Measurement Checklist for the Lido for the Championships

This paper is intended to be a guide for rapid and easy measurement of the Lido 14 to assure painless application of the rules that, in general, govern one design performance and compliance. It is not to be construed as a performance guide nor as a remedy for Lido 14s that have been altered beyond the scope or intent of One Design Yacht Racing. Due to the long history of development of the Lido 14, the measurer is advised to be familiar with the Official Lido 14 Handbook and Class Roster. The dimensional drawing, and the "Approved Changes" and the "Disallowed Proposed Changes" will govern most of the issues that have historically been questioned to maintain the Lido 14 as a One Design Racing Dingy.

Measurements, for the purpose of One Design Racing, do not mean that everything has to be traceable to the National Institute of Standards and Technology (NIST). An ordinary tape measure of reputable manufacture, and a good quality bathroom scale can suffice in most cases. Weight challenges can be met in most cases by comparison to a standard (bags of sand or plaster) or the grocer's scale. I have tank tested the Lido and I can assure you that while 50 pounds is measurably significant to performance (<.5%) a 5 pound difference won't ever make up for a good (or bad) start or poor sail trim. Attention to good starts and getting the first shift will always be more significant than a pound or 2 of hull weight. Ballast for the boat weight should be fixed in the hull. **The boat, as raced, must never be less than 310 pounds**. This is dry weight, since it is possible to sail without water in the boat or on the lines. If the painter (bow line) compass or some other gadget or accessory is permanently affixed to the hull this may be included in the hull weight measurement. Weighing the boat is easily accomplished with a loadcell and a hoist. Most yacht clubs have this sort of equipment available. Care must be taken to zero the instrument correctly use fresh batteries, and keep the electronics and loadcell out of the hot sunlight. Other mechanical hanging scales such as balance beams (hay scales, etc.) are fine and less subject to user error if properly used. If the hanging method of certification is used, remember to consider the tare weight of the sling in the measurement. Weight, without a hoist, may be accomplished in the field using 2 bathroom scales and a 2x8 plank at least 6 feet long. There must be at least 4 (6 is better) strong people to lift the boat from the trailer to the ground. The 2 scales should be positioned at ends of the 2x8 plank on a reasonably level surface. Small blocks should be placed on the center of the scales to center the load on the scale platform (remember the 2x8 will deflect under the weight of the boat and without the centering blocks the inboard edge of the scale platform will be loaded and tip the scale). Place a lifejacket or cushion on the center of the plank under the keel and record the tare weight of the apparatus on each scale, or carefully zero each scale. Move the boat onto the 2x8 at approximately 12" aft of the jib leads. Adjust the position until balance is achieved. Remember to have the rudder, tiller, etc. in the boat as required for the legal weight (these can be moved about in the hull to fine tune the balance). Record the weight and subtract the tare weight, if used. Make sure the ballast, if any, is firmly fixed in the hull. Note the amount of ballast required and location. Ballast for the crew weight is separate.

Centerboard and rudder dimensions are considered critical to boat performance and it will be helpful if a thickness jig is available. It has been my experience in the past that thickness has been a difficult issue for the inspection of fins. A design of a simple jig will be included at the end of this paper.

For the purposes of this paper the chord of a fin is measured perpendicular to the leading edge. Both the rudder and the centerboard have a free tip design. As long as the required depth of the fins is met the last 8" of the centerboard and the last 5" of the rudder are not subject to thickness or chord dimensional inspection.

The centerboard jibe dimension is a result of the difference in the board angle, fore and aft, as a result of the side play in the board. **The maximum allowed jibe is ¼".** This means that the leading edge of the board may be allowed ¼" more side play than the trailing edge. When measuring the jibe, the side play of the trailing edge is subtracted from the side play of the leading edge to determine the jibe angle.

As the boat(s) line up for the measurements the crew should remove all cushions, sails, tools, crew ballast weights, charts, beer cans, and other garbage out of the boat. Start with the boat on the trailer, mast up, rudder on, and measurement certificate in hand. **Be sure you have the current association dues decal stuck on the transom.**

A helper should be employed to speed things up. Usually the boat's skipper or crew is available to hold one end of the tape (you should read the dimension). If another person is available to write on the checklist things can

Measurement Checklist for the Lido for the Championships

really go fast. A well organized crew can complete a checklist in 10 minutes or less providing everyone understands the process and co-operates.

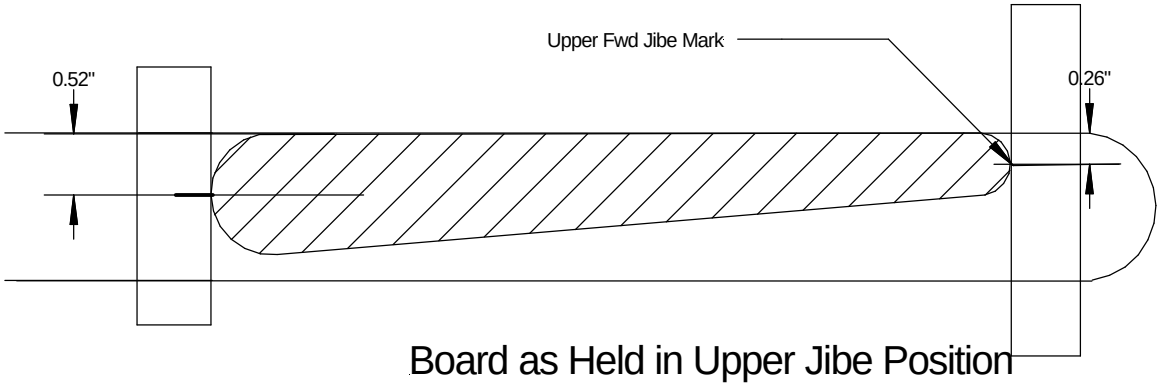
1. The diagram shows the whisker pole is measured while on the mast. Hold the pole perpendicular to the mast and place the tape end against the mast at the padeye. **Whisker pole length = 72" maximum.**
2. With the mast upright, hold the end of the tape to the front of the mast level with the forestay pin and sight through the center of the hole for the forestay pin and read the tape. **Forestay to mast dimension should be, 49 ¼" maximum, 48 ¾" minimum.**
3. Forestay to the jib fairlead, this dimension is measured to the forward edge of the hole in the fairlead(s). If the boat has tracks for the fairlead, the fairlead is to have the latch released and be moved as far forward as the track permits. Take the end of the tape to the center of the hole for the forestay pin at the bow and pull the tape to a fairlead. Sight across the boat to the other fairlead and read the tape. Pass the tape around the mast and read the other side. **Both readings must be greater than 95".**
4. Jib fairlead width abeam. Put the tape end through the far side fairlead hole and with the end hook on the outside of the fairlead stretch the tape across the boat. Read the tape vertically down to the outside of the near side fairlead. **The measurement is, 64 ¾" minimum.**
5. Traveler to the transom. Have your assistant hold the tape end at the intersection of the transom and keel. Pull the traveler block upward with one hand as hard as you comfortably can. Read the tape at the lower intersection of the knot of the traveler loop. **The traveler to keel dimension cannot exceed 22".**
6. Rudder angle, depth, and other dimensions:
   - **a.** With a batten or some other similar device held to the bottom of the hull at the transom and somewhat forward, mark the rudder at the intersection of the rudder and the batten with a soft pencil. If the leading edge of the rudder does not extend high enough to intersect the extension of the bottom at the leading edge, an extension may be easily made by using a piece of paper wrapped around the leading edge and taped to the sides of the rudder blade. Measure forward on the bottom 18 ¾" and mark the hull. Measure down the leading edge of the rudder 18 ¾" and make another mark. Stretch the tape from the hull mark to the leading edge mark. **The rudder angle is okay if the dimension is greater than 27**". A jig may be fabricated to accommodate this measurement, but care must be taken to insure that it only has a 2 point contact and does not rock on the bottom of the boat**.**
   - **b.** Rudder depth. Take out the rudder and lay it on a flat surface. Using an 8 ½" x 11" sheet of paper as a square, align it parallel to the leading edge, slide the paper till the leading edge mark (the extension of the hull bottom) is aligned with the top edge of the paper. Mark the top edge or tape the paper in place. **The rudder tip (depth) must be between 23 ¾" and 24 ¼" from the top of the paper.**
   - **c.** The chord (fore and aft, perpendicular to the leading edge) of the rudder must be **between 10 ¼" maximum and 9 ¾" minimum** at the 18 ¾" depth mark and the mark made (above) at the extension of the keel.
   - **d.** The use of a gage is handy for measuring the thickness, but if there is no gage, lay the rudder on a flat surface and put a nice (longer than the tip) straight board on the top. Check the offset of the board and the flat surface. If it's really close you'll need a gage. **The maximum thickness of the rudder between these marks 7/8".**
7. Remove the boat from the trailer for weighing. Weighing the boat should be done with the mast, boom, rudder, tiller, and mainsheet in the hull. Ballast should be fixed in place. **The boat must never be less than 310 pounds.**
8. The centerboard dimensions can be checked now that the boat is free from the trailer. If you are near a lawn, set the boat on the grass, otherwise sleeping bags or some other cushion should be placed under the hull. The mast should still be up from the other measurement exercises. Remove loose items from the hull. Then by pulling the main halyard to the side and rolling the boat over until the mast is approximately horizontal the boat can be rolled onto the rail.
9. Presuming that the boat is rolled over on the lawn and the halyard is tied off so the boat is stable on its side, lower the centerboard to the maximum down position. Place a piece of masking tape on the board where it exits the hull. Make a mark on the tape at the middle of the board (an extension of the

trailing edge) and place another piece of tape across the centerboard slot just aft of the board. Make a mark on this tape coincident with the mark on the centerboard. Have a helper lift the tip of the board until all of the sideways play is taken out. Make a new mark on the slot tape where the middle of the board has translated when the helper lifted it. This is the aft jibe measurement. Release the board and now move the tapes to the leading edge of the board. Line up the center of the board leading edge with the lower mark on the tape that goes across the trunk slot. Now have the helper lift the board until the sideways play is taken out. Make a new mark where the centerline on the board is on the tape that goes across the slot. This is the forward jibe measurement. This is the total jibe. A similar procedure may be used if the boat is on a hoist except the side play must be taken out in one direction, the marks lined up, and the board moved in the other direction without the help of gravity. **The difference of the forward jibe and the aft jibe measurement must not exceed ¼".** On a hoist one must work below the boat (a far more risky operation) to check the centerboard jibe and other important dimensions.

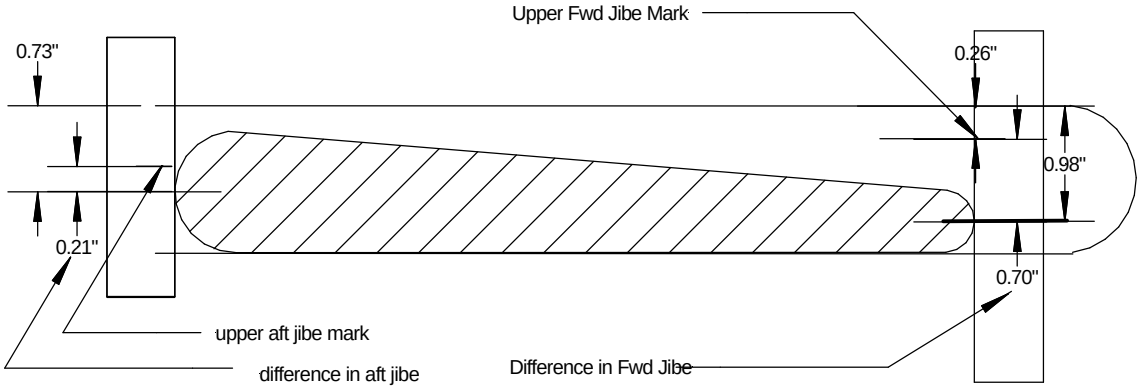
- **a.** Keel depth can be measured now. Place the tape end at the keel and measure to the deepest point on the tip of the centerboard. **The board depth, when fully down, must be between 48 ½" maximum and 47 ½" minimum.**
- **b.** The chord and taper profile (fore and aft dimension) of the board is measured at 2 points. One, 6" down from the keel, is **12 5/8" minimum, 13 1/8" maximum.** The other, 40" down from the keel is **11 5/8" minimum and 12 1/8" maximum**. The tip design is free below the 40" depth.
- **c.** The longitudinal position of the leading edge may now be determined. Have the helper hook the tape on the leading edge and check the dimension at the point where the transom and keel meet. **The board leading edge should be between 95" and 96" from the transom.** (95 ½" +/- ½").
- **d.** Finally, verify that the **slot in the keel is no less than 1 1/8" wide.**

10. Retract the centerboard and return the boat to the trailer. Be sure to return all the loose items taken from the boat during the measurement process, sign the checklist, thank the crew for their help, and get ready for the next boat.

Measurement Checklist for the Lido for the Championships



Board as Held in Upper Jibe Position



Board in Lower Jibe Position

The diagram above illustrates a technique for determining the jibe in the Lido 14 centerboard. If a piece of masking tape is placed on the keel at the leading edge and the trailing edge of the centerboard, and marks are made at the board centerline in the upper jibe position and lower jibe position, the two tapes then can be compared and the difference (total jibe) will be easily measured. In this case the difference is .70”-.21” or .49”which is over the legal limit. A .125” shim or washer on either side of the pivot will probably correct the excessive jibe condition.

Measurement Checklist for the Lido for the Championships

Measurement Checklist for Lido 14 hull # _____
Owner's Name
Skippers name_____Age over 50? Yes/No_____
Primary crew_____
Alternate crew_____

Sail Suit #1 Manufacturer: Main_____
Jib_____
Original Measurement Date: _____
- ❑ Lido 14 Royalty Tag Attached

Sail Suit #2 Manufacturer: Main_____
Jib_____
Original Measurement Date: _____
- ❑ Lido 14 Royalty Tag Attached
- ❑ Whisker pole length = 72" maximum, when mounted on mast.
- ❑ Forestay to mast dimension 49 ¼" maximum, 48 ¾" minimum.
- ❑ Forestay to the jib fairlead eye, both sides must be greater than 95".
- ❑ Jib fairlead width abeam 64 ¾" minimum.
- ❑ The traveler to keel (at the transom) dimension 22" maximum.
- ❑ The rudder angle is greater than 27".
- ❑ The rudder depth is between 23 ¾" minimum, and 24 ¼" maximum.
- ❑ Thickness of the rudder is between 5/8" minimum, and 7/8" maximum.
- ❑ The boat weight is 310 pounds, minimum.
- ❑ With _____ pounds of attached ballast.
- ❑ The difference of the forward jibe and the aft jibe measurement is less than ¼".
- ❑ The board depth, when fully down, is between 47 ½" minimum and 48 ½" maximum.
- ❑ The chord of the board 44" up from the tip is between 12 5/8" and 13 1/8".
- ❑ The chord of the board 8" up from the tip is between 11 5/8" and 12 1/8".
- ❑ The centerboard leading edge is 95" minimum, and 96" maximum to the transom.
- ❑ The centerboard slot in the keel is 1 1/8" wide, minimum.
- ❑ 2001/2002 Lido 14 Class Association Tag is on the starboard transom.
- ❑ The Official Measurement certificate is current.

I certify that this Lido 14 is in compliance with the specifications of Article XIII of the Lido 14 Class Association By-Laws, and the above measurements have been verified:

_____2002. Signed _____ Measurer, Fleet #_____

At Check-in:

- ❑ Life jackets are USCG approved and fit each crew.
- ❑ Crew weight is 300 pounds minimum wearing normal sailing attire.
- ❑ Ballast required to attain minimum crew weight =_____pounds.

Measurement Checklist for the Lido for the Championships