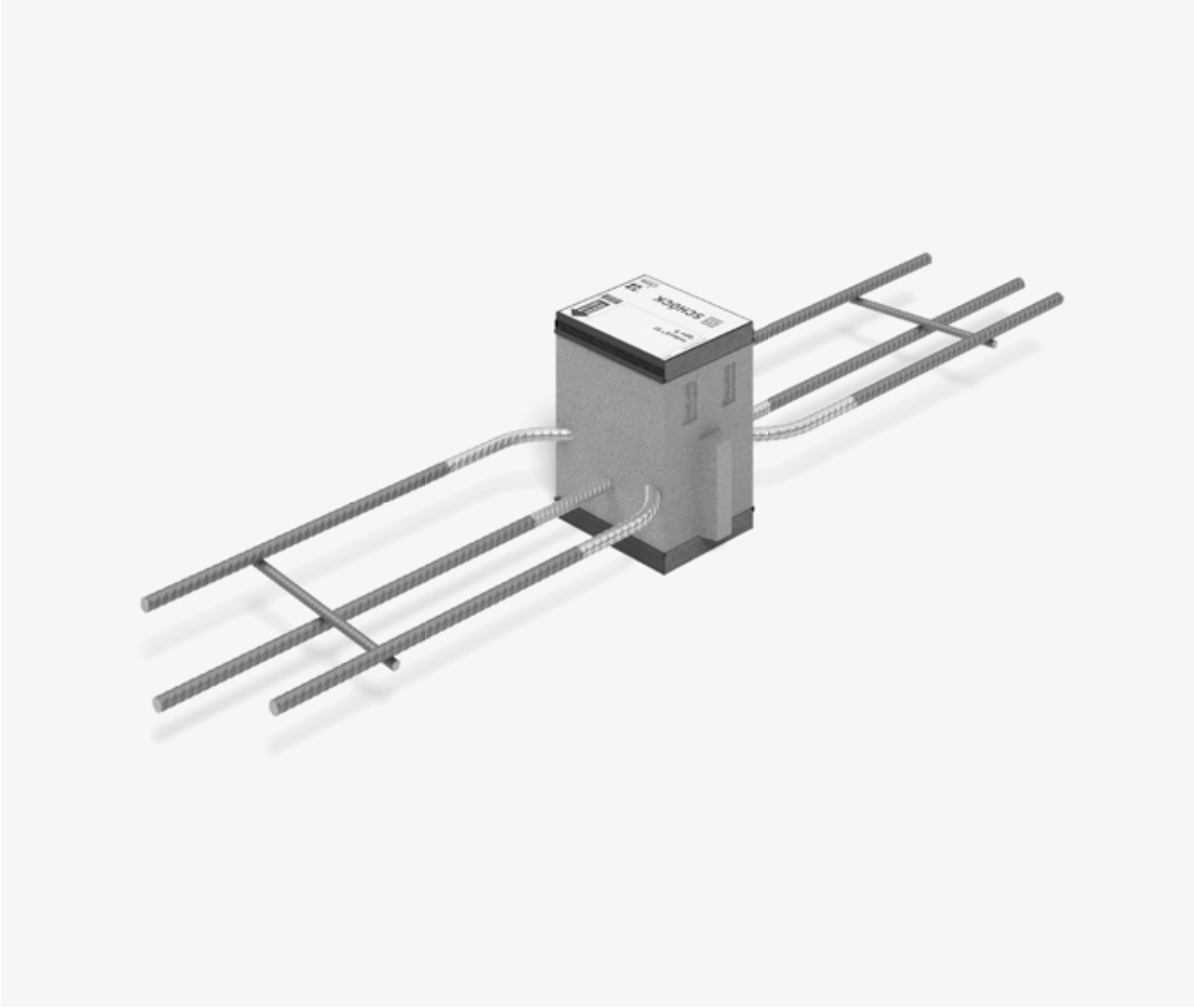
Schöck Isokorb® XT type H



Schöck Isokorb® XT type H
Load-bearing thermal insulation element for the transmission of planned horizontal forces parallel and perpendicular to the insulation plane. The element may be used only in conjunction with other Isokorb® types that can absorb moments or shear forces.
The element with the load bearing capacity NN transmits forces perpendicular to the insulation plane.
The element with the load bearing capacity VV-NN transmits forces parallel and perpendicular to the insulation plane.

Element arrangement | Installation cross sections

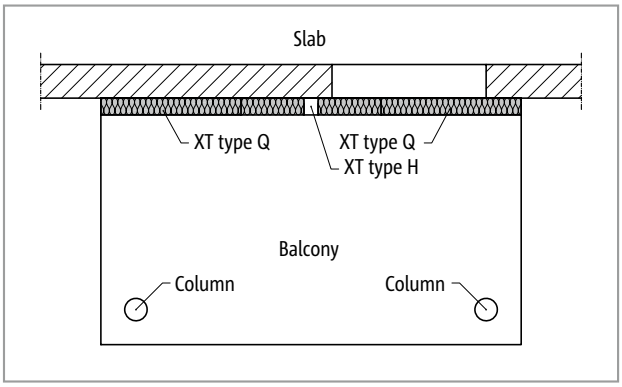


Fig. 211: Schöck Isokorb® XT type H: Balcony with column support

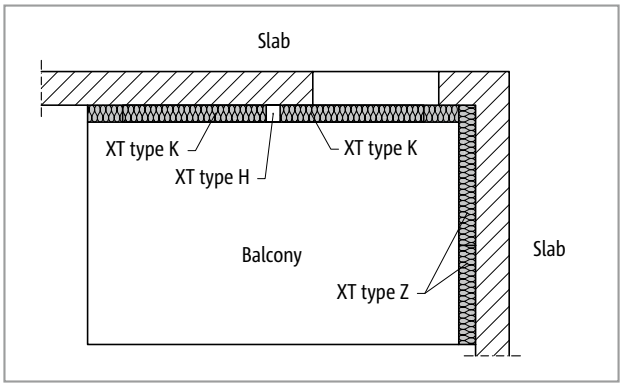


Fig. 212: Schöck Isokorb® XT type H: Balcony freely cantilevered

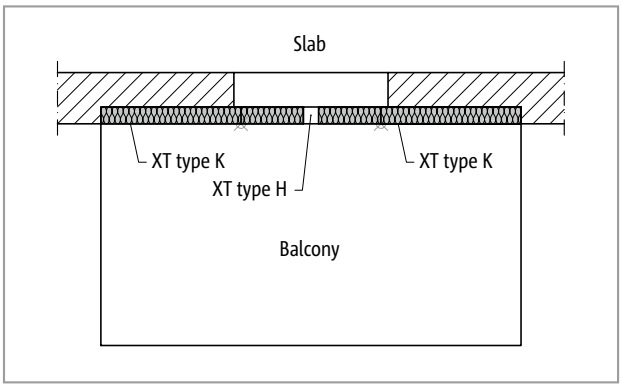


Fig. 213: Schöck Isokorb® XT type H: Balcony freely cantilevered

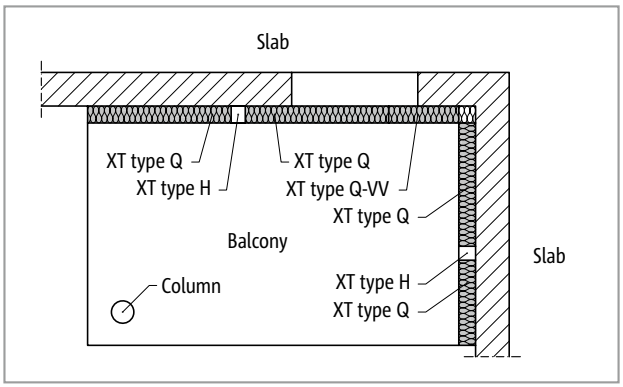


Fig. 214: Schöck Isokorb® XT type H: Balcony supported on two sides using columns

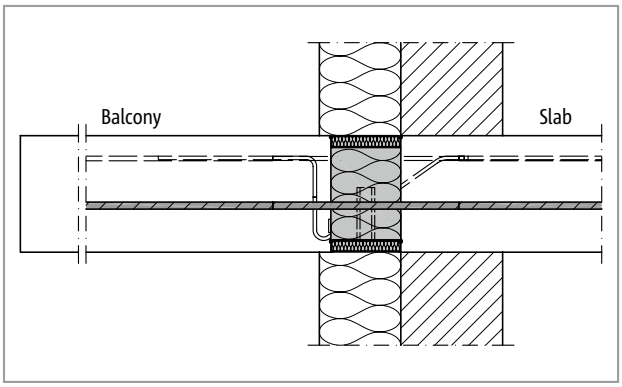


Fig. 215: Schöck Isokorb® XT type K, H-NN: Masonry with external insulation

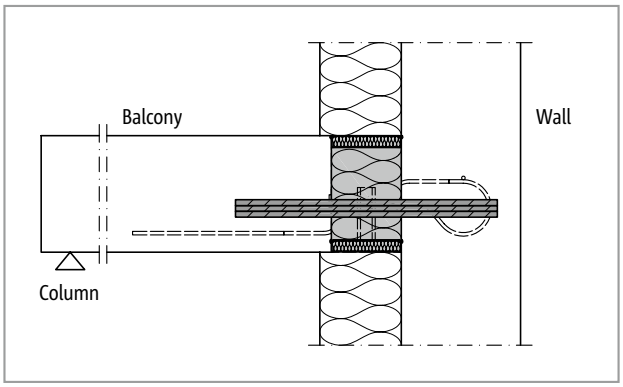


Fig. 216: Schöck Isokorb® XT type Q, H-VV-NN: Connection to a reinforced concrete wall with external insulation

Geometry

- The employment of Schöck Isokorb® XT types H-NN1 and H-VV1-NN1 is possible for a wall connection with a minimum wall thickness of 200 mm.

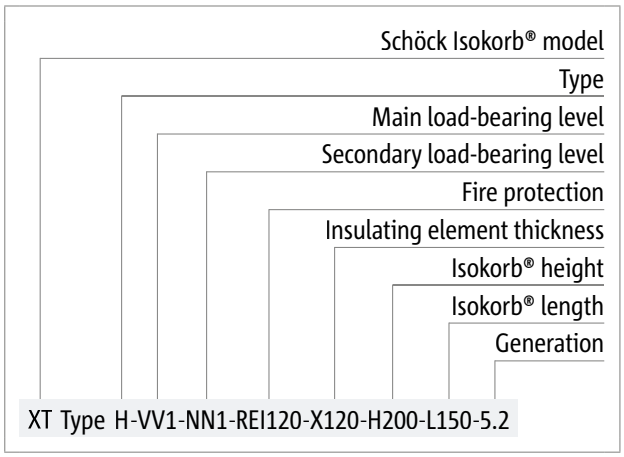
Product selection | Type designations | Special designs

Schöck Isokorb® XT type H variants

The configuration of the Schöck Isokorb® XT type H can vary as follows:

- Main load-bearing level:
  VV1, VV2, NN1, NN2
- Secondary load-bearing level:
  NN1
  NN2 is available on request
- Fire resistance class:
  REI120 (standard)
- Insulating element thickness:
  X120 = 120 mm
- Isokorb® height:
  H = 160 to 250 mm
- Isokorb® length:
  L = 150 mm
- Generation:
  5.2

Type designations in planning documents



Special designs

Please contact the design support department if you have connections that are not possible with the standard product variants shown in this information (contact details on page 3).

C25/30 design

Schöck Isokorb® XT type H		NN1		NN2		VV1-NN1		VV2-NN1	
Design values with		$V_{Rd,y}$ [kN]	$N_{Rd,x}$ [kN]	$V_{Rd,y}$ [kN]	$N_{Rd,x}$ [kN]	$V_{Rd,y}$ [kN]	$N_{Rd,x}$ [kN]	$V_{Rd,y}$ [kN]	$N_{Rd,x}$ [kN]
Concrete strength class	C25/30	0.0	±11.6	0.0	±49.2	±10.4	±11.6	±39.2	±49.2

Schöck Isokorb® XT type H	NN1	NN2	VV1-NN1	VV2-NN1
Placement with	Isokorb® length [mm]			
	150	150	150	150
Shear force bars, horizontal	-	-	2 × 1 ⌀ 10	2 × 1 ⌀ 12
Tension bars/compression bars	1 ⌀ 10	1 ⌀ 12	1 ⌀ 10	1 ⌀ 12

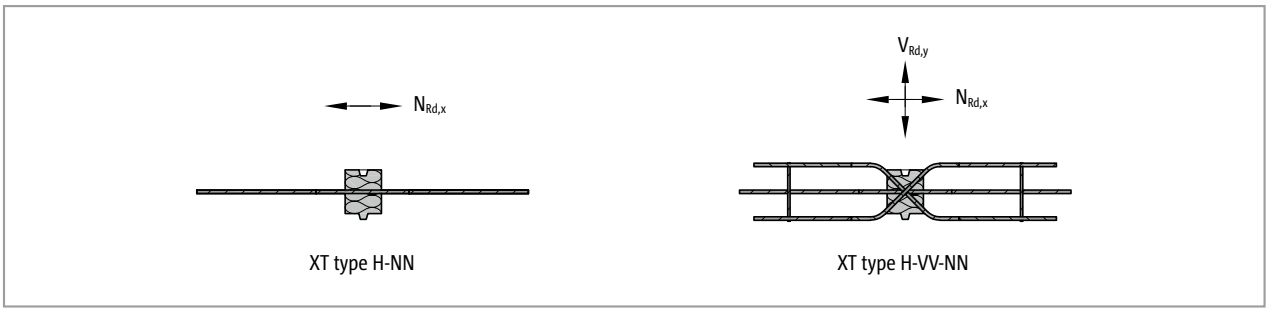


Fig. 217: Schöck Isokorb® XT type H: Type selection

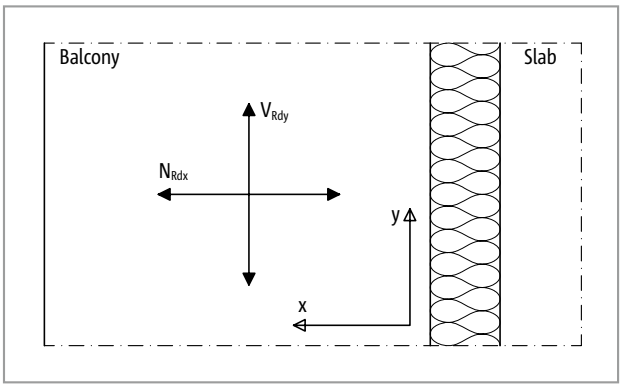


Fig. 218: Schöck Isokorb® XT type H: Sign rule for the design

Notes on design

- With the design of a linear connection attention is to be paid that, with the employment of the supplementary type H the design values of the linear connection can be reduced (e.g. XT type Q with L = 1.0 m and XT type H with L = 0.15 m in the regular exchange signifies a reduction by ca. 13 % of v_{Rd} of the linear connection using XT type Q).
- With the type selection (XT type H-NN or H-VV-NN) and - type arrangement attention is to be paid that no unnecessary fixed points are created and the maximum expansion joint spacings (of for example XT type K, XT type Q or XT type D) are maintained.
- The required number of Schöck Isokorb® XT type H-NN or H-VV-NN is to be determined according to static requirements.
- With different concrete strength classes (e.g. balcony C32/40, inner slab C25/30) basically the weaker concrete is relevant for the design of the Schöck Isokorb®.
- The indicative minimum concrete strength class of the external structural component is C32/40.

Expansion joint spacing

Maximum expansion joint spacing

If the length of the structural component length exceeds the maximum expansion joint spacing e, then the expansion joints must be integrated into the external concrete components at right angles to the insulating layer in order to limit the effect as a result of temperature changes. With fixed points such as, for example, balcony corners or with the employment of the Schöck Isokorb® XT types H, half the maximum expansion joint spacing e/2 applies.

The shear force transmission in the expansion joint can be ensured using a longitudinally displaceable shear force dowel, e.g. Schöck Stacon®.

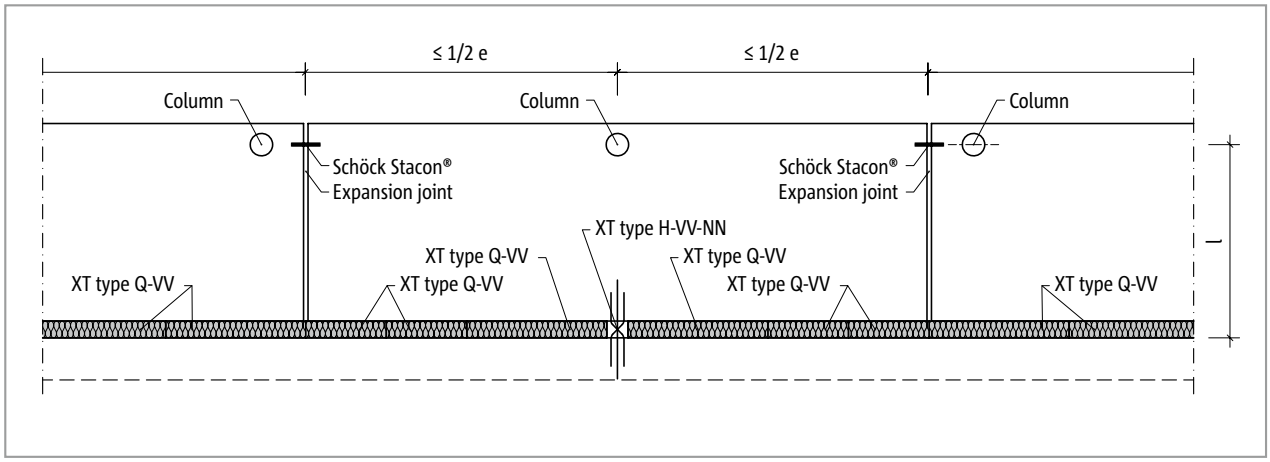


Fig. 219: Schöck Isokorb® XT type H: Expansion joint arrangement

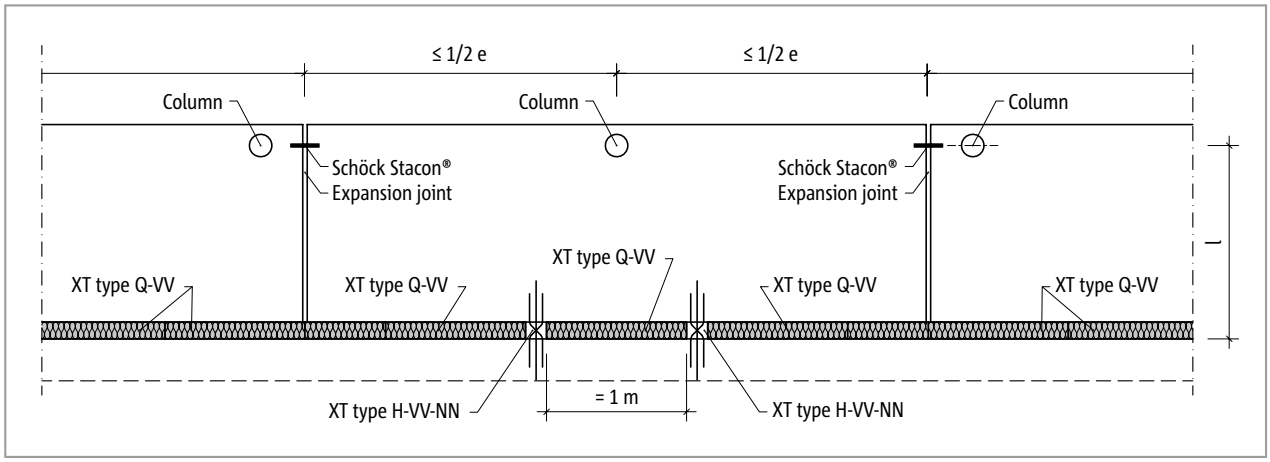


Fig. 220: Schöck Isokorb® XT type H: Expansion joint arrangement

Expansion joint spacing

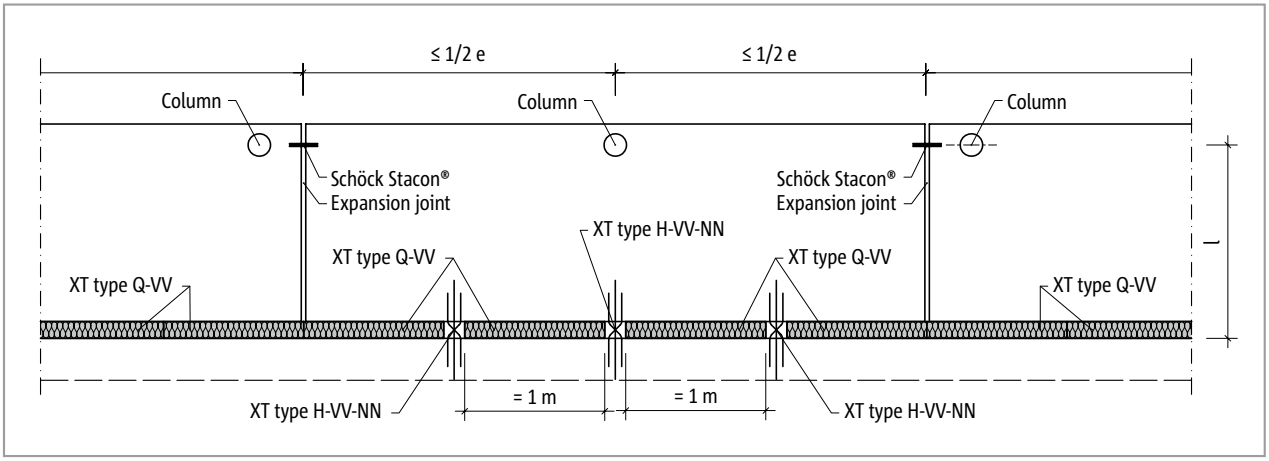


Fig. 221: Schöck Isokorb® XT type H: Expansion joint arrangement

Schöck Isokorb® XT type H combined with	XT type K	XT type K-U,K-O	XT type Q, Q-VV	XT type Q-P, Q-P-VV, Q-PZ	XT type D
maximum expansion joint spacing from fixed point e/2 [m]	≤ e/2 see XT type K	9.8	≤ e/2 see XT type Q, Q-VV	≤ e/2 see XT type Q-P, Q-P-VV, Q-PZ	9.9

Expansion joints

- A maximum of three Schöck Isokorb® XT type H-VV-NN only may be connected to a balcony. Another Schöck Isokorb® type with a connection length of one metre must be arranged between two of these elements.
- If two Schöck Isokorb® XT type H-NN are arranged respectively at the edge of the expansion joint the following permitted expansion joint spacings for XT type are to be observed:
  XT type H-NN1: 21.7 m
  XT type H-NN2: 19.8 m
  With the determination of the maximum expansion joint spacing in addition the combination of Schöck Isokorb® types is to be taken into account.

Product description

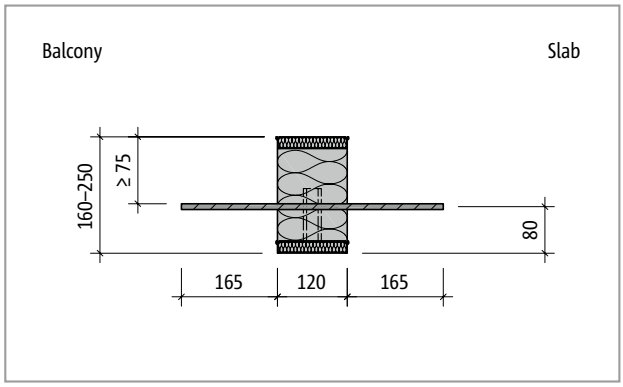


Fig. 222: Schöck Isokorb® XT type H-NN1: Product section

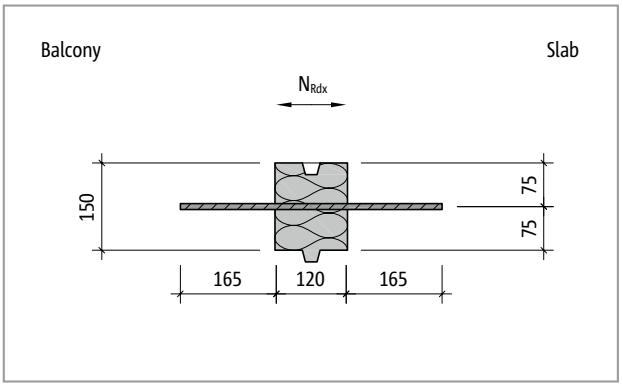


Fig. 223: Schöck Isokorb® XT type H-NN1: Product plan view

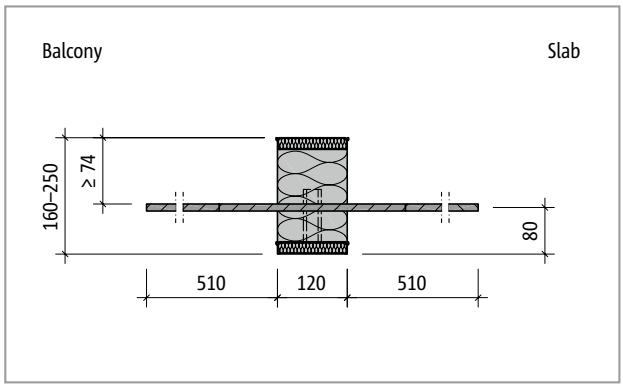


Fig. 224: Schöck Isokorb® XT type H-NN2: Product section

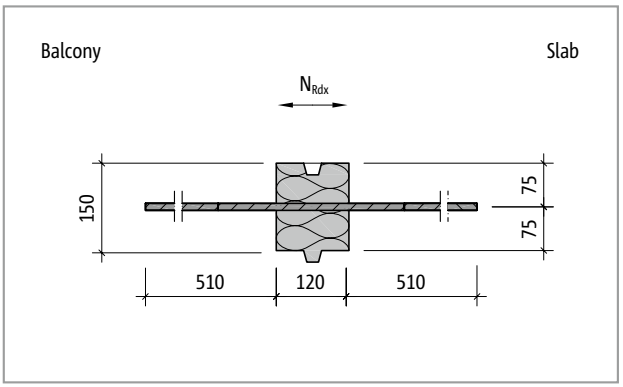


Fig. 225: Schöck Isokorb® XT type H-NN2: Product plan view

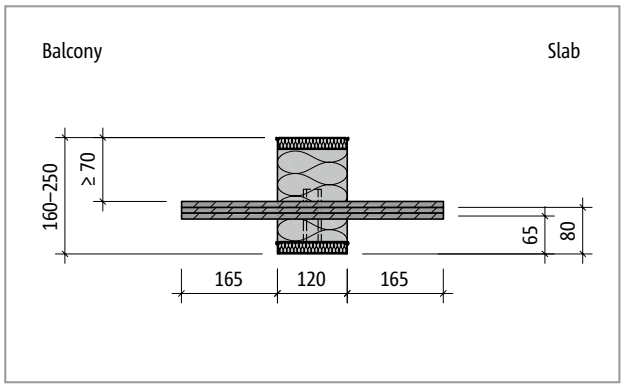


Fig. 226: Schöck Isokorb® XT type H-VV1-NN1: Product section

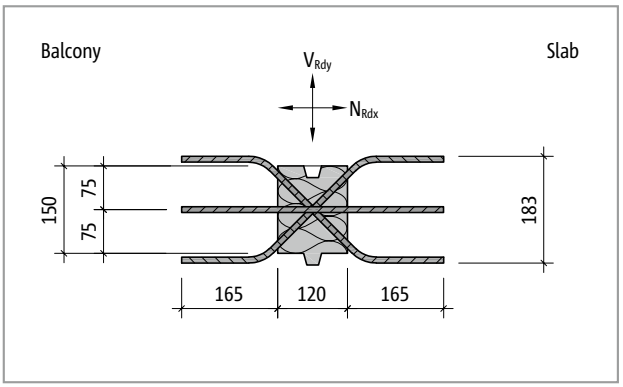


Fig. 227: Schöck Isokorb® XT type H-VV1-NN1: Product plan view

Product description

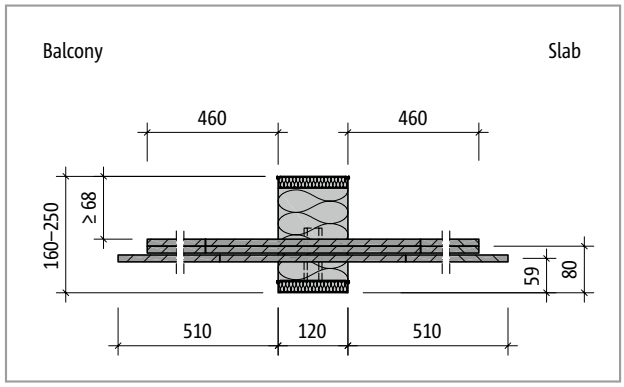


Fig. 228: Schöck Isokorb® XT type H-VV2-NN1: Product section

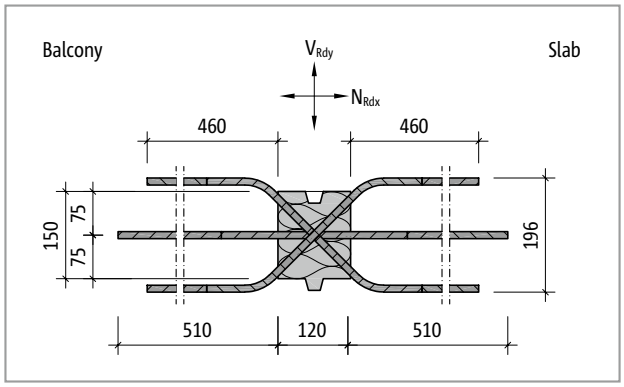


Fig. 229: Schöck Isokorb® XT type H-VV2-NN1: Product plan view

Product information

- Download further product plan views and cross-sections at cad.schoeck.co.uk

Design example

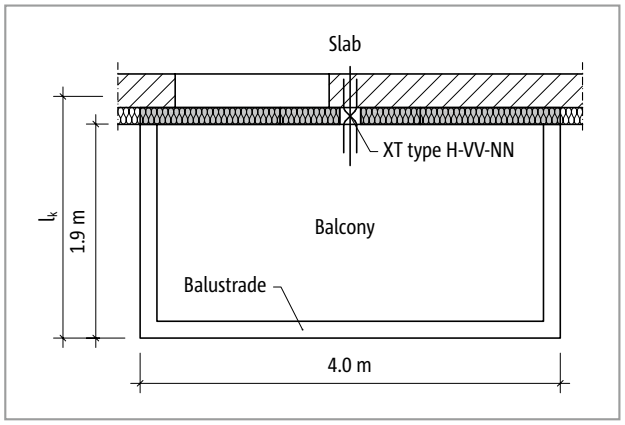


Fig. 230: Schöck Isokorb® XT type K, H: Plan view

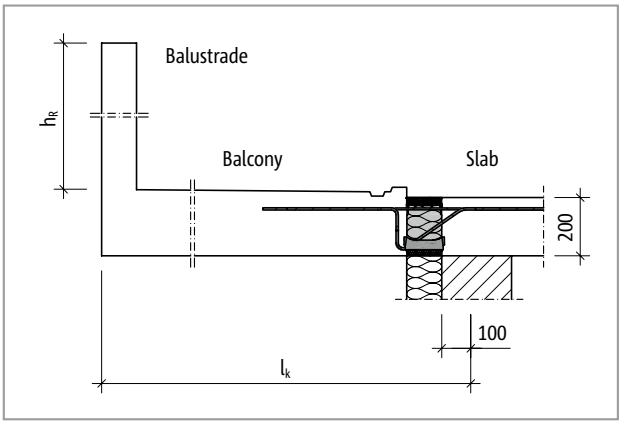


Fig. 231: Schöck Isokorb® XT type K: Static system

Static system and design loads

Geometry:	Cantilever length	l_k = 2.12 m
	Balcony slab thickness	h = 200 mm
	Surrounding parapet on three sides	h_R = 1.0 m
Design loads:	Balcony slab and surface	g = 6.5 kN/m²
	Live load	q = 4.0 kN/m²
	Edge load (parapet)	g_R = 3.0 kN/m
	Wind pressure	w_e = 1.0 kN/m²
Exposure classes:	Outer XC 4	
	Inner XC 1	
Selected:	Concrete quality C25/30 for balcony and floor	
	Concrete cover c_{nom} = 35 mm for Isokorb® tension bars	
	(Reduction Δc_{def} by 5mm, wg. Quality measures Schöck Isokorb® production)	
Connection geometry:	No height offset, no floor edge downstand beam, no balcony upstand	
Support floor:	Floor edge directly supported	
Support balcony:	Restraint of the cantilever slab using XT type K	

Design example | Installation instructions

Verification in the ultimate limit state

Internal forces:

m_{Ed} $= -[(\gamma_G \cdot g + \gamma_Q \cdot q) \cdot l_k^2/2 + \gamma_G \cdot (g_R \cdot l_k + 2 \cdot g_R \cdot l_k^2/2/4)]$
m_{Ed} $= -[(1.35 \cdot 6.5 + 1.5 \cdot 4) \cdot 2.12^2/2 + 1.35 \cdot (3,. \cdot 2.12 + 2 \cdot 3.0.\cdot 2.12^2/2/4)]$
m_{Ed} $= -46.3$ kNm/m

$v_{Ed,z}$ $= +(\gamma_G \cdot g + \gamma_Q \cdot q) \cdot l_k + \gamma_G \cdot (g_R + 2 \cdot g_R \cdot l_k/4)$
$v_{Ed,z}$ $= +(1.35 \cdot 6.5 + 1.5 \cdot 4.0) \cdot 2.12 + 1.35 \cdot (3.0 + 2 \cdot 3.0 \cdot 2.12/4)$
$v_{Ed,z}$ $= +39.7$ kN/m

$N_{Ed,x}$ $= \gamma_Q \cdot w_e \cdot 4.0 \cdot (h + h_R) = 1.5 \cdot 1.0 \cdot 4.0 \cdot (0.2 + 1.0) = 7.2$ kN (frontal wind)
$V_{Ed,y}$ $= \gamma_Q \cdot w_e \cdot 2 \cdot 1.9 \cdot (h + h_R) = 1.5 \cdot 1.0 \cdot 2 \cdot 1.9 \cdot (0.2 + 1.0) = 6.8$ kN (lateral wind)

Selected: **1 Schöck Isokorb® XT type H-VV1-NN1-REI120-H200-L150-5.1**
$N_{Rd,x}$ $= \pm 11.6$ kN (see page 143) $> N_{Ed,x}$
$V_{Rd,y}$ $= \pm 10.4$ kN (see page 143) $> V_{Ed,y}$

selected: **Schöck Isokorb® XT type K-M7-V1-REI120-CV35-X120-H200-6.0**
Increased effect taking into account the installation of the Schöck Isokorb® XT type H:
$|m_{Rd}|$ $= 50.7$ kNm/m (see XT type K)
> 48.1 kNm/m $= (4.00 \text{ m} / 3.85 \text{ m}) \cdot 46.3$ kNm/m $= |m_{Ed}|$
$v_{Rd,z}$ $= 75.2$ kN/m (see XT type K) > 41.2 kN/m $= (4.00 \text{ m} / 3.85 \text{ m}) \cdot 39.7$ kN/m $= v_{Ed,z}$

Verification for the exceptional load case earthquake

Load assumptions for earthquakes:
$F_{a,x} = \pm 15.0$ kN/m (horizontal, parallel to the joint)
$F_{a,y} = \pm 15.0$ kN/m (horizontal, perpendicular to the joint)

Internal forces:

$N_{EdA,x}$ $= \pm 4.0 \text{ m} \cdot F_{a,x} = \pm 4.0 \text{ m} \cdot 15.0$ kN/m $= 60.0$ kN (force perpendicular to the joint)
$V_{EdA,y}$ $= \pm 4.0 \text{ m} \cdot F_{a,y} = \pm 4.0 \text{ m} \cdot 15.0$ kN/m $= 60.0$ kN (force parallel to the joint)

Selected: **2 Schöck Isokorb® XT type H-VV2-NN1-REI120-H200-L150-5.1**
$N_{Rd,x}$ $= \pm 49.2$ kN $\cdot 2 = 98.4$ kN (see page 143) $> N_{EdA,x}$
$V_{Rd,y}$ $= \pm 39.2$ kN $\cdot 2 = 78.4$ kN (see page 143) $> V_{EdA,y}$

selected: **Schöck Isokorb® XT type K-M7-V1-REI120-CV35-X120-H200-6.0**
Increased effect taking into account the installation of the Schöck Isokorb® XT type H:
$|m_{Rd}|$ $= 50.7$ kNm/m (see XT type K)
> 50.1 kNm/m $= (4.00 \text{ m} / 3.70 \text{ m}) \cdot 46.3$ kNm/m $= |m_{Ed}|$
$v_{Rd,z}$ $= 75.2$ kN/m (see XT type K) > 42.9 kN/m $= (4.00 \text{ m} / 3.70 \text{ m}) \cdot 39.7$ kN/m $= v_{Ed,z}$

Design example

- The notes on expansion joint spacing are to be observed, see page 145.

Installation instructions

The current installation instruction can be found online under:
www.schoeck.com/view/6427

☑ Check list

- ☐ Have the loads on the Schöck Isokorb® connection been specified at design level?
- ☐ With a linear connection in combination with Schöck Isokorb® of length 1 m has the reduction of the design values of the linear connection been taken into account?
- ☐ With the selection of the design table is the relevant concrete strength class taken into account?
- ☐ Are the maximum allowable expansion joint spacings taken into account?
- ☐ Is the required component geometry present with the connection to a floor or a wall? Is a special design required?
- ☐ Are the requirements with regard to fire protection clarified and is the appropriate supplement entered in the Isokorb® type designation and in the implementation plans?