[INCH-POUND]
A-A-59420
28 September 1999
SUPERSEDING
MIL-S-45860D
23 March 1988

COMMERCIAL ITEM DESCRIPTION

SHRINKING AND STRETCHING MACHINE, SHEET METAL

The General Services Administration has authorized the use of this commercial item description in preference to MIL-S-45860D for all federal agencies.

1. SCOPE. This specification covers shrinking and stretching machines for forming sheet metal, angles, flatbars, and plates with equipment and accessories specified herein. These machines are used by aircraft manufacturers, fabricators, and the sheet metal trade, to shrink and stretch flats, angles, plates, and extrusions for forming, fitting, and removing wrinkles.

2. CLASSIFICATION. Shrinking and stretching machines shall be of the following types and sizes.

2.1 Type. Type is defined as the method of operation. Unless otherwise specified (see 7.4(b)), the types described herein are as follows:

Type I - Manually operated
Type II - Pneumatically operated
Type III - Hydraulically operated
Type IV - Electro-mechanically operated

2.2 Size. Size is defined as the distance from center of jaw to back of machine throat. Unless otherwise specified (see 7.4(c)) the sizes classified herein are as follows:

Size 01 - 1 inch throat depth
Size xx - other

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any other data which may improve this document should be sent to: Defense Supply Center Richmond (DSCR), ATTN: DSCR-VBD, 8000 Jefferson Davis Highway, Richmond, VA 23297-5610.

AMSC N/A FSC 3441

3. SALIENT CHARACTERISTICS

3.1 Design. The shrinking and stretching machine shall be capable of shrinking and stretching ferrous and non-ferrous metal through the application of compression or tension force on the metal which is gripped in sliding jaws, in accordance with the requirements specified herein. The types of metals that the machine will be shrinking and stretching are aluminum, stainless steel and titanium. The machine shall consist basically of a "C" type frame with a ram for application of pressure to the jaws. Design of the machine shall allow the operator to change tooling from one operation to another with relative ease. The machine shall include all components, parts, and features necessary to meet the performance requirements specified herein. The shrinking and stretching machine shall comply with the requirements of American National Standards Institute (ANSI) standard B11.7, "Cold Headers and Cold Formers, Safety Requirements for the Construction, Care and Use Of", and the safety requirements of Occupational Safety and Health Administration (OSHA) Title 29 CFR 1910, "Occupational Safety and Health Standards for General Industry".

3.2 Controls. All operating controls shall be located conveniently to the operator's workstation. Unless otherwise specified (see 7.4(d)), types II, III, and IV machines shall have foot controls.

3.3 Frame. The frame shall be manufactured sufficient in strength and rigidity to support and maintain alignment of all components when the machine is operated at its maximum rated capacity.

3.4 Ram or pressure lever. The machine shall have a ram or pressure lever for mounting the upper jaw assembly. The ram or pressure lever shall be supported by guides or bushings mounted on the frame, permitting vertical operation through a lever and toggle linkage.

3.5 Type I machines (manual). The type I machine shall be manually operated by either a foot treadle or hand lever providing sufficient force to accomplish the shrinking and stretching capacities for the machine size specified. The foot treadle or hand lever shall be either counter balanced or spring loaded to maintain the starting position after release.

3.6 Type II machines (pneumatic). The type II machine shall be pneumatically operated. The pneumatic system shall conform to National Fluid Power Association (NFPA) standard T2.25.1M, "Pneumatic Fluid Power – Systems Standard for Industrial Machinery". The system shall have an air line filter, water trap, and filter regulator lubricator, as necessary. The system shall include all devices necessary to meet the requirements specified herein. Air pressure gauges shall be provided to indicate input air pressure in all lines that are downstream from a pressure control device.

3.7 Type III machines (hydraulic). The type III machine shall be hydraulically operated. The hydraulic system shall be complete in order to meet or exceed the Joint Industrial Council (JIC) H-1 standards. Overpressure protection shall be provided in the high pressure line to prevent damage to components. A filter system shall be provided to ensure delivery of clean fluid. The

hydraulic reservoir shall have a means for determining fluid level, a provision for draining, and a cleanout access plate if the reservoir is not removable.

3.8 Type IV machines (electro-mechanical). The type IV machine shall be electro-mechanically operated. Power shall be transmitted mechanically from an electric motor to a flywheel and ram actuating mechanism, with sufficient force to perform the shrinking and stretching operations, as specified herein.

3.9 Jaw assemblies. The jaw assembly shall consist of an anvil and movable jaws made of alloy steel with a surface hardness of not less than 55 on the Rockwell "C" scale. The jaw assemblies shall be mounted one to the ram or pressure fingers, and one to the bed by means of a quick change locking and releasing device to expedite tooling changeover. The jaw assembly shall perform one forming operation per stroke. Unless otherwise specified (see 7.4(e)), the standard shrinking assemblies shall have a number 2 stipple or serrated gripping surface. When surface marking is unacceptable, jaws made of plastic or other suitable material shall be provided.

3.10 Electrical system. The electrical system required on type II, III, and IV machines shall conform to the latest National Fire Protection Association (NFPA) standard 79, "Machinery, Industrial, Electrical Standards For". Each machine shall have a fused safety disconnect switch or circuit breaker. An identified terminal for grounding the machine when it is installed shall be mounted in or near the disconnect switch. The terminal shall be suitable for connecting the size grounding connector.

3.10.1 Primary input voltage. Unless otherwise specified (see 7.4(f)), the powered machines shall be wired to draw all of its electrical power from a single 230/460 volt, 3-phase circuit. The machine shall be initially wired to operate from a 460 volt source.

3.10.2 Motors. Motors shall be rated for continuous duty. Unless otherwise specified (see 7.4(g)), the motor shall be the manufacturer’s standard motor.

3.11 Control circuit voltage. Auxiliary control circuits shall be isolated from the input electrical power by a low-voltage transformer having a secondary voltage no greater than 120 volts.

3.12 Lubrication. Means shall be provided to ensure lubrication for all moving parts. All oil holes, grease fittings, and filler caps shall be accessible. When specified (see 7.4(h)), a centralized automatic lubrication system shall be provided.

3.13 Hour meter. Unless otherwise specified (see 7.4(i)), type III and IV machines shall be equipped with an hour meter installed to display accumulated operating time of the main drive motor. The meter shall be of the non-resetting type with a range of 0 to 99,999 hours in increments of not greater than 1 hour. The meter shall be sealed to prevent the entrance of dust and moisture, and it shall be mounted to withstand the shock and vibration of the machine. Upon reaching 99,999 hours, the meter readout shall automatically return to zero and continue to accumulate time.

3.14 Physical size limitations. When specified (see 7.4(j)), the physical size of the press shall not exceed the height, width, and length restrictions specified by the procuring activity to ensure the press will fit into its future operating location.

3.15 Standard equipment. All equipment normally provided with the manufacturer's standard commercial machine shall be furnished, including the following:

a. One set of maintenance and adjusting tools
b. One set of manufacturers standard stretching jaw assemblies
c. One set of manufacturers extended shrinking jaw assemblies
d. One set of manufacturers extended stretching jaw assemblies

3.16 Optional equipment. Optional equipment when specified (see 7.4(k)), shall be described by the procuring activity and shall be provided by the manufacturer.

3.17 Marking on charts and plates. All words on charts and plates shall be in the English language. Characters shall be permanently marked in boldface on a contrasting background.

3.17.1 Lubrication chart or plate. A lubrication chart or plate shall be securely attached to each machine. The chart or plate shall contain the following information:

a. Points of lubricant application
b. Servicing interval
c. Type of lubricant
d. Viscosity

3.17.2 Nameplate. A nameplate shall be securely attached to each machine. Unless otherwise specified (see 7.4(l)), the nameplate shall contain the following information:

a. Nomenclature
b. Manufacturer's name
c. Manufacturer's model
d. Manufacturer's serial number
e. Power input (volts, total amps, phase, frequency)
f. Contract number or order number
g. National stock number
h. Date of manufacturer

3.18 Metric products. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch-pound units, provided they meet specified tolerances using conversion tables contained in the latest revision of FED-STD-376, "Preferred Metric Units for General Use by the Federal Government".

4. REGULATORY REQUIREMENTS

4.1 Recovered materials. 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. QUALITY ASSURANCE PROVISIONS

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 market. The government reserves the right to require proof of such conformance.

6. PACKAGING

6.1 Preservation, packing, and marking. For acquisition purposes, the products shall be preserved, packed, and marked as specified in the contract or purchase order (see 7.4(m)).

7. NOTES

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

AA59420 – X – XX

Size: 01 - 1 inch throat depth
xx - Other throat depth (i.e., 06 = 6 inch throat depth)

Type: 1 - Type I - Manually Operated
2 - Type II - Pneumatically Operated
3 - Type III - Hydraulically Operated
4 - Type IV - Electro-Mechanically Operated

CID number

7.2 National stock number (NSNs). The following NSNs correspond to this CID. The list is not indicative of all possible NSNs associated with this document.

NSN	OLD DESIGNATION	NEW PIN
3441-00-572-6456	MIL-S-45860, Type II, Size 6	AA59420-2-06
3441-00-528-9062	MIL-S-45860, Type II, Size 6	AA59420-2-06
3441-00-204-2891	MIL-S-45860, Type IV, Size 18	AA59420-4-18

7.3 Sources of documents.

7.3.1 ANSI standards. Copies of ANSI standards may be obtained from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036.

7.3.2 OSHA standards. Copies of OSHA standards may be obtained from the U.S. Department of Labor, 300 Constitution Avenue NW, Room 423, Washington, DC 20210.

7.3.3 NFPA standards. Copies of NFPA standards may be obtained from the National Fluid Power Association, 3333 N. Mayfair Road, Milwaukee, WI 53222-3219.

7.3.4 JIC standards. Copies of JIC standards may be obtained from the Joint Industrial Council, 7901 West Park Drive, McLean, VA 22101-4269.

7.3.5 NFPA standards. Copies of NFPA standards may be obtained from the National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269-9101.

7.3.6 Federal standards. Copies of FED-STD-376, 461, 462, and H28 may be obtained from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

7.3.7 FAR. The FAR may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-0001.

7.4 Ordering data. Acquisition documents must specify the following information:

a. Title, number, and date of this CID
b. Type required (see 2.1)
c. Size required (see 2.2)
d. Foot controls, if different (see 3.2)
e. Jaw assemblies, if different (see 3.9)
f. Primary voltage, if different (see 3.10.1)
g. Motor, if different (see 3.10.2)
h. Lubrication system, if different (see 3.12)
i. Hour meter, if different (see 3.13)
j. Physical size limitations, if required (see 3.14)
k. Optional equipment, if required (see 3.16)
l. Nameplate, if different (see 3.17.2)
m. Packaging requirements (see 6.1)

MILITARY INTERESTS:

Custodians:
Air Force - 99
Army - AR
Navy - SH

Reviewers:
Air Force - 84
Army - SM
Navy - MC

CIVIL AGENCY
COORDINATING ACTIVITY:

GSA - 6FET

Preparing activity:
DLA - GS
(Project 3441-0191)