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# 420

# PASSAGE

WE GO THE DISTANCE







**T**he first of the Hunter Passage series was launched over 10 years ago with the Passage 42. After building over 225 units, we learned a great deal about what our owners wanted in a center cockpit cruiser. The incredibly successful Passage 450 and now the new Passage 420 have been designed and engineered to reflect the years of knowledge gained through the owners, focus groups, Consumer Satisfaction Surveys, a world-class dealer organization and the continued dedication of Warren Luhrs and his Hunter Design Team.



# H U N T E R

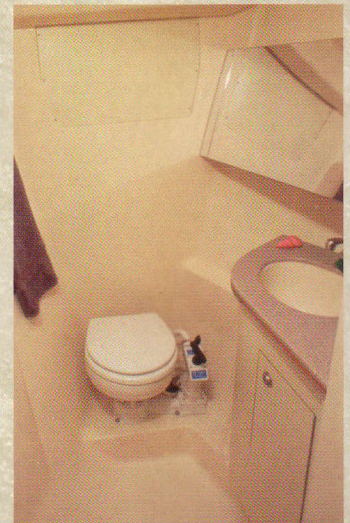
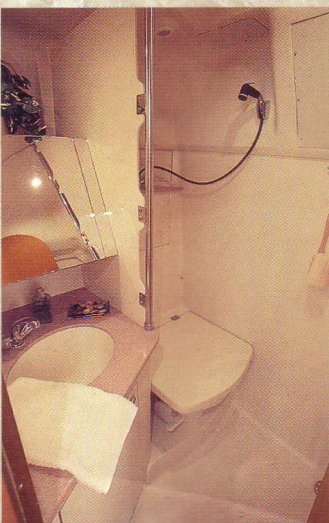


The new Passage 420 mirrors the innovations that have evolved throughout the Hunter line. Special features such as the B & R rig, integrated cockpit arch, mast struts and composite chainplates are all present on the 420. Center cockpits are not usually known for performing, but the Passage 420 surprisingly breaks the rules.

Below, the innovation continues with a great salon complete with convertible dinette and opposing settee, both loaded with storage capability. The highly polished teak dining table is a work of art and complements the rich fabrics and durable Corian®. Television with VCR and AM/FM stereo with CD will keep the crew entertained while the chef prepares in the enormous galley. Side by side dual opening refrigerator and freezer, three burner gimbale range

with oven, microwave and twin stainless sinks, not to mention a hidden trash receptacle are amenities usually only found in the best of homes, never mind a boat! The navigation station opposite the galley houses the controls to all the ship's systems and allows space for all your navigational electronics as well.

Comfort is important at Hunter and the staterooms aboard the 420 are no exception. Aft, you'll find an island, queen-sized berth with an inner-spring mattress that is flanked by hanging wardrobes







and drawers large enough for long term liveaboards. Even a slide-out desk is included. The private ensuite head features plenty of storage, beautiful Corian® covered vanity and a shower.

Forward, the guest stateroom with its double berth and private head with shower will please family or friends. Spacious and

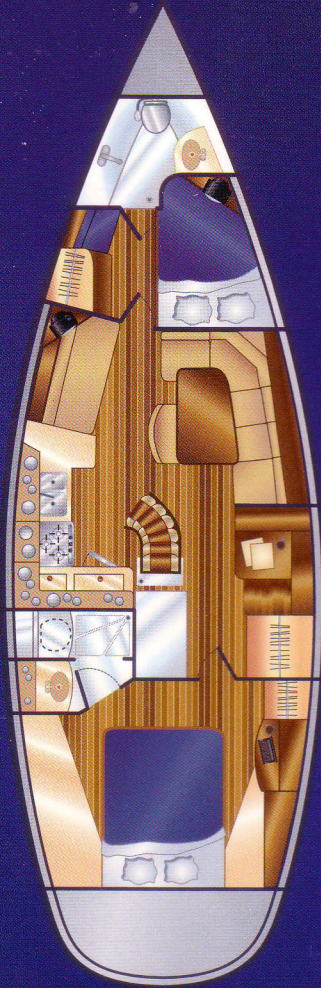
comfortable, this stateroom also boasts immense storage and plenty of natural light and ventilation. Your guest may never want to leave!

The combination of performance, comfort and structural integrity allow you to sail with confidence no matter where you go; so **"Go The Distance."**





**SPECIFICATIONS**



LOA .....	43'5"	.....	13.23m
HULL .....	41'1"	.....	12.52m
LWL .....	37'10"	.....	11.54m
BEAM .....	13'10"	.....	4.21m
DRAFT (shoal) .....	5'0"	.....	1.53m
(deep).....	6'5"	.....	1.96m
DISP. (shoal).....	20,200 lb.....	9,171kg	
(deep) .....	19,500 lb.....	8,853kg	
BALLAST (shoal) ..	7,400 lb.....	3,360kg	
(deep).....	6,700 lb.....	3,042kg	
SAIL AREA			
(actual) .....	875 ft <sup>2</sup> .....	81.38m <sup>2</sup>	
I .....	47'9"	.....	14.56m
J .....	16'2"	.....	4.93m
P .....	45'6"	.....	13.87m
E .....	19'3"	.....	5.87m
MAST HT (fr dwl) .....	58'5"	.....	17.80m
HEADROOM.....	6'6"	.....	1.98m
WATER CAP .....	145 gal .....	549L	
HOLDING CAP .....	45 gal .....	205L	
AUX. POWER-FRESHWATER COOLED			
STANDARD DIESEL.....	50 hp.....	37 kw	
FUEL CAPACITY .....	60 gal .....	227L	

**WE GO THE DISTANCE!**

The Hunter Marine Team is committed to crafting the best boat possible. To this goal we continue to develop innovative and affordable solutions to sailing's challenges, for this and the next generation of sailboats.

It is our desire that your time on the water be the basis of your fondest memories.

Featuring  
**MAXGUARD<sup>®</sup>**  
enduring beauty™

\*All Measurements Approximate





# HUNTER OWNER'S MANUAL

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- Steering Maintenance Guide
- Sailmaker Information
- Water Strainer
- Bilge Pump
- Toilet Manual
- Stove Manual
- Hot Water Manual
- Microwave Manual (except where not provided)
- Other:

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## HUNTER MARINE'S OWNER AND FOUNDER

# WARREN R. LUHRS

### BRIEF HISTORY

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

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

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

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

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

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

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

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

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

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



# HUNTER MARINE LIMITED WARRANTY

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## LIMITED ONE YEAR WARRANTY

Hunter Marine warrants to the first-use purchaser and any subsequent owner during the warranty period, that any part manufactured by Hunter will be free of defects caused by faulty workmanship or materials for a period of twelve (12) months from the date of delivery to the first-use purchaser under normal use and service. During this period, Hunter will repair or replace any part judged to be defective by Hunter.

## LIMITED FIVE YEAR HULL STRUCTURE AND BOTTOM 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. Dur-

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

The following circumstances will void the bottom blister limited warranty:

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

## RESTRICTIONS APPLICABLE TO WARRANTIES

These limited warranties do not cover:

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

manufacturer of such items will be, if possible, given on to the first-use purchaser.

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



# HUNTER MARINE

## LIMITED WARRANTY

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### RESTRICTIONS APPLICABLE TO WARRANTIES (continued)

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

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

### WARRANTY REGISTRATION

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

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

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

### TRANSFER OF LIMITED WARRANTIES

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

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

(2) The notice shall include the name, address

and telephone number of the subsequent 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. The transfer of the ownership of the boat will not extend the expiration dates of the limited warranties.



# HUNTER MARINE LIMITED WARRANTY

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## EPOXY BARRIER COAT

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

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

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

## CUSTOMER SATISFACTION SURVEYS

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

survey (CSS#2), nine to ten months into ownership, "measures" dealer service capability and allows the owner to evaluate most of the boat's functional systems and characteristics. Both surveys are dependent upon receipt of the first purchaser's Warranty Registration Form.



# Welcome To THE HUNTER MARINE FAMILY

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

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

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

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

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

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

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

## OWNER INFORMATION CARD

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

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

A copy of *Chapman's Piloting, Seamanship and Small Boat Handling* is provided with your Hunter Marine boat as part of the standard equipment. Any questions regarding the meaning of terminology used in this manual may be referenced in your *Chapman's*.



# GLOSSARY OF SAILING TERMS

## A

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

**Abaft:** towards the boat's stern.

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

**Aft:** at or near the stern.

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

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

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

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

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

## B

**Back:** when a wind backs, it shifts counter-clockwise.

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

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

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

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

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

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

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

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

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

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

**Bend:** 1, to secure a sail to a spar before

hoisting; 2, to moor a boat; 3, a sleeping place on board.

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

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

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

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

Bottlescrew: see Rigging screw.

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

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

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

## C

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

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

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

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

**Center 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 corner of a sail where the foot and *leech* meet.

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

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

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

**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 planing hull which can exceed its hull, or displacement, speed.

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

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

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

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

**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



# GLOSSARY OF SAILING TERMS

drawn into the hull, when entering shallow waters and recovering on to a trailer.

## E

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

## F

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

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

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

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

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

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

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

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

## G

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

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

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

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

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

**Ground tackle:** general term used for anchoring gear.

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

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

which the *pintle* fits.

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

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

## H

**Halyard:** rope used to hoist and lower sails.

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

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

**Hawse pipe:** see Navel pipe.

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

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

**Heads:** the toilet.

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

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

**Heaving line:** a light line suitable for throwing ashore.

**Heel:** to lean over to one side.

## I

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

## J

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

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

## K

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

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

## L

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

another.

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

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

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

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

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

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

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

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

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

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

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

**Lurch:** the sudden roll of a boat.

## M

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

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

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

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

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

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

## N

**Navel pipe:** a metal pipe in the foredeck through which the anchor chain passes to



# GLOSSARY OF SAILING TERMS

the locker below.

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

## O

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

**One the wind:** *close hauled*.

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

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

## P

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

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

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

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

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

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

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

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

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

## Q

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

## R

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

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

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

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

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

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

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

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

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

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

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

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

## S

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

**Scuppers:** 1, holes in the toe rail which allow water to drain off the deck; 2, drain cockpit through hull.

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

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

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

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

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

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

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

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

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

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

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

**Spindrift:** spray blown along the surface of the sea.

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

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

**Split pin:** see **Cotter pin**.

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

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

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

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

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

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

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

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

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

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

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



# GLOSSARY OF SAILING TERMS

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

## T

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Turnbuckle:** see **Rigging screw**.

## U

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

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

## V

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

## W

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

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

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

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

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

**Wetted surface:** the area of the hull under water.

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

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

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

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

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

## Y


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





# EXPLANATION OF SAFETY PRECAUTIONS

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

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

	<b>WARNING</b>
<p>Denotes a hazard exists which can result in injury or death if proper precautions are not taken.</p>	

	<b>CAUTION</b>
<p>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.</p>	



# SAFE BOATING TIPS

## BE PREPARED

**Take a safe boating course.** In the U.S., contact your local Coast Guard office for information. Outside the U.S., contact your local Boating Industry for details. Carry all safety equipment required by the laws that apply to your area. Requirements are generally available from the coast Guard or your local Boating Industry.



### WARNING

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

## MINIMUM RECOMMENDED SAFETY EQUIPMENT

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

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

## LIFE JACKETS

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



### WARNING

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

## FIRE EXTINGUISHERS

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

of each fire extinguisher. Fire extinguishers are normally classified according to fire type. Be familiar with what type of fire extinguishers are on boards.




# EXPLANATION OF SAFETY PRECAUTIONS

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## FLARES

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

	<b>WARNING</b>
<b>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.</b>	

## DRUGS AND BOATING

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


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

## BEFORE GETTING UNDERWAY

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

## WHILE UNDERWAY

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

	<b>WARNING</b>
<b>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.</b>	



# PRE-DEPARTURE CHECKLIST

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



# FLOAT PLAN

1. Name of person reporting and telephone number: \_\_\_\_\_

2. Description of boat:

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

3. Persons aboard:

NUMBER

NAME	AGE	PHONE #
ADDRESS		
NAME	AGE	PHONE #
ADDRESS		
NAME	AGE	PHONE #
ADDRESS		

4. Engine:

TYPE	H.P.	FUEL CAPACITY
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5. Safety Equipment:

<input type="checkbox"/> PFDs	<input type="checkbox"/> Flares	<input type="checkbox"/> Mirror	<input type="checkbox"/> Flashlight
<input type="checkbox"/> Food	<input type="checkbox"/> Water	<input type="checkbox"/> EPIRB	<input type="checkbox"/> Raft/Dinghy

6. Radio:

TYPE	FREQUENCIES
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7. Trip Expectations:

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

8. Automobile:

LICENSE #	STATE
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MAKE	COLOR	PARKED AT
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9. If not returned by \_\_\_\_\_, call the Coast Guard or: \_\_\_\_\_  
at: \_\_\_\_\_

# AFTER SAILING CHECKLIST

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

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

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



# SAFE BOATING TIPS

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## DOCKING

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

1. Whenever possible, your approach should be made against the prevailing wind and current to assist in stopping the boat. Where these conditions are contrary, the strongest should be used to determine approach.
2. Approaching the dock: Dock lines and fenders should be at ready, loose gear stowed and decks cleared. Determine the direction of wind and current, and, once you decide which side of the boat will be against the dock, rig dock lines and fenders on the appropriate side. One dock line should be

attached to the bow cleat, another to the stem cleat opposite the side that will lie against the dock.

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

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

## ANCHORING

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

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

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



### CAUTION

**Anchoring in unusual water and/or weather conditions will require additional precautions. Consult your *Chapman's* or other approved guide for suggestions.**

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

# SAFE BOATING TIPS

## DIESEL ENGINE

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

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



### DANGER

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



### WARNING

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

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

## FUELING YOUR DIESEL ENGINE



### WARNING

#### EXPLOSION/FIRE HAZARD

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



### CAUTION

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

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

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



# SAFE BOATING TIPS

## STARTING YOUR DIESEL ENGINE

1. Visually check engine compartment to see that the throttle linkage, shifting controls, electrical connections and fuel lines are properly secured.
2. *Before each start* check oil in engine and transmission.
3. Insure that engine shut-off cable is properly secured and operating. Only on 340 and down.
4. Place the shift lever in the neutral position. Pull out the button beside the shift lever to disengage the shift. On single lever controls, life the collar under the shift lever knob and move the lever forward to advance the throttle for neutral warm-up.
5. Insert the starter key and turn to the "on" position.
6. Press the starter button and hold until engine starts, then release. The buzzer and/or light should then go off. **Press the starter button no longer than 5 seconds continuously.**
7. Allow cold engine to warm up a minimum of five minutes.

8. When warm-up is completed, return the hand lever to neutral position, and push the button back in to re-engage the shift. The shift is ready for shift and throttle operation.
9. Check that the lube oil pressure warning light and the charge lamp go off. If any of the warning lamps do not go off above, 1,000 rpm, the engine is malfunctioning and should be stopped immediately. Consult your nearest engine dealer.

NOTE: To stop engine at any time, pull "engine stop" lever all the way out. Not all engines are equipped with pull stops. 340 and down.



### CAUTION

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

## MOTORING YOUR DIESEL ENGINE

- Before departure, remember to unplug the shore power. When the engine is warm, but prior to releasing the dock lines, move the shift lever to forward and to reverse to insure that it engages properly. To increase RPMs, push throttle lever forward and pull back to decrease RPMs. **IMPORTANT:** When sailing, it is best to start the engine before the sails are lowered. This way, it is still possible to maneuver if the engine should not start.



### CAUTION

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

## ELECTRICAL SYSTEM

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



### WARNING

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

# SAFE BOATING TIPS

## ELECTRICAL SYSTEM (continued)

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

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

**DO NOT ALTER SHORE POWER CABLE CONNECTORS.**

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

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

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

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

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

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



### WARNING

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



### WARNING

#### WHEN CHARGING THE BATTERY:

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



### WARNING

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



# SAFE BOATING TIPS

## COOKING STOVE

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



### WARNING

#### EXPLOSION/FIRE/ASPHYXIATION HAZARD

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

#### FIRE/ASPHYXIATION HAZARD

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

## TOILET

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

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

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

#### NOTICE:

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



### CAUTION

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

# SAFE BOATING TIPS

## PUMPS

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

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



### WARNING

**SINKING HAZARD - Ensure proper bilge pump operation.**



### CAUTION

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

## WATER SYSTEM OPERATION

Fill fresh water tank at deck fill. The tank filler cap will be marked "water". When tank is full, water will back up through the vent hose and exit through a vent located on the side of the hull. Use tank gauge for filling. D.C. main should be turned on first.

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

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

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

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

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

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



### CAUTION

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



# SAFE BOATING TIPS

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## WASTE DISCHARGE

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

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



# Model 45510-1000

## TWO POSITION Y-VALVE

### FEATURES

- Corrosion Resistant Polyester and Stainless Construction
- Includes Stainless Steel Locking Ring to secure valve in Holding Tank position
- Ideal for Marine Sewage and Bilge Pumpout Systems
- Full Port Openings

### SPECIFICATIONS

Ports:	1-1/2" ID Hose
Body Material:	Polyester
Shipping Weight:	1.1 lb (0,5 kg)
Mounting:	No. 10 Screw (4)

### APPLICATION

The Jabsco Y-Valve was designed for installation in on-board sewage handling systems and bilge evacuation systems.

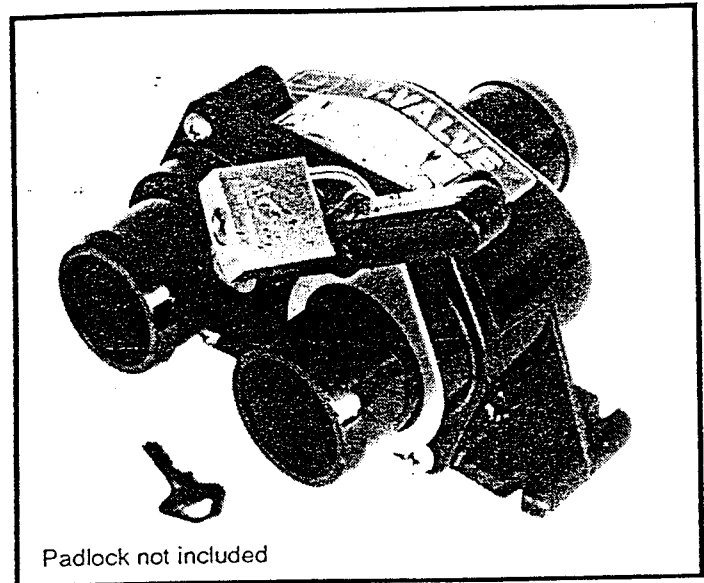
**SEWERAGE SYSTEMS:** Current U.S. Coast Guard Marine Sanitation Regulations allow the boat operator to discharge untreated human waste when outside the 3 mile coastal limit. When the Y-Valve is installed in the holding tank discharge line (diagram 1), it allows the operator to choose between pumpout through a deck fitting or directly through the seacock.

IT IS IMPORTANT TO NOTE THAT IT IS ILLEGAL TO DISCHARGE SEWAGE EFFLUENT THAT IS NOT TREATED TO U.S. COAST GUARD STANDARDS WITHIN THE 3 MILE COASTAL LIMIT. IT IS NOT ILLEGAL TO HAVE A SYSTEM THAT ALLOWS OVERBOARD DISCHARGE OF UNTREATED SEWAGE INSTALLED ON BOARD A BOAT AS LONG AS OVERBOARD SYSTEM IS NOT USED WITHIN THE 3 MILE COASTAL LIMIT.

*Be environmentally responsible. Do not discharge waste in discharge restricted areas. Do not discharge bilge water contaminated with oil or fuel.*

When the Y-Valve is installed in the marine toilet discharge line (diagram 2) it allows the operator to choose between storing the toilet discharge effluent in the holding tank, or discharging directly overboard (when legal).

**BILGE SYSTEMS:** For boats with 2 separate bilge areas, the Y-Valve allows the operator to pump out either bilge section with only one pump. By simply selecting the appropriate valve selector lever either of the 2 bilges can be evacuated. (Diagram 3.)



Padlock not included

Model 45510-1000

### INSTALLATION

Lay out the system that the Y-Valve will be installed in so that all hoses can be installed without sharp bends, kinks or loops that trap fluids. After choosing a convenient, accessible location for the Y-Valve, be sure that there is adequate room to swing the selector lever. Mark locations for mounting screw holes. Be sure to choose a mounting location which is as flat as possible to prevent damage to the Y-Valve from mounting on uneven surfaces. Fasten the Y-Valve using #10 stainless steel fasteners. Before connecting hoses to the Y-Valve, position the selector lever locking ring on the port that is to be connected with the waste holding tank. This will allow the valve to be secured in the holding tank position with either a small padlock or wire seal when operating in no-discharge zones. Attach inlet and outlet hoses to the appropriate ports and secure with stainless steel band clamps.

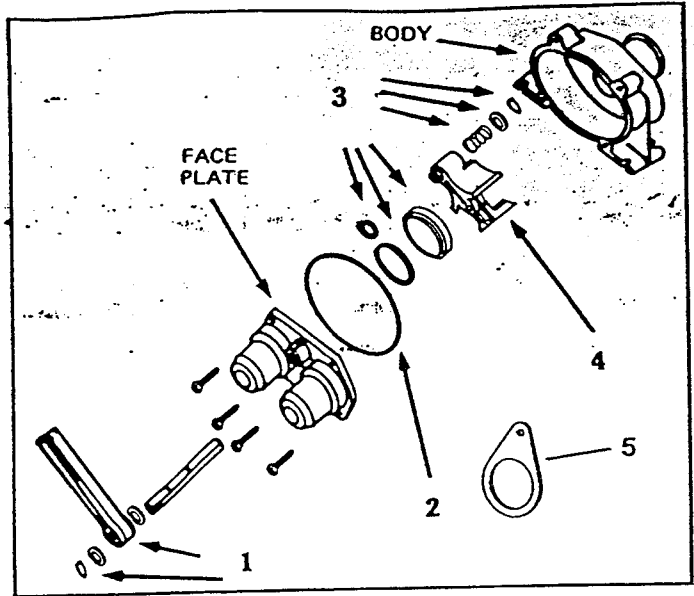
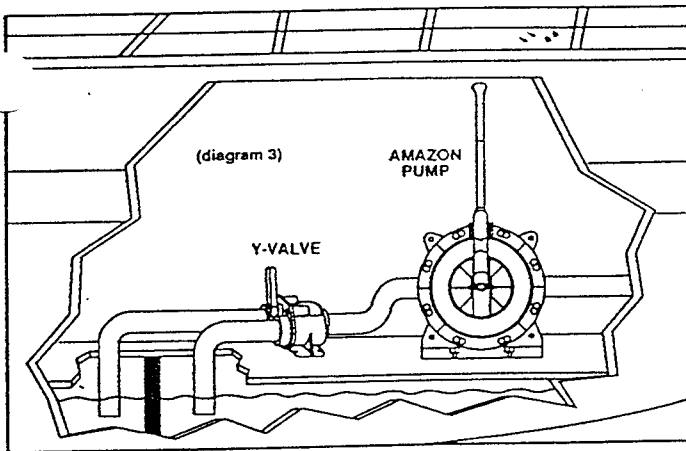
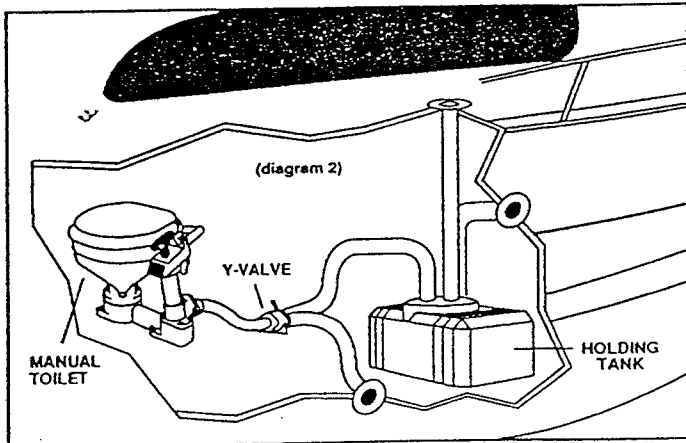
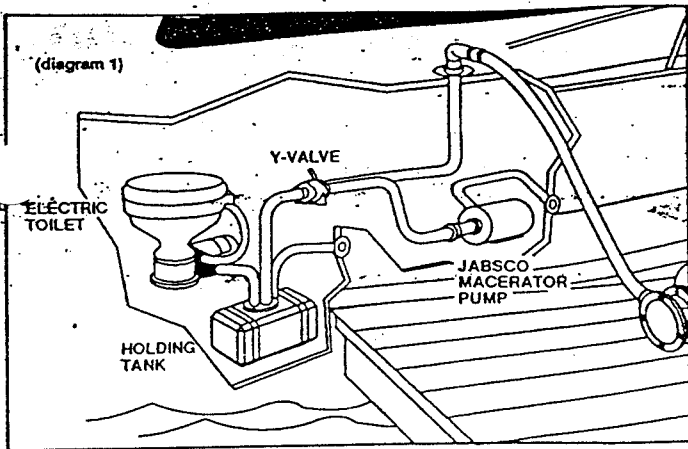
It is recommended that all hoses used in waste systems should be the heavy, non-collapsible fabric reinforced hose. Vacuum cleaner type hose and vinyl hoses will collapse under the vacuum of a dockside pumpout system, or will allow sewer gas to permeate into the boat. All hoses should be double clamped with stainless steel band type clamps. Generally, sealing compounds are not necessary when making hose connections.

### OPERATION

The Y-Valve is designed with a simple and positive diverter mechanism. When choosing the discharge hose system to use, simply orient the selector lever on the Y-Valve over the hose desired to be open to flow. When selecting the particular hose for flow, be sure that the lever is securely positioned against the positive stop. This will prevent bypass into the hose that has been chosen to be shut off. When fitted with a selector lever locking ring, the lever may be secured in the holding tank position by inserting a small padlock\* (with 1/4" or smaller shackle) through the hole in the locking ring and the hole in the selector lever.

\* padlock not included





### PARTS LIST

Key	Description	Part Number	Qty.
1	Selector Lever <sup>1</sup>	45559-0000	1
2	O-Ring Gasket	45559-0001	1
3	Valve Seal Mechanism <sup>2</sup>	45559-0002	1
4	Swivel Block	45559-0003	1
5	Locking Ring <sup>3</sup>	45507-0001	1

<sup>1</sup> Includes Shaft Spring Retainer

<sup>2</sup> Includes Seal Disk and O-Ring, Shaft O-Ring, Shaft Spring, Shaft Snap Ring

<sup>3</sup> To update an old style Y-Valve, order both a locking ring and selector lever-part numbers 45507-0001 and 45559-0000.

### MAINTENANCE

If the Y-Valve becomes damaged or clogged with debris during service, it will be necessary to disassemble the unit. Empty all hoses and the Y-Valve of waste liquids and thoroughly flush the system with clean water. Re-flush the system with a water and bactericide mixture and flush again with clean water.

Remove all hoses from the Y-Valve and remove the Y-Valve to an area where it can be conveniently disassembled. Remove the 4 screws located on the face plate. Remove face plate and shaft/handle assembly from body. Remove all debris from the valve and inspect for damaged components.

If any parts of the shaft/handle, or port seal assembly need to be replaced, the shaft/handle assembly must be disassembled. DO NOT REMOVE THE RETAINING RING AT THE SPRING END OF THE SHAFT. Remove the retaining ring at the handle end of the shaft. SLIDE the handle and washers off the shaft and slide shaft and swivel block out of the bore in the face plate. Replace all damaged parts and reassemble items on the shaft. The spring must be compressed to allow the retainer ring to snap into the slot on the shaft. Reassemble the Y-Valve and reinstall in the waste system. CHECK SYSTEM FOR LEAKS.

THE PRODUCT DESCRIBED HEREIN IS SUBJECT TO THE JABSCO ONE YEAR LIMITED WARRANTY, WHICH IS AVAILABLE FOR YOUR INSPECTION UPON REQUEST.

# ITT Jabsco

Unit of ITT Fluid Technology Corporation

U.S.A. ITT Jabsco, 1485 Dale Way, P.O. Box 2156, Costa Mesa, CA 92628-2158; Tel: (714) 545-8251; Fax: (714) 957-0609

UNITED KINGDOM  
ITT Jabsco  
Hoddesdon, Herts.

CANADA  
ITT Fluid Products  
Guelph, Ontario

JAPAN  
NHK Jabsco Co., LTD.  
Yokohama, Kanagawa

GERMANY  
Mintec, GmbH  
Norderstedt

# ENVIRONMENTAL CONSIDERATIONS

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## FUEL AND OIL SPILLAGE

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



### WARNING

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

## DISCHARGE AND DISPOSAL OF WASTE

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

Your marine toilet holding tank 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 emis-

sions and improve performance and economy.

## ANTI-FOULING PAINTS

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



### WARNING

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

## CLEANING CHEMICALS

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

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

# INSTRUCTIONS FOR PREPARATION FOR BOTTOM PAINTING

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## WARNING!

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

## BOTTOM PAINTING

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

## EPOXY BARRIER COAT

Sanding of the gel-coat bottom surface will be permitted should a customer wish to have an epoxy barrier coat applied to the hull, (example Interlux Interprotect 1000, 2000, West system or VCTAR). This will not void the Five Year Blister Warranty.

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, respirator, etc.).**



# ENGINE, TRANSMISSION and DRIVETRAIN

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## ENGINE

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

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

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

Shaft alignment:

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

## TRANSMISSION

Follow the lubrication requirements of the Engine

Manual. The oil level should be checked immediately after operation.

## STUFFING BOX

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

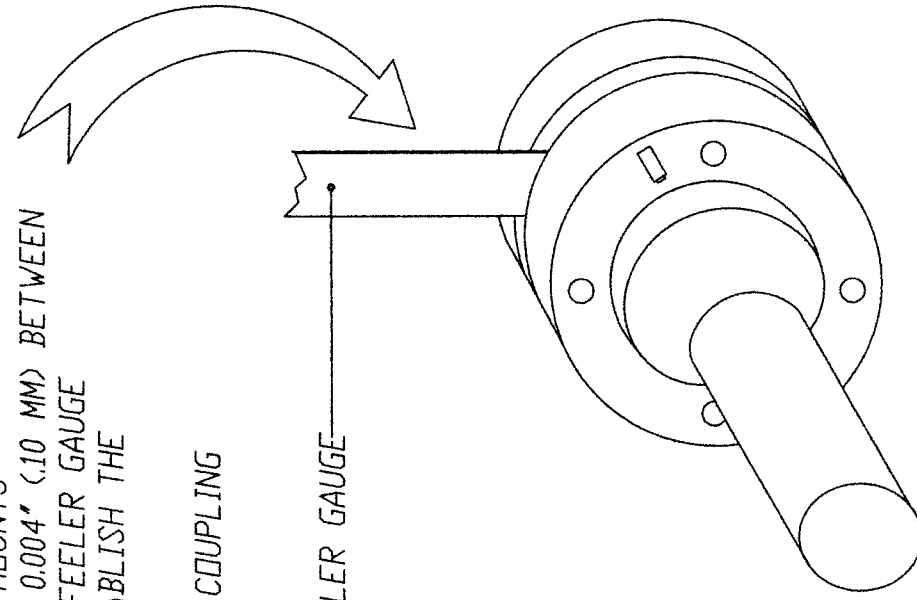
To adjust, loosed the locknut, tighten the gland nut one

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

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

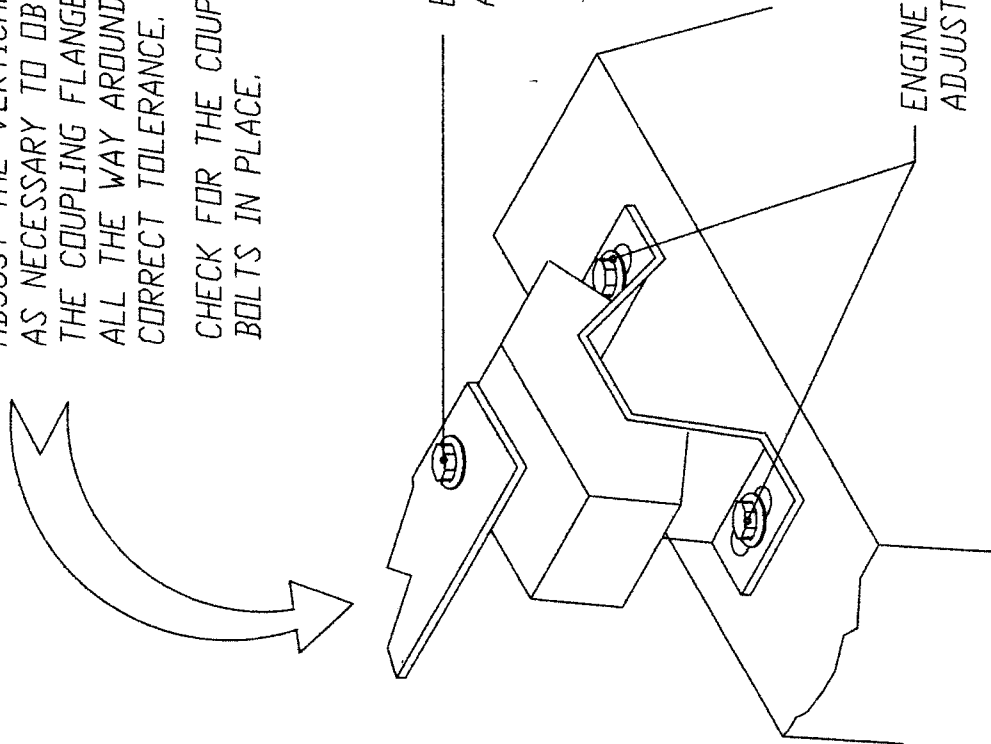
ADJUST THE VERTICAL & HORIZONTAL ENGINE MOUNTS AS NECESSARY TO OBTAIN A MAXIMUM GAP OF 0.004" (.10 MM) BETWEEN THE COUPLING FLANGE FACES. USE A 0.004" FEELER GAUGE ALL THE WAY AROUND THE COUPLING TO ESTABLISH THE CORRECT TOLERANCE.

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



ENGINE VERTICAL ADJUSTMENT

ENGINE HORIZONTAL ADJUSTMENT



# MAINTENANCE

## STEERING

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



### WARNING

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

## ELECTRICAL SYSTEMS

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



### WARNING

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



### WARNING

#### SHOCK/FIRE HAZARD

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



### CAUTION

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



# MAINTENANCE

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## COMPASSES

A boat compass rarely exists in an environment that is completely free from magnetic materials or influences.

The compass on your boat should be adjusted by a certified compass adjuster and have a deviation table made for it.

If you must depend solely on your compass for navigation, make a quick check for any objects near the compass that may cause additional, unmeasured deviation. Typical objects that may fall in this category include: knives, small radios, flashlights or other tools.

# MAINTENANCE

## PLUMBING SYSTEMS

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

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

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

The owner should become familiar with the layout of the water and waste systems by walking through the boat

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

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

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

## FUEL SYSTEM

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

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

## GENERAL CARE

### CLEANING FIBERGLASS SURFACES:

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

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

marine supply should be able to provide an appropriate wax.



### WARNING

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

### CLEANING ACRYLIC:

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



### CAUTION

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

# MAINTENANCE

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## GENERAL CARE (continued)

### SAIL CARE

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

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

To stow the mainsail, start at the leech and flake it on top of the boom, left and right, in about 18-9n. (46-cm) folds, while pulling the leech aft. Secure with a sail tie and continue to the luff. Lash to the boom with sail ties or shock cord.

### FABRIC CARE

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

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

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

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

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

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

### GENERAL HARDWARE MAINTENANCE

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

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



# MAINTENANCE

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## ELECTROLYSIS AND GALVANIC PROTECTION

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

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

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

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

# TEAK CARE

---

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

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

## MAINTENANCE

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

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

## REPAIRS

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

1. Take 180 to 200 grit wet/dry sandpaper 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 a 400A wet/dry sandpaper.
5. Wipe dry with a clean rag. Allow 8-12 hours drying time.

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

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

*Dalys*  
3525 Stoneway North  
Seattle, WA 98103

# STORAGE/WINTERIZATION

## IMPORTANT

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

### SAILS

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

### ELECTRICAL

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

### CUSHIONS

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

### HATCHES

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

### WATER SYSTEM

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

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

### WATER HEATER

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

### TOILET AND HOLDING TANK

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

### OUTBOARD ENGINE

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

### INBOARD ENGINE

#### Winterizing Fresh Water Cooled Diesel Engines Step

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



# STORAGE/WINTERIZATION

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

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

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

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

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

## Winterizing Raw Water Cooled Diesel Engines

### Step

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

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

3. Loosen water pump and alternator belts to lessen tension 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 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. **DO NOT USE** the starter to turn engine or serious engine damage may result.

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

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

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

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

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

## DEPARTURE FROM THE BOAT

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

## ROUTINE MAINTENANCE

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

On a calendar basis the lists should note such matters as electrolyte levels in storage-batteries, pressure gauges on dry-chemical fire extinguishers, and all navigation lights. Check the operation of automatic bilge alarms or pump switches by running water into the boat. Periodically close and open seacocks 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.

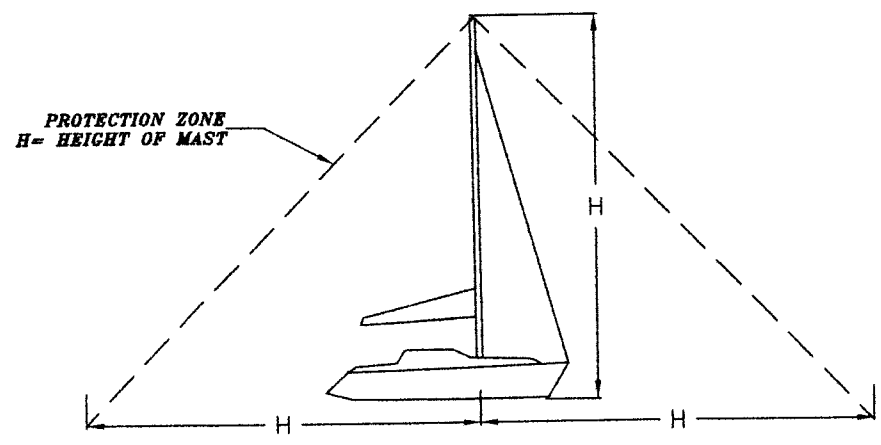


This document contains information for which HUNTERA WARE CORP. has proprietary rights.  
**HUNTERA**  
**LIGHTNING WARNING**  
 HUNTERA NO. \_\_\_\_\_  
 DRAWING NO. \_\_\_\_\_  
 SHEET NO. \_\_\_\_\_

**LIGHTNING STORM WARNING:**

1. ALL WHIP ANTENNAS SHOULD BE TIED DURING STORM, UNLESS PART OF THE LIGHTNING PROTECTION SYSTEM.
2. PRECAUTIONS: DURING LIGHTNING STORMS: A. THE SHIP'S 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. SYSTEM. AND D. AVOID ALL CONTACT WITH ANY METAL OBJECTS.
3. SEE DIAGRAM BELOW FOR INFORMATION ON THE LIGHTNING PROTECTION ZONE.
4. 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.

**FAILURE TO FOLLOW PRECAUTIONS MAY RESULT IN SEVERE INJURY OR DEATH**



# CERTIFICATION DETAILS

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## CE CERTIFIED

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

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

## CE CRAFT DESIGN CATEGORIES

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

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

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

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

*For additional information, contact:*

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

## NMMA CERTIFIED

Your Hunter has been judged by the National Marine Manufacturers Association (NMMA) to be in compliance with the applicable federal regulations and American Boat and

Yacht Council (ABYC) standard and recommended practices in effect at the time of manufacture.

*For additional information, contact:*

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



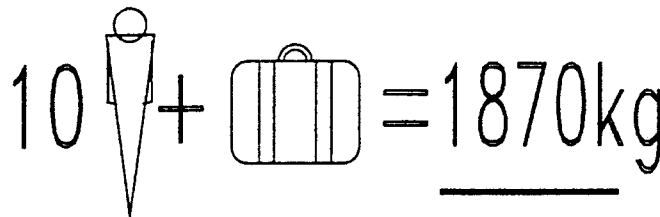
BUILDER'S INFORMATION PLATE  
HUNTER MARINE CORPORATION

P420

HUNTER MARINE CORP.



MAXIMUM



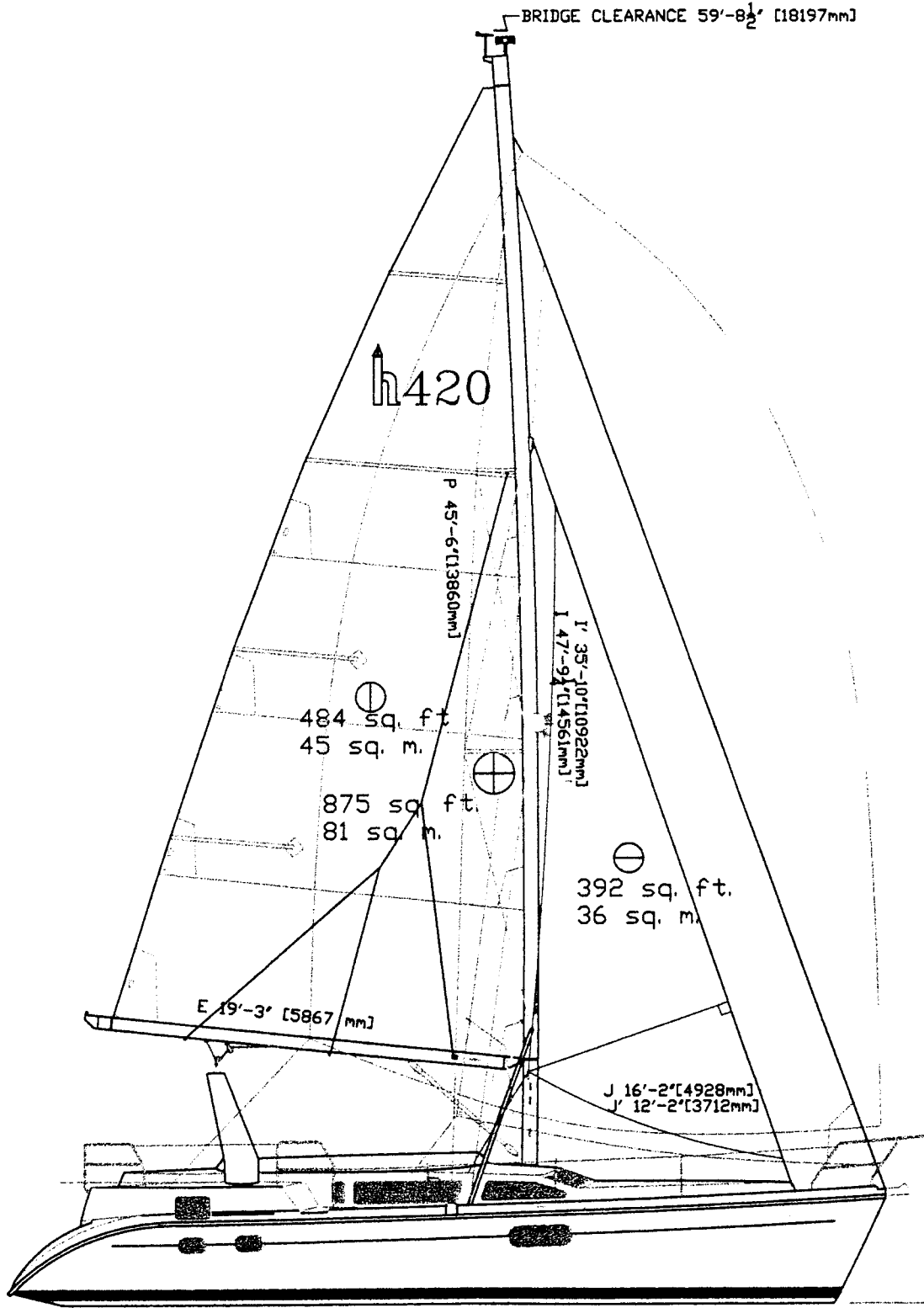
LIGHTSHIP DISPLACEMENT = 9,369Kg (20,611Lb)  
FULL LOAD DISPLACEMENT = 11,239Kg (24,725Lb)  
SINK @ FULL LOAD = 69mm (2.72")

EACH HUNTER P420 MODEL WITH THE CE MARK IS AND WILL CONTINUE TO BE IDENTICAL TO THE INDIVIDUAL UNIT OF THAT MODEL WHICH WAS OFFICIALLY INSPECTED AND APPROVED

MODEL YEAR 1999

P420 SAIL PLAN (STD)

NUMBER 4208038A  
DATE NONE  
DATE 7/21/98  
ENGINEERING DEPT



BRIDGE CLEARANCE 59'-8 1/2' [18197mm]

h 420

P 45'-6" [13860mm]

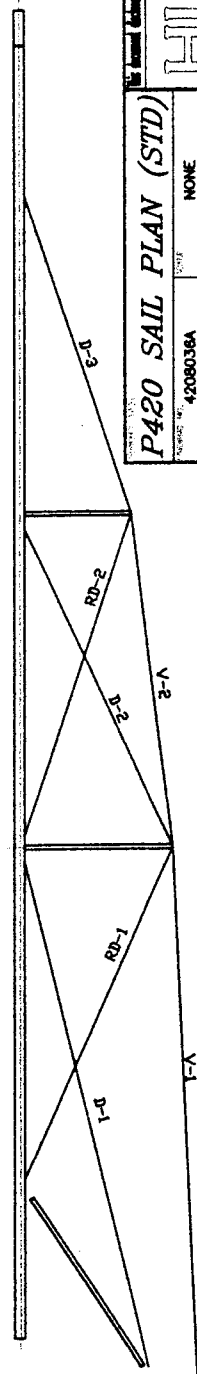
J 16'-2" [4928mm]  
J 12'-2" [3712mm]

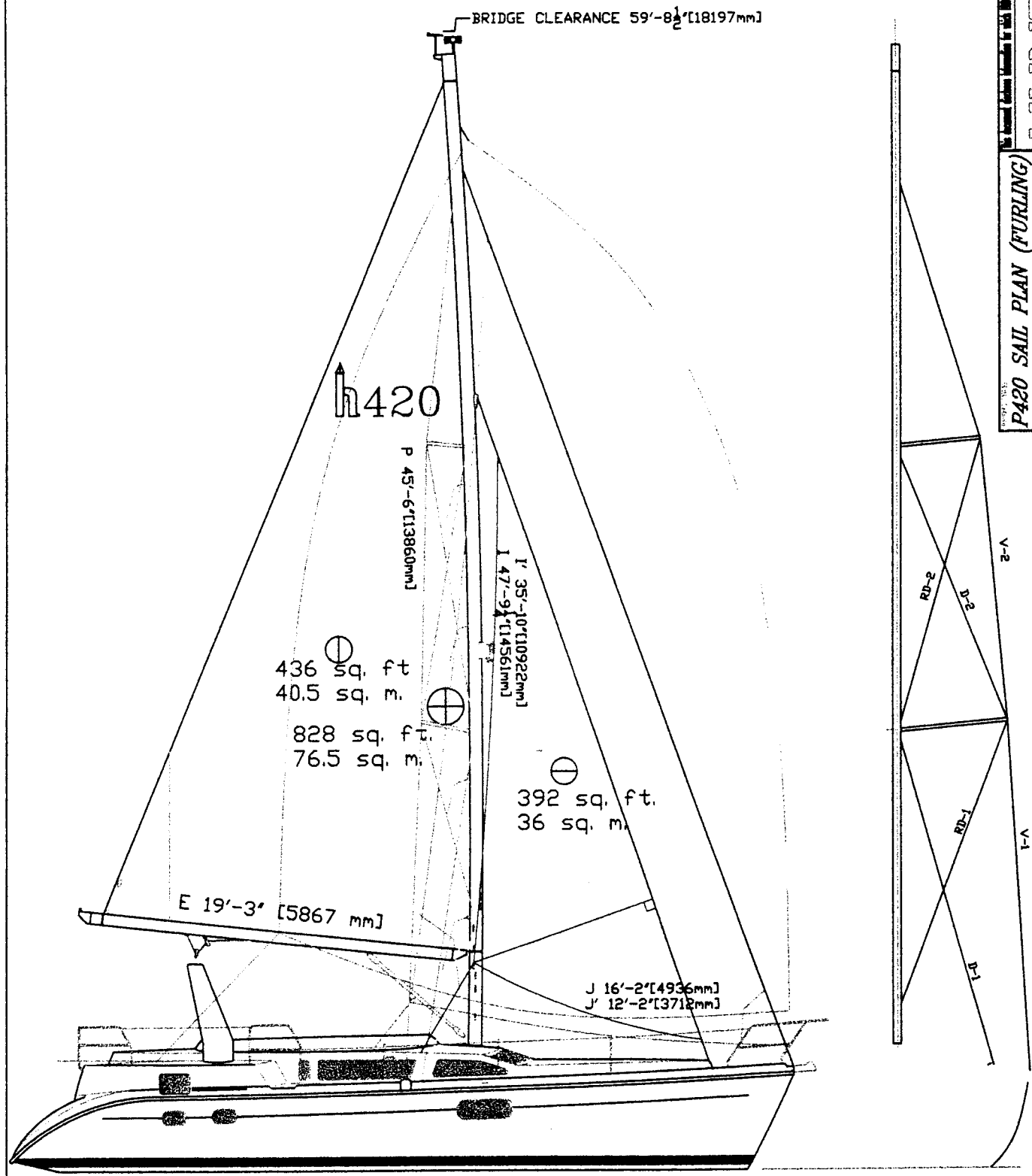
484 sq. ft.  
45 sq. m.

875 sq. ft.  
81 sq. m.

392 sq. ft.  
36 sq. m.

E 19'-3" [5867 mm]



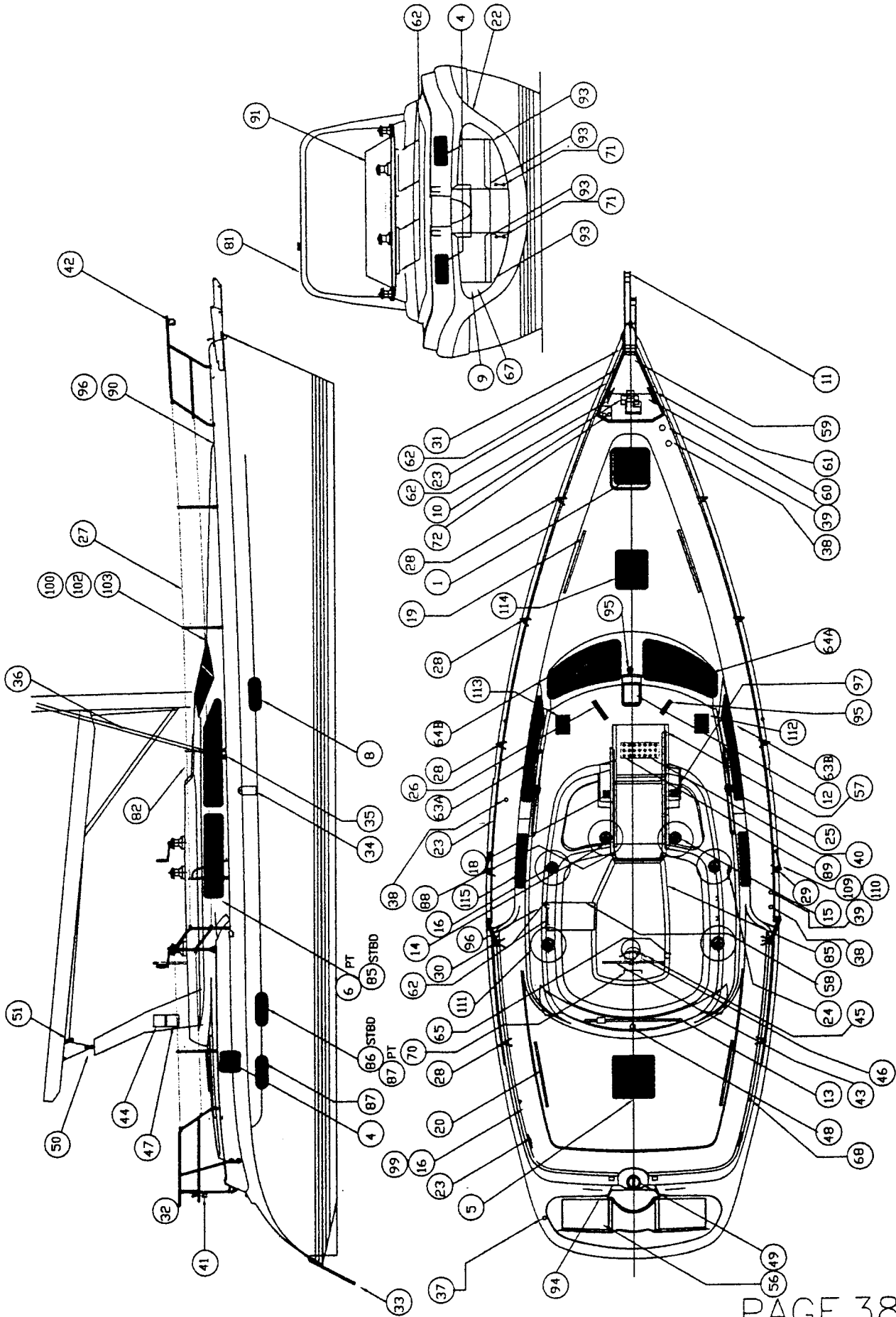




# DIMENSIONS, CAPACITIES, ETC.

## HUNTER 420

LENGTH OVERALL (LOA).....	40'8"	12.40m
LENGTH OF WATERLINE (LWL).....	37'10"	11.54m
BEAM (MAX).....	13'10"	4.21m
DRAFT (SHOAL KEEL).....	5'4" (SHOAL)	1.52m
DRAFT (DEEP KEEL).....	6'4" (DEEP)	1.93m
DISPLACEMENT.....	20,611 lbs.	9,369 kg
BALLAST (SHOAL KEEL).....	7,400	3,360 kg
BALLAST (DEEP KEEL).....	6,700	3,042 kg
SAIL AREA (100% TRAIANGLES).....	823 sq. ft.	76.46 sq.m
SAIL AREA (ACTUAL W/STANDARD SAILS).....	875 sq. ft.	81.29 sq.m
I.....	47' 9 1/4"	14.56m
J.....	16' 2"	4.93m
P.....	45' 6"	13.86m
E.....	19' 3"	58.67m
MAST HEIGHT (FROM WATERLINE).....	58' 4 1/2"	17.79m
HEADROOM.....	6'6"	1.98m
WATER CAPACITY.....	147 U.S. gal.	556 liters
HOLDING TANK CAPACITY.....	45 U S gal.	170 liters
FUEL TANK CAPACITY.....	51 US gal.	193 liters
LPG TANK CAPACITY.....	20 lbs.	9.09 kg
BATTERY CAPACITY.....	DEALER SUPPLIED	
ELECTRICAL VOLTAGES.....	12 V.D.C./ 110 V.A.C.	
	(SELECT OVERSEAS MODELS 220 V)	
INBOARD ENGINES.....	50 hp	37.3 kw
OPTIONAL GENERATOR.....		6 kw
MAXIMUM LOADING.....	10 PEOPLE	1870 kg
		(INCLUDING LUGGAGE)
LIFTING POINTS.....	INDICATED BY "SLING" LABELS ON HULL	
PROP DIAMETER & PITCH	<b>2 BLADE</b>	
YANMAR 4JH2HTE (62 H.P.)	N/A	
YANMAR 4JH2(B)E	18" X 15 R.H.(457.2mm X 381mm)	
YANMAR 4JH2T(B)E	18" X 16 R.H.(457.2mm X 406.4mm)	
	<b>3 BLADE</b>	
YANMAR 4JH2HTE (76 H.P.)	18" X 17 R.H.(457.2mm X 431.8mm)	
YANMAR 4JH2(B)E	18" X 14 R.H.(457.2mm X 355.6mm)	
YANMAR 4JH2T(B)E	18" X 15 R.H.(457.2mm X 381mm)	



HUNTER  
 P420 DECK HARDWARE LAYOUT  
 DRAWING NO. 3808038  
 ENGINEERING DEPT.  
 NONE  
 DATE 6/30/98

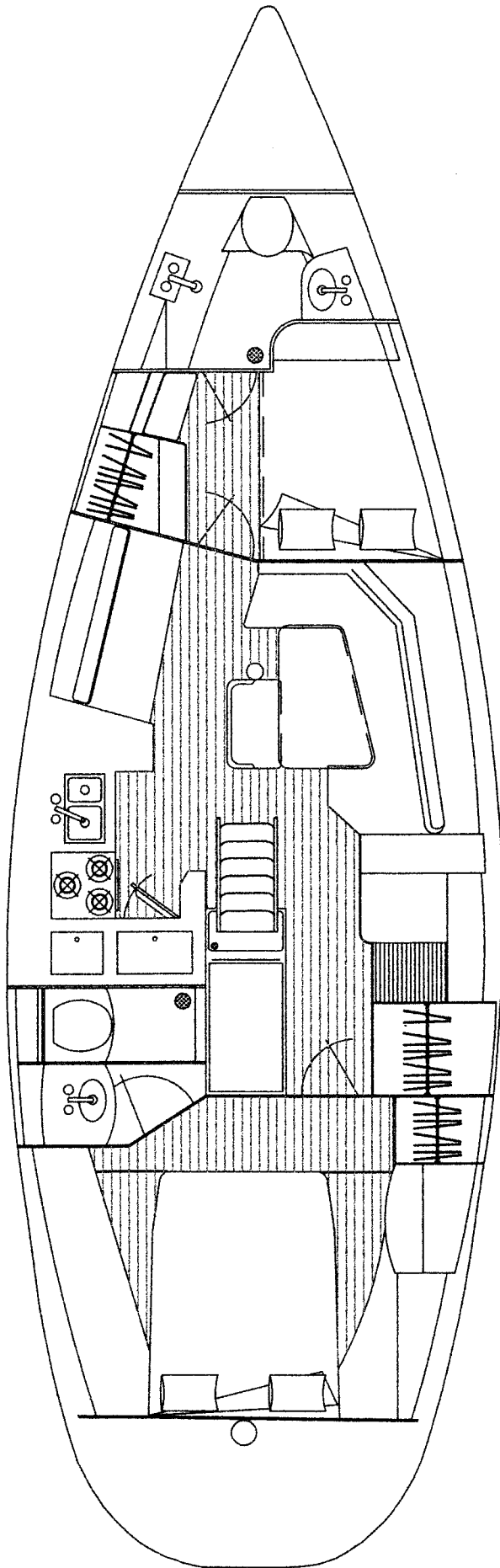
## HUNTER P420 DECK HARDWARE LIST

REVISION #	8/28/96					
<b>HUNTER P420 DECK HARDWARE</b>						
GEN.DESCR.	LOC. & TYPE	VENDOR	MDL/NAME#	#REQ.	H.P #	DWG #
1	HATCH	FWD HEAD	LEWMAR	COAST S-60	1	
4	HATCH	AFT S/R (AFT END)	LEWMAR	COAST41	4	
5	HATCH	AFT S/R (AFT END)	LEWMAR	COAST S-70	1	
6	HATCH	HOUSE SIDE	LEWMAR	PORTLIGHT 05	2	
8	PORTLIGHT	HULL SIDE			2	
9	BIN DOOR	PORT SIDE ABOVE SEAT			1	
11	BOW ROLLER	BOW			1	4462044A
12	MAST STEP	MID DECK	SELDEN		1	
13	MAINSHEET TRAV BAR	ON ARCH	HARKEN		1	
"	END CAPS	" "	" "	631NP	2	
"	TRAVELER CAR	" "	" "		1	
"	TRAV. CAR BLOCK	" "	" "	504-A	1	
"	BOOM BLOCK	" "	" "	1586	1	
"	CONTROL BLOCKS	" "	" "	566	2	
"	STAND UP SHEAVES	" "	SCHAEFFER	506-40	4	
"	CAM CLEATS	" "	HARKEN	365	2	
14	WINCH	HALYARDS	LEWMAR	COAST STD.44ST	2	
15	WINCH	JIB SHEETS	LEWMAR	COAST 48EST	2	
18	SHEETSTOPPER	PORT (TRIP)	SPINNLOCK	TRIP XT/3	1	
19	GRAB RAIL	FWD. TRUNK	75"		2	
20	GRAB RAIL	AFT TRUNK	48"		2	
22	SHORE PWR.	TRANSOM			1	
23	CLEAT	AFT/MID/FWD RAIL /ANC. W 10"			6	
24	CLEAT (FURL)	COCKPIT AREA	6" ON DECK		1	
25	JIB TRACK	MID TRUNK				
26	DK. ORGANIZER (TRI)	MID TRUNK (PORT)	HARKEN	1590	1	
27	LIFE LINES	ABOVE GUNNELS				
28	STANCHION	ALONG GUNNELS			8	N/A
29	FWD GATE STANCH	PORT AND STARBOARD			2	4462022A
30	AFT GATE STANCH	PORT AND STARBOARD			2	4462023A
31	BOW RAIL				1	4462024A
32	STERN RAIL				2	4462041A
33	SWIM LADDER	STERN	WINDLINE	TLD-3X	1	4462015A
34	CHAIN PLATE	UPPER SHROUD			2	
35	CHAIN PLATE	LOWER SHROUD			2	4462020A
36	STRUTS	MAST			2	4462034A
37	FILL PLATE	DIESEL			1	4462037A
38	FILL PLATE	WATER			3	
39	FILL PLATE	WASTE			2	
40	SOLAR PANEL	ON SEA HOOD			1	
41	STERN LIGHT				1	
42	BOW LIGHT				1	
43	WHEEL	WHITLOCK	36"		1	
44	SPEAKERS	ON ARCH			2	
45	PEDESTAL	PEDESTAL	WHITLOCK		1	
46	SHIFT CONTROL	PEDESTAL			1	N/A
47	ENGINE PANEL	ON ARCH			1	
48	LIGHT ON ARCH				1	4465007A
49	EMERG.TILL ACCESS	TRANSOM			1	
50	TRAVELER BLOCK	ARCH	HARKEN	504A	1	
51	MAINSHEET BLOCK	AFT END BOOM	HARKEN 1586			
53	VANG BLOCK		SCHAEFER	10-05-UC	1	
54	VANG BLOCK		SCHAEFER	705-15	1	
55	VANG BLOCK		SCHAEFER	10-55	1	
56	TRANSOM LAZERETTE LID				2	
57	SEA HOOD	FORWARD OF COMPANIONWAY			1	N/A
58	COCKPIT LAZERETTE	PORT SIDE			1	N/A
59	ANCHOR HATCH	BOW			1	N/A
60	ANCHOR LATCH	BOW			1	N/A
61	STRIKER PLATE	ANCHOR LOCKER			1	
62	HINGE				8	4462026A
63	CABIN SIDE WINDOW				2	

## HUNTER P420 DECK HARDWARE LIST

63	CABIN SIDE WINDOW				2		
64	CABIN WINDSHIELD				2	PR4470	N/A
65	BILGE PUMP				1	PLO371	N/A
67	SHORE WATER				1	PL1175	
68	PADEYE		SCHAEFER	78-99	2		
70	DRAIN	AFT COCKPIT FLOOR			1	PR4520	
71	SWIM GRAB HANDLE	STERN			2	HN2404	N/A
72	WINDLASS CONTROLS	BOW UP			1	HW3206-C	
81	ARCH	ABOVE COCKPIT			1		
82	WIND SHIELD	ON DECK FWD OF COCKPIT			1		N/A
83	SPRING CLEAT GARD				2	HW2126	N/A
84	HATCH	CABIN SIDE	LEWMAR	PX0375	4	HW0043	
85	HATCH	COCKPIT	LEWMAR	PORTLIGHT 05	2	HW0008	
86	PORTLIGH	HULL SIDE	LEWMAR		1	PX0297	
87	HATCH	HULL SIDE	LEWMAR		3	HW0074	
88	COMPANIONWAY TRACK		HUNTER		2	301555	
89	SOLAR PANEL MOUNTING PLATE	ON SEA HOOD					4462027A
91	WINDSHIELD GRAB RAIL						
93	HINGE (TRANSOM LOCKER)	TRANSOM			4	119801	N/A
94	TRANSOM HATCH LATCH	TRANSOM			2	624735	
95	DK ORGANIZER (TRI)	STARBOARD	HARKEN	1501	1		
97	SHEET STOPPER	STARBOARD (TRI)	SPINLOCK	TRI XT/3	1		
<b>OPTIONAL GEAR</b>							
17	WINCH	COCKPIT / SPINN.SHEET	LEWMAR	COAST STD.50ST	2	HW2553	
18	SHEET STOPPER (QUAD)	STARBOARD	SPINLOCK	QUAD(XT/4)	1		
		REPLACES ITEM # 97					
66	INNER FORESTAY BASE		ABI	2140CH	1		
	INNER FORESTAY MOUNTING HDWR.						
69	FENDER HOLDER				2		
	<b>SPIN OPTION</b>						
75	SNATCH BLOCK	MID RAIL	SCHAEFER	11-99	2		
74	SPIN BLOCK	AFT RAIL	SCHAEFER	10-15	2		
90	SPIN. MAST BLOCK		Z-SPAR	PN294	1		
	<b>STAYSAIL OPTION</b>						
90	STAYSAIL MAST BLOCK		Z-SPAR	PN294	1		
96	DK ORGANIZER (SIX)	STARBOARD	HARKEN	1503	1		





PLEASE NOTE: The current edition superseded by each LIMITED WARRANTY BOOK. COPY THE PREVIOUS EDITION.  
**P420 ACCOMMODATION PLAN (STD)**  
 DRAWING NO. 4208041A      SCALE NONE  
 DATE 7/21/98  
 ENGINEERING DEPT.

**HUNTER**

EXAMPLE: TO LOWER

Ⓐ LOOSEN CLAMP WITH COUNTER CLOCKWISE MOTION

Ⓑ ADJUST TABLE SLOWLY UNTIL IT REACHES DESIRED POSITION AT THE CENTER OF THE TABLE, APPLY DOWNWARD PRESSURE UNTIL THE TABLE REACHES THE DESIRED HEIGHT.

Ⓒ CONTINUE APPLYING PRESSURE WHILE RE-TIGHTENING THE CLAMP IN A CLOCKWISE MOTION

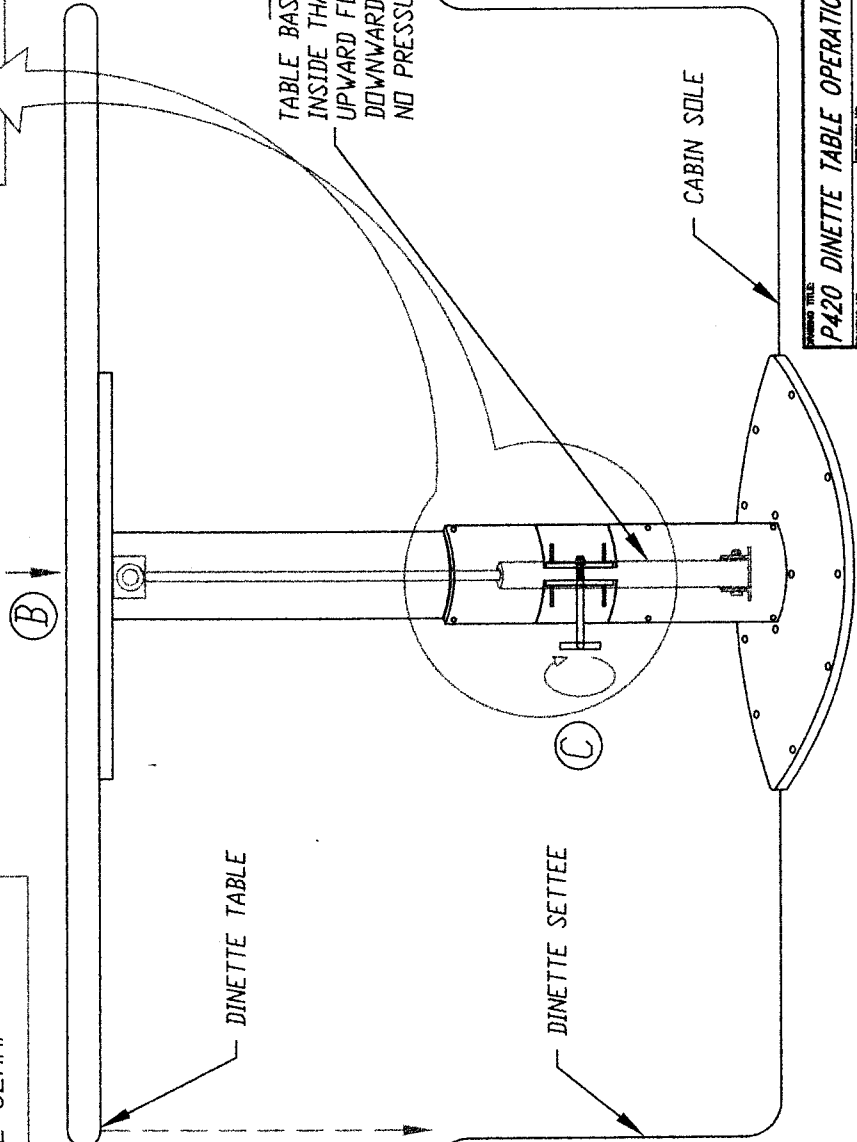
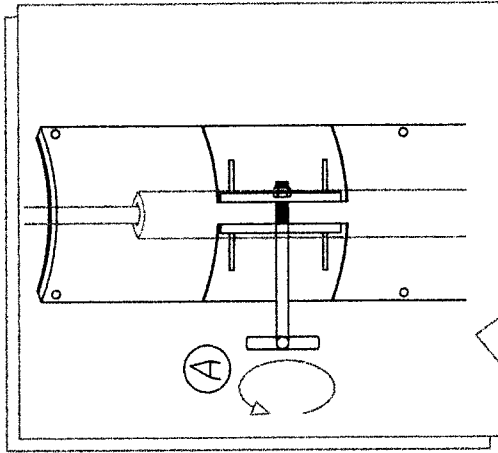
Ⓓ SEE NOTE BELOW BEFORE ADJUSTING.

TO RAISE:

A. LOOSEN CLAMP

B. TABLE RAISES AUTOMATICALLY.

C. RE-TIGHTEN THE CLAMP



Ⓓ

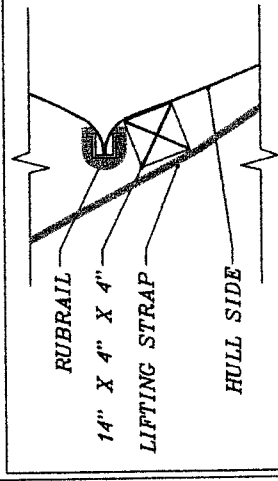
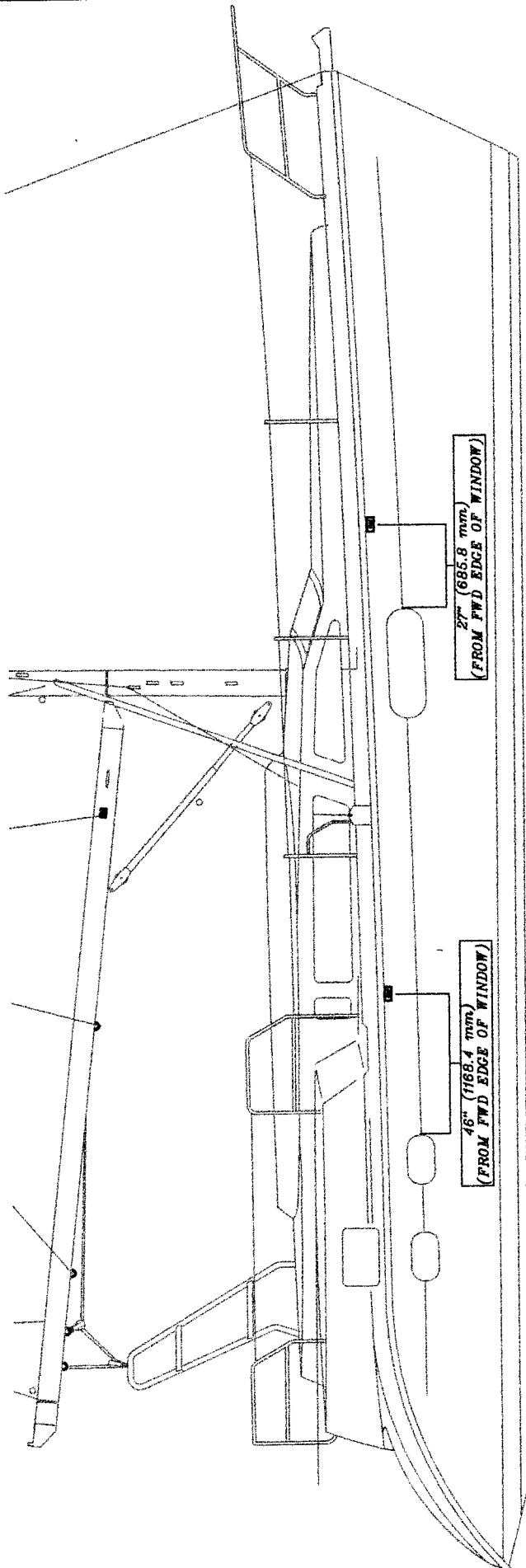
NOTE:

TABLE BASE FITTED WITH "GAS SHOCK" INSIDE THAT CONSTANTLY APPLIES AN UPWARD FORCE. TO LOWER, APPLY DOWNWARD PRESSURE. TO RAISE, NO PRESSURE OR LIFTING IS NEEDED.

FOR TECHNICAL ASSISTANCE OR MORE INFORMATION CONTACT HUNTER AIRCRAFT CORP. 111/12/98

<b>P420 DINETTE TABLE OPERATION</b>	
REVISED BY	NONE
ISSUE NO.	4208041B
DATE	11/12/98
DEPT.	ENGINEERING DEPT.

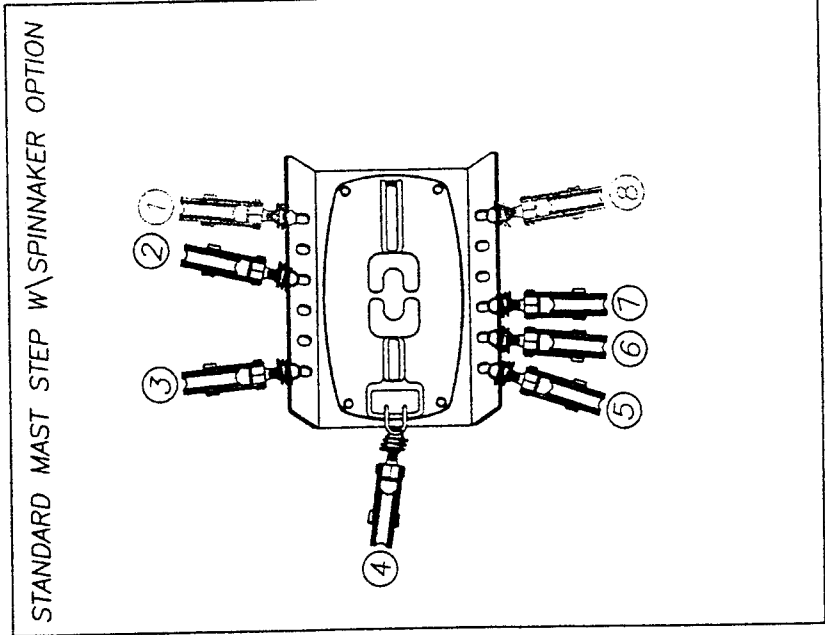
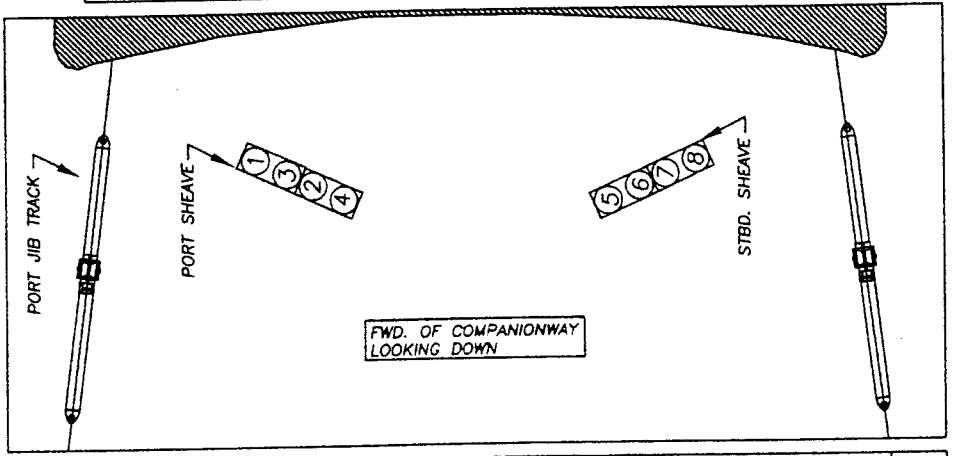
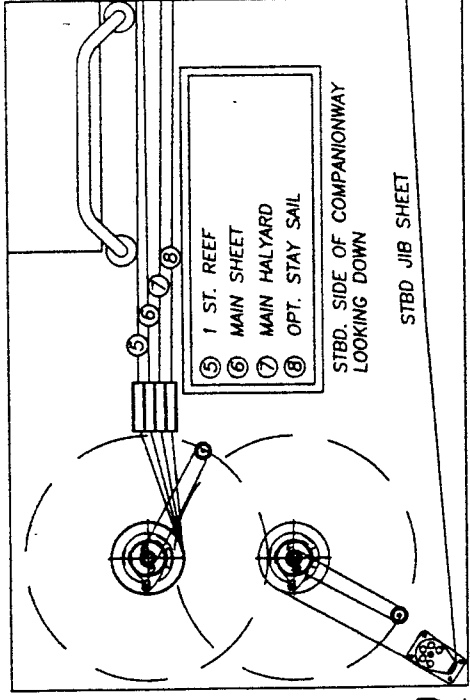
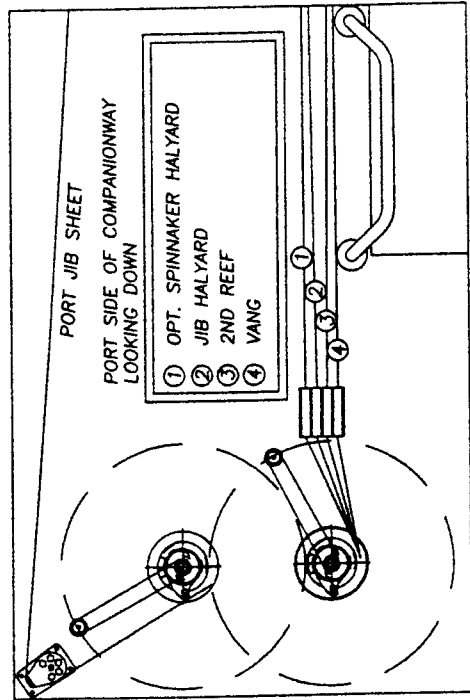
# HUNTER



NOTE: TO AVOID DAMAGING THE RUBRAIL WHEN LIFTING THE BOAT, A 14" X 4" WOOD STRAP SHOULD BE PLACED IN BETWEEN THE LIFTING STRAP AND THE HULL JUST BELOW THE RUBRAIL

NOTE: BE AWARE OF THE STAINLESS STEEL RUB RAIL INSERT WHEN LIFTING THE BOAT.

SELDEN STD. MAST STEP



NOTE:  
BLOCK NUMBER 4 ..... RUTGERSON SERIES 500 W/ SPRING  
BLOCK NUMBERS 1-3, 5-8 ..... RUTGERSON SERIES 600 W/ SPR

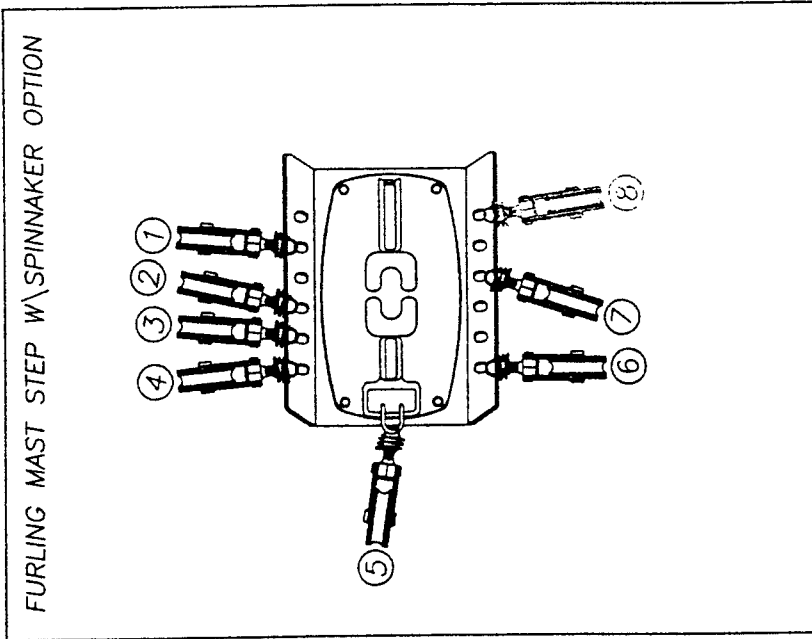
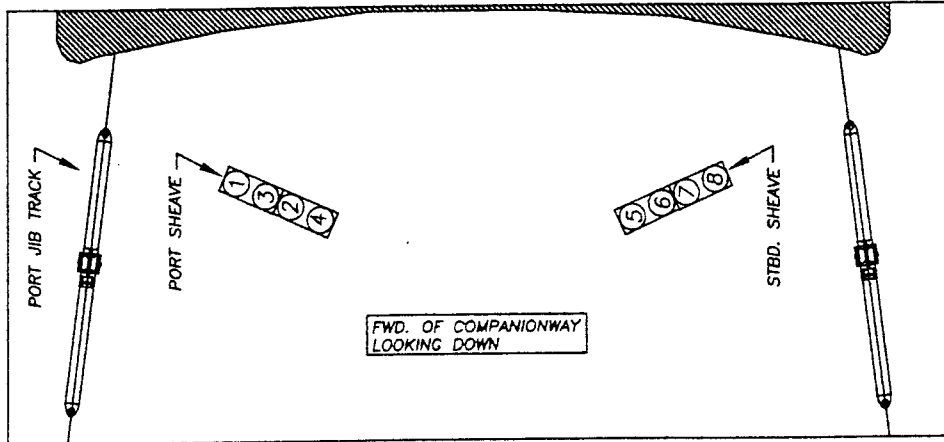
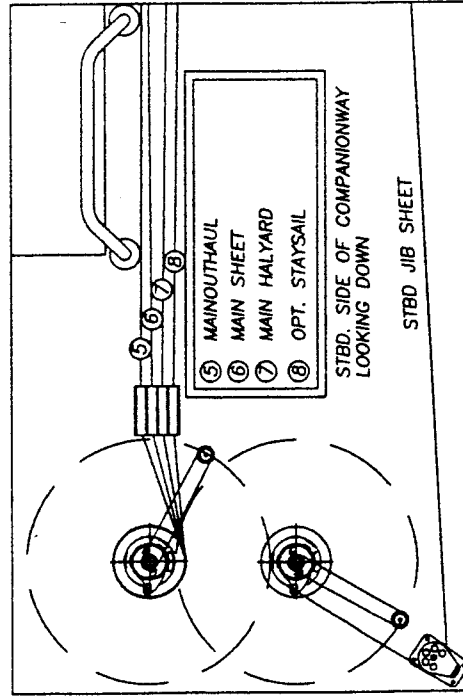
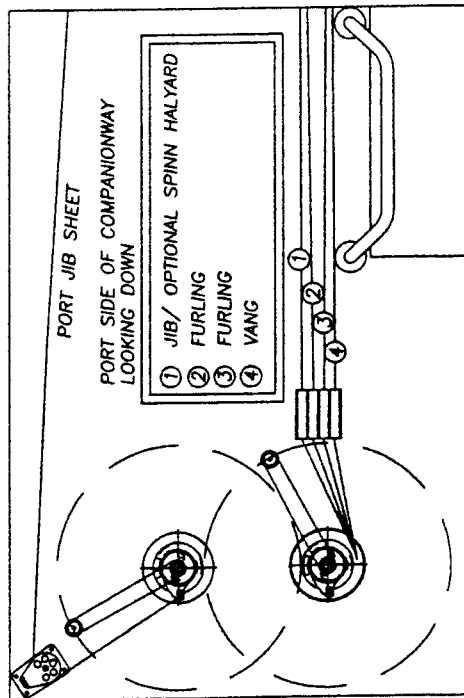
P420 STD. RUN. RIG & MAST STEP DETAIL  
 208042A-1  
 ENGINEERING DEPT.

NONE  
 2/11/98

HUNTER



SELDEN FURLIN' MAST STEP



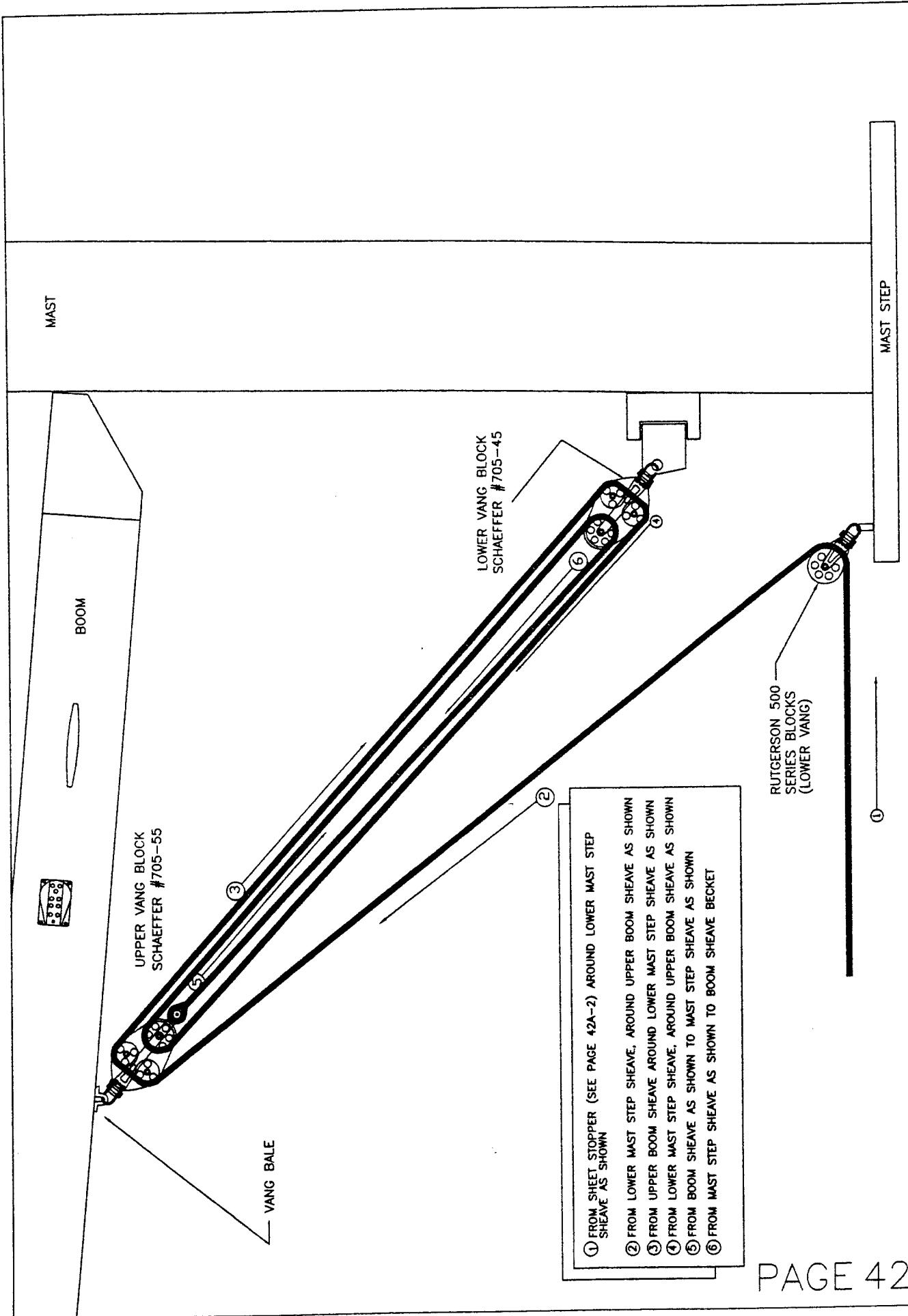
NOTE:

BLOCK NUMBERS 2,3 ... RUTGERSON SERIES 500 W/ SPRINGS  
 BLOCK NUMBERS 1,4-8 ... RUTGERSON SERIES 600 W/ SPRINGS

Part No. 208042A-2  
 Revision No. NONE  
 Date 2/11/88  
 Engineering Dept.

For General Technical Information See HUNTER MODEL COPT. for Proprietary Rights

# HUNTER

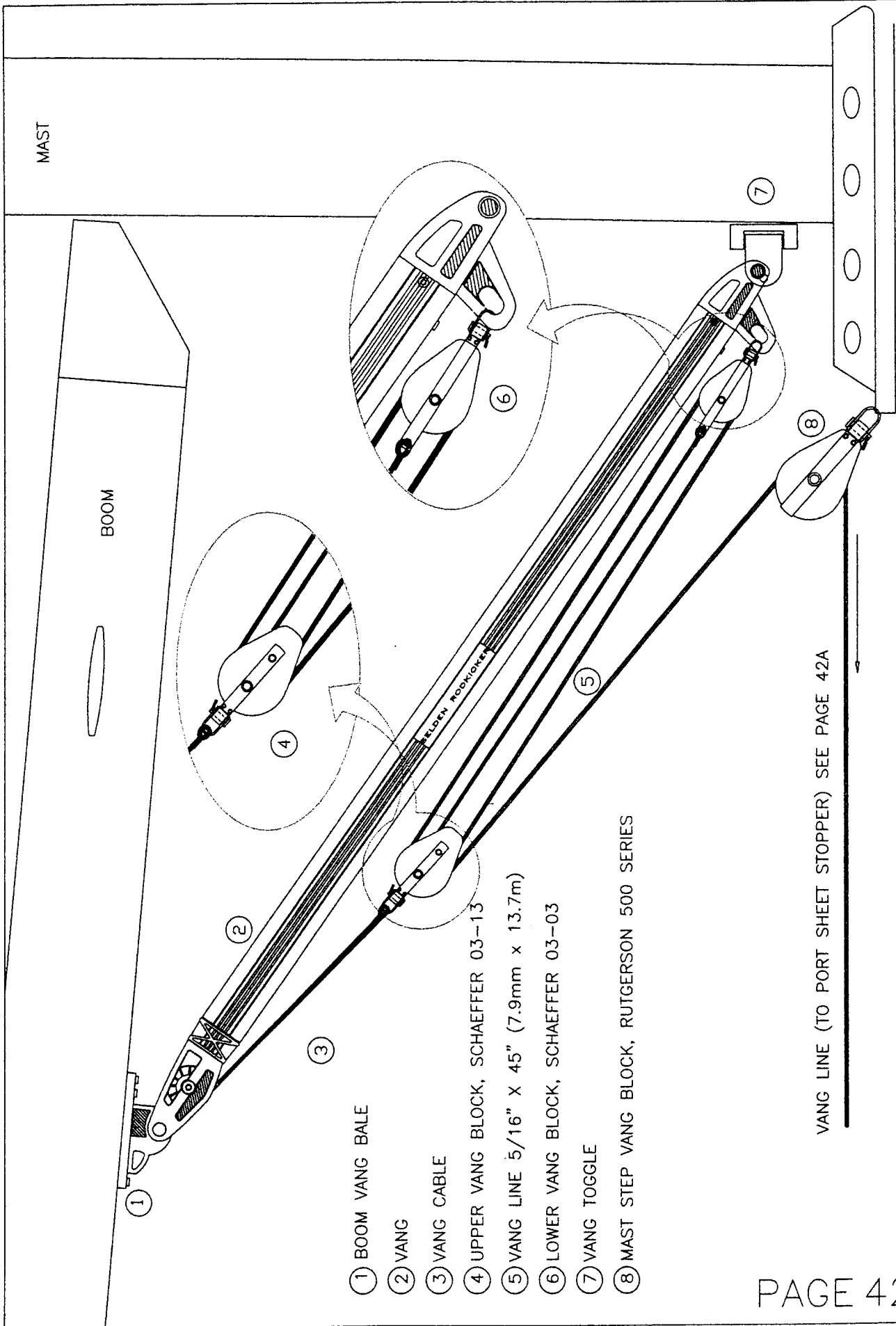


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**HUNTER**

**P420 VANG DETAILS (STANDARD)**

PART NUMBER 4208042B-1	REVISION NO. NONE
DATE 6/26/97	ENGINEERING DEPT.



- ① BOOM VANG BAILE
- ② VANG
- ③ VANG CABLE
- ④ UPPER VANG BLOCK, SCHAEFFER 03-13
- ⑤ VANG LINE 5/16" X 45" (7.9mm x 13.7m)
- ⑥ LOWER VANG BLOCK, SCHAEFFER 03-03
- ⑦ VANG TOGGLE
- ⑧ MAST STEP VANG BLOCK, RUTGERSON 500 SERIES

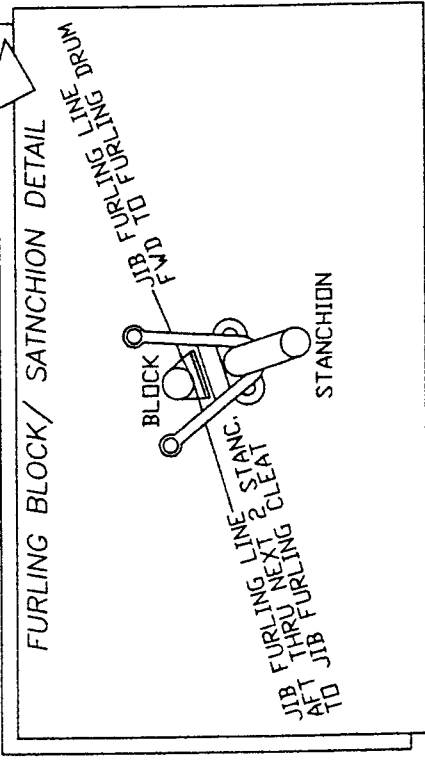
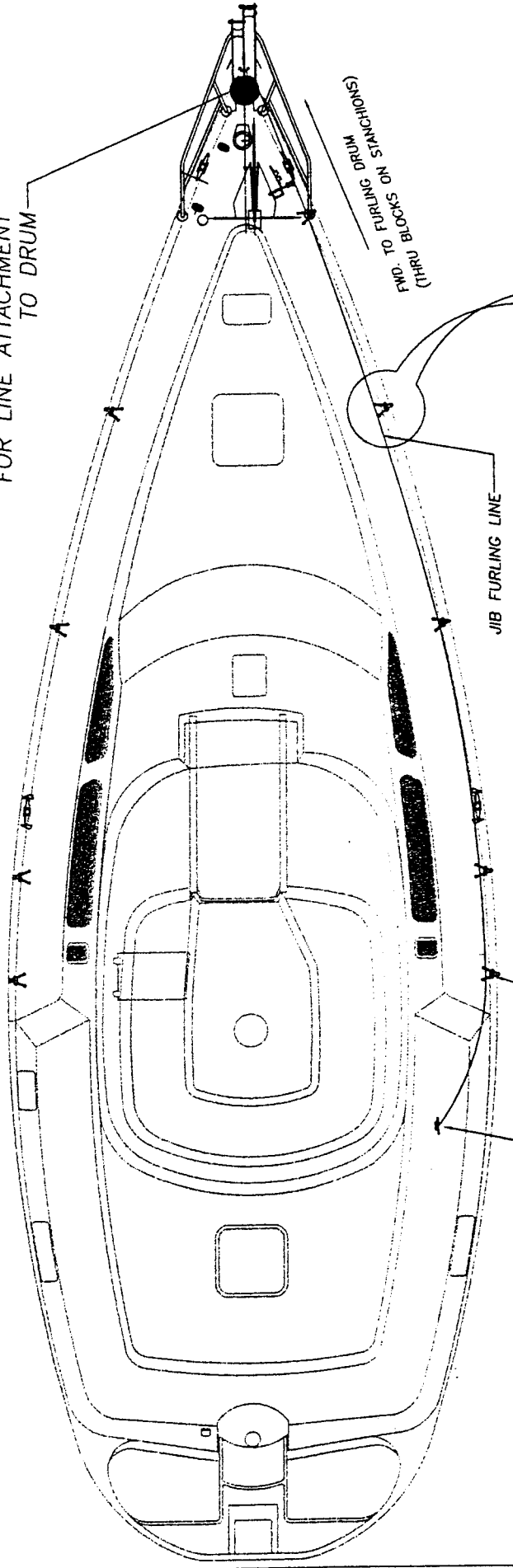
VANG LINE (TO PORT SHEET STOPPER) SEE PAGE 42A

FOR VANG DETAILS SEE FOLLOWING PAGES

HUNTER®  
 P420 RIGID VANG DETAILS (FURLING/OPT.)  
 DRAWING NO. 4208042B-2  
 REVISION NO. NONE  
 DATE 2/12/98  
 ENGINEERING DEPT.

SEE FURLING MANUAL  
FOR LINE ATTACHMENT  
TO DRUM

(STANCHION NO. 10 STANCHION DRUM  
FWD. TO T. F. FURLING DRUM  
BLOCKS (RIGHT))



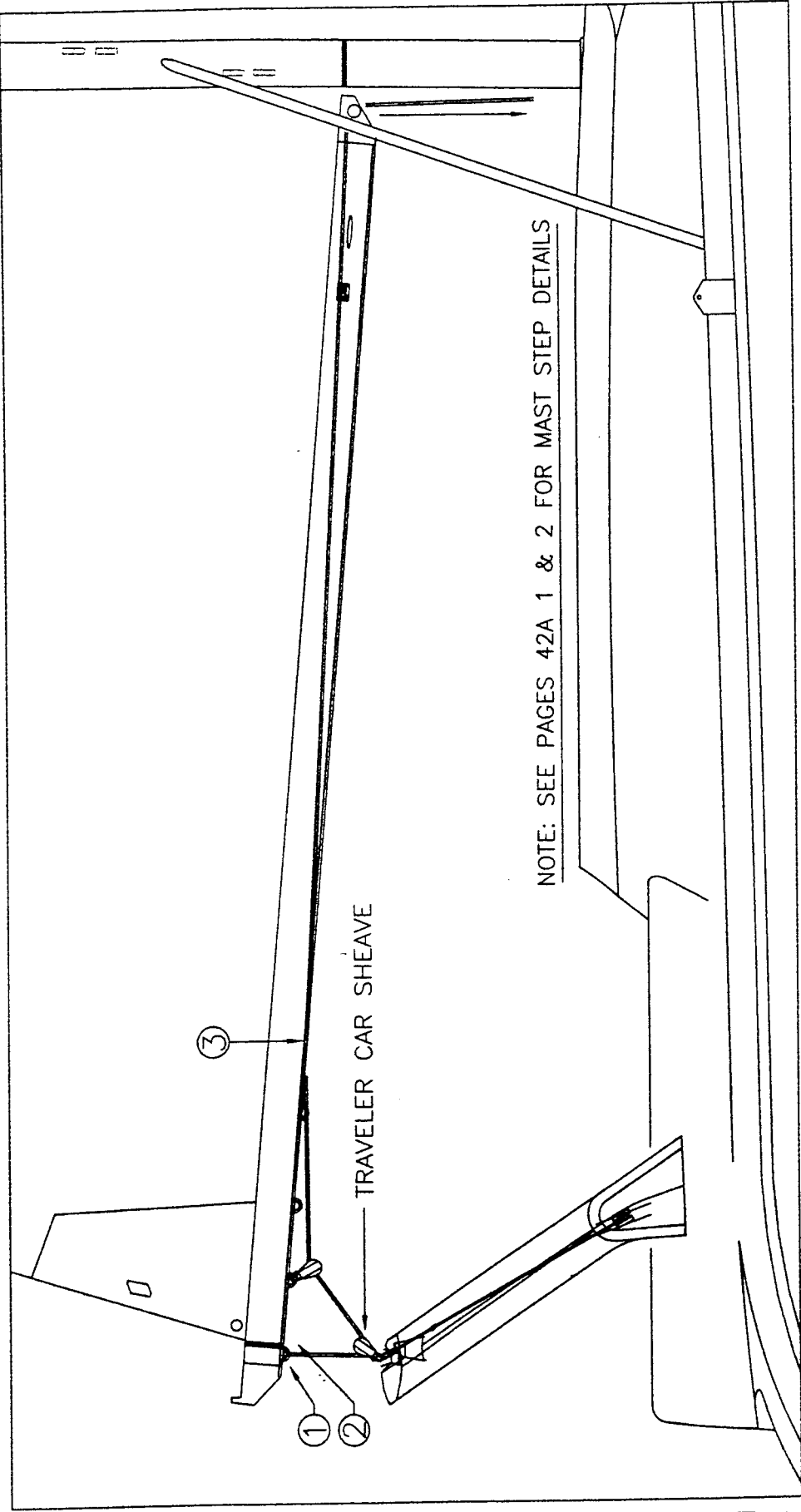
HUNTER®  
 P420 JIB FURLING LINES LAYOUT  
 420B042C  
 NONRE  
 2/12/98  
 ENGINEERING DEPT.

JIB FURLING SYSTEM



STANDARD MAINSHEET PURCHASE (ENDBOOM)  
 ① BALE, MAINSHEET END  
 ② BALE, MAINSHEET BLOCK  
 ③ EXIT, MAINSHEET

NOTE:  
 SEE PAGE 43C FOR ENDBOOM TRAVELER DETAILS



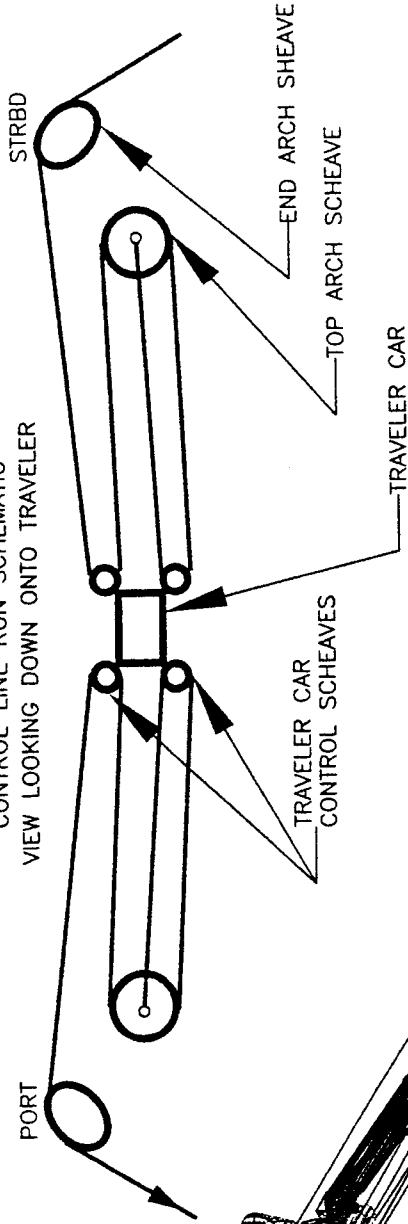
NOTE: SEE PAGES 42A 1 & 2 FOR MAST STEP DETAILS

STANDARD DRAWING  
**P420 MAINSHEET PURCHASE (STD)**  
DESIGNED BY 420804.3A REVISION NO. NONE  
DATE 5/28/98  
DEPT. ENGINEERING DEPT.

HUNTER

See General Practices Appendix for other HUNTER WORK GROUP drawing symbols.

CONTROL LINE RUN SCHEMATIC  
VIEW LOOKING DOWN ONTO TRAVELER



SEE PG 43C FOR DETAILS

STRBD

END ARCH SHEAVE  
TOP ARCH SHEAVE

TRAVELER CAR

TRAVELER CAR  
CONTROL SCHEAVES

PORT

UPPER SHEAVE

① CONTROL LINE RUNS THRU ARCH

② CONTROL LINE RUNS AROUND  
LOWER SHEAVE/CAM CLEAT

SEE PAGE 43A FOR  
MAIN SHEET LINE RUNS

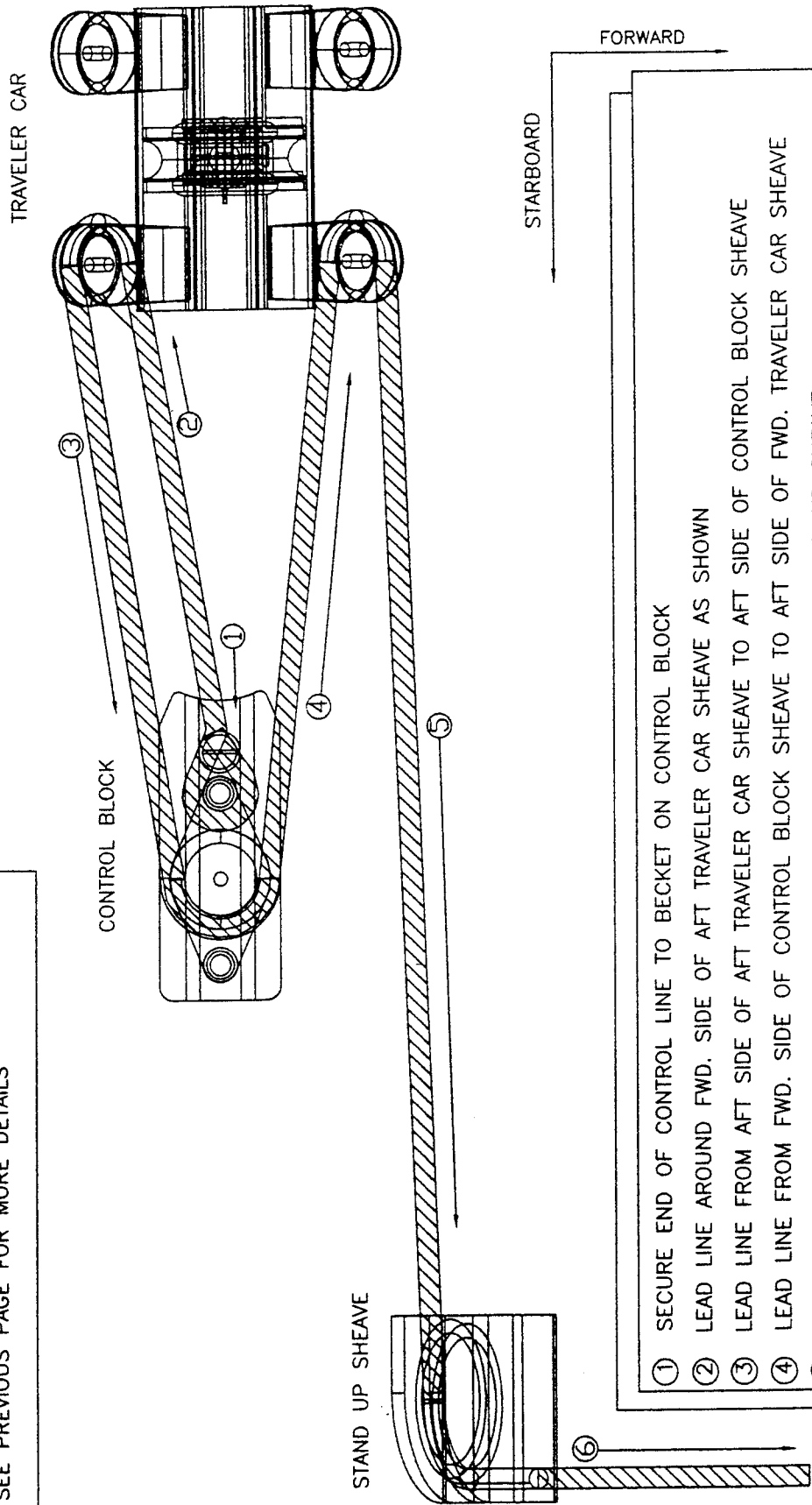
NOTE: STBD. SIDE DEFINED, PORT SIDE IS MIRROR IMAGE

FWD

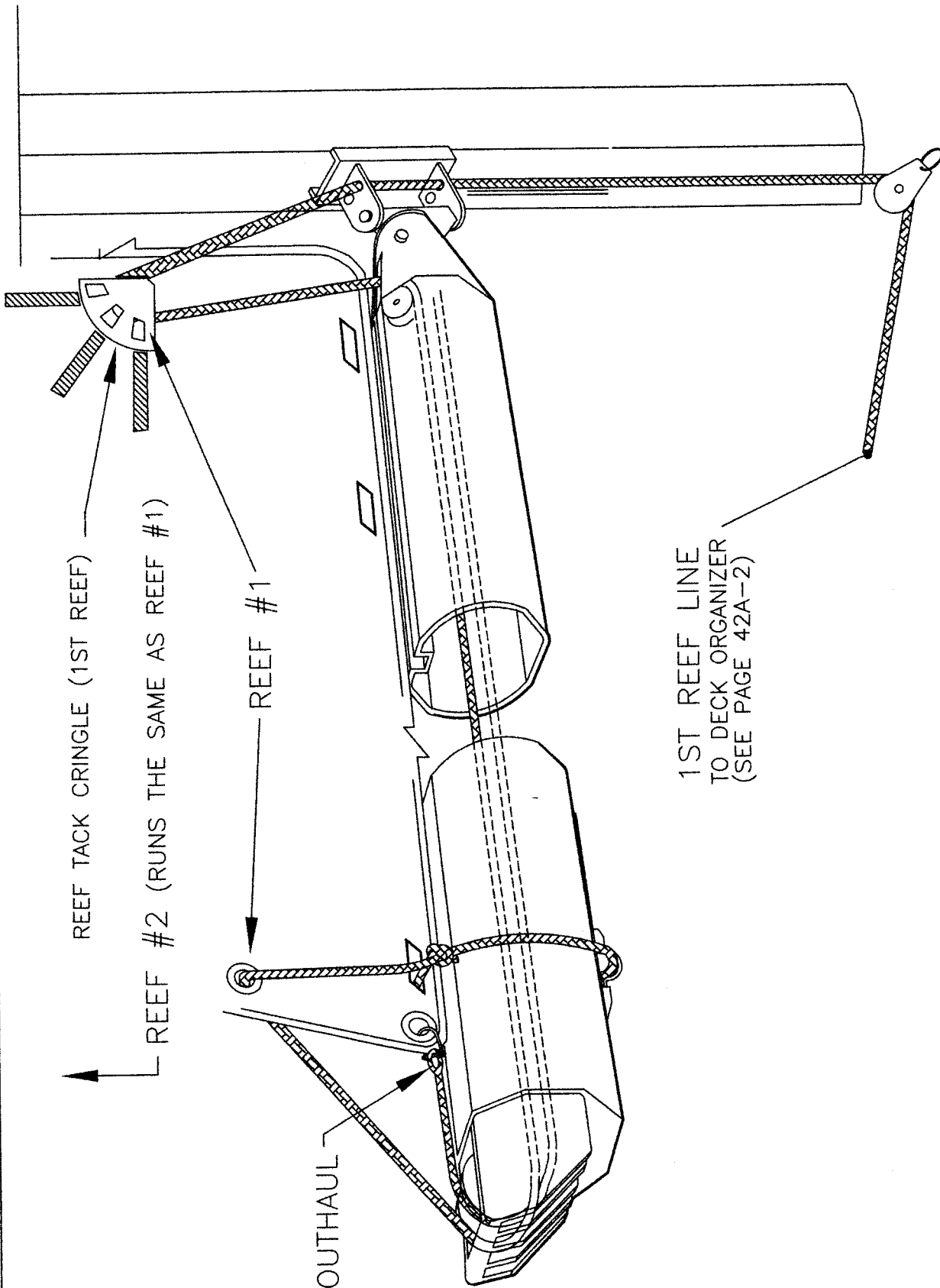
STBD

FOR FURTHER TECHNICAL INFORMATION OR SALES HUNTERA MARINE CORP. HAS PROPERTY RIGHTS  
**HUNTERA**  
**P420 TRAV. CONTROL LINE DETAILS**  
 DRAWING NO. 420B043B  
 REVISION NO. NONE  
 DATE 2/12/98  
 ENGINEERING DEPT.

NOTE: ARCH & TRAVELER BAR NOT SHOWN FOR CLARITY.  
 STARBOARD SIDE SHOWN, PORT SIDE IS MIRROR IMAGE  
 SEE PREVIOUS PAGE FOR MORE DETAILS



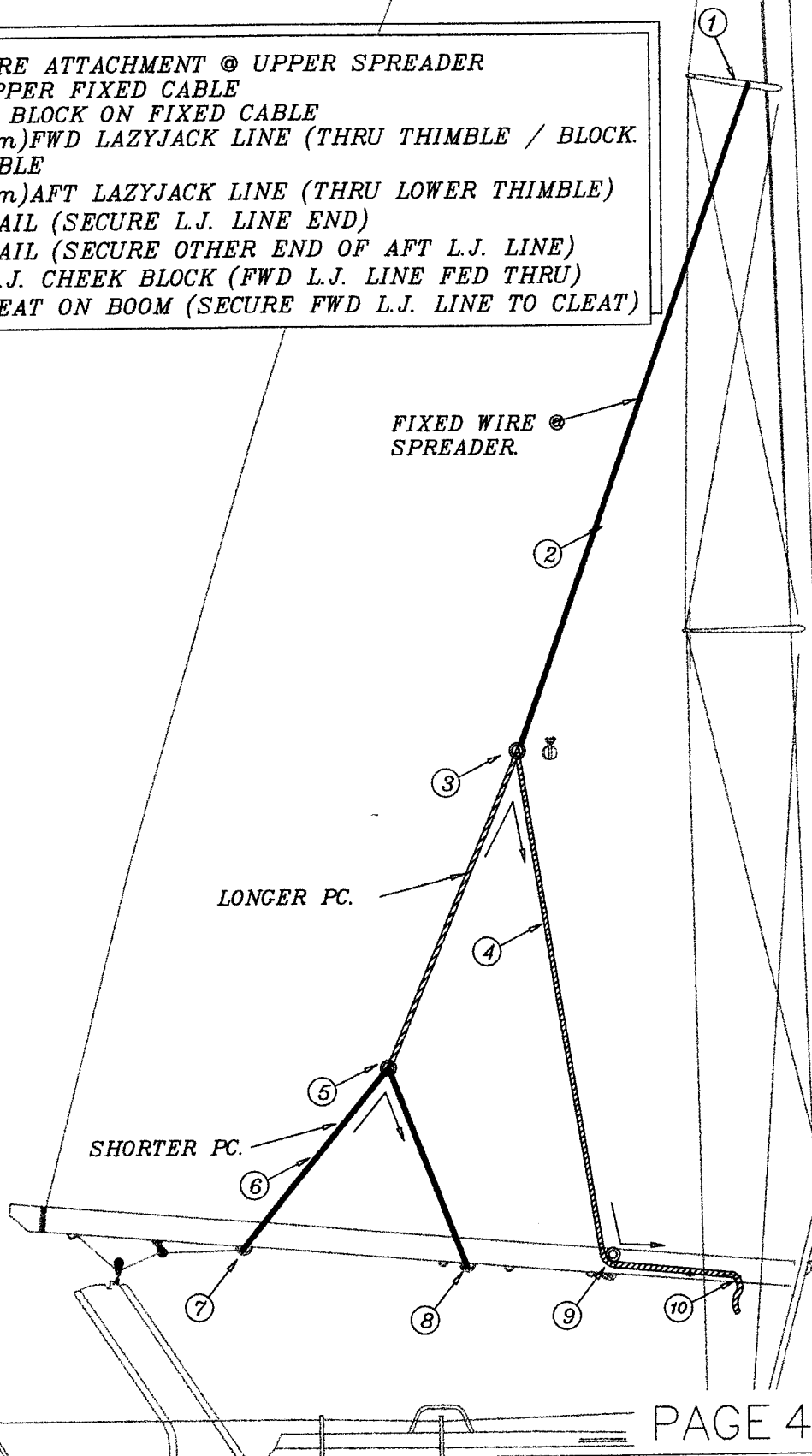
- ① SECURE END OF CONTROL LINE TO BECKET ON CONTROL BLOCK
- ② LEAD LINE AROUND FWD. SIDE OF AFT TRAVELER CAR SHEAVE AS SHOWN
- ③ LEAD LINE FROM AFT SIDE OF AFT TRAVELER CAR SHEAVE TO AFT SIDE OF CONTROL BLOCK SHEAVE
- ④ LEAD LINE FROM FWD. SIDE OF CONTROL BLOCK SHEAVE TO AFT SIDE OF FWD. TRAVELER CAR SHEAVE
- ⑤ LEAD LINE FROM FWD. SIDE OF FWD. TRAVELER CAR SHEAVE TO STAND UP SHEAVE
- ⑥ LEAD LINE AROUND STAND UP SHEAVE THEN DOWN THRU ARCH AND AROUND LOWER SHEAVE TO CAM CLEAT





P420

1. LAZYJACK WIRE ATTACHMENT @ UPPER SPREADER
2. LAZYJACK UPPER FIXED CABLE
3. THIMBLE OR BLOCK ON FIXED CABLE
4. 5/16" (7.9mm) FWD LAZYJACK LINE (THRU THIMBLE / BLOCK)
5. LOWER THIMBLE
6. 5/16" (7.9mm) AFT LAZYJACK LINE (THRU LOWER THIMBLE)
7. AFT BOOM BAIL (SECURE L.J. LINE END)
8. MID BOOM BAIL (SECURE OTHER END OF AFT L.J. LINE)
9. FWD BOOM L.J. CHEEK BLOCK (FWD L.J. LINE FED THRU)
10. LAZYJACK CLEAT ON BOOM (SECURE FWD L.J. LINE TO CLEAT)



FIXED WIRE @  
SPREADER.

LONGER PC.

SHORTER PC.

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**HUNTER**

PROCESS FILE: P420 LAZY JACKS INSTALLATION INSTRUCTIONS

PROJECT NO:	4208044B	SCALE:	NONE
ISSUE NO:		DATE:	5/14/99
ENGINEERING DEPT:			

# REEFING INSTRUCTIONS

1. SHACKLE TACK REEF BLOCKS TO FIRST AND SECOND REEF TACK CRINGLES.
2. RUN BOTH REEFING LINES AS ILLUSTRATED IN THE BOOM & REEF LAYOUT. BOTH PORTIONS OF THE REEFING LINE LEADING TO THE REEF TACK BLOCK MUST RUN THROUGH THE GOOSE NECK ON THE FRONT OF THE SPAR. THE SHORTER REEF LINE WILL BE USED ON THE FIRST REEF (STARBOARD SIDE, GREEN) THE LONGER REEF LINE ON THE SECOND REEF (PORT SIDE, RED.)
3. RAISE THE MAIN SAIL.
4. EASE THE MAINSHEET AND VANG.
5. LOWER THE MAIN SAIL TO APPROXIMATELY THE FIRST REEF POSITION.
6. TAKE UP THE SLACK IN THE FIRST REEF LINE UNTIL THE TACK AND THE CLEW ARE DOWN TO ABOUT 2" ABOVE THE BOOM.
7. ADJUST THE MAIN HALYARD SO THAT THE TACK REEF BLOCK IS NOT CONTACTING THE GOOSE NECK ON THE FRONT OF THE SPAR AND IS APPLYING TENSION TO THE LUFF OF THE MAIN ABOVE THE REEF, NOT BELOW. THERE WILL BE APPROXIMATELY 6" (150mm) OF STRETCH IN THE MAIN LUFF AND MAIN HALYARD WHEN THE REEFING LINE IS TENSIONED, SO MAKE SURE THAT THIS IS ALLOWED FOR WHEN ADJUSTING THE MAIN HALYARD TO LOCATE THE TACK REEF BLOCK.
8. ALSO, TENSION THE REEF LINE WITH THE APPROPRIATE SELF-TAILING WINCH UNTIL THE CLEW REEF CRINGLE IS BROUGHT DOWN TO THE BOOM.
9. CONFIRM THAT THE TACK REEF BLOCK IS STILL CLEAR OF THE TACK SHACKLE AND THAT ONLY THE MAIN LUFF ABOVE THE REEF CRINGLE IS TENSIONED, NOT THE LUFF BETWEEN THE CRINGLE AND THE TOP STACKED SAIL SLIDE. EASE THE REEF LINE AND READJUST THE HALYARD IF NECESSARY.
10. MARK THE HALYARD AT THE STOPPER WITH A 1" (25mm) SINGLE BAND OF INDELIBLE MARKER INK. BY DROPPING THE HALYARD TO THIS MARK EVERY TIME A REEF IS REQUIRED THE HALYARD IS AUTOMATICALLY IN THE CORRECT POSITION FOR THE REEF.
11. REPEAT THE PROCEDURE FOR THE SECOND REEF, USING DOUBLE BANDS TO MARK THE HALYARD IN THE CORRECT POSITION.

## REEFING PROCEDURE

1. HEAD UP INTO THE WIND.
2. EASE THE MAINSHEET AND VANG.
3. CHECK THE TOPPING LIFT FOR ADEQUATE BOOM SUPPORT.
4. LOWER THE MAIN HALYARD TO THE APPROPRIATE MARK, AND SNUB THE LINE WITH THE STOPPER.
5. TENSION THE REEFING LINE WITH THE SELF-TAILING WINCH UNTIL THE REEF CLEW IS BROUGHT DOWN TO THE BOOM. APPLY STOPPER AND TENSION THE MAIN HALYARD BACK UP. EASE THE TOPPING LIFT. (IF NEEDED)

## SHAKING OUT A REEF

1. HEAD UP INTO THE WIND.
2. EASE THE MAINSHEET AND VANG. TENSION TO TOPPING LIFT. (IF NEEDED)
3. RELEASE THE REEF STOPPER AND REMOVE REEF LINE FROM WINCH.
4. TENSION THE MAIN HALYARD TO RAISE SAIL, MAKING SURE REEF LINES RUN FREELY WHILE SAIL IS BEING RAISED. APPLY STOPPER TO MAIN HALYARD.
5. RE-TENSION VANG AND MAINSHEET. EASE THE TOPPING LIFT. (IF NEEDED)

FOR COMPLETE DETAILS REFER TO THE HUNTER P420 REEFING INSTRUCTIONS

**HUNTER**

4208045A NONE 10/7/98

ENGINEERING DEPT.

**RUNNING RIGGING SPECIFICATIONS**

BOAT: HUNTER 420      FILE NAME:      REVISION: added boom topping lift 8/28/98  
 BY: KJC      DATE: 7/24/98  
 CHECKED BY:      DATE:

OPT/STD	ITEM	QUANTITY	LINE SIZE	LINE TYPE	COLOR	LENGTH		
						END 1	END 2	
1 STD	MAIN HALYARD	1	7/16" (11mm)	XLS EXTRA	BLUE	36.1 m	118 ft	BARE
2 STD	JIB HALYARD	1	7/16" (11mm)	XLS EXTRA	RED	35.9 m	118 ft	BARE
3 STD	MAIN TRAVELER LINE	2	5/16" (8mm)	LS	WHITE	7.9 m	26 ft	BARE
4 STD	MAINSHEET	1	1/2" (12.5mm)	XLS	BLUE FLECK	24.3 m	80 ft	BARE
5 STD	REEFING LINE #1	1	7/16" (11mm)	LS	GREEN FLECK	22.9 m	75 ft	BARE
6 STD	REEFING LINE #2	1	7/16" (11mm)	LS	RED FLECK	32.7 m	107 ft	BARE
7 STD	JIB SHEET	2	1/2" (12.5mm)	LS	RED FLECK	12.2 m	40 ft	BARE
8 OPT	CRUISING SPINN. SHEET	2	7/16" (11mm)	LS	BLACK FLECK	28.0 m	92 ft	BARE
9 OPT	SPINNAKER HALYARD	1	7/16" (11mm)	XLS	BLACK	35.9 m	118 ft	BARE
10 OPT	STAYSAIL HALYARD	1	7/16" (11mm)	XLS	GREEN	29.0 m	95 ft	BARE
11 STD	VANG	1	7/16" (11mm)	LS	WHITE	15.2 m	50 ft	BARE
12 OPT	STAYSAIL SHEETS	2	7/16" (11mm)	LS	GREEN FLECK	10.9 m	36 ft	BARE
13 STD	BOOM TOPPING LIFT	1	3/8" (9.5mm)	LS	WHITE	33.2 m	109 ft	EYE
14 STD	LAZY JACK WIRE	2	1/8" (3.2mm)	PLASTIC COATED 7x7	WHITE	5.5 m	18 ft	EYE & THIMBLE, HARKEN 125 OR SHACKLE
15 STD	FIXED LAZY JACK LINE	2	3/8" (9.5mm)	LS	WHITE	6.3 m	21 ft	BARE
16 STD	ADJUSTABLE LAZY JACK LINE	2	3/8" (9.5mm)	LS	WHITE	8.5 m	28 ft	SS THIMBLE SPLICED

HUNTER  
 P420 RUNNING RIGGING SPECS (STD)  
 HUNTER NO. 420B046A      PARTIAL NO. NONE  
 ENGINEERING DEPT.      DATE 7/22/98

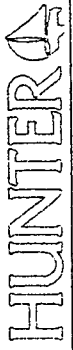
**FURLING MAST RUNNING RIGGING SPECIFICATIONS**

BOAT: HUNTER 420      FILE NAME: 420 SELDEN RUNNING      REVISION: REMOVE MAIN HALYARD 9/2/98  
 BY: KJC      DATE: 2/6/98

CHECKED BY:      DATE:

OPT/STD	ITEM	QUANTITY	LINE SIZE	LINE TYPE	COLOR	END 1	LENGTH	END 2
1 STD	JIB HALYARD	1	7/16" (11mm)	XLS EXTRA	RED	EYE	35.9 m 118 ft	BARE
2 STD	MAIN TRAVELER LINE	2	5/16" (8mm)	LS	WHITE	SMALL EYE	7.9 m 26 ft	BARE
3 STD	MAINSHEET	1	1/2" (12.5mm)	LS	BLUE FLECK	SMALL EYE	24.4 m 80 ft	BARE
4 STD	BOOM TOPPING LIFT	1	3/8" (9.5mm)	LS	WHITE	BARE	30.5 m 100 ft	BARE
5 STD	JIB SHEET	2	1/2" (12.5mm)	LS	RED FLECK	BARE	12.1 m 40 ft	BARE
6 OPT	CRUISING SPINN. SHEET	2	7/16" (11mm)	LS	BLACK FLECK	BARE	30.9 m 101 ft	BARE
7 OPT	SPINNAKER HALYARD	1	7/16" (11mm)	XLS	BLACK	SNAP SHACKLE NF11000s	35.9 m 118 ft	BARE
8 STD	MAIN FURLING LINE	1	3/8" (9.5mm)	LS	BLUE	BARE	13.4 m 44 ft	BARE
9 OPT	STAYSAIL HALYARD	1	7/16" (11mm)	XLS	GREEN	SNAP SHACKLE NF11000s	28.9 m 95 ft	BARE
10 OPT	STAYSAIL SHEETS	2	7/16" (11mm)	LS	GREEN FLECK	BARE	10.9 m 36 ft	BARE

P420 RUNNING RIGGING SPECS (FURL)  
 DRAWING NO. 4208046B      REVISION NO. NONE  
 DATE 7/22/98  
 ENGINEERING DEPT.



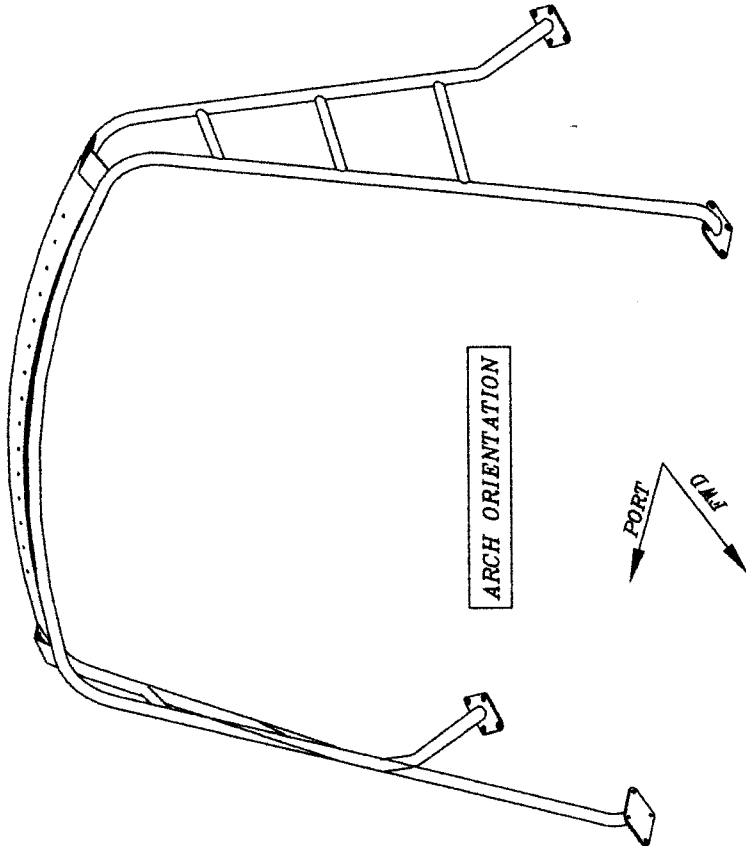
ARCH INSTALLATION: NOTES AND TOOL LIST

NOTES:

1. IMPORTANT: COMPLETELY READ ALL OF THE INSTALLATION INSTRUCTIONS BEFORE BEGINNING.
2. THIS JOB REQUIRES THREE PEOPLE. IT IS IMPORTANT THAT THE ARCH CONTINUE BEING SUPPORTED ONCE IT HAS BEEN SET IN PLACE, UNTIL BEING FULLY SECURED TO THE DECK.
3. WHEN INSTALLING ARCH: TO AVOID POSSIBLE INJURY, ORIENT THE DIRECTION OF THE ARCH (LEANING AFT) PRIOR TO BEGINNING THE INSTALLATION PROCESS.
4. SEE BELOW FOR A LIST OF TOOLS SUGGESTED FOR THE INSTALLATION PROCESS
5. IMPORTANT: REMEMBER TO CHECK ALL THE ARCH BOLTS / NUTS AFTER THE INITIAL SEA TRIAL AND RETIGHTEN AS NECESSARY

SUGGESTED TOOL LIST:

- 3/8" DRIVE RATCHET
- 6" EXTENSION
- 9/16" DEEP & REGULAR SOCKET
- 9/16" WRENCH
- SCREW DRIVER--PHILLIPS HEAD
- RATCHET STRAP
- CAULK GUN
- TUBE OF SEALANT (3M 5200)
- NEVER SEIZE (BOLT LUBE)
- RAZOR KNIFE
- RAGS
- ALCOHOL / CLEAN UP

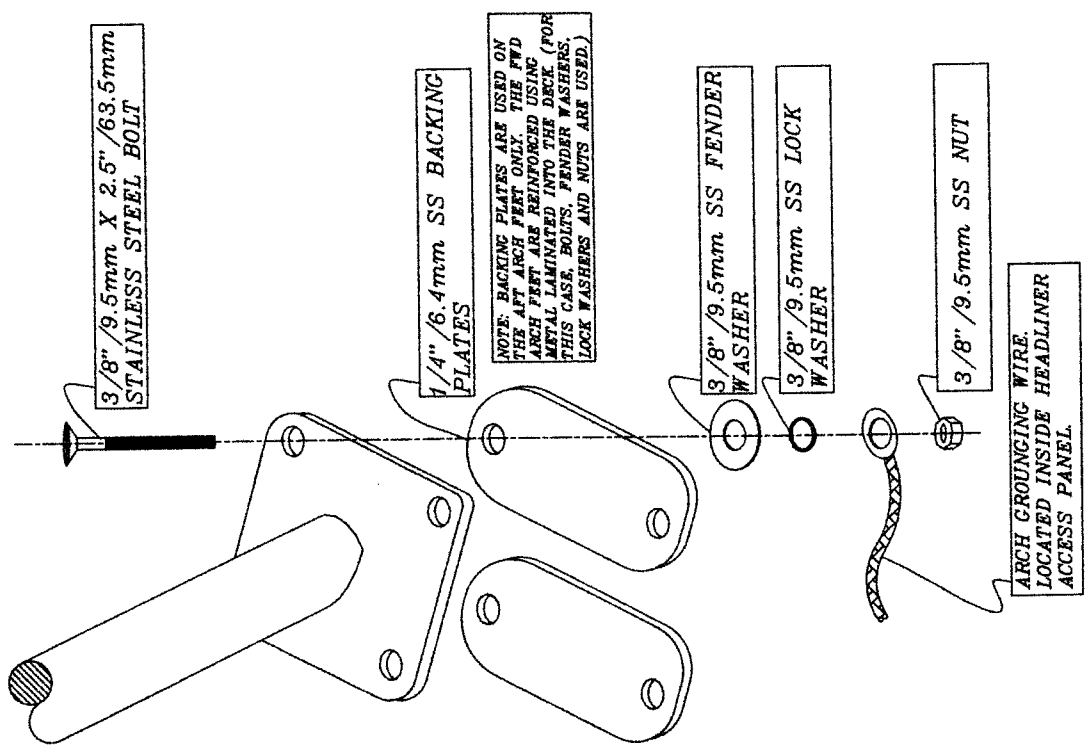


FORM NO. 1208046C-1  
 HUNTERA  
 ENGINEERING DEPT. 1/27/00  
 NONE



1. REMOVE ALL ACCESSORIES STORED IN THE COCKPIT LOCKERS. THIS WILL ALLOW EASIER ACCESS TO FASTEN THE ARCH BOLTS.
2. REMOVE ANY SEALANT IN THE ARCH PRE DRILLED HOLES.
3. CLEAN AROUND THE MOUNTING HOLES USING ALCOHOL.
4. APPLY A GENEROUS AMOUNT OF 3M 5200 SEALANT AT THE ARCH MOUNTING FOOT DECK MOUNTING HOLE LOCATIONS.
5. TO AVOID POSSIBLE INJURY, ORIENT THE ARCH (LEANING AFT) PRIOR TO PLACING IT ON THE BOAT.
6. PLACE THE ARCH ON THE DECK OF THE BOAT. ALIGN THE FORWARD MOST ARCH FOOT HOLE WITH THE MATCHING PRE DRILLED FWD MOST DECK COAMING HOLE.
7. INSERT A (2.5"(63.5mm)) STAINLESS STEEL BOLT THRU THE FWD MOST ARCH FOOT INTO THE COAMING.
8. ACCESS THE UNDERSIDES OF THE DECK AT THE ARCH FOOT LOCATIONS AS FOLLOWS:  
 STBD AFT: THRU ACCESS PANEL IN THE STBD SIDE AFT STATEROOM HEADLINER.  
 PORT AFT: THRU ACCESS PANEL IN THE PORT SIDE AFT STATEROOM HEADLINER  
 STBD FWD: THRU STBD. SIDE COAMING LOCKER  
 PORT FWD: THRU PORT SIDE COAMING LOCKER
9. INSTALL THE (1/4" (6.4mm)) BACKING PLATE ON THE INSIDE OF THE COAMING. THEN INSTALL THE S.S. WASHER, LOCK WASHER AND THE S.S. NUT AS WELL. (NOTE: THERE EXISTS CASES WHERE A BACKING PLATE IS NOT ABLE TO BE INSTALLED. IF THIS IS ENCOUNTERED, USE (1/4" 6.4mm)) S.S. FENDER WASHERS INSTEAD. (IT IS IMPORTANT TO APPLY A SMALL AMOUNT OF NEVER SEIZE TO THE BOLT TO PREVENT "GAULING" OF THE THREADS.)
10. COMPLETELY TIGHTEN THE FORWARD MOST BOLT.
11. REPEAT THIS PROCEDURE FOR THE REMAINING THREE FEET. INSERTING ONLY ONE BOLT AT FIRST AND COMPLETELY TIGHTENING IT DOWN STARTING WITH THE ARCH FOOT DIRECTLY ACROSS FROM THE BOLT ALREADY INSTALLED. REPEAT THIS FOR THE NEXT TWO.
12. NOTE: IT MAY BE NECESSARY TO USE A RATCHET STRAP TO "PULL" THE ARCH INTO ALIGNMENT WITH THE REMAINING MOUNTING HOLES.
13. INSERT THE REST OF THE S.S. FASTENERS INTO THE MOUNTING HOLES. INSTALL ALL THE S.S. BACKING PLATES, WASHERS AND NUTS FROM THE UNDERSIDE OF THE DECK (AT THIS TIME, BE SURE TO INSTALL THE ARCH GROUNDING WIRE, LOCATED IN THE HEADLINER ACCESS PANEL. SEE DIAGRAM FOR INSTALLATION DETAILS.)
14. RECHECK THE ARCH FIT ONTO THE DECK.
15. SECURELY TIGHTEN ALL THE NUTS AND BOLTS USING A CROSS TIGHTENING PATTERN. (DO NOT FORGET TO USE A SMALL AMOUNT OF LUBRICANT FOR THE BOLTS).
16. CLEAN OFF THE EXCESS SEALANT AROUND THE ARCH FEET AND COAMING AREAS USING ALCOHOL.
17. RECHECK THE BOLTS AFTER THE INITIAL SEA TRIAL AND TIGHTEN AS NECESSARY.
18. SEE FOLLOWING PAGE FOR INFO ON CONNECTING THE ARCH SPEAKER POD WIRING. (NOTE: REMEMBER TO CAULK AROUND THE ARCH SPEAKER WIRE EXIT HOLE IN THE DECK.

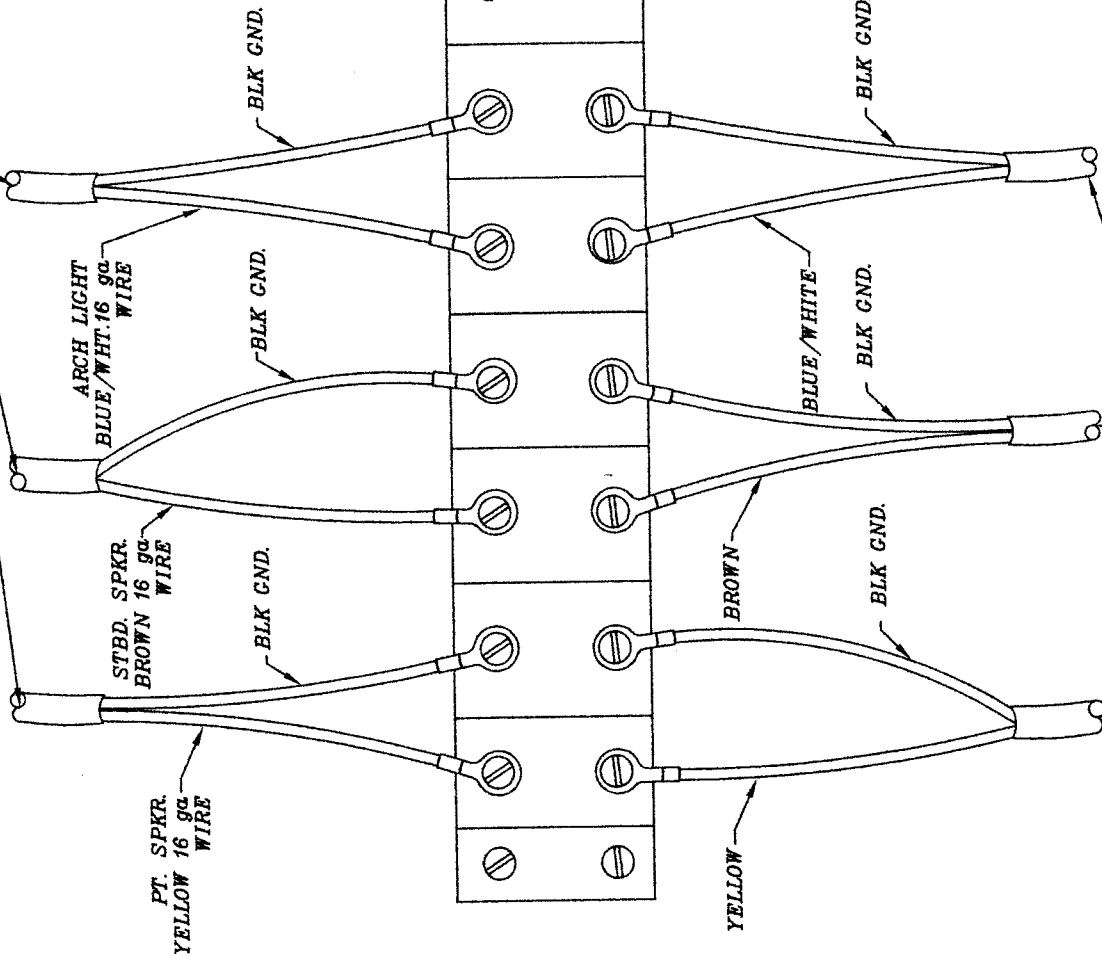
TYPICAL ARCH FOOT



NOTE: BACKING PLATES ARE USED ON THE AFT ARCH FEET ONLY. THE FWD ARCH FEET ARE REINFORCED USING METAL LAMINATED INTO THE DECK. (FOR THIS CASE, BOLTS, FENDER WASHERS, LOCK WASHERS AND NUTS ARE USED.)

HUNTER  
 P420 ARCH INSTALLATION INSTRUCTIONS COM1  
 PART NO. 4208046C-2  
 REV. NONE  
 DATE 1/28/00  
 ENGINEERING DEPT.

WIRES TO ARCH SPEAKERS  
AND ARCH LIGHT



TERMINAL STRIP  
LOCATED PORT SIDE  
AFT HEAD HEADLINER  
ACCESS PANEL

WIRES TO  
HEADLINER  
ALL 16 ga.

WIRE FILE: P120 ARCH WIRING TERMINAL STRIP SCHEMATIC  
Drawing No. 4208046D  
DATE: 1/28/00  
ENGINEERING DEPT

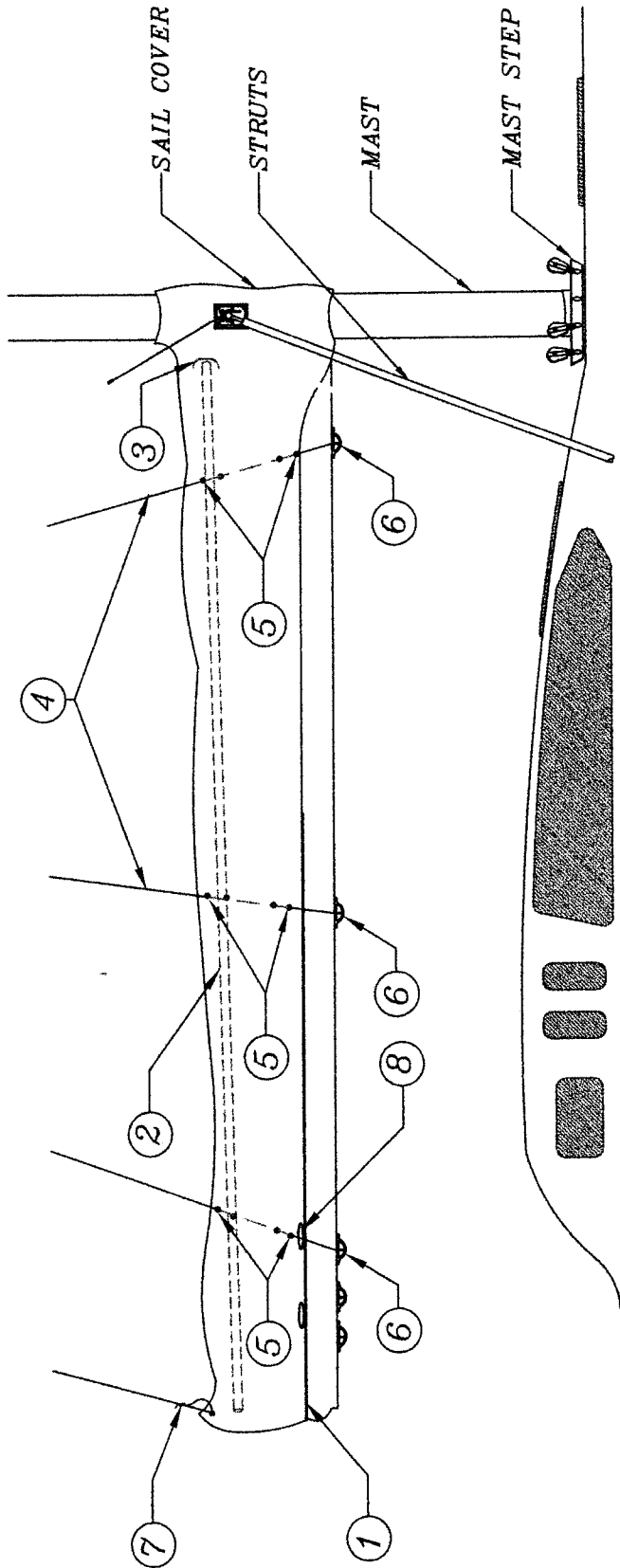
HUNTER

SLIDE THE BOLTROPE ON THE TWO HALVES OF THE COVER INTO THE BOLTROPE TRACKS (1) ON BOTH SIDES OF THE BOOM. START FROM THE AFT END AND MAKE YOUR WAY FORWARD.

INSTALL THE PVC BATTENS (2) INTO EACH HALF OF THE SAIL COVER. THERE ARE POCKETS (3) THAT OPEN TOWARDS THE FRONT, ON THE INSIDE OF THE COVER. SLIDE THE BATTENS INTO PLACE FROM THE FRONT, AND ROLL THE INSIDE LIP OF THE POCKET BACK IN ORDER TO HOLD THE BATTENS STATIONARY.

FEED THE LAZYJACK LINES (4) DOWN THROUGH THE GROMMETS/RINGS (5) IN THE SAIL COVER, STARTING AT THE TOP AND COMING OUT AT THE BOTTOM OF THE COVER. DEAD END THE LINES TO THE BAILS ON THE UNDERSIDE OF THE BOOM (6).

TIE THE AFT END OF THE SAIL COVER UP TO THE TOPPING LIFT LINE USING THE PIECE OF STRING PROVIDED (7). USE HALF HITCH KNOTS TO SECURE THE COVER IN PLACE AT THE OUTER END OF THE BOOM. THE REEF LINES RUN OUT THROUGH THE COVER SLOTS (8) AND TIE OFF.



SAIL COVER ONLY OFFERED ON STANDARD MAST BOATS

© 1999 Hunter Marine, Inc.  
**P420 HUNTER LAZYJACK SAIL COVER**  
 MODEL NO. 4208046E    SCALE NONE  
 DATE 3/11/99  
 ENGINEERING DEPT.

HUNTER

## P420 B&R RIG WITH STRUTS DESCRIPTION

---

The B&R rig, utilized on the Hunter P420, eliminates the need for a backstay to allow for a more efficient mainsail shape. Fixed backstays are commonly being designed out of today's performance-oriented boats to allow the mainsail to incorporate a full roach design - a more aerodynamic shape both for racing and cruising performance.

To accomplish this, the B&R rig has 30 degree swept spreaders, creating 120 degrees between each rigging point. This tri-pod arrangement has excellent strength for sailboat rigs, and has been used for years to support huge radio towers.

The latest advancement to the B&R rig is the addition of mast struts. These struts stabilize the lower section of the mast, allowing compression loads to be spread, reducing the point loading at the mast base. They also create a strong point for the boom and spinnaker pole loadings. The struts function also allow us to use a smaller mast section reducing weight aloft to decrease the heeling and pitching moments, making for a more comfortable ride. Additionally, they provide a secure handhold when going forward.

The struts perform an important structural function, **therefore never sail your boat without the struts properly fitted**. If your P420 is equipped with the in-mast furling option, the mast is a larger section size and the struts are not utilized.

Additional support is given to the B&R rig (and is unique to it) with the addition of reverse diagonal rigging. For example, the diagonals that you see beginning by the top of the mast strut, ending at the tip of the spreader, supports and stabilizes the lower section of the mast as it creates a triangle with

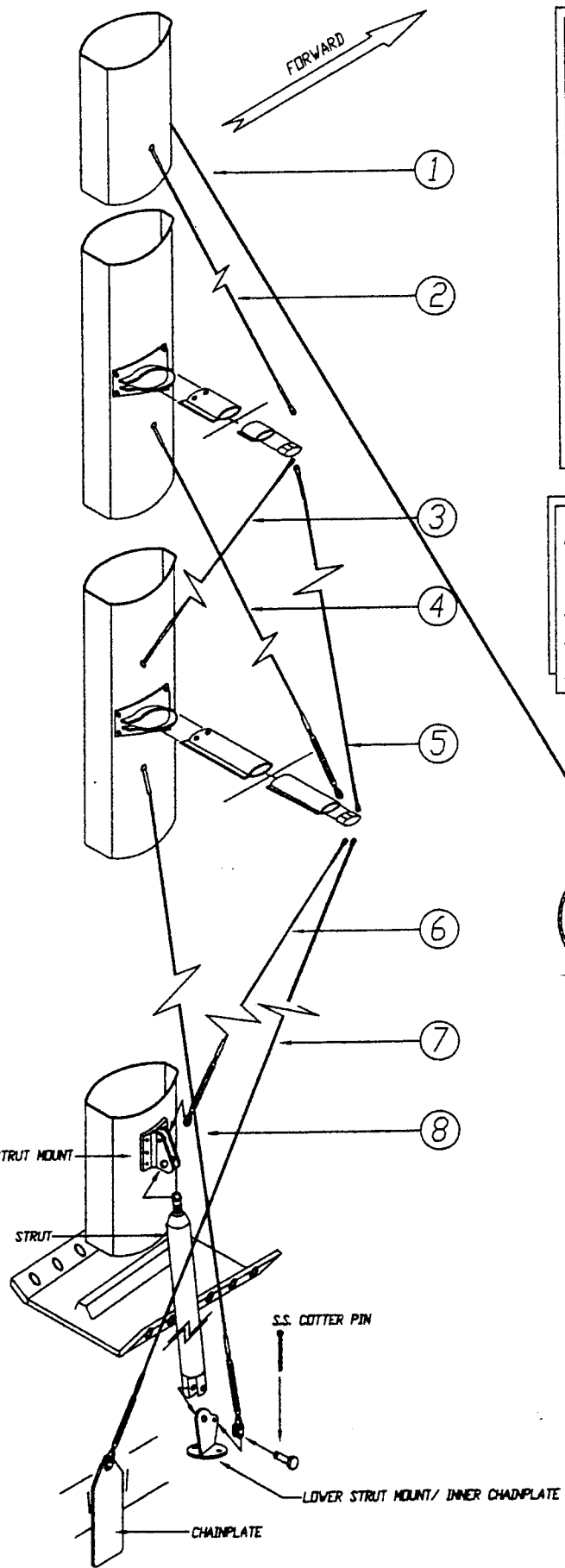
the lower shroud. The top RD2 runs from above the lower spreader base to the end of the top spreader, and stabilizes the top section of the mast.

The B&R rig is designed to be pre-bent to further add rigidity to the mast section and eliminate the need for adjustable rigging (like backstay adjusters). This design should prove more reliable than a rig with adjustable backstays or runners, as there is less chance for error.

The large main, small jib, sail plan on the P420 also eliminates the need for large overlapping headsails (genoa's), as the driving power comes from the much improved shape and size of the mainsail. This allows for an easier tacking small jib, creating good performance and more comfortable sailing as it is less work for the crew.

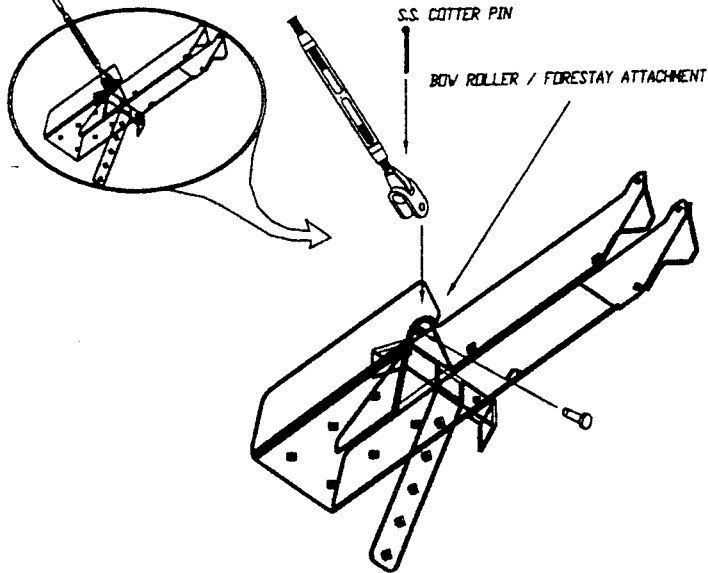
As the large main is creating additional mainsheet and leech loading, Hunter has included a cockpit arch whereby the mainsheet and leech loads are directed to the strong part of the boom (the outboard end) and is located at the heaviest loading point of the mainsail. The cockpit arch serves addition safety and comfort functions as handholds and cockpit canvas attachment points.

B&R rigs have been used on thousands of sailboats, and we are proud to incorporate this successful design on your new Hunter.



- ① FORESTAY 5/16 (7.9mm) 1 X 19
- ② D3 5/16" (7.9mm) 1 X 19
- ③ RD2 3/16" (4.8mm) 1 X 19
- ④ D2 1/4" (6.4mm) 1 X 19
- ⑤ V2 5/16" (7.9mm) 1 X 19
- ⑥ RD1 3/16" (4.8mm) 1 X 19
- ⑦ V1 5/16" (7.9mm) DYFORM
- ⑧ D1 5/16" (7.9mm) DYFORM

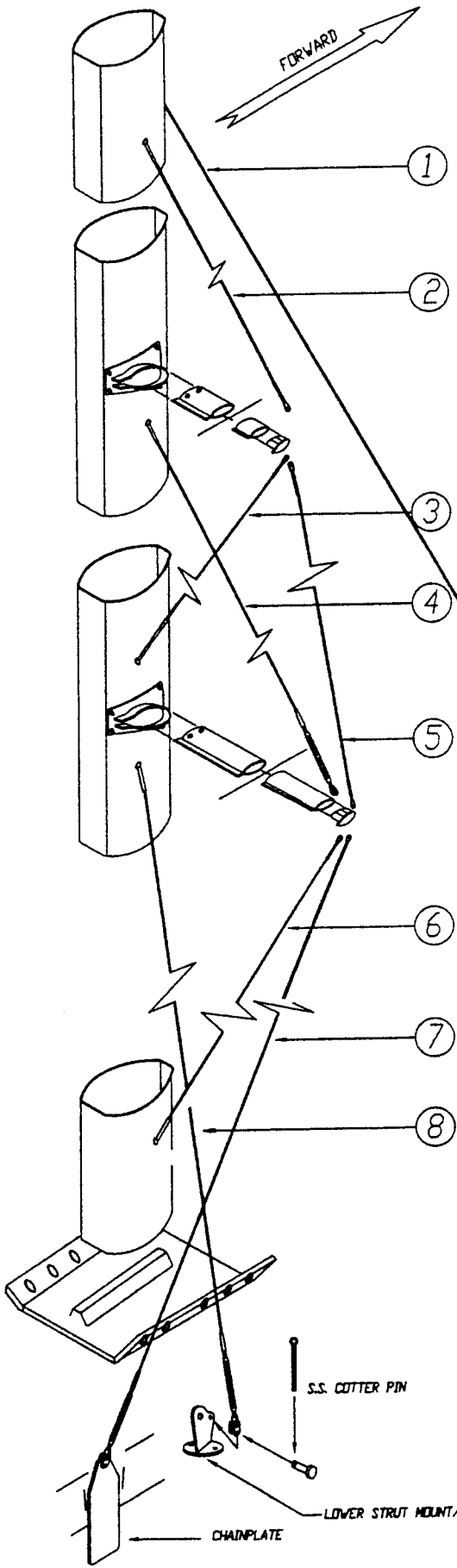
NOTE: SEE PAGES 49A & B FOR SPREADER TIP DETAILS.  
 SEE PAGE 50A FOR STANDARD RIG STANDING RIG LENGTHS.  
 SEE PAGE 51 FOR FITTINGS DESC.



NOTE: NEVER TRY TO SAIL THE VESSEL WITHOUT THE STRUTS IN PLACE AND PROPERLY FASTENED (SEE PAGE 48B)  
 NOTE: IN-MAST FURLING OPTION USES A LARGER MAST SECTION AND THE STRUTS ARE NOT UTILIZED. SEE FOLLOWING PAGE

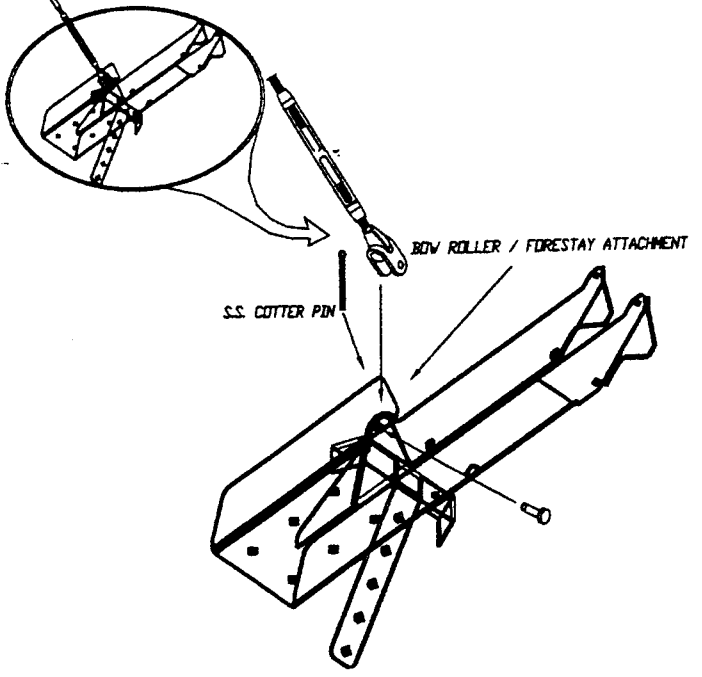
HUNTER®  
 P420 STANDING RIGGING (STANDARD)  
 PART NO. 208048A-1  
 DATE 6/24/97  
 ENGINEERING DEPT.





- ① FORESTAY 5/16" (7.9mm) 1 X 19
- ② D3 5/16" (7.9mm) 1 X 19
- ③ RD2 3/16" (4.8mm) 1 X 19
- ④ D2 1/4" (6.4mm) 1 X 19
- ⑤ V2 5/16" (7.9mm) 1 X 19
- ⑥ RD1 3/16" (4.8mm) 1 X 19
- ⑦ V1 5/16" (7.9mm) 1 X 19
- ⑧ D1 5/16" (7.9mm) 1 X 19

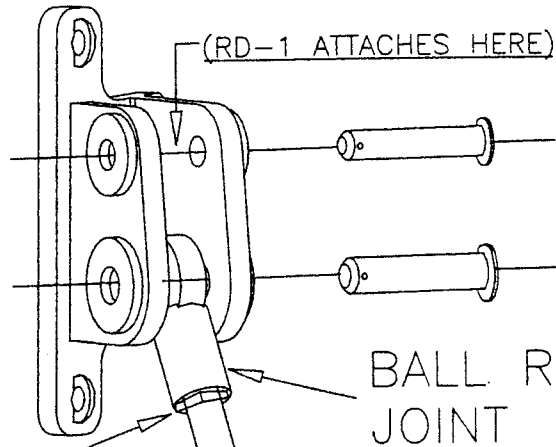
NOTE: SEE PAGES 49A & B FOR SPREADER TIP DETAILS.  
 SEE PAGE 50B FOR FURLING RIG LENGTHS.  
 SEE PAGE 51 FOR FITTINGS DESC.



NOTE: IN-MAST FURLING OPTION USES A LARGER MAST SECTION AND THE STRUTS ARE NOT UTILIZED.

HUNTERA  
 P420 STANDING RIGGING (FURLING)  
 REVISION NO. 208048-2  
 DATE 6/24/97  
 ENGINEERING DEPT.  
 NONE

(UPPER STRUT MOUNT  
ON EA. SIDE OF MAST)



BALL ROD  
JOINT

STEP TWO

ADJUST THREADS UNTIL BALL ROD JOINT  
IS ABLE TO BE EASILY PINNED IN  
STRUT BRACKET

STEP THREE

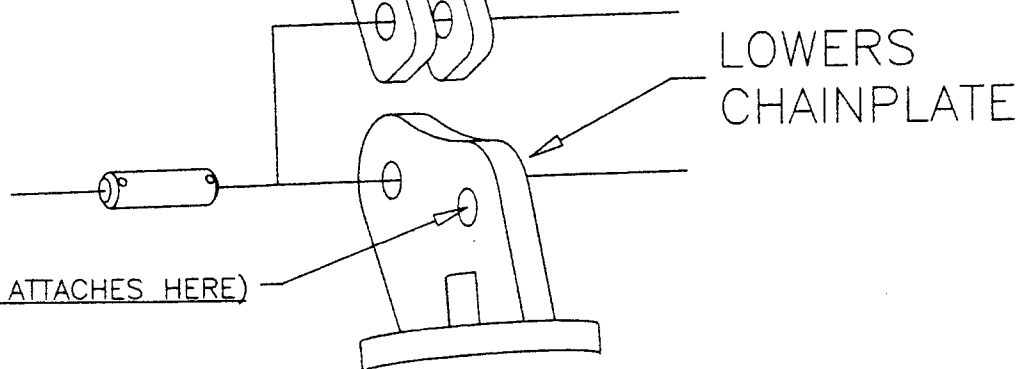
PIN BALL ROD JOINT AND TIGHTEN JAM  
NUT AGAINST END OF STRUT & BALL  
JOINT ROD

JAM NUTS

STRUT

STEP ONE

PIN LOWER END OF STRUT TO  
CHAINPLATE AND ADD SPLIT  
RINGS



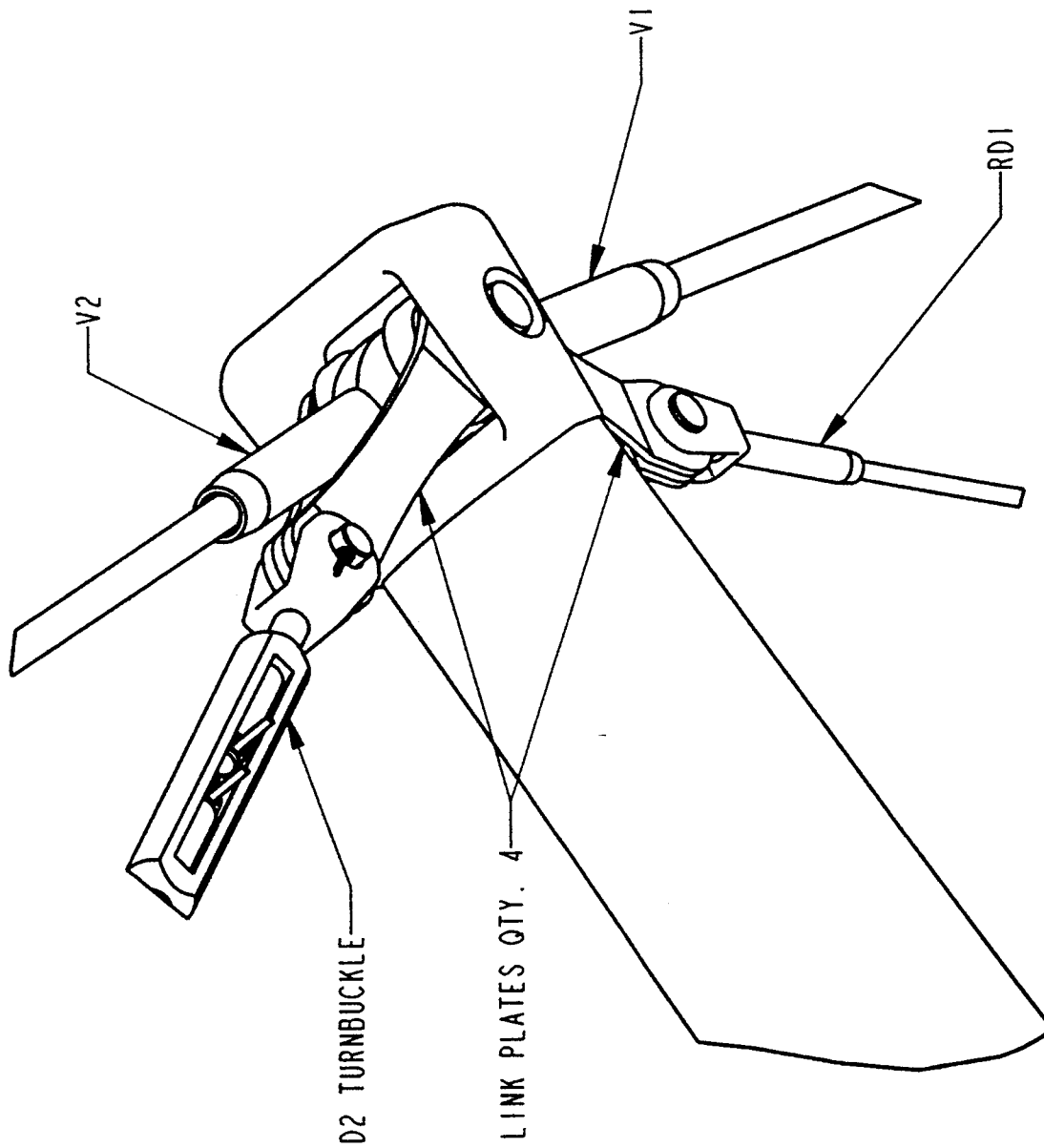
LOWERS  
CHAINPLATE

(D-1 ATTACHES HERE)

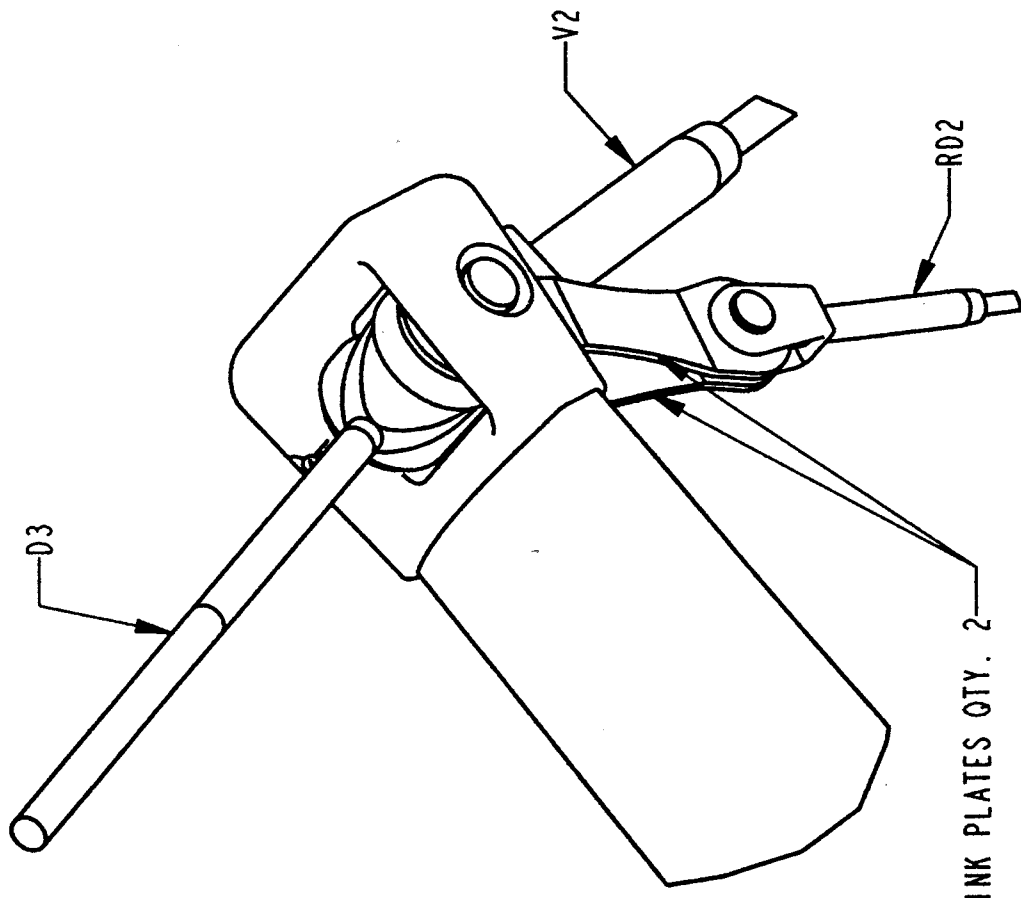
For current address information for Hunt Hunter Corp. see proprietary info.

**HUNTER**

REVISED TITLE	P420 STRUT ASSEMBLY	REVISION NO.	NONE
DESIGN NO.	420848B	DATE	2/13/98
DEPT.	ENGINEERING DEPT.		



HUNTER  
 Seldex Mast Lower Spreader Tip  
 PART NO. 1000  
 REV. 10/78  
 DATE: 10-1-78  
 DRAWN BY: J. J. J.

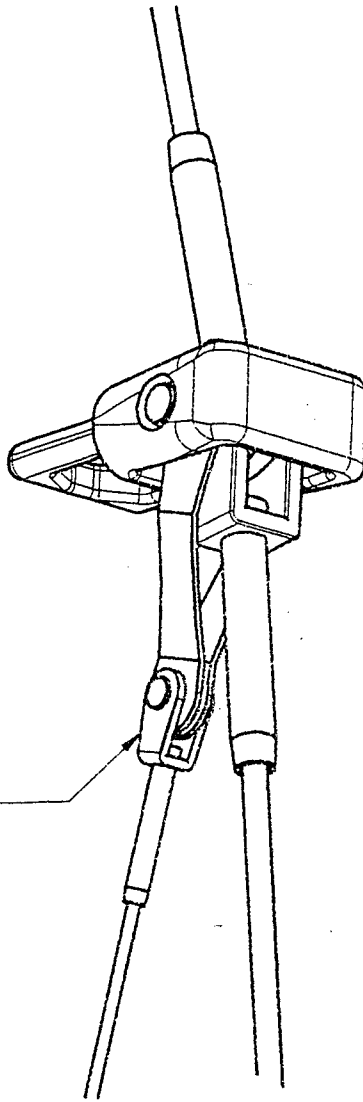


LINK PLATES QTY. 2

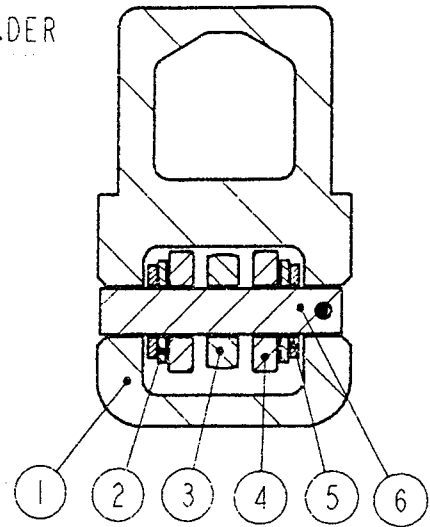
DRAWING TITLE: **SELEN MAST UPPER SPREADER TIP**  
 DRAWING NO.: **1000**  
 REV. NO.: **1**  
 DATE: **10-24-58**  
 DRAWN BY: **FRANKLIN, RCH**

This document contains information in strict confidence. Its disclosure is prohibited.  
**HUNTER**

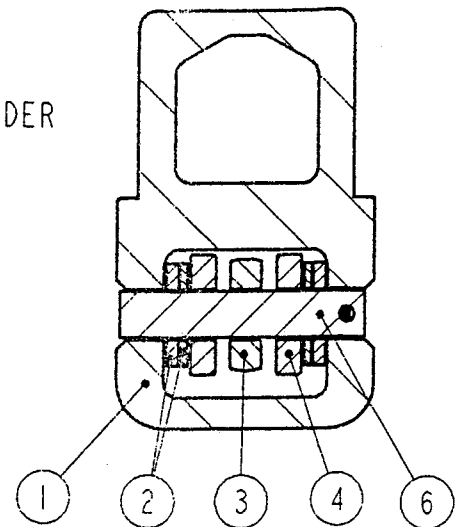
UPPER SPREADER



NYLON WASHERS  
BETWEEN STRIPS  
TO FILL OUT  
EXCESSIVE PLAY

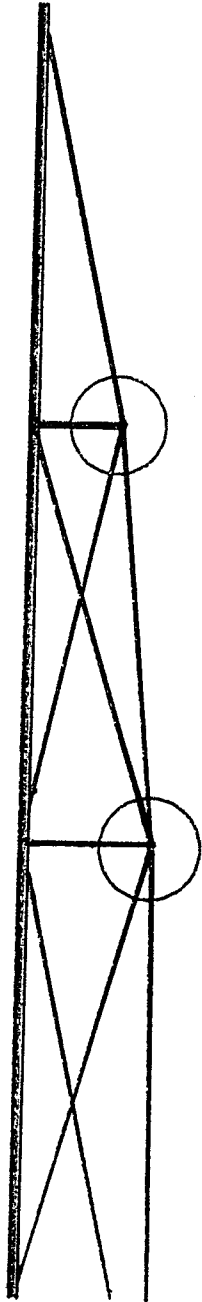


LOWER SPREADER

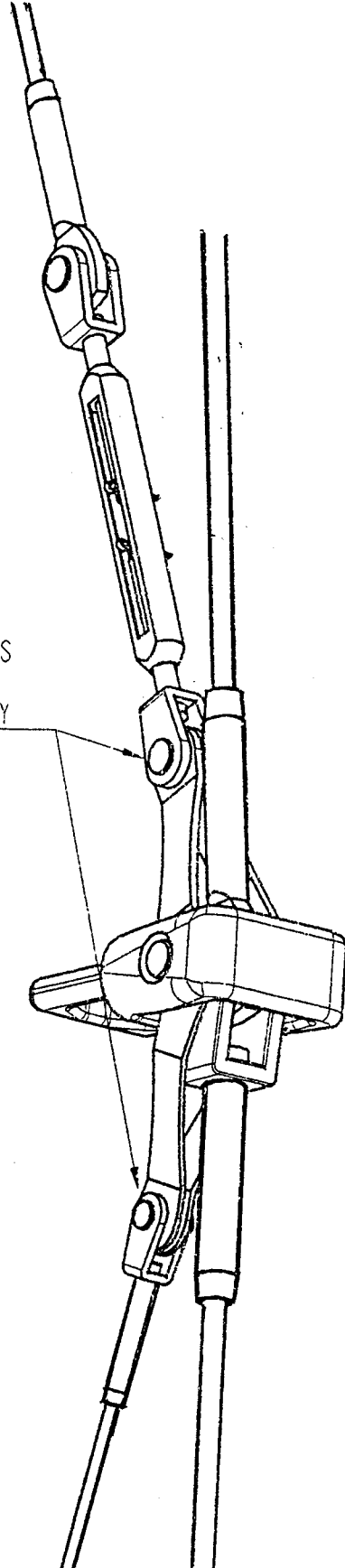


HUNTER  
 THE HUNTER GUNSALES CORPORATION  
 4608049C  
 ENGINEERING DEPT.  
 3/3/99  
 NONE  
 SILDEN MAST SPREADER TIP DETAIL  
 DRAWING NO.

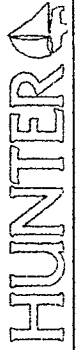




NYLON WASHERS  
BETWEEN STRIPS  
TO FILL OUT  
EXCESSIVE PLAY



PLEASE PRINT  
**SELDEN MAST SPREADER TIP DETAIL CONT**  
DRAWING NO. 4608049D PROJECT NO. NONE  
DATE 3/3/99 BY ENGINEERING DEPT.




**SELDEN STANDARD STANDING RIGGING SPECIFICATIONS**

BY: KJC DATE: 26-Feb-98 REVISION: D2 LENGTHENED, RD1 SHORTENED 9/24/98

OPT/STD	ITEM	QUANTITY	WIRE SIZE	UPPER END	LENGTH	LOWER END
1	STD D3	2	5/16" (8mm) 1x19	841-5/16 SHROUD TERMINAL	3.937 m 12 ft. 11 in.	MARINE EYE FOR 5/8" PIN
2	STD V2	2	5/16" (8mm) 1x19	JAW TOGGLE FOR 5/8" PIN	4.064 m 13 ft. 4 in.	MARINE EYE FOR 5/8" PIN
1	STD D2	2	1/4" (6.4mm) 1x19	841-1/4 SHROUD TERMINAL	3.937 m 12 ft. 11 in.	8-16-16 TURNBUCKLE W/ JAW FOR 12mm PIN
2	STD V1	2	5/16" (8mm) DYFORM	JAW TOGGLE FOR 5/8" PIN	6.429 m 21 ft. 1 1/8 in.	10-20-20 TURNBUCKLE
3	STD D1	2	5/16" (8mm) DYFORM	841-5/16 SHROUD TERMINAL	6.125 m 20 ft. 1 1/8 in.	10-16-16 TURNBUCKLE
3	STD UPPER DIAMOND, RD2	2	3/16" (5mm) 1X19	JAW TOGGLE FOR 3/8" PIN	3.988 m 13 ft. 1 in.	6-10-10 TURNBUCKLE WITH T TERMINAL FOR 740-5a
4	STD LOWER DIAMOND, RD1	2	3/16" (5mm) 1X19	JAW TOGGLE FOR 3/8" PIN	4.369 m 14 ft. 4 in.	6-10-10 TURNBUCKLE WITH UPSET TOGGLE FOR 12mm PIN
	OPT. INNER FORESTAY	1	1/4" (6.4mm) 1x19	841-6 SHROUD TERMINAL	11.433 m 37 ft. 6 1/8 in.	FORESTAY QUICK RELEASE LEVER W/ 1/2" PIN
5	STD FORESTAY	1	5/16" (8mm) 1x19	MARINE EYE	14.910 m 48 ft. 11 in.	GIBB 10-20-20 TURNBUCKLE W/ JAW TOGGLE LOOSE

420 SELDEN STANDARD STANDING.XIS

PROVIDE FILE  
**P420 STANDING RIGGING SPECS (STD)**  
NO ACCURATE WEIGHT INFORMATION FOR EACH TURNBUCKLE (TDB) HAS PROVIDED DATA  
 DRAWING NO. 4208050A  
 ENGINEERING DEPT. NONE  
 DATE 7/22/98

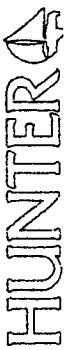


**P420 SELDEN FURLING MAST STANDING RIGGING SPECIFICATIONS**

BY: KJC DATE: 22-Sep-98 REVISION: AFTER STEPPING 9/28/98

OPT/STD	ITEM	QUANTITY	WIRE SIZE	UPPER END	LENGTH	LOWER END
1	STD D3	2	5/16" (8mm) 1x19	841-5/16 SHROUD TERMINAL	4.305 m 14 ft. 1 1/2 in.	MARINE EYE
2	STD V2	2	5/16" (8mm) 1x19	JAW TOGGLE	4.572 m 15 ft. 0 in.	MARINE EYE
3	STD D2	2	1/4" (6.4mm) 1x19	841-1/4 SHROUD TERMINAL	4.486 m 14 ft. 8 5/8 in.	8-12-12 TURNBUCKLE W/JAW TOGGLE
4	STD V1	2	5/16" (8mm) DYFORM	JAW TOGGLE	5.550 m 18 2 1/2	10-20-20 TURNBUCKLE
5	STD D1	2	5/16" (8mm) 1x19	841-5/16 SHROUD TERMINAL	5.302 m 17 4 3/4	10-16-16 TURNBUCKLE
6	STD UPPER DIAMOND, RD2	2	3/16" (5mm) 1X19	JAW TOGGLE	4.499 m 14 ft. 9 1/8 in.	TURNBUCKLE WITH T-TERMINAL
7	STD LOWER DIAMOND, RD1	2	3/16" (5mm) 1X19	JAW TOGGLE	4.686 m 15 ft. 4 1/2 in.	TURNBUCKLE WITH T-TERMINAL
8	OPT. INNER FORESTAY	1	1/4" (6.4mm) 1x19	841-6 SHROUD TERMINAL	11.481 m 37 ft. 8 in.	FORESTAY QUICK RELEASE LEVER W/ 1/2" PIN
9	STD FORESTAY	1	5/16" (8mm) 1x19	MARINE EYE	14.935 m 49 ft. 0 in.	GIBB 10-20-20 TURNBUCKLE W/ JAW TOGGLE LOOSE

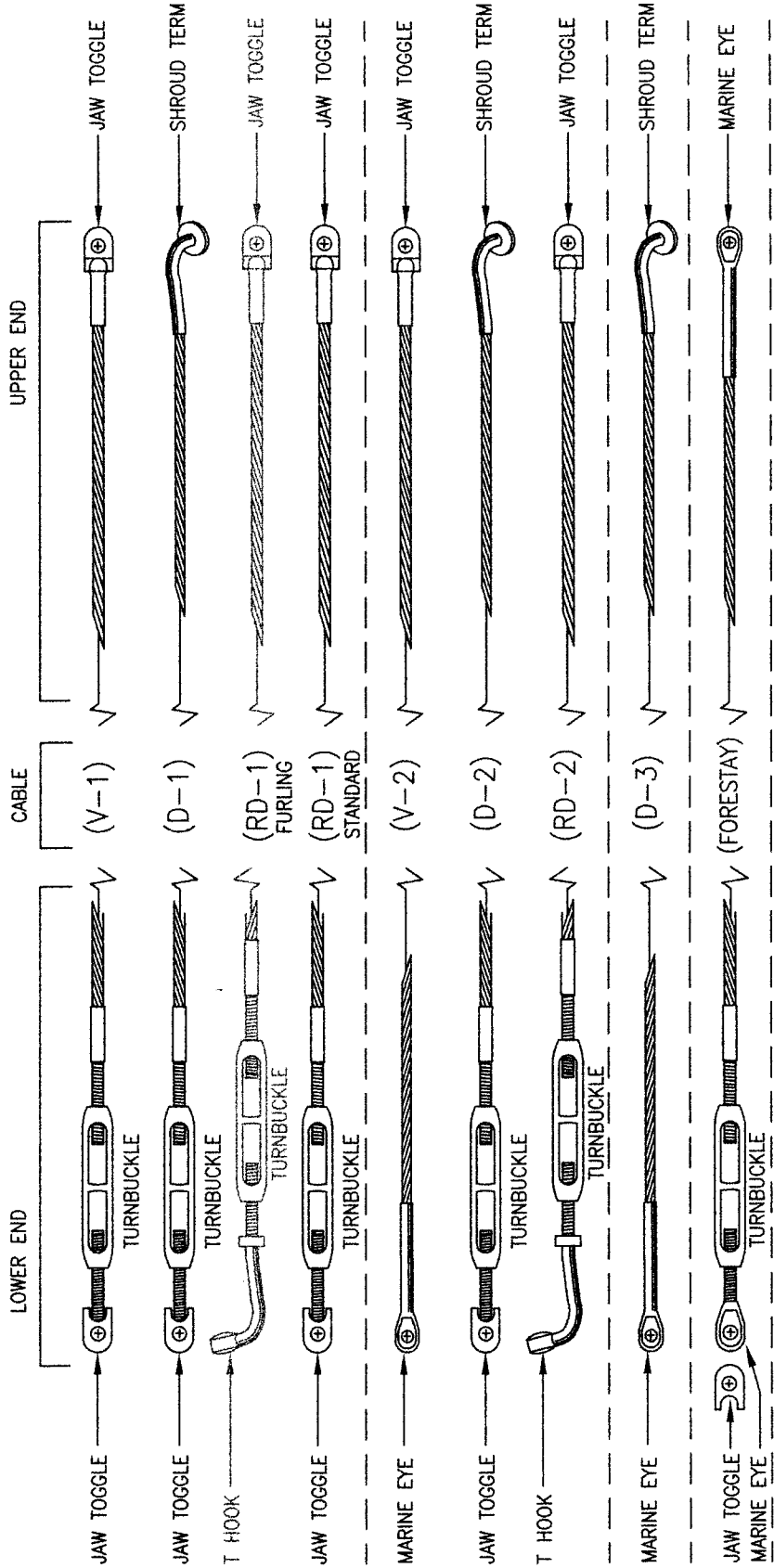
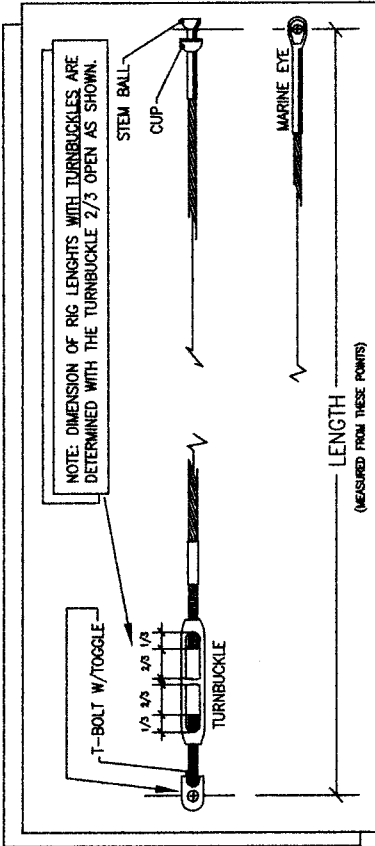
ALL ADJUSTABLE RIGGING IS DIMENSIONED WITH TURNBUCKLES 2/3 OPEN  
ALL TURNBUCKLES TO HAVE RIGHT HAND THREADS ON SWAGED FITTING

FORM NO. 100  
**P420 STANDING RIGGING SPECS (FURL)**  
REVISION NO. 42080508  
ENGINEERING DEPT.  
DATE 7/22/98  
PERSONNEL NONE  


V = VERTICAL  
 D = DIAGONAL  
 RD = REVERSE DIAGONAL

1 = LOWER  
 2 = INTER.  
 3 = UPPER

NOTE: SEE PAGES 50A & 50B FOR ACTUAL RIG LENGTHS.



# TUNING THE P420 B&R RIG

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The easiest method for tuning the B&R rig is to perform step one as follows before the mast is stepped, with it lying aft side down on two sawhorses. Begin with all rigging slack. If the mast is already stepped, loosen all the rigging, and then proceed to step one.

1. Start with all the rigging slack. Then induce the mast bend by tightening the reverse diagonals (diamonds). Measure the bend by tensioning a line or the main halyard between the masthead and the gooseneck. The maximum amount of bend should be no more than 8" (203 mm) for the standard rig and no more than 2" (50 mm) for the furling mast measured perpendicular from the aft face of the mast to the halyard at the deepest part of the bend. It can be less than that based on the sail shape and your own preference. The bend should also be evenly distributed along the mast to give a smooth shape. Keep in mind that bending a furling mast may make it more difficult to furl and will not do much to flatten the sail as in a standard rig. It is very important that the mast also be straight from side to side at this time. Tighten or loosen the reverse diagonals to achieve this.
2. Step the mast with all shrouds attached but with the turnbuckles completely loosened (if the mast was not already stepped).
3. Attach the jib halyard to a cleat on the bow to support the mast in a raked position (the masthead should be about 1-1/2' behind the step). Attach the verticals and tighten them until you can just see the hole for the cotter pin in the turnbuckle. Tighten the jib halyard until you can attach the forestay. At this point the masthead should be raked so that a weight hung on the main halyard hangs about 1' behind the mast step.
4. Use the main halyard to check that the mast is centered from side to side. Pull it tight and mark the halyard next to the verticals chainplate. Now do the same to the other side to see if the marks line up. If not, tighten and/or loosen the verticals until the marks line up. Once the masthead is centered, begin tightening the verticals until the turnbuckles are approximately half closed. While tightening the verticals you may notice the bend in the mast increasing. Now you can tighten the lowers which will tend to straighten the lower part of the mast. Be sure to tighten port and starboard sides evenly.
5. Now you should tighten the headstay until it is approximately half closed as well. This should induce the appropriate amount of headstay tension. *Never* use anything more than a pair of wrenches to tighten your rigging. If you use an extended piece of pipe on the handle of a wrench you can over tighten the rigging and do damage to the mast or rigging.
6. On the Hunter P420 it is necessary to go up the mast in a bosun's chair to tighten the number 2 diagonal shroud (D2 or intermediate shroud). Always use caution when "going aloft". You should always use a mountain climbing harness or Bosun's Chair intended for this use. Always tie into the harness with the halyard using a bowline and then secure the shackle as a back up as the knot is more reliable than a mechanical fastener. The person hoisting you aloft should keep the halyard stopper closed to prevent falls. Good communication between the two of you is also important. Tighten the D2 until it has just become tight and then add two complete turns. While at the first spreader, look up the back of the mast to see if it is straight. If not then adjust the appropriate D2 to straighten it.
7. Have the person on deck carefully lower you. They should keep the halyard wrapped at least twice around the winch and should always have one hand able to stop the halyard from running free. Once on deck look up the back of the mast and see if it is straight. If not then adjust the lowers (D1) until it is.
8. If you have the standard rig you need to attach the struts at this time. Attach the lower end of the strut to the smaller hole in the chainplate. Adjust the length by turning



# TUNING THE P420 B&R RIG

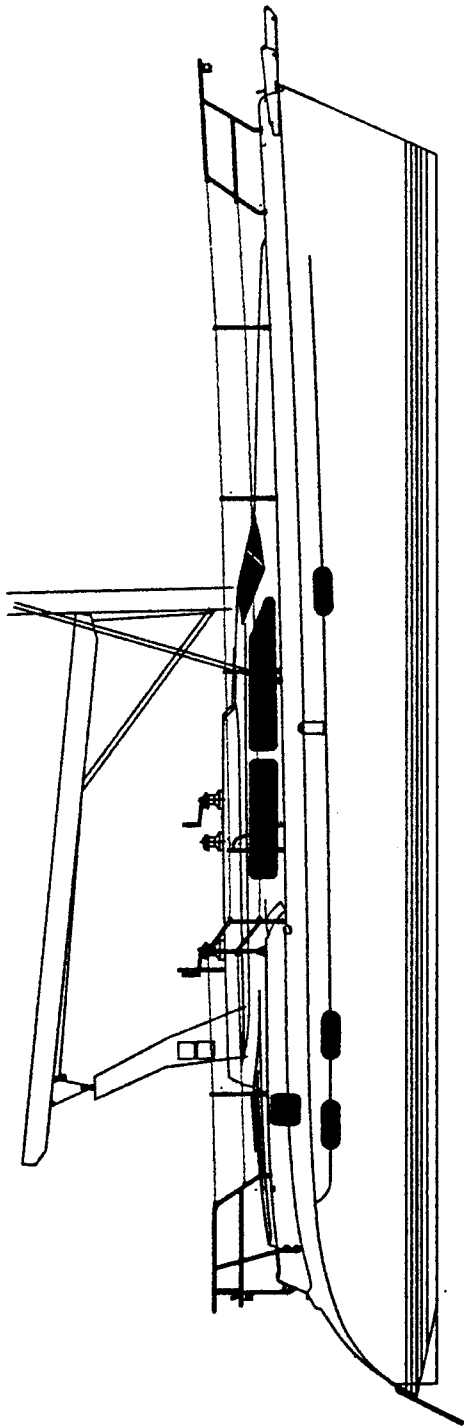
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the ball joint bearing in the upper end of the strut until the holes in the pin can be attached. It is normal to have some play between the strut and the chainplate and strut bracket

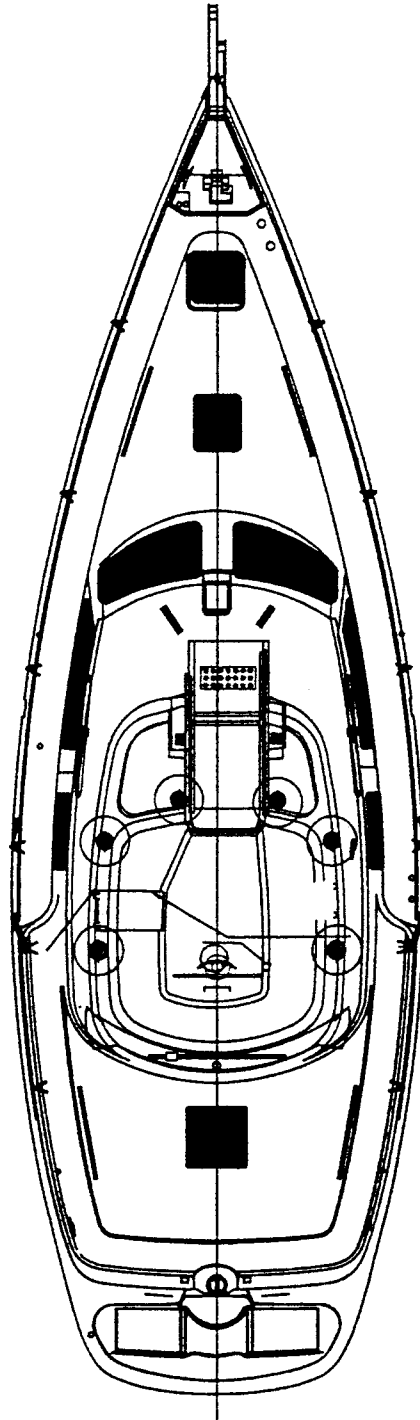
Caribbean it should be replaced every 2-3 years compared to every 10 for the great lakes. You should consult a professional rigger for advice.

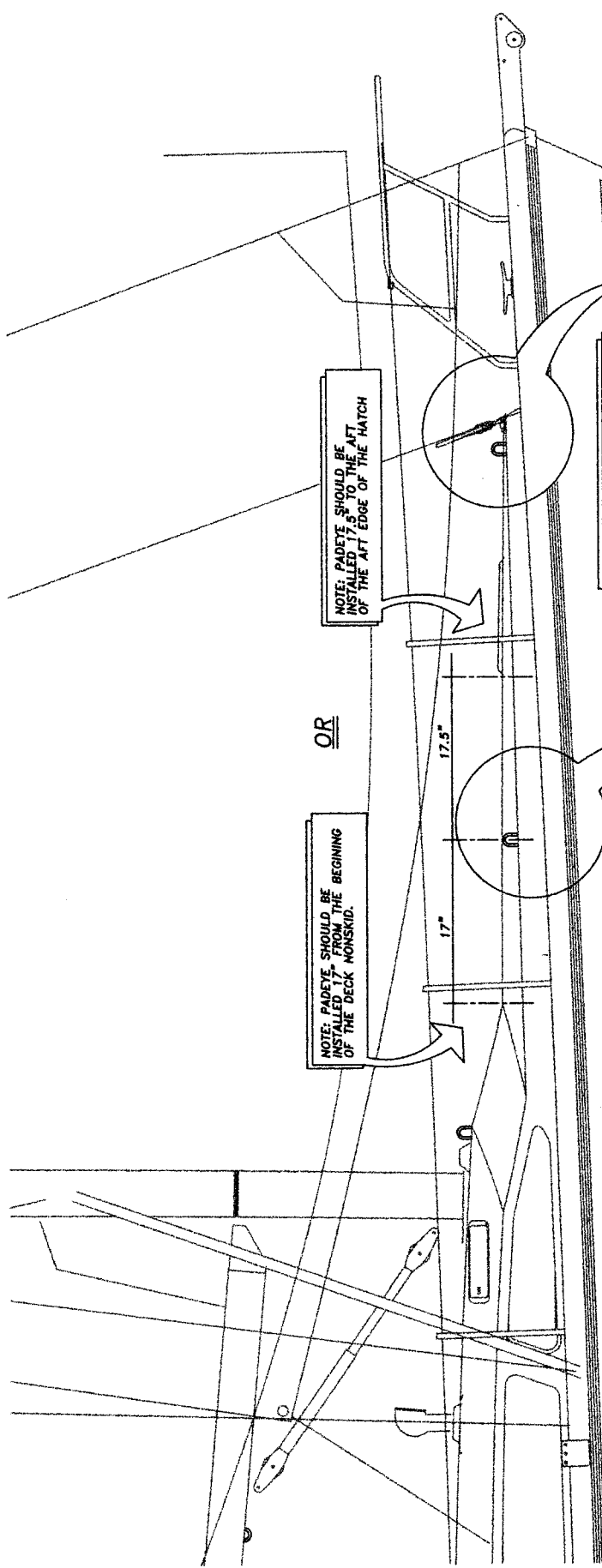
9. The final test is to go sailing in 10-15 knots of wind. First, adjust the tension in the shrouds. If when sailing upwind, the shrouds on the leeward side are slack then tighten them to remove about half the slack keeping note of the number of turns. Then tack and do the same to the other side. Do this until you are happy with the tension and the leeward side does not get loose when the boat is heeled. Now sight up the mast to be sure it is still relatively straight from side to side. If it is not then adjust to appropriate rigging to correct it. For example: if the mast is straight until the upper spreader and then hooks to the windward side then you will have to revisit steps 6 and 7 above. Remember to always tighten the leeward shroud, tack and tighten the new leeward shroud the same amount. This prevents damage to the turnbuckles and is also much easier to do. Keep in mind it is also possible to have something too tight such as a diagonal shroud.
10. At this point you should have adequate headstay tension. The sails are built for about 14" of headstay sag, the bend in the standard mast should be about 1' and 4" in the furling mast and it should be nearly straight from side to side when sailing upwind. If any of these are not true then revisit the appropriate step above to correct it. If the sag in the headstay is too much then adding tension to the verticals will fix it.
11. Once the rig is tuned you should make sure to add the cotter pins to all the rigging bending back the ends and taping them to prevent snagged lines sails and fingers.

Remember that rigging, like everything else, can age. As it gets older it may need to be replaced. The frequency for which this becomes necessary depends on the climate and conditions in which the boat is sailed. For example: if you sail in the



SEE PAGES 38-40 FOR OPTIONAL  
DECK HARDWARE INFORMATION





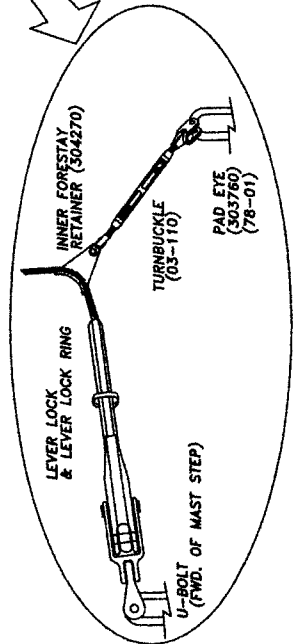
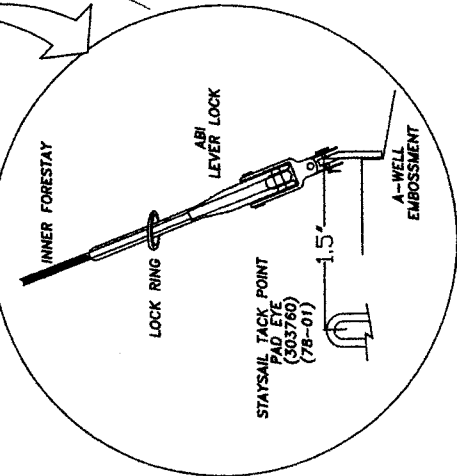
NOTE: PAD EYE SHOULD BE INSTALLED 17.5" TO THE AFT OF THE AFT EDGE OF THE HATCH

OR

NOTE: PAD EYE SHOULD BE INSTALLED 17" FROM THE BEGINNING OF THE DECK NONSKID.

NOTE: INSTALL LOCK RING PRIOR TO INNER FORESTAY INSTALLATION

STAYSAIL CONFIGURATION IN USE



CONFIGURATION WHEN NOT IN USE

Part No. 4208054B  
 Revision No. NONE  
 Date 9/15/98  
 Engineering Dept

**P420 OPTIONAL STAYSAIL LAYOUT**

**HUNTER**

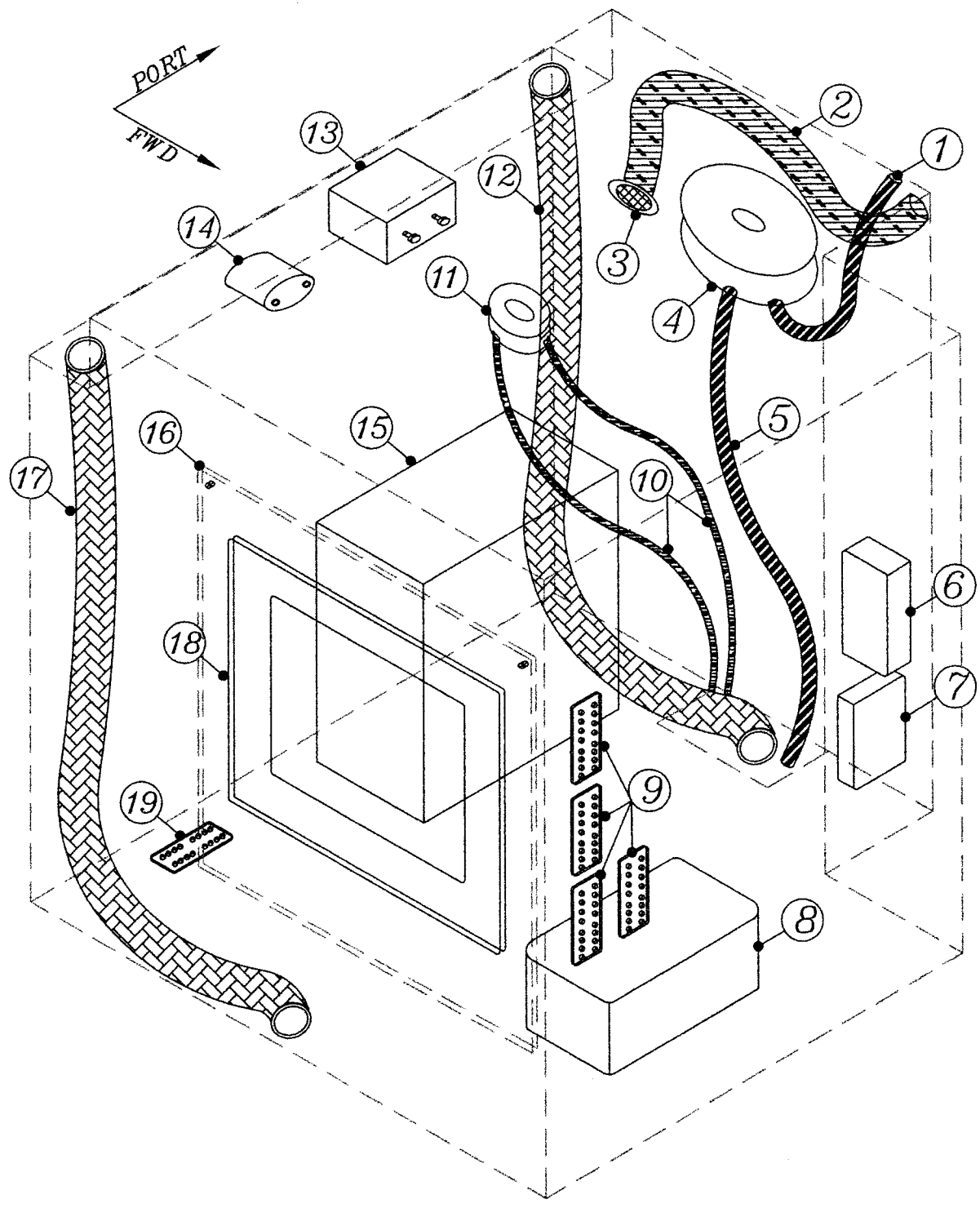
We warrant deck installation for each HUNTER MARK COFF. See preliminary plans.

## ENGINE OPERATING INSTRUCTIONS:

- ① FILL DIESEL TANK WITH DIESEL FUEL
- ② CHECK ENGINE OIL LEVEL (SEE YANMAR MANUAL)
- ③ OPEN ENGINE RAW WATER PICKUP SEACOCK (SEE PGE 60A)
- ④ TURN ON "START BATTERY SELECTOR SWITCH" (LOCATED AT ENGINE COMPARTMENT BULKHEAD)
- ⑤ TURN KEY TO START POSITION, RELEASE WHEN ENGINE STARTS  
NOTE (IF ENGINE APPEARS TO HAVE TROUBLE STARTING, SEE YANMAR MANUAL)
- ⑥ TO SHUT ENGINE DOWN: PUSH RED BUTTON AT KEY SWITCH PANEL  
UNTIL ENGINE STOPS RUNNING THEN TURN KEY TO OFF POSITION.

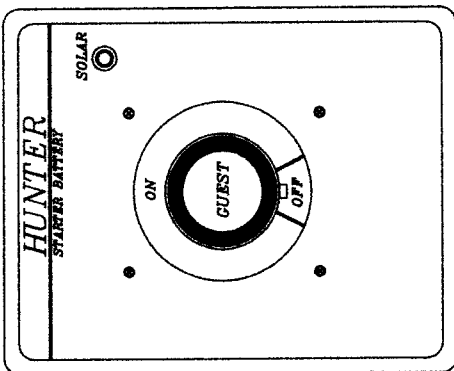
WARNING: DO NOT LEAVE AFT HATCHES OPEN WHILE ENGINE IS RUNNING. THERE EXISTS A POSSIBILITY OF EXHAUST POISONING, OR EVEN DEATH.

P420 ENGINE OPER. INST	
ENGINEERING DEPT.	DATE
4208065A	7/26/97
HUNTER	

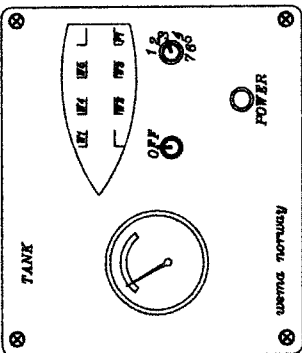


- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. MANUAL BILGE PUMP DISCHARGE HOSE</li> <li>2. GENERATOR BLOWER DUCT</li> <li>3. GENERATOR BLOWER MOTOR</li> <li>4. MANUAL BILGE PUMP. THRU TO DECK</li> <li>5. MANUAL BILGE PUMP PICK UP HOSE</li> <li>6. BACKSIDE OF CALLEY POWER OUTLET</li> <li>7. BACKSIDE OF LPG SOLENOID SWITCH</li> <li>8. START BATTERY/ BATTERY BOX</li> <li>9. GROUND BUSS BARS</li> <li>10. STEERING CABLES THRU TO RUDDER</li> </ol> | <ol style="list-style-type: none"> <li>11. STEERING SHEAVE BOX. THRU TO DECK</li> <li>12. (PT) SCUPPER DRAIN HOSE TO SEACOCK</li> <li>13. OPTIONAL INVERTER ISOLATOR</li> <li>14. OPTIONAL INVERTER SOLENOID</li> <li>15. LOCATION OF OPTIONAL GENERATOR</li> <li>16. (STBD) ENGINE BLKHD. ACCESS PANEL</li> <li>17. (STBD) SCUPPER DRAIN HOSE TO SEACOCK</li> <li>18. MAIN DISTRIBUTION PANEL</li> <li>19. GROUND BUSS BAR</li> </ol> |
|---|--|

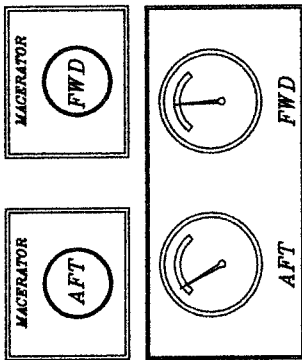
START BATTERY ON/OFF SAFETY SWITCH PANEL



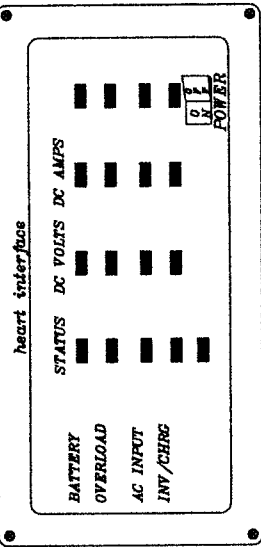
FUEL/WATER/TANK SELECTOR SWITCH PANEL



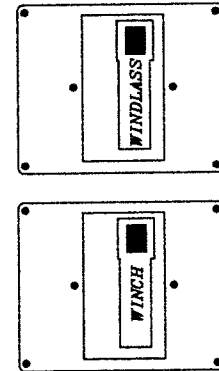
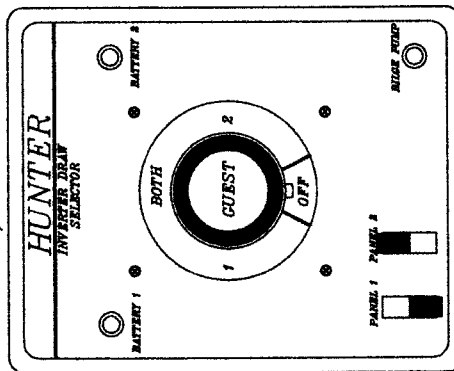
MACERATOR MOMENTARY SWITCHES/WASTE TANK LEVEL INDICATOR



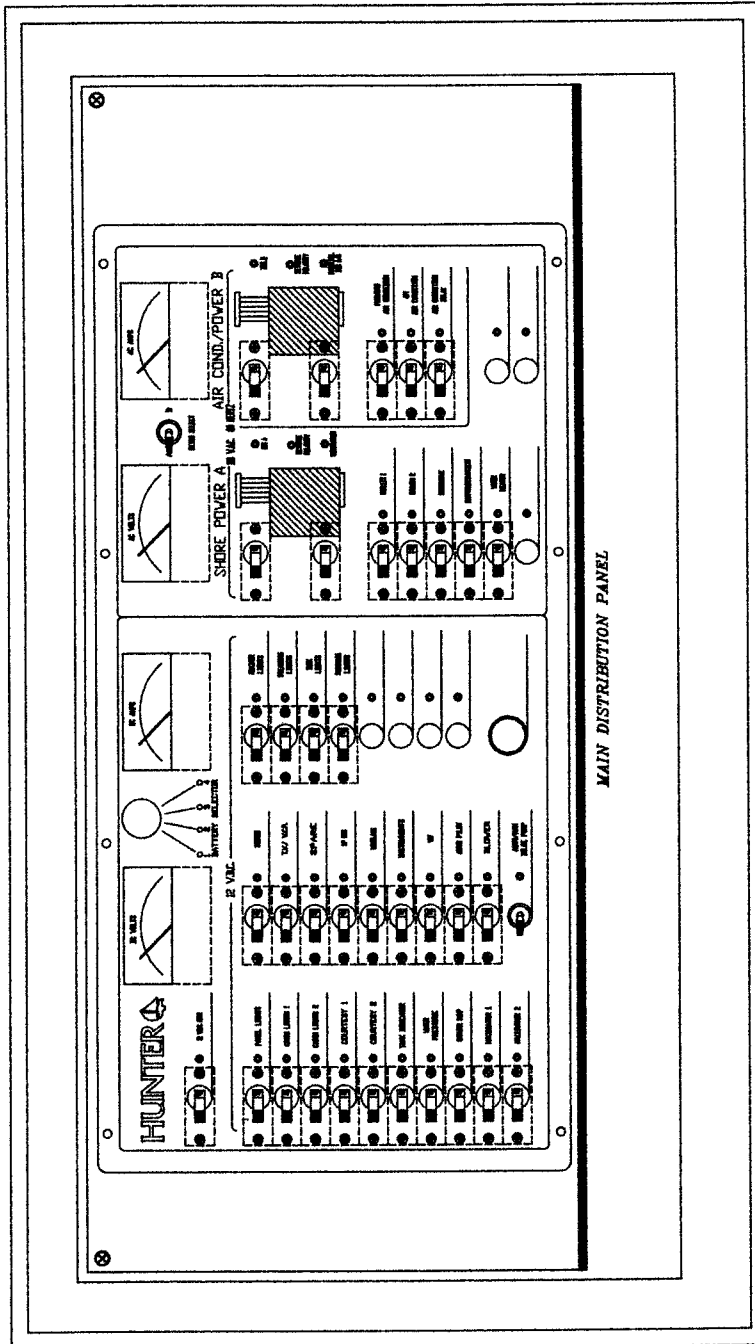
INVERTER REMOTE ON/OFF SWITCH PANEL



INVERTER/DRAW (HOUSE BATTERY) SELECTOR SWITCH



WINCH/WINDLASS BREAKER SWITCHES



SEE PAGE 63A-16 FOR FURTHER INFORMATION PERTAINING TO SELECTOR SWITCHES

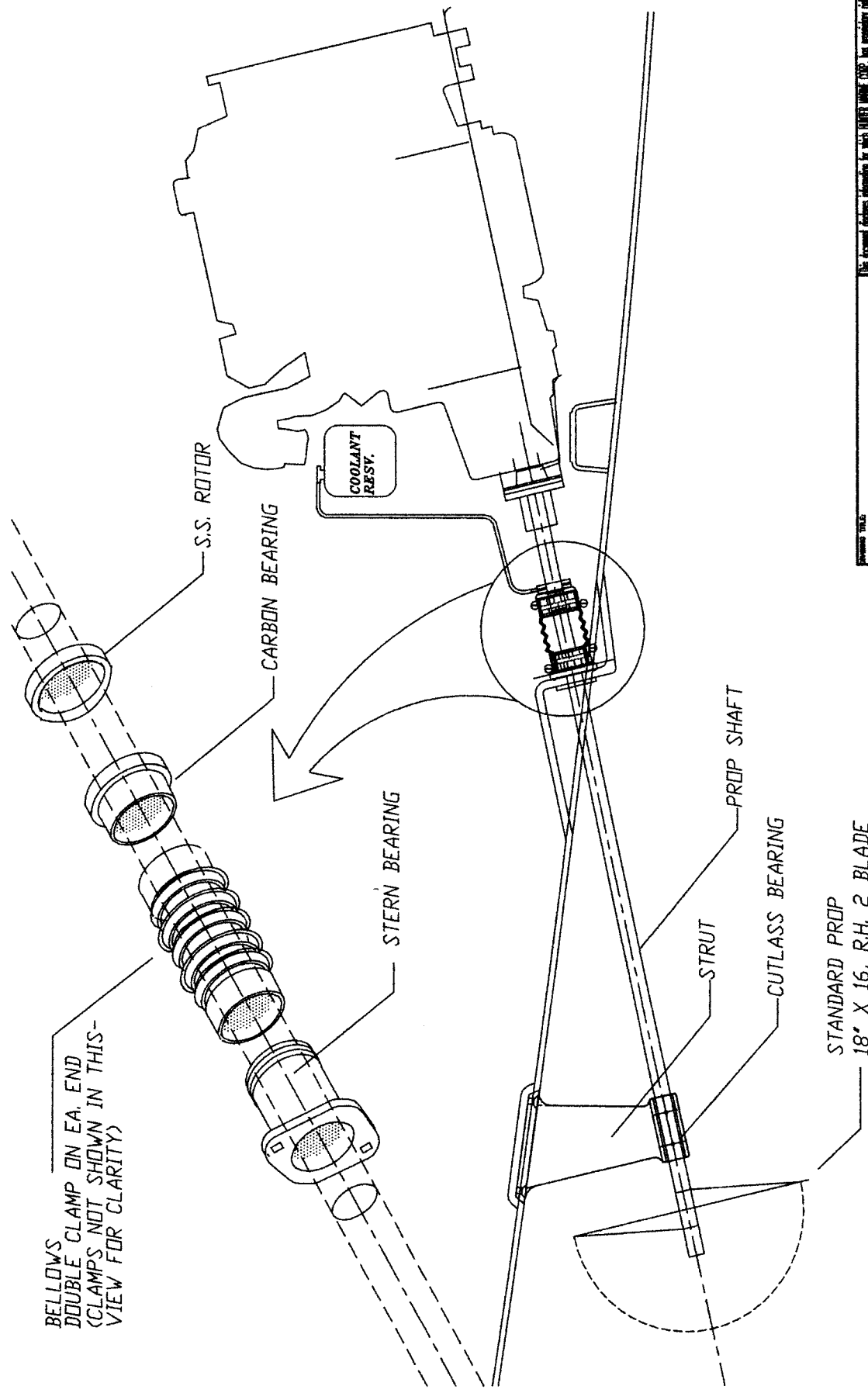
HUNTER  
 P420 ENGINE COMPARTMENT BULKHEAD LAYOUT  
 REVISION NO. NONE  
 DRAWING NO. 4208055D  
 DATE 2/10/99  
 ENGINEERING DEPT.



DRIPLESS PACKING GLAND  
DETAIL

SEE FOLLOWING PAGES FOR DETAILED  
INSTALLATION & TROUBLESHOOTING DETAILS

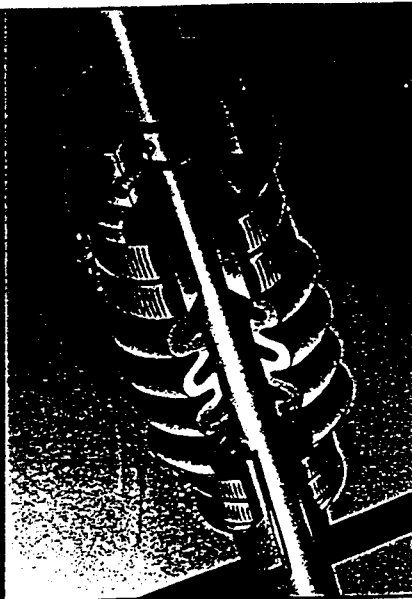
BELLOWS  
DOUBLE CLAMP ON EA. END  
(CLAMPS NOT SHOWN IN THIS-  
VIEW FOR CLARITY)



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

HUNTER  
 P420 PROP SHAFT & STUFFING BOX DETAIL  
 DRAWING NO. 4208056A  
 REVISION NO. NONE  
 DATE 9/21/98  
 ENGINEERING DEPT.  
For documented business information for HUNTER MARINE CORP. See proprietary rights.

# PACKLESS SEALING SYSTEM



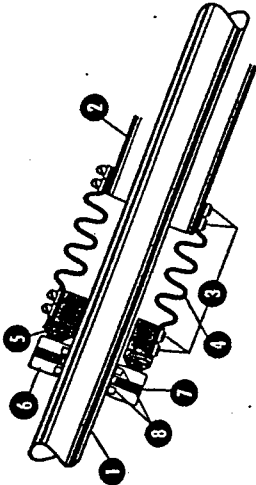
## SHAFT SEAL

### INSTALLATION INSTRUCTIONS

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

#### STANDARD S.S. SHAFT SEAL:

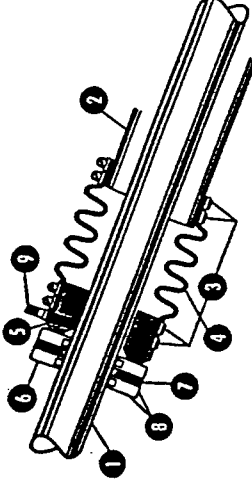
Hull Speed under 12 knots.  
(Boats equipped with water injected stuffing box, use high speed.)



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

#### HIGH SPEED P.S.S. SHAFT SEAL:

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



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

#### READ INSTRUCTIONS THOROUGHLY

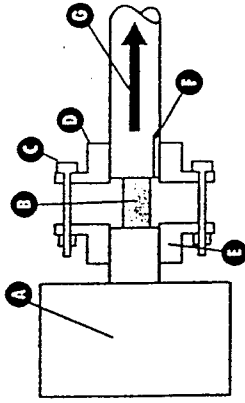
- Do not use grease or oil to slide the stainless steel rotor down the shaft.
- Do not allow petroleum based antifreeze to come in contact with face of the seal when winterizing engine.
- Install the P.S.S. Only when the boat is out of the water.
- Do not damage the carbon flange or stainless steel rotor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

#### INSTALLATION INSTRUCTIONS

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

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

#### REMOVING THE SHAFT COUPLING:



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

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

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

**BELLOW COMPRESSION CHART:**

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

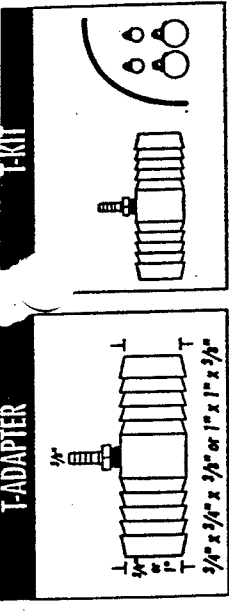
Note: amount of compression may vary depending on motor mounts and shaft misalignment.

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

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

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

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

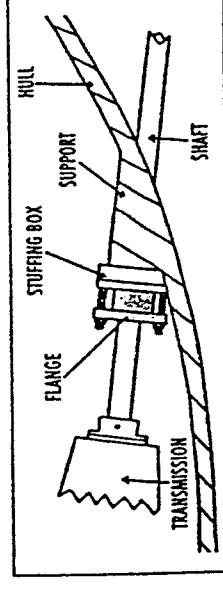


Note: P.Y.I. T-adapter fittings or T-adapter kits (T-adapter, 6' reinforced hose, 4 hose clamps) are available for 3/4" or 1" internal hose diameters.

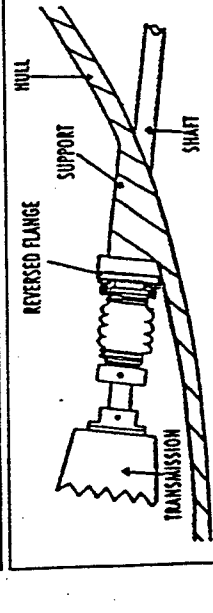
- For keel cooled or in-line systems, water can be plumbed into the seal from an underwater scoop.
  - Standard speed seals. When a boat with a watertight (P.S.S.) Seal goes back in the water, there will be an air pocket trapped in the shaft log (stern tube). This air pocket must be vented when the boat is launched, so water can reach the face of the seal to help cool and lubricate it. To vent the air pocket, simply compress the bellow (push the carbon away from the stainless steel rotor with your hand) so that water fills the shaft log (stern tube). A small amount of water will enter the boat at this time and will stop as soon as you release the bellow, allowing the two faces to come back in contact.
- This procedure should be done every time the boat goes back in the water and is not required with high speed seals.

**BOLT-ON OR RIGID STUFFING BOXES:**

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



**BEFORE**



**AFTER**

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

**BREAK-IN PERIOD:**

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

**TROUBLESHOOTING:**

- Spray or mist during operation:  
Dimensions provided in the bellow compression chart are an average and should act as a guide. If you should experience any spray or misting during high speed operation (after break-in period), add an additional 1/8" compression to the bellow with the rotor and repeat until the spray has stopped.
- Dripping while not operational:  
If the seal leaks when the shaft is not turning, some foreign material such as grease or oil may be prohibiting the two faces from seating properly. To clean this foreign material from the two faces, insert a clean cloth rag between the carbon graphite and stainless steel rotor and rotate it around the shaft vigorously. As you do this, water will flush both faces of any impurities. Remove the rag from the seal and the leak should stop.



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FRESH WATER SYSTEM OPERATION:

- ① FILL TANK/S WITH FRESH WATER (SEE PAGE 60B FOR FILL LOCATIONS)
- ② OPEN DESIRED MANIFOLD VALVE/S (SEE PAGE 57B-1 FOR MANIFOLD LOCATION)
- ③ TURN ON HOUSE BATTERY SELECTOR SWITCH (LOCATED ENGINE COMPARTMENT BULKHEAD)
- ④ TURN ON "D.C. MAIN" BREAKER ON MAIN BREAKER PANEL
- ⑤ TURN ON "WATER PRESSURE" BREAKER ON MAIN BREAKER PANEL
- ⑥ "HOT WATER" IS ATTAINABLE BASICALLY IN TWO WAYS...
  - Ⓐ BY HEATING THE WATER WITH THE DIESEL ENGINE
  - Ⓑ BY SUPPLYING 110V.A.C. BY "DOCKSIDE SHORE POWER" OR GENERATOR POWER.
- ⑦ TO HEAT BY "ENGINE" SEE PAGE 55A FOR ENGINE OPERATING INSTRUCTIONS  
NOTE: WHEN COOLANT IS INSTALLED, BLEED AIR FROM HEAT EXCHANGER LINES TO WATER HEATER.  
CRANK ENGINE, OPEN BLEEDER VALVE (SEE PAGE 55B) UNTIL AIR IS GONE FROM LINES
- ⑧ TO HEAT BY "SHORE POWER"
  - Ⓐ HOOK UP SHORE POWER CABLES (#1 AND #2)
  - Ⓑ TURN ON A.C. MAIN BREAKER ON MAIN BREAKER PANEL
  - Ⓒ TURN ON "WATER HEATER BREAKER" ON MAIN BREAKER PANEL
- ⑨ TO HEAT BY "GENERATOR POWER"... SEE PAGE 63E-1 FOR GENERATOR OPERATING INST.  
THEN FOLLOW STEPS #8 B & C (THIS PAGE) UNDER "TO HEAT BY SHORE POWER"

NOTE: AS WITH ALL WATER HEATERS, BE SURE WATER TANK IS FULL  
BEFORE APPLYING POWER TO UNIT, TO AVOID DAMAGING THE HEATING ELEMENT  
GENERATOR IS OPTIONAL

P420 FRESH WATER OPERATING INST.		HUNTER	
REVISED NO.	4208057A	REVISION NO.	NONE
ENGINEERING DEPT		DATE	11/21/98

MID-SHIP WATER SYSTEMS COMPONENTS (SEE PAGE 57F)

- 1D GALLEY FAUCET
- 2D WATER TANK (47 GAL./ 178 L.)
- 3D GALLEY SEACOCK
- 4D TANK FILL VENT (DECK FITTING)
- 5D (TO VENTED STANCHION)
- 6D TANK FILL LOCATION (DECK FITTING)
- 7D AFT HEAD SHOWER FAUCET
- 8D AFT HEAD VANITY FAUCET
- 9D AFT SHOWER DRAIN (SEE PG. 57B-2)
- 10D GALLEY FRIG./FRZR. DRAIN (SEE PG. 57B-2)

TRANSOM WATER SYSTEMS COMPONENTS (SEE PAGE 57H)

- 1E TRANSOM SHOWER FAUCET
- 2E TRANSOM FRESH WATER INLET

AFT WATER SYSTEMS COMPONENTS (SEE PAGE 57G)

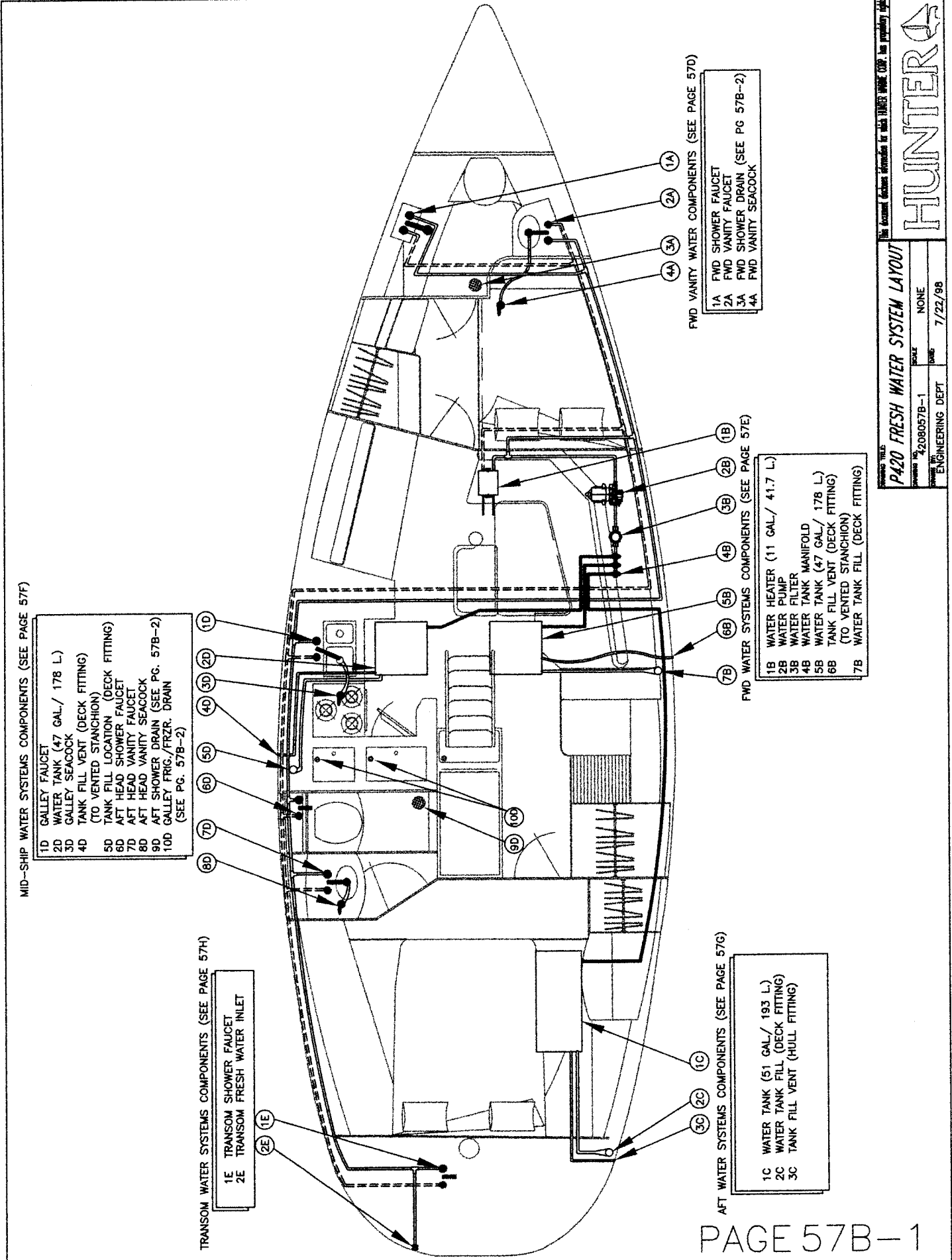
- 1C WATER TANK (51 GAL./ 193 L.)
- 2C WATER TANK FILL (DECK FITTING)
- 3C TANK FILL VENT (HULL FITTING)

FWD WATER SYSTEMS COMPONENTS (SEE PAGE 57E)

- 1B WATER HEATER (11 GAL./ 41.7 L.)
- 2B WATER PUMP
- 3B WATER FILTER
- 4B WATER TANK MANIFOLD
- 5B WATER TANK (47 GAL./ 178 L.)
- 6B TANK FILL VENT (DECK FITTING)
- 7B (TO VENTED STANCHION)
- 7B WATER TANK FILL (DECK FITTING)

FWD VANITY WATER COMPONENTS (SEE PAGE 57D)

- 1A FWD SHOWER FAUCET
- 2A FWD VANITY FAUCET
- 3A FWD SHOWER DRAIN (SEE PG 57B-2)
- 4A FWD VANITY SEACOCK



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**P420 FRESH WATER SYSTEM LAYOUT**

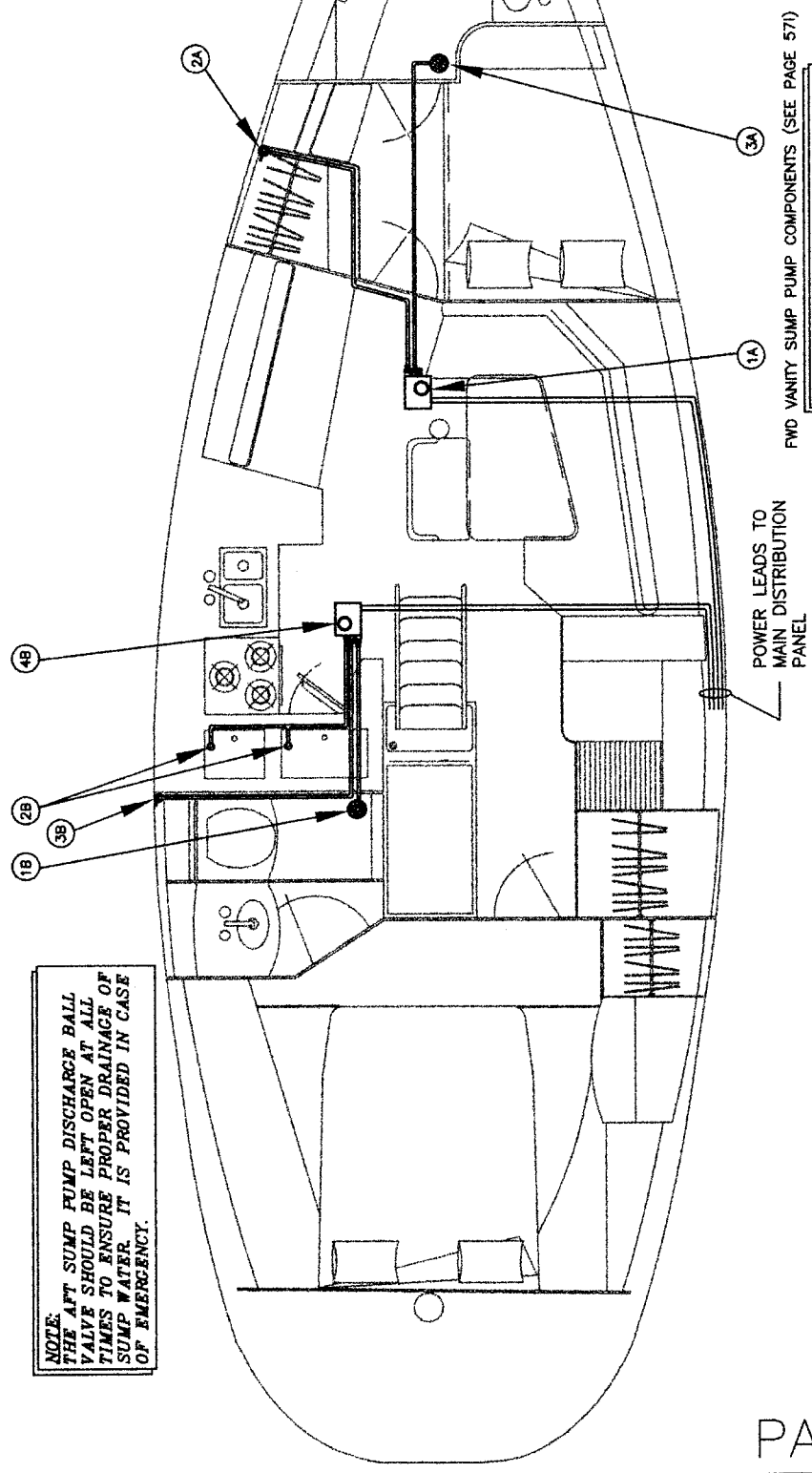
PROJECT NO. 208057B-1	SCALE NONE	DATE 7/22/98
ENGINEERING DEPT.		

AFT SUMP PUMP COMPONENTS (SEE PAGE 57J)

- 1B AFT SHOWER DRAIN (TO SUMP PUMP)
- 2B FREEZER DRAIN (TO SUMP PUMP)
- 3B (3/4"/19.1mm) SUMP PUMP DISCHARGE SEACOCK
- 4B SUMP PUMP

**NOTE:**  
THE AFT SUMP PUMP DISCHARGE SEACOCK IS LOCATED BEHIND THE ACCESS PANEL IN THE AFT HEAD.

**NOTE:**  
THE AFT SUMP PUMP DISCHARGE BALL VALVE SHOULD BE LEFT OPEN AT ALL TIMES TO ENSURE PROPER DRAINAGE OF SUMP WATER. IT IS PROVIDED IN CASE OF EMERGENCY.



- 1A FWD SHOWER DRAIN (TO SUMP PUMP)
- 2A (3/4"/19.1mm) FWD SUMP PUMP DISCHARGE THRU HULL
- 3A SUMP PUMP

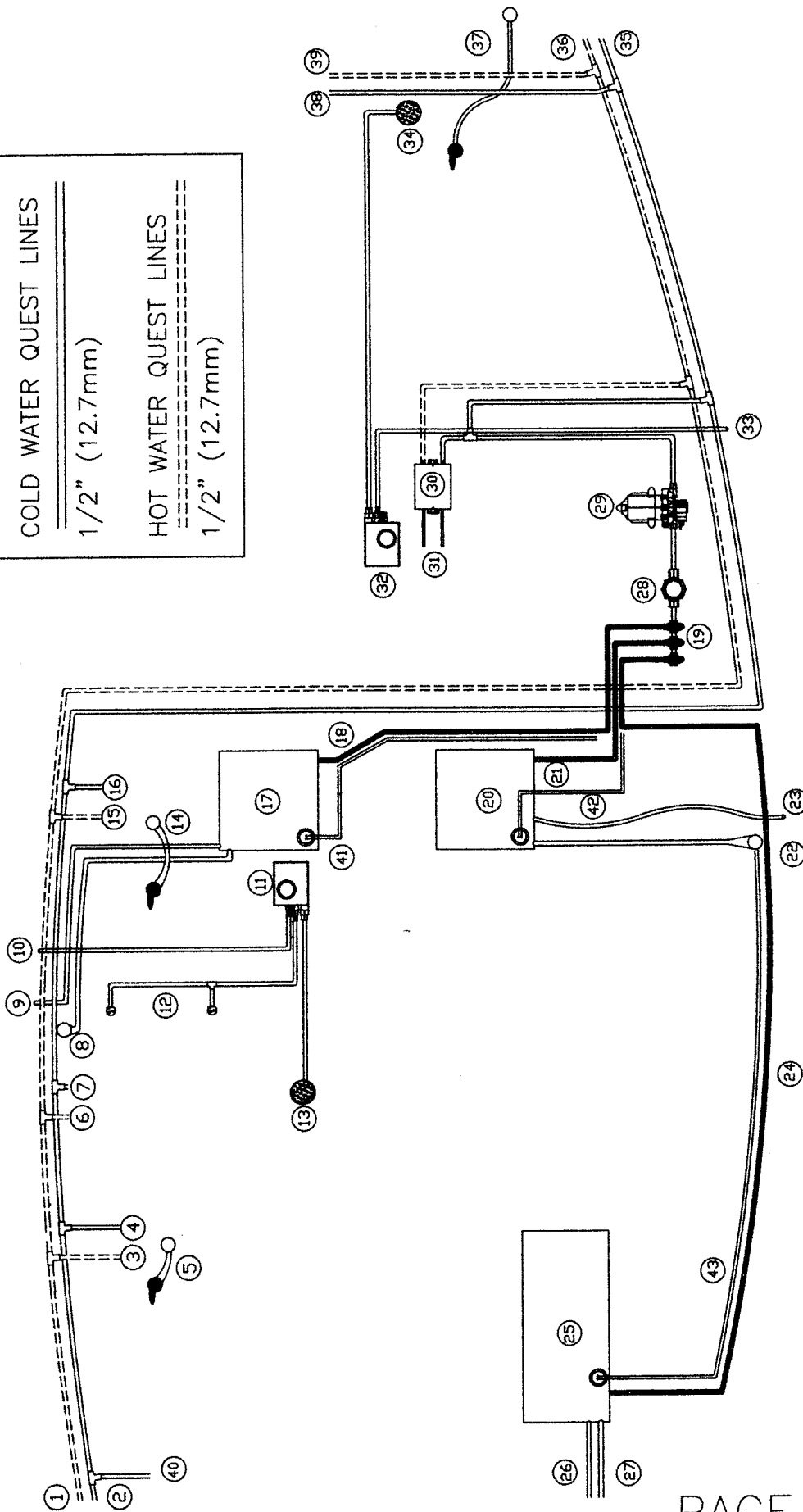
FWD VANITY SUMP PUMP COMPONENTS (SEE PAGE 57I)

POWER LEADS TO MAIN DISTRIBUTION PANEL

HUNTER  
 P420 FRESH WATER SUMP PUMP LAYOUT  
 SCALE NONE  
 DATE 7/22/98  
 ENGINEERING DEPT



COLD WATER QUEST LINES  
 1/2" (12.7mm)  
 HOT WATER QUEST LINES  
 1/2" (12.7mm)



HUNTER

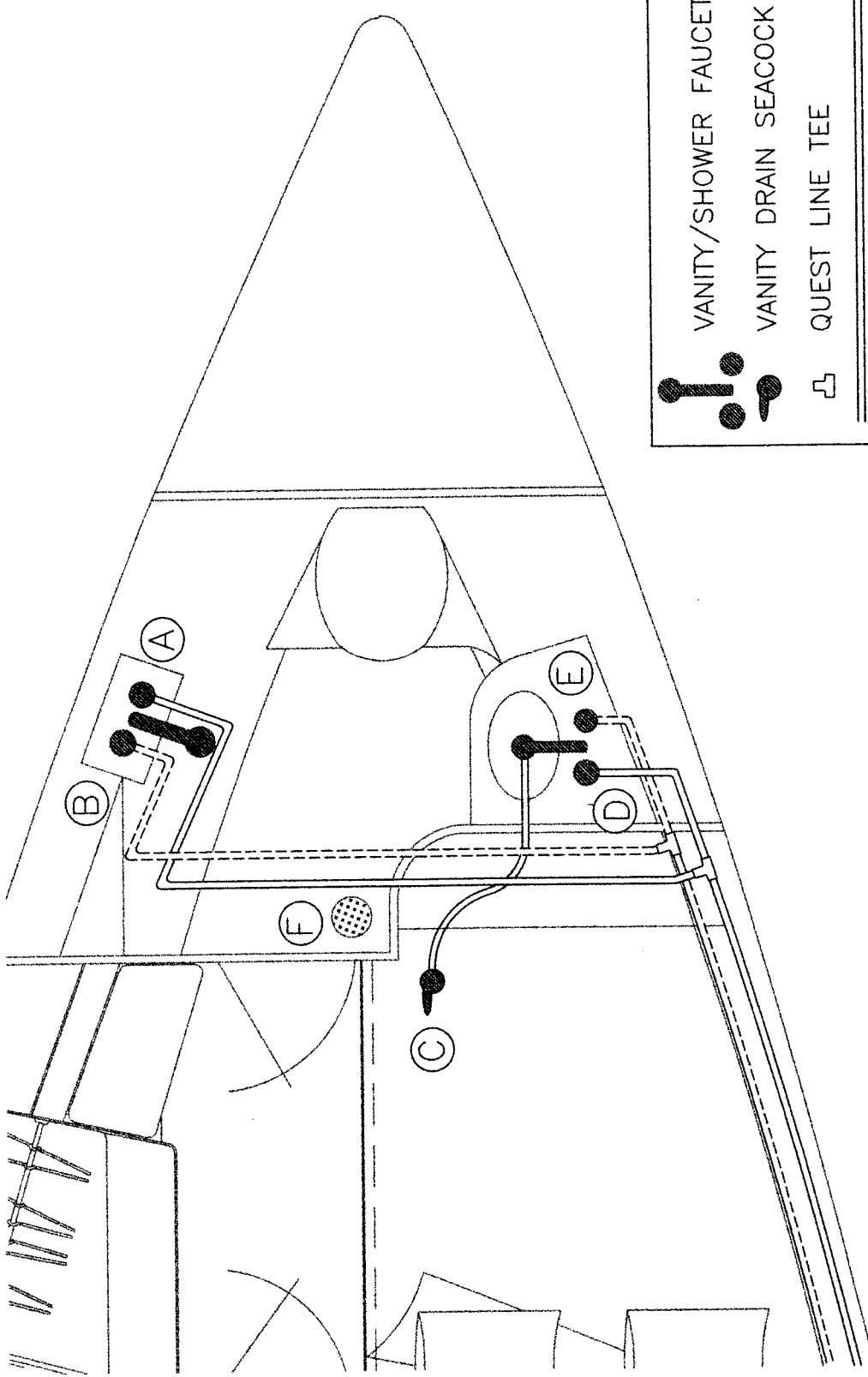
P420 FRESH WATER SYSTEM LAYOUT	
SCALE	NONE
DATE	7/22/98
ENGINEERING DEPT.	

1. HOT H2O TO TRANSOM SHOWER
2. COLD H2O TO TRANSOM SHOWER
3. HOT H2O TO AFT VANITY
4. COLD H2O TO AFT VANITY
5. AFT VANITY DRAIN TO SEACOCK (HULL)
6. HOT H2O TO AFT SHOWER
7. COLD H2O TO AFT SHOWER
8. PT H2O TANK FILL LOCATION (DECK)
9. PT H2O TANK FILL VENT (DECK)  
TO VENTED STANCHION (DECK HDWR.)
10. AFT SUMP PUMP DISCHARGE (HULL)
11. AFT SUMP PUMP
12. FRIG/FREEZER DRAIN TO SUMP PUMP
13. AFT SHOWER DRAIN TO SUMP PUMP
14. GALLEY DRAIN TO SEACOCK (HULL)
15. HOT H2O TO GALLEY SINK
16. COLD H2O TO GALLEY SINK
17. PT H2O TANK
18. PT H2O FEED TO MAINFOLD
19. H2O TANK MAINFOLD
20. STBD H2O TANK
21. STBD H2O FEED TO MANIFOLD
22. STBD H2O TANK FILL VENT  
TO VENTED STANCHION (DECK HDWR.)

23. STBD H2O TANK FILL VENT (HULL)
24. AFT H2O TANK FEED TO MANIFOLD
25. AFT H2O TANK
26. AFT H2O TANK FILL LOCATION (DECK)
27. AFT H2O TANK FILL VENT (HULL)
28. H2O FILTER
29. H2O PUMP
30. H2O HEATER
31. HEAT EXCHANGER LINES TO ENGINE
32. FWD SUMP PUMP
33. FWD SUMP PUMP DISCHARGE (HULL)
34. SHOWER DRAIN TO FWD SUMP PUMP
35. COLD H2O TO FWD HEAD VANITY
36. HOT H2O TO FWD HEAD VANITY
37. FWD VANITY DRAIN TO SEACOCK (HULL)
38. COLD H2O TO FWD HEAD SHOWER
39. HOT H2O TO FWD HEAD SHOWER
40. SHORE WATER INLET LINE TO SYSTEM
41. PORT H2O TANK SENDING UNIT/POWER  
LEADS TO MAIN DISTRIBUTION PANEL.
42. STBD H2O TANK SENDING UNIT/POWER  
LEADS TO MAIN DISTRIBUTION PANEL.
43. AFT H2O TANK SENDING UNIT/POWER  
LEADS TO MAIN DISTRIBUTION PANEL.

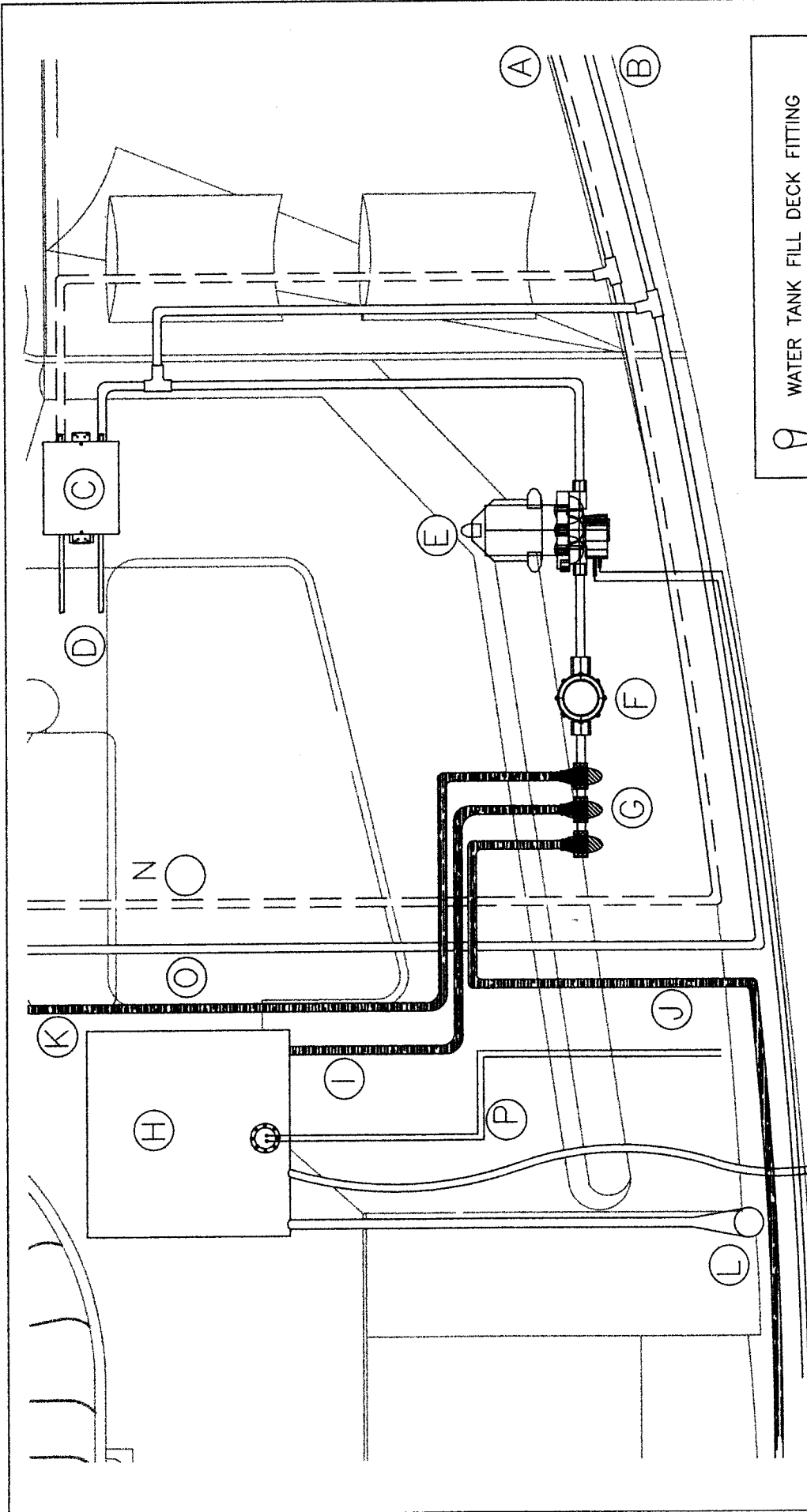
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PROJECT NO.	4208057C2	SCALE	NONE
DATE		DATE	7/22/98
ENGINEERING DEPT.			

HUNTERA



VANITY/SHOWER FAUCET  
 VANITY DRAIN SEACOCK  
 QUEST LINE TEE  
 QUEST LINE COLD (1/2" 12.7mm)  
 QUEST LINE HOT (1/2" 12.7mm)

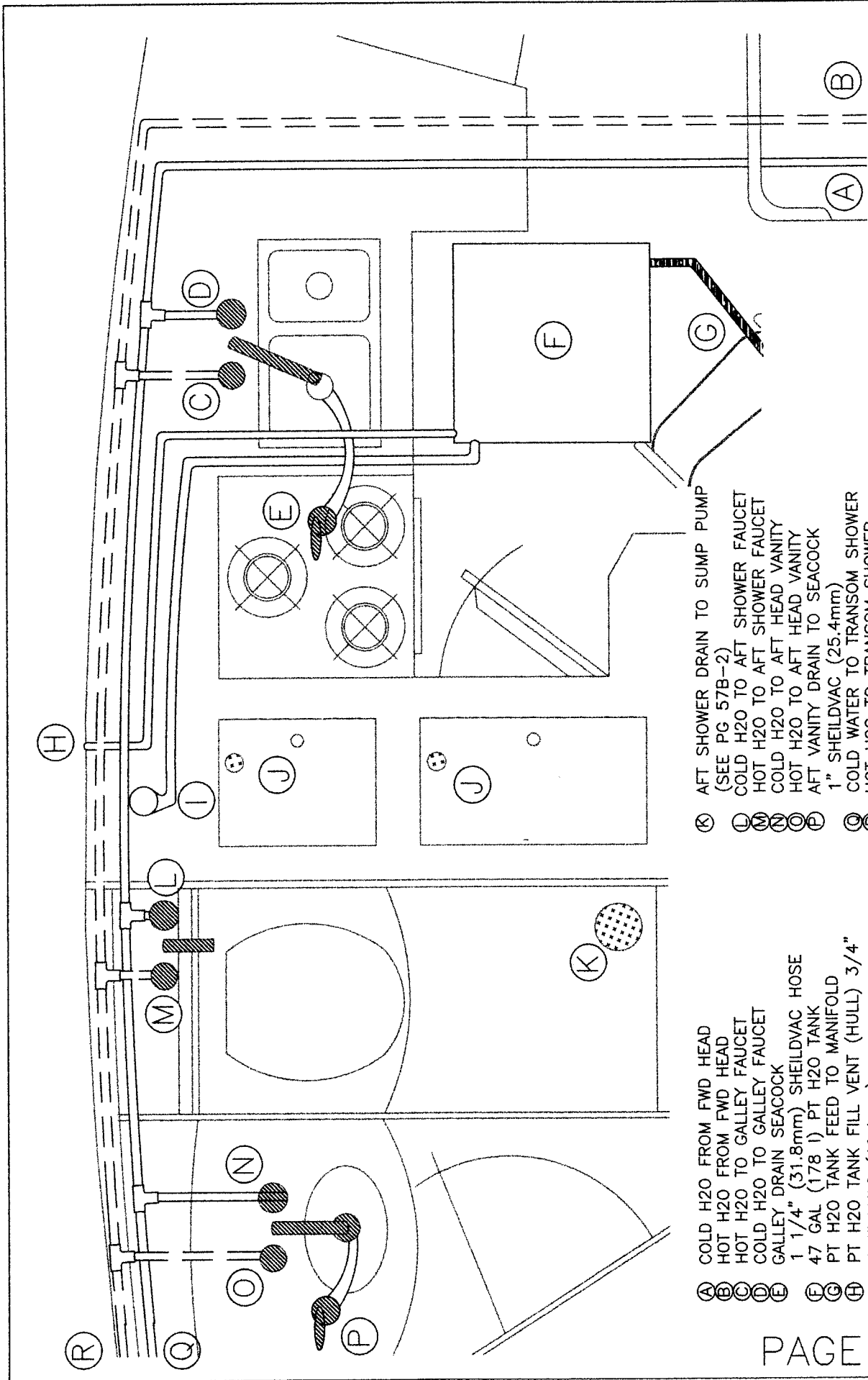
- (A) COLD H2O TO FWD SHOWER
- (B) HOT H2O TO FWD SHOWER
- (C) FWD HEAD VANITY SEACOCK DRAIN
- (D) 1" (25.4mm) SHIELDVAC DRAIN HOSE
- (E) COLD H2O TO FWD VANITY
- (F) HOT H2O TO FWD VANITY
- (SEE PG 57B-2)



WATER TANK FILL DECK FITTING  
 QUEST LINE TEE  
 TANK TO MANIFOLD LINE  
 1/2" (12.7mm)  
 QUEST LINE COLD (1/2" 12.7mm)  
 QUEST LINE HOT (1/2" 12.7mm)

- Q HOT H2O TO FWD VANITY
- A COLD H2O TO FWD VANITY
- B 11 GAL (41.7 L) WATER HEATER
- C HEAT EXCHANGE LINES TO ENGINE
- D 12 V.D.C H2O PUMP
- E H2O FILTER
- F H2O TANKS MANIFOLD
- G 47 GAL (178 L) STBD H2O TANK
- H STBD H2O TANK FEED TO MANIFOLD
- I AFT H2O TANK FEED TO MANIFOLD
- J PORT H2O TANK FEED TO MANIFOLD
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- UL
- UM
- UN
- UO
- UP
- UQ
- UR
- US
- UT
- UY
- UZ
- VA
- VB
- VC
- VD
- VE
- VF
- VG
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- ZR
- ZS
- ZT
- ZU
- ZV
- ZW
- ZX
- ZY
- ZZ

HUNTER  
 P420 FWD H2O SYSTEM LAYOUT  
 SCALE NONE  
 DATE 7/22/98  
 ENGINEERING DEPT



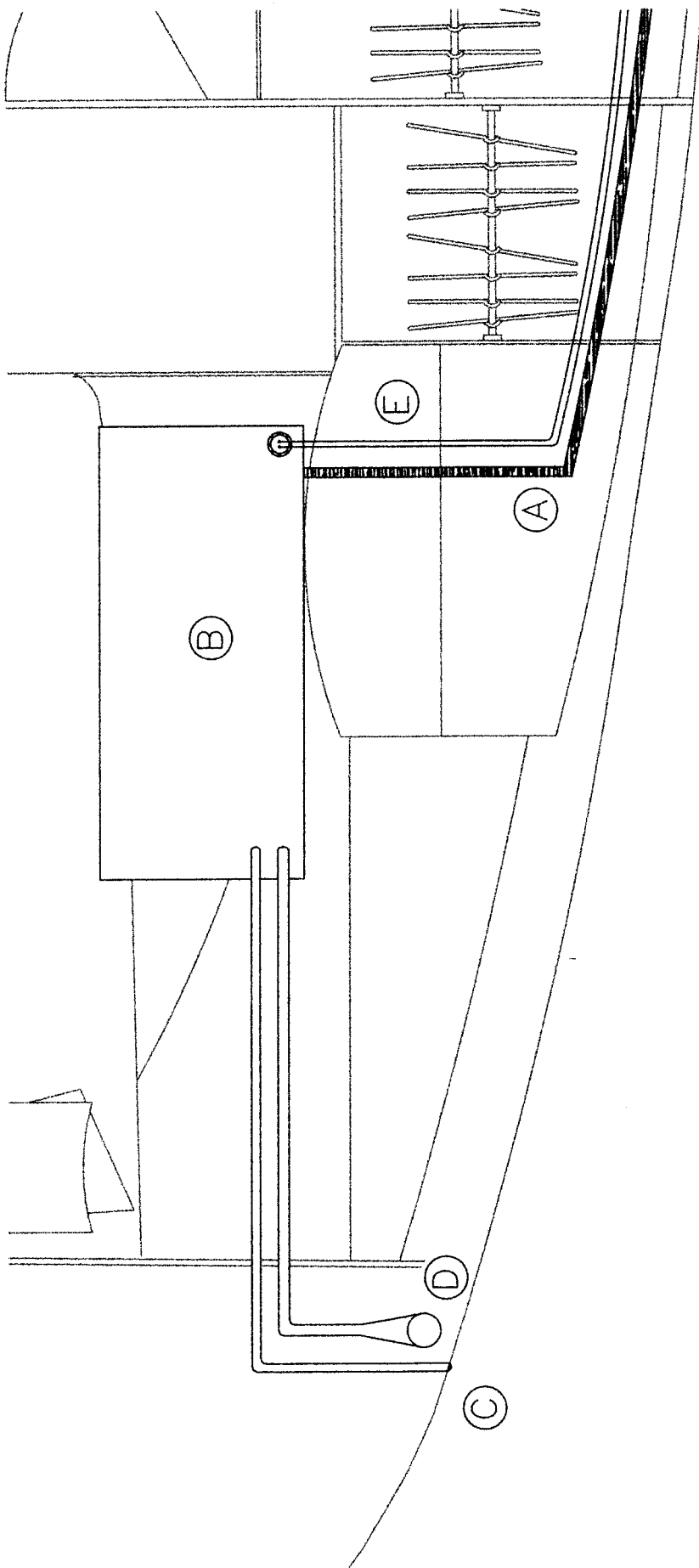
- (A) COLD H2O FROM FWD HEAD
- (B) HOT H2O FROM FWD HEAD
- (C) HOT H2O TO GALLEY FAUCET
- (D) COLD H2O TO GALLEY FAUCET
- (E) GALLEY DRAIN SEACOCK
- (F) 1 1/4" (31.8mm) SHEILDVAC HOSE
- (G) 47 GAL (178 l) PT H2O TANK
- (H) PT H2O TANK FEED TO MANIFOLD
- (I) PT H2O TANK FILL VENT (HULL) 3/4" SHEILDVAC (19.1mm) TO VENTED STANCHION (DECK HDWR.)
- (J) PT H2O TANK FILL LOCATION (DECK)
- (K) 1 1/2" SHEILDVAC (38.1mm)
- (L) FRIG / FREEZER DRAINS TO SUMP PUMP (SEE PG 57B-2)

- (M) COLD H2O FROM FWD HEAD (SEE PG 57B-2)
- (N) COLD H2O TO AFT SHOWER FAUCET
- (O) HOT H2O TO AFT SHOWER FAUCET
- (P) COLD H2O TO AFT HEAD VANITY
- (Q) HOT H2O TO AFT HEAD VANITY
- (R) AFT VANITY DRAIN TO SEACOCK
- (S) 1" SHEILDVAC (25.4mm)
- (T) COLD WATER TO TRANSOM SHOWER
- (U) HOT H2O TO TRANSOM SHOWER

PAGE 57F

HUNTER	
P420 AFT HEAD/ GALLEY H2O SYSTEM LAYOUT	
DESIGN NO.	4208057F
SCALE	NONE
DATE	7/22/98
ENGINEERING DEPT	

Use Approved Deck Plans for Mark III/III Mod. (COP. See previous page)



- Ⓐ AFT H2O TANK FEED TO MAINFOLD
- Ⓑ 51 GAL (193 L.) AFT H2O TANK
- Ⓒ AFT H2O TANK FILL VENT (DECK)
- Ⓓ 3/4" SHEILDVAC (19.1mm)
- Ⓔ AFT H2O TANK FILL LOCATION (DECK)
- Ⓚ 1 1/2" SHEILDVAC (38.1mm)
- Ⓛ AFT H2O TANK SENDING UNIT/POWER LEADS TO MAIN DIST. PANEL

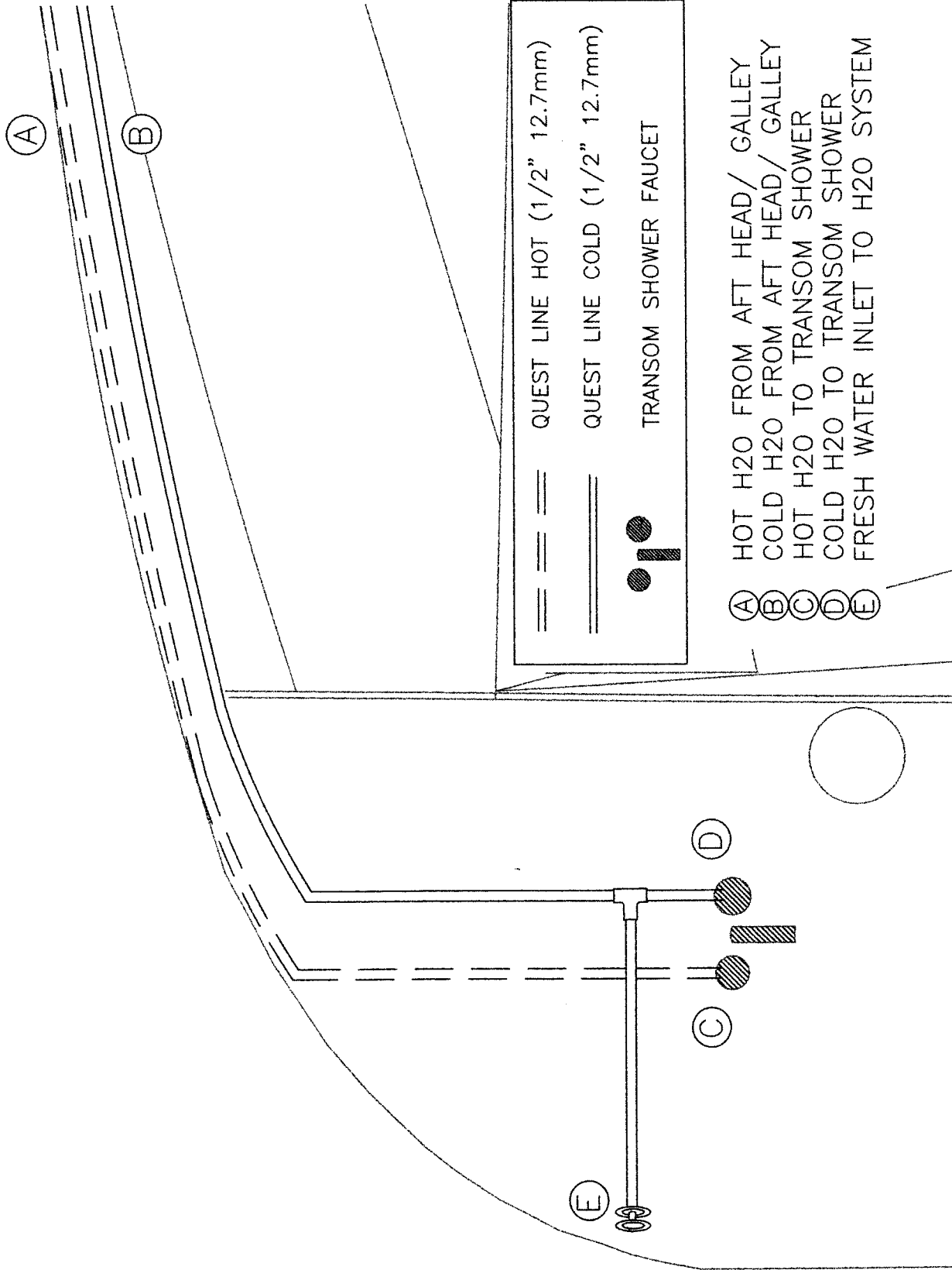
TANK TO MAINFOLD LINE  
1/2" (12.7mm)


WATER TANK FILL DECK FITTING

Ⓐ

OWNER: WLS  
**P420 AFT H2O SYSTEM LAYOUT**  
DESIGNED BY: HUNTER ENGINEERING  
PROJECT NO. 4208057G  
SCALE NONE  
DATE 7/22/98  
ENGINEERING DEPT  
**HUNTER**



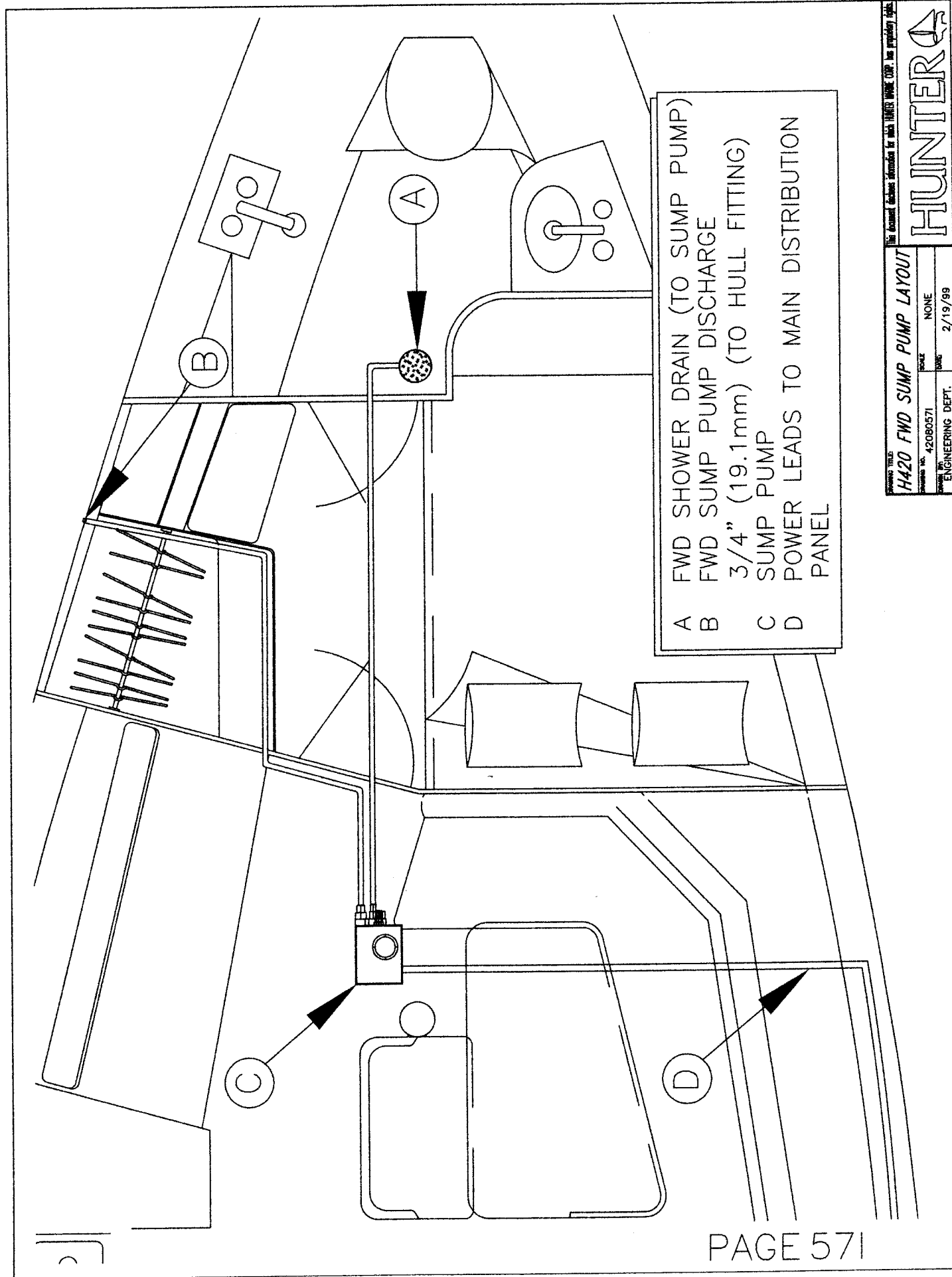


== == QUEST LINE HOT (1/2" 12.7mm)  
 == == QUEST LINE COLD (1/2" 12.7mm)  
 TRANSOM SHOWER FAUCET

- (A) HOT H2O FROM AFT HEAD/ GALLEY
- (B) COLD H2O FROM AFT HEAD/ GALLEY
- (C) HOT H2O TO TRANSOM SHOWER
- (D) COLD H2O TO TRANSOM SHOWER
- (E) FRESH WATER INLET TO H2O SYSTEM

HUNTER

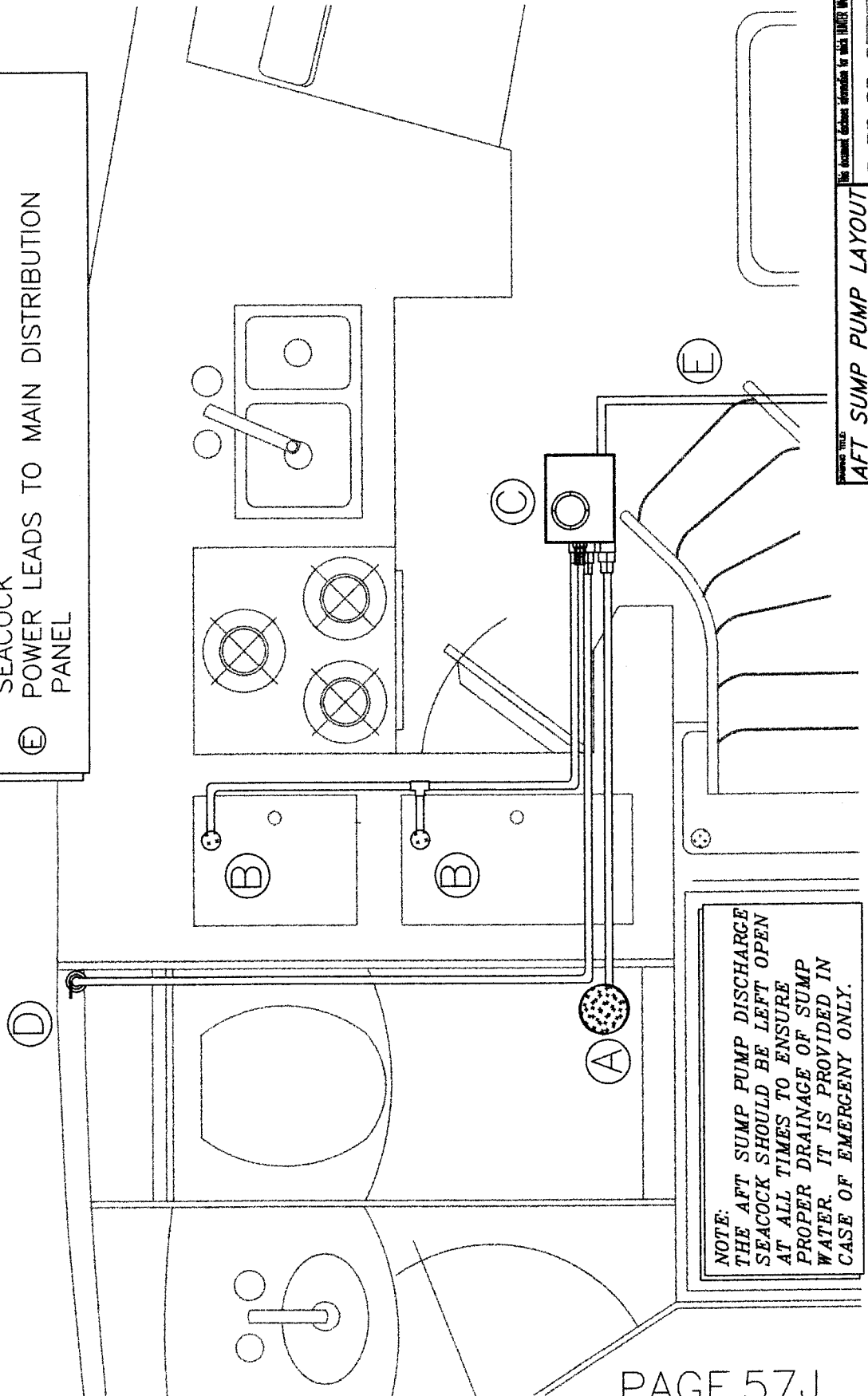
P-420 TRANSOM SHOWER H2O SYSTEM LAYOUT	
PROJECT NO. 4208057H	SCALE NONE
ENGINEERING DEPT.	DATE 7/22/98



HUNTERA  
 The Advanced Decking Alternative for Aesthetics, Durability, and Safety

<b>H420 FWD SUMP PUMP LAYOUT</b>	
DRAWING NO. 42080571	SCALE NONE
ENGINEERING DEPT.	DATE 2/19/99

- (A) AFT SHOWER DRAIN (TO SUMP PUMP)
- (B) FRIDGE/ FREEZER DRAINS TO SUMP PUMP
- (C) SUMP PUMP
- (D) SUMP PUMP DISCHARGE 3/4" (19.1mm) TO SEACOCK
- (E) POWER LEADS TO MAIN DISTRIBUTION PANEL



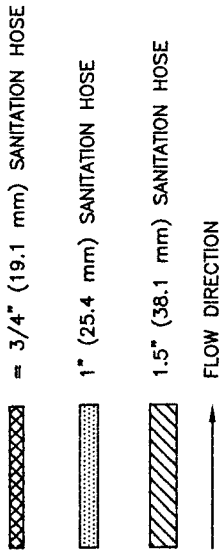
NOTE:  
 THE AFT SUMP PUMP DISCHARGE SEACOCK SHOULD BE LEFT OPEN AT ALL TIMES TO ENSURE PROPER DRAINAGE OF SUMP WATER. IT IS PROVIDED IN CASE OF EMERGENCY ONLY.

This document contains information that could identify the vessel's location.  
**HUNTER**

<b>AFT SUMP PUMP LAYOUT</b>	
<small>ENGINEER NO.</small> 4208057J	<small>SCALE</small> NONE
<small>ENGINEERING</small>	<small>DATE</small> 8/3/98

- ① COMMODE (HEAD)
- ② COMMODE RAW WATER PICKUP
- ③ VENTED LOOP
- ④ WASTE HOSE IN TO TANK
- ⑤ WASTE PUMPOUT (DECK FITTING)
- ⑥ WASTE TANK VENT (HULL FITTING)
- ⑦ WASTE TANK SENDING UNIT
- ⑧ MACERATOR
- ⑨ MACERATOR DISCHARGE SEACOCK
- ⑩ MACERATOR MOMENTARY SWITCH LOCATED ON ENGINE ROOM BULKHEAD (SEE PG. 58A-5 FOR DETAILS)
- ⑪ Y-VALVE HULL DISCHARGE
- ⑫ Y-VALVE DISCHARGE TO TANK (TAKES PLACE OF #4)
- ⑬ VENTED LOOP (Y-VALVE)
- ⑭ Y-VALVE

NOTE: Y-VALVE CONFIGURATION FOR INTERNATIONAL MODELS ONLY.



SENDING UNIT POWER LEADS SEE PG. 58B FOR SCHEMATICS

MACERATOR/SEND. UNIT POWER LEADS TO SWITCH PANEL

ACCESS THRU V-BTH. BUNK DOOR

FWD. STRM.

FWD. HEAD

WASTE TANK  
20 gallons  
(75.7 liters)

SEE PAGE 22B FOR Y-VALVE OPER. INST.

Y-VALVE VENTED LOOP LOCATED FWD. SIDE OF HEAD BULK. (SHOWN HERE FOR CLARITY)

NOTE: LINE RUNS & CMPTS. SHOWN IN SCHEMATIC FORM FOR CLARITY

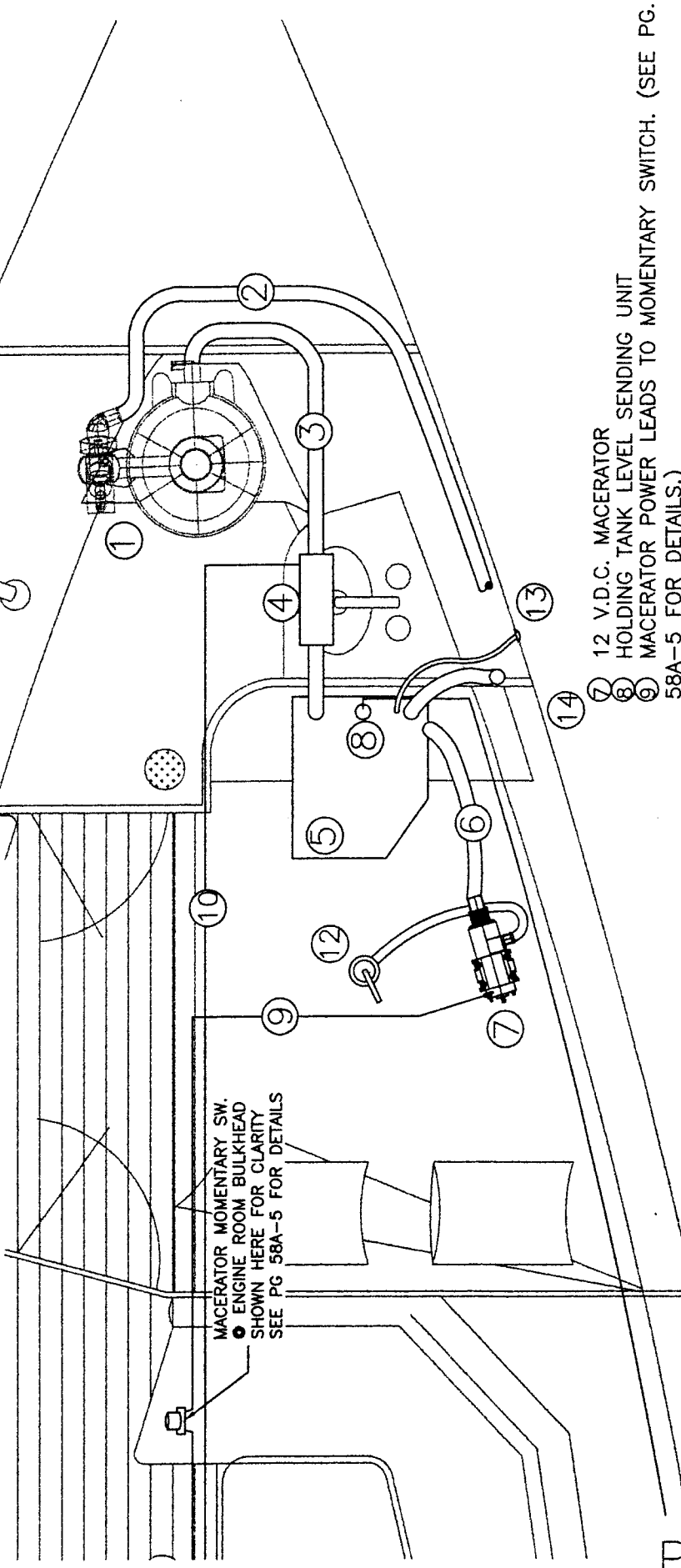
PROJECT FILE: **P420 FWD. HEAD LAYOUT**

DESIGN NO: 4208058A-1      DRAWING NO: NONE

ENGINEERING DEPT      DATE: 8/18/88

**HUNTER**

- ① HEAD
- ② 1/2" (12.7mm) QUEST H2O LINE TO HEAD
- ③ 1 1/2" (38.7mm) SANITATION HOSE TO "VACUFLUSH" GENERATOR PUMP.
- ④ 12 V.D.C. "VACFLUSH" GENERATOR
- ⑤ FWD WASTE HOLDING TANK 22.5 US GALLONS (85.1 L)
- ⑥ 1 1/2" (38.7 mm) SANITATION HOSE TO MACERATOR FROM HOLDING TANK



MACERATOR MOMENTARY SW.  
 ● ENGINE ROOM BULKHEAD  
 SHOWN HERE FOR CLARITY  
 SEE PG 58A-5 FOR DETAILS

- ⑦ 12 V.D.C. MACERATOR
- ⑧ HOLDING TANK LEVEL SENDING UNIT
- ⑨ MACERATOR POWER LEADS TO MOMENTARY SWITCH. (SEE PG. 58A-5 FOR DETAILS.)
- ⑩ POWER LEADS TO "VACUFLUSH" GENERATOR PUMP. (SEE PG. 58A-6 FOR DETAILS)
- ⑪ MACERATOR DISCHARGE SEACOCK (HULL FITTING 1 1/2" 38.1mm))
- ⑫ WASTE TANK VENT (HULL FITTING 3/4" (19.1mm))
- ⑬ WASTE PUMPOUT TO (DECK FITTING 1 1/2" (38.1mm))

SEE PAGE 58A-6 FOR OPTIONAL "VACUFLUSH" SCHEMATIC

**HUNTER**

PG20 FWD WASTE SYSTEM LAYOUT OPT. "VACUFLUSH"

2208058A-2	NONE
ENGINEERING DEPT.	3/13/98

Do not remove this information as it may affect future work. Opt. for regulatory info.

- ① HEAD
- ② HEAD RAW WATER PICKUP SEACOCK (SEE DWG PAGE 60C)
- ③ VENTED LOOP
- ④ WASTE HOSE IN TO TANK
- ⑤ WASTE PUMPOUT (DECK FITTING)
- ⑥ WASTE TANK VENT (HULL FITTING)
- ⑦ WASTE TANK SENDING UNIT
- ⑧ MACERATOR (BEHIND BACKREST)
- ⑨ MACERATOR DISCHARGE SEACOCK
- ⑩ Y-VALVE
- ⑪ Y-VALVE HULL DISCHARGE (TAKES PLACE OF ④)
- ⑫ Y-VALVE DISCHARGE TO TANK (TAKES PLACE OF ⑦)
- ⑬ VENTED LOOP
- ⑭ MACERATOR MOMENTARY SWITCH

NOTE: Y-VALVE CONFIGURATION FOR INTERNATIONAL MODELS ONLY.




SEE PAGE 22P FOR Y-VALVE ORDER MODELS ONLY (SEE PAGE 500A)

Y-VALVE DISCHARGE (INT. MODELS ONLY) TO PT. SWIM LOCKER COMP.

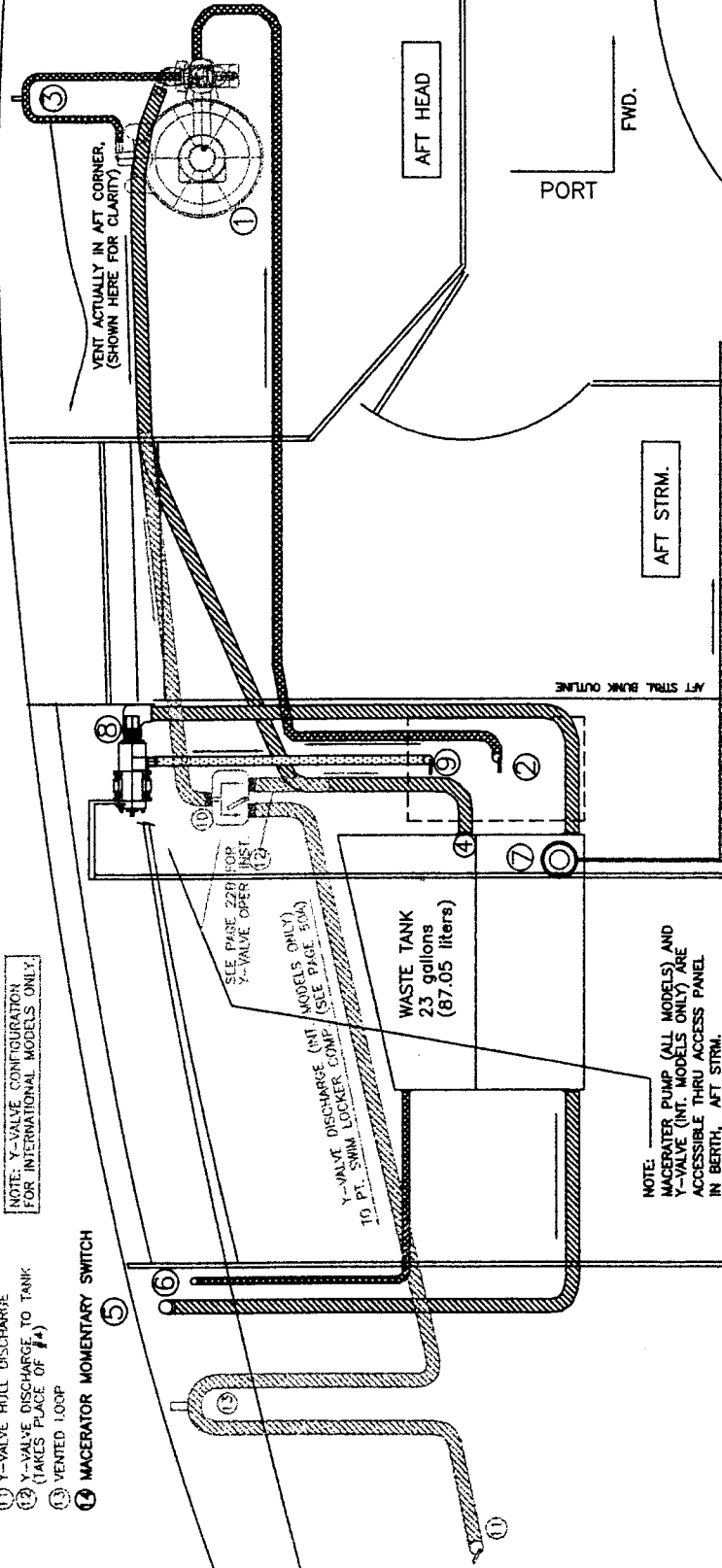
WASTE TANK  
23 gallons  
(87.05 liters)

NOTE: MACERATOR PUMP (ALL MODELS) AND Y-VALVE (INT. MODELS ONLY) ARE ACCESSIBLE THRU ACCESS PANEL IN BERTH, AFT STRM.

MOMENTARY SWITCH FOR MACERATOR (MOUNTED TO ENGINE ROOM BULKHEAD (SHOWN HERE FOR CLARITY) SEE PAGE 58A-5 FOR INFO

-  = 3/4" (19.1 mm) SANITATION HOSE
-  1" (25.4 mm) SANITATION HOSE
-  1.5" (38.1 mm) SANITATION HOSE

FLOW DIRECTION



NOTE: LINE RUNS & CMPTS. SHOWN IN SCHEMATIC FORM FOR CLARITY

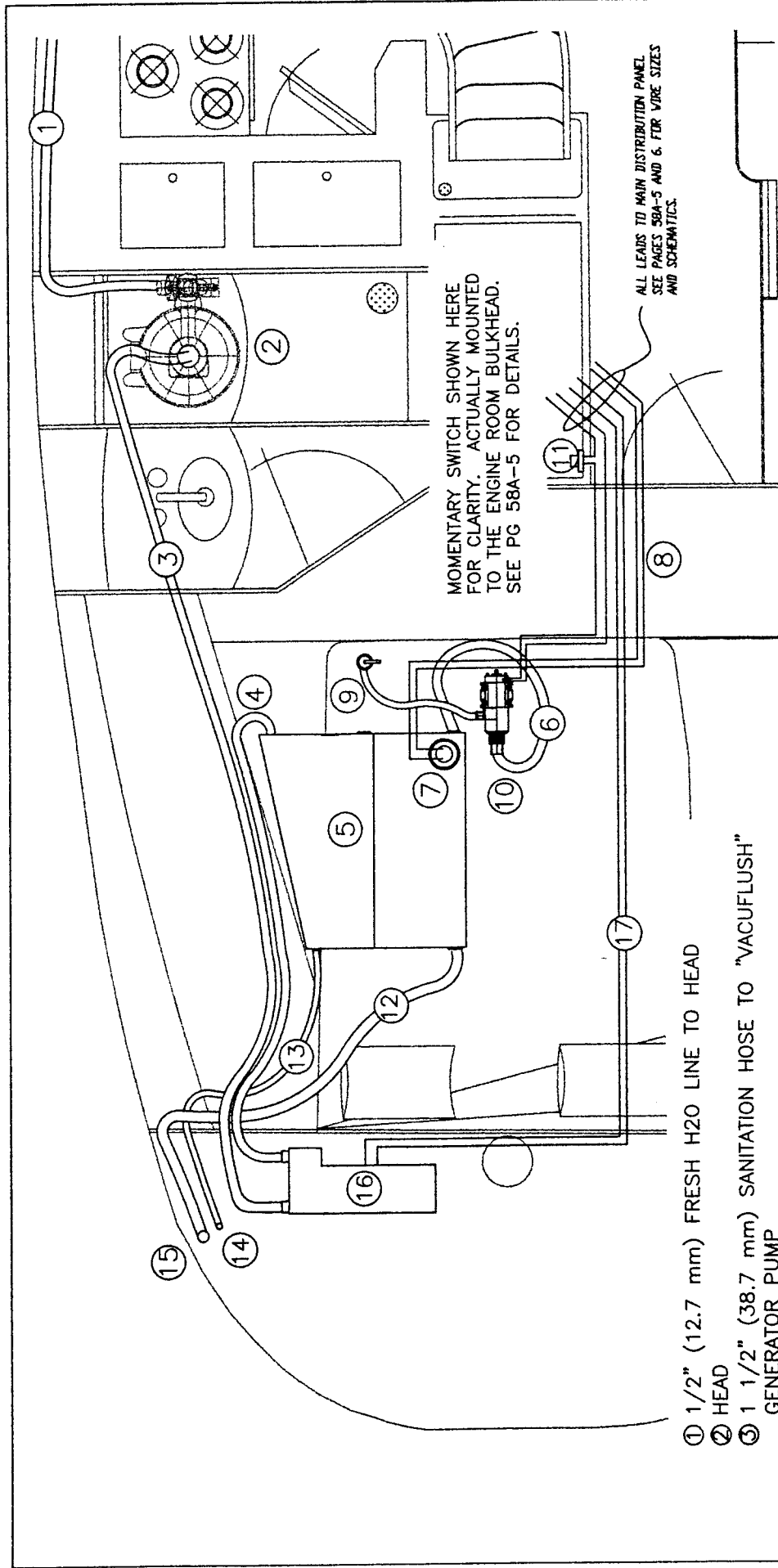
P420 AFT HEAD LAYOUT

REVISED NO. NONE  
 DRAWN BY: 208058A-3  
 ENGINEERING DEPT  
 DATE: 8/19/98



See General Section Instructions for each HUNTER MODEL. (COP. for proprietary data.)





MOMENTARY SWITCH SHOWN HERE FOR CLARITY. ACTUALLY MOUNTED TO THE ENGINE ROOM BULKHEAD. SEE PG 58A-5 FOR DETAILS.

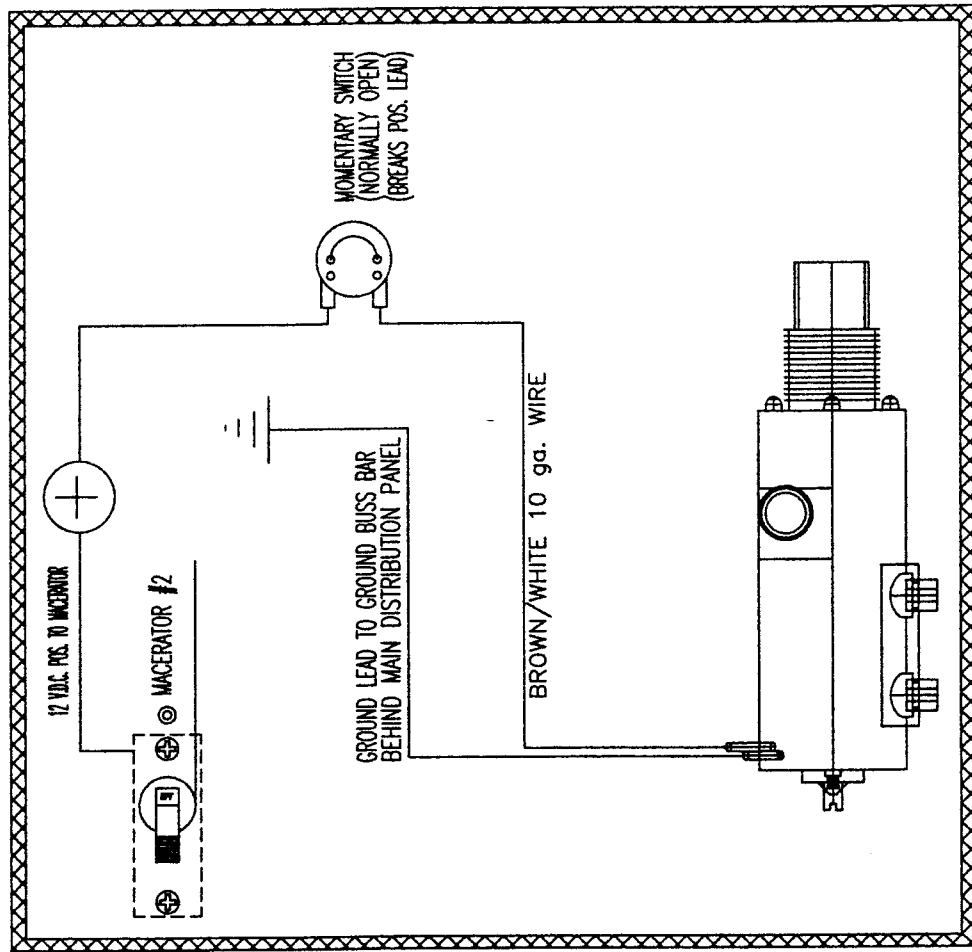
ALL LEADS TO MAIN DISTRIBUTION PANEL. SEE PAGES 58A-5 AND 6 FOR WIRE SIZES AND SCHEMATICS.

- ① 1 1/2" (12.7 mm) FRESH H2O LINE TO HEAD
- ② HEAD
- ③ 1 1/2" (38.7 mm) SANITATION HOSE TO "VACUFLUSH" GENERATOR PUMP
- ④ 1 1/2" (38.7 mm) "VACUFLUSH" GENERATOR HOSE TO HOLDING TANK
- ⑤ AFT WASTE HOLDING TANK 22.5 U.S. GALLONS (85.1 L)
- ⑥ 1 1/2" (38.7 mm) SANITATION HOSE TO MACERATOR FROM HOLDING TANK
- ⑦ HOLDING TANK LEVEL SENDING UNIT
- ⑧ HOLDING TANK INDICATOR LEADS TO GUAGE
- ⑨ 1" (25.4 mm SANITATION HOSE) MACERATOR DISCHARGE
- ⑩ 12 V.D.C MACERATOR (UNDER PT SIDE AFT BUNK)
- ⑪ MOMENTARY SWITCH FOR MACERATOR POWER LEADS

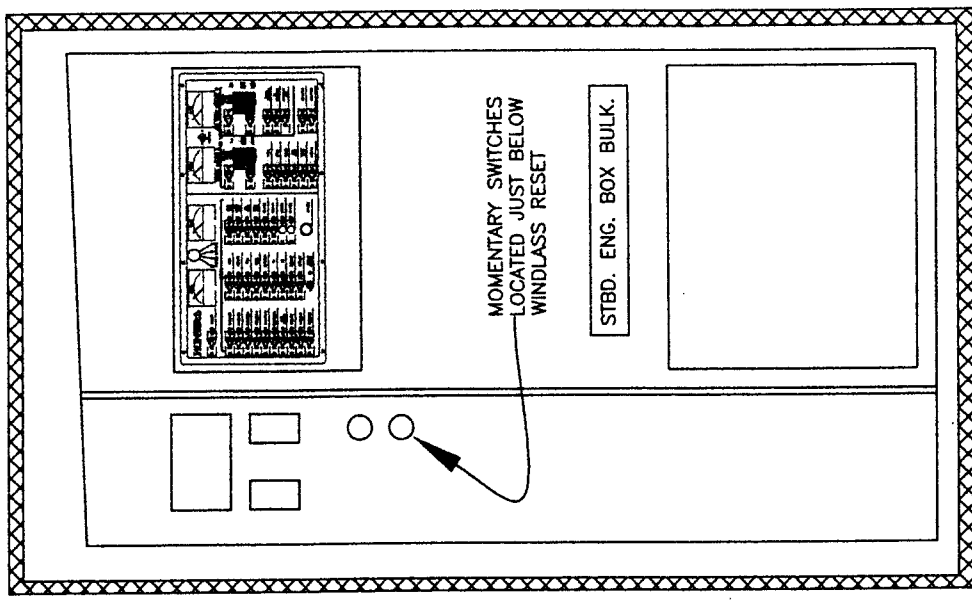
- ⑫ 1 1/2" (38.7) SANITATION HOSE TO DECK PUMPOUT
- ⑬ 3/4" (19.1mm) SANITATION HOSE HOLDING TANK VENT
- ⑭ HOLDING TANK VENT (HULL FITTING)
- ⑮ HOLDING TANK PUMPOUT. (DECK FITTING)
- ⑯ "VACUFLUSH" GENERATOR PUMP
- ⑰ POWER LEADS FROM "VACUFLUSH" GENERATOR PUMP TO MAIN BREAKER PANEL

HUNTER  
 P420 AFT HEAD LAYOUT OPT. "VACUFLUSH"  
 DRAWING NO. 2208058A-4  
 NONE  
 ENGINEERING DEPT. DATE: 9/21/88

THE MACERATOR MOMENTARY SWITCH IS PROVIDED TO PROHIBIT THE 'DRY RUNNING' OF THE MACERATOR. TO OPERATE THE MACERATOR, TURN THE MACERATOR BREAKER TO THE 'ON' POSITION. WHILE EITHER WATCHING THE WASTE TANK LEVEL INDICATOR, OR LISTENING TO THE PITCH OF THE PUMP, PUSH THE MOMENTARY SWITCH IN. THIS WILL ACTIVATE THE MACERATOR. ONCE THE TANK LEVEL INDICATOR REACHES 'EMPTY', OR THE PITCH CHANGES NOTICEABLY, RELEASE THE MOMENTARY SWITCH AND TURN THE BREAKER TO THE 'OFF' POSITION. NOTE: OCCASIONALLY THE TANK SENDING UNIT BECOMES STUCK, THEREFORE IT IS MORE EFFECTIVE AND SAFER FOR THE PUMP IF THE OPERATOR USES THE 'LISTENING' METHOD TO DETERMINE IF THE TANK HAS BEEN EMPTIED.

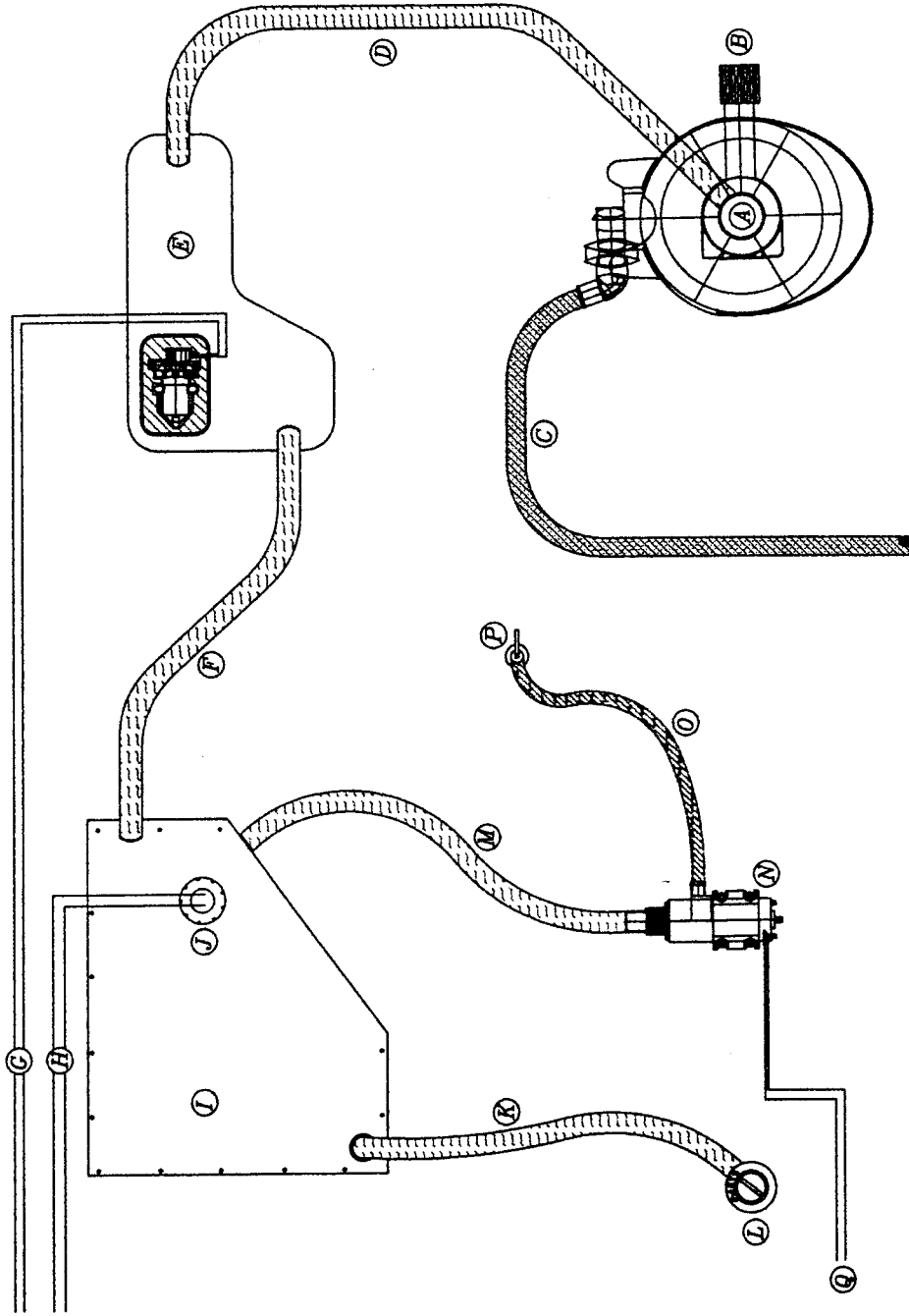


MACERATOR SCHEMATIC  
TYPICAL



MOMENTARY SWITCH LOCATION

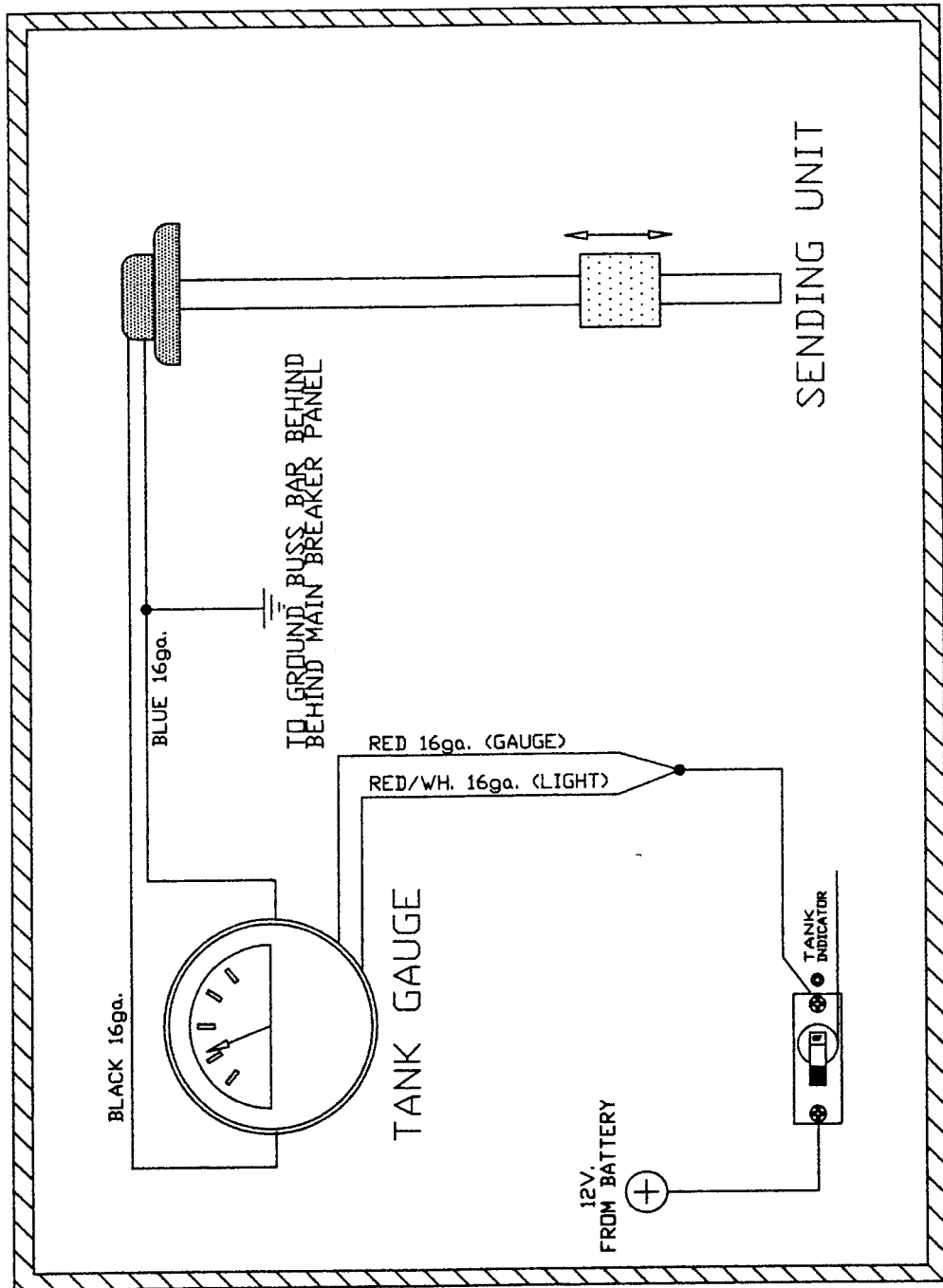
FIG. 1208058A-5  
**P420 BASIC MACERATOR WIRING SCHEMATIC**  
 PART NUMBER 1208058A-5  
 REVISION NONE  
 DATE 12/1/98  
 ENGINEERING DEPT.  
**HUNTER**



- (A) "VACUFLUSH" HEAD
- (B) PEDAL TO ENGAGE FLUSHING SEQUENCE
- (C) FRESH H2O QUEST LINE FEED. TEED FROM CLOSEST SOURCE. (EX. VANITY SINK OR SHOWER)
- (D) WASTE HOSE FROM HEAD TO GENERATOR.
- (E) "VACUFLUSH" GENERATOR PUMP
- (F) WASTE HOSE FROM GEN. TO HOLDING TANK
- (G) GEN. POWER LEAD TO MAIN DIST. PANEL.
- (H) SENDING UNIT POWER LEAD TO MAIN DIST. PANEL.
- (I) TYP. WASTE HOLDING TANK
- (J) SENDING UNIT.
- (K) WASTE HOSE TO DECK PUMP OUT.
- (L) DECK FITTING.
- (M) WASTE HOSE FROM TANK TO MACER.
- (N) MACERATOR
- (O) WASTE HOSE FROM TANK TO MACER.
- (P) WASTE HOSE FROM MACER. TO SEACOCK.
- (Q) MACER. DISCHARGE THRU HULL SEACOCK.

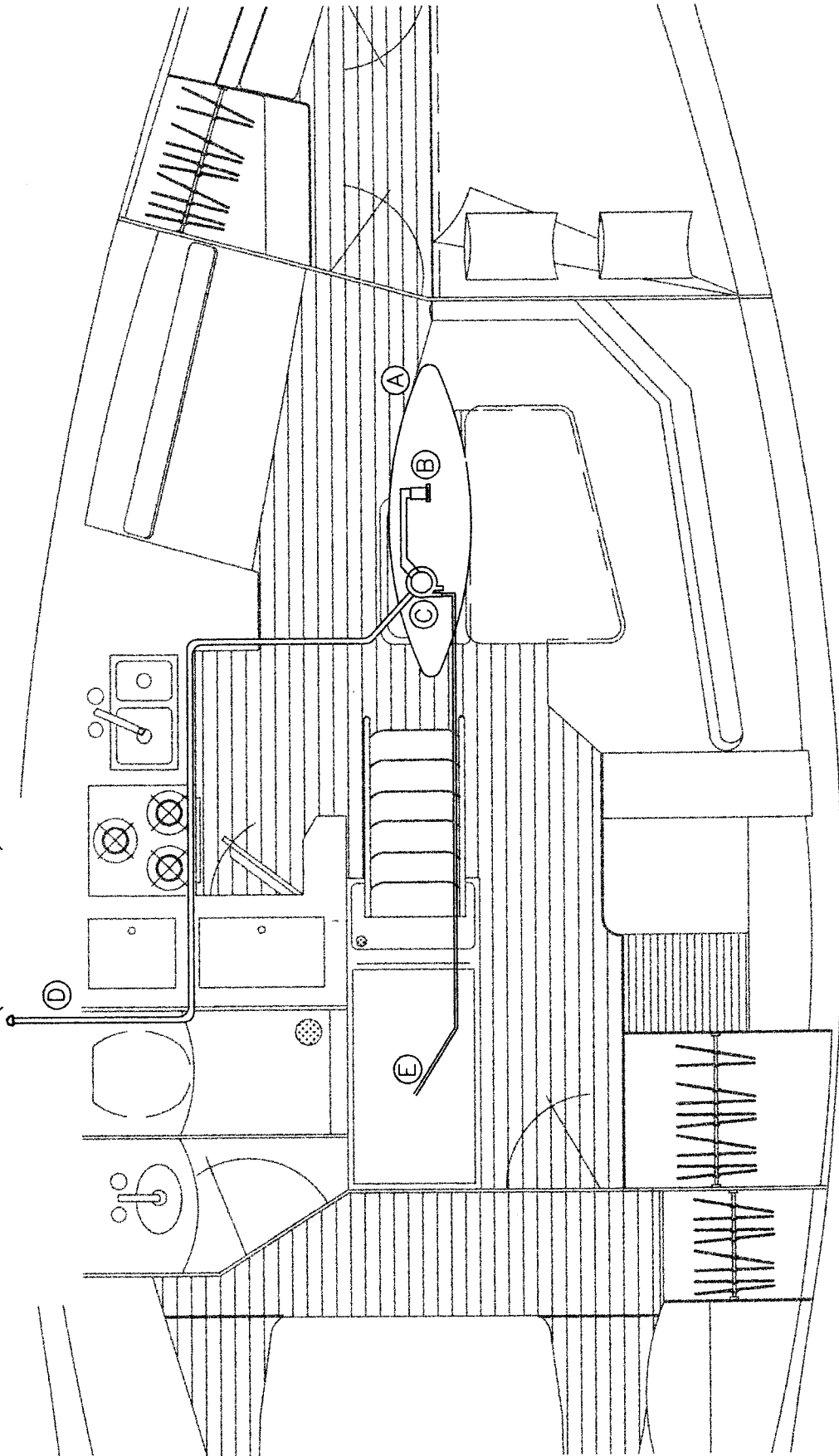
- (A) "VACUFLUSH" HEAD
- (B) PEDAL TO ENGAGE FLUSHING SEQUENCE
- (C) FRESH H2O QUEST LINE FEED. TEED FROM CLOSEST SOURCE. (EX. VANITY SINK OR SHOWER)
- (D) WASTE HOSE FROM HEAD TO GENERATOR.
- (E) "VACUFLUSH" GENERATOR PUMP
- (F) WASTE HOSE FROM GEN. TO HOLDING TANK
- (G) GEN. POWER LEAD TO MAIN DIST. PANEL.
- (H) SENDING UNIT POWER LEAD TO MAIN DIST. PANEL.
- (I) TYP. WASTE HOLDING TANK
- (J) SENDING UNIT.
- (K) WASTE HOSE TO DECK PUMP OUT.
- (L) DECK FITTING.
- (M) WASTE HOSE FROM TANK TO MACER.
- (N) MACERATOR
- (O) WASTE HOSE FROM TANK TO MACER.
- (P) WASTE HOSE FROM MACER. TO SEACOCK.
- (Q) MACER. DISCHARGE THRU HULL SEACOCK.

HUNTER  
 HUNTER MARINE CORPORATION  
 12/1/98  
 NONE  
 208058A-6  
 ENGINEERING DEPT.

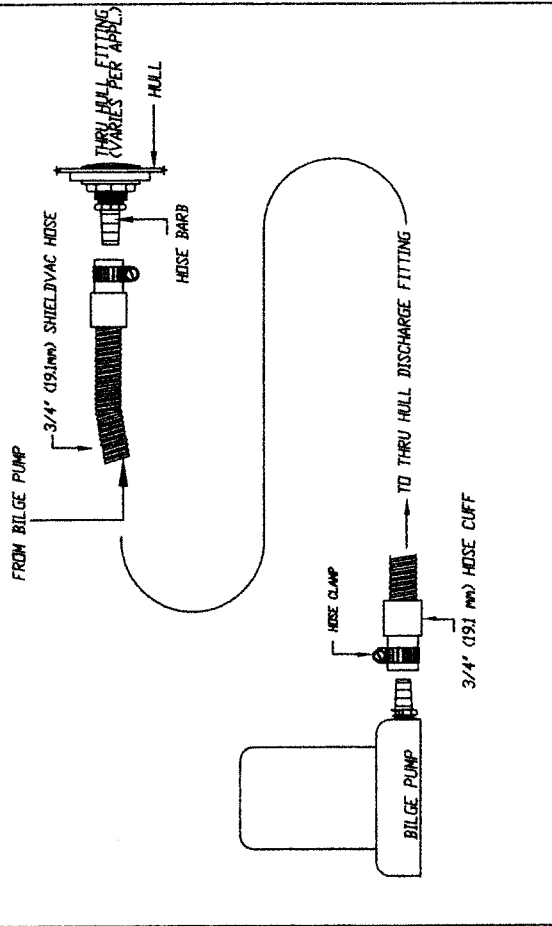


**NOTE:**  
 ALWAYS KEEP WASTE DISCHARGE BALL  
 VALVES CLOSED WHEN SYSTEM IS NOT IN USE.

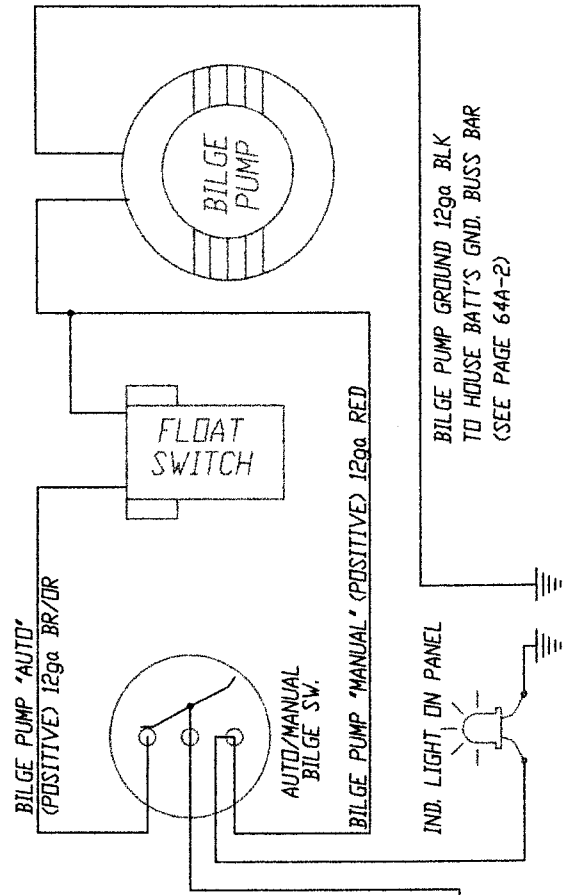
- (A) KEEL SUMP
- (B) BILGE PUMP FLOAT SWITCH
- (C) 12V.D.C BILGE PUMP
- (D) BILGE PIMP DISCHARGE TO HULL FITTING (3/4" 19.1mm)
- (E) BILGE PUMP POWER LEAD TO BREAKER PANEL (SEE PG 59B)



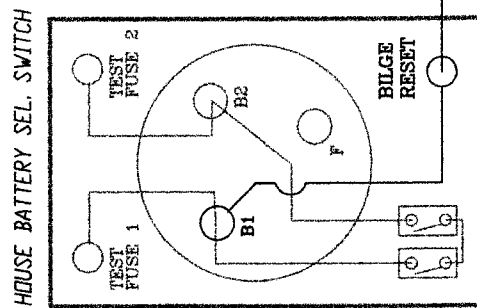
**BILGE PUMP PLUMBING DETAIL**



**BILGE PUMP WIRING DETAIL**



**OPTIONAL INVERTER BATTERY PANEL**



For licensed technical information for HUNTER HUNTER CORP. see proprietary files.

**HUNTER**

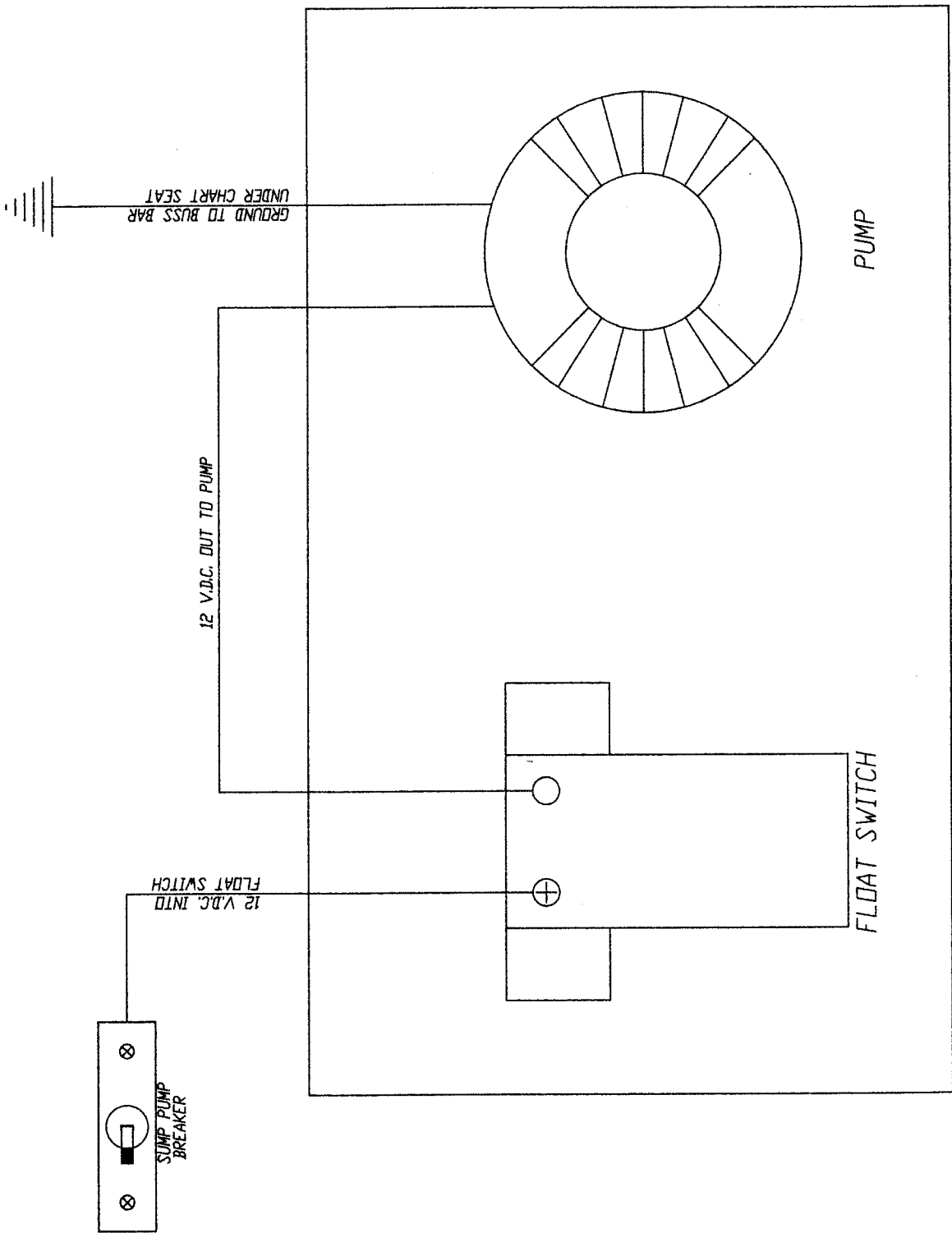
420 BILGE SYSTEM DETAILS

REVISED NO. 42080598

ISSUED NO. NONE

ENGINEERING DEPT. DATE 3/17/88



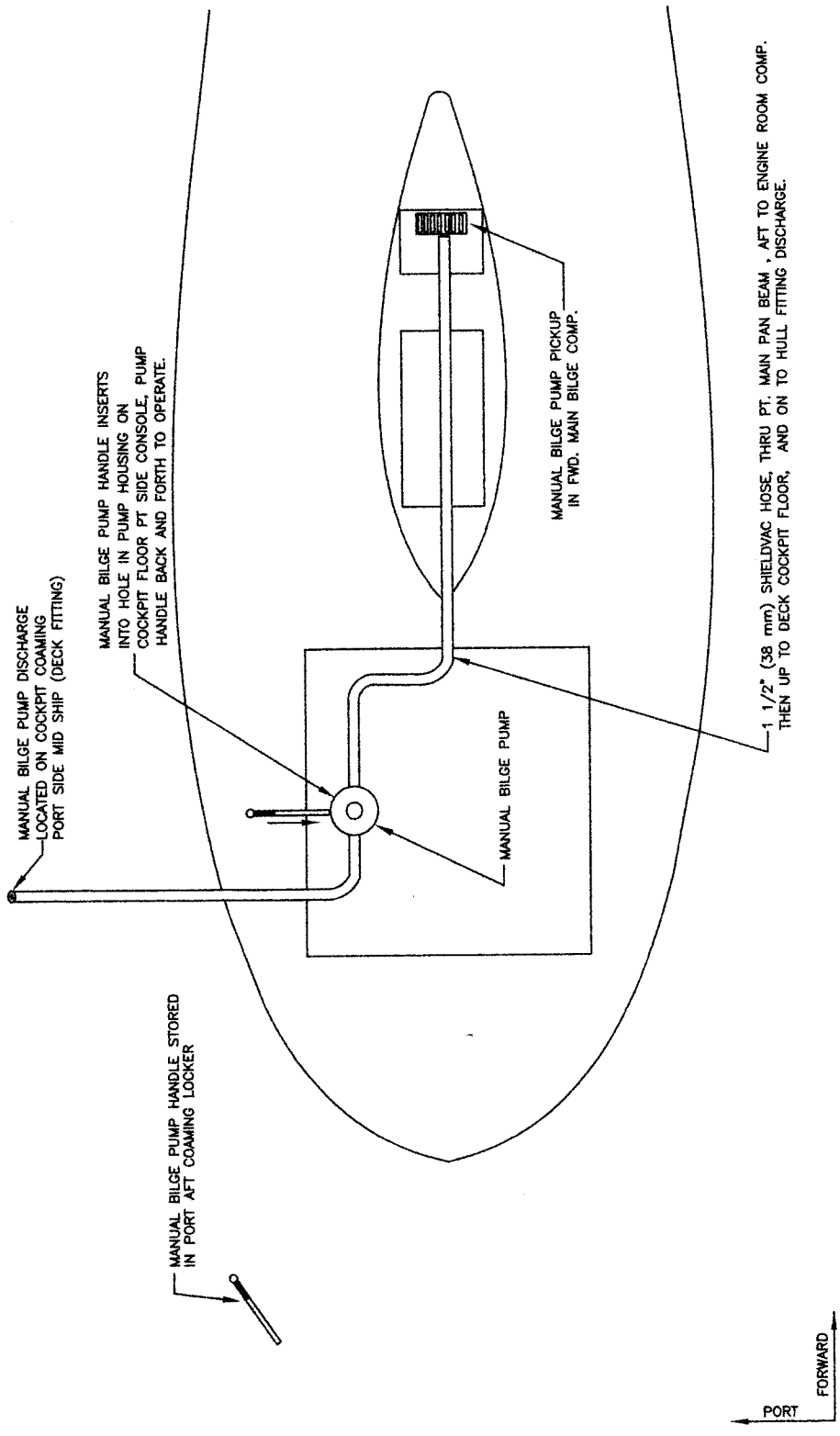


SUMP BOX

FOR DOCUMENT DELIVERY INFORMATION FOR WHICH HUNTER ENGINEERING CORP. HAS PROVIDED THIS

<b>420 SUMP PUMP SCHEMATIC</b>	
REVISION NO.	NONE
DATE	3/16/98
ENGINEERING DEPT.	

**HUNTER**



1 1/2" (38 mm) SHIELDVAC HOSE, THRU PT. MAIN PAN BEAM, AFT TO ENGINE ROOM COMP. THEN UP TO DECK COCKPIT FLOOR, AND ON TO HULL FITTING DISCHARGE.

FORWARD

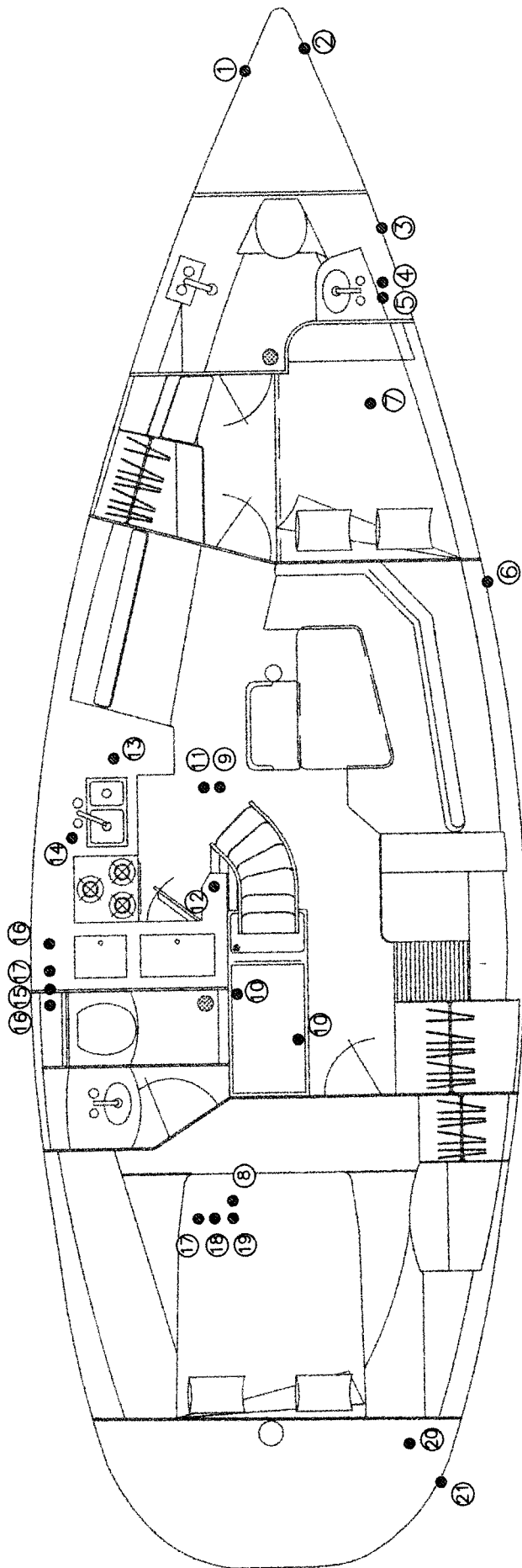
PORT

This document contains information for which HUNTER MARINE CORP. has proprietary rights.

**P420 MANUAL BILGE PUMP LAYOUT**

DESIGNER	REVISION NO.
4208059D	NONE
DATE	3/17/98
ENGINEERING DEPT	

HUNTER



- 12 OPT GENERATOR RAW WATER PICKUP\*\*
- 13 REFRIGERATION DISCHARGE\*\*
- 14 LPG LOCKER DRAIN
- 15 PT. SUMP PUMP DISCHARGE\*\*
- 16 MAIN BILGE PUMP DISCHARGE
- 17 ENGINE RAW WATER PICKUP\*\*
- 18 AFT VANITY SINK DISCHARGE\*\*
- 19 AFT MACERATOR DISCHARGE\*\*
- 20 ENGINE EXHAUST
- 21 OPT GENERATOR EXHAUST

- 1 PORT ANCHOR WELL DRAIN
- 2 STRB. ANCHOR WELL DRAIN
- 3 FWD WASTE TANK VENT
- 4 FWD HEAD MACERATOR DISCHARGE\*\*
- 5 FWD VANITY SINK DISCHARGE\*\*
- 6 STRBD. SUMP PUMP DISCHARGE\*\*
- 7 FWD HEAD WATER PICKUP (NOT ON VACUFLUSH MODELS)\*\*
- 8 AFT HEAD WATER PICKUP (NOT ON VACUFLUSH MODELS)\*\*
- 9 REFRIGERATION PICKUP\*\*
- 10 SCUPPER DRAIN DISCHARGE\*\*
- 11 GALLEY SINK DISCHARGE\*\*

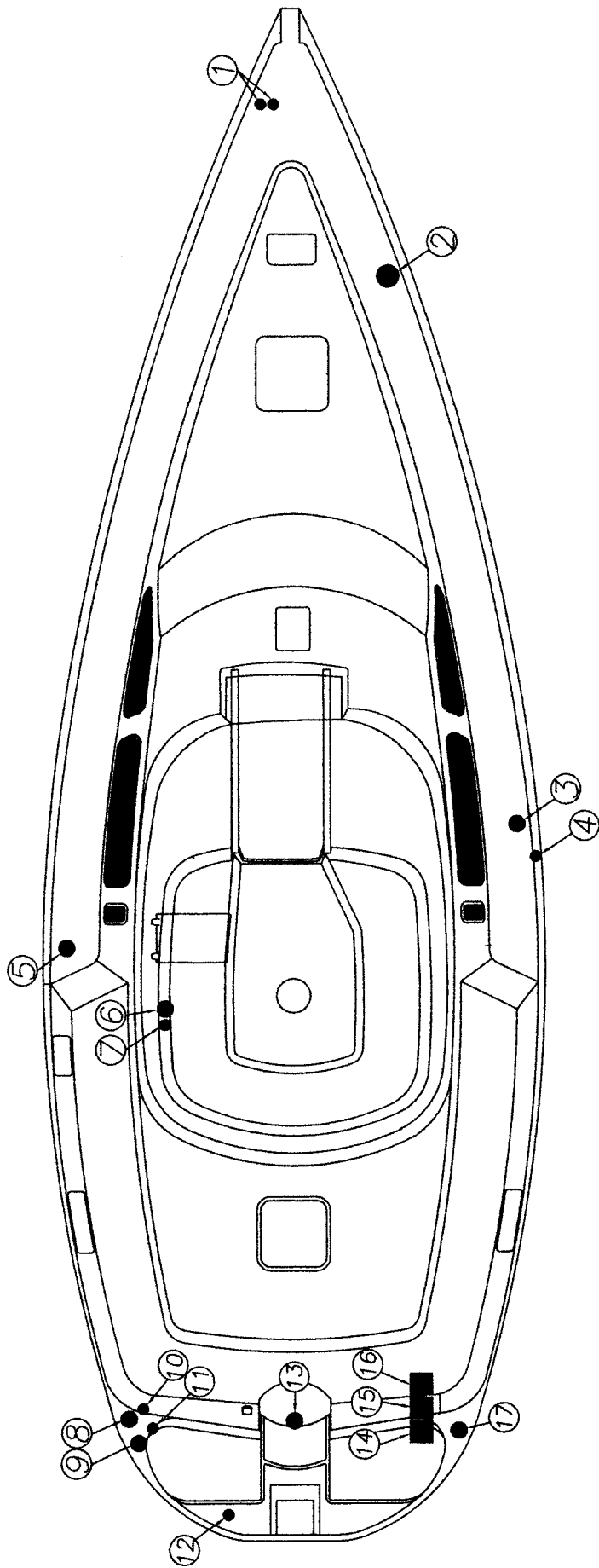
\*\* DENOTES A SEACOCK FITTING

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**P420 THRU HULL LOCATIONS**

DESIGN NO.	4208060A	SCALE	NONE
DATE	9/28/98	ENGINEERING DEPT	

HUNTERA



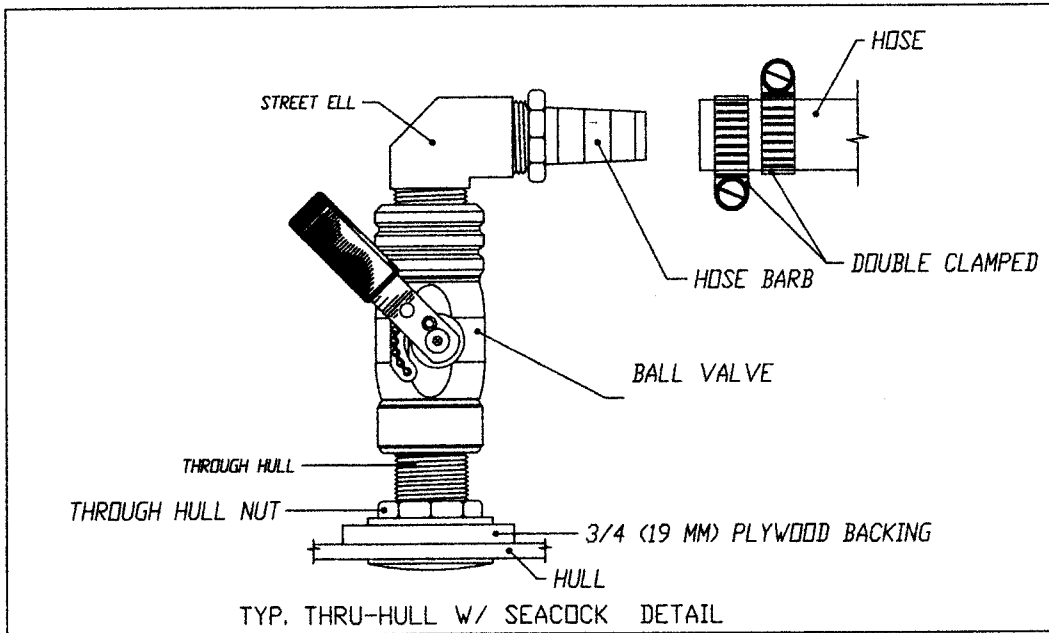
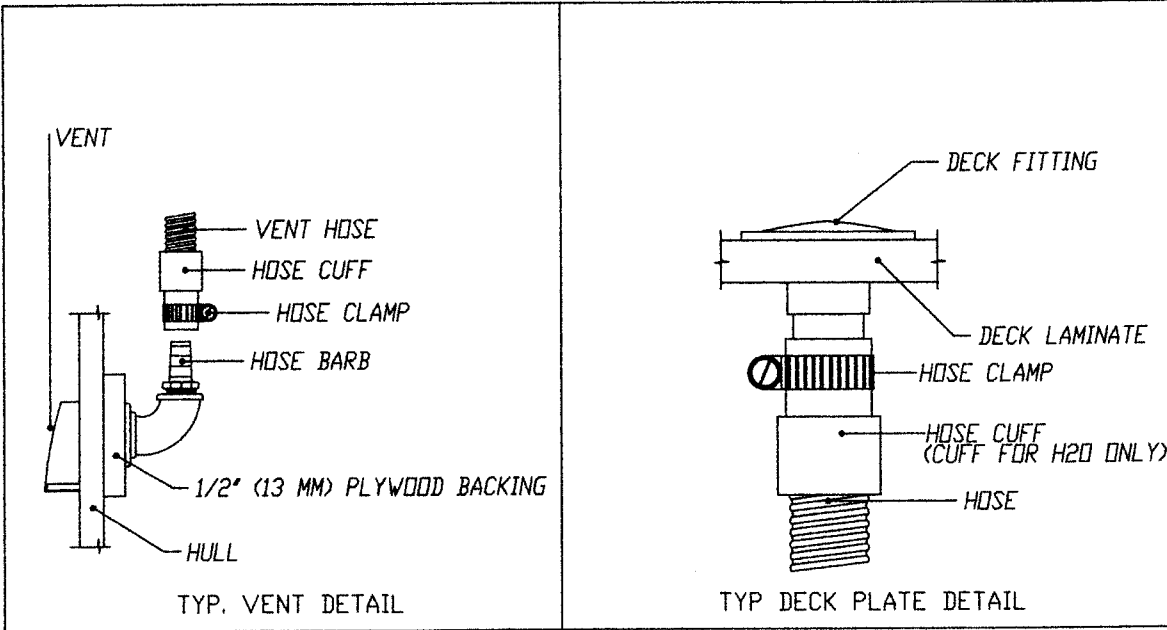
1. ANCHOR WINDLASS CONTROL LOCATION
2. FWD WASTE TANK PUMPOUT LOCATION
3. FWD STBD WATER TANK LOCATION
4. FWD STBD WATER TANK VENT LOCATION (VENTED STANCHION)
5. PT WATER TANK FILL LOCATION
6. MANUAL BILGE PUMP DISCHARGE (LOCATED ON SIDE OF CABIN HOUSE)
7. PT WATER TANK FILL VENT (LOCATED ON SIDE OF CABIN HOUSE)
8. DIESEL FUEL FILL LOCATION
9. AFT WASTE TANK PUMPOUT LOCATION
10. DIESEL FUEL FILL VENT LOCATION
11. AFT WASTE TANK VENT LOCATION
12. SHORE WATER INLET LOCATION
13. EMERGENCY TILLER DECK ACCESS PLATE LOCATION
14. TV COAX / PHONE LINE HOOKUP LOCATION
15. SHORE POWER "B" HOOK UP LOCATION
16. SHORE POWER "A" HOOK UP LOCATION
17. AFT STBD WATER TANK FILL LOCATION
18. AFT STBD WATER TANK FILL VENT LOCATION

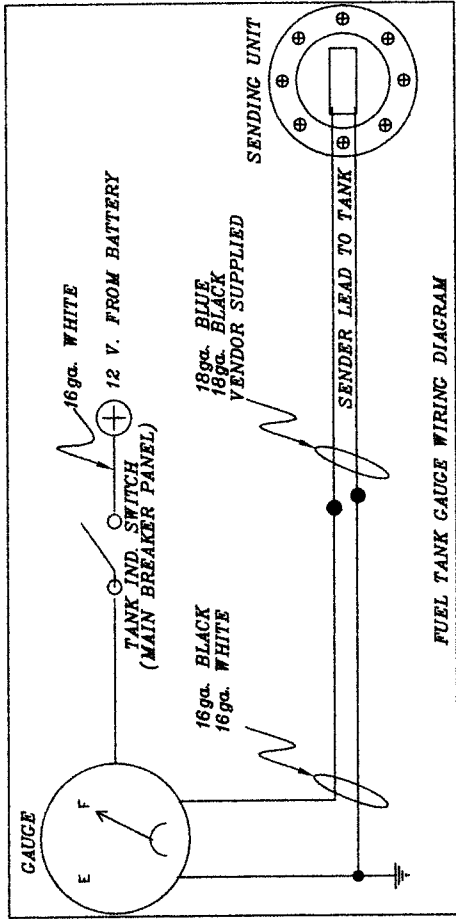
FOR SALES: TEL: 42080608 FAX: 42080608

HUNTER

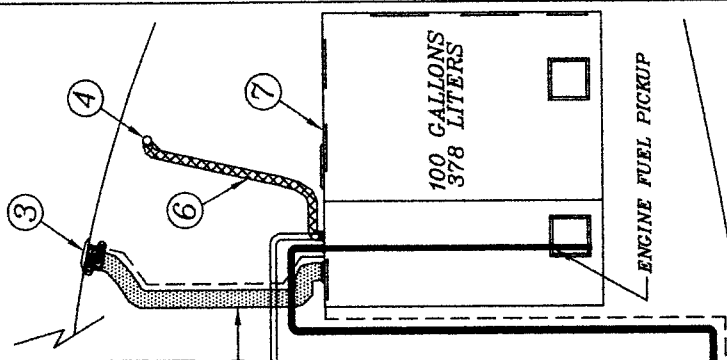
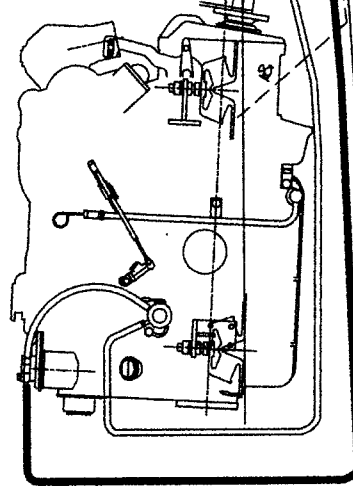
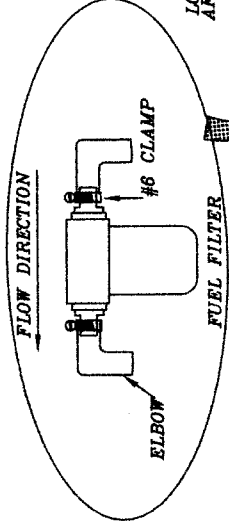
P420 THRU DECK LOCATIONS

DRAWING NO. 42080608	REVISION NO. NONRE
ENGINEERING DEPT.	DATE 9/28/98





1. ENGINE FUEL FILTER
2. ENGINE FUEL HOSE
3. DIESEL FILL (DECK FITTING)
4. DIESEL TANK VENT (HULL FITTING)
5. DIESEL FILL HOSE
6. DIESEL VENT HOSE
7. TANK SENDING UNIT



FUEL FILTER  
LOCATED ON STBD  
AFT ENGINE ROOM  
BULKHEAD

- = FUEL FEED LINE 5/16" (7.9 mm)
- = FUEL RETURN 5/16" (7.9 mm)
- = FUEL VENT HOSE 3/4" (19.1 mm)
- = FUEL FILL HOSE 1 1/2" (38.1 mm)
- = OVERSEAS/CHTR SPEC ALUM. TANK STATIC GND.

PROJECT NO. **P420 ENGINE FUEL SYSTEM**

ISSUE NO. 4208061A

REVISION NO. NONE



DATE 3/4/99

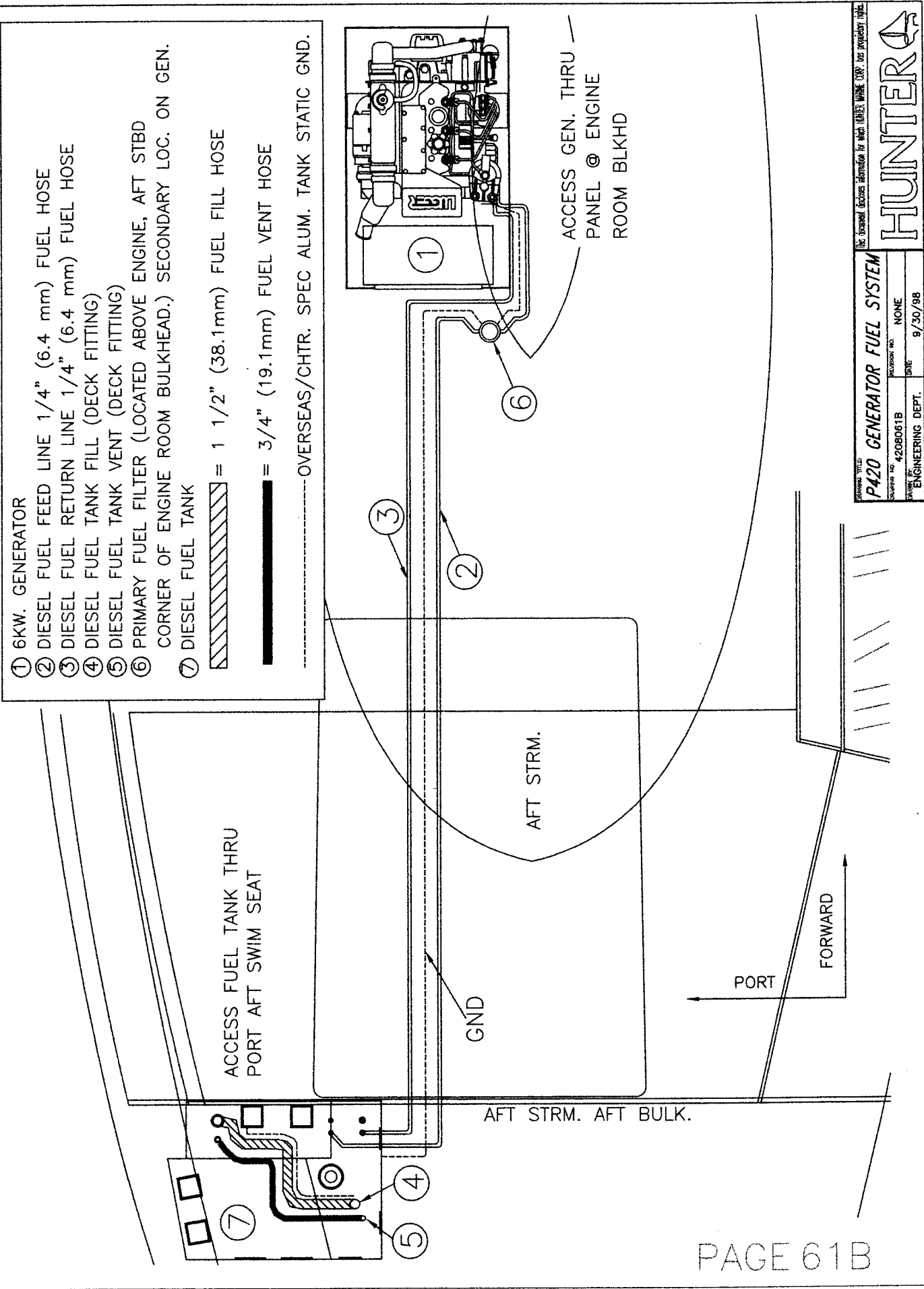
ENGINEERING DEPT

100 GALLONS 378 LITERS

ENGINE FUEL PICKUP

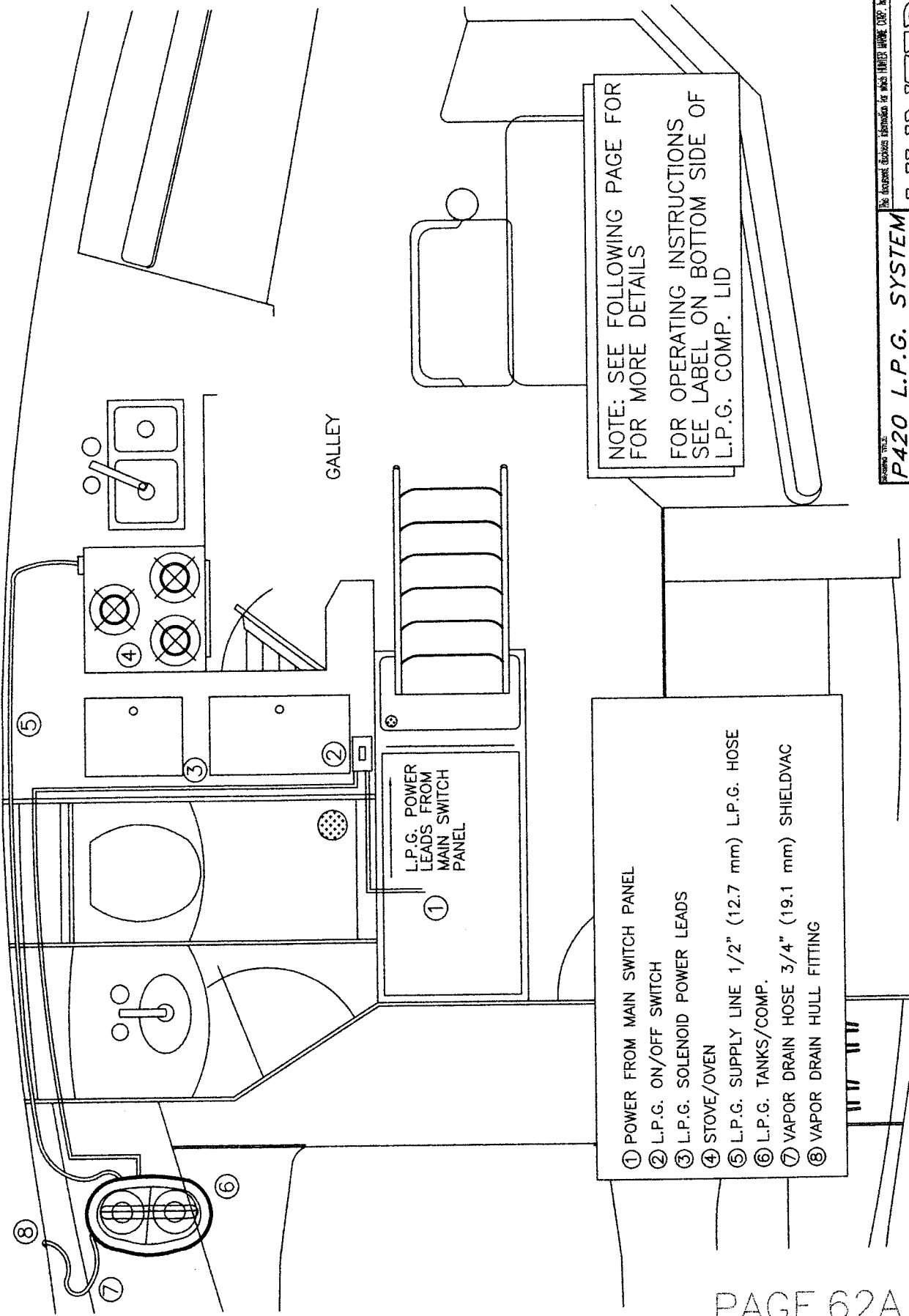
HUNTER

- ① 6KW. GENERATOR
  - ② DIESEL FUEL FEED LINE 1/4" (6.4 mm) FUEL HOSE
  - ③ DIESEL FUEL RETURN LINE 1/4" (6.4 mm) FUEL HOSE
  - ④ DIESEL FUEL TANK FILL (DECK FITTING)
  - ⑤ DIESEL FUEL TANK VENT (DECK FITTING)
  - ⑥ PRIMARY FUEL FILTER (LOCATED ABOVE ENGINE, AFT STBD CORNER OF ENGINE ROOM BULKHEAD.) SECONDARY LOC. ON GEN.
  - ⑦ DIESEL FUEL TANK
-  = 1 1/2" (38.1mm) FUEL FILL HOSE  
 = 3/4" (19.1mm) FUEL VENT HOSE  
 ----- OVERSEAS/CHTR. SPEC ALUM. TANK STATIC GND.



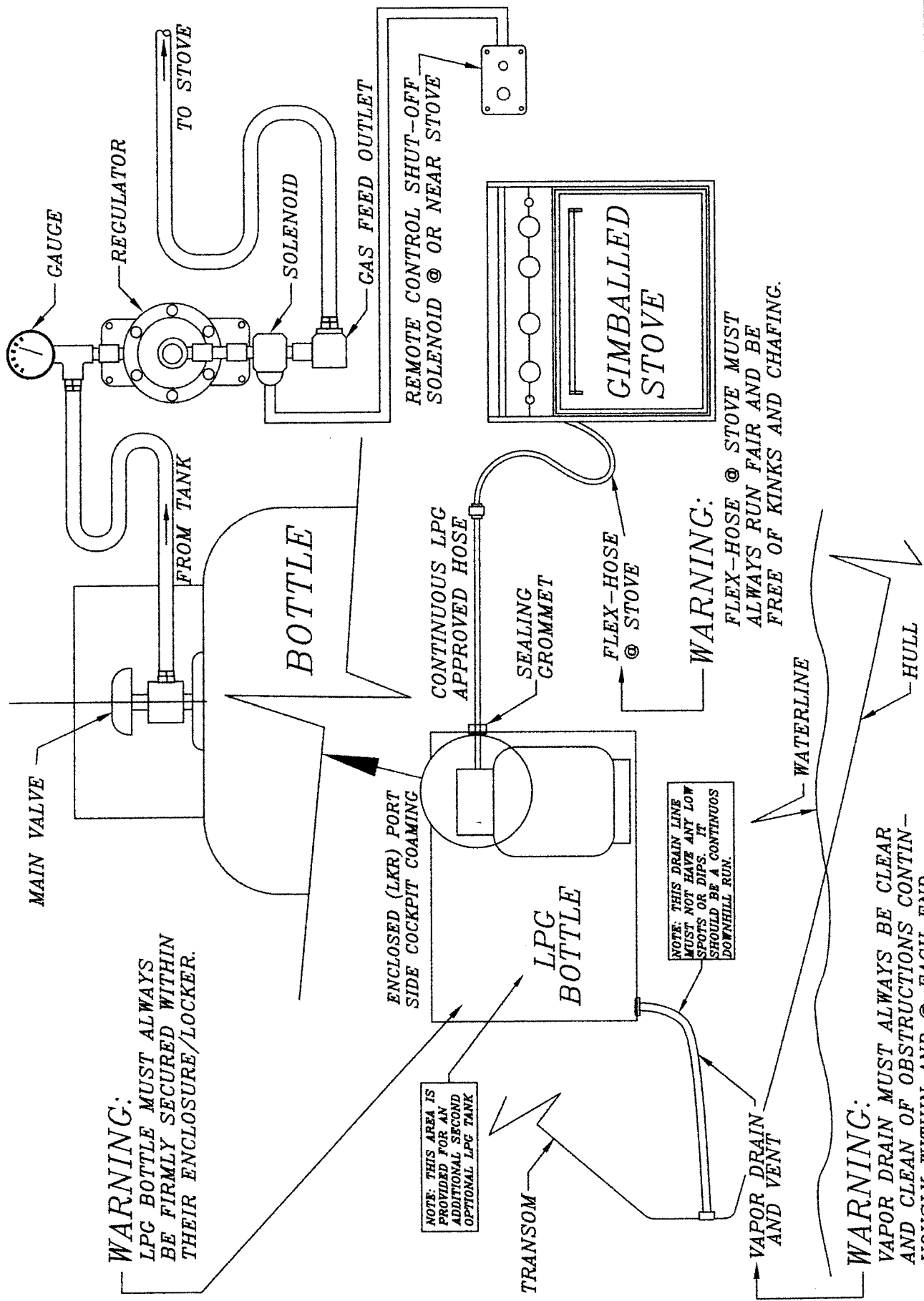
HUNTERA  
 THE HUNTERA GROUP  
 P420 GENERATOR FUEL SYSTEM  
 DRAWING NO. 4208061B  
 REVISION NO. NONE  
 DATE 9/30/98  
 ENGINEERING DEPT.





NOTE: SEE FOLLOWING PAGE FOR  
 FOR MORE DETAILS  
 FOR OPERATING INSTRUCTIONS  
 SEE LABEL ON BOTTOM SIDE OF  
 L.P.G. COMP. LID

- ① POWER FROM MAIN SWITCH PANEL
- ② L.P.G. ON/OFF SWITCH
- ③ L.P.G. SOLENOID POWER LEADS
- ④ STOVE/OVEN
- ⑤ L.P.G. SUPPLY LINE 1/2" (12.7 mm) L.P.G. HOSE
- ⑥ L.P.G. TANKS/COMP.
- ⑦ VAPOR DRAIN HOSE 3/4" (19.1 mm) SHIELDVAC
- ⑧ VAPOR DRAIN HULL FITTING



**WARNING:**  
LPG BOTTLE MUST ALWAYS BE FIRMLY SECURED WITHIN THEIR ENCLOSURE/LOCKER.

NOTE: THIS AREA IS PROVIDED FOR AN ADDITIONAL SECOND OPTIONAL LPG TANK

ENCLOSED (LKR) PORT SIDE COCKPIT COAMING

NOTE: THIS DRAIN LINE MUST NOT HAVE ANY LOW SPOTS OR DIPS. IT SHOULD BE A CONTINUOUS DOWNHILL RUN.

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

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

P420 L.P.G. SYSTEM LAYOUT  
 DRAWING NO. 4208082B  
 REVISION NO. NONE  
 DATE 11/11/98  
 ENGINEERING DEPT.



# P420 ELECTRICAL SYSTEMS

THE FOLLOWING PAGES PROVIDE DETAILED INFORMATION, SCHEMATICS ETC. PERTAINING TO THE P420 **STANDARD** ELECTRICAL SYSTEMS AS WELL AS THE **OPTIONAL** ELECTRICAL SYSTEMS.

READ THE DRAWING TITLE IN THE TITLE BLOCK TO BE SURE YOU ARE REFERRING TO THE CORRECT SYSTEM FOR YOUR MODEL.

MAJOR DIFFERENCES EXIST FOR EXAMPLE, IN THE CHARGING SYSTEM SCHEMATICS WHERE THE STANDARD MODEL IS EQUIPPED WITH A BATTERY CHARGER AND THE OPTIONAL MODEL IS EQUIPPED WITH AN INVERTER/CHARGER.

## **P420 ELECTRICAL SYSTEM CONTENTS**

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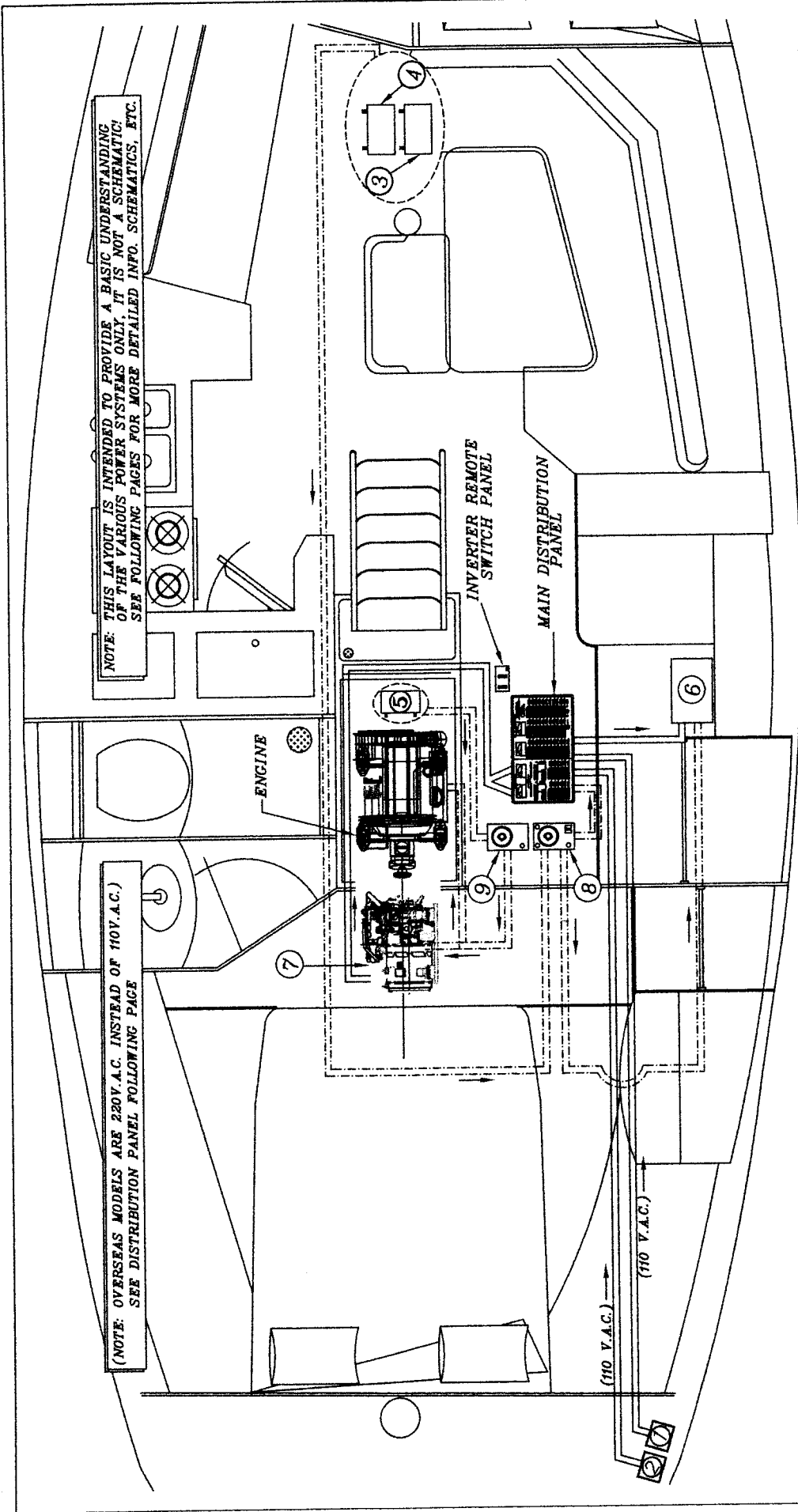
## P420 POWER SYSTEMS OPERATION PROCEDURES

POWER SOURCE:	TO OPERATE:
D.C. MAIN	<p><b>STD. BATTERY CHARGER MODEL:</b> TURN BATTERY SWITCH (LOCATED UNDER CHART TABLE) TO THE "ON" POSITION, THEN TURN ON "D.C. MAIN" BREAKER. ON D.C. SIDE OF MAIN DISTRIBUTION PANEL.</p> <p><b>IF NO POWER:</b> CHECK 50a. RESET ON "HOUSE" BATTERY SWITCH PANEL AND/OR BATTERY CONNECTIONS IF NECESSARY.</p> <p><b>OPTIONAL INVERTER MODEL:</b> TURN ON "D.C. MAIN" BRKR. ON D.C. SIDE OF MAIN DISTRIBUTION PANEL. IT IS NOT NECESSARY TO TURN ON THE INVERTER/DRAW SEL. SW. TO EITHER THE #1, #2, OR BOTH POSITIONS, THIS PORTION OF THE INV/DRAW SEL. SW. IS FOR THE CHARGING/INVERTING SYSTEM (AND ISOLATION OF) ONLY. IT IS NECESSARY TO TURN ON EITHER THE #1, OR #2, BREAKER/S LOCATED ON THE BOTTOM OF THE INV/DRAW SEL. SW. PANEL TO PROVIDE POWER TO D.C. PANEL FROM EITHER THE HOUSE BATT. #1 OR #2. (#1=HOUSE BATTERY #1) (#2= HOUSE BATTERY #2)</p> <p><b>IF NO POWER:</b> CHECK 300 amp IN LINE FUSE AT EACH HOUSE BATTERY IN HOUSE BATTERY COMPARTMENT, AND/OR BATTERY CONNECTIONS IF NECESSARY.</p>
SHORE POWER "A"	<p>1. CONNECT SHORE POWER CABLE #1, TO SUPPLY POWER TO "A" SIDE OF A.C. POWER MAIN DISTRIBUTION PANEL</p> <p>2. TURN ON MAIN BREAKER ON SHORE POWER "A" SIDE OF PANEL</p> <p>3. "A" SIDE OF A.C. POWER MAIN DISTRIBUTION PANEL SHOULD NOW BE OPERABLE (NOTE: APPROX. 15 SECOND DELAY ON OPT. INV. MODELS)</p> <p><b>IF NO POWER TO "A" SIDE OF PANEL CHECK THE FOLLOWING:</b></p> <p>1. BREAKER AT DOCKSIDE POWER SUPPLY BOX</p> <p>2. BREAKER #1 INSIDE PORT COCKPIT SEAT LOCKER</p>
SHORE POWER "B"	<p>1. CONNECT SHORE POWER CABLE #2, TO SUPPLY POWER TO "B" SIDE OF A.C. POWER MAIN DISTRIBUTION PANEL</p> <p>2. TURN ON MAIN BREAKER ON SHORE POWER "B" SIDE OF PANEL</p> <p>3. "B" SIDE OF A.C. POWER MAIN DISTRIBUTION PANEL SHOULD NOW BE OPERABLE</p> <p><b>IF NO POWER TO "B" SIDE OF PANEL CHECK THE FOLLOWING:</b></p> <p>1. BREAKER AT DOCKSIDE POWER SUPPLY BOX</p> <p>2. BREAKER #2 INSIDE PORT COCKPIT SEAT LOCKER</p>
OPTIONAL INVERTER WHEN IN INVERT MODE (CONVERTS 12V D.C. TO 110V A.C.)	<p>1. CHOOSE HOUSE BATTERY/S TO DRAW POWER FROM BY TURNING INV/DRAW (HOUSE BATT'S) SEL. SWITCH UNDER CHART TABLE TO 1,2, OR BOTH POSITION (THIS SW. PROVIDES ISOLATION CAPABILITY IN THE EVENT OF A BAD BATTERY. FOR EX. A DEAD CELL)</p> <p>2. TURN THE INVERTER REMOTE SW. (LOCATED AT INB. END OF CHART SEAT) TO THE "ON" POSITION</p> <p>3. TURN ON DESIRED BREAKER (EX. OUTLETS) ON "A" SIDE OF A.C. MAIN DISTRIBUTION PANEL</p> <p><b>NOTE:</b> IT TAKES 100.C. AMPS TO CREATE 1A.C. AMP, IF THE BATTERY VOLTAGE DROPS BELOW 10.5V. THE INVERTER WILL AUTOMATICALLY SHUT DOWN. (SEE "SEL. SW" &amp; "METERS" ON PAGE 63A-7) ALSO THE OUTPUT OF THE INVERTER IS NOT CAPABLE OF POWERING THE WATER HEATER OR AIR COND. SYSTEM, THE WATER HEATER IS POWERED BY "SHORE POWER A" CABLE OR OPT. GENERATOR. THE AIR COND'S ARE POWERED BY THE "SHORE POWER B" CABLE OR THE OPT. GENERATOR. <b>NOTE: IF ANY OTHER APPLIANCES ARE TO BE USED WITH AIR COND'S RUNNING WHEN ON SHORE POWER BOTH "SHORE POWER A" AND "SHORE POWER B" CABLES MUST BE HOOKED UP.</b></p> <p><b>TO POWER D.C. SIDE OF PANEL AND "A" SIDE OF A.C. PANEL SIMULTANEOUSLY USING INVERTER:</b></p> <p>1. TURN ON D.C. MAIN BREAKER ON D.C. SIDE OF MAIN DISTRIBUTION PANEL</p> <p>2. TURN THE INV/DRAW (HOUSE BATT'S) SELECTOR SWITCH TO THE #2 POSITION</p> <p>3. TURN THE #1 BREAKER LOCATED AT THE BOTTOM OF THE INV/DRAW SEL. SWITCH PANEL TO THE "ON" POSITION, AND TURN THE #2 BREAKER TO THE "OFF" POSITION.</p> <p>4. TURN INVERTER REMOTE SWITCH TO THE "ON" POSITION</p> <p><b>THIS PROCEDURE ALLOWS INVERTER TO SUPPLY 110V.A.C. POWER TO "A" SIDE OF A.C. PANEL BY DRAWING POWER FROM HOUSE BATTERY #2, WHILE D.C. SIDE OF PANEL DRAWS POWER FROM HOUSE BATTERY #1. THIS ISOLATION PROCEDURE COMES IN HANDY FOR EXAMPLE WHEN USING A HIGHER AMPERAGE APPLIANCE OFF OF THE INVERTER THAT MIGHT CAUSE A MOMENTARY VOLTAGE DROP THAT COULD EFFECT EQUIP. (SUCH AS THE OPT. AUTOPILOT) THAT IS VOLTAGE SENSITIVE CAUSING THE UNIT TO TURN OFF. (THIS APPLIES WHEN THERE IS NO SHORE OR GENERATOR POWER BEING SUPPLIED TO PANEL)</b></p> <p><b>THE INVERTER AUTO. TRANSFERS SHORE POWER TO THE A.C. PANEL WHEN "SHORE POWER A" CABLE CONNECTED AND DOCKSIDE POWER PRESENT AT A.C. PANEL BYPASSING THE INVERT MODE CAPABILITIES.</b></p>
BUILT IN INVERTER- TRANSFER SWITCH.	<p>1. TURN (START) BATTERY SW. (LOCATED UNDER CHART TABLE) TO THE "ON" POSITION</p> <p>2. CHECK SEA STRAINER AND OPEN RAW WATER SEACOCK. SEE PAGE 60 FOR LOCATION</p> <p>3. START GENERATOR (FOLLOW STARTING INSTRUCTIONS PROVIDED IN THE "GENERATOR MANUAL")</p> <p>3. RAISE SLIDE BAR ON "A" SIDE OF A.C. PANEL AND TURN GENERATOR BREAKER TO THE "ON" POSITION</p> <p>4. TO POWER "B" SIDE OF A.C. PANEL (TO USE AIR COND'S) RAISE SLIDE BAR ON "B" SIDE OF A.C. PANEL AND TURN PARALLEL BREAKER TO THE "ON" POSITION</p>
OPTIONAL GENERATOR	<p>1. TURN (START) BATTERY SW. (LOCATED UNDER CHART TABLE) TO THE "ON" POSITION</p> <p>2. CHECK SEA STRAINER AND OPEN RAW WATER SEACOCK. SEE PAGE 60 FOR LOCATION</p> <p>3. START GENERATOR (FOLLOW STARTING INSTRUCTIONS PROVIDED IN THE "GENERATOR MANUAL")</p> <p>3. RAISE SLIDE BAR ON "A" SIDE OF A.C. PANEL AND TURN GENERATOR BREAKER TO THE "ON" POSITION</p> <p>4. TO POWER "B" SIDE OF A.C. PANEL (TO USE AIR COND'S) RAISE SLIDE BAR ON "B" SIDE OF A.C. PANEL AND TURN PARALLEL BREAKER TO THE "ON" POSITION</p>

P420 POWER SYSTEMS OPERATION INSTRUCTIONS (CONT)

**P420 BATTERY CHARGING SYSTEMS OPERATION PROCEDURES**

<p><b>STD. BATT. CHARGER</b></p>	<p>1. CONNECT SHORE POWER CABLE #1 TO POWER "A" SIDE OF A.C. POWER MAIN DISTRIBUTION PANEL AND TURN ON "SHORE POWER A" MAIN BREAKER                  2. TURN "BATTERY CHARGER" BREAKER (LOCATED ON "A" SIDE OF A.C. PANEL) TO THE "ON" POSITION                  NOTE: IT IS NOT NECESSARY TO TURN ON THE "HOUSE" OR THE "START" BATTERY SWITCHES TO PROVIDE CHARGING POWER TO THE HOUSE &amp; START BATTERIES.</p>
<p><b>ENGINE ALTERNATOR</b></p>	<p>1. TURN (START) BATTERY SELECTOR SWITCH TO THE "ON" POSITION                  2. CHECK SEA STRAINER &amp; OPEN RAW WATER SEACOCK. SEE PAGE 60 FOR LOCATION                  3. START SHIP'S ENGINE. (FOLLOW STARTING INSTRUCTIONS IN THE "ENGINE MANUAL.")                  4. TURN (HOUSE) BATTERY SWITCH TO THE "ON" POSITION (ON OPT. INV. MODEL THE INV/DRAW SEL. SWITCH TO THE "BOTH" POSITION)</p>
<p><b>OPTIONAL INVERTER INVERTER HAS A BUILT IN AUTO CHARGING SYSTEM</b></p>	<p>1. CONNECT SHORE POWER CABLE #1 TO POWER "A" SIDE OF A.C. POWER MAIN DISTRIBUTION PANEL AND TURN ON "SHORE POWER A" MAIN BREAKER                  2. TURN INVERTER REMOTE SWITCH TO THE "OFF" POSITION                  3. TURN INVERTER/DRAW (HOUSE BATT'S) SELECTOR SWITCH TO THE "BOTH" POSITION                  NOTE: IT IS NOT NECESSARY TO TURN ON THE "START" BATTERY SWITCH TO PROVIDE CHARGING POWER TO THE START BATTERY.                  NOTES: WHEN LEAVING BOAT UNATTENDED, BE SURE INVERTER REMOTE SWITCH IS IN THE "OFF" POSITION, THIS WAY IF SHORE POWER IS LOST FOR ANY REASON, THIS WILL PREVENT THE INVERTER FROM CONVERTING 12V D.C. TO A.C. VOLTAGE CAUSING HOUSE BATTERIES TO BE DRAINED. WHEN THE INVERTER REMOTE SWITCH IS IN THE "OFF" POSITION THE INVERTER AUTOMATICALLY GOES INTO CHARGE MODE                  INVERTER CHARGE MODE WORKS ONLY WHEN THERE IS POWER TO THE "A" SIDE OF THE A.C. PANEL</p>
<p><b>OPT. GENERATOR</b></p>	<p>1. TURN (START) BATTERY SWITCH TO THE "ON" POSITION                  2. CHECK SEA STRAINER &amp; OPEN RAW WATER SEACOCK SEE PAGE 60 FOR LOCATION                  3. START GENERATOR (FOLLOW STARTING INSTRUCTIONS IN THE "GENERATOR MANUAL")                  4. ON STD. BATTERY CHARGER MODEL: TURN ON THE "GENERATOR" MAIN BREAKER ON THE A.C. SIDE OF MAIN DISTRIBUTION PANEL                  TURN ON "BATTERY CHARGER" BREAKER ON THE "A" SIDE OF A.C. PANEL. IT IS NOT NECESSARY TO TURN ON THE HOUSE BATTERY SW.                  5. ON OPT. INVERTER MODEL: TURN THE INVERTER REMOTE SWITCH TO THE "OFF" POSITION, AND THE INV/DRAW SEL. SWITCH TO THE "BOTH" POSITION.</p>

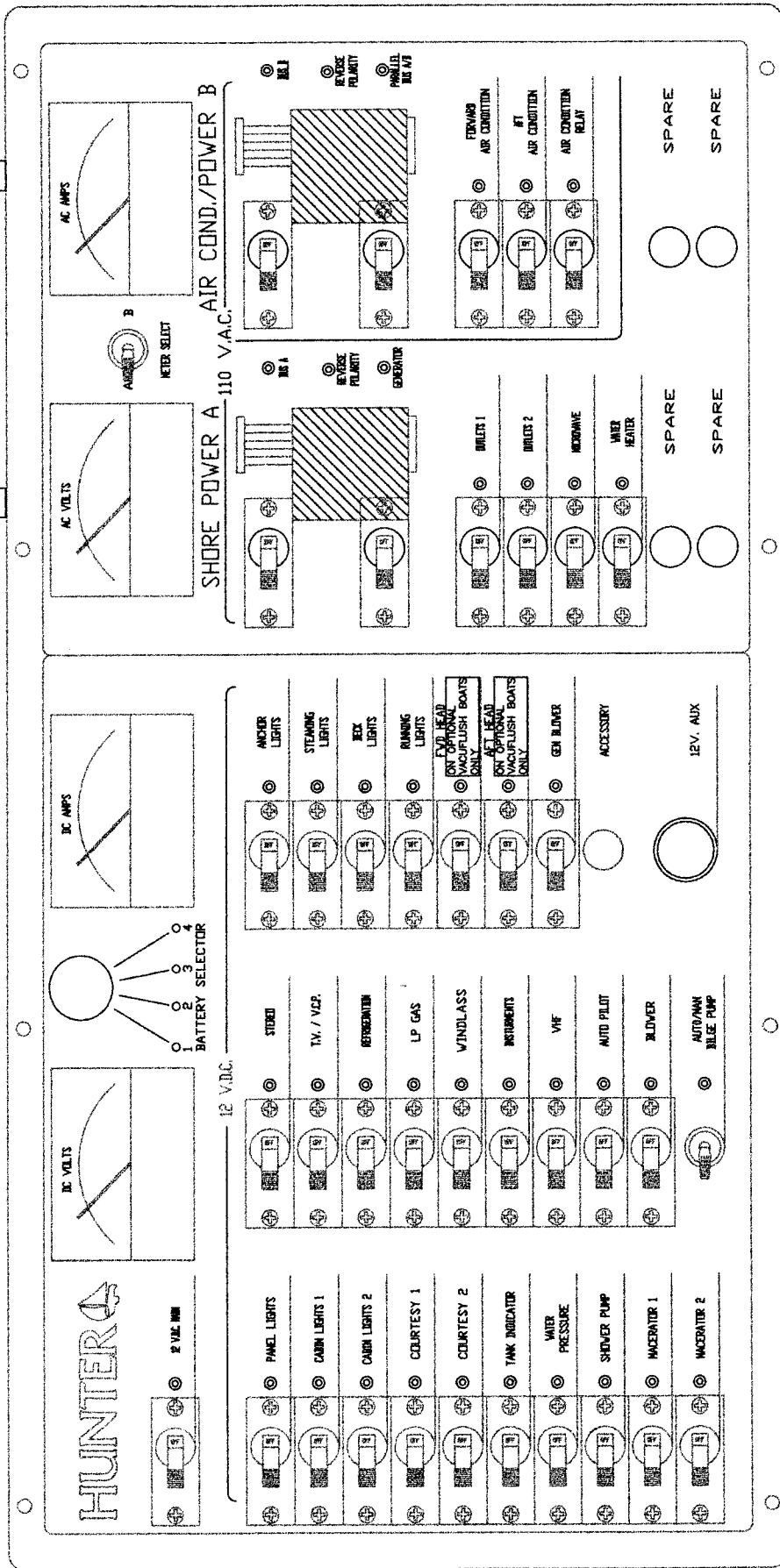


NOTE: THIS LAYOUT IS INTENDED TO PROVIDE A BASIC UNDERSTANDING OF THE VARIOUS POWER SYSTEMS ONLY. IT IS NOT A SCHEMATIC! SEE FOLLOWING PAGES FOR MORE DETAILED INFO, SCHEMATICS, ETC.

(NOTE: OVERSEAS MODELS ARE 220V.A.C. INSTEAD OF 110V.A.C.) SEE DISTRIBUTION PANEL FOLLOWING PAGE

- POWER SYSTEM OPERATION:**
- ① SHORE POWER "A" POWERS "A" SIDE OF A.C. PANEL
  - ② SHORE POWER "B" POWERS "B" SIDE OF A.C. PANEL
  - ③ & ④ HOUSE BATTERIES PROVIDE 12V D.C. VOLTAGE TO D.C. SIDE OF DISTRIBUTION PANEL AND INVERTER
  - ⑤ START BATTERY PROVIDES 12 V.D.C. POWER TO ENGINE & GEN. STARTERS. (NOTE: SOLAR PREVENTS INVERTER FROM DRAWING POWER FROM START BATTERY.)
  - ⑥ (OPT) INVERTER CONVERTS 12 V.D.C. TO A.C. VOLTAGE AND POWERS "A" SIDE OF A.C. PANEL ONLY.
  - ⑦ OPT. GENERATOR PROVIDES A.C. POWER TO BOTH "A" & "B" SIDES OF PANEL WHEN GENERATOR AND PARALLEL BREAKERS ARE IN THE "ON" POSITION WHILE GENERATOR RUNNING.
  - ⑧ START BATTERY ON/OFF SWITCH
  - ⑨ (OPT) INVERTER/DRAW SELECTION
    - = POWER FLOW DIRECTION
    - = 12 V.D.C.
    - = 110 V.A.C. (220 V.A.C. OVERSEAS MODELS)

- ① SHORE POWER "A" TO "A" SIDE OF A.C. PANEL
- ② SHORE POWER "B" TO "B" SIDE OF A.C. PANEL
- ③ HOUSE BATTERY "1" TO D.C. SIDE OF PANEL
- ④ HOUSE BATTERY "2" TO D.C. SIDE OF PANEL
- ⑤ START BATTERY SEE PREVIOUS PAGE
- ⑥ OPTIONAL INVERTER TO "A" SIDE OF A.C. PANEL
- ⑦ OPTIONAL GENERATOR POWER TO "A" AND "B" SIDE OF A.C. PANEL



③ ④

⑥ ⑦

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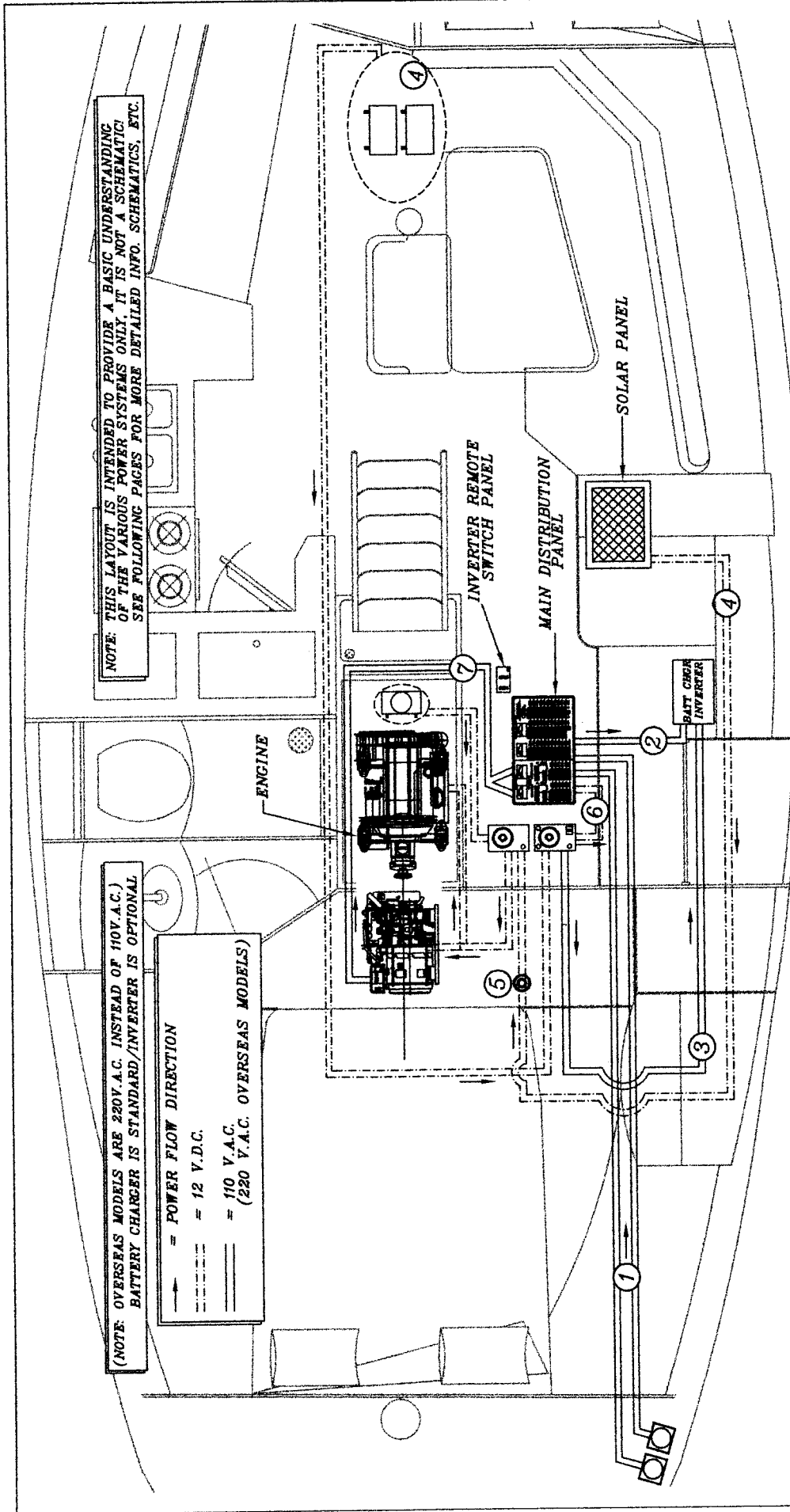
**HUNTER**

**P420 MAIN DISTRIBUTION PANEL LAYOUT**

REVISED DATE	REVISED BY	REVISION NO.
3/5/99	ENGINEERING DEPT.	NONE

SEE PAGES 63A-7 & 8 FOR BREAKER DESCRIPTIONS





NOTE: THIS LAYOUT IS INTENDED TO PROVIDE A BASIC UNDERSTANDING OF THE VARIOUS POWER SYSTEMS ONLY. IT IS NOT A SCHEMATIC! SEE FOLLOWING PAGES FOR MORE DETAILED INFO. SCHEMATICS, ETC.

(NOTE: OVERSEAS MODELS ARE 220V.A.C. INSTEAD OF 110V.A.C.) BATTERY CHARGER IS STANDARD/INVERTER IS OPTIONAL

— = POWER FLOW DIRECTION  
 - - - = 12 V.D.C.  
 = 110 V.A.C.  
 (220 V.A.C. OVERSEAS MODELS)

- ① 110 V.A.C. SHORE POWER INLETS TO THE MAIN DISTRIBUTION PANEL LOCATED AT THE ENGINE BOX BULKHEAD
- ② 110 V.A.C. FROM AC SIDE OF PANEL TO THE STANDARD BATTERY CHARGER/ (OPTIONAL INVERTER)
- ③ 100AMP CHARGE CIRCUIT FROM BATTERY CHARGER/(INVERTER) TO ALL BATTERIES.
- ④ TRICKLE CHARGE CIRCUIT FROM SOLAR PANEL TO START BATTERY.
- ⑤ SOLAR PANEL CHARGE REGULATOR
- ⑥ ENGINE ALTERNATOR CHARGE CIRCUIT TO ALL BATTERIES.
- ⑦ GENERATOR POWERS THE PANEL, THEN OPTIONAL INVERTER CHARGES ALL BATTERIES.

**BASIC OPERATION INSTRUCTIONS**  
 INVERTER CHARGES ALL BATTERIES WHEN INVERTER IS IN CHARGE MODE. INVERTER SWITCHES OVER TO CHARGE MODE WHEN IT IS NOT CONVERTING D.C. VOLTAGE TO A.C. VOLTAGE AND SHORE POWER "A" IS CONNECTED AND THE INVERTER DRAW (HOUSE BATTERY) SELECTOR IS IN THE "BOTH" POSITION.  
 ENGINE ALTERNATOR PROVIDES CHARGING POWER TO ALL THE BATTERIES WHEN THE ENGINE IS RUNNING AND THE INVERTER DRAW (HOUSE BATTERY), SELECTOR SWITCH IS IN THE "ON" POSITION.  
 THE OPTIONAL GENERATOR PROVIDES POWER TO THE MAIN DISTRIBUTION PANEL, ALLOWING THE INVERTER/ CHARGER TO CHARGE BATTERIES AS MENTIONED ABOVE.

**12 V.D.C. DISTRIBUTION PANEL**

BREAKER	DESCRIPTION
D.C. MAIN	SUPPLIES 12 V.D.C. POWER FROM HOUSE BATTERIES TO ALL BREAKERS ON D.C. SIDE OF PANEL.
PANEL LIGHTS	ILLUMINATES BOTH A.C. & D.C. SIDES OF THIS PANEL FOR NIGHT USE
CABIN LIGHTS 1	SUPPLIES POWER TO CABIN LIGHTS IN THE GALLEY, NAV. STA./MAP, LIGHT MAIN SAL., FWD. STRM., AND FWD. HEAD.
CABIN LIGHTS 2	SUPPLIES POWER TO CABIN LIGHTS IN THE AFT HEAD, & AFT STATEROOM
COURTESY 1	SUPPLIES POWER TO SWITCHED CTSY. LIGHTS, THESE ARE THE FRIDGE/FREEZER COMPTS.
COURTESY 2	SUPPLIES POWER TO ALL CABIN SOLE LIGHTS LOCATED AT THE GALLEY, NAV. STA., AFT STRM. SOLE AT DESK
COCKPIT LIGHTS	SUPPLIES POWER TO COCKPIT LIGHTS IN THE ARCH
WATER PUMP	SUPPLIES POWER TO FRESH WATER PUMP TO PRESSURIZE H2O SYSTEM.
SUMP PUMP	SUPPLIES POWER TO BOTH FWD. AND AFT SHOWER SUMP BOXES. (SELF CONTAINED FLOAT SWITCH IN EACH SUMP ACTIVATES PUMP INSIDE EACH SUMP BOX. (SEE PAGE 59A FOR SUMP LOCATIONS)
TV/VCP	SUPPLIES POWER TO TV/VCP (VIDEO CASSETTE PLAYER)
STEREO	SUPPLIES POWER TO STEREO UNIT AND AMPLIFIER
ANCHOR LIGHT	SUPPLIES POWER TO 360 DEGREE LIGHT AT TOP OF MAST, USE WHEN ANCHORED AT NIGHT.
STEAMING LIGHT	SUPPLIES POWER TO STEAMING LIGHT LOCATED ON FWD. SIDE OF MAST APPROXIMATELY AT THE HEIGHT OF THE LOWER SPREADERS. USE AT NIGHT WHEN VESSEL UNDERWAY BY ENGINE POWER. (ALONG W/RUNNING LTS.)
DECK LITES	SUPPLIES POWER TO DECK LIGHT (IS COMBINATION WITH STEAMING LIGHT) PROVIDES LIGHT TO DECK BELOW.
RUNNING LIGHTS	SUPPLIES POWER TO THE BOW, STERN, & COMPASS LIGHT. USE AT NIGHT UNDER SAIL AND/OR ENGINE POWER.
INSTRUMENTS	SUPPLIES POWER TO KNOT, DEPTH, & SPEED REPEATERS LOCATED ON HELM CONSOLE.
VHF	SUPPLIES POWER TO THE VHF RADIO LOCATED INSIDE COMPANIONWAY OPENING
NAV. INST.	THIS BREAKER PROVIDED FOR OPTIONAL NAVIGATION INSTRUMENTS SUCH AS RADAR.
WINDLASS	SUPPLIES POWER TO UP/DOWN CONTROLS AT ANCHOR WELL. NOTE: BECAUSE THE WINDLASS DRAWS ITS POWER FROM THE START BATTERY, IT IS GOOD PRACTICE TO START THE SHIPS ENGINE PRIOR TO OPERATING WINDLASS TO PREVENT BATTERY DRAIN. ( IF NO POWER, CHECK RESET ON REMOTE PANEL)
AUTOPILOT	THIS BREAKER PROVIDED FOR AN OPTIONAL AUTOPILOT SYSTEM.
MACERATOR 1	SUPPLIES POWER TO FWD. MACERATOR (LOCATED UNDER FWD. STRM BUNK)
MACERATOR 2	SUPPLIES POWER TO AFT MACERATOR (LOCATED UNDER AFT STRM. BUNK, NOTE: THESE DEVICES ARE USED FOR DIRECT OVERBOARD DISCHARGE OF RAW SEWAGE, BE AWARE OF YOUR LOCAL BOATING REG. BEFORE USING.
L. P. GAS	SUPPLIES POWER TO L.P. GAS SWITCH AT GALLEY. SEE "SEAWARD MANUAL" FOR OPER. & SAFETY INST.
BLOWER	SUPPLIES POWER TO ENGINE ROOM COOLING FAN & SHOULD BE "ON" WHEN RUNNING ENG. OR OPT. GEN
TANK INDICATOR	SUPPLIES POWER TO TANK SELECTOR SWITCH ( AT NAV STATION) ROTATE SWITCH TO DESIRED TANK, TO VIEW TANK LEVEL ON LEVEL GAUGE.
BILGE PUMP	TOGGLE SWITCH STAYS IN THE "AUTO" POSITION, THIS ALWAYS FEEDS POWER TO THE FLOAT SWITCH (AS LONG AS BATTERIES ARE CONNECTED AND HAVE AMPLE CHARGE) FOR MANUAL USE, PUSH SWITCH TO "MANUAL" ILLUMINATED L.E.D. INDICATES POWER TO PUMP AND PUMP SHOULD BE RUNNING. PRIOR TO LEAVING VESSEL "MANUALLY" TEST PUMP AND CHECK BATTERY LEVEL. SEE BATTERY SELECT SWITCH BELOW.
BATT. SEL. SW.	USE TO REVIEW STATUS OF EA. BATTERY ROTATE TO SELECT BATTERY, VIEW STATUS ON METERS.
METERS	D.C. VOLTS DISPLAYS AVAILABLE VOLTAGE FROM SELECTED BATTERY D.C. AMPS DISPLAYS AMPERAGE BEING DRAWN FROM SELECTED BATTERY.
SPARES/ACCESSORY	1 15amp BREAKER PROVIDED FOR ADDITIONAL 12 V.D.C. ACCESSORY
YELLOW L.E.D.'S	LIGHT EMITTING DIODES ILLUMINATE WHEN 12 V.D.C. POWER PRESENT.
NOTE:	IF THE OPTIONAL AUTOPILOT WAS INSTALLED AT THE FACTORY, THE "INSTRUMENTS" POWER LEADS ARE WIRED TO THE AUTOPILOT BREAKER. THIS ALLOWS THESE UNITS TO WORK SIMULTANEOUSLY OFF THE AUTOPILOT BREAKER. <b>SEE PAGE 64A FOR BREAKER AMPERAGES.</b>

## 110V.A.C. (220 OVERSEAS MODELS) DISTRIBUTION PANEL

### BREAKERS

### DESCRIPTION

#### "A" SIDE OF A.C. PANEL

REFRIGERATION	SUPPLIES POWER TO REF. COMPRESSOR, ADJUST THERMOSTATS INSIDE FRIDGE/FREEZER TO DESIRED TEMP.
SHORE POWER "A"	PROVIDES A.C. VOLTAGE TO "A" SIDE OF MAIN DISTRIBUTION PANEL WHEN SHORE POWER CORD "A" IS CONNECTED TO OUTLET AT DOCKING FACILITY.
GENERATOR	SUPPLIES POWER FROM GENERATOR TO SHORE POWER "A" (AND SHORE POWER "B" IF DESIRED) PANEL. NOTE: TO PROVIDE POWER TO SHORE POWER "B" SIDE OF PANEL MOVE SLIDE BAR UP AND TURN ON THE PARALLEL BREAKER ON THE SHORE POWER "B" SIDE OF PANEL.
OUTLETS 1	PROVIDES A.C. POWER TO THE OUTLETS ON THE PORT SIDE OF BOAT.
OUTLETS 2	PROVIDES A.C. POWER TO THE OUTLETS ON THE STBD. SIDE OF BOAT.
MICROWAVE	SUPPLIES POWER TO OUTLET BEHIND MICRO. IN WHICH MICROWAVE IS PLUGGED INTO.
WATER HEATER	SUPPLIES POWER TO WATER HEATER. BE SURE TANK IS FULL AND SYSTEM IS FREE FROM AIR BEFORE APPLYING POWER TO HEATER TO PREVENT ELEMENT BURNOUT.
REFRIGERATION	SUPPLIES POWER TO REF. COMPRESSOR, ADJUST THERMOSTATS INSIDE FRIDGE/FREEZER TO DESIRED TEMP.

#### "B" SIDE OF PANEL

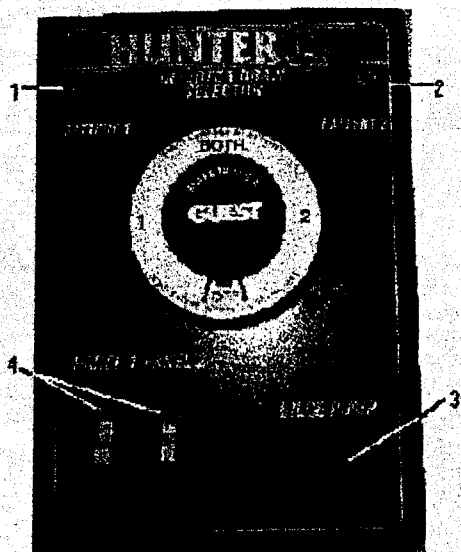
SHORE POWER "B"	PROVIDES A.C. VOLTAGE TO THIS SIDE OF PANEL WHEN SHORE POWER CORD "B" IS CONNECTED TO OUTLET AT DOCKING FACILITY.
PARALLEL	PROVIDES POWER FROM GENERATOR TO THIS SIDE OF PANEL.(MOVE SLIDE BAR UP TO TURN BREAKER ON.)
FWD/AFT AIR COND.	PROVIDES POWER TO EITHER FWD. OR AFT AIR COND. UNITS (SEE "MARINE AIR MANUAL" FOR OPER. INSTRUCTIONS.
AIR COND. RELAY	PROVIDES POWER TO RAW WATER CIRCULATION PUMP USED TO COOL AIR COND. COMPRESSORS UNITS, THIS BREAKER MUST BE ON WHEN OPERATING AIR COND. UNITS.

#### MISC. INFO

SPARE/ACCESSORY	3 15amp BREAKERS PROVIDED FOR ADDITIONAL 12V.D.C. ACCESSORIES
RED L.E.D.'S	ILLUMINATE WHEN A.C. POWER PRESENT.
METER SEL. SWITCH	ALLOWS VOLTAGE BEING SUPPLIED AND AMPERAGE BEING DRAWN TO BE DISPLAYED ON VOLT & AMP METERS SWITCH POSITION "A" = "A" SIDE OF PANEL. SWITCH POSITION "B" = "B" SIDE OF PANEL.
REV. POLARITY	IF REVERSED POLARITY L.E.D./S ILLUMINATE AFTER CONNECTING SHORE POWER HAVE DOCKSIDE POWER CHECKED BY QUALIFIED PERSONELL.
NOTE:	SEE PAGE 63A-14 FOR BREAKER AMPERAGES

**NOTE: A PRUDENT MARINER REALIZES THAT THE RESOURCES TO POWER A VESSEL ARE LIMITED. WHEN USING THE INVERTER OR GENERATOR ONE SHOULD BE CONSERVATIVE AND AWARE OF THE AMOUNT OF POWER BEING SUPPLIED VERSES POWER BEING DRAWN. THIS IS ESPECIALLY IMPORTANT WHEN USING OPTIONAL INVERTER POWER. CONSULT THE "INVERTER MANUAL" FOR POWER OUTPUT CAPABILITIES.**

## P420 SELECTOR SWITCH PANELS



1. IN LINE FUSE FROM HOUSE BATT.#1 (TEST CIRCUIT) USED TO DISPLAY AVAILABLE VOLTAGE FROM HOUSE BATT. #1 SEE "BATT. SEL SW." & METERS PAGE 63A-6
  2. IN LINE FUSE FROM HOUSE BATT. #2 (TEST CIRCUIT) USED TO DISPLAY AVAILABLE VOLTAGE FROM HOUSE BATT. #2 SEE "BATT. SEL SW." & METERS PAGE 63A-6
  3. BILGE PUMP RESET, PUSH TO RESTORE POWER TO BILGE PUMP
  4. HOUSE BATTERY BREAKERS SUPPLY POWER FROM HOUSE BATTERIES #1 & #2 TO MAIN D.C. PANEL  
 PANEL #1- HOUSE BATT. #1  
 PANEL #2- HOUSE BATT. #2
- SEE PAGE 63A-2 UNDER "INVERTER" FOR OPERATION DETAILS

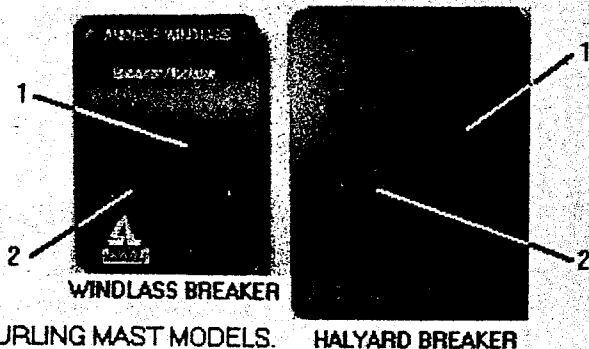
INVERTER/DRAW (HOUSE BATTERY) SELECTOR SWITCH  
 LOCATED ON ENGINE ROOM BULKHEAD

1. TEST (ON/OFF) BUTTON, PUSH TO TRIP RESET
2. "RESET" PUSH UP TO RESTORE POWER

NOTE: WINDLASS PANEL SUPPLIES POWER TO THE WINDLASS MOTOR. THE "WINDLASS BRKR." ON THE D.C. MAIN DIST. PANEL SUPPLIES POWER TO THE UP/DOWN CONTROLS ON THE FOREDECK.

THE HALYARD WINCH PANEL SUPPLIES POWER TO THE SWITCH, (LOCATED STBD. OF COMPANIONWAY OPENING) WHICH SUPPLIES POWER TO THE WINCH

WINDLASS IS OPTIONAL, ELEC. HALYARD IS OPTIONAL ON FURLING MAST MODELS.



THESE PANELS LOCATED ON THE STBD. AFT ENGINE ROOM BULK.

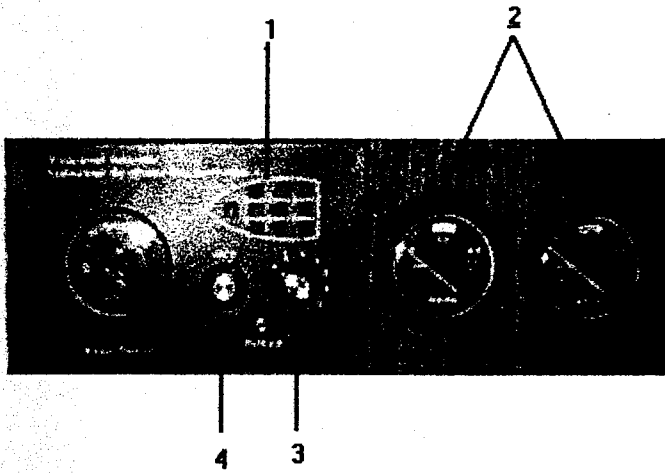
# P420 SELECTOR SWITCH PANELS



1. ON/OFF SWITCH SUPPLIES POWER FROM START BATTERY TO ENGINE & OPT. GEN STARTER/S

2. SOLAR PANEL CHARGE CIRCUIT FUSE

**START BATTERY ON/OFF SAFETY SWITCH PANEL  
LOCATED ON ENGINE ROOM BULKHEAD**



1. TANK SELECTION DISPLAY

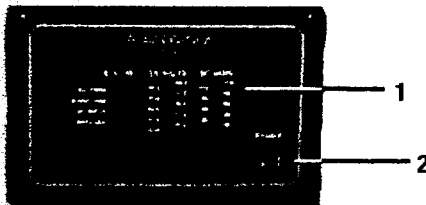
2. WATER/WASTE GAUGES

3. TANK SEL ROTARY SWITCH

4. TANK GAUGES ON/OFF SWITCH

OPERATION: TURN #4 SWITCH "ON"  
ROTATE #3 TO DESIRED TANK  
TANK SELECTED ILLUMINATES ON DISPLAY  
TANK LEVEL IS DISPLAYED ON GAUGE

**WATER/WASTE TANK SELECTOR & TANK LEVEL GAUGES  
LOCATED ON ENGINE ROOM BULKHEAD**



1. INVERTER STATUS DISPLAY

2. INVERTER ON/OFF SWITCH

SEE PAGE 63A-2 UNDER "INVERTER" FOR OPERATION DETAILS

**INVERTER REMOTE ON/OFF SWITCH PANEL  
LOCATED ON ENGINE ROOM BULKHEAD**

## 12V.D.C. SYSTEM TROUBLESHOOTING GUIDE

TO POWER PANEL: TURN ON "D.C. MAIN" BREAKER ON PANEL, IT IS NOT NECESSARY TO TURN INV/DRAW SELECTOR SWITCH ON. IF NO POWER TO PANEL, CHECK BREAKER/S ON INV/DRAW SELECTOR SW. PANEL "BREAKER" # 1= HOUSE BATTERY # 1 # 2= HOUSE BATTERY # 2 AND BATTERY CONNECTIONS IF NECESSARY

COMPONENT	SYMPTOM	POSSIBLE SOLUTION/S
D.C. MAIN	NO POWER TO PANEL	SEE "TO POWER PANEL" ABOVE BATTERY/S CHARGED?
PANEL LIGHTS	PANEL WON'T ILLUMINATE	SEE "TO POWER PANEL" ABOVE BATTERY TERMINALS CLEAN? SEEK QUALIFIED PERSONELL
CABIN LIGHTS	WON'T ILLUMINATE	SEE "TO POWER PANEL" ABOVE BULB/S NEED REPLACING?
COURTESY LIGHTS	WON'T ILLUMINATE	SEE "TO POWER PANEL" ABOVE BULBS/S NEED REPLACING?
WATER PUMP	NO POWER CYCLES ON/OFF EXCESSIVELY	SEE "TO POWER PANEL" ABOVE FAUCETS OFF? LEAK IN SYSTEM SEE PAGEC 57A FOR CONNECTION LOC.
SUMP PUMP	WON'T PUMP WHEN SUMP BOX FILLED (PUMP WON,T QUIT RUNNING) PUMP MAKES NOISE, DOESN'T PUMP PUMP RUNS BUT DOESN'T PUMP	SEE "TO POWER PANEL" ABOVE IS FLOAT SWITCH STUCK? DEBRIS IN PUMP IMPELLER? DISCHARGE HOSE CLOGGED? DISCHARGE SEACOCK CLOSED?
MACERATOR/S	WON'T TURN ON RUNS BUT DOESN'T DISCHARGE  PUMP MAKES NOISE, DOESN'T PUMP	SEE "TO POWER PANEL" IS DISCHARGE SEACOCK OPEN? IS WASTE DECK FITTING SECURE, IS IT PULLING AIR THRU? IF SO, TIGHTEN CAP OR REPLACE O- RING ON CAP. IS TANK VENT (HULL FITTING) CLOGGED? SEE PAGE 60 FOR LOCATIONS LODGED DEBRIS, TURN OFF POWER TO PUMP, INSERT SCREWDRIVER INTO PUMP ARMATURE AT END OF PUMP AND TURN TO DISLodge DEBRIS
STEREO	WON'T TURN ON	SEE "TO POWER PANEL" ABOVE CHECK INLINE FUSE BEHIND STEREO.
TV/VCP	WON'T TURN ON	SEE "TO POWER PANEL" ABOVE REPLACE BATTERIES IN REMOTE
REFRIGERATION	WON'T GET COLD	SEE "POWER SYSTEM OP." PAGE 63A-2 THERMOSTATS TURNED ON? DISCHARGE SEACOCK CLOSED? SEEK QUALIFIED PERSONELL
L.P. GAS	NO POWER TO SWITCH AT GALLEY SYSTEM TURNS ON, NO GAS PRESENT	SEE "TO POWER PANEL" ABOVE IS TANK VALVE OPEN? IS TANK EMPTY? SEE STOVE/OVEN MANUAL
WINDLASS	UP/DOWN CONTROLS DON'T OPERATE WINDLASS	SEE "TO POWER PANEL" ABOVE IS RESET "TRIPPED" ON WINDLASS RESET PANEL?
INSTRUMENTS	REPEATERS DON'T OPERATE	SEE "TO POWER PANEL" ABOVE DO TRANSDUCERS NEED CLEANING? SEE "INSTRUMENTS" MANUAL
V.H.F. RADIO	WON'T OPERATE  TURNS ON WON'T TRANSMIT/RECEIVE	SEE "TO POWER PANEL" ABOVE RADIO TURNED ON? ANTENNA CONNECTED PROPERLY?
OPT. AUTO PILOT	WON'T OPERATE WON,T HOLD STEADY COURSE  CONSTANTLY ADJUSTING HELM	SEE "TO POWER PANEL" ABOVE IS THERE ANY METAL OBJECTS NEAR THE FLUX GATE COMPASS LOCATED IN THE STBD. AFT MAIN BUNK COMP.? SENSITIVITY SETTING SET TO HIGH, SEE "AUTO PILOT MANUAL" FOR SENS. ADJ.
NOTE: COMPONENT/S FAILURE COULD ALSO BE THE RESULT OF A POOR "GROUND" CONNECTION. SEE PAGE 64B FOR GROUND SYSTEM LAYOUT AND GROUND STUD/BUSSBAR LOCATIONS. DUE TO VIBRATION, WEATHER CONDITIONS, ECT. OCCASIONAL INSPECTION, CLEANING AND TIGHTENING OF THESE TERMINALS (BY QUALIFIED PERSONELL) MAY BE NECESSARY.		

## 12V. D.C. SYSTEM TROUBLESHOOTING GUIDE CONT:

COMPONENT	SYMPTOM	POSSIBLE SOLUTION/S
BLOWER	WON'T TURN ON	SEE "TO POWER PANEL" PREV. PAGE
ANC., ST., DECK, & RUNNING. LIGHTS	WON'T ILLUMINATE	SEE "TO POWER PANEL" ABOVE CHECK CONNECTIONS IN ACCESS PANEL AT TOP OF COMPRESSION POST BULBS NEED REPLACING?
BILGE PUMP	WON'T OPERATE AUTO OR MANUAL  PUMP MAKES NOISE, DOESN'T PUMP PUMP RUNS BUT DOESN'T DISCHARGE	BATTERY LEVEL O.K.? SEE VOLT METER CHECK BILGE RESET ON INV/DRAW BATT. SWITCH PANEL, AND (IF APPLIES) RESET ON MAIN DISTRIBUTION PANEL. BATTERY CONNECTIONS GOOD? DEBRIS IN PUMP IMPELLER? DISCHARGE HOSE CLOGGED?
VOLT METER	NO VOLTAGE DISPLAYED	SEE "TO POWER PANEL" PREV. PAGE IS SEL. BATT. SW. ON #4? IF SO THIS POSITION AVAILABLE FOR ADDITIONAL BATTERY, USE #1,2, OR 3 POSITION. CK. FUSES ON INV/DRAW SEL. SW. PANEL ARE BATTERY CONNECTIONS GOOD? HAVE BATTERIES CHECKED HAVE METER CHECKED BY QUALIFIED PERSONELL.
AMP METER	NO AMPERAGE DISPLAYED	IS D.C. MAIN ON? IS ANYTHING IN THE 12V. SYSTEM TURNED ON & RUNNING? HAVE METER CHECKED BY QUALIFIED PERSONELL.
SOLAR PANEL	NO OUTPUT TO BATTERY/S	CK. FUSE ON START BATTERY ON/OFF SWITCH PANEL.



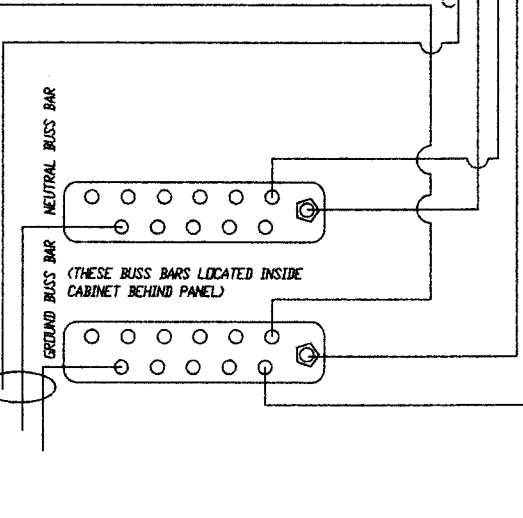
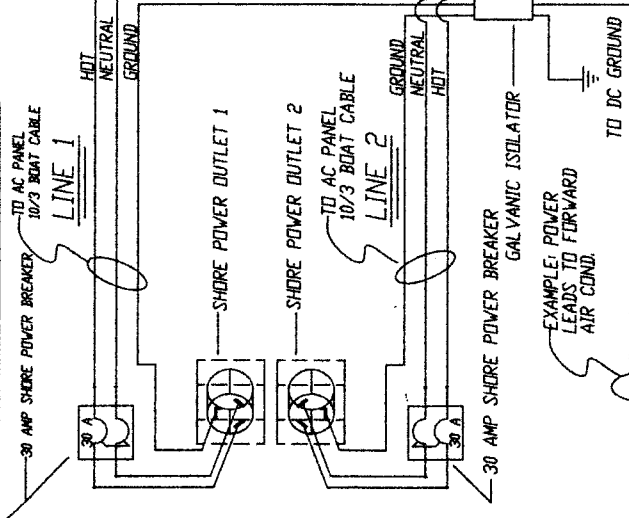
## 110V.A.C. (220V. OVERSEAS MODELS) SYSTEM TROUBLESHOOTING GUIDE

COMPONENT	SYMPTOM	POSSIBLE SOLUTION/S
SHORE POWER "A"	NO POWER TO PANEL	SEE "POWER SYSTEM OPERATIONS" PAGE 63A-2 CHECK DOCKSIDE BREAKER AND/OR BREAKER LOCATED INSIDE STARBOARD AFT STATEROOM HEADLINER (220V. MODELS INSIDE STB. SWIMSEAT LOCKER) CHECK RESET/S ON INVERTER. SEE "INV MANUAL" FOR LOCATION OF RESETS
OUTLETS #1 & 2	NO POWER	SEE "POWER SYSTEM OPERATIONS" PAGE 63A-2 IS OUTLET BREAKER/S ON? CHECK RESET ON G.F.I. OUTLETS AT GALLEY & AT NAV. STATION. CHECK INPUT/OUTPUT RESETS ON OPT. INVERTER MODELS SEE "INV MANUAL" FOR LOCATION OF RESETS.
MICROWAVE	NO POWER	IS BREAKER ON? SEE "POWER SYSTEM OPERATIONS" PAGE 63A-2 IS MICROWAVE ON? SEE "MICRO MANUAL"
REFRIGERATION	WON'T GET COLD	SEE "POWER SYSTEM OPERATIONS" PAGE 63A-2 THERMOSTATS TURNED ON? SEEK QUALIFIED PERSONELL
WATER HEATER	NO POWER  WON'T HEAT WATER  WATER TO COLD/HOT	IS BREAKER ON? SEE "POWER SYSTEM OPERATIONS" PAGE 63A-2 CHECK "RESET" ON WATER HEATER SEE "WATER HEATER MANUAL" FOR LOCATION. SEE "WATER HEATER MANUAL" FOR THERMOSTAT ADJUSTMENT AND/OR ELEMENT REPLACEMENT, SEEK QUALIFIED PERSONELL.
INVERTER/BATT. CHARGER	INV. NOT SUPPLYING A.C.POWER  INV. ON BUT UNABLE TO OPERATE DESIRED APPLIANCE/S	IS INVERTER REMOTE SWITCH AT NAV. STATION ON? IS DESIRED APPLIANCE BREAKER ON? IS BATTERY VOLTAGE LOW? SEE VOLTAGE DISPLAY ON INVERTER REMOTE PANEL, SELECT OTHER BATTERY ON INVERTER/DRAW SELECTOR SWITCH PANEL IN AFT STRM. ARE YOU ASKING THE INVERTER TO POWER MORE THAN IT IS CAPABLE? SEE "INVERTER MANUAL" FOR INFORMATION REGARDING POWER OUTPUT CAPABILITIES.
INVERTER/BATT. CHARGER	NOT CHARGING BATTERY/S	IS SHORE POWER "A" ON? SEE "POWER SYSTEM OPERATIONS" PAGE 63A-2 IS INVERTER DRAW SELECTOR SWITCH IN "BOTH" POSITION? CHECK IN-LINE FUSE AT BATTERY/S ARE BATTERY CONNECTIONS GOOD? INVERTER REMOTE SWITCH SHOULD BE IN THE "OFF" POSITION. (THIS IS NECESSARY IN THE EVENT YOU "LOSE" SHORE POWER, THE INVERTER DOESN'T GO INTO INVERT MODE CAUSING BATT./S TO DRAIN IF YOU LEFT AN A.C. APPLIANCE ON..

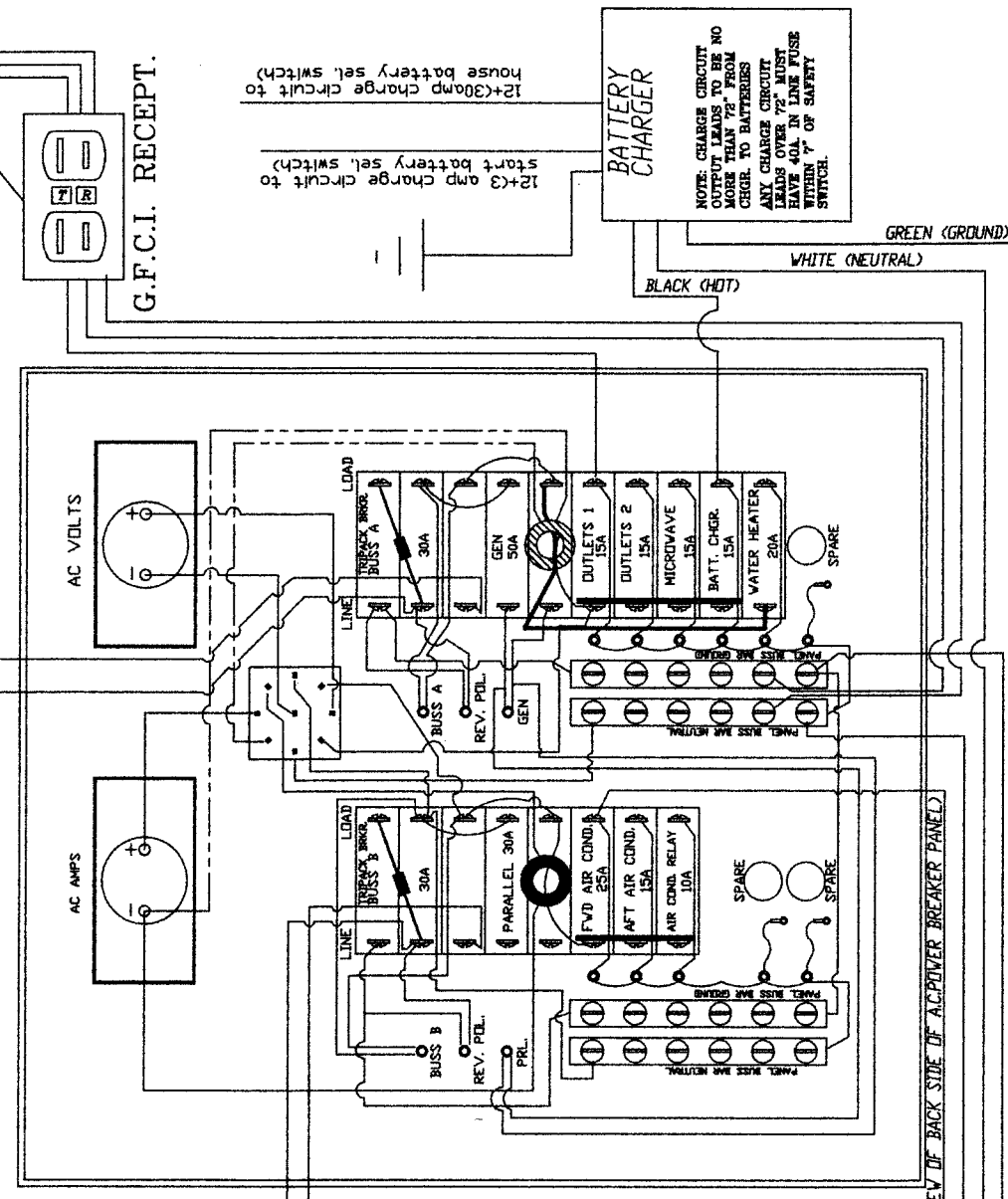
**110V.A.C. (220V. OVERSEAS MODELS) SYSTEM TROUBLESHOOTING GUIDE**  
**CONT:**

COMPONENT	SYMPTOM	POSSIBLE SOLUTIONS
SHORE POWER "B"	NO POWER TO PANEL	IS SHORE POWER "B" BREAKER ON? CHECK DOCKSIDE BREAKER CHECK SHORE POWER BREAKER LOCATED IN HEADLINER STBD. AFT STRM. (ON 220V.A.C. MODELS IN STBD. AFT SWIMSEAT LOCKER.)
AIR COND. FWD/AFT	WON'T TURN ON  TURNS ON THEN SHUTS DOWN  OTHER	ARE APPROPRIATE BREAKER/S ON? SEE "POWER SYSTEMS OPERATION" PAGE 63A-2 SEE "MARINE AIR" MANUAL IS AIR COND. RELAY "ON" ? IS AIR COND. RAW WATER SEACOCK OPEN? IF SO, IS WATER CIRCULATING? SEE PAGE 60 FOR AIR COND. DISCHARGE THRUHULL LOCATION, IF NOT IS AIR COND. PICKUP BEING RESTRICTED BY DEBRIS? SEE "MARINE AIR" MANUAL
<b>OPTIONAL GENERATOR (APPLIES TO BOTH "A" &amp; "B" SIDES OF A.C. PANEL)</b>		
GENERATOR	NO POWER TO STARTER RUNNING, BUT NO POWER AT PANEL.  WON'T START  GEN. STARTS THEN SHUTS DOWN	IS START BATT. SELECTOR SWITCH ON? IS "GENERATOR BREAKER" ON "A" SIDE OF PANEL ON? (MOVE SLIDE BAR UP TO TURN THIS BREAKER ON). IS "PARALLEL BREAKER" ON "B" SIDE OF PANEL ON? (TO POWER "B" SIDE OF A.C. PANEL) SEE GENERATOR MANUAL DID YOU FOLLOW PROPER STARTING PROCEDURE AS DESCRIBED IN THE "GENERATOR MANUAL"? DO YOU HAVE AN AMPLE AMOUNT OF DIESEL FUEL? REMEMBER THE GENERATOR FUEL PICKUP TUBE IS SHORTER THAN THE PICKUP TUBE FOR THE ENGINE, THIS PREVENTS GENERATOR FROM DRAINING TANK SINCE ENGINE POWER IS MORE IMPORTANT THAN GENERATOR POWER. REFER TO GENERATOR MANUAL FOR POSSIBLE FUSE OR RESET ON GENERATOR. IS RAW WATER PICKUP SEACOCK OPEN? IS RAW WATER PICKUP BEING RESTRICTED BY DEBRIS?

NOTE: SHORE POWER BREAKERS ARE TO BE LOCATED TO THE LEFT OF THE 10/3 BOAT CABLE FROM SHORE POWER INLET



14/3 BOAT CABLE TO NEXT RECEPTACLE  
G.F.C.I. REC. TO BE FIRST OUTLET IN EACH OUTLET CIRCUIT



12(3 amp charge circuit to start battery sel. switch)  
12(30amp charge circuit to house battery sel. switch)

**BATTERY CHARGER**  
NOTE: CHARGE CIRCUIT OUTPUT LEADS TO BE NO MORE THAN 72" FROM CHGR. TO BATTERIES  
ANY CHARGE CIRCUIT LEADS OVER 72" MUST HAVE 40A IN LINE FUSE WITHIN 7' OF SAFETY SWITCH.

NOTE: IF OPTIONAL WASHER/DRYER CHOSEN INSTALL BREAKER (CORRECT AMPERAGE) BUT DO NOT CONNECT HOT SIDE OF BREAKER TO BREAKER BUSS BAR, THE INVERTER (IF ADDED) IS NOT CAPABLE TO POWER THE WASHER/DRYER  
NOTE: THE HOT SIDE OF THE WATER HEATER BREAKER IS SEPARATED FROM THE BREAKER BUSS BAR BECAUSE THE INVERTER (IF ADDED) IS NOT CAPABLE OF POWERING THE WATER HEATER

REVISIONS:

NO.	DATE	BY	DESCRIPTION
1	02/01/99	...	...
2	03/05/99	...	...

4208063A-14

ENGINEERING DEPT.

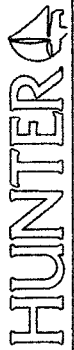
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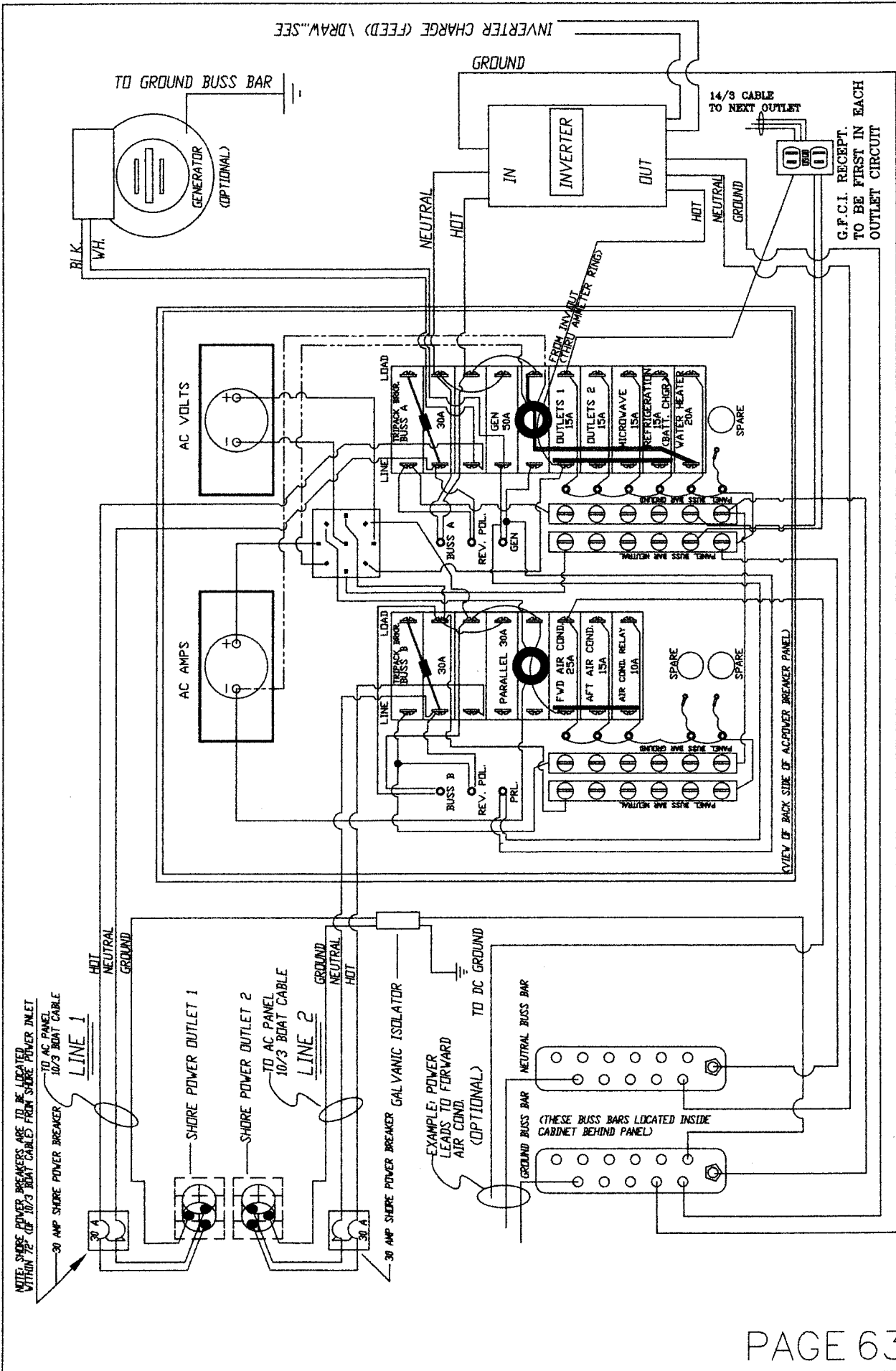
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BY: NONE

NO. 4208063A-14

DESCRIPTION: P420 AC PANEL SCHEMATIC W/ (STD BATT CHGR)





NOTE: SHORE POWER BREAKERS ARE TO BE LOCATED WITHIN 72" OF 10/3 BOAT CABLES FROM SHORE POWER INLET TO AC PANEL. 30 AMP SHORE POWER BREAKER. LINE 1

EXAMPLE: POWER LEADS TO FORWARD AIR COND. (OPTIONAL) TO DC GROUND

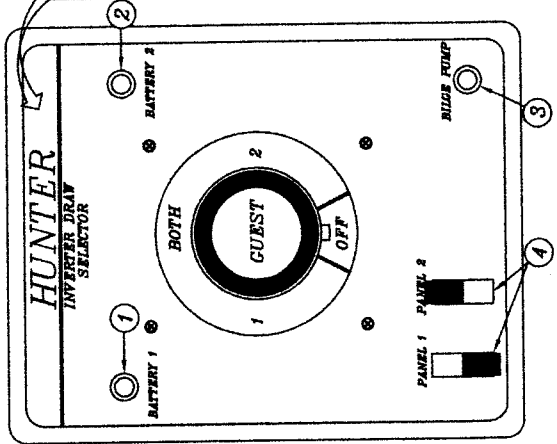
NOTE: IF OPTIONAL WASHER/DRYER CHOSEN INSTALL BREAKER (CORRECT AMPERAGE) BUT DO NOT CONNECT HOT SIDE OF BREAKER TO BREAKER BUSS BAR, THE INVERTER IS NOT CAPABLE TO POWER THE WASHER\DRYER

NOTE: THE HOT SIDE OF THE WATER HEATER BREAKER IS SEPARATED FROM THE BREAKER BUSS BAR BECAUSE THE INVERTER IS NOT CAPABLE OF POWERING THE WATER HEATER

G.F.C.I. RECEPT. TO BE FIRST IN EACH OUTLET CIRCUIT

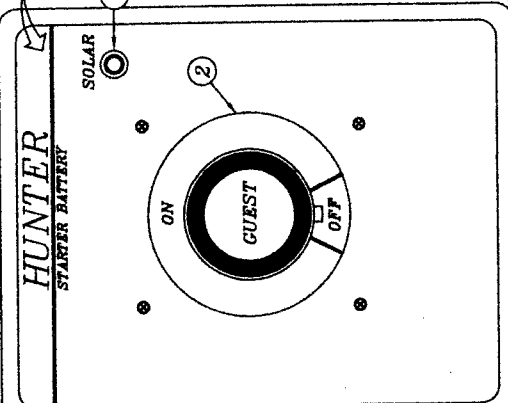
HUNTER  
 P420 AC PANEL SCHEMATIC W/ (INVRT. AND GEN.)  
 DRAWING NO. 4208053A-15  
 DATE 3/5/99  
 ENGINEERING DEPT.

**INVERTER/DRAW (HOUSE BATTERY) SELECTOR SWITCH**



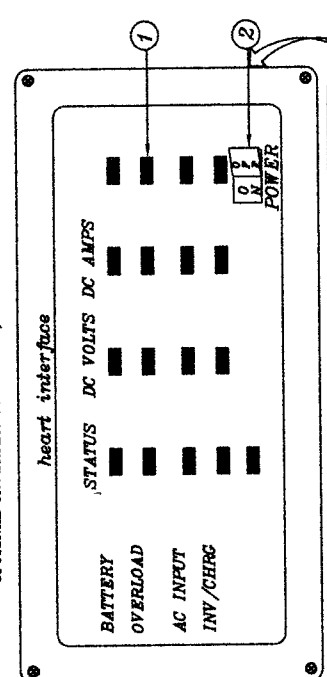
1. IN LINE FUSE FROM HOUSE BATTERY #1 (TEST CIRCUIT) USED TO DISPLAY AVAILABLE VOLTAGE FROM HOUSE BATTERY #1. SEE BATTERY SELECTOR SWITCH & METERS PAGE 63A-6.
  2. IN LINE FUSE FROM HOUSE BATTERY #2 (TEST CIRCUIT) USED TO DISPLAY AVAILABLE VOLTAGE FROM HOUSE BATTERY #2. SEE BATTERY SELECTOR SWITCH & METERS PAGE 63A-6.
  3. BILGE PUMP RESET. PUSH TO RESTORE POWER TO BILGE PUMP.
  4. HOUSE BATTERY BREAKERS SUPPLY POWER FROM HOUSE BATTERIES 1 & 2 TO MAIN DC PANEL.
- PANEL #1= HOUSE BATTERY #1  
PANEL #2= HOUSE BATTERY #2  
SEE PAGE 63A-2 "INVERTER" FOR OPERATING DETAILS

**START BATTERY ON/OFF SAFETY SWITCH PANEL**



1. ON/OFF SWITCH SUPPLIES POWER FROM START BATTERY TO ENGINE AND OPTIONAL GENERATOR STARTER(S)
2. SOLAR PANEL CHARGE CIRCUIT FUSE.

**OPTIONAL INVERTER REMOTE ON/OFF SWITCH PANEL**

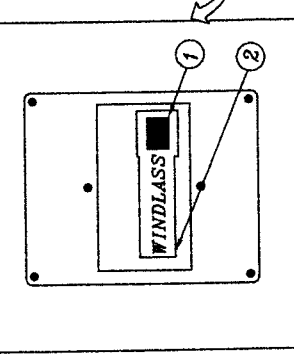
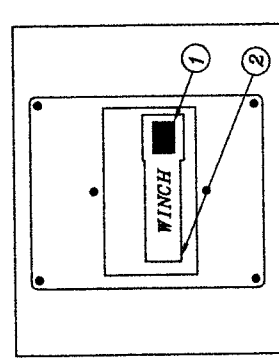


1. INVERTER STATUS DISPLAY
  2. INVERTER ON/OFF SWITCH
- SEE PAGE 63A-2 "INVERTER" FOR OPERATION DETAILS.

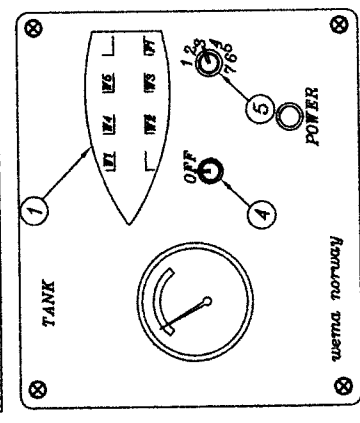
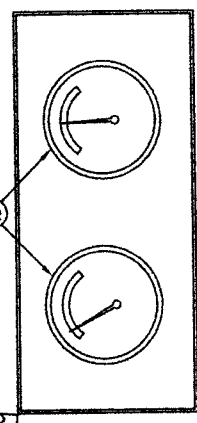
1. (TEST) ON/OFF BUTTON, PUSH TO TRIP RESET  
2. "RESET" PUSH UP TO RESTORE POWER

NOTE: WINDLASS PANEL SUPPLIES POWER TO THE WINDLASS MOTOR. THE "WINDLASS BREAKER" ON THE DC MAIN DISTRIBUTION PANEL SUPPLIES POWER TO THE UP/DOWN CONTROLS IN THE ANCHORWELL LOCKER.

THE HALLYARD WINCH PANEL SUPPLIES POWER TO THE SWITCH (LOCATED ON STBD SIDE BLEED OF COMPARTMENTWAY OPENING) WHICH SUPPLIES POWER TO THE WINCH. WINDLASS IS OPTIONAL. ELECTRIC HALLYARD IS STD. (EXCEPT ON FURLING MASTS)



1. TANK SELECTION DISPLAY
  2. WASTE GAUGES #1 & #2
  3. TANK SELECTION ROTARY SWITCH
  4. TANK GAUGES ON/OFF SWITCH
- OPERATION: TURN #4 SWITCH "ON" ROTATE AS TO DESIRED TANK TANK SELECTED ILLUMINATES ON DISPLAY TANK LEVEL IS DISPLAYED ON GAUGE.



SEE PAGE 65D FOR SWITCH PANEL LOCATION  
ⓐ THE ENGINE ROOM BULKHEAD

DRAWING TITLE: **P420 SELECTOR SWITCH PANELS**

REVISION NO.: NONE

DATE: 3/5/99

DESIGNED BY: \_\_\_\_\_

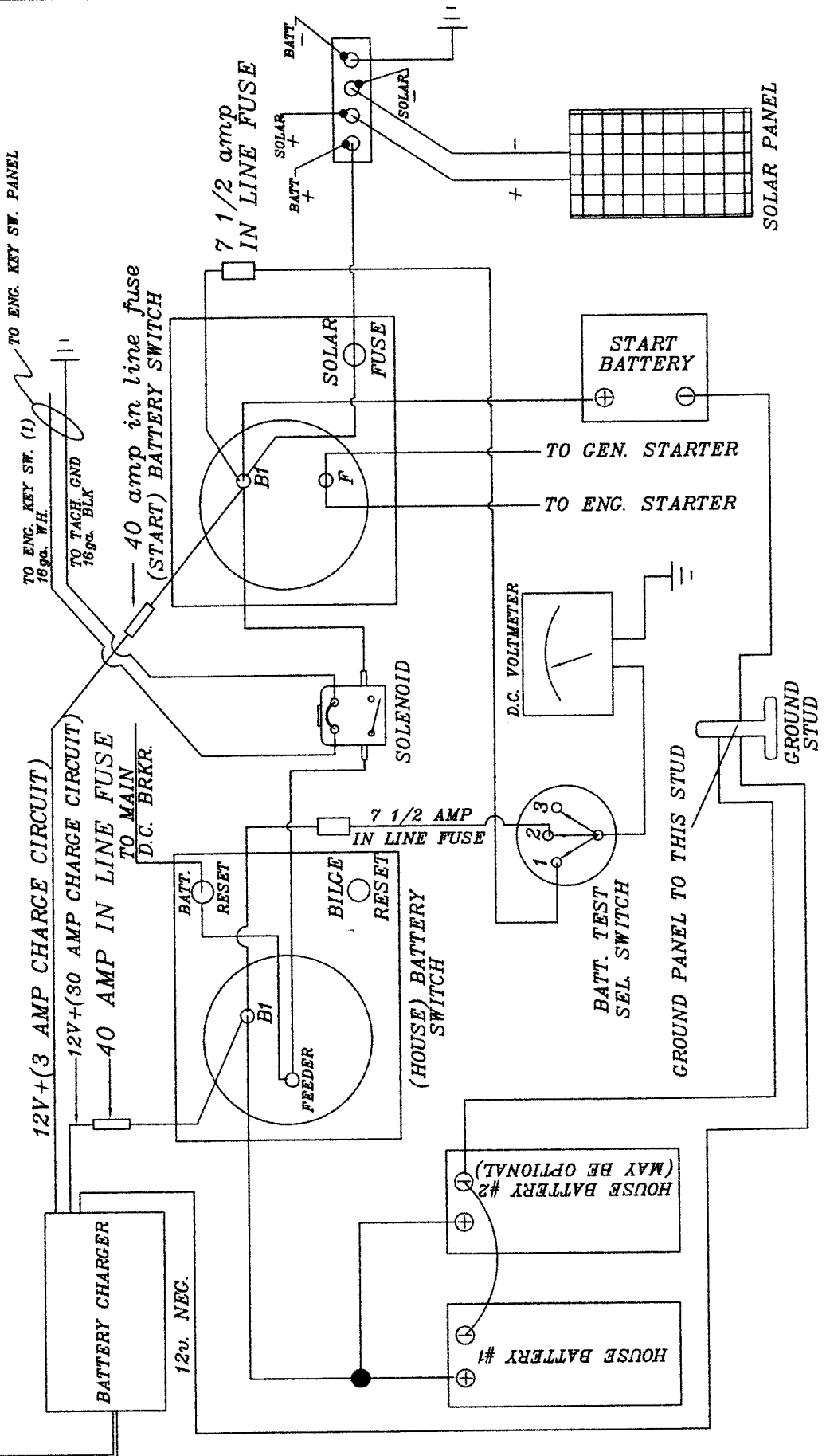
CHECKED BY: \_\_\_\_\_

ENGINEERING DEPT. \_\_\_\_\_

**HUNTER**

**NOTE: CHARGE CIRCUIT  
OUTPUT LEADS TO BE NO  
MORE THAN 72" FROM  
CHGR. TO BATTERIES  
ANY CHARGE CIRCUIT  
LEADS OVER 72" MUST  
HAVE 40A. IN LINE FUSE  
WITHIN 7" OF SAFETY  
SWITCH.**

BATT. CHARGER "IN" FROM A.C. PANEL



FOR EXHAUSTIVE DETAILS REFER TO WHICH HUNTER WIRE CORP. HAS PROPERTY FILED.

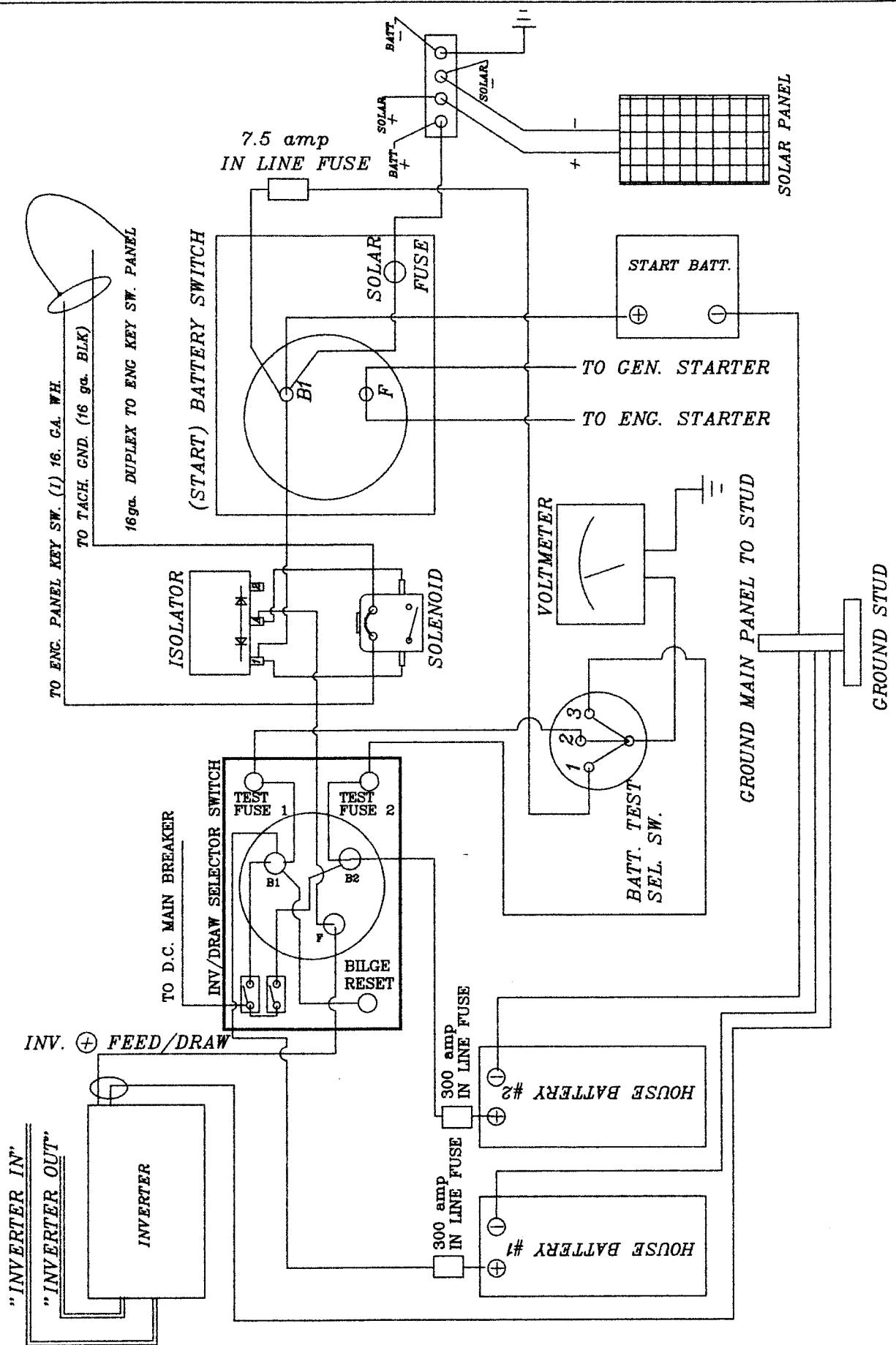
**HUNTER**

**P420 STD. BATTERY CHARGER CHARGING SYSTEM**

REV. NO. NONE

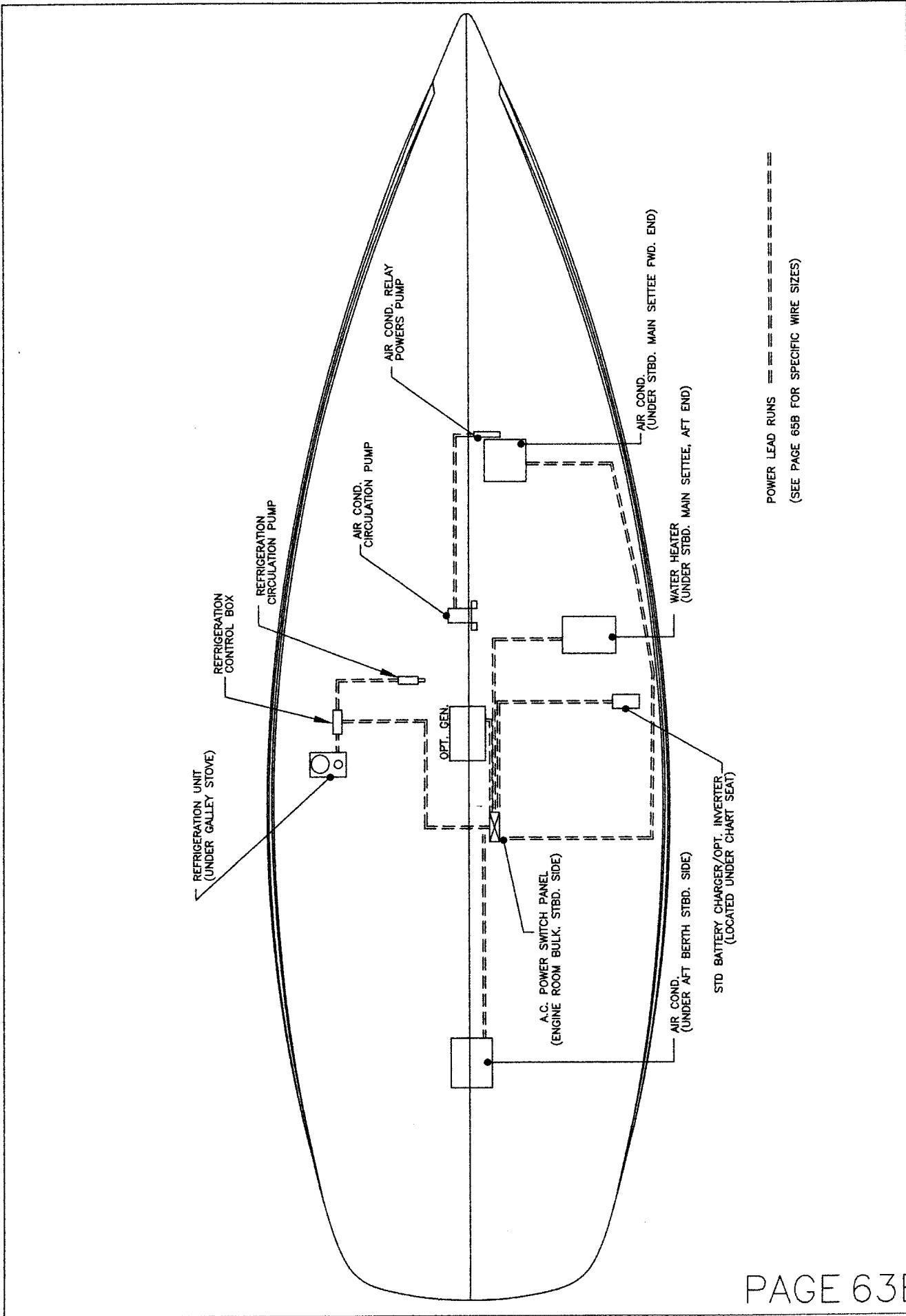
DATE 3/5/89

ENGINEERING DEPT.



HUNTER  
 12V CHARGING SYSTEM SCHEMATIC W/ INVERTER  
 DRAWING NO. NONE  
 DATE 3/5/99  
 ENGINEERING DEPT.



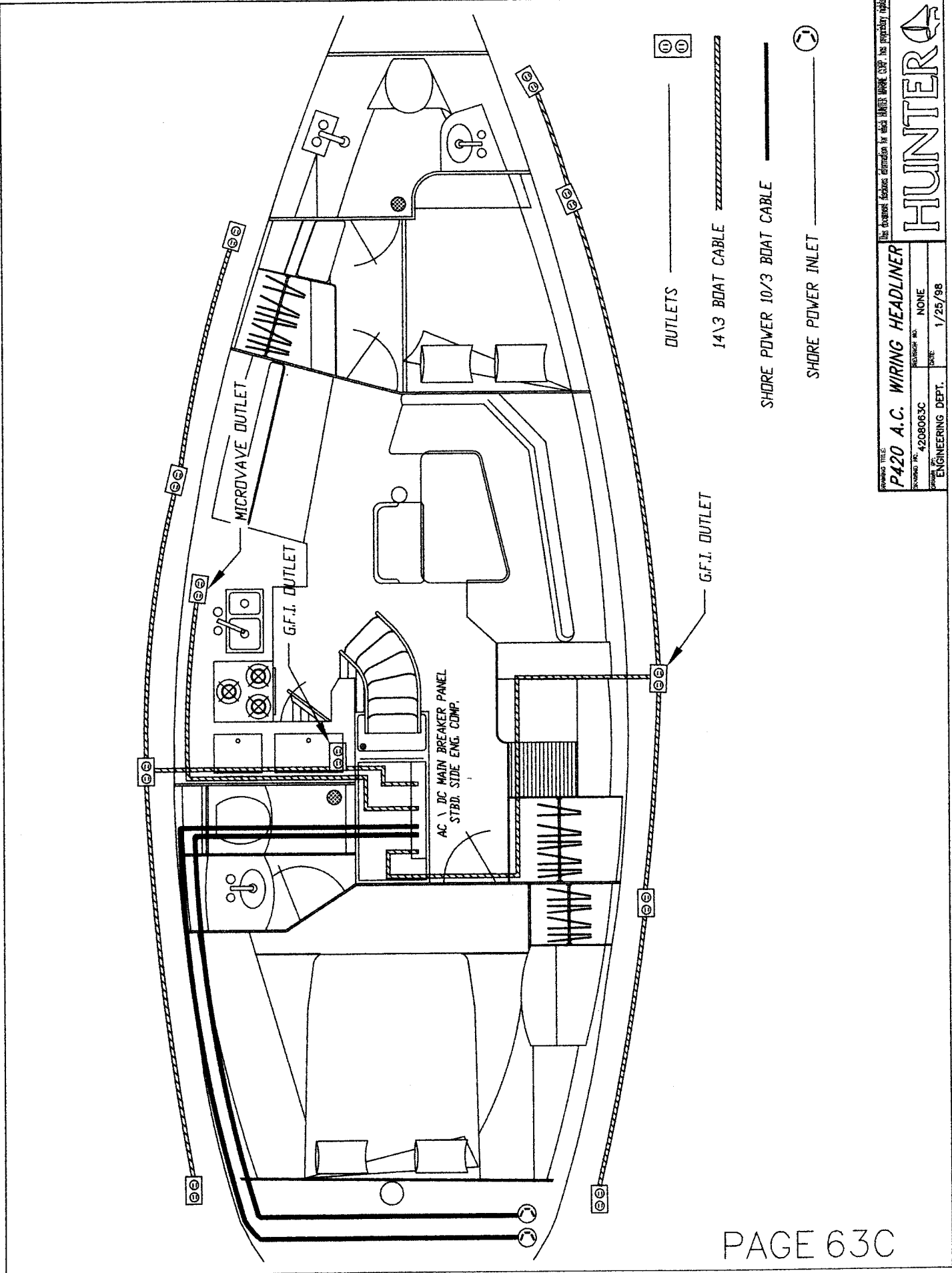


POWER LEAD RUNS -----  
 (SEE PAGE 65B FOR SPECIFIC WIRE SIZES)

PLEASE NOTE:  
 The enclosed describes information for which HUNTER MARINE CORP. has proprietary rights.

**P420 A.C. POWER PAN WIRING LAYOUT**  
 DRAWING NO. 4208063B  
 REVISED DATE 9/30/98  
 DESIGNED BY ENGINEERING DEPT.

**HUNTER**



FOR THESE FEATURES, REFER TO THE HUNTER HEADLINER CATALOG FOR A COMPLETE LIST OF OPTIONS.  
**P420 A.C. WIRING HEADLINER**  
 DRAWING NO. 4208083C  
 REVISED DATE 1/25/98  
 ENGINEERING DEPT.

**HUNTER**

SECTION 63D...OPTIONAL AIR COND. SYSTEMS

BASIC OPERATING INSTRUCTIONS:

- ① CHOOSE POWER SOURCE (SHORE POWER OR GENERATOR) SEE PAGES 63A-2
- ② CHECK AIR COND. SEA STRAINER, (SEE PAGE 60 FOR LOCATION) CLEAN IF NECESSARY
- ③ OPEN RAW WATER PICKUP SEACOCK (SEE PAGE 60A FOR LOCATION)
- ④ ENSURE THE DISCHARGE SEACOCK IS OPEN (SEE PAGE 60A FOR LOCATION)
- ⑤ TURN ON RELAY BREAKER UNDER AIR COND. BREAKERS
- ⑥ TURN ON DESIRED AIR COND. BREAKER/S
- ⑦ TURN ON UNIT/S AT THERMOSTAT DISPLAY PANEL AND SET TEMP.

NOTE:

IF ANY OTHER APPLIANCES ARE TO BE USED WHEN AIR CONDITIONERS ARE RUNNING WHEN ON SHORE POWER, BOTH "SHORE POWER A" AND "SHORE POWER B" CABLES MUST BE CONNECTED.

IF THERE IS NO POWER AT PANEL WHEN CONNECTED TO SHORE POWER, SEE TROUBLESHOOTING GUIDE PAGE 63A-13

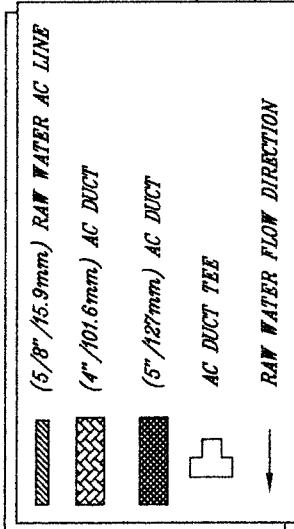
SEE MARINE AIR MANUAL FOR DETAILED OPERATING PROGRAMMING/TROUBLESHOOTING INSTRUCTIONS

REVISED TITLE  
P420 AIR COND. OPERATING INST.

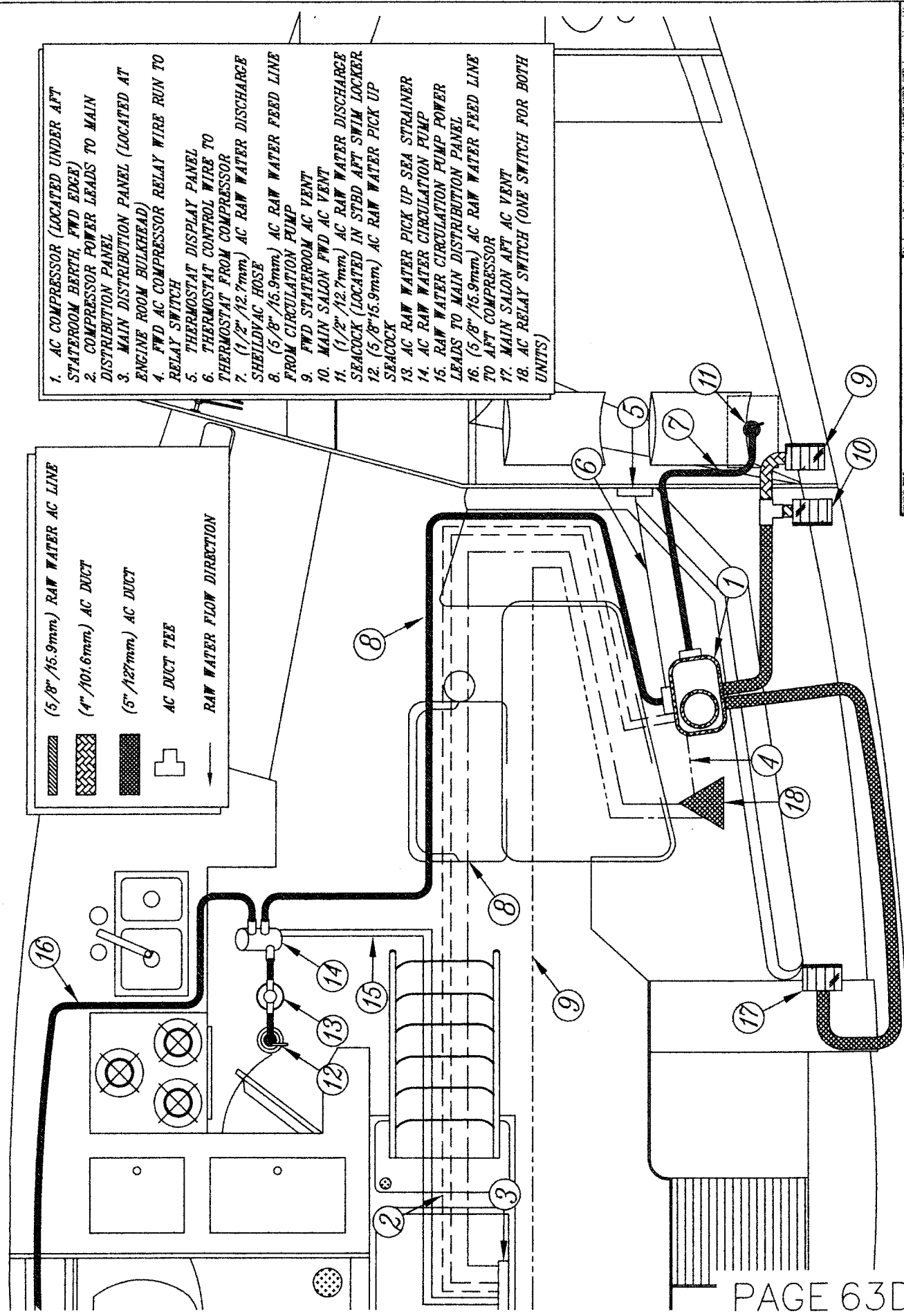
DRAWING NO.	4208063D-1	REVISION NO.	NONE
ISSUED		DATE	9/30/98
ENGINEERING DEPT			

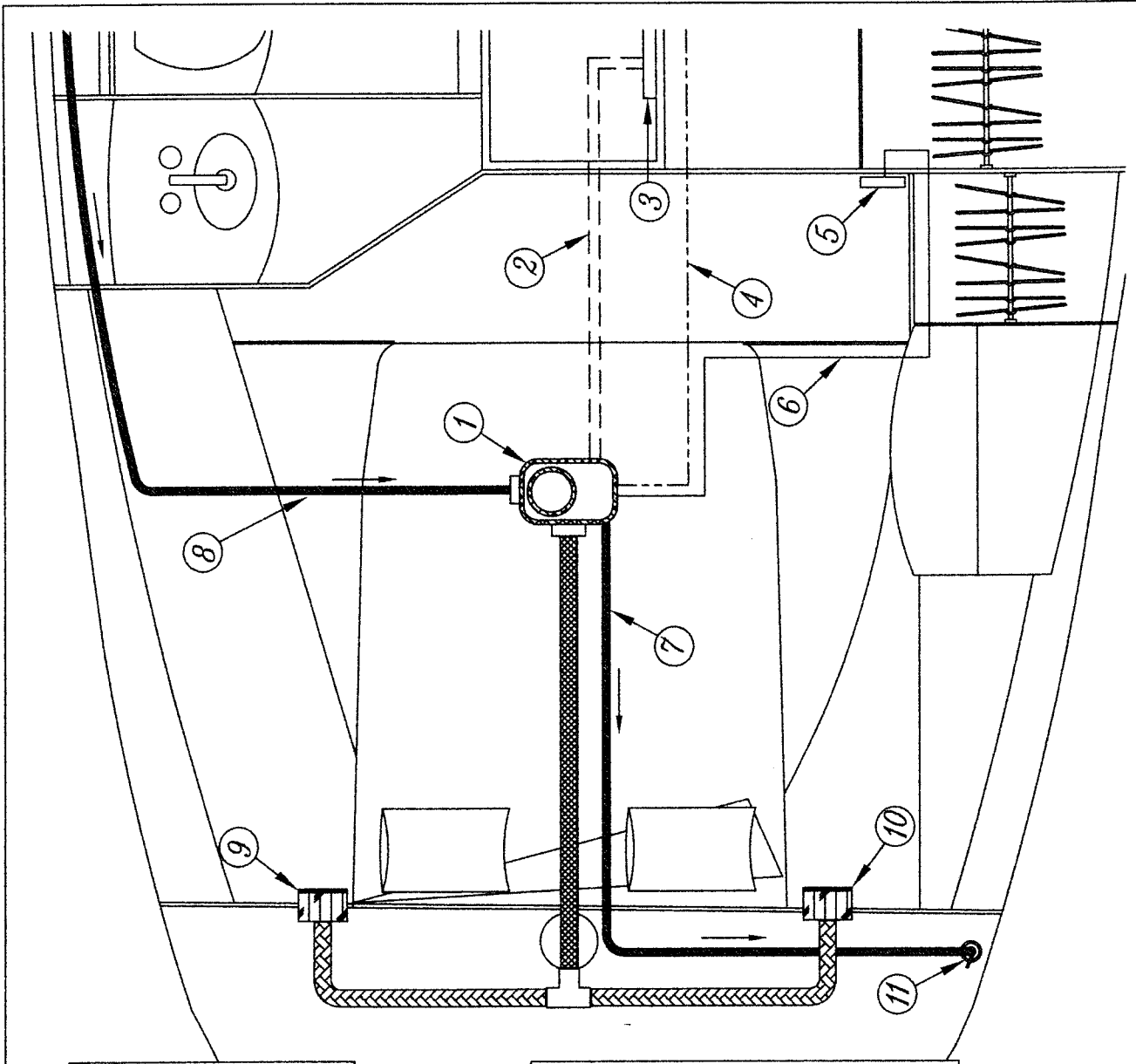
For Inmate Release Information for West Hunter Work Corp. See Previous Page






# HUNTER



1. AC COMPRESSOR (LOCATED UNDER AFT STATEROOM BERTH, FWD EDGE)
2. COMPRESSOR POWER LEADS TO MAIN DISTRIBUTION PANEL
3. MAIN DISTRIBUTION PANEL (LOCATED AT ENGINE ROOM BULKHEAD)
4. FWD AC COMPRESSOR RELAY WIRE RUN TO RELAY SWITCH
5. THERMOSTAT DISPLAY PANEL
6. THERMOSTAT CONTROL WIRE TO THERMOSTAT FROM COMPRESSOR
7. (1/2" / 12.7mm) AC RAW WATER DISCHARGE SHEILDVAC HOSE
8. (5/8" / 15.9mm) AC RAW WATER FEED LINE FROM CIRCULATION PUMP
9. FWD STATEROOM AC VENT
10. MAIN SALON FWD AC VENT
11. (1/2" / 12.7mm) AC RAW WATER DISCHARGE SEACOCK (LOCATED IN STBD AFT SWIM LOCKER)
12. (5/8" / 15.9mm) AC RAW WATER PICK UP SEACOCK
13. AC RAW WATER PICK UP SEA STRAINER
14. AC RAW WATER CIRCULATION PUMP
15. RAW WATER CIRCULATION PUMP POWER LEADS TO MAIN DISTRIBUTION PANEL
16. (5/8" / 15.9mm) AC RAW WATER FEED LINE TO AFT COMPRESSOR
17. MAIN SALON AFT AC VENT
18. AC RELAY SWITCH (ONE SWITCH FOR BOTH UNITS)

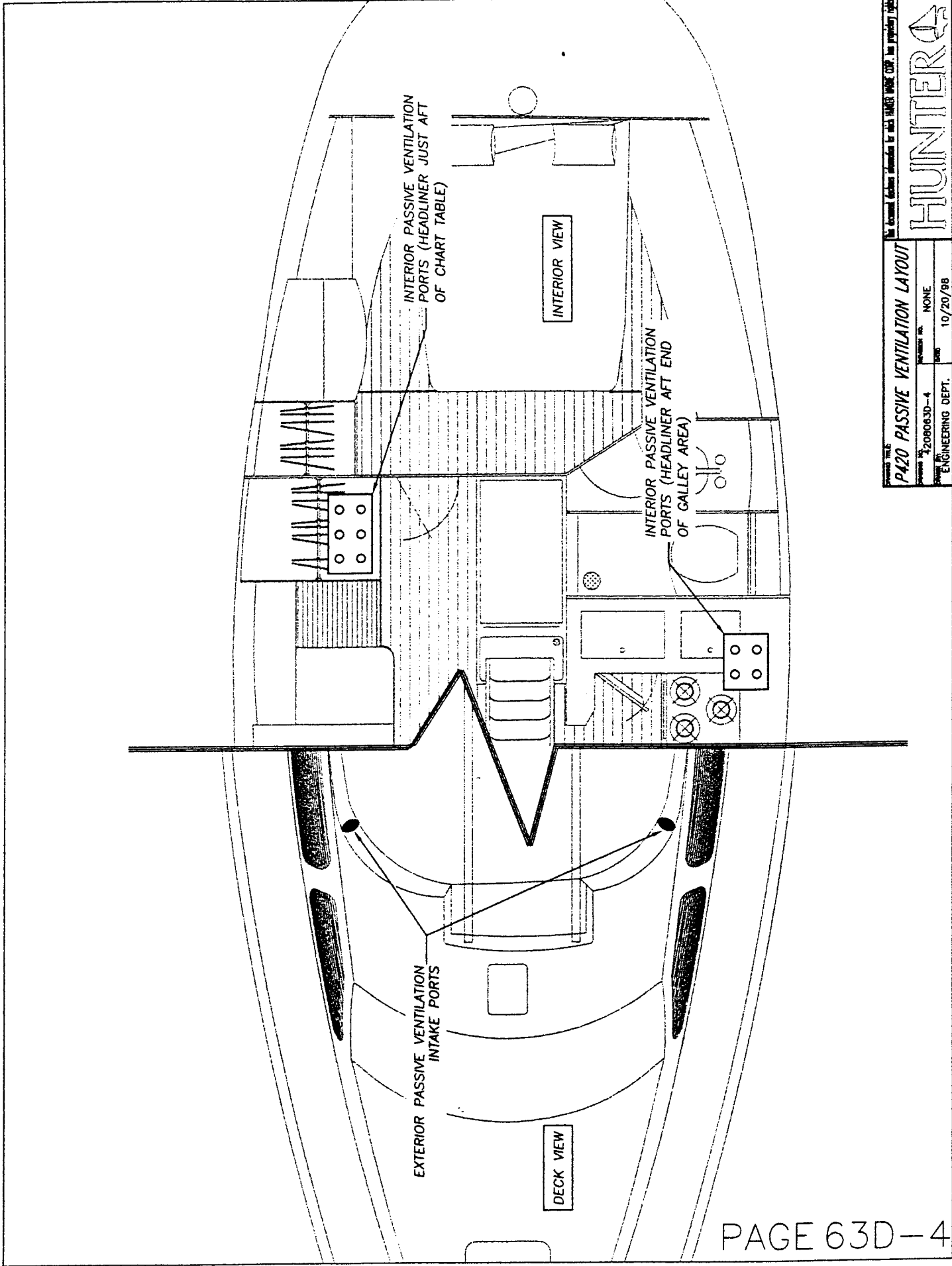




 (5/8" /15.9mm) RAW WATER AC LINE  
 (4" /101.6mm) AC DUCT  
 (5" /127mm) AC DUCT  
 AC DUCT TEE  
 RAW WATER FLOW DIRECTION

1. AC COMPRESSOR (LOCATED UNDER AFT STATEROOM BERTH, FWD EDGE)
2. COMPRESSOR POWER LEADS TO MAIN DISTRIBUTION PANEL
3. MAIN DISTRIBUTION PANEL (LOCATED AT ENGINE ROOM BULKHEAD)
4. AFT AC COMPRESSOR RELAY WIRE RUN TO RELAY SWITCH
5. THERMOSTAT DISPLAY PANEL
6. THERMOSTAT CONTROL WIRE TO THERMOSTAT FROM COMPRESSOR
7. (1/2" /12.7mm) AC RAW WATER DISCHARGE SHEILDVAC HOSE
8. (5/8" /15.9mm) AC RAW WATER FEED LINE FROM CIRCULATION PUMP
9. AFT STATEROOM PORT AC VENT
10. AFT STATEROOM STBD AC VENT
11. (1/2" /12.7mm) AC RAW WATER DISCHARGE SEACOCK (LOCATED IN STBD AFT SWIM LOCKER)

HUNTER  
 P420 AFT AIR CONDITION SYSTEM LAYOUT  
 DRAWING NO. 4208063D-3  
 REVISION NO. NONE  
 DATE 9/30/98  
 ENGINEERING DEPT.



HUNTER

P420 PASSIVE VENTILATION LAYOUT  
 DRAWING NO. 22080630-4  
 DATE 10/20/98  
 ENGINEERING DEPT.

SECTION 63F OPTIONAL 6 KW GENERATOR SYSTEM...

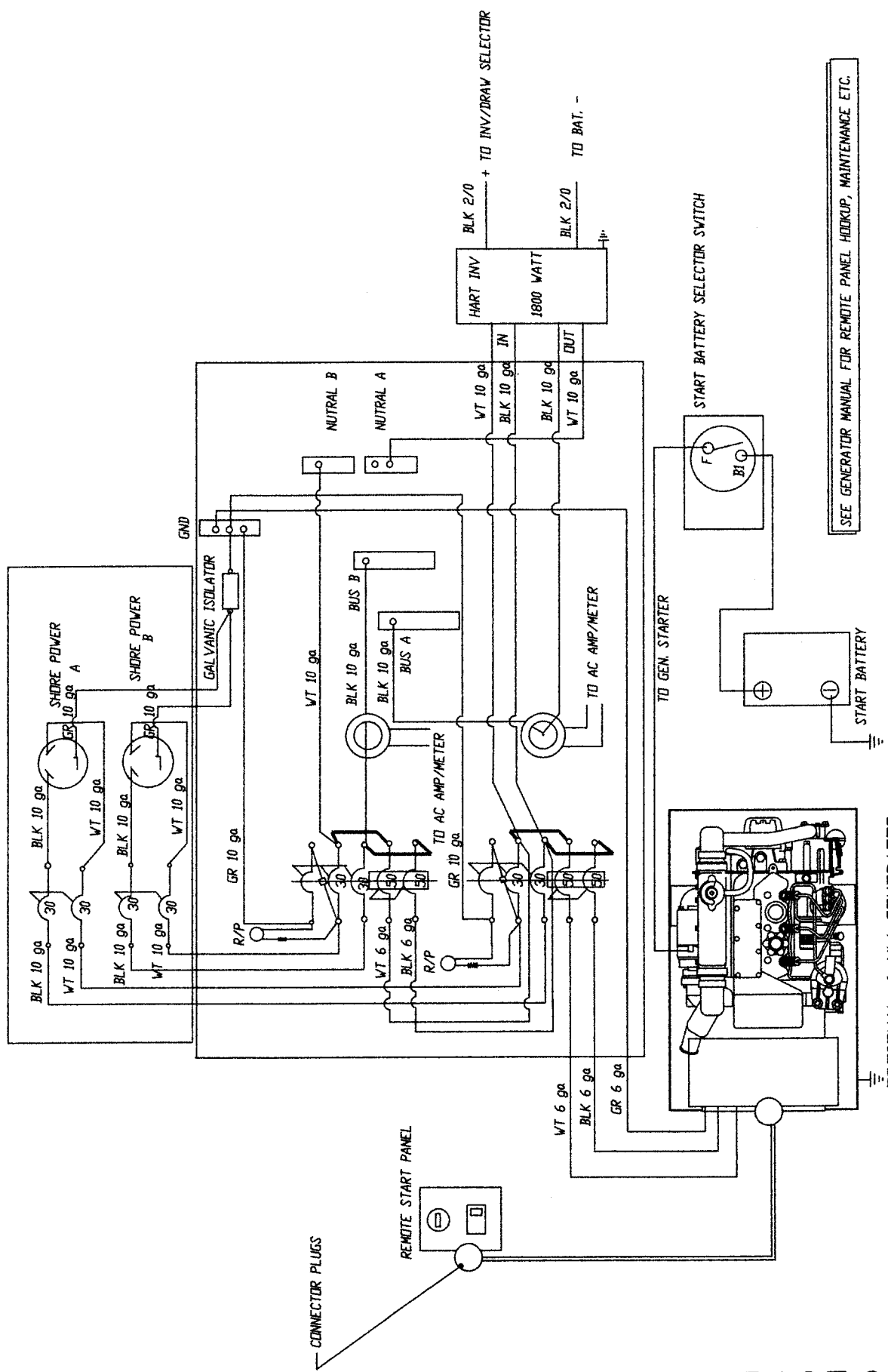
BASIC OPERATING INSTRUCTIONS: (NOTE: READ GENERATOR MANUAL BEFORE OPERATING GEN.)

- ① CHECK DIESEL FUEL LEVEL
- ② CHECK OIL LEVEL IN GENERATOR (SEE GENERATOR MANUAL FOR INST.)
- ③ TURN ON START BATTERY SELECTOR SWITCH (ON ENG. ROOM BULK, AFT STRM.)
- ④ CHECK SEA STRAINER (UNDER SOLE AFT OF AFT STRM. DOOR)
- ⑤ OPEN RAW WATER SEACOCK (LOCATED W/STRAINER)
- ⑥ START GENERATOR USING START PROCEDURE IN "GENERATOR MANUAL"
- ⑦ TURN ON "GENERATOR" BRKR. ON "A" SIDE OF A.C. PANEL TO POWER "A" SIDE AND (IF DESIRED) TO POWER "B" SIDE OF PANEL, RAISE SLIDE BAR ON "B" SIDE OF A.C. PANEL AND TURN "PARALLEL" BREAKER TO THE "ON" POSITION
- ⑧ TURN ON DESIRED APPLIANCE BREAKER (FOR EXAMPLE "OUTLETS" )
- ⑨ TO SHUT GEN. DOWN PUSH STOP SWITCH UNTIL GEN STOPS.

NOTE: SEE GENERATOR MANUAL FOR PROPER MAINTENANCE, TROUBLESHOOTING, ETC.

HUNTER	
P420 OPTIONAL GENERATOR OPERATING INST.	
FORM NO. 2208063E-1	ISSUE NO. NONE
ENGINEERING DEPT.	DATE: 9/30/98





SEE GENERATOR MANUAL FOR REMOTE PANEL HOOKUP, MAINTENANCE ETC.

OPTIONAL 6 KW GENERATOR

HUNTER  
 P420 OPT. GENERATOR WIRING SCHEMATIC  
 PART NO. 420806SE-2  
 DATE 9/30/98  
 NONE  
 ENGINEERING DEPT.

SECTION 63F...INVERTER SYSTEM

(FOR INVERTING D.C. POWER TO A.C. POWER)

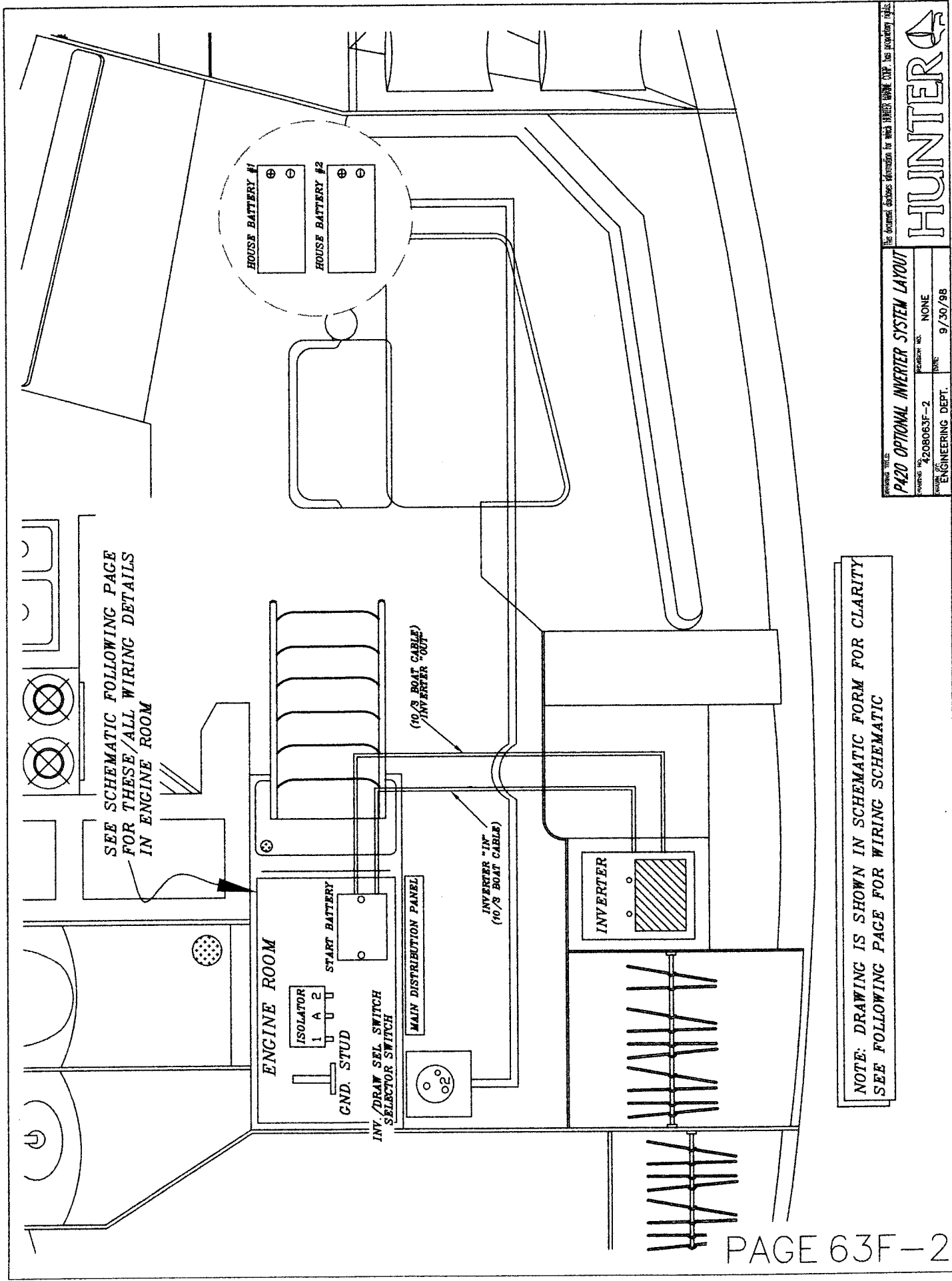
BASIC OPERATING INSTRUCTIONS:

- ① TURN ON INV./DRAW (HOUSE BATTERY) SELECTOR SWITCH TO #1, #2 OR BOTH POSITION.
- ② TURN INVERTER REMOTE PANEL AT ENGINE ROOM BLKHD. TO THE "ON" POSITION.
- ③ TURN ON DESIRED APPLIANCE BREAKER ON "A" SIDE OF V.A.C. MAIN DIST. PANEL.

SEE PAGE 63A-2 FOR DETAILED INVERTING/CHARGING PROCEDURES

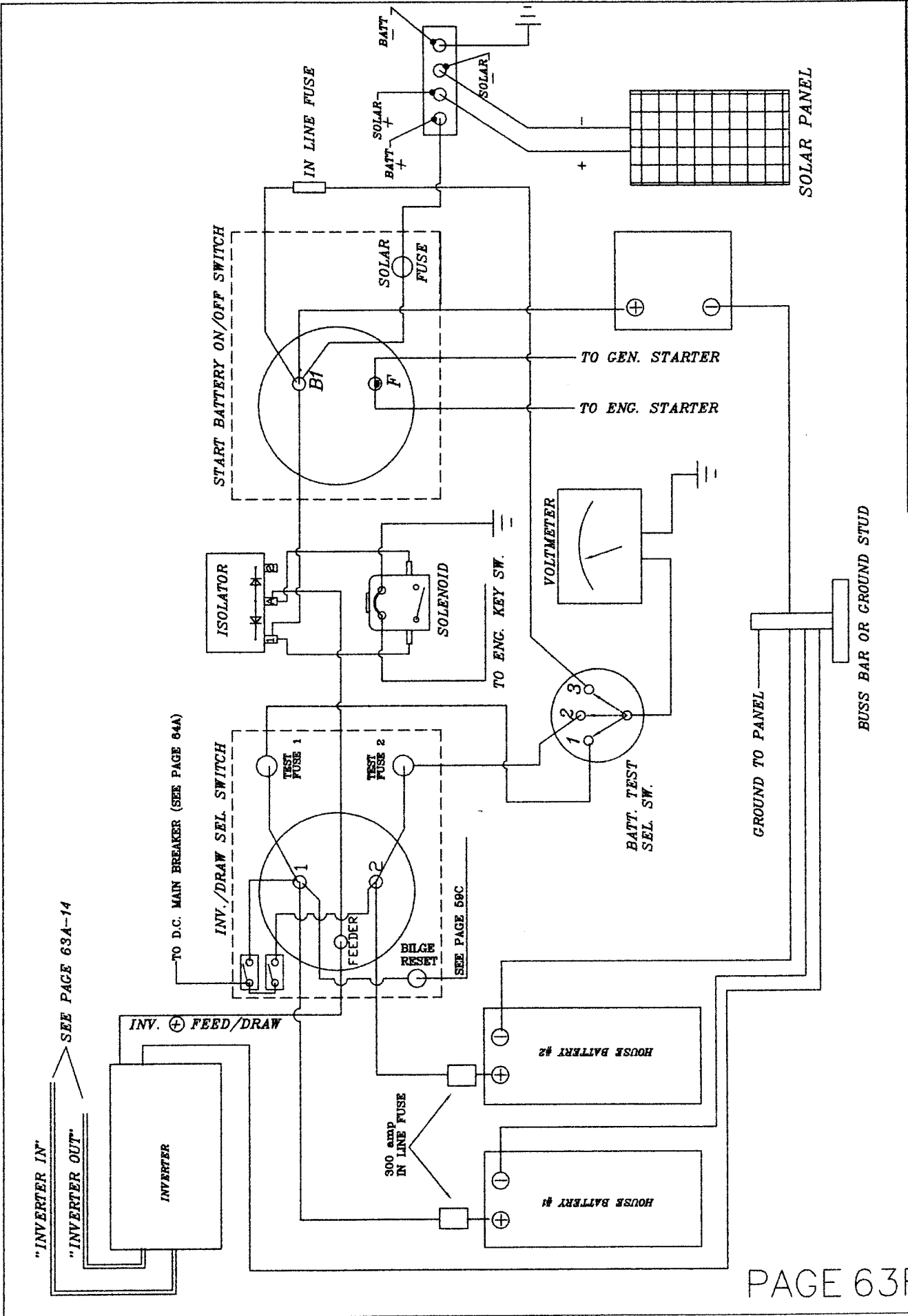
NOTE: INVERTER POWERS "A" SIDE OF V.A.C. MAIN DIST. PANEL ONLY  
SEE INVERTER MANUAL FOR TECHNICAL DATA, TROUBLESHOOTING, ETC.  
OPERATING/PROGRAMMING INSTRUCTIONS

FORMER TITLE		This document contains information for which HUNTERA WANTS (TM) has proprietary rights.	
PAZO (OPTIONAL) INVERTER OPER. INST		HUNTERA	
PROJECT NO.	PERSONAL FILE	DATE	
4208063F-1	NONE	9/30/98	
ISSUED BY:	ENGINEERING DEPT.		



NOTE: DRAWING IS SHOWN IN SCHEMATIC FORM FOR CLARITY  
SEE FOLLOWING PAGE FOR WIRING SCHEMATIC

PREPARED TITLE: **P420 OPTIONAL INVERTER SYSTEM LAYOUT**  
 COMPANY: 4208063F-2  
 PROJECT: ENGINEERING DEPT.  
 DRAWN BY: NONE  
 DATE: 9/30/88  
**HUNTER**



"INVERTER IN"  
"INVERTER OUT"  
SEE PAGE 63A-14

TO D.C. MAIN BREAKER (SEE PAGE 64A)

INV./DRAW SEL. SWITCH

FEEDER

300 AMP  
IN LINE FUSE

BILGE  
RESET

SEE PAGE 59C

START BATTERY ON/OFF SWITCH

IN LINE FUSE

BATT. +  
SOLAR +  
SOLAR -

BATT. +

BATT. +

SOLAR +

SOLAR -

SOLAR +

SOLAR -

SOLAR +

SOLAR -

SOLAR +

SOLAR -

SOLAR +

SOLAR -

SOLAR +

SOLAR -

SOLAR +

SOLAR -

SOLAR +

SOLAR -

SOLAR +

SOLAR -

SOLAR +

SOLAR -

SOLAR +

SOLAR -

SOLAR +

SOLAR -

SOLAR +

SOLAR -

SOLAR +

SOLAR -

SOLENOID

TO ENG. KEY SW.

VOLTMETER

BATT. TEST  
SEL. SW.

TO GEN. STARTER

TO ENG. STARTER

GROUND TO PANEL

BUSS BAR OR GROUND STUD

SOLAR PANEL

HUNTER  
 PA20 INVERTER/CHARGING SYSTEM SCHEMATIC  
 DRAWING NO. 2208063F-3  
 DATE 9/30/98  
 ENGINEERING DEPT.  
 NONE

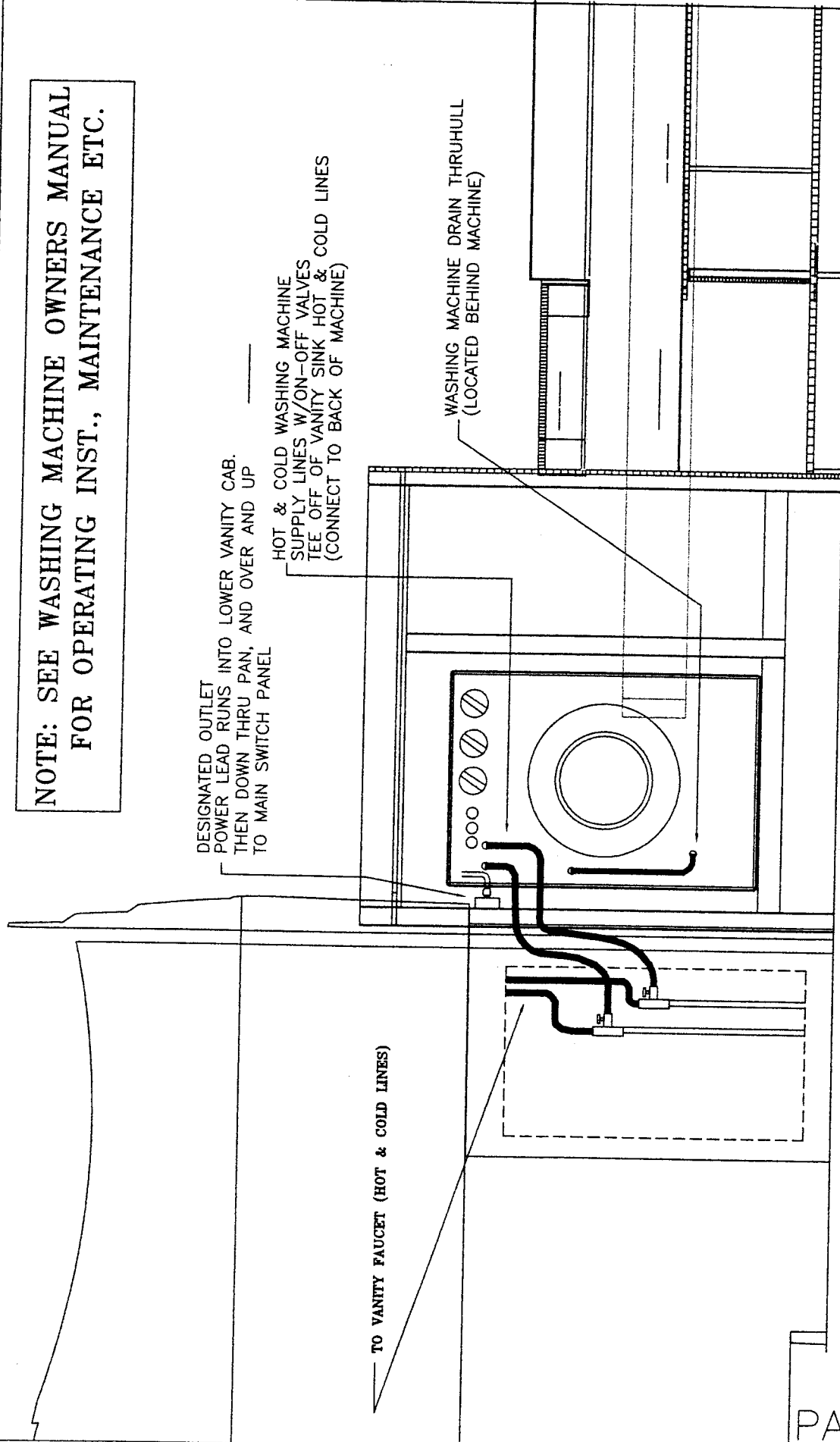
**NOTE: SEE WASHING MACHINE OWNERS MANUAL FOR OPERATING INST., MAINTENANCE ETC.**

DESIGNATED OUTLET POWER LEAD RUNS INTO LOWER VANITY CAB. THEN DOWN THRU PAN, AND OVER AND UP TO MAIN SWITCH PANEL

HOT & COLD WASHING MACHINE SUPPLY LINES W/ON-OFF VALVES TEE OFF OF VANITY SINK HOT & COLD LINES (CONNECT TO BACK OF MACHINE)

TO VANITY FAUCET (HOT & COLD LINES)

WASHING MACHINE DRAIN THRUHULL (LOCATED BEHIND MACHINE)



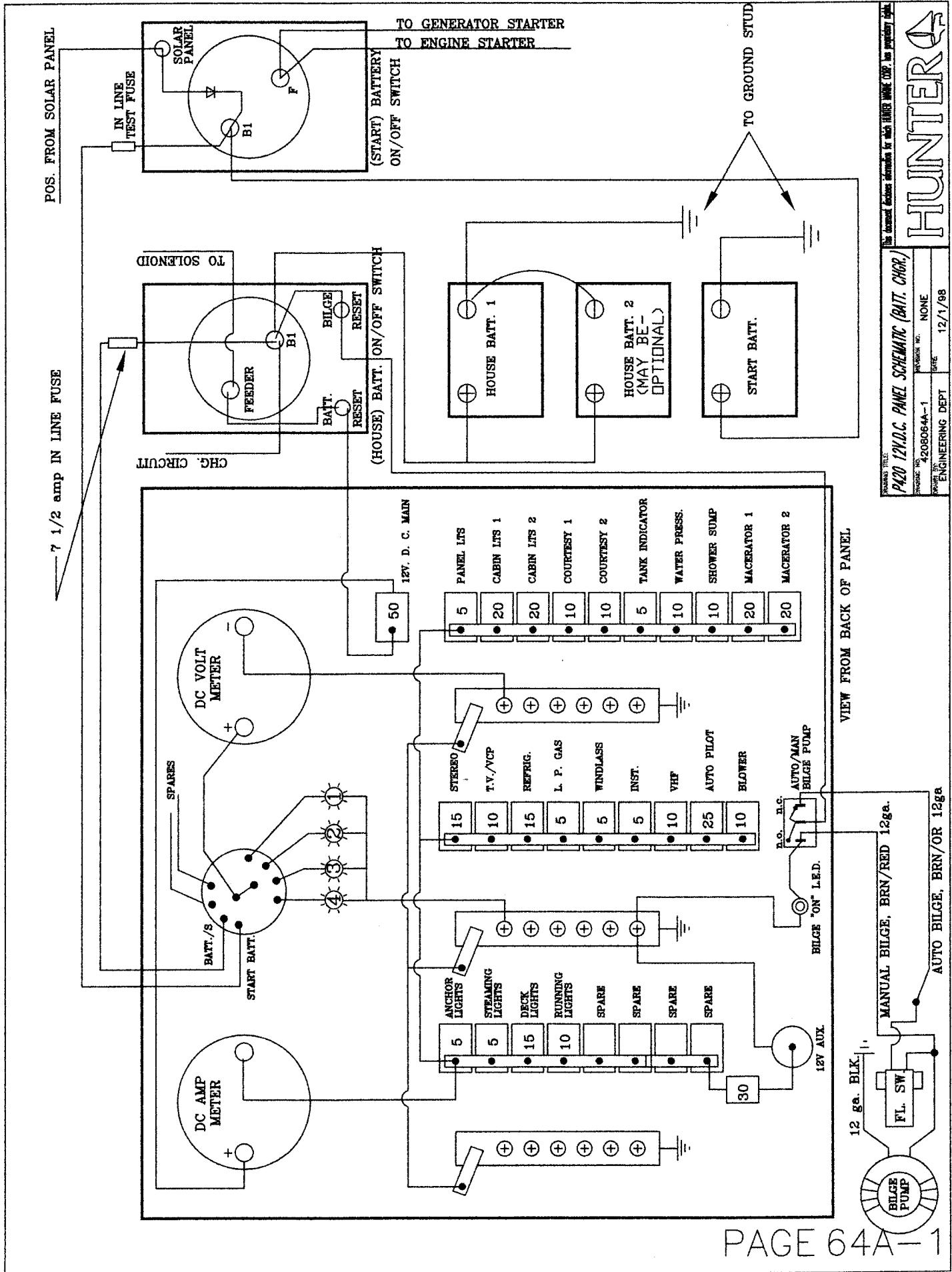
LOWER VANITY COMP.

AFT STRM. STBD. HANGING LOCKER

VIEW: PORT LOOKING STBD.

DRAWING TITLE	
P420 OPT. WASHING MACHINE LAYOUT	
DRAWING NO.	4208063G
REVISION NO.	NONE
DATE	1/26/98
ENGINEERING DEPT.	

**HUNTER**



REVISION FILE:

**P420 12V.D.C. PANEL SCHEMATIC (BATT. CHGR.)**

ISSUE NO. 4208084A-1

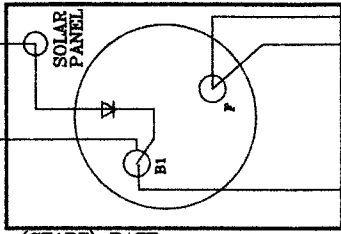
ISSUE DATE 12/1/98

ENGINEERING DEPT

HUNTER

FROM SOLAR PANEL POS.

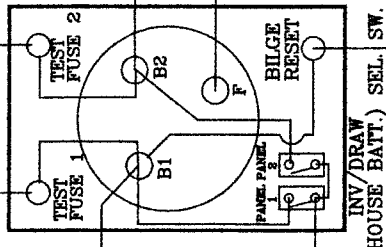
7 1/2 AMP IN LINE "TEST" FUSE



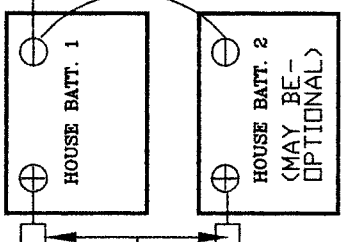
TO GENERATOR STARTER  
TO ENGINE STARTER

(START) BATT.  
ON/OFF SWITCH

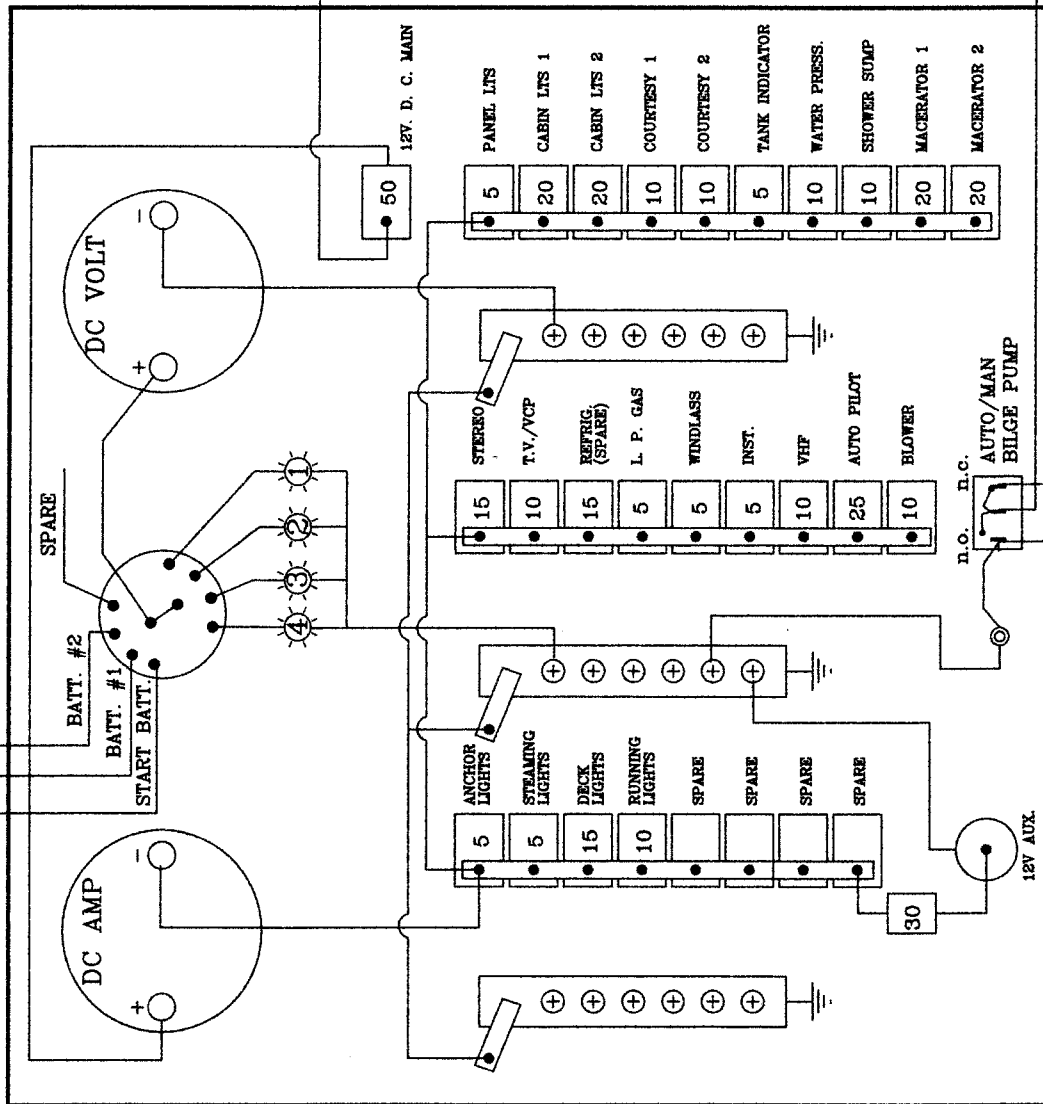
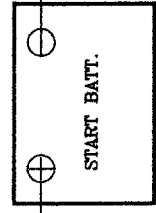
INV. CHARGE/DRAW FROM INVERTER



INV./DRAW  
(HOUSE BATT.) SEL. SW.



300 AMP  
INLINE FUSE



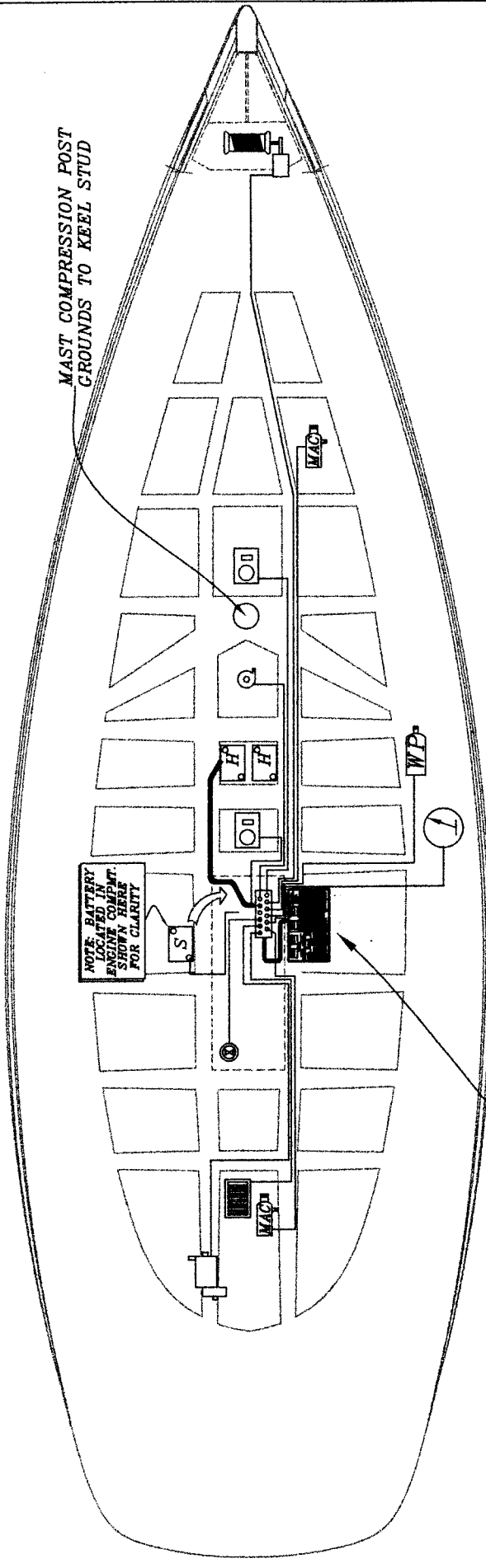
VIEW FROM BACK OF PANEL



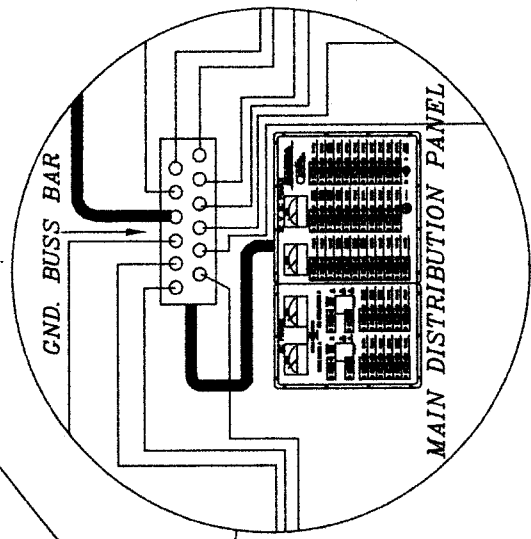
BILGE PUMP WIRING

DRAWING TITLE: **P420 12V.D.C. (W/INVERTER) PANEL SCHEMATIC**  
 DRAWING NO.: 2080644-2  
 REVISION NO.: NONE  
 PROJECT: ENGINEERING DEPT  
 DATE: 12/1/98
















NOTE: BATTERY LOCATED IN ENGINE COMPART. SHOWN HERE FOR CLARITY



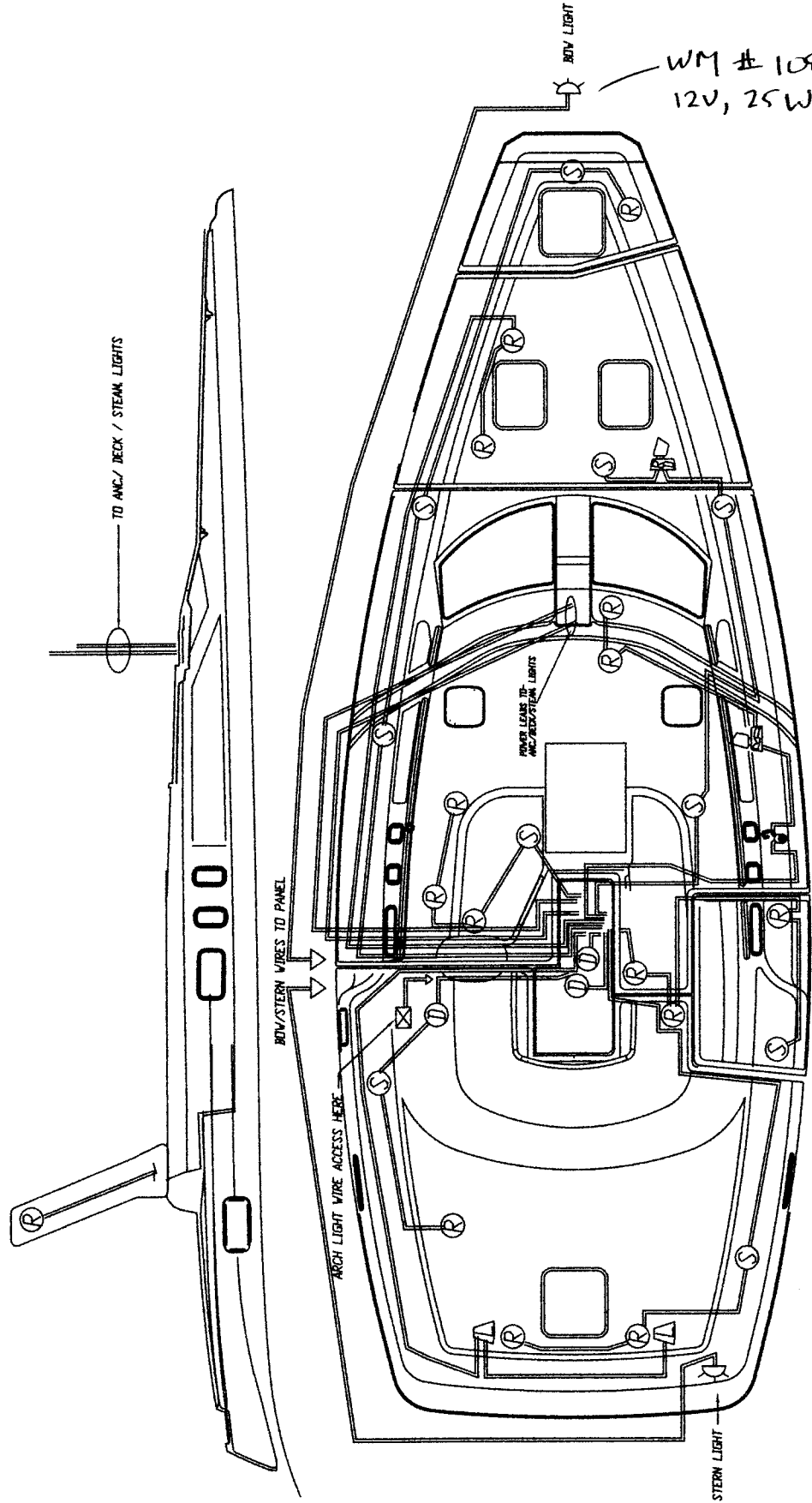
**LEGEND:**

-  SUMP PUMPS.....
-  BILGE PUMP.....
-  FRESH WATER PUMP.....
-  MACERATOR.....
-  WINDLASS.....
-  ENGINE ROOM BLOWER.....
-  TANK LEVEL INDICATOR.....
-  OPT. AUTOPILOT COURSE COMPUTER...
-  OPT. AUTOPILOT DRIVE MOTOR.....
-  START BATTERY.....
-  HOUSE BATTERY.....

PROFORM TITLE  
**P420 GROUNDING SYSTEM LAYOUT**  
The enclosed drawings are intended for use with HUNTER YACHTS' equipment. No responsibility is assumed for any other use.

PROJECT NO. 4208064A-3	DESIGNER NO. NONE
ENGINEERING DEPT.	DATE 3/12/99

**HUNTER**



WM # 10801  
12V, 25W, 2A DBL

NOTE: LIGHT ARRANGEMENT IN AFT CABIN DIFFERENT FOR TRI CABIN VERSION  
 1. BOTH LAMPS TO PORT SIDE  
 2. ADDED RECESSED LIGHT TO ST. FWD SIDE  
 3. DOME LIGHT AT FOOT OF BERTH PORT SIDE

LEGEND

DOME LIGHT	3 REQ'D	READING	2 REQ'D
SWIVEL (HALOGEN)	10 REQ'D	LAMPS	2 REQ'D
RECESSED	14 REQ'D	CHART LAMP	1 REQ'D
WIRE RUNS			

PREPARED BY: **PA20 12V.D.C. LIGHT WIRING (HEADLINER)**  
 DRAWING NO. 4208064B  
 REVISION NO. NONE  
 DATE: 3/15/99  
 ENGINEERING DEPT.

This document contains information for which HUNTER MARINE CORP. has proprietary rights.

# HUNTER

Ⓐ WM # 1080 1  
 12V, 2SW, 2A  
 DBL INDEX



LEGEND:

- BOW LIGHTS..... ⚡
- STERN LIGHTS..... ⚡
- CTSY. LITE..... ⚡
- ANCHOR LITE..... Ⓐ
- DECK LITE..... Ⓓ
- STEERING LITE..... Ⓢ
- WINDLASS..... ⚙
- WINDLASS CONTROLS..... ●
- INSTRUMENTS..... ☐

This document contains information for which HUNTER MARINE CORP. has proprietary rights.

**HUNTER**

PROJECT FILE: P420 12 VOLT D.C. DECK LAYOUT  
 PROJECT NO. 4208084C  
 DRAWN BY: ENGINEERING DEPT.

PREPARED BY: NONE  
 DATE: 3/15/99

## SECTION 64H... WINDLASS SYSTEM

### BASIC OPERATING INSTRUCTIONS:

#### LOWERING ANCHOR....

- ① START ENGINE IF NOT ALREADY RUNNING
- ② TURN ON WINDLASS BRKR. ON MAIN D.C. BRKR. PANEL. THIS CONTROLS THE UP/DOWN BUTTONS (ON FOREDECK) ONLY.
- ③ PUSH WINDLASS "DOWN" BUTTON ON FOREDECK AFT OF ANCHOR WELL.

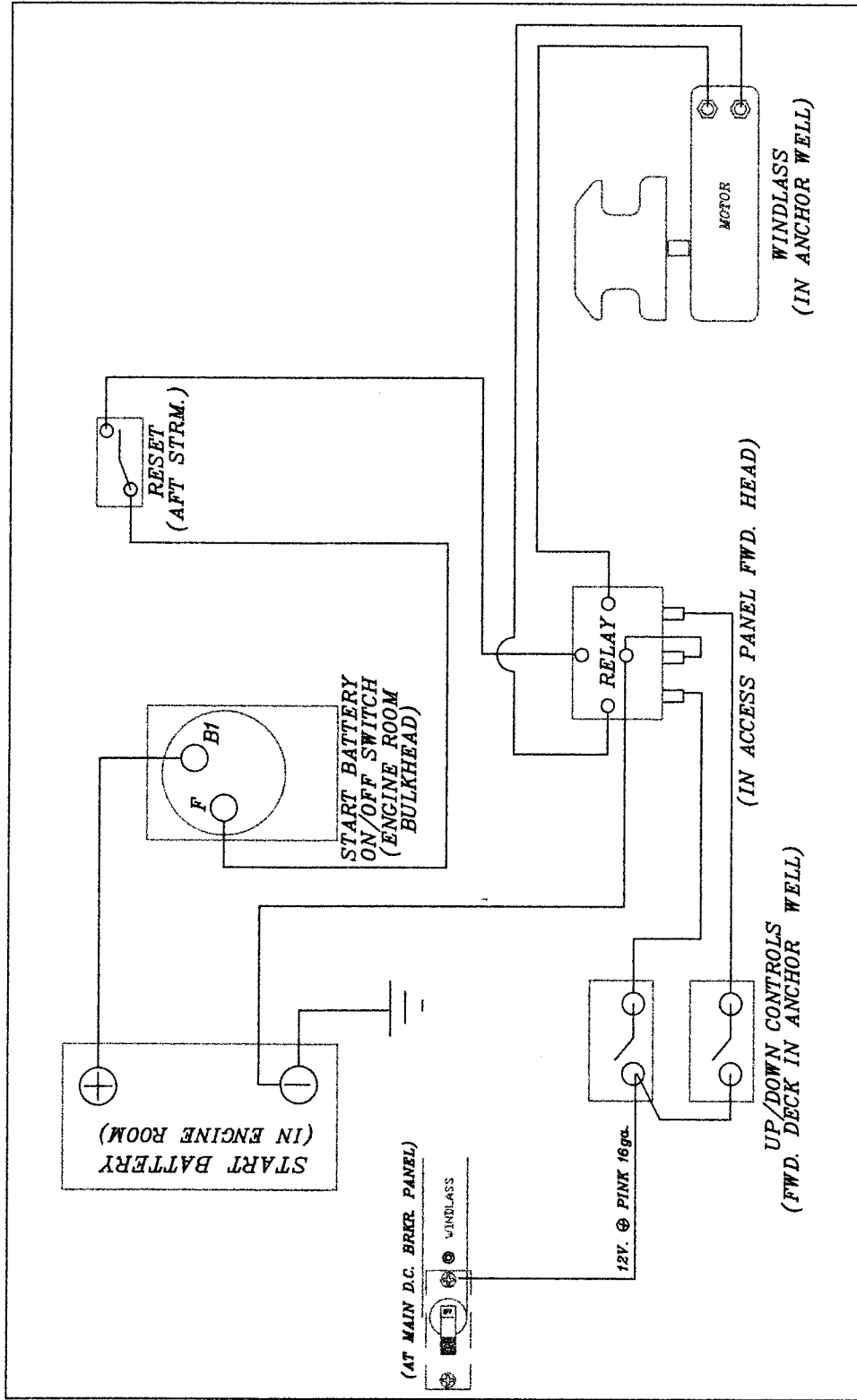
NOTE: "BUMP" SWITCH UNTIL ANCHOR CLEARS ANCHOR ROLLER AND HULL BEFORE LETTING ANCHOR DOWN FREELY.

#### RAISING ANCHOR....

- ① START BOAT ENGINE, THIS WILL ALLOW CONTROL OF BOAT WHEN ANCHOR BECOMES FREE, AS WELL AS REDUCING LOAD ON BATTERY
- ② SAME AS STEP #1 OF LOWERING ANCHOR
- ③ SAME AS STEP #2 OF LOWERING ANCHOR
- ④ PUSH WINDLASS "UP" BUTTON (LOCATED-NEXT TO "DOWN BUTTON" BEING CAREFUL AS THE ANCHOR APPROACHES THE HULL AND ANCHOR ROLLER) UNTIL THE ANCHOR RESTS IN THE STEMHEAD PROPERLY.

NOTE: IF IT APPEARS THERE IS NO POWER TO THE WINDLASS, CHECK RESET. IF WINDLASS BECOMES INOPERABLE ELECTRICALLY, A MANUAL WINCH HANDLE IS SUPPLIED, SEE THE "HORIZON WINDLASS MANUAL" SUPPLIED IN YOUR OWNERS MANUAL PACKAGE FOR INSTRUCTIONS.

The Account Address Information for each HUNTER WINDLASS (HW) has proprietary rights.	
HUNTER	
FORM NO. P420 WINDLASS OPERATING INST.	REVISION NO. NONE
DATE 2/20/86 4D-1	DATE 3/15/99
ENGINEERING DEPT.	



PLANS TITLE: P420 WINDLASS WIRING

NO. 4208064D-2

ENGINEERING DEPT.

REVISION NO. NONE

DATE 3/15/99

See General Decking Information for each DECK WELLS DEP. See Appendix 1/98

**HUNTER**

UP/DOWN CONTROL  
SWITCH POWER LEADS  
(16ga. PINK & 16ga. BLK)

WINDLASS/MOTOR

WIRE RUNS BETWEEN  
DECK AND HEADLINER

WINDLASS RELAY  
(FOR UP/DOWN CONTROLS)

TO MAIN  
DISTRIBUTION  
PANEL

WINDLASS

WINDLASS MOTOR POWER LEADS  
2/0 RED AND BLK  
(RUNS THRU PAN BEAM)

TO THE RESET & START BATTERY  
SEE SCHEMATIC ON PREVIOUS PAGE

MAIN DISTRIBUTION  
PANEL

START BATTERY

WINDLASS RESET

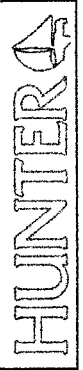
START BATTERY  
ON/OFF SWITCH

WINDLASS MOTOR

NOTE: THIS DRAWING PROVIDES BASIC  
WINDLASS COMPONENT LOCATIONS.  
SEE PREVIOUS PAGE FOR SCHEMATIC.

WORKS FILE: P420 WINDLASS COMPONENT LAYOUT

REVISION NO.	NONE
DATE	3/15/99
ENGINEERING DEPT.	



SECTION 64I..ELEC. HALYARD WINCH SYSTEM (OPT. ON FURLING MODELS)

BASIC OPERATING INSTRUCTIONS:

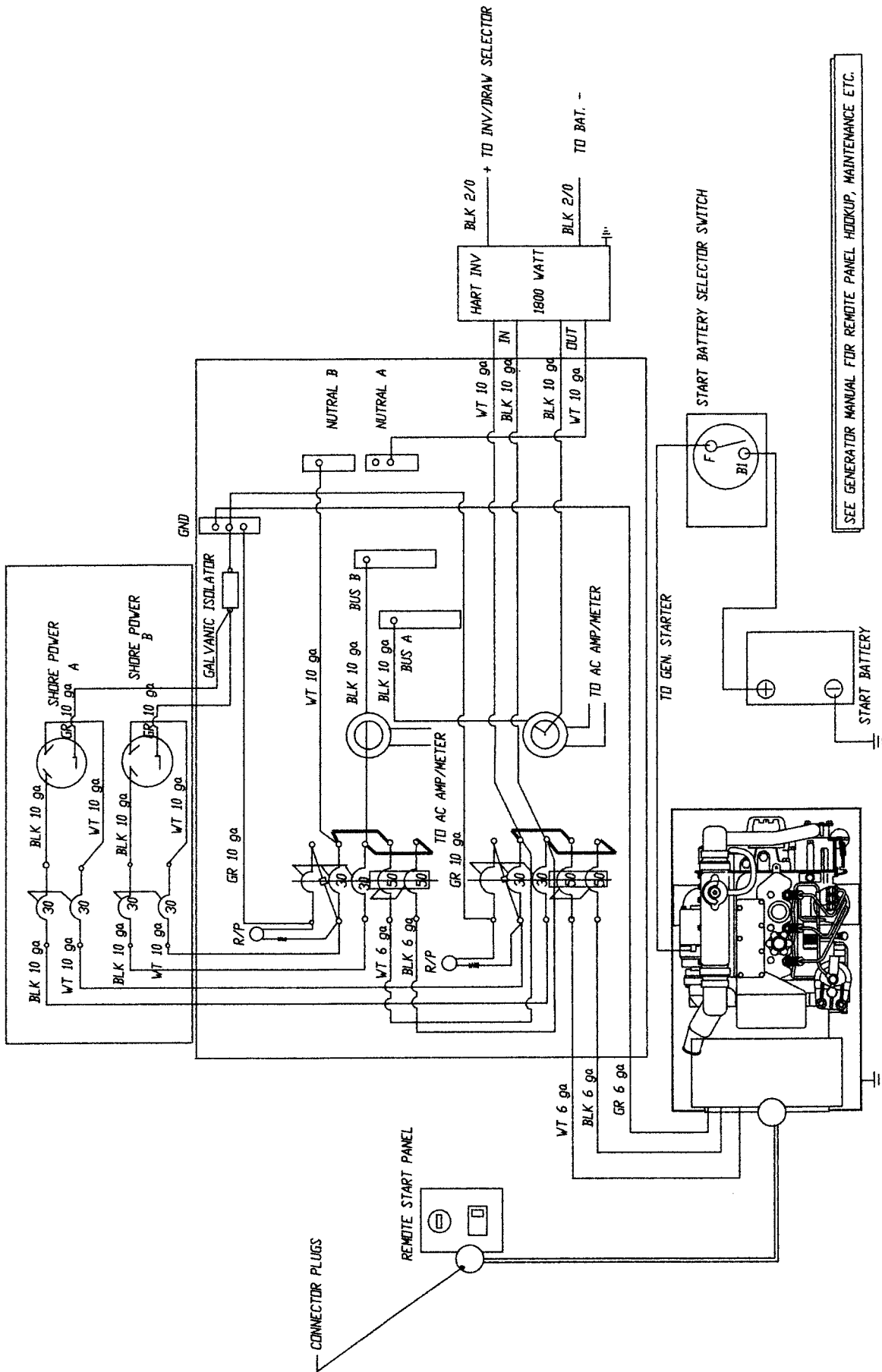
- ① START ENGINE IF NOT ALREADY RUNNING
- ② HALYARD SWITCH ON DECK SHOULD NOW OPERATE WINCH

NOTE:

SEE PG 63A-8 FOR RESET FUNCTION

HUNTER	
P420 ELECTRIC HALYARD OPERATING INSTRUCTIONS	
FORM NO. 4208064E-1	REVISION NO. NONE
ISSUED BY: ENGINEERING DEPT.	DATE: 9/30/98

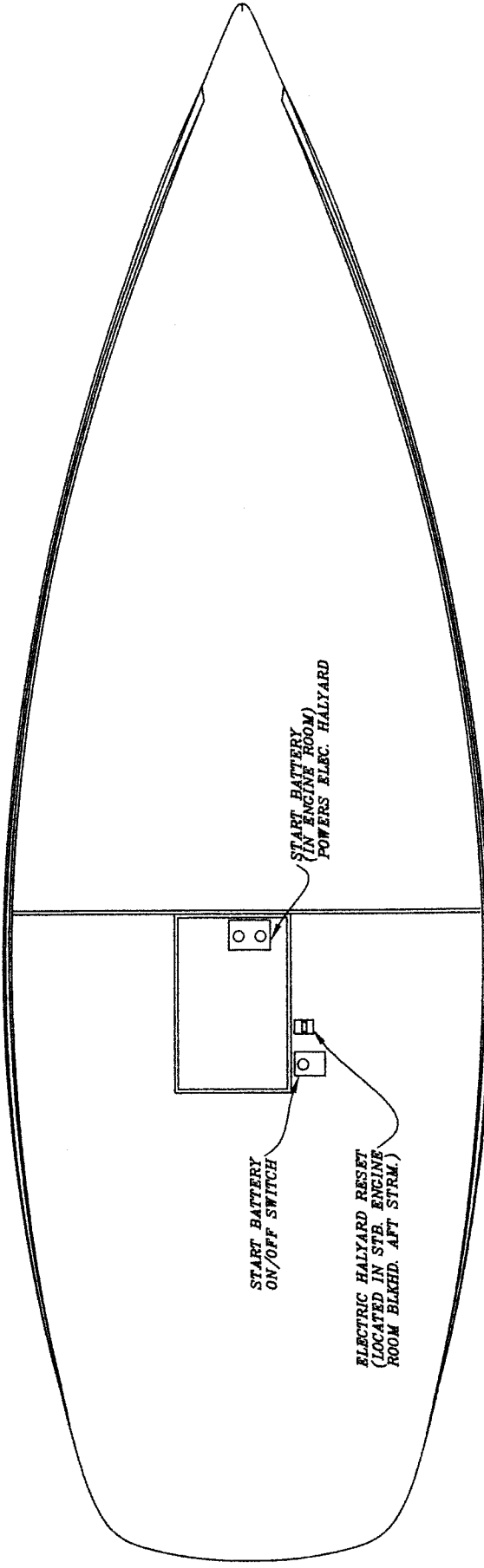
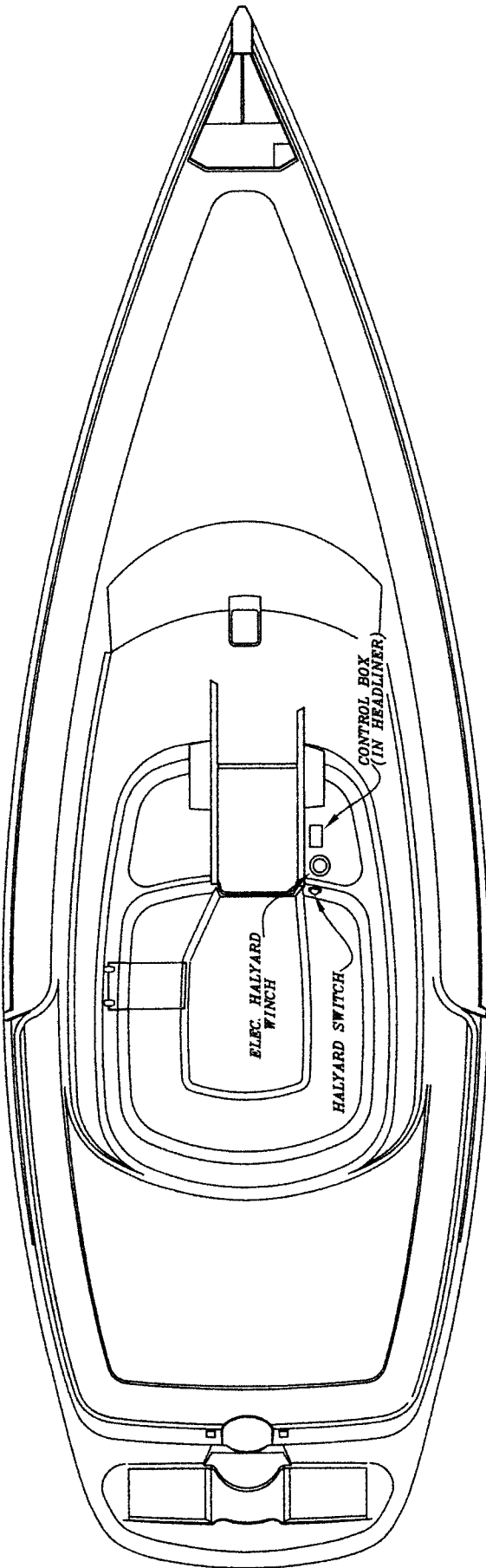




SEE GENERATOR MANUAL FOR REMOTE PANEL HOOKUP, MAINTENANCE ETC.

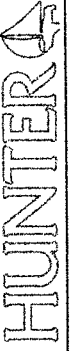
OPTIONAL 6 KW GENERATOR

HUNTER  
 P420 OPT. GENERATOR WIRING SCHEMATIC  
 DRAWING NO. 4208063E-2  
 DATE 9/30/98  
 ENGINEERING DEPT.

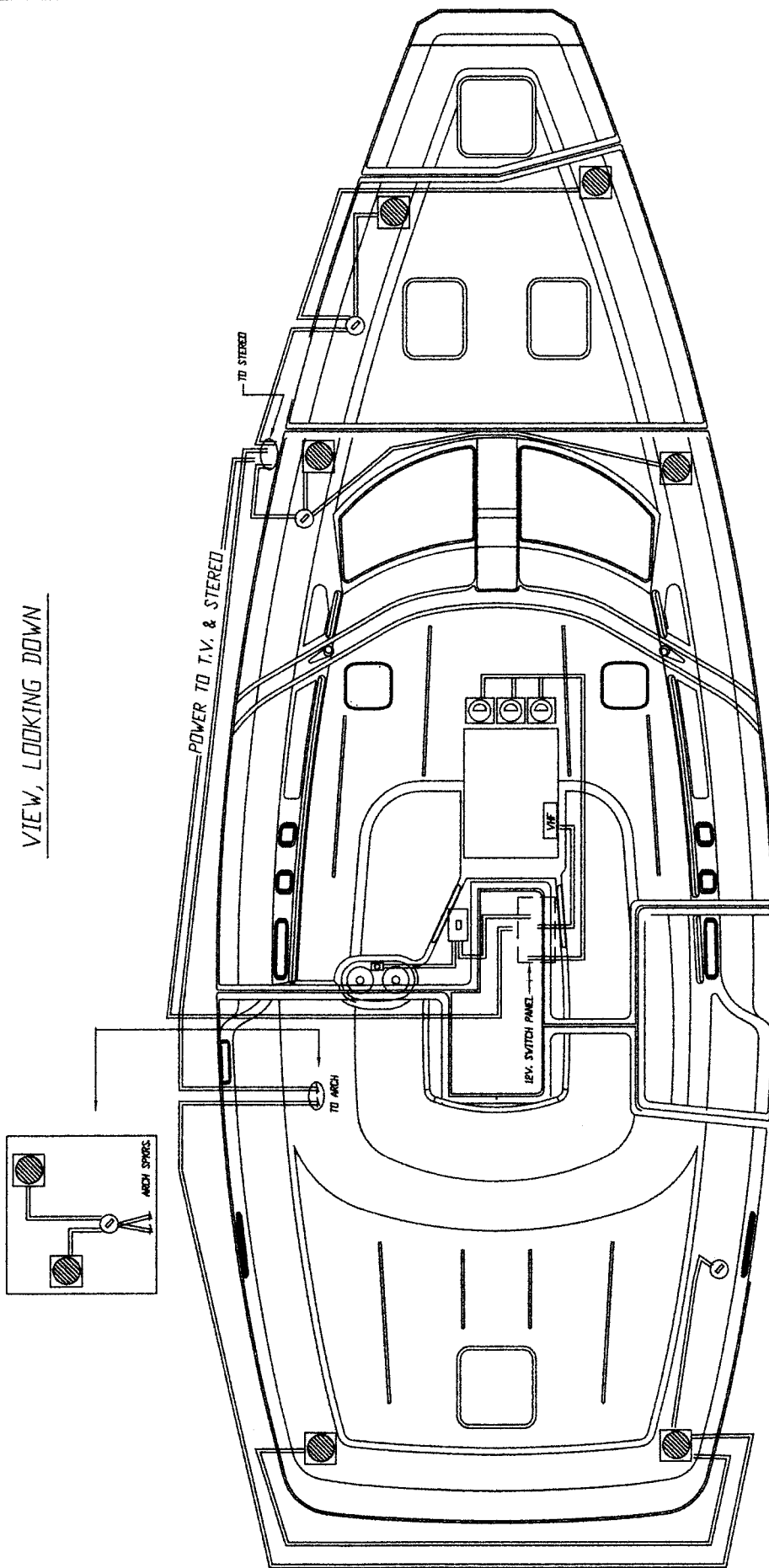


THIS DRAWING SHOWS THE COMPONENTS AND THEIR LOCATION OF THE ELECTRIC HALYARD SYSTEM. SEE PREVIOUS PAGE FOR SCHEMATIC & WIRING DETAILS. NOTE: ELECTRIC HALYARD IS OPTIONAL ON FURLING MAST MODELS.

OWNER USE  
**P420 ELEC. HALYARD COMPONENTS LAYOUT**  
REVISION NO. 2208064E-3    DATE NONE    DATE 3/15/99  
DEPT. ENGINEERING DEPT.



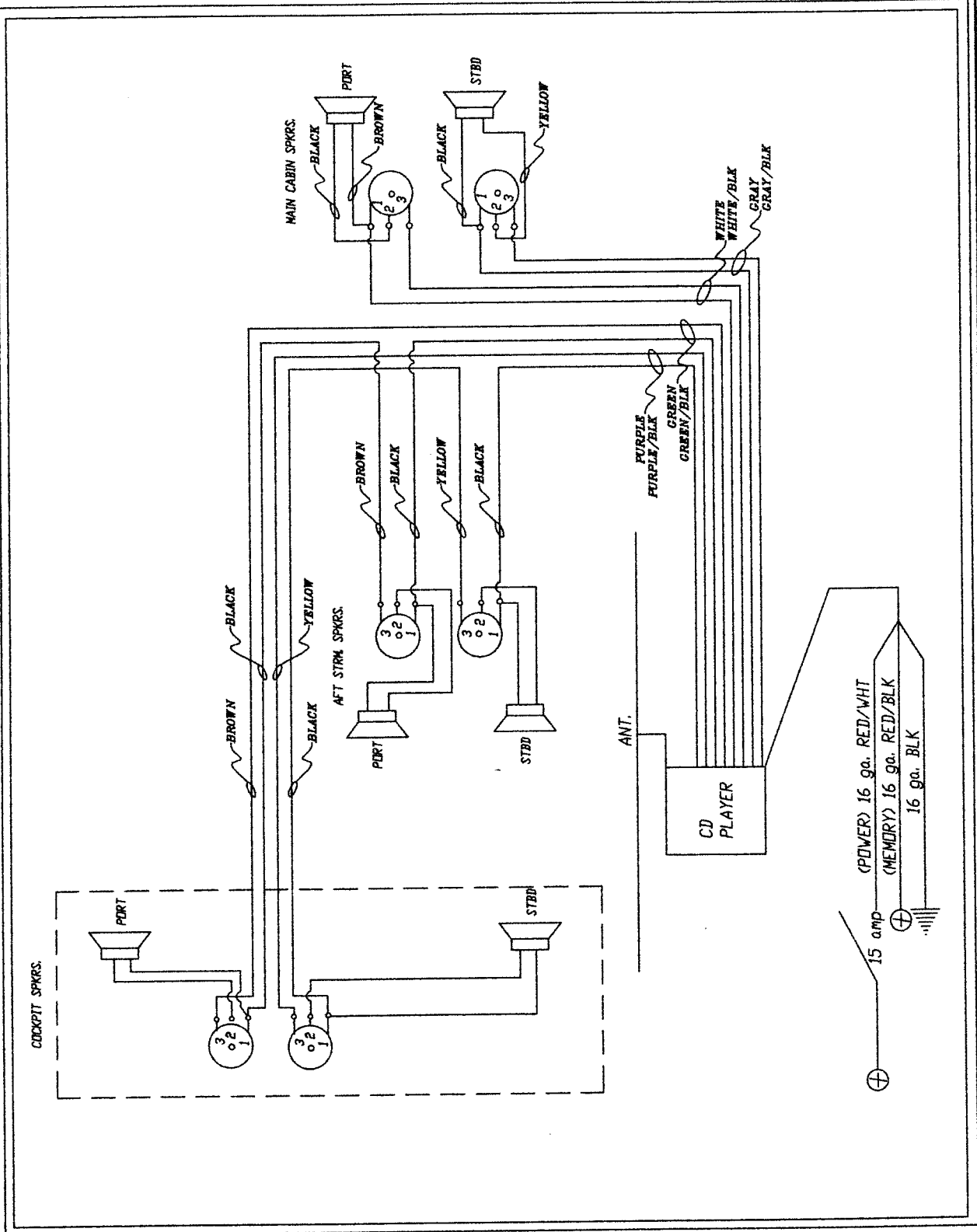
VIEW, LOOKING DOWN



LEGEND

WIRE RUNS	_____	SPEAKERS(SETS) 3 req'd	▨
INSTRUMENTS	⊙	VOLUME CONT. 3 req'd	⊙
VHF RADIO	VHF	LP GAS ON/OFF 1 req'd	□
		LP GAS SOLENOID 1 req'd	□

HUNTER  
 P420 12V.D.C. ACC. (HEADLINER WIRING)  
 DRAWING NO. 4208064F-1  
 ENGINEERING DEPT.  
 DATE 3/15/99  
 NONE  
 THE HUNTER GROUP, INC.



For current address information for this HUNTER, OUP, see proprietary info.

**HUNTER**

**P420 STEREO WIRING SCHEMATIC**

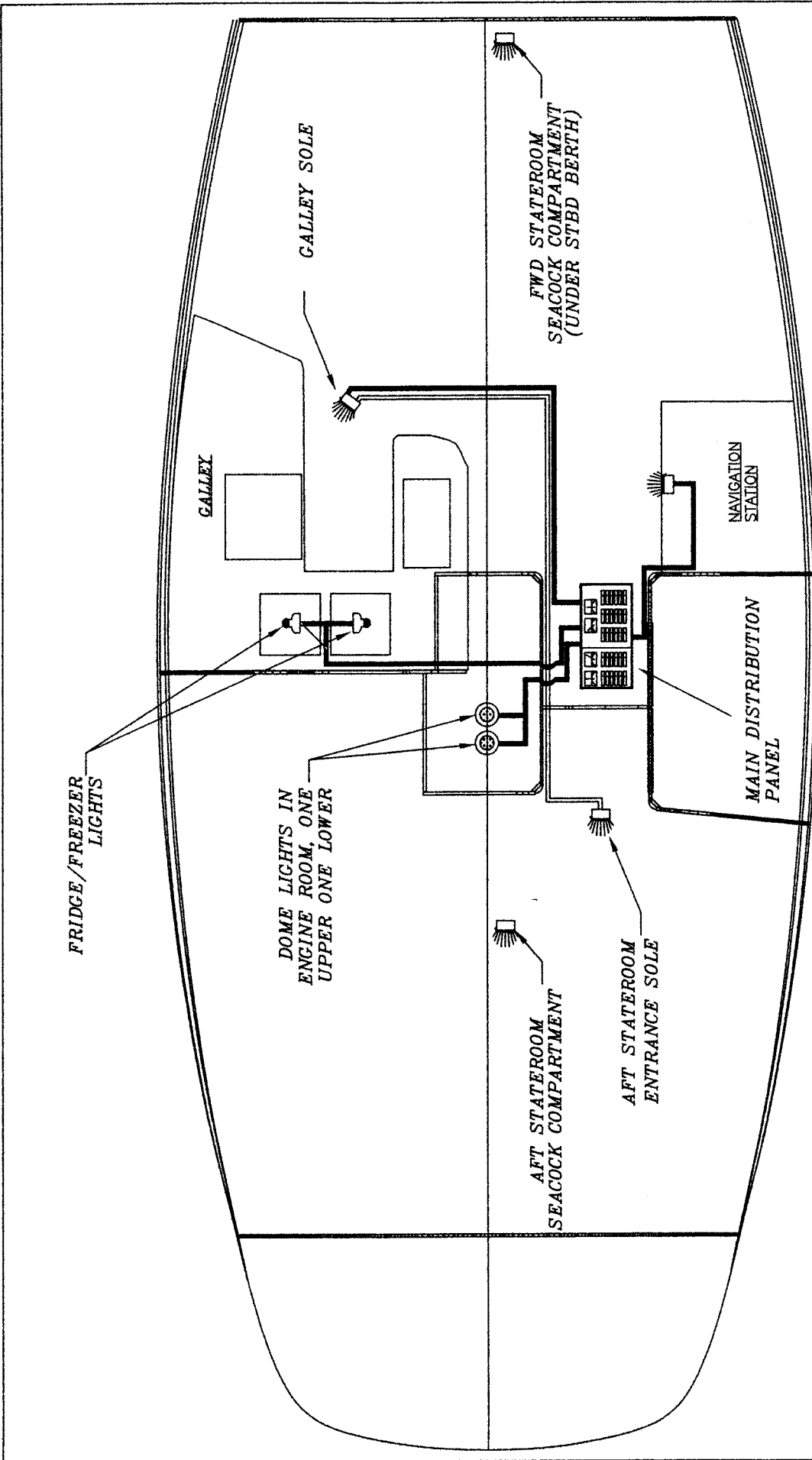
REVISED 10/98

FIGURE NO. 4208064F-2

ISSUE NONE

DATE 3/15/99

ENGINEERING DEPT.



**KEY:**

PART

COURTESY LIGHTS (RED)

FRIDGE/FREEZER LIGHTS

ENGINE ROOM DOME LIGHTS

FOR CURRENT LISTINGS INFORMATION FOR EACH HUNTER MARINE CORP. BOAT, SEE PROPRIETARY LISTS

**HUNTER**

DRAWING TITLE: **P420 12V.D.C. COURTESY LIGHT LAYOUT**

DRAWING NO: 4208064G

DESIGNER: NONE

DATE: 3/15/99

ENGINEERING DEPT

SECTION 64H...REFRIGERATION SYSTEM

BASIC OPERATING INSTRUCTIONS:

- ① CHECK SEA STRAINER & OPEN RAW WATER SEACOCK IN PORT AFT MAIN BILGE LOCKER
- ② ENSURE THE 1/2" (12.7mm) DISCHARGE SEACOCK VALVE IS OPEN.  
(SEACOCK ACCESSED THRU PANEL IN FWD BERTH, JUST FWD OF MAIN BULKHEAD)
- ③ SELECT HOUSE BATTERY #1 OR #2 AT INVERTER DRAW SELECTOR SWITCH @ NAV STATION
- ④ TURN ON MAIN D.C. BREAKER AT MAIN BREAKER PANEL
- ⑤ TURN ON REFRIG. BREAKER
- ⑥ SET THERMOSTATS TO DESIRED TEMP.

NOTE: KEEP SEA STRAINER CLEAN TO PREVENT IMPROPER CIRCULATION  
IF LEAVING UNIT ON WHEN AWAY FROM BOAT  
BE SURE SHORE POWER CABLES ARE CONNECTED AND  
(THE INVERTER WILL PREVENT BATTERY DRAIN.  
THE INVERTER "CHARGE" CIRCUIT IS AUTOMATIC IF  
SHORE POWER IS CONNECTED AND HAS POWER TO  
TO MAIN DISTRIBUTION PANEL)

# OPERATING INSTRUCTIONS FOR POLARMATE REFRIGERATION SPILL OVER SYSTEM

IN ORDER TO ACHIEVE THE PROPER PERFORMANCE OF THIS SYTEM,  
PLEASE FOLLOW THESE GUIDLINES.

UPON INITIAL START UP OF THIS SYSTEM, YOU MUST TURN ON THE  
FREEZER THERMOSTAT FIRST TO NUMBER 6. ALLOW TIME FOR THE  
FREEZER TO REACH APPROXIMATELY 25°F. ONCE THE FREEZER  
REACHES 25°F, SET THE REFRIGERATOR THERMOSTAT BETWEEN NUMBER  
2 AND NUMBER 3. KEEP IN MIND THAT THIS SYSTEM OPERATES  
DIFFERENTLY THAN A REFRIGERATOR IN A HOME. WHEN THE SPILL  
OVER FAN TURNS ON, A RISE IN FREEZER BOX TEMPERATURE IS  
NORMAL UNTIL THE REFRIGERATION THERMOSTAT IS SATISFIED. ONCE THE  
FAN CYCLES OFF THE FREEZER TEMPERATURE WILL GRADUALLY DROP  
AGAIN.

YOU MAY EXPERIENCE LONG DUTY CYCLES DEPENDING ON WATER AND  
AIR TEMPERATURES AND USAGE OF THE BOX. THIS SYSTEM IS NOT  
FROST FREE AND WILL DEVELOP FROST ON THE EVAPORATOR PLATE,  
WHICH WILL REQUIRE PERIODIC DEFROSTING

IF IT BECOMES NECESSARY TO DEFROST THE PLATE, TURN THE SYSTEM  
OFF AT THE SHIPS PANEL, REMOVE THE DRAIN PLUG FROM THE BOTTOM  
OF THE REFRIGERATOR AND POUR SOME TAP WATER OVER THE PLATE.  
WIPE WITH A CLEAN CLOTH AND THEN REPLACE THE DRAIN PLUG.  
(NOTE: THE DRAIN PLUG MUST BE IN PLACE FOR PROPER OPERATION  
OF THE SYSTEM.) TURN THE SYSTEM ON AND REPEAT THE ABOVE  
START UP PROCEDURES.

LIVE ABOARDS, MAY EXPERIENCE THE NEED FOR MORE FREQUENT  
DEFROSTING DUE TO HEAVIER USE. UNDER THESE CONDITIONS THEY  
MAY ALSO EXPERIENCE EXTENDED DUTY CYCLES.

THIS DOCUMENT CONTAINS INFORMATION FOR WHICH HUNTER ENGINEERING CORP. HAS PROPRIETARY RIGHTS.

**HUNTER**

ISSUING TITLE: **P420 POLARMATE REFRIGERATION OPERATING DETAILS**

ISSUING NO.: **4208084H-2**

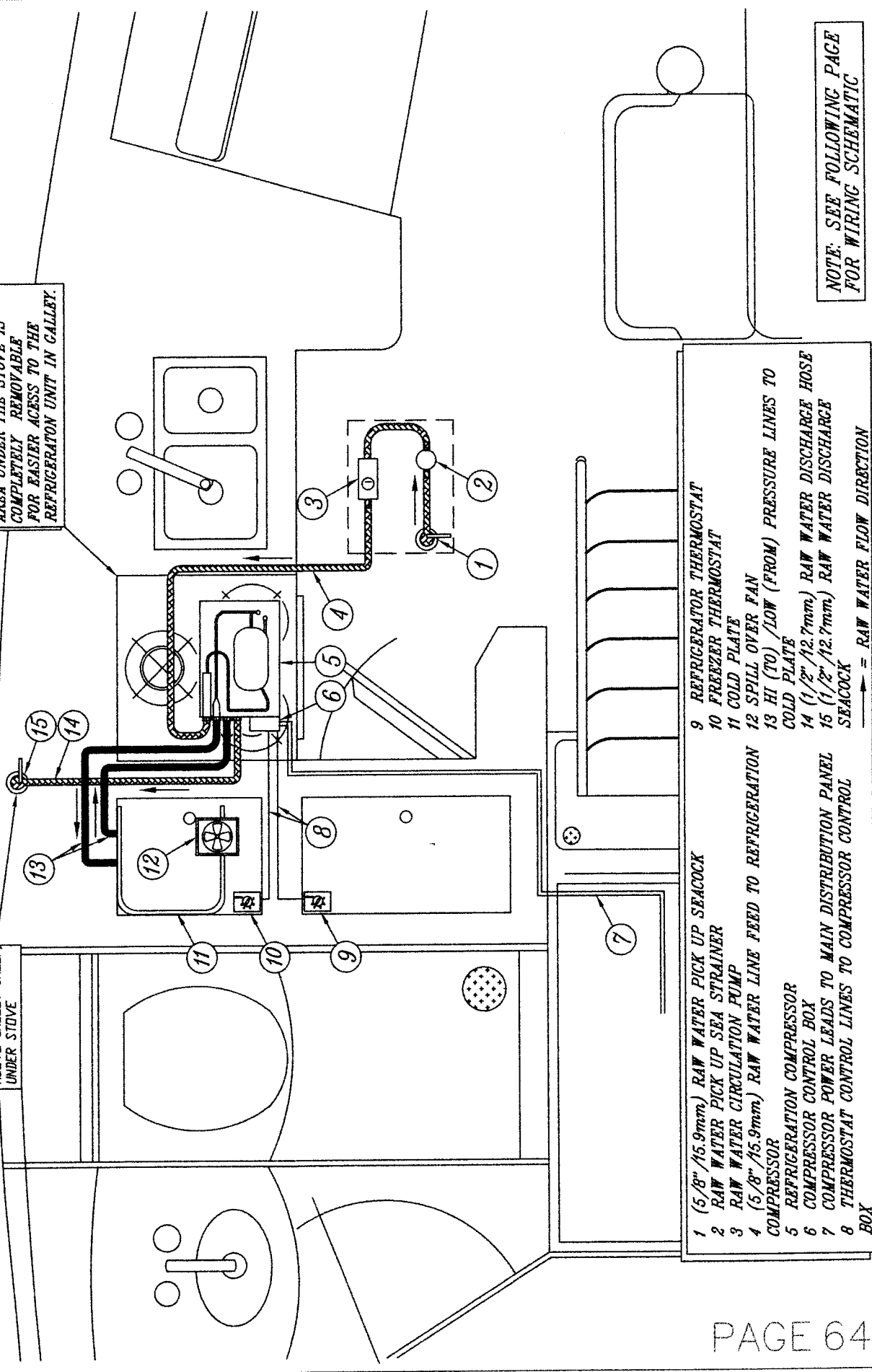
REVISION NO.: **NONE**

DATE: **3/15/99**

ENGINEERING DEPT.

NOTE:  
 AREA UNDER THE STOVE IS  
 COMPLETELY REMOVABLE  
 FOR EASIER ACCESS TO THE  
 REFRIGERATION UNIT IN GALLEY.

SEACOCK LOCATED  
 ABOVE GALLEY SHELF  
 UNDER STOVE



- 1 (5/8" / 15.9mm) RAW WATER PICK UP SEACOCK
  - 2 RAW WATER PICK UP SEA STRAINER
  - 3 RAW WATER CIRCULATION PUMP
  - 4 (5/8" / 15.9mm) RAW WATER LINE FEED TO REFRIGERATION COMPRESSOR
  - 5 REFRIGERATION COMPRESSOR
  - 6 COMPRESSOR CONTROL BOX
  - 7 COMPRESSOR POWER LEADS TO MAIN DISTRIBUTION PANEL
  - 8 THERMOSTAT CONTROL LINES TO COMPRESSOR CONTROL BOX
  - 9 REFRIGERATOR THERMOSTAT
  - 10 FREEZER THERMOSTAT
  - 11 COLD PLATE
  - 12 SPILL OVER FAN
  - 13 HI (TO) / LOW (FROM) PRESSURE LINES TO COLD PLATE
  - 14 (1/2" / 12.7mm) RAW WATER DISCHARGE HOSE
  - 15 (1/2" / 12.7mm) RAW WATER DISCHARGE SEACOCK
- = RAW WATER FLOW DIRECTION

NOTE: SEE FOLLOWING PAGE  
 FOR WIRING SCHEMATIC

FOR FURTHER DETAILS REFER TO THE HUNTER MARINE CORP. FOR FURTHER INFO.

**HUNTER**

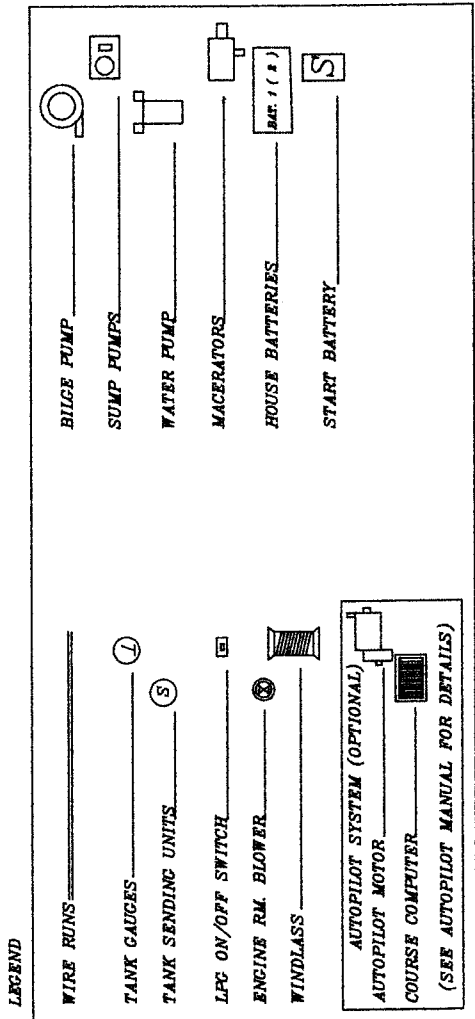
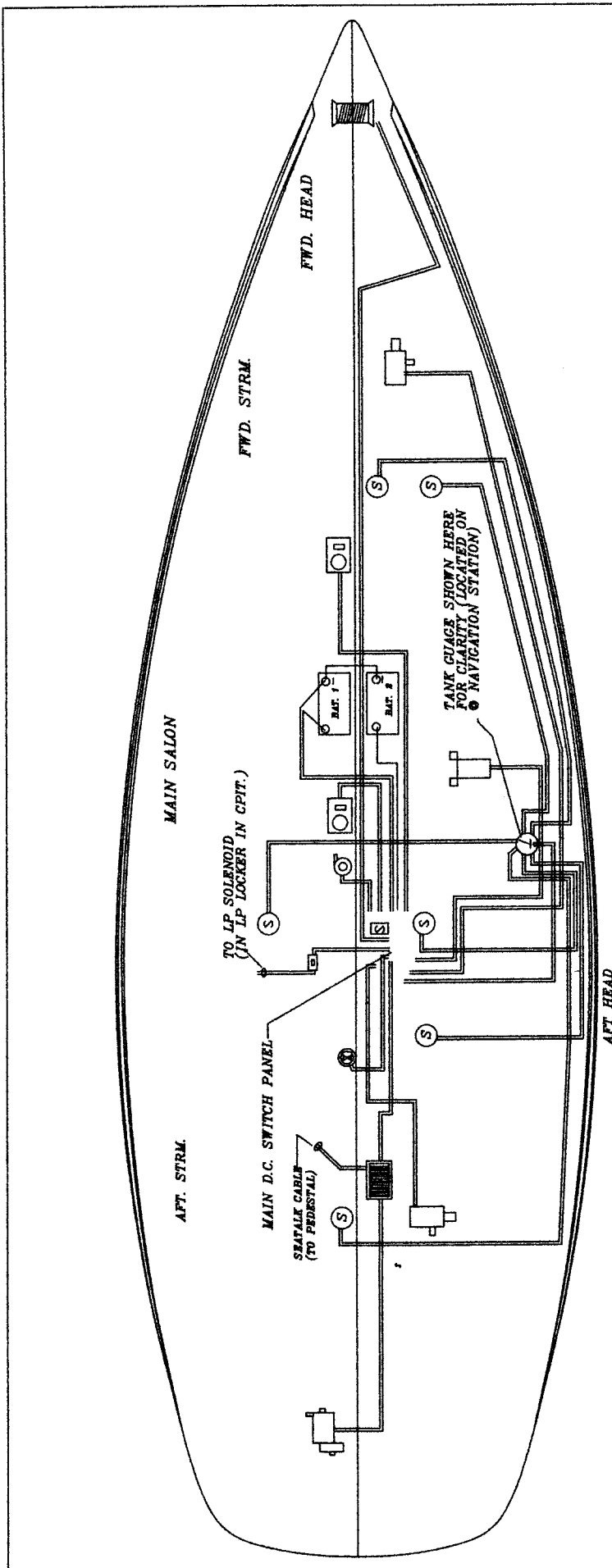
NAME: P420 OPT. REFRIGERATION LAYOUT

SCALE: NONE

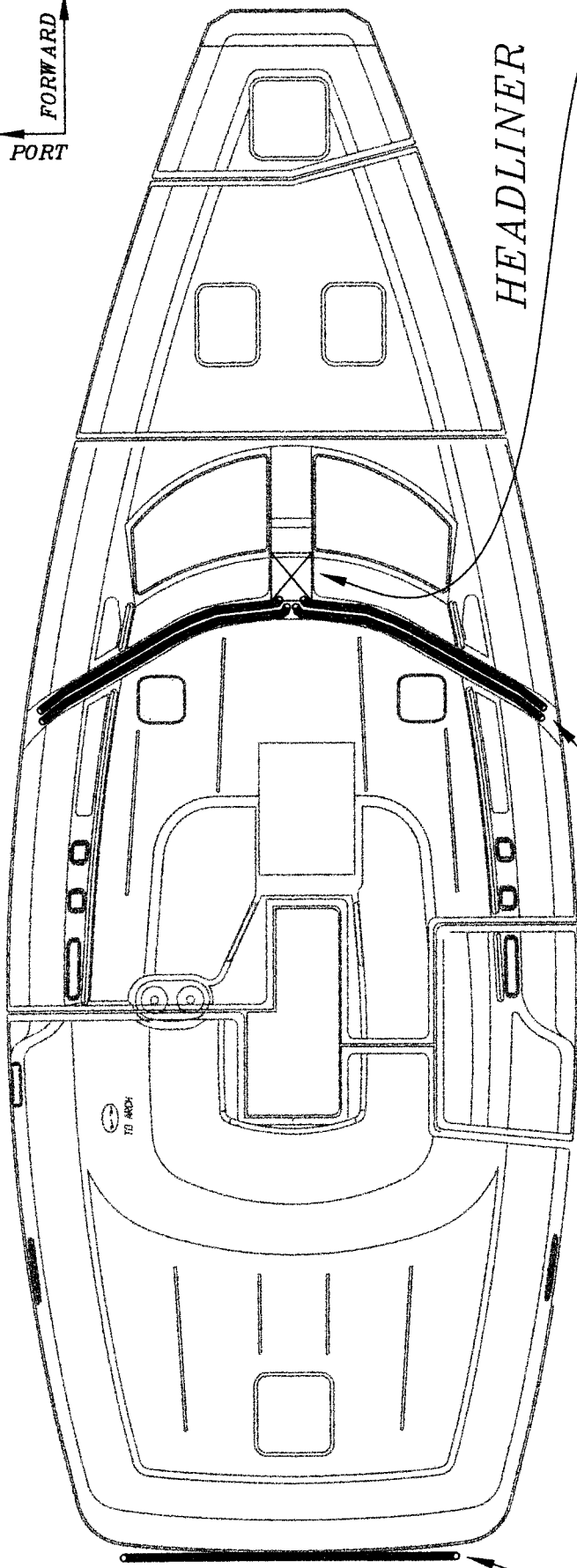
DATE: 3/16/99

ENGINEERING DEPT.





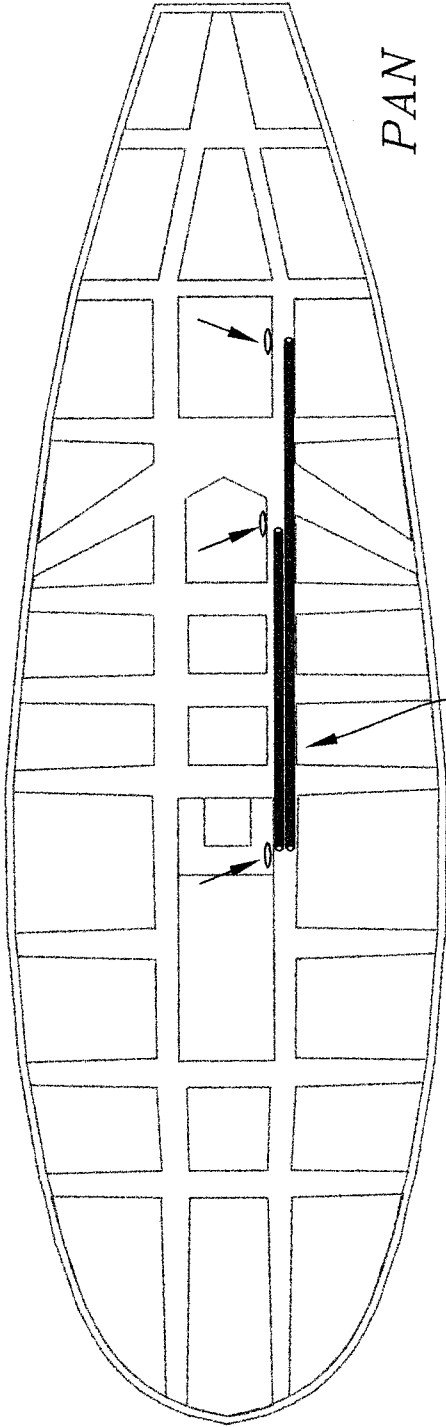
FORWARD  
PORT



HEADLINER

CHASE TUBING AFT OF AFT STRM. BULK.  
ACCESSIBLE THRU PT. & STBD. SWIM SEAT LOCKERS

CHASE TUBING INSIDE MAIN CABIN BEAM  
ACCESSIBLE AT CHAIN PLATE COVERS PORT &  
STBD. AND ABOVE COMPRESSION POST



PAN

CHASE TUBING MAIN PAN BEAM STBD. SIDE  
ACCESSIBLE THRU STBD. LOWER ENGINE ROOM & BELOW FWD. BILGE COVERS

DRAWING TITLE: P420 WIRE CHASE LOCATIONS  
 NUMBER: 42080641-2  
 REVISION NO.: NONE  
 DATE: 3/15/99  
 ENGINEERING DEPT.

See General Release Information for which HUNTER GROUP has proprietary rights.

# HUNTER

COAX CONNECTOR  
(CONNECTS TO TV)

TV COAX CABLE  
(RUNS THROUGH HEADLINER)

TO ARCH

FORWARD  
PORT

TV / PHONE INLET  
NOTE: PHONE WIRE IS NOT SUPPLIED

This document contains information for which HUNTER MARINE CORP. has proprietary rights.

PROJECT TITLE  
**PAZO T.V. COAX CABLE LAYOUT**

DRAWING NO. 4208064J

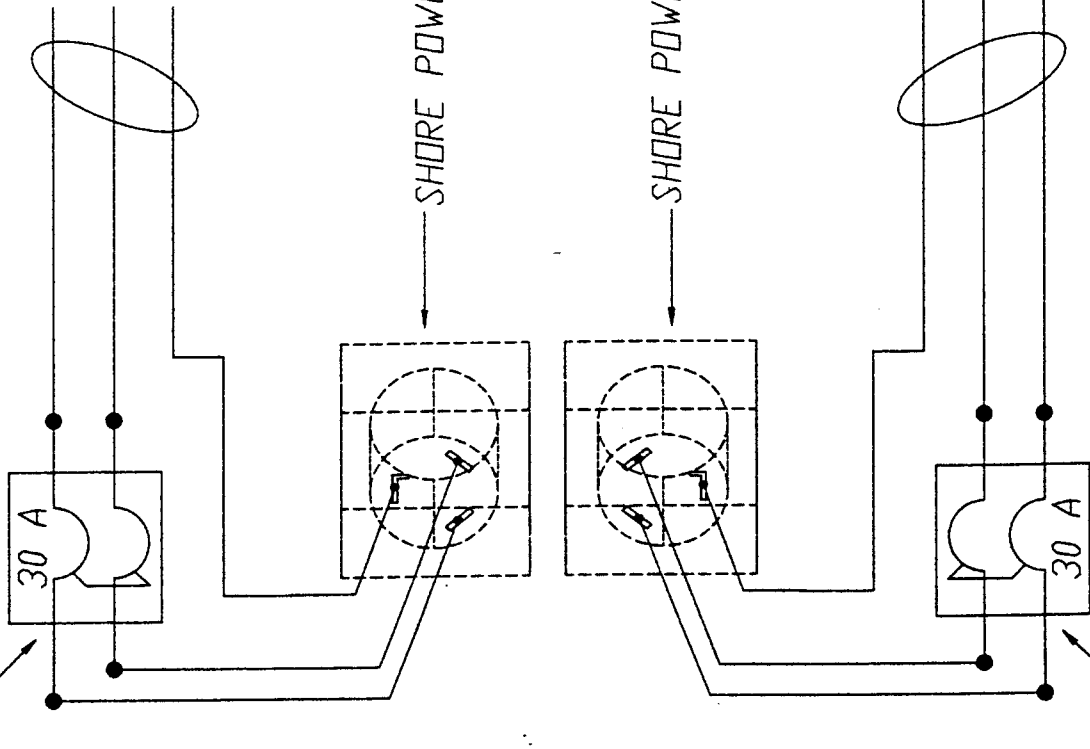
REVISION NO. NONE

DATE 9/30/98

ENGINEERING DEPT.

**HUNTER**

30 AMP SHORE POWER BREAKER



TO AC PANEL  
10/3 BOAT CABLE

LINE 2

(ON OPTIONAL AIR CONDITIONED BOATS ONLY)

SHORE POWER OUTLET 2

SHORE POWER OUTLET 1

NOTES: 30 amp BREAKERS ARE  
ON AFT STATEROOM AFT STRB. SIDE WALL

SEE PAGE 63A-1 FOR HOOKUP  
TO PANEL

SEE PAGE 63C FOR WIRE  
RUN LOCATION

10/3 BOAT CABLE  
TO AC PANEL

LINE 1

FIGURE 1005  
P420 SHORE POWER CONNECTOR SCH.

FIGURE NO.	420B065A	REVISION NO.	NONE
DATE	9/30/98	HUNTER	
ENGINEERING DEPT.			

### 380 ELECTRICAL WIRING/CABLE DATA

#### 12V.D.C. SYSTEM

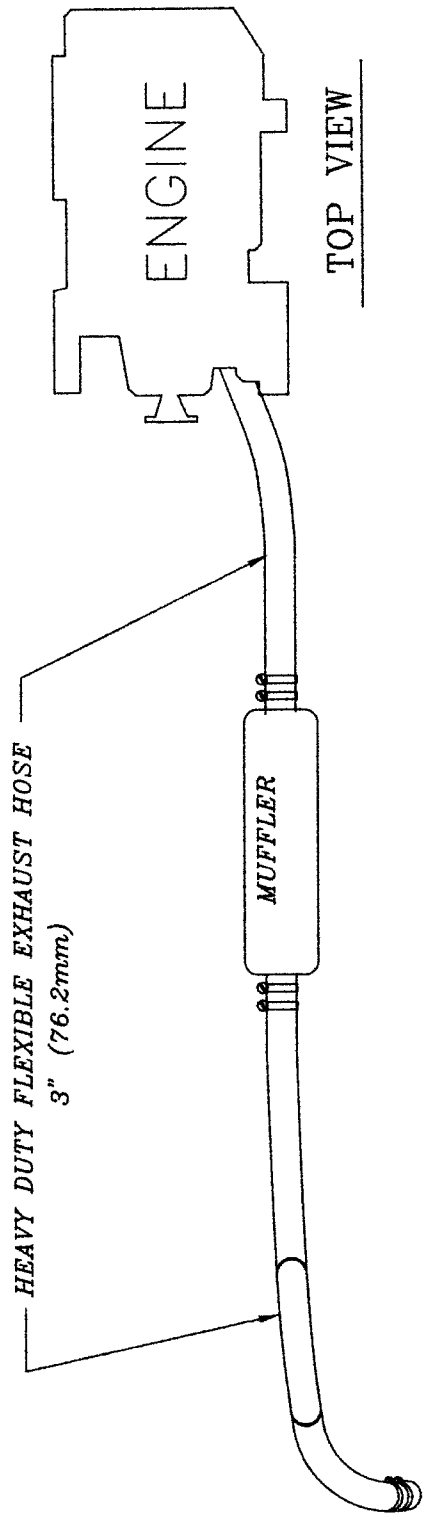
CIRCUIT/BREAKER	AMPERAGE	WIRE SIZE	WIRE COLOR
D.C. MAIN	50amp	6gauge	ORANGE/RED
PANEL LIGHTS	5amp	INTERN. WIRED	RED
CABIN LIGHTS 1	20amp	16gauge	BLUE
CABIN LIGHTS 2	20amp	16gauge	BLUE
COURTESY 1	10amp	16gauge	BLUE/WHITE
COURTESY 2	10amp	16gauge	BLUE/WHITE
TANK INDICATOR	5amp	14/2 BOAT CABLE	BLACK (NEG.) & WHITE (Pos.)
WATER PRESSURE	10amp	12gauge	BROWN
FWD.SHOWER SUMP	10amp	12gauge	BROWN/YELLOW
AFTSHOWER SUMP	10amp	12gauge	BROWN/BLACK
MACERATOR 1	20amp	10gauge	BROWN/WHITE
MACERATOR 2	20amp	10gauge	BROWN/WHITE
STEREO	10amp	16gauge	RED & YELLOW
STEREO W/AMPLIFIER	20amp	12gauge	RED
REFRIGERATION	15amp	8gauge	RED
L.P. GAS	5amp	14/2 BOAT CABLE	BLACK (NEG.) & WHITE (Pos.)
WINDLASS (SWITCH)	5amp	16gauge	RED/WHITE & RED/BLACK
INSTRUMENTS	5amp	VENDOR SUPPLIED	RED & YELLOW (SCREEN)
G.P.S.	5amp	16gauge	RED/BLACK
V.H.F.	10amp	16gauge	RED & WHITE
AUTO-PILOT	VARIES PER MODEL	8gauge	RED
ANCHOR LIGHT	5amp	16gauge	GRAY/RED
STEAMING LIGHT	5amp	16gauge	GRAY/GREEN
DECK LIGHT	15amp	16gauge	GRAY
RUNNING LIGHTS	10amp (LGR. MOD.)	16gauge	GRAY/WHITE
RUNNING LIGHTS	5amp (SM. MOD.)	16gauge	GRAY/WHITE
COMPASS (TIES TO RUN. LIGHTS)		16gauge	GRAY/WHITE
BATTERY CABLES		2/0	RED
ENGINE STARTER CABLE		2/0	RED
HALYARD WINCH		2gauge	RED
WINDLASS (MOTOR) CABLE		2gauge	RED

#### 110V.A.C. SYSTEM

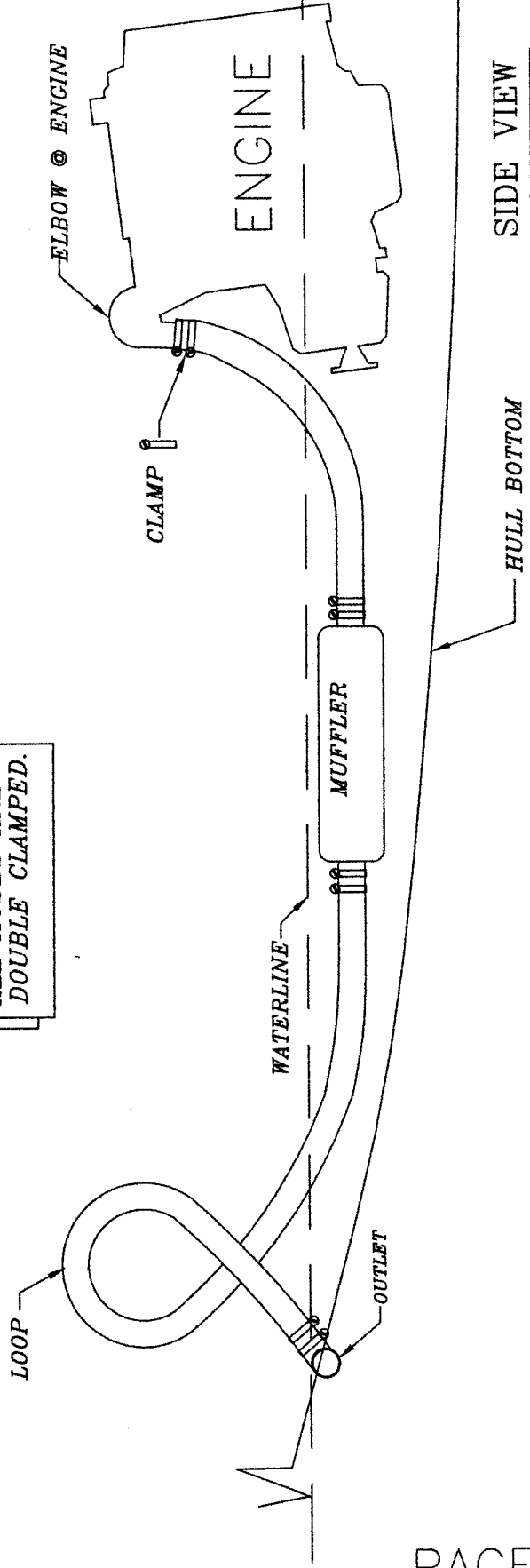
SHORE POWER A.C. MAIN/S	30 amp	10/3 BOAT CABLE	BLACK (HOT) & WHITE (NEU.)
OUTLETS	15amp	14/3 BOAT CABLE	BLACK (HOT) & WHITE (NEU.)
MICROWAVE OVEN	15amp	14/3 BOAT CABLE	BLACK (HOT) & WHITE (NEU.)
WATER HEATER	20amp	14/3 BOAT CABLE	BLACK (HOT) & WHITE (NEU.)
BATTERY CHARGER	15amp	14/3 BOAT CABLE	BLACK (HOT) & WHITE (NEU.)
INVERTER	INTERNAL	10/3 BOAT CABLE	BLACK (HOT) & WHITE (NEU.)
AIR CONDITIONING	25amp	10/3 BOAT CABLE	BLACK (HOT) & WHITE (NEU.)

#### 220V.A.C. SYSTEM (ON SELECT OVERSEAS MODELS ONLY)

SHORE POWER A.C. MAIN/S	15 amp	10/3 BOAT CABLE	BLACK (HOT) & WHITE (NEU.)
OUTLETS	10amp	14/3 BOAT CABLE	BLACK (HOT) & WHITE (NEU.)
MICROWAVE OVEN	10amp	14/3 BOAT CABLE	BLACK (HOT) & WHITE (NEU.)
WATER HEATER	10amp	14/3 BOAT CABLE	BLACK (HOT) & WHITE (NEU.)
BATTERY CHARGER	10amp	14/3 BOAT CABLE	BLACK (HOT) & WHITE (NEU.)
INVERTER	N/A	10/3 BOAT CABLE	BLACK (HOT) & WHITE (NEU.)
AIR CONDITIONING	15amp	10/3 BOAT CABLE	BLACK (HOT) & WHITE (NEU.)

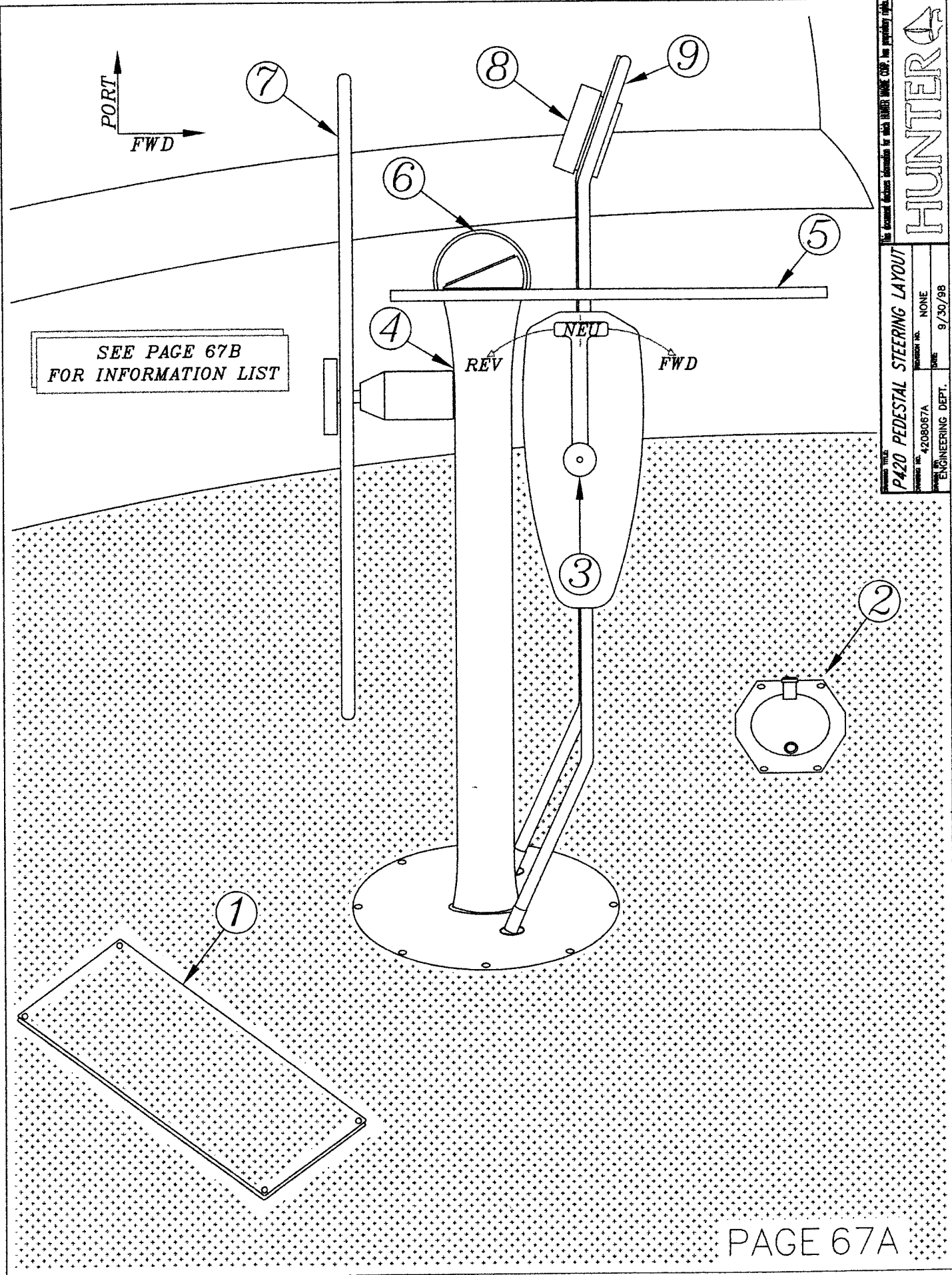


ALL HOSES ARE  
DOUBLE CLAMPED.



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**P420 EXHAUST SYSTEM LAYOUT**  
 DRAWING NO. 4208068  
 REVISION NO. NONE  
 DATE 1/18/00  
 ENGINEERING DEPT.

# HUNTER



1. SCUPPER DRAIN COVER. (SEE PAGE 55C FOR SCUPPER DRAIN HOSE RUNS)
2. MANUAL BILGE COCKPIT COVER (SEE PAGE 55C AND 59D FOR FURTHER INFORMATION) NOTE: THE MANUAL BILGE PUMP HANDLE IS LOCATED UNDER THE PORT AFT COAMING LOCKER LID.
3. ENGINE SHIFTER/ THROTTLE CONTROL
4. COCKPIT STEERING PEDESTAL (SEE PAGE 55C AND 67B FOR STEERING CABLE LOCATIONS/ RUNS AND FURTHER DETAILS.
5. COCKPIT TABLE
6. COMPASS
7. STEERING WHEEL
8. NAVIGATION INSTRUMENTS (COCKPIT) LOCATION
9. COCKPIT STEERING PEDESTAL GRAB BAR

NOTE:  
THE ENGINE KEY SWITCH PANEL IS LOCATED ON THE INSIDE OF THE ARCH, PORT SIDE.

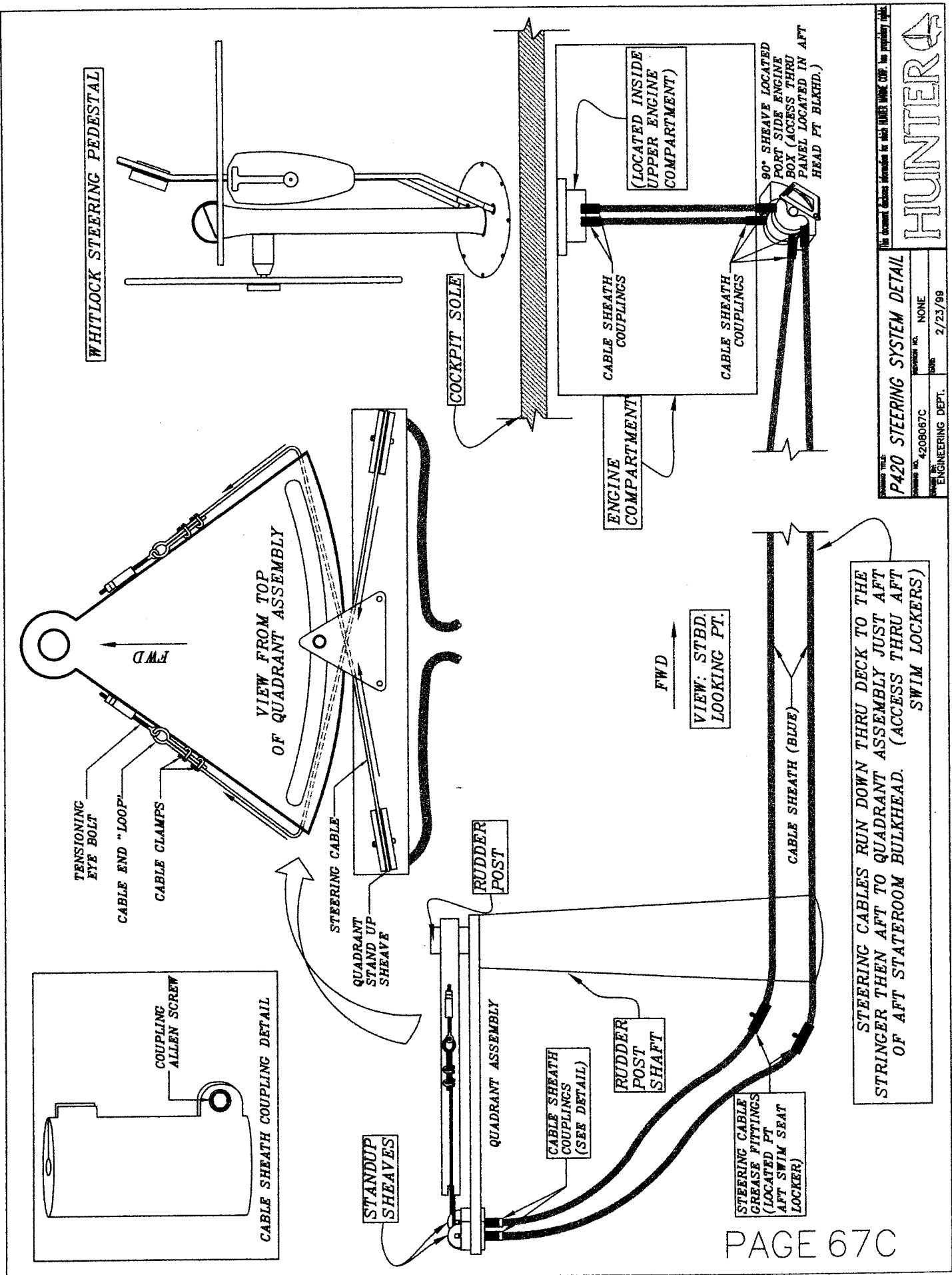
THE STEERING CABLES RUN DOWN THROUGH THE DECK FROM THE BASE OF THE PEDESTAL TO THE ENGINE COMPARTMENT, DOWN TO THE STRINGER THEN AFT TO THE QUADRANT ASSEMBLY. (SEE PAGE 67C FOR FURTHER DETAILS.

THE FOLLOWING INFORMATION IS FOR THE HUNTER MODEL SHIP. SEE PAGES 55C AND 59D FOR FURTHER INFORMATION.

HUNTER

P420 PEDESTAL STEERING LAYOUT LIST	REVISION NO.	NONE
DRAWING NO.	4208067B	DATE
DEPT.	ENGINEERING DEPT.	
DATE	2/23/99	

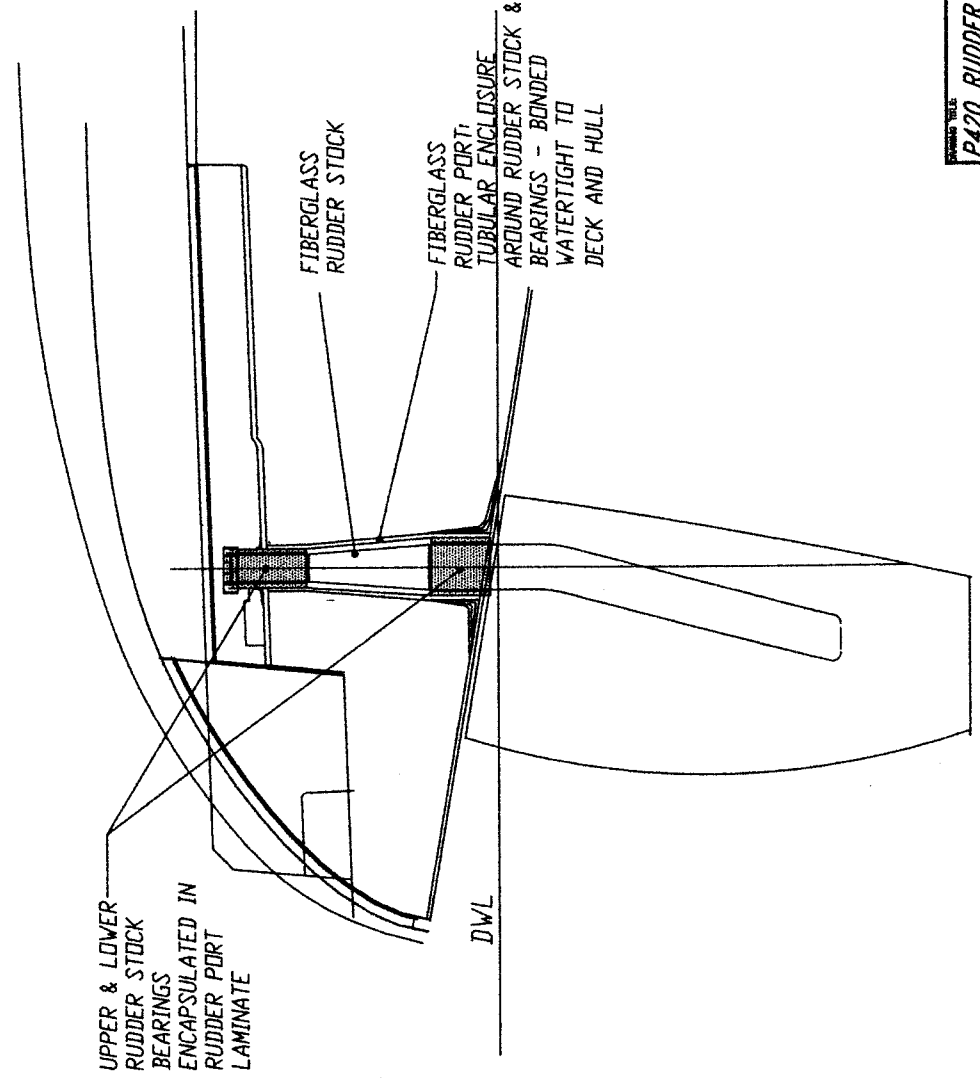




P420 STEERING SYSTEM DETAIL DRAWING NO. 4208067C DATE 2/23/99 ENGINEERING DEPT.	
PROJECT NO. NONE DRAWING NO. 4208067C DATE 2/23/99	HUNTERA

UPPER SLEEVE  
 3" O.D. X .120 WALL S.S. TUBE  
 (76.2mm X 3.048mm)  
 TURNED TO 2.970" +/- .005

LOWER SLEEVE  
 6" O.D. X .25 WALL S.S. TUBE  
 (152mm X 6mm)  
 TURNED TO 5.970" +/- .005



UPPER & LOWER  
 RUDDER STOCK  
 BEARINGS  
 ENCAPSULATED IN  
 RUDDER PORT  
 LAMINATE

FIBERGLASS  
 RUDDER STOCK

FIBERGLASS  
 RUDDER PORT  
 TUBULAR ENCLOSURE  
 AROUND RUDDER STOCK &  
 BEARINGS - BONDED  
 WATER TIGHT TO  
 DECK AND HULL

DWL



UMHW  
 UPPER BEARING



UMHW  
 LOWER BEARING

REVISED TITLE: P420 RUDDER & SHAFT DETAILS

DATE: 10/1/98

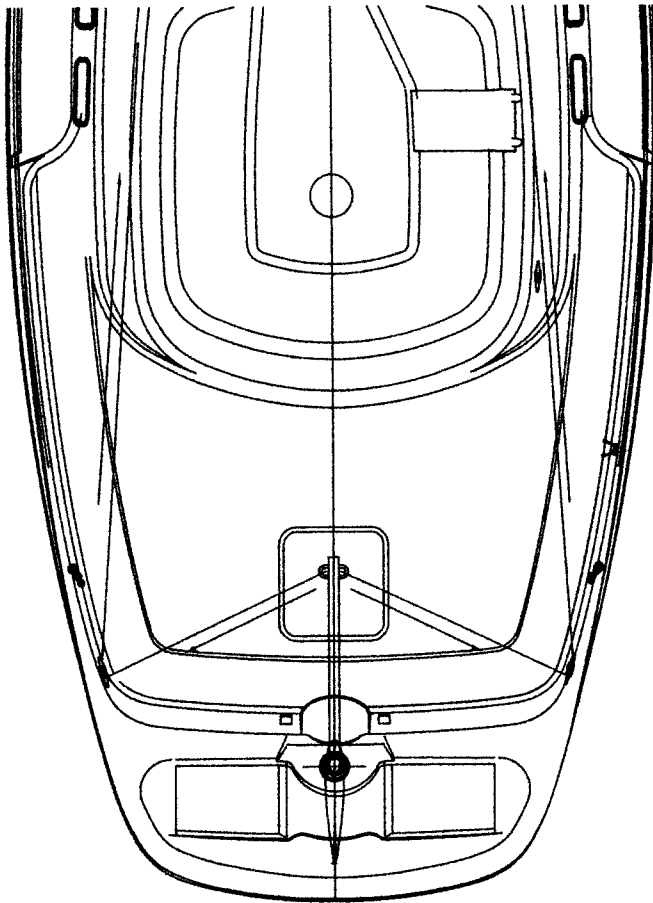
DESIGNER: NONE

ENGINEERING DEPT.

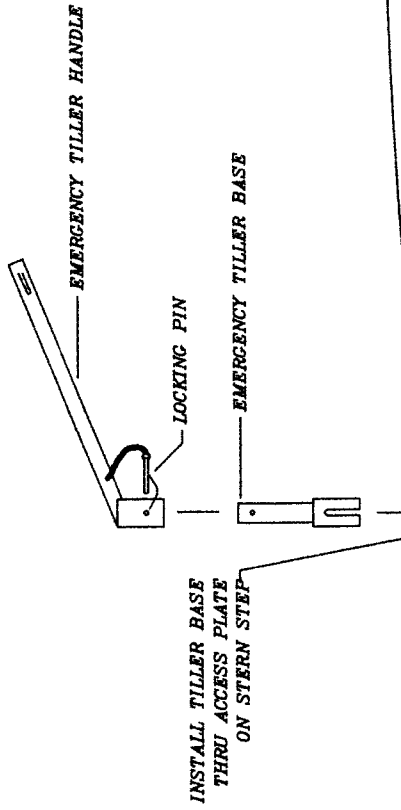
HUNTERA

**NOTE: IF SECURING TILLER BECOMES NECESSARY -  
OR IF YOU DESIRE TO STEER FROM COCKPIT -**

**SECURE LINE TO EYE ON TILLER HANDLE  
LEAD AROUND MOORING CLEATS AS SHOWN  
THEN ON TO WINCHES.**



**NOTE: EMERGENCY TILLER HANDLE & BASE  
LOCATED ON BULK (PT SIDE) IN AFT PORT COAMING LOCKER**

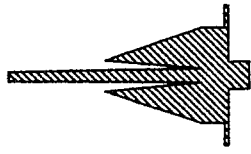


1. REMOVE ACCESS PLATE COVER ON STERN STEP
2. INSERT SLOT IN TILLER BASE OVER PIN IN TOP OF RUDDER POST.
3. INSTALL TILLER HANDLE OVER TILLER BASE ALIGNING PIN HOLES. INSERT LOCKING PIN.

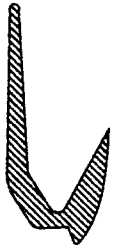
**EMERGENCY STEERING**

REVISED 1988  
 The document contains information for HUNTER MARINE CORP. and its property rights.  
**HUNTER**

<b>P420 EMERGENCY TILLER LAYOUT</b>	
REVISION NO.	NONE
DATE	10/1/98
ENGINEERING DEPT.	



DANFORTH ANCHOR



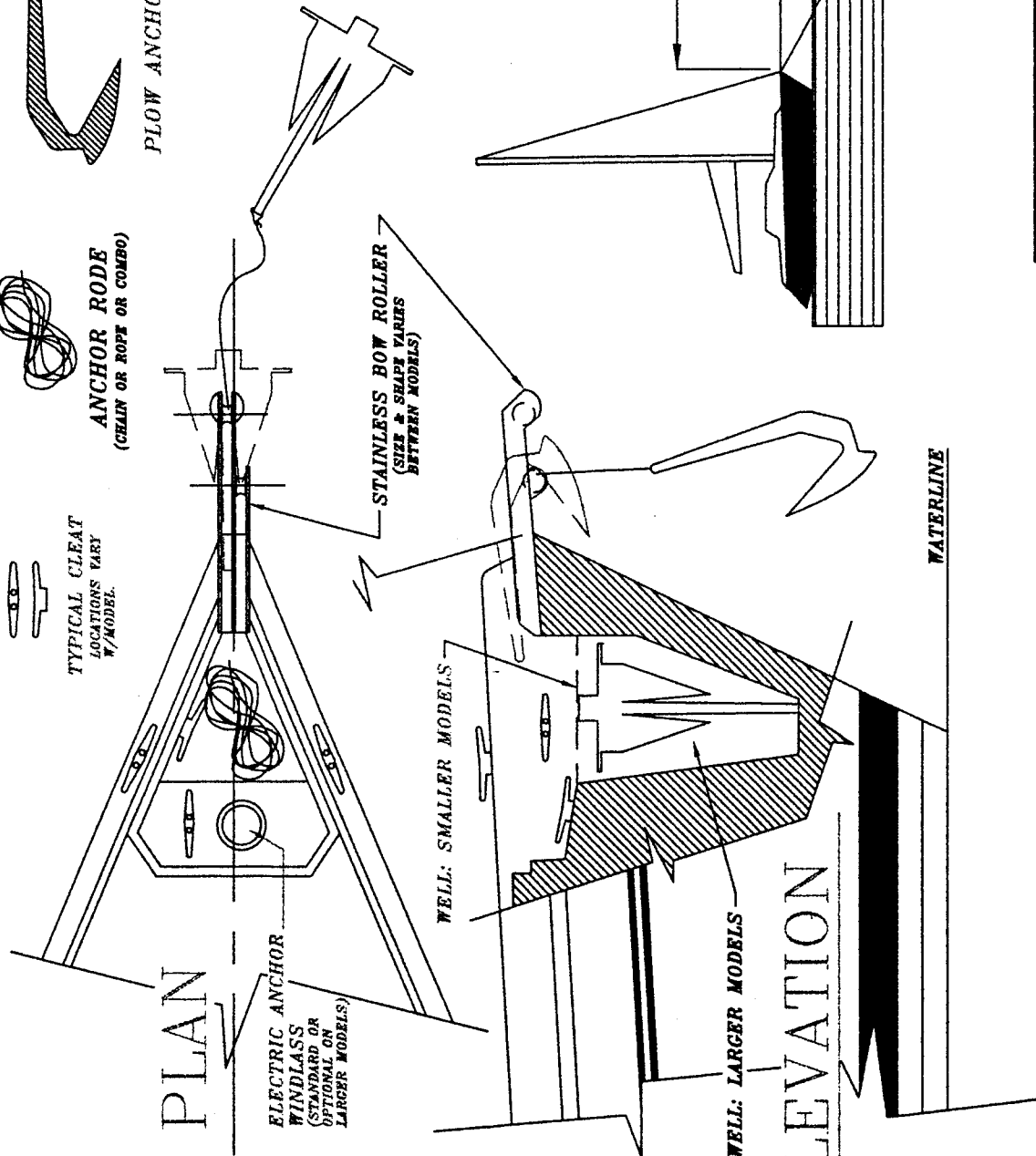
PLOW ANCHOR



ANCHOR RODE  
(CHAIN OR ROPE OR COMBO)

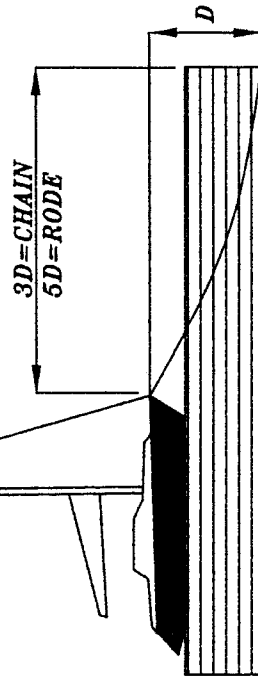


TYPICAL CLEAT  
LOCATIONS VARY  
W/MODEL



GROUND TACKLE:

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



PROJECT FILE: ANCHORING

DESIGN NO. 4208070

REVISION NO. NONE

DATE: 8/8/97

ENGINEERING DEPT.

HUNTER