



Designation: F1064 – 21

Standard Practice for Sampling and Inspection of Complete and Incomplete Alpine Ski/Binding/Boot Systems in Rental Applications¹

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INTRODUCTION

Adhering to these guidelines may help to reduce the risk of injuries resulting from improper mechanical functioning of releasable binding systems. However, skiing involves inherent and other risks. Injury can result from simply falling down, impact with an object, or from many other actions. Many injuries are unrelated to system function. Furthermore, even a properly functioning system cannot protect the skier in all situations. Therefore, it is to be clearly understood that compliance with these guidelines in no way guarantees that injury can be prevented.

1. Scope

1.1 This practice establishes a uniform method for the sampling and inspection of complete and incomplete Alpine ski/binding/boot systems used in rental operations. This practice is appropriate for use in rental applications in which all or part of the functional components of the system are supplied by the rental facility.

1.2 This practice should be followed by any facility that rents complete or incomplete Alpine ski/binding/boot systems to an end user.

1.3 This practice is not intended for use with other ski boot or bindings systems, such as alpine touring or pin/tech systems. Use of ski boots or ski bindings that do not meet the requirements for alpine ski equipment can cause unexpected release and retention characteristics.

1.4 This standard does not apply to a ski/binding/boot system that is rented to one individual for the majority of a season and not returned to the rental inventory until the end of the season (often referred to as a seasonal rental); such systems will follow the practice provided in Practice F1063.

NOTE 1—Refer to Practice F1063 for equivalent procedures and tolerances for retail systems.

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 Recom-*

mendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

2.1 *ASTM Standards:*²

F939 Practice for Selection of Release Torque Values for Alpine Ski Bindings

F1063 Practice for Functional Inspections and Adjustments of Alpine Ski/Binding/Boot Systems

3. Terminology

3.1 *Definitions:*

3.1.1 *system*—a group of interacting components, usually comprised of a ski, binding, and boot.

3.1.2 *incomplete system*—applies when a skier provides one of the components of a ski/binding/boot system, such as his or her own boots. In this case, the system is treated in accordance with 7.3.

3.1.3 *unit (also called “rental unit”)*—a half pair of ski equipment (ski-binding-boot system), consisting of a boot, a binding, and a ski or any individual system components (for example, a single boot or a single ski-binding).

3.1.4 *visual indicator setting*—the setting displayed on the binding’s release/retention adjustment scale.

3.1.5 *measured release value*—release torque value determined by the use of a testing device of the type defined in Annex A1.

¹ This practice is under the jurisdiction of ASTM Committee F27 on Snow and Water Sports and is the direct responsibility of Subcommittee F27.50 on Shop Procedures (Retail and Rental).

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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.

3.1.6 *test result*—the middle quantitative value of three repetitions of the same test.

3.1.7 *inspection range*—the accepted difference between the reference torque value and the test result. Defined as $\pm 15\%$ of the reference torque value, or ± 3 Nm for twist and ± 10 Nm for forward lean, whichever is greater, or one horizontal row up or down from the selected reference torque value determined on the binding manufacturer's adjustment chart.

3.1.7.1 *Discussion*—Any of the three methods described above for determining the range may be used as differences will be insignificant.

3.1.8 *in-use range (also called "re-adjustment range")*—the maximum difference between the reference torque value and the test result that does not require corrective action. Defined as $\pm 30\%$ of the reference torque value, or ± 6 Nm for twist and ± 20 Nm for forward lean, whichever is greater, or two horizontal rows up or down from the selected reference torque value determined on the binding manufacturer's adjustment chart. Results in this range are used to determine the frequency of sampling. Results that are beyond the inspection range but still in this range do not require corrective action.

3.1.8.1 *Discussion*—Any of the three methods described above for determining the range may be used as differences will be insignificant.

3.1.9 *clean versus lubricated tolerance*—the accepted difference between clean and lubricated test result(s), defined as not more than 20 % of the clean test, used whenever a functional test for binding-boot compatibility is required.

3.1.10 *corrective action*—procedures other than readjustment of the visual indicator setting that include repair or replacement of system components or removing components from a rental fleet.

3.1.11 *initial visual indicator setting*—the visual indicator setting derived from the binding manufacturer's release/retention adjustment chart.

3.1.12 *clockwise versus counterclockwise tolerance*—the accepted difference between test results about an axis perpendicular to the plane of the ski, usually from the toe piece component.

3.1.13 *random sampling*—a procedure in which every sampling unit in the inventory has an equal chance of being included in the sample.

3.1.14 *reference binding*—a unit that is typical of the bindings in inventory.

3.1.15 *reference boot*—a boot that is typical of the boots in inventory and is chosen using the method in **A4.1** and satisfies the requirements of **A1.1.3**.

3.1.16 *reference torque value*—the nominal release torque value derived from a document compatible with Practice **F939** such as **Annex A3** or information supplied by the binding or test device manufacturer.

3.1.17 *manufacturer pre-mounted ski-binding system*—a combination of new skis and new bindings that have passed inspection and testing by the original equipment manufacturer prior to delivery to the rental shop.

3.1.18 *rental skier days*—the number of rental skiers processed through a ski rental facility in a 24-h period.

3.1.19 *troubleshooting*—the binding manufacturer's recommendations or procedures for analyzing system failure.

4. Summary of Practice

4.1 Prior to the beginning of each season, components of boot/binding systems are inspected and tested individually for compatibility and proper function. Testing must be conducted with a device as defined in Annex A1 of Practice **F1063**.

4.2 At specified intervals throughout the operating season, samples are taken from rental inventory and inspected. Test results are used to determine sampling frequency and prompt corrective action when specified tolerances are exceeded.

5. Significance and Use

5.1 The purpose of this practice is to aid in providing the end user with an appropriate functioning ski/binding/boot system and associated release/retention characteristics by providing the rental facility with an ongoing program for monitoring the appropriateness of functional characteristics of the system. It is assumed that these procedures are integrated into the maintenance and operating procedures specified by the equipment manufacturers (for example, in manufacturer-provided technical manuals). This practice is not intended to create additional or redundant requirements for the rental facility. However, this practice should be the basis for the development of rental procedures if the equipment manufacturer's maintenance and operating procedures do not specifically state that they are in compliance with this practice. This practice will aid the rental facility in providing the end user with a system that provides appropriate release/retention characteristics.

5.2 This practice is applicable to rental facilities that use releasable alpine ski bindings. It is not intended as a method for evaluating equipment designs or types, such as alpine touring equipment. Mixing components of different system types (for example, using an alpine touring boot in an alpine binding) is discouraged.

6. Test Device

6.1 All tests specified in this practice are made with a device that indicates torque. Such a device should be inspected annually by the rental facility and calibrated biannually by a qualified technician in accordance with **Annex A2**.

7. Equipment Inspection Requirements

7.1 *Preseason Inspection*—Prior to the beginning of each season and whenever new inventory is added, an inspection should be made of the components of the ski/binding/boot system. Units that do not meet the specified tolerances are repaired, modified, or replaced.

7.1.1 A visual inspection for compatibility is performed on all boots in accordance with the procedures recommended by the binding manufacturer.

7.1.2 As a check on boots that are new to inventory, a single unit sample, by make, model, and shell size, is taken and tested