

### Challenge

Finding the more subtle leak defects on brake master cylinders can be a challenge. When missed they can lead to warranty or liability risks in the vehicle. Traditional leak systems primarily focus on the decay portion of the signal waveform which is accurate for most decay type defects; however it doesn't catch the subtle and more significant defects, such as gross leaks, metal debris, cut cup seal, hair in cup seal, etc.

Engine manufactures required a solution for detecting both static (decay) and dynamic (fill) leak defects in order to manufacture the highest quality brake master cylinder.

### Solution

Sciometric's leak test system provides a solution for detecting both static (decay) and dynamic (fill) leak defects in order to manufacture the highest quality brake master cylinder. To achieve high production rates, the fill cycle is accelerated to force fill the vessel as quickly as possible. This period brings out certain defects, which are not observable in the subsequent static portion of the waveform. With the ability to learn a  $\pm 3$  Sigma envelope, Sciometric's advanced mathematics application tools provide a clear and concise path for enhancing the tiniest - "needle in a haystack" type defects so they become more observable and are easily identified with a simple PASS/FAIL limit.

All the data and waveforms are stored in a central database where a record of all leak test information is maintained. Only the Sciometric system enables storage of the data contained in the process waveforms. This information can be used to easily generate yield and trend reports with full drill down to the individual part level using simple Windows®-based tools. It can also be used for quick identification of the root cause of issues of leak defects.

### BRAKE MASTER CYLINDER LEAK TESTING KEY FEATURES

- Identifies and catches Mater Cylinder defects such as, gross leaks, nicked o-ring, cut cup seal, rolled piston seal, metal debris on cup seal and cut o-ring
- Short cycle time
- Complete traceability: data, including signatures, are automatically stored in a central database and cross-referenced by serial number(s)



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## Results

By implementing Sciometric's system manufacturers are now able to more accurately test the brake master cylinders for leaks with short cycle times, providing quality while optimizing throughput.

SCIOMETRIC POWERTRAIN SOLUTIONS

Request more information: [www.sciometric.com](http://www.sciometric.com)  
[inquiries@sciometric.com](mailto:inquiries@sciometric.com)  
1-877-931-9200

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