

## Helium leak test machine model HLT02

for leak test of fire extinguishers from 1 kg to 12 kg

in accordance with European standard EN3-7. ( 6% of the expanded gas per year )

### Excerpt of EN 3-7 - Chapter 8.2 Acceptance levels

Leakage from an extinguisher, or propellant cartridge, shall not exceed the following:

a) for stored pressure extinguishers a rate less than or equal to 6 % (v/v) of the expanded gas at 20 °C per year;

NOTE The volume of the expanded gas is the free volume of the gas at 20 °C;

### 8.3 Production leak tests

To test for conformity to 8.2a) and 8.2b), all extinguishers and propellant cartridges shall be tested. A rate of leakage greater than the limit specified in 8.2a) or 8.2b) shall result in the rejection of the extinguisher.

#### Technical Data:

**Power supply:** 400 V, 3 Ph, 50/60 Cy.

**Air supply:** 10 bar

**Weight:** approx. 350 kg

**Dimensions:** approx. 800 x 1600 x 1600 mm



Leak test of extinguisher for example by a 6 kg stored pressure extinguisher:

- Nitrogen volume = 3,666666 litre by 16 bar
  - Expanded Nitrogen volume = 58,66666 barlitre
  - Tolerated leak per year = 3,52 barlitre
  - Tolerated leak per second = 0,0000001116 barlitre = 1,12E-7 barl/sec = 1,12E-4 mbarl/sec
- by using of 10% Helium in the nitrogen the equipment will be able to measure this fine leak rate of 0,00001116 mbarl/sec = **1,12E-5 mbarl/sec = ccm/sec** in one minute.



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### Execution examples - different variants



Operating in centre

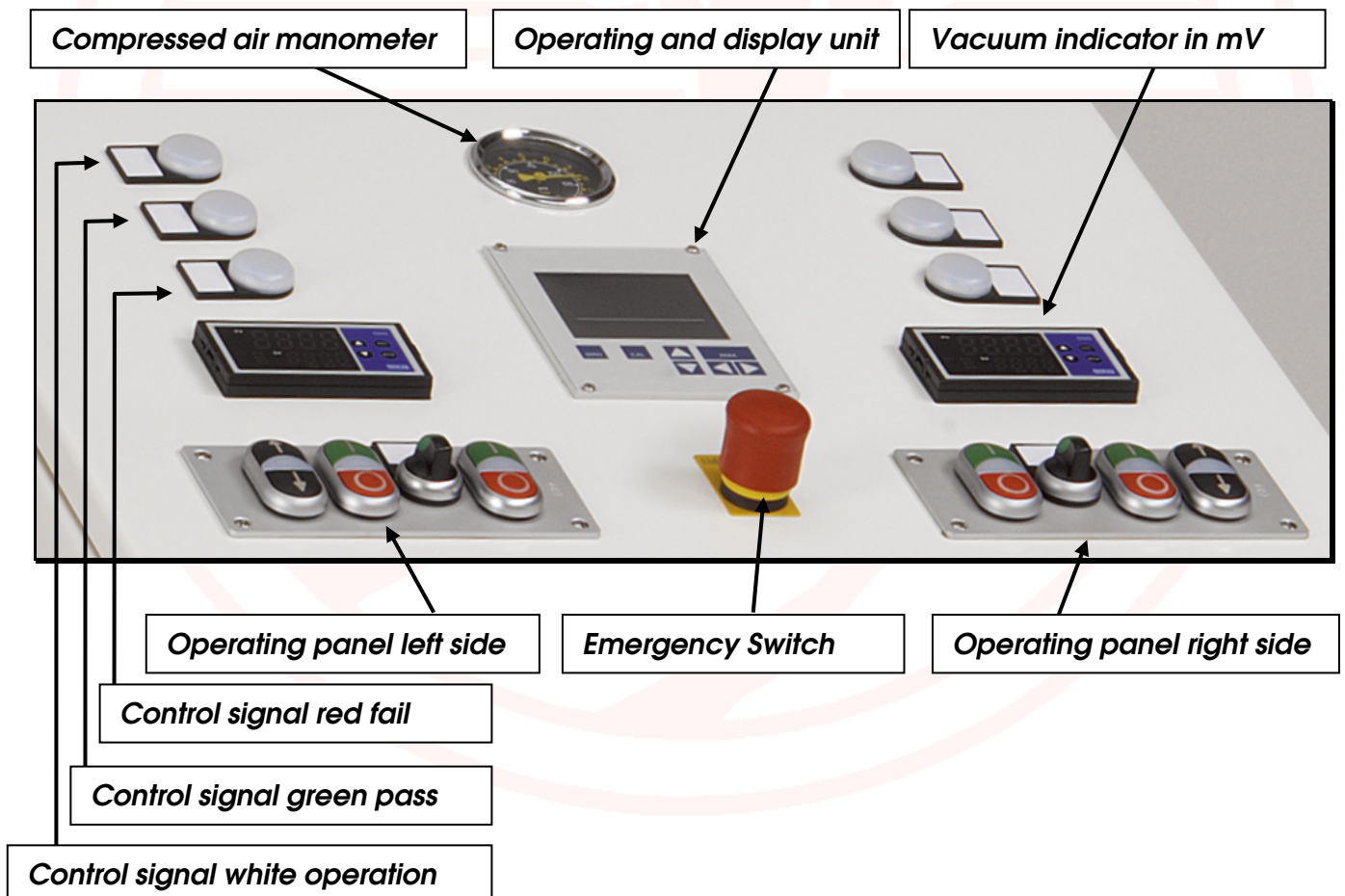


Operating by side

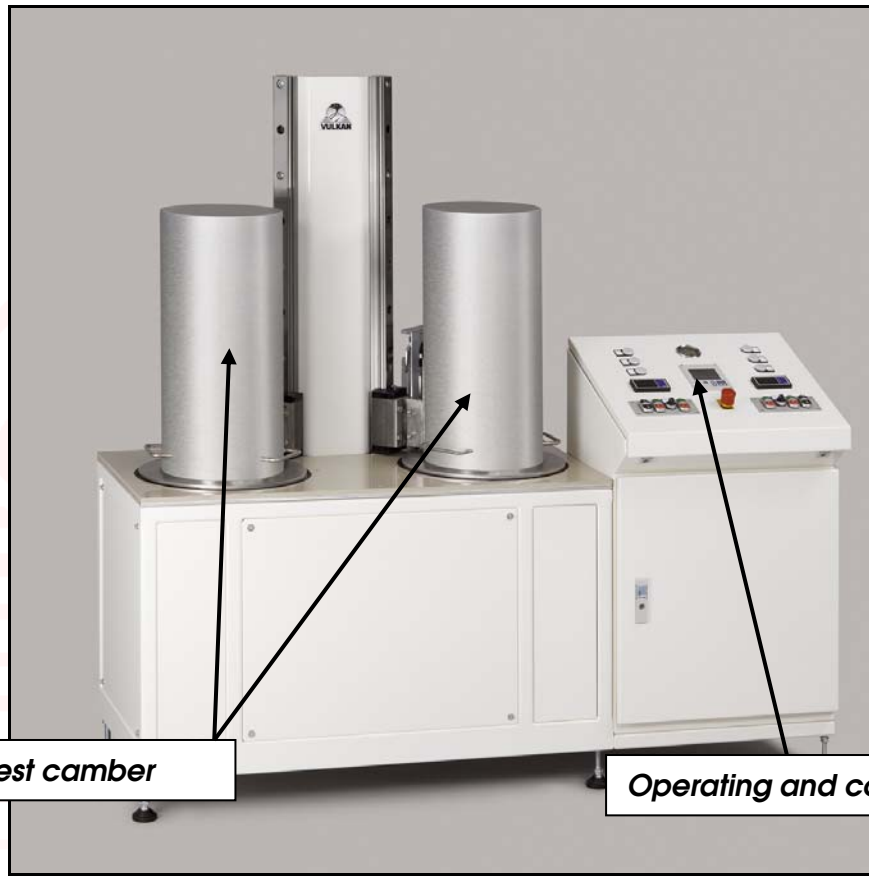


Test chamber horizontal for CNG Cylinder

### Operating and control panel



**Helium leak test machine model HLT02**  
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**Description of the individual components and elements**



Double test chamber

Operating and control panel



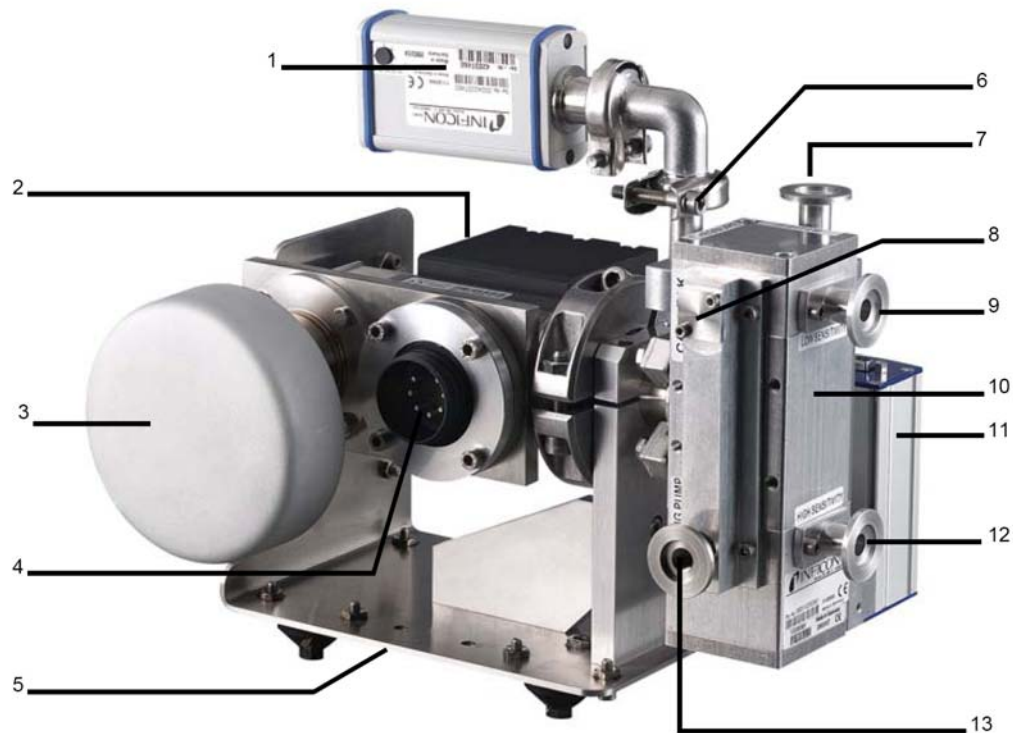
Vacuum Pump module

Test leak  $7,4E-7$  mbarl/s

Mass spectrometer module



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**Description of the individual components and elements**  
**Mass spectrometer module**



- 1: Pressure measurement unit
- 2: Mass spectrometer
- 3: Preamplifier
- 4: Ion source
- 5: Steel chassis
- 6: PRESSURE; connection for the pressure gauge
- 7: SNIFF; sniffer valve connection
- 8: CAL LEAK; test leak connection
- 9: Low Sensitivity; connection
- 10: Turbopump
- 11: Turbopump Electronic Drive Unit
- 12: High Sensitivity; connection
- 13: BACKING PUMP; connection for the pump module

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**Performance of the test**

**Calculation of the limit of the leak**

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
Extinguisher <i>Kg</i>	Specific powder weight <i>Kg/Liter</i>	Powder volume <i>Liter</i>  <b>=A/B</b>	Cylinder volume <i>Liter</i>	Nitrogen volume <i>Liter</i>  <b>=D-C</b>	Pressure <i>Bar</i>	Expanded volume <i>BarLiter</i>  <b>=E*F</b>
1	1,8	0,5556	1,2	0,6444	16	10,3111
2	1,8	1,1111	2,2	1,0889	16	17,4222
6	1,8	3,3333	7	3,6667	16	58,6667
12	1,8	6,6667	14	7,3333	16	117,3333

<b>Extin- guisher</b>	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>	<b>Helium leak rate</b>
<i>Kg</i>	Accepted Leak rate per year <i>BarLiter/Jahr</i>  <b>=G/100*6</b>	Accepted Leak rate per second <i>BarLiter/sec</i>  <b>=H/365/24/60/60</b>	Accepted Leak rate per second <i>mbarliter/ sec</i> <i>= ccm / sec</i> <b>=I*1000</b>	Helium <i>% of N2</i>	<b>=J/100*K</b>
1	0,6187	1,96E-08	1,96E-05	10	1,96E-06
2	1,0453	3,31E-08	3,31E-05	10	3,31E-06
6	3,5200	1,12E-07	1,12E-04	10	1,12E-05
12	7,0400	2,23E-07	2,23E-04	10	2,23E-05