

Technical Bulletin

Installation of screed-covered duct and flushfloor trunking systems

Information for site management and affected workers

Date: 07/2007

This technical bulletin provides you with information on specific technical subjects. It is based on the current rules and regulations and on our current test results. The contents of this document is not legally binding.

Installation of screed-covered duct and flushfloor trunking systems

The installation of screed-covered duct systems and flushfloor trunking systems is carried out according to our planning and installation instructions. The installation engineers undergo special product training with emphasis on installation. During and after the installation of screed-covered and flushfloor trunking systems, the following information should be observed, and appropriate measures taken to protect the installation systems and the neighbouring floors and floor coverings.

1. Acceptance of the installed duct/trunking system

After proper installation and levelling of the duct/trunking system, written acceptance is required from the site management before applying the floor covering. In accordance with Part B § 12 of the German Contracting Rules for the Award of Public Works Contracts (VOB), "acceptance" means: the following should be accepted on demand:

- a) intrinsically completed sections of the service,
- b) other parts of the service, if they are removed from further testing through additional work.

Both apply to underfloor installation systems, as the installed and levelled empty duct/trunking network can be considered as an "intrinsically complete section of the service" and, in addition, key sections of the duct/trunking system cannot be subjected to further testing on account of subsequent covering with screed or concrete.

2. Load capacity of the installed duct/trunking system

The loadability of underfloor cable management systems is described in DIN VDE 0634 part 1 and 2.

- 1) The loadability of screed covered ducts and protective mounting lids for underfloor boxes is defined with 750 N. This loadability is restricted for the installation time only as the ducts are covered with screed and therefore not affected to any load afterwards. The protective mounting lid has to be removed against a mounting lid for service outlets or a cassette solution.
- 2) The loadability of flushfloor trunking systems and service outlets is defined with 1500 N. The test requirements are based on a load, as given in DIN 1055 Part 3/06.71, Table 1, Section 5 b, for commercial premises and department stores, factories and workshops for light usage.

Ducts and accessories of underfloor installation systems obtain their permissible load for correct use only when joined to the neighbouring screed. For this reason, the screed should be laid directly after the duct/trunking system.

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In doing so, the following information should be carefully observed and complied with.

- 1) The duct/trunking system, levelled and fixed at the set screed height, may not be walked upon or subjected to other loads, such as material transports, construction material storage, scaffolding and transport vehicles. Measures to provide suitable protection should be agreed with the site management.
- 2) When applying the screed, the screed layer must carefully work in the screed in the area of the underfloor sockets and compact it.
- 3) As the duct/trunking systems form a composite with the neighbouring screed, the following waiting periods should be observed regarding use, access or other loads, to avoid damage to the screed and the duct/trunking system:

Screed types	Accessible after (days) (Human weight)	Extra load after (days)
Cement	3	7
Anhydrite	2	5
Magnesia	2	5
Poured asphalt	Usable after 2–3 hours	

Values according to DIN 18560 Part 1 "Floor screeds in building construction"

- 4) The opened duct/trunking system may not be walked upon nor subjected to loads, as specified under 1). Measures to provide suitable protection should be agreed with the site management.

3. Installation of screed-covered duct and flushfloor trunking systems

The installation systems can be installed in composite screed, separation layer screed, floating screed and heated screed.

As the installation system or parts of it serve as a binding finish for the screed, the level must be agreed with the site management and the screed company.

When applying the screed, the screed layer must carefully work in, compact and finish the screed in the area of the underfloor boxes and/or flushfloor trunkings.

In particular, in the case of the flushfloor trunking, the aluminium side profiles must be lined with screed, to provide good static support of the installation system.

The use of separation strips or layers between the screed and the underfloor boxes or flushfloor trunkings is not permitted, as the resulting joints and hollows considerably reduce the load capacity and pose a risk of damage to the floor covering.

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Depending on the type of screed, the following measures should be carried out when installing the installation systems:

a) Floating screed

When using floating screeds, seal off any openings in the installation system using suitable agents, e.g. adhesive tape. Openings are possible on the side walls of the underfloor box, the connecting devices and vertical bends, and on the duct impact points of duct units, branches, attached units and end pieces. The top sides of the underfloor box and flushfloor trunkings should also be covered with suitable agents and protected against soiling.

The sealing process should not leave any cavities between our components and the neighbouring screed, as this would impair the load capacities of the installation system.

b) Magnesia screed

With this screed, it is necessary to protect any components coming into contact with the screed during construction using a tested epoxy resin-based corrosion protection agent.

c) Poured asphalt (mastic asphalt)

There are no specific restrictions pertaining to the use of installation systems in poured asphalt. The following procedure for installations in poured asphalt was created in conjunction with the Beratungsstelle für Asphaltverwendung e.V. in Bonn.

The screed-covered ducts may, under no circumstances, make direct contact with the poured asphalt. The high installation temperature, approximately 250 °C, means that changes to the shape of metallic parts cannot be ruled out.

The duct sections must therefore be protected against the heat using a suitable insulation material, e.g. Fasoperl plates or asphalted corrugated card. On account of their small dimensions and the closeness of their fixings, the underfloor boxes do not require any additional insulation strips. This means that the poured asphalt can be worked directly on the underfloor boxes.

The flushfloor trunkings may also not make any contact with the hot poured asphalt. After installation of the trunkings, including the screed anchor, and before laying the poured asphalt, we recommend the application of insulation strips of approximately 15 - 20 mm on the trunking. When the poured asphalt has cooled, the insulation strip is removed and filled with a casting compound. The selection of a suitable casting compound must be agreed with the floor layer.

4. Protective measure, equipotential bonding

According to DIN VDE 0634, all the metallic components of the underfloor installation system must be included in one of the protective measures in DIN VDE 0100.

The components shall be considered as having a sufficient conductive connection when their connection points are either welded, soldered, riveted, screwed or when connections on metallic surfaces are created under pressure.

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The connection of the trunking system to the equipotential bonding system of the building is not contained in our installation services, but is carried out during the electrical installation work.

The screed-covered duct system, consisting of duct sections, connecting devices and underfloor boxes, is interconnected as part of installation, as this work must be carried out before the floor is laid. The underfloor boxes can be equipped with an earth conductor clamp (for nominal cross section of 1.5–4 mm²), which must be ordered separately.

The flushfloor trunking system is conductively interconnected on the outside as part of the installation process. This means that with the fixing and connection of the individual trunking sections using the fixing brackets, the screwing on of the covers and the connection of 90° branches, T and cross branches using connection brackets, the necessary work is carried out before the floor is laid.

The connection of the trunking system to the equipotential bonding system of the building, and the conductive connection between the bottom part of the duct and the inner side of the duct side profiles, is not contained in our installation services, but is carried out during the electrical installation work.

The necessary earth conductor clamp, for nominal cross-section 1.5 - 4mm², used inside the bottom sections of the trunking bases and the trunking side profiles, must be ordered separately.

5. Special features of flushfloor trunking systems

Cover butt supports

For nominal duct sizes of 400 mm or greater, cover butt supports with M8 support screws are used for static support of the duct cover. For this, the cover butt supports inserted in the trunking must be positioned correctly during the cable laying operation, levelled off and fixed with the locknut M8. The support screws must be firmly tightened between the trunking cover and the trunking base. The support screws must stand on the slab. In case there is no prepared opening in the trunking base, it must be drilled on site. For nominal sizes up to and including 400 mm, the cover butt supports can be inserted at the cover butt, for nominal sizes of 500 and 600 mm additionally in the centre of the 800-mm-long cover.

To allow cable insertion during repeated cabling, the cover butt supports can be removed. Reinsertion at the required points should be carried out to ensure the necessary cover support. If necessary, the levelling screws must be adjusted and locked.

As the insertion, levelling and locking of the cover butt supports generally takes place after the floor laying work as part of the electrical installation work, they are not included in our installation service.

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Floor covering application profiles

The flushfloor trunkings always contain aluminium floor covering application profiles. In the as-delivered state, these profiles are flush with the trunking, to allow finishing of the screed.

When the electrical installation work has been completed, the floor covering application profile is inserted raised.

The floor covering application profiles are used to protect the floor covering cutting edges. In addition, the duct system remains visible in a finished state, to allow installations at a later date, without any changes or damage to the floor covering.

The floor covering application profiles are designed in such a way as to ensure the required cover play in the finished state. The edge seen in the finished state is only 2 mm thick, so that it is not overly visible in the floor covering.