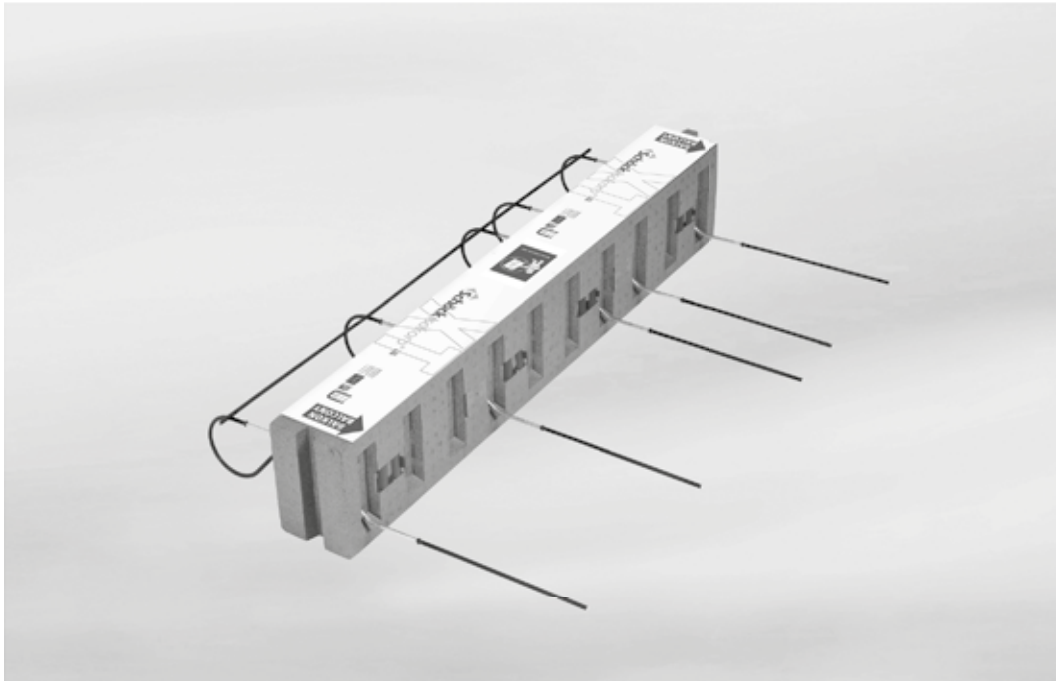


## Schöck Isokorb® type QXT, QXT+QXT, QZXT



Schöck Isokorb® type QXT

### Schöck Isokorb® type QXT

Suitable for supported balconies. It transmits positive shear forces.

### Schöck Isokorb® type QXT+QXT

Suitable for supported balconies. It transmits positive and negative shear forces.

### Schöck Isokorb® type QZXT

Suitable for supported balconies with zero-stress connections. It transmits positive shear forces.

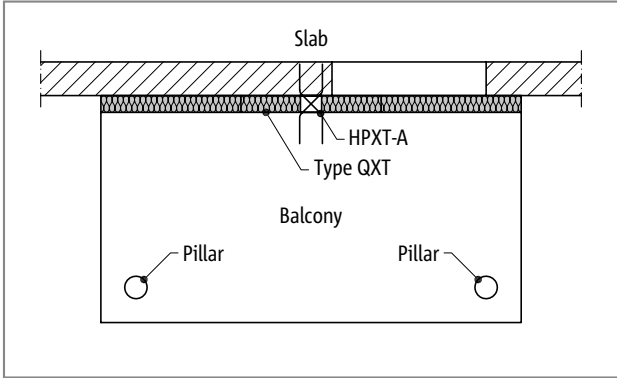


QXT

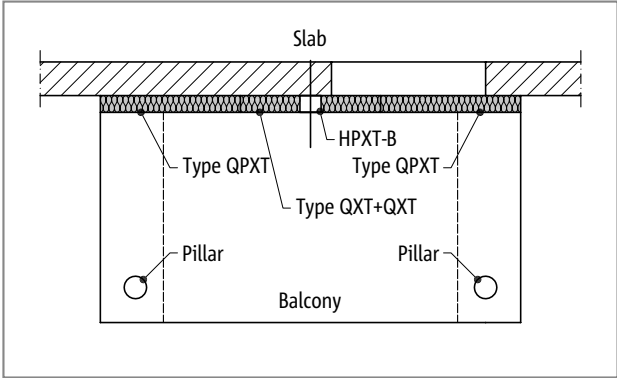
Reinforced concrete/Reinforced  
concrete



# Element arrangement



Schöck Isokorb® type QXT: Balcony with column support



Schöck Isokorb® type QPXT, QXT+QXT: Balcony with column support with different support stiffness; optionally with type HPXT-B for the transmission of standard horizontal force



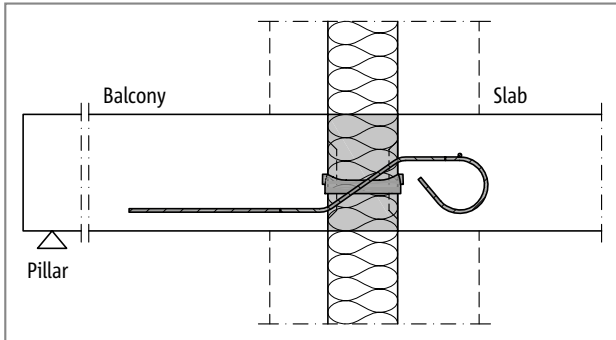
QXT

Reinforced concrete/Reinforced concrete

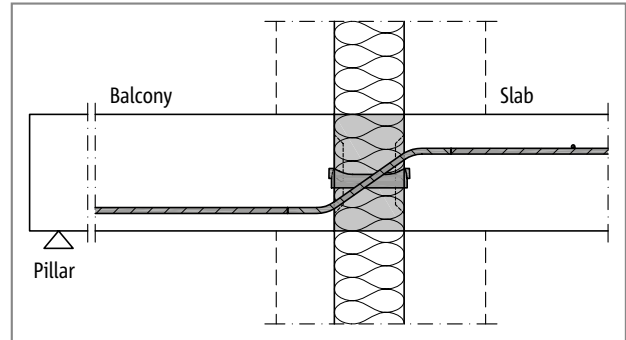
## Installation cross sections



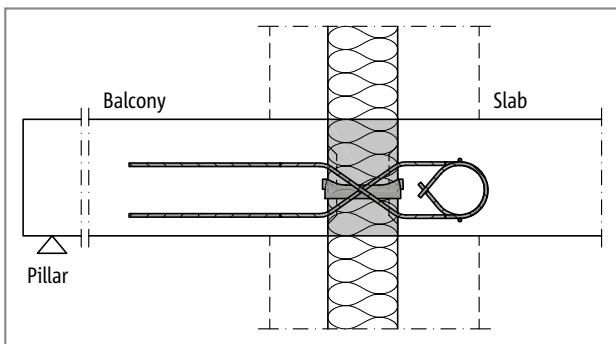
QXT



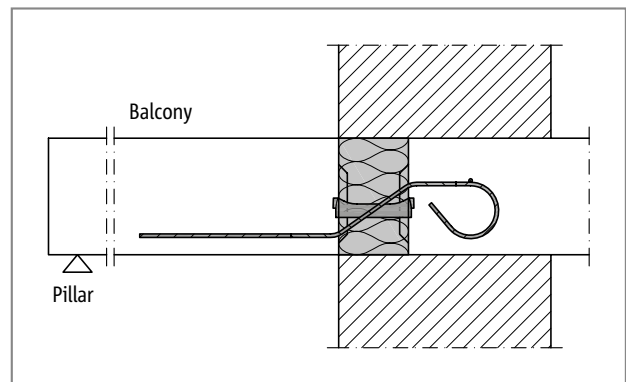
Schöck Isokorb® type QXT: connection with non-load-bearing cavity wall (type QXT10 to QXT40)



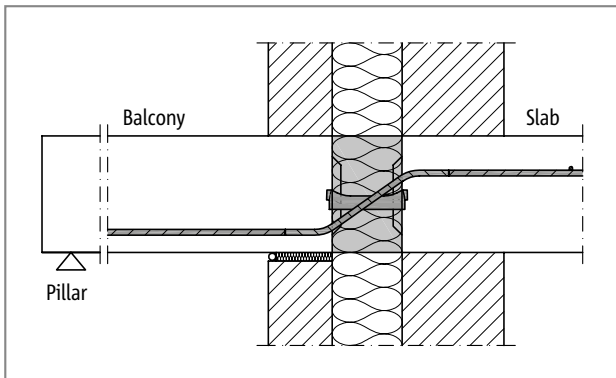
Schöck Isokorb® type QXT: Connection with non-load-bearing cavity wall (type QXT60 to QXT90)



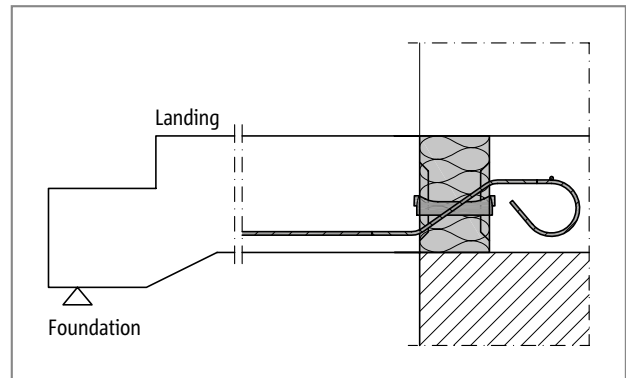
Schöck Isokorb® type QXT+QXT: Connection with non-load-bearing cavity wall



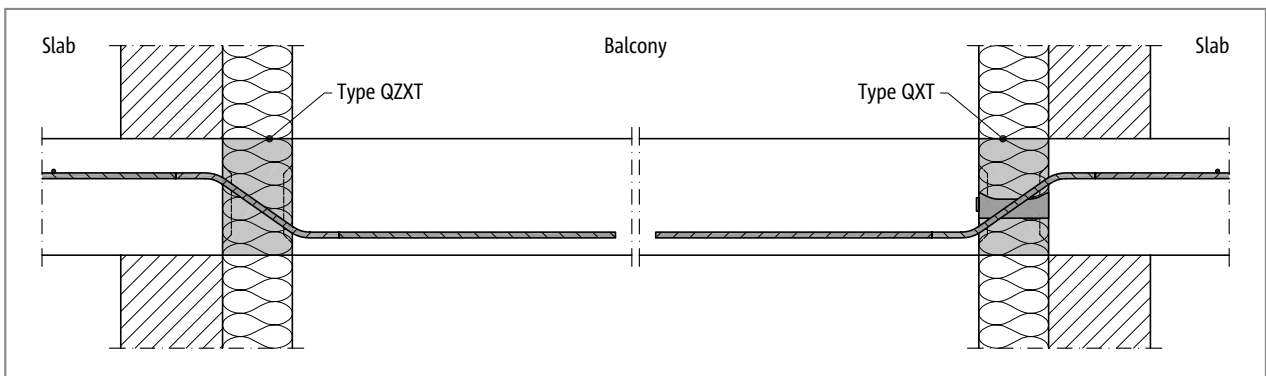
Schöck Isokorb® type QXT: Connection with single-shell, heat insulating masonry (type QXT10 to QXT40)



Schöck Isokorb® type QXT: Connection with cavity masonry with core insulation (type QXT60 to QXT90)



Schöck Isokorb® type QXT: Connecting stair landing with single-shell, heat insulating masonry (type QXT10 to QXT40)



Schöck Isokorb® type QXT, QZXT: Application case reinforced concrete slab spanning in one direction

Reinforced concrete/Reinforced concrete

## Product selection | Type designations | Special designs

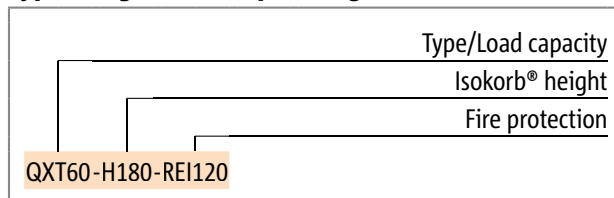
### Schöck Isokorb® type QXT, QXT+QXT variants

The configuration of the Schöck Isokorb® types QXT and QXT+QXT can be varied as follows:

For the load-bearing levels 10 to 40 the following applies, shear force bar bent off on the floor side, straight on the balcony side.  
For the load-bearing levels 60 to 90 the following applies, shear force bar straight on the floor side, straight on balcony side.

- ▶ Load capacity:
  - QXT10 bis QXT40, QXT60 bis QXT90
  - QXT10+QXT10 bis QXT40+QXT40
- ▶ Concrete cover of the shear force bars:
  - bottom: CV = 30 mm
  - top: CV ≥ 35 mm (depending on height of the shear force bars)
- ▶ Height:
  - H = H<sub>min</sub> bis 250 mm (note minimum slab height depending on load-bearing level and fire protection)
- ▶ Fire resistance class:
  - RO: Standard
  - REI120: Projecting upper fire protection slab, both sides 10 mm

### Type designations in planning documents



### **i** Special designs

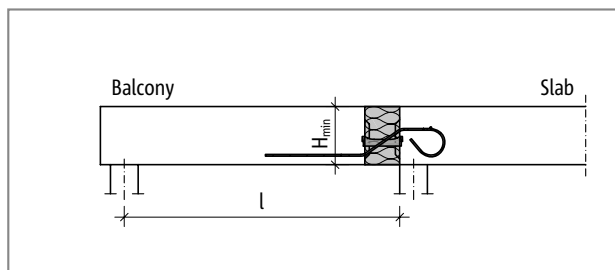
Please contact the design support department if you have connections that are not possible with the standard product variants shown in this information (contact details on page 3).

This also applies with additional requirements as a result of precast concrete construction. For additional requirements determined by manufacturing or transportation there are solutions available with coupler bars.

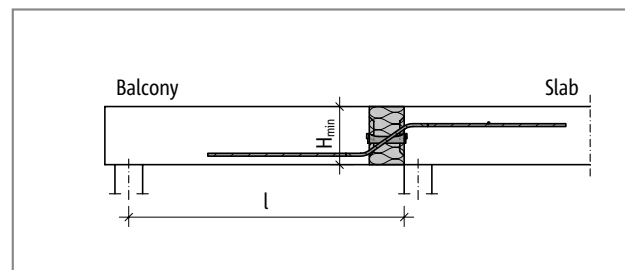
# Design

## Design table type QXT

Schöck Isokorb® type	QXT10	QXT20	QXT30	QXT40	QXT60	QXT70	QXT80	QXT90
Design values with	$v_{Rd,z}$ [kN/m]							
Concrete C25/30	35.3	42.3	56.4	70.5	87.7	97.9	117.5	137.1
Isokorb® length [mm]	1000	1000	1000	1000	1000	1000	1000	1000
Shear force bars	5 $\varnothing$ 6	6 $\varnothing$ 6	8 $\varnothing$ 6	10 $\varnothing$ 6	7 $\varnothing$ 8	5 $\varnothing$ 10	6 $\varnothing$ 10	7 $\varnothing$ 10
Pressure bearing (pce)	4	4	4	4	4	4	5	6
$H_{min}$ width R0 [mm]	160	160	160	160	160	170	170	170
$H_{min}$ width RE1120 [mm]	160	160	160	160	170	180	180	180



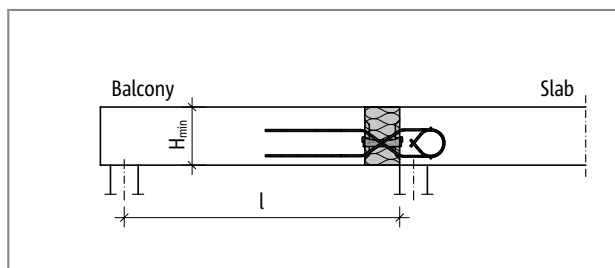
Schöck Isokorb® type QXT: Static system (type QXT10 to QXT40)



Schöck Isokorb® type QXT: Static system (type QXT60 to QXT90)

## Design table type QXT+QXT

Schöck Isokorb® type	QXT10+QXT10	QXT20+QXT20	QXT30+QXT30	QXT40+QXT40
Design values with	$v_{Rd,z}$ [kN/m]			
Concrete C25/30	±35.3	±42.3	±56.4	±70.5
Isokorb® length [mm]	1000	1000	1000	1000
Shear force bars	5 $\varnothing$ 6 + 5 $\varnothing$ 6	6 $\varnothing$ 6 + 6 $\varnothing$ 6	8 $\varnothing$ 6 + 8 $\varnothing$ 6	10 $\varnothing$ 6 + 10 $\varnothing$ 6
Pressure bearing (pce)	4	4	4	4
$H_{min}$ width R0 [mm]	160	160	160	160
$H_{min}$ width RE1120 [mm]	160	160	160	160



Schöck Isokorb® type QXT+QXT: Static system

QXT

Reinforced concrete/Reinforced concrete

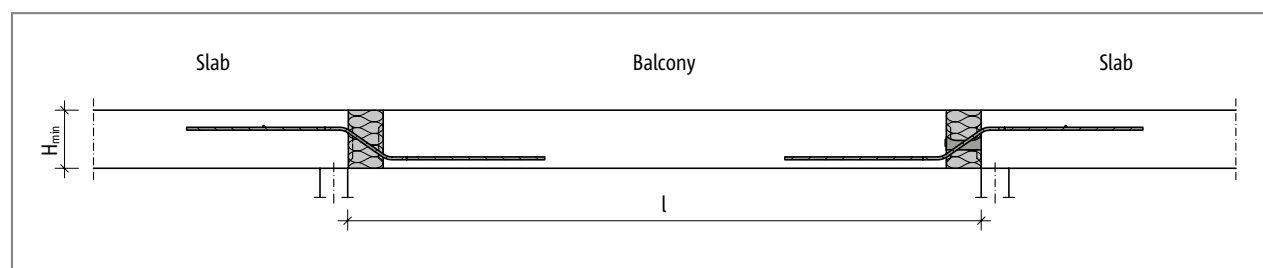


# Design

## Design table type QZXT

Schöck Isokorb® type	QZXT10	QZXT20	QZXT30	QZXT40	QZXT60	QZXT70	QZXT80	QZXT90
Design values with	$v_{Rd,z}$ [kN/m]							
Concrete C20/25	30.0	36.0	48.1	60.1	74.7	83.4	100.1	116.8
Concrete C25/30	35.3	42.3	56.4	70.5	87.7	97.9	117.5	137.1
Slab load-bearing capacity	ok	ok	ok	ok	ok	ok	ok	check

Isokorb® length [mm]	1000	1000	1000	1000	1000	1000	1000	1000
Shear force bars	5 $\varnothing$ 6	6 $\varnothing$ 6	8 $\varnothing$ 6	10 $\varnothing$ 6	7 $\varnothing$ 8	5 $\varnothing$ 10	6 $\varnothing$ 10	7 $\varnothing$ 10
Pressure bearing (pce)	-	-	-	-	-	-	-	-
H <sub>min</sub> width R0 [mm]	160	160	160	160	160	170	170	170
H <sub>min</sub> width REI120 [mm]	160	160	160	160	170	180	180	180



Schöck Isokorb® type QZXT, QXT: Static system (type QZXT60 to QZXT90, QXT60 to QXT90)

### **i** 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  $\theta = 45^\circ$  and  $\alpha = 90^\circ$  (slab load-bearing capacity).
- ▶ A static verification is to be provided for the adjacent reinforced concrete structural components on both sides of the Schöck Isokorb. With a connection using Schöck Isokorb® type QXT a freely rotatable support (pin connection joint) is to be accepted as a static system.
- ▶ For the transmission of standard horizontal forces additional Schöck Isokorb® type HPXT (see page 149) are required.
- ▶ Through the excentric force application of the Schöck Isokorb® type QXT and type QXT+QXT an offset moment results at the edges of the adjacent slabs. This is to be taken into account with the design of the slabs.
- ▶ 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.

## Moments from excentric connection

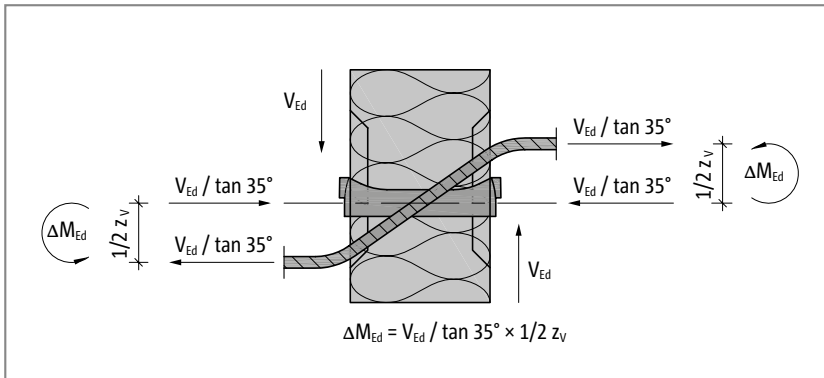
### Moments from excentric connection

For the design of the connection reinforcement on both sides of the shear force transmitting Schöck Isokorb® types QXT and QX-T+QXT moments from excentric connection are to be taken into account. These moments are in each case to be superimosed with the moments from the standard stressing if they have the same sign.

The following table values  $\Delta M_{Ed}$  have been calculated with 100% utilisation of  $v_{Rd}$  with a lever arm  $z_{v,max} = 140 \text{ mm}$ .



QXT



Schöck Isokorb® type	QXT10, QXT10+QXT10	QXT20, QXT20+QXT20	QXT30, QXT30+QXT30	QXT40, QXT40+QXT40
Design values with	$\Delta M_{Ed}$ [kNm/m]			
Concrete C25/30	2.2	2.7	3.6	4.5

Schöck Isokorb® type	QXT60	QXT70	QXT80	QXT90
Design values with	$\Delta M_{Ed}$ [kNm/m]			
Concrete C25/30	5.9	7.1	8.6	10.0

Reinforced concrete/Reinforced concrete

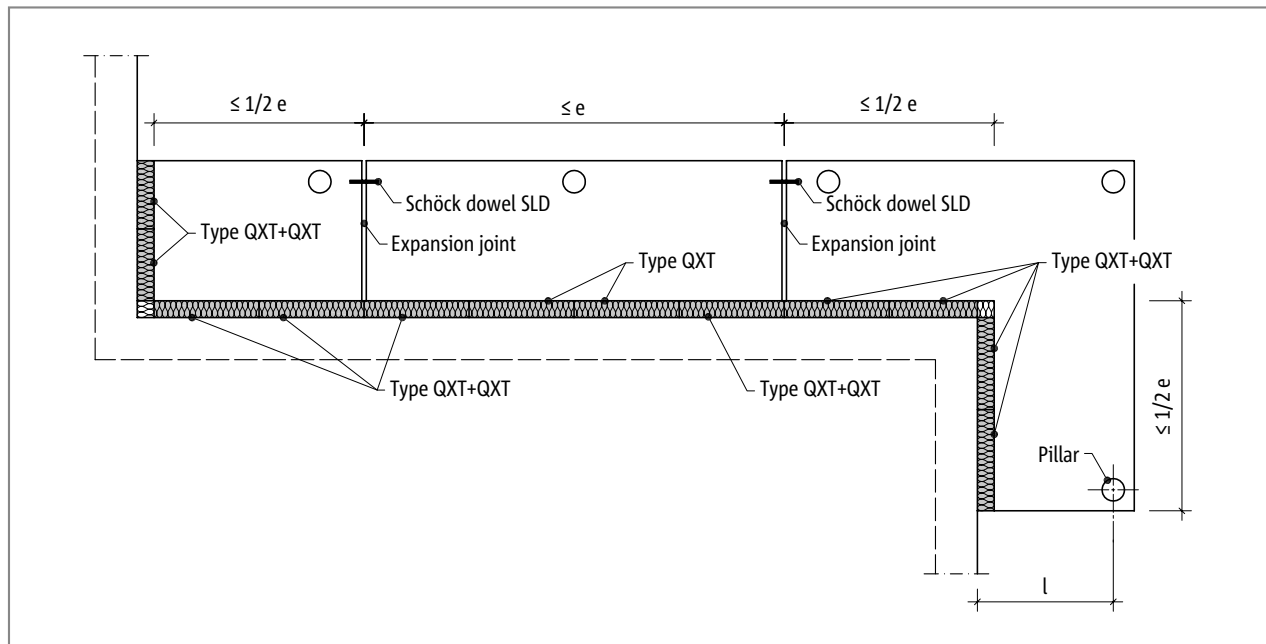


## Expansion joint spacing

### Maximum expansion joint spacing

If the structural component length exceeds the maximum expansion joint spacing  $e$ , expansion joints must be installed in the exterior concrete structural components at right angles to the insulation plane, in order to limit the effect as a result of temperature changes. With fixed points such as, for example, corners of balconies, parapets and balustrades or with the employment of the supplementary types HPXT or EQXT half the maximum expansion joint spacing  $e/2$  from the fixed point applies.

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



Schöck Isokorb® Type QXT, QXT+QXT: Expansion joint arrangement

Schöck Isokorb® type	QXT10 - QXT60 QXT10+QXT10 - QXT40+QXT40 QZXT10 - QZXT60	QXT70 - QXT90 QZXT70 - QZXT90
Maximum expansion joint spacing	$e$ [m]	
Insulating element thickness [mm]	120	21.7

### **i** Edge distances

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

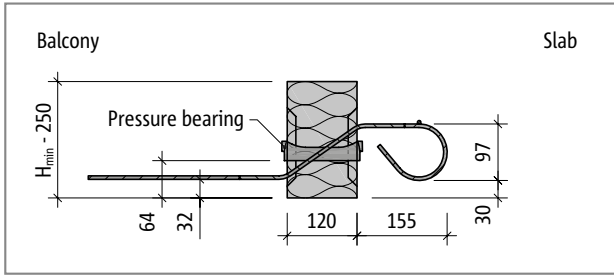
- ▶ For the centre distance of the compression elements from the free edge or from the expansion joint:  $e_R \geq 50$  mm applies.
- ▶ For the centre distance of the shear force bars from the free edge or from the expansion joint:  $e_R \geq 100$  mm and  $e_R \leq 150$  mm applies.

## Product description

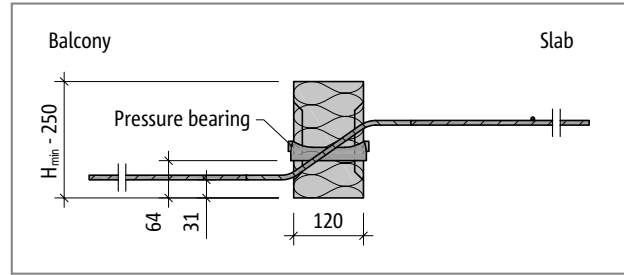


QXT

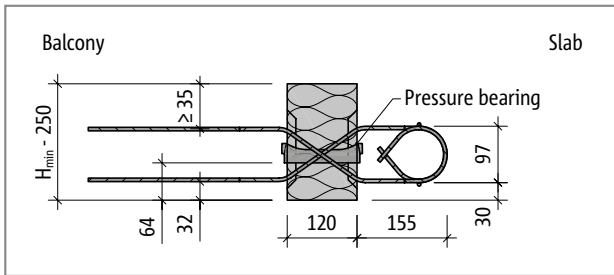
Reinforced concrete/Reinforced concrete



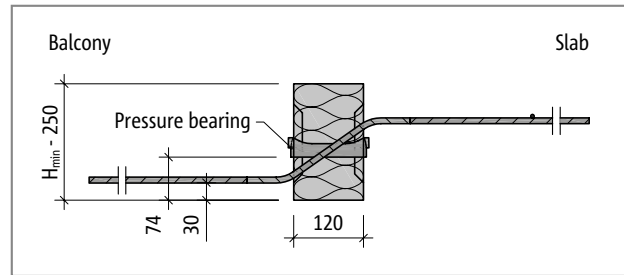
Schöck Isokorb® type QXT10 to QXT40: Product section



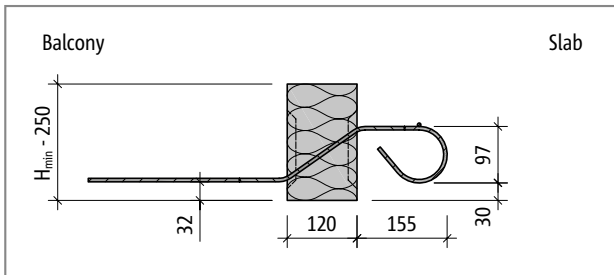
Schöck Isokorb® type QXT60: Product section



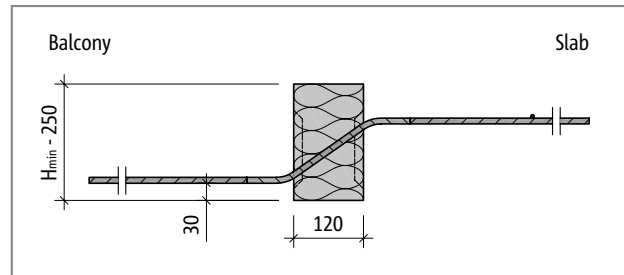
Schöck Isokorb® type QXT10+QXT10 to QXT40+QXT40: Product section



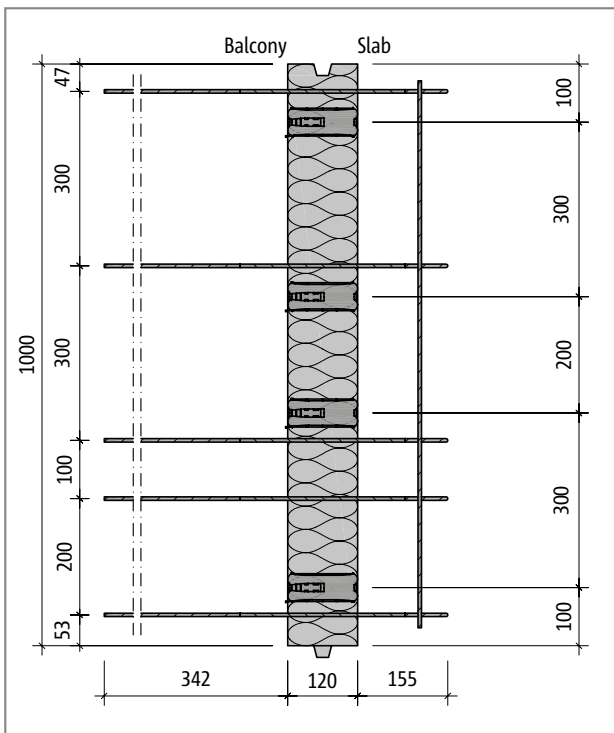
Schöck Isokorb® type QXT70 bis QXT90: Product section



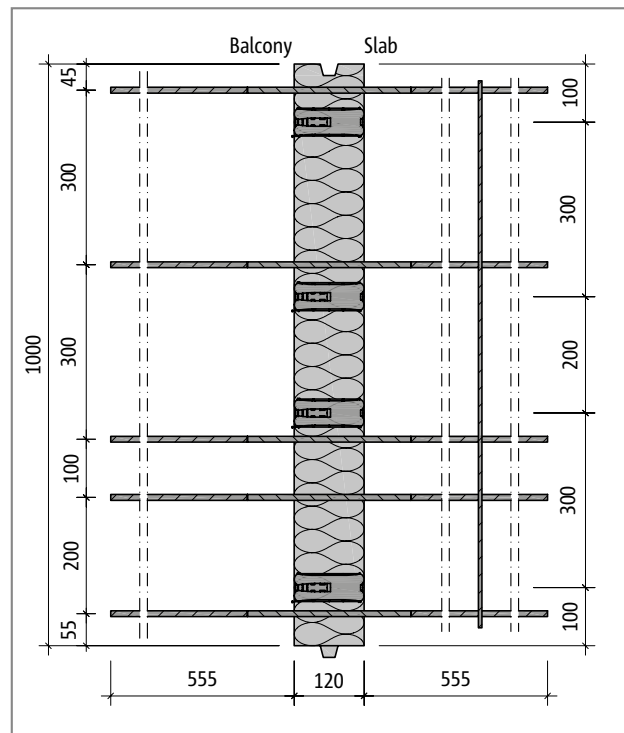
Schöck Isokorb® type QZXT10 to QZXT40: Product section



Schöck Isokorb® type QZXT60 to QZXT90: Product section



Schöck Isokorb® type QXT10: Product plan view

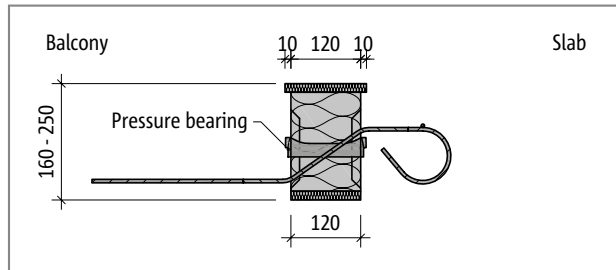


Schöck Isokorb® type QXT70: Product plan views

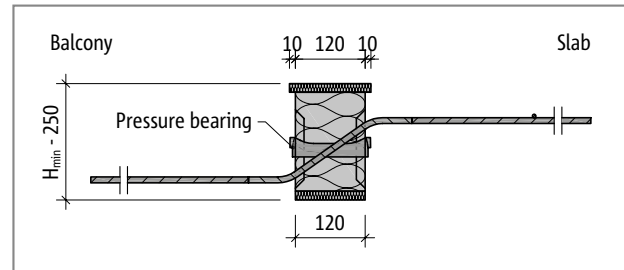
## Fire protection configuration

### **i** Product information

- ▶ Download further product plan views and cross-sections at [www.schoeck.co.uk/download](http://www.schoeck.co.uk/download)
- ▶ Note minimum height  $H_{min}$  Schöck Isokorb® type QXT, QXT+QXT



Schöck Isokorb® type QXT10 to QXT40 with REI120: Product section



Schöck Isokorb® type QXT60 to QXT90 with REI120: Product section

### **i** Fire protection

- ▶ Note minimum height  $H_{min}$  Schöck Isokorb® type QXT, QXT+QXT

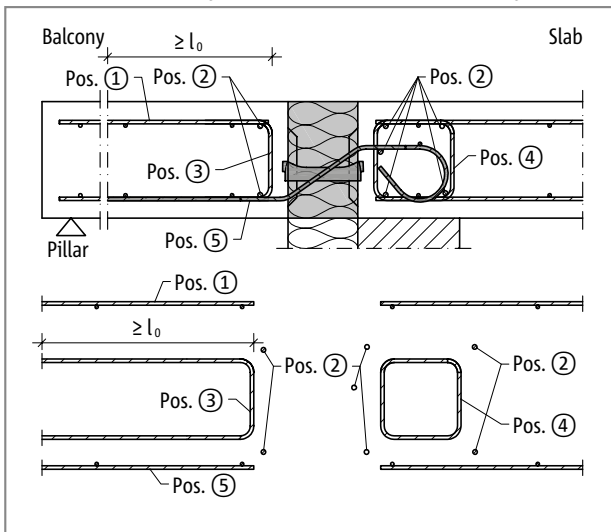


QXT

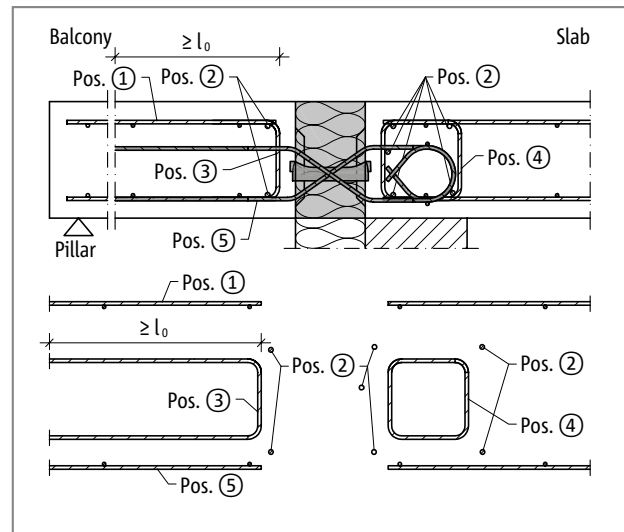
Reinforced concrete/Reinforced  
concrete

## On-site reinforcement

### Schöck Isokorb® type QXT10 to QXT40 and type QXT10+QXT10 to QXT40+QXT40



Schöck Isokorb® type QXT10 to QXT40: On-site reinforcement



Schöck Isokorb® type QXT10+QXT10 to QXT40+QXT40: On-site reinforcement

The reinforcement of the reinforced concrete slab is determined from the structural engineer's design. With this both the effective moment and the effective shear force should be taken into account.

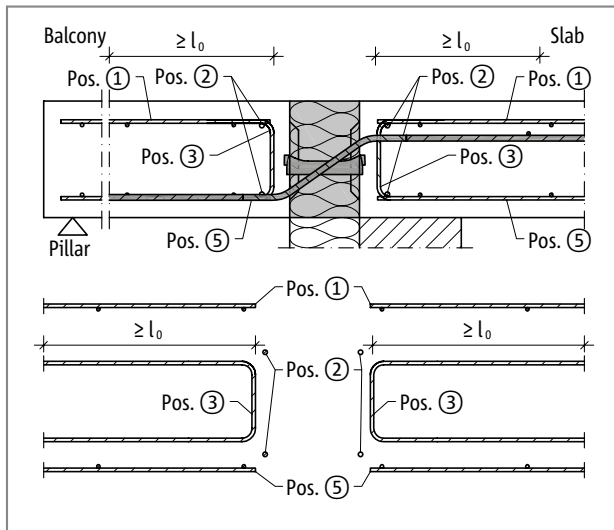
In addition, it is to be ensured that the shear force bars of the Schöck Isokorb® are 100% lapped, insofar as they lie in the tension zone.

Schöck Isokorb® type		QXT10, QXT10+QXT10	QXT20, QXT20+QXT20	QXT30, QXT30+QXT30	QXT40, QXT40+QXT40
<b>On-site reinforcement</b>	<b>Location</b>	<b>Concrete strength class <math>\geq</math> C25/30</b>			
<b>Pos. 1 Lapping reinforcement</b>					
Pos. 1	Balcony side	acc. to the specifications of the structural engineer			
<b>Pos. 2 Steel bars along the insulation joint</b>					
Pos. 2	Balcony side	2 · H8	2 · H8	2 · H8	2 · H8
Pos. 2	Floor side	5 · H8	5 · H8	5 · H8	5 · H8
<b>Pos. 3 Stirrup</b>					
Pos. 3 [mm <sup>2</sup> /m]	Balcony side	81	97	130	162
<b>Pos. 4 Closed stirrup (edge beam acc. to Z-15.7-240, Annex 6, para. 16a)</b>					
Pos. 4 [mm <sup>2</sup> /m]	Floor side	141	141	141	141
Pos. 4	Floor side	H8@200	H8@200	H8@200	H8@200
<b>Pos. 5 Lapping reinforcement</b>					
Pos. 5	Balcony side	necessary in the tension zone, as specified by the structural engineer			
<b>Pos. 6 Structural edging at the free edge</b>					
Pos. 6		Edging acc. to BS EN 1992-1-1 (EC2), 9.3.1.4 (not shown)			

#### **i** Information about on-site reinforcement

- ▶ Lapping of the reinforcement in the connecting reinforced concrete components must be applied as close as possible to the insulating element of the Schöck Isokorb®, the required concrete cover must be observed.
- ▶ The shear force bars are to be anchored with their straight ends in the pressure zone. In the tension zone the shear force bars are to be lapped.
- ▶ The structural edging Pos. 6 should be selected so low that it can be arranged between the upper and lower reinforcement position.
- ▶ The indicative minimum concrete strength class of the external structural component is C32/40.

## On-site reinforcement



Schöck Isokorb® type QXT60 to QXT90: On-site reinforcement

The reinforcement of the reinforced concrete slab is determined from the structural engineer's design. With this both the effective moment and the effective shear force should be taken into account.

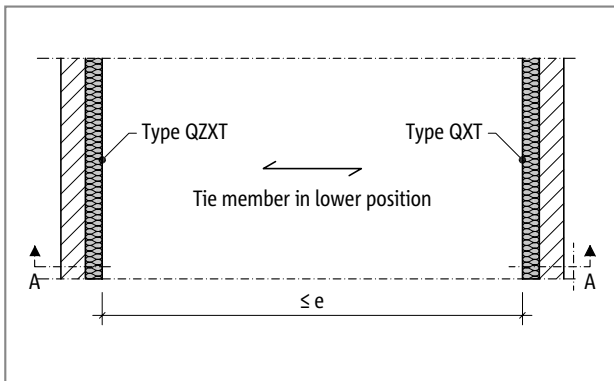
In addition, it is to be ensured that the shear force bars of the Schöck Isokorb® are 100% lapped, insofar as they lie in the tension zone.

Schöck Isokorb® type		QXT60	QXT70	QXT80	QXT90
<b>On-site reinforcement</b>	<b>Location</b>	<b>Concrete strength class <math>\geq</math> C25/30</b>			
<b>Pos. 1 Lapping reinforcement</b>					
Pos. 1	balcony/floor side	acc. to the specifications of the structural engineer			
<b>Pos. 2 Steel bars along the insulation joint</b>					
Pos. 2	balcony/floor side	2 · 2 · H8	2 · 2 · H8	2 · 2 · H8	2 · 2 · H8
<b>Pos. 3 Stirrup</b>					
Pos. 3 [mm <sup>2</sup> /m]	balcony/floor side	202	225	270	315
<b>Pos. 5 Lapping reinforcement</b>					
Pos. 5	balcony/floor side	necessary in the tension zone, as specified by the structural engineer			
<b>Pos. 6 Structural edging at the free edge</b>					
Pos. 6		Edging acc. to BS EN 1992-1-1 (EC2), 9.3.1.4 (not shown)			

### **i** Information about on-site reinforcement

- ▶ Lapping of the reinforcement in the connecting reinforced concrete components must be applied as close as possible to the insulating element of the Schöck Isokorb®, the required concrete cover must be observed.
- ▶ The shear force bars are to be anchored with their straight ends in the pressure zone. In the tension zone the shear force bars are to be lapped.
- ▶ The structural edging Pos. 6 should be selected so low that it can be arranged between the upper and lower reinforcement position.
- ▶ The indicative minimum concrete strength class of the external structural component is C32/40.

## Application example reinforced concrete slab spanning in one direction

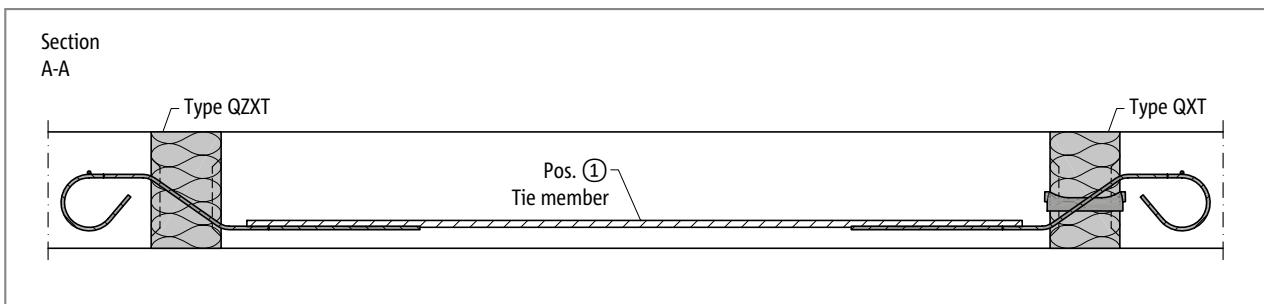


Schöck Isokorb® type QZXT, QXT: Reinforced concrete slab spanning in one direction

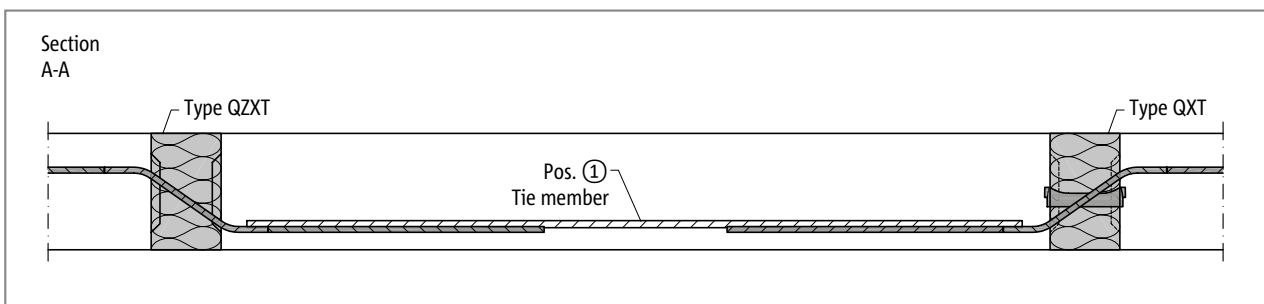
For zero-stress mounting a type QZXT without pressure bearing is to be arranged on one side. On the opposite side a type QXT with pressure bearing is then required. In order to maintain the equilibrium of forces a tie is to act as reinforcement between type QZXT and type QXT, which overlaps with the shear force transmitting Isokorb® bars.

### **i** Expansion joints

- Expansion joint spacing  $e$  see p. 123



Schöck Isokorb® type QZXT10 to QZXT40, QXT10 to QXT40: Section A-A; Reinforced concrete slab spanning in one direction



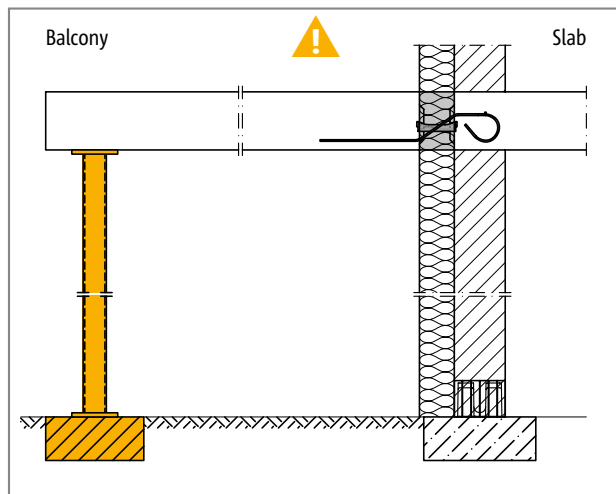
Schöck Isokorb® type QZXT60 to QZXT90, QXT60 to QXT90: Section A-A; Reinforced concrete slab spanning in one direction

Schöck Isokorb® type	QXT10, QZXT10	QXT20, QZXT20	QXT30, QZXT30	QXT40, QZXT40	QXT60, QZXT60	QXT70, QZXT70	QXT80, QZXT80	QXT90, QZXT90
On-site reinforcement	Concrete strength class $\geq$ C25/30							
Pos. 1 Tie								
Pos. 1	5 · H8	6 · H8	8 · H8	10 · H8	7 · H8	5 · H10	6 · H10	7 · H10

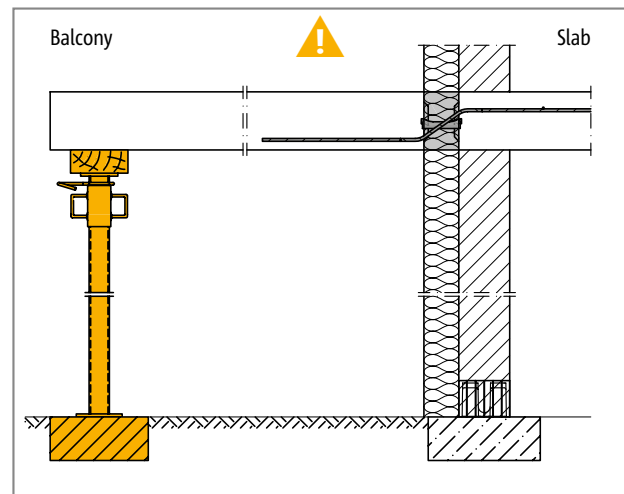
### **i** Information about on-site reinforcement

- The required suspension reinforcement and the on-site slab reinforcement are not shown here.
- On-site reinforcement analogous to Schöck Isokorb® type QXT see p. 126

## Type of bearing: supported



Schöck Isokorb® type QXT: Continuous support required



Schöck Isokorb® type QXT: Continuous support required

### **i** Supported balcony

The Schöck Isokorb® types QXT, QXT+QXT and QZXT are developed for supported balconies. They transmit exclusively shear forces, no bending moments.

### **!** Warning - omitting the columns

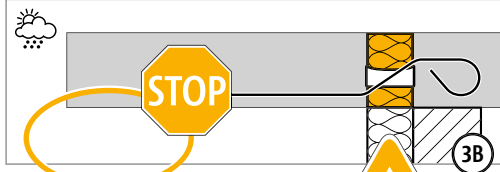
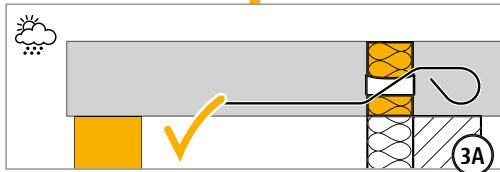
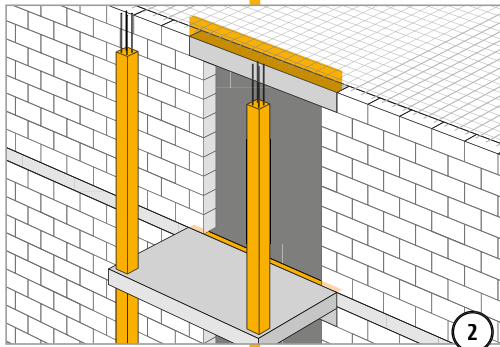
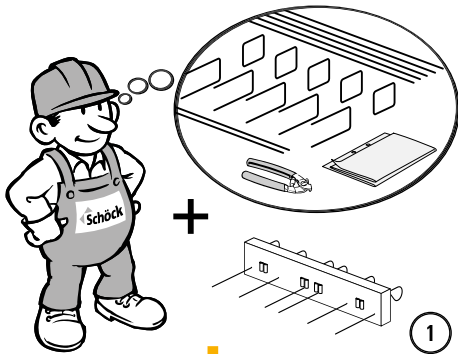
- ▶ The balcony will collapse if not supported.
- ▶ At all stages of construction, the balcony must be supported with statically suitable columns or supports.
- ▶ Even when completed, the balcony must be supported with statically suitable columns or supports.
- ▶ A removal of temporary support is permitted only after installation of the final support.

# Installation instructions

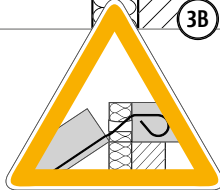


QXT

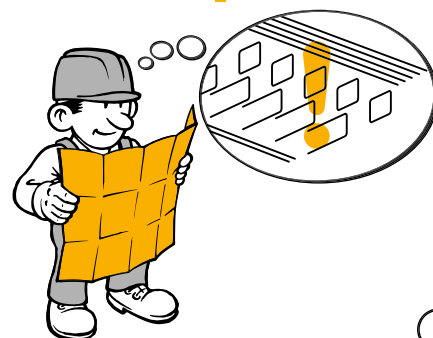
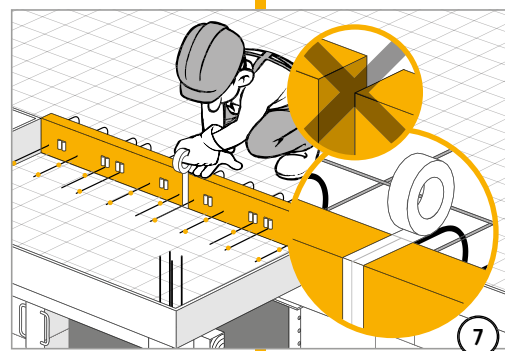
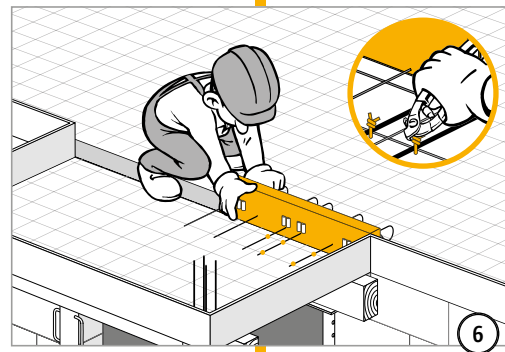
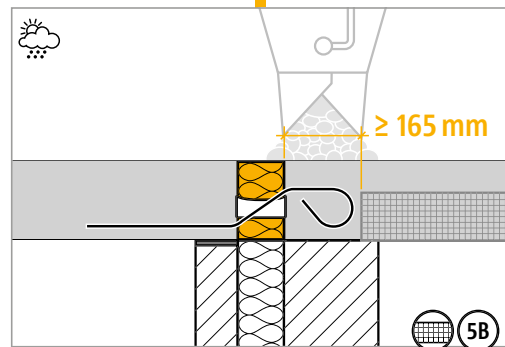
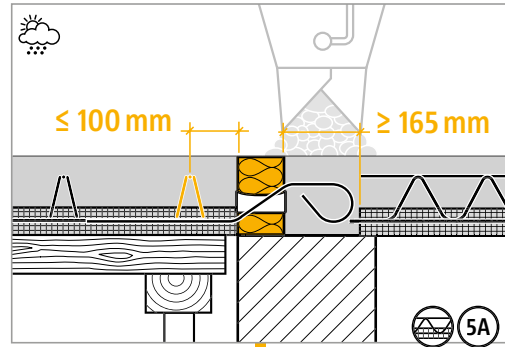
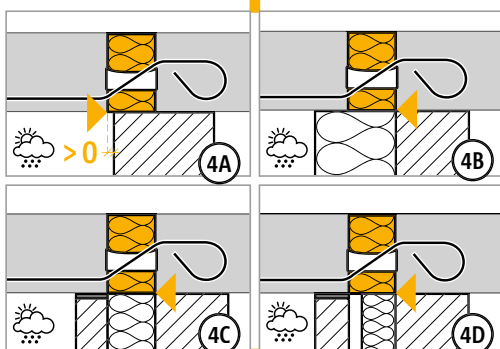
Reinforced concrete/Reinforced concrete



**⚠ WARNING**

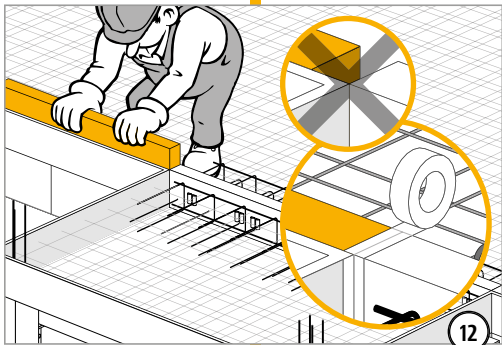
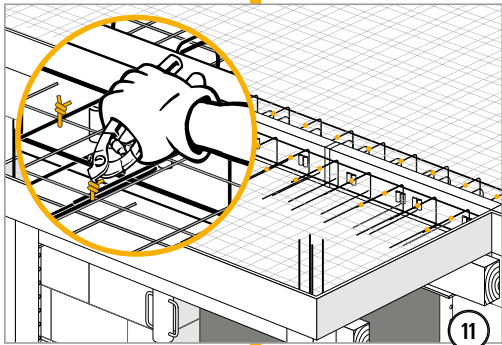
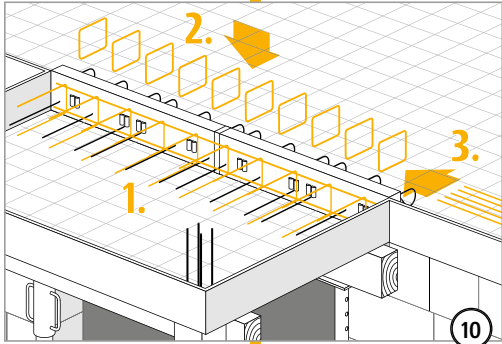
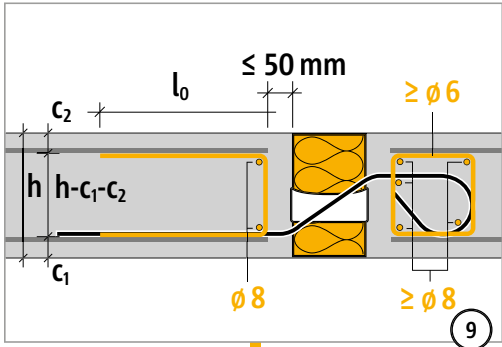


**Without support the balcony will collapse!**  
The balcony must always be supported statically designed. Remove temporary support only after installation of final support.





# Installation instructions



QXT

Reinforced concrete/Reinforced concrete

## ✓ Check list

- Is the Schöck Isokorb® type matching the static system selected? Type QXT counts as pure shear force connection (pinned connection).
- Is the balcony so planned that a continuous support is ensured in all stages of construction and in the final status?
- Have the loads on the Schöck Isokorb® connection been specified at design level?
- Has the cantilevered system length or the system support width been taken as a basis?
- Are the Schöck FEM guidelines taken into account with the calculation using FEM?
- Is the minimum slab thickness taken into consideration with Schöck Isokorb® types in fire protection configuration?
- Have the requirements for on-site reinforcement of connections been defined in each case?
- 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 explained and is the appropriate addendum entered in the Isokorb® type description in the implementation plans?
- Are existing horizontal loads e.g. from wind pressure taken into account? Are additional Schöck Isokorb® supplementary type HPXT required for this?
- With precast balconies are possibly necessary gaps for the front side transportation anchors and downpipes with internal drainage taken into account? Is the maximum centre distance of 300 mm for the Isokorb® bars observed?



QXT

Reinforced concrete/Reinforced concrete