Leak Test Device, Type LTD

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Range of Application

In order to guarantee the performance of components and systems in nuclear facilities, laboratories etc. during operation Krantz manufacture a portable leak testing device.

The portable leak testing device type LTD is for testing of the permissible leakage air flow e.g. according to DIN 25 496 “HVAC components in nuclear facilities” or KTA 3601 “HVAC systems in nuclear power plants” for:

- The tight seat of filter elements
- The tight seat of damper blades
- The tightness of housings

in a measuring range from 0.01 to 1.5l/min up to a theoretical test pressure of 5,000 Pa. The measuring devices integrated in the housing will be calibrated before assembly.

Test procedure

The leakage air flow is determined following the constant pressure method, which means the housing or the test groove of the seal resp. is filled with air until the predetermined test pressure is reached. The feed in air flow which is necessary to keep the test pressure constant is equivalent to the leakage air flow.

Two measuring ranges are available:

- For small leakage air flow:
  0.01 – 0.15l/min (test range I)
- For higher leakage air flow:
  0.15 – 1.5l/min (test range II).

The feed in to reach the predetermined test pressure as well as holding the test pressure constant is done by means of a hand pump.

Enclosed to each portable seal testing device:

- Manual
- Certificates of calibration of the measuring devices
- Hand pump
- Connecting hose with 4mm inner diameter and coupling nipples on both sides.
- Fast acting coupling

Exemplary range of permissible leakage air flows of HVAC components

Components	Standard for definition of permissible leakage air flow	Outer tightness	Inner tightness
– Fan	DIN 25 496	$10 \frac{l}{h \cdot m^2}$ at 1 bar, 20 °C and $\Delta p = 2\,000$ Pa Reference value is the surface of the housing including shaft transition	–
– Dampers with special requirements concerning tightness	DIN 25 496	$10 \frac{l}{h \cdot m^2}$ at 1 bar, 20 °C and $\Delta p = 2\,000$ Pa Reference value is the surface of the housing including shaft transition	$10 \frac{l}{h \cdot m^2}$ at 1 bar, 20 °C and $\Delta p = 2\,000$ Pa Reference value is the air flow area
– Dampers terminating an air duct (shut-off dampers)	DIN 25 496	$10 \frac{l}{h \cdot m^2}$ at 1 bar, 20 °C and $\Delta p = 2\,000$ Pa Reference value is the surface of the housing including shaft transition	2 % of nominal air flow at $\Delta p = 2\,000$ Pa Reference value is the air flow area
– Non-return dampers – Outside air dampers	DIN 25 496	$10 \frac{l}{h \cdot m^2}$ at 1 bar, 20 °C and $\Delta p = 2\,000$ Pa unless otherwise stated in data sheet	2 % of nominal air flow at $\Delta p = 2\,000$ Pa Reference value is the air flow area
– Filter Housing for – HEPA-filters – Adsorption filters	DIN 25 496	Leakage rate $< 3 \cdot 10^{-5}$ of nominal air flow at $\Delta p = 2\,000$ Pa	–
– Filter seat for HEPA filter class H13	DIN 25 496	–	Leakage rate $< 3 \cdot 10^{-5}$ of nominal air flow (of the filter element)[1] at $\Delta p = 2\,000$ Pa
– Welded ducts – Compensators – Other housings – Doors in filter chambers	DIN 25 496	$10 \frac{l}{h \cdot m^2}$ at 1 bar, 20 °C and $\Delta p = 2\,000$ Pa	–

The real permissible leakage air flow is fixed in the requirements of the tested component.

[1] Only DIN 1946-4 defines that the nominal air flow of the filter element is involved.

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