

JAPANESE INDUSTRIAL STANDARD

JIS S 7028:1997

Assembly, adjustment and inspection of
an alpine ski-binding-boot(S-B-B) system

April, 1998

ERRATA

Cover 2

Foreword

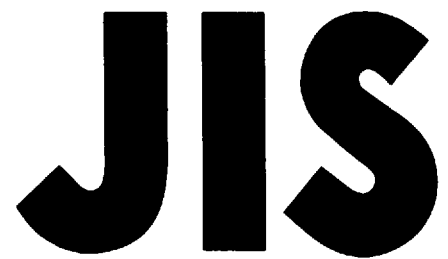
Delete the second paragraph,

“This established is made for conformity with ISO 11088, Assembly,
adjustment and inspection of an alpine ski-binding-boot(S-B-B)
system.”

and insert the following :

“The corresponding International Standard to this Standard is ISO 11088,
Assembly, adjustment and inspection of an alpine ski-binding-boot(S-B-B)
system.”

Remarks : This errata is for correcting the first edition of this Standard.
Japanese Standards Association



JAPANESE
INDUSTRIAL
STANDARD

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JIS S 7028 : 1997

**Assembly, adjustment and inspection
of an alpine ski-binding-boot (S-B-B)
system**

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Descriptors : winter sports equipment, skiing equipment, boots

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S 7028 : 1997

Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of International Trade and Industry through deliberations at Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law.

This established is made for conformity with ISO 11088, *Assembly, adjustment and inspection of an alpine ski-binding-boot (S-B-B) system*.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standard Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

The following Annexes are appended to JIS S 7028.

Annex A (normative)	Definition of skier type
Annex B (normative)	Setting methods
Annex C (normative)	Flow chart
Annex D (normative)	Clean versus lubricated diagnostic test for boot/ binding compatibility
Annex E (normative)	Drill
Annex 1 (normative)	Alpine ski-boots — Safety requirements and test methods
Annex 2 (normative)	Alpine ski-bindings — Selection of release torque values
Annex 3 (normative)	Alpine skis and bindings — Binding mounting area — Requirements and test methods
Annex 4 (normative)	Alpine ski-bindings — Safety requirements and test methods

Annexes 1, 2, 3 and 4 have been made based on ISO 5355, ISO 8061, ISO 8364 and ISO 9462, respectively.

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Assembly, adjustment and inspection of an alpine ski-binding-boot (S-B-B) system

This Japanese Industrial Standard has been prepared based on **ISO 11088**, *Assembly, adjustment and inspection of an alpine ski-binding-boot (S-B-B) system* published in 1993 as the first edition and **DAM1** put to a vote in 1996, without any modification in the technical content and the style of standard. **DAM1** was edited to integrate.

“Informative reference” underlined (with dots) in this Standard is the matter not given in the original International Standard.

0 Introduction International Standards exist for the components of the alpine ski-binding-boot system (S-B-B) and they are mainly intended for the component manufacturers. An International Standard (**ISO 8061**) also exists for the selection of release moments. However, the aim of this Standard is to include in one text the different phases of the choice of components, their assembly, adjustment and inspection in the form of practical procedures and to provide tolerances for inspection and adjustment.

The inspection procedures and tolerances described in this Standard apply to the condition of the S-B-B system before it leaves the ski shop and should not be used to judge the condition of the equipment once it is put into use.

1 Scope This Japanese Industrial Standard specifies assembly, adjustment and inspection procedures for the binding mechanism, integrating in a practical way the requirements of the standards given in clause 2.

This Standard is intended for all individuals and institutions which are concerned with the above-mentioned procedures, and especially sport retailers.

It applies to a ski-binding-boot system (S-B-B) for alpine skiing, in which at least one component is owned by the user.

Remarks 1 For the other case, in which both components (SB and B) are rented, another standard is prepared.

2 The following is the International Standard corresponding to this Standard:
ISO 11088 : 1993 *Assembly, adjustment and inspection of an alpine ski-binding-boot (S-B-B) system*

2 Normative references The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. Of them, the standards the issuance year of which is indicated constitute the provisions of this Standard only by the edition of the indicated year and, therefore, subsequent amendments to, or revisions of, any of these publications do not apply.

ISO 5355:1991, *Alpine ski-boots — Safety requirements and test methods*.

Informative reference The technical contents adopted from **ISO 5355** are shown in Annex 1.

For **ISO 5355**, **DAM1** is put to a vote in 1996.

ISO 8061 : 1991, *Alpine ski-bindings—Selection of release torque values.*

Informative reference The technical contents adopted from **ISO 8061** are shown in Annex 2.

ISO 8364 : 1991, *Alpine skis and bindings—Binding mounting area—Requirements and test methods.*

Informative reference The technical contents adopted from **ISO 8364** are shown in Annex 3.

ISO 9462 : 1993, *Alpine ski-bindings—Safety requirements and test methods.*

Informative reference The technical contents adopted from **ISO 9462** are shown in Annex 4.

3 Definitions For the purposes of this Standard, the following definitions apply.

3.1 fitting adjustment Procedures required to obtain geometric compatibility and correct functioning of different components.

3.2 indicator value (Z-mark) The release indicator value marked on the binding in accordance with **ISO 9462**.

3.3 skier type 1, 2 or 3 A release adjustment criteria pertaining to the type of skiing to be undertaken, as assessed by the skier in accordance with Table A.1.

Remarks 1 The designations L, A, S which were used in the first edition of **ISO 8061** : 1984 have been replaced by types 1, 2 and 3 respectively, as in the second edition of **ISO 8061** : 1991.

2 If the skier desires a setting outside the tolerances of this Standard, he or she may select such a setting at his or her own discretion.

3.4 initial indicator position The binding's release indicator position corresponding with the instructions given in Table B.1 or Table B.2.

3.5 release moment (values) M_z and M_y There are two contexts in which the release moment, expressed in newton metres, may be used:

3.5.1 selected individual release moment (reference moment) for a given skier According to **ISO 8061**.

3.5.2 measured release moment for a given S-B-B system The release value measured by the test device.

3.6 release moment range The accepted tolerance for the measured release moment, with respect to the selected individual moment. This is $\pm 15\%$ or $\pm 3\text{ N}\cdot\text{m}$, whichever is greater, for M_z and $\pm 15\%$ or $\pm 10\text{ N}\cdot\text{m}$, whichever is greater, for M_y .

3.7 release adjustment The purpose of this procedure is to make the measured M_z and M_y values coincide with the selected individual M_z and M_y values within the limits stated in Table B.1 or Table B.2.

3.8 trouble shooting procedures Additional procedures recommended by the equipment manufacturer.

3.9 limit for readjustment Maximum difference between the measured release moment (3.5.2) at the initial indicator position (3.4) and the selected individual release moment (3.5.1). This difference, which may be corrected by readjustment, is approximately $\pm 30 \%$ or $\pm$ two lines in the selected individual moment column in Table B.1, whichever is greater. The difference in Table B.2 is $\pm 30 \%$.

4 Skier's parameters

4.1 General The individual release moment values are given in Annex 2 (ISO 8061). As the values specified in 4.2 and 4.3 may be considered as an acceptable approximation of the basic functions of Annex 2 (ISO 8061), this method may be used.

4.2 Weight method

4.2.1 Determine the following skier's parameters.

- weight,
- height,
- type (according to Annex A),
- age,
- sole length if necessary.

4.2.2 Using Table B.1, choose the individual release values of M_z and M_y .

4.3 Tibial width method

4.3.1 Determine the following skier's parameters.

- tibial width,
- sex,
- type,
- age,
- sole length if necessary.

4.3.2 Using Table B.2, choose the individual release values of M_z and M_y .

5 Equipment parameters

5.1 Choice of new equipment The components shall conform to the following International Standards:

- ski — ISO 8364,
- boot — ISO 5355,
- binding — ISO 9462,
- brake — ISO 11087 ⁽¹⁾.

The skier should receive specific recommendations concerning the selection of boot, binding and ski, if they are provided by the manufacturer.

Note ⁽¹⁾ ISO 11087: —, *Skis—Retention devices—Safety requirements and test methods*. (To be published.)

5.2 Visual inspection and preparation of used equipment If any of the components of the S-B-B system have been used, the installer shall carry out a visual check according to the following criteria. In addition to this, older equipment may require special attention as defined by the manufacturer.

- a) The edges and sole of the ski shall be properly prepared according to the recommendations of the ski manufacturer. Unused mounting holes, if any, shall be carefully filled in, according to the manufacturer's specifications.
- b) The condition of the boot sole shall meet the binding manufacturer's requirements. All buckles, fasteners and support areas shall be in good condition.

Remarks: In cases where release is independent of the boot (e.g. some plate bindings), the inspection of the sole can be less exacting.

- c) The condition of the binding components shall meet the binding manufacturer's requirements (i.e. no broken, deformed, missing or worn-out parts).

Component guides or rotation points shall be free-moving, free of obvious rust, corrosion, dirt, etc.

The manufacturer's inspection and maintenance instructions shall be observed (including lubrication).

The brake shall not be deformed. Suspect components shall be repaired or exchanged.

5.3 Assembly When assembling the system, comply with the instructions of the binding and ski manufacturers and use the proper tools.

The use of a drill according to Annex E is recommended. Once they are drilled, it is recommended that the holes are tapped and glue applied unless other procedures are required by the ski manufacturer. New holes shall not be drilled less than 10 mm (measured from centre of hole to centre of hole) from old holes, even when they are filled in, unless otherwise specified by the ski or binding manufacturer.

When putting the screws in, take care not to damage the threads. A maximum tightening moment of 4 N·m shall fulfil this requirement, unless otherwise specified by the ski manufacturer.

5.4 Binding-to-boot fitting adjustments Follow the binding manufacturer's instructions.

5.5 Initial indicator adjustment The binding manufacturer shall provide a table similar to Table B.1 or Table B.2 for his products.

Using this Table, adjust the bindings to the appropriate initial indicator position.

5.6 Functional check (inspection of functions) Check visually that everything conforms to the binding manufacturer's instructions and operates correctly.

Check if the boot returns quickly to its initial position within less than 2 mm after a sideward displacement of approximately 10 mm.

5.7 Measurement of release moment Precondition the binding by releasing each unit as required by the binding manufacturer.

Using a test device proceed as follows :

Repeat release 3 times in each direction and all measured release moment shall be within the tolerance.

- a) Follow the test device manufacturer's instructions and check the calibration of the test device according to the manufacturer's procedures.
- b) Check that the measured $\pm M_z$ and M_y values are within the limits stated in Table B.1 or Table B.2 and, if required, correct the release adjustment.
- c) If the measured $\pm M_z$ values fall near opposite limits of the inspection tolerance range, the manufacturer's procedure for evaluation of non-symmetrical release shall be implemented.
- d) If the correction exceeds the limit for readjustment (3.9), check the binding manufacturer's most recent instructions before proceeding. If no instructions are provided, the person mounting the bindings should conduct a clean versus lubricated diagnostic test as defined in Annex D.
- e) If the measured $\pm M_z$ and M_y values are outside the $\pm 15\%$ inspection tolerance, consult the manufacturer's troubleshooting instructions. After completing the troubleshooting procedures, if the measured values fall within the $\pm 30\%$ limit for readjustment tolerance, readjustment of the binding may be undertaken. These readjustments shall achieve measured values as close as practical to the selected individual release moment, within the $\pm 15\%$ tolerance.

The different values obtained at three times of measurement, it is acceptable if the middle value falls in the permissible range.

Readjustment of bindings which, after troubleshooting, still the measured values of $\pm M_z$ and M_y are outside the $\pm 30\%$ limit for readjustment tolerance shall not be made.

Remarks: If a test device is not available, the procedure described in 5.1 to 5.6 should be used and the skier informed that a test device was not used to inspect the system.

5.8 Report In principle, an adjustment report is established by the ski shop and delivered to the user. It shall contain at least the following information :

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- a) skier's parameters,
- b) indicator value,
- c) measured values of M_z and M_y or pass/fail result of the system test.

Annex A
(normative)**Definition of skier type**

[adapted from Annex A of ISO 8061:1991]

A.1 It is the responsibility of the skier to determine his skier-type classification as used in Table A.1.

A.2 Skiers are classified by type of skiing into three categories, 1, 2 and 3. The definitions are as follows:

- Type 1: cautious skiing on smooth slopes of gentle to moderate pitch. This type also applies to entry level skiers uncertain of their classification.
- Type 2: skiers not classified in type 1 or 3.
- Type 3: fast, aggressive skiing on slopes of moderate to steep pitch.

Remarks: These new designations, 1, 2 and 3 should not be used by equipment manufacturers to categorize their products.

A.3 The information given in **A.3.1** and **A.3.2** can be used to assist the skier in determining the appropriate skier-type classification.

A.3.1 Skiers who designate themselves as type 1 receive lower than average release/retention settings. This corresponds to an increased risk of inadvertent binding release, in order to gain increased capacity for release in a fall.

A.3.2 Skiers who designate themselves as type 3 receive higher than average release/retention settings. This corresponds to decreased capacity for release in a fall, in order to gain a decreased risk of inadvertent binding release.

Remarks: The designations L, A, S which were used in the first edition of ISO 8061:1984 are currently used to refer to definition types 1, 2 and 3 respectively.

The new designations 1, 2 and 3 will now be reserved, in this Standard, for the purpose of setting the bindings.

A.4 The information given in Table A.1 is an example of the kind of layout which may be used to assist the skier in determining his skier-type classification.

A.5 The use of these definitions in determining the release setting may be inappropriate for some types of competition skiing.

Table A.1 Skier type

Type	1	2	3
Speed	Slow to moderate	Skiers that do not meet all the descriptions of either 1 or 3	Fast
Terrain	Gentle to moderate		Steep
Style	Cautious (or undetermined)		Agressive

Remarks: The skier type shall not be used by equipment manufacturers to categorize their products.

Annex B
(normative)**Setting methods****B.1 Weight method** (see Table B.1)

B.1.1 Locate the skier's weight (mass) and height in the appropriate column in Table B.1. If weight and height are not on the same line, select the line closest to the top of the Table.

B.1.2 Consider the skier type (see Annex A):

- for a type 1, stay on the line selected in **B.1.1** and use the reference moment (M_z and M_y) on that line;
- for a type 2, move down one line from the line selected in **B.1.1** and use the reference moment (M_z and M_y) on that line;
- for a type 3, move down two lines from the line selected in **B.1.1** and use the reference moment (M_z and M_y) on that line.

B.1.3 Consider the skier's age For skiers who are 50 years old or more, move up one line.

B.1.4 Using the boot sole length, determine the initial indicator value.

B.1.5 The inspection tolerance is defined as the range from one line above to one line below the selected individual release moment.

B.1.6 The limit for readjustment is defined as the range from two lines above to two lines below the selected individual release moment.

B.2 Tibial width method (see Table B.2)

B.2.1 Skier's parameters To determine the individual release moments, in decanewton metres, the maximum width of the tibial head is measured by pressing a caliper square onto an uncovered, right angled lower leg of a sitting skier. Corrections shall be made for the age and type of skier.

B.2.2 Parameters for checking See 5.7 for requirements in the text.

B.2.3 Presetting of the binding depending on the boot sole length Modification of the initial indicator position depending on the boot sole length.

Table B.1 Release value selection using the skier's weight

Skier's parameters			Initial indicator value, Z, depending on boot sole length, in millimetres						Inspection parameters	
Skier's mass kg	Skier's height m	Skier code	< 250	251 to 270	271 to 290	291 to 310	311 to 330	> 331	Twist M_z N·m	Forward lean M_y N·m
10 to 13		A							5	18
			0.75	0.75					8	29
14 to 17		B	1	1	0.75				11	40
18 to 21		C	1.5	1.25	1				14	52
22 to 25		D	1.75	1.5	1.5	1.25			17	64
26 to 30		E	2.25	2	1.75	1.5	1.5		20	75
31 to 35		F	2.75	2.5	2.25	2	1.75	1.75	23	87
36 to 41		G	3.5	3	2.75	2.5	2.25	2	27	102
42 to 48	< 1.48	H		3.5	3	3	2.75	2.5	31	120
49 to 57	1.49 to 1.57	I		4.5	4	3.5	3.5	3	37	141
58 to 66	1.58 to 1.66	J		5.5	5	4.5	4	3.5	43	165
67 to 78	1.67 to 1.78	K		6.5	6	5.5	5	4.5	50	194
79 to 94	1.79 to 1.94	L		7.5	7	6.5	6	5.5	58	194
> 95	> 1.95	M			8.5	8	7	6.5	67	271
		N			10	9.5	8.5	8	78	320
		O			11.5	11	10	9.5	91	380
									105	452
									118	540

Remarks 1 The part enclosed in bold lines is the values recommended by the manufacturer. The values shown in this range are for informative reference and given sometimes in the form of fraction.

- 2 The initial indicator values in this Table are the recommended values for initial procedure. Readjustment may be required for coinciding the measured values of M_z and M_y with the independent values of M_z and M_y selected within the range of the Table.

Table B.2 Skier's parameters**Table B.2.1** Skier's parameters

Tibia diameter measured with a tibiameter mm			Initial indicator value Z
Children up to age 15	Woman	Men	
≤ 52			0.5
53 to 61			1.0
62 to 68			1.5
69 to 73			2.0
74 to 77			2.5
78 to 81	≤ 73		3.0
82 to 85	74 to 78		3.5
86 to 88	79 to 83	≤ 76	4.0
89 to 91	84 to 87	77 to 79	4.5
≥ 92	88 to 90	80 to 82	5.0
	91 to 94	83 to 85	5.5
	≥ 95	86 to 88	6.0
		89 to 91	6.5
		92 to 94	7.0
		95 to 96	7.5
		97 to 99	8.0
		100 to 101	8.5
		≥ 102	9.0
			9.5
			10.0

Correction value in Z			
Age years	For skier type		
	1	2	3
≤ 15	- 0.5	0	+ 0.5
16 and 17	- 1.5	- 0.5	+ 0.5
18 to 50	- 1	0	+ 1
51 to 60	- 1.5	- 0.5	+ 0.5
≥ 61	- 2	- 1	0

Skier type	1	2	3
Speed	Slow to moderate	Skiers that do not meet the descriptions of either 1 or 3	Fast
Terrain	Gentle to moderate		Steep
Style	Cautious (or undetermined)		Agressive