

General Specifications

LS20B Series Leak Standard

GS 90A00B01-01E-A

■ GENERAL

The Yokogawa manufactured leak standards are available in either chlorine based R12 refrigerant or the new environmentally safe fluorine based R134a as a standard product. These standards can be used to accurately calibrate existing leak detector products which require an external accurate leak source. In addition, they are a valuable instrument for verifying the accuracy of the new micro-processor based industrial leak detectors containing an internal leak standard for automatic self calibration.

Each model contains a laboratory grade glass capillary tube which is matched to the refrigerant composition and the pressure required to provide an accurate test leak rate. Custom made units can be made for other refrigerants including halons.

■ LS20B SERIES LEAK STANDARD

The LS-20B Series halogen leak standard contains a reservoir of liquid refrigerants which is valved into a ballast tank in gaseous form. The amount of leakage is dependent on the amount of pressure in the ballast tank. Pressure is indicated by a Bourdon gauge and is controlled by two valves.

This provides for a variable leak adjustment from zero to full scale. The unit is factory calibrated and shipped fully charged with the refrigerant choices which provides approximately twelve months of continuous use. When the charge is depleted, the unit can be recharged by the user or returned to the factory for charge and calibration.

NIST testing and certification is available at an additional cost for units containing R12, R22, and R134a.

Leak Rates

Std. cc/Sec	oz./year R12	oz./year R134a
3×10^{-5}	17×10^{-2} or (.17)	14×10^{-2} or (.14)
10×10^{-5}	5.6×10^{-1} or (.56)	4.7×10^{-1} or (.47)

Please contact the factory on leak rates available for other non-listed halogen based gases.

■ APPLICATION NOTES

Most refrigerants weigh more than air. When refrigerant flows out of the capillary port of the



LS20B, it may accumulate and “puddle” around the port and base which the unit is sitting. In still air, this accumulation can cause a higher gas concentration reading than the leak rate of the instrument. It can be particularly noticeable if you are conducting a moving leak detector probe test to determine detection sensitivity.

To minimize this effect, it is recommended that the LS20B be placed on the edge of the workbench or table, to permit the refrigerant to flow or drop out of the testing area.

Environment is also important for accurate measurement of the standard particularly at small leak rates. Gas generating materials or venting can load the atmosphere with gas that is circulated throughout your facility by convection, heating or A/C systems. Frequently, this makes the gas level in the air higher than the leak rate of the leak standard or system you are testing. This can cause false alarming of the detector. It is a critical issue if you are measuring low leak rates of fluorine like R134a or SF₆ and the air is heavily laden with chlorine.

It takes 120 parts fluorine to generate the detection sensor signal level of 1 part of chlorine. If you experience detection difficulty and false alarming at low leak levels, consider the environment in which you are conducting your tests.

For suggestions and ideas on managing your test environment, please contact the factory.

■ MOVING PROBE TEST

The LS20B is an ideal signal alarm generator for conducting leak detector moving probe tests to determine product sensitivity. Our tests have indicated that at a distance of .5 inches from the end of the leak standard capillary, gas concentration can be as low as 10% of the original leak rate.

When using leak detectors, there is no guarantee that the probe tip will pass directly on or over the leak. Using a product that will alarm at 10% of the leak size you looking for will give you a much higher confidence level in finding all leaks.

Probe movement speed is important. We recommend that you do not exceed two inches per second. When conducting moving probe tests using the LS20B, the external capillary cover can be carefully removed for accurate distance measurement from the capillary end to the probe tip. For more accurate results and repeatability of alarm, tests should be conducted in a "still" atmosphere.

Yokogawa Corporation of America feels that a .25 inch from the leak source alarm capability, combined with a probe speed no greater than two inches per second, is a very desirable capability form accurate detection of all leaks.

As a result, we have adopted this unique capability as a standard for all of our new an future Leak Detector products designed with equal alarm sensitivity for both Chlorine and Fluorine based refrigerants.

For information on new industrial and service products with dual chlorine and fluorine detection capability, please contact the factory.
