

# TSP-M Almen Gage

## Features

- Digital Accuracy
- Adjustable Magnetic Grip
- Inch/Metric Convertible
- SPC Output
- Convenient Battery Replacement
- Precision Check Block
- One-Year Warranty
- Compliant to SAE J442
- US Patent 8,091,406 B1

## Description

The TSP-M Almen gage has all of the features of the Electronics Inc. (EI) #2 Almen gage, but the strip platform has been designed to accommodate the smaller and lighter EI Almen mini-strip.



## The Almen Mini-Strip Shot Peening Intensity Verification Procedure

The Electronics Inc. Almen mini-strips verify shot peening intensity in areas that are inaccessible with a standard-size Almen strip and holder. The Almen mini-strip process is faster and more accurate than the shaded strip procedure. The correlation between full-size Almen strips and mini-strips must be established before the intensity in small and hard-to-reach areas can be determined. The procedure requires:

1. Standard (full-size) Almen strips, a standard Almen strip holder and a #2 Almen gage are needed to develop saturation curves at both the minimum and maximum intensity range.
2. The EI mini-strips and TSP-M Almen gage are needed to obtain the corresponding arc height.

The appropriate arc height curvature of the mini-strips must be established for the low- and high-intensity limits. This is done by establishing the T1 times for the upper and lower intensity limits and then exposing the mini-strips to the shot blast at these T1 times. The procedure is as follows:

Mount a standard Almen holder on a test fixture and attach a standard Almen strip. Peen the Almen strip and measure the arc height on the Almen gage. (Be sure to zero the gage first.) Repeat as necessary to obtain a saturation curve at the lower end of the specified intensity range (a minimum of four data points with increasing exposure times is required). EI recommends a curve solver program as the quickest and most accurate way to find the calculated intensity T1 from the arc height data.\*

When the proper machine adjustments have been made that yield the lower intensity, attach a mini-strip to a convenient holder (flat surface) using double-sided tape and expose it to the blast stream for the T1 time. Place the peened mini-strip onto the TSP-M gage. Position the strip securely on the flat supports and against the back stops. If it's not convenient to adjust the machine settings to provide the T1 exposure time, then use an exposure time near T1. This gives the correlation of the mini-strip to the full-size strip.

Repeat this procedure again to establish the T1 time for the upper intensity limit. When complete, a range of acceptable arc height readings for the mini-strips will have been achieved.

Now that the correlated parameters have been established for the lower and upper intensity range of the specification between the standard strip and the mini-strip, develop the process parameters to duplicate these readings on a test component or simulated test fixture. Attach the mini-strip to the test component or test fixture with double-sided tape. Produce and record process parameters that will give an arc height between the lower and higher correlated arc heights.

**Additional information on the Almen mini-strips is available on the back of this datasheet.**

\* The Peen Solver App is available at [www.peensolver.com](http://www.peensolver.com). Download Dr. Kirk's Curve Solver program at [www.shotpeener.com](http://www.shotpeener.com). Both programs are free of charge.

# Almen Mini-Strips

## "A" and "N" Strips

### Features

- Size: 1" x .125" (25.4 mm x 3.175 mm)
- SAE 1070 Spring Steel
- "A" Strip Thickness: .051" | 1.3 mm
- "N" Strip Thickness: .031" | .79 mm
- Compliant to SAE J442

### Description

The Electronics Inc. Almen mini-strip verifies shot peening intensity in areas that are inaccessible with a standard-size Almen strip and holder. The Almen mini-strip intensity verification process is faster and more accurate than the shaded strip procedure. (The mini-strip procedure is outlined on the back of this datasheet.)

The mini-strips are 1" x .125" (25.4 mm x 3.175 mm) and can be attached with double-sided tape directly on a test component or simulated fixture. There is no need to allow room for a standard Almen strip holder and no need to make a shaded strip. Their size makes them ideal for measuring intensity in small or hard-to-reach areas like dove-tail slots in jet engine disks, gear roots, and the internal bore of springs, without making a complicated test fixture.

The Almen mini-strip must be used with the EI TSP-M Almen gage.

**Additional information on the TSP-M is on the back of this datasheet.**



Product Number	Type-Grade	Thickness (in/mm)	Flatness/Prebow (in/mm)	Hardness
970030	A-M1	0.0520   1.32 0.0500   1.27	±0.001/±0.025	HRC 44-50
970032	N-M1	0.0320   .81 0.0300   .76	±0.001/±0.025	HRA 72.5-76