

Test Strip, Holder and Gage for Shot Peening – SAE J442a

SAE Standard
Last revised November 1977

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TEST STRIP, HOLDER AND GAGE FOR SHOT PEENING—SAE J442a

SAE Standard

Report of Iron and Steel Technical Committee approved January 1952 and last revised by Fatigue Design and Evaluation Steering Committee November 1977.

This SAE Standard is supplemented by an SAE Recommended Practice, Procedures for Using Standard Shot Peening Test Strip, SAE J443.

Outline of Method of Control—The control of a peening machine operation is primarily a matter of the control of the properties of a blast of shot in its relation to the work being peened. The basis of measurement of these properties is as follows: If a flat piece of steel is clamped to a solid block and exposed to a blast of shot, it will be curved upon removal from the block. The curvature will be convex on the peened side. The extent of this curvature on a standard sample serves as a means of measurement of the blast. The degree of curvature depends upon the properties of the blast, the properties of the test strip, and the nature of exposure to the blast, as described below.

Properties of the blast are the velocity, size, shape, density, kind of material, and hardness of the shot.

The properties of exposure to the blast are the length of time, angle of impact, and shot flow rate.

The properties of the test strip depend upon the physical dimensions and mechanical properties of the strip.

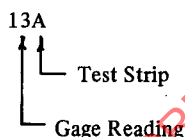
Based on these principles, the SAE has adopted the following standards: test strips, holding block, and gage. Specifications of these parts, the method of use, and a standard designation are presented herein.

Specifications of Intensity Measuring Equipment

Test Strips and Holding Fixtures—Standard test strips, N, A, and C are shown in Fig. 1, and test strip holder is shown in Fig. 2. The relationship between test strips N, A, and C are shown in Fig. 3. This curve shows N, A, and C strip readings for conditions of identical blast and exposure.

Gage—The gage for determining the curvature of the test strip is shown in Fig. 4. The curvature of the strip is determined by a measurement of the height of the combined longitudinal and transverse arcs across standard chords. This arc height is obtained by measuring the displacement of a central point on the nonpeened surface from the plane of four balls forming the corners of a particular rectangle. To use this gage, the test strip is located so that the indicator stem bears against the NONPEENED surface.

Designation Standard of Intensity Measurement—The standard designation of intensity measurement includes the gage reading and the test strip used. It may be explained by the following example:



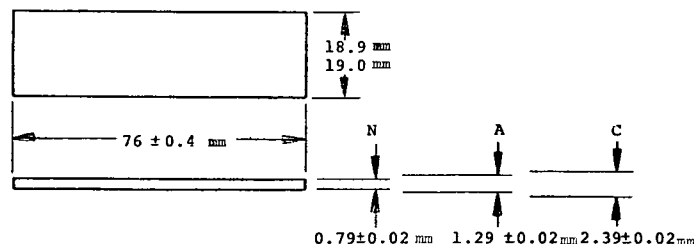
This example signifies that the gage reading of the peened test strip as measured on the gage is 13. This can be considered a dimensionless number relating to the number of graduations read on the dial indicator of the Almen gage.

Another example is:

6-8C

This signifies gage readings on the C size test strip measured with the same gage. This example is typical of the method used for specifying a gage reading tolerance for an application.

As shown in both of the examples, the gage reading is given first and is followed by the test strip designation.



ANALYSIS OF STOCK: STRIP N—SAE 1095 OR SAE 1070 COLD ROLLED SPRING STEEL.
STRIP A—SAE 1070 COLD ROLLED SPRING STEEL.
STRIP C—SAE 1070 COLD ROLLED SPRING STEEL.

EDGE NO. 1 (ON LONG EDGES).

FINISH:

STRIPS A AND C—BLUE TEMPER (OR BRIGHT).

STRIP N—PLAIN TEMPERED FINISH.

ALL STRIPS UNIFORMLY HARDENED. HEAT SET BETWEEN FLAT PLATES UNDER PRESSURE FOR A MIN OF 2 H AT 430°/15 °C HARDNESS 44–50 ROCKWELL C.

FLATNESS:

STRIP A—ARC HEIGHT OF .1 GRADUATION.

STRIP C—ARC HEIGHT OF .15 GRADUATIONS.

STRIP N—ARC HEIGHT OF .1 GRADUATION.

MEASURED ON THE STANDARD ALMEN GAGE

FIG. 1—TEST STRIP SPECIFICATIONS

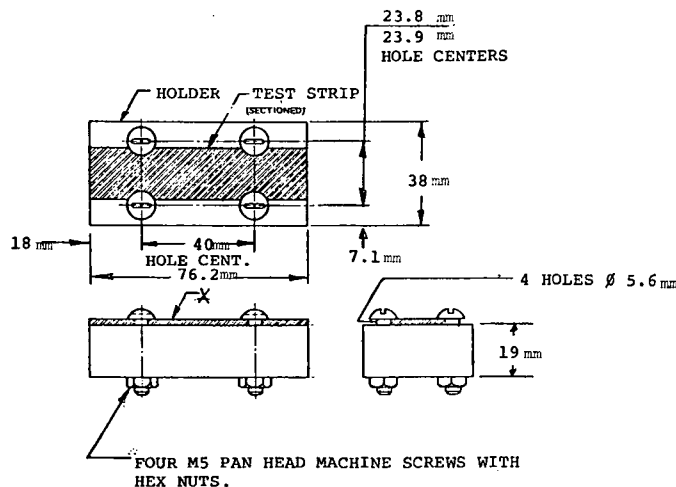


FIG. 2—ASSEMBLED TEST STRIP AND HOLDER

The ϕ symbol is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.