

Pressure Decay Leak Test

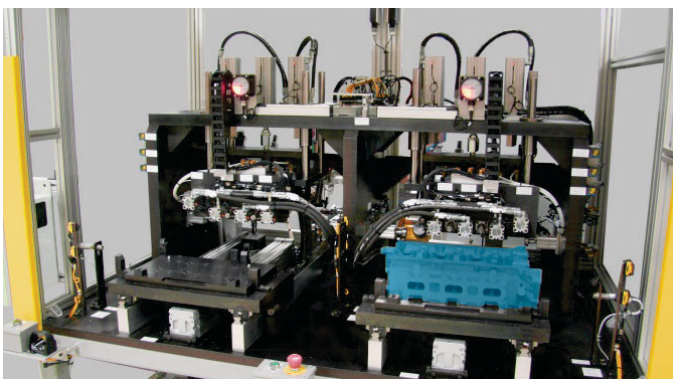
System Description

This machine is a semi-automatic dual station pressure decay system designed to independently or simultaneously leak test left and right engine cylinder heads. There are two tooling fixtures, one for left heads and right heads, and designed to test two different model parts.

An operator manually loads parts on a sliding tooling plate positioned at the unload position. The part is located on the fixture to provide orientation and accuracy for the test. Once loaded the operator initiates the cycle; the part is automatically moved to the test position, the part clamped and ports sealed, and the leak tests cycle without operator intervention. Sensors detect part presence and adjust the program to determine how the system cycles; test at left station, test at right station, or test at both stations. For safety, a light curtain is provided to prevent access to the machine once the cycle is started.

The Leak Test Cycle

Four pressure decay test are conducted on each part using the CTS Sentinel Blackbelt Pro test instrument. Test pressure is 20 psig with a leak rate of 12 scc/m. Machine operation is provided by a custom PLC interface. The 1st leak test checks the water jacket, the 2nd and 3rd tests run concurrently and test the oil passage and spark plug holes, and the 4th test leak tests the exhaust/intake ports. Parts passing all tests are impact marked on the machine. At the conclusion of the leak test the part clamps and seals retract and the part(s) are returned to the part load position for unloaded as shown below.



View of Part Fixture in the Load Station



Two station pressure decay leak test system designed to test left and right cylinder heads

Features and Benefits

- Dual station semi-automatic leak test system
 - Manual part load and unload
 - Part size ≈ 23" x 8" x 9"
- Automated pneumatic part clamping and port sealing
- Part impact marking system
- Safety light curtain
- Two Sentinel Blackbelt Pro instruments with full complement of high-performance features.
 - Independent four port multi-channel testing
 - Sequential and concurrent part testing
 - Leak, flow, pressure, and vacuum test capability,
 - On-board storage for 999 test programs with program linking capability
 - EtherNet/IP communications
- Leak rate specification:
 - 20 psig test pressure, 12 scc/m leak rate
- Production
 - Leak tests cycle: 68 sec (with tooling motion)
 - Manual part load/unload: 45 sec
 - Parts per hour: 30-34 pph

I64095