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SUPERSEDING
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FEDERAL SPECIFICATION

LUBRICATING AND SERVICING UNIT, POWER-OPERATED, PORTABLE, INDUSTRIAL TYPE

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

1. SCOPE

1.1 Scope. This document covers a portable, platform-mounted, air-operated lubricating unit (hereinafter referred to as the unit) consisting of a diesel-engine-driven air compressor, lubricant pumps, hose reels, and other equipment necessary to form a complete, self-contained unit suitable for dispensing lubricants directly from standard refinery drums.

2. APPLICABLE DOCUMENTS

2.1 Government publications. The issues of the following documents in effect on date of invitation for bids or solicitation for offers, form a part of this specification to the extent specified herein.

Federal Specifications

W-B-131 - Battery, Storage: Vehicular, Ignition, Lighting, and Starting
TT-P-664 - Primer Coating, Alkyd, Corrosion-Inhibiting, Lead and Chromate Free, VOC-Compliant
PPP-B-601 - Boxes, Wood, Cleated-Plywood
PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner
PPP-D-705 - Drum, Shipping and Storage: Steel, 16 and 30 Gallon Capacity

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

FSC 4930

PPP-D-711 - Drum: Metal, Shipping, Steel, Lightweight (55 Gallon)
PPP-P-40 - Preservation and Packing of Hand Tools; Tools and Tool Accessories for Power Driven, Metal and Woodworking Machinery
PPP-T-60 - Tape: Packaging, Waterproof

Federal Standard

FED-STD-595 - Colors

Military Specifications

MIL-C-104 - Crates, Wood: Lumber and Plywood Sheathed, Nailed and Bolted
MIL-P-116 - Preservation, Methods of
MIL-B-121 - Barrier Material, Greaseproof, Waterproofed, Flexible
MIL-C-3600 - Compressors, Rotary, Power-Driven; and Compressors, Reciprocating, Power-Driven: Air and Gas (Except Oxygen and Refrigerated), Packaging of
MIL-C-3774 - Crates, Wood; Open 12,000- and 16,000-Pound Capacity
MIL-L-4387 - Lubrication Dispensing Equipment Accessories
MIL-C-5501 - Caps and Plugs, Protective, Dust and Moisture Seal
MIL-E-10062 - Engines: Preparation for Shipment and Storage of
MIL-G-10924 - Grease, Automotive and Artillery
MIL-T-22085 - Tapes, Pressure - Sensitive, Adhesive, Preservation and Sealing

Military Standards

MIL-STD-129 - Marking for Shipment and Storage
MIL-STD-209 - Slinging and Tiedown Provisions for Lifting and Tying Down Military Equipment
MIL-STD-1186 - Cushioning, Anchoring, Bracing, Blocking and Waterproofing; with Appropriate Test Methods

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

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

American Society of Mechanical Engineers (ASME):

ASME Boiler and Pressure Vessel Code
Section VIII, Division 1 - Rules for Construction of Pressure Vessels

(Application for copies should be addressed to the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, NY 10017.)

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.)

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 unit shall be equipped with a diesel-engine-driven (DED) air compressor; lubricant drums, pumps, and hose reels; air-service hose reel; hose reel mounting stand with storage compartment; air distribution system and manifold; air-operated lubricant pump elevator; socket-mounted drum hoisting davit; lubricant drum heating system; and other equipment and accessories as specified herein.

3.2 First article. When specified (see 6.2), the contractor shall furnish a unit for first article inspection and approval (see 4.2.1 and 6.2, and 6.4).

3.3 Standard commercial product. The unit 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 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.

3.3.1 System of measurement. The dimensions used in this specification are not intended to preclude the use of metric system of measurement in the fabrication and production of the material, individual parts, and the finished product, provided form, fit, and function requirements are met.

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.

3.5 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.

3.6 General arrangement. The general arrangement of the components of the unit shall be as shown in figure 1.

3.7 Air compressor. The air compressor shall have a rated capacity of not less than 15 cubic feet per minute (cfm) of air at a discharge pressure of not less than 125 pound-force per square inch gage (psig) or a rated cfm and pressure in psig equal to 10 percent greater than the combined requirements of the four main lubricating pumps, whichever is greater. In either case, the compressor ratings (cfm and pressure) shall be the manufacturer's standard for the compressor furnished with the unit. The compressor shall be furnished with an automatic pressure regulated unloader, inlet filter, outlet sound suppressor, and safety guards to enclose moving parts which could be hazardous to personnel.

3.7.1 Engine. The compressor shall be driven by a commercial, air-cooled, diesel engine producing the required horsepower and torque capabilities to drive the air compressor furnished at maximum rated compressor output plus a reserve engine capability of not less than 10 percent. The engine shall be completely installed and shall include a cranking motor, charging generator or alternator, voltage regulator, starter switch, battery, interconnecting wiring and cables. The engine shall be equipped with a friction disc clutch, capable of being disengaged/engaged; air cleaner; exhaust silencer; fuel filter; lubricating oil pressure gage; and a fuel tank having a capacity of at least three gallons. The diesel engine shall start in any temperature above -20 degrees Fahrenheit (oF). Starting aids may be either electric glow plug or ether primer. When an ether priming system is furnished, it shall be of the measured shot type with a storage capacity of not less than 12 fluid ounces. When specified (see 6.2), batteries shall be dry-charged in accordance with W-B-131, without electrolyte, with sealed caps to prevent the intrusion of atmospheric moisture.

3.7.2 Air receiver. The air receiver tank shall be of the horizontal type, and shall be constructed in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1. The tank shall have a minimum capacity of 30 gallons and shall be designed for the maximum allowable working pressure equal to not less than 10 percent greater than the maximum working pressure of the air compressor furnished. The maximum length of the compressor, including the receiver tank and any valves or fittings mounted on the tank heads shall be 48 inches. Mounting brackets for the engine-compressor shall be provided between the brackets and the engine-compressor base plate. The tank shall be equipped with an ASME-rated pressure relief valve, a pressure gage, a drain cock, and a shutoff valve or cock on the compressed air outlet connection. The pressure gage shall be of the dial type, 2-1/2 inches in diameter, minimum, with a scale reading from 0 to 300 psig. The tank shall be equipped with a float- or diaphragm-operated moisture separator to trap and automatically expel moisture from the discharge air stream.

3.7.3 Pressure regulation. The compressor shall be equipped with an automatic unloader designed to unseat the suction valve whenever the receiver reaches a preset maximum to permit continuous operation of the engine-compressor unit. The unloader shall automatically function to initiate compression when the receiver pressure drops to a preset value. The upper and lower settings of the unloader shall be adjustable.

3.8 Lubricant pumps. Four immersion-type lubricant pumps shall be provided. One high pressure pump shall be furnished for grease, one medium pressure pump for gear oil, one low pressure pump for engine oil, and one low pressure pump for hydraulic oil. Pumps shall be designed to operate at air pressures up to 150 psig. Pressure-containing parts of the air motor shall be capable of withstanding pressures to 200 psig. Pumps shall meet the requirements of table I. The high pressure pump shall be designed for mounting on a 120 pound (lb), lug-cover, commercial grease drum conforming to type III of PPP-D-705. The medium and low pressure pumps shall be designed for mounting on a 55-gallon, 400 lb, removable cover drum conforming to type III of PPP-D-711. Pumps shall be designed or equipped for self-priming operation. Each pump shall be furnished with a pressure gage reading from 0 to at least 200 psig and with an air pressure regulator to provide control of the individual pumping rates. The pump tubes on the medium pressure and low pressure pumps shall be equipped with strainer assemblies to prevent the entrance of foreign particles into the pump.

TABLE I. Lubricant pump requirements.

Pressure Classification	High	Medium	Low
Pressure ratio(1)			
Minimum	40:1	9:1	4:1
Maximum	75:1	25:1	12:1
Lubricant pumped	Light-body, viscous and fibrous grease, MIL-G-10924 grease (NLGI(2) grade 2)	Gear oil, SAE 90 to SAE 250	Engine oil and hydraulic oils up to SAE 70
Minimum delivery for the following conditions:	9.5 lb/min	3.0 gal/min	4.0 gal/min
Lubricant pumped	Light-body grease (NLGI, grade 0)	Gear lube (SAE 140)	Engine oil (SAE 30)
Ambient temperature	70oF	70oF	70oF
Air supply pressure air motor	100 psig	100 psig	100 psig
Pumps required per unit	1	1	2

(1) Pressure ratio is the lubricant pressure at the pump outlet to air supply pressure at air motor inlet.
(2) National Lubricating Grease Institute (NLGI).

3.9 Hose reels. Four lubricant hose reels shall be provided complete with hoses and pistol grip control valves. One hose reel shall be furnished for grease, one for engine oil, one for gear oil, and one for hydraulic oil. One air-service hose reel shall be provided complete with air hose, air coupler, air blow gun, and gage-type tire inflator with flexible hose quick-disconnect connector. The hose reels shall be of the self-retracting, spring-retracting, spring-operated, large-capacity, heavy-duty type. The hose reels shall be mounted in a bank on a structural steel stand as specified in 3.9.1. Each reel shall be equipped with a steel base, a ratchet mechanism to permit latching the hose at any desired position, and a hose guide arm. The guide-arm shall be equipped with a roller assembly or equivalent low-friction bushing to protect the hose against abrasion as it passes through the guide arm. The angular position of the guide arm shall be adjustable about the axis of the reel. The end of the hose adjacent to the accessory attachment shall be provided with a rubber bushing to prevent impact of the attachment against the guide arm. The hose reels shall be furnished complete with the hoses specified in table II.

TABLE II. Requirements for reel-mounted hose.

Application	Minimum inside diameter (inches)	Pressure rating (psig) Working	Burst	Reinforcement (minimum)
High pressure (grease)	1/4	5,000	16,000	Two-ply wire braided
Medium pressure (gear oil)	1/2	1,000	4,000	One-ply wire braided
Low pressure (engine oil)	1/2	1,000	4,000	One-ply wire braided
Air service	3/8	250	1,000	Two-ply fabric braided

3.9.1 Stand. The mounting stand for the bank of five hose reels shall be constructed of steel angle, channel, beams, or similar structural steel shapes or of plates, or a combination thereof. The height of the stand shall be equal to approximately one-half the diameter of the hose reels, but not less than 12 inches. The base of the stand shall be enclosed to form a compartment for the storage of the accessory equipment specified herein, such as grease guns and oilers. The front of the compartment shall consist of two doors, hinged in such a manner as to hold the doors open in an up or down position, as applicable. Each door shall be equipped with keyed-alike recessed latches. The compartment enclosure panels and doors shall be sheet steel having a thickness of not less than 0.074 inch (14 gage). The interior of the storage space shall be compartmental to prevent undue movement of individual accessories in transit. Nameplates shall be mounted on the stand at each reel position to indicate the type of service for which the reel is intended.

3.9.2 Hose. Each hose reel shall be furnished with not less than 40 feet of hose having an inside diameter, working pressure, and burst pressure as specified in table II. The hose shall consist of an inner tube, a wire or fabric braid reinforcement, and an outer cover. The tube and cover shall be polychloroprene or nitrile rubber for both lubricant and air hoses except that butadiene-styrene tubes and covers will be acceptable for the air hose. The reinforcement shall be as specified in table II. Hoses connecting the lubricant pumps to the hose reels shall be as specified herein for the reels except that the length shall be sufficient to permit the removal of pumps from the drums without disconnecting the hoses. Hoses shall be furnished with fittings at each end suitable for making connections to pumps, hose reels, control valves, and accessories, as applicable.

3.9.3 Control valves, fittings and air attachments. Hoses on the four lubricant reels and air reel shall be equipped as specified in table III. The connection sizes for the accessories shall be as required for the connection to the hoses specified in table II. The control valves and accessories for the lubricant reels shall meet the applicable requirements of MIL-L-4387 for the classification specified in table III.

TABLE III. Control valves and other accessories for hose reels.

Hose reel	Accessory attachment	Classification in MIL-L-4387
Grease	Control valve non-metering high pressure.	Type VI, class 1, style A
	Extension, nominal 6-inch	Type III, class 1
	Hydraulic coupling	Type I, class 1, style A
	Universal swivel, Z-style	Type VII, class 3
Gear oil	Control valve non-metering low pressure with extension and non-drip nozzle.	Type VI, class 1, style B
Engine oil	Control valve metering nontotalizing, low pressure with flexible nozzle extension and non-drip nozzle.	Type VI, class 2, style B (except for extension)
Air	Blow gun with quick-disconnect coupling.	Commercial standard
	Tire inflator, gage type with quick-disconnect coupling and flexible connector.	Commercial standard

3.10 Air distribution system. An air distribution system shall be provided and shall consist of a stand-mounted air-distribution manifold, a 0-300 lb gage, a hose for connecting the compressor receiver tank to the manifold, and hoses for connecting the manifold to the lubricant pumps and air hose reel.

3.10.1 Air hoses. The unit shall be furnished with six lengths of 1/2-inch inside diameter air hose, four for connecting the lubricant pumps to the manifold, one for connecting the air service reel to the manifold, and one for connecting the manifold to the compressor receiver. The hoses shall have a minimum burst pressure of 1,000 psig and shall be as specified in 3.9.2 and table II. The length of the manifold-to-receiver hose and manifold-to-air service reel hose shall be sufficient to permit connection without undue strain on the hose or connections. The length of the manifold-to-pump hoses shall be at least 6 feet.

3.11 Drum accessories. The unit shall be furnished with drum installation and dispensing accessories for three 400 lb drums and one 120 lb drum.

3.11.1 Cover, tie rod, and gasket assemblies. The cover and tie rod assembly for each drum shall include a flanged steel cover, two steel tie rods, and two eye bolts permanently mounted on the platform deck. The tie rods shall be hooked at one end to engage the eye bolts and threaded at the top to secure the cover with wing nuts. Each drum station shall include two concentric locator rings mounted securely on the platform; the outer ring to encircle the outside of the drum. The rings shall be fabricated of steel stock at least 1/8-inch thick and shall be sized and located to provide an approximate 2-inch space between the inner and outer rings. The height of the rings shall be 1-1/2-inch minimum for the outer ring and 3/4-inch +1/16-inch for the inner ring. The 2-inch space between the rings shall contain a silicone gasket approximately 2 inches wide and 1/2-inch thick which shall act as a seal against leakage of hot exhaust gases during low temperature operation. The eye bolts of the tie rods may be attached to the outer locator ring in lieu of being mounted directly on the platform.

3.11.2 Bung sealing kit. The drum covers shall be furnished with bung adapters to provide a water-tight seal between the pump and cover and to prevent the entrance of dirt, dust, and moisture into the lubricant drums.

3.11.3 Follower plate. A follower plate shall be provided for the 120 lb grease drum. The plate shall be designed to prevent cavitation at the pump inlet to ensure continuous delivery.

3.12 Pump elevator. The pump elevator shall be a single-post, air-operated hoist with a horizontal swing arm designed to rotate a full 360 degrees. The elevator shall be capable of lifting at least 200 lb and shall have sufficient extended height to raise the pump tubes clear of the 400 lb drums. The elevator shall be located in a position suitable for servicing the four drums and shall be furnished complete with all required hooks, chains, air couplings, controls, and mounting bolts.

3.13 Transfer pump. A vertical, air-motor-operated, transfer pump shall be furnished with each unit. The pump shall be designed for mounting directly in a 2-inch bung or in a bung adapter furnished with the pump. The pump shall have a rated capacity at free discharge and 70oF, of not less than 15 gallons per minute of SAE 20 engine oil using 100 psig pressure at the air motor connection. The pump shall have a pressure ratio of 1:1 or 1-1/2:1 and shall be equipped with a standard 3/4-inch hose connection. Not less than 12 feet of 3/4-inch delivery hose with a non-drip spout shall be supplied with each pump. The pump suction pipe shall be of sufficient length to permit emptying 55-gallon drums.

3.14 Drum hoist. A removable socket-mounted drum hoist of not less than 600 lb capacity shall be furnished. The drum hoist shall be a single post jib type capable of 360 degree rotation, with a horizontal beam and rolling hoist carrier, having sufficient reach to pick up a loaded 400 lb drum from the ground, clearing the side of the unit by at least 2 feet and placing the drum in its receptacle on the unit. Two sockets shall be furnished with each hoist. The sockets shall be permanently mounted on the platform (one on each side) so that the drums can be swung on and off from the nearest side. A drum-lifting attachment and lifting hook shall be supplied with each hoist.

3.15 Platform. The platform for supporting components of the unit shall consist of a structural steel frame with 1/4-inch thick, nonskid deck plates, a lubricant-drum heating system, provisions for mounting of components, and lifting eyes. Unless otherwise specified (see 6.2), the maximum overall dimensions of the platform base shall be 109 inches long by 49-1/2 inches wide.

3.15.1 Frame. The frame members on both sides and ends of the platform shall be nominal 6-inch by 2-inch channels weighing not less than 8.2 pounds per foot. Suitable structural steel cross-bracing or reinforcement shall be incorporated in the design, as required, to permit the unit, fully serviced for operation, to be lifted onto a truck or trailer bed without causing permanent deformation of the platform, dislocation or misalignment of any components thereon. The bottom flange of the structural steel rails shall be drilled with 11/16-inch holes to permit insertion of mounting bolts, with at least three holes in each end rail and four holes in each side rail.

3.15.2 Drum heating system. The platform shall include a lubricant drum heating system designed to use the exhaust gases from the compressor engine and, if required by the temperature condition, the exhaust gases from the engine of the truck on which the unit is mounted. Two sheet steel box sections shall be centrally located under the drum positions as shown in figure 2. The deck under each drum shall be perforated or cut out to provide maximum direct contact of the exhaust gases with the bottom drum heads. The box sections shall be fabricated of sheet steel not less than 10 gage in thickness; shall be not less than 4 inches deep inside; and shall be leakproof. The siderail members and the steel deck may serve as part of the box enclosures. The exhaust piping shall be standard 3-inch galvanized pipe with threaded terminal connection and cap. Suitable fittings for the vehicle shall be furnished for attachment after the unit is vehicle-mounted to direct the discharge in a downward direction. The connection from the diesel engine exhaust to the 3-inch intake pipe to the heating boxes shall include a flexible vibration-isolating connector, a damper to permit the exhaust to be routed through the engine muffler for warm weather operation, and a plugged connection to permit attachment, when necessary, or an auxiliary conduit from the truck engine exhaust.

3.15.3 Mounting requirements. All permanently mounted components, including the engine-compressor, hose reel bank, air distribution manifold, drum locator rings, drum gasket bands, and drum cover tie-rod eye bolts shall be firmly secured in place. The heads of mounting bolts or the nuts for the base of the pump elevator shall be welded in position to the underside of the deck. If the bolts are welded in place, a wooden mockup of the pump elevator base shall be bolted in position to protect the bolts. Sockets for drum hoists shall also be welded in position and braced, as required, to the side rails under the deck.

3.15.4 Lifting and tiedown attachments. The platform shall be equipped with four lifting eyes conforming to the applicable requirements of MIL-STD-209. The lifting eyes may be attached as shown in figure 2. The skid shall be equipped with tiedown attachments conforming to MIL-STD-209. A nonferrous transportation plate shall be provided and mechanically attached to the platform. The plate 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 platform on the carrier when shipped.

3.16 Accessory equipment. The following accessory equipment shall be furnished with each unit:

a. Two heavy duty grease guns, hand operated, lever type with hydraulic coupler extension. Guns shall be rated at 10,000 psig, shall have a capacity of at least 20 ounces of lubricant, and shall be suitable either for cartridge loading or bulk loading.
b. Two suction guns, each with a flexible extension designed for withdrawing lubricant from oil filter cases, gear cases, transmissions, differentials, brake master cylinders, and the like. The capacity shall be not less than 12 ounces.
c. Two hand operated, pistol grip, squirt type, spring oilers having a capacity of one quart.

3.16.1 Hydraulic grease fittings. An assortment of hydraulic grease fittings containing not less than the items listed below shall be furnished with each unit. The assortment shall be furnished in a compartment box with an identification chart.

a. Twenty 1/8-inch National Pipe Thread (NPT), Straight
b. Twenty 1-4-inch 28, Straight
c. Ten 1/4-inch 28, 45 degree
d. Ten 1/8-inch NPT, 65 degree
e. Ten 1/8-inch NPT, 90 degree
f. Ten 1/4-inch 28, 90 degree

3.16.2 Grease gun accessories. The following grease gun accessories shall be furnished with each unit:

a. Two flexible hose extensions, 12 inches long. Hose shall be 3/16-inch inside diameter, reinforced type, with end adapters. Hose shall withstand a proof pressure of not less than 8,000 pound-force per square inch (psi).
b. Two hydraulic couplers conforming to MIL-L-4387, type I, class 1, style A, size 2.
c. Two standard button head couplers. Coupler shall give fast, positive seal on standard button head fittings. Inlet shall have 1/8-inch internal NPT.
d. Two giant button head couplers. Couplers shall give fast, positive seal on giant button head fittings. Inlet shall have 1/8-inch internal NPT.

3.16.3 Tire inflation devices. The following tire inflation devices shall be furnished with each unit:

a. One large bore tire clip-on type
b. One truck tire clip-on type
c. One standard tire clip-on type

3.17 Canvas cover. A canvas cover of adequate size to enclose the top and sides of the unit with all pumps and drums in place shall be furnished. The canvas cover shall be fire, water, weather, and mildew resistant cotton duck weighing not less than 17 ounces per square yard. Metallic grommets and tie down ropes shall be furnished and installed, not less than four per side and three per end.

3.18 Identification plate. 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. Nonferrous screws, rivets, or bolts of not less than 1/8-inch in diameter shall be used to affix the plates. Nomenclature shall be "LUBRICATING AND SERVICING UNIT, PORTABLE, DED, INDUSTRIAL."

3.19 Lubrication. 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, 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.

3.20 Cleaning, treatment, and painting. Surfaces normally painted in good commercial practice shall be cleaned, treated, and painted as specified herein. 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 of acrylic-based enamel. 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. Color of the finish coat shall be as specified (see 6.2), in accordance with FED-STD-595, if applicable.

3.21 Dissimilar metals. Metals dissimilar with respect to the galvanic scale shall not be used unless separated by an insulating material which will avoid electrolytic corrosion.

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.

3.22.2 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.

3.22.3 Bolted connections. Bolt holes 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.

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

3.22.5 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. Welders shall be qualified for the specified type of welding being performed, in accordance with the applicable welding codes. Certification records shall be made available to Government inspectors.

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 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 the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of section 3 and 5. The inspection set forth in this specification shall become a part of the contractor’s overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies

submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of 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 inspection. 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).
c. Packaging inspection (see 4.6).

4.2.1 First article inspection. First article inspection shall be performed on one pump when a first article is required (see 3.2 and 6.4). This inspection shall include the examination of 4.3 and the tests of 4.4. Failure of the first article to pass the examination or any of the tests shall be cause for rejection. 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 consist of the examination of 4.3, the tests of 4.4 and the packaging inspection of 4.6. When a first article is tested in accordance with the requirements of 4.4, and has passed, the tests of 4.4 need not be performed for the quality conformance inspection. When the tests of 4.4 are to be performed for the quality conformance inspection, they shall be performed on one production unit.

4.3 Examination. Each unit 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. The first article, when furnished, shall be tested, and any unit failing to pass the following tests, as applicable, shall be rejected. Tests shall be conducted as outlined in the referenced documents and as herein specified.

4.4.1 Compressor test. Engine-compressor shall be operated for at least 30 minutes to verify compliance with the performance requirements of 3.7. The automatic unloader shall be checked as the compressor operates when the set pressure in the receiver is reached. The receiver pressure shall be manually released, as necessary, to effect at least three compression cycles.

4.4.2 Static pressure test. The unit shall be pressure-tested to verify the strength and tightness of components in the lubrication dispensing system. The tests shall be conducted using NLGI grade 2 grease for the high pressure pump, SAE 140 gear oil for the medium pressure pump, and SAE 30 engine oil for the two low pressure pumps. The drums shall be supplied by the contractor and filled with sufficient lubricant to conduct the tests specified herein. The tests shall be conducted using the hose reels on the unit connected through a quick-disconnect coupler to a lubrication fitting mounted in an accurately gaged test fixture. The test pressures shall be as follows:

a. Grease pump: 7,000 psig
b. Gear oil pump: 1,600 psig
c. Engine oil pumps: 400 psig

Any evidence of leakage, rupture, separation of hose fittings, cracking, or other defects affecting serviceability shall constitute failure of the test.

4.4.3 Capacity tests. After completion of the tests of 4.4.2, the pumps shall be tested to verify compliance with the pump delivery requirements of table I. Tests shall be conducted at 70oF, plus or minus 10oF using 10 feet of 1/2-inch inside diameter discharge hose and 100 psig air pressure. Delivered quantities shall be determined by accurate weighing or measuring devices. Failure to meet the minimum specified pumping rate by one or more pumps shall be cause for rejection of the unit.

4.4.4 Lifting eyes. The unit, with all equipment in place or with an equivalent live loading, shall be lifted at least five times to a height of 10 feet and lowered. Weld cracking or any permanent deformation of the lifting attachments or structural members shall constitute failure of the test.

4.5 Production unit test. The contractor shall perform a compressor test in accordance with 4.4.1 on each production unit. The test shall, as a minimum, assure that the unit is capable of meeting performance requirements of 3.7.

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

5. PACKAGING

5.1 Preservation. Preservation shall be level A or C, as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Methods of preservation. Cleaning processes, drying procedures, preservatives, and methods of preservation specified in the following paragraphs are listed in MIL-P-116 and shall conform to the requirements of MIL-P-116 and any applicable specifications.

5.1.1.2 Cleaning and drying. Prior to the application of preservative compounds or paint, surfaces shall be cleaned by process C-1 and dried by any applicable procedure of MIL-P-116.

5.1.1.3 Disassembly. Disassembly shall be the minimum necessary to protect parts subject to damage or loss, and to accomplish reduction in cube. Removed bolts, nuts, pins, screws, and washers shall be reinstalled in mating parts and secured to prevent their loss.

5.1.1.4 Matchmarking. Parts removed and mating parts on the equipment and attachments shall be matchmarked to facilitate reassembly. Parts and accessories removed, and mating parts on the equipment, shall be identified with weatherproof tags attached to mating parts and locations. Marking shall be applied to the tags with a waterproof material.

5.1.1.5 Unprotected surfaces. Unprotected exterior metal surfaces requiring the application of a contact preservative in accordance with MIL-P-116 and not specifically provided for herein shall be preserved as follows:

5.1.1.5.1 Unfinished (not machined) surfaces. Unfinished exterior metal surfaces shall be coated with type P-1 preservative.

5.1.1.5.2 Machined surfaces. Exposed machined surfaces shall be coated with type P-6 or P-11 preservative and wrapped or covered, as applicable, with barrier material conforming to MIL-B-121, type I, grade A, class 2. The material shall be secured in place with waterproof tape.

5.1.1.6 Engines. Engines, engine components, and accessories shall be preserved in accordance with the level A requirements of MIL-E-10062, type I, method I.

5.1.1.7 Clutches. All surfaces of clutch assemblies, except composition facings, shall be coated with a thin coat (0.5 - 0.6 mil thick) of primer conforming to TT-P-664. The clutch shall be disengaged.

5.1.1.8 Air compressors. The air compressor and air receiver tank shall be preserved in accordance with the level A requirements of MIL-C-3600.

5.1.1.9 Pumps. Interior surfaces of the lubricant, hydraulic fluid, and transfer pumps shall be coated with type P-10, grade 30 preservative in a manner to insure thorough coating of all interior parts and surfaces. Excess preservative shall be drained. All openings into the pumps shall be sealed with applicable caps or plugs conforming to MIL-C-5501, or waterproof tape conforming to MIL-T-22085, type II, or PPP-T-60, type IV.

5.1.1.10 Hose and reels. Hose attached to reels shall be compactly wound on the reels, secured to prevent unwinding and the reels locked. Any open ends of hose shall be sealed with tape conforming to MIL-T-22085, type II or PPP-T-60, type VI. Unattached hose shall be coiled to the minimum safe diameter and secured.

5.1.1.11 Accessories. Interior surfaces of grease guns, suction guns, air guns, and hand pumps shall be coated with type P-10 preservative. Any small accessories with exposed uncoated ferrous metal machined surfaces or threads shall have such surfaces coated with type P-10, grade 30 preservative; and, the items shall be individually wrapped with MIL-B-121 barrier material and secured with PPP-T-60 tape. The accessories shall be placed on the unit in the appropriate location provided for that purpose and secured to prevent movement.

5.1.1.12 Maintenance tools. Maintenance tools shall be preserved in accordance with level A preservation and packaging requirements of PPP-P-40.

5.1.1.13 Service parts. The preservative application criteria and applicable methods of preservation of MIL-P-116 shall be used to preserve service parts.

5.1.1.14 Consolidations. Disassembled components, accessories not secured to the unit, tools, and parts for each unit shall be consolidated in containers conforming to PPP-B-601, overseas type or PPP-B-621, class 2. The contents shall be cushioned, blocked, and braced to prevent movement in accordance with MIL-STD-1186. Containers shall be secured to the equipment with appropriate strapping.

5.1.2 Level C. The equipment shall be preserved in accordance with the contractor's standard practice in a manner to prevent deterioration and damage. The equipment shall be lubricated for operational service as required by the manufacturer.

5.2 Packing. Packing shall be level A, B, or C, as specified (see 6.2).

5.2.1 Level A. Each complete unit shall be packed in a crate conforming to MIL-C-104, type II, class 1 or 2, style A. Anchoring, blocking, and bracing shall be in accordance with the appendix to MIL-C-104.

5.2.2 Level B. Each complete unit shall be packed in a crate conforming to MIL-C-3774, type II, style A. Closure, strapping, reinforcing, anchoring of contents, and waterproofing of contents with a full shroud shall be in accordance with the appendix to MIL-C-3774.

5.2.3 Level C. The equipment shall be prepared for shipment in a manner which will insure arrival at the destination in a satisfactory condition. Preparation for delivery shall comply with applicable carrier rules and regulations.

5.3 Marking. Marking shall be in accordance with MIL-STD-129.

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 lubricating and servicing unit is intended for mounting on a suitable truck or trailer bed to provide a mobile facility for the lubrication of automotive and construction equipment in the field under normal and low temperature conditions.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of the specification.
b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).

c. When a first article is required (see 3.2 and 6.4).
d. When a dry-charged battery is required (see 3.7.1).
e. When maximum platform overall dimensions shall be other than 109 inches long by 49-1/2 inches wide (see 3.15).
f. Color of finish coat (see 3.20).
g. Level of preservation and level of packing required (see 5.1 and 5.2.)

6.3 Data requirements. When this specification is used in an acquisition and data are required to be delivered, the data requirements shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (CDRL), incorporated into the contract. When the provisions of DOD FAR Supplement, Part 27, Sub-Part 27475.1 (DD Form 1423) are invoked and the DD Form 1423 is not used, the data shall be delivered by the contractor in accordance with the contract or purchase order requirements.

6.4 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 (see 6.2) 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.

6.5 Subject term (key word) listing.

Air compressor
Air receiver
Lubricant pumps
Air distribution system
Hose reels
Diesel-engine-driven

FIGURE 1. General layout of lubricating unit components.

FIGURE 2. Platform details showing diesel exhaust-gas heating system.

MILITARY INTERESTS:

Custodian

Navy - YD

Review Activity

DLA - CS

CIVIL AGENCY COORDINATING ACTIVITIES:

GSA - FSS

PREPARING ACTIVITY:

Navy - YD

(Project 4930-0361)

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.