

MIL-P-45952
5 March 1973

MILITARY SPECIFICATION

PIN, QUICK-RELEASE, DETENT GENERAL SPECIFICATION FOR

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

1. SCOPE

1.1 Scope. This specification covers the requirements for detent, quick-release pins.

1.2 Classification. Quick-release pins shall be of the style and sizes specified on the specification sheet.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

Federal

- | | |
|------------|--|
| QQ-P-35 | - Passivation Treatments for Austenitic, Ferritic and Martensitic Corrosion-Resisting Steel. |
| QQ-P-416 | - Plating, Cadmium (Electrodeposited). |
| QQ-S-637 | - Steel Bar, Carbon, Cold Finished (Standard Quality, Free Machining). |
| QQ-S-763 | - Steel Bars, Wire, Shapes and Forgings, Corrosion-Resisting. |
| QQ-S-764 | - Steel Bar, Corrosion-Resisting, Free Machining. |
| QQ-W-423 | - Wire, Steel, Corrosion-Resisting. |
| QQ-W-470 | - Wire, Steel, Carbon, Spring, Music. |
| PPP-H-1581 | - Hardware (Fasteners and Related Items), Packaging and Packing for Shipment and Storage of. |

Military

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

FSC 5340

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- MIL-H-6875 - Heat Treatment of Steels (Aircraft Practice, Process For)
 MIL-P-45952/1 - Pin, Quick - Release, Detent
 MIL-C-81562 - Coating, Cadmium or Zinc (Mechanically Deposited)

STANDARDS

Military

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
 MIL-STD-129 - Marking for Shipment and Storage.
 MIL-STD-1312 - Fasteners; Test Methods.

(Copies of specifications, standards, drawings and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitations for bid or request for proposal shall apply.

American National Standards Institute (ANSI) Standard:

ANSI B46.1 - Surface Texture

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

3. REQUIREMENTS

3.1 Specification sheet. The individual item requirements shall be as specified herein and in accordance with the specification sheet.

3.2 Material. Pins shall be made from the materials in 3.2.1 or 3.2.2, as specified in the specification sheet.

3.2.1 Alloy steel.

3.2.1.1 Head and shank. When using one-piece construction, the head and shank shall be 4130 alloy steel in accordance with MIL-S-6758. The shank shall be heat treated in accordance with MIL-H-6875 to meet the mechanical properties specified in 3.3. When using two-piece construction, the shank shall be 4130 alloy steel as specified above and the head shall be carbon steel in accordance with QQ-S-637.

3.2.1.2 Balls. The balls shall be 440C corrosion-resisting steel in accordance with QQ-S-763.

3.2.1.3 Spring and ring. The spring and ring shall be carbon steel music wire in accordance with QQ-W-470.

3.2.2 Corrosion-resisting steel.

3.2.2.1 Head and shank. The head and shank shall be corrosion-resisting steel, 300 Series, in accordance with QQ-S-763 or QQ-S-764.

3.2.2.2 Balls. The balls shall be 440C corrosion-resisting steel in accordance with QQ-S-763.

3.2.2.3 Spring and ring. The spring and ring shall be corrosion-resisting steel wire, 300 Series, in accordance with QQ-W-423.

3.3 Mechanical properties.

3.3.1 Tensile strength. Alloy steel shanks shall be heat treated to 160,000-180,000 PSI tensile strength.

3.3.2 Double-shear strength. Pins shall be capable of withstanding, without failure, the double-shear strengths specified in the specification sheet.

3.4 Protective finish.

3.4.1 Cadmium. Alloy and carbon steel parts shall be cadmium plated in accordance with QQ-P-416, Type II, Class 2 or cadmium coated in accordance with MIL-C-81562, Type II, Class 2.

3.4.2 Passivation. Corrosion-resisting steel parts shall be passivated in accordance with QQ-P-35.

3.5 Design and construction. The design and construction of the pins shall be as specified herein and in accordance with the specification sheet.

3.5.1 Shank straightness. Pin shank straightness shall be as specified in Table I.

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TABLE I
SHANK STRAIGHTNESS

SHANK DIAMETER (INCH)	MAXIMUM DEVIATION (INCH PER INCH GRIP LENGTH)
1/4	.0030
3/8	.0025
1/2 and up	.0020

3.5.2 Surface roughness. Pins shall have a maximum surface roughness (arithmetical average), after application of protective finish, of 125 microinches. Values shall be determined in accordance with ANSI B46.1.

3.5.3 Insertion and removal force. Insertion and removal forces for these pins shall fall within the limits specified in the specification sheet when inserted and removed 15 times.

3.5.4 Ring. The ring shall be located within a hole through the head and shall be able to rotate through the hole. The ring shall not break or deform when subjected to the maximum removal force specified in the specification sheet.

3.6 Workmanship. Pins shall be free from pits, seams, cracks, burrs, scratches and other surface contamination. Superficial scratches to the chromate coating in the staked ball area and the head-shank juncture due to fabrication techniques shall be allowed.

3.7 Material certificate. The contractor shall furnish the Government with a mill certificate covering the chemical requirements of the material being used to make the pins.

3.8 Marking. The pin head shall be marked with the manufacturer's identification. Markings may be raised or depressed.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Inspection lot. A lot shall consist of completed pins which are of the same part number, produced by the same manufacturer under essentially the same conditions, and submitted for acceptance at one time.

4.3 Sampling for lot inspection.

4.3.1 Sampling for examination. A random sample of pins shall be taken from each lot in accordance with MIL-STD-105, Inspection Level I. The Acceptable Quality Level (AQL) shall be as specified in Table II.

4.3.2 Sampling for test of double-shear strength and insertion and removal force. A random sample of pins shall be taken from each lot in accordance with MIL-STD-105, Inspection Level S-2. The AQL shall be 1.5 percent defective.

4.3.3 Sampling for protective finish. Sampling for test of protective finish shall be in accordance with the applicable specification of 3.4.

4.3.4 Sampling for packaging and packing. Sampling for examination and test of packaging, packing and marking shall be in accordance with PPP-H-1581.

4.4 Examination. Each pin taken as specified in 4.3.1 shall be examined to verify conformance with this specification. Examination shall be conducted in accordance with Table II. Any pin containing a defect shall be rejected and if the number of defective pins in any individual category exceeds the acceptance number for that category, the lot represented by the sample shall be rejected.

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TABLE II
Classification of Defects

<u>Categories</u>	<u>Defects</u>	<u>Inspection Method</u>
Critical	None defined	
Major	AQL = 1.0 percent defective	
101	Material, not as specified (3.2)	Visual
102	Grip length, not as specified (3.5)	*SIE
103	Shank diameter, not as specified (3.5)	SIE
104	Shank straightness, not as specified (3.5.1)	SIE
Minor	AQL = 4.0 percent defective	
201	Protective finish, missing or incomplete (3.4)	Visual
202	Other dimensions, not as specified (3.5)	SIE
203	Surface roughness, not as specified (3.5.2)	SIE
204	Workmanship (3.6)	Visual
205	Marking (3.8)	Visual

*SIE = Standard Inspection Equipment

4.5 Tests.

4.5.1 Double-shear. Samples taken as specified in 4.3.2 shall be subjected to a double-shear test to determine conformance with 3.3.2. The test shall be conducted in accordance with Test 13 of MIL-STD-1312.

4.5.2 Insertion and removal force. Samples taken as specified in 4.3.2 shall be subjected to an insertion and removal force test to determine conformance with 3.5.3. Pins shall be inserted and removed 15 times using the correct size holes specified in the specification sheet. Maximum and minimum forces shall be within the limits specified. The ring shall not break or deform (see 3.5.4).

4.5.3 Protective finish. Tests of protective finishes shall be in accordance with the applicable specification of 3.4.

4.5.4 Packaging and packing. Examination and test of packaging, packing and marking shall be in accordance with PPP-H-1581.

5. PREPARATION FOR DELIVERY

5.1 Packaging. Packaging shall be level A or C, as specified (see 6.2), in accordance with PPP-H-1581.

5.2 Packing. Packing shall be level A, B or C, as specified (see 6.2), in accordance with PPP-H-1581.

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

6. NOTES

6.1 Intended use. Detent quick-release pins are intended for use for fastening where quick assembly and disassembly are required. These pins can be inserted and removed by hand. They should be used for shear applications only.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number and date of this specification.
- (b) Title, number and date of the specification sheet.
- (c) Applicable part number.
- (d) Selection of applicable levels of packaging and packing (5.1 and 5.2).

Custodians:

Army - WC
Navy - OS
Air Force - 11

Preparing Activity:

Army - WC

Project No. 5340-0951

Reviewer Activities:

Army - AT, AV, GL, MU
Navy - None
Air Force - 82
DSA - IS

User Activities

Army - ME
Navy - MC, SH
Air Force - None

SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No 22-R255

INSTRUCTIONS This sheet is to be filled out by personnel either Government or contractor involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.

SPECIFICATION

ORGANIZATION

CITY AND STATE

CONTRACT NUMBER

MATERIAL PROCURED UNDER A

 DIRECT GOVERNMENT CONTRACT SUBCONTRACT

1 HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A GIVE PARAGRAPH NUMBER AND WORDING

B RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2 COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3 IS THE SPECIFICATION RESTRICTIVE?

YES NO (If "yes" in what way?)

4 REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers attach to form and place both in an envelope addressed to preparing activity.)

SUBMITTED BY (Printed or typed name and activity - Optional)

DATE

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