

■ Piston Ring Verification System: Laser Gaging Using Signature Analysis

**Highlights:**

- Identifies improper orientation (i.e. up-side down) of scraper and taper rings
- Identifies improperly manufacture scraper rings
- Identifies position of the bad ring within the stack
- Counts number of rings in each stack
- Tracks test results for each part type
- Prints summary report for each part type

This test stand uses advanced laser gaging technology along with sophisticated Signature Analysis techniques to test for correct orientation of individual rings within a stack of compression rings installed on a shipping magazine.

Signature data is analyzed 'on-the-fly' as the laser scans the stack for profile measurements. Enhanced Signature Analysis algorithms break the data stream into small sets of data, each set representing the profile of a single ring. Modern statistical trending techniques are then applied to each ring data set to determine the taper orientation of the ring surface. Notched rings, known as 'scraper' rings, are also tested for correct notch positioning.

Flexible menu driven software allows a single stand to test numerous different part types as selected by the user from a predefined complexity matrix. Batch order summary reports are printed after each order is complete including the number of good parts tested along with an operator identification number, insuring traceability of each order. Good parts are validated with a dab of paint after verification of compliance to test parameters.



Improper Orientation (Upside Down)

