



AISI S913-13



AISI STANDARD

Test Standard for Hold-Downs Attached to Cold-Formed Steel Structural Framing

2013 Edition

Approved by
the AISI Committee on Specifications for the Design of
Cold-Formed Steel Structural Members

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PREFACE

The American Iron and Steel Institute Committee on Specifications developed this standard to provide methodology to determine both the strength and deformation behavior of hold-downs used in cold-formed steel light-frame construction.

The Committee acknowledges and is grateful for the contribution of the numerous engineers, researchers, producers and others who have contributed to the body of knowledge on this subject.

User Notes and Commentary are non-mandatory and copyrightable portions of this standard.

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Test Standard for Hold-Downs Attached to Cold-Formed Steel Structural Framing

1. Scope

1.1 This standard provides methodology to determine both the strength and deformation behavior of hold-downs used in cold-formed steel light-frame construction.

User Note:

- This Standard is specifically applicable to hold-down devices as employed in lateral load resisting shear walls. If the Standard is used for other applications, the engineer of record or the test agency must define the applicable limits as required in Section 10.1.2 and 10.1.3.
- Illustrated in Figure 1 are some typical hold-downs, but there are many other configurations.

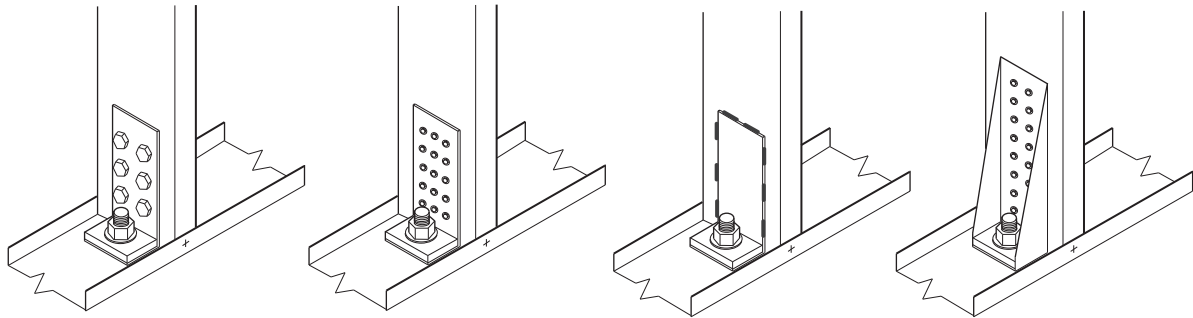


Figure 1 - Typical Hold-Down Assemblies

1.2 The strength of hold-downs is determined by testing a hold-down device using a steel fixture (Section 8.2) or by testing a hold-down assembly in accordance with this Standard.

1.3 The deformation of hold-downs is determined by testing a hold-down assembly (Section 8.3) in accordance with this Standard.

1.4 This Standard applies to hold-downs attached to the cold-formed steel structural framing by use of welds or *fasteners* and to the supporting structure using anchor bolt(s)/rod(s).

1.5 This standard consists of Sections 1 through 11 inclusive.

2. Referenced Documents

The following documents or portions thereof are referenced within this Standard and shall be considered as part of the requirements of this document:

- a. American Iron and Steel Institute (AISI), Washington, DC:
AISI S100-12, North American Specification for the Design of Cold-Formed Steel Structural Members
- b. ASTM International (ASTM), West Conshohocken, PA:

ASTM A370-12a, *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*

ASTM E6-09be1, *Standard Terminology Relating to Methods of Mechanical Testing*

IEEE/ASTM-SI10-10, *American National Standard for Metric Practice*

3. Terminology

Where the following terms appear in this Standard, they shall have the meaning as defined herein. Terms not defined in Section 3 of this Standard, AISI S100 or ASTM E6 shall have the ordinary accepted meaning for the context for which they are intended.

Connection. Combination of structural elements and joints used to transmit forces between two or more members.

Fastener. Bolts, screws, power-driven pins or nails, clinches, or other mechanical *fasteners*.

Hold-Down. Device used to resist uplift of the chords of shear walls, uplift on cold-formed steel members resisting uplift, or lateral loads for wall anchorage.

Hold-Down Device. See *hold-down*.

Hold-Down Assembly. Assembly consisting of the following components: (1) a *hold-down device*, (2) an anchor bolt/rod(s) attached to the seat of the device, (3) cold-formed steel member(s) having specified dimensions and properties, (4) *fasteners* or welds used to attach the *hold-down device* to the cold-formed steel member(s), and, if applicable, (5) bearing plates or washers used to enhance the performance of the *hold-down assembly*.

4. Units of Symbols and Terms

Any compatible system of measurement units is permitted to be used in this Standard, except where explicitly stated otherwise. The unit systems considered in this Standard shall include U.S. customary units (force in kips and length in inches) and SI units (force in Newtons and length in millimeters).

5. Precision

5.1 Loads shall be recorded to a precision of one percent of the anticipated ultimate load during application of test loads.

5.2 Deflections shall be recorded to a precision of 0.001 in. (0.025 mm).

6. Test Fixture

The test fixture shall consist of either:

- (a) A hydraulic or screw-operated testing machine capable of operating at a constant rate of motion of the movable crosshead or a constant rate of loading, and a calibrated force-measuring device, or
- (b) A hydraulic cylinder with a steel fixture, and a calibrated load cell.