ASME HST-3–2017
[Revision of ASME HST-3–1999 (R2010)]

Performance Standard for Lever Hoists

AN AMERICAN NATIONAL STANDARD

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Two Park Avenue • New York, NY • 10016 USA

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This Standard will be revised when the Society approves the issuance of a new edition.

ASME issues written replies to inquiries concerning interpretations of technical aspects of this Standard. Interpretations are published on the Committee Web page and under go.asme.org/InterpsDatabase. Periodically certain actions of the ASME HST Committee may be published as Cases. Cases are published on the ASME Web site under the HST Committee Page at go.asme.org/HSTcommittee as they are issued.

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The American Society of Mechanical Engineers
Two Park Avenue, New York, NY 10016-5990

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FOREWORD

This Standard is one in a series that provides performance requirements for hoists and was originally issued in 1985. It was developed by the ASME HST Standards Committee, Hoists — Overhead. It is intended to serve as a guide to manufacturers of the equipment and to the purchasers and users of the equipment.

Standards in this series are:

HST-1, Performance Standard for Electric Chain Hoists
HST-2, Performance Standard for Hand Chain Manually Operated Chain Hoists
HST-3, Performance Standard for Lever Hoists
HST-4, Performance Standard for Overhead Electric Wire Rope Hoists
HST-5, Performance Standard for Air Chain Hoists
HST-6, Performance Standard for Air Wire Rope Hoists

This edition contains an appendix that, in conjunction with ASME HST-3, is intended to replace MIL-H-904.

ASME HST-3–2017 is rewritten and reorganized to conform to current ASME style guidelines and harmonized with ASME B30.21 to eliminate duplication and conflicts in content. The title is revised to "Performance Standard for Lever Hoists." Definitions have been revised. The 2017 edition does not include a corresponding section to ASME HST-3–1999 (R2010), Section 3: Mechanical, due to duplication with ASME B30.21. This revision also includes the addition of specifications and figures for lever hoists with web-strap type and wire-rope type lifting media, and the addition of tables for typical performance characteristics of these hoists, among other revisions. The requirements of this Standard shall be applied with the requirements of ASME B30.21 for the products covered.

Following the approval of the ASME HST Standards Committee and ASME, and after public review, ASME HST-3–2017 was approved by the American National Standards Institute on January 6, 2017.

ASME HST COMMITTEE
Hoists — Overhead

(The following is the roster of the Committee at the time of approval of this Standard.)

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CORRESPONDENCE WITH THE HST COMMITTEE

General. ASME Standards are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Standard may interact with the Committee by requesting interpretations, proposing revisions or a case, and attending Committee meetings. Correspondence should be addressed to:

Secretary, HST Standards Committee
The American Society of Mechanical Engineers
Two Park Avenue
New York, NY 10016-5990
http://go.asme.org/Inquiry

Proposing Revisions. Revisions are made periodically to the Standard to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Standard. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

Proposing a Case. Cases may be issued to provide alternative rules when justified, to permit early implementation of an approved revision when the need is urgent, or to provide rules not covered by existing provisions. Cases are effective immediately upon ASME approval and shall be posted on the ASME Committee Web page.

Requests for Cases shall provide a Statement of Need and Background Information. The request should identify the Standard and the paragraph, figure, or table number(s), and be written as a Question and Reply in the same format as existing Cases. Requests for Cases should also indicate the applicable edition(s) of the Standard to which the proposed Case applies.

Interpretations. Upon request, the HST Standards Committee will render an interpretation of any requirement of the Standard. Interpretations can only be rendered in response to a written request sent to the Secretary of the HST Standards Committee.

Requests for interpretation should preferably be submitted through the online Interpretation Submittal Form. The form is accessible at http://go.asme.org/InterpretationRequest. Upon submittal of the form, the Inquirer will receive an automatic e-mail confirming receipt.

If the Inquirer is unable to use the online form, he/she mail the request to the Secretary of the HST Standards Committee at the above address. The request for an interpretation should be clear and unambiguous. It is further recommended that the Inquirer submit his/her request in the following format:

Subject:	Cite the applicable paragraph number(s) and the topic of the inquiry in one or two words.
Edition:	Cite the applicable edition of the Standard for which the interpretation is being requested.
Question:	Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. Please provide a condensed and precise question, composed in such a way that a "yes" or "no" reply is acceptable.
Proposed Reply(ies):	Provide a proposed reply(ies) in the form of "Yes" or "No," with explanation as needed. If entering replies to more than one question, please number the questions and replies.
Background Information:	Provide the Committee with any background information that will assist the Committee in understanding the inquiry. The Inquirer may also include any plans or drawings that are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in this format will be rewritten in this format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME Committee or Subcommittee. ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

Attending Committee Meetings. The HST Standards Committee regularly holds meetings and/or telephone conferences that are open to the public. Persons wishing to attend any meeting and/or telephone conference should contact the Secretary of the HST Standards Committee. Future Committee meeting dates and locations can be found on the Committee Page at go.asme.org/HSTcommittee.

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Chapter 3-0
Scope, Definitions, References, and Appendix

SECTION 3-0.1 SCOPE

(a) This Standard establishes performance requirements for chain, wire rope, and web strap lever hoists for lifting, pulling, and tensioning applications (see Figures 3-0.1-1, 3-0.1-2, 3-0.1-3, and 3-0.1-4).

(b) The specifications and information in this Standard apply to lever hoists of the following types:

(1) ratchet-and-pawl operation with
- *(-a)* roller-type load chain lifting medium
- *(-b)* welded-link-type load chain lifting medium
- *(-c)* web-strap-type lifting medium
- *(-d)* wire-rope-type lifting medium

(2) friction-brake operation with
- *(-a)* roller-type load chain
- *(-b)* welded-link-type load chain
- *(-c)* web-strap-type lifting medium
- *(-d)* wire-rope-type lifting medium

(c) Specially insulated lever hoists designed for handling high-voltage lines are not covered by this Standard.

(d) This Standard is applicable to hoists manufactured after the date on which this Standard is issued. This Standard is not applicable to

(1) damaged or malfunctioning hoists

(2) hoists that have been misused or abused

(3) hoists that have been altered without authorization of the manufacturer or a qualified person

(4) hoists used for lifting or supporting people

(5) hoists used for the purpose of drawing both the load and hoist up or down the hoist's own load chain(s), wire rope(s), or web strap(s)

(6) hoists used for marine and other applications as required by the Department of Defense (DOD).

The requirements of this Standard shall be applied together with the requirements of ASME B30.21. Refer to ASME B30.21 for requirements pertaining to marking, construction, installation, inspection, testing, maintenance, and operation.

SECTION 3-0.2 DEFINITIONS

abnormal operating conditions: environmental conditions that are unfavorable, harmful, or detrimental to the operation of a hoist, such as excessively high or low ambient temperature, exposure to weather, corrosive fumes, dust-laden or moisture-laden atmospheres, and hazardous locations.

brake: a device for retarding and stopping motion of the load (see *load-controlling mechanism*).

hazardous (classified) locations: locations where fire or explosion hazards may exist. Locations are classified according to the properties of the flammable vapors, liquids, gases, or combustible dust or fibers that may be present, and the likelihood that a flammable or combustible concentration or quantity is present. Refer to ANSI/NFPA 70.

headroom (closed height): the distance between the saddle of the suspension hook and the saddle of the load hook when the load hook is in its fully retracted position (see Figure 3-0.1-1).

idler sprocket: a freely rotating device that changes the direction of the load chain, rope, or web strap.

lever hoist: a manually lever-operated device used to lift, lower, or pull a load and to apply or release tension.

lever pull: the average force, lbf (kN), exerted by the operator at the end of the operating lever (handle) to lift or pull rated load.

lift: the maximum distance through which the load hook can travel (see Figure 3-0.1-1).

lifting devices: devices that are not normally reeved onto the hoist rope, web strap, or chain, such as supplemental devices used for handling or attaching to the load. The weight of these devices is to be considered part of the load to be lifted.

lifting medium: the chain, wire rope, or web strap used by the lever hoist to apply a force or support the load.

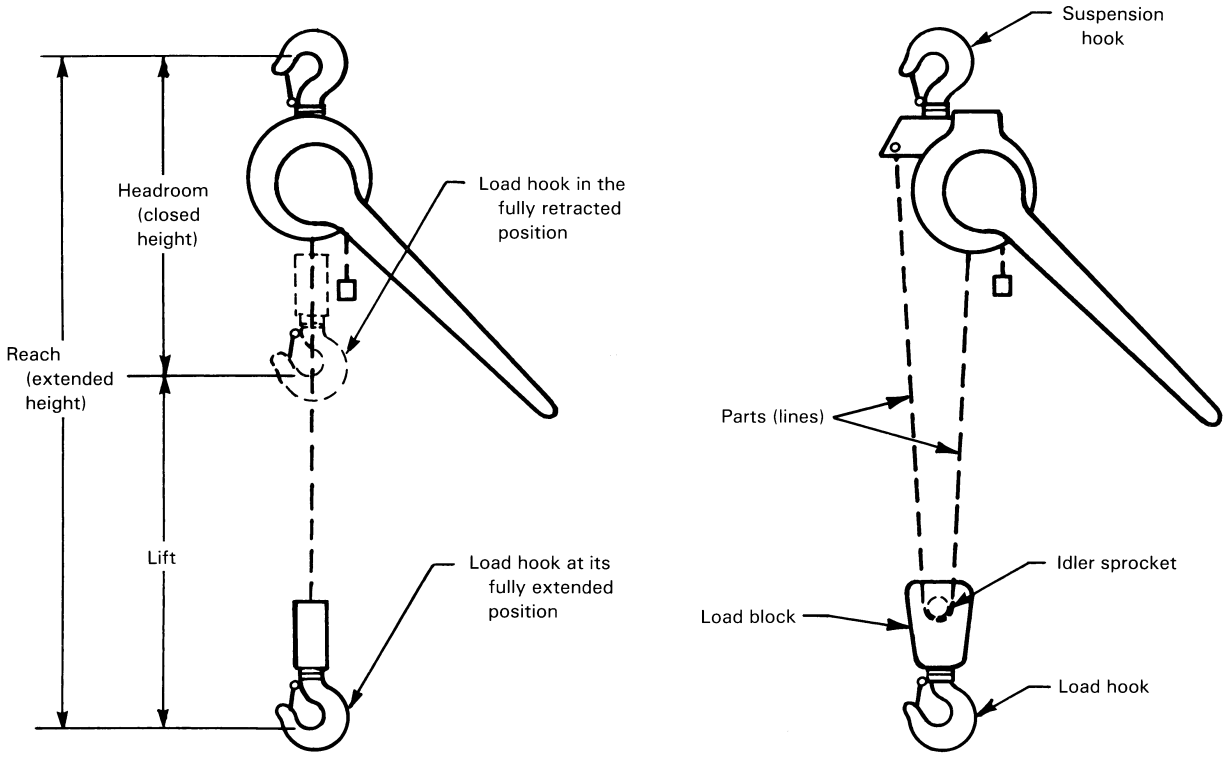
load: the total superimposed force on the hoist load block or load hook.

load block: the assembly of hook or shackle, swivel, bearings, sheaves, sprockets, pins, and frame suspended by the load chain, rope, or web strap. This shall include any appurtenances reeved into the load chain, rope, or web strap.

load chain: the load-bearing chain in the hoist.

roller chain: a series of alternately assembled roller links and pin links in which pins articulate inside the bushings, and rollers are free to turn on the bushings. Pins and bushings are press-fit in their respective link plates.

Figure 3-0.1-1 Lever Hoist



(a) Single Reeved (One Part)

(b) Multiple Reeved (Two Parts)

welded-link chain: a chain consisting of interwoven links formed and welded.

NOTE: Load-chain properties do not conform to those shown in ASME B30.9.

load-controlling mechanism: a mechanism that functions automatically to hold and control the load. In each of the following general types, a reciprocating force must be applied to the hoist lever to lower the load:

friction-brake type: an automatic type of brake used for holding and controlling loads. This unidirectional device requires a force applied to the operating lever to lower the load but does not impose additional lever pull when lifting the load.

ratchet-and-pawl type: a load-controlling mechanism consisting of interlocking pawl(s) and ratchet that act to hold the load by mechanical engagement.

load hook: the hook used to connect the load to the hoist.

load suspension parts: the suspension hook, the chain, rope or web strap, the sprocket(s), the structure or housing that supports the sprocket(s), and the load block.

normal operating conditions: conditions during which a hoist is performing functions within the scope of the original design.

operating lever: the lever or handle provided to operate the hoist.

overload: any load greater than the rated load.

pawl: a device that engages the ratchet to prevent rotation.

qualified person: a person who, by possession of a recognized degree in an applicable field or certificate of professional standing or who, by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

ratchet: a toothed member that engages with a pawl.

rated load: the maximum load that shall be applied to the hoist as specified by the manufacturer or qualified person.

reach (extended height): the distance from the saddle of the load hook at its fully extended position (lower limit of travel) to the saddle of the suspension hook. Reach is equal to lift plus headroom (see Figure 3-0.1-1).

reeving: a system in which the chain, rope, or web strap travels around sprockets (drums) and sheaves (see Figure 3-0.1-1).

shall: indicates a requirement.