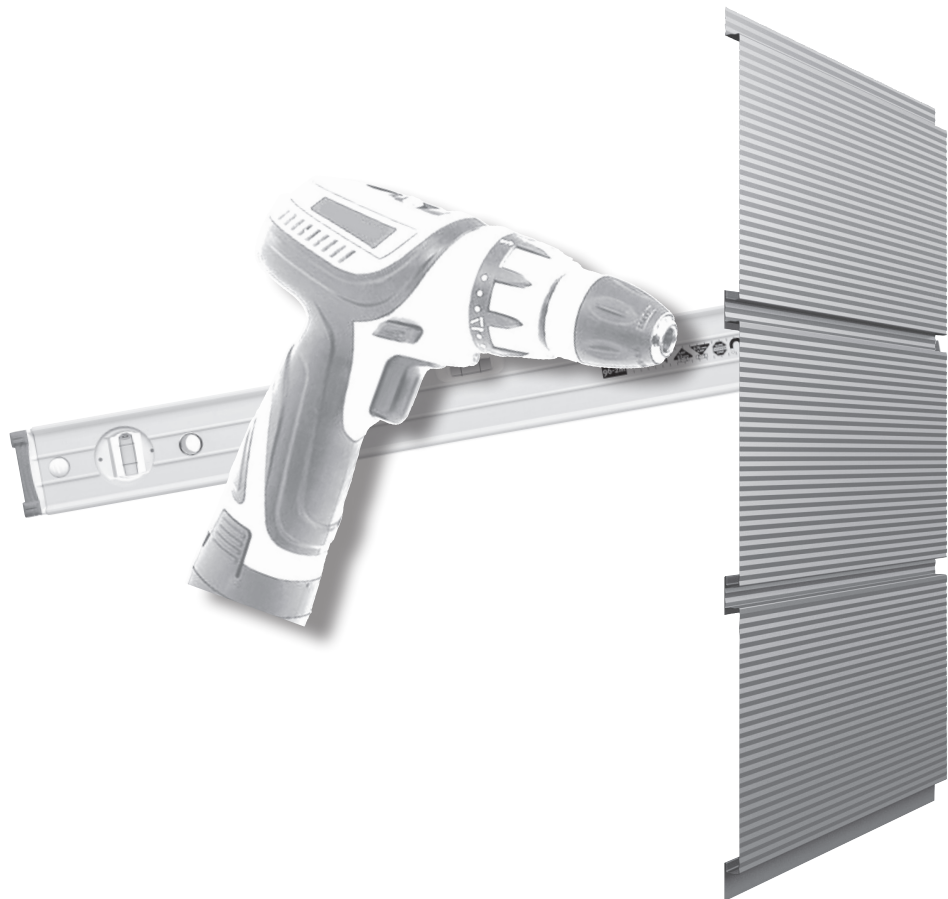


Steckpaneel PLUS®



The installation guidelines for the Steckpaneel PLUS comply with the generally recognised codes of practice and are one of the basic principles for professional installation. We assume that the valid standards are known. The rules for lightweight metal constructions of the IFBS (International Association for Lightweight Metal Structures) apply analogously to these installation instructions. Compliance with the installation notes does not exempt the user from acting on his own responsibility. The Steckpaneel PLUS has the general approval of the construction supervision agency Z-14.1-578 aluminium, Z-14.1-579 steel / stainless steel.

Alternations of Length and Tolerances

Temperature-dependent alternations of length and width of the components must absolutely be taken into account. At a temperature difference of 100 Kelvin the alternation is:

- for steel 1.2 mm / m
- for aluminium 2.4 mm / m

Production-related tolerances (steel / aluminium)

- overall widths 190 – 400 mm tolerances + 1 / - 2mm
- lengths 400 – 6,000 mm tolerances + 5 / - 2mm

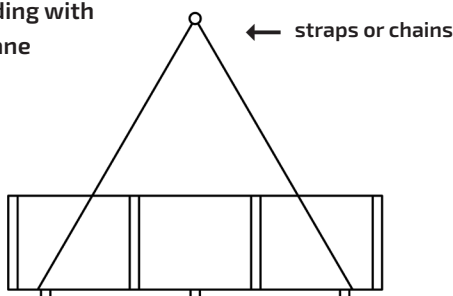
Due to the properties of the primary material, material-related stresses may occur in the processed condition which may result in a slight unevenness.

Unloading

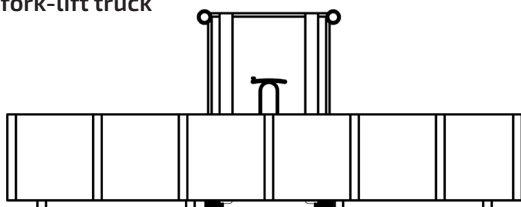
When unloading the packages only appropriate lifting equipment and slings may be used. The lifting equipment is only to be attached to the packaging, in no event to the Steckpaneel PLUS itself as otherwise deformations may occur (Fig. 1).

Fig. 1 Loading and unloading

Unloading with the crane



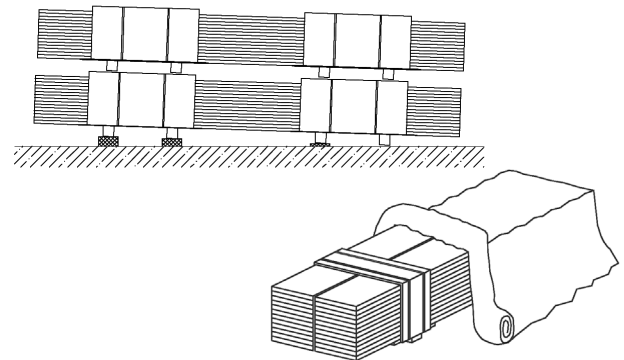
Unloading by fork-lift truck



Storage

The storage on the construction site must ensure that the panel elements are stored evenly, inclined and without any deflection. For a weatherproof outdoor storage a suitable tarpaulin should be used - this tarpaulin must be well ventilated to avoid any formation of condensation water (Fig. 2). The weather protection is also necessary to avoid any problems when removing the protective foil at a later date.

Fig. 2 Storage



Handling during Transport

Longer slot-in panels should always be carried in an upright position in pairs (Fig. 3) to avoid any deflection deformation.

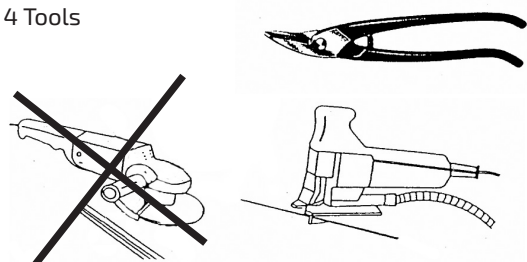
Fig. 3 Transport



Processing the Panels

When processing **steel panels**, only cold-cutting tools and machines should be used (jigsaw with suitable saw blade, Fig. 4). In no case angle grinders should be used as these high-speed rotating tools and machines would destroy the protective zinc-lacquer coating which would cause the loss of corrosion protection. Any sawing and drilling chips must be removed immediately.

Fig. 4 Tools



When processing aluminium panels suitable hand-held circular saws may also be used. It is essential to ensure that a suitable carbide-tipped saw blade is used. The appropriate number of revolutions according to the manufacturer's specifications must be observed.

Substructures made of metal

Single or multi-part metal constructions should be used as substructures for the Steckpaneel PLUS. In case of steel substructures a minimum thickness of $t \geq 1.5$ mm must be observed; for substructures made of aluminium the mandatory minimum thickness is $t \geq 1.8$ mm. The minimum width of the support of 40 mm must also be observed.

The substructures must be mounted flush and perpendicular, statically dimensioned in relation to the dimensions of the respective cladding elements. The type of connections and fastenings of the substructure as well as the cladding elements to one another must be done in such a way that movements of the components and the structure can be absorbed with low noise.

Substructures made of wood*

Wooden substructures are allowed to be used. The dimensioning of a potential wooden substructure must be done according to relevant standards. Due to the natural shrinkage process strong deformations of the cladding elements may occur. We therefore do not recommend wooden substructures. When using wooden substructures a separating layer must be used.

* The German General Building Approval of the Steckpaneel PLUS does not cover wooden substructures.

Installing the Steckpaneel PLUS

Prior to installation all dimensions at the structure must be checked. The Steckpaneel PLUS - elements may only be installed on flat aligned substructures. In order to compensate the production-related tolerances of the panels in a reliable manner the measurements of the panels should be checked again and the installation pattern adjusted accordingly. All elements must be inspected for defects before installation, defective or damaged elements should not be used.

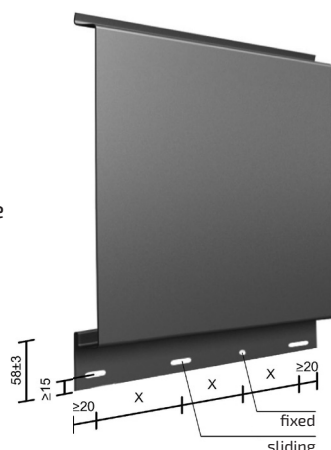


Fig. 5 Mounting scheme

It is essential that the installation is done free of any restraint (provision of fixed and sliding points, Fig. 5). Screw connections must be secured against unintended loosening.

Only screws with aluminium or stainless steel washers $\geq \varnothing 12$ mm approved by the construction supervision agencies and rivets made of aluminium or stainless steel with a head diameter of 11 - 14 mm are allowed to be used. The position (horizontal or vertical) of the first panel must be precisely aligned. We recommend to check the pattern at certain intervals to compensate for tolerances. When handling, transporting and installing the panels it must be ensured that they are always handled with care.

The panels are fastened by means of concealed drilling screws or rivets suitable for the system. Per panel one central fixed point must be provided. It is essential to design all further fastening points as sliding points (slotted holes for instance by means of a slot-hole punch) (Fig. 6). It must be absolutely ensured that the fasteners are not overtightened.

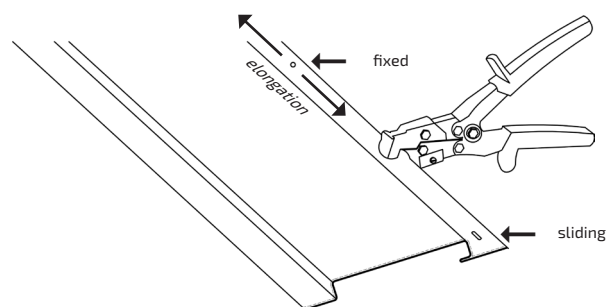


Fig. 6 Slot-hole punch

When using rivets we recommend a riveting tool (Fig. 7). The installation of the individual panels must be done free of any restraint to absorb any material tensions and thus avoid „cracking noises and wave formation“ as far as possible.

Fig. 7 Riveting tool



When installing at a lesene, corner or reveal (Fig. 8) it must be ensured that there is sufficient space for the longitudinal expansion (X) of the panel (see alternation of length and tolerance).

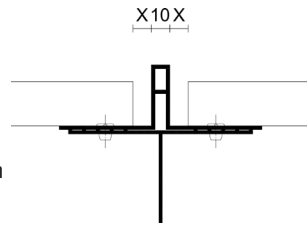
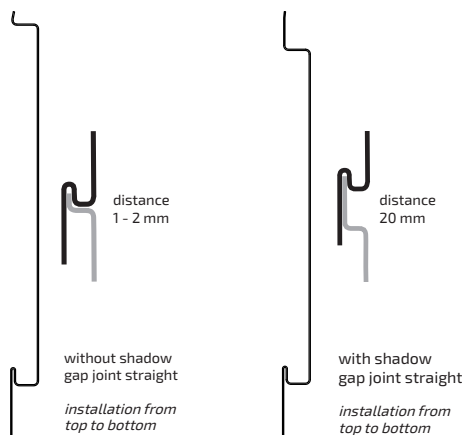


Fig. 8 Transverse joint with lesene profile

Longitudinal joints should be executed with a joint of 1 - 2 mm. Installation without a characteristic joint or a horizontal or vertical separation is not recommended as neither any tolerances nor linear thermal expansion of the panels can be compensated.

Such a construction may result in visual and structural defects. Due to the different viewing angles and various light conditions in combination with the reflection caused by the surface coating the vertical and horizontal installation of the panels makes the highest demands on an accurate mounting of the substructure and the panels.

Fig. 9 Situation of joints



Statics

The material thickness of the substructures and the distances between the fastening points should be determined statically to ensure the structural safety of the facade and to achieve the optimum in economic terms. Basic information regarding the static calculation for the Steckpaneel PLUS are given in the approvals of the construction supervision agency..

Modular bracket

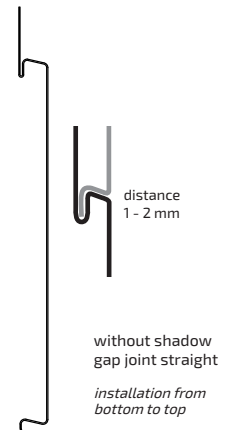
The modular brackets (Fig. 10) must be mounted flush and perpendicular. In this connection, special attention must be given to the fact that the height of the notches in the modular brackets conforms to the panels. The modular brackets then define the installation pattern. Using the brackets ensures that the panels are mounted or suspended on the facade with as little noise and tension as possible, even in case of high variations in temperature. A fixed point must be set in the middle.

Fig. 10 Modular brackets

modular bracket to hold Steckpaneel PLUS

*installation from bottom to top only
joint oblique*

U - section



Protective Foil

After installing the protective film applied (Fig. 11) must immediately be removed; removing the protective film at a later time may cause problems (UV radiation). The protective film should be removed at a material temperature of min. + 10° C to prevent any residues of adhesives.

Fig. 11 Protective film

