

Tips for planning and installation

What are the important aspects to observe when selecting expansion-joint designs?

The construction of expansion joints in floors, walls, ceilings or roofs continues to be a problem area which is sometimes difficult but which can, as a rule, be solved. Selection of the correct joint design is therefore of decisive significance for correct functioning.

It is essential that the planning and contract-awarding company devotes sufficient attention to the importance of selecting the correct joint construction and that the construction company follows the appropriate recommendations and instructions.

Failure to do so leads to damage, such as cracking in the surface-covering, breaking away at the edges, damage due to moisture, defect or damaged profile constructions.

Such damage occurs as soon as the joint construction is required to carry out its function [strain, movement, settlement, etc.].

1. Floor profiles

Joint designs in industrial flooring, shopping centres, etc., have been attaining increasing significance in the last few years. Strains due to fork-lift trucks, with static wheel-loads of 10 kN at a wheel/surface contact area of 25/30 mm – and even smaller contact areas – are no longer a rare occurrence.

The greater the strain to which a floor is subjected due to friction, impact, pressure, etc. [see DIN 18 560], the greater the need for careful selection of the correct joint design.

Ill. 1 shows how pressure forces and tensile forces subject a construction to strain.

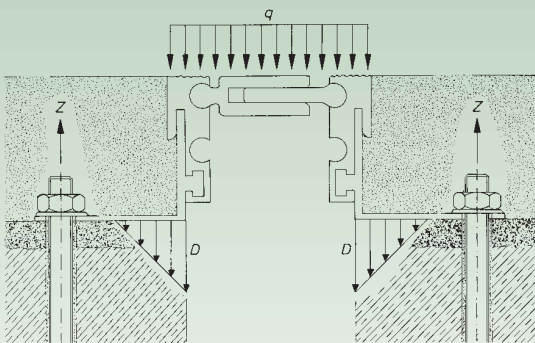


Illustration 1

Such forces cannot always be sustained by aluminium profiles.

In the cases, steel constructions are employed designed especially to sustain extreme levels of strain.

For all the floor profiles in accordance with Chapter 4, static checks have been carried out in accordance with the information on loads contained in DIN 1055, Part 3, counterbalance fork-lift truck, and DIN 1072, Standard Moving Loads [see Table 1].

N. B.:

Information regarding the permissible maximum weight or wheel load of a vehicle, which is not contained in the DIN, is of no value when determining the appropriate profile, unless the wheel/surface contact area is also stated.

Of equal importance to the aspect of heavy loads is the problem area of watertight joint designs.

Watertight designs are especially often required for multi-storey car parks, underground car parks, etc.

Very few profiles systems are able to meet this requirement [Illustration 2]

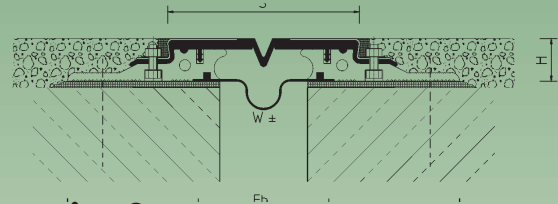


Illustration 2

The following decisive criteria are to be generally observed when selecting joint constructions:

- Horizontal-movement acceptance \pm
- Settlement ability [effects of mining work, earth-quake areas, connection to existing or newly erected building], i. e. vertical movement \pm
- Joint-width
- Height of construction
- Purpose of use [magnesium oxychloride screed topping, bituminous mastic concrete, etc.]. Attention must be paid to the contact of joint profiles with other materials!
- Standard load-carrying capacity [in accordance with DIN 1055 and DIN 1072], otherwise special enquiry required.
- Watertightness
- Aggressive media [chemicals industry, dairies, etc.]

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When the above points have been taken into consideration, further factors must be considered to ensure correct functioning of a profile:

- a) Continuation of the same joint-width from the underfloor into the top flooring ground layer [e. g. VOB]
- b) perfect joints, i. e. possibly after-working of the joint edges prior to installation

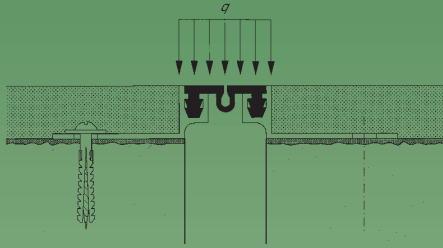


Illustration 3

- c) **Aluminium surfaces, which must subsequently bond with floor coverings, must be provided in a clean condition or must be degreased using commonly available cleansers.**
- d) **vibration-free installation of the profile on the subgrade, if necessary, plastic-mortar bedding for the entire surface of the profile, $\delta_D \geq 5,5 \text{ N/mm}^2$, metall distance-pieces or other appropriate measures [Ill. 3]**
- e) **adequate and frictional-type anchorage in the sub-construction [$\geq \text{EC 25/30}$], with Fischer reaction anchors or Fischer ZYKON anchors [Table 1]**
- f) **adequate distance, between the edge of the profile anchorage and the joint-edge [observe characteristic values of dowels!] [Ill. 1]**
- g) **additional sealing of the anchoring elements, if surface-sealing is used**
- h) **possible insertion of jointing compound between top ground layer and joint profile.**

2. Wall and ceiling profiles

Joint constructions in this field are not required to fulfill the high level of requirement of floor profiles.

Nevertheless, avoidable damage also occurs here after installation.

This damage results both from wrongly selected construction and from incorrect installation.

Special consideration must be given here to wind/suction forces.

3. Roof profiles

These joint constructions are always to be watertight.

Attachment to the surface sealing and connection to parts of the superstructure are to be carried out with the utmost care and attention.

All above-mentioned points in the general explanation must also be observed with regard to roofing.

In view of the present state of the art, it may be assumed that appropriate **DEFLEX® systems** exist or can be constructed for every kind of joint design which may be required.

Failure to observe the points stated above leads to expensive joint-renovation work [dismantling of the profile construction, reworking of the joint edges, chipping away of the subgrade, connection to the surface seal, installation of a new profile, installation of the top ground layer, etc.], which may in some circumstances be connected with partial close-downs in industrial areas.

The costs of such renovation work bears absolutely no relation to the original value of the order. It is better, therefore, to select the correct joint design and the correct joint construction from the outset.

This planning folder is intended to provide help in the planning of expansion joints and the selection of the correct profile construction.

The technical data on drawings, possible areas of application, static load capacities and specifications are presented in a clear and easily understandable manner.

Should any questions nevertheless remain unanswered, please contact us. We are sure that we can offer you the perfect solution for any special problem which you may have.