

HF/LF – Wall coating (high frequency+low frequency)

Shielding paint HF65

Content – Possible processing

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Grounding and safety requirements

The necessary installation must be carried out by a qualified electrician. A fault-current circuit breaker (FI or RCD ≤ 30mA) must be present in the electric circuit. Your electrician will install this standard device for you, if it is not already present. All electric work (work on electric devices and systems) must be carried out and examined by a qualified electrician or under their guidance and supervision!

We are happy to give your trusted electrician further information at +49 7433 955 7172.

The grounding must be carried out according to the valid DIN/VDE regulations.

Security equipotential bonding:

DIN57100/VDE 0100 part 410 + part 540
 DIN/VDE 0100 part 410 + part 540
 DIN/VDE 0100 part 610 section 4+5
 VDE 0100

Functional equipotential bonding:

DIN VDE 0100-100
 DIN VDE 0100-410
 DIN VDE 0100-540
 DIN VDE 0185-305-3

A: Security equipotential bonding (SPA)
 Existing building and smaller renovation

B: Functional equipotential bonding (FPA)
 New construction and larger renovation

This type of grounding, for example at an electric plug or heating pipe, is only recommended if the effort in carrying out the integration of the shielding surface into the functional equipotential bonding exceeds the use, e.g. for shielding areas that lie far away, or with only one shielding area (one room, one wall surface). The decision of where to ground is usually made by your electrician, who knows the technology, your premises, and the local regulations.

This type of grounding should be carried out for larger renovations or in new buildings. The grounding in the sub – or main distributor is hereby intended with a separately built-in and marked FPA track. There, all grounding wires (flat ground strap EFK / blank, transparently insulated – 4 mm²) of the shielding areas and the auxiliary wires of shielded cables are connected. Every room should be connected separately.

The grounding cable (yellow /green 2.5mm²) is hereby inserted into the existing socket and firmly wired. Your electrician will bring this cable.

Further information and an information flyer for your implementing electrician can be found at www.funktionspotentialausgleich.de



Important / Please note!!!

Let an expert / electrician inspect your electric installation. Grounding is only possible with a TN-S (3 conductor) or a TT system. Grounding to a non-existing TNC system is not possible or would require the renewal of some parts of the electrical system (fig. TN-S).

The processing examples depicted here exclusively refer to products offered by Biologa. Through different technical singularities of the materials, compatibility with shielding products from other manufacturers is not guaranteed!

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HF/LF – Wall coating (high frequency+low frequency)

SPA – prepare grounding

Grounding / equipotential bonding system

To avoid a connection of low-frequency electric alternating fields, or to dissipate these, the shielding paint HF65 must be integrated into the equipotential bonding.

If desired, the grounding wire can be hidden in the wall.
Possibility 1: **fig.1**

A small slit stemmed from the floor to the socket in the wall and the wire inserted accordingly into the existing socket. Following this, the small slit can be sealed again (plaster) and the surface adapted. The grounding plate EGP is hereby mounted beneath the skirting board.

Possibility 2: **fig.2**

The grounding plate (EGP) is placed next to the socket and the grounding wire inserted from the back side into the existing socket. The panel can be countersunk in the wall and connected with the electrically conductive ground strap (AEB 3.0). The grounding plate can remain visible or be painted over with color or wallpapered over.

Open installation **fig.3**

In cases in which closets, shelves or similar objects are placed in front of the ground connection, the wire can also be led visibly to the socket with nail clamps or a small channel. The grounding plate is mounted beneath the skirting board.

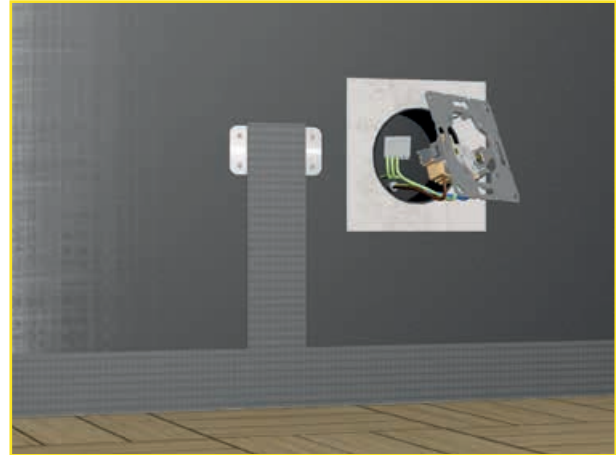


Fig.2: Grounding plate next to socket / Leading the ground strap / Insert the grounding wire into the wall socket.

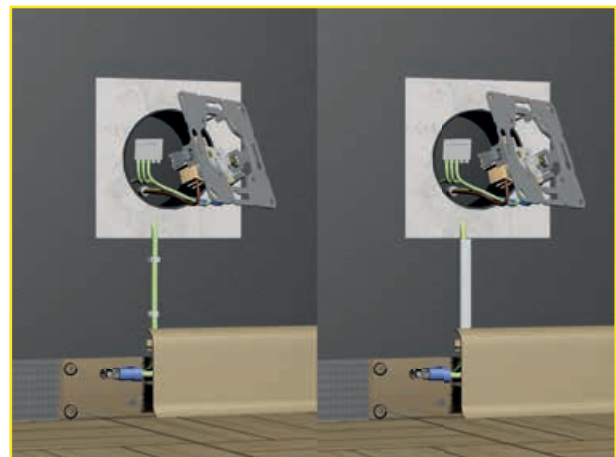


Fig.3: Grounding wire visible / Grounding wire installed in the channel / Insert the grounding wire into the wall socket.

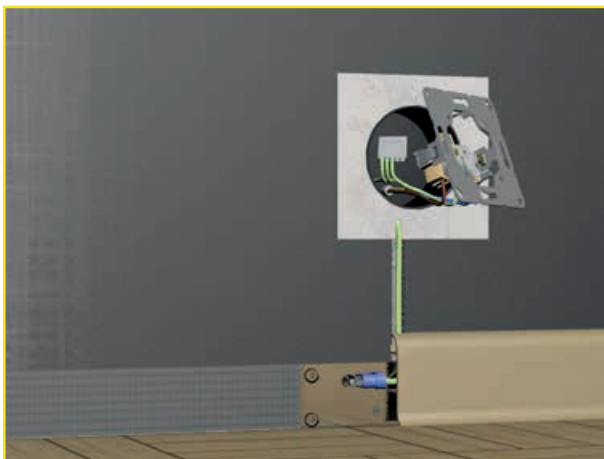


Fig.1: Slit to socket / Insert the grounding wire into the wall socket / Grounding no longer visible on completion

Important / Please note!!!

Let an expert / electrician inspect your electric installation. Grounding is only possible with a TN-S (3 conductor) or a TT system. Grounding to a TNC system is not possible or would require the renewal of some parts of the electrical system (**fig. TN-S**).

The delivery of the grounding plate does not include a grounding wire to avoid incorrect connection of the components. Please inform your trusted electrician of this. They will bring the cable in the appropriate length.



TN-S:

General number cores in general version in buildings. Three conductors phase L1 (brown o. black), neutral conductor N (blue), protective conductor PE (yellow/green) – Here in shielded version with shielding supplementary wire. This is not present in a conventional electric installation.

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HF/LF – Wall coating (high frequency+low frequency)

Installation of ground strap AEB 3.0

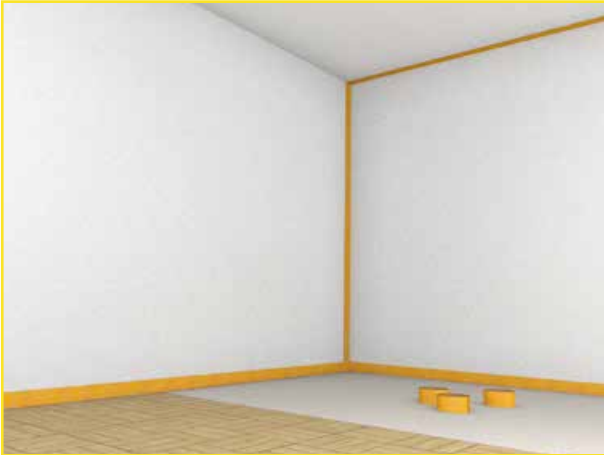


Fig.4: Affixing the electrically conductive ground strap AEB in the socket area. If the ceiling area is to be shielded, the ground strap is led upwards and affixed across the entire ceiling width.



Fig.5: First painting of the room corners, window reveals, and the areas concealed by the heater.



Fig.6: Keep about 5-10 mm distance to sockets and switching elements.

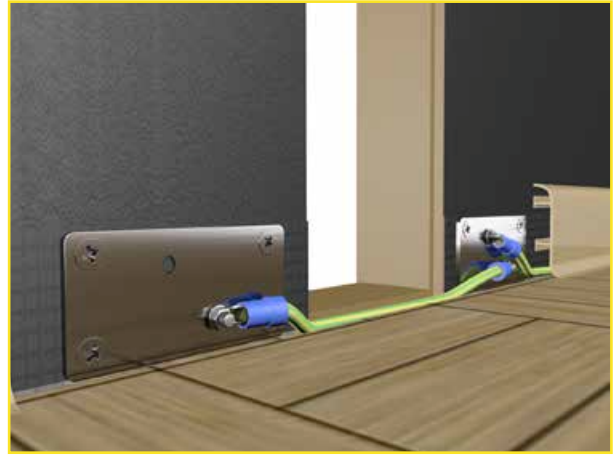


Fig.7: Connection of room openings with or with the help of 2 grounding plates

Surface preparation

Sweep off, remove, or mend loosely fixed parts; eliminate mealy, sandy substances by brushing them away. Remove sinter skin through abrasion, release agents through washing. Fill flaws, holes, tears with wall filler and sand off the filler groove. Re-affix open wallpaper joints, remove paste remainders. Completely remove weakly adhesive, non-adhesive, non-wetting or unsuitable old coats. The shielding paint HF65 sticks to many surfaces, including plasterboard, old coats of paint, wallpaper, plaster, concrete, wood. Strongly absorbent surfaces must be pretreated with a primer.

Attaching the ground strap AEB 3.0

Afterwards, attach the self-adhesive and electrically conductive ground strap AEB to the skirting board area and optionally up to the ceiling (fig.4). The ground strap AEB 3.0 can thus be attached on as well as beneath shielding paint, for example. For improved durability and simple processing, we recommend sticking the band under the shielding paint.

It is best to press the band firmly to the wall with a wallpaper roller (small rubber roller).

The band can be led further along the floor under the door in the area of the doors and of floor-to-ceiling – windows (balcony). Connecting two grounding plates with the help of a grounding wire to the left and right of the door is also possible. The connecting cable can then be placed into the floor’s expansion joint. (Fig.7) The ground strap may not be placed in a closed circle. You should therefore leave out an opening.

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HF/LF – Wall coating (high frequency+low frequency)

Spreading the shielding paint

Spreading the shielding paint HF65

Stir the paint for at least 2-3 minutes (ideally electrically) so that the incorporated carbon particles can spread evenly. Processing can only occur at a room and surface temperature of more than >5°C.

Add some paint from the container into the prepared paint tray and first spread the paint across the corners of the room as well as the small surfaces around windows, doors, switches, and heater with a small roller, flat brush, and the radiator brush (fig.5).

There must be a spacing of about 5-10 mm around sockets and switching elements. The electrically conductive coating with HF65 may not be connected in a conductive way with the frames of the insets, according to the guidelines of the VDE. (Fig.6)

Afterwards, paint the remaining, larger surfaces – roll with pile 10-12 mm (fig.8).

IMPORTANT: Ensure an even (homogenous) distribution of the paint on the surface. Sections with differing thickness of paint coats can change the shielding attenuation depending on the thickness of the layer. Do not dilute the paint and never use more than the stated amount of 5-6 m² per liter. In order to avoid waste at a later point, you should apply all paint from the containers to the surfaces. This will further increase the shielding effect. Dried paint belongs in the normal residual waste. Please return the containers to the usual collection points (“yellow sack”).

Further processing can occur after a drying time of 12-24 hours.

Tip: Allow the coat to dry well over night to be able to continue the next day.

Attaching the grounding plate EGP

If not yet done, drill the holes for the grounding plate EGP. The holes are drilled through the coat of shielding paint and through the ground strap AEB 3.0. The holes can be vacuumed and painted over with shielding paint and a small paintbrush.

Your trusted electrician will now attach the grounding plate and connect the grounding wire to the grounding plate and socket. The grounding accessories for the connection are included in the delivery of the grounding plate EGP. (Fig.9)

Further processing after coating the wall and drying

After the shielding paint has dried, it can be worked on further.

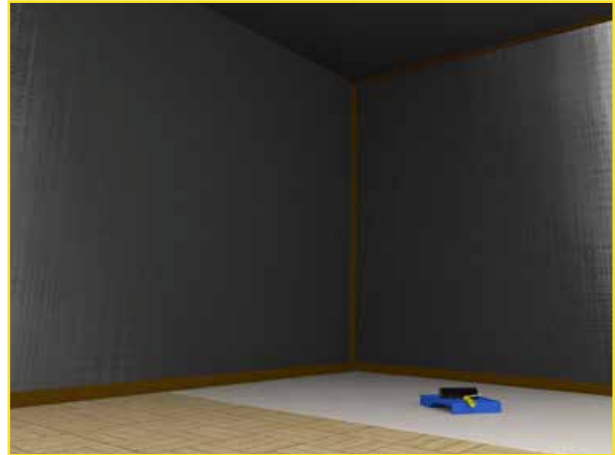


Fig.8: Painting the large surface with HF65 After grounding the shielding area at the intended grounding points, the shielding color can be painted over with a topcoat or wallpapered over (roll with pile 10-12 mm).

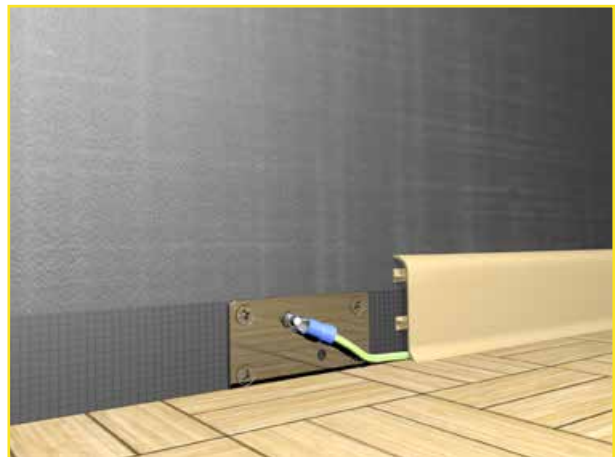


Fig.9: Attaching the grounding plate EGP and connecting the grounding wire

Further processing after coating the wall and drying

In order to achieve a good coverage with the shielding paint, it is generally necessary to paint over it twice. The floating particles that are not bound by the low binding agent proportion mix together in the first coating and thus lead to darker results. The first coat can be spread with the maximum dilution degree stated by the manufacturer. The second coat should be applied undiluted, if possible. After the first coat has dried and is covered with a second coat, the surface turns pure white again. (Fig.14 – last page). Wallpapering over it is just as easy. In this case, a deep primer, etching primer, or primer is applied to the shielding paint. Subsequently to this, the wallpaper can be attached with wallpaper paste for heavy wallpaper.



HF/LF – Wall coating (high frequency+low frequency)

Applying the shielding paint on wood

Surface preparation

Remove and improve loosely fixed parts. Removal of impurities through abrasion or washing. Fill flaws, holes, tears with wall filler and sand off the filler groove. Completely remove weakly adhesive, non-adhesive, non-wetting or unsuitable old coats such as lacquer. The shielding paint HF65 sticks to many surfaces, including plasterboard, old coats of paint, wallpaper, plaster, concrete, wood. Strongly absorbent surfaces must be pre-treated with a primer.

Spreading the shielding paint HF65

Stir the paint for at least 2-3 minutes (ideally electrically) so that the incorporated carbon particles can spread evenly. Processing can only occur at a room and surface temperature of more than >5°C.

Add some paint from the container into the prepared paint tray and spread the paint over door frames or the door panel with a small roller. (Fig.10+11).

IMPORTANT: Ensure an even (homogenous) distribution of the paint on the surface. Sections with differing thickness of paint coats can change the shielding attenuation depending on the thickness of the layer. Do not dilute the paint and never use more than the stated amount of 5-6 m² per liter. In order to avoid waste at a later point, you should apply all paint from the containers to the surfaces. This will further increase the shielding effect. Dried paint belongs in the normal residual waste. Please return the containers to the usual collection points ("yellow sack").

Further processing can occur after a drying time of 12-24 hours.
Tip: Allow the coat to dry well over night to be able to continue the next day.

Further processing after wood coating and drying

After the shielding paint has dried, it can be worked on further. In order to achieve a good coverage with the shielding paint, it is generally necessary to paint over it twice. The floating particles that are not bound by the low binding agent proportion mix together in the first coating and thus lead to darker results. Both coats should be applied undiluted as far as possible. After the first coat has dried and is covered with a second coat, the surface turns pure white again. (Fig.10+11).

Grounding

Grounding is not necessarily required for doors if the surrounding areas are shielded and grounded. In the case of pure shielding of the door frame and the door panel, a grounding plate (EGP) can be applied in the lower door panel area if desired.

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HF/LF – Wall coating (high frequency+low frequency)

FPA – prepare grounding

Processing of the shielding paint HF65

Complete steps 4-8 as described above.

Grounding / equipotential bonding system (FPA)

To avoid a connection of low-frequency electric alternating fields, or to dissipate these, the shielding paint HF65 must be integrated into the function equipotential bonding for larger renovations or in new buildings.

In this case, the grounding plate EGP is also mounted beneath the skirting board.

The grounding flat cable is installed from the grounding plate up to a lower distributor or main distributor (fuse box) (fig.12 Flat grounding cable).

A separate function equipotential bonding rail (yellow/green) is mounted and marked in the fuse box. This FPA rail is connected with the existing PE rail. (Fig.13)

Further processing after coating the wall and drying

After the shielding paint has dried, it can be worked on further.

In order to achieve a good coverage with the shielding paint, it is generally necessary to paint over it twice. The floating particles that are not bound by the low binding agent proportion mix together in the first coating and thus lead to darker results (in the case of a white topcoat, the first coat will be gray). The first coat can be spread with the maximum dilution degree stated by the manufacturer. The second coat should be applied undiluted, if possible. After the first coat has dried and is covered with a second coat, the surface turns pure white again. (Fig.14). Wallpapering over it is just as easy. In this case, a deep primer, etching primer, or primer is applied to the shielding paint. Subsequently to this, the wallpaper can be attached with wallpaper paste for heavy wallpaper.

Quality labelling

A QS-mark in the distribution panel signals the connection of the shielding area to the function potential bonding rail, warns against removal, and notes the address of the involved expert as well as that of the responsible electrician. QS-label (available from Biologa)

Further information on functional equipotential bonding can also be found at: www.funktionspotentialausgleich.de

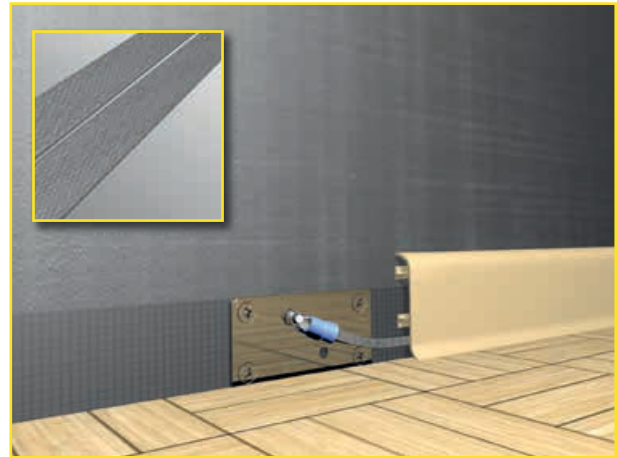


Fig. 12 Grounding plate beneath skirting board / guiding the ground strap up to the sub-distribution board

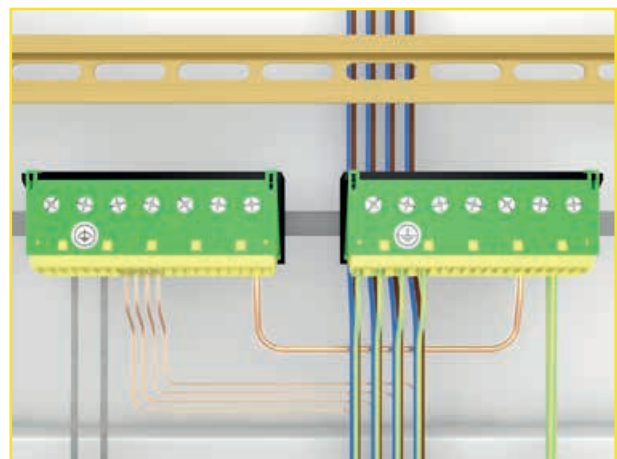


Fig. 13: Connection left of the function equipotential bonding conductor in the lower main distributor of the power supply with the separately marked function equipotential bonding rail.

In diesem Schaltschrank sind **geschirmte Leitungen** und/oder **elektrisch leitfähige Wandflächen** angeschlossen.

Die Schirm-Beidrähte der Leitungen sowie der Anschluss der Wandflächen sind mit der Schutzleiter-Schiene verbunden. Bei Lösen dieser Verbindung wird die Funktion der Schirmung aufgehoben.

Zur Erhöhung des Personen- und Sachschutzes sind alle geschirmten Leitungen und Wandflächen über einen Fehlerstromschutzschalter mit einem Bemessungsdifferenzstrom ≤ 30 mA geführt.

Zutreffende Normen:
 DIN VDE 0100-100
 DIN VDE 0100-410
 DIN VDE 0100-540
 DIN VDE 0185-305-3

Ihr ausführender Elektriker:

Ihr beratender Sachverständiger / Messtechniker:

www.funktionspotentialausgleich.de



QS-label available from Biologa

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HF/LF – Wall coating (high frequency+low frequency)

Tips and frequently asked questions

IMPORTANT / Tips

Ensure an even (homogeneous) distribution of the paint on the surface. Sections with differing thickness of paint coats can change the shielding attenuation depending on the thickness of the layer. Do not dilute the paint and never cover more than the stated surface. In order to avoid waste at a later point, you should apply all paint from the containers to the surfaces. This will further increase the shielding effect. Dried paint belongs in the normal residual waste. Please return the containers to the usual collection points ("yellow sack").

Drilling the holes can occur beforehand at the attachment points of the grounding plate or after painting and drying of the shielding area. Some of the shielding paint should be saved to cover the holes with paint after drilling. Another coat of shielding paint can also occur under the grounding plate in order to improve the contact from plate to ground strap.

The delivery of the grounding plate does not include a grounding wire to avoid incorrect connection of the components. Please inform your trusted electrician of this. They will bring the cable in the appropriate length. For incorporating the function equipotential bonding (grounding variation B), a flat grounding cable is used. This can be ordered by you or your electrician from Biologa. Please name the version that you require.

Frequently asked questions

Reply

General check of a surface's absorbency

The absorbency can be checked by sprinkling with water. If the water runs straight off, you are dealing with a weakly or non-absorbent surface. If it demonstrates a quick intake of water and a clear dark discoloration, this is an indicator of strongly absorbent surfaces.

Can the shielding paint HF65 also be processed on wallpaper?

Yes, generally you can directly apply the shielding paint HF65 to wallpaper. However, this should not be water-repellent and not have been painted over dozens of times. We always recommend processing under wallpaper or a coat of paint. Nonetheless, it can surely be sensible to apply the shielding paint directly to the wallpaper if the shielding measure will be removed again at a later time, e.g. in a rental flat after moving in or out. Discuss shielding measures with your landlord in advance.

Can pictures or other objects be fixed to the wall or ceiling after completion of the shielding measures?

Attaching pictures or other objects does not present a problem and can also occur on a shielding surface. Smaller nails or also screws may be used.
Please pay attention to the cable course of your electric installation beforehand to avoid damaging existing cables in the wall. You can find such cable finders at a construction market or at specialist stores.

Can the grounding according to version A also take place on other wall or ceiling outlets?

When applying a coat on only one ceiling, for example, the grounding can also take place over a luminaire outlet. The ground strap AEB 3.0 is hereby led along and closely to the outlet. The assembly of the EGP then occurs next to the luminaire outlet.

How can the shielding paint be removed again?

When processing on wallpaper, the shielding surface can simply be removed with the removal of the wallpaper. Have your electrician remove the grounding connection beforehand.
For processing under wallpaper, directly on the wall surface, the wall surface must be sanded off or milled off (about 1-2 mm).

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