AERONAUTICAL
MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

AMS 7207C

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SPRING PINS, TUBULAR
Corrosion and Moderate Heat Resistant

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. TYPE: Tubular shaped pins having a full-length longitudinal slot to permit flexure when inserted in a hole.

3. APPLICATION: Primarily to provide a pin with sufficient flexure to remain tight against the inner surface of a hole into which it has been inserted, after adjusting itself to the hole tolerances, and requiring corrosion resistance and oxidation resistance up to 700 F (370 C).

4. MATERIAL: Unless otherwise specified, shall be steel strip in accordance with the latest issue of AMS 5506.

5. TECHNICAL REQUIREMENTS:

5.1 Shear Strength: Shall be not lower than the value specified below when tested in holes of the respective size shown.

Nominal Pin Diameter Inch	Hole Diameter Inch	Double Shear Strength lb, min
0.062	0.064 - 0.065	425
0.078	0.080 - 0.081	650
0.094	0.096 - 0.097	1,000
0.125	0.128 - 0.129	2,100
0.156	0.159 - 0.160	3,000
0.188	0.191 - 0.192	4,400
0.219	0.223 - 0.224	5,700
0.250	0.255 - 0.256	7,700
0.312	0.317 - 0.318	11,500
0.375	0.381 - 0.382	17,600
0.438	0.444 - 0.445	20,000
0.500	0.509 - 0.510	25,800

5.1.1 For intermediate sizes, the minimum hole diameter and minimum double shear strength may be determined by interpolation in the above table; the maximum hole diameter shall be 0.001 in. greater than the minimum.

5.1.2 Procedure: The shear plane shall be at least 1 pin diameter away from each end of the pin. The pin slot shall be located approximately 90 deg to the line of application of force. Pins too short to test in double shear shall be tested by placing two pins in single shear simultaneously. The clearance between loading member and supporting member shall be not greater than 0.005 inch. The pin supports and bushing for applying load shall each have hardness not lower than Rockwell C 58 or equivalent.

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5.2 Hardness: Shall be Rockwell 15-N 83 - 87 or equivalent when determined on a prepared flat surface on the pin OD.

5.3 Structure: Pin shall have microstructure of tempered martensite produced by hardening and tempering.

5.4 Ductility: Pins shall withstand, without cracking, squeezing in a vise until the gap closes. Pins which have been tested for shear strength shall show a ductile shear with no longitudinal cracks longer than 0.250 in. or 1/3 the total length of the pin, whichever is less.

5.5 Insertion: Pins shall be capable of being inserted in the minimum hole size shown on the drawing without the sides of the gap touching. The hole in the ring gage used for this test shall have a basic diameter equal to the minimum hole size shown on the drawing and a tolerance of ± 0.0003 inch.

5.6 Finish: Unless otherwise specified, finished parts shall be cleaned and passivated.

5.6.1 Pins shall show not more than a slight haze of copper adhering to the surface after being subjected to the following test:

5.6.1.1 Scrub sample pins with soap and warm water, rinse in hot water, dip in 95% ethyl alcohol, and dry. Immerse the cleaned samples in a solution containing 4 g cupric sulfate, 10 g sulfuric acid (sp gr 1.84), and 90 ml distilled water for 6 min. at 65 F ± 2 (18.3 C ± 1.1). Remove the samples and wash with a cloth saturated with clean water.

6. QUALITY: Pins shall be clean, sound, smooth, and free from foreign materials and from internal and external imperfections detrimental to their performance.

7. TOLERANCES:

7.1 Minimum Average Diameter: Shall be as shown on the drawing and shall be determined by averaging 3 diameters measured at the locations shown on the drawing. These diameters shall be measured at the center of the length of the pin if the pin is 1 in. long or less, and shall be measured at least 1/2 in. from the end on pins more than 1 in. long. Minimum diameter shall be as shown on the drawing and shall be determined by means of a "no-go" ring gage having a length of hole not greater than 0.125 inch.

7.2 Maximum Diameter: Shall be not greater than shown on the drawing and shall be determined by means of a "go" ring gage having a length of hole not greater than 0.125 inch.

7.3 Straightness: The straightness of the spring pin shall be determined by using a ring gage. The maximum ID of this gage shall be greater than the maximum diameter specified on the drawing for the pin by the amount of the straightness tolerance. The length of these gages shall depend on the straightness tolerance and shall be as follows:

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