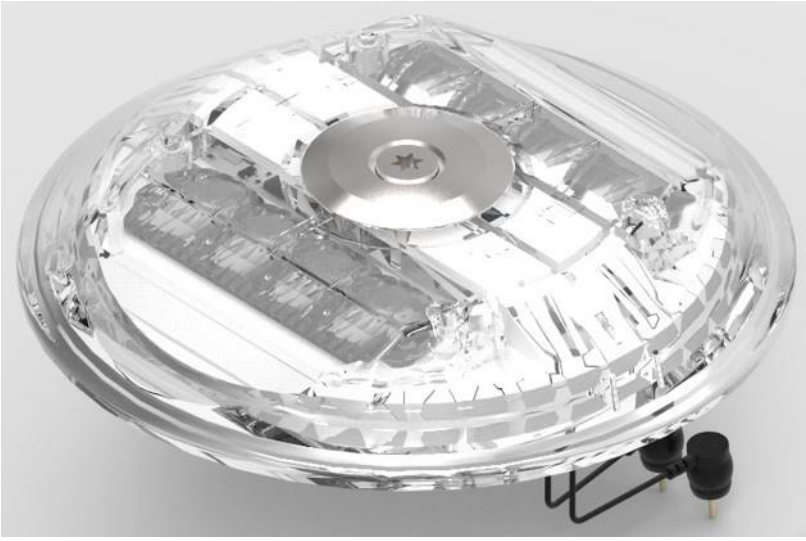
MarkLED 4

Installation instructions



VERSION	MODIFICATIONS
1.0	First edition
0518	Ø9mm drill bit, current collector fixation
0319	Add self-sealing cable grommet (page 27)
0420	Current collector Screw 3x12 replaced by 3x14
0720	Adapter AP polyamide
1220	Power distribution boxes without sealing compound may not be used
0721	p.43 Zusatz Instandhaltung
1121	p.22 Bore hole banquet reduced from ø60mm to ø50mm
1.1	28.03.2023 Adjust torque 2 Nm

Table of contents

1 General information 5

1.1 Marking concept for hazards and hints 5

1.2 Responsibilities of the operator 5

2 Introduction 6

2.1 Installation conditions product MarkLED 4 6

3 Required tools 7

3.1 Standard tool 7

3.2 Auxiliary tool 8

3.3 Consumables 8

4 Process 9

5 Electric power supply of the unit 10

5.1 Two tubes without adaption zone in the opposite direction 10

5.2 Two tubes with adaption zone in the opposite direction 10

5.3 A tube with contraflow 10

6 Measuring of MarkLED placement with current collector 11

7 System cable and current collector 12

7.1 Milling a groove in the shoulder 12

7.2 Remove bitumen from groove / remove old system 13

7.3 Create mounting and current collector bores 14

7.4 Inserting connecting cables 15

7.5 Mount current collector onto system cable 16

7.6 Install current collector in groove 17

7.7 Seal the groove (close) 18

7.8 Insert system profile 19

7.8.1 Installation with roll-off and profile-laying car (hire material) 19

7.9 Assembly of the control unit and connection of the system cables 21

8 Installation of the surface-mounted adapter PA on a shoulder with a tube 22

8.1 Calibrate the sites, mark and mill the tube 22

8.2 Laying the connecting cable 22

8.3 Mounting material 22

9 Installation of the surface-mounted adapter PA on a shoulder with a GROOVE 23

9.1 Calibrate the sites, mark and mill the groove 23

9.2 Laying the connecting cable 23
9.3 Installing the surface-mounted adapter 23
9.4 Connection MarkLED 24
9.5 Further installation work 25
10 Installation of MarkLED recess-mounted adapter in drilling core hole 26
10.1 Mark bores and groove 26
10.1.1 Mill groove 26
10.1.2 Drill core holes 26
10.2 Clean groove and boreholes 27
10.3 Mount installation conduit 27
10.4 Place levelling jig 27
10.5 Set recess-mounted box 27
10.5.1 Fill with mortar 28
10.5.2 Installing the recess-mounted adapter first step 28
10.5.3 Remove levelling jig 28
10.5.4 Installing the recess-mounted adapter 2nd step 28
10.6 Close groove 29
10.6.1 Close groove with mortar 29
10.6.2 Close groove with hot bitumen 29
10.7 Connection MarkLED 30
10.7.1 Pull in the cable 30
10.7.2 Preparation of cables/conductors 30
10.7.3 Connection MarkLED light module 30
10.8 Sealing compound 31
11 Wall-mounting of the surface-mounted adapter PA 32
11.1 Determine the mounting location 32
11.2 Lay the feeding cable 32
11.3 Installing the surface-mounted adapter 32
12 Installation MarkLED surface-mounted box 35
12.1 Attachment 35
12.2 Installation 35
12.3 Connection 36
12.4 Sealing compound 36
13 Installation of MarkLED recess-mounted adapter in formwork 37

13.1 Mark, drill and fasten 37
13.1.1 Alternative attachment with 4 screws 37
13.2 Mount installation conduit 38
13.3 Remove formwork 38
13.4 Connection and installation of MarkLED 38
14 Montage MarkLED wired 39
14.1 Mounting location 39
14.2 Attachment 39
14.3 Driling 40
14.3.1 Dimensions for drilling holes 40
14.4 Installation and connection of MarkLED 40
14.5 Function check 41
14.6 Drilling jig 42
15 Maintenance 43
15.1 Inspection and maintenance plan 43
15.2 Description of inspection and maintenance work 43
16 Service 44
16.1 Service addresses 44
16.2 Imprint 44

1 General information

1.1 Marking concept for hazards and hints

Hazard

Hazardous situation which will cause serious injury or even death if it is not prevented.

Caution

Hazardous situation which could cause slight to moderate injury if it is not prevented.

Hint

Indicates information which does not concern personal injury, e.g. hints in respect of material damage.

Protective measures

Increase safety by applying a protective measure.

1.2 Responsibilities of the operator

- Make sure that this document is always kept in a safe place in a legible form together with the product.
- Read these instructions carefully before first start-up of the product.
- This product has been developed and produced exclusively for the use indicated in these documents. Every other use, which is not mentioned explicitly, could affect the intactness of the product and/or could constitute a source of danger.
- The manufacturer rejects any liability for damage which has been caused by incorrect or non-intended use of the product.
- In countries, which do not belong to the European Community, the national legal reference regulations as well as the standards and regulations applicable in these countries have to be observed for warranty of a corresponding safety level.
- The installation has to be carried out according to the applicable regulations.
- The manufacturer assumes no liability for inexpert execution of installation as well as deformations which may occur during operation.
- The electric power supply has to be switched off before executing any action on the installation.
- Exclusively original parts of the manufacturer shall be used for maintenance. Maintenance work may be carried out by qualified staff only.
- All procedures which are not explicitly mentioned by the manufacturer in the instructions are not permitted.
- The packing material must not be stored within the reach of children as it could be a potential source of danger.

2 Introduction

To ensure proper installation, the following steps and notes must be complied with under all circum- stances. Only this way can it be ensured that the product will work to complete satisfaction.

Hint

Read all instructions before starting installation. Our sales department will be happy to answer any questions you may have.

2.1 Installation conditions product MarkLED 4

The system installation of MarkLED also depends on a professional installation!

Improper work:

- Extensive warranty work due to improper works

We instruct you on each project site for the correct assembly, so that a proper function of the system MarkLED can be ensured!

The cable cross-section of the cable length must be adjusted to maintain the required operating voltage.

Installation work in which adhesives or hot bitumen are used must not be carried out at carriageway temperatures below 5°C or above 30°C. For details on specifications, use and safety instructions, see the manufacturer's specifications.

3 Required tools

3.1 Standard tool

Drill hammer

Concrete drill ø9 mm and ø 40mm
Item no. 191102

Pliers to cut off cables

Light barping pliers for system cables 2x2,5mm²

Hot-air gun

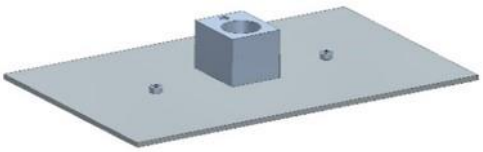
Compressed air for cleaning the groove and the bores

Hand press for 310ml cartridges

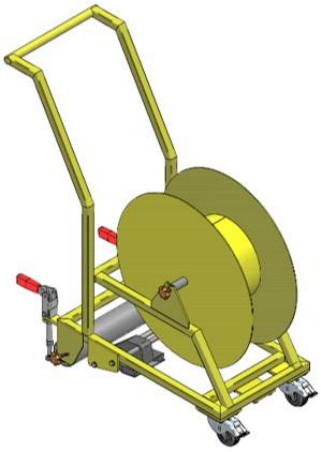
In order to ensure the correct polarity and thereby the function as early as the installation stage, we recommend using a supply voltage of 24VDC when connecting to the connection cables (if necessary, a 24V battery can also be used).

3.2 Auxiliary tool

Drilling jig item no. 860599 for mounting bore ø9 mm and installation bore current collector cone ø40 mm



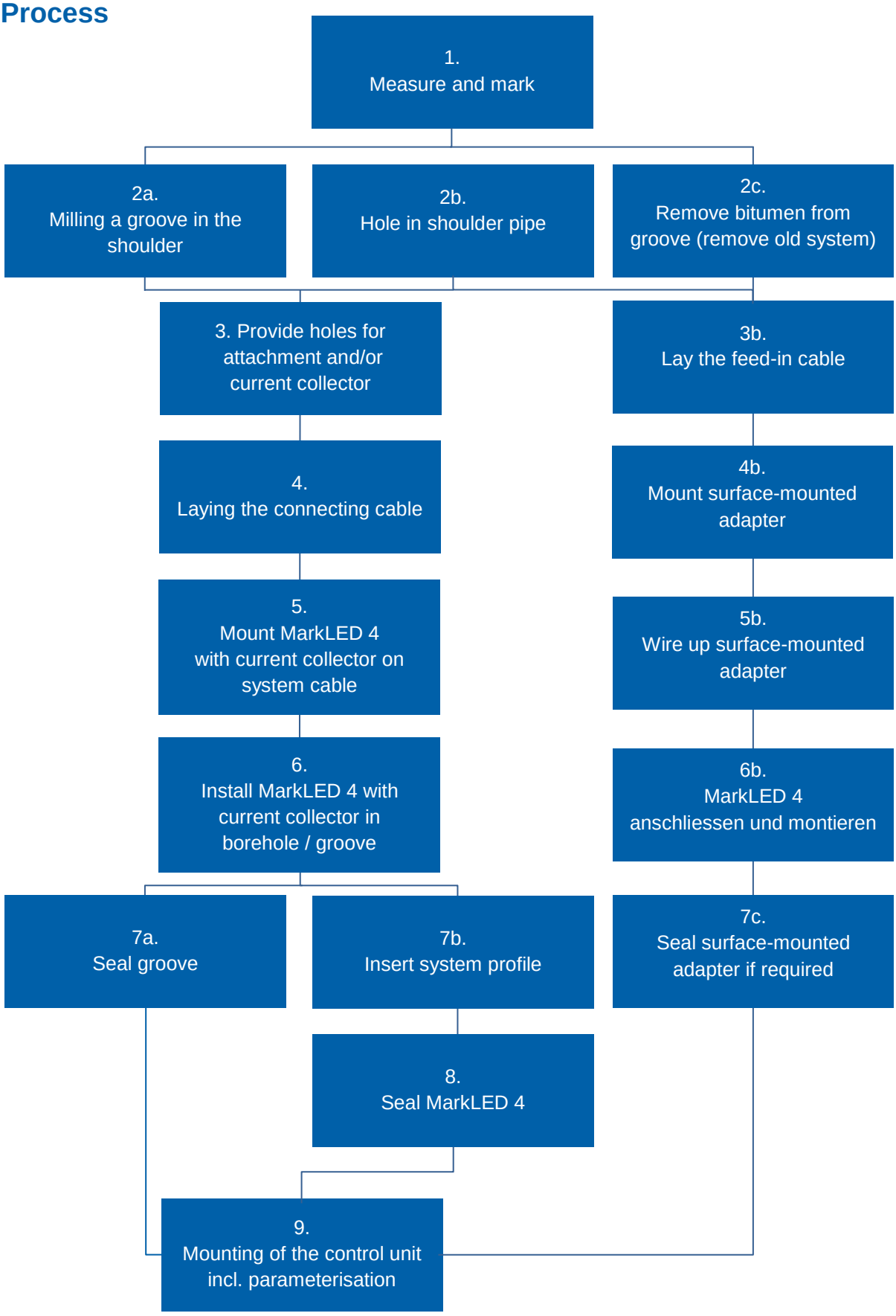
Trolley for sealing profile item no. 172211 (loan material GIFAS)



3.3 Consumables

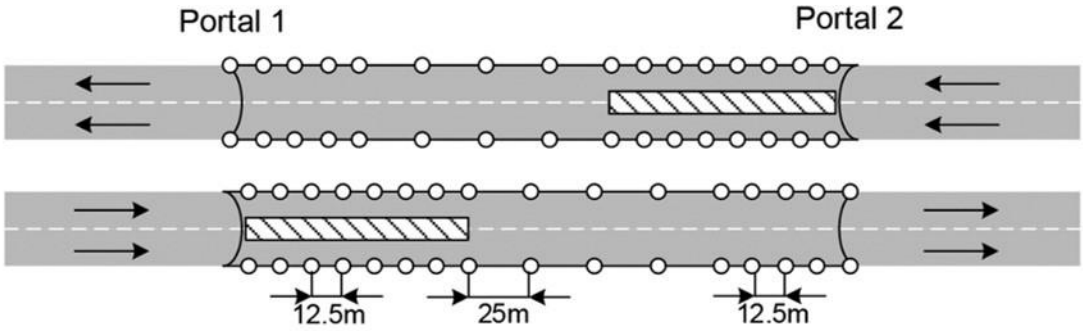
Heat shrink tube with glue (6mm/2mm)	item no. 010300
insulation tape 2 M Scotch no. 23, black	item no. 152743
crimp connector 1.5-2.5 hot-shrinking Raychem, blue	item no. 019875
Solder connector 1.5-2.5 heat-shrinkable NSPA, transparent	item no. 172745
Device for unrolling cables	
Cable lug crimping pliers for press connector	
Head lamp, measuring tape, material/tool cart, etc.	

4 Process

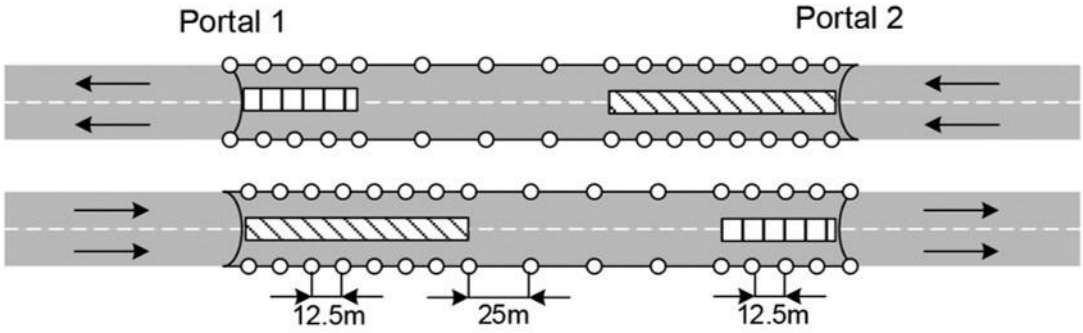

1.
Measure and mark
2a.
Milling a groove in the shoulder
2b.
Hole in shoulder pipe
2c.
Remove bitumen from groove (remove old system)
3. Provide holes for attachment and/or current collector
3b.
Lay the feed-in cable
4.
Laying the connecting cable
4b.
Mount surface-mounted adapter
5.
Mount MarkLED 4 with current collector on system cable
5b.
Wire up surface-mounted adapter
6.
Install MarkLED 4 with current collector in borehole / groove
6b.
MarkLED 4 anschliessen und montieren
7a.
Seal groove
7b.
Insert system profile
7c.
Seal surface-mounted adapter if required
8.
Seal MarkLED 4
9.
Mounting of the control unit incl. parameterisation

5 Electric power supply of the unit

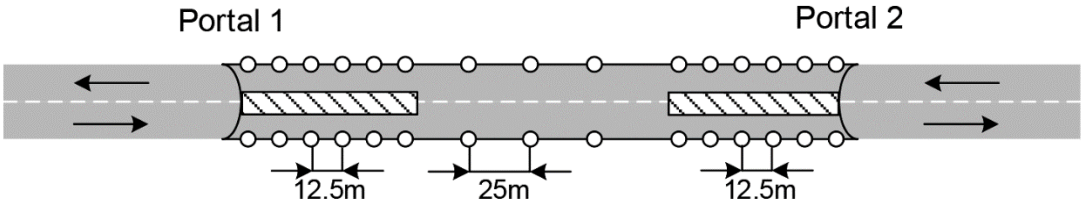
5.1 Two tubes without adaption zone in the opposite direction



5.2 Two tubes with adaption zone in the opposite direction



5.3 A tube with contraflow



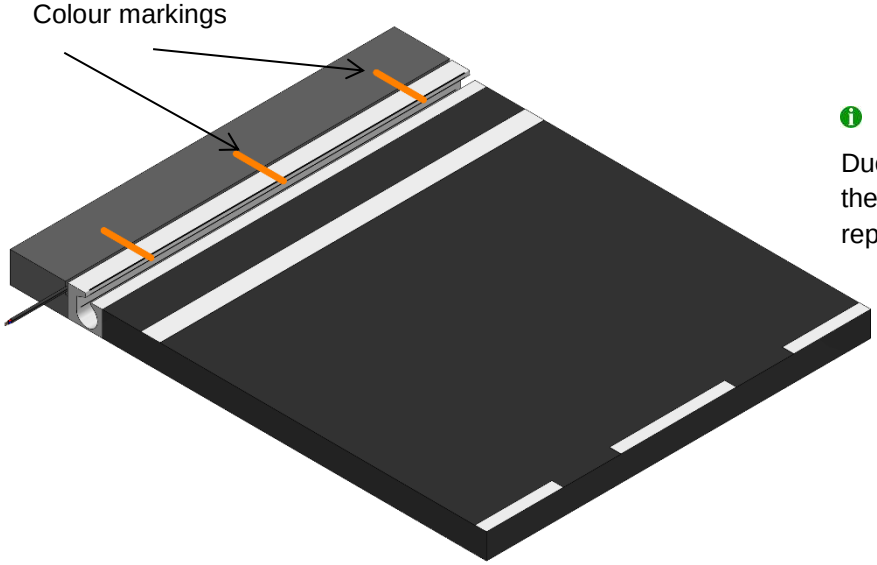
Key:

	Entry and crossover route
	Entry and crossover route in the opposite direction
	LED guidance system

6 Measuring of MarkLED placement with current collector

- Marking of locations of MarkLED units in accordance with project default (by spray colour)
- Recommendation:
  - Tunnel entrance (adaption): a MarkLED each 12.5 m (according to ASTRA/BAST regulations)
  - Middle of tunnel: a MarkLED each 25 m
  - Tunnel exit (adaption): a MarkLED each 12.5 m (according to ASTRA/BAST regulations)

Colour markings



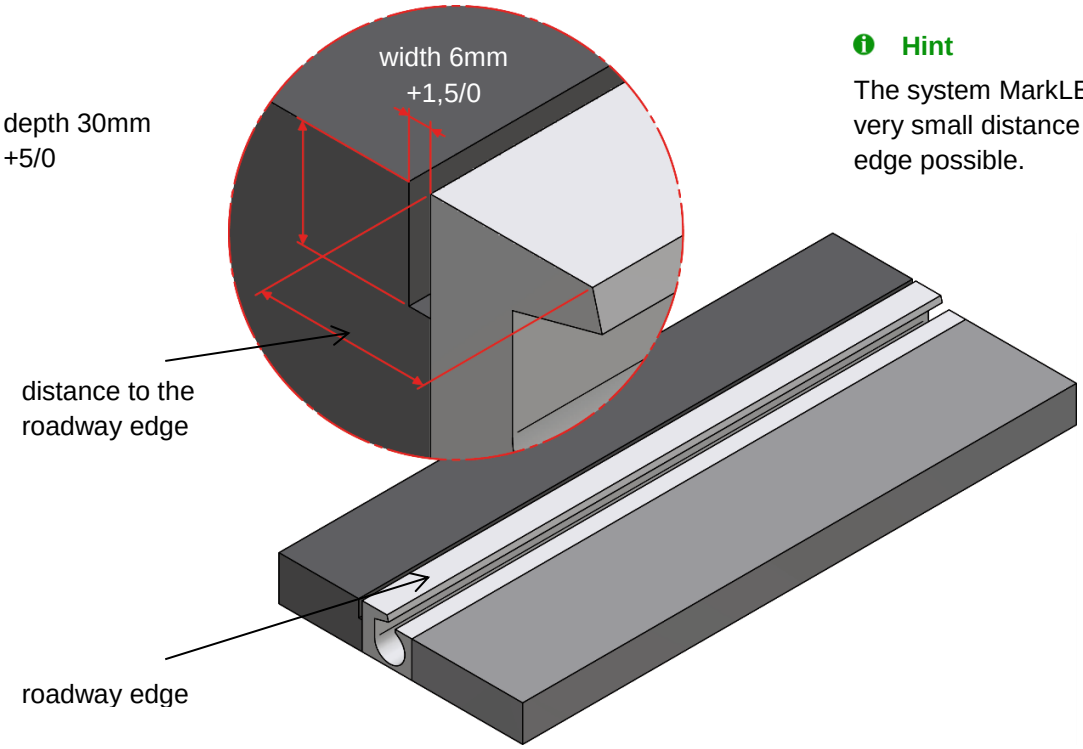
Hint

Due to obstacles (pit/joints etc.) the location of MarkLED has to be replaced as less as possible.

7 System cable and current collector

7.1 Milling a groove in the shoulder

- Milling of a continuous groove (width 6 mm/depth 30 mm)
- The groove at the line ending needs to be milled 10mm wide, for a complete bitumen casting of the cable ending
- Distance between groove and roadway edge project-specifically
- Milling around obstacles (pits etc.) after project default

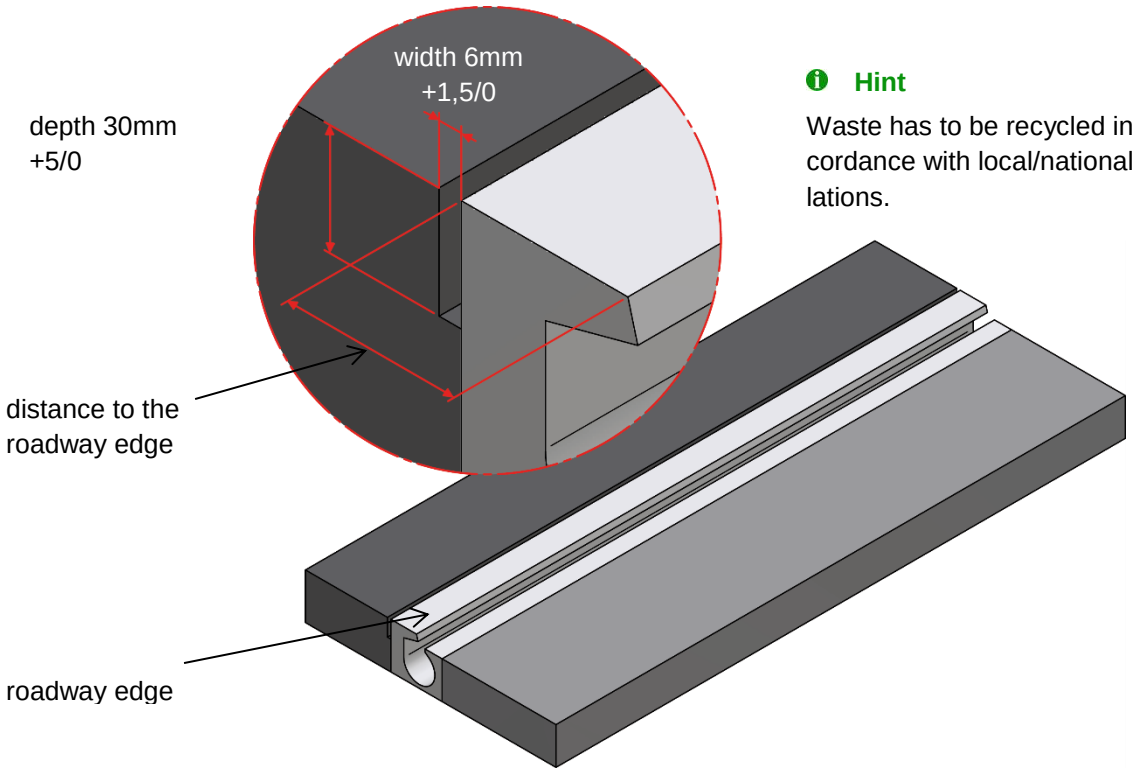


Hint

The system MarkLED makes a very small distance to the roadway edge possible.

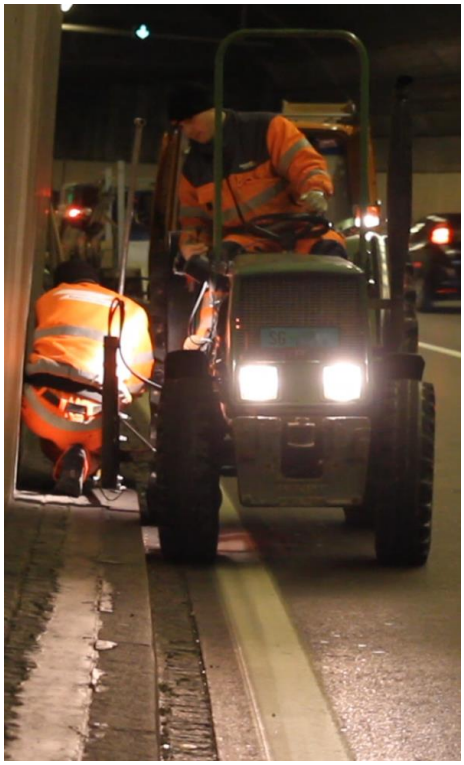
7.2 Remove bitumen from groove / remove old system

- Machine scratch-out of existing wiring (2 operations)
- Suction and blowing out of the groove



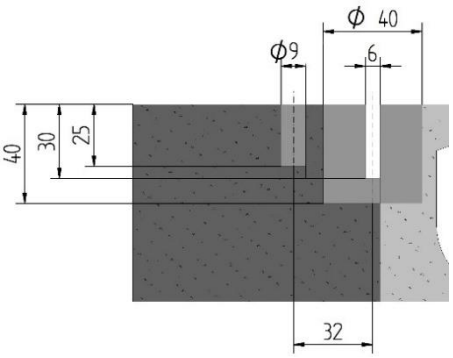
Hint

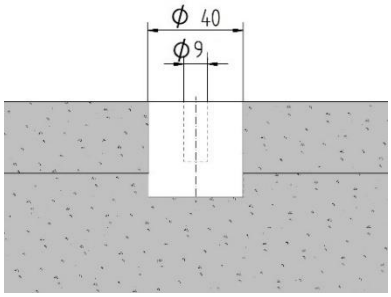
Waste has to be recycled in accordance with local/national regulations.

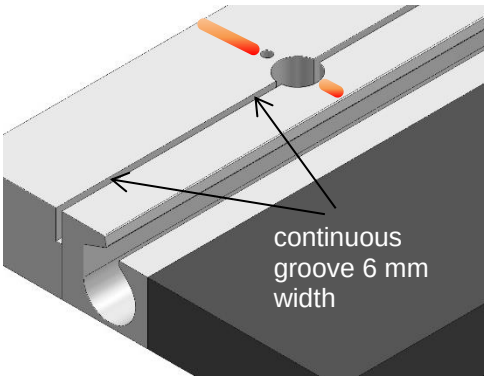


7.3 Create mounting and current collector bores

- Insert the drilling jig into the groove with the 2 lower guide pins.
- Move the drilling jig in the groove direction until it is centred on the previously marked light position
- Stand with both feet on the drilling jig and first, drill bore ø40 mm, depth 40+5/0 mm
- Make sure that the drilling jig stays in place and then drill a bore ø9 mm, depth 25+5/0 mm
- Tolerances are to be kept: in the depth +5/0 mm
- Then clean the entire groove and clean and dry all bores



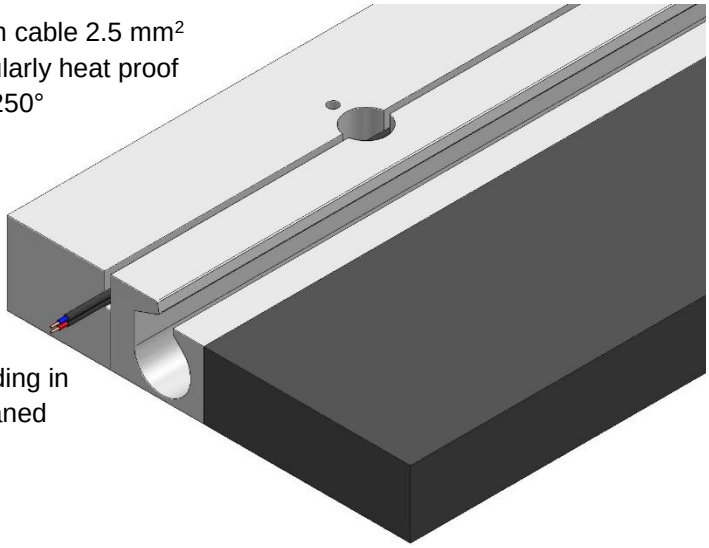




7.4 Inserting connecting cables

- Unroll system cable and insert continuously into the groove (protect mechanically!)
- Cabling from control unit according to project specifications (observe channels / lines)
- Feed-in 24V voltage

system cable 2.5 mm² particularly heat proof up to 250°



embedding in the cleaned groove

Hint

System MarkLED only needs a very small cross section due to the small power input.

Even with consideration of the voltage drop, the cross section of 2.5 mm2 is sufficient.

Hazard

Protect the cables against mechanical damage!

7.5 Mount current collector onto system cable

- Insert system cable into current collector at the marking
- Screw current collector lid with 4 screws Item no. 206566 3x14 onto current collector with already applied sticking compound. M = 1Nm (Power distribution boxes without sealing compound may not be used)
  Tighten up the 4 screws in a second step M = 0.9Nm
- Attention: Leave at least 50cm on the system cable end after the last current collector, separate both strands approx. 10cm from the final part and finalise each strand separately with shrink tubing with adhesive tightly over it.
- Finally, insert the sealed cable end into the groove and cast with liquid hot bitumen.

Hint

By screwing the current collector lid and the current collector with the 4 screws, the two contact pins encased in butyl sealant are inserted into the cable. This sophisticated construction produces tightness and permanent contact of the current collector.

Hazard

Do not open an isolation once it has been “pierced”.

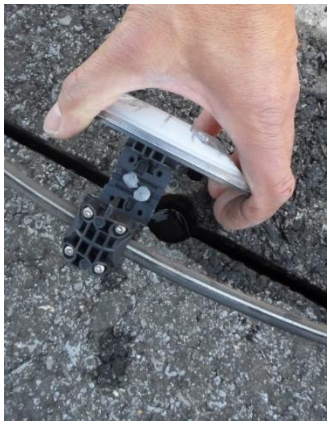
Hint

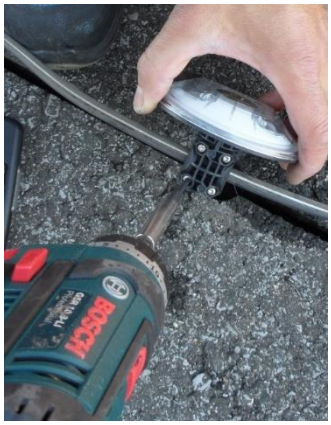
The function check can be carried out simultaneously when connecting the MarkLED by having a 24VDC tension on the system cable.

It must be ensured that the screws are tightened in two steps with suitable tools. M = 1Nm.

Hazard

No other installation materials may be used!





7.6 Install current collector in groove

Installation location must be dry and clean before installing MarkLED current collector.

Hint

Small unevenness (+/- approx. 1 mm) can be absorbed by using adhesives and sticking compound.

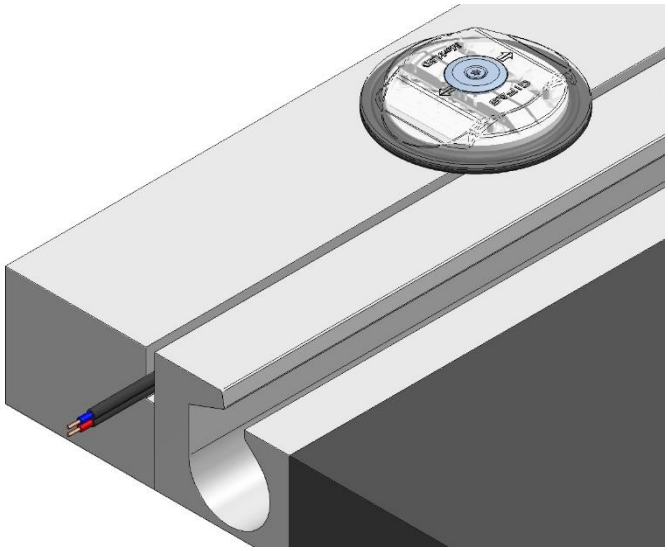
Apply Permafix to bottom of current collector.

Insert MarkLED into bores and press down, weigh down if necessary.

7.7 Seal the groove (close)

Seal the groove either with sealing compound or joint profile (according to the owner's stipulations)

- Pre-treat groove (if necessary) with primer
- Seal the groove with filler (hot bitumen or epoxy glue)
- do not use cold bitumen
- primer/sealing compound (according to stipulation)



⚠ **Hazard**

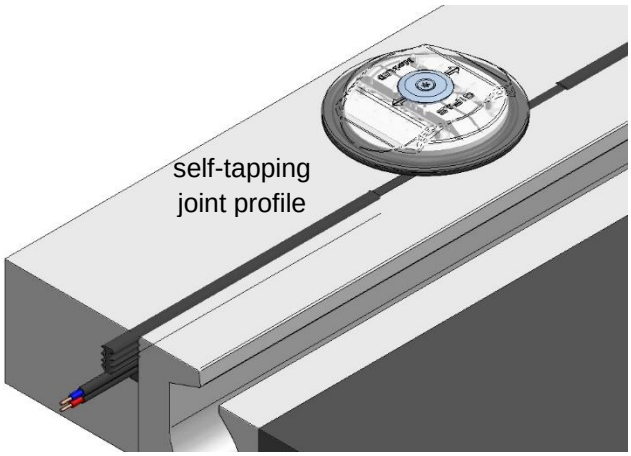
An electrical function check must be performed before sealing**!**

7.8 Insert system profile

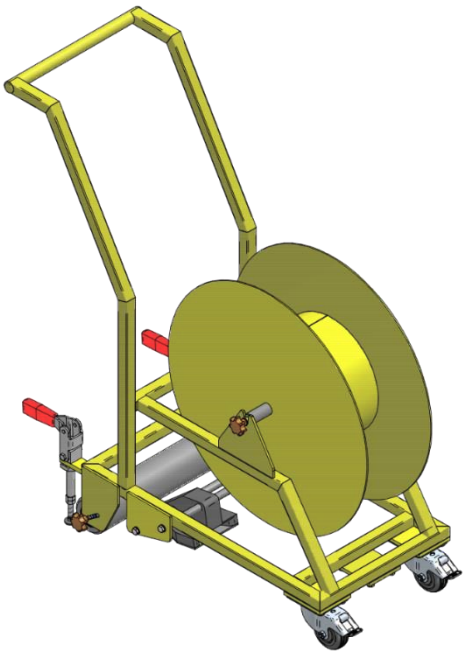
- Instead of the hot sealing compound, a self-tapping joint profile can be inserted over the system cable.
- Leave 5 cm free both in front of and behind the MarkLED.
- Fix profile every 5m with Permafix in the groove and before/after every MarkLED.

⚠ Hazard

Always seal the groove in the passable area!



7.8.1 Installation with roll-off and profile-laying car (hire material)



Install joint profile at a distance of approx. 5cm from the MarkLED!

The area of the MarkLED must be cast with liquid hot bitumen.

7.9 Assembly of the control unit and connection of the system cables

- Install and connect ready-for-use-unit (according to project specifications)
- Install and connect power supply unit
- Up to 4 lines connectable
- Program the unit(s)

Hint

The assembly of the control unit is to be implemented preferably before the shoulder assembly, for the reason that the operability control can take place within the placement.

The control unit and the associated power pack are preferably integrated into existing cabinets. The space requirement is relatively small.

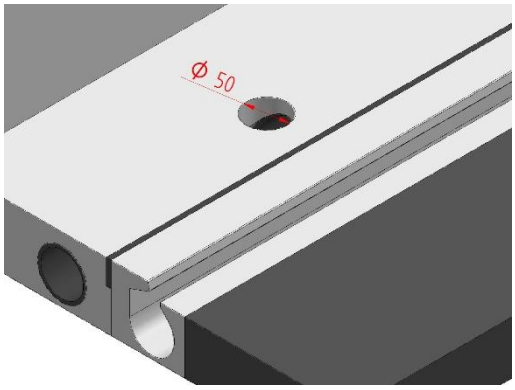
Control unit 330x230x110mm
Power supply 39x124x117mm (WxHxD)

8 Installation of the surface-mounted adapter PA on a shoulder with a tube

8.1 Calibrate the sites, mark and mill the tube

Carry out work as described in 7.

At each intended MarkLED location vertical Drill access to tube with ø 50mm.

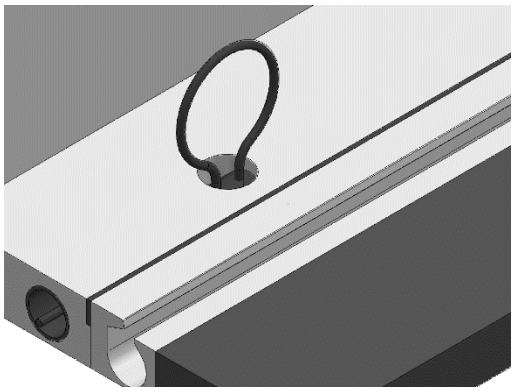


8.2 Laying the connecting cable

Pull cable into tube.

For each MarkLED location, pull the cable upwards out of the tube with a catch tool, e.g. a hook through the ø 50 mm hole.

Then carry out the work as described from point 10.3.



8.3 Mounting material

Depending on the substrate, there are different screws and dowels which are used for permanent fixing.

Chipboard screw, A4 5x60mm	Item no. 211986
Chipboard screw, A4 5x80mm	Item no. 210629
Chipboard screw, A4 5x100mm	Item no. 211987
Dowel plastic 8x50	Item no. 024677
Dowel plastic 8x65	Item no. 210630

9 Installation of the surface-mounted adapter PA on a shoulder with a GROOVE

9.1 Calibrate the sites, mark and mill the groove

Carry out work as described in 7 - 8.2. The milled groove width must be adapted to the cable diameter when using a round cable.

9.2 Laying the connecting cable

Lay a system cable or round cable as described in 8.4, but allow a cable loop of approx. 30 cm to protrude at each MarkLED site.

9.3 Installing the surface-mounted adapter

Use a screwdriver to pierce the pre-formed holes in the bottom of the surface-mounted adapter required for the cable lead-throughs.

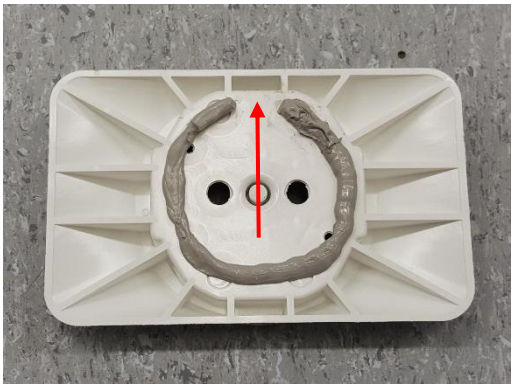
Pierce at least 2 of the pre-formed mounting positions in a diagonally opposite sequence.

Hold the surface-mounted adapter in the required mounting position on the shoulder and mark the drill holes with a marker pen or a 5mm concrete drill bit.

Remove the surface-mounted adapter and drill fixing holes at the marked positions. Blow out the fixing holes and insert pegs.

Apply a circular bead of Permafix adhesive to the bottom of the surface-mounted adapter with an open section facing the tunnel wall.

Any water can drain off through this open sealing area.



9.4 Connection MarkLED

Pass the cables through the openings in the bottom of the adapter. Ensure that the adapter is correctly aligned, place it on the shoulder and press down.

Attach the surface-mounted adapter to the shoulder with at least 2 fixing screws.

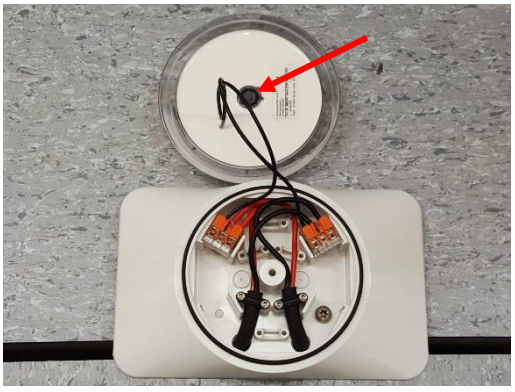
Strip back the connection cables ~12cm and remove insulation ~11mm.

Attach the cables to the surface-mounted adapter with strain relief brackets Item no. 034633 and rounded head screws Item no. 165001.

Connect the cables to Wago connection terminals.

Position the Wago connection terminals in holders.

Place the O-ring on one side of the surface-mounted adapter, stretch it slightly and allow it to slide over the sealing surface on the opposite side.



Check that there is a small O-ring in the centre of the MarkLED. (missing O-rings must be replaced without fail) Strip the conductors of the MarkLED and connect to the Wago connection terminals.

The large O-ring must be greased for easy installation of the MarkLED.

Parker O-Lube silicone-free grease (Item no. 205457) is recommended by GIFAS for greasing the O-ring seal.

One tube is sufficient for hundreds of lamps.

Hint

The contact surfaces of the surface-mounted adapter must be absolutely clean to ensure a tight installation.

Hint

Make sure that the conductors are not pinched anywhere.

Place the MarkLED on the surface-mounted housing and align it in the specified direction of beam.

Press the MarkLED onto the surface-mounted adapter by hand using lateral pressure and maintain the pressure.

The MarkLED must be flush with the surface-mounted adapter.

Provide a washer and tighten the countersunk screw A4 ø4x27mm Item no. 186805 with a torque of approx. 2 Nm.

Hint

Do not attempt to tighten the MarkLED with excessive screw pressure under any circumstances. This could damage the screw, thread or MarkLED.

9.5 Further installation work

Continue and complete the installation work described from 7.7 – 7.9.

10 Installation of MarkLED recess-mounted adapter in drilling core hole

10.1 Mark bores and groove

Measure and mark the centres of the bores, mark the course of the groove through centres of the bores.

10.1.1 Mill groove

Mill groove, using a floor saw with the appropriate cutting width.

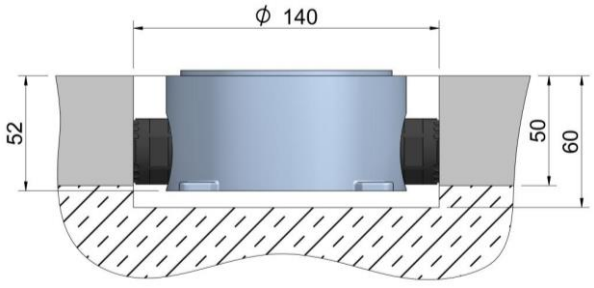
Mill groove over a small distance, check width and depth and correct if required.

Finish milling groove
Depth: 55mm (±5mm)
Width: 21mm for the installation conduit M21.2

10.1.2 Drill core holes

Drilling core hole with diameter 140mm (+ 10/0mm) and depth 60mm (+ 5/0mm).

Break out core and check depth.



10.2 Clean groove and boreholes

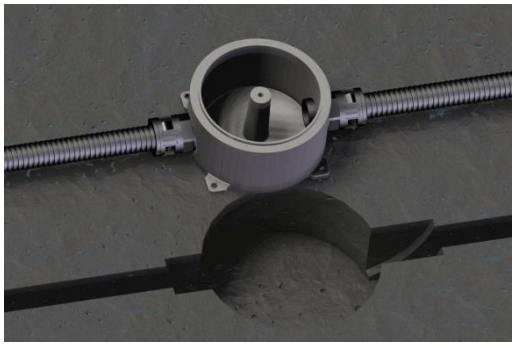
Completely clean groove and boreholes of drilling mud, dirt and dust.

Rinse/blow out the groove and boreholes.

10.3 Mount installation conduit

Place recess-mounted boxes next to core drillings.

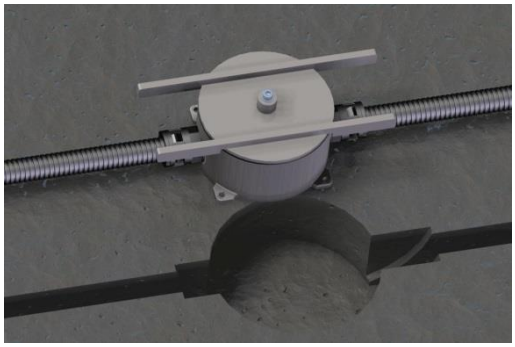
Measure the installation conduit, cut it off and insert into the hose connections.



10.4 Place levelling jig

Place levelling jig on recess-mounted adapter and tighten central cylinder with hexagon screw.

Align flat profiles of the levelling jig approximately parallel to the cable slot.



10.5 Set recess-mounted box

Approx. required quantity of mortar for a recess-mounted adapter:
0.24dl water to 2dl CTW HR mortar. (equivalent to about 440g)

First add the water and then the mortar to the mixing bowl and stir well for about 3 minutes until no more lumps are present.

If using other mortar, see manufacturer's instructions.

10.5.1 Fill with mortar

Fill the bore with mortar up to 4.5 cm under carriageway level and moisten the bore wall up to the top.

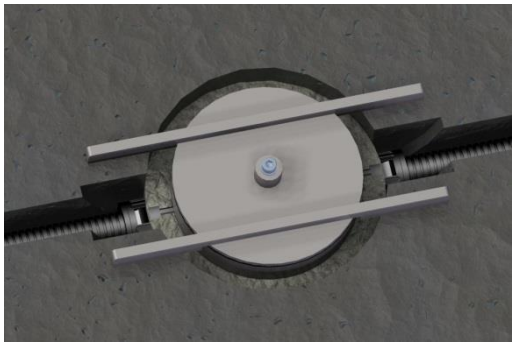
Hint

Mortar sets very quickly, especially at higher temperatures → mounting adapter must be set immediately.

10.5.2 Installing the recess-mounted adapter first step

Press recess-mounted adapter with levelling jig into mortar until 4-edge bars lie flush on floor.

Press installation conduit down into groove on both sides. Adapter should only go about 1cm in the mortar.



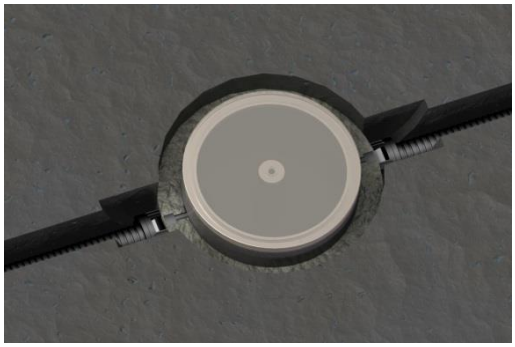
Hint

Weigh down cemented adapter for flush mounting with weight if necessary.

10.5.3 Remove levelling jig

After approx. 30 minutes of the mortar drying, unscrew the levelling jig and place the blind chart to prevent it from getting dirty.

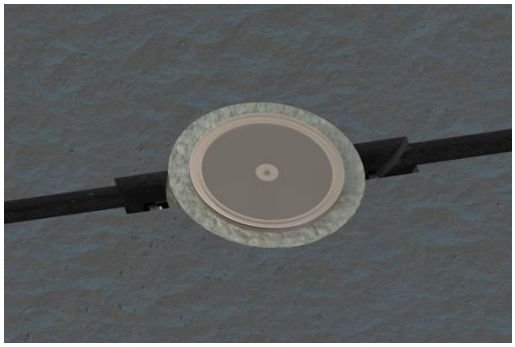
The blind chart protects the recess-mounted adapter from water and dirt.



10.5.4 Installing the recess-mounted adapter 2nd step

If necessary, temporarily seal the groove so that the topping mortar cannot flow away.

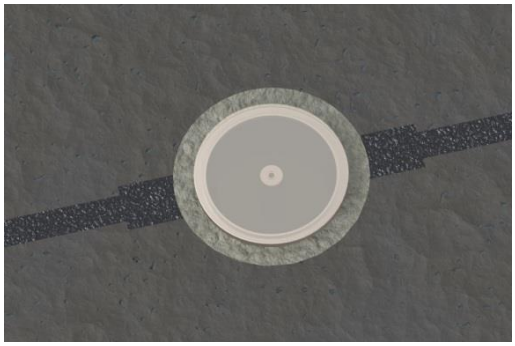
Reposition mortar and cement installation box with trowel or spatula to carriageway level.



10.6 Close groove

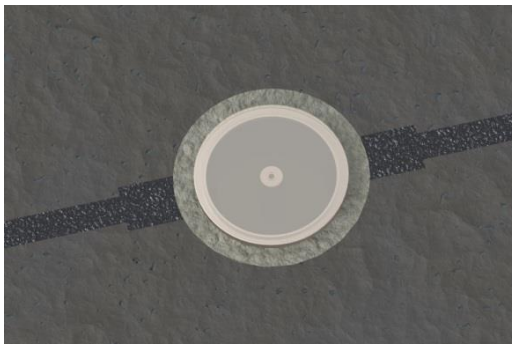
10.6.1 Close groove with mortar

Press installation conduit into dust-free and dry groove and seal flush or cover with mortar.

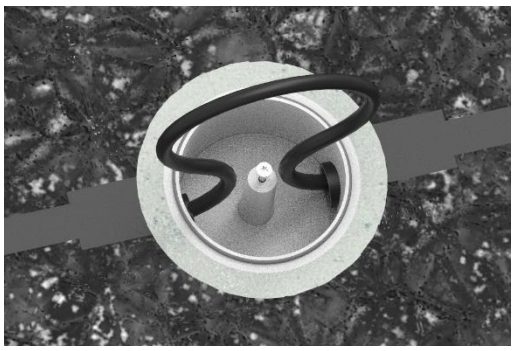


10.6.2 Close groove with hot bitumen

Press installation conduit into dust-free and dry groove and seal flush or cover with hot bitumen.



10.7 Connection MarkLED

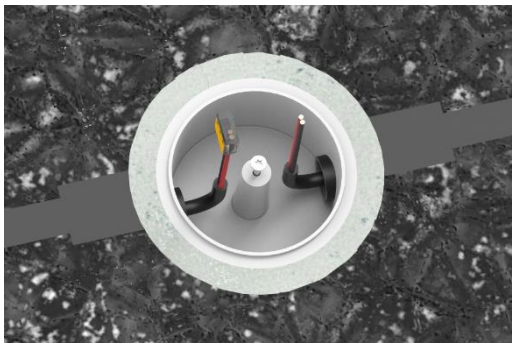


Once the mortar has fully set, remove blind chart.

10.7.1 Pull in the cable

Insert cable from recess-mounted adapter to recess-mounted adapter and allow cable loop of 30 cm at each connection point.

10.7.2 Preparation of cables/conductors



Cut the cable loop and cut both cable lengths to 15 cm (from hose connection).

Pierce both cables through a M20 self-sealing cable grommet with a hole and push the self-sealing grommet into the hose connection.

Then strip both cables up to approx. 5cm on the hose connection.

Strip approx. 11mm of insulation from the strands and connect to 2 Wago connection terminals item no. 162224

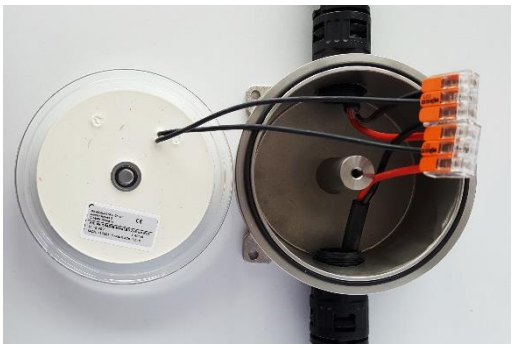
10.7.3 Connection MarkLED light module

Coat seal ring sealing with silicone grease.

Position the seal ring on one side of the recess-mounted adapter, slightly overstretch it and slide it over the sealing surface on the opposite side.

Check if there is a small seal ring in the centre of the MarkLED and coated with silicone grease (missing seal rings must be refitted).

Strip cable conductors and the MarkLED to 11mm and connect to the WAGO connection terminals item no. 162224.



10.8 Sealing compound

The recess-mounted adapter must be filled with removable sealing compound for ground installation (seal the feed-in pipes first, so that the sealing compound does not run off or block the feed-in pipes!)
Sealing compound, e.g. Bluegel. (Item no. 166534 1l container)

Hint

To ensure a tight installation, the contact surfaces of the surface-mounted adapter must be absolutely clean.

Hint

Make sure that the conductors are not pinched.

Place and align MarkLED on the surface-mounted housing.

Press MarkLED on recess-mounted housing by hand using lateral pressure and maintain pressure.
MarkLED must rest flush on the recess-mounted adapter.

The MarkLED must be flush with the surface-mounted adapter.

Put on washer and tighten countersunk screw M5 with 2 Nm.

Hint

Never try to tighten the MarkLED with excessive pressure. This may damage the screw, thread or MarkLED.

11 Wall-mounting of the surface-mounted adapter PA

11.1 Determine the mounting location

Mark the mounting locations along to the project specification.

11.2 Lay the feeding cable

Install the feeding pipes.

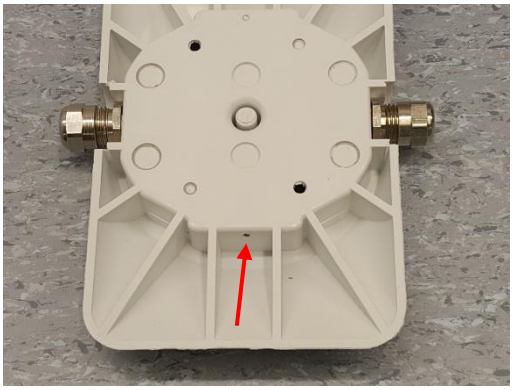
Insert the cable and provide each MarkLED mounting location with a cable loop of approx. 30cm.

11.3 Installing the surface-mounted adapter

Isolate the cable loop at the MarkLED mounting location.

Provide the lower section of the surface-mounted adapter with a drain hole with an approx. ø of 2mm.

Pierce at least 2 of the pre-formed mounting positions in a diagonally opposite sequence.



Hold the surface-mounted adapter in the required mounting position on the wall and mark the drill holes with a marker pen or a 5mm concrete drill bit.

Remove the surface-mounted adapter and drill fixing holes at the marked positions. Blow out the fixing holes and insert pegs.

Apply a closed circular bead of Permafix adhesive to the rear of the surface-mounted adapter.

Pass the cable through the cable glands mounted on the side of the surface-mounted adapter. Line up the surface-mounted adapter with the mounting holes on the wall with the drain hole pointing downwards and press on the wall.

Attach the surface-mounted adapter to the wall with at least 2 fixing screws.

Strip the connection cables.

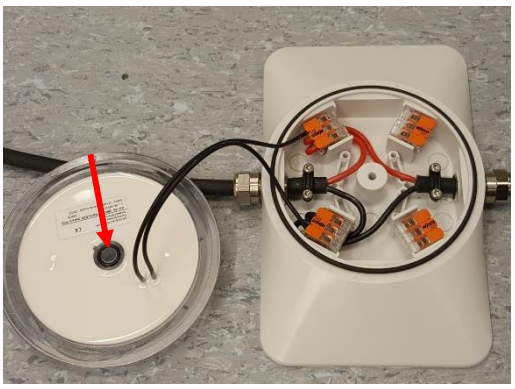
Attach the cables to the surface-mounted adapter with strain relief brackets Item no. 034633 and rounded head screws Item no. 165001.

Connect the cables to Wago connection terminals.

Position the Wago connection terminals in holders.

Place the O-ring on one side of the surface-mounted adapter, stretch it slightly and allow it to slide over the sealing surface on the opposite side.

Check that there is a small O-ring in the centre of the MarkLED. (missing O-rings must be replaced without fail).
Strip the conductors of the MarkLED and connect to the Wago connection terminals.



Hint

The contact surfaces of the surface-mounted adapter must be absolutely clean to ensure a tight installation.

Hint

Make sure that the conductors are not pinched anywhere.

The large O-ring must be greased for easy installation of the MarkLED 4.
Parker O-Lube silicone-free grease (Art. no. 205457) is recommended by GIFAS for greasing the O-ring seal

One tube is enough for hundreds of lights

Place the MarkLED on the surface-mounted housing and align it in the specified direction of beam.

Press the MarkLED onto the surface-mounted adapter by hand using lateral pressure and maintain the pressure.

The MarkLED must be flush with the surface-mounted adapter.

Provide a washer and tighten the countersunk screw A4 ø4x27mm Item no. 186805 with a torque of approx. 2 Nm.

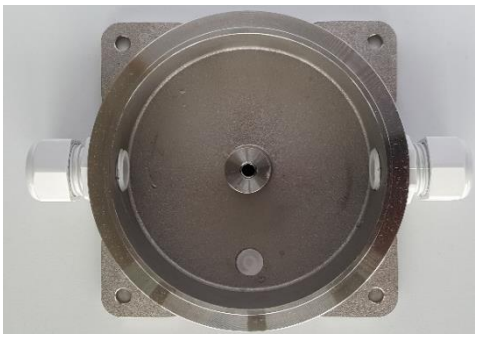
Hint

Do not attempt to tighten the MarkLED with excessive screw pressure under any circumstances. This could damage the screw, thread or MarkLED.

12 Installation MarkLED surface-mounted box

12.1 Attachment

The surface-mounted box must be permanently fixed.



12.2 Installation

For easy installation of the MarkLED, the large seal rings must be greased.

The small seal ring should already be fitted and greased on the MarkLED.

Place seal ring on surface-mounted housing.

We recommend using the following product for lubricating: item no. 017458.

One unit can be used for hundreds of lamps.

Place seal ring on surface-mounted housing.

Clean recess-mounted adapter inside and dry. Surface-mounted adapter must be completely dry on the inside.

To check the installation and the connection, it is recommended that the supply voltage is applied at this point.

12.3 Connection

Strip cable conductors and the MarkLED to 11mm and connect to the WAGO connection terminals item no. 162224.

Check if there is a small seal ring in the centre of the MarkLED (missing seal rings must be refitted).

12.4 Sealing compound

The box must be filled with removable sealing compound when not wall-mounted (first seal the tubes so that they are not blocked by the compound)!
e.g. Bluegel. (Item no. 166534 1l container)

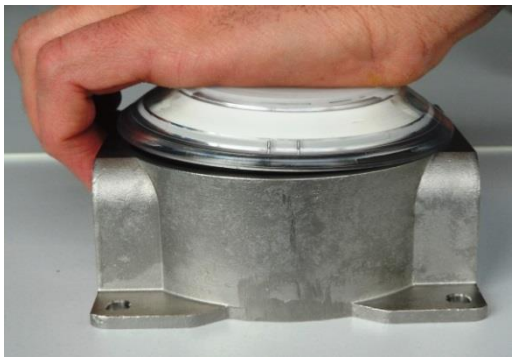
Hint

To ensure a tight installation, the contact surfaces of the surface-mounted adapter must be absolutely clean.

Hint

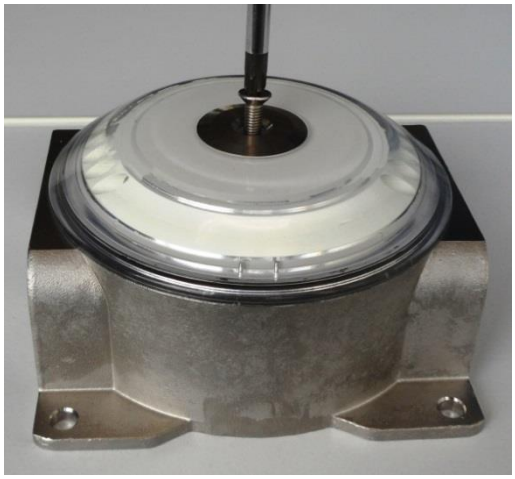
Make sure that the conductors are not pinched.

Place and align MarkLED on the surface-mounted housing.



Press MarkLED on recess-mounted housing by hand using lateral pressure and maintain pressure.

MarkLED must rest flush on the recess-mounted adapter.



Put on washer and tighten countersunk screw M5 with 2 Nm
torque.

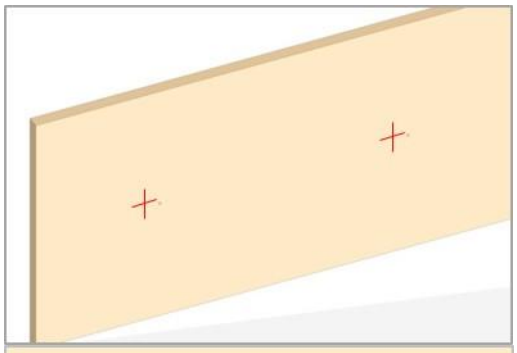
Hint

Never try to tighten the MarkLED with excessive pressure. This may damage the screw, thread or MarkLED.

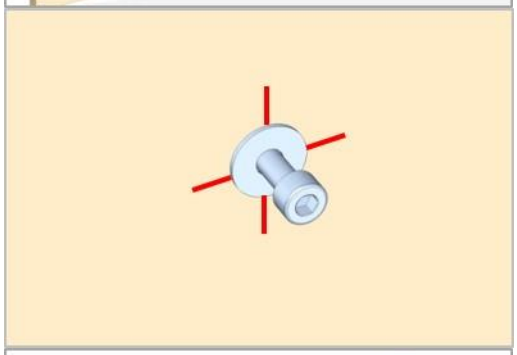
13 Installation of MarkLED recess-mounted adapter in formwork

13.1 Mark, drill and fasten

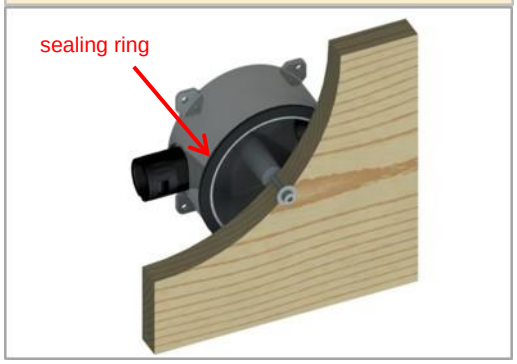
Measure and mark centres of light module locations on the formwork and drill with ø 5 mm.



Insert M5 screw with washer from the front through the 5mm bore in the formwork. Length of M5 screw 15mm + formwork thickness.



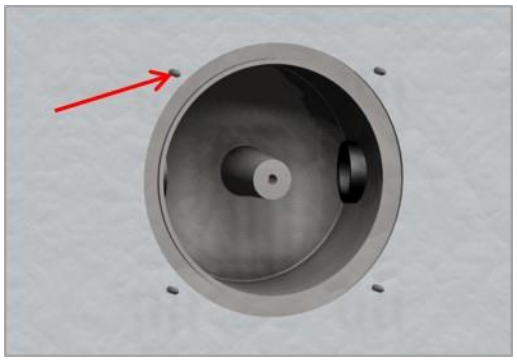
Put sealing ring item no. Set 154914 onto recess-mounted adapter. Screw the recess-mounted adapter to the back of the formwork with the previously inserted M5 screw. Determine alignment of hose connections.



13.1.1 Alternative attachment with 4 screws

The MarkLED recess-mounted adapter can alternatively be screwed onto the formwork from the back using 4 screws.

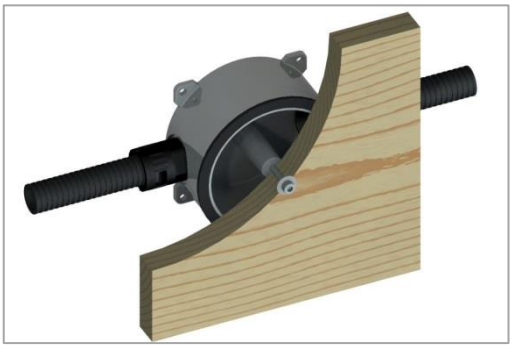
In this mounting variant, the screw tips projecting out of the concrete after stripping must be cut off.



13.2 Mount installation conduit

Cut the installation conduit to length and insert them into the hose connections until they noticeably lock.

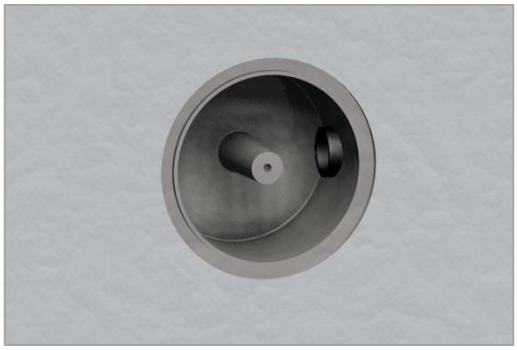
Apply all installation conduit connections between the recess-mounted adapters.



13.3 Remove formwork

After the concrete has hardened, the M5 fixing screw in the centre of the recess-mounted adapter must be unscrewed before stripping.

Then stripping may begin. Remove the sealing rings after stripping.



13.4 Connection and installation of MarkLED

For connection and installation, proceed as described from Point 10.2 to Point 10.4.

14 Montage MarkLED wired

14.1 Mounting location

The MarkLED is attached to the floor without its base.

Cable routing is done either in the cable ducts or through a bore in the New Jersey profile.

The MarkLED is then connected to a suitable junction box/socket and connected to the power cable.

The underground must be flat and dry to ensure a solid and long-lasting installation.

14.2 Attachment

We recommend the use of the following product for gluing MarkLED: Hybrid adhesive and sealant Permafix 153 grey, (item no. 020157).

Depending on the condition/porosity of the substrate, a 290ml cartridge will suffice for approx. 30 MarkLED's.

Only use water to clean MarkLED, without any chemical additions and without aggressive cleansing agents.

Accessories complete (item no.151253)

Nylon dowel hexagonal

Counter sunk screw 4.5x50mm Torx 20

MarkLED washer Ø 29.8mm

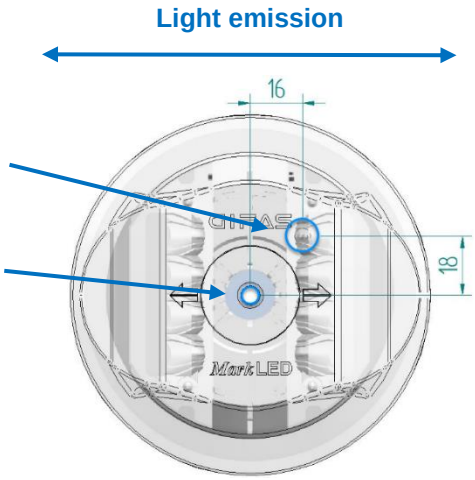
14.3 Driling

The central drilling determines the position on the bench of MarkLED.

The bore through the cable duct base plate or the New Jersey profile for the cable passage determines the alignment of the MarkLED.

Drill the holes exactly, because the orientation can only be adjusted minimally.

14.3.1 Dimensions for drilling holes



14.4 Installation and connection of MarkLED

Blow out drilling dust and clean the surface as dust-free as possible for gluing the MarkLED.

Lead the connection cable of the MarkLED through the cable drilling.

Connect cable to junction box or cable sleeve.

Insert nylon dowels into the mounting bore.

Apply Permafix on the bottom of MarkLED.

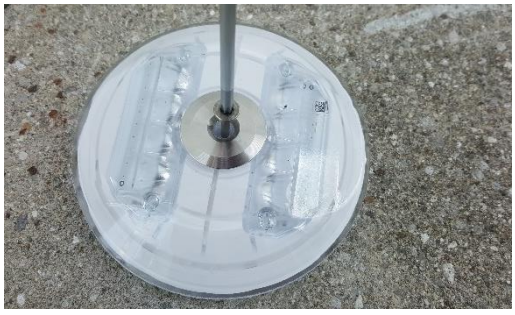
Place MarkLED on the ground and align parallel to the carriageway.

Push down the MarkLED firmly with your hands. You must not hit the MarkLED or use a hammer.

Align centre onto mounting bore in the ground.

Place the washer.

Screw MarkLED with countersunk screw 4.5x50 item no. 17473 onto the ground.
M = 2.5Nm



Hint

Never tighten the MarkLED mounting screws too tightly. This could lead to the MarkLED failing in later operation due to stress cracks.

14.5 Function check

Energise feed-in cable for function check. (GIFAS recommends putting the feed-in cable under 24V voltage at the beginning of the installation so that any failures can be detected prior to gluing.

Hint

A clean bond:

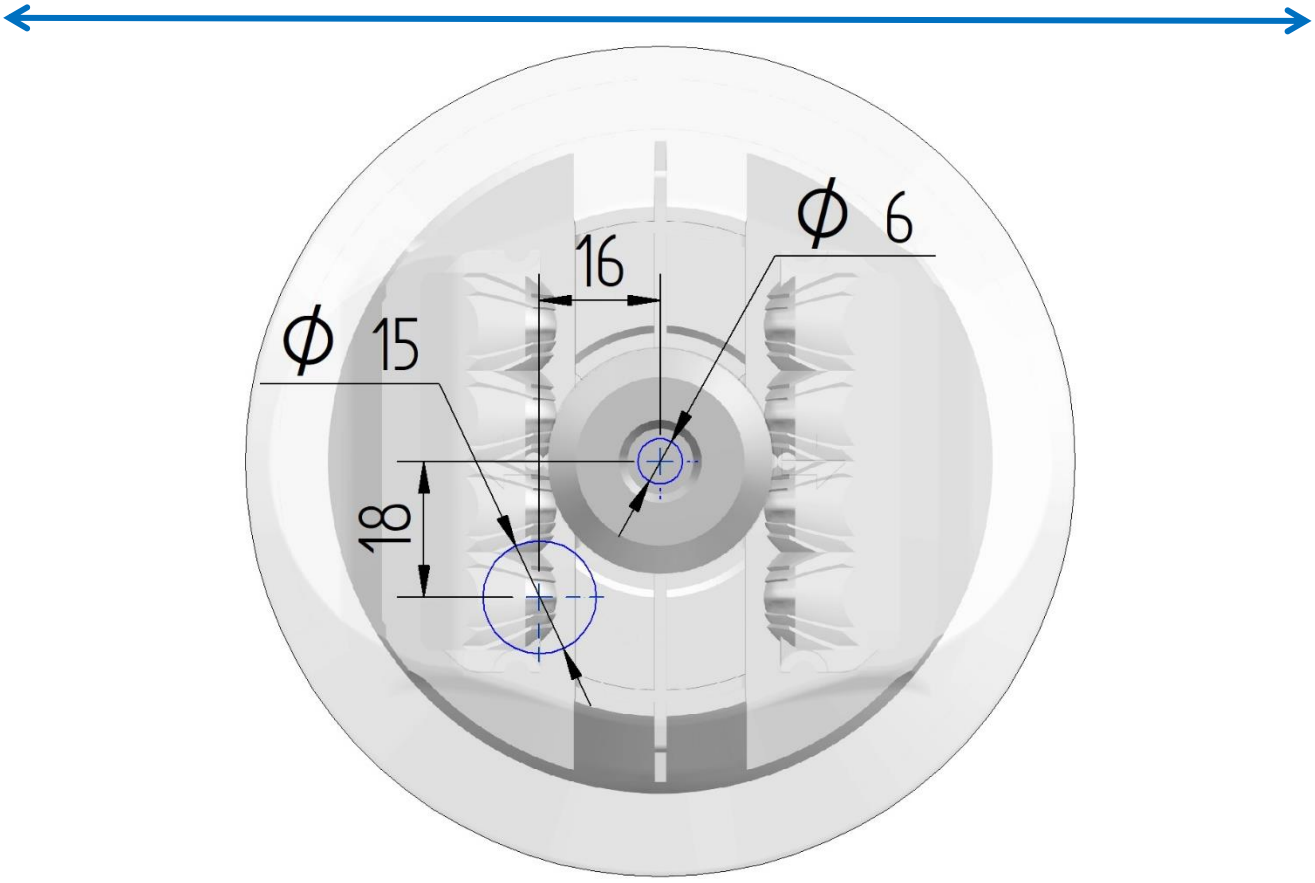
- guarantees safe and permanent adhesion to the ground.
- prevents the underflow of meteor and surface water

14.6 Drilling jig

Hint

We recommend using the following drilling jig for precise drilling of the two holes. It can be cut out and used on site for an exact determination of the drilling holes.

Direction of traffic



15 Maintenance

15.1 Inspection and maintenance plan

Work to be carried out:	Time period/frequency
sight check / Check surface / Cleaning	Min. 1x per year or more often, depending on pollution degree
Mechanical check	Min. 1x per year or according to the maintenance plan of the operator
Function check	Min. 1x per year or according to the maintenance plan of the operator

The interval can be adjusted to the system maintenance interval

15.2 Description of inspection and maintenance work

Only original parts of the manufacturer may be used for maintenance.

Maintenance work may only be carried out by qualified personnel.

The MarkLED 4 should be cleaned with water when dirty without the addition of cleaning agents (e.g. with a sponge or IP69 high-pressure cleaner) to ensure good visibility. Cleaning can also be carried out mechanically in conjunction with tunnel cleaning.

Check the MarkLED and its installation for firm hold and external damage.

Carry out a mechanical inspection. Damaged or defective parts of the lighting and its installation must be replaced as soon as possible.

A functional check of all LEDs with regard to light colour and intensity must be carried out.

Deviating or defective parts of the lighting must be replaced as soon as possible.

16 Service

16.1 Service addresses

GIFAS ELECTRIC GmbH
Borsigstrasse 9
D-41469 Neuss
+49 2137 105-0
+49 2137 105-230
www.gifas.de
verkauf@gifas.de

GIFAS-ELECTRIC S.r.l
Via dei Filaracci 45
Piano del Quercione
I-55054 Massarosa (LU)
+39 58 497 82 11
+39 58 493 99 24
www.gifas.it
info@gifas.it

GIFAS ELECTRIC GmbH
Strass 2
A-5301 Eugendorf
+43 6225 7191-0
+43 6225 7191-561
www.gifas.at
verkauf@gifas.at

GIFAS-ELECTRIC GmbH
Dietrichstrasse 2
Postfach 275
CH-9424 Rheineck
+41 71 886 44 44
+41 71 886 44 49
www.gifas.ch
info@gifas.ch

16.2 Imprint

GIFAS-ELECTRIC GmbH
CH-9424 Rheineck
www.gifas.ch

Technical changes and errors reserved.

These installation instructions are the property of GIFAS-ELECTRIC GmbH and may not be copied, translated, transferred, duplicated or passed on to third parties without the previous written consent of GIFAS-ELECTRIC.