

## **Portable Metal Disintegrator**

The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on the date of an invitation for bids or a request for proposals shall apply.

### **THE CODE OF FEDERAL REGULATIONS**

- 29 CFR 1910 Occupational Safety and Health Standards
- 29 CFR 1926 Safety and Health Regulations for Construction
- 40 CFR 261 Identification and Listing of Hazardous Waste

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

### **NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)**

- NFPA 70 National Electric Code
- NFPA 79 Electrical Standards for Industrial Equipment

(Application for copies should be addressed to National Fire Protection Association, 470 Atlantic Ave., Boston, MA 02210)

### **NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION (NEMA)**

- ICS Industrial Controls and Systems
- MGI Motors and Generators

(Application for copies should be addressed to the National Electrical Manufacturers' Association, 2101 L Street, NW, Washington, DC 20037)

### **INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)**

- ISO 4413 Hydraulic Fluid Power General Rules and Safety Requirements for Systems and Their Components

(Copies available online at: [http://www.iso.org/iso/iso\\_catalogue.htm](http://www.iso.org/iso/iso_catalogue.htm) or American National Standards Institute, 11 West 42nd St, New York, NY 10036)

### **AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI)**

- ANSI Z535.4 Product Safety Signs and Labels

(Copies available at: <http://webstore.ansi.org> or ANSI Attn: Customer Service Department, 25 W 43<sup>rd</sup> Street, 4<sup>th</sup> Floor, New York, NY 10036)

### **PSNS&IMF OCCUPATIONAL SAFETY AND HEALTH MANUAL**

- OSH-II-9 Hazardous Energy Control, Lock Out/Tags Plus (LOTP)

(Copies available, to be provided by Government Point of Contact as required by Section 4.2 of this specification)

## 1. General Equipment Requirements

### Specifications and Required Features for Portable Metal Disintegrator: shall have the minimum salient characteristics:

#### Utility Requirements:

- AC Power source: Single phase 110V

#### Operational Specifications:

- Quick connection (jack plug) cables
- Amperage meter to provide indication of proper feed rate
- Power overload circuit breaker
- Ground cable length: 10 ft.

#### Disintegrating Head Requirements:

- Light weight and compact disintegrating head
- Single pass removal capability (tap diameter): up to 3/4"
- Single pass removal capability (tap depth): 1 1/2" or greater
- Head shank for use in 3 point chuck dimensions: 2.5" x 1/2"
- Disintegrating head cable length: 10 ft.

#### Dimension Requirements:

- Max power supply size: 24" x 12.5" x 16"
- Max power supply weight: 125 lb.
- Power input cable length: 10 ft.

#### Standalone coolant pump/motor system requirements:

- Coolant pump power source: Single phase 110V AC
- Coolant pressure to head: 90 psi
- Quick disconnect coolant hoses: 10 ft. (quantity of 2)
- Minimum coolant tank size: 16 gallons
- Coolant tank equipped with filter, quick disconnect, fill cap, and pressure relieve valve

#### Material Disintegration Requirements:

- Disintegration capability: high  
speed steel, and carbide

#### Disintegrating head magnetic stand requirements:

- Permanent magnet base stand for holding disintegrating head during operation
- Magnet force: 800 lb.
- Maximum stand weight: 40 lb.
- Maximum stand size: 18" x 18" x 18"
- Minimum # of 360° rotation axes: 2

- Maximum rotation axis increments:  
1°
- Vertical adjustability: 5"
- Horizontal adjustability: 4.5"
- Down feed adjustability: 4"

1.1 All electrical components including motors, starters, relays, switches, and wiring shall conform to and be located in accordance with the applicable NFPA, NEMA, and ANSI standards for the intended application.

1.2 Motors. Motors shall be rated for continuous duty and shall be equipped with ball or roller bearings of the sealed and permanently lubricated type. Alternating current (AC) motors shall be designed to operate on 60-HZ. All electrical motors shall meet NEMA-MG 1 requirements. Each motor shall have an identification plate to identify the manufacturer, model identification, serial number, voltage, amperage, horsepower, phase, and frequency.

1.3 Bearings. All bearings contained within this machine and the entire system shall be U.S. or Canadian manufactured. If they are not U.S. or Canadian manufactured bearings, the vendor must provide a list of exact U.S. or Canadian made equivalent bearings that can be used for replacement of each bearing within this equipment or system. This requirement is in accordance with Defense Federal Acquisition Regulation Supplement (DFARS 252.225-7016).

1.4 Electrical System. Electrical components including motors, starters, relays, switches, and wiring shall conform to and be located in accordance with NFPA 79. Electricity available at the installation site is 460 VAC, 3 Phase, 60 Hz. The equipment shall be designed to operate on the available electric utilities. The electrical system shall be complete including any electrical transformer(s) required to modify the existing source voltage to the proper operating voltage of the equipment. A properly rated and fused single disconnect device shall be provided on the machine with a means of lockout. All electrical components shall conform to applicable NEMA ICS 1 standards.

1.5 Electric Power Disconnect. A single supply circuit disconnect device shall be provided and installed on the equipment, which controls all electrical power. All electrical components shall be fused or circuit breaker protected in each phase conductor for AC circuits. Overloads, fuses, and circuit breakers shall be coordinated for maximum component protection and minimum circuit disruption. The device shall be either a fusible motor circuit switch or circuit breaker.

1.6 Energy Isolating Devices. The equipment shall be provided with energy isolation devices (e.g. power switches, safety devices, circuit breakers, valves, etc.) that protect personnel from the release of hazardous energy. Hazardous energy includes electrical, mechanical, hydraulic, pneumatic, gravity, or other energy that could harm employees involved in servicing or maintenance of the equipment. The devices shall be installed as the first energy control device on all major components of the system such that the component can be isolated at the component level. The devices shall be designed and manufactured such that they can be padlocked in the user-selected position (ON or OFF, OPEN or CLOSED) to prevent inadvertent or unauthorized change.

1.7 Electrical Connections. Electrical connections within the equipment shall be complete and shall be made via terminals on the components, terminals, or circuit boards and bussing.

Splices between terminations are not permitted. Connections and terminals shall be supported and spaced without the dependence upon the wiring in the components and braced as necessary to assure withstanding the distortion forces associated with available short-circuit currents. Proper identification of wiring, bussing, terminals and circuits for function, polarity, phasing, etc., shall be adhered to throughout the equipment. Identification shall be in the form of wire markers, color coding, permanently engraved plates, and permanent markings on the devices. Adequate spacing shall be maintained throughout to avoid excessive bending of cabling and wiring, to maintain adequate separation and creepage distance between electrical potentials and between these potentials and ground, and to permit ease in disconnecting wiring and cabling during trouble-shooting and repair. In no instance shall clearances and creepage distances be less than those described under NEMA ICS, Part ICS 1-111.

1.8 Grounding. Exposed, non-current carrying metal parts shall be maintained at common, zero ground potential. A grounding stud/lug shall be provided as a means for grounding the equipment. For cord connected equipment, a NEMA type grounding plug which effectively grounds the equipment for the safety of personnel shall be acceptable in lieu of a ground stud or lug on the equipment.

1.9 Over-current Protection. All electrical components shall be fuse or circuit breaker protected in each phase conductor for AC circuits. Overloads, fuses and circuit breakers shall be coordinated for maximum component protection and minimum circuit disruption.

1.10 Electrical Enclosure. Electrical components of the equipment shall be contained in an enclosure(s) of structural and sheet steel. Provisions shall be made for power cable entrance. The enclosure(s) shall be of drip-proof construction and of minimum size consistent with good design practices and ventilation of components.

1.11 Emergency Stop Buttons. The equipment specified herein shall be provided with emergency stop buttons (switches) at the equipment control panel. These stop buttons shall be the mushroom type, shall be colored red with a yellow background, and shall be labeled as such. When activated, the emergency stop buttons shall disconnect all electrical power to the equipment such that all operations or functions will immediately stop or cease.

1.12 Hydraulic Systems. Hydraulic systems shall include filtration, protection from over pressurization, and comply with requirements of ISO 4413. The system shall be complete, including all pumps, valves, piping, cylinders, and pressure controls. Overpressure protection shall be provided to prevent damage to components and fluid conductors. A filter system shall be provided to insure delivery of clean fluid to the system. Where ventilation of the hydraulic unit is necessary for lubrication or hydraulic purposes, tall vents shall be filtered and located in a position that will prevent contamination or loss of lubricant. The hydraulic pump inlet shall be protected with an inlet strainer. Reservoirs used for lubrication or hydraulic fluid, shall have a means of visually determining fluid level, temperature and over pressurization, as well as a drain plug for routine maintenance and cleaning. All reservoirs used as a holding tank, shall be tested and certified to prevent leakage. Lubrication and hydraulic systems having reservoirs located in the bed or base shall have filters mounted outside the bed or base to facilitate maintenance and prevent inadvertent contamination. A positive means of fluid temperature control shall be provided to prevent the system from exceeding 130°F under normal operating conditions.

1.13 Painting. All surfaces shall be painted in conformance with the manufacturer's standard practices and good workmanship. Painting shall result in a highly wear-resistant finish that

guarantees continued protection to surfaces in an indoor environment with a temperature range of 15° to 110° F, up to 100% Non-condensing relative humidity. The manufacturer's standard color shall be provided. **Lead or chromium base paints are prohibited.**

1.14 PCBs. The manufacturer shall provide written certification that any new equipment provided contains no detectable PCB's. The certification shall be on the manufacturer's letterhead and signed by a company official who is empowered to provide that certification.

1.15 Controls and Instrumentation. Operator controls, instrumentation and indicators shall be mounted convenient to operating personnel. Such devices shall be clearly and legibly marked for function and identification. Controls shall be fitted with suitable handles, pushbuttons, or control knobs, as applicable. Gauges and instruments shall be designed for recalibration. Pressure gauges shall be calibrated in the U.S. system of measurement.

1.16 Safety devices. All machine parts, components, mechanisms, and assemblies furnished on the unit shall comply with all specific requirements of "OSHA Safety and Health Standard (29 CFR 1910), General Industry" that are applicable to the equipment itself.

1.17 Safety signs and labels. Safety signs and labels in accordance with ANSI Z535.4 shall be securely attached to the equipment in visible locations, with any safety precautions to be observed by the operator or maintenance personnel permanently marked on the signs.

1.18 Informational Plates. The following informational plates shall be marked by engraving or photo imaging on wear and corrosion resistant metal and permanently affixed to the equipment.

1.18.1 Identification Plate. The following information shall be securely attached to the equipment on an identification plate: Nomenclature, Contractor's name, manufacturer's name, equipment model number, equipment serial number, electrical utilities (Volts, Full Load Amps, Frequency, Phases, and Short Circuit Current Rating {SCCR}), date of manufacture, contract number and any other pertinent information for identifying the part as a unique component of the system.

1.18.2 Caution and Warning Plates. "Caution" or "Warning" label plates shall be securely attached to the equipment in visible locations, with any safety precautions to be observed by the operator or maintenance personnel permanently marked on the plates.

1.18.3 PCB Label Plate. A label plate containing "PCB free" certification information per the requirements of Section 1.14 shall be securely attached to the equipment near the manufacturer's identification label plate.

1.19 Standard, Off The Shelf Components – All materials and parts comprising this system shall be new, of current design and manufacture and shall not have been in prior service except as required for factory testing. Standard, off the shelf components with proven reliability shall be used whenever possible to increase performance reliability and reduce costs. The equipment shall be one of the manufacturer's current production models which has been designed, engineered and sold, or is being offered for sale through advertisements or manufacturer's published catalogs or brochures. Products such as a prototype unit, pre-production model, or experimental unit DO NOT qualify as meeting this requirement. The equipment shall be complete, so that when connected to power, it can be used for the function for which it was designed and constructed.

1.20 Warranty. Supplies and services furnished shall be covered by warranty from defects in design, materials and workmanship. The warranty shall be the manufacturer's standard commercial warranty which shall conform to all the requirements of the contract. Acceptance of the manufacturer's standard commercial warranty shall not minimize the rights of the Government under clauses in the contract, and in any conflict that arises between the terms and conditions of the contract and manufacturer's warranty, the terms and conditions of the contract shall take precedence. The warranty period shall commence when final acceptance has been achieved as determined when all contract line item numbers have been processed through Wide Area Workflow (WAWF).

1.21 Technical manuals. A set of (3) three technical manuals is required to cover each specific make, model year, and serial numbered piece of equipment scheduled for delivery under the terms of the contract. The manuals shall provide instructions, illustrations, and other associated data for operations, maintenance, repair, overhaul, including a complete catalog of parts used in the assembly of the end item enabling an average journeyman mechanic to operate, program, maintain, repair, and overhaul the equipment. The manuals provided shall contain complete instructions and information for all equipment, components, assemblies, subassemblies, attachments, and accessories assemble in the end item. The contents of a complete set of technical manuals shall include, as a minimum, the following:

- a. Operating instructions including pre-operational checks, start-up, shut down, and emergency shutdown procedures
- b. Maintenance, service, and overhaul instructions, including all preventive maintenance schedules and lubrication chart
- c. Trouble-shooting guides
- d. Parts list containing: illustrations, part numbers, part nomenclature, original manufacturer, cross reference numbers, and recommended spare parts including quantities
- e. Energy control procedure, in accordance with 29 CFR 1910.47, OSHA Energy Control Standard to bring equipment to a zero energy state for service and maintenance
- f. All mechanical and electrical schematics showing discrete components/block diagrams/wiring diagrams with inputs and outputs identified/system electrical interface documents and drawings for the specific model of all machine equipment/drives/controls supplied
- g. Programming requirements

## 2. OSHA Approved Certification.

2.1 The equipment installation and its component parts shall be in compliance with the applicable Occupational Safety and Health Administration (OSHA) regulations in accordance with CFR Title 29, Chapter XVII, Part 1910 and installed in accordance with NEC/NFPA requirements. Approval shall be as specified under the "Approval" and "Acceptance" criteria in the OSHA regulations Subpart "O", Machinery and Machine Guarding paragraph 1910.212 and Subpart "S" Electrical, paragraph 1910.303 and paragraph 1910.399. After equipment delivery and installation, and prior to testing, the contractor shall provide an OSHA Certification Report for approval by the Environmental, Safety, and Health Department at the Receiving Activity. Failure to provide this certification will delay acceptance of the equipment, and could result in

rejection for failure to comply with the terms of the contract. The *3D Printer* shall be listed or approved, and labeled by one of the following methods:

- The equipment specified herein shall be listed and labeled by an OSHA recognized and approved Nationally Recognized Testing Laboratory (NRTL). Test data reports shall be provided.
- The equipment and its installation specified herein shall be field inspected, approved, and labeled by an OSHA recognized and approved NRTL. Test data/field evaluation reports shall be provided.

2.2 OSHA Compliance Statement. The contractor shall provide signed, written certification of compliance to the requirements of Section 1.16 with the equipment. This certification shall be on manufacturer's letterhead, and signed by a company official or designee who is empowered to provide such signature. Failure to provide this certification report will delay acceptance of the equipment, and could result in rejection for failure to comply with the terms of the contract.