



## Case Study – Piston Ring Orientation Check

### Customer Problem

A manufacturer of piston assemblies was relying on human visual inspection to orient stacks of piston rings. The inspector was required to identify a very slight taper that was machined onto one face of each piston ring and then load them onto horizontal racks for an automated piston assembly station.

If a ring was incorrectly oriented, the result could be compromised engine function and potential warranty issues. Since the machined taper was very slight, there was a high probability that the ring orientations could be mixed. If found during product quality testing, the effort to remove and reinstall rings turned into wasted labor hours and a disruption to the daily production.

### The Solution

Two eddy current test probes were installed (one above and one below the piston ring), in order to monitor both surfaces. (Feasibility testing demonstrated that a distinctive signal was generated by each face as they passed over the probes, forming the basis of the sort). The eddy current instrumentation was integrated into a product sorting/orientation station so as the rings were passed between the two test probes dynamically, they could be diverted to one of two stacks depending on the machined face position (up or down).

The [Zetec InSite HT](#) eddy current instrument can handle single or multiple sorting applications at once. The industrial I/O on the instrument makes it easy to interface with material handling stations.

For more information visit our website at [www.criterionndt.com](http://www.criterionndt.com) or call Criterion NDT at 253-929-8800.

Equipment: [Zetec InSite HT](#), Eddy Current Probes



Figure 1 - Piston Rings

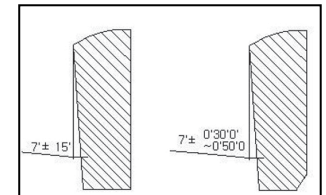


Figure 2 –Non-Tapered vs. Tapered Piston Ring



Figure 3—Zetec InSite HT

