Designation: F3030 – 13

Standard Test Method for Snowboards with a Channel-Mounting System and Removable Inserts[1]

This standard is issued under the fixed designation F3030; 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 requirements and test method for snowboards with channel-mounting systems on which bindings are attached to the board by means of a removable insert and screws.

1.2 This test method does not apply to snowboards for children with a mass less than 25 kg. It contains data for the manufacturer of snowboards, bindings, and retention devices concerning dimensions, tests, and other specifications for the binding mounting area.

1.3 For snowboards with fixed inserts, see ISO 10958-2.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

2.2 *ISO Standards:*[3]

ISO 68-1 ISO general purpose screw threads-Basic profile-Part 1: Metric screw threads

ISO 10958-2 Requirements and test methods for snowboards with fixed inserts

3. Terminology

3.1 *Definitions:*

3.1.1 *channel, n*—reusable metal attachment slot permanently fixed in the snowboard at the time of manufacture used to mount the bindings to the snowboard via removable threaded inserts.

3.1.2 *insert, n*—reusable commonly threaded attachment point, removable from the channel in the snowboard, used to mount the bindings to the snowboard.

3.1.3 *retention strength, n*—axial pull-out force of an insert in a snowboard tested in accordance with 5.1 and 8.1.

3.1.4 *screw thread engagement, n*—number of threads engaged by a standard screw in an insert.

4. Significance and Use

4.1 This test method is intended for use in evaluating the binding to snowboard insert retention strength resulting from use. This test method may also be used to compare the durability of different materials and designs. This test method references ISO 10958-2, which is considered satisfactory for acceptance testing insert retention for snowboards.

5. Apparatus

5.1 *Retention Strength Test Apparatus*—Universal test machine (UTM), with a pull-out device according to Fig. 1, having a minimum load range of 10 kN.

5.2 The pullout device should consist of:

5.2.1 A rigid steel attachment plate (A) with one hole of 6.5-mm diameter,

5.2.2 An insert (B) located in the snowboard channel and bolted through the hole of (A),

5.2.3 A universal joint (C) that is connected to the attachment plate and the clamping device of the test machine, and

5.2.4 A snowboard support (D) with two rollers and span of 200 mm between them.

6. Specifications for Design of Snowboard Channel and Insert

6.1 Inserts shall have an M6 × 1.0, Class 6H internal thread with standard tolerances in accordance with ISO 68-1.

[1] This test method is under the jurisdiction of ASTM Committee F27 on Snow Skiing and is the direct responsibility of Subcommittee F27.30 on Skiing and Snowboarding Equipment.

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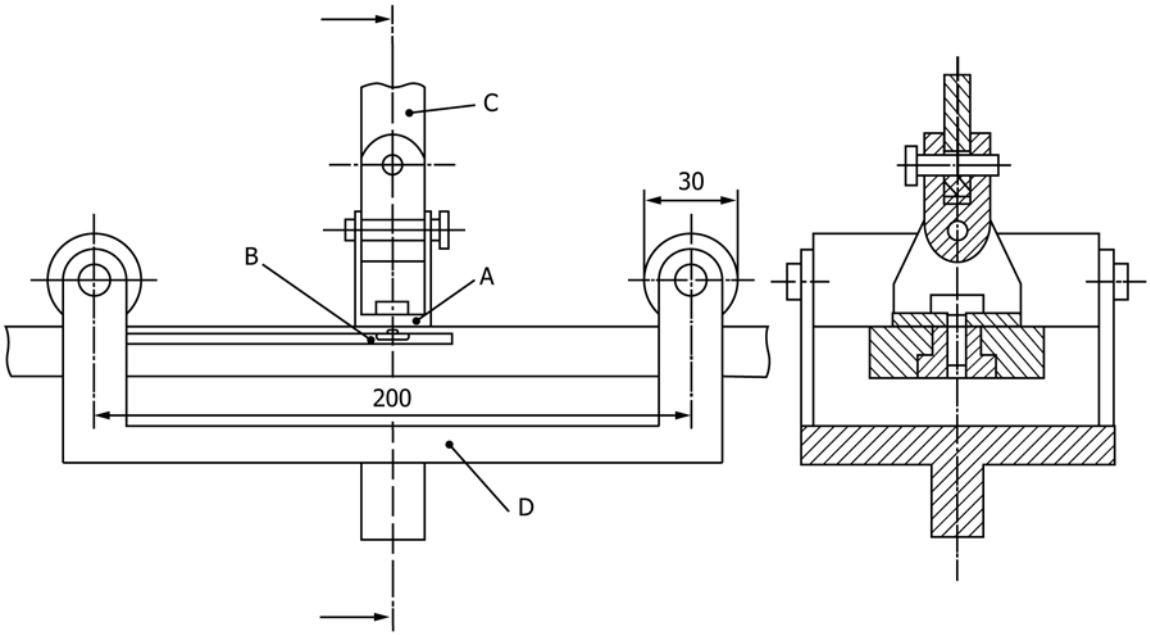
[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from International Organization for Standardization (ISO), 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland, http://www.iso.org.



NOTE 1—Dimensions in millimetres.

FIG. 1 Universal Test Machine with Pullout Device

6.2 Insert screws shall have an M6 × 1.0, Class 6g external thread with standard tolerances in accordance with ISO 68-1.

6.3 The snowboard design shall provide a minimum screw engagement of three threads. The length of the screw shall allow a gap between the end of the screw and the bottom of the channel. The value of three threads of engagement has been verified by extensive tests carried out by snowboard manufacturers. It is recommended that self-locking screws are used.

7. Strength Requirements

7.1 *Retention Strength*—When tested in accordance with Section 9, the channel in a snowboard shall have a minimum retention strength of 4500 N for those snowboards with a suggested rider mass of 45 kg or more and a minimum retention strength of 3500 N for those snowboards with a suggested rider mass between 25 and 45 kg.

8. Conditioning

8.1 Test the snowboards at room temperature, 23 ± 5°C.

9. Procedure

9.1 The board should be pulled in four locations, using the insert that is provided with the snowboard and positioned at 50 mm from each end of the channel (see Fig. 2).

9.2 Set the UTM crosshead load rate to 20 mm/min ± 20 % with 1 % break sensitivity.

9.3 Stop the test at a load of 4500 N, respectively, 3500 N as appropriate.

10. Report

10.1 The test report shall include the following information:

10.1.1 Reference to this test method;

10.1.2 Snowboard/binding insert manufacturer, model/style, and length;

10.1.3 Snowboard serial number;

10.1.4 Compliance with the requirements according to Section 7;

10.1.5 Any deviations from this test method; and

10.1.6 Date of tests.

FIG. 2 Insert Pull Locations

11. Precision and Bias[4]

11.1 The precision of this test method is based on an intralaboratory study of this test method, conducted in 2012. A single laboratory participated in this study, testing seven different types of snowboards. Every test result represents an individual determination. The laboratory reported between four and fifty replicate test results for each board. Except for the use of only one laboratory, Practice E691 was followed for the design and analysis of the data.

11.1.1 *Repeatability Limit (r)*—Two test results obtained within one laboratory shall be judged not equivalent if they differ by more than the *r* value for that product. *r* is the interval representing the critical difference between two test results for the same product, obtained by the same operator using the same equipment on the same day in the same laboratory.

11.1.1.1 Repeatability limits are listed in Table 1.

11.1.2 *Reproducibility Limit (R)*—Two test results obtained by different laboratories shall be judged not equivalent if they differ by more than the *R* value for that product. *R* is the interval representing the critical difference between two test results for the same product, obtained by different operators using different equipment in different laboratories.

11.1.2.1 Reproducibility limits cannot be calculated from a single laboratory's results.

11.1.3 The above terms (repeatability limit and reproducibility limit) are used as specified in Practice E177.

11.1.4 Any judgment in accordance with statement 9.1.1 would normally have an approximate 95 % probability of being correct, however, the precision statistics obtained in this ILS must not be treated as exact mathematical quantities which are applicable to all circumstances and uses. The limited number of laboratories reporting replicate results guarantees that there will be times when differences greater than predicted by the ILS results will arise, sometimes with considerably greater or smaller frequency than the 95 % probability limit would imply. Consider the repeatability limit as a general guide, and the associated probability of 95 % as only a rough indicator of what can be expected.

TABLE 1 Minimum Pullout Strength (N)

Board ID	Average $\bar{x}$	Repeatability Standard Deviation s_r	Repeatability Limit *r*	Replicate Count
Custom FV-54	7575	434.5	1216.6	50
Custom FV-58	7647	300.3	840.9	28
Custom Xebio FV-56	7481	259.8	727.6	4
EZ Livin'-55	7013	218.8	612.6	4
Mystery-58	7399	292.1	817.9	4
Vapor-55	7509	306.0	856.8	6
Whammy Bar-55	7475	40.0	112.1	4

11.2 *Bias*—At the time of the study, there was no accepted reference material suitable for determining the bias for this test method, therefore, no statement on bias is being made.

11.3 The precision statement was determined through statistical examination of 100 test results, from a single laboratory, on seven types of snow boards.

12. Keywords

12.1 bindings; mounting; snowboards

[4] Supporting data have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR:F27-1000. Contact ASTM Customer Service at service@astm.org.