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INCH-POUND

MIL-PRF-12065E
26 February 1996
SUPERSEDING
MIL-W-12065D
9 August 1984

PERFORMANCE SPECIFICATION

WINCHES, DRUM, HAND-OPERATED, SPUR GEAR, 2 OR 3 PURCHASE

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers hand-operated, single-drum, spur gear driven, 2- or 3-purchase type winches.

1.2 Classsification. The winches are of the following sizes, as specified (see 6.2):

sizes	
1-1/2	tons
2	tons
3-1/2	tons
5	tons
6	tons
15	tons

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/BLUE, Warren, MI 48397-5000, by using the Standardization Document Improvement 'Proposal (DD Form 1426) appearing at the end of this document, or by letter.

AMSC N/A FSC 3950

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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 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 documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications. 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 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).

SPECIFICATIONS

FEDERAL

RR-W-410 - Wire Rope and Strand

DEPARTMENT OF DEFENSE

MIL-T-704 - Treatment and Painting of Materials

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

2.3 Non-Government Publications The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

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AMERICAN GEAR MANUFACTURER'S ASSOCIATION (AGMA)

AGMA Standards

(Applications for copies should be addressed to the American Gear Manufacturer's Association, 1500 King Street, Suite 201, Alexandria, VA 22314.)

2.4 Order of precedence In the event of a conflict between the text of this document and the references cited herein, the text of this specification takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a first article sample shall be subjected to first article inspection in accordance with 4.2.

3.2 Materials. Materials used shall be in accordance with the manufacturer's materials specifications for winches. The materials shall be capable of meeting all the operational and environmental requirements specified herein. Asbestos, cadmium, and radioactive material shall not be used in this item (see 4.3.1 and 6.5).

3.2.1 Dissimilar metals. Dissimilar metals shall not be used in intimate contact with each other unless protected against galvanic corrosion (see 4.3.1).

3.2.2 Recyled. recovered. or enviromentally preferable materials. Recycled, recovered, or environmentally preferable 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.

3.3 Safety.

3.3.1 Ratchet. A ratchet mechanism, which will hold the load under maximum load conditions without assistance, shall be included. When engaged, the ratchet shall allow winching of the load but will prevent playout of the load and kickback of the crank if released. When not engaged, the ratchet shall allow free wheeling playout of the wire rope (see 4.3.1).

3.4 Description. The winches shall be of the hand-operated. spur gear, single-drum, 2- or 3-purchase type. Load holding is provided by a ratchet mechanism and load holding/control by a handbrake. Capacities shall be as specified in table I. All parts having the same manufacturer's part number shall be directly and completely interchangeable with each other

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with respect to installation and performance on winches. The winch shall be the latest model of the manufacturer's standard commercial product equipped as specified herein and shall have been in production, marketed and in use for a minimum of one year preceding the solicitation for procurement. The introduction of normal product improvement changes in this one year period is acceptable.

TABLE I. Winch capacities.

Size (tons)	Line pull* (pounds (lbs))	Wire rope	
		Diameter (inches (in.))	Length (feet (ft))
1.5	3000	7/16	150
2	4000	1/2	150
3.5	7000	1/2	175
5	10000	1/2	200
6	12000	7/8	200
15	30000	1	200

*Rated load: Measured with a single layer of rope on the drum.

3.4.1 Gear cover. The winch shall be equipped with a gear cover.

3.4.2-. The winch shall be equipped with a lever operated, band or disc type handbrake and it shall be accessible for examination and adjustment. The brake shall control and hold the load under maximum load conditions without assistance from the ratchet.

3.4.3 Cranks. Power for the winch shall be supplied by one or two adjustable length crank (s) with rotating hand grips. Two or three gear ratios shall be provided which shall be selected by changing the location of the crank(s) from the drum shaft to the geared shaft(s). The effort for each crank shall not exceed 25 Ibs underrated load conditions.

3.4.4-. All bearings shall be of the sealed, anti-friction or replaceable bushing type (see 4.3.1).

3.4.5 4.5 Wrinch drum and wire rope The winch drum, flanges, and braking surfaces shall be machined to a finish not rougher than 250 microinches. The winch drums shall each have wire rope capacities as specified in table I. Unless otherwise specified (see 6.2), the wire rope shall conform to RR-W-410, type 1, class 2, preformed, uncoated, regular lay. The wire rope diameter and length as specified in table I for the applicable sized winch shall be furnished installed on the drum. A swivel hook having a safety factor of not less than four shall be furnished and installed in the wire rope by means of a thimble, swaged type pendant fittings, or

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shall be secured by a wire rope loop passing around open- and closed-end thimbles and spliced into the wire rope by the fabricator. The swivel hook shall be machined at the bearing surface to permit turning.

3.4.6 Gearing. All gears shall be of the spur type, manufactured in accordance with AGMA Standards, with a minimum service life of 5,000 hours.

3.4.7 Frame or housing. The frame or housing shall provide the strength and rigidity required in winching operations. The frame or housing shall contain the other components of the winch in one unit. Bracket(s) shall be furnished and installed on the frame for retaining the crank(s) when not in use. The frame or housing shall have a flat mounting base containing holes spaced for bolting the winch to a foundation. The number, size and spacing of holes shall be sufficient so that when mounted with the appropriate size bolts, the drum spooled to capacity and the rated load applied, no permanent deformation of the winch or bolts shall occur.

3.4.8 5-ton size. When specified (see 6.2), the 5-ton size shall have four base mounting holes, 0.69 in. in diameter. The holes shall be spaced 13.062 in. plus or minus 0.031 in. centers on lines parallel to the longitudinal axis of the drum and 10.875 in. plus or minus 0.031 in. centers on lines at right angles to the longitudinal axis of the drum.

3.5 Lubrication. All surfaces requiring lubrication shall be provided with a suitable means for lubricating.

3.6 Identification and marking. Identification and marking shall be permanent and legible. Marking shall be applied to a nameplate attached to the winch base by screws, bolts, or rivets in a conspicuous, protected location. The nameplate shall be made of a material suitable to withstand environmental conditions expected with a winch. The winch nameplate shall include the following information (see 4.3.1):

a. Winch, drum, hand-operated, spur gear, 2-or 3-purchase
b. National stock number (NSN)
c. Part or Identifying Number (PIN) (see 6.3)
d. Manufacturer's serial number
e. Manufacturer's name or identification code (CAGE)
f. Contractor or order number
g. Date of manufacturing

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3.7 Treatment and painting. The portions of the winch normally painted shall be cleaned, treated, and painted in accordance with MIL-T-704, type A (see 4.3.1).

4. VERIFICATION

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

a. First article inspection (see 4.2).
b. Conformance inspection(see 4.3).

4.2 First article inspection.

4.2.1 Examination. The winch shall be examined as specified in 4.3.1. Presence of one or more defects shall be cause for rejection.

4.2.2 Tests. The winch shall be tested as specified in 4.3.2. Failure of any portion of the test shall be cause for rejection.

4.2.3 First article model. Any changes or deviations of production winches from the approved first article model during production will be subject to the approval of the contracting officer. Approval of the first article model will not relieve the contractor of his obligation to furnish winches conforming to this specification.

4.3 Conformance inspection. The manufacturer shall utilize all its commercial production quality control procedures for the winches produced for the government. In addition, prior to shipment, the contractor shall examine each winch for the defects listed in table II.

4.3.1 Examinination. The winch shall be examined for the following defects in table II. Examination shall be visual, tactile or by measurement with standard inspection equipment (SIE).

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TABLE II. Classification of defects

Category	Defect	Method of examination
Major:		
101	Capacity not as specified (see table I).	SIE 1/
102	Assembly not complete or not correct.	Visual
103	Materials not as specified (see 3.2).	Visual
104	Dissimilar metals are not effectively insulated from each other (see 3.2.1).	Visual
105	Bearings not as specified (see 3.4.4).	Visual
106	Safety devices missing or not as specified (see 3.3.1)	Visual
107	Identification markings not as specified (see 3.6).	Visual
108	Treatment and painting not as specified (see 3.7).	Visual

1/ SIE = Standard Inspection Equipment.

4.3.2 Test. The performance of the winch shall be tested using the following procedures. Lubricate the winch. The winch shall be bolted to a suitable foundation. The test load shall cause a minimum line pull as specified in table I. The line pull shall remain constant for a length of at least 30 ft. With the ratchet mechanism engaged, the load shall be winched for 30 ft and then the crank(s) shall be released. The effort required shall not exceed 25 lbs per crank. No playout of the line is allowed. The handbrake shall be engaged and the ratchet shall be released. Using the handbrake only, controlled playout of the line shall be allowed, stopping and holding the load at approximately 5 ft increments for a total of 30 ft. This procedure shall be repeated for a total of 15 cycles. One cycle of the test shall be completed except the load shall be winched to within 5 ft of the winch so that the drum is spooled to capacity (input force on the crank(s) may exceed 25 lbs). Any evidence of damage, operating difficulties, or malfunctions shall constitute failure of this test.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contractor order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. 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

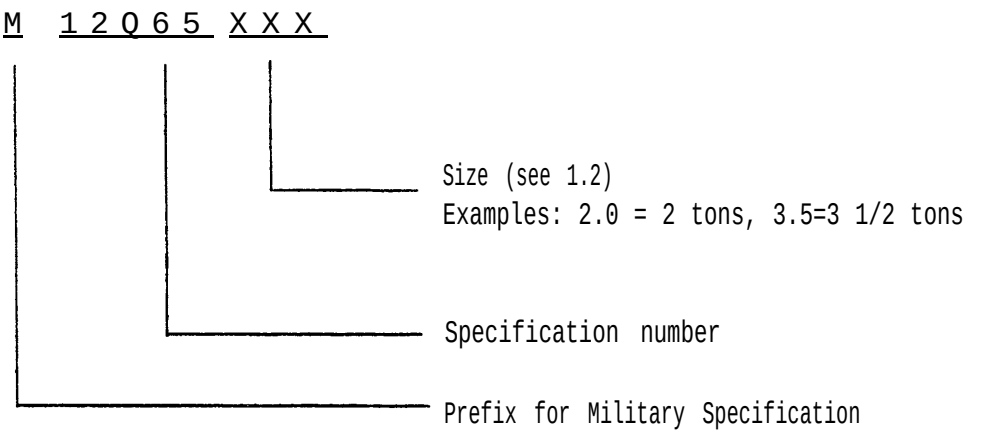
(This section contains information of a general or explanatory nature which maybe helpful, but is not mandatory.)

6.1 Intended use. The winch is intended for use in pulling loads where light weight and compactness are required or power is not available.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number and date of this specification.
b. Size, PIN, and quantity of winches required (see 1.2 and 6.3).
c. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2.1 and 2.3).
d. When a first article inspection is required (see 3.1).
e. When wire rope other than as specified is acceptable (see 3.4.5).
f. When mounting hole requirement for the 5-ton size winch should be as specified in 3.4.8.
g. Packaging requirements (see 5.1).

6.3 Part or Identifying Number (PIN). The PIN to be used for winches acquired to this specification are created as follows:



6.4 First article model. Any changes or deviations of production winches from the approved first article model during production will be subject to the approval of the contracting officer, Approval of the first article model will not relieve the contractor of his obligation to furnish winches conforming to this specification.

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6.5 Radioactive material. Radioactive material is defined by Title 10, Code of Federal Regulations, Part 40, and other material in which the radioactivity is greater than 0.002 microcurries per gram or 0.01 microcurries total activity for the item.

6.6 Subject term (key word) listing.

Bearings
Crank
Rope
Ratchet

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

Custodians:
Army - AT
Navy - MC
Air FORCE -99

Review Activities:
Army - CE
Air Force - 84
DLA - CS

Preparing Activity:
Army - AT

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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	2. DOCUMENT DATE (YYMMDD)
	MIL-PRF-12065E	960226

3. DOCUMENT TITLE

Winches, Drum, Hand-Operated, Spur Gear, 2 or 3 Purchase

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

a. NAME	b. TELEPHONE (Include Area Code) (1) Commercial (810) 574-8745	(2) AUTOVON 786-8745
c. ADDRESS (Include Zip Code) Commander U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/BLUE Warren, MI 48397-5000	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	