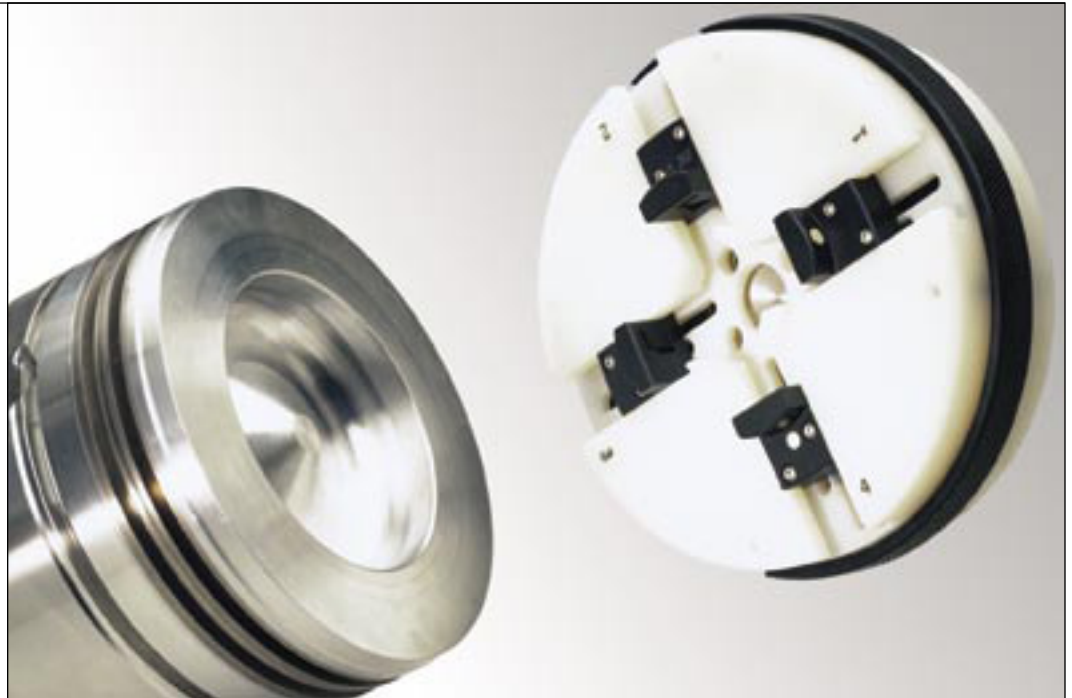




100% Inspection of Pistons

Assures Zero Defects in Critical Areas

- Fast, in-line production testing
- Timesaving, scrap-reduction process
- Lower per-part inspection costs
- Ensure minimum warranty costs
- Meet increased quality requirements
- Real-time process
- Inspect multiple test points simultaneously



Eddy current testing is the perfect solution in the production of critical manufactured components.

These remarkable, high signal-to-noise ratio Zetek eddy current systems, with developmental roots in the nuclear power industry, can now be used for piston and cylinder liner testing. Criterion NDT systems test automotive components to detect cracks, porosity, fissures or other surface and subsurface flaws.

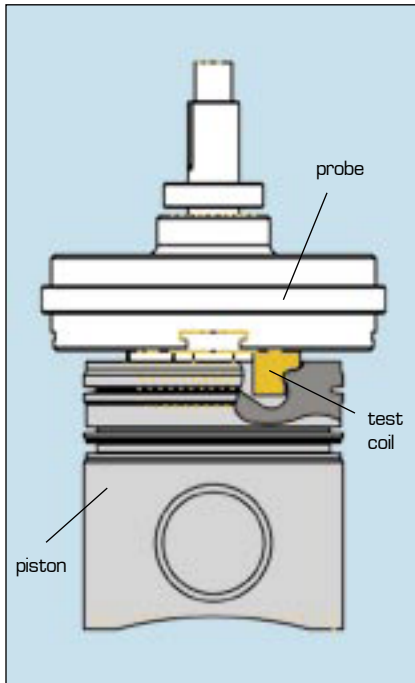
Until the development of eddy current testing for pistons and cylinder liners, such flaws were only detectable with time-consuming

X-ray, mag particle, liquid penetrant and ultrasound procedures or costly destructive testing.

Even rigorous sampling can miss statistically unpredictable or previously unencountered defects.

As engines become more complex and compression ratios increase, ensuring zero-defect piston quality is of increasing importance. Cast materials can develop structural problems that can shorten piston life.

Criterion NDT's Zetec Eddy Current Test Instrument, the "InSite," Coupled with Criterion NDT's Probes, Provide The Best, Most Sensitive Crack Testing Systems Available



Using multiple frequencies, the Zetec system can detect different flaws simultaneously.

"Hit or miss quality leads to increased warranty costs and production line slowdowns. This technology has given us an advantage in detecting surface and subsurface flaws. We found eddy current testing to be the ultimate test solution."

— Major piston plant manager

When an eddy current test system is in place, components can be tested in the production line without slowdowns. Whether it's discrimination of hardness, detection of cracking, porosity or casting flaws, a Criterion NDT test system solution helps assure your piston is defect free. Now, zero defects* are not just a goal but also an affordable reality.

Test Probe Capabilities. Each test probe is designed to find material and manufacturing flaws in critical areas. The Zetec InSite CT test unit uses multiple frequencies to simultaneously detect different types of flaws. For instance, frequencies of 300 – 400 kHz are used to detect surface defects during production. Lower frequencies, 100 kHz or less, are used to reveal subsurface flaws undetectable to the naked eye.

Early Warning Crack Detection. Our Zetec +Point® coils are highly sensitive and when precisely coated, can detect flaws in critical areas of the piston such as cracks or porosity in the crowns and skirts. What's more, multiple critical locations can be tested simultaneously. This means there is no waiting for sample tests, destructive cutting of parts or messing with dye penetrants. Moreover, a cracked part can be detected with eddy current testing early in the manufacturing process, before additional machining and grinding is performed, further driving down production costs. Simply put, Criterion offers you the best in-line crack testing available.

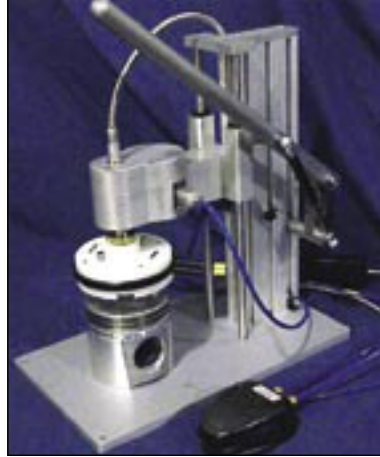
Advantages of +Point™ Coils. The key advantage of nuclear industry-proven Zetec +Point™ test coils is the reduced error rate from the increased signal-to-noise ratio. The Zetec system uses two coils in a specific configuration that are constantly comparing critical information reducing "noise" and yet increasing sensitivity to detectable defects in the pistons.

Complete Systems. Criterion Piston Inspection Systems range from highly versatile eddy current probes and economical stand-alone platforms, or integration within complete turnkey systems.

Our test systems provide I/O capability allowing the separation of “good vs. bad” parts as well as the activation of paint markers and sorters. So every defective unit is clearly labeled or sorted. In addition, our rugged and reliable eddy current test equipment can be mounted within environmental enclosures designed to operate in harsh factory environments.

Perfect Instruments for the Job. The powerful Zetec InSite is a state-of-the-art platform using the same electronics developed for the nuclear industry. The Zetec InSite can support multiple coils that allow a single, unified system to inspect a number of critical locations with one test instrument on one easy to view color display. Multiple independent frequency readings enable the Zetec InSite to maximize the difference between acceptable and rejected parts. Up to 25 test configurations for different parts can be stored by the user along with flexible alarm box parameters — meeting any test situation.

*At customer-identified test points.



A Criterion NDT test probe is designed to test for manufacturing flaws at both the piston crown (as shown) and piston skirt.



The Zetec InSite CT simultaneously shows several parameters on an easy-to-view color display.

Component Testing Solutions

Criterion NDT's Custom Approach Criterion NDT has an application-specific approach for your inspection needs. Starting with your material samples and requirements for flaw detection, Criterion NDT designs and builds innovative test solutions. The entire solution is engineered to meet your specifications, from the first feasibility study through design, prototyping and manufacturing. Thorough quality testing is completed before installation at your facility.

Free Feasibility Study Guarantees Results. With a free feasibility study, your real samples are carefully evaluated for detection and test reliability before you make any commitments. Our application specialists have extensive knowledge in eddy current testing and can determine if eddy current is the best solution for your test situation. A formal feasibility report and cost estimate is forwarded to you for your consideration. Budgetary quotations are also available.

Custom Designs Fit Your Process. Criterion NDT designs are customized to your application. Let us help you achieve 100% quality inspection. For more information about Criterion NDT or our products, visit: www.criterionndt.com

Criterion NDT's eddy current NDE solutions are the result of almost 40 years of market leading experience in safety critical industries.



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