
* NOT MEASUREMENT *
* SENSITIVE *

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SUPERSEDING
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FEDERAL SPECIFICATION

ROLLER, TOWED, OPEN-FACE TYPE, TWO DRUM

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

1. SCOPE

1.1 This specification covers a two drum, open-face (grid) type, towed roller.

* 2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 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-H28 - Screw-Thread Standards for Federal Services

Military Standards

MIL-STD-209 - Slings and Tiedown Provisions for Lifting and Tying Down Military Equipment

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. *

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DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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

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

SOCIETY OF AUTOMOTIVE ENGINEERS, INC. (SAE)

SAE Handbook.

(Application for copies should be addressed to the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.)

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

* 2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, 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 Description. The roller covered by this specification consists essentially of two open-face (grid) type drums mounted on a structural steel frame equipped with a tow bar and hitch.

3.2 First article. When specified (see 6.2), the contractor shall furnish a roller for first article inspection and approval (see 4.2.1 and 6.3).

3.3 Standard commercial product. The equipment shall, as a minimum, be in accordance with the requirements of this specification and shall be the manufacturer's standard commercial product. Additional or better features which are not specifically prohibited by this specification but which are a part of the manufacturer's standard commercial product, shall be included in the equipment being furnished. A standard commercial product is a product which has been sold or is being currently offered for sale on the commercial market through advertisements or manufacturer's catalogs, or brochures, and represents the latest production model.

3.4 Dimensions and weight. The complete roller, unballasted and ready for operation, shall weigh not less than 12,400 pounds (lbs). Fully ballasted, the roller shall weigh not less than 26,400 lbs. Roller shall conform to the dimensions specified in table I.

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Table I. Dimensions.

Requirement	Dimensions in inches	
	Min	Max
Single drum:		
Width	32	
Diameter	67	
Double drum:		
Width	70	
Diameter	67	
Overall dimensions:		
Width		96
Length		235

* 3.5 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.

3.6 Threaded parts. All threaded parts shall conform to the applicable requirements of FED-STD-H28.

3.7 Maintainability. The roller shall be designed so that accessories and components are readily accessible for repair or replacement with minimum removal or disturbance of adjacent parts or components, using general-purpose tools. Operating parts, accessories, and drain outlets shall be readily accessible for regular maintenance service. Drainage of all liquids shall be gravity onto the ground.

3.8 Interchangeability. All units of the same classification furnished with similar options under a specific contract shall be identical to the extent necessary to insure interchangeability of component parts, assemblies, accessories, and spare parts.

3.9 Performance characteristics. The fully ballasted roller shall withstand the strains imposed without permanent deformation or damage while being towed at a speed of not less than 9 miles per hour (mph) over rough and rocky ground. When tested as specified in 4.4.1, the roller shall break loose rocks and stones (see 6.4), having a minimum compressive strength of not less than 24,000 pound-force per square inch (psi) and crush, pulverize, mix, and compact large pieces of asphaltic concrete.

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3.10 Frame. Frame shall be constructed of either structural steel sections or steel plates with members joined using one of the arc welding processes. To withstand the stresses imposed, and to prevent permanent deformation or damage to the roller, the frame shall be braced and reinforced wherever necessary. A clevis shall be affixed to the back of the frame to permit towing rollers in tandem. Clevis shall contain a hole to accommodate 2-inch pin.

3.11 Axles and bearings. Each drum shall be equipped with an independent axle extending entirely through the drum and mounted on heavy-duty bearings. Tapered roller or combination radial thrust-type ball bearings with dust-tight seals shall be used.

3.12 Drums. Drums shall be constructed with face strips forming square, rectangular, or hexagonal openings on the drums' surfaces. Face strips shall be not less than 1-1/2 inches or more than 3 inches thick. Sides of square and rectangular openings and the distance across flats of hexagonal openings shall be not less than 3 inches and not more than 5 inches.

* 3.13 Cleaners. Roller shall be equipped with adjustable drum cleaners. The cleaners shall be capable of cleaning the drums when roller travels in both the forward and reverse directions.

3.14 Drawbar. The drawbar shall be of such design and construction as to permit either pulling or pushing of the roller. The drawbar shall be equipped with an adjustable, universal type clevis which shall allow coupling to an SAE J749, size F tractor drawbar.

3.15 Jack leg. A jack leg shall be provided for supporting the roller frame in horizontal plane when detached from the tractor. Jack leg shall be retractable, and shall be equipped with a positive locking device to prevent accidental detachment while roller is being towed. No part of the jack leg or its components, while in the stowed position, shall interfere with normal operation of the roller.

3.16 Ballast boxes. Roller shall be equipped with ballast boxes having sufficient volume for 14,000 lbs of weight when filled with wet sand. Volume calculations shall be determined using wet sand weighing 115 lbs per cubic foot. Boxes shall be constructed of steel with members joined using one of the arc welding processes. Boxes shall be secured to the frame using bolts. Each box shall be furnished with lifting attachments to allow lifting of the loaded box.

3.17 Lubrication. Means for lubrication shall be in accordance with the manufacturer's standard practice. The lubricating points shall be easily visible and accessible. All parts requiring lubrication shall be properly lubricated before delivery and shall be tagged in a conspicuous place to indicate the temperature range and grade of lubricant used. Where use of high pressure lubricating equipment, 1,000 psi or higher, will damage grease seals or other parts, a suitable warning shall be affixed to the equipment in a conspicuous location.

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3.18 Identification plate. When specified (see 6.2), an identification plate will be furnished by the contracting officer for each roller. The contractor shall stamp all necessary data in the blank spaces of the plate provided for that purpose, and securely affix a plate to each roller in a conspicuous place with screws, bolts or rivets of not less than 1/8-inch in diameter. The applicable nomenclature contained in the contract item description shall be placed in the top blank.

* 3.19 Instruction plates. The roller shall be equipped with instruction plates suitably located, describing any special or important procedures to be followed in operating and servicing the equipment. Plates shall be of a material which will last and remain legible for the life of the equipment. Plates shall be securely affixed to the equipment with nonferrous screws or bolts of not less than 1/8-inch diameter.

3.20 Cleaning, treatment, and painting. Surfaces normally painted in good commercial practice shall be cleaned, treated, and painted as specified herein. The color of the finish coat shall be as specified (see 6.2). Surfaces to be painted shall be cleaned and dried to insure that they are free from contaminants such as oil, grease, welding slag and spatter, loose mill scale, water, dirt, corrosion product, or any other contaminating substances. As soon as practicable after cleaning, and before any corrosion product or other contamination can result, the surfaces shall be prepared or treated to insure the adhesion of the coating system. The painting shall consist of at least one coat of primer and one finish coat. The primer shall be applied to a clean, dry surface as soon as practicable after cleaning and treating. Painting shall be with manufacturer's current materials according to manufacturer's current processes and the total dry film thickness shall be not less than 2.5 mils over the entire surface. The paint shall be free from runs, sags, orange peel, or other defects.

* 3.21 Lifting and tiedown attachments. When specified (see 6.2), the roller shall be equipped with lifting and tiedown attachments. Lifting and tiedown attachments shall conform to type II or type III of MIL-STD-209. A nonferrous transportation plate shall be provided and mechanically attached to the roller. Transportation plates shall be inscribed with a diagram showing the lifting attachments and lifting slings, the capacity of each attachment, and the required length and size of each sling cable. A silhouette of the item furnished showing the center of gravity shall be provided on the transportation plate. Tiedown attachments may be identified by stenciling or other suitable marking. Tiedown marking shall clearly indicate that the attachments are intended for the tiedown of the roller on the carrier when shipped.

3.22 Workmanship.

3.22.1 Steel fabrication. The steel used in fabrication shall be free from kinks, sharp bends, and other conditions which would be deleterious to the finished product. Manufacturing processes shall not reduce the strength of the steel to a value less than intended by the design. Manufacturing processes shall be done neatly and accurately. All bends shall be made by controlled means to insure uniformity of size and shape.

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3.22.2 Bolted connections. Boltholes shall be accurately punched or drilled and shall have the burrs removed. Washers or lockwashers shall be provided in accordance with good commercial practice, and all bolts, nuts, and screws shall be tight.

3.22.3 Riveted connections. Rivet holes shall be accurately punched or drilled and shall have the burrs removed. Rivets shall be driven with pressure tools and shall completely fill the holes. Rivet heads, when not countersunk or flattened, shall be of approved shape and of uniform size for the same diameter of rivet. Rivet heads shall be full, neatly made, concentric with the rivet holes, and in full contact with the surface of the member.

3.22.4 Welding. Welding procedures shall be in accordance with a nationally recognized welding code. The surface of parts to be welded shall be free from rust, scale, paint, grease, or other foreign matter. Welds shall be of sufficient size and shape to develop the full strength of the parts connected by the welds. Welds shall transmit stress without permanent deformation or failure when the parts connected by the weld are subjected to proof and service loadings.

3.22.5 Castings. All castings shall be sound and free from patching, misplaced coring, warping, or any other defect which reduces the casting's ability to perform its intended function.

* 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 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 Component and material inspection. Components and materials shall be inspected in accordance with all the requirements specified herein and in applicable referenced documents.

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

- a. First article inspection (see 4.2.1).
- b. Quality conformance inspection (see 4.2.2).

4.2.1 First article inspection. The first article inspection shall be performed on one roller when a first article is required (see 3.2 and 6.2). This inspection shall include the examination of 4.3 and the tests of 4.4. The first article may be either a first production item or a standard production item from the supplier's current inventory provided the item meets the requirements of the specification and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

4.2.2 Quality conformance inspection. The quality conformance inspection shall include the examination of 4.3, the tests of 4.4.3, and the packaging inspection of 4.5.

4.3 Examination. Each roller shall be examined for compliance with the requirements specified in section 3 of this specification. Any redesign or modification of the contractor's standard product to comply with specified requirements, or any necessary redesign or modification following failure to meet specified requirements shall receive particular attention for adequacy and suitability. This element of inspection shall encompass all visual examinations and dimensional measurements. Noncompliance with any specified requirements or presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection.

4.4 Tests.

4.4.1 Performance test. Roller shall be lubricated, weighed empty, ballasted, and weighed again to determine conformance to 3.4 and 3.16. The roller shall be towed for not less than 8 hours over a relatively dry, hard, and ungraded surface. Towing speed shall be maintained at 9 mph. Turn-arounds shall be in the shortest possible turning radius. Drum cleaners shall be observed to verify compliance with 3.13. Roller shall be backed 10 times for a distance of not less than 20 feet each time to prove conformance to 3.13. An area not less than 10 by 20 feet shall be covered with salvaged asphaltic concrete. Each piece of asphaltic concrete shall have a surface area of not less than 3 square feet and a thickness of not less than 4 inches. To demonstrate ability to perform as specified in 3.9, roller shall make 10 passes (see 6.5) over the asphaltic concrete. Not less than 50 percent of the asphaltic concrete shall be reduced to a size not greater than 5 inches in any dimension. Loose rocks and stones having a compressive strength as specified in 3.9 shall be spread over the crushed asphaltic concrete. Not less than 40 percent of the rocks and stones shall be fractured or broken after the roller has made 20 passes. Jack leg shall be lowered and adjusted to support the roller's frame. Towing unit shall be disconnected and removed from the roller to prove the jack leg complies with the requirements of 3.15. During and at the completion of the test, the roller shall be examined for any evidence of malfunction, structural failures or deformation, and abnormal wear.

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4.4.2 Lifting and tying down attachment tests. Each ballast box shall be lifted to determine compliance with the requirement of 3.16. The roller, when equipped with lifting and tying down attachments, shall be tested to verify conformance to 3.21.

4.4.3 Operational test. Each roller shall be completely assembled, properly adjusted, and lubricated. Roller shall be attached to a suitable towing vehicle and towed for not less than 30 minutes at speeds up to 9 mph. Roller shall be backed not less than 3 times for a total distance of 60 feet. Bearings, shafts, and other moving parts shall be tactually examined for excessive heating or abnormal operation insofar as is practicable and possible. Evidence of damage, deformation, or malfunction of any part of the roller, or failure to pass any phase of this test, shall be cause for rejection.

* 4.5 Preparation for delivery inspection. The preservation, packaging, packing, and marking of the item shall be inspected to verify conformance to the requirements of section 5.

5. PACKAGING

5.1 Preparation for delivery. The roller shall be preserved in accordance with the contractor's standard practice in a manner to prevent corrosion, deterioration, and damage. The roller shall be lubricated for operational service as required in the operator's manual. The roller shall be prepared for shipment in a manner which will insure arrival at destination in a satisfactory condition. Preparation for delivery shall comply with applicable carrier rules and regulations.

* 6. NOTES

* 6.1 Intended use. This document is intended to replace MIL-R-23144. The roller is intended for use in:

- a. Crushing, breaking, and pulverizing large pieces of salvaged asphaltic concrete, loose rocks, and stones.
- b. Mixing the crushed rocks, stones, and asphaltic concrete with soil.
- c. Compacting the soil-rock, stone, asphaltic concrete mixture.

6.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Specifications and standards (see 2.1.1).
- c. When a first article roller is required for inspection and approval (see 3.2, 4.2.1, and 6.3).
- d. When identification plates are not to be furnished by the contracting officer (see 3.18).
- e. Color of finish coat (see 3.20).
- f. When lifting and tying down attachments are required (see 3.21).

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6.3 First article. When a first article inspection is required, the item will be tested and should be a first production item or it may be a standard production item from the contractor's current inventory as specified in 4.2.1. The first article should consist of one unit. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examination, test, and approval of the first article.

6.4 Data requirements. When this specification is used in an acquisition which incorporates a DD Form 1423, Contract Data Requirements List (CDRL) and invokes the provisions of paragraph 52.227-7031 of the Federal Acquisition Regulations (FAR), the data requirements will be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved CDRL (DD Form 1423) incorporated into the contract. When the provisions of FAR 52.227-7031 are not invoked, the data shall be delivered in accordance with the contract requirements.

6.5 Definitions.

6.5.1 Loose rocks. Detached rocks greater than 1 cubic foot and less than 1 cubic yard.

6.5.2 Stones. Rock fragments greater than 10 inches in diameter, if rounded, and greater than 15 inches along the greatest axis if flat.

6.5.3 Pass. Driving the roller in one direction, over the material being compacted, is defined as 1 pass. Driving the roller over the original path a second time or opposite direction is defined as 2 passes.

6.6 Changes from previous issue. The margins of this specification are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

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MILITARY INTERESTS:

CIVIL AGENCY COORDINATING ACTIVITY:

Custodians

GSA - FSS

Navy - YD

PREPARING ACTIVITY:

Air Force - 99

Navy - YD

Review Activity

(Project 3895-0327)

Air Force - 84

User Activity

Navy - MC

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.

