

INCH-POUND
MIL-B-82572A
31 May 1989
SUPERSEDING
MIL-B-82572
28 February 1969

MILITARY SPECIFICATION

BOMB, GENERAL PURPOSE, MARK 84, 2000 POUND,
EXPLOSIVE LOADING, ASSEMBLING, AND PACKING

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification establishes special requirements normally not required by the applicable drawings and provides quality assurance provisions for the explosive loading, assembly, and packaging of the general purpose bomb designated as Bomb, GP, MK 84, 2000 Pound.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

MILITARY

DOD-D-1000	Drawings, Engineering and Associated Lists
MIL-E-22267	Explosive Compositions, HBX Type
MIL-I-45607	Inspection Equipment, Supply and Maintenance of

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Naval Air Engineering Center, Systems Engineering and Standardization Department (Code 53), Lakehurst, NJ 08733-5100, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 1325

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

STANDARDS

MILITARY

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-746	Radiographic Testing Requirements for Cast Explosives
MIL-STD-1167	Ammunition Data Card
MIL-STD-1168	Lot Numbering of Ammunition
MIL-STD-1320-53	Truckloading Bomb, General Purpose, MK 84 and Mods (2000 LB) (With Plastic Nose Plug) in Adapter, Unit Load, MK 79 MOD 0 Fleet Issue Unit Load
MIL-STD-1325-85	Railcar Loading of Hazardous Materials Bomb, General Purpose, MK 84 MODS 0, 1, and 2 (2000 LB) in Unit Load Adapter MK 79 MOD 0
MIL-STD-45662	Calibration System Requirements

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19111-5096.)

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

OTHER GOVERNMENT DOCUMENTS

DEPARTMENT OF DEFENSE (DOD)

DOD 4145.26M	DOD Contractor's Safety Manual for Ammunition Explosives and Related Dangerous Material
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(Unless otherwise indicated, copies of DOD 4145.26M are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19111-5096.)

DRAWINGS

NAVAL AIR SYSTEMS COMMAND (NAVAIR)

1380911	Bomb, MK 84 MODS, G.P. 2000 Lb Loading Assembly
4902049	Bomb, MK 84 MOD 3, General Purpose (GP) 2000 Pound, Thermally Protected, Loading Assembly
923AS104	Bomb, MK 84 MOD 4, GP 2000 Pound Loading Assembly

DRAWINGS - Continued

NAVAL AIR SYSTEMS COMMAND (NAVAIR)

923AS107	Bomb, MK 84 MOD 5, GP 2000 Pound, Thermally Protected, Loading Assembly
923AS519	Bomb, MK 84 MOD 6, GP 2000 Pound, Thermally Protected, Loading Assembly
923AS527	Bomb, MK 84 MOD 7, GP 2000 Pound Loading Assembly
DL 1380911	Bomb, MK 84 MOD 2, List of Drawings and Specifications
DL 2642646	Unit Load Adapter, MK 79 MOD 0
DL 4902049	Bomb, MK 84 MOD 3, List of Drawings and Specifications
DL 923AS104	Bomb, MK 84 MOD 4, List of Drawings and Specifications
DL 923AS107	Bomb, MK 84 MOD 5, List of Drawings and Specifications
DL 923AS519	Bomb, MK 84 MOD 6, List of Drawings and Specifications
DL 923AS527	Bomb, MK 84 MOD 7, List of Drawings and Specifications

(Unless otherwise indicated, copies of NAVAIR drawings are available from the Naval Air Technical Services Facility (NATSF) (Code 3121), 700 Robbins Avenue, Philadelphia, PA 19111-5096.)

PUBLICATIONS

NAVAL SEA SYSTEMS COMMAND (NAVAL WEAPONS STATION EARLE ENGINEERING DEPT)

WR 51/42	Weapons Requirement, Truckloading 2000 Lb L.D. Bomb MK 84 and MODS, Loose with Plastic Nose Plugs
WR 52/73	Weapons Requirement Carloading 2000 Lb L.D. Bomb MK 84 and MODS, Loose With Plastic Nose Plugs
WR 54/127	Weapons Requirement, Palletizing Fleet Issue Unit Load, 2000 Lb Low Drag Bomb (G.P.) MK 84 and MODS with Metal or Plastic Nose Plugs in Unit Load Adapter MK 79 MOD 0

(Unless otherwise indicated, copies of Weapons Requirements are available from the Naval Ordnance Station (Code 802) Louisville, KY 40214-5001.)

2.2 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.4) in accordance with 4.4.

3.2 Design and construction. The design and construction of the bomb shall be in accordance with the requirements specified herein and with the applicable drawings and documents for the bomb being procured (see 3.3).

3.3 Explosive loading. Explosive loading shall be in accordance with the applicable loading drawings as follows: 1380911, MK 84 MOD 2, listed on DL 1380911, 4902049, MK 84 MOD 3, listed on DL 4902049, 923AS104, MK 84 MOD 4, listed on DL 923AS104, 923AS107, MK 84 MOD 5, listed on DL 923AS107, 923AS519, MK 84 MOD 6, DL 923AS519, and 923AS527, MK 84 MOD 7, listed on DL 923AS527.

3.4 Explosive composition. The explosive composition used in loading the assembly shall be tritonal 80/20 or H-6 explosive composition as specified by the acquiring activity (see 6.2).

3.4.1 Tritonal (80/20) explosive composition. Tritonal (80/20) explosive composition shall consist of $80\% \pm 3\%$ trinitrotoluene (TNT) and $20\% \pm 3\%$ aluminum (see 4.6.2).

3.4.2 H-6 explosive composition. H-6 explosive composition shall conform to the requirements of MIL-E-22267 (see 4.6.2).

3.5 Weight of applied asphaltic compound. The total weight of the asphaltic compound on the interior surfaces of the bomb assembly shall be in accordance with the applicable loading drawing (see 3.3) when tested as specified in 4.5 and 4.6.3.

3.6 Radiographic examination of the explosive charge. The loaded bomb shall be subjected to radiographic examination in accordance with 4.5 and 4.6.4 to ensure that:

- a. No shrinkage cavity larger than 10 square inches in cross section area is located less than 6 inches from the nose fuze liner.
- b. No shrinkage cavity contacts more than one half of the surface area of the forward 3 inches of the base fuze liner.
- c. No shrinkage cavity is located less than 1.5 inches from the suspension lug area.

3.7 Safety. The contractor shall observe the safety precautions of DOD 4145.26M as applicable.

3.8 Marking. Each bomb shall be marked as specified on the applicable loading drawing (see 3.3).

3.9 Workmanship. All interior bomb surfaces requiring application of asphaltic compound shall be free of chips, dirt, oil, grease, rust, and other material before applying asphaltic compound and before loading of explosive charge. Outer bomb skin and other surfaces shall be free of chips, dirt, rust, or other imperfections. All interior surfaces of the bomb assembly shall be completely coated and shall be protected from contamination. The cleaning method used to remove explosive material from the exterior surfaces of the bomb, fuze cavities, charging tubes, and threads shall not be injurious to any of the parts nor shall the parts be contaminated by the cleaning method.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor 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 this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.4).
- b. Quality conformance inspection (see 4.5).

4.3 Inspection equipment. The inspection equipment required to perform the examinations and tests prescribed in this specification shall be in accordance with inspection equipment which has been reviewed or provided by an approved Government test facility.

4.3.1 Inspection equipment data. Inspection equipment lists and detailed drawings for contractor designed inspection equipment shall be prepared and be available to the acquiring activity as specified in the contract or purchase order (see 4.3.2, 6.2, and 6.3).

4.3.2 Contractor designed inspection equipment. When specified by the acquiring activity, contractor designed inspection equipment shall be in accordance with 4.3.2.1 through 4.3.2.5.

4.3.2.1 Inspection equipment lists. Inspection equipment lists shall be prepared by the contractor in accordance with DOD-D-1000 (see 6.3), indicating the availability of inspection equipment designs, the numbers of drawings, or Federal Stock Numbers of existing equipment designs, or codes as indicated in 4.3.2.2. Design action required of the contractor is described in 4.3.2.3 and 4.3.2.4. The contractor will be required to prepare detailed drawings in accordance with 4.3.2.4 for all the equipment coded as "Contractor Design." These contractor designs shall be approved by the Government prior to fabrication or procuring of the equipment. Designs shall be available for approval as specified in 4.3.2.5.

4.3.2.2 Inspection equipment list codes. The inspection equipment as defined in 4.3.2.3 and 4.3.2.4 will be designated by the following codes:

CD - Contractor design on controlled contractor format or commercial equipment.

DOD - Military design, mandatory for use.

4.3.2.3 Military designs. Military designs are reflected on detailed drawings which completely depict all the information necessary for the fabrication of the item of inspection equipment. The contractor need provide no design when a military design is listed for an item of inspection equipment. Military designs fall into two basic classifications: mandatory (designated "DOD") and non-mandatory (indicated by drawing or Federal Stock Number). When an inspection equipment list references mandatory military designs, the contractor shall comply with and use these designs accordingly. The contractor may, however, in connection with non-mandatory designs and with the approval of the Government, design alternate inspection equipment or use comparable commercial equipment to facilitate his operations. Such contractor prepared designs or commercial equipment selections shall be approved by the Government prior to fabrication or procuring of the equipment. Designs shall be available for approval as specified in 4.3.2.5.

4.3.2.4 Contractor designs. Contractor designs are designs of inspection equipment for which the Government has assigned design responsibility to the contractor. Contractor designs shall be supported by detailed drawings which depict all the information necessary to completely fabricate, calibrate, and operate an item of inspection equipment. This requires that the necessary views, dimensions, materials, finish, notes, operating, and calibration instructions be properly depicted in accordance with approved practices to the extent that further calculation or clarification will not be required. Unless otherwise specified, contractor designs may be developed on the format the contractor normally employs in his equipment design procedures provided such format reflects the detail and information specified above, subject to the following controls: All available contractor designs shall conform to DOD-D-1000 (see 6.3). Legibility and reproducibility shall permit conventional making of clearly understandable, high contrast reproductions. The contractor shall make available one copy of final designs as a rolled set. Designs shall be available for approval as specified in 4.3.2.5.

4.3.2.5 Availability of contractor designs. Unless otherwise specified by this specification, all designs of equipment for inspection of defects classified as critical and major shall be available for approval to the departmental agency as designated by the contracting officer. All other designs of inspection equipment shall be approved by the Government agency administering the contract as directed by the contracting officer. Partial availability of inspection equipment designs is permissible and encouraged. However, the completion date for design review will be based on the date of the final availability of designs. Design review by the military should normally be accomplished within one month after receipt.

4.3.3 Supply and maintenance. Supply and maintenance of the inspection equipment shall be in accordance with MIL-I-45607.

4.3.4 Calibration. The contractor shall have available a set of master gages, standards, and appropriate instruments for regularly scheduled calibrations of his acceptance inspection equipment. Records of such regularly scheduled calibrations shall be maintained and be available to the Government (see 6.2). The calibration of gages, standards, and instruments shall be in accordance with MIL-STD-45662.

4.4 First article inspection. First article inspection shall consist of all the requirements and inspections of this specification and any additional inspections required by the contract or purchase order (see 6.2 and 6.4).

4.4.1 Sample. As soon as practicable, after award of a contract or purchase order, the contractor shall furnish a first article sample from each loading line to determine conformance with this specification and applicable drawings. First article sample shall consist of twenty loaded and assembled bombs selected at random from a quantity of one hundred bombs loaded and assembled in accordance with this specification and applicable drawings. First article sample shall be subjected to the inspections specified in 4.4. Failure of a bomb to meet all requirements shall result in rejection of the first article sample.

4.5 Quality conformance inspection. Each inspection lot (see 4.5.1) shall be sampled in accordance with MIL-STD-105 and 4.6.1. Samples shall be subjected to examination of all the characteristics listed on the applicable drawing (see 3.3) and examination of characteristics listed in 4.6.5. Upon approval of the first article sample, the asphaltic compound weight and radiographic examinations tests as specified in 4.6.3 and 4.6.4 shall be conducted as quality conformance tests only in accordance with the following procedure: A minimum of one bomb per week per fill house shall be selected at random and tested as specified in 4.6.3 and 4.6.4 for conformance to the requirements of 3.5 and 3.6. If a bomb fails to meet either requirement, the loading line, where the failure occurred, shall be requalified in accordance with 4.4.1. The asphaltic compound weight and radiographic examination quality conformance tests specified herein shall not be resumed for the loading line until requalification testing provides evidence that control of the asphaltic compound weight and explosive shrinkage cavities has been achieved. Any bomb failing either requirement 3.5 or 3.6 shall be rejected.

4.5.1 Inspection lot. An inspection lot shall consist of assemblies produced from one loading line in one unchanged process in accordance with the same drawing, drawing revision, specification, and specification revision. Unless otherwise authorized by the acquiring agency (see 6.2), the lot size shall be limited to a maximum of one month's production. Drawing, specification, or process changes not affecting safety, performance, or fit, as determined by the Government, shall not necessitate changing the identification of the inspection lot. Each inspection lot shall contain explosive loaded bombs processed from batches of raw ingredients with the assurance of homogeneity within the composition limits of the applicable specification and using bomb bodies manufactured by the same manufacturer within a sixty day period. Lot numbering shall be in accordance with MIL-STD-1168.

4.6 Methods of inspection.

4.6.1 Examination of characteristics. Sampling plans and procedures for the examination of critical, major, and minor characteristics shall be as specified herein. Equipment necessary for the performance of inspection shall be in accordance with 4.3.

4.6.1.1 Critical characteristics. Characteristics classified as critical on the applicable drawings or herein shall be inspected 100%.

4.6.1.2 Major characteristics. Characteristics classified as major on the applicable drawings or herein shall be inspected by class on the basis of single sampling in accordance with MIL-STD-105, inspection level II, acceptance quality level (AQL) 1.0% defective.

4.6.1.3 Minor characteristics. Characteristics classified as minor on the applicable drawings or herein shall be inspected by class on the basis of single sampling in accordance with MIL-STD-105, inspection level II, AQL 2.5% defective.

4.6.2 Process verification of explosive composition. The preparation of tritonal or H-6 explosive composition shall be subject to Government verification at the time the first batch is prepared and at random intervals during production, but not less than once during each week of continuous operation. A record shall be maintained for each batch prepared to ensure that the components, composition, order of addition, temperature, agitation, and mixing time is in accordance with mandatory procedures.

4.6.3 Weight of applied asphaltic compound. Prior to application of the asphaltic compound, each bomb selected in accordance with 4.5 shall be weighed with an accuracy of ± 1.0 pound. Record this weight as W_e . The application of the compound shall be in accordance with the applicable drawing (see 3.3). After all excess compound has been removed, weigh the bomb and record this weight as W_m . The weight of the applied asphaltic compound shall be calculated as the difference in weight, $W_m - W_e$, and checked for conformance to the requirements of 3.5.

4.6.4 Radiographic examination of the explosive charge. Each bomb selected shall be radiographed in two planes in accordance with the requirements of MIL-STD-746. One plane shall be through the lug and bomb centers and the other at 90° to it. Shrinkage cavities, if any, shall be checked for conformance to 3.6.

4.6.5 Inspection of packing (see DL 2642646). The inspection of packing characteristics shall be as shown in Table I.

TABLE I. Inspection of packing characteristics.

Classification	Defects	Method of inspection
Critical:	None defined	--
Major:		
101	Strapping missing, improperly positioned, or broken	Visual and manual
102	Assembly loose	Manual
103	Pallet damaged	Visual
Minor:		
201	Evidence of poor workmanship	Visual
202	Marking missing or improperly applied	Visual

5. PACKAGING

5.1 Preservation-packaging. Preservation-packaging is not applicable to this specification.

5.2 Packing. Packing shall be level A.

5.2.1 Level A. The loaded and assembled bombs shall be packed on pallet adapters DL 2642646 in accordance with Naval Weapons Requirement WR 54/127.

5.3 Marking. Pallets shall be marked for shipment in accordance with MIL-STD-129.

5.3.1 Ammunition data cards. Data cards (see 6.2 and 6.3) shall be prepared in accordance with MIL-STD-1167 except that only space numbers 1 through 14, 23, and 26 shall be completed. Space number 23, identification

of components, shall be limited to the inert bomb body.

5.4 Transportability. Transportability shall be level A.

5.4.1 Carloading. The bombs, packed as specified in 5.2.1, shall be loaded in accordance with MIL-STD-1325-85. Carloading of bombs loose shall be loaded in accordance with Naval Weapons Requirement WR 52/73.

5.4.2 Truckloading. The bombs, packed as specified in 5.2.1, shall be loaded in accordance with MIL-STD-1320-53. Truckloading of bombs loose shall be loaded in accordance with Naval Weapons Requirement WR 51/42.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The MK 84 bomb is used as a general purpose bomb.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1).
- c. Explosive composition required (see 3.4 through 3.4.2).
- d. Quantity of bombs.
- e. When lot size requirements other than specified are necessary (see 4.5.1).
- f. Name and location of Government representative responsible for random selection of inspection sample.
- g. Name and location of Government approved test laboratory.
- h. Whether first article is required (see 3.1 and 6.4).
- i. Any additional inspections required (see 4.4).
- j. Where data items (see 4.3.1, 4.3.2.1, 4.3.2.4, 5.3.1, and 6.3) and records of scheduled calibrations (see 4.3.4) are to be forwarded.

6.3 Data requirements. The following Data Item Descriptions (DID's) must be listed, as applicable, on the Contract Data Requirements List (DD Form 1423) when this specification is applied on a contract, in order to obtain the data, except where DOD FAR Supplement 27.475-1 exempts the requirement for a DD Form 1423.

<u>Reference Paragraph</u>	<u>DID Number</u>	<u>DID Title</u>	<u>Suggested Tailoring</u>
4.3.1, 4.3.2.1, 4.3.2.4	DI-E-7031	Drawings, Engineering and Associated Lists	---
5.3.1	DI-MISC-80043	Ammunition Data Card	---

The above DID's were those cleared as of the date of this specification. The current issue of DOD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be researched to ensure that only current, cleared DID's are cited on the DD Form 1423.

6.4 First article. When a first article inspection is required, the item should be a first article sample. The first article should consist of twenty loaded and assembled bombs (see 4.4.1). The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results, and disposition of first articles. Invitations for bids should provide that the Government reserve the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.5 Subject term (keyword) listing.

Bomb, general purpose, Mark 84
Bomb, GP, MK 84, 2000 pound
Bomb, Mark 84

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

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

Preparing activity:
Navy - AS
(Project No. 1325-0171)

Review activities:
Air Force - 18, 70

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER

2. DOCUMENT TITLE

3a. NAME OF SUBMITTING ORGANIZATION

4. TYPE OF ORGANIZATION (Mark one)

VENDOR

USER

MANUFACTURER

OTHER (Specify): _____

b. ADDRESS (Street, City, State, ZIP Code)

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER (Last, First, MI) - Optional

b. WORK TELEPHONE NUMBER (Include Area Code) - Optional

c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional

8. DATE OF SUBMISSION (YYMMDD)

DD FORM 82 MAR 1426

PREVIOUS EDITION IS OBSOLETE.

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