

**INSPECTION PROBLEM**

Automotive sheet metal parts must be stamped to exact dimensions for a vehicle to assemble properly. A radius stamped into the part and the location of the radius relative the part's edge, called the flange, must be precise for fit-up and aesthetic reasons.

Small inside radii are almost impossible to measure with mechanical radius gages. An inspector cannot always see the fit of the template gage against the sheet metal because of the design of the part. Measuring the length of the flange is equally difficult since the inspector cannot repeatably find the exact point that marks where the radius ends, and the flange begins.



**REQUIREMENTS**

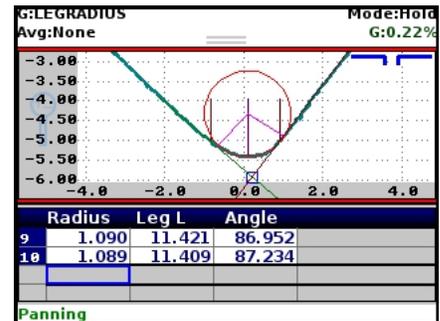
**Measurements** – Radii as small as 0.3 millimeters (mm) and as large as 5.0mm must be measured accurately and repeatably. The flange length must be measured from end point of the radius to the edge of the part, and the angle of the flange relative to the surface on the other side of the radius must also be measured.

**Instrument** – Thousands of stamped parts are received each day at the plants for use in the assembly of vehicles. Inspection is done on a sampling basis, but enough parts must be inspected to assure that there are no pervasive problems with the parts such as a worn die. Measurements must be made quickly, and the results must automatically indicate any out-of-spec conditions.

**LASERGAUGE® SOLUTION**

**LASERGAUGE® SYSTEM**

The TS800 sensor is uniquely designed to minimize potential reflection problems when measuring inside radii. Depending on the resolution required and the length of flanges that need to be measured, a sensor with either a 0.5" or 1.0" field-of-view is recommended. An LG5000 controller or a larger screen LG7000 controller allows the operator to view the profile of the radius while taking the measurement and ensure that the sensor is focused on the correct radius when the part has several contours.



**MEASUREMENTS**

Each measurement takes approximately two seconds to complete. SPC or tolerance limits can be specified and any measurements that are outside the spec range are shown in red. The data table can be saved as documentation of the measurements taken.

**APPLICATION DATASHEET**

**Radius**

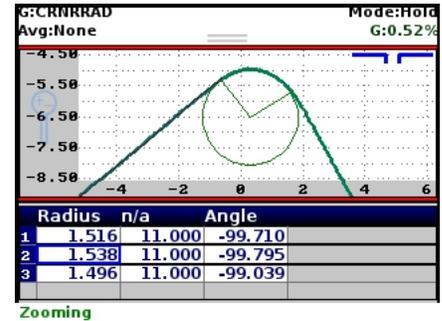
**ADVANTAGES REALIZED**

**Saves Time** – More parts can be inspected in less time than with any manual or mechanical gages.

**Saves Costs** – Problems are identified before the bad parts are used in the assembly. The measurements are accurate and repeatable.

**Documented Results** – Out-of-spec conditions can be documented by saving the data table. As further documentation, the profile of a bad part can be saved and sent to the appropriate parties for viewing.

**Convenient** – Stamped parts are staged throughout an assembly plant. The lightweight, battery powered LaserGauge® can be used by the operator in any area of the plant. Parts do not have to be transported to a central inspection room for the measurements to be made.



**RELATED APPLICATIONS**

**OUTSIDE RADIUS**

On stamped parts, assemblies and other components, an outside radius may also need to be inspected.

**LASERGAUGE® SYSTEM**

Depending on the range of radii being measured and the resolution required, a TS800 sensor with either a 0.5" or 1.0" FOV. The graphical LG5000 controller or larger screen LG7000 controller will provide visual feedback to the operator for positioning the sensor and provide a real-time profile of the radius. The controller can be set to automatically save the profile associated with every measurement taken.



**FEATURES**

The measurement algorithm returns the calculation of the radius and the angle between the two surfaces on either side of the radius. The surface profile, as seen on the controller display, can be captured and saved. The profile can be sent to a PC and plotted using any common spreadsheet application. Data files are also automatically saved on the controller and can be subsequently sent to a PC and archived for documentation or later analysis.