



Standard Test Methods for Evaluating Design and Performance Characteristics of Externally Loaded Strength Training Equipment, Strength Training Benches and External Weight Storage Equipment¹

This standard is issued under the fixed designation F3104; 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 these test methods is to provide reliable and repeatable methods for the evaluation of Externally Loaded Strength Training Equipment, Strength Training Benches and External Weight Storage Equipment. Users of these machines must recognize, however, that conformance to a standard will not necessarily prevent injuries. Like other physical activities, exercise involving this equipment involves the risk of injury, particularly if the equipment is not maintained or used properly.

1. Scope

1.1 These test methods specify procedures and apparatus used for testing and evaluating Externally Loaded Strength Training Equipment, Strength Training Benches and External Weight Storage Equipment for compliance to Specification **F3105**. Both design and operational parameters will be evaluated. Where possible and applicable, accepted test methods from other recognized bodies will be used and referenced.

1.2 *Requirements*—This equipment is to be tested in accordance with this test method or Test Methods **F2571** for all of the following parameters:

- 1.2.1 Stability,
- 1.2.2 Edge and corner sharpness,
- 1.2.3 Tube ends,
- 1.2.4 Entrapment and pinch points,
- 1.2.5 Weight disc retention,
- 1.2.6 Function of adjustments and locking mechanisms,
- 1.2.7 Training weight post loading,
- 1.2.8 Storage weight post loading,
- 1.2.9 Stop height verification,
- 1.2.10 Stop load drop test,
- 1.2.11 Barbell hook dimensions,
- 1.2.12 Catch hook load drop test,
- 1.2.13 Barbell support/frame impact test,
- 1.2.14 Intrinsic loading,
- 1.2.15 Extrinsic loading,
- 1.2.16 Endurance loading, and

1.2.17 Documentation and warnings verification.

1.3 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards*:²

- F1749** Specification for Fitness Equipment and Fitness Facility Safety Signage and Labels
- F2216** Specification for Selectorized Strength Equipment
- F2571** Test Methods for Evaluating Design and Performance Characteristics of Fitness Equipment
- F3105** Specification for Externally Loaded Strength Training Equipment, Strength Training Benches and External Weight Storage Equipment

2.2 *European Standards*:³

- EN 957-1** Stationary Training Equipment—Part 1: General Safety Requirements and Test Methods
- EN 957-2** Stationary Training Equipment—Part 2: Strength Training Equipment, Additional Specific Safety Requirements and Test Methods

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

¹ These test methods are under the jurisdiction of ASTM Committee **F08** on Sports Equipment, Playing Surfaces, and Facilities and are the direct responsibility of Subcommittee **F08.30** on Fitness Products.

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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 Available from European Committee for Standardization (CEN), Avenue Marnix 17, B-1000, Brussels, Belgium, <http://www.cen.eu>.