

**INCH-POUND**

A-A-55804A

30 May 2002

SUPERSEDING

A-A-55804

11 March 1996

## COMMERCIAL ITEM DESCRIPTION

### RODS, GROUND (WITH ATTACHMENTS)

The General Services Administration has authorized the use of this commercial item description for all federal agencies.

1. **SCOPE.** This commercial item description (CID) establishes the government acquisition requirements for grounding electrodes with connecting cables and provisions for securing attachments to exposed noncurrent-carrying conductive materials of electrical equipment in mobile shops and temporary or permanent power stations, and to establish grounds in areas devoid of underground metallic water piping systems.

2. **CLASSIFICATION.** The ground rods shall be classified by the following types and classes as specified (see 7.4(b)).

#### Type

- I - Auger rod
- II - Driven rod
- III - Sectional rod
- IV - Driven head

#### Class

- A - Galvanized steel
- B - Copper-clad steel

### 3. SALIENT CHARACTERISTICS

3.1 **Materials.** Materials shall be as specified herein and the applicable figures. Materials not specified shall be subject to the requirements of this description.

3.2 **Threads.** All threads shall be of readily accepted commercial sizes. Type III rods shall have 5/8-11-UNC-2B or 3/4-10-UNC-2B threads. The coupling threads shall be as specified in figure 5.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to: Defense Supply Center Richmond (DSCR), ATTN: DSCR-VBD, 8000 Jefferson Davis Highway, Richmond, VA 23297-5610.

AMSC N/A

FSC 5975

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3.3 Rods. The ground rod assemblies shall be in accordance with National Fire Protection Association (NFPA) 70, "National Electrical Code" (DoD adopted).

3.3.1 Class A rods. Class A rods shall be fabricated from steel conforming to American Society for Testing and Materials (ASTM) A 108, "Standard Specification for Steel Bars, Carbon, Cold-Finished, Standard Quality" (DoD adopted), grade 1020, 1022, or 1025 and shall have a hardness of B 74 to 82 as specified in ASTM E 18, "Standard Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials" (DoD adopted). The rods shall be galvanized in conformance with ASTM A 153/A 153M, "Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware" (DoD adopted), class A, and shall have a depth not less than 0.0034 inch.

3.3.2 Class B rods. Class B rods shall be fabricated from steel conforming to ASTM A 108, grade 1016, 1018, or 1020 and shall have a hardness of Rockwell B 90 to 100 with copper cladding of not less than 0.010 inch in conformance with ASTM B 152, "Standard Specification for Copper Sheet, Strip, Plate, and Rolled Bar" (DoD adopted).

3.3.3 Protective finishes. Metal surfaces of the rod and attachments that are exposed when in use, but are not inherently corrosion resistant, shall be finished to resist corrosion.

3.3.4 Type I rods. The type I rod shall be 8 feet long  $\pm 1$  inch and 5/8 inch minimum diameter. It shall consist of a steel rod with an auger tip for ground insertion on one end and a T-handle on the other end (see figure 1). The T-handle shall be steel and shall be attachable to the grounding portion of the rod at the center of the T-handle. The auger tip shall be steel, with a right-hand thread not less than 9 inches in length. The ratio of the pitch diameter to the major diameter of the flutes shall be approximately 1.4 to 1. The auger tip shall be integral with the rod or attached thereto by means of brazing or welding. The tip shall be heat-treated to a minimum hardness of Rockwell C 45 in accordance with ASTM E 18.

3.3.5 Type II, class A or class B rods. The type II rod shall be 8 feet  $\pm 5/8$  inch long and 5/8  $+0 -5/64$  inch in diameter, or 8 feet  $\pm 3/4$  inch long and 5/8  $+0 -5/64$  inch in diameter, or 10 feet long  $\pm 1$  inch and 3/4 inch  $+0 -5/64$  inch in diameter as specified in the order (see 7.4(c)). These rods shall have a conical end for ground insertion and a flat end with a chamfer. The conical point angle shall be 60 degrees, with a tolerance of  $\pm 5$  degrees. The chamfer shall be 30 degrees (see figure 2). The ground insertion end shall be pointed without application of heat to retain original hardness of the metal.

3.3.6 Type III, class B rods. The type III rod shall have three 3-foot  $\pm 3/8$  inch sections, 5/8 inch  $+0 -5/64$  in diameter, or four 5-foot  $\pm 3/4$  inch sections, 3/4 inch  $+0 -5/64$  in diameter, or two 5-foot  $\pm 3/4$  inch sections, 3/4 inch  $+0 -5/64$  in diameter as specified in the order (see figure 3) (see 7.4(c)).

3.3.7 Type IV, class A rods. The type IV rod shall be 8 feet  $\pm 1/2$  inch long, 5/8 inch  $+0 -5/64$  inch diameter (see figure 4).

3.4 Fastening devices. All screws, pins, bolts, and similar parts shall be installed with means for adjustment and preventing loss of tightness.

3.5 Clamps. Clamps shall permit installation on the ground rod before or after the rod is inserted into the ground. To prevent electrolytic corrosion, the clamp body and parts shall be made of material compatible with the class of rod upon which they will be used.

3.5.1 Type I clamps. The clamp for type I rods (see figure 1) shall consist of a U-shaped yoke to accommodate a crossbar containing a threaded hole. A hex-head bolt to fit the threaded hole shall be used to apply pressure to the contact plate and clamp, producing a positive electrical connection without overstressing the material. The minimum size of the bolt shall be 5/16 inch. The minimum thickness of the clamp shall be 1/8 inch.

3.5.2 Type II and III clamps. The clamp for the type II and type III rods (see figures 2 and 3) shall have a one-piece assembly with a threaded hole and a hex-head cup set screw of 1/2-inch minimum diameter. The clamp shall be of sufficient size to allow it to be fitted over the ground rod. When mounted in place, it shall provide a positive electrical connection with the rod and grounding cable.

3.5.3 Type IV clamps. The clamp for the type IV rod shall have a 1/2-inch diameter thumbscrew, 20 threads per inch, and a washer (see figure 4).

3.6 Ground cables. The overall cable length shall be 6 feet  $\pm$  1 inch, unless otherwise specified in the order (see 7.4(d)).

3.6.1 Type I grounding cables. The grounding cable for type I rods shall consist of No. 10 wire size, rope stranded (7 strands), extra flexible bare copper wire or a strap of braided or woven copper wire equivalent to No. 6 wire size. A strap, if supplied, shall be not less than 3/4 inch and not more than 1 inch wide. The wire or braid shall be coated with tin, lead, or lead alloy. One end of the wire or braid shall be soldered or brazed to the yolk of the U-clamp and the opposite end shall be attached to the power clip (see figure 1).

3.6.2 Type II, III, and IV grounding cables. The grounding cable for types II, III, and IV rods shall consist of No. 6 wire size, flexible, bare stranded copper wire.

3.7 Ground terminals.

3.7.1 Type I grounding terminals. The ground terminal for type I rods shall be a clip such as A-A-59466, "Clips, Electrical, General Specification for", type PC, with the proper current rating.

3.7.2 Type II, III, and IV grounding terminals. The ground terminal lug for types II, III, and IV (see figures 2, 3, and 4) shall be an internal pressure bar type containing a threaded hole fitted with a fillister head machine screw for tightening against the pressure bar. The terminal shall provide electrical contact with the cable without deformation or weakening of the connection. A flattened portion shall be provided on the terminal with minimum dimensions of 1/2 inch long by 1/2 inch wide by 1/16 inch thick. This portion shall include a hole 9/32 inch  $\pm$  1/32 inch in diameter.

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3.8 Impact strength. The rod shall be capable of meeting the following impact requirement without shattering, becoming deformed, or otherwise physically damaged. With the ground rod in a vertical position and securely held in place by a suitable device placed 6 inches from the drive end of the rod, a 4-pound weight shall be dropped on the drive end of the rod from a height of 10 feet a total of 25 times.

3.9 Bending. The rod shall be capable of meeting the following bending requirements without showing evidence of cracking of the surface of the bent portion. At a temperature of  $77 \pm 9$  °F, the rod shall be held in a suitable rigid clamp or vise and the free end bent by applying a force normal to the rod at a distance of 40 rod diameters  $\pm 1/32$  inch from the clamping device. The normal force shall be applied until a permanent angular bend of 30 degrees is attained.

3.10 Clamp and grounding cable attachment. The clamp, with the grounding cable attached to the rod, shall be capable of withstanding a 150-pound pull on the cable for five minutes in a direction parallel to the axis of the rod, without slippage of the clamp or cable.

3.11 Contact resistance. The contact resistance between the terminal connection and the ground rod shall not exceed 0.005 ohm.

3.12 Workmanship. All ground rods and component accessories shall be free of burrs and sharp edges. Welds shall be free of fissures and lack of fusion with the parent metals. Metal coatings shall be free of pits and voids.

#### 4. REGULATORY REQUIREMENTS

4.1 Recovered materials. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

4.2 Metric products. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch-pound units, provided they fall within specified tolerances using conversion tables contained in the latest version of FED-STD-376, "Preferred Metric Units for General Use by the Federal Government", and provided all other requirements of this CID are met. If a product is manufactured to metric dimensions and those dimensions exceed the tolerances specified in the inch-pound units, a request should be made to the contracting officer to determine if the product is acceptable. The contracting officer has the option of accepting or rejecting the product.

#### 5. PRODUCT CONFORMANCE PROVISIONS

5.1 Product conformance. The products provided shall meet the salient characteristics of this CID, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial marketplace. The government reserves the right to require proof of such conformance.

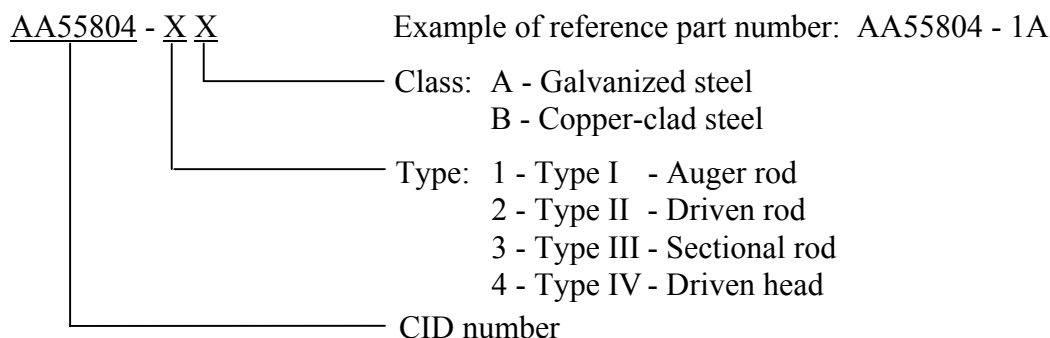
5.2 Market acceptability. The product offered must have been previously sold either to the government or on the commercial market.

## 6. PACKAGING

6.1 Preservation, packaging, and marking. Preservation, packaging, and marking for shipment shall be in accordance with ASTM D 3951, "Standard Practice for Commercial Packaging" (DoD adopted), or as specified in the acquisition order (see 7.4(e)).

## 7. NOTES

7.1 Part or identification number (PIN). The following PIN procedure is for government purposes and does not constitute a requirement for the contractor.



## 7.2 Sources of documents.

7.2.1 FAR. The FAR may be obtained from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. Electronic copies of FAR documents may be obtained from <http://www.arnet.gov/far/>.

7.2.2 CIDs and federal standards. Copies of CIDs and federal standards may be obtained from General Services Administration, Federal Supply Service, Specification Section, 470 East L'Enfant Plaza SW, Suite 8100, Washington, DC 20407. Electronic copies of CIDs and federal standards may be obtained from <http://astimage.daps.dla.mil/quicksearch/>.

7.2.3 ASTM standards. Copies of ASTM standards may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. Electronic copies of ASTM standards may be obtained from <http://www.astm.org/>.

7.2.4 NFPA standards. Copies of NFPA standards may be obtained from the National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101. Electronic copies of NFPA standards may be obtained from <http://www.nfpa.org/>.

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7.3 National stock number (NSN). The NSNs listed below are assigned for the listed product types and classes (see table I). Other NSNs may also correspond with this document.

<u>NSN</u>	<u>Type</u>	<u>Class</u>	<u>Size</u>
5975-00-371-9428	I	A	8 feet long
5975-00-296-5324	II	B	8 feet long
5975-00-878-3791	III	B	9 feet long, three 3-foot sections
5975-00-952-1791	III	B	10 feet long, two 5-foot sections

7.4 Ordering data. The contract or order should specify the following:

- a. CID document number, revision, and CID PIN.
- b. Type and class of rod (see 2).
- c. Length of rod (see 3.3.5 and 3.3.6).
- d. Length of ground cable if different (see 3.6).
- e. Special packaging requirements (see 6.1).

7.5 Subject term (key word) listing.

auger  
electrical  
grounding cable  
power stations  
terminal

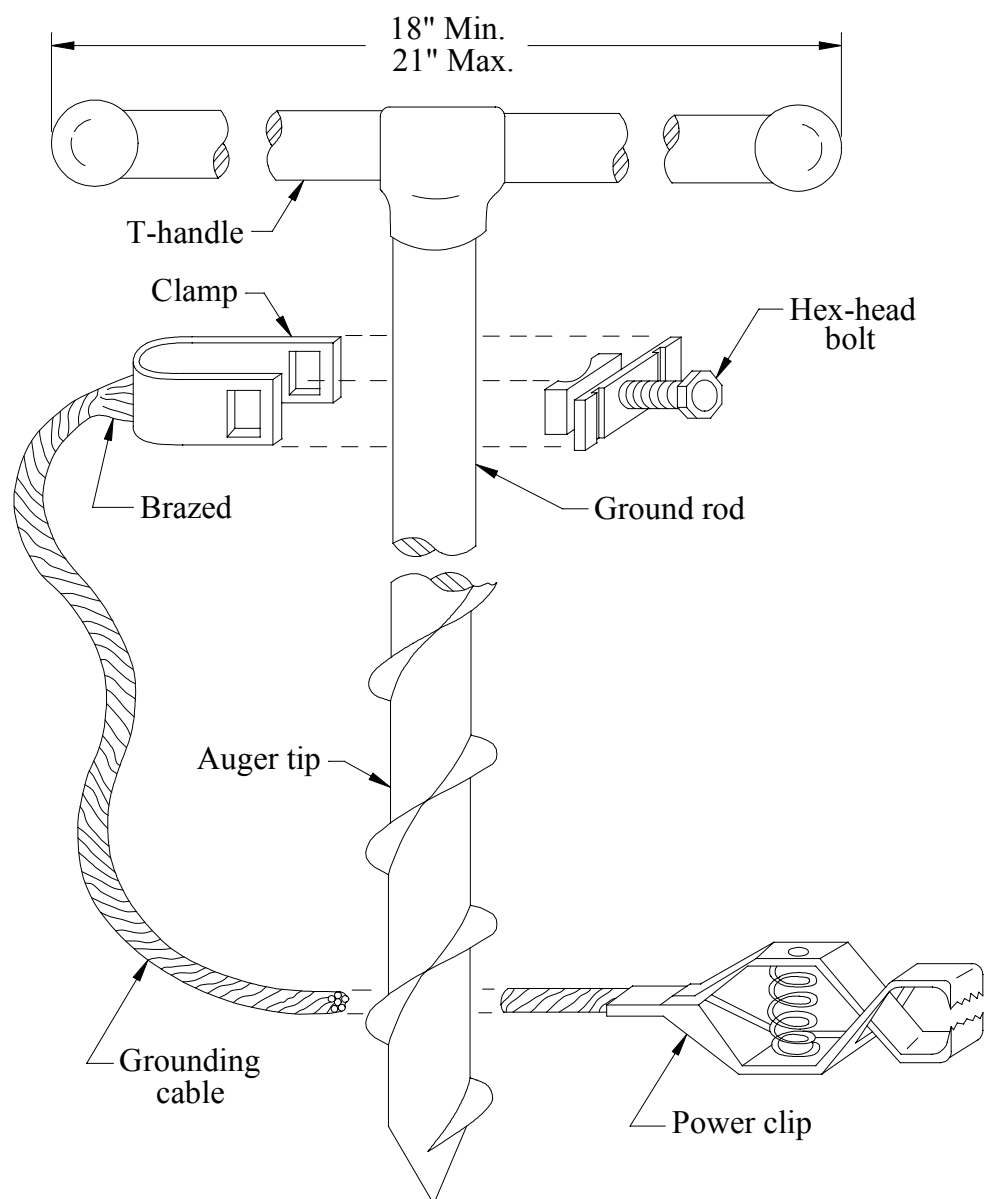


FIGURE 1. Type I, class A auger rod.

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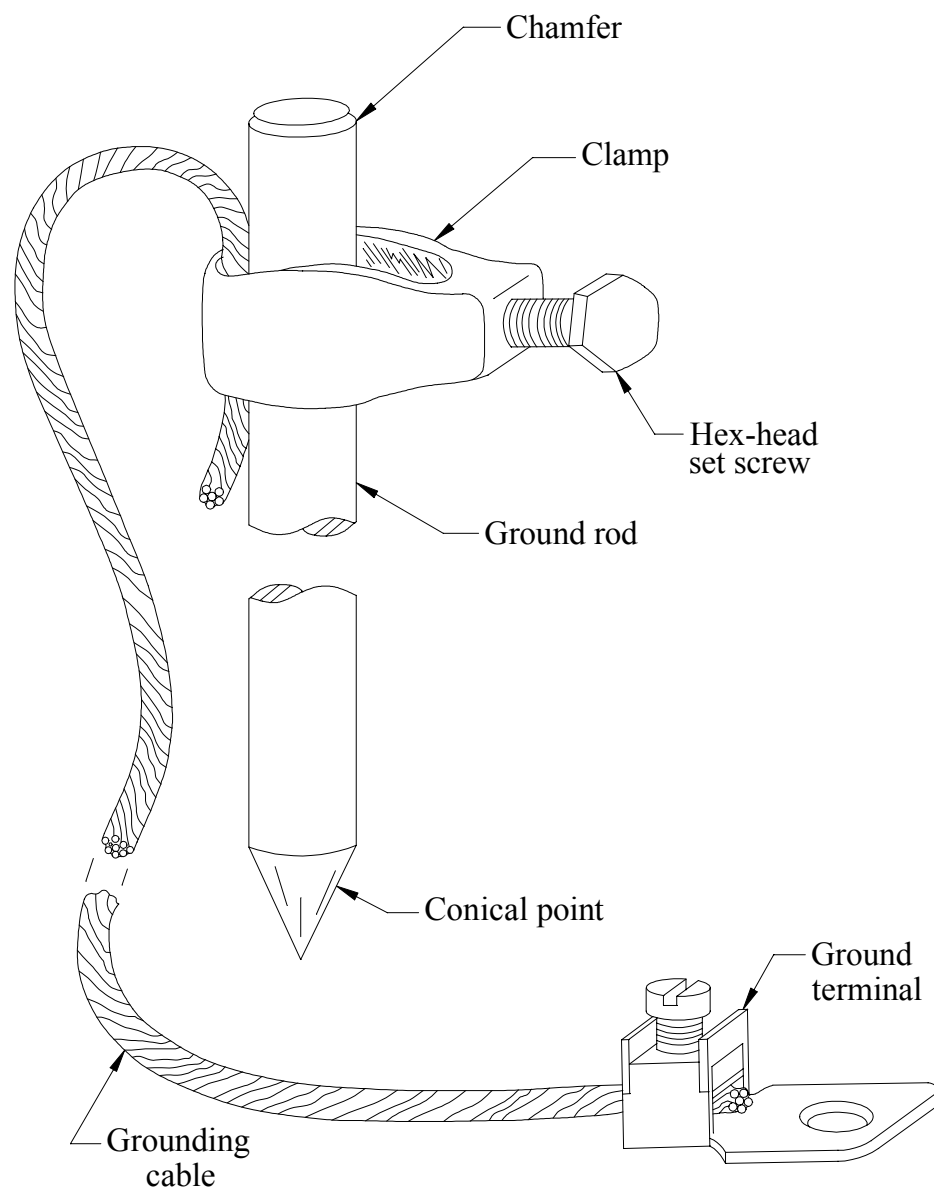


FIGURE 2. Type II, class A or B driven rod.



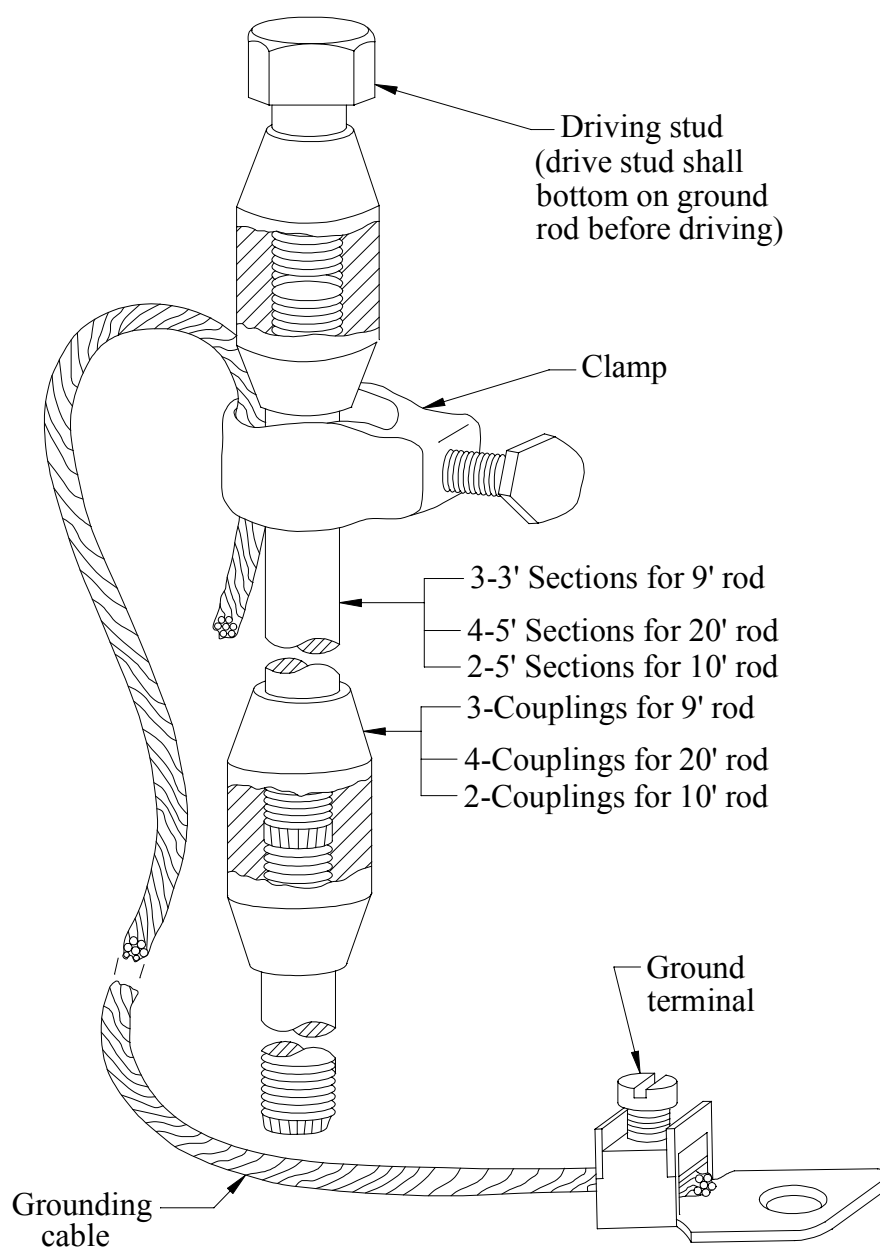


FIGURE 3. Type III, class B sectional rod.

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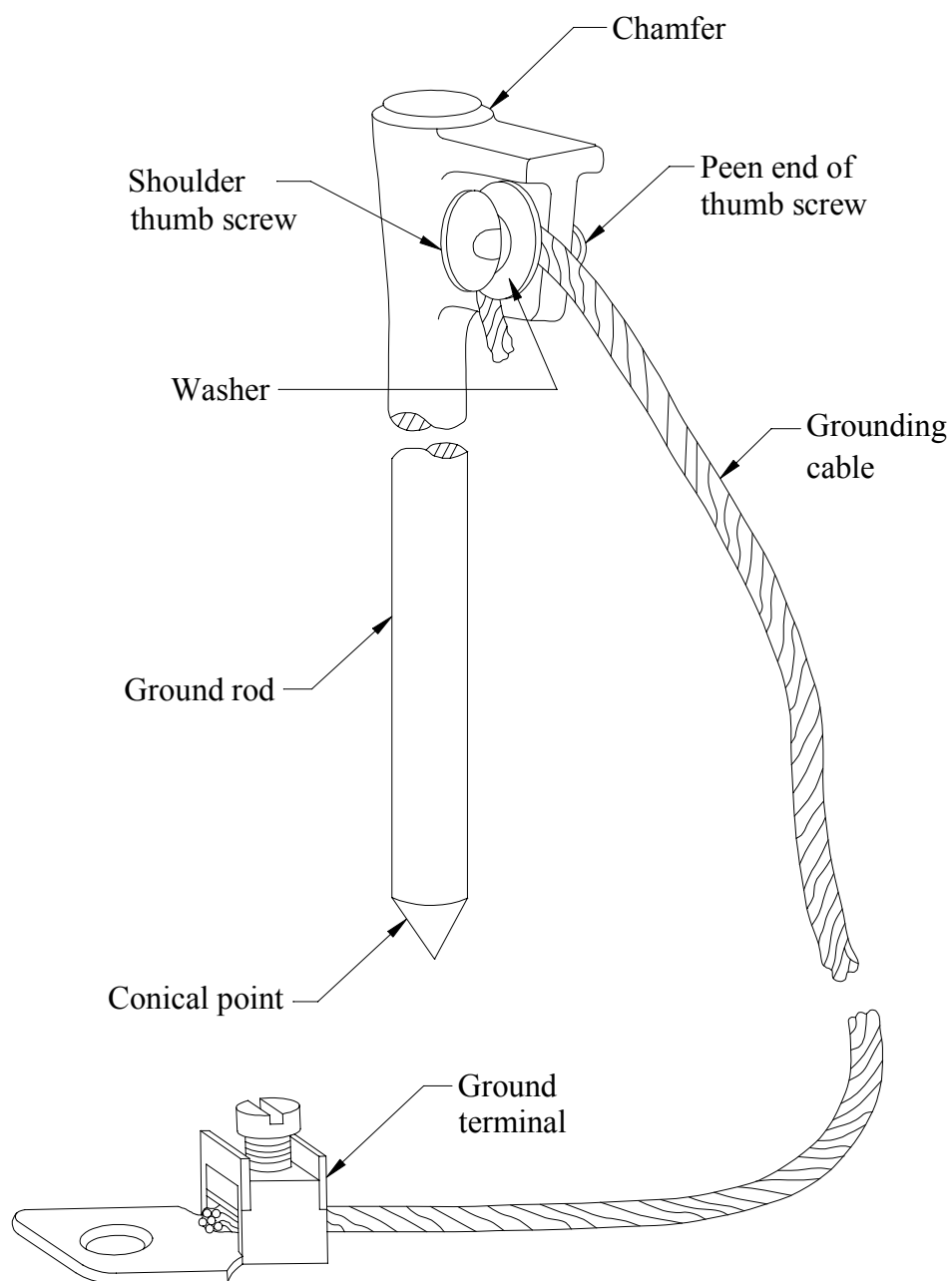


FIGURE 4. Type IV, class A driven head rod.

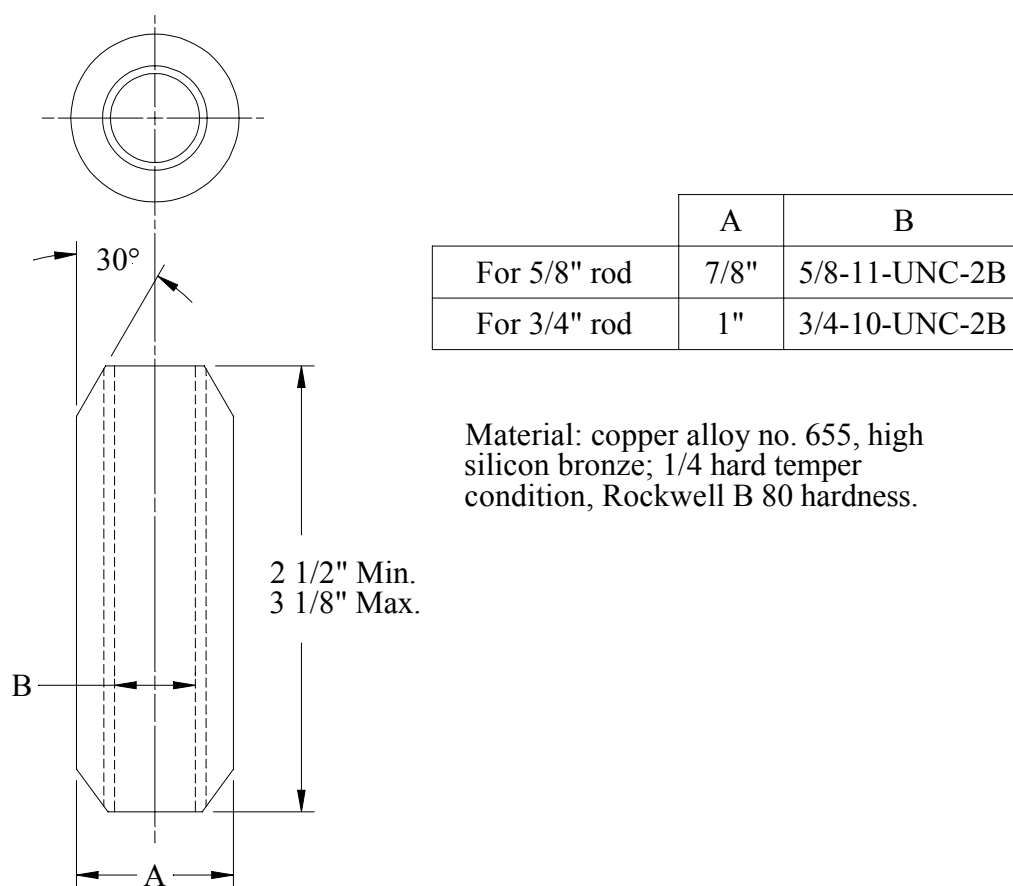


FIGURE 5. Coupling for type III, class B sectional rod.

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MILITARY INTERESTS:

Custodians:

Army - CR4

Navy - MC

Air Force - 11

Reviewer Activities:

Army - CR

Air Force - 99

CIVIL AGENCY  
COORDINATING ACTIVITY:

GSA - 7FXE

Preparing Activity:

DLA - GS2

(Project 5975-1352)