

**MIL-C-8783A**

27 OCTOBER 1959

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**SUPERSEDING**  
**MIL-C-8783(ASG)**  
**31 AUGUST 1954**
**MILITARY SPECIFICATION****CLAMP, HOSE, FLAT BAND 500° F**

*This specification has been approved by the Department of Defense and is mandatory for use by the Departments of the Army, the Navy, and the Air Force.*

**1. SCOPE**

**1.1 Scope.** This specification covers flat band clamps used in various aircraft installations of ducts, hose, tubing, etc.

**1.2 Classification.** Clamps shall be of the following types as designated by part numbers on MS21920:

- (a) Clamp — flat band, conventional latch.
- (b) Clamp — flat band, quick-release latch.

**2. APPLICABLE DOCUMENTS**

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

**SPECIFICATIONS****FEDERAL**

**QQ-P-416** — Plating, Cadmium (Electrodeposited).

**GGG-G-17** — Gages, General Purpose.

**PPP-B-566** — Boxes, Folding, Paperboard.

**PPP-B-585** — Boxes, Wood, Wirebound.

**PPP-B-591** — Boxes, Fiberboard, Wood-Cleated.

**PPP-B-601** — Boxes, Wood, Cleated-Plywood.

**PPP-B-621** — Boxes, Wood, Nailed and Lock-Corner.

**PPP-B-636** — Boxes, Fiber.

**PPP-B-676** — Boxes, Set-Up, Paperboard.

**PPP-C-843** — Cushioning Material, Cellulosic.

**MILITARY**

**MIL-B-121** — Barrier Material, Greaseproofed, Flexible (Waterproofed).

FSC 4730
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**MIL-C-8783A**

- MIL-B-138** — Boxes, Wood, Fiberboard - Lined for Overseas Shipment (for Weight of Contents Not Exceeding 500 Pounds).
- MIL-S-5059** — Steel, Corrosion-Resistant (18-8) Plate, Sheet and Strip.
- MIL-B-6812** — Bolts, Aircraft.
- MIL-S-7742** — Screw Threads Standard, Aeronautical.
- MIL-B-10877** — Box, Wood, Cleated, Veneer, Paper Overlaid.
- MIL-L-10547** — Liners, Case, Waterproof.
- MIL-N-25027** — Nut, Self-Locking, 250°F, 550°F, and 800°F.

**STANDARDS****MILITARY**

- 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.
- MS21920** — Clamp, Hose, Flat Band, 500°F.

(Copies of specifications, standards, drawings, and publications required by 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 Qualification.** The flat band clamps furnished under this specification shall be a product which has been tested and passed the qualification tests specified herein, and has been listed on or approved for listing on the applicable qualified products list.

**3.2 Component parts.** The latch of the quick-release type shall be positive locking but easily released when either nut or bolt is backed off. All component parts of quick-release clamps shall remain as an assembly during installation or removal. Conventional-type clamps may require removal of latch components. Externally threaded parts shall conform to MIL-B-6812 except as noted in 3.3 below. Nuts shall conform to the 550° F type of MIL-N-25027, except that the tensile strength shall be 3,630 pounds, minimum. The class of threads shall be 3A and 3B, respectively, for the bolt and nut in accordance with MIL-S-7742.

**3.3 Materials.** Clamp bands shall be manufactured of 0.028 one-half hard corrosion-resistant type steel conforming to MIL-S-5059. Bolts shall be steel conforming to MIL-B-6812, except that the ultimate tensile strength shall be 3,180 pounds, minimum, and the heat-treat range may be accordingly altered. The tongue shall be the same width and thickness as the band and shall be of the same material, except that it may be in a harder condition. All materials which are not specifically described herein shall be of a quality and weight suitable for the purpose intended.

**3.4 Design and construction.** Clamps shall be of a design to permit easy installation and removal in confined places. Design and construction shall be such that improper installation is extremely difficult and readily discernible. Design shall require the bolt-type element to be an integral load-carrying member. A permanently attached tongue

shall be provided to insure that the clamp will exert a bearing pressure throughout the complete circumference.

**3.4.1 Minimum adjustment range.** A clamp for any given size shall have sufficient adjustment available in the assembled condition in order that an applied torque of 25 in. lb will tighten it uniformly around the full periphery of solid rods or steel tubes having outside diameters to the maximum and minimum dimensions specified on the applicable MS standard.

**3.5 Sizes and dimensions.** The sizes and dimensions shall conform to the applicable MS Standard. Envelope dimensions of the tightening device are applicable when the clamp is in the tightened positions on the minimum and maximum size solid rod or tube.

**3.6 Protective treatment.** Clamp components manufactured of non-corrosion-resistant material shall be cadmium plated in accordance with QQ-P-416, type II, class 3. Corrosion-resistant steel components shall be passivated.

**3.7 Ultimate tensile strength.** The minimum ultimate tensile strength of all sizes of clamps shall be 2,250 pounds.

**3.8 Deflection.** The maximum deflection shall be 0.15 inch when tested in accordance with 4.5.3.

**3.9 Identification of product.** Each clamp shall be marked with the applicable MS21920 part number in accordance with MIL-STD-130. The manufacturer's name or trademark shall be placed on the clamp, printed parallel to edges of the band. Steel stamps, when used, shall consist of numerals  $\frac{1}{16}$ -inch to  $\frac{3}{16}$ -inch high and shall have all sharp corners rounded to a radius of 0.005 to 0.010 on  $\frac{1}{16}$ -inch to  $\frac{3}{32}$ -inch size markings, and a radius of 0.010 to 0.015 on  $\frac{1}{8}$ -inch to  $\frac{3}{16}$ -inch markings. The stamp shall not cause disfigurement of the opposite surface.

**3.10 Workmanship.** Clamps shall be uniform in quality and free from burrs, sharp edges, cracks, inclusions and other defects which may adversely affect its functioning and service life.

#### 4. QUALITY ASSURANCE PROVISIONS

**4.1** 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 tests.** The inspection and testing of clamps shall be classified as follows:

- (a) Qualification tests (4.3)
- (b) Acceptance tests (4.4)

**4.3 Qualification tests.** Qualification tests shall consist of all of the tests of this specification.

**4.3.1 Sampling instructions.** The qualification test samples shall consist of three clamps of the —41 or —41R size, as applicable. Samples shall be plainly identified by securely attached durable tags marked with the information specified below and shall be forwarded to the activity responsible for qualification. (See 6.3).

Sample for qualification tests

CLAMP, HOSE, FLAT BAND, 500° F  
MS Part No.

Manufacturer's Part No.

Name of Manufacturer

Submitted by (name) (date) for qualification tests in accordance with MIL-C-8783A under authorization (reference letter of authorization).

**MIL-C-8783A**

**4.4 Acceptance tests.** The acceptance tests shall consist of the following tests as specified under 4.5:

- (a) Examination of product (4.5.1.)
- (b) Minimum adjustment range (4.5.2.)
- (c) Load deflection (4.5.3.)
- (d) Ultimate tensile strength (4.5.4.)

**4.4.1 Inspection lot.** An inspection lot shall consist of clamps of the same size and type produced under essentially the same manufacturing conditions and submitted for inspection at the same time. The unit of inspection shall be one clamp.

**4.4.2 Sampling for acceptance tests.** A random sample shall be selected from each inspection lot in accordance with MIL-STD-105, Inspection Level L-4. The acceptance number shall be zero for all tests except examination of product (4.5.1), for which the AQL shall be 2.5 percent defective.

**4.4.3 Resubmitted inspection lots.** The paragraph titled "Resubmitted lots" of MIL-STD-105 shall apply, except that a resubmitted inspection lot shall be inspected by the contractor under the supervision of the Government inspector using tightened inspection. Where the original acceptance number was zero, a sample size represented by the next higher sample size code letter shall be selected. Before an inspection lot is resubmitted, full particulars concerning the cause of previous rejection and the action taken to correct the defects found in the inspection lot, shall be furnished by the contractor to the Government inspector.

**4.5 Test methods.**

**4.5.1 Examination of product.** Each clamp submitted for acceptance under contract shall be visually examined to determine conformance with the requirements of this specification not covered by test and with respect

to workmanship and dimensions specified on the applicable standard.

**4.5.2 Minimum adjustment range.** Solid rods or steel tubes having outside diameters equal to the minimum extended diameter, +1 percent —0, and maximum compressed diameter, +0, —1 percent, specified on MS21920, shall be used to measure the adjustment range. The clamp shall be tightened with an applied torque of 25 in. lb, on the maximum size solid rod or tube. It shall not be possible to insert a thickness (feeler) gage 0.028 inch thick by 0.312 inch wide, conforming to GGG-G-17 type VIII, as applicable, between the clamp and the rod or tube. The clamp shall be removed and installed in the same manner on the minimum size solid rod or tube and the test repeated to determine conformance with the minimum adjustment range requirement.

**4.5.3 Load deflection.** Load deflection data shall be obtained by a straight tensile test on a clamp which has been cut apart in the band opposite the latching element. The cut clamp shall be carefully straightened from the circular form to provide a straight test specimen. The distance between the two trunnions shall be the same as when the clamp was tightened on the minimum size rod or tube in accordance with 4.5.2. A gage length of 10 inches shall be used, and a supporting plate may be employed to maintain the clamp assembly in a straight line and to prevent possible malfunction of the latching element (see figure 1). The maximum allowable deflection between the loads of 150 pounds and 1,500 pounds is 0.15 inch measured across the original 10-inch gage length.

**4.5.4 Ultimate tensile strength.** The ultimate tensile strength test shall be conducted on the same or similar specimens used in the load deflection test (4.5.3). The minimum ultimate tensile strength is 2,250 pounds.

## MIL-C-8783A

4.5.5 *Packing and marking.* The inspector shall ascertain that the packing and marking of the clamps conform to this specification.

## 5. PREPARATION FOR DELIVERY

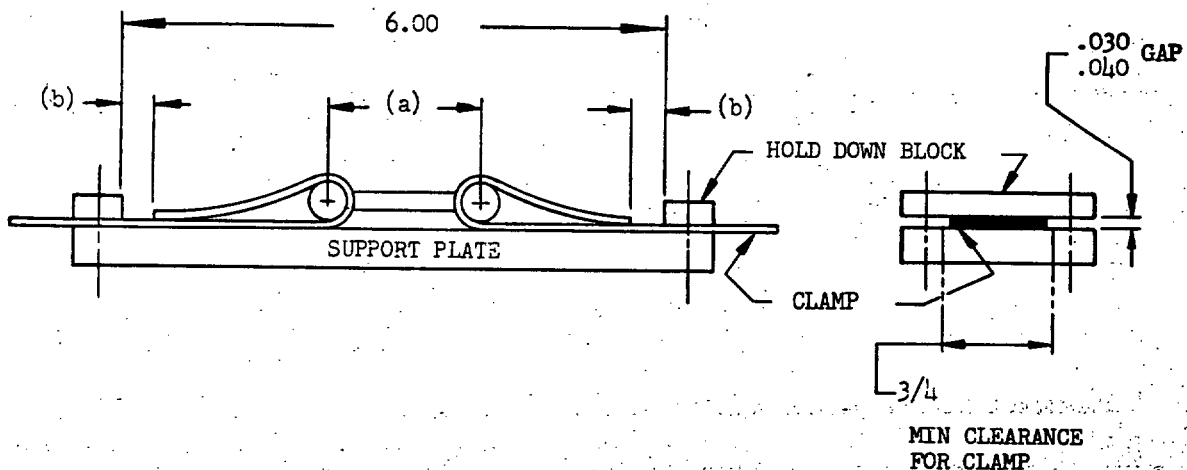
### 5.1 Preservation and packaging.

5.1.1 *Level A.* Unless otherwise specified, the clamps shall be packaged by either of the following two methods.

5.1.1.1 Clamps of one size and type shall be wrapped or bagged in greaseproof paper

conforming to MIL-B-121 in multiples of 10, with a maximum of 100 to each package, and in such manner that the clamps are completely and securely enclosed. The wrapped or bagged clamps shall be overpacked in paperboard cartons or boxes conforming to PPP-B-566 or PPP-B-676.

5.1.1.2 Clamps of one size and type shall be packaged in multiples of 10 with a maximum of 100 in a commercial standard food-packer's No. 10 can. The clamps shall be cushioned with cushioning material conforming to PPP-C-843 in such manner as to prevent rattling and movement during handling and shipment.



- (a) THIS DISTANCE DETERMINED FROM ASSEMBLY ON MIN BAR OR TUBE IN ACCORDANCE WITH 1.5.2.
- (b) CENTER CLAMP ON PLATE BY MAKING THESE DIMENSIONS EQUAL WITHIN .06.

DIMENSIONS IN INCHES.

FIGURE 1. Test setup

**MIL-C-8783A**

**5.1.2 Level C.** The clamps shall be preserved and packaged in accordance with the manufacturer's commercial practice.

**5.2 Packing.**

**5.2.1 Level A.** Clamps shall be packed in overseas-type shipping containers conforming to PPP-B-585, PPP-B-591, PPP-B-601, PPP-B-621, PPP-B-636, MIL-B-138, or MIL-B-10377. Insofar as practicable, containers shall be of uniform shape and size, of minimum cube and tare consistent with the protection required, and shall contain identical quantities. The gross weight shall be limited to approximately 200 pounds. The containers shall be provided with a case liner conforming to MIL-L-10547 and shall be sealed in accordance with the appendix thereto. Containers shall be closed and strapped in accordance with the applicable container specification or appendix thereto.

**5.2.2 Level B.** Clamps, preserved and packaged as specified in 5.1.1 or 5.1.2, shall be packed in domestic-type exterior shipping containers conforming to PPP-B-591, PPP-B-621, PPP-B-636, PPP-B-585, PPP-B-601, or MIL-B-10377. Exterior shipping containers shall be of minimum cube and tare consistent with the protection required. Insofar as practicable, exterior shipping containers shall be of uniform shape and size and contain identical quantities. Closures shall be in accordance with the appendix of the applicable container specification. When fiberboard containers are utilized, the fiberboard shall have a minimum Mullen test of 275 pounds. The gross weight of the shipping container when packed for shipment, shall not exceed 200 pounds; the gross weight of fiberboard containers shall not exceed the weight limitations of the applicable container specification.

**5.2.3 Level C.** Packages which require overpacking for acceptance by the carrier shall be packed in exterior-type shipping containers in a manner that will insure safe

transportation at the lowest rate to the point of delivery. Containers shall meet the Consolidated Freight Classification Rules or regulations of other common carriers, as applicable to the mode of transportation.

**5.3 Marking of shipments.** Interior packages and exterior shipping containers shall be marked in accordance with MIL-STD-129.

**6. NOTES**

**6.1 Intended use.** Clamps covered by this specification are intended for use in making duct or tube connections for temperatures through 500°F. and in other applications requiring a flat metallic band with an adjustment feature. These clamps are not intended for use in pressurized lines carrying combustibles.

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

- (a) Title, date, and number of this specification.
- (b) MS part number of the clamp desired (see 1.2).
- (c) Quantity.
- (d) Selection of applicable levels of preservation and packaging, and packing (see 5.1 and 5.2).

**6.3 Qualification.** With respect to products requiring qualification, awards will be made only for such products as have, prior to the time set for opening of bids, been tested and approved for inclusion in the applicable Qualified Products List whether or not such products have actually been so listed by that date. The attention of the suppliers is called to this requirement, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government, tested for qualification in order that they may be eligible to be awarded contracts or orders for the

**MIL-C-8783A**

products covered by this specification. The activity responsible for the Qualified Products List is the Bureau of Aeronautics, Navy Department, Washington 25, D. C.; however, information pertaining to qualification of products covered by this specification may be obtained from the Commanding Officer, U. S. Naval Air Material Center, Philadelphia 12, Pennsylvania. Copies of all such correspondence should be forwarded to the Bureau of Aeronautics (AE-633), Navy Department, Washington 25, D. C., and to the Commander, Wright Air Development Center, Wright-Patterson Air Force Base, Ohio.

**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.

**Custodians:**

Army—Ordnance Corps  
Navy—Bureau of Aeronautics  
Air Force

**Preparing activity:**

Navy—Bureau of Aeronautics