

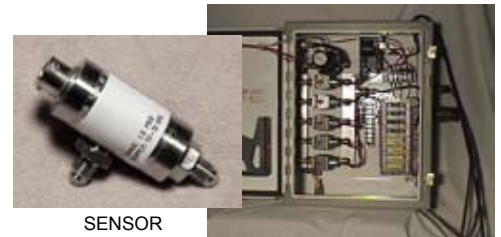
■ Brake Master Cylinder Leak Testing

Highlights:

- Master Cylinder “defects”
 - Gross leaks
 - Hair in cup seal
 - Metal debris on cup seal
 - Nicked o-ring
 - Rolled piston seal
 - Cut piston sea
 - Cut cup seal
 - Cut o-ring
- Detection techniques
 - Pressure decay
 - Differential pressure
 - Vacuum
- Advantages
 - Fill and decay analysis
 - Short cycle time
 - High sensitivity
- Mathematic “tools”
 - 3s “learned” curves
 - Derivative analysis
 - Slope
 - Envelope
 - Area under curve
 - Traceability (barcode)

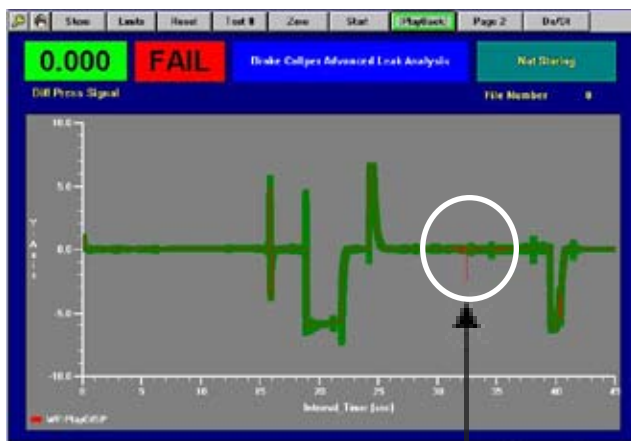
Brake master cylinders present a significant challenge for establishing a fast, accurate and stable production test environment. Historically, traditional leak systems have focused primarily on the decay portion of the signal waveform. Although this approach is accurate for most decay type defects, more subtle but significant defects are often missed and can and will become warranty or liability risks in the vehicle.

Sciometric® offers a superior approach for detecting both static (decay) and dynamic (fill) leak defects. In order to achieve high production rates, the fill cycle is accelerated to force fill the vessel as quickly as possible. This dynamic period will bring out certain defects, which are not observable in the subsequent static portion of the waveform. With the ability to 3s “learn” a normal curve shape, InspeXion®’s advanced mathematic application tools provide a clear and concise path for enhancing the “needle in the haystack” defects so they become more observable and easily detected with a simple PASS/FAIL limit. Traceability by serial number allows continuous corrective actions.



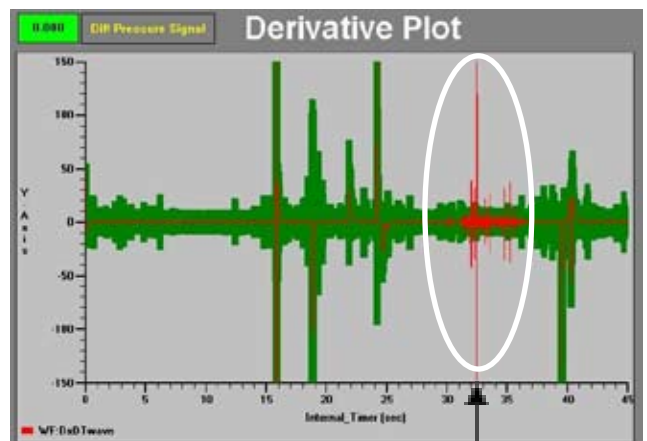
SENSOR

VALVE CONTROL BOX



InspeXion® Screen showing FAILED O-ring Insertion

NICKED O-RING



InspeXion® Screen showing Enhancement of Signature Waveform that details the FAILED O-ring Insertion

SIGNATURE MATH