Outdoor installation instructions for MultiEcoChill

The following text lists information about the requirements for installing our refrigeration units with flammable refrigerants. This ensures operational safety on site. Access to the refrigeration system is only to be granted to trained personnel.

Installation of the MultiEcoChill outdoors - systems with a refrigerant charge < 5 kg

The MultiEcoChill is designed for outdoor installation. The system is designed to be technically watertight in the long term. The housing is sufficiently mechanically ventilated so that no potentially explosive atmosphere can arise in the event of a possible leak. No division into zones is necessary.

Further information in the operating instructions: Analysis and assessment of the *dangers and risks*.

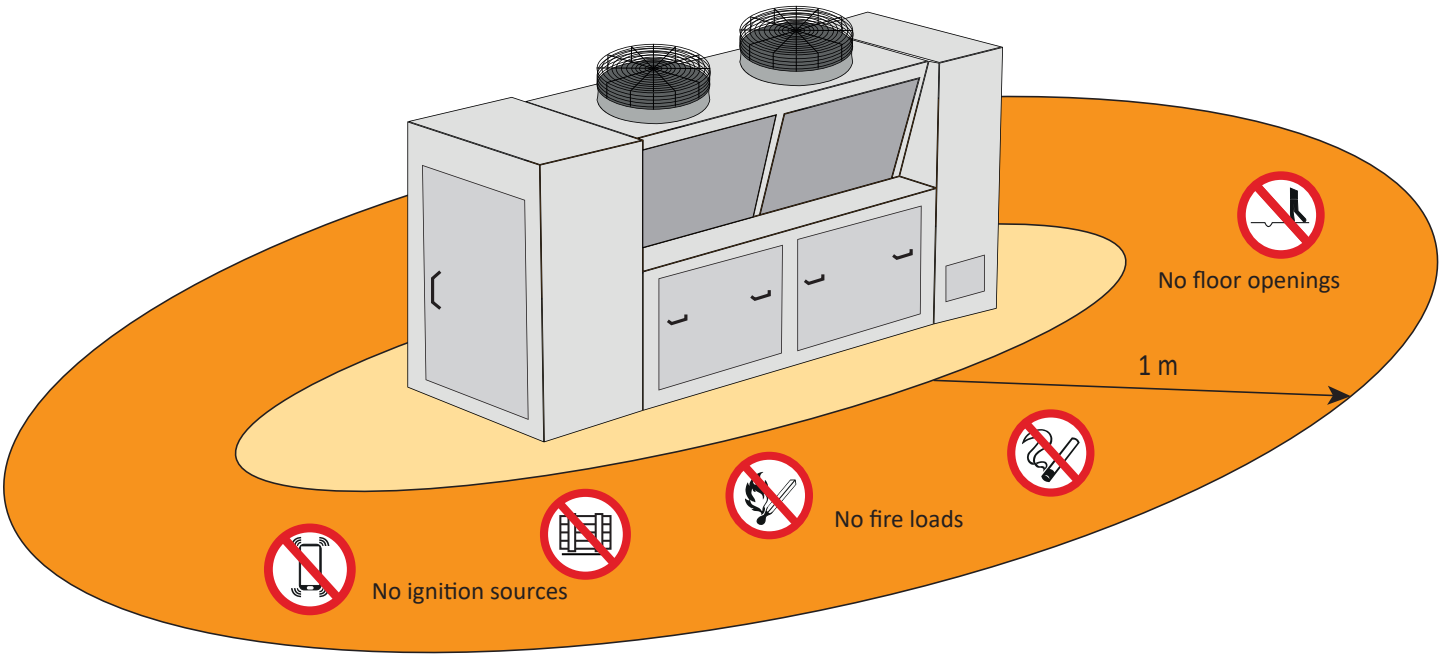
The refrigerants R290, R1270, R600 and R600a are heavier than air. The refrigeration system must therefore be set up so that no refrigerant can get into a building in the event of a leak. Furthermore, in the event of a leak, refrigerant must not enter ventilation openings for fresh air, door openings, floor flaps or similar openings.

No persons or property may be endangered.

The operator is responsible for checking the local conditions during installation:

- There must be no floor inlets, ventilation openings, floor flaps or similar openings directly below the system. We recommend a distance of at least 1 m around the system.
- Floor heels and depressions in which leaked refrigerant can collect should also be avoided. If there are depressed sections in the installation area, gas warning sensors must be used.
- Sources of ignition and fire loads should be avoided at a distance of 1 m.

For maintenance purposes there is sufficient space to provide the cooling units. Due to the low refrigerant charge, no further installation instructions regarding unauthorised persons are required. Appropriate measures must be taken to avoid mechanical effects and the general regulations for flammable substances. This can be done by signage or by fencing off the distances to be observed.



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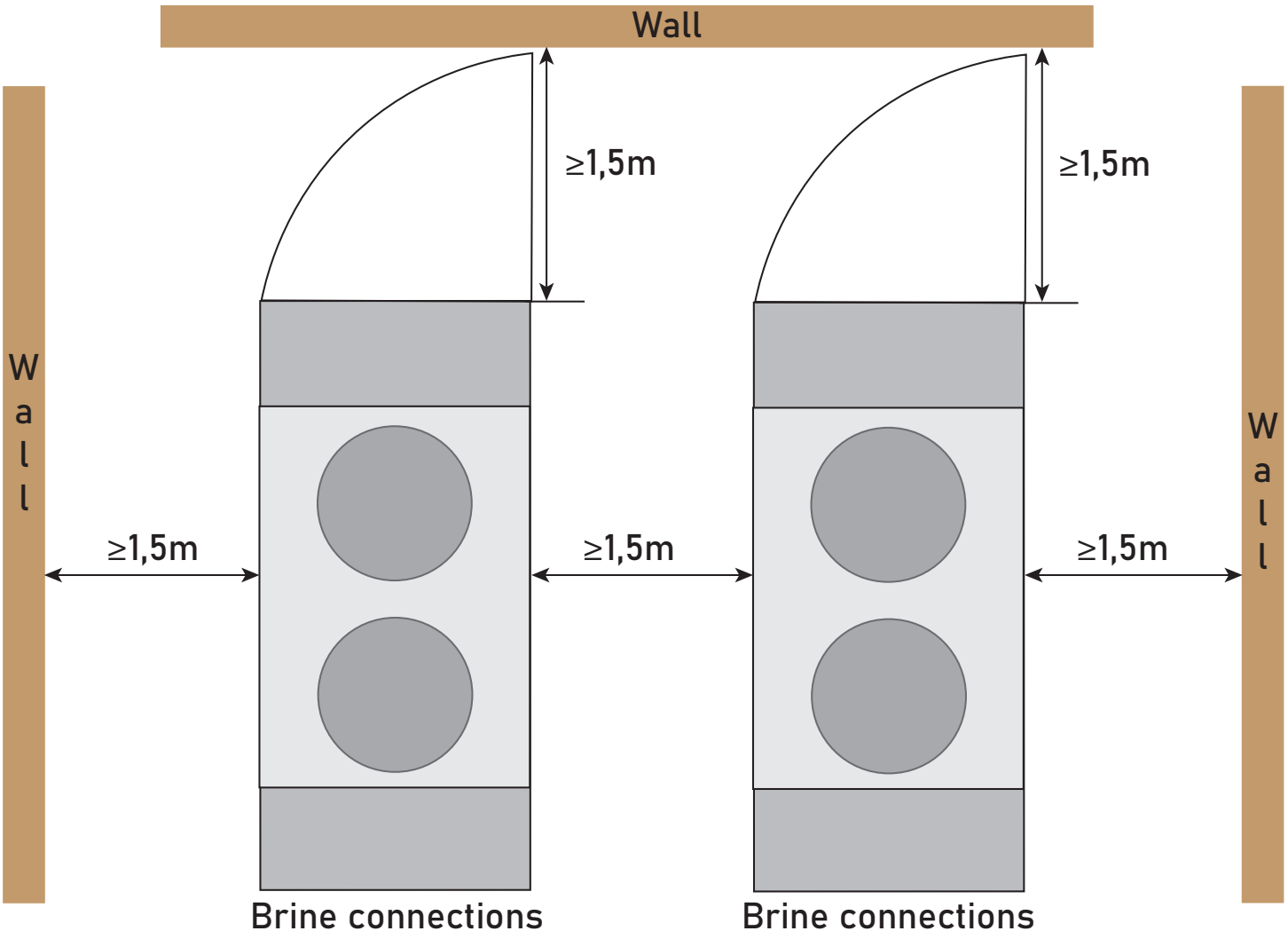

Smoking and open fire around the blow-out point are not permitted. No ignition sources may be present. The limit values specified in the table below must not be exceeded.

Maximum permissible surface temperatures and concentrations of refrigerants

Refrigerants	**Maximum surface temperatures** (°C)	**Maximum refrigerant concentrations at potential ignition sources** (kg/m^3)
R290	370	0,019
R1270	355	0,023
R600	265	0,019
R600a	360	0,0215

The following security systems are used:

- Two-stage ATEXgas sensor for the flammable refrigerant and fan for delivering flammable gas to the outside as soon as a concentration in the housing of 2000 ppm is exceeded. Safe derivation must be possible.
- https://www.esders.de/2019/09/ueg-versus-ppm/

ATEX gas sensor setting MultiEcoChill

Switch-on levels	**Action**	**Recommended setting of the ATEX-gas sensor**
1	The fan conveys any escaping refrigerant to the outside safely and switches the fan off when the set value is undershot. Device remains active.	2000
2	The chiller is switched off. The fan conveys any escaping refri-gerant to the outside safely. After the value falls below the set value, the electrical voltage is again applied to the MultiEcoChill. However, the MultiEcoChill must be enabled manually. The ATEX gas sensor always remains active.	4000

The MultiEcoChill is to be regarded as „Live“ even if the gas sensor is triggered!

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

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