00-T-1719
January 5, 1972
SUPERSEDING
Fed. Spec. 00-L-131J (In Part)
November 6, 1969

FEDERAL SPECIFICATION

TYING MACHINES, BUNDLE, INDUSTRIAL

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

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers tying machines for tying bundles.

1.2 Classification.

1.2.1 Types. Tying machines shall be of the following types as specified (see 6.2):

Type I - Single Wrap
II - Double Wrap

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

Federal Specifications:

CC-M-636 - Motor, Alternating-Current, (Fractional Horsepower).
CC-M-641 - Motor, Alternating-Current, (Integral Horsepower), (200 HP and Smaller).

Federal Standard:

FED-STD-123 - Marking for Domestic Shipment (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers, at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Specifications:

MIL-T-152	-	Treatment, Moisture and Fungus Resistant of Communications, Electronic, and Associated Electrical Equipment.
MIL-P-514	-	Plates, Identification, Instruction and Marking, Blank.
MIL-L-3153	-	Laundry and Dry Cleaning Machinery and Equipment (For Fixed Installations), Preparation for Delivery Of.

Military Standards:

MIL-STD-105	-	Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129	-	Marking for Shipment and Storage.
MIL-STD-130	-	Identification Marking of U.S. Military Property.
MIL-STD-461	-	Electromagnetic Interference Characteristics, Requirements for.
MIL-STD-462	-	Electromagnetic Interference Characteristics, Measurement Of.

(Copies of Military specifications and standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following document forms a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply:

National Electrical Manufacturers' Association (NEMA):

ICS-1970 - Industrial Controls and Systems.

(Application for copies should be addressed to the National Electrical Manufacturers' Association, 155 East 44th Street, New York, New York 10017.)

Underwriters' Laboratories, Inc. (UL) Standards:

(Application for copies should be addressed to the Underwriters' Laboratories, Inc., 207 East Ohio Street, Chicago, Illinois 60611; 1285 Walt Whitman Road, Melville, L.I., New York 11749; or 1655 Scott Boulevard, Santa Clara, California 95050.)

National Fire Protection Association (NFPA):

No. 70 - The National Electrical Code (1968).

(Application for copies should be addressed to the National Fire Protection Association, 60 Batterymarch Street, Boston, Massachusetts 12110.)

American Society For Testing and Materials (ASTM):

A167-63 - Corrosion-Resisting Chromium-Nickel Steel Plate, Sheet and Strip
A176-63 - Corrosion-Resisting Chromium Steel, Plate, Sheet and Strip

(Application for copies should be addressed to the American Society for testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.)

American National Standards Institute (ANSI) Inc.,

ANSI S1.4 - 1961

Specifications For Sound Level Meters.

(Application for copies should be addressed to the American National Institute Inc., 1430 Broadway, New York, New York 10018.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), the supplier shall furnish a sample for first article inspection and approval (see 4.2, 6.2 and 6.3).

3.2 Standard product. The tying machine furnished under this specification shall be the manufacturer's current standard product except for changes necessary to comply with the requirements of this specification.

3.3 Codes and standards.

3.3.1 NFPA. The tying machine shall be wired to conform to NFPA Standard No. 70.

3.3.2 UL. The wiring and conduit shall conform to the applicable Underwriters' Laboratories (UL) Standards for use in nonhazardous locations.

3.3.3 NEMA. Motor controllers and switches shall conform to performance requirements of NEMA Standards Publication No. ICS-1970.

3.3.4 Certification. Prior to approval of the first article or if none is submitted, prior to approval of the first shipment, the supplier shall submit satisfactory evidence to the contracting officer or his authorized representative, that the tying machine he proposes to furnish meet the requirements specified in 3.3.1, 3.3.2 and 3.3.3.

3.3.4.1 NFPA. Acceptable evidence of meeting requirements of 3.3.1 shall be the manufacturer's certified statement that the tying machines are wired to conform to NFPA Standard No. 70.

3.3.4.2 UL. Acceptable evidence of meeting requirements of 3.3.2 shall be the UL label or Listing Mark or certification from an independent testing laboratory acceptable to the contracting officer or his authorized representative that the wiring and conduit conform to applicable UL Standards.

3.3.4.3 NEMA. Acceptable evidence of meeting the requirements of 3.3.3 shall be the manufacturer's certified statement that the motor controllers and switches conform to NEMA Standards Publication No. ICS-1970. A tag or label attached to these components stating the component conforms to this standard is acceptable evidence.

3.4 Materials. Materials not definitely specified shall be of the quality normally used by the manufacturer for tying machines provided the completed items comply with all provisions of this specification.

3.4.1 Corrosion-resisting steel. Corrosion-resisting steel used in the fabrication of the tying machine shall be corrosion-resisting steel conforming to requirements of ASTM Specifications A167-63 or A176-63, as applicable.

3.4.2 Conduit and wire electric. Electrical conduit shall be rigid or flexible steel or electrical metallic tubing. All electrical wire shall be heat-resistant grade, thermoplastic insulated.

3.4.3 Motor. The motor shall be supplied with an enclosure in accordance with the manufacturer's standard practice. Motor shall conform to the requirements of CC-M-636 or CC-M-641, as applicable, and shall conform to the following requirements:

(a) The motor shall have windings impregnated to resist moisture.

(b) Motor shall be equipped with ball bearings, except that a motor of 1/2 horsepower and less when used in horizontal applications may have sleeve bearings.

(c) Motor bearings shall be of the permanently lubricated type or shall have adequate and accessible means for lubrication.

(d) A motor of 1/8 horsepower rating or larger shall be provided with thermal-overload protection incorporated as a part of the motor or installed in the controller.

3.5 Design and construction. The industrial bundle tying machines shall be type I or type II as specified.

(a) Type I machine shall be designed to make one wrap of twine around the bundle and tie and cut twine per cycle of operation.

(b) Type II machine shall be designed to make two wraps of twine around the bundle and tie and cut twine per cycle of operation. The type II machine shall permit the operator to turn the bundle 90 degrees during the wrapping cycle allowing the bundle to be wrapped in two directions prior to tying the knot.

Both types of machines shall be capable of tying bundles with a 16-ply cotton wrapping twine having a breaking strength of 30 pounds or more. All knots shall be of nonslip bow type and the twine ends shall be cut no less than a minimum of 3/8-inch or a maximum of 1 inch from the knot. The machines shall be self-adjusting to any size of bundle from 4 to 20 inches in height by 8 to 23 inches in width. The assembly item shall show that the assembly of components has complete and proper inter-relationship, no overheating of parts, starting and stopping devices operate smoothly and positively, and there are no structural failures (see 4.4.1). When tested as specified in 4.4.3, the tying machines noise level shall not exceed 90 dBA (see 3.5.12).

3.5.1 Control. The control for the wrapping, tying, and cutting of the twine shall be by means of a clutch controlled foot treadle. Unless otherwise specified (see 6.2) the machines shall be provided with an electrical interlock for safe operation of the needle or tying arm. The machines shall be wired in such a manner that the proper sequence must be maintained to operate the needle or tying arm. If the foot treadle is depressed before the power switch is moved to the "Start" or "On" position, the needle or tying arm shall remain at rest position. If the power switch is moved to the "Start" or "On" position and then the foot treadle is depressed, the needle or tying arm shall begin the tying cycle.

3.5.2 Power. The machine shall be electrically powered with an arrangement for continuous operation of the motor. Motor shall conform to the requirements of 3.4.3.

3.5.3 Frame. The frame of the machine shall be ferrous metal and shall be mounted on rubber or composition wheel swivel casters. The frame shall support the electric motor, twine holder, and a corrosion-resisting steel bundle support table.

3.5.4 Safety devices. All exposed belts, shaft, pulleys and other moving parts not within the periphery of the machine frame shall be guarded. Guards shall be cast iron, sheet metal, or wire mesh, and shall be securely attached and readily removable.

3.5.4.1 Safety guard. The tying machines' needle or tying arm shall be either of an oscillating or rotating design and shall be mechanically guarded to prevent contact or injury to any person by the needle or arm during machine operation. The guard may be steel or a combination of steel and high impact plastic. This device is in addition to the safety requirements specified in 3.5.4. The capacity of the tying machine shall not be impaired by this device.

3.5.5 Belts and pulleys. Driving pulleys shall be grooved for the type belt used and pulleys that are being driven may be grooved or not grooved in accordance with commercial practice. Means shall be provided for adjusting belt tension.

3.5.6 Lubrication instructions. Lubrication instructions including location, type of lubricant, and time intervals shall be indented or embossed on a noncorrodible metal plate and permanently affixed in accordance with the manufacturer's practice.

3.5.7 Name and data plates. Tying machines for military procurement shall be marked for identification in accordance with MIL-STD-130 on a plate conforming to MIL-P-514. Tying machines for civil agency procurement shall be marked in accordance with the manufacturer's standard practice.

3.5.8 Finish. Unless otherwise specified (see 6.2), the tying machine except pushbuttons shall be finished according to the manufacturer's standard commercial practice. Emergency stop and normal stop pushbuttons shall be red and this color shall be limited to pushbuttons.

3.5.9 Electromagnetic compatibility. When specified (see 6.2), equipment shall be designed and equipped for electromagnetic compatibility in accordance with class IIB of MIL-STD-461 (see 4.4.2).

3.5.10 Moisture and fungus resistant treatment. When specified (see 6.2), electrical components of tying machines covered by this specification shall be moisture and fungus resistant treated with material conforming to and applied as specified in MIL-T-152.

3.5.11 Electrical characteristics. The electrical parts of the machine shall be suitable for the voltage, frequency, and number of phases for alternating current (AC) or voltage for direct current (DC) as specified (see 6.2).

3.5.12 Noise emission criteria. Whenever noise levels in the area occupied by the machinery exceeds 90 dBA, the appropriate muff type hearing protective devices will be furnished. The hearing protective devices will attenuate the noise levels reaching the middle ear to less than 90 dBA. The hearing protective devices should be stored in an inclosed receptacle(s) affixed to the machinery so that they are readily accessible to the operators. Standard operating procedures will include instructions in the use of hearing protective devices in hazardous noise areas.

3.6 Workmanship. The completely fabricated tying machine shall be free from defects such as fractures, splits, punctures, tears, dents, creases, bows, miscasts, deteriorations, or malformations. There shall be no sharp edges, burrs, or slivers.

3.6.1 Application of finish. The finish applied to the end item shall be free from blisters, peeling, not chipped or areas of no film.

3.6.2 Threaded fasteners. Threaded fasteners shall not be broken, stripped, fractured, or loose.

3.6.3 Rivets. Rivets shall be driven to completely fill the holes. Rivet heads shall be in full contact with the surface of the riveted members and shall not be loose.

3.6.4 Electrical wiring. Wiring shall not be cut, abraded, or have excess insulation stripped, and shall be securely joined at terminals. Wiring shall have slack to provide strain relief.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier 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.

4.2 First article inspection. When a first article is required, it shall be examined for defects listed in table I, specified dimensions, and tested as specified in 4.4.1, and when applicable 4.4.2. The presence of any visual defect, any dimension not within the specified requirements, or failure to pass the tests shall be cause for rejection of the first article.

4.3 Inspection. Sampling for inspection shall be performed in accordance with MIL-STD-105, except where otherwise indicated hereinafter.

4.3.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected and tested in accordance with all the requirements of referenced specifications, drawings, and standards unless otherwise excluded, amended, modified, or qualified in this specification, or applicable purchase document.

4.3.2 End item inspection. A lot shall consist of all tying machines of one type for inspection at one time. The sample unit for this inspection shall be one completely fabricated tying machine.

4.3.2.1 Visual examination. Examination shall be made of the end item for defects listed in table II. The inspection level shall be level II with an acceptable quality level (AQL) of 2.5 for major defects and 6.5 for total defects, expressed in terms of defects per hundred units.

TABLE I. Classification of defects

Examine	Defect	Classification Major	Minor
Type I and II	Finish not color and type as specified.		X
	Blistered, peeled, chipped, or area of no film.		X
Construction and workmanship	Fractured, split, punctured, dented, or deteriorated.	X	
	Sharp burr, edge, sliver, or splinter.	X	
	Component loose.		X
	Not connected or joined as specified.	X	
	Any component not readily accessible for servicing where required.		X
	Moving parts not guarded.	X	
	Design not for making one or two wraps across or lengthwise around the bundle per tie and cut as specified.	X	
	Knots not made of nonslip bow type and twine ends longer or shorter than specified.		X
	Control for tying and cutting of twine not by foot treadle.	X	
	Not electrically powered with arrangements for continuous operation of the motor.	X	
	Not type specified.	X	
	Not wired for sequence operation.	X	
	Not properly guarded.	X	
Threaded fasteners	Missing, broken, stripped, fractured.	X	
	Loose.		X
Rivets (when applicable)	Broken, loose, not peened, or insufficiently peened.	X	
Electrical assembly	Wiring cut, abraded, not properly joined, loose at terminal or not inclosed in specified conduit where required.	X	
	Adequate slack not provided for wiring to relieve strain or insulation stripped from wiring.	X	

TABLE I. Classification of defects (cont'd)

Examine	Defect	Classification Major	Minor
Lubrication (where applicable)	Not lubricated where required.	X	
	Lubrication fitting not accessible for servicing.		X
Marking for identification	Missing, incomplete, not legible.		X

4.3.2.2 Testing of the end item. Each unit of production shall be tested as specified in 4.4.1. Any nonconformance shall be cause for rejection of the unit. When a first article is not required, the initial unit of production shall be tested as specified in 4.4.1 and 4.4.3 and when applicable, 4.4.2. Any nonconformance shall be cause for rejection of the lot. The operational test in 4.4.1 shall be performed and shall be witnessed by a representative of the Government prior to acceptance unless satisfactory evidence is produced that this item has previously satisfactorily passed this test either in the manufacturer's plant or in a commercial application (see 6.4). The Government reserves the right to check-test such items to determine validity of the evidence produced.

4.3.2.3 Code and standards compliance. When moisture and fungus resistant treatment is specified, the supplier shall furnish a certificate of compliance that electrical components comply with 3.5.10. Proof of compliance with the requirements of 3.3 shall be made available to the Government representative.

4.3.3 Examination of preparation for delivery. Examination of preparation for delivery shall be in accordance with MIL-L-3153.

4.4 Tests.

4.4.1 Operational testing. Each type I or type II tying machine as applicable shall be tested by the supplier by operating with representative bundles and with twine for a period of 15 minutes to determine that the wrapping mechanisms functions satisfactorily. Any nonconformance with requirements of 3.5 shall constitute failure of the test.

4.4.2 Electromagnetic compatibility. When electromagnetic compatibility is required, the first article or initial unit of production, as applicable, shall be tested by the supplier in accordance with test methods CE03 and RE02 of MIL-STD-462. The Government reserves the right to witness tests performed by the supplier or an independent testing agency. The supplier shall furnish the Contracting Office written certification that the Interference Control Plan, The EMI/EMC Test Plan, the electromagnetic test report and the requirements meet MIL-STD-461.

4.4.3 Noise evaluation test. The noise evaluation test shall be conducted as follows:

4.4.3.1 Instrumentation. A sound level meter meeting the requirements of ANSI S1.4-1961 Specifications for Sound Level Meters shall be used for survey measurements. An acoustical calibrator shall be used for verifying amplified gain and absolute sound level of the sound level meter prior to and following each series of measurements.

4.4.3.2 Acoustical environment. The test site shall consist of an outdoor open space area of uniform grade and free of reflecting surfaces (e.g., buildings, trees, or hill sites) within a minimum distance of 50 feet (15 meters) from the equipment under test. The ground surface between the microphone and the equipment being tested shall be preferably concrete, asphalt, or similar hard material free of snow, long grass, or loose soil. Bystanders in the vicinity of either the microphone or test object may appreciably influence the meter reading, therefore, only the person reading the meter, an optional observer, and the person operating the equipment being tested should be within the test site. The observer, if used, shall be directly behind the person reading the meter. The level of ambient noise, including wind effects, must be 10dBA lower than that produced by the equipment being tested. The observer should insure that wind gusts do not influence the measurements, and no measurements should be made when wind velocity is in excess of 12 miles per hour.

4.4.3.3 Measurement. The microphone shall be located at the operator's position, 4 feet above the ground plane with the direction of the microphone oriented as specified in the meter manufacturer's operating manual.

5. PREPARATION FOR DELIVERY

5.1 Preservation, packaging and packing. Preservation, packaging, and packing shall be in accordance with the applicable level A, B, or C requirements of MIL-L-3153 as specified (see 6.2).

5.2 Marking.

5.2.1 Civil agencies. In addition to any special marking required by the contract or order, interior packages and shipping containers shall be marked in accordance with FED-STD-123.

5.2.2 Military requirements. In addition to any special marking required by the contract or order, interior packages and shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The industrial bundle tying machines covered by this specification are intended for use in fixed laundry installations.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

(a) Title, number, and date of this specification.
(b) Type required (see 1.2.1).
(c) First article, when a first article is required (see 3.1, 4.2 and 6.3).
(d) When interlock is not required (see 3.5.1).
(e) Finish, if other than manufacturer's standard is required (see 3.5.8).
(f) When electromagnetic compatibility is required (see 3.5.9).
(g) When moisture and fungus-resistant treatment is required (see 3.5.10).
(h) Whether alternating current or direct current is required (see 3.5.11).
(i) Selection of applicable levels of preservation, packaging, and packing (see 5.1).

6.2.1 Contract data requirements. Any requirements for equipment manuals for the items covered by this specification should be included in DD Form 1423 Contract Data Requirements List and cited in the contract.

6.3 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of ASPR 7-104.55. The first article shall be a preproduction sample of the type tying machine specified. The first article should consist of one unit. The contracting officer should include specific instructions in all procurement instruments regarding arrangements for inspection and approval of the first article.

6.4 Successful commercial application. Invitation for bids should specify that no item of equipment shall be acceptable unless the manufacturer has had equipment of approximately the same type as that specified, operating successfully in a commercial or institutional facility for at least one year. Equipment installed for test purposes in a manufacturer's plant or laboratory shall not come within the category of successful commercial application.

6.5 Deletions. The tying machine specified herein was formerly Item 14 of 00-L-131J, dated November 6, 1969 and Interim Amendment-1 (GL), dated December 21, 1970.

MILITARY CUSTODIANS:

Army - GL
Navy - MC
Air Force - 84

Preparing activity:

Army - GL

Project No. 3540-0104

Review activities:

Army - MD, SM

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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. Price 15 cents each.

SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 22-R255

INSTRUCTIONS: This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.

SPECIFICATION

TYING MACHINES, BUNDLE, INDUSTRIAL 00-T-1719

ORGANIZATION

CITY AND STATE

CONTRACT NUMBER

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐ YES ☐ NO *(If "yes", in what way?)*

4. REMARKS *(Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)*

SUBMITTED BY *(Printed or typed name and activity - Optional)*

DATE

DD FORM 1 JAN 66 1426

REPLACES EDITION OF 1 OCT 64 WHICH MAY BE USED.

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