

GGG-D-2782
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 SUPERSEDING
 MIL-D-29225D
 January 13, 1984
 (see 6.4)

FEDERAL SPECIFICATION

DRIVE, POWER, PORTABLE; FOR PIPE AND BOLT THREADING, ELECTRIC (WITH ACCESSORIES)

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 hand-held, and stand-mounted power drives powered by integral or separately mounted electric motors for cutting threads on pipe and bolt stock. Included are optional items to tailor the power drive to perform various functions.

1.2 Classification. The classification shall be of the following types, as specified (see 6.2):

Classification	PIN Dash No.
Type I - Hand held	-1
Type II - Stand-Mounted	-2
Type III - Accessories only (without power drive)	-3

1.2.1 Part identification numbers. Part identification numbers (PIN) for items covered by this specification have been established (see 6.3).

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).

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 self-addressed Standardization *
 *Document Improvement Proposal (DD Form 1426) appearing at the end of this *
 *document or by letter. *

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Federal Specifications

- CC-M-1807 - Motors, Alternating Current, Fractional and Integral Horsepower (500 HP and Smaller).
- GGG-C-771 - Cutters Pipe, and Cutters Tube.
- GGG-R-180 - Reamer, Hand and Machines, Arbors, Shell Reamer, and Pilots, Adjustable Hand Reamer.
- GGG-T-581 - Tapes, Dies, Diestocks, and Threading Set-Pipe Threading, Hand.

Military Specifications

- MIL-T-152 - Treatment, Moisture-and-Fungus-Resistant, of Communications, Electronic, and Associated Electrical Equipment.
- MIL-I-24092 - Insulating Varnish, Electrical, Impregnating, Solvent Containing.

Federal Standard

- FED-STD-H28/7 - Pipe Threads (Except Dry Seal and Hose Coupling Types).

Military Standards

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-461 - Electromagnetic Emission and Susceptibility, Requirements for the Control of Electromagnetic Interference.

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

2.1.2 Other publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation (see 6.2).

American Gear Manufacturer's Association (AGMA):

- AGMA 201.02 - Tooth Proportion for Coarse-Pitch Involute Spur Gears.
- AGMA 207.06 - Tooth Proportion for Fine-pitch Involute Spur and Helical Gears.
- AGMA 2005-B - Design Manual For Bevel Dears.
- AGMA 6010-E - Standard For Spur, Helical, Herringbone, and Bevel Enclosed Drives.
- AGMA 6030-C - Design of Industrial Double-Enveloping Wormgears.
- AGMA 6034-A - Practice for Enclosed Cylindrical Wormgear Speed Reducers and Gearmotors.

(Application for copies should be addressed to the American Gear Manufacturer's Association, 1901 N. Fort Myer Drive, Suite 1000, Arlington, VA 22209.)

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American National Standards Institute, Inc. (ANSI):

- ANSI B1.3 - Screw Thread Gaging Systems for Dimensional Acceptability for Unified Screw Threads (UN, UNR, UNJ).
- ANSI B1.16 - American Gaging Practice for Metric Screw Threads.
- ANSI B2.1 - Pipe Threads (Except Dryseal) Specifications, Dimensions, and Gaging for Taper and Straight Pipe Threads Including Certain Special Applications.
- ANSI B18.2.1 - Square and Hex Bolts and Screws Inch Series Including Hex Cap Screws and Lag Screws.

(Application for copies should be addressed to the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.)

ASTM:

ASTM D 3951 - Packaging, Commercial.

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

International Standards Organization (ISO):

- ISO 7/1 - Pipe Threads Where Pressure-Tight Joints are Made on the Threads (Designation, Dimensions and Tolerances).
- ISO 7/2 - Pipe Threads Where Pressure-Tight Joints are Made on the Threads (Verification by Means of Limit Gages).
- ISO 68 - General Purpose Screw Threads - Basic Profile.
- ISO 261 - General Purpose Metric Screw Threads - General Plan.

(Application for copies should be addressed to the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.)

National Fire Protection Association (NFPA):

NFPA No. 70 - National Electrical Code.

(Application for copies should be addressed to the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.)

Society of Automotive Engineers, Inc. (SAE):

SAE J534 - Lubrication Fittings.

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

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

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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 First production sample. When specified (see 6.2), the contractor shall furnish a first production unit sample for inspection and approval (see 4.2.1 and 6.7).

3.1.1 Definition. The term "unit" as used herein shall mean the power drive, and accessories under a specific contract or order.

3.2 Standard commercial product. The unit shall, as a minimum, be in accordance with the requirements of this specification and to the maximum extent possible 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 unit 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. The basic power-drive (associated frame, motor, gears, chucks, housing) dimensions and fits may be fabricated in either the inch or International Standard metric system of measurement.

3.3 Description. The unit shall be of the type specified in 1.2, 3.3.1, 3.3.2, and 3.3.3.

3.3.1 Type I. The type I power-drive shall consist of a portable frame, integral motor, control, and supply cord; gearing and provisions for mounting and supplying power to the die-head or other attachments.

3.3.2 Type II. The type II power-drive shall consist of a housing, gearing, drive motor, control, and supply cord; spindle, rear centering chuck, front gripping chuck, support or extension arms or way rods.

3.3.3 Type III. The type III shall consist of only the accessories or accessory sets for Type I or Type II power drive as specified (see 6.2). The accessories shall comply with the requirements specified herein.

3.4 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 are allowed under this specification.

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3.5 Design. Type I and II power-drives shall be designed to be adapted by accessories to standard die-heads and geared threaders for cutting threads on pipe and boltstock. Type I shall include a ring gear in which the die-head or adapter is mounted. This gear shall be mounted on sleeve or journal bearings and driven by the enclosed motor through a gear reduction and shall weigh not more than 45 pounds (lb) with one die-head and adapter included. Type II shall be a self-contained, fully enclosed assembly with necessary reduction gears, a cam-action rear centering device adjustable from 1/8 through 2 inch diameter, and an adjustable positive grip drive-chuck capable of operation either with machine or geared die-heads. The drive-chuck shall be adjustable up to 2-inch diameter pipe size and shall be suitable for operation with a universal drive shaft. The drive-chuck shall be the wrenchless type. Jaws of the drive chuck shall have easily replaceable jaw inserts for when the jaw teeth become worn. Type II shall weigh not more than 100 lb (net weight without die-head, dies, adapters, stand, cutter, reamer or other accessories).

3.6 Maintainability. Design and configuration of the power-drives, accessories, and adjustment features shall insure that maintenance of operational capability and accuracy will be reduced to the simplest form or procedures and will require a minimum of skills and common maintenance equipment. Instructions shall be provided for disassembly, repair, assembly, and adjustment and shall be clear, concise, and definitive in application. The power-drive and component parts requiring lubrications, adjustment, cleaning, and operator maintenance shall be accessible without disassembly or removal of parts or components, such items as safety covers or guards excluded.

3.7 Performance.

3.7.1 Type I. The type I shall turn the drop-head die-head with dies and cut quality threads on steel pipe 1/8 inch through 2 inch diameter and turn the geared threader to produce threads on steel pipe 2-1/2 inch through 6 inch diameter. With the proper dies, it shall cut metric threads on steel pipe or conduit 6 millimeter (mm) through 50mm diameter. It shall also turn dies to cut threads on steel bolt stock from 1/4 inch through 1 inch diameter. When die-heads and dies are provided as part of the unit, the threads produced shall conform to ANSI B18.2.1, FED-STD-H28/7, ISO 7/1, 68 and 261, as applicable.

3.7.2 Type II. Type II shall turn pipe and bolt stock for threading with die-head and dies mounted on a moveable carriage attached to the power-drive, turn pipe for cutting and reaming with the cutter and reamer mounted on a moveable carriage, turn geared threaders short coupled or long coupled to the power-drive. Steel pipe from 1/8 inch through 2 inch diameter and bolt stock from 1/4 inch through 2 inch diameter shall be threaded by the carriage mount (machine mount dies) and steel pipe from 2-1/2 inch through 6 inch diameter shall be threaded by geared threaders. When die-heads and dies are provided as part of the unit, the threads produced shall conform to ANSI B18.2.1, FED-STD-H28/7, ISO 7/1, 68 and 261, as applicable.

3.8 Construction. The units shall be constructed to withstand the strains and vibrations encountered in normal start-stop and turning or threading operations. The body shall enclose the power-drives moving parts and shall be of a suitable metal, either cast or fabricated. The type I unit body shall consist of a separate or integral housing for the drive motor mounted to the body. The type II threader shall include a separate body or housing for the

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drive motor with an attached base with at least four mounting holes for mounting to a stand. The type II housing shall include support or extension bars or way rods on which the attachments are to be mounted.

3.8.1 Motor. The motor shall be a reversible universal type rated at 1/2-horsepower minimum before gear reduction, 115/230 volts (V) alternating current (AC), 25 to 60 Hertz. The type II spindle speed shall be 35 rpm minimum standard. The motor internal wiring shall be connected for 115V operation unless otherwise specified (see 6.2). The motor shall otherwise conform to CC-M-1807.

3.8.1.1 Power cord. The power cord shall be at least 8 feet long, type SO or ST, No. 16 AWG or larger, copper, stranded, with 3 conductors. The plug shall be a 3-wire grounding type. The power cord shall otherwise conform to NFPA No. 70-400. Grounding shall conform to NFPA No. 70-250.

3.8.1.2 Motor control. The motor control shall be a 3 position switch rated for the motor full load current. The switch for type I shall be the momentary type. The switch may be a combination directional control and on-off momentary type. The switch shall be mounted convenient to the operator and protected against accidental starting. The switches shall be marked to indicate FORWARD, OFF, and REVERSE positions. Type II shall include a momentary OFF and ON foot switch with a switch shield in addition to the Forward-Off-Reverse switch. The shield shall be over-size to accommodate safety-toe shoes. A guard to prevent unintentional operation of the treadle shall be included.

3.9 Power drive attachments, components, and material. Type I and II power drives, when augmented from options covered in 3.10 through 3.12.7, can be tailored to perform a variety of functions. Augmented items shall be considered as part of the unit when selected for a specific contract or order. Augmented items shall be compatible with the complete unit for fit and function.

3.10 Threading attachments for type I. When specified (see 6.2), options (see tables I through VII), include the die-heads, dies, die-head adapter (for bolt threading die-head), adapter (gear threader), support (torque) arm, and carrying case(s). Dies for pipe threading shall be the die segment insert type. Bolt dies for the drop-head may be the button type.

3.10.1 Die-head and dies. Includes the drop-head die-head with alinement guide, and die inserts for threading pipe and bolt stock in the inch and IS metric system (pipe threads 1/8 inch through 2 inches and 16mm through 40mm diameter) (bolt threads 1/4 inch through 1 inch diameter). Threads produced shall conform to ANSI B18.2.1, FED-STD-H28/7 or ISO 7/1, as appropriate. Dies and die-heads shall otherwise conform to GGG-T-581 (see tables I and V).

3.10.2 Adapters. When adapters are required, the adapters shall adapt the bolt threading die-head, and the gear threader to the type I power drive (see table V and VI).

3.10.3 Support arm. The support arm shall clamp onto the work to resist the torque of the type I when threading (see table VI).

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3.10.4 Carrying cases. Metal carrying case(s) shall be provided for the type I Power drive, adapters, and support arm, and for pipe and bolt die-heads and dies. The cases shall be fabricated with not less than 18 gage metal. The case(s) shall include latches and partitions or nests to keep contents separated and in location (see table VI).

3.11 Threading attachments for type II. When specified (see 6.2), options (see table VII) include a carriage with lever arm, reamer, cutter, dies and die-heads (machine die-heads).

3.11.1 Carriage. The carriage mounts on the support arm(s) of the power drive and provides a moveable base for the reamer, cutter, and die-head. Increased mechanical leverage is provided by the lever arm to move the carriage laterally for threading and reaming operations.

3.11.2 Reamer. The reamer is attached to the carriage at a pivot point to permit rotating the reamer into position for reaming the pipe. The reamer shall otherwise conform to GGG-R-180 and shall be the straight-fluted cone type.

3.11.3 Cutter. The cutter is attached to the carriage at a pivot point to permit rotating the cutter into position for cutting the pipe. The cutter shall otherwise conform to GGG-C-771 and shall be the full floating wheel type.

3.11.4 Dies and die-head. Includes the self-opening, and quick-opening (universal) die-heads with die segment inserts. Automatic opening die-heads must be manually opened in size 3/8 IPS and smaller.

3.11.4.1 Self-opening die-head. The closing movements shall be controlled manually, opening shall be controlled both manually, and automatically when the full thread is complete. Provisions for adjustment of dies to produce oversize and undersized threads shall be included.

3.11.4.2 Quick-opening (universal) die-head. The opening and closing movements shall be controlled manually and the die-head shall include provisions for adjustment of dies to produce oversize and undersize threads.

3.12 Miscellaneous threading components, attachments, and accessories. Items selected from this group are intended as options to augment either the type I or II power-drive or selected individually for replacement of broken, or worn-out items of a unit or to expand the function of an existing unit. When individual items are requisitioned and are not part of an order with a power-drive, the make and model of the unit the item is intended to fit must be indicated to insure compatibility. When specified (see 6.2), items selected from table VIII include geared threaders with dies, drive bar, nipplechuck, and adapters for threading short and close pipe nipples, and bolts, a tool stand with tray, pipe support stand, oiler, cutting oil, and ratchet with handle.

3.12.1 Geared pipe threader. The geared pipe threader is powered by a separate power drive through a short or long drive shaft. The threader is adjustable from diameters 2-1/2 through 4-inch range or 4- through 6-inch range (65mm through 100mm and 100mm through 150mm) with one set of dies in each range. The geared threader is attached to the drive unit for short couple or supported on the pipe to be threaded for long couple. A safety device to prevent accidental jamming, and an integral adjustable guide to maintain pipe alignment

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shall be included. The geared threaders shall be adjustable for oversize and undersize (NPSM) threads.

3.12.2 Dies. Includes pipe and bolt dies in the inch and IS metric systems to fit the self-opening and quick-opening (universal) die-heads, and geared threader. Dies shall be of high speed steel and shall cut threads conforming to ANSI B18.2.1, FED-STD-H28/7, ISO 7/1 or 261, as applicable. Dies shall be hardened to a hardness range of Rockwell C58 to C66 as specified in GGG-T-581. Test may be made at nearest flat or manageable point not to exceed 1-inch from the thread cutting section.

3.12.3 Chuck and adapters for nipples and bolts. The nipple-chuck is attached to the main chuck of the power drive. Nipple and bolt adapters are attached to nipple-chuck for holding and turning short and close nipples and bolt stock for threading. Threads are cut by the dies provided for the die-heads in table VII. Threads cut by adapters shall conform to ANSI B18.2.1, FED-STD-H28/7, ISO 7/1, or 261, as applicable.

3.12.4 Tool stand. The tool stand shall be of aluminum or steel construction designed to support the type II power drive during normal threading operations, without buckling, distorting, or moving. Provisions for bolting the power drive to the stand shall be included. The height of the stand shall be such as to permit threading operations by an operator who works in the standing position. A tray or shelf shall be mounted between the legs to afford additional rigidity to the stand and permit storage of the tools and parts. The stand shall be designed for easy assembly and disassembly.

3.12.5 Pipe support stand. The adjustable stand shall be capable of supporting pipe without tipping or rocking, yet allowing the pipe to rotate over rollers mounted in the crotch of the stand. The stand shall have a vertical adjustment range from 24 to 32 inches and be of height suitable for operating with type II while mounted on the tool stand and close coupled to the gear threader. Capacity of the stand shall be for 10-inch diameter pipe.

3.12.6 Oiler. The oiler for oiling the dies, when threading, shall include a hand pump attached to a pan by an oil resistant hose (4-foot long minimum). The chip pan serves as an oil reservoir and catch for oil run-off to prevent oil waste and permit the reuse of the oil. The pan shall provide screening of oil run-off before the oil is drawn from the pan by the pump. The pan shall include a hinged cover.

3.12.7 Ratchet and handle. The ratchet shall have a 1-inch square drive socket to fit a pinion shaft 31/32 inch square on the geared pipe threader. The square socket drive hole extends through the ratchet drum so that the ratchet may be placed on the pinion shaft through either side of the drum. The ratchet shall provide forward and reverse operation either by control of the ratchet pawls or by inserting the driven shaft in the socket-drive-hole on the opposite side of the ratchet drum. Ratchet and handle shall withstand the force on the end of the handle to produce 200 foot pounds (ft lbs) torque on a shaft inserted in the square drive socket. The handle and ratchet combined shall measure between 30 and 36 inches long with the handle a minimum of 27 inches long. The ratchet drum, frame and pawl assembly shall not fail when subjected to a minimum of 400 ft lbs torque. The ratchet and handle shall weigh a minimum of 9 lb unless otherwise specified. The handle shall be threaded on one end for

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attaching to the ratchet and to permit removal of the handle from the ratchet.

3.12.8 Cutting oil. The thread cutting oil shall provide cooling to tools, and work and aid the cutting of smooth threads by reducing friction. The oil shall be nonfoaming, nontoxic, and noncorrosive to steel, copper, and tool parts.

3.13 Fastening-devices. All screws, pins, bolts, and similar parts subject to loosening by vibration shall be installed with means to prevent loss of tightness. When subject to removal or adjustment, such parts shall not be swaged, peened, staked, or otherwise permanently deformed.

3.14 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 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.

3.15 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.

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

3.17 Lubrication. Unless otherwise specified (see 6.2), means for lubrication shall be in accordance with the manufacturer's standard practice. The lubricating points shall be easily visible and accessible. Hydraulic lubrication fittings shall be in accordance with SAE J534. Where use of high pressure lubricating equipment will damage grease seals or other parts, a suitable warning shall be affixed to the equipment in a conspicuous location.

3.18 Instruction plates. The unit and related components 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, and shall be securely affixed thereto.

3.19 Identification plate. Unless otherwise specified (see 6.2), the contracting officer will furnish to the Government inspector the required identification plates. The contractor will be required to stamp the necessary data in the blank spaces thereon and securely affix said plates in a conspicuous place on each unit, assembly, or subassembly, and parts as directed by the Government inspector. Screws, rivets, or bolts shall be used to affix the plates. Nomenclature shall be "DRIVE-POWER, PORTABLE: FOR PIPE AND BOLT THREADING, HAND HELD, ELECTRIC" or "DRIVE-POWER, PORTABLE: FOR THREADING, STAND MOUNTED, ELECTRIC" as appropriate.

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3.20 Painting. Unless otherwise specified (see 6.2), painting and finishing of the unit shall be in accordance with the contractor's standard practice provided the following minimum criteria are met or exceeded; all surfaces to be painted shall have been cleaned to be free of all foreign matter prior to painting.

3.21 Spare parts and maintenance tools. When specified (see 6.2), spare parts and maintenance tools shall be furnished.

3.22 Electromagnetic interference control. When specified (see 6.2), equipment procured under this specification, electromagnetic interference control shall be in accordance with the requirements of MIL-STD-461 for class C3, group 1 equipment (see 4.5.3).

3.23 Fungus control. When specified (see 6.2), electrical components and circuit elements shall be treated for fungus resistance in accordance with type II requirements of MIL-T-152, except that the statement of treatment is not required. Windings of the electric motors shall be given two impregnating coats of varnish conforming to the requirements of MIL-I-24092, type M, class 130 through 220 (manufacturer's option).

3.24 Gears. As to design and fit, spur, pinions, worm, and bevel gears shall be machined in the inch, or SI metric system (manufacturer's option), and shall otherwise conform to AGMA 201.02, 207.06, 2005-B, 6010-E, 6030-C, and 6034-A as appropriate.

3.25 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, and accessories without the need for modification.

3.26 Workmanship. Workmanship of the unit and accessories shall be of the best quality prevailing among manufacturers of this type of equipment. The items shall be free from all imperfections which will adversely affect the general appearance, function, and serviceability.

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

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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.

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

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

4.2.1 First production sample inspection. The first production sample inspection shall be performed on one unit when a first production sample is required (see 3.1 and 6.2). This inspection shall include the examination of 4.4, the tests of 4.5, and, when specified, the preproduction pack inspection of 4.6 (see 6.2). The first production sample 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 4.4, the tests of 4.5, and the packaging inspection of 4.6. This inspection shall be performed on the samples selected in accordance with 4.3.

4.3 Sampling. Sampling and inspection procedures shall be in accordance with MIL-STD-105. All units offered for delivery at one time shall be considered a lot for the purpose of inspection. If an inspection lot is rejected, the contractor may rework it to correct the defects, or screen out the defective units, and resubmit for a complete reinspection. Resubmitted lots shall be reinspected using tightened inspection. If the rejected lot was screened, reinspection shall be limited to the defect causing rejection. If the lot was reprocessed, reinspection shall be performed for all defects. Rejected lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.3.1 Sampling-for-examination. Examination shall be based on inspection level II and an Acceptable Quality Level (AQL) of 2.5 percent defective.

4.3.2 Sampling for tests. Tests shall be based on inspection level S-2 and an AQL of 4.0 percent defective.

4.4 Examination. Each unit shall be examined for compliance with the requirements specified in section 3 of this document. 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

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presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection.

4.5 Tests. The unit shall be tested as specified in 4.5.1 through 4.5.3, as applicable.

4.5.1 Type I. Use the power drive to cut a full length thread (one turn plus or minus of the USA standard thin ring gage) using the drop head and dies on 1/4-inch through 2-inch diameter steel pipe (in 7 increments) and turn the geared threader to cut a full length thread on 6-inch diameter steel pipe. Time required to thread the 2-inch diameter pipe shall not exceed 1 minute.

4.5.1.1 Die-head and dies (pipe). When die-heads and dies are provided, the same range of thread diameters as in 4.5.1 shall be produced for inch sizes and metric sizes 6mm through 50mm (of any eight sizes including 6mm and 50mm). The thread quality shall conform to FED-STD-H28/7 when checked in accordance with ANSI B2.1 for inch sizes, conforming to ISO 7/1 when checked in accordance with ISO 7/2 for metric sizes.

4.5.1.2 Die-head and dies (bolt). When bolt dies are provided, threads shall be cut on bolt stock from 1/4 inch through 1 inch diameter or 6mm through 50mm diameter (in 4 increments). Threads shall conform to ANSI B18.2.1 when checked in accordance with system 21 of ANSI B1.3 or ANSI B1.16 as applicable.

4.5.2 Type II. Use the power drive to cut threads on 2-inch diameter steel pipe with the die-head and dies attached to the carriage and the carriage mounted on the power drive. Use the power drive short coupled to the geared threader and cut threads on 6-inch diameter steel pipe. Time required to produce a full length thread (one turn plus or minus the USA standard thin ring gage) shall not exceed 1 minute for the 2 inch and 3 minutes for the 6 inch.

4.5.2.1 Carriage. When the carriage is provided with the unit; cut, ream, and thread a 2-inch diameter steel pipe with the carriage mounted cutter, reamer, and die-head. The pipe shall be cut square, the reamer shall enter the pipe centered and the pipe shall enter the dies centered. The die-head and the reamer shall not move out of line when pressure is applied on the lever arm and when the reamer or die-head is forced against the rotating pipe to perform the reaming and threading function. The carriage shall move freely and smoothly on the support arms without binding.

4.5.2.2 Die-heads and dies. When die-heads and dies are provided with the unit; cut (UNC, NPT, NPSM, IS metric) threads, appropriate for dies provided, on pipe and bolt stock (with self-opening, and quick-opening (universal) die-heads (in diameter sizes of 1/2-, 1-, and 2-inch, and 12mm, 36mm, and 50mm) including close nipples and short studs with the nipple chuck, and nipple and stud adapters. Thread quality shall conform to FED-STD-H28/7 for inch pipe when checked in accordance with ANSI B2.1; conform to ANSI B18.2.1 for bolts when checked in accordance with system 21 of ANSI B1.3; conform to ISO 7/1 when checked in accordance with ISO 7/2 for metric pipe; conforming to ISO 261 when checked in accordance with ANSI B1.16 for metric bolts; produce NPSM (conduit) threads conforming to ANSI B2.1 by using the NPT dies and making adjustments in the die-head.

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4.5.2.3 Geared threader and ratchet. When the geared threader is provided with the unit; cut, NPT, NPSM, and IS metric threads on 3 and 4 inch, 5 and 6 inch diameter (depending on the size of the geared threader) or IS 65 through 100mm and 100 through 150mm diameter pipe. The ratchet assembly shall not fail when subject to 400 ft lbs torque, the handle shall not break or bend when subjected to 200 ft lbs torque, when the ratchet and handle is used as intended. Use a stronger handle to test the ratchet assembly. Threads shall be checked and conform as in 4.5.2.2.

4.5.3 Electromagnetic interference control test. When specified (see 3.22 and 6.2), equipment requiring electromagnetic interference (EMI) control shall be tested for class C3 group I equipment EMI requirement UMO5 in accordance with MIL-STD-461 to determine compliance with 3.22.

4.6 Packaging inspection. The preservation, packing, and marking of the item shall be inspected to verify conformance to the requirements of section 5.

5. PACKAGING

5.1 Preservation, packaging, packing, labeling, and marking. Preservation, packaging, packing, labeling, and marking shall be in accordance with the requirements of ASTM D 3951, unless otherwise specified in the contract or order (see 6.2).

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The power drives covered by this specification are intended to provide rotational power to turn pipe and bolt stock or turn geared threaders for threading, cutting, and reaming pipe. The type I is a hand-held drive which can also be adopted for turning large valves and turning geared threaders. Type II is a portable unit which is normally bolted to a portable stand and used for threading pipe and bolt stock using a mounted carriage with attached die-heads, reamer, and cutter, or coupled to a geared threader. Both units are intended for use in the shop or on the construction site due to their portability.

6.2 Ordering data. Acquisition documents should specify the following: (use PIN to identify specific items, see 6.3.1).

- a. Title, number, and date of this specification.
- b. Type power drive required (see 1.2 (use PIN)).
- c. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.1.2).
- d. When first production sample is required for inspection and approval (see 3.1, 4.2.1, and 6.7).
- e. Specify wiring requirements if different (see 3.8.1).
- f. Threading attachments, if required, for type I (see 3.10 and 3.12 and tables I, II, III, IV, V, VI, VIII and PIN dash number on tables).

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1. Attachment set for type I or II (see Table I).
 2. Pipe die-head (see 3.10.1 and tables I, II, III, and IV).
 3. Pipe dies (see 3.10.1 and table II through VIII).
 4. Bolt die-head (see 3.10.2 and tables V and VIII).
 5. Bolt die-head adapter (see 3.10.2 and table IV).
 6. Geared threader adapter (see 3.10.2 and table VIII).
 7. Support (torque) arm (see 3.10.3 and table VI).
 8. Carrying cases (see 3.10.4 and table VI).
- g. Threading attachments, if required, for type II (see 3.11 and table VII PIN dash numbers).
1. Carriage (see 3.11.1 and table VII through VIII).
 2. Reamer (see 3.11.2 and table VII).
 3. Cutter (see 3.11.3 and table VII).
 4. Dies (see 3.11.4 and table VII).
 5. Die-head (see 3.11.4.1 and 3.11.4.2 and table VII).
- h. Miscellaneous threading components, attachments, and accessories, if required (see 3.12 and table VIII PIN dash number).
1. Geared threader (see 3.12.1 and table VIII).
 2. Drive bar for geared threader (3.12.1 and table VIII).
 3. Dies, inch or metric (see 3.12.2 and table VIII).
 4. Chuck and adapters for nipples and bolt (see 3.12.3 and table VIII).
 5. Tool stand (see 3.12.4 and table VIII).
 6. Pipe support stand (see 3.12.5 and table VIII).
 7. Oiler (see 3.12.6 and table VIII).
 8. Ratchet and handle (see 3.12.7 and table VIII).
 9. Cutting oil (see 3.12.8 and table VIII).
- i. Lubrication requirements, if different (see 3.17).
- j. Instruction and identification plate requirements, if different (see 3.18 and 3.19).
- k. Painting, if different (see 3.20).
- l. Spare parts and maintenance tools required (see 3.21).
- m. Electromagnetic interference control, when required (see 3.22).
- n. Fungus controls, when required (see 3.23).
- o. Level of preservation and level of packing required (see 5.1).
- p. Type and quantity of handbooks, if different (see 6.6).

6.3 Part identification number (PIN). Items covered by this specification are identified by a part identifying number which is derived using the following numbering system. The PIN permits the identification of the power drives separate from accessories, power drives in combination with 1 individual accessory and in combination with sets of accessories, and single accessories and sets of accessories separate from the power drives. When the power drives need to be identified with more than 1 individual accessory but not a complete set of accessories, each of the items should be identified as separate and unique items.

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6.3.1 PIN makeup. The PIN is arrived at by combining this specification number (DXXXX) and the type power drive dash number and corresponding PIN dash numbers from 1.2 or tables I through VIII for the specific item required.

Example 1: DXXXX-1-A00 (this would indicate that the type I power drive was required) (without accessories).

	DXXXX	-	1	-	A00
	*		*		*
Specification number	-----*		*		*
Type No. (1 for Type I, 2 for Type II, and 3 for	-----*		*		*
Type III) (see 1.2)					*
					*
PIN Dash No. (see Tables I thru VIII)	-----*				*

Example 2: DXXXX-1-B02 (this would indicate that the die-head for type I power drive was required).

	D2782	-	1	-	B02
	*		*		*
Specification number	-----*		*		*
Type I power drive	-----*		*		*
Item dash number for die-head from table II	-----*				*

6.4 Supersession. This federal specification replaces and supersedes MIL-T-18166C of 22 April 1977 and MIL-D-29225D of 13 Jan 1984.

6.5 Cross reference.

MIL-T-18166C	MIL-D-29225	GGG-D-2782
Type I	Type I	Type I
Type II	Type II	Type II

6.6 Handbook of instructions. When specified (see 6.2), the contractor should furnish two copies of the manufacturer's standard handbook.

6.7 First production sample. When a first production sample is required (see 6.2), the item to be tested should be a first production item or it may be a standard production item from the contractor's current inventory. The first production sample consists of one unit. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examination, test, and approval of the first article.

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TABLE I. Combination of attachment sets for Type I and Type II power drives.

* Item Description	PIN Dash No.	*
-----		*
* POWER DRIVE WITH NO ATTACHMENTS	A00	*
* ATTACHMENT SET COMBINATION - TYPE I POWER DRIVE:		*
* Attachment sets B01 & C01	A01	*
* Attachment sets B01 & D01	A02	*
* Attachment sets B01 & E01	A03	*
* Attachment sets B01 & F01	A04	*
* Attachment sets C01 & D01	A05	*
* Attachment sets C01 & E01	A06	*
* Attachment sets C01 & F01	A07	*
* Attachment sets D01 & E01	A08	*
* Attachment sets D01 & F01	A09	*
* Attachment sets E01 & F01	A10	*
* Attachment sets B01, C01, & D01	A11	*
* Attachment sets B01, C01, & E01	A12	*
* Attachment sets B01, C01, & F01	A13	*
* Attachment sets B01, D01, & E01	A14	*
* Attachment sets B01, D01, & F01	A15	*
* Attachment sets B01, E01, & F01	A16	*
* Attachment sets C01, D01, & E01	A17	*
* Attachment sets C01, D01, & F01	A18	*
* Attachment sets C01, E01, & F01	A19	*
* Attachment sets D01, E01, & F01	A20	*
* Attachment sets B01, C01, D01, & E01	A21	*
* Attachment sets B01, C01, D01, & F01	A22	*
* Attachment sets B01, C01, E01, & F01	A23	*
* Attachment sets B01, D01, E01, & F01	A24	*
* Attachment sets C01, D01, E01, & F01	A25	*
* Attachment sets B01, C01, D01, & F01	A26	*
* ATTACHMENT SET COMBINATION - Type II Power Drive:		*
* Attachment sets G01 & H01	A027	*
-----		*

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TABLE II. Pipe (inch) threading attachments for type I power drive.

*Item name	Type 1/	Size 2/	PIN Dash No.	*
* Complete set of all accessories in the table.			B01	*
* Die-head, pipe, * high speed, * complete	Right hand NPT (segment insert)	1/8" - 27 TPI	B02	*
* Die-head, pipe, * high speed, * complete	Right hand NPT (Segment (insert)	1/4" - 18 TPI	B03	*
* Die-head, pipe, * high speed, * complete	Right hand NPT (segment insert)	3/8" - 18 TPI	B04	*
* Die-head, pipe, * high speed, * complete	Right hand NPT (segment (insert)	1/2" - 14 TPI	B05	*
* Die-head, pipe, * high speed, * complete	Right hand NPT (segment insert)	3/4" - 14 TPI	B06	*
* Die-head, pipe, * high speed, * complete	Right hand NPT (segment insert)	1" - 11-1/2 TPI	B07	*
* Die-head, pipe, * high speed, * complete	Right hand NPT (segment insert)	1-1/4" - 11-1/2 TPI	B08	*
* Die-head, pipe, * high speed, * complete	Right hand NPT (segment insert)	1-1/2" - 11-1/2 TPI	B09	*
* Die-head, pipe * high speed, * complete	Right hand NPT (segment insert)	2" - 11-1/2 TPI	B010	*

NOTE:

1/ NPT = National Pipe Thread.

2/ TPI = Threads per inch.

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TABLE III. Conduit (metric) threading attachments
for type I power drive.

* Item name	Type 1/	Diameter-Thread 2/ pitch	PIN Dash No. *

* Complete set of accessories in the table.			C01 *
* Die-head, conduit, * complete	Conduit, IS, taper, R 1-1/2 segment insert	16mm - 1.5mm TP	C02 *
* Die-head, conduit, * complete	Conduit, IS, taper, R 1-1/2 segment insert	20mm - 1.5mm TP	C03 *
* Die-head, conduit, * complete	Conduit, IS, taper, R 1-1/2 segment insert	25mm - 1.5mm TP	C04 *
* Die-head, conduit, * complete	Conduit, IS, taper, R 1-1/2 segment insert	32mm - 1.5mm TP	C05 *
* Die-head, conduit * complete	Conduit, IS, taper, R 1-1/2 segment insert	40mm - 1.5mm TP	C06 *

NOTES:

1/ IS = International Standards, R = Taper, external.

2/ TP = Thread pitch.

TABLE IV. Pipe (metric) threading attachments for
type I power-drive.

* Item name	Die 1/ Thread type, and designator	Pipe size nominal (mm)	Thread Designator (inch)	Thread Pitch (mm)	PIN Dash No. *

* Complete set of accessories in table.					D01 *
* Die-head, pipe, * high-speed, * complete	Pipe (segment insert) IS, taper, R-1/8	6	1/8 inch	0.907	D02 *
* Die-head, pipe, * high speed, * complete	pipe (segment insert), IS, taper, R-1/4		1/4 inch	1.337	D03 *
* Die-head, pipe, * high-speed, * complete	Pipe (segment insert) IS, taper, R-3/8	10	3/8 inch	1.337	D04 *

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TABLE IV. Pipe (metric) threading attachments for type I power-drive - Continued.

* Item name	Die 1/ Thread type, and designator	Pipe size nominal (mm)	Thread Designator (inch)	Thread Pitch (mm)	PIN Dash No.	*
*Die-head, pipe, *high speed, *complete	Pipe (segment insert), IS, taper, R-1/2	15	1/2 inch	1.814	D05	*
*Die-head, pipe, *high speed, *complete	Pipe (segment insert), IS, taper, R-3/4	20	3/4 inch	1.814	D06	*
*Die-head, pipe, *high-speed, *complete	Pipe (segment insert) IS, taper, R-1	25	1 inch	2.309	D07	*
*Die-head, pipe, *high-speed, *complete	Pipe (segment insert) IS, taper, R-1-1/4	32	1-1/4 inch	2.309	D08	*
*Die-head, pipe, *high speed, *complete	Pipe (segment insert), IS, taper, R-1/2	40	1-1/2 inch	2.309	D09	*
*Die-head, pipe, *high-speed, *complete	Pipe (segment insert) IS, taper, R-2	50	2 inch	2.309	D10	*

Note: 1/ IS = International Standard, R = Taper, external.

TABLE V. Bolt (inch) threading attachments for type I power drive.

* Item name	Type1/ or insert)	Size (inch)2/ or insert)	PIN Dash No.	*
* Complete set of accessories in table.			E01	*
* Die-head, bolt, * complete	RH, UNC (Button or insert)	1/4" - 20 TPI	E02	*
* Die-head, bolt, * complete	RH, UNC (Button or insert)	5/16" - 18 TPI	E03	*
* Die-head, bolt, * complete	RH, UNC (Button or insert)	3/8" - 16 TPI	E04	*
* Die-head, bolt, * complete	RH, UNC (Button or insert)	7/16" - 14 TPI	E05	*
* Die-head, bolt, * complete	RH, UNC (Button or insert)	1/2" - 13 TPI	E06	*
* Die-head, bolt, * complete	RH, UNC (Button or insert)	9/16" - 12 TPI	E07	*
* Die-head, bolt, * complete	RH, UNC (Button or insert)	5/8" - 11 TPI	E08	*

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TABLE V. Bolt (inch) threading attachments for type I power drive - Continued.

* Item name	Type 1/	Size (inch) 2/	PIN Dash No.	*
* Die-head, bolt, complete	RH, UNC (Button or insert)	3/4" - 10 TPI	E09	*
* Die-head, bolt, complete	RH, UNC (Button or insert)	7/8" - 9 TPI	E010	*
* Die-head, bolt, complete	RH, UNC (Button or insert)	1" - 8 TPI	E011	*
* Die-head adapter	Bolt die-head		E012	*

NOTES:

1/ RH = right hand, UNC = Unified National Course.

2/ TPI = threads per inch.

TABLE VI Miscellaneous attachments for type I power drive.

* Item name	Type	Size	PIN Dash No.	*
* Complete set of accessories in the table.			F01	*
* Support arm	Clamp-on	2-inch capacity	F02	*
* Adaptor	Gear threader	Standard	F03	*
* Carrying case	Metal	For type I power-drive and attachments	F04	*
* Carrying case	Metal	For type I dies and die heads	F06	*

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TABLE VII. Threading attachments for
type II power drive.

* Item name	Type 1/	Size 2/	PIN Dash No.	*
* Complete set of accessories in the table.			G01	*
* Carriage with lever arm	For die-head, reamer, and cutter	Standard	G02	*
* Reamer	Straight flute, carriage mount	See 3.11.2	G03	*
* Cutter	Wheel, floating, carriage mount	See 3.11.3	G04	*
* Die-head (inch)	Self-opening, RH	1/8" - 2" IPS	G05	*
* Die-head (inch)	Quick Opening (universal) RH	1/8" - 2" IPS	G06	*
* Die, high speed (set)	Pipe, RH, NPT	1/4" and 3/8", 18TPI	G07	*
* Die, high speed (set)	Pipe, RH, NPT	1/2" and 3/4", 14TPI	G08	*
* Die, high speed (set)	Pipe, RH, NPT	1" - 2", 11-1/2 TPI	G09	*
* Die-head (metric)	Self-Opening, RH	6mm - 50mm IPS	G010	*
* Die-head (metric)	Quick opening (universal) RH	6mm - 50mm IPS	G011	*
* Die, high speed (set)	Pipe, IS, taper, R 1/4 and R 3/8	8mm - 10mm	G012	*
* Die, high speed (set)	Pipe, IS, taper, R 1/2 and R 3/4	15mm - 20mm	G013	*
* Die high speed, (set)	Pipe, IS, taper R 1 to R 2	25mm - 50mm	G014	*
* Die-head (metric)	Bolts, IS	6mm through 26mm	G015	*
* Die-head (metric)	Bolts, IS	27mm through 52mm	G016	*

NOTES:

1/ RH = Right Hand, IS = International Standard, NPT = National Pipe Thread, R = Taper, External.

2/ TPI = Threads Per Inch, IPS = Iron Pipe Size.

- The above dies shall fit both the self-opening, and quick-opening (universal) die-heads.
- Three sets of dies are required to cover the range from 1/4 inch through 2 inch diameter. Sets of dies are adjustable through diameter ranges 1/4 and 3/8 inch, 1/2 and 3/4 inch, and 1 inch through 2 inches or ranges 8-10mm, 15-20mm, 25-50mm diameter with either of the above die-heads.
- Dies in one size range shall be provided in matched sets.

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TABLE VIII. Miscellaneous threading components, attachments, and accessories.

-----				*
* Item name	Type 1/	Size Range 2/ (nominal)	PIN Dash No.	*
-----				*
* Complete set of accessories in table.			H01	*
* Pipe threader	Geared, adjust- able	2-1/2" - 4" diameter	H02	*
* Pipe threader	Geared, adjust- able	4" - 6" diameter	H03	*
* Pipe threader (metric)	Geared adjustable	65mm thru 100mm	H04	*
* Pipe threader (metric)	Geared adjustable	125mm thru 150mm	H05	*
* Die, geared pipe threader (set)	High speed, RH, NPSM, NPT	2-1/2" thru 4" - 8TPI	H06	*
* Die, geared pipe threader (set)	High speed, RH, NPSM, NPT	4" - 6" - 8TPI	H07	*
* Die, geared pipe threader	High speed, IS, taper,	65 thru 100mm diameter, nominal	H08	*
* Die, geared pipe threader (metric)	High speed, IS, taper	100 thru 150mm diameter, nominal	H09	*
* Drive bar, geared threader	Close couple	Standard, 1" square	H010	*
* Die, bolt (inch) (set)	RH, UNC, closed	3/8" - 16 TPI	H011	*
* Die, bolt (inch) (set)	RH, UNC, closed	7/16" - 14 TPI	H012	*
* Die, bolt (inch) (set)	RH, UNC, closed	1/2" - 13 TPI	H013	*
* Die, bolt (inch) (set)	RH, UNC, closed	9/16" - 12 TPI	H014	*
* Die, bolt (inch) (set)	RH, UNC, closed	5/8" - 11 TPI	H015	*
* Die, bolt (inch) (set)	RH, UNC, closed	3/4" - 10 TPI	H016	*
* Die, bolt (inch) (set)	RH, UNC, closed	7/8" - 9 TPI	H017	*
* Die, bolt (inch) (set)	RH, UNC, closed	1" - 8 TPI	H018	*
* Die, bolt (inch) (set)	RH, UNC, closed	1-1/4" - 7 TPI	H019	*
* Die, bolt (inch) (set)	RH, UNC, closed	1-1/2" - 6 TPI	H020	*
* Die, bolt (inch) (set)	RH, UNC, closed	1-3/4" - 5 TPI	H021	*
* Die, bolt (inch) (set)	RH, UNC, closed	2" - 4-1/2 TPI	H022	*

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TABLE VIII. Miscellaneous threading components,
attachments, and accessories - Continued.

* Item name	Type 1/	Size range, nominal 2/	PIN Dash No.	*

* Die, bolt, metric (set)	RH, IS, closed	6mm - 1mm TP	H023	*
* Die, bolt, metric (set)	RH, IS, closed	8mm - 1.25mm TP	H024	*
* Die, bolt, metric (set)	RH, IS, closed	10mm - 1.5mm TP	H025	*
* Die, bolt, metric (set)	RH, IS, closed	12mm - 1.75mm TP	H026	*
* Die, bolt, metric (set)	RH, IS, closed	16mm - 2mm TP	H027	*
* Die, bolt, metric (set)	RH, IS, closed	18mm - 2.5mm TP	H028	*
* Die, bolt, metric (set)	RH, IS, closed	20mm - 2.5mm TP	H029	*
* Die, bolt, metric (set)	RH, IS, closed	22mm - 2.5mm TP	H030	*
* Die, bolt, metric (set)	RH, IS, closed	24mm - 3mm TP	H031	*
* Die, bolt, metric (set)	RH, IS, closed	30mm - 3.5mm TP	H032	*
* Die, bolt, metric (set)	RH, IS, closed	36mm - 4mm TP	H033	*
* Die, bolt, metric (set)	RH, IS, closed	42mm - 4.5mm TP	H034	*
* Die, bolt, metric (set)	RH, IS, closed	48mm - 5mm TP	H035	*
* Die, bolts, metric (set)	RH, IS, closed	50mm - 5mm TP	H036	*
* Chuck, nipple & bolt	Short & close nipple, & bolt	1/2" to 2"	H037	*
* Adapter, nipple	RH, NPT	3/8" - 18 TPI	H038	*
* Adapter, bolt	RH, UNC	3/8" - 16 TPI	H039	*
* Adapter, bolt	RH, UNC	7/16" - 14 TPI	H040	*
* Adapter, bolt	RH, UNC	1/2" - 13 TPI	H041	*
* Adapter, bolt	RH, UNC	9/16" - 12 TPI	H042	*
* Adapter, bolt	RH, UNC	5/8" - 11 TPI	H043	*
* Adapter, bolt	RH, UNC	3/4" - 10 TPI	H044	*
* Adapter, bolt	RH, UNC	7/8" - 9 TPI	H045	*
* Adapter, bolt	RH, UNC	1" - 8 TPI	H046	*
* Adapter, bolt	RH, UNC	1-1/4" - 7 TPI	H047	*
* Adapter, bolt	RH, UNC	1-1/2" - 6 TPI	H048	*
* Adapter, bolt	RH, UNC	1-3/4" - 5 TPI	H049	*
* Adapter, bolt	RH, UNC	2" - 4-1/2 TPI	H050	*
* Adapter, bolt metric	RH, IS	6mm - 1mm TP	H051	*
* Adapter, bolt metric	RH, IS	8mm - 1.25mm TP	H052	*

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TABLE VIII. Miscellaneous threading components,
attachments, and accessories - Continued.

-----				*
* Item name	Type 1/	Size range, nominal 2/	PIN Dash No.	*
-----				*
* Adapter, bolt	RH, IS	10mm - 1.5mm TP	H053	*
* metric				*
* Adapter, bolt	RH, IS	12mm - 1.75mm TP	H054	*
* metric				*
* Adapter, bolt	RH, IS	16mm - 2mm TP	H055	*
* metric				*
* Adapter, bolt	RH, IS	18mm - 2.5mm TP	H056	*
* metric				*
* Adapter, bolt	RH, IS	20mm - 2.5mm TP	H057	*
* metric				*
* Adapter, bolt	RH, IS	22mm - 2.5 TP	H058	*
* metric				*
* Adapter, bolt	RH, IS	24mm - 3mm TP	H059	*
* metric				*
* Adapter, bolt	RH, IS	30mm - 3.5mm TP	H060	*
* metric				*
* Adapter, bolt	RH, IS	36mm - 4mm TP	H061	*
* metric				*
* Adapter, bolt	RH, IS	42mm - 4.5mm TP	H062	*
* metric				*
* Adapter, bolt	RH, IS	48mm - 5mm TP	H063	*
* metric				*
* Adapter, bolt	RH, IS	50mm - 5mm TP	H064	*
* Tool Stand	Adjustable,	Standard	H065	*
* power-drive				*
* Support stand	Pipe	6" pipe diameter	H066	*
* Oiler	Hand Operated,	1 gallon capacity	H067	*
* with pan		minimum		*
* Ratchet & handle	Reversible	1 inch drive	H068	*
* Oil	Thread cutting	5 gallons	H069	*
-----				*

NOTES:

1/ RH = Right Hand, IS = International Standard, UNC = Unified National Coarse, NPSM = National Pipe Straight - Mechanical, NPT = National Pipe Taper.

2/ TP = Thread Pitch, TPI = Threads Per Inch.

1. Dies for threading nipples or bolts are to fit the self-opening and quick-opening die-heads of table VII.

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MILITARY INTERESTS:

Custodians:

Army - AL
Navy - YD
Air Force - 99

Review Activities:

Air Force - 84
DLA - GS

User Activity:

Navy - MC

CIVIL AGENCY COORDINATING ACTIVITIES:

GSA - FSS

PREPARING ACTIVITY:

Navy - YD

Project 3450-0020