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ASME B56.11.1-1992
DOUBLE RACE OR BI-LEVEL SWIVEL AND RIGID INDUSTRIAL CASTERS

There will be no addenda or interpretations for 1993 published to ASME B56.11.1-1992. Within the past year neither changes to, nor inquiries regarding, the technical requirements of this document have been issued.



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OCTOBER 1993

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
345 East 47th Street, New York, N.Y. 10017

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STD.ASME B56.11.1-ENGL 1992 ■ 0759670 0619985 577 ■

ASME B56.11.1-1992

(REVISION OF ASME/ANSI B56.11.1-1988)

POWERED AND NONPOWERED INDUSTRIAL TRUCKS

REAFFIRMED 2000

FOR CURRENT COMMITTEE PERSONNEL
PLEASE SEE ASME MANUAL AS-11

Double Race or Bi-Level Swivel and Rigid Industrial Casters

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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AN AMERICAN NATIONAL STANDARD

POWERED AND NONPOWERED INDUSTRIAL TRUCKS

Double Race or Bi-Level Swivel and Rigid Industrial Casters

ASME B56.11.1-1992

(REVISION OF ASME/ANSI B56.11.1-1988)

The American Society of Mechanical Engineers

345 East 47th Street, New York, N.Y. 10017

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FOREWORD (92)

(This Foreword is not part of ASME B56.11.1-1992.)

The first edition of B56.11.1, a revision and redesignation of MH11.1-1973(R1978), was approved by the ASME B56 Committee on Powered and Nonpowered Industrial Trucks and by the sponsor organization, and was approved and designated as an American National Standard by the American National Standards Institute, Inc. on April 19, 1985.

ASME/ANSI B56.11.1-1988 was approved by the B56 Committee, by the sponsor, and after public review, by the American National Standards Institute, Inc. on November 17, 1988.

ASME B56.11.1-1992 was approved by the B56 Committee, by ASME, and after public review, by the American National Standards Institute, Inc. on January 13, 1992.

Safety codes and standards are intended to enhance public health and safety. Revisions result from committee consideration of factors such as technological advances, new data, and changing environmental and industry needs. Revisions do not imply that previous editions were inadequate.

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Powered and Nonpowered Industrial Trucks

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ASME B56.11.1-1992
SUMMARY OF CHANGES

The 1992 edition of B56.11.1 includes the following changes, identified by **(92)**.

Page	*Location*	*Change*
iii	Foreword	Revised
1	General	(1) Third paragraph revised (2) Footnote revised

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POWERED AND NONPOWERED INDUSTRIAL TRUCKS

(92) GENERAL

This Standard is one of a series that has been formulated with the American Society of Mechanical Engineers as Sponsor in accordance with the Accredited Organization method, the procedures accredited by the American National Standards Institute, Inc., and the following scope.

> Establishment of the safety requirements relating to the elements of design, operation, and maintenance; also, the standardization relating to principal dimensions to facilitate interchangeability, test methods, and test procedures of powered and nonpowered industrial trucks (not including vehicles intended primarily for earth moving or over-the-road hauling); and to maintain liaison with the International Organization for Standardization (ISO) in all matters pertaining to powered and nonpowered industrial trucks.

One purpose of the Standard is to serve as a guide to governmental authorities having jurisdiction over subjects within the scope of the Standard. It is expected, however, that the Standard will find a major application in industry, serving as a guide to manufacturers, purchasers, and users of the equipment.

For convenience, Standards for Powered and Nonpowered Industrial Trucks have been divided into separate volumes:

Safety Standards

B56.1	Low Lift and High Lift Trucks
B56.5	Guided Industrial Vehicles
B56.6	Rough Terrain Forklift Trucks
B56.7	Industrial Crane Trucks
B56.8	Personnel and Burden Carriers
B56.9	Operator Controlled Industrial Tow Tractors
B56.10	Manually Propelled High Lift Industrial Trucks[1]

Standardization Standards

B56.11.1	Double Race or Bi-Level Swivel and Rigid Industrial Casters
B56.11.3	Load Handling Symbols for Powered Industrial Trucks
B56.11.4	Hook-Type Forks and Fork Carriers for Powered Industrial Forklift Trucks
B56.11.5	Measurement of Sound Emitted by Low Lift, High Lift, and Rough Terrain Powered Industrial Trucks
B56.11.6	Evaluation of Visibility From Powered Industrial Trucks[1]

Safety standards that were previously listed as B56 volumes but now have different identification due to a recent change in standards development assignments are as follows.

NFPA 505	Fire Safety Standard for Powered Industrial Trucks — Type Designations, Areas of Use, Maintenance and Operation (formerly B56.2)
UL 583	Standard for Safety for Electric-Battery-Powered Industrial Trucks (formerly B56.3)
UL 558	Standard for Safety for Internal Combustion-Engine-Powered Industrial Trucks (formerly B56.4)

If adopted for government use, the references to other national standards in the specific volumes may be changed to refer to the corresponding governmental regulations.

The use of powered and nonpowered industrial trucks is subject to certain hazards that cannot be completely eliminated by mechanical means, but the risks can be minimized by the exercise of intelligence, care, and common sense. It is therefore essential to have competent and careful operators, physically and mentally fit, thoroughly trained in the safe operation of the equipment and the handling of the loads. Serious hazards are overloading, instability of the load, obstruction to the free passage of the load, poor maintenance, and using equipment for a purpose for which it was not intended or designed.

[1] B56.10 and B56.11.6 are in the developmental stage.

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Suggestions for improvement of these standards, especially those based on actual experience in their application, shall be submitted to the Secretary of the B56 Committee, ASME, United Engineering Center, 345 East 47th Street, New York, NY 10017.

Comments shall be written in accordance with the following format:

(*a*) specify paragraph designation of the pertinent standard;

(*b*) indicate suggested change (addition, deletion, revision, etc.);

(*c*) briefly state reason and/or evidence for suggested change;

(*d*) submit suggested changes to more than one paragraph in the order in which they appear in the standard.

The appropriate B56 Subcommittee will consider each suggested revision at its first meeting after receipt of the suggested revision(s).

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DOUBLE RACE OR BI-LEVEL SWIVEL AND RIGID INDUSTRIAL CASTERS

1 SCOPE

This standard establishes dimensional standards for double race or bi-level swivel and rigid industrial casters in order to provide for the overall interchangeability of a complete caster.

2 EXPLANATION

Most industrial casters are purchased as a complete unit, which includes the caster assembly and the wheel. For this reason, the specifications and dimensional tolerances in this Standard provide for the overall interchangeability of a complete caster.

This Standard does not include detailed specifications for the wheel utilized within the Standard, and does not include data on load rating for specific sizes of industrial casters.

Factors affecting interchangeability of a caster include overall height, overall size of mounting plate, hole spacings for the mounting plate, mounting bolt diameter, and swivel radius. Dimensions for each of these items are included in this Standard along with applicable tolerances.

For the purpose of identification, a nominal specification is given for the wheel diameter and tread width. Wheel diameter and tread width do not affect interchangeability of the entire caster, and tolerances are therefore not necessary.

3 INTERPRETATION

To carry out the provisions of this Standard, all items are mandatory except for those including the word *should*, which are recommendations.

For terminology not included in this publication, refer to ANSI Z94.0.

The B56 Committee will render an interpretation of any requirement of this Standard. Interpretations will be rendered only in response to a written request sent to the Secretary of the B56 Committee, ASME, 345 East 47th Street, New York, NY 10017. The request for interpretation shall be in the following format.

Subject: Cite the applicable paragraph number(s) and provide a concise description.

Edition: Cite the applicable edition of the pertinent 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 approval of a proprietary design or situation. The inquirer may also include any plans or drawings which are necessary to explain the question; however, they should not contain proprietary names or information.

ASME procedures provide for reconsideration of any interpretation when or if additional information which 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.

The values stated in U.S. customary units are to be regarded as the standard.

4 DUTY CLASSIFICATIONS

Casters of various sizes are arranged into broadly defined duty classifications as a preliminary guide to selecting the caster size determined by experience as suitable for various applications. Caster manufacturers design casters for the duty classifications described in the following paragraphs and their literature and customer service departments should be consulted for details of load capacity for particular applications under consideration. Dimensional requirements for these classifications are given in Table 1.

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TABLE 1 DIMENSIONS FOR INDUSTRIAL CASTERS

Wheel Diameter, in.	Tread Width, in.	Overall Height, in.	Overall Size of Mounting Plate, in.	Mounting Plate Hole Spacing, in.	Mounting Bolt Diameter, in.	Swivel Radius, in.
Light Duty Casters (para. 4.1)						
2	3/4	2 5/8	1 1/4 × 2 1/8	13/16 × 1 9/16	3/16	2
3	3/4	3 13/16	2 3/4 × 3 3/4	1 3/4 × 3	1/4	2 3/4
4	1	4 3/4	2 3/4 × 3 3/4	1 3/4 × 3	1/4	3 3/4
5	1	5 3/4	2 3/4 × 3 3/4	1 3/4 × 3	1/4	4
Light Medium Duty (para. 4.2)						
3	1 1/4	4 3/16			5/16	3
3 1/2	1 1/4	4 3/4	2 3/4 × 3 3/4 or 3 1/8 × 4 1/8	1 3/4 × 2 7/8 or 2 3/8 × 3 7/16	5/16	3 1/4
4	1 1/4	5 1/16			5/16	3 3/4
5	1 1/4	6 1/8			5/16	4 1/4
Medium Duty (Slotted Holes) (para. 4.3)						
4	1 1/2	5 5/8	4 × 4 3/4	Slotted holes 2 5/8 × 3 5/8 to 3 × 3	3/8	4
5	1 1/2	6 7/16	4 × 4 3/4		3/8	4 3/4
6	1 1/2	7 3/8	4 × 4 3/4		3/8	5 1/2
Heavy Medium Duty (para. 4.4)						
4	2	5 5/8		4 1/8 × 4 1/2 or Slotted holes 2 5/8 × 3 5/8 to 3 × 3	3/8	4
5	2	6 1/2	4 × 4 1/2 or 5 × 5 1/2		3/8	4 1/2
6	2	7 3/8			3/8	5 5/8
8	2	9 1/2			3/8	7 1/4
Heavy Duty (Slotted Holes) (para. 4.5)						
6	2 1/2	8 1/8	5 × 7	Slotted holes 2 7/16 × 4 15/16 to 3 3/8 × 5 1/4	1/2	5 1/2
8	2 1/2	10 5/8	5 × 7		1/2	7 1/4
10	2 1/2	12 1/4	5 × 7		1/2	8 1/2
12	3	14 1/2	5 × 7		1/2	10 1/4
Extra Heavy Duty (para. 4.6)						
8	3	11 1/8	5 1/2 × 7 1/2	4 1/8 × 6 1/8	5/8	7 1/4
10	3	13 1/8	5 1/2 × 7 1/2	4 1/8 × 6 1/8	5/8	8 1/2
12	3	15	9 × 11	7 × 9 3/4	5/8	9 1/2
12	3 1/2	15	9 × 11	7 × 9 3/4	5/8	9 1/2

4.1 Light Duty — Up to 145 lb Load Capacity

Light duty casters are used for service carts, clothes baskets, tool stands, and similar light equipment in offices, homes, institutions, stores, schools, etc., where floors are smooth. Operation is manual and loads are light.

4.2 Light Medium Duty — Up to 300 lb Load Capacity

Light medium duty casters are used for applications similar to light duty, but where loads are somewhat heavier. Operation is manual and floors are smooth.

4.3 Medium Duty — Up to 575 lb Load Capacity

Medium duty casters are used for applications such as linen carts, heavier food service equipment, light warehouse trucks, and order picking trucks. Operation is manual and frequent. Floors are smooth.

4.4 Heavy Medium Duty — Up to 1000 lb Load Capacity

Heavy medium duty casters are used for commercial, industrial, and institutional applications such as platform trucks, warehouse stock trucks, and portable

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shelving over smooth floors. They are operated manually or by intermittent power under 3 mph.

4.5 Heavy Duty — Up to 2000 lb Load Capacity

Heavy duty casters are used for commercial and factory applications. They are operated manually or by intermittent power under 3 mph; they are used on relatively smooth surfaces such as concrete which may have minor obstacles.

4.6 Extra Heavy Duty — Up to 2500 lb Load Capacity

Extra heavy duty casters are used for commercial and factory applications. They are operated by intermittent power under 3 mph; they are used on well-maintained surfaces which may have minor obstacles.

4.7 Super Duty

Super duty casters are used for loads and operating conditions exceeding those listed above. For dimensional requirements, consult the manufacturer.

5 DIMENSIONS AND TOLERANCES[1]

5.1 Wheel Diameter

Wheel diameter is shown in Table 1 as nominal and for reference purposes only. Wheel diameter does not affect interchangeability of the complete caster.

5.2 Tread Width

Tread width is shown in Table 1 as nominal and for reference purposes only. Tread width does not affect interchangeability of the complete caster.

5.3 Overall Height

Overall height is the vertical distance between the top of the caster mounting plate and the bottom of the wheel (see Fig. 1).

[1] See Fig. 1.

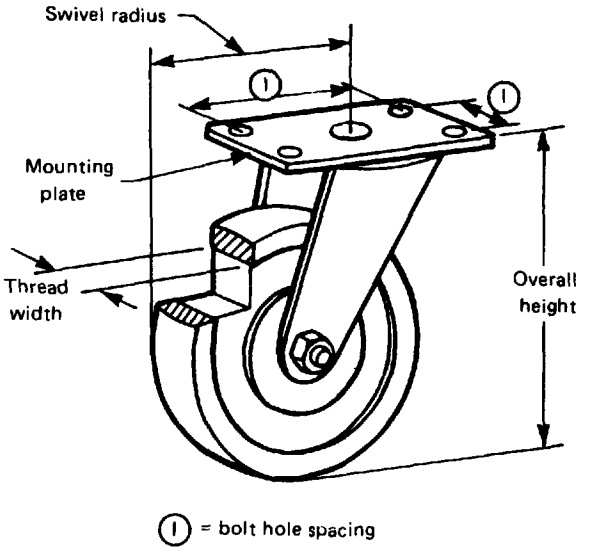


FIG. 1 CASTER TERMS

Tolerances for overall height are affected by the general size of the wheel diameter. The larger the wheel size, the larger the overall height. Tolerances are therefore applied as follows:

Wheel Diameter, in.	Tolerance, in.
2 to 5	±1/16
6 to 8	±1/8
10 to 12	±1/4

5.4 Mounting Plate — Overall Size

The mounting plate or top plate is used to attach the caster to the equipment. A tolerance of ±1/4 in. is allowed to meet normal manufacturing and mill tolerances. The minimum size of the mounting plate is governed by the hole spacing, and no tolerance is required.

5.5 Hole Spacings for Mounting Plate

Tolerances for hole spacing are applied in accordance with the duty classification of the caster as follows (refer to Section 4):

Duty Classification	Tolerance, in.
Light and light medium	±1/64
Medium and heavy medium	±1/32
Heavy and extra heavy	±1/16
Super	Consult manufacturer

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5.6 Mounting Bolt Diameter

Normal commercial tolerances are allowed on the diameter of the bolt used for attaching the mounting plate to the equipment.

5.7 Swivel Radius

Specifications are shown in Table 1 as maximum allowable swivel.

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APPENDIX A
METRIC (SI) UNITS CONVERSION TABLE

(This Appendix is an integral part of ASME B56.11.1-1992 and is placed after the main text for convenience.)

1 in. = 25.4 mm

1 lbm = 0.45 kg

1 lbf = 4.448 N

1 mph = 1.609 km/h

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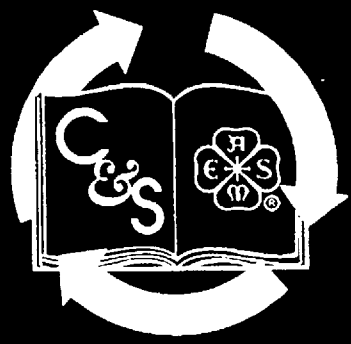
AMERICAN NATIONAL STANDARDS ON MATERIAL HANDLING EQUIPMENT

Safety Code for Elevators and Escalators A17.1-1990
Safety Standard for Conveyors and Related Equipment B20.1-1990
Safety Standard for Low Lift and High Lift Trucks B56.1-1988
Safety Standard for Guided Industrial Vehicles B56.5-1988
Safety Standard for Rough Terrain Forklift Trucks B56.6-1987
Safety Standard for Industrial Crane Trucks B56.7-1987
Safety Standard for Personnel and Burden Carriers B56.8-1988
Safety Standard for Operator Controlled Industrial Tow Tractors B56.9-1991
Double Race or Bi-Level Swivel and Rigid Industrial Casters B56.11.1-1991
Load Handling Symbols for Powered Industrial Trucks B56.11.3-1988
Hook-Type Forks and Fork Carriers for Powered Industrial Forklift Trucks B56.11.4-1988
Measurement of Sound Emitted by Low Lift, High Lift, and Rough Terrain Powered Industrial Trucks B56.11.5-1989
Definitions and Terminology Covering Pallets and Related Structures MH1.1.2-1989
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