

MIL-W-80027D
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SUPERSEDING
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14 September 1976

MILITARY SPECIFICATION

WELDING MACHINES, ARC, AC/DC, TRANSFORMER-RECTIFIER, CONSTANT CURRENT

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

1. SCOPE .

1.1 Scope. This specification covers constant current welding machines of the combination alternating current (AC) and direct current (DC), with or without a built-in high frequency circuit, and gas and water controls.

1.2 Classification. Welding machines covered by this specification shall be of the following types and sizes. The type and size required shall be as specified (see 6.2.1).

Type I - Welding machines with built-in high frequency circuit,
and gas and water controls.

Type II - Welding machines without high frequency circuit, and gas
and water controls.

Size 200 - 200 Amperes (AC/DC, 60 percent Duty Cycle)

Size 300 - 300 Amperes (AC/DC, 60 percent Duty Cycle)

Size 400 - 400 Amperes (AC/DC, 60 percent Duty Cycle)

Size 500 - 500 Amperes (AC/DC, 60 percent Duty Cycle)

Size 600 - 600 Amperes (AC/DC, 60 percent Duty Cycle)

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Defense Industrial Plant Equipment Center, ATTN: DIPEC-SSM, Memphis, Tennessee 38114-5297, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 3431

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2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. Unless otherwise specified, the following specifications, standards and handbooks of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation, form a part of this specification to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL-W-45562 - Welding and Soldering Equipment, Supplies and Accessories, Packaging of.

MIL-W-80105 - Welding Set, Arc, Gas Shielded Tungsten Electrode.

STANDARDS

FEDERAL

FED-STD-H28 - Screw Thread Standards for Federal Services.

2.1.2 Other Government documents, drawings and publications. The following other Government documents, drawings, and publications form a part of this specification to the extent specified herein.

U. S. DEPARTMENT OF LABOR

OSHA 2206 - General Industry, OSHA Safety and Health Standards
(29 CFR 1910)

(Application for copies should be addressed to the Superintendent of Documents, Government printing Office, Washington, DC 20402.)

(Copies of specifications, standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. The issue of the documents which are indicated as DoD adopted shall be the issue listed in the current DoDISS and the supplement thereto, if applicable.

AMERICAN NATIONAL STANDARDS INSTITUTE

ANSI/AWS AS.1 - Electrodes, Arc Welding, Covered Carbon Steel.

ANSI/NEMA EW 1 - Electric Arc-Welding Power Sources.

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

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COMPRESSED GAS ASSOCIATION INCORPORATED (CGA) SPECIFICATIONS

(Application for copies should be addressed to the Compressed Gas Association Inc. , 500 Fifth Avenue, New York, NY 10036.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM-D-3951 - Commercial Packaging, Standard Practice for.

ASTM-E-380 - Metric Practice.

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

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 First Article. When specified (see 6.2.1), a sample shall be subjected to first article inspection (see 4.3 and 6.2).

3.2 Design. The welding machine shall be new and one of the manufacturer's current models capable of AC welding and DC welding both straight and reverse polarity in accordance with the requirements herein. The machine shall include all components, parts, and features necessary to meet the performance requirements specified herein. All parts subject to wear, breakage, or distortion shall be accessible for adjustment, replacement, and repair. The welding machine shall be designed and constructed to conform to the requirements of NEMA EW-1.

3.2.1 Measurement systems. Unless otherwise specified, either the U.S. Customary System of Units (US) or the International System of Units (SI) shall be used in the design and construction of the machine. When one system of measurements is required, the particular system shall be as specified (see 6.2.1). In this specification, all measurements, dimensions, sizes and capacities are given in SI units and US units. US units may be converted to SI units through the use of the conversion factors and methods specified in ASTM-E-380.

3.2.1.1 Measuring and indicating device calibrations. Unless otherwise specified, either the U.S. Customary System of Units (US) or the International System of Units (SI) shall be used to graduate measuring and indicating devices such as scales, pressure gauges, temperature indicators, and other similar devices. When one system of graduation is required, the particular graduation shall be as specified (see 6.2.1). Regardless of the measurement system used, all measuring and indicating devices on the machine shall be graduated in the same system.

3.2.1.1.1 Dual calibrations. When specified (see 6.2.1), measuring and indicating devices will be graduated in both the US and the SI system of measurements.

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3.2.2 Reclaimed materials. The machine may contain reclaimed materials provided such materials will not jeopardize the machine's intended use and performance. The reclaimed materials shall have been reprocessed, remanufactured or recycled in a manner which will restore them to the same chemical composition and physical properties as the materials originally selected for use on the machine.

3.2.3 Energy efficiency. The welding machine and all its applicable components that directly consume energy in normal operation shall be designed and constructed for the highest degree of energy efficiency as governed by the latest developments available within the industry.

3.2.4 Safety and health requirements. Covers, guards, or other safety devices shall be provided for all parts of the welding machine that present safety hazards. The safety devices shall not interfere with the operation of the machine. The safety devices shall prevent unintentional contact with the guarded part, and shall be removable to facilitate inspection, maintenance and repair of the parts. All machine parts, components, mechanisms, and assemblies furnished on the machine, whether or not specifically required herein, shall comply with all of the requirements of OSHA 2206 that are applicable to the machine itself. Additional safety and health requirements shall be as specified (see 6.2.1).

3.2.5 Electric service. Unless otherwise specified (see 6.2.1), the welding machines shall be designed for operation on 230/460 volts +10 percent single phase, 60 HZ, electric service and wired for initial operation on 460 volts.

3.2.6 Open circuit voltage. The open circuit voltage shall be in accordance with NEMA EW-1.

3.2.7 Temperature rise. The maximum allowable temperature rise of various insulated parts of the machines for the given class of insulation system shall be in accordance with NEMA EW-1. The operating temperature of the welding machine rectifier under maximum rated load conditions, shall not exceed a value which will result in injury to the rectifier or adversely affect the performance of the welding machines.

3.2.8 Mercury restriction. The machine shall not contain mercury or mercury compounds nor be exposed to free mercury during manufacture.

3.2.9 Asbestos restriction. Asbestos and materials containing asbestos shall not be used on or in the machine.

3.2.10 Environmental protection. The machine shall be designed and constructed such that, under the operating, service, transportation and storage conditions described herein, the machine shall not emit materials hazardous to the ecological system as prescribed by Federal, state or local statutes in effect at the point of the installation.

3.2.11 Interchangeability. To provide for replacement of worn or damaged parts, all parts shall be manufactured to definite dimensions and tolerances which will permit installation of replacement parts without modification of part or machine.

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3.2.12 Portability. The welding machines shall be portable, and shall be base mounted. Running gear, if required (see 6.2.1), shall be as specified by the procuring activity. The welding machines shall be provided with a lifting device for handling by crane or hoist, and shall be capable of supporting 2-1/2 times the weight of the machine. The center of gravity of the entire unit shall be as low as is consistent with economical design. The machine shall also be designed to be lifted by forklift truck.

3.3 Construction. The welding machine shall be constructed of parts which are new, without defects and free of repairs. The structure shall be capable of withstanding all forces encountered during operation of the machine to its maximum rating and capacity without permanent distortion.

3.3.1 Welding, brazing or soldering. Welding, brazing, or soldering shall be employed only where specified in the original design. None of these processes shall be employed as a repair measure for any defective part.

3.3.2 Fastening devices. All screws, pins, bolts, and other fasteners shall be installed in a manner to prevent change of tightness. Fastening devices subject to removal or adjustment shall not be swaged, peened, staked, or otherwise permanently installed.

3.3.3 Surfaces. All surfaces shall be clean and free of sand, dirt, fin, sprues, flash, scale, flux, and other harmful or extraneous materials. All edges shall be either rounded or beveled unless sharpness is required to perform a necessary function. Except as otherwise specified herein, the condition and finish of all surfaces shall be in accordance with the manufacturer's commercial practice.

3.3.4 Painting. All surfaces to be painted shall be cleaned of all foreign matter. Unless otherwise specified (see 6.2.1), the machine shall be painted in accordance with manufacturer's standard commercial practice which shall be not less than one coat of primer and one coat of finish color.

3.3.5 Threads. All threaded parts used on the machine and its related attachments and accessories shall conform to FED-STD-H28 and the applicable "Detailed Standard" section referenced therein.

3.3.6 Dials. Dial diameters shall be such that graduations may be easily read. Dials shall be permanently and legibly engraved or etched on a non-glare background.

3.4 Components. The welding machines shall consist of, but not be limited to, the following components: enclosure, transformer, rectifier, controls, and ventilation system.

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3.4.1 Enclosure. The sheet metal enclosure shall be dripproof, so designed and constructed that liquid or solid particles falling on the enclosure from above, at angles up to 15 degrees from the vertical, shall not interfere with the satisfactory operation of the equipment. Surfaces of all parts of the enclosure shall be free from sand, dirt, fins, sprues, scale, flux, or other harmful or extraneous materials. External surfaces shall be smooth, and all protruding edges shall be rounded or beveled and all other edges shall be free of burrs. Inlet and outlet electrical connections shall be clearly and permanently marked. The output welding terminals shall be of the stud and hex nut type, not less than 13 mm (1/2 inch) in diameter, or receptacles of equivalent capacity with a pair of matching plugs suitable for attachments to the welding leads. All intake and exhaust openings shall be screened or shall be small enough to prevent entrance of trash or rodents.

3.4.2 Transformer. The transformer shall be of the laminated core or shell type. Insulation system of primary and secondary transformer coils shall be B, F, or H in accordance with the definition of NEMA EW-1.

3.4.2.1 Overtemperature protection. Transformer coil windings shall be protected by a suitable device or devices, to de-energize the machine and prevent damage to the windings by precluding overheating. A combination overtemperature and overload device may be used in lieu of separate controls for protection against excess overtemperatures and overloads.

3.4.3 Rectifier. The rectifier shall be of the silicon diode, full wave type. The assembly shall be of a type which has had a satisfactory history of field service in general arc welding. Temperature rise of the silicon diodes shall not exceed 100 degrees C (212°F) when operated at rated output and duty cycle.

3.4.4 Controls.

3.4.4.1 Control panel. The control panel shall be located on the machine enclosure and shall provide central location for all switches, controls, and electrical outlets. The current control shall permit adjustment of the current from minimum to maximum in increments small enough to satisfy any required setting within the range of the machine. A switch shall be provided to select AC welding or straight and reverse DC welding. All panel mounted components shall be clearly marked as to their function. The control panel shall be recessed. Operation of adjustment controls shall be free from binding, and controls shall be of such materials and design that a fixed setting will remain after several hours of exposure to adverse atmospheric conditions. For type I machines, provisions shall be made for gradual application of weld current at the start of the welding operation to prevent blasting. A switch shall be provided to bypass this circuit when

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desired. Type I machines shall have provisions to reduce the weld current at the end of the weld run to a pre-determined value for crater filling. This reduction in weld current shall be accomplished by a foot or hand control located at the welding operation.

3.4.4.2 Overload protection control. The control shall have a device to de-energize the machine in the event of a sustained overload or power failure. The re-energizing of the machine shall be either manual or automatic. This control may be a combination control as stated in 3.4.2.1.

3.4.4.3 Stabilization control. A reactor, or other means for control of the welding control current, shall prevent erratic changes in output under all load conditions for all current settings. No evidence of core saturation, which may have an undesirable effect on welding characteristics, shall appear in the output of the machine. The current ripple in the DC output shall be low enough to insure arc stability in critical welding application.

3.4.4.4 Remote control. Type I welding machine shall be furnished with a foot operated control with a minimum of 6 m (20 feet) of electrical cable, complete with terminal plugs for connecting into the welding machine. The remote control shall control starting, stopping, and welding currents throughout the ranges from minimum to maximum corresponding to the range selected on the master current control at the machine. The foot control shall remotely control the starting and stopping of the high frequency current, and gas and water flow. The 6 m (20 foot) length of cable on the remote control is intended only as a standard length and has no bearing on the distance from the machine the high frequency shall be capable of producing an arc.

3.4.5 High frequency power unit. A high frequency power unit shall be included with the type I welding machines and shall require no supplemental source of power to operate. A switch shall be provided to select high frequency current for starting, or for continuous use during welding operations, or to make the high frequency current provision inoperative entirely. An intensity adjustment of high frequency current shall be provided, and shall be located in close proximity 38 cm (15 inches or less) to the high frequency current switch. The design of the unit shall incorporate all necessary devices to block high frequency feedback to the welding machine, and to retain rated capacity and other performance characteristics during all operation for which it is intended. The output of the high frequency unit shall supply the required high frequency current at the work station when using a welding cable at least 7.6 m (25 feet) long. When required, high frequency capability, using a cable longer than 7.6 m (25 feet), shall be furnished as specified (see 6.2.1). The high frequency unit shall be capable of producing a spark across a 1.6 mm (1/16 inches) gap between the workpiece and the electrode when operated in an inert gas atmosphere.

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3.4.6 Gas shielding system. The type I machines shall include the necessary components to control the flow of the shielding gas through the welding machine and hose assembly. A timer with a fixed setting shall control the flow of gas and water before the starting of the arc for purging of the torch. An adjustable timer shall control the flow of gas and water after the arc has been extinguished to allow for protection of the weld area while it is cooling and for cooling of the torch. The adjustable timer shall have a range of delay time from a minimum of 6 seconds or less to a maximum of 30 seconds or more. The welding machine shall be fitted with inlet and outlet gas connections in accordance with CGA standards. Connecting hoses and gas pressure regulators are not to be furnished with the machine. When specified (see 6.2.1) weld set in accordance with MIL-W-80105 shall be furnished with each machine.

3.4.7 Water cooling system. The type I welding machines shall be fitted with the necessary internal components to control the flow of water through the welding machine and electrode holder. When required (see 6.2.1), the unit shall have a water filter either internally or externally on the inlet water connection. The inlet and outlet water connections shall have 5/8 - 18 LH threads. The machine shall be capable of operation with a water supply pressure of 172 KPA to 483 KPA (25 to 70 PSIG) at a minimum temperature of 27°C.

forced air. All ventilation openings shall be located and designed so that water and dirt will not be drawn into the machine by the intake air in quantities which will interfere with the useful service life of the machine. The cooling fans shall have totally enclosed motors with permanently lubricated bearings. The fan assembly shall be fastened to a rigid mount in such a manner to withstand vibration encountered in this type of equipment. Fan blades shall be of a material and design to prevent fatigue failure.

3.4.9 Solid state components. Solid state design shall be used throughout for electronic components. The use of selenium or other similar aging devices is permitted only for voltage surge protection to other solid state components.

3.4.10 Control circuit voltage. Auxiliary control circuits shall be isolated from the input electric power supply by a low-voltage transformer having a secondary voltage no greater than 115 volts.

3.5 Size and capacity. The welding machines shall have output ratings in accordance with table I when connected to a resistance load having a power factor of not less than 0.99.

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TABLE I. Size and capacity.

Size	Rating @ 60% Duty Cycle		Range of Welding Current (Amperes)							
			Type I				Type II			
	Amperes	Load Volts Minimum	AC		DC		AC		DC	
			Not More Than	Not Less Than	Not More Than	Not Less Than	Not More Than	Not Less Than	Not More Than	Not Less Than
200	200	28	10	250	5	200	40	250	40	200
300	300	32	10	375	7	300	60	375	60	300
400	400	36	10	500	10	400	80	500	80	400
500	500	40	20	625	10	500	100	625	100	500
600	600	44	20	750	15	600	100	650	100	600

3.6 Welding performance. The welding machines shall conform to the applicable performance requirements of NEMA EW-1. When operated by a qualified welder and within the current range specified in table I, the machines shall be a satisfactory power source for the following welding operations:

a. Type I machine:

- (1) AC welding with any electrodes stabilized for use with AC current.
- (2) AC and DC welding with processes using gas shielding.
- (3) AC and DC welding, wherein high frequency current is required.
- (4) DC welding with both straight and reverse polarity, wherein a drooping arc characteristic is required.

b. Type II machine:

- (1) AC welding with any electrodes stabilized for use with AC current.
- (2) DC welding with both straight and reverse polarity, wherein a drooping arc characteristic is required.

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3.7 Diagram of connections. A diagram of connections shall be attached to a readily accessible inside surface of the welding machines. The diagram shall be protected by a coating of transparent varnish or other suitable material.

3.8 Optional equipment. Optional equipment shall be furnished as specified and shall be fully described (see 6.2.1).

3.9 Repair parts. Such repair parts as are specified (see 6.2.1), shall be furnished.

3.10 Marking of instruction plates, indicating plates and nameplates. All words on instruction and indicating plates shall be in the English language. Characters shall be engraved, etched, embossed or stamped in bold-face on a contrasting background.

3.11 Nameplate. Unless otherwise specified (see 6.2.1), a nameplate shall be securely attached to each welding machine. The nameplate shall contain the information listed below. If the welding machine is a special model, the model designation shall include the model of the basic standard welding machine and a suffix identified in the manufacturer's permanent records. The captions listed may be shortened or abbreviated, provided the entry for each caption is clear as to its identity.

Nomenclature

Manufacturers name

Manufacturer's model designation

Manufacturer's serial number

Power input (volts, total amps, phase, frequency)

Power output characteristics and ratings

Contract Number or Order Number

National Stock Number (NSN) or Plant Equipment Code (NSN preferred)

Date of manufacture

3.12 Technical data. When technical data is required it shall be furnished in accordance with the requirements of 6.2.2

3.13 Workmanship. Workmanship of the welding machine and accessories shall be of a quality equal to that of the manufacturer's commercial equipment of the type specified herein.

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 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

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The Government reserves the right to perform any inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.3 First article inspection. When a first article inspection is required, it shall be applied to the first article submitted in accordance with 3.1. Unless otherwise specified (see 6.2.1), first article inspection shall consist of the examination in 4.5 and all tests in 4.6. Failure of the item to pass the first article tests shall be cause for rejection.

4.4 Quality conformance inspection. Quality conformance inspection shall be applied to each item prior to being offered for acceptance under the contract. Unless otherwise specified (see 6.2.1) quality conformance inspection shall consist of at least the examination in 4.5 and the tests in 4.6. Failure of the item to pass the examination or tests shall be cause for rejection.

4.5 Examination. The machine and equipment shall be examined to determine compliance with the requirements specified herein.

4.6 Tests. Except as otherwise specified (see 6.2.1), all tests shall follow the procedures of NEMA EW-1, when applicable.

4.6.1 High potential test. The welding machine shall be subjected to a high potential test as described in Testing Standard of NEMA EW-1. When first article inspection is required, this test shall be performed after the rough handling test in 4.6.2.

4.6.2 Rough handling test. A chain or cable shall be attached to the lifting device of the welding machine. The welding machine shall be raised and then dropped to fall freely a distance between 15 cm (6 inches) minimum and 25 cm (10 inches) maximum upon a solid concrete slab. The drop shall be repeated so that the impact is made on three of the lower edges of the machine. There shall be no damage to the welding machine as a result of these tests other than minor denting of the cited lower edges.

4.6.3 Open circuit voltage test. When the welding machine is connected to a 200, 230 or 460 volt primary power, the open circuit voltage shall be in accordance with 3.2.6.

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4.6.4 Temperature rise test. With machine at room temperature, the temperature of the primary and secondary windings of the transformer shall be recorded. The welding machine shall be operated at rated load at 60 percent duty cycle until stable temperatures are obtained. The load test are to be run with resistance loading. Temperature rise shall be in accordance with requirements of 3.2.7. The highest temperature reached on the rectifier assemblies shall not exceed the limits specified in 3.4.3.

4.6.5 Short circuit and capacity test. The welding machine shall be subjected to a sustained short circuit connected through an external resistance of approximately 0.002 ohms when set for maximum current output for one minute without indication of damage affecting machine operations. The overload protection device specified in 3.4.4.2 shall be out of the circuit when this test is performed. The machine shall then be tested for capacity output. The machine shall be connected to a load bank, and checked for the proper secondary output on AC and DC settings. The amperage draw shall conform to the requirements of table I.

4.6.6 Overload protection test. The welding machine shall be adjusted for maximum output and energized. The overload protection device, with thermostatic protection temporarily disconnected, shall operate to either disconnect the machine from the line or relieve it of its load on application of a dead short as described in 4.6.5 to the output terminals. The test shall be performed on both AC and DC output. No observable or measurable damage to the machine shall result.

4.6.7 Welding performance tests. Welding tests shall be performed at least 6 meters (20 feet) from the welding machine. The tests shall consist of depositing weld beads, minimum of 15 cm (6 inches) long on a mild steel plate. There shall be no difficulty in establishing or maintaining the arc. Welding electrodes AWS-A5.1 E-6010, DC (reverse polarity) and AWS-A5.1 E-6011 (straight and reverse polarity) shall be used for the welding performance tests of the machine. Weld deposits shall be made with both types of electrodes using appropriate current settings and polarity for size and type of electrodes selected. In addition to the above welding test, type I welding machines shall be tested by using the gas-tungsten-arc process with high frequency to start the welding. The high frequency shall perform in accordance with 3.4.5. The gas and water controls shall provide proper gas coverage of the weld and cooling of the torch. During the welding performance tests the machine shall be checked to determine compliance with the requirements in 3.4.4.3 through 3.4.8.

4.6.8 Dripproof enclosure test. The welding machine shall be placed on a horizontal surface and exposed to natural or artificial rain falling toward the machine at a nominal 15 degree angle from vertical. The volume of water shall simulate an average rainfall with uniform droplets and with the velocity of natural falling rain. The top and each side of the machine shall be exposed to the falling water for five minutes. Water leakage into the interior of the enclosure shall not interfere with the satisfactory operation of the welding machine.

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4.7 Packaging inspection. Packaging shall be inspected to determine compliance with the requirements of section 5.

5. PACKAGING

5.1 Packaging, packing and marking. Unless otherwise specified, packaging, packing, and marking shall be in accordance with ASTM-D 3951. When specified packaging, packing and marking shall be in accordance with applicable requirements of MIL-W-45562. The required level of preservation and packing, and any special marking requirements shall be as specified (see 6.2.1).

6. NOTES

6.1 Intended use. The welding machines are intended for production service in industrial environments wherein, AC welding and DC welding, both straight and reverse polarity are required. Type I welding machines, the most commonly used, are also intended for gas-tungsten-arc processes in addition to the above process.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- d. Title, number and date of this specification.
- e. Type and size required, etc. (see 1.2).
- f. When first article is required for inspection and approval (see 3.1).
- g. If machine is required to be configured in a specific measurement system (US or SI), state required system (see 3.2.1).
- h. If measuring and indicating devices are required to be graduated in a specific measurement system (US or SI), state required system (see 3.2.1.1).
- i. Dual calibrations (US and SI), if required (see 3.2.1.1.1).
- j. Additional safety and health requirements, if required (see 3.2.4).
- k. Electrical service, if different (see 3.2.5).
- l. Portability, specify requirements (see 3.2.12).
- m. Painting, if different (see 3.3.4).
- n. High frequency power, if different (see 3.4.5).
- o. Welding set, if required (see 3.4.6).

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- m. Filter, if required (see 3.4.7).
- n. Specify and fully described optional equipment required; if different (see 3.8).
- o. Repair parts, if required (see 3.9).
- p. Nameplate, if different (see 3.11).
- q. First article inspection, if different (see 4.3).
- r. Quality conformance inspection, if different (see 4.4).
- s. Level of packaging, packing and marking, if different (see 5.1).
- t. Test if required (see 4.6).

6.2.2 Contract data requirements. All data requirements, such as parts lists, wiring diagrams, operating manuals, maintenance manuals, alignment and test results shall be requested on a DD Form 1423, Contract Data Requirements List and shall be furnished in accordance with each specified DD Form 1664, Data Item Description as shown on the DD Form 1423.

6.3 First article. When first article inspection is required, the item to be tested should be the first item offered for acceptance under the contract. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examination, test and approval of the first article.

6.4 Safety and health requirements. Paragraph 3.2.4 requires compliance only with those OSHA requirements that concern the machine itself. It does not require compliance with those OSHA requirements that concern "the machine in its operating environment" such as noise levels, radiation levels, electromagnetic emissions, noxious vapors, air contaminants, and heat. Since OSHA limits the total hazard level of these hazards in the environment (and does not limit the hazard level of individual machines in the environment) the procuring activity is advised to analyze the existing hazard levels in the proposed operating environment, and specify additional machine requirements that will integrate the new machine into its future operating environment. The above, and any other additional safety and health requirements should be specified in detail under 6.2.1(g).

6.5 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Custodians:

Army - AL
Navy - SH
Air Force - 99

Preparing Activity:

DLA - IP

Project Number:

3431-0162

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Review Activities:

Army - AL
Navy - SH
Air Force - 84
DLA - GS

User Activities:

Navy -MC, CG, AS, YD
DLA - GS

INSTRUCTIONS: In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge (*DO NOT STAPLE*), and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

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

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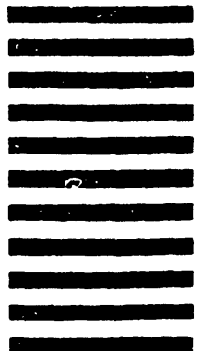
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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL	
(See Instructions - Reverse Side)	
1. DOCUMENT NUMBER MIL-W-80027D	2. DOCUMENT TITLE Welding Machines, Arc, AC/DC, Transformer, Constant Current
3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION (Mark one) <input type="checkbox"/> VENDOR <input type="checkbox"/> USER <input type="checkbox"/> MANUFACTURER <input type="checkbox"/> OTHER (Specify) _____
b. ADDRESS (Street, City, State, ZIP Code)	
5. PROBLEM AREAS	
a. Paragraph Number and Wording	
b. Recommended Wording	
c. Reason/Rationale for Recommendation	
6. REMARKS	
7a. NAME OF SUBMITTER (Last, First, MI) - Optional	b. WORK TELEPHONE NUMBER (Include Area Code) - Optional
c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional	8. DATE OF SUBMISSION (YY MMDD)

