

INCH-POUND

MIL-P-23460E

20 November 1991

~~SUPERSEDING~~

MIL-P-23460D

11 April 1984

MILITARY SPECIFICATION

PIN, QUICK-RELEASE, SELF-RETAINING,
POSITIVE-LOCKING

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

1. SCOPE

1.1 Scope. This specification covers positive locking, single and double acting quick-release pins for use on aircraft (see 6.1).

1.2 Classification. Quick-release pins shall be of the following types and styles, as specified (see 6.2):

- Type I - Single acting pins: A push on the release button releases the locking mechanism.
- Type II - Double acting pins: A push or pull on the release button or handle releases the locking mechanism (see 6.5).
- Style 1 - Button handle
- Style 2 - "T" handle
- Style 3 - "L" handle
- Style 4 - Ring handle

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this specification 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.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding Officer, Naval Air Engineering Center, SESD, Code 5311, 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

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

FSC 534

MIL-P-23460E

SPECIFICATIONS

FEDERAL

QQ-A-200/8 Aluminum Alloy 6061, Bar, Rod, Shapes, Tube and Wire, Extruded.

QQ-A-225/3 Aluminum Alloy Bar, Rod and Wire; Rolled, Drawn or Cold Finished, 2011.

QQ-A-225/5 Aluminum Alloy 2017, Bar, Rod and Wire; Rolled, Drawn or Cold Finished.

QQ-A-225/6 Aluminum Alloy 2024, Bar, Rod and Wire; Rolled, Drawn or Cold Finished.

QQ-A-225/8 Aluminum Alloy 6061, Bar, Rod, Wire and Special Shapes; Rolled, Drawn or Cold Finished.

QQ-P-35 Passivation Treatments for Corrosion-Resisting Steel.

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

QQ-A-591 Aluminum Alloy Die Castings.

PPP-H-1581 Hardware (Fasteners and Related Items), Packaging of.

MILITARY

MIL-B-1083 Balls, Bearing, Ferrous and Non-Ferrous (for Use in Bearings, Valves and Bearing Applications), General Specification for.

MIL-C-5541 Chemical Conversion Coatings on Aluminum and Aluminum Alloys.

MIL-T-6735 Tubing, Chrome-Molybdenum, 4135 Steel, Seamless, Aircraft Quality.

MIL-T-6736 Tubing, Chrome-Molybdenum, 4130 Steel, Seamless and Welded, Aircraft Quality.

MIL-S-6758 Steel, Chrome-Molybdenum (4130) Bars and Reforging Stock (Aircraft Quality).

MIL-H-6875 Heat Treatment of Steel, Process for.

MIL-B-007883(AS) Brazing of Steels, Copper, Copper Alloys, Nickel Alloys, Aluminum and Aluminum Alloys.

MIL-A-8625 Anodic Coatings, for Aluminum and Aluminum Alloys.

MIL-G-23827 Grease, Aircraft and Instrument, Gear and Actuator Screw, Nato Code Number G-354, Metric.

MIL-P-23460E

SPECIFICATIONS (continued)

MILITARY (continued)

MIL-T-31000 Technical Data Packages, General Specification for.

STANDARDS

FEDERAL

FED-STD-151 Metals: Test Methods.

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.

MIL-STD-810 Environmental Test Methods and Engineering Guidelines.

MIL-STD-1312 Fasteners, Test Methods.

MIL-STD-2219 Fusion Welding for Aerospace Applications.

(Unless otherwise indicated, copies of federal and military specifications, standards and handbooks are available from the Standardization Document Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Non-government publications. The following documents form a part of document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI B 46.1 Surface Texture (Surface Roughness, Waviness and Lay).

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

AEROSPACE MATERIAL SPECIFICATIONS (AMS)

AMS 5520 Steel Sheet, Strip and Plate, Corrosion and Moderate Heat Resistant - 15Cr-7.1 Ni-2.5 Mo-1.1 Al Solution Heat Treated, Precipitation Hardenable.

AMS 5630 Steel Bars and Forgings, Corrosion Resistant 17Cr-0.52 Mo (0.95-1.20C).

MIL-P-23460E

AEROSPACE MATERIAL SPECIFICATIONS (AMS) (continued)

| | |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| AMS 5643 | Steel Bars, Forgings, Tubing and Rings, Corrosion Resistant 16Cr-4.0Ni-0.30(Cb+Ta)-4.0 Cu Solution Heat Treated. |
| AMS 5659 | Steel Bars, Forgings, Rings and Extrusions, Corrosion Resistant 15Cr-4.5Ni-0.30(Cb+Ta)-3.5 Cu Consumable Electrode Melted, Solution Heat Treated. |
| AMS 5678 | Steel Wire, Corrosion Resistant 17Cr-7.1Ni-1.1 Al Precipitation-Hardenable, Spring Temper. |
| AMS 5880 | Steel Bars and Forgings, Corrosion Resistant 17Cr-0.52 Mo (0.95-1.20C) (SAE 51440C) Bearing Quality. |
| AMS 6530 | Steel Tubing, Seamless 0.50Cr-0.55Ni-0.20Mo (0.28-0.33C) (SAE 8630). |

(Application for copies should be addressed to the Society of Automotive Engineers (SAE), 400 Commonwealth Drive, Warrendale, PA 15096.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

| | |
|------------|------------------------------------------------------------------------------------|
| ASTM A 228 | Standard Specification for Steel Wire, Music Spring Quality. |
| ASTM A 313 | Chromium-Nickel Stainless and Heat-Resisting Steel Spring Wire, Specification for. |

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

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for associated detail specifications, specification sheets or MS standards), 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 Military standards. The individual item requirements shall be as specified herein and in accordance with the applicable military standards. In the event of any conflict between the requirements of this specification and the standards, the latter shall govern.

3.2 Qualification. The plans furnished under this specification shall be products which are authorized by the qualifying activity for listing on the applicable Qualified Products List (QPL) at the time set for opening of bids (see 4.3 and 6.3).

MIL-P-23460E

3.2.1 Retention of qualification. To maintain status on a Qualified Products List (QPL), certification shall be submitted to indicate continued compliance with the requirements of this specification (see 4.3.1).

3.3 Materials.

3.3.1 Identification. The manufacturer shall conduct identification tests of the materials used to fabricate the quick-release pins (see 4.6.13). The test results shall be made available upon request of the contracting activity or as directed by the contracting officer.

3.3.2 Alloy steel. Shanks and spindles of Type I and Type II alloy steel pins shall be fabricated from materials conforming to AMS 6530 (UNS G86300), MIL-S-6758 (UNS G41300), MIL-T-6735 (UNS G41350) or MIL-T-6736 (UNS G41300).

3.3.3 Corrosion-resistant steel.

3.3.3.1 Shanks and spindles. Shanks and spindles of Type I and Type II pins shall be fabricated from corrosion-resistant steel conforming to AMS 5643 (17-4PH), AMS 5659 (15-5PH) or AMS 5520 (PH15-7Mo).

3.3.3.1.1 Welded tubing. Welded corrosion-resistant steel tubing may be used provided the welding material is of the same chemical composition and hardness as the tubing. The tubing shall be drawn and heat treated after welding (see 4.6.12.1).

3.3.3.2 Attaching links, rings or ring handles. All attaching links, rings or ring handles shall be fabricated from music wire (UNS G10860) per ASTM A228, Cres 302 (UNS S30200) per ASTM A313 or Cres 17-7PH (UNS S17700) with spring temper per AMS 5678.

3.3.3.3 Locking elements. All locking elements shall be 440C (UNS S44004) corrosion-resistant steel conforming to AMS 5630/5880. Locking elements that are ball bearings shall conform to MIL-B-1083.

3.3.4 Aluminum. Aluminum handles shall be made of aluminum alloy conforming to QQ-A-591, QQ-A-200/8 (UNS A96061), QQ-A-225/3 (UNS A92011), QQ-A-225/5 (UNS A92017), QQ-A-225/6 (UNS A92024) or QQ-A-225/8 (UNS A96061).

3.3.5 Component parts. Materials for other component parts shall be specified on the applicable military standard.

3.4 Protective finish. Pins shall be plated, coated or treated in accordance with 3.4.1, 3.4.2 or 3.4.3, as applicable.

3.4.1 Cadmium plating. Alloy steel parts shall be cadmium plated in accordance with QQ-P-416, Type II, Class 2. For embrittlement relief, alloy steel parts shall be baked at $190^{\circ}\text{C} \pm 14^{\circ}\text{C}$ ($375^{\circ}\text{F} \pm 25^{\circ}\text{F}$) for not less than four hours and within four hours after plating.

MIL-P-23460E

3.4.2 Passivation. Corrosion-resistant steel parts shall be passivated in accordance with QQ-P-35 except for those parts that are silver-brazed in accordance with 3.5.4.

3.4.3 Anodizing. Aluminum alloy parts shall be anodized in accordance with MIL-A-8625, Type I or II, Class 2 or given a chemical film in accordance with MIL-C-5541, Class 1A. Aluminum alloy handles shall be black. Button color is optional.

3.4.4 Heat treatment. Corrosion-resistant steel and alloy steel parts shall be heat treated in accordance with MIL-H-6875 to develop mechanical properties specified herein and in accordance with the applicable military standards.

3.5 Design and construction. The design and construction of the quick-release pins shall be as specified herein and in accordance with the applicable military standards.

3.5.1 Attaching link, ring or hook. Pins may be furnished with attaching links, rings or hooks. Links are to be attached to the handle or head as shown on applicable standards. The links shall not be joined to or be a part of the release mechanism. Links shall not interfere with or hinder installation of the pin and shall move freely in the hole. Links on Type II, double acting pins shall be free to move about the periphery of the pin head.

3.5.2 Shank straightness. Pin shank straightness shall be in accordance with Table I.

TABLE I. Shank straightness.

| Shank diameter (inch) | Maximum deviation-pin shank from surface plate (inch per inch grip length) |
|--------------------------|----------------------------------------------------------------------------------|
| .1875 | 0.0040 |
| .2500, .3125 | 0.0030 |
| .3750, .4375 | 0.0025 |
| .5000 and up | 0.0020 |

3.5.3 Head and button rotational tolerance (double-acting pins). There shall be no rotational play greater than 15 degrees between the head and button of the pin.

3.5.4 Brazing or welding. Brazing of components, when required, shall be in accordance with MIL-B-007883(AS). Welding may be used in lieu of brazing. Welding shall be in accordance with MIL-STD-2219.

3.5.5 Surface texture. Surface texture shall be in accordance with ANSI/ASME B46.1, and as specified in 3.5.5.1 and 3.5.5.2.

3.5.5.1 Head surface texture. Heads shall have a surface roughness of not greater than 125 micro-inches.

MIL-P-23460E

3.5.5.2 Shank surface texture. Shanks shall have a surface roughness of not greater than 32 micro-inches.

3.5.6 Locking device. Pins shall be of such design and construction as to be self-locking.

3.5.6.1 Locking device types.

- a. Type I, single acting - The locking device of single acting pins shall release only by an axial push applied to the actuating button.
- b. Type II, double acting - The locking device of double acting pins shall release only when the spindle has been moved to a release position by an axial push or pull on the actuating button.

3.5.6.2 Lubrication. Grease conforming to MIL-G-23827 may be used in the locking device of the pin.

3.5.7 Release mechanism. The release mechanism shall automatically remain in the locked position (see 4.6.1).

3.5.7.1 Release mechanism actuating force. The actuating force required to release the locking device shall be within the range specified for the applicable pin size as shown in Table II.

3.5.7.2 Locking element. When the pin release button is depressed to a release position, the pin shall be capable of being pulled out from the bushing (see Figure 5) with a force that is twice the maximum release mechanism actuating force in Table II (see 4.6.1.1).

3.5.8 Attaching link, ring, handle, flag or flag attachment strength. The pin attaching link, ring, handle, flag or flag attachment shall show no evidence of failure when subjected to the tensile strength test (see 4.6.2 and Figure 3). Deformation of the link, ring or flag attachment shall not constitute failure.

3.5.9 Element retention. Elements used as a locking device shall be retained in the shank when subjected to the minimum push-out values specified in Table II (see 4.6.8).

3.5.10 Operability. The release mechanism shall be operable while the pin is shear loaded to the following percentages of the minimum shear strengths specified in Table II (see 4.6.4).

- a. .1875 shank diameter - 35%
- b. .2500 through .7500 shank diameters - 50%
- c. .8750 and 1" shank diameters - 40%

3.5.11 Pin shank shear strength. Pins shall conform to the minimum double shear strength values specified in Table II (see 4.6.5).

MIL-P-23460E

3.5.12 Locking element tensile strength. The pins shall conform to the minimum tensile strength values specified in Table II (see 4.6.6).

3.5.13 Handle tensile strength. The pin handles shall be subjected to tensile loading per Table II (see 4.6.7 and Figure 4). The handles shall show no evidence of failure or distortion when subjected to this test. This requirement is not applicable to ring handle pins.

TABLE II. Performance characteristics.

| Nominal diameter (inch) | Double Shear strength (lb-min) | | Locking element tensile strength (lb-min) | Release mechanism actuating force (lb) | | Locking element push-out force (lb-min) | Handle Tensile Strength (lb-min) |
|-------------------------|--------------------------------|---------|-------------------------------------------|----------------------------------------|-----|-----------------------------------------|----------------------------------|
| | Steel | Cres | | Min | Max | | |
| .1875 | 4,600 | 5,150 | 200 | 1 | 5 | 10 | 500 |
| .2500 | 8,200 | 9,200 | 230 | 1 | 5 | 15 | 500 |
| .3125 | 12,800 | 14,400 | 510 | 2 | 7 | 15 | 500 |
| .3750 | 18,400 | 20,600 | 575 | 2 | 7 | 15 | 500 |
| .4375 | 25,000 | 28,000 | 710 | 3 | 10 | 30 | 500 |
| .5000 | 32,800 | 36,800 | 1,160 | 3 | 10 | 30 | 500 |
| .5625 | 41,200 | 46,000 | 1,420 | 3 | 10 | 30 | 500 |
| .6250 | 51,200 | 57,500 | 2,070 | 3 | 10 | 30 | 500 |
| .7500 | 73,600 | 82,500 | 2,950 | 4 | 13 | 30 | 500 |
| .8750 | 100,000 | 112,500 | 3,900 | 4 | 13 | 30 | 500 |
| 1.0000 | 131,000 | 147,000 | 5,480 | 7 | 25 | 30 | 500 |

3.5.14 Endurance. Pins shall function satisfactorily when tested in accordance with 4.6.3.

3.5.15 Temperature limits. Pins shall function satisfactorily and be hand operable at temperatures from -65°F to +200°F.

3.5.16 Corrosion. The pins shall be subjected to the corrosion test (see 4.6.10). Upon completion of the test, the pins shall meet the release actuating force values in Table II.

3.5.17 Sand and dust. The pins shall be subjected to the sand and dust test (see 4.6.11). Upon completion of the test, the pins shall meet the release actuating force values in Table II.

3.5.18 Hardness. Alloy steel pins shall have a Rockwell hardness in the range of C36 to C40 (see 4.6.12). Corrosion-resistant steel pins shall be heat treated per MIL-H-6875, CH-900 condition for PH15-7Mo and H900 condition for 17-4PH and 15-5PH, Rockwell C40 minimum.

3.6 Interchangeability. All parts having the same manufacturer's part number shall be functionally and dimensionally interchangeable. The drawing number requirements of MIL-T-31000 shall govern changes in the manufacturer's part number.

3.7 Identification of product. Pins shall be marked in accordance with MIL-STD-130 on the handle of the head.

3.8 Workmanship. Pins shall be free of pits, seams, flash, nicks, burrs, and scratches.

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. Qualification inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.3 Qualification inspection. Qualification inspection shall consist of all the examinations (see 4.5) and tests (see 4.6) listed in Table III.

TABLE III. Qualification inspections.

| Examination or test | Requirement paragraph | Test paragraph | Number of samples to be inspected |
|-----------------------------------------|-----------------------|----------------|-----------------------------------|
| Identification (chemical analysis) | 3.3.1 | 4.6.13 | - |
| Shank straightness | 3.5.2 | 4.5.2 | 3 |
| Release mechanism | 3.5.7 | 4.6.1 | 3 |
| Attaching link or ring tensile strength | 3.5.8 | 4.6.2 | 3 |
| Endurance | 3.5.14 | 4.6.3 | 3 |
| Operability | 3.5.10 | 4.6.4 | 3 |
| Pin shear strength | 3.5.11 | 4.6.5 | 3 |
| Locking element tensile strength | 3.5.12 | 4.6.6 | 2 |
| Handle tensile strength | 3.5.13 | 4.6.7 | 2 |
| Element retention | 3.5.9 | 4.6.8 | 3 |
| Temperature | 3.5.15 | 4.6.9 | 2 |
| Corrosion | 3.5.16 | 4.6.10 | 3 |
| Sand and dust | 3.5.17 | 4.6.11 | 2 |
| Hardness | 3.5.18 | 4.6.12 | 2 |

MIL-P-23460E

4.3.1 Retention of qualification. Certification shall be requested by NAVAIRDEVCEEN (Naval Air Development Center), Code 6013, Warminster, PA 18974, from each manufacturer. NAVAIRDEVCEEN will forward certification to NAVAIR-ENGCEEN (Naval Air Engineering Center) who is acting as agent for NAVAIRSYSCOM (Naval Air Systems Command) AIR-53033. Certification shall be at the time of the two year review and shall be signed by a responsible official of management, attesting that the listed product(s) is still available from the listed plant; can be produced under the same conditions as originally qualified (i.e., same process, materials, construction, design, manufacturer's part number, or designation); and meets the requirements of the current issue of the specification. Failure to provide the certification will be cause for removal from the QPL. After completion of the certification review, the QPL shall be reprinted to show the date of validation. (DD Form 1718, Certification of Qualified Products, shall be used for obtaining certification.)

4.3.2 Sampling. Samples submitted for qualification shall consist of five (5) pins of the type, style, diameter and material for which qualification is desired. Grip lengths of the samples shall not be less than four times their diameter.

4.4 Quality conformance inspection. Quality conformance inspections are mandatory and shall be as specified in Table IV. Order of inspections is not necessarily as listed.

TABLE IV. Quality conformance inspections.

| Examination and test | Requirement paragraph | Test paragraph |
|-----------------------------------------|-----------------------|----------------|
| Identification (chemical analysis) | 3.3.1 | 4.6.13 |
| Visual examination | - | 4.5.1 |
| Shank straightness | 3.5.2 | 4.5.2 |
| Release mechanism | 3.5.7 | 4.6.1 |
| Attaching link or ring tensile strength | 3.5.8 | 4.6.2 |
| Pin shear strength | 3.5.11 | 4.6.5 |
| Handle tensile strength | 3.5.13 | 4.6.7 |
| Element retention | 3.5.9 | 4.6.8 |
| Operability | 3.5.10 | 4.6.4 |
| Locking element tensile strength | 3.5.12 | 4.6.6 |
| Hardness | 3.5.18 | 4.6.12 |

4.4.1 Inspection lot. An inspection lot shall consist of pins of the same type, style, material lot and diameter produced under the same manufacturing conditions and submitted for inspection at the same time.

4.4.2 Sampling.

4.4.2.1 Sampling for quality conformance inspections. A random sample of pins shall be selected in accordance with MIL-STD-105, special inspection

level S-3, Acceptable Quality Level (AQL) of 1.5 percent defective except for pin shank shear test (see 4.6.5). For visual examination, pins shall be selected in accordance with MIL-STD-105, general inspection level I, AQL of 2.5 percent defective.

4.4.3 Resubmitted inspection lots. Resubmitted inspection lots shall be in accordance with MIL-STD-105. A resubmitted inspection lot shall be inspected 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.

4.5 Examinations.

4.5.1 Visual Examination. Pins shall be examined to verify compliance with the requirements of this specification and the applicable military standard.

4.5.1.1 Superficial scratches. Superficial scratches to the chromate coating due to fabrication techniques shall not be cause for rejection provided the cuts do not penetrate the cadmium plating. Superficial scratches apply to cadmium plated, chromate coated alloy steel pins in the locking element area and the head-to-shank junction.

4.5.2 Shank straightness. Shank straightness shall be measured using a 0.5000-inch wide feeler gage at the point of greatest deviation. This deviation shall be found by rolling the pin shank on a surface with the locking balls retracted. Shank straightness may be checked prior to pin assembly.

4.6 Tests.

4.6.1 Release mechanism. Pins shall be mounted in a fixture conforming to Figure 1. The release mechanism actuating force values shall be measured for conformance to Table II.

4.6.1.1 Locking element. Pins shall be mounted in a fixture conforming to Figure 5. When the pin release button is depressed to a release position, the pin shall be capable of being pulled from the bushing (see Figure 5).

4.6.2 Attaching link, ring, handle or flag. Pins shall be tested in accordance with Figure 3. A force of 100 pounds shall be applied between the link or ring on the handle and through the pin shank. If a flag is attached, the 100 pound load shall be applied at the flag and through the pin shank. The link, ring, handle or flag shall show no evidence of failure. Deformation of the link or ring shall not constitute failure.

4.6.3 Endurance. Pins shall be mounted in a fixture conforming to Figure 1. The release mechanism shall be subjected to 5000 cycles of operation. The actuating force required to release the locking device shall be measured for conformance to Table II.

4.6.4 Operability. Pins shall be tested in accordance with MIL-STD-1312-13. The shear loads specified in Table II shall be applied to the sample pins. The actuating force for the release mechanism shall be

MIL-P-23460E

measured for conformance to Table II. Note that hole size "D" for nominal size .1875 shall be the same as for nominal size 10 in Test 13.

4.6.5 Pin shank shear strength. Pins shall be tested in accordance with MIL-STD-1312-13. For lot (order/batch) sizes of 150 pieces or less, the shank shear test sample size will be three. Accept lot on zero failures, reject on one. For over 150 pieces, MIL-STD-105 applies (see 4.4.2.1). Note that hole size "D" for nominal size .1875 shall be the same for nominal size 10 in Test 13. The loads specified in Table II shall be applied to the sample pins.

4.6.6 Locking element tensile strength. Pins shall be tested in accordance with MIL-STD-1312-8. The loads of Table II shall be applied to the sample pins. For quality conformance tests, this test need not be carried to destruction. The elements shall be seated against a bushing with a hardness of not less than Rockwell C63, as shown in Figure 2.

4.6.7 Handle tensile strength. The handle tensile strength test shall be in accordance with MIL-STD-1312-8. The handles shall be assembled with bushings in accordance with Figure 4.

4.6.8 Locking element retention. The spindle and all but one locking element shall be removed from the test sample. The sample shall then be placed on a V-shaped anvil, with the one locking element in the staked hole placed downward in a manner not permitting contact with any portion of the anvil. A mandrel connected to a direct-reading load indicator shall be inserted through an empty locking element staked hole. The load specified in Table II shall be applied against the locking element in the staked hole. The locking element shall be retained in the pin as specified in 3.5.9 when subjected to the loads in Table II.

4.6.9 Temperature. Pins shall be held at a temperature of at least -65°F for one hour, and at a temperature of at least +200°F for one hour. The samples shall be tested for conformance to the actuating force values in Table II.

4.6.10 Corrosion. Pins shall be subjected to the salt spray test of MIL-STD-1312-1. Upon completion of the test, the pins shall be tested for conformance to the release mechanism force values of Table II.

4.6.11 Sand and dust. Pins shall be subjected to the sand and dust test of MIL-STD-810, Method 510.1. Upon completion of the test, the pins shall be tested for conformance to the release mechanism force values of Table II.

4.6.12 Hardness. Pins shall be tested in accordance with MIL-STD-1312-6 for conformance to the hardness requirements on the applicable military standard.

4.6.12.1 Welded tubing. For welded tubing, the hardness reading shall be taken at not less than eight places around the circumference of the shank. The hardness reading shall vary by not more than three points on the Rockwell "C" scale.

MIL-P-23460E

4.6.13 Chemical analysis. Chemical analysis shall be performed in accordance with FED-STD-151, Method 111.2 for material identification in accordance with the applicable military standard.

4.6.14 Inspection of packaging. The sampling and inspection of the preservation, packing and container marking shall be in accordance with PPP-H-1581.

5. PACKAGING

5.1 Pins shall be preserved, packaged, packed and marked for shipment in accordance with PPP-H-1581. Preservation and packing shall be Level A or C, as specified in the contract or purchase order (see 6.2).

5.2 Packing shall be Level A, B or C, as specified in the contract or purchase order (see 6.2).

5.3 Marking of shipments. In addition to any special requirements of the contract or purchase order, shipments shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The pins are intended for use on aircraft to ensure that the landing gear cannot be retracted while the aircraft is on the ground. The pins are also intended for use in applications requiring quick assembly and disassembly.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number and date of this specification.
- b. Type and style required (see 1.2).
- c. MS part number.
- d. Level of packaging required (see 5.1).
- e. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for such products which are, at the time set for opening of bids, qualified for inclusion on the applicable Qualified Products List whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, 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 purchase orders for the products covered by this specification. The activity responsible for the Qualified Products List is the Naval Air Systems Command, Department of the Navy, Washington, DC 20361 and information pertaining to qualification of products covered by this specification may be obtained from the Naval Air Development Center (NAVAIR-DEVCEN), Code 6013, Warminster, PA 18974.

6.4 Subject term (keyword) listing.

Pin
Quick release
Warning streamer

6.5 Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:

Navy - AS
Air Force - 99
Army - AV

Preparing activity:

Navy - AS
(Project No. 5340-1916)

Review Interest:

DLA - IS

MIL-P-23460E

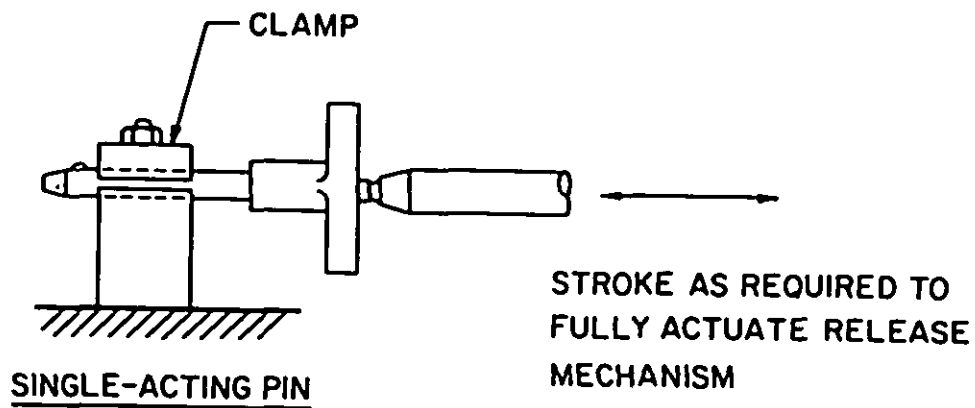
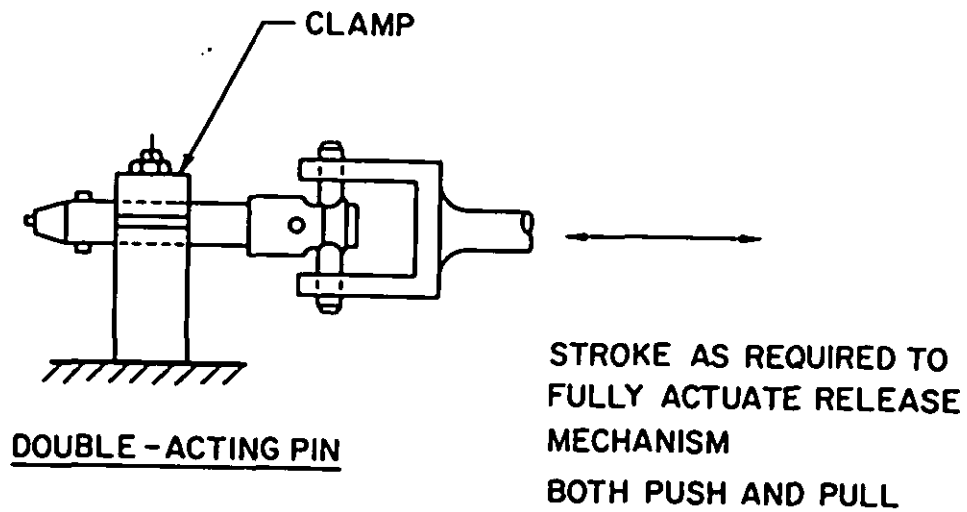
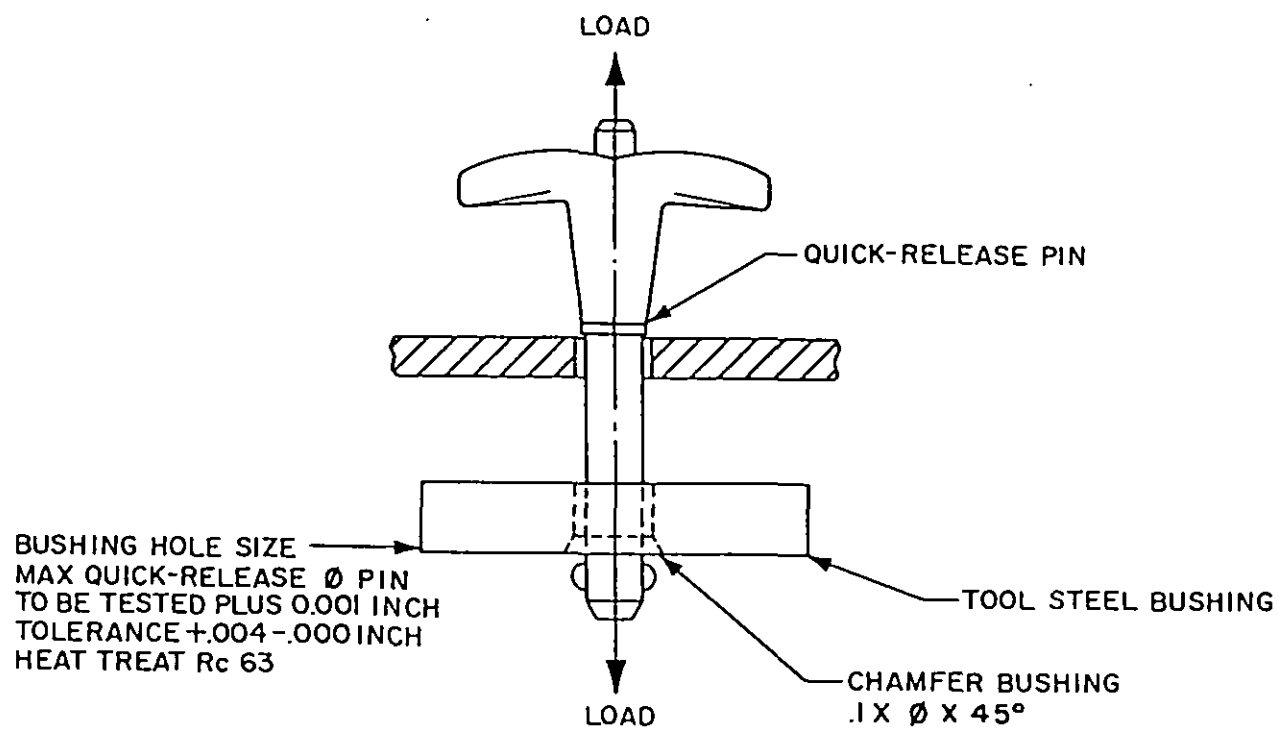


FIGURE 1. Release fixture.

MIL-P-23460E

FIGURE 2. Test fixture for locking element tensile strength test.

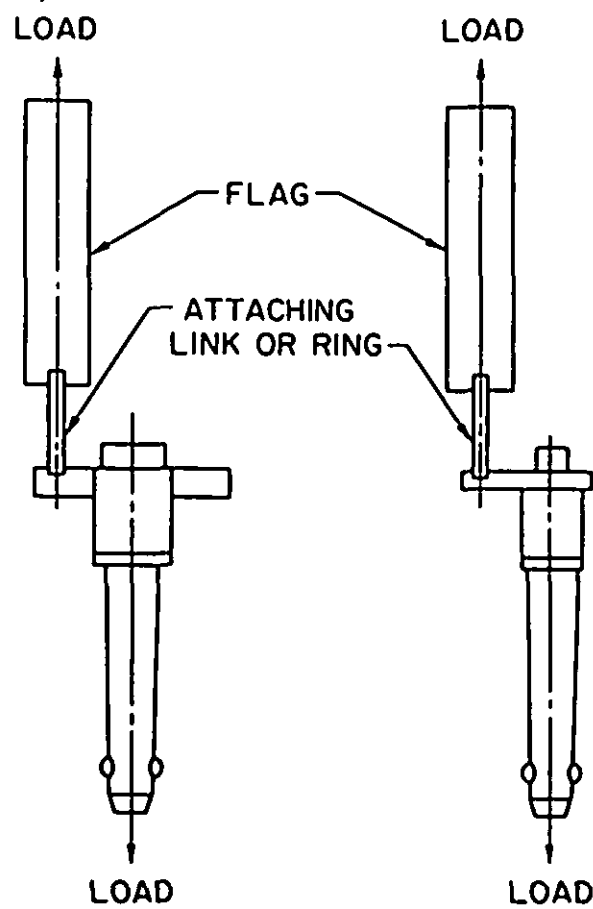


FIGURE 3. Attaching link or ring tensile strength test.

MIL-P-23460E

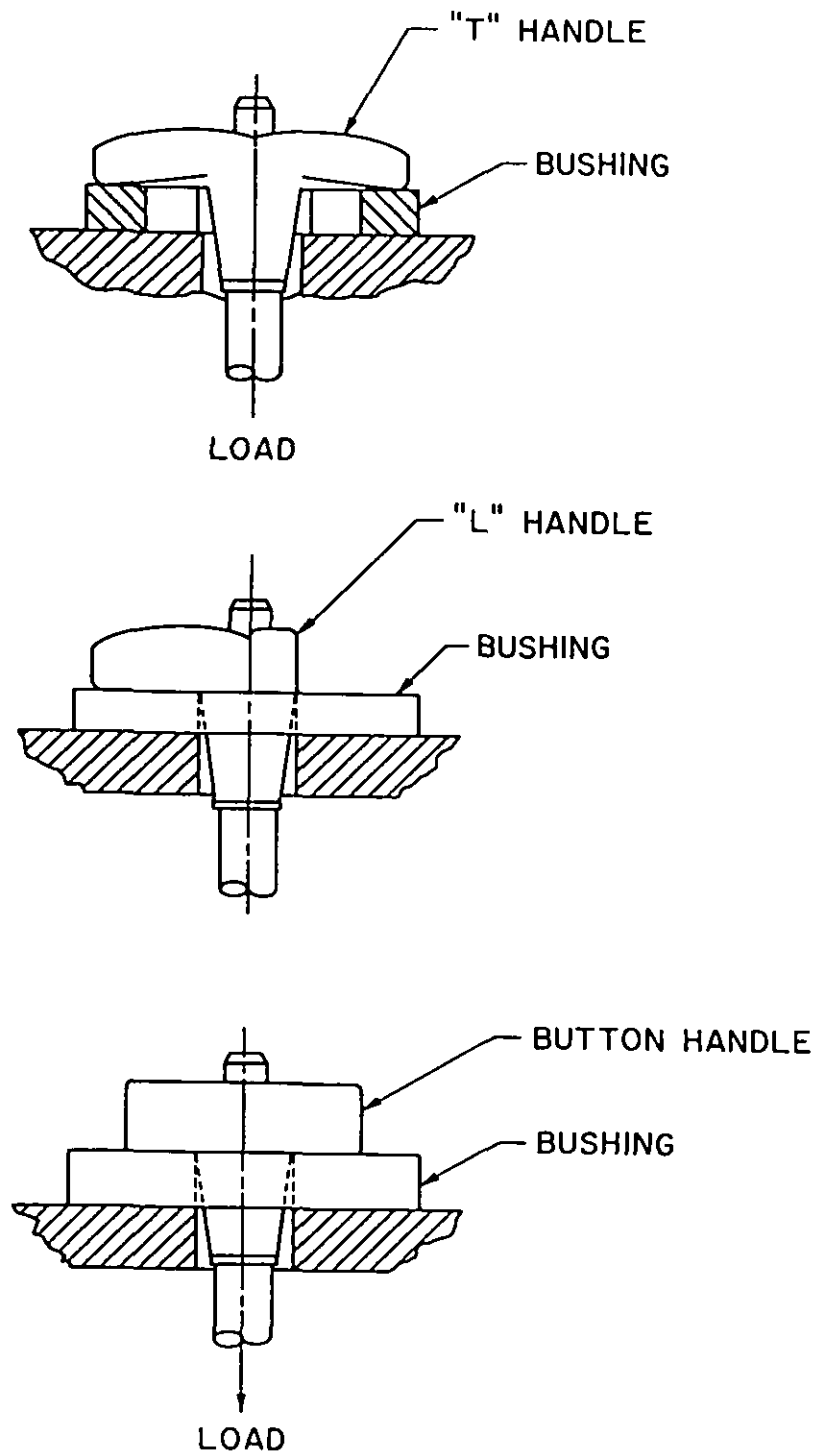


FIGURE 4. Test fixtures for handle tensile strength test.

MIL-P-23460E

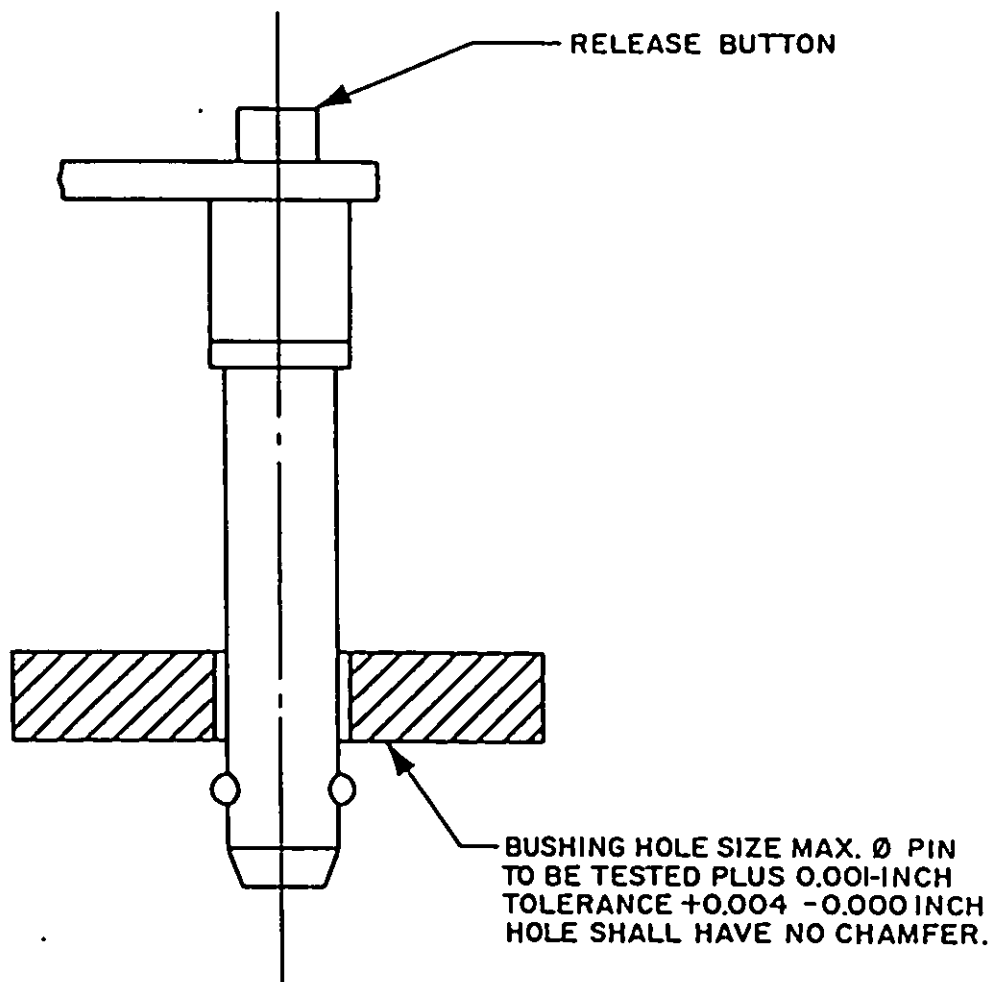


FIGURE 5. Locking element fixture.



STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. 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.

I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER

MIL-P-23460E

2. DOCUMENT DATE (YYMMDD)

(91 11 20)

3. DOCUMENT TITLE

PIN, QUICK-RELEASE, SELF-RETAINING, POSITIVE-LOCKING

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE (Include Area Code)

(1) Commercial

(2) AUTOVON
(if applicable)

7. DATE SUBMITTED
(YYMMDD)

8. PREPARING ACTIVITY

NAME

b. TELEPHONE (Include Area Code)

(1) Commercial

(908) 323-2326

(2) AUTOVON

624-2326

c. ADDRESS (Include Zip Code)

Commanding Officer
Naval Air Engineering Center
SESD (Code 5311)
Lakehurst, NJ 08733-5100

IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:
Defense Quality and Standardization Office
5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466
Telephone (703) 756-2340 AUTOVON 289-2340