



## “CHARGE-IN-CHAMBER” SYSTEM FOR LEAK TESTING A/C CONDENSING UNITS OR COILS



In this system for burst and leak testing of air-conditioner condensing units or coils, the connections of the evacuation and gas charging lines to the condensing unit are made within the vacuum test chamber using quick-connect fittings. The unit is first proof tested at a high pressure, usually 500 to 1000 psig, using dry air or nitrogen, which is then exhausted. The unit is then leak tested by evacuating the chamber and condensing unit, charging the unit with helium, and detecting any helium leaking from the unit into the chamber using a mass spectrometer. After a quick check at low pressure to detect and reject any part with a large leak that could otherwise slow production, the unit is pressurized with helium, typically to 150 psig, for the sensitive leak test.

This “smart” system controls the test cycle and makes the final “Pass/Fail” decision based on programmed specifications, thereby eliminating operator decisions. Also, at the end of each cycle, a “verification test” is performed by opening a Calibrated Leak with the specified flow of helium to assure a valid test result. If not verified, a “No Test” signal is given. A “Fail” or “No Test” signal requires the operator to isolate the part for repair and/or re-testing. Parts that “Pass” proceed on the production line.

The system shown is designed to test to a helium leak rate equivalent to 0.5 ounce/year of Refrigerant leakage in a two-minute cycle, although higher and lower production rates and leakage levels are typical of similar systems.