American National Standard

for Adaptive Sports Equipment –

Volume 1:
Winter Sports Equipment

RESNA
Rehabilitation Engineering and Assistive Technology Society of North America

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Foreword

This standard covers the requirements and test methods for the testing of adaptive sports equipment (ASE). Volume 1 pertains to the testing of winter sports equipment. Winter sports equipment is generally tested as a complete system in a standard reference configuration that facilitates comparison of test results among different manufacturers and models. Accessory manufacturers would test their product on one piece of winter sports equipment for which the accessory is recommended and determine those performance specifications that are affected by the addition of the accessory to the winter sports equipment.

The standards are test procedures designed to produce objective information about adaptive sports equipment. Some of the test methods establish minimum performance criteria for durability and safety reasons. In all cases, the information that is disclosed with regard to the testing should be considered with respect to the following note: the results obtained are based on testing one or more adaptive winter sports devices of a specific make, model and type. The performance a specific user gets from his/her own equipment will depend upon their skill, personal user habits, weight and mass distribution, user techniques, the make, model and condition of the attached ski, and the condition in which the equipment is maintained and may not represent the results obtained using the standardized RESNA test procedures.

RESNA ASE Volume 1 consists of the following section under the general title Adaptive Sports Equipment:

Volume 1: Winter Sports Equipment

Section 1: Requirements and Test Methods for Sit-skis, Mono-skis and Bi-skis

RESNA is accredited as a standards organization, and the Technical Standards Board oversees the work of the RESNA Standards Committee on Adaptive Sports Equipment. RESNA is an interdisciplinary organization that promotes assistive technology for people with disabilities.

This standard had its inception in December of 1995 when the first meeting of the RESNA Standards Committee on Adaptive Sports Equipment met to begin the creation of requirements and test procedures for sit-skis, mono-skis and bi-skis. This work was begun in parallel with changes that were being made to the American’s with Disabilities Act (ADA) Accessibility Guidelines for outdoor recreation access for ski areas. The ANSI B-77.1 American National Standard for Passenger Ropeways - Aerial Tramways, Aerial Lifts, Surface Lifts, Tows and Conveyors - Safety Requirements had begun making revisions for accessibility to skiers using sit-skis, mono-skis and bi-skis at this time. Programmatic guidelines for accessibility were also being drafted for application to ski areas operating on public land which the United States Department of Agriculture (USDA) Forest Service has since implemented and adopted. To facilitate and enable the compatibility of standardized adaptive ski equipment with ski area lift equipment and ski area instructional programming, the need for requirements and test procedures for sit-skis, mono-skis and bi-skis became evident.

The RESNA Standards Committee on Adaptive Sports Equipment is composed of a variety of people including sit-ski, mono-ski and bi-ski manufacturers and designers, adaptive ski program

directors, ski alpine industry representatives, lift equipment manufacturers and operators, governmental representatives (US Access Board and USDA Forest Service) and adaptive skiers.

Suggestions for the improvement of this standard are welcome. They should be sent to the following address:

RESNA Technical Standards Board
1700 North Moore Street, Suite 1540
Arlington, VA 22209

This standard was approved by the RESNA Standards Committee on Adaptive Sports Equipment and the RESNA Technical Standards Board for submittal to ANSI. Committee approval of the standard does not necessarily imply that all the committee members voted for its approval or the approval of every test method or requirement in the standard. At the time the standard was approved, the RESNA Standards Committee on Adaptive Sports Equipment consisted of the following members:

Organization Represented	*Name of Representative*
Beneficial Designs, Inc. / Consumer / Designer	Peter Axelson, Chair
Beneficial Designs, Inc. / Rehabilitation Engineer	Denise Axelson, Secretariat
Ability Plus Mt Snow	Sue Tatem
ADA Consultant / Adaptive Instructor	Bradley Morgan
Adaptive Adventures	Matt Feeney
Adaptive Sports Association	Bob Belcher
Adaptive Sports Center	Christopher Hensley
Adaptive Sports Foundation	Gwen Allard
Baltimore Adaptive Recreation Sports	Jerry Miserandino
Beech Mountain Adaptive Sports Program	Dee Thomas
Breckenridge Outdoor Education Center	Gene Gamber
Breckenridge Ski Area Operations	Jon Mauch
Enabling Technologies	Woody Witte
Freedom Factory	Andy Tirums
Freedom Factory	Lynn Tirums
International Association for the Hearing Challenged	TJ Barnes
Laitner-POMA of America, Inc.	Thomas Clink
Lounsbury Adaptive Ski Program	Stephen O'Neill
Mountain Man	Darvin Vadergrift
National Ski Areas Association	Sid Roslund
National Sports Center for the Disabled	Paul Saarela
Radventures, Inc. / Adaptive Ski Designer / Consumer	Joel Goodman
Radventures, Inc. / Manufacturer / Designer	Jeff Goodman
Radventures, Inc. / Manufacturer	Genie Goodman
Ski Star Technologies	Mike Miltner
Spokes 'N Motion / Consumer	Paul Speight
Stowe Mountain Resort	Jane Harissis
Strange R&D / Consumer	Mike Alexander
The Michael Ehrenfeld Co.	Fred Liebel

U.S. Disabled Ski Team / Manufacturer / Consumer ..... Kenny La Come
USDA Forest Service ..... Joe Meade
USDA Forest Service ..... Kevin Kennedy
Vail Associates Consulting Inc. ..... David Larson

Adaptive Ski Instructor ..... Linda Whittle
Consumer ..... Clay Crawford
Consumer ..... Jonathan Steele
Consumer ..... Michael Lopez
Former Adaptive Program Leader ..... Rick Van Aken
Former Adaptive Program Leader ..... Vanessa Van Aken
Physical Therapist ..... Kendra Betz
Physician / Consumer ..... Jeff Cain
Trainer ..... George Livingston

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Scope of Volume 1

Volume 1: Winter Sports Equipment of the RESNA American National for Adaptive Sports Equipment applies to sit-skis, mono-skis and bi-skis.

This standard does not apply to: (1) adaptive sports equipment intended for special purposes, such as one of a kind custom-made adaptive sports equipment, or (2) adaptive sports equipment specially designed and fabricated for specific people with disabilities.

NOTE 1 Changes such as different sizes or production upon receipt of an order do not qualify an adaptive sports equipment as “one of a kind.”

NOTE 2 Appropriate sections of this standard may be applied to adaptive sports equipment and adaptive sports equipment accessories outside this scope, to the extent that it is practical.

This standard specifies requirements and test methods for determining adaptive sports equipment performance. It also specifies requirements for the disclosure of the test results.

These test methods may be used to verify manufacturers’ claims that a product exceeds the minimum requirements of this standard.

Standardized means of preparing and adjusting adaptive sports equipment are provided to enable the test results to be used for the comparison of performance.

WARNING: This RESNA Standard calls for the use of procedures that may be injurious to the testing technician if adequate precautions are not taken.

Section 1

Requirements and Test Methods for Sit-skis, Mono-skis and Bi-skis

Contents

Introduction

At the time of this publication, Section 1, the only section at this time, pertains to the testing of sit-skis, mono-skis and bi-skis (SMBs). An SMB is generally tested as a complete system in a standard reference configuration that facilitates comparison of test results among different manufacturers and models. Accessory manufacturers would test their product on one SMB for which the accessory is recommended and determine those performance specifications that are affected by the addition of the accessory to the SMB.

In all cases, the information that is disclosed with regard to the testing should be considered with respect to the following note: the results obtained are based on testing one or more SMBs of a specific make, model and type. The performance a specific skier gets from his/her own SMB will depend upon their skill, personal skier habits, weight and mass distribution, skiing techniques, the make, model and condition of the attached ski and the condition in which the SMB is maintained and may not represent the results obtained using the standardized RESNA test procedures.

Winter Sports Equipment —

Section 1:
Requirements and Test Methods for Sit-skis, Mono-skis and Bi-skis

1. Scope

This document establishes a standard for the design, manufacture, construction, operation, and maintenance of sit-skis, mono-skis and bi-skis (SMBs).

The purpose of this standard is to develop a system of principles, specifications, and performance criteria that will meet the following objectives:

a) Reflect the current state-of-the-art of SMB design and use;

b) Be acceptable for adoption by government agencies and others.

It is recognized that certain dangers and risks are inherent in the use of SMBs. This standard is intended to result in SMBs that are designed, constructed, and operated in a manner that helps reduce danger and exposure of risk to skiers and to encourage improvements in productivity, efficiency, development, and progress consistent with the objectives.

Such a system with these stated objectives constitutes a safety standard.

2. Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this RESNA Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of RESNA Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ANSI B77.1-2006, *American National Standard for Passenger Ropeways*

National Ski Area Association (NSAA) – *Ski & Snowboard Safety, Your Responsibility Code*

3. Informative references

ASTM F473-96 (2003) *Standard Specification for Binding Mounting Area Dimensions on Alpine Skis and Bindings.*

ASTM F1061-97 (2003) *Specification for Ski Binding Test Devices.*

