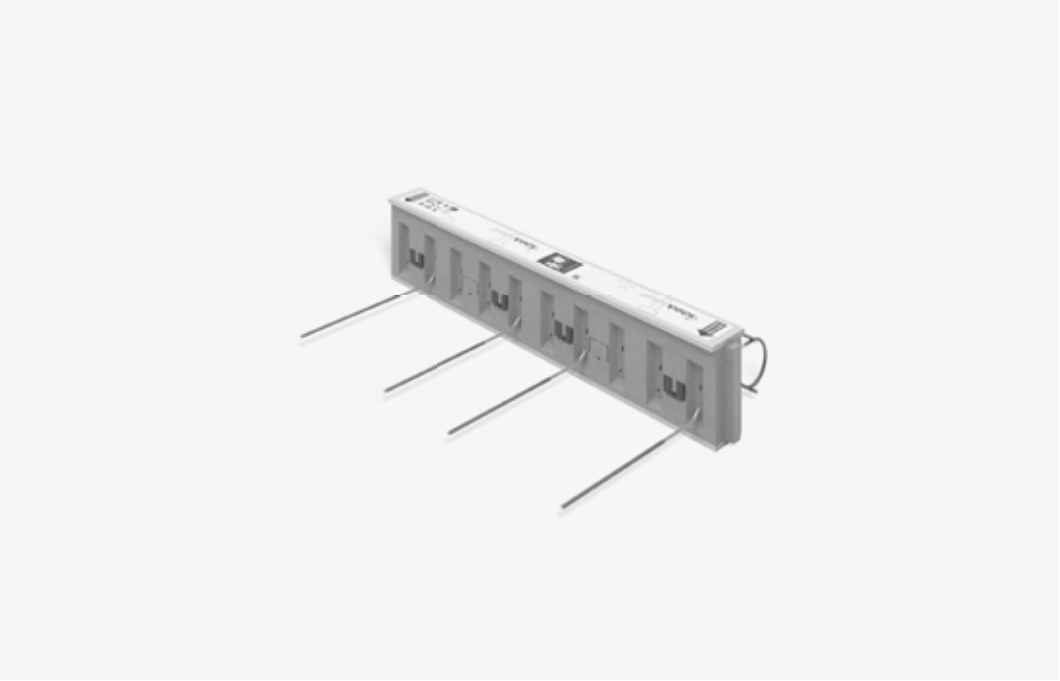
Schöck Isokorb® T type Q



Schöck Isokorb® T type Q
Suitable for supported balconies. It transfers positive shear forces.

Schöck Isokorb® T type Q-VV
Suitable for supported balconies. It transfers positive and negative shear forces.

Schöck Isokorb® T type Q-Z
Suitable for supported balconies with connection free of constraint forces. It transfers positive shear forces.

Element arrangement | Installation cross sections

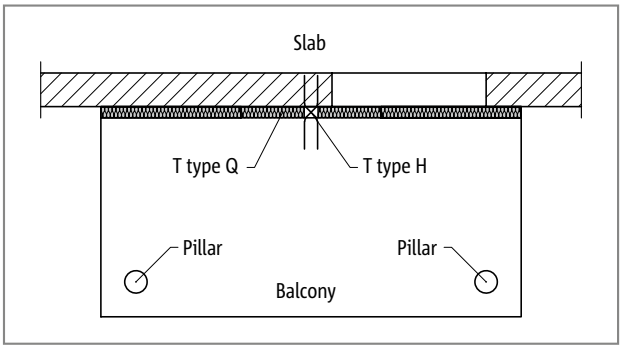


Fig. 115: Schöck Isokorb® type Q: Balcony with pillar support

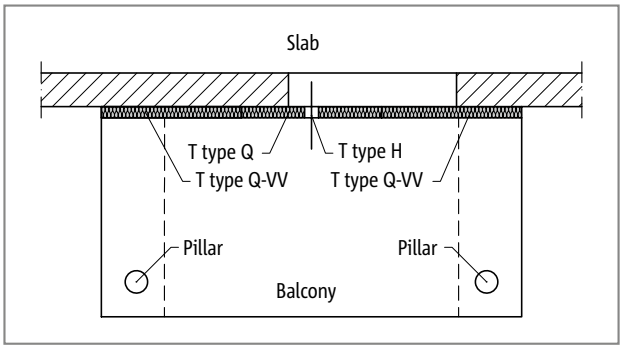


Fig. 116: Schöck Isokorb® T type Q, Q-VV: Supported balcony with various bearing stiffnesses; T type H (optional) with ordinary horizontal forcet

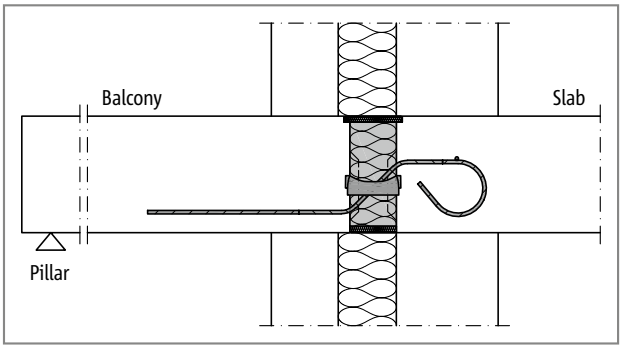


Fig. 117: Schöck Isokorb® T type Q: Connection with non-load-bearing cavity masonry (e.g. T type Q-V1 to T type Q-V5)

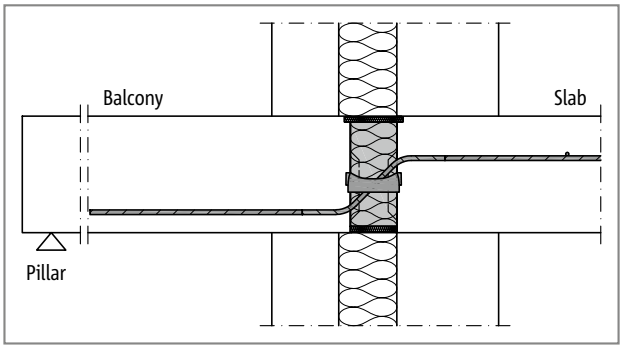


Fig. 118: Schöck Isokorb® T type Q: Connection with non-load-bearing cavity masonry (e.g. T type Q-V6 to T type Q-V10)

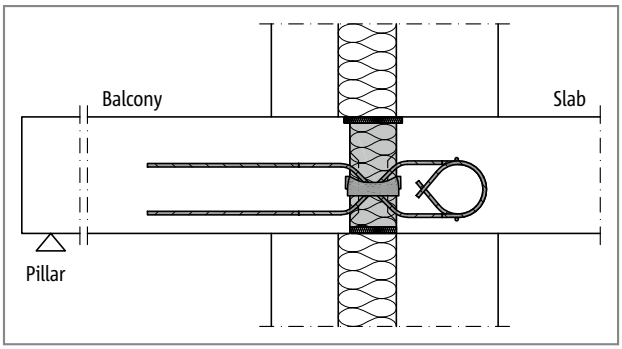


Fig. 119: Schöck Isokorb® T type Q-VV: Connection with non-load-bearing cavity masonry (e.g. T type Q-VV1 toT type Q-VV5)

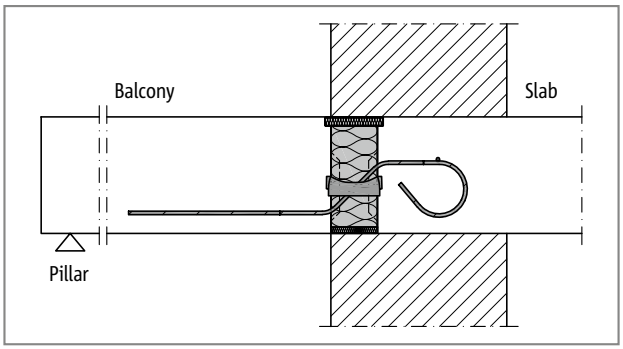


Fig. 120: Schöck Isokorb® T type Q: Connection with thermal insulating cavity masonry (e.g. T type Q-V1 to T Typ Q-V5)

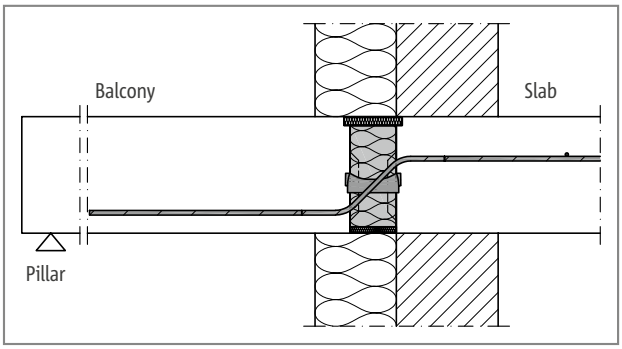


Fig. 121: Schöck Isokorb® T type Q: Connection with thermal insulation composite system (TICS) (e.g. T type Q-V6 to T Typ Q-V10)

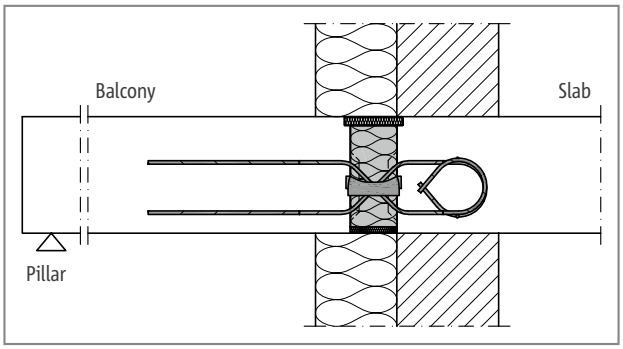


Fig. 122: Schöck Isokorb® T type Q-VV: Connection with thermal insulation composite system (TICS) (e.g. T type Q-VV1 to T Typ Q-VV5)

Installation cross sections

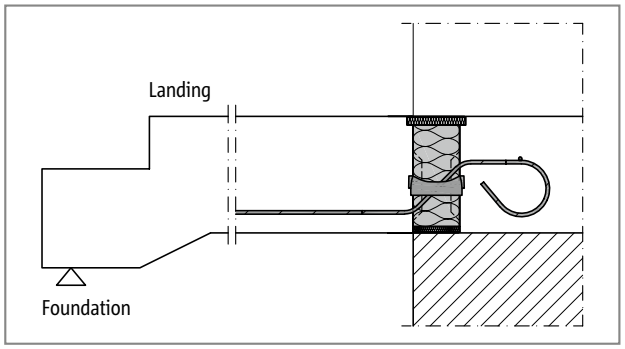


Fig. 123: Schöck Isokorb® T type Q: Connection stair flight with thermal insulating cavity masonry (e.g. T type Q-V1 to T Typ Q-V5)

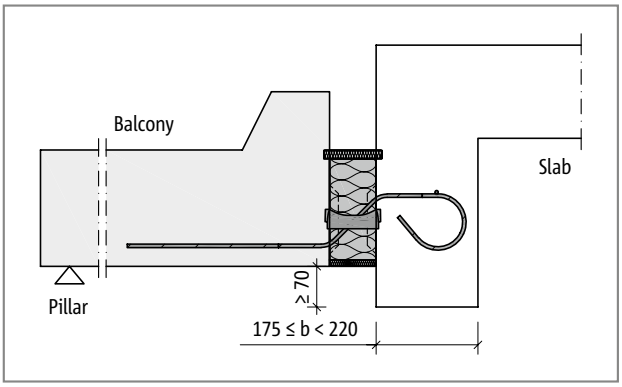


Fig. 124: Schöck Isokorb® T type Q: Installation situation "pre-cast balcony slab" (e.g. T type Q-V1 to Q-V5)

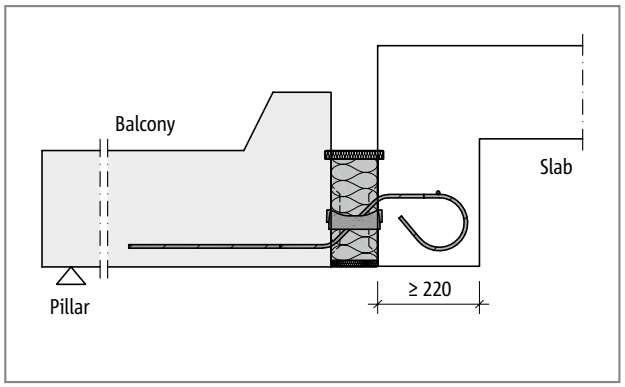


Fig. 125: Schöck Isokorb® T type Q: Installation situation "pre-cast balcony slab" (e.g. T type Q-V1 to Q-V5)

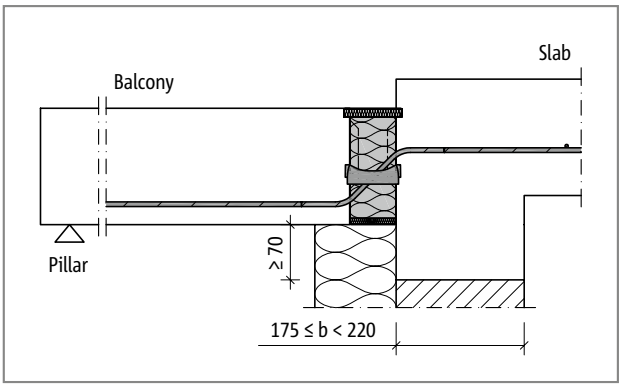


Fig. 126: Schöck Isokorb® T type Q: Installation situation with small height offset (e.g. T type Q-V6 to Q-V10)

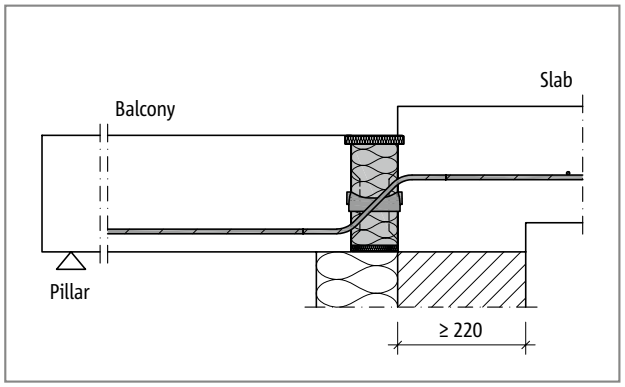


Fig. 127: Schöck Isokorb® T type Q: Installation situation with small height offset (e.g. T type Q-V6 to Q-V10)

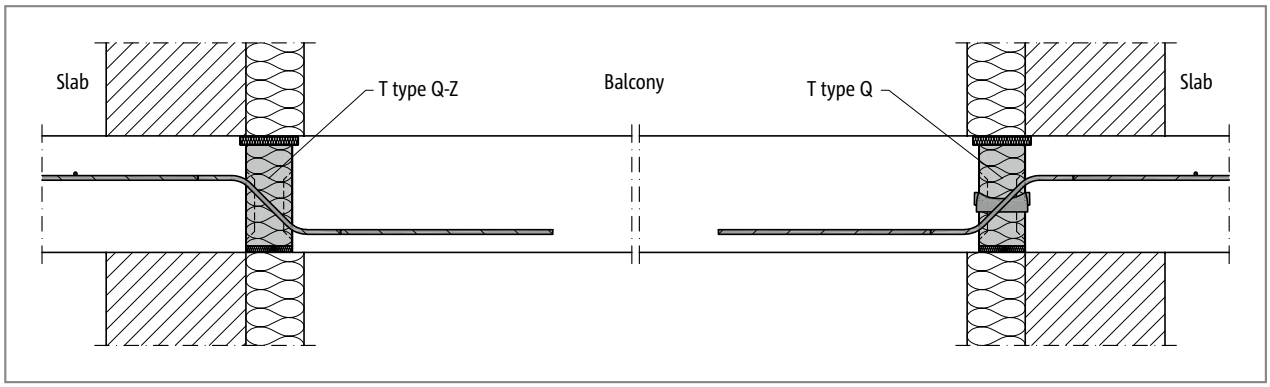


Fig. 128: Schöck Isokorb® T type Q-Z, Q: Application case one-way reinforced concrete slab

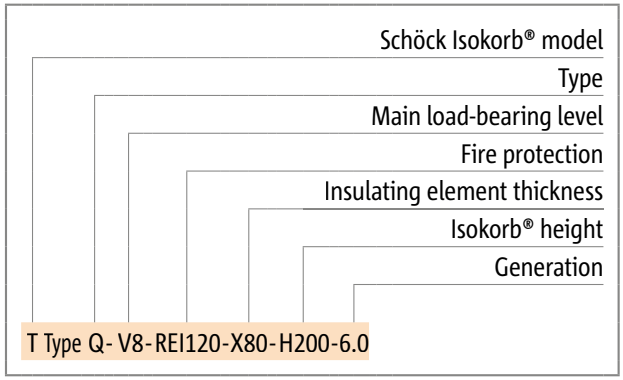
Product selection | Type designations | Special designs

Schöck Isokorb® T type Q, Q-VV, Q-Z variants

The configuration of the Schöck Isokorb® T types Q and Q-VV can be varied as follows:
T type Q: Shear force bar for positive shear force
T type Q-VV: Shear force bar for positive and negative shear force
T type Q-Z: Free of constraint forces without pressure bearing. shear force bar for positive shear force

- Main load capacity:
  V1 to V10
  VV1 to VV10
  main load capacities V1 to V5: Shear force bar, floor side bent, balcony side straight
  Main load-bearing level V6 to V10: Shear force bar on floor side straight, on balcony side straight
- Fire resistance class:
  REI120 (standard): Projection upper fire protection board, both sides 10 mm
- Concrete cover of the shear force bars:
  bottom: CV ≥ 30 mm
  top: CV ≥ 24 mm (depending on height of the shear force bars)
- Insulating element thickness:
  X80 = 80 mm
- Isokorb® height:
  H = H_{min} up to 250 mm (note minimum slab height depending on load bearing capacity and fire protection)
- Generation:
  6.0

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.
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.

C25/30 design

Schöck Isokorb® T type Q	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
Design values with	$v_{Rd,z}$ [kN/m]									
Concrete C25/30	34.8	43.5	52.2	69.5	86.9	92.5	112.1	134.5	173.9	208.6
Isokorb® length [mm]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Shear force bars	4 ⌀ 6	5 ⌀ 6	6 ⌀ 6	8 ⌀ 6	10 ⌀ 6	6 ⌀ 8	5 ⌀ 10	6 ⌀ 10	5 ⌀ 12	6 ⌀ 12
Pressure bearing (piece)	4	4	4	4	4	4	4	4	6	6
H_{min} width REI120 [mm]	160	160	160	160	160	170	180	180	190	190

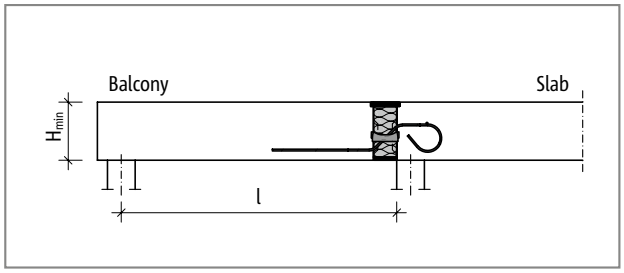


Fig. 129: Schöck Isokorb® T type Q: Static system (T type Q-V1 to Q-V5)

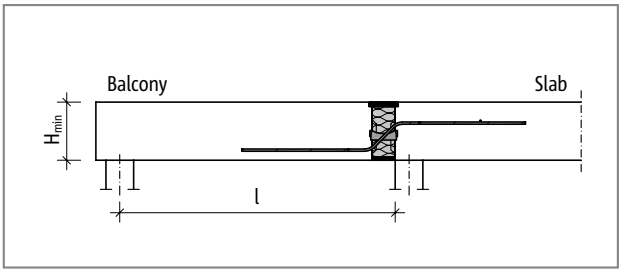


Fig. 130: Schöck Isokorb® T type Q: Static system (T type Q-V6 to Q-V10)

Schöck Isokorb® T type Q-Z	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
Design values with	$v_{Rd,z}$ [kN/m]									
Concrete C25/30	34.8	43.5	52.2	69.5	86.9	92.5	112.1	134.5	173.9	208.6
Isokorb® length [mm]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Shear force bars	4 ⌀ 6	5 ⌀ 6	6 ⌀ 6	8 ⌀ 6	10 ⌀ 6	6 ⌀ 8	5 ⌀ 10	6 ⌀ 10	5 ⌀ 12	6 ⌀ 12
Pressure bearing (piece)	-	-	-	-	-	-	-	-	-	-
H_{min} width REI120 [mm]	160	160	160	160	160	170	180	180	190	190

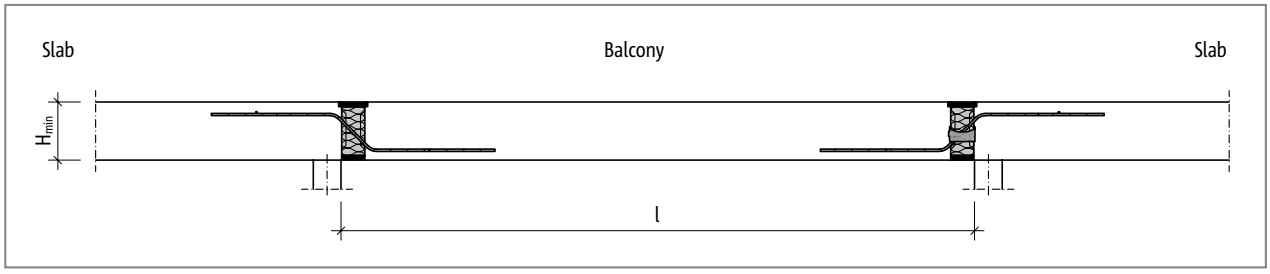


Fig. 131: Schöck Isokorb® T type Q-Z, Q: Static system (T type Q-Z-V6 to Q-Z-10, Q-V6 to Q-V10)

C25/30 design

Schöck Isokorb® T type Q	VV1	VV2	VV3	VV4	VV5
Design values with	$v_{Rd,z}$ [kN/m]				
Concrete C25/30	±34.8	±43.5	±52.2	±69.5	±86.9
Isokorb® length [mm]	1000	1000	1000	1000	1000
Shear force bars	2 × 4 ⌀ 6	2 × 5 ⌀ 6	2 × 6 ⌀ 6	2 × 8 ⌀ 6	2 × 10 ⌀ 6
Pressure bearing (piece)	4	4	4	4	4
H_{min} width REI120 [mm]	160	160	160	160	160

Schöck Isokorb® T type Q	VV6	VV7	VV8	VV9	VV10
Design values with	$v_{Rd,z}$ [kN/m]				
Concrete C25/30	±92.5	±112.1	±134.5	±173.9	±208.6
Isokorb® length [mm]	1000	1000	1000	1000	1000
Shear force bars	2 × 6 ⌀ 8	2 × 5 ⌀ 10	2 × 6 ⌀ 10	2 × 5 ⌀ 12	2 × 6 ⌀ 12
Pressure bearing (piece)	4	4	4	6	6
H_{min} width REI120 [mm]	170	180	180	200	200

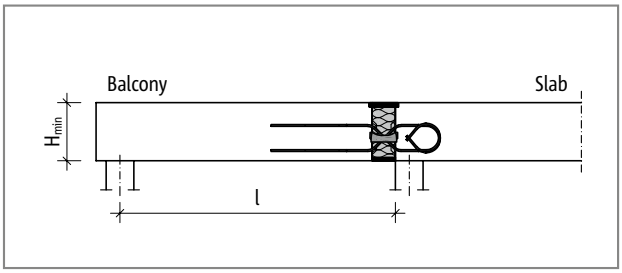


Fig. 132: Schöck Isokorb® T type Q-VV: Static system (T type Q-VV1 to Q-VV5)

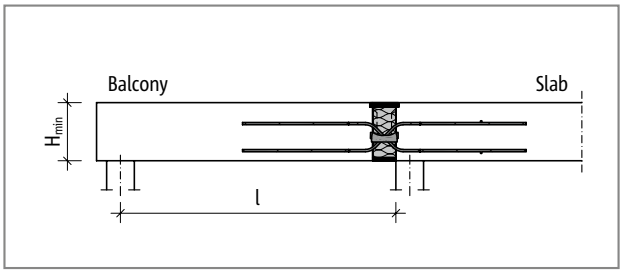


Fig. 133: Schöck Isokorb® T type Q-VV: Static system (T type Q-VV6 to Q-VV10)

Notes on design

- A structural analysisis to be produced for the reinforced concrete structural elements adjacent on both sides of the Schöck Isokorb®. With a connection with Schöck Isokorb® T type Q a freely rotatable bearing (moment hinge) is to be assumed as static system.
- For the transfer of ordinary horizontal forces additional Schöck Isokorb® type H (see page 125) are required.
- With horizontal tension forces at right angles to the outer wall, which are greater than the existing shear forces, the Schöck Isokorb® type H is additionally to be arranged punctually.
- Due to the excentric force application of the Schöck Isokorb® type Q and type Q-VV an offset moment is generated at the adjacent slab edges. 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 resulting from excentric connection

Moments from excentric connection are to be taken into account for the design of the connection reinforcement on both sides of the shear force transferring Schöck Isokorb® T types Q and Q-VV. These moments are respectively to be overlaid with the moments from the ordinary loading, if they have the same sign.
The following table values ΔM_{Ed} have been calculated for 100% utilisation of v_{Rd}.

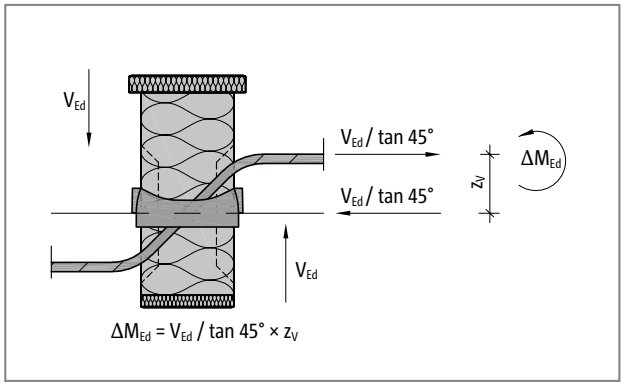


Fig. 134: Schöck Isokorb® T type Q: Moments resulting from eccentric connection

Schöck Isokorb® T type Q	V1, VV1	V2, VV2	V3, VV3	V4, VV4	V5, VV5
Design values with	Δ M_{Ed} [kNm/Element]				
Concrete C25/30	1.5	1.9	2.3	3.1	3.8

Schöck Isokorb® T type Q	V6, VV6	V7, VV7	V8, VV8	V9, VV9	V10, VV10
Design values with	Δ M_{Ed} [kNm/Element]				
Concrete C25/30	4.4	5.8	7.0	10.1	12.1

Expansion joint spacing

Maximum expansion joint spacing

If the length of the structural component exceeds the maximum expansion joint spacing e, then 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. For fixed points such as corners of balconies, parapets and balustrades or when using the Schöck Isokorb® T type H, half the maximum expansion joint spacing e/2 applies out from the fixed point.
The shear force transmission in the expansion joint can be ensured using a longitudinally displaceable shear force dowel, e.g. Schöck Dorn.

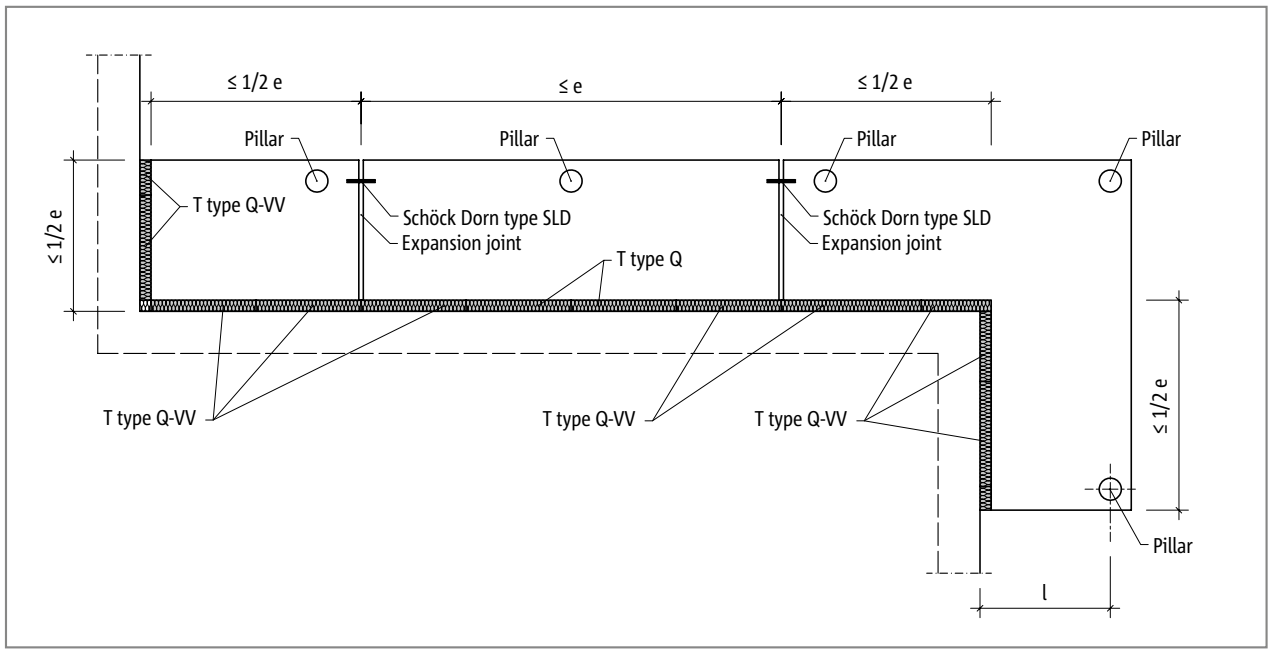


Fig. 135: Schöck Isokorb® T type Q, Q-VV: Expansion joint layout

Schöck Isokorb® T type Q, Q-Z		V1 - V6 VV1 - VV6	V7 - V8 VV7 - VV8	V9 - V10 VV9 - VV10
Maximum expansion joint spacing		e [m]		
Insulating element thickness [mm]	80	13.5	13.0	11.7

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

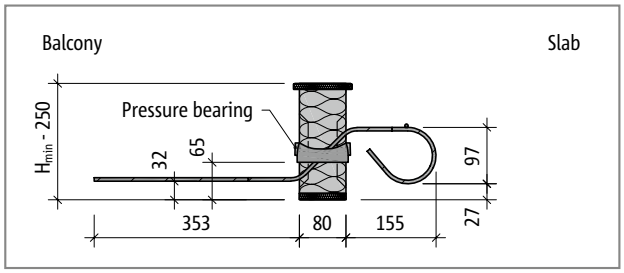


Fig. 136: Schöck Isokorb® T type Q-V1 to Q-V5: Product section

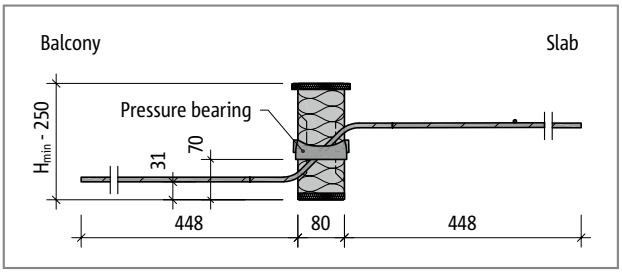


Fig. 137: Schöck Isokorb® T type Q-V6: Product section

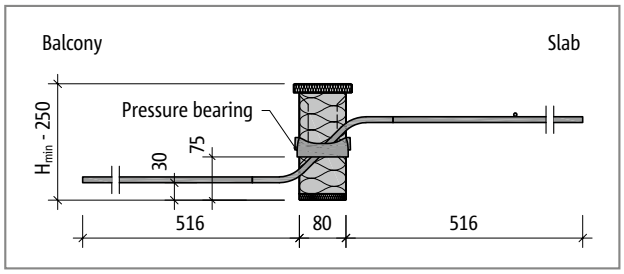


Fig. 138: Schöck Isokorb® T type Q-V7 for Q-V8: Product section

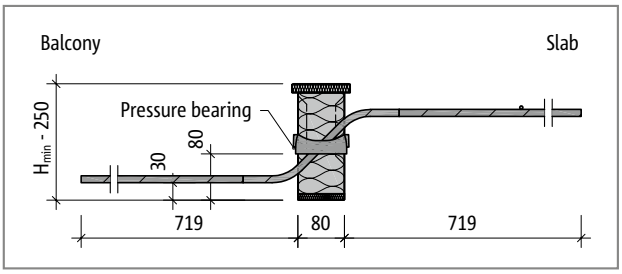


Fig. 139: Schöck Isokorb® T type Q-V9 for Q-V10: Product section

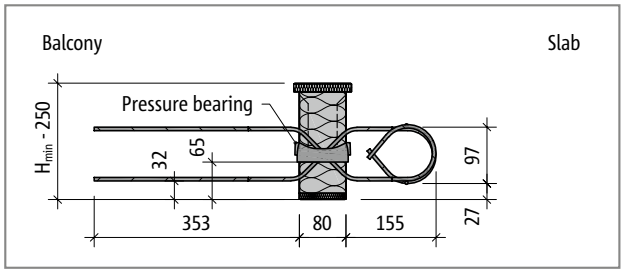


Fig. 140: Schöck Isokorb® T type Q-VV1 up to Q-VV5: Product section

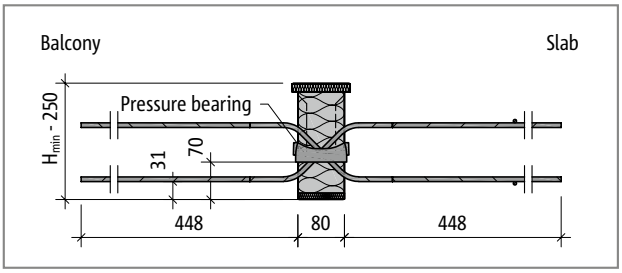


Fig. 141: Schöck Isokorb® T type Q-VV6: Product section

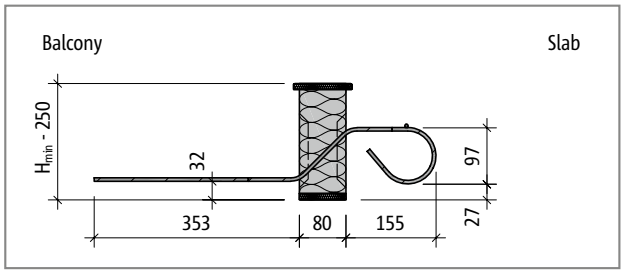


Fig. 142: Schöck Isokorb® T type Q-Z-V1 to Q-Z-V5: Product section

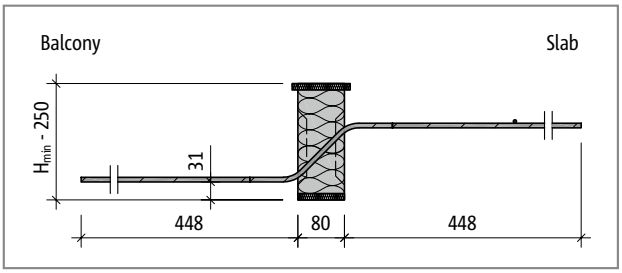


Fig. 143: Schöck Isokorb® T type Q-Z-V6: Product section

Product description

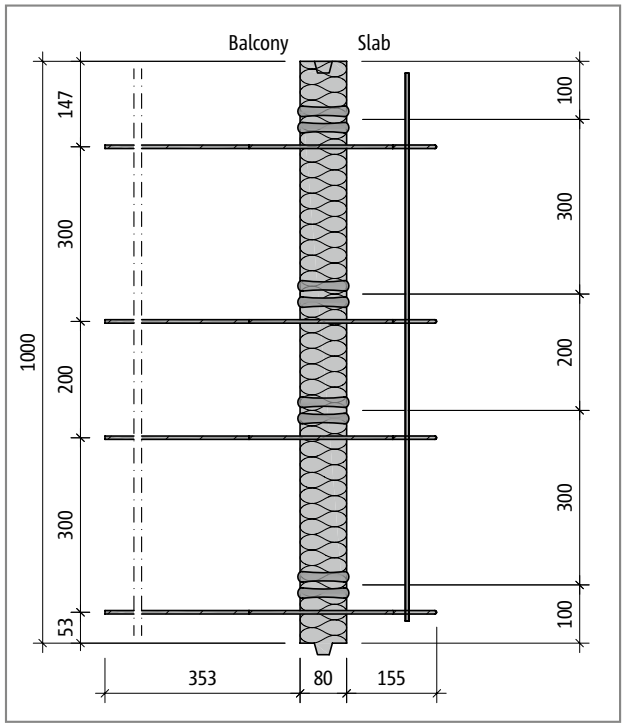


Fig. 144: Schöck Isokorb® T type Q-V1: Product layout

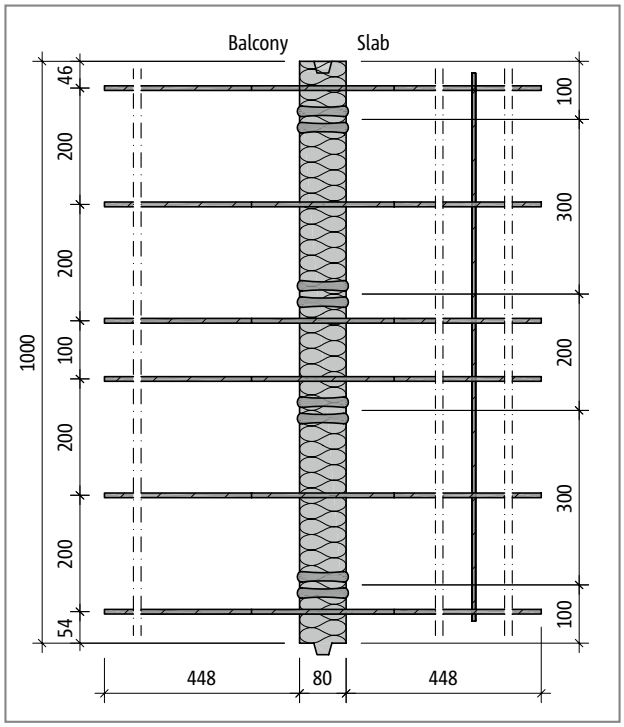


Fig. 145: Schöck Isokorb® T type Q-V6: Product layout

Product information

- Download further product plan views and cross-sections at www.schoeck.co.uk/download
- Note min. height H_{min} Schöck Isokorb® T type Q, Q-VV, Q-Z.

On-site reinforcement

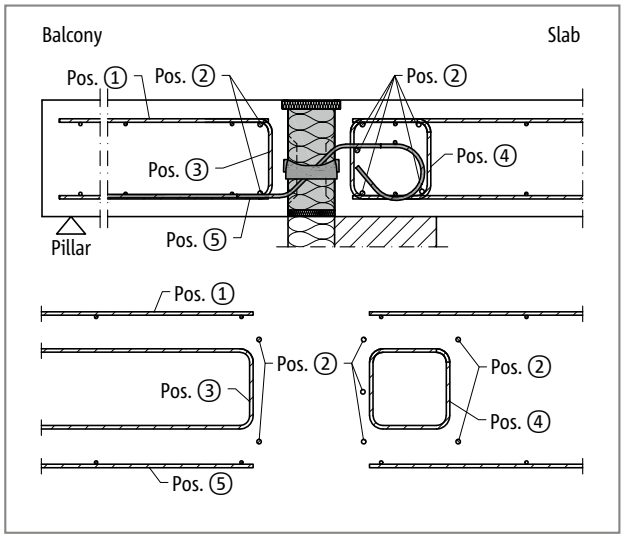


Fig. 146: Schöck Isokorb® T type Q-V1 up to Q-V5: On-site reinforcement

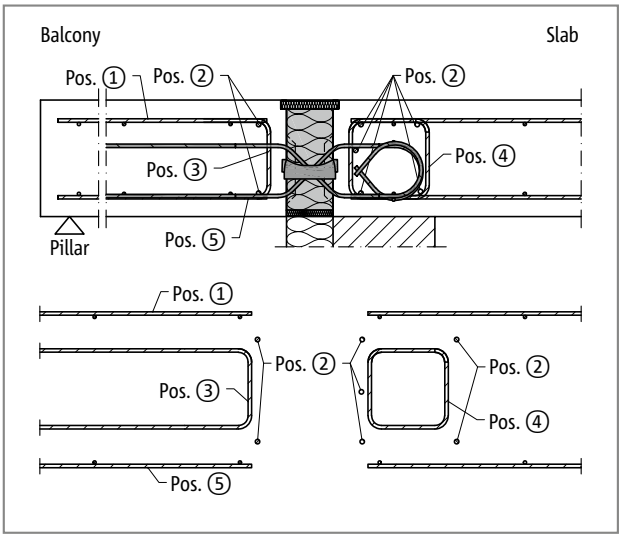


Fig. 147: Schöck Isokorb® T type Q-VV1 up to Q-VV5: On-site reinforcement

The reinforcement in 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® T type Q, Q-Z		V1, VV1	V2, VV2	V3, VV3	V4, VV4	V5, VV5
On-site reinforcement	Location	Concrete strength class ≥ C25/30				
Pos. 1 Lapping reinforcement						
Pos. 1	Balcony side	acc. to the specifications of the structural engineer				
Pos. 2 Steel bars along the insulation joint						
Pos. 2	Balcony side	2 • H8	2 • H8	2 • H8	2 • H8	2 • H8
Pos. 2	Floor side	5 • H8	5 • H8	5 • H8	5 • H8	5 • H8
Pos. 3 Stirrup						
Pos. 3 [mm²/m]	Balcony side	80	100	120	160	200
Pos. 4 Closed stirrup (edge beam according to Z-15.7-240)						
Pos. 4 [mm²/m]	Floor side	141	141	141	141	141
Pos. 4	Floor side	H8@200	H8@200	H8@200	H8@200	H8@200
Pos. 5 Lapping reinforcement						
Pos. 5	Balcony side	necessary in the tension zone, as specified by the structural engineer				
Pos. 6 Side reinforcement at the free edge						
Pos. 6		Edging as per BS EN 1992-1-1 (EC2), 9.3.1.4 (not pictured)				

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 side reinforcement Pos. 6 should be selected as low as possible so that it can be arranged between top and bottom reinforcement position.
- The indicative minimum concrete strength class of the external structural component is C32/40.

On-site reinforcement

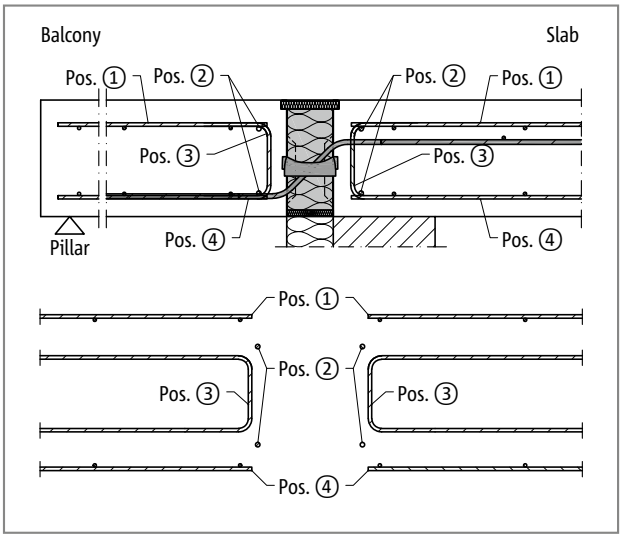


Fig. 148: Schöck Isokorb® T type Q-V6 up to Q-V10: On-site reinforcement

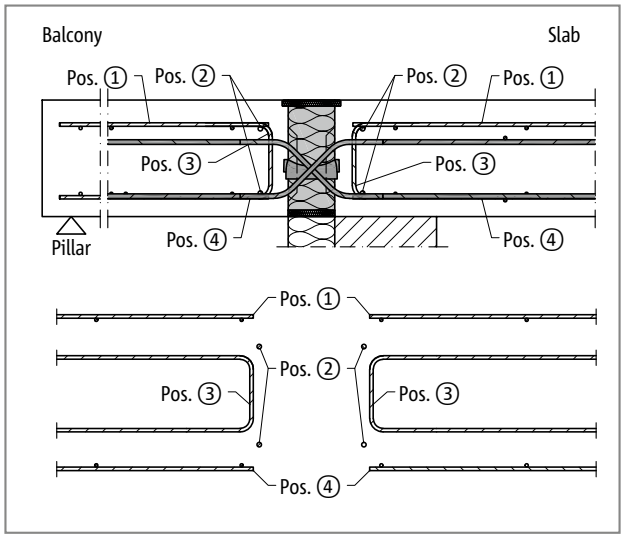


Fig. 149: Schöck Isokorb® T type Q-VV6 up to Q-VV10: On-site reinforcement

The reinforcement in 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® T type Q, Q-Z		V6, VV6	V7, VV7	V8, VV8	V9, VV9	V10, VV10
On-site reinforcement	**Location**	**Concrete strength class ≥ C25/30**				
Pos. 1 Lapping reinforcement						
Pos. 1	**Balcony/floor side**	acc. to the specifications of the structural engineer				
Pos. 2 Steel bars along the insulation joint						
Pos. 2	**Balcony/floor side**	2 × 2 ⌀ 8	2 × 2 ⌀ 8	2 × 2 ⌀ 8	2 × 2 ⌀ 8	2 × 2 ⌀ 8
Pos. 3 Stirrup						
Pos. 3 [mm²/m]	**Balcony/floor side**	213	258	309	400	480
Pos. 4 Lapping reinforcement						
Pos. 4	**Balcony/floor side**	necessary in the tension zone, as specified by the structural engineer				
Pos. 5 Side reinforcement at the free edge						
Pos. 5		Edging as per BS EN 1992-1-1 (EC2), 9.3.1.4 (not pictured)				

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 side reinforcement Pos. 5 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

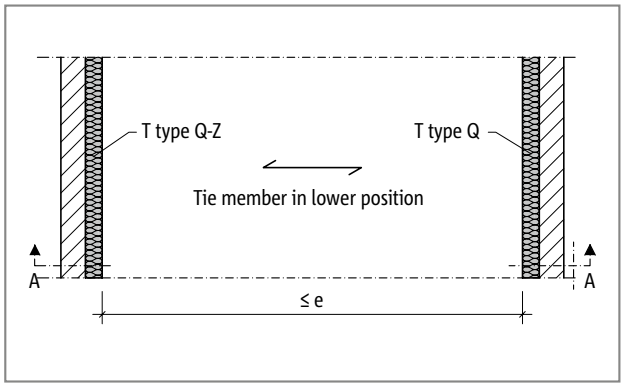


Fig. 150: Schöck Isokorb® T type Q-Z, Q: One-way reinforced reinforced concrete slab

A T type Q-Z without pressure bearing is to be arranged on one side for support free of constraint forces. A T type Q with pressure bearing is then required on the opposite side. In order to maintain the balance of forces a tie bar, which laps with the shear force transferring Isokorb® bars, is to reinforce between T type Q-Z and T type Q.

Expansion joints

- Expansion joint spacing e see p. 101

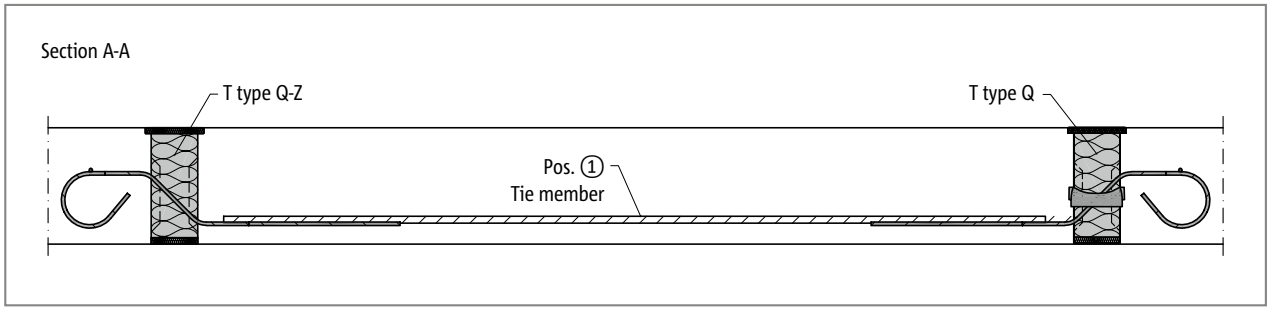


Fig. 151: Schöck Isokorb® T type Q-Z-V1 to Q-Z-V5, Q-V1 to Q-V5: Section A-A; One-way reinforced concrete slab

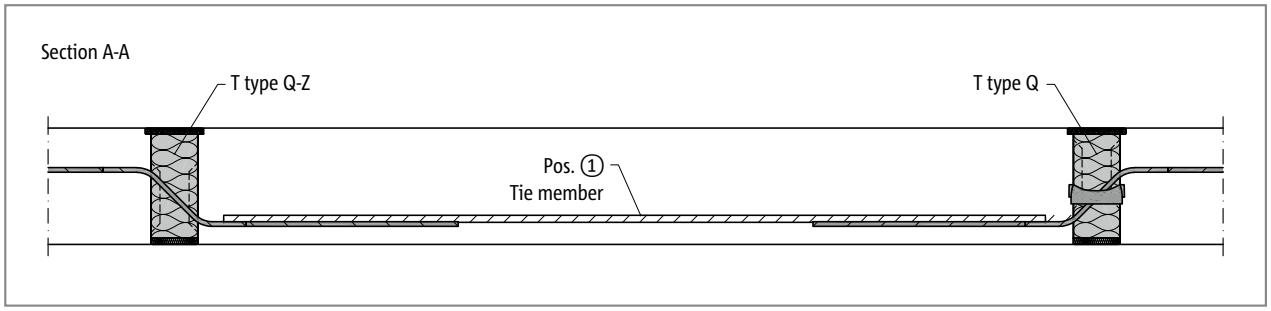


Fig. 152: Schöck Isokorb® T type Q-Z-V6 to Q-Z-V10, Q-V6 to Q-V10: Section A-A; One-way reinforced concrete slab

Schöck Isokorb® T type Q, Q-Z	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
On-site reinforcement	Concrete strength class ≥ C25/30									
Pos. 1 Tie										
Pos. 1	4 • H8	5 • H8	6 • H8	8 • H8	10 • H8	6 • H8	5 • H10	6 • H10	5 • H12	6 • H12

Information about on-site reinforcement

- The required suspension reinforcement and the on-site slab reinforcement are not shown here.
- On-site reinforcement analogue to Schöck Isokorb® T type Q see p. 104

Type of bearing: supported | Installation instructions

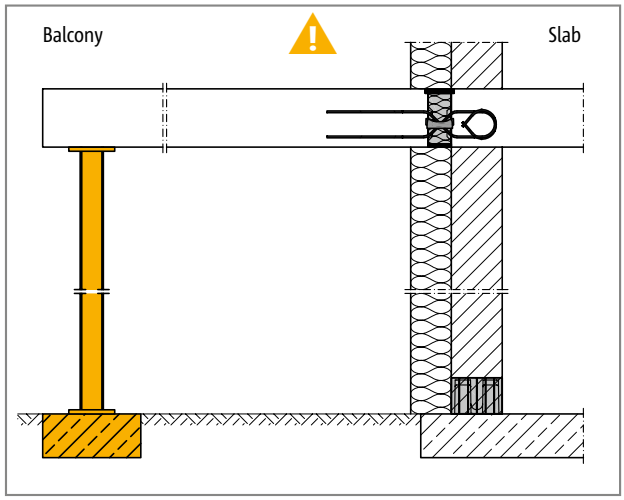


Fig. 153: Schöck Isokorb® T type Q-VV: Support required at all times

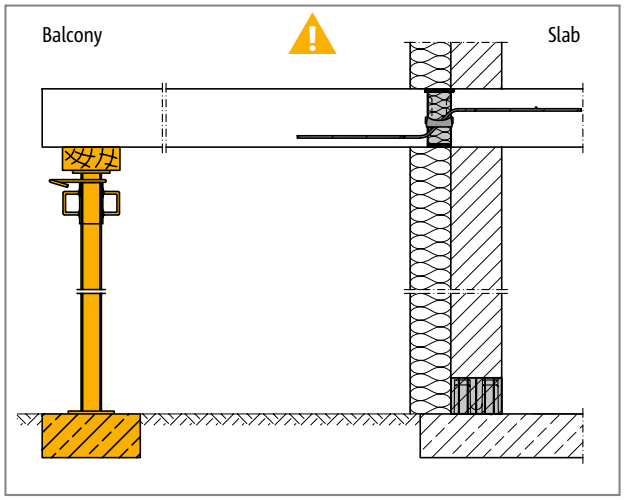


Fig. 154: Schöck Isokorb® T type Q: Support required at all times

Supported balcony

The Schöck Isokorb T type Q, Q-W and Q-Z is developed for supported balconies. It transfers exclusively shear forces, no bending moments.

Warning - omitting the pillars

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

Installation manual

- Installation manual see Technical Information Schöck Isokorb® XT for reinforced concrete structures.

Check list

- ☐ Has the right type of Schöck Isokorb® been selected for the static system? T Type Q is a connection purely for shear force (moment joint).
- ☐ 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?
- ☐ With the selection of the design table is the relevant concrete cover taken into account?
- ☐ 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?
- ☐ Have existing horizontal loads e.g. from wind pressure been taken into account as planned? Are additional Schöck Isokorb® T type H 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?
- ☐ With 2- or 3-sided support has a Schöck Isokorb® (possibly T type Q-Z, T type Q-PZ) been selected for a connection free of constraint forces?