

INCH POUND

A-A-58049C

August 7, 2020

SUPERSEDING

A-A-58049B

APR 4, 2008

COMMERCIAL ITEM DESCRIPTION

MAGNETIC PARTICLE INSPECTION UNITS, 52-INCH AND 100-INCH

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

1. **SCOPE.** This Commercial Item Description (CID) covers the 52-inch, and 100-inch, wet horizontal magnetic particle inspection unit, which will be capable of performing conventional magnetization of ferromagnetic parts.
2. **CLASSIFICATION.** The magnetic particle inspection units shall be of the following sizes:
Size I: 52-inch
Size II: 100-inch
3. **SALIENT CHARACTERISTICS.**
 - 3.1 **Output power.** It shall provide alternating current (AC) and full wave rectified direct current (DC) from a three-phase AC power supply.
 - 3.1.1 **Input power.** The input power 200-240 VAC with 230 VAC nominal or 400-480 VAC with 460 VAC nominal, 50-60 Hertz, 3 phase. The unit shall have a press-to-test system indicating that the proper electricity connections have been made.
 - 3.1.2 **Output current.** The rated maximum output shall be at least DC 6000 amperes with not more than 6 percent ripple, and for AC is 5000 amperes.
 - 3.1.3 **Connections.** The unit shall be self-contained, requiring only connections for electrical and compressed air supply for operation.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to: AFLCMC/EZSS, 2145 Monahan Way, Area B, Bldg 28, Wright-Patterson AFB, OH 45433 or emailed to ENGINEERING.STANDARDS@US.AF.MIL. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil/>.

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- 3.2 Unit performance. The unit shall be capable of performing magnetic particle inspection processes as described ASTM E1444.
- 3.3 Unit capability. The unit shall be capable of magnetizing a work piece in the longitudinal and circular directions.
- 3.4 Unit capacity. The usable distance between fixed headstock and moveable tailstock (with clamping device for supporting the work piece and providing electrical contact) at the maximum spacing shall be:
- Size I 52 ±2 inches
 - Size II 100 ±2 inches
- 3.5 Unit dimensions. The overall length of the unit shall be as follows:
- Size I no greater than 73 inches.
 - Size II no greater than 124 inches.
- 3.6. Instruments for inspection. The instruments for inspection shall be conveniently located to permit the operator manipulation and viewing from the inspection station.
- 3.6.1 Ammeter display. The digital ammeter shall display AC root mean square (RMS) amperes or DC amperes at the coil or contact. The meter shall incorporate a sample and hold display that will be reset after the magnetizing or demagnetizing current push button is depressed.
- 3.6.2 Current control. The current control shall be continuously variable.
- 3.6.3 Magnetization activation switch. The magnetization activation switch shall be of a type that can be activated by a knee/hip push bar. The push bar shall not exceed a height of 36 inches.
- 3.6.4 Magnetization time. The magnetization time shall be variable from 0.20 to 2.0 seconds.
- 3.6.5 Headstock pressurization switch. The headstock pressurization shall be activated by a maintained foot switch.
- 3.6.6 Coil. The coil shall be rail mounted, have an inside diameter of 16 inches, and be capable of producing 15,000 Ampere-turns AC and DC.
- 3.7 Unit demagnetizing. The unit shall be capable of demagnetizing any work piece previously magnetized by the same unit to less than three gauss in any direction. Both reversing DC and AC ramp demagnetization capabilities shall be built into the unit.
- 3.8 Operating air pressure. The operating air pressure range shall be at least 60 to 110 pounds per square inch psi.
- 3.9 Operating duty cycle. The equipment shall be capable of operating at a 2 percent duty cycle at maximum output indefinitely without damage to any components.
- 3.10 Electrical systems components. Electrical systems components, devices, wiring, and insulation shall be suitable for voltages, current and duty characteristics of the circuits in which they are used. They shall meet the applicable requirements of the National Electrical Manufacturers Association (NEMA) standards.
- 3.11 Accessories. The following accessories shall be included:
- a. A copper rod one inch in diameter by eighteen inches in length that will provide a low resistance path for determining magnetizing current through the contact heads.
 - b. Four auxiliary cables consisting of two No. 4/0 extra flexible insulated conductors with each cable being 15 feet in length, and two No. 2/0 extra flexible insulated cable conductors with

each being 10 feet in length. Each conductor shall have a 4/0 connector on each end and shall have a suitable-heavy-duty, oil-resisting insulation.

- c. Contact clamps consist of two spring-loaded clamps suitable for use with the equipment in circular magnetizing of parts by passing current through the parts. The cable clamps connect to the 4/0 cables and the cables connect to the contactor block placed between the head and tailstock.
- d. A light emitting diode UV-A inspection lamp for reviewing fluorescent magnetic particle indications shall be provided.
 - 1. The UV-A inspection lamps employed to fluoresce the inspection medium shall have an initial minimum intensity of 1000 microwatts per square centimeter at 15 inches. The UV-A lamp wavelength shall be in the range of 320 to 380 nanometers (nm), with a peak intensity of 365 nm. UV-A inspection lamps shall be 110-120VAC mains powered. Except the UV-A lamp lens itself, no part of the UV-A lamp may exceed 120 °F in operation to prevent injury to personnel. LED UV-A lamps are to be used unless otherwise specified, and shall meet requirements of ASTM E3022-18 and TO 33B-1-1.
 - 2. The lamp shall be mounted on swivel bracket which shall permit the lights to be directed at the parts under inspection. The lamp is connected to a line cord at least as long as the unit's length that can be wound on an enclosed spring-loaded reel. It shall be readily retractable and extendable to any desired length between head and tailstock positions without adjustment at the reel.
- e. A hood suitable for fluorescent inspections including flame retardant curtains, a white light source, and ventilation fan shall be provided.
 - 1. The hood shall allow not more than 2 foot-candles (20 lux) of ambient light into the inspection area.
- f. A set of replaceable copper braid pads for the headstock and tailstock contact plates.
- g. A tank suitable for holding the suspension and particles with a hose long enough to reach the entire inspection area, and a nonmagnetic low pressure spray nozzle.
- h. An agitation system capable of maintaining magnetic particles in suspension.

3.11 Delivery requirements. The unit shall be delivered with all equipment necessary for immediate operation (e.g. circuit breaker box, air pressure regulator, air filter).

3.12 Calibration certificate. Calibration of ammeter to ± 5 percent at full amperage, using National Institute of Standards and Technology (NIST) traceable standard, by the manufacturer is required.

3.13 Manual. One paper copy and one electronic copy (CD-ROM) of the commercial operation and maintenance instructions, part catalog, wiring diagram, installation procedures (including calibration procedures and adjustments, as applicable) following MIL-PRF-32216 shall be shipped with each item. An electronic copy of the manual(s) shall be delivered to the Contracting Officer for distribution to the Equipment Specialist and Cognizant Engineer.

4. REGULATORY REQUIREMENTS.

The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal acquisition regulation (FAR).

5. PRODUCT CONFORMANCE.

5.1 Product conformance. The products provided shall meet the salient characteristics of this Commercial Item Description, conform to the producer's own drawings, specifications,

standards and quality assurance practices, and be the same product offered for sale in the commercial marketplace. The government reserves the right to require proof of such conformance.

5.2 Conformance testing. The government may perform acceptance testing of any item to the characteristics of section 3.

5.3 Warranty. The unit shall be supplied with the commercial warranty or a one-year warranty on parts and labor, whichever is longer. Information on warranty expiration, conditions, and point of contact shall be shipped with each item.

5.4 Approved items. The contractor shall maintain the same configuration on all delivered units and technical manuals for this order. Any deviations shall be approved in advance.

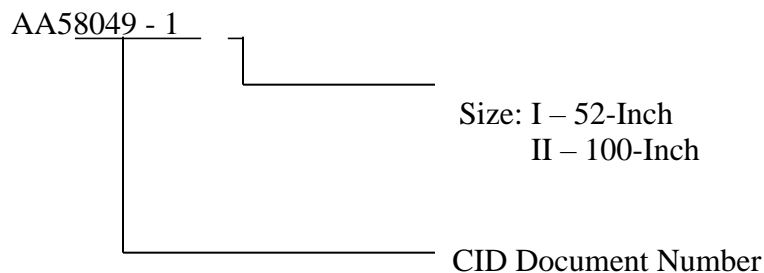
6 PACKAGING.

Preservation, packing and marking shall be specified in the contract or order. The unit should be packaged to withstand 30 days outside storage without damage. Drain valves on unit shall be left open.

7 NOTES.

7.1 Part Identification Number (PIN). The following part identification numbering procedure is for government purposes and does not constitute a requirement for the contractor.

Example of reference part number: A-A-58049-I or A-A-58049-II



7.2 Metric products. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch-pound units, provided they fall within the tolerances specified in conversion tables contained in the latest version of FED-STD-376 and all other requirements of this CID are met. If the manufacturer elects to use metric dimensions as the basis upon which to derive or base a mechanical feature, a request shall be made to the contracting officer to determine if the product is acceptable. The contracting officer has the option of accepting or rejecting the product.

7.3 Source of Documents.

7.3.1 ASTM documents. Documents may be obtained online at <https://www.astm.org/>.

7.3.2 FED-STD-376. Copies may be obtained at <https://www.nist.gov/>.

7.3.3 Government documents. Copies of government documents are available online at <https://quicksearch.dla.mil/>.

7.3.4 NEMA documents. Documents may be obtained online at <http://www.nema.org/>.

7.3.5 NIST documents. Documents may be obtained online at <https://www.nist.gov/>.

7.3.6 Technical Orders (TO). Copies of TO 33B-1-1 are available online at <https://www.tinker.af.mil/Home/Technical-Orders/>.

7.6.7 The Federal Acquisition Regulations. Copies may be obtained online from

<https://www.acquisition.gov/far/>.

7.6.8 Ordering data.

- a. Title, number, and date of this CID.
- b. Specify special packaging requirements.
- c. Contracting officer may request proof of certification of commercial item prior to first contract delivery.

7.6.9 Subject term (key word) listing.

Ferromagnetic
Inspection Unit
Magnetization

Concluding material

Custodians:

Air Force - 184

Navy -AS

DLA - GS

Preparing Activity:

Air Force - 184

Agent:

Air Force – 110

(Project 6635-2020-002)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.