

CALT 9

Leakage Tester



Description

The CALT 9 leakage tester has been designed and developed to measure leakage rates and give a detailed print-out of the test parameters and results. It is particularly suitable for measuring and calculating the leakage rate of double O-ring seals as fitted to packages for the transport of radioactive materials.

The CALT 9 is a portable instrument supplied in a robust case. The instrument is complete with all fittings including a reference volume to measure interspace volumes and a comprehensive instruction manual.

Operation

The CALT 9 is easy to operate. The internal computer displays a series of screen prompts which lead the operator through the leakage testing procedure in a manner that is easy to understand and follow.

All calculations are made by the computer. Full test details and results are printed out automatically at the end of the test (see next page).

The CALT 9 uses the pressure drop or pressurise method to give a quantitative result. The software automatically corrects for the change in dynamic viscosity of air which varies with temperature, and also converts the calculated leakage rate into Standardised Leakage Rate (SLR).

Variations

The instrument has been designed to be flexible to meet user requirements. Bespoke software and/or hardware can be supplied to meet customer-specific requirements.

Menu Options

The current version of the CALT software has five main options:

- **Leakage Test** - Pressure drop or Pressure Rise
- **Measure Volume** - The volume of the interspace must be known or measured before leakage testing can be carried out
- **Print-Out** - Print out the last test performed
 - Measure volume
 - Leakage test
 - Combined measure volume and leakage test
- **Gauge** - Pressure/temperature gauge with or without a print-out
- **Utilities:**
 - Password
 - Calibration
 - Calibrate temperature & Pressure sensors
 - Print-out calibration history
 - Select primary or secondary calibration
 - System set
 - Pressure rise or drop
 - Standard (ISO or ANSI)
 - Reference pressure
 - User name to appear on printout
 - Date
 - Set system clock and date

Features

- Portable and robust
- Quality Pressure Transducer
- Built-in printer
- User calibration
- Store calibration for spare transducers
- Calibration protected against power loss
- Flat front panel for easy contamination checking
- Temperature probe
- Built-in electric pressuring pump
- Comprehensive print-out
- Battery operated and portable
- External battery socket for charging during storage
- Supplied with 2cc reference volume

Dimensions and Weight

458 mm wide x 331 mm deep x 190 mm
11 kg

After sales service

A full after sales service is offered including:

- Calibration and complete instrument functional check over
- Spare parts/consumables either installed or supplied for user installation
- Training at Croft Associates' offices or on site
- Software upgrades and customer-specific changes
- Hardware modification
- Hot line support
- Instrument service

Typical Print-outs

Measure Volume

CALT 9 Serial No: 0001
 System Date: Mon 26 Feb 2007 10:18:24
 Calibration Set No: 1 (10 days old)
 Temp Sensor No: ISN190 (10 days old)

USER NAME
 CALT 9 - Version 1.00

*****MEASURE VOLUME*****

Reference Volume: 2cc
 Reference Volume No: CI001
 Test Reference No: CI95001
 Design/Serial Nos: 2863B/001
 Number of Readings: 1
 Comment: Lid

Pressure mbar		Volume	
Atmos	Start	Final	(cc)
996.15	2119.33	1954.81	11.89

Average Volume: 11.892 cc

Sig: _____ Date: _____
 (Tested by)

Sig: _____ Date: _____
 (Supervisor)

USER NAME
 CALT 9 - Version 1.00
 Pressure Drop
*****LEAKAGE TEST*****

Test Reference No: CI95001
 Design Serial Nos: 2863B/001
 Comment: Lid
 Interspace Volume: 11.892 cc
 Settling Time: 5 mins
 Test Duration: 10 mins
 Temperature: 25°C
 Temperature Ratio: 1.000
 μ ratio: 1.000
 Pass Rate: 3.0E-04 bar cc/sec
 Max Pressure Change: 48 mbar

*****RESULTS*****

Pressure mbar	Date/Time
Atmos: 1002.89	
Start: 2099.75	20 DEC 1994 09:33:48
Final: 2095.62	20 DEC 1994 09:43:49

Leakage Rate: 2.4E-05 bar cc/sec
*****PASS*****

Standard Conditions:
 Temperature: 25°C
 Upstream Pressure: 1000 mbar
 Down stream pressure: 0 mbar

Sig: _____ Date: _____
 (Tested by)

Sig: _____ Date: _____
 (Supervisor)

When a combined test for measuring volume and leakage is performed, the print-outs above are combined with a single header and the common items printed only once.

Pressure Drop Test

CALT 9 Serial No: 0001
 System Date: Mon 26 Feb 2007 10:18:24
 Calibration Set No: 1 (10 days old)
 Temp Sensor No: ISN190 (10 days old)

CALT 9 progression

The CALT 9 supersedes the CALT 8B with the introduction of a bespoke internal computer. The CALT 8B will continue to be supported for spares, maintenance, calibration, software and hardware upgrades.

Hardware

The CALT 9 hardware includes all the features of the CALT 8 with following new features:

- Interface autoswitch off
- Display sleep mode
- Li-ion battery pack
- External charger socket
- Comprehensive battery management LEDs
- Audible alarm
- A single battery to power the interface and printer and computer
- Low EM emissions and susceptibility
- Battery meter

Software

The software is based on the CALT 8B version 2.42 software which includes:

- Easy reboot
- Safe/protected calibration
- Multi-calibration (which allows a spare transducer to be used)
- Combined measure volume and leakage test if required
- Last test print out from main menu
- Automatic parameter testing

If you are a CALT 8 user you will be comfortable with the CALT 9, as the testing principles and the test procedure remain unchanged.

The CALT 9 builds on the experience of both the CALT 8 and CALT 5, incorporating features to meet users comments and generally to improve the instrument. Particularly noteworthy is the new Li-ion battery pack. This is robust and will take a lot of abuse with respect to overcharging, over discharging and being left completely discharged for months. The battery compartment is accessible by removing front panel cover.

Further Information

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