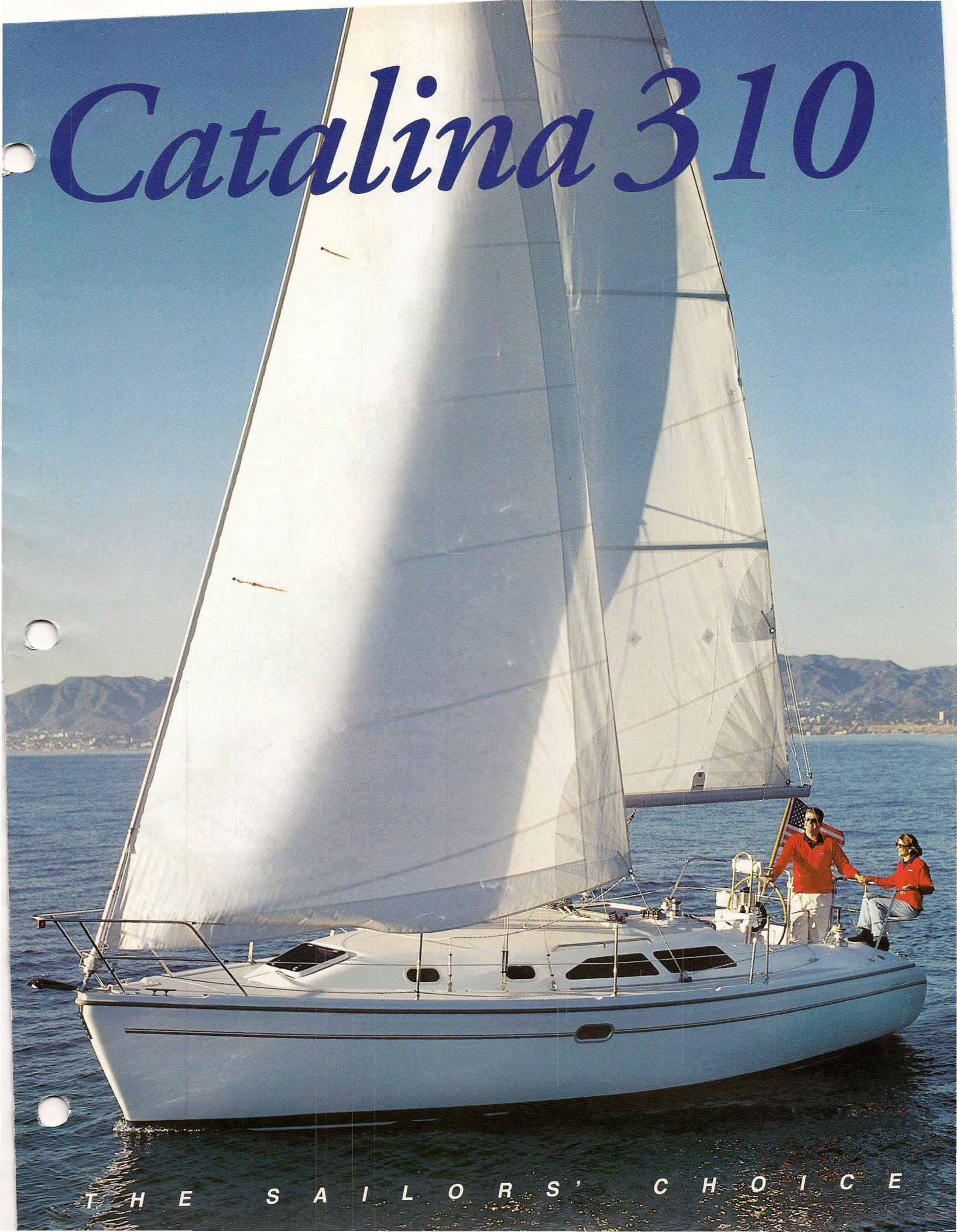
Catalina 310



THE SAILORS' CHOICE

CATALINA 310

OWNER'S MANUAL

Revised 5/1/00

FOREWORD

Congratulations on the acquisition of your new Catalina Yacht. All Catalina yachts are designed and built with care using quality materials to assure you years of sailing enjoyment with a minimum of upkeep and maintenance.

Before attempting maintenance or operation of your Catalina Yacht, please read the Catalina Yachts Limited Warranty booklet and fill out the enclosed warranty registration card.

The registration card enables Catalina to inform you of developments and modifications to enhance the performance or comfort of your yacht. It is also important to be able to contact owners to comply with Coast Guard defect notification requirements.

The launching and rigging of your Catalina Yacht should be handled by experienced boat yard personnel under the direction of your authorized dealer.

The index page lists the contents of this manual. Warrantees and information regarding installed optional equipment have been included when available and applicable.

Maintaining your yacht properly can become a satisfying part of your sailing activities. A regular inspection is the best preventive maintenance. It will help keep your boat safe and in good condition while in use, and insure peace of mind when the boat is left unattended.

Take good care of your boat and take the time to learn and practice good seamanship.

PREFACE

This manual is intended and supplied to help owners of Catalina Yachts understand their boats and answer common questions about maintenance and systems design specific to their boat.

This manual is not intended to provide sailing instructions. It is assumed the operator will consult books written for that purpose, or take sailing lessons or courses to gain knowledge necessary for the safe operation of the vessel.

The systems descriptions and illustrations in this manual apply to boats built at the time of publication. Our policy of constant improvement necessitates that changes have been made to the boat since its introduction. Therefore, these illustrations and descriptions may not apply to boats built before the time of publication.

Owners of earlier hulls, who have questions not answered herein should consult with their local Catalina dealer, or write to, or e-mail Catalina Yachts. Please include your hull number in all correspondence.

The maintenance check lists contained within this manual are intended as guidelines for boats in normal service under typical conditions.

Climate and use will vary and may require additional or special maintenance. Consult with your local boat yard or Catalina dealer for specific maintenance and precautions recommended for your purposes and climate.

Caution: The aluminum and other metal parts conduct electricity. Coming in contact with or near an electrical power line or lightening can cause severe injury or death. Stay away from overhead electrical power lines when sailing and/or launching the boat.

TABLE OF CONTENTS

COMMISSIONING CHECK LIST

This check list is intended as a guide to aid in the proper delivery and commissioning of a new boat to the originator purchaser. It may also be useful to review this list each time the boat is recommissioned after storage.

PRE-LAUNCH CHECK: (before stepping mast)

1. _____Shaft turns freely by hand, zinc collar installed if required.
2. _____Check intake hoses and clamps.
3. _____Check all through hull fittings.
4. _____Drain plugs tight, ____ engine, muffler and exhaust line OK.
5. _____Bottom clean, paint OK.
6. _____Hull sides clean, gel coat OK.
7. _____Decks clean, gel coat OK.
8. _____ Interior varnish OK.
9. _____Cushions, curtains, clean and in place.
10. _____Lifelines, pelican hooks and pulpits rigged and OK.
11. _____ Spreaders taped at base end, upper shroud and intermediate wired to tip end and taped or boots installed.
12. _____ Rigging lengths verified with check list in kit.
13. _____ Mast and boom inspected; cotter pins, sheaves, tangs, spreaders, reef lines, outhaul, OK.
14. _____ Mast lights checked before mast stepped
15. _____ Check overhead for electrical wires which may interfere with the space required to raise the mast to its full upright position. If there are wires of any kind anywhere near the boat. **Do not raise the mast.** Move boat to any other location away from any wires. Contact with wires can be fatal.
16. _____Masthead sheaves lubricated and rotate freely.

ELECTRICAL:

1. _____Lights operational:
   ___Running ___Cabin ___Bow ___Anchor ___Deck Light
2. _____ Pumps Operational: ___Pressure Water ___Macerator Pump ___Bilge Pump
3. _____Shore power outlet OK.

4. _____Check battery switch #1___ #2___ OK.

5. _____Check battery fluid level.

6. _____Check battery terminal for tightness.

7. _____Check battery tie down straps.

PLUMBING AND INTERIOR:

1. _____No leaks at through hull fittings with seacocks open or closed.

2. _____Fill all water tanks.

3. _____Check all water tanks at fittings and vents for leaks.

4. _____Test all faucets and foot pumps for leaks.

5. _____Check for leaks at sink drain, sink drains OK.

6. _____Put water in ice box and check for proper drainage.

7. _____Check manual bilge pump operation, handle present.

8. _____Check head by flushing and pumping.

9. _____Check shower sump drain line.

10._____Check holding tank, pump vent and fitting.

11._____Check head and pump handle for leaks.

12._____Main hatch no leaks, slides freely, hatch boards fit OK.

13._____Cabin windows hose tested for leaks.

14._____Anchor locker drains OK, no Leaks.

15._____Stove operates OK; check tank, fuel line, burner and oven.

RIGGING AND HARDWARE:

1. _____Mast stepped.

2. _____Pin, tape and tune standing rigging

3. _____Blocks, cars, cleats rigged OK.

4. _____Test all winches, winch handles present.

5. _____ Boom vang supports boom

6. _____ Check chainplates for leaks (**note 1*)

ENGINE:

1. _____No leaks: Shaft, rudder, stuffing box, or shaft log.

2. _____Shaft, dimpled for set bolts at coupling; bolts wired and coupling secured.

3. _____With fuel tanks full, no leaks at fill pipes, overflow vent, or any fuel line connections.

4. _____With coupling disconnected, engine and shaft alignment OK. Recheck alignment OK. Recheck alignment after rigging tuned.

5. _____Transmission fluid level OK.

6. _____Engine oil level OK.

7. _____Check fresh water/coolant level OK.

8. _____Fuel valves open, bleed and prime lines for diesel engine.

9. _____Check that shaft is coupled and aligned to .003 maximum tolerance.

10._____Engine wire OK, connections tight.

11._____Throttle control cable travel and brackets OK.

12._____Clutch control cable travel and brackets OK.

13._____Start engine.

14._____Exhaust water flow OK.

15._____No leaks in fuel lines at fittings, fuel filter, fuel pump or injectors.

16._____No engine or oil leaks.

17._____Idling speed set ___ R.P.M.'S.

18._____ Check shutoff cable for diesel engine.

19._____Check forward and reverse shifting.

20._____Check engine instruments for operation, tachometer for calibration.

21._____Run in gear for ten (10) minutes.

22._____Recheck packing gland after engine stops.

23._____Bilge blower and vent system OK.

24._____Exhaust system, check for leaks, insulation in place.

*Note (1): It may be necessary to rebed the chainplates after the boat has been sailed the first few time as some movement between the deck and the metal chainplate may break the bedding material seal. This movement is normal. Chainplates should be rebedded or caulked at the first sign of a leak to avoid damage to the interior wood and finishes.

OPERATION CHECK LIST:

1. _____ Emergency tiller trail fitted and operational.
2. _____Pedestal steering operation OK, compass OK.
3. _____Sails and halyard OK.
4. _____Boat sea trailed under power and sail OK.

FINAL CHECK:

1. _____All accessory equipment operates OK.
2. _____All boat, engine, and accessory literature, and/or manuals aboard or presented to owner.
3. _____Warranty cards completed and mailed, owner registration card attached, owner informed of warranty responsibilities.
4. _____Engine warranty card completed and mailed.
5. _____ Owner familiarized with boat, equipment and operation.

Commissioned By: _____ Date: _____

Sold and Delivered By: _____ Date: _____

MAINTENANCE CHECKLIST

PRE-USE MAINTENANCE:

RIGGING:

1. _____Inspect turnbuckles, tighten as required, pinned as required.
2. _____Inspect clevis pins and cotter pins.
3. _____Visually inspect spreader tips and other areas where sails may chafe during sailing, replace tape as necessary.
4. _____Halyards free and not tangled.
5. _____Inspect mast hardware attachment bolts, tighten as required.

HULL AND DECK INSPECTION:

1. _____ Pedestal steering OK, rudder post packing gland not weeping.
2. _____Bilge and compartments are dry.
3. _____Through hull valves, hoses, and clamps OK.
4. _____Check running lights.

ENGINE:

1. _____Check engine oil and fuel levels.
2. _____Packing gland OK, cooling water intake valve opens and closes OK.
3. _____Throttle shift OK.

MONTHLY MAINTENANCE:

RIGGING:

1. _____Inspect chain plates, fastenings and bolts for leaks, replace sealant and tighten as necessary. (1)
2. _____Inspect blocks, shackles, cotter pins.
3. _____Check rigging tune, rigging wire condition.
4. _____Check turnbuckles and locking pins.

NOTE (1): It may be necessary to rebed the chainplates after the boat has been sailed the first few time as some movement between the deck and the metal chainplate may break the bedding material seal. This movement is normal. Chainplates should be rebedded or caulked at the first sign of a leak to avoid damage to the interior wood and finishes.

HULL AND DECK:

1. _____Inspect hull valves open and close freely.

2._____ Winches turn freely, lubricate as per manufacturer's recommendations.

3. _____Clean and wax gel coat surfaces as necessary.

ENGINE:

1. _____Check oil and fluid levels, visually check for fluid leaks.

2. _____Battery: Check fluid levels and tie downs.

3. _____Tighten all bolts and nuts to proper torque.

4. _____Check fuel tank fittings and hose clamps.

5. _____Disassemble and inspect cooling system anti-siphon

6. _____Check bolts.

7. _____Check filters.

SEASONAL MAINTENANCE:

RIGGING:

1. _____Mast head pins and sheaves turn freely.

2. _____Halyards and shackles are in good condition. (Refer to Rigging, Stepping the Mast)

3. _____Spreader tips and bases, and mast fittings OK.

4. _____All shroud terminations and swedged fittings OK, check for cracks or corrosion.

5. _____Gooseneck assembly and boom assembly OK.

6. _____Mast, boom and spreaders cleaned and waxed.

7. _____Lifelines, pelican hooks, and stanchions all OK, all pins and fittings are secure, cotter rings taped. Turnbuckles, pelican hooks and connector loops OK, screw fittings checked for thread wear.

HULL, DECK and CABIN:

1. _____All chainplates and through bolts tight.

2. _____Disassemble winches and lubricate bearings and pawls.

3. _____Inspect and coat electrical system connections, battery tie downs and terminal connectors to prevent corrosion.

4. _____Drain and flush fresh water system.

5. _____Check head and anti-siphon valve in toilet.

6. _____Hatch gaskets and hold down fasteners OK.

7. _____Bottom, keel and rudder condition of anti-fouling paint OK.

8. _____Lifelines, stanchions and pelican hooks OK.

ENGINE:

1. _____Check shaft alignment, repack stuffing box if necessary.

2. _____Clean motor thoroughly.

3. _____Inspect fuel system.

4. _____Tune engine as per manufacturer's recommendations.

5. _____Exhaust system check for leaks, or deterioration, insulation in place.

CATALINA 310 SPECIFICATIONS

I. PRINCIPAL DIMENSIONS

L.O.A.		31'-0" (9.49m)			
L.W.L.		26'-6" (8.08m)			
Beam		11'-6" (3.51m)			
Draft	**Fin Keel**	5'9" (1.75M)	**Wing Keel**	4'0"	(1.22m)
Ballast	**Fin Keel**	4000 lbs. (1814kg)	**Wing Keel**	4400 lbs.	(1996kg)
Displacement	**Fin Keel**	10300 lbs. (4672kg)	**Wing Keel**	10700 lbs.	(4854kg)
Distance-Waterline to Masthead		46'-9" (14.3m)			
Headroom-Maximum		6'2" (188cm)			

II. COMPARATIVE DATA

Displacement/Length	**Fin Keel**: 332.26	**Wing Keel**: 345.16
Sail Area/Displacement	**Fin Keel**: .0476	**Wing Keel**: .0458
Theoretical Hull Speed	6.7 Knots	

III. SAILS

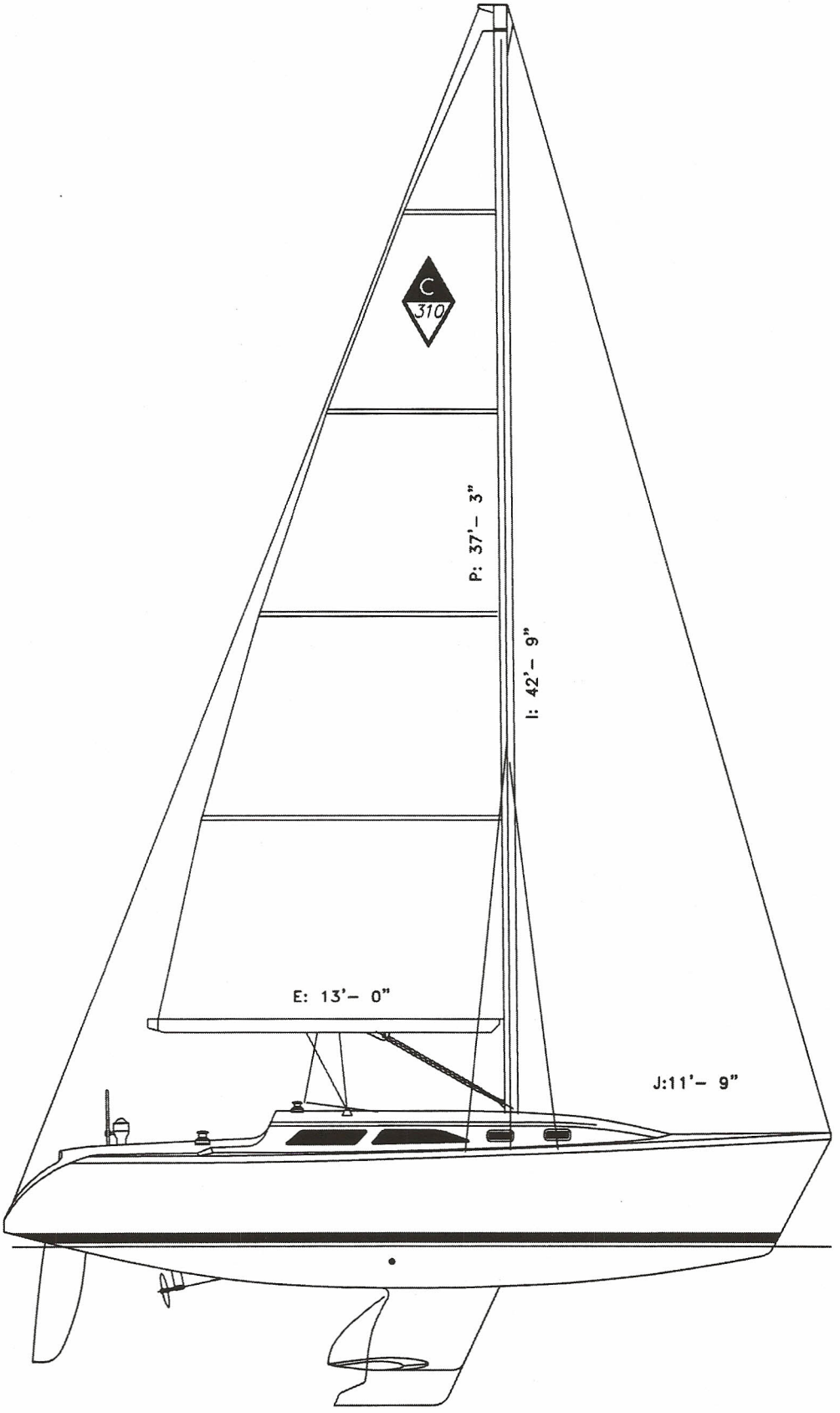
	Weight (oz. per sq. yd.)	
Main	8.0 oz	I=42'-9" (13.0m)
Jib	8.0 oz.	J=11'-9" (3.6m)
Genoa, 150%	6.0 oz.	P=37'-3" (11.4m)
Spinnaker, cruising	?1.5 oz.	E=13'-0" (4.0m)
135% Jib	7.0 oz.	
		Area
Total w/100% Foretriangle		490sq. ft. (45.52 sq. M)

IV. TANKAGE and CAPACITIES

Water	Forward: 35 gal (208 liters), Water Heater 20 gal (23 liters)
	Total = 55 gal(189 liters)
Holding	17 gal (64.3 liters)
Fuel	27 gal (102.1 liters)
Ice Box	6 cu. ft. (.17 cu. M)
Berths	2 Doubles
Common Ratings (approx.)	PHRF = 180
	MORF = 28.4
	IOR = 23.0

V. ENGINE and CONTROLS

Engine	Universal Model(25XP Diesel, 23hp 3 cyl., 57 c.i.,fresh water-cooled
Fuel Consumption (estimate)	.55 g.p.h. (2 liters) at Cruising r.p.m.
Propeller	2 Blade" 13x12, 3 Blade: 13x10
Pedestal Steering	Edson w/32" (81 cm) dia. Destroyer Wheel
Compass	Ritchie NDW200



Catalina Yachts

310 SAIL PLAN

SPAR AND RIGGING MAINTENANCE:

STANDING RIGGING:

Your boat is equipped with stainless steel standing rigging, and Dacron running rigging, to give you years of trouble-free service. However, due to normal wear and tear, it is recommended that a periodic inspection be made on all fittings and wires. Turnbuckles should never be neglected and should be unscrewed from time to time in order that they do not seize. Every three months should be about right for the average sailor. A slightly bent turnbuckle shaft or broken wire in your shrouds should be replaced immediately.

Under most conditions, 1 X 19 standing rigging has a safe "working" life span of approximately five years: seven years under ideal conditions. Factors which reduce the life of the wire are environmental factors such as high humidity (Florida, the Caribbean, and Gulf States); high salinity (Great Lakes, Gulf States, or mooring near a sea wall with constant salt spray); extremes in temperature; and industrial pollution (pulp mills, generating plants, acid rains, and smog). High loading of the rigging as required in most racing boats also induces stress in the rigging system. Many of us have to deal with at least one of these conditions and should consider replacing standing rigging at the five year limit.

Unlike running rigging wire rope, which gives us clear signs that it is deteriorating by broken strands and "meat hooks", standing rigging may give no sign that failure is imminent. The usual point of failure of stay or shroud is approximately ¼" inside the bottom swedged threaded stud fitting which threads into the turnbuckle barrel.

Although the stud is compressed around the wire during the swedging process, salt water and pollutants work down into the tine cavities between the wire strands and the inevitable corrosive process starts in the crevice first time the rigging becomes wet with salt water.

A common method of visually monitoring swedge fitting conditions, employed by distance racers and cruisers, is to dab a small ring of enamel paint around the joint between the wire and the swedge fitting. This will help provide a means to see if the wire is pulling out of the fitting.

Another technique used to check the condition of swedge fittings is a "dye penetrant" test. This simple test will detect any cracks which may develop in the fittings due to internal pressure from the corrosive process. Inexpensive dye tests kits usually are available from most welding supply stores. Dye tests usually are not required by weekend sailors, but may be done before an extended cruise or ocean passage if any doubt about the integrity of the rigging exists.

All stainless steel wire rope rigging will develop some rust film when new. This is normal.

The rust is caused by two factors. When wire rope is manufactured, the wire strands are fed over steel rollers during the process of twisting or laying the wire. Trace amounts of the ferrous steel from the rollers and dyes are transferred to the wire strands. As this small amount of steel rusts it causes a film on the new wire.

The second cause of the rust film on new wire is the microscopic veins of ferrous material which exist in all stainless steel. After a period of time, as the surface material veins are depleted, and the stainless steel has been cleaned several times, new rust film development will slow to a minimum.

For the average sailor, the best insurance against a rigging failure is a periodic (every six months is recommended) inspection of all rigging parts, including turnbuckles, and replacement of standing rigging as required.

IMPORTANT: If any wear or sign of broken strands is found on the running or standing rigging, it is time to replace that part. Using your boat when the rigging is worn could cause the rigging to fail when you least expect it.

FITTINGS:

Marine fittings today need minimal maintenance. Deck hardware should be hosed down with freshwater after each sail in salt water. Stainless steel fittings such as pulpits and lifeline stanchions should be cleaned and waxed periodically to maintain their appearance. Winches require occasional cleaning and lubrication. Where possible, a maintenance brochure for your winches has been included in this manual. Masthead fittings, halyard sheaves, etc., should be inspected, cleaned and lubricated periodically. Keep your equipment clean of dirt and salt.

SPARS:

Like all other fittings, the mast and boom suffer from salt water, air and spray. These should be kept waxed where possible, and at least always hosed down with fresh water. Always see that the halyards are tied off away from the mast. This will eliminate slapping in the wind, and subsequent marking of the mast. Find a high pressure nozzle and shoot fresh water to the top of the mast and spreaders. This will help keep your sails clean, too, as they rub on the mast and spreaders.

SAIL MAINTENACE:

Your sails should be protected from chafing. This can be done by either padding the areas that touch the sail or by having your sailmaker attach chafe patches to the sails themselves.

You should check your sails frequently for any signs of wear and have any tears or frayed stitches repaired immediately.

Sails should never be stored in the sun because they are susceptible to decay through exposure to too much ultraviolet light. Always keep your sails covered when they are not is use.

Sails should never be put away wet. If they are wet after sailing, leave them in loose bundles and dry them at your first opportunity.

For most problems, such as common dirt, dried or caked salt, etc., try scrubbing the surface with a soft bristled brush and liquid detergent. Avoid harsh powder detergents and stiff brushes, as they may damage the finish or stitching. This approach should work nicely for most applications. More severe stains can be taken care of by the following:

IMPORTANT: FOR WHITE SAILS ONLY

BLOOD: Soak the stained portion for 10 to 20 minutes in a solution of bleach (Clorox) and warm water. Generally 10 parts water to 1 part bleach. Scrub and repeat if necessary. Rinse thoroughly, particularly nylon, and dry thoroughly.

OIL, GREASE TAR, WAX: Warm water, soap and elbow grease seem to be effective. On hard stains, proprietary stain remover and dry cleaning fluids should do the trick. Be careful to remove all fluids, as they can soften the various resinated coatings.

RUST AND METALLIC STAINS: These types of stains are very often the most frustrating and difficult to remove. First scrub with soap and water, and apply acetone, M.E.K., or alcohol. As a last resort, you might try a diluted mixture (5%) of Oxalic soaked for 10 to 15 minutes. Hydrochloric Acid, 2 parts to 100 in warm water, will also work.

MILDEW: Hot soapy water with a little bleach will generally prevail. After scrubbing, leave the solution on the fabric for a few minutes and rinse thoroughly. When using a bleach, a residual chlorine smell may be present after rinsing. A 1% solution of Thiosulphate (photographers' Hypo) should remove all chlorine traces. Here again, rinse and dry well.

PAINT AND VARNISH: Acetone and M.E.K. should remove most common paint stains. Varnish can be easily removed with alcohol. Generally speaking, use all solvents with care. Always rinse and dry thoroughly. It should be emphasized that nylon ripstop spinnaker fabrics are less durable and more sensitive than their polyester counterparts. Bleaches and solvents can ruin nylon if not used properly.

Follow the above guidelines, take your sails into your sailmaker for periodic inspection, and you will have many effective seasons of racing and cruising pleasure.

RIGGING:

STEPPING THE MAST:

1. Before stepping the mast check all standing rigging lengths against the checklist

2. Check all mast light wiring, be sure the masthead anchor light, steaming light and deck light function, the wires exiting at the base of the spar should be taped up to prevent damage when the spar is set on the step.

3. Prepare to step the mast in the following sequence:
   a) Check all rigging lengths and inspect all end fittings.
   b) Attach all shrouds, forestay and backstay. Tape clevis pins and spreader tips, check all halyards and tape to mast.
   c) Connect and check mast wiring and mast light wiring at mast step.
   d) Make electrical connections at base of mast for mast lights and check circuits.
   e) Run halyards through turning blocks at deck.
   f) Tune rigging at dock and when under sail.

TUNING THE MAST:

Your mast is held aloft by the standing rigging (forestay, backstay, upper shrouds, intermediate and lower shrouds). The term "tuning" refers to adjustment of the standing rigging so that the mast remains "in column" (not bent) when under load, this is accomplished by following the procedure outlined below:

AT THE DOCK:

1. Adjust forestay and backstay so that the mast is straight up and down. Tie a bolt to a 6 to 7 foot long piece of light line to make a quick plumb bob, and tape the free end of the line to t he front of the mast as high up as you can reach. This devise will help you to determine if the mast is perpendicular or not. Otherwise, sight your mast with the corner of a building.

2. Adjust the upper shrouds so that the mast is straight up and down athwartships. That is, from side to side as opposed to bow and stern.

3. The upper shrouds should be firm but not bar tight. A 50 pound push should deflect the upper shroud about 1" at shoulder height.

4. The lower shrouds (4 of them) should be adjusted so that they are looser than the upper shrouds. While at dock, they should have no slack, but no tension either. No lower shroud, when pushed, should deflect the mast more than any other shroud when pushed equally hard. If this cannot be achieved, the upper shrouds are too tight. Back off one half turn at a time on the upper shroud turnbuckles until the tension on the lower shrouds is brought into balance.

UNDER SAIL:

The object of fine tuning is to have the mast "in column" (not bent fore or aft or athwartships) when sailing in conditions typical for your area. This is accomplished through adjustments to the lower shroud turnbuckles. Here are some points to look for:

1. When sailing on port tack, sight up the mast from the base. If the middle (where the spreaders are) is sagging to leeward, take up equally on both port lower shrouds until the mast is in "in column". Repeat this procedure on starboard tack.

2. If, when sighting up the mast while on port tack, the middle is bent forward (but not to leeward) take up a turn on the port aft lower shroud and let out a turn on the port forward lower shroud turnbuckle. Reverse these adjustments if the middle of the mast is aft of the "in column" position.

3. If a perfectly straight mast is not obtained, the mast head (top) may be curved aft and to leeward. The mast head should never be "hooked" forward nor to weather.

All rigging wire used on yachts has a tendency to stretch, especially on a new yacht and after you have sailed in heavier wind than you are normally familiar with. Therefore, you should periodically check the tension on the shrouds and stays, tightening them up if it is required. Rigging, as well as tuning, becomes all too important when setting up the mast. A knowledgeable person should oversee the rigging and tuning so as to eliminate the possibility of an eccentric load which might occur with an improperly loaded shroud. Special attention should be given to the initial stretch of the shrouds and a further gradual stretch of the wire over the first few hard outings.

MAINSAIL REEFING:

Reefing should always be done before it becomes necessary. Some sailors use the rule of thumb that the thought of reefing occurs to you, it is time to reef. Sailing at extreme angles of heel, 25 degrees or more, is not efficient, fast or comfortable.

Your Catalina is equipped with single line reefing, for reefing the mainsail. The system consists of a line tied around the boom and reeved through the cringles, internal boom sheaves, and blocks as shown in the illustration. A second reef line may be installed in a like manner, but to the opposite side of the boom, and led to the starboard side of the cockpit.

Tie a loop of line around the main boom with a bowline, through the cringles at the first reef and into the boom on the starboard sheave. The line exists the starboard forward sheave and through the cringle in the sail at the first reef. Lead the line to the turning block at the base of the mast, through the organizer on the deck and through the sheet stopper to the winch on the port side.

REEFING PROCEDURE:

1. Take up the slack in the main boom topping lift.

2. East the mainsheet.

3. Release the main halyard on the starboard side of the cockpit, to a predetermined point. (marking the halyard with ink or a colored thread into the line is helpful.) Recleat the halyard after lowering.

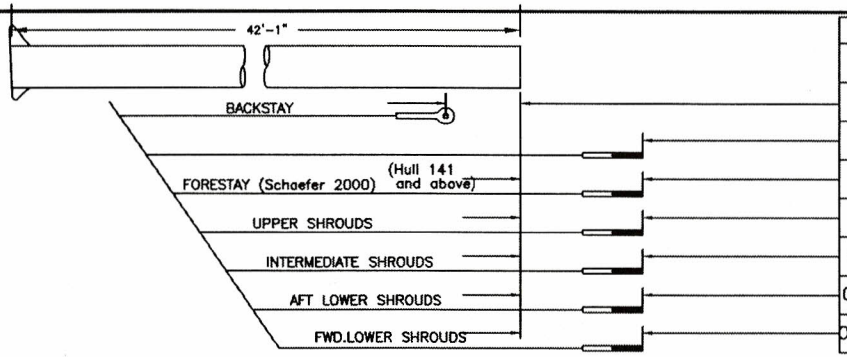
4. Pull the luff and leach cringles down to the boom by pulling the reefing line through the blocks with the port cockpit winch and cleat off.

5. Trim in the mainsheet.

6. Tie off remaining reef points with lines around boom.

7. Snug up the main halyard as required to flatten out the mainsail.

8. Ease the topping lift.



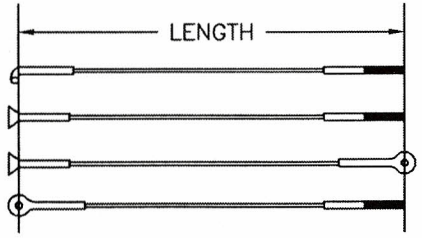
RIGGERS CHECK LIST		
STANDARD	TOP FITTING	BOTTOM FITTING
8' - 10"	EYE	EYE
0'-11"	EYE 1/2" PIN	1/2" STUD
0'-9 1/4"	EYE 5/8" PIN	1/2" STUD
0'-10 3/4"	EYE	1/2" STUD
0' - 13 1/4	EYE	1/2" STUD
0' - 9 3/4"	EYE	1/2" STUD

RUNNING RIGGING			
DESCRIPTION	MATERIAL	LENGTH	QTY.
TOPPING LIFT TAIL	5/16" DACRON	115'-0"	1
MAINSHEET	7/16" DACRON	100' 0"	1
GENOA SHEET	7/16" DACRON	50' 0"	2
TRAVELER CONTROL LINES	5/16" DACRON	30' 0"	2
SPINNAKER SHEETS	7/16" DACRON	60' 0"	2
VANG LINE	3/8" DACRON	25' 0"	1
FIRST REEF - FORWARD LINE	5/16" DACRON	50' 0"	1
SECOND REEF - SINGLE LINE	3/8" DACRON	70' 0"	1

STANDING RIGGING			
DESCRIPTION	MATERIAL	LENGTH	QTY.
BACKSTAY	1/4" WIRE 1x19	33'-0"	1
BACKSTAY BRIDLE **	1/4" WIRE 1x19	12'-7"	2
FORESTAY (Schaefer 2000)	5/16" WIRE 1x19	42'-9 1/2"	1
UPPER SHROUDS	5/16" WIRE 1x19	41'-3"	2
INTERMEDIATE SHROUDS	1/4" WIRE 1x19	28'-4"	2
AFT LOWER SHROUDS	1/4" WIRE 1x19	14'-7"	2
FWD LOWER SHROUDS	1/4" WIRE 1x19	14'-3 1/2"	2

** Bridle to be eye to 3/8" stud

HALYARDS			
DESCRIPTION	MATERIAL	LENGTH	QTY.
MAINSAIL HALYARD	3/8" LOW STRETCH	115'-0"	1
JIB HALYARD	3/8" LOW STRETCH	115'-0"	2
SPINNAKER HALYARD	3/8" LOW STRETCH	115'-0"	1



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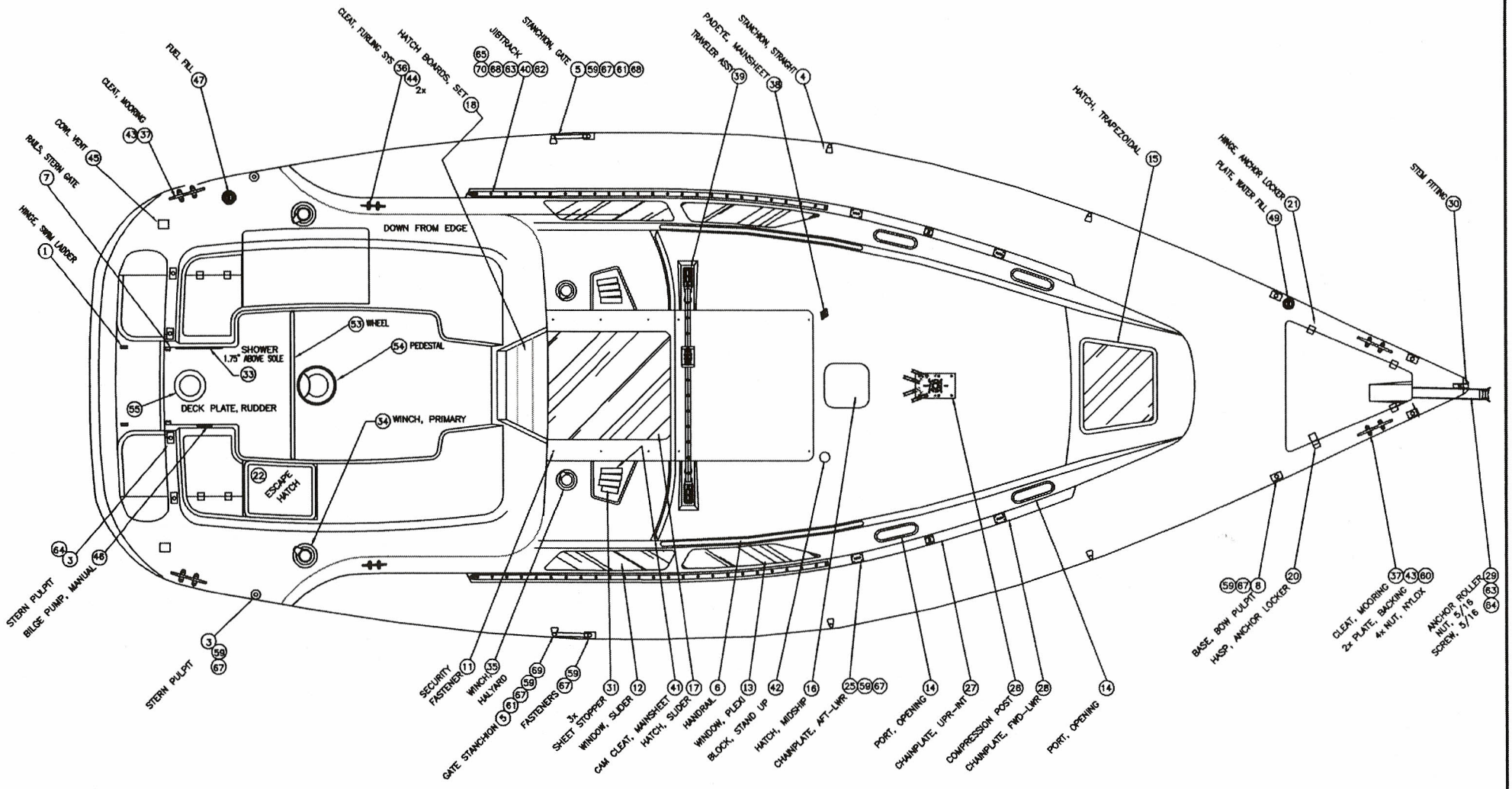
SCALE: NONE	APPROVED:	DRAWN BY: DENNISON
DATE: 3.15.99	FILE: 31340010	

TITLE: RIGGING LENGTH

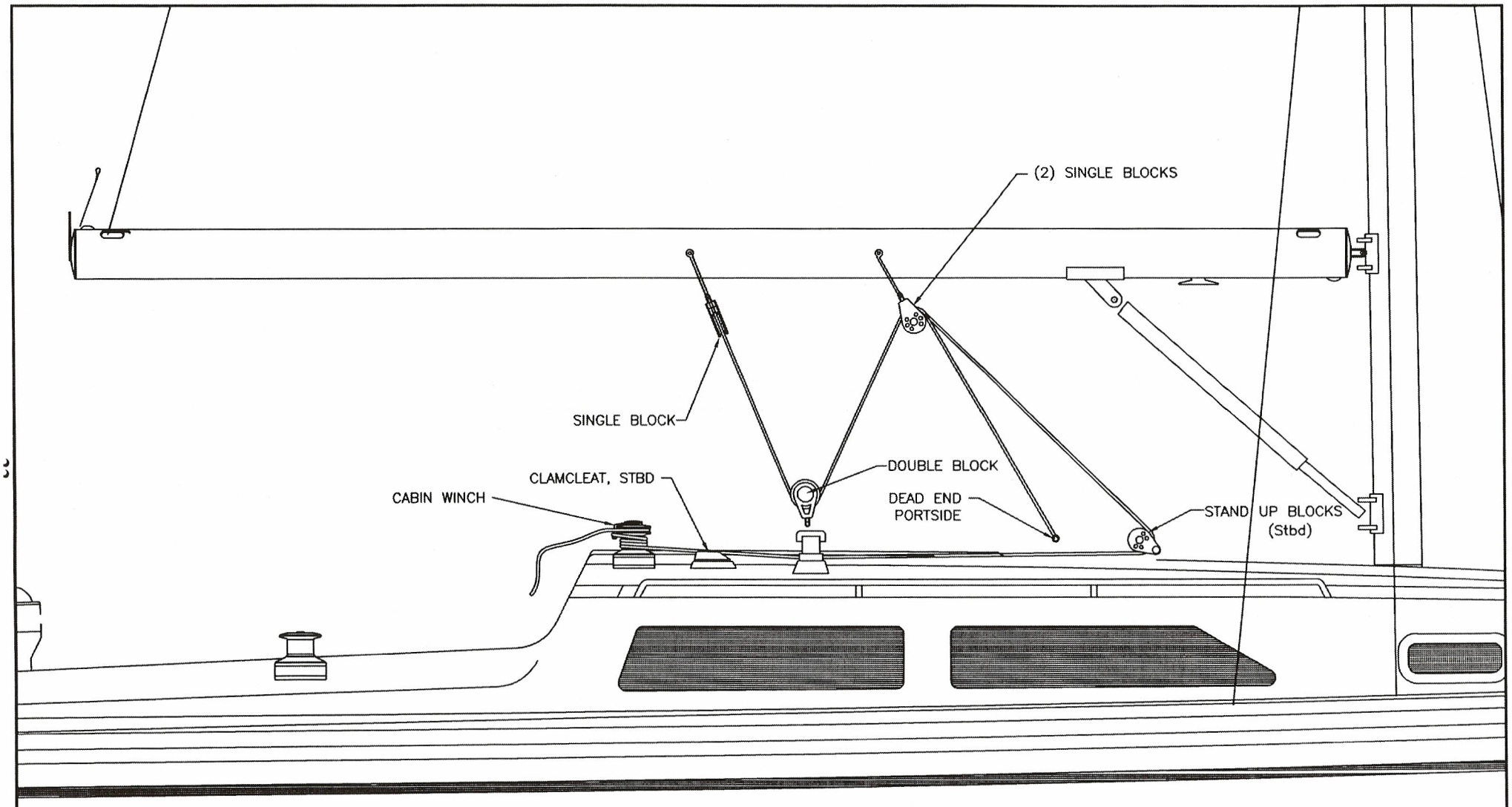
BOAT: CATALINA 310

DRAWING NUMBER: 310-34001-0



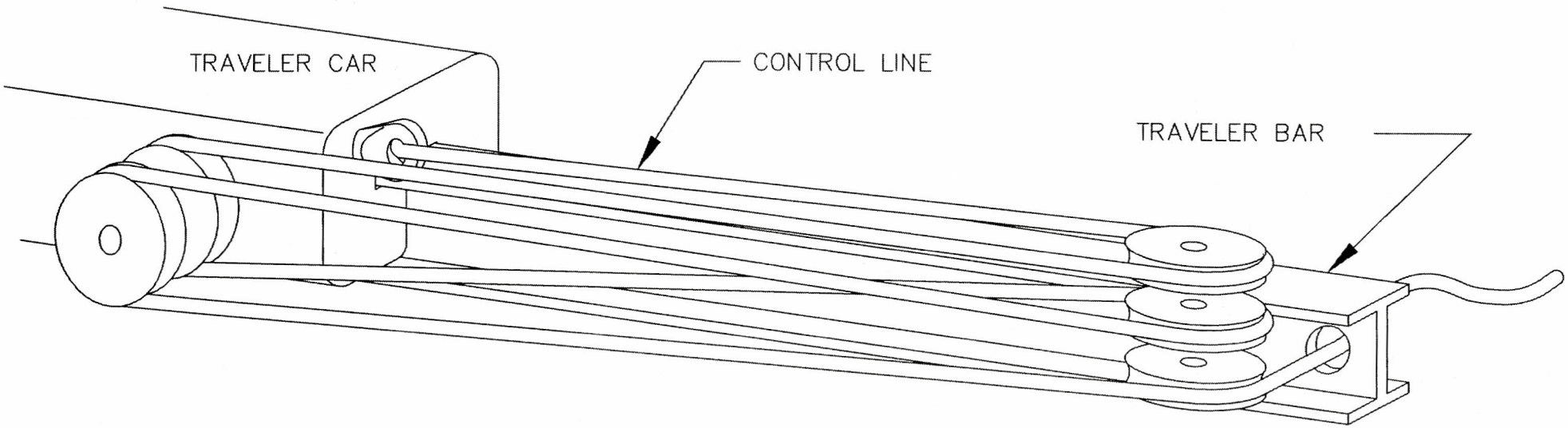
Catalina Yachts

310 DECK PLAN



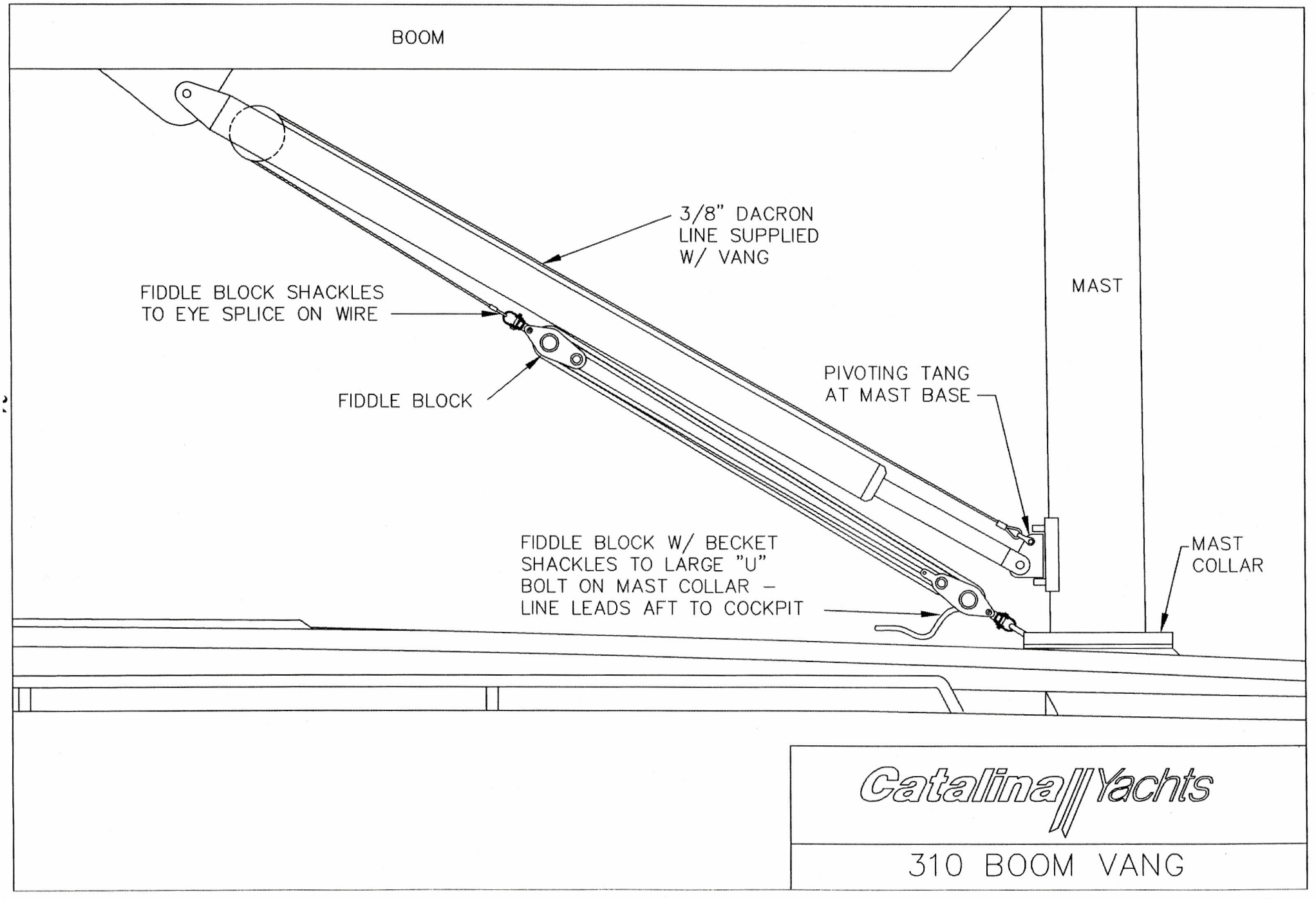
Catalina Yachts

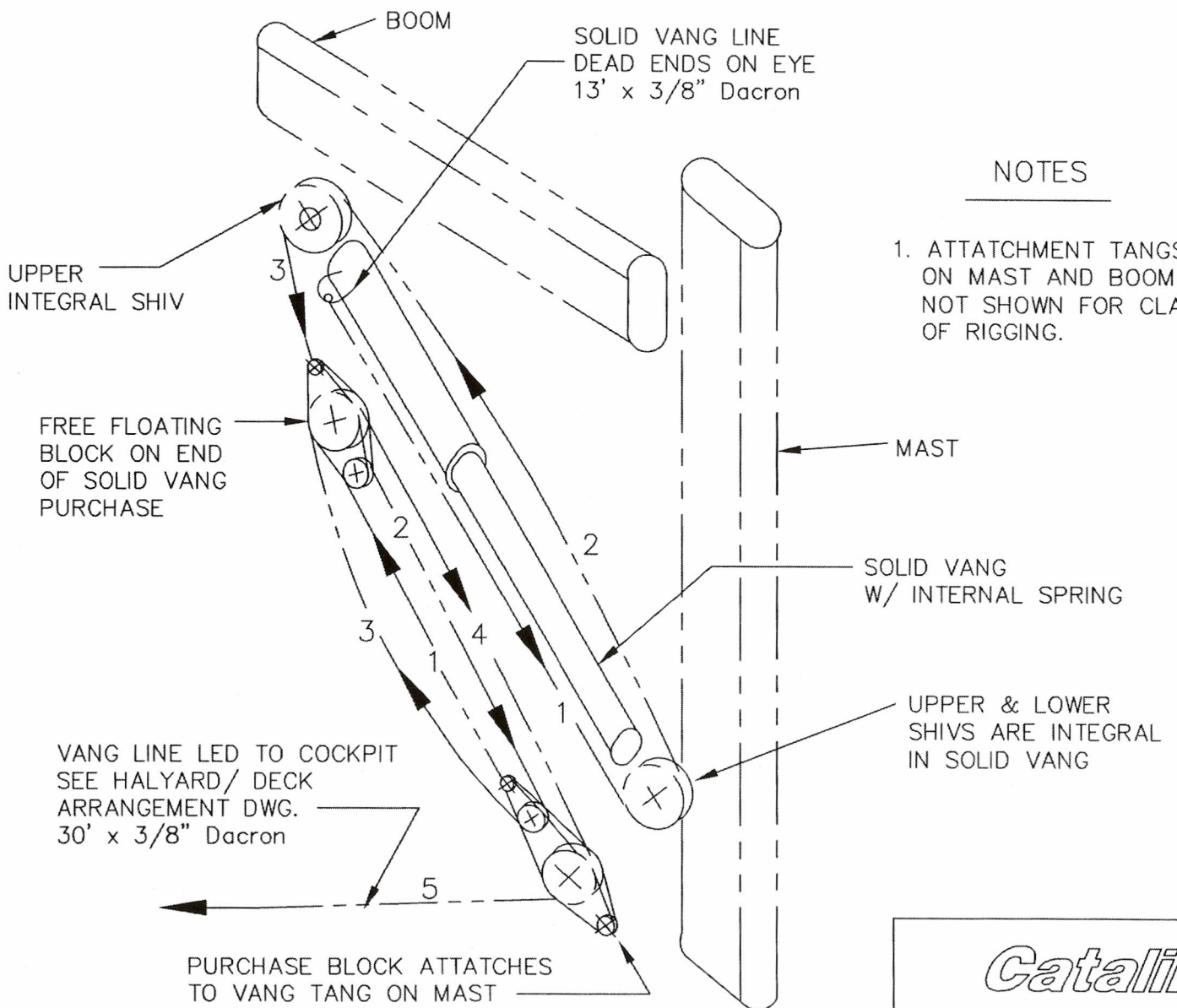
310 MAINSHEET ARRANGEMENT



Catalina Yachts

310 MAINSHEET TRAVELER


BOOM
3/8" DACRON
LINE SUPPLIED
W/ VANG
MAST
FIDDLE BLOCK SHACKLES
TO EYE SPLICE ON WIRE
FIDDLE BLOCK
PIVOTING TANG
AT MAST BASE
FIDDLE BLOCK W/ BECKET
SHACKLES TO LARGE "U"
BOLT ON MAST COLLAR –
LINE LEADS AFT TO COCKPIT
MAST
COLLAR
Catalina Yachts
310 BOOM VANG

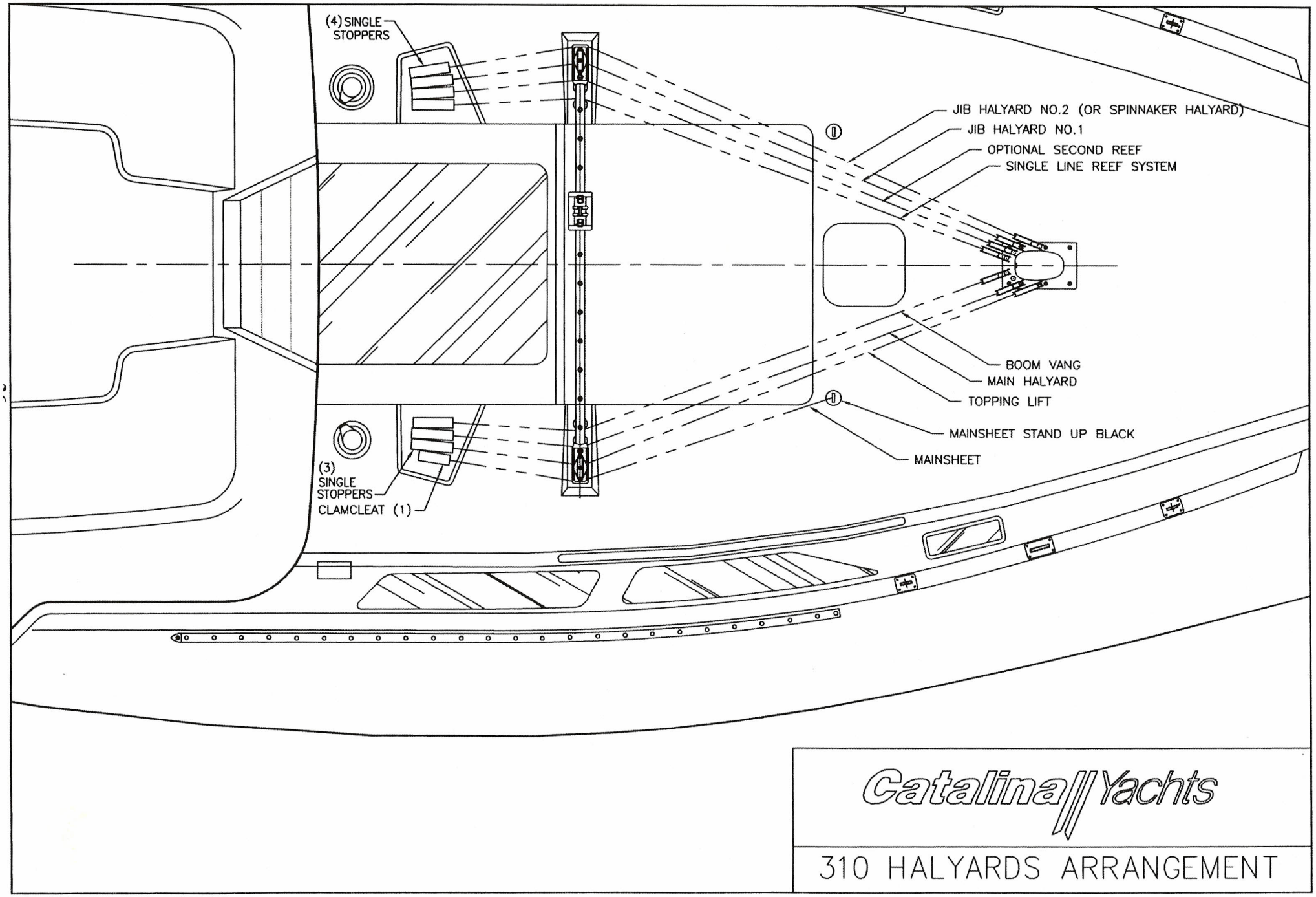


NOTES

1. ATTATCHMENT TANGS ON MAST AND BOOM NOT SHOWN FOR CLARITY OF RIGGING.

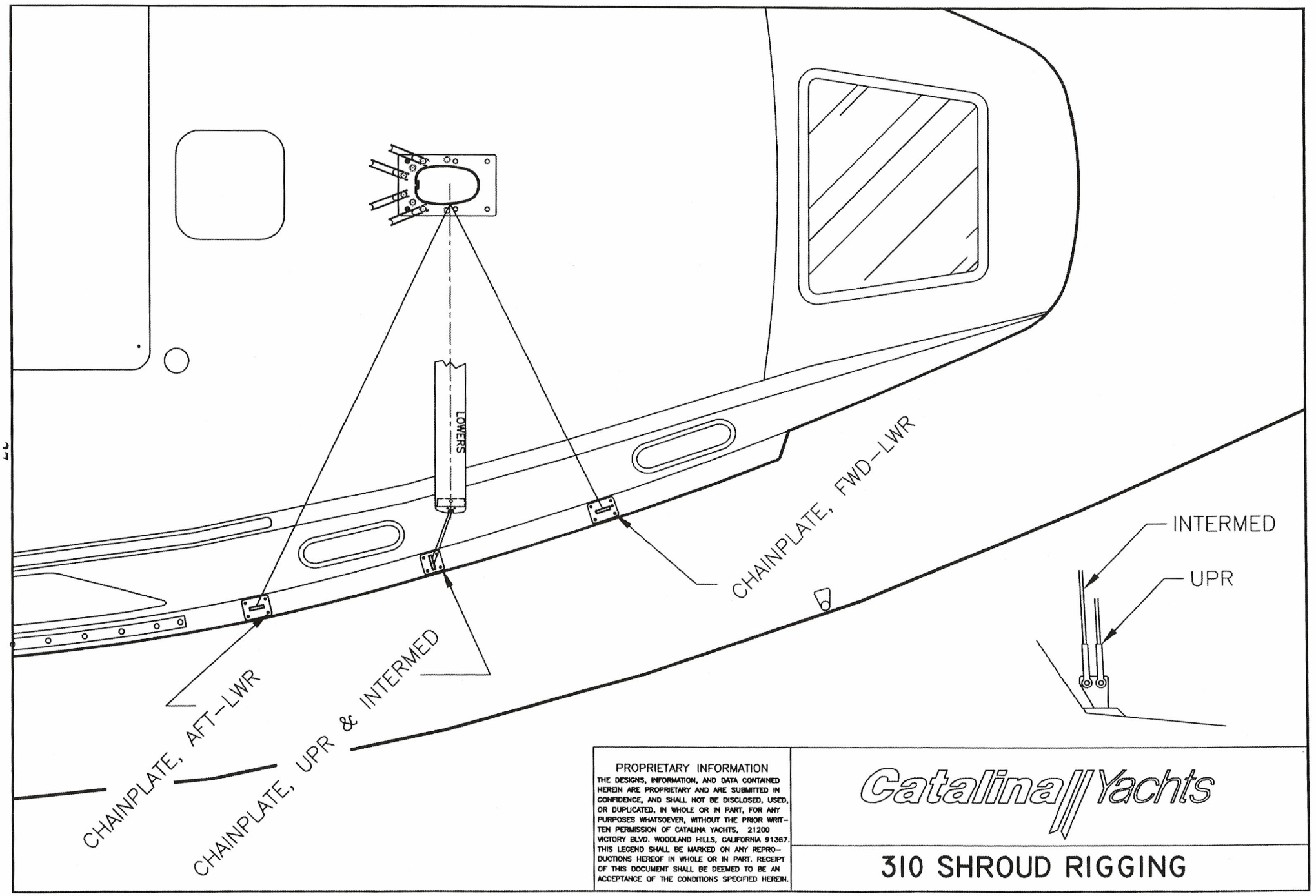
Catalina Yachts

310 SOLID VANG & PURCHASE



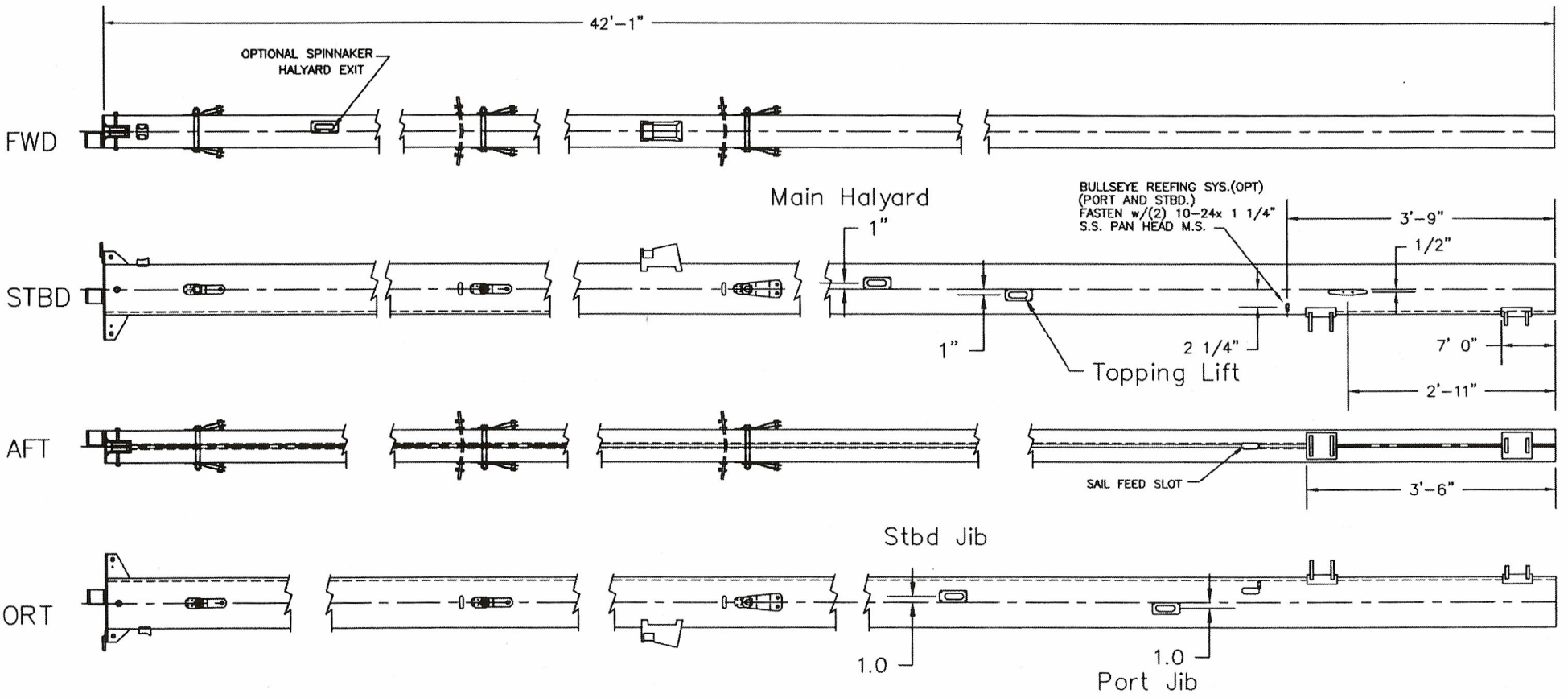
Catalina Yachts

310 HALYARDS ARRANGEMENT



Catalina Yachts

310 SHROUD RIGGING



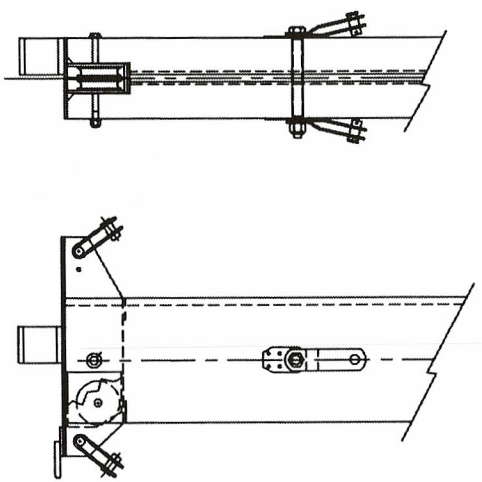
Catalina Yachts

310 MAST SUB ASSY

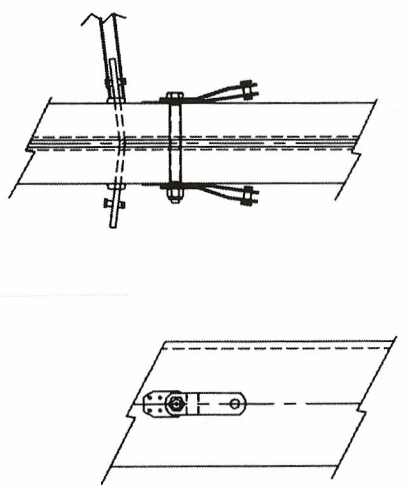
SHEET: 1/2

DATE: 7.19.99

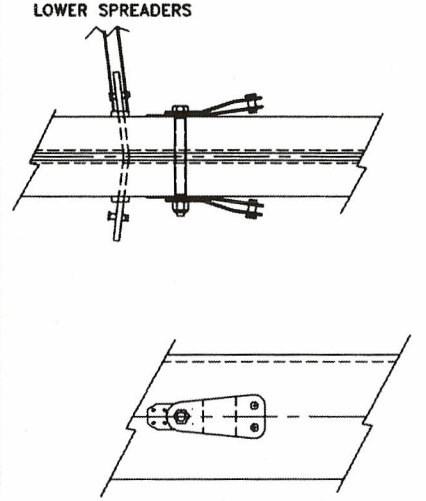
UPPER SHROUDS



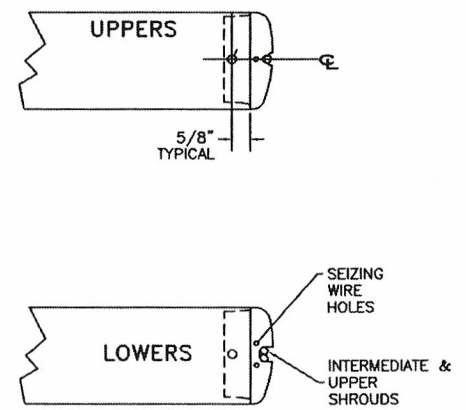
INTERMEDIATE SHROUDS



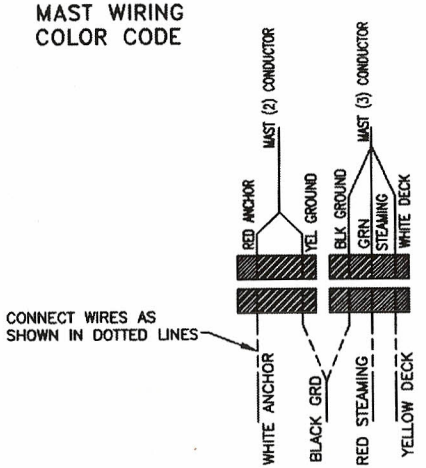
LOWER SHROUDS



SPREADERS TIP DETAIL

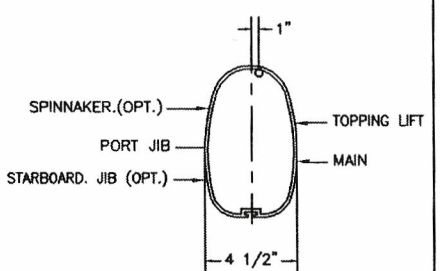


MAST WIRING COLOR CODE



HALYARD EXIT LOCATION

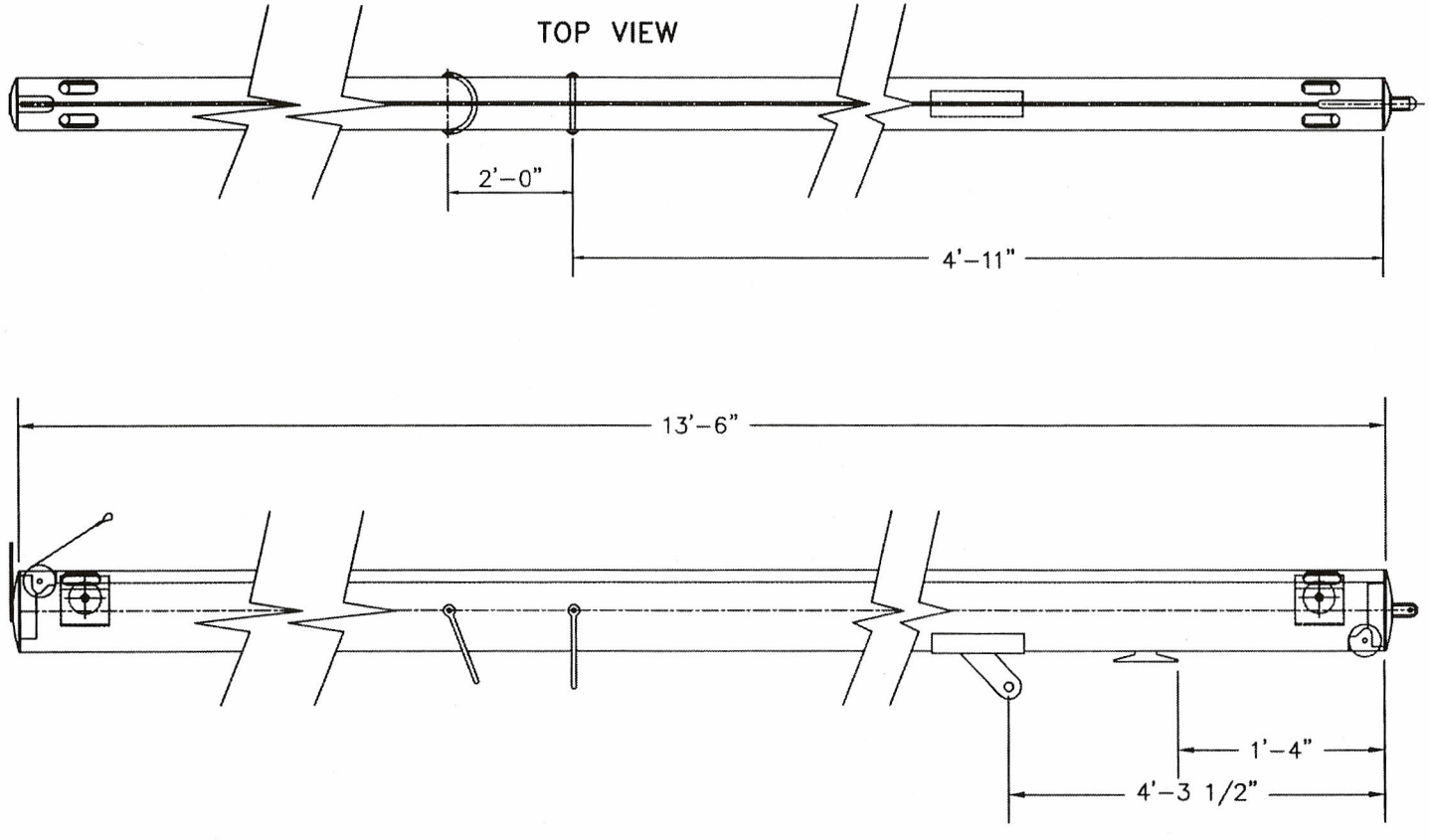
SCALE: NONE



Catalina Yachts

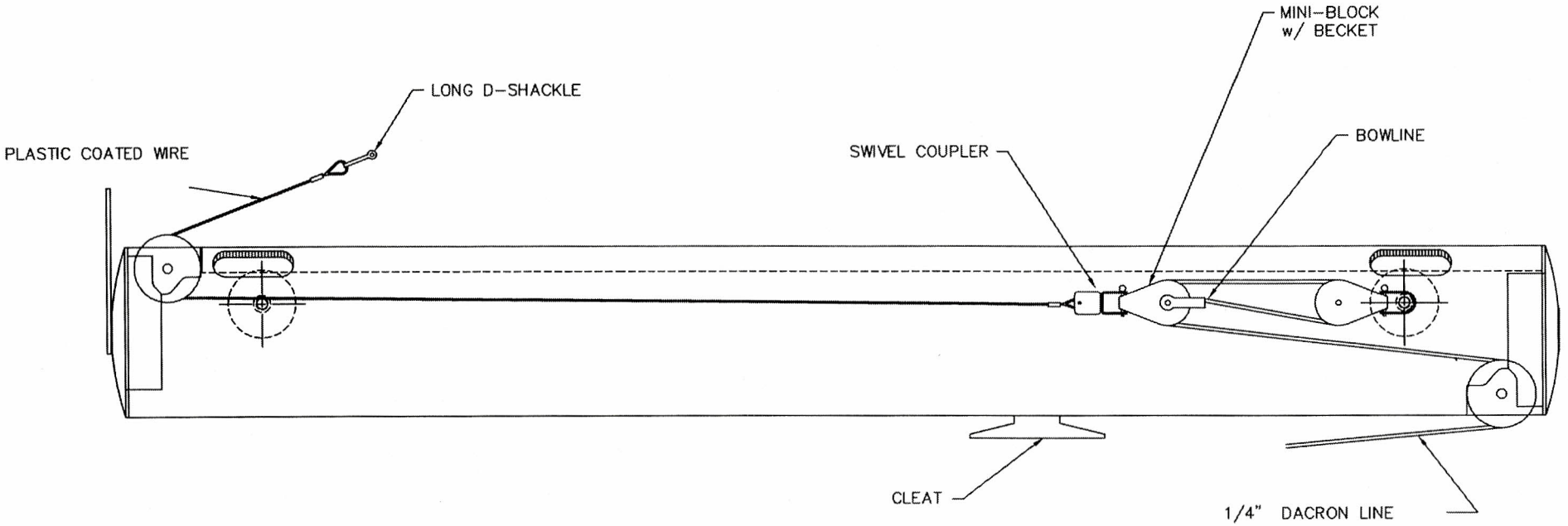
310 MAST SUB ASSY

SHEET	DATE
2/2	7.19.99



Catalina Yachts

310 BOOM



Catalina Yachts

310 OUTHAUL ASSEMBLY

4.1.6

ELECTRICAL DC 12 VOLT:

BATTERIES:

Your electrical system is powered by 2 marine grade, 12 volt, deep cycle batteries. Attention should be given to maintaining the proper level of distilled water. Do not overfill. The batteries are located under the settee, forward of the galley.

The batteries are provided with a tie down to prevent tipping over at extreme angles of heel. Be sure these tie downs are fastened securely.

With proper care, the batteries installed in your Catalina will provide long and satisfactory service. Proper care is not difficult if a few basic points are kept in mind.

Your batteries should be checked periodically for any cracks or breaks in the case or cover and any cracks in the sealing compound. If there is any damage, the battery should be replaces at once.

WARNING: The electrolyte in a battery is a solution of sulfuric acid. If any should enter the eyes, rinse immediately with large amounts of fresh water and seek medical attention. Electrolyte spilled on skin should be rinsed well with fresh water also. Even a small amount of electrolyte spilled on clothing will destroy the clothing.

ELECTROLYTE LEVEL:

The electrolyte level in a battery should never be allowed to fall low enough to expose the plates. This not only results in a loss of battery capacity while the battery is low, but will cause hardening of the active material on the battery plates. This will result in a permanent loss of battery capacity.

CAUTION: Use only pure distilled water to replenish electrolyte levels. The water from many city water supply systems is unsatisfactory for battery use.

CHARGING THE BATTERY:

Before adding water, a hydrometer reading of the battery should be taken. If the reading shows the battery to be above 1.225 specific gravity, the battery has a sufficient charge. If the reading is below 1.225, the battery should be removed for bench charge.

Once charged, the battery should have a specific gravity of at least 1.260. If this cannot be reached, the battery should be inspected by a battery supplier.

The batteries should be checked often to ensure that they do not run down. Check that all battery cells keep an even fluid level and that the fluid is about 3/8" above the top of the separators.

If one or two cells have lower fluid levels, it is a good indicator that something is wrong with the battery, and it should be checked.

DISCHARGED STATE:

Leaving a battery in a discharged state for any length of time can also result in a permanent loss of capacity for the battery. Since it will freeze at relatively low temperatures, leaving it in the cold weather can destroy the battery.

STOCK CHARGING Proper Instructions for Wet or Dry Batteries in Stock

Wet Batteries

1. Wet Batteries will discharge over a period of time sitting on the shelf. Because of this they need to be given a periodic charge to bring them back to full charge.

2. These wet batteries would be given a charge every: (see charging section):
   a. 9-12 Months-Calcium Automotive and Group 31.
   b. 5-7 Months-Low Antimony, Hybrid and Barium.
   c. 3-4 Months-Low Antimony Commercial, Specialty and Automotive Batteries.

   Note: In hot climates or warm storage areas, a battery's state of charge should be checked more often.

3. Periodic checks on batteries in stock should be made to assure that batteries are fully charged.

4. They all should be given a slow charge (see charging section) until the hydrometer reaches 1.250 or higher in all cells. The reason for the slow charge is because batteries should be recharged in the same manner they were discharged-slowly, over a period of time, to assure that they are sufficiently charged.

   As batteries discharge, sulfation begins to set in. This sulfation needs to be broken down slowly, so it's broken off completely. A fast charge will not adequately penetrate the sulfated plates, the battery only receives a surface charge. At the first draw upon the battery, the surface charge is removed and the battery is back to its previous state-of-charge (surface charge is simply a charge on the 5urface of the plates, not having penetrated the plates).

Dry Batteries

When preparing dry batteries for activation to be sod as wet, the following steps need to be observed.

1. Fill each cell to the bottom of the vent well with electrolyte only.

2. Vent caps must be firmly in place before charging. This is to prevent any possible chances for explosion (when charging). If possible, place a damp cloth across top of battery vent caps, to also aid in preventing the chance of any explosion.

3. Let the batteries set for at least 15 minutes to allow the electrolyte to soak in to the plates.

4. Charge each battery at the following rates:
   a. 12 Volt Battery: 30-40 Amps
   b. 6 Volt Battery: 60-70 Amps

   Charge until hydrometer reading is 1.250 or higher (see charging section).

5. After sufficient charge cycle or cycles have been completed, check the electrolyte level. If necessary re-fill to the bottom of the vent well (electrolyte only).

CLEAN CONNECTIONS:

Keep battery connections clean and tight. A cupful of strong baking soda solution and a toothbrush will clean corrosion from the terminals and neutralize any spilled acid (do not allow any of the solution to enter the battery cells). A coating of petroleum jelly on the battery terminals will inhibit corrosion.

MAIN BATTERY SWITCH:

The circulator battery switch has the markings 1, 2 and "ALL" as well as "OFF". You can selectively charge the battery with the engine alternator. Many experienced sailors use battery #1 for electrical lighting needs and keep #2 in reserve for starting the engine.

When the engine is running, never select the "OFF" position or the alternator diodes will be burned out.

If both batteries are of equal charge, keep the selector switch on "ALL" position, and use "ALL" to start the engine if both batteries are low.

ELECTRICAL SYSTEM:

The Catalina is equipped with a standard 12-volt DC system and 110-115 volt AC system. The wiring is run to prevent chaffing or contact with water, where possible, and is supported as needed. We recommend that you check all the connections at least once a year for corrosion, loose fittings, etc.

DC - 12 VOLT SYSTEM:

The DC system is powered by two deep cycle batteries located under the settee seat forward of the head.

MAIN DC CIRCUIT BREAKER:

Operating switches for lights and accessories are located on the main switch panel. The main circuit breaker will automatically trip to the OFF position in the event of an overload to the circuit. If the breaker trips to OFF, the cause should be determined and any necessary repairs should be made before repositioning the circuit breaker switch to ON.

Before purchasing any electrical accessories for your boat, ensure that they are compatible to a negative ground system.

IMPORTANT: Be sure to disconnect the batteries and disconnect AC shore power cord before opening the panel, or severe injuries may result.

All wires, terminals and connections should be checked periodically for loose connections or corrosions which could cause high resistance, electrical sparks or fires. The engine accessory wiring should also be checked at this time.

NAVIGATION LIGHTS:

Navigation lights should be used in accordance with the rules and regulations of the waters in which you intend to sail.

Generally, navigation lights should be used from dusk to dawn in all weather conditions. It is advisable to use the navigation lights any time visibility is poor.
Your Catalina Yacht is equipped with the following navigation lights:

a) Red and Green 112.5° combination running lights mounted on the bow pulpit.

b) White 135° stern running light mounted on the stern pulpit.

c) White 225° steaming light mounted on the mast.

d) White 360° anchor light mounted on the masthead.

(a) and (b) are wired to the running light switch on the panel. (2) is wired to the steaming light switch, and (d) is wired to the anchor light switch.

When underway by sail, the bow running light and stern running light must be used. When underway by power, the steaming light, bow and stern running lights must be on. At anchor, the anchor light should be on, the running (a) and (b) and steaming (2)should be off.

REV	DESCRIPTION	DATE	APPROVAL
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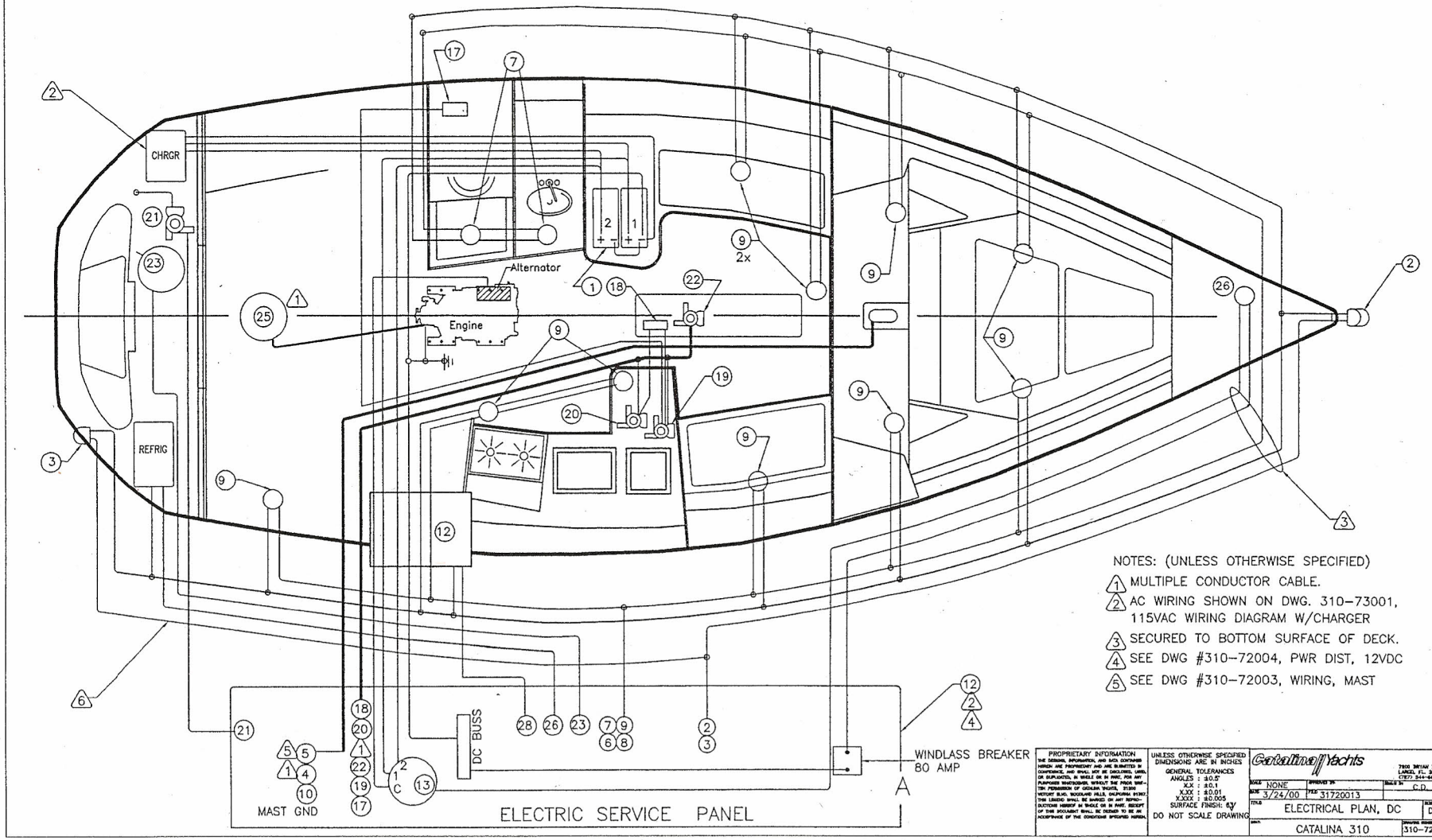


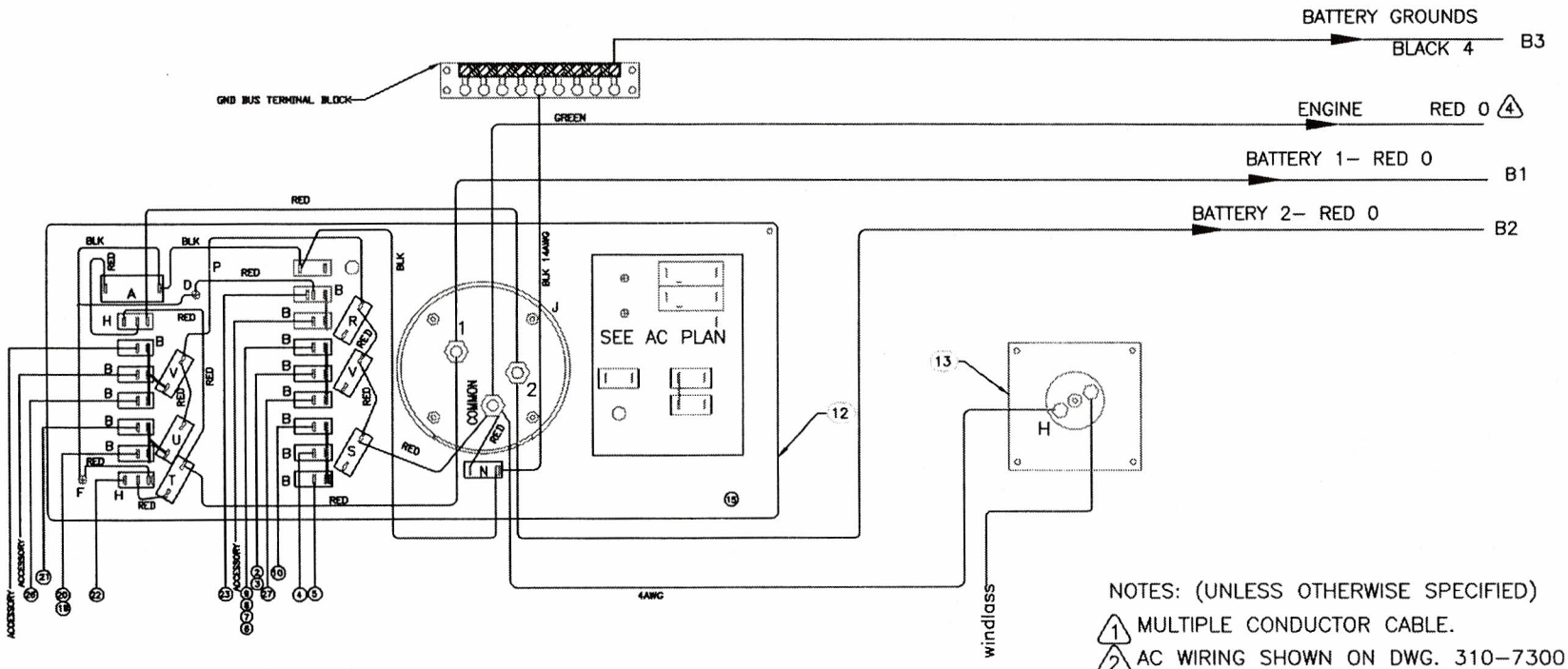
NOTES: (UNLESS OTHERWISE SPECIFIED)

1. MULTIPLE CONDUCTOR CABLE.
2. AC WIRING SHOWN ON DWG. 310-73001, 115VAC WIRING DIAGRAM W/CHARGER
3. SECURED TO BOTTOM SURFACE OF DECK.
4. SEE DWG #310-72004, PWR DIST, 12VDC
5. SEE DWG #310-72003, WIRING, MAST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
GENERAL TOLERANCES
ANGLES : ±0.5°
X.X : ±0.1
X.XX : ±0.01
X.XXX : ±0.005
SURFACE FINISH: 63
DO NOT SCALE DRAWING

Catalina Yachts
7900 BRYAN DAIRY RD.
LARGO, FL. 33777
(727) 544-6449

SCALE NONE	APPROVED BY	Sheet № C.D.	
DATE 3/24/00	REV 31720013		
TITLE ELECTRICAL PLAN, DC		SIZE D	SHEET 1/2
MODEL CATALINA 310		DRAWING NUMBER 310-72050-0	



NOTES: (UNLESS OTHERWISE SPECIFIED)

1. MULTIPLE CONDUCTOR CABLE.
2. AC WIRING SHOWN ON DWG. 310-73001, 115VAC WIRING DIAGRAM W/CHARGER
3. SECURED TO BOTTOM SURFACE OF DECK.
4. SEE DWG #310-72004, PWR DIST, 12VDC
5. SEE DWG #310-72003, WIRING, MAST

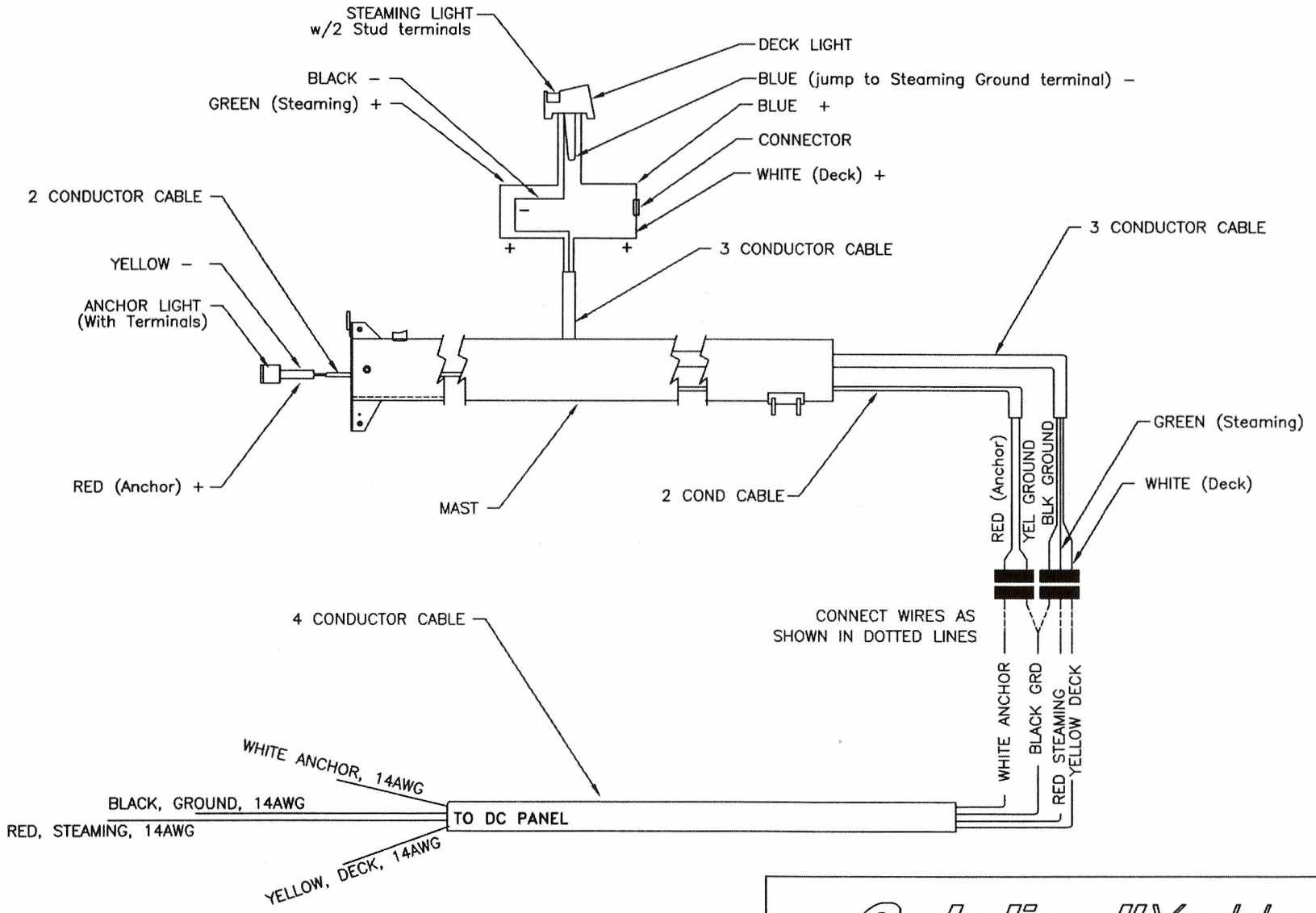
ITEM		DESCRIPTION	LEAD WIRE AWG
V		BREAKER, DISTRIBUTION PANEL, 20A	BUS BAR, DBL RED 10
U		BREAKER, DISTRIBUTION PANEL, 25A	BUS BAR, DBL RED 10
T		BREAKER, DISTRIBUTION PANEL, 15A	BUS BAR, DBL RED 10, RED 10
S		BREAKER, DISTRIBUTION PANEL, 10A	BUS BAR, DBL RED 10
R		BREAKER, DISTRIBUTION PANEL, 5A	BUS BAR, DBL RED 10
P	WINDLASS	LIGHT, RED	2 BLK 14
N	SERVICE ON	LIGHT, FLAT, GREEN	RED 14, BLK 14
L			
K		BREAKER, WINDLASS, 80A	BUS BAR, DBL RED 4
J		SWITCH, BATTERY SELECT, 250A	RED 14, RED 10
H	BATTERY/BILGE	SWITCH, TRI-POLE (ROCKER), 16A	
F	BILGE PUMP	LIGHT, LED, RED	BLK,RED 24
D	LPG GAS		
C	OUTLETS/WTR HTR	BREAKER, DISTRIBUTION PANEL, 15A, LUG	BUS BAR, BLK 10
B		SWITCH, ON-OFF	BUS BAR
A		VOLTMETER, 8-16 VOLTS	BLK 22, RED/BLK 14

COMPONENTS, SERVICE PANELS

Catalina Yachts

310 ELECTRICAL PLAN, DC

SHEET 2/2



Catalina Yachts

310 MAST LIGHT WIRING

ELECTRICAL AC - 110-115 VOLT SYSTEM:

The 110V AC power system depends upon the boat being connected to 110V-30 amp shore power connector. The factory option offers a 50' shore power cable which should be plugged into the 110V inlet on he boat (located on the transom) and into the shore power connector on the dock.

IMPORTANT: TO MINIMIZE SHOCK AND FIRE HAZARDS:

1. Turn off the boat's shore connection switch before connecting or disconnecting the shore power cable.
2. Connect the shore power cable at the boat first.
3. If the polarity warning indicator is activated, disconnect the cable immediately.
4. Disconnect the shore power cable at the shore outlet first.
5. Close the shore power inlet cover tightly.
6. DO NOT ALTER THE SHORE POWER CABLE CONNECTORS IN ANY WAY. SEVERE INJURY MAY OCCUR.

Care should be taken to support the shore power cable at both ends to allow sufficient slack to avoid pulling. Remember to allow for the tide.

The master breaker switch is 30 amp, two pole type, located in the port stern locker. There are five (5) 110V outlets. Be certain that all 110 volt appliances, other than lamps, have an adequate grounding connector. Wet feet or moist atmosphere increases the potential shock hazard.

There is a reverse polarity indicator on the panel. With all switches off, attach the power cable to the inlet. Next, attach the power cable to the dock outlet. If the reverse polarity light comes on, DISCONNECT THE CORD IMMEDIATELY! This indicates a reverse polarity situation which is very dangerous.

WARNING: Do not open the electrical panel for any purpose with the shore power cable connected to the dock. 110 volt wiring is exposed when the panel is open. Contact with the 110 volt wiring can cause electrocution. Electricity is dangerous. Even when safety devices are present, handle with care and use reasonable caution.

GROUND FAULT INTERRUPTER:

G.F.I. receptacles are designed to provide protection against electrical shock hazards due to line-to-ground faults. Although the G.F.I. receptacle does not limit the magnitude of the fault current, and therefore cannot prevent electrical shock, it does limit the duration of the shock to a period considered safe for normal healthy persons. G.F.I. receptacles will provide protection against ground faults only. They will not protect against overload or short circuits. There is no known device that will guard against the electric shock hazard resulting from contact with both the "hot" and neutral wires of the electrical circuit.

The 110V AC outlets in the Catalina Yacht are protected by the G.F.I. receptacle. If there is a power failure which does not affect the fuse or breaker serving these outlets, unplug all cord-

connected appliances from the protected outlets, unplug all cord-connected appliances from the protected outlets and restore power by pressing the red RESET button on the receptacle. Push the RESET back in and reconnect the appliances one at a time. Any defective appliance will trip the button and should be repaired at once.

If the appliances are all disconnected, and the RESET button will not stay in, cal a qualified electrician. If the RESET button does not pop out when the blue TEST button is pressed, PROTECTION IS LOST. Do not use any of the outlets and call a qualified electrician immediately.

IMPORTANT: Your Ground Fault Interrupter Circuit should be tested regularly. Use the following steps:

1. Push the blue TEST button. The red RESET button should pop out. Power is now out at that outlet indicating that the circuit is operating properly.

2. If the button does not pop out when testing, do not use that outlet. Protection is lost and a qualified electrician should be called.

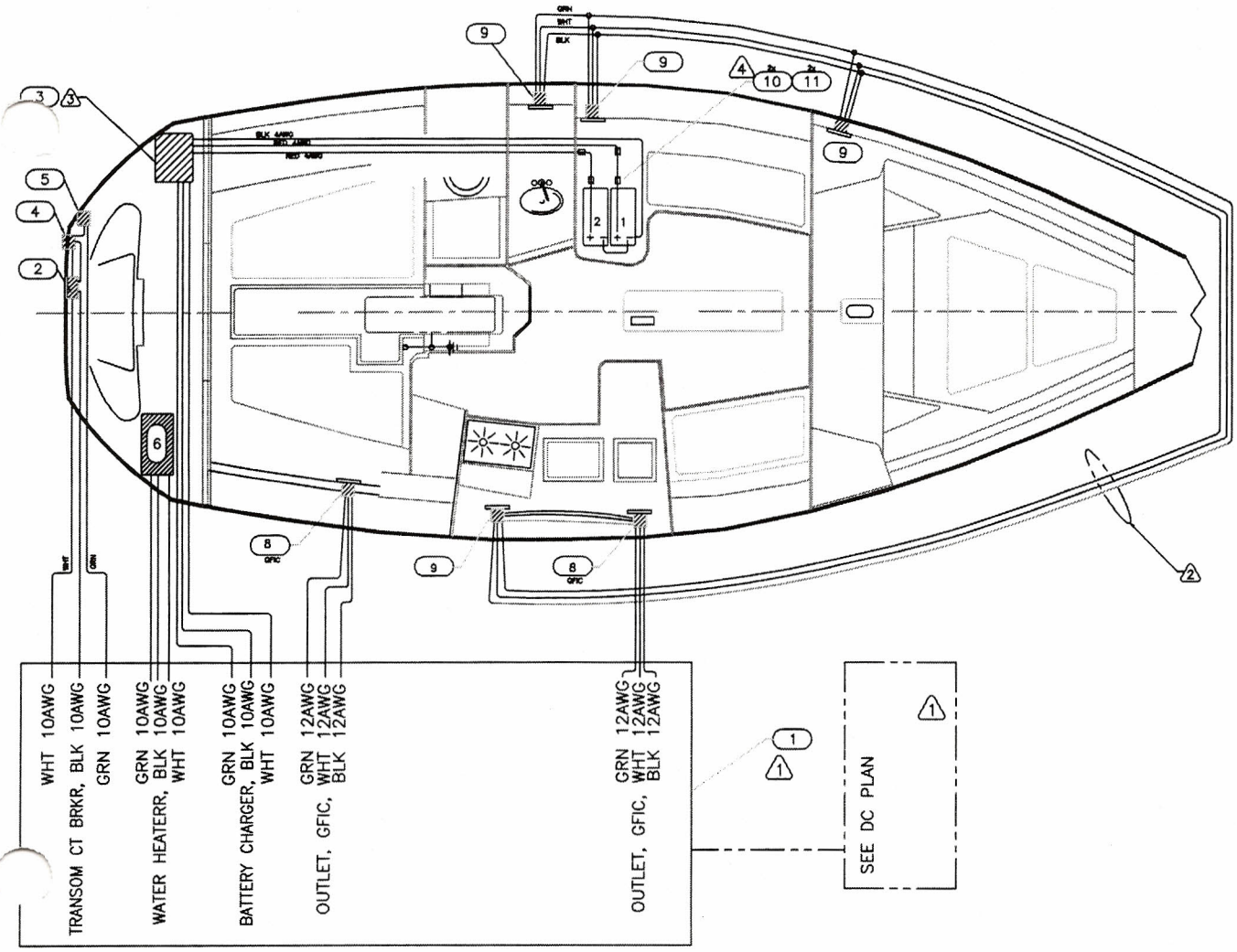
3. To restore power, push the RESET button.

PREVENTATIVE MAINTENANCE:

This consists of periodic inspection and protection against any damage created by the elements. Electrical systems are adversely affected by moisture and a salt-air environment.

The system can be protected by the application of aerosol sprays such as WD-40 or CRC. All wire harnesses and connections should be checked periodically to ensure that fastenings are secured and that everything is clean with no sign of damage or corrosion. It is extremely important that all connections be kept clean.

WARNING: Do not perform any maintenance or repair on a live circuit. Do not turn the main DC switch off while the engine is running. This could cause damage to the alternator.



ITEM	CAT PT No	DESCRIPTION	QTY
9		FUSE, 20A	2
8	HEB-BB	FUSE HOLDER, BUSSMAN-TRON (WITHIN 7" OF BATT POST)	2
9		OUTLET	4
8		OUTLET, GFCI	2
7			
6		HEATER, WATER, 20 GAL	1
5		ISOLATOR, GALVANIC	1
4		INLET, SHORE PWR	1
3	–	BATTERY CHARGER, 20A (PROFESSIONAL MARINER)	1
2		CIRCUIT BREAKER, TRANSOM, 30A	1
1	REF (1)	SERVICE PANEL, AC/DC	

PARTS LIST

NOTES: (UNLESS OTHERWISE SPECIFIED)
- C WIRING SHOWN ON DWG. 320-72001
- ECURED TO BOTTOM SURFACE OF DECK.
- (3) UNUSED POSITIVE TERMINALS MUST BE CONNECTED TO ACTIVE TERMINAL PER MANUFACTURER'S INSTRUCTIONS.
- (4) FUSE MUST MATCH CHARGER OUTPUT AND BE INSTALLED WITHIN 7" OF TERMINAL.

Catalina Yachts

310 AC PLAN