

## Excerpts from Menger Cat 19 Owner's Manual

*Note: Only sections on Trailer Procedure, Stepping and Lowering the tabernacle mast, sailing tips, and glossary are included in this document.*

### 1.2 STEPPING AND LOWERING THE TABERNACLE MAST

#### 1.2 - 2 STEPPING THE MAST ON TABERNACLE BOATS

Place the mast aft side down into tabernacle. Put the top bolt in. Close the main hatch and walk the mast up the center of the boat until it is vertical. Put a long thin screwdriver in the bottom hole. Attach the forestay. Put the bottom bolt in. Tighten both bolts, but do not over tighten!

Check to make sure the electrical wires and antenna coming out of the mast base are clear as the mast is raised. It also helps to have someone make sure the lines on the mast don't get snagged on cleats, tiller, etc.. Put  $\frac{1}{2}$ "-6" S.S. bolt in fore and aft hole through mast and tabernacle. This bolt is used to secure the mast further, but is not really necessary for boats that are not left on a mooring. When your Menger Cat is in the water the mast is 23'6" high from the waterline, so be well aware of overhead obstructions to avoid serious injury or harm to yourself or others.

#### 1.2 - 5 LOWERING TABERNACLE MAST

Following are the steps to be taken to lower the mast of a tabernacle Cat:

1. Put on the sail cover on in the normal way, and replace the boom crutch with the mast-boom carrier.
2. Unclip the forward flap on the sail cover
3. Remove the parrel line from one side of the gaff saddle.
4. Pull the gaff and saddle aft toward starboard.
5. Loosen the forestay.
6. Remove the fore-and-aft bolt from mast and tabernacle.
7. Remove the lower bolt (jiggle the mast to ease removal)

8. Put a long screwdriver through the bottom hole
9. Disconnect the forestay turnbuckle from the boat
10. Close the main hatch
11. Standing on the cabin top, remove the screwdriver while holding the back of the mast.
12. Pull mast toward you and lower slowly, standing on port side.
13. Remove the forestay, coil up and stow.
14. Gather all lines, starting from mast top, and pull forward. Unclip the sail cover and tuck the lines inside.
15. Tie the mast down to the aft cleats and tighten the main sheet..
16. Using the line in the sail cover, tie the gaff to the boom and mast.

That's it!

## 1.3 TRAILER PROCEDURE

### 1.3 - 1 ON THE ROAD

1. Your tow vehicle must have enough capacity to tow 3500 to 4000 lbs. There is a lot of information in the boat press as to towing capacity of common vehicles. Check with your auto dealer. (If you add a lot of gear, weight will go up.)
2. If you are doing long distance trailering, check the regulations in the states you are traveling through. You may be required to have surge brakes depending on the weight of your total load.
3. Carry enough spare parts! You should have at least a spare wheel bearing, light bulbs, waterproof bearing grease and gun, extra wheel studs, and a spare tire and rim.
4. Make sure all lines are tied down and nothing is loose. Tie a line around the outside of the sail cover to prevent it rubbing on the non-skid on top of the main hatch. Pad all metal to metal contacts. Remember that vibration will cause wear and tear very quickly.

### 1.3 - 2 LAUNCHING

1. If you so desire, the mast can be raised before launching. This is much easier to do on the trailer than in the water. Be very careful of low overhead wires near the launching ramp or in the staging area. If you touch an overhead line do not make contact with the ground by stepping out of your vehicle or touching the boat or trailer! One Menger Cat owner bent his mast in two but continued on due to his four wheel drive. If he had stopped and got out-?
2. Check over your Cat to make sure you are ready to go into the water. Raise the centerboard fully. Close all sea cocks. Raise the outboard fully. Remove all tie downs from the Cat to trailer. Attach dock lines to the bow and stern long enough to reach from the Cat to dock with enough length to allow for the surge of launching.
3. Back up to the launching ramp until your trailer wheels start to touch water. Get out and determine how far you are going to go in. Remember, try not to submerge the trailer bearing as this is the weakest link in the trailer. Steep ramps are the most desirable in this respect. If you do submerge the bearings, be sure to give them a squirt of grease when you get home. Do not back up so far that the wheels of your car touch the water or slippery area. Put wood blocks on the ramp to prevent going in too far.
4. When you are in position, slowly release the pressure on the trailer winch, (be careful - the handle can spin fast enough to seriously hurt you), so that the hook becomes loose on the bow eye. Remove it. The Cat will not go flying off as the curve of the hull holds it on the trailer.

5. At this point, give the hull a push and it might start to slide off the trailer into the water, depending on the steepness of the ramp.
6. If you cannot push the hull free, pull forward slightly with your vehicle and then back up and slam on your brakes. Do not allow the rear wheels of your vehicle to enter the water.
7. At this point the boat will roll back and into the water. If this doesn't work the first time, try again. Doing this for the first time is rather traumatic, but it works on all types of ramps.

### 1.3 - 3 LOADING

1. Moor your boat as close to the ramp as possible.
2. Run lines from the bow and stern cleats long enough so that you are able to reach the launching ramp.
3. Back the trailer into the water until the wheels are submerged to the axle. Place wood blocks under the rear wheels of your tow vehicle to prevent the trailer from pulling it into the water.
4. Slowly position the bow so that it lines up with the center of the trailer.
5. Let the wire out until you can reach the bow eye and attach the hook to it.
6. Reverse the direction of the winch so that it is pulling in. Slowly crank the winch in. If excessive force is needed, stop winching and determine what is hanging up. The boat should roll slowly onto the trailer until the bow reaches the V-block on the winch stand.
7. You can now pull away from the ramp. Use low gear and slow speed. Again, watch for overhead wires!!
8. See Section 1.2 - 5 on lowering mast.

## 2.5 SAILING TIPS

### 2.5 - 1 CENTERBOARD

The centerboard on your Cat can be adjusted from time to time or left down about 24" all the time you are sailing. It should be pulled up while the boat is moored or under power. The purpose of the centerboard is to resist the boat's tendency to slide to the leeward while going into the wind. If necessary the Cat will sail to windward with board-up, but will make considerable leeway.

To see this action, have one person sail and the other raise the board all the way while going hard on the wind. Observe that the wake has an "oily" appearance. Slowly lower the board until the wake becomes normal. This position is the right amount of board for sailing to windward with this amount of wind. It will measure about 20"-25" of pennant. If this is your local area's normal wind, mark the pennant with a permanent marker..

The helmsman will note that the amount of weather helm decreased significantly when the board was raised. Lowering the board all the way will considerably increase weather helm. Perhaps the reason catboats were saddled with a reputation for heavy weather helm was not the design's fault but the lack of sailing skill of the sailor. Try reducing the weather helm in a keel boat this way!

You can sail your Cat to windward in up to about 7 knots of wind and calm seas, by only adjusting the centerboard pennant. Start out by setting a course to windward with your board set as you normally do. Let the tiller go and take the centerboard pennant in hand. Lowering it causes the Cat to go "higher"; raising it causes you to "fall-off". Somewhere in between your Cat will sail herself to windward. Fasten the pennant and sit back and relax. (DO NOT FALL OVERBOARD AT THIS TIME!)

### 2.5 - 2 SAIL TRIM

Very few of us have had experience in adjusting a four-sided sail. The tricks of the gaff rig have been lost by all but a few. The gaff rig of the past was burdened by the gaff being set at an angle to the mast of 30 to 45 degrees. Sailboats with this kind of gaff will not go to windward very well. The leading edge of a sail is what determines your windward ability. The Menger Cat gaff is set at an angle of about 10 degrees. In effect the gaff is an extension of the mast it is so closely in line. (Technical books term this rig a gunter rig rather than gaff.)

To raise the sail, first untie the sail ties. Pull on both the peak and throat halyards together, pulling the gaff so it raises parallel to the boom. Make sure the gaff does not go on the wrong side of the topping lift as you are pulling up. DO NOT run the halyards through the inside hole of the cleats but let them run freely on the outside of the cleats. (The reason for tying a stopper knot through the hole in the cleat is to stop it from

running up the mast.) Throw the line into the inside of the cabin. Don't worry about being neat. Keep on pulling until the throat halyard becomes taut. At that point make it fast. Keep on pulling the peak halyard up until it becomes taut.

While making sail in open water, lay the boat on the port tack. When the gaff is hoisted it will swing to starboard, preventing the sail from fouling under the topping lift

This gaff enables you make adjustments to the sail shape. Once again you can hoist the sail and leave it alone or "play" with the shape. The sail shape to go to windward should be set by increasing the tension in the peak halyard. While hoisting the sail bring the throat halyard as taut as possible. Continue raising the peak halyard until a crease extends from the peak to the tack. This crease will disappear when you haul in the mainsheet. Do not raise the peak too high as you will "double block" the peak blocks. This will prevent the saddle from rotating. An inch or two adjustment in peak halyard will drastically change the shape of the sail. When the halyards are new they will stretch shortly after being tensioned. Therefore tighten them again 15 minutes after hoisting sail. The outhauls on the boom and gaff should be stretched very taut for heavy airs, but loosened for light airs.

A leech line runs up the leech of the sail. This line stops the fluttering of the leech while going to windward. Do not adjust it in advance as you will end up with a curled leech, ruining the shape of the sail. After you've had a chance to sail the Cat a while, adjust it only if there is excessive flutter in your leech, otherwise leave it alone. Only pull in a very small amount at any one time. There is a small "clam" cleat on the side of the sail to secure it.

The mainsheet is your primary sail adjustment. The sail should never be hauled in closer than the corners of the transom (quarters) no matter how high you're trying to point, unlike the mainsheet on a sloop. Your Cat's mainsheet is like the sloop's jib sheet. For optimum adjustment while going to windward watch the aft end of the boom. While pulling it in note its travel. Keep pulling while it moves toward the center of the Cat; stop pulling when it moves in a downward direction. (The downward movement is flattening your sail and taking out the draft. You are in effect pushing the Cat sideways.)

Off the wind, you can increase your speed by slacking off peak and throat halyards. Raising the centerboard all the way will decrease your skin friction, reduce weather helm and thus increase your speed.

## 2.5 - 3 REEFING

Reefing is the most important part of learning to sail your Cat. Since the catboat has only one sail, it has to be a light weather sail. The mainsail of your cat is equivalent in area to that of a sloop with a large genoa or spinnaker and a small mainsail. However, the catboat's beamy hull fools the novice into thinking that since the Cat doesn't heel like his old sloop did, he can carry all that sail in any kind of wind. **WRONG!** The end result is

she rounds up in the puffs, has heavy weather helm and becomes uncontrollable. In rail-down wind conditions, reefing your catboat will make it sail faster (and more comfortably) than under full sail. You wouldn't carry a number one Genoa or a spinnaker on a sloop in those wind conditions, would you? The problem really comes down to making reefing easy to do in the conditions of high winds and rough seas. We at Menger Boatworks have been striving toward that end and have developed a new single line reef system for the first reef, in which a combined downhaul and outhaul leads to the aft end of the cabin.

One of the most important things to remember when reefing is that the sail must be FLAT when reefed, with little draft. It is not enough to just shorten sail; it must also have less draft.

#### FIRST REEF:

1. Let go of mainsheet and raise topping lift to take weight of boom.
2. Lower peak and throat halyards so lower cringle on the luff is at the level of the boom.
3. Haul in on the first reef line (aft end of cabin, port side, inboard cleat) to set the reef downhaul and outhaul, tight!
4. Raise peak and throat halyards.
5. Release topping lift, haul in mainsheet and resume course.

Reef is complete. Sail can hang below boom along foot. The modern Dacron sail is strong enough not to require the mid-sail reef points to be tied in. However the sail will have a cleaner appearance and will set better if the loose sail is gathered up and the reef points tied.

#### SECOND REEF:

1. Let go of mainsheet and raise toppinglift to take weight of boom, and let cat heave to.
2. Lower peak and throat halyards so upper reef cringle is at the level of the boom.
3. Go forward to secure 2nd reef downhaul to tack.
4. Secure reef outhaul on leech to cleat on the port side of the boom.
5. With this reef it is necessary to tie in some of the reef points to keep the sail from hanging below the boom.

6. Release toppinglift and resume course.

Note: Wind strong enough to require a second reef may also raise a considerable sea in open waters. The ability of any small boat to make progress to the windward under such conditions is limited, so keep well off a lee shore under conditions of rising wind.

## 2.5 - 4 HEAVING-TO

Cat boats are work boats in origin, and a typical 19th century crew consisted of one man and a boy. They had to handle the catboat while making a hard and dangerous living. Lines, traps and nets had to be pulled in all kinds of conditions while the cat took care of herself. Different wind and wave conditions will vary the way the Cat heaves to, so try practicing in various conditions beforehand.

Simply let go of the tiller and mainsheet while going to windward. Take care that the mainsheet doesn't tangle on a cleat or the tiller. The Cat will stop and lie sideways to the wind. Raise the centerboard and slowly haul in the mainsheet until the sail partly fills and she begins to point up. She is now in "park", moving very slowly forward and to the leeward, constantly adjusting herself to maintain this attitude. You can catch a fish, oil some teak, or go below to fix your lunch

In stronger wind conditions you may want to try lashing the tiller to leeward and trimming the mainsheet in a little further. She should then "scallop" up to windward, fall off and do it again and again. Trying out these tricks beforehand will help make it easy when you have to heave-to while reefing in rough conditions.

## 2.5 - 5 RACING

The things that make one catboat faster than another are numerous. To mention a few: the skill of the skipper, the condition of the sail and hull, local knowledge, the start, having the right amount of sail up for the wind conditions, the design and others. In most of the above only you can help yourself. It's a good idea to follow the most successful skipper prior to the start to see how he aligns his catboat in relationship to the starting line.

A sailboat goes through the water with laminar flow in about the forward third of the hull. It is therefore a wise idea to clean this area prior to racing. Rough bottom paint and marine growth disturb this smooth flow and should be cleaned up. (That is the reason we do not like to put through-hulls in this area.)

The Cat will sail through a chop a lot better with an 80 pound lead ingot sitting on the forward bunk just aft of the mast. Try shifting crew weight up forward. Some of the things that work in light air don't in heavy air! Experiment; don't just sit there!

## 2.5 - 6 SCANDALIZING

According to the misinformation put out by the boating press, the advantage of the gaff rig is in being able to "scandalize" the gaff. Scandalizing is achieved by dropping the peak halyard and allowing the gaff to hang down. This provides a smaller, triangular sail.

The disadvantages of scandalizing are numerous and it is not recommended.

1. The gaff is swinging wildly and uncontrollably and is aiming for the top of your head.
2. The sail is being stretched on the bias and will lose its shape if this is done frequently.
3. The sail that results from scandalizing is inefficient for anything but running down wind.

It is reported that professional catboat sailors (i. e. fisherman) were never seen to do this, and rightly so.!

## GLOSSARY

*The definitions in this glossary are specific to the Menger Cat, and may have somewhat different meanings in other contexts.*

anchor rode n. the line attaching the anchor to the boat.

apparent wind n. the wind perceived on a moving boat. It is the resultant of the actual wind and the wind generated by the boat's motion.

athwartship adj. crossways to the boat.

backing plate n. a reinforcing plate for a fitting attached to the deck or hull.

bale n. a u-shaped fitting on the boom or gaff to which a block or bridle is attached.

batten n. fiberglass or wooden strips used to stiffen the leech of a sail.

becket n. an attachment point on the bottom of a block for connecting a line.

block n. roughly, the device known to landlubbers as a pulley.

bobstay n. a short stay from the end of the bowsprit to the stem.

boom n. the spar at the foot of the sail.

boom crutch n. a device to support the boom when the sail is not in use.

bowline n. (bo'lin) one of the most useful knots; it makes an eye in the end of a rope.

bridle n. a short wire cable with both ends attached to the gaff, to which a halyard block is attached.

bronze n. a strong, corrosion-resistant alloy of tin and copper.

brow n. the strip of teak that runs along the top edge of the cabin.

bulkhead n. a term applied to any athwartship partition.

casting n. a cast metal object, spec. the parts fitted to the ends of the spars.

catboat n. a shallow draft, broad-beamed craft with the mast stepped far forward.

centerboard n. a broad fiberglass plate lowered through the hull to resist leeway.

centerboard trunk n. the housing into which the centerboard can be withdrawn.

Cetol n. brand name of a varnish-like finish.

chock n. the bronze castings through which the bow lines are passed.

cleat n. a bronze fitting with arms or horns upon which to secure lines.

close-hauled adj. with the sail hauled in for sailing as close to the wind as possible.

coaming n. the low, elevated rail around the cockpit.

cockpit n. an open area from which the boat is handled.

cockpit drain n. the drain leading into the centerboard trunk to drain water from the cockpit.

cringle n. a circular brass eye let into a sail for attaching a line for outhaul, reefing, etc.

Dacron n. tradename of a synthetic fiber used for making strong, stretch-resistant rope or sailcloth.

diesel engine n. (after Rudolph Diesel, a German inventor). An internal combustion engine in which ignition is achieved by the heat of compression.

diesel vent n. on the Menger Cat, an engine compartment ventilator set in the cockpit coaming.

dock master n. the person in charge of a dock(s).

downhaul n. a line used to pull down the luff or forward edge of a sail.

draft n. 1. depth of a boat below the waterline. 2. the particular shape of a sail that enables a sailboat to go to the windward.

dropboard n. the board that closes off the entrance to the cabin.

eyebolt n. a bolt with an eye on the end, used on the mast for attaching the halyard blocks, also on the stem for attachment to a trailer.

fairlead n. a guide through which a line passes.

fiberglass n. a fabric made from fine strands of glass, also, a very strong composite of fiberglass and resin, widely used in boatbuilding.

Fiberglas n. tradename for a brand of fiberglass.

figure eight knot n. a stopper knot tied in the end of a line.

flag halyard n. a light line used to hoist a flag.

foot n. the lower edge of a sail.

forestay n. a wire rope from the mast to the tang on the stem or bowsprit.

gaff n. the spar supporting the head of a sail.

gaff saddle n. a curved plate at the bottom of the gaff, bearing against the mast, allowing hoisting and rotation of the gaff.

gelcoat n. a smooth opaque outer layer acting as finish and protection on fiberglass.

genoa or genoa jib n. a large headsail used on sloops and other non-catboats.

gooseneck n. the universal joint on the forward end of the boom.

gudgeon n. the female half of a rudder pivot. see pintle.

gunter rig n. an essentially triangular sail with a high peaked gaff almost parallel to the mast.

halyard n. a line used to hoist a sail. A gaff-rigged sail requires two halyards: a throat halyard and a peak halyard.

head n. 1. the top of a sail. 2. a ship's toilet. This term has many other uses with the general meaning of front or top.

isophthalic adj. a particular formulation of gelcoat.

keel n. orig., the main longitudinal member of a hull; now, a similar shape molded in fiberglass.

knot n. 1. a combination of loops and tucks that join a rope to other ropes or to objects. 2. a rate of speed of one nautical mile (6,076 feet) per hour.

knotmeter n. an instrument for indicating speed through the water.

lazyjacks n. light lines run between mast and boom to control the gaff and sail while being lowered.

lee helm n. the tendency of a sailboat to fall off the wind, requiring the helm (tiller) to be pushed to leeward to maintain course. See weather helm

lee shore n. the shore on the lee side of a boat. The wind blows onto a lee shore.

leech n. the after edge of a sail.

leeward adj. in the direction of the lee side of a boat.

lift n. 1. the forward-acting force generated by the airfoil shape of a sail. 2. a similar force acting on the keel or centerboard 3. an advantageous shift in wind direction.

luff n. the forward edge of the sail. v. to allow the wind to strike the leeward side of the sail.

mainsheet n. see sheet.

make fast v. to secure, as with a halyard, outhaul or any line.

marline n. a light, tarred line used to whip rope ends, secure mast hoops to sails, etc.

mast n. the vertical spar supporting the sail.

mast rings or hoops n. sliding rings attaching the sail to the mast.

mat n. a non-woven fiberglass fabric.

outhaul n. a line used to stretch the head or foot of the sail along the gaff or boom.

parrel beads n. revolving hardwood beads strung on the line holding the gaff saddle to the mast.

peak n. the top corner of a sail.

peak halyard n. the halyard which hoists the outer end of the gaff on a gaff-rigged sail.

pennant n. 1. a short line attached at one end, i.e. a centerboard pennant. 2. A long narrow flag.

pintle n. the male half of a rudder pivot. See gudgeon.

port n. 1. When facing forward, the side of the boat to your left. (Note: The terms left and right are used relative to a person; port and starboard are used relative to a vessel.) 2. An opening, such as the ports in the side of a cabin. 3. The shipping outlet of a city or place, a harbor.

Porta Potti n. A tradename for a portable, self-contained toilet.

Quarter n. the after corner of a boat.

reef v. to shorten a sail, usually because of rising winds. n. a shortening of sail.

reef knot n. a square knot or "shoelace knot" often with only one end looped for quick release.

reef points n. small lines attached to cringles in the sail for gathering up excess sail when reefed.

resin n. a material derived from petroleum which, when mixed with a catalyst, hardens into a rigid material. A composite of resin and fiberglass yields a material of unequalled value, strength and versatility.

sail n. everybody knows what a sail is.

sea cock n. a valve to close off an opening in the hull for cooling water, etc.

shackle n. a U-shaped metal piece with a threaded pin across the ends, for attaching two objects such as anchor to chain, block to bail, etc.

shaft log n. fiberglass tube with stuffing box on one end and cutlass bearing on the other which allows the propeller shaft to pass through the hull.

sheave n. a wheel or disk with a grooved rim; the moving part of a block.

sheet n. the multi-part line from the end of the boom to the stern for controlling the angle of the sail.

shroud n. a wire cable from the mast to the side of a boat; not used on small catboats.

sintered adj. particles of metal partially melted together, resulting in a porous mass of great surface area.

skeg n. the extension of the keel in the after part of a boat, serving to protect the propeller, support the rudder and provide directional stability.

skeg bar n. the bronze bar across the bottom of the propeller opening on diesel Cats to support the rudder.

spar n. a mast, boom or gaff.

square knot n. a knot of limited value, used on a boat only for reefing. See reef knot.

standing rigging n. the fixed wires supporting the mast on a sailboat. Catboats normally use only a forestay.

starboard adj. when facing forward, the side of the boat to your right. See port.

stopper knot n. a knot in the end of a rope to stop it from running through a block, up the mast, etc.

stuffing box n. a device to admit a shaft through a hull while excluding water.

surge brakes n. brakes on a trailer actuated by pressure on the tongue caused by the braking of the towing vehicle.

throat n. the forward upper corner of the sail, where the gaff meets the mast.

throat halyard n. the line that hoists the inner end of the gaff. See peak halyard.

topping lift n. the line from the masthead to the end of the boom, supporting the boom during reefing, furling, etc.

traveler n. the bar across the stern on which the sheet block travels.

turnbuckle n. a device to powerfully shorten or lengthen rigging.

VHF adj. Very High Frequency; a frequency band assigned to marine communications. Also, a transceiver using these frequencies.

wainscoting n. decorative wood strips used to line the inside of the cabin.

weather helm n. the tendency of a sailboat to point up into the wind, requiring the helm (tiller) to be pulled to the weather, or windward, to maintain course. See lee helm.

winch n. a device offering mechanical assistance in hauling lines, halyards, etc.

windward adj. the direction from which the wind is blowing.

woven roving n. a form of fiberglass material having strength in two directions.