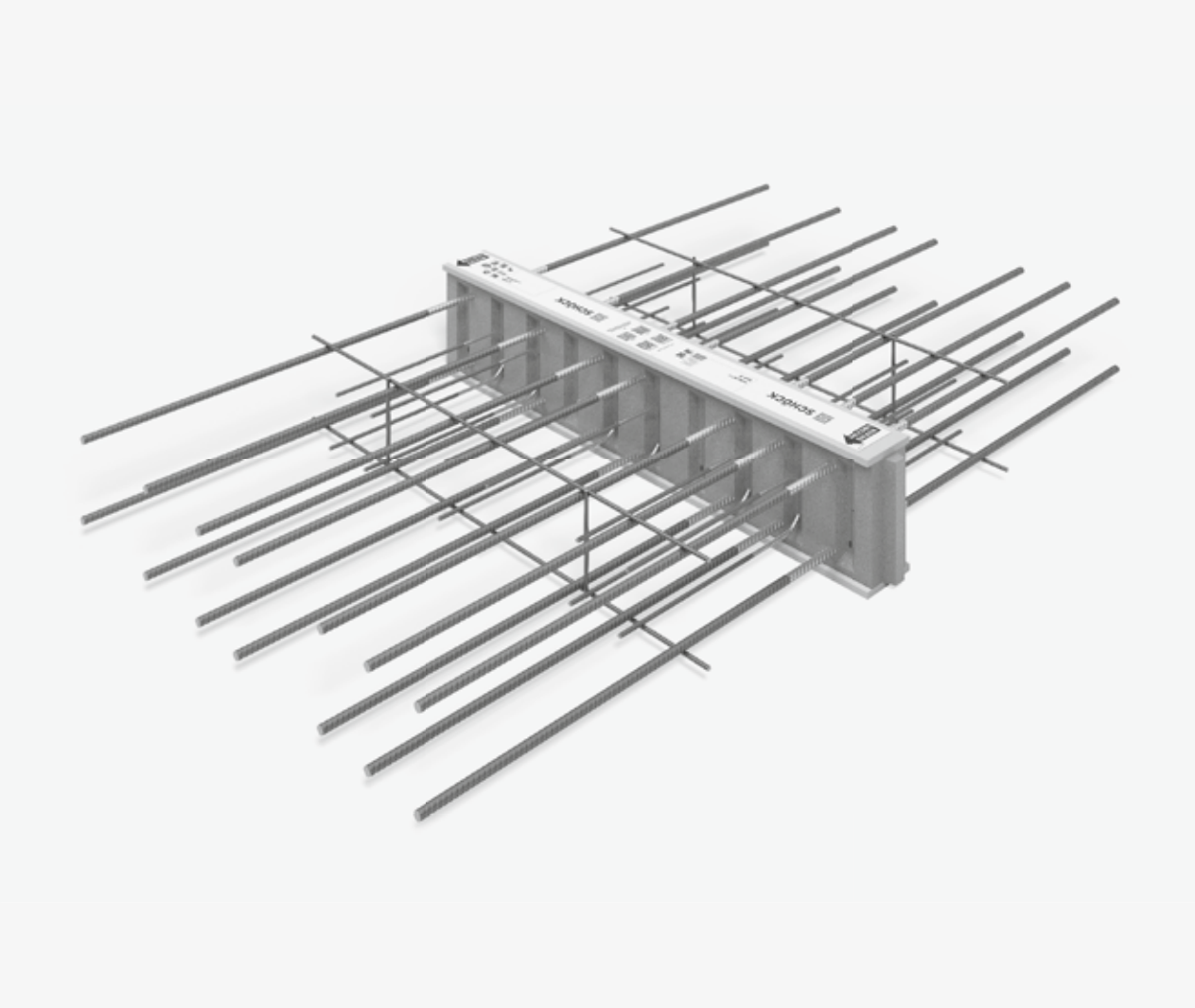
Schöck Isokorb® T type D



Schöck Isokorb® T type D
Load-bearing thermal insulation element for continuous flooring. The element transfers moments and shear forces.

Element arrangement | Installation cross sections

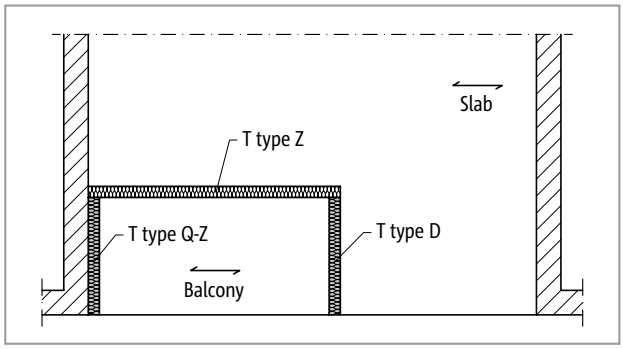


Fig. 246: Schöck Isokorb® T type D, QZ; Z: One-way spanning

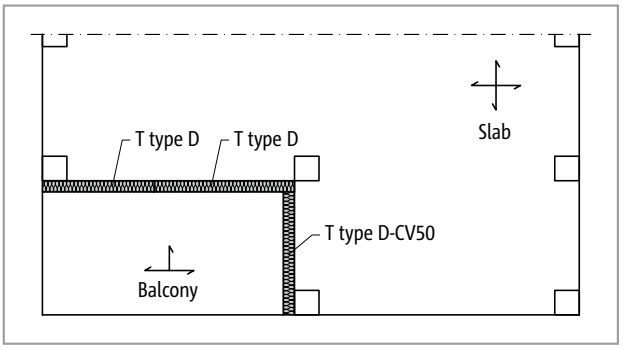


Fig. 247: Schöck Isokorb® T type D: Two-way spanning

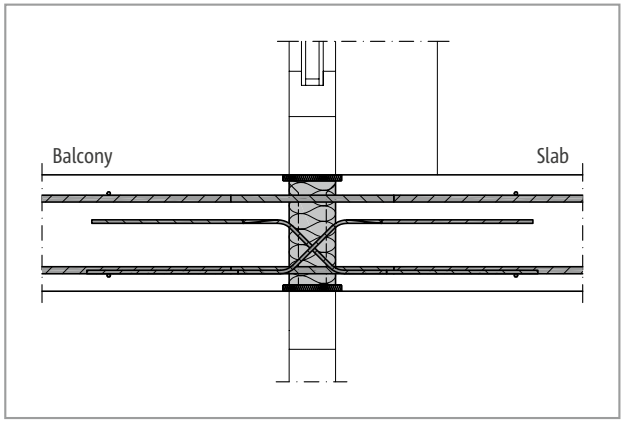


Fig. 248: Schöck Isokorb® T type D: Installation section; one-way spanning

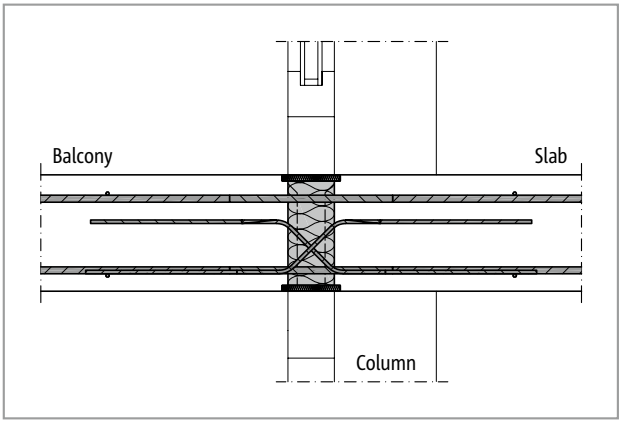


Fig. 249: Schöck Isokorb® T type D: Installation section; one-way spanning

Element arrangement

- When connecting across a corner with Schöck Isokorb® T type D, a T type D-CV50 (2nd layer) is required in one axial direction. This results in a minimum slab thickness of 200 mm.

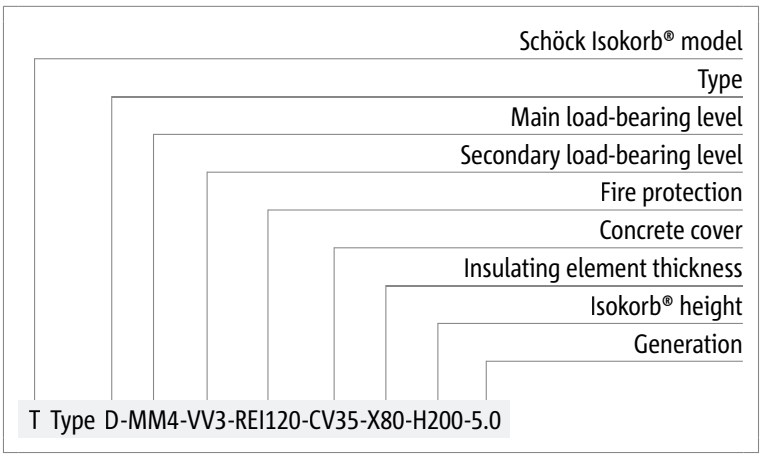
Product selection | Type designations | Special designs

Schöck Isokorb® T type D variants

The configuration of the Schöck Isokorb® T type D can be varied as follows:

- Main load-bearing level:
  MM2 to MM5
  MM1 is available upon request
- Secondary load-bearing level:
  VV1 to VV3
- Fire resistance class:
  REI120 (standard): Top and bottom fire protection projecting by 10 mm on both sides
- Concrete cover of the tension bars:
  CV30: top CV = 30 mm, bottom CV = 30 mm
  CV35: top CV = 35 mm, bottom CV = 30 mm
  CV50: top CV = 50 mm, bottom CV = 50 mm
- Insulating element thickness:
  X80 = 80 mm
- Isokorb® height:
  H = H_{min} to 250 mm (H_{min} depends on the concrete cover and shear force load-bearing level, see page 156)
- Generation:
  5.0

Type designation 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® T type D				MM1			MM2			MM3		
				VV1	VV2	VV3	VV1	VV2	VV3	VV1	VV2	VV3
Design values with	Concrete cover CV [mm]			Concrete strength class ≥ C25/30								
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]								
Isokorb® height H [mm]		160		±14.9	±14.2	-	±18.2	-	-	±26.4	-	-
	160		200	±15.8	±15.0	-	±19.3	-	-	±28.0	-	-
		170		±16.7	±15.9	±14.0	±20.4	±18.6	-	±29.6	±27.7	-
	170		210	±17.6	±16.7	±14.7	±21.5	±19.6	-	±31.2	±29.2	-
		180		±18.5	±17.6	±15.5	±22.6	±20.5	±18.3	±32.8	±30.7	±28.4
	180		220	±19.4	±18.4	±16.2	±23.7	±21.5	±19.2	±34.4	±32.2	±29.8
		190		±20.3	±19.3	±17.0	±24.8	±22.5	±20.1	±35.9	±33.7	±31.2
	190		230	±21.2	±20.1	±17.7	±25.9	±23.5	±21.0	±37.5	±35.1	±32.6
		200		±22.1	±21.0	±18.5	±27.0	±24.5	±21.9	±39.1	±36.6	±34.0
	200		240	±23.0	±21.8	±19.2	±28.1	±25.5	±22.8	±40.7	±38.1	±35.4
		210		±23.8	±22.7	±20.0	±29.2	±26.5	±23.7	±42.3	±39.6	±36.7
	210		250	±24.7	±23.5	±20.7	±30.3	±27.5	±24.5	±43.9	±41.1	±38.1
		220		±25.6	±24.4	±21.5	±31.4	±28.5	±25.4	±45.5	±42.6	±39.5
	220			±26.5	±25.3	±22.2	±32.5	±29.5	±26.3	±47.1	±44.1	±40.9
		230		±27.4	±26.1	±23.0	±33.6	±30.5	±27.2	±48.7	±45.6	±42.3
	230			±28.3	±27.0	±23.8	±34.7	±31.5	±28.1	±50.3	±47.1	±43.6
		240		±29.2	±27.8	±24.5	±35.8	±32.5	±29.0	±51.9	±48.5	±45.0
	240			±30.1	±28.7	±25.3	±36.9	±33.5	±29.9	±53.4	±50.0	±46.4
		250		±31.0	±29.5	±26.0	±38.0	±34.5	±30.8	±55.0	±51.5	±47.8
	250			±31.9	±30.4	±26.8	±39.1	±35.5	±31.7	±56.6	±53.0	±49.2
				$v_{Rd,z}$ [kN/m]								
Secondary load-bearing level		VV1/VV2/ VV3		±34.8	±52.2	±92.7	±52.2	±92.7	±136.0	±52.2	±92.7	±136.0

Schöck Isokorb® T type D	MM1			MM2			MM3		
	VV1	VV2	VV3	VV1	VV2	VV3	VV1	VV2	VV3
Placement with	Isokorb® length [mm]								
	1000			1000			1000		
Tension bars/compression members	2 × 4 ⌀ 12			2 × 5 ⌀ 12			2 × 7 ⌀ 12		
Shear force bars	2 × 4 ⌀ 6	2 × 6 ⌀ 6	2 × 6 ⌀ 8	2 × 6 ⌀ 6	2 × 6 ⌀ 8	2 × 6 ⌀ 10	2 × 6 ⌀ 6	2 × 6 ⌀ 8	2 × 6 ⌀ 10
H_{min} with CV30 [mm]	160	160	170	160	170	180	160	170	180
H_{min} with CV35 [mm]	160	160	170	160	170	180	160	170	180
H_{min} with CV50 [mm]	200	200	210	200	210	220	200	210	220

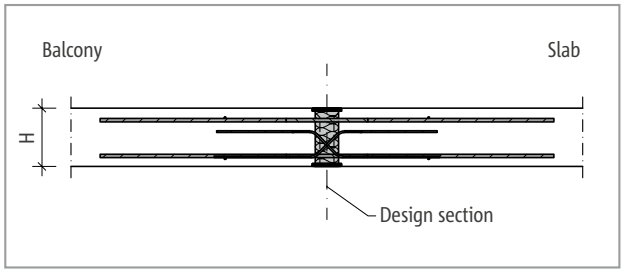


Fig. 250: Schöck Isokorb® T type D: Static system

C25/30 design

Schöck Isokorb® T type D				MM4			MM5		
				VV1	VV2	VV3	VV1	VV2	VV3
Design values with	Concrete cover CV [mm]			Concrete strength class ≥ C25/30					
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]					
Isokorb® height H [mm]		160		±38.6	-	-	±46.8	-	-
	160		200	±41.0	-	-	±49.6	-	-
		170		±43.3	±41.4	-	±52.5	±50.6	-
	170		210	±45.6	±43.6	-	±55.3	±53.3	-
		180		±48.0	±45.9	±43.6	±58.1	±56.0	±53.8
	180		220	±50.3	±48.1	±45.8	±60.9	±58.7	±56.4
		190		±52.6	±50.3	±47.9	±63.7	±61.4	±59.0
	190		230	±54.9	±52.6	±50.0	±66.6	±64.2	±61.6
		200		±57.3	±54.8	±52.1	±69.4	±66.9	±64.2
	200		240	±59.6	±57.0	±54.2	±72.2	±69.6	±66.8
		210		±61.9	±59.2	±56.4	±75.0	±72.3	±69.4
	210		250	±64.3	±61.5	±58.5	±77.8	±75.0	±72.0
		220		±66.6	±63.7	±60.6	±80.7	±77.8	±74.7
	220			±68.9	±65.9	±62.7	±83.5	±80.5	±77.3
		230		±71.2	±68.1	±64.8	±86.3	±83.2	±79.9
	230			±73.6	±70.4	±66.9	±89.1	±85.9	±82.5
		240		±75.9	±72.6	±69.1	±91.9	±88.6	±85.1
	240			±78.2	±74.8	±71.2	±94.8	±91.3	±87.7
		250		±80.6	±77.0	±73.3	±97.6	±94.1	±90.3
	250			±82.9	±79.3	±75.4	±100.4	±96.8	±92.9
				$v_{Rd,z}$ [kN/m]					
Secondary load-bearing level	VV1/VV2/VV3			±52.2	±92.7	±136.0	±52.2	±92.7	±136.0

Schöck Isokorb® T type D	MM4			MM5		
	VV1	VV2	VV3	VV1	VV2	VV3
Placement with	Isokorb® length [mm]					
	1000			1000		
Tension bars/compression members	2 × 10 ⌀ 12			2 × 12 ⌀ 12		
Shear force bars	2 × 6 ⌀ 6	2 × 6 ⌀ 8	2 × 6 ⌀ 10	2 × 6 ⌀ 6	2 × 6 ⌀ 8	2 × 6 ⌀ 10
H_{min} with CV30 [mm]	160	170	180	160	170	180
H_{min} with CV35 [mm]	160	170	180	160	170	180
H_{min} with CV50 [mm]	200	210	220	200	210	220

Notes on design

- 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®.
- A static verification is to be provided for the adjacent reinforced concrete structural component on both sides of the Schöck Isokorb®.
- 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 $\theta = 45°$ and $\alpha = 90°$ (slab load-bearing capacity).
- The indicative minimum concrete strength class of the external structural component is C32/40.
- The Schöck Isokorb® T type D transfers only bending moments perpendicular to the insulation body. The Schöck Isokorb® does not transfer torsional moments Therefore the arrangement of a Schöck Isokorb®T type D in in a point-supported slab without downstand beams is not sensible.

Deflection/Camber

Deflection

The deflection factors given in the table (tan α [%]) result alone from the deflection of the Schöck Isokorb® under 100% steel utilisation. They serve for the estimation of the required camber. The total arithmetic camber of the balcony slab formwork results from the calculation according to BS EN 1992-1-1 (EC2) and BS EN 1992-1-1/NA plus the deflection from Schöck Isokorb®. The camber of the balcony slab formwork to be given by the structural engineer/designer in the implementation plans (Basis: Calculated total deflection from cantilever slab + floor rotation angle + Schöck Isokorb®) should be so rounded that the scheduled drainage direction is maintained (round up: with drainage to the building facade, round down: with drainage towards the cantilever slab end).

Deflection (p) as a result of Schöck Isokorb®

$p = \tan\alpha \cdot l_k \cdot (m_{pd} / m_{Rd}) \cdot 10$ [mm]

Factors to be applied

$\tan\alpha$ = apply value from table

l_k = cantilever length [m]

m_{pd} = relevant bending moment [kNm/m] in the ultimate limit state for the determination of the p [mm] from Schöck Isokorb®.
The load combination to be applied for the deflection is determined by the structural engineer.
(Recommendation: Load combination for the determination of the camber p : determine g+q/2, m_{pd} in the ultimate limit state)

m_{Rd} = maximum design moment [kNm/m] of the Schöck Isokorb®

Schöck Isokorb® T type D		MM1–MM5		
Deflection factor for		CV30	CV35	CV50
		tan α [%]		
Isokorb® height H [mm]	160	1.0	1.1	-
	170	0.9	0.9	-
	180	0.8	0.8	-
	190	0.7	0.7	-
	200	0.6	0.7	1.0
	210	0.6	0.6	0.9
	220	0.6	0.6	0.8
	230	0.5	0.6	0.7
	240	0.5	0.5	0.6
	250	0.5	0.5	0.6

Expansion joint spacing

Maximum expansion joint spacing

If the structural element length exceeds the maximum expansion joint spacing e, then expansion joints must be incorporated into the external concrete components at right angles to the insulating layer in order to limit the effect as a result of temperature changes. The maximum expansion joint spacing e/2 applies to fixed points such as balcony corners or to the use of the Schöck Isokorb® T types H.

Schöck Isokorb® T type D		MM1 VV1–VV3	MM2–MM5 VV1–VV2	MM2–MM5 VV3
Maximum expansion joint spacing when		e [m]		
Insulating element thickness [mm]	80	11.0	11.0	10.6

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

Product description

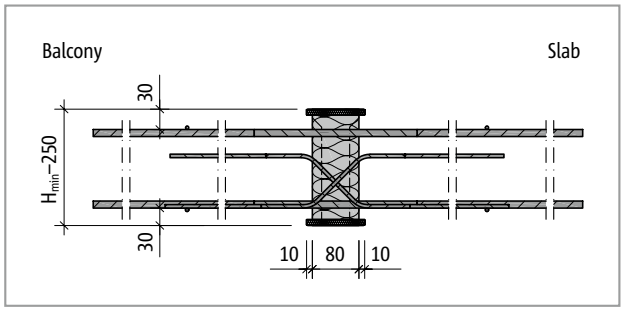


Fig. 251: Schöck Isokorb® T type D with CV30: Product section

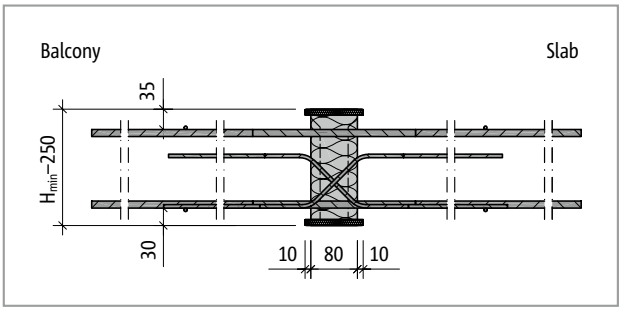


Fig. 252: Schöck Isokorb® T type D for CV35: Product section

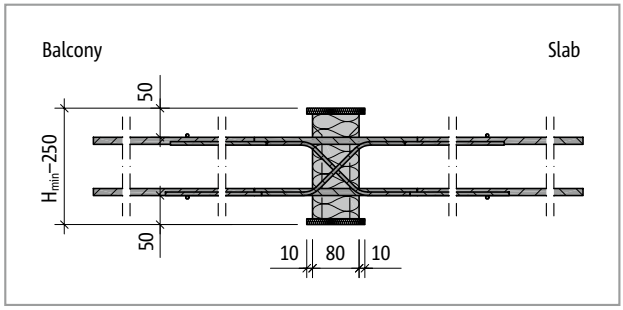


Fig. 253: Schöck Isokorb® T type D for CV50: Product section

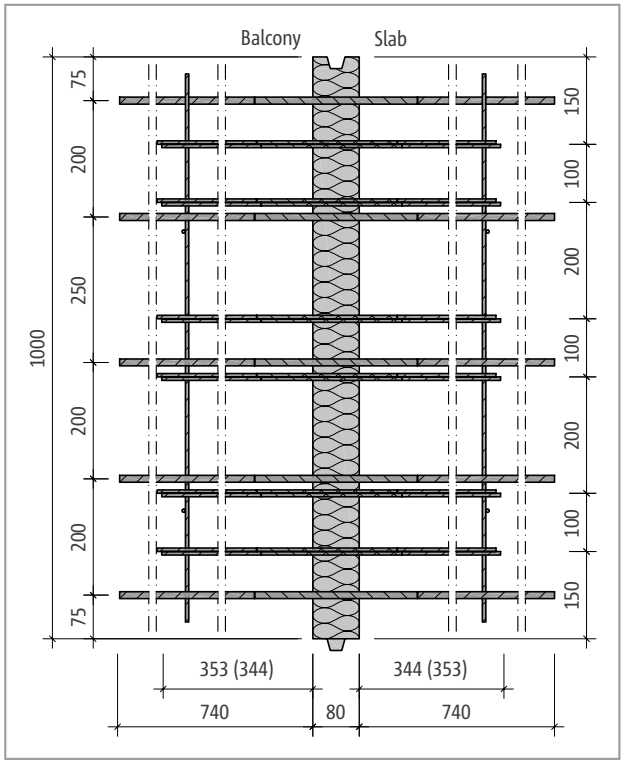


Fig. 254: Schöck Isokorb® T type D-MM2-VV1: Layout

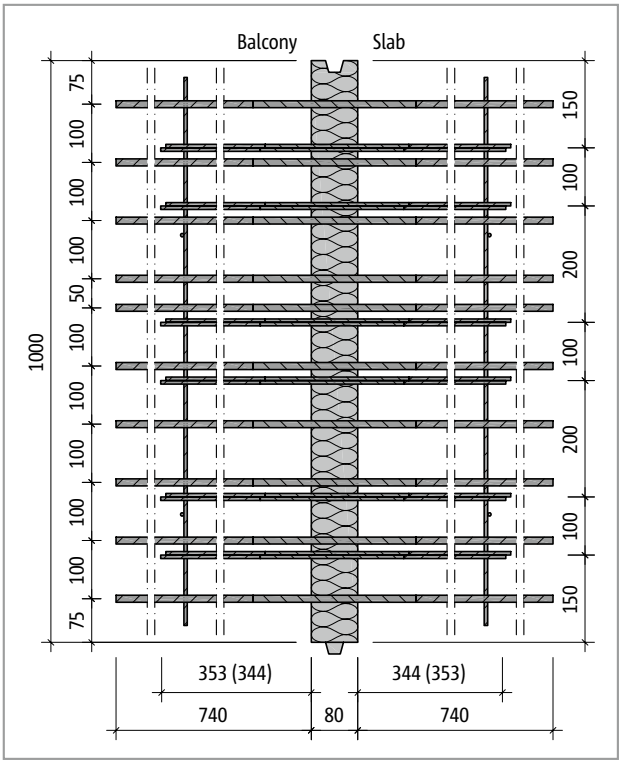


Fig.

Product information

- Download further product plan views and cross-sections at www.schoeck.com/en-gb/download

On-site reinforcement

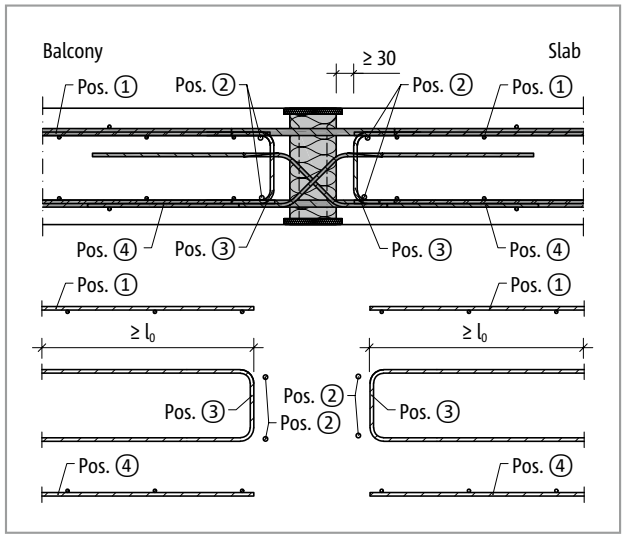


Fig. 255: Schöck Isokorb® T type D: On-site reinforcement

Information about on-site reinforcement

- The rules as per BS EN 1992-1-1 (EC2) and BS EN 1992-1-1/NA apply for calculating the lap length. A reduction of the required lap length with m_{Ed}/m_{Rd} is permitted. For the lapping (l) with Schöck Isokorb® a length of the tension bars of 710 mm is accounted for for type D

On-site reinforcement | Installation instructions

Recommendation for the on-site connection reinforcement

Information on the on-site reinforcement for Schöck Isokorb® with a loading of 100 % of the maximum design moment and the shear force with C25/30. The required reinforcement cross-section depends on the bar diameter of the steel bar or wire-mesh reinforcement - see type approval.

Schöck Isokorb® T type D				MM1			MM2			MM3		
				VV1	VV2	VV3	VV1	VV2	VV3	VV1	VV2	VV3
On-site reinforcement	CV30	CV35	CV50	Concrete strength class ≥ C25/30								
	Height [mm]											
Lap reinforcement dependent on bar diameter (necessary for negative moment)												
Pos. 1 with ⌀8 [mm²/m]				486	503	467	616	580	565	842	806	792
Pos. 1 with ⌀10 [mm²/m]				514	545	524	658	637	611	885	863	838
Pos. 1 with ⌀12 [mm²/m]				543	588	580	701	693	683	927	920	909
Steel bars along the insulation joint												
Pos. 2				2 • 2 • H8								
Vertical reinforcement												
Pos. 3 [mm²/m]	160–170	160–180	200–210	113								
Pos. 3 [mm²/m]	180–250	190–250	220–250	113	120	213	120	213	313	120	213	313
Lap reinforcement dependent on bar diameter (necessary for positive moment)												
Pos. 4 with H8 [mm²/m]				486	503	467	616	580	565	842	806	792
Pos. 4 with H10 [mm²/m]				514	545	524	658	637	611	885	863	838
Pos. 4 with H12 [mm²/m]				543	588	580	701	693	683	927	920	909

Schöck Isokorb® T type D				MM4			MM5		
				VV1	VV2	VV3	VV1	VV2	VV3
On-site reinforcement	CV30	CV35	CV50	Concrete strength class ≥ C25/30					
	Height [mm]								
Lap reinforcement dependent on bar diameter (necessary for negative moment)									
Pos. 1 with ⌀8 [mm²/m]				1181	1145	1131	1408	1371	1357
Pos. 1 with ⌀10 [mm²/m]				1224	1202	1177	1450	1428	1403
Pos. 1 with ⌀12 [mm²/m]				1267	1259	1249	1493	1485	1475
Steel bars along the insulation joint									
Pos. 2				2 • 2 • H8					
Vertical reinforcement									
Pos. 3 [mm²/m]	160–170	160–180	200–210	113	113	125	113	113	156
	180–250	190–250	220–250	120	213	313	120	213	313
Lap reinforcement dependent on bar diameter (necessary for positive moment)									
Pos. 4 with H8 [mm²/m]				1181	1145	1131	1408	1371	1357
Pos. 4 with H10 [mm²/m]				1224	1202	1177	1450	1428	1403
Pos. 4 with H12 [mm²/m]				1267	1259	1249	1493	1485	1475

Installation instructions

The current installation instruction can be found online under:
www.schoeck.com/view/6424

On-site reinforcement

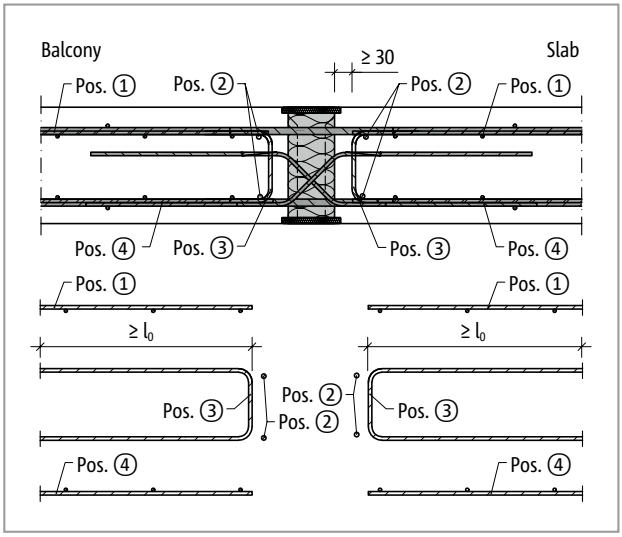


Fig. 256: Schöck Isokorb® T type D: On-site reinforcement

Information about on-site reinforcement

- The rules as per BS EN 1992-1-1 (EC2) and BS EN 1992-1-1/NA apply for calculating the lap length. A reduction of the required lap length with m_{Ed}/m_{Rd} is permitted. For the lapping (l) with Schöck Isokorb® a length of the tension bars of 710 mm is accounted for for type D

On-site reinforcement | Installation instructions

Recommendation for the on-site connection reinforcement

Information on the on-site reinforcement for Schöck Isokorb® with a loading of 100 % of the maximum design moment and the shear force with C25/30. The required reinforcement cross-section depends on the bar diameter of the steel bar or wire-mesh reinforcement – see type approval.

Schöck Isokorb® T type D				MM1			MM2			MM3				
				VV1	VV2	VV3	VV1	VV2	VV3	VV1	VV2	VV3	VV4	VV5
On-site reinforcement	CV30	CV35	CV50	Concrete strength class ≥ C25/30										
	Height [mm]													
Lap reinforcement dependent on bar diameter (necessary for negative moment)														
Pos. 1 with H8 [mm²/m]				486	503	467	616	580		565	842	806	792	
Pos. 1 with H10 [mm²/m]				514	545	524	658	637		611	885	863	838	
Pos. 1 with H12 [mm²/m]				543	588	580	701	693		683	927	920	909	
Steel bars along the insulation joint														
Pos. 2				2 • 2 • H8										
Vertical reinforcement														
Pos. 3 [mm²/m]	160–170	160–180	200–210	113										
Pos. 3 [mm²/m]	180–250	190–250	220–250	113	120	213	120	213		313	120	213	313	
Lap reinforcement dependent on bar diameter (necessary for positive moment)														
Pos. 4 with H8 [mm²/m]				486	503	467	616	580		565	842	806	792	
Pos. 4 with H10 [mm²/m]				514	545	524	658	637		611	885	863	838	
Pos. 4 with H12 [mm²/m]				543	588	580	701	693		683	927	920	909	

Schöck Isokorb® T type D				MM4					MM5				
				VV1	VV2	VV3	VV4	VV5	VV1	VV2	VV3	VV4	VV5
On-site reinforcement	CV30	CV35	CV50	Concrete strength class ≥ C25/30									
	Height [mm]												
Lap reinforcement dependent on bar diameter (necessary for negative moment)													
Pos. 1 with H8 [mm²/m]				1181	1145	1131			1408	1371	1357		
Pos. 1 with H10 [mm²/m]				1224	1202	1177			1450	1428	1403		
Pos. 1 with H12 [mm²/m]				1267	1259	1249			1493	1485	1475		
Steel bars along the insulation joint													
Pos. 2				2 • 2 • H8									
Vertical reinforcement													
Pos. 3 [mm²/m]	160–170	160–180	200–210	113	113	125			113	113	156		
	180–250	190–250	220–250	120	213	313			120	213	313		
Lap reinforcement dependent on bar diameter (necessary for positive moment)													
Pos. 4 with H8 [mm²/m]				1181	1145	1131			1408	1371	1357		
Pos. 4 with H10 [mm²/m]				1224	1202	1177			1450	1428	1403		
Pos. 4 with H12 [mm²/m]				1267	1259	1249			1493	1485	1475		

Installation instructions

The current installation instruction can be found online under:
www.schoeck.com/view/6424

☑ Check list

- ☐ 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 maximum allowable expansion joint spacings taken into account?
- ☐ With the selection of the design table is the relevant concrete cover taken into account?
- ☐ Are the requirements with regard to fire protection explained and is the appropriate addendum entered in the Isokorb® type description in the implementation plans?
- ☐ Has the minimum slab thickness (≥ 200 mm) and the required 2nd layer (CV50) been taken into account for a connection across a corner? with Schöck Isokorb® T type D?
- ☐ Has the required cutout (width ≥ 760 mm from insulating element) been marked in the construction drawings for the T type D in conjunction with semi-precast balcony slabs and has the on site reinforcement been adjusted constructively?
- ☐ 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?
- ☐ Have the requirements for on-site reinforcement of connections been defined in each case?