ASME B29.300-2015

[Revision of ASME B29.300-1998 (R2008)]

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Agricultural, Detachable, and Pintle Chains, Attachments, and Sprockets

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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The American Society of Mechanical Engineers

Two Park Avenue • New York, NY • 10016 USA

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

CONTENTS

FOREWORD

On August 2, 1998, the B29 Standards committee agreed via letter ballot to consolidate and revise the following three chain standards: ASME B29.6, Steel Detachable Link Chains, Attachments, and Sprockets; ASME B29.19, Agricultural Roller Chains, Attachments, and Sprockets; and ASME B29.25, Open Barrel Steel Pintle-Type Conveyor Chains, Attachments, and Sprockets.

The 1998 revisions of B29.6, B29.19, and B29.25 were designed to integrate the agricultural-type chains found in each of these three Standards.

The 2015 revision of B29.300 includes new chains that are now common in the agricultural industry.

Suggestions for improvement of these three Standards are welcome. They should be sent to The American Society of Mechanical Engineers; Secretary, B29 Standards Committee; Two Park Avenue; New York, NY 10016.

ASME B29.300 was approved as an American Standard on November 23, 201[illegible]

B29.6 — Steel Detachable link Chains, Attachments, and Sprocket[illegible]

Detachable link power transmission chains have been used almost exclusively by agricultural implement manufacturers for power transmission and conveyors in manure spreaders, corn pickers, planters, hay rakes, potato diggers, elevators, and many other types of machines.

The first steel detachable link chain was manufactured in 1[illegible]97. This steel chain is made from special analysis steel strip, and is heat treated after forming to withstand wear and provide strength and toughness.

Early in 1950, agricultural equipment manufacturers realized the need for a standard on steel detachable link chain. In May 1951, a subcommittee of ASA Sectional Committee B29 was appointed with members from the agricultural implement industry and the steel detachable link chain industry to develop a standard for steel detachable link chains.

During the 1960 revision, certain sizes of chains and attachments were deleted from the Standard with the intent of eliminating those of low popularity that were also closely similar to other existing sizes, thereby strengthening the Standard. In addition, several popular chains, attachments, and couplers were added. Some attachment designs were slightly revised. The coupler and coupler pin designs were revised to the currently more popular style, which allows any link to be used either right-handed or left-handed.

This Standard establishes, in the main, only those dimensions that will provide for interchangeability of the chains in use without restricting the chain manufacturers in their overall design. The 1983 revision included the sprocket dimension controlling the surfaces that must properly engage or clear the chain. The 1994 edition updated the Standard to the current ANSI standards format and symbols covering chains. Numbers 45 and 67 were deleted from the Standard since they are no longer manufactured. The definition of Minimum Ultimate Tensile Strength (M.U.T.S.) was also updated.

In the 1998 edition, the symbols and sprocket information sections were revised to provide consistency throughout the consolidated B29.300 Standard.

B29.19 — Agricultural Roller Chains, Attachments, and Sprockets

Agricultural replacement roller chains, introduced around 1956, provide implement engineers with an upgrade from cast or steel detachable chains. These chains offer increased strength and durability, and can be used with the same sprockets.

The agricultural replacement roller chains are available in both drive series (A550 and A620) and conveyor series (CA550 and CA620). They have replaced No. 55 and No. 62 detachable chains in many applications and have found use in light-duty industrial conveyors.

The Standard establishes essentially only those dimensions that will provide for interchangeability of the chains in use without restricting the chain manufacturers in their overall designs.

The B29 Committee agrees that the CA550 and CA620 chains may be used on No. 55 and No. 62 detachable chain sprocket, respectively; however, the sprocket data included in this Standard is for sprockets designed specifically for CA550 and CA620 chains. The difference in sprocket design is necessary because of the difference in roller diameters.

The 1993 revision included updating to the current ANSI standards format and symbols covering chains and sprockets. Minimum Ultimate Tensile Strength (M.U.T.S.) was redefined.

The 1996 revision changed the name of the Standard from "A and CA550 and 620 Roller Chains, Attachments, and Sprockets" to "Agricultural Roller Chains. Attachments, and Sprockets." Also, two new chains for both drive series (A555 and A557) and conveyor series (CA555 and CA57), as well as several associated attachments, were added to the Standard.

In the 1998 edition, the sprocket tooth form was modified to be identical with the form used in the other two chains.

B29.25 — Open Barrel Steel Pintle-Type Conveyor Chains, Attachments, and Sprockets

The open barrel steel pintle chain was originally developed in 1962 for the agricultural implement industry. The original sizes were developed to run on the same sprockets as their detachable chain counterparts of ANSI B29.6. In later years, sizes were developed to accommodate industrial applications as well.

The steel pintle chain is primarily used as a conveyor chain and, in limited use, as a power transmission chain. Typical conveyor speeds are under 300 ft/min. Consult manufacturers for details.

The 1994 revision incorporated a restatement of the definition of Minimum Ultimate Tensile Strength (M.U.T.S.), and an addition of footnotes in Tables 3 and 4 regarding hole sizes in certain attachments.

In the 1998 edition, Tables 1 and 2 were combined for simplicity, and the sprocket tooth form was modified to be identical with the form used for the other two chains.

In this edition, two new pintle chains (88C and 308C) were added to the standard.

ASME B29 COMMITTEE
Chains, Attachments, and Sprockets for Power Transmission and Conveying

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

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CORRESPONDENCE WITH THE B29 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, B29 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 for the purpose of providing 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 B29 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 B29 Standards Committee at go.asme.org/Inquiry.

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.
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. 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 may be rewritten in the appropriate 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 B29 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 B29 Standards Committee. Future Committee meeting dates and locations can be found on the Committee Page at go.asme.org/B29committee.

ASME B29.6

STEEL DETACHABLE LINK CHAINS, ATTACHMENTS, AND SPROCKETS

1 DEFINITIONS

link: a one-piece steel link consisting of end bar *A*, hook *B*, and two sidebars *C-C* (see Fig. 2 of B29.6).

measuring load: the load under which a dry or lightly lubricated chain should be measured for length.

steel detachable link chain: a series of successively assembled steel links in which the end bars articulate inside the hook. The chain is detached by flexing it and driving the end bar out of the adjoining hook (see Fig. 1 of B29.6).

2 REFERENCES

The following is a list of publications referenced in this Standard:

Chains for Power Transmission and Material Handling
Publisher: American Chain Association (ACA), 6724 Lone Oak Boulevard. Naples, FL 34109 (www.americanchainassn.org)

3 GENERAL CHAIN PROPORTIONS AND DESIGNATIONS

3.1 Minimum Ultimate Tensile Strength

The Minimum Ultimate Tensile Strength (M.U.T.S.) for chain covered by this Standard is the minimum force at which an unused, undamaged chain could fail when subjected to a single tensile loading test.

WARNING: The Minimum Ultimate Tensile Strength is NOT a "working load." The M.U.T.S. greatly exceeds the maximum force that may be safely applied to the chain.

(a) Test Procedure. A tensile force is slowly applied, in a uniaxial direction, to the ends of the chain sample.

(b) The tensile test is a destructive test. Even though the chain may not visibly fail when subjected to the M.U.T.S., it will have been damaged and will be unfit for service.

CAUTION: This load is beyond the yield strength of the chain and would render the chain unsuitable for application.

(c) For application guidance, consult the manufacturers' catalogs or the American Chain Association's handbook, *Chains for Power Transmission and Material Handling*.

4 ATTACHMENTS

See Tables 1 through 11 of B29.6 for tolerances and dimensions for the following attachments: plain link, A1, A2, AS, C1, C15, G27, HB4, K1, S1, and S2.

See Table 12 of B29.6 for coupler link information and Table 13 of B29.6 for coupler pin information.

5 SPROCKETS

5.1 General Information

Sprockets for use with steel detachable chains are usually made of cast or wrought ferrous material. Wear resistance is frequently designed into the material of the tooth faces. Sprocket bodies are of many configurations (e.g., plate, arm, web, flat, or dished). When hubs containing the sprocket mounting bore are employed, they may project from either side or from both sides of the sprocket body.

This Standard covers only the dimensions controlling the surfaces that must properly engage or clear the chain.

Dimensions are given in a decimal inch system. The metric dimensions given are recommended conversions from the decimal inch system. In some cases the conversion is not exact; the decimal inch system is therefore to be taken as the base control dimension.

Sprockets with standard tooth forms are capable of transmitting chain loads in systems operating under a wide variety of conditions such as the following combination:

(a) maximum peak tension in chain as great as 0.20 of the ultimate breaking strength of the chain;

(b) slack strand tensions as small as 0.25% of the working tension in the chain;

(c) friction between the chain and the sprocket tooth faces as low as 10%; and

(d) the number of chain links in contact with the periphery of the sprocket as few as $0.5 \times (N - 1)$.

Individually, the above limits are not absolute. Variations may be accepted in each of them provided commensurate modifications are made in other limits.

5.2 Sprocket Tooth Form

The elements of the tooth profiles for sprockets for standard chains are given in Fig. 3 and Tables 14 and 15 of B29.6.

Maximum tooth thickness t may not exceed (0.95 D minus actual sideface oscillation), where D equals hook width of chain.