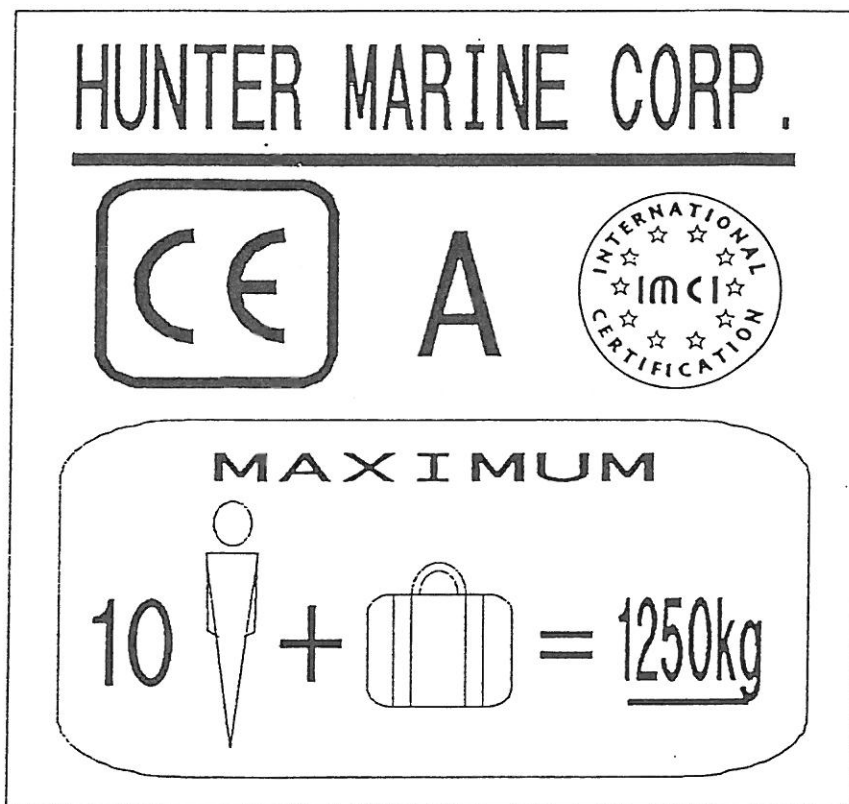


BUILDER'S INFORMATION PLATE

HUNTER MARINE CORPORATION

H450

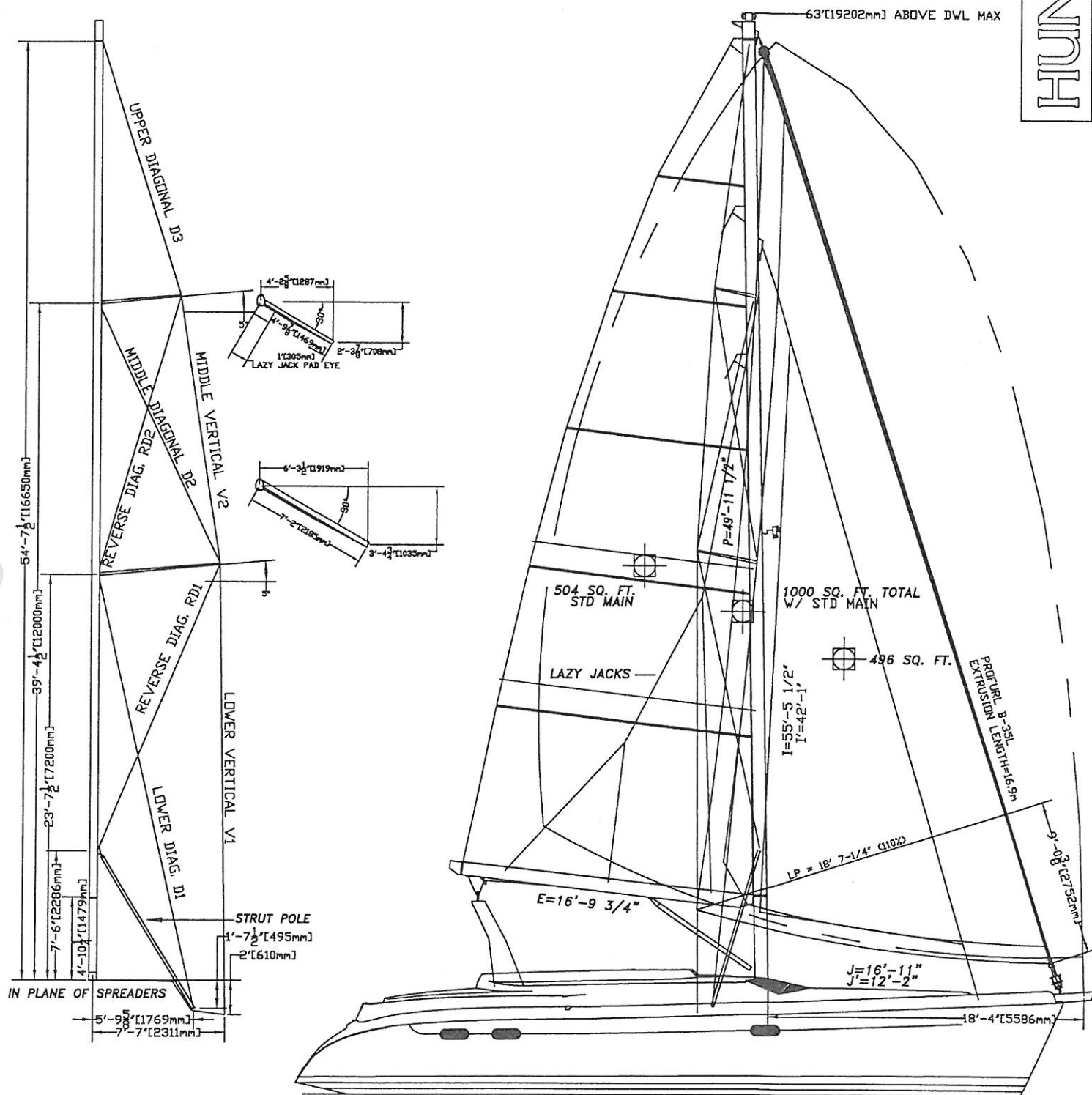


Light Ship Disp. = 11,340 kg (25,000 lbs)

Full Load Disp. = 13,835 kg (30,500 lbs)

Sink @ Full Load Disp. = 81mm (3.19")

Each Hunter 450 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.

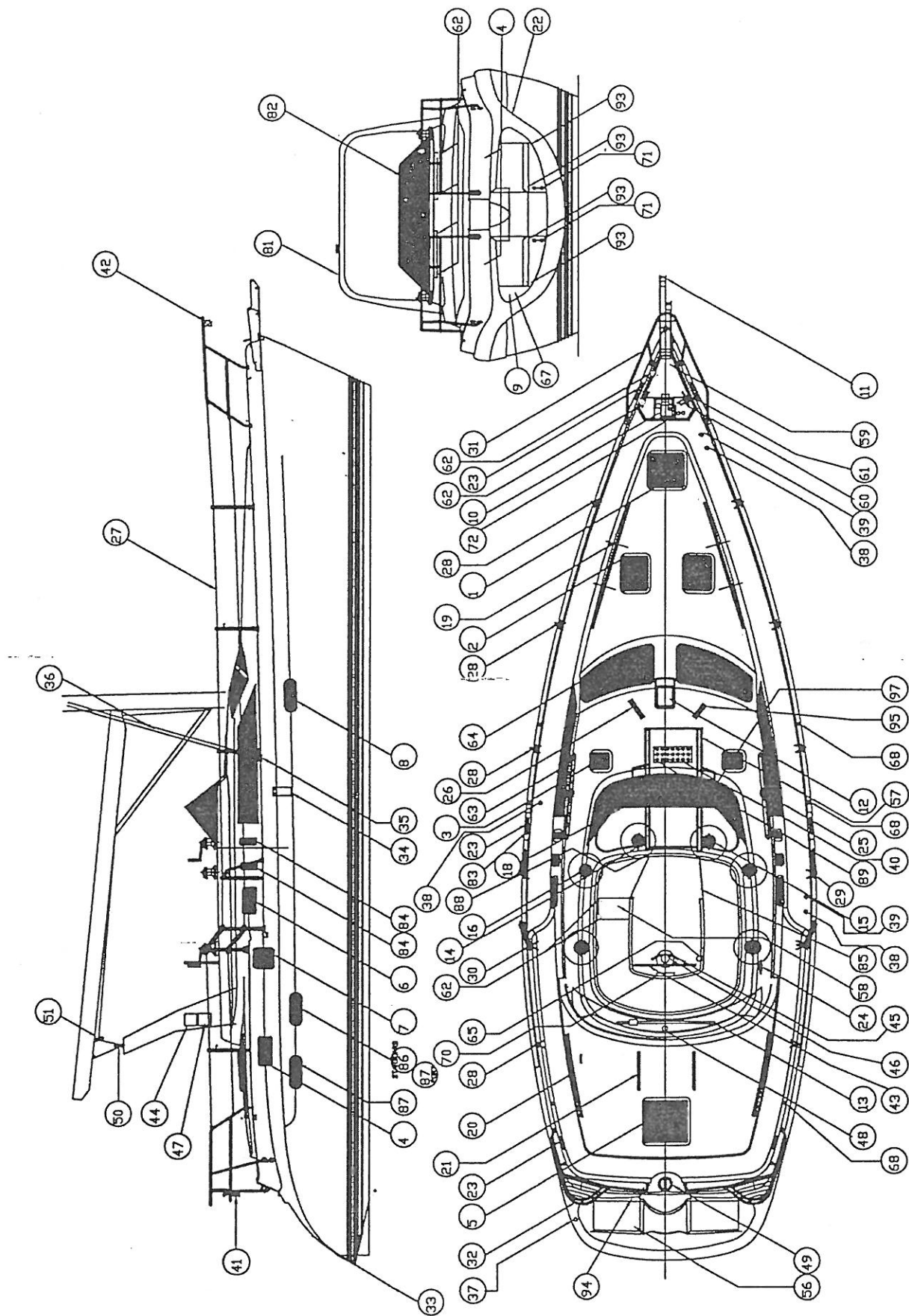


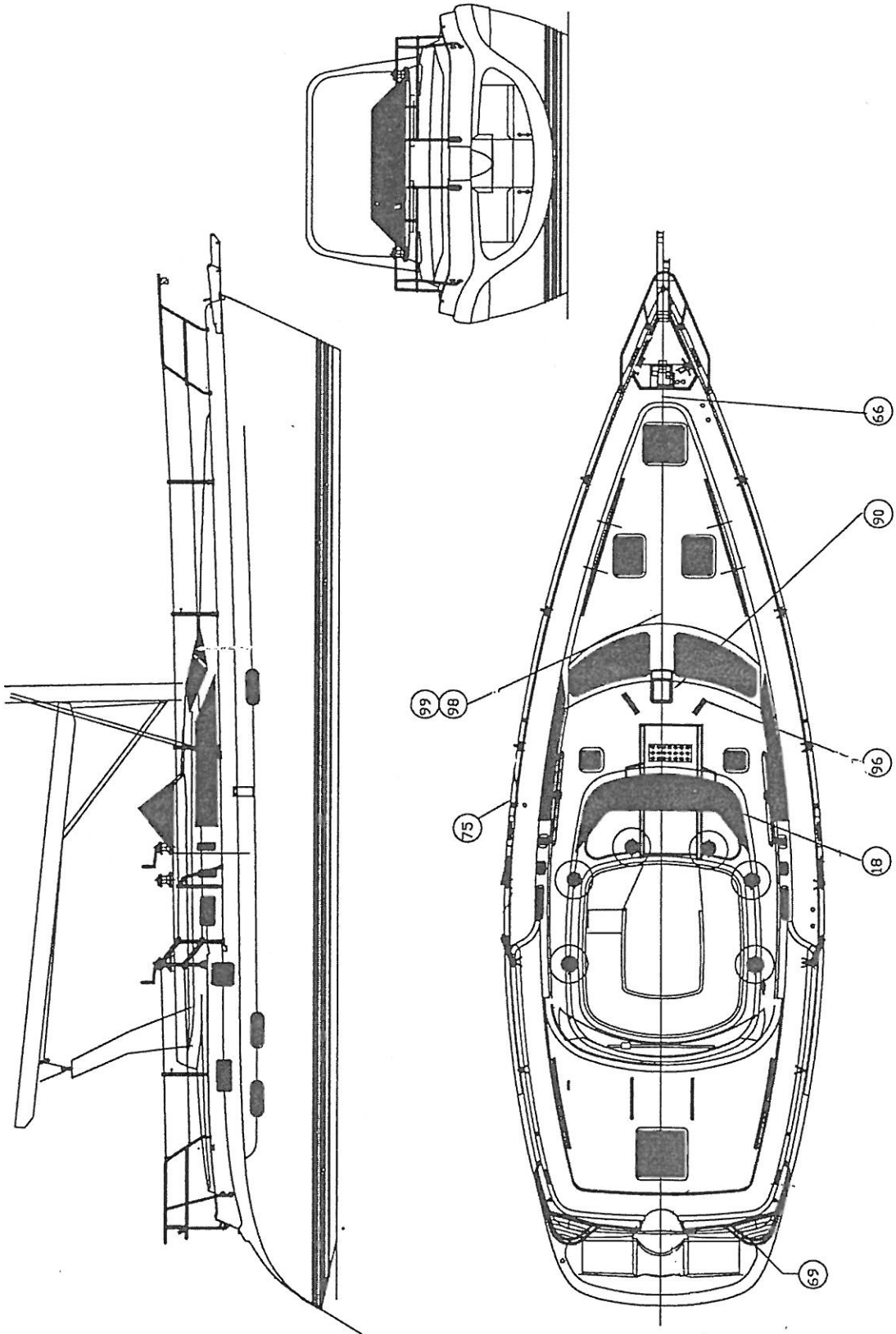


DIMENSIONS, CAPACITIES, ETC.

HUNTER 450

Length overall (LOA)	44'3"	13.49m
Length of waterline (LWL)	38'8"	11.79m
Beam (max)	14'0"	4.27m
Draft	5'6"	1.68m
Displacement	26,000 lbs	11,794 kg
Ballast	9,500 lbs	4,309 kg
Sail Area (100% triangles)	889 sq ft	82.7 sq m
Sail Area (actual w/standard sails).....	1,000 sq ft	93.0 sq m
I	55'5.5"	16.91m
J	16'11"	5.16m
P	49'11.5"	15.23m
E	16'9.75"	5.13m
Mast height (from waterline).....	63'0"	19.21m
Headroom	6'10"	2.08m
Water capacity	200 U.S. gal.	757 liters
Holding tank capacity	50 U.S. gal.	189 liters
Fuel tank capacity	100 U.S. gal.	378 liters
LPG tank capacity	10 lbs.	4.54 kg
Battery capacity	85 amp (1)	starter battery
	235 amp (2)	house batteries
Electrical voltages	See Electrical Drawings	
Inboard engine	59 hp	43.6 kw
Maximum loading -people/luggage.....	10 people	1,250 kg
Lifting points	Indicated by "Sling" labels on hull	



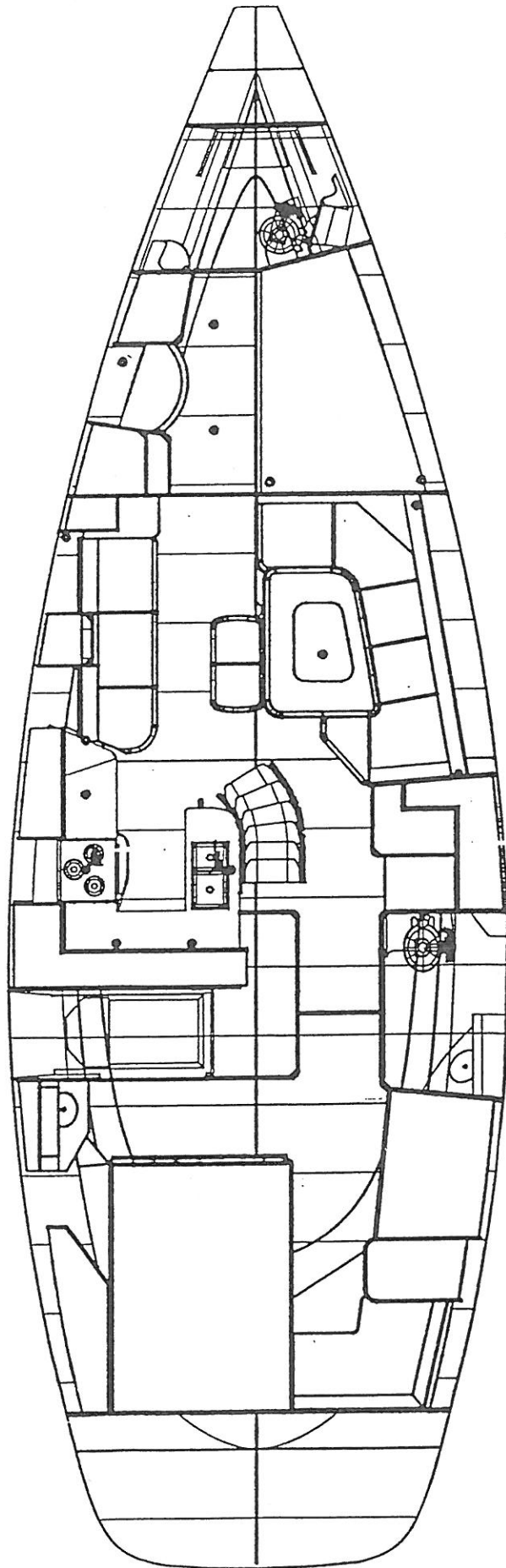


REVISION #		10/1/96				
HUNTER P450 DECK HARDWARE						
GEN.DESCR.	LOC. & TYPE	VENDOR	MDL/NAME/#	#REQ.	H.P #	DWG #
86 PORTLIGH	HULL SIDE	LEWMAR		1	PX0297	
87 HATCH	HULL SIDE	LEWMAR		3	HW0074	
1 HATCH	FWD.HEAD	LEWMAR	COAST S-60	1	HW0053	
2 HATCH	FWD.S/R CABIN TOP	LEWMAR	COAST S-50	2	HW0086	
3 HATCH	MAIN SALOON	LEWMAR	COAST S-10	2	HW0014	
4 HATCH	AFT S/R (AFT END)	LEWMAR	COAST41	4	HW0071	
5 HATCH	AFT S/R (AFT END)	LEWMAR	COAST S-70	1	HW0087	
84 HATCH	CABIN SIDE	LEWMAR	PX0375	4	HW0043	
85 HATCH	COCKPIT	LEWMAR	PORTLIGHT 05	2	HW0008	
6 HATCH	HOUSE SIDE	LEWMAR	PORTLIGHT 05	2	HW0008	
7 HATCH	HOUSE SIDE	LEWMAR	SIZE 03	1	HW0013	
8 PORTLIGHT	HULL SIDE			2	PX0298	
9 BIN DOOR	PORT SIDE ABOVE SEAT			1	PLO189	
10 WINDLASS	ANCHOR LKR.	HORIZON	1500GD	1	HW3204	
11 BOW ROLLER	BOW			1	HW1619	4462044A
12 MAST STEP	MID DECK	Z SPAR		1	R10554	
13 MAINSHEET TRAV	ON ARCH	HARKEN				
TRACK		HARKEN	516.5	1		
END STOPS		HARKEN	631NP	2		
CAR		HARKEN	1928	1		
CLEAT/BRACKET		HARKEN	564			
CLEAT/BRACKET		HARKEN	565			
BLOCKS ON CAR		HARKEN	1515	2		
14 WINCH	HALYARD	LEWMAR	COAST STD.44ST	1	HN2521	
15 WINCH	HALYARD-ELEC.	LEWMAR	COAST 48EST	1	HN2573	
16 WINCH	COCKPIT / JIB SHEET	LEWMAR	COAST STD.44ST	2	HN2521	
19 GRAB RAIL	FWD. TRUNK	75"		2	HW1700	
20 GRAB RAIL	AFT TRUNK	48"		2	HW2440	
21 GRAB RAIL	AFT TRUNK	24"		2	HW2445	
22 SHORE PWR.	TRANSOM			1	LGO100	
23 CLEAT	AFT/MID/FWD RAIL /ANC. W 10"			6	HW0977	
24 CLEAT (FURL)	COCKPIT AREA	4"		1		
25 JIB TRACK	MID TRUNK					
TRACK		SCH 40-54	45"	2	HW0317	
CAR		SCH 74-366		4	HW0217	
ENDS		SCH 32-98		2	HW0215	
27 LIFE LINES	ABOVE GUNNELS				RI1261	
28 STANCHION	ALONG GUNNELS			8	HW1735	4462022A
29 FWD GATE STANCH	PORT AND STARBOARD			2	HW1736	4462023A
30 AFT GATE STANCH	PORT AND STARBOARD			2		4462024A
31 BOW RAIL				1	HW2413	4462041A
32 STERN RAIL				2	HW2284	4462015A
33 SWIM LADDER	STERN	WINDLINE	TLD-3X	1	HW0456	
34 CHAIN PLATE	UPPER SHROUD			2	HW1821	4462020A
35 CHAIN PLATE	LOWER SHROUD			2	HW1823	4462034A
36 STRUTS	MAST			2	R10365	4462037A
37 FILL PLATE	DIESEL			1	PL1126	
38 FILL PLATE	WATER			3	PL1130	
39 FILL PLATE	WASTE			2	PL1140	
40 SOLAR PANEL	ON SEA HOOD			1	EL1180	
41 STERN LIGHT				1	ELO390	
42 BOW LIGHT				1	ELO344	
43 WHEEL	WHITLOCK	36"		1	HW3278	
44 SPEAKERS	ON ARCH			2	EL 0101-A	
45 PEDESTAL	PEDESTAL	WHITLOCK		1		
46 SHIFT CONTROL	PEDESTAL			1	HW3572	
47 ENGINE PANEL	ON ARCH			1	ELO459	4465007A
48 LIGHT ON ARCH				1	ELO250	
49 EMERG.TILL ACCESS	TRANSOM			1	VC010004	
50 TRAVELER BLOCK	ARCH	HARKEN	504A	1		
51 MAINSHEET BLOCK	BOOM	HARKEN	1586	1		
56 TRANSOM LAZERETTE LID				2		GLASS
57 SEA HOOD	FORWARD OF COMPANIONWAY			1		GLASS

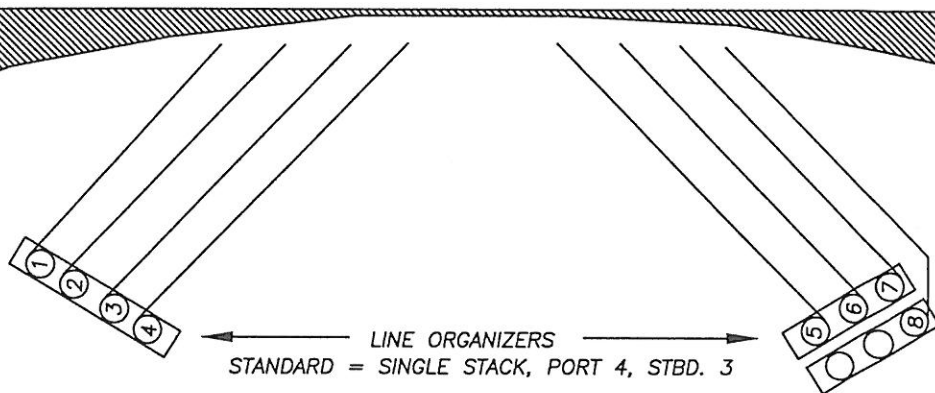
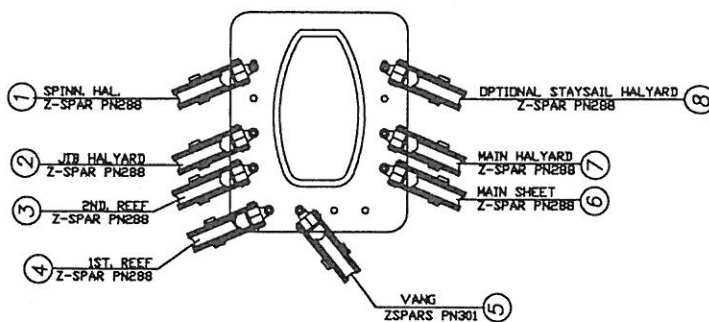
58 COCKPIT LAZERETTE	PORT SIDE			1	GLASS
59 ANCHOR HATCH	BOW			1	GLASS
60 ANCHOR LATCH	BOW			1	HW4481
61 STRIKER PLATE	ANCHOR LOCKER			1	HW2886 4462026A
62 HINGE				8	HW4172
63 CABIN SIDE WINDOW				2	N/A
64 CABIN WINDSHIELD				2	PX0005/6
65 BILGE PUMP				1	PLO371
67 SHORE WATER				1	PL1175
68 PADEYE		SCHAEFER	78-99	6	HW0841
70 DRAIN	AFT COCKPIT FLOOR			1	PL0069
71 SWIM GRAB HANDLE	STERN			2	HN2404
72 WINDLASS CONTROLS	BOW UP			1	HW3206-C
WINDLASS CONTROLS	BOW DOWN			1	HW3206-F
81 ARCH	ABOVE COCKPIT			1	N/A
82 WIND SHIELD	ON DECK FWD OF COCKPIT			1	PX0004
ANCHOR	DANFORTH		T2500(OLD 60H)	1	L60341
MAST	ST.#4/6 BLKS.INC	LEWMAR		1	4463002A
WINCH HANDLE.		LEWMAR	10" ALUM	1	HW2526
WINCH HANDLE.		LEWMAR	10" STAINLESS	1	HW2527
EMERG TILLER					N/A
83 SPRING CLEAT GARD				2	HW2126
88 COMPANIONWAY TRACK					4462027A
89 SOLAR PANEL MOUNTING PLATE		ON SEA HOOD			
93 HINGE (TRANSOM LOCKER)	TRANSOM			4	119801
94 TRANSOM HATCH LATCH	TRANSOM			2	624735
26 DK. ORGANIZER (QUAD)	MID TRUNK (PORT)	HARKEN	1590	1	HW0347
95 DK ORGANIZER (TRI)	STARBOARD	HARKEN	1501	1	HW0346
18 SHEETSTOPPER	PORT (QUAD)	SPINNLOCK	QUAD XT/4	1	HW1283
97 SHEET STOPPER	STARBOARD (TRI)	SPINLOCK	TRI XT/3	1	
MAIN HALYARD				1	R10905-01
JIB HALYARD				1	R10905-02
MAINTRAVELER LINE				2	R10905-03
MAINSHEET				1	R10905-04
BOOM TOPPING LIFT				1	R10905-05
REEF LINE 1				1	R10905-06
REEF LINE 2				1	R10905-07
JIB SHEET				2	R10905-08
LAZY JACK WIRE				2	R10905-13
FIXED LAZY JACK LINE				2	R10905-14
ADJUSTABLE LAZY JACK LINE				2	R10905-15
98 STEP	ON ARCH			2	PR4460A

OPTIONAL GEAR

ITEM	LOCATION	MANUFACTUR	ID#	QTY	HUNTER#
17 WINCH	COCKPIT / SPINN.SHEET	LEWMAR	COAST STD.50ST	2	HW2553
75 SNATCH BLOCK	MID RAIL	SCHAEFER	11--99	2	
				2	N/A
STAYSAIL OPTION					
98 PADEYE	IN FRONT OF MAST	SCHAEFER	78-25	1	
99 INNER FORSTAY RETAINER	IN FRONT OF MAST			1	4462063A
66 INNER FORESTAY BASE		ABI	2140CH	1	HW1617
INNER FORESTAY MOUNTING HDWR.					
90 STAYSAIL MAST BLOCK		Z-SPAR	PN294	1	
96 DK ORGANIZER (SIX)	STARBOARD	HARKEN	1503	1	HW0384
REPLACES ITEM# 95					
18 SHEET STOPPER (QUAD)	STARBOARD	SPINLOCK	QUAD(XT/4)	1	HW1283
REPLACES ITEM # 97					
STAYSAIL HALYARD				1	R10905-11
STATSAIL SHEETS				2	R10905-12
69	NOTE: THOUGH A FENDER HOLDER IS PROVIDED THE FENDERS THEMSELVES ARE NOT.				
	THE RECOMMENDED FENDER SIZE IS 10" X 28" (25 CM X 71 CM)				



STANDARD MAST STEP W/ SPINNAKER OPTION STAYSAIL

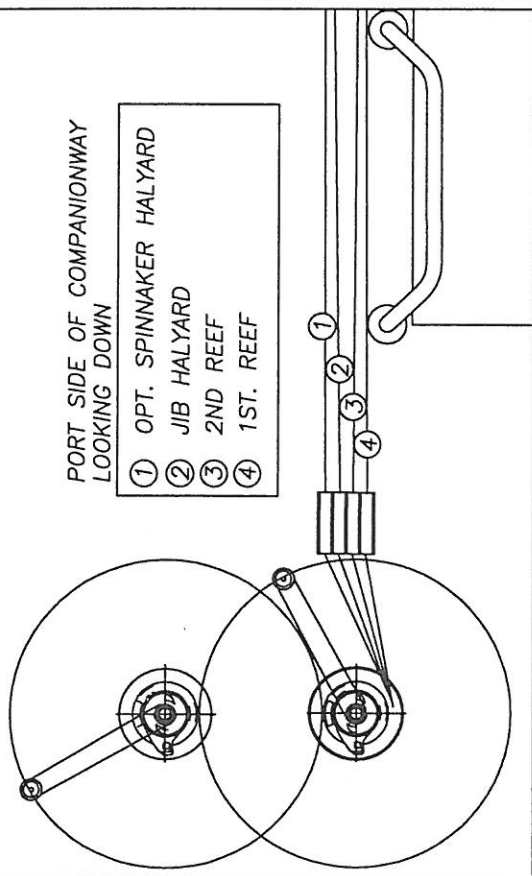


FWD. OF COMPANIONWAY
LOOKING DOWN

NOTE:
FOR STAYSAIL (OPTION) STBD. SIDE
LINE ORGANIZER IS A DOUBLE STACK OF (3)
USE # 8 UPPER FOR STAYSAIL HALYARD

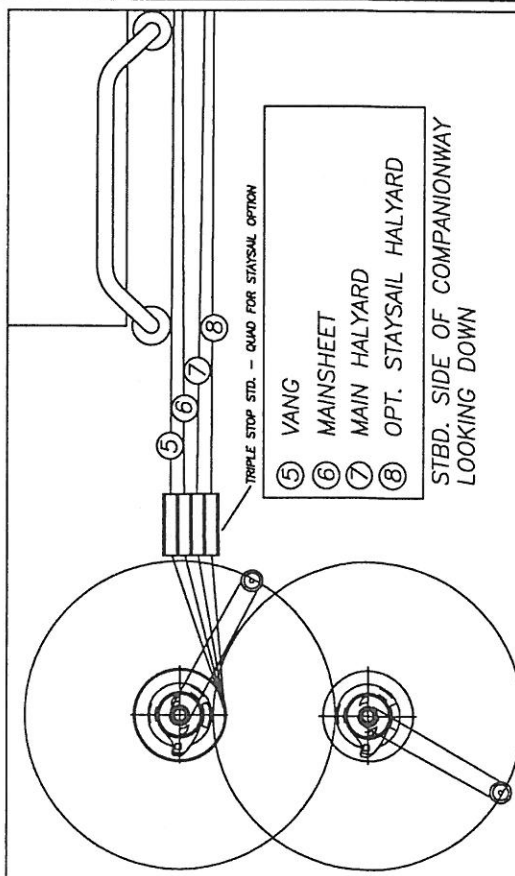
PORT SIDE OF COMPANIONWAY
LOOKING DOWN

- 1 OPT. SPINNAKER HALYARD
- 2 JIB HALYARD
- 3 2ND REEF
- 4 1ST REEF

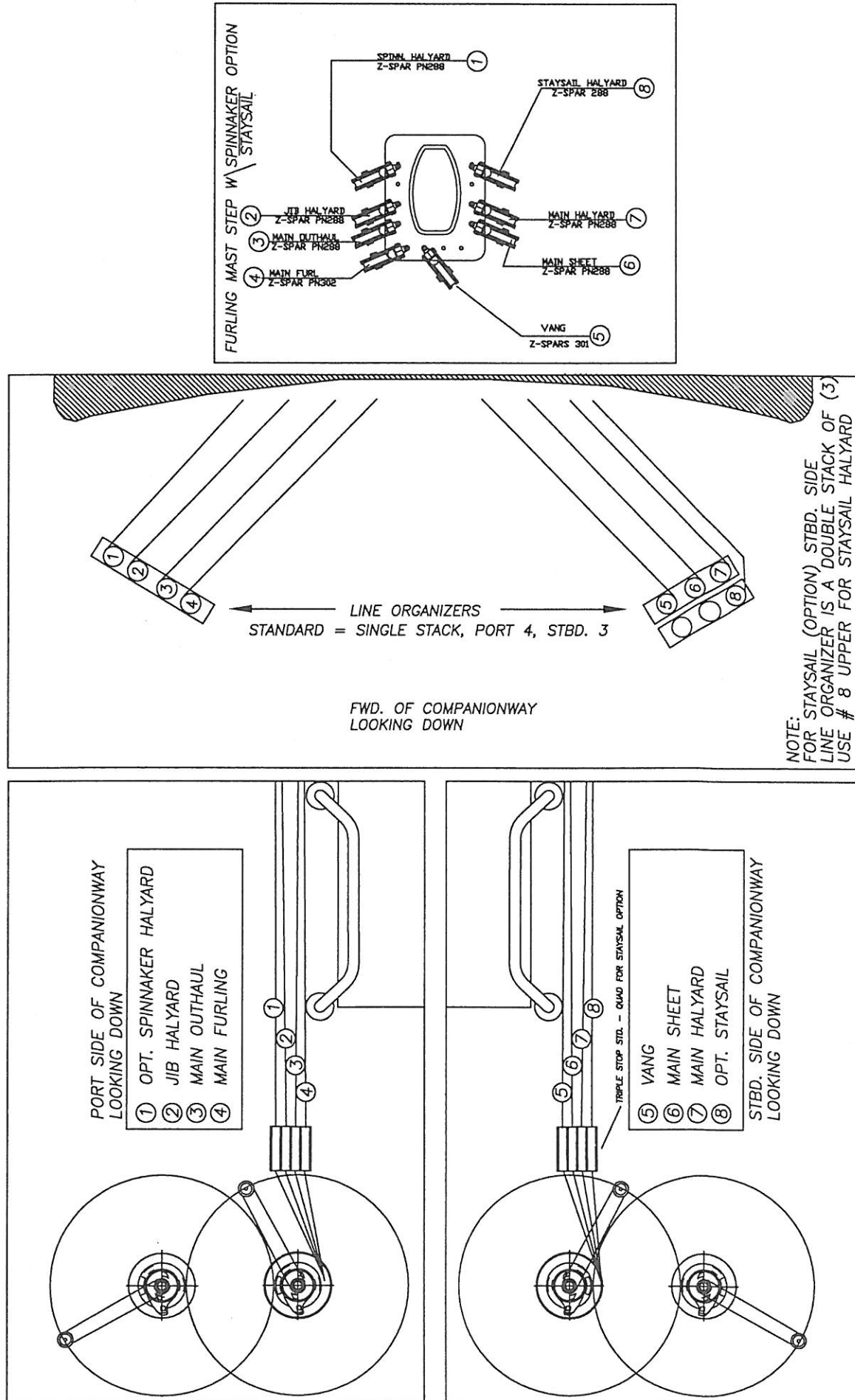


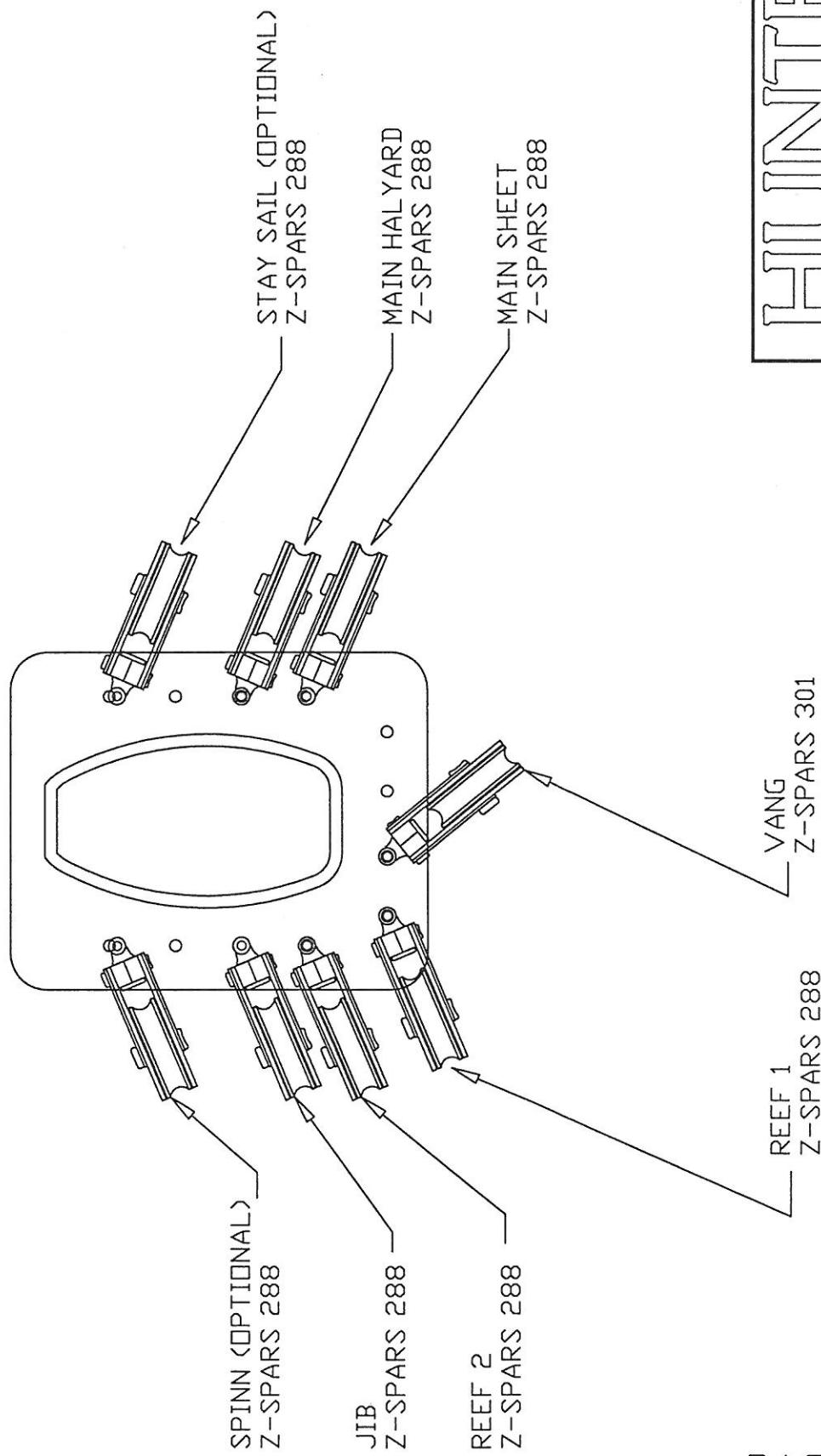
TRIPLE STOP STD. - QUAD FOR STAYSAIL OPTION

- 5 VANG
- 6 MAINSHEET
- 7 MAIN HALYARD
- 8 OPT. STAYSAIL HALYARD



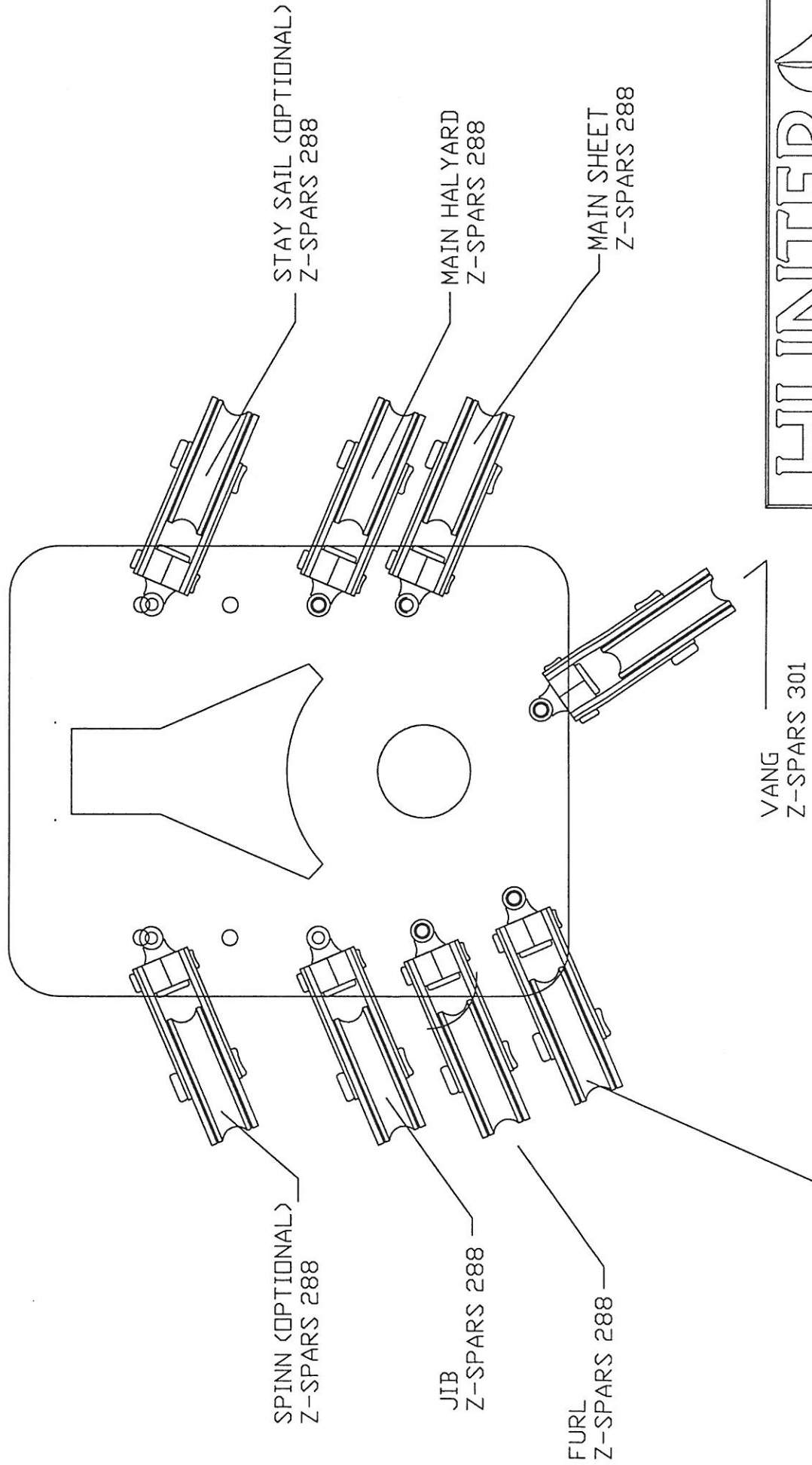
STBD. SIDE OF COMPANIONWAY
LOOKING DOWN





HUNTER

DRAWING TITLE:		P450 MAST STEP	
SHEET		HUNTER PART NO.	
1/#	HUN#	4463005A	

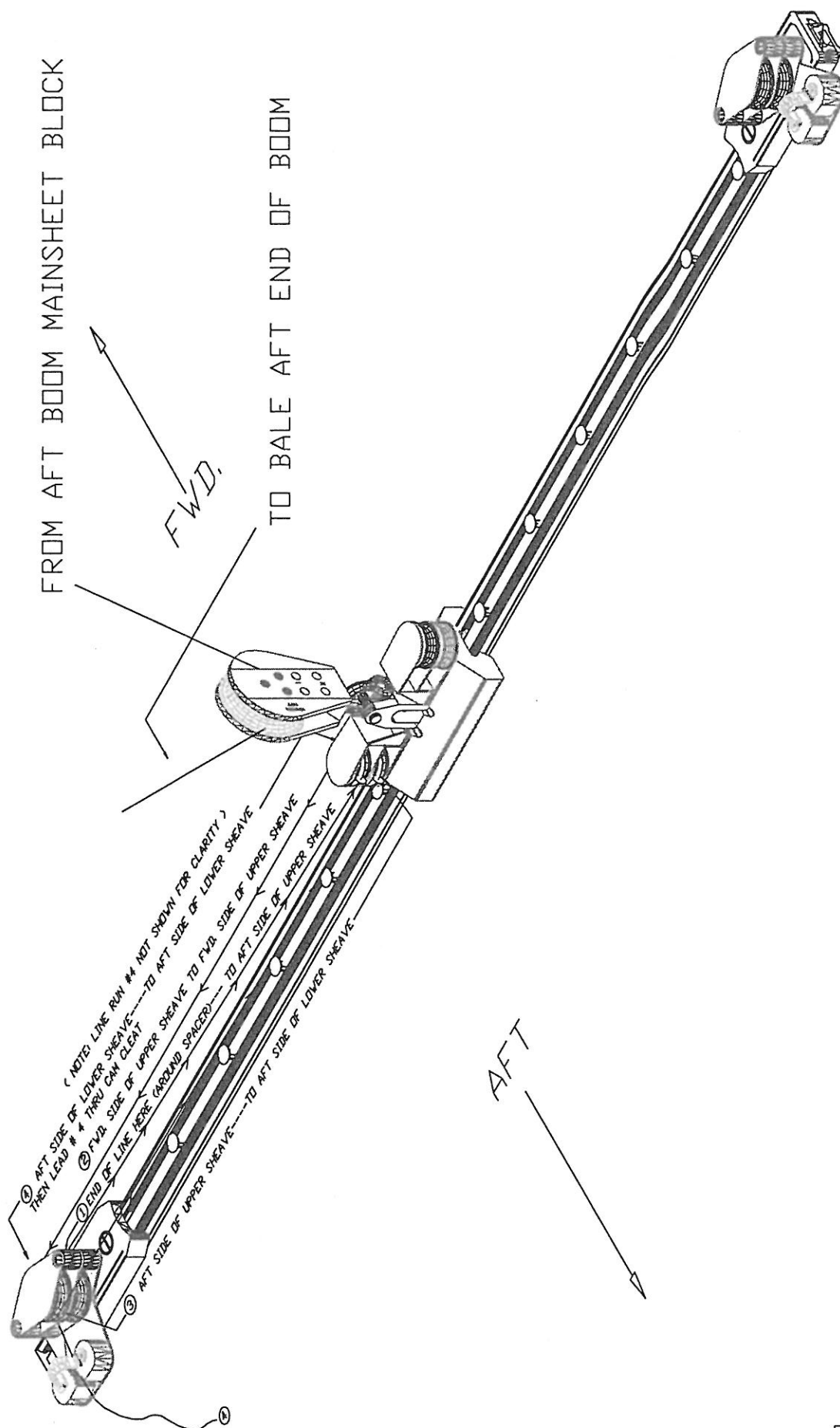


HUNTER

P450 FURLING MAST STEP

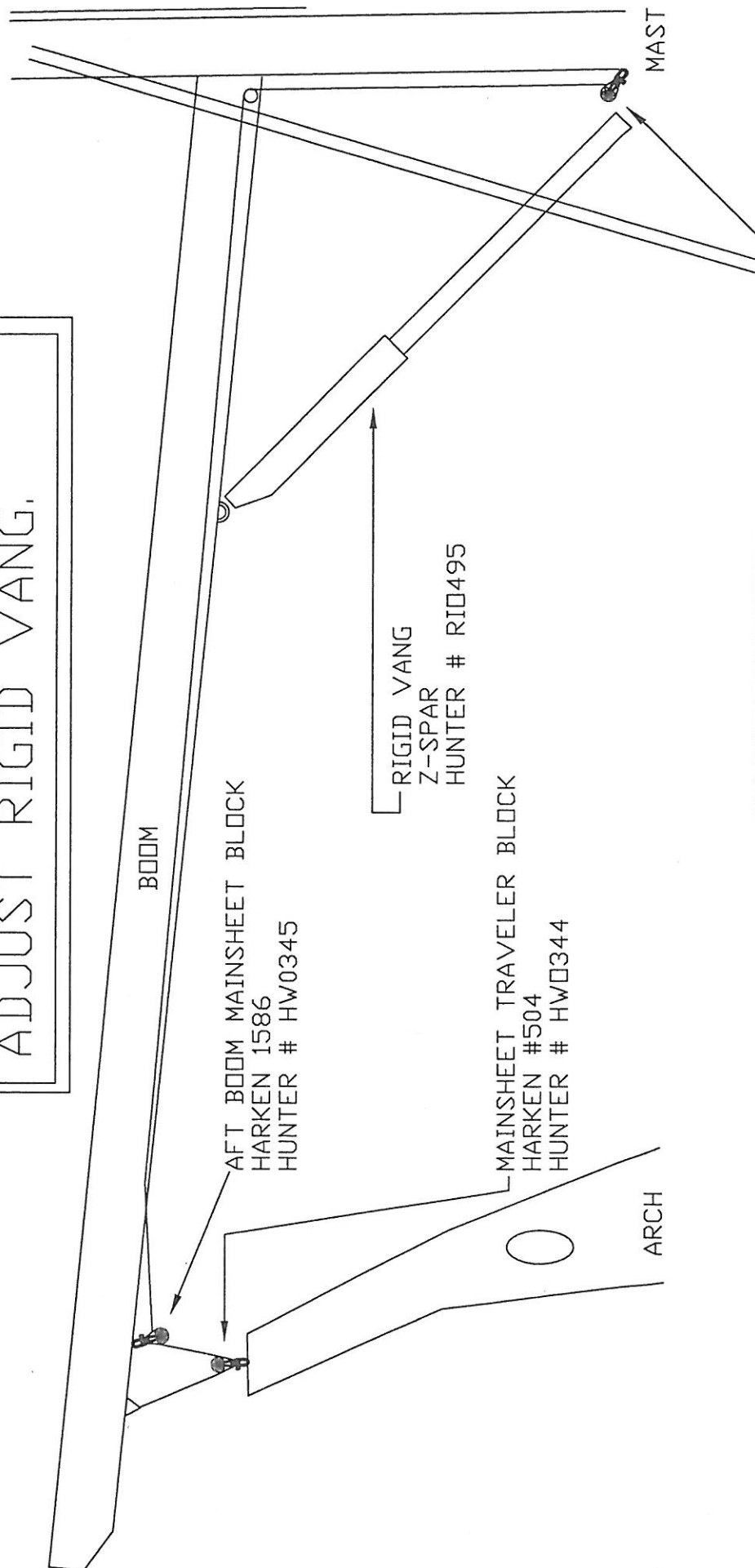
1/# HUN# 4463005B

NOTE: PORT SIDE LINE RUNS SHOWN, -
STBD. SIDE IS MIRROR IMAGE



OPTIONAL MAIN SHEET TRAVELER

WARNING! ...DO NOT USE
ELEC. HALYARD WINCH TO
ADJUST RIGID VANG.



BOOM

AFT BOOM MAINSHEET BLOCK
HARKEN 1586
HUNTER # HW0345

RIGID VANG
Z-SPAR
HUNTER # RID495

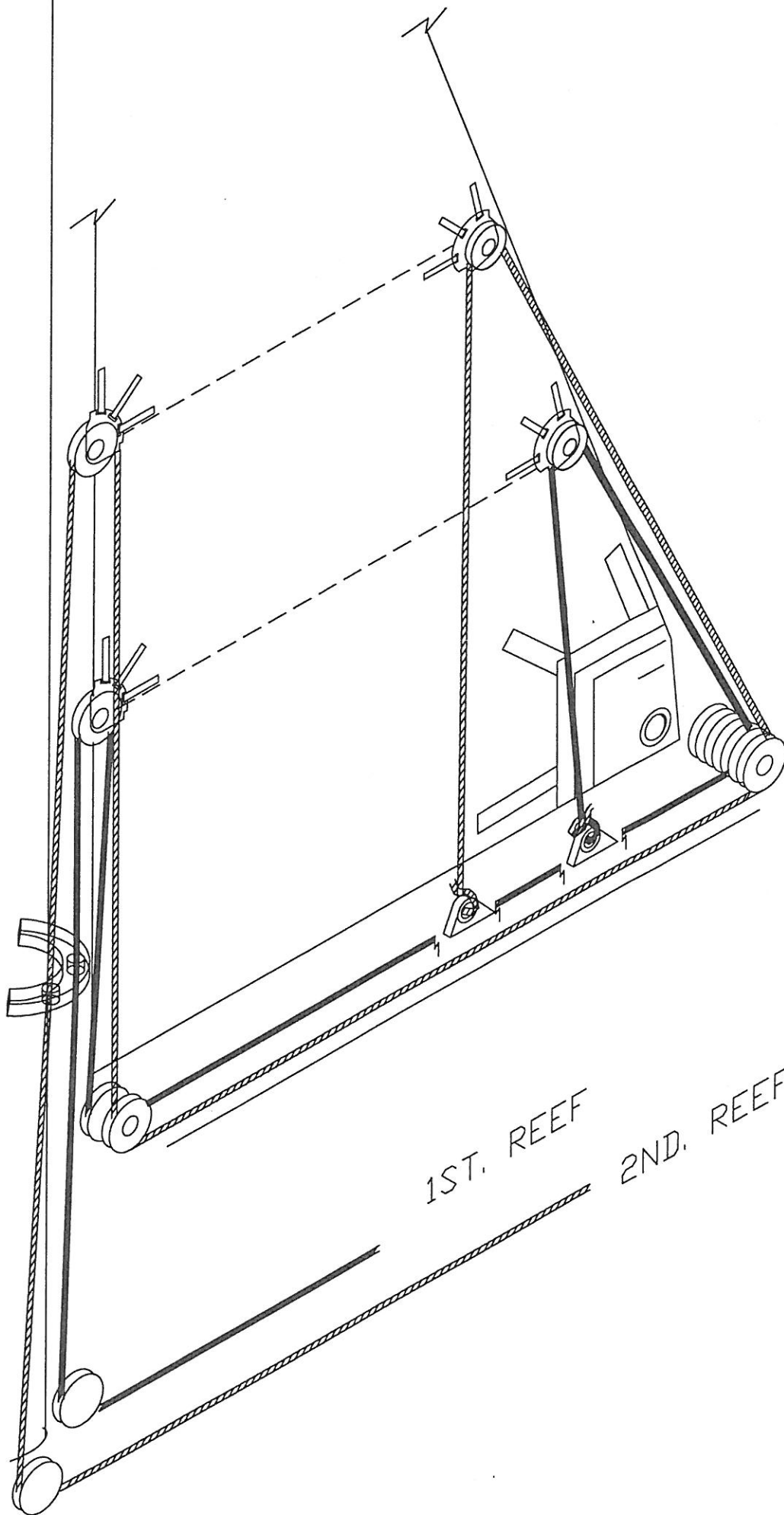
MAINSHEET TRAVELER BLOCK
HARKEN #504
HUNTER # HWD344

ARCH

MAST

MAST STEP MAINSHEET BLOCK
ZSPAR PN288
SUPPLIED W/ ZSPAR MAST STEP

FAST REEFING SYSTEM



REEFING

1. *Release tension on vang.*
2. *Ease main sheet out a couple of feet.*
3. *Wrap main halyard on winch.*
4. *Open main halyard clutch.*
5. *Ease main halyard down while simultaneously pulling in on both reef lines.*
6. *When desired reef tack is about a foot above the boom, lock off the main halyard.*
7. *Put desired reef line on the winch and tension until the tack and clew are in the positions shown in the photos below.*
8. *Tension main halyard until horizontal wrinkles are gone from the luff of the sail.*
9. *Adjust main sheet and vang to suit your desired course.*
10. *Pull in extra line from the reef you are not using just to straighten up.*

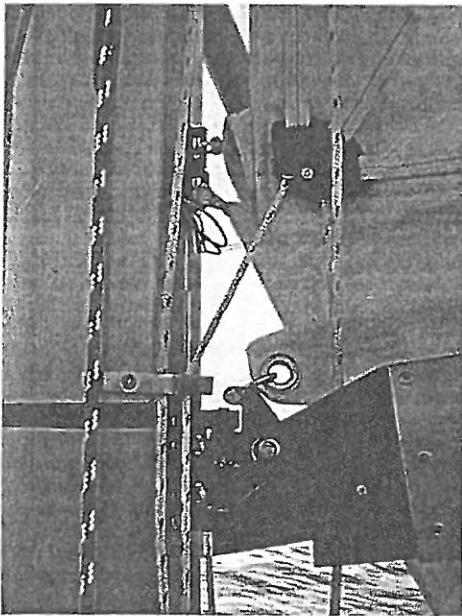


Figure 1 Reef 1 Tack Fitting

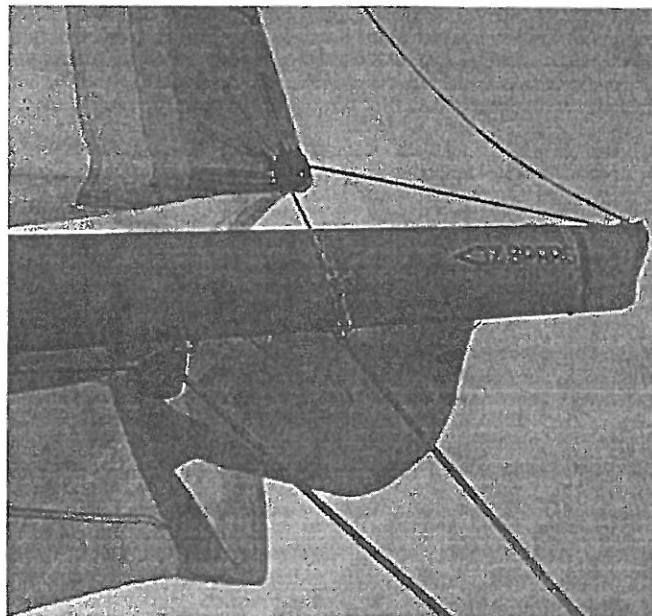


Figure 2 Reef 1 Clew Fitting

UN-REEFING

1. *Ease tension on vang and mainsheet.*
2. *Release reef line clutches.*
3. *Wrap main halyard on winch and tension until reef is removed.*
4. *Readjust mainsheet and vang to suit course.*

RUNNING RIGGING SPECIFICATIONS

BOAT: PASSAGE 450		FILE NAME: RI0905		REVISION: D		11/7/96	
BY: KJC		DATE: 6/21/96		MODIFIED ALL LAZY JACK LINES			
CHECKED BY:		DATE:					
OPT/STD	ITEM	QUANTITY	LINE SIZE	LINE TYPE	COLOR	END 1	END 2
1 STD	MAIN HALYARD	1	7/16" (11mm)	XLS EXTRA	BLUE	HEADBOARD SHACKLE	128 ft
2 STD	JIB HALYARD	1	7/16" (11mm)	XLS EXTRA	RED	EYE	132 ft
3 STD	MAIN TRAVELER LINE	2	5/16" (8mm)	LS	WHITE	SMALL EYE	23 ft
4 STD	MAINSHEET	1	7/16" (11mm)	XLS	BLUE FLECK	SMALL EYE	75 ft
5 STD	BOOM TOPPING LIFT	1	3/8" (9.5mm)	LS	WHITE	BARE	108 ft
6 STD	REEFING LINE #1	1	7/16" (11mm)	LS	GREEN FLECK	BARE	82 ft
7 STD	REEFING LINE #2	1	7/16" (11mm)	LS	RED FLECK	BARE	116 ft
8 STD	JIB SHEET	2	1/2" (12.5mm)	LS	RED FLECK	BARE	50 ft
9 OPT	CRUISING SPINN. SHEET	2	7/16" (11mm)	LS	BLACK FLECK	BARE	100 ft
10 OPT	SPINNAKER HALYARD	1	7/16" (11mm)	XLS	BLACK	SNAP SHACKLE NF11000s	132 ft
11 OPT	STAYSAIL HALYARD	1	7/16" (11mm)	XLS	GREEN	SNAP SHACKLE NF11000s	107 ft
12 OPT	STAYSAIL SHEETS	2	7/16" (11mm)	LS	GREEN FLECK	BARE	40 ft
13 STD	LAZY JACK WIRE	2	1/8" (3.2mm)	PLASTIC COATED 7x7 WIRE	WHITE	EYE & THIMBLE, SMALL SHACKLE	16 ft
14 STD	FIXED LAZY JACK LINE	2	3/8" (9.5mm)	LS	WHITE	SMALL EYE	23 ft
15 STD	ADJUSTABLE LAZY JACK LINE	2	3/8" (9.5mm)	LS	WHITE	SS THIMBLE SPLICED	43 ft

HUNTER

P-45 RUN. RIG. SPECS

RUNNING RIGGING SPECIFICATIONS									
BOAT: PASSAGE 450		FILE NAME: PR4597		REVISION: C		9/20/96			
BY: KJC		DATE: 6/21/96							
CHECKED BY:		DATE:							
OPT/STD	ITEM	QUANTITY	LINE SIZE	LINE TYPE	COLOR	END 1	LENGTH	END 2	
1 STD	MAIN HALYARD	1	7/16" (11MM)	XLS EXTRA	BLUE	HEADBOARD SHACKLE	39.0 m	128 ft	BARE
2 STD	JIB HALYARD	1	7/16" (11MM)	XLS EXTRA	RED	EYE	40.1 m	132 ft	BARE
3 STD	MAIN TRAVELER LINE	2	5/16" (8MM)	LS	WHITE	SMALL EYE	7.0 m	23 ft	BARE
4 STD	MAINSHEET	1	7/16" (11MM)	XLS	BLUE FLECK	SMALL EYE	22.8 m	75 ft	BARE
5 STD	BOOM TOPPING LIFT	1	3/8" (9.5MM)	LS	WHITE	BARE	33.0 m	108 ft	BARE
6 STD	REEFING LINE #1	1	7/16" (11MM)	LS	GREEN FLECK	BARE	24.8 m	82 ft	BARE
7 STD	REEFING LINE #2	1	7/16" (11MM)	LS	RED FLECK	BARE	35.2 m	116 ft	BARE
8 STD	JIB SHEET	2	1/2" (12.5MM)	LS	RED FLECK	BARE	15.2 m	50 ft	BARE
9 OPT	CRUISING SPINN. SHEET	2	7/16" (11MM)	LS	BLACK FLECK	BARE	30.5 m	100 ft	BARE
10 OPT	SPINNER HALYARD	1	7/16" (11MM)	XLS	BLACK	SNAP SHACKLE NF11000s	40.1 m	132 ft	BARE
11 OPT	STAYSAIL HALYARD	1	7/16" (11MM)	XLS	GREEN	SNAP SHACKLE NF11000s	32.7 m	107 ft	BARE
12 OPT	STAYSAIL SHEETS	2	7/16" (11MM)	LS	GREEN FLECK	BARE	12.2 m	40 ft	BARE
13 STD	LAZY JACK WIRE	2	5/32" (4MM)	PLASTIC COATED 1x19 WIRE	WHITE	EYE & THIMBLE, SMALL SHACKLE	4.9 m	16 ft	EYE & THIMBLE, HARKEN 125 OR SCHAEFER 300-02
14 STD	FIXED LAZY JACK LINE	2	3/8" (9.5MM)	LS	WHITE	SMALL EYE	7.1 m	23 ft	SMALL EYE
15 STD	ADJUSTABLE LAZY JACK LINE	2	3/8" (9.5MM)	LS	WHITE	SS THIMBLE SPICED	12.2 m	40 ft	BARE

FURLING MAST RUNNING RIGGING SPECIFICATIONS

FURLING MAST RUNNING RIGGING SPECIFICATIONS									
BOAT: PASSAGE 450		FILE NAME: PR45FRUN		REVISION:					
BY: KJC		DATE: 9/24/96							
CHECKED BY:		DATE:							
OPT/STD	ITEM	QUANTITY	LINE SIZE	LINE TYPE	COLOR	END 1	LENGTH		END 2
1 STD	MAIN HALYARD	1	7/16" (11MM)	XLS EXTRA	BLUE	SMALL EYE	39.0 m	128 ft	BARE
2 STD	JIB HALYARD	1	7/16" (11MM)	XLS EXTRA	RED	EYE	40.1 m	132 ft	BARE
3 STD	MAIN TRAVELER LINE	2	5/16" (8MM)	LS	WHITE	SMALL EYE	7.0 m	23 ft	BARE
4 STD	MAINSHEET	1	7/16" (11MM)	XLS	BLUE FLECK	SMALL EYE	22.8 m	75 ft	BARE
5 STD	BOOM TOPPING LIFT	1	3/8" (9.5MM)	LS	WHITE	BARE	33.0 m	108 ft	BARE
6 STD	JIB SHEET	2	1/2" (12.5MM)	LS	RED FLECK	BARE	15.2 m	50 ft	BARE
7 OPT	CRUISING SPINN. SHEET	2	7/16" (11MM)	LS	BLACK FLECK	BARE	30.5 m	100 ft	BARE
8 OPT	SPINNAKER HALYARD	1	7/16" (11MM)	XLS	BLACK	SNAP SHACKLE NF11000s	40.1 m	132 ft	BARE
9 OPT	STAYSAIL HALYARD	1	7/16" (11MM)	XLS	GREEN	SNAP SHACKLE NF11000s	32.7 m	107 ft	BARE
10 OPT	STAYSAIL SHEETS	2	7/16" (11MM)	LS	GREEN FLECK	BARE	12.2 m	40 ft	BARE

PASSAGE 450 B&R RIG WITH STRUTS

DESCRIPTION

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

When the rig is correctly tuned, the mast will not bend sideways appreciably when under sail, though it may be raked and be bent fore and aft to suit the sails and sailing preference of the crew.

The upper shrouds, or D2, keep the mast which is above the spreaders from bending away from the wind. When the D2 is tightened it pulls the upper portions of the mast toward it and pushes the spreader which then pushes the mast near the spreaders in the opposite direction. The lower shrouds, or D1 pull on the area near the spreader. The forestay and backstay position the mast fore and aft allowing you to rake the mast the desired amount.

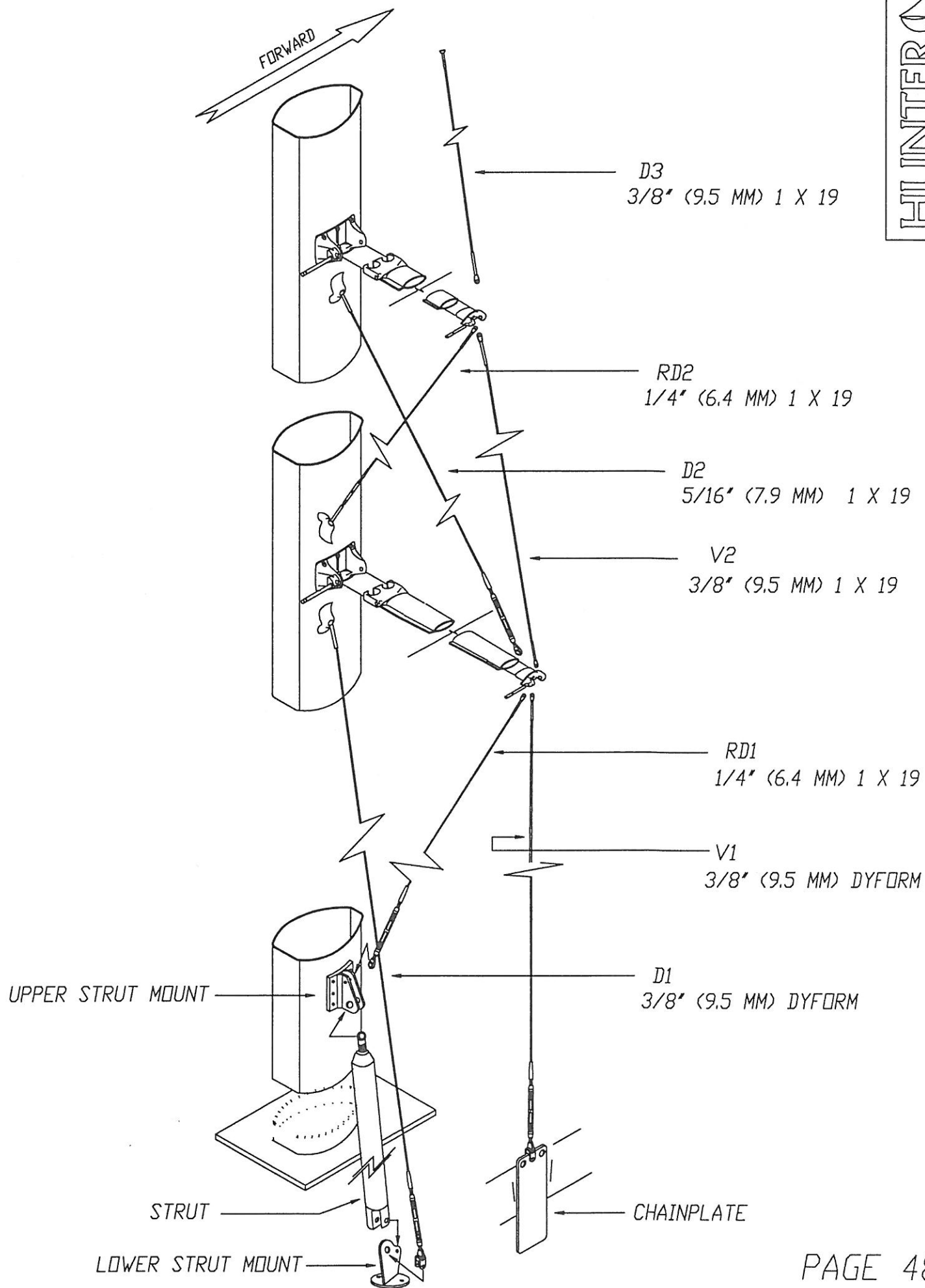
An improvement on the single spreader rig, which allows you to use a smaller mast section, is to support the bottom of the mast by holding it in place with struts and adding a second set of spreaders. The struts make a strong point where they attach and also serve as handholds making work on deck safer. By going to a smaller mast section it would normally be necessary to also support the mast fore and aft with additional rigging such as runners and

checkstays and inner forestays. To avoid the complication and inherent risk these additional items represent, Hunter uses the B&R rig which is as evenly supported fore and aft as it is sideways.

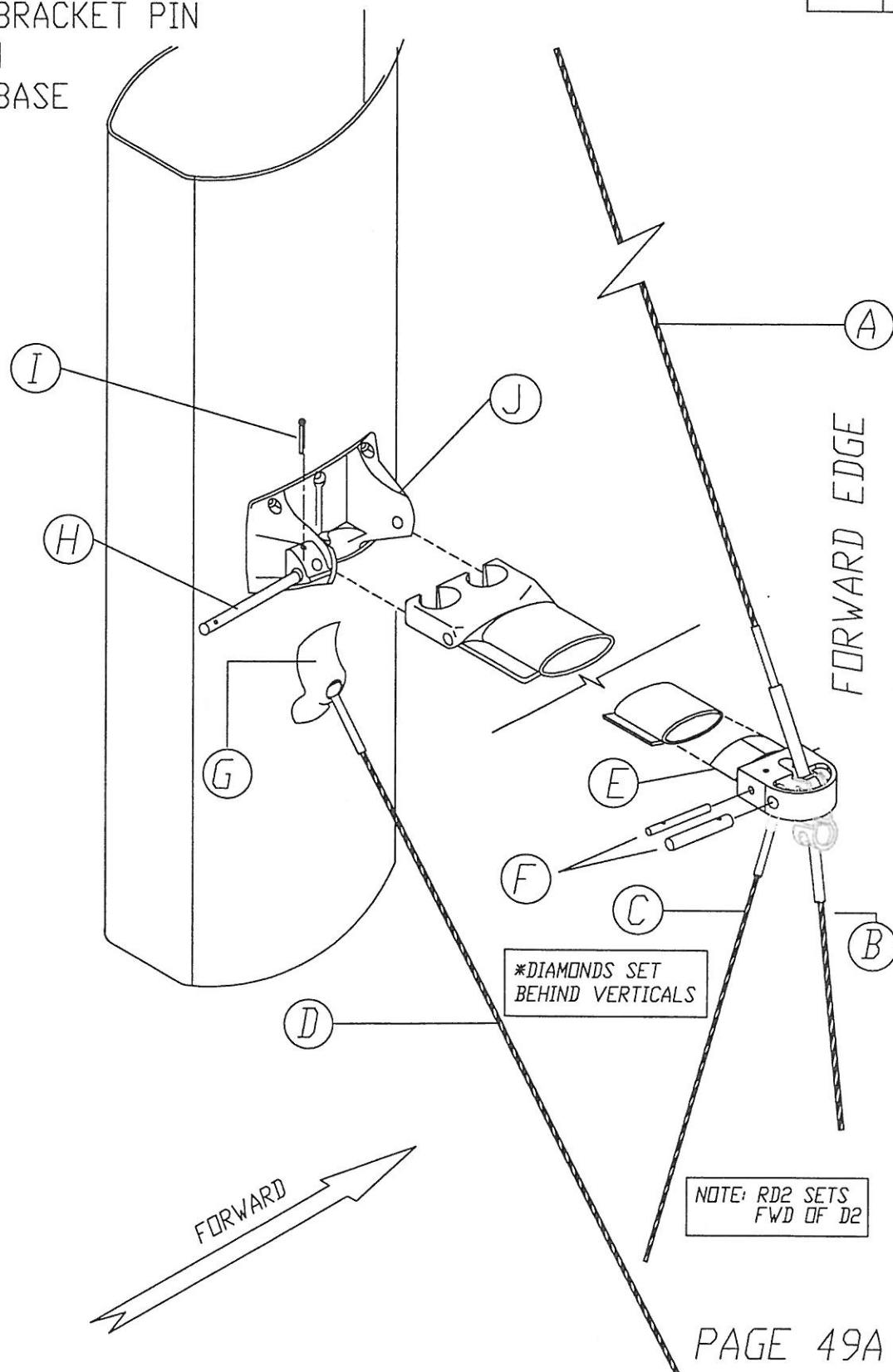
The B&R rig consists of aft swept spreaders and reverse diagonals which support the mast fore and aft thus combining the functions of inner forestays, checkstays, runners, and a backstay with their function as spreaders. With the B&R rig, no rigging has to be adjusted while sailing, thereby achieving a safe rig at all times. The performance minded skipper will benefit from the aerodynamic efficiency of the smaller mast section and the ability to make faster tacks because of the lack of running backs or inner forestays. The cruising sailor, who often sails with minimum crew, will enjoy the safety and comfort of not having to constantly move about the boat doing and undoing various parts of the rigging.

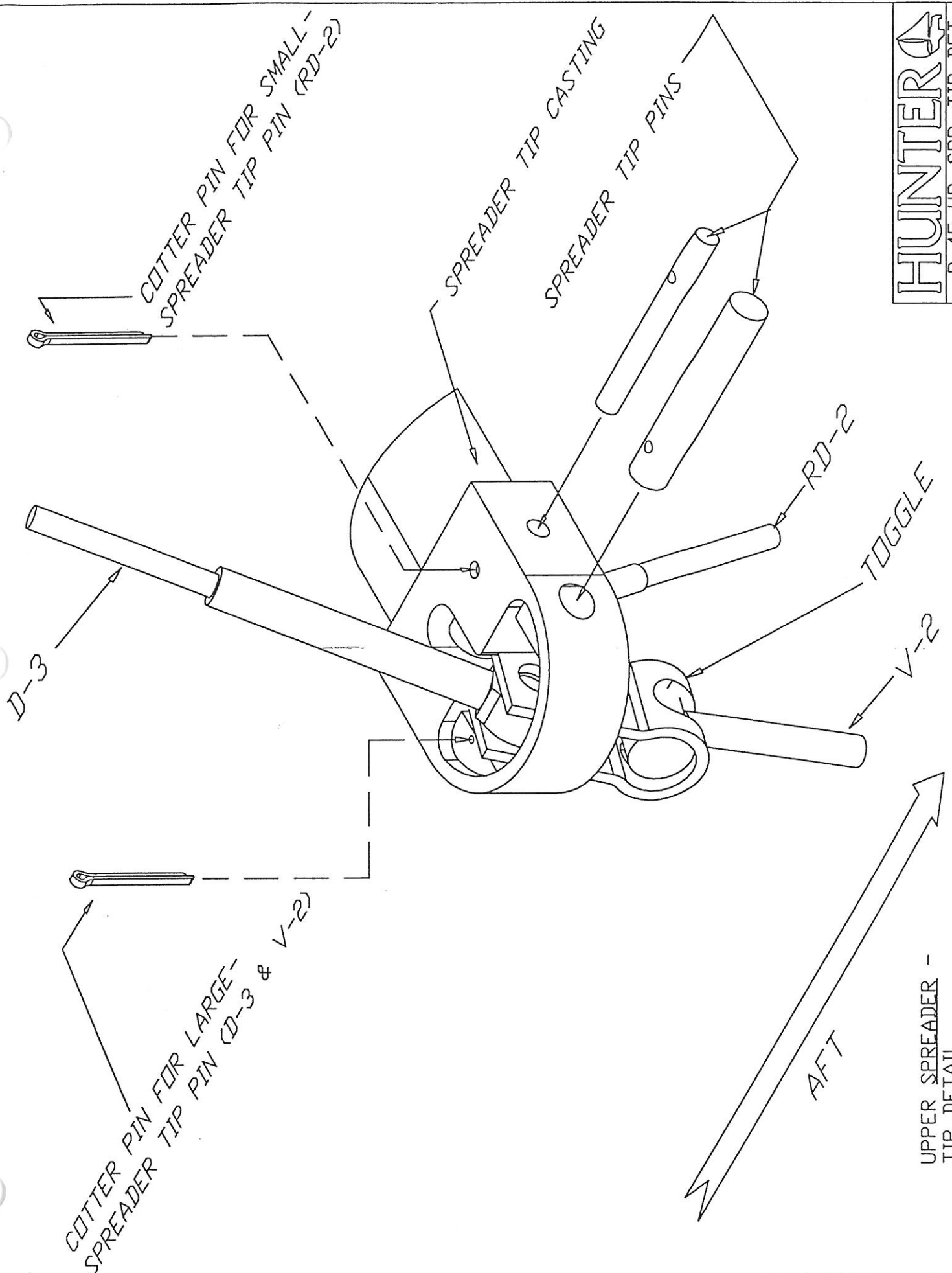
The furling mast option will eliminate the mast support struts, as a larger section is utilized due to the size of the mainsail when stowed inside this section. This larger mast section has the required strength that it can be used without the struts.

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



- (A) UPPER DIAGONAL (D3)
- (B) UPPER VERTICAL (V2)
- (C) REV. DIAG. (RD2) MARINE EYE W/ 1/2" (12.7 MM) HOLE
- (D) MIDDLE DIAG. (D2)
- (E) SPREADER TIP CASTING
- (F) SPREADER TIP PINS
- (G) BACKING SHELL
- (H) SPREADER BRACKET PIN
- (I) COTTER PIN
- (J) SPREADER BASE

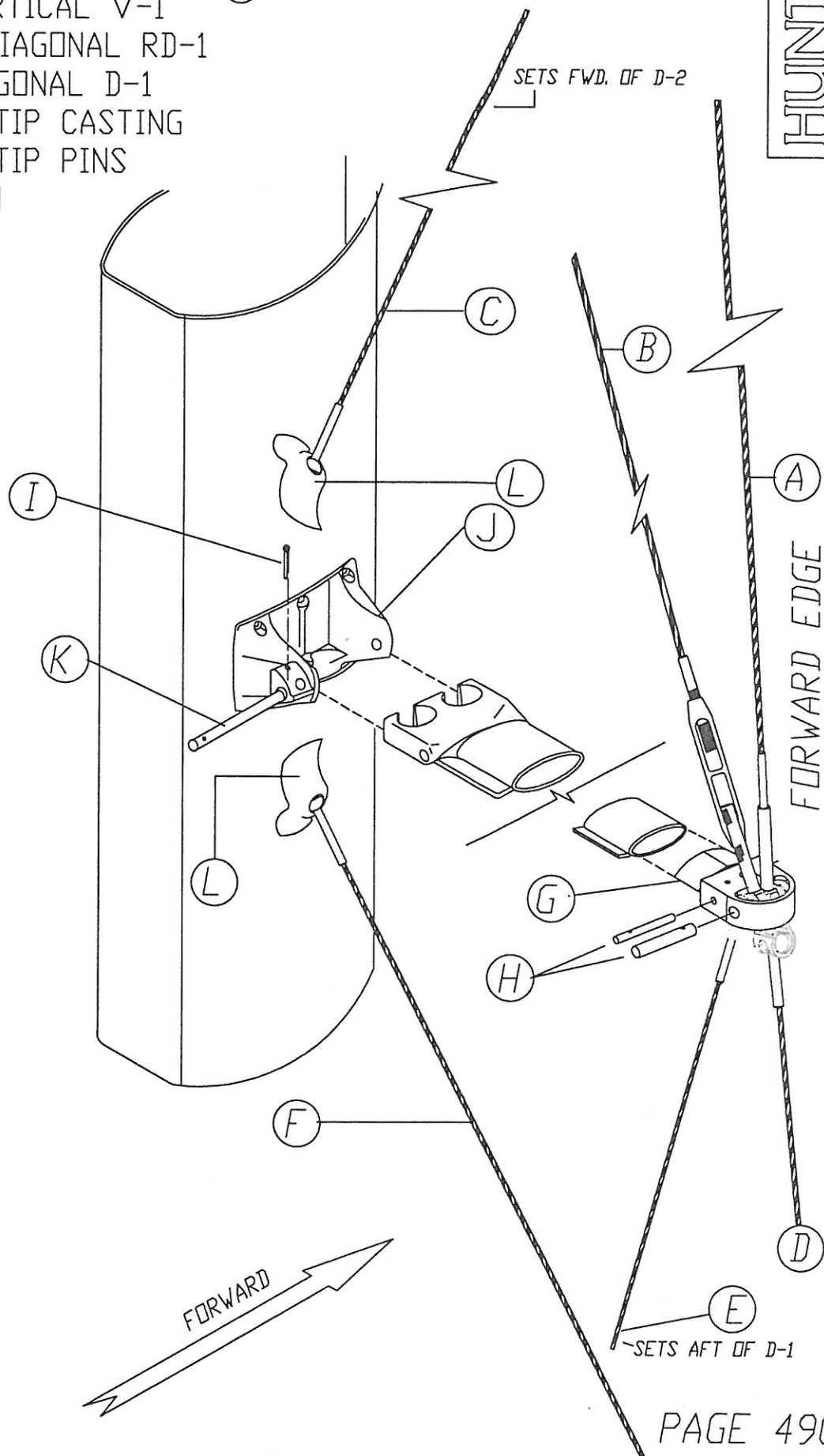




UPPER SPREADER -
TIP DETAIL

- (A) MIDDLE VERTICAL V-2
- (B) MIDDLE DIAGONAL D-2
- (C) REV. DIAG. RD2
- (D) LOWER VERTICAL V-1
- (E) REVERSE DIAGONAL RD-1
- (F) LOWER DIAGONAL D-1
- (G) SPREADER TIP CASTING
- (H) SPREADER TIP PINS
- (I) COTTER PIN

- (J) SPREADER BASE BRACKET
- (K) SPREADER BASE BRACKET PIN
- (L) BACKING SHELL



COTTER PIN FOR LARGE-
SPREADER TIP PIN (V-1 & V-2)

V-2

COTTER PIN FOR SMALL-
SPREADER TIP PIN (RD-1)

SPREADER TIP CASTING

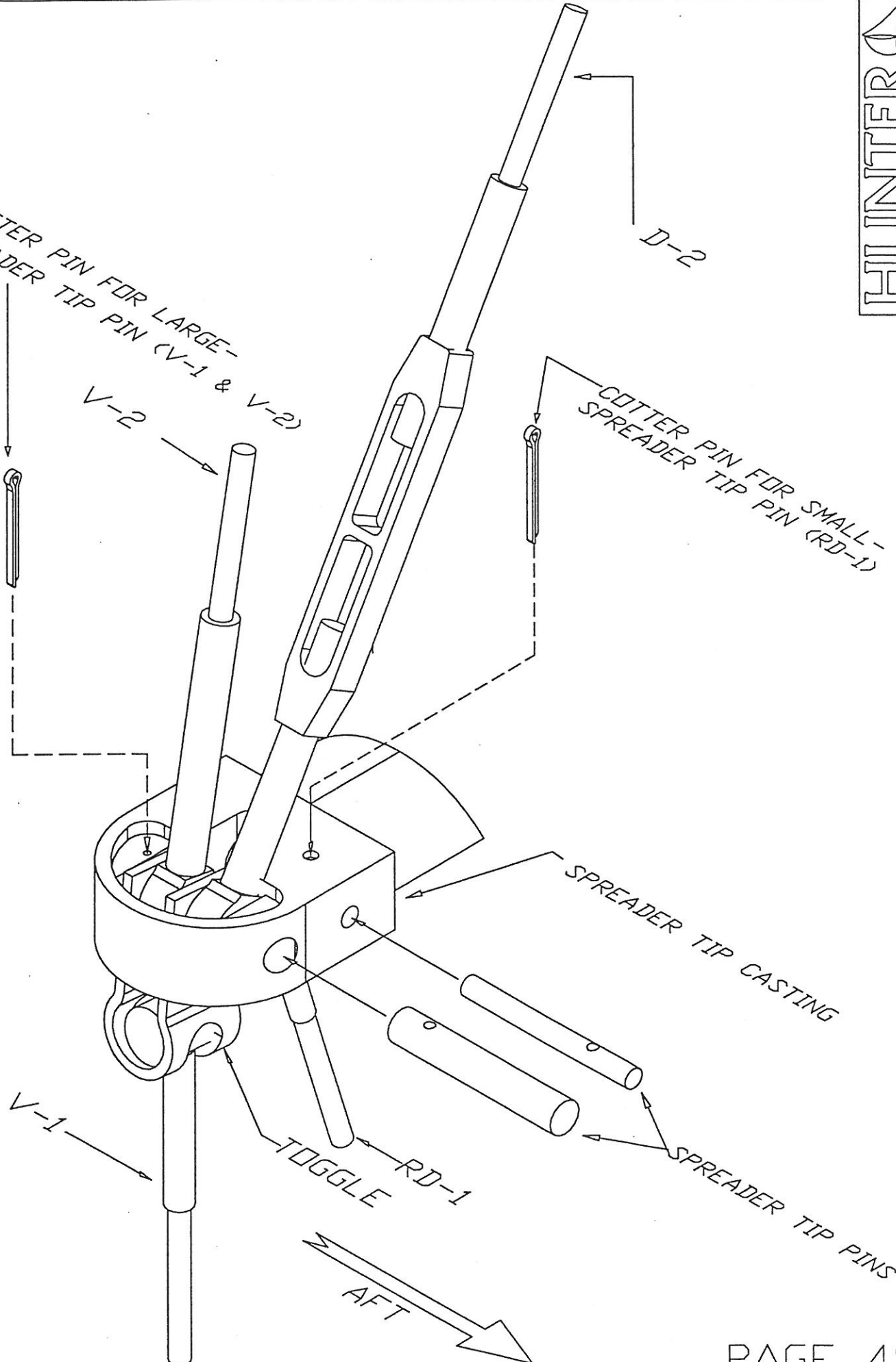
SPREADER TIP PINS

RD-1

TOGGLE

V-1

AFT



STANDARD PASSAGE 45 STANDING RIGGING SPECIFICATIONS

BY: KJC DATE: 25-Jun-96 RI0904

OPT/STD	ITEM	QUANTITY	WIRE SIZE	UPPER END	LENGTH	LOWER END
1	STD D3	2	3/8" (9.5mm) 1x19	RBS10, BC10, SB12 STEMBALL IN BACKING SHELL	4.728 m 15 ft. 6 1/8 in.	ME12 MARINE EYE
2	STD V2	2	3/8" (9.5mm) 1x19	RTJ1220 JAW TOGGLE	4.816 m 15 ft. 9 5/8 in.	ME12 MARINE EYE
3	STD V1	2	3/8" (9.5mm) 1x19 Dyform	RTJ1220 JAW TOGGLE	7.836 m 25 ft. 8 1/2 in.	TB122020 12-20-20 TURNBUCKLE
4	STD D2	2	5/16" (7.9mm) 1x19	RBS07A, SB10, STEMBALL IN BACKING SHELL	4.915 m 16 ft. 1 1/2 in.	10-16-16 TURNBUCKLE W/ EYE
5	STD D1	2	3/8" (9.5mm) 1x19 Dyform	RBS10, BC10, SB12 STEMBALL IN BACKING SHELL	7.588 m 24 ft. 10 3/4 in.	12-20-20 TURNBUCKLE W/ JAW TOGGLE ***C***
6	STD UPPER DIAMOND, RD2	2	1/4" (6.4mm) 1X19	ME08, MARINE EYE	4.893 m 16 ft.	8-12-12 STEMBALL TURNBUCKLE IN BACKING SHELL ***C***
7	STD LOWER DIAMOND, RD1	2	1/4" (6.4mm) 1X19	ME08, MARINE EYE	5.372 m 17 ft. 7 1/2 in.	8-12-12 STEMBALL TURNBUCKLE WITH JAW TOGGLE ***C***
8	STD FORESTAY	1	3/8" (9.5mm) 1X19	SBENG220, J2002020, ME12, STEMBALL EYE, JAW TOGGLE	17.697 m 58 ft. 3/4 in.	GIBB 12-20-20 TURNBUCKLE W/ JAW TOGGLE LOOSE ***B***
9	OPT INNER FORESTAY	1	9/32" (7.1mm) 1x19	SBENG116, J2001616, ME09, STEMBALL EYE, JAW TOGGLE	13.919 m 45 ft. 8 in.	FORESTAY RELEASE LEVER

RI0904.XLS

T-BOLT W/TOGGLE

$\frac{1}{3}$ $\frac{2}{3}$ $\frac{2}{3}$ $\frac{1}{3}$

TURNBUCKLE

STEM BALL

CUP

EYE

FORK

LENGTH

HUNTER

RIGGING LENGTHS GENA2605

TUNING THE P450 B&R RIG

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 1' for the standard rig and no more than 4" 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 2-1/2' 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 Passage 450 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 upper end of the strut to the strut bracket on the mast. Adjust the length by turning the strut until the holes in the lower jaw line up

TUNING THE P450 B&R RIG

with the holes in the chainplate. Attach lower end with clevis pin and secure with a cotter pin. Secure the upper end with the lock nut.

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 Caribbean it should be replaced every 2-3 years

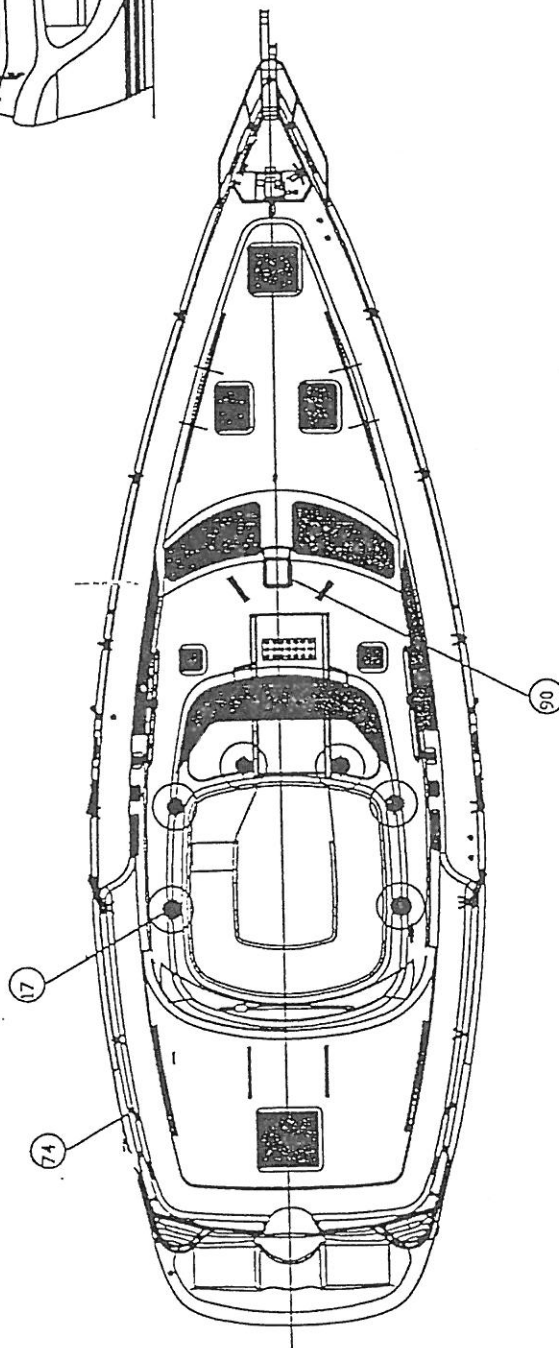
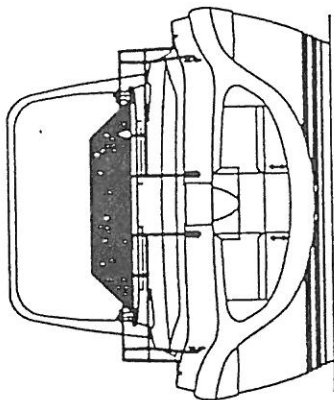
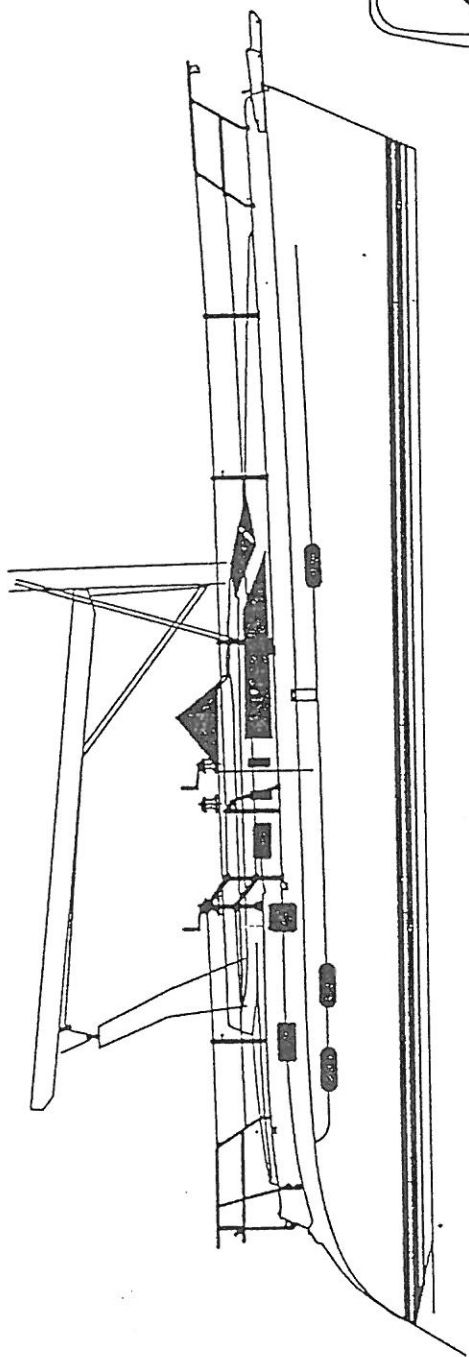
TUNING THE P450 B&R RIG

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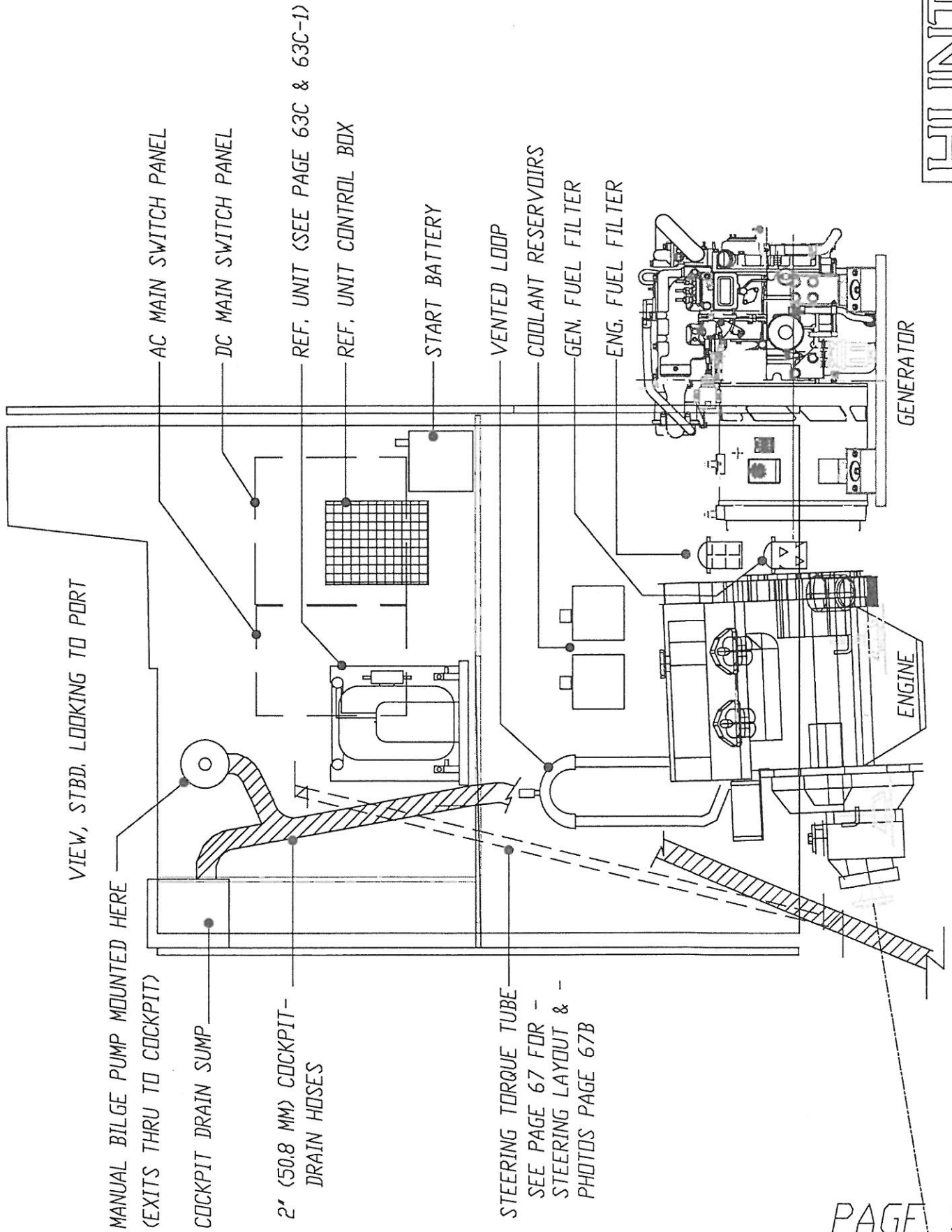


HUNTER

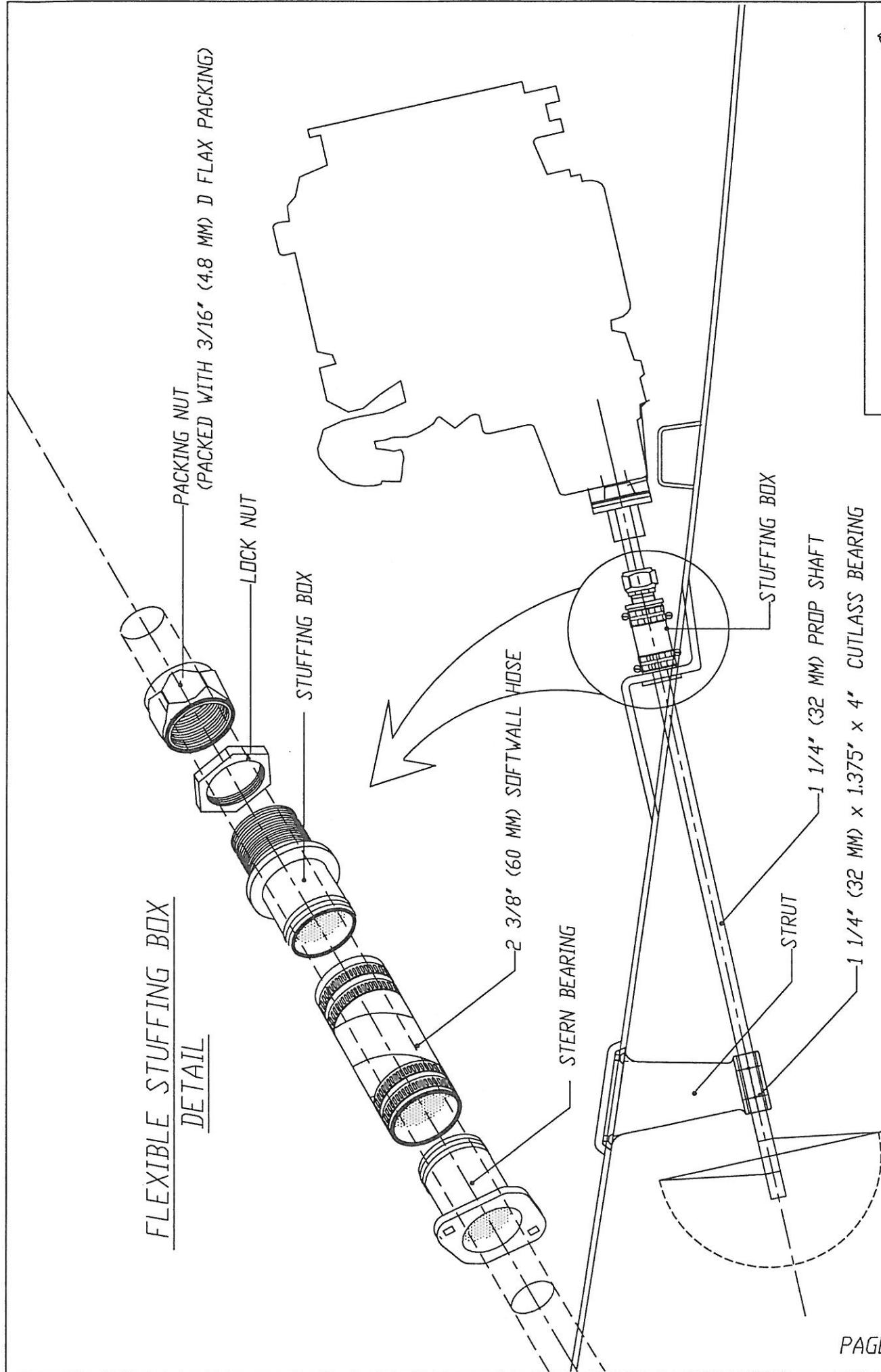
P-45 OPT. SPINN.
4468030B

OPTIONAL SPINNAKER LAYOUT

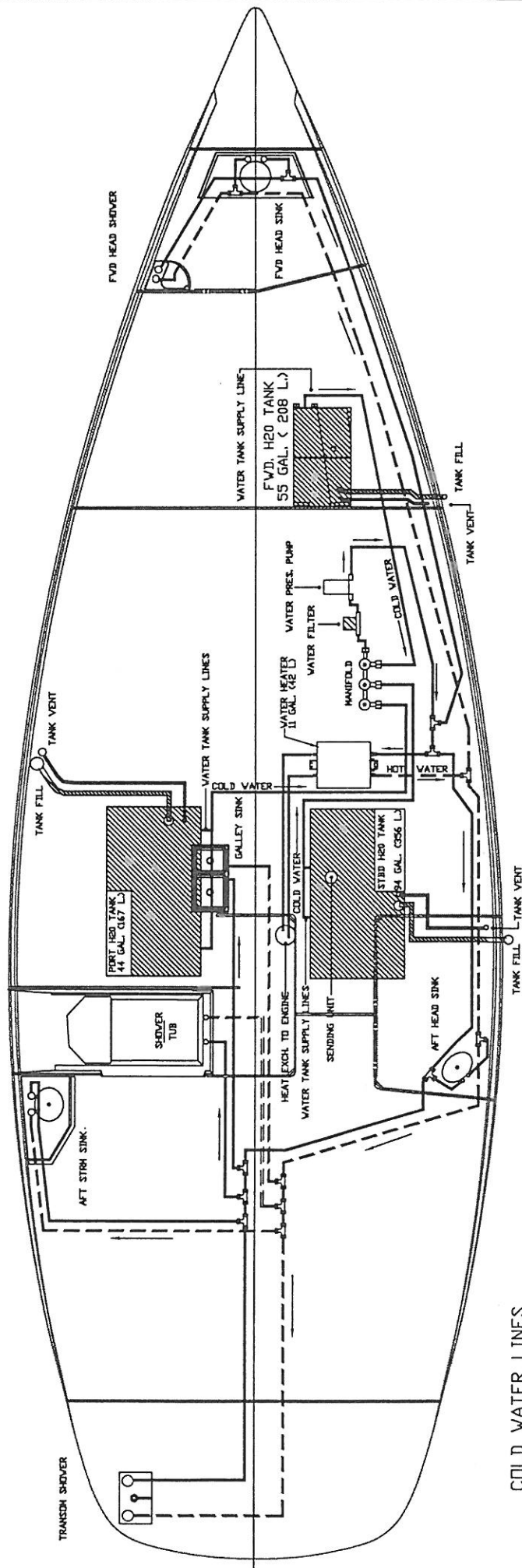
SPIN OPTION				
ITEM	LOCATION	MANUFACTURER	QTY	HUNTER#
74 SPIN BLOCK	AFT RAIL	SCHAEFER	10--15	2
90 SPIN. MAST BLOCK		Z-SPAR	PN294	1
SPIN. MAST HEAD BLOCK	MAST HEAD	HARKEN	1540	1
CRUSING SPINN. SHEET				2 R10905-09
SPINN. HALYARD				1 R10905-10



FLEXIBLE STUFFING BOX DETAIL



WATER SYSTEM LAYOUT



COLD WATER LINES

HOT WATER LINES

→ = FLOW DIRECTION

HUNTER PART #'s

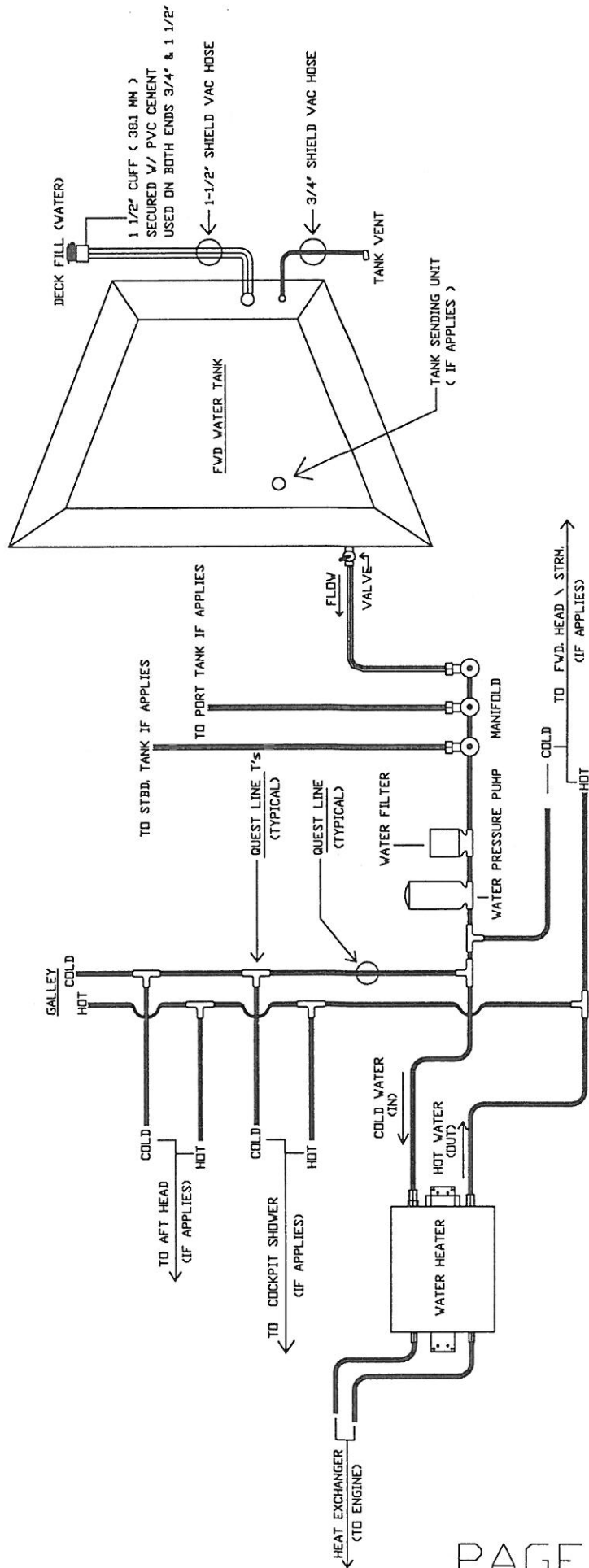
WATER HEATER < 6 GAL. >PLD280
 WATER HEATER < 11 GAL. >PLD285
 WATER PUMPPLD301
 TANK VALVEPL1815
 COCKPIT SHOWERPLD189
 QUEST LINE 1/2" < 12.7 MM >PL1825
 QUEST LINE T'SPL1820
 QUEST LINE T'SPL1830
 WATER DECK FILL 1 1/2" < 38.1 MM >PL1130
 1-1/2" < 38.1 MM > SHIELDVAC HOSEPL1440
 1-1/2" < 38.1 MM > HOSE CUFFPL1500
 TANK VENT FITTINGPLD520
 3/4" < 19.1 MM > SHIELDVAC HOSEPL1450
 3/4" < 19.1 MM > HOSE CUFFPL1480
 WATER TANK.....SPECIFIC TO BOAT MODEL
 FAUCETS.....SPECIFIC TO BOAT MODEL

NOTE:

SEE PAGE 60A FOR SPECIFIC-
 SEACOCK / THRUHULL / DECK FITTING LOCATIONS

SEE PAGE 60B FOR SPECIFIC-
 SEACOCK / THRUHULL / DECK FITTING ASSEMBLY

SEE PAGE 64D FOR SPECIFIC-
 SENDING UNITS / MACERATOR-
 WIRING LAYOUTS



HUNTER

STD. H2O LAYOUT
 4468034B

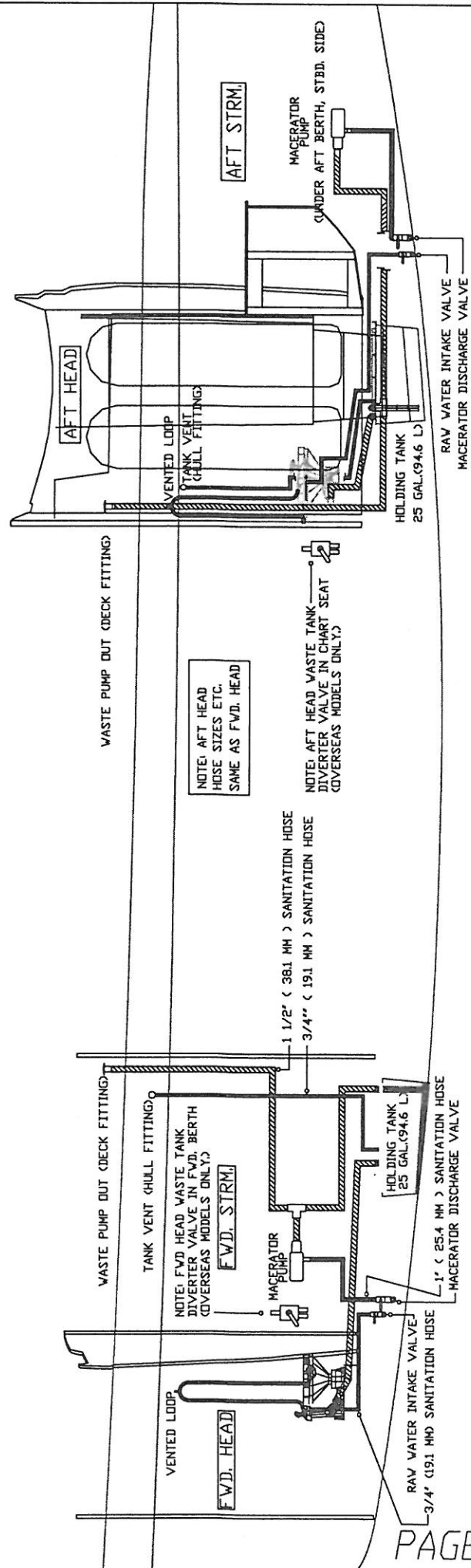
STANDARD H2O SYSTEM LAYOUT

NOTE:

SEE PAGE 60 FOR SPECIFIC -
SEACOCK / THRUHULL / DECK FITTING LOCATIONS

SEE PAGE 60A FOR SPECIFIC -
SEACOCK / THRUHULL / DECK FITTING ASSEMBLY

SEE PAGE 64 FOR SPECIFIC -
SENDING UNITS / MACERATOR -
WIRING LAYOUTS



HUNTER PART #'s

WASTE (PUMP OUT) DECK FITTING.....PL1140
 1" (25.4 MM) BALL VALVE (DISCHARGE).....PLO861
 1" (25.4 MM) DISCHARGE THRU HULL FITTING.....PLO483
 1" (25.4 MM) WASTE (SEA) DISCHARGE HOSE.....PL1525
 1-1/2" (38.1 MM) DECK WASTE PUMPOUT HOSE.....PL1525

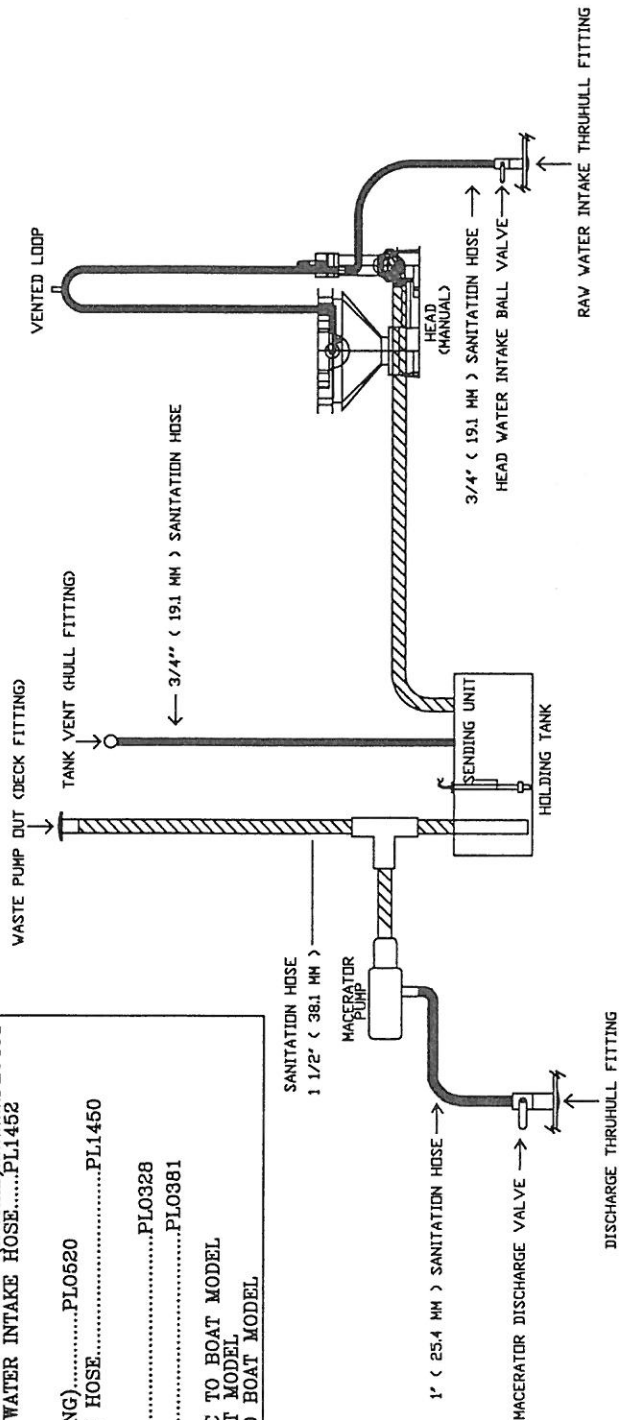
3/4" (19.1 MM) BALL VALVE (INTAKE).....PLO863-A
 3/4" (19.1 MM) THRU HULL FITTING (INTAKE).....PLO481
 3/4" (19.1 MM) RAW WATER INTAKE HOSE.....PL1452

TANK VENT (HULL FITTING).....PLO520
 3/4" (19.1 MM) VENT HOSE.....PL1450

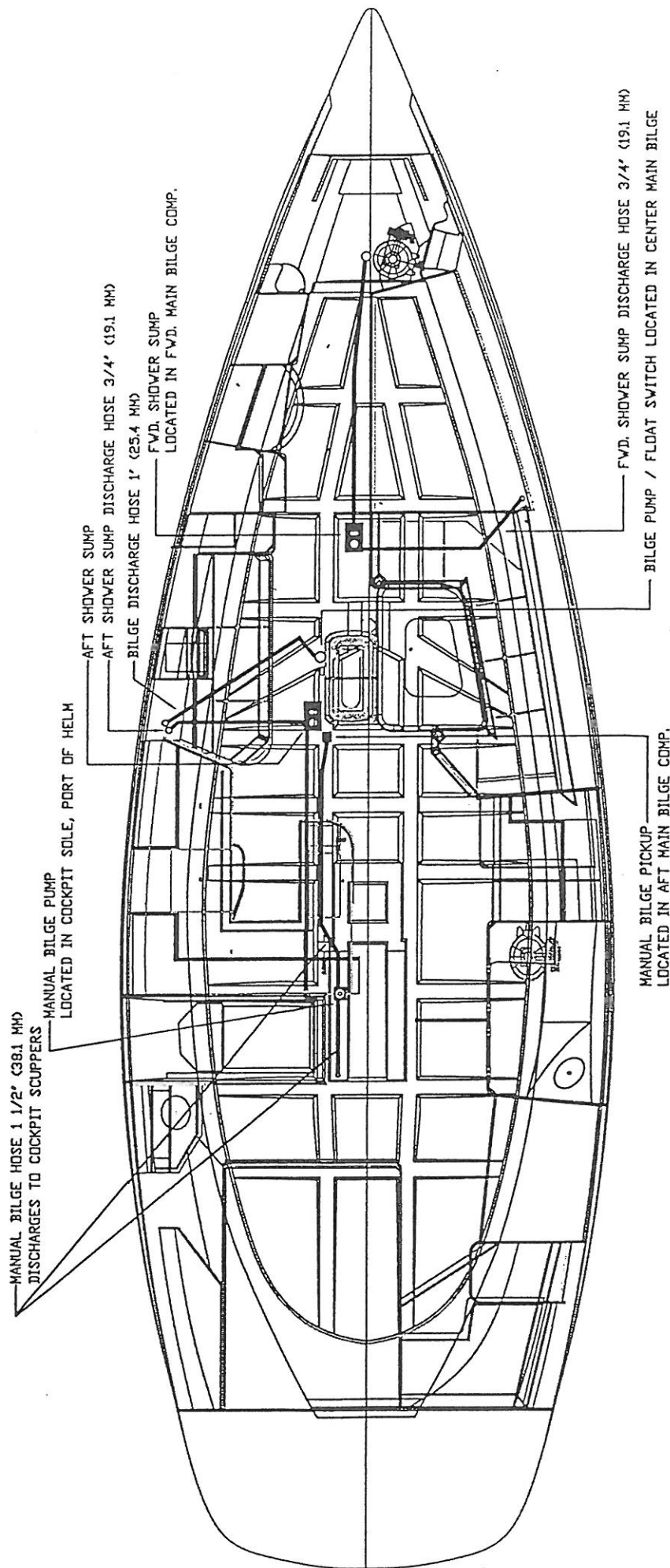
MACERATOR PUMP.....PLO328
 VENTED LOOP.....PLO381

HOLDING TANK...SPECIFIC TO BOAT MODEL
 HEAD...SPECIFIC TO BOAT MODEL
 SEND UNIT...SPECIFIC TO BOAT MODEL

STANDARD WASTE SYSTEM LAYOUT (NON ELECTRIC HEAD MODELS)



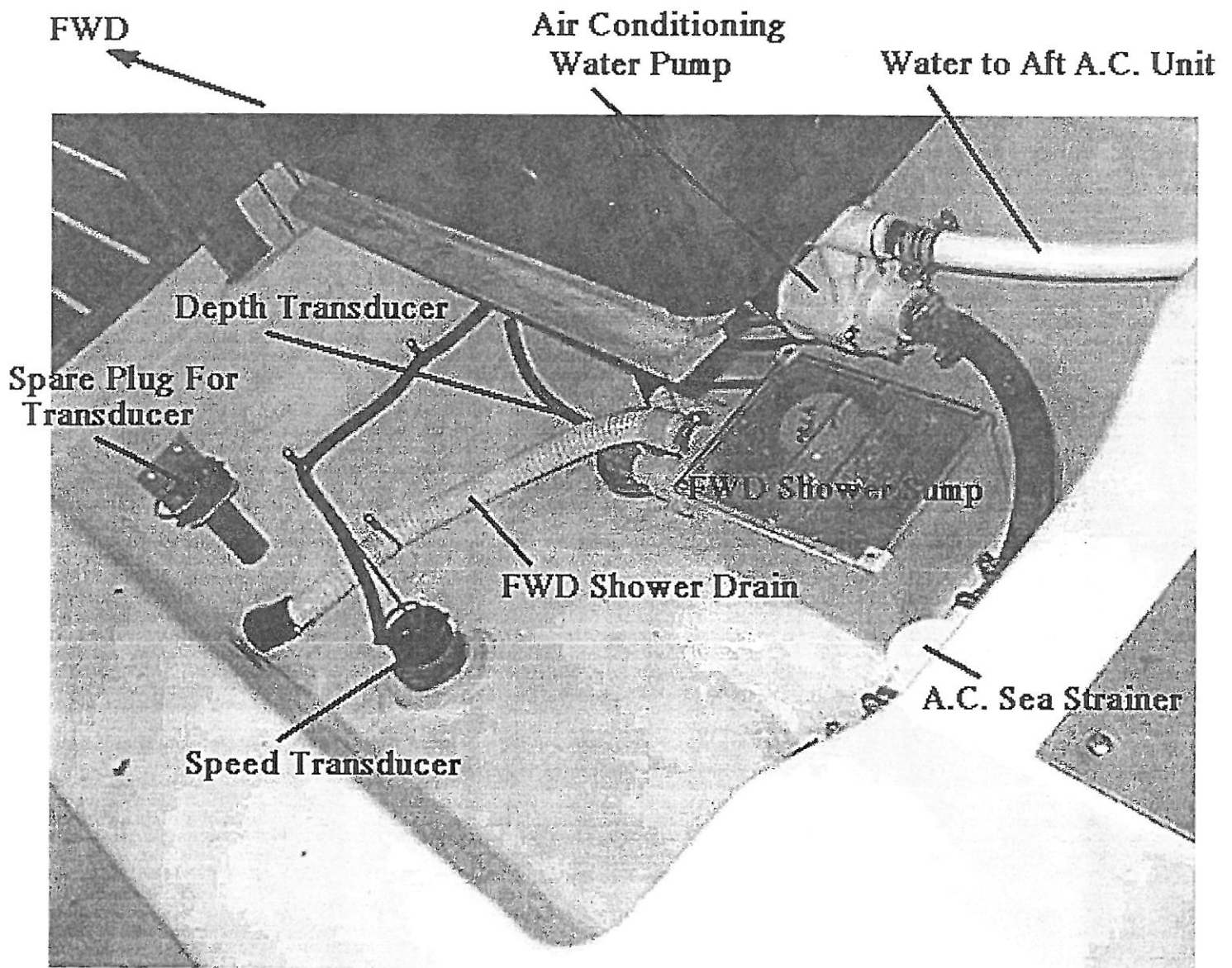
NOTE:
 SEE PAGE 60A FOR SPECIFIC -
 SEACOCK / THRUHULL / DECK FITTING LOCATIONS
 SEE PAGE 60B FOR SPECIFIC -
 SEACOCK / THRUHULL / DECK FITTING ASSEMBLY
 SEE PAGE 64D FOR SPECIFIC -
 SENDING UNITS / MACERATOR-
 WIRING LAYOUTS



NOTE:

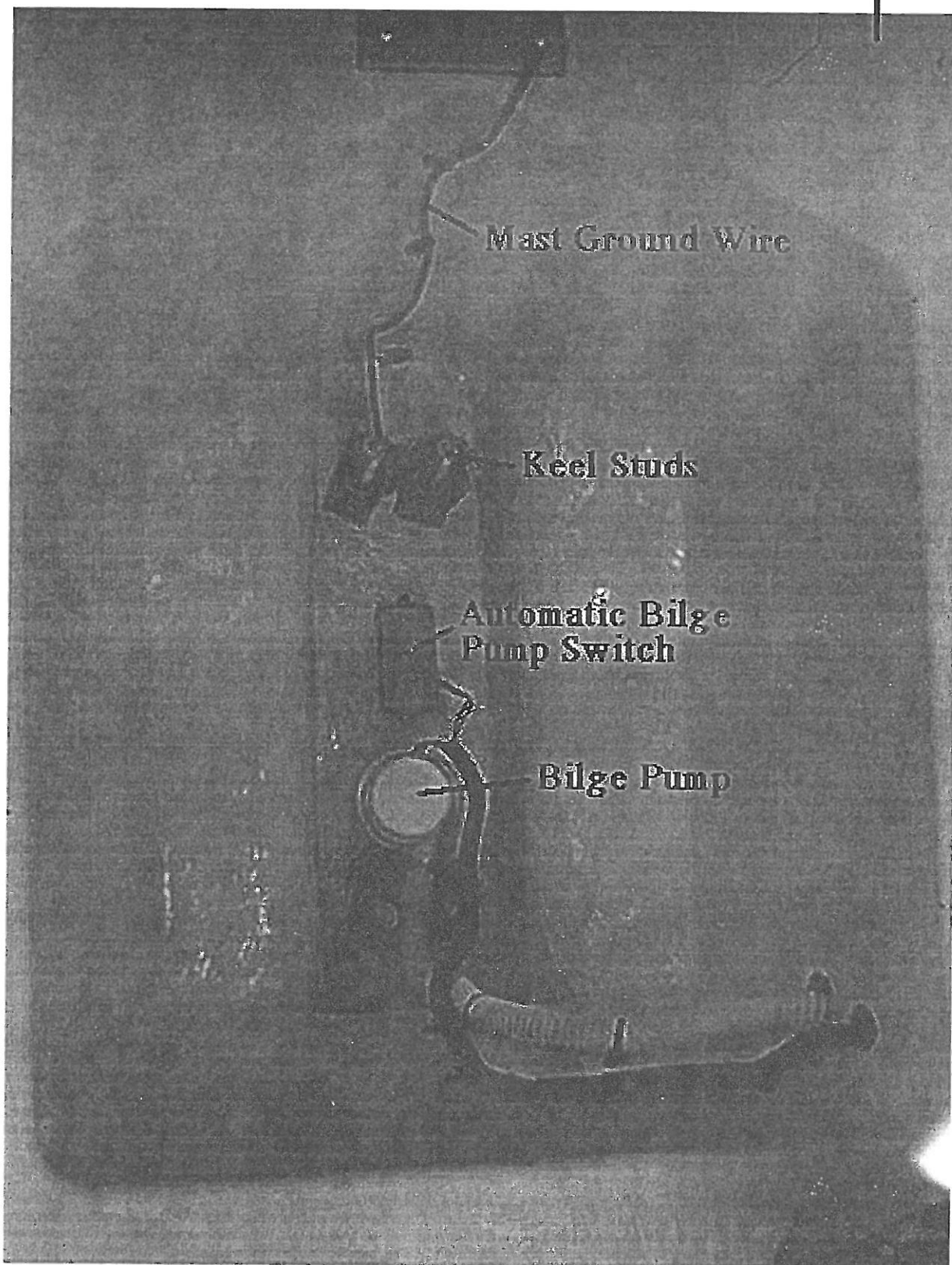
ALL POWER LEADS FROM PUMPS ARE RUN THROUGH BILGE TO MAIN BREAKER PANEL
SEE PAGE 65C FOR COLOR CODES

FWD Main Bilge Compartment



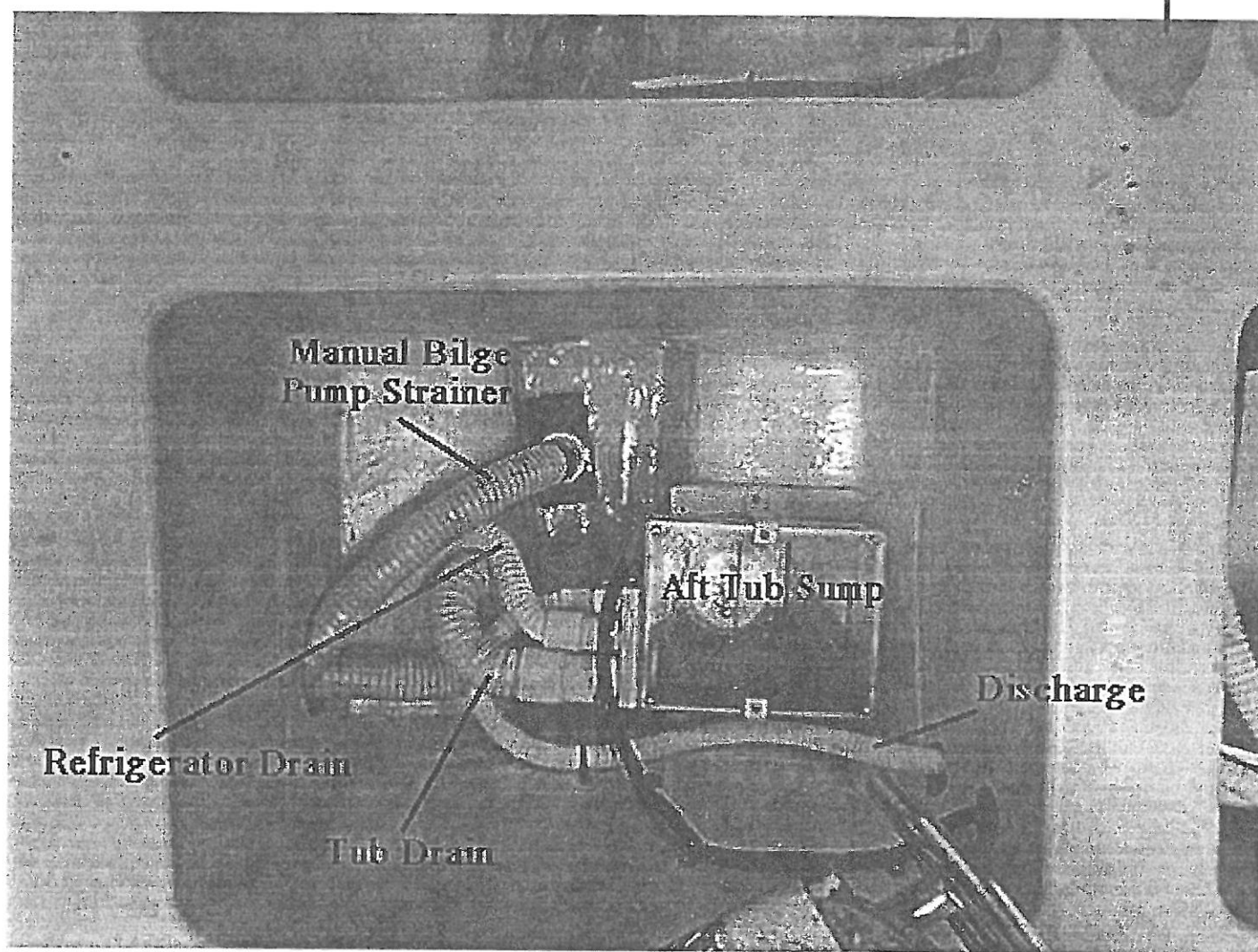
Center Bilge Compartment

FWD

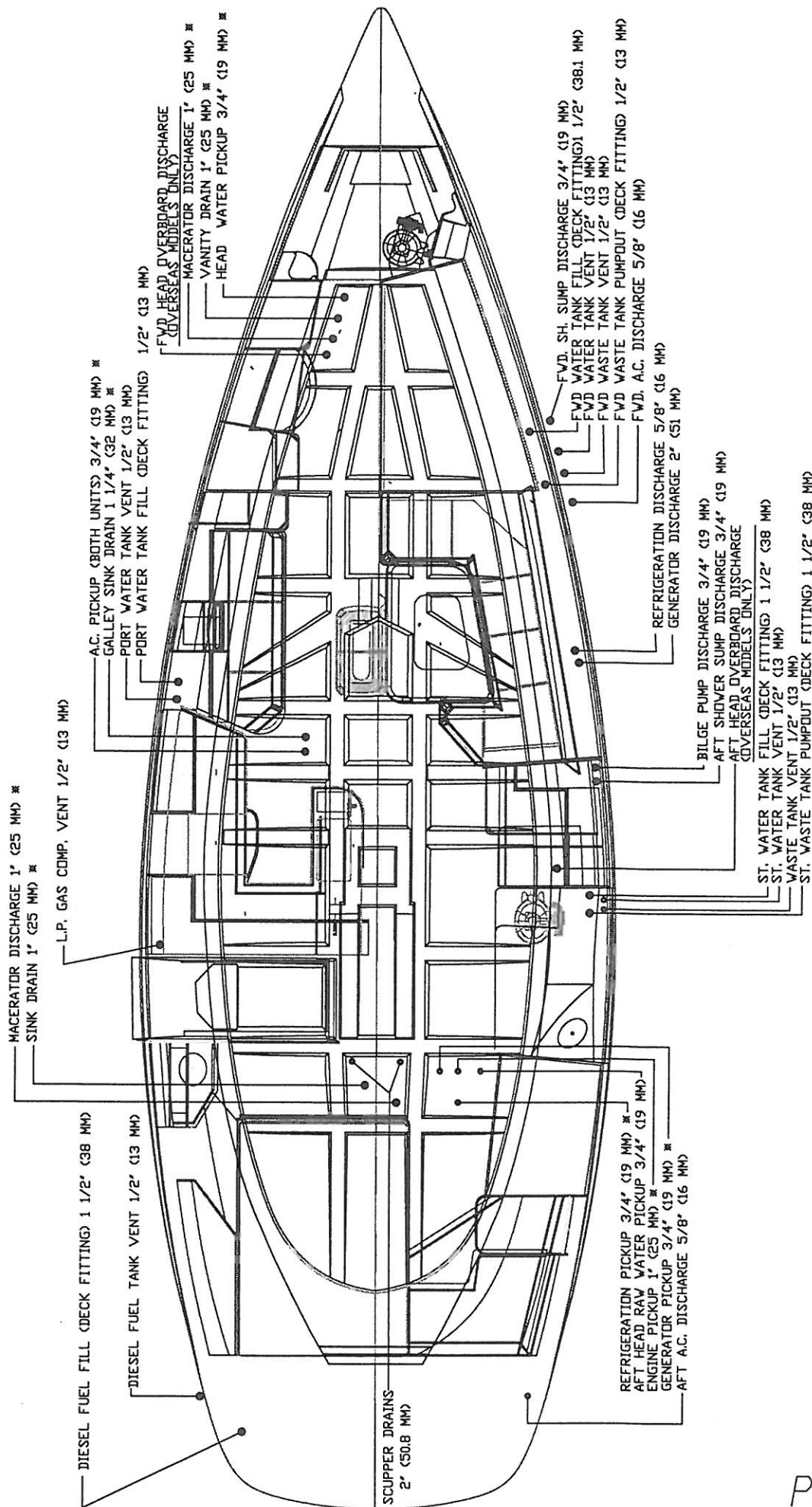


Aft Bilge Compartment

FWD



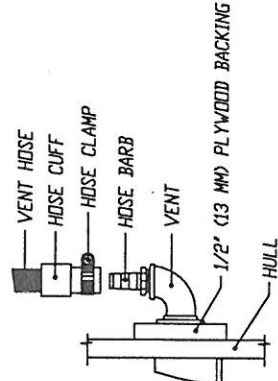
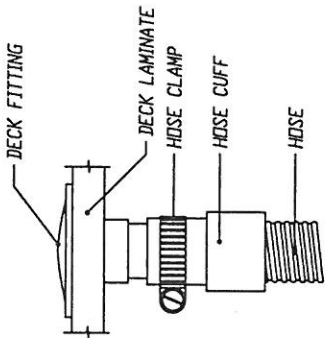
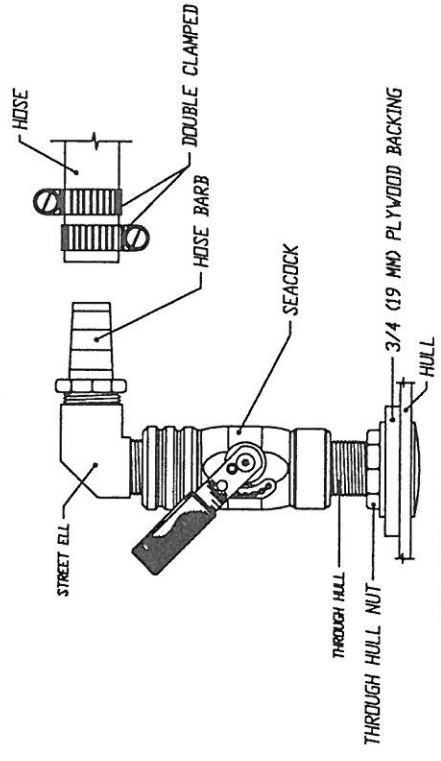
NOTE: AIR CONDITIONING & GENERATOR COMPONENTS ARE OPTIONAL



THRU HULL \ DECK & SEACOCK LOCATIONS
(* = SEACOCKS)

HUNTER

P-45 THRU HULLS 4468037

 TYP. VENT DETAIL	 TYP. DECK PLATE DETAIL	 TYP. THRU-HULL W/ SEACOCK DETAIL
WATER TANK VENT...1/2" (12.7 MM) WASTE TANK VENT...1/2" (12.7 MM) DIESEL TANK VENT...1/2" (12.7 MM) L.P. TANK VENT...1/2" (12.7 MM) VENT HOSE SIZES AS FOLLOWS: H₂O/WASTE/L.P. HOSE = 3/4" (19.1 MM) FUEL HOSE...5/8" (15.9 MM)	WATER FILL...1 1/2" (38.1 MM) DIESEL FILL...1 1/2" (38.1 MM) WASTE P.O.U.T...1 1/2" (38.1 MM) WASTE P.O.U.T...1 1/2" (38.1 MM)	ENGINE WATER PICKUP MODELS 376 ON UP = 1" (25.4 MM) MODELS 336 ON DOWN = 3/4" (19.1 MM) HEAD WATER PICKUP...3/4" (19.1 MM) GEN. WATER PICKUP (IF APPL.)...3/4" (19.1 MM) REF. WATER PICKUP (IF APPL.)...3/4" (19.1 MM) A. C. WATER PICKUP (IF APPL.)...3/4" (19.1 MM) SH. SUMP DIS. (IF APPL.)...3/4" (19.1 MM) ALL MODELS EXCEPT P-42 P-42 = 1" (25.4 MM)

TYP. VENT SIZES TYP. DECK PLATE SIZES (REFLECTS HOSE SIZE) TYP. THRU-HULL/SEACOCK SIZES (REFLECTS HOSE SIZE)

THRUHULL/DECK,SEACOCK,VENT, DETAILS

AFT STATEROOM SEACOCKS SHAFT LOG AREA

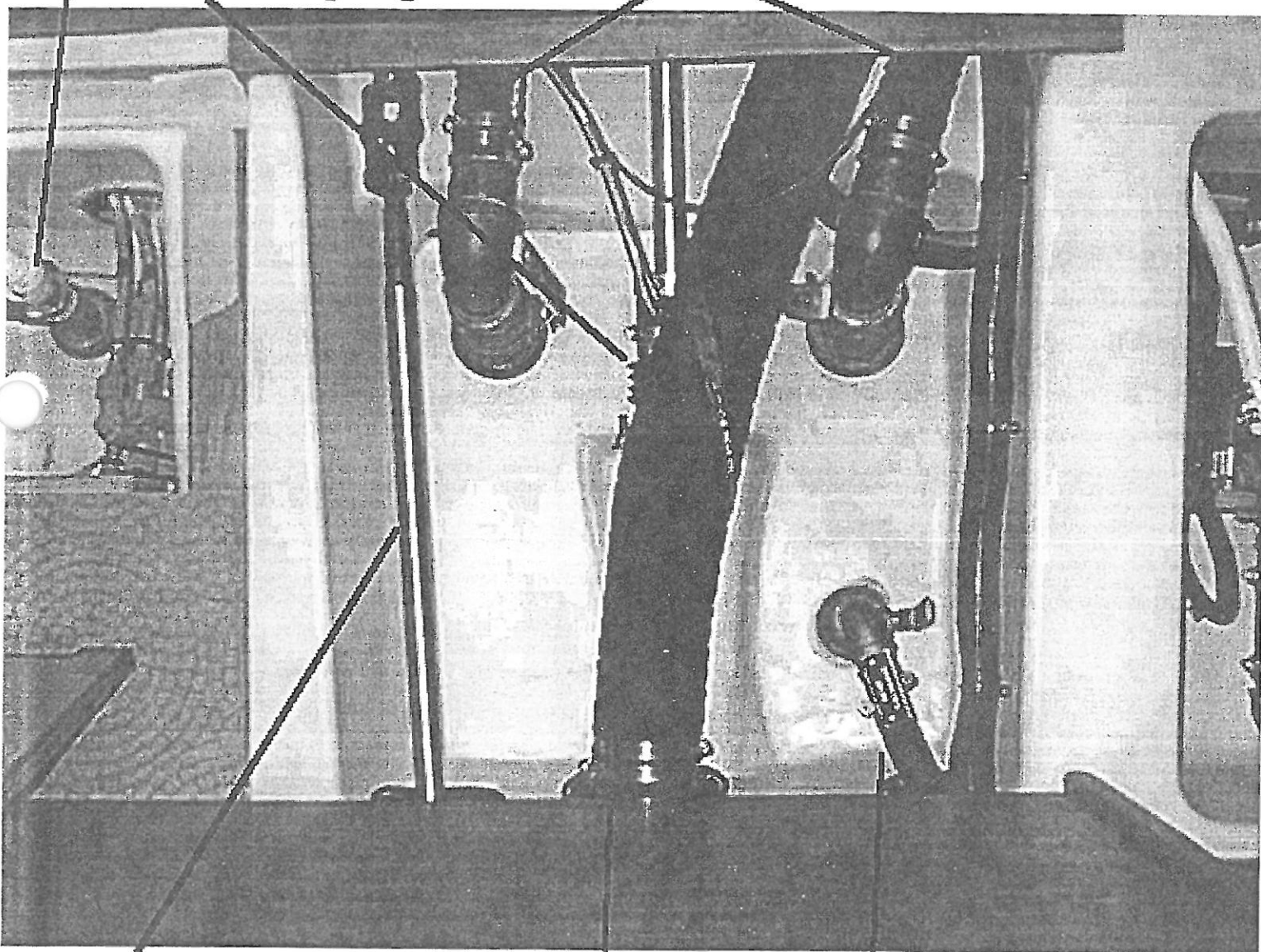
FWD



Aft Vanity Sink Drain

Cockpit Scupper Drains

Shaft Coupling

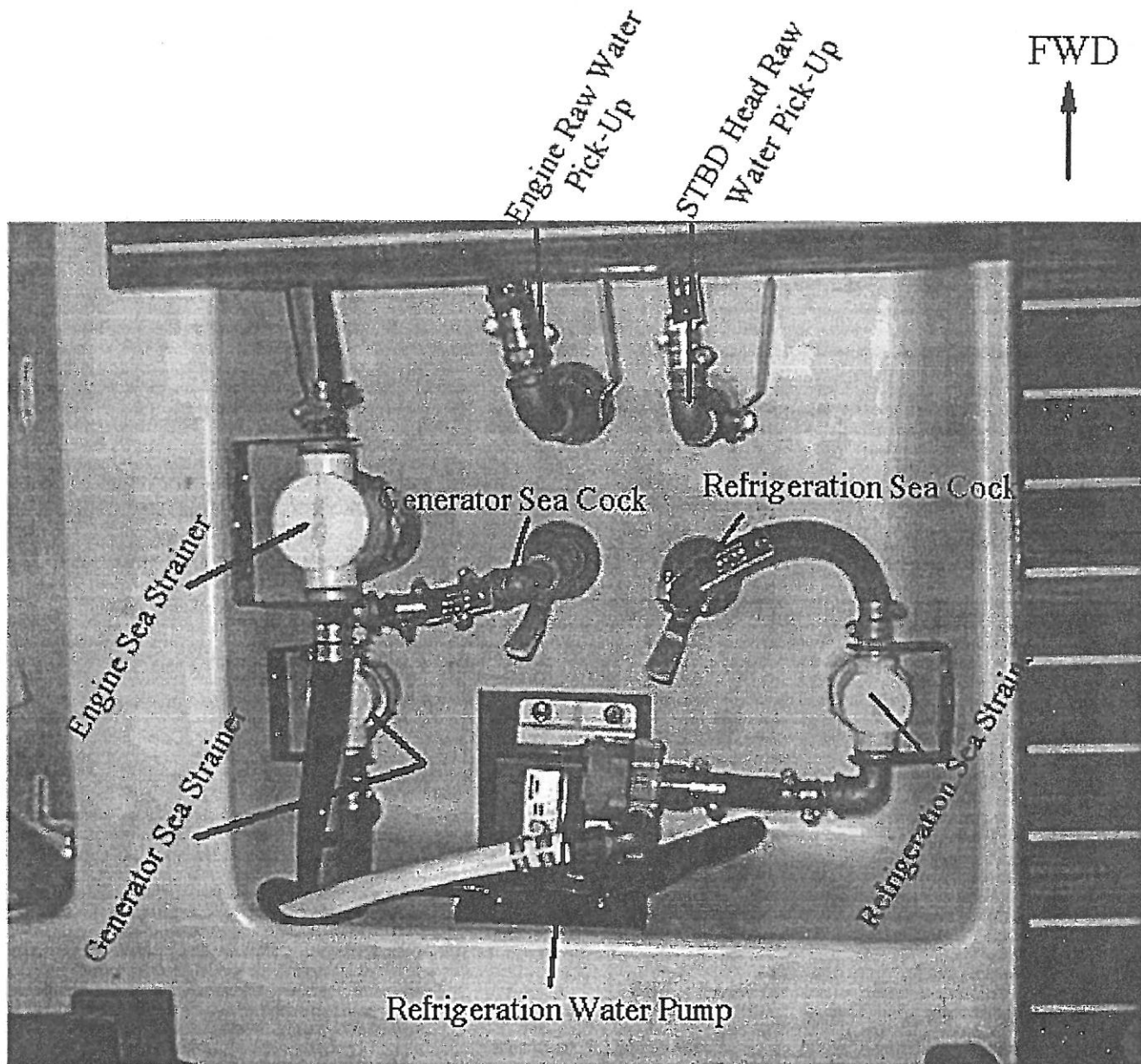


Aft Head Macerator Discharge

Engine Exhaust

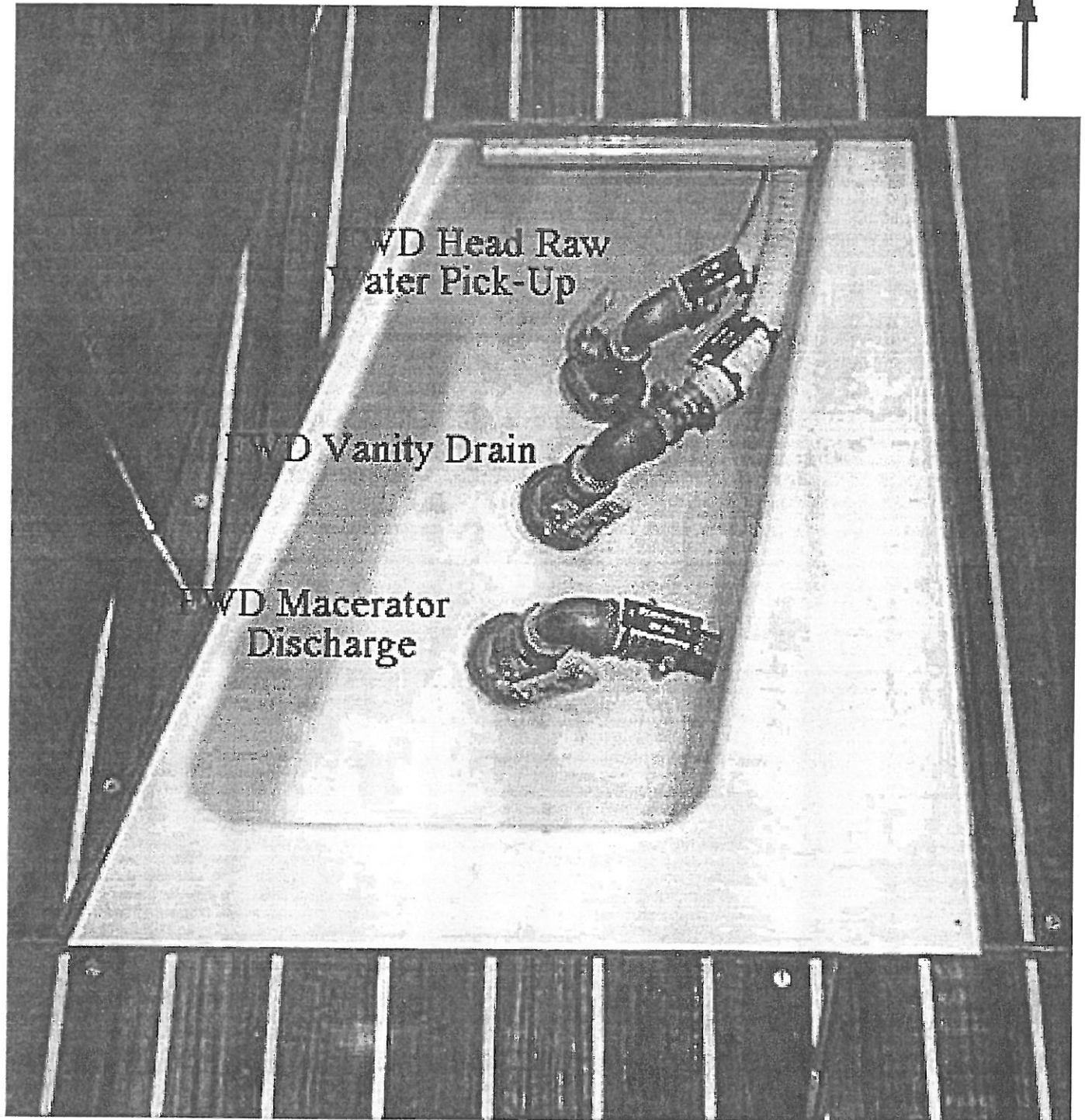
Steering Torque Tube

Aft State Room STBD Seacocks

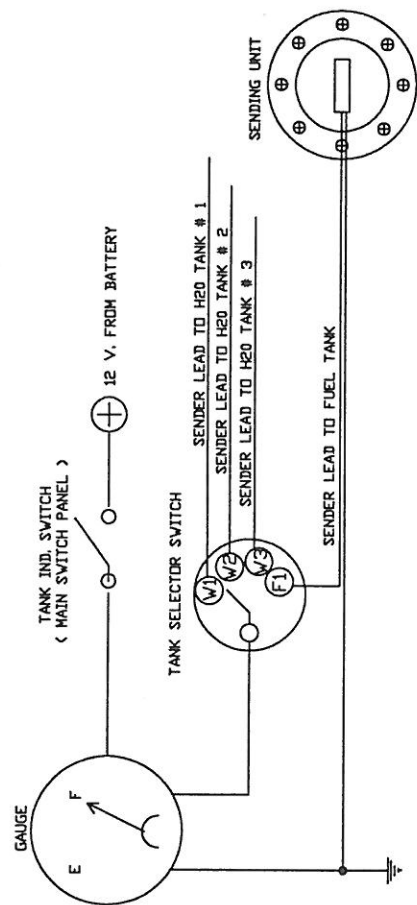


FWD STATEROOM SEACOCKS

FWD

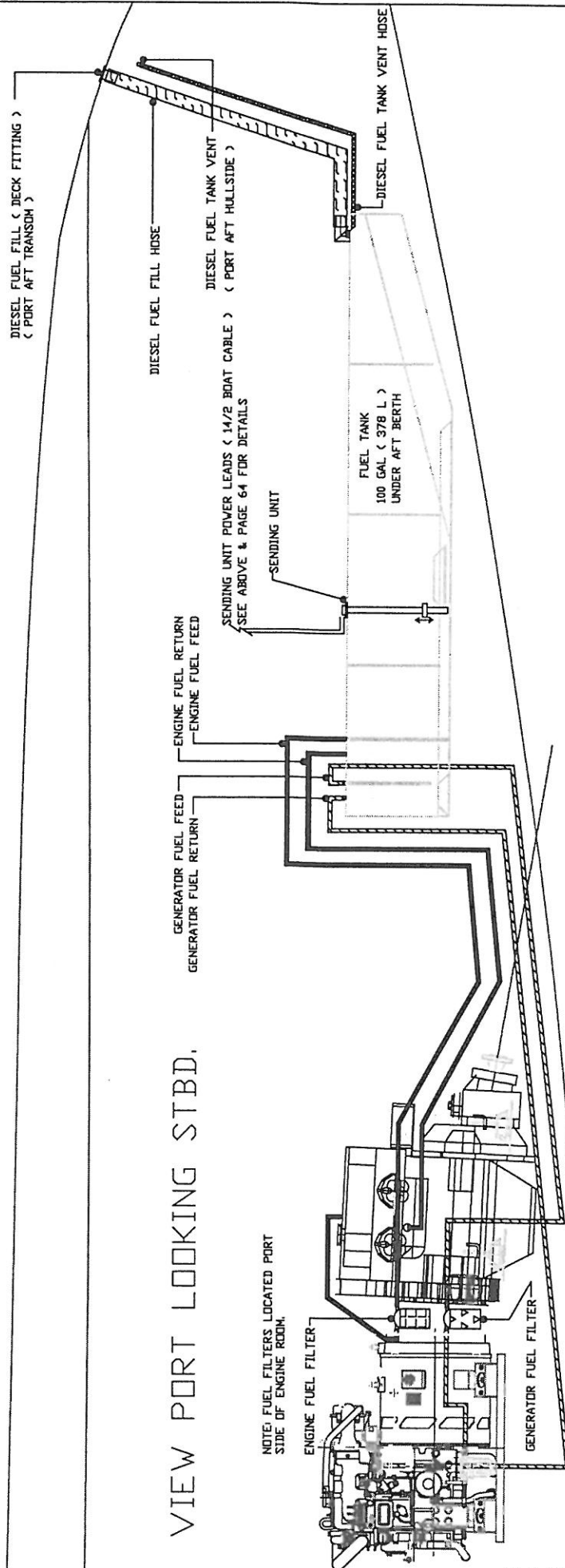


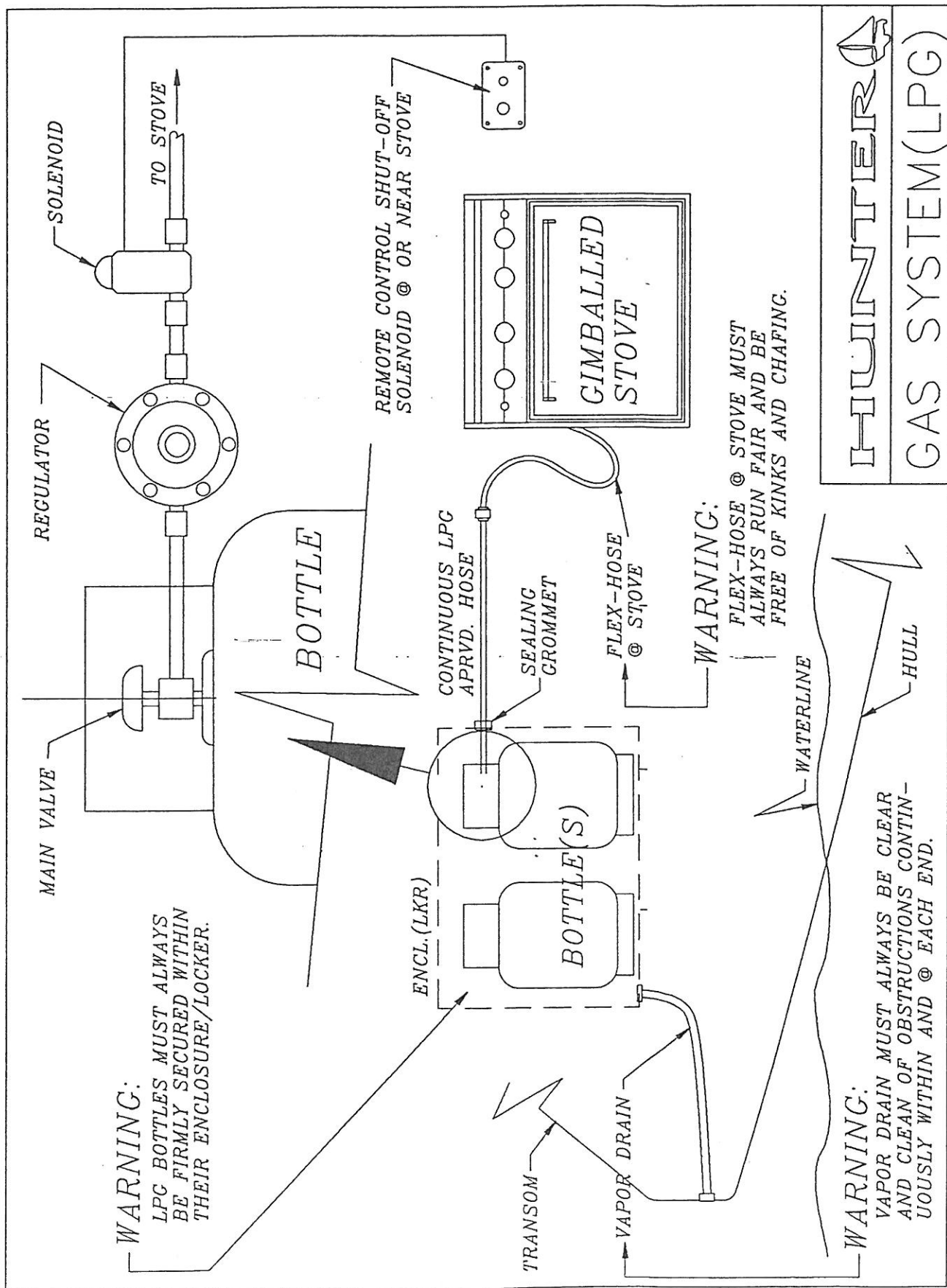
DESCRIPTION	HUNTER PART #
ENGINE FUEL FILTER	PL0430
GENER. FUEL FILTER	PL0430
ENGINE FUEL FEED / RETURN HOSE 5/16" (7.9 MM)	PL1370
GENER. FUEL HOSE FEED / RETURN 1/4" (6.4 MM)	PL1415
DIESEL FILL FITTING	PL1126
TANK VENT FITTING	PL0520
DIESEL FILL HOSE 1 1/2" (38.1 MM)	PL1530
TANK VENT HOSE 3/4" (19.1 MM)	PL1450
TANK GAUGE	EL0169D
SENDING UNIT	EL0171



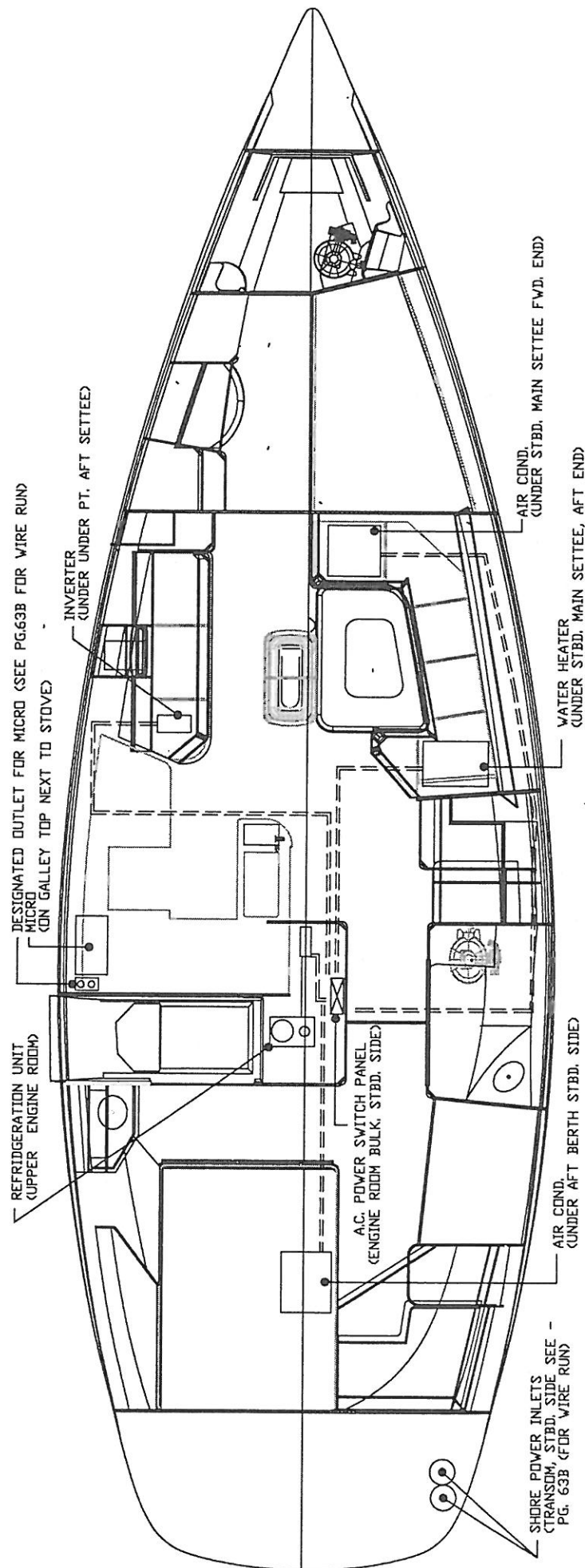
FUEL < WATER TANK > GAUGE WIRING DIAGRAM

VIEW PORT LOOKING STBD.





HUNTER
GAS SYSTEM(LPG)



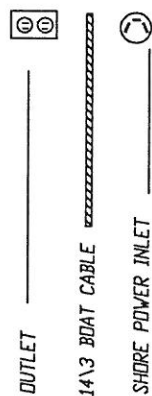
POWER LEAD RUNS =====
 (SEE PAGE 65B FOR SPECIFIC WIRE SIZES)

A.C. POWER (PAN WIRING) LAYOUT

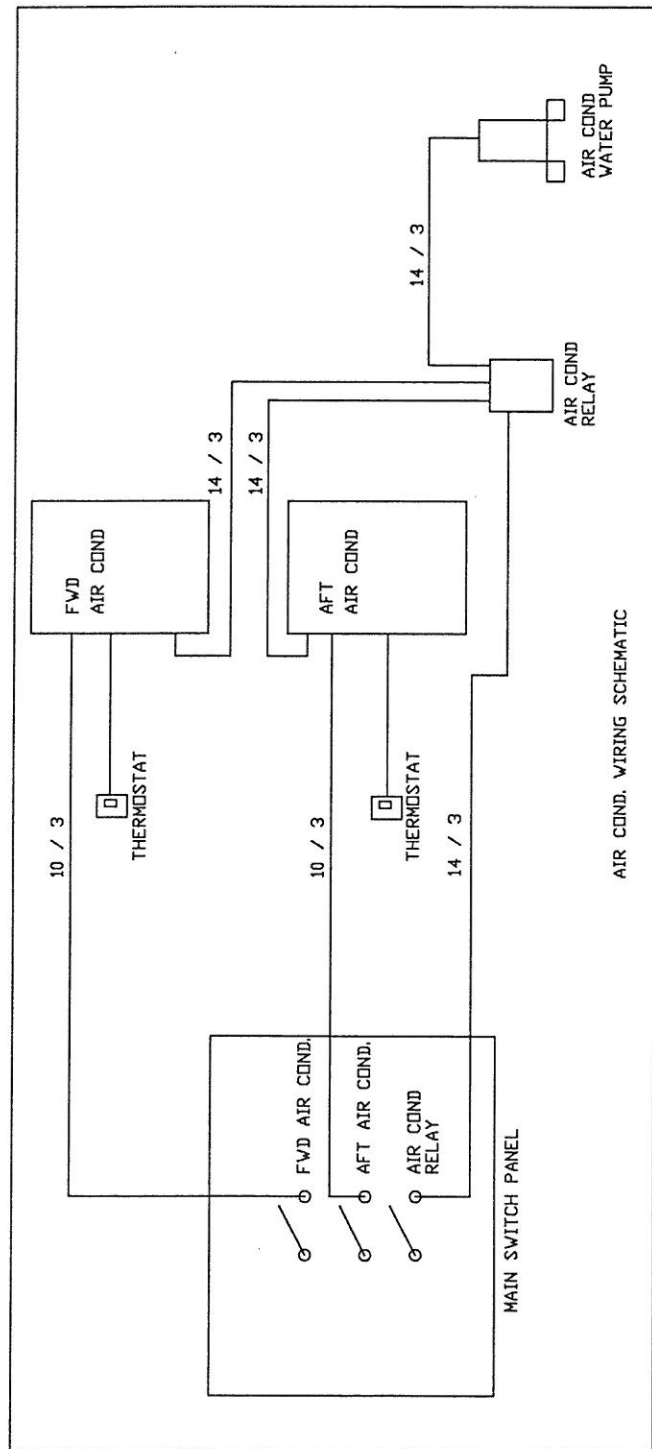
HUNTER

P-45 AC POWER (PAN)

4468040A



PAGE 63B



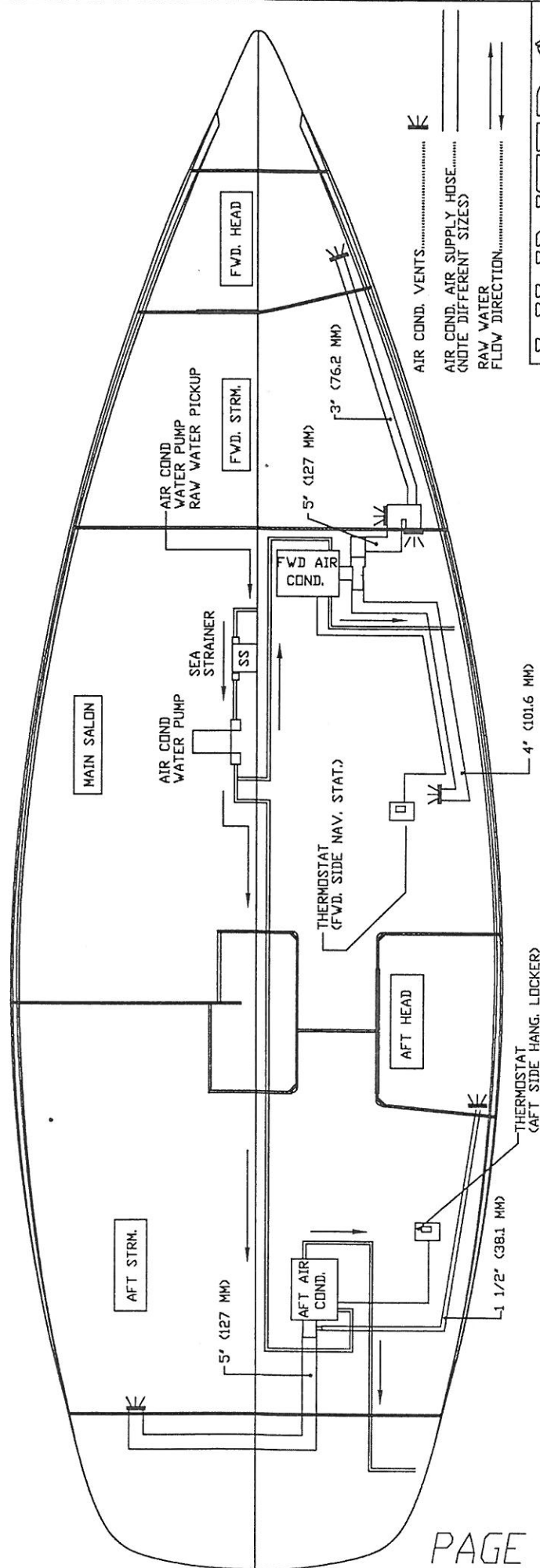
NOTE:

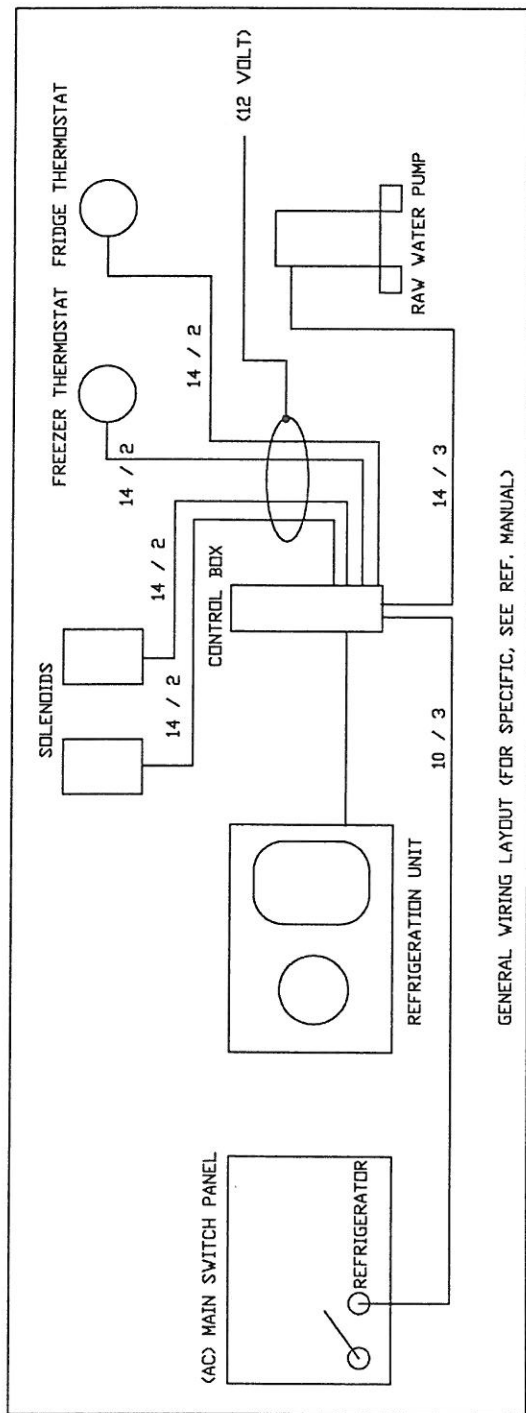
SEE PAGE 60A FOR SPECIFIC-
SEACOCK / THRUHULL / DECK FITTING LOCATIONS

SEE PAGE 60B FOR SPECIFIC-
SEACOCK / THRUHULL / DECK FITTING ASSEMBLY
AND SIZES & PART # / S

SEE PAGE 64 FOR SPECIFIC-
WATER PUMP WIRING LAYOUT

SEE PAGE 63A FOR SPECIFIC-
POWER RUNS TO AC UNITS



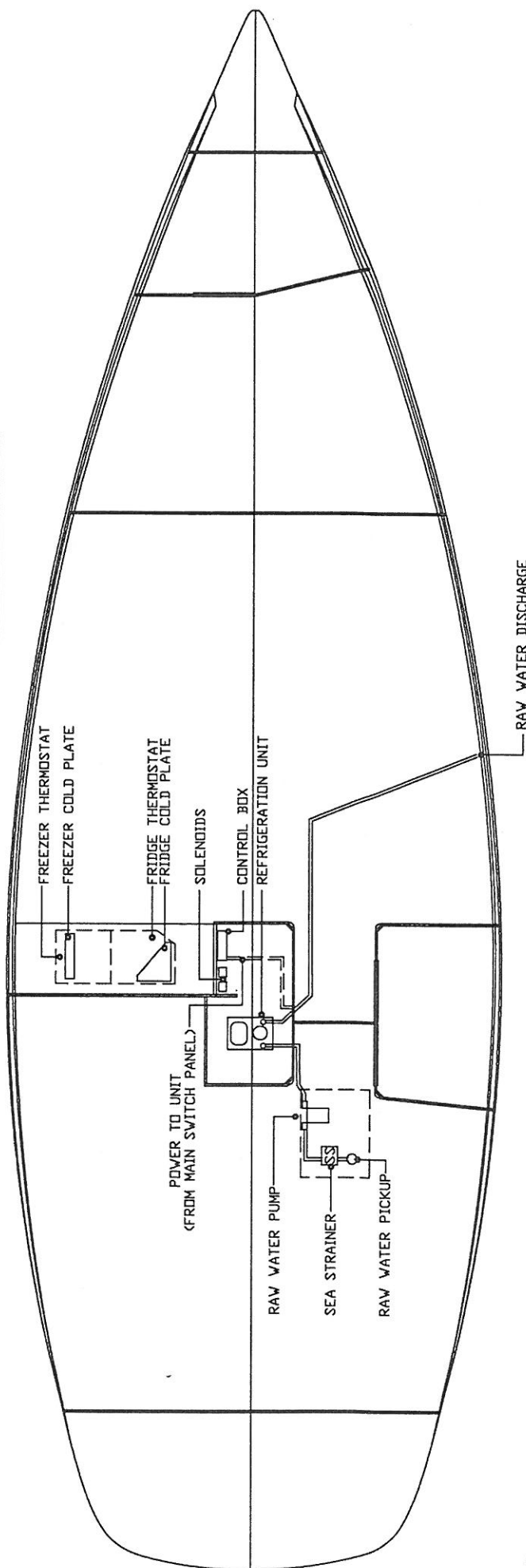


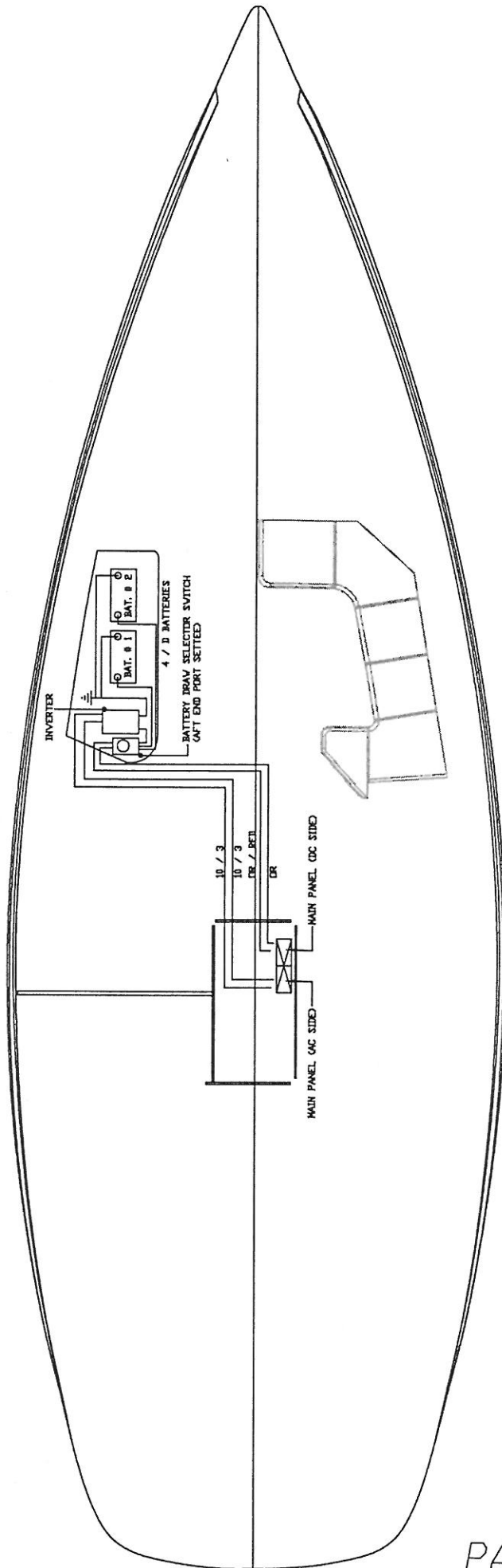
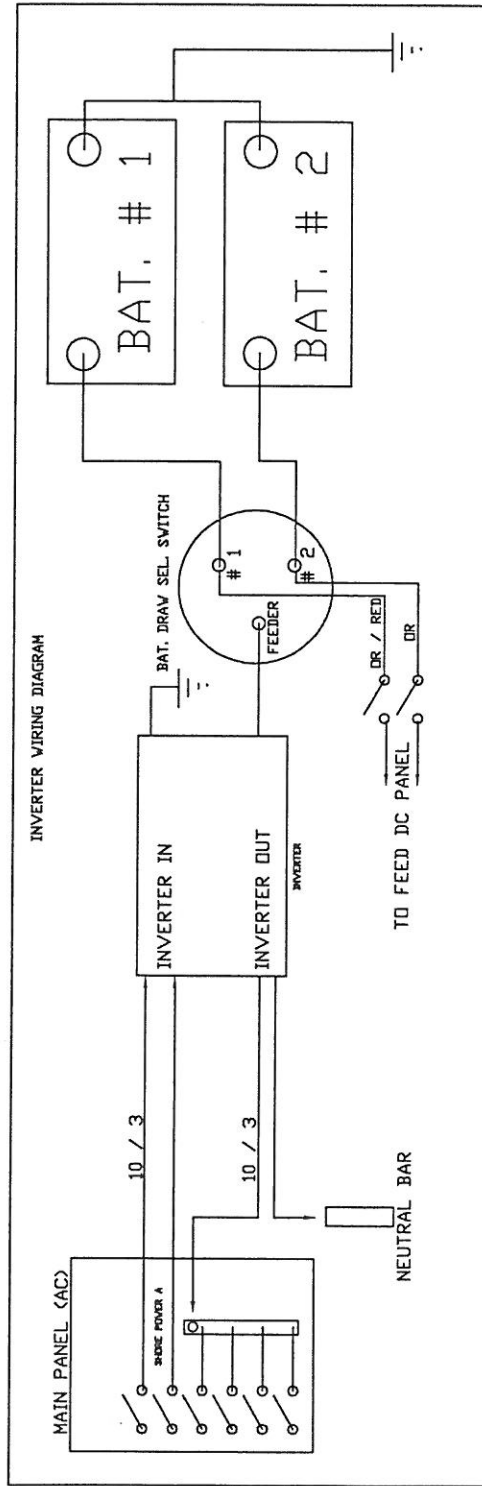
GENERAL WIRING LAYOUT (FOR SPECIFIC, SEE REF. MANUAL)

NOTE:

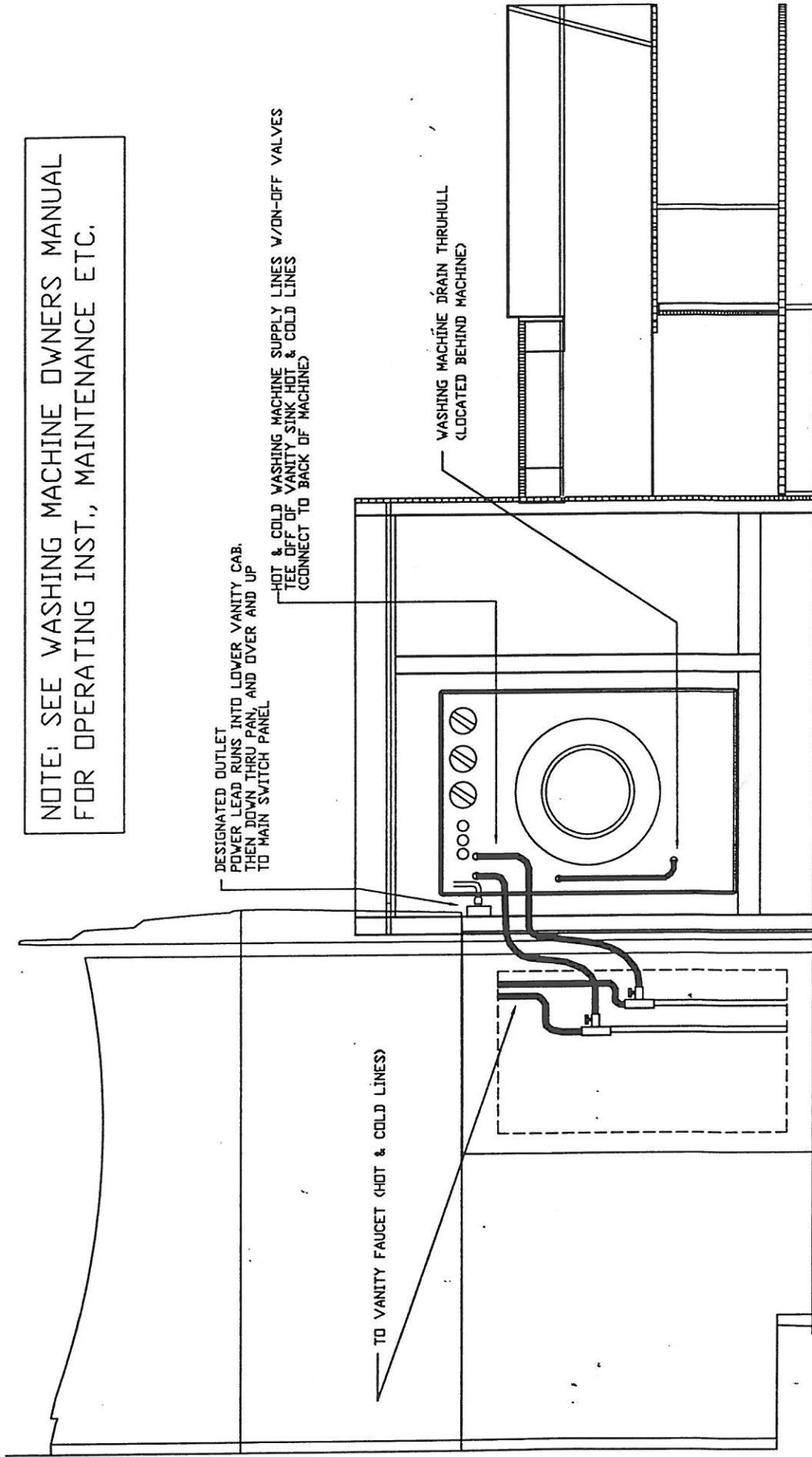
SEE PAGE 60A FOR SPECIFIC-
SEACOCK / THRUHULL / DECK FITTING LOCATIONS

SEE PAGE 60B FOR SPECIFIC-
SEACOCK / THRUHULL / DECK FITTING ASSEMBLY
AND SIZES & PART # 'S



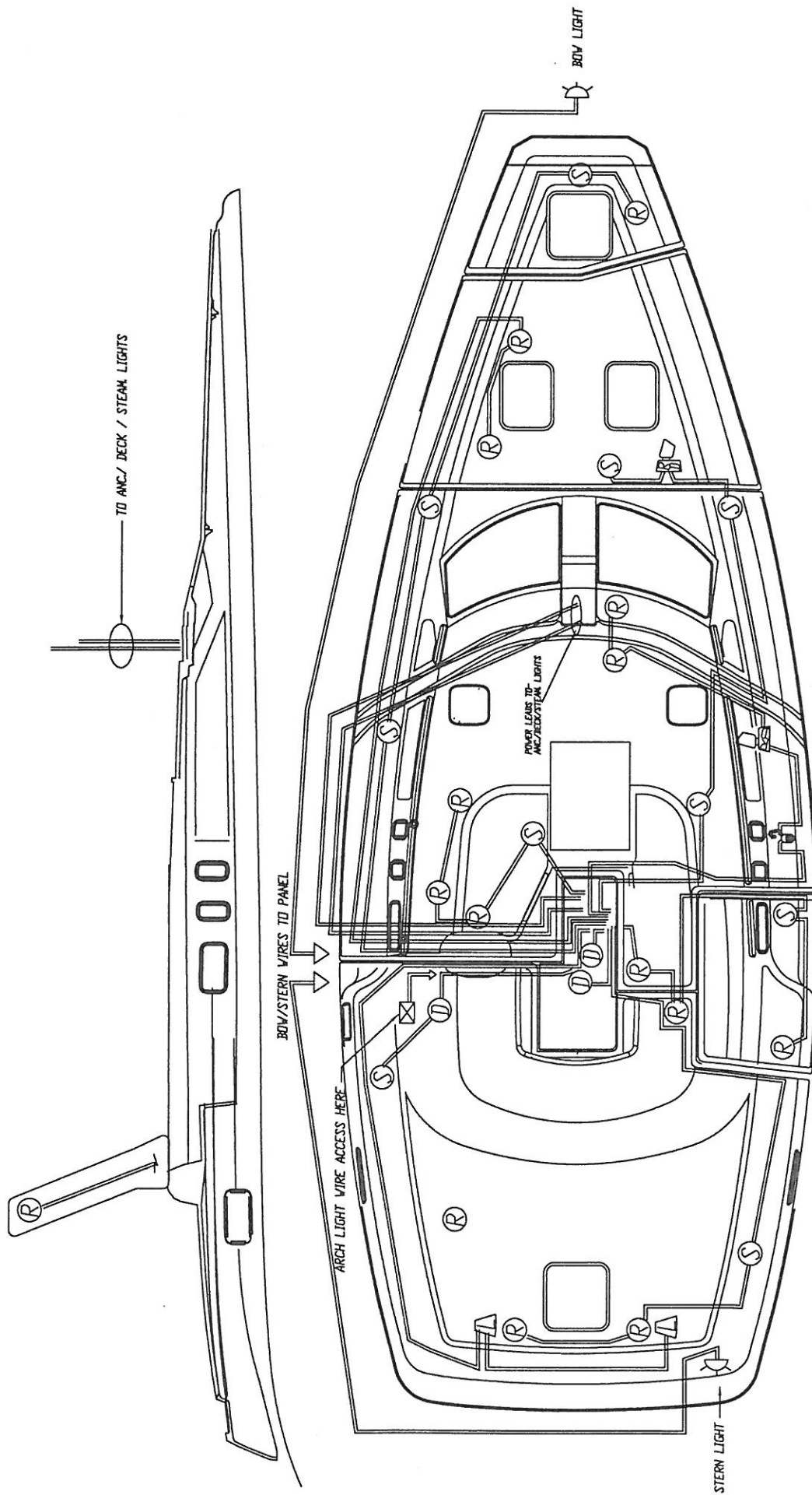


NOTE: SEE WASHING MACHINE OWNERS MANUAL
FOR OPERATING INST., MAINTENANCE ETC.

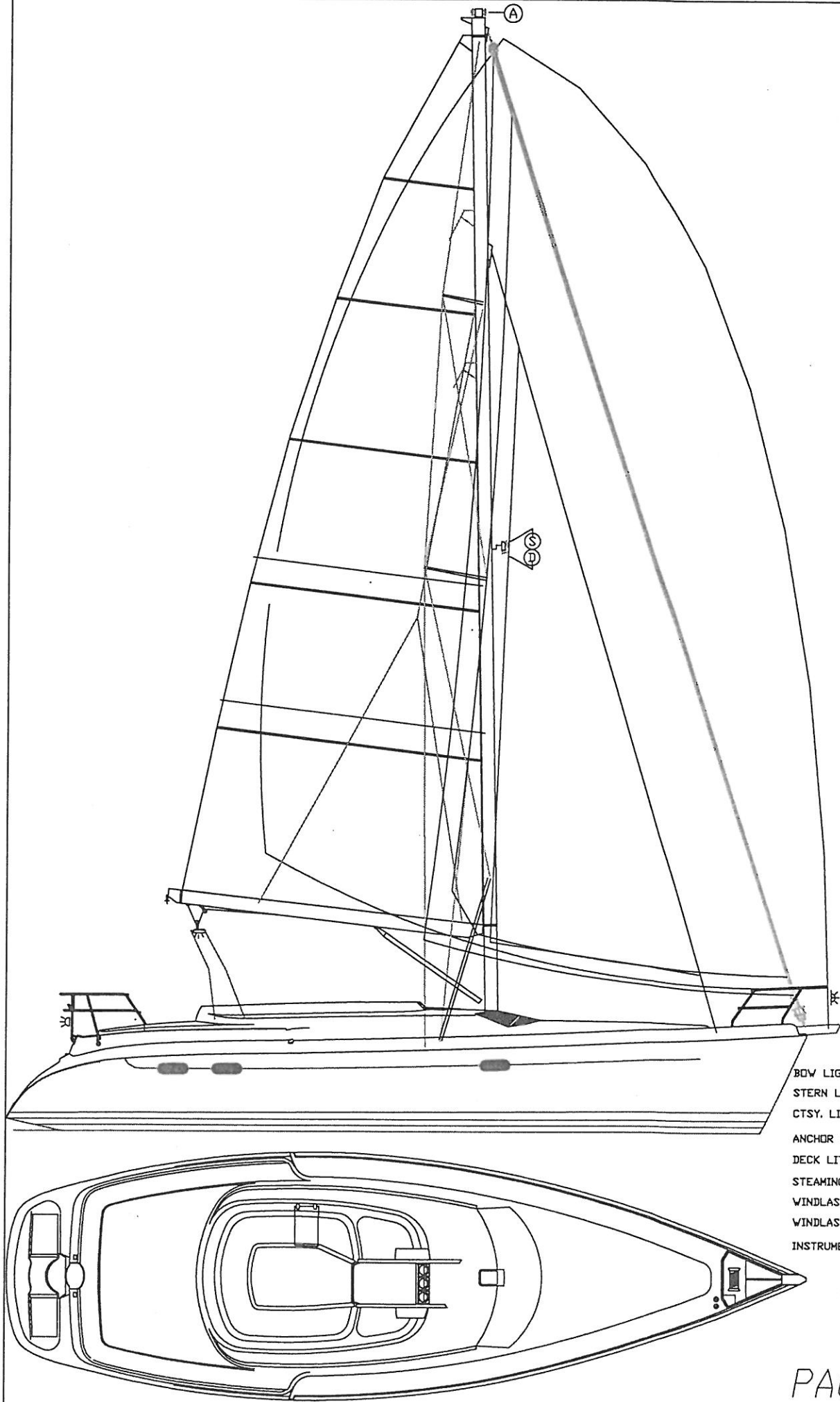


VIEW: PORT LOOKING STBD.

WASHING MACHINE (OPTIONAL) LAYOUT



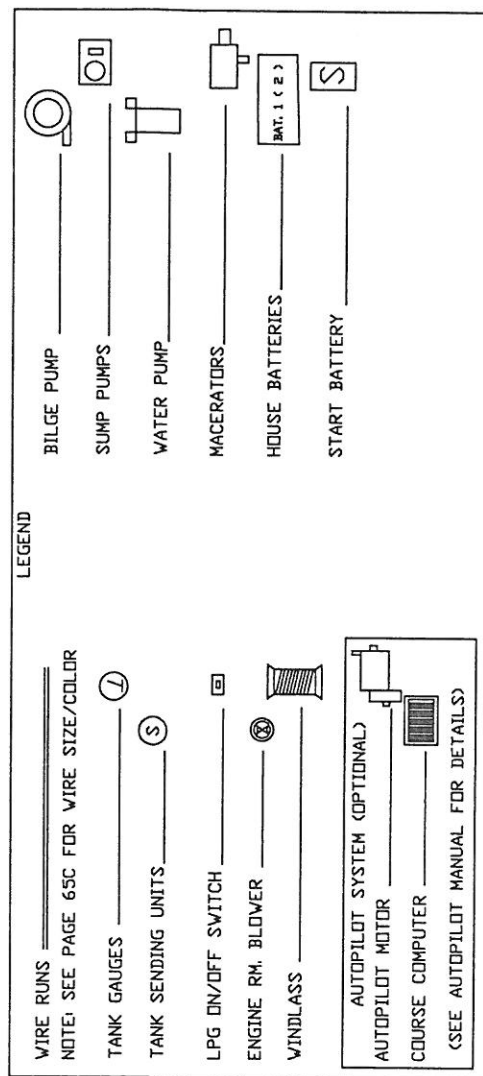
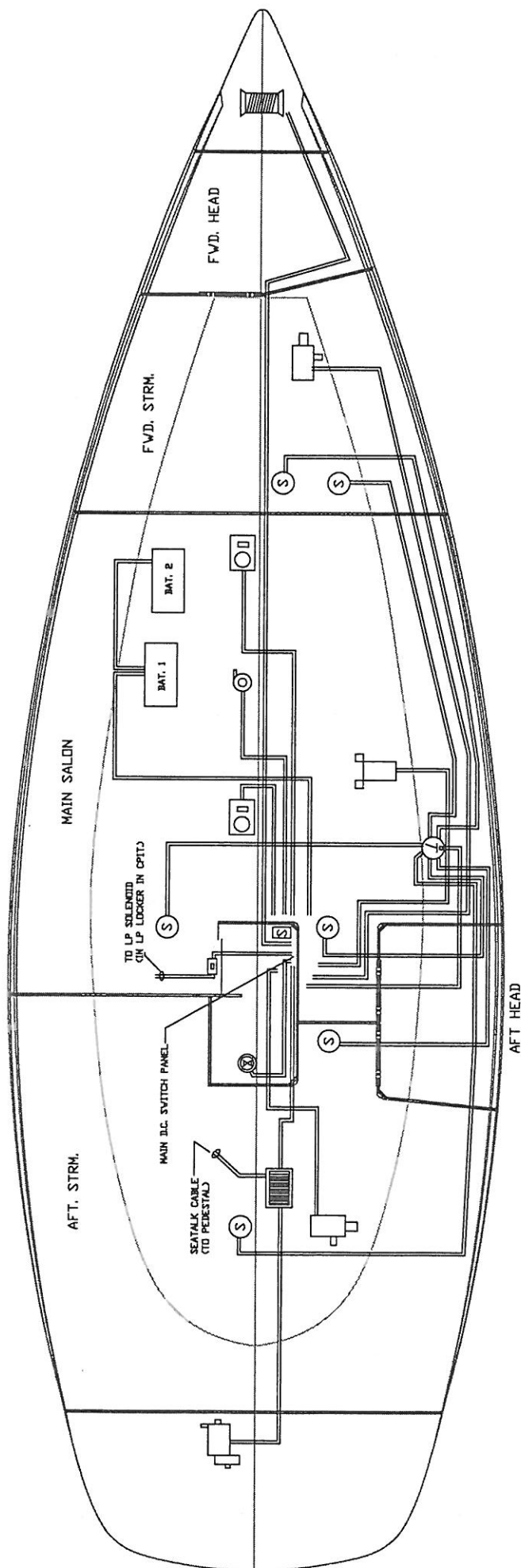
ACCESSORIES LAYOUT

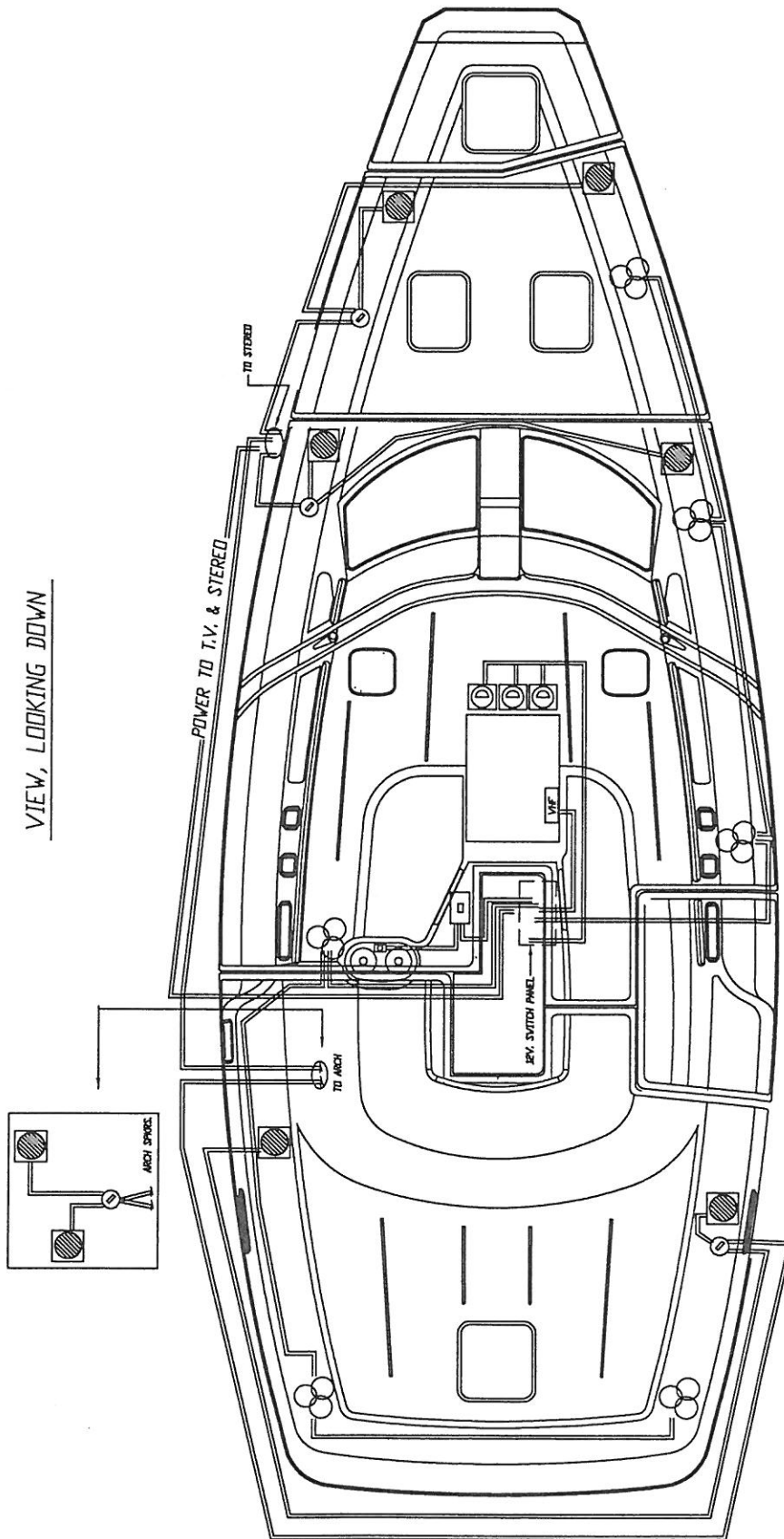


LEGEND:

- BOW LIGHTS.....
- STERN LIGHTS.....
- CTS. LITE.....
- ANCHOR LITE.....
- DECK LITE.....
- STEERING LITE.....
- WINDLASS.....
- WINDLASS CONTROLS.....
- INSTRUMENTS.....







LEGEND

WIRE RUNS (SEE PAGE 65C FOR COLOR/SIZES)	_____	SPEAKERS(SETS) 3 req'd	_____
INSTRUMENTS	_____	VOLUME CONT. 3 req'd	_____
VHF RADIO	_____	LP GAS ON/OFF 1 req'd	_____
FAN 6 REQ'D	_____	LP GAS SOLENOID 1' req'd	_____
			B



ELECTRICAL WIRING INFO.				ELECTRICAL CABLE INFO.		
12V. ONLY				12V. & 110V.		
EL. COMP.	GA. WIRE	COLOR CODE		EL. COMP.	GA. WIRE	COLOR CODE
INSTMTS.	22GA.	RED/YEL/SHIELD	VENDOR SUPPLIED	BAT. CABLES	2/0	RED & BLK
ANC. LITE	16 GA.	GRAY / RED & - *		ENG.ST. CAB.	2 GA.	RED & BLK
CAB. LITE	16 GA.	BLUE & BLK		HAL.WINCH" "	2 GA.	RED & BLK
CTSY LITE	16 GA.	BLU/WH & BLK		WDLS. CABLE	2/0	RED & BLK
DECK LITE	16 GA.	GRAY & - *			↑(12 V)↑	STANDARD 376=2 GAUGE
FANS	16 GA.	WH & BLK				
RUN. LITE	16 GA.	GRAY/WH & BLK		SH. POWER		
SPEAKERS	16 GA.	YEL & BLK	PORT SIDE OF BOAT	INVERTER	10/3	BOAT CABLE
SPEAKERS	16 GA.	BRN & BLK	STBD SIDE OF BOAT	AIR COND.	(110V)	
STEAMING	16 GA.	GRAY/GRN & - *				
STERED	16 GA.	RED & YEL & BLK		AC. RELAY		
VHF RADIO	16 GA.	RED/WHI & BLK		BAT. CHGR	14/3	BOAT CABLE
WINDLASS	16 GA.	PINK		MICRD.	(110V)	
L.P. SYS.	14/2	BOAT CABLE		OUTLETS		
TANK IND.	14/2	BOAT CABLE		WATER HTR.		
SHWR.SUMP	12GA.	BRN/YEL & BLK	FORWARD SHOWER			
SHWR.SUMP	12GA.	BRN/BLK & BLK	AFT SHOWER			
WAT. PUMP	12 GA.	BROWN & BLK				
MACERATOR	10GA.	BRN/WH & BLK				
FREEZER	8 GA.	RED/WH & BLK				
FRIDGE	8 GA.	RED/BLK & BLK				
PAGE 65B						
NOTE: * = ANC./ DECK/ STEAMING LIGHTS						

(1) 12 GAUGE CABLE (BLACK) FOR -

DC VOLT

DC AMP

BANK 1
BANK 2
BANK 3

50A

5A

20A

20A

15A

15A

10A

10A

10A

5A

10A

LINE
LOAD

GROUND

10A

5A

15A

10A

10A

5A

10A

5A

20A

20A

20A

LINE
LOAD

GROUND

5A

10A

15A

15A

15A

15A

15A

15A

15A

15A

15A

LINE
LOAD

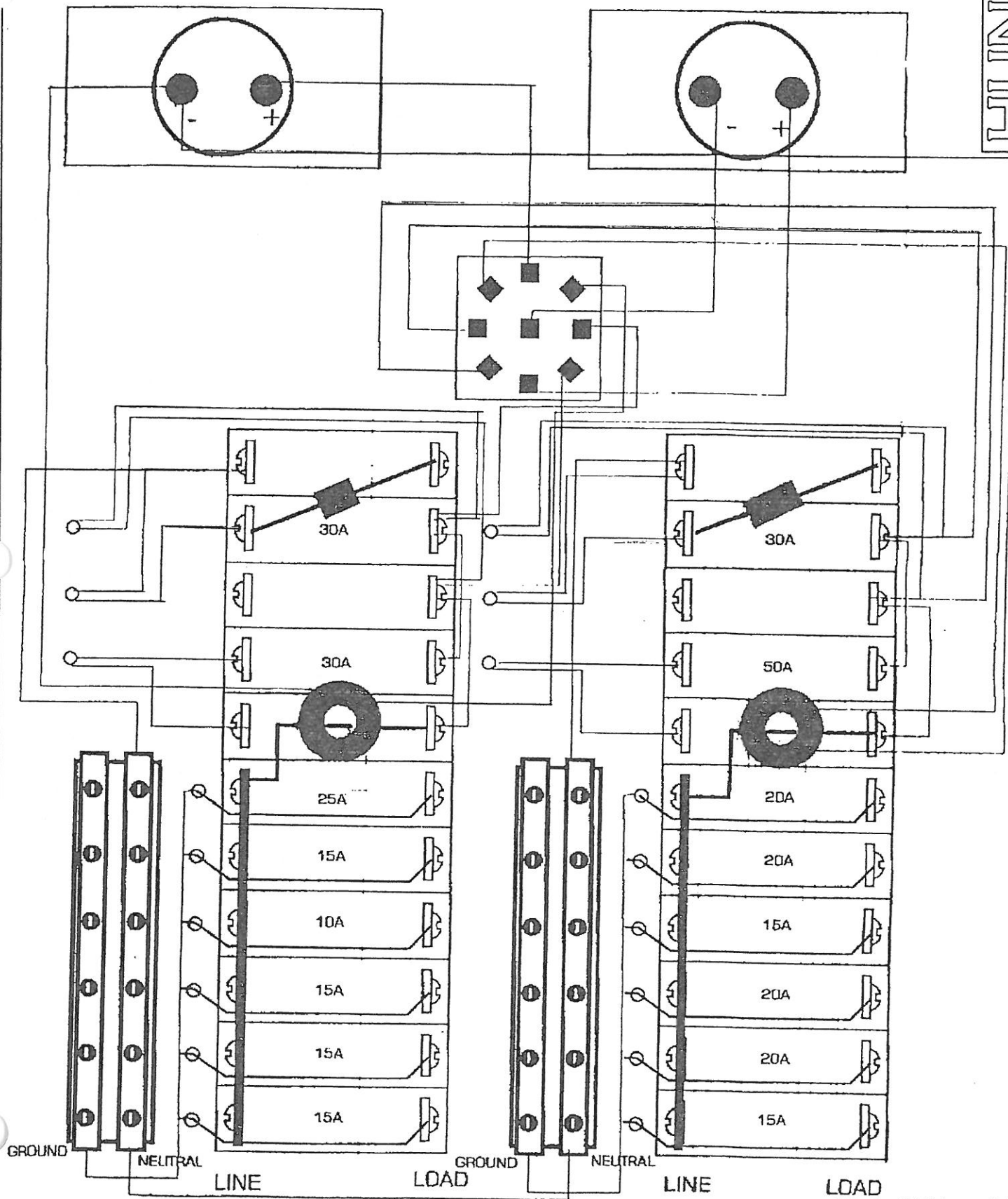
GROUND

HUNTER

P-45 D.C. PANEL LAYOUT

AC AMP

AC VOLT

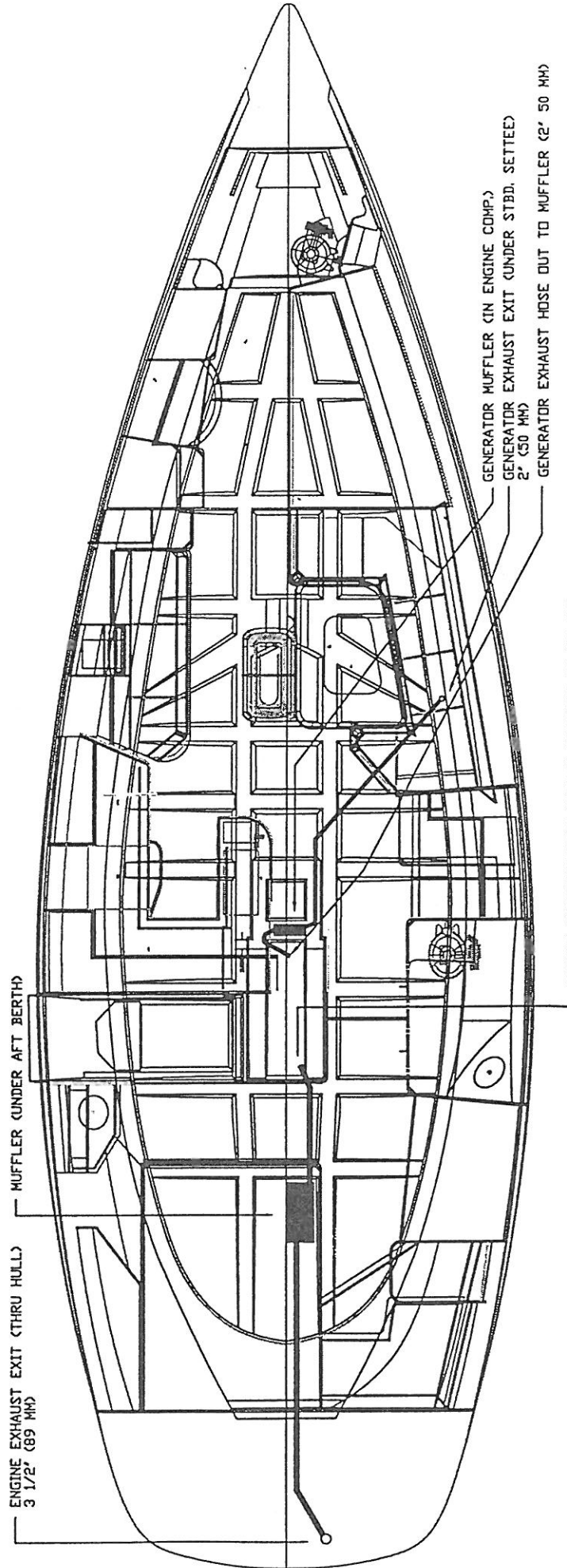


ENGINE EXHAUST EXIT (THRU HULL)
3 1/2" (89 MM)

MUFFLER (UNDER AFT BERTH)

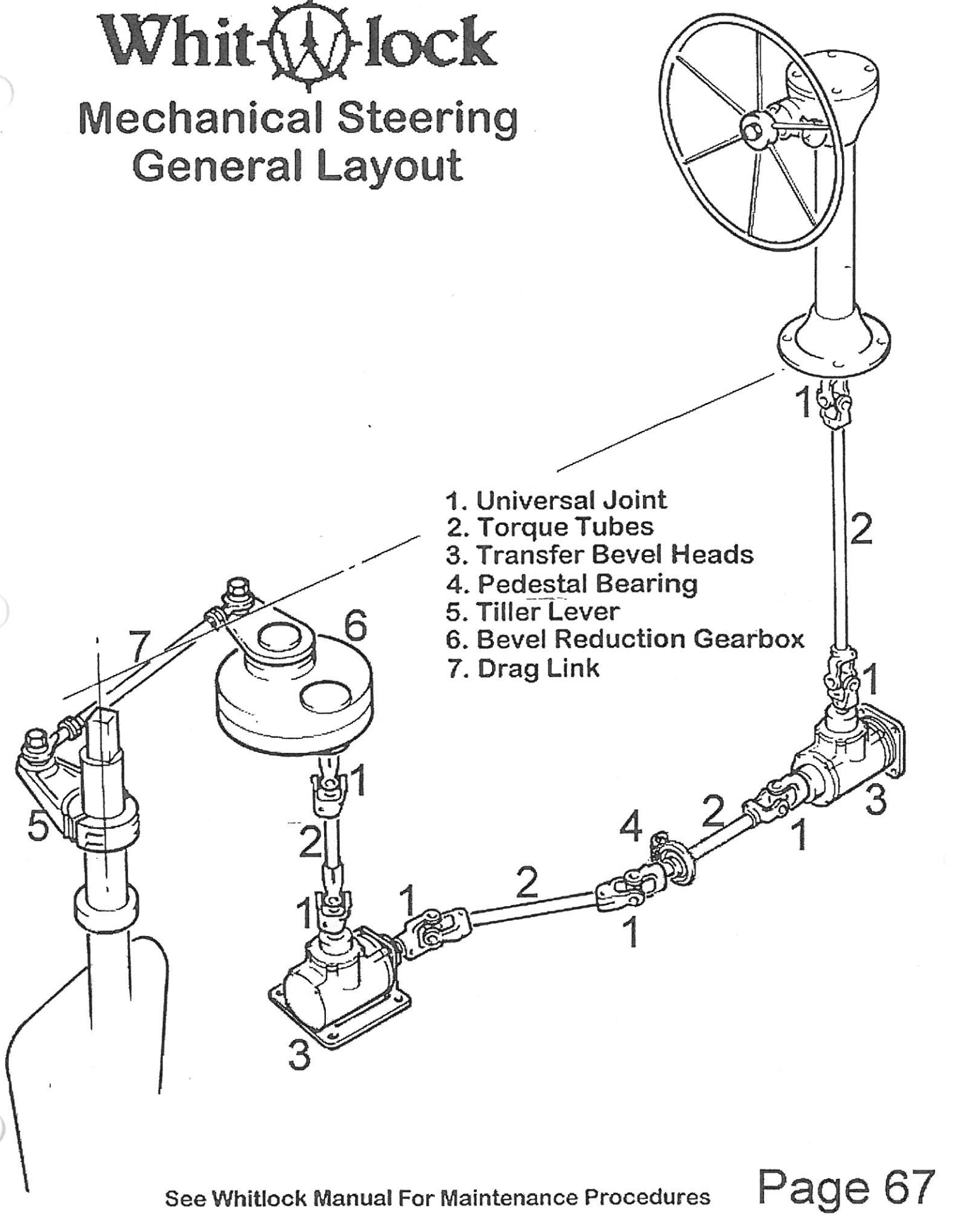
GENERATOR MUFFLER (IN ENGINE COMP.)
GENERATOR EXHAUST EXIT (UNDER STBD. SETTEE)
2" (50 MM)
GENERATOR EXHAUST HOSE OUT TO MUFFLER (2' 50 MM)

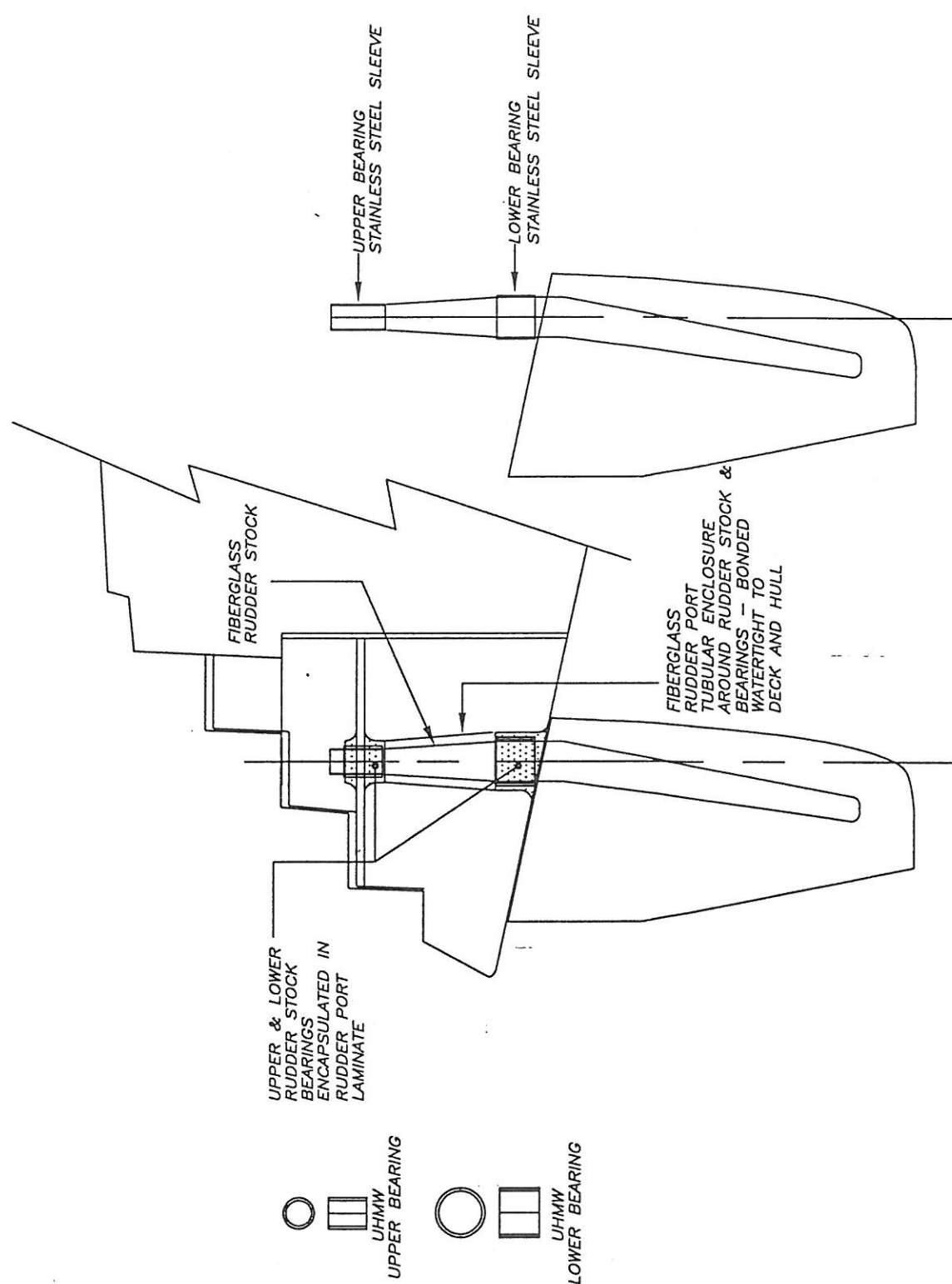
ENGINE EXHAUST HOSE OUT TO MUFFLER 3' (89 MM)



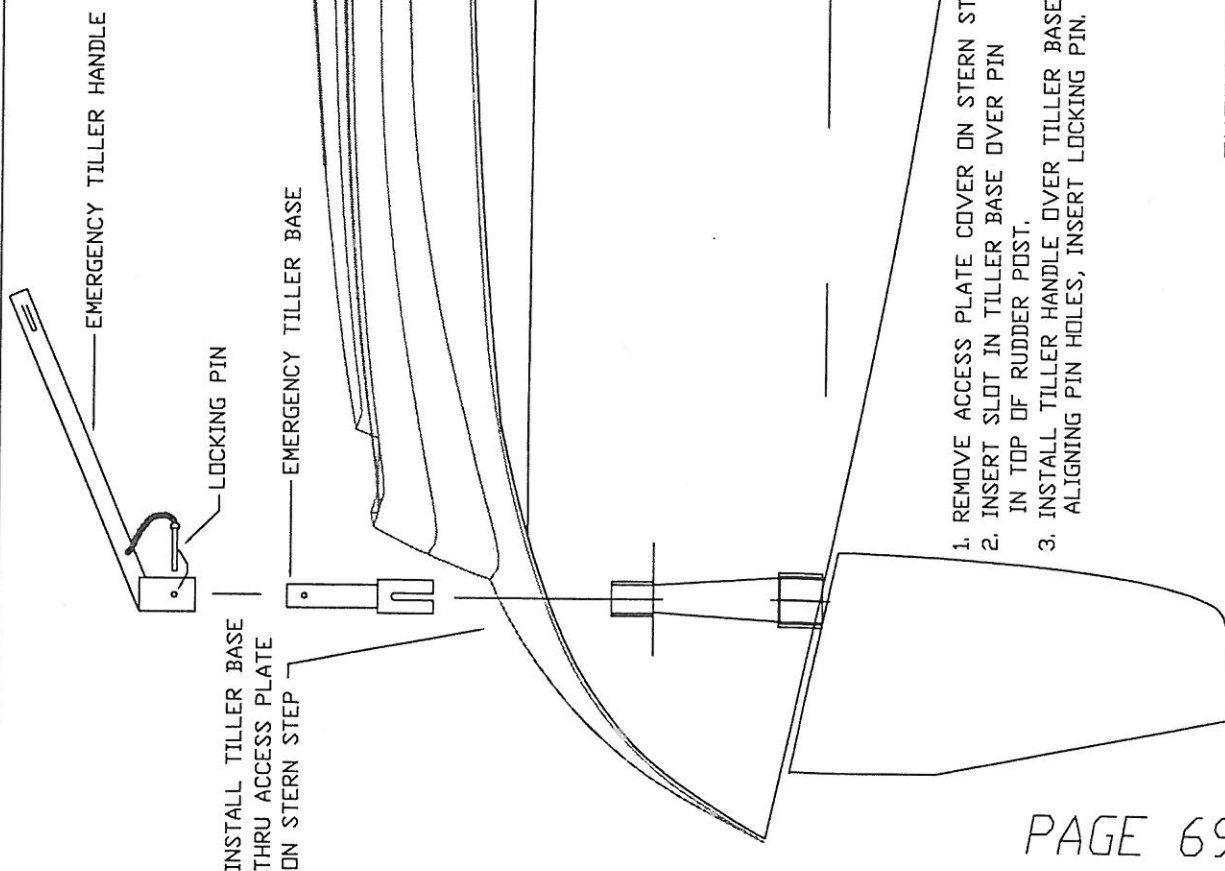
Whitlock

Mechanical Steering General Layout

- 
- The diagram illustrates the general layout of a mechanical steering system. It features a steering wheel at the top right, connected to a vertical shaft (2) that passes through a pedestal bearing (4). This shaft is linked via a universal joint (1) to a horizontal torque tube (2). The torque tube is connected to a bevel reduction gearbox (6) through another universal joint (1). The gearbox is mounted on a pedestal bearing (4). A drag link (7) connects the gearbox to a transfer bevel head (3), which is also mounted on a pedestal bearing (4). A tiller lever (5) is attached to the transfer bevel head. The diagram uses numbers 1 through 7 to identify the following components:
- 1. Universal Joint
 - 2. Torque Tubes
 - 3. Transfer Bevel Heads
 - 4. Pedestal Bearing
 - 5. Tiller Lever
 - 6. Bevel Reduction Gearbox
 - 7. Drag Link



NOTR: EMERGENCY TILLER HANDLE & BASE
LOCATED ON BULK. (STBD SIDE) IN AFT SWIM SEAT LOCKER



NOTE: IF SECURING TILLER BECOMES NECESSARY-
OR IF YOU DESIRE TO STEER FROM COCKPIT

SECURE LINE TO EYE ON TILLER HANDLE
LEAD AROUND MOORING KLEATS AS SHOWN
THEN TO WINCHES AS SHOWN

