

MILITARY
SPECIFICATION

B-06-78
MIL-M-55058(SigC)
22 January 1959

MAST AB-503()/U

1. SCOPE

1.1 This mast is a tubular, telescopic, hand-air-pump-operated unit designated as Mast AB-503()/U. (See 6.3.)

1.2 This specification covers the technical requirements and means for determining the compliance therewith of the following units of Mast AB-503()/U.

- (a) Mast Assembly
- (b) Case, Accessories CY-2507()/U
- (c) Case, Accessories CY-2508()/U

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on the date of invitation for bids form a part of this specification:

SPECIFICATION

MIL-P-11268

Parts, materials, and processes used in electronic communication equipment.

STANDARDS

MIL-STD-105

Sampling procedures and tables for inspection by attributes.

MIL-STD-169

Extreme temperature cycle.

DRAWINGS

ES-DL-168389

Mast AB-503()/U.

SC-A-46415

Packaging, packing, and marking instructions.

(Copies of the above listed publications required by the contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 Description. - Mast AB-503()/U consists of three major items, namely the Mast Assembly, Case, Accessories CY-2507()/U and Case, Accessories CY-2508()/U.

MIL-M-55058(SigC)

3.1.1 Mast assembly.- The mast assembly consists of the mast sections, base leg assemblies, peep sight, turning handle, azimuth ring, air release valve, pump hose adapter, spacer and cable assembly, cross levels, strap assembly, and support leg assemblies. (See 3.5.)

3.1.2 Case, Accessories CY-2507()/U.- This case provides storage for the foot assemblies, guy stake assemblies, guy assemblies (top and lower), driving caps, tools, and saddle. (See 3.5.1 and 3.9.)

3.1.3 Case, Accessories CY-2508()/U.- This case contains the air pump, pump handle and air hose and provides storage for the lok-tite hold-down assemblies, and running spare parts. (See 3.5.1 and 3.9.)

3.2 Preproduction samples.- The contractor shall furnish preproduction samples for approval as required in the invitation for bids and contract. (See 6.2(c)(1).)

3.3 Serial numbers.- Each mast equipment shall be serial numbered in accordance with the bid request or contract.

3.4 Parts, materials, and processes.- In addition to the requirements herein and on applicable drawings covering parts, materials and processes, such items shall conform to applicable portions of Specification MIL-P-11268. In case of conflict, this specification shall govern.

3.5 Detail requirements.-

3.5.1 Construction.- Unless otherwise specified, the equipment shall be constructed in accordance with Drawing List ES-DL-168389 and the requirements of this specification. In case of conflict, the specification shall govern.

3.5.2 Torsional rigidity.- The total twist over the entire length of the mast shall not exceed 10 mils from any initial setting of an appropriate measuring device while supporting a 12 pound equipment load. (See 4.8.5.)

3.5.3 Mast alignment.- The mast sections shall be keyed to prevent rotational movement. The mast sections shall be indexed to the mil scale pointer located at the bottom of the mast base section.

3.5.4 Height stability.- The fully loaded and guyed mast shall remain at any desired height between fully extended and completely retracted positions for at least 1 hour without additional air pressure being required from the pump. (See 4.8.6.)

3.5.5 Variation due to climatic conditions.- Height increase of the mast from air expansion caused by sun load or height decrease caused by sudden temperature drop shall not be cause for rejection.

3.6 Performance characteristics.-

3.6.1 Torque.- The torque required to turn the mast for orientation shall not exceed 10 pounds, applied on each of the turning handles with the mast fully extended, guyed, and supporting its normal equipment load. (See 4.8.1)

MIL-M-55058(SigC)

3.6.2 Air pressure.- The nominal air pressure required to extend the fully guyed and loaded mast to operating (completely extended) position shall be 20 pounds per square inch gauge (psig). A maximum pressure of 35 psig is permissible.

3.6.3 Mil scale.- The mil scale shall turn freely by hand with the lock screw disengaged, but shall not rotate by hand pressure when the lock screw is in the locked position.

3.6.4 Mast operation.- Mast operation shall be such that extension and contraction of the mast is smooth and even. There shall be no points of excessive friction that will affect rapid acceleration or deceleration.

3.6.5 Air pump.- The air pump shall provide sufficient pressure and volume of air to fully extend the guyed and loaded mast in a period of not more than five minutes.

3.7 Service conditions.- The equipment shall meet the following service conditions:

3.7.1 Equipment nonoperating.- The equipment shall comply with the operational requirements of 3.6 after subjection to any of the following nonoperating conditions successively or in combinations encountered during worldwide short-term storage and transit:

- (a) Temperature.- Exposure in the range of +160°F to -80°F.
- (b) Elevation.- Elevation up to 25,000 feet above sea level.
- (c) Bounce (Cases only).- The equipment shall meet the requirements of 3.9.

3.7.2 Equipment operating.- The operating equipment shall meet the following conditions:

- (a) Temperature.- Ambient temperature in the range of +160°F to -65°F. (The 160°F temperature includes effect of sun-load.)
- (b) Elevation.- Elevation up to 10,000 feet above sea level.

3.8 Interchangeability.- Corresponding components, replaceable subassemblies, and replacement parts shall be physically and functionally interchangeable as units without modification thereof or of other items with which the units are used.

3.9 Bounce (cases only).- Cases CY-2507()/U and CY-2508()/U shall give full specification performance with no physical damage other than surface abrasion when tested in accordance with 4.11.

3.10 Cleaning.- All parts, assemblies, and subassemblies shall be cleaned thoroughly of metal chips, burrs, solder, welding flux and other foreign matter before final assembly. The equipment shall be clean and free of burrs, scratches or other defects after final assembly.

3.11 Technical literature, tools, and running spare parts.- Technical literature, tools, and running spare parts shall be provided in accordance with the bid request and contract. Running spare parts shall be identical to corresponding parts in the equipment being furnished on contract.

MIL-M-55058(SigC)

3.12 Workmanship.- Workmanship shall be such as to meet the applicable requirements of this specification and its subsidiaries when inspected in accordance with section 4 of this specification and for conformance to the following paragraphs herein:

- 3.1 Description
- 3.5.1 Construction
- 3.10 Cleaning

4. QUALITY ASSURANCE PROVISIONS

4.1 Contractor responsibility.- Unless otherwise specified herein, the supplier is responsible for the performance of all inspection requirements prior to submission for Government inspection and acceptance. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. Inspection records of the examinations and tests shall be kept complete and available to the Government as specified in the contract or order.

4.2 Classification of inspection.- Inspection shall be classified as follows:

(a) Preproduction inspection (does not include preparation for delivery).
(See 4.3.)

(b) Procurement inspection. (Procurement inspection shall be the inspection performed by the contractor and by the Government, as specified by 4.4 and 4.13.)

(1) Procurement inspection of items before preparation for delivery.
(See 4.4.)

(2) Procurement inspection of preparation for delivery. (See 4.13 and section 5.)

4.3 Preproduction inspection.- This inspection will be performed by the Government unless otherwise specified in the contract. It shall consist of the preproduction inspection specified in table I and the group A, group B and group C inspection specified in tables II, III and IV, respectively. Other nondestructive tests on preproduction samples may be performed to determine compliance with specified requirements.

Table I.- Preproduction inspection

Inspection	Requirement paragraph	Test paragraph
Temperature	3.7.2	4.9
Elevation	3.7.2	4.10

4.4 Procurement inspection of items before preparation for delivery.- The contractor shall perform the inspection specified by (a) through (c) below, to demonstrate compliance with specified requirements. However, this does not relieve the contractor of his responsibility for performing any additional inspection which is necessary to control the quality of the product and to assure compliance with all specification requirements. The



4.4 Procurement inspection of items before preparation for delivery. - (Cont'd)
Government will review and evaluate the contractor's inspection procedures and examine the contractor's inspection records. In addition the Government---at its discretion---may perform all or any part of the inspection specified in (a), to verify the contractor's compliance with specified requirements. (The amount of such verification inspection will depend on the extent to which the contractor's inspection procedures and records insure that the equipment on contract meets the specified procurement inspection. Also see 6.4.)

(a) Procurement inspection shall consist of group A, group B and group C inspection as specified in 4.4.1 through 4.4.3.2.

(b) When Standard MIL-STD-105 specifies actions by the Government, the Government may authorize the contractor to perform any of such actions except that responsibility for acceptance rests with the Government.

(c) Group B inspection shall normally be performed on inspection lots that have passed group A inspection and on samples selected from units that have been subjected to and met the group A inspection. In addition, group C inspection shall normally be performed on sample units that have been subjected to and met group B inspection. However, the order may be varied when it is considered more practical to select separate samples for group B or group C inspection, or both.

4.4.1 Group A inspection. - This inspection (including sampling) shall conform to table II and Standard MIL-STD-105. Unless otherwise specified, normal inspection shall be used at the start of the contract. Group A inspection shall be performed in any order which is satisfactory to the Government.

Table II.- Group A inspection

Inspection	Requirement paragraph	Test paragraph	AQL	
			Major	Minor
Visual and Mechanical				
Mast Assembly	3.12	4.7	1.5%	6.5%
Case CY-2507()/U	3.12	4.7	1.5%	6.5%
Case CY-2508()/U	3.12	4.7	1.5%	6.5%
Air Pressure *#	3.6.2	4.8.3	1.5%	**
Operation #	3.6.4	4.8	1.5%	**

* This test shall be conducted through a minimum of 10 cycles of operation for procurement inspection. The test will be conducted through 500 cycles of operation in preproduction inspection.

These tests may be made concurrently

** All operational defects are of major category.



MIL-M-55058(SigC)

4.4.2 Group B inspection.- This inspection (including sampling) shall conform to table III and the Appendix to Standard MIL-STD-105. Unless otherwise specified herein, normal inspection shall be used at the start of the contract. The reduced inspection procedure shall be R-1. Disposition of nonconforming product (sample units and inspection lots) shall be in accordance with 4.5 and the requirements of Standard MIL-STD-105 for disposition of rejected product.

4.4.2.1 Group B sampling plans.- The group B sampling plans, for the AQL's listed in table III, shall be as follows:

<u>AQL</u>	<u>Inspection level for normal and tightened inspection</u>	<u>Inspection level for reduced inspection</u>
4%	L-8	L-6

4.4.2.2 Order of inspection within group B.- Group B inspection shall be performed in any order which is satisfactory to the Government.

Table III.- Group B inspection

<u>Inspection</u>	<u>Requirement paragraph</u>	<u>Test paragraph</u>	<u>AQL</u>
Torque	3.6.1	4.8.1)	4% for the group
Airpump	3.6.5	4.8.7)	
Mil Scale	3.6.3	4.8.2)	
Interchangeability	3.8	4.12)	
Bounce (cases only)	3.7.1	4.11)	

4.4.3 Group C inspection.- This inspection shall be as listed in Table IV.

4.4.3.1 Sampling for inspection of equipment.- Two mast assemblies for group C inspection shall be selected without regard to their quality out of each 100 units or fraction thereof on order, except that the first two shall be selected from the first lot submitted for procurement inspection.

4.4.3.2 Noncompliance.- If a sample unit fails group C inspection, the contractor shall immediately investigate the cause of failure and shall report to the Government inspector the results thereof and details of the corrective action taken on the process and all units of product which were manufactured with the same conditions, materials, processes, etc. If the Government inspector does not consider that the corrective action will enable the product to meet specified requirements, or if the contractor cannot determine the cause of failure, the matter shall be referred to the contracting officer. (See 6.5.)

Table IV.- Group C inspection

Inspection	Requirement paragraph	Inspection paragraph
Torsional rigidity	3.5.2	4.8.5
Mast alignment	3.5.3	4.8.4
Height stability	3.5.4	4.8.6

4.4 Reinspection of conforming group B and group C sample units.- Unless otherwise specified, sample units which have been subjected to and passed group B or group C inspection, or both, may be accepted on contract, provided that they are resubjected to and pass group A inspection after repair of all visible damage.

4.5 Disposition of nonconforming product.- The following shall be suitably tagged or identified by equivalent means to indicate the cause of failure and means employed to correct the fault:

Sample units found defective during group A, B, or C inspection.

Inspection lots which failed during group A or B inspection.

Product which has been reworked as a result of failure during group C inspection.

The required information shall be presented to the Government when the product is submitted and shall become the property of the Government.

4.6 Bounce preconditioning.- The unit, with shock mounts (if any) removed or blocked, shall be placed in its normal operation position on the table of the Package Tester as made by the L.A.B. Corporation, Skaneateles, New York, or equal. The package tester, shafts in phase, shall have a speed such that it is just possible to insert a 1/32-inch-thick strip of material under one corner or edge of the unit to a distance of 3 inches as the unit bounces. The unit shall be subjected to this preconditioning for 1 minute. After bounce preconditioning, the unit shall not be repaired, aligned, cleaned, or otherwise changed prior to subsection to procurement inspection.

4.7 Visual and mechanical inspection.- The mast and equipment shall be examined for defects listed in Table V.

MIL-M-55058(SigC)

Table V.- Classification of visual and mechanical defects

Classification	Defect
Major	<p>Missing, broken, inoperative or defective parts of pump assembly, hose or valve system.</p> <p>Damaged or inaccurate peepsights, levels or mil scale.</p> <p>Damaged or inoperative mast section.</p> <p>Ineffective mast seals.</p> <p>Broken or misaligned fasteners or hinges.</p> <p>Carrying handle, hinge or fastener on wrong side of case.</p> <p>Finish peeling or cracking.</p> <p>Poor, inadequate or improperly applied finish.</p>
Minor	Loose particles of material, sharp points or rough surfaces.

4.8 Mast operation.- The mast shall be operated from fully retracted to fully extended positions and return for conformance with 3.6.4.

4.8.1 Torque test.- The mast shall be checked for maximum force required to turn (orient) the mast, with the mast fully extended, both sets of guys in place and tensioned, and the mast carrying an equipment load of 12 pounds (real or simulated).

4.8.2 Mil scale.- The mil scale shall be checked for compliance with 3.6.3.

4.8.3 Air pressure.- Test for compliance with 3.6.2. Pressure in excess of the 35 psig limit indicates a faulty mast.

4.8.4 Mast alignment.- Erect the mast, with a 12 pound equipment load (real or simulated) and fully guyed, to a vertical position. Check the mil scale index, mil scale pointer, and peep sight orientation to assure alignment. (See 3.5.3.) Instrumentation shall be in accordance with agreement between the contractor and the authorized Government technical representative.

4.8.5 Torsional rigidity.- The fully erected and guyed mast with a 12 pound equipment load (either real or simulated) shall be subjected to a 3 foot-pound, twisting force applied to the top of the top section of the mast. The total twist shall not exceed ten mils measured at the top of the mast by instrumentation agreed upon by the contractor and authorized Government technical representative.

4.8.6 Height stability.- The mast, loaded with a 12 pound equipment load (real or simulated) and guyed, shall be tested at positions of one-third, one-half, two-thirds, and fully extended for compliance with 3.5.4.

4.8.7 Air pump.- Test for compliance with 3.6.5 with the mast and pump in operating position. The mast is to be loaded with a 12 pound equipment load, real or simulated, and the guys in place and properly tensioned.

4.9 Temperature test for equipment.- The equipment shall be subjected to the temperature cycle shown on Standard MIL-STD-169. Measurement shall be made as follows:

<u>Paragraph</u>	<u>Step</u>	<u>Measurement</u>
3.8.2	2A	Test for compliance with 3.6. Equipment may be removed from test chamber for test for compliance with 3.6.4 if size of chamber will not permit full extension of mast. Such test must be conducted immediately upon removal from chamber.
3.8.2	7	Test for compliance with 3.6. If size of test chamber does not permit full extension of mast for compliance with 3.6.4, test may be conducted within the limits of the confines of the chamber. Horizontal testing is permissible.

4.10 Elevation.- Place the equipment in a suitable pressure chamber. Reduce the atmospheric pressure to 20.44 inches of mercury. Test to determine that the mast can be extended using the air pump furnished as an item of equipment. If the size of the test chamber will not permit full extension of the mast for compliance with 3.6.4, the test may be conducted within the limits of the confines of the test chamber. Mast sections may be in horizontal position.

4.11 Bounce test; equipment under 1000 pounds.- Cases CY-250()/U and CY-2508()/U loaded normally or with a load simulating the weight and distribution of equipment normally stored therein or components thereof shall be placed on the table of the Package Tester as made by the L.A.B. Corporation, Skaneateles, New York, or equal, and shall be constrained from horizontal motion of more than 2 inches by suitable wooden fences. The package tester, shafts in phase, shall be operated at a speed of 285 rpm \pm 1 percent, for a total of 3 hours. During each 1-hour period of the test, the transit case (with contained equipment) shall rest on a different face.

4.12 Inspection for interchangeability.- The dimensions listed below shall be gaged or measured to determine compliance with the physical interchangeability requirements of 3.8. When a dimension is not within specified limits, it shall be considered a major defect.

a. External and internal dimensions of collar, ring, and insertable subassemblies, when such dimensions affect mating of parts.

b. Size and form of special threads.

4.13 Procurement inspection of preparation for delivery.- This inspection shall conform to applicable portions of Drawing SC-A-46415 as specified in the contractual document.

5. PREPARATION FOR DELIVERY

5.1 Packaging, packing and marking shall be in accordance with the applicable paragraphs of Drawing SC-A-46415.

MIL-M-55058(SigC)

6. NOTES

6.1 Intended use.- Mast AB-503()/U is used for the support of meteorological and other equipment, such as antennas.

6.2 Ordering data.- Procurement documents should specify the following:

- (a) Title, number, and date of this specification and any amendment thereto.
- (b) Level of packaging and level of packing required for shipment. (Level A, level B, or level C.)

(c) Preproduction inspection:

(1) Two samples of each item cited in section 1 are generally required so that lengthy environmental tests can be completed on one sample while complete performance measurements can be made on the second sample. (See 3.2.)

(2) Preproduction pack(s) as specified in Drawing SC-A-46415.

- (d) Marking and shipping of samples.
- (e) Place of final inspection.
- (f) Technical literature required. (See 3.11.)
- (g) Quantity of tools and running spare parts required. (See 3.11.)

6.3 Nomenclature.- The parentheses in the nomenclature will be deleted or replaced by a letter identifying the particular design; for example AB-503W/U. The contractor should apply for nomenclature in accordance with the applicable clause in the contract. (See 1.1.)

6.4 Verification inspection.- The amount of verification inspection (by the Government) will be adjusted to make maximum utilization of the contractor's quality control system and the quality history of the product, and will normally be identified by the categories listed below:

(a) Type A--The total of that inspection set forth in the Quality Assurance Provisions of this specification or the contract. Included in this category is that amount of inspection referred to as normal and tightened inspection by Military Standard 105.

(b) Type B--That inspection set forth in the Quality Assurance Provisions of this specification or the contract reduced in amount under the reduced inspection provisions of Military Standard 105.

(c) Type C--A reduced inspection procedure resulting in a material reduction in the amount of inspection set forth in the Quality Assurance Provisions of this specification. The amount of inspection is less than that provided for in type B and is based upon a consistently acceptable product resulting from a planned quality control system voluntarily employed by the contractor in the production of the product.

MIL-M-55058(SigC)

6.5 Group C inspection.- Approval to ship may be withheld, at the discretion of the Government, pending the decision from the contracting officer on the adequacy of corrective action. (See 4.4.3.2.)

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 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.



MILITARY
SPECIFICATION

B-06-78
MIL-M-55058(SIGC)
Amendment 1
7 September 1960

MAST AB-503()/U

1. Paragraph 2.1 - Under DRAWINGS:

a. Change "ES-DL-168389" to "SC-DL-193206."

b. Add the following:

SC-DL-193207	Case, Accessories CY-2508()/U
SC-DL-193209	Case, Accessories CY-2507()/U
SC-DL-193212	Pump Assembly
SC-DL-193404	Pump Handle Assembly
SM-C-193336	Hose Assembly

2. Paragraph 3.5.1 - Delete and replace with the following:

"3.5.1 Construction. - Construction shall be in accordance with the following drawing and data lists and drawing:

SC-DL-193206	Mast AB-503()/U
SC-DL-193207	Case, Accessories CY-2508()/U
SC-DL-193209	Case, Accessories CY-2507()/U
SC-DL-193212	Pump Assembly
SC-DL-193404	Pump Handle Assembly
SM-C-193336	Hose Assembly "