



Designation: A952/A952M – 02 (Reapproved 2022)

Standard Specification for Forged Grade 80 and Grade 100 Steel Lifting Components and Welded Attachment Links¹

This standard is issued under the fixed designation A952/A952M; 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 for forged alloy steel lifting components and welded coupling and master links for Grade 80 and Grade 100 alloy chain slings as described in Specification [A906/A906M](#).

1.2 Two grades of components and welded links are covered:

1.2.1 Grade 80.

1.2.2 Grade 100.

1.3 This specification is a performance standard. Other standards apply to use of these products. Some of these standards are: OSHA 1910.184, ASME B30.9, and ASME B30.10.

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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

[A29/A29M Specification for General Requirements for Steel Bars, Carbon and Alloy, Hot-Wrought](#)

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.

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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.

[A391/A391M Specification for Grade 80 Alloy Steel Chain](#)
[A751 Test Methods and Practices for Chemical Analysis of Steel Products](#)

[A906/A906M Specification for Grade 80 and Grade 100 Alloy Steel Chain Slings for Overhead Lifting](#)

[A973/A973M Specification for Grade 100 Alloy Steel Chain](#)
[E4 Practices for Force Calibration and Verification of Testing Machines](#)

[E44 Definitions for Terms Relating to Heat Treatment of Metals \(Withdrawn 1993\)](#)³

[E165/E165M Practice for Liquid Penetrant Testing for General Industry](#)

[E709 Guide for Magnetic Particle Testing](#)

2.2 *Other Standards:*

[OSHA 1910.184 Slings](#)⁴

[ASME B30.9 Slings](#)⁵

[ASME B30.10 Hooks](#)⁵

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *breaking force, minimum*—the minimum force in pounds or newtons at which the component has been found by verification testing to break when a constantly increasing force was applied in direct tension. This test is a manufacturer's design verification test and shall not be used as criteria for service.

3.1.2 *chain sling*—an assembly consisting of alloy steel chain joined to upper and lower end components for attaching loads to be lifted by a crane or lifting machine.

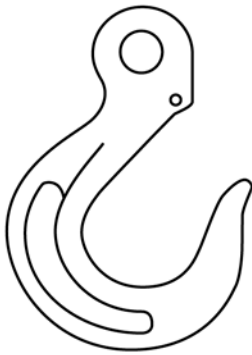
3.1.3 *coupling link*—a link fitted to the end of the chain to connect to another component of the sling. See [Fig. 1](#).

3.1.4 *master link*—a link used as an upper end component of a chain sling and by means of which the sling may be attached to a crane or other device. See [Fig. 1](#).

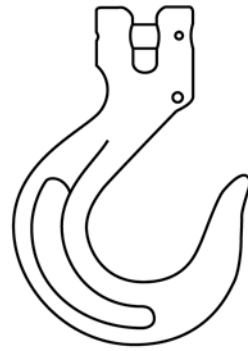
³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from Occupational Safety and Health Administration (OSHA), 200 Constitution Ave., NW, Washington, DC 20210, <http://www.osha.gov>.

⁵ Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Two Park Ave., New York, NY 10016-5990, <http://www.asme.org>.



Class ESH
Eye Sling Hook



Class CSH
Clevis Sling Hook



Class EGH
Eye Grab Hook



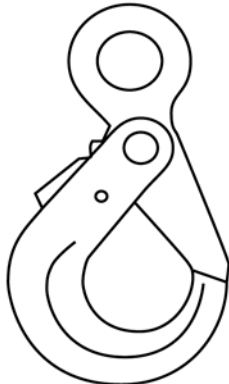
Class CGH
Clevis Grab Hook



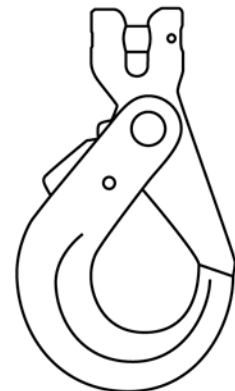
Class EFH
Eye Foundry Hook



Class CFH
Clevis Foundry Hook

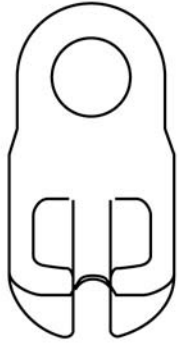


Class ESLH
Eye Self-Locking Hook

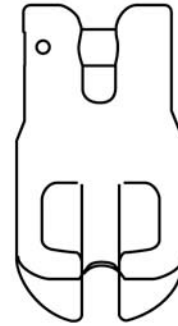


Class CSLH
Clevis Self-Locking Hook

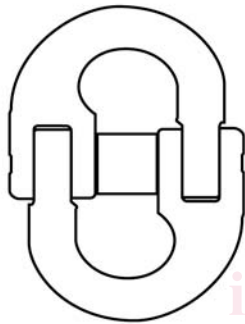
FIG. 1 General Component Configuration



Class ECGH
Eye Claw Grab Hook



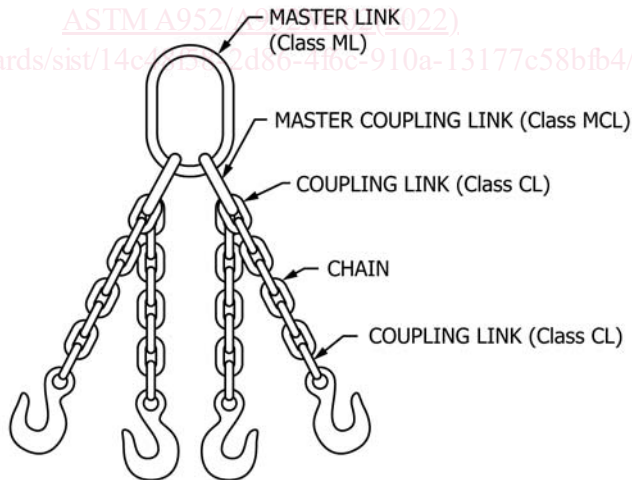
Class CCGH
Clevis Claw Grab Hook



Class CLM
Coupling Link, Mechanical



Class CCL
Clevis Coupling Link



Class ML, MCL, CL
Master Link, Master Coupling Link, Coupling Link

FIG. 1 General Component Configuration (continued)

3.1.5 *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.

3.1.6 *proof test*—a quality control tensile test applied to components for the purpose of verifying manufacturing and material quality. It is the minimum force in pounds or newtons which the component has withstood at the time it left the producer, under a test in which a constantly increasing force has been applied in direct tension. Proof test loads are a manufacturing integrity test and shall not be used as criteria for service.

3.1.7 *traceability code*—a series of letters, or numbers, or both, marked on a component which enables its manufacturing history, including identity of the steel heat, to be traced.

3.1.8 *working load limit (WLL)*—the maximum combined static and dynamic load in pounds or kilograms that shall be applied in direct tension to the component.

4. Classification

4.1 Only Grade 80 and Grade 100 components are covered under this specification.

4.2 Sixteen classes of components are covered under this specification. The general configuration on these components are shown in Fig. 1.

- 4.2.1 *Class EGH*—Eye Grab Hook.
- 4.2.2 *Class CGH*—Clevis Grab Hook.
- 4.2.3 *Class ESH*—Eye Sling Hook.
- 4.2.4 *Class CSH*—Clevis Sling Hook.
- 4.2.5 *Class EFH*—Eye Foundry Hook.
- 4.2.6 *Class CFH*—Clevis Foundry Hook.
- 4.2.7 *Class CLM*—Coupling Link, Mechanical.
- 4.2.8 *Class ESLH*—Eye Self-Locking Hook.
- 4.2.9 *Class CSLH*—Clevis Self-Locking Hook.
- 4.2.10 *Class ECGH*—Eye Claw Grab Hook.
- 4.2.11 *Class CCGH*—Clevis Claw Grab Hook.
- 4.2.12 *Class ML*—Master Link.
- 4.2.13 *Class MCL*—Master Coupling Link.
- 4.2.14 *Class CL*—Coupling Link.
- 4.2.15 *Class CCL*—Clevis Coupling Link.
- 4.2.16 *Class OTH*—Specialty components may be required for certain applications.

4.3 For the classes listed in 4.2, an “S” prefix denotes a component with a swivel joint.

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 Product to conform to Specification A952 or Specification A952M and year of issue.
- 5.1.2 Nominal size of component, in. [mm] (see Note 1).
- 5.1.3 Grade of component.
- 5.1.4 Class of component.
- 5.1.5 Quantity of components.
- 5.1.6 Finish, if required.
- 5.1.7 Certification, if required.

5.1.8 Acceptance of inspection by purchaser, if required.

5.1.9 Supplementary requirements, if required.

NOTE 1—Component size and working load limits are based on Grade 80 and Grade 100 alloy steel chain nominal sizes. See Specifications A391/A391M and A973/A973M.

6. Materials

6.1 *Quality*—The selection of the type of steel is left to the judgment of the manufacturer provided the material meets the requirements set forth in 6.2 and 6.3.

6.2 *Melting Process*—The steel used shall be produced by an electric process or by an oxygen blown process. The steel shall be fully killed and have an austenitic grain size of 5 or finer.

6.3 Chemical Requirements:

6.3.1 The alloy steel used shall contain at least two of the three alloying agents in the minimum percentages as listed below:

Nickel	0.40 % minimum
Chromium	0.40 % minimum
Molybdenum	0.15 % minimum

6.3.2 The phosphorous and sulfur content of the steel shall not exceed 0.025 % for each element.

6.3.3 *Product Analysis*—The steel used may be analyzed by the purchaser and shall conform to the requirements of 6.3.1 and 6.3.2 subject to the product analysis tolerances specified in Specification A29/A29M. Test samples may be taken from rods, bars, or finished product.

6.3.4 Chemical analysis of material covered by this specification for referee purposes shall be in accordance with Test Methods and Practices A751.

7. Manufacture

7.1 The body of all components shall be forged hot in one piece, with the exception of Class ML, MCL, and CL link components.

7.2 Excess metal flash shall be cleanly removed, leaving the surface free from sharp edges.

7.3 Class ML, MCL, and CL link components may be manufactured using the electric welding, gas welding, or forging process.

7.4 Ancillary components such as load pins, latches, bearings, and springs need not be forged components.

7.5 Welding shall not be used to repair forged components. Grinding of surface discontinuities may be carefully performed as long as no dimension is altered outside of the manufacturer’s dimensions and tolerances for that component. All ground areas must blend in smoothly with the surface.

7.6 *Heat Treatment*—After forging or welding is completed, each load bearing component shall be heat treated before applying the proof test. Heat treatment shall include quenching and tempering as defined in Definitions E44.

7.7 After heat treatment, furnace scale shall be removed from the component.