



# Standard Specification for Forged Grade 80 and Grade 100 Steel Lifting Components and Welded Attachment Links<sup>1</sup>

This standard is issued under the fixed designation A 952/A 952M; 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 ( $\epsilon$ ) 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.

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 B30.10, and ASME B30.9.

1.4 The values stated in either inch-pound 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 exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

## 2. Referenced Documents

### 2.1 ASTM Standards:

A 29/A 29M Specification for Steel Bars, Carbon and Alloy, Hot-Wrought and Cold-Finished, General Requirements for<sup>2</sup>

A 391/A 391M Specification for Grade 80 Alloy Steel Chain<sup>2</sup>

A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products<sup>3</sup>

A 906 Specification for Alloy Steel Chain Slings for Overhead Lifting<sup>2</sup>

A 973/A 973M Specification for Grade 100 Alloy Steel Chain<sup>2</sup>

E 4 Practices for Force Verification of Testing Machines<sup>4</sup>

E 44 Definitions of Terms Relating to Heat Treatment of Metals<sup>5</sup>

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

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<sup>2</sup> Annual Book of ASTM Standards, Vol 01.05.

<sup>3</sup> Annual Book of ASTM Standards, Vol 01.03.

<sup>4</sup> Annual Book of ASTM Standards, Vol 03.01.

<sup>5</sup> Annual Book of ASTM Standards, Vol 01.02.

E 165 Test Method for Liquid Penetrant Examination<sup>6</sup>

E 709 Guide for Magnetic Particle Examination<sup>6</sup>

2.2 Other Standards:

OSHA 1910.184 Slings<sup>7</sup>

ASME B30.9 Slings<sup>8</sup>

ASME B30.10 Hooks<sup>8</sup>

## 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, in the condition it leaves the manufacturer, has been found by verification testing to break when a constantly increasing force was applied in direct tension. Breaking force values are a statistical attribute verification test and are not a guarantee that all components will endure these loads. Breaking force loads 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 fittings 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 either directly or through a secondary link to an upper or lower end fitting. See Fig. 1.

3.1.4 *end fitting*—a link, hook, or other component fitted at the end of a branch. See Fig. 1.

3.1.5 *master link*—a link used as an upper end fitting of a chain sling and by means of which the sling may be attached to a crane or other device. See Fig. 1.

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

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

3.1.8 *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

<sup>6</sup> Annual Book of ASTM Standards, Vol 03.03.

<sup>7</sup> Available from OSHA.

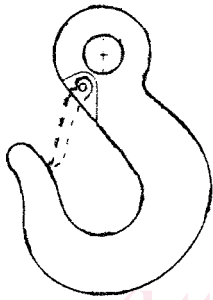
<sup>8</sup> Available from ASME, 345 E. 47th Street, New York, NY 10017.



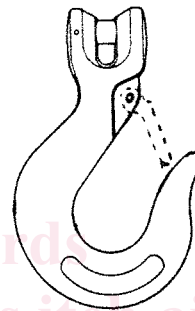
Class EGH  
Eye Grab Hook



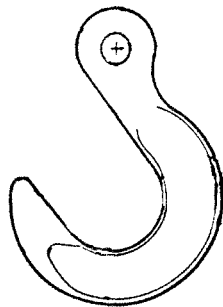
Class CGH  
Clevis Grab Hook



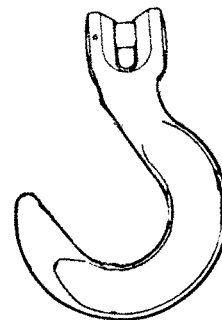
Class ESH  
Eye Sling Hook



Class CSH  
Clevis Sling Hook



Class EFH  
Eye Foundry Hook



Class CFH  
Clevis Foundry Hook

FIG. 1 General Component Configuration

has been applied in direct tension. Proof test loads are a manufacturing integrity test and shall not be used as criteria for service.

3.1.9 *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.

3.1.10 *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**

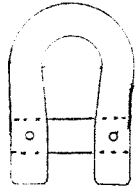
4.1 Only Grade 80 and Grade 100 components are covered under this specification.

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

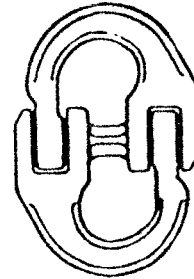
4.2.1 *Class EGH*—Eye Grab Hook.

4.2.2 *Class CGH*—Clevis Grab Hook.

4.2.3 *Class ESH*—Eye Sling Hook.



Class CCL  
Clevis Coupling Link



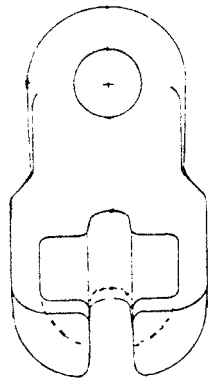
Class CLM  
Coupling Link, Mechanical



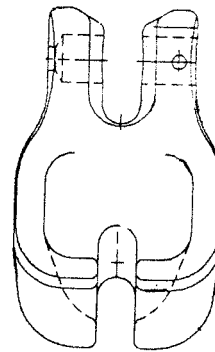
Class ESLH  
Eye Self-Locking Hook



Class CSLH  
Clevis Self-Locking Hook



Class ECGH  
Eye Claw Grab Hook



Class CCGH  
Clevis Claw Grab Hook

FIG. 1 General Component Configuration (continued)