

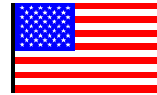


# Instructional Manual

## Model TSP-3 JR



U.S Patent Number 5,297,418



Also available from Electronics Inc.  
---- Premium grade Almen strips  
and Almen holders

Doc.: TSP-JR Instruction Manual

Rev.: C

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Electronics Incorporated  
56790 Magnetic Drive  
Mishawaka, Indiana 46545  
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1-574-256-5001 (Phone)  
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indentations. All peening specifications require measurement based upon the concave curvature (indicator tip touching the non-peened side of the Almen strip).

3.4 Confirm the accuracy of the measurement by removing and replacing the strip from the gage. If it does not repeat the reading then check the gage for shot sticking to the magnetic balls. If problems persist then repeat the zero procedure.

#### 4. Maintenance

4.1 No regular maintenance, other than cleaning with a dry cloth, is recommended. The Almen gage should be calibrated annually. If the gage shows any signs of obvious abuse or misuse then it should be returned to the Electronics Incorporated for service.

4.2 Inspect the gage head for any signs of wear or abuse. Inspect the balls for visual signs of wear (if any ball has a flat circle greater than 0.050 inch the gage is rejected and should be returned to Electronics Incorporated for repair. Verify ball plane flatness by placing a flat block onto the gage. There must be less than 0.002-inch gap maximum from any ball to the flat block.

**DO NOT APPLY ANY OIL OR OTHER LUBRICANTS TO THE INDICATOR.**

#### 5. Service

Should your TSP-3 JR Almen gage ever require service return it freight prepaid to:

Electronics Incorporated  
56790 Magnetic Drive  
Mishawaka, Indiana 46545

#### 6. Warranty

Your TSP-3 JR Almen gage is warranted to be free from defects and materials for a period of one (1) year from date of shipment from Electronics Incorporated. Any problems, other than customer abuse or normal wear will be corrected free of charge. Send the gage with freight pre-paid to:

Electronics Incorporated  
1428 W. 6th Street  
Mishawaka, In 46544 USA

Your repaired gage will be returned freight prepaid via United Parcel Service (UPS) unless specified otherwise (additional cost). Non-warranty work is chargeable and will be quoted in advance. Loaner gages are available in advance. Contact the factory for assistance.

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## 1. Description

The TSP-3 jr Almen Gage is a precision device used for measuring the deflection, or curvature, of a metal test coupon called an Almen strip. It is fitted with a high quality indicator with a low-force spindle spring to provide highly accurate and repeatable measurements.

Treated properly, this gage should give many years of trouble-free service. A special AZero-Block® is supplied with each gage for zero adjustment. The gage should be re-calibrated (both indicator performance and ball wear) annually or more frequently if conditions warrant.

For additional information see:

Use of Almen Gage	U.S. Patent 2,350,440
Construction of Gage	SAE J442
Use of Gage	SAE J443
Shot Peening Practice	SAE HS-84

## 2. Quick Start

2.1 Place AZero Block® onto gage.

2.2 If necessary, rotate the indicator bezel to zero the reading.



2.3 Select a new Almen strip and place it on the gage to check its flatness. Be sure to measure both sides of the strip to check its pre-bow (flatness) on the display. The larger number, regardless of positive or negative sign, is used as the flatness value.

Common flatness limits are listed below:

Mil-S-13165	0.0015@
SAE J 442	0.001@
SAE AMS 2432	0.0005@

2.4 Place the peened Almen strip onto the gage with the indicator tip touching the non-peened side of the strip.



Correct



Incorrect

2.5 Optional: Some procedures require that the pre-bow value be subtracted from the final value. This is called an A Compensated® reading. Make sure that the initial reading is (-) positive and that its value is subtracted from the final reading.

## 3. Using the TSP-3 JR Almen gage

3.1 Zero the indicator by placing the Zero block onto the measurement head.



3.2 Next, place the Almen strip onto a proper Almen holder (available from Electronics Inc). Be sure that any pre-bow measurements that are marked on the strip are on the side of the strip facing down, not on the side that will be blasted.



3.2 Expose the Almen strip to the blast stream, remove it from the holder and place

3.3 it onto the Almen gage. Be sure the non-peened side is placed next to the indicator tip and that the indicator reading is (-) or negative for a convex curvature reading.

A positive reading indicates that the strip is placed *upside-down*, on the gage. This occurs when the indicator tip is touching the peened side of the Almen strip. This should be avoided because of the inaccuracy caused by the tip touching the peening