

MIL-A-002550C (AR)
17 NOVEMBER 1977
USED IN LIEU OF
MIL-A-2550B
8 February 1973

MILITARY SPECIFICATION

AMMUNITION, GENERAL SPECIFICATION FOR

This limited coordination military specification has been prepared by the U.S. Army Armament Research and Development Command based upon currently available technical information but it has not been approved for promulgation as a coordinated revision of MIL-A-2550B. It is subject to modification. However, pending its promulgation as a coordinated military specification, it may be used in procurement.

1. SCOPE

1.1 Scope.—This specification covers general requirements for all types of ammunition (non-nuclear and nuclear) and all components, propellants, explosives and other supplies used in or in support of ammunition.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

MILITARY

- DOD-D-1000 - Drawings, Engineering and Associated Lists
- MIL-I-45607 - Inspection Equipment, Acquisition, Maintenance and Disposition of
- MIL-C-45662 - Calibration System Requirements

FSC: 1395

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army Armament Research and Development Command, Attn. DRDAR-QA, Dover, New Jersey 07801 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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STANDARDS

MILITARY

MIL-STD-9 - Screw Thread Conventions and Methods
of Specifying
MIL-STD-1168- Ammunition Lot Numbering

(Copies of specifications, standards, drawings and publications 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 documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitations for bids shall apply.

U. S. DEPARTMENT OF COMMERCE

NATIONAL BUREAU OF STANDARDS

HANDBOOK H28 - Screw Thread Standards for
Federal Services

(Application for copies should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402)

AMERICAN NATIONAL STANDARDS INSTITUTE

ANSI B46.1-1971 - Surface Texture, Surface
Roughness, Waviness and Lay

(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 Contractor design data.- Unless otherwise specified, where the contractor agrees to furnish materiel for which the Government does not prescribe the design, the contractor shall prepare and submit to the Government a complete set of drawings and specifications of the materiel to be furnished. Drawings and changes thereto will be prepared to one or more of the Levels of Specification DOD-D-1000. Specific Levels of drawings to be delivered, Data Items which apply and delivery schedules will be as specified on the pertinent DD Form 1423, Contract Data Requirements List. When approved by the Government, such drawings and specifications shall become Government property.

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3.2 Compliance with drawings and specifications. - Items submitted under contract, including the materials, components and parts used therein shall comply with all the functional, dimensional, physical, chemical or other property requirements of the applicable contract, drawings and specifications. The list of specifications and standards shown on an approved Government drawings includes, either directly or by reference, each authorized specification and standard with which the Government requires compliance by the manufacturer of the item for which the list is prepared, including those for all materials, processing, general specifications and packaging specifications.

3.3 Sub-Contracts. - The contractor shall be responsible for the compliance with all requirements of the contract, the drawings, and specifications on the part of his sub-contractors, including those who supply raw materials. Evidence of such compliance shall be supplied by the contractor.

3.4 Use of Government drawings and specifications. - The supplier shall work within the dimensions given on the drawings and the numerical values prescribed by the specification. In no case shall the drawings be scaled. All toleranced drawing dimensions (other than reference dimensions) and the numerical values cited on drawings and in specification requirements are absolute and describe the extreme permissible limits. Material deviating from prescribed limits will be considered defective without regard to the extent of the deviation.

3.5 Drawing requirements.

3.5.1 Untoleranced drawing dimension. - Unless otherwise specified in this or the detailed specification, the tolerances for untoleranced drawing dimensions except basic and reference dimensions, shall be $\pm 1/64$ inch when given in fractions, $\pm .010$ inch when given in decimals, and ± 30 minutes when expressed in degrees. The tolerance for untoleranced metric drawing dimensions, except basic and reference dimensions, shall be $\pm .25$ millimeter.

3.5.2 Dimensions for protectively treated surface. - Unless otherwise specified, when plating or other surface treatment (e.g. anodizing or bonderizing) is prescribed, the dimensional requirements and tolerances shall apply after plating or surface treatment.

Unless otherwise specified, when painting or application of a painting preparative coating (e.g. phosphatizing or other prime coating) is prescribed, the dimensional requirements and tolerances shall apply before application of the paint or preparative coating.

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3.5.3 Threads.—Threads shall be in accordance with MIL-STD-9 and Handbook H28.

3.5.4 Drilled holes.

3.5.4.1 Tolerance.—When a drilled hole is shown on the drawing and is dimensioned only by drill or letter reference or by linear dimension without a stated tolerance, the tolerance shall be that listed in Table I.

3.5.4.2 Depth of drilled holes.—Unless otherwise specified, the depth shall be defined to be the length of the cylindrical portion of the drilled hole.

3.5.5 Geometric and tolerancing controls.—Geometric and tolerancing controls used to define features such as location, form, runout and size shall be defined and interpreted in accordance with specified standards and documents. (See 6.3).

3.5.5.1 Geometric and tolerancing controls (when unspecified).—The tolerance zone established by the drawing defines the extreme limits of Maximum Material Condition (MMC) and Least Material Condition (LMC). No feature(s) or elements of any feature shall exceed these boundaries of perfect form. The stated interpretation prescribing the boundaries of perfect form applies to both features and to the interrelationship of features (See 6.4).

3.6 Condition of materials, parts and assemblies.

3.6.1 Surface finish.—Surfaces shall be finished to the requirements indicated by symbols on the drawing. Standards and classes of surface finish shall be in accordance with American National Standards Institute ANSI B46.1-1971. Unless otherwise specified, surface roughness height shall not exceed 125 micro-inch when a surface symbol is shown without a roughness height value.

3.6.2 Protective surface treatment.—When the drawing permits one or more alternative protective finishes on a metal part, the salt spray requirement shall be limited to that protective finish which requires the least severe salt spray test, unless otherwise specified by the detail specification or contract.

3.6.3 Intersection of surfaces.—All intersections of surfaces shall be free of burrs, slivers or feather edges. Unless otherwise specified, intersections of surfaces shall be as follows:

| | |
|---------|---------------------------------|
| Fillets | .01 inch radius, maximum (max.) |
| Corners | .02 inch radius, max. or |
| | .02 inch max. by 45° chamfer |

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3.6.4 Materials.--All materials shall be free from foreign matter and defects which would preclude meeting the requirements of the finished product. Foreign matter is defined as, but not limited to, dirt, corrosion, grease and chips. Defects are defined as, but not limited to, cracks, cavities, distortion, gouges, inclusions, laps, seams and porosity.

3.6.5 Parts and assemblies.--All parts and assemblies shall be in the condition and of a quality as specified on the applicable drawings and specifications. They shall be free from other defects such as, but not limited to, blemishes, burrs, cavities, pits, voids, corrosion, cracks, dents, distortion, warpage, gouges, scores, nicks, inclusions, laps, porosity, slivers or obstructions. Cleaning shall be thorough to remove all dirt, chips, grease, oil, flux, chemical deposits, residues, and other foreign matter. The cleaning method and agents used shall not be injurious to any part, nor shall the parts be contaminated by the cleaning agent.

3.6.6 Material properties.--Unless otherwise specified, mechanical and physical properties of an item shall be as specified on the applicable drawing and shall apply after the required process operations have been completed. Process operations include, but are not limited to, stress relieving, case hardening, through hardening, shot peening, or hydrogen embrittlement relief.

3.7 Alternative materials, methods and designs.--When an alternative material, method or design is permitted by the drawing or specification, the supplier may select the material, method or design he will use unless otherwise specified by the Invitation for Bid, Request for Proposal or Quote. The supplier shall specify in his bid, proposal or quote which alternative he proposes to use and, if he subsequently desires a change to another authorized alternative, prior approval shall be obtained from the procuring activity.

3.8 Marking.--All required marking (e.g. stamping, etching, etc.) of components, assemblies and packaging shall be neat and sharply defined. In-process marking shall not be deleterious to any component or assembly operation, fit or protective coating and shall not affect safety.

3.9 SAFETY

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3.9.1 Ammunition.-Suppliers shall be responsible for observance of all safety requirements pertinent to the type and class of ammunition being produced. Production facilities shall be designed and selected with due consideration for the hazard characteristics of the item being produced.

3.9.2 Spin-actuated fuzes.-Special attention will be given to rotational assembling and disassembling of spin-actuated fuze sub-assemblies and fuzes assembled to complete rounds - 37MM or larger. The fuze shall at no time be spun in excess of 300 revolutions per minute (rpm) nor shall the fuze be accelerated to 300 rpm in less than one second. Free-rolling and assembling or disassembling operations shall be prohibited where the rotational limitations may be exceeded. Wherever possible, anti-tampering devices shall be installed on mechanical assembling or disassembling rotating tools.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection.-Unless otherwise specified in the contract, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, 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 Samples required

4.2.1 Qualification sample.-A sample required to qualify a supplier's product for compliance with the requirements of a specification in advance of, and independent of any specific procurement action. The sample shall be submitted to a Government approved laboratory for inspection. When compliance is determined, the product will be identified on a "Qualified Products List". Such listing in no manner implies either acceptance of any quantity of product or the waiving of First Article or Quality Conformance Inspection.

4.2.2 First article sample.-A sample required to demonstrate the manufacturer's ability to interpret the requirements of the Technical Data Package and to produce a satisfactory unit of product. The identification and number of samples will be specified in the item detail specification or contract. A first article sample may also be identified as: preproduction models, initial production sample, first lot, pilot models or pilot lot.

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4.2.3 Quality conformance sample.-A sample required to determine the acceptance or rejection of an inspection lot. The procedures to be followed for lot formation and sample size shall be as specified herein and in the item detail specification or contract.

4.3 Test and measuring equipment

4.3.1 General.-Unless otherwise specified, acquisition, maintenance and disposition of inspection equipment shall be in accordance with MIL-I-45607.

4.3.2 Calibration

4.3.2.1 Unless otherwise specified, calibration of standards and inspection equipment (test, measuring and diagnostic equipment) shall be conducted to approved procedures and in accordance with MIL-C-45662.

4.3.2.2 Unless otherwise specified, environmental controls to be maintained in the calibration laboratories shall conform to the conditions described in Table II. Records demonstrating adherence to the specified conditions shall be maintained and be available for review by the Government.

4.3.3 Tolerances.-The tolerance limits specified on drawings and in specifications are absolute with no allowance for test and measuring equipment tolerances.

4.3.3.1 Gage limits.-The actual measured size of gages may differ from the dimensions shown on the component drawing by the amount of the wear allowance plus the gage-makers tolerance and may, therefore, consume that much of the component tolerance.

4.3.3.2 Other equipment limits.-For test and measuring equipment, other than gages, the tolerance limits used by the supplier shall be determined by reducing the absolute component tolerances by the value of the certified accuracy limits of the test and measuring equipment used.

4.3.3.3 Referee decisions.-In the event that gage or other equipment accuracy limits operate to reject any part, it shall be the responsibility of the supplier to satisfy the Government Quality Assurance Representative, using a mutually agreed upon procedure, that the part is in fact within the limits permitted by the component tolerance specified. When it is demonstrated that the part conforms thereto, it shall be accepted, provided it otherwise complies with all other applicable requirements.

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4.4 Thread gaging.-The design and usage of thread gages shall be in accordance with the practices outlined in Handbook H28. HI/Lo (Not-go) thread gages may enter or be entered provided the gage encounters a snug fit on or before the third pitch and maintains this snug fit throughout full entry. A snug fit is demonstrated by a perceptible resistance to turning of the gage and by absence of shake or play and must not be obtained by the thread plug gage bottoming in the hole or the thread ring gage abutting a shoulder.

a. For threads which are less than four full pitches in length, the gage must not enter or be entered beyond two pitches or beyond half the total number of pitches, whichever is smaller.

b. For threads used in special applications and when specifically stated on the drawing or in specifications, deviation may be made from the above standards.

4.5 Lots.-Unless otherwise specified in the item detail specification, or contract, a lot or batch is defined as an "inspection lot" which is a homogeneous collection of units of product from which a representative sample is drawn, or which is inspected 100 percent, to determine conformance with applicable requirements. Units of product selected for inspection shall represent only the inspection lot from which drawn and shall not be construed to represent any prior or subsequent quantities presented for inspection. Homogeneity shall be considered to exist provided the inspection lot has been produced by one manufacturer in one unchanged process, using the same materials and methods, in accordance with the same drawing and specification or specified requirements. The formation and size of the inspection lot and the manner in which each lot is to be presented and identified by the supplier shall be designated or approved by the responsible Government activity.

4.5.1 Lot numbering.-When required, lot numbering shall be in accordance with MIL-STD-1168, "Ammunition Lot Numbering."

4.6 Unlisted defects.-The item detail specification stipulates only those defects which will be used to determine the acceptability of the lot. However, if during the performance of verification inspection a defect is found which is not listed in the characteristics specified in Section 4, the piece containing the defect will be rejected. The discovery of any unlisted defects shall be reported along with regular inspection reports. No component known to contain any defect whether listed or unlisted shall be submitted to the Government without prior approval from the Contracting Officer.

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4.7 Safety.-Production and test and measuring equipment shall be inspected and certified by the supplier prior to initial use and at regular intervals thereafter to assure the presence and maintenance of required safety limits and safeguards. Records of such inspections shall be maintained and be made available for examination and verification by the government.

5. Packaging.-Preservation, packaging, packing and marking shall be in accordance with the requirements of the detail specification or drawings, or as specified by the procuring activity.

6. NOTES

6.1 Ordering data.-Procurement documents will specify title, number and date of this specification.

6.2 Clarification of requirements.-Should additional dimensions be required for any drawing, or should the contractor desire the interpretation to clarify any requirement of the drawings or specifications, application shall be made to the Government Quality Assurance Representative who will secure the clarification from the appropriate source.

6.3 Geometric and tolerancing controls.-Geometric and Tolerancing controls shall be interpreted and defined in accordance with ANSI-Y14.5-1973. Technical Data Packages may be encountered which will require interpretation in accordance with USASI-Y14.5-1966, MIL-STD-8, MIL-STD-8A, MIL-STD-8B or MIL-STD-8C in which cases specific reference is made therein.

6.4 Departure from perfect form is allowed when the feature(s) depart from Maximum Material Condition (MMC). Where the actual size of each feature has departed from MMC, a tolerance of position and form combined is allowed equal to the amount of such departure. The total permissible variation in position and form is maximum when the feature(s) is at Least Material Condition (LMC) contained within the MMC boundary of perfect form. (See Figure 1).

6.5 Safety.-Safety requirements include, but are not limited to, those specified on the applicable major component safety data statement, which is a part of the technical data package.

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NOTICE: When Government drawings, specifications or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever, and the fact that the Government may have formulated, furnished or in any other way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

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Preparing activity:
Army - AR

Project Number: 1395-A008

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TABLE 1
DRILLED HOLE TOLERANCES

STANDARD DRILLED HOLE TOLERANCES: FOR HOLES DRILLED WITH A DRILLING MACHINE USING SUITABLE JIGS AND FIXTURES, THE HOLE TOLERANCES DEPEND UPON THE DIAMETER OF THE HOLE AND INCREASE AS THE HOLE DIAMETER INCREASES. THE FOLLOWING ARE STANDARD TOLERANCES FOR GENERAL MACHINE WORK AND APPLY IN ALL CASES EXCEPT WHERE GREATER OR LESSER ACCURACY IS REQUIRED BY THE DESIGN:

| DRILL SIZE | INCHES | MILLI METER | DRILL SIZE | INCHES | MILLI METER |
|------------|--------|-------------|------------|--------|-------------|
| 80 | .0135 | .340 | 58 | .042 | 1.067 |
| 79 | .0145 | .366 | 57 | .043 | 1.092 |
| 1/64 | .0156 | .397 | 56 | .0465 | 1.178 |
| 78 | .016 | .406 | 3/64 | .0469 | 1.191 |
| 77 | .018 | .457 | 55 | .052 | 1.321 |
| 76 | .020 | .508 | 54 | .055 | 1.397 |
| 75 | .021 | .533 | 53 | .0595 | 1.509 |
| 74 | .0225 | .569 | 1/16 | .0625 | 1.587 |
| 73 | .024 | .607 | 52 | .0635 | 1.610 |
| 72 | .025 | .635 | 51 | .067 | 1.702 |
| 71 | .026 | .660 | 50 | .070 | 1.778 |
| 70 | .028 | .711 | 49 | .073 | 1.854 |
| 69 | .0292 | .737 | 48 | .076 | 1.930 |
| 68 | .031 | .787 | 5/64 | .0781 | 1.984 |
| 1/32 | .0312 | .794 | 47 | .0785 | 1.991 |
| 67 | .032 | .813 | 46 | .081 | 2.057 |
| 66 | .033 | .838 | 45 | .082 | 2.083 |
| 65 | .035 | .889 | 44 | .086 | 2.184 |
| 64 | .036 | .914 | 43 | .089 | 2.261 |
| 63 | .037 | .940 | 42 | .0935 | 2.372 |
| 62 | .038 | .965 | 3/32 | .0938 | 2.381 |
| 61 | .039 | .991 | 41 | .096 | 2.438 |
| 60 | .040 | 1.016 | 40 | .098 | 2.489 |
| 59 | .041 | 1.041 | 39 | .0995 | 2.540 |

| HOLE DIA | TOLERANCES |
|------------------------|--------------------|
| INCHES | |
| .0135 THRU .024 | + .0025 - .0005 |
| .025 THRU .039 | + .0032 - .0005 |
| .040 THRU .055 | + .0035 - .001 |
| .056 THRU .096 | + .004 - .001 |
| .097 THRU .161 | + .005 - .001 |
| MILLIMETER EQUIVALENTS | |
| .340 THRU .607 | + .064 - .013 |
| .608 THRU .991 | + .080 - .013 |
| .992 THRU 1.397 | + .090 - .025 |
| 1.398 THRU 2.438 | + .100 - .025 |
| 2.439 THRU 4.089 | + .127 - .025 |

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TABLE 1

DRILLED HOLE TOLERANCES

STANDARD DRILLED HOLE TOLERANCES: FOR HOLES DRILLED WITH A DRILLING MACHINE USING SUITABLE JIGS AND FIXTURES, THE HOLE TOLERANCES DEPEND UPON THE DIAMETER OF THE HOLE AND INCREASE AS THE HOLE DIAMETER INCREASES. THE FOLLOWING ARE STANDARD TOLERANCES FOR GENERAL MACHINE WORK AND APPLY IN ALL CASES EXCEPT WHERE GREATER OR LESSER ACCURACY IS REQUIRED BY THE DESIGN:

| DRILL SIZE | INCHES | MILLI METER | DRILL SIZE | INCHES | MILLI METER |
|------------|--------|-------------|------------|--------|-------------|
| 38 | .1015 | 2.575 | 18 | .1695 | 4.303 |
| 37 | .104 | 2.642 | 11/64 | .1719 | 4.366 |
| 36 | .1065 | 2.702 | 17 | .173 | 4.394 |
| 7/64 | .1094 | 2.778 | 16 | .177 | 4.496 |
| 35 | .110 | 2.794 | 15 | .180 | 4.572 |
| 34 | .111 | 2.819 | 14 | .182 | 4.623 |
| 33 | .113 | 2.870 | 13 | .185 | 4.699 |
| 32 | .116 | 2.947 | 3/16 | .1875 | 4.7625 |
| 31 | .120 | 3.084 | 12 | .189 | 4.801 |
| 1/8 | .125 | 3.175 | 11 | .191 | 4.851 |
| 30 | .1285 | 3.261 | 10 | .1935 | 4.912 |
| 29 | .136 | 3.454 | 9 | .196 | 4.978 |
| 28 | .1405 | 3.566 | 8 | .199 | 5.080 |
| 9/64 | .1406 | 3.572 | 7 | .201 | 5.105 |
| 27 | .144 | 3.658 | 13/64 | .2031 | 5.1594 |
| 26 | .147 | 3.734 | 6 | .204 | 5.182 |
| 25 | .1495 | 3.795 | 5 | .2055 | 5.217 |
| 24 | .152 | 3.861 | 4 | .209 | 5.309 |
| 23 | .154 | 3.912 | 3 | .213 | 5.410 |
| 5/32 | .1562 | 3.969 | 7/32 | .2188 | 5.556 |
| 22 | .157 | 3.988 | 2 | .221 | 5.613 |
| 21 | .159 | 4.039 | 1 | .228 | 5.791 |
| 20 | .161 | 4.089 | A | .234 | 5.944 |
| 19 | .166 | 4.216 | 15/64 | .2344 | 5.953 |

| HOLE DIA | TOLERANCES |
|------------------------|------------------|
| INCHES | |
| .097 THRU .161 | + .005 - .001 |
| .162 THRU .272 | + .006 - .001 |
| MILLIMETER EQUIVALENTS | |
| 2.439 THRU 4.089 | + .127 - .025 |
| 4.090 THRU 6.909 | + .152 - .025 |

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TABLE 1
DRILLED HOLE TOLERANCES

STANDARD DRILLED HOLE TOLERANCES: FOR HOLES DRILLED WITH A DRILLING MACHINE USING SUITABLE JIGS AND FIXTURES, THE HOLE TOLERANCES DEPEND UPON THE DIAMETER OF THE HOLE AND INCREASE AS THE HOLE DIAMETER INCREASES. THE FOLLOWING ARE STANDARD TOLERANCES FOR GENERAL MACHINE WORK AND APPLY IN ALL CASES EXCEPT WHERE GREATER OR LESSER ACCURACY IS REQUIRED BY THE DESIGN:

| DRILL SIZE | INCHES | MILLI METER | DRILL SIZE | INCHES | MILLI METER |
|------------|--------|-------------|------------|--------|-------------|
| B | .238 | 6.045 | T | .358 | 9.093 |
| C | .242 | 6.147 | 23/64 | .3594 | 9.128 |
| D | .246 | 6.248 | U | .368 | 9.347 |
| 1/4 (E) | .250 | 6.350 | 3/8 | .375 | 9.525 |
| F | .257 | 6.528 | V | .377 | 9.576 |
| G | .261 | 6.629 | W | .386 | 9.804 |
| 17/64 | .2656 | 6.747 | 25/64 | .3906 | 9.922 |
| H | .266 | 6.756 | X | .397 | 10.084 |
| I | .272 | 6.909 | Y | .404 | 10.262 |
| J | .277 | 7.036 | 13/32 | .4062 | 10.319 |
| K | .281 | 7.137 | Z | .413 | 10.490 |
| 9/32 | .2812 | 7.144 | 27/64 | .4219 | 10.716 |
| L | .290 | 7.366 | 7/16 | .4375 | 11.112 |
| M | .295 | 7.493 | 29/64 | .4531 | 11.509 |
| 19/64 | .2969 | 7.541 | 15/32 | .4688 | 11.906 |
| N | .302 | 7.671 | 31/64 | .4844 | 12.303 |
| 5/16 | .3125 | 7.9375 | 1/2 | .500 | 12.700 |
| O | .316 | 8.026 | 33/64 | .5156 | 13.097 |
| P | .323 | 8.204 | 17/32 | .5312 | 13.494 |
| 21/64 | .3281 | 8.334 | 35/64 | .5469 | 13.891 |
| Q | .332 | 8.433 | 9/16 | .5625 | 14.287 |
| R | .339 | 8.611 | 37/64 | .5781 | 14.684 |
| 11/32 | .3438 | 8.7312 | 19/32 | .5938 | 15.081 |
| S | .348 | 8.839 | 39/64 | .6094 | 15.478 |

| HOLE DIA | TOLERANCES |
|------------------------|----------------|
| INCHES | |
| .162 THRU .272 | +.006 -.001 |
| .273 THRU .438 | +.007 -.002 |
| .439 THRU .625 | +.008 -.002 |
| MILLIMETER EQUIVALENTS | |
| 4.090 THRU 6.909 | +.152 -.025 |
| 6.910 THRU 11.125 | +.178 -.051 |
| 11.126 THRU 15.875 | +.203 -.051 |

TABLE II
REQUIREMENTS FOR ENVIRONMENTAL CONTROLS

| <u>CONDITIONS</u> | <u>DIMENSIONAL</u> | <u>ELECTRICAL-PHYSICAL</u> |
|---|---|--|
| Temperature | 23°C ± 0.3°C (68°F. ± 0.5°F.) | 23°C ± 0.6°C (73.4°F. ± 1.0°F.) |
| Temperature rate of change (less than) | 0.3°C per hour (0.5°F per hour) | 0.6°C per hour (1.0°F per hour) |
| Electrical & Radio Frequency Noise | | 60 db reduction of interference |
| Lighting (at bench level) | 100 ft. candles at bench tops | 80 ft. candles at bench tops |
| Dust (particle count) | Less than 1.0 x 10 ⁴ parts per ft ³ over 1.0 micron; less than 5.0 x 10 ⁴ parts per ft ³ over 0.5 micron | Less than 20 x 10 ⁴ parts per ft ³ over 1.0 micron; less than 100 x 10 ⁴ parts per ft ³ over 0.5 micron |
| Vibration | 0.001g max The instrument mount must provide such stability that readings can be consistently obtained to an accuracy of at least the value indicated for each instrument. | |
| Acoustic Noise | 50 db max (above 10 ⁻¹⁶ watt per cm ²) | |
| Relative Humidity | 35% - 55% | Constant within 2 percent around a regulated point. |

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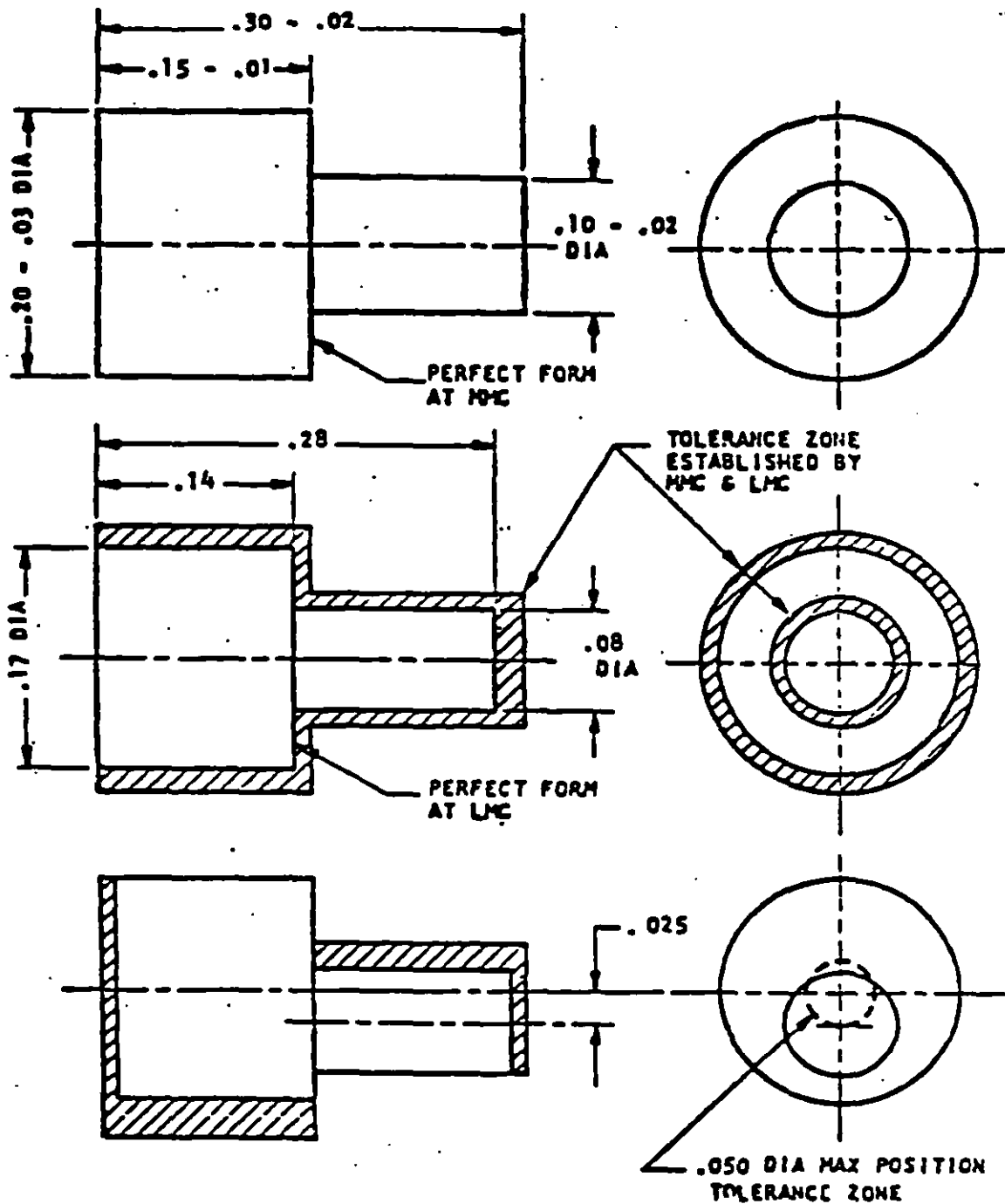


FIGURE 1

| STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL | | OMB Approval No. 22-R255 |
|---|--|---|
| <p>INSTRUCTIONS: The purpose of this form is to solicit beneficial comments which will help achieve procurement of suitable products at reasonable cost and minimum delay, or will otherwise enhance use of the document. DoD contractors, government activities, or manufacturers/vendors who are prospective suppliers of the product are invited to submit comments to the government. Fold on lines on reverse side, staple in corner, and send to preparing activity. 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. Attach any pertinent data which may be of use in improving this document. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity.</p> | | |
| DOCUMENT IDENTIFIER AND TITLE | | |
| NAME OF ORGANIZATION AND ADDRESS | | CONTRACT NUMBER |
| | | MATERIAL PROCURED UNDER A <input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT |
| <p>1. HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?</p> <p>A. GIVE PARAGRAPH NUMBER AND WORDING</p> <p>B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES</p> | | |
| 2. COMMENTS ON ANY DOCUMENT REQUIREMENT CONSIDERED TOO RIGID | | |
| <p>3. IS THE DOCUMENT RESTRICTIVE?</p> <p><input type="checkbox"/> YES <input type="checkbox"/> NO (If "Yes", in what way?)</p> | | |
| 4. REMARKS | | |
| SUBMITTED BY (Printed or typed name and address - Optional) | | TELEPHONE NO. |
| | | DATE |

DD FORM 1426
1 JAN 72

REPLACES EDITION OF 1 JAN 68 WHICH MAY BE USED