

| INCH-POUND |

GGG-W-648B

April 30, 1992

SUPERSEDING

GGG-W-648a

November 25, 1966

FEDERAL SPECIFICATION

WRENCH, LINEMAN'S

This specification is approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers lineman's wrenches used in poleline work. The wrenches were formerly covered by GGG-W-644.

1.2 Classification.

1.2.1 Type and sizes. Wrenches shall be of the lineman's type and of the following sizes, as specified (see 6.2 and 6.3):

5/8 - (See table I)

3/4 - (See table I)

2. APPLICABLE DOCUMENTS

2.1. Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

Federal Standards

FED-STD-123 - Marking for Domestic Shipment (Civil Agencies)

| Beneficial comments (recommendations, additions, deletions) and any pertinent |
| data which may be of use in improving this document should be addressed to: |
| Commanding Officer (Code 156), Naval Construction Battalion Center, Port |
| Hueneme, CA 93043-5000, by using the Standardization Document Improvement |
| Proposal (DD Form 1426) appearing at the end of this document or by letter. |

FSC 5120

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GGG-W-648B

Military Standards

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129 - Marking for Shipment and Storage

(Unless otherwise indicated, copies of federal and military specifications and standards are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Other publications. The following publication forms a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply:

ASTM

ASTM A686 - Tool Steel, Carbon
ASTM D3951 - Standard Practice For Commercial Packaging
ASTM E18 - Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification takes precedence. Nothing in this specification, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Illustration. Except for dimensional requirements, the illustration shown herein is for the convenience of identification and is not intended to preclude the purchase of wrenches which are otherwise in accordance with the requirements of this specification.

3.2 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. Unless otherwise specified, none of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification.

3.2.1 Steel. Steel shall be in accordance with ASTM A686.

GGG-W-648B

3.3 Design. The wrenches shall be of the double open-end type and shall be of forged steel with opening surfaces having a hardness of not less than 35 nor more than 50 on the Rockwell C scale (35-50 HRC). The forgings shall be in accordance with good commercial practice. The width of each wrench opening (see A, B, C, and D on figure 1) and tolerances shall be as specified in table I, as applicable. The wrench shall have a hole in the shank near the larger end for turning standard pole steps. The wrench shall withstand a test load of 4,500 inch-pounds with the pole step turning hole engaged and the load applied near the end of the small head. Each wrench opening shall withstand a test load of 7,500 inch-pounds applied near the end of the wrench opposite the head being tested. The wrenches shall be similar to figure 1 and tested as specified in section 4.

Table I. Wrench openings.

Size No.	A Inches	B Inches	C Inch	D Inch	E Inches	F Inches	G Inch	H Inches
	+1/64 -0	+1/64 -0	+1/64 -0	+1/64 -0	±1/32	±1/32	±1/32	±1/32
5/8	1-3/32	29/32	13/16	5/8	1	1-1/4	13/16	7/8
3/4	1-5/16	1-1/16	7/8	5/8	1-1/8	1-13/32	27/32	1-1/32

3.4 Finish. Wrenches shall be finished in accordance with the manufacturer's standard practice.

3.5 Identification marking. Each wrench shall be marked in a plain and permanent manner with the name or trademark of the manufacturer so that the source of manufacture may be readily determined.

3.6 Workmanship. Workmanship shall be of the highest grade throughout and in accordance with good commercial practice. Burrs, sharp edges, forging flash, and other harmful or extraneous material shall be removed.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this document where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this document shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in this document shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an

GGG-W-648B

acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.1.2 Responsibility for dimensional requirements. Unless otherwise specified in the contract or purchase order, the contractor is responsible for ensuring that all specified dimensions have been met. When dimensions cannot be examined on the end item, inspection shall be made at any point, or at all points in the manufacturing process necessary to ensure compliance with all dimensional requirements.

4.2 Sampling for conformance. Sampling shall be performed in accordance with MIL-STD-105. The sample unit shall be one wrench. Data for sampling shall be as stated in table II.

Table II. Sampling data.

Category	Sample unit	Inspection level	Acceptable quality level (AQL)	AQL expressed in terms of:	Reference
Visual examination	One wrench	II	4.0	Defects per 100 units	4.3.1
Dimensional examination	One wrench	S-4	1.0	Defects per 100 units	4.3.2
Testing	One wrench	S-3	1.0	Defects per 100 units	4.4
Examination of preparation for delivery	One container	II	4.0	Defects per 100 units	4.5

4.3 Examinations.

4.3.1 Visual examination. Each sample unit shall be examined for any nonconformance in design, material, finish, coating, construction, workmanship, and marking. Data for sampling shall be as specified in table II. Defects are listed in table III.

Table III. Defects list.

Examine	Defects
Material	Not as specified.
Finish	Not manufacturer's standard practice.
Design	Not as specified.
Workmanship	Burrs, sharp edges, forging flash, or other extraneous material.
	Not highest commercial grade.
Marking	Missing, incomplete, illegible, or not permanent.

GGG-W-648B

4.3.2 Dimensional examination. Each sample unit shall be examined for any nonconformance with dimensional requirements. Data for sampling shall be as specified in table II.

4.4 Testing. Each sample unit shall be tested in accordance with 4.4.1 and 4.4.2.

4.4.1 Load test.

4.4.1.1 Preparation. Straight parallel lines shall be scribed the full length of the top and bottom sides of the wrench. It is suggested that the sample wrench be securely fixed in a definite position on a vertical faceplate which is attached to a horizontal faceplate, and the straight lines scribed by means of a surface gage. The internal dimension of the wrench openings shall be measured. Suitable mandrels shall be supplied to fit into each of the wrench openings to provide reaction against the load. All mandrels shall be hardened to a hardness of not less than 55 HRC.

4.4.1.2 Application of load. Wherever possible, the load shall be applied near the end of the handle, or as far away as practicable from the wrench opening or slot. A shallow V-groove shall be filed on the wrench handle to mark the point of load application. The load shall be applied through a knife-edge bearing fitted into the V-groove and shall be held for one minute. The load shall be applied with suitable torque producing machines or by means of dead weights or testing machines. Care shall be exercised to maintain accuracy in applying the load and in measuring the effective lever arm through which the load acts. The effective lever arm, when the load is vertical and a lever is employed, is the shortest distance in inches between two vertical lines passing respectively through the point of load application and the center of the reaction mandrel. The specified test load in 3.3 shall be the product of the effective lever arm in inches, and the applied load in pounds, resulting in inch-pounds.

4.4.1.3 Determination of test results. After application of the load test, the test wrenches shall be replaced in the same position on the vertical base plate. The scriber point on the surface gage shall be moved along the scribed lines on the wrenches. Any permanent deformation of handles will be indicated by a change in the straight reference line scribed on the wrench before application of load. Slots and wrench openings shall be remeasured and examined. Any evidence of permanent set in the handles; distortion or spreading of the slots and openings; spalling (other than a brightening of the metal) or slots, or other indications of weakness of any nature that would affect serviceability of the wrench shall be cause for rejection.

4.4.2 Hardness test. A hardness test shall be conducted in accordance with ASTM E18 to determine compliance with 3.3.

4.5 Examination of preparation for delivery. Inspection to determine compliance with preparation for delivery shall be made in accordance with section 5.

GGG-W-648B

5. PACKAGING

5.1 Preservation, packaging, and packing. Unless otherwise specified (see 6.2), the wrenches shall be preserved, packaged, and packed in accordance with ASTM D3951.

5.2 Marking.

5.2.1 Civil agencies. In addition to markings required by the contract or order, the interior packages and shipping containers shall be marked in accordance with FED-STD-123.

5.2.2 Military activities. In addition to markings required by the contract or order, the interior packages and shipping containers shall be marked in accordance with MIL-STD-129 or ASTM D3951.

6. NOTES

6.1 Intended use. The size 5/8 wrench is intended for use on 5/8-inch hardware, and the size 3/4 wrench for use on 3/4-inch hardware, in poleline work.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- (a) Title, number, and date of this specification.
- (b) Packaging, and packing if different (see 5.1).

6.3 Supersession data. This specification covers lineman's wrenches, formerly type III, in GGG-W-644.

MILITARY INTERESTS:

Military Coordinating Activity

Navy - YD

Custodians

Army - GL

Navy - YD

User Activities

Army - AR, CE

CIVIL AGENCY COORDINATING ACTIVITIES:

GSA - FSS

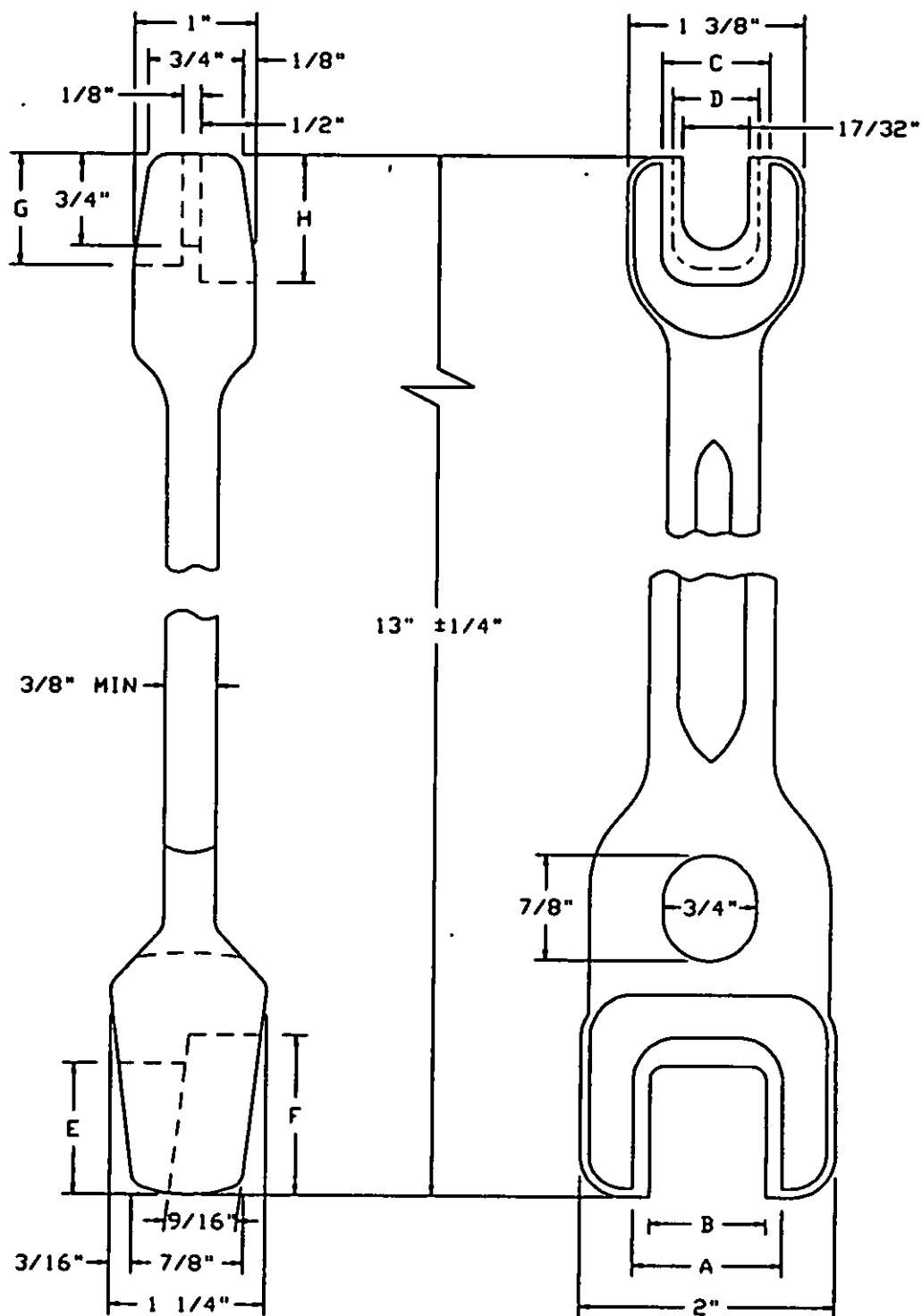
PREPARING ACTIVITY:

Navy - YD

(Project 5120-D007)

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein.

GGG-V-648B



Note:

1. A tolerance of plus or minus 10 percent will be permitted on non-toleranced dimensions.

FIGURE 1. Lineman's wrench.

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
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I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER
GGG-W-648B

2. DOCUMENT DATE (YYMMDD)
920430

3. DOCUMENT TITLE

WRENCH, LINEMAN'S

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE (Include Area Code)
(1) Commercial
(2) AUTOVON
(If applicable)

7. DATE SUBMITTED
(YYMMDD)

8. PREPARING ACTIVITY

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Ray Mayer

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805-982-5615

(2) AUTOVON
551-5615

c. ADDRESS (Include Zip Code)

Commanding Officer
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