



# 29

## OWNER'S MANUAL



Owner's Name

---

Address

---

---

Date

---

Yacht Name

---

Hull No.

---

Engine Serial No.

---

Dealer Name

---

DESIGNERS AND BUILDERS  
TOGETHER THEY BECOME CREATORS

"Basically, we design and produce a product that is somewhat pointed at one end and rather blunt at the other. To stop it from falling over sideways, we hang a big blob of lead underneath."

With a touch of wry understatement, that's how C&C President George Cuthbertson described the way yachts are created. The occasion: C&C Yachts receiving a Canadian government award for excellence of design management. C&C is one of the few producers of yachts where designers and builders work together, close at hand, from conception to production.

The birth of a yacht at C&C starts with a meeting of marketing people, designers and yachtbuilders. Together, they discuss the developing needs of the market and what kind of yacht to build. Should it be a flat out racing craft? A lazy, lounging cruiser? What size should the new yacht be? In what price category will it compete? When these questions are answered, the first glimmering image of the new craft begins to form in the designers' minds.

A few weeks later, the design group calls the next meeting. This time, the design group presents preliminary drawings and specifications for the new craft. And with their initial concept comes the unique contribution that only a top-flight design team can provide. The innovation, the fresh thinking and even the occasional stroke of sheer genius that makes a yacht more than just the solution to a marketing need. They lay their case as to why their design concept fits the agreed needs of the market, and why they think it's going to be a great yacht. But they're playing to a tough audience. The marketing people and production people are encouraged to take potshots. It's a demanding session for the design group, but when their work survives this kind of scrutiny, and that in other meetings to follow, they know they've got a great design going.

After a series of such meetings, it's time for the prototype. This is when the master boatbuilder comes into his own. With a prototype, there are no production precedents to follow. Now, the responsibilities are reversed. It's the builder's job to execute exactly what the design group has conceived. And until the prototype is completed, his job is just as difficult as was the designers'.

Things that didn't show up as problems on paper become problems in production.

Designers are there casting a watchful eye every time the builder turns around. And last minute design modifications always seem to arrive just as

Date June 30, 1976

Replacing \_\_\_\_\_



Designers and builders. Together they become creators. (cont'd)

that particular part has been completed. But out of it all, comes that first, exciting and beautiful prototype. And there isn't a designer or builder alive whose blood doesn't rush a little faster when he looks her over.

Into the water. It's the only place to test a prototype, and at C&C it's all aboard. Marketing people, designers and builders sail the prototype. Together and separately. After enough sailing, in all kinds of weather, the reviews come in. She's almost but not quite. She's fabulous downwind in a breeze, but a little sluggish in very light winds. An extra two inches in the forward cabin would make all the difference for cruising comfort. Details, details, details. But every last one of them goes on the blueprint as a design modification.

Then, and only then, is a C&C design ready for production. When a yacht has sailed its way through the toughest critics she'll ever come across. When designer and builder can acknowledge, without a word spoken, that together they've created something quite beautiful and very worthwhile.

It's a long road to production for a C&C yacht. But it's that long road that has made C&C yachts consistent race winners and cruising favourites throughout North America, and increasingly, throughout the world.

Date June 30, 1976

Replacing \_\_\_\_\_



## I N D E X

1. INTRODUCTION
2. LIST OF ILLUSTRATIONS AND TABLES
3. CONSTRUCTION
  - 3.1 Hull
  - 3.2 Deck
  - 3.3 Deck/Hull Joint
  - 3.4 Rudder & Steering
  - 3.5 Ballast
4. RIGGING
  - 4.1 General Description
  - 4.2 Spars
  - 4.3 Tuning At The Dock
  - 4.4 Tuning While Sailing
5. FUEL SYSTEM
  - 5.1 Fuel Tank
  - 5.2 Fueling
  - 5.3 Fuel Grade
  - 5.4 Portable Fuel Tank
6. POWER PLANT AND TRANSMISSION OF POWER
  - 6.1 Engines
  - 6.2 Transmissions
  - 6.3 Propeller Shaft
  - 6.4 Shaft Alignment
  - 6.5 Stuffing Box
  - 6.6 Propellers
  - 6.7
  - 6.8 Removal of Propellers
  - 6.9 Installation of Propeller
  - 6.10 Proper Alignment Check
  - 6.11 Exhaust System

Date June 30, 1976

Replacing \_\_\_\_\_

## I N D E X

- 7. CONTROLS
  - 7.1 Description
  - 7.2 Starting and Operating an Inboard Engine
  - 7.3 Finished With Engine
  
- 8. ACCESSORIES
  - 8.1 To Install Thru Hull Fittings
  - 8.2 Installation of Deck Fittings
  
- 9. ELECTRICAL
  - 9.1 General
  - 9.2 Batteries
  - 9.3 Alternators
  
- 10. ELECTRONICS
  - 10.1 General
  - 10.2 Thru Hull Fittings
  - 10.3 Masthead Fittings
  - 10.4 Electronic Equipment
  
- 11. SAFETY EQUIPMENT
  - 11.1 Fire Extinguishers
  - 11.2 Life Jackets
  - 11.3 Life Buoys
  - 11.4 Life Lines
  - 11.5 Safety Harnesses
  - 11.6 Flashlights
  - 11.7 Dinghy or Life Raft
  - 11.8 Flares
  - 11.9 Fog Signals and Radar Reflectors
  
  - 11.10 Anchor

Date June 30, 1976

Replacing \_\_\_\_\_

## I N D E X

### 12. MAINTENANCE

- 12.1 Gelcoat Surfaces
- 12.2 Windows and Hatches
- 12.3 Teak
- 12.4 Bottom of the Yacht
- 12.5 Cove Stripe
- 12.6 Vinyl Rubbing Strip
- 12.7 Standing Rigging
- 12.8 Running Rigging
- 12.9 Lifelines, Pulpits and Stanchions
  
- 12.10 Winches and Blocks
- 12.11 Engine
- 12.12 Power Train
- 12.13 Electrical Maintenance
- 12.14 Upholstery
- 12.15 Steering
- 12.16 Miscellany

### 13. FITTING OUT

- 13.1 Prior to Launching
- 13.2 After Launching
- 13.3 Stepping the Spar

### 14. LAYING UP FOR WINTER STORAGE

- 14.1 Hauling (Slings)
- 14.2 Cradle Support
- 14.3 When Yacht Is Hauled
- 14.4 Fresh Water System
- 14.5 Head and Holding Tank
- 14.6 Batteries

### 15. WARRANTY

### 16. SUGGESTED READING

Date June 30, 1976

Replacing \_\_\_\_\_

2. LIST OF ILLUSTRATIONS AND TABLES

Figures

1. Deck/Hull Joint
2. Keel Hull Sealing Method
3. Mast and Rigging
4. Fuel Tank Installation & Thru Hull Location
5. Stuffing Box Assembly
6. Propeller Installation
7. Thru Hull Installation
8. Typical Wiring Diagram
9. Mast Lighting System
  
10. Lighting Including Mast Wiring & Water System
11. Spar Sling Lifting Location
12. Sling Locations
13. Typical Alcohol Stove & Propane Systems
14. Typical Warranty Forms
15. Warranty Registration Change of Ownership Forms
16. Sail Plan
17. Accommodation Plan

Tables

1. Stainless Steel Components, Slides & Cutbacks, Slab Reefing Booms
2. Standing Rigging
3. Running Rigging
4. Blocks
5. Backstay Preload Limits
6. Propellers
7. Fuse and Bulb Sizes
8. Tank Capacities and Pertinent Data

Date June 30, 1976

Replacing \_\_\_\_\_

1. INTRODUCTION

This manual is intended to help you to know your new C&C yacht. It is most important to familiarize yourself thoroughly with all aspects of operating and maintaining your yacht in a safe and efficient manner. Read your manual carefully as well as the manuals supplied by the manufacturers of components. If any questions arise to which you cannot find an answer, your C&C dealer will be pleased to help you or write to us directly.

It is company policy that the C&C line of yachts is constantly upgraded and improved. Thus, you may find your yacht is equipped with gear different from that shown in your manual. Any new piece of equipment will be in all cases, equal to, or better than, its predecessor. We will keep you informed through your dealer of changes that have been made, of recommendations for improvement of the equipment on your yacht, or other matters of interest to you as a C&C owner.

On taking delivery of your yacht, be sure to read and understand the C&C warranty. Fill in the warranty card or the change of ownership card and return it to us immediately.

We know you will have many satisfying and happy hours of sailing in your C&C yacht.

Date June 30, 1976

Replacing \_\_\_\_\_





### 3. CONSTRUCTION

#### 3.1 Hull

The hull of the C&C yacht is a single unit fibreglass moulding. It is carefully constructed to ensure the complete wetting of the fibreglass with no voids or bubbles. Uni-directional fibreglass roving is used extensively in the basic structure as well as in areas of additional stress such as keel bolts. The exterior finish consists of a pigmented gelcoat moulded onto the fibreglass. The boot top is permanently moulded in the hull to reduce maintenance requirements. In the C&C 38, balsa core is laid up in the hull between the layers of fibreglass to add strength to the hull, and yet ensure that weight is kept to a minimum.

#### 3.2 Deck

The deck and cockpit, like the hull, is a single unit fibreglass moulding surfaced with gelcoat. Balsa core is incorporated into the deck between the layers of fibreglass to give additional stiffness. A non-skid finish is moulded into the working areas of the deck.

#### 3.3 Deck/Hull Joint

The patented C&C hull-to-deck joint details are illustrated in Fig. 1. On assembly, the top of the hull flange is capped with butyl compound upon which is fitted a vinyl rub rail topped by another layer of butyl compound. The deck is then lowered onto the hull and a layer of butyl compound placed on top of the deck. The anodized toe rail is then placed on the deck and fastened to the hull by means of stainless steel thru-bolts. When these bolts are tightened, the butyl compound in the joint is forced into the exposed crevices. It should be noted that if a leak should develop at the hull/deck joint, the thru-bolts in the area may be tightened, care being taken not to allow the bolt to turn while tightening the nut.

#### 3.4 Rudder & Steering

The outboard rudders for the C&C 24 and the C&C 25 are constructed of two fibreglass shells bonded together. At the upper part of the rudder, wooden battens are installed between the rudder shells for strength. Immediately below, between the two shells, the void is filled with Cabosil to provide added strength. The lower area of the rudder is hollow for lightness and some areas reinforced with foam to provide strength. There are two holes in the lower section of the rudder for drainage. These should be kept open and clear at all times.

Date June 30, 1976

Replacing \_\_\_\_\_

### 3.4 Rudder & Steering (cont'd)

The rudder can be removed by unbolting the tiller, removing the cotter pin at the bottom of the 24-1/2" pin that extends through the gudgeon and pintle. Remove the pin and lift off the rudder.

The rudder weighs approximately 35 lbs. Care must be taken when removing the pin to support the rudder so that it does not drop.

The rudders on all other C&C Yachts (other than the C&C 24 and C&C 25) are spade-type of solid fibreglass construction. The rudder post is stainless steel, which is welded to a mild steel blade in the interior of the rudder. Cabosil filler effects the bond between the blade and the fibreglass reinforced shells.

On all yachts where the rudder post passes through the hull, water tightness and lubrication is made by means of a grease packing. A grease cup is fitted to the rudder tube and is packed with grease before the yacht leaves the plant. To refill, unscrew the cup and pack it with a good grade of waterpump grease and screw the cup back on. Tightening the cup down forces more grease around the rudder post.

On yachts fitted with tiller steering, the tiller is connected to the head of the rudder post. On those yachts fitted with pedestal steering and wheel, a radial driver which is turned by the wheel through a cable system, is connected to the top of the rudder post with a keyway and lock nuts. The pedestal manufacturer has provided a sheet of maintenance instructions with regard to the steering system and these are repeated in Sec. 13.15 under Maintenance.

### 3.5 Ballast

The keel of your C&C yacht is lead alloyed with antimony for added strength and cast to close tolerances. The keel gives the yacht stability and because of its foil shape, provides a certain amount of 'lift' when the yacht is sailing to weather. The keel is fastened to the bottom of the yacht by means of stainless steel bolts which are cast into the lead. These bolts extend through the bottom of the boat and are secured by means of stainless steel nuts and washers. The bolts are bedded in Tremco Semkit two-part sealant (Tremco Mfg.) and epoxy where they project. (See Fig. 2 Keel Hull Sealing Method)

Date June 30, 1976

Replacing \_\_\_\_\_

## 4. RIGGING

### 4.1 General Description

To do an effective job of mast tuning, it's important that you understand the principles involved. Let's start with some definitions and some explanations. The term 'standing rigging' refers to fixed pieces of stainless steel wire or rod which support the mast. If they offer principally fore and aft support, they are called 'stays' (backstay, forestay, etc.). If the support is principally transverse, they are called 'shrouds'. (See Fig.3 Mast & Rigging, Table 1 Stainless Steel Components, Table 2 Standing Rigging, Table 3 Running Rigging, Table 4 Blocks and Table 5 Backstay Preload Limits).

The shroud which runs from the masthead to a chainplate on the deck near the rail is called the main or upper shroud. If it were to travel this route directly, then the angle of support would be so fine as to induce extremely large tensile forces in the shroud and equally large compressive forces in the mast. To increase this angle of support to the desirable  $12^{\circ}$  or greater, a spreader is inserted approximately half way. This spreader should be angled upwards approximately  $5^{\circ}$  to bisect the angle formed by the shroud as it bends over the spreader tip. A horizontal spreader, or worse still a spreader angled slightly down, is not only unsightly but unseamanlike and dangerous; the spreader may be forced to slip further down the shroud resulting in the loss of the spreader and thus collapse of the mast. This spreader becomes a compressive member and when properly loaded would tend to push the middle of the spar to leeward. To avoid the resulting leeward bow, a lower shroud is installed running from the mast at the spreader to the deck near the upper shroud chainplate. Although the principal purpose of the lower shroud is to provide athwartship support, some fore and aft support can also be achieved at times by adding two lower shrouds per side, one running forward and the other aft. Therefore, we can have a single spreader rig with single or double lowers. The addition of the spreader and lower shrouds means the mast is now supported at more places transversely than it is fore and aft; and the mast section itself need not be as strong transversely as it does fore and aft. Thus, almost all keel boat masts have a greater fore and aft dimension than transverse.

### 4.2 Spars

It is an obvious extension that the more spreaders and shrouds used transversely, and intermediate forestays and running backstays used longitudinally, the smaller the allowable mast section will be. This can be advantageous as it reduces the weight and windage of the mast, and thus the undesirable influence of the mast on the mainsail. The smaller the mast section, the better the flow over the main. However,

Date June 30, 1976

Replacing \_\_\_\_\_

4.2 Spars (cont'd)

to keep such a small section standing would require a complex maze of wires. The spar would be difficult to keep in tune and the running backstays and the intermediate forestays would make tacking difficult. Therefore, except in the case of very sophisticated racing craft with large experienced crews, we design the rigs as simple as possible to reduce the degree of attention required. However, even while maintaining an uncomplicated rig, we have attempted to reduce the drag of the spar and its detrimental influence on the main by using our own highly developed triangular and diamond-shaped sections, and extruded aluminum airfoil spreaders.

We have also modified some of our boats completely to solid, high-strength, stainless steel rod rigging. Rod has the advantage over the current industry standard of 1x19 stainless steel wire in that it stretches much less for a given size. Therefore, a rig will hold its tune in a much larger range of sailing conditions. Swaged terminals on 1x19 wire are highly susceptible to stress, corrosion, and freeze cracking when water seeps between the wire and the terminals, whereas rod rigging with its headed terminals are susceptible to neither. The navtang terminal at the spar also reduces the number of pieces involved and eliminates the need for machine screwing the tang to the spar, at the same time reducing windage.

Tuning involves adjusting the tension in these shrouds and stays so that the mast will remain straight under most sailing conditions and at the dock with the desired amount of rake for comfortable helm balance. Tuning involves two phases - tuning at the dock, and tuning while under sail.

4.3 Tuning at the Dock

Be sure all turnbuckles are equipped with toggles at their base to eliminate any bending load on the swage and turnbuckle threads. Also see that there is a toggle at both ends of the forestay. As the boat tacks and the headsail loading varies from side to side, the forestay terminals experience a much higher fatigue loading.

Start tuning the spar by ensuring that the mast is in the centre of the boat, perpendicular to the designed transverse waterline. Boats often will not sit level at the dock due to the distribution of their accommodation plan and the internal weight or location of crew. So to make sure the mast is plumb transversely, slacken the lower shrouds fully by undoing their turnbuckles. If the spar is stepped through deck, remove the mast wedges as well. Take the main

Date June 30, 1976

Replacing \_\_\_\_\_



#### 4.4 Tuning While Sailing

Select a pleasant sunny day with a steady 8 to 12 knots of breeze. Put the boat on a starboard tack, close hauled. Sight up the luff groove of the spar. If the mast seems to fall off to leeward at the spreaders, luff up slightly and tighten the starboard lower shroud a couple of turns. Put the boat back on the wind and check the spar again. When the mast appears straight, put the boat about and do the same on the port side. Check the following carefully. First, if the upper shrouds are at optimum tension, when at about 15°-20° of heel, the leeward rigging should begin to look slack. This is quite natural and should never be tightened. Secondly, when close hauled under genoa and main, the forestay will appear quite sagged. Tensioning the backstay will reduce the amount of sag, but the sag itself can never be eliminated. As a rule of thumb, the maximum static backstay pressure should not exceed one-quarter the backstay breaking strength. (See Table 2 - Standing Rigging and Table 5 - Backstay Preload Limits).

The mast should also be fixed at the step by either pins or wedges to prevent fore and aft movement and to hold the mast in the step.

If your boat is equipped with double lowers, as in the case of the C&C 27, C&C 29 and C&C 33, the forward lower shrouds should be tightened marginally more than the aft lowers to encourage a bit of a forward bow to the mast. This forward bow is counteracted by the luff of the mainsail and the aft lowers. Aft bow should not be allowed. It destroys the sail shape and is countered only by the forward lower shrouds. If you find that the mast, whether or not you have double or single lowers, tends to bow aft rather than forward under backstay tension, the problem may then lie in your mast step. For example, if the mast is resting on its forward end, it may tend to bow aft. Therefore, to correct this situation, wedge up the after part of the heel to encourage a forward bow.

If yours is a brand new boat, chainplates may seat and the rigging may stretch to the extent that tuning from scratch will be necessary in a matter of weeks. However, after this initial working-in period, you will find that your boat tends to hold this tune for fairly long periods of time. After becoming used to the feel of the boat, you may wish to either increase or decrease the amount of 'weather helm' - that is, the amount of feel on the tiller. Any sailboat, when going upwind, should have a tendency to 'round up' slightly or head into the wind if you let go of the helm. However, if you're constantly fighting the boat in order to hold her off the wind, you have too much weather helm. This can be alleviated by taking some rake out of the spar;

Date September 15, 1976

Replacing June 30, 1976



#### 4.4 Tuning While Sailing (cont'd)

i.e., raking the spar further forward, and thus moving the centre of effort of the sailplan further forward. If you find when sailing upwind that the boat tends to fall off the wind and you are constantly having to push her to weather, then you probably have lee helm. This can be overcome by putting a bit more rake into the spar.

With constant tuning as the season progresses, your boat performance will improve. The boat will feel more comfortable to sail. You will find that tuning is a bit of an art; you will begin to notice subtle changes in the behaviour and response of your boat as you make subtle changes in tuning. The important thing to remember is to go about things in a slow and orderly fashion, and before you make any change, make sure it makes sense in your own mind.

Date June 30, 1976

Replacing \_\_\_\_\_

## 5. FUEL SYSTEM

### 5.1 Fuel Tank

For fuel tank location on yachts other than the C&C 24 and the C&C 25 with outboard, see 'Typical Fuel Tank Installation' Fig.4. The inlet fuel cap and the fuel tank vent locations are also noted.

### 5.2 Fueling

Before opening the fuel inlet cap, be sure that all open flame aboard the yacht is extinguished, no person is smoking, plus all electrical circuits and the main electrical switch are turned to 'off'. The nozzle of the fuel hose must be touching the metal deck plate to ground static electricity. When the tank has been filled, close the inlet cap tightly and wash down any spills with fresh water. Before starting the engine, open all hatches and operate the bilge blower for at least five minutes.

It is recommended when fueling a C&C 24 or a C&C 25 with outboard engine that the fuel tank be removed from the yacht when being filled. The nozzle of the fuel hose must be touching the metal tank to ground static electricity.

### 5.3 Fuel Grade

For the Vire 8 HP engine, use a regular gasoline and add 1/2 pint of SAE 30 motor oil to one gallon of gasoline (see manufacturer's manual). For outboard engines, see the engine manufacturer's specification for the correct oil to fuel ratio.

On those yachts with Universal inboard gasoline engines, use regular grade of gasoline.

For those yachts equipped with diesel engines, use a standard diesel fuel.

### 5.4 Portable Fuel Tank

On C&C 25 with inboard engine and fitted with a portable fuel tank, we advise disconnecting the fuel line from the portable fuel tank when the engine is not in use. The vent valve on top of the tank filler cap should be left open to allow for expansion.

Date June 30, 1976

Replacing \_\_\_\_\_



## 6. POWER PLANT AND TRANSMISSION OF POWER

### 6.1 Engines

The most common engines installed in C&C yachts to provide auxiliary power are the Atomic 4 or Atomic 4 'Stevedore', manufactured by Universal Motors, 1552 Harrison Street, Oshkosh, Wisconsin 54901, U.S.A.; or Vire, distributed by Westerbeke Corporation, Leeden Avenue, Avon Industrial Park, Avon, Massachusetts 02822, U.S.A.

All necessary data and information about the engines is contained in the Engine Owner's Manual and is not repeated here. Read this manual carefully so that it is thoroughly understood. The life and performance of an engine depends upon the care which it is given.

### 6.2 Transmissions

The reduction gears and reverse gears are contained in the transmission casing attached to the after end of the engine. These gears normally need little maintenance, but the oil should be checked from time to time (see Maintenance Schedule). To avoid damage to the gears and increase clutch life, the engine should always be at idle speed when shifting gears.

On those yachts fitted with a V-drive, the gear box is at the forward end of the engine. An extra gear box is installed which allows the line of the drive shaft to be reversed in direction and extend toward the stuffing box at the stern of the yacht.

Some yachts are fitted with hydraulic drive. This drive consists of an oil pump which is a part of the engine unit, and hoses leading to a hydraulic motor which drives the propeller shaft. The oil in this system is under pressure and becomes very hot. Care must be taken that the hose connections are tight and the cooler on the system is working efficiently (see Maintenance Schedule).

### 6.3 Propeller Shaft

The propeller shaft in C&C production yachts is as specified in Table 6. It is supported at the inboard end by the shaft coupling and at the outboard end by a strut containing a cutless type rubber bearing. The shaft passes through the hull at the stuffing box.

### 6.4 Shaft Alignment

The propeller shaft and the engine are aligned carefully prior to delivery of a new yacht. From time to time, however, this alignment should be checked, especially if there is excess vibration when the

Date June 30, 1976

Replacing \_\_\_\_\_

#### 6.4 Shaft Alignment (cont'd)

engine is running or loss of engine speed is evident. The alignment is checked in the following manner:

- a. Remove the bolts on the shaft coupling adjacent to the transmission box.
- b. Support the weight of the shaft and coupling and slide the coupling faces together by hand.
- c. Use a feeler gauge or a piece of metal stock of .003" maximum thickness to check that the gauge is gripped firmly completely around the circumference of the coupling faces.

If the feeler gauge does not pull evenly around the entire coupling, misalignment is indicated. This is corrected by placing shims under the engine legs until the coupling faces match evenly. Rotate the shaft 180° and again check the alignment. If it is still out of line, this indicates a bent shaft. The shaft must be removed and straightened or replaced.

#### 6.5 Stuffing Box

The stuffing box is located at the inboard end of a fibreglass tube passing through the hull. The fibreglass tube and the stuffing box is connected by means of a short length of flexible rubber tubing held in place by two hose clamps. The stuffing box should be inspected on a regular basis. If found that it is leaking slightly, the hose clamps should be checked. If the drip is very slight from the stuffing box, we recommend no further adjustment be made. If the leak seems excessive, the stuffing box may be tightened by loosening the lock nut and tightening the gland nut slightly (perhaps a quarterturn), then tightening the lock nut back up (see Fig. 5). Do not over tighten the stuffing box. This will cause excessive heating and possibly the seizing up of the unit.

If the stuffing box continues leaking after tightening down the gland nut and after the engine has been run for a number of hours, new stuffing box packing may be indicated. To replace the packing (available from your marine dealer), unscrew the gland nut and wind 3 or 4 turns of new packing around the shaft in separate rings to almost fill the stuffing box. The gland nut then is moved towards the stuffing box against the packing, and tightened just until the leak stops. The lock nut should then be tightened. If leaking still persists, have your dealer investigate for a possible bent or scored shaft.

Date June 30, 1976

Replacing \_\_\_\_\_

## 6.6 Propellers

The standard propeller supplied with the yacht is a two-bladed, solid bronze unit. Details of this propeller are given in Table 6.

For cruising, this unit is undoubtedly the best choice. However, for serious racing the optional folding propeller is superior, offering the least amount of drag.

When sailing a yacht equipped with an inboard engine, it is advisable to lock the propeller shaft by putting the engine 'in gear' after it has been shut off. In using a folding propeller, note the location of a point adjacent to the engine on the shaft or coupling when the propeller blades are in the horizontal position. Before racing, shut the engine off, put into 'neutral', rotate the shaft by hand until located as previously noted. Then, lock the shaft by placing the engine 'in gear'. This will ensure that one blade of the folding propeller does not hang open since the speed of the yacht while sailing will close the blades if they are in horizontal position.

When sailing with a fixed two-bladed propeller, it is usual to lock the shaft when the blades are in the vertical position. This offers, it is felt, the least drag. This is done by rotating the shaft to a pre-determined point as above.

## 6.7

Date June 30, 1976

Replacing \_\_\_\_\_



## 6.8 Removal of Propellers

For both solid and folding propellers, a wheel puller or propeller puller is required. This is available from a major hardware or marine hardware dealer.

To remove a folding propeller, proceed as follows:

- a. Remove all cotter pins from pivot bar for blades and shaft. Salvage these cotter pins if possible.
- b. Pull pivot bar for the blades. It will be noticed that on some propellers one end of the pivot bar is tapped for a bolt. Thread bolt into this end of the pivot bar and pull bar by means of bolt. On other types, the pivot bar can be tapped out with a drift punch and hammer.

For both folding and solid propellers:

- c. Remove the shaft nut which is counter sunk inside the propeller hub on folding props and exposed on solid props. To remove shaft nut, a 1/2" square drive handle with extension is required.
- d. To remove the propeller, leave the propeller retaining nut in place but installed about 1 or 2 turns loose from the tight position (to protect the threads). The puller shaft should bear directly on the end of the propeller shaft or on the propeller retaining nut. If it bears on the propeller retaining nut a spacer of brass, aluminum or copper should be used to protect the nut. The puller must be installed straight and centred carefully so that its maximum effectiveness can be realized. Place the claws of the wheel puller behind the propeller hub.

While pulling the hub, it is often a help if the propeller hub is tapped with a composition hammer. If the propeller has been on for some period of time, some effort may be required to remove it.

## 6.9 Installation of Propeller

Ensure that the bore of the propeller is free from dirt and corrosion and the end of the shaft is clean. The keyways of the propeller and shaft must be free from burrs. Place the propeller on the shaft with the keyways in the shaft and propeller in line. The key should fit as snugly at the sides with a .01" minimum clearance at the top. Do not force the key in as this may cause the propeller to be forced off centre. The propeller, the locking nut and the cotter pin are then

Date June 30, 1976

Replacing \_\_\_\_\_

6.9 Installation of Propeller (cont'd)

assembled on the shaft (Fig. 6). Check to ensure that the propeller is correctly aligned.

6.10 To Check Propeller Alignment

Install the propeller completely as to be used. Clamp a piece of thin metal or wood on the propeller strut to touch one blade edge of the propeller. Rotate the shaft and the propeller by hand. Any variance in the track will be indicated by either a gap between the next blade or the blade striking the indicator. If the propeller is so indicated to be out of line, it should be checked and balanced by a yacht marine yard familiar with this type of work.

6.11 Exhaust System

The exhaust system utilizes the Aqualift Marine Muffler. In fresh water operations, the engine water pump draws water through the engine intake port, circulates it through the engine block, and thence into the muffler. The water is mixed with the exhaust gases in the muffler and discharged overboard through the exhaust port in the stern of the yacht.

In a yacht with an engine set up for salt water operation, an auxiliary pump draws water through the intake port, circulates it through a heat exchanger, from whence it is pumped into the muffler and overboard through the exhaust port. The salt water in the heat exchanger lowers the temperature of the engine coolant circulated through the engine block by means of the normal engine water pump. This coolant is 50% ethylene glycol and 50% fresh water and protects the system to approximately 32°F (0°C). The ethylene glycol should be used at all times to help prevent corrosion in the engine.

Date June 30, 1976

Replacing \_\_\_\_\_

## 7. CONTROLS

### 7.1 Description

#### C&C 25 Inboard

The engine controls for the C&C 25 consist of the throttle and gear shift lever unit located on the starboard side of the cockpit near the companionway; the engine instrument panel located inside and at the forward end of the starboard cockpit seat locker above the muffler; and a switch located on top of and at the forward end of the Vire engine. The instrument panel in the cockpit seat locker consists of a choke, ignition key switch, blower button, engine stop button, and a generator lamp. The red warning lamp on the panel only operates when the battery is discharging through the ignition system and if it burns after the engine is running, indicates a 'no charge condition'. The light may glow at idle speed even though the system is in perfect working order. The 'stop-run' switch above the fly wheel on the engine can normally be left in the 'run' position (to port). As an added security precaution, the owner may desire to leave it in the 'stop' position when the yacht is not in use. This switch may also be used when the engine is being started by hand with a pull cord.

#### C&C 27, C&C 29, C&C 30, C&C 33

The engine controls of the C&C 27, C&C 30 and C&C 33, consist of the instrument panel located in the cockpit on the portside aft, and on the starboard aft side of the C&C 29, and the throttle and gear shift levers. The instrument panel consists of a choke button, ignition button, starter button, compass light switch, blower switch, oil pressure gauge, water temperature gauge, ammeter, and fuel gauge. There is no key for this ignition system which is secured by turning the mast switch which is located inside the cabin on the after bulkhead to 'off'. On yachts equipped with tiller steering, throttle and gear shift levers are located in the cockpit on the starboard side close to the front of the tiller, and on the port side aft of the C&C 30. With wheel steering, throttle and gear shift levers are located on the steering pedestal. On the Edson pedestal, the throttle is located on the starboard side of the pedestal and the gear shift lever on the port side. When sailing, the gear shift lever should be removed and placed in the receptacle located in the top of the pedestal adjacent to the compass seat.

Date September 15, 1976

Replacing June 30, 1976

7.1 Description (cont'd)

C&C 38

The engine controls for the C&C 38 consist of the engine instrument panel located in the cockpit aft on the starboard side, and throttle and gear shift levers. The instrument panel consists of choke button, ignition button, starter button, compass light switch, blower switch, oil pressure gauge, water temperature gauge, ammeter and fuel gauge. The throttle and gear shift levers are located on the steering pedestal. The throttle is located on the starboard side of the pedestal and the gear shift lever on the port side. When sailing, the gear shift lever should be removed and placed in the receptacle located in the top of the pedestal adjacent to the compass seat.

Date June 30, 1976

Replacing

## 7.2 Starting and Operating an Inboard Engine

1. Turn main battery switch to 'on'.
2. Switch engine compartment blower 'on' (blower should remain on for approximately five minutes before starting engine).
3. Check that engine water intake valve is open.
4. Check that the gear shift lever is in neutral, throttle is slightly open, and choke button is pulled out.
5. Pull ignition switch to 'on'.
6. Turn key or press starter button to start engine. Push choke button in gradually until engine idles smoothly.
7. Check oil pressure gauge to be sure it is registering. Check the exhaust port to be sure that water is circulating and is discharging through the port. If oil pressure is not indicated or water is not being discharged, shut down engine immediately. Check engine manual.
8. Again check oil pressure gauge and exhaust port discharge after about ten minutes of operation. If they do not indicate normal operation, shut down engine immediately and consult engine manual.
9. Close throttle until engine is at low idle before moving gear level into forward or reverse.
10. When using a folding propeller, excessive vibration may occur when the engine is placed in forward gear. This is caused by one blade of the propeller not opening. If this occurs, slow the engine to idle, shift into reverse gear and accelerate the engine. This will open the blade. Idle the engine and shift into forward gear.
11. Be sure to run the engine until it reaches full operating temperature. Excessive engine corrosion will result if this is not done.
12. If difficulty is experienced in starting the Vire engine, it may be cranked by hand using a pull-rope. All the above procedures should be followed.

When sailing, it is always wise to start the engine before the sails are lowered. In this way, it is still possible to manoeuvre if the engine should not start.

Date June 30, 1976

Replacing



### 7.3 Finished With Engine

1. Close the throttle to slow idle, place the gear shift in neutral, and turn off ignition switch.
2. If the engine is not to be used again for long periods, the circulating water intake port valve may be closed, but this is normally not necessary.
3. Turn off engine compartment blower. If finished with other power in the yacht, turn the main battery switch to 'off'.
4. Diesel Engine. Slow to idle, place the gear shift to neutral and engage the engine cut-off button until the engine stops. Turn the ignition key to 'off'. Repeat other steps as above.

Date June 30, 1976

Replacing \_\_\_\_\_



## 8.2 Installation of Deck Fittings

### Winches

Ensure winch placement where the deck is reinforced to accommodate it, ie., winch island mounts. The cabin area is equipped with plastic access plates enabling entry from below to the bolts securing the winch. Winches do not require back-up plates. Lock washers and nuts only are required. Bolts for winches, tracks, cleats, etc., should be bedded with silicone sealant.

### Other

Any deck fitting which is under load (chainplates and inboard genoa tracks) should be checked at least once a year and rebedded with silicone sealant if found to be leaking.

Date June 30, 1976

Replacing \_\_\_\_\_

## 9. ELECTRICAL

### 9.1 General

The electrical system in your C&C yacht has been designed to ensure as much trouble-free operation as possible. Wiring and connections are kept as high in the interior of the yacht as practicable reducing the possibility of exposure to water. The main switch panels are located to protect them as much as possible from the elements. See Fig. 8 - Typical Wiring Diagram included in this manual for details of the wiring arrangement. Also see Fig. 9 - Mast Lighting System.

### 9.2 Batteries

C&C yachts with inboard engines are supplied with one (second optional) 12 volt, 55 ampere hour battery. The battery is located adjacent to the engine in the engine compartment. The red circular explosion-proof main battery switch is located in the after part of the cabin adjacent to the companionway. This switch has four positions: 'off', 'one', 'both', 'two'. When one battery is installed, 'off' and 'one' are the two positions used. When the arrow points to 'one', the yacht's electrical system is activated.

On yachts with the two batteries installed, the switch will activate '# one' or '# two' batteries, or 'both' will operate the batteries in parallel. DO NOT TURN THIS SWITCH TO 'OFF' WHILE THE ENGINE IS RUNNING AS SERIOUS DAMAGE TO THE CHARGING SYSTEM WILL RESULT. The engine manufacturer recommends that you do not change batteries with this switch while the engine is running.

### 9.3 Alternators

The Universal engines are fitted with a 35 amp alternator which operates with the engine to charge the 12 volt D.C. batteries.

The Vire engine is fitted with a generator/starter which delivers approximately 13 amps to charge the 12 volt batteries while the engine is operating.

Date June 30, 1976

Replacing \_\_\_\_\_



## 10. ELECTRONICS

### 10.1 General

Many owners add electronic equipment such as logs, speedometers, depth sounders (all of which usually require thru hull fittings) and relative wind indicators, wind speed indicators, radio direction finders, VHF and SSB radios, and various types of electronic navigation aids such as Loran and Omega (all of which require mast-head fittings and/or antennas). Many of these items can be installed when the yacht is being built, or later by the owner or C&C dealer.

Many problems develop in electronic instrumentation due to faulty installation. This should be done in the first instance by a specialist. It is recommended that instruments containing their own battery package be installed whenever possible to prevent drain on the yacht's main battery when sailing.

### 10.2 Thru Hull Fittings

If other than standard thru hull fittings are required and are to be added after the yacht is built, consult your C&C dealer to determine the correct positioning of the thru hull fitting. Directions showing the components and installation of the thru hull fittings should be supplied with the unit. (See 8.1 Balsa Cored Hull and 8.2 Non Balsa Cored Hull).

### 10.3 Masthead Fittings

Masthead fittings should be installed carefully following manufacturers' recommendations. Cables leading from the masthead fitting should come out at the foot of the mast and a connector installed at this point to facilitate easy disconnect when the mast is unstepped. Keep all connectors, junctions and wiring as high in the boat as possible when installing electronic equipment to prevent them from coming in contact with water.

### 10.4 Electronic Equipment

All electronic equipment feeding off the yacht's electric circuit should be separately fused. Radios and other DC accessories taking a high amperage should be wired directly to the yacht's battery with a fuse installed close to the battery. Make sure the polarity for electronic accessories is correct and it is installed according to the manufacturer's recommendation.

Date June 30, 1976

Replacing \_\_\_\_\_

## 11. SAFETY EQUIPMENT

Safety should be first concern of every sailor and certain items should always be carried on each boat to ensure the well-being of every person aboard. Although the laws pertaining to safety vary from country to country, the items listed below are generally considered an absolute necessity on each yacht.

### 11.1 Fire Extinguishers

At least one type B.C. 2-1/2 lb. extinguisher is standard equipment with every C&C yacht except the C&C 24. Depending upon the size of the yacht, many owners carry two or three extinguishers mounted in the yacht where easily accessible. These extinguishers should be certified with regular inspection and testing dates listed on the unit.

### 11.2 Life Jackets

One life jacket for each member of the crew must be carried. They should be approved by the Department of Transport in Canada and by the United States Coast Guard in the U.S.A.

### 11.3 Life Buoys

Many yachts carry life buoys of the 'horseshoe/pony ring' type which can be easily stowed in a bracket on the stern pulpit or adjacent to the helmsman. The C&C 33 and C&C 38 all have special life ring storage in the aft end of the cockpit behind the helmsman's seat. This life buoy should have a gravity actuated strobe or other bright light attached to it and a long line, the other end of which is attached to a man-overboard pole. This pole is stowed on the life line of the yacht and goes overboard after the life buoy.

### 11.4 Life Lines

Life lines should be checked regularly to ensure their integrity. Always be sure that the access gate (if installed) is closed before leaving the dock. Check carefully that the swage fittings are not pulling and the lock nuts on the bottle screws are tight.

### 11.5 Safety Harnesses

Just as with life jackets, a safety harness should always be worn by anyone on deck at night and during heavy weather sailing. These harnesses allow the wearer to be attached to some permanent fixture on or above the deck. They should be of good quality and be able to take the full weight of the wearer falling several feet.

Date June 30, 1976

Replacing \_\_\_\_\_

#### 11.6 Flashlights

The yacht should be equipped with a number of flashlights in good condition with well-charged batteries, not only as a convenience in moving about the boat at night and in trimming sails, but as a safety precaution locating people overboard. At least two of the lantern-type should be available on the boat.

#### 11.7 Dinghy or Life Raft

For off-shore racing, an inflatable dinghy or life raft must be carried with the capacity to accommodate every member of the crew.

Inflatable dinghys should be checked once every two years to ensure their good operation. Your C&C dealer or yacht marine yard can advise you where to have the dinghys checked and repacked.

#### 11.8 Flares

Flares of the Very Pistol type are best for use under adverse conditions. Some of the smaller types in heavy winds tend to be blown into the sea very quickly. At least six red flares should be carried, the flares being replaced according to expiry date listed on each flare.

#### 11.9 Fog Signals and Radar Reflectors

Both of these items are extremely important if sailing conditions deteriorate and visibility is severely restricted. Fog horns of the cannister pressure type are good, but a 'lung power' type should also be available. Sailboats cannot be picked up well on radar, thus the radar reflector is a must for bad weather. These should be purchased commercially and stored carefully to prevent damage since the accuracy of the angles on the reflector are most important.

#### 11.10 Anchor

The type of anchor carried will vary from region to region according to the bottom conditions. The anchor should include an anchor line minimum length of three times the length of the yacht which is attached to approximately six feet of chain which in turn is attached to the anchor. This chain ensures that the stock of the anchor will lie on the bottom permitting the anchor to dig into the bottom as it is dragged.

Date June 30, 1976

Replacing \_\_\_\_\_

## 12. MAINTENANCE

Yachts to be kept tidy and ship-shape require maintenance on a regular and frequent basis. The frequency will depend upon the conditions in which the yacht is being used. You should constantly check the running and standing rigging, winches, engine, head, bilge and surface finishes for signs of needed maintenance.

### 12.1 Gelcoat Surfaces

Wash down the gelcoat surface of the hull and the deck regularly with fresh water and a good detergent. A sponge or soft brush should be used on a smooth surface and a stiffer brush should be used on the non-skid areas of the deck. Follow by rinsing with fresh water.

At least once a year the top sides of the hull should be waxed with a good automotive or boat wax and polished. This will help the gelcoat to retain its colour and appearance. Do not wax the non-skid surfaces of the deck.

Minor scratches in the gelcoat surfaces can be repaired by buffing with a light abrasive cleaner followed by a waxing and polishing. Scrapes or damage that have broken through the gelcoat surface can be repaired with the gelcoat repair kit which comes with your yacht. Directions for these repairs are included with the gelcoat repair kit. For major damage, where a large area of gelcoat has been removed or the damage extends into the glass lamination below the gelcoat, consult your C&C dealer or a qualified yacht marine yard.

Gelcoat surfaces below deck are cleaned with a good detergent and water and rinsed down with fresh water. These surfaces can also be waxed if required to maintain the appearance.

Gelcoat surfaces will stain if the yacht is moored where leaves fall on the deck or birds roost. Surfaces should be scrubbed down very frequently or have a protective cover if this occurs.

### 12.2 Windows and Hatches

Windows and hatches of your yacht are glazed with plexiglass which is impact resistant and very durable. The surface of plexiglass, however, is not highly abrasion-resistant and therefore gritty cleaning agents should never be used on them. Clean plexiglass with mild soap and water. If plexiglass requires polishing, plexiglass polish is available from most major hardware dealers. Toothpaste may be used as a substitute for plexiglass polish. Rinse afterwards with a mild detergent and clear water.

Date June 30, 1976

Replacing \_\_\_\_\_







#### 12.6 Vinyl Rubbing Strip

The vinyl rubbing strip is located along the deck line where the deck is bonded to the hull. This rubbing strip may be cleaned using detergent and water. If hard to remove stains are encountered, an abrasive cleaner such as Ajax may be used.

#### 12.7 Standing Rigging

Standing rigging is defined as fixed parts of the rigging which aid in support of the mast. The standing rigging and all the components listed under 'Stainless Steel' should be checked each time before going sailing and given a detailed monthly examination. Turnbuckles should be checked to make sure cotter pins are in place at top and bottom, cotter pin ends are turned back carefully and protected with plastic tape. Each spreader should be checked that the pins are in, and the spreader is not bent (up or down or aft). The end of the spreader where the shroud passes through must be taped. If any of the standing rigging is wire, sails may be ripped if strands are broken or protruding. Check also for signs of rust in wire rigging. A good safety practice is to paint a small white ring around the wire where it enters the terminal. The paint will show if any slippage occurs and will prevent salt from collecting in the minute spaces between the strands which will induce corrosion. Examine carefully where the wire enters the terminal end fitting for signs of rust or wear since this is a particularly vulnerable point when the yacht is sailed in a salt water area. If signs of rust or wear are found, the rigging should be replaced. Rod rigging should be examined for nicks or kinks and any signs of slippage where the wire enters the terminal end of fitting. If this is found, consult your C&C dealer or the manufacturer of the rod rigging.

#### 12.8 Running Rigging

Running rigging comprises all the gear that is normally used in handling and trimming of sails such as sheets, guys, halyards and vang. Main and genoa halyards are stainless steel wire and are subject to heavy loads and constant flexing as they pass over the sheave at the head of the mast and turning blocks at the foot of the mast. This constant flexing tends to fatigue the metal over a period of time. Consequently, halyards should be examined regularly for signs of stress and breaking strands. When signs of stress appear, the only solution is to replace the halyard. Again, the end fitting on a halyard should be examined carefully. On halyards with rope tails the splice between the rope and the wire tends to be a point of possible weakness and should be examined regularly. Rope halyards (used mainly for spinnakers) are not subject to wear as severe as wire halyards but should be checked two or three times a season. The end

Date June 30, 1976

Replacing \_\_\_\_\_



12.8 Running Rigging (cont'd)

fitting should be checked each time the boat is sailed to ensure it closes and locks easily and securely. Rope sheets tend to fray over a period of time with use and only experience will dictate when they need replacement.

12.9 Lifelines, Pulpits and Stanchions

Lifelines, like standing rigging, should receive periodic checks. The terminal ends at the connector must be well screwed into the barrel in order all the threads of the barrel are fully engaged and the lock nuts are done up tightly. This is most important as a life may depend on it. Again, check the swagings for signs of rust. Check pulpits and stanchions for dents or cracks at the base and ensure they are properly bolted down.

12.10 Winches and Blocks

The installed winches on your yacht are as of high a quality as any available on the market. A manual is included in the kit accompanying your yacht describing winches and the maintenance required. Most problems with winches occur due to poor or improper maintenance. When sailing actively on salt water, winches should be stripped down, cleaned, and lubricated no less than once a month. Otherwise, winches should be stripped down, cleaned and lubricated at least twice per season. The bolts securing the winches should be checked at least once a season. Access to the bolts supporting the winches in the cockpit may be gained through the cockpit lockers or from the quarter berth on yachts so fitted. Bolts securing the winches located on the deck may be checked by removing the access plates located in the deck head of the cabin. If it is necessary to remove a winch base and remove the bolts, the bolts should be reseated using a sealing compound such as silicone rubber or a butyl tape of the type used under the toe rail.

Blocks normally require little maintenance but they should be examined regularly for damage. Never leave a snatch block open. Be sure the snatch is properly closed before applying a load to prevent the cheek of the block being bent. Sheaves and blocks can be sprayed with a silicone lubricant to keep them running freely. The sheaves at the head of the mast should be checked before the spar goes into the boat in the spring and a couple of times during the season (this necessitates going up the spar in the bosun's chair) to ensure they are turning freely and the halyard is not cutting a groove into the sheave. The sheaves for the main and genoa halyards have oil-lite bronze bushings and normally do not require lubrication. All running rigging should be washed down with fresh water after sailing on salt water.

Date June 30, 1976

Replacing \_\_\_\_\_



### 12.11 Engine

The maintenance of your engine is covered in the Engine Manual which should be read carefully.

Please note. Once the engine is started, it should be operated until it reaches full operating temperature to prevent corrosion. This may take several minutes in cold water.

Before changing the oil, operate the engine until it reaches full operating temperature. The oil can be removed from the crank case with a crank case pump which is supplied (see 'Winter Storage').

Check all fuel lines for tightness and integrity. Probably your nose is your best guide here. If you smell gasoline or diesel fuel, there is a leak somewhere in the system. A gentle tightening of the bolt at each connection in the fuel line often will solve the problem. If you do smell gasoline fumes in the boat, extreme caution must be used to prevent an explosion.

### 12.12 Power Train

Details of shaft alignment and removal of propeller and stuffing box maintenance are given under Section 6.

### 12.13 Electrical Maintenance

The electrical wiring should require little or no maintenance. Exposed terminals and connections should be checked a couple times a season and more often in a sea air environment for tightness and signs of corrosion. Exposed electric and electronic terminals can be protected with a light coating of vaseline or silicone resin coat obtainable from an electronics parts dealer.

Battery terminals must be kept clean and free from corrosion. Periodic cleaning washes away sea water, acid and dirt that can accumulate and set up tiny circuits that drain off amperage. Before cleaning a battery, remove it to an area that will not be damaged by acid washed off the battery. Be sure the vent caps are tight. Scrub the terminals and the top of the battery with a brush dipped in a solution of dilute ammonia or a couple of ounces of baking soda to a quart of water. Scrub until all the bubbling stops. Flush with clean water, dry, and replace the battery.

Remember - 'Clean, Dry, Tight' are the three most important factors in battery and electrical connection maintenance.

Date June 30, 1976

Replacing \_\_\_\_\_

### 12.13 Electrical Maintenance (cont'd)

Add water, preferably distilled water, to bring the electrolyte level of the battery about 1/4" to 1/2" above the level of the separators and plates, or to the bottom of the split ring. Check the battery from time to time with a hydrometer. A fully charged battery has a specific gravity reading of 1.265 or 1.270 at a temperature of 80°F. In tropical climates, batteries usually have an electrolyte with a specific gravity of 1.225 when fully charged. Before testing a battery, all the lights and electronic equipment must be turned off in the yacht so that the battery is not discharging during testing.

To replace fuses, note the arrow on the fuse holder. To remove, push the fuse holder in and twist anti-clockwise. To insert a new fuse, push in and twist holder clockwise. (For fuse and bulb sizes, see Table 7).

The domes on interior lights are held on by friction. These can be removed by gently prying the dome out. To remove the dome bulb, push in and twist anti-clockwise. To replace, push in and twist clockwise. The covers of the fluorescent lights are taken off by removing the screw in the middle of the cover and pinching in the sides. The bulb is removed by gripping both ends and twisting approximately quarter turn. If corrosion is noted in the bulb socket, it can be cleaned by inserting a small stiff brush and twisting in the socket. Fluorescent light sockets may be cleaned by using a light sandpaper. (Do not use emery cloth as it contains metal particles). For outlet locations, see Fig. 10 - Lighting Including Mast Wires.

### 12.14 Upholstery

The cushions and seat backs on your C&C yacht are covered with relatively stain resistant nylon which should ONLY BE DRY CLEANED. With the exception of the C&C 24, cushion covers can be removed from the foam padding for cleaning. It is important that the upholstery be kept aired and that it be dried after use to prevent mould development. If the yacht is to be left for some time unused, it is advisable to stand the cushions on edge so that air can circulate around them. If there is no circulation of air in the boat, it may be of help to keep two or three shore-powered electric light bulbs burning in the boat to reduce the dampness. (These should be suspended away from flammable material such as wood, paper, vinyl, etc.). It is also advisable at such times to clean out all lockers of damp clothing and leave locker doors open.

Date June 30, 1976

Replacing \_\_\_\_\_





## 13. FITTING OUT

### 13.1 Prior to Launching

- a. The exterior of the boat should be sponged down with soapy water to reveal any scratches and damage. Repair damaged areas (see 12.1).
- b. Wax the hull exterior. An idea for polishing the hull is to mix into the wax, if in paste form, a pigment for tinting. You can buy small tubes of pigment the same colour as the hull at a paint supply store. Thus, when you wax the hull, the wax will fill in any small scratches and disappear when you polish the hull.
- c. Check and clean propellers and shafts, and also for play in the strut. Ensure that the blades of a folding propeller open and close readily. In addition, check the alignment.
- d. Examine all deck fittings and service all winches (Sec.12.10).
- e. Check that batteries are fully charged, battery terminals are clean and all electrical connections are secure.
- f. Check all thru hull fittings are secure and that valves open and close easily. Prior to launching, all thru hull valves should be closed to prevent any leakage.
- g. For yachts with inboard engines, install new spark plugs. Replace engine block and water pump drain plugs. If fitted with V-drive, replace plug at bottom of intake connection. Add a small can of gasoline anti-freeze to the gas tank. Remove any winter cover protecting the carburetor and the plug or cover at the stern exhaust port.

### 13.2 After Launching

- a. Check all thru hull fittings, sea cocks and the bilge to ensure that leakage is not occurring.
- b. Open the sea cock for the engine cooling water intake.
- c. Turn on main power switch and bilge blower.
- d. Use hand primer located at fuel pump on both Universal and diesel engines to charge the fuel system.

Date June 30, 1976

Replacing \_\_\_\_\_



### 13.2 After Launching (cont'd)

- e. Start engine. After engine has reached operating temperature, shut down and change oil.

### 13.3 Stepping the Spar

Spars are stepped by two methods, depending on a yacht's design. Some spars are stepped directly on the deck of the yacht, the imposed load being transferred to the keel by means of a support inside the yacht. Other spars go through the deck at a mast collar and are seated on a mast step located on top of the keel. The procedure for stepping the spar basically is the same for both types.

The spar first should be laid out on two or more saw horses and checked carefully. Spreaders should have the pins in place and all standing rigging pinned at the tangs. Halyards must run freely and head sheaves turn easily. Install and check running rigging. Examine halyards for wear and replace if necessary. Steaming, mast head and spreader lights, plus any mast head wind instruments should be checked. Main upper shrouds should be positioned in spreader ends and locked.

Tie all running rigging together and secure tightly to the spar with light line at a point that will be just above the mast collar when the spar is stepped. Tie the forestay, backstay and two main shrouds together in a separate bundle and secure with light line to the spar at a point that will be approximately three feet above the deck when the spar is stepped.

Remove cotter pins and clevis pins from all turnbuckles and place in a container for future use. Back off all turnbuckles to the maximum. Carefully locate and secure the yacht adjacent to a crane, making sure the mast step is within the radius of the crane arm. Place the spar on saw horses adjacent to the crane.

Prepare a rope sling which will take the weight of the spar. A 10 ft. line, minimum 5/8" dia. tied in a loop will suffice. Place the loop around the spar below the lower spreaders **OUTSIDE THE RUNNING RIGGING. THE FORESTAY, BACKSTAY AND MAIN SHROUDS MUST BE OUTSIDE THE SLING.** Make fast a 1/2" tie-down line to the sling, securing the other end to a winch or cleat at the bottom of the spar. This line prevents the load of the spar being carried by the spreaders when the spar is raised to a vertical position. It also facilitates pulling down the sling after the spar is stepped. Attach

Date June 30, 1976

Replacing \_\_\_\_\_



### 13.3 Stepping the Spar (cont'd)

the lifting hook to the sling. In some instances, the crane height may not be sufficient or the sling must be positioned below the mid-point of the spar. Additional persons may be necessary to offset the weight above the sling and guide the spar into position. At least three persons should be present when stepping the spar in addition to the crane operator. Position one person at the foot of the spar to take the weight of the foot as it is raised and to guide the foot toward the yacht. A second person should clear the rigging as the spar is beside the mast step to guide the foot of the spar into position.

Raise the spar carefully, guiding the foot toward the yacht. Position one person on the yacht; pass the foot of the spar from shore to this person. Raise the spar to an almost vertical position and guide the foot into the step located on the deck or through the mast collar if the spar is stepped below. In the latter case, all electrical wiring at the bottom of the spar must precede the spar through the collar. With the foot of the spar through the collar, free the forestay, backstay and main shrouds, ensuring that all are clear of the crane lifting cable. Station a person below to guide the spar into the mast step and place the chocks or wedges around the foot before the weight is fully taken on the step.

With the weight of the spar on the step, attach the forestay, backstay and port and starboard main shrouds. Place the wedges around the spar at the collar to support the spar at this point. Lower the crane lifting cable sufficiently to allow the sling to be lowered and released, taking care that the sling and hook do not damage the steaming light on the forward side of the mast.

Release lower shrouds from their lashing, connect the lower shrouds and snug up all turnbuckles. Replace clevis pins and cotter pins. To help prevent damage to sails, insert all clevis pins fore to aft or out-

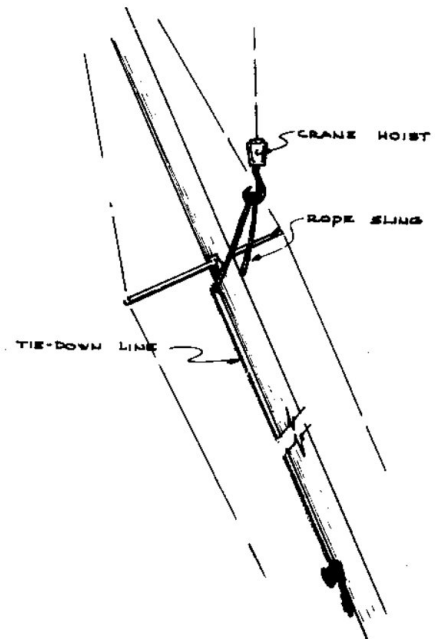


Fig.11  
Spar Sling Lifting  
Location

Date June 30, 1976

Replacing \_\_\_\_\_

### 13.3 Stepping the Spar (cont'd)

board to inboard and tape over the cotter pins. Release all running rigging and lead to the appropriate blocks and winches. Proceed with tuning the spar at the dock (Sec. 4.3).

To unstep the spar, reverse the above procedure. Before removing the spar for winter storage, make a diagram of the location of the running rigging to serve as a guide when the mast is resteped. DO NOT use masking or filament tape on the spar. DO NOT expose a spar wrapped in plastic to sunlight. It is better to leave a stored spar unwrapped.

Date June 30, 1976

Replacing \_\_\_\_\_

## 14. LAYING UP FOR WINTER STORAGE

### 14.1 Hauling (Slings)

The proper placement of slings and supports is most important when hauling out. Improper placement stresses the hull and may result in gelcoat fractures or other damages. Slings should never be placed on a propeller shaft or strut. The forward sling is placed in the area of the forward main bulk head and the aft sling in the area of the aft main bulk head. To prevent the slings coming into contact with the vinyl rub rail, the hull may be padded with carpet placed flat against the hull just below the cove line. (See Fig.12)

Before the yacht is hauled (if a Universal engine), run the engine until warm, remove the oil and replace with two quarts of SAE 10 oil to flush the system. Run the engine again for about five minutes, change this oil and replace it with three quarts of SAE 30 oil and run the engine for five to ten minutes. Add a can of top lubricant (such as STP) directly into the carburetor in the following way:

- a. Run the engine until warm.
- b. Remove the forward screw from the flame arrestor (Universal Engine Manual) and loosen the rear screw.
- c. Slide flame arrestor to side.
- d. With engine at fast idle, pour the top lube directly into the carburetor. If engine starts to stall, stop pouring until revs are back up.
- e. When finished, replace flame arrestor and tighten down.

Many owners 'fog' their engine in this way once or twice a season to help prevent the valves from sticking. Add a small can of gasoline anti-freeze to the gas tank.

### 14.2 Cradle Support

When hauling on a marine railway or placing the yacht in its winter cradle, at least 60% of the weight of the yacht should be on the keel. Pads for supporting the bottom of the hull should not bear more than 30-40% of the weight of the yacht or structural damage may result if these weight percentages are not followed. Do not put weight on the keel further aft than the last keel bolt. The extreme aft tip of the keel is thin and will accept little weight without bending (see 3.5).

Date June 30, 1976

Replacing \_\_\_\_\_

#### 14.2 Cradle Support (cont'd)

It may be necessary to go through the loading process two or three times, checking the keel position relative to the centre line of the cradle, before it is correctly positioned.

#### 14.3 When Yacht Is Hauled

- a. Scrub down the bottom to remove any marine growth and grease. Wash down top sides and deck.
- b. All gear that may be damaged by cold or damp such as clothing, batteries, books, life jackets, etc., should be removed from the yacht and placed in a warm, dry storage area.
- c. Lubricate or cover all exposed mechanical fittings to guard against ice or snow.
- d. Check all electrical and mechanical components on boat and remove those needing repair or replacement during the winter.
- e. On Universal engines (see Engine Manual), remove three drain plugs: manifold drain plug, cylinder block drain plug, and water pump drain plug. With a V-drive, remove the plug at the bottom of the intake connection. After allowing to drain for five to ten minutes, replace the plugs and tighten. Remove the engine water inlet hose from the sea cock and place this hose in a gallon container of anti-freeze. Start the engine and run until all the anti-freeze is out of the container. Stop the engine. Replace the inlet hose on the sea cock and tighten the hose clamp. You now have anti-freeze and a little water in the cooling system as well as in the muffler. There is no need now to remove all the drain plugs.
- f. On the Universal engine, remove the back cover of the water pump (see Engine Manual) which is held on by four slot-headed screws. In doing so, try not to break the paper gasket. Remove the composition impeller unit and wipe around the walls of the pump with oil. Replace the impeller unit and the cover.
- g. Remove the spark plugs, add a little light oil in the cylinder head, and turn the engine over a few times with the starter. Replace the plugs finger tight.
- h. Remove the flame arrestor (see Engine Manual) and put a piece of plastic (from a garbage bag, etc.) over carburetor intake and screw flame arrestor back down.

Date June 30, 1976

Replacing \_\_\_\_\_

14.3 When Yacht Is Hauled (cont'd)

- i. Put a wooden plug in, or plastic cover over, the exhaust pipe in stern of boat.
- j. Shut off gas tank valve.
- k. Remove, clean, and dry fuel pump bowl. Return bowl to its position making sure it is installed squarely on the gasket. Tighten clamp firmly by hand.

14.4 Fresh Water System

- a. Remove one of the hoses at the lowest point of system and allow it to drain into the bilge.
- b. Pump the bilge, cleaning it at the same time.
- c. Remove the inspection port on the top of the water tank and dry with a cloth.
- d. Place some baking soda in an open glass container and place in the tank and lay the inspection port back on.
- e. Pump sink water pumps to remove any water remaining in them.

14.5 Head and Holding Tank

- a. Pump out holding tank and flush once or twice.
- b. Add some Elson Blue through the deck 'waste' fittings.
- c. Clean the bowl of head and pump water through.
- d. Add some anti-freeze (such as Methanol) to the bowl of the head and pump it through the system.
- e. For best protection and trouble-free operation the next season, do the following: remove the parts as per manufacturer's instructions and clean all valves on the head.

Note: If you have a Proto Tank, DO NOT add anti-freeze to the tank. Add only sufficient anti-freeze in the bowl of the head to protect the valve system of the head - approximately one quart.

Date June 30, 1976

Replacing \_\_\_\_\_

14.6 Batteries

Remove the batteries from the yacht, fully charge them, and store in a cool and protected area on a wooden shelf for the winter. If batteries are to remain in the yacht, make absolutely sure they are completely charged to help protect them against frost damage.

Date June 30, 1976

Replacing \_\_\_\_\_





16. SUGGESTED READING

There are many excellent books and periodicals available on the subject of boating and yachting. We suggest some below which we feel might be of interest.

The list of titles is by no means complete as a reader's interest may vary. It will depend on his level of skill and whether he is interested in cruising, racing, or perhaps just general reading.

Brown, INVITATION TO SAILING, Simon & Shuster.

Chapman, Charles F., PILOTING, SEAMANSHIP & SMALL BOAT HANDLING, Motor Boating & Sailing Book Division, The Hearst Corporation, New York.

Creagh-Osborne, Richard, THIS IS SAILING (PARTS I, II, III), Nautical Publishing Co. Ltd., Nautical House, Lymington, Hampshire, England.

Manning, Richard, & Associates, THE YACHTSMAN'S WIFE, (Qrtly), Box 342, New Canaan, Connecticut 06840, U.S.A.

Simonsen, Capt. Svend T., SIMONSEN'S NAVIGATION, Prentice-Hall, Englewood Cliffs, New Jersey, U.S.A.

Date June 30, 1976

Replacing \_\_\_\_\_



Date September 15, 1976

Replacing June 30, 1976

Table 1

C&C YACHTS																	
Stainless Steel Components, Slides and Outbacks, Slab Reefing Booms																	
COMPONENTS						SLIDES AND CUTBACKS						SLAB REEFING BOOMS					
Yacht	Bow Pulpit	Stern Pulpit	Stanchions	Mast Slides	Boom Slides	Outback	Size	Clew Pin Height	Cut-back	Tack Pin Height	Slide / Slug						
C&C 24	7/8"	7/8"	7/8"	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a						
C&C 25	7/8"	7/8"	7/8"	Bolt Rope	Bolt Rope	4"	2-1/4" x 3-3/4" (elliptical)	n/a	4"	1-1/8"	Bolt Rope						
C&C 27	7/8"	7/8"	7/8"	5/8" Internal	Bolt Rope or 1/2" Slugs	4"	2-1/4" x 3-3/4" (elliptical)	n/a	4"	1-1/8"	Bolt Rope						
C&C 29	1"	1"	1"	1/2" Slug	Bolt Rope or 1/2" Slug	4"	2-1/4" x 3-3/4" (elliptical)	2-1/8"	1-1/2"	1-1/8"	Bolt Rope						
C&C 30	1"	1"	1"	1/2" Slug	Bolt Rope or 1/2" Slug	5-1/2"	3-1/4"x5" (Flat-sided) Roller Reef	2-1/8"	1-1/2"	1-1/8"	Bolt Rope						
C&C 33	1"	1"	1"	1/2" Slug	Bolt Rope or 1/2" Slugs	2-1/8"	3-1/4"x5"	2-1/8"	2-1/8"	1-1/8"	Bolt Rope						
C&C 38	1"	1"	1"	1/2" Slug	Bolt Rope or 1/2" Slugs	2-1/8"	3-1/4"x5"	2-1/8"	2-1/8"	1-1/8"	Bolt Rope						

C&C 29 STANDING RIGGING

Table 2

Item	Size (Diameter)	Style	Upper Fitting	Lower Fitting	Remarks
Forestay	1/4"	1 x 19 s.s. wire	1/2" dia. pin marine eye and toggle	jaw to jaw turnbuckle & toggle 1/2" dia. pin	
Backstay	1/4"	1 x 19 s.s. wire	1/2" dia. pin marine eye	Fork 3/8" dia. pin	Custom link plate
Backstay Bridle	1/4"	1 x 19 s.s. wire	Fork 3/8" dia. pin	1/2" dia. pin jaw/ swage turnbuckle	2 required
Aft Lower Shroud	3/16"	1 x 19 s.s. wire	Fork 5/16" dia. pin	3/8" dia. pin jaw & swage t.b. & toggle	2 required
Forward Lower Shroud	3/16"	1 x 19 s.s. wire	Fork 5/16" dia. pin	3/8" dia. pin jaw & swage t.b. & toggle	2 required
Main Shroud	1/4"	1 x 19 s.s. wire	Marine eye 1/2" dia. pin	Jaw/swage t.b. & toggle 1/2" dia. pin	2 required
Upper Life Line	3/16"	7 x 19 life line cable	Forward end fork 1/4" dia. pin	Aft end 1/4" turnbuckle	Plastic coated
Lower Life Line	1/8"	7 x 19 life line cable	Forward end fork 1/4" dia. pin	Aft end 1/8" turn- buckle & toggle with 3/16" dia. pin	Plastic coated

Date September 15, 1976

Replacing \_\_\_\_\_

Table 3

Replacing

Item	Material		Lengths		Fitting On U/End	Fitting On L/End	Special Fittings	Remarks
	SS=stainless steel	YB=yacht braid	SS	YB				
Main Halyard	5/32"	3/8"	38'-0"	42'-0"	Headboard Shackle			
Main T/Life	3/32" 1x19ss	5/16"	35'-6"	7'-0"	Nicropress & thimble	Nicropress w/mini block		
Main Cunningham		3/8"		20'-0"				
Main Sheet		3/8"		62'-0"				
Boom Vang		3/8"		25'-0"				
Genoa Halyard	5/32"	3/8"	48'-7"	45'-0"	Snap Shackle			
Genoa Sheets		1/2"		2 x 44'-0"				
Spinnaker Halyard		3/8"		90'-0"	Snap Shackle			
Spinnaker Sheets		7/16"		2 x 60'-0"	Snap Shackle			
Spinnaker Car Bridle		3/8"		22'-0"				
Spinnaker Pole T/Lift		3/8"		70'-0"	Snap Shackle			
Spinnaker Pole Foreguy		3/8"		46'-0"	Snap Shackle			
Reef Lines		3/8"		2 x 20'-0"				

C&C 29 BLOCKS

Date September 15, 1976

Table 4 Replacing

Usage	Description (Manufacturer Suggested Safe Working Load)	Quantity
Mainsheet	Fixed fiddle block (1,750 lbs.)	1
	Fiddle block with becket and cam (1,750 lbs.)	1
Jib Sheet Turning Blocks	Snatch block (2,000 lbs.)	2
	Cheek block (2,250 lbs.)	2
Genoa Halyard Lead Blocks	Aluminum block scored for wire (1,750 lbs.)	1
	Cheek block (1,750 lbs.)	1
Slab Reefing	Cheek block (1,250 lbs.)	2
Boom Vang	Single block with becket and cam (1,300 lbs.)	1
	Swivel fiddle block (1,300 lbs.)	1
Spinnaker Gear	Turning block(halyd)(1,750 lbs.)	1
	Single swivel block (Halyard) (1,750 lbs.)	1
	Snatch block (2,000 lbs.)	3
	Lead block(pole T/L) 1,300 lbs.)	1
Main boom lift	Mini single block ( 900 lbs.)	1
	Cheek block ( 900 lbs.)	1
Cunningham	Single block (1,750 lbs.)	1
	Single block w/bec. (1,750 lbs.)	1
	Cheek block (1,200 lbs.)	1

RECOMMENDED BACKSTAY PRELOAD LIMITS  
C&C YACHTS

---

Note: Absolute limit (40% Breaking Strength) should only be used with rod backstay & forestay, not stainless steel wire (SSW)

Table 5

Model	Backstay Size	Backstay Breaking Strength (Lbs.)	Preload limit 25%-33% of Breaking Strength (Lbs.) Wire Limit	Absolute Preload limit 40% of Breaking Strength (Lbs.) Rod Limit
C&C 24	3/16" SSW	4,700	1,200	-
C&C 25	3/16" SSW	4,700	1,200	-
C&C 27	7/32" SSW	6,300	1,600	-
C&C 29	1/4" SSW	8,200	2,000	-
C&C 30	1/4" SSW	8,200	2,000	-
C&C 33	#8 Rod	8,200	2,700	3,300
C&C 38	#10 Rod	10,300	3,400	4,100

Date September 15, 1976

Replacing June 30, 1976

Table 6

PROPELLERS SUPPLIED ON C&C YACHTS

BOAT	ENGINE	PROPELLER	OPTIONAL
C&C 25	Vire	11 x 7 x 7/8" R.H. 2-Blade	12 x 5 x 7/8" R.H. Folding
C&C 27	Std. Atomic Four - Gas	11 x 7 x 7/8" R.H. 2-Blade	12 x 5 x 7/8" R.H. Folding
C&C 29	Std. Atomic Four - Gas	11 x 7 x 7/8" R.H. 2-Blade	12 x 5 x 7/8" R.H. Folding
C&C 30	Std. Atomic Four - Gas	11 x 7 x 7/8" R.H. 2-Blade	12 x 5 x 7/8" R.H. Folding
	Pilot 10 - Diesel	14 x 10 x 7/8" R.H. 2-Blade	No Optional Folding Propeller
C&C 33	Std. Atomic Four - Gas	16 x 10 x 1" R.H. 2-Blade	16 x 10 x 1" R.H. Folding
C&C 38	Std. Atomic Four - U.J.R. 2:1 Reduction - Gas Westerbeke L-25 Diesel	16 x 10 x 1" R.H. 2-Blade 16 x 10 x 1" R.H. Solid	<u>Used on Gas or Diesel</u> 18 x 12 x 1" R.H. Mk. III Folding

Date September 15, 1976Replacing June 30, 1976

C&C YACHTS  
ELECTRICAL LIGHTS AND FUSES

Table 7

Location	Bulb Sizes	Fuse Sizes
<u>Running Lights</u>		
Bow	90	5A
Stern	211	5A
Cabin Lights	1141	15A
Bow Light (On Mast)	90	5A
Spreader Light	268 (Sealbeam)	5A
Masthead Light	90	5A

NOTE:

With the addition of a second spreader light, or other additions in the electrical system, fuse sizes will change accordingly.

Light bulb sizes may vary according to availability. Upon replacing a light, the expired bulb should be removed and taken to the distributor to ensure that the new bulb is the same size.

Date June 30, 1976

Replacing \_\_\_\_\_



Date September 15, 1976

Replacing June 30, 1976

Table 8

TANK CAPACITIES AND PERTINENT DATA

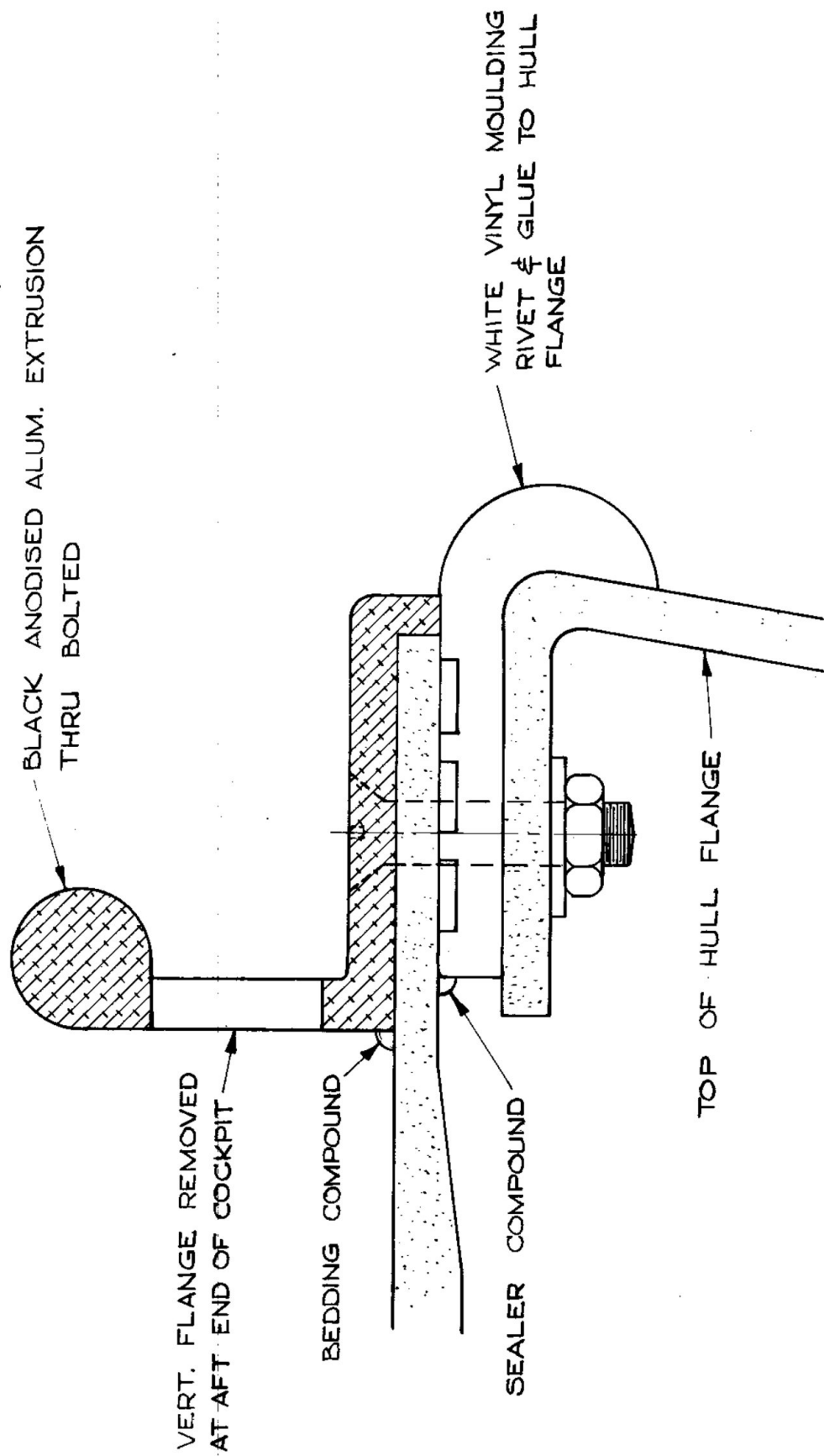
		C&C 24	C&C 25(1)	C&C 27	C&C 30	C&C 29, C&C 33	C&C 38
Water Tank	Type	Polyethylene	Polyethylene	Fibreglass	Fibreglass	Polyethylene	Polyethylene
	Capacity US gal	7.0	10.0	26.0	40.0 (2 x 20)	30.0	60.0 (2 x 30) 48.0
	Imp gal	5.6	8.0	20.8	32.0	24.0	
Holding Tank	Capacity Litre	26.5	37.9	98.5	151.6	113.7	227.4
	Type	N.A.	N.A.	Polyethylene	Polyethylene	Polyethylene	Polyethylene
	Capacity US gal	7.5	7.5	13.0	13.0	15.5	15.5
Fuel Tank	Capacity Imp gal	6.0	6.0	10.4	10.4	12.4	12.4
	Capacity Litre	28.4	28.4	49.3	49.3	58.8	58.8
	Type	N.A.	Plastic(2)	Aluminum	Aluminum	Aluminum	Aluminum
Head	Capacity US gal		6.0	20.0	20.0	20.0	20.0
	Capacity Imp gal	N.A.	4.8	16.0	16.0	16.0	16.0
	Capacity Litre		22.7	75.8	75.8	75.8	75.8
Stove	Type	Self Contained Marine Toilet	Self Contained Marine Toilet	Standard Marine Toilet	Standard Marine Toilet	Standard Marine Toilet	Standard Marine Toilet
	Type	2-Burner (3) Countertop Model Alcohol	2-Burner Countertop Model Alcohol	2-Burner Recessed with Lid Alcohol	3-Burner with Oven Alcohol	3-Burner with Oven Alcohol	3-Burner with Oven Alcohol
	Type						

(1) With Inboard Engine

(2) CSA Approved

(3) Optional Extra



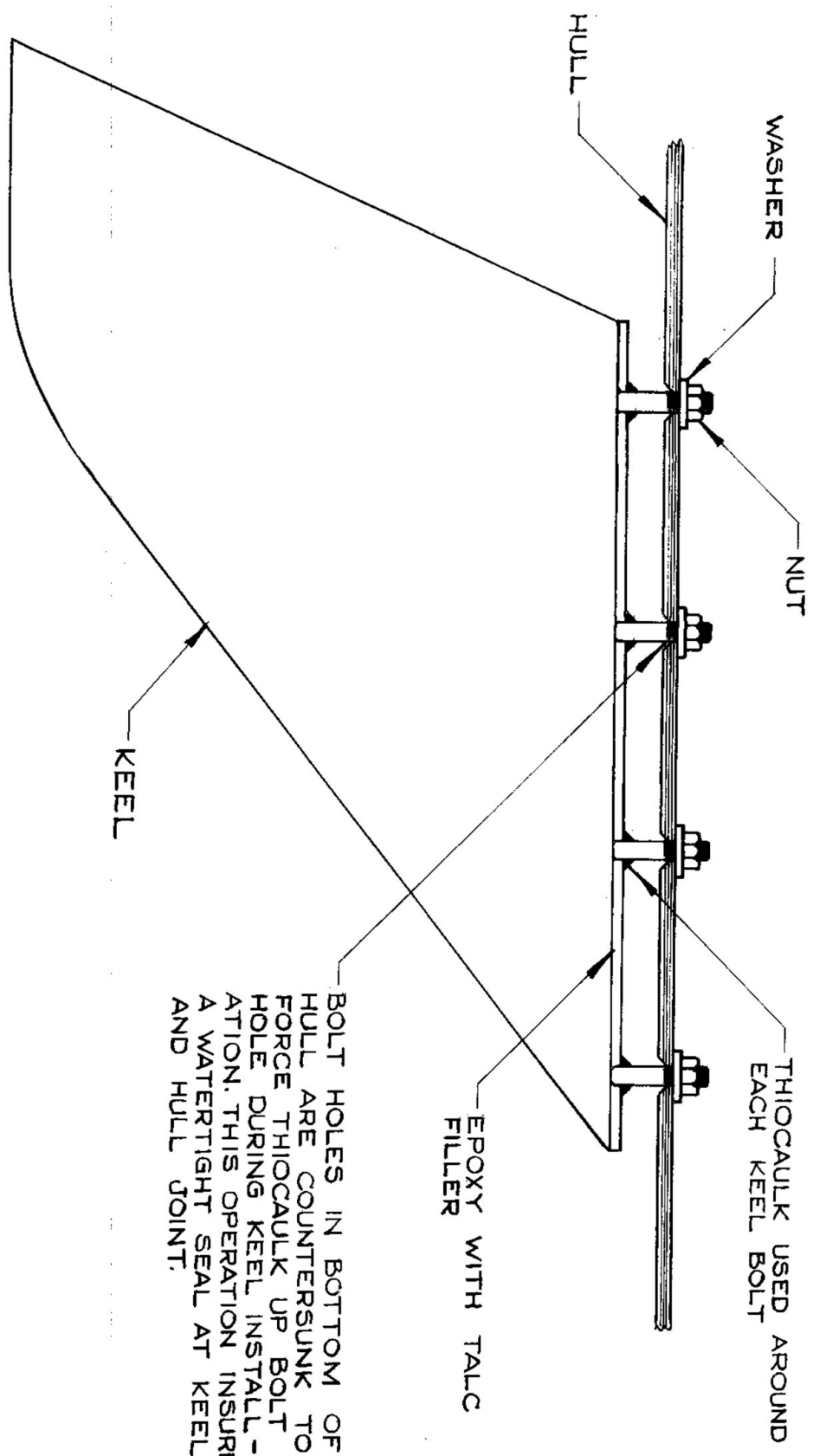


TYPICAL DECK - HULL JOINT

FIG. 1

DATE JUN. 30/76

REPLACING \_\_\_\_\_

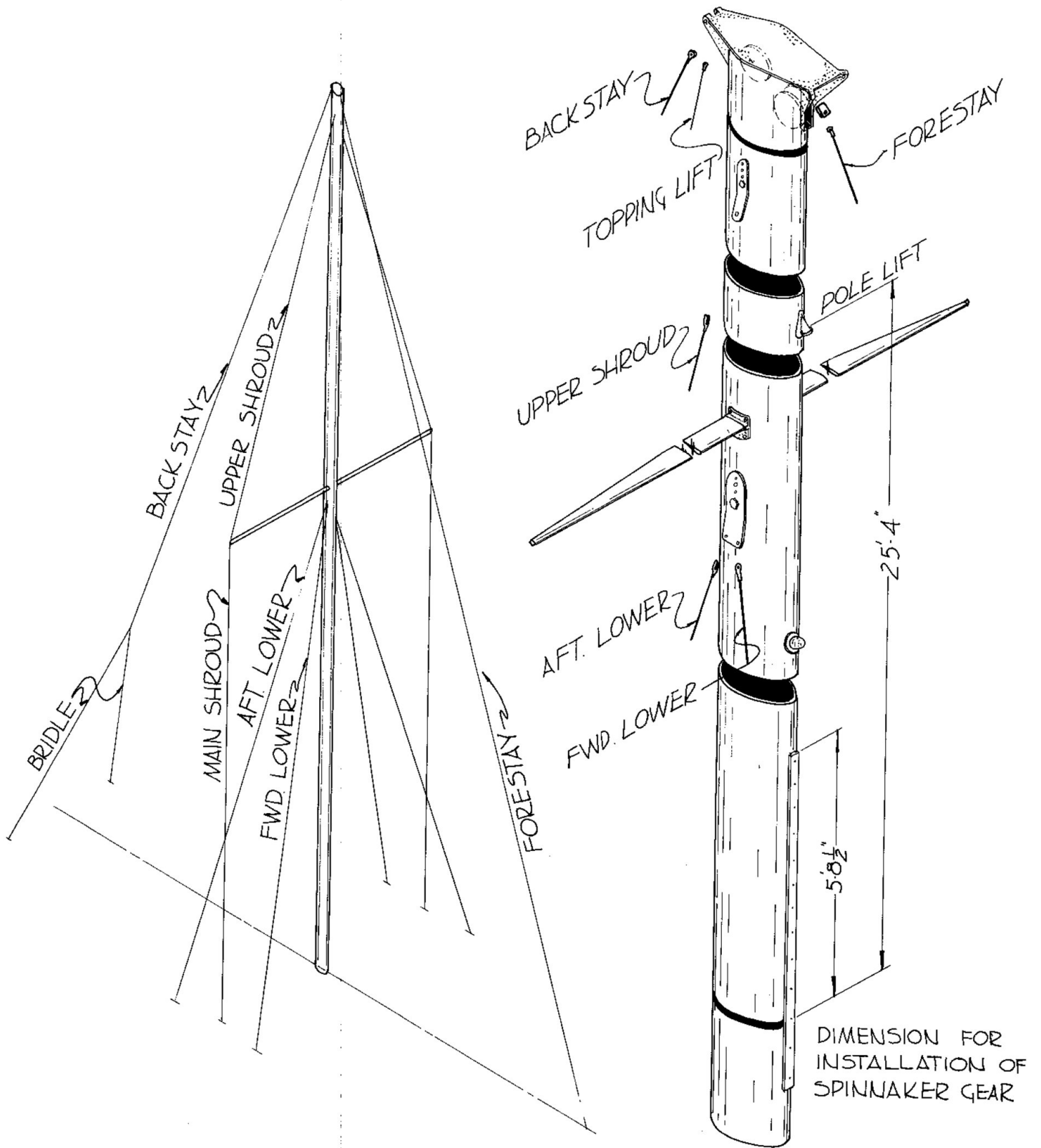


TYPICAL KEEL - HULL SEALING METHOD

FIG. 2

DATE JUN. 30/76  
 REPLACING

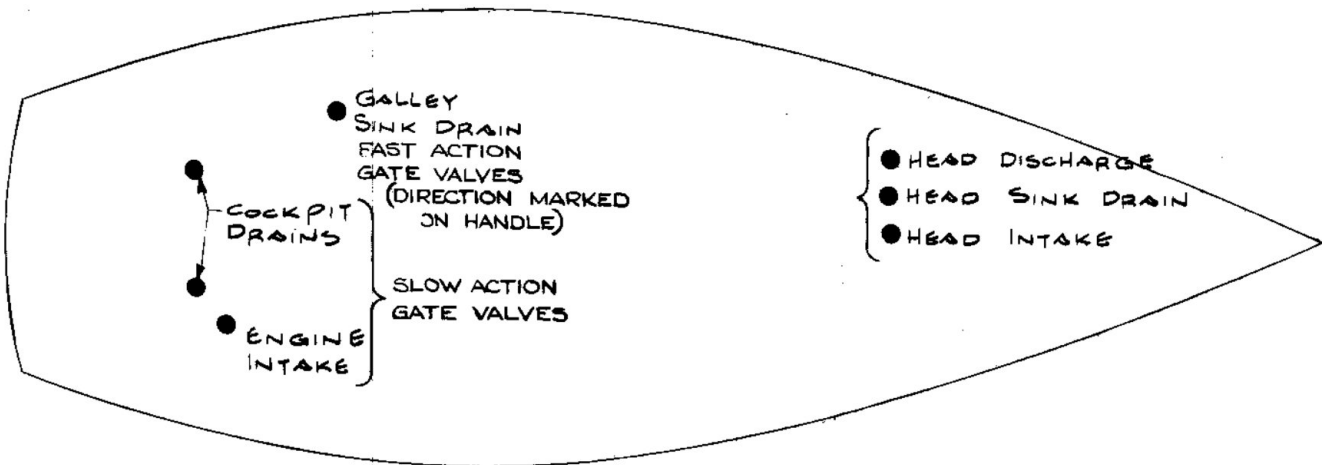
FIG. 3



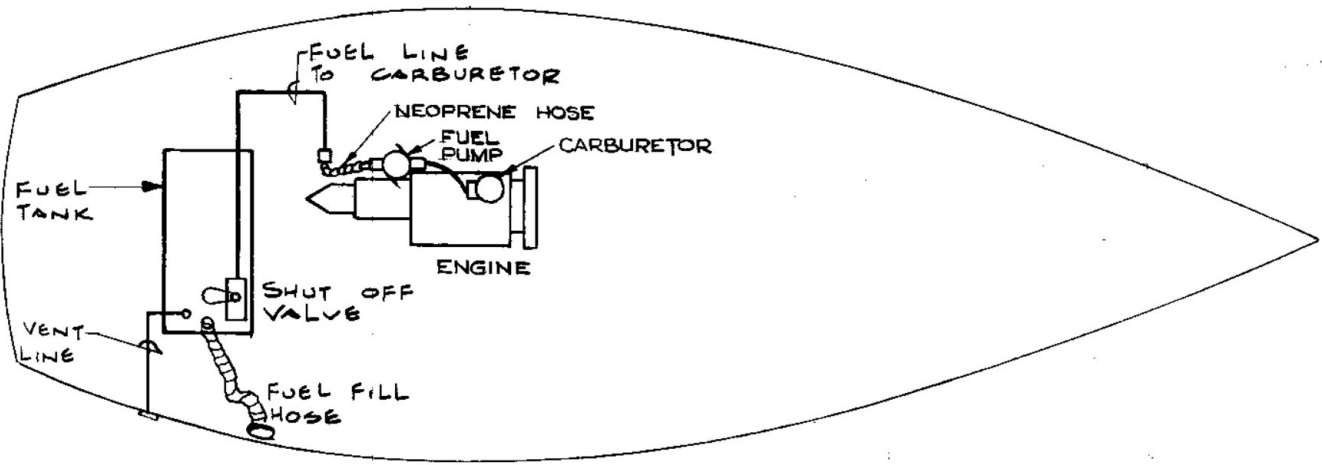
**C&C 29**

**MAST and RIGGING**

DATE SEPT. 15/76  
REPLACING \_\_\_\_\_



TYPICAL THROUGH HULL LOCATIONS



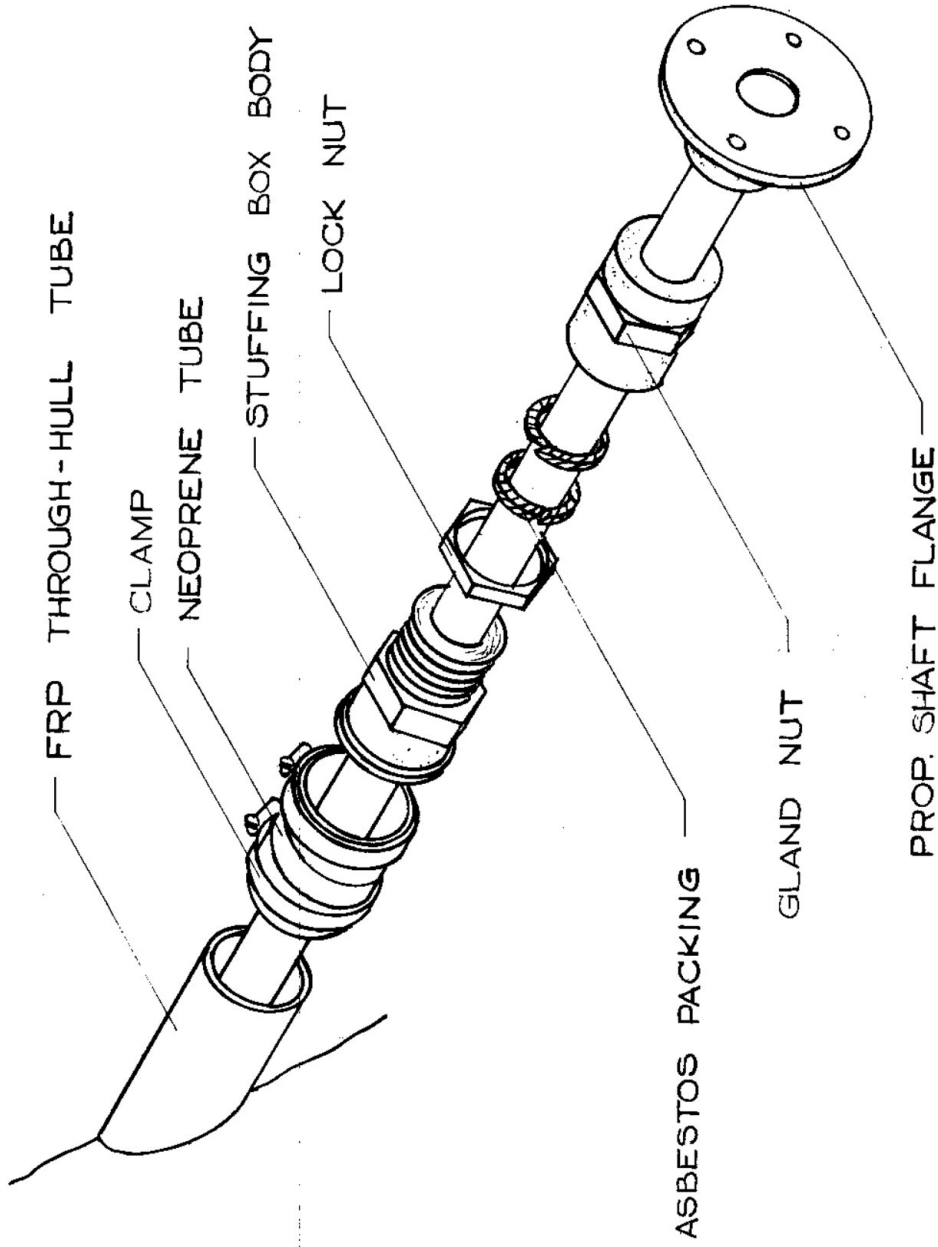
TYPICAL FUEL TANK INSTALLATION

FIG. 4

DATE JUN. 30/76

REPLACING \_\_\_\_\_





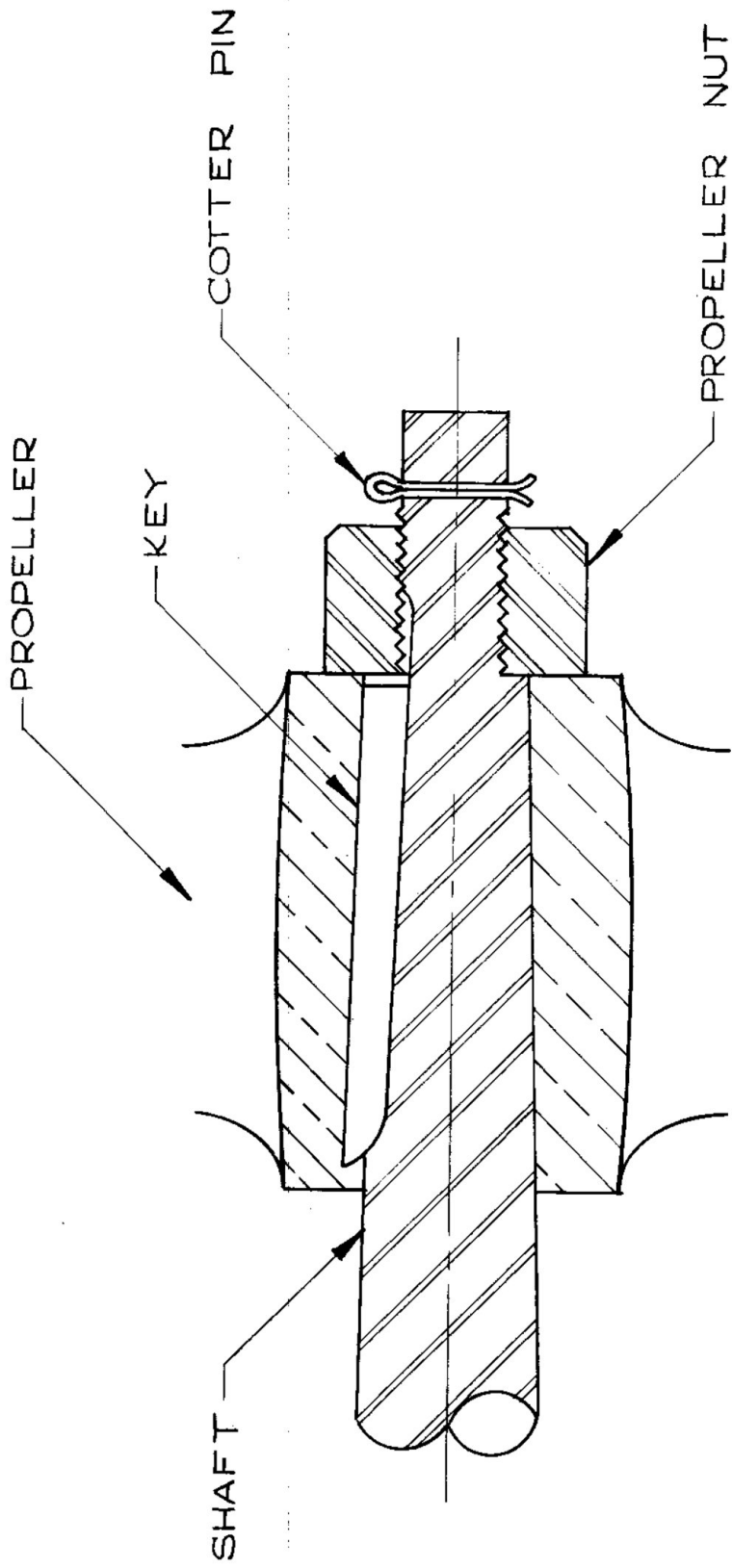
STUFFING BOX ASSEMBLY

FIG. 5

DATE JUN. 30/70

REPLACING \_\_\_\_\_



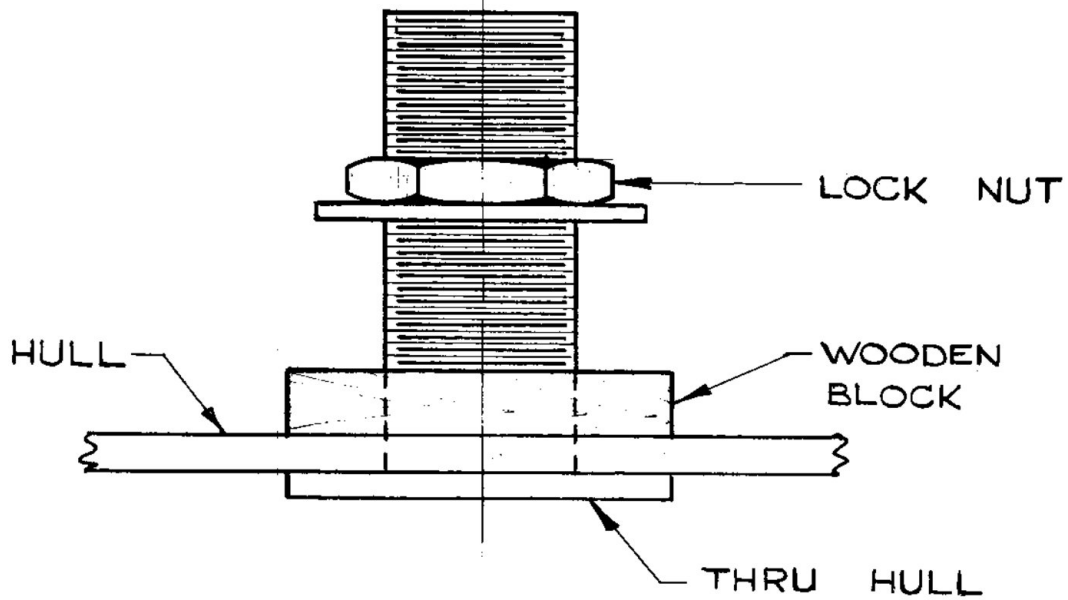
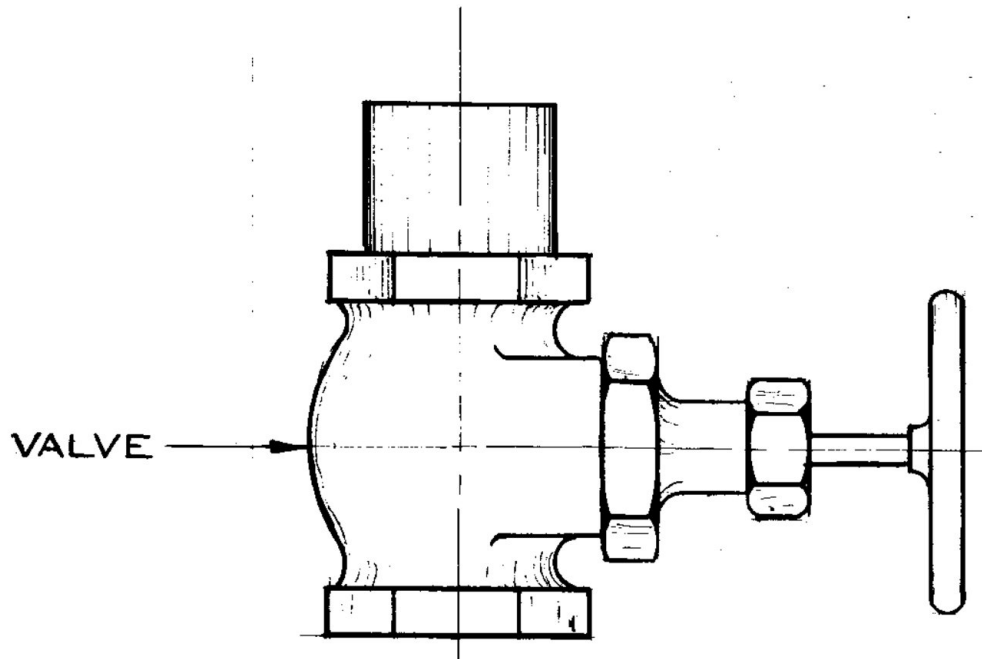


PROPELLER INSTALLATION

FIG. 6

DATE JUN. 30/76

REPLACING



TYPICAL THRU HULL SEACOCK INSTALLATION

FIG. 7

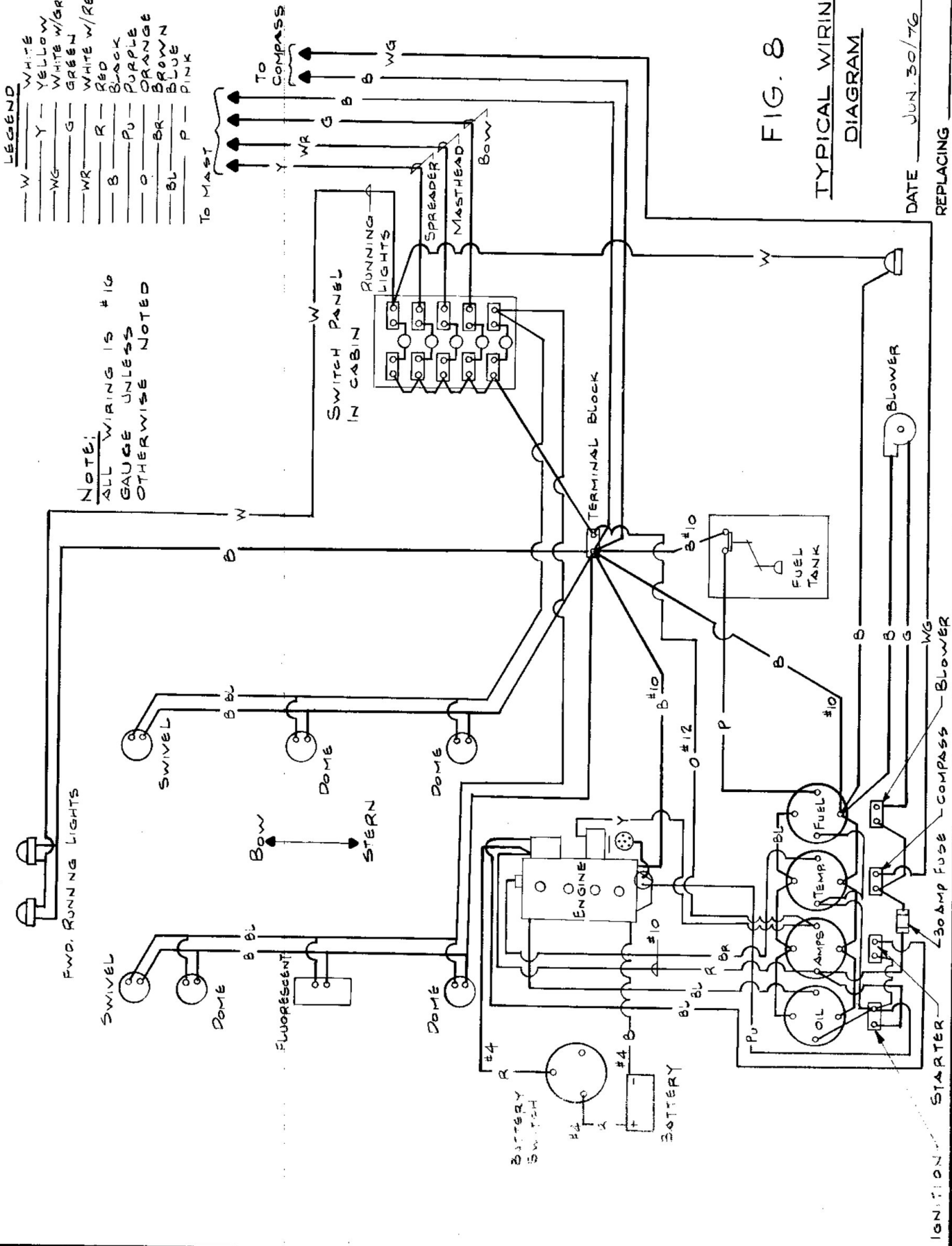
DATE JUN. 30/76

REPLACING \_\_\_\_\_

**LEGEND**

W	WHITE
Y	YELLOW
WG	WHITE W/GREEN
G	GREEN
WR	WHITE W/RED
R	RED
B	BLACK
Pu	PURPLE
O	ORANGE
BR	BROWN
BL	BLUE
P	PINK

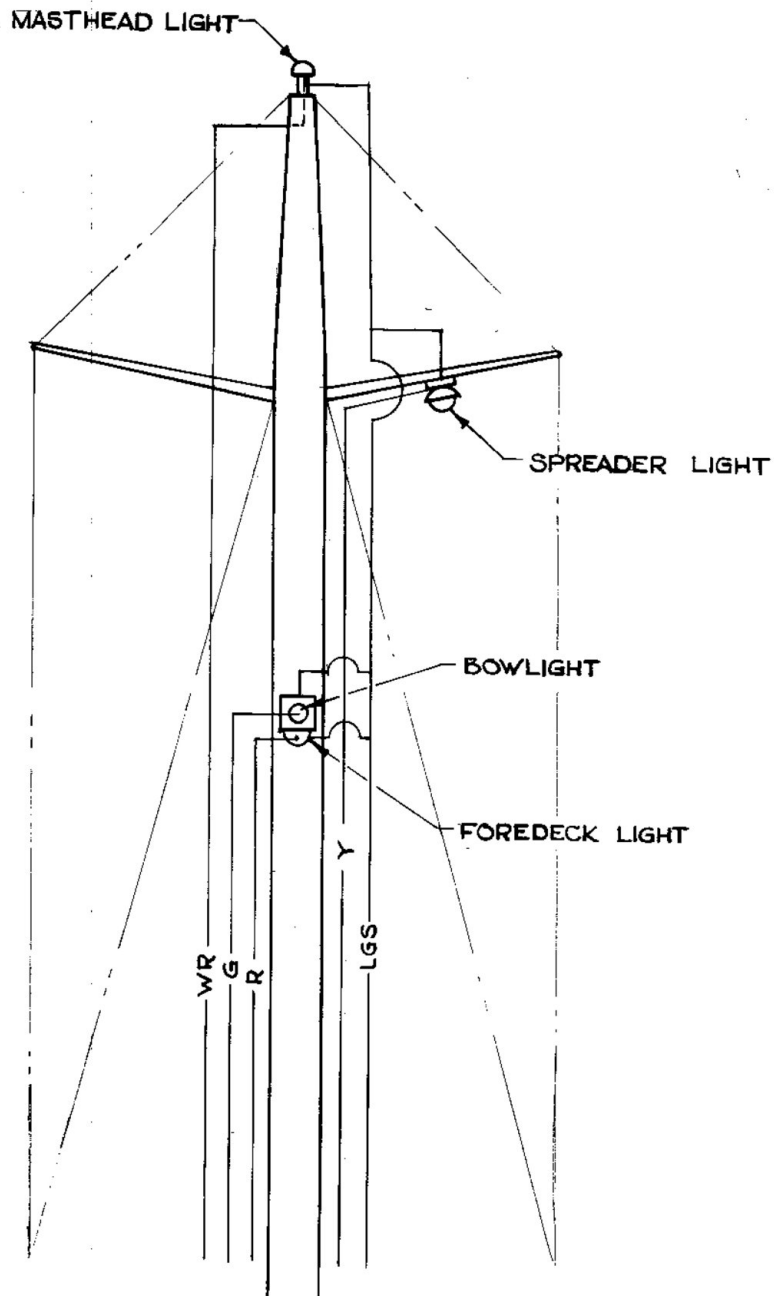
**NOTE:**  
ALL WIRING IS #16  
GAUGE UNLESS  
OTHERWISE NOTED



**FIG. 8**  
**TYPICAL WIRING**  
**DIAGRAM**

DATE JUN. 30/76  
REPLACING \_\_\_\_\_





LEGEND

- WR — \*16 WHITE W/RED TRACER
- G — \*16 GREEN
- R — \*16 RED
- Y — \*14 YELLOW
- LGS — LIGHTING GROUND SYSTEM

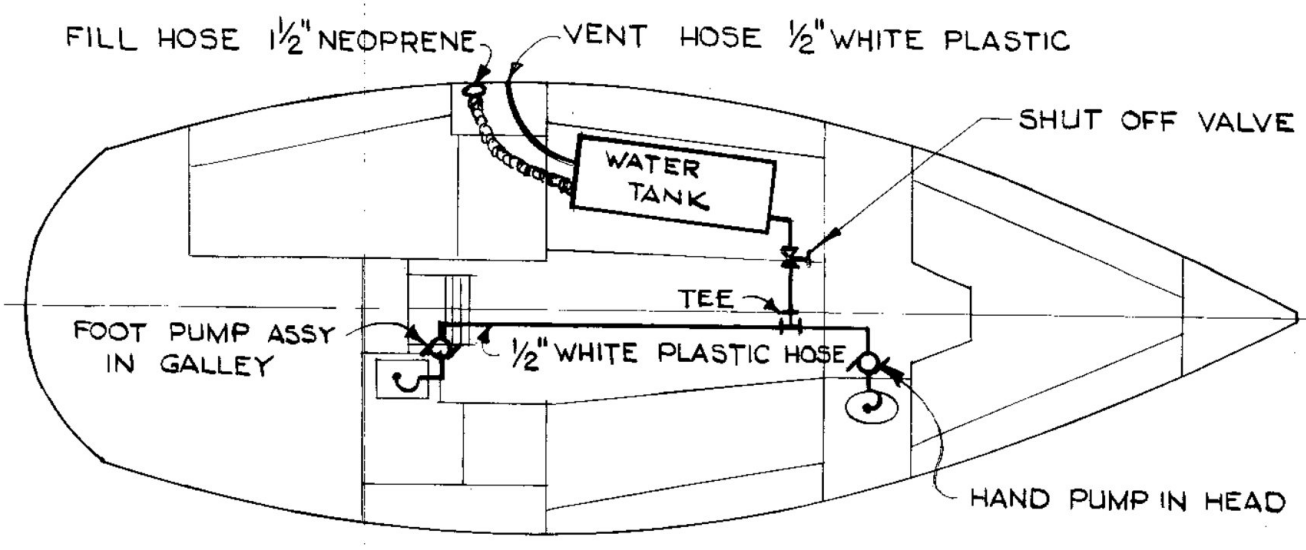
TYPICAL MAST LIGHTING SYSTEM

FIG. 9

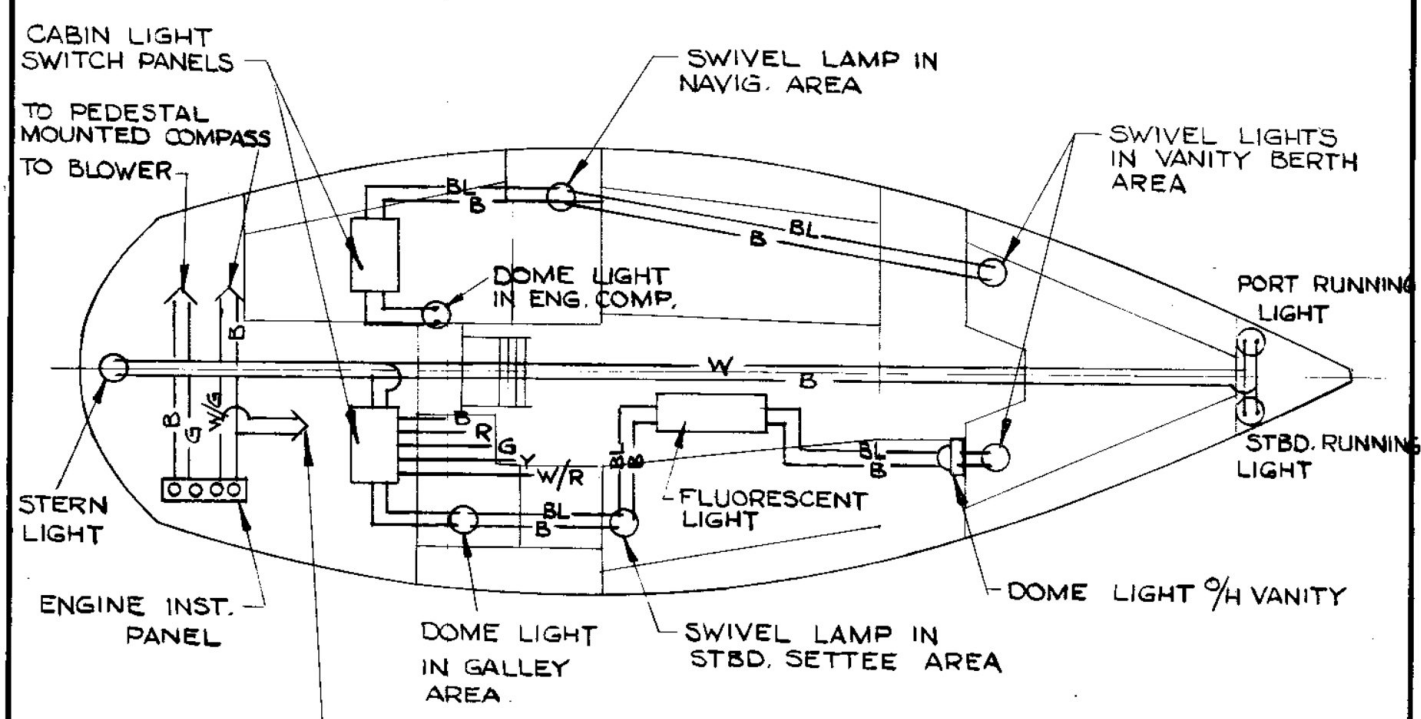
DATE JUN. 30/76

REPLACING \_\_\_\_\_





WATER SYSTEM



LIGHTING INCLUDING MAST WIRING

C & C 29

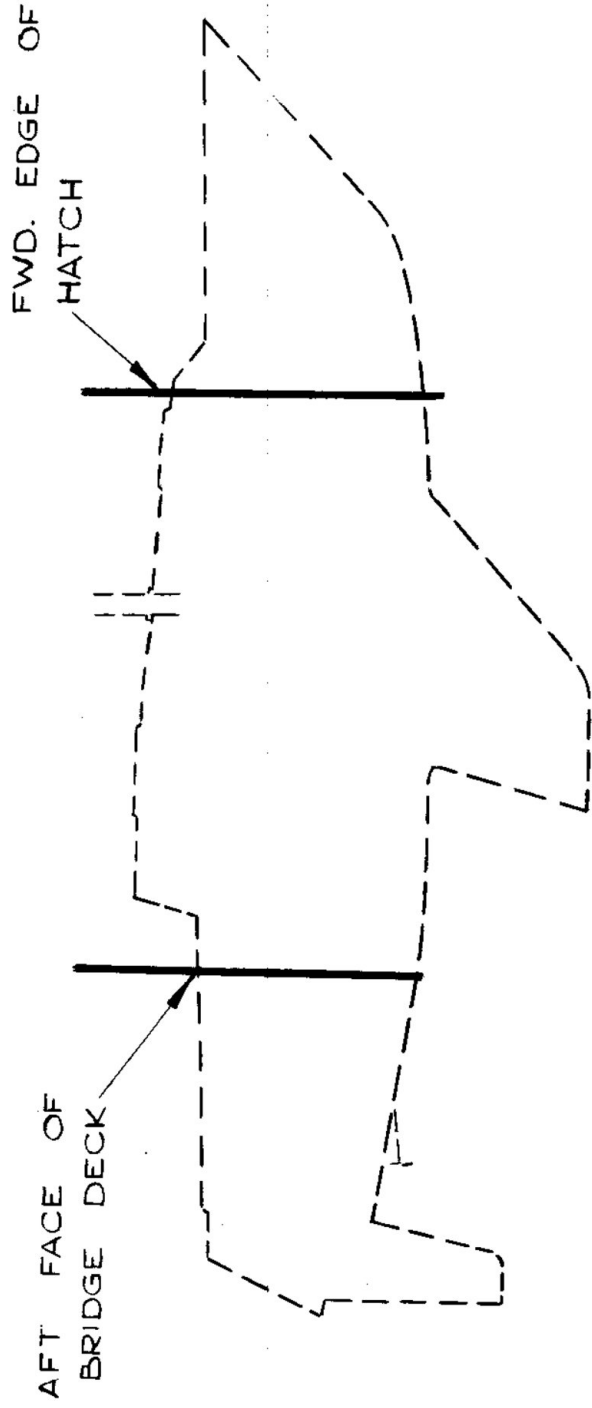
LEGEND

- W — WHITE
- B — BLACK
- R — RED
- Y — YELLOW
- G — GREEN
- BL — BLUE
- W/R — WHITE W/RED TRACER
- W/G — WHITE W/GREEN TRACER

FIG. 10

DATE SEPT. 15/76  
REPLACING \_\_\_\_\_





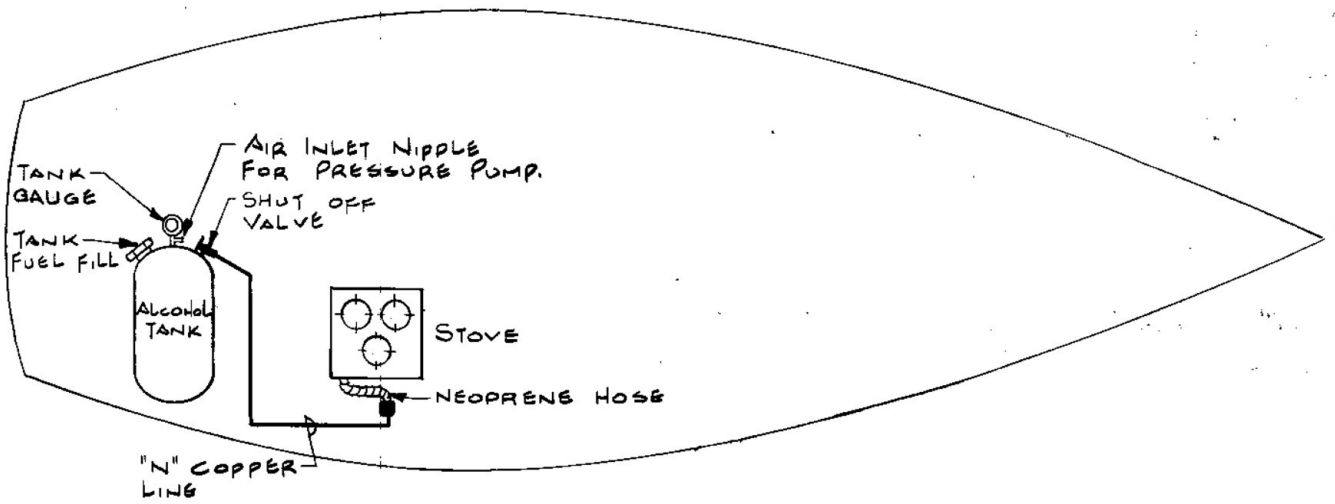
SLING LOCATING DIAGRAM

C & C 29

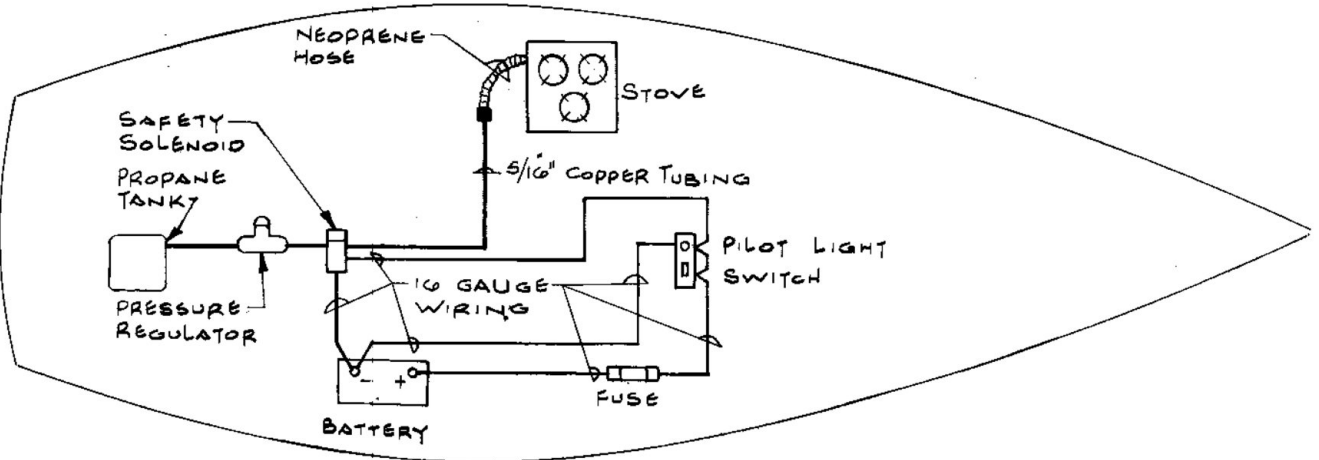
FIG. 12

DATE: SEPT. 15, 1976

REPLACING: \_\_\_\_\_



TYPICAL ALCOHOL STOVE & ACCESSORIES



TYPICAL PROPANE SYSTEM WITH ELECTRICAL CIRCUIT

FIG. 13

DATE JUN. 30/76

REPLACING \_\_\_\_\_





C&C 29

LENGTH OA.	29'7"
LENGTH WL	23'7"
BEAM (MAX.)	10'5"
DRAFT	5'3"
DISPLACEMENT	7,500 LBS.
SAIL AREA (100% FORE Δ)	429.68 SQ.FT.

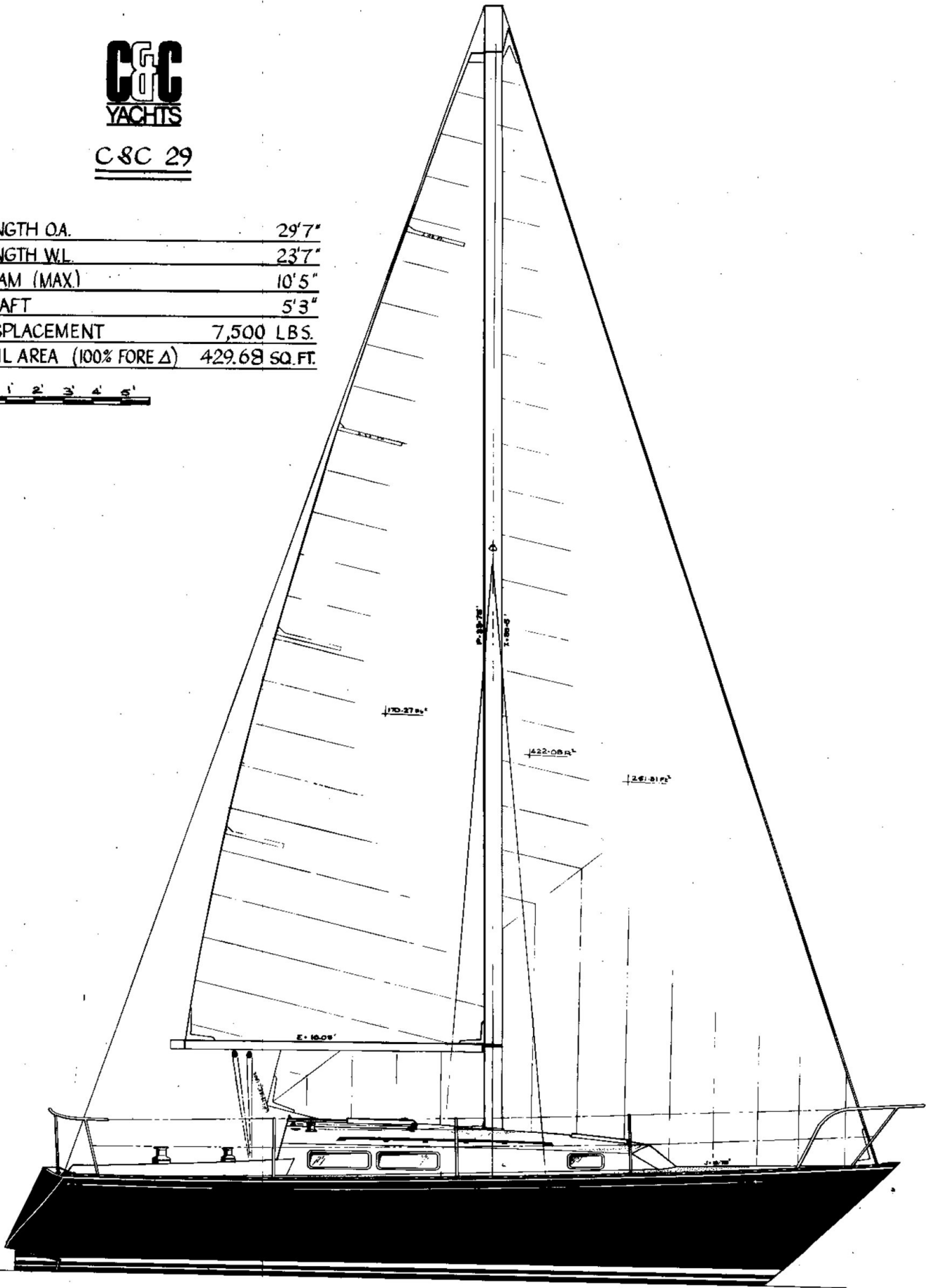
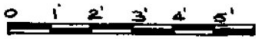


FIG. 16



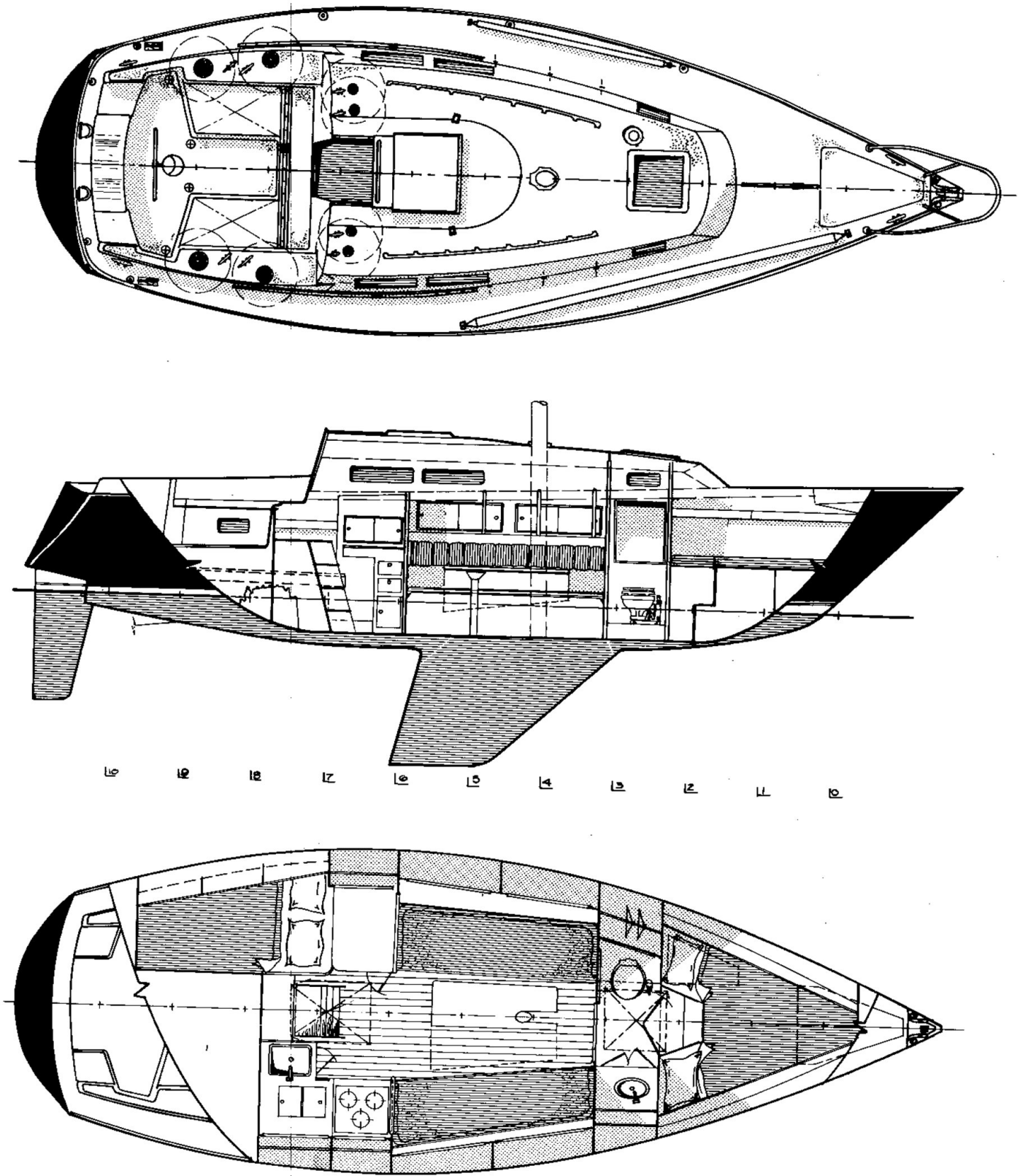


FIG. 17