Etics weber.therm circle

Dismantable ultra thick-layer Etics with mineral wool insulation boards

* for biocide-free AquaBalance facade renders

- Dismantable
- Non-combustible
- High mechanical resistance
- With AquaBalance technology: particularly resistant to algae and fungi growth

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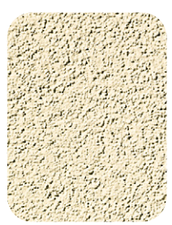
Scratch render fine-grained or granular

With marble, Jura or quartz grains in many sizes. Grain size: 1.0–8.0 mm

Floated render

Mineral floated render with a lively and granular texture Grain size: 1.5–3.0 mm



Smoothed render

Mineral render with a fine-grained and smooth surface

Broom render

Mineral modellable render for modern textures (comb or broom texture)

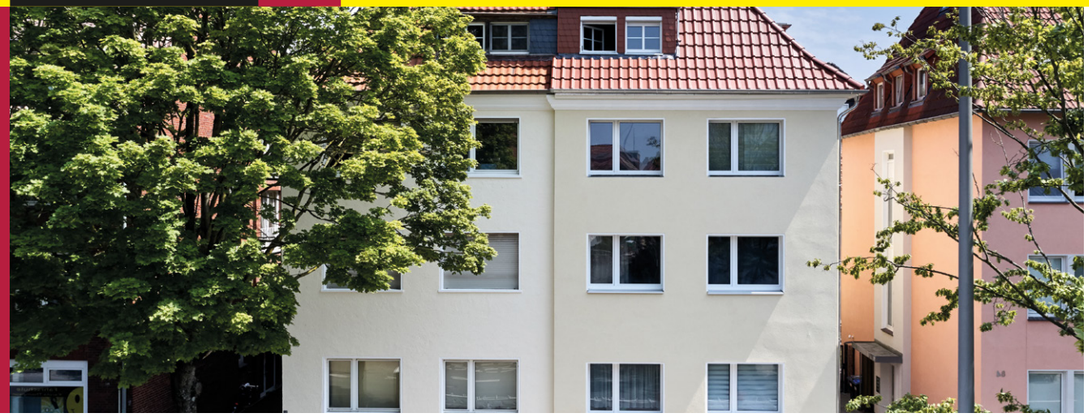
Throw-on render

Mineral render for expressive throw-on textures

weber.therm circle

Substrate	Masonry Old/new building	Concrete
Insulation	Mineral wool insulation boards weber.therm MW 040 Facade circle	
Anchoring	screw dowels weber.therm SRD-5 (10 pieces/m²)	
Assembly	Substrate check - Anchor pull-out tests. Anchoring with screw dowels weber.therm Schraubdübel SRD-5 (see section 4.5 „Anchoring")	
Reinforcing base coat render	weber.therm armadura base	
Woven mesh	weber.therm 310	
Reinforcing mortar	weber.therm 302	
Woven mesh	weber.therm 310	
Primer for render		weber.prim 403 (eventually)
	Mineral thick-layer scratch renders	Mineral thin-layer renders
Top coat render	weber.top 200 | 203 | 204 | 206 AQUABALANCE	weber.star 220 | 221 | 224 | 240 | 260 | 280 AQUABALANCE
Primer for paint		weber.prim 406
Paint	weber.ton AQUABALANCE 410 | 414	weber.ton AQUABALANCE 411 | 412

The schematic presentation shows a simplified structure of the system with standard components; it cannot however replace expert advice on site. More extensive information concerning the system components is provided in the technical data sheets.
The type of substrate preparation and/or anchoring must be selected based on the requirements of the construction project. For additional information refer to the technical data sheets and/or request technical advice.



Dismantable ultra thick-layer Etics with mineral wool insulation boards

Fields of application

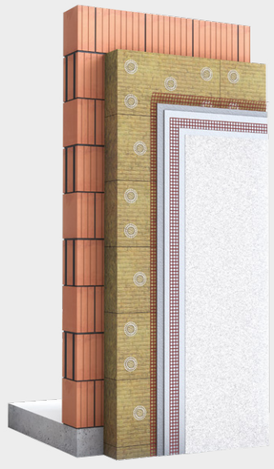
- completely dismantable
- allows separation and recycling for each type of component
- thermal insulation of new and old buildings

Main features

- non-combustible, solid, full-mineral system
- biocide-free render system
- best fire resistance and acoustic protection

Consumption / Yield

Dowels	**weber.therm SRD-5**	10 pieces/m²
Additional dowel plate	**weber.therm VT 112 2G**	10 pieces/m²
Mineral wool capl	**weber.therm STR U MW**	10 pieces/m²
Reinforcing base coat render	**weber.therm armadura base**	approx. 12.5 kg/m²
Woven mesh as separation layer	**weber.therm 310**	approx. 1,0 m²/m²
Reinforcing mortar	**weber.therm 302**	approx. 5.7 kg/m²
Woven mesh	**weber.therm 310**	approx. 1.1 m²/m²
Primer	**weber.prim 403** (eventually)	approx. 0.25 l/m²
Top coat render	refer to technical data sheets	



* For anchor selection and basics on anchor technology, see pages anchor technology - anchor quantities - anchor diagramm in our German guide

1. Range of application

- **weber.therm circle** circle is an external thermal insulation composite system (Etics) with mineral wool insulation boards and mineral top coat renders (norm EN 998-1).
- It is used to improve the thermal insulation of old and new walls of buildings with a height of max. of 18 meters.
- It can be completely dismantled and recycled after separation of each component when the building is converted or demolished.
- It is particularly suitable for facade insulation of buildings where non-combustibility and dismantling are required.
- Furthermore, the system is convenient for the renovation of defective and/or cracked new and old facades.
- The premium Etics combines the best solutions of all **Weber** Etics: fully mineral, open to water vapour diffusion-open construction, highest reaction to fire (A1: non-combustible), solid build-up, high mass, good heat storage capacity, fast drying, low tendency to algae formation and good acoustic insulation.
- Concrete and masonry are suitable substrates.

2. Homologations

- The Etics **weber.therm circle** is approved by the German Building Authorities (DIBt - Deutsches Institut für Bautechnik) with the approval **Z-33.49-1731** (dowelled Etics/mineral wool insulation board MW).
- The assembly of the Etics is carried out exclusively by certified companies.
- The Etics **weber.therm circle** has the highest reaction to fire A1 (non-combustible according to DIN 4102).
- Like for all Etics, comply with the national standards and/or guidelines relating to fire resistance.
- The official approval is only valid for the whole system. It is not allowed to replace any component of the system. The use of other components, which do not belong to the system, is not permitted; otherwise, the approval is no longer valid and the warranty of the manufacturer is deleted.

3. Product features of Etics components

3.1 Reinforcing base coat render/lightweight bonding and reinforcing mortar weber.therm

- solid mineral reinforcing base coat render **weber.therm armadura base**
- lightweight bonding and reinforcing mortar **weber.therm 302**

Refer to the technical data sheets.

3.2 Insulation boards weber.therm

3.2.1 Mineral wool (MW) insulation boards weber.therm

weber.therm circle weber.therm MW	weber.therm MW 040 Facade circle
Thermal conductivity λ (DIN 4108) W/(m·K)	0.040
Class of reaction to fire (DIN EN 13501-1)	A1
Shear strength	≥ 15 kPa
Water vapour diffusion resistance μ	1
Dimension [cm]	80 x 62.5
Thickness [mm]	100–200 mm

3.2.2 weber.therm FG 039 Sockel standard

The socket polystyrene board **weber.therm FG 039 Sockel standard** has a general approval as non-combustible insulation of the socket part. It is glued with the system-compliant adhesive (2-comp. solvent-free reactive adhesive PC® 56) and additionally fixed mechanically with the screw dowels **weber.therm Schraubdübel SRD-5** above ground level. Afterwards apply a reinforcement layer with the lightweight bonding and reinforcing mortar **weber.therm 307** and the woven mesh **weber.therm 310** (coarse). For further information relative to application, refer to the application tip **„Non-combustible ETICS on the facade socket part with Foamglas insulation".**

weber.therm FG 039 Sockel	Sockel
Thermal conductivity λ (DIN 4108) W/(m·K)	0.039
Class of reaction to fire (DIN EN 13501-1)	A1
Water vapour diffusion resistance μ	∞
Dimension [cm]	60 x 45
Thickness [mm]	60–200

3.3 Woven mesh weber.therm 310 (coarse)

The mesh consists of glass fiber with a high tear resistance according to EN 13496 and covered with an alkali-resistant impregnation.

weber.therm 310	
Tear resistance when delivered [N/5 cm]	> 2.400
Tear resistance after alkaline stress [N/5 cm]	> 1.300
Weight [g/m²]	approx. 200
Mesh size [mm]	approx. 8 x 8
Colour	wine red

3.4 Screw dowels weber.therm Schraubdübel

The screw dowels **weber.therm Schraubdübel SRD-5** are used with the additional plate **weber.therm VT 112** to ensure the stability of the insulation boards **weber.therm MW 040 Facade circle**.

Plate diameter [mm]	112 (countersunk with additional plate and cap)
Shaft diameter [mm]	8
Anchoring depth (h_{ef}) [mm]	25–65, according to substrate type
Reduction of μ-value [W/m² · K]	< 0,001 (countersunk with additional plate and cap)

3.5 Universal Primer weber.prim 403

The primer is mainly used to regulate the hydrological balance of the thin-layer top coat renders. Moreover, their absorbency is equalized and their adhesion with subsequent products is improved. The primer makes the application of the top coat render easier. It is also possible to pre-treat the reinforcement layer by pre-wetting.

3.6 Overlay (top coat) renders

The following mineral renders can be used:
weber.top 200/203/204/206 AquaBalance scratched renders
weber.star 220/221/224 AquaBalance floated renders
weber.star 240 AquaBalance rilled render
weber.star 260 AquaBalance smoothed render (freestyle effect render upon request)
weber.star 280 AquaBalance broom or comb render

Characteristics of mineral top coat renders (weber.star/weber.top)	
Strength class/ mortar group	CS I bzw. CS II/PIc
Compressive strength [N/mm2]	> 1
Water absorption coefficient w [kg/m2 · √h]	< 0.5
Water vapour diffusion resistance μ	≤ 20
Class of reaction to fire (EN 13501-1)	A1
Binder	white hydrated lime, white cement

The light reference value of the top coat renders should be ≥ 20. Additional information is provided in the technical data sheets of the concerned products.

3.7. Accessories

A number of accessory items are available for correct processing of the whole system:

- **weber.therm 312** ultra-solid mesh for corner reinforcement (6 x 10 mm)
- **weber.therm 313** coarse mesh for corner reinforcement with PVC profile (mesh size 8 x 8 mm)
- **weber.therm 315** arrow-shaped glass fiber element for diagonal reinforcement of angles (33 x 40 cm)
- **weber.therm 342** dowel for skirting profile (starting rail)
- **weber.therm 345** PU foam (reaction to fire B1) for filling small joints between insulation board
- Reveal beads with mesh (hard PVC-profiles with glass fiber mesh flag and integrated PUR sealing tape) **therm Gewebeanputzleiste W38 pro/W38 pro K**
- Render profiles for angles and stop-ends
- Socket skirting profile with mesh flag **weber.therm Sockel-Gewebe-Kantenprofil W66-4**

ETICS weber.therm circle

facade / wall

4. Working instructions

4.1 Preliminary conditions

Respect following demands prior to begin of installation of the Etics:

- The substrate must be load-bearing, sufficiently dry and level. Dirt, dust and loose parts must be removed. Concrete surfaces must be free of residues of separating formwork oil, eventually by removal with steam-blasting.
- In the case of exclusively mechanical fastening, the measures of the substrate pre-treatment are determined by the **Weber** Department for Application Techniques within the scope of an on-site appointment.
- The load-bearing capacity of the substrate is checked by pull-out tests and a trial installation and documented accordingly.
- Before carrying out the anchor pull-out tests, the render shell must be drilled down to the substrate with a drill bit ø 16 mm.
- The evenness (flatness) of the substrate must comply with the allowed tolerances (variations) defined by the national standards and/or guidelines (for ex. norm DIN 18202 „Tolerances in Building Constructions"). If necessary, take the appropriate remedial measures for levelling unsuitable substrates; in case of doubt request technical advice.
- The contractor should report concerns in case of:
  - heavy contamination, efflorescence, excessively smooth surfaces
  - greater unevenness than allowed by the national guidelines
  - too high building moisture (e.g as a result of moisture-generating finishing works).
- Horizontall coverings, such as window sills, roof terminations, parapet covers etc. must have been installed.
- Expansion joints of the building structure must be taken over within the whole system build-up.
- Intermediate joints (designed to divide a large surface into smaller sections) must be installed under consideration of the prevailing facade structure. In all cases expansion joints are to be placed every 30 meters.
- The width of joints must comply with the national standards/ guidelines (for ex. norm DIN 18 540 „Sealing of External Wall Joints with Joint Sealants"); if not issued and if necessary, request technical advice. The dimensions of the joints must be similar in all layers of the system.
- All necessary waterproofing works relative to the Etics must be completed prior to its installation.

4.2 Preliminary works

- Remove all residues of concrete and mortar.
- Flatness differences of ± 7 mm can be compensated during bonding.
- Unevenness of more than 7 mm must be first levelled out with the bonding mortar **weber.therm 300** or the lightweight lime-cement underlay render **weber.dur 132.** Alternative: use the reinforcing mortar **weber.therm 376** or the lightweight lime-cement underlay render with optimized setting and scratching properties **weber.dur 137 SLK**. Allow the levelling layer to dry at least 1 week before bonding insulation boards.
- Carefully check if there are hollow parts within the old renders; if necessary, remove such parts and over-work them (substrate and old render) with the underlay render **weber.dur 132.** Clean substrate and old render, eventually pre-wet them. Load-bearing coatings can be over-worked. Partial opening of existing coatings is recommended (e.g by slitting or partial removal) so as to ensure the high diffusion performance of the fully mineral construction.

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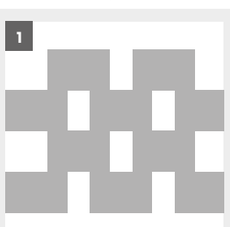

4.3 Starting rail on the upper socket parts

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Three possibilities exist:
a) Skirting board edge profile: it must match the board thickness and be inserted into the joint between the socket insulation and the rising facade insulation.
b) Skirting rail with U-shaped profile: it must match the board thickness and be fixed with the profile dowels **weber.therm 342** (3 pieces/m) **(picture 2)** and installed with the skirting rail connectors **weber Sockelverbinder.** In addition, the skirting rail can be fixed on its whole length with the profile bonding and installation mortar **weber.mix 125,** which is particularly necessary on uneven substrates to ensure a tight, lower finish.at the bottom part. Take care that the skirting rails and the clip-on profiles **weber.therm Aufsteckprofil** are not press-fitted due to thermal expansion.
c) Starting rail without profile: fix the ultra-solid mesh for corner reinforcement **weber.therm 312** on the wall with the bonding mortar **weber.therm 302**, on which the insulation boards will be later bonded **(picture 3).** Afterwards place another piece of **weber.therm 312** on the front of the boards, so that the first row of panels is enclosed in a U-shape mesh rail by the above-mentioned reinforcement. In case of glued or mortar-fixed clinker brick slips, which are load-bearing, an anchoring is not recommended, because the brick slips could detach.

4.4 Mechanical fastening of insulation boards

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Store the insulation boards away from humidity. Do not install drenched or defective boards. The fastening of the insulation boards is carried out with the screw dowels **weber.therm Schraubdübel SRD-5** and the additional plate **weber.therm VT 112 2G**. The boards are laid exclusively horizontally. After completed installation, the dowels which are countersunk in the additional plate, are covered with a mineral wool cap. The anchor pattern is symmetrical: 4 dowels per 15 cm away from the corners and one dowel in the middle of the boards. This corresponds to 5 dowels per whole board resp. 10 anchors per m². Cut insulation boards are dowelled in proportionally (for ex. 3 dowels for half boards). The minimum number of dowels is two per insulation board.

For reduction of cracks the insulation boards must de-coupled at the angles of openings (doors and windows), i.e no joint in-between must be prevailing in the angles.

Whenever the installation of the window sill is not tight against rain, a second waterproofing layer must be planned with the stop-end for window sill **weber.therm Sol Pad** and the 2-comp. waterproofing coating **weber.tec Superflex D 2.**

At all connections (e.g windows, doors, roof terminations and transitions to socket insulation), a pre-compressed joint sealing tape must be installed between the insulation boards and the adjacent building parts. The board joints must be kept free of mortar so as to avoid thermal bridges. Even in case of exact working methods, gaps and joints cannot always be avoided, but they must be filled with the same insulation material.
Smaller gaps can be filled with the PU foam **weber.therm 345** (max. joint width 1 cm).

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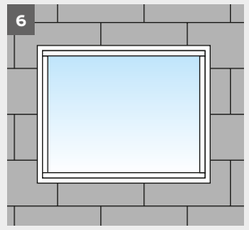

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4.5 Anchoring

Before the insulation boards are mechanically fixed, their suitability is verified by preliminary tests on the building structure. Anchor pull-out tests are carried out for each building. Furthermore, an installation test is carried out with the respective insulation thickness. The required dowel length is determined from the aggregated results. The non-load-bearing layers must be considered (such as base coat render/old top coat render). For the dowel choice with the required length, request technical advice.

The **weber.therm MW 040 Facade circle** is anchored as follows:

Insulation board **weber.therm**	Dowel plate diameter [mm]	Under woven mesh
MW 040 Facade circle	112	countersunk (exclusively)

The following anchoring system is used:

- screw dowels **weber.therm Schraubdübel SRD-5**
- dowel plate **weber.therm VT 112 2G**

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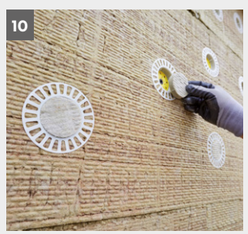

4.6 Design of corners and profiles

In the reinforcing base coat render:

At the corners of the building and windows the wire straightening bracket/edge protecting straightening bracket are set with the bonding and reinforcing mortar **weber.therm 302.** After an appropriate waiting time they are covered with the reinforcing base coat render **weber.therm armadura base** and the separation fabric **weber.therm 310.**

Dismantable ultra thick-layer Etics with mineral wool insulation boards

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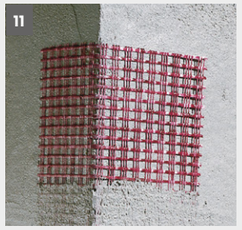

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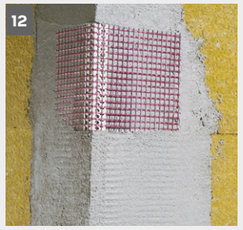

In the reinforcement layer:

At the corners of the building and windows install the ultra-solid mesh for corner reinforcement **weber.therm 312** with the bonding and reinforcing mortar **weber.therm 302.** For prevention of cracks in angles in the areas of window sills, window lintels and other wall openings, **weber.therm 312** must be cut to size and glued with the pre-said reinforcing mortar on the insulation boards.

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Alternative: the coarse mesh for corner reinforcement with PVC profile **weber.therm 313** can be fixed with the reinforcing mortar at the angles. For prevention of cracks in angles the arrow-shaped glass fiber element for diagonal reinforcement of angles **weber.therm 315** or a piece of woven mesh cut to the required dimensions (approx. 60 x 25 cm) are embedded in the layer of reinforcing mortar.

A separation must be provided between reinforcing base coat render, reinforcing mortar and window sill. Adjacent building parts must be separated from the built-in render system. The separation is carried out with render profiles for stop-ends and joint sealing tape.

Window reveals, offset frames and jambs, and render strips

For substrates that are not suitable for the mechanical fastening of insulation material, the application is carried out by using the bonding method. When forming window reveals, offset frames and jambs, and render strips, apply the lightweight mineral fine-grained top coat render **weber.star 260 AquaBalance** in a thickness of 2 - 3 mm on top of the reinforcing mortar. Work to a floated or smoothed texture. After sufficient drying it can be painted with the silicate paint **weber.ton 410 AquaBalance.**

facade / wall

Dismantable ultra thick-layer Etics with mineral wool insulation boards

4.7 Priming / Base coat / Reinforcing works

Protect the glued boards from too heavy humidity ingress. The reinforcing base coat render **weber.therm armadura base** is applied onto the insulation boards in a thickness of 10 - 15 mm and ruled level **(picture 14).**

The coarse woven mesh **weber.therm 310** is inserted in the lower third of the base coat render layer as a separating fabric for ensuring recyclability of the system. After a waiting time of 14 days, the reinforcing mortar **weber.therm 302** is applied onto **weber.therm armadura base.**

Afterwards lay the woven mesh **weber.therm 310** into the reinforcing mortar in vertical or horizontal wrinkle-free strips across the whole surface. Gently press the mesh with a flat trowel. The strips must overlap by at least 10 cm **(picture 15).**

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Afterwards the mesh must lie in the upper half of the reinforcing mortar layer. Pay attention that the overlapping mesh strips do not coincide with other mesh reinforcements in corner areas of windows and other wall openings. At the corners of the building, the mesh is brought flush to the corners.

In case of thick-layer overlay renders (range of scratch renders **weber.top**) comb the reinforcing mortar **weber.therm 302,** using for ex. a hard broom after stiffening. In case of thin-layer mineral or organic overlay renders rule level to a flat, rough and in-plane surface with a wooden float (do not smooth it).

	weber.therm armadura base	weber.therm 302
weber.therm 310		+
weber.therm 310 as	+	
Thickness of reinforcement layer	10–15 mm	5–7 mm

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4.8 Overlay (top coat) renders

Respect a drying time of at least 7 days after application of the reinforcing mortar and prior to application of the overlay renders. Depending on climatic conditions and type of finish top coat, the reinforcement layer can be pre-wetted (preferably the day before). Alternative: the universal primer **weber.prim 403** can be applied in case of thin-layer overlay renders. The overlay render can be applied by hand appropriate render machine. Respect the specific instructions in the technical data sheets for the application of overlay renders. In case of through-coloured, mineral and silicate thin-layer overlay renders, one coat of paint, for ex. **weber.ton 414 AquaBalance** is recommended to compensate the colour differences.

4.9 Perimeter insulation and socket part insulation

Conditions

- The Etics has no waterproofing function.
- The necessary vertical and horizontal waterproofing (in accordance with the national standards/guidelines, for ex. DIN 18533) must have been carried out.
- Precipitation water must be diverted from the facade by taking appropriate measures (for ex. installation of capillary layer or permeable gravel bed). The paving slabs around the building must be laid with a sufficient slope and be separated from the building so as to facilitate the water drainage

Bonding of insulation boards

The socket insulation boards **weber.therm FG 039 Sockel standard** are bonded with the system-compliant adhesive (2-comp. solvent-free reactive adhesive PC® 56) and mechanically fastened with the screw dowels **weber.term SDR-5 Schraubdübel** above ground level. Afterwards apply a reinforcement layer with the lightweight bonding and reinforcing mortar **weber.therm 307** + woven mesh **weber.therm 310** (coarse). For further information refer to the application tip **„Non-combustible ETICS on the facade socket part with Foamglas insulation"**.

Top coat render

Next day apply a layer of the lightweight bonding and reinforcing mortar **weber.therm 307** as final coat, rule level and texture to a smooth finish. After drying of the mortar, it is recommended to reinforce its hydrophobic behaviour in the upper socket parts (facade parts above ground level) by applying the silicate resin paint **weber.ton 410 AquaBalance** or the silicone resin paint **weber.ton 411 AquaBalance.** On earth-contacting building parts apply the flexible waterproofing coating **weber.dur 126** (1-comp.) or **weber.tec Superflex D 2** (2-comp.) after drying of the mortar.

Beforehand roll out a protection and drainage mat (for ex. **weber.sys 983**) or a drainage board so as to protect earth-contacting surfaces from loads and damages during the backfilling of the excavation pit.

Comply with the national standards and/or guidelines relating to all works described in this document; if necessary, request technical advice.