



Designation: F3503 – 21

Standard Test Method for Breaking Strength of Slalom Water Skis¹

This standard is issued under the fixed designation F3503; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method covers the determination of breaking load for slalom water skis.

1.2 This test method is intended for use with applicable slalom water skis.

1.3 *Units*—The values stated in SI units are to be regarded as the standard. No other units of measurement are included in this standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D2240 Test Method for Rubber Property—Durometer Hardness

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *breaking load, F_B , n* —maximum load applied in accordance with Sections 6 and 7 (that is, the maximum load that the ski can sustain).

3.1.2 *slalom water ski, n* —a single water ski designed with two binding mounting areas and a fin near the tail.

¹ This test method is under the jurisdiction of ASTM Committee F27 on Snow and Water Sports and is the direct responsibility of Subcommittee F27.80 on Water Sports Equipment.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

4. Significance and Use

4.1 This test method provides a means of determining the breaking strength of the slalom water ski. It is not intended to evaluate the data with regard to the quality of the slalom water ski.

5. Apparatus

5.1 This test method shall be conducted on a device (see Fig. 1) equipped with adjustable supports, a load (F) application system with a range of at least 20 000 N and display resolution of ± 50 N. The system shall have a controlled displacement rate. A standard universal tension/compression testing machine with X–Y recorder is typical of such a system.

5.2 The slalom water ski shall be positioned in accordance with Fig. 1, with the binding mounting surface facing up, the front tip of the slalom water ski curving upwards and the overhanging portions of the slalom water ski left free to deflect.

5.3 The test system shall be set up in accordance with Fig. 1 with a 1070 mm distance between supports. Each support shall be made with a 25 mm diameter, low-friction roller at point of contact with the slalom water ski. The load is applied through a load applicator made up of a steel plate and a hard rubber sheet (95 ± 5 Shore A durometer; see Test Method D2240). The hard rubber sheet shall be positioned between the steel plate and the surface of the slalom water ski. The load applicator (steel plate and hard rubber sheet) shall be 25 mm in width (in the fore-aft direction of the slalom water ski) and of length slightly greater than the width of the slalom water ski at the centroid of the load application point as shown in Fig. 1 (Section A). The load applicator shall be free to rotate under the loading ram.

6. Determination of Load Application Point

6.1 The centroid of the load application point will be halfway between the heel of the front binding and the toe of the rear binding based on the binding inserts embedded in the slalom water ski or the manufacturers recommended binding placement. The centroid of the load application point will be centered between the supports (535 mm from each support).

7. Procedure

7.1 Condition the slalom water ski and testing device for 24 h minimum at a temperature of $23 \pm 5^\circ\text{C}$. Place the slalom

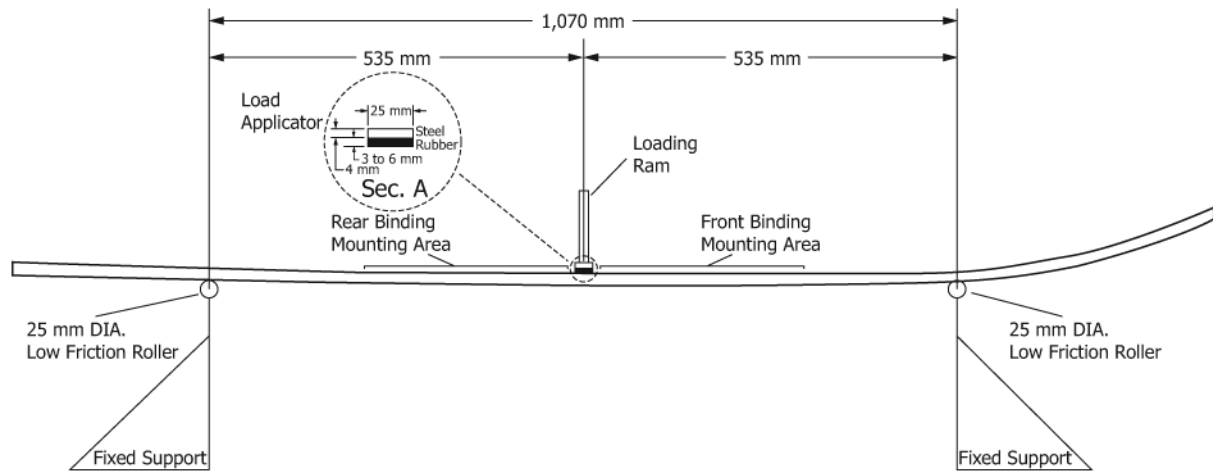


FIG. 1 Test System for Breaking Strength of Slalom Water Skis

water ski as shown in Fig. 1 and set up the system to apply the load at the centroid of the load application point. Apply a pre-load of 135 ± 50 N. Load the slalom water ski at a rate sufficient to increase the displacement by 125 ± 25 mm/min until the load displacement curve changes to a negative slope indicating failure of the slalom water ski.

8. Interpretation of Results

8.1 The maximum load measured is defined as the breaking load, F_B .

9. Report

9.1 Report the following information:

- 9.1.1 This designation, ASTM F3503;
- 9.1.2 Brand, model, serial number, and size of slalom water ski;
- 9.1.3 Breaking load;
- 9.1.4 Peak displacement at centroid of load application point at breaking load;

- 9.1.5 Width of slalom water ski at load application point;
- 9.1.6 Distance from tail of slalom water ski to application point;
- 9.1.7 Mode of failure; and
- 9.1.8 Any deviation from the procedure and reasons therefor.

10. Precision and Bias

10.1 *Precision*—It is not practical to specify the precision of the procedure in this test method because the test is destructive.

10.2 *Bias*—The procedure in this test method has no bias because the values for breaking strength of water skis are defined only in terms of the test method.

11. Keywords

11.1 breaking strength; slalom water skis; water skis test methods

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