Langmatz

Installation Instructions

Underground Distribution System EK600 | EK800

with Swivel Cover

Contents

English

1 General information

Note!
Any person involved in the assembly, connection, operation, maintenance, and repair of the product must first read, understand and follow these instructions. We accept no liability for damage and operating malfunctions caused by failure to comply with these instructions.

In the interest of further development, we reserve the right to change individual assemblies and accessories as considered necessary for further safety and performance improvements, while preserving the main features.

2 Safety information

The product complies with the latest state-of-the-art technology at the time of printing and is delivered in an operationally safe condition. Unauthorised modifications, particularly to safety-related parts, are prohibited.

Langmatz GmbH warns against the misuse of the product.

Before opening, ensure that the underground distribution system is not flooded.

2.1 Electrical installation kit

All electrical components must meet the applicable standards when installing them.

Protect electrical components from the harmful effects of water. Langmatz recommends the use of Langmatz diving-bell cabinets.

2.2 General

- Information signs attached to the underground distribution system must be observed.
- Information signs must be kept clean. Missing or illegible signs must be replaced.
- Regular maintenance and cleaning are essential for safe operation and must be performed by trained professionals (see also Chapter 11).

Note when folding away!

- Do not allow cables to be crushed!
- Keep folding and swivelling areas clear when folding away! **Risk of injury! Crushing of limbs.**
- Clear folding and swivelling areas of dirt and other objects.

The operating company is responsible for installing, operating and maintaining the fixtures.

The operating company is responsible for the following:

- Preventing danger to the life and limb of users and third parties.
- Ensuring operational safety.
- Precluding downtime and environmental impact due to incorrect handling.
- Ensuring that protective clothing is worn when working with or on the product.
- Ensuring that users receive instructions in the proper operation of the underground distribution system.

Do not use the product if the mechanics are damaged. Please contact the hotline (see Chapter 16 Contact).

Note!

Applicable occupational safety and environmental protection regulations must be complied with during installation, operation, maintenance, or repair.

3 Illustration of the “snorkel effect” principle

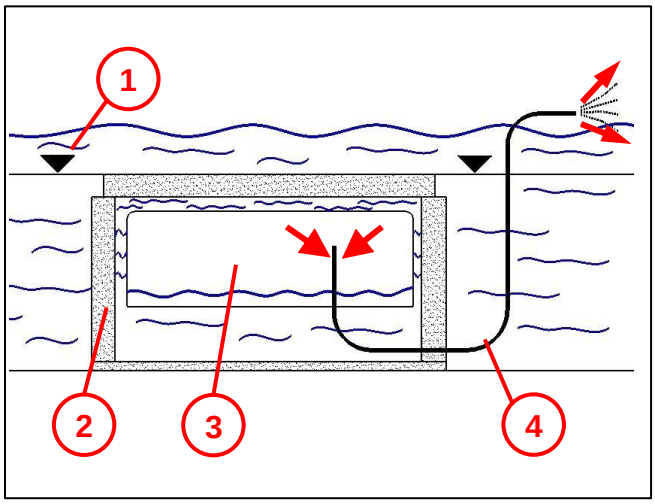


Fig. 1

Danger!

Ensure that supply and discharge cables/lines **(4)** are tightly sealed (see Fig. 2) to prevent a “snorkel effect” in rising water.

1 Ground level
2 Underground distribution system
3 Tray/flood-proof cover

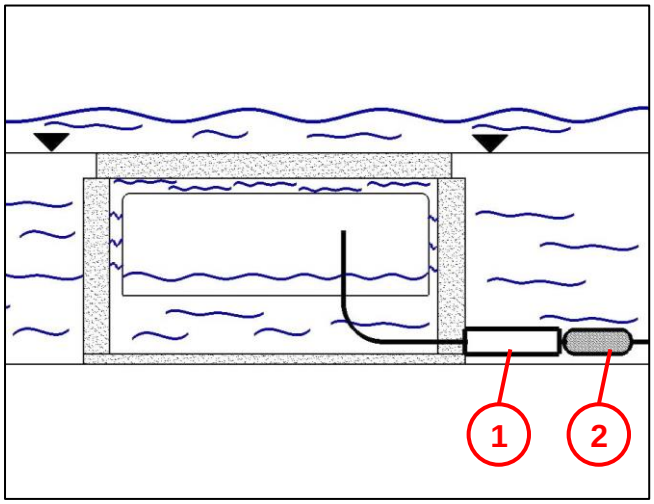


Fig. 2

The seal must be gas-tight.

- Use compression joints with an oil stop etc.
- Then encase the cable using a cast resin fibre closure **(2)**.

<u>Fibre enclosures outside the underground distribution system:</u>

Note!

- Do not lay cables directly in the ground!
- A conduit **(1)**, among other things, can be used to protect the cables!

4 Product description

The underground distribution system EK600 | EK800 has been developed primarily for energy distribution in public places and for operation by lay persons. Operation is correspondingly user-friendly and seamless. In addition, great importance is attached to safety (e.g. by means of a safety catch and step protection cover).
The power outlet distribution system is folded into the base when not in use and can, if required, be easily opened again with the aid of two gas springs. A locking system patented by Langmatz guarantees reliable opening, even if the cover is frozen shut. To prevent contamination and unauthorised access, the actuation area of the locking mechanism is equipped with a lockable flap.

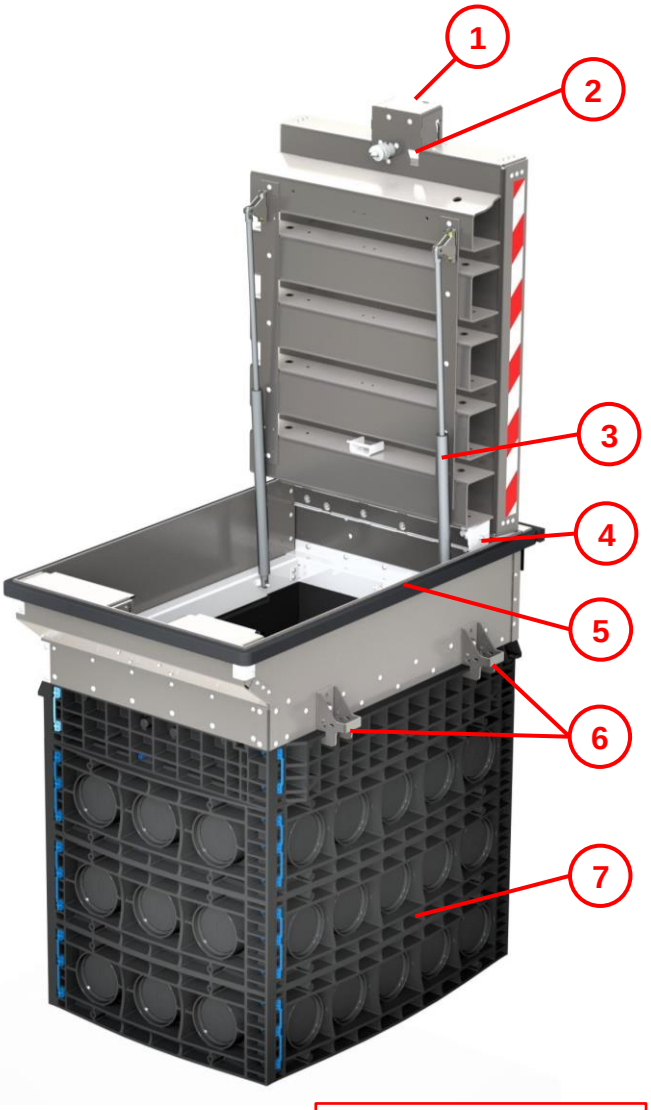
All components in the cover are made from high-quality stainless steel.

Langmatz's many years of experience in the field of underground distribution systems mean that product details, such as openings for measuring the water level in the manhole and/or openings for pumping water out of the manhole, are provided as standard.

4.1 Technical data

	EK600	EK800
Overall external dimensions:	683 x 887 mm	825 x 1050 mm
Clear dimensions:	400 x 650 mm	550 x 800 mm
Overall depth in the ground:	640 mm; 860 mm; 1080 mm;	625 mm; 845 mm; 1065 mm;
Height with the cover folded up above ground:	810 mm	960 mm
Maximum possible cable or hose diameter:	60 mm	60 mm
Manhole cover compliant with DIN EN 124:	Load class D 400; - paveable; fillable tray depth: 65 mm;	Load class D 400; - paveable; fillable tray depth: 65 mm;
Manhole cover locking mechanism:	Yes	Yes
Manhole body material:	PC	PC
Manhole frame material:	Stainless steel 1.4301	Stainless steel 1.4301
Weight (without paving; concrete)	213 kg	238 kg

5 Scope of delivery



Item 1 Locking flap

Item 2 Opening for water level measurement and pump-out option

Item 3 Gas spring

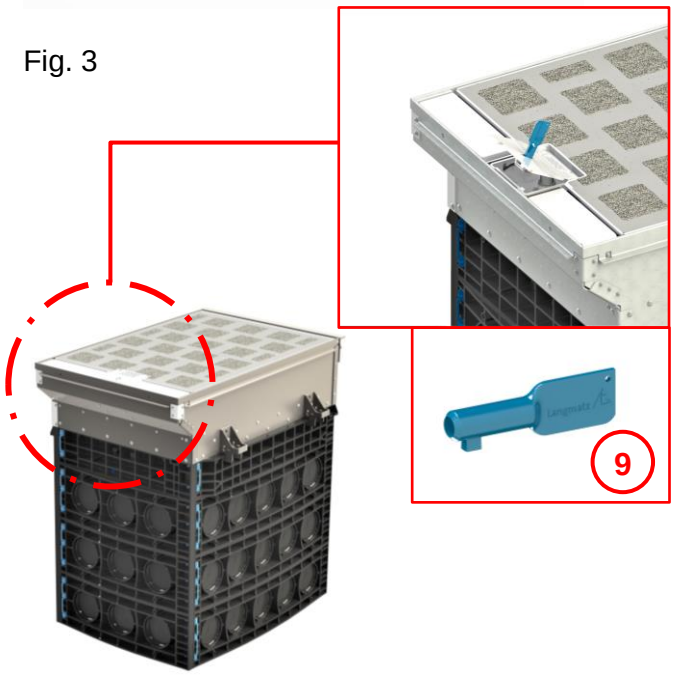
Item 4 Safety catch

Item 5 Joint tape (in accessories kit)

Item 6 Crane lugs

Item 7 Manhole body

Fig. 3



Item 8 Cable outlet cover

Item 9 Key

Fig. 4

5.1 Required tools (not included)

Commercially available tools are sufficient for installation and connection. No special tools are required.

6 Installation

6.1 General

- The underground distribution system must be installed by a qualified expert company.
- The soil conditions must be assessed before preparing a load-bearing foundation pit base.

  - The manhole must be installed in “non-cohesive” to “cohesive” mixed soils.
  - Groups G1 to G3 soil types as per ATV-DVWK-A 127 (German Association for Water, Waste Water and Waste), and/or soil groups GE, GW, GI, SE, SW, SI, GU, GT, SU, ST, GU*, GT*, SU*, ST*, UL, and UM as per DIN 18196.

Caution!
Observe ZTV A-StB 12 (Supplementary Technical Contract Conditions and Guidelines for the Construction of Asphalt Roads) for the construction of the road surface!

6.2 Preparing the foundation pit base

When preparing the foundation pit, comply with the following documentation from the Gütegemeinschaft Leitungstiefbau e.V. (Underground Cable Line Construction Quality Association):
"Procedural instructions for performing tasks in underground cable line construction".
The position and depth of the foundation pit base must match the installation situation.
The upper edge of the manhole cover must lie completely flush with the surrounding ground level and must not project.
Align the cover surface horizontally. The height cannot be adjusted with this product.
Underground distribution systems arranged next to each other must have a clearance of at least 1.00 m between them.
The supply lines must be installed by the client according to their planning specifications. The specifications in the Installation Instructions, Chapter 6.3.1 must be observed.

6.2.1 Drainage

The water drainage system is connected via a predetermined breaking point in the lowest frame. The installation of a backflow trap between the water drainage connection and waste water system is recommended.
Drain any water that has penetrated into the manhole to a surface drainage system (e.g. gravel).

6.2.2 Possible situations for the foundation pit base

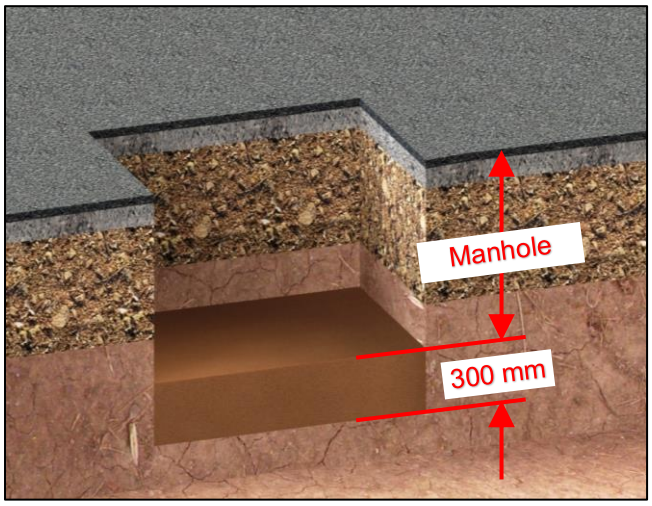


Fig. 5

Situation A
For pedestrian areas:

- Lay an underfill/bottom layer at least 300 mm thick.
- The underfill/bottom layer must consist of “non-cohesive” to “cohesive” mixed soil (group G1 soil type as per ATV-DVWK-A127).
- Layer and compact the underfill/bottom layer to $D_{Pr} \geq 98\%$.

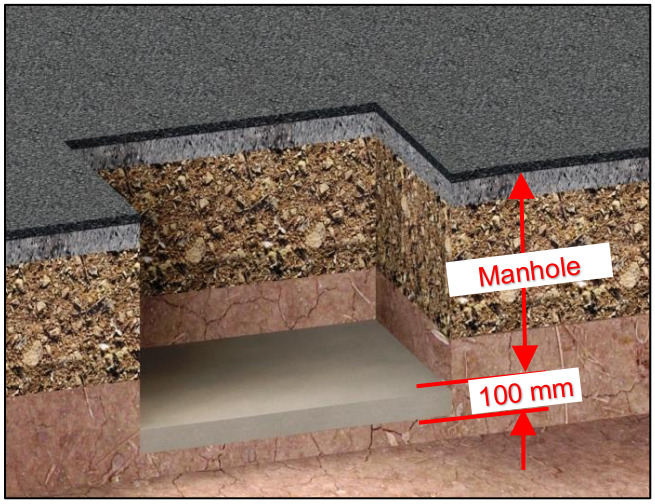


Fig. 6

Situation B
For vehicle traffic areas:

- Compact the pit base according to the requirements.
- With group G1/G2 soil types as per ATV-DVWK-A 127 (soil groups GE, GW, GI, SE, SW, SI, GU, GT, SU, ST as per DIN 18196):
- Lay a concrete load-bearing layer at least 100 mm thick (tamped concrete, strength class ≥ C8/10).

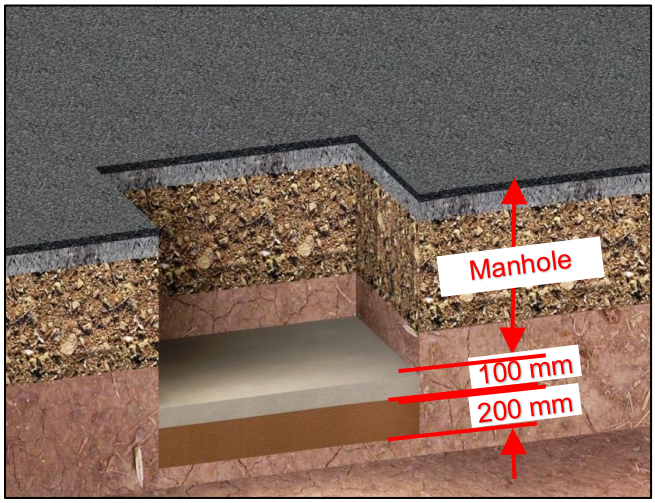


Fig. 7

Situation C
For vehicle traffic areas:

- With group G3 soil type as per ATV-DVWK-A 127 (soil groups GU*, GT*, SU*, ST*, UL, UM as per DIN 18196):
- Lay an underfill of group G1 soil types as per ATV-DVWK-A 127.
  Minimum thickness 200 mm. Layer and compact the underfill to $D_{pr} \geq 98\%$.
- Lay a concrete load-bearing layer at least 100 mm thick (tamped concrete, strength class ≥ C8/10).

6.3 Installation of the underground distribution system

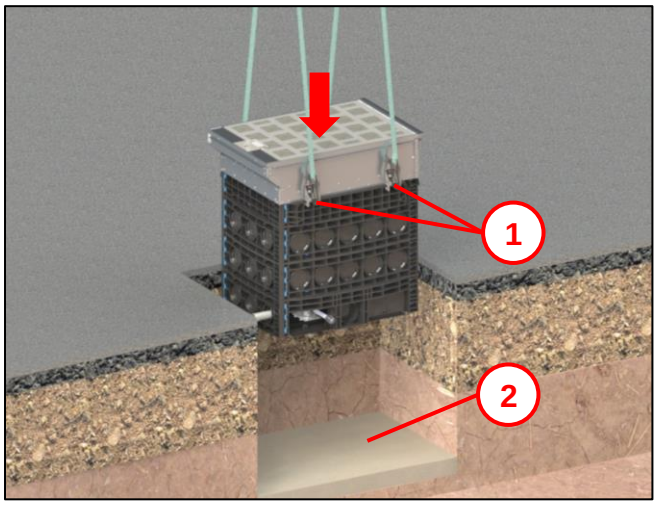


Fig. 8

- Pick up the underground distribution system using the 4 crane lugs **(1)** provided.
- Use suspension ropes or chains with a minimum side length of 1.0 m.
- Place the closed underground distribution system on the foundation pit base **(2)**.

  The crane lugs **(1)** remain secured to the underground distribution system and are buried along with it.

6.3.1 Alignment of supply and discharge lines

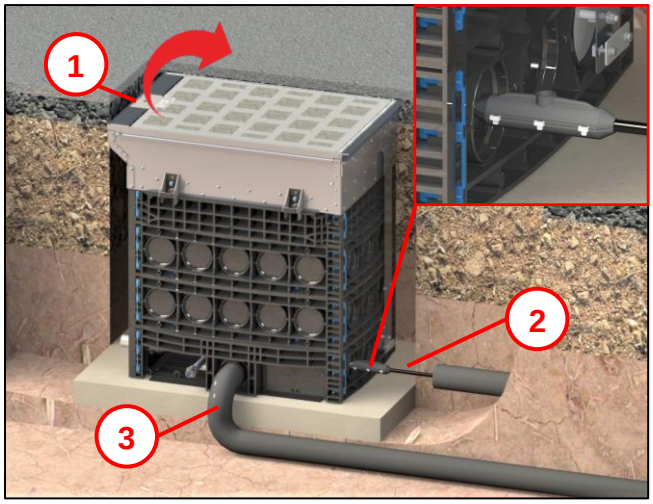


Fig. 9

Note!

Align the supply and discharge lines to the position of the locking flap **(1)**!

Installation showing the EK600

- Supply line **(2)** on the rear side opposite the locking flap **(1).**
- Drainage **(3)** – on the long side.

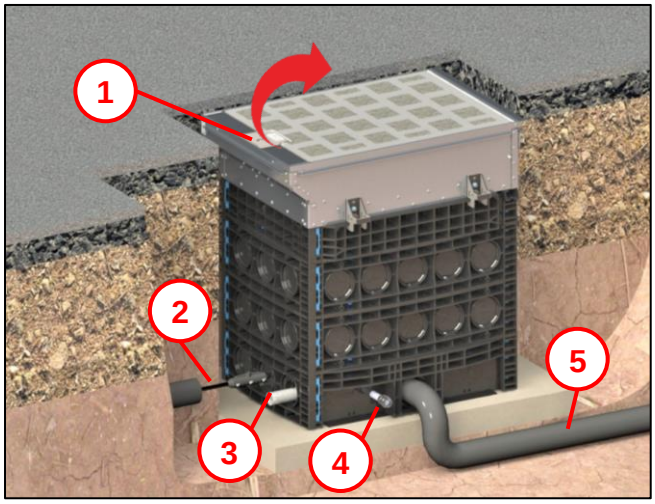


Fig. 10

Installation showing the EK800

- Supply line **(2)** on the front side below the locking flap **(1)**.
- Waste water drain **(3)**.
- Fresh water supply **(4)**.
- Drainage **(5)** – on the long side.

6.4 Earthing

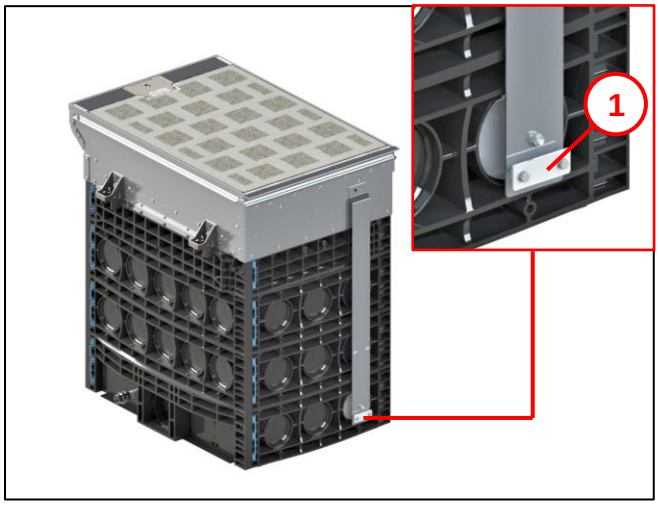


Fig. 11

The earthing connection **(1)** is located on the rear of the underground distribution system.

It is possible to connect an earthing strip.
Note: The connection must be made before the foundation pit is backfilled!

Take a measurement to comply with the values specified by VDE.
Observe further specifications based on the local conditions as well as the specifications of the responsible grid operator.

6.5 Installing the circumferential joint tape

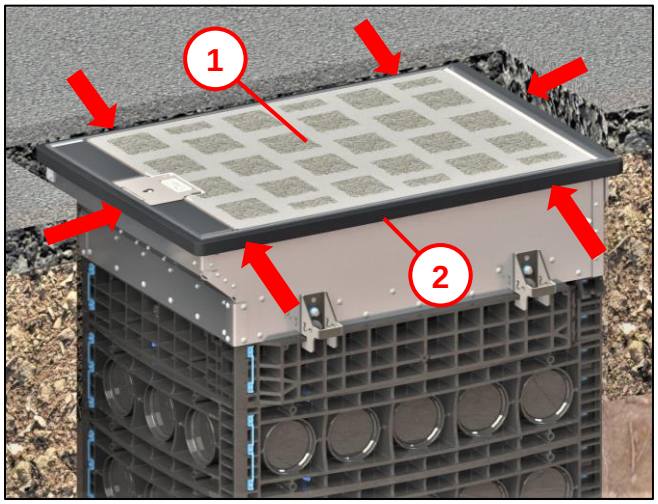


Fig. 12

Note:
A joint tape **(2)** is fitted to ensure that the swivel cover **(1)** can be operated properly. This prevents the underground distribution system from becoming wedged or deformed.

- Attach the joint tape **(2)** provided right around the upper area of the steel frame as per ZTV Fug-StB01.

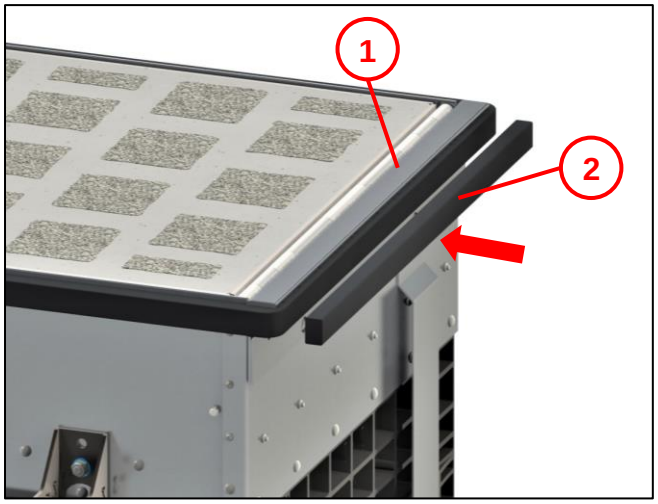


Fig. 13

- **Important:**
  Apply two layers of the joint tape **(2)** to the hinge side **(1)** of the manhole.

7 Constructing the surrounding surface

7.1 Backfilling the foundation pit

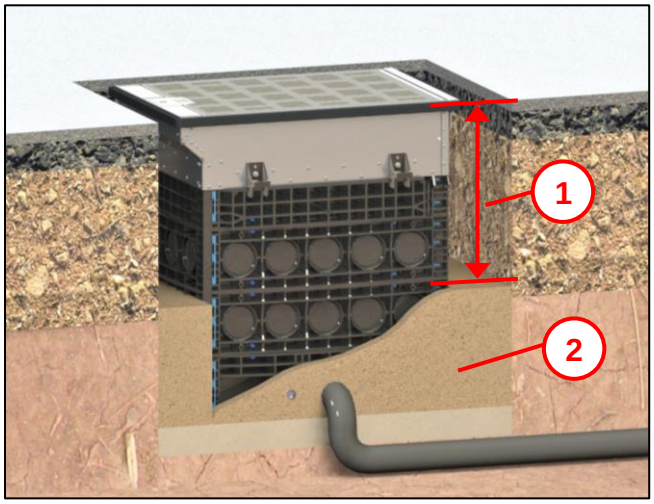


Fig. 14

- Backfill the foundation pit in layers using material suitable for compacting **(2)** in accordance with ZTV E-StB 09 up to the lower edge of the top layer **(1)**.
  (Top layer height approx. 65 cm).

7.2 Constructing the top layer (in the vehicle traffic area)

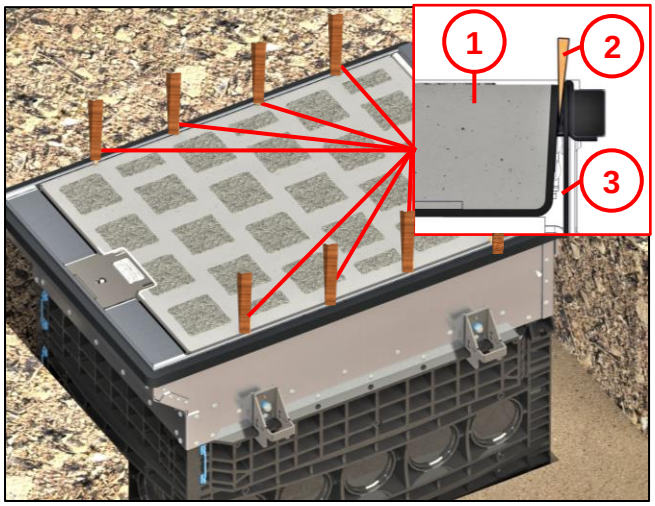


Fig. 15

Note!

Before compacting the top layer, make sure that the gap between the swivel cover **(1)** and the steel frame **(3)** is secured to prevent deformation (warping)!

- Drive in the 8 wooden wedges **(2)** provided between the swivel cover **(1)** and the steel frame **(3)**.

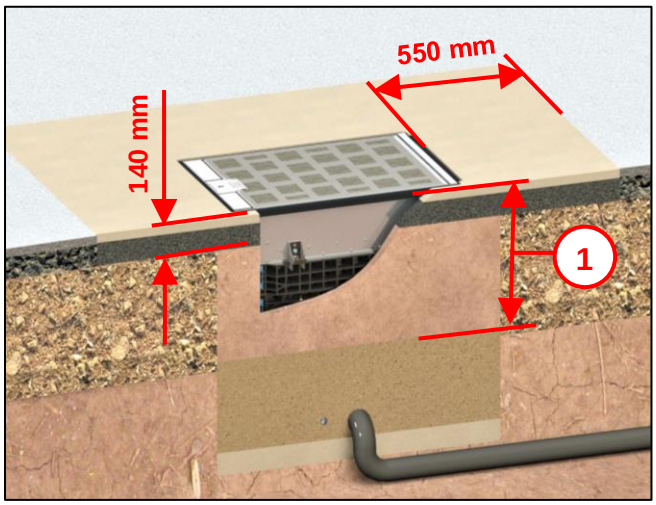


Fig. 16

- Construct the top layer **(1)** as per ZTV A-StB 12 (and/or Guidelines for the standardisation of traffic area top layers RStO 2001).
  In the vehicle traffic area:
  At the upper edge of the top layer, allow a strip of concrete or poured asphalt at least 550 mm wide and 140 mm thick (asphalt base layer of at least construction class V according to RStO 2001).

8 Handling paveable swivel covers

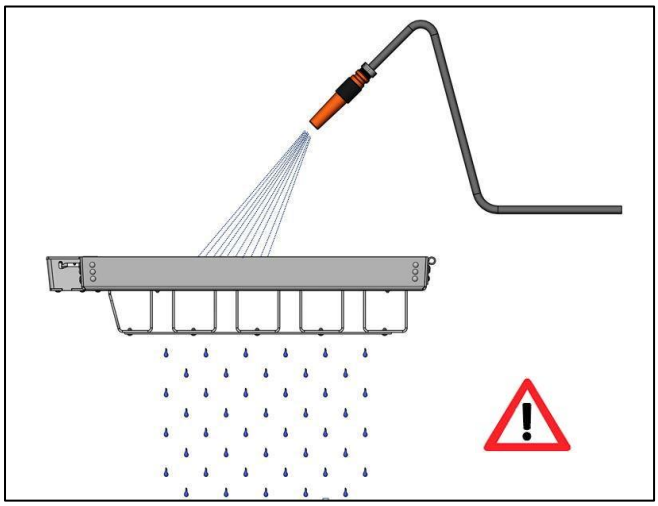


Fig. 17

Warning!
The swivel cover is not sealed at the factory!

- The surface of the swivel cover is delivered empty from the factory and can therefore be paved over.

- **If the swivel cover surface is constructed by the client, please note:** The covering fitted may not come loose or fall out when the swivel cover is open. Handle the paving as follows.

8.1 Preparing the steel tray

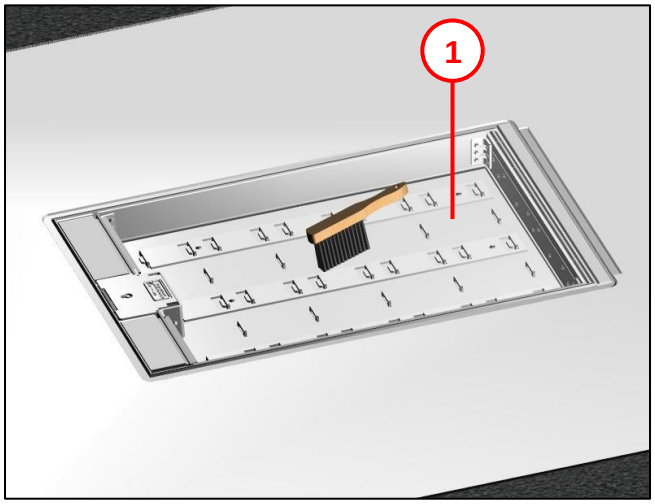


Fig. 18

- Thoroughly clean the surface of the stainless steel tray **(1).**
- Make sure that the base surface is clean and dry (corrosion-free steel surfaces).

- Prime the stainless steel tray, for example using
  - PCI Bauharz Epoxi resin-epoxy binder
    or
  - PCI Epoxigrund 390 primer.

Note!
Never allow the primer to cure! Perform follow-on work before it has dried!

8.2 Laying the mortar bed

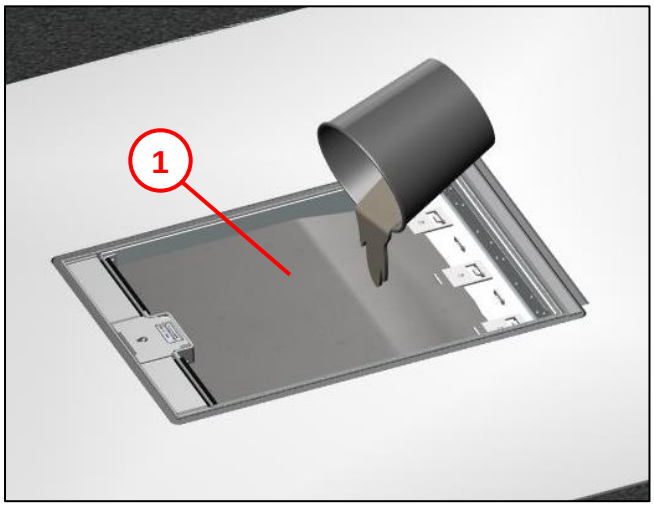


Fig. 19

- Lay the required thickness of mortar bed **(1),** for example using
  - PCI Bauharz Epoxi resin-epoxy binder
    or
  - PCI Epoxigrund 390 primer.

  Mix either product with, for example, PCI Quartz Sand II in a ratio of 1:8.

8.3 Paving and grouting

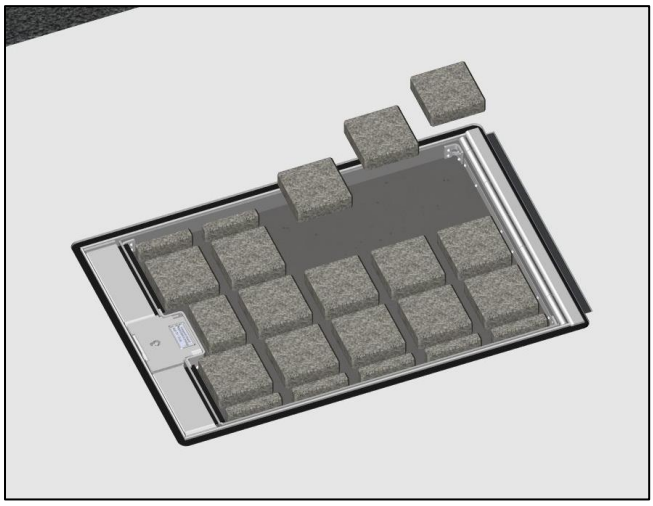


Fig. 20

- Apply primer to the back of the paving stones.
- As with the mortar bed, e.g. using
  - PCI Bauharz Epoxi resin-epoxy binder
    or
  - PCI Epoxigrund 390 primer.
- Tap in the paving stones before the base has fully dried.
- **Note!**
  Only grout the covering <u>once the mortar bed has hardened!</u>
- Grout with PCI Durapox NT + PCI Quartz Sand BCS 412.

  Note:
  Depending on the natural stone material, this can cause the stones to appear darker (“wet effect” or “baroque frame” effect).

The surface thus prepared is fully load-bearing after approx. 48 hours (at +23 °C and 50% air humidity).

9 Operation

9.1 Opening the swivel cover locking flap

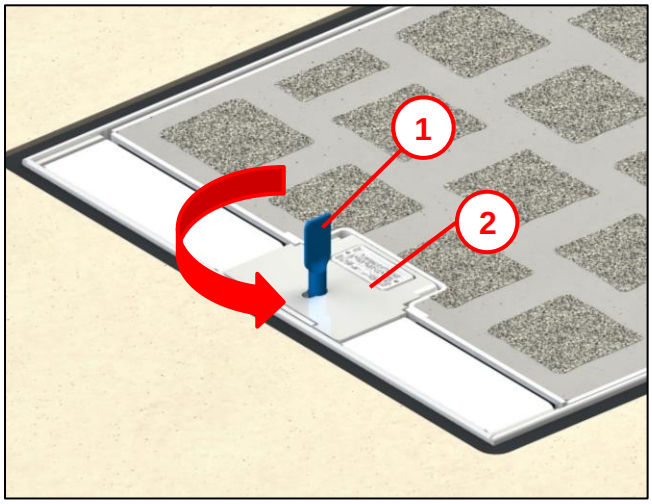


Fig. 21

Caution!
When opening,
exit the swivelling area / danger area and ensure that it is free of objects.

- Unlock the locking flap **(2)** with the key provided **(1)** (anti-clockwise).

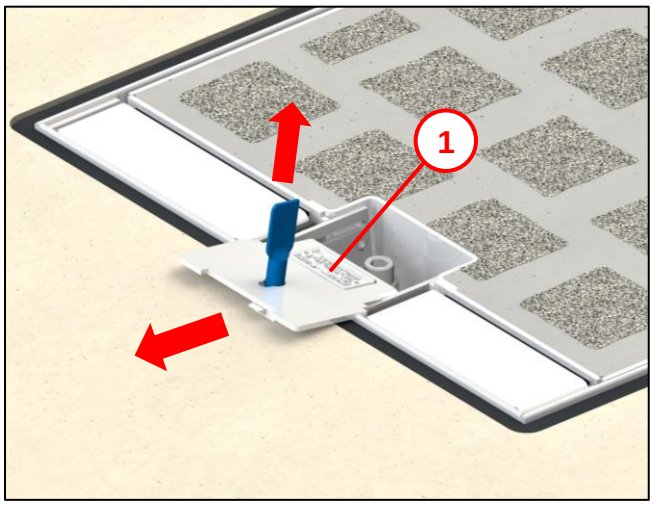


Fig. 22

- Fold the locking flap **(1)** upwards and pull it forwards.

9.2 Checking the water level

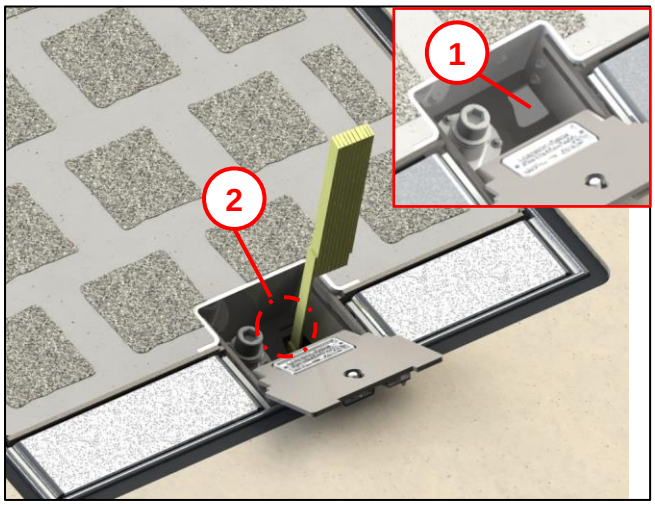


Fig. 23

Opening to check the water level, e.g. in the event of flooding **(1).**
Doubles as a pump-out opening.

- Insert a metre rule (or other suitable tool) into the opening down to the base **(2).**
- Do not open if there is standing water!
- Pump out the underground distribution system through the opening.

9.3 Opening the swivel cover locking bolt

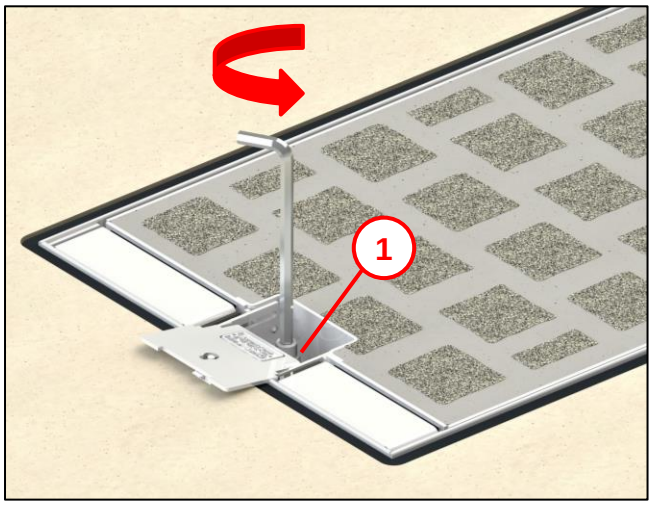


Fig. 24

- Insert the hexagon socket spanner, AF14, provided into the locking bolt **(1)**.
- Turn the hexagon socket spanner anti-clockwise.
- The swivel cover raises by a few centimetres.
- Turn the locking bolt further until the swivel cover disengages from the locking system.
- This state is reached once the turning movements no longer produce any noticeable resistance.

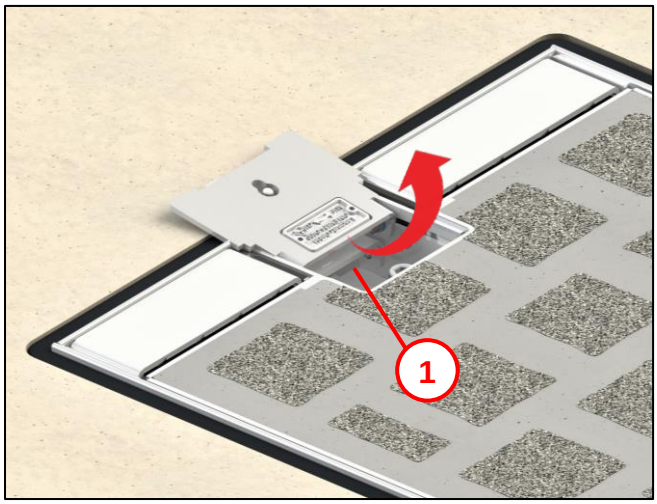


Fig. 25

- Tighten the swivel cover using the handle recess **(1)**.
- The swivel cover folds upwards with support from the gas springs (in the interior).
  Note:
  The gas springs act as an opening aid. Temperature fluctuations affect the sliding properties of the gas springs.

9.4 Opening the swivel cover completely

(Illustration showing removal and step protection cover)

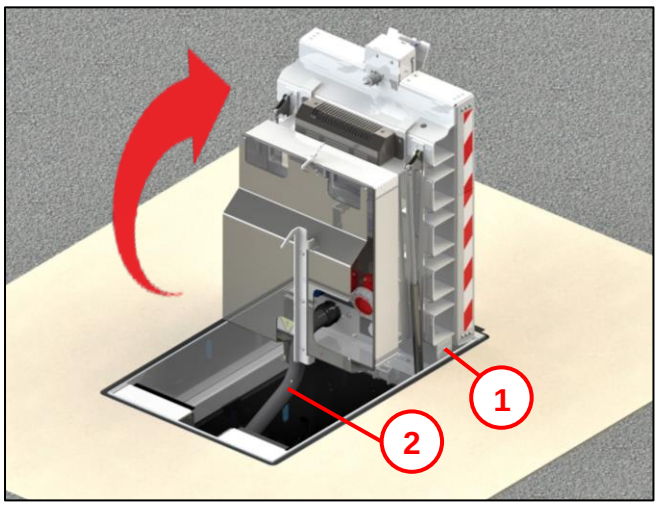


Fig. 26

- Open the swivel cover until the safety catch **(1)** on the side engages.

Warning!
Check the supply cable **(2)** for any damage. Do not operate the underground distribution system if the supply cable is damaged.
Risk of electric shock and fire hazard!

9.5 Using the step protection cover (optional)

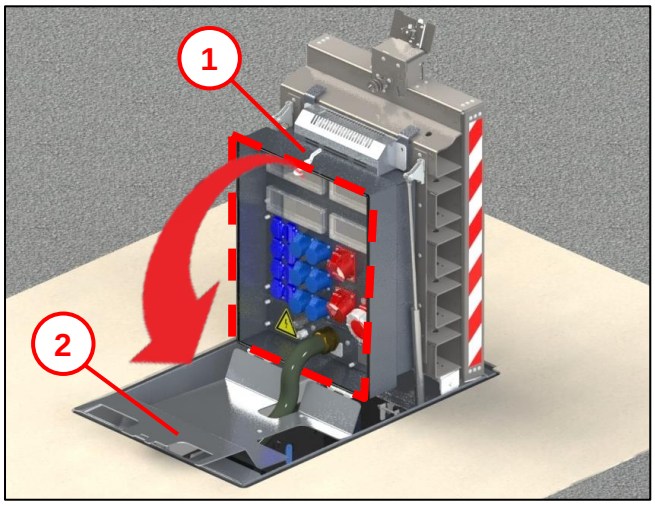


Fig. 27

The underground distribution system is shown here with a step protection cover **(2)** (optional).

- After the swivel cover has been opened, loosen the locking hook **(1)** and fold down the step protection cover.

Caution!

When operating open, always fold down the step protection cover **(2)** (risk of falling/injury)!

10 Operation

10.1 Operation when closed

(Illustration showing removal and step protection cover)

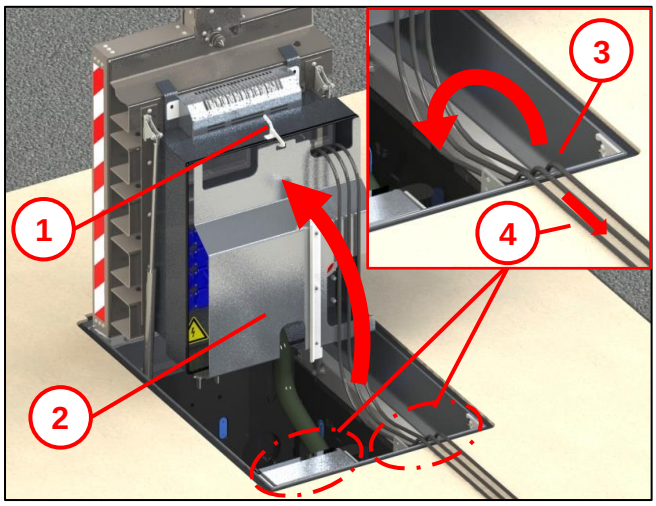


Fig. 28

Note!
Before closing the swivel cover, open the required cable outlet cover **(3)** as follows.

- Fold up the step protection cover **(2)** (optional).
- Close the locking hook **(1)**.
- Lift the required cable outlet cover **(3)** and pull it down into the guide slot.
- Route cables and hoses **(4)** through the respective cable outlet opening.
- Make sure that the cables/hoses are not pinched or crushed.

10.2 Closing the swivel cover

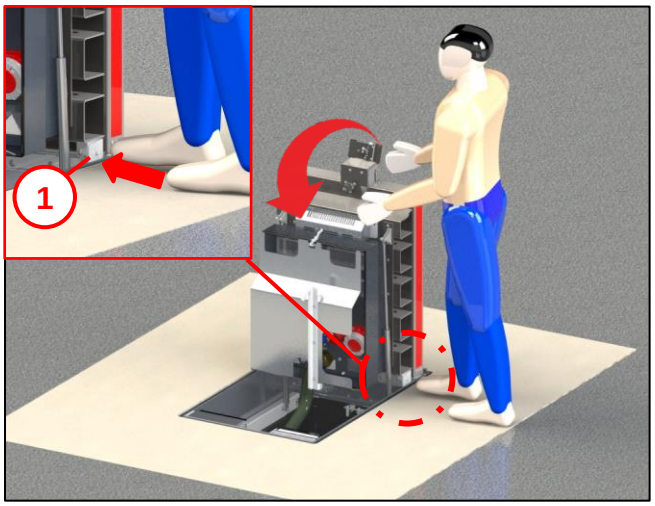


Fig. 29

- The swivel cover is unlocked by pressing the safety catch **(1)** with your foot.

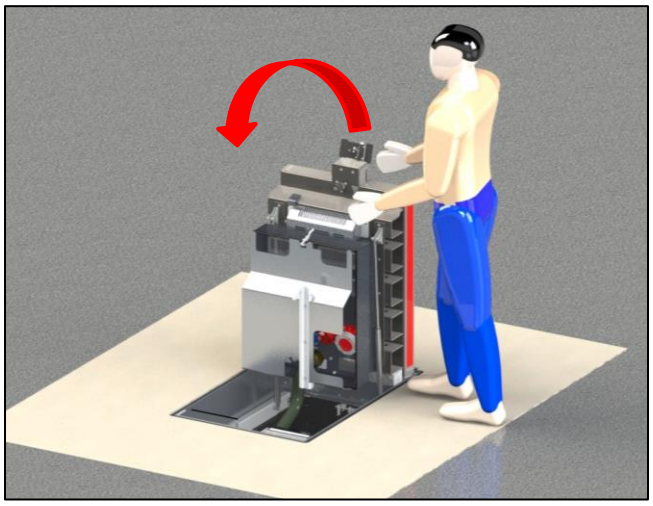


Fig. 30

- Swing in the swivel cover with downward pressure.
- The gas springs dampen and prevent it from falling shut.

Caution!
Ensure that the cables/hoses are routed tidily.

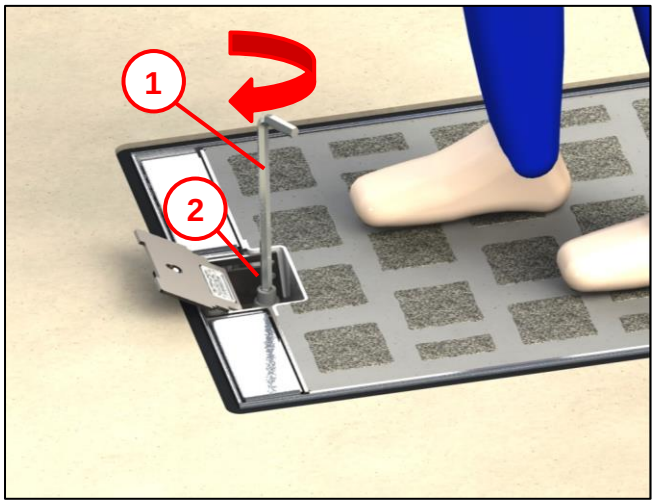


Fig. 31

- The user should stand on the swivel cover to lock the underground distribution system.
- Insert the hexagon socket spanner, AF14 **(1)**, into the locking bolt **(2)**.
- Turn clockwise and lock the swivel cover.
- Turn until the swivel cover has lowered to the level of the steel frame and a noticeable resistance can be felt when turning.

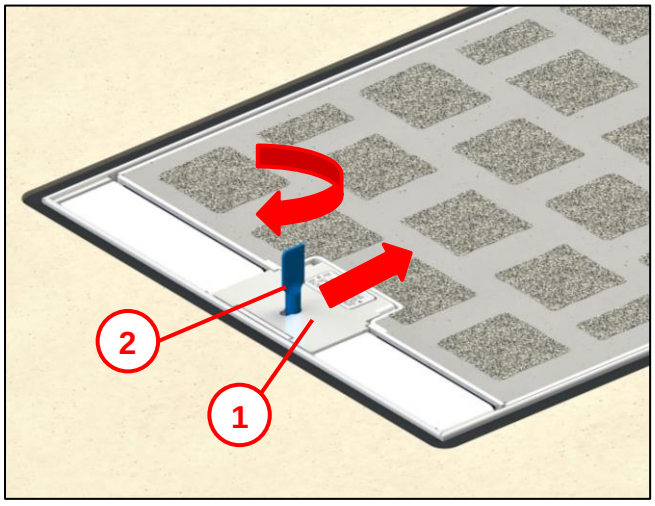


Fig. 32

- Push back the locking flap **(1)** and lock it with the key provided **(2)** (clockwise).

11 Maintenance

11.1 General measures

Measures	Intervals	Remarks
Clean the interior of the underground distribution system	After every use	(By trained professionals)
Check that the fastening screws fit securely	Annually	
Open and close the swivel cover	Every six months	Regularly operate the gas springs to lubricate the seals.
Visual inspection of the drain for free drainage	After every use	

12 Declaration of Conformity

The product meets the requirements of the following applicable harmonisation directives:

2006/42/EC Machinery Directive

Compliance with the relevant harmonisation legislation has been demonstrated through the application of the following harmonised standards:

No applicable harmonised standards exist.

Compliance with the harmonisation legislation has been demonstrated through the application of the following other standards and technical specifications:

DIN EN 124-1: 2015-09 (not harmonised)
DIN EN 124-3: 2015-09 (not harmonised)

13 Material defects

Langmatz accepts liability for material defects in the product as per Section 434 BGB (German Civil Code) for 24 months, starting from the date on the purchase receipt.

Within the scope of liability, all parts that become damaged due to manufacturing faults or material defects will be replaced or repaired free of charge.
The purchaser must report any deficiency complaints immediately in writing.
Claims by the purchaser for damages due to material defects or for whatever legal reason will not be accepted.

Any damage or failure caused by the following are also excluded from liability:
- incorrect use,
- natural wear and tear,
- intervention by third parties.

We accept no liability for damage caused by force majeure or transport.

Repairs due to a deficiency complaint do not extend the warranty period for the replaced parts or for the product.

This product conforms to the latest state-of-the-art technology. Nevertheless, if you experience any problems with it, please contact our hotline (see section 16 Contact).

14 Quality management

The Langmatz GmbH quality management system is certified to DIN EN ISO 9001.

15 Disclaimer/Warranty

The information in this technical document is presented appropriately and correctly in compliance with the technical regulations, and to the best of our knowledge. However, this does not confer any guarantee of particular characteristics. In this context, the company that operates the products supplied by Langmatz GmbH is expressly obliged to decide, based on its own judgement, whether the products are suitable and appropriate for the application or use being considered. The product liability accepted by Langmatz GmbH relates exclusively to our conditions of sale, delivery, and payment. Langmatz GmbH accepts no liability on the basis of random, indirect and resultant consequential damage, or of any damage attributable to any use of the product other than its intended purpose as described.

16 Contact

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