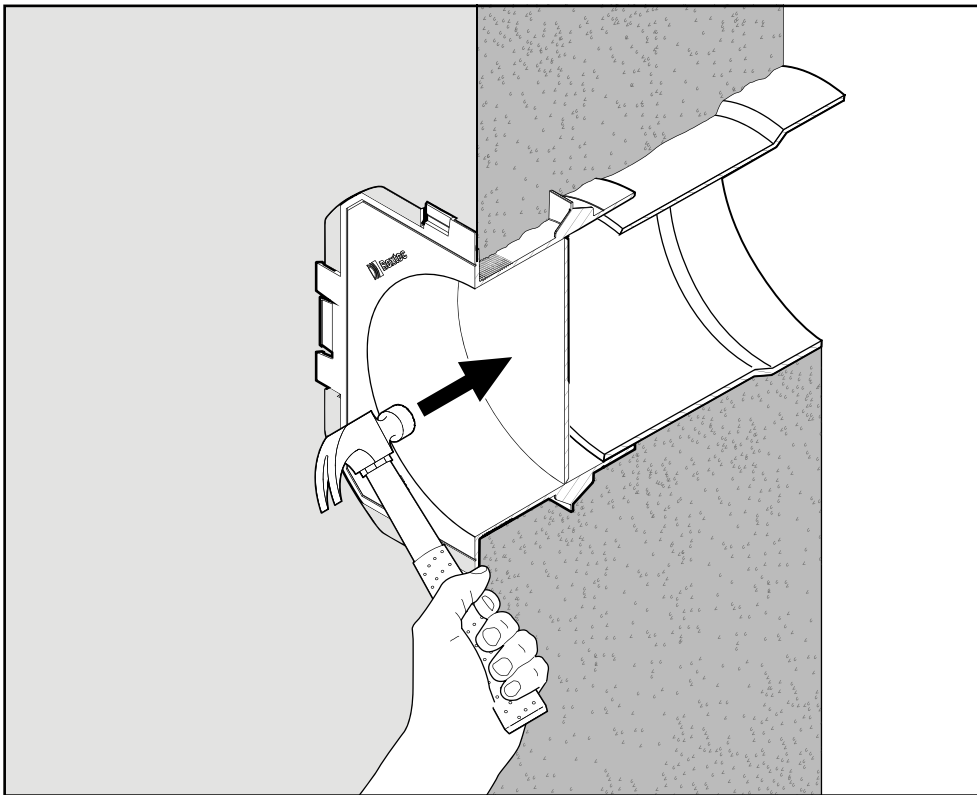


Description and application guidelines

Roxtec casting guidelines – Knock-out sleeve



Prepared for: Roxtec International AB

Date: 2019-01-08

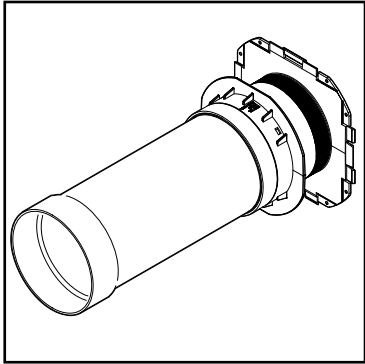
Author: Jens Bohlin, Roxtec Group,
Box 540, Karlskrona, Sweden

Contents

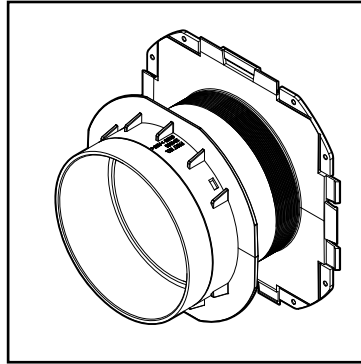
1	Roxtec knock-out sleeve – Casting guidelines	3
2	Attach the sleeve to the shutters	3
3	Rebar and support	4
4	Casting and consolidation	5
5	Finish	6
6	Installation of seals	6

1 Roxtec knock-out sleeve – Casting guidelines

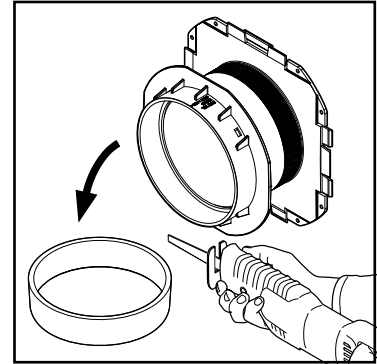
The Roxtec knock-out sleeve is designed to fit between shutters of 100 or 150 mm distance by default. It is also possible to cut or extend the sleeve to make it fit any wall depth by using standard pipes for cable protection.



Extended distance between shutters.



Standard distance between shutters 100 or 150 mm.

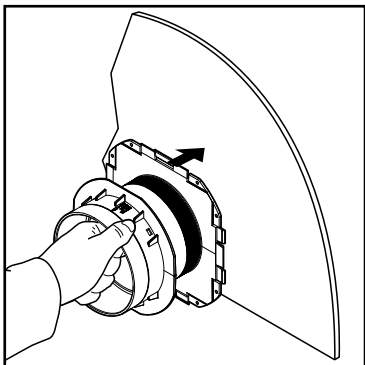


Shorter distance between shutters than standard.

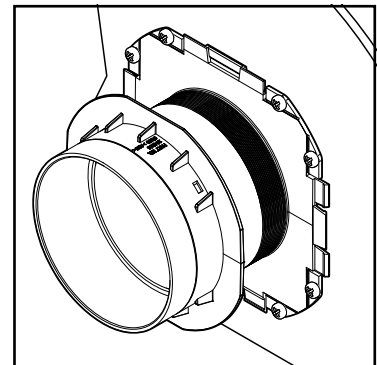
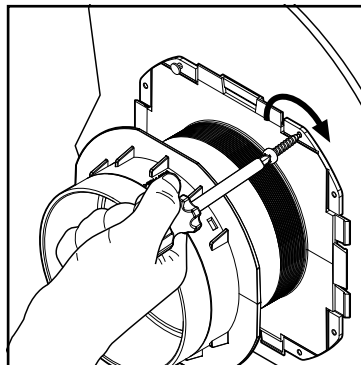
2. Attach the sleeve to the shutters

The sealing side of the sleeve is attached to the shutters with suitable fasteners, such as screws, glue or magnets. This creates a pressing force towards the shutter, making the inside of the sleeve sealed from concrete. The use of a lid (accessory), will prevent penetration of concrete.

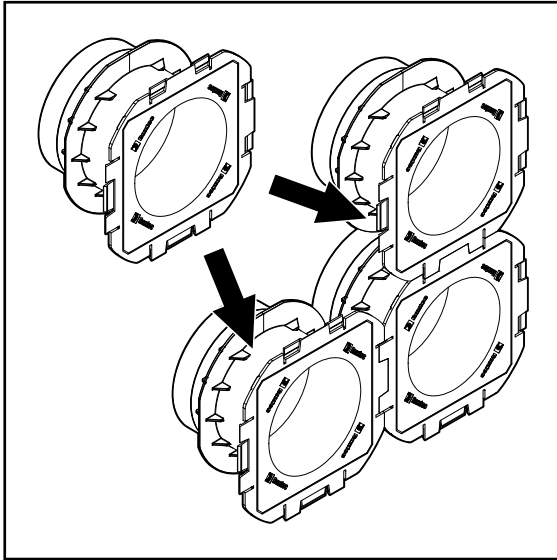
Note: the knock-out sleeve can be located on either the inside or outside facing wall depending on your preference.



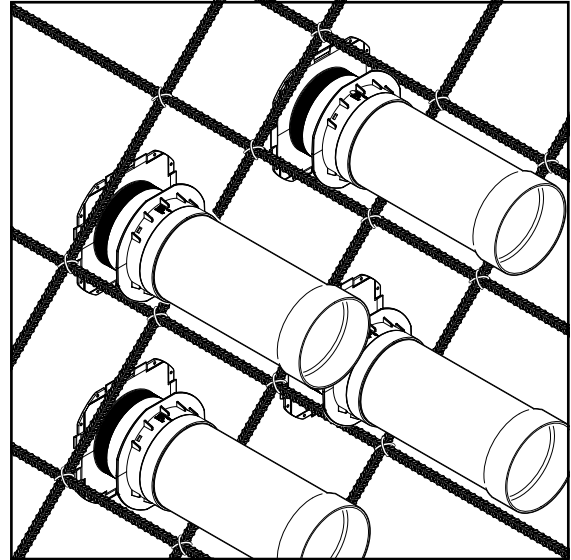
Sleeve attached by screws.



When multiple sleeves are attached it is important to create space between them to allow for mounting of rebar structures. Consider national codes and regulations for spacing.



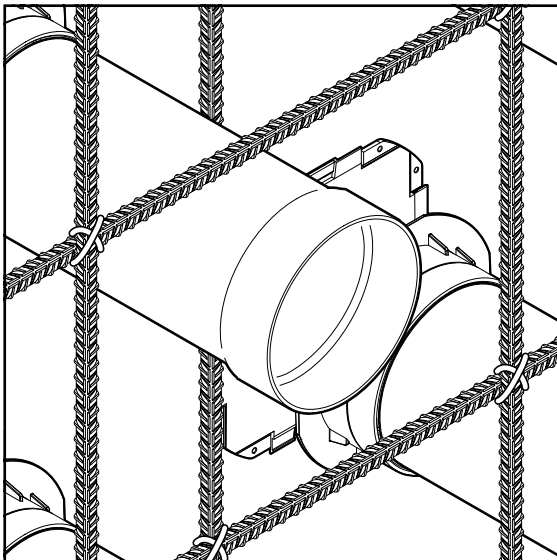
Knock-out sleeve installed in a 2x2 formation.



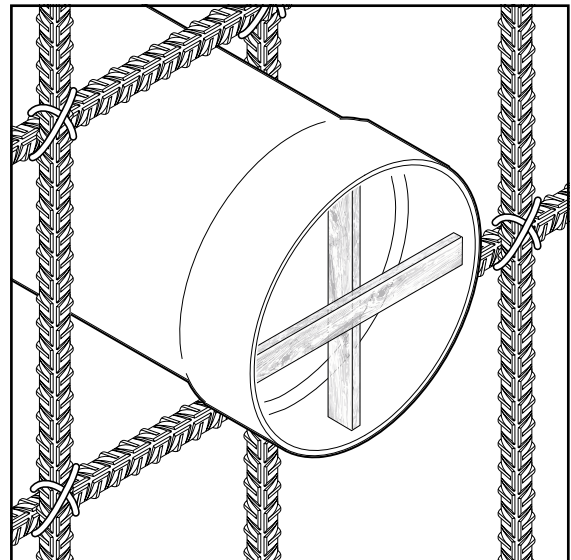
Knock-out sleeve with extensions installed in a 2x2 formation, separated by rebars.

3. Rebar and support

The rebar structure shall be designed in accordance with national codes and laws. If the rebar needs to be placed close to the sleeves it is important to allow the concrete to fill potential voids. This often requires space for a vibrator or other compaction equipment. If there is a lot of force on the cable protection pipe during the casting process it might need support to avoid geometrical deformation at the end.



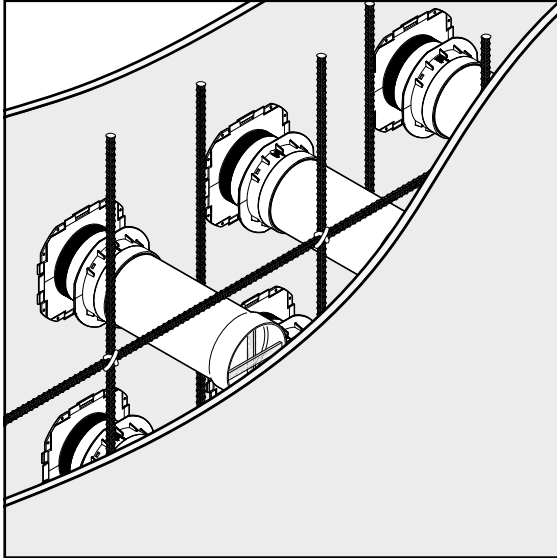
Knock-out sleeve with extension pipe.



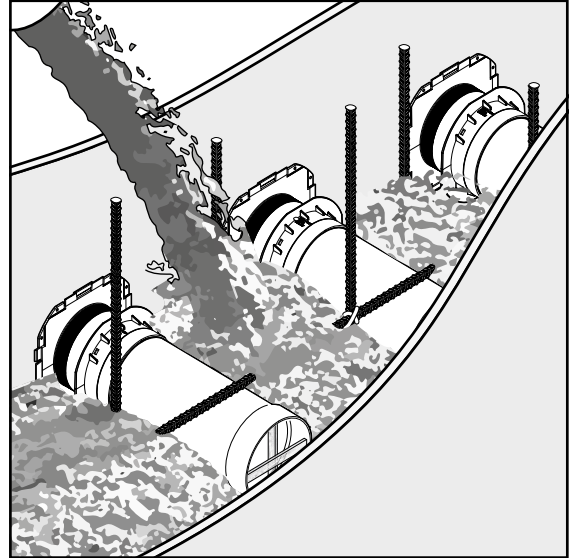
Extension pipes with supports.

4. Casting and consolidation

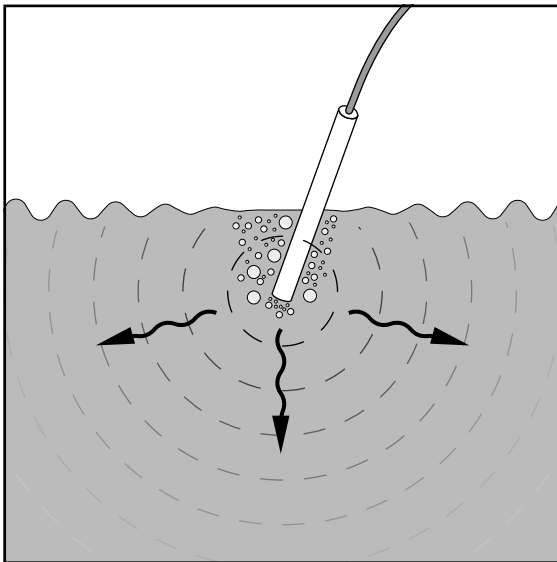
Apply the second shutter to seal the wall before pouring concrete. Avoid pouring large masses of concrete directly onto the sleeves, especially from heights. The w/c ratio must be well balanced to allow the concrete to fill any voids around the sleeve but still remain watertight. A suitable grade of aggregate that is well consolidated also contributes to obtain watertight penetrations. During the consolidating phase it is important not to damage the sleeve or cable protection pipes.



Applying second shutter.



Pouring concrete.

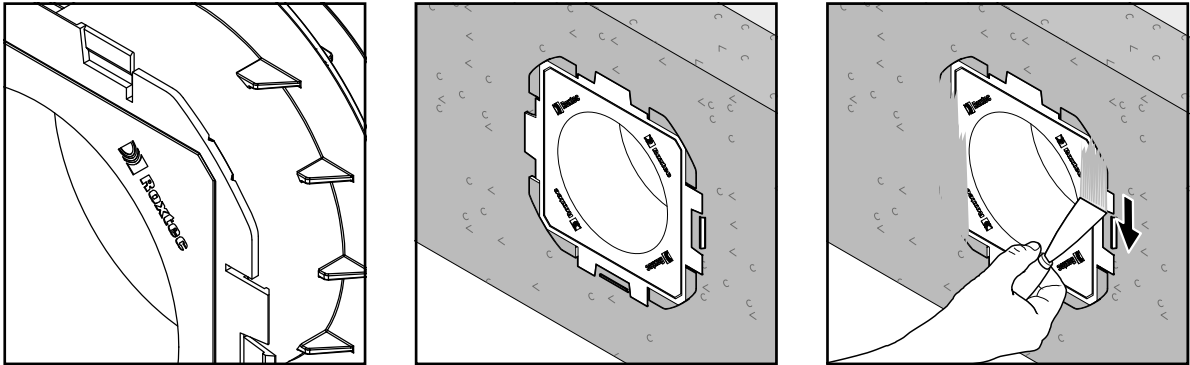


Schematic view of vibration from consolidation

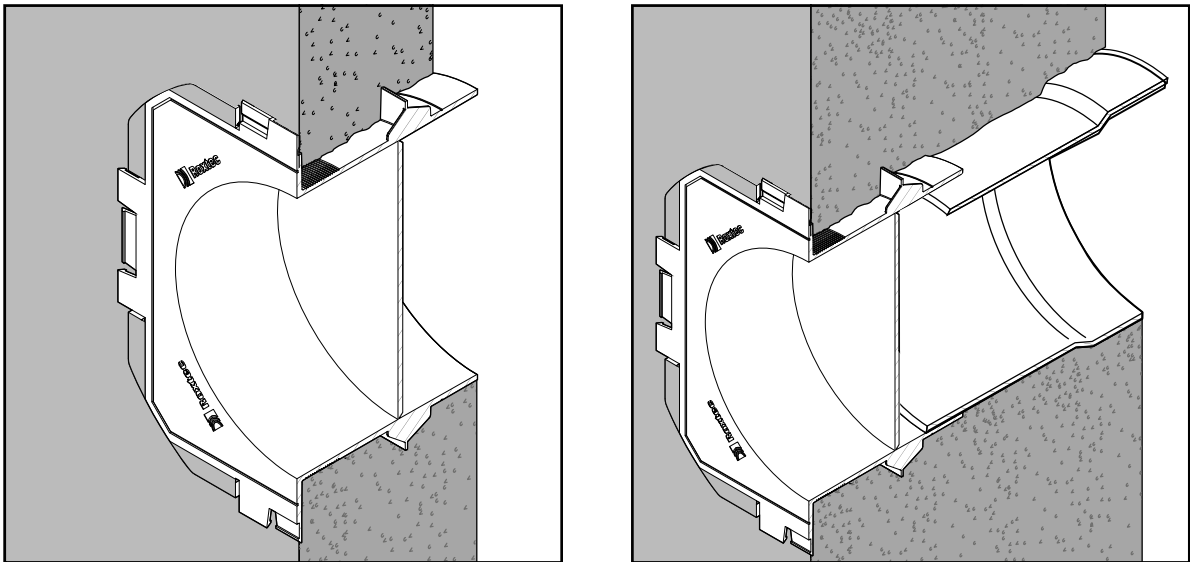


5 Finish

When the shutters are removed the holder on the sleeve will be broken and stay attached to the shutter. For visual finish, the feet can be covered with suitable cement screed.



Depending on wall thickness, cable protection pipes can be attached either directly to the sleeve or to the extension pipe used for elongation through the wall



Knock-out sleeve.

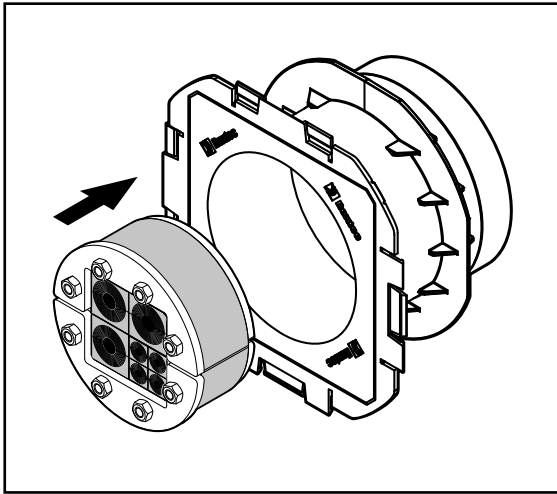
Knock-out sleeve with extension.

6. Installation of seals

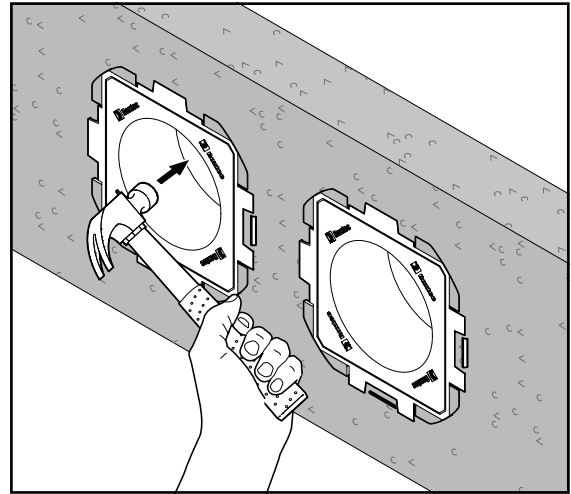
When it is time to install the seals the knock-out cover is removed by the use of a hammer. Make sure the sealing surfaces are clean and that the installation instructions of the seal are followed.

To simplify the installation, consider the following steps:

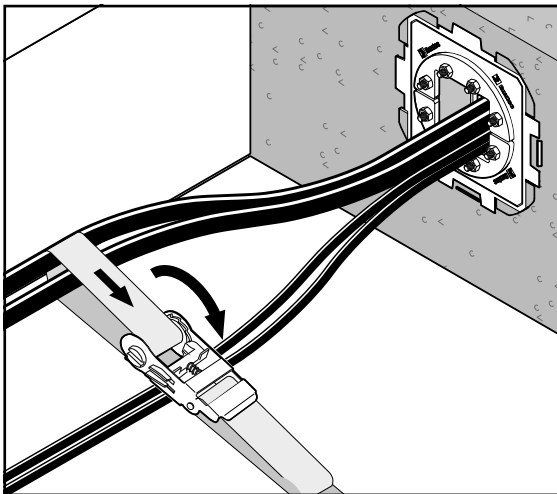
- Avoid filling the trench before installation to allow movement of cables.
- Elevate cables to the center of the sleeve to simplify insertion of the seal and modules.



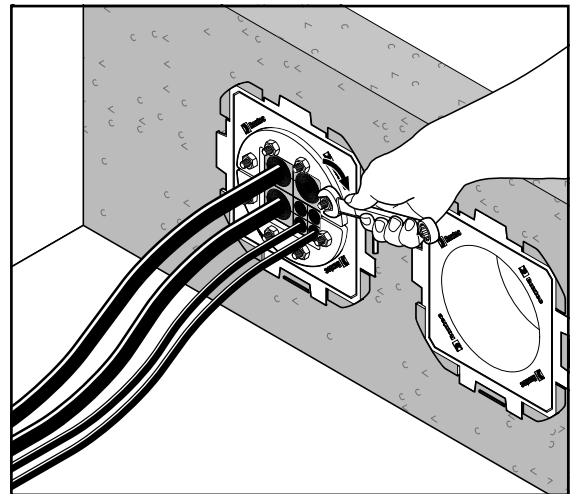
Position of seal in knock-out sleeve.



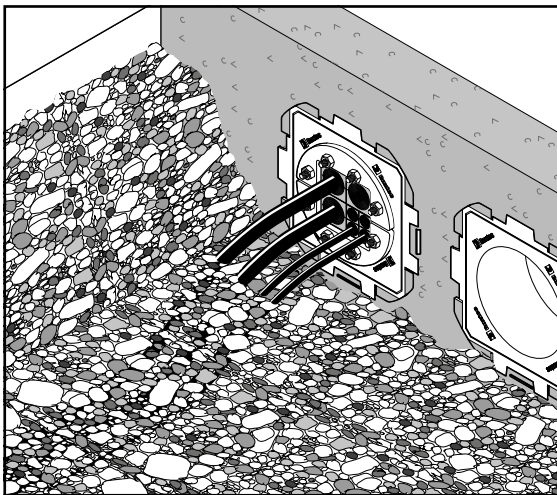
Knock-out plate removal.



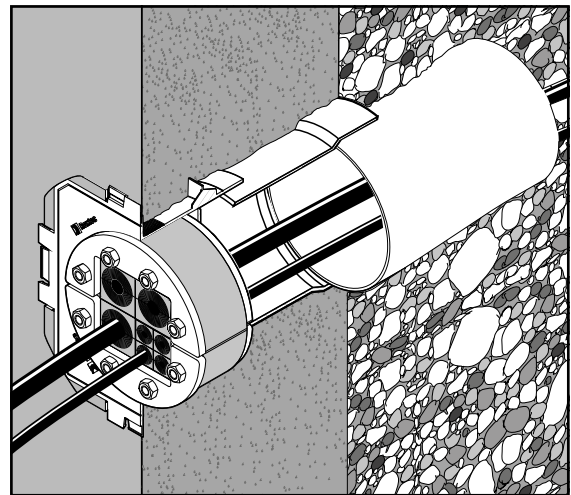
Cables moved in position.



Tighten the seal before filling the trench.



Fill the cable trench.



Knock-out sleeve and seal mounted from the inside of the structure.

DISCLAIMER

"The Roxtec cable entry sealing system ("the Roxtec system") is a modular-based system of sealing products consisting of different components. Each and every one of the components is necessary for the best performance of the Roxtec system. The Roxtec system has been certified to resist a number of different hazards. Any such certification, and the ability of the Roxtec system to resist such hazards, is dependent on all components that are installed as a part of the Roxtec system. Thus, the certification is not valid and does not apply unless all components installed as part of the Roxtec system are manufactured by or under license from Roxtec ("authorized manufacturer"). Roxtec gives no performance guarantee with respect to the Roxtec system, unless (I) all components installed as part of the Roxtec system are manufactured by an authorized manufacturer and (II) the purchaser is in compliance with (a), and (b), below.

(a) During storage, the Roxtec system or part thereof, shall be kept indoors in its original packaging at room temperature.

(b) Installation shall be carried out in accordance with Roxtec installation instructions in effect from time to time.

The product information provided by Roxtec does not release the purchaser of the Roxtec system, or part thereof, from the obligation to independently determine the suitability of the products for the intended process, installation and/or use. Roxtec gives no guarantee for the Roxtec system or any part thereof and assumes no liability for any loss or damage whatsoever, whether direct, indirect, consequential, loss of profit or otherwise, occurred or caused by the Roxtec systems or installations containing components not manufactured by an authorized manufacturer and/or occurred or caused by the use of the Roxtec system in a manner or for an application other than for which the Roxtec system was designed or intended.

Roxtec expressly excludes any implied warranties of merchantability and fitness for a particular purpose and all other express or implied representations and warranties provided by statute or common law. User determines suitability of the Roxtec system for intended use and assumes all risk and liability in connection therewith. In no event shall Roxtec be liable for indirect, consequential, punitive, special, exemplary or incidental damages or losses."

