



Designation: F1063 – 22

Standard Practice for Functional Inspections and Adjustments of Alpine Ski/ Binding/Boot Systems¹

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INTRODUCTION

Adhering to these guidelines may help reduce the risk of injuries resulting from improper mechanical functioning of releasable alpine binding systems. Skiing involves inherent risks and injury can result from simply falling down, impact with an object, or from many other actions. Many injuries are unrelated to ski/binding/boot system function and a properly functioning system cannot protect the skier in all situations. Compliance with these guidelines in no way guarantees that injury will be prevented.

1. Scope

1.1 This practice provides procedures for inspection and adjustment of alpine ski/binding/boot systems, including ski binding systems designated as multi-norm bindings and those compatible with “improved walking soles.”

1.2 This practice should be followed for all ski/binding/boot systems, whether newly mounted or previously mounted, when work is performed on the system that may affect its release function, unless otherwise specified by the binding manufacturer in non-rental applications.

1.3 This standard is not applicable to ski/binding/boot rental systems, including incomplete systems, except when a customer intends to use his or her own skis/bindings with the shop’s boots (as provided in Subsection 7.3 of Practice F1064). For more information on ski/binding/boot rental shop practices, for both complete and incomplete systems, consult Practice F1064.

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 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.*

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. Referenced Documents

2.1 *ASTM Standards:*²

F504 Test Method for Measuring the Quasi-Static Release Moments of Alpine Ski Bindings

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

F1061 Specification for Ski Binding Test Devices

F1064 Practice for Sampling and Inspection of Complete and Incomplete Alpine Ski/Binding/Boot Systems in Rental Applications

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 to a rental shop, such as his or her own boots.

3.1.2.1 *Discussion*—For these systems, consult Practice F1064.

3.1.3 *release/retention values (also release settings and release/retention settings)*—release torques of the ski/binding/boot system in twist (M_z) and forward lean (M_y) as defined in Test Method F504.

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

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.

3.1.3.2 *test result*—the middle quantitative measured release value of three repetitions of the same test.

3.1.4 *visual indicator setting*—the setting displayed on the binding's release/retention adjustment scale that corresponds to the release/retention values of a ski/binding/boot system.

3.1.5 *release preference*—(previously *skier type*) classification of I, II, or III that is selected by the skier and corresponds to the balance between release and retention of the ski/binding/boot system.

3.1.5.1 *Type I*—designation that provides lower release/retention values; corresponds to an increased risk of inadvertent binding release in order to gain releasability in a fall; also applies to entry level skiers uncertain of their release preference.

3.1.5.2 *Type II*—designation that provides release/retention values appropriate for most recreational skiing; applies to skiers not classified as in I or III.

3.1.5.3 *Type III*—designation that provides higher release/retention values; corresponds to decreased releasability in a fall in order to gain a decreased risk of inadvertent binding release.

3.1.5.4 (/)—a symbol that separates release preference designations, used when, as a result of troubleshooting, different release preferences have been selected for determining twist (M_z), and forward lean (M_y) release/retention values; shown in the order (twist/forward lean) or (T/H) to denote toe piece (T) and heel piece (H) of this ski binding. Other conventions may be used to record different release preferences for twist and forward lean when required by the documentation.

3.1.6 *skier code*—letter code derived from the binding manufacturer's adjustment chart, based on a skier's parameters (height, weight, age, and release preference).

3.1.7 *discretionary settings*—visual indicator settings higher or lower than the normal setting range:

(1) (–)—a symbol, that when placed to the left of release preference I (see 3.1.5.1), provides release/retention values lower than release preference I, corresponds to a further increase in the risk of inadvertent binding release in order to gain increased releasability in a fall.

(2) (+)—a symbol, that when placed to the right of release preference III (see 3.1.5.3), provides release/retention values higher than release preference III, corresponds to a further decrease in releasability in a fall in order to gain a decreased risk of inadvertent binding release.

3.1.8 *reference torque value*—nominal release torque value derived from a document compatible with Practice F939, such as Annex A2, or information supplied by the binding or test device manufacturer.

3.1.8.1 *Discussion*—When an algorithm or table is used to provide a value, either may be used (differences may be insignificant).

3.1.9 *initial visual indicator setting*—visual indicator setting corresponding to reference torque value that is derived from the binding manufacturer's adjustment chart.

3.1.10 *inspection range*—accepted difference between the reference torque value(s) and the test result(s), 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 reference torque value determined on the binding manufacturer's adjustment chart (see Annex A2). It is used as the criteria for prompting consultation of the binding manufacturer's troubleshooting procedures or readjustment of the binding, or a combination of both.

3.1.10.1 *Discussion*—When an algorithm or table is used to provide a value, either may be used (differences may be insignificant).

3.1.11 *in-use range*—accepted difference between the reference torque value(s) and the test result(s), defined as $\pm 30\%$ of the reference torque value, or ± 5 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.

3.1.11.1 *Discussion*—In the absence of an applicable manufacturer's chart, use Annex A2. This range is used as the upper and lower limit for determining if system release/retention values are acceptable for in-use or in-service purposes, after the ski/binding/boot system has been released to the customer; values in this range are considered acceptable. This limit is derived from the in-use range found in Practice F1064, 3.1.8 that is (± 16 to 30% , or two horizontal rows up or down from the selected reference torque value). It is used as the upper and lower limit for readjustment of the binding.

3.1.11.2 *Discussion*—When an algorithm or table is used to provide a value, either may be used (differences may be insignificant).

3.1.12 *clean versus lubricated tolerance*—accepted difference between clean and lubricated test results, defined as not more than 20% of the clean test, used whenever a functional test for binding-boot compatibility is required (see 6.3).

3.1.13 *clockwise versus counterclockwise tolerance*—accepted difference between test results about an axis perpendicular to the plane of the ski, usually from the toe piece component, and defined as within the inspection tolerance.

3.1.14 *corrective action*—procedures other than readjustment of the visual indicator setting (see 3.1.4) to include repair or replacement of system components.

3.1.15 *limit for readjustment*—accepted difference between the reference torque value (see 3.1.8) and test result(s) (see 3.1.3.2), defined as $\pm 30\%$ of the reference torque value, or ± 5 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 (see Annex A2).

3.1.15.1 *Discussion*—For a reference torque value of 8 Nm in twist and 29 Nm in forward lean (Skier Code A in Annex A2), the limit for readjustment is one row up or two rows down on the adjustment chart. The limit for readjustment is used as the upper and lower limit for troubleshooting (see 3.1.17) – bindings beyond this cannot be adjusted for use by the customer.