ANSI/ITSDF B56.11.4-2005
(Reaffirmation of ASME B56.11.4-1992)

Hook-Type Forks And Fork Carriers For Powered Industrial Forklift Trucks

AN AMERICAN NATIONAL STANDARD

INDUSTRIAL TRUCK STANDARDS DEVELOPMENT FOUNDATION

AN AMERICAN NATIONAL STANDARD

HOOK-TYPE FORKS AND FORK CARRIERS FOR POWERED INDUSTRIAL FORKLIFT TRUCKS

ITSDF B56.11.4-2005

(Reaffirmation of ASME B56.11.4-1992)

Date of Issuance: April 30, 1 9 9 2

ITSDF issues written replies to inquiries concerning interpretations of technical aspects of this Standard. Interpretations are published on the ITSDF Web site at http://www.itsdf.org as they are issued, and will also be published within the next edition of the Standard.

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FOREWORD

(This foreword is not part of ITSDF B56.11.4-2005)

This Standard is a revision and redesignation of ANSI MH11.1.4-1973, which had been developed by the American National Standard by the American National Standards Committee MH11, Hand- or Power-Operated Handling Trucks. In December 1982, the activities of the MH11 Committee were incorporated into the scope of the ASME B56 Committee, with the MH11 Committee becoming the B56.11 Subcommittee. As a result of this consolidation, the title of the B56 Committee was changed to Committee on Powered and Nonpowered Industrial Trucks. All MH11 Standards, when revised, are to be redesignated as B56.11 Standards.

The first edition of B56.11.4 was approved by the B56 Committee, by ASME, and, after public review, by the American National Standards Institute, on February 8, 1985.

The first revision of B56.11.4-1985 was approved by the B56 Committee, by ASME, and, after public review, by the American National Standards Institute on October 18, 1988.

The second revision to B56.11.4-1995 was approved by the B56 Committee, by ASME, and, after public review, by the American National Standards Institute on January 13, 1992.

This Standard shall become effective 1 year after its respective Date of Issuance. Part III applies only to trucks manufactured after the effective date.

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.

ASME STANDARDS COMMITTEE B56
Powered and Nonpowered Industrial Trucks

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

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ITSDF B56.11.4-2005
SUMMARY OF CHANGES

Following reaffirmation by the ITSDF B56 Committee and after public review, ITSDF B56.11.4 was approved as a reaffirmation of ASME B56.11.4-1992 and 1994 addenda by the American National Standards Institute on September 1, 2005.

SPECIAL NOTE

The Interpretations to ITSDF B56.11.4 are included at the end of this edition as a separate section for the user's convenience. The interpretations are not part of this edition or of the standard itself.

CONTENTS

POWERED AND NONPOWERED INDUSTRIAL TRUCKS

General

This Standard is one of a series that have been formulated with the Industrial Truck Standards Developing Foundation 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; 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 maintenance of 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 has been divided into separate volumes:

Safety Standards

B56.1 Low Lift and High Lift Trucks
B56.5 Guided Industrial Vehicles and Automated Functions of Manned 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 Trucks
B56.10 Manually Propelled High Lift Industrial Trucks

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
B56.11.7 Liquefied Petroleum Gas (LPG) Fuel Cylinders (Horizontal or Vertical) Mounting — Liquid Withdrawal — for Powered Industrial Trucks

Safety standards that were previously listed as B56 volumes but now have different identification due to a 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 governmental use, the references to other national codes and 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, and 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, collision with objects or pedestrians, poor maintenance, and use of equipment for a purpose for which it was not intended or designed.

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, ITSDF, 1750 K Street NW, Suite 460, Washington DC 20006.

Comments shall be writen in accordance with the following format:

(a) specify paragraph designation of the pertinent volume;

(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 volume.

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

HOOK-TYPE FORKS AND FORK CARRIERS FOR POWERED INDUSTRIAL FORKLIFT TRUCKS

1 SCOPE

The scope of this Standard encompasses standards relative to hook-type fork carriers and the attaching elements of fork arms and load handling attachments for forklift trucks, in relation to manufacturers' rated capacities of trucks up to and including 11,000 kg (24,000 lb).

2 PURPOSE

The purpose of this Standard is to establish standards relative to the interchangeability of hook-type fork arms on fork carriers of forklift trucks, and to the mounting of load handling attachments in relation to the manufacturers' rated capacities, up to and including 11,000 kg (24,000 lb).

3 INTERPRETATION

To carry out the provisions of this Standard, all items are mandatory except 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 the Standard. Interpretations will be rendered only in response to a written request sent to the Secretary of the B56 Committee, ITSDF, 1750 K Street NW, Suite 460, Washington DC, 20006. 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.

ITSDF 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 ITSDF Committee or Subcommittee. ITSDF does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device or activity.

4 DESIGN AND CONSTRUCTION STANDARDS

(*a*) The forks for forklift trucks shall be constructed in accordance with Fig. 1 and Table 1.

(*b*) The fork carrier for forklift trucks should be constructed in accordance with Fig. 2 and Table 2.

(*c*) The upper edge of the fork carrier shall have notches spaced across its entire length. This spacing shall be as follows:

(*1*) one notch located on the center line of the carrier;

(*2*) one notch located on each side of the center notch spaced as shown in Table 2, Column P.

(*3*) The remaining notches shall be spaced at a maximum dimension of 100 mm (4 in.) center-to-center of the notches.

(*d*) Where locating notches other than those normally specified by the manufacturer are required by the application involved, their spacing shall be agreed upon between the user and the manufacturer.

(*e*) The lower edge of the fork carrier shall also be provided with a notch for use as an alternate centering method for attachment installation. The dimensions of the notch and one notch on either side of center in the upper edge of the fork carrier shall conform to those

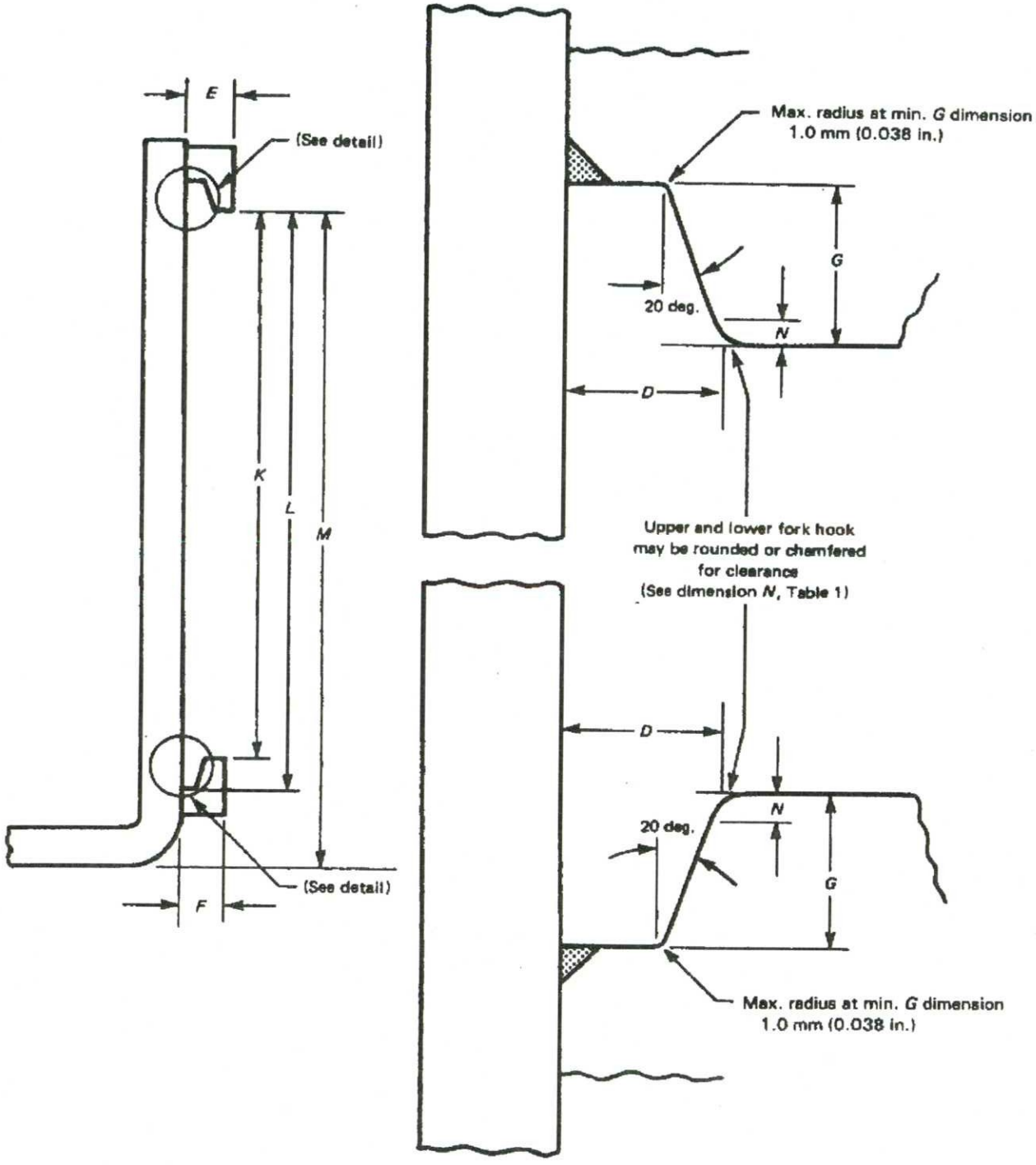

FIG. 1 HOOK-TYPE FORK MOUNTING

TABLE 1 HOOK-TYPE FORK MOUNTING DIMENSIONS

Truck Rated Capacity		Rated Load Center Distance, mm (in.)	Fork Arm Type	A, mm (in.) (Ref.)	D, mm (in.) +1 −0 (+0.04 −0.00)	M, mm (in.) +3 −3 (+0.12 −0.12)	K, mm (in.)		E, mm (in.) Max.	F, mm (in.) Max.	G, mm (in.) Min.	L, mm (in.) Min.	N, mm (in.) +1.5 −0 (+0.06 −0.00)
Class	kg (lb)[1]							Tol., mm (in.)					
I	Up to 999 (Up to 1,999)	600 (24)	A	76 (3.00)	16.5 (0.65)	394 (15.50)	306 (12.05)	+1 −0 (+0.04 −0.00)	28 (1.10)	26 (1.03)	14 (0.55)	320 (12.60)	5 (0.20)
			B	114 (4.50)		432 (17.00)							
II	1,000–2,500 (2,000–5,500)	600 (24)	A	76 (3.00)	16.5 (0.65)	470 (18.50)	382 (15.04)		31 (1.22)	29 (1.14)	14 (0.55)	396 (15.58)	5 (0.20)
			B	152 (6.00)		546 (21.50)							
III	2,501–5,000 (5,501–10,000)	600 (24)	A	76 (3.00)	22 (0.87)	568 (22.36)	477 (18.78)		40 (1.57)	38 (1.50)	17 (0.67)	494 (19.45)	5.5 (0.25)
			B	203 (8.00)		695 (27.36)							
IV	5,001–8,000 (10,001–17,500)	600 (24)	A	127 (5.00)	26 (1.03)	743 (29.25)	598 (23.54)	+1.5 −0 (+0.06 −0	47 (1.85)	45 (1.78)	20 (0.79)	618 (24.33)	8 (0.31)
			B	254 (10.00)		870 (34.25)							
V	8,001–11,000 (17,501–24,000)	600 (24)	A	127 (5.00)	35 (1.38)	830 (32.67)	680 (26.77)		65 (2.56)	63 (2.48)	26 (1.03)	706 (27.80)	8 (0.31)
			B	257 (10.12)		960 (37.80)							

NOTE:
(1) Ratings reflect industry practice, not direct conversions.

(a)

TABLE 2 HOOK-TYPE FORK CARRIER DIMENSIONS

Truck Rated Capacity		Rated Load Center Distance, mm (in.)	Fork Arm Type	*A*, mm (in.) (Ref.)	*B*, mm (in.) (Ref.)	*C*, mm (in.) +0 −1 (+0.00 −0.04)	*T*, mm (in.) +0.8 −0.8 (+0.03 −0.03)	*J*, mm (in.) Tol., mm (in.)	*H*, mm (in.) +0 −1.5 (+0.00 −0.06)	*S*, mm (in.) +1 −0 (+0.04 −0.00)	*U*, mm (in.) +2 −2 (+0.08 −0.08)	*V*, mm (in.) +1.5 −1.5 (+0.06 −0.06)	*Q*, mm (in.) +1.5 −1.5 (+0.06 −0.06)	*P*, mm (in.) MAX. MIN.
Class	kg (lb)[1]													
I	Up to 999 (Up to 1,999)	600 (24)	A	76 (3.00)	331 (13.00)	16 (0.63)	16 (0.63)	305 +0 −1 (12.00 +0.00 −0.04)	13 (0.51)	8 (0.32)	95 (3.74)	90 (3.54)	13 (0.51)	160 (6.30) 70 (2.76)
			B	114 (4.50)										
II	1,000–2,500 (2,000–5,500)	600 (24)	A	76 (3.00)	407 (16.00)	16 (0.63)	16 (0.63)	381 +0 −1 (15.00 +0.00 −0.04)	13 (0.51)	8 (0.32)	95 (3.74)	90 (3.54)	13 (0.51)	160 (6.30) 70 (2.76)
			B	152 (6.00)										
III	2,501–5,000 (5,501–10,000)	600 (24)	A	76 (3.00)	508 (20.00)	21.5 (0.85)	19 (0.75)	476 +0 −1.5 (18.75 +0.00 −0.06)	16 (0.63)	10 (0.39)	120 (4.72)	114.5 (4.51)	20 (0.79)	160 (6.30) 80 (3.15)
			B	203 (8.00)										
IV	5,001–8,000 (10,001–17,500)	600 (24)	A	127 (5.00)	635 (25.00)	25.5 (1.00)	19 (0.75)	597 +0 −1.5 (23.50 +0.00 −0.06)	19 (0.75)	12 (0.47)	145 (5.71)	139.5 (5.50)	27.5 (1.08)	160 (6.30) 90 (3.54)
			B	254 (10.00)										
V	8,001–11,000 (17,501–24,000)	600 (24)	A	127 (5.00)	728 (28.67)	34 (1.34)	25 (0.98)	678 +0 −15 (26.70 +0.00 −0.06)	25 (0.98)	16 (0.63)	171 (6.73)	164.5 (6.48)	30 (1.18)	160 (6.30) 110 (4.33)
			B	257 (10.12)										

NOTE:
(1) Ratings reflect industry practice, not direct conversions.

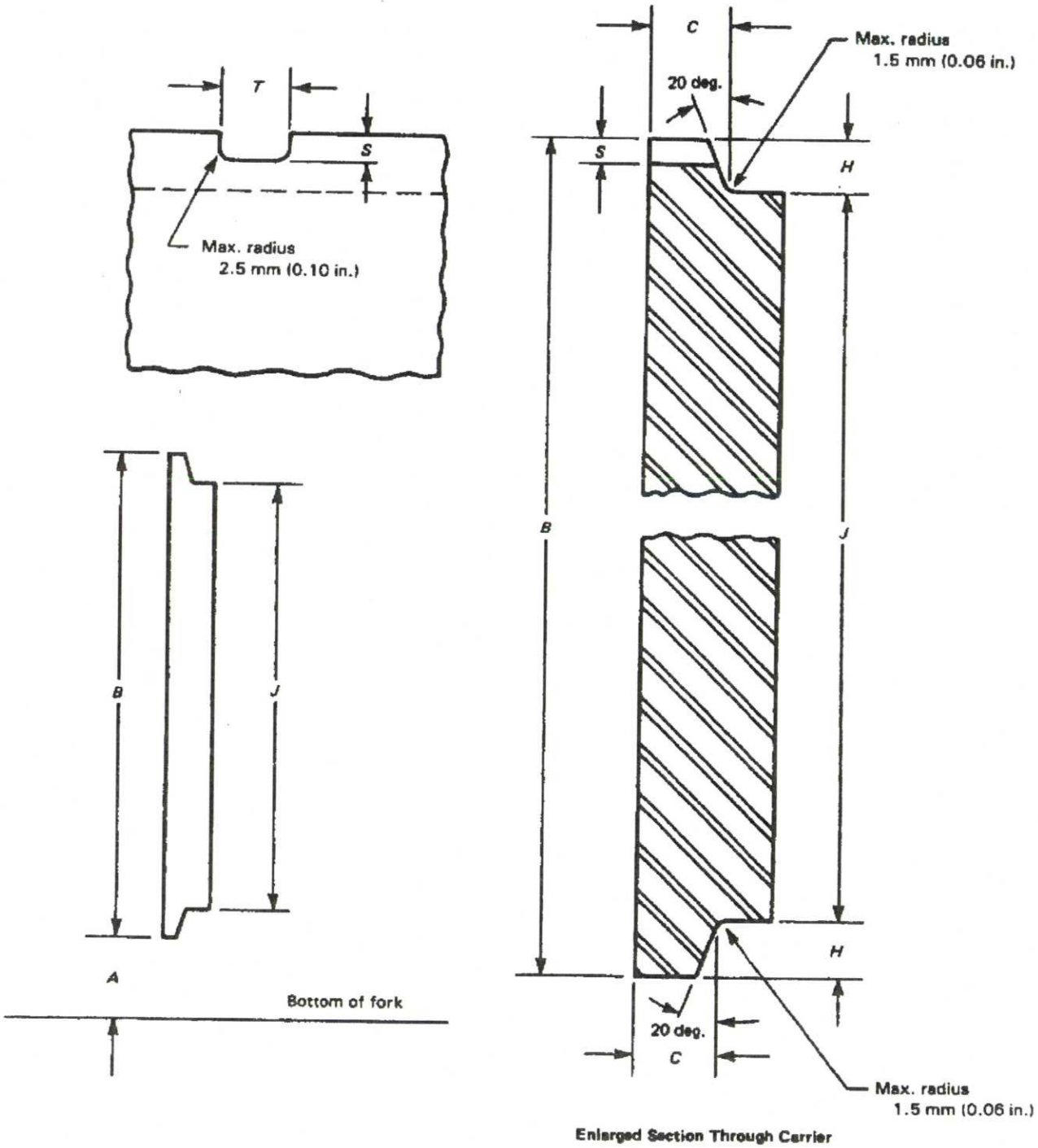

FIG. 2 HOOK-TYPE FORK CARRIER

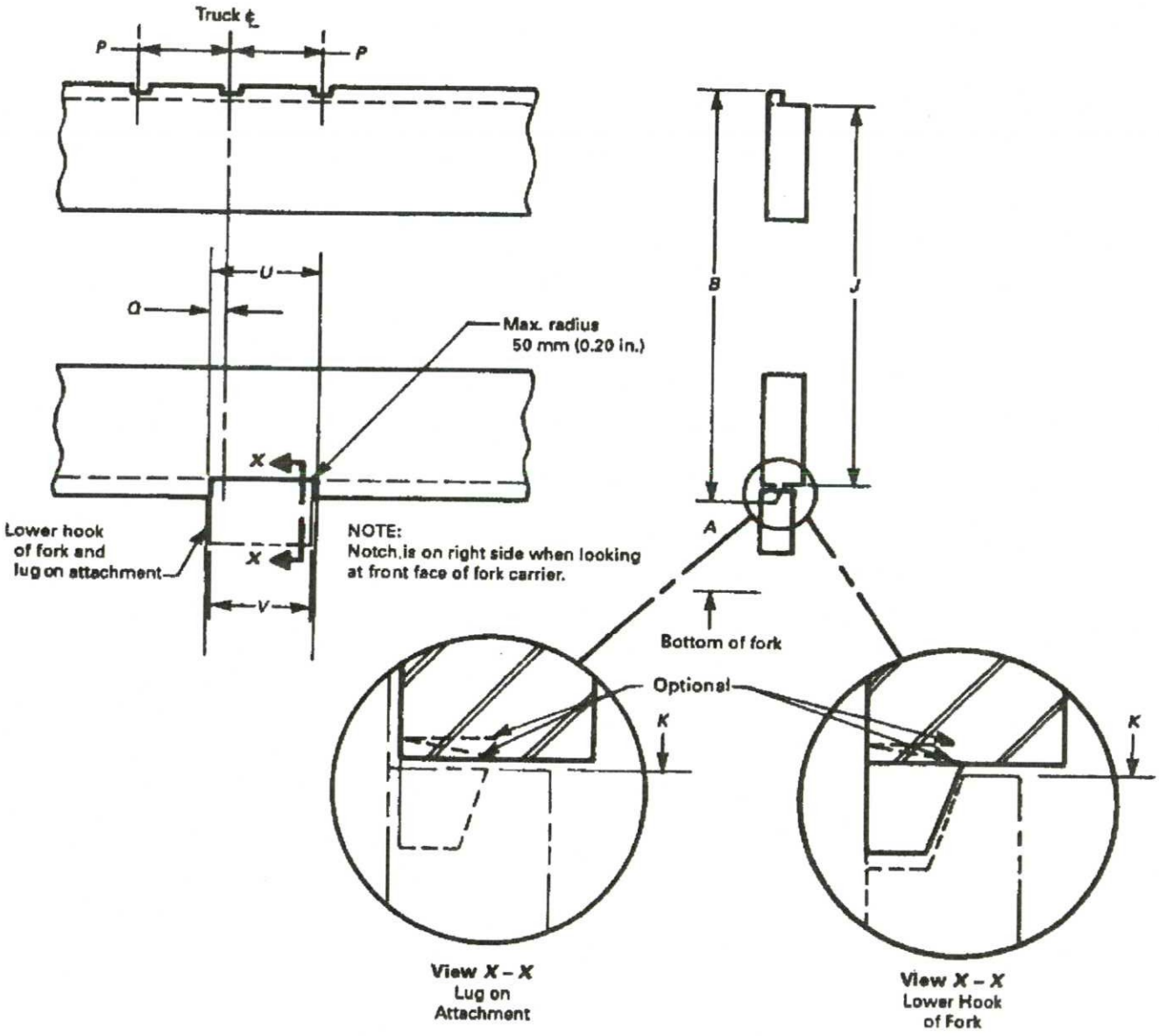

FIG. 3 HOOK-TYPE FORK CARRIER
Detail of Notches In Upper and Lower Edge of Fork Carriage (See Table 2)

shown in Fig. 3 and specified in Table 2. This notch will also facilitate installation and removal of fork arms.

(*f*) The number of classes has been minimized to a practical limit. At or near the upper limit of each capacity range, the next larger mounting class may be used.

(*g*) The dimensions of each class relate to the mounting details only, and should not be interpreted to influence strength and other design features of the carrier or forks.

(*h*) Either a plate or two bars may be used for fork mounting.

(*i*) The thickness of plate or bars is not a part of this Standard.

(*j*) The plate or bars and back face of the forks shall not bow convexly toward each other.

(*k*) In addition to the means described in para. (n), stops shall be provided at the extremities of the carrier to prevent lateral disengagement of the forks.

(*l*) Each fork shall be clearly stamped with its individual load rating in an area readily visible and not subject to wear. For example, a stamping of 1500 × 24 means a 1500 lb load rating at 24 in. load center, and a 2000 × 600 stamping means a 2000 kg load rating at 600 mm load center.

(*m*) Fork strength shall permit the following loading and method of test.

(*1*) The test load *W* shall correspond to three times the load rating of the fork arm and shall be applied to it at the applicable distance *Y* from the front face of the fork arm shank. (See Fig. 4.)

(*2*) The fork arm shall be restrained in a manner identical to that used on the forklift truck.

(*3*) The test load shall be applied twice, gradually and without shock, and maintained for 30 sec each time.

(*4*) The fork arm shall be checked before and after the second application of the test load. It shall not show any permanent deformation.

(*5*) These tests are intended to be applied to prototype forks and to production forks on a selective basis.

(*n*) Means shall be provided that, when engaged, prevent lateral movement of the forks.

(*o*) With the locating latch of a fork engaged in any notch provided in the upper bar, the fork should not be capable of being disengaged from the fork carrier.

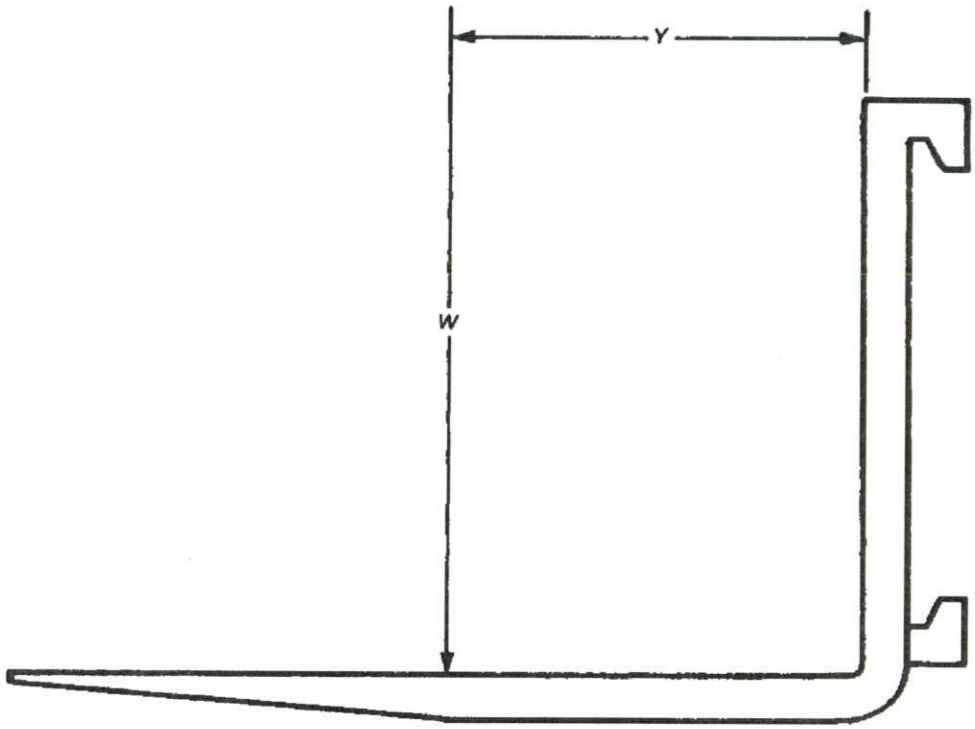

FIG. 4 TYPICAL HOOK-TYPE FORK