

## RULE 49 - INBOARD RUNABOUT CLASSES (from 2008 Inboard rule book 9/6/07)

**49.1 Hulls:** Hulls for Inboard racing Runabouts shall be a displacement or monoplane type; and shall be equipped with forward and aft decks. The combined total length of the two decks shall not be less than 1/5th of L.O.A.

**49.2** Hulls shall have no step and there shall be no breaks in the longitudinal or transverse continuity of the immersed surfaces other than the keel, rubbing strips, and strakes (breaker strips).

- These shall be of no greater depth than 5/8ths inch, and run in a fore and aft direction.
- All longitudinal breaks shall be essentially parallel to the keel, from the trailing edges to amidships.
- Strakes terminating forward of the trailing edges, must do so at no more than a 45 degree angle to the adjacent bottom surface.
- The keel shall not be higher than a straight line from chine to chine, or to any spray rails attached to chines, from the trailing edges to amidships.
- Strake depth shall not interfere with a straightedge touching keel and chine, in the area from the trailing edges of planking surfaces, to fifty-four inches forward of the trailing edges. This shall be from the major trailing edges including cavitation plate(s) excluding projections, from cavitation plate.
- There shall be no limitations to the number or width of strakes used, and they may extend to include cavitation plate.
- There shall be allowed a 1/8" break or step in the transverse direction for the purpose of attaching hardware such as fins, water pickups, turning fins, strut, etc. to the bottom of hull.

**49.3 Flat Keels:** Hulls may have a flat keel area on both sides of centerline. The outer edges of the flat keel area shall be essentially parallel to the centerline of the hull, in the area from the transom to fifty-four (54) inches forward of the transom.

In this flat keel area concavity (hollow) shall not exceed 1/8th inch per foot, as measured from a straight edge, running parallel to the transom, in the area from the trailing edges of planing surfaces, to fifty-four inches forward of the trailing edges. This shall be from the major trailing edges, including cavitation plate(s) and excluding projection from cavitation plate.

**49.4 Concavity:** Hulls shall have no more than 5/8th inch concavity (hollow) from keel to chine, from trailing edges to amidships.

- Measurements shall be taken from a straightedge placed from keel to right and left chines, or the lower edge of any spray rails attached to chines.
- Any portion of the bottom width that exceeds 5/8" concavity (hollow) shall be declared illegal.

**49.5 Cavitation Plates:** Hulls may be equipped with cavitation plates. Plates may be adjusted while boat is in motion. Cavitation plates shall conform with all measurements required of hull at a given handle or foot control setting. At the point at which the cavitation plate(s) attach to the hull, there shall be a maximum recess of 1/8th inch allowed between the bottom surface of the plates and the bottom of the hull.

**49.6** For purposes of definition and measurement, the following shall apply: Strakes, breaker strips, spray rails, and rubbing strips are considered the same. The keel is the fore and aft centerline of the hull bottom. Immersed surfaces are those taken with crew and fuel on board, while at rest in water. The term "trailing edges" shall include cavitation plate(s). Surfaces required to be parallel to centerline shall not vary more than one inch per foot. It shall be allowable to add aluminum, wood or fiberglass to a hull to bring hull into rule requirements. Skid and turning fins, struts, and blast plates located between the strut and leading edge of the cavitation plates shall not be included in any measurement, nor are they considered at present under the rules.

**49.7** When any engine or hull is the subject of protest or questioned as to compliance with these rules, the Inboard Racing Commission of the APBA may order a special inspection, or at its discretion require the owner to file such drawings as are necessary to show the protested or questioned condition. The report of the Inspector or the drawings shall be submitted to the proper Runabout Technical Committee for analysis and opinion. If the hull is deemed to violate the provisions of the rules in letter or spirit, or if the owner should not provide the required information, the boat may be barred from racing.

**49.8 Hull Lifting Requirements:** It is your obligation to have some device, sling, or point in your hull to which the hook of a crane, backhoe, boat launch tram hook, tow truck hook, etc., can be attached, to safely lift your hull off the trailer for inspection. The inspector shall determine if this device, sling, or point, is capable of safely lifting the hull. Your boat can be declared illegal if you cannot meet this requirement for inspection.

## TECHNICAL MANUAL FOR INSPECTION AND MEASUREMENT OF THE RACING RUNABOUT

The purpose of this manual is to provide uniform review of the Runabout Hull Requirements. Included are methods, tools and devices for hull inspection, and sketches of areas that must be measured. It is intended as an inspection and measurement guide, so that on a National level we can provide uniform thinking.

Since it is almost impossible to consider every measurement combination that may arise or answer every question, you are encouraged to contact the Hull Committee Chairman whenever in doubt and request a ruling. MOST IMPORTANT, do not accept verbal rulings, interpretation or opinions. Insist upon a written copy of any question regarding these rules. Only those rules as written in the Inboard Runabouts section of the rule book, plus your specific class rules, will apply.

Remember that hulls, regardless of make, manufacture or design, are like engines. Each is subject to inspection on a separate basis. In other words, simply because one hull was inspected, that does not mean that all of the same design or manufacturer are legal. Any hull is subject to reinspection at any regatta, just as an engine would be. It is your obligation to see that your hull conforms to the rules.

**MEASURING TOOLS:** The following list includes suggested basic tools or devices that will help in measuring a hull. Substitute methods or tools may be used as long as they produce similar results.

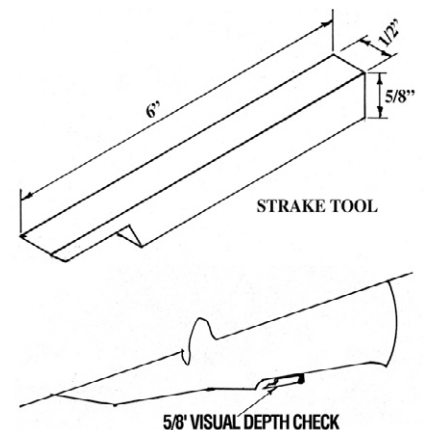
- 1 - Plumb Bob.
- 1 - Depth Micrometer with 4" Range.
- 1 - Asst. Marking Pens.
- 1 - Set Twist Drills - 1/32 to 1/2 inch Dia.
- 1 - Aluminum Straight Edge - 3/8" thick x 2" wide x 6' long.
- 1 - 20' Steel Measuring Tape
- 1 - 2' Level (Carpenters).
- 1 - 12" Straight Edge.
- 2 - Wood Blocks (oak or mahogany), 6" long x 5/8" wide x 1/2" thick.

**NOTE:** Shape one end as shown. This can be used to quick check strake depth, where radius or angles interfere with other measuring devices.

- 2 - Each 1-1/4" and 5/8" round dowels, steel rods, or rigid copper tubing about 5" long.

**NOTES:** If wood is used, it should be sealed with one or more coats of sealer. The above suggested copper tubing is available at most hardware, plumbing or refrigeration shops. Use ridged type, cut to size, deburr, and Mic., to allow out of round tolerance in final measurements.

See Illustration



**PRE-MEASURING NOTES:** The drawings in this manual are not to scale.

**49.10** When inspecting or measuring a hull that incorporates more than one or two parts of the rules, each shall be measured separately to assure compliance with each rule. Example:

1. A flat (wide) keel area.
2. A strake in the flat keel area (runner).
3. A concavity in the flat keel area.
4. A series of strakes.
5. A concavity to each side of the keel. (See Illustration)

**49.11** Any clarification of this manual or the rules shall be made in writing to the Chairmen of all Runabout Classes. Any written interpretation shall be approved by a majority of the Hull Committee members. Interpretations or clarification shall not change the intent of any rule.

**49.12** Skid, turning fins and struts shall not be included in any measurement nor are they considered at present under the rules.

**49.13** There is no tolerance allowed for warpage, settling, etc.

**49.14 MEASURING AREAS:** The Inboard Runabout Rules require that given dimension must be maintained in three areas of the hull bottom. For the sake of clarity they will be referred to as "Measuring Areas". Those areas are as follows:

**49.14.1 IMMERSED SURFACES:** These are all surfaces of the bottom of the boat that would be under water when the crew and fuel are aboard and the boat is at rest in the water. If necessary to perform inspection, make reference marks on the hull before it is removed from the water.

**49.14.2 TRAILING EDGES TO AMIDSHIP:** These are all surfaces of the bottom of the hull beginning with the aft (rear) major edge of the cavitation plate less any projections to amidship. To determine this surface and the amidship line proceed as follows.

- |                                    |          |
|------------------------------------|----------|
| Measure total length of hull       | a. _____ |
| Measure length of cavitation plate | b. _____ |
| Total of above                     | c. _____ |
| Amidship equals 1/2 of above total | d. _____ |

Or: simply measure overall length of hull and plate F. shown in illustration is 1/2 that length.

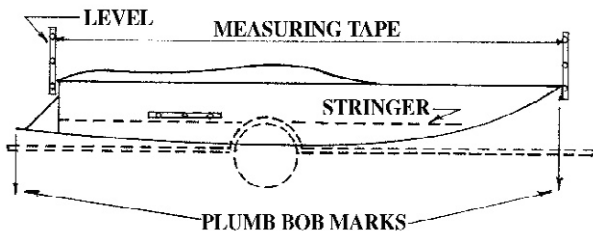
**Note:** Aft or rear edge of plate is from major trailing edges, not from rear of any projection etc., as in sketch.

**49.14.3 TRAILING EDGES TO 54" FORWARD:** These are all surfaces of the bottom of the hull, beginning with the aft (rear) major edge of the cavitation plate, 54" forward of that point. To determine this surface and line proceed as follows:

Measure forward (toward bow) 54" from major trailing edge of cavitation plate. This is 54" line as required for inspection.

**NOTE:** Projections from major trailing edge of cavitation plate are not to be considered.

**NOTE:** When determining the amidship line, it is necessary to find the length of hull and/or length of hull and cavitation plate. Two methods are suggested below; use any that produces the same result.



**49.14.4** A simple method of determining hull length when engine height blocks interferes with measuring tape, is to use two straight edges and a level. Place one straight edge with level along transom. Have a crew rise or lower tongue of trailer, until bubble in level is centered. Leaving trailer set in that position, use another straight edge at bow, and again level or center bubble in level. Use tape to measure between both straight edges. See illustration.

**49.14.5** An alternate method is use of a Plumb Bob. First place level on stringer. Crank or block nose of trailer until stringer is level. Drop Plumb Bob line from cavitation plate to ground and bow to ground. Mark point at both spots. Use tape and measure marks to determine total overall length of hull and plate. Remember one half that total length is the amidship line. See illustration.

**49.15** The following references are numbered exactly to match the rules as printed in the rule book. The rules are not repeated in this manual. The following simply elaborates or further explains those rules.

**REMEMBER:** Refer to current rules as printed in the rule book and then information below.

**RULE #1. including section(s) a. - "HULLS":**

**RULE #1. Displacement or monoplane type hull:** essentially displacement hulls move aside or displace a certain amount of water. Monoplane - a hull with one main supporting or riding surface that displaces water. No sponsons or other devices are allowed that would shift that support to other than one main supporting or riding surface. Other section of the rules specify tolerances for strakes, keels etc.

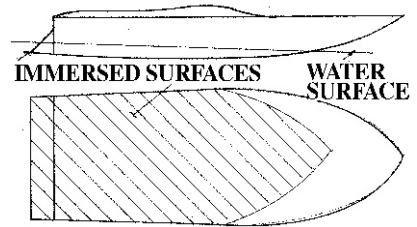
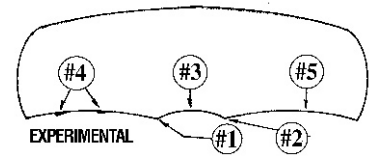
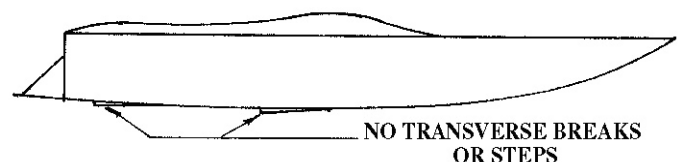
**RULE #1 SECTION a. (self explanatory)** Hulls must have fore and aft decks. Together they must total 1/5th of the total length of hull. In example, a 20' hull would require a minimum of 4' of deck.

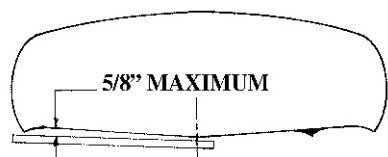
**RULE #2, including sections a. b. c. d. e. f. and g. - LONGITUDINAL OR TRANSVERSE BREAKS:**

**RULE #2. Measuring Area - "All Immersed Surfaces"** Longitudinal or Transverse Breaks: This rule repeats the basic requirement of monoplane design - No steps, breaks. It does however, provide allowances for keel and strakes within the limits as specified under section a. thru g. to follow. There is NO allowance for transverse breaks, other than Rule #2 section g. and Rule #5 section c. Transverse breaks as defined in Webster's would be breaks that would lie across the hull.

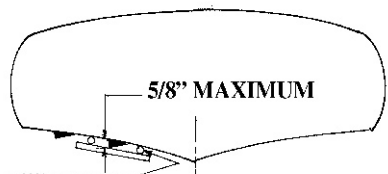
Inspect entire immersed surfaces for same, including cavitation plate.

**RULE #2 section a. Measuring Area - "All Immersed Surfaces"** Keels and strakes may run only in fore and aft direction. They can be no more than 5/8" deep. Inspect entire immersed surfaces, including cavitation plate for maximum 5/8" depth. See Illustration.

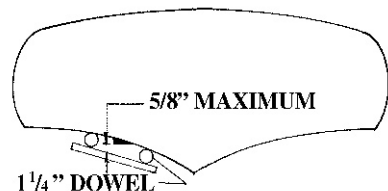




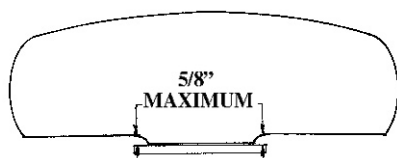
On flat hulls a straight edge and depth Mic. can be used as shown at left.



If hull is concaved as shown, strake depth can better be checked using a 12" straightedge and 5/8" dowels. Place dowels so that they are in highest portion of concavity, with straight edge across same. Straightedge should be able to touch both dowels without strake interference.

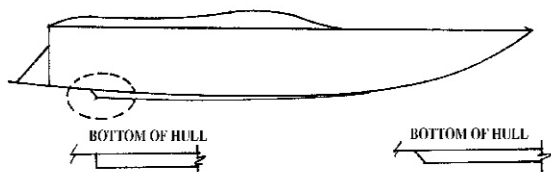


If dowels are thicker, such as 1-1/4", there should be no less than 5/8" gap or space between straightedge and strake.



On hulls with a flat keel, a strake is allowed in that keel area. (This is commonly referred to as a runner or runner type hull). However, this strake or runner may not exceed 5/8" depth. Measure with straight edge as shown. See rule #3 section a. and b. for additional details on this type of hull.

Measure depth as close to runner as possible.



**Illegal:** Any angle over 45 degrees

**Legal:** Angle does not exceed 45 degrees

**RULE #2 section c.: Measuring Area - "All Immersed Surfaces"** Strake termination shall not form a transverse break. They must end at no more than 45 degree angle to bottom. Inspect as below, on all immersed surfaces including cavitation plate. Check all strakes and breakers, including those that fall on keel on chine. *See Illustration.*

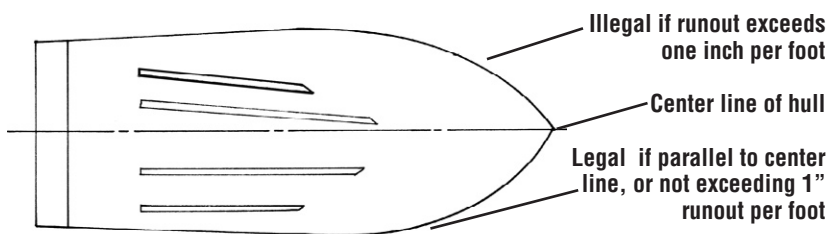
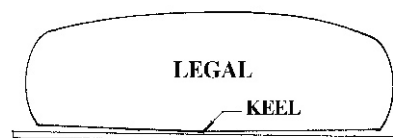
**RULE #2 section d.: Measuring Area - "Trailing Edges To Amidship"** Keel must be lower than chines in this area. Inspect as below, from trailing edges of cavitation plate to amidship line.



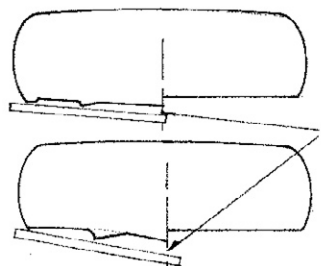
The two examples at left display illegal hulls - the keel is higher than the chines. Note space between keel and straight edge. Remember- it is permissible to add keel strip etc. to bring hull into proper configuration.



This example shows a legal hull, as straightedge can touch keel.

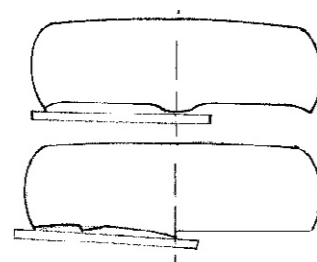


**RULE #2 section e.: Measuring area - Trailing Edges to 54"** Forward Strake depth shall not prevent a straight edge from touching keel and chine. Inspect as below in entire 54" area including cavitation plate. Strake or any part of it must not interfere with straight edge, touching both keel and chine at same time.



The two examples at left show illegal hulls, as straight edge cannot touch both keel and chine strakes interfere with straight edge. Note gap.

These are two legal configurations. Note that straight edge can and does touch both keel and chine. There is no gap.





The last example shows hull with flat keel. When measuring this type hull, straight edge must touch chine and outside edge of flat keel area, to meet requirement of Rule #2 section e. See rule #3 for further details.

**RULE #2 section f.:** (*self explanatory*) there is no limit on number or width of strakes. And they can run to trailing edges, which includes cavitation plate.

**RULE #2 section g.:** (*self explanatory*) is provided so that a 1/8" recess across the hull (transverse direction) can be made for attaching hardware, struts, fins, etc. See sketch under Rule 5 section c. for example sketch showing cavitation plate attachment.

**RULE #3, including sections a. and b.:** - FLAT KEELS:



**RULE #3:** (*self explanatory*) Keel need not be V or semi-V shape and may be flat to right and left of centerline. Examples shown may be used, providing they meet requirements of section a. and b. below. Also see Rule #2 sections a. and e. and Rule #4 as those rules affect this type of hull. See Illustration

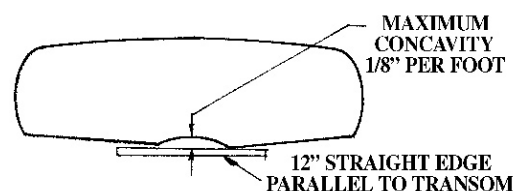
**RULE #3 section a.:** **Measuring Area - Trailing Edges to 54" Forward.** Outside edges of flat keel must be parallel to centerline. Inspect as below.

**Edges that run other than parallel to centerline of keel:**

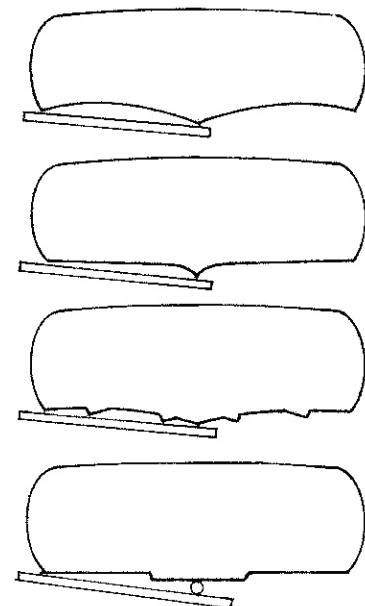
**Illegal if runout exceeds one inch per foot.**

**Centerline of hull**

**Legal if parallel to center line, or not exceeding 1" runout per foot. Illegal if runout exceeds 1" per foot.**



**RULE #3 section b.:** **Measuring Area - Trailing edges to 54" forward.** The flat or wide keel area may have concavity not to exceed 1/8" per foot. Inspect as below, use 1/8" drill bit and 12" straight edge to entire 54" area including cavitation plate. Maximum concavity 1/8 inch per foot.



**RULE #4 including sections a. and b.:** **CONCAVITY: Measuring Areas - Trailing edges to Amidship** This rule is self explanatory, in that hulls may have a concave bottom on each side of center line. The concavity may not exceed 5/8". Sections a. and b. spell out how to measure this concavity, using below transom views as examples.

Inspect using straight edge placed on keel and chine or to any spray rail or strake attached to chine. Check in all portions, including cavitation plate. Concave radius may be even or uneven.

On the two top examples at left, measure all portions of concavity 5/8" max.

On certain hulls strakes between the 54" line and amidship line may interfere or not allow the straight edge to touch keel and chine to measure concavity. In this case block down straight edge with dowels - see example.

If using 1-1/4" dowels, measure maximum depth of concavity and deduct 1-1/4" from your measurement.

On hulls with a flat keel area, proceed as mentioned above. Using dowels to block down straightedge with one dowel on chine, and one in center of keel area, take maximum depth and deduct dowel.

**RULE #5 including sections a. b. and c.:** - CAVITATION PLATES:

**RULE #5 section b:** Cavitation plates, even though separately attached and of different materials, are considered part of the actual hull. This rule requires that at any given foot or handle setting (your choice) the plate must meet all measuring requirements of the hull. This includes Rules #2, #3 and #4 and all sections of those rules.

To inspect, select one root or handle setting. At that given setting, measure the plate(s) for compliance with the rules and subsections. Stops are no longer required.

**RULE #5 section c:** This rule is self-explanatory; however, a graphic example is at right. The 1/8" is allowed for fitting tolerance to hull.

**RULE #6 including sections a. thru e.:** - **DEFINITIONS:** Those definitions in the rule book will apply to this technical manual. In addition there shall be no tolerance to the 5/8" requirements. The maximum is .625".

