HELIUM LEAK TESTING STATION FOR AIR CONDITIONING COMPONENTS

This Test System, designed and built by VTI, leak tests heat exchanger coils using Helium to test to a leak rate equivalent to 0.25 ounce per year of R22 leaking from 250 psig into atmosphere. After a pressure decay test with Nitrogen at 80 psig to detect gross leaks, the sensitive leak test is conducted using the "inside/out" technique by pressurizing the coil with a mixture of 30% Helium and 70% Nitrogen while inside a vacuum chamber. The test is performed at 350 psig to simultaneously satisfy the burst test requirement. The Test System is equipped with VTI's Aero Vac mass spectrometer to detect any Helium leaking through any defect.

A rotating table is used to transfer coils from the vacuum chamber position to the load-unload position, which allows the machine to operate at a rate not strongly dependent upon the skill and speed of the operator. The Test System is capable of testing two coils simultaneously in the vacuum chamber for a throughput of 130 coils per hour. While two coils are in the test portion of the cycle, the two coils already tested are disconnected and unloaded, and the next two coils to be tested are connected to the pressurization lines in preparation for the table to rotate. The Test System is capable of "sorting" to determine which of the two coils is a leaker. With one coil in the vacuum chamber, the System can test 75 coils per hour. The system is PC-controlled and logs test results in a database format for statistical analysis. VTI also builds a Helium mass spectrometer-based tester for a Repair Station that uses bar coding to work in conjunction with this Test System.

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