

[INCH-POUND]
A-A-50562
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SUPERSEDING
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COMMERCIAL ITEM DESCRIPTION

PUMP UNITS, CENTRIFUGAL, WATER, HORIZONTAL; GENERAL SERVICE AND BOILER-FEED: ELECTRIC-MOTOR- OR STEAM-TURBINE-DRIVEN

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

1. **SCOPE.** This commercial item description (CID) covers two types of horizontally mounted, electric-motor- or steam-turbine-driven, general service and boiler-feed centrifugal water pump units, with capacities ranging from 5 gallons per minute (gpm) to 15,000 gpm (0.32 litre per second (L/s) to 945 L/s) for total dynamic heads ranging from 10 to 2,500 feet (3 to 760 metre (m)).

2. **CLASSIFICATION.** The pumps are of the following types, styles, and classes, as specified (see 7.3):

Types

- Type I - General service.
- Type II - Boiler-feed.

Styles

- Style 1 - Axially split casing.
- Style 2 - End suction (on base plate).
- Style 3 - End suction (close coupled).
- Style 4 - Radially split casing.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data which may improve this document should be sent to: Commanding Officer (Code 15E2), Naval Construction Battalion Center, 1000 23rd Avenue, Port Hueneme, CA 93043-4301, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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Classes

- Class 1 - Single-stage.
- Class 2 - Multi-stage.

3. SALIENT CHARACTERISTICS.

3.1 Description. The pumps shall be horizontally mounted centrifugal pumps and shall be equipped with direct-connected pump drivers. The pump driver shall be an electric motor or a steam turbine, as specified. Each pump and its driver, except for close-coupled pumps, shall be connected by means of a flexible shaft coupling and mounted on a common bedplate. Each pump shall be equipped with all connecting lines and accessories required for proper operation. When specified (see 7.3), auxiliary priming devices or systems shall be furnished. Details of the priming devices or systems shall be as specified (see 7.3).

3.2 Standard commercial product. The pump units shall, as a minimum, be in accordance with the requirements of this commercial item description and shall be the manufacturer's standard commercial product. Additional or better features which are not specifically prohibited by this commercial item description but which are a part of the manufacturer's standard commercial product, shall be included in the pump units 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.

3.3 Performance. The pumps shall be capable of meeting the capacity and head requirements as specified (see 7.3), without exceeding the continuous horse power rating of the driver. With the pump operating, the first lateral critical speed causing excessive vibration or resonance frequencies shall occur at not less than 25 percent above the maximum governed speed of the driver. The casing of the pump shall withstand a hydrostatic pressure equal to 1.5 times the discharge pressure or the total dynamic head, whichever is greater.

3.4 Construction. The pumps shall be designed and constructed to withstand the strains, jars, vibrations, and other conditions associated with shipping, storage, and installation. The pumps shall be complete so that when installed, they can be used for any operation for their intended purpose. The pumps and accessories shall be designed and constructed to prevent conditions hazardous to personnel or deleterious to equipment. The pumps shall withstand the hard usage encountered in military service or shore establishments. The pumps shall permit easy and ready accessibility for replacement of accessories, maintenance, service, and adjustments in the field.

3.4.1 General service pumps (type I). General service pumps shall be designed and constructed for liquid pumping service with liquid at ambient or elevated temperatures without vapor lock. Unless otherwise specified (see 7.3), general service pumps shall be suitable for suction lifts of not less than 15 feet (4.6 m) when pumping 85 degrees Fahrenheit (°F) (29.4 degrees Celsius (°C)) water and shall be driven by electric motors.

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3.4.2 Boiler-feed pumps (type II). Boiler-feed pumps shall be designed and constructed for boiler-feed service with liquids at ambient or elevated temperatures without vapor lock. Unless otherwise specified (see 7.3), boiler-feed pumps shall be suitable for suction heads of not less than 3 feet (0.9 m) at rated capacity.

3.4.3 Split casing pumps (styles 1 and 4). Split casing pumps shall have the casing split to enable removal of all rotating parts without disturbing pipe connections or alignment. Stuffing boxes shall be provided on each side of the casing and shall use the same sizes of packing rings except when mechanical seals are required.

3.4.4 End suction (on base plate) pumps (style 2). End suction pumps shall have a vertically split casing bolted to a supporting frame which houses two or more shaft bearings. The bearings shall be arranged to support the shaft from one side of an overhung impeller and connected to the driver by a coupling. Both the driver and the pump shall be mounted on a base plate.

3.4.5 End suction close-coupled pumps (style 3). Close-coupled pumps shall have the pump and its driver built together as one unit. The casings shall be cast or bolted together, and the pump casing shall house an overhung impeller or impellers. The pump and driver shall share the same mounting, shaft, and bearings. The pump shaft shall be an integral extension of the driver shaft. The two or more shaft bearings shall be of sufficient size and adequately spaced for proper support and alignment of rotating parts of both the pump and its driver. Motor-driven units shall be provided with integrally cast or securely fastened feet. Turbine-driven close-coupled pumps shall be provided with suitable bedplates. Unless otherwise specified (see 7.3), turbine-driven close-coupled pumps shall have permanently fixed upper discharge connections.

3.4.6 Single-stage (class 1) pumps. Single-stage (class 1) pumps shall have a single impeller that develops the total head of the pump. Single-stage (class 1) style 2 and 3 pumps shall have the axis of the suction inlet concentric with the eye of the impeller. Unless a multi-position type casing is definitely specified (see 7.3), the casing for style 2 pumps shall be designed for either fixed, top, vertical-up discharge or shall be bolted to the support head in a manner to permit rotating the casing to not less than three discharge positions; top horizontal, top vertical, or bottom horizontal. Style 2 pumps with multi-position casings shall be furnished with the casing in the top horizontal discharge position. The support leg for style 2 pumps shall be securely fastened to the bedplate and shall be located under the support head or under the casing. The casing for style 3 pumps shall be designed to permit rotation of the casing to provide not less than four discharge positions 90 degrees apart. Style 3 pumps shall be furnished with the casing positioned for top and vertical discharge.

3.4.7 Multi-stage (class 2) pumps. Multi-stage (class 2) pumps shall have two or more impellers which act in series to develop the total head of the pump. Multi-stage (class 2) style 2 pumps shall be limited to two stages. Unless otherwise specified (see 7.3), multi-stage style 2 pumps shall be side intake, and shall have permanently fixed, one-position discharge openings.

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3.4.8 Connections. Unless otherwise specified (see 7.3), suction and discharge openings 2.5 inches (65 millimetre (mm)) in diameter or larger shall be flanged, and openings smaller than 2.5 inches (65 mm) in diameter may be threaded. Unless otherwise specified, (see 7.3), the pump discharge shall be one size smaller than the suction openings.

3.4.9 Drivers. Pump drivers shall conform to the following requirements, as applicable.

3.4.9.1 Motors. Electric motors shall have the electrical characteristics as specified (see 7.3). Electric motors shall conform to NEMA MG 1, and shall be rated for continuous duty with starting torque and speed rating suitable for the application. Electric motors shall have a horsepower (watt) rating adequate for operation of the specified pump without exceeding the allowable temperature rise. Motor options shall be as specified (see 7.3). Unless otherwise specified (see 7.3), a motor starter shall be furnished with each motor. The motor starter characteristics shall be based on the manufacturer for the required service.

3.4.9.2 Steam turbines. Steam turbines shall conform to NEMA SM 23. The acquisition documents shall include the information in the Steam Turbine Inquiry Guide of NEMA SM 23, as specified (see 7.3). When provided with steam at the specified inlet temperature and inlet and outlet pressures, each turbine shall develop ample power at the proper speeds to drive the pump efficiently under all normal conditions of pump loading.

4. REGULATORY REQUIREMENTS.

4.1 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). Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this commercial item description 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 are allowed under this commercial item description.

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 ASTM E 380, and all other requirements of this commercial item description including form, fit and function 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.

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5. QUALITY ASSURANCE PROVISIONS.

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

6. PACKAGING. The preservation, packing, and marking shall be as specified in the contract or order.

7. NOTES.

7.1 Part Identification Number (PIN). The following part identification numbering procedure is for government purposes and does not constitute a requirement for the contractor. The PIN to be used for items acquired to this description is created as follows:

| | | | | |
|---------------------------|---------|-------|-------|-------|
| | AA50562 | X | X | X |
| CID number | _____ | _____ | _____ | _____ |
| Type code (see table I.) | _____ | _____ | _____ | _____ |
| Style code (see table I.) | _____ | _____ | _____ | _____ |
| Class code (see table I.) | _____ | _____ | _____ | _____ |

7.1.1 Type, style, and class identification codes. The type, style, and class of the pump is identified by a one-digit identifier as shown in table I.

TABLE I. PIN identification codes.

| Type | Style | Class |
|--------|-------|-------|
| I = 1 | 1 = 1 | 1 = 1 |
| II = 2 | 2 = 2 | 2 = 2 |
| | 3 = 3 | |
| | 4 = 4 | |

7.2 Source of documents.

7.2.1 The Federal Acquisition Regulation (FAR) may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

7.2.2 ASTM standards are available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

7.2.3 NEMA standards are available from National Electrical Manufacturers Association, 1300 North 17th Street, Suite 1847, Rosslyn, VA 22209.

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7.3 Ordering data. Acquisition documents should specify the following:

- a. Type, size, and class of pump required (see 2.).
- b. When auxiliary priming devices or systems are to be furnished and required details of priming devices or systems (see 3.1).
- c. Performance requirements for type I and type II pumps, as applicable (see 3.3):
 - (1) Capacity, in gpm (L/s).
 - (2) Pumping temperature of liquid, in °F (°C).
 - (3) Head:
 - (a) Discharge: Net head in feet (metre) above the centerline of the pump.
 - (b) Suction: NPSH, in feet (metre); and NPSH available, in feet (metre).
- d. For type I pumps, type of impeller required: minimum suction lift, if different (see 3.4.1).
- e. For type II pumps, type of impeller required: type of stuffing boxes required; and minimum suction lift, if different (see 3.4.2).
- f. When a turbine-driven close-coupled pump does not require permanently fixed upper discharge connections (see 3.4.5).
- g. When a multi-position type casing is required for single-stage (class 1), style 2 pumps (see 3.4.6).
- h. Position of intake and requirements of discharge openings for multi-stage (class 2) style 2 pumps, if different (see 3.4.7).
- i. Requirements for suction and discharge connections, if different; size of discharge and suction connections, if different (see 3.4.8).
- j. Required electrical characteristics for electric motors; required motor options; and when a motor starter is not to be provided (see 3.4.9.1).
- k. Required information from the Steam Turbine Inquiry Guide of NEMA SM 23 (see 3.4.9.2).

7.4 Subject term (key word) listing.

Axially split casing
 Condensate return
 End suction
 Multi-stage
 Radially split casing
 Single-stage

MILITARY INTERESTS:

Custodian:

Navy - YD1

Review Activity:

DLA - CS

CIVIL AGENCY COORDINATING ACTIVITY:

GSA - FSS

Preparing Activity:

Navy - YD1

(Project 4320-0010)

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.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER
A-A-50562

2. DOCUMENT DATE (YYMMDD)
970619

3. DOCUMENT TITLE PUMP UNITS, CENTRIFUGAL, WATER, HORIZONTAL; GENERAL SERVICE AND BOILER-FEED:
~~ELECTRIC-MOTOR OR STEAM-TURBINE-DRIVEN~~

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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