



Designation: A906/A906M – 02 (Reapproved 2022)

Standard Specification for Grade 80 and Grade 100 Alloy Steel Chain Slings for Overhead Lifting¹

This standard is issued under the fixed designation A906/A906M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers the requirements and method of rating and testing for alloy chain slings. Slings shall be assembled using components manufactured in accordance with Specification A391/A391M for Grade 80 chain, Specification A973/A973M for Grade 100 chain, and Specification A952/A952M for other components. This specification covers welded and mechanically assembled slings.

1.2 This specification does not cover slings used at elevated temperatures (above 400 °F [200 °C]), in harmful or corrosive environmental conditions or for applications such as nonsymmetrical legs or loading.

1.3 This specification is a performance and assembly specification. Other standards, such as OSHA 1910.184, ASME B30.9, and ASME B30.10, apply to the use of the products in this specification.

1.4 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel and Related Alloys and is the direct responsibility of Subcommittee A01.27 on Steel Chain.

Current edition approved March 1, 2022. Published March 2022. Originally approved in 1991. Last previous edition approved in 2016 as A906/A906M – 02(2016). DOI: 10.1520/A0906_A0906M-02R22.

2. Referenced Documents

2.1 ASTM Standards:²

A391/A391M Specification for Grade 80 Alloy Steel Chain
A952/A952M Specification for Forged Grade 80 and Grade
100 Steel Lifting Components and Welded Attachment
Links

A973/A973M Specification for Grade 100 Alloy Steel Chain

2.2 Other Standards:

OSHA 1910.184 Slings³

ASME B30.9 Slings⁴

ASME B30.10 Hooks⁴

3. Terminology

3.1 Definitions:

3.1.1 *chain sling*—an assembly consisting of alloy steel chain or chains joined to suitable upper and lower fittings, according to the provisions of this specification, for attaching loads to be lifted by a crane or lifting machine.

3.1.2 *coupling link*—a link fitted to the end of the chain to connect to another component of the sling. See Fig. 1.

3.1.3 *master coupling link (secondary or intermediate link)*—a link used on three and four leg slings to connect the legs to a master link. See Fig. 1.

3.1.4 *master link*—a link used as the upper end component of a chain sling and by means of which the sling is attached to a crane or other lifting machine. See Fig. 1.

3.1.5 *overhead lifting*—that process of lifting which would elevate a freely suspended load to such a position that dropping the load would present a possibility of bodily injury or property damage.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from Occupational Safety and Health Administration (OSHA), 200 Constitution Ave., NW, Washington, DC 20210, <http://www.osha.gov>.

⁴ Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Two Park Ave., New York, NY 10016-5990, <http://www.asme.org>.

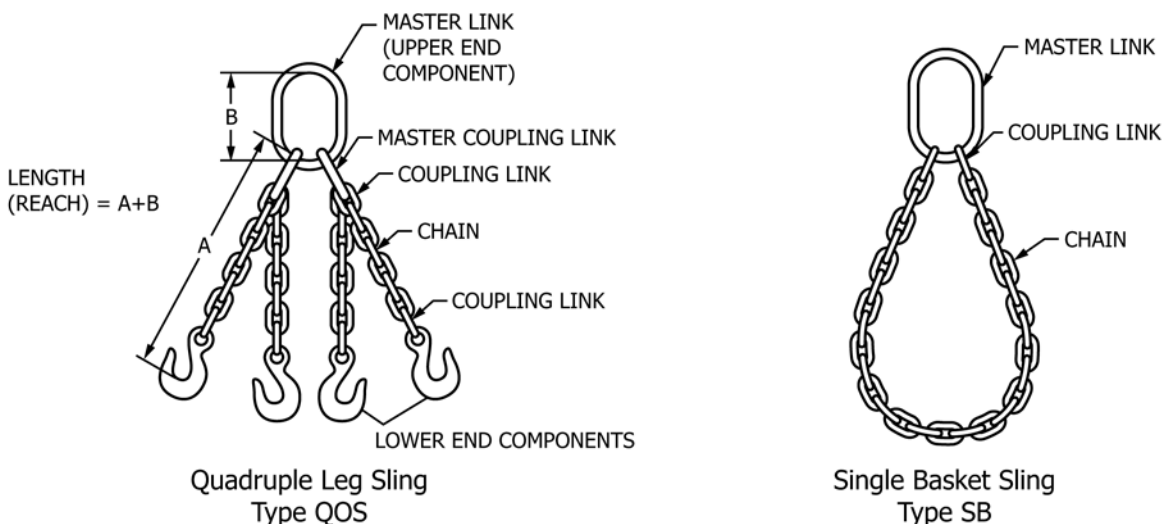


FIG. 1 Chain Sling Major Components

3.1.6 *proof test*—a term designating a quality control test applied to a sling or to components of a sling. It is the minimum force in pounds or newtons which the sling and components have withstood under a test in which a constantly increasing force has been applied in direct tension.

3.1.7 *length (reach)*—the distance from the bearing point of the upper end fitting to the bearing point of the lower end fitting. See Fig. 1.

3.1.8 *sling angle*—that angle measured between the horizontal plane and the leg (legs) of the sling. See Tables 1-3.

3.1.9 *working load limit (WLL)*—the maximum load which a sling is designed to support in direct tension without shock loading at a designated sling angle of lift.

4. Classification

4.1 There are two grades of chain slings covered under this specification. The size of a sling is denoted by the size of the

chain used in its manufacture. The grade of a sling is denoted by the lowest grade component used in its manufacture.

4.1.1 Grade 80.

4.1.2 Grade 100.

5. Ordering Information

5.1 It shall be the responsibility of the purchaser to specify all requirements that are necessary for material ordered under this specification. Such requirements to be considered include, but are not limited to, the following:

5.1.1 Conformance to ASTM designation A906 or A906M and year of issue,

5.1.2 Size of sling in inches [millimetres],

5.1.3 Grade of sling,

5.1.4 Type of sling(s) as designated by the symbols depicted in Table 7, if possible,

5.1.5 Quantity ordered,

5.1.6 Reach of sling(s),

5.1.7 Sling angle, and

5.1.8 Certification of proof test(s), if required.

6. Manufacture

6.1 *Assembly:*

6.1.1 Only component parts compatible with alloy chain shall be used.

6.1.2 Slings assembled by welding shall be fabricated by the electric or gas welding process, or both.

6.1.3 Mechanically assembled slings shall be assembled in accordance with component manufacturer's recommendations.

6.1.4 Components shall be assembled so as to ensure free articulation of the sling.

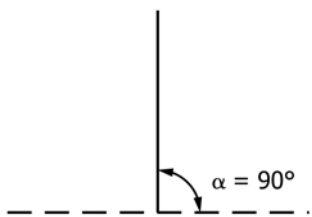
7. Mechanical Requirements

7.1 *Proof Test:*

7.1.1 All components of a sling, either individually or as an assembly, shall be proof tested as required in 7.1.2 – 7.1.4.

7.1.2 The proof test load for single leg slings and components attached to single legs shall be twice the working load limit for the size and grade chain.

TABLE 1 Chain and Single Leg Grade 80 Sling WLL Data



Grade 80 Chain Size		Single Leg WLL (max)	
in.	mm	lb	kg
7/32	5.5	2100	950
9/32	7	3500	1600
5/16	8	4500	2000
3/8	10	7100	3200
1/2	13	12 000	5400
5/8	16	18 100	8200
3/4	20	28 300	12 800
7/8	22	34 200	15 500
1	26	47 700	21 600
1 1/4	32	72 300	32 800