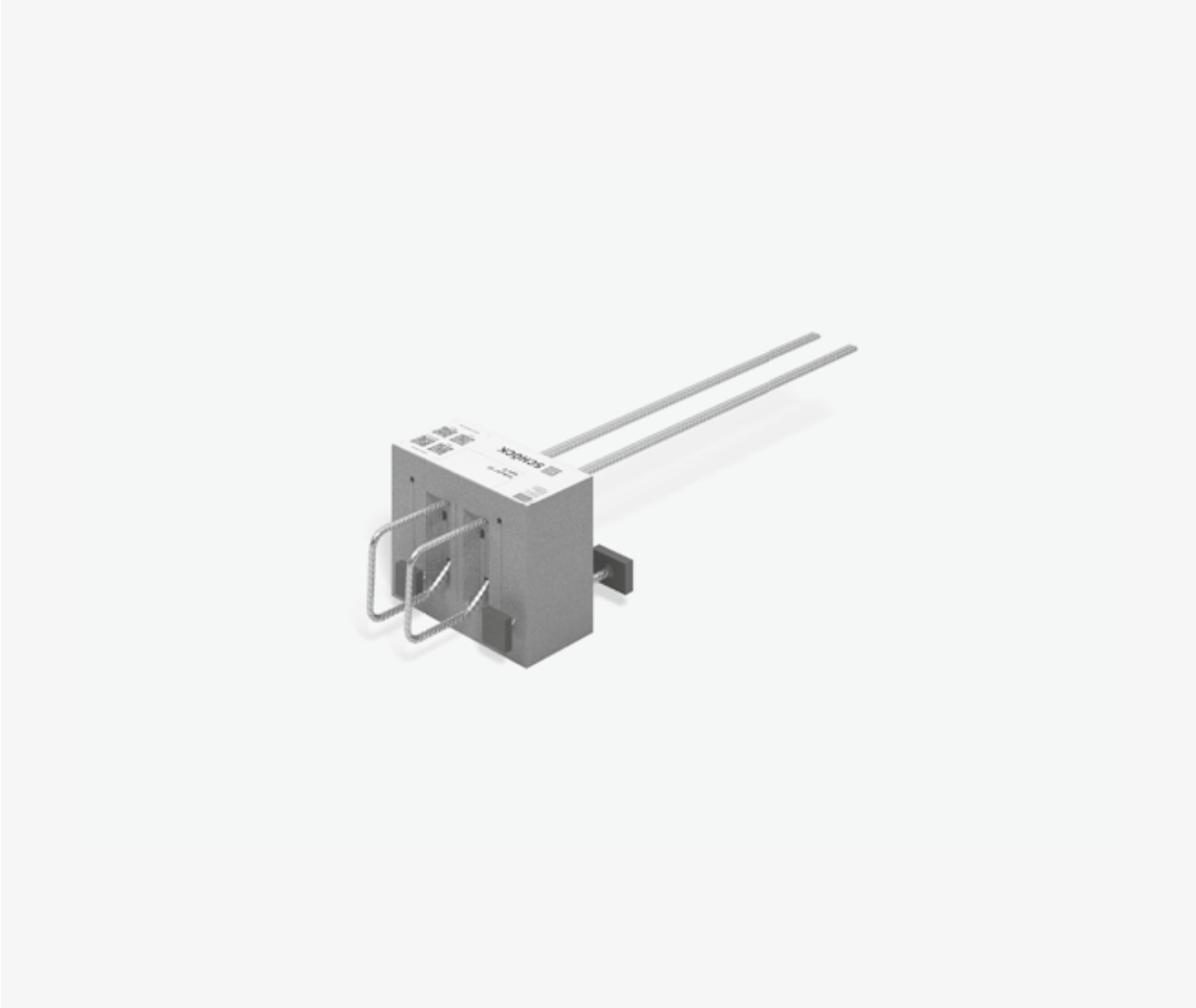
Schöck Isokorb® XT type O



Schöck Isokorb® XT type O
Load-bearing thermal insulation element for corbels. The element transfers positive shear forces and normal forces.

Element arrangement | Installation cross sections

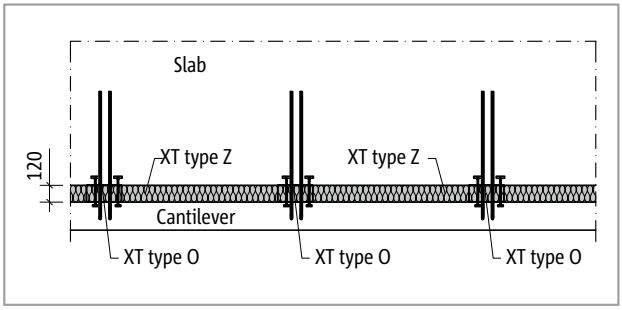


Fig. 287: Schöck Isokorb® XT type O, Z: Corbel

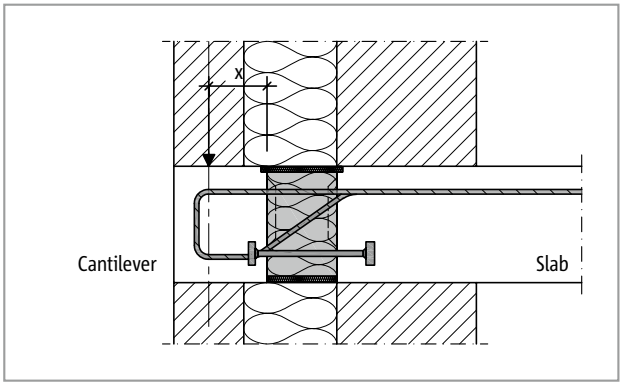


Fig. 288: Schöck Isokorb® XT type O: Corbel with faced masonry

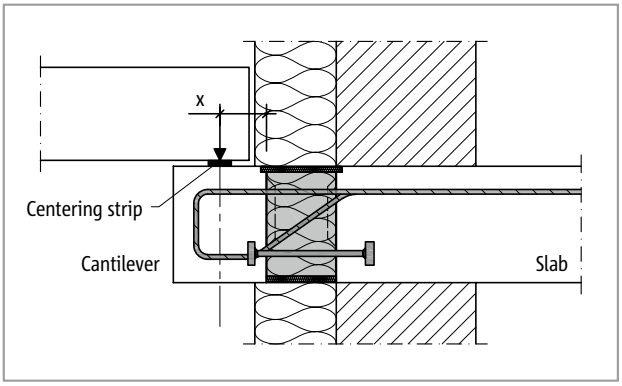


Fig. 289: Schöck Isokorb® XT type O: Connection of a console as floor support; centring battens prevent a displacement of the load application point

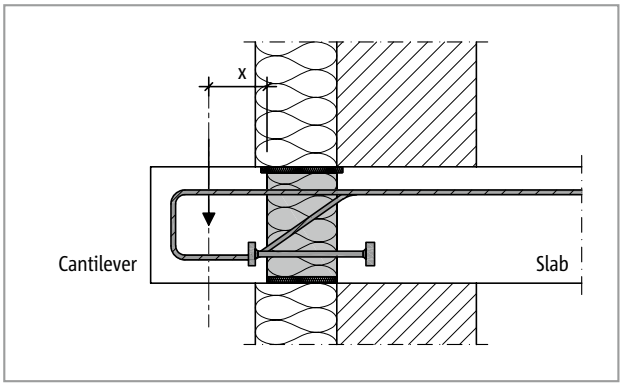


Fig. 290: Schöck Isokorb® XT type O: circumferential cornice

Element arangement/installation cross-section

- For the insulation between the Schöck Isokorb® the Schöck Isokorb® XT type Z (see page 151) is available in fire protective configuration.
- For surrounding cornices larger cantilever depths are also available to maintain the specific edge conditions.

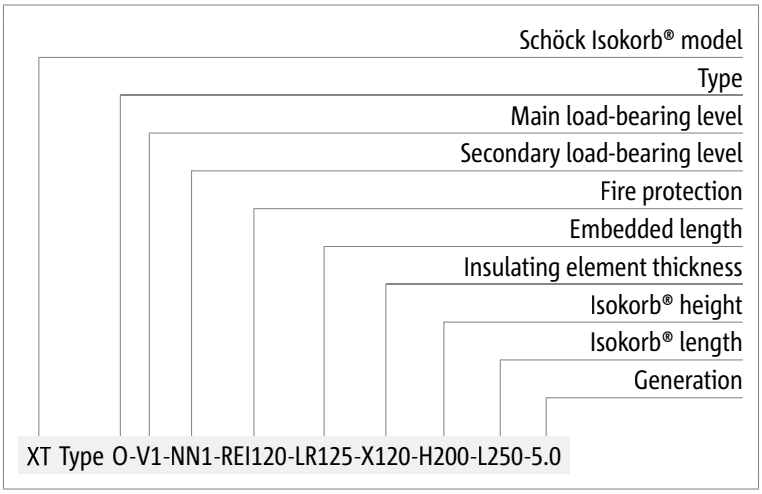
Product selection | Type designations | Special designs

Schöck Isokorb® XT type O variants

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

- Corbele depths:
  LR125: Corbel depth 160 mm (CV35) and 155 mm (CV30)
  LR165: Corbel depth 200 mm (CV35) and 195 mm (CV30)
- Main load-bearing level:
  V1
- Secondary load-bearing level:
  NN1
- Fire resistance class:
  REI120 (standard): Top and bottom fire protection projecting by 10mm on both sides
- Embedded length: LR
- Insulating element thickness:
  X120 = 120 mm
- Isokorb® height:
  H = 180 to 250 mm
- Isokorb® length:
  L = 250 mm
- Generation:
  5.0

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).
In accordance with approval heights up to 500 mm are possible.

C25/30 design

Schöck Isokorb® XT type O		LR125	LR165
Design values with		Concrete strength class ≥ C25/30	
		$V_{Rd,z}$ [kN/element]	
Position of the load application point x [mm]	60–75	25.1	25.1
	85	24.2	24.2
	95	23.1	23.1
	105	22.2	22.2
	115		21.3
	125		20.5
	135		19.8
	145		19.1
$N_{Rd,x}$ [kN/element]			
Secondary load-bearing level	NN1	≤ ±1/10 $V_{Ed,z}$	≤ ±1/10 $V_{Ed,z}$

Schöck Isokorb® XT type O	LR125	LR165
Placement with	Isokorb® length [mm]	
	250	250
Tension / shear force bars	2 ⌀ 8	2 ⌀ 8
Pressure bearing [piece]	2 ⌀ 10	2 ⌀ 10
Maximum distance x_{max} [mm]	105	145
Minimum height floor H_{min} [mm]	180	180

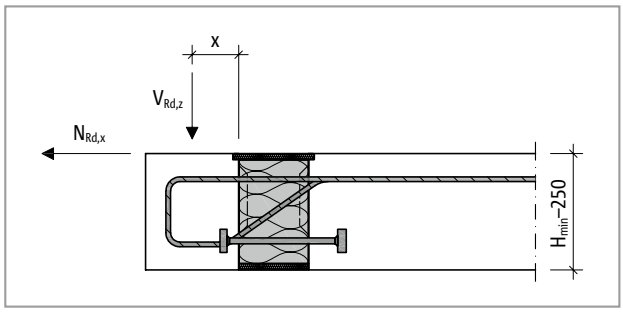


Fig. 291: Schöck Isokorb® XT type O: Distance of the load application point x (load distance point)

Notes on design

- The shear force loading of the slabs in the area of the insulation joint is to be limited to $V_{Rd,max}$, whereby $V_{Rd,max}$, acc. to BS EN 1992-1-1 (EC2), Exp. (6.9) is determined for θ = 45 ° and α = 90 ° (slab load-bearing capacity).
- The allowable normal force $N_{Rd,x}$ is dependent on the actual effective shear force $V_{Ed,z}$
- The indicative minimum concrete strength class of the external structural component is C32/40.

Expansion joint spacing | Edge spacing

Maximum expansion joint spacing

Expansion joints are to be arranged in the external structural components. The longitudinal change due to temeperature is related to the maximum distance e_a of the outer edges of the outermost Schöck Isokorb® types. With this the outer structural component can project laterally over the Schöck Isokorb®.
With fixed points such as, for example corners, half the maximum length e_a applies.
The shear force transmission in the expansion joint can be ensured using a longitudinally displaceable shear force dowel, e.g. Schöck Stacon®.

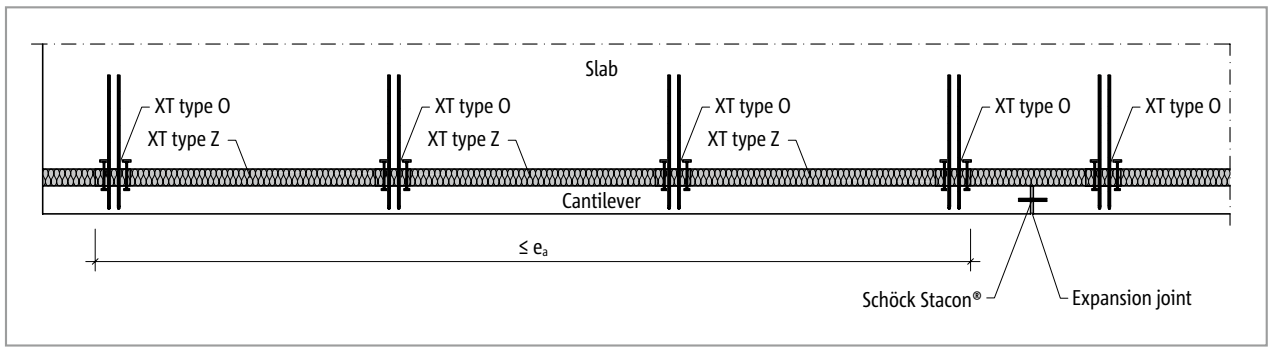


Fig. 292: Schöck Isokorb® XT type O: Expansion joint arrangement

Schöck Isokorb® XT type O		LR125, LR165
Distance for		e_a [m]
Insulating element thickness [mm]	120	21.7

Edge distances

The Schöck Isokorb® must be so arranged at the expansion joint that the following conditions are met:

- The distance of the insulation member from the edge of the structural component or of the expansion joint: $e_R \geq 30$ mm applies.

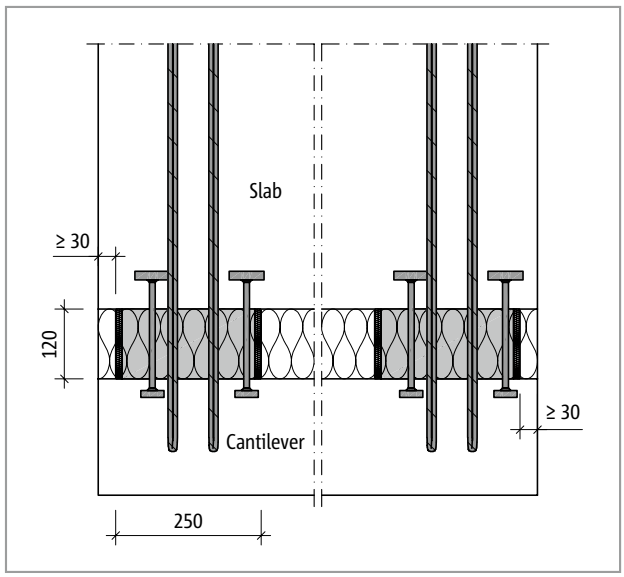


Fig. 293: Schöck Isokorb® XT type O: Edge distances to be observed

Product description | Concrete cover

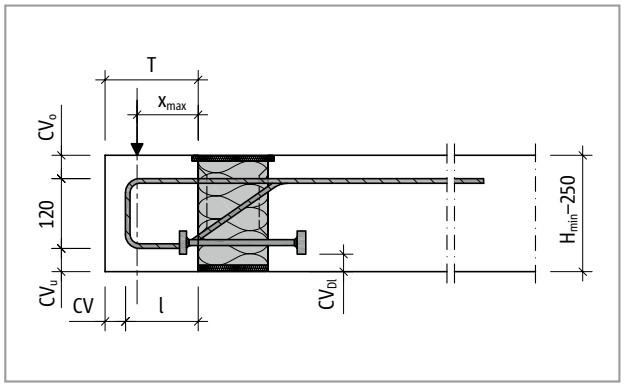


Fig. 294: Schöck Isokorb® XT type O: Product section

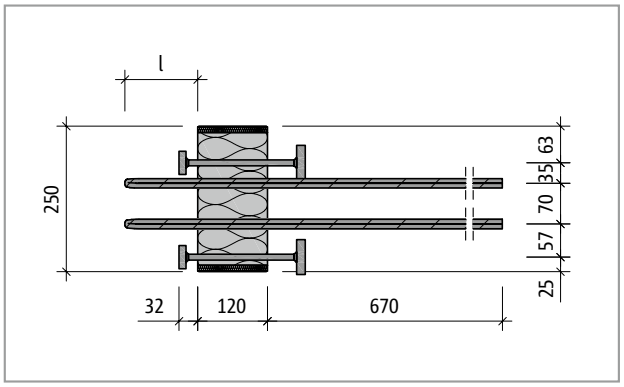


Fig. 295: Schöck Isokorb® XT type O: Product plan view

Schöck Isokorb® XT type O	LR125	LR165
Product description for	Isokorb® length [mm]	
	250	250
Loop length l [mm]	125	165
Maximum distance x_{max} [mm]	105	145
Cantilever depth T (CV30) [mm]	155	195
Cantilever depth T (CV35) [mm]	160	200
Minimum height floor H_{min} [mm]	180	180

Concrete cover

The concrete cover CV_o, CV_u and CV_{DI} of the Schöck Isokorb® XT type O vary depending on the floor height. As only stainless, ribbed reinforcing steels are used for the reinforcement of the crbel in the area of the Schöck Isokorb®, there is no risk of corrosion. Therefore, even with an exposure class XC4 a concrete cover in the area of the Schöck Isokorb® XT type O of CV = 30 mm is sufficient.

Schöck Isokorb® XT type O		LR125, LR165		
Concrete cover with		CV_o	CV_u	CV_{DI}
Isokorb® height H [mm]	180	30	30	30
	190	35	35	35
	200	40	40	30
	210	45	45	35
	220	50	50	40
	230	50	60	50
	240	50	70	60
	250	50	80	70

Product information

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

On-site reinforcement | Installation instructions

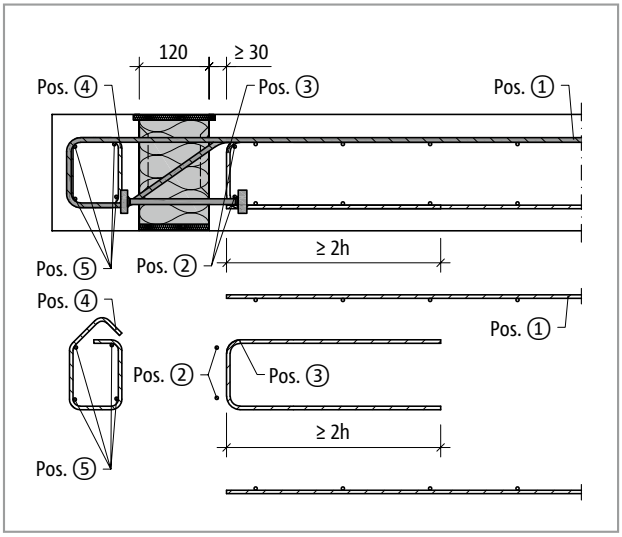


Fig. 296: Schöck Isokorb® XT type O: On-site reinforcement

The reinforcement of the reinforced concrete slab is determined from the structural engineer's design. With this the effective moment, the effective normal force and the effective shear force should be taken into account.
In addition, it is to be ensured that the tension bars of the Schöck Isokorb® are 100% lapped. The existing floor reinforcement can be taken into account so far as the maximum separation to the tension bars of 4⌀ is maintained. Additional reinforcement may be required.

Recommendation for the on-site connection reinforcement
Details on the lapping reinforcement for Schöck Isokorb® with a loading of 100% of the maximum design moment with C25/30; structurally selected: a_s lapping reinforcement ≥ a_sIsokorb® compression/tension bars.

Schöck Isokorb® XT type O		LR125, LR165
On-site reinforcement	Location	Concrete strength class ≥ C25/30
Overlapping reinforcement		
Pos. 1 [mm²/Element]	Floor side	200
Lap length l_0 [mm]	Floor side	640
Steel bars along the insulation joint		
Pos. 2	Floor side	2 • H8
Stirrup as suspension reinforcement		
Pos. 3	Floor side	H8@250
Stirrup		
Pos. 4	Cantilever side	5 • H8

Information about on-site reinforcement
- Alternative connection reinforcements are possible. The rules as per BS EN 1992-1-1 (EC2) and BS EN 1992-1-1/NA apply for the determination of the lap length. A reduction of the required lap length with V_{Ed}/V_{Rd} is permitted.
- The indicative minimum concrete strength class of the external structural component is C32/40.

Installation instructions
The current installation instruction can be found online under:
www.schoeck.com/view/5157

Design example

Wall structure design example

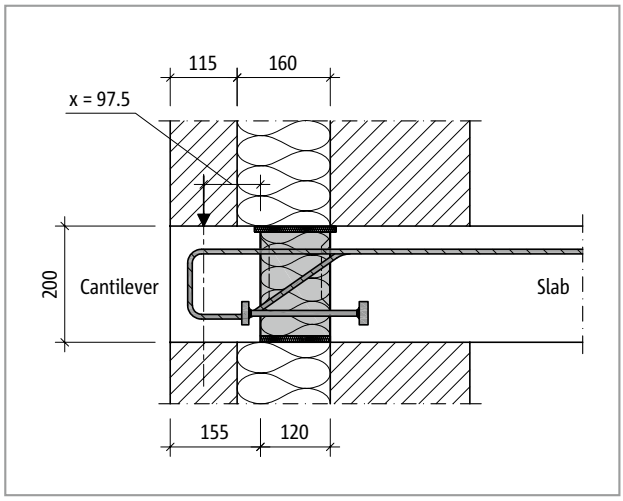


Fig. 297: Schöck Isokorb® XT type O: Wall construction for design example

Design example | Installation instructions

Given:
Corbel side concrete C25/30
Floor side concrete C25/30
Total length of the corbel l = 15.00 m
Height of the outer masonry shell: h_{MW} = 2.50 m
Thickness of the outer masonry shell: d_{MW} = 11.5 cm
Thickness of the insulating material: d_D = 16 cm
Height of the console or thickness of the floor: $h_{Concrete}$ = 20 cm
Wind load $n_{Ed,x}$ = 1.0 kN/m²
(height to be taken into account for the wind load: h_{Wind} = 0.60 m)
Specific weight of concrete $\gamma_{Concrete}$ = 25.00 kN/m³
Specific weight of masonry γ_{MW} = 22.00 kN/m³

Sought: Required number of Schöck Isokorb® XT type O related to the overall length of the corbel.

Shear force:
$V_{Ed,z,tot.} = \gamma_G \cdot l \cdot (\gamma_{MW} \cdot h_{MW} \cdot d_{MW} + \gamma_{Concrete} \cdot h_{Concrete} \cdot T_{Console})$
$= 1.35 \cdot 15.00\ m \cdot (22.00\ [kN/m^3] \cdot 2.50\ m \cdot 0.115\ m + 25.00\ [kN/m^3] \cdot 0.20\ m \cdot 0.155\ m)$
$= 143.8\ kN$
$N_{Ed,x,tot.} = \gamma_Q \cdot l \cdot n_{Ed,x} \cdot h_{Wind} = 1.5 \cdot 15.00\ m \cdot 1.0\ [kN/m^2] \cdot 0.60\ m = 13.5\ kN$

Note: XT type O-LR125 is selected based on the corbel depth T = 155 mm.

Design table:
x = 160 mm + 115 mm/2 - 120 mm = 97.5 mm, i.e. x < 105 mm.
$V_{Rd,z}$ = 22.2 [kN/element]
$V_{Ed,z,tot.}/V_{Rd,z}$ = 143.8 kN/22.2 [kN/element] = 6.5 · element,
⇒ 7 Schöck Isokorb® XT type O required, spacing ≤ 15.00 m/7 = 2.14 m
$V_{Ed,z}$ = $V_{Ed,z,tot.}$/7 = 143.8 kN/7 = 20,5 [kN/element] ≤ $V_{Rd,z}$ = 22.2 kN → NW o.k. ✓

Normal force:
$N_{Rd,x}$ = 1/10 · $V_{Ed,z}$ = 1/10 · 20.5 [kN/element] = 2.05 [kN/element]
$N_{Rd,x,tot.}$/7 = 13.5 kN/7 = 1.9 [kN/element] < 2.05 [kN/element] → NW o.k. ✓

Note: The required number of Schöck Isokorb® XT type O is determined by the capacity for acceptance of shear force $V_{Rd,z}$. The acceptable normal force $N_{Rd,x}$ results depending on the actual applied shear force $V_{Ed,z}$.

Selected: 10 elements of the Schöck Isokorb® XT type O-LR125-H200 which, taking into account the required expansion joint, are arranged at the ends of the console and distributed evenly over the length. Using 10 Schöck Isokorb® XT type O the position of the expansion joint can be varied with simultaneous observation of sensible edge separations of the Isokorb. Through this the bending of the console can in any case be minimised.

Installation instructions
The current installation instruction can be found online under:
www.schoeck.com/view/5157

☑ Check list

- ☐ Have the loads on the Schöck Isokorb® connection been specified at design level?
- ☐ Has the maximum separation of the outermost Schöck Isokorb® types as a result of expansion in the outer structural components been maintained?
- ☐ Have the requirements for on-site reinforcement of connections been defined in each case?
- ☐ Are the requirements with regard to fire protection explained and is the appropriate addendum entered in the Isokorb® type description in the implementation plans?