RUDDER ASSEMBLY
INSTALLATION & REMOVAL

1. Two people are required to perform the rudder removal and installation process.

2. Tools required:

   One 11/16" socket
   Rachet drive
   Short extention for ratchet

   These tools are provided with boat at delivery.

3. Procedure for installation:

   A. Check for delrin washer on shaft above blade prior to installing lower rudder assembly.
   B. Slide rudder shaft up into bearing unit, with blade aligned fore and aft. Hold in place snugly against hull.

   C. Align upper rudder shaft fore and aft, noting slot/key integration.

   D. Tighten bolt snugly. Do not overtighten.

      Note: Frequent application of lubricant or anti-seize compound is recommended to prevent corrosion and galling of threads.

   E. Lower tiller arm and check for free movement of complete assembly.

4. Procedure for removal:

A. Raise tiller arm to full "up" position, exposing bolt head.

B. Loosen (standard right hand threads) bolt six to eight turns so bolt head clears rudder post head three-eights to one half inch.

C. Tap bolt head downward with mallet or small hammer (not included with boat) or with ratchet head against extension as a drift pin, to break upper shaft assembly away from lower shaft assembly.

Note: The tiller arm can be used by dropping sharply. The cast aluminum fork on the wooden tiller arm will loosen the assemblies, however, there is risk of damage if excessive force is applied.

D. With assistant below holding rudder blade assembly, loosen rudder shaft bolt completely and the rudder assembly will fall freely through the shaft bearing unit.

CAUTION: Do not lose delrin washer(s) which act as a thrust washer between the rudder and hull.

KEEL LOWERING/RAISING

NOTE: When keel lid is removed--NEVER sail the boat. When moving under power or tow for loading on/off trailer, never exceed idle (1 to 2 MPH) speed. Water can be taken in with lid off at speed.

As shipped from the factory, the keel will be installed and raised. It will be resting on the keel pad on the trailer or cradle, partially supported by the keel hoist assembly. This support tension will be slight but sufficient to prevent excessive movement within the keel well, and is recommended for transporting at all times.

IMPORTANT NOTE

The keel assembly weighs 1800 pounds. Use caution when raising or lowering. The winch supplied on the keel hoist assembly utilizes a worm drive against a toothed gear and will not "reverse transfer" rotation from a suggested dead load.

While vertical movement is slow, should some part of the physical anatomy become an obstacle to the moving components, relief from entrapment will doubtless be slower than desirable. Keep fingers, arms, legs, etc., well clear--particularly when the keel assembly is supported solely by the winch assembly and cable. Frequently check cable for fraying, kinks, etc., and replace same if any defect is noted. Always keep the worm drive and gear heavily lubricated to prevent galling.

We do not recommend alternate winch drive configurations such as direct/ratchet lock types due to the possibility of ratchet lock failure or disengagement which would result in a near free fall of the keel plus high handle speed should the handle be released under load.

OPERATION

I. Before launching;

A. Raise keel clear of trailer support pad. Do not overtighten against hull. Keel to clear of pad only.

B. When boat is clear of trailer and securely moored, the keel may be lowered.

NOTE: Keel draft is 5'6" below water line. Should bottom depth be in question, check first.

C. Check keel bolting flange at guide post on forward end--raise or lower if necessary to facilitate removal of locking pin from guide post.

D. Crank keel assembly downward, continually checking for any binding or unusual noise. Should this occur, stop, determine cause and clear before lowering further. As keel nears bottom check alignment of attach plates to fore and aft studs. When alignment is assured, lower totally.

E. Remove hoist cable and hoist assembly, and stow out of way. (Note--lubricant on winch gears should be kept from upholstery, etc.)

F. Remove guide post assembly by lifting upward into upper sleeve fitting, tilt slightly when clear of keel stud and lower until clear of upper assembly. Upper tube assembly should be removed and secured to post and locking pin and stowed conveniently for future use.

G. 1) Install fore and aft bevelled washers and nuts snugly which will assure final alignment.

2) Install side washers and nuts snugly.

3) Tighten fore and aft nuts, then again to side nuts. Torque down firmly. (Socket, extension and socket for adapting to topside line winch handle.)

4) Install keel well lid, centering over flange. Install (2) keel well lid bolts assuring rubber washer contacts lid first followed by steel washers and bolt head. Tighten bolts progressively fore and aft in increments so lid compresses seal evenly. Tighten only a sufficient amount to insure adequate seal compression. Should slight leakage be noted in this area it may be stopped by adjustment of these bolts.

II. Raising

NOTE: Do not remove keel lid at any time prior to mooring.

A. Remove keel well lid taking care to not lose washers. Stow in secure location.

B. Install upper guide post sleeve assembly.

C. Remove all four securing nuts (four washers).

D. Install guide post, sliding upwards into upper sleeve assembly, then down over forward keel stud, through attach flange fitting.

E. Attach winch assembly, making sure of deck fitting installation and alignment. Upper bolts will bottom out leaving exposed bolt shank.

F. Attach winch cable assembly to keel securely.

G. Raise keel assembly up to point where locking pin may be installed below keel bolting flange fitting.

H. Install locking pin.

I. Boat may now be pulled onto trailer or lifted by other means to cradle.

J. When boat settled and aligned on supports, guide post locking pin may be removed, and keel lowered to keel support pad until hoist cable slackens. Take up slight tension on cable assembly.

HOBIE 33

TEMPORARY OPERATION INSTRUCTIONS

These instructions are issued to identify the basic methods for rigging and operating the major components for the Hobie 33.

They will delineate the recommended procedures for stepping the mast, removal and installation of the rudder, raising and lowering the keel and the initial rigging of the mast as shipped.

Formal Owner/Operator manuals will be forwarded in the near future.

MAST RIGGING

1. Set mast assembly on raised supports for ease of handling and access to all sides.

2. There are small lines prestrung through the mast to facilitate leading the various lines into position. See description on last page, non-scale drawing.

3. HALYARD installations:

   A. Lay out all halyard assemblies, identifying each:
      1. Main halyard - all white 3/8" line 45 ft. long, spliced into 41 ft. 3" of 5/32 stainless steel 7 x 19 wire.

      2. Jib halyard - starboard - white with green tracer 3/8" line 45 ft. 6" long, spliced into 38 ft. 6" of 5/32 stainless steel 7 x 19 wire.

      3. Jib halyard - port - white with red tracer 3/8" line 45 ft. 6" long spliced into 38 ft. 6" of 5/32 stainless steel 7 x 19 wire.

      4. Spinnaker halyard - white with blue tracer 3/8" line 48 ft. long, spliced into 38 ft. 10" of 5/32 stainless steel 7 x 19 wire.

      5. Topping lift - all white 5/16" line 35 ft. long spliced into 35 ft. of 1/8 stainless steel 7 x 19 wire.

   B. Leave prestrung lines tied to spinnaker car (as received) temporarily. All lines will be installed from top end of the mast assembly and will be pulled to the base internally, through the sheaves noted in the base.

      1. Tie lead line to main halyard (rope end) with a clove hitch (3 minimum) and tape for security. This is important to make a

secure attachment as losing the line internally will require restringing the lead line and will be difficult. Should this become necessary, be certain not to cross any lines internally as this will increase drag and wear and possibly keep halyards from working.

2. Gently pull the lead line and halyard toward the base with an assistant leading the halyard into the mast assembly. At contact with the sheave very carefully pull the line through. Pull through entirely and coil line assembly for storage. Remove lead line.

3. Repeat above steps with all lines shown, being sure to identify each for appropriate line and location.

4. SPREADER BAR installations:

A. Remove expander casting taped to spreader base on mast assembly.
   1. Adjust set screws to flush with the top (front) surface of expander casting.

   2. Locate in position as taped and slide spreader bar over the spreader root casting until holes in leading edge align with the set screws in the expander casting.

   3. Tighten set screws, inboard first, outboard last. Loctite on screws is recommended to insure security.

B. On the outboard ends of the spreader bars are the plastic tips which will secure the wire assemblies.

   1. Loosen screw in tip and remove carefully. Take special precautions not to lose the small insert.

   2. Lay out upper wire assemblies, assuring there are no kinks or coils, placing one on each side of the mast assembly.

3. Remove rubber plug from T - terminal and install terminal in slot. Caution that T - terminal is always aligned with the mast to prevent severe bending in the wire.

4. Repeat operation above for other side.

5. Slip wire into spreader tip with copper stop sleeve below the tip assembly.

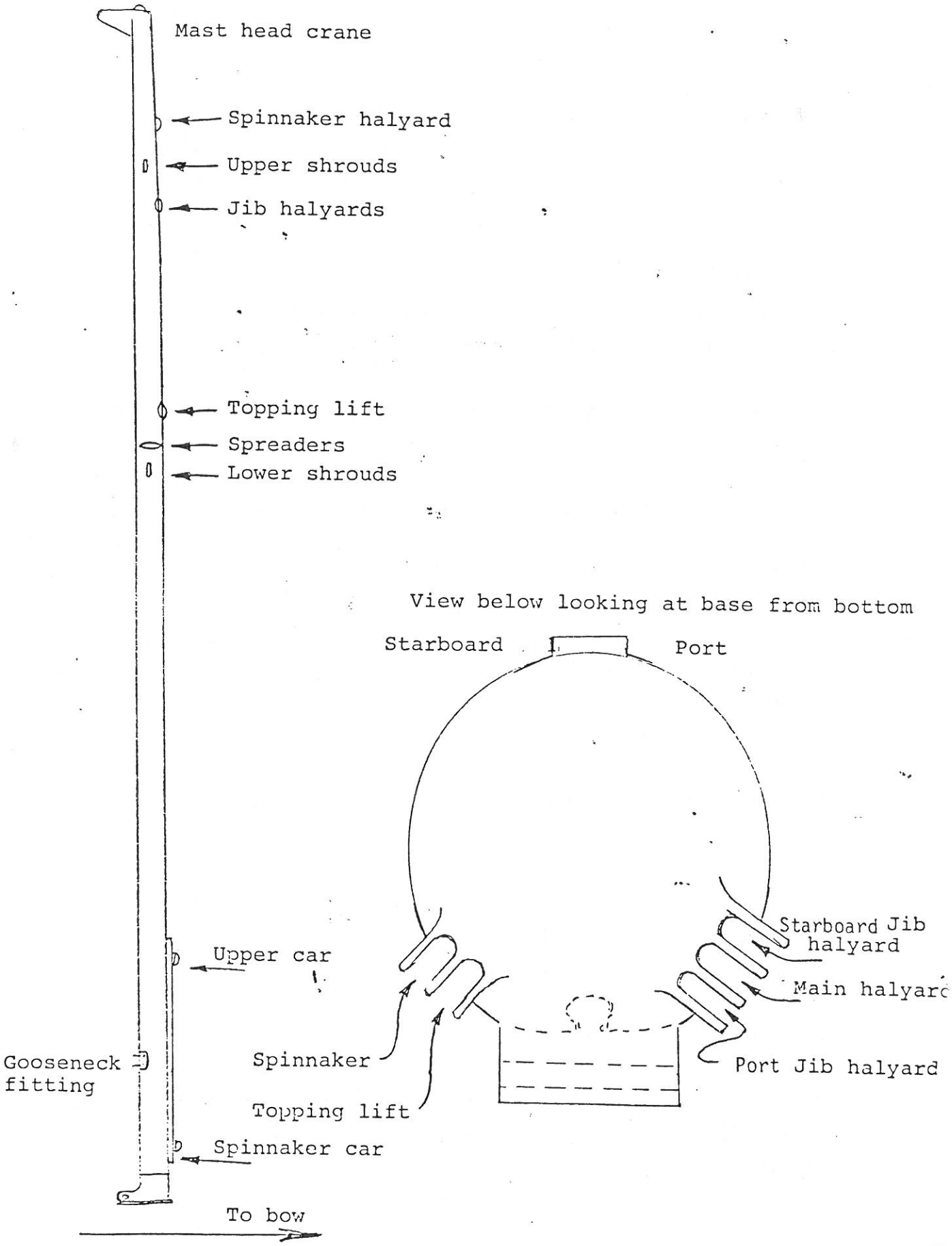
6. Replace plastic spacer and install tip into spreader bar. Trailing edge should be inserted first at slight angle. Press in firmly and tighten screw. Caution to not over-torque this screw. Loctite is recommended to insure security.

7. Repeat other side as per above.

8. Install lower shrouds same as uppers - replace rubber retaining plug.

* Caution: Do not exert force on the wire assembly above the spreader assembly - may damage assembly by raising spreader arms.

Non-scale Sketch H-33 Mast Rigging points



MAST RAISING PROCEDURE

1. CAUTION!!! Check overhead for electrical wires or any obstruction which may interfere with the space required to raise the mast to it's full upright position. When on the trailer the mast (without extending wind indicator, etc.) is 45 feet 2 inches above the ground.

   If there are wires of any kind, anywhere near the boat DO NOT RAISE THE MAST. Do not attempt to guess whether or not there is overhead clearance. Move the boat to a location away from any wires.

   The mast is aluminum and conducts ELECTRICITY WHICH CAN BE FATAL.

2. Examine all supporting wires, stays, shrouds, etc., prior to raising. Some areas are not accessible when elevated. Check for kinks, tight bends, fraying, and general security. At the time of first mast installation all standing rigging should be attached to hull allowing for sufficient slack to support mast at vertical without interference. Upper and lower shrouds should be attached to the chain plates with the turnbuckles installed a depth at least equal to the thread diameter as a minimum. Adjustments for tension will be accomplished later. The back stay should be attached to the back stay adjusters with adjust line uncleated.

3. Untie all securing lines.

4. If equipped with optional mast head fly, install at this time.

5. Check headstay for fair lead (clearance).
   Note: Not inside upper shrouds or between spreaders.

6. Unroll all stays and shrouds.

7. Place winch handle, spinnaker sheet (57 feet of 3/8" white with blue tracer), snatch block, and mast raising bridle on cockpit seat, for accessibility.

8. Close hatch to companionway.

9. Locate mast step pin and lock ring nearby the mast step in a secure position for next steps.

10. Check that mast properly centered on aft roller support assembly.

11. From bow area slide mast aft, keeping constant watch to assure shrouds and other wires do not snag on winches and other deck hardware. Stop and free any such encounter to prevent kinds or sharp bends in wires. Serious damage or injury could result from wire failure and possible mast falling.

    When mast base is aligned with mast step casting on deck, press down into position, aligning the holes in both castings.

12. Install mast step pin completely through castings.

13. Install locking ring into mast step pin, assuring lock ring is rotated completely to a secure position.

14. Connect electrical lines at mast base, assure location is and will remain clear of castings during raising of mast.

15. Check rigging "T" terminals at mast entry point for parallel alignment to mast. Straighten if necessary.

16. Clear spinnaker halyard and lead through cheek block on deck, then aft to spinnaker winch. Do not cleat.

17. Attach snatch block to toe rail forward of intersection of headstay and deck on the port side.

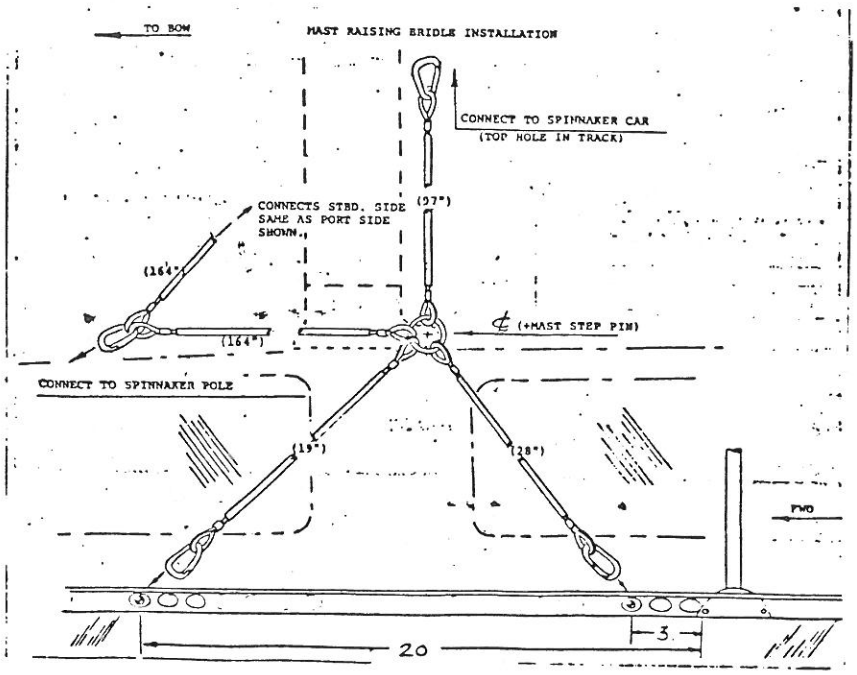
18. Lead the bitter end of the spinnaker sheet (not snap-shackle) through the #1 genoa car on the port side, then through the snatch block on the bow.

19. Locate spinnaker pole with jaws up and tie a small bowline (end of spinnaker sheet) on the bottom side of the spinnaker pole. Next, attach the bridle to the bowline knot using the clip on the spinnaker sheet. Attach the spinnaker halyard to the top side of the spinnaker pole using the shackle.

Note: Do not attach bridle directly to spinnaker pole as the clip will bend and possibly fail with repeated use in that fashion.

20. Attach mast raising bridle to toe rail, mast and spinnaker pole as noted below.

Note: Lay out the bridle assembly with the two 164" wires laying with their snap-shackle connection end, aft. Lay one set (of two each 19" wires and one each 97" wire) on either side of the mast base. Starting from and including the toe rail hole just forward of stanchion bolt (aft of the mast step), count forward three holes (these may be marked with a punched dot on rail top directly above proper hole). Attach snap-shackle on the 97" wire into the top (spinnaker) car on the mast, with the car locked into the top hole. Attach the two 164" wire, snap-shackle end to the bowline knot on the end of the spinnaker pole. Repeat for other side for first two wires.



21. Lift spinnaker pole into position above the mast and attach to the spinnaker car, with the car locked in the lowest position on the slide.

22. Take up the slack on the spinnaker halyard and the spinnaker sheet. Position pole at an angle less than 90 degrees to the mast.

    Note: Do not cleat off spinnaker halyard or spinnaker sheet on cam cleats. Lead to standard cleat on the side of cockpit coaming.

23. Check backstay to make sure it is completely released by slight pulling at the exit sheave on the stern.

24. Check vicinity for clearance from obstructions and anyone in the area should stand clear as the mast is being raised.

25. Using low speed on the primary winch in cockpit, crank the mast up keeping constant watch for shroud clearance. Wind at least 3 wraps of line around the winch.

26. As the mast approaches vertical position recheck internal wiring for clearance from pinching between castings.

27. When mast is in full upright position, cleat off spinnaker "raising" line to the standard cleat on the side of the cockpit coaming.

    Note: Do not use cam cleats.

28. Check headstay for clearance from shrouds and spreaders. Remove lock ring and pin & place headstay tang in proper hole. Insert pin and ring, rotate lockring into secure position.

29. Remove and stow spinnaker pole, raising bridle assembly, spinnaker sheet, snatch block, and winch handle.

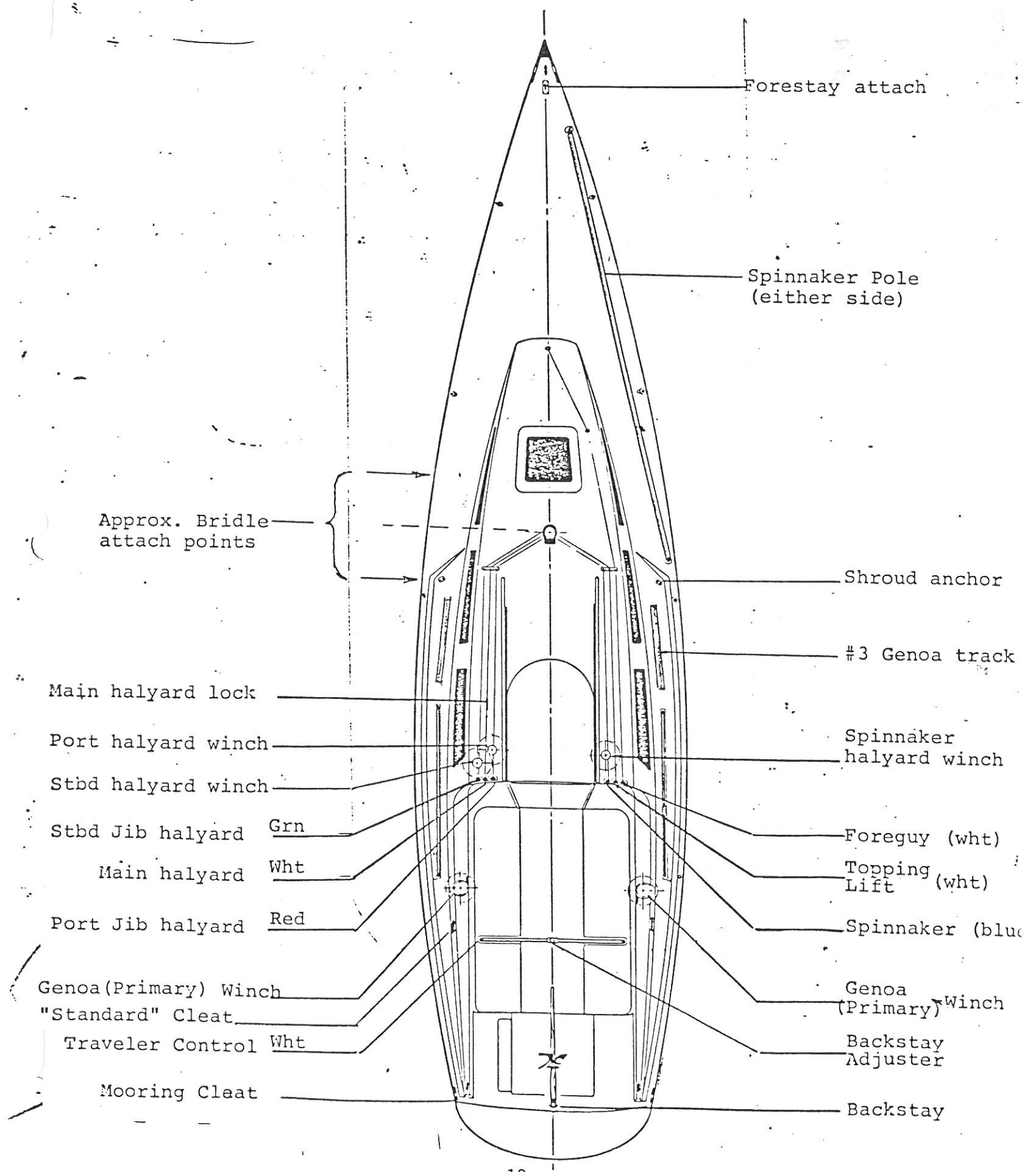
30. Check rig adjustment.

31. Rig remaining halyards through proper cheek blocks and cleats (see deck sketch) typing figure eight knots in ends. Hook topping lift to outboard end of boom. On gooseneck end of boom, remove ring and pin and align the boom, inserting into gooseneck assembly, insert pin and lock ring. Rotate lock ring into secure position.

32. Connect vang and mainsheet assemblies.

33. Sails may be installed at this time.

Hobie 33 View for line routing, etc.



Mast Lowering Procedure

1. Install forward and aft mast supports (stern w/hooks forward).

2. Remove mainsheet and boom vang assemblies from deck and secure on boom.

   Set boom end on life line above primary winch.

   Remove gooseneck lock ring and pin, slip gooseneck out of position on mast, set on deck and replace pin and lock ring to mast assembly. Remove topping lift from boom.

3. Store boom assembly below deck.

4. Locate mast raising bridle assembly, spinnaker sheet, snatch block, winch handle and stern mast support in cockpit area.

5. Remove all halyards and topping lift from cleats and cheek blocks except spinnaker halyard which will be used for lowering mast.

6. Coil all halyards and topping lift and secure to mast.

7. Attach mast raising bridle to toe rail as noted in "Raising Procedure".

8. Close hatch to companionway.

9. Attach snatch block to toe rail forward of intersection of headstay and deck on the port side.

10. Lead the bitter end of the spinnaker sheet (not snap shackle end) through the No. 1 genoa car on the port side, then through the snatch block on the bow. Check that line is lead under the bridle guide wires.

11. Locate spinnaker pole, with jaws up and tie the smallest possible bowline on the bottom side of the pole. Attach the bridle assembly to the bowline using the clip. Do not attach bridle directly to spinnaker pole as the clip will bend and may fail after repeated use. Attach the spinnaker halyard to the top side of the pole with the snap shackle.

12. Set spinnaker pole into position just above the deck and attach to the spinnaker car with car in the lowest position on the slide.

13. Take up slack on the spinnaker halyard and spinnaker sheet to position the pole at an angle less than 90° to the mast. Do not cleat off spinaker halyard or sheet on cam cleats. Lead lines to the standard cleat on the side of the cockpit coaming.

14. Check backstay to assure it is released completely by slight pulling at the exit on the stern.

15. Check vicinity for clearance from any obstructions and OVERHEAD WIRES. Anyone in the area should stand clear as the mast is being lowered. (Recheck for wires anywhere near.)

16. Using low speed on the primary winch in cockpit take up slack on spinnaker sheet until the headstay has sufficient slack to remove its securing the lock ring and pin.

17. Cleat off the spinnaker sheet securely and remove the headstay lock ring and pin, remove headstay, replace lock ring and pin, securing lock ring.

18. Return to the primary winch and uncleat the spinnaker sheet being extremely careful when releasing slowly. As the mast rotates downward the load will increase. Maintain at least 3 wraps of line around the winch with line directed so it will not jump over the winch head.

CAUTION: MAKE CERTAIN NO ONE IS IN A DIRECT LINE WITH THE MAST DURING LOWERING.

19. As the mast angle approaches horizontal, be sure it is guided into the stern mast support and contacts gently.

20. Uncleat, but do not release the spinnaker halyard from cleat on cockpit side, move forward towards spinnaker pole, release both spinnaker sheet and halyard, while supporting spinnaker pole.

21. Remove spinnaker pole from mast and lay on deck. Remove spinnaker halyard and mast raising bridle, then stow in proper location on deck.

22. Disconnect electrical connection at mast base.

23. Remove lock ring and pin at mast base, raise base and reinstall pin and lock ring in mast step on deck.

24. Lift mast at base and move base forward to mast support taking care to avoid snagging wires on obstructions.

25. When properly positioned on supports, tie both ends securely to supports and stanchion.

26. Coil shrouds and secure. The mast step pin will retain the wires, but they should be tied with a small line to contain them neatly.

27. Coil backstay, tie off with small line and stow in life ring storage compartment.

28. If installed, remove mast head instruments or other devices and stow below deck. Be sure wind instrument is stowed in upright position to avoid leakage of internal liquids.

HOBIE 33 NEWS

You are now the proud owner of a Hobie 33. This boat has many unique features not found on many trailerable sailboats. Your owner's manual will go into detail on set-up and getting your 33 ready for the water.

This newsletter is a brief outline on proper mast tuning and how to race your 33 right.

Mast Tuning - After raising your mast, you have three adjustments that must be set in the correct position. First, your headstay should be pinned so that the mast has maximum rake. Rake is the amount of angle the mast has past straight up and down. Do not confuse this with mast bend, which is the amount the mast bends with backstay pressure. Your headstay pin should be in the last hole.

Your lower and upper shrouds should be extremely tight. Both upper and lowers should be the same tension. You should measure to see if the mast is straight sideways. Take your main halyard and measure to each toe rail on the port and starboard side. This is just a rough measurement and fine tuning can be accomplished by sighting up the mast from the gooseneck and adjusting til the mast is perfectly straight. Remember, you can't get your shrouds too tight and with our swept back spreader design, you never need to adjust your shrouds when raising or lowering the mast. Your Hobie 33 has a backstay which can be adjusted very easily. This adjustment, probably more than anything else on the boat, will make tha boat go faster or slower. It is impossible to write down different backstay settings, so a good overall rule of thumb on the 33 is to have too little backstay tension rather than too much. With the tight shrouds and swept back spreaders, the headstay tension is not directly related to backstay pressure. The best way to develop a feel for proper mainsail-backstay set-up is to have a knowledgeable person sail with you and show the effects of the different combinations.

Sail Settings - Your mainsail is designed for all wind conditions. There are three reef points for the upper wind ranges. These must be used to keep the boat flat. We do not have enough experience with the 33 to know if a reefed main and large jib is faster than full main and small jib. I would tend to reef first and then go to a smaller jib if you are actually in a race. You will lose alot less by reefing. If the wind is up before the start, a small jib is better.

The outhaul should be pulled tight in wind over 10 kts. In light air, a nice bag in the bottom of the main is probably fast. This is a critical adjustment in that the boat doesn't need much horsepower and a full mainsail foot is excess drag in meduim to heavy conditions. Cunningham adjustment is basic - just enough to eliminate the wrinkles. There is a leach cord that should be adjusted only to stop leach flutter.

The class rules specify two jibs. A 155% Mylar genoa and a 100% jib. The Mylar genoa should be used up to about 10 knots of true wind. The luff of the jib should be tightened to just eliminate the wrinkles. This is one of the more critical sail adjustments and must be considered with varying wind strengths. The 155% jib lead position will vary depending upon wind strength, but never more than 1 or 2 holes. The 100% jib is designed for heavier weather and has a built in storm sail. The 100% leads to the track just inside the shrouds. The jib car position of this sail will probably stay constant once the proper setting is determined. The luff of this sail is not quite as critical as the Mylar jib with regards to tension, but will also require constant observation. Both of these sails, as well as the main, should be folded after use and occasionally rinsed with fresh water.

Your 3/4 oz. spinnaker is designed to be an excellent all-around sail. The pole should be kept perpendicular with the mast when running and about one foot higher on the outboard end while reaching. I suggest making marks on your halgards so that they can be cleated in the right location. Your spinnaker sheets should be led to the back of the boat, on the toe rail, to achieve maximum effectiveness while reaching.

The spinnaker needs to be kept dry and salt free. When drying the spinnaker, never let it flog in the wind. This breaks down the resin and reduces the spinnakers life. A lawn or living room works great. This concludes the sail setting section of this newsletter. Since this boat is such a strict one design class, you can be assured that if you set your sails, jib leads and running rigging exactly like the winners, you will have the same equipment and all you have to do is out sail them!

Racing Positions and Mechanics

The Hobie sails best with a crew of five. This does not mean that three people can't race her, but results have shown that when sailing to windward in medium to heavy weather, the weight really helps. And remember, this weight must be to weather. I have sailed her with four and have been extremely competitive, but the extra beef on the rail helps. The forward crew should be against the shrouds and all other crew side by side. The skippers position should be with one leg on each side of traveller in heavy air, and both legs forward of traveller in light air. Downwind and reaching should follow the same positions, but not necessarily on the weather rail. The seat behind the traveller is comfortable and should only be used if most of the crew is on deck or on the cabin top.

When tacking in light air, there should be one person on both jib sheets and in heavy air two people. The other members of the crew should cross over the cabin top and be in the hiking position as the boat heels. Try not to cross over too fast, you don't want the boat to heel to windward just after the tack.

Sailing the Hobie 33 to weather is a sailors dream. The feel generated through the tiller is one of speed and control. It is important to get to know this "feel" and know when the boat is going fast or slow. I suggest that the helmsman concentrate on watching the jib and sea conditions. Let the closest crew play the traveller and watch the mainsail trim. Be sure to sail the boat around the waves if possible. Watching the waves on any boat is important.

The spinnaker leg is just as important as the weather leg. Try to have a person who is quick and light on the foredeck. The spinnaker set is self explanatory but there are other areas that are unique with the 33. The boat is extremely fast when the spinnaker is up. Your apparent wind will go forward very fast and it will appear that you are always reaching. I can't explain the different angles one should sail downwind but I can say one thing, don't sail too low on the downwind leg in light air! Keep the boat moving at all times.

The pole positioning is the same as on all boats, low in light air, higher in a breeze. Again, when reaching, the outboard end of the pole should be about 1' higher than the inboard end.

On the offwind legs, ease the outhaul and cunningham and be sure to not have excessive vang pressure. The only time you can't overdue vang tension is on reaching legs with the wind over 15 kts. The back-stay should always be eased on reaching legs and let off completely downwind. However, hever let the rig bounce around in sloppy water.

There is still alot to learn about sailing a Hobie 33 to her potential. With good class racing and keen competitors, we should be able to increase her speed potential by a knot!

Go Fast!

ROBBIE HAINES

PERFORMANCE HANDICAP RACING FLEET
P. O. Box 14356
Long Beach, California 90814

May 25, 1982

Robbie Haines
Regional Manager - Hobie 33
Hobie Cat
4925 E. Oceanside Boulevard
Oceanside, CA 92056

Dear Robbie

The PHRF handicappers have been watching the Hobie 33 race for several months now. These observations have indicated that the Hobie 33 seems to get around the course at very close to the same speed as an Ohlson 30. Consequently, we have assigned the same handicap to a Hobie 33 in stock class configuration as we have to the Ohlson - 90.

Cordially

TOM LEWECK
President

HOBIE 33 9 MARCH 83

BOAT ONLY

DIM: 396 x 96 x 76 inches 1637 cu.ft.

IN CRADLE

DIM: 396 x 96 x 82 inches 1804 cu.ft.

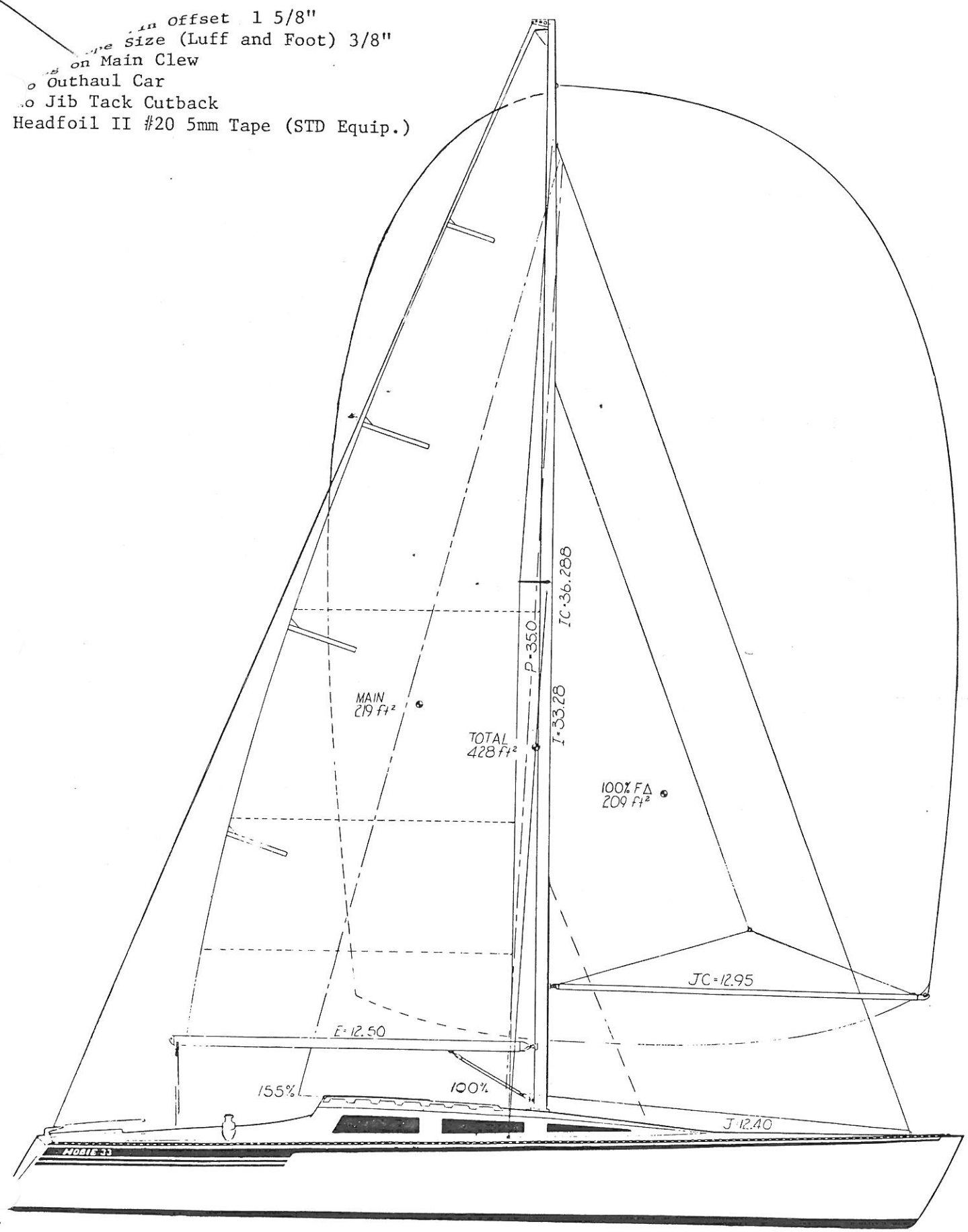
ON TRAILER

DIM: 456 x 98 x 93 inches 2405 cu.ft.

MAST (in tube)

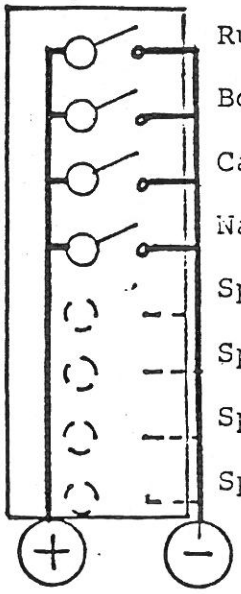
DIM: 449.5 x 9 x 9 inches 21 cu.ft.

...in Offset 1 5/8"
...ape Size (Luff and Foot) 3/8"
...s on Main Clew
...o Outhaul Car
...o Jib Tack Cutback
Headfoil II #20 5mm Tape (STD Equip.)



HOBIE 33
T/B R.G & SAIL PLAN
9/8/82 · DO NOT SCALE

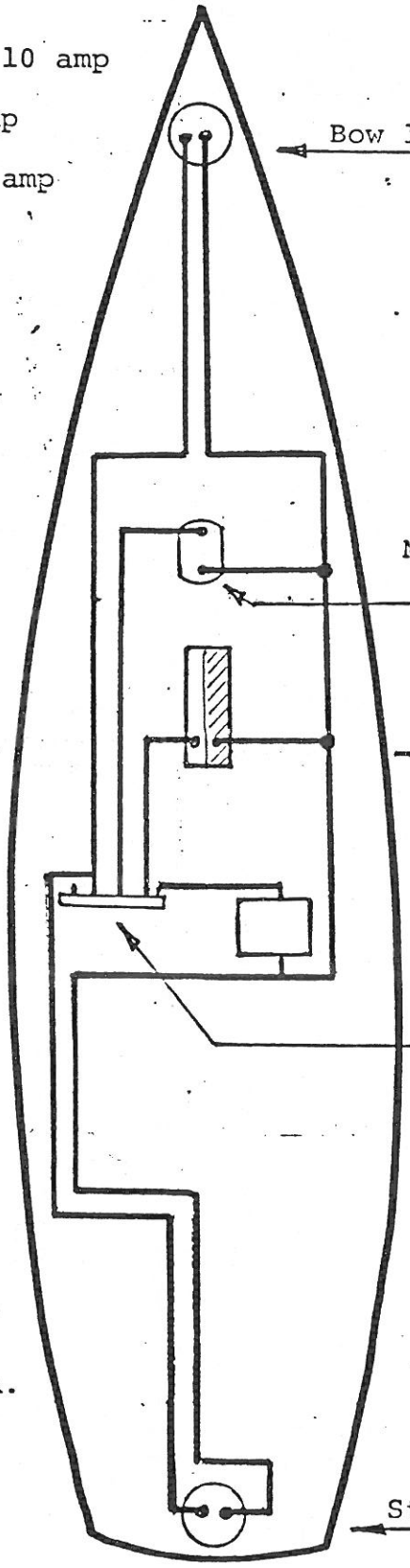
ELECTRICAL PANEL



* No breaker switches installed. (Available "Airpax" 10/15 amp)

BLK = Positive (12VDC)
WHT = Neutral
GRN = Ground

All wiring shown is 12 GA. except ground = 10 GA.



Note: Shroud anchors are electrically connected to keel (#8 copper) for lightening protection system only.

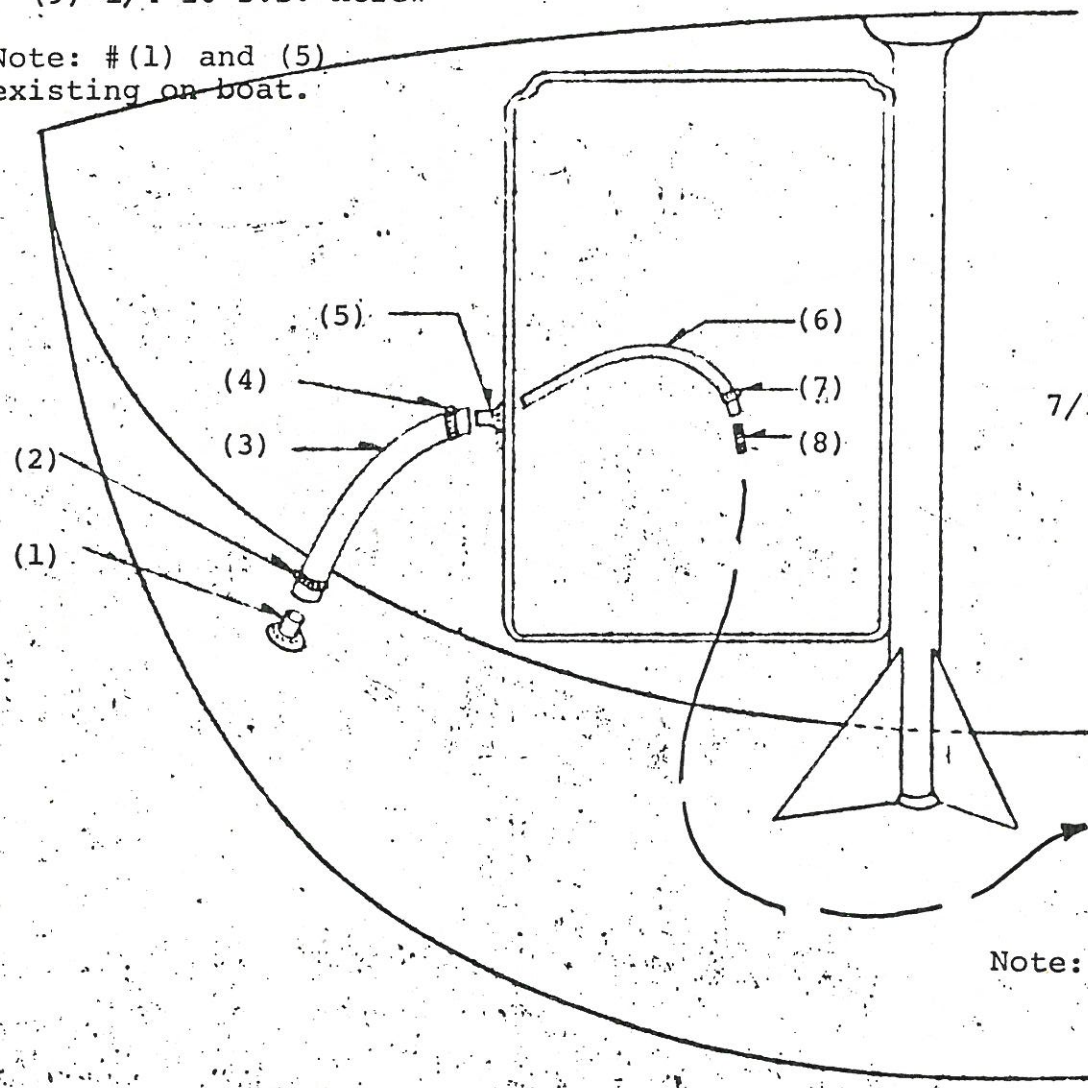
ENGINE MODIFICAT. N FOR HONDA

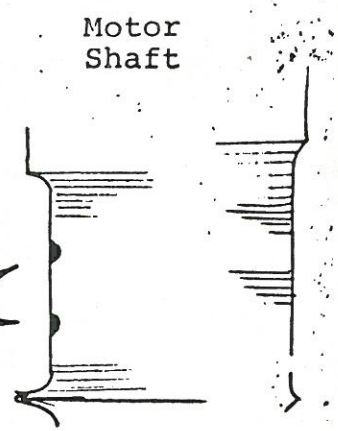
For overboard Low-speed Exhaust

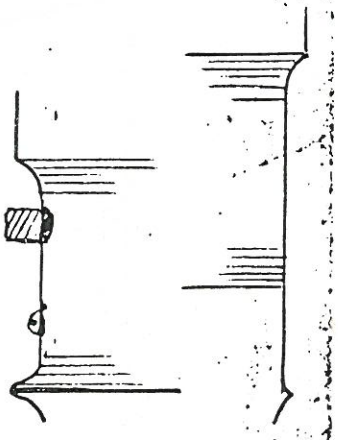
(Requires Mod. Kit #7010-2000)

(1) Hull exit port
(2) #16 S.S. Clamp
(3) Hose 3/4X1/2X26
(4) #16 S.S. Clamp
(5) Motor well exit port
(6) Hose 1X17
(7) #8 S.S. Clamp
(8) 1/4 Pipe nipple (ref).
(9) 1/4-20 S.S. Xcrew

Note: #(1) and (5) existing on boat.







Note: Install screw and pipe nipple with non heat sensitive sealant such as "Permatex".

Note: Principally, other motor modifications are similar, and will be outlined for most major manufacturers in the completed version of the Hobie 33 Owners manual...