Installation instructions for MultiLowChill

The following text contains information about the requirements for installing our MultiLowChills with CO_2 refrigerants. This ensures operational safety on site.

Installation in the deep / cold room for the MultiLowChill.

The MultiLowChill is a permanently sealed version of the system in accordance with DIN EN 378-1 and the Pressure Equipment Directive, which can be used to safely prevent a hazard from CO_2 (R744). The operator is responsible for carrying out a classification according to the local conditions.

Due to the anesthetic and suffocating effect at high concentrations of CO_2, the practical limit value in the cold room must be observed. If the practical limit at the installation site can be exceeded due to the conditions there, gas warning sensors must be installed for monitoring.

The practical limit value for carbon dioxide (CO_2) according to DIN EN 378-1, Annex E, Table E1 (refrigerant number 744) is 0.1kg / m³ and is based on empirical values, see the above-mentioned standard, Chapter 5.2 Designation and classification of refrigerants.

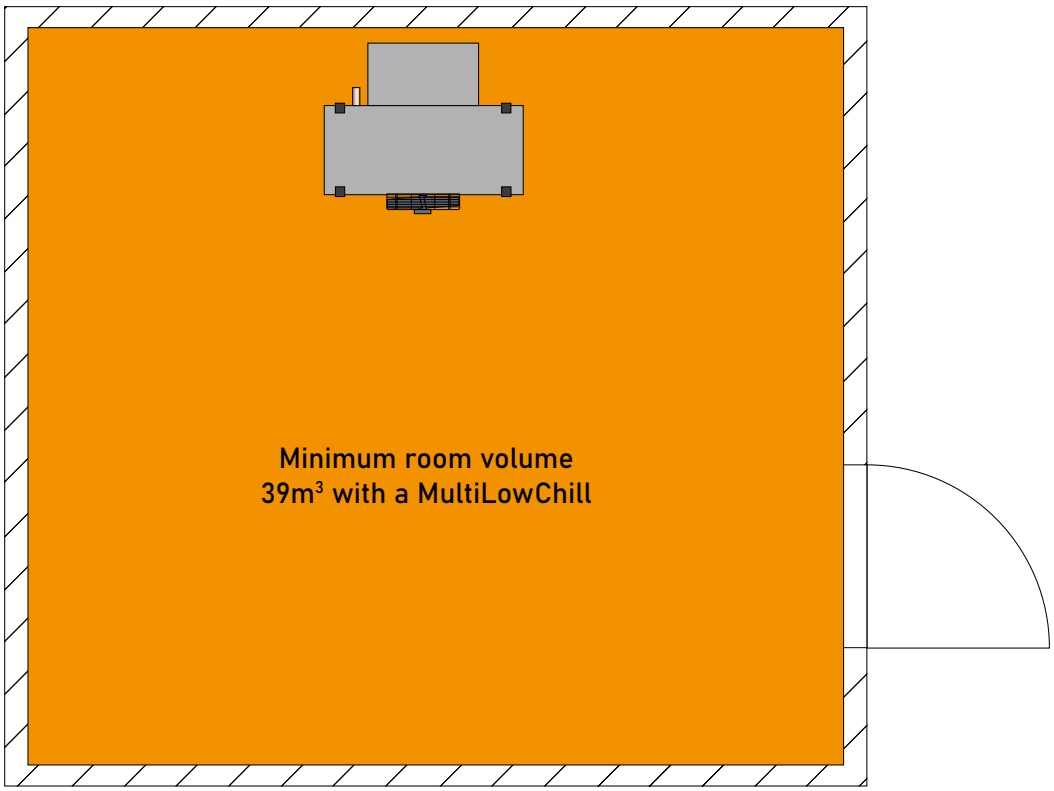
In order to calculate the minimum room volume, the ATEL / ODL (toxicity / limit value for oxygen deficiency) of 0.072 kg / m³ according to DIN EN 378-1, Appendix E, Table E1 (refrigerant number 744) and the permissible concentration (RCL) according to Table C3, used for the refrigerant R744.

Depending on the version, the MultiLowChill contains a maximum refrigerant charge of 2.8 kg CO_2. In order not to exceed the ATEL / ODL limit, the minimum room volume must be 39 m³.

$$\textbf{Minimum room volume} = \frac{\textbf{refrigerant charge}}{\textbf{ATEL / ODL}}$$

If the space volume is below this minimum requirement, a gas warning system must be installed.

Furthermore, the in Appendix D “Protection of people in cold rooms” according to DIN EN 378-1 must also be observed.



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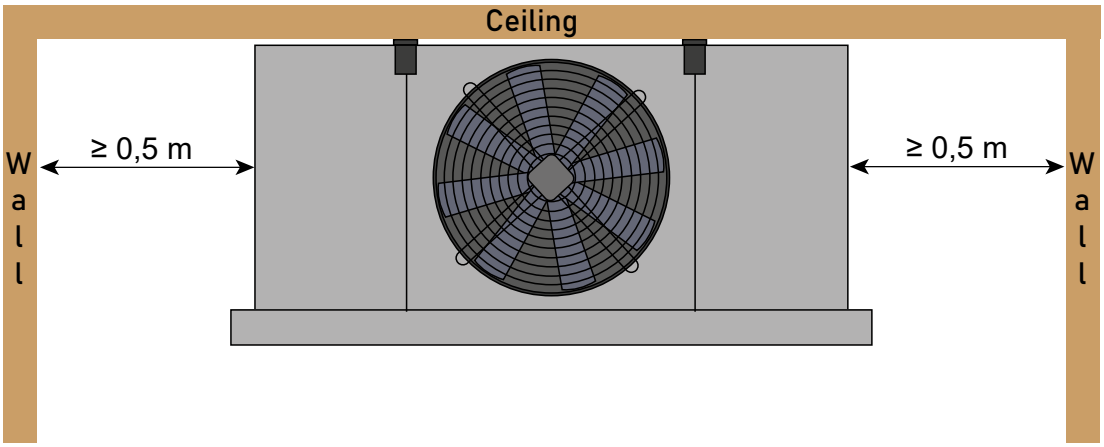

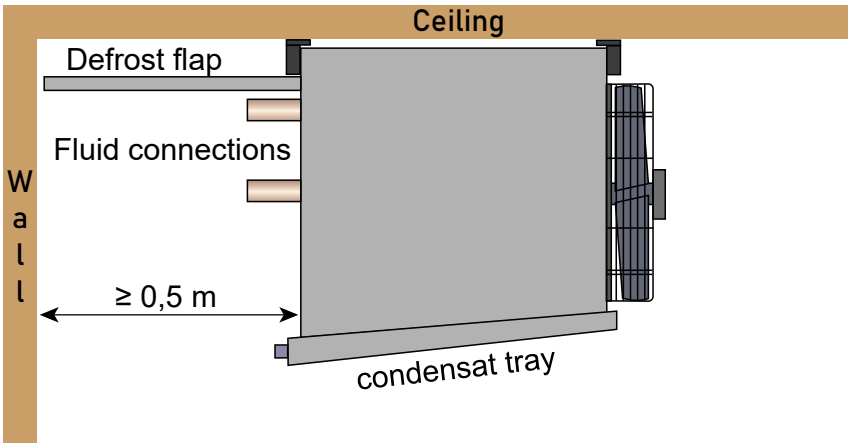

Refrige-rant	Density	Occupational	Exposure Limit	Practical Limit Oxygen Limit
R744	1,9767 kg/m³	9100 mg/m³ bzw. 5000 ml/m³=ppm	0,1 kg/m³	0,072 kg/m³

Due to the material properties, a leak can lead to a dangerous concentration of gas. It is important to ensure that there is no lack of oxygen.

Should there be any unanswered questions, please contact Futron GmbH Tel.-No.: +49 (0) 37 65 / 38 03 - 0.