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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 their functions. For your sailing pleasure and safety, please take time to study this manual.

We stand behind the quality of your boat with a warranty, which you should review. To insure the validity of your warranty, please complete 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 registration of a boat's first owner. The warranty data should also be recorded in the space below for your own reference.

This manual has been compiled to help you operate your craft with safety and pleasure. It contains details of the craft; equipment supplied or fitted, systems, and information on operation and maintenance. Please read it carefully, and familiarize yourself with the craft before using it. If this is your first sailboat or you are changing to a type of craft you are not familiar with, please ensure that you obtain proper handling and operating experience before you assume 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 SAFE PLACE AND HAND IT OVER TO THE NEW OWNER IF YOU SELL THE CRAFT.

You should also complete the warranty cards for your engine, stove, head, electric water pump and other accessories. These are enclosed in the manufacturers' manuals that are packaged 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 CORRESPONDENCE.

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*

CUSTOMER SERVICE / WARRANTY

The following warranties apply to all 2009 Model Year boats produced by HUNTER MARINE CORPORATION:

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, after it is reviewed by the selling dealership.

LIMITED FIVE-YEAR HULL STRUCTURE AND BOTTOM BLISTER 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. Hunter will not pay transportation, hauling, launching, bottom paint, storage, dockage, cradling rental, rigging and derigging, or other similar costs. 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, sandblasted, 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, Gelcoat, 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.

(3) Boats used for commercial activities including charter.

THESE LIMITED WARRANTIES ARE YOUR SOLE AND EXCLUSIVE REMEDIES AND ARE ESPRESSLY IN LIEU OF ANY AND ALL OTHER REMEDIES AND WARRANTIES EXPRESSED AND IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHETHER ARISING BY LAW, CUSTOM, CONDUCT, OR USAGE OF TRADE. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. IN THE EVENT THAT IMPLIED WARRANTIES ARE FOUND TO EXIST UNDER THE LAW OF A PARTICULAR STATE, NOTWITHSTANDING THE EXCLUSION CONTAINED HERIN, THE DURATION OF ANY SUCH IMPLIED WARRANTY SHALL BE LIMITED TO THE DURATION OF THE APPLICABLE LIMITED WARRANTY STATED HEREIN. THE PURCHASER ACKNOWLEDGES THAT NO OTHER REPRESENTATIONS WERE MADE TO HIM OR HER WITH RESPECT TO THE QUALITY OR FUNCTION OF THE BOAT. ANY ORAL STATEMENT OR PRINTED MATERIAL ADVERTISING THE BOAT WHICH SPEAKS TO ANY PERFORMANCE CHARACTERISTIC OF THE BOAT OR ANY OF ITS COMPONENTS SHALL BE CONSIDERED AND CONSTRUED AS AN ESTIMATED DESCRIPTION ONLY AND SHOULD NOT BE RELIED UPON AS AN EXPRESS WARRANTY OR AS THE BASIS OF THE BARGAIN FOR THE BOAT OR ANY OF ITS COMPONENTS.

ANY CONSEQUENTIAL, INDIRECT OR INCIDENTAL DAMAGES WHICH MAY BE INCURRED ARE EXCCLUDED AND PURCHASER'S REMEDY IS LIMITED TO REPAIRS OR REPLACEMENT OF ANY PART(S) JUDGED DEFECTIVE BY HUNTER MARINE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL OR INDIRECT 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.

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 ten (10) days of delivery.

Return of 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

For 1995 and later hull numbers, the 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 purchaser, 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. (see form letter, attached) The transfer of the ownership of the boat will not extend the expiration dates of the limited warranties.

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.

SAMPLE FORM LETTER

March 12, 1997

Mr. John Smith
1456 Joy Street
Sarasota, FL 34266

Dear Mr. Smith,

Thank you for providing written notice of transfer of ownership. We are pleased you have selected a Hunter sailboat and we will make every effort to assure Hunter ownership will be a satisfying experience for you.

Based on the information you have provided, we are pleased to notify you of the expiration dates of the limited warranties.

- The limited **one-year** New Boat warranty expires (d)_____.
- The limited **five-year** Hull Structure and Bottom Blister warranty expires (d)___ _____.

Should you require assistance at any time during ownership, we encourage you to contact your Hunter dealer or to call us directly at 386-462-3077.

Please confirm the information at the bottom of the page and advise us if any corrections are required.

_____
Customer Service Manager

Hull No: HUN_____ Model:_____

Telephone: (H)_____(B)_____

Date of Purchase:_____

Purchased From: Name:_____

Address:_____

City/State_____Zip_____

( ) Private Owner ( ) Dealer

HUNTER MARINE'S OWNER AND FOUNDER

WARREN R. LUHRS

BRIEF BACKGROUND

Warren Luhrs was born in East Orange, New Jersey in 1944 into a family with an established tradition in the maritime and transportation industries. His great-grandfather, Henry, was a railroad and clipper-shipping pioneer in America, while his great-uncle John 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 the principal owner of the bark *Sophia R. Luhrs*, named for his wife. He was also a partner with Albert Sprout, who managed the shipyard where the *Sophia R. Luhrs* was built in Melbridge, Maine.

Warren Luhrs' father Henry worked at a small boat manufacturer in Morgan, New Jersey, and later started his own company, continuing the Luhrs' family sea tradition during the great depression. During World War II he repaired boats and installed ice sheathing on their bows for the Coast Guard.

After the War, 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, where he constructed lapstrake sea skiffs using assembly-line techniques. Henry personally "shook down" his prototypes on family trips up the Hudson River to Lake Champlain.

The sea skiff is a class of boat that 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 waterline to increase stability in rough water or a following sea. Such skiffs can either be smooth sided or of a lapstrake construction.

Inspired by Henry Ford, Henry Luhrs' aimed to give the average man the opportunity to enjoy the luxury of boating by building an affordable and reliable boat. He was both designer and engineer, and his progressive new models exhibited his talent for innovation. He successfully changed the line of the bow from straight to curved at a time when the industry trend was a straight square effect, and he is believed to be the first designer-builder to popularize a small boat with a fly bridge.

In 1960, Luhrs acquired the Ulrichsen Boat Company of Marlboro, New Jersey. It was here that Luhrs' Alura fiberglass division was located. In 1965, Henry sold his company to Bangor Arrostook 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 the Luhrs Group of marine manufacturers, which consists of Silverton Marine, Mainship Motor Yachts, and Luhrs Fishing Boats with its Alura division, as well as Hunter Marine, which exclusively manufactures sailboats.

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

A

Aback: describes a sail when the wind strikes it on the lee side.
Abaft: towards the boat's stern.
Abeam: at right angles to the *centerline* 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 that supports the deck; 3, on the beam means that an object is at right angles to the centerline.
Bear away: 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 the 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 a quarter.
Bulkhead: a 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 a 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 of 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 center 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.
Coaming: 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 *centerline*.
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 planning 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 hole; 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.
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 directions.
Fairlead: a fitting through which a line is run to alter the lead of the line.
Fathom: the measurement used for depths of water and lengths or rope. 1 fathom = 6 ft. or 1.83m.
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 keeps 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.
Hawes 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 triangle 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 blows.
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 traveled 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 a boat's head right into the wind.
Luff groove: a groove in a wooden or metal spar into which the *luff* of a 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 fiberglass hull to strengthen it.
Meridian: an imaginary line encircling the Earth that 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.*
On the wind: *close-hauled*.
Out haul: a rope used to pull out the foot of a sail.
Overall length (OAL): the boat's extreme length, measured from the foremost past of the bow to the aftermost part of the stern, excluding bowspirt, 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 that fits 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 which a boat may sail; the boat's *course* relative to the direction of the wind.
Port: the left-hand side of the 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 be, 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-around 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. (3 km.).
Rigging screw: a deck fitting with which the tensions of standing rigging, e.g. stays, shrouds, etc. are adjusted.
Roach: the curved part of the *leech* of a sail that extends beyond the direct line from head to *clew.*
Run: to run 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: 1, holes in the toe rail that allow water to drain off the deck; 2, drain cockpit through hull.
Seacock: a valve that 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 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 the *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 wooden 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 wire by unlaying the strands and interweaving them.
Split pin: see *cotter pin.*
Spreaders: horizontal struts attached to the mast, which extends 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 guardrails or lifelines.
Standing part: the part of a line not used when making a knot; the part of a rope that is made fast, or around which the knot is tied.
Standing rigging: the shrouds and stays that are permanently set up and support the mast.
Starboard: right-hand side of a boat looking forward (opp. of *port*).
Starboard tack: a boat is the starboard tack when the wind strikes the starboard side first and the boom is out to the *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 timer at the bow, from the keel upward, 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 sides 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* that 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 by the gravitational attraction of the moon.
Toe rail: a low strip of metal or molding 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 that 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 angle of the sheets.
Transit: two fixed objects are in transit when seen in line; two transit give position fix.
Traveller: 1, a ring or hoop that can be hauled along a *spar*; 2, a fitting that 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 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 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 *displacement hull* and effects a boats *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 that 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 manual contains safety precautions that 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

HUNTER® MARINE CORPORATION
AN EMPLOYEE OWNERSHIP COMPANY

Safety TuneUp

- At Hunter Marine, we believe that it is appropriate to highlight some very important maintenance and safety issues to all of our boat owners. Our goal is to have all owners enjoy safe and trouble-free boating at all times.

- Although this publication is not all-inclusive, it does cover some very important responsibilities of boat maintenance and ownership. We ask that you insert this into your owner's manual or boat log for quick and easy reference when using your boat. In addition, please go to **http://www .huntermarine.com** for archived issues of this publication. You are also encouraged to refer to the current edition of Chapman's Piloting, Seamanship and Small Boat Handling, or U.S. Sailing's Keel Boat Manual.

RETAIN FOR YOUR RECORDS

Carbon Monoxide Safety

Carbon Monoxide Can Kill

This section is intended to provide educational information about carbon monoxide relative to boats and boating. Carbon monoxide accumulation is affected by boat geometry, hatch, window and door openings, ventilation openings, proximity to other structures and boats, wind direction, boat speed, boat maintenance and a multitude of other variables. This section discusses many of these and enables the boat owner to better understand some of the more predictable effects. However, this information is limited in that it cannot cover all conceivable variables. Therefore, the boat owner is cautioned not to exclusively rely on it to prevent the accumulation of carbon monoxide.

What Is Carbon Monoxide?

Carbon monoxide is a highly poisonous gas formed by the combination of carbon and oxygen. Commonly referred to as CO, its chemical formula, "C" for carbon and "O" for oxygen. CO is a colorless, odorless, and tasteless gas that by itself cannot be detected by human senses. CO diffuses in the air much more rapidly than other gases that are detectable by the human senses. The weight of CO is about the same as air so it does not rise or fall like other gases but will distribute itself throughout the boat. CO is produced any time a material containing carbon is burned. In boating, these materials include, but are not limited to, gasoline, diesel fuel and propane. All carbon based fuels produce varying amounts of CO, depending on their carbon content. Gasoline is high in carbon and therefore produces high levels of CO. Diesel fuel is low in carbon and therefore produces lower levels of CO. However, the exhaust of all engines and generators as well as any open flame device produce CO and the same precautions should be taken regardless of the type of fuel.

How A Person Is Affected By Carbon Monoxide

When breathed, carbon monoxide is absorbed by the lungs and reacts with the blood hemoglobin to form carboxyhemoglobin, which reduces the oxygen carrying capacity of the blood. The result is a lack of oxygen for the tissues with the subsequent tissue death and, if prolonged, death of the individual. Carbon monoxide in high concentrations can be fatal in a matter of minutes. Even lower concentrations must not be ignored because the effects of exposure to CO are cumulative and can be just as lethal. Certain health related problems and age increase the effects of CO. People, who smoke or are exposed to high concentrations of cigarette smoke, consume alcohol or have lung or heart disorders are particularly susceptible to an increase in the effects from CO. However, the health of all of the boat's occupants should be considered. Physical exertion accelerates the rate at which the blood absorbs CO. The early effects of CO poisoning are easy to overlook because they are similar to the effects of other boating related stresses such as eye strain, fatigue, sun exposure, seasickness, or alcohol consumption. But as the concentration of CO in the air increases, it has increasingly adverse effects on your health.

Symptoms Of Carbon Monoxide Poisoning

One or more of the following symptoms can signal the adverse effects of carbon monoxide accumulation. The order of this list is generally the sequence of symptoms. However, the number of symptoms and the order of appearance may change for different people:

- Watering And Itching Eyes
- Flushed Appearance
- Throbbing Temples
- Inattentiveness
- Inability To Think Coherently
- Ringing In The Ears
- Tightness Across The Chest
- Headache
- Drowsiness
- Incoherence
- Nausea
- Dizziness
- Fatigue
- Vomiting
- Collapse
- Convulsions

What To Do When Someone Is Overcome By Carbon Monoxide

When someone falls victim to carbon monoxide poisoning, fast and responsive action is crucial. Know the symptoms. The earlier the effects of CO are detected the better the chances for recovery. The following list shows the sequence of events that must be done in an effort to revive a CO victim:

Evacuate, Ventilate, Investigate and Take Corrective Action: Carbon Monoxide Poisoning Action Sequence

- Move the person to fresh air.
- Administer oxygen if available.
- Contact medical help.
- If the victim is not breathing, perform artificial respiration per approved CPR procedures until medical help arrives and takes over. Prompt action can make the difference between life and death.
- Ventilate area.
- Investigate the source of CO and take corrective actions.

How Carbon Monoxide Can Enter Your Boat

Any device that burns fuel creates carbon monoxide. For example, a propane cook-top or a space heater are both potential sources for CO. But the most serious danger comes from the engines and generators aboard your own and neighboring boats. There are four basic ways that CO from a running engine or generator can enter your boat:

- The “Station Wagon Effect” results from the aerodynamics of deck cabins and transoms. With the boat under way, the air flow over the top forms a low pressure area behind the cabin or transom which can suck exhaust gasses into the cockpit and the cabin.

- Obstructions are principally a problem when boats are rafted together or tied to a dock or seawall. Against an obstruction, exhaust gasses which normally dissipate may instead be directed back to your boat. Beware of open windows, hatches, doors and the location of the engine air intake. Exhaust contains particularly high concentrations of CO when an engine is cold; so to protect yourself and your neighbors, minimize the time spent getting underway. Pay particular attention to potential obstructions when running a generator for long periods.

- Infiltration of CO from a neighbor's exhaust can be a problem aboard any boat at any time. Infiltration can happen any time your neighbors are running a generator or engine, even when they are many slips away.

- Leaks in your own exhaust system from the engine or generator can allow harmful levels of CO to accumulate at a surprising rate. Good maintenance practices are critical to avoid this.

There are many variables that can combine to affect the accumulation of carbon monoxide. Some of these variables are: the presence of weather enclosures and covers, boat layout and configuration, location of ports, hatches, windows, doors, and vents, proximity and types of structures and other boats, wind speed and direction, speed of the boat, etc. Although it would be impossible to identify every variable or combination of variables that may affect the accumulation of carbon monoxide, the boat operator must remain aware at all times of the possibility of CO accumulation. The following additional illustrations show how Carbon Monoxide Gas (CO) can accumulate in your boat while you are at the dock or underway. Become familiar with these examples to prevent exposure to this poisonous gas.

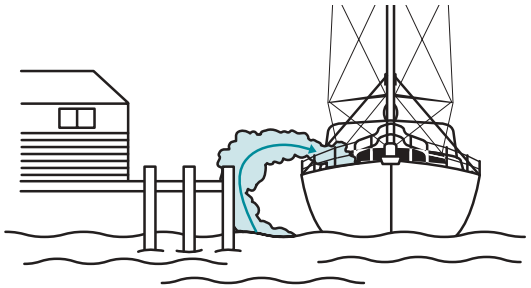


Figure 1. Blocked hull exhaust outlets near a pier, dock, seawall, bulkhead or any other structure can cause excessive accumulation of Carbon Monoxide gas with the cabin areas of your yacht. Be certain hull exhaust outlets are not blocked in any way.

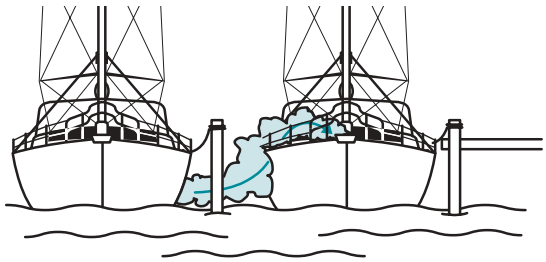


Figure 2. Engine and generator exhaust from other vessels alongside your yacht, while docked or anchored, can cause excessive accumulation of Carbon Monoxide gas within the cabin and cockpit areas of your yacht. Be alert for exhaust from other vessels.

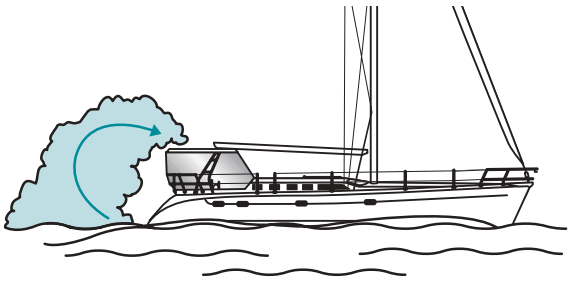


Figure 3. When protective weather coverings are in place, engine or generator exhaust from your yacht, while docked and/or running, can cause excessive accumulation of Carbon Monoxide gas within the cabin and cockpit areas of your yacht. Always provide adequate ventilation when the weather coverings are in place and either the engine or generator are running.

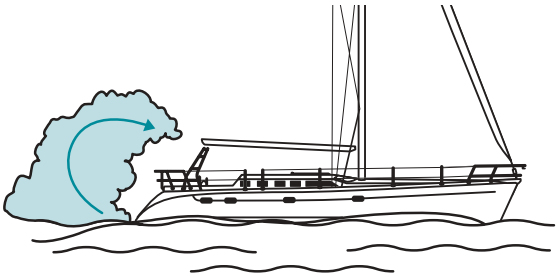


Figure 4. Engine or generator exhaust from your yacht while underway at a slow speed can cause excessive accumulation of Carbon Monoxide gas within the cabin and cockpit areas of your yacht. A tail wind can increase the accumulation. This is often referred to as the “station wagon effect”. Always provide adequate ventilation or increase your speed if possible.

Dangers Of Carbon Monoxide In The Water

On many boats, carbon monoxide from your main engine or generator or those of another boat can accumulate in high concentrations beneath the swim-platform. Carbon monoxide can also accumulate between boats, boats and docks, and below docks and other structures. Accumulations of carbon monoxide at or near the surface of the water can present the risk of carbon monoxide poisoning to anyone swimming in or otherwise near the water surface. Children are especially vulnerable, as they tend to playfully swim near swim-platforms and docks where accumulations of carbon monoxide may be present. NEVER swim or allow others to swim if a generator or engine is running. Never swim or allow others to swim while in a marina or where other boats or structures are present.

How To Minimize The Accumulation Of Carbon Monoxide

- Practice good inspection and maintenance habits.
- Be certain hull exhaust outlets are not blocked or restricted in any way.
- Be alert for exhaust gasses from other boats.
- Always provide adequate ventilation when weather enclosures are in place and engine or generator is running.
- Orient your boat to maximize the dispersion of CO.
- Be aware of the effects of your actions on other boats.
- Be aware of the effects of the actions of others on your boat.
- Provide adequate ventilation when open flame appliances are used in the cabin.

Preventative Maintenance

Frequent inspections and proper maintenance of the engine, generator, and exhaust systems as well as other various areas of your boat are critical in preventing the accumulation of carbon monoxide. It is the owner's responsibility to make sure that the entire boat is inspected and maintained against CO.

The exhaust systems of your engine and generator are under constant attack from salt water, gasses, vibration and normal wear. Inspect every exhaust system component often. Start with a visual inspection. Check each joint for discoloration, carbon buildup, stains, water leaks or other signs of damage. Inspect all metal parts for corrosion, discoloration or flaking. Check that all hose clamps are in good condition and properly tightened. Carefully inspect all exhaust and cooling hoses for signs of wear, dry rot, cracking, discoloration, chafing or swelling. If any of these conditions exist, have the entire system inspected and corrected by a qualified technician before starting the engine or generator.

Next, start the engine and generator one at a time. Follow the full run of the exhaust system, listening and looking for leaks. While doing this, make sure there is adequate ventilation and that your CO detector is on.

Other items to inspect are as follows: If your boat has access panels, check that the access panels around the engine and exhaust are in place and fit snugly to minimize the opportunity for CO to enter the cabin. There should be no large openings where CO could enter the cabin. Ensure that all ventilation systems are in good working order, and not blocked or punctured. Check all sink drains to ensure that they have a good water trap to prevent CO from coming in from the outside.

Finally, because poorly running engines produce excessive CO, make sure engine and generator are tuned up. They should run smoothly and not produce black smoke. The fuel system and air filters should be in good order.

Carbon Monoxide Detectors

If you carefully avoid potential CO accumulation and maintain your systems properly, you have made great strides towards protecting yourself and others from the dangers of carbon monoxide. Another important line of defense is a CO detector, used whenever you're aboard your boat. A detector is the only way to properly detect the presence of CO. There should be a CO detector located in each living area of your boat. Use only those CO detectors that are UL approved for marine use. RV and residential models won't withstand the elements of the boating environment. Most CO detectors require specific maintenance procedures to remain accurate and functional. Follow the manufacturer's instructions for the installation, use and maintenance of the CO detectors. Carbon Monoxide Detectors should be installed in all boats and the operation of them should be known to all aboard.

If you would like to purchase a CO detector and receive a special purchase price, please contact the Hunter Marine Customer Service Hotline at 800-771-5556.

If you need assistance, please feel free to contact our Customer Service Hotline at 1-800-771-5556.

BoatingUnderTheInfluence

BUI is just as deadly as drinking and driving!

Did you know:

- A boat operator is likely to become impaired more quickly than a driver, drink for drink?
- The penalties for BUI can include large fines, revocation of operator privileges and serious jail terms?
- The use of alcohol is involved in about a third of all recreational boating fatalities?

Every boater needs to understand the risks of boating under the influence of alcohol or drugs (BUI). It is illegal to operate a boat while under the influence of alcohol or drugs in every state. The Coast Guard also enforces a federal law that prohibits BUI. This law pertains to ALL boats (from canoes and rowboats to the largest ships) — and includes foreign vessels that operate in U.S. waters, as well as U.S. vessels on the high seas.

Dangers of BUI

Alcohol affects judgment, vision, balance and coordination. These impairments increase the likelihood of accidents afloat – for both passengers and boat operators. U.S. Coast Guard data shows that in boating deaths involving alcohol use, over half the victims capsized their boats and/or fell overboard.

Alcohol is even more hazardous on the water than on land. The marine environment – motion, vibration, engine noise, sun, wind and spray – accelerates a drinker's impairment. These stressors cause fatigue that makes a boat operator's coordination, judgment and reaction time decline even faster when using alcohol.

Alcohol can also be more dangerous to boaters because boat operators are often less experienced and less confident on the water than on the highway. Recreational boaters don't have the benefit of experiencing daily boat operation. In fact, boaters average only 110 hours on the water per year.

Alcohol Effects

- Alcohol has many physical effects that directly threaten safety and well-being on the water.
- When a boater or passenger drinks, the following occur:
- Cognitive abilities and judgment deteriorate, making it harder to process information, assess situations, and make good choices.
- Physical performance is impaired - evidenced by balance problems, lack of coordination, and increased reaction time.
- Vision is affected, including decreased peripheral vision, reduced depth perception, decreased night vision, poor focus, and difficulty in distinguishing colors (particularly red and green).
- Inner ear disturbances can make it impossible for a person who falls into the water to distinguish up from down.
- Alcohol creates a physical sensation of warmth - which may prevent a person in cold water from getting out before hypothermia sets in.

As a result of these factors, a boat operator with a blood alcohol concentration above .10 percent is estimated to be more than 10 times as likely to die in a boating accident than an operator with zero blood alcohol concentration. Passengers are also at greatly increased risk for injury and death - especially if they are also using alcohol.

Estimating Impairment

This table gives a guide to average impacts of alcohol consumption. However, many factors, including prescription medications and fatigue, can affect an individual's response to alcohol, and impairment can occur much more quickly as a result. There is NO safe threshold for drinking and operating a boat, so do not assume you are safe just because you fall into the "rarely" or "possibly" influenced categories.

APPROXIMATE BLOOD ALCOHOL PERCENTAGE									
Drinks	Body Weight in Pounds								Influenced
	100	120	140	160	180	200	220	240	
1	0.04	0.04	0.03	0.03	0.02	0.02	0.02	0.02	RARELY
2	0.09*	0.07*	0.06*	0.06*	0.05*	0.04	0.04	0.04	
3	0.13	0.11	0.09*	0.08*	0.07*	0.07*	0.06*	0.06*	
4	0.18	0.15	0.13	0.11	0.1	0.09*	0.08*	0.07*	POSSIBLY*
5	0.22	0.18	0.16	0.14	0.12	0.11	0.1	0.09*	
6	0.26	0.22	0.19	0.17	0.15	0.13	0.12	0.11	
7	0.31	0.26	0.22	0.19	0.17	0.15	0.14	0.13	DEFINITELY
8	0.35	0.29	0.25	0.22	0.2	0.18	0.16	0.15	
9	0.4	0.33	0.28	0.25	0.22	0.2	0.18	0.17	
10	0.44	0.37	0.31	0.28	0.24	0.22	0.2	0.18	

The asterisk (*) indicates estimated levels of impairment that could mean the individual is possibly influenced.

Enforcement and Penalties

The Coast Guard and every state have stringent penalties for violating BUI laws. Penalties can include large fines, suspension or revocation of boat operator privileges, and jail terms. The Coast Guard and the states cooperate fully in enforcement in order to remove impaired boat operators from the waters.

In waters that are overseen solely by the states, the states have the authority to enforce their own BUI statutes. In state waters that are also subject to U.S. jurisdiction, there is concurrent jurisdiction. That means if a boater is apprehended under Federal law in these waters, the Coast Guard will (unless precluded by state law) request that state law enforcement officers take the intoxicated boater into custody.

When the Coast Guard determines that an operator is impaired, the voyage may be terminated. The vessel will be brought to mooring by the Coast Guard or a competent and un-intoxicated person on board the recreational vessel. Depending on the circumstances, the Coast Guard may arrest the operator, detain the operator until sober, or turn the operator over to state or local authorities.

Tips For Avoiding BUI

Boating, fishing and other water sports are fun in their own right. Alcohol can turn a great day on the water into the tragedy of a lifetime.

Consider these alternatives to using alcohol while afloat:

Take along a variety of cool drinks, such as sodas, water, iced tea, lemonade or non-alcoholic beer.

Bring plenty of food and snacks.

Wear clothes that will help keep you and your passengers cool.

Plan to limit your trip to a reasonable time to avoid fatigue. Remember that it's common to become tired more quickly on the water.

If you want to make alcohol part of your day's entertainment, plan to have a party ashore at the dock, in a picnic area, at a boating club, or in your backyard.... Choose a location where you'll have time between the fun and getting back into your car or boat.

If you dock somewhere for lunch or dinner and drink alcohol with your meal, wait a reasonable time (estimated at a minimum of an hour per drink) before operating your boat.

Having no alcohol while aboard is the safest way to enjoy the water — intoxicated passengers are also at risk of injury and falls overboard.

Spread the word on the dangers of BUI. Many recreational boaters forget that a boat is a vehicle - and that safe operation is a legal and personal responsibility.

(Source: uscgboating.org)

If you need assistance, please feel free to contact our Customer Service Hotline at 1-800-771-5556.

RiggingMaintenance

As a sailing yacht owner the list of responsibilities that ensure the enjoyment and safety of you and your family and friends may feel overwhelming at times. It may seem that you are expected to be "the expert" at every turn in an arena where all you were looking for was some fun and relaxation.

One of the most important systems to get to know on your sailboat is the primary function of Sail power. It involves five subsystems, which include: Sails, the spars (mast and boom), standing rigging (furling systems included), running rigging and deck hardware.

When you purchase your sailboat, it is usually the case where all of these systems are intact and ready to operate. This is a good thing, as your responsibility as an expert doesn't seem so demanding after all. You have hoisted and furled sails before and you understand the concept of having to reef or "shorten" sail when conditions merit. So what else do I need to know about my primary power supply while I am out on the water?

As with any power system there is going to be that vital concept of diligence, known as maintenance. After owning your boat for a season or two, you may be asking yourself am I doing what I should to keep my sail power system operating safely and at its optimum. The key to answering this question is one simple word: Awareness!

The four subsystems which I'll discuss (sails excluded) that help make up your sail-power system are quite simple and logical in their design and the key to you maintaining them is being aware of what they are and how they function.

Maintenance awareness should start with an overview of your mast and standing rigging and its proper relation to your boat. This includes a proper rig tune and knowing the rigging pieces involved. This overview can be best introduced by reading your Selden Mast "Hints and Advice" Rigging guide for the Hunter keel boats which gives you a thorough background of how your rig was stepped and tuned in relation to your boat. The guide should give you a vivid mental picture of how your boat was set up originally by your dealer and presented to you in its current state. A photo log or notebook that would record the current settings would be a good idea to add to your rigging guide.

Now that you have an overview or general picture of your mast and standing rigging, it is important for you to become aware of the general conditions of these systems by conducting regular inspections. At least once or twice a year, your personal inspections should help satisfy any safety or performance issues that may have arisen during your sailing season. These inspections will also provide you with more awareness of the systems and their function as well.

General items to look for during our inspection are signs of accelerated corrosion. It can usually appear as excessive rust discoloration or oxidation, which can appear as a powder or flaking of a metallic part. Routinely cleaning the deck level areas of your mast and rigging with fresh water will help in preventing the corrosion problems you are looking for. Another item of inspection are your fasteners and rigging screws which are threaded items that should still be intact and matching their original condition. (It would be a good time to review your photo or notes log.) Also check that all cotter pins, locking nuts and locking pins are still in place. It is a good practice during this inspection to coat any threaded items or moving parts with a light lubricant to ensure that they will properly function when you want them to.

A third inspection area related to your mast and rigging are your furling systems. It is best to become aware of your furling systems by reviewing the particular manuals provided with the boat. Then you will get to know the concept of its function and the vital points of inspection and lubrication before you remove your sails. After removing your sails you will see that Selden furling systems for the Hunter keel boats have several lubrication points that are described in your manuals and are easily accessible during your inspection.

Your boat's running rigging (halyards, sheets and control lines) and deck hardware are the remaining areas to address during your maintenance awareness program. The same rule applies with first a general overview of their function which is actually quite simple and logical, will make you the expert in no time. Then a closer inspection several times a year would be prudent. Since these subsystems are more dynamic than the mast and standing rigging, you should pay close attention to wear and chafe of these materials. Any particular area that seems to be more worn than the remainder of the piece being inspected should be addressed by replacement or a recommendation by a professional. Part of your mast and rigging awareness, of course, involves everything aloft as well. If you are not comfortable in going aloft to perform a routine inspection then hiring a professional using the same timetable is the prudent thing to do. It would be advisable to at least perform an overview of going aloft in case of an emergency where it would necessitate you having the awareness of you being able to use a bosun's chair and safely perform the task at hand. Then if the situation arose you would at least have a comfort factor of what needed to be done.

So while you are out sailing, providing the enjoyment and relaxation which makes it such a great sport, just remember to keep your eyes open and watch things work as this awareness will make you the expert in no time.

HUNTER MARINE CORPORATION would like to thank Mr. Tom Sharkey, General Manager, Selden Mast, Inc. for this article and his contribution to this edition of the Hunter Safety TuneUp.

RudderInformation

Dear Valued Hunter 450/456/460/466/46 Owner:

Seasoned offshore sailors understand and appreciate the fact that rudders are designed and manufactured to protect the hull of the boat from serious under-water damage. Over the past several years, we have received reports from some owners who have inadvertently lost their fiberglass composite post rudders during boating activity. Our goal with this communication is to explain how this loss might occur and to provide you with recommendations for enhanced maintenance options, plus encourage ongoing safety education for captain and crew alike in the case of rudder loss.

By virtue of its design, whenever a boat runs aground, or when the rudder strikes or is struck by an object, there is always a chance that the rudder post has been compromised or weakened to some extent. This weakening may go undetected, and may only become evident after continued or extensive use, possibly in adverse conditions.

While Hunter Marine's limited warranty specifically does not warrant the rudder because of the significant linkage to boat operation, it has always been Hunter Marine's policy to examine rudder stocks where there has been a rudder loss, whenever possible. Our goal in analyzing rudder loss is to determine cause and continually seek methods of improvement in our approach to design and manufacturing.

Specifically, Hunter Marine is aware of 16 rudders which have been lost on boats within your size range, most of which had been in use for more than two years. We were able to review 13 of the 16 reported. Our research indicates that 11 were well within the design and manufacturing tolerances. One rudder post may have had a manufacturing problem, while another was within the design tolerance but did not meet Hunter's internal tolerance specifications.

Another area in which we seek to assist our owners involves ongoing education. One of our key goals is to continually educate owners about preparation for offshore sailing, including our strong safety recommendation that the captain should learn how to sail without a rudder. We regularly publish articles in our corporate publications, including Safety Tune Up and KnotLine about this topic, and other safety issues. We highly recommend that our offshore owners in particular be appropriately prepared for offshore sailing activities by bringing along appropriate equipment, including anchor lines and anchors as well as other needed supplies. You should be well aware of equipment requirements which allow you to recover in the case of unexpected rudder loss. Coast Guard recommendations and Chapman's Piloting are both excellent resources all captains should be familiar with and thoroughly review in regards to this topic. We also highly encourage your participation in professional sailing schools where safety techniques can be taught and mastered by captain and crew. Here's a great source for more information:

http://www.offshore-sailing.com/courses_content/learn_to_sail.htm

In an effort to better support our owners and to make routine maintenance inspections easier to spot rudder problems, Hunter is now offering to replace our former composite rudder posts with stainless steel rudder posts on boats in your size range. While both composite and stainless steel rudder posts have their distinct advantages, we believe that stainless posts provide more obvious visibility of damage and will thereby assist our owners in the troubleshooting process. This direct inspection will allow you to replace a damaged post prior to your next use, versus not being able to readily note the problem with the composite design. In a goodwill effort, we are making a retrofit stainless steel rudder post available to you at a significantly reduced cost. If you are interested in purchasing such a rudder, please inquire through our Customer Service Department by calling (800)771-5556. We will be pleased to make arrangements to have the stainless steel option delivered to you for your installation.

We are also in the process of researching an affordably priced pre-manufactured emergency rudder system and will advise you when this becomes available. In the meantime, there are some aftermarket versions available at a reasonable cost. For information, visit: http://www.selfsteer.com/products/sos/index.php

Our research has shown that the SOS rudder system can be purchased for about half the cost of an emergency life raft.

In closing, we want you to know that Hunter Marine remains committed to your total satisfaction, boating safety and excellent sailing experience. We hope that this safety alert and precaution encourages you to take the proper steps to be fully prepared to sail without a rudder in the case of a loss, to anchor appropriately in adverse conditions, to have all required emergency equipment and supplies, and to consider making the switch to a stainless post to enhance your inspection capability.

Have a great – and safe – sailing season!

RudderlessSailing

The rudder on a sailboat is extremely vulnerable to damage and is under extreme pressure at all times when being used, including motor sailing. It also is exposed to any hazard that exists in the sea and can be damaged by grounding or receive shock loads by hitting flotsam and debris in the water. Whales and other sea life have been known to destroy rudder blades. It is not uncommon for an anchor line to wrap around the rudder, and for the shock load from wave action to apply enough pressure to overload the rudderstock. There are many ways a rudder can become damaged or inoperable.

The operator of a sailing vessel should be able to diagnose the cause of steering loss, assess the damage, and determine which course of action is appropriate in order to regain control of his boat. The source of failure may not be obvious, and a systematic inspection of relevant components may be necessary. Start by examining the wheel or tiller system that connects to the rudderpost. In most instances, the problem is here because this area is subject to high pressure and is normally mechanically fastened to the rudderpost. Check for cables that have slipped off the sheaves, or pins that have dropped out of the link between the wheel and rudderpost. It is good policy to always insert clevis pins "aircraft style", with the end of the pin that the cotter pin fits into aiming down. This is so that if the cotter pin falls out, the clevis pin still has a chance of not dropping out. In the case of a tiller boat, inspect the bracket that connects the tiller to the rudderpost. This can work itself loose or become unbolted. If all the mechanical parts seem to be functioning properly, one can assume that the problem lies in the rudder blade or rudderpost. This situation is more difficult to repair. If this is the case, it will likely be necessary to either sail as best as possible away from danger or, if in shoal conditions, anchor until you have a chance to implement a jury rig.

However, the rudder is not the only factor involved in steering a boat, and there are several alternate methods for controlling the trajectory of a vessel in the event of rudder dysfunction. Knowledge of alternate steering methods is an important component of thorough sailing knowledge, and should be part of any beginner's training. Rudderless sailing is indeed possible; in fact, many junior sailing programs devote a portion of their instruction to sailing the boat without a rudder. This is learned through the study of the boat's dynamic reaction to sail trim. It is important to understand how a sailboat reacts to sail trim, as this is how you will guide the boat. Not only can learning these skills help you out of a difficult situation, they will advance your knowledge of sail trim and your ability as a sailor.

If you need assistance, please feel free to contact our Customer Service Hotline at 1-800-771-5556.

Imagine a boat resting in the water with no sails rigged. Underwater, the keel or centerboard acts as a fulcrum, called the Center of Lateral Resistance (CLR, indicated by dotted line in illustrations on the top of the next page) somewhere near the center of the boat. If you were to push against the bow from the starboard side, the boat would turn toward the port, rotating on that fulcrum (figure 1). Conversely, if you push on the stern from the starboard side the boat will turn toward the starboard side (figure 2).

These forces can be duplicated using the sails. With only the mainsail rigged, and the wind blowing across the starboard side, the boat will turn toward the starboard side (figure 3). This is because the position of the mainsail is generally aft of the CLR, and the wind causes the mainsail to apply force behind that axis. With only the jib rigged and sheeted in, the same force is applied forward of the axis, and the force of the sail will push the bow away, as if you were pushing the bow with your hand (figure 4).

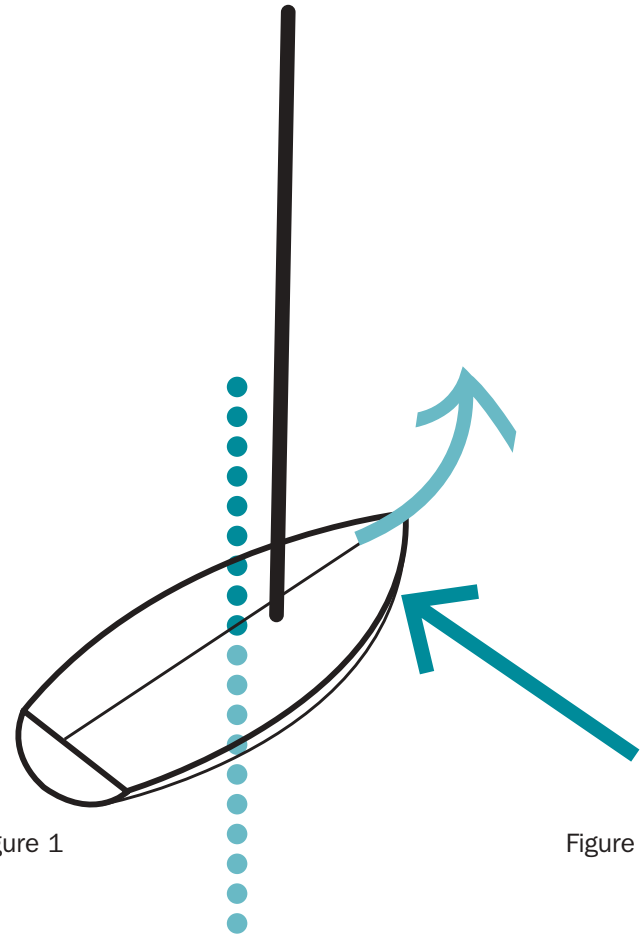


Figure 1

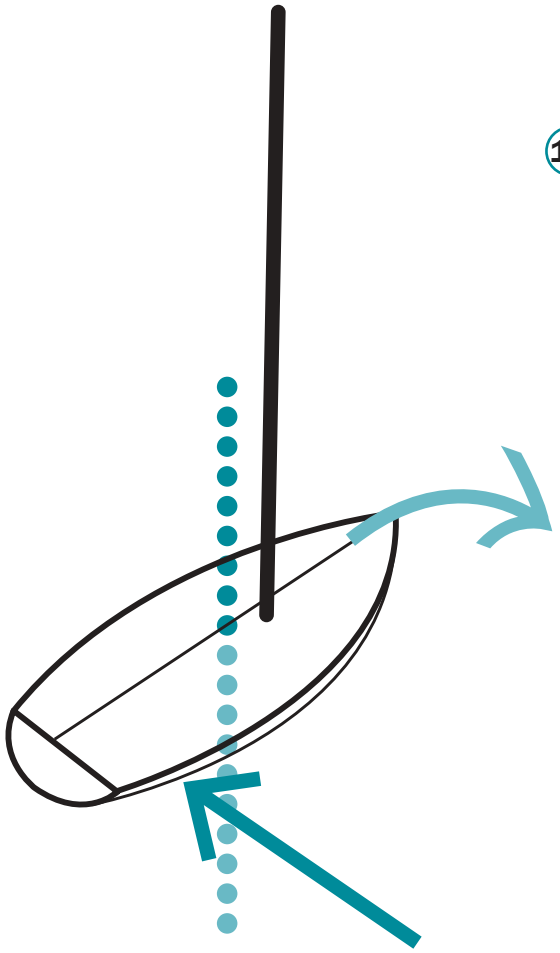


Figure 2

If both sails are up, sheeting out all the way on one or the other sail can provide the same effect as if the other were the only sail. When the jib is sheeted out, it does not exert any force, so it is as if it were not even there. Similarly, if the jib is sheeted in and the mainsail let loose, the boat will behave as if force were being applied to the bow. Keeping these principles in mind, it becomes evident that changing the trim of the sails can influence the trajectory of the boat. In fact, this should be practiced.

Go sailing and lock off the rudder. Try making the boat go in the direction you want by applying the sail trim as we described. If the bow needs to go downwind, trim it in and ease the main. If the bow needs to go upwind, ease the jib and trim in the main. As you become accustomed to how much trim is required (and this will vary from boat to boat), you should be able to steer a course by making minor adjustments once you have the basic trim set up. It will take some practice but it will make you a much better sailor.

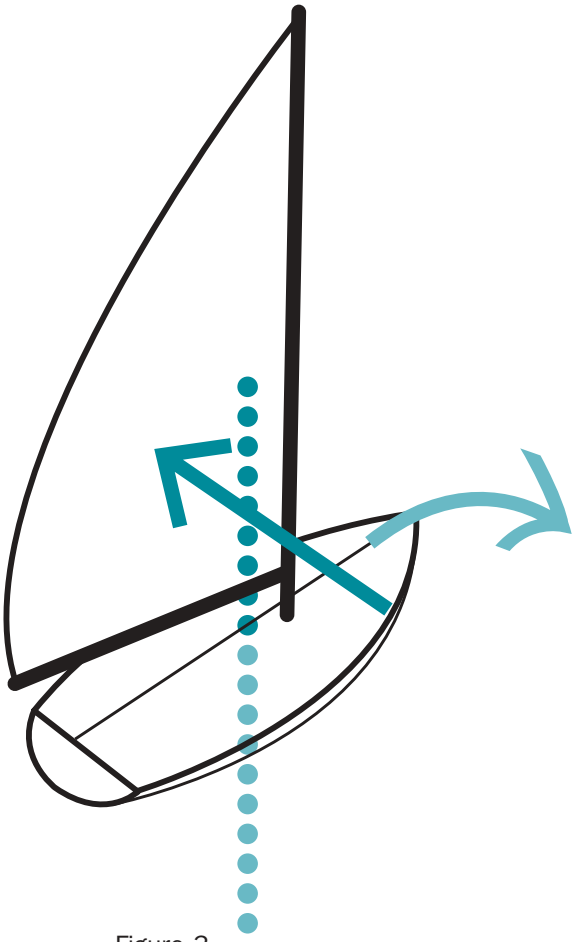


Figure 3

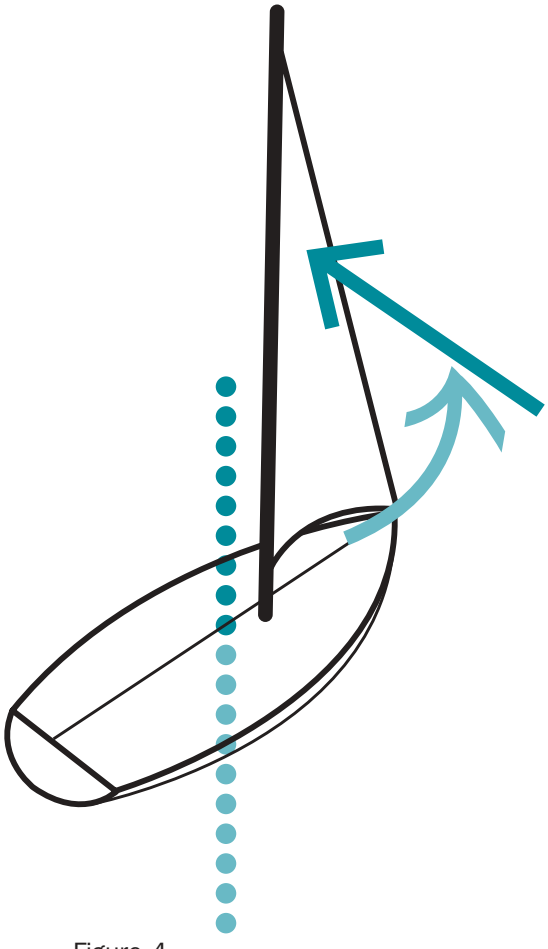


Figure 4

To refine this method, we need to understand that a boat is designed so it will slowly head into the wind if the helm is let go (A, fig 5). Accordingly, the mainsail should be eased so that the jib can "blow" the bow back down to compensate. Also, a drag device can be easily improvised to reduce the boat's tendency to head-up into the wind. For example, a bucket can be tied off the leeward side of the boat, creating a drag (B, fig 5), which reduces the boat's tendency to turn into the wind.

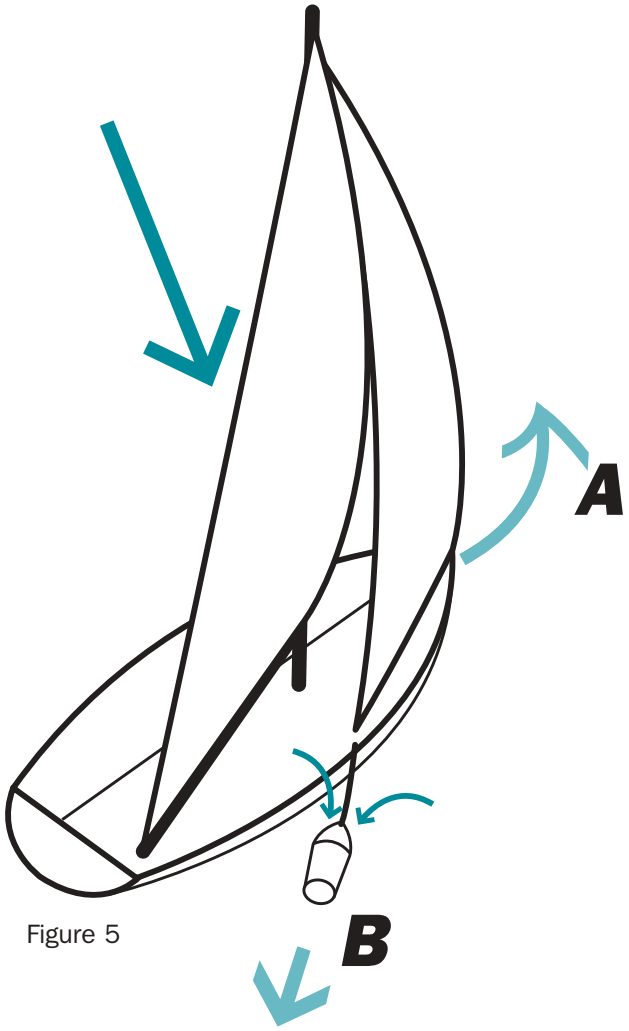


Figure 5

By adjusting the amount of drag (i.e. adding or removing buckets), an optimum combination can be reached. Also, most sailboats when under power will automatically tend either to the port or starboard when the engine is engaged, depending on many different variables from boat to boat. Determine which way the boat turns with just the engine on, and this force can be used to help steer the boat. The idea is to balance all the forces to keep the boat going straight ahead. If you are able to practice and become comfortable with the necessary procedures involved to successfully sail without a rudder, it should greatly boost your confidence in your ability to handle unexpected situations. That is the essence of seamanship.

TrailerTuneUp

One of the most overlooked investments many boat owners have is their boats trailer. While most owners only take a quick glance at the owner's manual after taking delivery of their boat they do not realize that trailer maintenance and setup is a crucial part of having a fun day on the water or in some cases not making it to the boat ramp at all.

Within the trailers owners manual there is an inspection list with many items that will need to be greased, inspected or tighten on a regular basis. In most cases the unseen items are what can turn out to be the most troublesome. Rather than quote the owners manual word for word lets review the most common maintenance items on your trailer and see how they could affect your weekend outing if not properly attended to.

1. Wash your trailer: When washing the trailer do it systematically and take your time doing so. This is an excellent time to visually inspect the under carriage, brake line fittings and brake drums, if equipped on your trailer. As you work your way around the trailer use your free hand to lightly push or pull on items such as trailer uprights, fenders or winch stands to check for tightness. Always be on the lookout for loose fitting hardware. Remember a lot of bouncing and vibration takes place as your trailer moves down the highway and this can loosen most types of fastening devises.

2. Tire pressure and tire wear: Just like your automobile tire pressure can be the difference between a smooth or unpleasant ride to the boat ramp. The difference in a few pounds of air from one tire to the next or from side to side can make a large difference in fuel economy and tire wear. If you have ever wondered why your trailer seems to bounce down the road, chances are one or all of the tires are not properly inflated. By checking the air pressure on a routine basis (monthly) you are one step closer to a safe and worry free trip to the local boat ramp or the long awaited vacation resort a few hundred miles away.

3. Proper lighting: This is one of the most important safety inspections you can make on your trailer. How many times have you been motoring down the highway after sunset and notice just in front of you a boat and trailer with the running lights flashing and flickering? And, this is just the ones that are working. It is often taken for granted that if one taillight is working properly then the boat can be seen by the driver following behind. The type of lighting failure described above is not only dangerous it is easily and inexpensively resolved. To replace the running/brake light bulbs on your trailer probably cost the average owner less that five-dollars to complete. To clean the light bulb sockets install the new bulbs and clean the trailer light connector at the hitch probably takes less than thirty minutes to complete from start to finish. The point being, it only takes a few minutes of preparation to travel safely during the nighttime hours so why take the chance.

4. Tie down straps: A good start to any weekend outing is when a boat owner, his vehicle, boat and its trailer all arrive at the same location and at the same time. One of the largest misconceptions in boat towing that a boat by itself weighs enough to hold it securely on the trailer while riding down the highway. Part of this assumption is true or that is until it becomes necessary to set the brakes in an emergency situation and this is when the trailer becomes a launching pad for the boat rather than a means of transporting it. Don't be convinced that a boat tie down strap is only used to prevent a boat from sliding backwards or from bouncing around on the trailer because this is far from the case. Check your owner's manuals (boat and trailer) for the correct tie-down locations on your boat and trailer.

5. Safety chains: Very few owners are aware that not only are safety chains required in most states they should also be crossed under the trailer coupler for maximum performance. Safety chains and the use of an emergency brake cable (supplied on most trailers with brakes) are the only means of controlling and stopping your boat/trailer should it become detached from the vehicle while it is moving down the highway.

6. Trailer weight: One of the biggest misunderstandings most owners have is load capacity. For the most part a boat's trailer is only designed, specified and manufactured to carry your boat and a reasonable amount of loose gear. They are not designed or intended to transport excess cargo such as, but not limited to, gas grills, small fishing boats with outboard or an assortment of windsurfers. These are just a few examples that come to mind. Trailers for the most part are built for a specific brand and model of boat. If ever in doubt about your trailers carrying capacity a quick review of the manufacturers capacity label located on the forward portion of the trailer will relieve any concerns you may have.

7. Tongue weight: I am sure at some point we have all seen a vehicle slowly and carefully moving down the highway in an odd manner. In this particular case what you quickly begin to notice about this bizarre driving style is that as the operator begins to accelerate the rear of the vehicle begins to sway back and forth. When he slows down the rear of the vehicle settles down and the driver continues on at a slow pace. This, not so uncommon event, is known to most Trailer Sailors as fish tailing. What most drivers don't understand is that this nerve-wrenching and dangerous means of transporting a boat is normally caused by improper tongue weight. In most cases the type of swaying just described takes place when the boat or its cargo has been set to far aft on the trailer therefore as is moves down the road it is attempting to lift the rear of the vehicle off the ground. It is not set in stone for every boat trailer but the average tongue weight for a Hunter boat should be at or close to seven percent of the total boat weight. This can be accomplished by moving the winch stand forward or aft on the trailer tongue to achieve the desired weight.

8. Wheel bearings: If there was ever an item that needed to be maintained to the letter it is the greasing and annual maintenance of your trailers wheel bearings. For the Trailer Sailor, more weekends have been spoiled by that unpleasant grinding sound coming from the center of the wheel hub on a trailer. Why? Because it can only mean one thing and that is the bearings are dry of grease, over heating and about to stop turning. What is even worse is this only happens at night on a lonely highway and during a holiday weekend. The good news is it can be partially avoided by installing and using bearing buddies, if you do not already have them, and following a diligent maintenance schedule. One of the few down falls with bearing buddies is the inner/rear bearing may not receive the proper amount of lubrication if the bearings are not packed properly in the beginning. This is why it is recommended that all bearing be removed, cleaned and repacked (including the hub) on an annual basis. By following these simple suggestions you will greatly improve your chances of trouble free travel and increased fuel mileage.

By following these simple recommendations we feel that your time spent traveling to and from your favorite boating site or taking that annual family vacation can be made more pleasant and enjoyable for the entire family.

WindlassFactAndFiction

Windlasses are often times viewed as the culprit whenever there has been a problem with the anchoring system. All vertical and horizontal windlasses must have the same installation opportunity to function as the manufacturer has intended for it to work. Unfortunately vessel manufacturers and designers have space constraints that may cut into the perception that the consumer has regarding the level of performance that is delivered from the system. The following information will answer some of the myths and facts regarding anchoring systems.

All windlasses, no matter the manufacturer, must have a minimum amount of fall directly under the windlass to accept the anchor rode paying off the gypsy, down into the anchor locker. The windlass does not "stow" the rode into the anchor locker. Gravity and locker capacity play the major role in capturing the rode and "stowing" the rode until it is needed to hold the boat during the anchoring process. The conventional windlass installation/operation will work best when the windlass is sitting over the widest and deepest portion of the locker. This will help gravity to stow the rode evenly as it pays off the windlass. The locker layout does play a part in how well the rode will pay off the windlass, as well.

The anchor rode must have available space in the locker. The incoming rode must leave the area where the rode pays off the windlasses gypsy free and clear to keep it from piling up in front of the windlass. Should there not be sufficient free space, the operator will have to "tend" the rode so that there is space for the rode as it pays off the gypsy. If the rode is not tended to it will "pile up" on itself directly in front of the windlass or underneath the mounting platform. Creating a "bottle neck", jamming the rode as it is trying to pay off the gypsy. This will, of course, "trip" the circuit breaker and damage the stripper. No matter what the rode length is, there must be free space for the rode paying off the gypsy into the locker or in front of the windlass to allow for the oncoming rode, the windlass cannot detect that the locker is full.

Whenever you alter your anchor rode, adding a longer tail scope of chain or ALL chain rode you must be sure the extra length or size change will be adequate for the windlass that is installed. Just because you can physically put a given length of rode into a locker does not mean that the windlass will do the same. The trade off point is the windlass will do all of the "back breaking" work for you.

Simple rules to cross check your rode choice is to find the total weight of your rope, chain and anchor. Multiply the total rode weight by 3. If your findings are less than the maximum pulling power of the windlass you then have selected a rode that is matched to the capacity of the windlass. Should you find that the total rode weight multiplied by 3 is greater than the maximum pulling power of the windlass, you will have to replace the windlass as it will not provide you with the service you are looking for. This method is telling you that the system is now mismatched. (You will find the max pulling power information listed in your owner's manual.)

A common problem discussed alot is rode jamming. Some of the reports refer to a "looping" in the line that creates a jamming of the rode from underneath as the rode pays out. It is believed that a common anchor swivel may prevent the "looping" of the anchor rode. Looping is a common action that is part of the line falling over on itself as the line pays into the anchor locker. The line will rotate clockwise during the recovery process, hesitate and then fall over itself and continue to rotate counter clockwise until the rope repeats the hesitation; at which time the rope falls again over itself as it lays in the locker. The "loops" are created when the rope changes direction as it pays into the locker. The anchor swivel will not stop this action. The "looping" is increased when the lay of the 3-strand nylon rope becomes tighter, or after it has been used in salt water over a period of time. Saline builds up in the rope fibers over time and causes the rope to stiffen. However, a good fabric softener rinse has been found to be very effective in lessening this problem. Depending on where you cruise will determine the effect the salt water has on your rope. It has been found that some fresh water lakes will "soften" the rope and cause it to jam.

Another cause for jamming is when the rode has been dumped into the locker. The "loops" appear as part of the rode from the start. For example the "looping" found with a common garden hose. If the rode was originally stowed removing the tangles and loops as the rode pays off into the locker, as apposed to just dumping the rode into the locker. 3-Strand nylon has a bit of memory and will want to retain the loops. This is brought on because during the twisting of the yarns to form the rope creates the 3-strand construction. By loading the rode initially using the windlass, and working the 'loops' and 'twists' out as the rode is installed, will certainly lend to reducing added woes of the rode fouling itself at the start. The addition of the anchor swivel will not completely rid you of you 3-strands woes, but it does help and is worth the investment.

To dispel the "loops" the rode needs to be periodically taken completely out of the locker and manually remove the twists and "loops". Again, an anchor swivel will not be a total "end all" to removing loops. The "old salt's tail" of dragging the anchor behind the boat or letting the anchor hang straight down at a 90 degree angle to the vessel in deep water just does not get the problem solved, in fact it delays and wastes time and it is not safe.

The other issue to be aware of is that the 3-strand can be just too tight of a lay to properly perform in a windlass installation and may have to be replaced. The rope will appear to be hard and stiff.
Even going to an all chain rode; you can find the exact same problem. The chain will twist and fall over itself. The main cause is the point of contact where the rode crosses over the bow roller, and when the rode changes direction as it travels around the windlasses gypsy. Yes, even chain will develop twists and will periodically have to be laid out to manually remove the twist (It's the best method, although not well liked and it is the safest way).

We do not know why some vessels have more problems than others. It is reasonable to have 6 vessels all-operating out of the same marina and one will have problems and the others will not. And yes the bow roller wheel design will pay a big part in this process.

Summary:
The incoming rode must have somewhere to go. Clearing itself and making more room for the rode entering behind it. The volume of the locker must match the length of rode being used.

Windlasses with control arms can require up to 12 or more inches of fall when being used with 3-strand ropes. 8-Plaited rope is much more forgiving. With the entire rode in the locker, 8-plait rope requires as little as 8 inches of fall.

Use the "Cross Check" method mentioned above to make sure your rode matches your windlasses performance rating.

Always tie off to a strong point while at anchor. The windlass uses a clutch drive system and it could creep out the anchor rode.

Always tie off the rode while the vessel is under way. You would not want to run over your anchor.

A windlass is a retrieval device. It is designed to recovery your anchor and rode. It is not a winch that is manufactured to pull sustained high loads.

Damaged strippers are caused by:

- Using a rope that is too soft
- Too small of a diameter of rope.
- Too long of an anchor rode fills the locker and as the windlass continues to operate jams the rope into the stripper.
- Too stiff of rope.
- The rope passing through the deck can get hung up on the deck. In other words the passage is not clean or smooth.
- Not tying off while at anchor. The rope stretches wedges itself down in the bottom of the gypsy and cannot strip itself out fast enough when the up button is pushed.

These are sound helpful hints to keep your anchoring experience a pleasant one, not a hateful one.

Safety Equipment

Federal law requires that you provide and maintain certain safety equipment on your boat. As the boat owner, you are responsible for providing all required safety equipment. Consult the United States Coast Guard and your state and local regulations to ensure your boat is in complete compliance with all requirements concerning safety equipment on board. Additional safety equipment may be recommended for your safety and the safety of your passengers. You and your passengers should be aware of the availability and specific use of each piece of safety equipment.

Minimum Recommended Safety Equipment

- Required life saving equipment, including personal floatation and throwing devices
- Required fire-extinguishing equipment
- Required visual distress signal devices
- First aid kit
- Emergency position indicating radio beam (EPIRB)
- Manual bailing device
- Anchor with sufficient line/chain
- Flashlight with fully charged batteries
- Binoculars
- Whistle
- VHF radio
- Navigational charts for your cruising area
- Fog bell (boats over 39.4 feet)

Fire Safety

Fire safety is something that everyone who owns or operates a boat should practice. Each year, boating fires and explosions kill and injure hundreds of boaters and cause millions of dollars in property damage. While there is a greater chance of a fire or explosion on a boat than on land, most of these accidents can be prevented. With a little effort on your part, fire prevention and fire safety are very attainable goals.

As the owner of your boat, it is your responsibility to:

- Have fire-fighting equipment inspected at regular intervals.
- Replace fire-fighting equipment, if expired or discharged, with devices of equal or greater fire-fighting capacity.
- Inform members of the crew about the location and operation of all fire-fighting equipment.
- Inform members of the crew and guests about the location and operation of all escape hatches.
- Ensure that fire-fighting equipment is readily accessible.
- Keep passageways to exits and escape hatches clear of obstructions.
- Never allow the use of gas lights on board.
- Never leave the boat unattended when cooking or heating appliances are in use.

Fire Safety — Continued

- Never modify any of the boat's systems (especially electrical, exhaust, fuel, and ventilation).
- Never handle fuel of any type when machinery is running or when cooking or heating appliances are in use.
- Follow proper fueling procedures.
- Never smoke while handling fuel.
- Keep machinery and bilge areas clean and free of debris.
- Perform fire drills on a regular basis.

Fire Drills

Your strategy for fighting a boat fire will depend on many variables. Therefore, you should perform fire drills under several different circumstances.

Discuss with your regular complement of crew, family and friends exactly how to fight a fire in the engine room, the galley, the berthing area, and the helm station; then decide who should do which jobs – and when.

Each person should know how the installed fire extinguisher system works and how to operate it. Walk through the boat noting all the potential fire locations, and point out all the hand-portable extinguishers.

Practice dismounting the extinguishers and then aiming for the base of the imaginary flames – sweeping the jet from side to side. (However, if you actually squirt a CO_2 extinguisher during this "test run", it won't reseal properly and will leak.) Check to see if any of the extinguishers weighs less than it is supposed to, and have any light ones refilled or replaced. Focus on all of your boat's potential fire locations.

Periodically, call a fire drill and time everyone with a stopwatch. The first drill will probably help you identify weak links. Discuss them and practice again right away, until you've improved your response time. After everyone is comfortable in his or her role, change roles and practice again – or practice with one less person to simulate an injury situation.

Generally, everyone on board who is physically able to grab an extinguisher and douse the fire should be ready to do so. However, if the fire is inside a crowded space (such as the engine room), perhaps only one person may be able to stand and aim an extinguisher at the fire. The other person could stand nearby, holding backup extinguishers, ready to hand them to the primary firefighter – or ready to take over the fight if the first person is exhausted or inhales smoke.

If you're offshore, anyone not fighting a fire should (a) shut down the fuel and air supply at the helm station, (b) make the Mayday call on VHF or SSB radio, and (c) don PFDs as if abandoning ship. If you're drifting in the harbor, a non-firefighter could also turn up the loudhailer and notify everyone nearby that the boat's on fire.

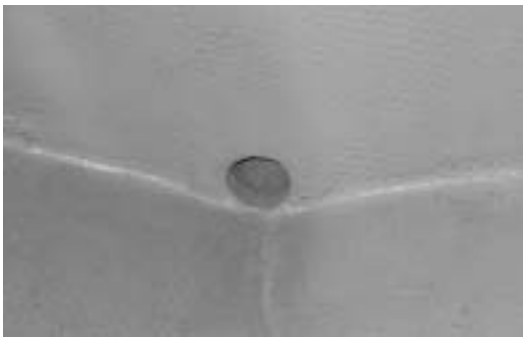
If your boat is on fire in a marina slip, you might be able to put the fire out more safely while standing on any of the docks surrounding it. If it is not an electrical fire, using multiple water hoses from neighboring slips may help you put out the fire faster. Most marinas have a high-volume fire pump and hose mounted on the docks. During your fire drill, locate that hose and learn how to operate it.

We hope that you'll never have to confront an onboard fire – but if you do, follow these steps and you'll be prepared to deal with it swiftly, safely and successfully.

Maintenance For Safety

Maintaining the critical equipment and systems of your boat is essential to safety. The following is a guideline for maintaining some of these systems.

- The condition of your rigging, both standing and running, is paramount to your safety and the performance of your vessel. It is imperative that all rigging be inspected and checked by a qualified professional on a regular basis. Acid rain, airborne dirt and salt spray can cause serious corrosion to your rig. It should be cleaned where possible on a regular basis and all swages and fittings should be checked for cracks and deterioration. Many insurance companies demand periodic checks by a reputable rigging company. Be sure to check with your company or agent to make sure you are covered in the event of a failure.
- Running rigging should also be inspected and replaced on a schedule. To have a line part under stress is dangerous to the crew and could jeopardize the integrity of the entire rig.
- Chainplates are under considerable loads and need to be checked regularly for any separation, delamination or loosening during the season. If you suspect any problems, contact your Hunter dealer or qualified technician immediately. Do not use your boat, if there is a problem present. If a visual inspection is not easily done, call Hunter Marine Customer Service at 800-771-5556 or 386-462-3077 for instructions.
- Keep your bilge absolutely free of dirt and trash. Check frequently and clean out as often as needed. Accumulations of dirt and debris can absorb oil and fuel. In addition to creating a fire hazard, this may also clog limber holes and bilge pumps. Clogged limber holes could result in water damage to equipment and corrosion of fuel tanks.



Limber hole

- Inspect lifesaving equipment frequently. At least at the beginning and midway through the boating season, check the condition of all lifesaving equipment. Replace any equipment that is dated or questionable.
- Check fire-extinguishing equipment regularly as recommended by the manufacturer. Weigh the engine room fire extinguishers yearly to ensure that they are fully charged.
- Have the entire fuel system inspected for signs of damage and wear. Visually inspect the fuel lines inch by inch. Look for signs of corrosion of the fuel tanks. If any deterioration is noticed have a qualified marine technician repair or replace immediately.
- Have a qualified marine electrician inspect your entire electrical system annually. This should include the AC, DC, and bonding systems. Replace zinc anodes and damaged wiring and equipment as needed.

Maintenance For Safety — Continued

- Maintaining your engine and generator exhaust systems is critical to prevent flooding and the infiltration of deadly carbon monoxide gases. Inspect your entire exhaust system regularly for signs of leaking, breakage, cracking, and dry rotting of hoses. Have a qualified marine technician inspect and repair the exhaust systems annually.
- Each sink drain in your boat includes a water trap within the drain hose. The purpose of the trap is to prevent deadly carbon monoxide gases from entering your boat through the drain. Before you use your boat at the beginning of each season, run an ample amount of water through your sink drains to ensure that the water traps are full of water. This should also be done periodically throughout the boating season.
- Check all keelbolts for rust or water intrusion. They should be tight and show no signs of movement. The keel sump should also be kept clean and free of debris.
- Check rudder bearings for signs of wear or leaks. Please refer to the owner's manual for the specific maintenance schedule.
- Check all through hull seacocks for proper operation. All should be able to be opened and closed easily. If any are difficult to operate, they should be disassembled, greased and reassembled.
- Check all stanchions and pulpits for cracks and integrity.

Is Your Boat As Safe As It Can Be?

If you can answer YES to the following questions, chances are that your boat is safely equipped and that you operate it safely.

- Do you carry legally required and other safety equipment aboard and do you know how to use it?
- Before getting underway, do you review, with everyone on board, emergency procedures and identify all safety equipment and exits?
- If you carry a life raft aboard your boat, have you included its proper deployment as part of your routine safety training?
  Has at least one other crew member been trained?
- Are you aware that it is illegal and dangerous to operate a boat while intoxicated?
- Do you check local weather reports before departure, and keep a weather eye open during your voyage?
- Are your lifesaving equipment and fire extinguishers readily accessible at all times?
- Do you avoid overloading your boat with people or gear?
- Do you make sure you have good non-skid surfaces on deck and on the soles of shoes of everyone on board?
- Do you keep bilges clean and electrical contacts tight?
- Do you guard rigidly against any fuel system leakage?
- Have you requested a Coast Guard Auxiliary Courtesy Examination for the current year?
- Have you taken any safe boating or first-aid courses?
- Before departing, do you leave a Float Plan so someone knows where you are boating and when you are expected to return?
- Are you familiar with the waters that you will be using: tides, currents, sand bars, navigation aides and any hazards you may encounter?
- Do you know your personal limitations and responsibilities?
- If you are a non-swimmer, are you learning to swim?
- Are you and your crew prepared for any emergency that could occur?
- Do you know and obey the Rules Of The Road?
- Do you know your fuel tank capacity and fuel consumption at various RPMs, and the cruising range this gives?
- Do you take maximum precautions when taking on fuel? Do you practice the “one-third rule” by using one-third of the fuel going out and one-third to get back, keeping one-third in reserve?
- When anchoring, do you allow adequate scope on your anchor line? Are you far enough away from your neighboring boats?
- If someone falls into the water do you know what to do?
- Do you avoid relieving yourself over the side of the boat in a standing position? This is a common cause of accidents resulting in drowning.
- Whenever possible, do you, and those aboard your boat remain seated while underway?

(Source: Chapman *Piloting, Seamanship & Small Boat Handling*)

Product **Recalls** and **Notifications**

This publication is distributed annually to all known Hunter owners. In it, many important product recalls and notifications are highlighted from the past year. These recalls and notifications are generally safety related and contain information that you need to be aware of. We also mail all recalls and notifications to our dealers, customers, or both as they are released. Even though we make every effort to notify everyone of these issues, it is strongly recommended that you visit our web site **(http://www .huntermarine.com/prodNot/index.html)** frequently and check the "Product Safety Notifications" section for current recalls and notifications that may pertain to your boat.

Hunter Recalls and Notifications

260/270 HULL TO DECK JOINT REPAIR	10/02
INLINE FUSE UPDATE	11/02
410 CHAINPLATE FIX	3/03
420 WIRING/ELECTRICAL UPDATE	4/03
240/260/270 FUSE/POWER SURGE PROTECTION	5/03
FIRE SUPPRESSION SYSTEM	7/03
FIRE SUPPRESSION UPDATE	3/04
AUTOMATIC ENGINE SHUTDOWN PROCEDURE	3/04
SHORE POWER CONNECTION UPDATE	4/04
POWER SYSTEM OPERATION INSTRUCTIONS	4/04
SWIM SEAT INFORMATION	5/04
33 HELM SEAT REINFORCEMENT	6/04
BALL VALVE DRAINING AND WINTERIZING	7/04
GROUND WIRE ON MAIN AC/DC DISTRIBUTION PANEL	9/04
33 FUEL VENT NOTIFICATION	01/05
TRAILER TUNE UP	02/05
33 BOW ROLLER NOTIFICATION	02/05
PRELIMINARY CARE/INSPECTION CHECKLIST	08/05
NEW BACK-UP RUDDER SYSTEMS AVAILABLE	11/05

If you no longer own your boat, please give this memorandum to the purchaser and advise Hunter Marine of the name and address of the purchaser. Call 1-800-771-5556.

HUNTER®
MARINE CORPORATION
AN EMPLOYEE OWNERSHIP COMPANY

CUSTOMER HOTLINE: 800-771-5556
Hunter Marine Corporation ▸ P.O. Box 1030 ▸ Alachua, FL USA 32615
Phone: (386) 462-3077 FAX: (386) 462-4077
http://www.huntermarine.com ▸ e-mail: customerservice@huntermarine.com

SAFE BOATING TIPS

BE PREPARED

Take a safe boating course. In 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 local boating authorities

MINIMUM RECOMMENDED SAFETY EQUIPMENT

- Required life saving equipment, including life vests and throwables.
- First Aid kit
- Anchor with sufficient line and/or chain
- Flashlight with good batteries
- Binoculars
- Appropriate navigational charts
- Flares
- Noise emitting device
- Sufficient food and water provisions
- Sunglasses and block
- Blanket
- Oar(s)

The legally required on-board safety equipment may vary by region or body of water. Please check with local authorities prior to departure 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 any packaging, and keep throwable floatation devices ready for immediate use.

⚠ WARNING

It is very important that children, handicapped people, and non-swimmers wear lifejackets at all times. Make sure all passengers are properly instructed in use of life saving gear

FIRE EXTINGUISHERS

Approved fire extinguishers are required on most boats, local authorities can provide details. All passengers should know the location and operating procedure of each fire extinguisher. Fire extinguishers are normally classified according to fire type. Be familiar with the type of fire extinguishers you have 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 types 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

Consumption of alcohol while boating is not recommended. The combination of noise, sun, wind, and motion act to produce fatigue on the water, and can exaggerate the effects of alcohol.

⚠ WARNING

IMPAIRED OPERATION HAZARD
Operating any boat while is intoxicated or under the influence of drugs is both dangerous and illegal. Impaired vision or judgment on the water can 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. Keep a watch to the 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

Dear Hunter Owner,

Attached you will find a list of items and recommendations that we believe should be incorporated into your own ongoing list of preventative maintenance items and safety check points. THIS LIST SHOULD NOT BE CONSIDERED A COMPLETE SERVICE MANUAL OR THE ONLY ITEMS ON YOUR BOAT IN NEED OF ROUTINE MAINTENANCE, INSPECTION OR ATTENTION.

You will find that we address commonly found optional equipment items installed on Hunter boats, as well as most standard equipment from Hunter Marine. Owner's need to familiarize themselves with individual equipment manuals on all such items, especially aftermarket purchases or optional equipment installed by your dealer or Hunter Marine. This should insure that you are following the manufacturer's recommendations for proper maintenance and up-keep.

We strongly recommend that all owners complete a Power Squadron course followed with a complementary boat inspection before leaving the dock. To locate a Power Squadron in your area please visit < www.usps.org >.

Reviewing and familiarizing yourself with the Chapman's Piloting Manual is also highly recommended for every boat owner. This manual contains demonstrations for safety drills which should be practiced routinely, dealing with adverse conditions, general boat handling and recommended safety equipment. Our opinion is that no boat owner should operate a boat without first reviewing this manual and without having ready access to it while sailing.

We hope that this list will be beneficial to you in your ongoing maintenance and upkeep. Safe boating!

Thank You

Hunter Marine

Preliminary care and maintenance checklist

A qualified Technician should be used if you are not completely confident in your ability to make repairs or inspections.

Out of Water Inspection

Pre-launch inspection

_____ Sacrificial zinc anodes installed
_____ Propeller installed with keyway, nuts and cotter pin
_____ Propeller shaft turns freely and without excess wobble
_____ Struts and shaft log free of corrosion
_____ Rudder swings easily & correct with wheel direction
_____ Rudder and post inspected for cracks and/or concealed damage (may require removing rudder)
_____ Auxiliary tiller handle properly aligned, fits securely and operational
_____ Backup rudder system complete and operational
_____ All thru-hulls and valves below water line inspected for corrosion, labeled and closed until after launch
_____ Bottom paint in satisfactory condition
_____ Hull freshly cleaned and waxed (free of gelcoat damage)
_____ Mooring, safety lines and fenders onboard and in good condition
_____ House & engine start batteries installed and filled with correct electrolyte levels
_____ House & engine start battery boxes secured
_____ All battery terminals clean and wires secured
_____ Engine block & transmission drains closed
_____Speed / Depth transducers in place. Speed paddle wheel rotates smoothly
_____ Hose clamps on all systems below water line tight
_____ Keel bolts tight and clean
_____ Exhaust hose attached and secured
_____ Boat is free of internal and external water leaks above water line (Failure to stop water intrusion could result in permanent damage or deterioration of structural coring materials, internal wiring and cause mildew and molding)

Mast Assembly

_____ Review manufacturers manual for maintenance and up-keep
_____ Spreaders securely fastened
_____ Mast and spreaders free of corrosion and stress cracks
_____ Standing rigging and pins inspected for wear, tear, corrosion and cracking
_____ External wiring secured for anchor, steaming and deck lights
_____ Electronic wind indicator installed per manufacturers recommendation
_____ Manual wind indicator installed on masthead
_____ VHF antenna installed and connected
_____ Headsail furling system installed inspected per manufacturers recommendation
_____ Running rigging inspected for wear and tear
_____ Mast step stand-up blocks secured and operational
_____ Main Sail, jib sail and flaking system inspected for wear and tear (non-furling mast). In-mast system checked for smooth operation and overall condition of sails
_____ Specified pre-bend and diagonal tensions attained in mast. See owners manual
_____ Mast to deck wiring properly sealed with drip loop

Anchor System and Ground Tackle

_____ Anchor windlass inspected per manufacturers recommendation
_____ Anchor secured in bow roller assembly
_____ Spare anchor onboard and accessible. See Chapman's Manual for recommendations on anchors, anchor lines and drogues
_____ Anchor line pays out and retrieves into anchor locker without difficulty
_____ Bitter end of anchor line secured
_____ Anchor rode inspected and free of abrasions
_____ Anchor chain shackle lock-wired at pin after secured to anchor and corrosion free
_____ Anchor locker hatch secures properly with anchor and line in place
_____ Anchor locker free of debris inside
_____ Anchor locker drains open

Fuel System

_____ Tank fuel level indicator functioning properly
_____ Fuel clean and treated with engine manufacturers recommended additives
_____ Primary and secondary filters cleaned or replaced
_____ Fuel tank supply valves open
_____ Fuel tank vent clear from tank to atmosphere (hose has anti-siphoned loop in place at hull or deck side)

Steering System

_____ Inspect and service steering system according to manufacturer's recommendation
_____ Clean and grease autopilot drive chains
_____ Ensure compass light is operational

Primary Pumps Functional

_____ Manual bilge pumps
_____ Electric bilge pumps and float switches (discharge hose has anti-siphon loop in place to prevent back flow under sail)
_____ Macerator pumps
_____ Fresh water pumps
_____Toilet flush pumps
_____ Shower sump pumps
_____ High water bilge alarm pump

Illumination and small electrical components check

_____ Bow light
_____ Cabin lights
_____ Stern light
_____ Deck light
_____ Instrument lamps
_____ Masthead light
_____ Chart light
_____ Anchor light
_____ Courtesy lights
_____ Reading lights
_____ Distribution panel lights
_____ Smoke detectors operational
_____ CO detectors operational (one per cabin recommended)
_____ Engine & generator room blower operational
_____ Auto fire suppression system operational (engine compartment)
_____ Shore power cord and adapter plug operational. See manufacturer's manual for complete details
_____ 110 or 220 VAC outlets operational – Ground fault circuits functioning
_____ 110 or 220 VAC inverter/battery charging systems functioning properly
_____ Cockpit control systems operational

Fresh Water Systems

_____ Hot water heater drains shut
_____ All spigots and hose bibs shut
_____ All tanks flushed clean and free of debris and antifreeze
_____ Water heater tank and lines flushed of antifreeze
_____ All water lines and components purged of air and checked for leaks
_____ Sinks and drains checked for leaks and adequate flow
_____ Cockpit shower operational
_____ Fresh water filters clean
_____ Tank water level indicator systems operating – labeling and tank valve selection correspond

Head and Holding Tank Systems

_____ Vent clear from tank to atmosphere
_____ Filled with fresh water and test pumped with macerator
_____ Toilets flush to holding tanks properly
_____ Waste level indicating system properly functioning
_____ No leaks at any hose fitting within the system

Galley Systems

_____ Gas bottle filled installed and connected to regulator. Inspect Gas system for leaks after 3 minutes. Should a leak be detected, immediately close the main valve, exit boat and seek professional assistance for a thorough inspection.
_____ Stove and oven operational. Refer to manufacturer's manual for proper operation and trouble shooting.
_____ Gimbal latch secure and operational
_____ LPG stowage locker drain open and tank storage area free of debris.
_____ Microwave operational
_____ Refrigerator operational and proper temperature attained
_____ Freezer operational and proper temperature attained
_____ USCG waste disposal-warning poster onboard or in owner's package
_____ Icebox drains to sump or bilge properly
_____ Icebox drain plugs installed

Topside Inspection

_____ Swim seats / ladders / gates operational
_____ Swim seat latch operating correctly
_____ Cockpit hatches operate properly (adjustments should be made with boat in water)
_____ Canvas properly cleaned and installed
_____ Cockpit cushions cleaned and installed
_____ Lifeline fittings tight and secure
_____ Rubrail sealed secured to hull
_____ Sliding hatches drains free of debris
_____ Companionway drop-ins fit properly in companionway and stowage rack
_____ Load bearing hardware sealed and securely fastened. This includes but is not limited to chainplates, winches and handrails
_____ Traveler arch sealed and securely fastened. Stainless Steel models should be properly grounded, see owners manual for details
_____ Plexiglas hatches, ports, windscreens and windows adjusted and cleaned. Cleaners and polishers specifically for Plexiglas can be purchased from most marine supply stores
_____ External teak cleaned and oiled (Teak decking cleaned with mild soap and water)
_____ External railings cleaned with soap and water then hand polished using automotive wax
_____ All deck fill caps seal properly and have retainer chains intact (except Waste Pump-out)
_____ Dorade vents or sealing caps installed
_____ Topside surface clean and free of gelcoat damage

Interior Inspection

_____ Drop-in hatches for bunks and floors in place and fit securely
_____ Interior steps and grab rails secured
_____ Bilges clean and free of debris
_____ Opening port and hatch screens in place
_____ Blinds / privacy curtains, shades and interior cushions cleaned, installed and secured
_____ All doors open / shut / latch properly
_____ Insure all wires and connection on distribution panels are tight (should be professionally inspected)
_____ Television / VCR operational
_____ Stereo / Tape / CD operational
_____ Chapman's Manual onboard and readily available
_____ Safety gear onboard readily available and up to date. See Chapman's Manual and US Coast Guard website at < www.uscg.mil >for details.
_____ Boat owner's manual onboard

In Water Inspection

Dockside inspection of Engine, Pre-start sequence and operating system

_____ Review engine manual for maintenance requirements and proper starting procedure
_____ Propeller shaft properly aligned (per engine manual)
_____ Shaft to engine coupling bolted and properly torque (per engine manual)
_____ All engine mounting bolts in place and properly torque (per engine manual)
_____ Crankcase oil at full mark (per engine manual)
_____ Transmission fluid / oil at full mark (per engine manual)
_____ Coolant mix ratio proper – heat exchanger and expansion tanks full (per engine manual)
_____ Seawater intake valve open and no leaks
_____ Air bled from fuel lines and system
_____ No fuel leaks at any fittings
_____ Throttle linkages smooth and operational
_____ Shutdown system operational
_____ USCG Oil Discharge warning poster in place
_____ Exhaust elbows and hoses tight
_____ Starting sequence and alarms correct
_____ Oil pressure acceptable (per engine manual)
_____ Coolant temperature acceptable (per engine manual)
_____ Alternator DC output at rated rpm (per engine manual)
_____ Correct Idle rpm (per engine manual)
_____ Water discharged with exhaust
_____ Hour meter operational
_____ Fuel level indicators operational
_____ Throttle cable tension set properly
_____ Shifter operation correct
_____ Neutral safety start switch operational
_____ No inboard exhaust gas leaks
_____ No fuel / oil / water leaks on engine
_____ Shaft packing / Drip free Seal adjusted and locknuts tight. One to three drips per minute with shaft turning on traditional packing assembly
_____ Engine box installed and secured

Dockside inspection of Generator, Pre-start sequence and operating system

_____ Review and follow manufacturer's manual for maintenance and up-keep
_____ Seawater strainer water-tight and clean
_____ No leaks in fuel system - Fuel filters clean
_____ Lube oil at full mark
_____ Coolant level full – proper mix ratio with water (per generator manual)
_____ Seawater discharge overboard with exhaust gas
_____ No inboard water or exhaust gas leaks
_____ Proper voltage output to distribution panel (per generator manual)
_____ Ship / Shore power transfer panel function properly
_____ Starter battery box secured
_____ Starter battery cable connections clean and tight
_____ Starting battery electrolyte level proper

Climate Control System

_____ Review and follow manufacturers manual for maintenance and up-keep
_____ Seawater strainer water tight and clean
_____ Seawater pump air purged and operational
_____ Seawater flow adequate fwd and aft
_____ Fwd system functions properly in all modes of operation
_____ Aft system functions properly in all modes of operation
_____ No seawater leaks in system components and lines
_____ No condensation leaks to deck or liner
_____ Air return/intake filters clean and clear
_____ 110 or 220 VAC 30 amp shore power wired correctly at dock
_____ Remote control units and display features operate correctly
_____ Condensation drains open

Dockside Pre-sail inspection

_____ Standing rigging tuned statically – all fittings pinned and secured (re-check after sailing)
_____ Genoa installed and furling system operational
_____ Main sail installed and operates smoothly
_____ Main sail flaking system properly adjusted
_____ All reefing points attained properly
_____ Topping lift and outhaul operational
_____ Sheets / Blocks / Winches operate correctly and easily under load
_____ Genoa Car travels freely full length on tracks port and starboard
_____ All line stoppers operational and labeled
_____ Calibrate all electronic equipment and compass to geographical area.
_____ VHF operational
_____ Battery negative to keel ground voltage check. Mast and arch must be installed for this check. This will verify no wires have shorted out to your keel/lighting ground system. digital multimeter required.
_____ Dockside water connection operable and free of leaks
_____ Complete safety package onboard and up-to date (see Chapman's manual and US Coast Guard rules and regulations)
_____ Secure and evenly distribute all loose equipment and weight
_____ Complementary onboard inspection made by local Power Squadron

Date of inspection: _____

Inspection made by _____

(Several copies may be required to complete each of the following categories)

Chapman's Piloting recommended operating techniques, maintenance inspections and safety points for my particular boat length and type of sailing

Recommendations made by manufacturers of original equipment for proper maintenance and up-keep

Power Squadron recommendations for maintenance and safe boating

Local sailing club or marina's recommendations for maintenance and up-keep

List of onboard safety equipment and location

(A copy should be posted onboard at all times)

Spare parts list

Dates of practice drills and onboard safety inspections

MY PERSONAL PREFERENCES FOR MAINTENANCE ITEMS & SAFETY GEAR

PRE-DEPARTURE CHECKLIST

- ☐ Check bilge for extra 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 propeller or bow
- ☐ Anchor ready to run
- ☐ Check lifelines for tightness
- ☐ Turn on fuel and waterlines
- ☐ Stow all loose gear
- ☐ Open engine cooling water intake thru-hull valve

CE CERTIFIED

Your Hunter has been manufactured in the United States and has been certified by the 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 the applicable current International Organization for Standardization (ISO) standards and directives as stated on the CE certificate supplied with your craft. The builder's plate, 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. Hunter Marine Corporation does NOT establish these criteria, and the category indicated 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 condition. The skill of your 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 may exceed wind force 8 (Beaufort Scale) and include significant wave heights of 4m, for vessels that are largely self-sufficient.

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

Category D – "Sheltered Waves": 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 0.5m 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

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. Number of Persons aboard

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

DEPARTURE TIME DATE FROM

DESTINATION RETURN DATE NO LATER THAN

8. Automobile:

LICENSE # STATE MAKE

COLOR PARKED AT

9. If not returned by-

Contact the Coast Guard or-

CALL - AT-

AFTER SAILING CHECK LIST

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 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 main-sheet purchase. (It is a good idea to rig a line from the steering wheel or tiller to a convenient 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 should be at ready, loose gear stowed and decks cleared. Determine the direction of the wind and current and when 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 stern 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 pilings**.

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 a 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 slope 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.

MAST RAISING & LOWERING SYSTEM

WARNING: MAKE SURE THAT THE MAST AND RIGGING IS CLEAR OF ALL OVERHEAD ELECTRICAL CABLES WHEN BEING RASIED OR LOWERED OR MANEUVERED ABOUT THE LAUNCH AREA. CONTACT WITH AN ELECTRICAL CABLE CAN CAUSE SEVERE INJURY OR DEATH.

1. Confirm that all standing rigging and spreaders are connected to the spar as per the drawings in this owner's manual. The spreader retaining pins should be installed and pinned, the spreader tip tightened in the correct location and all black rubber retainer plugs installed in the rigging terminals on the mast. These plugs prevent the shrouds from falling out of the mast when the mast is lowered. All halyards should be installed and the mast light installed.

2. Confirm that the white "boots" are installed over each shroud turnbuckle and that the turnbuckles are attached to the chain plate "U" bolts with the cotter pins located inboard. The boots must be forced down over the turnbuckle toggles to prevent the turnbuckles binding on the "U" bolts and bending during the stepping process.

3. Untie the mast from the bow pulpit and support crutch, and slide the mast aft on the support crutch roller until the base of the mast is over the mast step. At this point the mast will be balanced on the roller only, so do not let go of the mast base. The mast struts remain attached during this procedure.

4. Remove the stainless steel mast step pin from the mast step casting, being careful not to lose the boom vang strap.

5. Push the mast base down until the retaining pin holes in the base align with the corresponding holes in the step, and reinstall the stainless steel retaining pin, being careful to reinstall the boom vang strap at this time. Install the split ring to the retaining pin.

6. Open the anchor locker and attach the lower end of the mainsheet tackle (the end with the jam cleat) to the "U" bolt inside the locker.

7. Connect the mast raising tube to the pin in front of the spar.

8. Holding the pole in a vertical position, connect the jib halyard shackle to the aft loop at the top end of the pole. Tension the halyard by pulling it from the exit at the line stopper (make sure that the jib halyard is being tensioned, and not the main halyard) until the mast raising pole is angled aft approximately 10 degrees. Lock down the line stopper and securely cleat the halyard to the black plastic cleat on the side of the deck outboard of the line stopper.

9. While still holding the mast raising pole at the ten degree aft angle, connect the upper end of the mainsheet tackle to the forward loop at the end of the mast raising pole and take out the slack through the jam on the lower block of the mainsheet.

10. Check to make sure that the forestay is not twisted around the jib halyard, that the upper and lower shrouds are not twisted around each other and are outside the life lines, that the turnbuckles are vertical on the "U" bolts, the spar is clear of all overhead electrical wiring, all shrouds, mast raising bridles and forestays are properly attached to the spar, all shackles on the mainsheet and jib halyards are properly closed, the jib cleat is properly cleated to the spar, no one is standing in the cockpit or under the mast and, in all respects, the mast is ready to raise.

11. Pull on the mainsheet tackle to raise the spar making sure that the mainsheet always runs through, and is being held by the jam cleat. With the mast struts installed, the mast is prevented from moving side to side, so you can rest between pulls and it is not necessary to have anyone pushing the spar up from behind as you are pulling on the tackle, although this will reduce the load on the tackle and speed up the process. The load on the tackle will be at a maximum at the beginning of the raising process and will reduce progressively as the spar is raised, reducing to almost nothing when the spar is up. With the anchor locker open, the bow of the boat has limited space in which to work, so be careful and watch your footing. There is no need to hurry.

12. When raised, leave the mainsheet jammed and tensioned. Take the forestay forward and connect to the forward of the two holes in the stemhead fitting.

13. Connect mast wiring plug to deck fitting at starboard base of spar.

14. Refer to GETTING READY TO SAIL.

MAST LOWERING

1. Remove sails, boom vang and boom.

2. Install mast support crutch to transom, if not already done.

3. Install mast raising pole.

4. Attach jib halyard shackle to upper spliced eye at forward end of mast raising pole.

5. Tension jib halyard (again confirming that it is the jib halyard being tensioned and not the main halyard—check the color coding) so that the pole angles up at the front end approximately 10 degrees. Secure halyard to cleat on side of deck, and lock down the line stopper.

6. Attach bottom end of mainsheet to “U” bolt in anchor locker and top end to bottom loop at end of mast raising pole. Tension mainsheet tackle so jib halyard takes the load. Make sure mainsheet is jammed and for extra security secure to bow mooring cleat.

7. Loosen forestay turnbuckle and remove forestay from stemhead fitting.

8. Check for overhead electrical cables, make sure that no one is standing in the cockpit or under the spar, and confirm that the spar is in all respects ready to lower.

9. Allowing the mainsheet to hook around the bow mooring cleat, unjam the mainsheet and, holding the mainsheet tail in one hand, ease tension on the mainsheet tackle while pushing the spar aft with your other hand. Retaining the deflection of the mainsheet around the cleat, ease the mainsheet further until the spar begins to hinge aft.

10. Continue lowering the spar, remembering that the load on the tackle will increase as the spar is being lowered, until the spar rests in the mast crutch.

11. Disconnect the mast raising pole, mast electrical wiring and uncleat halyards aft so the spar can slide forward.

12. Remove mast step pin and disconnect mast base from step while restraining bottom end of mast and retaining boom vang strap. Replace pin, vang strap and cotter pin.

13. Slide mast forward on mast crutch roller until base of mast rest in bow pulpit. Secure mast in place at pulpit and at mast crutch. Take slack out of shrouds and secure forestay forward.

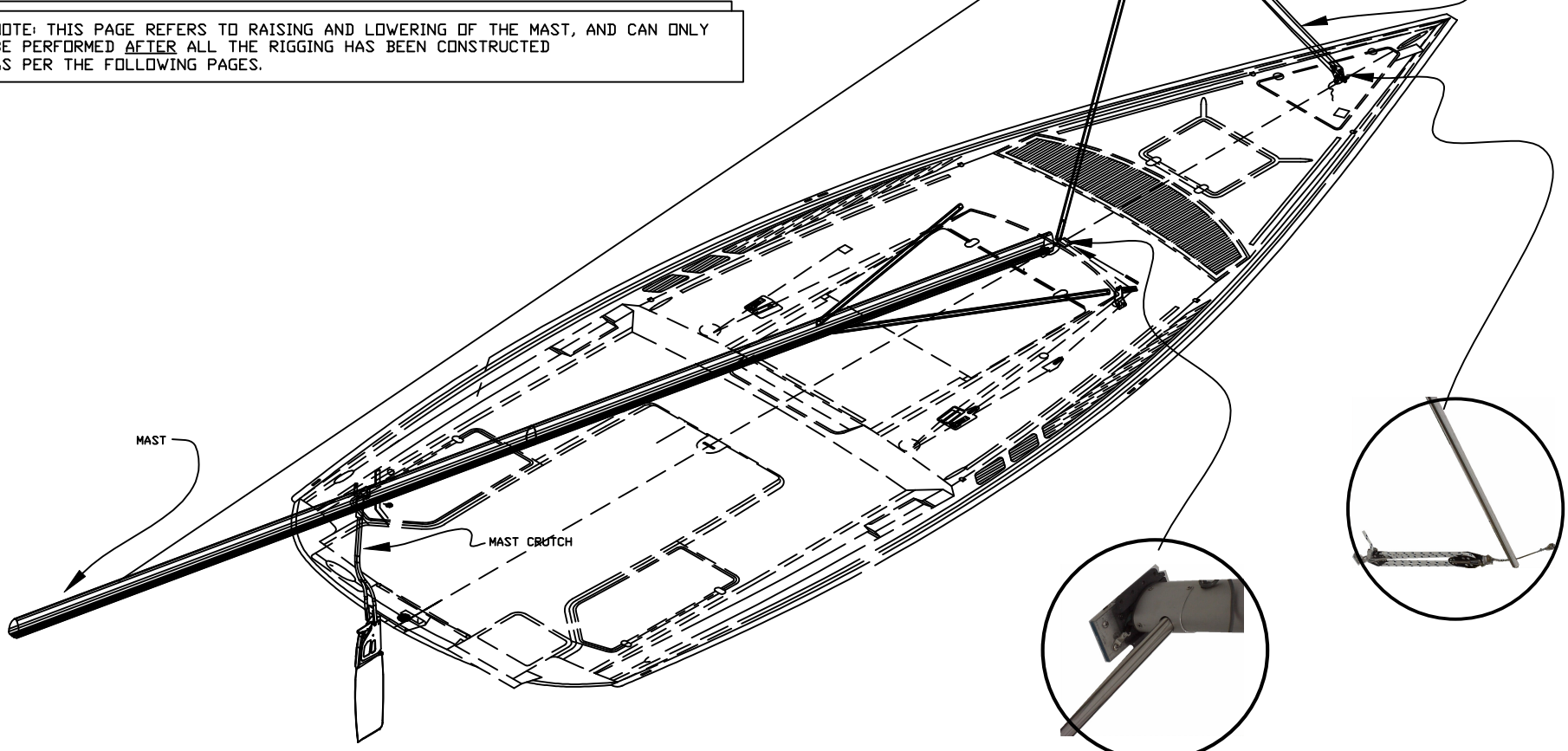
Jib halyard connects to mast raising pole with D-shackle

IMPORTANT: READ PAGES 17A & 17B THOROUGHLY BEFORE RAISING OR LOWERING MAST

NOTE: THIS PAGE REFERS TO RAISING AND LOWERING OF THE MAST, AND CAN ONLY BE PERFORMED AFTER ALL THE RIGGING HAS BEEN CONSTRUCTED AS PER THE FOLLOWING PAGES.

JIB HALYARD

MAINSHEET PURCHASE



NOTE: NOT ALL OF RIGGING SHOWN FOR CLARITY

PAGE 17C

DRAWING TITLE: MAST RAISING DETAILS	
DRAWING NO. 258017C	REVISION NO. None
DRAWN BY: ENG	DATE: 11/29/04

HUNTER

LAUNCHING & RETRIEVING PROCEDURES

LAUNCHING

1. Extend the trailer tongue, if necessary, by lowering the forward support wheel, chocking the main wheels, unplugging the electrical connection, removing the tongue positioning pin and cotter pin and sliding the tongue out to its full extended length and reinstalling the pin and cotter pin. This can be done with the vehicle still connected to the trailer, using the vehicle to slowly move the extension while a second person watches the trailer, but should at all times be done with the trailer on level ground. Whether the tongue needs extending will depend on the slope of the launch ramp and the depth of water available when the boat is backed in. In the majority of cases, for launching, the tongue may not need extending.

2. Remove any and all tie down straps and ropes securing the boat to the trailer, as well as any lines securing the rudder in the upright position or on centerline. The only attachment of the boat to the trailer should be the strap from the bow eye to the trailer winch.

3. The spar can be raised before or after launch, depending on the time available before and the docking facilities available after launch. **Beware of nearby power lines before raising spar*.***

4. Attach the necessary bow and stern mooring lines and fenders if necessary. Do not lower the fenders over the side until the boat is clear of the trailer.

5. Initially slacken the trailer winch and familiarize yourself with its gear switch action and return the winch to the locked position.

6. Load all loose gear and provisions aboard by lowering the swim ladder in the transom.

7. Back the boat and trailer down the ramp until the back wheels of the vehicle are just clear of the water, Retrieve the bow and stern lines as necessary. Loosen the trailer winch and bow strap.

8. Once the boat is floating free, push the boat clear of the trailer guides to the available dock, maintaining control with the mooring lines.

9. Slowly pull the empty trailer out of the water, being careful that boat and people stay clear.

10. Park the trailer and vehicle and return to the boat.

LAUNCHING & RETRIEVING PROCEDURES

RETRIEVING

1. Raise rudder.

2. Back trailer into water. Extend trailer tongue if needed.

3. Maneuver boat between trailer guides and up to the winch.

4. Connect bow strap and with winch in correct gear, winch boat up and snug against bow stop.

5. Center boat between upright aft trailer guides.

6. Slowly pull boat from water until the weight of the boat is on the trailer.

7. Confirm alignment on trailer. Put trailer back in water if necessary to realign boat.

8. Make sure that rudder is pinned or tied in upright position so that the tip doesn't drag on ground.

9.De-rig and unstep mast if not already done. **Beware of nearby power lines when lowering mast.**

10. Tie boat to trailer, and secure mast.

NOTE: The mast may be raised while the boat is on the trailer or after the boat is launched. However, if the mast is raised after launching, make sure (on water ballast models) that the ballast tank is full before the mast is raised. Also make sure that all halyards and reefing lines are installed using the messenger lines already run in the spar.

1. After the rig has been raised, attach the forestay turnbuckle to the most forward position of the two holes in the stem fitting. Turnbuckle should be about ¾ open. Confirm that the upper and lower shrouds are supporting the spar.

2. Remove the mast-raising pole. The mast crutch may be left on the transom or removed, as you prefer.

3. Return the mainsheet to its aft position, attaching the block with the jam the "U" bolt at the front end of the cockpit. Install the forward end of the boom to the gooseneck fitting on the mast. Tie the bottom end of the topping lift rope (the other end is fixed to the top of the mast) to the casting at the bottom of the boom, which is immediately above the mainsheet "u" bolt in the cockpit.

4. Attach the jam block of the boom vang to the stainless steel bail on the mast step with the small shackle provided. The block should be oriented so that the line exits the vee jam on the bottom aft side. Attach the upper block of the vang to the eye on the boom.

5. If not already done on the H25, lead the main and jib halyards from the exits in the spar, through the sheaves molded into the mast base (main halyard through the aft sheave), around the deck organizer blocks to the inner of the two jams on the house top.

6. Using the main halyard, center the rig in the middle of the boat by first jamming the halyard in a position so that the halyard shackle just contacts a known point on the toe rail adjacent to the spar on the port side. Transfer the halyard to the starboard side and applying the same amount of tension, see if the shackle contacts the corresponding position on the starboard toe rail. If the shackle falls short, ease the port upper shroud turnbuckle and tension the starboard, always maintaining some tension on each shroud so they are not slack. If the shackle overshoots the mark on the toe rail, ease the starboard upper shroud turnbuckle and shorten the opposite side until the halyard shackle does contact both points on the opposite toe rail uniformly.

7. After the rig is centered, set the amount of mast rake to approximately one degree of aft angle. This can be measured by hanging a weight, such as an adjustable wrench from the main halyard shackle and adjusting the halyard so the wrench is suspended immediately above the boom. With the boat level, this wrench when hanging from the main halyard above the gooseneck should be 6" (15cm) from the aft face of the mast. Adjust the forestay turnbuckle as necessary to achieve this position.

8. Tension the upper shrouds uniformly, alternately taking six turns on one, then the other, until the upper shrouds are tight. The upper shrouds maintain tension on the forestay. The tighter the shrouds are, the tighter the forestay will be and the less forestay "sag" there will be. A turnbuckle is tensioned by turning the center portion counter clockwise and loosened by turning it clockwise. The upper swage on the wire should be held with pliers, vice grips, or wrench to prevent it from turning as the turnbuckle rotates.

⚠ WARNING

ELECTROCUTION HAZARD

Make sure that the mast and rigging are clear of all overhead electrical cables when being raised or lowered or maneuvered about a launching area. Contact with an overhead electrical cable can cause severe injury or death.

9. Tension the lower shrouds until the mast appears straight when sighted up the trailing edge, using the bolt rope slot as a guide. If the mast appears to bow to one side, ease the lower shroud on that side and tension the shroud on the opposite side until the mast appears straight.

10. Once the mast is straightened transversely, sight up the mast from the side to see if there is any fore and aft bend. The mast should be bowed forward at the spreaders by approximately 2' (5cm). Ease or tension the lower shrouds uniformly until this slight amount of bend is achieved. When finished, the lower shroud should be slightly less tight than the main shrouds. If you sail in a predominately heavy air region, slightly more mast bend, in the 3" to 4" (4-10cm) range may be desirable in order to flatten and depower the main sail.

11. After tuning the rig, install cotter pins in all turnbuckles to prevent them from backing off while sailing.

12. Install the battens in the mainsail and install the mainsail onto the boom from the forward end. Remove the stop pin in the mast and install the luff slides into the track on the back of the spar. Reinstall the stop pin to prevent the slides from falling back out again.

13. Install the out haul rope (the shorter of the two) in the boom with the messenger line provided and lead from the sheave at the back of the boom through the lower cringle at the back of the sail and aft to the end of the casting.

14.Install reefing line (the longer of the two) in the boom with the messenger line provided and lead from the sheave through the upper cringle at the back of the sail and then down to the sliding eye on the bottom of the boom. Pull enough slack into the reef line so that the sail can be fully raised unimpeded by the reef line. Tie the mainsail onto the boom with the sail ties provided.

15. Install the jib sheet onto the jib as illustrated in the owner's manual (page 42A) and lead the sheets inside the shrouds to the lead blocks on the cabin top and aft to the jams or winches on the house top. Tie figure eight knots in the end of the sheets to prevent them from running back through the jams. Shackle the bottom of the jib to the aft of the two holes in the stemhead fitting and hank the jib onto the forestay. Bunch and tie to prevent it blowing overboard before it is ready to hoist.

16. Attach jib and main halyards to their respective sails.

17. Lower the rudder blade, if depth of water permits, to full down position. If water depth does not permit this before leaving the dock or ramp, make sure the rudder is lowered before raising sail. The rudder must be down to achieve the correct balance for the proper helm loading. A rudder, which is not lowered, will load up excessively in severe conditions preventing the helmsman from responding to puffs and thus allowing the boat to "round up". The cleat is provided to retain the blade in the upright position for the launch, retrieval and trailering. Helm "feel" can be fine tuned by adjusting the fore and aft angle of the rudder in the down position.

18. Install the tiller extension to the tiller (if not already installed from factory).

19. Raise sails, beginning with the main and then the jib while powering into the wind. Remember to lower the centerboard before you raise sail and confirm that the water ballast is full and sealed. Once each halyard, beginning with the main, is tensioned by the winch, the halyard can be pushed down into its respective jam and the halyard removed from the winch, freeing the winch for the next halyard and, in the case of the H25, ultimately for the jib sheets. However, care should be taken not to inadvertently pull the halyards out of the jams, since the sails will lower rapidly if this is done. When the sails are raised, the boat can be laid off and the engine turned off and tilted upward to clear the water.

20. Once the main is sheeted in and you are sailing upwind, confirm the main topping lift position. The

main should be capable of sheeting in hard without the topping lift being tight. With the main sheeted in hard, the topping lift should have eight to ten inches of sag and should be adjusted accordingly. When at dock or at mooring, the topping lift can be readjusted to raise the boom to a comfortable height above the cockpit.

21. Final conformation of the mast tune as well as finer tuning, if you desire it, will take place when sailing by sighting up the spar while going upwind in about ten to twelve knots of breeze. The mast should maintain its 2" (5cm) fore and aft bend, but should also still appear straight transversely with the leeward main shroud still retaining its tension and not going noticeable slack.
If the leeward rigging does go slack when sailing, apply more tension uniformly to both shrouds by first tightening the leeward rigging three half turns and then after tacking, tension the new leeward rigging the same amount. Continue this procedure, as necessary until the leeward upper shrouds no longer appear slack and forestay sag has been reduced. Removal and reinstallation of the turnbuckle cotter pins will be necessary to make these fine tuning adjustments.

22. Once the upper shrouds are tensioned, again sight up the spar to make sure that the middle of the spar at the spreaders is not falling to leeward or bending to weather. Adjust and uniformly retension the lower shrouds as necessary.

NOTE: Standing rigging will stretch slightly when initially loaded. Therefore, the rigging may have to be further tensioned slightly after a few sails in a strong breeze to compensate for this initial stretch. Once the mast is tuned and initial stretch is taken out, the rig should need retuning only at the beginning of each season.

23. After a day of sailing, the sails should be lowered while again powering into the wind, with the jib lowered first and then the main.

COOKING STOVE

Carefully read and understand the manufacturer's instructions prior to operating your stove. Save the instructions for review, and also to pass on to any subsequent owners.

Use only the fuel recommended by the manufacturer, and store the fuel in an approved container.

Do not smoke while working with fuel.

Immediately clean up any spilled fuel.

⚠ 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.
- Use special care with flames or high temperatures near urethane foam. Once ignited, it burns rapidly, producing extreme heat, releasing hazardous gasses and consuming a large amount of oxygen.

TOILET

⚠ CAUTION

- Do not add holding tank deodorant to the top fresh water tank
- Avoid adding holding tank deodorant through bowl. Use tank on rear of bottom tank. Slide valve must be opened fully before adding deodorant through bowl, and avoid spilling or splashing deodorants on slide valve seals or bowl. Rinse off any spilled or splashed deodorant immediately.
- Atmospheric pressure and temperature changes may cause pressure

FOR OPTIONAL H-25 MARINE HEAD, SEE PG 58A & B FOR WASTE SYSTEM DRAWINGS

Your Hunter 25 comes standard with a portable, self-contained marine toilet. Please refer to the manufacturers instructions to familiarize yourself with the correct operation of your toilet.

Be sure to keep your toilet secure by connecting it to supplied hold down brackets. Add a holding tank deodorant to the lower unit of the tank, which is the holding tank. The upper unit is the fresh water tank for flushing.

Empty the holding tank at an approved permanent toilet facility by first removing the holding tank, ensuring that the valve is closed, and carrying by the built-in handle. Rinse with fresh water and reassemble.

PUMPS

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

⚠ WARNING

SINKING HAZARD – Ensure proper bilge pump operation

⚠ CAUTION

Run pump only as long as necessary to remove water. Dry running can damage the pump motor

Inspect all bilge pump hoses for chafing and dry rot. See that all hose clamps are tight. Check that the bilge pump impeller area is clean and free of obstructions. Inspect electrical wiring for corrosion. Ensure that the float switch functions properly.

WATER SYSTEM OPERATION

Your Hunter is equipped with a manual pump water system, incorporating a water tank and a level actuated manual pump. After sitting for some time, the pump will need a few strokes to prime the system. Be aware of the quality of the water on board, if you are using it for drinking or washing. Periodically, flush the water tank to keep it clean. When storing your boat for the winter, empty the water tank, and pump the lines dry.

WARNING

California Proposition 65

Diesel engine exhaust and some of its constituents are known to cause cancer, birth defects, and reproductive harm in the State of California.

WARNING

California Proposition 65

Battery posts, terminals, and related accessories contain lead and lead compounds; chemicals known to the State of California to cause cancer and reproductive harm.

Wash hands after handling!

OUTBOARD ENGINE AND MOTORING

As the outboard is an option on your Hunter, you have numerous choices of brands available to you. This motor should be between 8hp and 10hp for the H25. An engine owner's manual should be supplied with your outboard motor. This manual will contain technical specifications, running instructions and a maintenance schedule on lubricants and other important functions. For longer engine life, follow the routine maintenance schedule recommended by the manufacturer.

Run the engine at a low speed for about three minutes for warm-up operation before cruising, permitting the oil to circulate throughout the machine. Otherwise, the life of the engine will be shortened greatly. During warm-up operation, confirm that cooling water is discharged from its check port.

Under power (without sails up) your boat may be maneuvered with the rudder only, or in tight turning situations, you can shorten your turning radius by turning the outboard in the same direction as the rudder. This directs the propulsion forces in a complementary direction to the way the rudder is steering the boat. The engine will generate some "prop walk" which will exert force to push the transom relative to the direction of the rotation of the propeller. You can test your prop walk direction by putting the boat in reverse while you are parallel to the dock, and see if the stern swings toward or away from the dock.

⚠ CAUTION

If cooling water is not discharged, and operation continues, the engine will be overheated, causing mechanical troubles

When fueling your engine, be sure to use fresh fuel. Fuel that has been in a tank too long can form gum and varnish, which can affect performance. Use oil as recommended by the manufacturer. Two stroke engines require a special oil to be either mixed with gasoline or injected from a remote tank. This lubrication is essential for the operation of the engine.

⚠ WARNING

EXPLOSION/FIRE HAZARD

- ***Store flammable material in safety approved containers. Keep containers in an area designed for that purpose. Never store in an unvented space.***
- ***Observe no-smoking while fueling***
- ***Fill to less than the capacity of the tank. Allow for fuel expansion.***
- ***Inspect fuel system regularly for leaks.***

ELECTRICAL SYSTEM

Your DC power source is a 12v battery, just as with your automobile, and it must be charged regularly. Some outboard motors include a small alternator, which will assist in recharging you battery. Otherwise you must use a battery charger. Perform regular visual inspections to insure proper water level and inspect terminals for corrosion. If your boat sits for long periods without use, it is a good idea to remove the battery(s) And connect them with a trickle charger to keep them fully charged and ready for use.

⚠ WARNING

- Carefully follow safety instructions included with battery
- Always charge battery in a ventilated location

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. It is dangerous and unlawful. Two common types of accidental 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. Overfill 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 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 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 more 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 that contain phosphates, chlorine, solvents, non-biodegradable or petroleum-based products.

Common households 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. See the warranty information at the beginning of this 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 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.

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.

⚠ 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, respiration, etc)

ENGINE MAINTENANCE

Follow the fuel and lubrication requirements in the engine manual provided by the manufacturer. Check oil levels prior to starting, and use lubricants as recommended by the engine manufacturer. Always check fuel lines and connections for possible leaks, which may create a dangerous situation.

If you use your outboard in salt water, wash down the exposed drive unit after every use to limit corrosion. Also, it's a good idea to attach a water hose to a flushing device on an outboard and completely flush out the raw water cooling system. Regularly check the propeller and drive unit for any damage or other signs of serious wear. Propeller damage will reduce performance, as well as contribute to other potential engine problems.

⚠ WARNING

EXPLOSION/FIRE HAZARD

- ***Fuel system connections that are too loose or too tight can leak, resulting in fuel loss, environmental pollution and explosion or fire hazards.***

ELECTRICAL SYSTEMS

The electrical system is a 12-volt, negative ground installation. On a weekly basis, the owner should inspect batteries, terminals and cables for signs of corrosion, cracks, and electrolyte leakage. Battery terminals are to be kept clean and greased. Refer to specific instructions on batteries, wiring diagrams, and electronics.

PLUMBING SYSTEM

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

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

Inspect electrical wiring for corrosion. Ensure that the float switch functions properly.

PROTECTING YOUR RIGGING

No matter how good your rigging is, without careful inspection and proper maintenance it is subject to fatigue, wear, discoloration, and therefore, product failure. Remember: regular inspection and cleaning will increase the life of your investment and secure your rigging. We suggest the following:

- Always rinse your rigging with fresh water after sailing, especially salt-water sailing**.** Salt can create corrosion pits, causing cracks and deterioration.
- Clean with a water-soluble chlorine-free detergent. Nonabrasive cleansers are best for hard white vinyl coated cables.
- Inspect rigging for stains. Rust stains may indicate stress cracks or corrosion. Remove stains with synthetic or brass pads. Never use steel wool pads.
- Look for broken wires - a sign of fatigue in rigging. Replace standing rigging if wires are broken.
- Never mix stainless steel and galvanized metals on cable, fittings, pins, cotter keys, etc. If mixing dissimilar metals, electric currents may conduct between metal causing rapid deterioration
- After unstopping, make sure to release all standing rigging to avoid bending, crushing and kinking.
- Store rigging in a dry place. Never store in a plastic bag, which can cause corrosion.

TRAILER MAINTENANCE

BEFORE USING YOUR TRAILER

1. Check all bolts and nuts for tightness, including the lug nuts for the wheels.

2. Check to insure that all lights are working properly.

3. Always maintain the tires' recommended air pressure.

4. For improved tire life, have your tires spin-balanced by a qualified tire service center.

5. When the trailer has been hitched to your vehicle, remove the two-speed winch handle before departing.

6. Always check hitch and safety chain connection and boat tie downs prior to departing.

PROTECTING AND MAINTAINING YOUR TRAILER

1. Before launching your boat, we recommend that the light harness be disconnected from your vehicle with enough time to allow bulbs to cool. This will greatly extend the life of your bulbs.

2. This trailer has a galvanized frame, however, some parts including the brakes, axles, hubs, springs, U bolts, and plates are not galvanized. Most of these parts have been sprayed with a high gloss black rust resistant paint, plus a clear coating. After launching, (especially in salt water locations), rinse your trailer, including the painted components. As a continuing measure to protect your trailer, you should from time to time, refinish and repaint surfaces that show signs of rusting.

3. Periodically and regularly check your wheel bearings for sufficient grease and tightness. The more launching you do, the more likely for the need to regrease these bearings.

Proper maintenance and care will help insure more trouble free trailering for you.

IMPORTANT: Be sure to thoroughly familiarize yourself with the trailering regulations in your state and in any others through which you will be traveling with your boat. Regulations vary from state to state regarding the trailering of sailboats, governing both the width of the load and the length of mast overhang at the rear of the trailer. Special permits may be required, and other regulations may apply. Consult your local authorities for more information.

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 you operate your boat 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 fresh clean 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

EXPLOSION/FIRE HAZARD

Cleaning agents and paint ingredients may be flammable and/or explosive, and 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.

SAIL CARE

Sunlight is a sail's worst enemy, so **cover the mainsail 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, can be 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 onto 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.

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 cleat 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 them or use protective covers manufactured for that purpose. Grease winches a minimum of once yearly.

WINCH MAINTENANCE

Follow the maintenance instructions prescribed by winch manufacturer. We recommend a minimum of an annual cleaning and light greasing.

ACRYLIC CARE

As in all plastics scratching must be avoided…

• Acrylic is much softer than glass and therefore can scratch. Also, certain chemicals can damage the product. These chemicals will either dull the finish or cause crazing and eventually crack the acrylic.

• **Do not** use paper towels when cleaning (*use a cotton cloth instead*)

• **Do not** clean with ammonia based chemicals such as, 409, Windex, solvents, paint thinner (use soapy water only)

What should I do if the paint chips off?

1. Lightly sand affected area to a feathered edge.
2. Mask off area to prevent over spray.
3. Spray with an acrylic lacquer.

What should I do if my acrylic part scratches

• Some minor scratches and scuffs in the surface of the material are repairable

• Buff out with a fine polish, (such as 3M finesse-it-II, or Mequiars #17 clear plastic polish). This should remove most minor scratches.



What if I have a deeper scratch?

1. Sand the scratch with a 400 grit sand paper.

2. Once the scratch is removed wet sand with a 600 grit sand paper.

3. Buff out using 3M super duty rubbing compound and a high speed bonnet buffer.

4. Buff out with a fine polish, (such as 3M finesse-it-II, or Mequiars #17 clear plastic polish), and a high speed bonnet buffer.

Although Spartech Marine uses the finest cast acrylics which are more scratch and chemical resistant than others, care must still be taken.

What If I have to reinstall the part?

• Always use a hand held screw driver or a battery operated driver with a clutch; this will prevent the part from chipping or cracking.

WINDSCREEN CARE

As in all plastics scratching must be avoided

- Do not scrape on the windscreen
- Use a soft clean cloth (cotton towel) and soapy water to clean
- Paper towels can cause scratching
- Do not use any ammonia based products (Windex)
- Do not use any chemicals such as paint thinner or solvent cleaners

What should I do if the paint chips off the windscreen?

1. Lightly sand affected area to a feathered edge.
2. Mask off area to prevent over spray.
3. Spray with an acrylic lacquer.

What should I do if my windscreen scratches?

- Some minor scratches and scuffs in the surface of the material are repairable.
- Buff out with a fine polish, 3M finesse-it-II, or Mequiars #17 clear plastic polish. This should remove most minor scratches.



What if I have a deeper scratch?

1. Sand the scratch with a 400 grit sand paper.

2. Once the scratch is removed wet sand with a 600 grit sand paper.

3. Buff out using 3M super duty rubbing compound and a high speed bonnet buffer.

4. Buff out with a fine polish, (such as 3M finesse-it-II, or Mequiars #17 clear plastic polish), and a high speed bonnet buffer.

Although Spartech Marine uses the finest cast acrylics which are more scratch and chemical resistant than others, care must still be taken.

VINYL

These patterns, like all upholstery fabrics and vinyl, require a regularly scheduled cleaning program. A thorough cleaning should be administered on a daily, weekly or monthly basis depending on use and exposure to dirt and/or staining agents. It is important to begin treatment of a stain as soon as possible after a spill. It is important that efforts begin immediately after a spill to remove any potential staining agent. It is advisable to clean these products as soon as the first signs of dinginess occur, otherwise, delaying clean up will require a much greater effort to restore the product to its original appearance.

Regular cleaning requires the use of a mild cleaner such as Murphy's Oil soap and water. In situations where the vinyl has not been washed regularly and there is a build up of dirt, stronger vinyl cleaners such as Simonize's Tuff Stuff or Turtle Wax's vinyl/fabric cleaner are recommended. We do not recommend the use of any other cleaners. The use of cleaners other than those recommended may result in irreparable damage to the product.

In order for the above listed cleaning solutions to work effectively on stubborn stains, please allow time for the cleaning solution to soak in thoroughly. Be sure to remove the cleaning solution before it has time to dry. Regardless of the type of cleaner used, it is necessary to finish up with a thorough rinse using fresh water on a clean sponge or rag. A soft bristled nylon or natural fiber brush can be used to remove built-up dirt and staining agents.

Finally, please remember that all our fabric grain vinyls require a greater cleaning effort to maintain than comparable smooth grain vinyls. These products will provide an attractive and durable alternative to conventional fabrics and vinyls if properly maintained. One must realize that the proper installation and use of our fabric grain vinyls require additional attention to the establishment and maintenance of a well thought out cleaning program.

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 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, it will restuff more easily if wrapped with thin plastic.

Storage: Cover with airflow fabric to reduce dust buildup. 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.**

ELECTROLYSIS AND GALVANIC PROTECTION

Salt water allows electric current to flow from anodic to cathodic material. For any two metals from two components, their relative positions in the galvanic rating table, will determine which loses material (the anode) and which remains largely undisturbed (the cathode). The distance between the two metals on the galvanic table determines the rate of wear. 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; this would render it ineffective.

To prevent electrolysis in seawater, the difference between the voltages of the two adjacent metals should not exceed 0.20 V. For example, zinc and carbon steel 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 wood with a 3 to 4 coat system of high quality Seafin Teak Oil, manufactured by Dalys. This material is 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 repair and maintain and repair. With proper maintenance it will outlive urethane varnish on interior and even exterior surfaces.

MAINTENENCE

When oiled surfaces require renewing, simply wipe the surface area free of loose dirt, dust or other contaminants. Dampen a cloth with the Seafin Teal Oil and wipe on. Let stand for 5-15 minutes, then polish dry. If your dinette table has an epoxy finish, 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 smooth 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 400A wet/dry sandpaper.
5. Wipe dry with a clean rag. Allow 8-12 hours drying time.
6. Apply second coat, sand, and repeat procedure.

This procedure may be repeated as many times as needed to bring damaged area back to its original finish. If you have trouble with getting the same sheen, you may use a soaked and rung out cloth to apply a very light coat to get an even sheen.

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 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 sail maker 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 air flow 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 (7.6L) of non-toxic anti-freeze 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 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 SYSTEM

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

TOILET AND HOLDING TANK

Drain and flush toilet. Using non-toxic anti-freeze 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

1. Drain crankcase and transmission and refill with fresh lubricant as specified in Engine Manual.
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.
4. Close the sea cock, remove the raw water pickup hose from the raw water pump and immerse one end into a 5-gallon (19L) bucket of anti-freeze solution. Start engine and run till anti-freeze solution comes out exhaust stack or until bucket is empty. Attach the raw water pickup hose to the raw water pump. Tighten all clamps. **NOTE: This procedure bypasses the sea strainer to prevent anti-freeze from crystallizing in sea strainer, which warranty will not over.**
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** starter to turn engine or serious engine damage may result.
7. Tape the openings of the intake and exhaust manifolds with duct 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, and

then 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 a confined area.

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

Winterizing Raw Water Cooled Diesel Engines

1. Drain crankcase and transmission and refill with fresh oil as specified in the engine manual. Change oil filters.
2. Close seacock, remove raw water pickup hose from water pump, attach 4-foot (1.2m) length of hose to water pump and immerse in a 5-gallon (19L) bucket of **biodegradable** anti-freeze 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 **biodegradable** anti-freeze solution. Start engine and run until water begins to warm up (about 3-5 min.) and the thermostat opens. Stop engine. Replace hose that leads to exhaust elbow. Star engine and let run till water comes out exhaust pipe. Stop engine, remove hose from water pump to bucket, attach hose from seacock to water pump and tighten all hose clamps. **NOTE: this procedure bypasses the sea strainer to prevent anti-freeze 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 duct 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 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 and rinse thoroughly with lean 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, properly setting electrical switches, pumping out bilge and leaving the switch on automatic (or arrange for periodic pumping out). **It is recommended that the power be turned off when leaving the boat.** Other departure checklist items are securing ports, windows, hatches and doors.

ROUTINE MAINTENANCE

Routine maintenance checklists 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

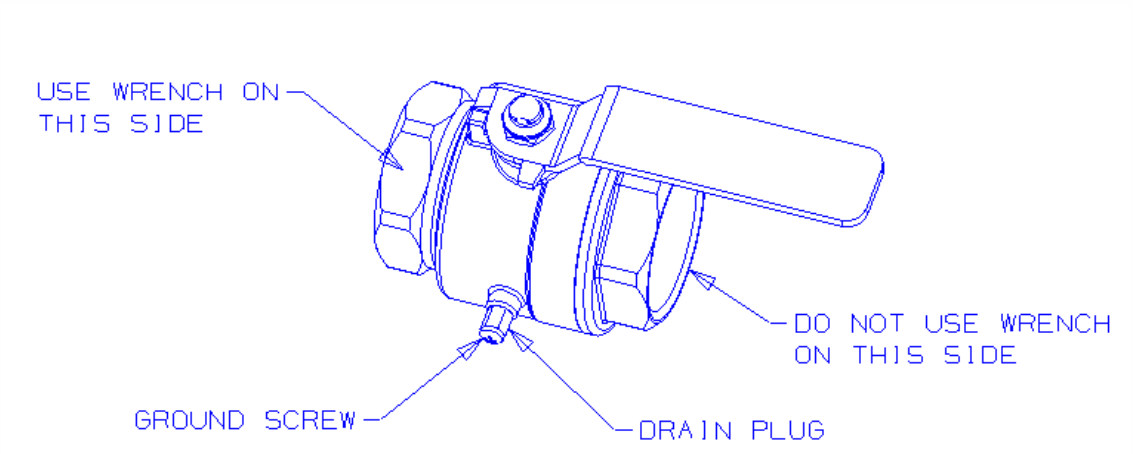
sea cocks several times to ensure their free and easy operation in case they are needed in an emergency. Equipment and supplies carried on board for emergencies should be inspected for any signs of deterioration.

MARINE HARDWARE INC™

Quality materials make it strong ... Our designs make it better.

BALL VALVE DRAINING AND WINTERIZING INSTRUCTIONS

To winterize, the vessel must be out of the water.
Close the valve and loosen the hose at its upper end opposite the valve.
Open the valve to drain hose and valve.
Remove the drain plug on the side of the valve to drain water from the valve body.
Open and close valve until liquids have been drained from valve body.
Replace and tighten plug. Reattach and tighten hose.
Check open and close operation of valve and all connections at spring re-commissioning and before re-launch.
Check for leaks during re-launch.



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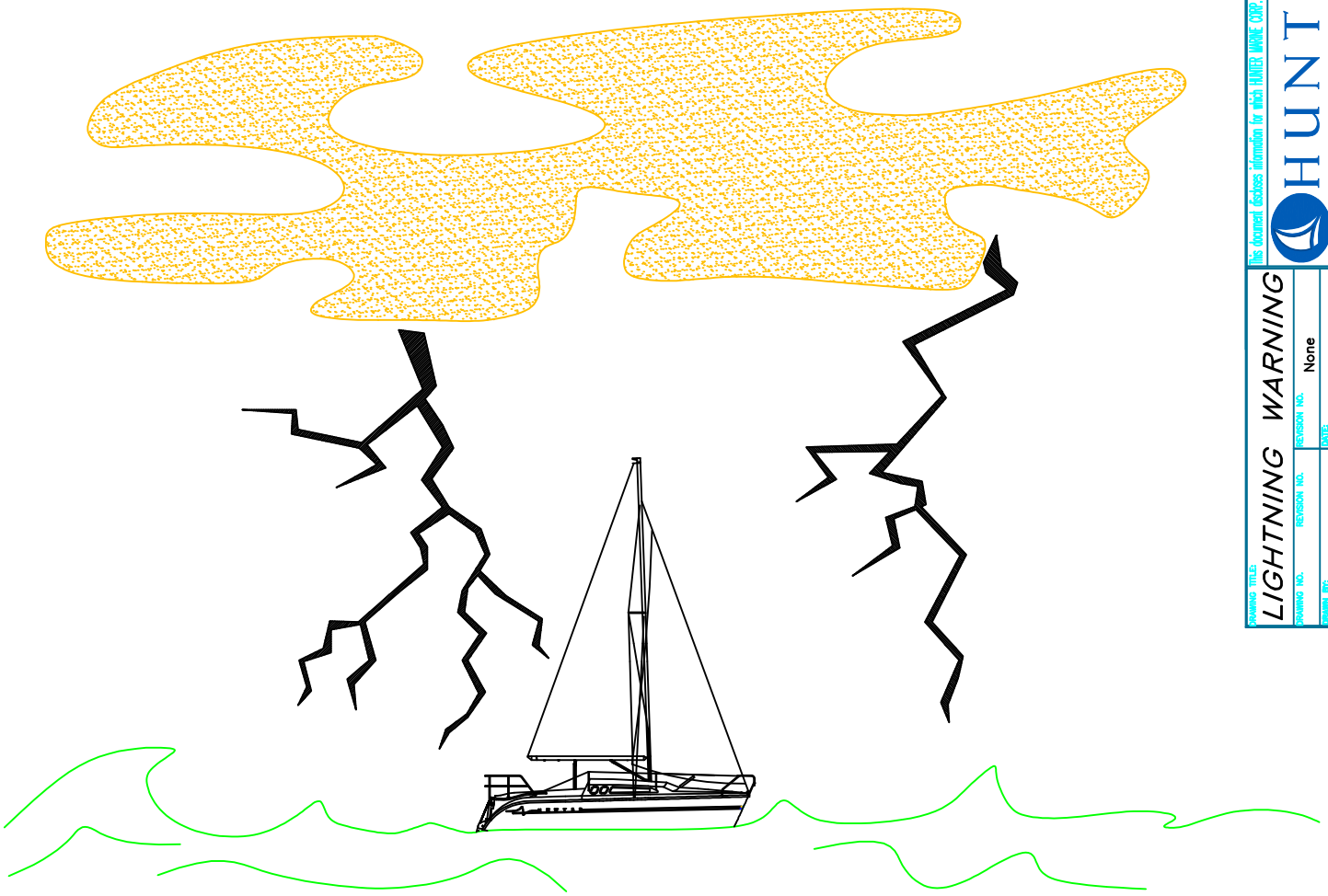


HUNTER

DRAWING TITLE: LIGHTNING WARNING

DRAWING NO.	REVISION NO.	REVISION NO.	DATE:
		None	11/29/04

DRAWN BY: ENG

LIGHTNING STORM WARNING:

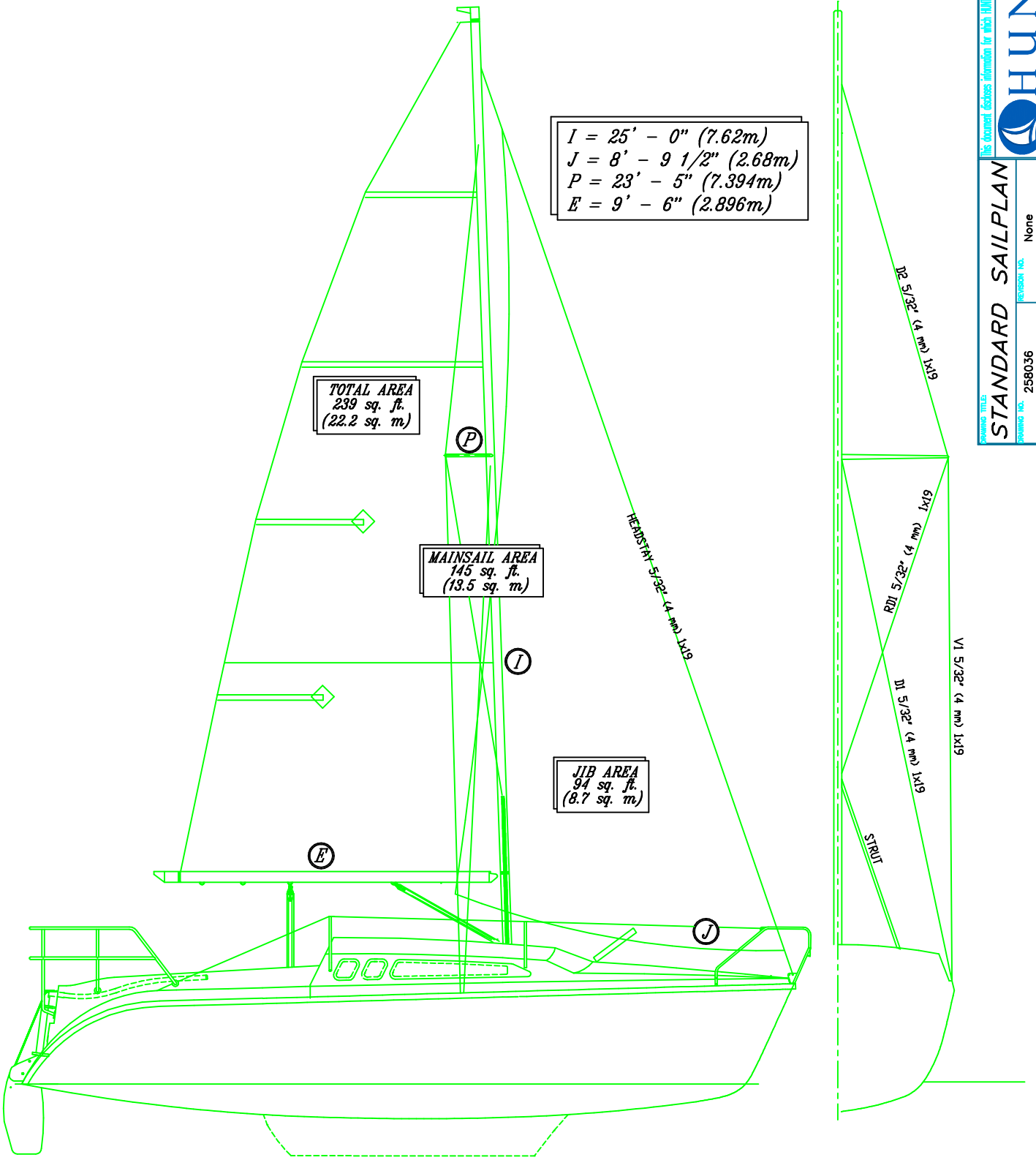
1. ALL WHIP ANTENNAS SHOULD BE TIED DURING STORM.

2. PRECAUTIONS: DURING LIGHTNING STORMS: A. THE SHIPS OCCUPANTS SHOULD TAKE SHELTER INSIDE A CLOSED AREA OF THE BOAT. EXAMPLE: BELOW DECK. B. OCCUPANTS SHOULD NOT HAVE ANY BODY PARTS IN THE WATER. C. AVOID CONTACT WITH ANY COMPONENTS OF THE L.P.S. AND D. AVOID ALL CONTACT WITH ANY METAL OBJECTS.

3. IF LIGHTNING SHOULD STRIKE THE SHIP, INSPECT ALL ELECTRONICS, ELECTRIC GEAR, COMPASS AND L.P.S. SYSTEM FOR POSSIBLE DAMAGE. RECALIBRATE AS NECESSARY. NOTE: BEGIN CHECKING ELECTRONICS AFTER THE THREAT OF LIGHTNING HAS PASSED.

NOTE: THIS BOAT IS NOT PROVIDED WITH ANY LIGHTNING PROTECTION SYSTEM. SEEK A QUALIFIED ABYC CERTIFIED ELECTRICIAN IF SUCH SYSTEM NEEDS TO BE ADDED TO THE BOAT.

FAILURE TO FOLLOW PRECAUTIONS MAY RESULT IN SEVERE INJURY OR DEATH



HUNTER

DRAWING TITLE: STANDARD SAILPLAN

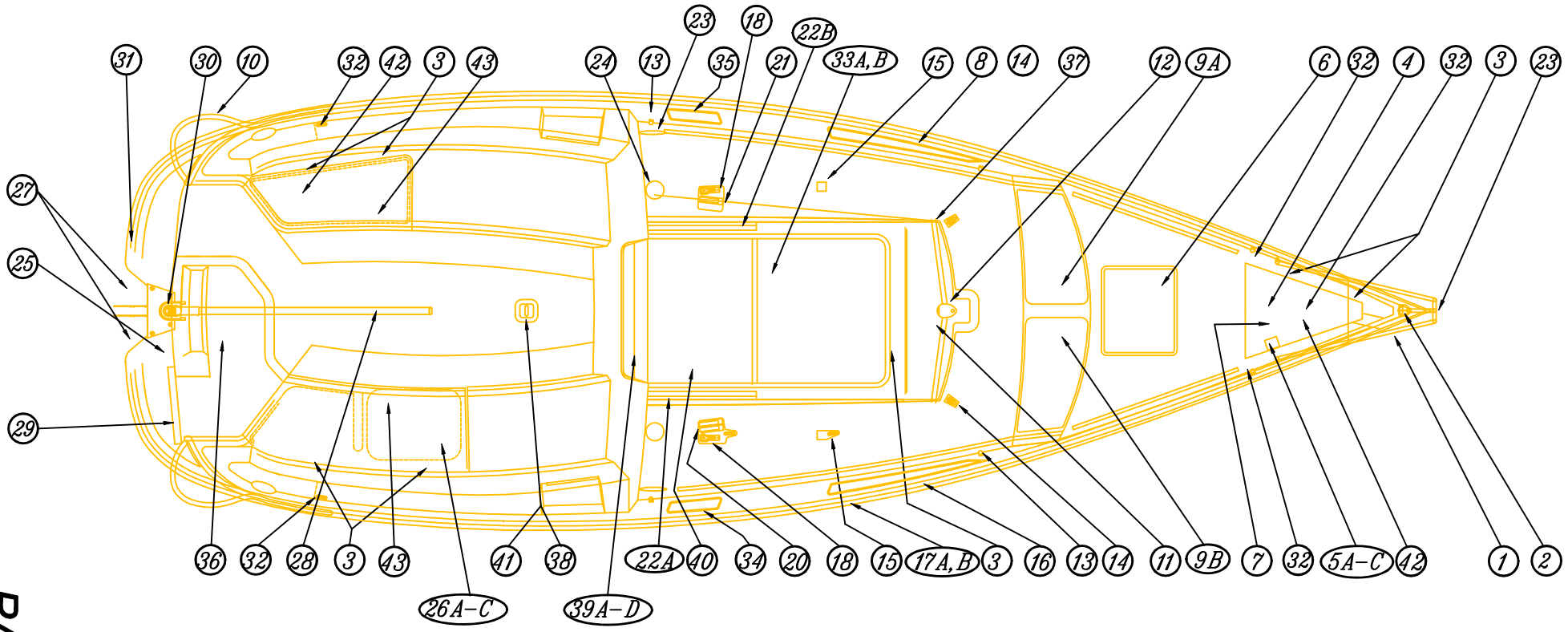
DRAWING NO.	REVISION NO.	DATE:
258036	None	11/29/04

DRAWN BY: ENG

DIMENSIONS, CAPACITIES, ETC.

HUNTER 25

LENGTH OVERALL (LOA)……..	24' 6"	7.47m
LENGTH OF WATERLINE (LWL)……..	22' 1"	6.72m
BEAM (MAX)……..	8' 5 1/2"	2.58m
DRAFT ……..……..	2' 0"	.61m
DISPLACEMENT ……..……..……..	3700 lbs	1678 kg
SAIL AREA (ACTUAL W/ STANDARD SAILS)……..	239 sq. ft.	22.2 sq.m
I……..	25' 0"	7.62m
J ……..	8' 6"	2.59m
P……..	23' 5"	7.39m
E……..	9' 6"	2.896m
MAST HEIGHT (FROM WATERLINE)……..	31' 8"	9.65m
WATER CAPACITY……..	10 U.S. gal.	37.9 liters
HOLDING TANK CAPACITY (PORTA-POTTY)……..	2.8 U S gal.	10.5 liters
HOLDING TANK CAPACITY (OPT. MARINE HEAD)……..	13 U.S. gal	49.2 liters
FUEL TANK CAPACITY .....……..	OPTIONAL W/ OUTBOARD	
BATTERY CAPACITY……..	DEALER SUPPLIED	
ELECTRICAL VOLTAGES……..	SEE ELECTRICAL DRAWINGS	
OPT. OUTBOARD ENGINE……..	UP TO 10 H.P.	7.5 kw
MAXIMUM LOADING……..	8 PEOPLE	840 kg (INCLUDING LUGGAGE)



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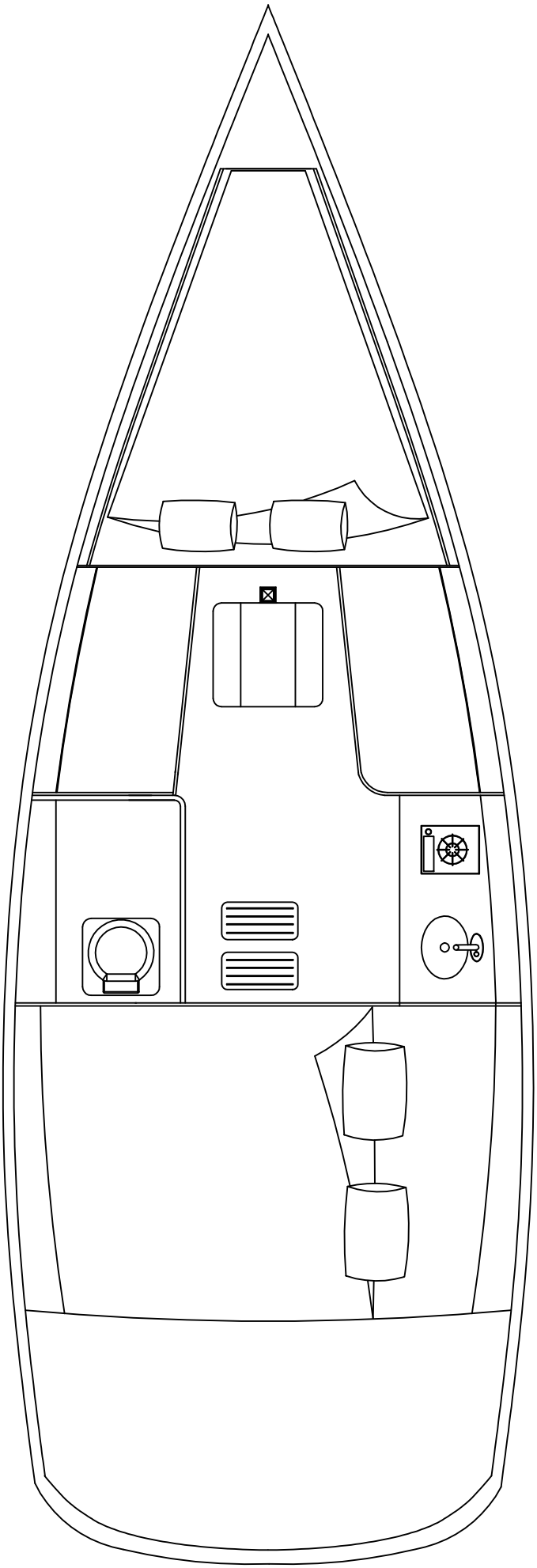
DRAWING TITLE: DECK HARDWARE LAYOUT	This document discloses information for which HUNTER MARINE CORP. has proprietary rights.
DRAWING NO. 258038	REVISION NO. None
DRAWN BY: ENG	DATE: 11/29/04

HUNTER

DECK HARDWARE LIST

ITEM	QTY	DESCRIPTION	DWG#	COMMENTS
1	1	BOW RAIL	H23B2022	HUNTER
2	1	BOW ROLLER (OPTIONAL)		SEA DOG
3	8	HINGE		#1167
4	1	ANCHOR DEAD END U-BOLT		3/8" SS U-BOLT
5A	1	ANCHOR LOCKER LATCH		S.S.
5B	1	STRIKER PLATE		S.S.
5C	2	EYE STRAP (CHROME)		FOR BUNGEE CORD
6	1	FRONT HATCH	H23A2415	FIBERGLASS
7	1	ANCHOR LOCKER LID	H23A2417	SAME AS H23.5
8	1	PORT FWD WINDOW		
9A	1	PORT FORWARD WINDSHIELD		
9B	1	STRBD FORWARD WINDSHIELD		
10	2	STERN RAILS		
11	1	THREE PRONG PLUG		
12	1	MAST BASE		
13	4	FWD STANCHION		
14	2	HALYARD CHEEK BLOCKS		
15	2	JIB LEAD BLOCKS		
16	1	STBD FWD WINDOW		
17A	4	CHAINPLATES	H23B2028	3/8" U-BOLTS
17B	2	CHAINPLATE BACKUP PLATES		1/4" X 3/4" S.S.
18	2	CLAM CLEATS		
19	4	PAD-EYE		
20	1	XA/2 SHEET STOPPER		EASY LOCK DOUBLE
21	1	XA/1 SHEET STOPPER		EASY LOCK SINGLE
22A	1	SLIDER RETAINER		STBD. SIDE
22B	1	SLIDER RETAINER		PORT SIDE
23	1	BOW LIGHT		BI-COLOR #62246B
24	2	HALYARD WINCHES		LEWMAR 6A
25	1	STERN LIGHT		#62243B
26A	1	WHITE HATCH		#927-2100
26B	1	TRIM RING		#926 GREY ENT.
26C	1	SCREEN		#GS927-28
27	2	RUDDER STOPS		
28	1	TILLER ARM		RONSTAN
29	1	ENGINE MOUNTING BRKT.		
30	1	RUDDER ASSEMBLY		
31	1	SWIM LADDER		
32	5	6" FOUR HOLE CLEATS		S.S.
33A	1	SEAHOOD		GLASS PART
33B	2	SEAHOOD SUPPORT LEGS		S.S.
34	1	PORT LIGHT-SMOKE		N. FLA. GLASS & MIRROR
35	1	PORT LIGHT-FROSTED		N. FLA. GLASS & MIRROR
36	1	GAS TANK ACCESS		GLASS PART
37	2	STRUT BRACKETS	24030002	MADE BY HUNTER
38	1	MAINSHEET U-BOLT WITH NUTS		3/8" S.S.
39A	1	HATCH BOARDS		
39B	1	HATCH BOARD HASP		CHROME
39C	1	STBD. HATCH BOARD TRACK		KING STARBOARD
39D	1	PORT HATCH BOARD TRACK		KING STARBOARD
40	1	C-WAY SLIDER		
41	1	MAINSHEET ASSEMBLY		SCHAEFFER35-03
42	3	BUNGEE CORD 20"		FOR DECK HATCHES
43	4	RUBBER BUMPERS		



DRAWING TITLE: INTERIOR LAYOUT

DRAWING NO. 258040

REVISION NO. None

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DATE: 11/29/04

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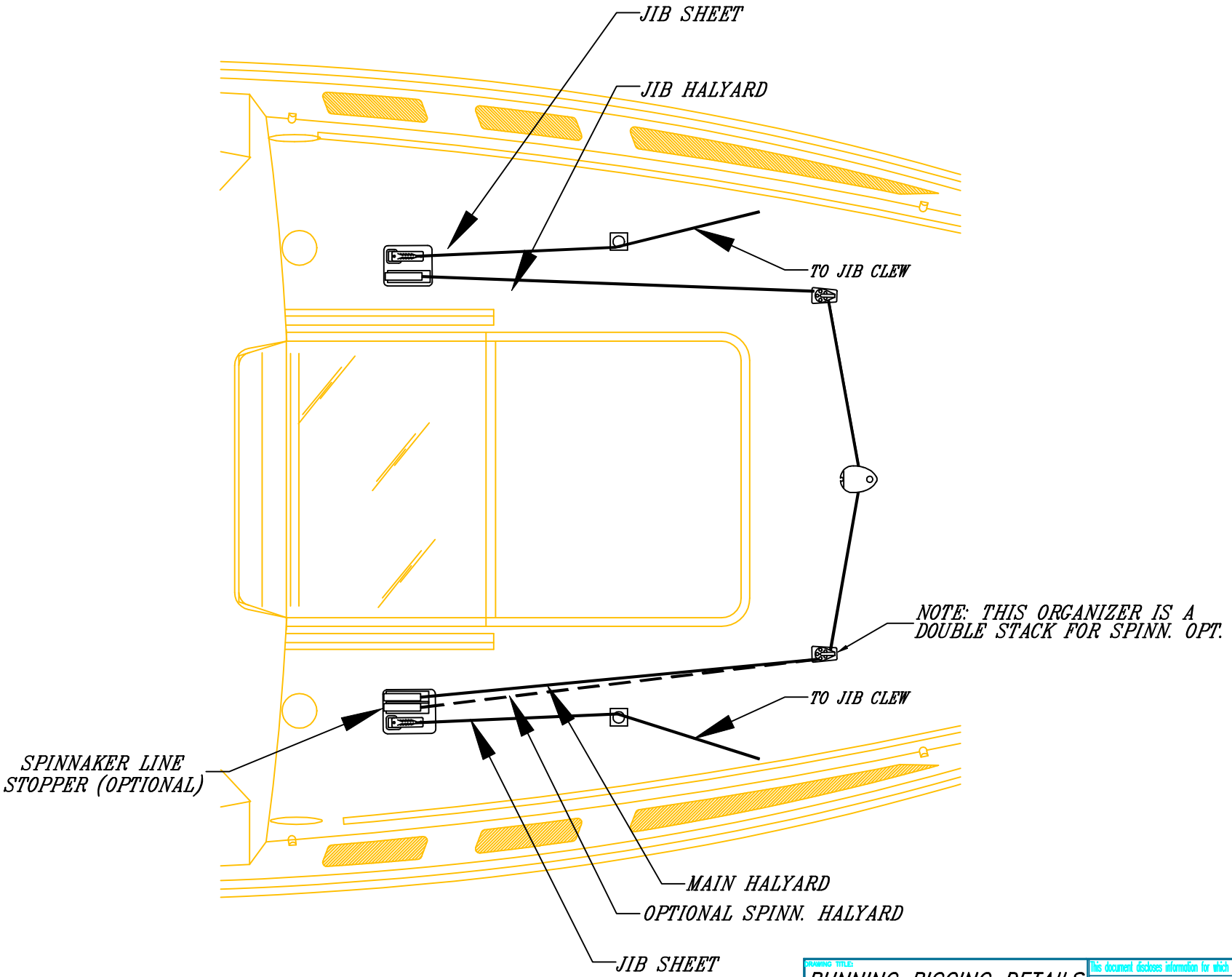

DRAWING TITLE:	RUNNING RIGGING DETAILS
DRAWING NO.	258041
REVISION NO.	None
DRAWN BY:	ENG
DATE:	11/29/04

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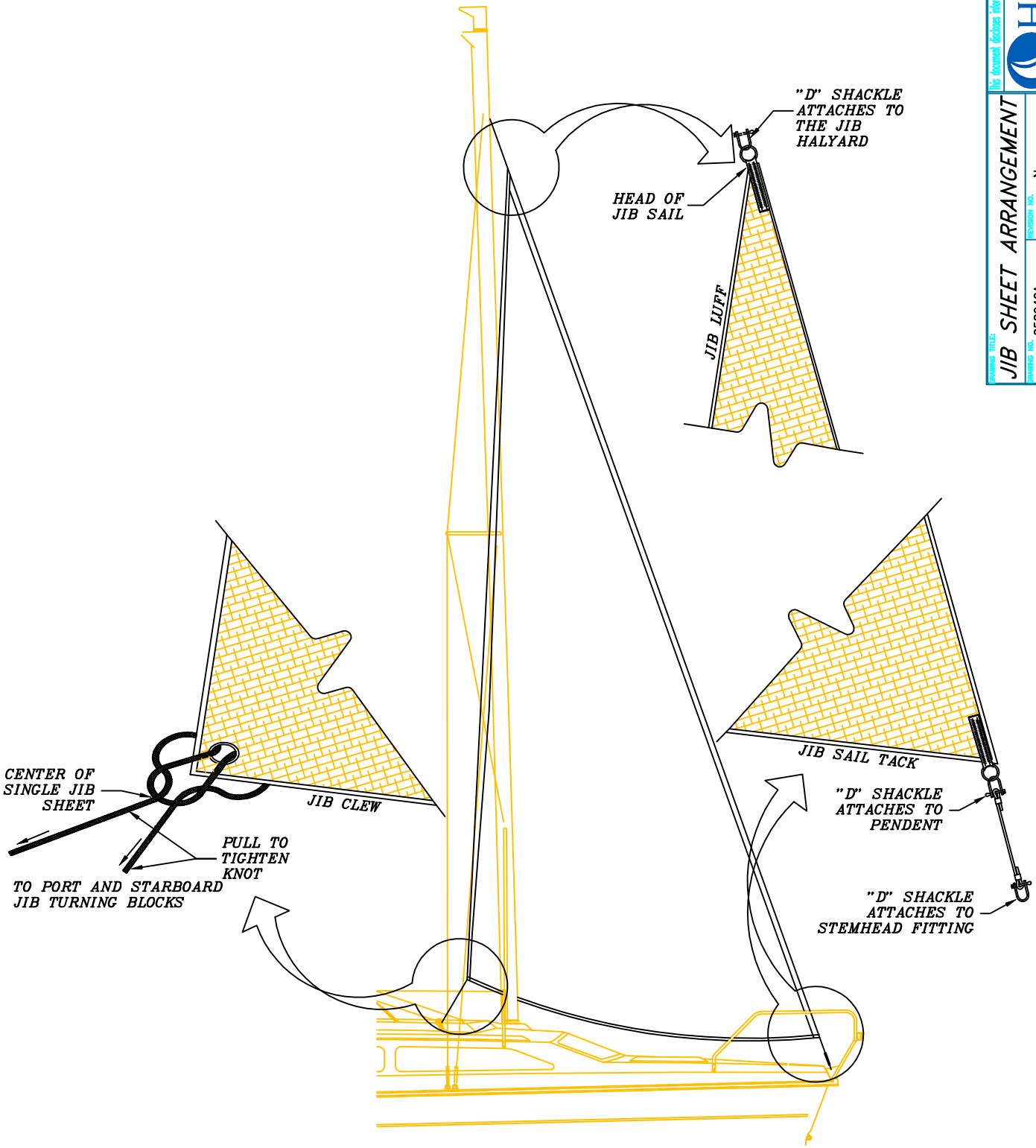

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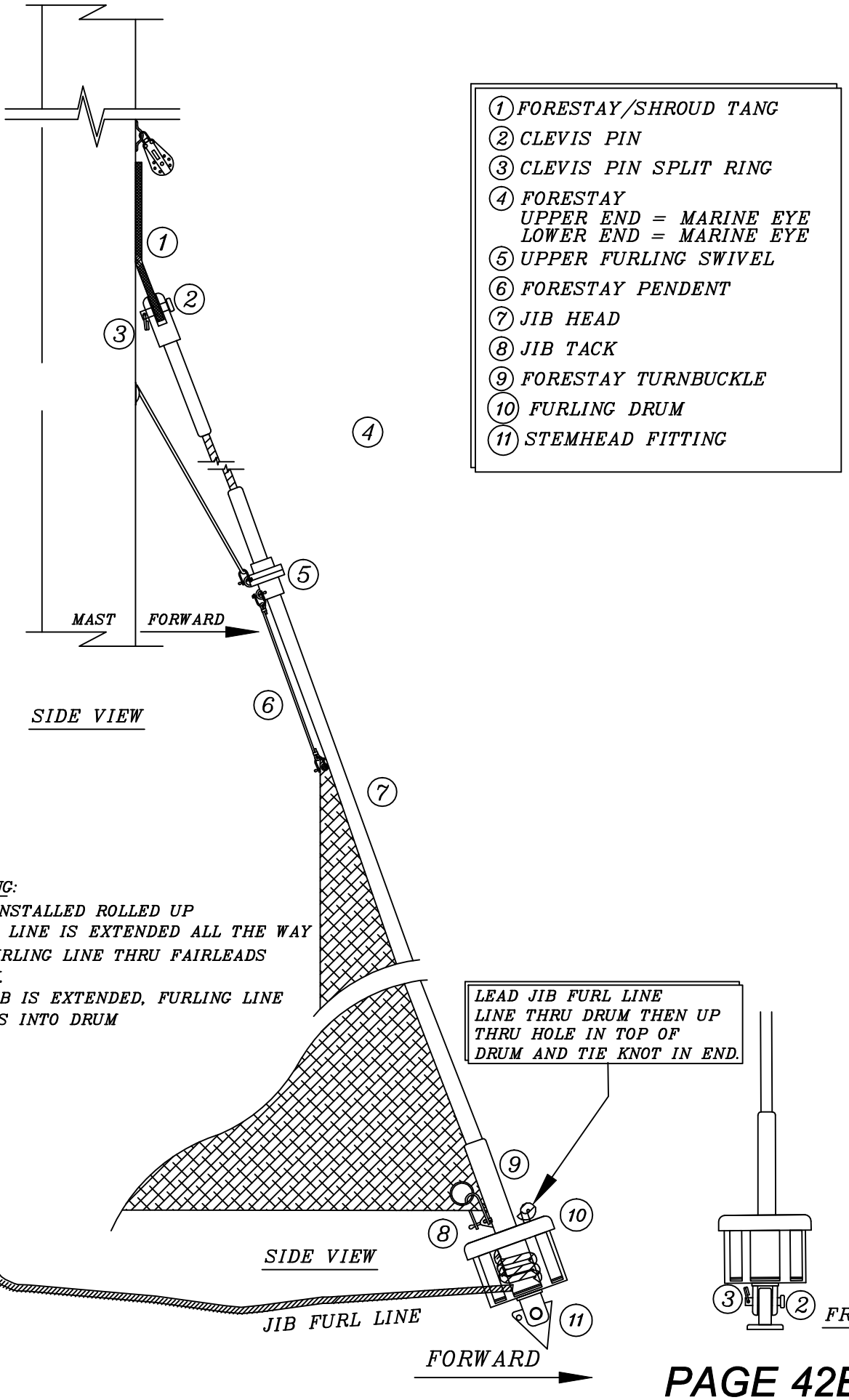
DRAWING TITLE: JIB SHEET ARRANGEMENT

DRAWING NO.	REVISION NO.	DATE
258042A	None	11/29/04

DRAWN BY: ENG



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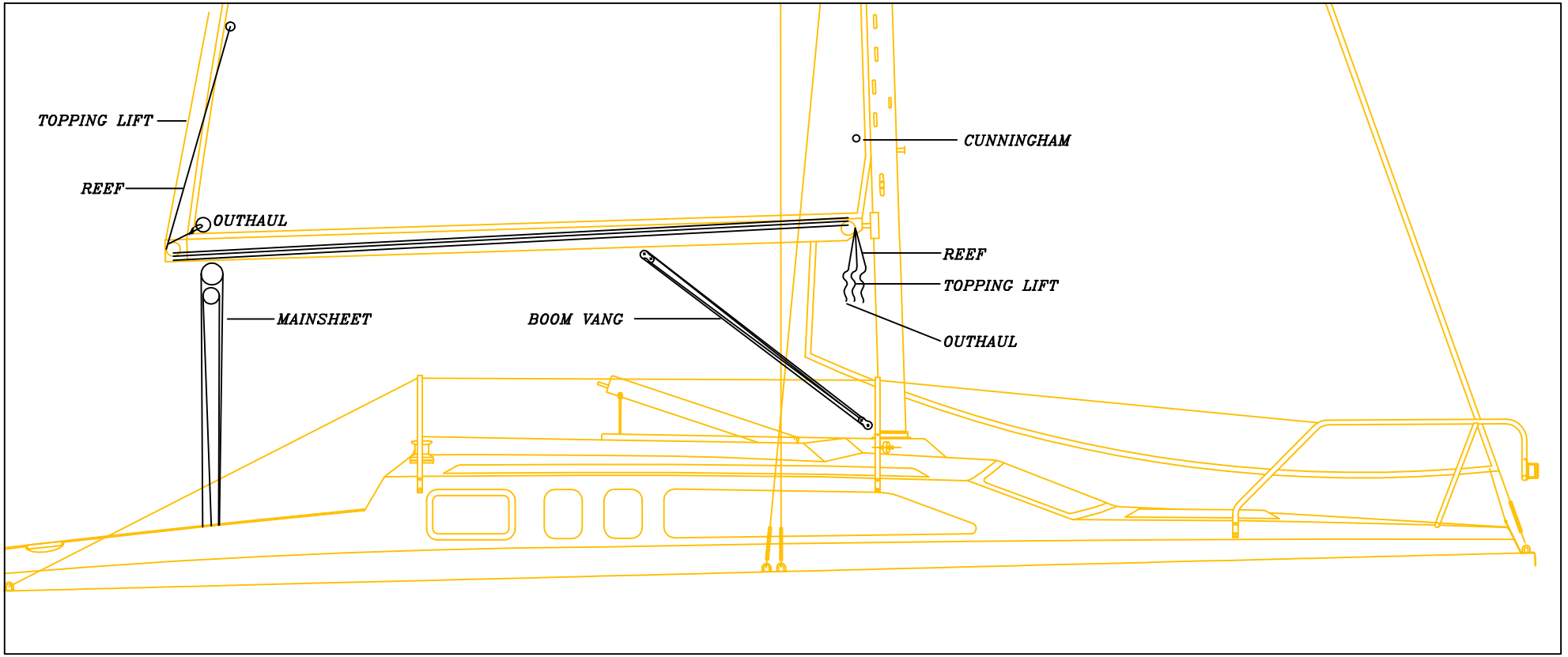
DRAWING TITLE: OPTIONAL FURLING DETAILS

DRAWING NO. 258042B | REVISION NO. None | DRAWN BY: ENG | DATE: 11/29/04



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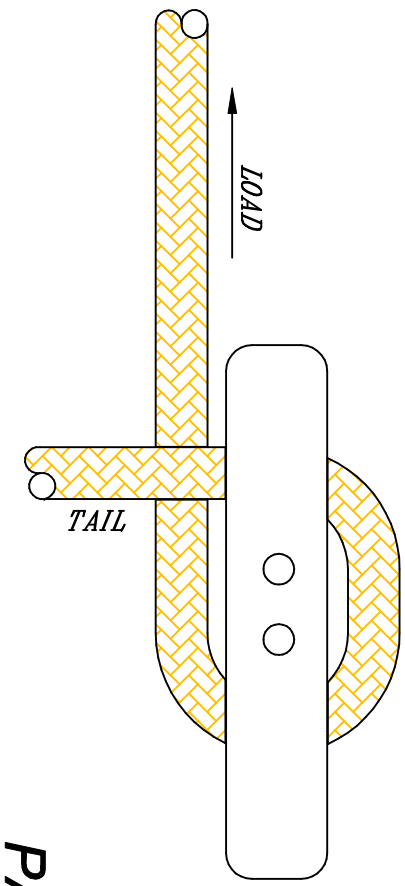
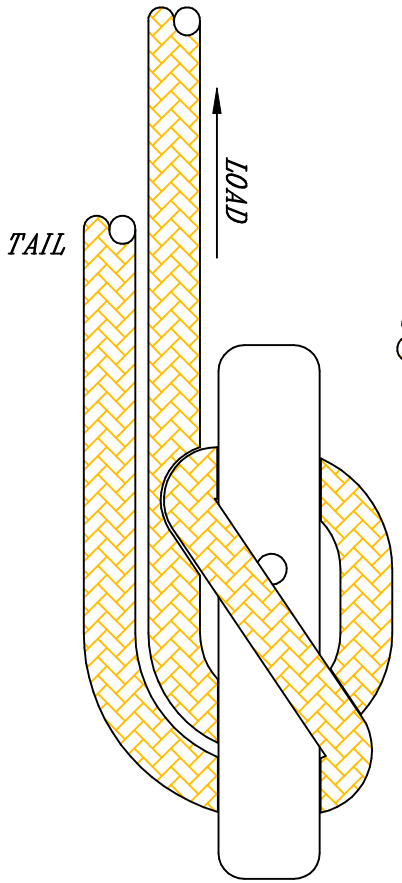
DRAWING TITLE: RUNNING RIGGING ARRANGEMENT	
DRAWING NO. 258042C	REVISION NO. None
DRAWN BY: ENG	DATE: 11/29/04

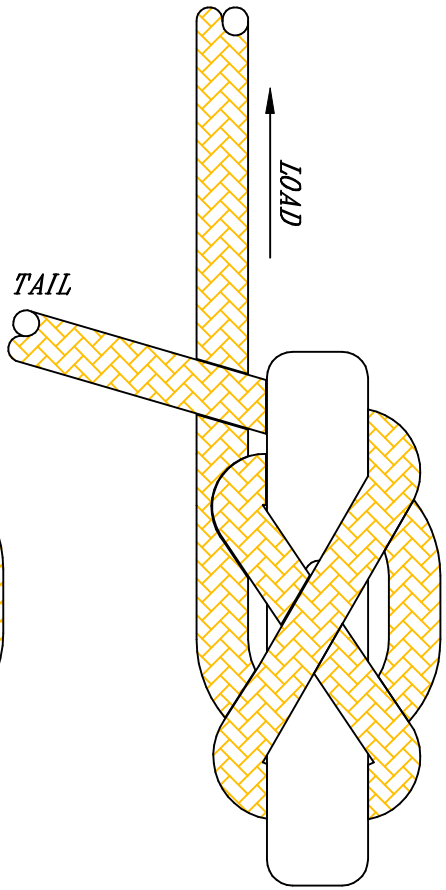
HUNTER



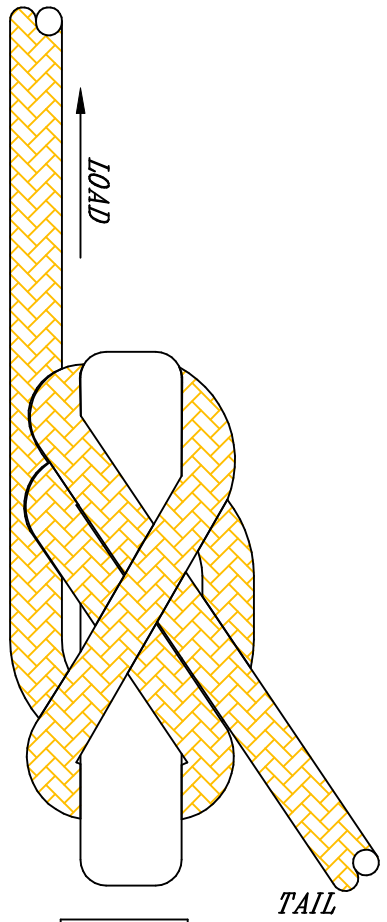
STEP 1



STEP 2



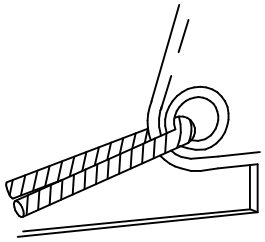
STEP 3



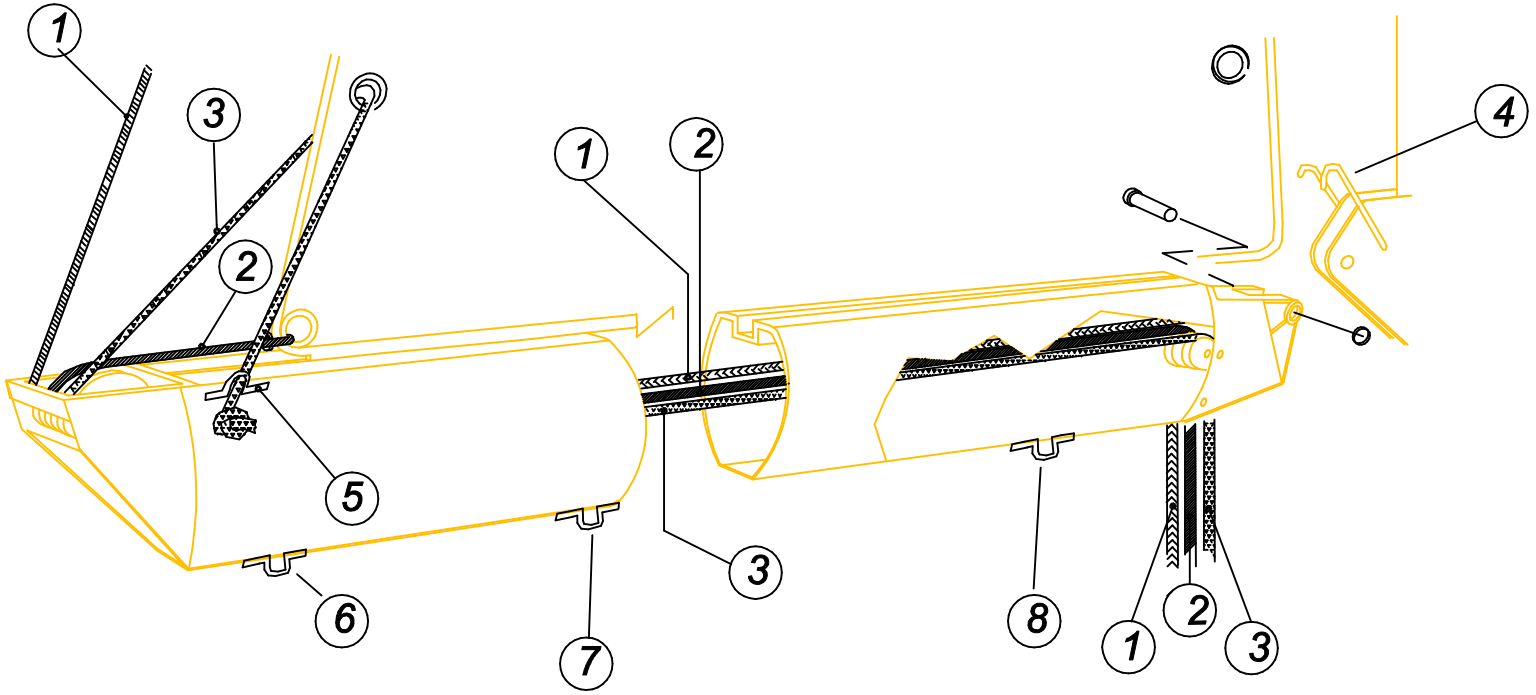
STEP 4

DRAWING TITLE: PROPER CLEAT KNOT	
DRAWING NO. 258043	REVISION NO. None
DRAWN BY: ENG	DATE: 11/29/04

HUNTER



OUTHAUL CAN BE ENDED AT CLEW, OR RUN THRU AS SHOWN HERE AND SECURE TO END OF BOOM CREATING A 2 TO 1 PURCHASE.

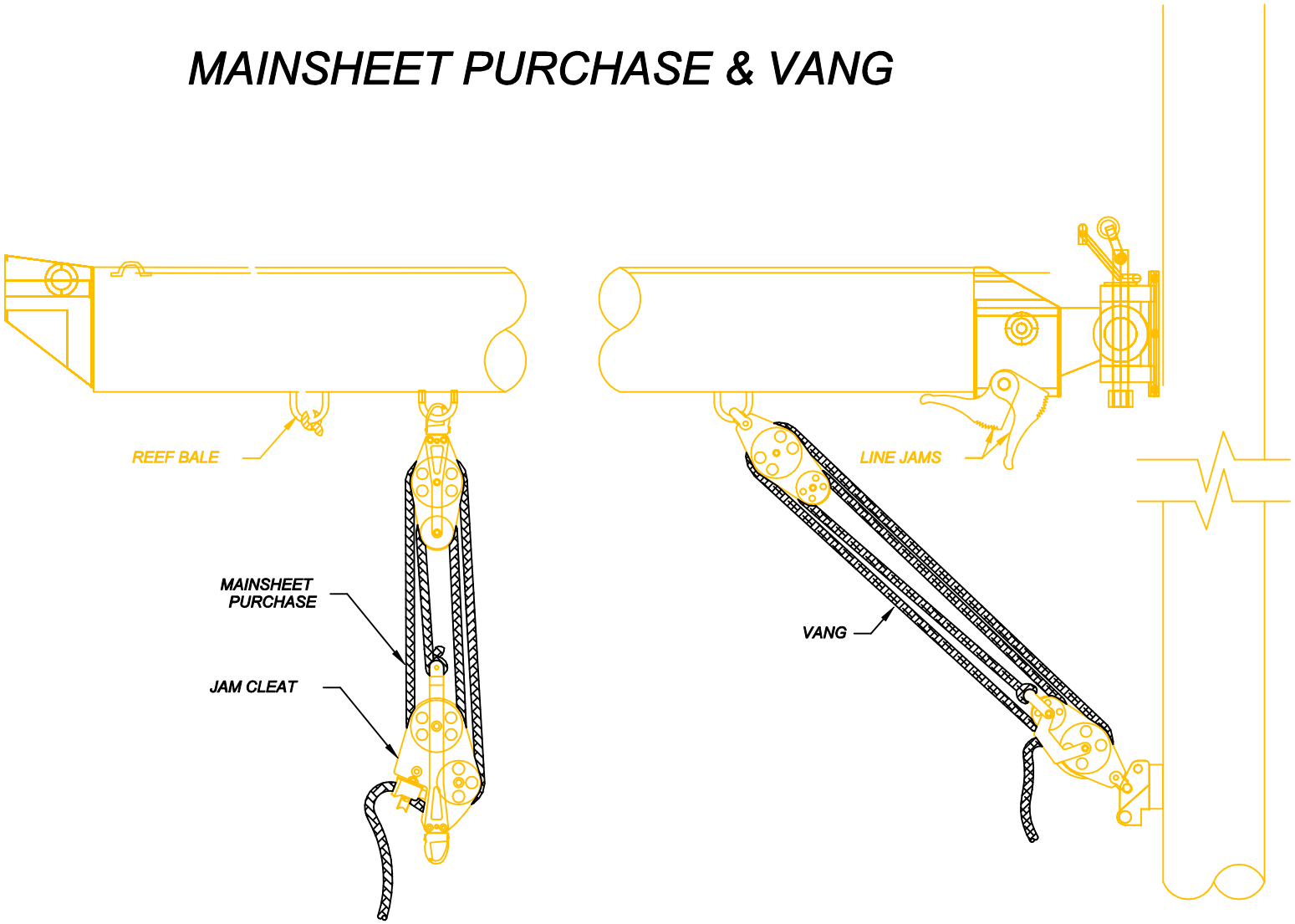


1. BOOM TOPPING LIFT
2. OUTHAUL
3. REEF LINE
4. RAMSHEAD HOOKS (FOR TACK REEF GROMMET)
5. REEF LINE BALE
6. 2ND REEFLINE BALE
7. MAINSHEET PURCHASE BALE
8. VANG BALE

DRAWING TITLE: BOOM DETAILS AND LAYOUT	
DRAWING NO. 258044A	REVISION NO. None
DRAWN BY: ENG	DATE: 11/29/04

HUNTER

MAINSHEET PURCHASE & VANG



PAGE 44B

DRAWING TITLE: BOOM DETAILS AND LAYOUT	
DRAWING NO. 258044B	REVISION NO. None
DRAWN BY: ENG	DATE: 11/29/04

HUNTER

REEFING INSTRUCTIONS

IF THE WIND STRENGTH BUILDS TO THE POINT WHERE THE BOAT HEELS EXCESSIVELY OR UNCOMFORTABLY, YOU MAY REDUCE THE SAIL AREA BY TAKING IN A REEF. REEFING IS EASIEST WHEN DONE ON A STARBOARD TACK (WHEN THE WIND IS BLOWING FROM THE STARBOARD SIDE) SINCE THE JIB SHEET IS ON THE PORT SIDE, AND THE HALYARD WINCH IS THEN FREE. HOWEVER, REEFING CAN BE DONE ON EITHER TACK.

1. **FEATHER THE BOAT INTO THE WIND SLIGHTLY TO REDUCE THE HEEL.**

2. **EASE THE TENSION ON THE MAINSHEET.**

3. **MAKE SURE THE STARBOARD WINCH IS FREE BY EITHER PUTTING THE BOAT ON A STARBOARD TACK OR BY TAKING THE JIB SHEET AND JAMMING IT IN THE JIB SHEET JAM CLEAT BEFORE REMOVING IT FROM THE WINCH.**

4. **TRANSFER THE MAIN HALYARD TO THE WINCH, AND TAKE UP FULL TENSION OF THE HALYARD BETWEEN THE WINCH AND THE SHEET STOPPER. THEN UNLOCK THE MAIN HALYARD SHEET STOPPER.**

5. **LOWER THE MAIN HALYARD UNTIL THE FORWARD REEF CRINGLE ON THE SAIL CAN BE SECURED BY INSERTING THE REEF HOOK THRU LOCATED ON THE BOOM GOOSE NECK THROUGH THE CRINGLE.**

6. **RETENSION THE MAIN HALYARD UNTIL ALL THE SLACK OR WRINKLES ARE REMOVED FROM THE LUFF.**

7. **TIGHTEN THE REEF LINE AT THE FORWARD END OF THE BOOM BY PULLING THE LINE DOWN THROUGH THE SHEAVE AND JAM UNTIL THE AFT REEFING CRINGLE IS AGAINST THE BOOM AND THE LINE CANNOT BE TENSIONED ANY FURTHER. THE MAINSHEET AND VANG MAY HAVE TO BE LOOSENED TO BE ABLE TO ACHIEVE THE PROPER TENSION.**

8. **JAM THE REEF LINE AT THE GOOSENECK. RETENSION THE VANG AND MAINSHEET ACCORDINGLY. REJAM THE MAIN HALYARD AND TRANSFER THE JIB SHEET BACK TO THE WINCH IF NECESSARY.**

9. **IF THE WIND CONTINUES TO INCREASE, YOU MAY DROP THE JIB COMPLETELY AND LASH IT TO THE DECK USING A SAIL TIE. THIS WILL ALLOW YOU TO SAIL ON A REEFED MAIN ALONE. IN SOME CASES, YOU MAY FIND IT MORE EFFECTIVE TO DROP THE JIB FIRST, INSTEAD OF / BEFORE YOU TAKE IN A REEF. IT MAY ALSO BE EASIER TO TAKE IN A REEF BY TEMPORARILY LOWERING THE JIB DURING THE REEFING PROCESS.**

SHAKING OUT A REEF

1. TRANSFER MAIN HALYARD TO THE WINCH AS EXPLAINED ABOVE.

2. EASE THE MAIN HALYARD DOWN ENOUGH TO REMOVE THE FORWARD REEF CRINGLE FROM THE REEF HOOK ON THE BOOM GOOSENECK.

3. UNJAM THE REEF LINE AT THE FORWARD END OF THE BOOM.

4. RAISE MAIN HALYARD USING THE WINCH. WHILE DOING SO, ENSURE THE REEFING LINE CONTINUES TO RUN THROUGH THE SAIL REEF CRINGLE AND THE FORWARD BOOM JAM.

5. TENSION THE MAIN HALYARD AND REJAM

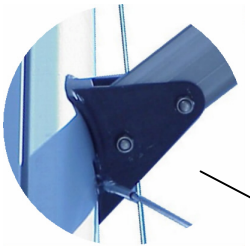
6. ADJUST THE SHEET AND VANG AS NECESSARY.

RUNNING RIGGING SPECIFICATIONS

	OPT/STD	ITEM	QUANTITY	LINE SIZE	LINE TYPE	COLOR	END 1	LENGTH		END 2
1	STD	MAIN HALYARD	1	5/16" (8mm)	XLS	BLUE	BARE	22.9 m	75 ft	BARE
2	STD	JIB HALYARD	1	5/16" (8mm)	LS	RED	BARE	22.25 m	73 ft	BARE
3	STD	MAINSHEET	1	3/8" (9.5mm)	LS	BLUE FLECK	SMALL EYE	17.0 m	56 ft	BARE
4	STD	REEFING LINE	1	5/16" (8mm)	TRACER	GREEN FLECK	BARE	11.3 m	37 ft	BARE
5	STD	JIB SHEET	2	3/8" (9.5mm)	LS	RED FLECK	BARE	9.75 m	32 ft	BARE
6	OPT	SPINN. SHEET	2	3/8" (9.5mm)	LS	BLACK FLECK	BARE	14.6 m	48 ft	BARE
7	OPT	SPINNAKER HALYARD	1	3/8" (9.5mm)	XLS	BLACK	BARE	22.25 m	73 ft	BARE
8	STD	VANG	1	5/16" (8mm)	LS	WHITE	SMALL EYE	5.9 m	19 ft	BARE
9	STD	CENTERBOARD LINE 1	1	3/8" (9.5mm)	XLS	WHITE	EYE	2.2 m	7.25 ft	BARE
10	STD	CENTERBOARD LINE 2	1	5/16" (8mm)	LS	WHITE	EYE	0.9 m	3 ft	BARE
11	STD	CENTERBOARD LINE 3	1	5/16" (8mm)	LS	WHITE	EYE	2.4 m	8 ft	BARE
12	STD	TOPPING LIFT	1	1/8" PVC		WHITE		7.6 m	25 ft	BARE

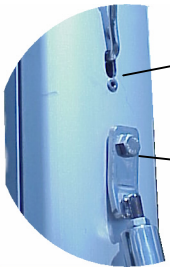
STANDING RIGGING SPECIFICATIONS

	OPT/STD	ITEM	QUANTITY	WIRE SIZE	UPPER END	LENGTH		LOWER END
1	STD	FORESTAY	1	5/32" (4mm) 1x19	T-BALL	8.46m	27' 9"	TURNBUCKLEw/JAW TOGGLE
2	STD	D1	2	5/32" (4mm) 1x19	T-BALL	4.617m	15' 1 1/2"	TURNBUCKLEw/JAW TOGGLE
3	STD	V1	2	5/32" (4mm) 1x19	TOGGLE FORK	4.7m	15' 5"	TURNBUCKLEw/JAW TOGGLE
4	STD	D2	2	5/32" (4mm) 1x19	FORK	3.55m	11' 8"	EYE
5	STD	RD1	2	5/32" (4mm) 1x19	EYE	2.83m	9' 4"	TURNBUCKLEw/JAW TOGGLE



SPREADER RECEIVER
(VIEW FROM BELOW)

SPREADER TIP
(VIEWED FROM BELOW)



UPPER STRUT MOUNT

FORWARD

FORESTAY 5/32" (4 mm) 1 X 19

D2
5/32" (4 mm) 1 X 19

D1
5/32" (4 mm) 1 X 19

RD1
5/32" (4 mm) 1 X 19

V1
5/32" (4 mm) 1 X 19

RD1 T-BALL FITS INTO
MAST CUTOUT

JIB TACK ATTACHES HERE

STRUT

CHAINPLATE U-BOLTS

FORESTAY ATTACHES HERE ON BOW RAIL

1. PLACE JAW TOGGLE OVER FWD. HOLE
2. INSERT PIN
3. INSTALL SPLIT RING

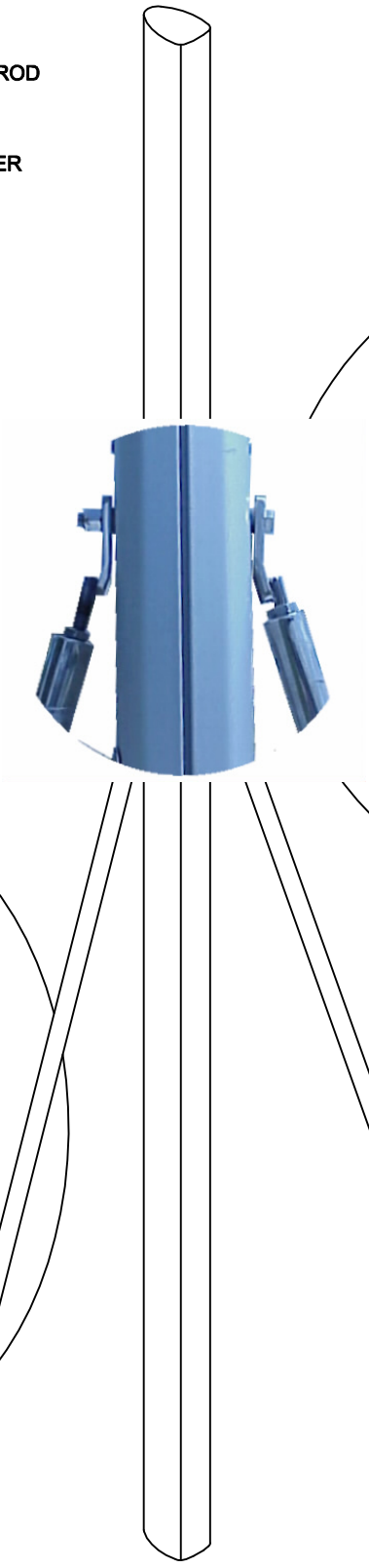
NOTE: NEVER TRY TO SAIL THE VESSEL WITHOUT STRUTS IN PLACE AND PROPERLY FASTENED

HUNTER

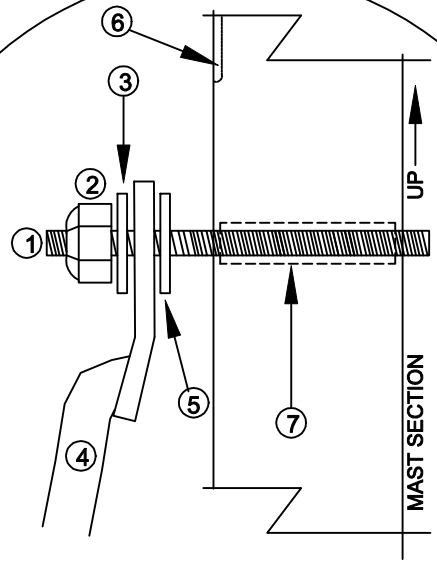
DRAWING TITLE: STANDING RIGGING
DRAWING NO. 258047A
REVISION NO. None
DRAWN BY: ENG
DATE: 11/29/04

SUPPLIED

1. 3/8" (9.5 mm) S.S. THREADED ROD
2. 3/8" (9.5 mm) LOCK NUT
3. 3/8" (9.5 mm) S.S. FLAT WASHER
4. UPPER STRUT BRACKET
5. 3/8" (9.5mm) NYLON WASHER
6. CUTOUT FOR RD1 T-BALL
7. COMPRESSION SLEEVE



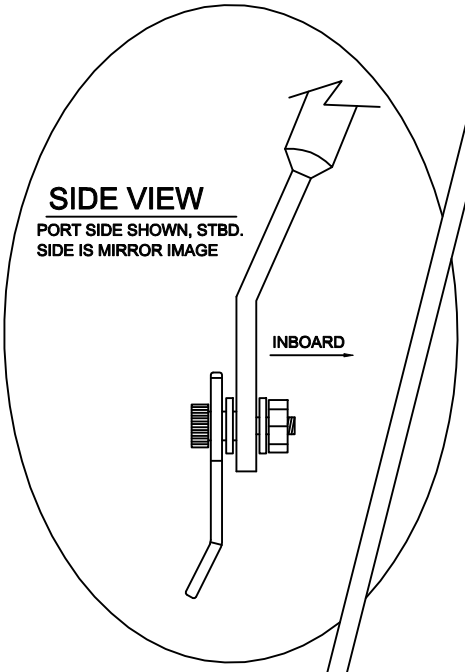
UPPER STRUT ASSEMBLY



SIDE VIEW

PORT SIDE SHOWN, STBD.
SIDE IS MIRROR IMAGE

LOWER STRUT ASSEMBLY



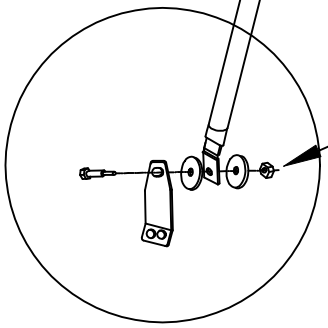
SIDE VIEW

PORT SIDE SHOWN, STBD.
SIDE IS MIRROR IMAGE

ATTENTION:
NEVER TRY TO SAIL THE VESSEL WITHOUT STRUTS IN PLACE AND PROPERLY FASTENED. SOME PLAY IS DESIRABLE, THEREFORE DO NOT OVER-TIGHTEN THE LOWER STRUT BRACKET.

STRUT MOUNTING PLATES

NOTE: STRUTS MOUNT TO INBOARD SIDE OF STRUT MTG. PLATE



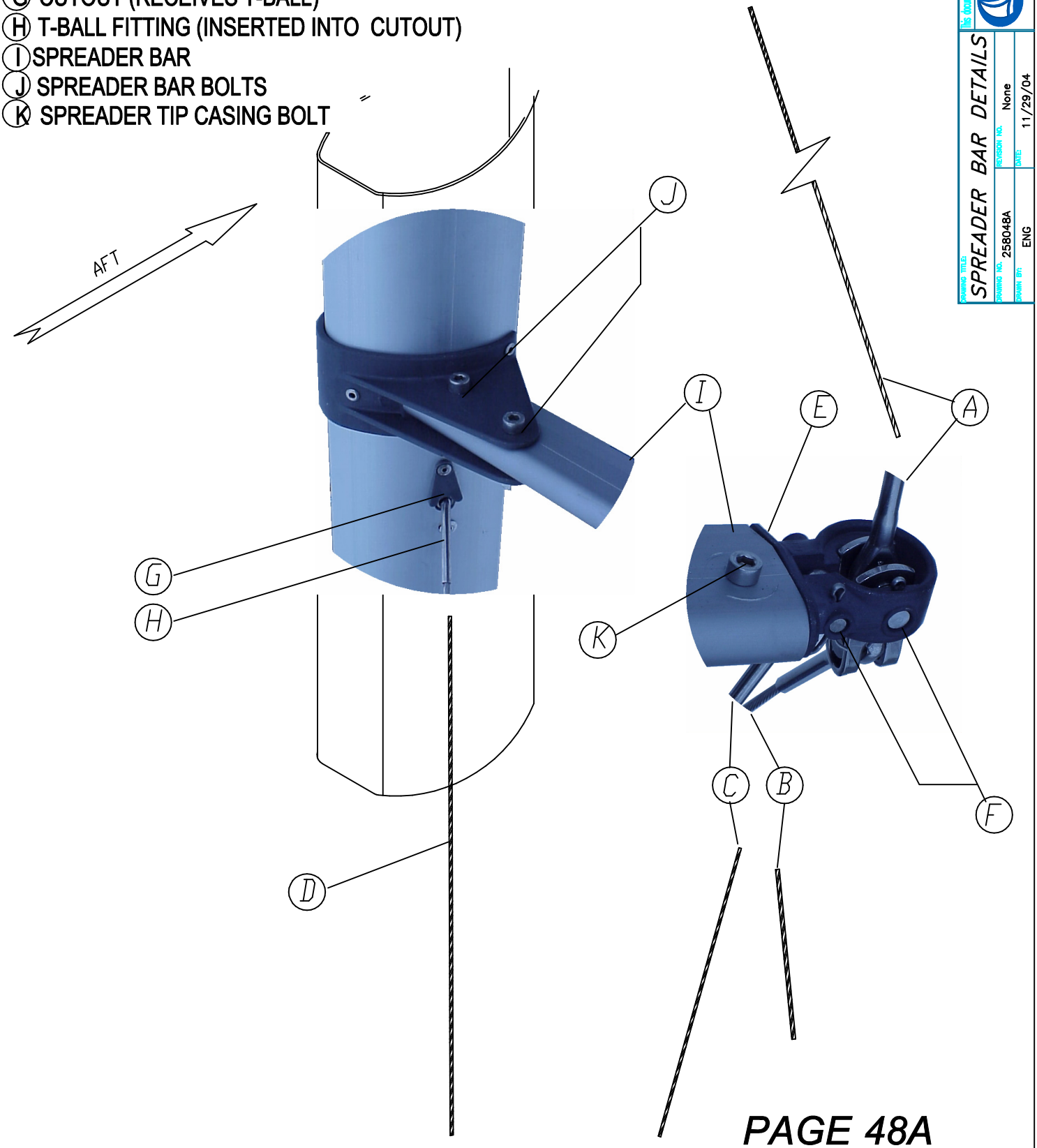
THESE FASTENERS
HUNTER SUPPLIED
3/8" SHOULDER BOLTS F/W & LOCK NUTS
(9.5 mm X 25.4 mm)
PORT SIDE SHOWN-
STBD. SIDE, MIRROR IMAGE

STRUT
BRACKET ASSEMBLY

DRAWING TITLE: STRUT ASSEMBLY
DRAWING NO. 258047B
DRAWN BY: ENG
REVISION NO. None
DATE: 11/29/04

HUNTER

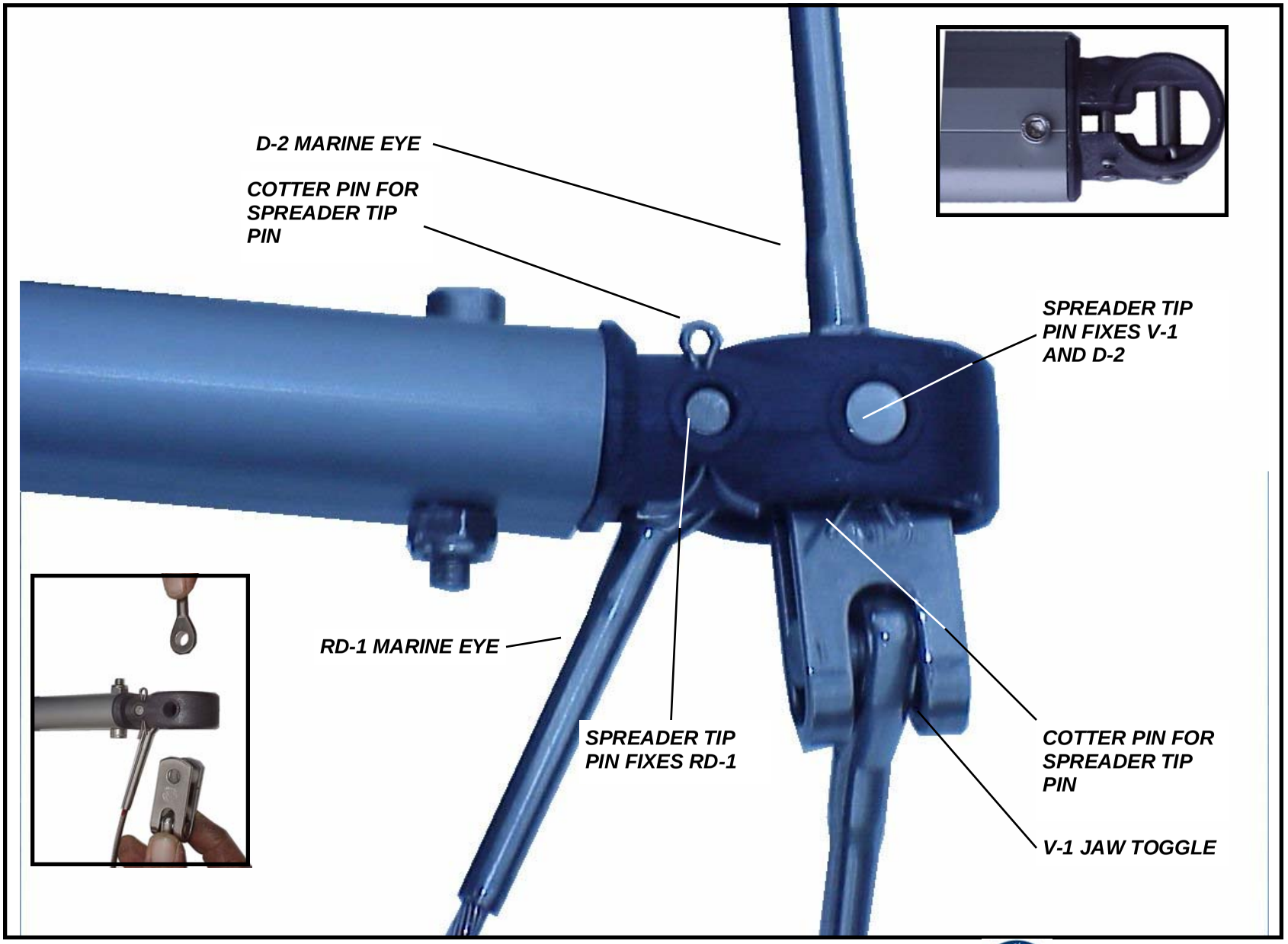
Ⓐ UPPER DIAGONAL (D2)
Ⓑ VERTICAL (V1)
Ⓒ REV. DIAG. (RD1) MARINE EYE
Ⓓ LOWER DIAG. (D1)
Ⓔ SPREADER TIP CASTING (INSERTED INTO SPREADER END)
Ⓕ SPREADER TIP PINS
Ⓖ CUTOUT (RECEIVES T-BALL)
Ⓗ T-BALL FITTING (INSERTED INTO CUTOUT)
Ⓘ SPREADER BAR
Ⓙ SPREADER BAR BOLTS
Ⓚ SPREADER TIP CASING BOLT



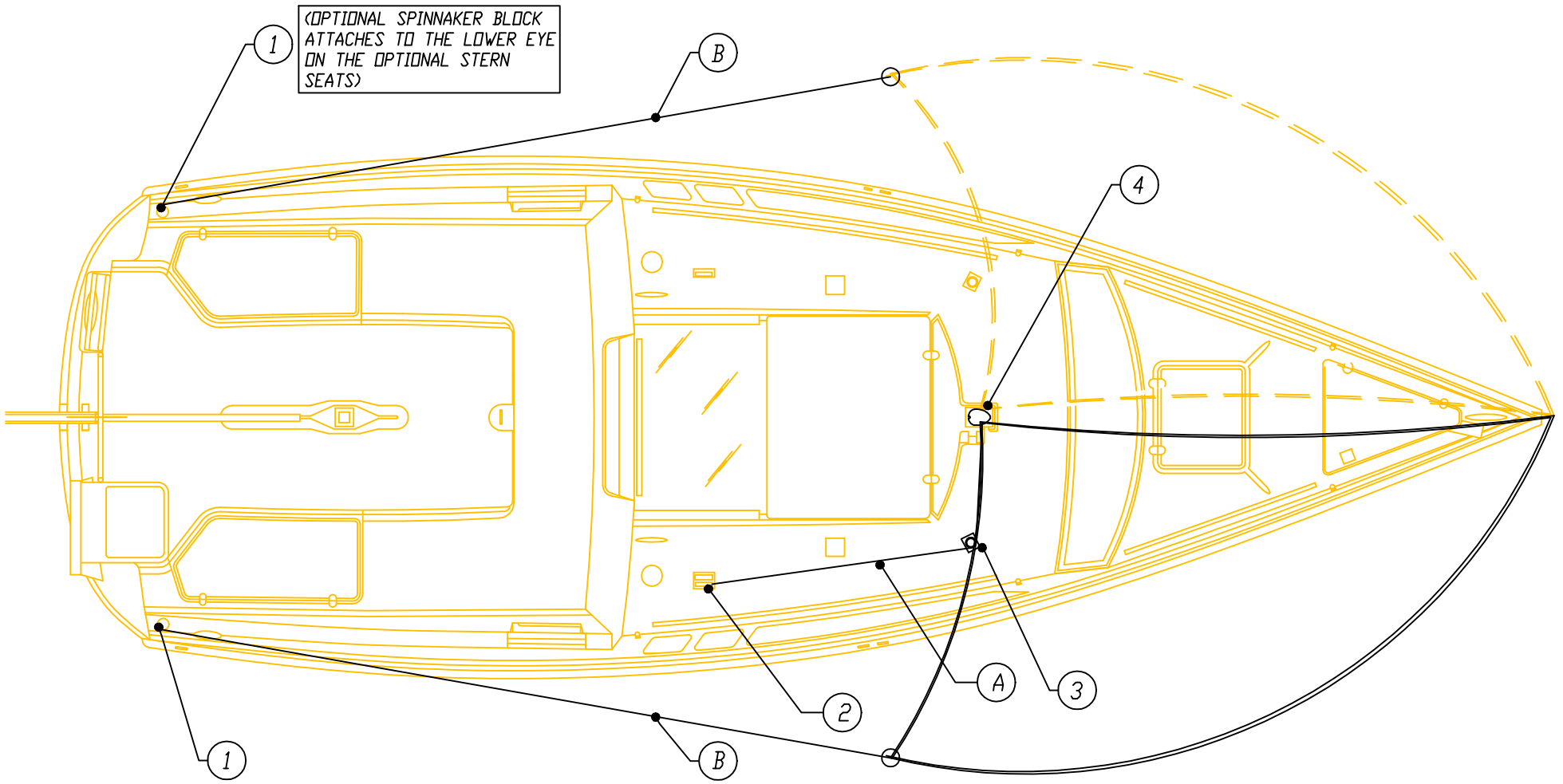
HUNTER

DRAWING TITLE: SPREADER BAR DETAILS
DRAWING NO. 258048A
REVISION NO. None
DRAWN BY: ENG
DATE: 11/29/04

SPREADER TIP DETAILS



VIEW IS OF PORT SIDE LOOKING AFT



DECK FITTING ITEMS	MANUFACTURER
1. SPINNAKER BLOCK (2) (1 PORT / 1 STBD)	HARKEN
2. LINE STOPPER (1) (ONE ADDED STBD ONLY)	EASYLOCK XA/1
3. DOUBLE STACK CHEEK BLOCK (1) (REPLACES STANDARD SINGLE CHEEK BLOCK)	HARKEN
4. SPINNAKER HALYARD MAST SHEAVE (LOCATED STRBD SIDE MAST)	SCHAEFER 30-30

LINE KIT

ITEM	LINE SIZE	PART NO.
A. SPIN. HALYARD (1)	3/8" (9.5 MM) X 63' (19.3 m)	400510
B) SPIN. SHEET (2)	3/8" (9.5 MM) X 49' (14.9m)	

DRAWING TITLE: OPTIONAL SPINNAKER LAYOUT

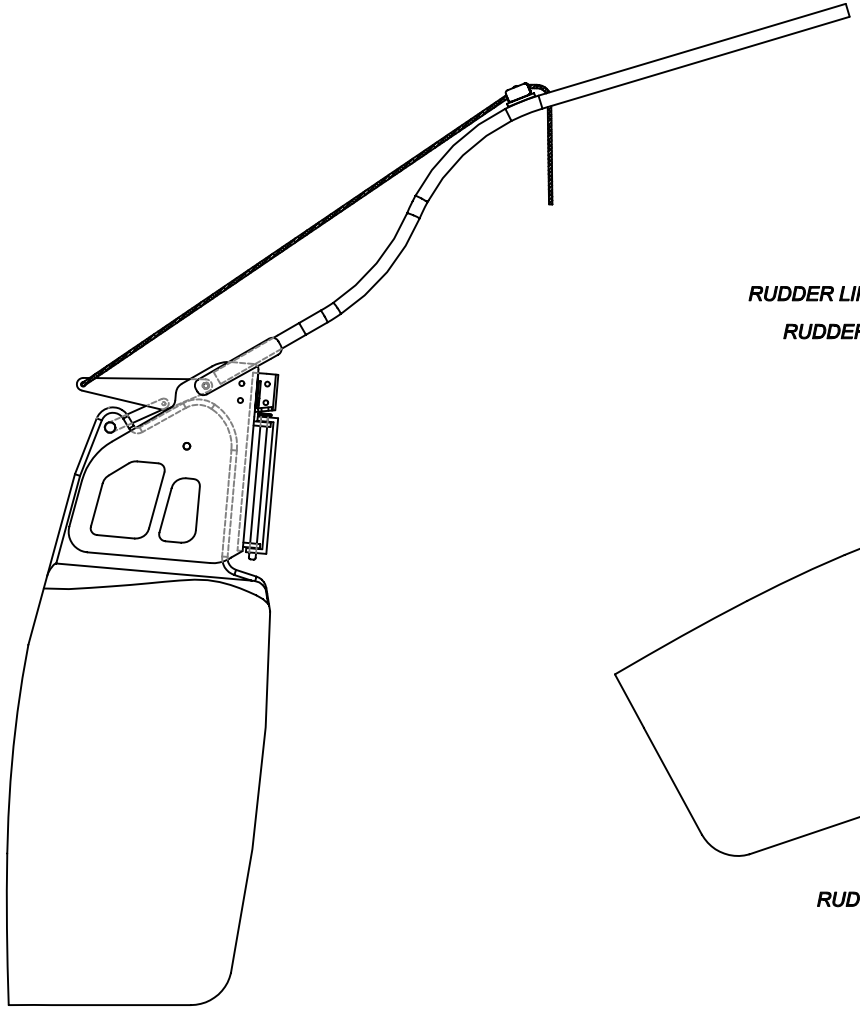
DRAWING NO. 258049 | REVISION NO. None

DRAWN BY: ENG | DATE: 11/29/04

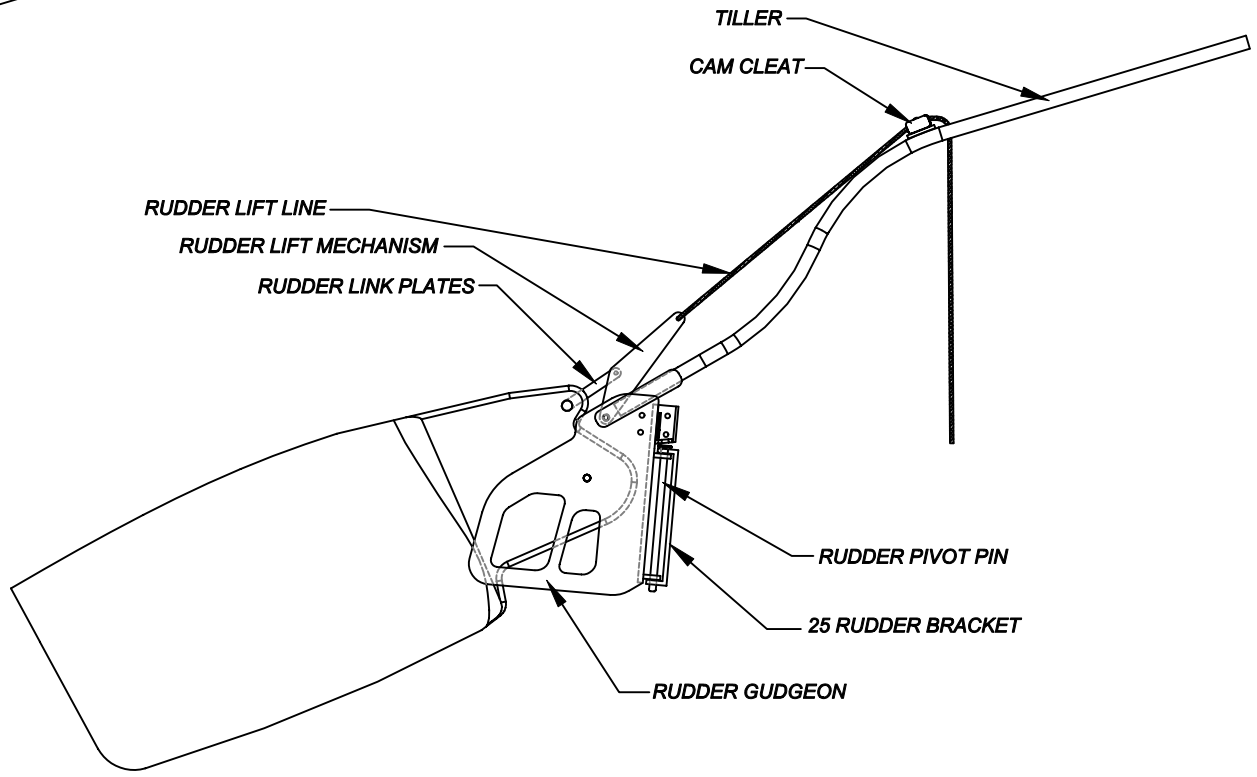
HUNTER

TO RAISE RUDDER, PULL RUDDER LIFT LINE AND LOCK INTO CAM CLEAT.
NOTE: RUDDER TO BE SECURED IN THE UP POSITION WHEN TRAILERING.

TO LOWER RUDDER, PULL RUDDER LIFT LINE FROM CAM CLEAT AND LOWER. RUDDER WILL LOCK WHEN DOWN.



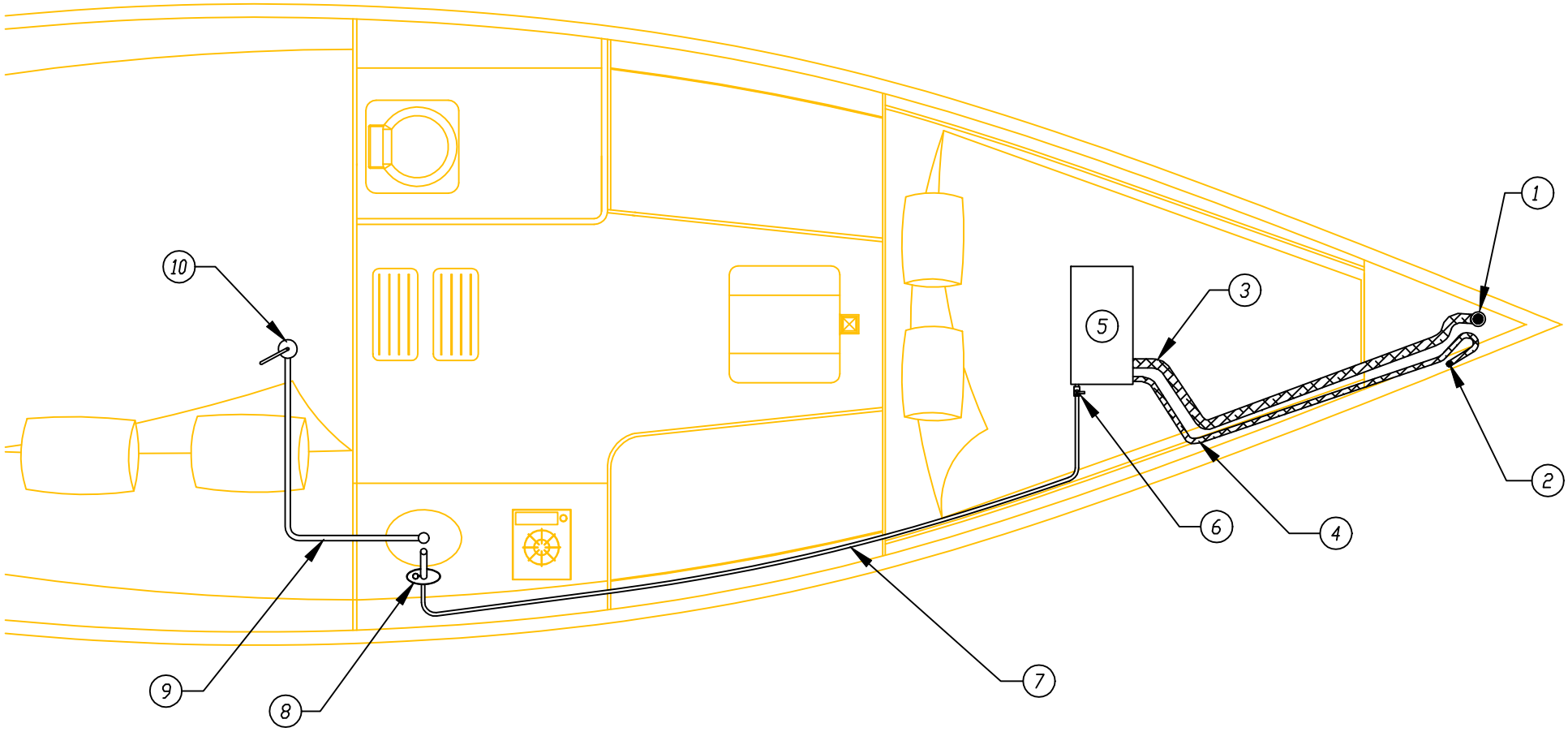
RUDDER, DOWN POSITION



RUDDER, UP POSITION

DRAWING TITLE:	RUDDER DETAILS
DRAWING NO.	258050
REVISION NO.	None
DRAWN BY:	ENG
DATE:	11/29/04

HUNTER

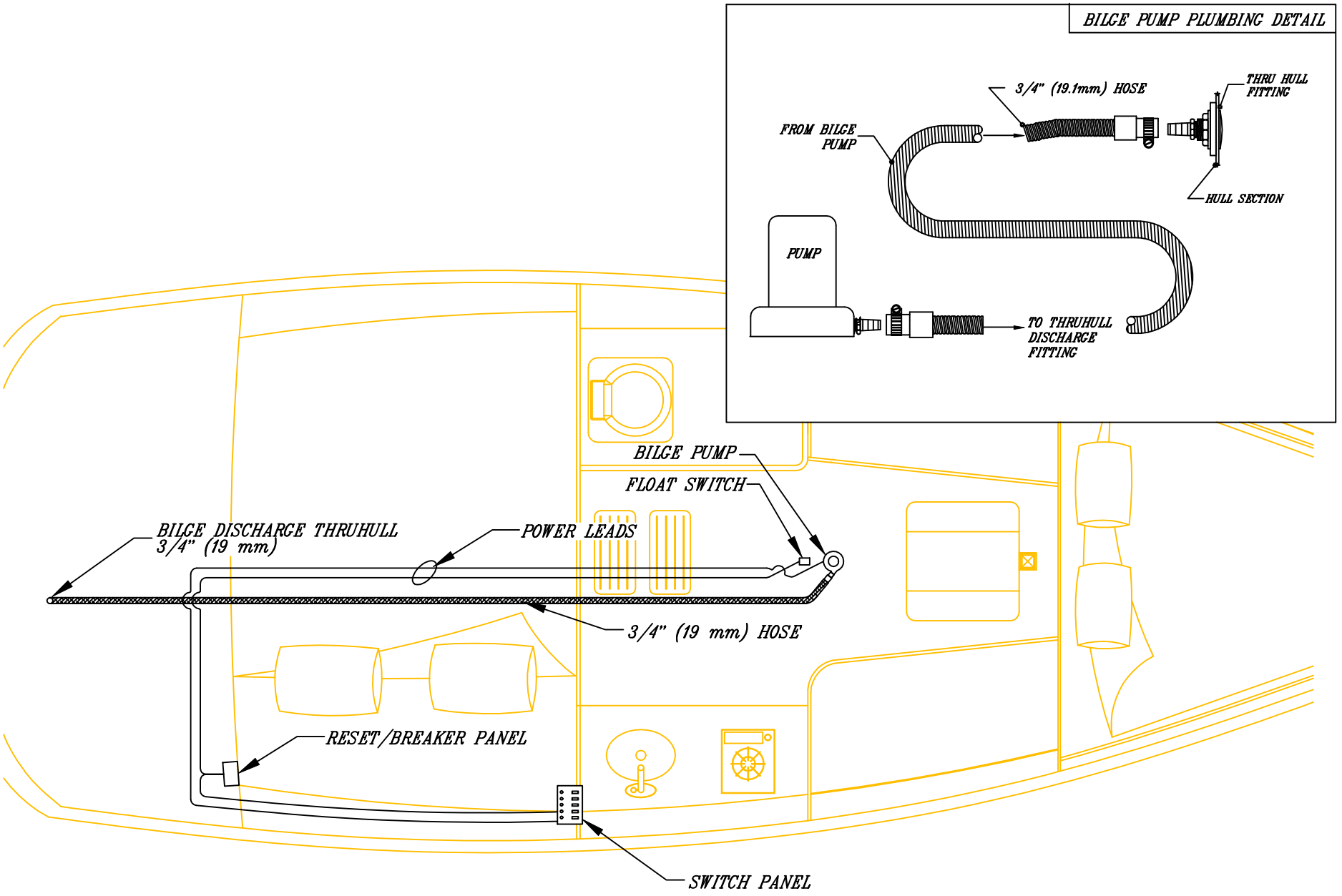


1. H2O TANK FILL DECK FITTING, 1 1/2" (38 mm)
2. H2O TANK VENT, HULL FITTING 3/4" (19 mm)
3. H2O FILL HOSE, 1 1/2" (38 mm) HOSE
4. H2O VENT HOSE 3/4" (19 mm) HOSE
5. H2O TANK, 10 GAL. (37.9 L)
6. TANK ON/OFF VALVE
7. H2O SUPPLY LINE, 15mm TUBING
8. GALLEY FAUCET
9. 1 1/8" DRAIN HOSE
10. 1" THRU HULL FITTING W/ BALL VALVE

DRAWING TITLE: FRESH WATER SYSTEM LAYOUT

DRAWING NO.	REVISION NO.
258051	None
DRAWN BY: ENG	DATE: 11/29/04

HUNTER



PAGE 52A

DRAWING TITLE: BILGE PUMP LAYOUT	This document discloses information for which HUNTER MARINE CORP. has proprietary rights.
DRAWING NO. 258052A	REVISION NO. None
DRAWN BY: ENG	DATE: 11/29/04

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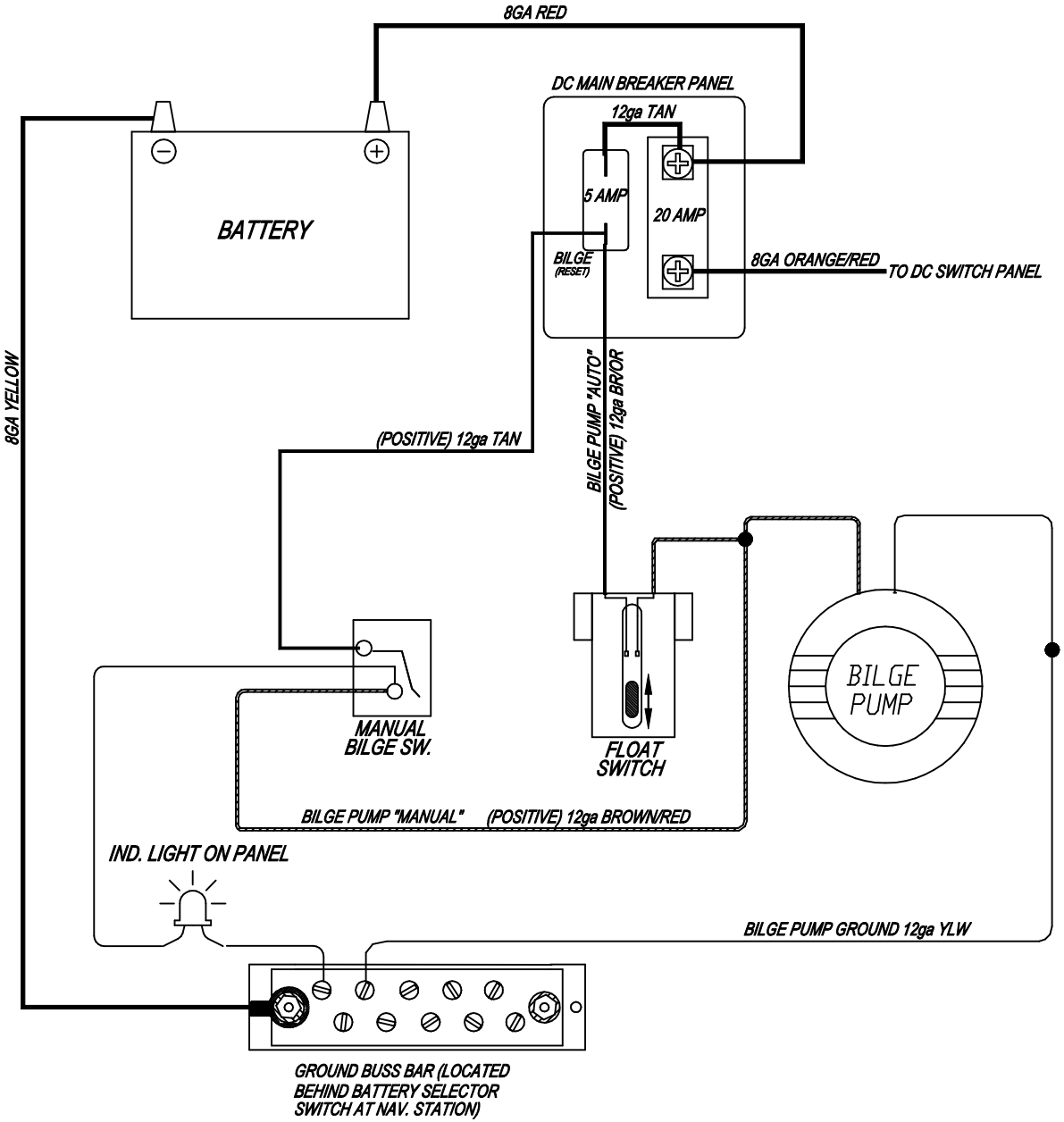


PAGE 52B

DRAWING TITLE: ELECTRIC BILGE PUMP SCHEMATIC	
DRAWING NO.: 258052B	REVISION NO.: NONE
DRAWN BY: ENG	DATE: 07/15/03

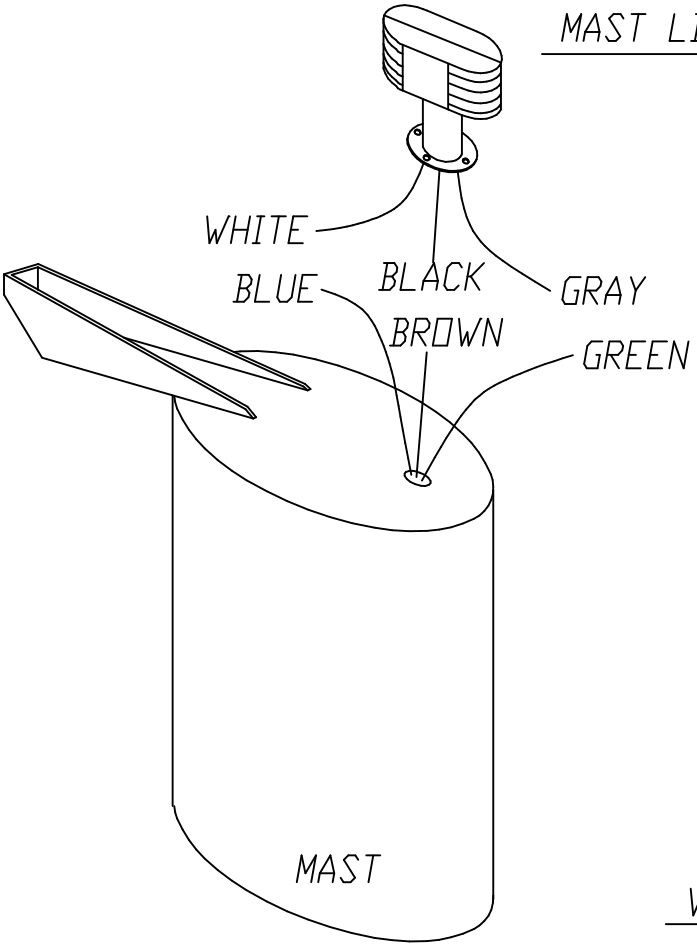
HUNTER

HUNTER

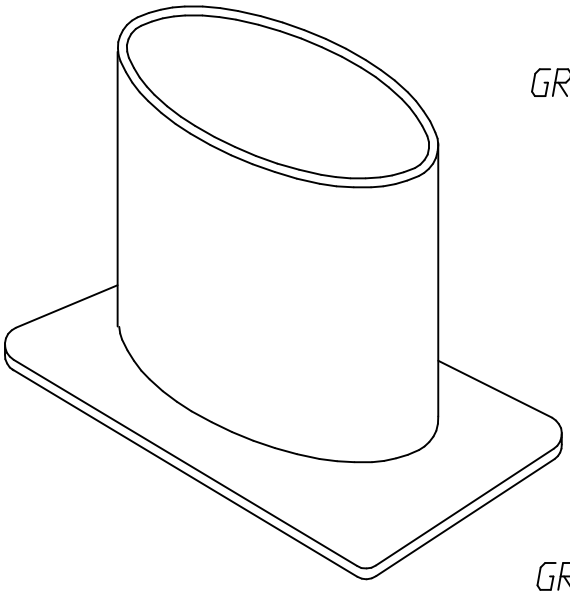
DRAWING TITLE: MAST WIRING DETAIL

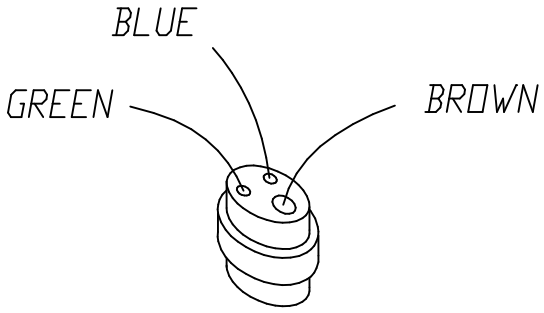
DRAWING NO. 258053 | REVISION NO. None | DRAWN BY: ENG | DATE: 11/29/04

MAST LIGHT

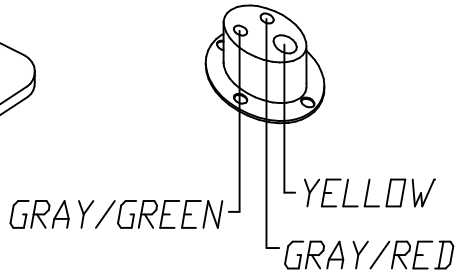


WIRES FROM MAST

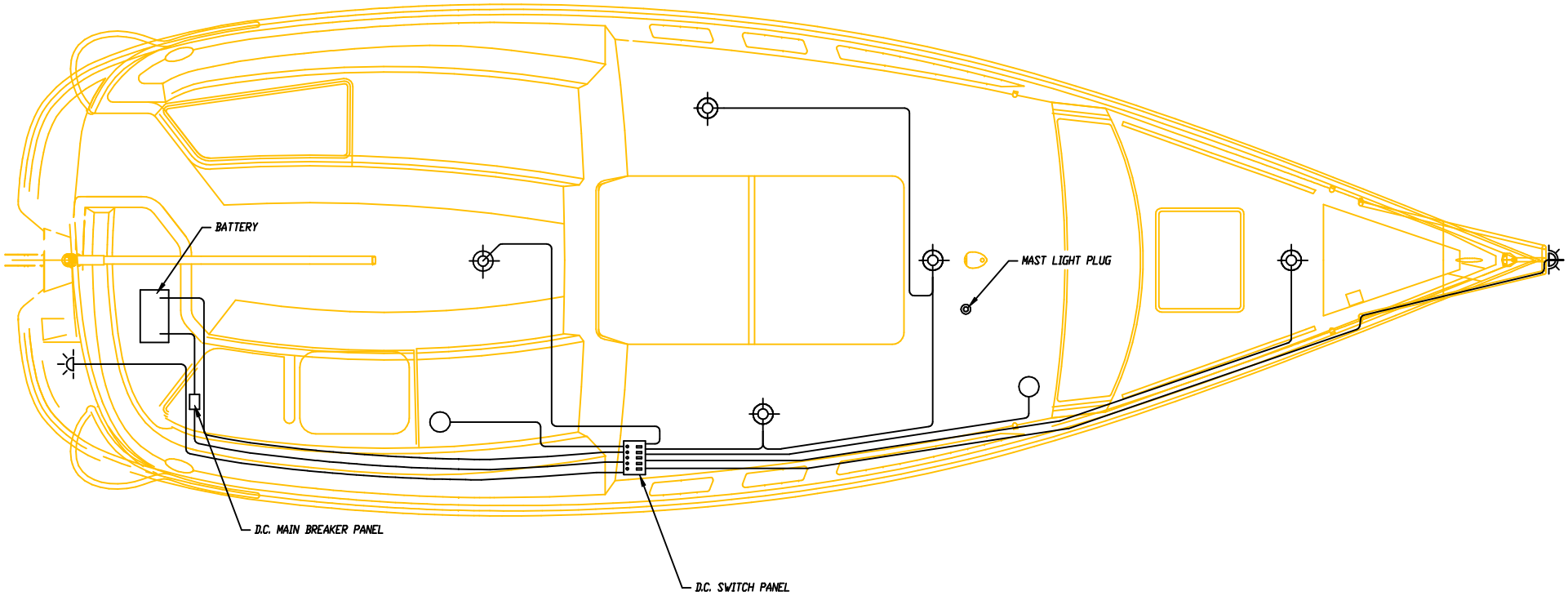




ON DECK CONNECTOR



WIRES FROM PANEL



LEGEND

- BOW LIGHT
- STERN LIGHT
- DOME LIGHTS (INTERIOR)
- C.O. ALARM

PAGE 54A

DRAWING TITLE: 12V.D.C. WIRING LAYOUT	
DRAWING NO. 258054A	REVISION NO. None
DRAWN BY: ENG	DATE: 11/29/04

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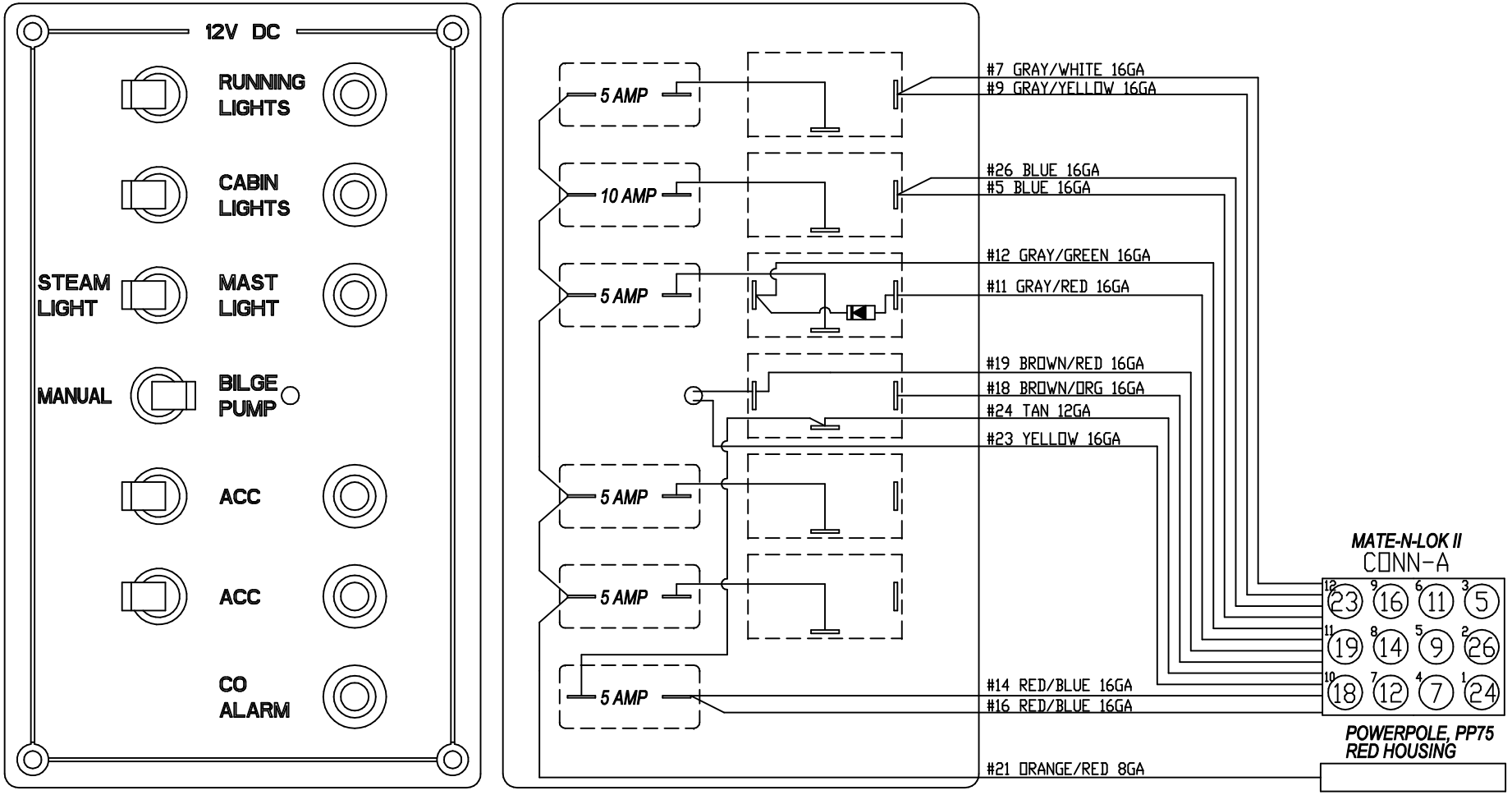

PAGE 54B

DRAWING TITLE: D.C. SWITCH PANEL SCHEMATIC	This document discloses information for which HUNTER MARINE CORP. has proprietary rights.
DRAWING NO. 258054B	REVISION NO. None
DRAWN BY: ENG	DATE: 11/29/04

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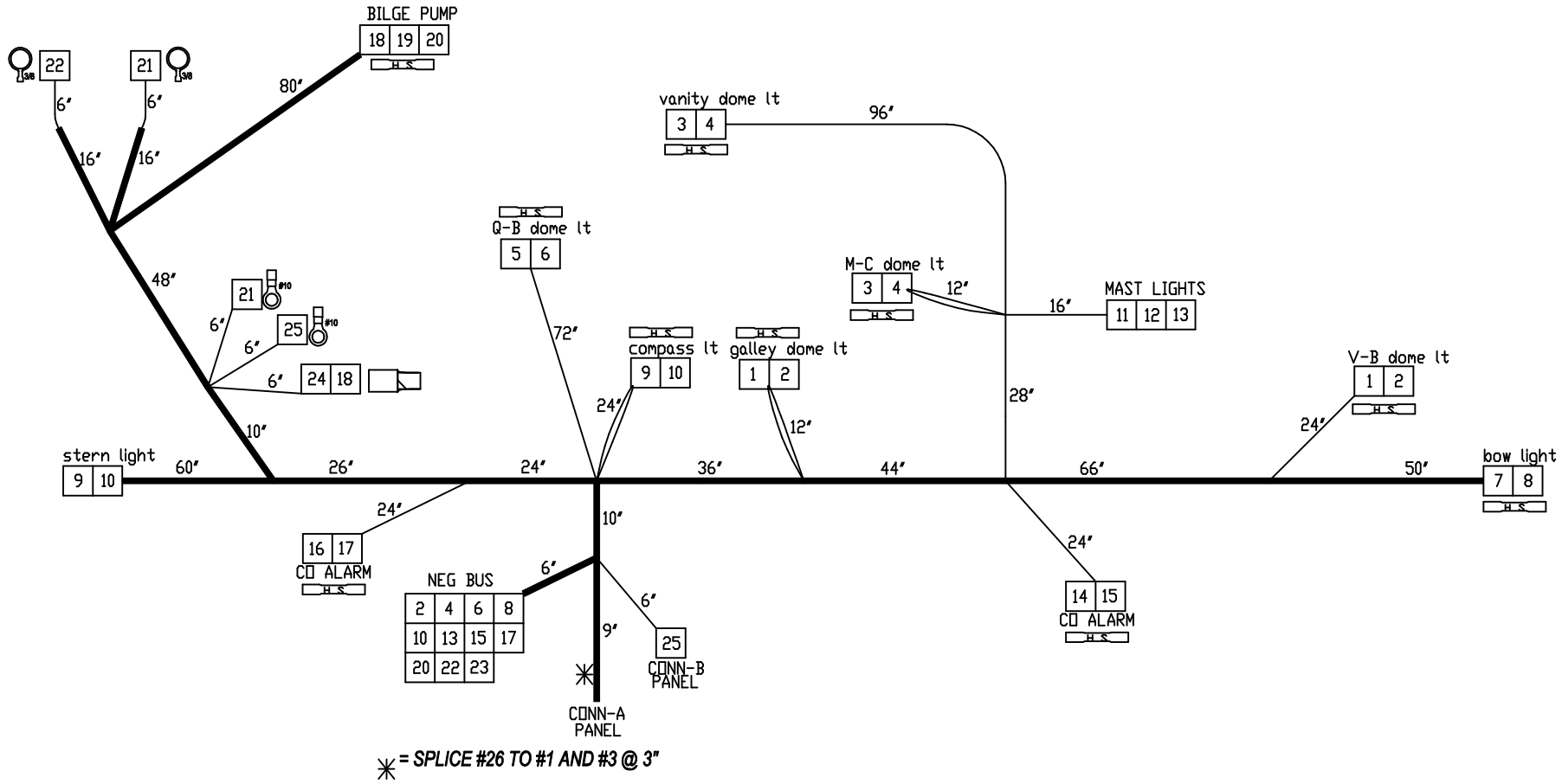


= CONDUIT

BARREL

#10 RING

1/4" RING

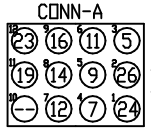
5/16" RING

3/8 RING

1/4 SLIDE

1/4 SLIDE W\PIGGYBACK

CONN-A



MATE-N-LOK II
MALE HOUSING W/MALE PINS

CONN-B *POWERPOLE, PP75*
RED HOUSING

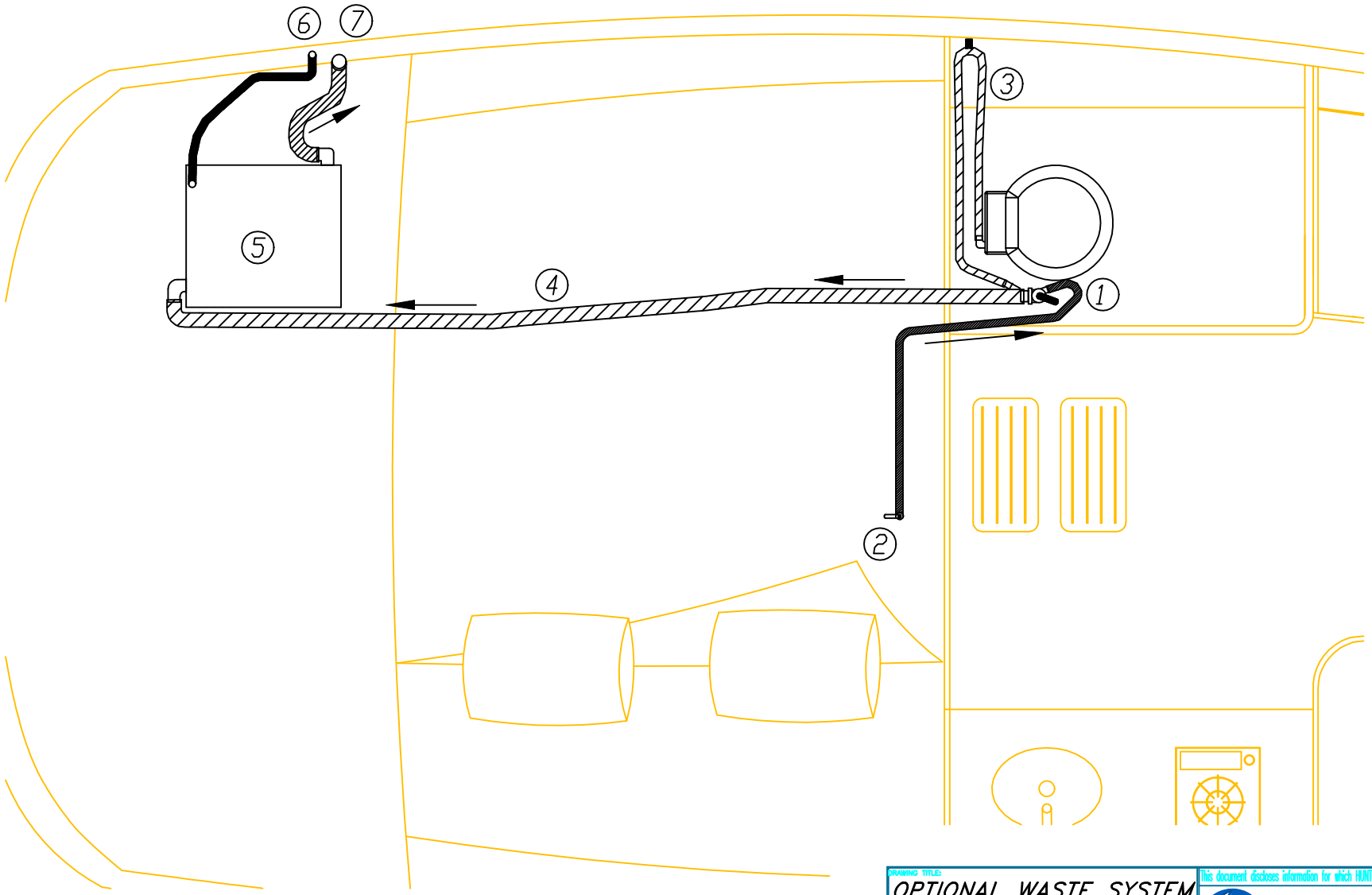
PAGE 54C

DRAWING TITLE: ELECTICAL HARNESS	
DRAWING NO. 258054C	REVISION NO. None
DRAWN BY: ENG	DATE: 11/29/04

HUNTER

① COMMODE/CONTROL
② RAW WATER PICKUP/SEACOCK 3/4" (19 mm)
③ VENTED LOOP 3/4" (19 mm)
④ WASTE SANITATION HOSE 1 1/2" (38 mm)
⑤ WASTE HOLDING TANK 13 GAL. (49.2 L.)

⑥ TANK VENT, HULL FITTING & 3/4" (19mm) SHIELDVAC HOSE
⑦ TANK PUMPOUT DECK FITTING & 1 1/2" (38 mm) SANITATION HOSE
→ = FLOW DIRECTION

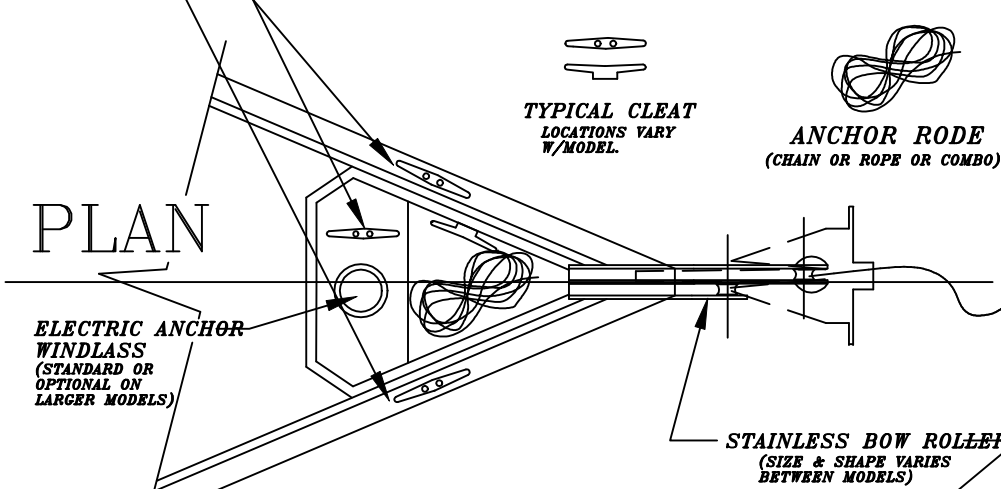


DRAWING TITLE: OPTIONAL WASTE SYSTEM	
DRAWING NO. 258055	REVISION NO. None
DRAWN BY: ENG	DATE: 11/29/04

HUNTER

NOTE: THE FORWARD SIDE CLEATS ON THE DECK ARE CONSIDERED THE STRONG POINT. THAT SHOULD BE THE ANCHOR POINT IF THE BOAT IS TO BE LEFT UNATTENDED.

NOTE: ALWAYS SECURE ANCHOR RODE TO THE CLEAT OR LASH ANCHOR SECURE TO BOW ROLLER IN ADDITION TO THE QUICK PIN!



PLAN

ELECTRIC ANCHOR WINDLASS
(STANDARD OR OPTIONAL ON LARGER MODELS)

TYPICAL CLEAT
LOCATIONS VARY W/MODEL.

ANCHOR RODE
(CHAIN OR ROPE OR COMBO)

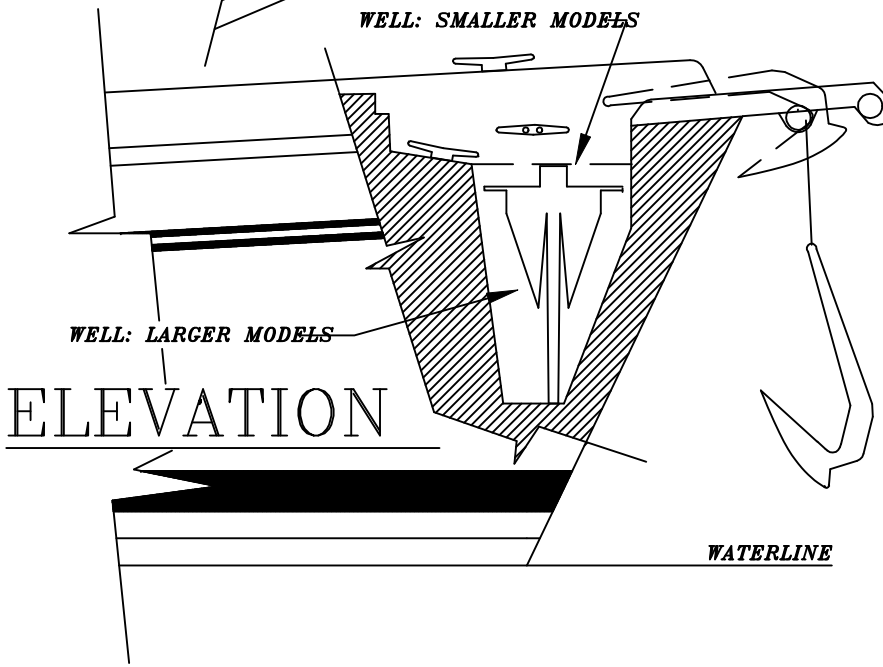
PLOW ANCHOR

DANFORTH ANCHOR

STAINLESS BOW ROLLER
(SIZE & SHAPE VARIES BETWEEN MODELS)

WELL: SMALLER MODELS

WELL: LARGER MODELS

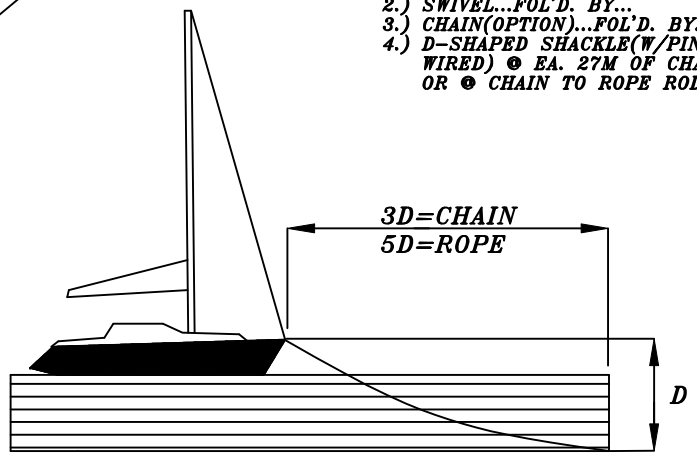


ELEVATION

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. 27M OF CHAIN OR @ CHAIN TO ROPE RODE.*



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