



Designation: F3021 – 23

Standard Specification for Universal Design of Fitness Equipment for Inclusive Use by Persons with Functional Limitations and Impairments¹

This standard is issued under the fixed designation F3021; 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.

INTRODUCTION

The goal of this specification is to promote proper design and manufacturing practices for fitness equipment intended for use by persons with functional limitations and impairments. Through these specifications, this standard aims to assist designers and manufacturers in reducing the possibility of injury when these products are used in accordance with the operational instructions.

The equipment user must recognize, however, that the standard alone will not necessarily prevent injuries. Like other physical activities, exercise involving fitness equipment involves the risk of injury, particularly if the equipment is used improperly or not properly maintained. In addition, users with physical limitations should seek medical advice and instruction from the fitness facility prior to using this equipment. Certain physical conditions or limitations may preclude some persons from using this equipment as intended by the manufacturer, and using this equipment may increase the risk of injury.

1. Scope

1.1 This specification² established additional requirements not set forth in the referenced ASTM standards for the design of commercial fitness equipment to increase access and user independence by people with functional limitations or impairments.

1.2 The intent of this specification is to ensure that the fitness product being designed for inclusive use by individuals with and without functional limitations or impairments remains functional and safe when the equipment is operated according to the manufacturer's operational instructions.

1.3 It is the intent of this specification to specify products for indoor use in a commercial environment by individuals age 13 and above.

1.4 Products designed to meet this specification must not be automatically classified as fit for medical or rehabilitation

fitness purposes. Products intended for medical use should comply with any applicable international or national standards.

1.5 Where users are exercising from a wheelchair, it is the intent of this specification to specify products for use by individuals using manual or powered wheelchairs (including scooters) (A1.4.5).

1.6 This standard does not purport to address the needs of every possible user and recognizes that access will not be possible for all individuals or all types of assistive technologies.

1.7 This specification is to be used in conjunction with Test Method F3022 and other ASTM fitness equipment standards and their accompanying test methods as noted.

1.8 The values stated in SI units are to be regarded as standard. The values given in parentheses are for information only.

1.9 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

NOTE 1—Additional specifications applicable to specific pieces of equipment, such as treadmills, bicycles, ellipticals, and strength equipment have been published in the equipment-specific standards.

1.10 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the*

¹ This specification is under the jurisdiction of ASTM Committee F08 on Sports Equipment, Playing Surfaces, and Facilities and is the direct responsibility of Subcommittee F08.30 on Fitness Products.

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Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

2.1 ASTM Standards:³

F1749 Specification for Fitness Equipment and Fitness Facility Safety Signage and Labels

F2115 Specification for Motorized Treadmills

F2276 Specification for Fitness Equipment

F3022 Test Method for Evaluating the Universal Design of Fitness Equipment for Inclusive Use by Persons with Functional Limitations and Impairments

2.2 ADAAG:⁴

Americans with Disabilities Act Accessibility Guidelines (ADAAG)

2.3 Federal Standard:

AMS-STD-595 Colors Used in Government Procurement

2.4 ISO Standards:⁵

ISO 845 Cellular plastics and rubbers -- Determination of apparent density

ISO 2439 Flexible cellular polymeric materials -- Determination of hardness (indentation technique)

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *access*, *v*—getting at or on fitness equipment or at fitness equipment controls or adjustments.

3.1.2 *assistive technologies*, *n*—adaptive or rehabilitative devices, or both, for people with disabilities that promote greater independence by enabling people to perform tasks that they were formerly unable to accomplish, or had great difficulty accomplishing.

3.1.2.1 *Discussion*—Assistive technologies include, but are not limited to, wheelchairs, walkers, canes, crutches, prosthetics, alternative communication devices, cell phones, etc.

3.1.3 *audible feedback or instruction*, *n*—audio voice/speech output.

3.1.4 *color value contrast*, *n*—the difference in luminance between two or more surfaces seen simultaneously or successively.

3.1.4.1 *Discussion*—In this standard, significant color value contrast is defined as 70 % or more, which is the current best practice.

3.1.4.2 *Discussion*—In this standard, contrast is measured by measuring the luminance (L) of color, as opposed to color hue or saturation.

³ 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.

⁴ Available from the US Access Board, www.access-board.gov, or contact the US Access Board Customer Service at ta@access-board.gov.

⁵ Available from International Organization for Standardization (ISO), 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland, <http://www.iso.org>.

3.1.5 *control panel/console*, *n*—equipment/user interface device for controlling the operation of, or displaying information about the operational state of the equipment.

3.1.6 *core branding and logo artwork/graphics*, *n*—equipment supplier logo, artwork, or graphics, or combinations thereof, that promote and market their brand.

3.1.6.1 *Discussion*—Core branding is not to be used within the body of instructional text.

3.1.7 *free weight style exercise bench*, *n*—an adjustable or fixed seat device that is intended to provide stability during exercise with free weights, generally consisting of a supported, padded area to sit, lean, or recline.

3.1.8 *gripping surface*, *n*—the area of the hand grips or hand grip bars/rails intended to be grasped by the hands for balance or stability during access, egress, or exercise, or combinations thereof.

3.1.9 *hand grips, fixed*, *n*—non-movable piece designed to be grasped by the hand(s) for support during access, egress, or exercise, or combinations thereof.

3.1.9.1 *Discussion*—This includes both applied and integral hand grips as defined in Specification **F2276**.

3.1.10 *hand grips, movable*—movable piece designed to be grasped by the hand(s) for support and use during exercise.

3.1.10.1 *Discussion*—This includes both applied and integral hand grips as defined in Specification **F2276**.

3.1.11 *iconography*, *n*—graphic or pictorial symbols used on consoles or other parts of the equipment to display information.

3.1.12 *impairment*, *n*—any deficit in psychological, physiological, or anatomical structure or function that has an adverse effect on a person's ability to carry out day to day activities, including health and leisure activities.

3.1.12.1 *Discussion*—An impairment is not a disability if it does not interfere with task performance.

3.1.13 *inclusive*, *adj*—including people with and without disabilities or impairments, or both.

3.1.14 *incremental weights*, *n*—additional fractional weights that can be applied in between the main weight plate selections.

3.1.15 *instructions for use*, *n*—user-facing instructions that are affixed to the equipment relating to the use of a piece of equipment, not including core branding or logo artwork, manufacturer's labels, model number labels, or standards or certification marks, or owner's/training manual(s).

3.1.15.1 *Discussion*—For example: Placard, decal panel, or other means.

3.1.16 *labels*, *n*—information directed at the user to support the use of a specific element of a piece of equipment, not including core branding or logo artwork, manufacturer's labels, model number labels or standards, or certification marks.

3.1.17 *luminance (L)*, *n*—value or lightness on a scale ranging from black to white of light reflected off a surface measured in candela per meter squared (cd/m²).

3.1.18 *main controls*, *n*—quick start, start, stop, enter, clear, numeric digits 0 to 9, increase resistance/level, decrease resistance/level, increase speed, decrease speed, increase