

INCH-POUND

MIL-DTL-13220G  
28 September 2015  
SUPERSEDING  
MIL-DTL-13220F  
26 May 2015

## DETAIL SPECIFICATION

## HOOK, SLIP (FOR USE WITH WIRE ROPE OR CHAINS)

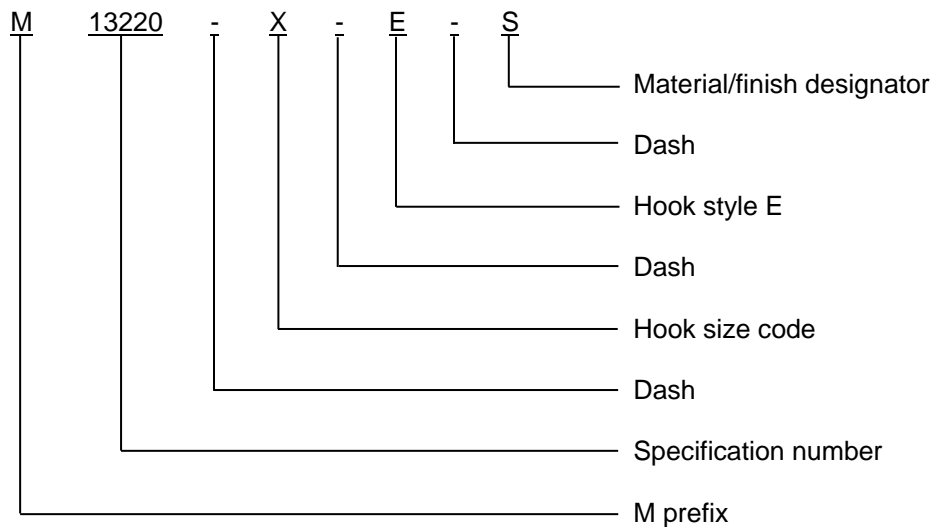
Reactivated after 25 January 2006 and may be used for new and existing designs and acquisitions.
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This specification is approved for use by all Departments and Agencies of the Department of Defense.

## 1. SCOPE

1.1 Scope. This specification covers hook, slip, (for use with wire rope or chains). Wire rope should be plain end loop or thimble slings.

1.2 Part or Identifying Number (PIN). The PIN consist of the letter "M", the basic specification number, a dash, a letter for the hook size, a dash, a letter for hook style, a dash, and a letter for material/finish. See the individual specification sheets for applicable PIN's.



Example: M13220-X-E-S represents a hook, slip, eye, with latch for 5/16 inch chain, cast or forged steel, zinc finish.

Comments, suggestions, or questions on this document should be addressed to: DLA Land and Maritime, Attn: VAI, P.O. Box 3990, Columbus, OH 43218-3990, or emailed to <a href="mailto:FluidFlow@dla.mil">FluidFlow@dla.mil</a> . Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <a href="https://assist.dla.mil">https://assist.dla.mil</a> .
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AMSC N/A

FSC 4030



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1.2.2 Hook style. Hook style codes see [table I](#) and [3.4.1](#).

TABLE I. Hook style and code.

Code	Hook style	Specification sheet number
A	Hook, slip, clevis	MIL-DTL-13220/1
B	Hook, slip, clevis, with latch	MIL-DTL-13220/2
C	Hook, slip, eye	MIL-DTL-13220/3
D	Hook, slip, swivel eye, with latch	MIL-DTL-13220/4
E	Hook, slip, eye, with latch	MIL-DTL-13220/5
F	Hook, slip, sliding choker	MIL-DTL-13220/6

## 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections [3](#) and [4](#) of this specification. This section does not include documents cited in other sections of this specification or recommended of for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections [3](#) and [4](#) of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

## DEPARTMENT OF DEFENSE SPECIFICATION

- MII-C-24707 - Castings, Ferrous, General Specification For
- MIL-C-24707/4 - Castings, Ferrous, Austenitic Manganese (Hadfield Manganese), (Low Magnetic Permeability and/or Wear Resistant)

(See supplement 1 for list of specification sheets)

(Copies of these documents are available online at <http://quicksearch.dla.mil>.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

## AMERICAN IRON AND STEEL INSTITUTE (AISI)

- AISI 4130 - Steel Products Manual

(Copies of this document are available online at <http://www.steel.org>.)

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ASTM INTERNATIONAL

- ASTM A128/A128M - Austenitic Manganese-Steel Castings
- ASTM A693 - Standard Specification for Precipitation-Hardening Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
- ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus

(Copies of these documents are available online at <http://www.astm.org>.)

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

- ISO 17025 - General requirements for the competence of testing and calibration laboratories

(Copies of this document are available online at <http://www.ncsli.org> or from NCSL International 2995 Wilderness Place, Suite 107 Boulder, Colorado 80301-5404.)

NCSL INTERNATIONAL

- NCSL Z540.3 - Requirements for the Calibration of Measuring and Test Equipment

(Copies of this document are available online at <http://www.ncsli.org> or from NCSL International 2995 Wilderness Place, Suite 107 Boulder, Colorado 80301-5404)

SAE INTERNATIONAL

- SAE-AMS2700 - Passivation of Corrosion Resistant Steels
- SAE-AMS5659 - Steel, Corrosion-Resistant, Bars, Wire, Forgings, Rings, and Extrusions 15Cr - 4.5Ni - 0.30Cb (Nb) - 3.5Cu - UNS S15500
- SAE-AMS5862 - Steel, Corrosion-Resistant, Sheet, Strip, and Plate 15Cr - 4.5Ni - 0.30Cb (Nb) - 3.5Cu Consumable Electrode Remelted, Solution Heat Treated Precipitation-Hardenable-Composition similar to UNS S15500
- SAE-AMS6370 - Steel, Bars, Forgings, and Rings 0.95Cr - 0.20Mo (0.28 - 0.33C) (SAE 4130) - UNS G41300

(Copies of these documents are available from <http://www.sae.org>.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1 Specification sheets. The individual item requirements shall be as specified herein and also in accordance with the applicable specification sheet. In the event of a conflict between the requirements of this specification and the specification sheet, the latter shall govern.

3.2 First article. When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.3.

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3.3 Recycled, recovered, environmentally preferable, or biobased materials. Recycled, recovered, or environmentally preferable, or biobased materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.4 General requirements.

3.4.1 Classification (style). Hooks shall be of the sizes, materials, and finishes, as specified in the individual specification sheets, see supplement 1.

3.5 Material.

3.5.1 Cast steel hooks. Material shall be cast steel, heat treated, clean and sound, and in accordance with MIL-C-24707 or in accordance with ASTM A128/A128M. See [table I](#) for dimensions.

3.5.2 Low magnetic permeability. Low magnetic permeability hooks shall be cast steel in accordance with MIL-C-24707/4.

3.5.3 Forged steel. Material shall be heat treated, forged alloy steel in accordance with AISI 4130 or SAE-AMS6370.

3.5.4 Corrosion resistant steel. Material shall be corrosion resistant steel SAE 15-5PH in accordance with SAE-AMS5659 or UNS S15500 in accordance with SAE-AMS5862 or ASTM A693.

3.6 Finish.

3.6.1 Steel finish. Steel finish shall be zinc coating in accordance with ASTM B633 Fe/Zn 5, type VI.

3.6.2 Corrosion resistant steel. Corrosion resistant steel shall be passivated in accordance with SAE-AMS2700, type 6 or 7.

3.7 Proof test. Each sample hook selected shall be proof tested in accordance with [4.6.2](#). Working load limit (WLL) shall be as specified in the individual specification sheets. The hooks shall show no evidence of deformation, distortion or permanent set, or sign of incipient cracks after subjecting hook to stipulated proof test load.

3.8 Ultimate strength. Ultimate strength requirements in accordance with [4.6.3](#), the WLL of the hooks shall be as shown in the associated slash sheets. Ultimate strength of hooks shall not be less than four times the safe WLL. The hooks shall be tested until they crack.

3.9 Salt spray. When hooks are exposed to salt spray testing specified in [4.8](#), the plating shall show no corrosion products of zinc or basis metal corrosion products. The appearance of corrosion products visible to the unaided eye at normal reading distance shall be cause for rejection, except white corrosion products at the edges of the specimens shall not constitute a failure.

3.10 Identification. The hooks shall bear the manufacturer's identification mark and hook size. The identification shall be stamped, or applied by any other method of permanent marking, on the hooks in a clearly visible location.

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3.11 Workmanship. Workmanship shall conform to accepted commercial standard practice for this type of equipment. Castings should be clean and high quality. There shall be no fins, spurs, scale, extraneous material, cracks, porosity, sand, inclusions, blowholes, rough edges, or rough surfaces. Forgings shall be inspected for proper die alignment, unfilled sections, cold shunts, scale pits, mistrimmed, and other defects visible to the eye.

## 4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.3).
- b. Conformance inspection (see 4.4).

4.2 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the applicable test procedures.

4.2.1 Test equipment and inspection facilities. Test and measuring equipment and inspection facilities of sufficient accuracy, quality, and quantity to permit performance of the required inspection shall be established and maintained or identified by the contractor. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment shall be in accordance with ISO 17025 and NCSL Z540.3 as applicable.

4.3 First article inspection. First article inspection, if not done by the manufacturer, shall be performed at a laboratory acceptable to the procuring activity on sample units produced with equipment and procedures used in production.

4.3.1 Samples for first article. The samples shall be representative of the construction, workmanship, components, and materials to be used during production. When a manufacturer is in continuous production of hooks from one contract to another or has demonstrated within the past 3 years the capability to meet the requirements of this specification, inspection of additional first article samples for a new contract may be waived at the discretion of the acquiring activity (see 6.2). Approval of the first article samples or the waiving of first article inspection does not preclude the requirements for performing conformance inspection. First article samples shall be furnished to the Government as directed by the contracting officer (see 6.2).

4.3.2 Inspection routine. From each lot presented for inspection eight samples (8 total) shall be randomly selected (see 4.3.2.1). If only one lot is presented the sample size shall be 8. The 8 samples shall be subjected to the first article inspections specified in table II. Sample units, which have been subjected to salt spray testing, shall not be delivered on a contract or purchase order.

4.3.2.1 Lot. A lot shall consist of all hooks of the same type, size, material, and manufactured under essentially the same conditions and submitted for acceptance at one time.

TABLE II. First article inspection.

Inspection	Requirement	Test method
Visual and mechanical inspections	3.4.1, 3.5, 3.10, and 3.11	4.6.1
Proof test	3.7	4.6.2
Ultimate strength test	3.8	4.6.3
Salt spray test	3.9	4.6.4

4.3.3 Failures. One or more failures shall be cause for refusal to grant first article approval.

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4.3.4 Disposition of samples. First article samples shall be furnished to the Government as directed by the contracting officer (see 6.2). Unless otherwise specified, after award of the contract or order, the manufacturer shall forward, from randomly selected samples, 1 hook. The sample shall be representative of the construction, workmanship, components, and materials to be used during production.

4.3.5 First article information. Upon completion of first article inspection, the Government activity responsible for conducting the inspection program (see 6.2), shall report the results of the inspection, with appropriate recommendation, to the contracting officer. Approval of the first article samples or the waiving of first article inspection does not preclude the requirements for performing conformance inspections.

4.3.6 Waivers or deviations to specification requirements. All waivers or deviations to specification requirements shall be coordinated through the preparing activity; DLA Land and Maritime, Attn: VAI, P.O. Box 3990, Columbus, OH 43218-3990, or emailed to [Fluidflow@dla.mil](mailto:Fluidflow@dla.mil).

#### 4.4 Conformance inspection.

4.4.1 Individual inspections. For manufacturers that have successfully passed first article inspections and are continuously producing hooks to this specification, on going inspections shall consist of individual inspections (see table III) and periodic inspections (see table IV), on samples selected in accordance with 4.5.1. If first article is waived due to prior successful first article inspection the individual inspections and sampling and periodic inspections shall be the manufactures in house inspection procedures. Individual inspections shall be implemented on a continual basis throughout the production of hooks.

TABLE III. Individual inspections.

Inspections	Requirement	Inspection	Number of samples
Visual and mechanical	3.4.1, 3.5, 3.10, and 3.11	4.6.1	100%
Proof test	3.7	4.6.2	8

4.4.2 Periodic inspections. Periodic inspections shall be performed every year see 4.4.3. Periodic inspections shall consist of the testing specified in table IV.

TABLE IV. Periodic inspections. 1/

Inspections	Requirement paragraph	Inspection paragraph
Ultimate strength	3.8	4.6.3
Salt spray test	3.9	4.6.4

1/ Sample units, which have been subjected to periodic inspections, shall not be delivered on a contract or purchase order.

4.4.3 Periodic test frequency. If the manufacturer can demonstrate that periodic tests have been performed for two consecutive years with zero failures, then the frequency of the periodic test, with the approval of the contracting officer, can be performed every fourth year.

4.5 Production lot. A production lot shall consist of all hooks of the same PIN which have been manufactured under the same conditions and on the same continuous run.

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4.5.1 Production samples. The production samples shall be a product selected at random from the production lot without regard to quality and shall be the sample size specified in [table V](#).

TABLE V. Lot and sample size.

Production lot size	Sample size
1 to 90	8
91 to 150	12
151 to 280	19
281 to 500	21
501 to 1200	27
1201 to 3200	35
3201 to 10,000	38
10,001 to 35,000	46

4.5.2 Lot records. Manufacturers shall keep lot records for 3 years minimum. Manufacturers shall monitor for compliance to the prescribed procedures, and observe that satisfactory manufacturing conditions and records on lots are maintained for these hooks. The records, including as a minimum, an attributes summary of all quality conformance inspections conducted on each lot, shall be available to review by customers at all times.

4.6 Test methods.

4.6.1 Visual and mechanical inspection. Hooks shall be examined to ensure conformance with this specification and the individual specification sheets. Continuous examination shall be performed to assure compliance with the following requirements:

- a. Design, construction and physical dimensions (see [3.4.1](#)).
- b. Materials (see [3.5](#)).
- c. Marking (see [3.10](#)).
- d. Workmanship (see [3.11](#)).

4.6.2 Proof test (see 3.7). Each sample hook selected in accordance with [4.5.1](#) shall be proof tested to twice the safe working load limit (WLL), specified in the individual specification sheet. The pull shall be in direct alignment with the centerline of the hook. The hooks shall meet the requirements of [3.7](#).

4.6.3 Ultimate strength test (see 3.8). The WLL, as specified in the individual specification sheets, shall have a design factor of not less than 4 on the ultimate strength of materials. The hook shall be tested by pulling it, stretching it until it fails. The graph of the engineering stress versus strain shall be made available upon request.

4.6.4 Salt spray test (see 3.9). Hooks when subjected to 120 hours of corrosion resistance testing in accordance with ASTM B117 and shall meet the requirements of [3.9](#).

## 5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see [6.2](#)). When packaging of material is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the Military Service's System Commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

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## 6 NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Sliding choker hooks are intended for use with single leg plain end loop and thimble slings. Hook slips are intended for use with chains. These hooks are military unique because they must be proof pressure and strength tested to assure that the hooks will not break when in service that could cause injury or property damage. Commercial hooks are not required to be tested in this way.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. PIN (see 1.2).
- c. If first article is required (see 4.3).
- d. Name and address of the first article inspection test facility to which first article samples are to be forwarded (see 4.3.1) and the name and address of the Government activity responsible for conducting the first article inspection program (see 6.3).
- e. Name and address of the Government activity responsible for receiving a production sample (see 4.3.4).
- f. Packing requirements (see 5.1).

6.3 First article. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results, and disposition of first article samples. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.3.1 Defense Logistics Agency (DLA) waiver of first article test. A waiver of a first article testing will only be considered by DLA when the contractor has delivered the same item within the last 3 years, has no unfavorable quality history, has not changed processes, or changed any subcontractors. DLA will not accept first article testing results outside the stated requirements.

6.4 Subject term (key word) listing.

Anchor  
Cast  
Forged  
Low Magnetic Permeability  
Steel  
Tie down

6.5 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. As of the dating of this document, the U.S. Environmental Protection Agency (EPA) is focusing efforts on reducing 31 priority chemicals. The list of chemicals and additional information is available on their website at <http://www.epa.gov/osw/hazard/wastemin/priority.htm>. Included in the list of 31 priority chemicals are cadmium, lead, and mercury. Use of these materials should be minimized or eliminated unless needed to meet the requirements specified herein (see Section 3).



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6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

CONCLUDING MATERIAL

Custodians:

Army - AV  
Navy - AS  
Air Force - 11  
DLA - CC

Preparing activity:

DLA - CC

(Project 4030-2015-018)

Review activities:

Army - MI  
Navy - CG, MC  
Air Force - 50, 70, 71

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.