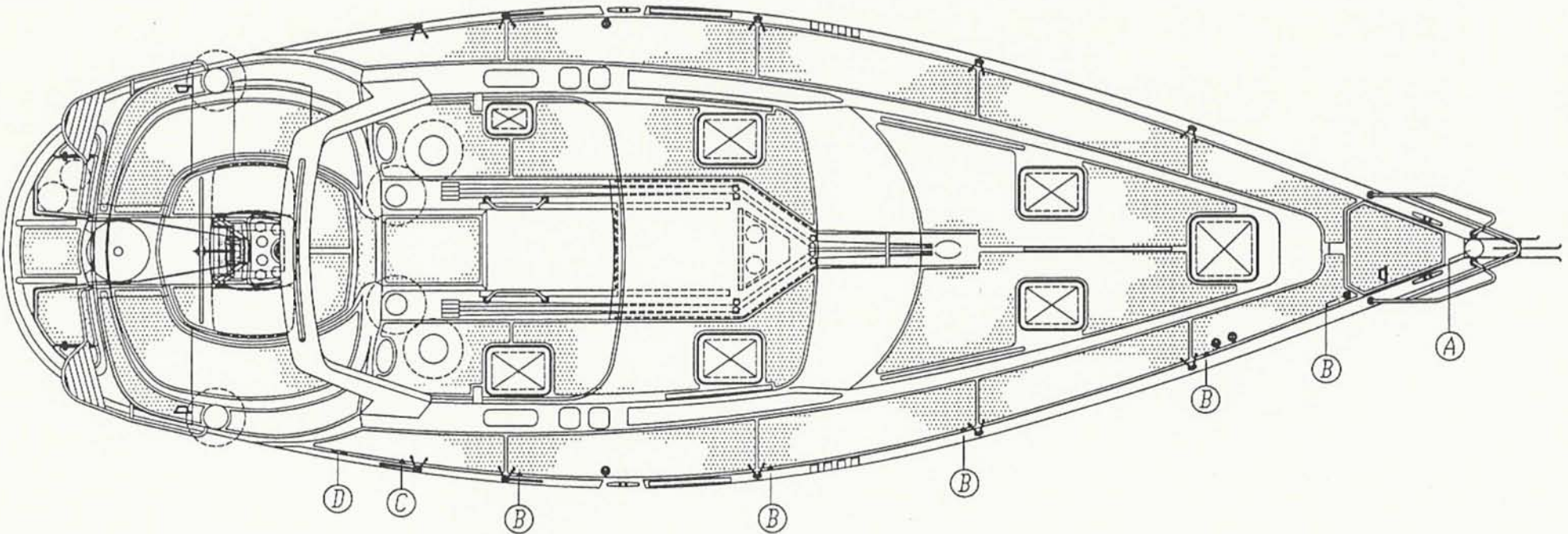
MAIN HALYARD
Z-SPAR PN288

MAIN OUTHAUL
Z-SPAR PN302

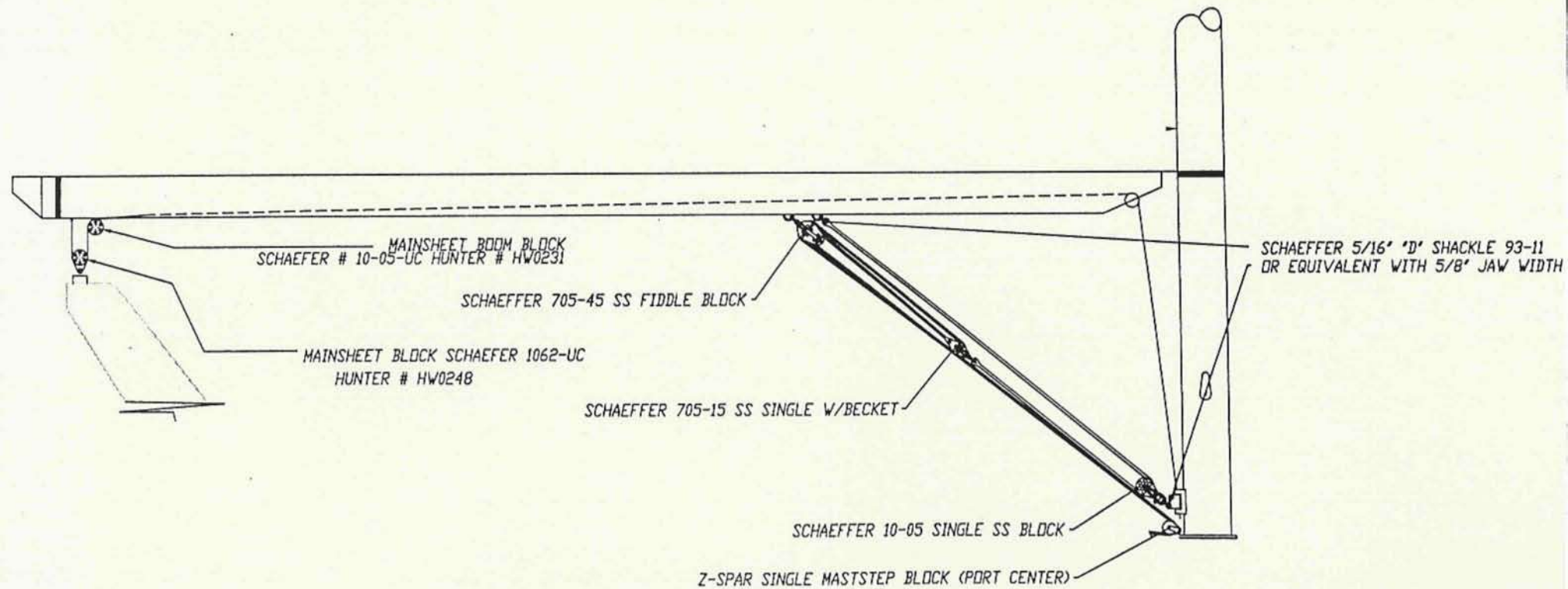
MAIN FURLING LINE
Z-SPAR PN302

MAIN SHEET & VANG
SCHAEFER PN705-45

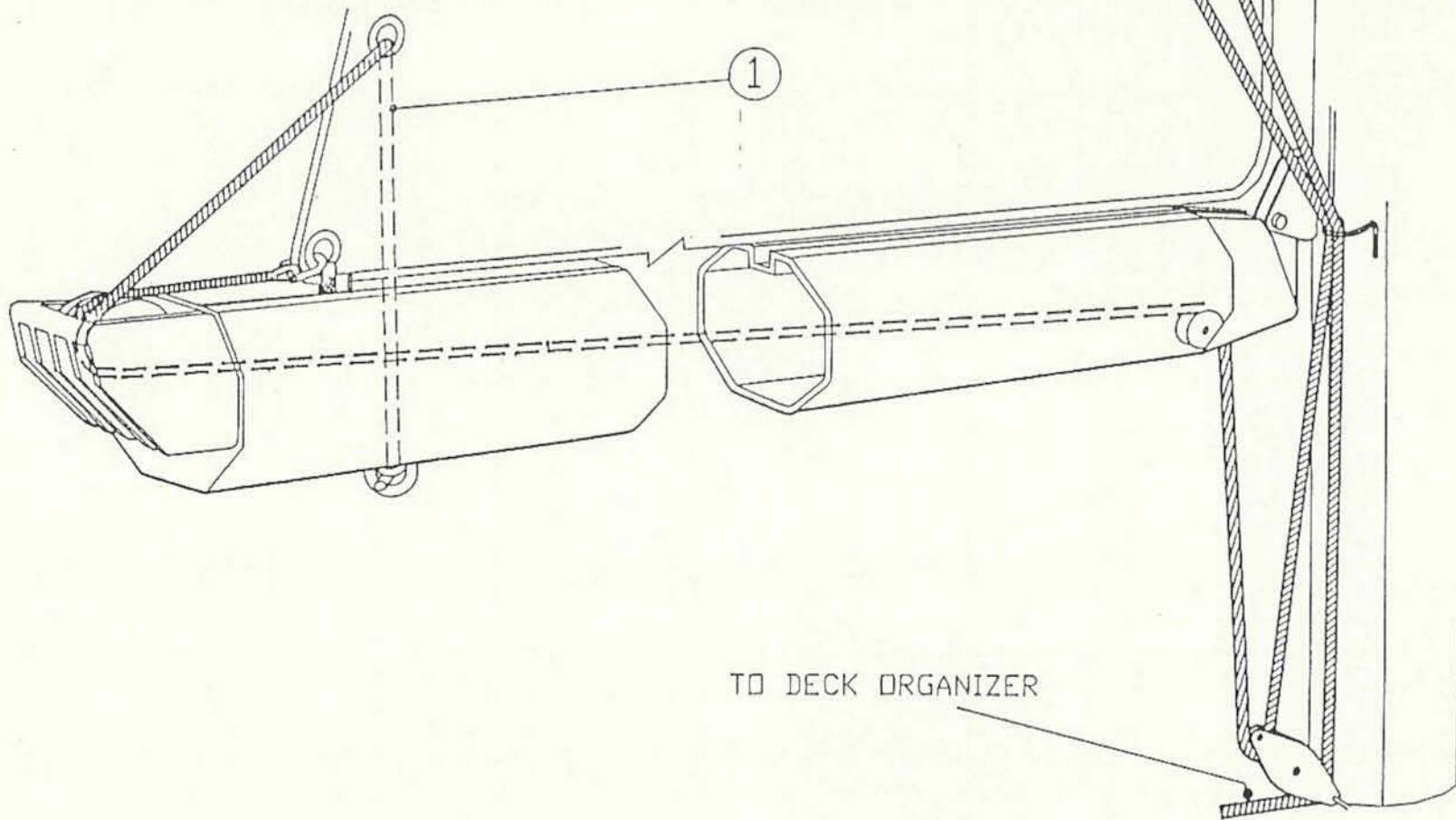




- Ⓐ PROFURL B35M FURLER
- Ⓑ SWIVEL BLOCKS (PROFURL SUPPLIED)
- Ⓒ FURLING BLOCK (SCHAEFFER 300-35)
- Ⓓ 4' ALUMINUM FURLING CLEAT



① REEF #1
REEF #2 IS MIRROR IMAGE OF REEF #1



TO DECK ORGANIZER

HUNTER 

BOOM AND REEF LAYOUT
Z-SPAR H43A2665

H430 REEFING INSTRUCTIONS

PRE-MARK THE MAIN HALYARD FOR EACH REEF

1. Shackle tack reef blocks to first and second reef tack cringles.
2. Run both reefing lines as illustrated in the Boom & Reef layout. Both portions of the reefing line leading to the reef tack block must run through the stainless steel eye on the side of the spar. The shorter reef line will be used on the first reef (starboard side, GREEN) the longer reef line on the second reef (port side, RED,).
3. Raise the main sail.
4. Ease the mainsheet and vang.
5. Lower the main sail to approximately the first reef position.
6. Take up the slack in the first reefing line.
7. Adjust the main halyard so that the tack reef block is not contacting the stainless steel eye on the side of the spar and is applying tension to the luff of the main above the reef, not below. There will be approximately 6" (150 mm) of stretch in the main luff and main halyard when the reefing line is tensioned, so make sure that this is allowed for when adjusting the main halyard to locate the tack reef block.
8. Tension the reef line with the appropriate self-tailing winch until the clew reef cringle is brought down to the boom.
9. Confirm that the tack reef block is still clear of the stainless steel eye and that only the main luff above the reef cringle is tensioned, not the luff between the cringle and the top stacked sail slide. Ease the reef line and readjust the halyard if necessary.
10. Mark the halyard at the stopped with a 1" (25mm) single band of indelible marker ink. By dropping the halyard to this mark every time a reef is required the halyard is automatically in the correct position for the reef.
11. Repeat the procedure for the second reef, using double bands to mark the halyard in the correct position.

REEFING PROCEDURE

1. Head up into the wind.
2. Ease the mainsheet and vang.
3. Check the topping life for adequate boom support.
4. Lower the main halyard to the appropriate mark, and snub the line with the stopper.
5. Tension the reefing line with the self-tailing winch until the reef clew is brought down to the boom. Apply stopper. Ease the topping lift.

SHAKING OUT A REEF

1. Head up into the wind.
2. Ease the mainsheet and vang. Tension to topping lift.
3. Release the reef stopper and remove reef line from winch.
4. Tension the main halyard to raise sail, making sure reef lines run freely while sail is being raised. Apply stopper to main halyard.
5. Re-tension vang and mainsheet. Ease the topping lift.

HUNTER 430 RUNNING RIGGING SPECIFICATIONS

RUNNING RIGGING

FITTINGS

Description	Line Size	Color	Attachments	Overall Length
Jib Halyard	7/16 (11mm)	Red	Snapshackle	122' (37.19 m)
Main Halyard	7/16 (11mm)	Blue	Hdbd. Shackle	130' (39.62 m)
Spinnaker Halyard*	7/16 (11 mm)	Black	Snapshackle	126' (38.40 m)
Staysail Halyard	7/16 (11 mm)	Green	Snapshackle	91' (27.74 m)
Jib Sheets	1/2 (13 mm)	White/Red	B.B.E.**	50' (15.24 m)
Mainsheet	7/16 (11 mm)	White/Blue	Eye splice w/shackle	80' (24.38 m)
Spinnaker Sheets	7/16 (11 mm)	White/Black	Snapshackle	80' (24.38 m)
Staysail Sheets	7/16 (11 mm)	White/Green	B.B.E.**	45' (13.72 mm)
Boom Topping Lift	3/8 (9 mm)	White	Shackle	112' (34.14 m)
Reef #1	7/16 (11 mm)	Green	B.B.E.**	85' (25.91 m)
Reef #2	7/16 (11 mm)	Red	B.B.E.**	120' (36.58 m)
Outhaul	3/8 (9 mm)	White	Shackle	22' (6.71 m)
Vang (short)	1/2 (13 mm)	White	Eye Splice w/shackle	10' (3.05 m)
Vang (long)	3/8 (9 mm)	White	Eye Splice	43' (13.11 m)
Travel. Cntrl.	3/8 (9 mm)	White	Eye Splice	20' (6.10 m)

HUNTER 430 B&R RIG DESCRIPTION

To understand how to tune the B&R rig, first you should be familiar with the various parts of a basic, single spreader rig, something that most sailors know a bit about. It is comprised of six interconnected parts: mast, spreaders, upper shrouds, lower shrouds, backstay and forestay.

When the rig is correctly turned the mast will be straight athwartships when under sail. While it may be raked or bent longitudinally to suit the individual skipper's boat handling preference, the mast will not bend sideways.

The upper shrouds, or uppers, keep the top part of the mast, that which is above the spreaders, from moving from side to side. When an upper is tightened it will pull the top of the mast in the same direction as the shroud and will put a bind in the mast at the spreader in the opposite direction from the shroud. Example: when the starboard upper is tightened it will pull the top of the mast to starboard and push the middle of the mast at the spreader to port.

The lower shrouds keep the middle of the mast from bending sideways. If the boat is fitted with fore and aft lowers, the mast will also be kept from moving fore and aft.

The forestay and backstay position the tip of the mast in a fore and aft direction. It is possible to rake the mast forward or aft to the desired amount by the correct adjustment of the forestay and backstay.

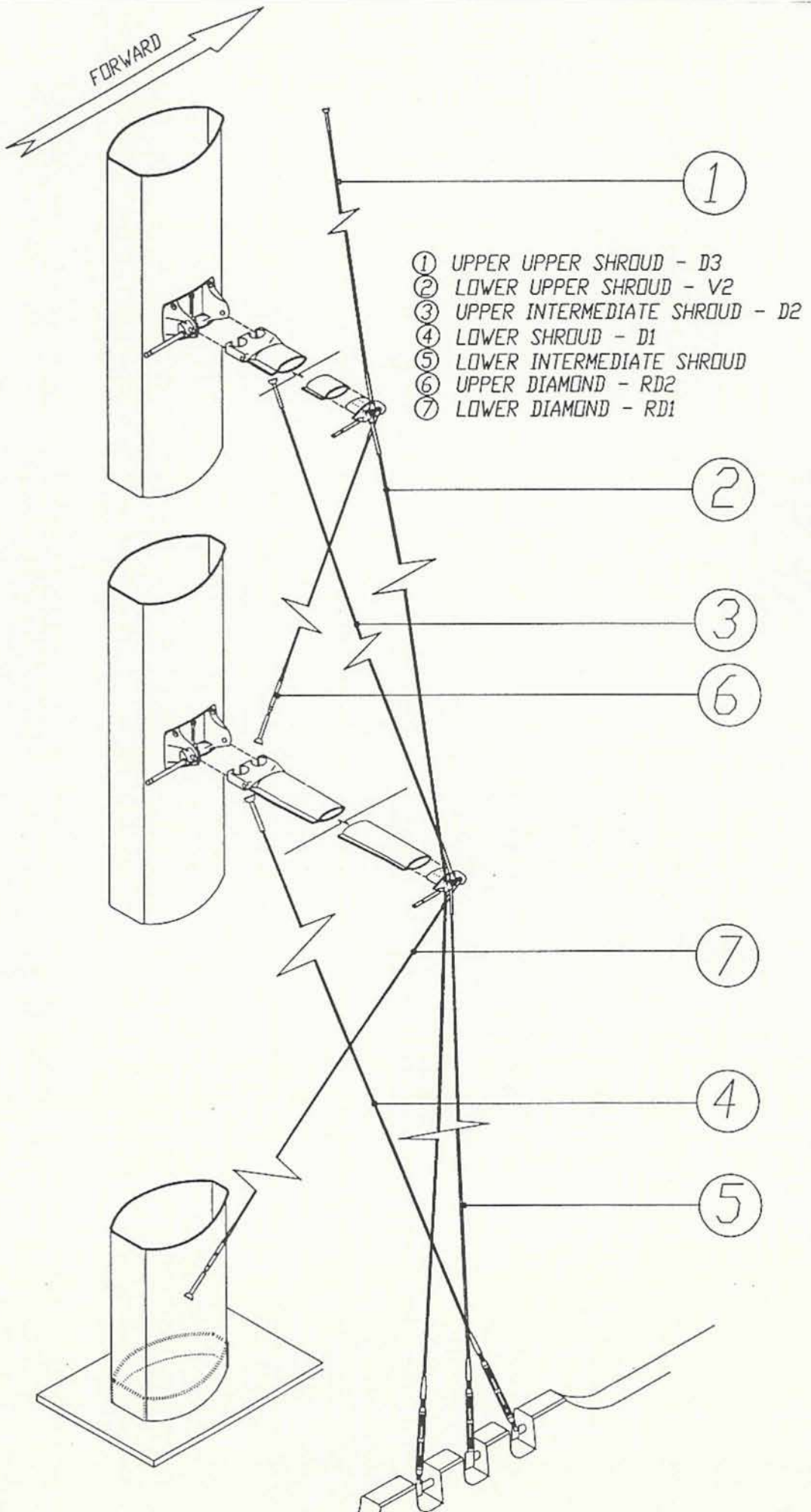
An improvement upon single spreader rig aerodynamics is to reduce the diameter of the mast by increasing its number of spreaders. The double spreader rig, only slightly more complicated than the single spreader rig, has an intermediate shroud between the upper and lower shroud which functions to keep the mast from bending athwartships.

However, with a conventional two spreader rig, one needs to add an inner forestay and running backstays which complicate sail handling. The inner forestay is generally in the way when tacking. Sails often get hung up on it, slowing the tack down and sometimes requiring crew to go forward to clear the fouled sail. During a gybe, at one point, both inner forestay and running backstays will be clack; the mast will have very poor longitudinal support, and mast failure can result. In heavy weather, if a running backstay or inner forestay comes loose for some reason or is not properly set after a gybe or a tack, there is a distinct possibility of a mast failure.

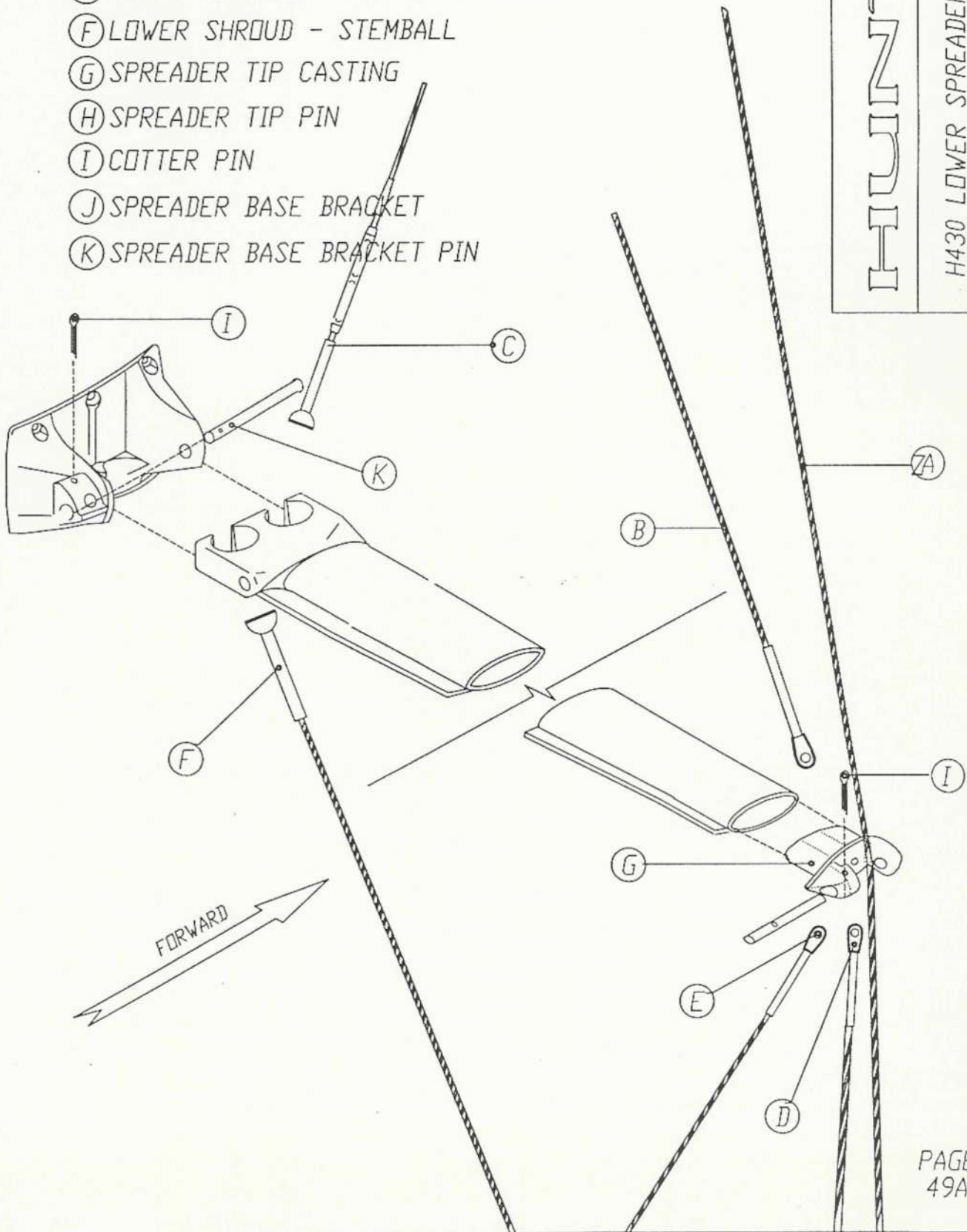
The B&R rig is designed to eliminate the inner forestay and backstay, yet allowing the use of a small mast section which will provide for good aerodynamics. The basic difference between a B&R rig and a conventional rig lies in the B&R's use of swept back spreaders and diamonds: diamonds perform the same function as inner forestays, and the swept back spreaders with shrouds eliminate the need for the backstay.

With the B&R rig no rigging has to be adjusted on any point of sail, thereby achieving a safe rig at all times. The performance-minded skipper will benefit from the inherent aerodynamic efficiency and quick tacking ability of the B&R rig's smaller mast section and swept back spreader arrangement. The cruising sailor, who often sails with minimum crew, will enjoy the safety and comfort of not having to worry about constantly moving about the boat doing and undoing various parts of the rigging.

B&R rigging systems are on boats the world over: world cruisers and racers, OSTAR boats, 2 ton, 1 ton, 3/4 ton, 1/4 ton boats and multihulls, wherever one finds sailors who want performance and reliability.



- (A) LOWER UPPER SHROUD
- (B) UPPER INTERMEDIATE SHROUD - MARINE EYE
- (C) UPPER DIAMOND - STEMBALL & TURNBUCKLE
- (D) LOWER INTERMEDIATE - MARINE EYE
- (E) LOWER DIAMOND - MARINE EYE
- (F) LOWER SHROUD - STEMBALL
- (G) SPREADER TIP CASTING
- (H) SPREADER TIP PIN
- (I) COTTER PIN
- (J) SPREADER BASE BRACKET
- (K) SPREADER BASE BRACKET PIN

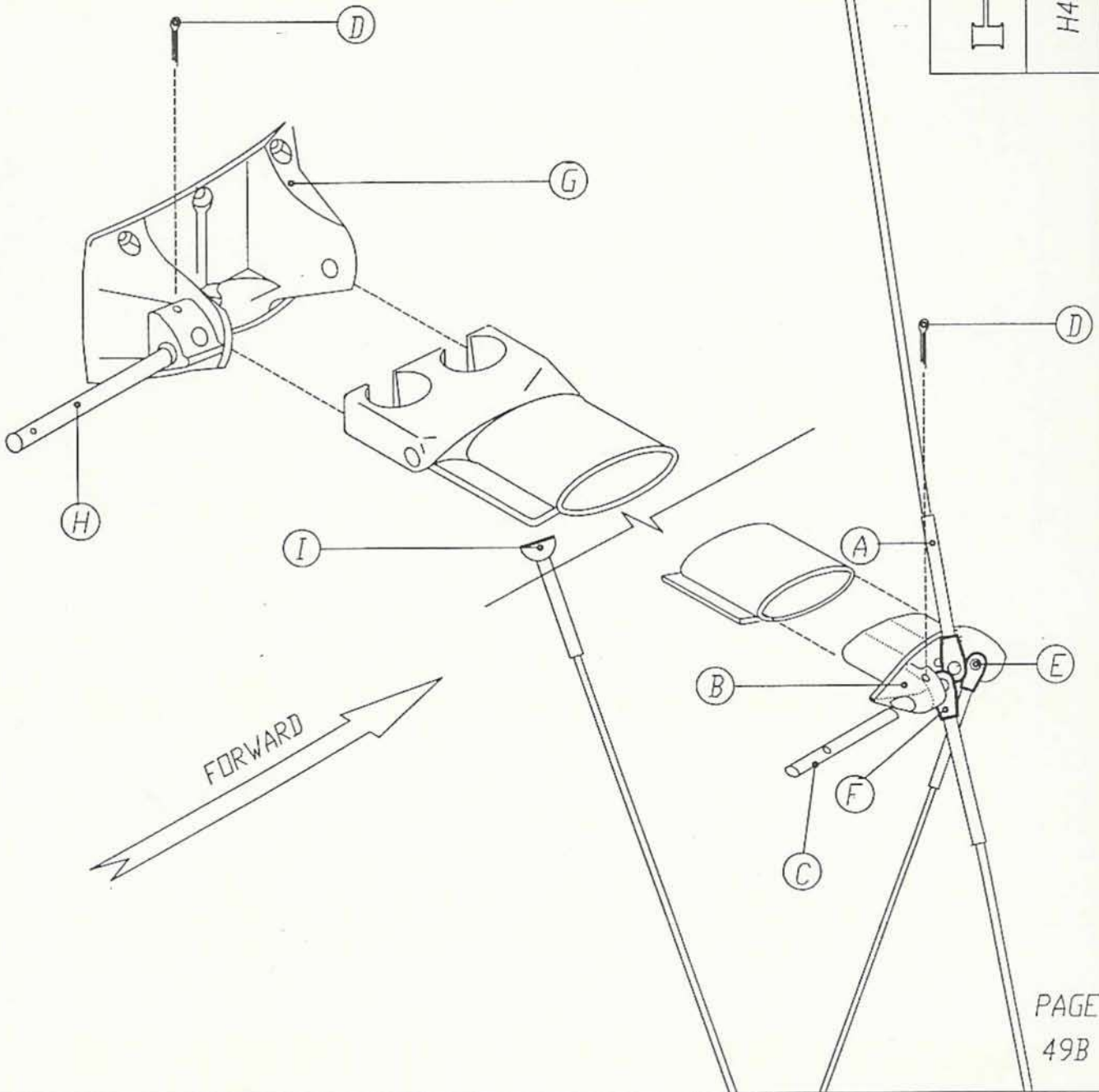




HUNTER

H430 UPPER SPREADER DETAIL H432663

- Ⓐ AIRCRAFT SPREADER EYE - UPPER UPPER SHROUD
- Ⓑ SPREADER TIP CASTING
- Ⓒ SPREADER TIP PIN
- Ⓓ COTTER PIN
- Ⓔ MARINE EYE - UPPER DIAMOND
- Ⓕ AIRCRAFT EYE - LOWER UPPER SHROUD
- Ⓖ SPREADER BASE BRACKET
- Ⓗ SPREADER BASE BRACKET PIN
- Ⓘ STEMBALL - UPPER INTERMEDIATE SHROUD



HUNTER 430 STANDING RIGGING SPECIFICATIONS

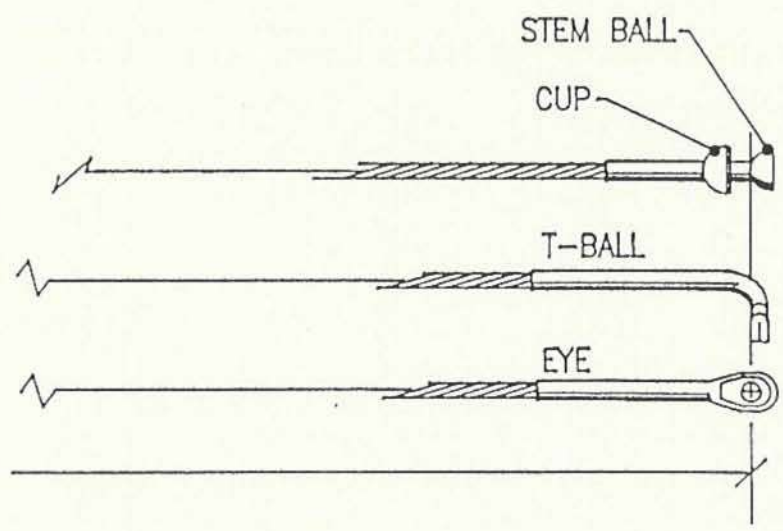
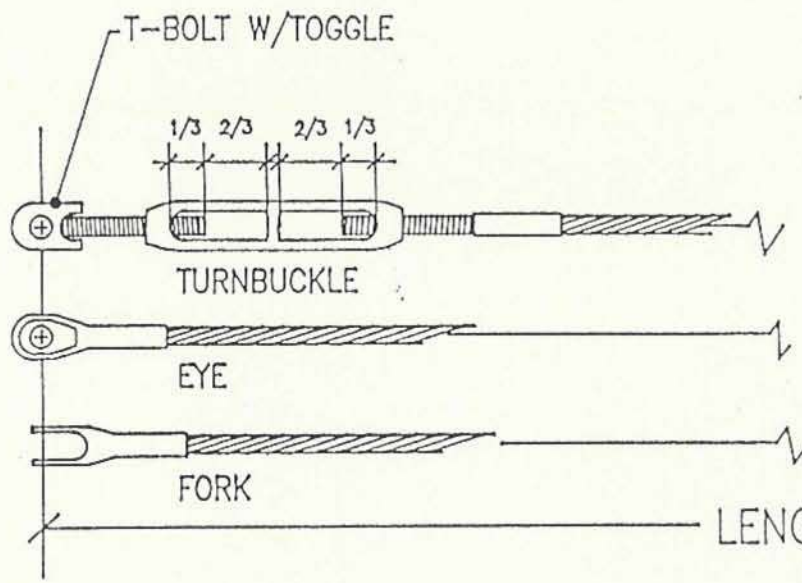
STANDING RIGGING

FITTINGS

Description	Wire Size	Upper End	Lower End	Overall Length
Upper Upper	3/8 (9 mm)	Stemball w/shell	Aircraft Eye	15' 10" (4.83 m)
Lower Upper	3/8 (9 mm)	Aircraft Eye	12-20-20	36' 3 1/4" (11.06 m)
Upper Intermediate	5/16 (8 mm)	Stemball w/cup	Marine Eye 1/2" pin	17' 2 3/4" (5.25 m)
Lower Intermediate	5/16 (8 mm)	Marine Eye 1/2" pin	10-20-20	19' 9 1/8" (6.02 m)
Lower	3/8 (9 mm)	Stemball w/cup	12-20-20	20' 5 5/8" (6.24 m)
Upper Diamond	1/4 (6 mm)	Marine Eye	8-16-16*	16' 10 1/4" (5.14 m)
Lower Diamond	1/4 (6 mm)	Marine Eye	8-16-16*	19' 0 1/2" (5.80 m)
Forestay	3/8 (9 mm)	Marine Eye	12-20-20	52' 2 3/4" (15.92 m)
Staysail Stay	9/32 (7 mm)	Stemball w/shell	9-16-16	36' 9 5/8" (11.27 m)

All wire is 1 x 19 stainless steel.

* The three numbers represent the turnbuckle size as follows:
Wire size, body size, pin diameter in 32nds (.8 mm) of an inch.



HUNTER 

RIGGING LENGTHS GENA2605

TUNING THE B&R RIG

THE HUNTER 430 B&R RIG

The easiest method to tune the B&R rig is to perform Step One as follows before the mast is stepped, with the mast lying aft side down, supported at both ends, and with all rigging slack. If the mast is already stepped, loosen all the rigging until it is slack, and then proceed to Step One.

1. Start with all rigging slack. Then induce the desired mast bend by tightening the diamonds. Measure the bend by tensioning a thin string, or the main halyard, along the back edge of the mast. The amount of bend desired depends on the way the sails are cut. As a general rule, however, a calculation based on .07 of the height of the mast above the boom can be used to determine normal mast bend. Therefore, a boat with a mast 50' (15.24 m) high from the boom to the tip, would have the string approximately .35' or 4" (10 cm) (.07x50') away from the mast when measured half way up. Upper and lower diamonds should be about equally tight, so that you have a nice, even bend in the mast.

It is very important that you get the mast straight athwartships at this stage, so that all the bend is in the longitudinal plane. When this is achieved all diamonds should be about equally tight.

2. Step the mast with all shrouds attached loosely (if the mast was not already stepped).

3. Adjust the forestay to the desired mast rake. Hunter recommends that you rake the mast aft approximately one degree. With mast height of 60' (18.29 m) over deck, this approximately corresponds to a one foot rake. Hang a weight from the main halyard and use this as a plumbob.

Tighten the forestay up to approximately 25% of the final tension you will want on it. This means that the turnbuckle on the forestay will be adjusted approximately another 1% of the forestay length to reach its final tension.

4. Up until now all shrouds shall have been slack and the mast straight athwartships. Start adjusting

the uppers with an equal number of turns on the turnbuckles on both sides until they are tight. Now the mast bend has increased some, which will be corrected later.

5. The next step is to check if the mast is standing straight up relative to athwartships. Use the jib halyard for this. Pull it outboard so that it reached below the sheerline to one side of the mast, and mark the halyard at the sheerline. Bring the halyard over to the other side, and repeat the procedure. If you find a difference, adjust the turnbuckles an equal number of turns on both sides (in opposite directions) until the mast is standing straight.

6. Tighten the intermediate shrouds equal amounts on both sides until they are almost as tight as the uppers. Sight along the mast, and see that it is straight athwartships. If it is not straight, adjust the intermediates an equal number of turns on both sides of the boat (in opposite directions) until it is.

7. Tighten the lower shrouds until they are equally tight with the upper shrouds. Again, sight along the mast, and see that it is straight athwartships. If it is not, again adjust, but this time the lowers, until it is. Your mast will now have about the same amount of longitudinal bend as you originally set up, and no bend athwartships.

8. Tighten the forestay to its estimated final tension.

9. The final test on how well your rig is adjusted comes when you are sailing. Sail upwind with the boat in 10-15 knots of winds. First, adjust the tension of the shrouds. If the leeward shrouds are very loose, take about half the amount of slack out by tightening the turnbuckles, carefully marking down the number of turns for each one. Tack over, and adjust the shrouds on the other side (now leeward side) by the same number of turns. Continue sailing upwind. Sight along the back of the mast. The mast should now look almost straight athwartships. If, however, the mast is straight up to the top spreaders

but thereafter falls off to leeward, adjust the uppers on both sides until it is straight.

During this final tuning always adjust both sides in the same way, or else it will be very hard to get the mast straight on both tacks. Try to make all adjustments on the leeward side, and then tack over and make the adjustments on the new leeward side. By doing this you decrease the wear on the turnbuckle threads.

10. While sailing, also check the amount of sag in the forestay. The desired headstay tension depends upon the shape of the jib and the sea and wind conditions.

Generally, a tighter forestay will give more pointing ability and a looser forestay more power. As a general guide, the sag should be 1-2% of the headstay

length. For a 60' (18.29 m) headstay this would translate into 7-14" of sag.

Once your B&R rig is adjusted, you will not have to redo it. If the mast has to be taken down for winter storage, only loosen the forestay until the pins in the shrouds can be taken out. Leave the spreaders on the mast, and do not adjust either the shrouds or the diagonals.

Measure the forestay turnbuckle adjustment carefully before loosening them so that the rigging adjustment can be reset after the rig is put back up.

A good way to store the mast is on top of the boat, with the spreaders pointing down, thereby supporting the winter cover and efficiently keeping snow and water off the boat.

HUNTER 430 SPINNAKER OPTIONS

The swept back shrouds and spreaders prevent the boom from being eased as much downwind as on more conventional rigs. Therefore, the 430 should not sail directly downwind, but should instead “tack” downwind by gybing from broad reach to broad reach. This will also help to prevent the jib from being blanketed by the large main.

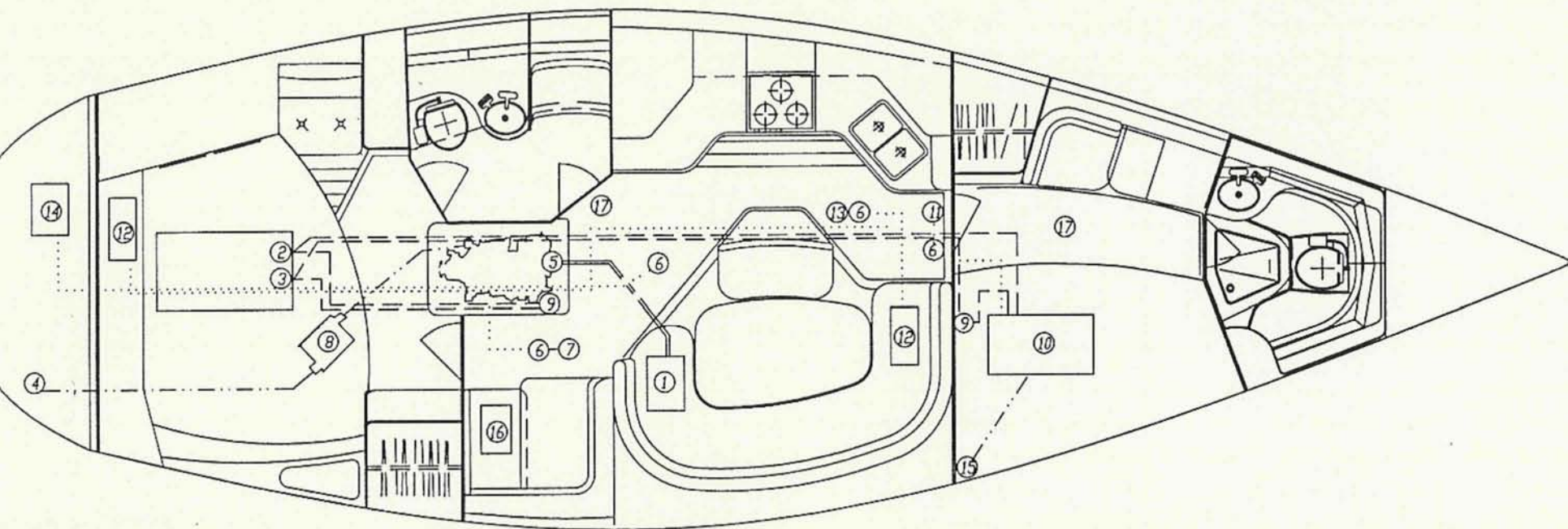
“Tacking” downwind is also much safer, since the boat is more stable and has much less chance of being caught “by the lee” and being exposed to an accidental gybe or broach.

This need to “tack” downwind makes the 430 ideally suited to the use of the new asymmetrical spinnakers. These spinnakers are flown like large jibs and do not require conventional spinnaker poles with

their inherent and complicated topping lifts, foreguys, after guys, and resultant high mast loadings.

The asymmetrical spinnaker on the 430 can be flown from a tack line secured to the “U” bolt on the stem head and passing over the bow roller. In this configuration, at the majority of sailing angles, the jib must be furled to allow clear air flow to the spinnaker. If not, the spinnaker will be more difficult to fly. The weather sheet should be lead outside the luff of the spinnaker so the sail will fly downwind when gybing. To ease handling of the sail a “snuffer” or “spinnaker sally” can be used.

Talk to your local sailmaker about the best system for your needs and the optimum size of spinnaker.



LEGEND

- | | |
|----------------------------|----------------------------|
| ① WATER HEATER | ⑨ FUEL FILTER |
| ② FUEL RETURN | ⑩ GENERATOR |
| ③ FUEL SUPPLY | ⑪ GENERATOR INTAKE |
| ④ ENGINE EXHAUST THRU HULL | ⑫ AIR CONDITIONER |
| ⑤ ENGINE HEAT EXCHANGER | ⑬ AIR CONDITIONER INTAKE |
| ⑥ WATER STRAINER | ⑭ REFRIGERATION COMPRESSOR |
| ⑦ ENGINE INTAKE | ⑮ GENERATOR EXHAUST |
| ⑧ MUFFLER | ⑯ INVERTER |
| | ⑰ SUMP PUMPS |

LINE TYPES

- | | | |
|----------------|-------|-------------------------------|
| FUEL LINE | ----- | 1/4" (6MM) FUEL HOSE |
| WATER HEATER | ----- | 5/8" (16MM) SHIELDFLEX HOSE |
| COOLING WATER | | 1" (25MM) SHIELDFLEX HOSE |
| ENGINE EXHAUST | ----- | 3" (76MM) EXHAUST HOSE |

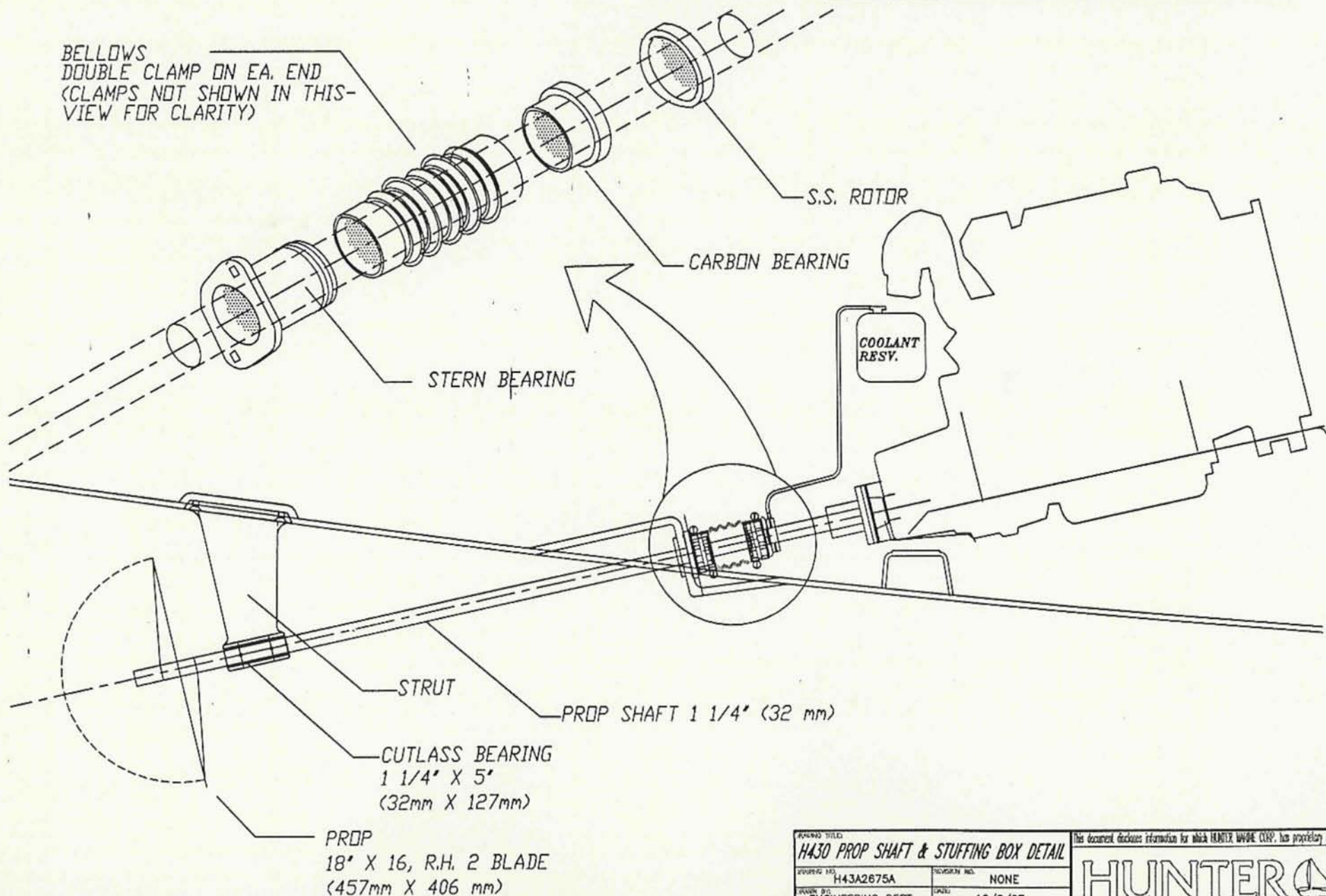
HUNTER 

H430 MECHANICAL SYSTEM H43A2659

DRIPLESS PACKING GLAND
DETAIL

SEE FOLLOWING PAGES FOR DETAILED
INSTALLATION & TROUBLESHOOTING DETAILS

BELLOWS
DOUBLE CLAMP ON EA. END
(CLAMPS NOT SHOWN IN THIS-
VIEW FOR CLARITY)



S.S. ROTOR

CARBON BEARING

STERN BEARING

COOLANT RESV.

STRUT

PROP SHAFT 1 1/4" (32 mm)

CUTLASS BEARING
1 1/4" X 5"
(32mm X 127mm)

PROP
18" X 16, R.H. 2 BLADE
(457mm X 406 mm)

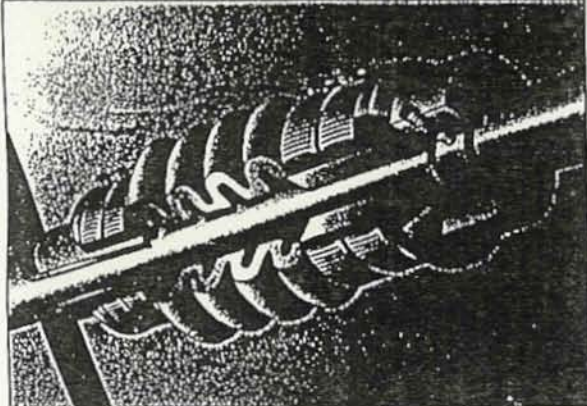
PAGE 56A

PART NO. TITLE:		H430 PROP SHAFT & STUFFING BOX DETAIL	
REVISED BY:	H43A2675A	REVISION NO.:	NONE
DESIGNED BY:	ENGINEERING DEPT.	DATE:	10/2/97

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HUNTER

PACKLESS SEALING SYSTEM



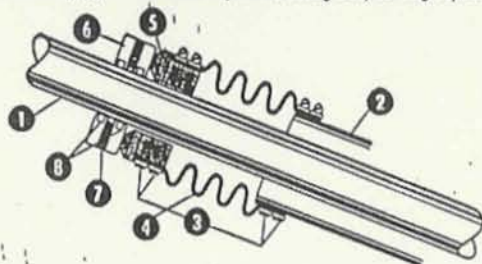
SHAFT SEAL

INSTALLATION INSTRUCTIONS

For Shafts:
3/4" to 3 3/4"
(22mm to 90mm)

STANDARD SPEED P.S.S. AFT SEAL:

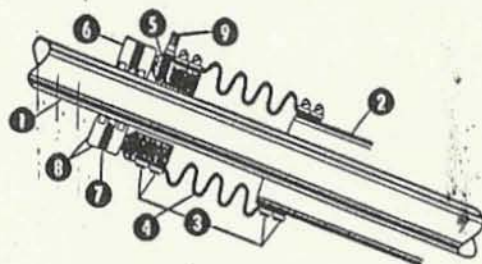
*Hull Speed Under 12 Knots.
(Boats equipped with water injected stuffing box, use high speed.)*



- | | |
|-----------------------------------|---|
| 1 Propeller Shaft | 5 Carbon Graphite Flange (1) |
| 2 Shaft Log (Stern Tube) | 6 Stainless Steel Rotor (1) |
| 3 Stainless Steel Hose Clamps (4) | 7 Stainless Steel Set Screws (5 total / 4 for Rotor, 1 Spare) |
| 4 Reinforced Bellow (1) | 8 Nitrile O-Rings (2 In Rotor / 2 Spare) |

HIGH SPEED P.S.S. SHAFT SEAL:

Hull speed over 12 knots and boats with water injected stuffing box.



- | | |
|-----------------------------------|---|
| 1 Propeller Shaft | 6 Stainless Steel Rotor (1) |
| 2 Shaft Log (Stern Tube) | 7 Stainless Steel Set Screws (5 total / 4 for Rotor, 1 Spare) |
| 3 Stainless Steel Hose Clamps (4) | 8 Nitrile O-Rings (2 In Rotor / 2 Spare) |
| 4 Reinforced Bellow (1) | 9 Nylon Hose Barb Fitting |
| 5 Carbon Graphite Flange (1) | |

READ INSTRUCTIONS THOROUGHLY

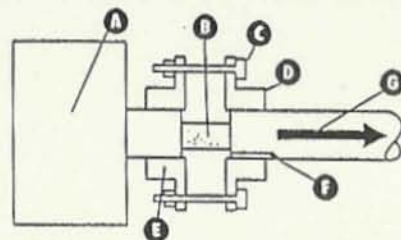
- Do not use grease or oil to slide the stainless steel rotor down the shaft.
- Do not allow petroleum based antifreeze to come in contact with face of the seal when winterizing engine.
- Install the P.S.S. Only when the boat is out of the water.
- Do not damage the carbon flange or stainless steel rotor while unpacking and handling.
- Do not tighten nylon hose barb fitting or replace with stainless or brass.

INSTALLATION INSTRUCTIONS

1. Unbolt the shaft coupling from the transmission coupling.
2. Remove the shaft coupling from the shaft. (On most installations the coupling is fixed to the shaft by two set screws that are wired together).

Helpful hint: Removing the shaft from the shaft coupling may be difficult. The drawing below shows the use of a spacer as a press between the propeller shaft and the transmission coupling:

REMOVING THE SHAFT COUPLING:



- | | |
|------------------|-------------------------|
| A Transmission | E Transmission Coupling |
| B Spacer | F Key |
| C Bolts | G Shaft |
| D Shaft Coupling | |

- A. Insert a spacer (with a diameter smaller than the shaft) between the shaft and transmission coupling.
- B. Bolt the transmission coupling and shaft coupling back together with the spacer fit between (note: this may require longer bolts). The spacer will act as a press to drive the shaft from the shaft coupling as the bolts are tightened.
3. Remove the old stuffing box and rubber hose to expose the shaft log (stern tube).
 - * If your boat is equipped with a bolt-on or rigid stuffing box, please refer to heading: Bolt-on or rigid stuffing boxes.
 - ** If your boat is equipped with a threaded stuffing box, please refer to heading: Threaded stuffing boxes.
4. Slide the open end of the bellow and two hose clamps over the shaft log. The carbon flange (5) should already be securely attached to the bellow.
5. Clean the shaft (1) with very fine sand paper or emery paper (400 to 600 grit), paying particular attention to the shaft keyway to make certain there are no burrs or sharp edges that could tear the O-rings.
6. Make sure the O-rings (8) are positioned in the grooves of the rotor (spare O-rings are provided) and that the set screws (7) are backed out so that they do not extend into the inside bore of the rotor. Slide the stainless steel rotor (6) onto the shaft using a water soluble lubricant like dish soap to help the rotor slide easily. Do not use grease or oil.

- Attach the shaft coupling (do not forget to secure coupling with screws. Wire set screws together to avoid loosening).
- Position the bellow on the stern tube so the carbon is centered around shaft (the carbon graphite flange is bored larger than the shaft to compensate for vibration or misalignment). Clamp the cuff of the bellow to the shaft log (2) with the two stainless steel hose clamps (3).
- Slide the stainless steel rotor (6) down the shaft so it just comes in contact with the carbon graphite flange (1). Mark this "neutral" position on the shaft just in front of the stainless steel rotor with a marker or tape.
- Using the stainless steel rotor (6), compress the bellow (4) the amount indicated on the bellow compression chart (the "neutral" mark on the shaft is used as a reference to measure the amount of compression). While keeping the bellow compressed, tighten the two set screws to secure the rotor to the shaft. Once these set screws are secured, a second pair of screws are stacked on top of the first to act as locking screws to prevent the lower screws from possibly backing away from the shaft.

BELLOW COMPRESSION CHART:

Shaft diameter	Compression amount
3/4" to 1 1/8" (22mm to 30mm)	3/4" (20mm)
1 1/4" to 2" (32mm to 55mm)	1" (25mm)
2 1/4" to 3 3/4" (60mm to 95mm)	1" (25mm)

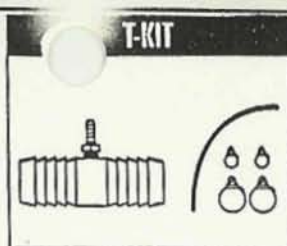
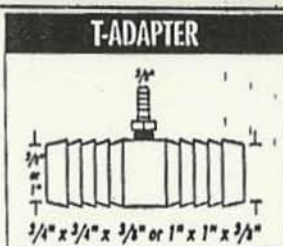
Note: amount of compression may vary depending on motor mounts and shaft misalignment.

- High speed seals with nylon hose barb fitting reference 11-A; Standard speed seals reference 11-B.

11-A. High speed seals with a nylon hose barb fitting require that water be plumbed into the seal to cool and lubricate the seal. There are three methods for plumbing water into the seal:

- Remove the plug from heat exchanger and replace plug with a hose barb fitting (this plug would normally be used to drain water from the engine). Run a reinforced hose to the shaft seals nylon hose barb (3/8"). Secure both with hose clamps.

- Cut into the exhaust line of the cooling system before hot water is discharged overboard. Fit t-adapter into line and plumb water into shaft seal nylon hose barb (3/8"), using reinforced hose. Secure all connections with hose clamps.



Note: P.Y.I. T-adapter fittings or T-adapter kits (T-adapter, 6' reinforced hose, 4 hose clamps) are available for 3/4" or 1" internal hose diameters.

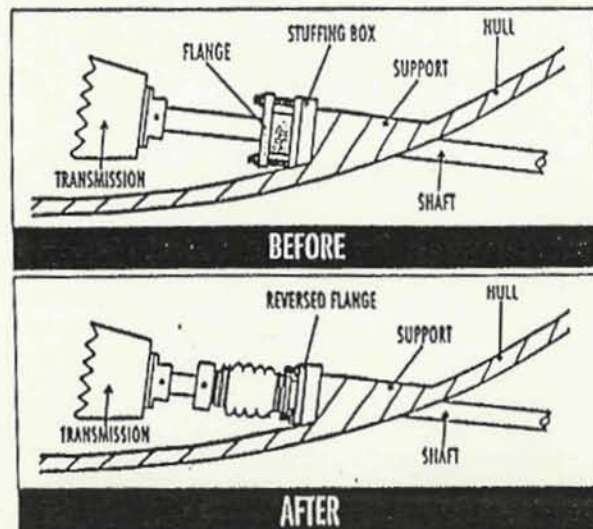
- For keel cooled or in-line systems, water can be plumbed into the seal from an underwater scoop.

11-B. Standard speed seals. When a boat with a watertight (P.S.S.) Seal goes back in the water, there will be an air pocket trapped in the shaft log (stern tube). This air pocket must be vented when the boat is launched, so water can reach the face of the seal to help cool and lubricate it. To vent the air pocket, simply compress the bellow (push the carbon away from the stainless steel rotor with your hand) so that water fills the shaft log (stern tube). A small amount of water will enter the boat at this time and will stop as soon as you release the bellow, allowing the two faces to come back in contact.

This procedure should be done every time the boat goes back in the water and is not required with high speed seals.

BOLT-ON OR RIGID STUFFING BOXES:

If your stuffing box is a bolt-on or rigid type, you will need to reverse the flange that was used to compress the packing. This flange will be bolted to the face of the bolt-on stuffing box and sealed with a gasket so no water can leak through. Once reversed, the bellow can be fit over the tube that was used to compress the packing. When completed, proceed with step #4 of instructions.



THREADED STUFFING BOXES:

If your old stuffing box was threaded directly into the hull, you will need to cover the threads with a liquid gasket material like "form-a-gasket" to prevent the threads from cutting into the bellow. When completed, proceed with step #4 of instructions.

BREAK-IN PERIOD:

There is, on average, a 10 minute break-in period when the carbon graphite flange will polish the face of the stainless steel rotor. During this break-in period there will be a very fine black mist being emitted when shaft is turning at high R.P.M.'s.

TROUBLESHOOTING:

- Spray or mist during operation:

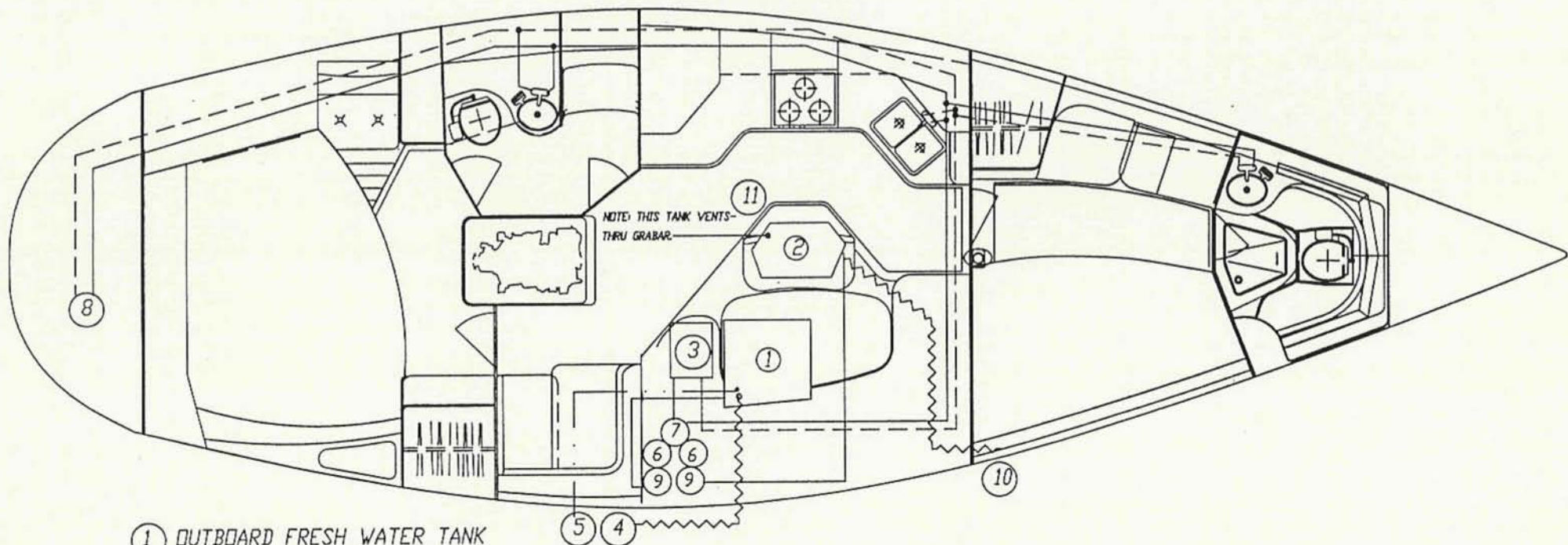
Dimensions provided in the bellow compression chart are an average and should act as a guide. If you should experience any spray or misting during high speed operation (after break-in period), add an additional 1/8" compression to the bellow with the rotor and repeat until the spray has stopped.

- Dripping while not operational:

If the seal leaks when the shaft is not turning, some foreign material such as grease or oil may be prohibiting the two faces from seating properly. To clean this foreign material from the two faces, insert a clean cloth rag between the carbon graphite and stainless steel rotor and rotate it around the shaft vigorously. As you do this, water will flush both faces of any impurities. Remove the rag from the seal and the leak should stop.



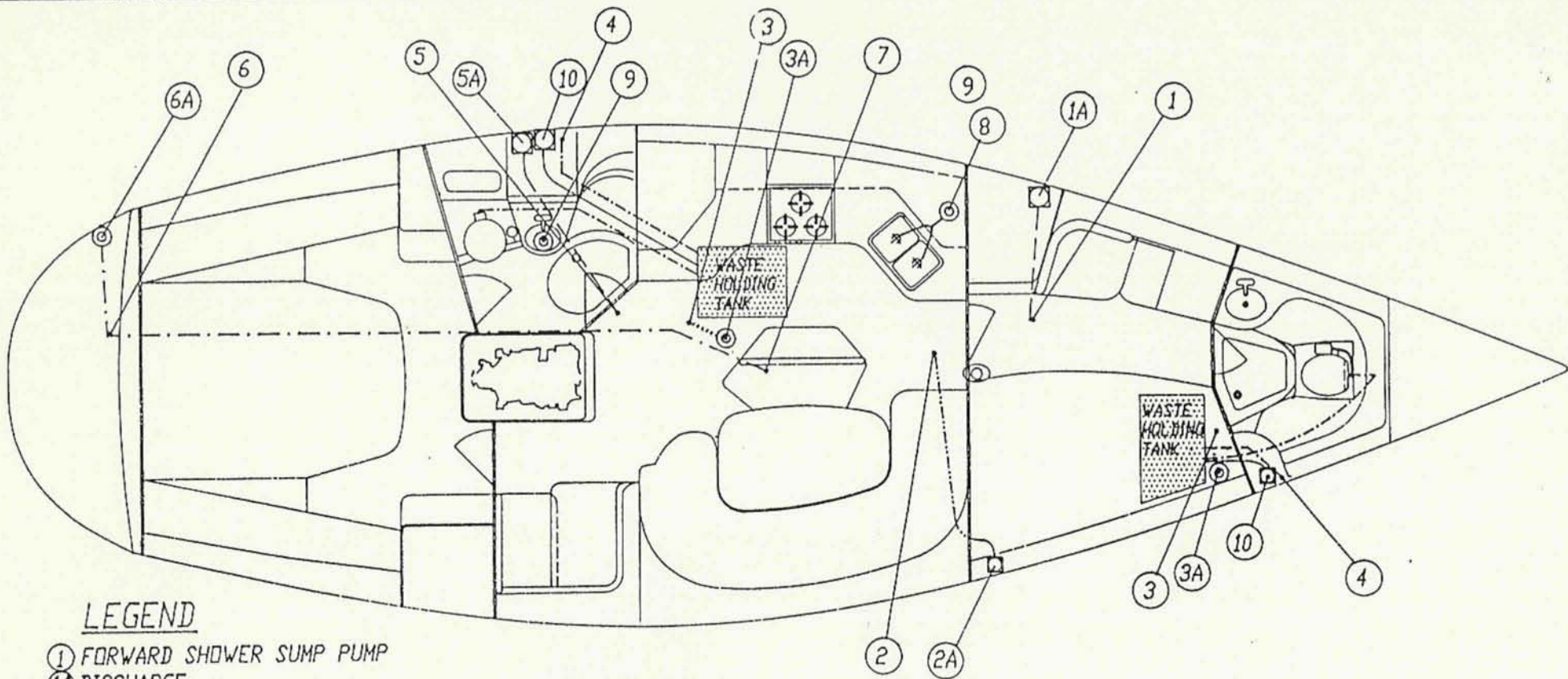
P.O. Box 336 • Edmonds, WA 98020
7831 196th Street S.W. • Edmonds, WA 98026
Phone: (425) 670-8915 • Fax: (425) 670-8918
E Mail: pyi@compuserve.com



- ① OUTBOARD FRESH WATER TANK
- ② INBOARD FRESH WATER TANK
- ③ WATER HEATER
- ④ WATER FILL (MIDSHIP)
- ⑤ WATER TANK VENT (MIDSHIP)
- ⑥ WATER FILTER
- ⑦ WATER PUMP
- ⑧ COCKPIT SHOWER
- ⑨ TANK SELECTOR VALVES
- ⑩ WATER FILL (FORWARD)
- ⑪ WATER TANK VENT (FORWARD)

LINE TYPES

HOT WATER	-----	3/8" (9 MM) POLYBUTYLENE
COLD WATER	—————	3/8" (9 MM) POLYBUTYLENE
WATER FILL	~~~~~	1-1/2" (38 MM) SHIELDVAC
TANK VENT	-----	3/4" (19 MM) SHIELDVAC



LEGEND

- ① FORWARD SHOWER SUMP PUMP
- ①A DISCHARGE
- ② BILGE PUMP
- ②A DISCHARGE
- ③ MACERATOR
- ③A DISCHARGE
- ④ WASTE PUMP OUT STATION (DECK)
- ⑤ AFT SHOWER SUMP PUMP
- ⑤A DISCHARGE
- ⑥ MANUAL BILGE PUMP (DECK)
- ⑥A DISCHARGE
- ⑦ MANUAL BILGE PUMP INTAKE
- ⑧ GALLEY SINK DISCHARGE
- ⑨ VANITY SINK DISCHARGE
- ⑩ WASTE HOLDING TANK VENT

LINE TYPES

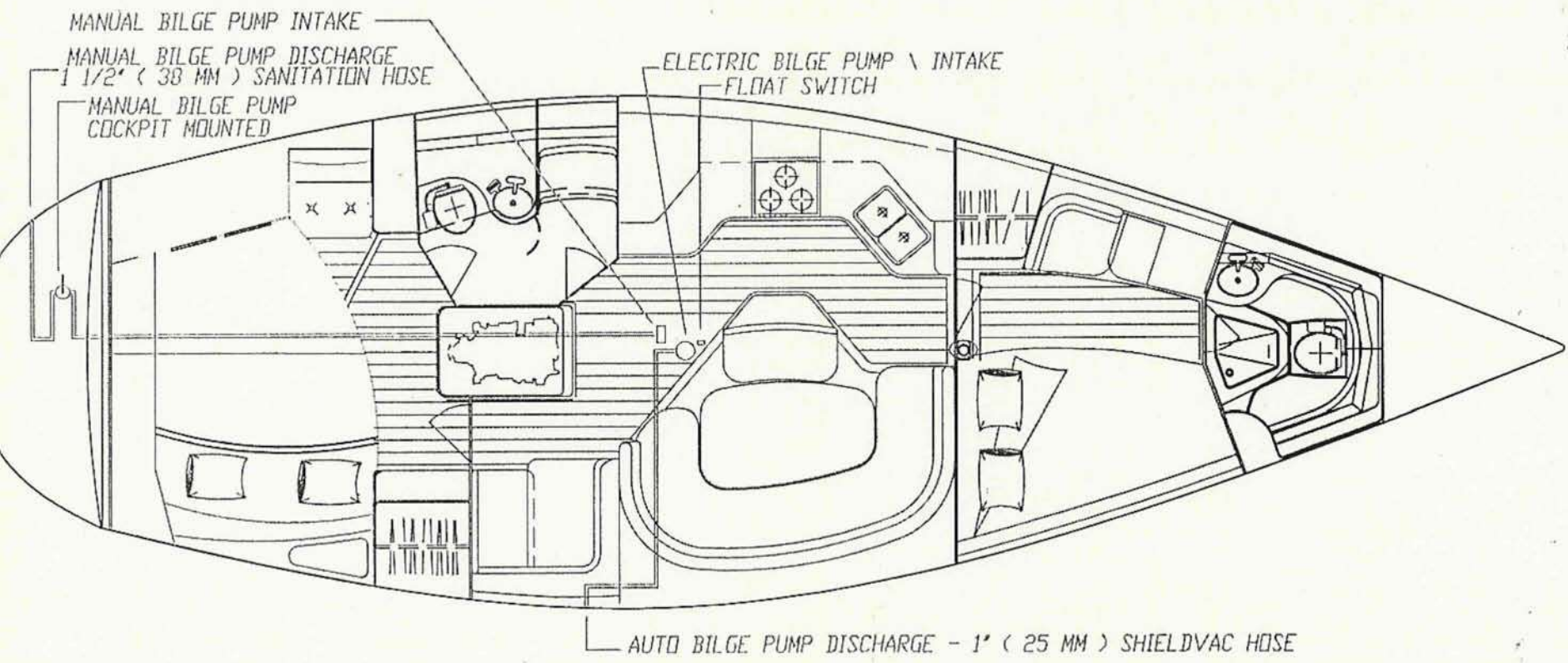
- 1-1/2" SANITATION HOSE -----
- 1-1/2" SHIELDVAC _____
- 1" SHIELDVAC -----
- 1" SHIELDFLEX (dotted line)
- 3/4" SHIELDVAC -----

- ⊙ BRONZE THRU-HULL W/BALL VALVE
- PLASTIC THRU-HULL

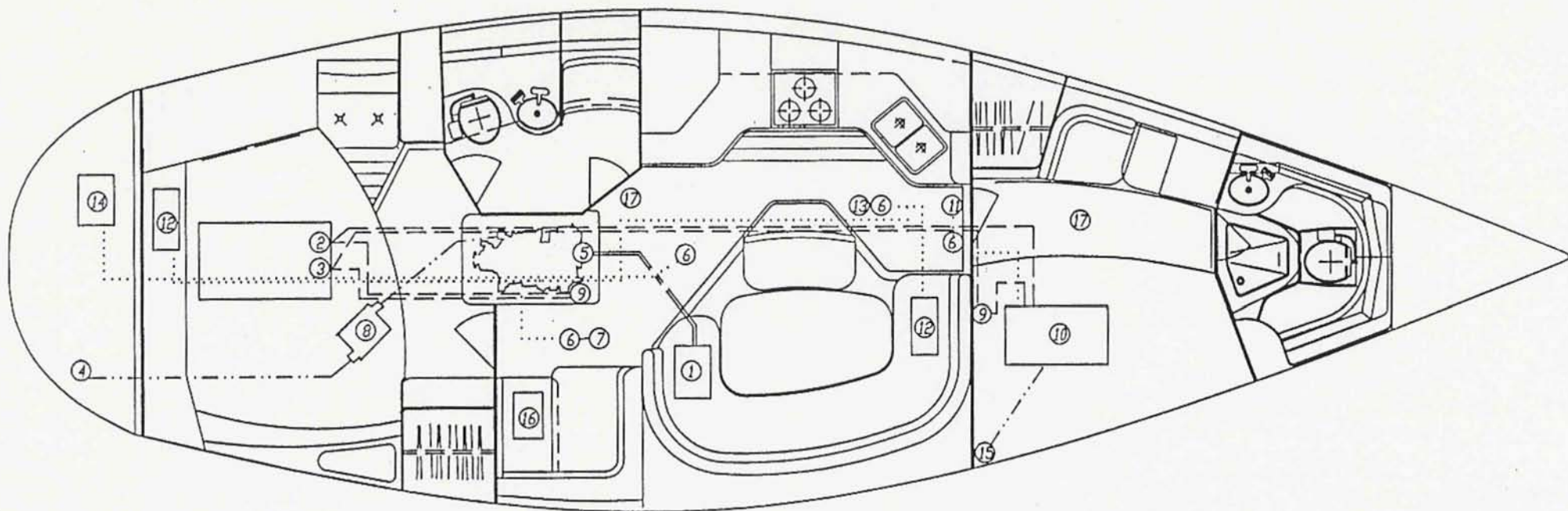
- 1 1/2" = 38MM
- 1" = 25MM
- 3/4" = 19MM

HUNTER 

H43 WASTE SYSTEM H43A2657



AUTO BILGE PUMP DISCHARGE - 1" (25 MM) SHIELDVAC HOSE



LEGEND

- | | |
|----------------------------|----------------------------|
| ① WATER HEATER | ⑨ FUEL FILTER |
| ② FUEL RETURN | ⑩ GENERATOR |
| ③ FUEL SUPPLY | ⑪ GENERATOR INTAKE |
| ④ ENGINE EXHAUST THRU HULL | ⑫ AIR CONDITIONER |
| ⑤ ENGINE HEAT EXCHANGER | ⑬ AIR CONDITIONER INTAKE |
| ⑥ WATER STRAINER | ⑭ REFRIGERATION COMPRESSOR |
| ⑦ ENGINE INTAKE | ⑮ GENERATOR EXHAUST |
| ⑧ MUFFLER | ⑯ INVERTER |
| | ⑰ SUMP PUMPS |

LINE TYPES

- | | | |
|----------------|-------|-------------------------------|
| FUEL LINE | ----- | 1/4" (6MM) FUEL HOSE |
| WATER HEATER | ----- | 5/8" (16MM) SHIELDFLEX HOSE |
| COOLING WATER | | 1" (25MM) SHIELDFLEX HOSE |
| ENGINE EXHAUST | ----- | 3" (76MM) EXHAUST HOSE |

HUNTER 

H430 MECHANICAL SYSTEM H43A2659

MAIN VALVE

REGULATOR

SOLENOID

WARNING:

LPG BOTTLES MUST ALWAYS BE FIRMLY SECURED WITHIN THEIR ENCLOSURE/LOCKER.

TO STOVE

BOTTLE

REMOTE CONTROL SHUT-OFF SOLENOID @ OR NEAR STOVE

ENCL. (LKR)

CONTINUOUS LPG APRVD. HOSE

TRANSOM

SEALING GROMMET

BOTTLE(S)

FLEX-HOSE @ STOVE

GIMBALED STOVE

VAPOR DRAIN

WARNING:

FLEX-HOSE @ STOVE MUST ALWAYS RUN FAIR AND BE FREE OF KINKS AND CHAFING.

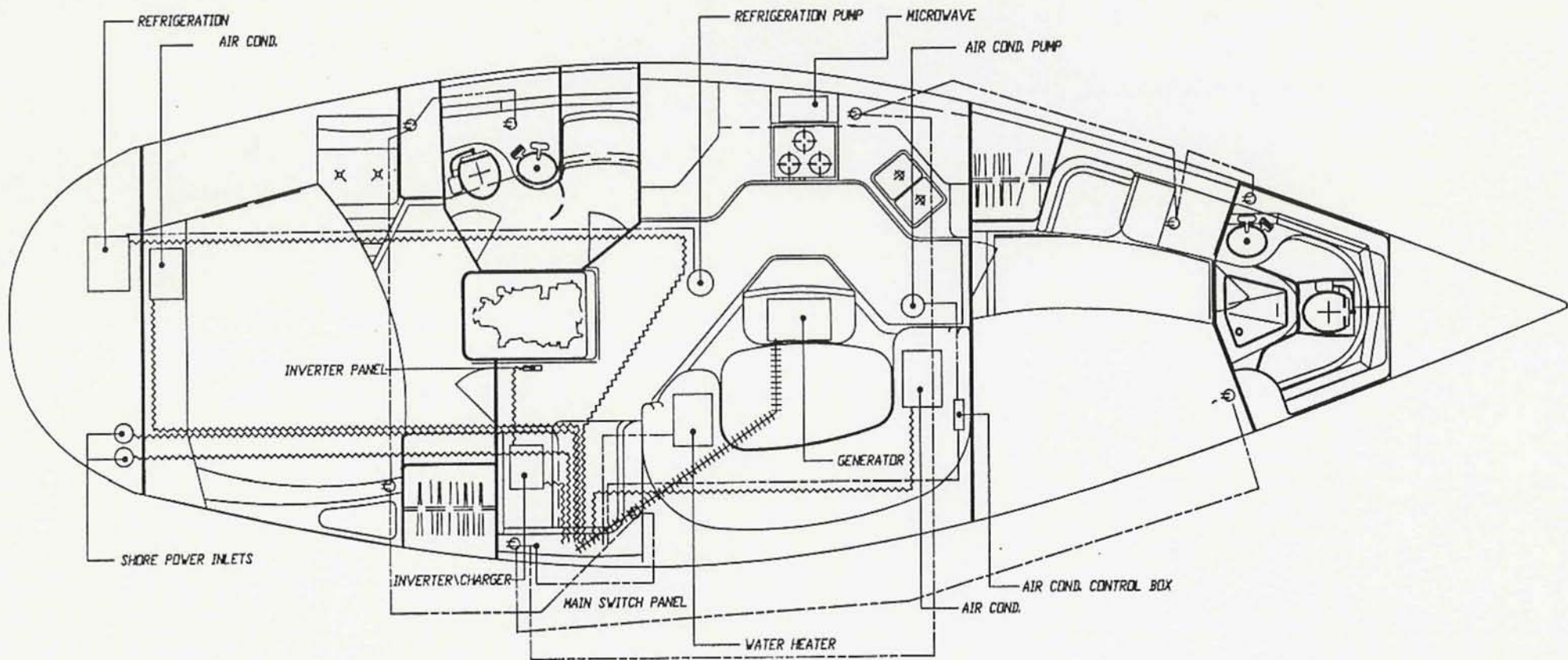
WATERLINE

WARNING:

VAPOR DRAIN MUST ALWAYS BE CLEAR AND CLEAN OF OBSTRUCTIONS CONTINUOUSLY WITHIN AND @ EACH END.

HULL

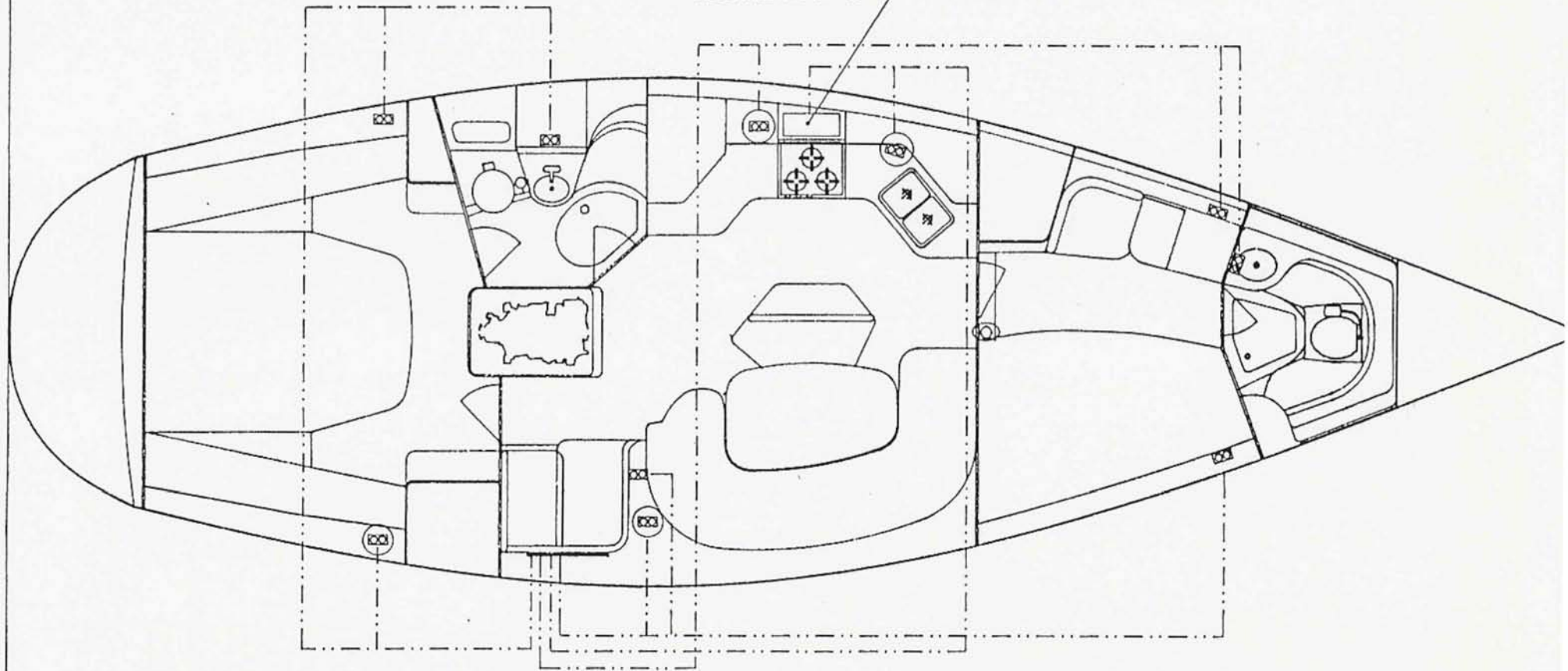
HUNTER 
GAS SYSTEM(LPG).



LEGEND

- 6 GAUGE +-----+
- 14\3 BOAT CABLE - - - - -
- 10\3 BOAT CABLE ~~~~~~
- OUTLETS ⊕

MICROWAVE



OUTLET 
GROUND FAULT RECEPTICAL 

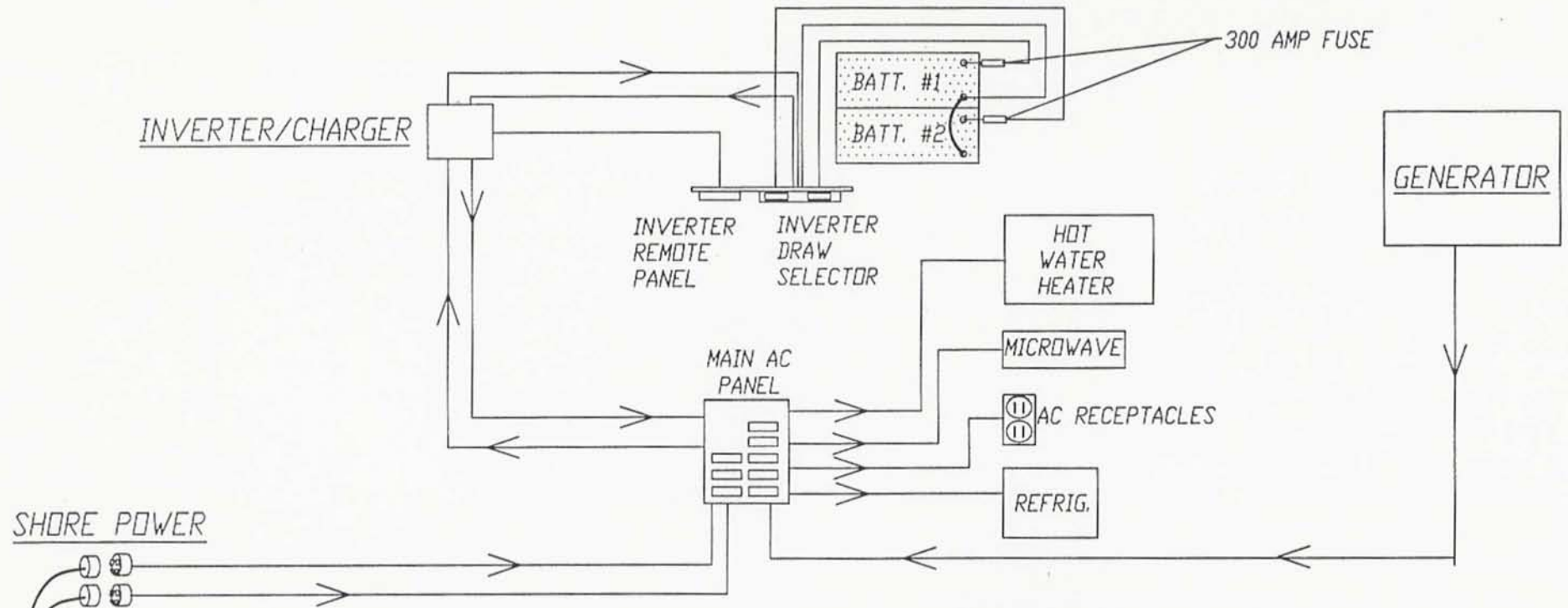
RECEPTACLES  14/3 BC WIRE

HUNTER 

H430 HEADLINER 110 VOLT SYSTEM H43A2656


1. THE HEART FREEDOM 20 USES POWER FROM THE HOUSE BATTERIES TO PRODUCE UP TO 2000 WATTS OF CONTINUOUS SILENT AC POWER. THE BATTERIES MUST BE CHARGED AND PROPERLY MAINTAINED FOR THE INVERTER TO WORK. THE INVERTER WILL SHUT ITSELF OFF WHEN THE BATTERY VOLTAGE DROPS BELOW 10 VOLTS.

2. THE MICROWAVE, AC RECEPTACLES, REFRIGERATION AND WATER HEATER ARE OPERATED BY THE FREEDOM 20 INVERTER WHEN SHORE POWER IS DISCONNECTED OR THE GENERATOR IS OFF. THERE IS NOT ADEQUATE POWER TO RUN THE AIR CONDITIONER UNITS.

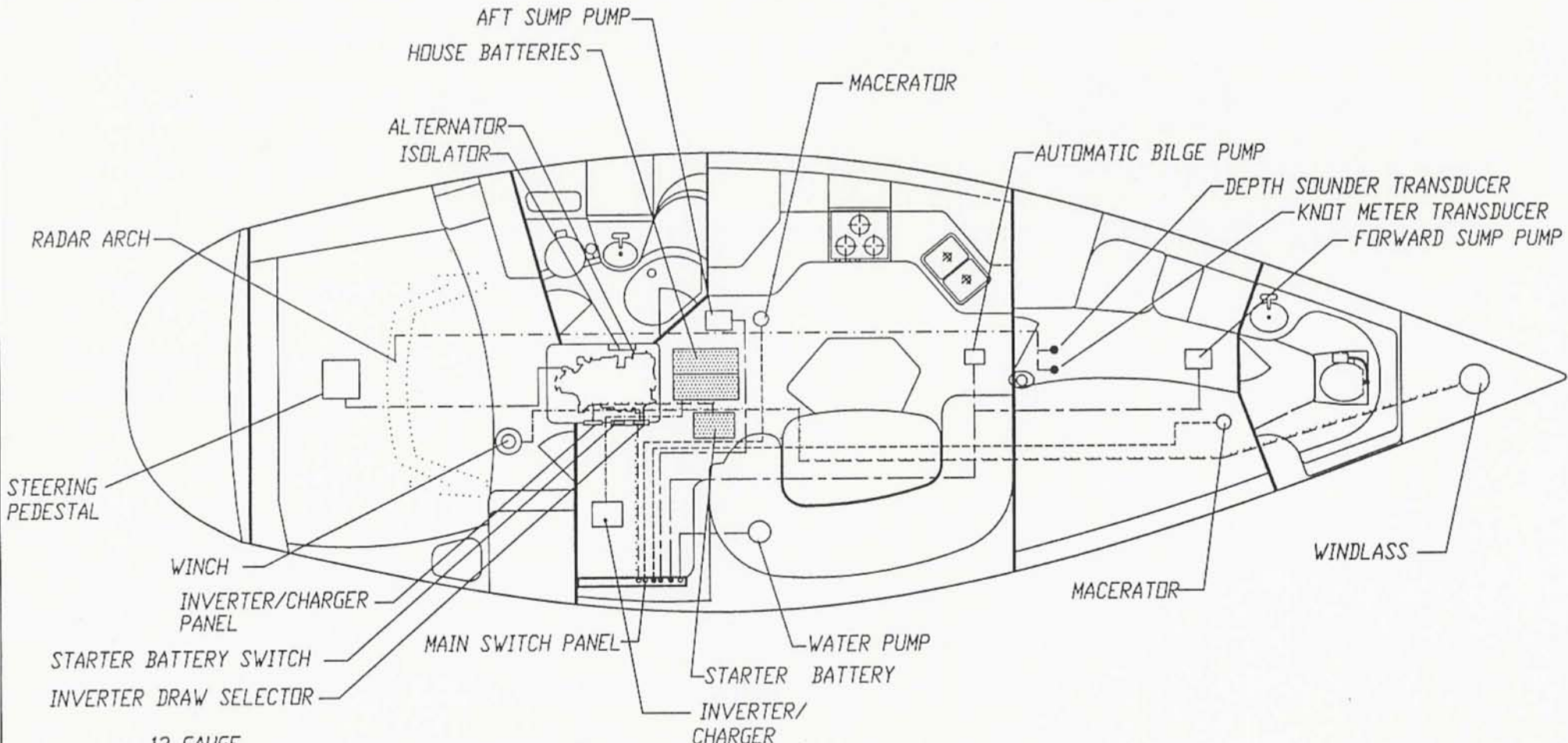


4. THE INVERTER REMOTE PANEL HAS AN ON/OFF SWITCH AND A RED INDICATOR INVERTER/CHARGER LIGHT THAT IS ILLUMINATED WHEN SHORE POWER IS CONNECTED OR THE GENERATOR IS ON. THE BATTERY LIGHT WILL COME ON AS A RESULT OF LOW BATTERIES. OVER-LOAD SITUATIONS CAN BE DIAGNOSED BY THE AMP LIGHTS. PLEASE SEE THE MANUAL FOR MORE DETAIL. LEAVE THE SWITCH ON THE INVERTER ITSELF IN THE OFF POSITION. IF YOU NEED TO CYCLE POWER, DO SO BY TURNING THE UNIT OFF AND ON USING THE REMOTE SWITCH.


3. WHEN CONNECTED TO SHORE POWER OR RUNNING THE ON-BOARD GENERATOR, INCOMING AC POWER IS SWITCHED THROUGH THE INVERTER TO AC LOADS. WITH INCOMING AC, THE HEART CHARGER/CONVERTER ALSO SUPPLIES UP TO 100 AMPS TO THE HOUSE BATTERIES AND DC LOADS.

HUNTER 

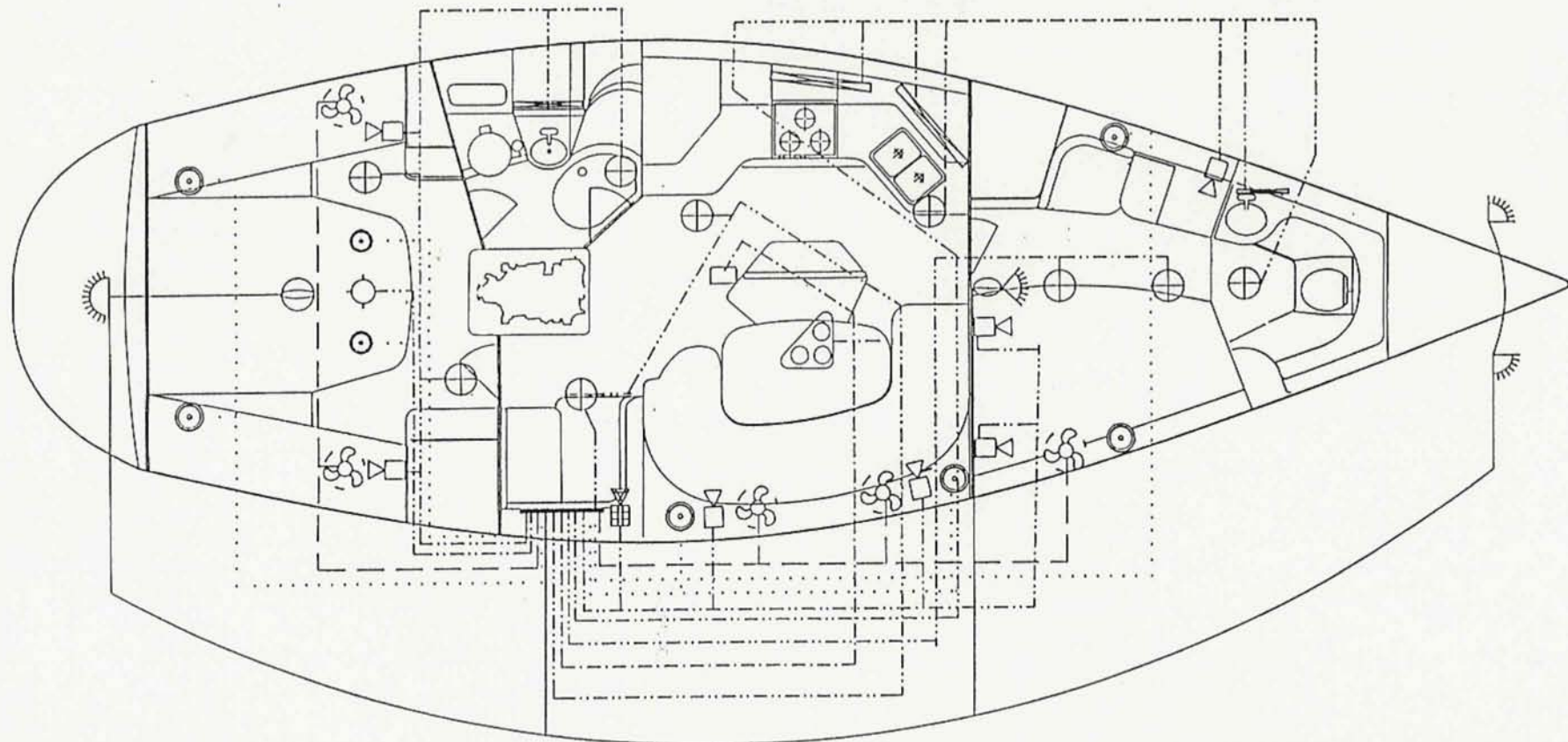
H430 INVERTER/CHARGER SYSTEM H43A2670


















- 12 GAUGE _____
- 10 GAUGE _____
- 8 GAUGE _____
- 6 GAUGE _____
- 4 GAUGE _____
- 2 GAUGE _____
- ENGINE HARNESS _____
- 14/3 BOAT CABLE _____
- 1/3 BOAT CABLE _____
- 2/0 WIRE _____
- IMI CABLES _____

HUNTER 

H430 12V DC ELECTRICAL/MECHANICAL SYSTEM
H43B2660



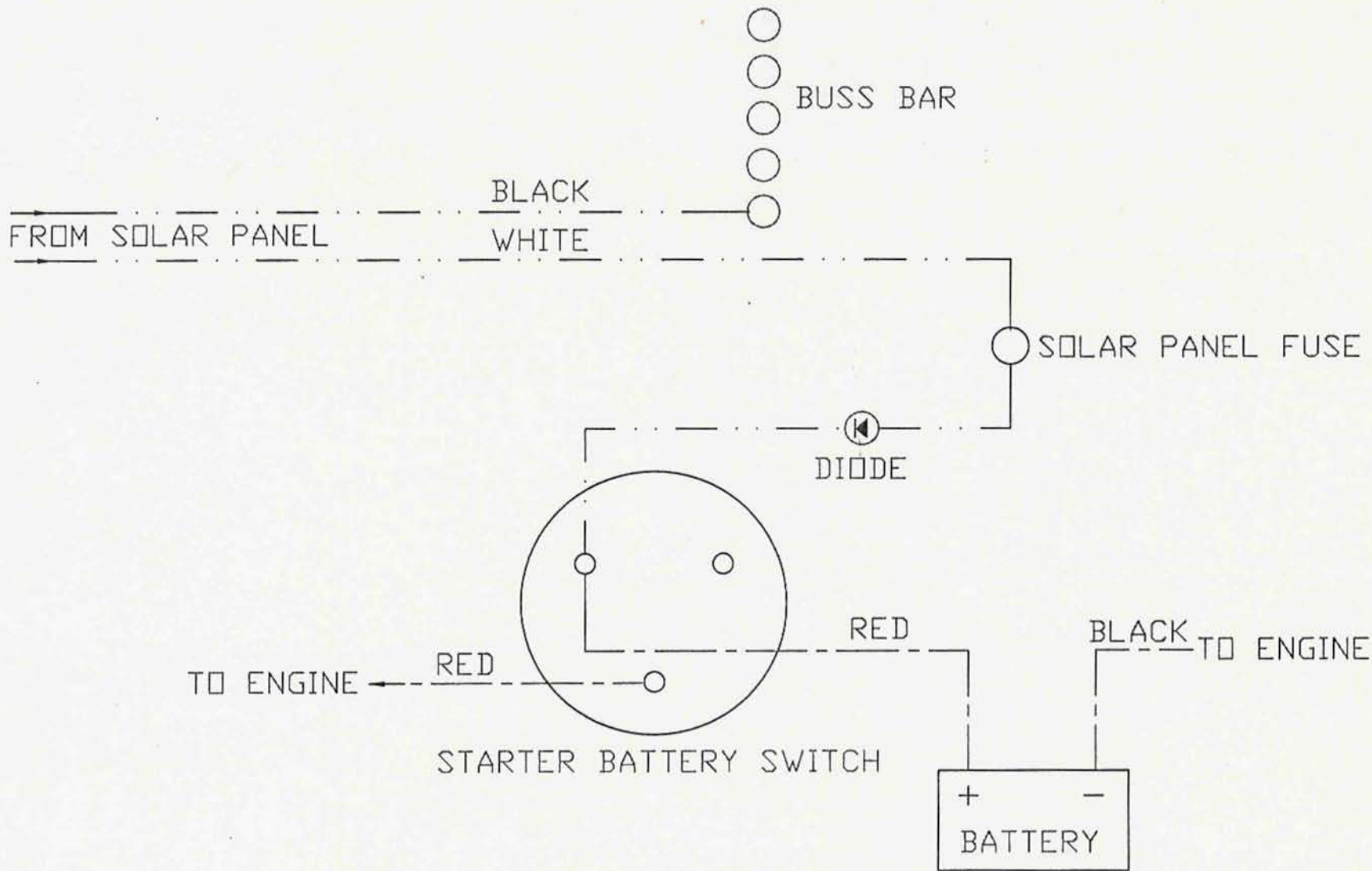
-  SETTEE LAMP
-  SOLAR PANEL
-  COMPASS
-  SPEAKER
-  24' FLUORESCENT
-  16' FLUORESCENT
-  READING LIGHT
-  CHART LIGHT

-  PORT RUNNING LIGHT
-  STBD RUNNING LIGHT
-  MASTHEAD - ANCHOR, STEAMING, DECKLIGHT
-  STERN LIGHT
-  COCKPIT LIGHT (OVERHEAD RADAR ARCH)
-  DOME LIGHT
-  FAN

- FANS _____
- LIGHTING -----
- SPEAKERS
- NAVIGATION LIGHTS _____
- SOLAR PANEL -----

HUNTER

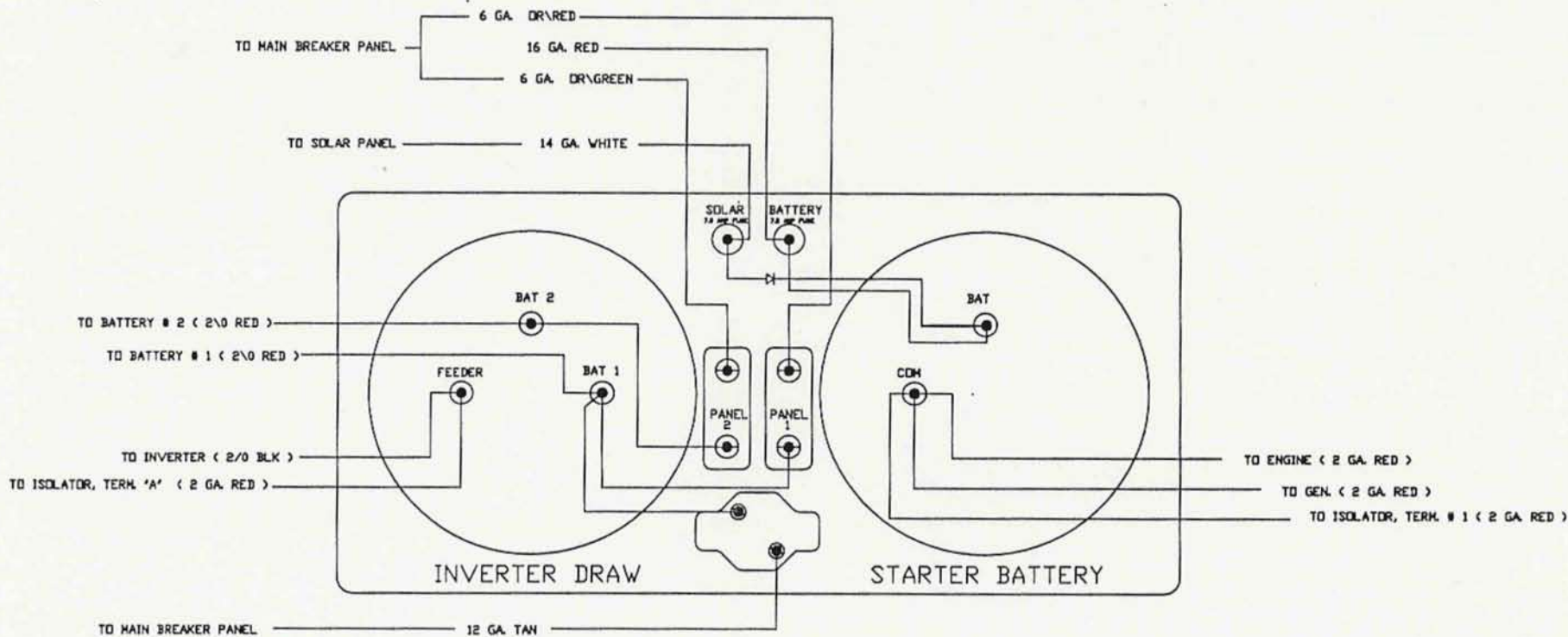
H430 12 VOLT OVERHEAD ELECTRIC
SYSTEM H43A2654



LINE TYPES	
2/0 WIRE	_____
14 GA. WIRE	_____

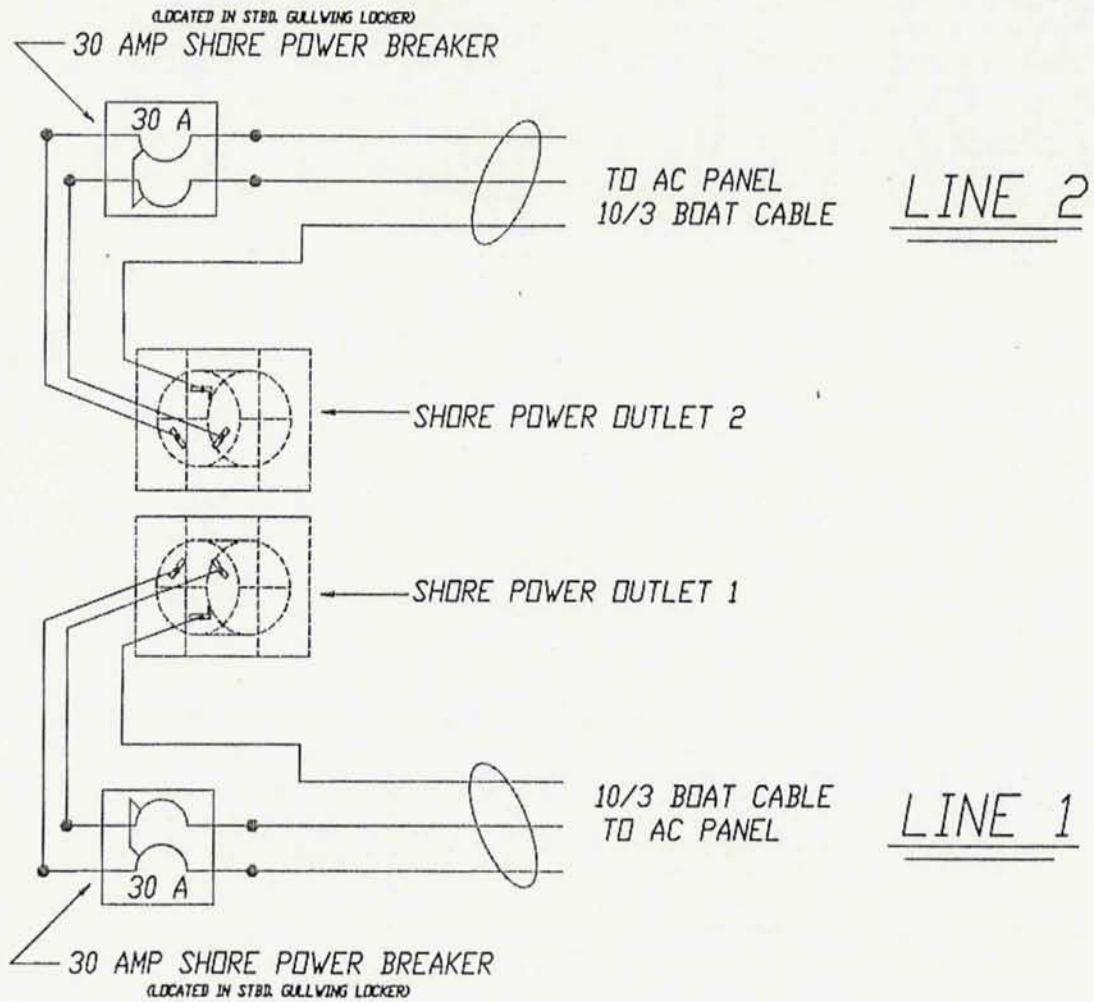
HUNTER 

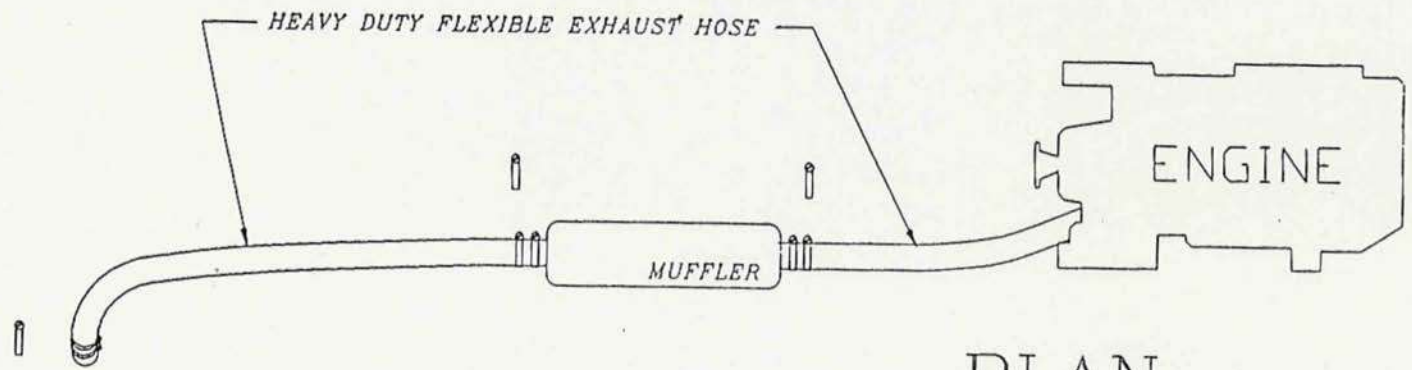
SOLAR PANEL INSTALLATION HUNA2623



BATTERY SELECTOR SWITCH PANEL WIRING DIAGRAM

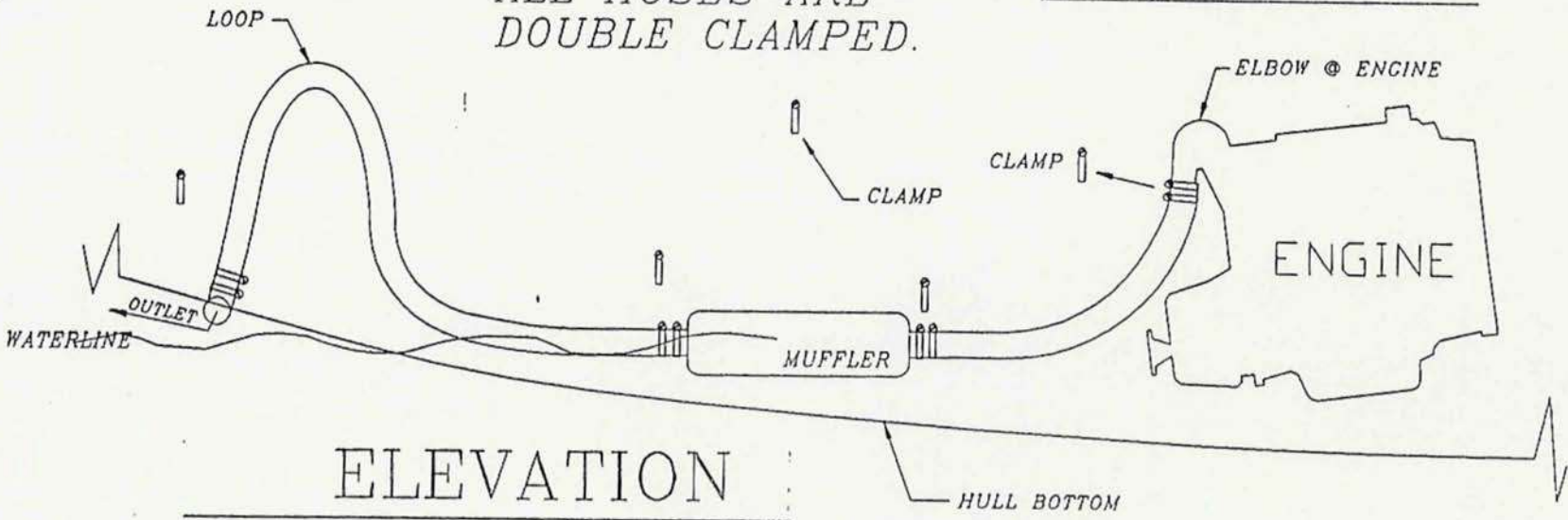
(VIEW FROM BACK SIDE)





PLAN

ALL HOSES ARE
DOUBLE CLAMPED.

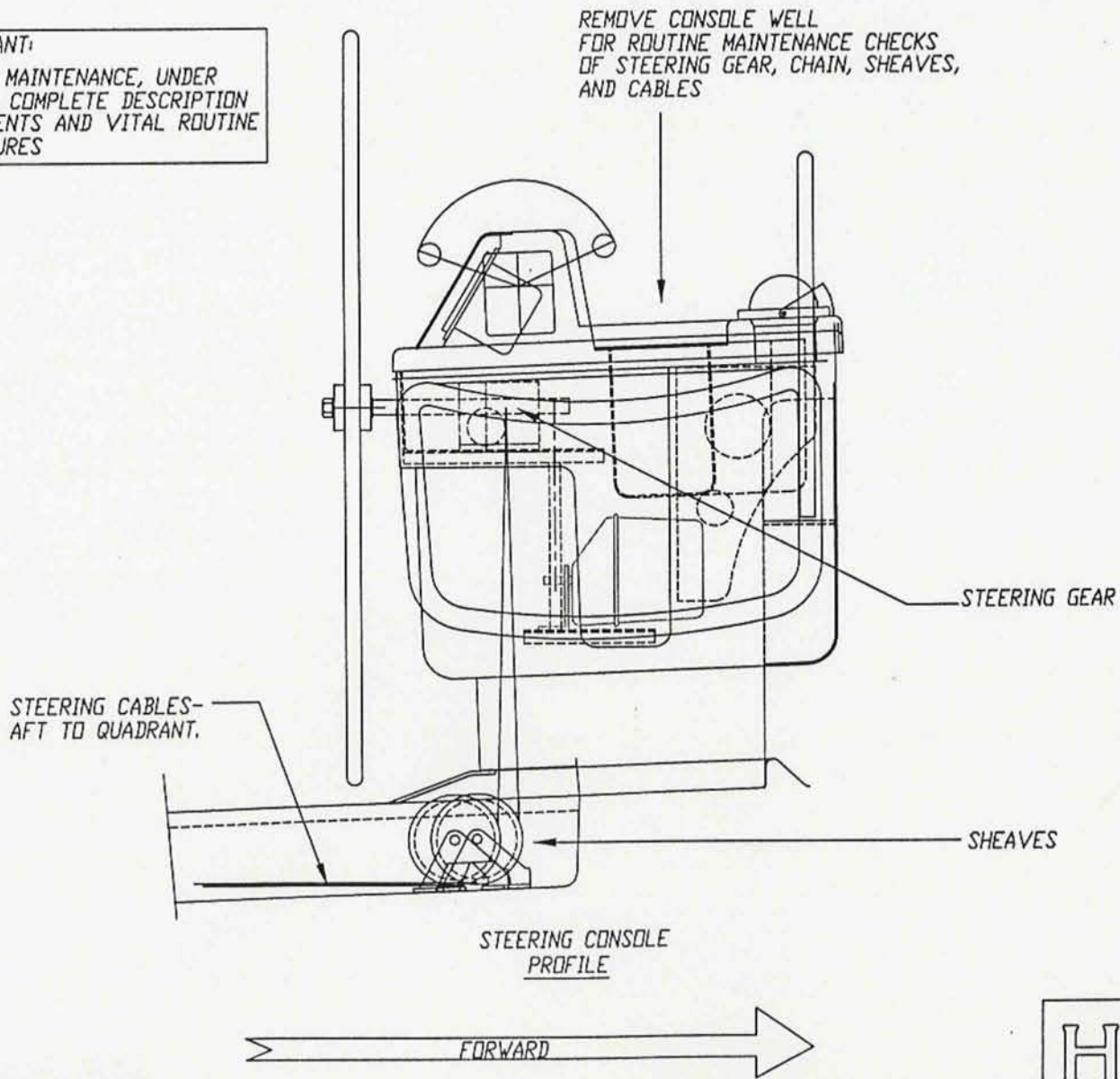


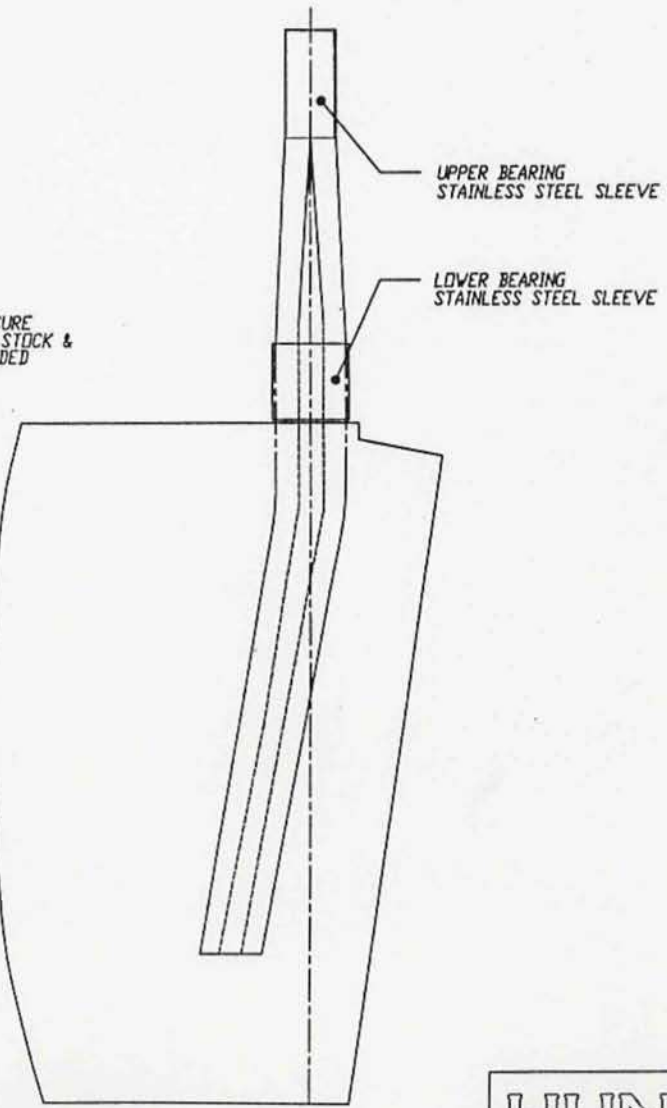
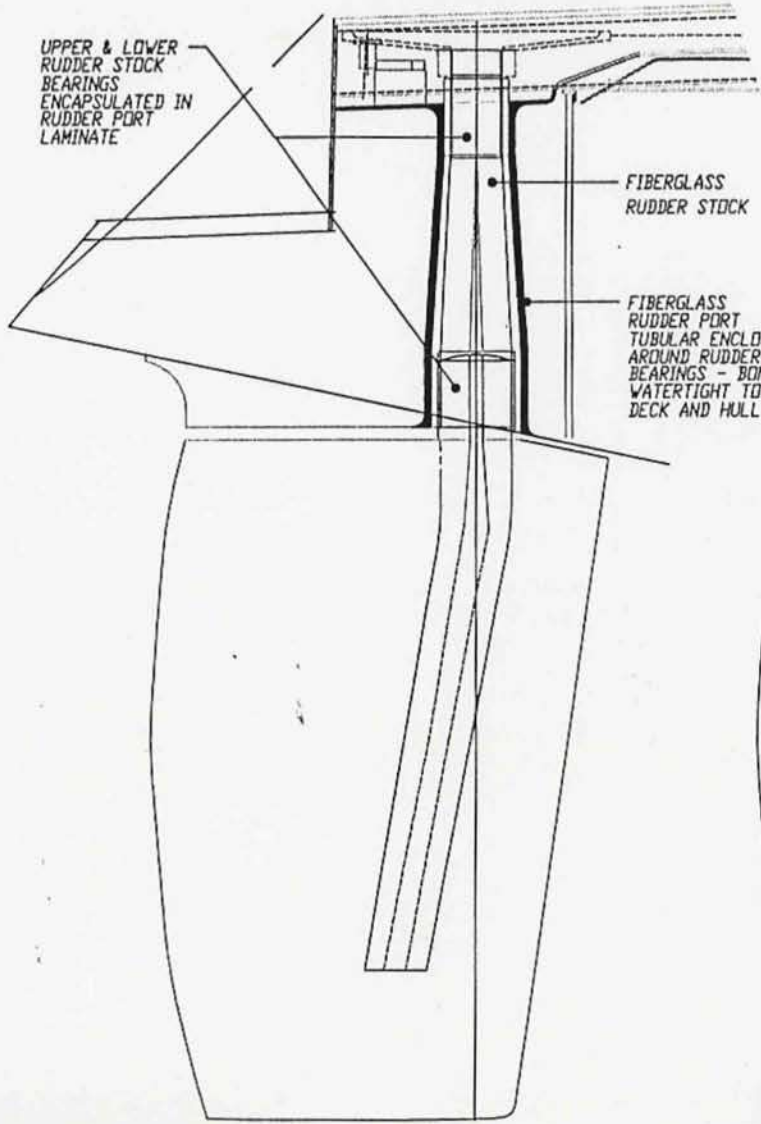
ELEVATION

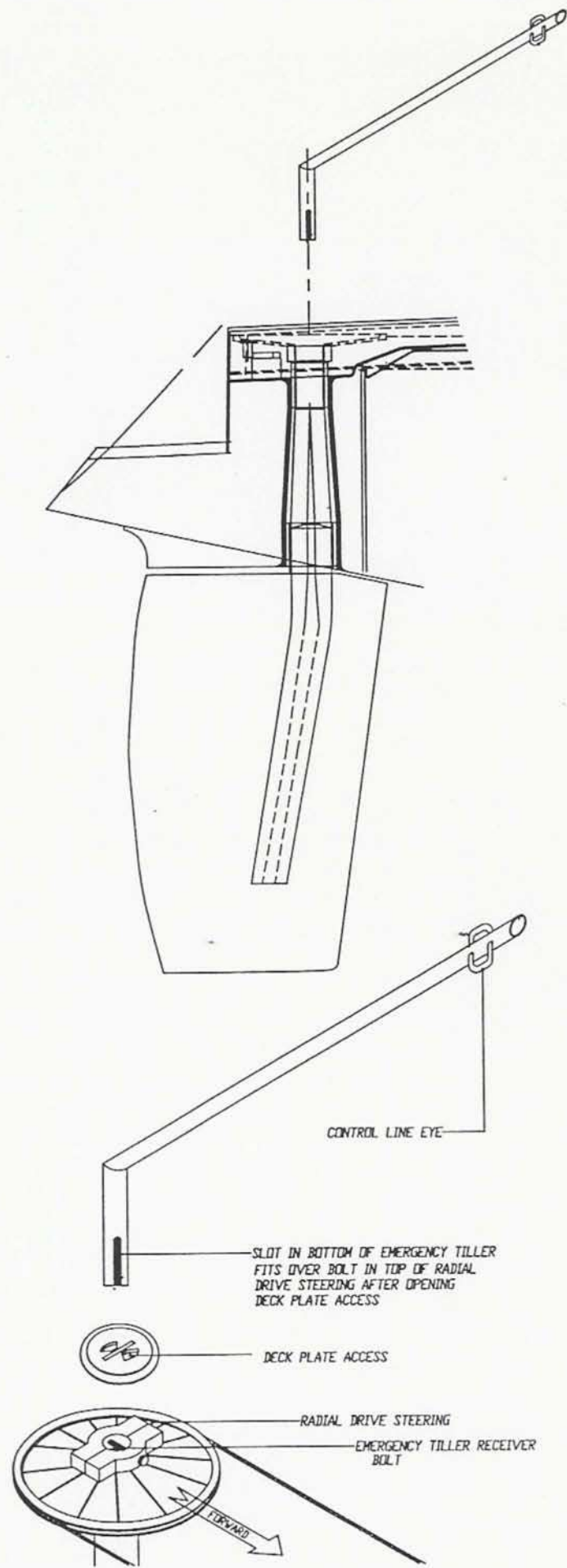
HUNTER 

EXHAUST SYSTEM

IMPORTANT:
SEE EDSON STEERING MAINTENANCE, UNDER
'MAINTENANCE' FOR A COMPLETE DESCRIPTION
OF STEERING COMPONENTS AND VITAL ROUTINE
MAINTENANCE PROCEDURES





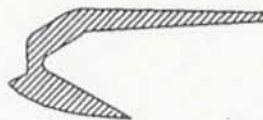




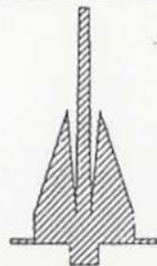
TYPICAL CLEAT
LOCATIONS VARY
W/MODEL.



ANCHOR RODE
(CHAIN OR ROPE OR COMBO)



PLOW ANCHOR



DANFORTH
ANCHOR

PLAN

ELECTRIC ANCHOR
WINDLASS
(STANDARD OR
OPTIONAL ON
LARGER MODELS)

STAINLESS BOW ROLLER
(SIZE & SHAPE VARIES
BETWEEN MODELS)

WELL: SMALLER MODELS

WELL: LARGER MODELS

ELEVATION

WATERLINE

GROUND TACKLE:

- 1.) BOW SHACKLE(W/PIN WIRED)
○ ANCHOR...FOL'D. BY...
- 2.) SWIVEL...FOL'D. BY...
- 3.) CHAIN(OPTION)...FOL'D. BY...
- 4.) D-SHAPED SHACKLE(W/PIN
WIRED) ○ EA. 27W OF CHAIN
OR ○ CHAIN TO ROPE RODE.

3D=CHAIN
5D=ROPE

HUNTER

ANCHOR SYSTEM