# COMMISSIONING ON A NEW GEMINI 3200

## MAST

1. The mast is 38 ft long with double spreaders.

2. Rigging comprises 1/4 headstay, intermediate lowers and lowers. 9/32 cap shroud. 7/32 twin backstays, baby stay and lower aft stays, (the lower afts act as check stays that stop the mast from pumping)

3. The running rigging is all external end comprises 7/16 main halyard that goes right through the meat head from front to back with a halyard shackle on the aft aide. The Jib halyard is also 7/16 end also goes through the mast from back to front with a snap shackle on the front side. The topping lift is 3/8 going through a pulley shackled to the mast head having a 1/4 in shackle on the boom end.

4. On the front end of the mast cap is a stainless U welded to a plate, this is to take a spinnaker halyard pulley.

5. At the base of the mast are two winches for the Jib and main halyard and three cleats.

6. At the top of the mast on one side is the bracket to take the V.H.F. antenna. Tapped into the top of the mast are 4 1/4 in bolts to secure the wind instruments C make sure these bolts do not go through the mast cap end catch onto the Jib and main halyards) Behind the wind instruments is the combination tri color and anchor lights C this light is normally removable with a bayonet fitting or a twist lock).

7. Half way up the meat on the leading edge is the steaming light & this light also illuminates the foredeck)

8. The wires are secured to the inside of the mast along with a tube. This tube is there to facilitate the addition of extra wires that will then not rattle against the side of the mast such as the wind instruments

## RAISING THE MAST

With a double spreader rig it is difficult to put the strop around the meat to raise it and then remove it once the meat is up. With the strop under the lower spreader the mast is top heavy. With the strop under the upper spreader it is difficult to lower it down the mast once the mast is up, unless a really high crane is used that facilitates the use of a strop with a large loop. It is possible to use a strop under the lower spreader securing the end of the crane wire and another wire looped around the crane wire going over the upper spreader and back down to the bottom of the mast. When the mast is up loosening the crane wire facilitates lowering of the strop down the meat whilst the upper line can simply be released from the bottom of the mast and pulled over the upper spreader as the crane is moved away from the boat.

When raising the mast the operation must be stopped whilst the mast is hovering over the mast base so that the wires coming down the mast can be pushed down the 1 in dia. tube in the center of the mast base. The positioning of the mast and the attachment of the wires is as normal and hopefully obvious. The turnbuckles should be tightened so that the shrouds are reasonably tight and of an equal tension and the mast is straight. Racking the mast forward or backward does not seem to make any difference.

## BOOM AND SLAB REEFING

The boom is 14 ft long with a track for sliders on the foot. The tack of the sail is tied to a shackle on the gooseneck. The foot of the sail is tensioned by an outhaul that is tied to the clew and goes into the end of the boom over the center of the triple pulleys. One third of the way into the boom the outhaul is secured to a pulley, another line that is tied to the inside of the boom at the front end passes through the pulley and then goes forward exiting the boom at the front end near a cleat C the purpose of this complicated system is to get a double purchase on the outhaul)

To attach the boom there is a solid aluminum block which with clevis pins in two directions allows the boom to move in all directions. At the rear of the boom shackle on the three part block and feed the mainsheet through this block and the other block on the mainsheet traveler. The shackle at the end of the topping lift should go through the tang at the end of the boom. Tighten the topping lift so that the boom is just off the pilot house. (I find it easier to leave the topping lift always at one length and to wrap the topping lift around the winch when the sail is down and I want to put the sail cover on and I want the boom to be well clear of the pilot house.

There are two reef points. At the gooseneck there is a hook on either side of the boom to attach the ayes on the forward end of each row of reef points on the sail. At the rear of the boom there are the two reefing lines that go over the outer of the triple pulleys. Each reefing line exits the rear of the boom and goes through one or the other of the reinforced eyes on the leech of the sail approx 5 and 10 feet up respectively and then goes vertically back down to the boom where it is tied to the boom. Some trial and error is necessary to locate the position to tie the reef lines to the boom. At the other end the reeling lines exit the boom near two cleats near the mast.

MAST ELECTRIC WIRES

Before the mast was put up it would have been necessary to remove a curved teak strip in the master cabin between the main bulkhead and the roof. The fabric to the roof would have just dropped down exposing the one inch hole to the tube in the center of the meat base. Once the meat is up end the wires have been pushed down though this tube it will now be necessary to connect these wires to the rest of the ships electrical.

1. The VHF COAX CABLE FROM DOWN THE MAST is simply pushed and threaded into the coax leading all the way back to the radio

2. The NAV5A WIRES. The small grey wire has in fact seven color coded wires within it, this should be cut

roughly 18” from the roof, the outer skin of this grey wire should be peeled back and then the various colors can be connected to the meting wires secured to the cabin roof that go all the way beck to the navigation station.

3. STEAMING ANCHOR AND TRICOLOR. Coming down the mast are five wires three from the combination mast heed light and two from the steaming light, inside the cabin secured to the cabin roof are two twin core wires. The first step is to connect the two greens that are coming down the mast together and crimp them into the one black wire of the twin core cable. This now leaves one wire, normally yellow as the positive live to the tricolor another wire normally brown which is the positive to the anchor and another wire normally orange which is the positive to the steaming light, the two greens were obviously the earth return. The cabin roof wires are such that the one twin core wire marked steaming was arranged so that the black was the negative and the white would be the positive to be connected to the orange steaming wire, the other twin core wire is set up so that the white will be the

positive to the tricolor yellow and the black will be positive to the anchor brown wire. (The normal color code in the boat is black is negative, white is positive, in this case the black to the anchor light will be a positive.) There is normally sufficient wire so that these wires could be cut and recrimped several times, the wires are now coiled up and the fabric to the roof pulled tight across them, the teak curved strip is replaced.

MAIN SAIL

The foot and the luff of the mainsail has sliders, to feed the sliders into the mast this is done through a gate roughly two feet up from the gooseneck, the tack of the mainsail is normally tied to the shackle at the gooseneck. The outhaul probably has to be tied to the clew. There are four battens; the two longest battens go in the middle.

REEFING

To reef the main simply lower the main halyard so that the eye on the first row of reef points can be pulled down over the hook on the gooseneck then pull the halyard tight remembering that the normal is three turns of the halyard around the winch. To pull the slab reefing line at the rear of the boom, life can be made a lot easier by pulling the boom way into the air with the topping lift, then pull the appropriate slab reefing line which will pull

eye in the leech hard down to the boom. Lower the topping lift and you are ready to continue sailing. It Is not normal to put ties through the reefing eyes that go along the sail, if however you wanted to do that the correct procedure is to use roughly 1/8” cordage and tie right around the excess sail passing this 1/8 cordage between the foot of the sail and the boom, do not run the reefing line around the boom. (The reason for doing this is so that in an emergency the sail can be removed from the boom without having to undo the reefing lines from around the boom.

HEAD SAILS

An eight foot length of 7/16 rope is supplied as a strop for the Jib and Genoa. This is tied with a bowline through the second hole in the stem plate. The Genoa strop should be approximately two feet positioning the Genoa so that it is just high enough for you to see under it, but not so high that the halyard pulls the head hard to the top of the mast. The jib strop should be about six inches off the deck. I find it adequate to take this eight foot strop through the eye in the tack down through the bowline and then two half hitches back onto itself, this can be tied and untied quickly and seems strong enough. The sliders on the track on the cabin roof work for the Genoa and the jib with the slider all the way back on the track the Genoa sheet lead is roughly correct, with the slider approximately level with the U bolt on the check stay the slider is approximately correct for the jib. The accurate positioning of the slider is determined by an imaginary line that goes from the center of the head stay through the clew and positioned where this line strikes the track. Fine adjustment depends on wind strength; the slider is moved forward in heavy winds and back in light winds.

ELECTR I CS

After a long trip it is advisable to check the wires behind the switch panel for loose connections, this is done by removing the angled panel in the port aft cabin.

The master switch is in the battery box. The off position is vertically down, you will see that you can

either select battery one, both, or battery two. I would advise only leaving the battery switch on, say, battery one all the time this will be the battery that starts the engine and supplies power to the rest of the ship. If in the morning your battery is dead you then at least know you have one fully charged, battery. I think the switches on the switch panel are self explanatory, however because there are only six switches if somebody requests an autopilot, we would normally hook this up the cabin light switch. The NAV5 and the VHF because they have their own inline fuse we would wire this direct to the buzz bar at the back of the switch panel. Our normal code is black is negative white is positive. If in your boat we had different color wire they could be black negative end red positive.

WATER SYSTEM

The 30 gallon water tanks are located under each aft bunk, with easy access by just lifting the carpet and hinging up the panel above the tank. The tanks are filled from the cockpit with separate fills to each tank. The vents to each tank are just below the water fills.

The selection of water from each tank is through a half inch three way valve that is located under the starboard bed, close to the pressure water pump. The arrow on this Y valve actually has the word ‘closed’ on it, therefore which ever half inch line this arrow points to will be closed end you will be taking the water of *f* the other tank.

When filling the tanks do not overfill because there is a chance that the six inch inspection hatch in the top of each tank can leak when the tank is brim full and there is a four foot head of water.

Starting from the tank in the stbd. hull you will be able to trace the water coming from the tank through the Y valve through the pressure pump and then along through a hose going into the D section on the side of the hull. This goes forward into the space underneath the master cabin floor where it now tees off to go to the tip toe foot pump in the galley or across to the head. From the tip toe foot pump the water goes back to the cold faucet in the galley, the supply line going across to the head will be teed so that one part goes as a supply line to the hot water heater and the other goes to the tip toe foot pump and then on back to the cold faucet in the head. Hot water goes from the water heater in the head to the hot faucet in the bathroom and the galley.

Without the pressure switch on, cold water can be supplied to the galley and the head by means of the tip toe foot pump on the floor. The plunger on the foot pump is held down by a 90 degree twist of your foot. and obviously released by twisting the plunger anti clock wise. The plunger should be locked down before the pressure water is switched on. The faucet has to be open before the plunger on the foot pump can be operated or even pushed down to lock.

When priming the system for the first time it will take a while to expend all the air from the system, when this is correctly done and the faucets are turned off, after a few seconds the pump should atop when it has built up pressure. There is no accumulator in the line, the pressure in the system is purely the water in the hose itself, the pump comes on very quickly after the smallest amount of water has been run off the system. If the pump cycles on every few seconds with the faucets closed there is either a leak in the hoses somewhere which will very easily be noticed or the non return valve in the pump itself is held up because of some dirt in the system. Flushing water through the system normally clears this dirt; however, it might be necessary to take the pump apart.

PROPANE

The two twenty pound bottles supplied are special horizontal tanks that are stored in the aft self draining cockpit locker. There is a separate 3/8 copper tube for each appliance that goes from the junction box in the cockpit locker to each appliance. Any leeks would therefore be at the appliance or the junction box. The regulator is screwed into the propane bottle with a left handed thread, and must be very tight. First light the stove by holding the knobs in, and in the on position, when propane finally makes it to the stove this can be ignited with a match. Hold the knob in for a few seconds until the flame failure probe warms up so that the propane will stay on. This is a safety device so that if the flame goes out the probe will cool down and the flow of propane will be stopped. Check for leaks at the back of the stove. To light the ‘fridge set the thermostat to one half, select propane on the fuel selector and hold in the right hand button, periodically pressing the left hand button which operates a piezo lighter, when finally the propane reaches the ‘fridge, which in a new boat could take several minutes the propane will be ignited in the chimney at the base of the fridge. The flame should be visible through the prism at the front of the fridge looking down at the prism. You will not hear any noise and you might not see the light through the prism, all the time you are holding the flame failure override knob in you should keep hitting the piezo lighter, if, after 10 minutes you are not sure if the fridge is alight feel the back of the fridge through the opening in the top, if it feels warm then the fridge is alight. It is much easier to see the flame through the prism at night. To connect the fridge to 110 v there is a plug on a cord at the back of the fridge which can be pulled out and plugged into an extension cord.

To light the water heater pushing the left hand knob in is the flame failure device, turning it 90 degrees operates the piezo lighter, frequently turning it backwards and forwards through that 90 degree arc while holding it in will eventually ignite the propane when it finally makes its way from the bottle to the heater. You then turn the knob completely anti clock wise and the heater is now ready to heat water. With the pressure pump switched on, when the hot water faucet is opened at the sink as water passes through the water heater the flame will ignite and the water will be heated, turning the faucet off and stopping the flow of water will obviously put the flame out. The right hand knob is a throttling device with the right hand knob turned fully clockwise to the HOT position this slows the flow of water down increasing its temperature. It has been our experience that it is better to keep the knob in the hot position and feed cold into the system at the faucet. Turning this knob to the WARM position will cause the unit to be inoperative due to a lack of pressure inside the unit.

TOILET

Removing the loose panel from behind the toilet and looking right down to the keel you will see on the left hand side a three quarter sea cock end on the right side an inch and a half see cock, turning the handles in line with the hose opens both these sea cocks. ,On the bulkhead ahead. of the toilet you will see two Y valves, with the handles on both these V valves turned outwards ie the right one fully clockwise and the left one fully anticlockwise the toilet is now ready to discharge overboard On the toilet itself there is a small lever which should be vertical, as you pull the handle up and down you will be bringing fresh water in to flush the toilet and pumping waste water out; with this little handle on the side horizontal, you should be pumping out only.

The holding tank is behind the fiberglass above the V valves and has a capacity of 18 gallons, the breather to the holding tank runs down the inside of the hull and will vent through a fitting underneath the sink. With the right hand Y valve anticlock wise waste water from the head is now going up and into the holding tank, and will stay there until the left hand V valve is turned fully clockwise when it will gravity drain.

—When punching to windward in a heavy swell it is possible water might flood over the rim of the toilet bowl, to stop this turn the little knob on the side of the toilet to the PUMP DRY position.

NAV5A WIND SPEED & DIRECTION, BOAT SPEED AND DEPTH.

The paddle wheel which is removed for transportation or beaching is in the port hull under the forward floor covering. To install the transducer unscrew the dummy plug and remove, replace with the paddle wheel transducer. If you do this operation with the boat on dry land as you remove the dummy plug you will see a rubber gasket recessed into the top of the threads, therefore when you install the paddle wheel transducer no rubber gasket is needed. Changing the transducer can be done with the boat in the water, you just need to put your hand over the opening whilst you change or clean the transducer, approximately a gallon and a half of water is all that will come into the boat. The depth sounder transducer is already installed in the through hull fitting under the rear floor inspection cover in the port hull; there should be no reason to remove this. Beside this fitting is the ground plate which is used for a negative earth on the electronic equipment.

Pressing the power switch on the NAV5A unit switches the unit on. The navigation unit has all of the necessary controls to set and adjust the equipment.

CENTERBOARDS

The centerboards are approximately seven feet long and have a pivot point that is 12 inches back from the main bulkhead and three inches up from the floor. The centerboard is controlled by rope attached to the top leading edge of the centerboard that goes back to a 4” diameter drum that is inside the case. The rope goes once around the drum through the drum and out the other side and then three more times round the drum going back to the centerboard, this somewhat complicated arrangement ensures you don’t get overriding turns. As the drum is rotated the top of the centerboard is pulled back up to the drum, as the drum is rotated the other way the line that is connected to the centerboard further back pulls the centerboard up. The centerboard is made of plywood and has almost neutral buoyancy, needing force to pull it down and up.

A regular 6” 3/4 diameter bolt is used with the head cut off and an 8 point socket welded on the threaded end, a nut is positioned on the thread before the eight point socket is welded on. The shaft of this 3/4 bolt is passed through the case and through the drum two 3/8” stainless steel pins are used to go through the 4” diameter drum and the shaft to secure the drum to the shaft. A special deep socket with handles is supplied which slides right over the eight point socket and goes onto the 3/4 nut, when this nut is turned clockwise it locks the drum in position inside the case, a regular winch handle goes into the eight point socket, so that in order to operate the centerboard, first the 3/4 nut is slackened off and then the winch handle is rotated anti clockwise to bring the board down, and clock wise to bring it up. When the board is in the required position the 3/4 nut is tightened in a clockwise direction. The direction of rotation is such that were the centerboard to be fully down and you ran aground the lock nut would loosen and allow the centerboard to come up. One and three quarter turns moves the centerboard all the way up or down and it physically cannot go any further.

The mechanism can be serviced by unscrewing the cap in either the chart table or the galley. The 1 1/2 inch through hull fitting in the cap vents the center board case. With the water going up and down in the case tremendous pressures or vacuums are created that. These must be relieved or the case will leak.

The only time when the centerboards are needed are for sailing closer than 70 degrees to the bow, and we find from experience just the leeward board down gives the best performance. If you are new to the boat *I* would advise putting both boards one and a quarter turns down and forget about them, you will find rapidly that having the boards up when sailing off the wind or down wind greatly improves your

performance and stops them clattering around when there is no side pressure on them. In heavy airs I don't put the boards fully down, this reduces the stresses on the board and on the case. When motoring for maximum fuel, economy have the boards up but for maximum maneuverability and to atop the effects of a cross wind have the boards down when docking.

On a screaming broad reach winds of 25 knots or more and seas six to eight feet or more the boat is subject to weather helm; when broaching down a wave front, because the rudders are balanced the helmsman might not be aware of the high forces on the rudders, so there is a risk the rudders could be broken, putting one centerboard down one turn because of its long directional ability immediately removes the tendency of weather helm. With the centerboard up you are perhaps doing surge speeds of 14 knots, putting the centerboard down takes two knots off your top speed, but you are much safer and there is a lot less stress on the helmsman.

RUDDERS

The rudders are a mahogany wood blade in a stainless cage that is normally used all the way down with the pin in the top hole. A short length of rope is used as a handle and also stops the blade from falling through the case. The rudder blades can be raised when going into shallow water.

The rudder blades are held in place inside a stainless steel cage by shock cord through a U bracket at the aft lower end of the case. On running aground the rudder blade will be pushed backward and spring out of the case. When clear of the obstruction the shock cord will pull the U bracket back into the cage repositioning the rudder blade. Some times the U bracket is pushed so far out that it takes help from a boat hook to line up the bracket and the cage to allow cage to return to the normal position. The shock cord can be tensioned by loosening the clamp plate at the top and pulling the shock cord through.

The rudder is balanced in the down position. In other words, part of the rudder below the water line is ahead of the pivot line (an imaginary line projected down from the two pintles). Therefore the force to turn the rudder is reduced. With the rudder part way up the degree of balance is less so there is more force to operate the steering even though there is less blade area.

STEERING

The steering is a mechanical system by Teleflex. The wheel is connected to a helm assembly ( ah 5000 ). k 30 ft cable ( ac8230 with a length 13 ft and b length 17 ft ) is split 13 ft from one end and fed into the split helm assembly. The ends of the cable go through a splash well on the transom. The cable is then connected to the rudder cage. The toe in or out of the rudders can be changed by rotating the black ball in the splash well consequently moving the one inch dia. threaded shaft in or out through the transom. If the black ball cannot be rotated the

large nut at the end of the black cable inside the transom can be slackened off allowing the one inch dia. threaded alloy shaft to be rotated. The steering cables can be changed by removing the battery box and fridge. The teak plugs that cover the screws holding the fridge in place are not glued in and can be removed by driving a screw through the plug which pops out as the screw hits the other screw below it.

ENGINE

The engine is raised by means of a 1/4 in rope to an eight part pulley block system at the back of the

outboard bracket. The whole bracket is raised. If only the engine tilted the bracket or molding to which the engine is mounted would have to be so far down that it would create severe drag when sailing at speed. If when the bracket is fully up the engine still drags in the water at speed it is possible to lower the bracket a bit and then tilt the engine. Unfortunately the engine will not tilt sufficiently to use the engine lock so it is necessary to hold the engine in a tilted position with a rope.

The engine should be lowered so that the cavitation plate is about 8 in. below the water. The bracket can be raised in flat sees if it is creating a lot of turbulence or lowered in heavy seas if it cavitates.

Some times in rough weather motoring to windward it is advantageous to open the throttle to go faster to create a stern wave and to allow the engine to grip the water and stop the boat from pitching. Motoring slowly only allows the boat to pitch and the engine cavitates. This is one reason to have plenty of power, even if a small engine should have sufficient power to just move the boat forward the pitching and cavitation of the engine will almost render the engine useless.

The engine is steered by means of 1/4 in line going from the back of the outboard to a stainless U welded to the back of the rudder and then forward to a smell pad eye on the back of the boat directly over the rudder gudgeons and then forward to a jam cleat. To steer the engine both lines must be reasonably tight. When raising the engine these lines must be slackened off.

For safety, a separate line must be secured from the pad eyes on the boat to the engine so that if the main lifting lines break there is protection to stop the engine felling into the water.

There are two 18 gallon fuel tanks one in each aft locker. These tanks are vented overboard and filled from the deck. There is a mechanical fuel gauge visible under the 6 In. inspection cover on the aft deck. In the port cockpit locker there is a 6 gallon portable fuel tank. In this same locker is the fuel tank selector valve (a four way valve with the supply going through the bulkhead into the propane locker and then onto the engine). The handle has a pointer on one end that points to the fuel line in use. Following the fuel line beck to the tank will determine where the fuel is coming from.

For safety constantly check the hose clamps on the fuel tanks. Whenever the fuel tanks are being filled open the aft lockers for ventilation and to check for leaks from the hose attachments.

Some two strokes have oil injectors but others have oil mixed into the gasoline. In the latter case the normal mix is one quart to 12 gallons but double the amount of oil for the first 10 hours.

The choice of engines is determined on the length of shaft. The normal long shaft is 20 in, but to avoid cavitation a 25 in shaft is necessary The Mercury 25 hp, Tohatsu 30 or 40 HP or the Yamaha 9.9 hp C four stroke ), are the only engines that can be equipped with en extra long shaft.

The Teleflex single lever control is on the side of the steering box. Neutral is with the handle horizontal and only in neutral can the engine be started ( there is a microswitch visible behind this gear lever which can be checked by removing the panel above the fridge, if with the gear lever in neutral only the choke works even after wiggling the gear lever up and down then wires to the micro switch should be removed and shorted out ). Lifting the gear lever up about 45 degrees engages forward gear. The rest of the movement opens the throttle. Moving the lever down 45 degrees engages reverse and again the rest of the movement operates the throttle. In the case of the Tohatsu there is a throttle lock in reverse. This throttle lock is adjustable with a Philips screw driver in the engine & should be obvious).

With your right hand on the handle of the gear lever when in neutral and your left hand gripping the

center of the handle pulling the handle towards you (into the center of the boat) disengages the gears so that the throttle can be operated independently for testing or starting. As soon as the throttle is moved horizontal again the gears are engaged.

I like to start 2 strokes with a reasonable amount of throttle and I never let a 2 stroke idle at low speed for a long time.

The choke is operated by a solenoid when the ignition key is pushed in and held in as the ignition key is rotated to start the engine. Releasing the key releases the choke. The Tohatsu does not like a lot of choke and is easily flooded. To dry the engine out after flooding open the throttle fully and turn the engine with the starter motor, without engaging the choke until it starts. Remember to rapidly throttle down as the engine starts.

The Tohatsu comes with a manual start cord and a mechanical choke. All outboards have some ability so start manually.

FUEL CONSUMPTION

We are still experimenting with propellers to try and find the compromise for best fuel consumption. A propeller is like a screw going through the water. A coarse pitch prop is for a high speed boat a fine pitch prop is for a slow boat. A coarse prop on a heavy boat that can not go feat will not allow the engine to rev up to its full rpm therefore that engine cannot develop its full power. On the other hand a fine pitch prop allows the engine to scream away needing it to be throttled back also not developing full power. On Gemini we install large engines so that they are never worked hard and have plenty of spare power. The rated rpm of moat engines are 5,000 rpm but for comfort 2,800 is better. We are therefore looking for a prop that gives adequate power and fuel consumption at two thirds throttle but with the ability to have more power when needed. We normally use a prop slightly coarser than a work boat prop.

Some of our owners use a 4. 5. 6. rule. At 4 knots they get 6 miles to the gallon and at 6 knots they get 4 miles to the gallon. I think these figures are very conservative but of course with a loaded boat end a few barnacles these figures might be accurate.

SAILING

Suggested sell areas with the new 38 ft mast

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| Drifter end main | 12 knts |
| Genoa and main | 16 knts |
| Jib and main | 22 knts |
| Jib and one reef | 28 knts |
| storm end one reef | 34 knts |
| reef main alone | 36 knts |

storm and two reef 40 knts

Use a good inclinometer and reef at 7 degrees never letting the boat go over 10 degrees. The max point of stiffness is 12 degrees at which point the windward hull is out of the water. If the boat were to be pulled by its mast in an experiment it would heel to over 60 degrees end still come upright.

It has been found that the windward center board causes the boat to heel. The leeward board levels the boat upright. With no boards down Gemini behaves like some of our competitors with only en ineffective low aspect ratio keel which does not allow the boat to go hard to windward, dramatically reducing the heeling moment.

The jam cleat beside the winch holds the rope by its jamming action as the rope passes first under the smooth side and then down in the tapered aide. Do not use this cleat with the normal locking twists. With just half a turn round the cleat it is possible to take the tail of the rope back through the tapered part of the cleat over the top of the first jam so that a sharp pull removes the rope from the cleat to quickly release the sheet in case of a sudden gust of wind.

CHOCKING AND LIFTING

Th. keel of Gemini is very strong but to be on the safe side for long term storage the boat should be chocked under the front and rear bulkheads. The front bulkhead is 9 in ahead of the toilet outlet and the same on both hulls. The rear support can be anywhere under the water tank roughly 17/18 ft back from the front bulkhead.

The boat can be lifted with a travel lift, the positioning of the straps is not critical. It is possible to lift the boat with a fork lift. The bridge deck is strong enough to take the weight of the boat on the forks. Blocks have to be secured to the forks to level out the bridge deck, particularly at the rear of the bridge deck under the cockpit.

WINTERIZING

Gemini does not seem to come to harm left in the water all winter even in ice. It is still better to take boats out of the water for the winter because they do absorb water (several hundred pounds) and you must pay to have the boat hauled every year for bottom painting any way.

The only thing that can be damaged in the winter is the water system especially the hot water heater. Pump the water system almost dry then add non toxic antifreeze to the water tanks finally pumping the system dry. For good measure remove the hoses to the heater. Pour antifreeze into the toilet and pump partly empty leaving some water in the system to stop the valves drying out. If the boat is staying in the water close all through hull fittings and remove the paddle wheel. Ideally you should remove the sails so that they are not damaged by ice. The same applies to rope.

SEAMANSHIP

Never sail or motor for hours without periodically checking the boat. Just walk around looking at things. A leeward turnbuckle that is coming undone if not found before tacking will cause a catastrophic mast failure. If caught in time the turnbuckle just needs tightening up and securing.

When pounding to windward, with water solid on the deck, the hatches will more than likely leak. The foredeck lockers are self draining but if the drains get blocked or do not drain fast enough then these

lockers will fill with tons of water. With tons of water in the front of the boat other leaks will be found from these lockers into the boat and the boat might appear to be sinking at the bow. The problem is the blocked drain. Whenever going offshore in rough conditions it is advisable to duck tape the hatches closed.