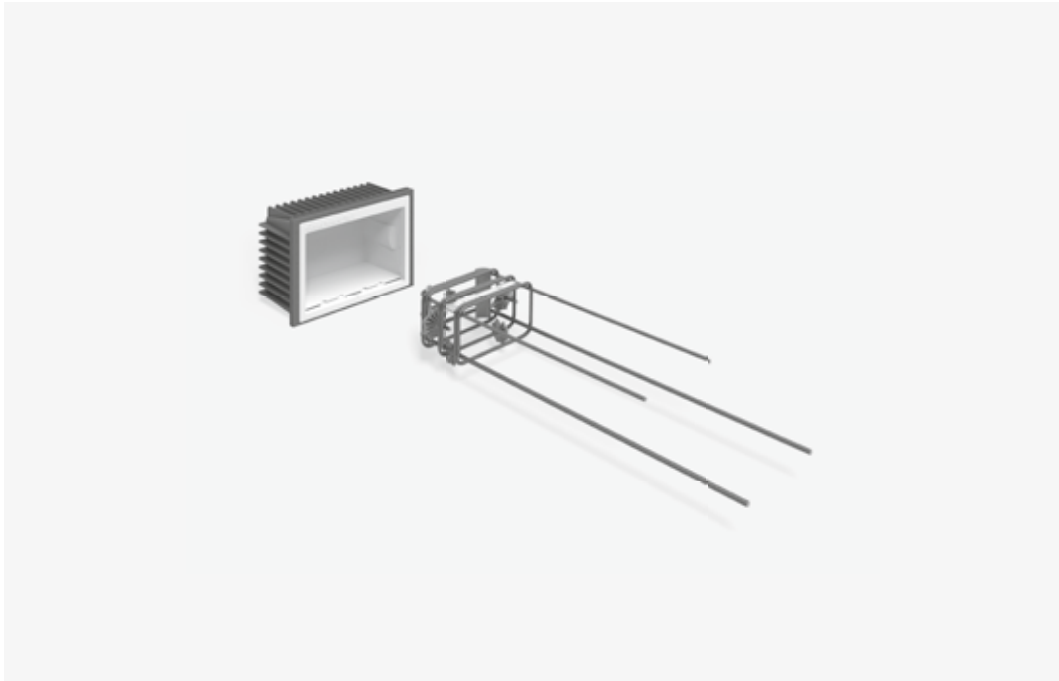


Schöck Tronsole® type Z



Schöck Tronsole® type Z

Serves the sound insulation of landings and staircase walls. Here, the landings can be implemented in in-situ concrete or as fully precast components. The staircase wall can be either masoned or concreted.

Z

Product characteristics | Product design

i Product characteristics

- ▶ Impact sound pressure level difference $\Delta L_{n,w}^* \geq 27$ dB, tested according to DIN 7396; Test report Nos. 91386-09;
- ▶ High quality and efficient Elodur® elastomer support for point connection
- ▶ Load-bearing element in accordance with type approval report No. S-N/130257
- ▶ One element height for all landing heights
- ▶ Fire resistance class R90 in accordance with Fire Protection Report GS 3.2/13-390-2
- ▶ Light load-bearing element including spacer for simple assembly optional

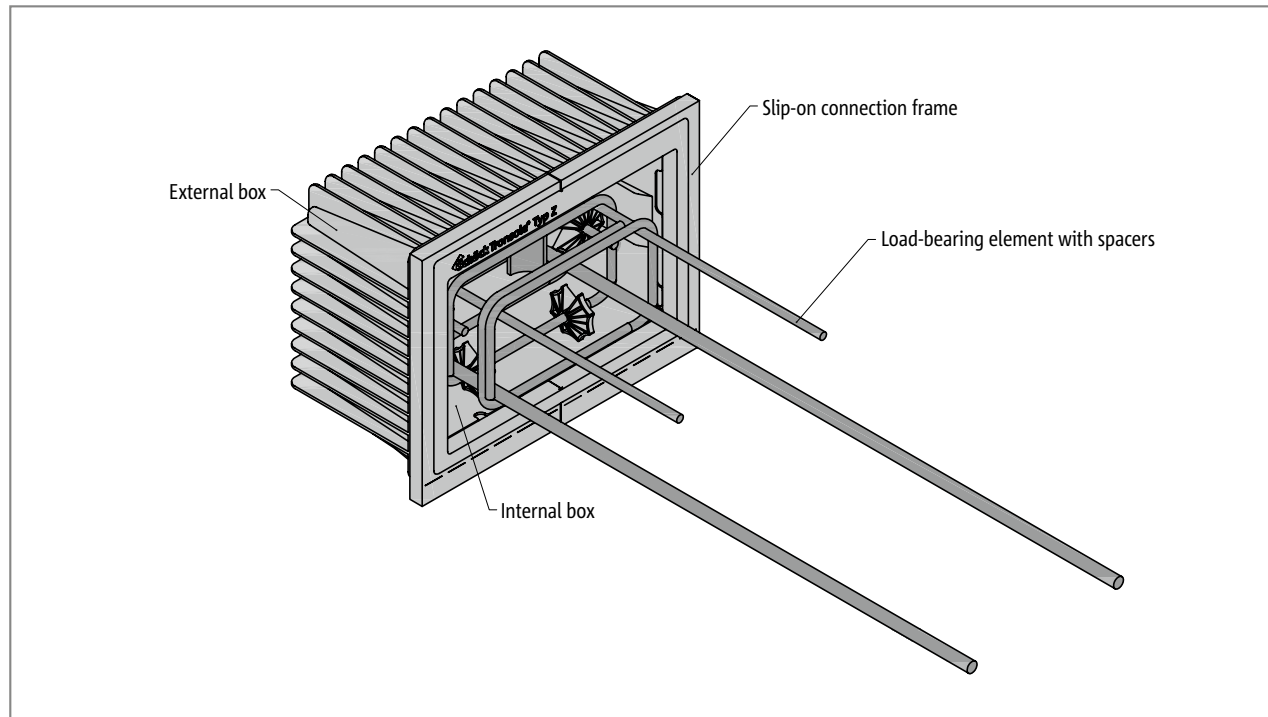
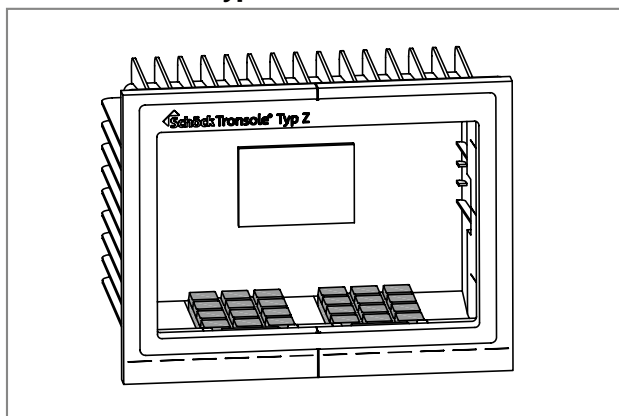


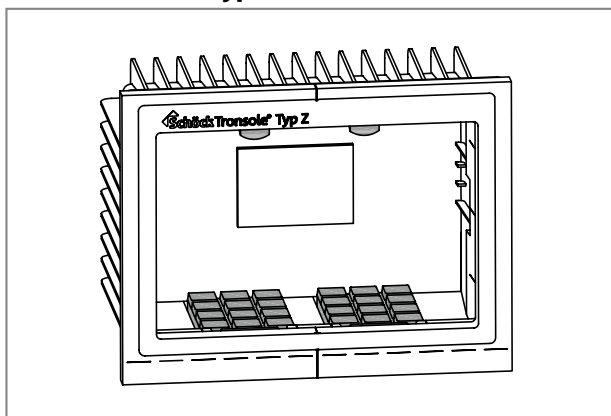
Fig. 108: Schöck Tronsole® type Z: Wall element, consisting of outer box, inner box, connection framework and integrated Elodur® elastomer, which are not visible in the diagram. The load-bearing element can be obtained optionally and is concreted into the landing.

Product selection | Type designations

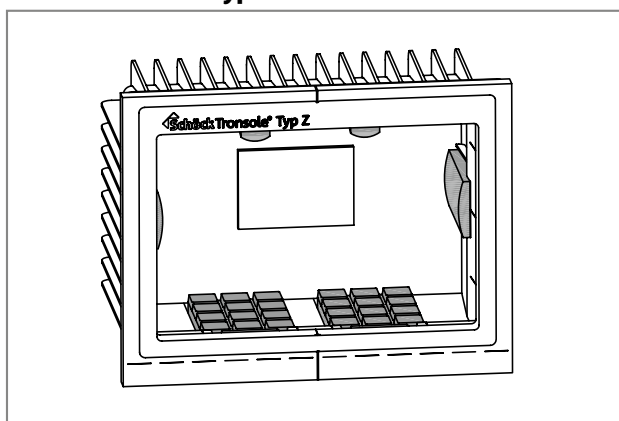
Schöck Tronsole® type Z-V



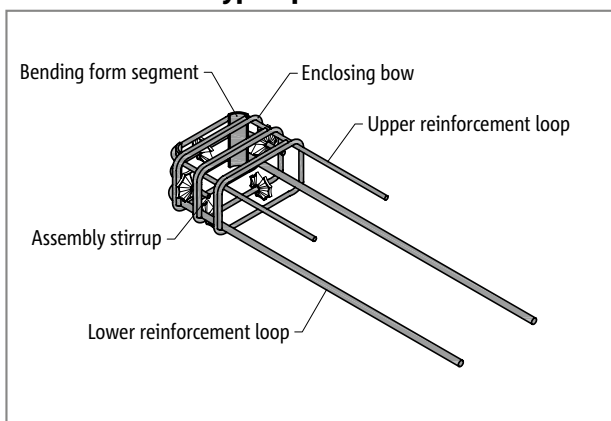
Schöck Tronsole® type Z-V+V



Schöck Tronsole® type Z-VH+VH



Schöck Tronsole® type Z part T



Schöck Tronsole® type Z variants

The design of the Schöck Tronsole® type Z can vary as follows due to different placement with Elodur® elastomer supports:

► Load acceptance direction:

The type Z-V wall element receives a positive shear force $V_{Ed,z}$.

The Elodur® elastomer support is located in the wall element of the Tronsole® type Z-V below.

The wall element type Z-V+V receives positive and negative shear forces $V_{Ed,z}$.

The Elodur® elastomer support is located in the wall element of the Tronsole® type Z-V+V below and above.

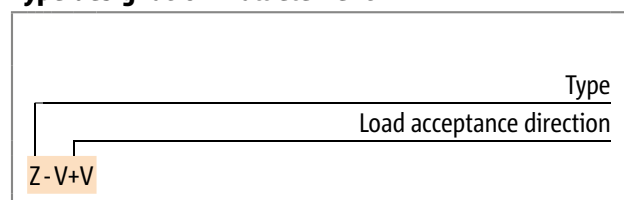
The wall element type Z-Vh+Vh, along with shear forces $\pm V_{Ed,z}$ also receives lateral horizontal forces $\pm V_{Ed,y}$.

The Elodur® elastomer support is located in the wall element of the Tronsole® type Z-VH+VH below, above and laterally.

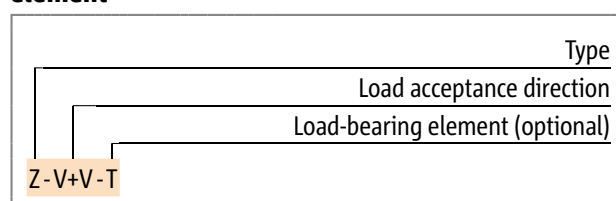
► Load-bearing element:

The type-approved load-bearing element Schöck Tronsole® type Z part T is optionally available.

Type designation wall element



Type designation wall element with load-bearing element



Manufacturing variants

Manufacturing variant wall element as stay-in-place formwork

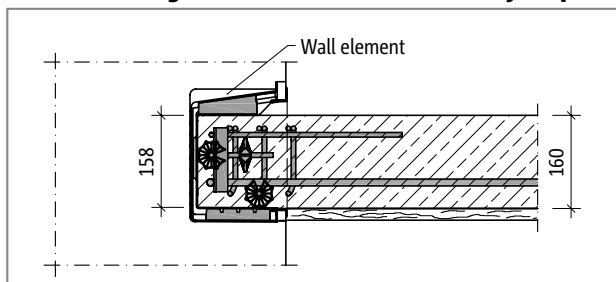


Fig. 109: Schöck Tronsole® type Z: Wall element as stay-in-place formwork

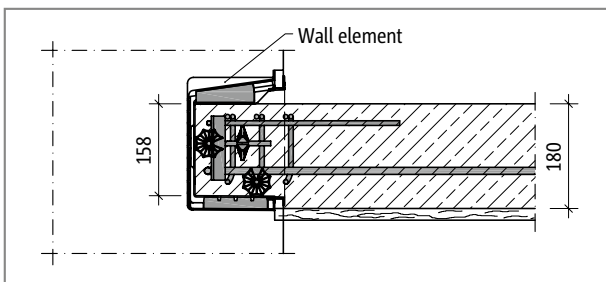


Fig. 110: Schöck Tronsole® type Z: Wall element as stay-in-place formwork; underside of the landing flush with the connection frame of the wall element

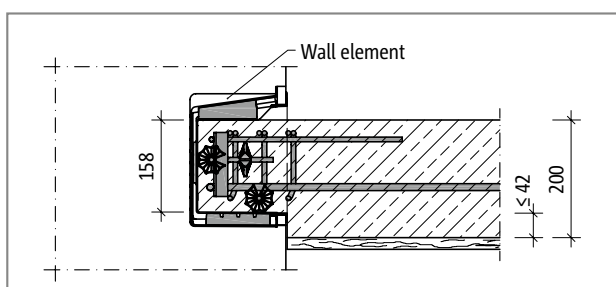


Fig. 111: Schöck Tronsole® type Z: Wall element as stay-in-place formwork; underside of the landing lower than the connection frame of the wall element

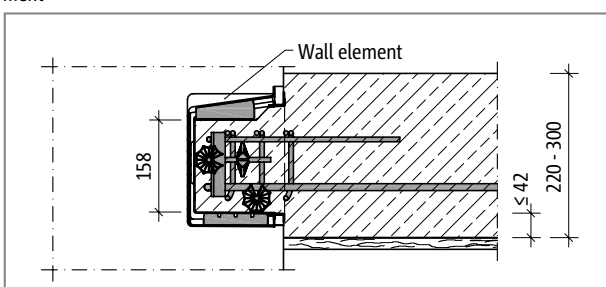


Fig. 112: Schöck Tronsole® type Z: Wall element as stay-in-place formwork; underside of the landing lower than the connection frame of the wall element

Manufacturing variant formwork construction in the prefabricating plant

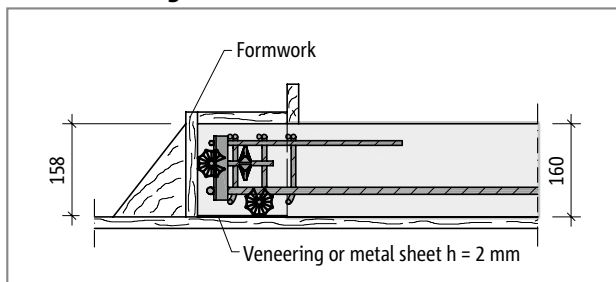


Fig. 113: Schöck Tronsole® type Z: Production of a support corbel on the fully precast landing; landing slab thickness $h = 160$ mm

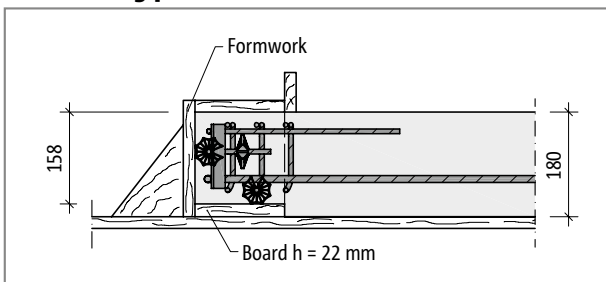


Fig. 114: Schöck Tronsole® type Z: Production of a corbel bracket on the fully precast landing; landing slab thickness $h = 180$ mm

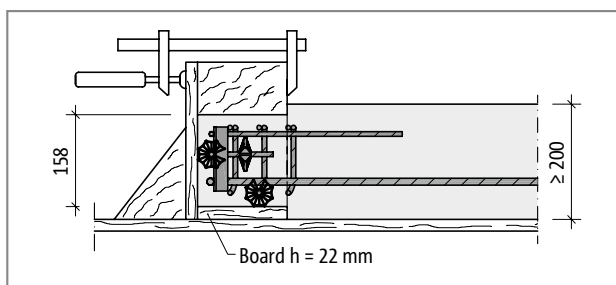


Fig. 115: Schöck Tronsole® type Z: Production of a corbel bracket on the fully precast landing; landing slab thickness $h \geq 200$ mm

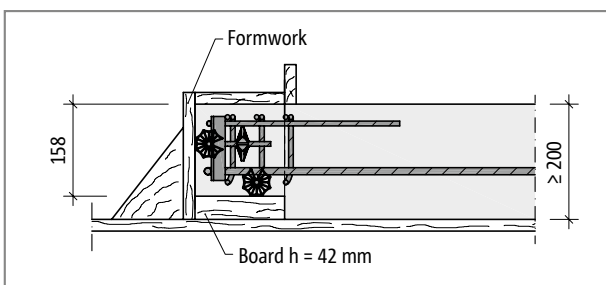


Fig. 116: Schöck Tronsole® type Z: Production of a corbel bracket on the fully precast landing with maximum height difference between the lower edge of the landing and the corbel; landing slab thickness $h = 200$ mm

Manufacturing variants

The Schöck Tronsole® type Z is used both for in-situ concrete as well as for fully precast landings. With in-situ concrete landings the wall element of the Tronsole® is used as stay-in-place formwork. With fully precast landings the corbel bracket of the landing is manufactured according to the dimensions presented in this technical information in order, following the hardening of the concrete, to be able to insert it into the wall element of the Tronsole®.

Installation cross section

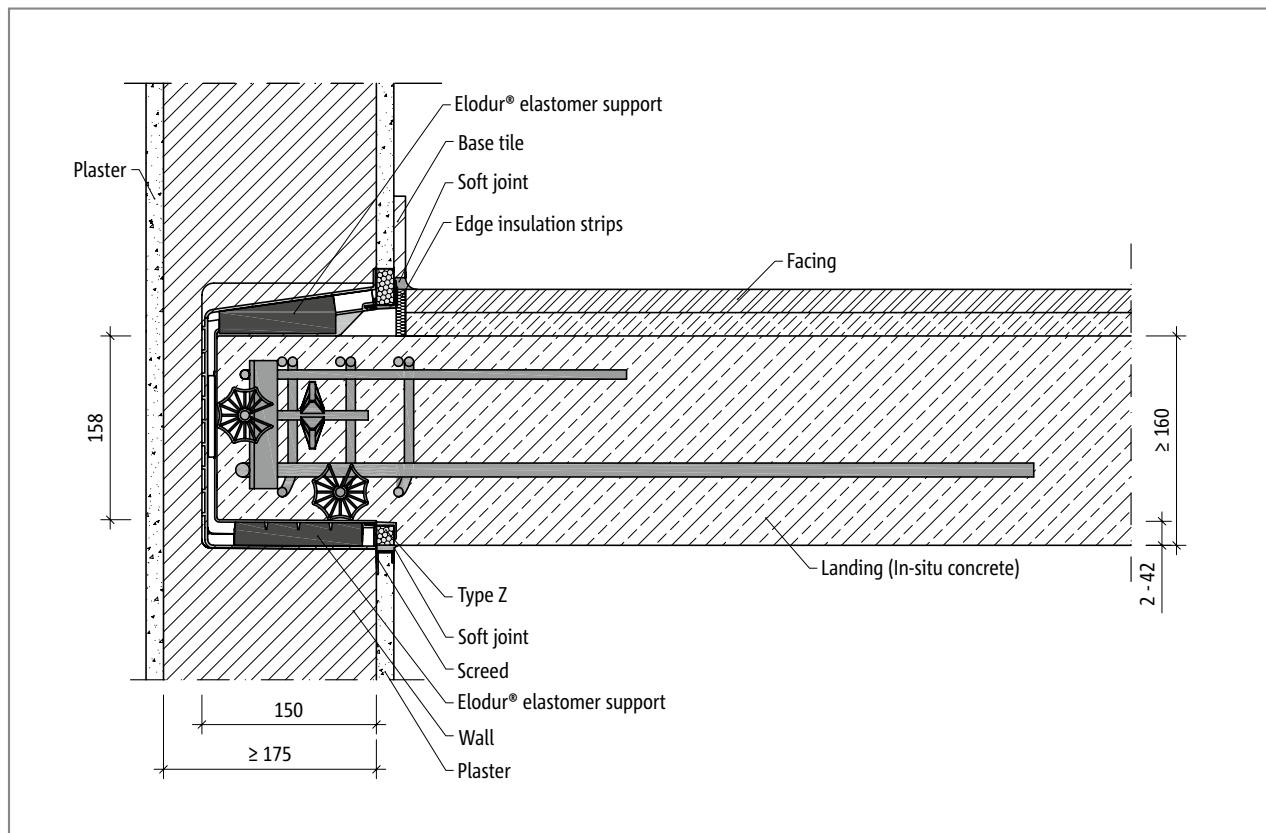


Fig. 117: Schöck Tronsole® type Z-V+V-T: Installation cross-section in-situ concrete landing

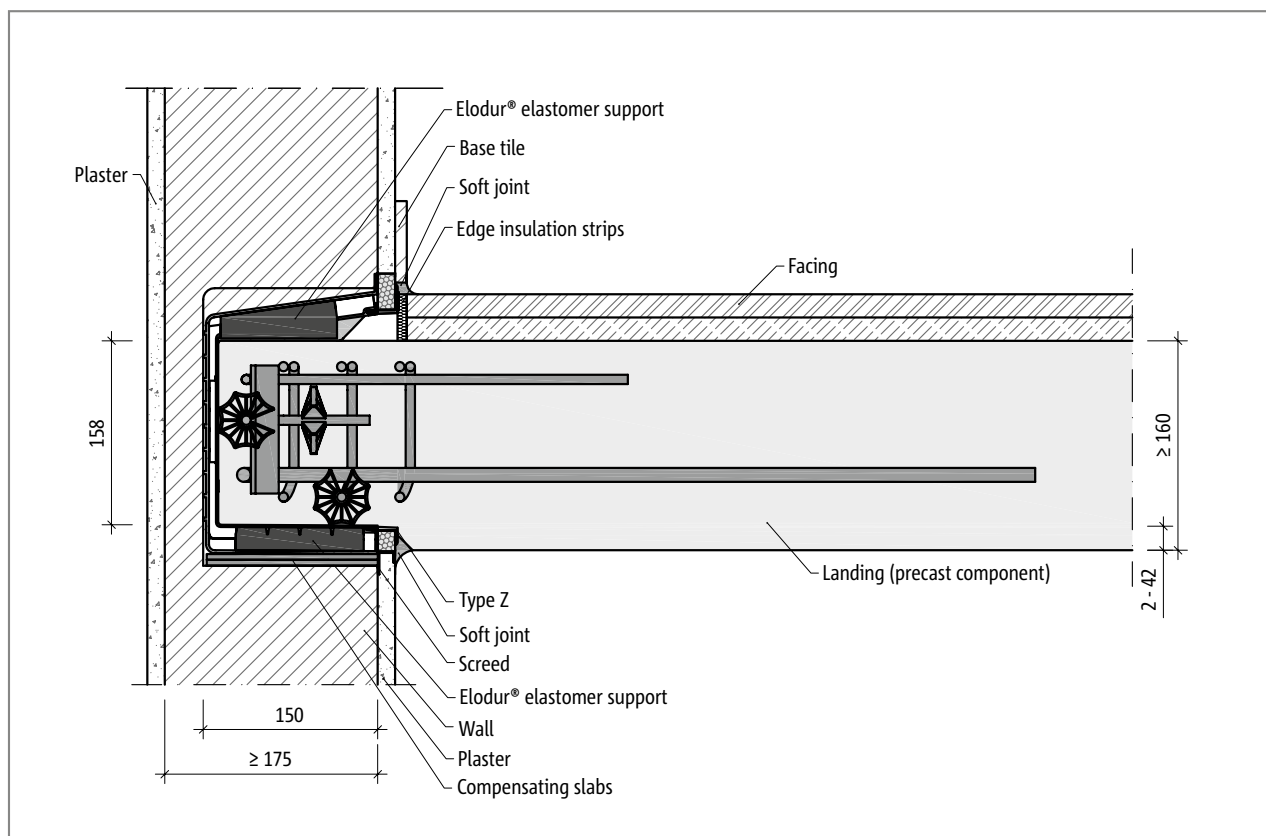


Fig. 118: Schöck Tronsole® type Z-V+V-T: Installation cross-section precast landing

Element arrangement

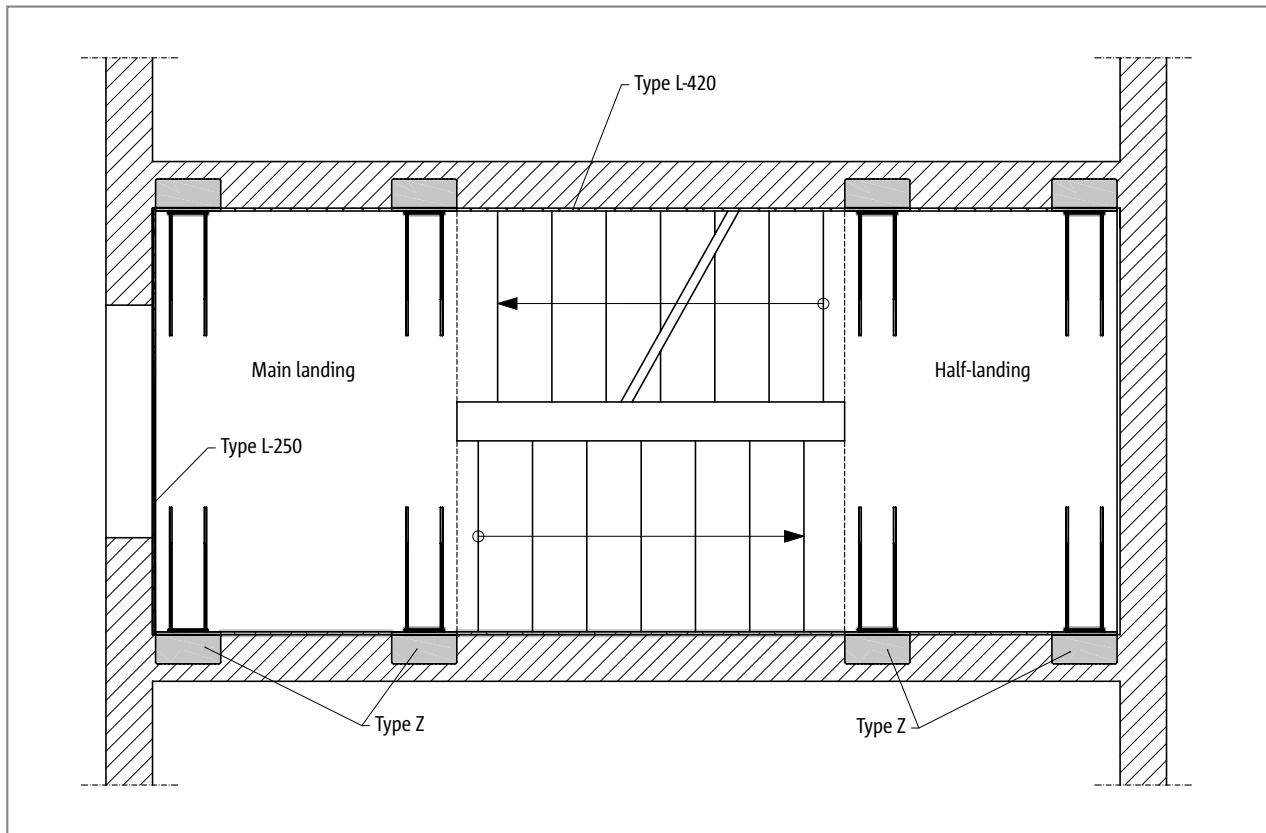


Fig. 119: Schöck Tronsole® type Z: Element configuration in plan view

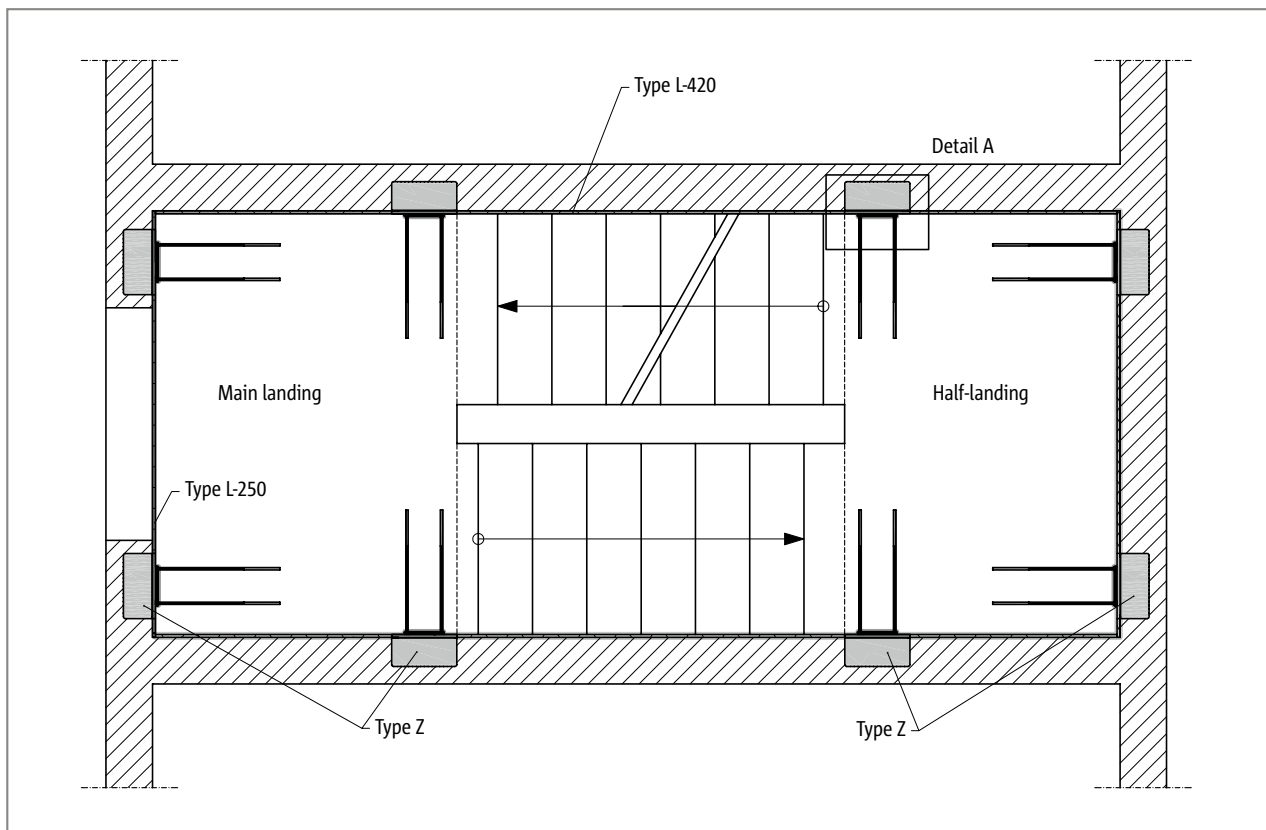


Fig. 120: Schöck Tronsole® type Z: Alternative element configuration in plan view

Element arrangement

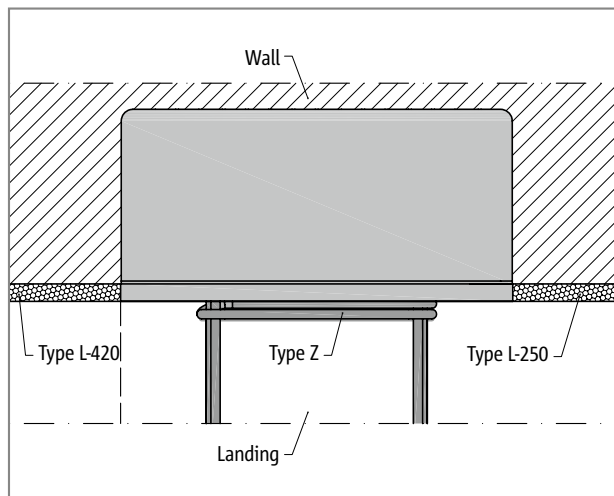


Fig. 121: Schöck Tronsole® type Z: Element configuration, Detail A

i Element arrangement

In order to achieve a favourable distribution of the support forces, a 4 point support of the landing on two opposite sides or on three sides is recommended.

i Combination possibilities

- The given acoustic insulation values apply in combination with the Tronsole® type L-420 or with a sufficiently wide air joint (50 mm).

Product description

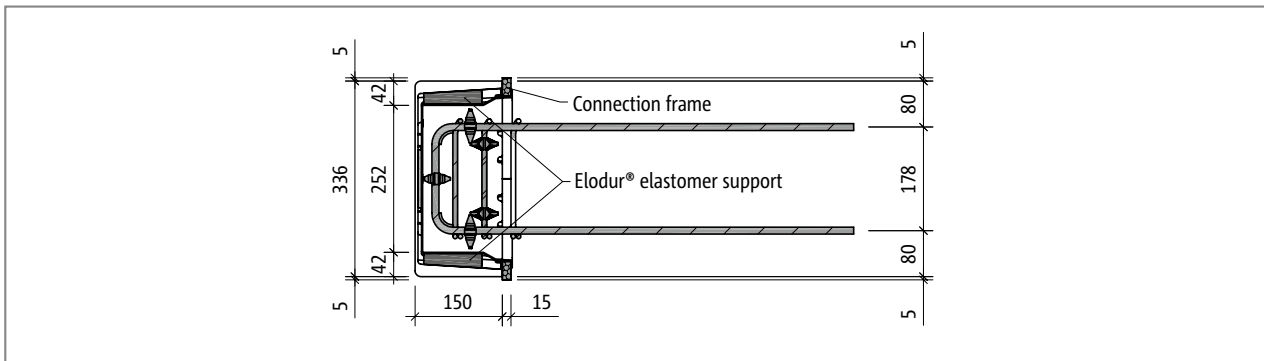


Fig. 122: Schöck Tronsole® type Z-VH+VH-T: Horizontal cross-section

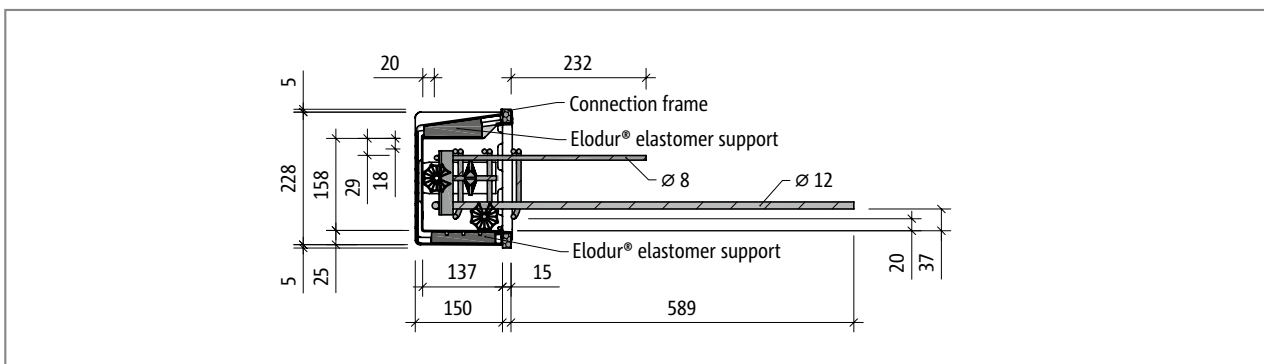


Fig. 123: Schöck Tronsole® type Z-V+V-T respectively type Z-VH+VH-T: Vertical cross-section

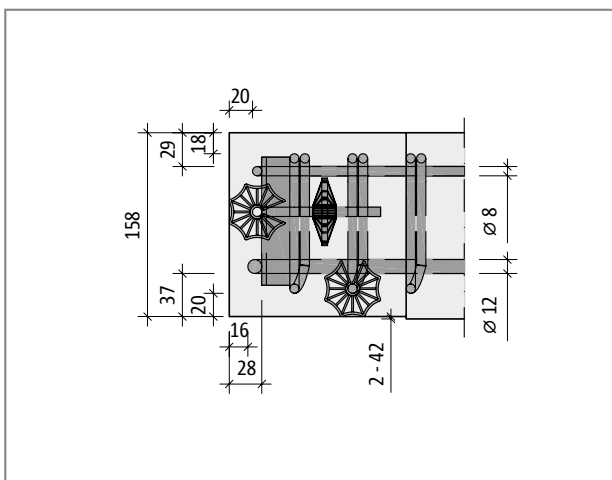


Fig. 124: Schöck Tronsole® type Z: Side view of a concrete landing with integrated load-bearing element

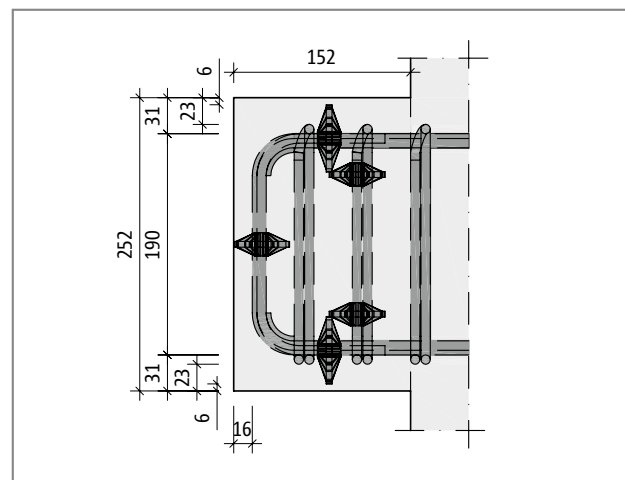


Fig. 125: Schöck Tronsole® type Z: Plan view of a concrete landing with integrated load-bearing element

i Product information

- The connecting frame of the wall element of the Tronsole® type Z is a plug-on type.

Design | On-site reinforcement

Schöck Tronsole® type	Z-V	Z-V+V	Z-VH+VH
Design values with	Concrete strength class \geq C20/25		
$V_{Rd,z}$ [kN/element]	75.0	75,0/-15,0	75,0/-15,0
$V_{Rd,y}$ [kN/element]	-	-	± 15.0

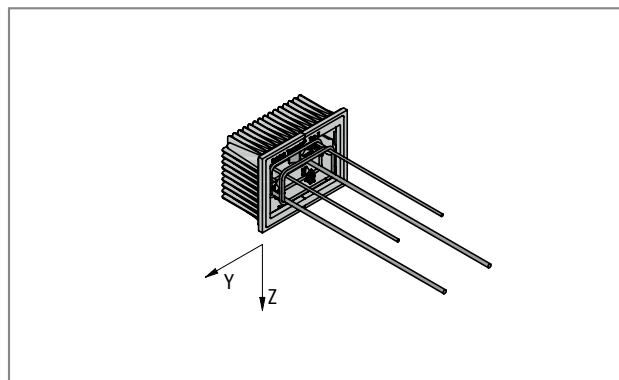


Fig. 126: Schöck Tronsole® type Z: Sign rule for the design

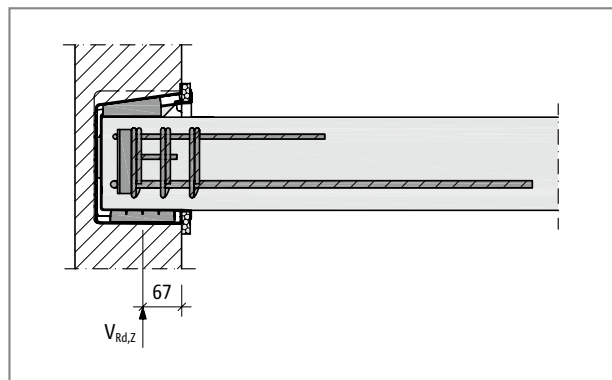


Fig. 127: Schöck Tronsole® type Z: Representation of the active line of the reaction force in the wall

Design

The reinforcement cage-like load-bearing element of the Schöck Tronsole® type Z is concreted into the landing and transmits shear forces to the staircase walls via the concrete corbel and the therefrom resultant offset moments.

For the bearing surface of the Tronsole®, with the maximum loading of 75 kN, at least the compression strength class 20 in combination with mortar group III ($f_k = 6.0 \text{ N/mm}^2$) is required as masonry. With lower compression strength classes a concrete pressure pad under the wall element can be used, with which the permitted pressing is maintained.

The positive shear force $V_{Ed,z}$ is transmitted via two Elodur® elastomer supports into the wall element of the Tronsole® type Z with a surface area of $110 \text{ mm} \times 80 \text{ mm}$.

A structural verification is to be produced for the reinforced concrete structural elements adjacent on both sides of the Schöck Isokorb®. The shear force resistance of the (landing) slab is to be verified. With a connection using Schöck Isokorb® type Z a freely rotatable support (moment joint) is to be assumed as static system.

i Notes on design

- ▶ The stress impacting the masonry is calculated as follows: $\sigma_{Ed} = V_{Ed} / (2 \cdot 110 \cdot 80) \text{ mm}^2$. With the maximum utilisation of 75 kN $\sigma_{Ed} = 4.26 \text{ N/mm}^2$.
- ▶ With the predefined concrete strengths h consider the minimum requirements based on the design.
- ▶ Exposure class XC1 is assumed for the landing.
- ▶ According to DIN EN 1992-1-1 and DIN EN 1992-1-1/NA with exposure class XC1 the following nominal concrete cover results:
In-situ concrete landing: $c_{nom} = 20 \text{ mm}$.
Prefabricated landing: $c_{nom} = 15 \text{ mm}$.
- ▶ Using the load-bearing element with in-situ concrete the following applies for the concrete cover in the area of the corbel $c_{nom} = 15 \text{ mm}$.
- ▶ The Schöck Tronsole® type Z supports under mainly static loading.
- ▶ Under both lower Elodur® elastomer supports of the Tronsole® type Z one can assume a uniform support pressing.
- ▶ The height offset between the lower edges of the landing and the concrete corbel is limited to a maximum 42 mm in order, in any case, to enable the formation of an overlap connection of the load-bearing element with the lower landing reinforcement.

i On-site reinforcement

- ▶ The tensile reinforcement of the load-bearing element is to overlap with the on-site reinforcement in adjacent landing.
- ▶ With this the overlap length starts at the transition of the corbels for the landing.
- ▶ The free edges on the landing at both sides of the Tronsole® type Z are to be secured using ties.

Deflection

Deformation of the Elodur® elastomer support of the Tronsole® type Z

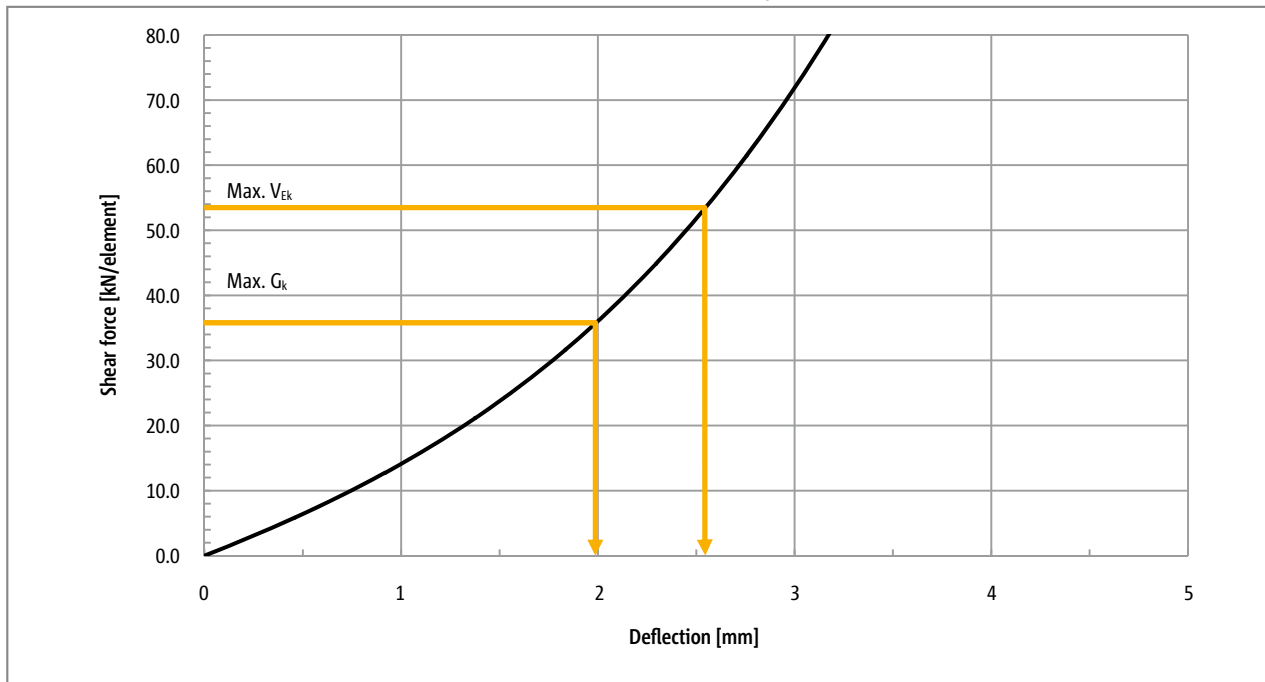


Fig. 128: Schöck Tronsole® type Z: Deformation of the Elodur® elastomer support

i Notes on deformation

- ▶ With deflection, it is understood to be the vertical deformation of the Elodur® elastomer support under vertical shear force load.
- ▶ $\text{Max. } V_{Ek} = \text{Max. } V_{Ed} / \gamma$, whereby $\gamma = 1.4$
- ▶ $\gamma = 1.4$ applies under the assumption that $\text{Max. } V_{Ed}$ is made up of two thirds from own weight and one third from live load.
- ▶ Thus $\text{Max. } V_{Ek}$ the maximum service load and the maximum own weight is $\text{Max. } G_k = 2/3 \cdot \text{Max. } V_{Ek}$.

Precast construction

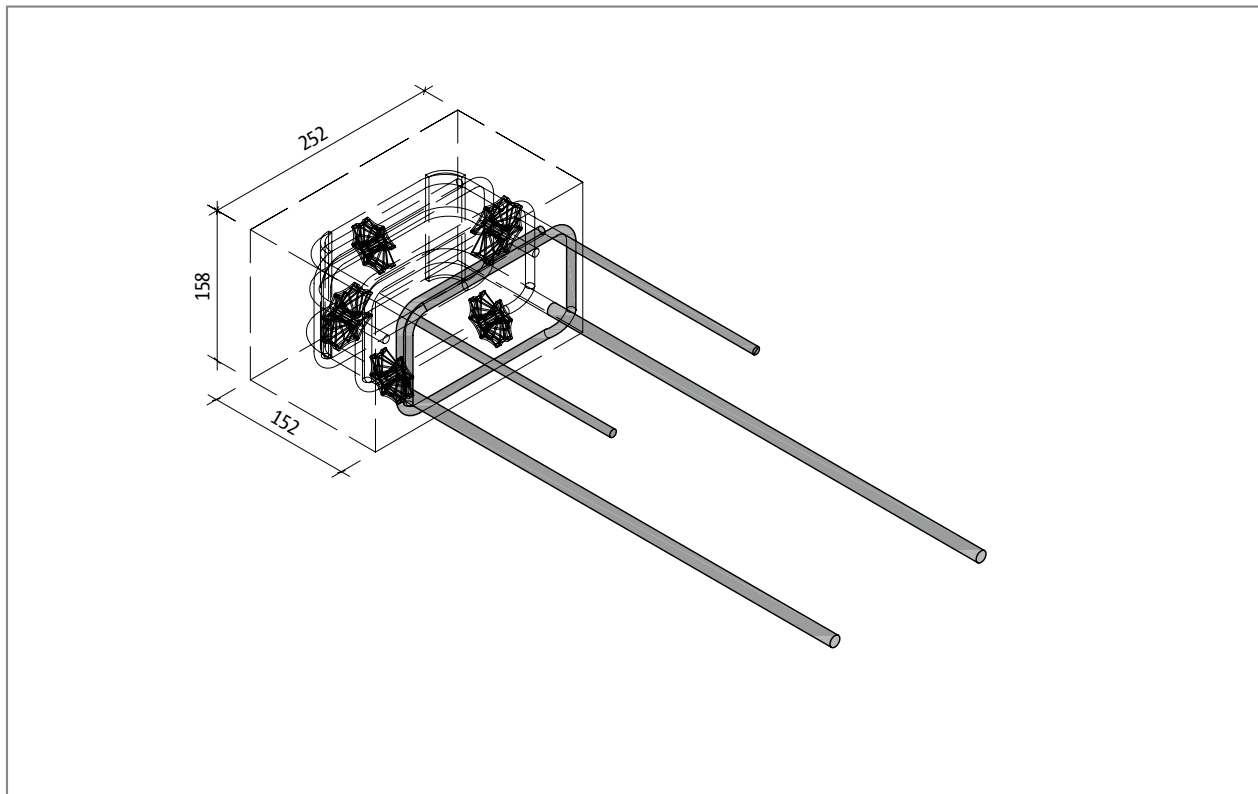


Fig. 129: Schöck Tronsole® type Z: Dimensions of the corbel support to be manufactured in the prefabrication plant

i Precast part construction

- ▶ The limit deviations of the prefabricated support bracket for the acceptance of the wall element of the Tronsole® type Z are subject to the general tolerances according to DIN ISO 2768 - c.
- ▶ The corbel depth of 152 mm takes into account a 15 mm wide joint between wall and landing alongside the corbel brackets.
- ▶ With negative fabrication of landings using the load-bearing element of the Tronsole® type Z on-site spacers are required in order to achieve the necessary concrete cover on the concrete corbel.
- ▶ With the installing of the staircase the height of the stairs, if required, is to be adjusted using pressure-resistant compensating plates under the wall element. The complete support surface of the wall element must be underlaid flush with the compensating plates.

Z

Fire protection configuration | Materials

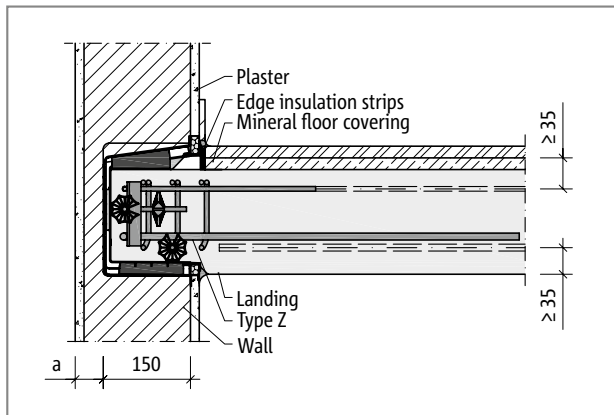


Fig. 130: Schöck Tronsole® type Z: Fire protection configuration

Fire protection

According to DIN 4102-4, Table 5, joints between the structural components ≤ 30 mm are not taken into account. The structural component surfaces of the landing in the area of the neighbouring wall are considered as not flame treated as the corbel support with the staircase wall thermotechnically forms one unit

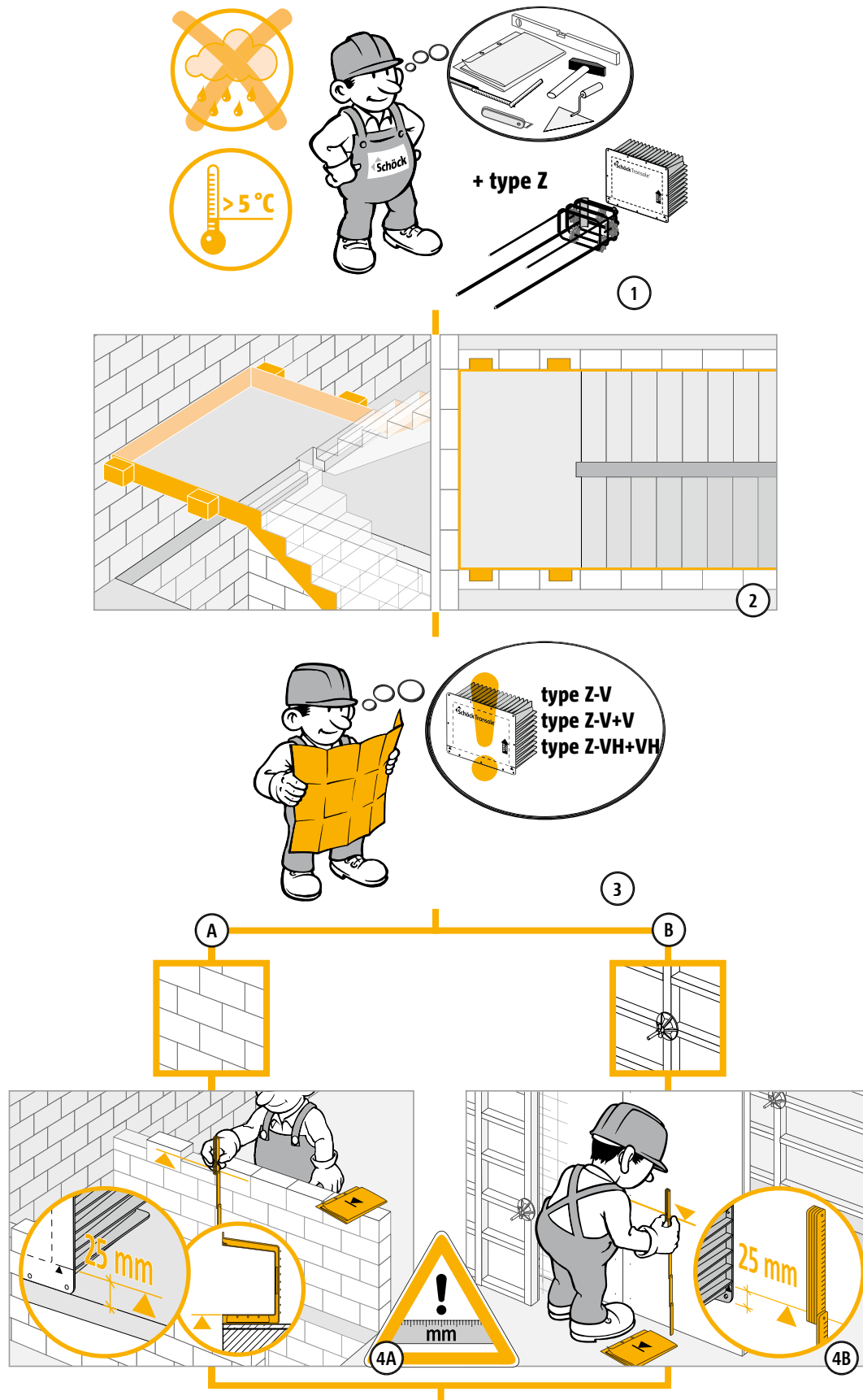
i Fire protection

- ▶ A minimum spacing $u = 35$ mm of the lower load-bearing reinforcement, with load-bearing elements of the Tronsole® type Z with $c_{v,l} \geq 37 + 12/2 = 43$ mm, is met.
- ▶ The neighbouring structural elements must satisfy the same building supervisory requirements on the fire resistance capability as the connection area itself.
- ▶ For fire protection dimensioning of the reinforced concrete slabs DIN EN 1992-1-2 together with DIN EN 1992-1-2/NA is to be applied.
- ▶ The fire protection classification of the staircase wall is not disturbed by the wall element if a backing of at least 40 mm masonry blocks ($a \geq 40$ mm) is carried out. A mineral render may be added to the thickness.

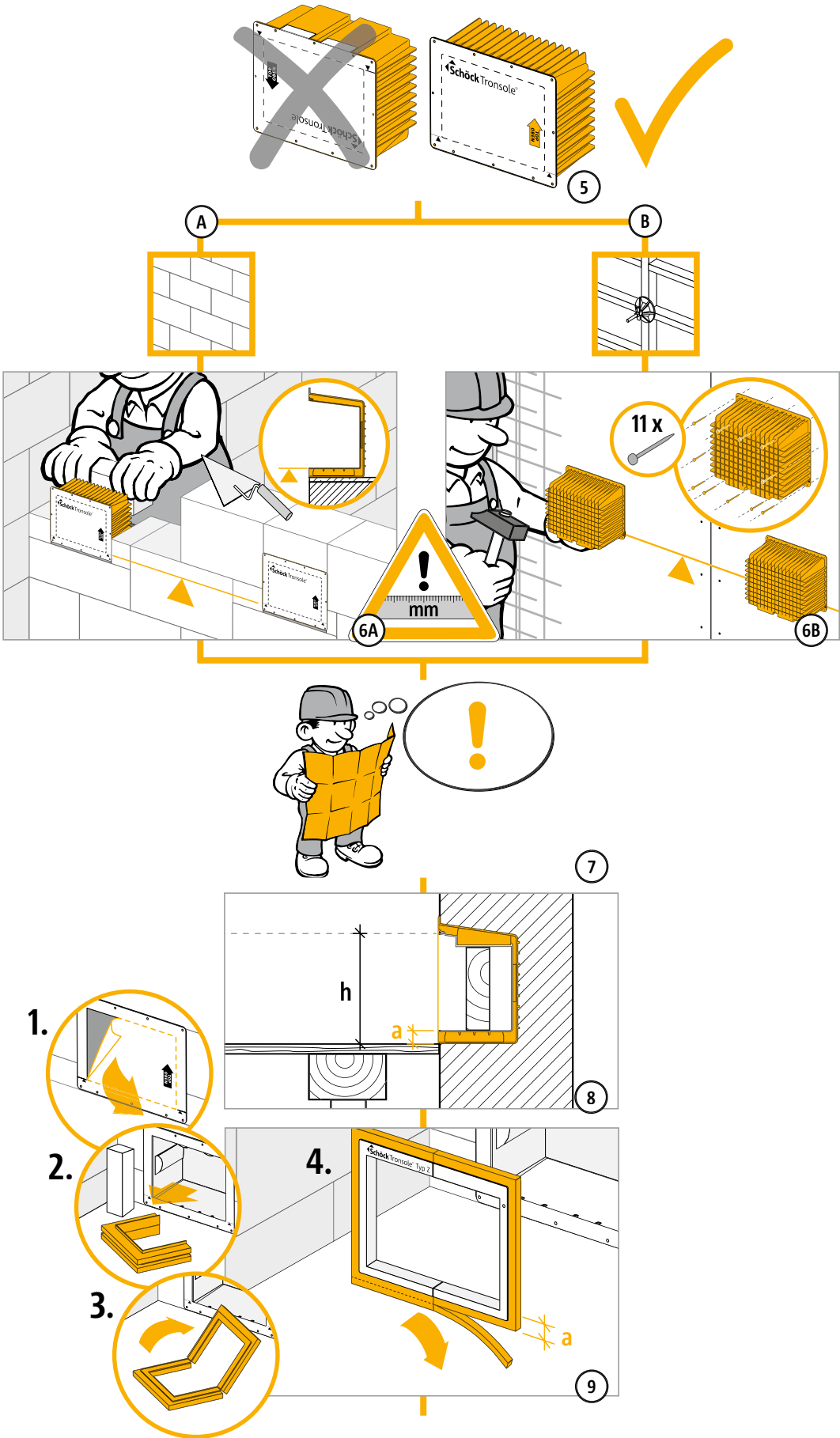
Materials and construction materials

Schöck Tronsole® type Z	Material
External box	Polystyrene
Internal box	Polystyrene
PE foam insert	PE foam according to DIN EN 14313
Hinged plastic profile	ABS according to DIN EN ISO 2580-1
Connection frame	PE foam according to DIN EN 14313
Elastomer support	Polyurethane according to DIN EN 13165
Reinforcement of the load-bearing element	Reinforcing steel B500B according to DIN 488-1
Bending form segment	S 235 JR

Installation instructions building site in-situ concrete

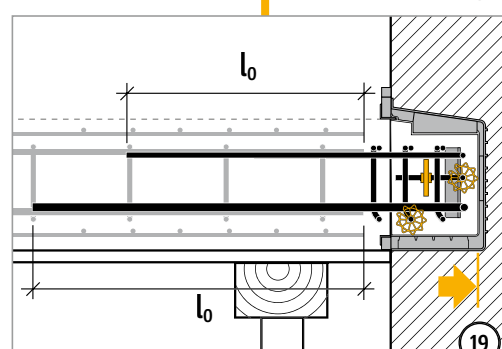
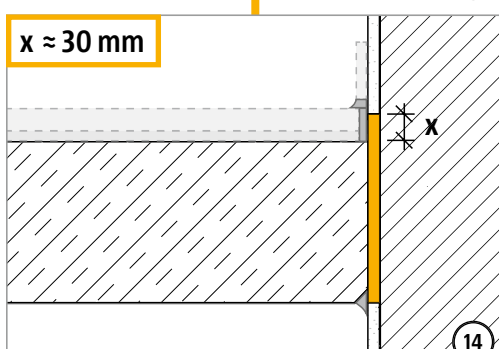
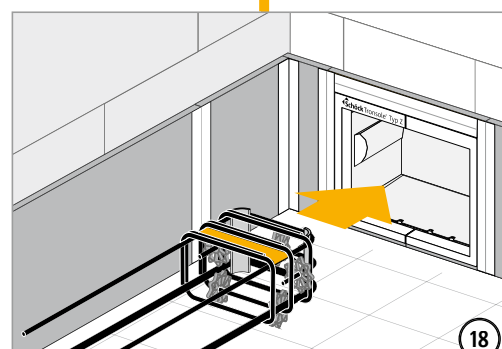
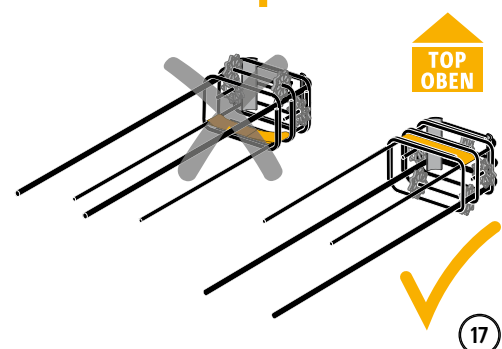
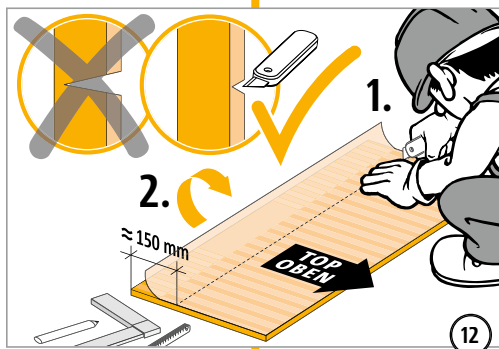
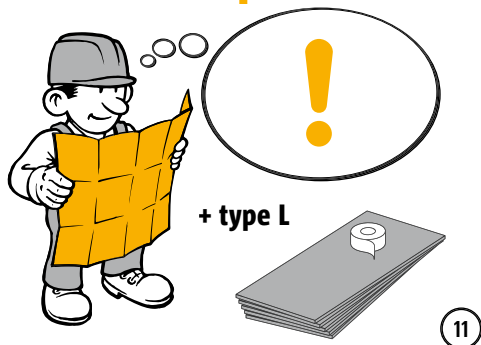
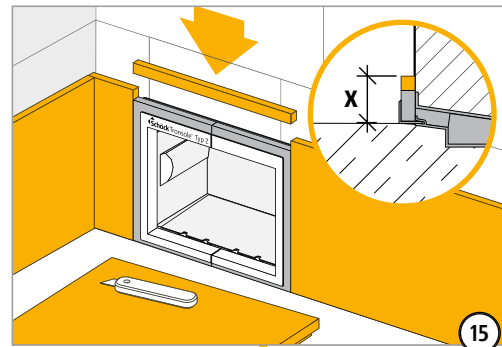
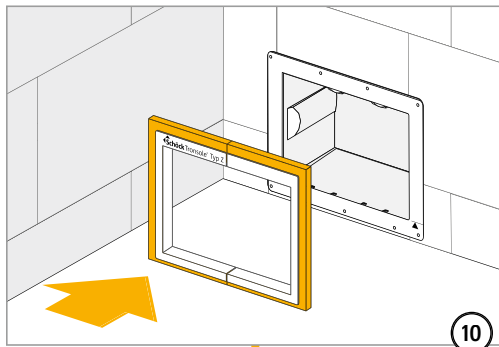


Installation instructions building site in-situ concrete

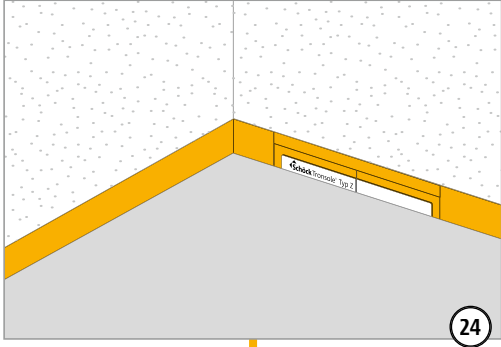
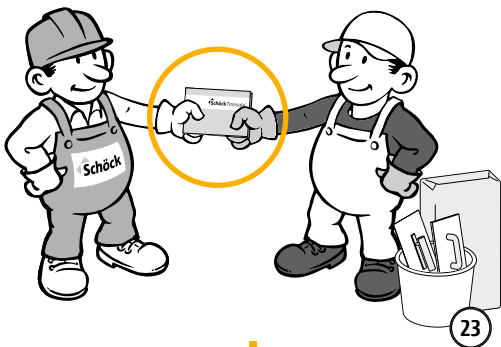
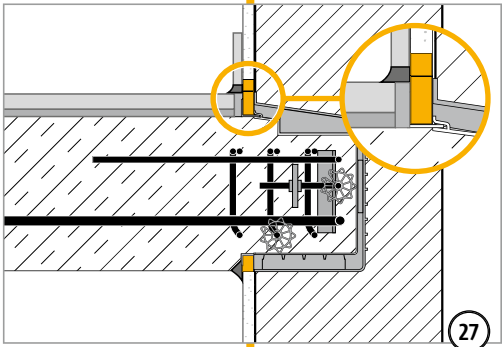
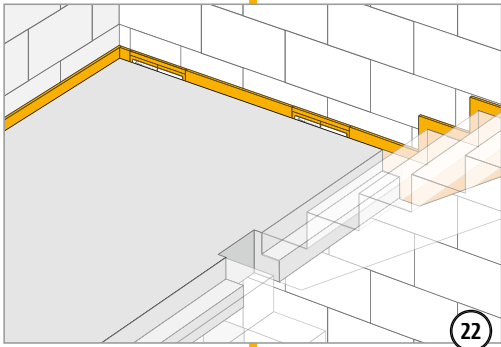
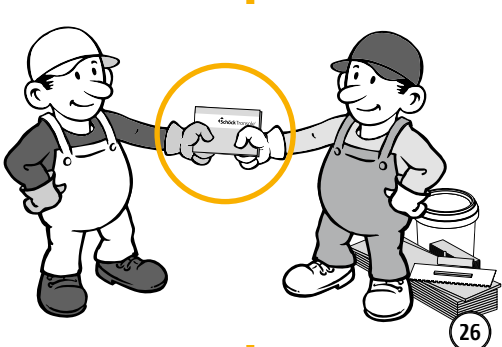
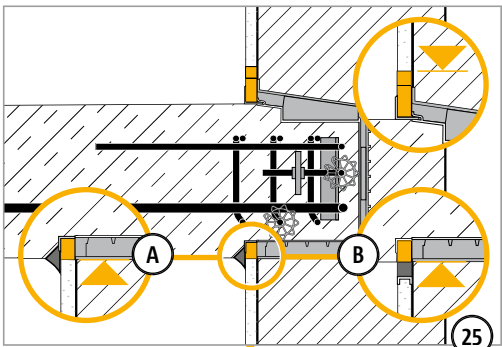
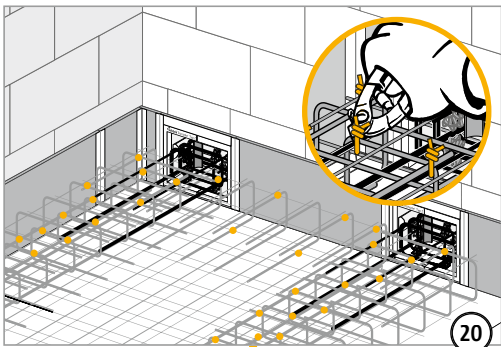


Z

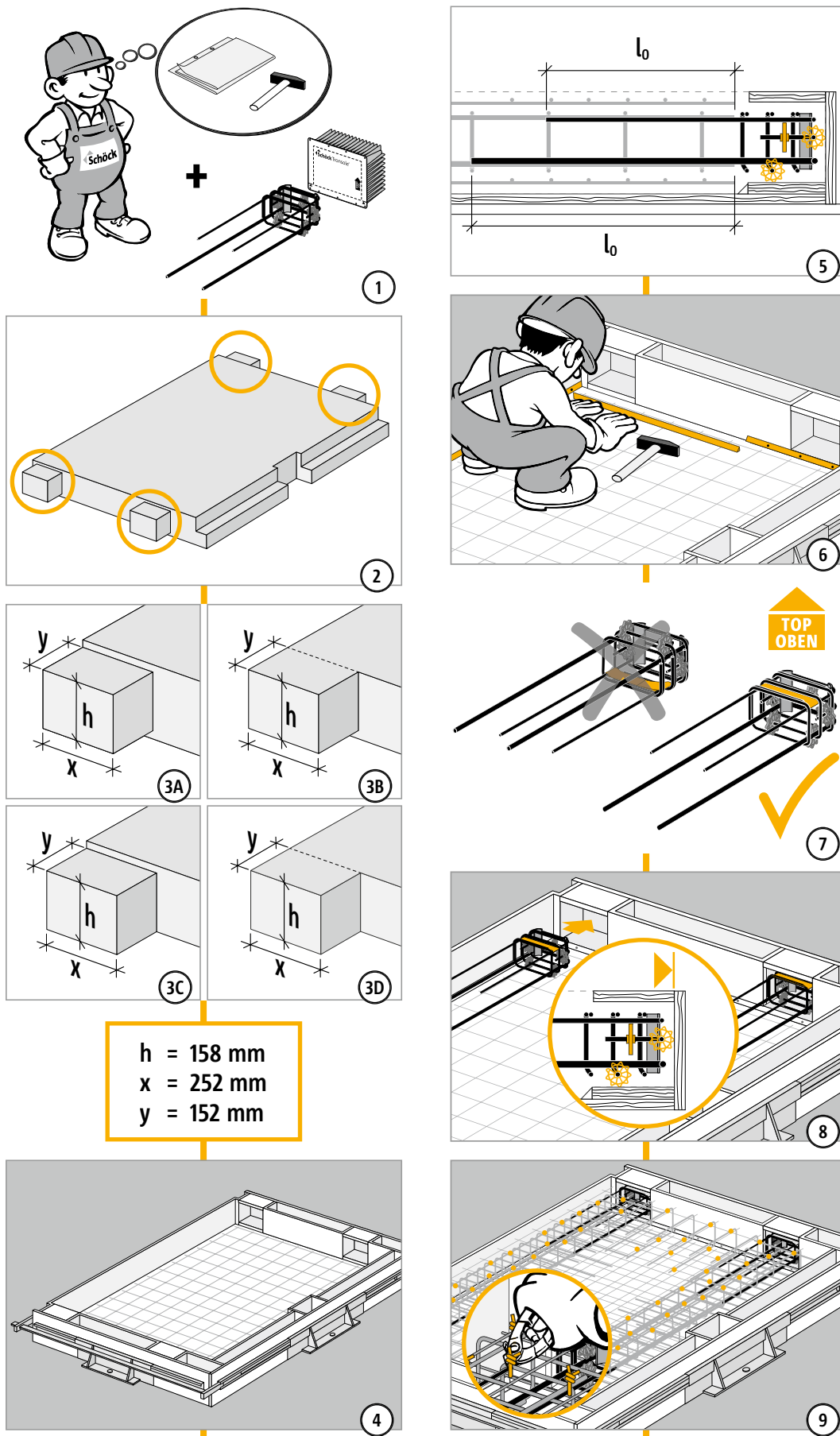
Installation instructions building site in-situ concrete



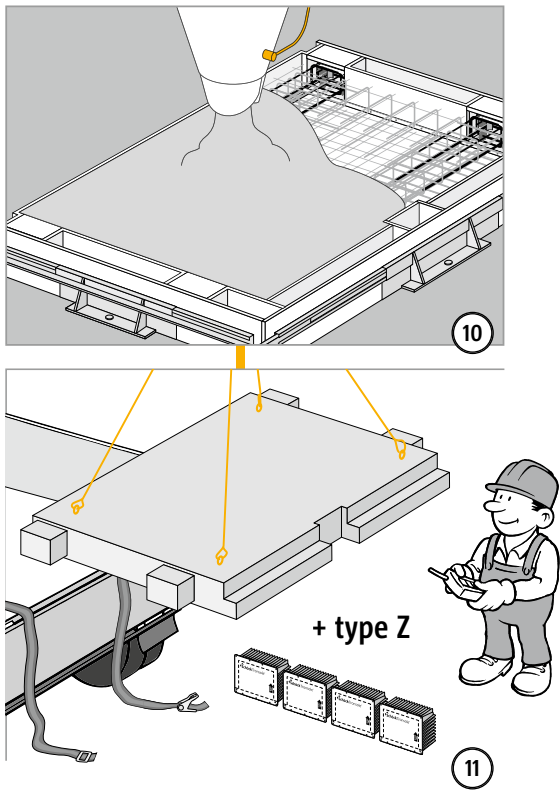
Installation instructions building site in-situ concrete



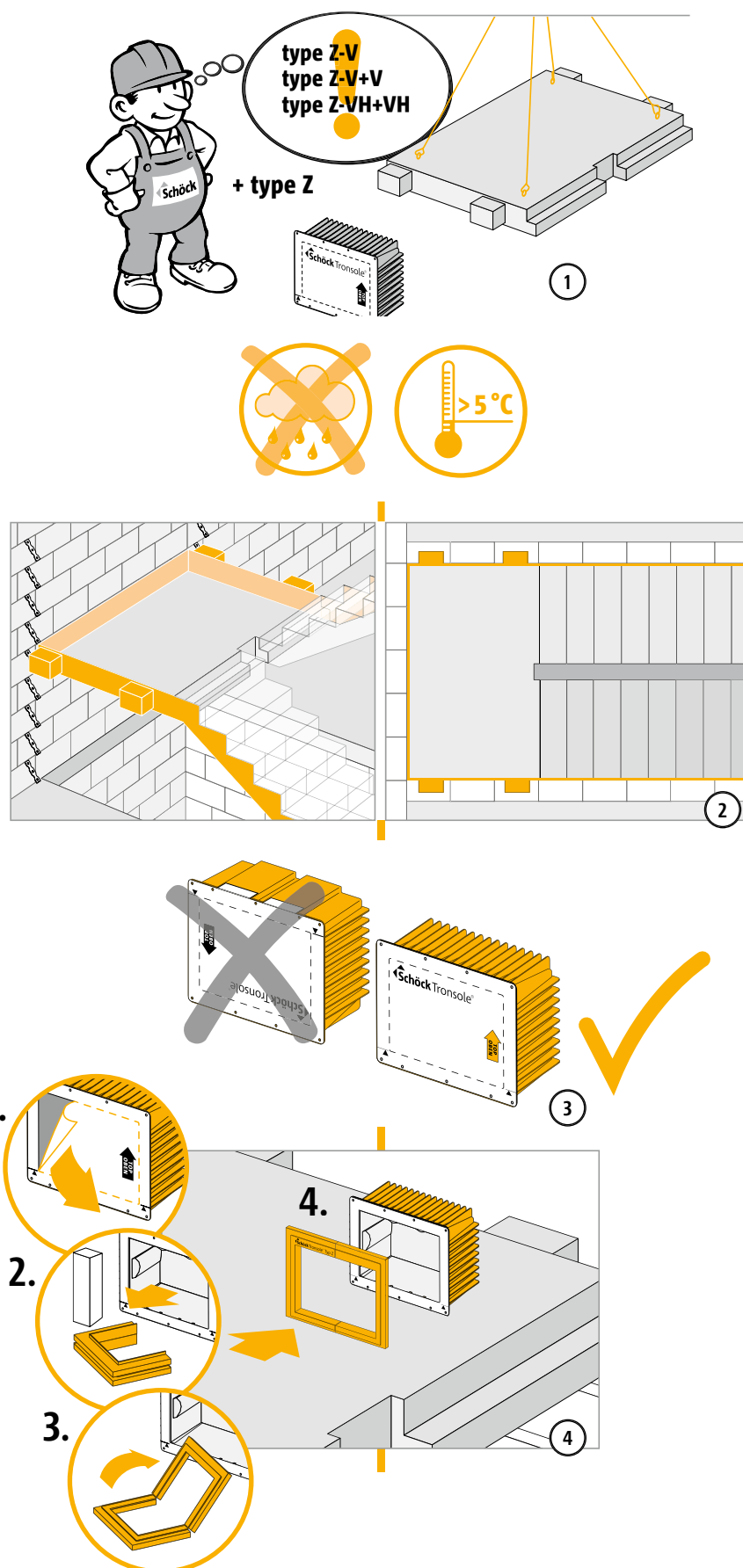
Installation instructions for prefabricating plant



Installation instructions for prefabricating plant

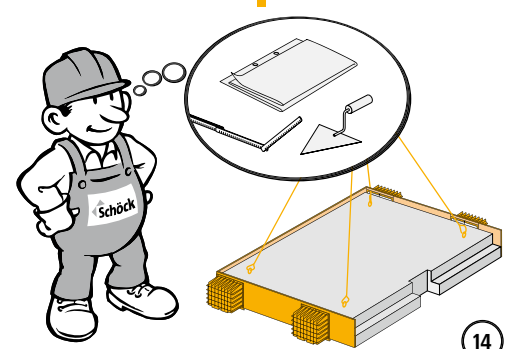
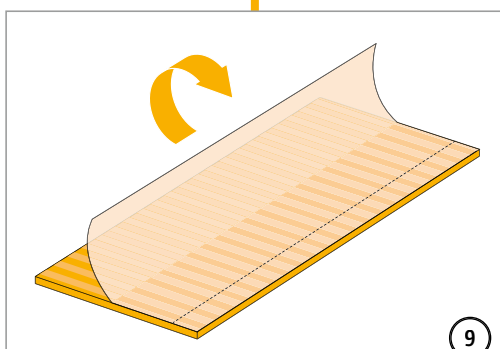
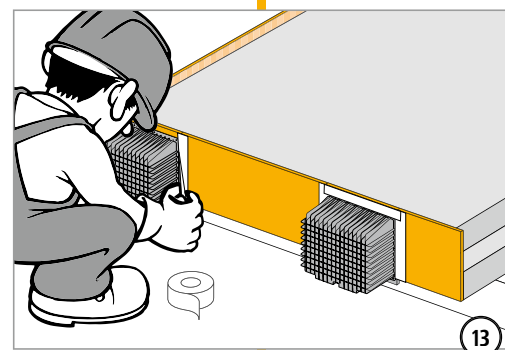
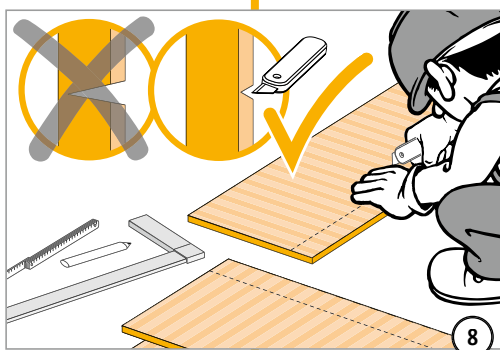
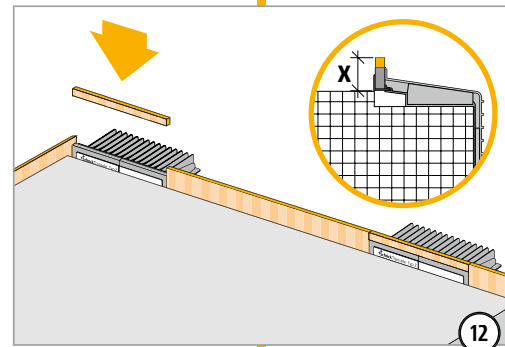
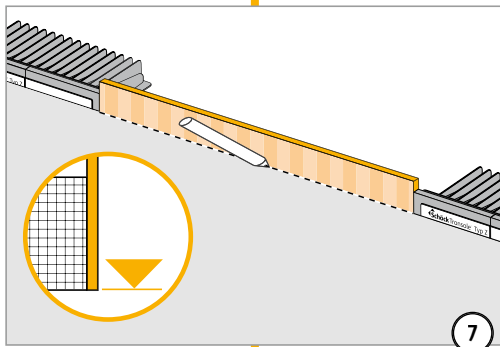
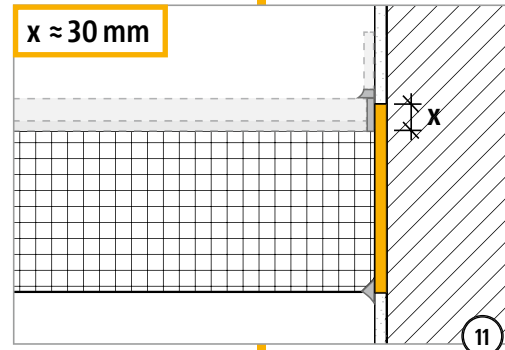
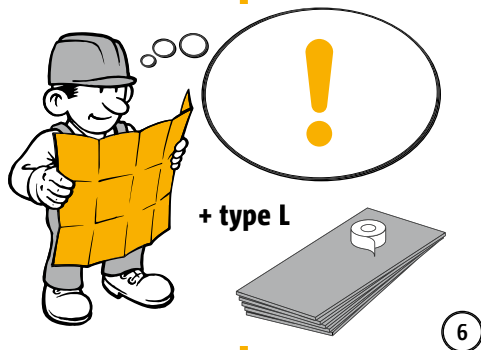
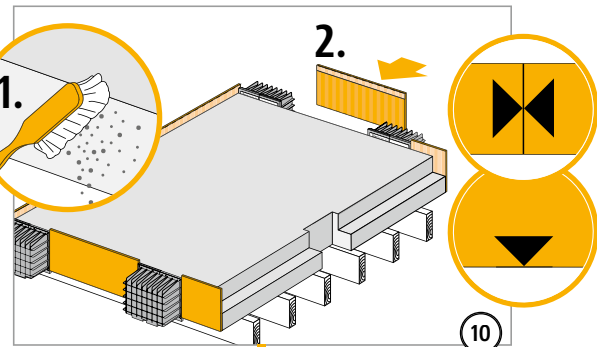
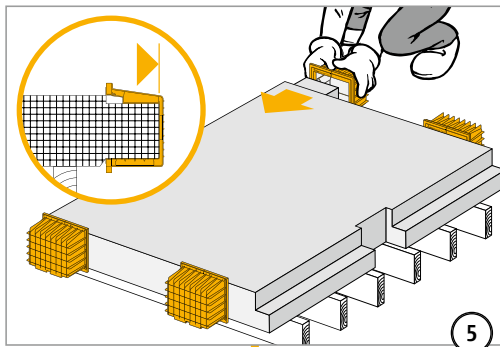


Installation instructions building site precast components

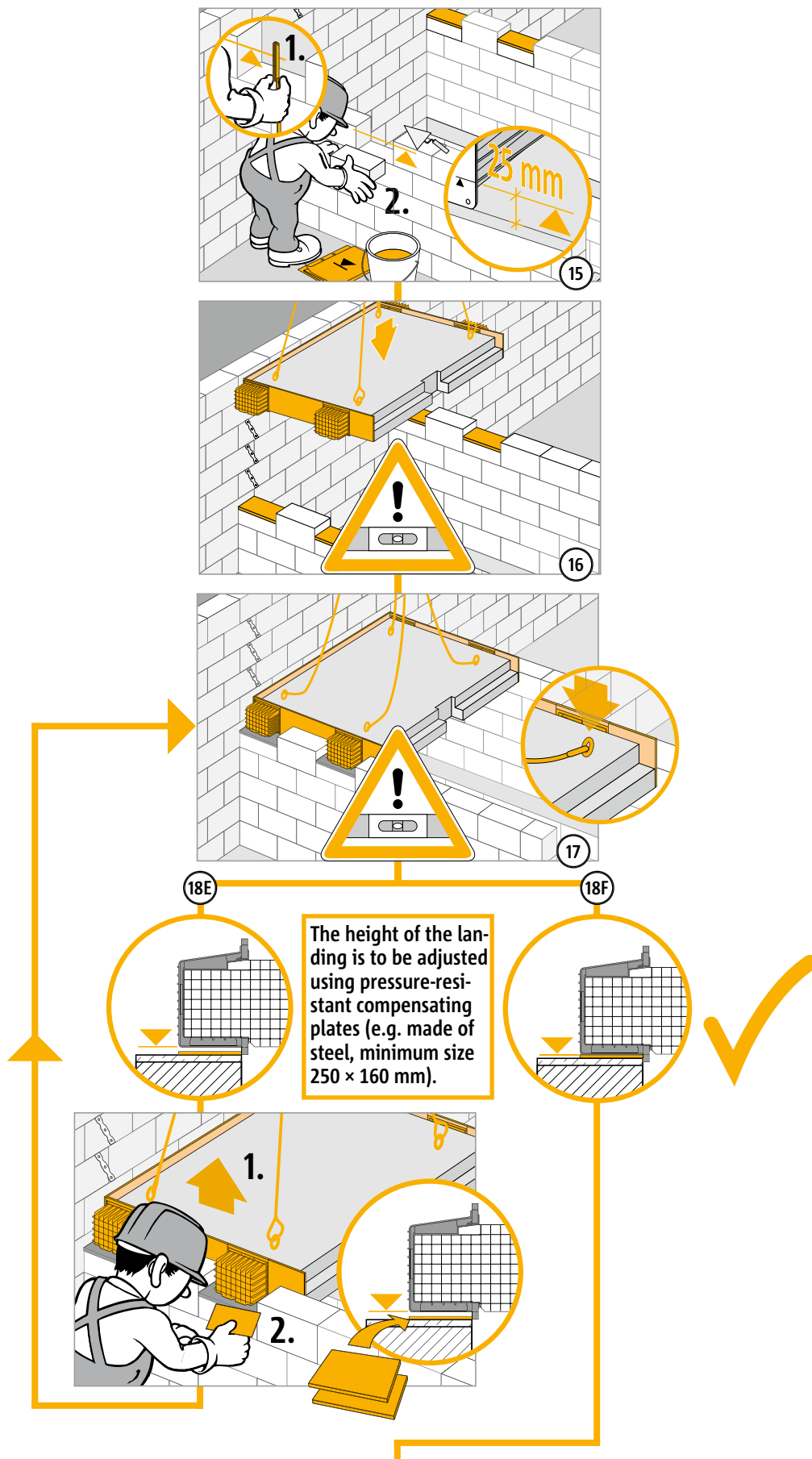


Z

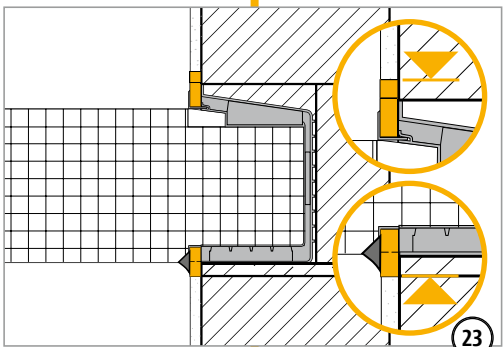
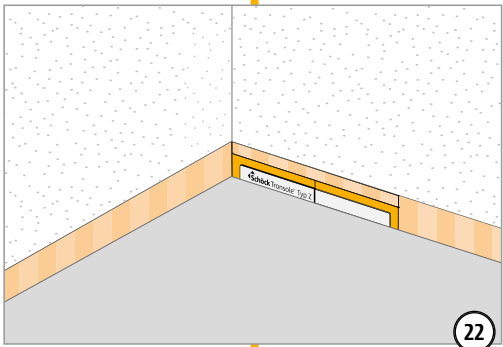
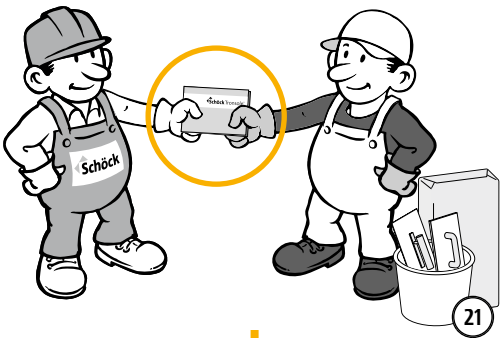
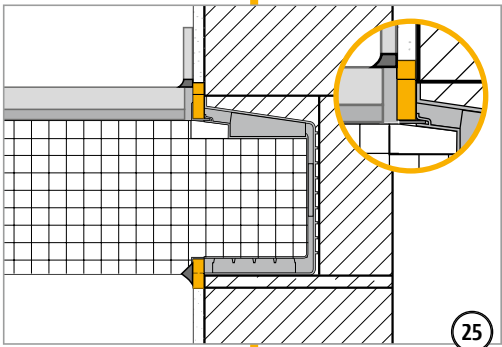
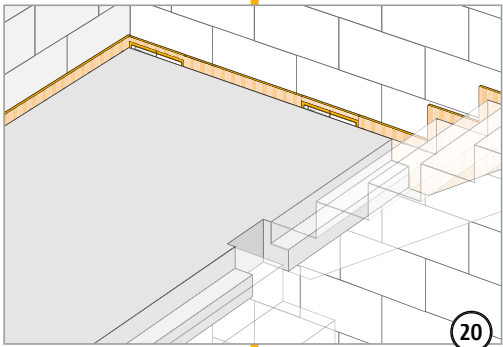
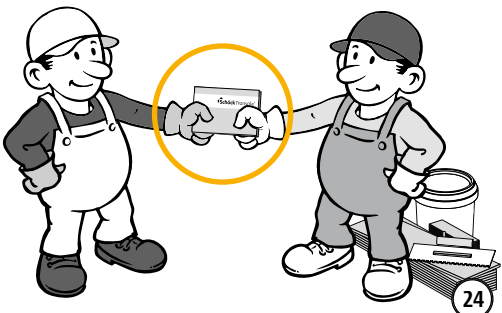
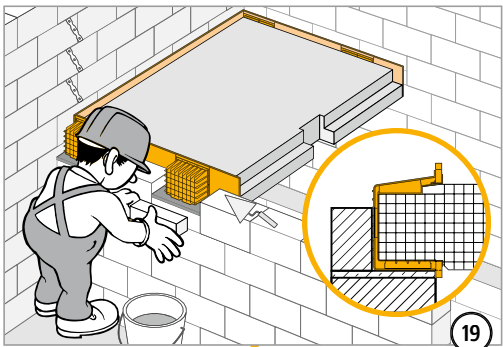
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✓ Check list

- ☐ Is the geometry of the structural component to be sound insulated matched to the measurements of the Schöck Tronsole® type Z?
- ☐ Have the effects on the Schöck Isokorb® connection been specified at design level?
- ☐ Is the minimum concrete strength $\geq C20/25$ taken into account with the use of the load-bearing element of the Schöck Tronsole® type Z?
- ☐ Have the requirements with regard to fire protection been cleared and announced?
- ☐ With the use of the Schöck Tronsole® type Z and concurrent fire protection requirements on the room closure is a minimum wall width (including exterior rendering) of 160 mm met?
- ☐ With V_{Ed} at the slab edge of the landing, is the limiting value of the slab load-bearing capacity checked?
- ☐ Are planned existing horizontal loads resp. lifting forces, which can be conducted away via the Schöck Tronsole® type Z, taken into account?

