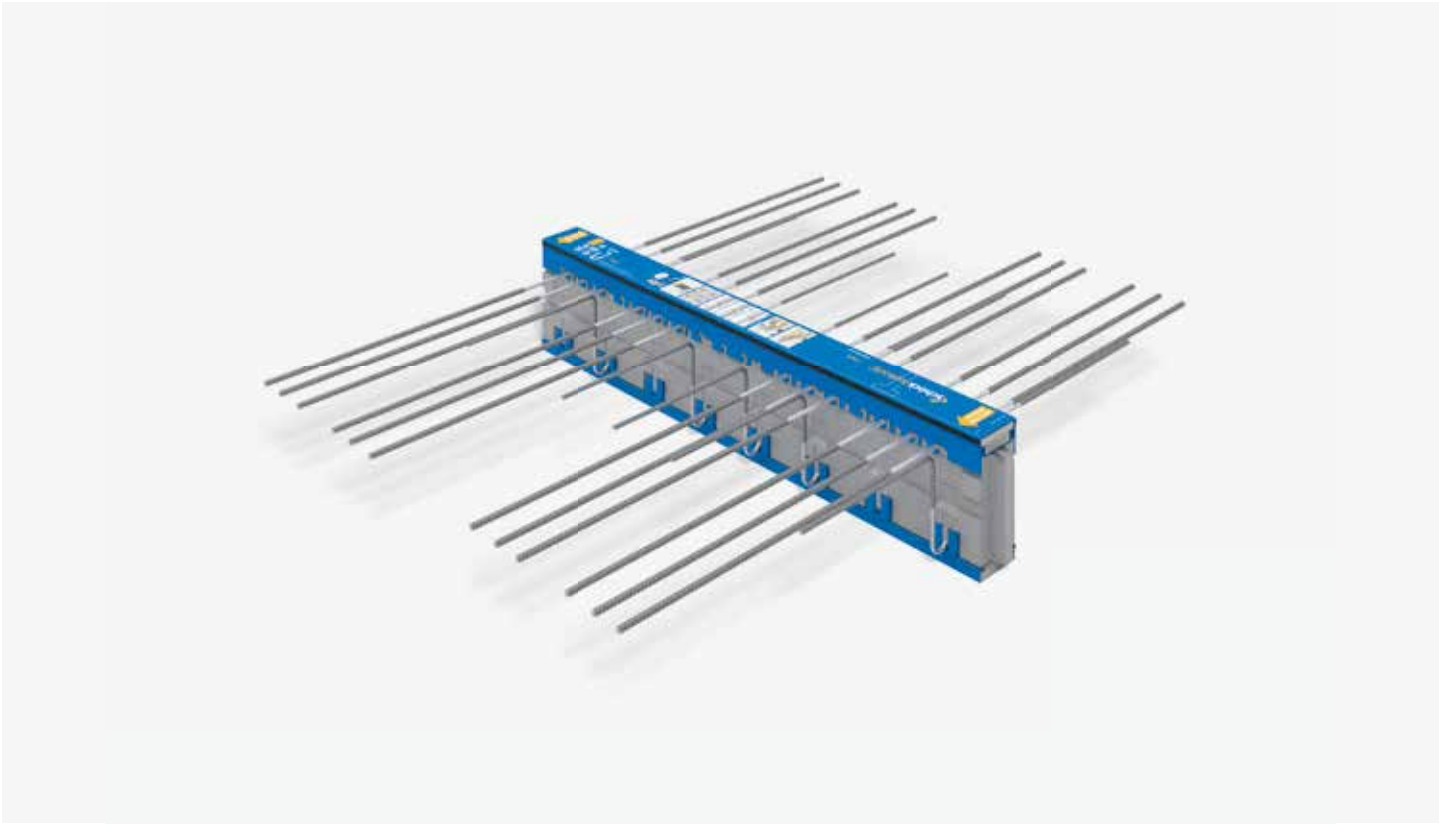
Schöck Isokorb®



Technical Information

Schöck Isokorb® T for reinforced concrete structures

March 2020

Telephone hotline for design support services
Telephone: 01865 290 890
Fax: 01865 290 899
design@schoeck.co.uk

Planning tools – downloads and requests
Telephone: 01865 290 890
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www.schoeck.co.uk

CPD Seminars and on-site consultation
Telephone: 01865 290 890
Fax: 01865 290 899
www.schoeck.co.uk

Planning and consulting service

The engineers of Schöck's application engineering department would be very happy to advise you on static, structural and building-physics questions and will produce for you proposals for your solution with calculations and detailed drawings.
For this please send your planning documentation (general arrangements, sections, static data) with the address of the building project to:

Schöck Ltd
Staniford House
4 Wedgwood Road
Bicester
Oxfordshire
OX26 4UL

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Notes | Symbols

Technical Information

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Schöck Isokorb® T for reinforced concrete structures

Some connection situations cannot be realised with those standard product variants presented in this Technical Information. In this case special designs can be requested from the application engineering department (for contact details see page3). This applies, for example, with additional requirements as a result of prefabricated construction (limitations due to technical manufacturing constraints or through transportation width), which can possibly be met using coupler bars. The bending of bars required for special constructions are carried out in the factory in each case on the individual steel bar. With this, it is monitored and ensured that the conditions of the general building supervisory approvals and of BS EN 1992 1-1 (EC2) and BS EN 1992-1-1/NA are observed with regard to bending of reinforcing steel.

Attention: If reinforcing steel in the Schöck Isokorb® is bent or bent and bent back on-site, the observation and the monitoring of the respective conditions lie outside the influence of Schöck Bauteile GmbH. Therefore, in such cases, the warranty is invalidated.

Note on shortening threaded rods

The threaded rods may be shortened on site provided at least two threads remain visible after installation, levelling and final tightening of the balcony structure. Nuts must be re-checked after cutting to ensure they have remained fully tightened.

Tags

Hazard note

The yellow triangle with the exclamation mark indicates a hazard note. This means there is a danger to life and limb if compliance is not observed.

Info

The square with “i” indicates important information which must be read in conjuction with the design.

Check list

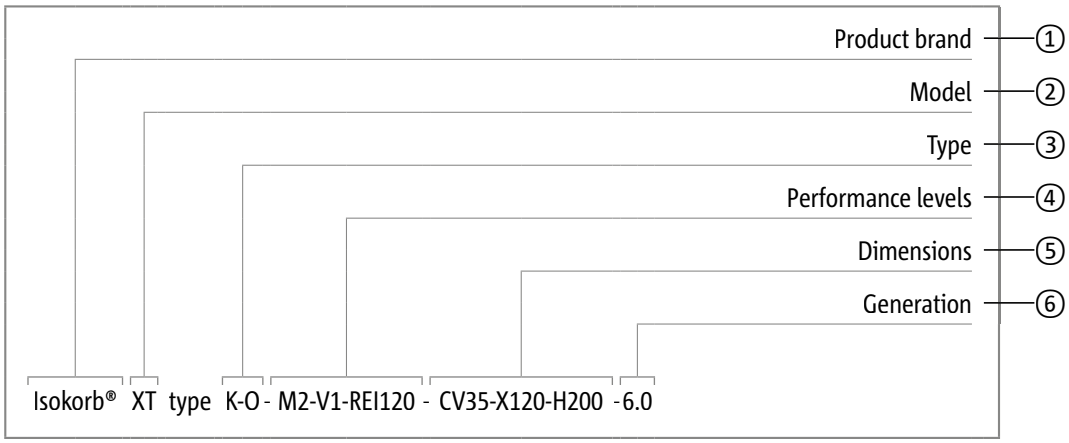
The square with tick indicates the check list. Here the essential points of the design are summarised.

Table of contents

Explanation for the naming of Schöck Isokorb® types

The systematic naming convention for the Schöck Isokorb® product group has changed. This page contains information about the name components for easier conversion.

The type designation has a strict structure. However, the sequence of the name components always remains the same.



① Product brand

Schöck Isokorb®

② Model

In future, the model designation will be a fixed name component of every Isokorb®. It stands for a core characteristic of the product. The corresponding abbreviation will always be positioned before the type word.

Model	Core characteristics of the products	Connection	Components
XT	For extra thermal separation	Reinforced concrete – reinforced concrete, Steel – reinforced concrete	Balcony, access walkway, canopy, floor slab, parapet, balustrade, corbel, beam, wall
CXT	With Combar® for extra thermal separation	Reinforced concrete – Reinforced concrete	Balcony, walkway, canopy
T	For thermal separation	Reinforced concrete – reinforced concrete, Steel – reinforced concrete, Steel – steel	Balcony, access walkway, canopy, floor slab, parapet, balustrade, corbel, beam, wall
RT	For reconstruction of components with a thermal separation	Reinforced concrete – reinforced concrete, Steel – reinforced concrete	Balcony, walkway, canopy, beam

③ Type

The type is a combination of the following name components:

- Basic type
- static or geometric connection variant

Basic type			
K	Balcony, canopy – cantilevered	**A**	Parapet, balustrade
Q	Balcony, canopy – supported (shear force)	**B**	Beam, downstand beam
C	Corner balcony	**W**	Shear wall
H	Balcony with horizontal loads	**SK**	Steel balcony – cantilevered
Z	Balcony with intermediate insulation	**SQ**	Steel balcony – supported (shear force)
D	Floor slab – continuous (indirectly mounted)	**S**	Steel structure

Static connection variant	
Z	Restraint-free
P	Punctual
V	Shear force
N	Normal force

Geometric connection variant	
L	Arrangement left of viewpoint
R	Arrangement right of viewpoint
U	Balcony with height offset downwards or wall connection
O	Balcony with height offset upwards or wall connection

④ Performance levels

Performance levels include load-bearing levels and fire protection. The various load-bearing levels of an Isokorb® type are numbered consecutively, beginning with 1 for the lowest load-bearing level. Different Isokorb® types with the same load-bearing level do not have the same load-bearing capacity. The load-bearing level must always be determined via the design and calculation tables or the calculation program.

The load-bearing level has the following name components:

- Main load-bearing level: Combination of internal static force and number
- Secondary load-bearing level: Combination of internal static force and number

Internal static force of the main load capacity	
M	Moment
MM	Moment with positive or negative force
V	Shear force
VV	Shear force with positive or negative force
N	Normal force
NN	Normal force with positive or negative force

Internal static force of the secondary load-bearing level	
V	Shear force
VV	Shear force with positive or negative force
N	Normal force
NN	Normal force with positive or negative force

The name component for the fire protection contains the fire resistance class or R0 if no fire protection is required.

Fire resistance class	
REI	R – load bearing capacity, E – integrity, I – insulation under the effects of a fire
RO	No fire protection

⑤ Dimensions

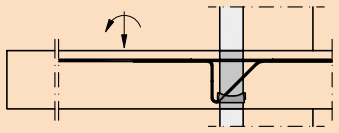
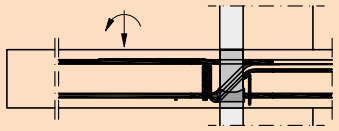
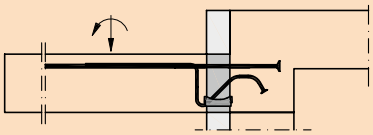
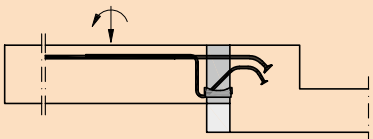
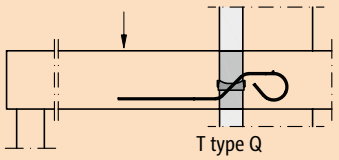
The following name components are part of the dimensions:

- Concrete cover CV
- Bond length LR, bond height HR
- Insulating element thickness X, height H, length L, wIdth W
- Diameter of thread D

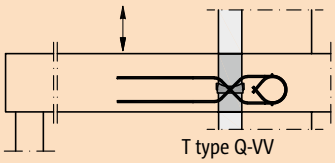
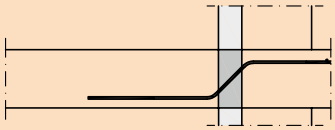
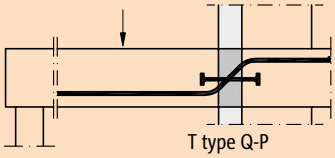
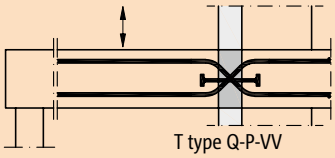
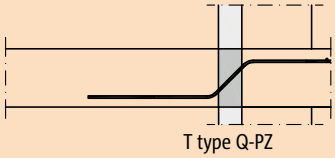
⑥ Generation

Each type designation ends with a generation number.

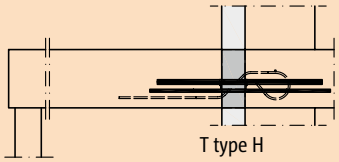
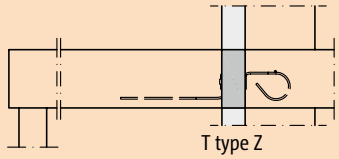
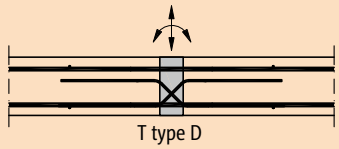
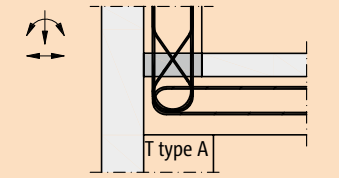
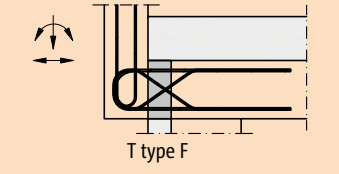
Summary of types

Application	Production type	Schöck Isokorb® type
Free cantilevered balconies		
 T type K	**Building site** In-situ concrete balconies **Precast concrete work** Completely prefabricated balconies Prefabricated component balconies	**T type K**  Page 27
Free cantilevered balconies with corner		
 T type C	**Building site** In-situ concrete balconies **Precast concrete work** Prefabricated component balconies	**T type C**  Page 49
Free cantilevered balconies with height offset downwards or wall connection		
 T type K-U	**Building site** In-situ concrete balconies **Precast concrete work** Completely prefabricated balconies	**T type K-U**  Page 61
Free cantilevered balconies with height offset upwards or wall connection		
 T type K-O	**Building site** In-situ concrete balconies **Precast concrete work** Completely prefabricated balconies	**T type K-O**  Page 61
Supported balconies		
 T type Q	**Building site** In-situ concrete balconies **Precast concrete work** Completely prefabricated balconies Prefabricated component balconies	**T type Q**  Page 93

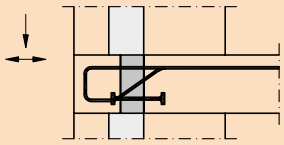
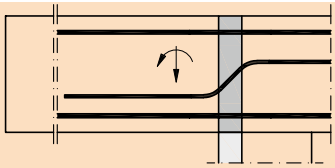
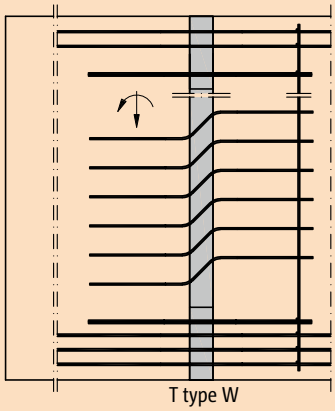
Summary of types

Application	Production type	Schöck Isokorb® type	
Supported balconies with positive and negative shear force			
 T type Q-VV	**Building site** In-situ concrete balconies **Precast concrete work** Completely prefabricated balconies Prefabricated component balconies	**T type Q-VV**	Page 93
Zero-stress shear force connection			
 T type Q-Z	**Building site** In-situ concrete balconies **Precast concrete work** Completely prefabricated balconies Prefabricated component balconies	**T type Q-Z**	Page 93
Supported balconies with point load peaks			
 T type Q-P	**Building site** In-situ concrete balconies **Precast concrete work** Completely prefabricated balconies Prefabricated component balconies	**T type Q-P**	Page 109
Supported balconies with positive and negative shear force with point load peaks			
 T type Q-P-VV	**Building site** In-situ concrete balconies **Precast concrete work** Completely prefabricated balconies Prefabricated component balconies	**T type Q-P-VV**	Page 109
Constraint-free transverse force connection with point peak loads			
 T type Q-PZ	**Building site** In-situ concrete balconies **Precast concrete work** Completely prefabricated balconies Prefabricated component balconies	**T type Q-PZ**	Page 109

Summary of types

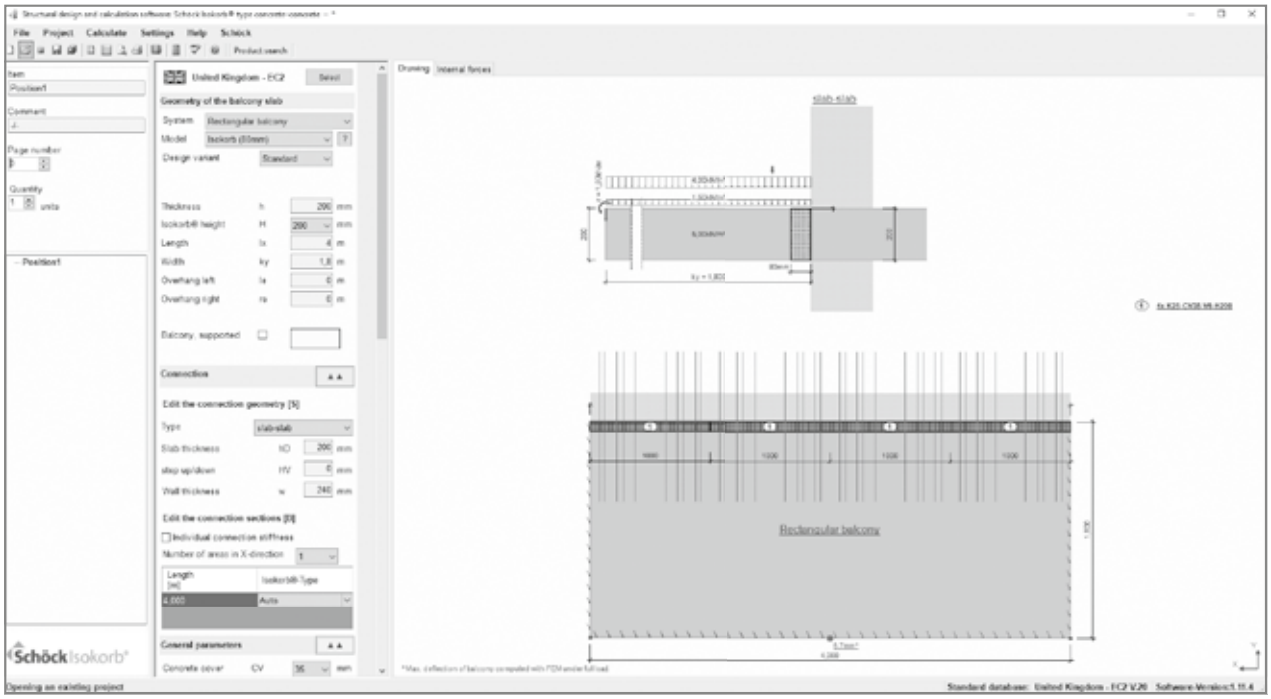
Application	Production type	Schöck Isokorb® type
Addition for horizontal loads  	**Building site** In-situ concrete balconies **Precast concrete work** Completely prefabricated balconies Prefabricated component balconies	**T type H** Page 125
Addition as insulating spacer without reinforcement  	**Building site** In-situ concrete balconies **Precast concrete work** Completely prefabricated balconies Prefabricated component balconies	**T type Z** Page 135
Continuous floors with bending momemts and shear forces  	**Building site** In-situ concrete balconies **Precast concrete work** Completely prefabricated balconies Prefabricated component balconies	**T type D** Page 141
Balustrades and parapets  	**Building site** In-situ concrete **Precast concrete work** Completely prefabricated part	**T type A** Page 151
For attached balustrades  	**Building site** In-situ concrete **Precast concrete work** Completely prefabricated part	**T type F** Page 153

Summary of types

Application	Production type	Schöck Isokorb® type
Corbel  T type O	**Building site** In-situ concrete **Precast concrete work** Completely prefabricated part	**T type O** Page 155
Free cantilevered downstand beams and reinforced concrete beams  T type B	**Building site** In-situ concrete **Precast concrete work** Completely prefabricated part	**T type B** Page 157
Free cantilevered shear walls  T type W	**Building site** In-situ concrete **Precast concrete work** Completely prefabricated part	**T type W** Page 165

Design software

The Schöck Isokorb® design software provides the rapid design of thermally separated structures.
The Schöck Isokorb® design software is available as a free download and can also be applied for on DVD. It runs under MS Windows using MS Framework 4.6.1.

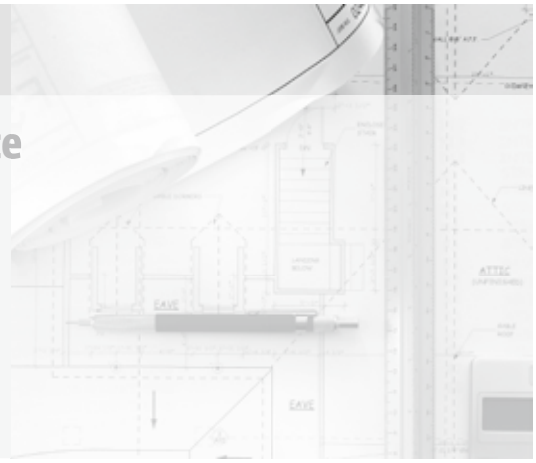


Software

- Administrator rights are required for installation of the software.
- Upwards from Windows 7, with an update, the software is to be started using administrator rights (right mouse click on Schöck Icon; selection: carry out using administrator rights).

Fire protection

Reinforced concrete – reinforced concrete



Fire protection configuration

Fire protection configuration Schöck Isokorb® reinforced concrete - reinforced concrete

The Schöck Isokorb® comes as standard with a fire protection configuration (-REI120).

- With fire protection, e.g. T type K-M4-V1-REI120-CV35-X80-H180-6.0

For this purpose fire protection boards are mounted on the upper and lower sides of the Schöck Isokorb® (see figure). Prerequisite for the fire resistance classification of the balcony connection is that the balcony slab and the ceiling also fulfil the requirements for the necessary fire resistance class according to BS EN 1992-1-1 and -2 (EC 2). If, in addition to the load-bearing capacity (R), integrity (E) and insulation (I) are also required in case of fire, then the cutouts between the Schöck Isokorb® are to be closed, e.g. using the Schöck Isokorb® T type Z with the fire protection configuration.

The Schöck Isokorb® T has been tested in room closure configuration on the basis of floors according to BS EN 1365-2. According to BS EN 13501-2 only the requirement R (load-bearing capacity in the case of fire) is required. The basis for this test is BS EN 1365-5. The fire protection of the Schöck Isokorb® is additionally further tested on the basis of floors according to BS EN 1365-2. From this results the classification REI.
(R - load-bearing capacity, E - integrity, I - insulation under the influence of fire.)
The requirement from the fire tests with Schöck Isokorb® with flush integrated lateral fire protection bands or 10 mm projecting fire protection boards has been implemented. The integrated fire protection bands made from material forming insulation layers or respectively the 10 mm projecting fire protection boards on the upper side of the Schöck Isokorb® ensure that the joints, which have opened due to the effect of the fire, are closed. Thus the room integrity and the insulation in the case of fire are ensured (see figures below).

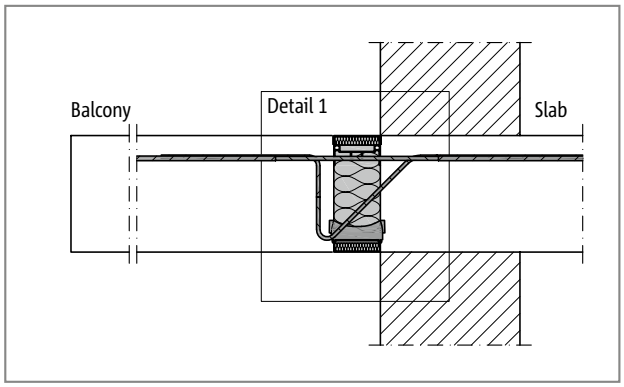


Fig. 1: Schöck Isokorb® T type K for REI120: Fire protection board top and bottom; lateral integrated fire protection bands

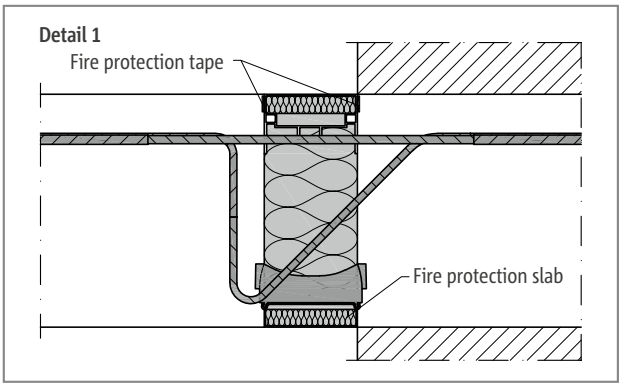


Fig. 2: Schöck Isokorb® T type K for REI120: Detail 1

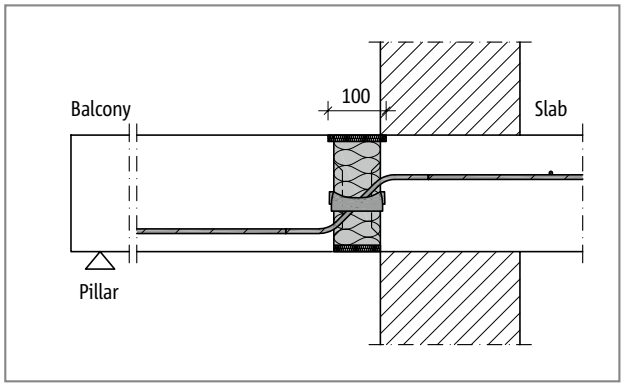


Fig. 3: Schöck Isokorb® T type Q for REI120: Fire protection board top, projecting laterally

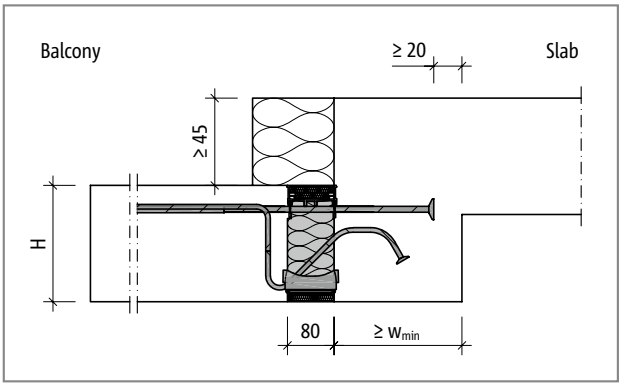


Fig. 4: Schöck Isokorb® T type K_U for REI120: Fire protection board top and bottom; lateral integrated fire protection bands

Fire protection classes | Balcony fire protection configuration REI120

Fire protection classes REI120, R90, EI120

The reaction to fire of structural components is classified on the basis of the European Standard BS EN 13501-2.

The fire resistance / behaviour of components is classified on the basis of European standard DIN EN 13501-2. The European classification system is on par alongside the previous classification system as per DIN 4102.
Users have the option for verification of fire behaviour or fire resistance based either on DIN 4102 or on DIN EN 13501-1 (fire behaviour) and/or DIN EN 13501-2 (fire resistance).

The Schöck Isokorb® T achieves the following fire protection classes:

Schöck Isokorb® T type	K, C, Q, H, D	B, W
Fire protection class	REI120	R 90

Schöck Isokorb® T type	Z
Fire protection class	EI120

Fire protection configuration REI120

The Schöck Isokorb® can be delivered with a fire protection configuration (-REI120). Then the balcony also achieves the fire protection class REI120, so far as, on the floor and balcony sides, REI120 is achieved.

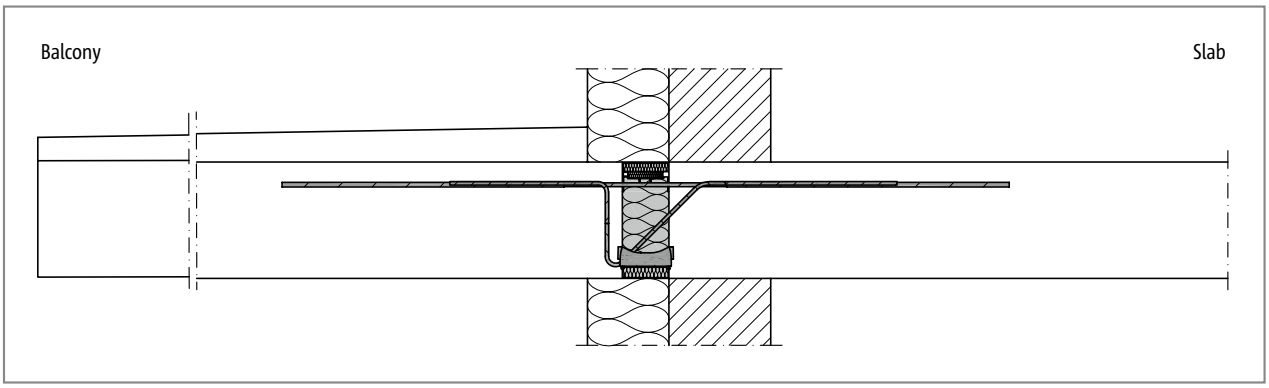


Fig. 5: Schöck Isokorb® T type K for REI120: Balcony connection REI120

Fire protection

- For the insulation between the Schöck Isokorb® there is Schöck Isokorb® supplementary type Z (see page135) available with fire protection performance. The rating of the Schöck Isokorb® is relevant for the fire protection of the connection .

Fire protection

Reinforced concrete – reinforced concrete

Notes

Notes

- The Schöck Isokorb® type H is as a basic principle, to be combined with Schöck Isokorb® T types with 1 m length.
- The Schöck Isokorb® T types Q-P, Q-P-VV, Q-PZ can be used separately as long as the mode of operation of the load-bearing system is so selected that the load application and load transfer is ensured in the designated floor and balcony side connection areas. The slab design and the resultant reinforcement must be coordinated with the point load application.
- 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 tight fit between the thrust bearings and the concrete must be ensured, therefore lift joints must be arranged underneath the thrust bearings. With construction joints (BS EN 1992-1-1/NA) between precast concrete members and the Schöck Isokorb® an on-site concreting or grouting strips ≥ 100 mm is carried out.
- The fire protection board of the Schöck Isokorb® may not be penetrated by nails or screws.

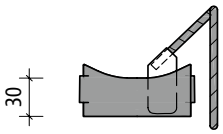
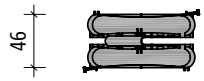
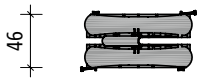
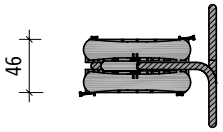
Schöck Isokorb® T for reinforced concrete structures

Some connection situations cannot be realised with those standard product variants presented in this Technical Information. In this case special designs can be requested from the application engineering department (for contact details see page3). This applies, for example, with additional requirements as a result of prefabricated construction (limitations due to technical manufacturing constraints or through transportation width), which can possibly be met using coupler bars. The bending of bars required for special constructions are carried out in the factory in each case on the individual steel bar. With this, it is monitored and ensured that the conditions of the general building supervisory approvals and of BS EN 1992 1-1 (EC2) and BS EN 1992-1-1/NA are observed with regard to bending of reinforcing steel.

Attention: If reinforcing steel in the Schöck Isokorb® is bent or bent and bent back on-site, the observation and the monitoring of the respective conditions lie outside the influence of Schöck Bauteile GmbH. Therefore, in such cases, the warranty is invalidated.

HTE-Compact®

Summary of the application of the HTE-Compact® pressure bearing in the Schöck Isokorb® types.

HTE-Compact® 20	HTE-Compact® 30	HTE-Compact® 30 with special stirrup
		
		

HTE-Compact® 20

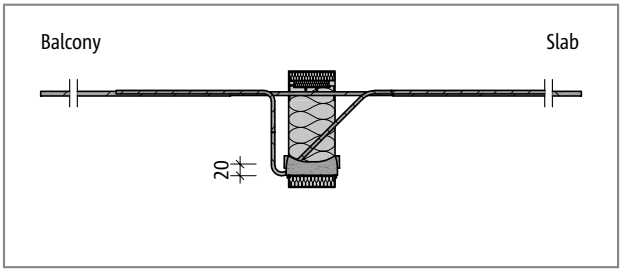


Fig. 6: Schöck Isokorb® T type K-M1 up to M4: Product section

HTE-Compact® 30

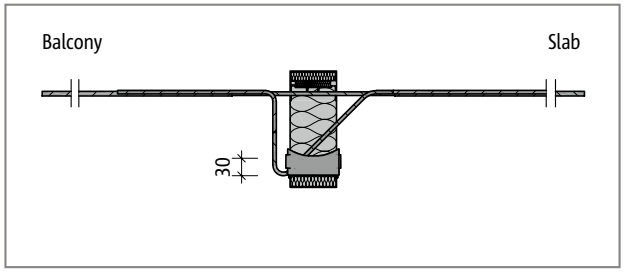


Fig. 7: Schöck Isokorb® T type K-M5 to M6: Cross section of the product

HTE-Compact® 30 with special stirrup

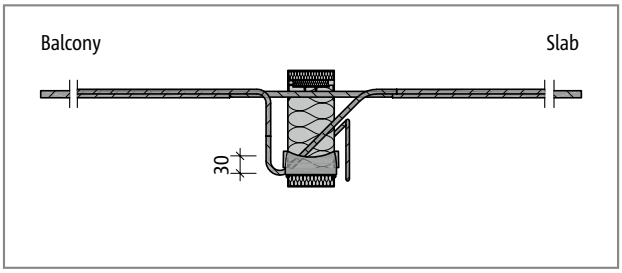


Fig. 8: Schöck Isokorb® T type K-M7 to M11: Cross section of the product

HTE-Compact® 20

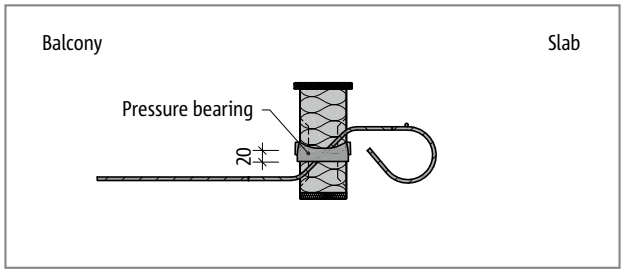


Fig. 9: Schöck Isokorb® T type Q-V1 to Q-V5: Cross section of the product

FEM guidelines

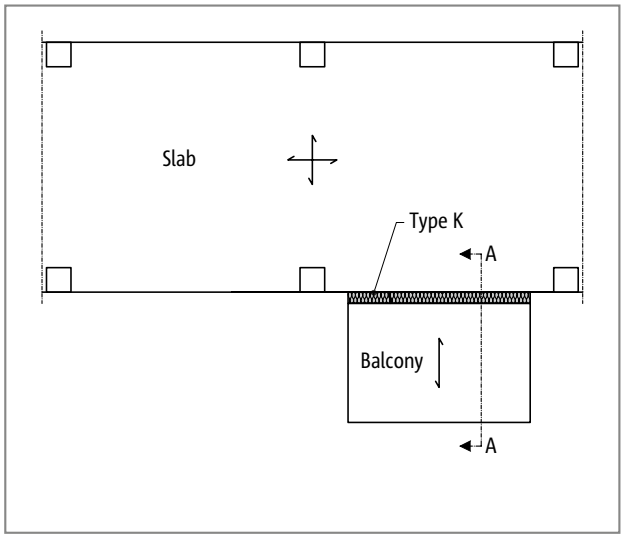


Fig. 10: Static overall system balcony and floor

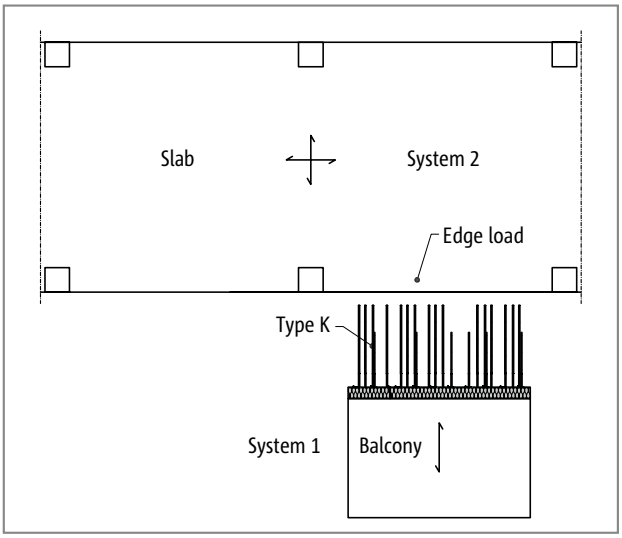


Fig. 11: For the design of the floor and of the balcony the balcony slab is to be decoupled from the overall system (System 1 and 2)

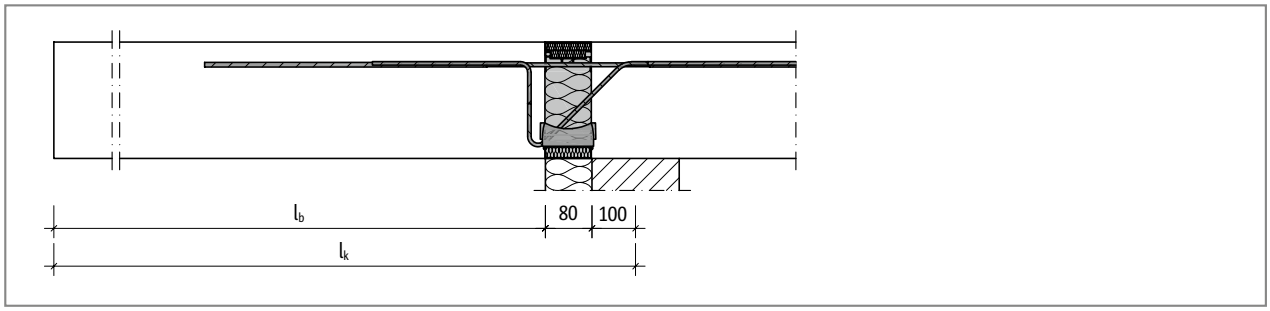


Fig. 12: Schöck Isokorb® type K: System cantilever length (l_k) for design and geometric cantilever length (l_b)

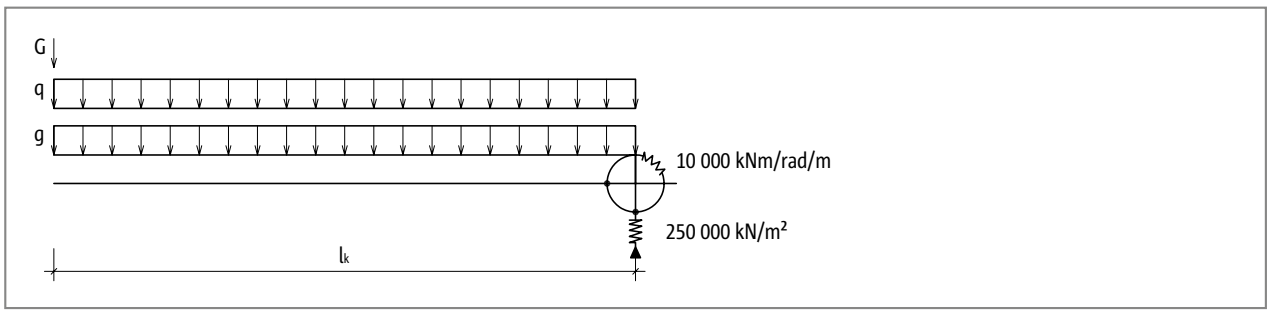


Fig. 13: Schöck Isokorb®: Approximate adoption of the spring stiffness

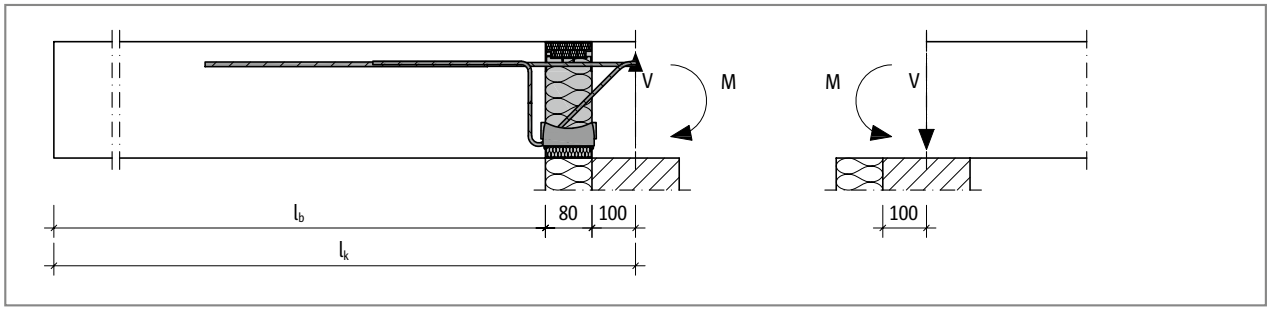


Fig. 14: Schöck Isokorb® Type K Determined design section dimensions applied to floor slab

FEM guidelines

FEM guidelines

Recommended method for the design of Schöck Isokorb® types by means of FEM systems:

- Separate balcony slab from the supporting structure of the building
- Determine internal forces on the balcony slab support taking into account the spring stiffness values (satisfactorily accurate approximation of the Schöck Isokorb® load-bearing behaviour)
  10,000 kNm/rad/m (rotation)
  250,000 kN/m² (vertical)
- Select Schöck Isokorb® type and add the calculated values v_{ed} and m_{ed} as external edge loads to the load-bearing structure of the building.

The stiffnesses in the area of the support of the load-bearing structure (inner slab/wall) are, in the normal case, assumed to be infinitely stiff . Only with very different stiffness relationships of connecting and supporting structural components are the linearly changing moments and shear forces along the edges of the slab to be taken into account.
The achievable internal forces are used for both the design of the Schöck Isokorb® as well as for the design of the inner slab and wall construction of the building.

FEM guidelines

- The Schöck Isokorb® can transmit no twisting moments.

Fatigue/Temperature effect

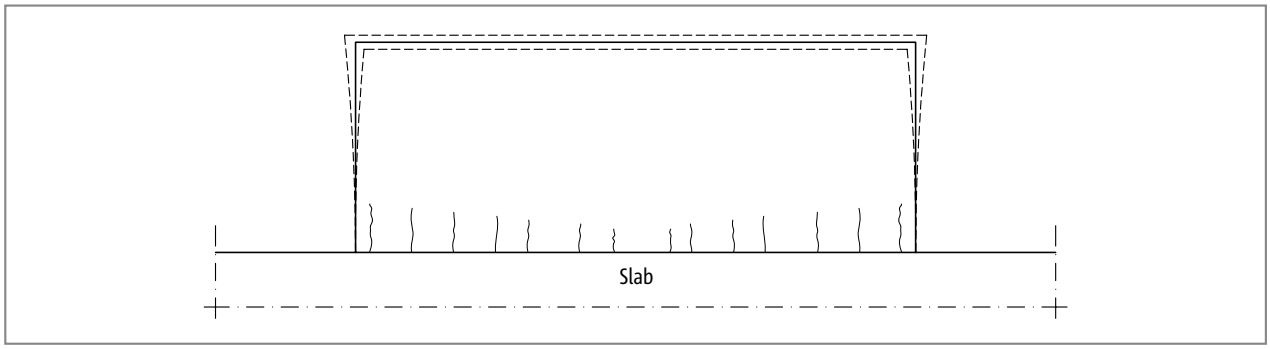


Fig. 15: Balcony slab without Schöck Isokorb®: Crack formation through fatigue possible

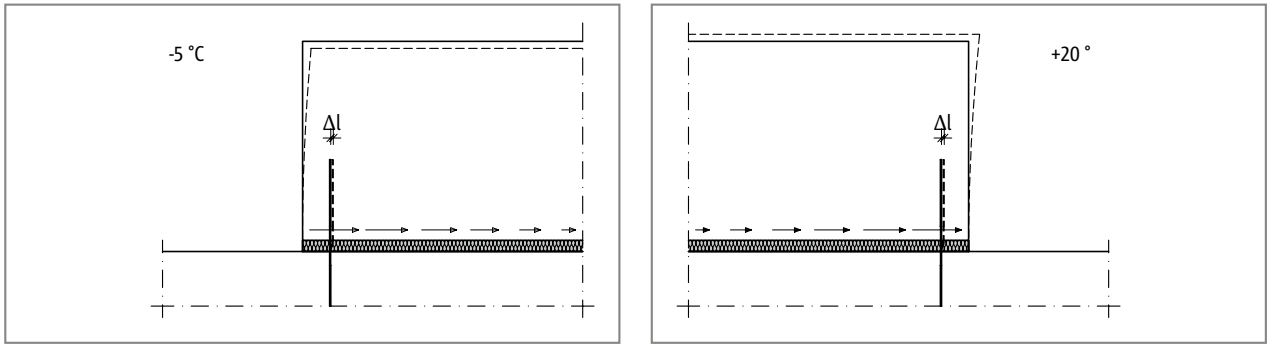


Fig. 16: Schöck Isokorb®: Displacement of the outer bars of a balcony slab by Δl as a result of temperature deformation

Balcony slabs, passageway walks and canopy constructions expand with warming and contract with cooling. With a continuous reinforced concrete slab cracks in the reinforced concrete slab can result at this point through which moisture can penetrate. The Schöck Isokorb® defines a joint which with correct execution prevents cracks in the concrete.

The tension bars, the shear force bars and the HTE-Compact® pressure bearings in the Schöck Isokorb® are consistently deflected transverse to their axis through thermal stressing. Therefore a verification of the fatigue safety is to be carried out for the Schöck Isokorb®. This verification of the fatigue safety is provided through the observation of the respective expansion joint spacings 'e' for the Schöck Isokorb® type (as per approval document). Thus material fatigue and the failure of the structural component over the planned useful life is excluded.

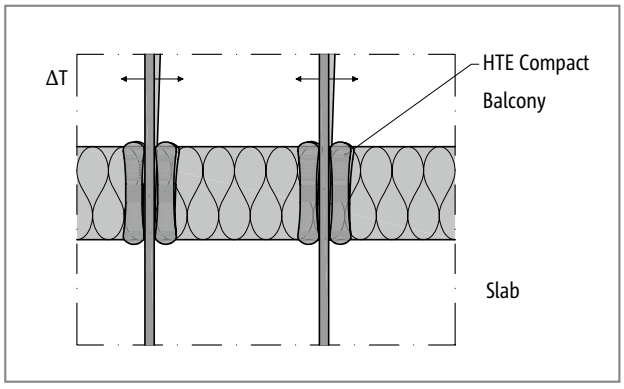


Fig. 17: Schöck Isokorb® detail: deflection of the pressure bearing as a result of temperature difference

The HTE-Compact® pressure bearing compensates the movement of the structural component through individual inclination of each individual compression element. The bars are deflected only in the fatigue safe area.

Fatigue | Expansion joint spacing

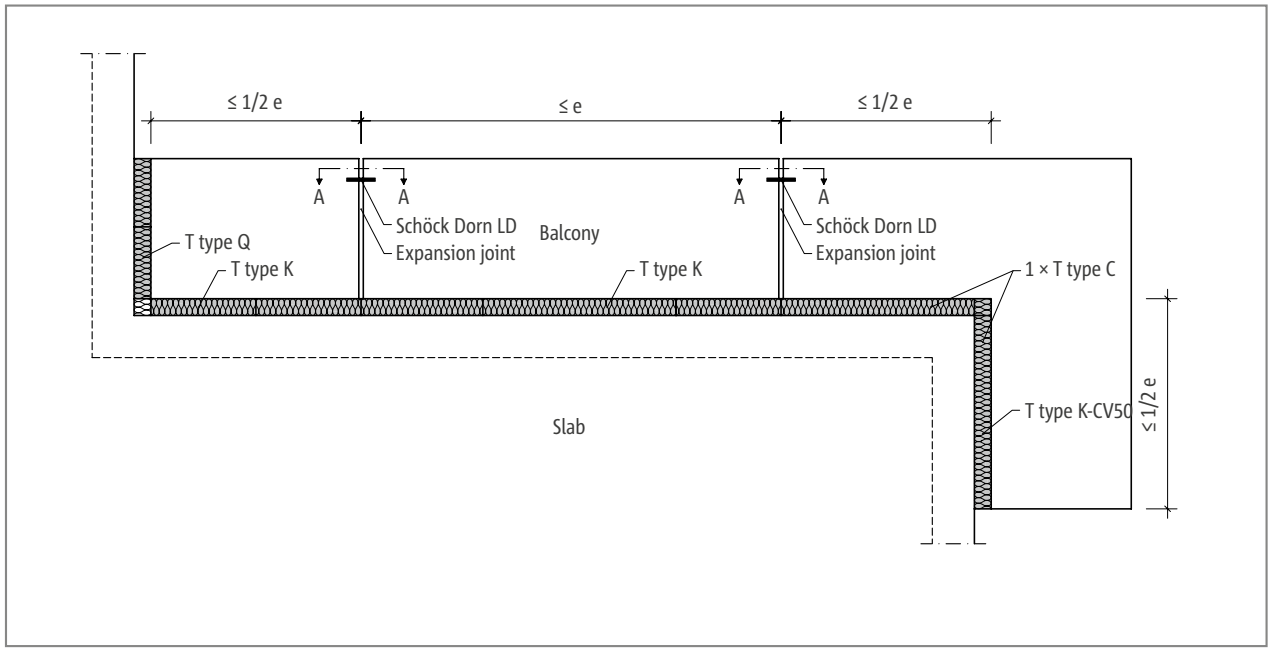


Fig. 18: Schöck Isokorb® T type K: Expansion joint formation with longitudinally displaceable shear force dowel, e.g. Schöck Dorn

The maximum permitted expansion joint spacings e of the Schöck Isokorb® types depend on the bar diameter and type of construction of the chosen Schöck Isokorb® types. For the respective Schöck Isokorb® type, the maximum expansion joint spacings are provided in the Product chapter.
The shear force transmission in the expansion joint can be ensured using a longitudinally displaceable shear force dowel, e.g. Schöck Dorn.

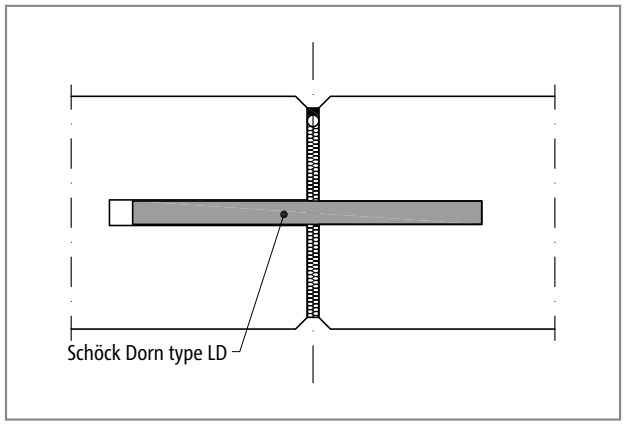


Fig. 19: Schöck Dorn: Expansion joint formation in in-situ concrete

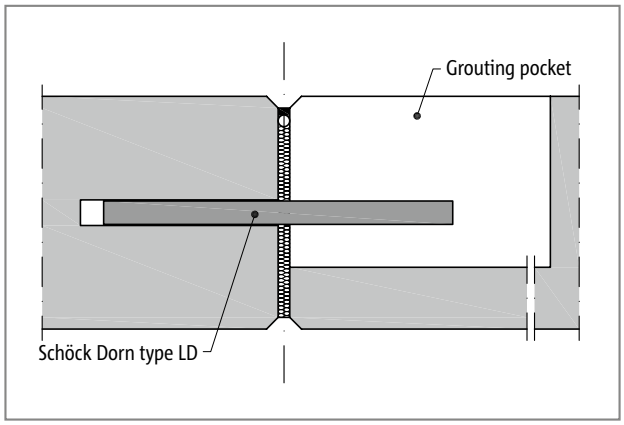


Fig. 20: Schöck Dorn: Expansion joint formation precast concrete balcony

Expansion joints

- Details for the formation of expansion joints see also: Technical Information Schöck Dorn application examples.

Indicative minimum concrete strength classes

In addition, the indicative minimum concrete strength classes of exposure classes XF1, and XF3 are to be noted. The higher minimum concrete strength class is relevant.
In addition, the indicative minimum concrete strength classes of exposure classes XF1, and XF3 are to be noted.

Indicative minimum concrete strength classes (extract from BS EN 1992-1-1 Table 4.1 and BS 8500-1:2006)

Exposure class	Indicative minimum concrete strength classes			Concrete cover CV [mm]
BS EN 1992-1-1 Table 4.1	BS 8500-1:2006	Approval internal component	Approval external component	Schöck Isokorb®
XC1	C20/25	C25/30	C32/40	30
XC3/4	C40/50			35 (Δc = 5 mm)
XC3/4	C30/37			50
XD1	C35/40			50
XS1	C45/55			50 (Δc = 5 mm)
XF1, XF3	acc. to BS EN 206-1			-

Concrete cover

- Due to suitable quality measures with the Schöck Isokorb® manufacture, Δc_{dev} (BS EN 1992-1-1/NA, NDP to 4.4.1.3(3)) may be reduced by 5 mm with the determination of the concrete cover CV.
- T types K, C, K-U, K-O: CV30, CV35 and CV50 is the concrete cover of the tension bars.
- T type D: CV30 and CV35 is the concrete cover of the above lying tension bars. The lower tension bars in both cases have 30mm concrete cover.
  CV50 is the concrete cover of the upper and lower tension bars.
- T types Q, Q-VV, Q-Z: Concrete cover balcony side under at least 30 mm (as a rule less exposed than the balcony surface).
- T types Q-P, Q-P-VV and Q-PZ: Concrete cover balcony side under at least 40 mm (as a rule less exposed than the balcony surface).
- With special requirements on the concrete cover further product variants can be requested from Schöck Technical Design Department.

Construction materials

Schöck Isokorb® construction materials

Reinforcing steel	BS4449
Structural steel	S 235 JRG1, S 235 JO, S 235 J2, S 355 JR, S 355 J2, or S 355 JO according to BS EN 10025-2 for the pressure slabs
Stainless steel	Ribbed round steel B500B NR, Material No. 1.4571 or 1.4482 according to Approval document Z-15.7-240 Tension bars Material No. 1.4482 f_{yk} = 600 N/mm^2) Plain steel bars, Material No. 1.4571 or 1.4404 of hardening level S 460
Concrete pressure bearings	HTE-Compact® pressure bearings (pressure bearings made from micro-steel fibre-reinforced high performance fine concrete) HDPE plastic sheathing
Insulating material	Neopor® - this polystyrene hard foam is a registered trademark of BASF, λ = 0.031 W/(m•K), building material classification B1 (flame retardant)
Fire protection material	Light building panels of building material class A1, cement-bonded fire protection panels, mineral wool: ρ ≥ 150 kg/m^3, melting point T ≥ 1000 °C and integrated fire protection tape

Connected components

Reinforcing steel	B500A, B500B or B500C acc.to BS 4449 or BS 4483
Concrete	Standard concrete as per BS EN 206-1 with a dry apparent density of 2000 kg/m^3 to 2600 kg/m^3 (lightweight concrete is not permitted) **Indicative minimum concrete strength class of the exterior structural elements:** Minimum C32/40 and depending on the environmental classes according to EC2 and NA **Indicative concrete class of the interior structural components:** Minimum C25/30 and depending on the environmental classes according to EC2 and NA

Information on the bending of reinforcing steel

With the production of the Schöck Isokorb® in the factory it is ensured through monitoring that the conditions of the general building supervisory approval document and of BS EN 1992-1-1 (EC2) and BS EN 1992-1-1/NA with regard to bending of reinforcing steel are oberved.

Attention: Attention: If reinforcing steel of the Schöck Isokorb® is bent or bent and bent back on-site, the observation and the monitoring of the respective conditions (European Technical Assessment (ETA, BS EN 1992-1-1 (EC2) and BS EN 1992-1-1/NA) lie outside the influence of Schöck Bauteile GmbH. Therefore, in such cases, the warranty is invalidated.

Schöck Isokorb® T type K

Schöck Isokorb® T type K
Suitable for cantilever balconies. It transfers negative moments and positive shear forces. The Schöck Isokorb® type K with the secondary load-bearing level VV transmits negative moments, positive and negative shear forces.

Element arrangement | Installation cross sections

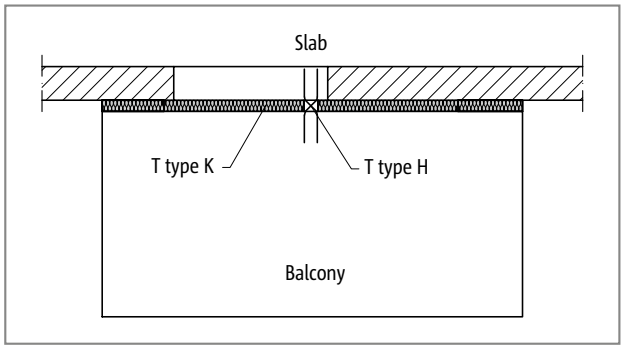


Fig. 21: Schöck Isokorb® T type K: Balcony freely cantilevered, optional with T type H (from page 125) with planned horizontal loads, e.g. closed balustrades

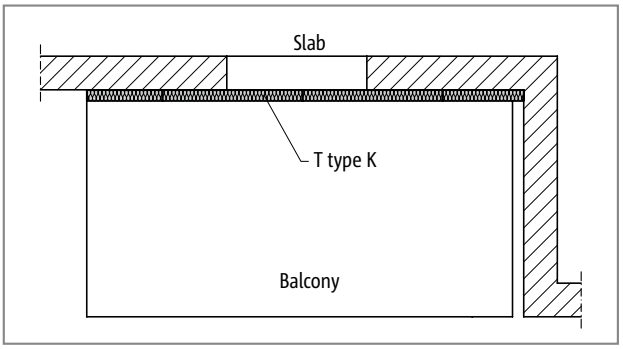


Fig. 22: Schöck Isokorb® T type K: Balcony with facade offset

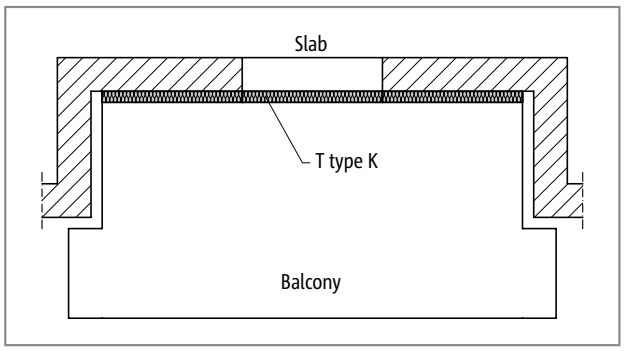


Fig. 23: Schöck Isokorb® T type K: Balcony with facade recess

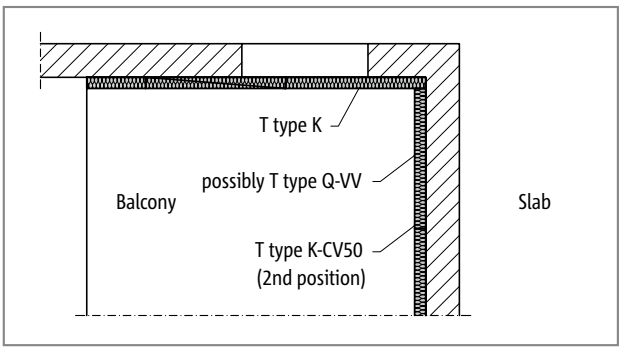


Fig. 24: Schöck Isokorb® T type K, Q-VV: Balcony with inside corner, freely supported on two sides

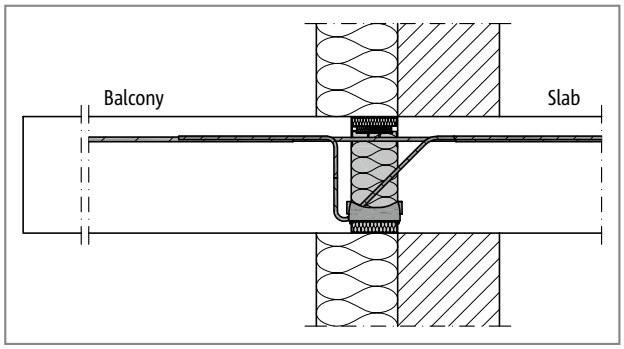


Fig. 25: Schöck Isokorb® T type K: Connection with thermal insulation composite system (WDVS)

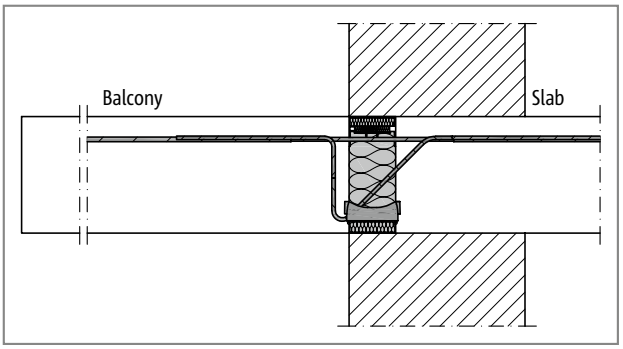


Fig. 26: Schöck Isokorb® T type K: Connection with single-leaf masonry

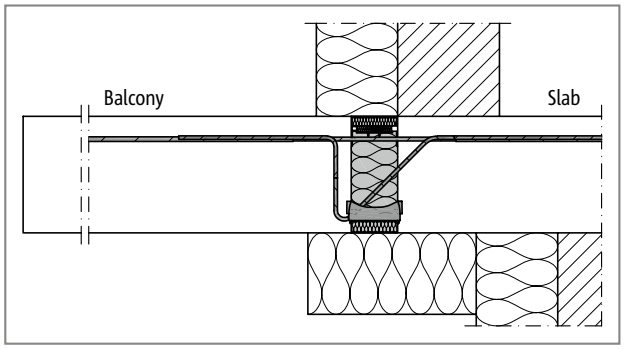


Fig. 27: Schöck Isokorb® T type K: Connection with indirectly positioned floor and WDVS

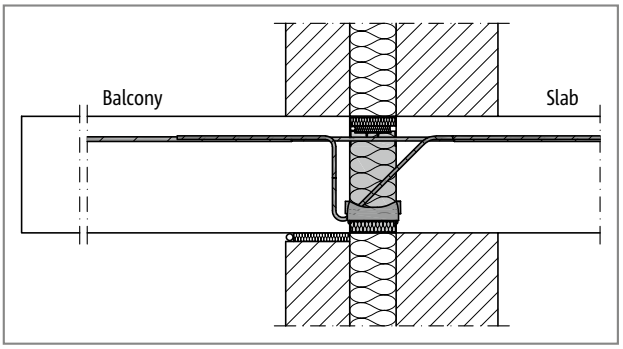


Fig. 28: Schöck Isokorb® T type K: Cavity wall with a balcony at inner slab level

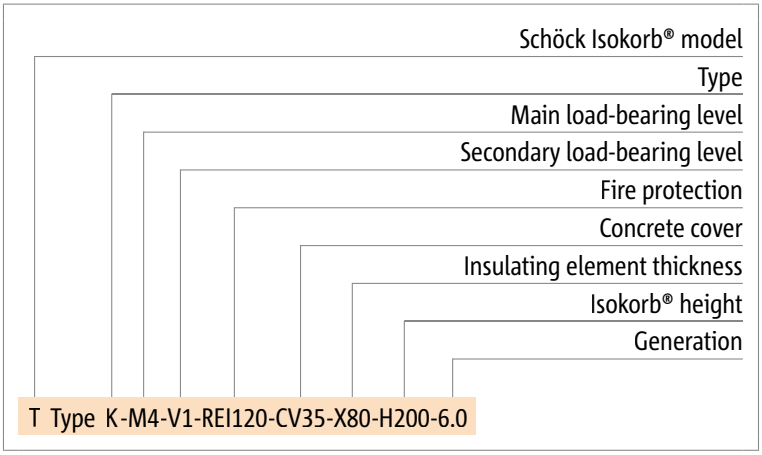
Product selection | Type designations | Special designs

Schöck Isokorb® T type K variants

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

- Main load-bearing level:
  M1 to M13
- Secondary load-bearing level:
  V1 to V3, VV1
- Fire resistance class:
  REI120 (standard): M1 to M11
  REI120 (Standard): M12 and M13: Projection upper fire protection board, both sides 10 mm
- Concrete cover of the tension bars:
  CV30 = 30 mm, CV35 = 35 mm, CV50 = 50 mm
- Insulating element thickness:
  X80 = 80 mm
- Isokorb® height:
  H = 160 - 250 mm for concrete cover CV30, CV35
  H = 180 - 250 mm for concrete cover CV50
- 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.

Design

Notes on design

- Minimum height H_{min} Schöck Isokorb® T type K-M1 to M11 for CV50: H_{min}=180mm, T type K-M12 and K-M13 see page33.
- For cantilever slab structures Schöck Isokorb® T type K-M1 to K-M11 without live load, stressed from moment loading without direct shear force activity or light structures, please use Schöck design software or contact our application engineering dept.

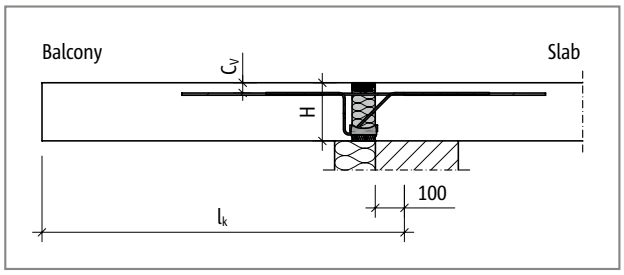


Fig. 29: Schöck Isokorb® T type K: Static system

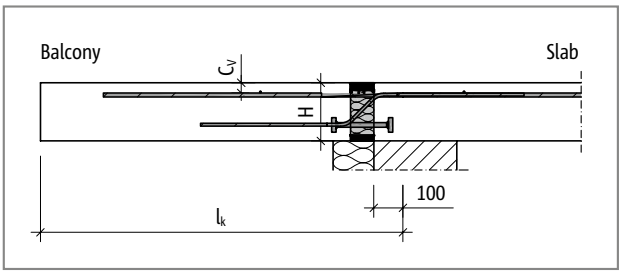


Fig. 30: Schöck Isokorb® T type K-M12: Static system

C25/30 design

Schöck Isokorb® T type K:				M1	M2	M3	M4	M5	M6
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	-	-8.0	-15.7	-20.5	-23.8	-26.1	-28.7
	160	-	180	-8.5	-16.6	-21.7	-25.2	-27.7	-30.4
	-	170	-	-8.9	-17.5	-23.0	-26.5	-29.3	-32.3
	170	-	190	-9.4	-18.4	-24.2	-27.9	-30.8	-34.0
	-	180	-	-9.9	-19.3	-25.5	-29.2	-32.4	-35.9
	180	-	200	-10.3	-20.2	-26.7	-30.6	-34.0	-37.7
	-	190	-	-10.8	-21.1	-27.9	-31.9	-35.6	-39.6
	190	-	210	-11.3	-22.0	-29.1	-33.3	-37.1	-41.4
	-	200	-	-11.8	-23.0	-30.3	-34.6	-38.7	-43.2
	200	-	220	-12.2	-23.9	-31.5	-36.0	-40.3	-45.1
	-	210	-	-12.7	-24.8	-32.7	-37.3	-41.9	-47.0
	210	-	230	-13.2	-25.7	-33.8	-38.7	-43.4	-48.8
	-	220	-	-13.7	-26.6	-35.0	-40.0	-45.0	-50.7
	220	-	240	-14.2	-27.5	-36.2	-41.4	-46.6	-52.6
	-	230	-	-14.7	-28.5	-37.4	-42.7	-48.2	-54.5
	230	-	250	-15.1	-29.4	-38.6	-44.1	-49.7	-56.4
	-	240	-	-15.6	-30.3	-39.8	-45.4	-51.3	-58.3
	240	-	-	-16.1	-31.2	-40.9	-46.8	-52.9	-60.2
	-	250	-	-16.6	-32.2	-42.1	-48.1	-54.4	-62.2
	250	-	-	-17.1	-33.1	-43.3	-49.5	-56.0	-64.0
				$v_{Rd,z}$ [kN/m]					
	V1			34.8	34.8	43.5	43.5	43.5	43.5
	V2			61.8	61.8	77.3	77.3	77.3	77.3
	V3			-	-	123.6	123.6	123.6	123.6
	VV1			-	-	-	±61.8	±61.8	±61.8

Schöck Isokorb® T type K:	M1	M2	M3	M4	M5	M6
Isokorb® length [mm]	1000	1000	1000	1000	1000	1000
Tension bars V1/V2/V3	4 ⌀ 8	8 ⌀ 8	10 ⌀ 8	12 ⌀ 8	14 ⌀ 8	15 ⌀ 8
Tension bars VV1	-	-	-	14 ⌀ 8	15 ⌀ 8	8 ⌀ 12
Shear force bars V1	4 ⌀ 6	4 ⌀ 6	5 ⌀ 6	5 ⌀ 6	5 ⌀ 6	5 ⌀ 6
Shear force bars V2	4 ⌀ 8	4 ⌀ 8	5 ⌀ 8	5 ⌀ 8	5 ⌀ 8	5 ⌀ 8
Shear force bars V3	-	-	8 ⌀ 8	8 ⌀ 8	8 ⌀ 8	8 ⌀ 8
Shear force bars VV1	-	-	-	4 ⌀ 8 + 4 ⌀ 8	4 ⌀ 8 + 4 ⌀ 8	4 ⌀ 8 + 4 ⌀ 8
Pressure bearing V1/V2 (piece)	4	6	7	8	7	8
Pressure bearing V3 (piece)	-	-	8	8	8	10
Pressure bearing VV1 (piece)	-	-	-	11	12	13

Notes on design

- Static system and infomation on the design see page 30.
- Schöck Isokorb® T type K-M6-V3 tension bars: 7⌀12
- Schöck Isokorb® T type K-M6-VV1 special stirrup: 4 piece.

C25/30 design

Schöck Isokorb® T type K:				M7	M8	M9	M10	M11	M11
Design values with	Concrete cover CV [mm]			Concrete strength class ≥ C25/30					≥ C30/37
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]					
Isokorb® height H [mm]	-	160	-	-32.5	-36.4	-40.4	-46.4	-46.4	-50.2
	160	-	180	-34.5	-38.7	-43.0	-49.2	-49.2	-53.3
	-	170	-	-36.7	-41.1	-45.6	-52.1	-52.1	-56.4
	170	-	190	-38.7	-43.4	-48.1	-55.0	-55.0	-59.4
	-	180	-	-40.9	-45.8	-50.8	-57.8	-57.8	-62.5
	180	-	200	-42.9	-48.1	-53.3	-60.7	-60.7	-65.6
	-	190	-	-45.1	-50.6	-56.0	-63.5	-63.5	-68.7
	190	-	210	-47.2	-52.9	-58.6	-66.4	-66.4	-71.8
	-	200	-	-49.4	-55.3	-61.3	-69.3	-69.3	-74.9
	200	-	220	-51.5	-57.7	-63.9	-72.1	-72.1	-78.0
	-	210	-	-53.7	-60.1	-66.6	-75.0	-75.0	-81.1
	210	-	230	-55.8	-62.5	-69.2	-77.9	-77.9	-84.2
	-	220	-	-58.0	-65.0	-71.8	-80.7	-80.7	-87.3
	220	-	240	-60.1	-67.4	-74.3	-83.6	-83.6	-90.4
	-	230	-	-62.4	-69.9	-76.8	-86.4	-86.4	-96.5
	230	-	250	-64.5	-72.3	-79.4	-89.3	-89.3	-96.6
	-	240	-	-66.8	-74.7	-81.9	-92.2	-92.2	-99.7
	240	-	-	-68.9	-77.1	-84.5	-95.0	-95.0	-102.8
	-	250	-	-71.2	-79.4	-87.0	-97.9	-97.9	-105.9
	250	-	-	-73.4	-81.7	-89.6	-100.7	-100.7	-109.0
				$v_{Rd,z}$ [kN/m]					
	V1			92.7	108.2	108.2	123.6	139.1	139.1
	V2			123.6	123.6	123.6	139.1	-	-
	VV1			108.2/–61.8	108.2/–61.8	108.2/–61.8	123.6/–61.8	123.6/–61.8	123.6/–61.8

Schöck Isokorb® T type K:	M7	M8	M9	M10	M11	M11
Isokorb® length [mm]	1000	1000	1000	1000	1000	1000
Tension bars V1/V2	8 ⌀ 12	9 ⌀ 12	10 ⌀ 12	12 ⌀ 12	13 ⌀ 12	13 ⌀ 12
Tension bars VV1	9 ⌀ 12	10 ⌀ 12	11 ⌀ 12	12 ⌀ 12	13 ⌀ 12	13 ⌀ 12
Shear force bars V1	6 ⌀ 8	7 ⌀ 8	7 ⌀ 8	8 ⌀ 8	9 ⌀ 8	9 ⌀ 8
Shear force bars V2	8 ⌀ 8	8 ⌀ 8	8 ⌀ 8	9 ⌀ 8	-	-
Shear force bars VV1	7 ⌀ 8 + 4 ⌀ 8	7 ⌀ 8 + 4 ⌀ 8	7 ⌀ 8 + 4 ⌀ 8	8 ⌀ 8 + 4 ⌀ 8	8 ⌀ 8 + 4 ⌀ 8	8 ⌀ 8 + 4 ⌀ 8
Pressure bearing V1/V2 (piece)	11	12	16	18	18	18
Pressure bearing VV1 (piece)	16	17	16	18	18	18
Special stirrup (piece)	4	4	4	4	4	4

Notes on design

- Static system and infomation on the design see page 30.
- The indicative minimum concrete strength class of the external structural component is C32/40.
- 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®.
- Note FEM guidelines if a FEM program is to be used for design.

C25/30 design

Schöck Isokorb® T type K:				M12	M13
Design values with	Concrete cover CV [mm]			Concrete strength class ≥ C25/30	
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]	
Isokorb® height H [mm]	-	180	-	-59.8	-86.5
	180	-	200	-63.5	-90.9
	-	190	-	-67.1	-95.2
	190	-	210	-70.7	-99.5
	-	200	-	-74.3	-103.8
	200	-	220	-77.9	-108.2
	-	210	-	-81.5	-112.5
	210	-	230	-85.1	-116.8
	-	220	-	-88.7	-121.1
	220	-	240	-92.3	-125.5
	-	230	-	-95.9	-129.8
	230	-	250	-99.5	-134.1
	-	240	-	-103.1	-138.4
	240	-	-	-106.7	-142.8
	-	250	-	-110.3	-147.1
	250	-	-	-113.9	-151.4
				$v_{Rd,z}$ [kN/m]	
	V1			96.6	96.6
	V2			144.9	144.9
	V3			208.6	208.6

Schöck Isokorb® T type K:	M12	M13
Isokorb® length [mm]	1000	1000
Tension bars	12 ⌀ 14	14 ⌀ 14
Pressure bearing / compression bars	10 ⌀ 16	12 ⌀ 16
Shear force bars V1	4 ⌀ 10	4 ⌀ 10
Shear force bars V2	6 ⌀ 10	6 ⌀ 10
Shear force bars V3	6 ⌀ 12	6 ⌀ 12
H_{min} for V3 CV30/35 [mm]	190	190
H_{min} for V1/V2 CV50 [mm]	200	200
H_{min} for V3 CV50 [mm]	210	210

Notes on design

- Static system and infomation on the design see page 30.
- The indicative minimum concrete strength class of the external structural component is C32/40.
- 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®.
- Note FEM guidelines if a FEM program is to be used for design.

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®

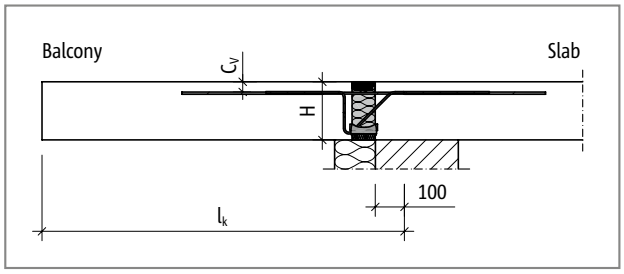


Fig. 31: Schöck Isokorb® T type K: Static system

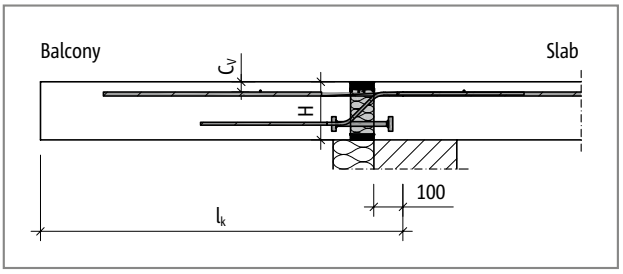


Fig. 32: Schöck Isokorb® T type K-M12: Static system

Schöck Isokorb® T type K:		M1-M5, M6-V1/V2			M6-V3/VV1, M7-M11		
Deflection factors when		tan α [%]			tan α [%]		
		CV30	CV35	CV50	CV30	CV35	CV50
Isokorb® height H [mm]	160	0.9	0.9	-	1.2	1.2	-
	170	0.8	0.8	-	1.0	1.0	-
	180	0.8	0.8	0.9	0.9	0.9	1.1
	190	0.7	0.7	0.8	0.9	0.9	1.0
	200	0.6	0.6	0.7	0.8	0.8	0.9
	210	0.6	0.6	0.7	0.7	0.7	0.8
	220	0.6	0.6	0.6	0.7	0.7	0.8
	230	0.5	0.5	0.6	0.6	0.6	0.7
	240	0.5	0.5	0.5	0.6	0.6	0.7
	250	0.5	0.5	0.5	0.6	0.6	0.6

Deflection/Camber | Slenderness

Schöck Isokorb® T type K:		M12			M13		
Deflection factors when		tan α [%]			tan α [%]		
		CV30	CV35	CV50	CV30	CV35	CV50
Isokorb® height H [mm]	180	0.8	0.8	-	1.2	1.2	-
	190	0.7	0.7	-	1.1	1.1	-
	200	0.7	0.7	0.8	1.0	1.0	1.2
	210	0.6	0.6	0.7	0.9	0.9	1.1
	220	0.6	0.6	0.7	0.9	0.9	1.0
	230	0.5	0.5	0.6	0.8	0.8	0.9
	240	0.5	0.5	0.6	0.8	0.8	0.9
	250	0.5	0.5	0.5	0.7	0.7	0.8

Slenderness

In order to safeguard the serviceability limit state we recommend the limitation of the slenderness to the following maximum cantilever lengths max l_k [m]:

Schöck Isokorb® T type K:		M1-M13		
maximum cantilever length with		$l_{k,max}$ [m]		
		CV30	CV35	CV50
Isokorb® height H [mm]	160	1.81	1.74	-
	170	1.95	1.88	-
	180	2.10	2.03	1.81
	190	2.25	2.17	1.95
	200	2.39	2.32	2.10
	210	2.54	2.46	2.25
	220	2.68	2.61	2.39
	230	2.83	2.76	2.54
	240	2.98	2.90	2.68
	250	3.12	3.05	2.83

Maximum cantilever length

The tabular values are based on the following assumptions:

- Accessible balcony
- Specific weight of concrete γ=25 kN/m^3
- Dead weight of the balcony surfacing $g_2 \leq 1.2$ kN/m^2
- Balcony rail $g_R \leq 0.75$ kN/m

Maximum cantilever length

- The maximum cantilevered length for ensuring the serviceability is a benchmark. It can be limited by the load bearing capacity when using the Schöck Isokorb® T type K.

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.

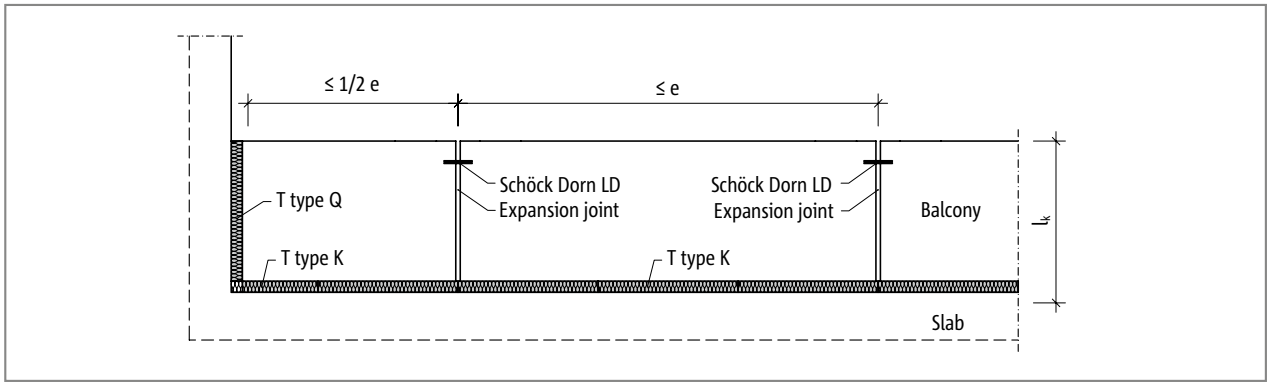


Fig. 33: Schöck Isokorb® T type K: Expansion joint layout

Schöck Isokorb® T type K:		M1 - M6-V1,V2	M6-V3 - M11
Maximum expansion joint spacing		e [m]	
Insulating element thickness [mm]	80	13.5	13.0

Schöck Isokorb® T type K:		M12, M13
Maximum expansion joint spacing e		e [m]
Insulating element thickness [mm]	80	9.2

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 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

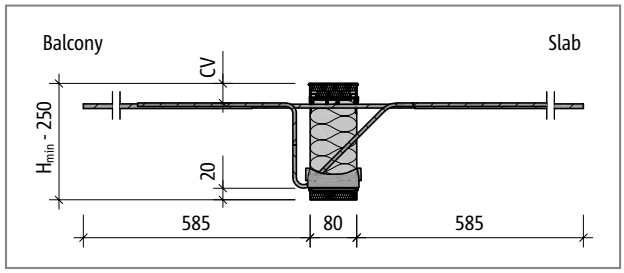


Fig. 34: Schöck Isokorb® T type K-M1 to M4: Product section

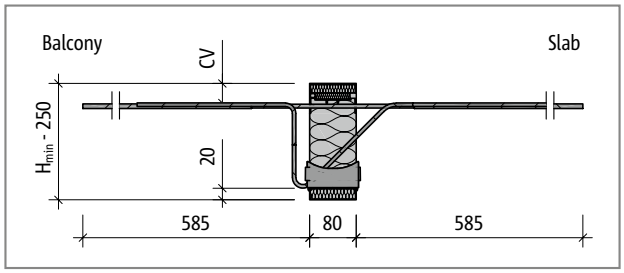


Fig. 35: Schöck Isokorb® T type K-M5 and K-M6: Product section

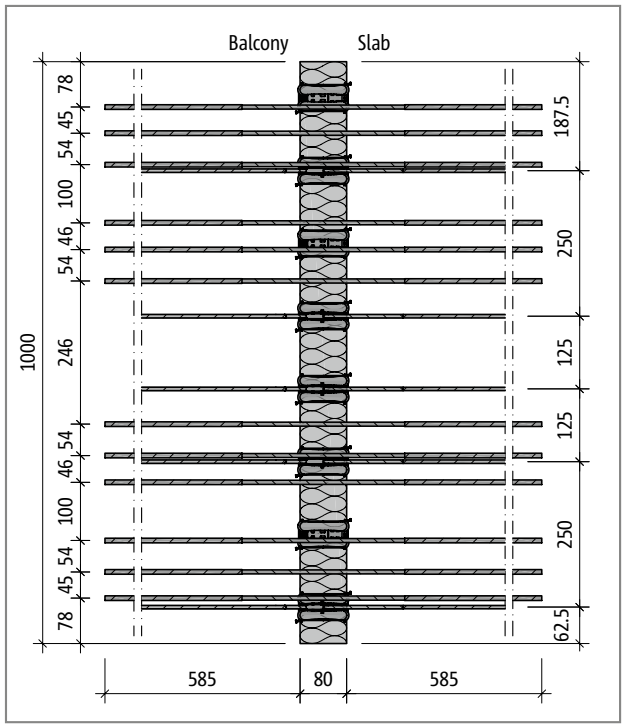


Fig. 36: Schöck Isokorb® T type K-M4-V1: Product layout

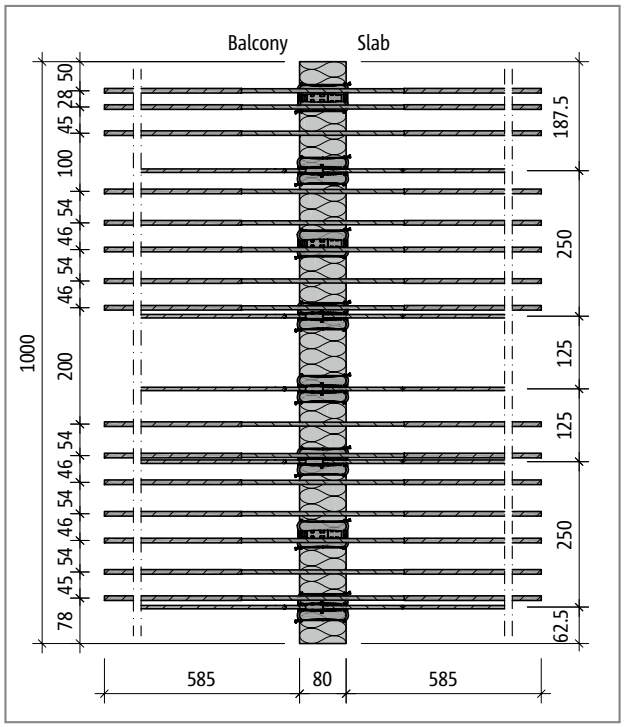


Fig. 37: Schöck Isokorb® T type K-M6-V1: Product layout

Product information

- Download further product plan views and cross-sections at www.schoeck.co.uk/download
- Minimum height Schöck Isokorb® T type K with CV50: H_{min} = 180 mm
- On-site spacing of the Schöck Isokorb® T type K on the unreinforced positions possible; take into account the load-bearing capacity reduced due to the spacing; take into account required edge distances
- Concrete cover of the tension bars: CV30 = 30 mm, CV35 = 35 mm, CV50 = 50 mm
- Schöck Isokorb® T type K-M6-V3/VV1: Tension bar length L= 725 mm

Product description

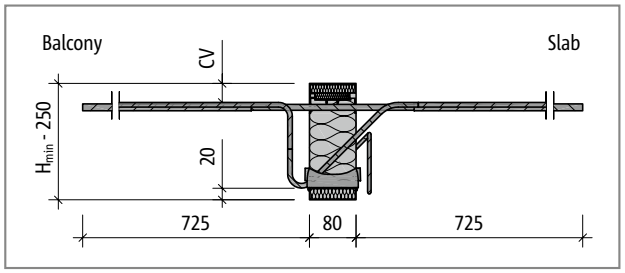


Fig. 38: Schöck Isokorb® T type K-M7 to M11: Product section

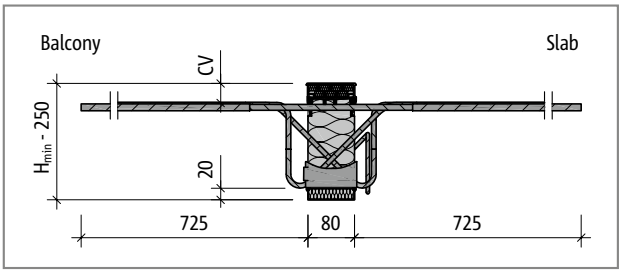


Fig. 39: Schöck Isokorb® T type K-M6-VV1: Product section

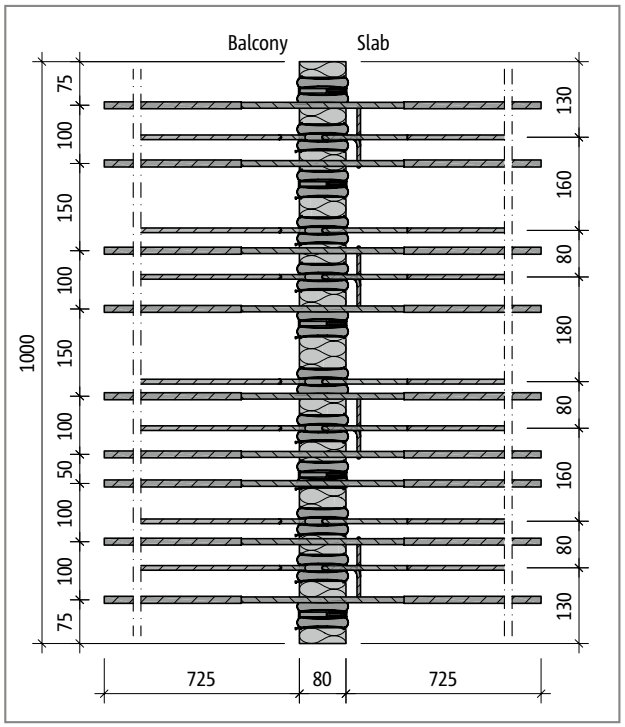


Fig. 40: Schöck Isokorb® T type K-M8-V1: Product layout

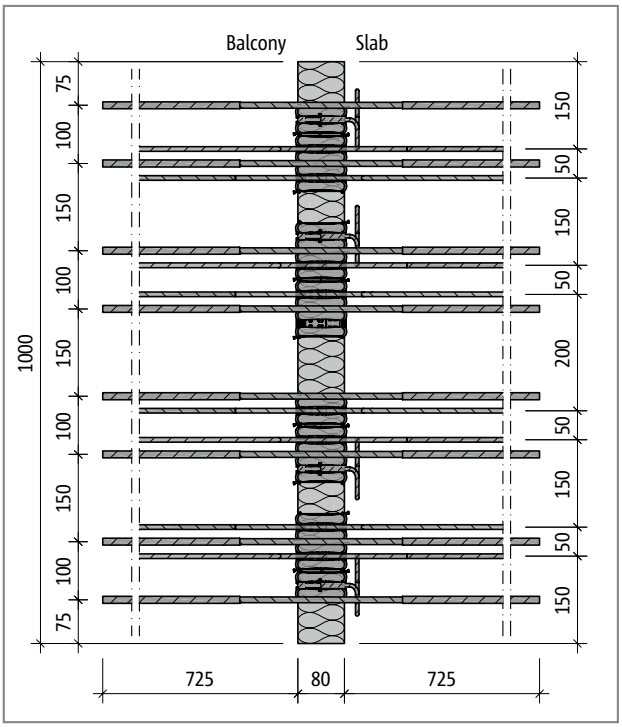


Fig. 41: Schöck Isokorb® T type K-M6-VV1: Product layout

Product information

- Download further product plan views and cross-sections at www.schoeck.co.uk/download
- Minimum height Schöck Isokorb® T type K with CV50: H_{min} = 180 mm
- On-site spacing of the Schöck Isokorb® T type K on the unreinforced positions possible; take into account the load-bearing capacity reduced due to the spacing; take into account required edge distances
- Concrete cover of the tension bars: CV30 = 30 mm, CV35 = 35 mm, CV50 = 50 mm

Product description

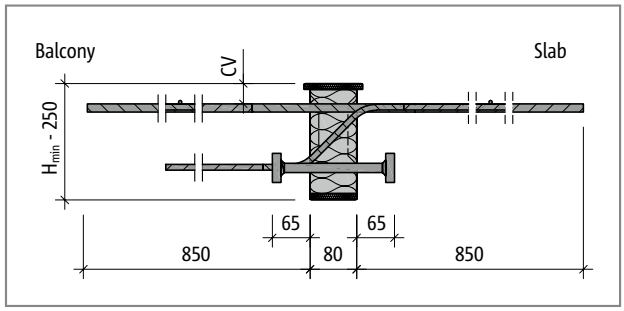


Fig. 42: Schöck Isokorb® T type K-M12: Product section

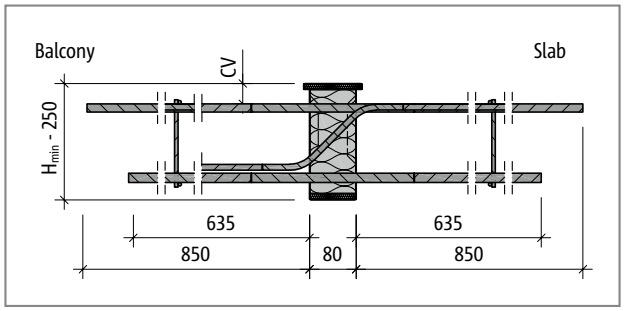


Fig. 43: Schöck Isokorb® T type K-M13: Product section

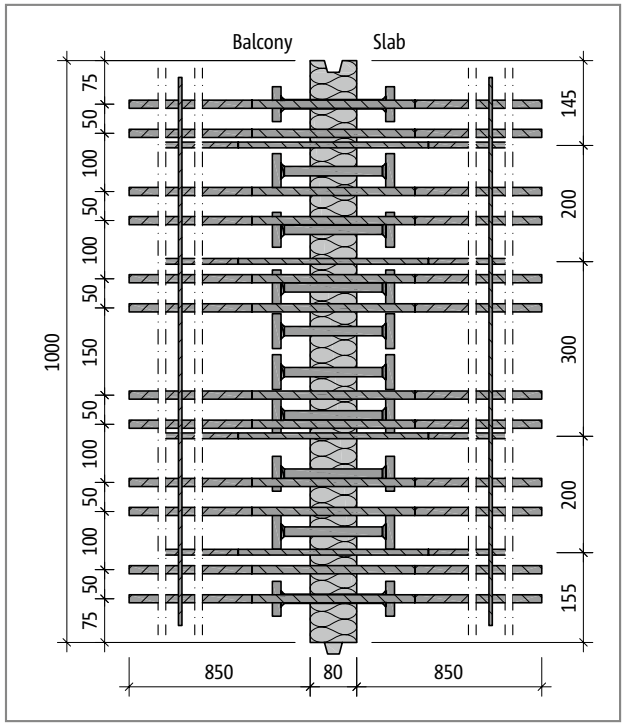


Fig. 44: Schöck Isokorb® T type K-M12-V1: Product layout

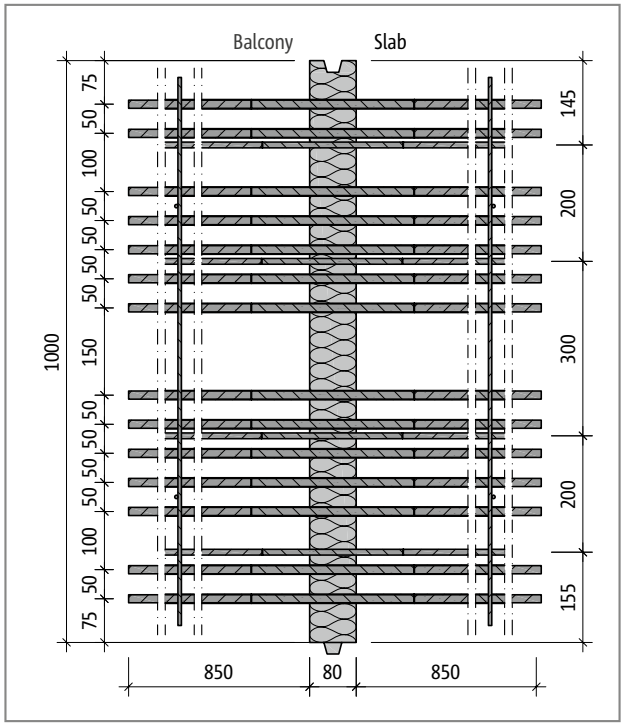


Fig. 45: Schöck Isokorb® T type K-M13-V1: Product layout

Product information

- Download further product plan views and cross-sections at www.schoeck.co.uk/download
- Minimum height H_{min} Schöck Isokorb® T type K-M12 and T type K-M13 see page 33
- On-site spacing of the Schöck Isokorb® T type K on the unreinforced positions possible; take into account the load-bearing capacity reduced due to the spacing; take into account required edge distances
- Concrete cover of the tension bars: CV30 = 30 mm, CV35 = 35 mm, CV50 = 50 mm

On-site reinforcement

Direct support

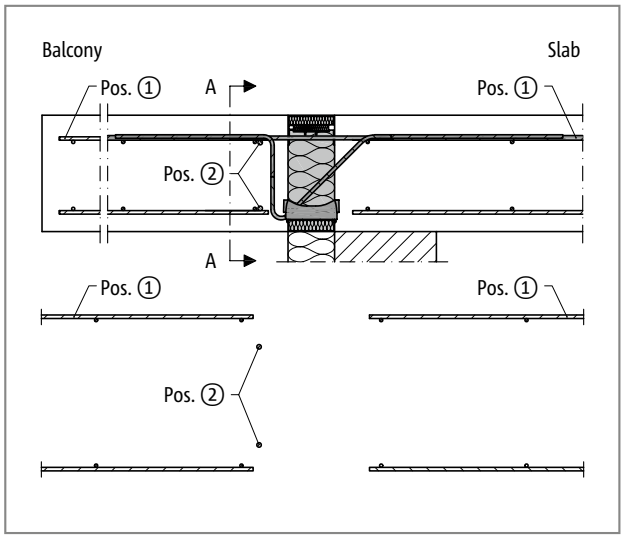


Fig. 46: Schöck Isokorb® T type K: On-site reinfircement with direct support

Indirect support

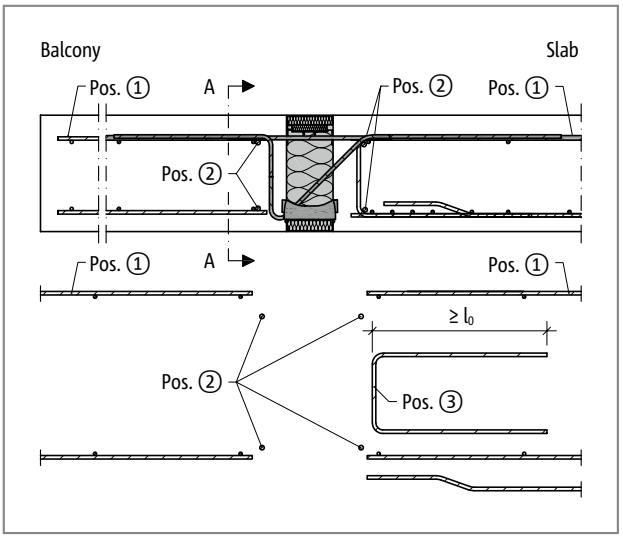


Fig. 47: Schöck Isokorb® T type K: On-site reinforcement with indirect support

Information on side reinforcement

- The side reinforcement of the slab edge parallel to the Schöck Isokorb® is covered on-site by the integrated suspension reinforcement of the Schöck Isokorb®.

Direct and indirect support

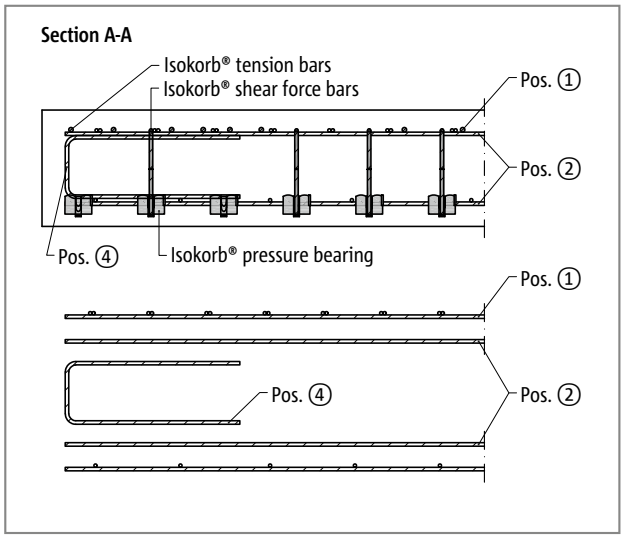


Fig. 48: Schöck Isokorb® T type K: On-site reinforcement on the balcony side in the Section A-A; Pos.4 = side reinforcement on the free edge perpendicular to the Schöck Isokorb®

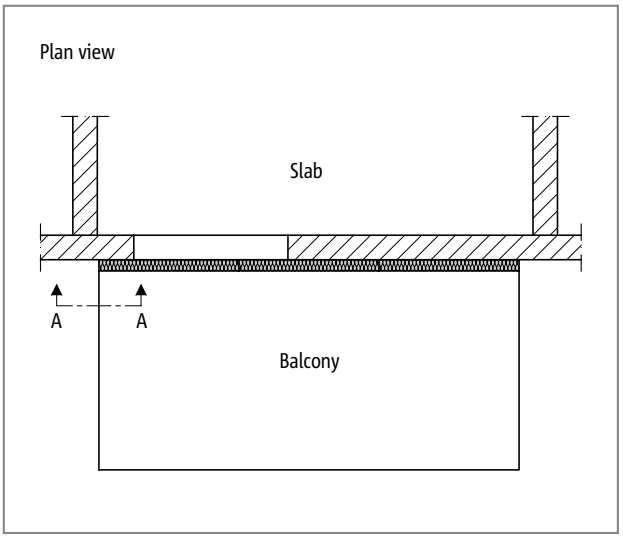


Fig. 49: Schöck Isokorb® T type K: Diagram of the position of Section A-A

On-site reinforcement

Recommendation for on-site connection reinforcement

Details of the lapping reinforcement for Schöck Isokorb® with a loading of 100 % of the maximum design moment with C25/30; variants adapted to load-bearing level. The required reinforcement cross-section depends on the bar diameter of the steel bar or wire mesh reinforcement.

Schöck Isokorb® T type K:			M1		M2		M3			M4			
On-site reinforcement	Secondary load-bearing level		V1	V2	V1	V2	V1	V2	V3	V1	V2	V3	VV1
	Type of bearing	Height [mm]	Concrete strength class ≥ C25/30										
Pos. 1 overlap reinforcement depending on bar diameter													
Pos. 1 with ⌀8 [mm²/m]	direct/indirect	160 - 250	242	215	443	416	578	544	564	655	622	622	704
Pos. 1 with ⌀10 [mm²/m]			271	252	476	457	619	596	641	698	675	699	717
Pos. 1 with ⌀12 [mm²/m]			325	302	571	548	743	715	769	838	810	839	861
Pos. 2 Steel bars along the insulation joint													
Pos. 2	direct	160 - 250	2 • H8										
	indirect	160 - 250	4 • H8										
Pos. 3 vertical reinforcement													
Pos. 3 [mm²/m]	indirect	160 - 250	113		113		113			113			-
Pos. 4 supplementary edge reinforcement													
Pos. 4	direct/indirect	160 - 250	according to BS EN 1992-1-1 (EC2), 9.3.1.4										

Schöck Isokorb® T type K:			M5				M6				M7		
On-site reinforcement	Secondary load-bearing level		V1	V2	V3	VV1	V1	V2	V3	VV1	V1	V2	VV1
	Type of bearing	Height [mm]	Concrete strength class ≥ C25/30										
Pos. 1 overlap reinforcement depending on bar diameter													
Pos. 1 with ⌀8 [mm²/m]	direct/indirect	160 - 250	757	724	775	754	861	827	844	880	959	959	990
Pos. 1 with ⌀10 [mm²/m]			802	779	856	768	908	884	915	880	1012	1030	990
Pos. 1 with ⌀12 [mm²/m]			963	934	1027	922	1089	1061	986	880	1065	1101	990
Pos. 2 Steel bars along the insulation joint													
Pos. 2	direct	160 - 250	2 • H8										
	indirect	160 - 250	4 • H8										
Pos. 3 vertical reinforcement													
Pos. 3 [mm²/m]	indirect	160 - 250	113		120	-	125		130	-	113		-
Pos. 4 supplementary edge reinforcement													
Pos. 4	direct/indirect	160 - 250	according to BS EN 1992-1-1 (EC2), 9.3.1.4										

Information about on-site reinforcement

- Alternative reinforcements are possible. Determine lap length according to BS EN 1992-1-1 (EC2) and BS EN 1992-1-1/NA.A reduction of the required lap length using m_{Ed}/m_{Rd} is permitted.For overlapping (l_0) with the Schöck Isokorb®, with T types K-M1 to K-M6-V2 a length of the tension bars of 545 mm and with T types K-M6-V3 to K-M11 a length of the tension bars of 675 mm can be input in the calculation.
- When reinforcing with different diameters the reinforcement specification for the largest diameter is relevant.
- The mixing of steel bar and wire mesh reinforcement is possible. The corresponding mesh reinforcement can be taken into account when determining the additional reinforcement.
- The reinforcement at the free edges Pos. 4 of the structural component perpendicular to the Schöck Isokorb® should be selected as low as possible so that it can be arranged between the upper and lower reinforcement layer.
- The indicative minimum concrete strength class of the external structural component is C32/40.

On-site reinforcement

Recommendation for on-site connection reinforcement

Details of the lapping reinforcement for Schöck Isokorb® with a loading of 100 % of the maximum design moment with C25/30; variants adapted to load-bearing level. The required reinforcement cross-section depends on the bar diameter of the steel bar or wire mesh reinforcement.

Schöck Isokorb® T type K			M8			M9			M10			M11	
On-site reinforcement	Secondary load-bearing level		V1	V2	VV1	V1	V2	VV1	V1	V2	VV1	V1	VV1
	Type of bearing	Height [mm]	Concrete strength class ≥ C25/30										
Pos. 1 overlap reinforcement depending on bar diameter													
Pos. 1 with ø10 [mm²/m]	direct/indirect	160 - 250	1130	1139	1100	1232	1241	1170	1388	1396	1317	1504	1424
Pos. 1 with ø12 [mm²/m]			1192	1210	1100	1295	1312	1170	1459	1476	1317	1584	1424
Pos. 2 Steel bars along the insulation joint													
Pos. 2	direct	160 - 250	2 • H8										
	indirect	160 - 250	4 • H8										
Pos. 3 vertical reinforcement													
Pos. 3 [mm²/m]	indirect	160 - 250	113		-	113		-	113		-	113	-
Pos. 4 supplementary edge reinforcement													
Pos. 4	direct/indirect	160 - 250	according to BS EN 1992-1-1 (EC2), 9.3.1.4										

Information about on-site reinforcement

- Alternative reinforcements are possible. Determine lap length according to BS EN 1992-1-1 (EC2) and BS EN 1992-1-1/NA.A reduction of the required lap length using m_{Ed}/m_{Rd} is permitted.For overlapping (l_0) with the Schöck Isokorb®, with T types K-M1 to K-M6-V2 a length of the tension bars of 545 mm and with T types K-M6-V3 to K-M11 a length of the tension bars of 675 mm can be input in the calculation.
- When reinforcing with different diameters the reinforcement specification for the largest diameter is relevant.
- The mixing of steel bar and wire mesh reinforcement is possible. The corresponding mesh reinforcement can be taken into account when determining the additional reinforcement.
- The reinforcement at the free edges Pos. 4 of the structural component perpendicular to the Schöck Isokorb® should be selected as low as possible so that it can be arranged between the upper and lower reinforcement layer.
- The indicative minimum concrete strength class of the external structural component is C32/40.

On-site reinforcement

Direct support

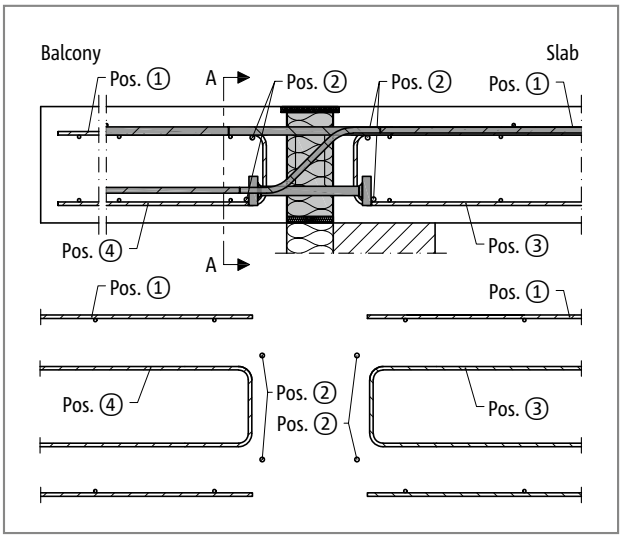


Fig. 50: Schöck Isokorb® T type K-M12: On-site reinforcement with direct support

Indirect support

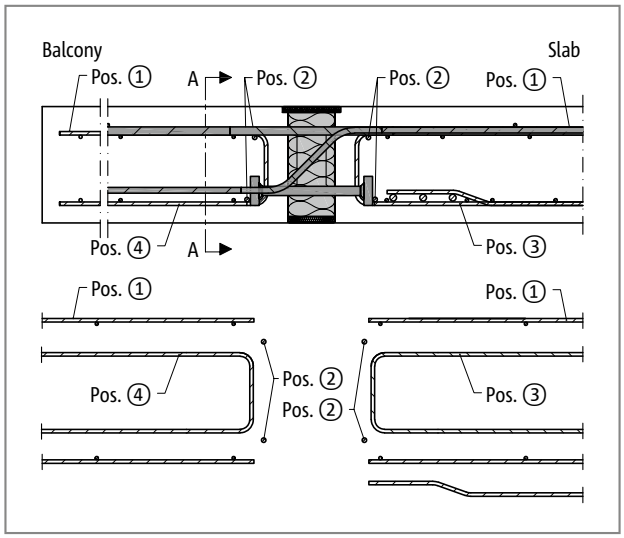


Fig. 51: Schöck Isokorb® T type K-M12: On-site reinforcement with indirect support

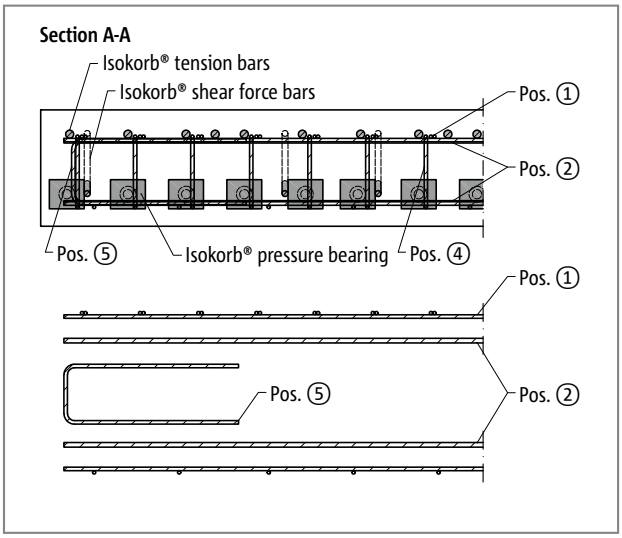


Fig. 52: Schöck Isokorb® T type K-M12: On-site reinforcment on the balcony side in the Section A-A; Pos.5 = structural edging at the free edge perpendicular to the Schöck Isokorb®

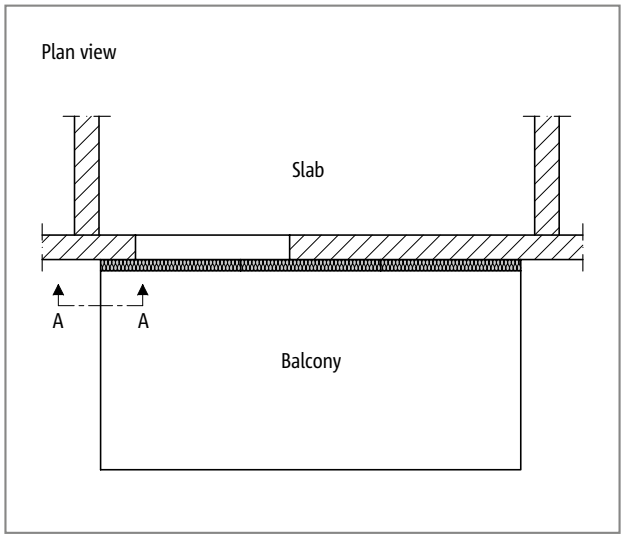


Fig. 53: Schöck Isokorb® T type K: Diagram of the position of Section A-A

On-site reinforcement

Schöck Isokorb® T type K:			M12-V1	M12-V2	M12-V3	M13V1	M13-V2	M13-V3
On-site reinforcement	Type of bearing	Height [mm]	Concrete strength class ≥ C25/30					
Pos. 1 Lapping reinforcement								
Pos. 1 [mm²/m]	direct/indirect	180 - 250	1848			2156		
Pos. 1 Variant	direct/indirect	180 - 250	H16@80 mm			H16@70 mm		
Pos. 2 Steel bars along the insulation joint								
Pos. 2	direct	180 - 250	2 • H8			2 • H8		
	indirect	180 - 250	2 • H8			2 • H8		
Pos. 3 Edge- and splitting tension reinforcement								
Pos. 3 [mm²/m]	direct	180 - 250	-			-	-	-
	indirect	180 - 250	226			113		
Pos. 4 Edge and splitting tension reinforcement								
Pos. 4 [mm²/m]	direct	180 - 250	448	559	706	222	333	480
	indirect	180 - 250						
Pos. 5 Side reinforcement at the free edge								
Pos. 5	direct/indirect	180 - 250	according to BS EN 1992-1-1 (EC2), 9.3.1.4					

Information about on-site reinforcement

- Alternative reinforcements are possible. Determine lap length according to BS EN 1992-1-1 (EC2) and BS EN 1992-1-1/NA. A reduction of the required lap length using m_{Ed}/m_{Rd} is permitted. For overlapping (l_0) with the Schöck Isokorb®, with T types K-M12 a length of the tension bars of 710 mm and with T types K-M13 a length of the tension bars of 730 mm can be in put in the calculation.
- 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.

Tight fit/Concreting section | Precast/Compression joints

Tight fit/Concreting section

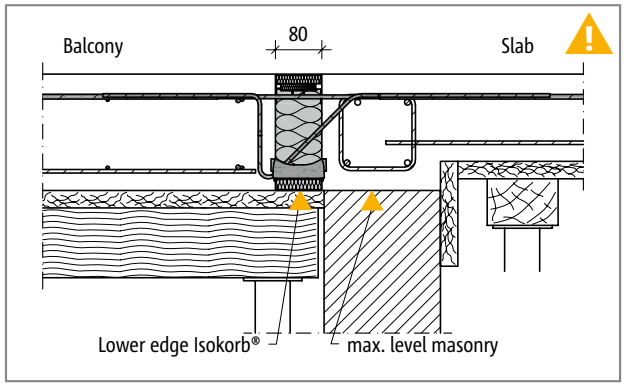


Fig. 54: Schöck Isokorb® T type K: In situ concrete with height offset floor on masonry wall

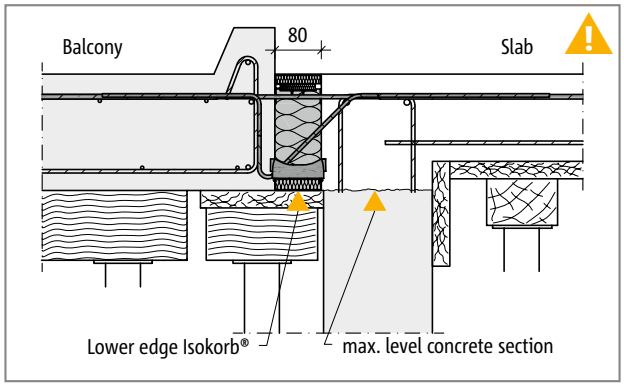


Fig. 55: Schöck Isokorb® T type K: Fully-finished balcony with height offset floor on fully-finished reinforced concrete wall

⚠ Hazard note: Tight fit with different height levels

The tight fit of the pressure bearings to the freshly poured concrete is to be ensured, therefore the upper edge of the masonry respectively of the concreting section is to be arranged below the lower edge of the Schöck Isokorb®. This is to be taken into account above all with a different height level between inner slab and balcony.

- The concreting joint and the upper edge of the masonry are to be arranged below the lower edge of the Schöck Isokorb®.
- The position of the concreting section is to be indicated in the formwork and reinforcement drawing.
- The joint planning is to be coordinated between precast concrete plant and construction site.

Precast/Compression joints

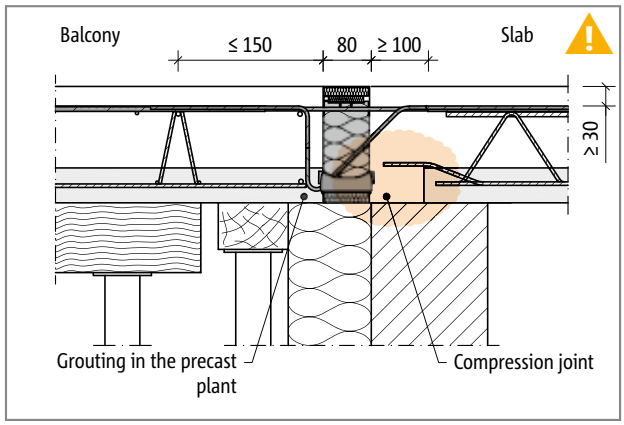


Fig. 56: Schöck Isokorb® T type K/KF: Direct support, installation in conjunction with prefabricated slabs (here: h ≤ 170 mm), compression joint on the floor side

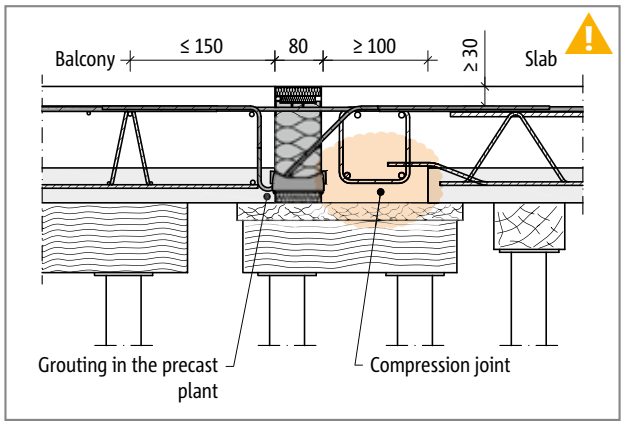


Fig. 57: Schöck Isokorb® T type K/KF: Indirect support, installation in conjunction with prefabricated slabs(here: h ≤ 170 mm), compression joint on the floor side

⚠ Hazard note: Compression joints

Compression joints are joints which, with unfavourable loading combination, remain always in compression. The underside of a cantilever balcony is always a compression zone. If the cantilever balcony is a precast part or an element slab, and/or the floor is an element slab, then the definition of the standard is effective.

- Compression joints are to be indicated in the formwork and reinforcement drawing!
- Compression joints between precast parts are always to be grouted using in-situ concrete. This also applies for compression joints with the Schöck Isokorb®!
- With compression joints between precast parts (on the inner slab or balcony side) and the Schöck Isokorb® an in-situ concrete resp. pour of ≥ 100 mm width is to be cast. This is to be entered in the working drawings.
- We recommend the installation of the Schöck Isokorb® and the pouring of the balcony-side compression joint already in the precast concrete plant.

Design example

Example calculation

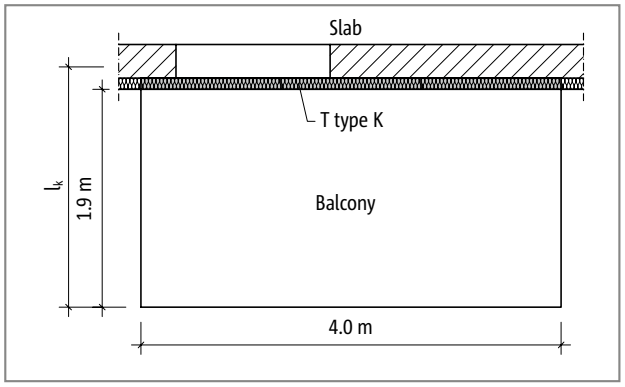


Fig. 58: Schöck Isokorb® T type K: Plan layout

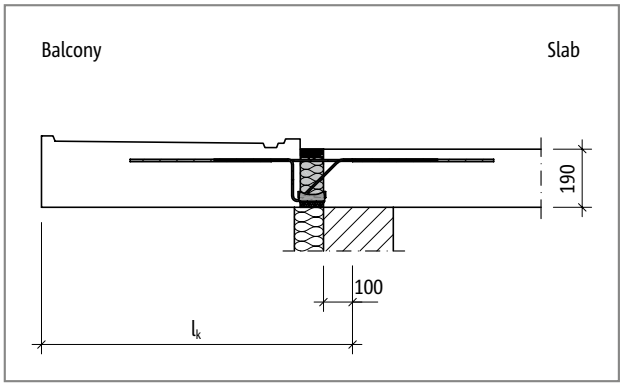


Fig. 59: Schöck Isokorb® T type K: Static system

Static system and load assumptions

Geometry:	Projection length	l_k = 2.06 m
	Balcony slab thickness	h = 190 mm
Design loads:	Balcony slab and screed	g = 6.25 kN/m²
	Service load	q = 2.5 kN/m²
	Edge load (balustrade)	g_R = 1.5 kN/m
Explosure classes:	External XC 4	
	Internal XC 1	
Selected:	Concrete strength class C25/30 for floor and C32/ 40 for balcony	
	Concrete cover c_v = 35 mm for Isokorb® tension bars	
Connection geometry:	No height offset, no floor downstand beam, no balcony upstand	
Support floor:	Floor edge directly supported	
Support balcony:	Restraint of cantilever slab using type K	

Recommendation on slenderness

Geometry:	Projection length	l_k = 2.06 m
	Balcony slab thickness	h = 190 mm
	Concrete cover	CV35
	Maximum projection length	$l_{k,max}$ = 2.17 m (from table, see page 35) > l_k

Proof of limits of load-bearing capacity (moment stress and shear force)

Internal forces:	m_{Ed}	$= -[(\gamma_G \cdot g_Q + \gamma \cdot q) \cdot l_k^2/2 + \gamma_G \cdot g_R \cdot l_k)]$
	m_{Ed}	$= -[(1.35 \cdot 6.25 + 1.5 \cdot 2.5) \cdot 2.06^2/2 + 1.35 \cdot 1.5 \cdot 2.06)] = -30.0$ kNm/m
	v_{Ed}	$= +(\gamma_G \cdot g + \gamma_q \cdot q) \cdot l_k + \gamma_G \cdot g_R$
	v_{Ed}	$= +(1.35 \cdot 6.25 + 1.5 \cdot 2.5) \cdot 2.06 + 1.35 \cdot 1.5 = +27.1$ kN/m
Selected:	**Schöck Isokorb® T type K-M6-V1-REI120-CV35-X80-H190**	
	m_{Rd}	= −31.9 kNm/m (see page 30) > m_{Ed}
	v_{Rd}	= +43.5 kN/m (see page 30) > v_{Ed}
	tan α	= 0.7 % (see page 34)

Design example | Installation instructions

Serviceability limit state (deflection/precamber)

Deflection factor: $\tan \alpha$ = 0.7 (from table, see page 34)

Selected load combination: g + q/2

(Recommendation for the determination of the precamber from Schöck Isokorb®)

Determine $m_{üd}$ in the ultimate limit state

$m_{pd} = -[(\gamma_G \cdot g + \gamma_Q \cdot q/2) \cdot l_k^2/2 + \gamma_G \cdot g_R \cdot l_k]$

$m_{pd} = -[(1.35 \cdot 6.25 + 1.5 \cdot 2.5/2) \cdot 2.06^2/2 + 1.35 \cdot 1.5 \cdot 2.06] = -26.0$ kNm/m

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

$p = [0.7 \cdot 2.06 \cdot (26.0/31.9)] \cdot 10 = 11.8$ mm

Arrangement of expansion joint: Length of balcony : 4.00 m < 11.30 m

=> No expansion joints required

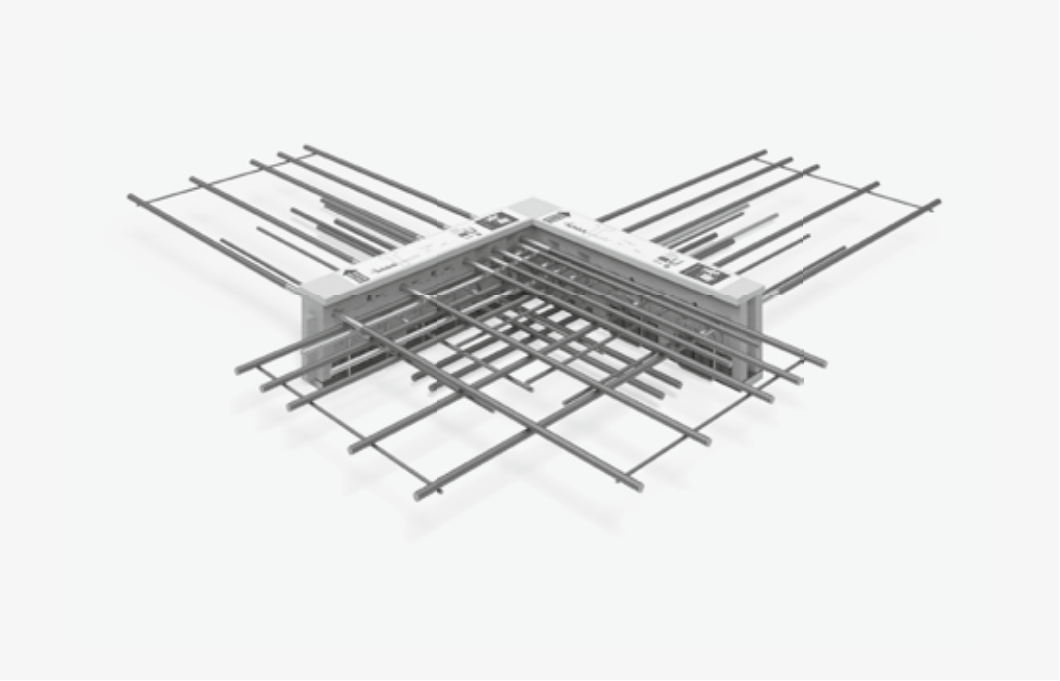
Installation manual

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

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?
- ☐ Has the additional proportionate deflection resulting from the Schöck Isokorb® been taken into account?
- ☐ Is the drainage direction taken into account with the resulting camber information? Is the degree of camber entered in the working drawings?
- ☐ Is the minimum slab thickness H_{min} for the respective Schöck Isokorb® type taken into account?
- ☐ Are the recommendations for the limitation of the slenderness observed?
- ☐ Are the maximum allowable expansion joint spacings taken into account?
- ☐ 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?
- ☐ 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?
- ☐ 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 the required in-situ concrete strips for the T type K in conjunction with inner slab elements (width ≥ 100 mm from compression element), been charted in the implementation plans?
- ☐ Have the requirements for on-site reinforcement of connections been defined in each case?
- ☐ 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?
- ☐ Is the increased minimum slab thickness (≥ 180 mm) and the required 2nd position (-CV50) been taken into account with the corner balcony?
  Is a T type K-CV50 (2nd position) planned in the connection to the T type C sub-member?
- ☐ Is the T type K-U, K-O or a special construction required instead of Isokorb® T type K for connections with height offset or to a wall?

Schöck Isokorb® T type C



Schöck Isokorb® T type C
Suitable for cantilevered corner balconies. It transfers negative moments and positive shear forces.

Element arrangement | Installation cross sections

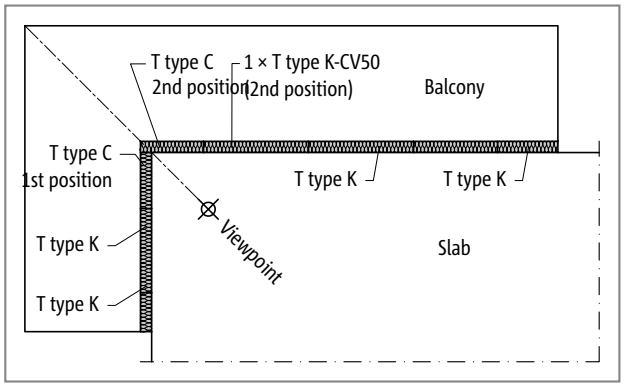


Fig. 60: Schöck Isokorb® T type C: Balcony with outside corner freely cantilevered

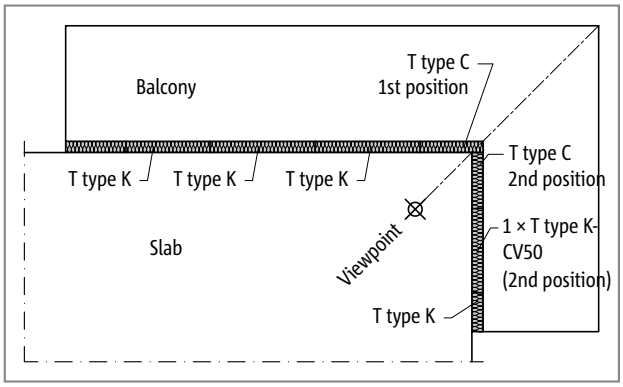


Fig. 61: Schöck Isokorb® T type C: Balcony with outside corner freely cantilevered

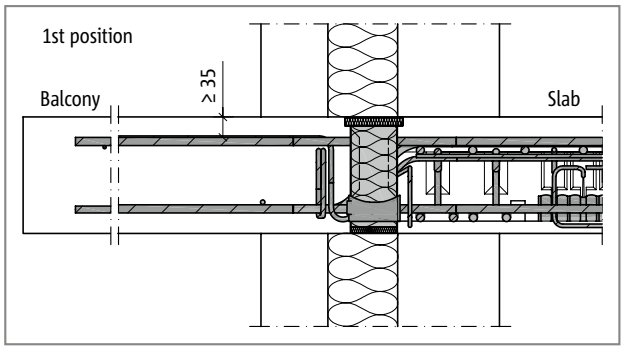


Fig. 62: Schöck Isokorb® T type C: Section 2nd position; connection with non-load-bearing cavity walls

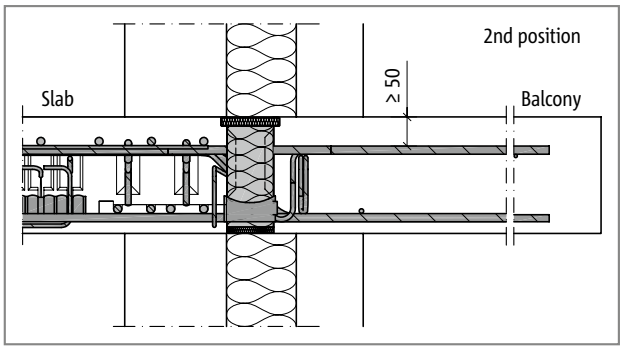


Fig. 63: Schöck Isokorb® T type C: Section 1st position; connection with non-load-bearing cavity walls

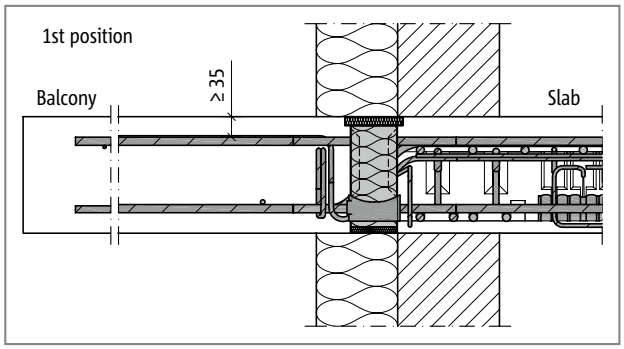


Fig. 64: Schöck Isokorb® T type C: Section 1st position; connection with thermal insulation composite system (TICS)

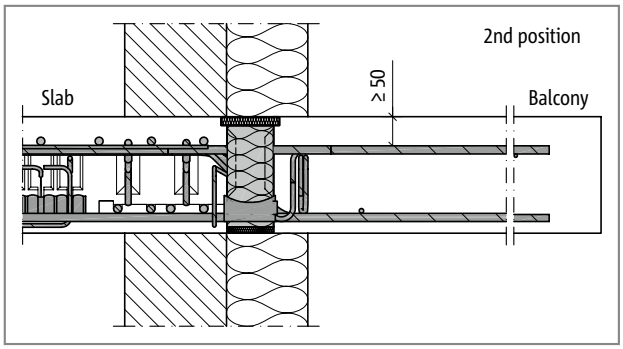


Fig. 65: Schöck Isokorb® T type C: Section 2nd position; connection with thermal insulation composite system (TICS)

Element arrangement

- Subcomponent 1st position and subcomponent 2nd position of the Schöck Isokorb® T type C cannot be interchanged.
- In connection with a Schöck Isokorb® T type C subcomponent 2nd position a Schöck Isokorb® T type K-CV50 element (2nd position) is always required.

Product selection | Type designations | Special designs

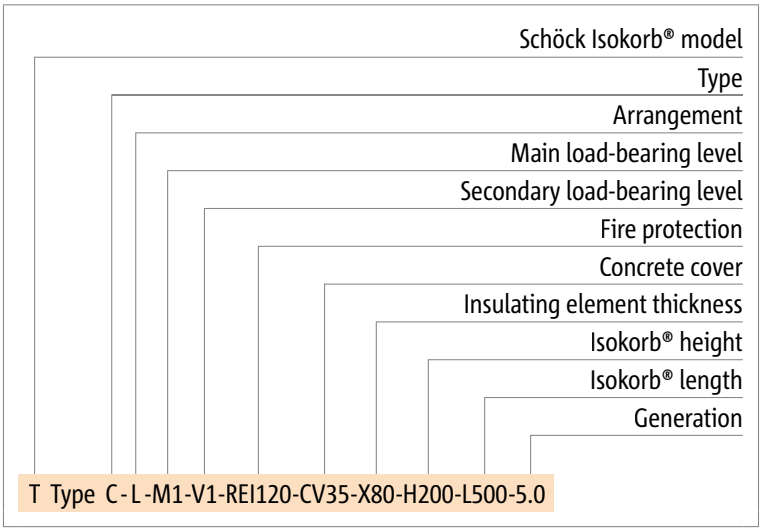
Schöck Isokorb® T type C variants

The Schöck Isokorb® T type C consists always of a subcomponent C-L 1st position and a subcomponent C-R 2nd position.

The configuration of a Schöck Isokorb® T type C can vary as follows:

- Arrangement:
  2 components: Subcomponent C-L 1st postion, subcomponent C-R 2nd position
  L = 1st position: Left from viewpoint on the floor
  R = 2nd position: Right from viewpoint on the floor
- Main load-bearing level: M1 to M3
- Secondary load-bearing level: V1
- Fire resistance class:
  REI120 (standard): Projection upper fire protection board, both sides 10 mm
- Concrete cover of the tension bars: CV30 = 30 mm, CV35 = 35 mm
- Insulating element thickness:
  X80 = 80 mm
- Isokorb® height:
  H = 180 - 250 mm
- Insulating element length: L = 500 mm, 620 mm
- possible combinations:
  e. g. T type K-M2-CV35 with T type C-M2-CV35
- 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® T type C			M1	M2	M3
Design values with	Concrete cover CV [mm]		Concrete strength class ≥ C25/30		
	CV30	CV35	M_Rd,y [kNm] per subcomponent L 1st position and R 2nd position		
Isokorb® height H [mm]		180	-14.3	-28.7	-32.9
	180		-15.1	-30.4	-34.8
		190	-16.0	-32.0	-36.6
	190		-16.9	-33.6	-38.4
		200	-17.7	-35.2	-40.2
	200		-18.6	-36.8	-42.0
		210	-19.4	-38.4	-43.9
	210		-20.3	-40.0	-45.7
		220	-21.2	-41.6	-47.5
	220		-22.0	-43.2	-49.3
		230	-22.9	-44.8	-51.2
	230		-23.7	-46.4	-53.0
		240	-24.6	-48.0	-54.8
	240		-25.5	-49.6	-56.6
		250	-26.3	-51.2	-58.5
	250		-27.2	-52.8	-60.3
Secondary load-bearing level			V_{Rd},z [kN] per subcomponent L 1st position and R 2nd position		
	H = 180-190 mm		37.3	78.6	91.1
	H ≥ 200 mm		37.3	106.7	119.2

Schöck Isokorb® T type C	M1		M2		M3	
	L 1st position	R 2nd position	L 1st position	R 2nd position	L 1st position	R 2nd position
Isokorb® length [mm]	500	500	620	620	620	620
Tension bars	8 ⌀ 8	8 ⌀ 8	5 ⌀ 14	5 ⌀ 14	6 ⌀ 14	6 ⌀ 14
Compression bars	-	-	3 ⌀ 14	3 ⌀ 14	4 ⌀ 14	4 ⌀ 14
Pressure bearing	5	5	6	6	6	6
Shear force bars H = 180 - 190 mm	3 ⌀ 8	3 ⌀ 8	3 ⌀ 8 + 2 ⌀ 10	3 ⌀ 8 + 2 ⌀ 10	4 ⌀ 8 + 2 ⌀ 10	4 ⌀ 8 + 2 ⌀ 10
Shear force bars H ≥ 200 mm	3 ⌀ 8	3 ⌀ 8	3 ⌀ 8 + 2 ⌀ 12	3 ⌀ 8 + 2 ⌀ 12	4 ⌀ 8 + 2 ⌀ 12	4 ⌀ 8 + 2 ⌀ 12
Special stirrups	-	-	2 ⌀ 6	2 ⌀ 6	2 ⌀ 6	2 ⌀ 6

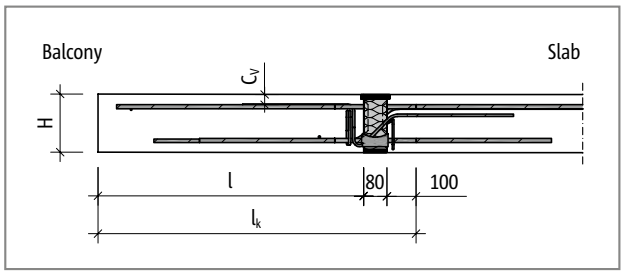


Fig. 66: Schöck Isokorb® T type C: Static system

C25/30 design

Notes on design

- The Schöck Isokorb® T type C with small cantilever lengths can also be replaced through the combination Schöck Isokorb® T type K (1st position) and Schöck Isokorb® T type K-CV50 (2nd position).
- The design takes place according to F. Leonhardt's "Vorlesung über Massivbau" ["Lecture on solid construction"] Part 3, Chap. 8.3.4.
- The indicative minimum concrete strength class of the external structural component is C32/40.
- 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®.
- Note FEM guidelines if a FEM program is to be used for design.
- The deflection and required precamber of the balcony corner is to be determined depending on the overall system and the direction of drainage.

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.

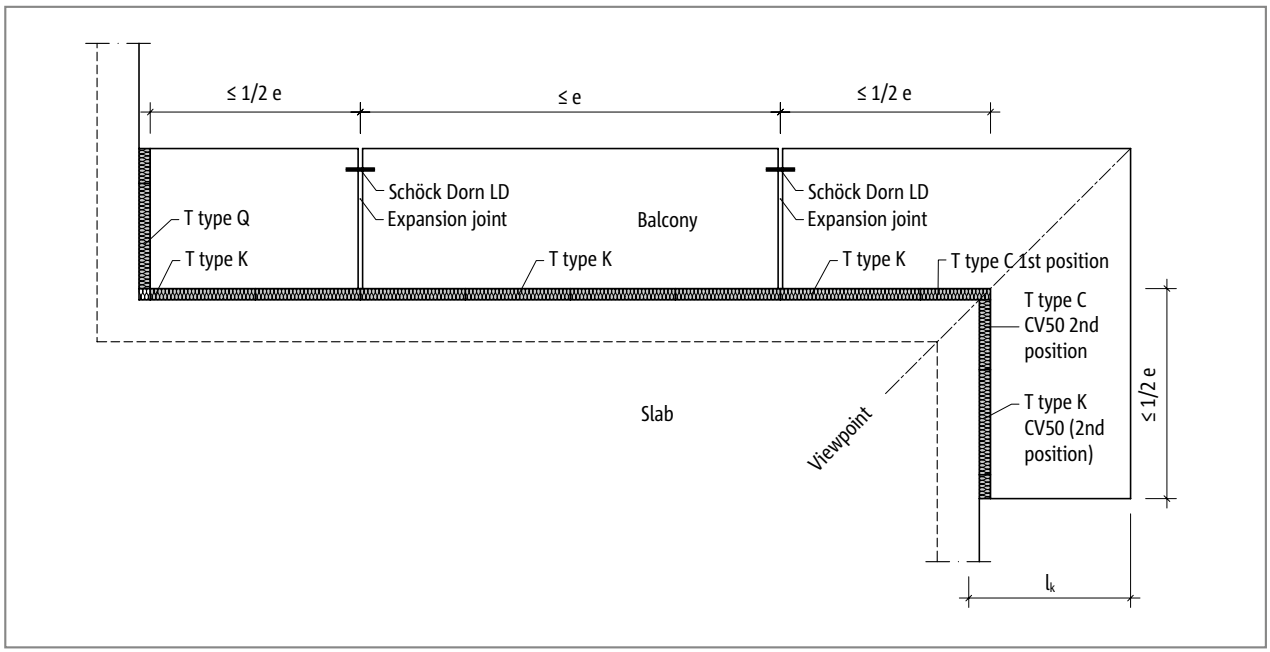


Fig. 67: Schöck Isokorb® T type C: Expansion joint spacing

Schöck Isokorb® T type C		M1	M1, M2
Maximum expansion joint spacing		e [m]	
Insulating element thickness [mm]	80	13.5	10.1

Schöck Isokorb® type C combined with	T type K	T type Q, T type Q-VV	T type Q-P, T type Q-P-VV, T type Q-PZ	T type D
maximum expansion joint spacing from fixed point e/2 [m]	≤ e/2 see p. 36	≤ e/2 see p. 101	≤ e/2 see p. 117	≤ e/2 see p. 146

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 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

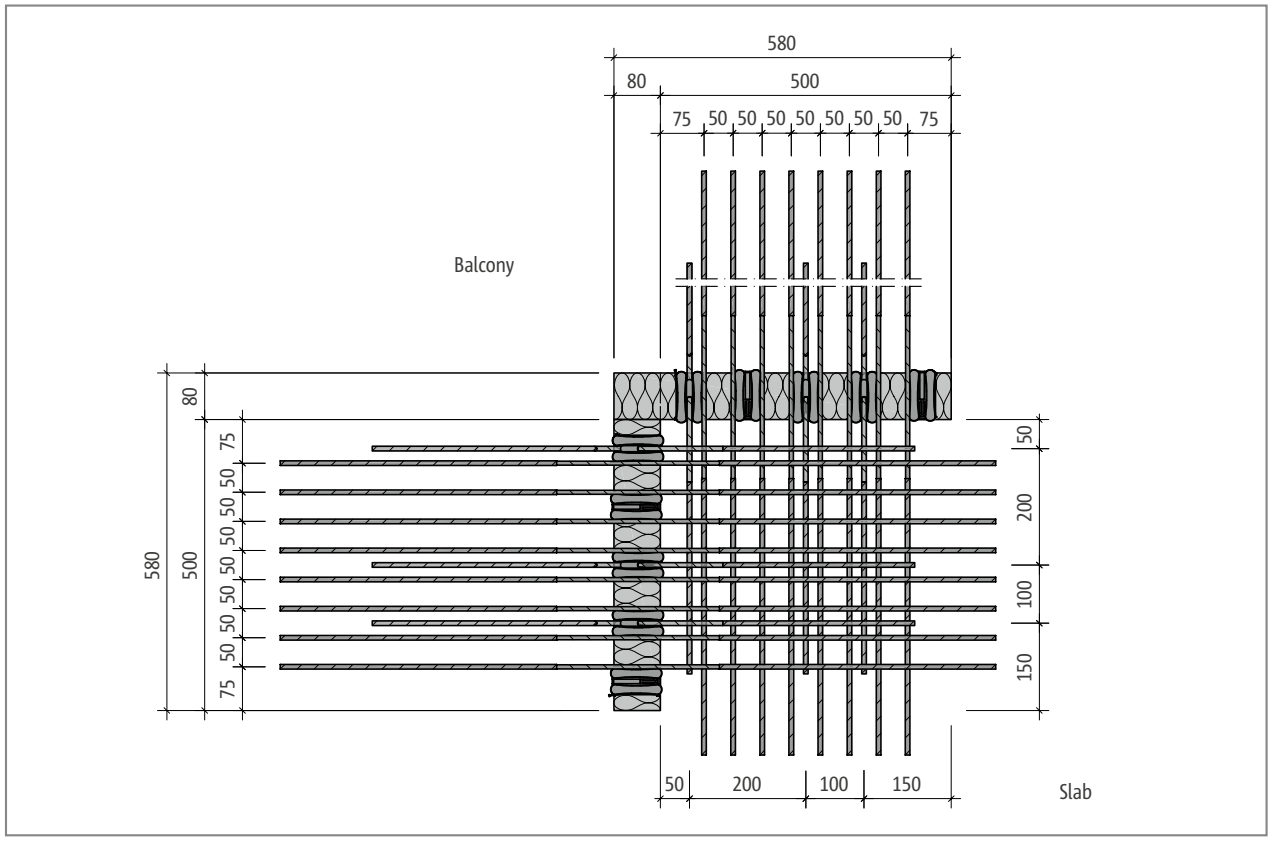


Fig. 68: Schöck Isokorb® T type C-M1: Product layout

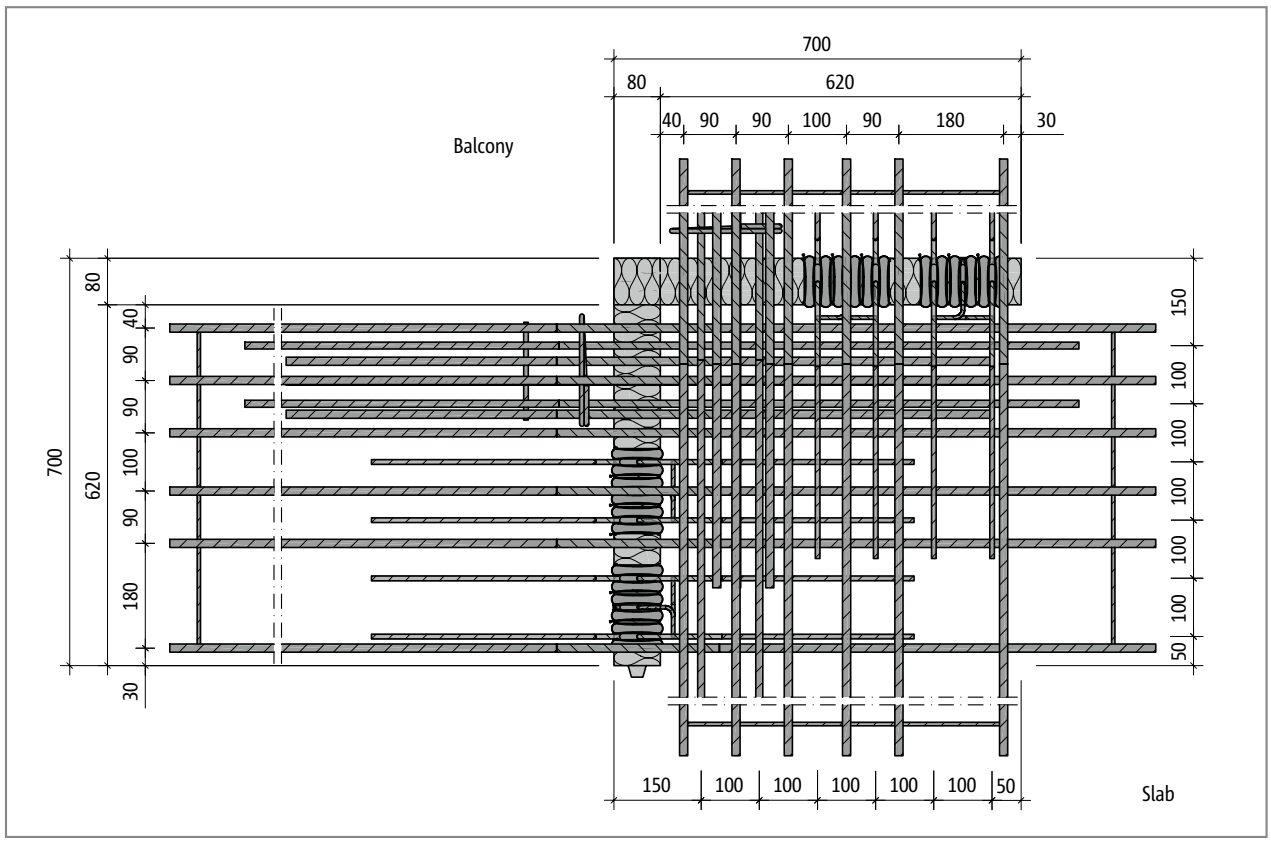


Fig. 69: Schöck Isokorb® T type C-M2: Product layout

Product description

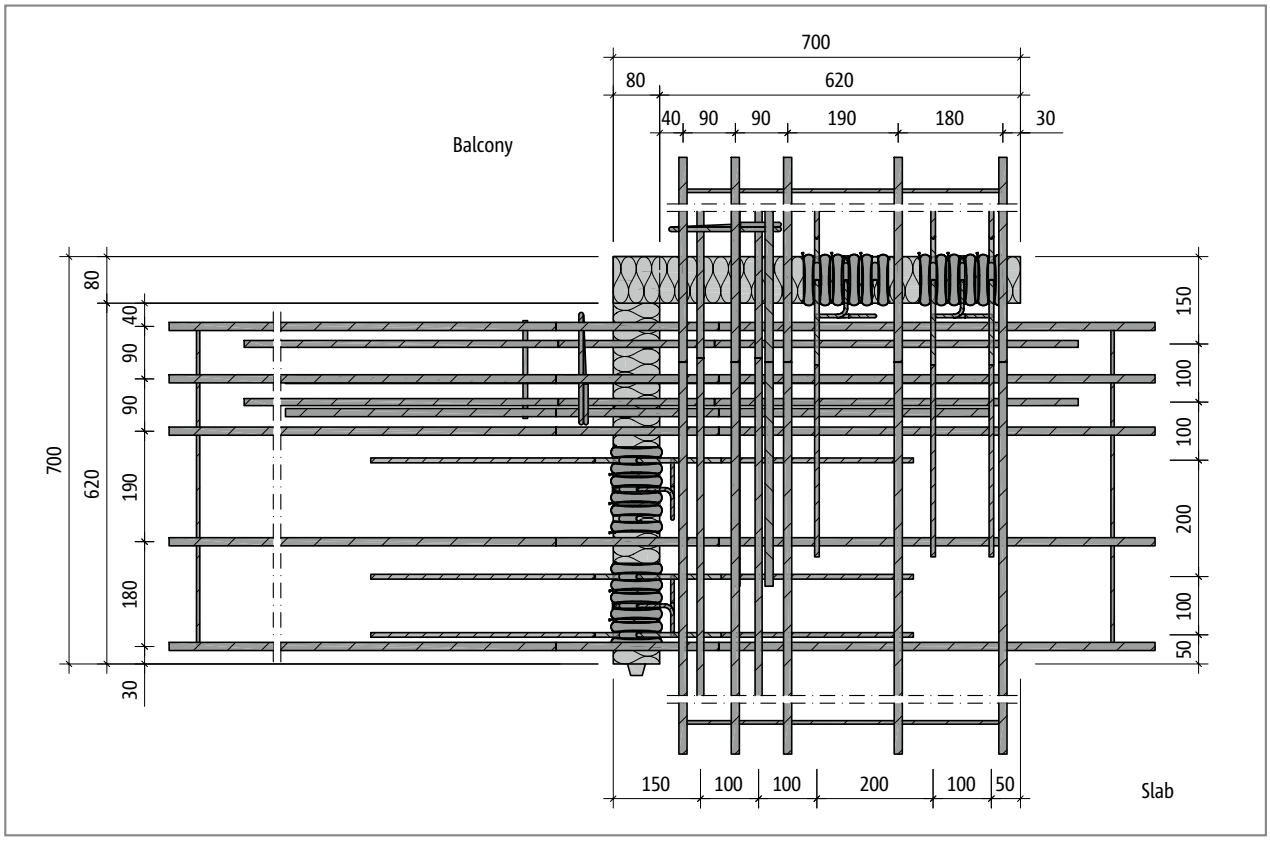


Fig. 70: Schöck Isokorb® T type C-M3: Product layout

Product information

- Download further product plan views and cross-sections at www.schoeck.co.uk/download

On-site reinforcement

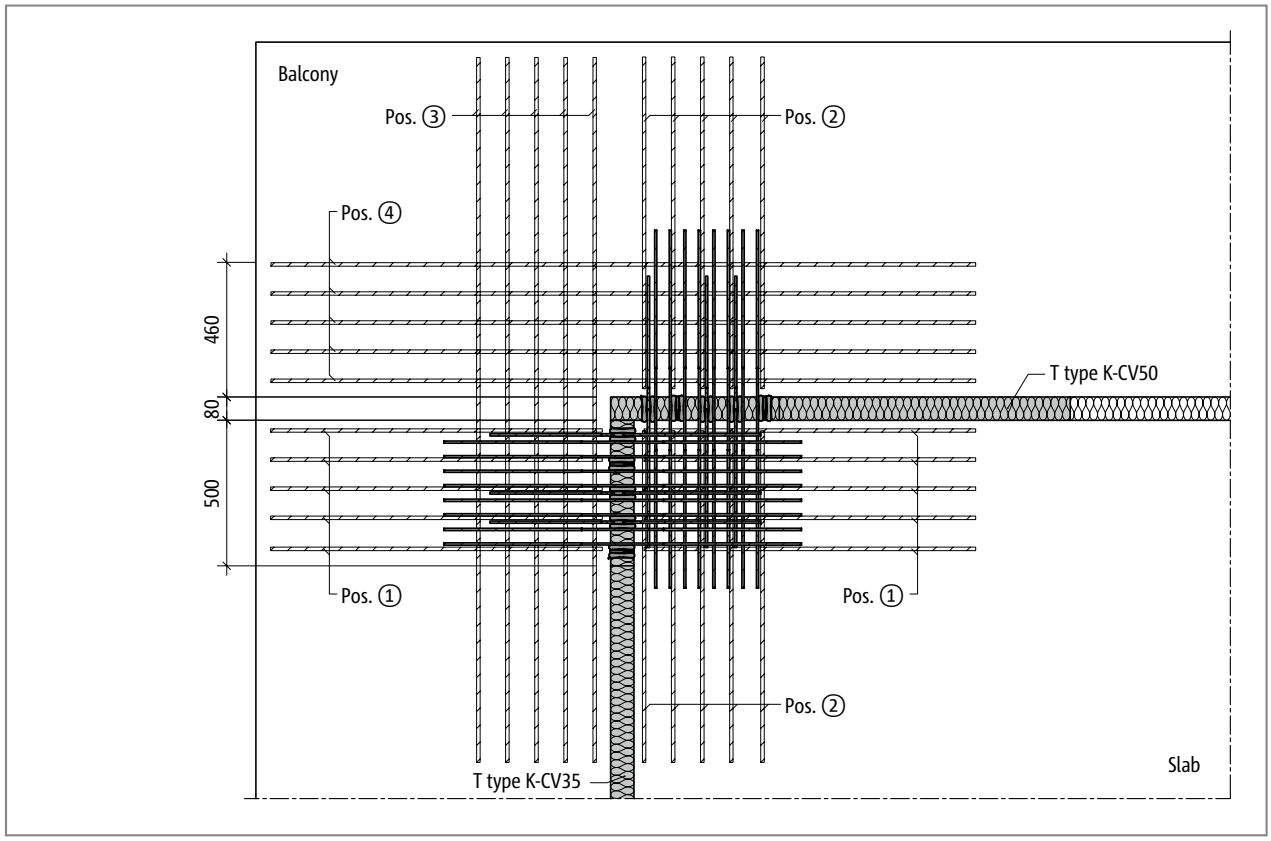


Fig. 71: Schöck Isokorb® T type C-M1: On-site reinforcement (top position)

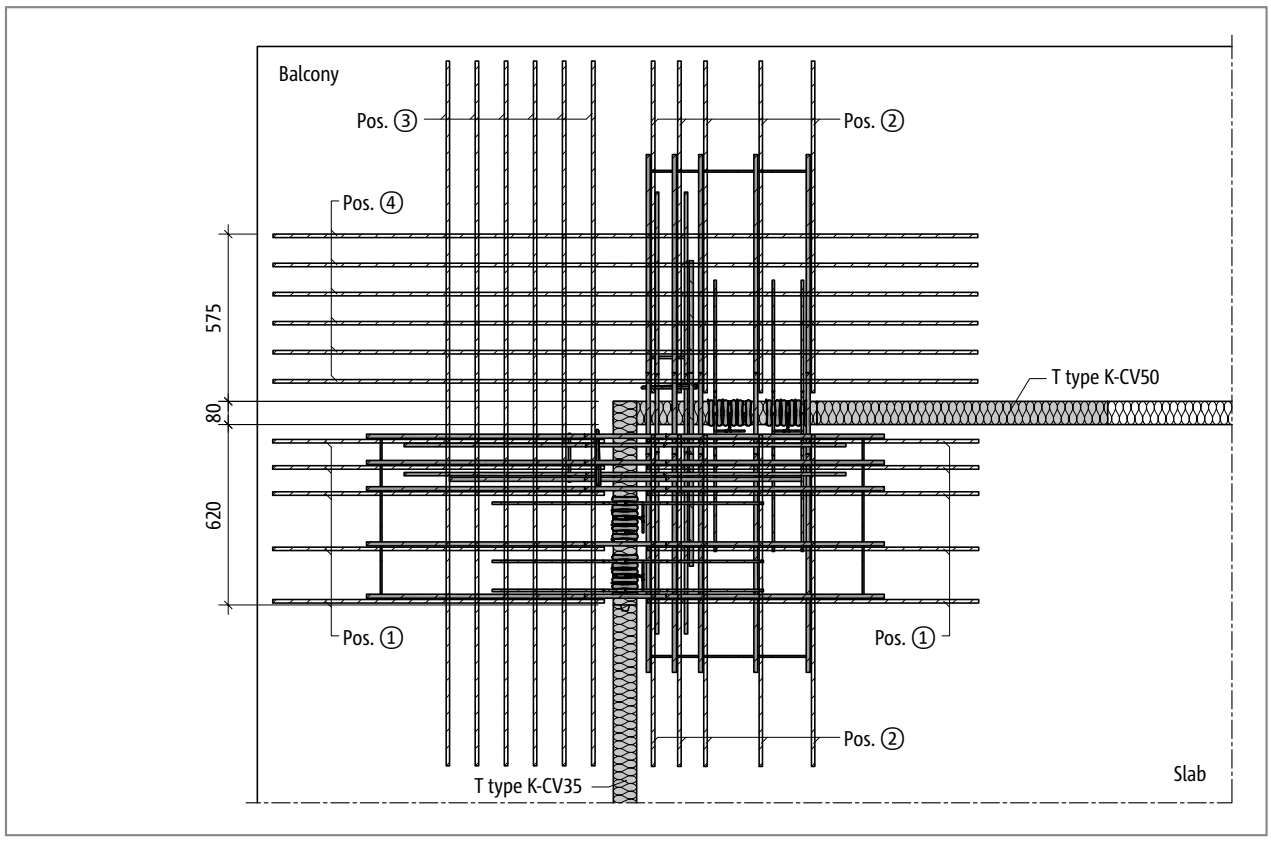


Fig. 72: Schöck Isokorb® T type C-M2: On-site reinforcement (top position)

On-site reinforcement | Installation instructions

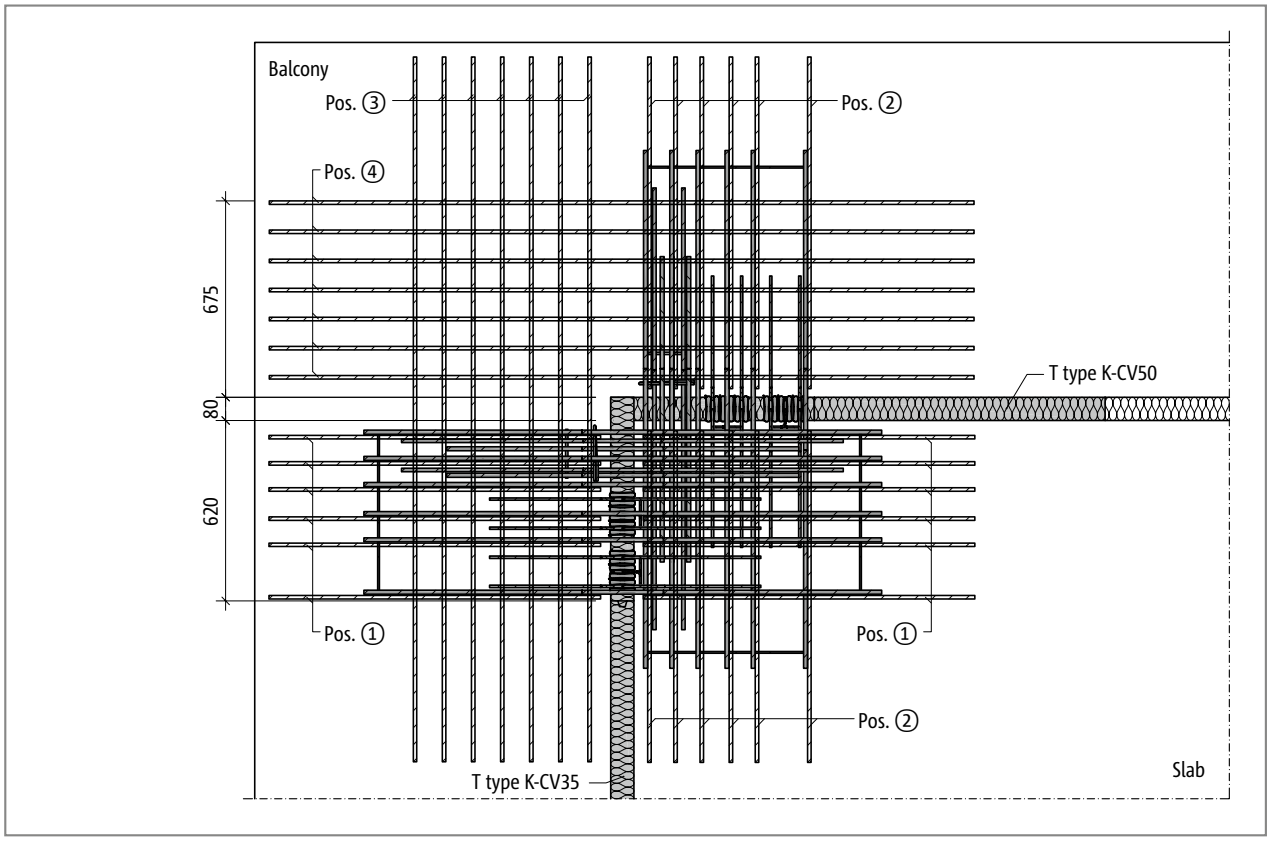


Fig. 73: Schöck Isokorb® T type C-M3: On-site reinforcement (top position)

Schöck Isokorb® T type C		M1	M2	M3
On-site reinforcement	Location	Concrete strength class ≥ C25/30		
Pos. 1 Lapping reinforcement				
Pos. 1	Balcony/floor side	2 • 5 • H12@100	2 • 5 • H16	2 • 6 • H16
Pos. 1 Bar length	Balcony/floor side	l - 70 mm	l - 70 mm	l - 70 mm
Pos. 2 Overlapping reinforcement				
Pos. 2	Balcony/floor side	2 • 5 • H12@100	2 • 5 • H16	2 • 6 • H16
Pos. 2 Bar length	Balcony/floor side	l - 70 mm	l - 70 mm	l - 70 mm
Pos. 3 Steel bars along the insulation joint				
Pos. 3	Balcony side	5 • H12@100	6 • H16@100	7 • H16@100
Pos. 3 Bar length	Balcony side	2 × l	2 × l	2 × l
Pos. 4 Steel bars along the insulation joint				
Pos. 4	Balcony side	5 • H12@100	6 • H16@100	7 • H16@100
Pos. 4 Bar length	Balcony side	2 × l	2 × l	2 × l

Information about on-site reinforcement

- The suspenson reinforcement and edging along the insulation joint is factory-integrated.
- Design of the overlap joints, precamber of the balcony slab and concrete cover according to the details from the structural engineer.
- With concreting, uniform filling and compacting on both sides is required for the positional security of the Schöck Isokorb®.
- The indicative minimum concrete strength class of the external structural component is C32/40.

Installation manual

- Installation manual for T type C under www.schoeck.co.uk/download.

Check list

- ☐ With the corner balcony has the required 2nd position (-CV50) been taken into account?
  In the connection to the Schöck Isokorb® T type C (2nd position) is a Schöck Isokorb® T type K-CV50 planned?
- ☐ Is the minimum slab thickness (H_{min} = 180 mm) of the Schöck Isokorb® T type C taken into account?
- ☐ Are the recommendations for the limitation of the slenderness observed?
- ☐ Are the maximum allowable expansion joint spacings 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?
- ☐ Have the in-situ concrete strips (width ≥ 100 mm from insulation body of the Schöck Isokorb® T type C-M1, width ≥ 200 mm from insulation body of the Schöck Isokorb® T type C-M2 and T type C-M3) been charted in the implementation plans?
- ☐ 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?
- ☐ Have the loads on the Schöck Isokorb® connection been specified at design level?
- ☐ With the selection of the design table is the relevant concrete cover taken into account?
- ☐ Has the additional proportionate deflection resulting from the Schöck Isokorb® been taken into account?
- ☐ Is the drainage direction taken into account with the resulting camber information? Is the degree of camber entered in the working drawings?
- ☐ Have the requirements for on-site reinforcement of connections been defined in each case?
- ☐ 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?
- ☐ Is the T type K-U, K-O or a special construction required instead of Isokorb® T type K for connections with height offset or to a wall?

Schöck Isokorb® T type K-U, K-O

Schöck Isokorb® T type K-U
Suitable for cantilevered balconies with height offset downward. The balcony lies lower than the floor slab. Suitable for cantilevered balconies, which are connected to a reinforced concrete wall above. It transfers negative moments and positive shear forces

Schöck Isokorb® T type K-O
Suitable for cantilevered balconies with height offset upwards The balcony lies higher than the floor slab. Suitable for cantilevered balconies, which are connected to a reinforced concrete wall at the bottom. It transfers negative moments and positive shear forces.

Product change

Old

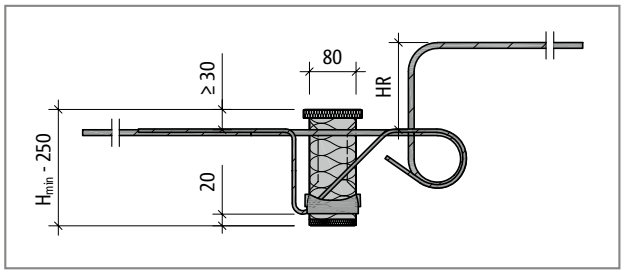


Fig. 74: Schöck Isokorb® T type K-HV: Product sectiont

New

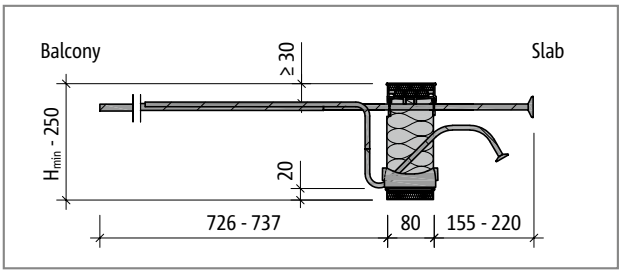


Fig. 75: Schöck Isokorb® T type K-U: Product section

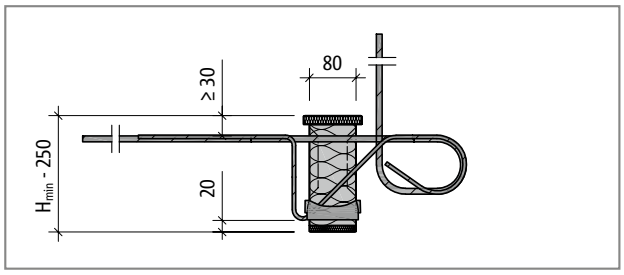


Fig. 76: Schöck Isokorb® T type K-WO: Product section

Old

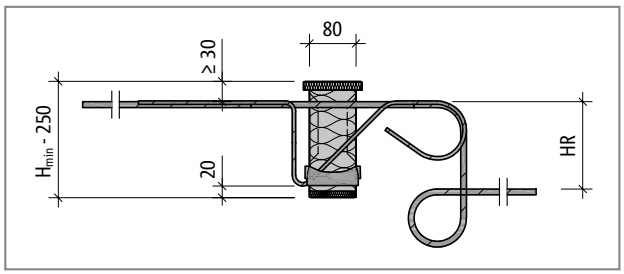


Fig. 77: Schöck Isokorb® T type K-BH: Product section

New

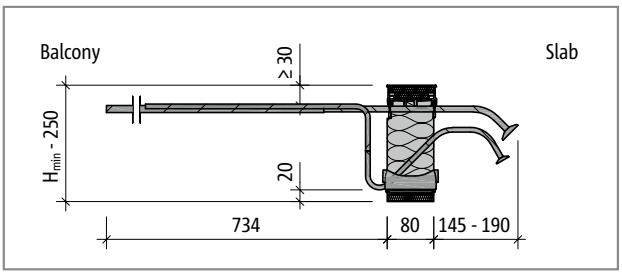


Fig. 78: Schöck Isokorb® T type K-O: Product section

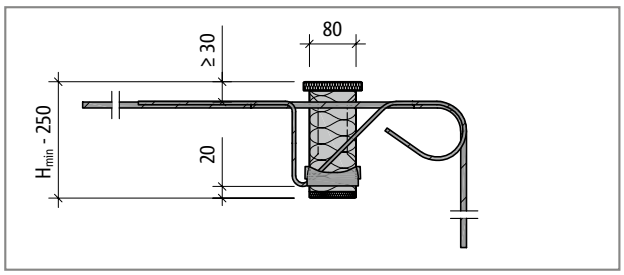


Fig. 79: Schöck Isokorb® T type K-WU: Product section

Product change

- The Schöck Isokorb® T type K-HV and the Schöck Isokorb® T type K-WO are replaced by the Schöck Isokorb® T type K-U.
- The Schöck Isokorb® T type K-BH and the Schöck Isokorb® T type K-WU are replaced by the Schöck Isokorb® T type K-O.

Balcony with height offset downwards with Schöck Isokorb® T type K

Height offset $h_V \leq h_D - c_a - d_s - c_i$

- If $h_V \leq h_D - c_a - d_s - c_i$ then the Schöck Isokorb® T type K with straight tension bar can be selected.

h_V = height offset
h_D = floor thickness
c_a = concrete cover outside
$_s$ = diameter tension bar Isokorb
c_i = required concrete cover inside
H = Isokorb® height

Example: Schöck Isokorb® T type K-M5-CV35
h_D = 180 mm, c_a = 35 mm, d_s = 8 mm, c_i = 30 mm
max. h_V = 180 - 35 - 8 - 30 = 107 mm

- Recommendation: Downstand beam width at least 220 mm
- With floor-side arrangement of element slabs for c_i the element slab thickness + $\varnothing_s$ is to be applied.

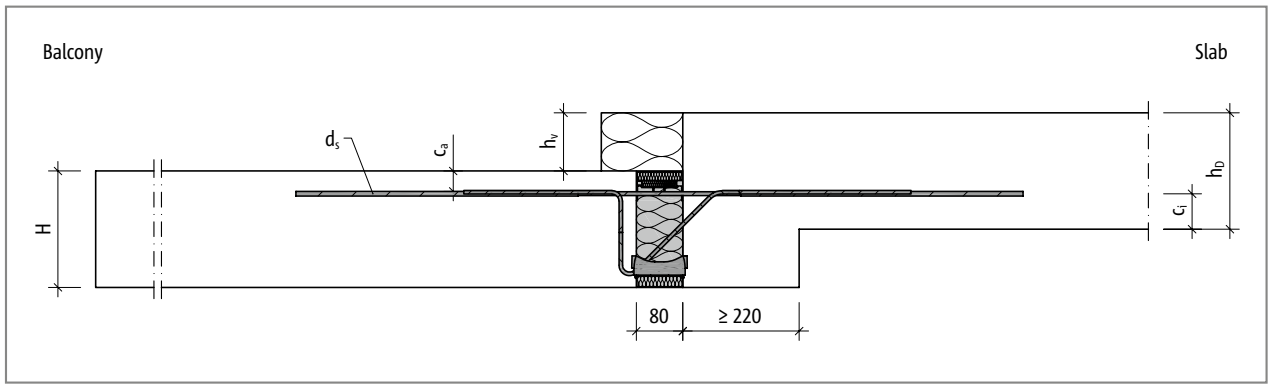


Fig. 80: Schöck Isokorb® T type K: Smaller height offset downwards (balcony lying lower)

Height offset $h_V > h_D - c_a - d_s - c_i$

If the condition $h_V \leq h_D - c_a - d_s - c_i$ is not met, the connection can be implemented using Schöck Isokorb® T type K-U.

Element arrangement | Installation cross sections

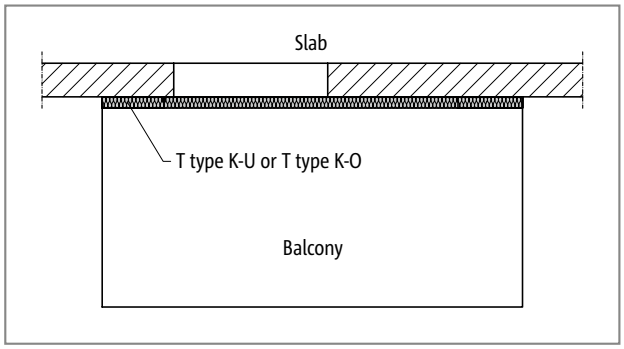


Fig. 81: Schöck Isokorb® T type K-U/K-O: Cantilevered balcony

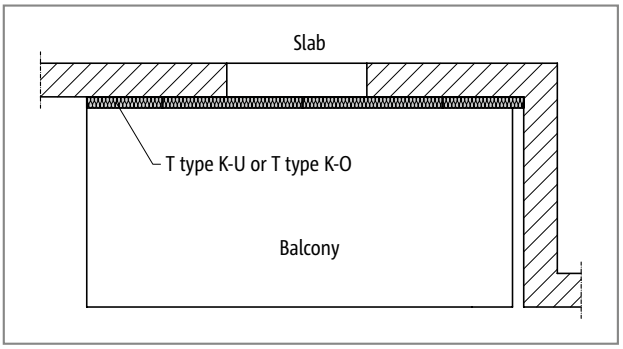


Fig. 82: Schöck Isokorb® T type K-U/K-O: Balcony with façade offset

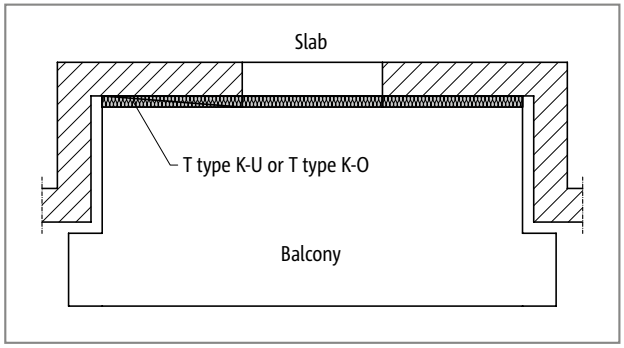


Fig. 83: Schöck Isokorb® T type K-U/K-O: Balcony with façade recess

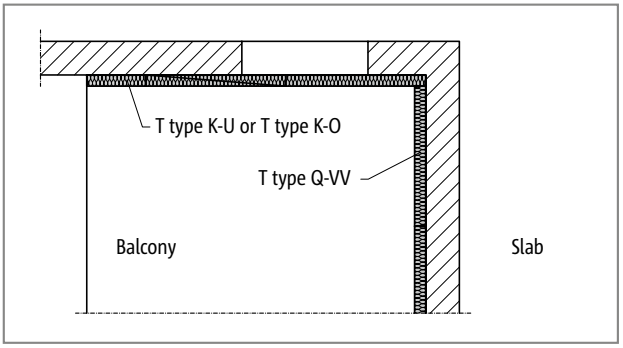


Fig. 84: Schöck Isokorb® T type K-U/K-O, T type Q-VV: Balcony with inside corner, double-faced supported

Balcony with height offset upwards

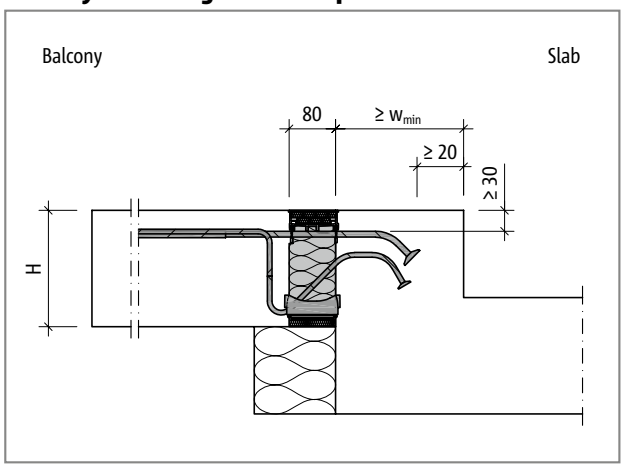


Fig. 85: Schöck Isokorb® T type K-O: Balcony with height offset upwards and external insulation

Balcony with height offset downwards

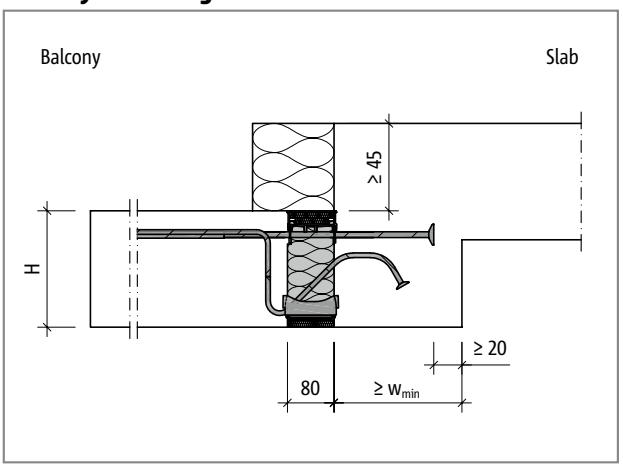


Fig. 86: Schöck Isokorb® T type K-U: Balcony with height offset downwards and external insulation

Installation cross sections

Wall connection upwards

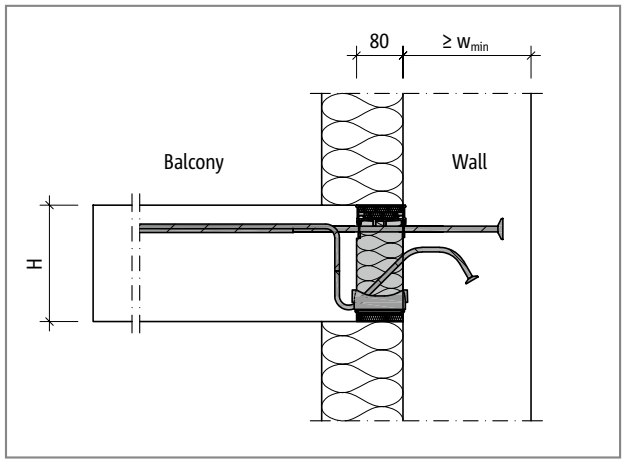


Fig. 87: Schöck Isokorb® T type K-U: Wall connection upwards with external insulation

Wall connection downwards

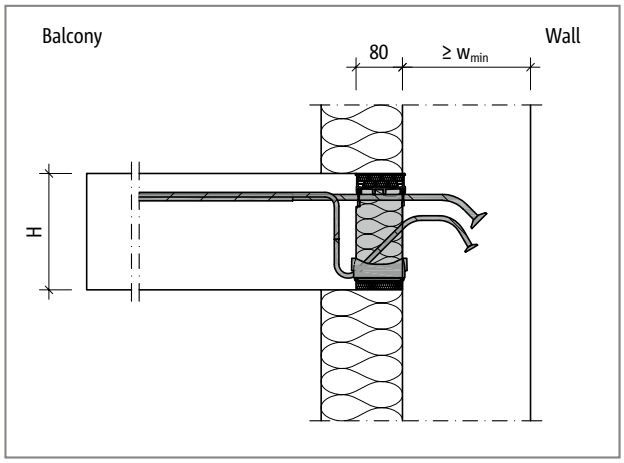


Fig. 88: Schöck Isokorb® T type K-O: Wall connection downwards with external insulation

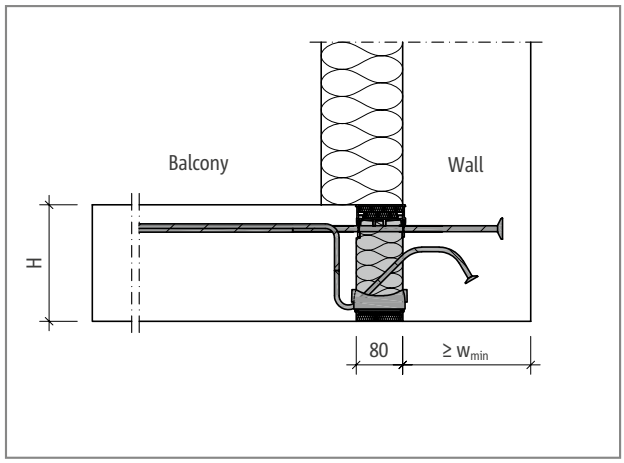


Fig. 89: Schöck Isokorb® T type K-U: Wall connection upwards with external insulation

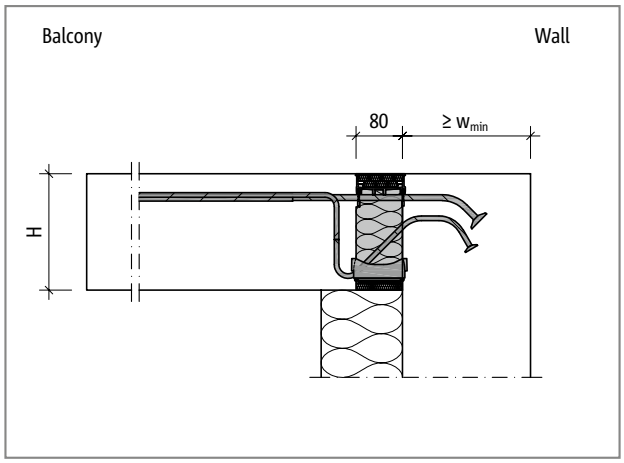


Fig. 90: Schöck Isokorb® T type K-O: Wall connection downwards with external insulation

Geometry

- The employment of the Schöck Isokorb® T types K-U and K-O requires a minimum wall thicknesss and a minimum girder width of 175 mm.
- Depending on the Schöck Isokorb® type selected and on the selected Isokorb® height, a minimum component dimension of w_{min} is required (see page 68).
- A minimum concrete cover of 60 mm above the anchor head must be complied with.

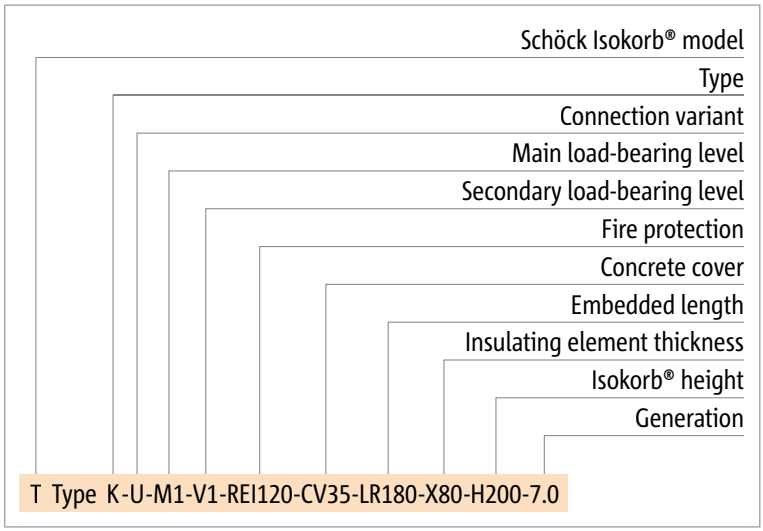
Product selection | Type designations | Special designs

Schöck Isokorb® T type K-U variants

The configuration of the Schöck Isokorb® T type K-U can be varied as follows:

- Main load capacity: M1 to M4
- Secondary load capacity: V1
- Fire resistance class:
  REI120 (standard):
- Concrete cover of the tension bars:
  CV30 = 30 mm, CV35 = 35 mm, CV50 = 50 mm
- Embedded length: LR = 155 mm to 220 mm; depends on the Isokorb® height, see page 68.
- Insulating element thickness:
  X80 = 80 mm
- Isokorb® height:
  H = 160 - 250 mm for concrete cover CV30, CV35
  H = 180 - 250 mm for concrete cover CV50
- Generation: 7.0

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).

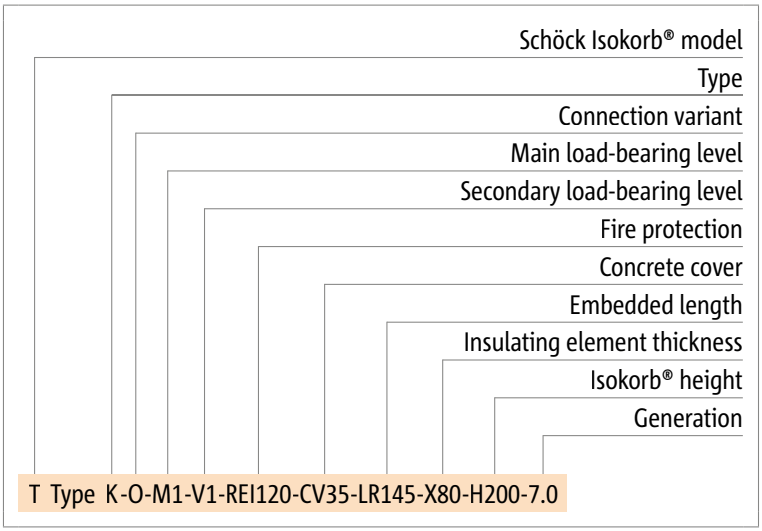
Product selection | Type designations | Special designs

Schöck Isokorb® T type K-O variants

The configuration of the Schöck Isokorb® T type K-O can be varied as follows:

- Main load-bearing level: M1 to M4
- Secondary load-bearing level: V1
- Fire resistance class:
  REI120 (standard):
- Concrete cover of the tension bars:
  CV30 = 30 mm, CV35 = 35 mm, CV50 = 50 mm
- Embedded length: LR = 145 mm to 190 mm; depends on the Isokorb® height, see page 68.
- Insulating element thickness:
  X80 = 80 mm
- Isokorb® height:
  H = 160 - 250 mm for concrete cover CV30, CV35
  H = 180 - 250 mm for concrete cover CV50
- Generation: 7.0

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).

Minimum component dimensions

Schöck Isokorb® T type K-U		M1 - M4			
minimum component dimension for		CV30/CV35		CV50	
		w_{min} [mm]	LR [mm]	w_{min} [mm]	LR [mm]
Isokorb® height H [mm]	160	175	155	-	-
	170	175	155	-	-
	180	175	155	175	155
	190	175	155	175	155
	200	200	180	175	155
	210	200	180	175	155
	220	220	200	200	180
	230	220	200	200	180
	240	240	220	220	200
	250	240	220	220	200

Schöck Isokorb® T type K-O		M1 - M4			
minimum component dimension for		CV30/CV35		CV50	
		w_{min} [mm]	LR [mm]	w_{min} [mm]	LR [mm]
Isokorb® height H [mm]	160	175	145	-	-
	170	175	145	-	-
	180	175	145	175	145
	190	175	145	175	145
	200	175	145	175	145
	210	175	145	175	145
	220	190	170	175	145
	230	190	170	175	145
	240	210	190	190	170
	250	210	190	190	170

Design

Notes on design

- With CV50, H = 180 mm is the lowest Isokorb® height, this requires a minimum slab thickness of h = 180 mm.
- The employment of the Schöck Isokorb® T types K-U and K-O requires a minimum wall thicknesss and a minimum girder width of 175 mm.
- The employment of the Schöck Isokorb® T types K-U and K-O with further connection situations (175 mm ≤ $w_{previously}$ < w_{min}) is possible taking into consideration reduced load-bearing capacity. Please make contact the Schöck Design Department (see page3).
- Depending on the Schöck Isokorb® type selected and on the selected Isokorb® height, a minimum component dimension of w_{min} is required (see page 68).
- The design values for Schöck Isokorb® T type K-U depend on the exisiting girder width and wall thickness (w_{exist}).
- A minimum concrete cover of 60 mm above the anchor head must be complied with.
- Direction of the load application in the neighbouring structural element determines the Isokorb® connection variant.

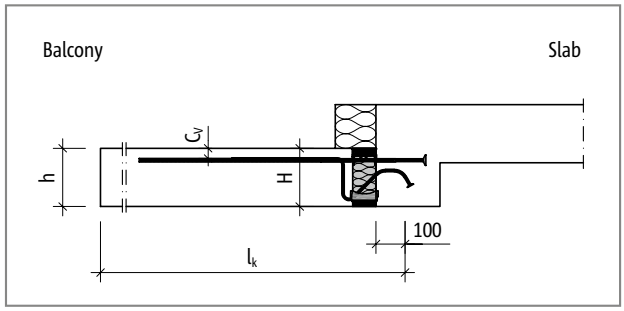


Fig. 91: Schöck Isokorb® T type K-U: Static system

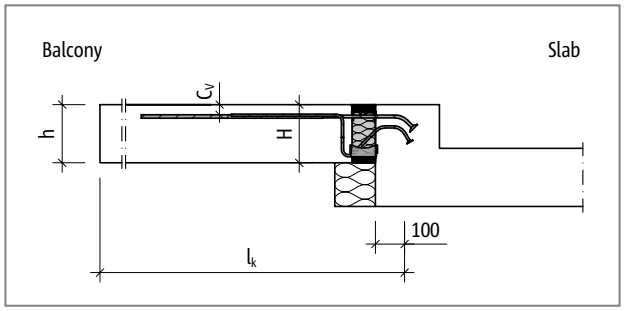


Fig. 92: Schöck Isokorb® T type K-O: Static system

C25/30 design

Design table T type K-U

Schöck Isokorb® T type K-U				M1	M2	M3	M4
Design values with	Concrete cover CV [mm]			Concrete strength class ≥ C25/30			
				200 mm > downstand beam width ≥ 175 mm 200 mm >wall thickness ≥ 175 mm			
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]			
Isokorb® height H [mm]		160		-11.5	-15.4	-19.2	-26.1
	160		180	-12.2	-16.3	-20.4	-27.7
		170		-12.9	-17.3	-21.6	-29.3
	170		190	-13.7	-18.2	-22.8	-30.9
		180		-14.4	-19.2	-23.9	-32.5
	180		200	-15.1	-20.1	-25.1	-34.1
		190		-16.0	-21.1	-26.3	-35.7
	190		210	-16.5	-22.0	-27.5	-37.4
				$v_{Rd,z}$ [kN/m]			
	V1			61.7	92.5	92.5	92.5

Schöck Isokorb® T type K-U				M1	M2	M3	M4
Design values with	Concrete cover CV [mm]			Concrete strength class ≥ C25/30			
				220 mm > downstand beam width ≥ 200 mm 220 mm >wall thickness ≥ 200 mm			
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]			
Isokorb® height H [mm]		160		-15.1	-20.1	-25.1	-34.1
	160		180	-16.0	-21.3	-26.6	-36.2
		170		-16.9	-22.5	-28.2	-38.3
	170		190	-17.8	-23.8	-29.7	-40.4
		180		-18.8	-25.0	-31.3	-42.5
	180		200	-19.7	-26.3	-32.8	-44.6
		190		-20.6	-27.5	-34.4	-46.7
	190		210	-21.6	-28.7	-35.9	-48.8
		200		-22.5	-30.0	-37.5	-50.9
	200		220	-23.4	-31.2	-39.0	-53.0
		210		-24.3	-32.5	-40.6	-55.1
	210		230	-25.3	-33.7	-42.1	-57.2
				$v_{Rd,z}$ [kN/m]			
	V1			61.7	92.5	92.5	92.5

Notes on design

Static system and information on the design see page 69.

C25/30 design

Design table T type K-U

Schöck Isokorb® T type K-U				M1	M2	M3	M4
Design values with	Concrete cover CV [mm]			Concrete strength class ≥ C25/30			
				Downstand beam width ≥ 220 mm wall thickness ≥ 220 mm			
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]			
Isokorb® height H [mm]		160		-16.6	-24.3	-30.4	-40.4
	160		180	-17.6	-25.8	-32.2	-42.9
		170		-18.7	-27.3	-34.1	-45.6
	170		190	-19.8	-28.8	-36.0	-48.1
		180		-20.9	-30.3	-37.8	-50.8
	180		200	-22.0	-31.8	-39.7	-53.3
		190		-23.1	-33.3	-41.6	-55.1
	190		210	-24.2	-34.8	-43.5	-58.6
		200		-25.3	-36.3	-45.3	-61.3
	200		220	-26.4	-37.8	-47.2	-63.9
		210		-27.6	-39.3	-49.1	-66.6
	210		230	-28.7	-40.8	-51.0	-69.2
		220		-29.9	-42.3	-52.8	-71.7
	220		240	-31.0	-43.8	-54.7	-74.3
		230		-32.2	-45.3	-56.6	-76.8
	230		250	-33.3	-46.8	-58.4	-79.4
	Concrete cover CV [mm]			Downstand beam width ≥ 240 mm wall thickness ≥ 240 mm			
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]			
		240		-34.5	-48.3	-60.3	-81.9
	240			-35.6	-49.8	-62.2	-84.5
		250		-36.8	-51.3	-64.1	-87.0
	250			-38.0	-52.8	-65.9	-89.6
				$v_{Rd,z}$ [kN/m]			
	V1			61.7	92.5	92.5	92.5

Schöck Isokorb® T type K-U	M1	M2	M3	M4
Isokorb® length [mm]	1000	1000	1000	1000
Tension bars	4 Ø 12	6 Ø 12	8 Ø 12	10 Ø 12
Anchor bars	4 Ø 10	6 Ø 10	8 Ø 10	10 Ø 10
Shear force bars V1	4 Ø 8	6 Ø 8	6 Ø 8	6 Ø 8
Pressure bearing (piece)	6	8	10	16
Special stirrup (piece)	-	-	-	4

Notes on design

Static system and information on the design see page 69.

C25/30 design

Design table T type K-O

Schöck Isokorb® T ype K-O				M1	M2	M3	M4
Design values with	Concrete cover CV [mm]			Concrete strength class ≥ C25/30			
				Downstand beam width ≥ 175 mm wall thickness ≥ 175 mm			
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]			
Isokorb® height H [mm]		160		-16.6	-24.3	-30.4	-40.4
	160		180	-17.6	-25.8	-32.2	-42.9
		170		-18.7	-27.3	-34.1	-45.6
	170		190	-19.8	-28.8	-36.0	-48.1
		180		-20.9	-30.3	-37.8	-50.8
	180		200	-22.0	-31.8	-39.7	-53.3
		190		-23.1	-33.3	-41.6	-56.0
	190		210	-24.2	-34.8	-43.5	-58.6
		200		-25.3	-36.3	-45.3	-61.3
	200		220	-26.4	-37.8	-47.2	-63.9
		210		-27.6	-39.3	-49.1	-66.6
	210		230	-28.7	-40.8	-51.0	-69.2
	Concrete cover CV [mm]			Downstand beam width ≥ 190 mm wall thickness ≥ 190 mm			
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]			
		220		-29.9	-42.3	-52.8	-71.7
	220		240	-31.0	-43.8	-54.7	-74.3
		230		-32.2	-45.3	-56.6	-76.8
	230		250	-33.3	-46.8	-58.4	-79.4
	Concrete cover CV [mm]			Downstand beam width ≥ 210 mm wall thickness ≥ 210 mm			
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]			
		240		-34.5	-48.3	-60.3	-81.9
	240			-35.6	-49.8	-62.2	-84.5
		250		-36.8	-51.3	-64.1	-87.0
	250			-38.0	-52.8	-65.9	-89.6
				$v_{Rd,z}$ [kN/m]			
	V1			61.7	92.5	92.5	92.5

Schöck Isokorb® T ype K-O	M1	M2	M3	M4
Isokorb® length [mm]	1000	1000	1000	1000
Tension bars	4 Ø 12	6 Ø 12	8 Ø 12	10 Ø 12
Anchor bars	4 Ø 10	6 Ø 10	8 Ø 10	10 Ø 10
Shear force bars V1	4 Ø 8	6 Ø 8	6 Ø 8	6 Ø 8
Pressure bearing (piece)	6	8	10	16
Special stirrup (piece)	-	-	-	4

Notes on design

Static system and information on the design see page 69.

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®

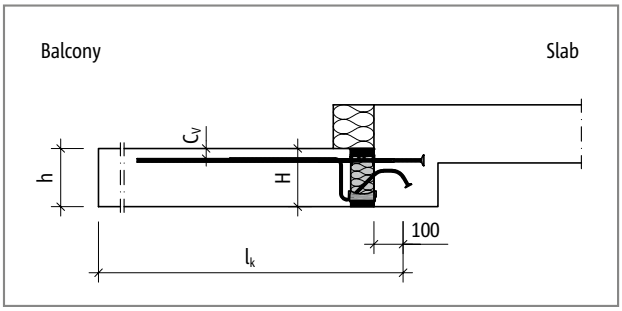


Fig. 93: Schöck Isokorb® T type K-U: Static system

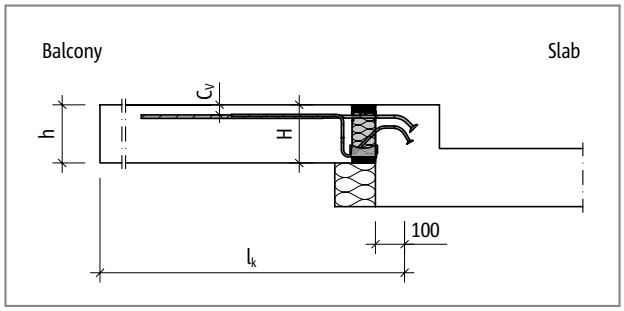


Fig. 94: Schöck Isokorb® T type K-O: Static system

Deflection/Camber

Schöck Isokorb® T type		K-U		
Deflection factors when		tan α [%]		
		200 mm > w_{exist} ≥ 175 mm		
		CV30	CV35	CV50
Isokorb® height	160	0.8	0.9	-
	170	0.7	0.8	-
	180	0.7	0.7	0.8
	190	0.6	0.6	0.7
	200	-	-	0.7
	210	-	-	0.6

Schöck Isokorb® T type		K-U		
Deflection factors when		tan α [%]		
		220 mm > w_{exist} ≥ 200 mm		
		CV30	CV35	CV50
Isokorb® height	160	1.0	1.0	-
	170	0.9	0.9	-
	180	0.8	0.8	1.0
	190	0.7	0.7	0.9
	200	0.7	0.7	0.8
	210	0.6	0.6	0.7
	220	-	-	0.7
	230	-	-	0.6

Schöck Isokorb® T type		K-U		
Deflection factors when		tan α [%]		
		w_{exist} ≥ 220 mm		
		CV30	CV35	CV50
Isokorb® height	160	1.1	1.1	-
	170	0.9	1.0	-
	180	0.9	0.9	1.1
	190	0.8	0.8	0.9
	200	0.7	0.7	0.9
	210	0.7	0.7	0.8
	220	0.7	0.6	0.7
	230	0.6	0.6	0.7
	240	0.5	0.6	0.7
	250	0.5	0.5	0.6

Notes on deformation

- The design values for Schöck Isokorb® T type K-U depend on the exisiting downstand beam width and wall thickness (w_{exist}).
- The minimum structural element dimension w_{min} = 240 mm vor CV30 and CV35 is to be complied with for H ≥ 240 mm.

Deflection/Camber | Slenderness

Schöck Isokorb® T type		K-O		
Deflection factors when		tan α [%]		
		$w_{exist} \geq 175$ mm		
		CV30	CV35	CV50
Isokorb® height	160	1.1	1.1	-
	170	0.9	1.0	-
	180	0.9	0.9	1.1
	190	0.8	0.8	0.9
	200	0.7	0.7	0.9
	210	0.7	0.7	0.8
	220	0.7	0.6	0.7
	230	0.6	0.6	0.7
	240	0.5	0.6	0.6
	250	0.5	0.5	0.6

Slenderness

In order to safeguard the serviceability limit state we recommend the limitation of the slenderness to the following maximum cantilever lengths max l_k [m]:

Schöck Isokorb® T type		K-U K-O		
maximum cantilever length with		$l_{k,max}$ [m]		
		CV30	CV35	CV50
Isokorb® height H [mm]	160	1.81	1.74	-
	170	1.95	1.88	-
	180	2.10	2.03	1.81
	190	2.25	2.17	1.95
	200	2.39	2.32	2.10
	210	2.54	2.46	2.25
	220	2.68	2.61	2.39
	230	2.83	2.76	2.54
	240	2.98	2.90	2.68
	250	3.12	3.05	2.83

Maximum cantilever length

The tabular values are based on the following assumptions:

- Accessible balcony
- Specific weight of concrete γ=25 kN/m³
- Dead weight of the balcony surfacing $g_2 \leq 1.2$ kN/m²
- Balcony rail $g_R \leq 0.75$ kN/m

i Maximum cantilever length

- The maximum cantilevered length for ensuring the serviceability is a benchmark. It can be limited by the load bearing capacity when using the Schöck Isokorb® T type K.

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.

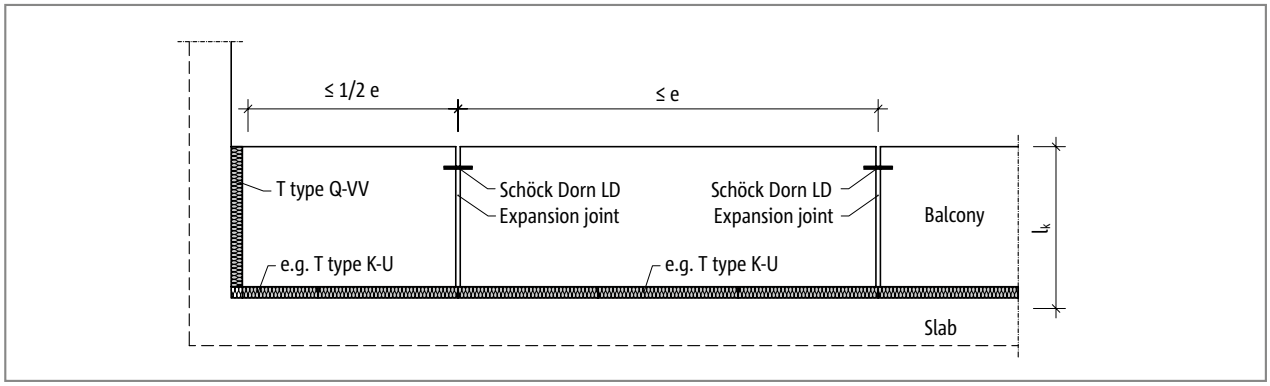


Fig. 95: Schöck Isokorb® T type K-U: Expansion joint layout

Schöck Isokorb® T type		K-U K-O
Maximum expansion joint spacing e		e [m]
Insulating element thickness [mm]	80	13.0

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 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

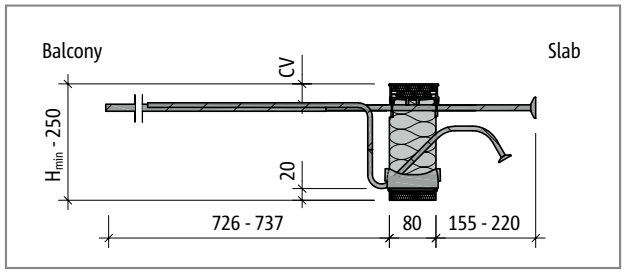


Fig. 96: Schöck Isokorb® T type K-U-M2: Product section

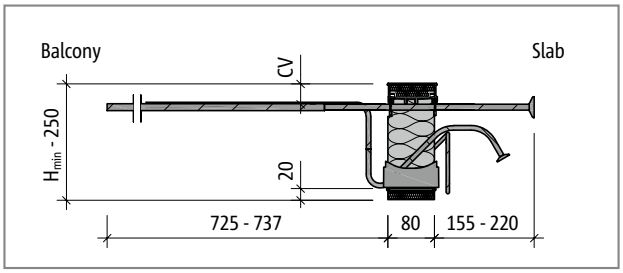


Fig. 97: Schöck Isokorb® T type K-U-M4: Product section

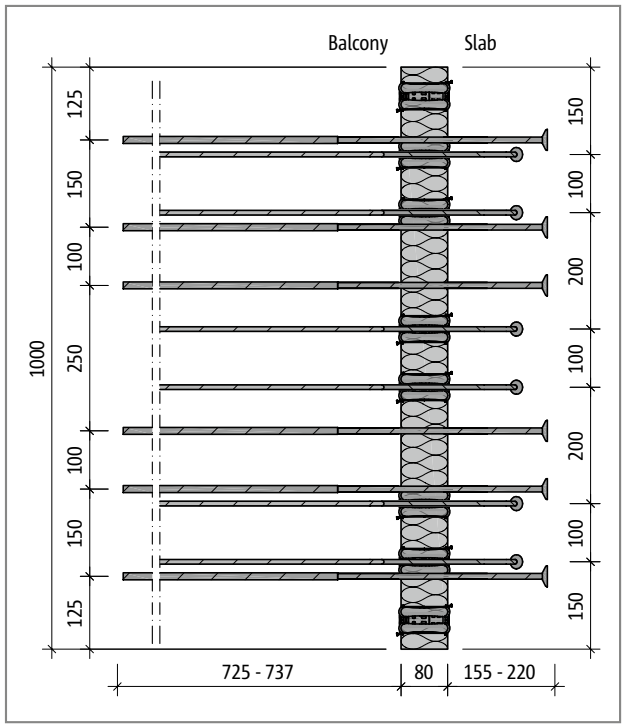


Fig. 98: Schöck Isokorb® T type K-U-M2: Product layout

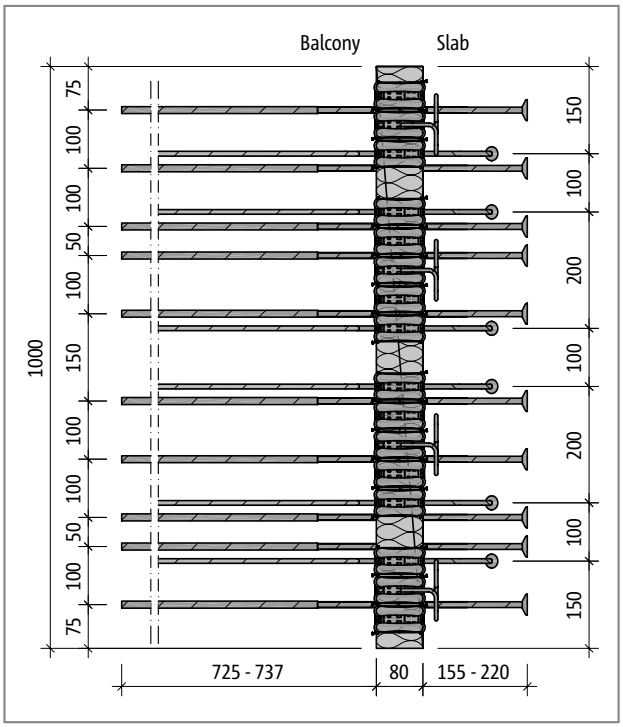


Fig. 99: Schöck Isokorb® T type K-U-M4: Product layout

Product information

- Download further product plan views and cross-sections at www.schoeck.co.uk/download
- Minimum height Schöck Isokorb® T type K-U: H_{min} = 160 mm
- On-site spacing of the Schöck Isokorb® type K-U possible at the unreinforced points; take into account reduced load-bearing capacity due to spacing; take into account required edge distances
- Concrete cover of the tension bars: CV30 = 30 mm, CV35 = 35 mm, CV50 = 50 mm

Product description

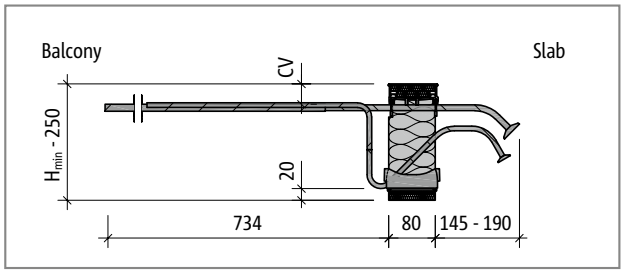


Fig. 100: Schöck Isokorb® T type K-O-M2: Product section

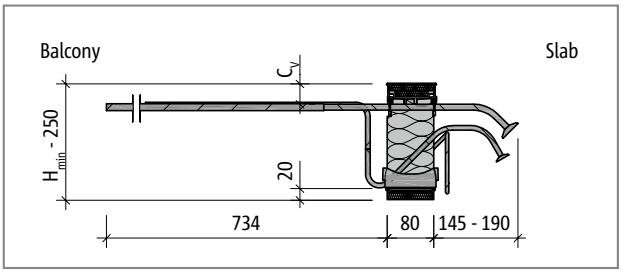


Fig. 101: Schöck Isokorb® T type K-O-M4: Product section

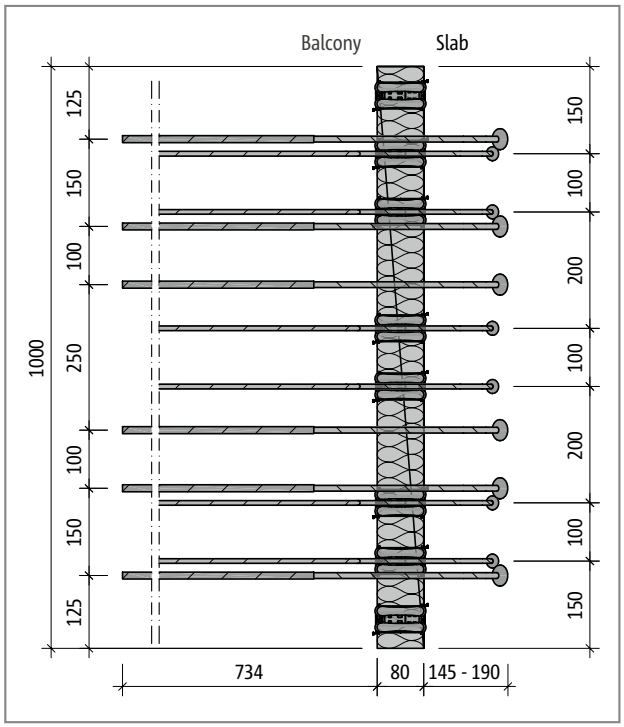


Fig. 102: Schöck Isokorb® T type K-O-M2: Product layout

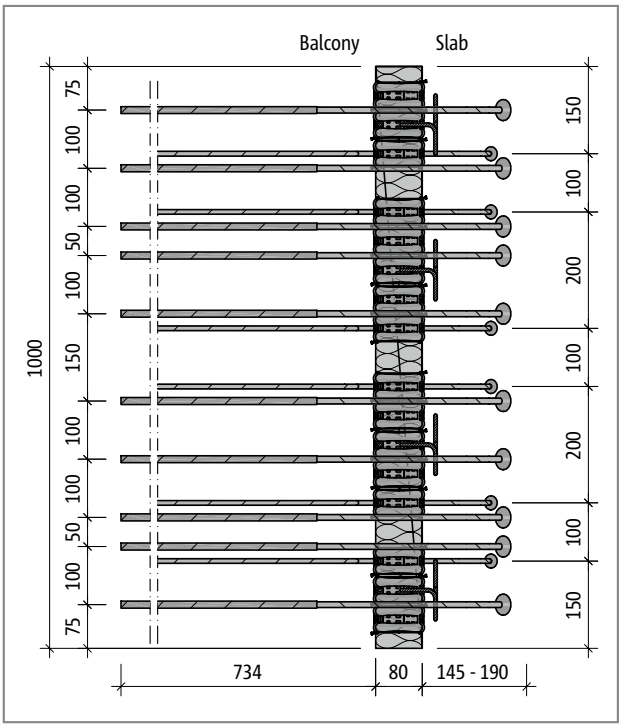


Fig. 103: Schöck Isokorb® T type K-O-M4: Product layout

Product information

- Download further product plan views and cross-sections at www.schoeck.co.uk/download
- Minimum height Schöck Isokorb® T type K-O: H_{min} = 160 mm
- On-site spacing of the Schöck Isokorb® type K-O possible at the unreinforced points; take into account reduced load-bearing capacity due to spacing; take into account required edge distances
- Concrete cover of the tension bars: CV30 = 30 mm, CV35 = 35 mm, CV50 = 50 mm

On-site reinforcement - Schöck Isokorb® T type K

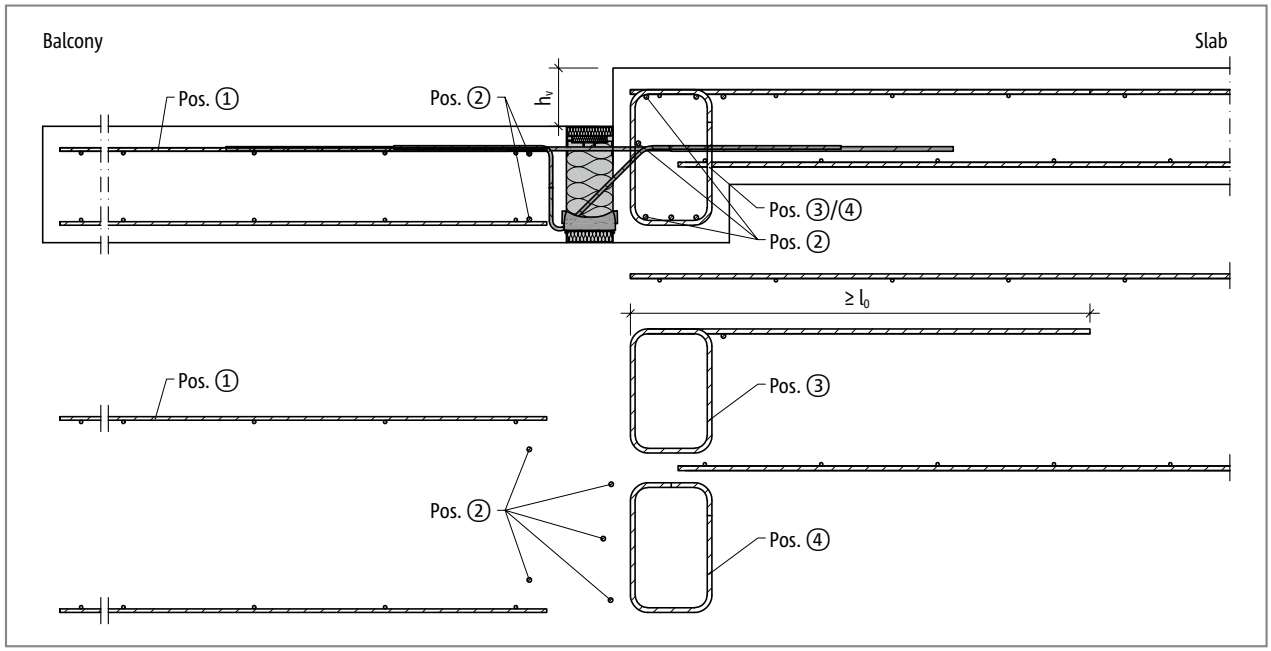


Fig. 104: Schöck Isokorb® T type K: On-site reinforcement for small height offset

Recommendation for on-site connection reinforcement

Details of the lapping reinforcement for Schöck Isokorb® with a loading of 100 % of the maximum design moment with C25/30; variants adapted to load-bearing level. The required reinforcement cross-section depends on the bar diameter of the steel bar or wire mesh reinforcement.

Schöck Isokorb® T type K:			M1		M2		M3		
On-site reinforcement	Shear force variant		V1	V2	V3	VV1	V1	V2	V3
	Location	Height [mm]	Concrete strength class ≥ C25/30						
Pos. 1 overlap reinforcement depending on bar diameter									
Pos. 1 with ⌀8 [mm²/m]	Balcony side	160 - 250	242	215	443	416	578	544	564
Pos. 1 with ⌀10 [mm²/m]			271	252	476	457	619	596	641
Pos. 1 with ⌀12 [mm²/m]			325	302	571	548	743	715	769
Pos. 2 Steel bars along the insulation joint									
Pos. 2	Balcony side	160 - 250	2 • H8						
	Floor side	160 - 250	3 • H8						
Pos. 3 stirrup reinforcement for redirection of the tension force (single-shear chargeable)									
Pos. 3 [mm²/m]	Floor side	160	235	266	422	453	510	549	621
Pos. 3 [mm²/m]	Floor side	250	375	406	698	730	845	884	969
Pos. 4 Stirrup reinforcement acc. to shear force design									
Pos. 4	Floor side	160 - 250	Stirrup reinforcement according to BS EN 1992-1-1 (EC2), 6.2.3, 9.2.2						

On-site reinforcement - Schöck Isokorb® T type K

Schöck Isokorb® T type K:			M4				M5				M6			
On-site reinforcement	Secondary load-bearing level		V1	V2	V3	VV1	V1	V2	V3	VV1	V1	V2	VV1	VV
	Location	Height [mm]	Concrete strength class ≥ C25/30											
Pos. 1 overlap reinforcement depending on bar diameter														
Pos. 1 with ø8 [mm²/m]	Balcony side	160 - 250	655	622	622	704	757	724	775	754	861	827	844	880
Pos. 1 with ø10 [mm²/m]			698	675	699	717	802	779	856	768	908	884	915	880
Pos. 1 with ø12 [mm²/m]			838	810	839	861	963	934	1027	922	1089	1061	986	880
Pos. 2 Steel bars along the insulation joint														
Pos. 2	Balcony side	160 - 250	2 • H8											
	Floor side	160 - 250	3 • H8											
Pos. 3 stirrup reinforcement for redirection of the tension force (single-shear chargeable)														
Pos. 3 [mm²/m]	Floor side	160	582	621	674	480	679	718	821	528	780	819	889	653
Pos. 3 [mm²/m]	Floor side	250	970	1009	1062	926	1140	1179	1320	1012	1319	1356	1441	1233
Pos. 4 Stirrup reinforcement acc. to shear force design														
Pos. 4	Floor side	160 - 250	Stirrup reinforcement according to BS EN 1992-1-1 (EC2), 6.2.3, 9.2.2											

Schöck Isokorb® T type K:			M7			M8		
On-site reinforcement	Secondary load-bearing level		V1	V2	VV1	V1	V2	VV1
	Location	Height [mm]	Concrete strength class ≥ C25/30					
Pos. 1 overlap reinforcement depending on bar diameter								
Pos. 1 with ø8 [mm²/m]	Balcony side	160 - 250	959	959	990	1068	1068	1100
Pos. 1 with ø10 [mm²/m]			1012	1030	990	1130	1139	1100
Pos. 1 with ø12 [mm²/m]			1065	1101	990	1192	1210	1100
Pos. 2 Steel bars along the insulation joint								
Pos. 2	Balcony side	160 - 250	2 • H8					
	Floor side	160 - 250	3 • H8					
Pos. 3 stirrup reinforcement for redirection of the tension force (single-shear chargeable)								
Pos. 3 [mm²/m]	Floor side	160	970	1005	819	1102	1120	935
Pos. 3 [mm²/m]	Floor side	250	1615	1651	1490	1841	1859	1704
Pos. 4 Stirrup reinforcement acc. to shear force design								
Pos. 4	Floor side	160 - 250	Stirrup reinforcement according to BS EN 1992-1-1 (EC2), 6.2.3, 9.2.2					

Information about on-site reinforcement

- Due to the reinforcement density in the beam application is only recommended up to T type K-M8.
- For the redirection of the tension force on the floor-side, a stirrup reinforcement Pos. 3 is required in the floor edge beam (upper side length $l_{o,bü}$). This stirrup reinforcement Pos.3 safeguards the load transmission from the Schöck Isokorb®.
- When reinforcing with different diameters the reinforcement specification for the largest diameter is relevant.
- The shear force reinforcement Pos. 4 conforms to the loading of balcony, floor and the supporting width of the downstand/upstand beam. Therefore the shear force reinforcement in individual cases is to be verified by the structural engineer.
- The required lateral reinforcement in the overlap area is to be verified according to BS EN 1992-1-1 (EC2), 8.7 to 8.8 and BS EN 1992-1-1/NA, NDPs nd NCIs to 8.7 and 8.8.
- The Schöck Isokorb® T type K is to be placed as necessary before the installation of the downstbeam and or upstand beam reinforcement.
- Pos. 3: Value for Isokorb® heights between 160 mm and 250 mm may be interpolated.
- Pos. 3: For larger downstand beam widths a reduction of the required reinforcement acc. to the structural engineer's details is possible.
- The indicative minimum concrete strength class of the external structural component is C32/40.

On-site reinforcement - Schöck Isokorb® T type K-U

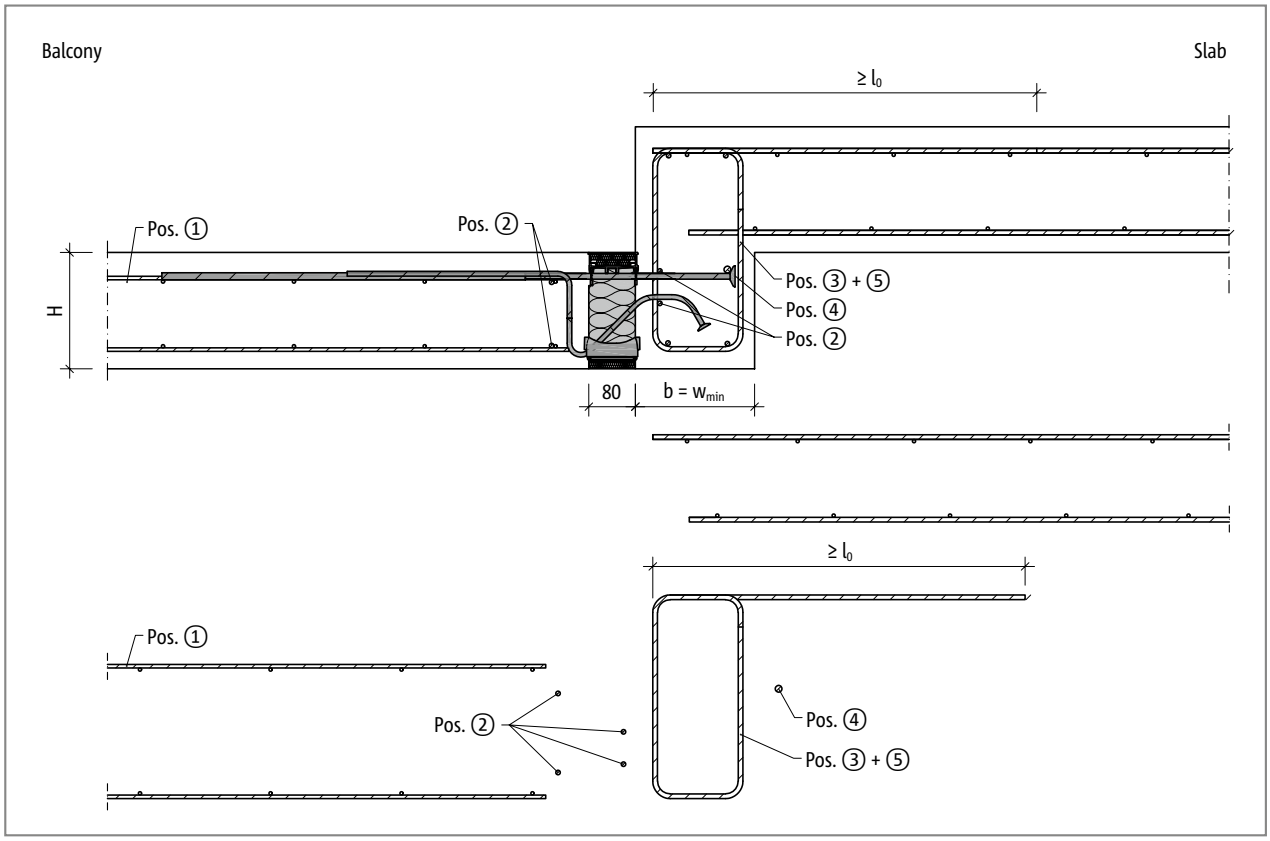


Fig. 105: Schöck Isokorb® T type K-U: On-site reinforcement for balcony with height offset downwards with minimum structural element dimension (w_{exist}= w_{min})

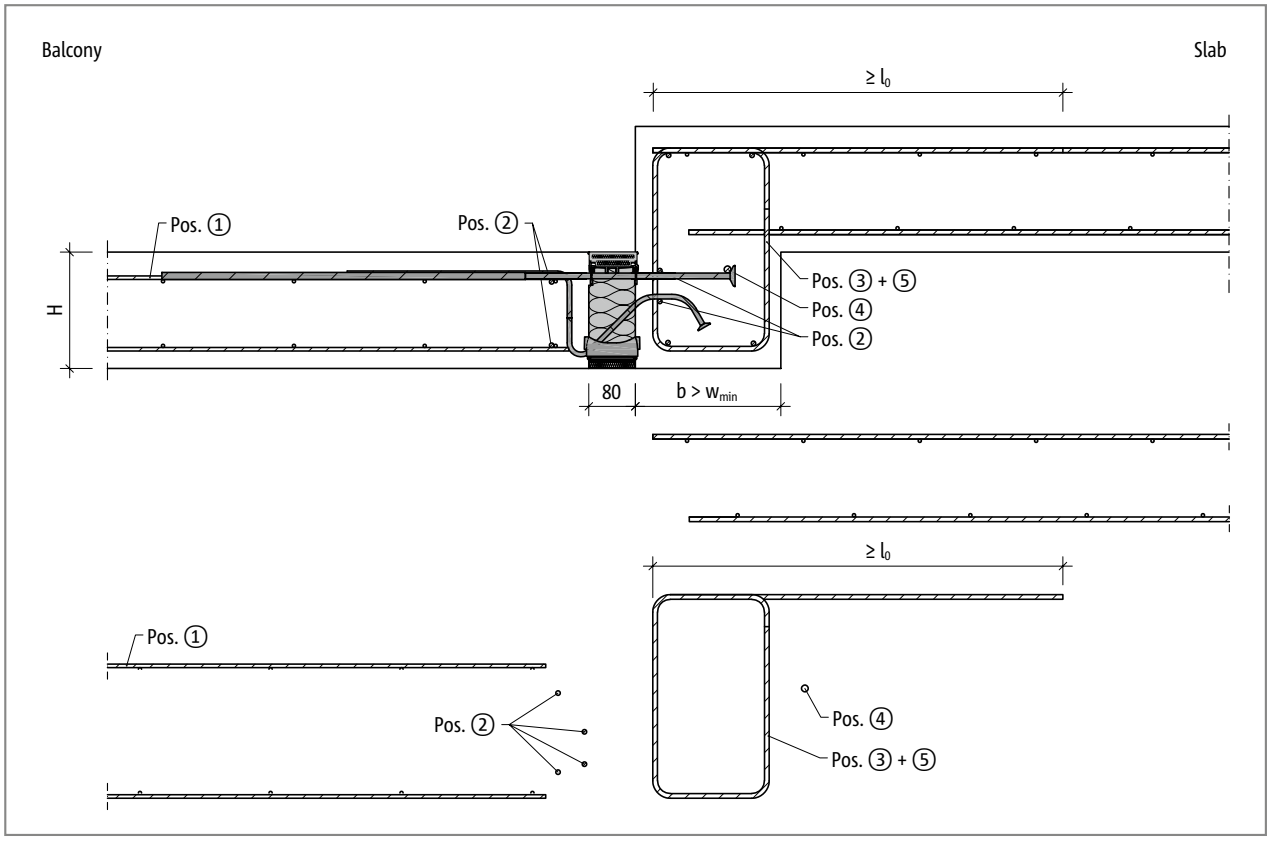


Fig. 106: Schöck Isokorb® T type K-U: On-site reinforcement for balcony with height offset downwards with larger structural element dimension (w_{exist}= w_{min})

On-site reinforcement - Schöck Isokorb® T type K-U

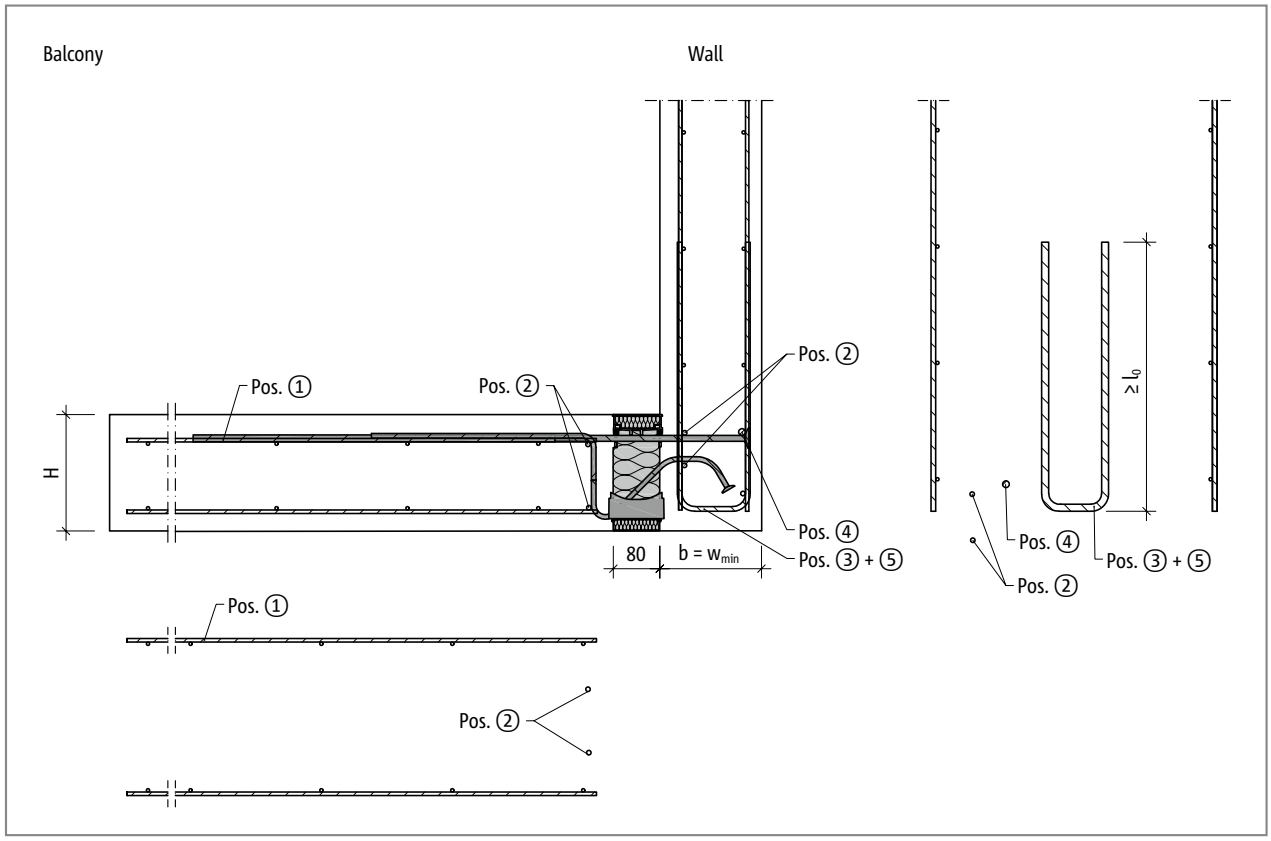


Fig. 107: Schöck Isokorb® T type K-U: On-site reinforcement for wall connection with minimum structural element dimension (w_{exist}= w_{min})

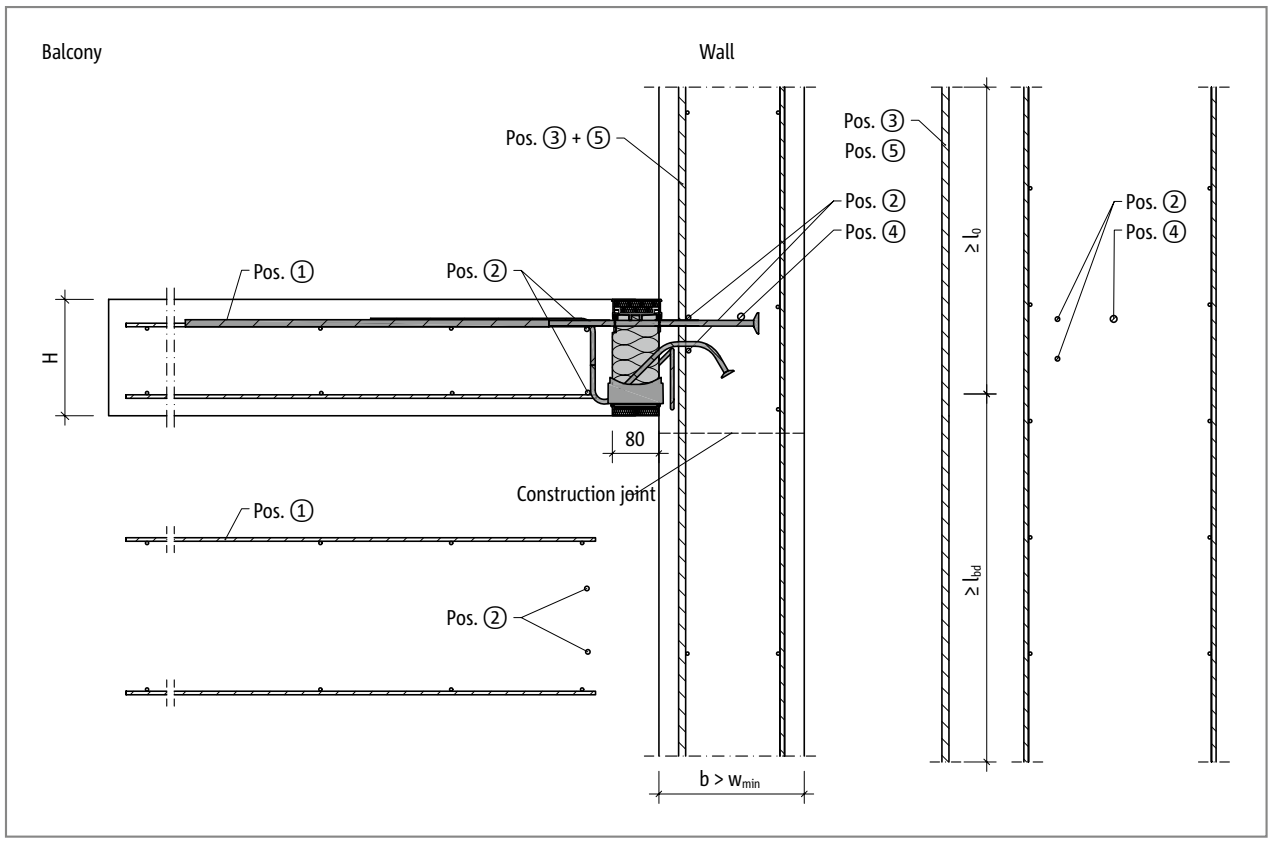


Fig. 108: Schöck Isokorb® T type K-U: On-site reinforcement for wall connection upwards with larger structural element dimension (w_{exist}= w_{min})

On-site reinforcement - Schöck Isokorb® T type K-U

Recommendation for on-site connection reinforcement

Details of the lapping reinforcement for Schöck Isokorb® with a loading of 100 % of the maximum design moment with C25/30; variants adapted to load-bearing level. The required reinforcement cross-section depends on the bar diameter of the steel bar or wire mesh reinforcement.

Schöck Isokorb® T type K-U			M1	M2	M3	M4
On-site reinforcement	Location	Height [mm]	Concrete strength class ≥ C25/30 200 mm > downstand beam width ≥ 175 mm 200 mm >wall thickness ≥ 175 mm			
Pos. 1 overlap reinforcement depending on bar diameter						
Pos. 1 with ⌀8 [mm²/m]	Balcony side	160 - 210	327	436	545	740
Pos. 1 with ⌀10 [mm²/m]			363	489	598.	794
Pos. 1 with ⌀12 [mm²/m]			398	543	652	847
Pos. 2 Steel bars along the insulation joint						
Pos. 2	balcony side/ downstand beam, wall	160 - 210	2 • 2 • H8			
Pos. 3 Vertical reinforcement						
Pos. 3 [mm²/m] minimum reinforcement	downstand beam, wall	160 - 210	≥ 528	≥ 737	≥ 846	≥ 1041
Pos. 3 structural element design	downstand beam, wall	160 - 210	Taking into account the moments and shear forces provided by the structural engineer			
Pos. 4 Steel bars along the insulation joint						
Pos. 4	downstand beam, wall	160 - 210	≥ 1 ⌀ 12			
Pos. 5 splitting tension reinforcement						
Pos. 5 [mm²/m]	downstand beam, wall	160 - 210	130			

Schöck Isokorb® T type K-U			M1	M2	M3	M4
On-site reinforcement	Location	Height [mm]	Concrete strength class ≥ C25/30 220 mm > downstand beam width ≥ 200 mm 220 mm >wall thickness ≥ 200 mm			
Pos. 1 overlap reinforcement depending on bar diameter						
Pos. 1 with ⌀8 [mm²/m]	Balcony side	160 - 230	427	570	712	967
Pos. 1 with ⌀10 [mm²/m]			463	623	765	1020
Pos. 1 with ⌀12 [mm²/m]			498	676	818	1074
Pos. 2 Steel bars along the insulation joint						
Pos. 2	balcony side/ downstand beam, wall	160 - 230	2 • 2 • H8			
Pos. 3 Vertical reinforcement						
Pos. 3 [mm²/m] minimum reinforcement	downstand beam, wall	160 - 230	≥ 628	≥ 871	≥ 1013	≥ 1268
Pos. 3 structural element design	downstand beam, wall	160 - 230	Taking into account the moments and shear forces provided by the structural engineer			
Pos. 4 Steel bars along the insulation joint						
Pos. 4	downstand beam, wall	160 - 230	≥ 1 ⌀ 12			
Pos. 5 splitting tension reinforcement						
Pos. 5 [mm²/m]	downstand beam, wall	160 - 230	130			

On-site reinforcement - Schöck Isokorb® T type K-U

Schöck Isokorb® T type K-U			M1	M2	M3	M4
On-site reinforcement	Location	Height [mm]	Concrete strength class ≥ C25/30 Downstand beam width ≥ 220 mm wall thickness ≥ 220 mm			
Pos. 1 overlap reinforcement depending on bar diameter						
Pos. 1 with ⌀8 [mm²/m]	Balcony side	160 - 250	496	689	862	1170
Pos. 1 with ⌀10 [mm²/m]			532	743	915	1223
Pos. 1 with ⌀12 [mm²/m]			567	796	968	1277
Pos. 2 Steel bars along the insulation joint						
Pos. 2	balcony side/ downstand beam, wall	160 - 250	2 • 2 • H8			
Pos. 3 Vertical reinforcement						
Pos. 3 [mm²/m] minimum reinforcement	downstand beam, wall	160 - 250	≥ 640	≥ 960	≥ 1163	≥ 1400
Pos. 3 structural element design	downstand beam, wall	160 - 250	Taking into account the moments and shear forces provided by the structural engineer			
Pos. 4 Steel bars along the insulation joint						
Pos. 4	downstand beam, wall	160 - 250	≥ 1 ⌀ 12			
Pos. 5 splitting tension reinforcement						
Pos. 5 [mm²/m]	downstand beam, wall	160 - 250	130			

Information about on-site reinforcement

- The mixing of steel bar and wire mesh reinforcement is possible. The corresponding mesh reinforcement can be taken into account when determining the additional reinforcement.
- When reinforcing with different diameters the reinforcement specification for the largest diameter is relevant.
- The minimum reinforcement of Pos. 3 serves for the transfer of the active bar axial forces from the Isokorb®. This minimum reinforcement must be complied with.
  The required reinforcement from the structural element design as a result of the loading of the balcony, floors, walls and the supporting width of the downstand/upstand beam is to be verified by the structural engineer. The reinforcement determined from this must be compared with the minimum reinforcement of Pos, 3.
  The greater of the two values is relevant.
- Isokorb® height for CV30 and CV35: H = 160 - 190 mm for downstand beam width w_{min} < 200mm
  H = 160 - 210 mm downstand beam width w_{min} < 220mm
  H = 160 - 230 mm downstand beam width w_{min} < 240mm
- The required lateral reinforcement in the overlap area is to be verified according to BS EN 1992-1-1 (EC2), 8.7 to 8.8 and BS EN 1992-1-1/NA, NDPs nd NCIs to 8.7 and 8.8.
- l_0 for l_0 (⌀10) ≥ 570 mm, l_0 for l_0 (⌀12) ≥ 680 mm, l_0 (⌀14) ≥ 790 mm nd l_0 (⌀16) ≥ 910 mm.
- Further reinforcement values for concrete strength class C20/25 under www.schoeck.co.uk/downloads
- With the selection of the Isokorb® type channels and inclinations must be taken into account, in order to maintain the required concrete cover.
- For the safe transmisson of forces the instructions with regard to construction joints are to be observed, see page91.
- The indicative minimum concrete strength class of the external structural component is C32/40.

Hazard warning - missing connection bar

- For the given load-bearing capacity, the transverse reinforcement bar is absolutely necessary. This transverse reinforcement bar must be fitted directly to the anchor head.

On-site reinforcement - Schöck Isokorb® T type K-U

Design example

Example for the stirrup design (Pos. 3 + 5):

Geometry: Isokorb® height H = 200 mm
downstand beam width w_{exist} = 220 mm
concrete cover CV30

concrete strength: C25/30

internal forces from balcony: $_{Ed}$ = 45.3 kNm/m
v_{Ed} = 35.0 kN/m

selected: T type K-U-M3-V1-REI120-CV35-LR180-X80-H200-7.0

Minimum reinforcement for Pos. 3: $a_{s,min}$ = 1163 mm²/m
Required reinforcement from structural element design: $a_{s,req}$ = 528 mm²/m < 1163 mm²/m = $a_{s,min}$

⇒ The minimum reinforcement $a_{s,min}$ = 1163 mm²/m is relevant!

Required splitting tensile reinforcement Pos. 5: $a_{s,req}$ = 130 mm²/m

⇒Required stirrup cross-section: $a_{s,req}$ = 1163 mm²/m + 130 mm²/m = 1293 mm²/m

On-site reinforcement - Schöck Isokorb® T type K-O

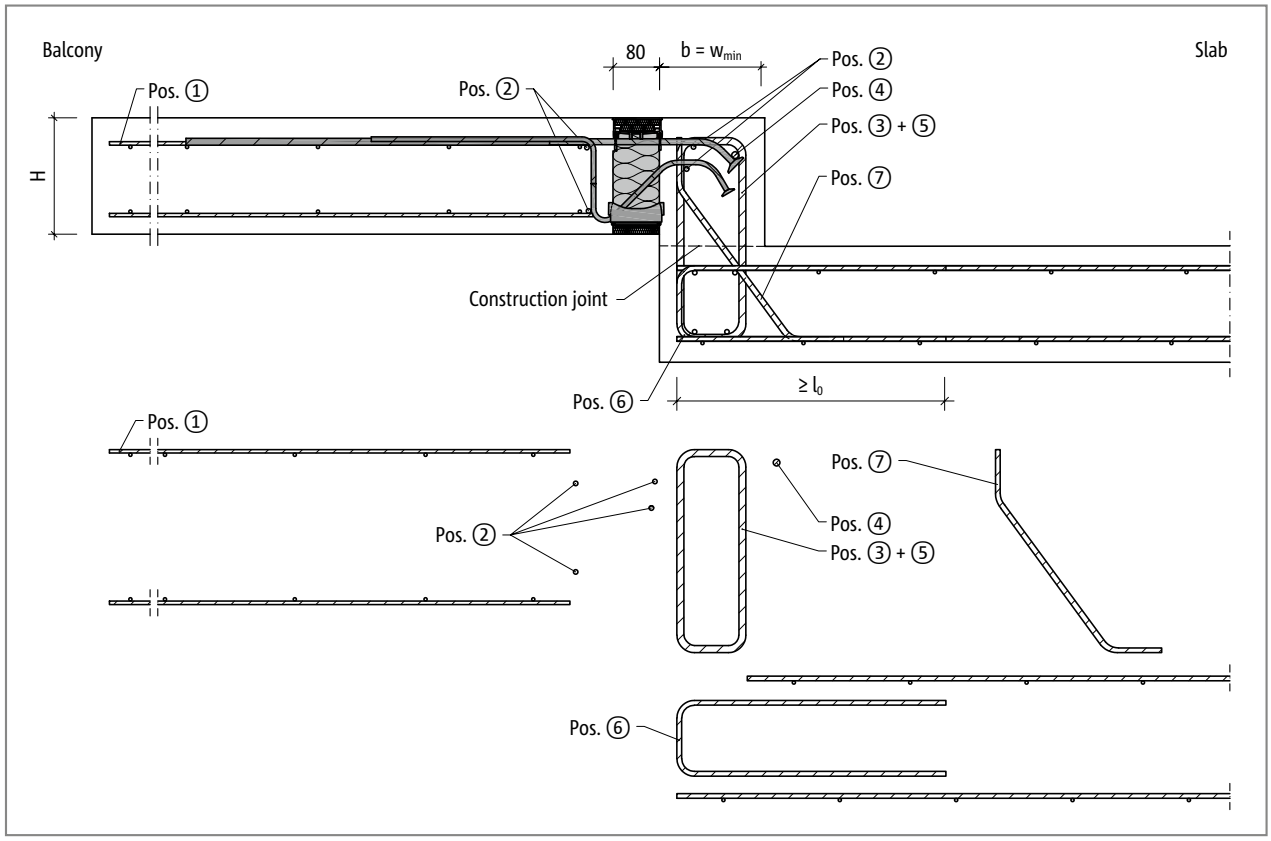


Fig. 109: Schöck Isokorb® T type K-O: On-site reinforcement for balcony with height offset upwards with minimum structural element dimension (wexist= wmin)

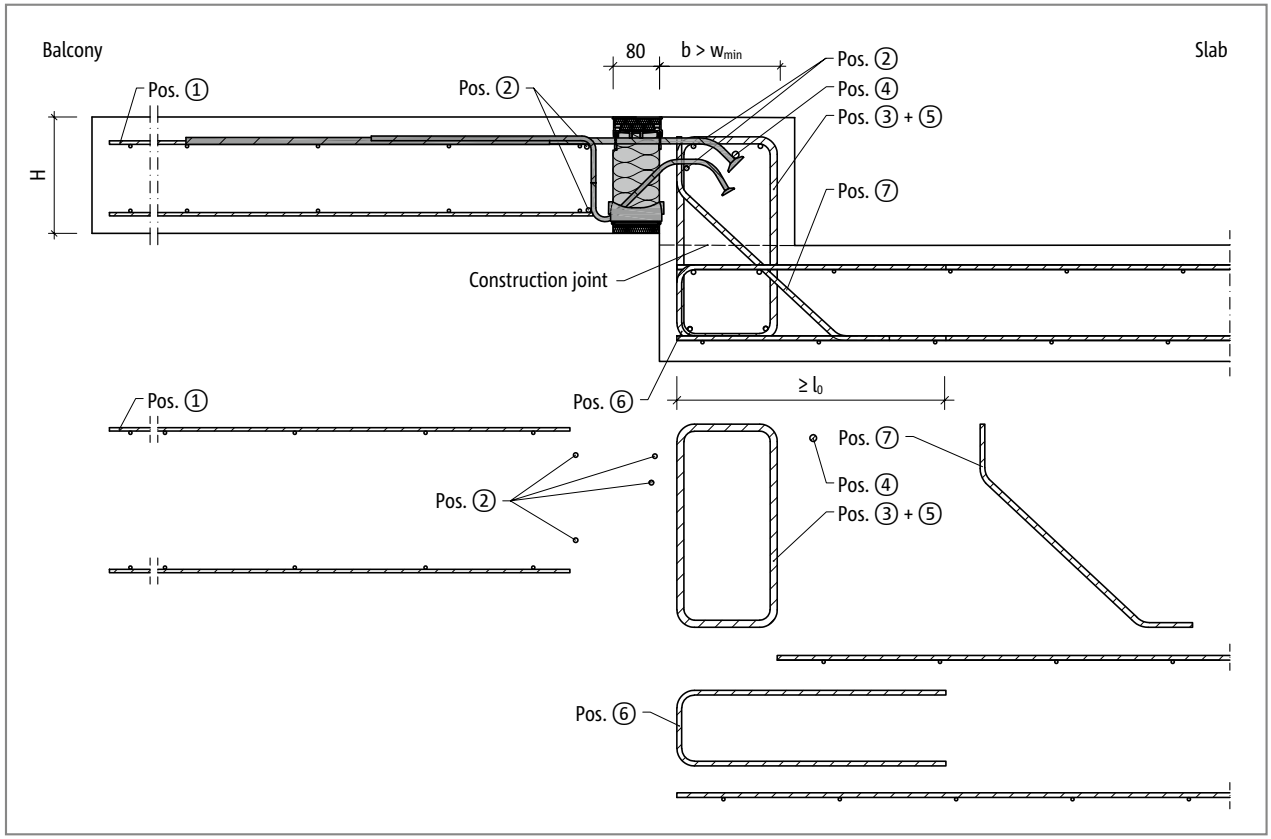


Fig. 110: Schöck Isokorb® T type K-O: On-site reinforcement for balcony with height offset upwards with larger structural element dimension (w_{exist}= w_{min})

On-site reinforcement - Schöck Isokorb® T type K-O

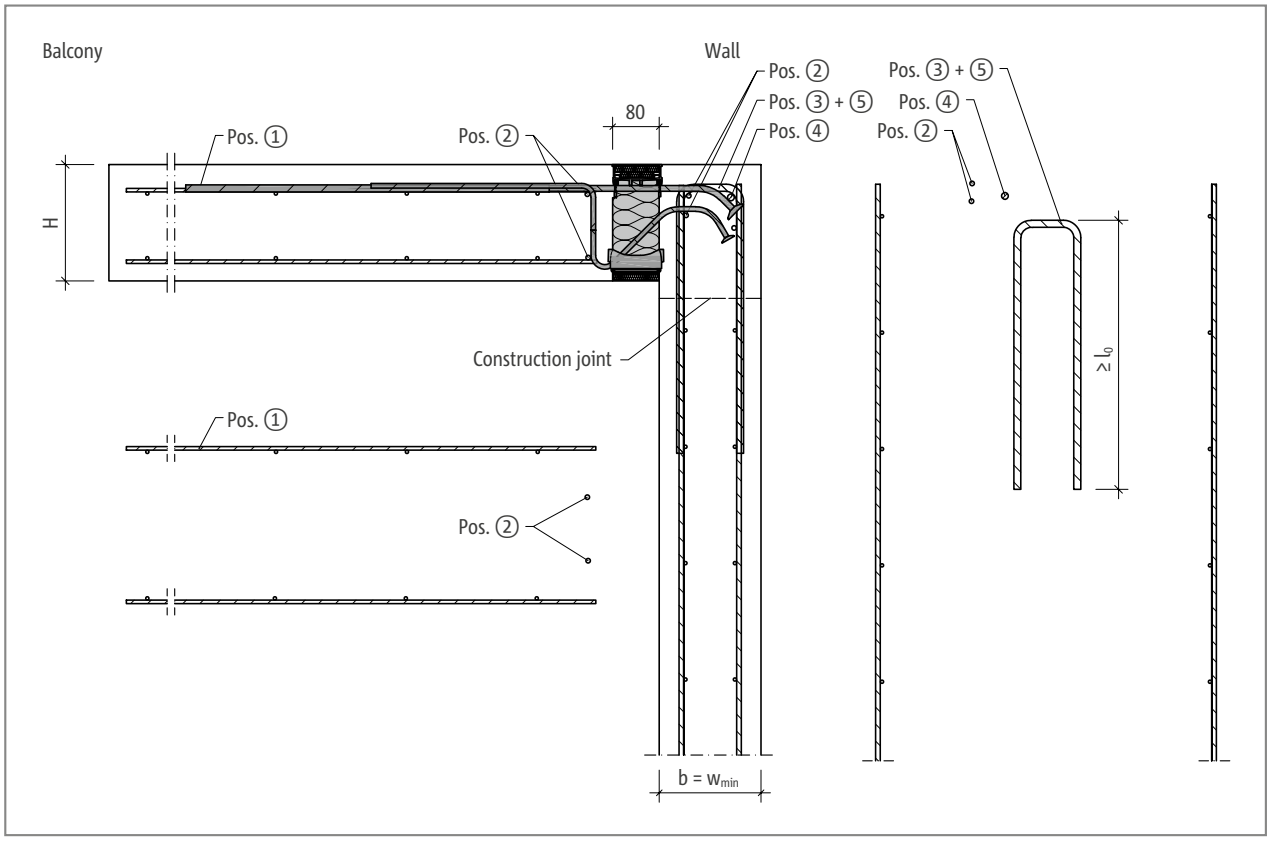


Fig. 111: Schöck Isokorb® T type K-O: On-site reinforcement for wall connection downwards with minimum structural element dimension (w_{exist}= w_{min})

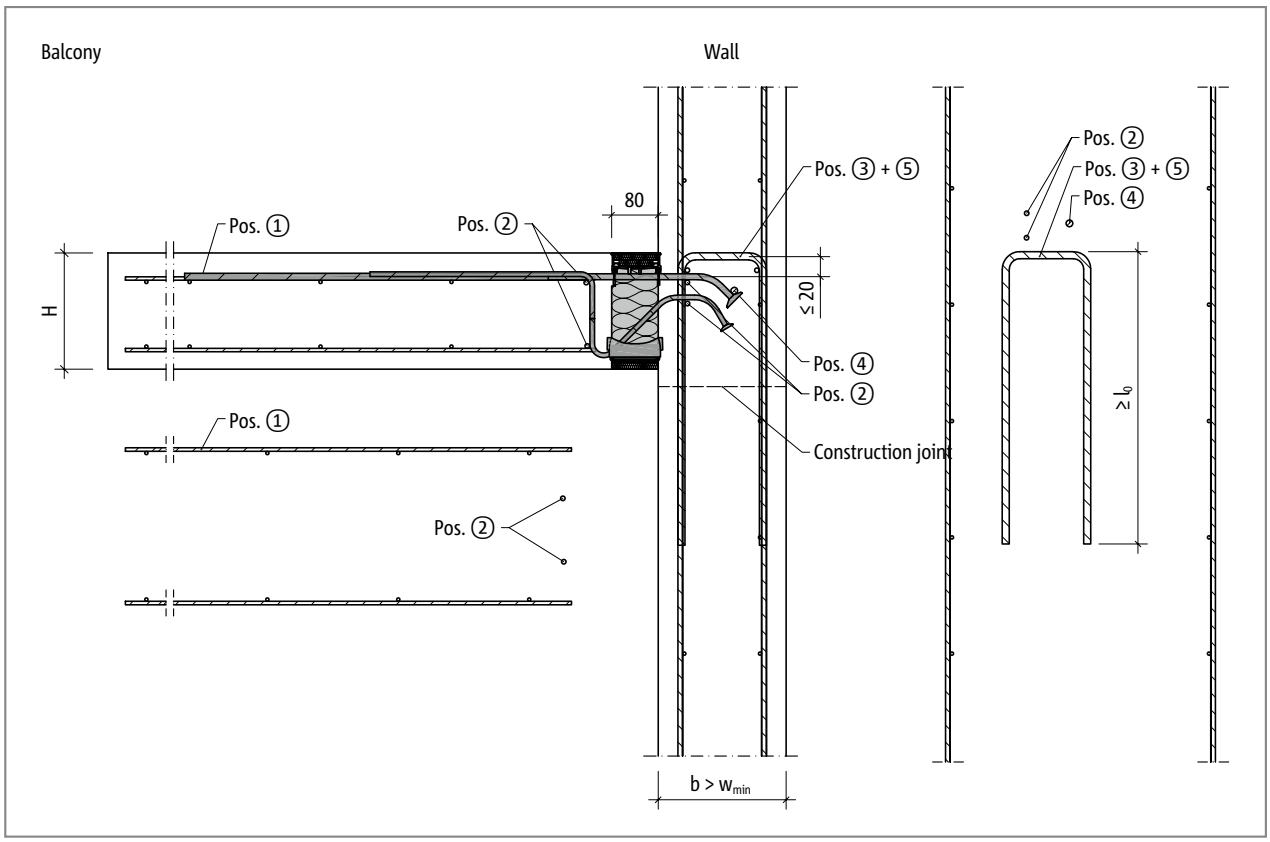


Fig. 112: Schöck Isokorb® T type K-O: On-site reinforcement for wall connection with larger structural element dimension (w_{exist}= w_{min})

On-site reinforcement - Schöck Isokorb® T type K-O

Recommendation for on-site connection reinforcement

Details of the lapping reinforcement for Schöck Isokorb® with a loading of 100 % of the maximum design moment with C25/30; variants adapted to load-bearing level. The required reinforcement cross-section depends on the bar diameter of the steel bar or wire mesh reinforcement.

Schöck Isokorb® T type K-O			M1	M2	M3	M4
On-site reinforcement	Location	Height [mm]	Concrete strength class ≥ C25/30 Downstand beam width ≥ 175 mm wall thickness ≥ 175 mm			
Pos. 1 overlap reinforcement depending on bar diameter						
Pos. 1 with ⌀8 [mm²/m]	Balcony side	160 - 250	496	689	862	1170
Pos. 1 with ⌀10 [mm²/m]			532	743	915	1223
Pos. 1 with ⌀12 [mm²/m]			567	796	968	1277
Pos. 2 Steel bars along the insulation joint						
Pos. 2	balcony side/ downstand beam, wall	160 - 250	2 • 2 • H8			
Pos. 3 Vertical reinforcement						
Pos. 3 [mm²/m] minimum reinforcement	downstand beam, wall	160 - 250	≥ 640	≥ 960	≥ 1163	≥ 1400
Pos. 3 structural element design	downstand beam, wall	160 - 250	Taking into account the moments and shear forces provided by the structural engineer			
Pos. 4 Steel bars along the insulation joint						
Pos. 4	downstand beam, wall	160 - 250	≥ 1 ⌀ 12			
Pos. 5 splitting tension reinforcement						
Pos. 5 [mm²/m]	downstand beam, wall	160 - 250	130			
Pos.6 Slip in bracket						
Pos. 6	Floor side	160 - 250	acc. to the specifications of the structural engineer			
Pos. 7 Slanting reinforcement						
Pos.7	Downstand beam	160 - 250	acc. to the specifications of the structural engineer			

Information about on-site reinforcement

- Information on the on-site reinforcement see page 90.
- The indicative minimum concrete strength class of the external structural component is C32/40.

Hazard warning - missing connection bar

- For the given load-bearing capacity, the transverse reinforcement bar is absolutely necessary. This transverse reinforcement bar must be fitted directly to the anchor head.

On-site reinforcement - Schöck Isokorb® T type K-O

Information about on-site reinforcement

- The mixing of steel bar and wire mesh reinforcement is possible. The corresponding mesh reinforcement can be taken into account when determining the additional reinforcement.
- When reinforcing with different diameters the reinforcement specification for the largest diameter is relevant.
- The minimum reinforcement of Pos. 3 serves for the transfer of the active bar axial forces from the Isokorb®. This minimum reinforcement must be complied with.
  The required reinforcement from the structural element design as a result of the loading of the balcony, floors, walls and the supporting width of the downstand/upstand beam is to be verified by the structural engineer. The reinforcement determined from this must be compared with the minimum reinforcement of Pos, 3.
  The greater of the two values is relevant.
- Isokorb® height for CV30 and CV35: H = 160 - 210 mm for downstand beam width w_{min} < 190mm
  H = 160 - 230 mm for downstand beam width w_{min} < 210mm
- Pos. 3 and Pos. 5 are to be brought as close as possible over the tension bar of the Schöck Isokorb®. The distance between the on-site stirrup reinforcement and the upper edge of the tension bar is smaller than 2 cm.
- The required lateral reinforcement in the overlap area is to be verified according to BS EN 1992-1-1 (EC2), 8.7 to 8.8 and BS EN 1992-1-1/NA, NDPs nd NCIs to 8.7 and 8.8.
- l_0 for l_0 (⌀10) ≥ 570 mm, l_0 for l_0 (⌀12) ≥ 680 mm, l_0 (⌀14) ≥ 790 mm nd l_0 (⌀16) ≥ 910 mm.
- Further reinforcement values for concrete strength class C20/25 under www.schoeck.co.uk/downloads
- With the selection of the Isokorb® type channels and inclinations must be taken into account, in order to maintain the required concrete cover.
- For the safe transmisson of forces the instructions with regard to construction joints are to be observed, see page91.
- The indicative minimum concrete strength class of the external structural component is C32/40.

Hazard warning - missing connection bar

- For the given load-bearing capacity, the transverse reinforcement bar is absolutely necessary. This transverse reinforcement bar must be fitted directly to the anchor head.

Design example

- Numerical example for stirrup design (Pos. 3 + 5):

Geometry: Isokorb® height H = 230 mm
downstand beam width w_{exist}= 175 mm
concrete cover in the downstand beam CV30

concrete strength: C25/30

internal forces from balcony: m_{Ed} = -6.92 kNm/mv
$_{Ed}$ = 21.6 kN/m

selected: T type K-O-M4-V1-REI120-CV50-LR145-X80-H230-7.0

minimum reinforcement for Pos. 3: $a_{s,min}$ = 1400 mm²/m
required reinforcement from structural element design $a_{s,req}$ = 1446 mm²/m > 1400 mm²/m = $a_{s,min}$

⇒ The required reinforcement from beding design $a_{s,req}$ = 1446 mm²/m is relevant!

Required splitting tensile reinforcement Pos. 5: $a_{s,req}$ = 130 mm²/m

⇒ required stirrup cross-section: $a_{s,req}$ = 1446 mm²/m + 130 mm²/m = 1576 mm²/m

Tight fit/Concreting section | Installation instructions

Tight fit/Concreting section

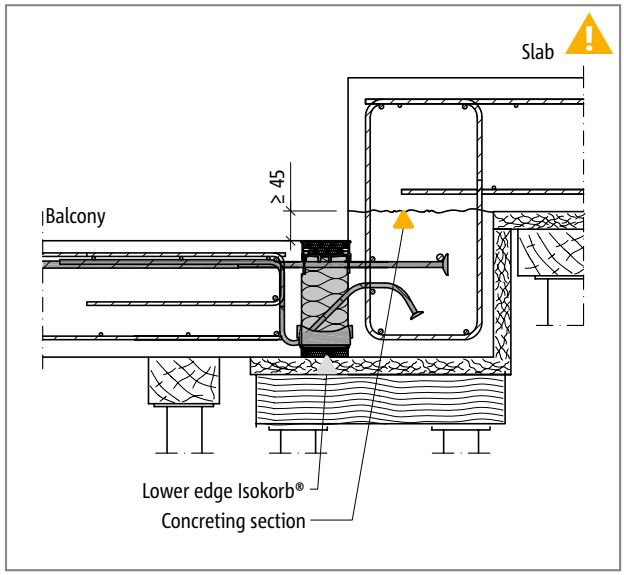


Fig. 113: Schöck Isokorb® T type K-U: Cast-in-place concrete balcony with height offset downwards

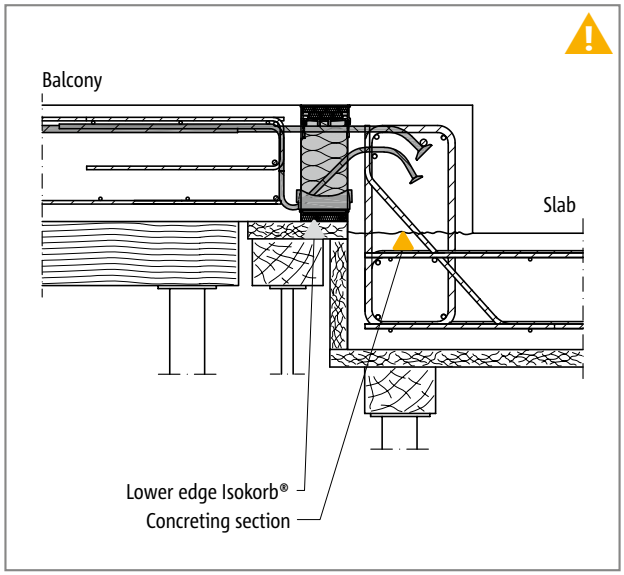


Fig. 114: Schöck Isokorb® T type K-O: Cast-in-place concrete balcony with height offset upwards

Hazard note: Tight fit with different height levels

The tight fit of the pressure bearings to the freshly poured concrete is to be ensured, therefore the upper edge of the masonry respectively of the concreting section is to be arranged below the lower edge of the Schöck Isokorb®. This is to be taken into account above all with a different height level between inner slab and balcony.

- The concreting joint and the upper edge of the masonry are to be arranged below the lower edge of the Schöck Isokorb®.
- The position of the concreting section is to be indicated in the formwork and reinforcement drawing.
- The joint planning is to be coordinated between precast concrete plant and construction site.

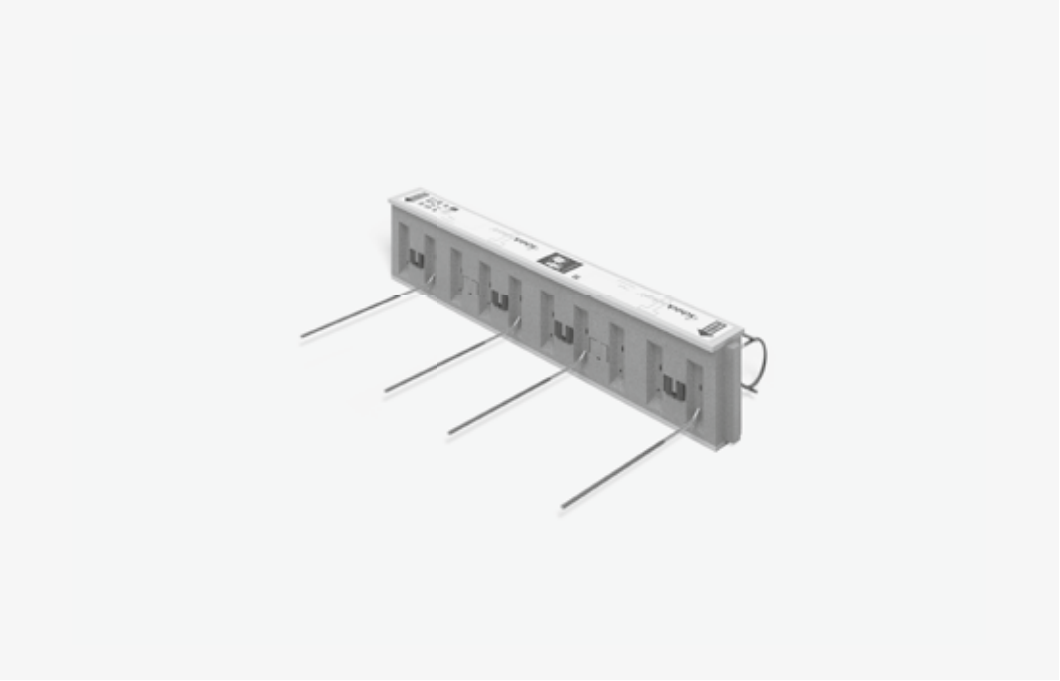
Installation manual

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

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?
- ☐ Has the additional proportionate deflection resulting from the Schöck Isokorb® been taken into account?
- ☐ Is the drainage direction taken into account with the resulting camber information? Is the degree of camber entered in the working drawings?
- ☐ Is the increased minimum slab thickness taken into account with CV50?
- ☐ Are the recommendations for the limitation of the slenderness observed?
- ☐ Are the maximum allowable expansion joint spacings taken into account?
- ☐ 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?
- ☐ 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?
- ☐ Are the requirements with regard to fire protection explained and is the appropriate addendum entered in the Isokorb® type description in the implementation plans?
- ☐ Is the required component geometry present with the connection to a floor or a wall? Is a special design required?
- ☐ Have the requirements for on-site reinforcement of connections been defined in each case?
- ☐ 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?

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

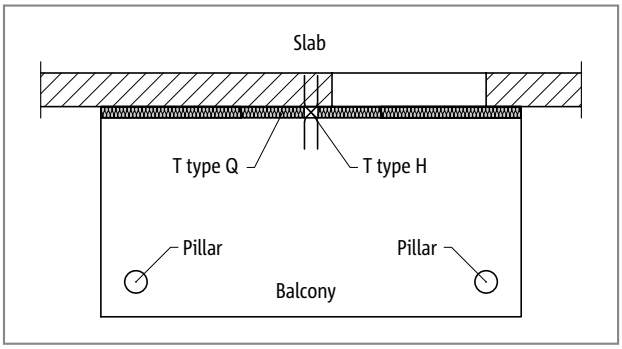


Fig. 115: Schöck Isokorb® type Q: Balcony with pillar support

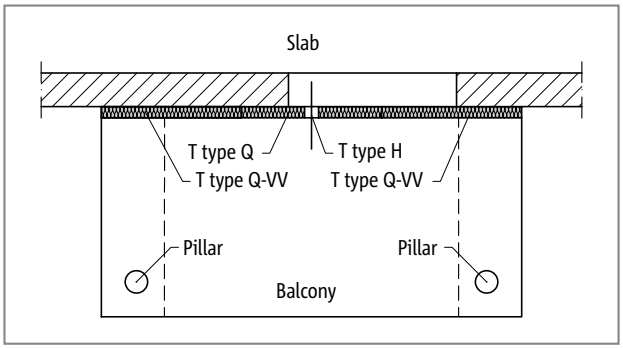


Fig. 116: Schöck Isokorb® T type Q, Q-VV: Supported balcony with various bearing stiffnesses; T type H (optional) with ordinary horizontal forcet

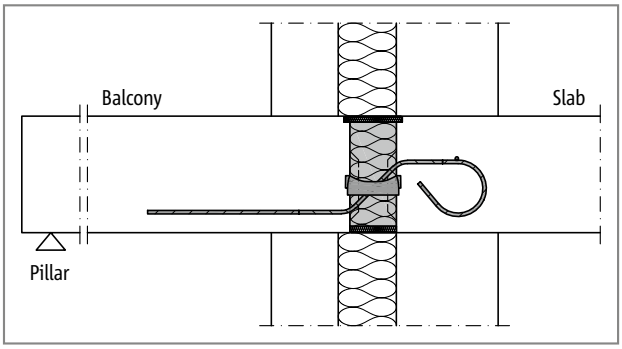


Fig. 117: Schöck Isokorb® T type Q: Connection with non-load-bearing cavity masonry (e.g. T type Q-V1 to T type Q-V5)

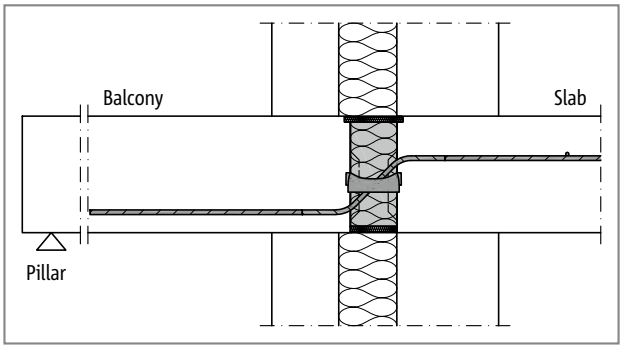


Fig. 118: Schöck Isokorb® T type Q: Connection with non-load-bearing cavity masonry (e.g. T type Q-V6 to T type Q-V10)

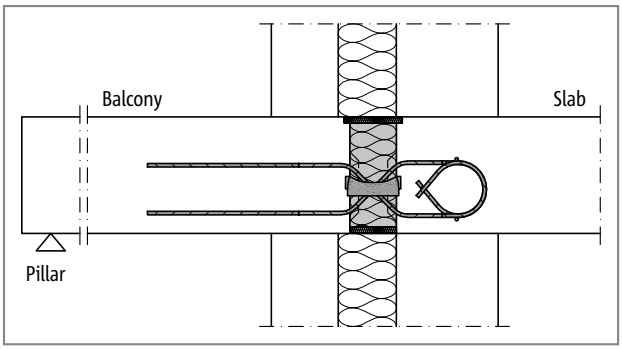


Fig. 119: Schöck Isokorb® T type Q-VV: Connection with non-load-bearing cavity masonry (e.g. T type Q-VV1 toT type Q-VV5)

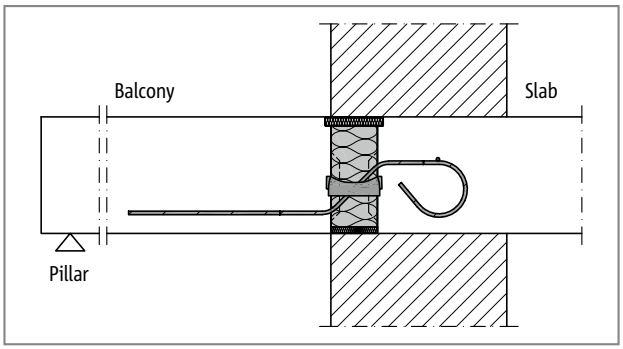


Fig. 120: Schöck Isokorb® T type Q: Connection with thermal insulating cavity masonry (e.g. T type Q-V1 to T Typ Q-V5)

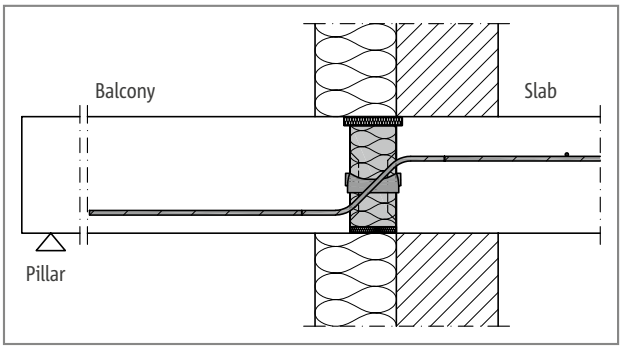


Fig. 121: Schöck Isokorb® T type Q: Connection with thermal insulation composite system (TICS) (e.g. T type Q-V6 to T Typ Q-V10)

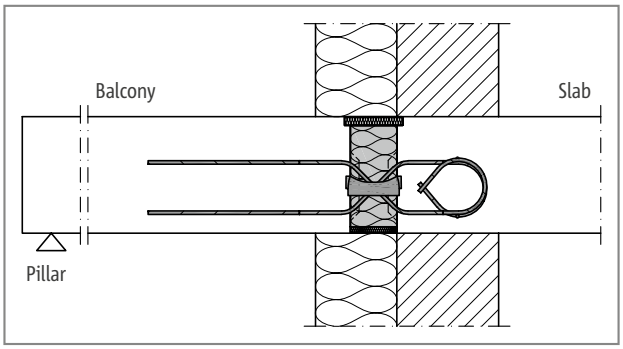


Fig. 122: Schöck Isokorb® T type Q-VV: Connection with thermal insulation composite system (TICS) (e.g. T type Q-VV1 to T Typ Q-VV5)

Installation cross sections

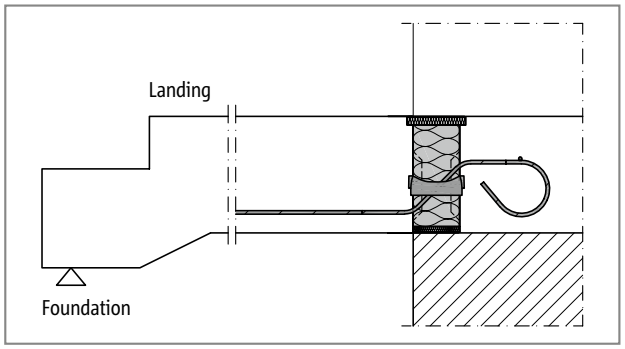


Fig. 123: Schöck Isokorb® T type Q: Connection stair flight with thermal insulating cavity masonry (e.g. T type Q-V1 to T Typ Q-V5)

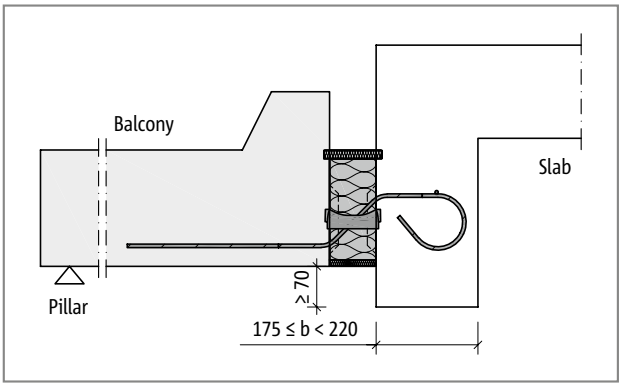


Fig. 124: Schöck Isokorb® T type Q: Installation situation "pre-cast balcony slab" (e.g. T type Q-V1 to Q-V5)

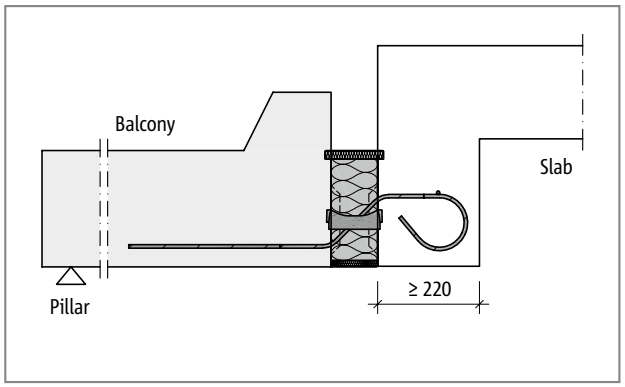


Fig. 125: Schöck Isokorb® T type Q: Installation situation "pre-cast balcony slab" (e.g. T type Q-V1 to Q-V5)

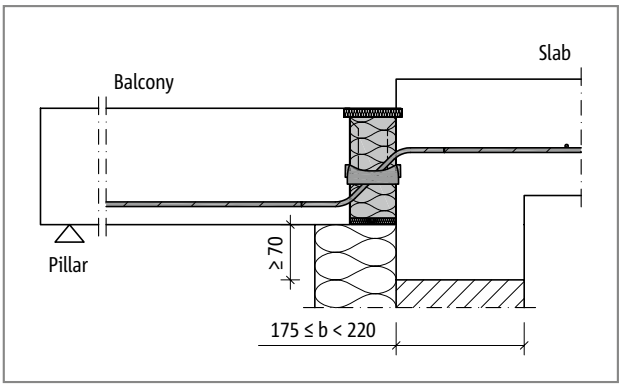


Fig. 126: Schöck Isokorb® T type Q: Installation situation with small height offset (e.g. T type Q-V6 to Q-V10)

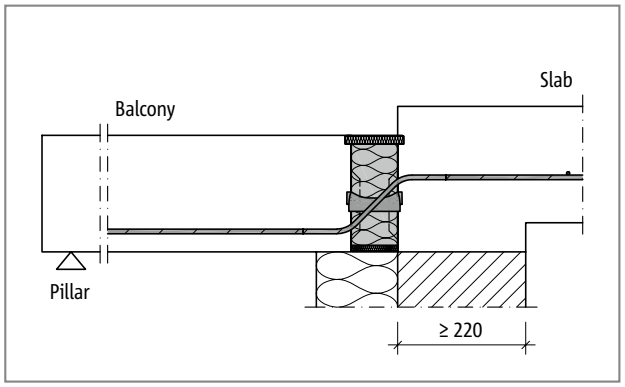


Fig. 127: Schöck Isokorb® T type Q: Installation situation with small height offset (e.g. T type Q-V6 to Q-V10)

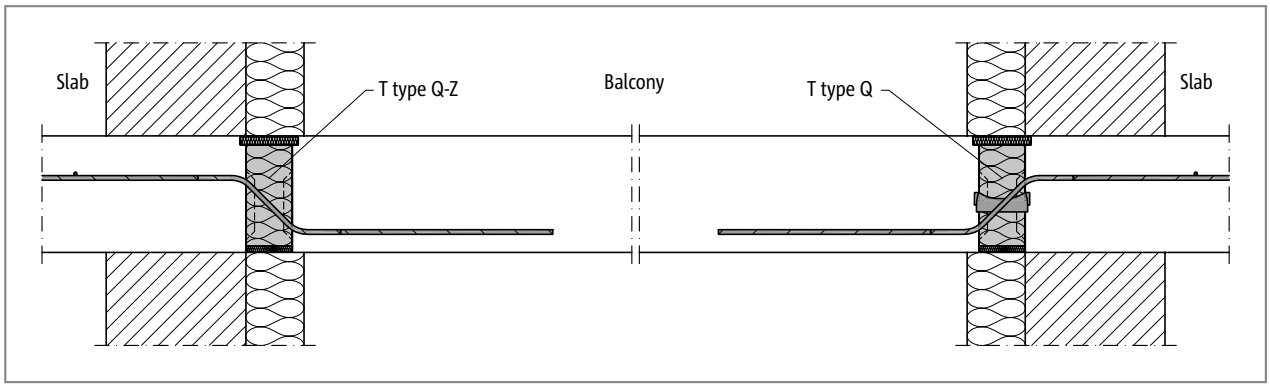


Fig. 128: Schöck Isokorb® T type Q-Z, Q: Application case one-way reinforced concrete slab

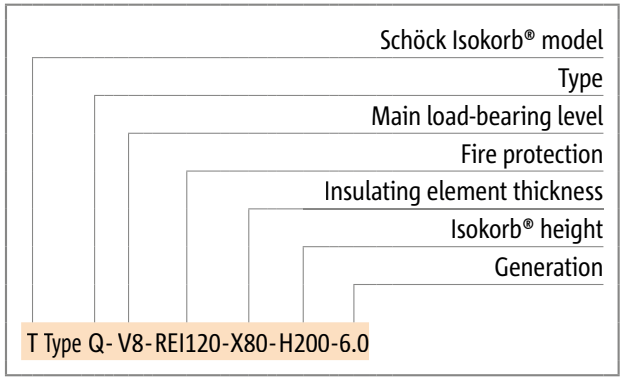
Product selection | Type designations | Special designs

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

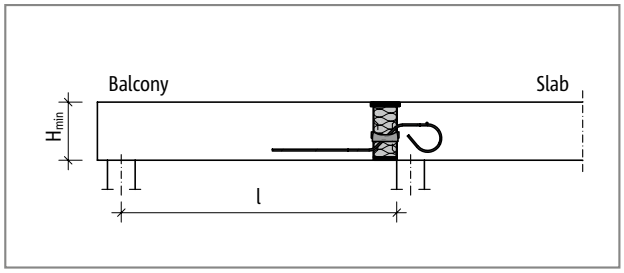


Fig. 129: Schöck Isokorb® T type Q: Static system (T type Q-V1 to Q-V5)

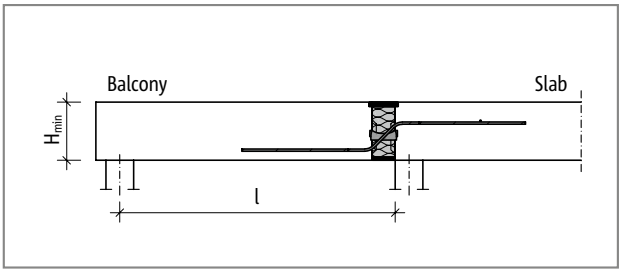


Fig. 130: Schöck Isokorb® T type Q: Static system (T type Q-V6 to Q-V10)

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

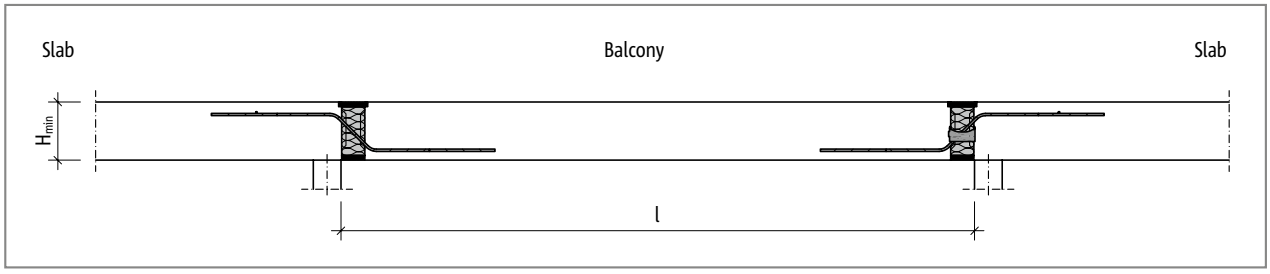


Fig. 131: Schöck Isokorb® T type Q-Z, Q: Static system (T type Q-Z-V6 to Q-Z-10, Q-V6 to Q-V10)

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

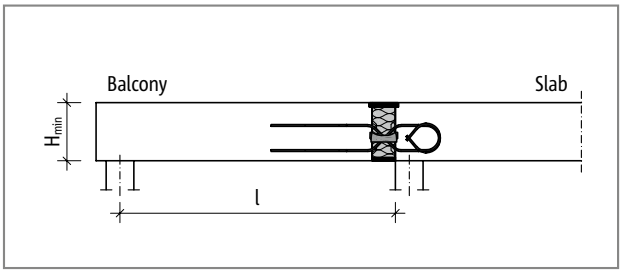


Fig. 132: Schöck Isokorb® T type Q-VV: Static system (T type Q-VV1 to Q-VV5)

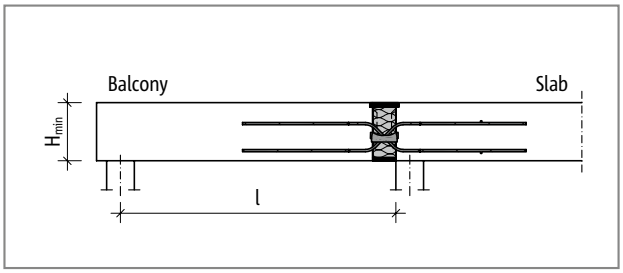


Fig. 133: Schöck Isokorb® T type Q-VV: Static system (T type Q-VV6 to Q-VV10)

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}.

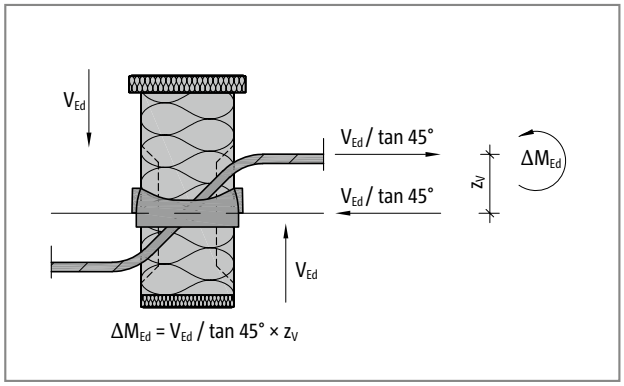


Fig. 134: Schöck Isokorb® T type Q: Moments resulting from eccentric connection

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.

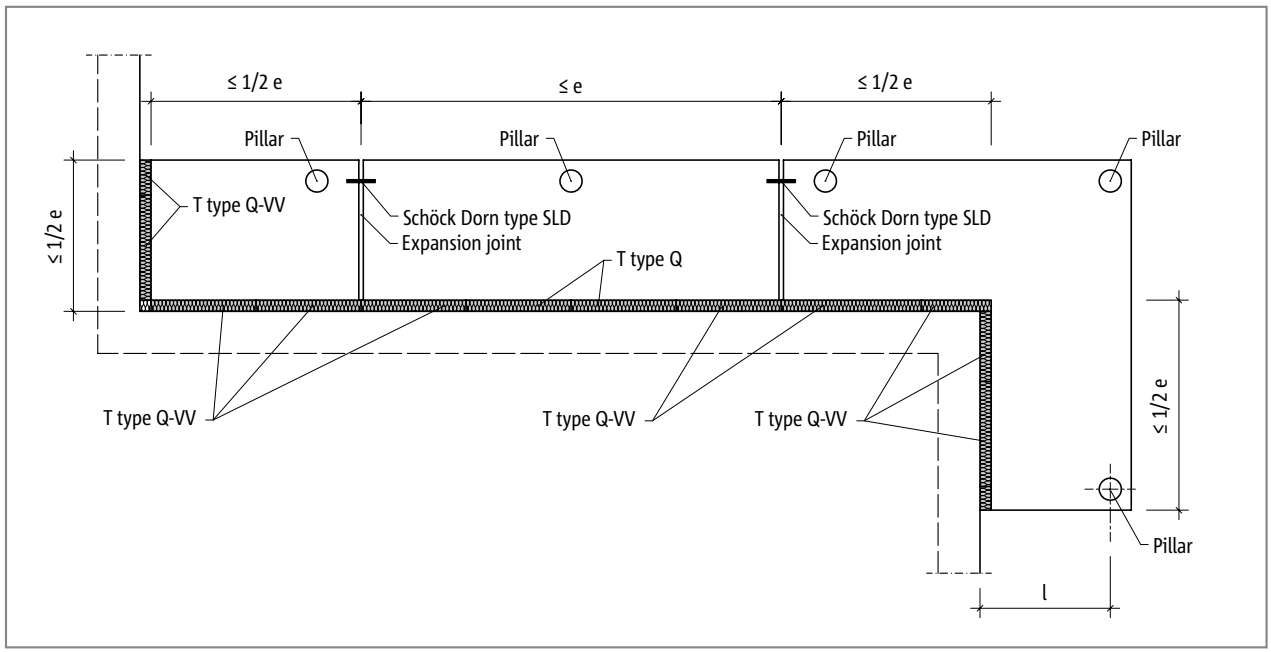


Fig. 135: Schöck Isokorb® T type Q, Q-VV: Expansion joint layout

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

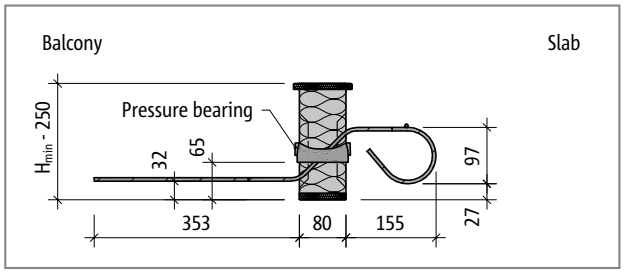


Fig. 136: Schöck Isokorb® T type Q-V1 to Q-V5: Product section

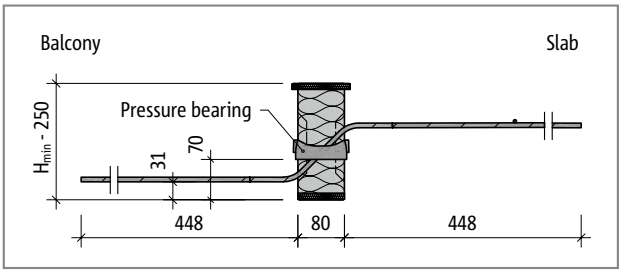


Fig. 137: Schöck Isokorb® T type Q-V6: Product section

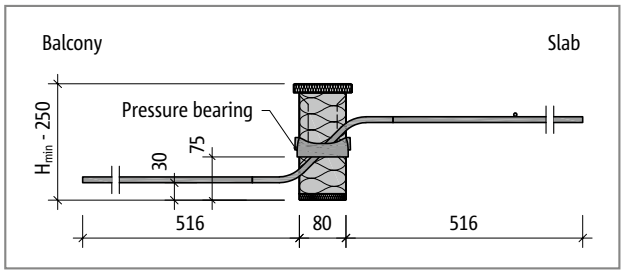


Fig. 138: Schöck Isokorb® T type Q-V7 for Q-V8: Product section

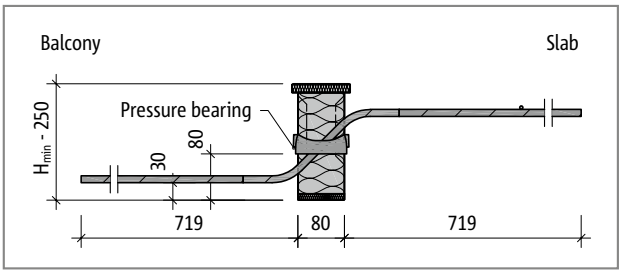


Fig. 139: Schöck Isokorb® T type Q-V9 for Q-V10: Product section

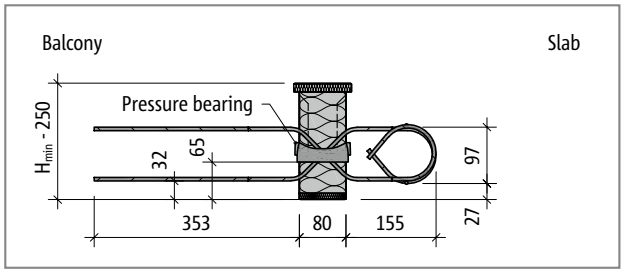


Fig. 140: Schöck Isokorb® T type Q-VV1 up to Q-VV5: Product section

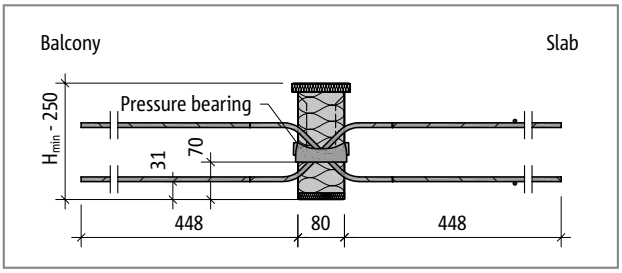


Fig. 141: Schöck Isokorb® T type Q-VV6: Product section

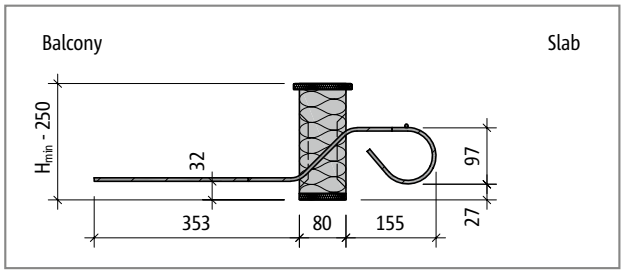


Fig. 142: Schöck Isokorb® T type Q-Z-V1 to Q-Z-V5: Product section

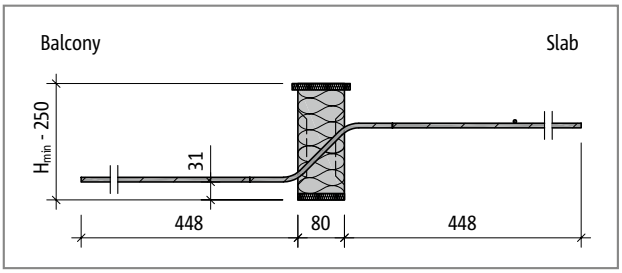


Fig. 143: Schöck Isokorb® T type Q-Z-V6: Product section

Product description

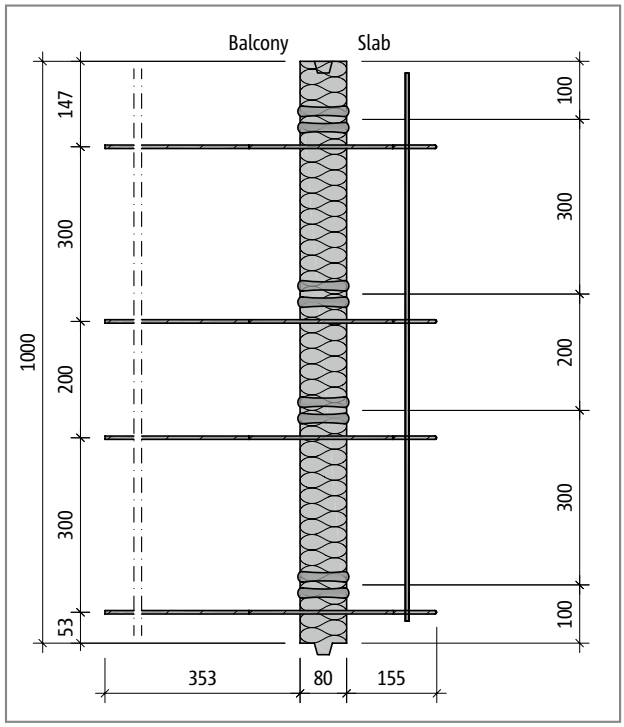


Fig. 144: Schöck Isokorb® T type Q-V1: Product layout

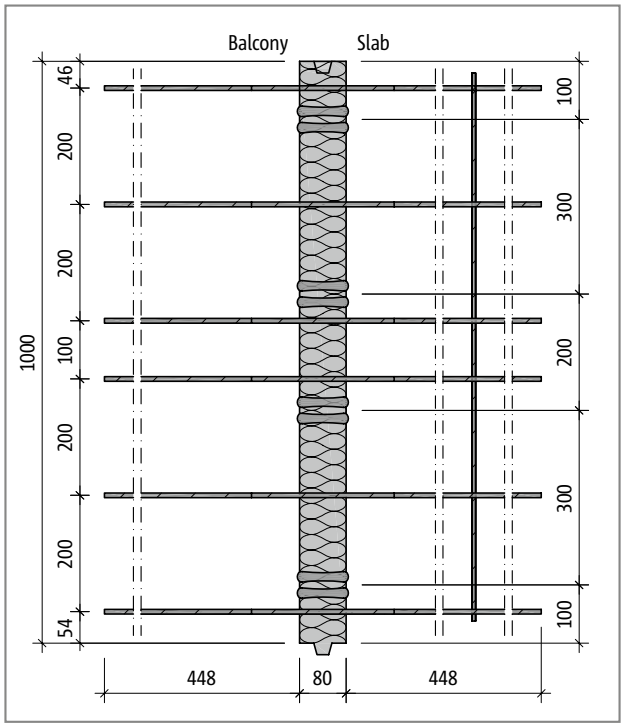


Fig. 145: Schöck Isokorb® T type Q-V6: Product layout

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

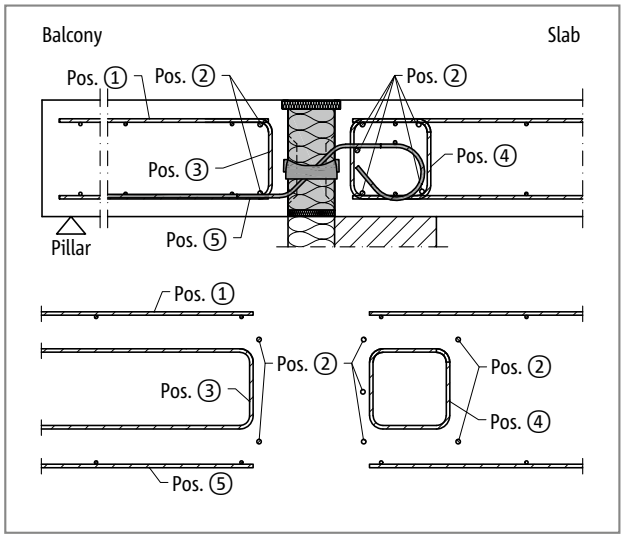


Fig. 146: Schöck Isokorb® T type Q-V1 up to Q-V5: On-site reinforcement

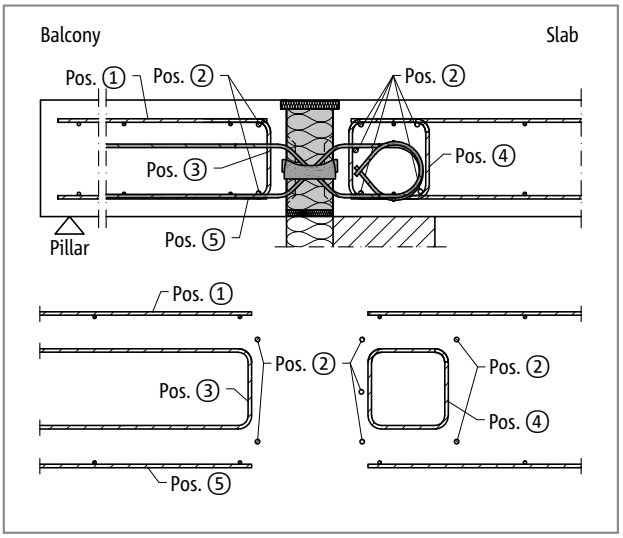


Fig. 147: Schöck Isokorb® T type Q-VV1 up to Q-VV5: On-site reinforcement

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

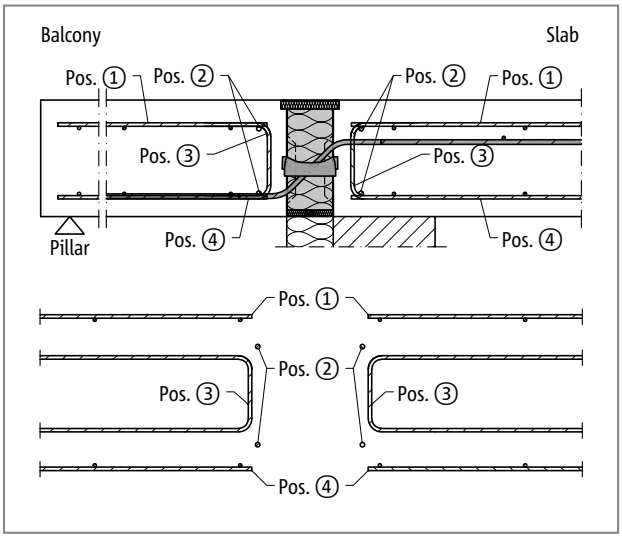


Fig. 148: Schöck Isokorb® T type Q-V6 up to Q-V10: On-site reinforcement

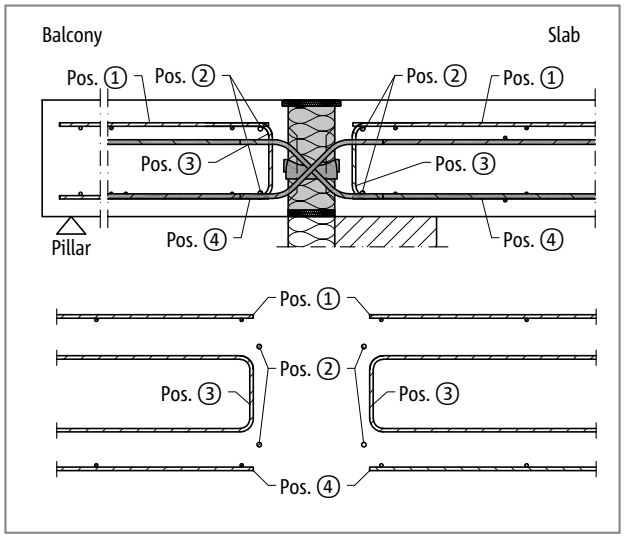


Fig. 149: Schöck Isokorb® T type Q-VV6 up to Q-VV10: On-site reinforcement

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

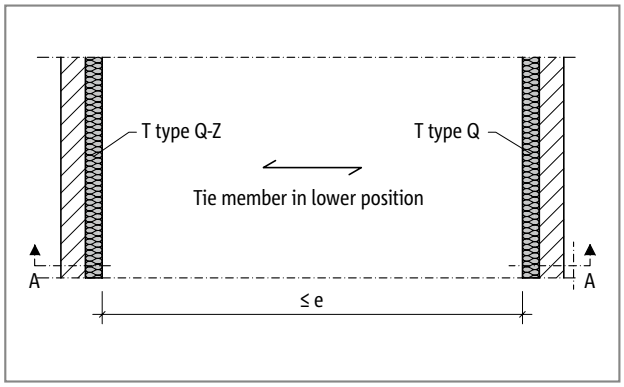


Fig. 150: Schöck Isokorb® T type Q-Z, Q: One-way reinforced reinforced concrete slab

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

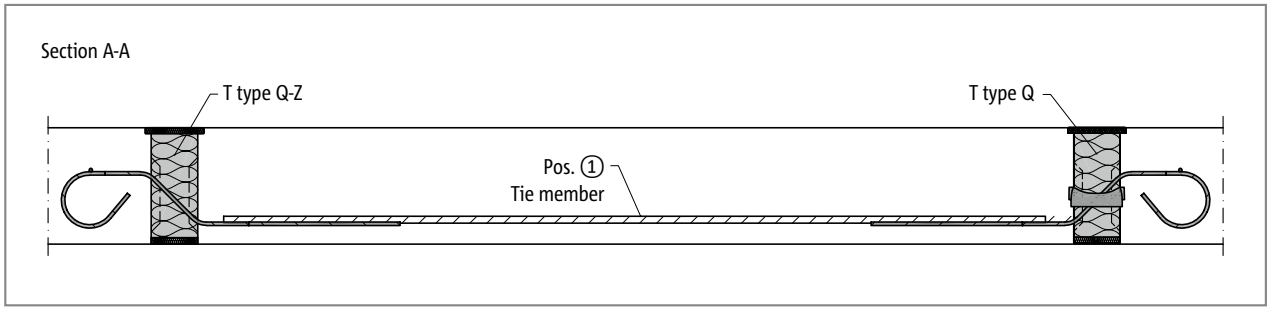


Fig. 151: Schöck Isokorb® T type Q-Z-V1 to Q-Z-V5, Q-V1 to Q-V5: Section A-A; One-way reinforced concrete slab

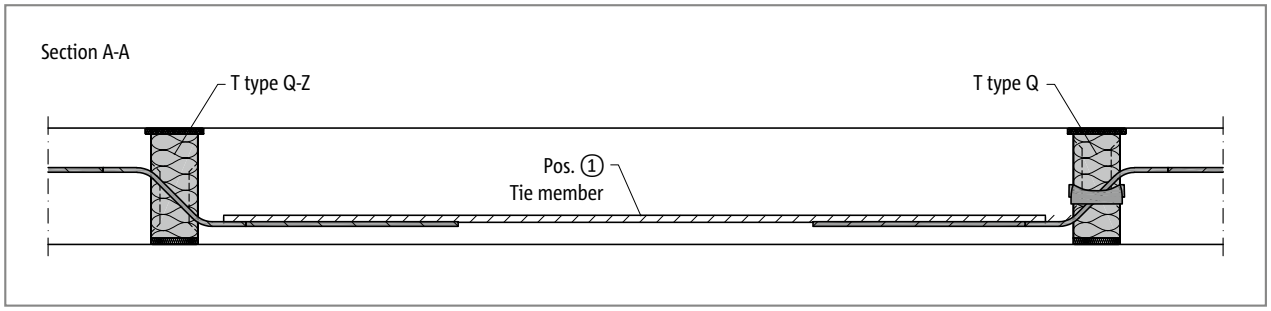


Fig. 152: Schöck Isokorb® T type Q-Z-V6 to Q-Z-V10, Q-V6 to Q-V10: Section A-A; One-way reinforced concrete slab

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

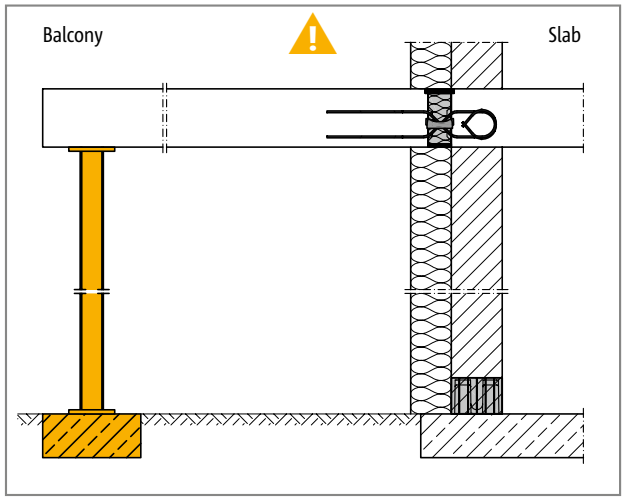


Fig. 153: Schöck Isokorb® T type Q-VV: Support required at all times

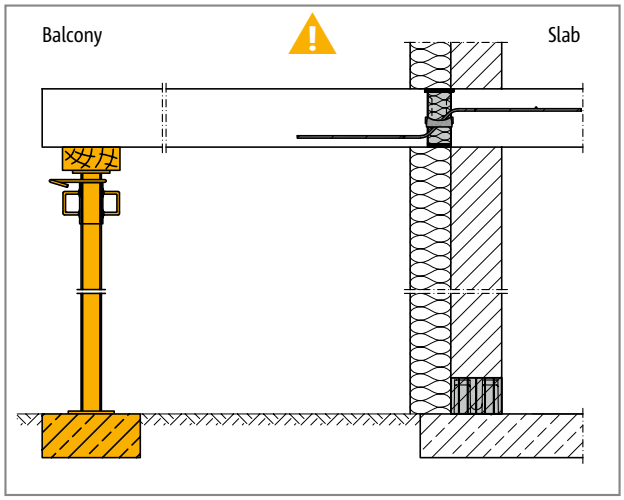


Fig. 154: Schöck Isokorb® T type Q: Support required at all times

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.

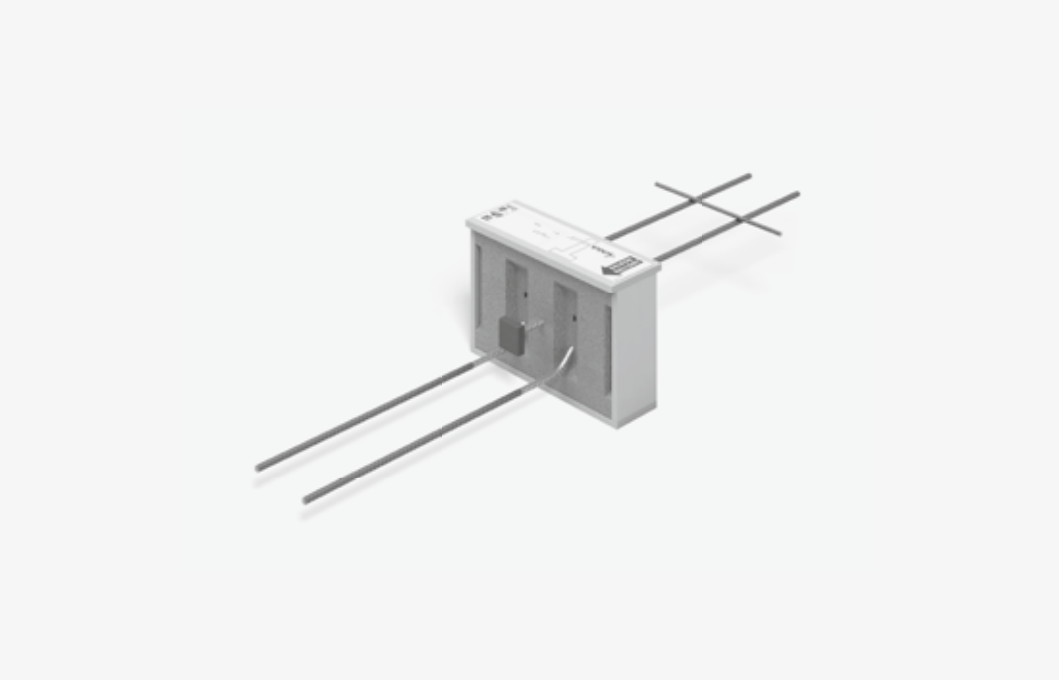
Installation manual

- 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?

Schöck Isokorb® T type Q-P



Schöck Isokorb® T type Q-P (shear force)
Suitable for load peaks with supported balconies. It transfers positive shear forces.

Schöck Isokorb® T type Q-P-VV (shear force)
Suitable for load peaks with supported balconies. It transfers positive and negative shear forces.

Schöck Isokorb® T type Q-PZ (shear force free of restraint)
Suitable for peak loads with supported balconies. It transfers positive shear forces.

Element arrangement

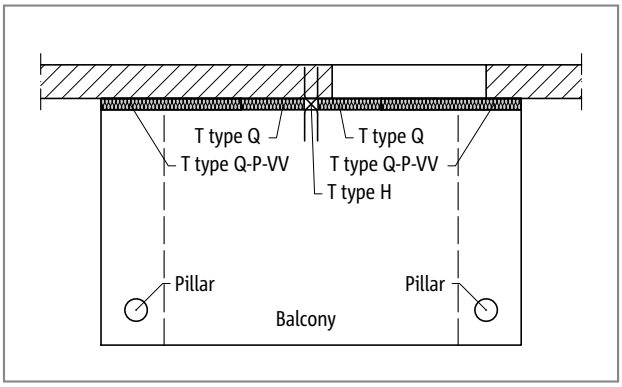


Fig. 155: Schöck Isokorb® T type Q-P-VV, Q: balcony with pillar support, connection with various bearing stiffnesses; optionally with T type H for the transfer of ordinary horizontal force

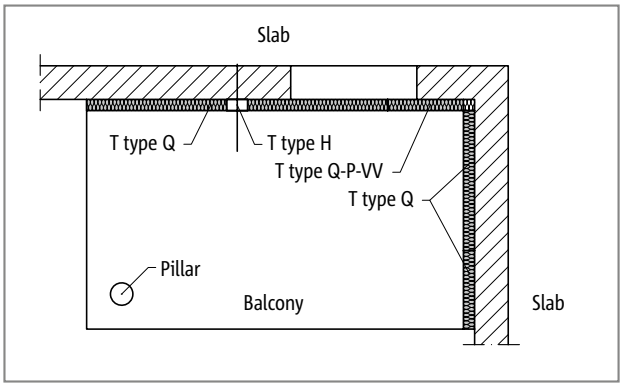


Fig. 156: Schöck Isokorb® T type Q, Q-P-VV: Balcony supported on two sides with pillar and positive shear forces

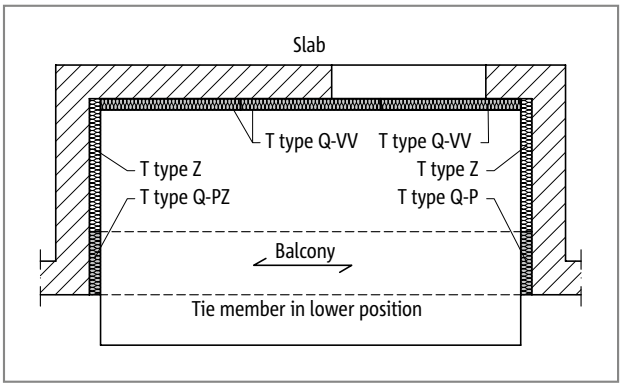


Fig. 157: Schöck Isokorb® T type Q-VV, Q-P,, Q-Z Recessed balcony supported on three sides with tie member

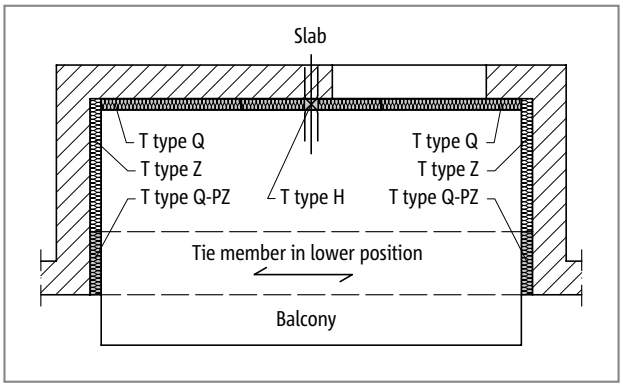


Fig. 158: Schöck Isokorb® T type Q, Q-PZ: Recessed balcony supported on three sides - symmetric with tie member

Installation cross sections

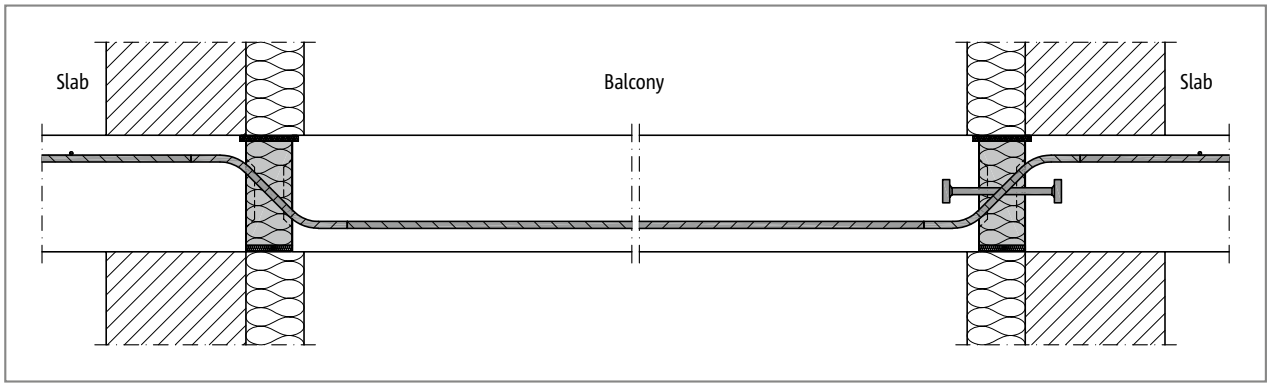


Fig. 159: Schöck Isokorb® T type Q-PZ, Q-P: Recessed balcony application see also page 121

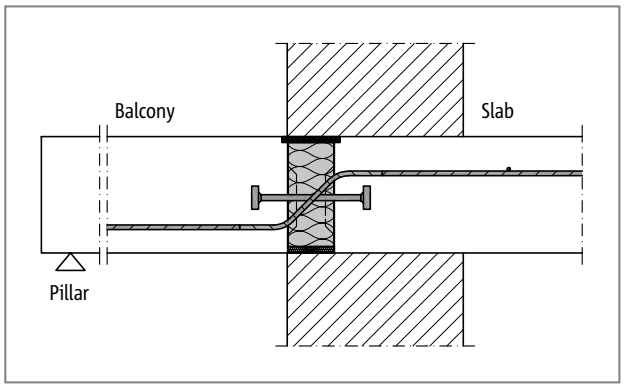


Fig. 160: Schöck Isokorb® T type Q-P: Connection of supported balcony with thermal insulating cavity wall

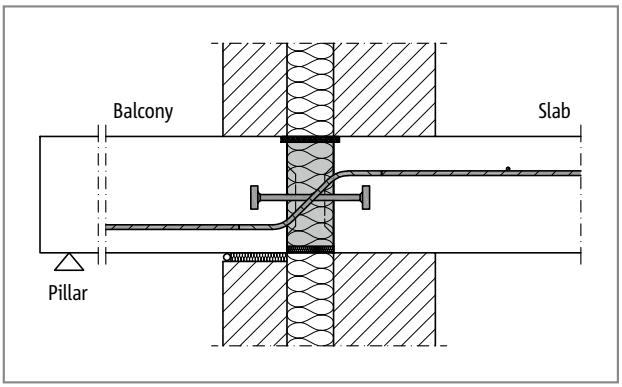


Fig. 161: Schöck Isokorb® T type Q-P: Connection supported balcony with thermal insulating cavity masonry

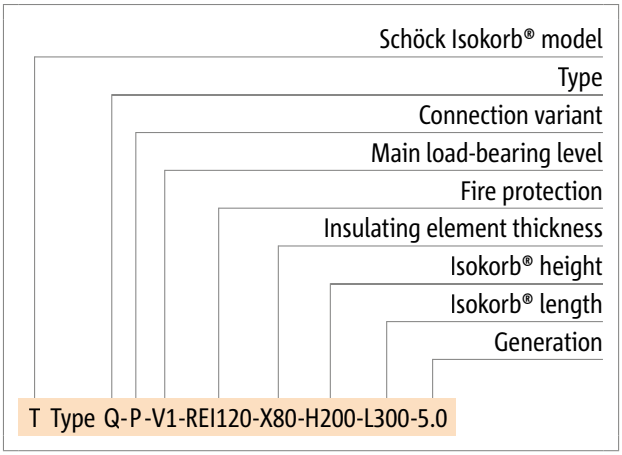
Product selection | Type designations | Special designs

Schöck Isokorb® T type Q-P, Q-P-VV, Q-PZ variants

The configuration of the Schöck Isokorb® types Q-P, Q-P-VV and Q-PZ can be varied as follows:
Shear force bar on floor side straight, on balcony side straight, applies for all bearing levels.
T type Q-P: Shear force bar for positive shear force
T type Q-P-VV: Shear force bar for positive and negative shear force
T type Q-PZ: Free of constriant forces without thrust bearing, shear force bar for positive shear force

- Connection variant: P - Punctual
- Main bearing level:
  V1 to V9
  VV1 to VV9
- Fire resistance class:
  REI120 (standard): Projection upper fire protection board, both sides 10 mm
- Concrete cover:
  bottom: CV ≥ 40 mm
  top: CV ≥ 21 mm (depeneding 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)
- Isokorb®length:
  L = 300 to 500 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.
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-P	V1	V2	V3	V4	V5	V6	V7	V8	V9
Design values with	$V_{Rd,z}$ [kN/element]								
Concrete C25/30	30.9	46.4	61.8	45.3	65.4	65.4	98.6	87.0	130.4
Isokorb® length [mm]	300	400	500	300	400	300	400	300	400
Shear force bars	2 ⌀ 8	3 ⌀ 8	4 ⌀ 8	2 ⌀ 10	3 ⌀ 10	2 ⌀ 12	3 ⌀ 12	2 ⌀ 14	3 ⌀ 14
Pressure bearing (piece)	1 ⌀ 10	2 ⌀ 10	2 ⌀ 10	1 ⌀ 12	2 ⌀ 10	2 ⌀ 10	2 ⌀ 12	2 ⌀ 12	3 ⌀ 12
H_{min} width REI120 [mm]	180	180	180	190	190	200	200	210	210

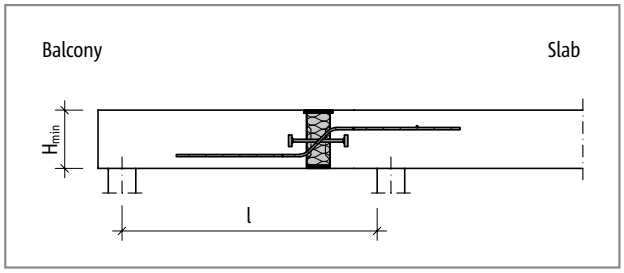


Fig. 162: Schöck Isokorb® T type Q-P: Static system

Schöck Isokorb® T type Q-PZ	V1	V2	V3	V4	V5	V6	V7	V8	V9
Design values with	$V_{Rd,z}$ [kN/element]								
Concrete C25/30	30.9	46.4	61.8	45.3	65.4	65.4	98.6	87.0	130.4
Isokorb® length [mm]	300	400	500	300	400	300	400	300	400
Shear force bars	2 ⌀ 8	3 ⌀ 8	4 ⌀ 8	2 ⌀ 10	3 ⌀ 10	2 ⌀ 12	3 ⌀ 12	2 ⌀ 14	3 ⌀ 14
Pressure bearing (piece)	-	-	-	-	-	-	-	-	-
H_{min} width REI120 [mm]	180	180	180	190	190	200	200	210	210

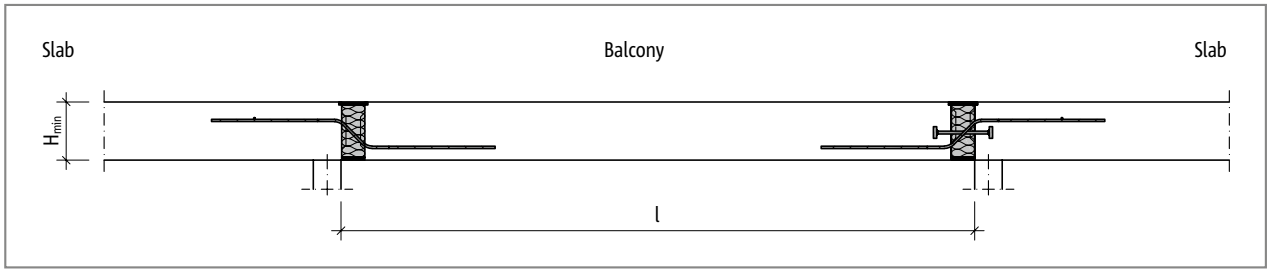


Fig. 163: Schöck Isokorb® T type Q-PZ, Q-P: Static system

C25/30 design

Schöck Isokorb® T type Q-P	VV1	VV2	VV3	VV4
Design values with	$V_{Rd,z}$ [kN/element]			
Concrete C25/30	±30.9	±46.4	±61.8	±45.3
Isokorb® length [mm]	300	400	500	300
Shear force bars	2 × 2 ⌀ 8	2 × 3 ⌀ 8	2 × 4 ⌀ 8	2 × 2 ⌀ 10
Pressure bearing (piece)	1 ⌀ 10	2 ⌀ 10	2 ⌀ 10	1 ⌀ 12
H_{min} width REI120 [mm]	180	180	180	190

Schöck Isokorb® T type Q-P	VV5	VV6	VV7	VV8	VV9
Design values with	$V_{Rd,z}$ [kN/element]				
Concrete C25/30	±65.4	±65.4	±98.6	±87.0	±130.4
Isokorb® length [mm]	400	300	400	300	400
Shear force bars	2 × 3 ⌀ 10	2 × 2 ⌀ 12	2 × 3 ⌀ 12	2 × 2 ⌀ 14	2 × 3 ⌀ 14
Pressure bearing (piece)	2 ⌀ 10	2 ⌀ 10	2 ⌀ 12	2 ⌀ 12	3 ⌀ 12
H_{min} width REI120 [mm]	190	200	200	220	220

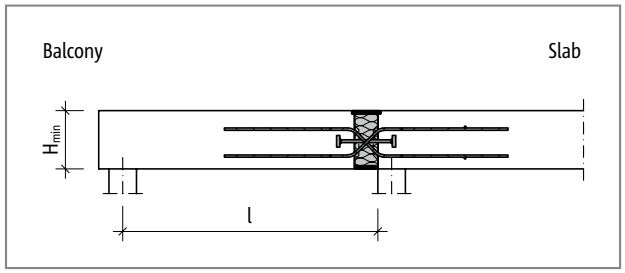


Fig. 164: Schöck Isokorb® T type Q-P-VV: Static system

Notes on design

- For the transfer of ordinary horizontal forces additional Schöck Isokorb® type H (see page 125) are required.
- A structural calculation is to be produced for the reinforced concrete structural elements adjacent on both sides of the Schöck Isokorb®. With a connection using Schöck Isokorb® type QP and type QP+VV a freely rotatable support (pin connection is to be assumed as static system.
- The Schöck Isokorb® type Q-PZ for connection free of constraint forces requires a reinforced tie bar in the lower position. Select $A_{s,req}$ according to application example recessed balcony page 121.
- The indicative minimum concrete strength class of the external structural component is C32/40.
- 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®.

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® types Q and Q-P-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} with a lever arm of $z_{v,max}$ = 140 mm.

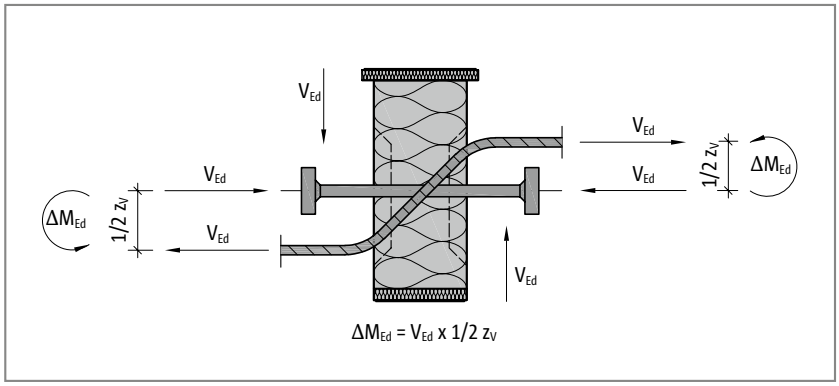


Fig. 165: Schöck Isokorb® T type Q-P: Moments resulting from excentric connection

Schöck Isokorb® T type Q-P	V1, VV1	V2, VV2	V3, VV3	V4, VV4	V5, VV5
Design values with	Δ M_{Ed} [kNm/Element]				
Concrete C25/30	1.3	2.0	2.6	2.2	3.1

Schöck Isokorb® T type Q-P	V6, VV6	V7, VV7	V8, VV8	V9, VV9
Design values with	Δ M_{Ed} [kNm/Element]			
Concrete C25/30	3.6	5.5	5.5	8.2

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.

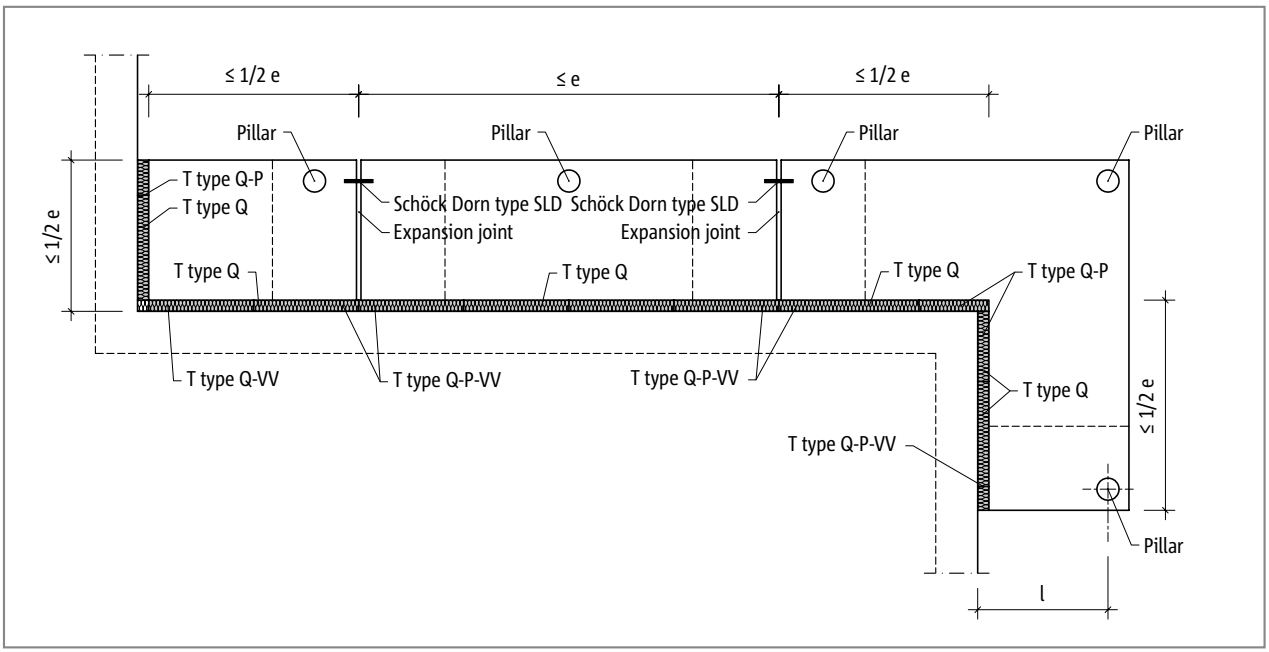


Fig. 166: Schöck Isokorb® T type Q-P, Q-P-VV: Expansion joint layout

Schöck Isokorb® T type Q-P		V1, VV1	V2, VV2	V3, VV3	V4, VV4	V5, VV5
Maximum expansion joint spacing		e [m]				
Insulating element thickness [mm]	80	11.0	11.0	11.0	10.6	10.6

Schöck Isokorb® T type Q-P		V6, VV6	V7, VV7	V8, VV8	V9, VV9
Maximum expansion joint spacing		e [m]			
Insulating element thickness [mm]	80	9.5	9.5	8.3	8.3

Schöck Isokorb® T type Q-PZ		V1	V2	V3	V4	V5	V6	V7	V8	V9
Maximum expansion joint spacing		e [m]								
Insulating element thickness [mm]	80	11.0	11.0	11.0	10.6	10.6	9.5	9.5	8.3	8.3

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

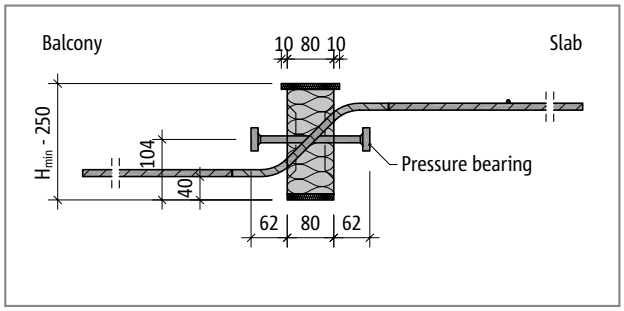


Fig. 167: Schöck Isokorb® T type Q-P: Product section

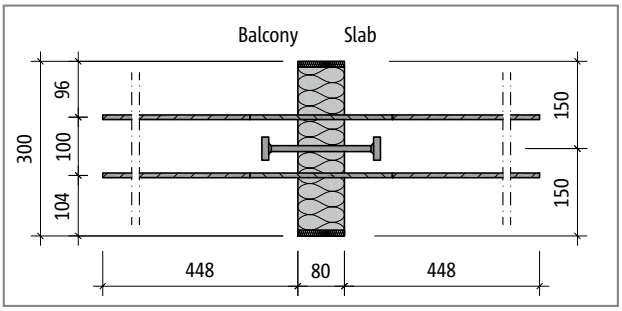


Fig. 168: Schöck Isokorb® T type Q-P-V1: Product layout

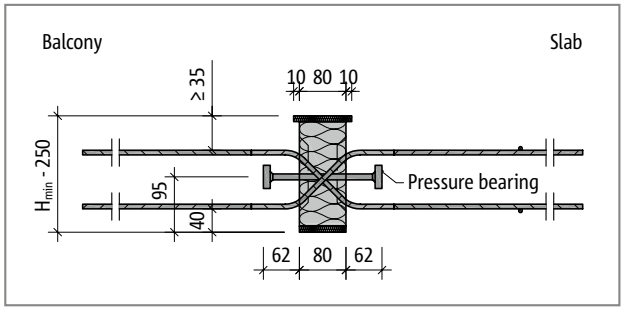


Fig. 169: Schöck Isokorb® T type Q-VV: Product section

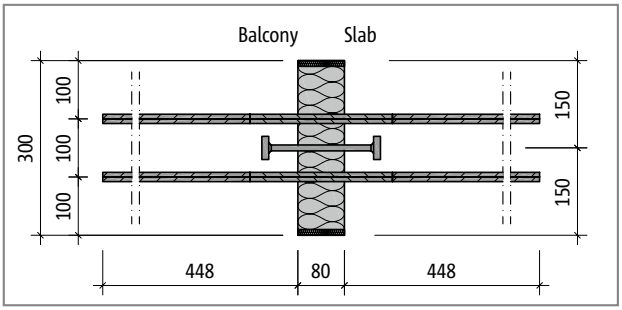


Fig. 170: Schöck Isokorb® T type Q-P-VV1: Product layout

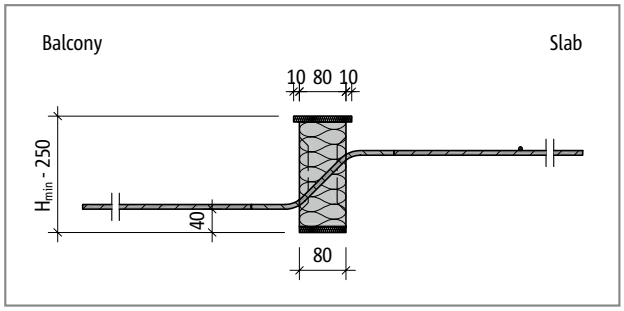


Fig. 171: Schöck Isokorb® T type Q-PZ: Product section

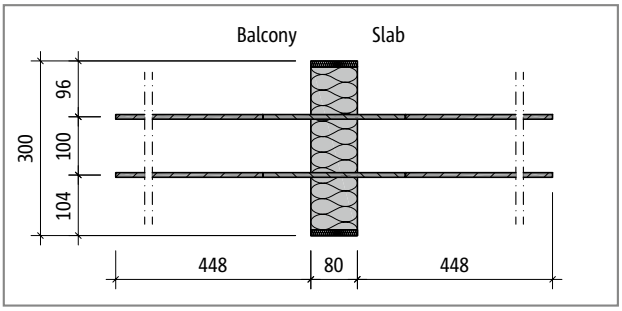


Fig. 172: Schöck Isokorb® T type Q-PZ-V1: Product layout

Product information

- Note min. height H_{min} Schöck Isokorb® T type Q-P,Q-P-VV, Q-PZ.
- The length of the Schöck Isokorb® varies dependent on the load-bearing level.
- The upper fire protection board projects on both sides of the Schöck Isokorb® by 10 mm.
- Download further product plan views and cross-sections at www.schoeck.co.uk/download

On-site reinforcement - In-situ concrete construction

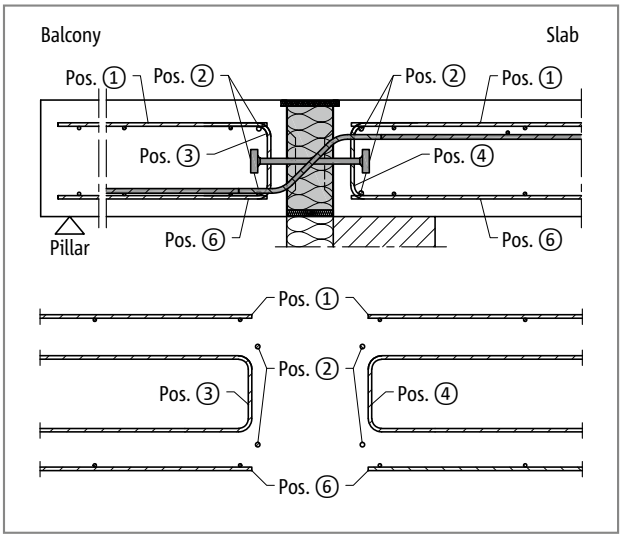


Fig. 173: Schöck Isokorb® T type Q-P: On-site reinforcement

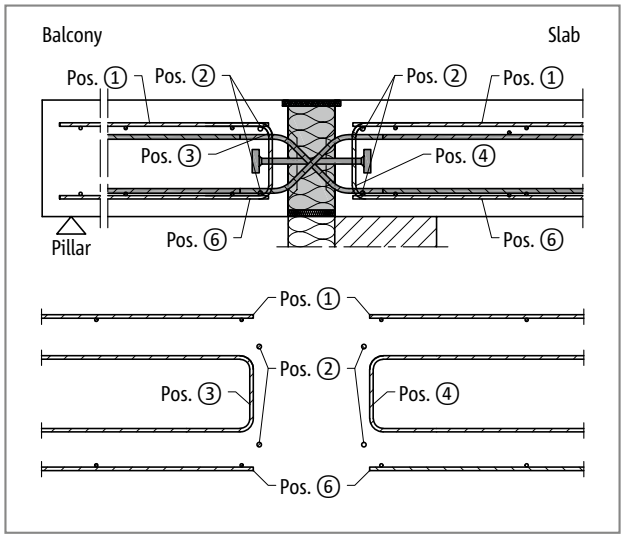


Fig. 174: Schöck Isokorb® T type Q-VV: On-site reinforcement

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.

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 side reinforcement Pos. 5 at the edge of the structural component should be selected as low as possible so that it can be arranged between top and bottom reinforcement position.
- The Schöck Isokorb®T type Q-P and Q-PZ for connection free of constraint forces requires a reinforced tie bar in the lower position. Select $A_{s,req}$ according to application example recessed balcony page 121.
- 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 indicative minimum concrete strength class of the external structural component is C32/40.

On-site reinforcement - In-situ concrete construction

Schöck Isokorb® T type Q-P, Q-PZ		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/floor side	necessary in the tension zone, as specified by the structural engineer				
Pos. 2 Steel bars along the insulation joint						
Pos. 2	Balcony/floor side	2 • 2 • H8	2 • 2 • H8	2 • 2 • H8	2 • 2 • H8	2 • 2 • H8
Pos. 3 Stirrup						
Pos. 3 [mm²/Element]	Balcony/floor side	71	107	142	104	150
Pos. 5 Side reinforcement at the free edge						
Pos. 5	Balcony/floor side	Edging as per BS EN 1992-1-1 (EC2), 9.3.1.4 (not pictured)				
Pos. 6 Lapping reinforcement						
Pos. 6		necessary in the tension zone, as specified by the structural engineer				

Schöck Isokorb® T type Q-P, Q-PZ		V6, VV6	V7, VV7	V8, VV8	V9, VV9
On-site reinforcement	Location	Concrete strength class ≥ C25/30			
Pos. 1 Lapping reinforcement					
Pos. 1	Balcony/floor side	necessary in the tension zone, as specified by the structural engineer			
Pos. 2 Steel bars along the insulation joint					
Pos. 2	Balcony/floor side	2 • 2 • H8	2 • 2 • H8	2 • 2 • H8	2 • 2 • H8
Pos. 3 Stirrup					
Pos. 3 [mm²/Element]	Balcony/floor side	150	227	200	300
Pos. 5 Side reinforcement at the free edge					
Pos. 5	Balcony/floor side	Edging as per BS EN 1992-1-1 (EC2), 9.3.1.4 (not pictured)			
Pos. 6 Lapping reinforcement					
Pos. 6		necessary in the tension zone, as specified by the structural engineer			

Application case recessed balcony

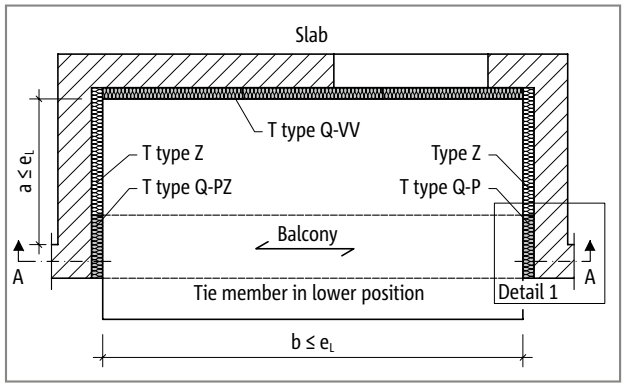


Fig. 175: Schöck Isokorb® T type Q-PZ, Q-P: Layout of recessed balcony

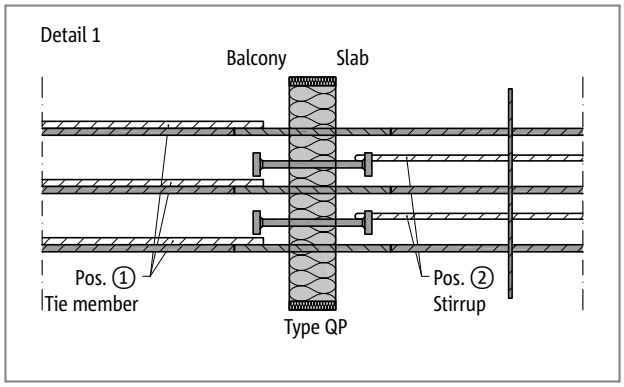


Fig. 176: Schöck Isokorb® T type Q-P: Detail 1; Reinforcement connection tie bar

A T type Q-PZ without pressure bearing is to be arranged on one side for support free of constraint forces. A T type Q-P 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-PZ and T type Q-P.

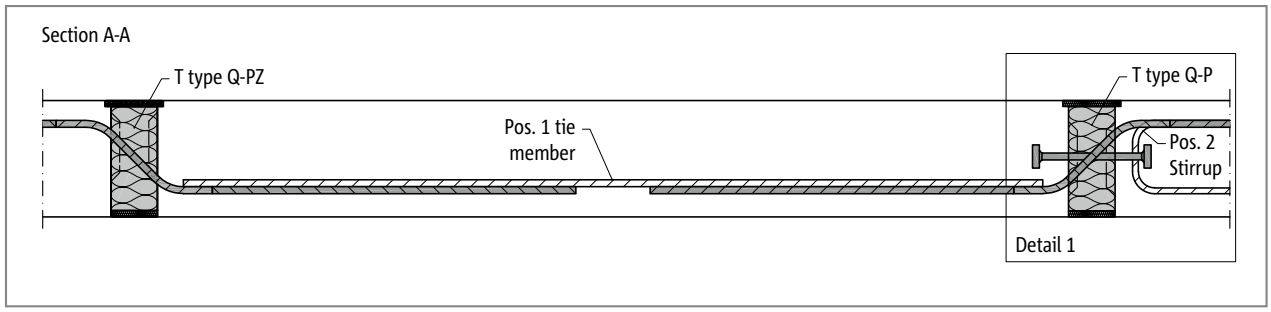


Fig. 177: Schöck Isokorb® T type Q-PZ, Q-P: Tie member connection

Schöck Isokorb® T type Q-P, Q-PZ	V1	V2	V3	V4	V5	V6	V7	V8	V9
On-site reinforcement	Concrete strength class ≥ C25/30								
Pos. 1 Tie									
Pos. 1	2 • H8	3 • H8	4 • H8	2 • H10	3 • H10	2 • H12	3 • H12	2 • H16	3 • H16
Pos. 2 Stirrup (bracing)									
Pos. 2	1 • H8	2 • H8	2 • H8	1 • H10	2 • H10	2 • H10	2 • H10	2 • H10	3 • H10

Schöck Isokorb® T type Q-P, Q-PZ	V1	V2	V3	V4	V5	V6	V7	V8	V9
Fixed point separation recessed balcony	e_L [m]								
a, b ≤	5.5	5.5	5.5	5.3	5.3	4.7	4.7	4.2	4.2

Information on tie bar

- The fixed point separations a, b are to be selected witht $a \leq e_L$ and $b \leq e_L$.
- The floor side bracing of the tie is carried out via on-site stirrups, which are tied to the pressure bearings.
- The required suspension reinforcement and the on-site slab reinforcement are not shown here.

Application example recessed balcony - symmetrical | Expansion joint spacing

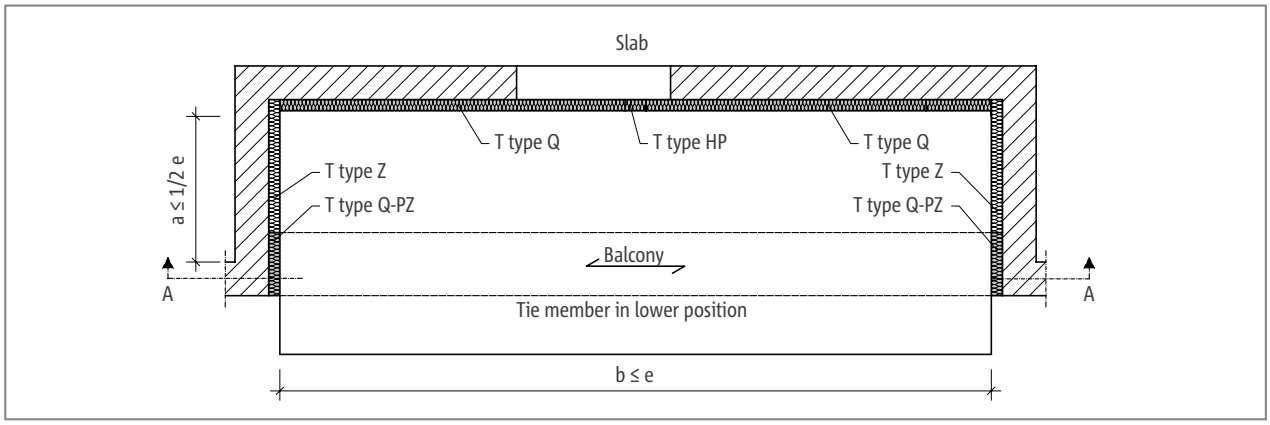


Fig. 178: Schöck Isokorb® T type Q-PZ: Layout of recessed balcony - symmetrical

A T type Q-PZ without pressure bearing is to be arranged on both sides for support free of constraint forces. 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 types Q-PZ.

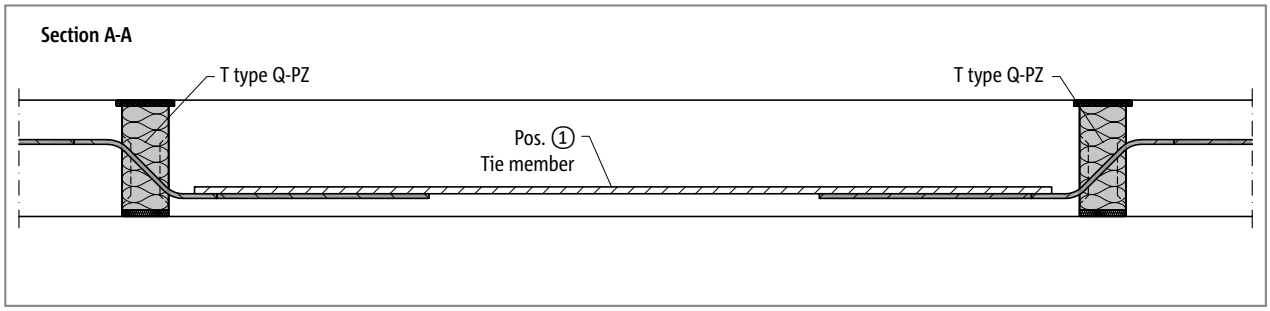


Fig. 179: Schöck Isokorb® T type Q-PZ: Tie member connection

Schöck Isokorb® T type Q-PZ		V1	V2	V3	V4	V5	V6	V7	V8	V9
Maximum expansion joint spacing		e [m]								
Insulating element thickness [mm]	80	11.0	11.0	11.0	10.6	10.6	9.5	9.5	8.3	8.3

Schöck Isokorb® T type Q-PZ	V1	V2	V3	V4	V5	V6	V7	V8	V9
On-site reinforcement	Concrete strength class ≥ C25/30								
Pos. 1 Tie									
Pos. 1	2 • H8	3 • H8	4 • H8	2 • H10	3 • H10	2 • H12	3 • H12	2 • H16	3 • H16

Recessed balcony

- The fixed point spacings a, b are to be selected as a ≤ 1/2 e and b ≤ e.
- The required suspension reinforcement and the on-site slab reinforcement are not shown here.
- This arrangement of the Schöck Isokorb® (T type Q-PZ opposing) is suitable for symmetrical layouts only, if the asymmetrical load case is not relevant

Type of bearing: supported | Installation instructions

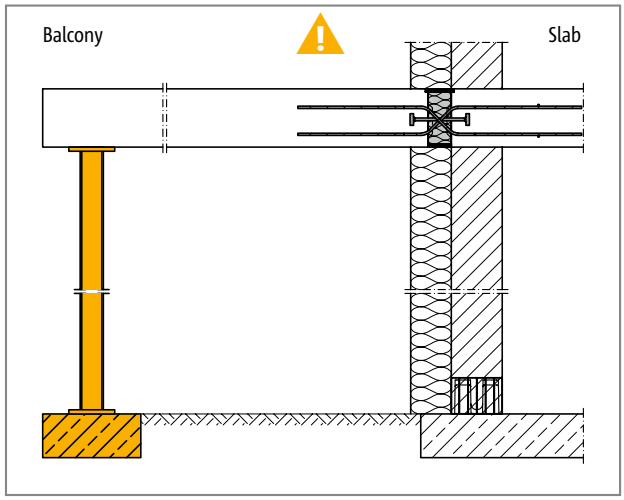


Fig. 180: Schöck Isokorb® T type Q-VV: Support required at all times

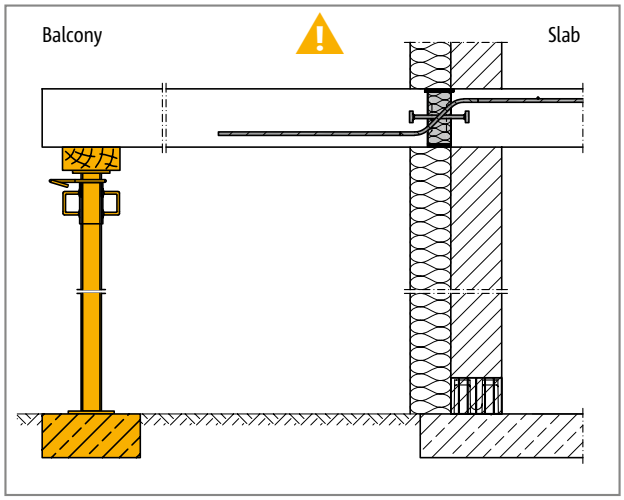


Fig. 181: Schöck Isokorb® T type Q-P: Support required at all times

Supported balcony

The Schöck Isokorb type Q, Q+Q and VV 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.

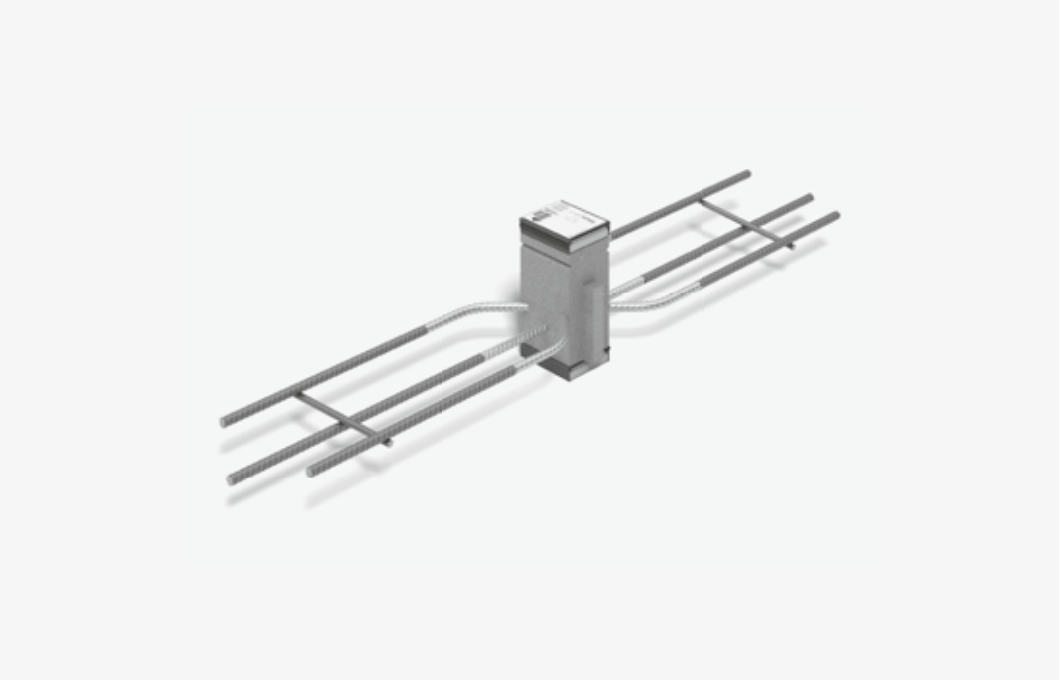
Installation manual

- 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? Type QP is a connection purely for shear forces (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?
- ☐ 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?

Schöck Isokorb® T type H



Schöck Isokorb® T type H
Suitable for ordinary existing horizontal forces.

The Schöck Isokorb® T type H-NN transfers forces at right angles to the insulation layer.
The Schöck Isokorb® T type H-VV-NN transfers forces both parallel and also at right angles to the insulation layer.

The Schöck Isokorb® T type H-VV-NN and/or T type H-NN is may be used only in conjunction with other Isokorb® types that can transfer shear forces and, if necessary, moments.

Element arrangement | Installation cross sections

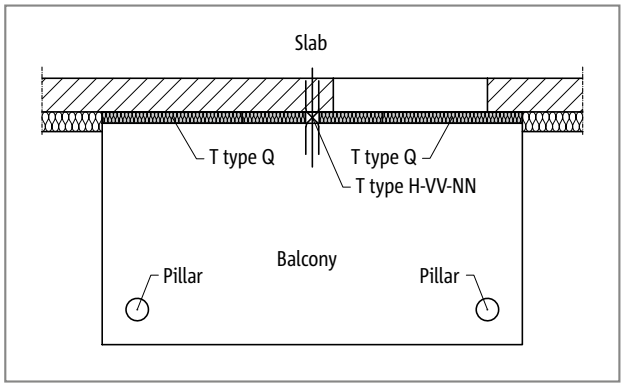


Fig. 182: Schöck Isokorb® T type H: Balcony with column support

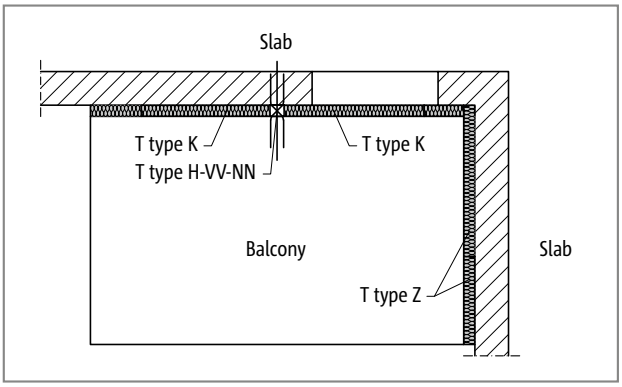


Fig. 183: Schöck Isokorb® T type H: Cantilevered balcony

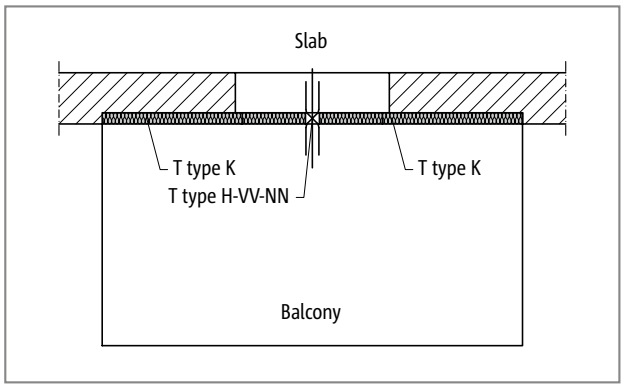


Fig. 184: Schöck Isokorb® T type H: Cantilevered balcony

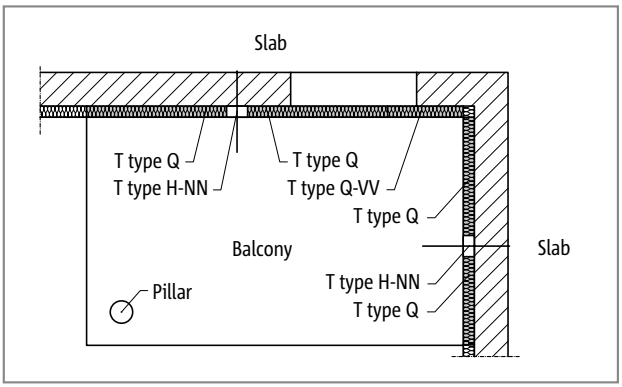


Fig. 185: Schöck Isokorb® T type H: Balcony supported on two sides with column

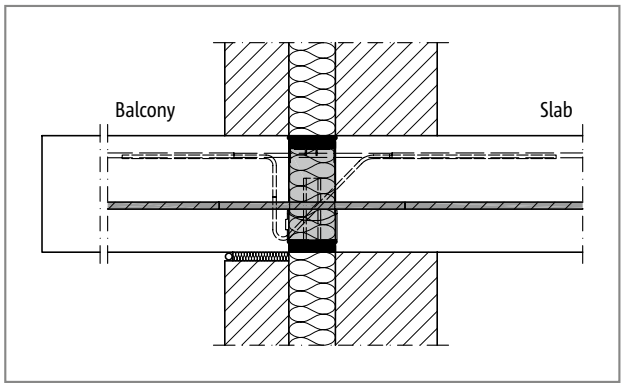


Fig. 186: Schöck Isokorb® T type K, H-NN: Connection with non- cavity masonry

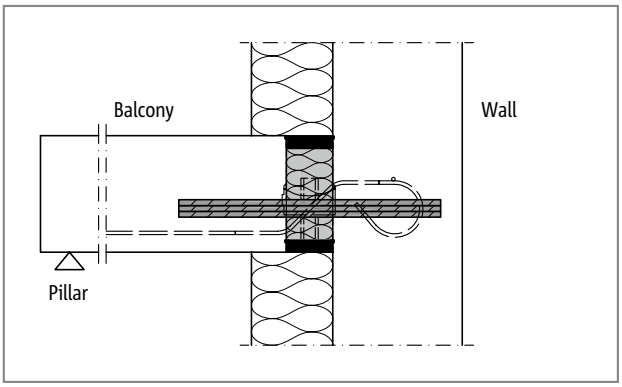


Fig. 187: Schöck Isokorb® T type Q, H-VV-NN: Connection to a reinforced concrete wall with external insulation

Geometry

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

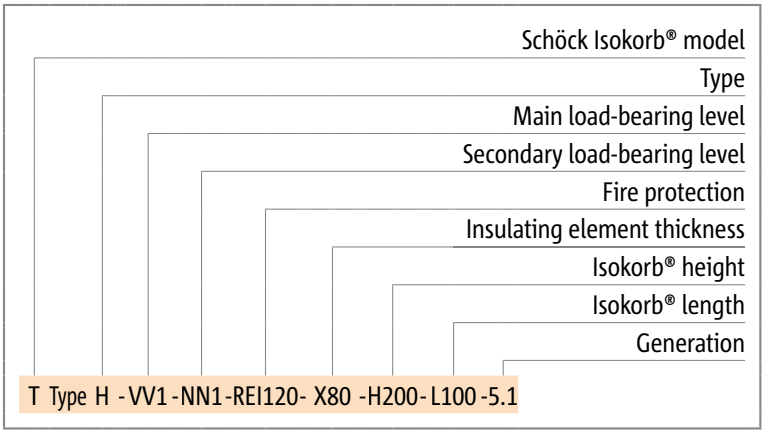
Product selection | Type designations | Special designs

Schöck Isokorb® T type H variants

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

- Main load-bearing level:
  VV1, VV2, NN1, NN2
- Secondary load-bearing level:
  NN1
  NN2 is available upon request
- Fire resistance class:
  REI120 (standard)
- Insulating element thickness:
  X80 = 80 mm
- Isokorb® height:
  H = 160 to 250 mm
- Isokorb®length:
  L = 100 mm
- Generation:
  5.1

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® T 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]
C25/30	0.0	±11.6	0.0	±49.2	±10.4	±11.6	±39.2	±49.2

Shear force bars, horizontal	-	-	2 × 1 ⌀ 10	2 × 1 ⌀ 12
Tension bars/compression bars	1 ⌀ 10	1 ⌀ 12	1 ⌀ 10	1 ⌀ 12
Isokorb® length [mm]	100	100	100	100
Isokorb® height H [mm]	160 - 250	160 - 250	160 - 250	160 - 250

Fig. 188: Schöck Isokorb® T type H: Type selection

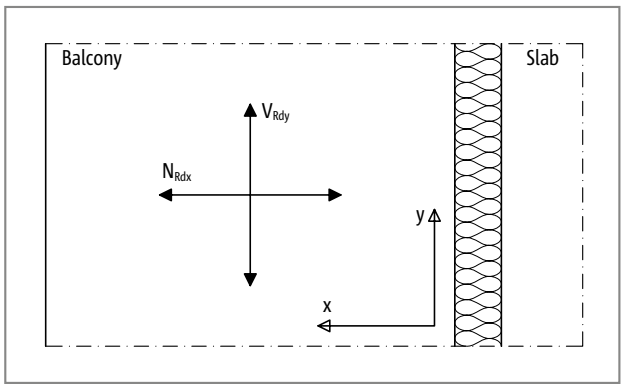


Fig.

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. T type Q with L = 1.0 m and T type H with L = 0.1 m in regular exchange signifies a reduction by ca. 9 % of v_{Rd} of the linear connection using type T type Q).
- With the type selection (T Typ H-NN or H-VV-NN) and arrangement, attention is to be paid that no unnecessary fixed points are created and the maximum expansion joint spacings (of e.g. type K, type Q or type D) are maintained.
- The required number of Schöck Isokorb® T 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 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.

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

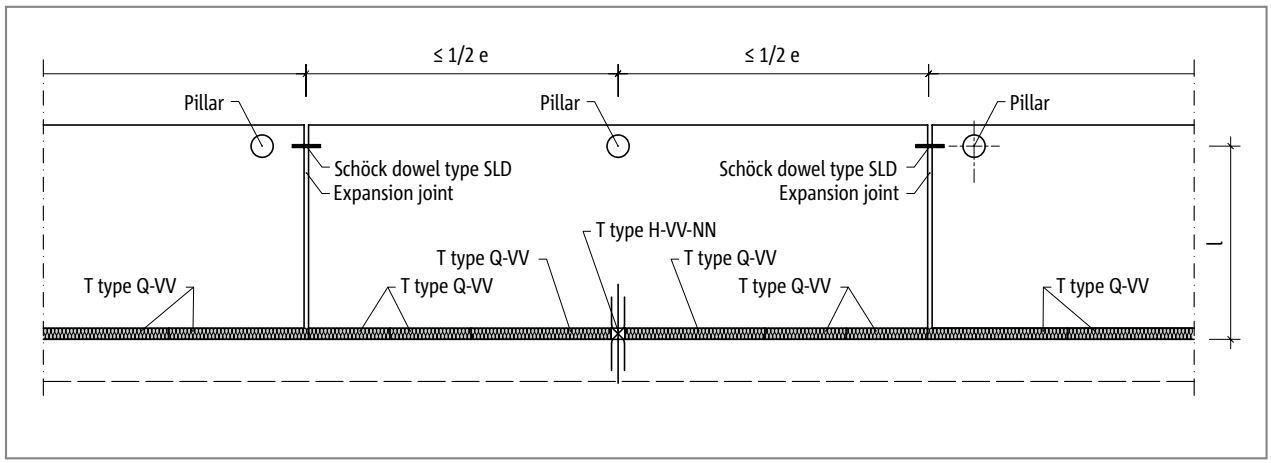


Fig. 189: Schöck Isokorb® T type H: Expansion joint layout

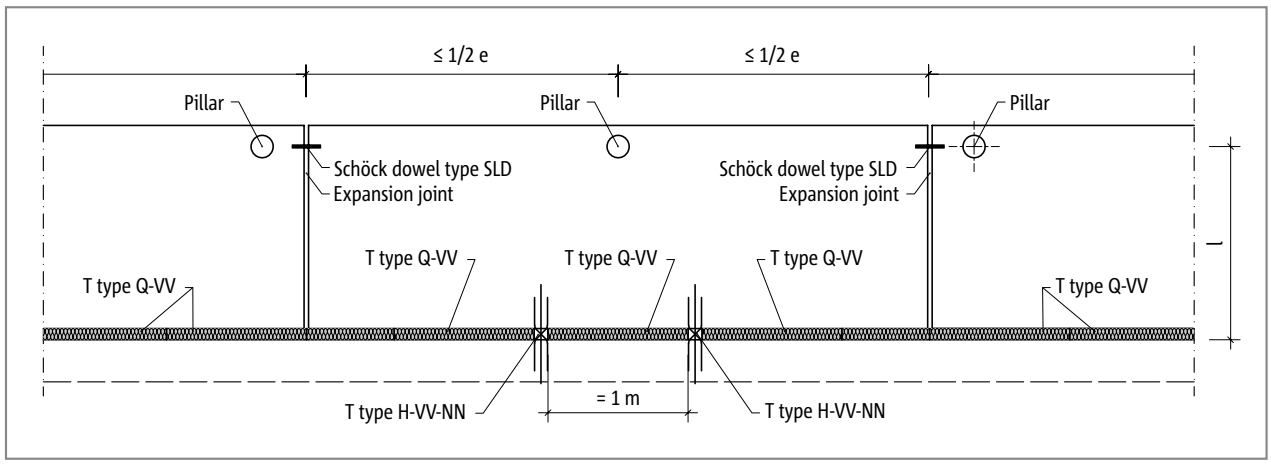


Fig. 190: Schöck Isokorb® T type H: Expansion joint layout

Expansion joint spacing

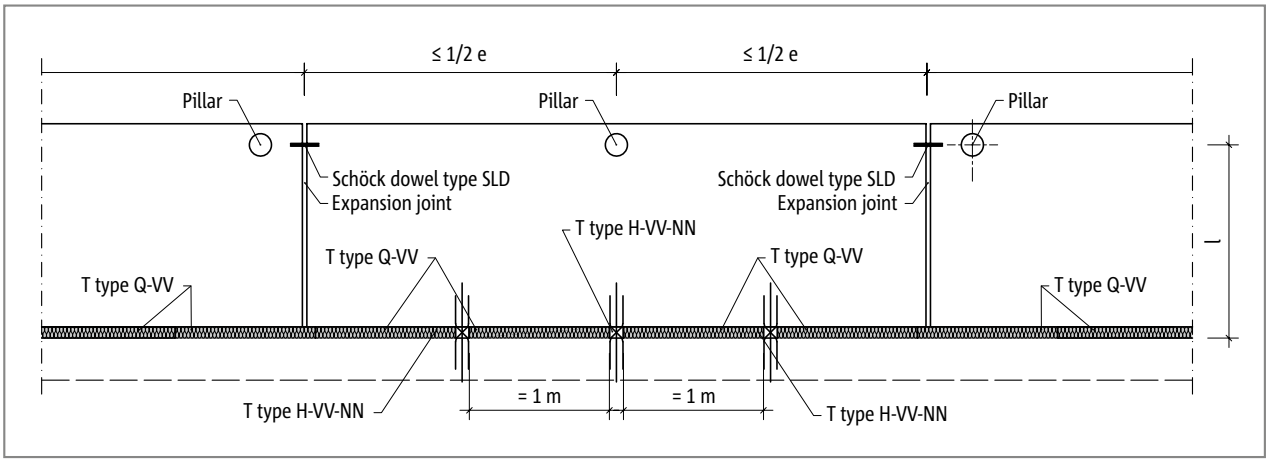


Fig. 191: Schöck Isokorb® T type H: Expansion joint layout

Schöck Isokorb® T type H combined with	T type K	T type K-U K-O	T type Q, Q-VV	T types Q-P, Q-P-VV Q-PZ	T type D
maximum expansion joint spacing from fixed point e/2 [m]	≤ e/2 see type K	6.5	≤ e/2 see Type Q, Q-VV	≤ e/2 see T Typ Q-P, Q-P-VV, Q-PZ	5.9

Expansion joints

- A maximum of three Schöck Isokorb® T type H-VV-NNs 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® T type H-NNs are arranged on each edge of the expansion joint, then the following permitted expansion joint spacings must be maintained for T type H-NN:
  T type H-NN1: 13.0 m
  T type H-NN2: 11.7 m
  In addition, the combination of Schöck Isokorb® types being used should also be taken into account for determining the maximum expansion joint spacings.

Product description

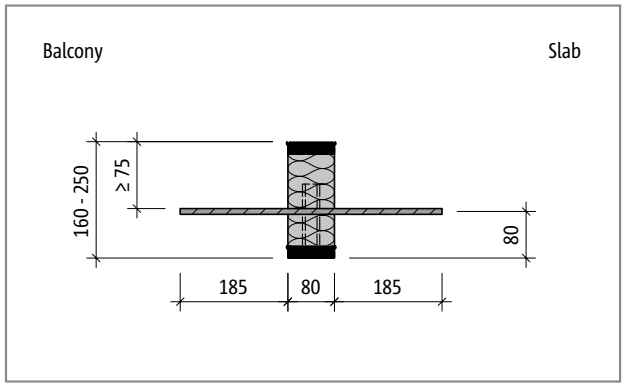


Fig. 192: Schöck Isokorb® T type H-NN1: Product sction

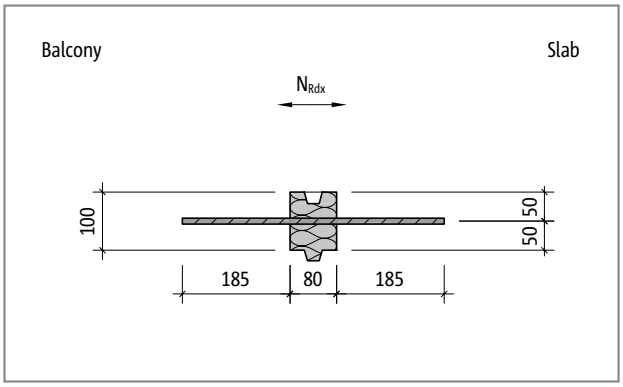


Fig. 193: Schöck Isokorb® T type H-NN1: Product layout

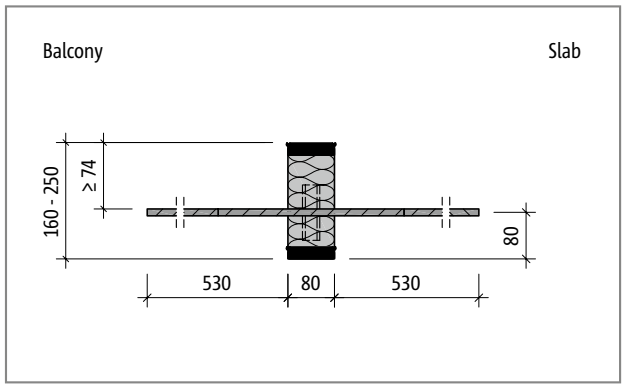


Fig. 194: Schöck Isokorb® T type H-NN2: Product sction

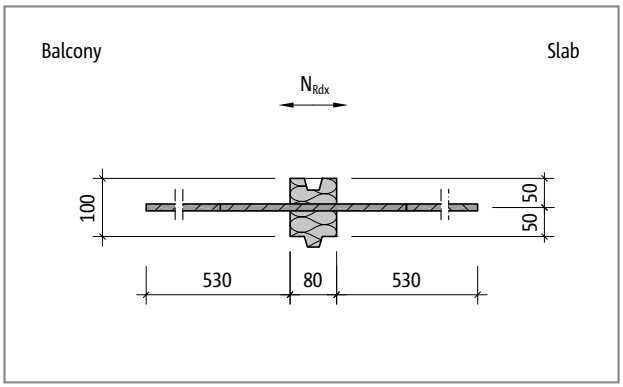


Fig. 195: Schöck Isokorb® T type H-NN2: Product layout

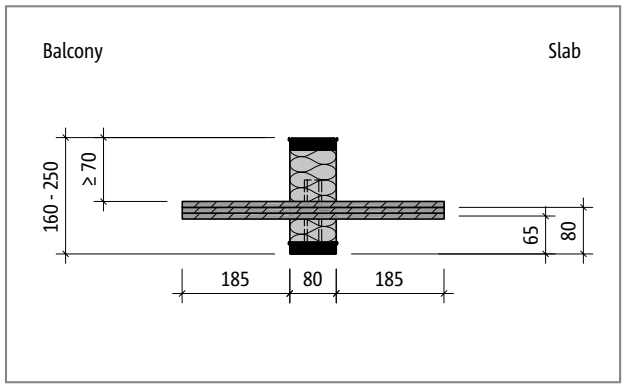


Fig. 196: Schöck Isokorb® T type H-VV1-NN1: Product section

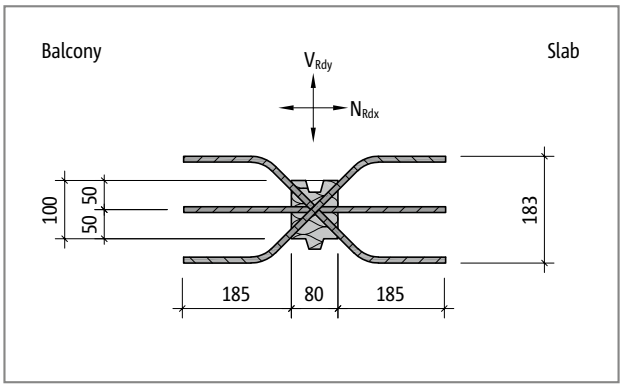


Fig. 197: Schöck Isokorb® T type H-VV1-NN1: Product layout

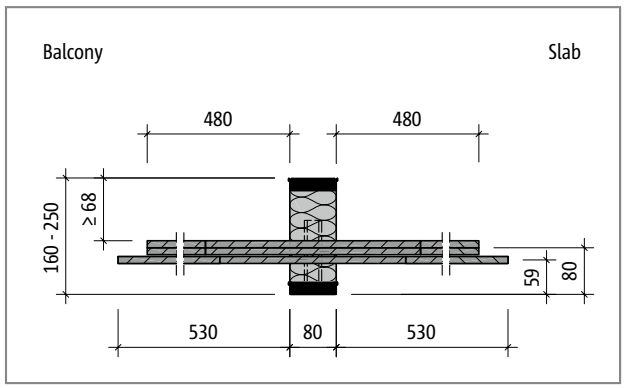


Fig. 198: Schöck Isokorb® T type H-VV2-NN1: Product sction

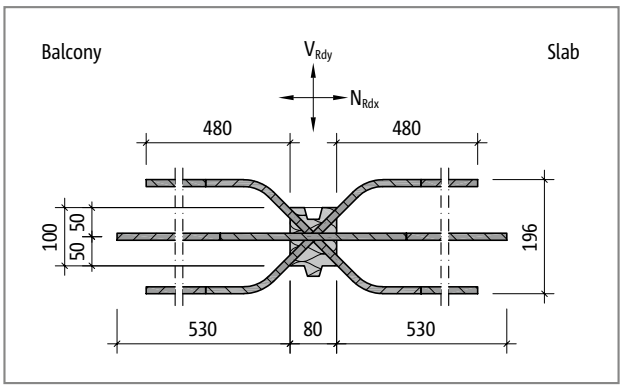


Fig. 199: Schöck Isokorb® T type H-VV2-NN1: Product layout

Design example

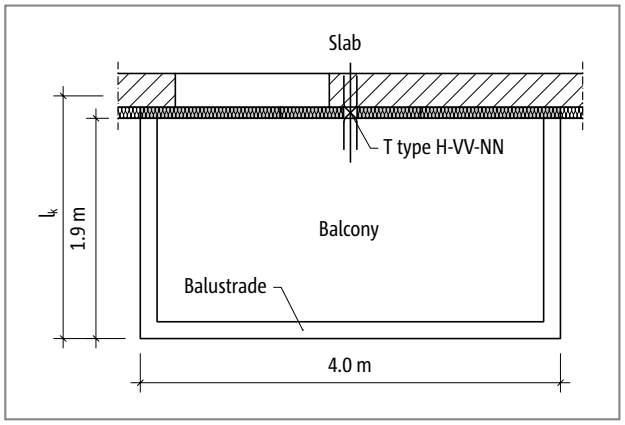


Fig. 200: Schöck Isokorb® T type K, H: Layout

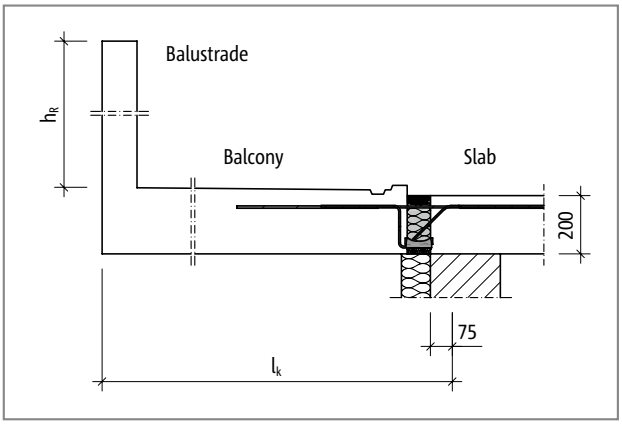


Fig. 201: Schöck Isokorb® T type K: Static system

Static system and load assumptions

Geometry:	cantilever length	l_k = 2.06 m
	balcony slab thickness	h = 200 mm
	three-sided wraparound balustrade	h_R = 1.0 m
Load assumptions:	balcony slab and surfacing	g = 6.5 kN/m²
	live load	q = 4.0 kN/m²
	Edge load (balustrade)	g_R = 3.0 kN/m
	wind pressure	w_e = 1.0 kN/m²
Exposure classes:	exterior XC 4	
	interior XC 1	
selected:	concrete grade C25/30 for balcony and floor	
	concrete cover c_{nom} = 35 mm for Isokorb® tension bars	
	(reduction Δc_{def} by 5 mm, concerning quality measure Schöck Isokorb® production)	

Connection geometry: No height offset, no floor edge downstand beam, no balcony upstand
Support floor: Floor edge directly supported
Support balcony: Restaint of cantilever slab using Type K

Design example | Installation instructions

Verifications in the ultimate limit state

Internal forcess: $m_{Ed} = -[(\gamma_G \cdot g + \gamma_Q \cdot q) \cdot l_k^2/2 + \gamma_G \cdot (g_R \cdot l_k + 2 \cdot g_R \cdot l_k^2/2/4)]$

$_{Ed} = -[(1.35 \cdot 6.5 + 1.5 \cdot 4) \cdot\cdot 2.06^2/2 + 1.35 \cdot (3.0 \cdot 2.06 + 2 \cdot 3.0 \cdot 2.06^2/2/4)]$

$m_{Ed} = -44.0$ kNm/m

$v_{Ed,z} = +(\gamma_G \cdot g + \gamma_Q \cdot q) \cdot l_k + \gamma_G \cdot (g_R + 2 \cdot g_R \cdot l_k/4)$

$v_{Ed,z} = +(1.35 \cdot 6.5 + 1.5 \cdot 4.0) \cdot 2.06 + 1.35 \cdot (3.0 + 2 \cdot 3.0 \cdot 2.06/4) = +38.7$ kN/m

$v_{Ed,z} = +38.7$ 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 windind)

Selected: **1 Schöck Isokorb® T type H-VV1-NN1-REI120-H200-L100-5.1**

$N_{Rd,x=} \pm 11.6$ kN (see page128) > $N_{Ed,x}$

$_{Rd,y} = \pm 10.4$ kN (see page128) > $V_{Ed,y}$

selected: **Schöck Isokorb® T type K-M7-V1-REI120-CV35-X80-H200-6.0**

increased effect taking into account the installation of the Schöck Isokorb® T type H:

$|m_{Rd}| = 49.4$ kNm/m (see T type K) > 45.7 kNm/m = (4.00 m /3.90 m) • 44. kNm/m = $|m_{Ed}|$

$v_{Rd,z} = 92.7$ kN/m (see T type K) > 40.2 kN/m = (4.00 m /3.90 m) • 38.7 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: $N_{EdA,x} = \pm 4.0$ m • $F_{a,x} = \pm 4.0$ m • 15.0 kN/m = 60.0 kN (force perpendicular to the joint)

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

selected: **1 Schöck Isokorb® T type H-VV2-NN1-REI120-H200-L100-5.1**

$N_{Rd,x=} \pm 49.2$ kN • 2 = 98.4 kN (see page128) > $N_{Ed,x}$

$_{Rd,y} = \pm 39.2$ kN • 2 = 78.4 kN (see page128) > $V_{Ed,y}$

selected: **Schöck Isokorb® T type K-M7-V1-REI120-CV35-X80-H200-6.0**

increased effect taking into account the installation of the Schöck Isokorb® T type H:

$|m_{Rd}| = 49.4$ kNm/m (see T type K) > 46.3 kNm/m = (4.00 m /3.80 m) • 44. kNm/m = $|m_{Ed}|$

$v_{Rd,z} = 92.7$ kN/m (see T type K) > 40.7 kN/m = (4.00 m /3.80 m) • 38.7 kN/m = $v_{Ed,z}$

Design example

- The notes on expansion joint spacing are to be observed, see page 130.

Installation manual

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

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?
- ☐ 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?

Schöck Isokorb® T type Z

Schöck Isokorb® T type Z
Suitable as insulating spacer for various installation situations and fire protection requirements. The Schöck Isokorb® T type Z transfers no forces.

Element arrangement | Installation cross sections

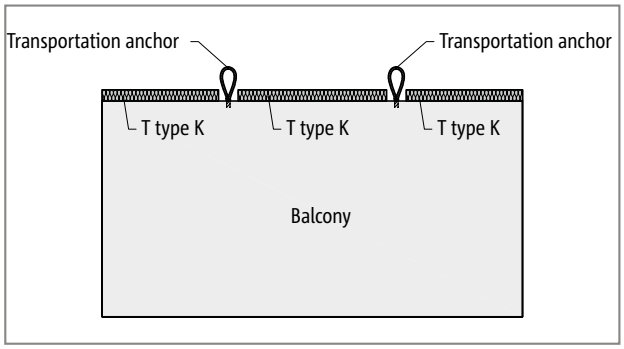


Fig. 202: Schöck Isokorb® T type K: Precast balcony with transporter anchor; insulation spacer T type Z can be inserted on-site

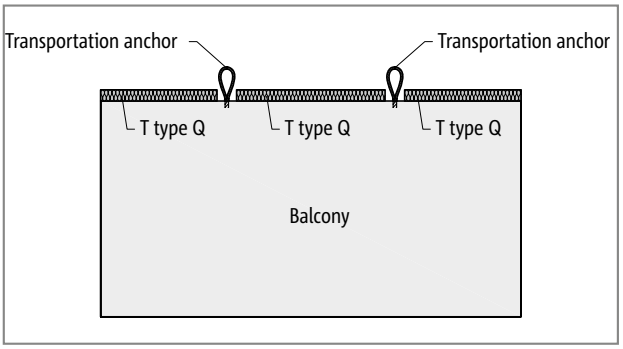


Fig. 203: Schöck Isokorb® T type Q: Precast balcony with transporter anchor; insulation spacer T type Z can be inserted on-site

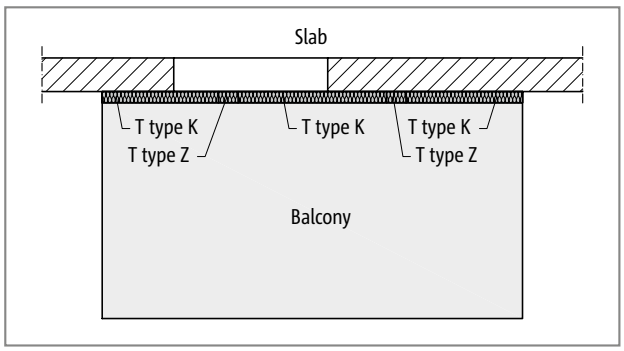


Fig. 204: Schöck Isokorb® T type Z, K: Cantilevered balcony

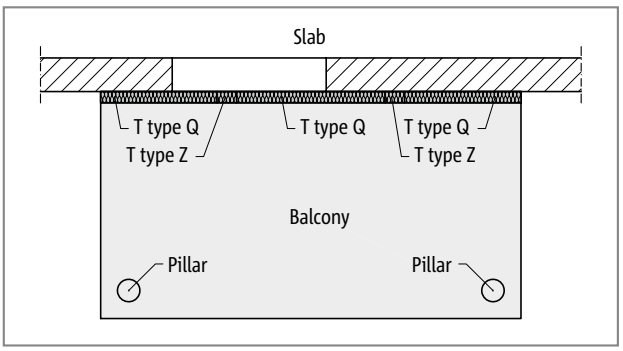


Fig. 205: Schöck Isokorb® T type Z, K: Balcony with column support

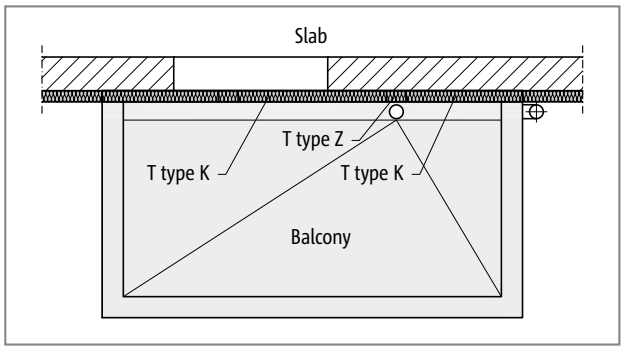


Fig. 206: Schöck Isokorb® T type Z, K: Block-out for drainage with Schöck Isokorb® T type Z

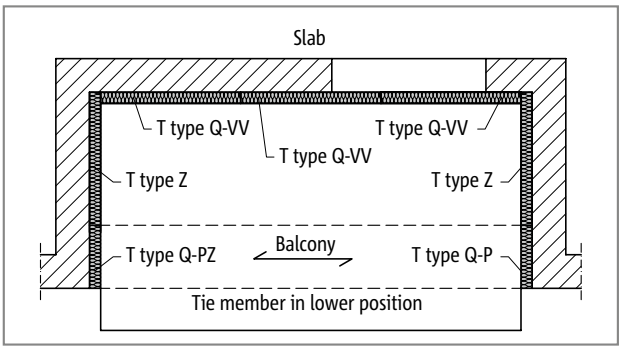


Fig. 207: Schöck Isokorb® T type K: Recessed balcony supported on three sides with tie member

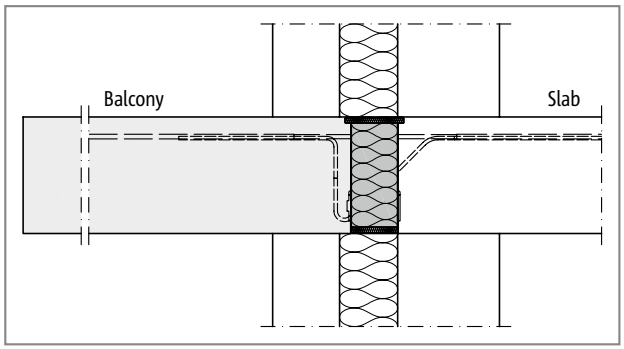


Fig. 208: Schöck Isokorb® T type Z, K: Indirect support, non-load-bearing cavity masonry

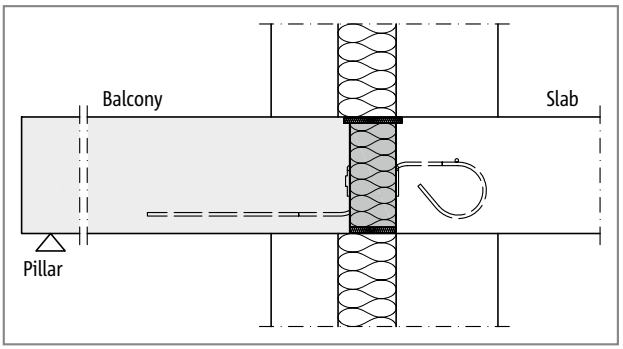


Fig. 209: Schöck Isokorb® T type Z, Q: Indirect support, non-load-bearing cavity masonry

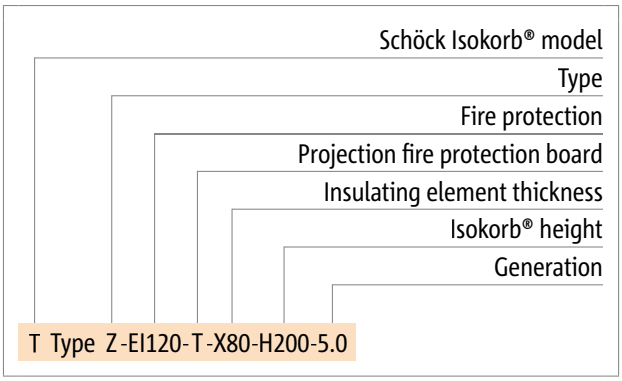
Product selection | Type designations

Schöck Isokorb® T type Z variants

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

- Fire resistance class
  EI120: Fire protection board top and bottom, top fire protection board without projection, with clout and fire protection strip
  E1120-T Fire protection board top and bottom, top fire protection board projecting on both sides by 10 mm
- Projection fire protection board:
  T = Projection fire protection board
- Insulating element thickness:
  X80 = 80 mm
- Isokorb® height:
  H = 160 - 250 mm
- Generation:
  5.0
- Isokorb® length:
  L = 100 mm or 1000 mm

Type designations in planning documents



Product description

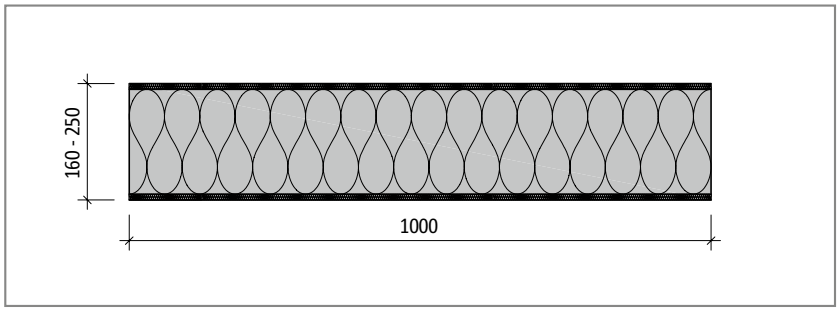


Fig. 210: Schöck Isokorb® T type Z-EI120-L1000: Product layout

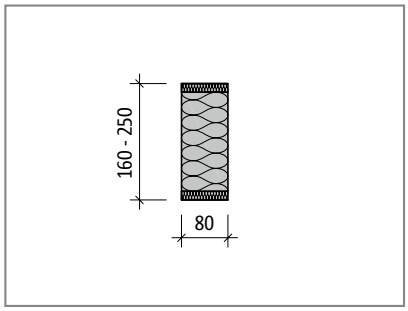


Fig. 211: Schöck Isokorb® T type Z-EI120: Product section

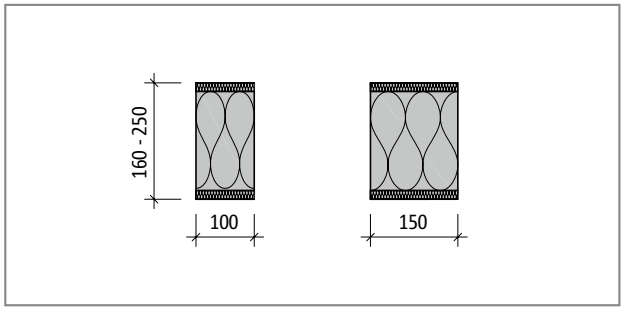


Fig. 212: Schöck Isokorb® T type Z-EI120-L100, Z-EI120-L150: Product layout

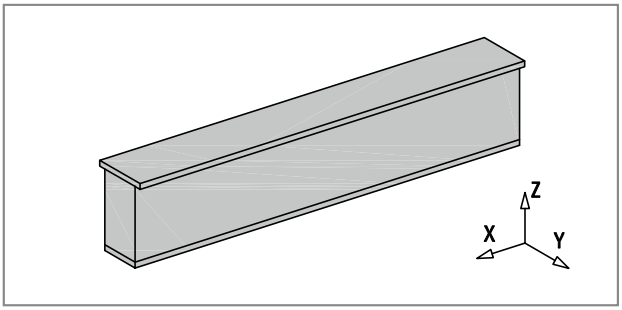


Fig. 213: Schöck Isokorb® T type Z-EI120-T: 3D model

Product information

- The Schöck Isokorb® T type Z is supplied in 1000 mm lengths (length 100 mm and 150 mm on request)
- The Schöck Isokorb® T type Z-L1000 can, as required, be shortened to the desired length.
- Download further product plan views and cross-sections at www.schoeck.co.uk/download

Notes on design

- Edge and centre distances of the adjacent Schöck Isokorb® types are to be noted.
- With the design of a linear connection attention should be paid that with the employment of the Schöck Isokorb® T type Z, the design values of the linear connection can be reduced (e.g. Schöck Isokorb® type with L = 1.0 m and Schöck Isokorb® T type Z with L = 0.1 m in regular exchange signifies a reduction of m_{Rd} of the linear connection by ca. 9 %).

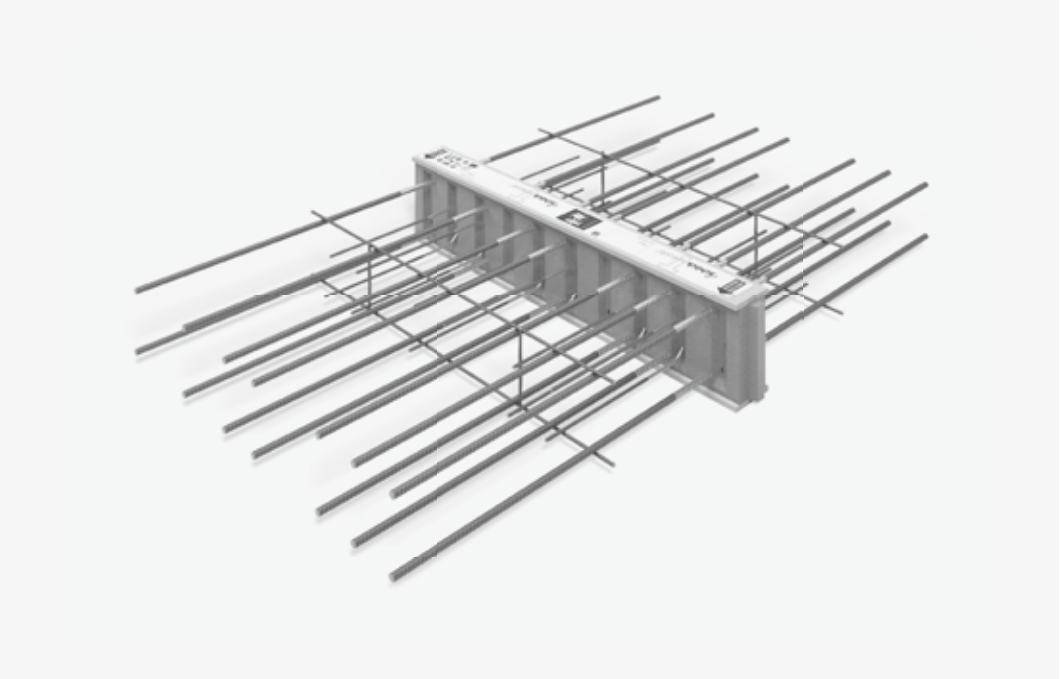
Fire protection

- The Schöck Isokorb® T type Z-EI120 is suitable for employment with Schöck Isokorb® T type K and K-F.
- The Schöck Isokorb® type Z-EI120-T is suitable for use with Schöck Isokorb® T type K-U, K-O, Q, Q-P and D.
- The Schöck Isokorb®T type Z-EI120 can be inserted later (e.g. transportation anchor holes with precast balconies), as fire protection boards without projection.
- The fire protection class of the Schöck Isokorb® T type Z corresponds with maximum fire protection class of the connected, load-bearing Schöck Isokorb T type (e.g. K→REI120).

Check list

- ☐ 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?
- ☐ Are the requirements with regard to fire protection explained and is the appropriate addendum entered in the Isokorb® type description in the implementation plans?

Schöck Isokorb® T type D



Schöck Isokorb® T type D
Suitable for continuous floors. It transfers both negative moments and positive shear forces with the cantilevered balcony or positive field moment combined with shear forces

Element arrangement | Installation cross sections

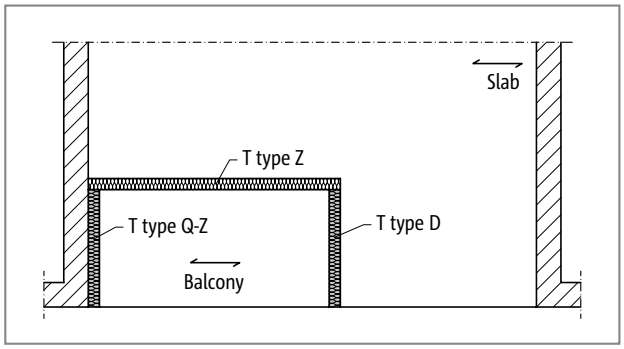


Fig. 214: Schöck Isokorb® T type D, QZ; Z: One-way spanning

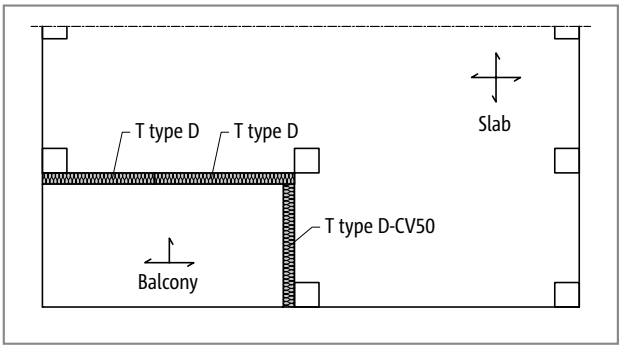


Fig. 215: Schöck Isokorb® T type D: Two-way spanning

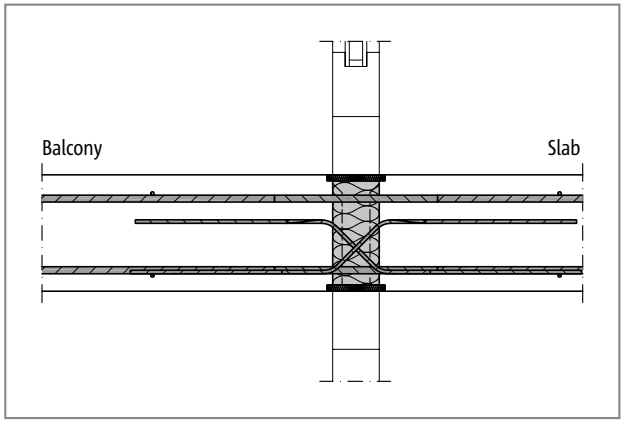


Fig. 216: Schöck Isokorb® T type D: Installation section; one-way spanning

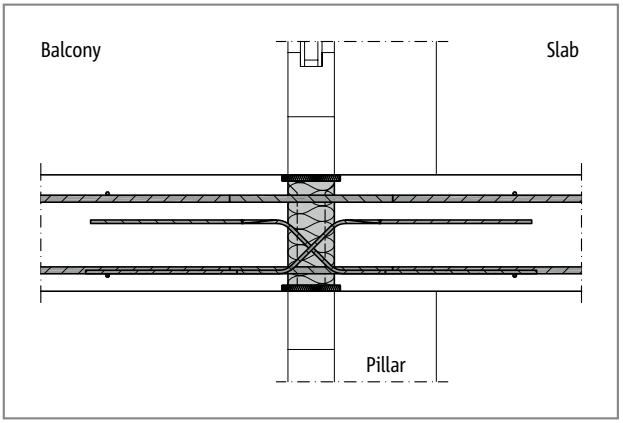


Fig. 217: Schöck Isokorb® T type D: Installation section; one-way spanning

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.

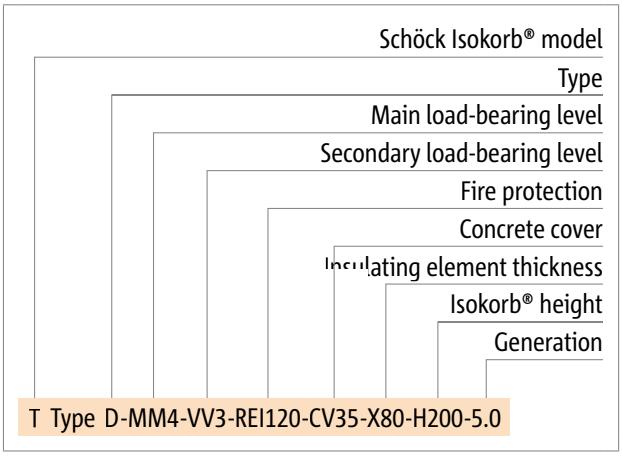
Product selection | Type designations | Special designs

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 to 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 144)
- 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				MM2-VV1	MM2-VV2	MM2-VV3	MM3-VV1	MM3-VV2	MM3-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		±18.3	-	-	±26.5	-	-
	160		200	±19.4	-	-	±28.1	-	-
		170		±20.5	±18.6	-	±29.7	±27.8	-
	170		210	±21.6	±19.6	-	±31.3	±29.3	-
		180		±22.7	±20.6	±18.5	±32.9	±30.8	±28.6
	180		220	±23.8	±21.6	±19.4	±34.5	±32.3	±30.0
		190		±24.9	±22.6	±20.3	±36.1	±33.8	±31.4
	190		230	±26.0	±23.6	±21.2	±37.6	±35.3	±32.8
		200		±27.1	±24.6	±22.1	±39.2	±36.7	±34.2
	200		240	±28.2	±25.6	±23.0	±40.8	±38.2	±35.6
		210		±29.3	±26.6	±23.9	±42.4	±39.7	±37.0
	210		250	±30.4	±27.6	±24.8	±44.0	±41.2	±38.4
		220		±31.5	±28.6	±25.6	±45.6	±42.7	±39.7
	220			±32.6	±29.6	±26.5	±47.2	±44.2	±41.1
		230		±33.7	±30.6	±27.4	±48.8	±45.7	±42.5
	230			±34.8	±31.6	±28.3	±50.4	±47.2	±43.9
		240		±35.9	±32.6	±29.2	±52.0	±48.7	±45.3
	240			±37.0	±33.6	±30.1	±53.6	±50.2	±46.7
		250		±38.1	±34.6	±31.0	±55.2	±51.7	±48.1
	250			±39.2	±35.6	±31.9	±56.8	±53.2	±49.5
				$v_{Rd,z}$ [kN/m]					
	VV1/VV2/VV3			±52.2	±92.7	±136.0	±52.2	±92.7	±136.0

Schöck Isokorb® T type D	MM2-VV1	MM2-VV2	MM2-VV3	MM3-VV1	MM3-VV2	MM3-VV3
Isokorb® length [mm]	1000			1000		
Tension bars/compression members	2 × 5 ⌀ 12			2 × 7 ⌀ 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

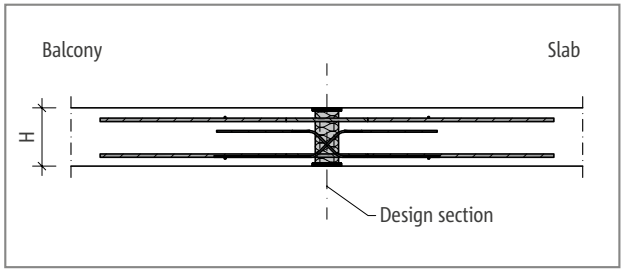


Fig. 218: Schöck Isokorb® T type D: Static system

C25/30 design

Schöck Isokorb® T type D				MM4-VV1	MM4-VV2	MM4-VV3	MM5-VV1	MM5-VV2	MM5-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		±38.8	-	-	±46.9	-	-
	160		200	±41.1	-	-	±49.8	-	-
		170		±43.4	±41.5	-	±52.6	±50.7	-
	170		210	±45.8	±43.8	-	±55.4	±53.4	-
		180		±48.1	±46.0	±43.9	±58.3	±56.2	±54.0
	180		220	±50.4	±48.2	±46.0	±61.1	±58.9	±56.6
		190		±52.8	±50.5	±48.1	±63.9	±61.6	±59.3
	190		230	±55.1	±52.7	±50.3	±66.7	±64.3	±61.9
		200		±57.4	±54.9	±52.4	±69.6	±67.1	±64.5
	200		240	±59.8	±57.2	±54.5	±72.4	±69.8	±67.1
		210		±62.1	±59.4	±56.6	±75.2	±72.5	±69.8
	210		250	±64.4	±61.6	±58.8	±78.0	±75.2	±72.4
		220		±66.8	±63.9	±60.9	±80.9	±78.0	±75.0
	220			±69.1	±66.1	±63.0	±83.7	±80.7	±77.6
		230		±71.4	±68.3	±65.2	±86.5	±83.4	±80.2
	230			±73.8	±70.6	±67.3	±89.4	±86.2	±82.9
		240		±76.1	±72.8	±69.4	±92.2	±88.9	±85.5
	240			±78.4	±75.0	±71.5	±95.0	±91.6	±88.1
		250		±80.8	±77.3	±73.7	±97.8	±94.3	±90.7
	250			±83.1	±79.5	±75.8	±100.7	±97.1	±93.4
				$v_{Rd,z}$ [kN/m]					
	VV1/VV2/VV3			±52.2	±92.7	±136.0	±52.2	±92.7	±136.0

Schöck Isokorb® T type D	MM4-VV1	MM4-VV2	MM4-VV3	MM5-VV1	MM5-VV2	MM5-VV3
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 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.

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.

Schöck Isokorb® T type D		MM2	MM3	MM4	MM5
Maximum expansion joint spacing e		e [m]			
Insulating element thickness [mm]	80	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 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 members from the free edge or from the expansion joint the following applies: $e_R \geq 50$ 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

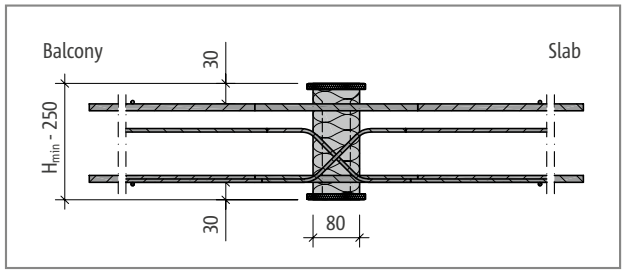


Fig. 219: Schöck Isokorb® T type D with CV30: Product section

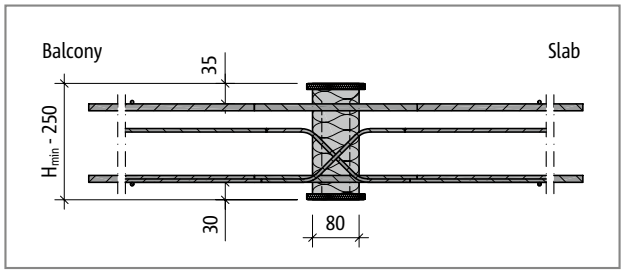


Fig. 220: Schöck Isokorb® T type D for CV35: Product section

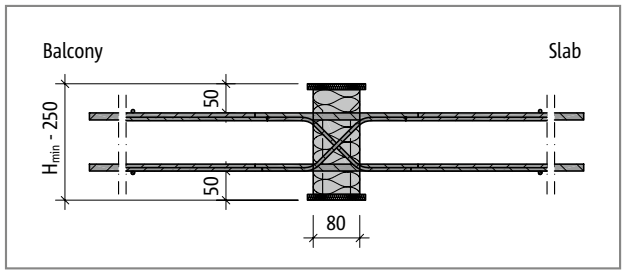


Fig. 221: Schöck Isokorb® T type D for CV50: Product section

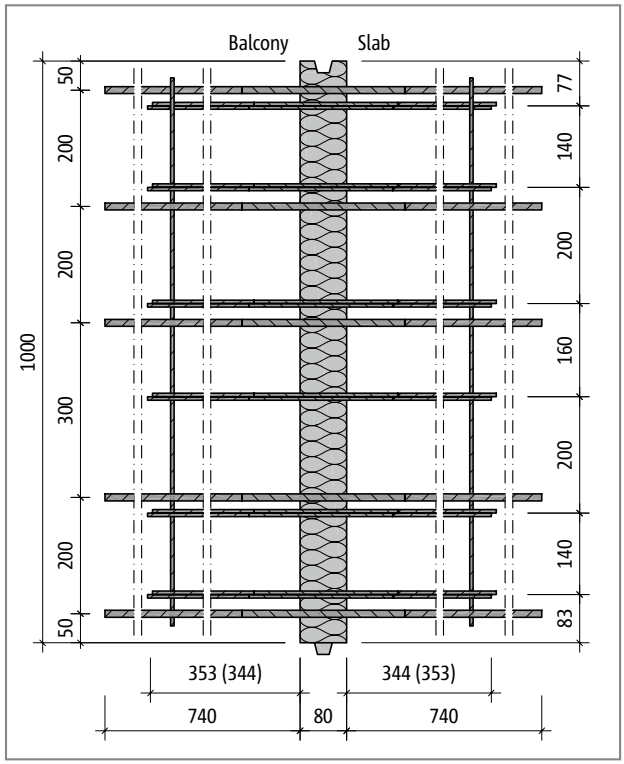


Fig. 222: Schöck Isokorb® T type D-MM2-VV1: Layout

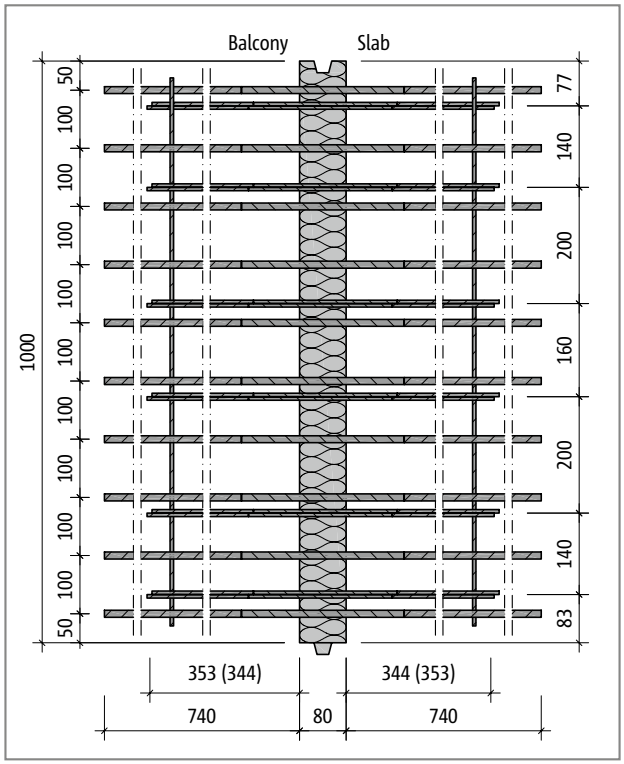


Fig.

Product information

Download further product plan views and cross-sections at www.schoeck.co.uk/download

On-site reinforcement

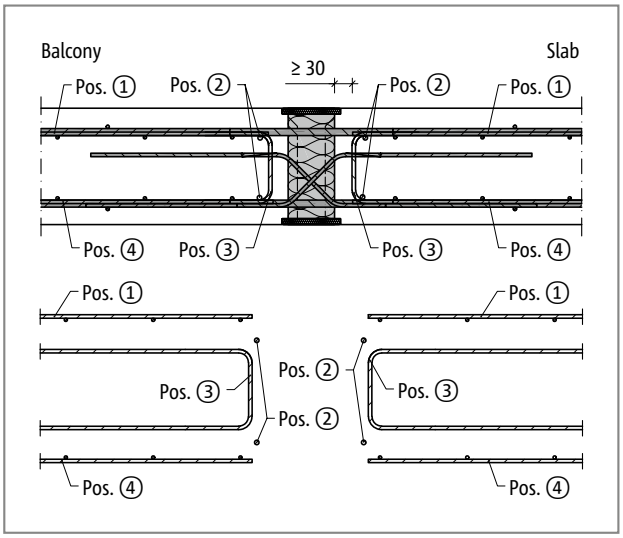


Fig. 223: Schöck Isokorb® T type D: On-site reinforcement

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 tension bars of the Schöck Isokorb® are 100% lapped. The existing inner slab reinforcement can be taken into account as long as the maximum separation to the tension bars of the Schöck Isokorb® of 4⌀ is maintained. Additional reinforcement may be required.

Schöck Isokorb® T type D	MM2-VV1	MM2-VV2	MM2-VV3	MM3-VV1	MM3-VV2	MM3-VV3
On-site reinforcement	Concrete strength class ≥ C25/30					
Pos. 1 Lapping reinforcement (required with negative moment))						
Pos. 1 [mm²/m]	565	565	565	792	792	792
Pos. 2 Steel bars along the insulation joint						
Pos. 2	2 • 2 • H8	2 • 2 • H8	2 • 2 • H8	2 • 2 • H8	2 • 2 • H8	2 • 2 • H8
Pos. 3 Edge and suspension reinforcement						
Pos. 3	H8@150	H8@100	H8@75	H8@150	H8@100	H8@75
Pos. 4 Lapping reinforcement (required with positive moment)						
Pos. 4 [mm²/m]	565	565	565	792	792	792

Schöck Isokorb® T type D	MM4-VV1	MM4-VV2	MM4-VV3	MM5-VV1	MM5-VV2	MM5-VV3
On-site reinforcement	Concrete strength class ≥ C25/30					
Pos. 1 Lapping reinforcement (required with negative moment))						
Pos. 1 [mm²/m]	1131	1131	1131	1357	1357	1357
Pos. 2 Steel bars along the insulation joint						
Pos. 2	2 • 2 • H8	2 • 2 • H8	2 • 2 • H8	2 • 2 • H8	2 • 2 • H8	2 • 2 • H8
Pos. 3 Edge and suspension reinforcement						
Pos. 3	H8@150	H8@100	H8@75	H8@150	H8@100	H8@75
Pos. 4 Lapping reinforcement (required with positive moment)						
Pos. 4 [mm²/m]	1131	1131	1131	1357	1357	1357

On-site reinforcement | Installation instructions

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
- Edge and suspension reinforcement (pos. 3) is to be arranged on both sides of the Schöck Isokorb® T type D. Details in the table apply for Schöck Isokorb® with a loading of 100 % of the maximum design internal forces with C25/30.

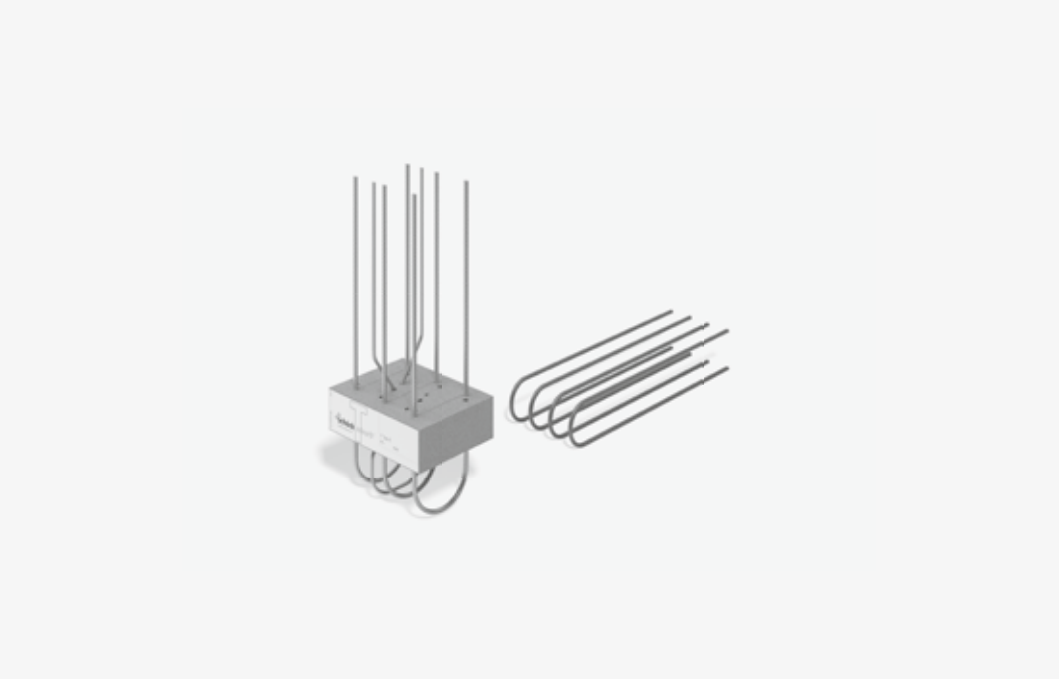
Installation manual

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

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?

Schöck Isokorb® T type A

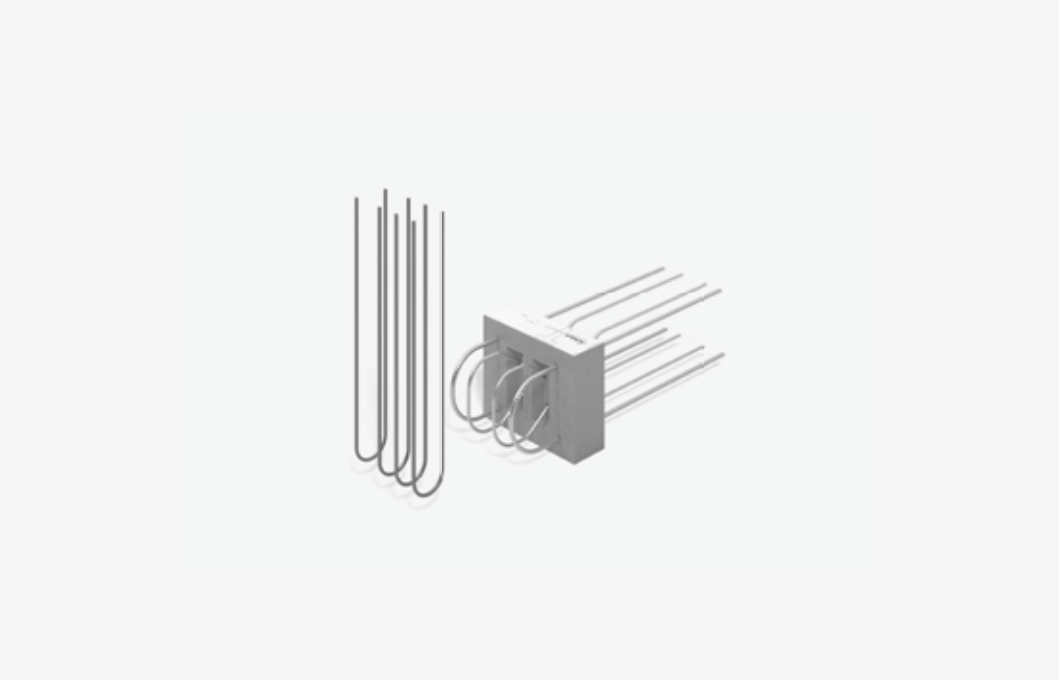


Schöck Isokorb® T type A
Suitable for parapets and balustrades. It transfers moments and shear forces and compression forces.

T type A

- The Schöck Isokorb® T type A is replaced by the Schöck Isokorb® XT type A.

Schöck Isokorb® T type F

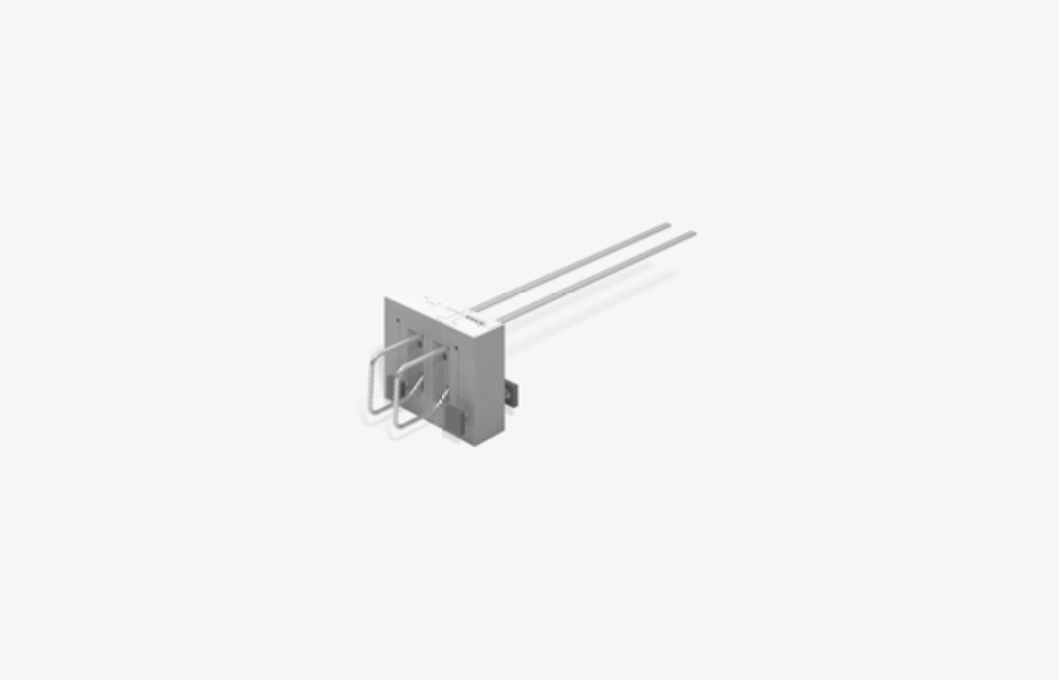


Schöck Isokorb® type F
Suitable forfrontally connected balustrades. It transfers normal forces, positive and negative moments and shear forces.

T type F

- The Schöck Isokorb® T type F is replaced by the Schöck Isokorb® XT type F. With special geometric requirements the Schöck Isokorb® T type F is available on request.

Schöck Isokorb® type O

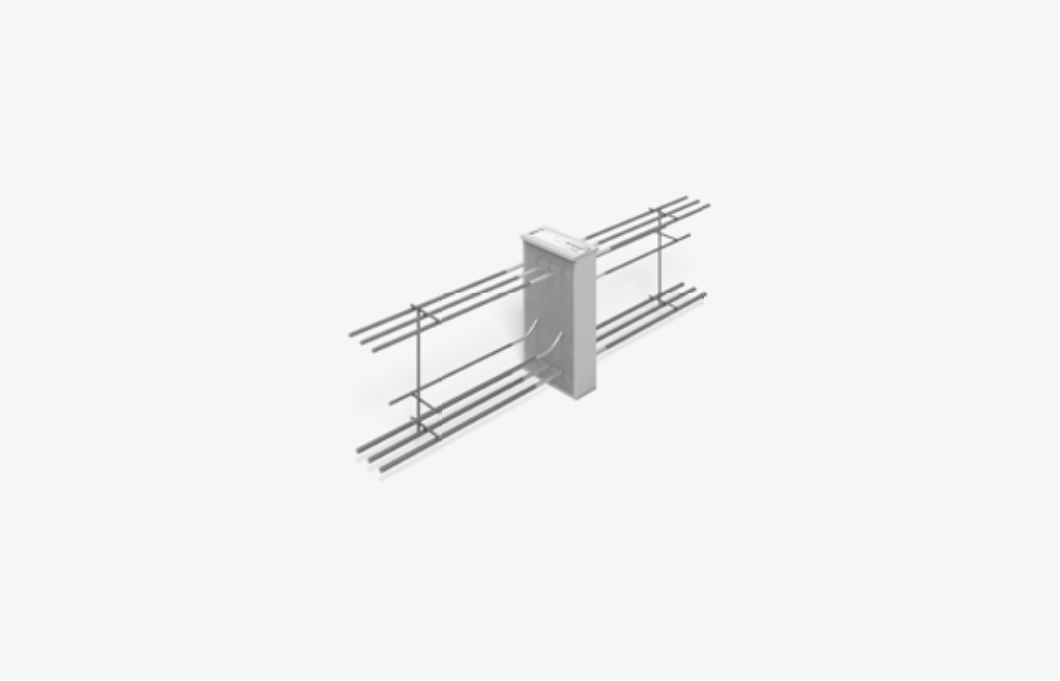


Schöck Isokorb® T type O
Suitable for corbels. It transfers positive shear forces and normal forces.

T type O

- The Schöck Isokorb® T type O is replaced by the Schöck Isokorb® XT type O. With special geometric requirements the Schöck Isokorb® T type O is available on request.

Schöck Isokorb® T type B



Schöck Isokorb® T type B
Suitable for cantilevered downstand beams and reinforced concrete balconies. It transfers negative moments and positive shear forces.

Element configurations | Installation cross sections

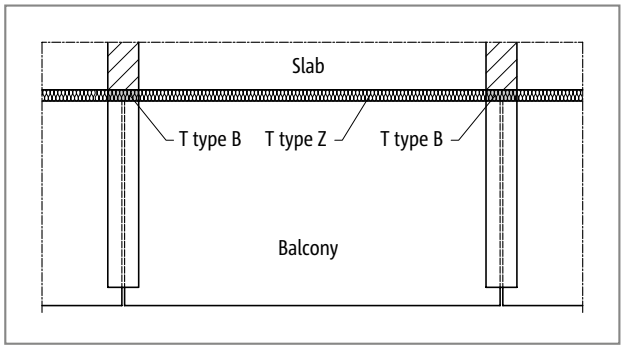


Fig. 224: Schöck Isokorb® T type B: Balcony structure with freely cantilevered downstand beams (precast balcony)

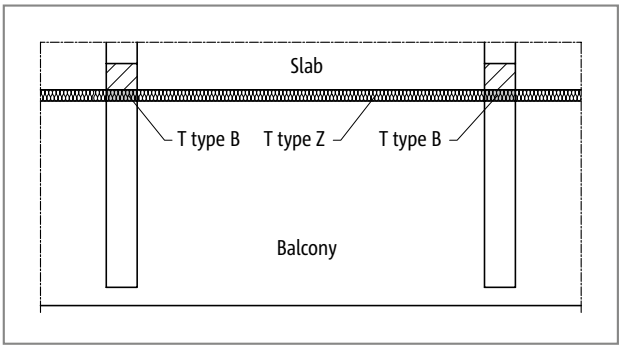


Fig. 225: Schöck Isokorb® T type B: Balcony structure with freely cantilevered downstand beams (precast balcony)

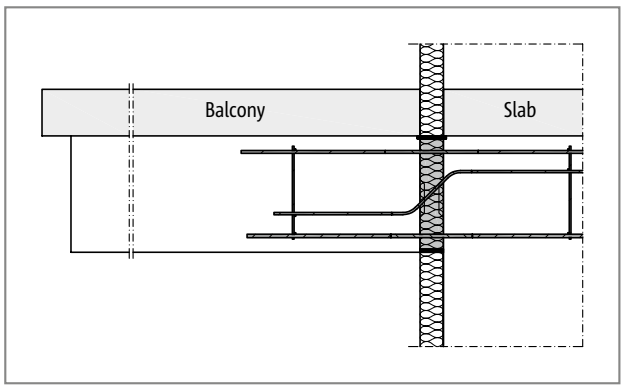


Fig. 226: Schöck Isokorb® T type B: Balcony structure with freely cantilevered downstand beams (precast balcony)

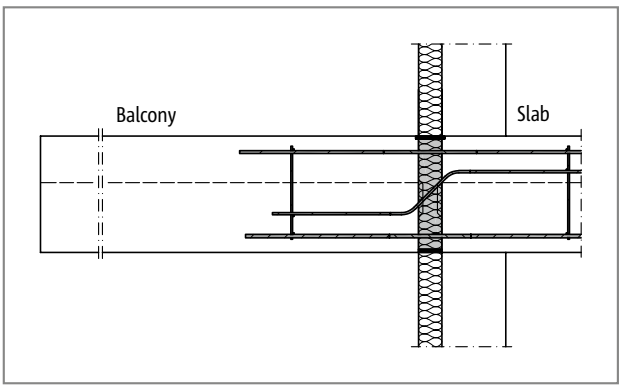


Fig. 227: Schöck Isokorb® T type B: Balcony structure with freely cantilevered downstand beams (precast balcony)

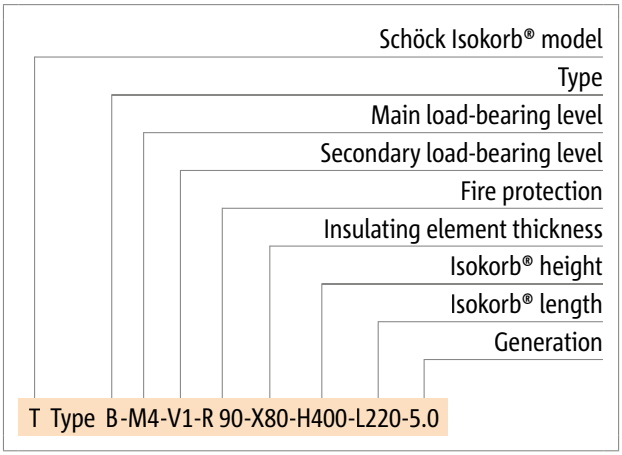
Product selection | Type designations | Special designs

Schöck Isokorb® T type B variants

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

- Main load-bearing level:
  M1 to M4
- Secondary load capacity:
  V1
- Fire resistance class:
  R90 (standard): Top fire projection board projecting on both sides by 10 mm
- Insulating element thickness:
  X80 = 80 mm
- Isokorb® height:
  H = 400 mm
- Isokorb® length:
  L = 220 mm
- Generation:
  5.0
- Board range:
  VB2 moderate bonding (Bonding range II)

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® T type B		M1	M2	M3	M4
Design values with		Concrete strength class ≥ C25/30			
		$M_{Rd,y}$ [kNm/element]			
Isokorb® height H [mm]	400	-29.6	-39.1	-51.7	-71.1
		$V_{Rd,z}$ [kN/element]			
	400	30.9	48.3	69.5	94.7

Schöck Isokorb® T type B	M1	M2	M3	M4
Isokorb® height H [mm]	400	400	400	400
Isokorb® length [mm]	220	220	220	220
Tension bars	3 ⌀ 10	3 ⌀ 12	3 ⌀ 14	3 ⌀ 16
Tension bars VB2 (poor)	855	1020	1180	1890
Shear force bars	2 ⌀ 8	2 ⌀ 10	2 ⌀ 12	2 ⌀ 14
Compression bars	3 ⌀ 12	3 ⌀ 14	3 ⌀ 16	3 ⌀ 20
Compression bar length	595	565	635	840

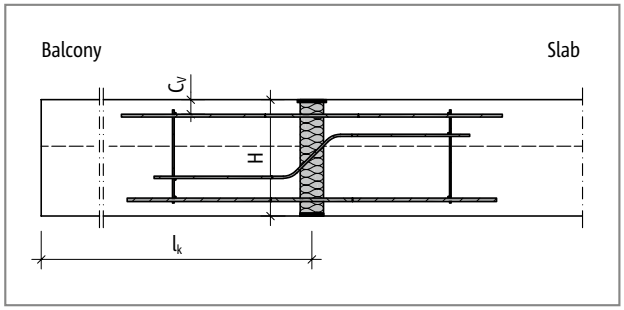


Fig. 228: Schöck Isokorb® T type B: Static system

Notes on design

- Poor bonding conditions (bonding range II) are the basis for the determination of the compression member anchoring lengths.
- 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 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.

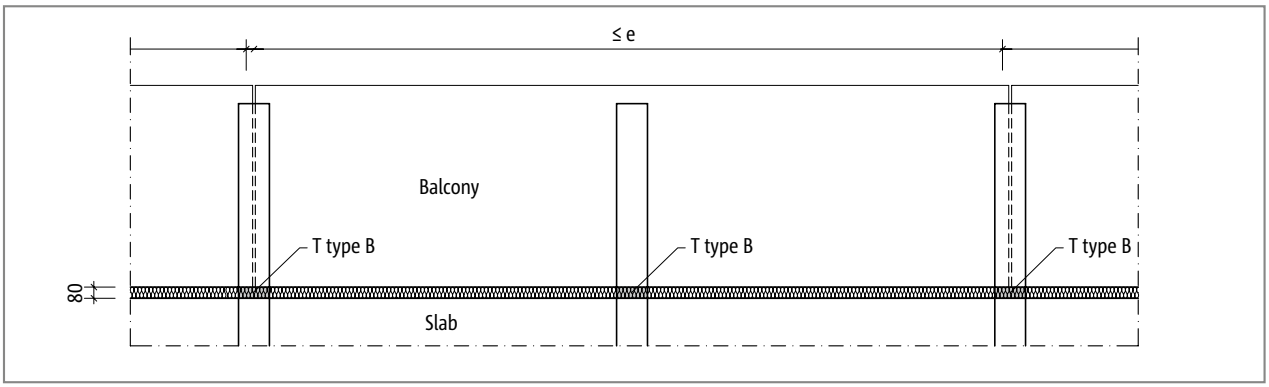


Fig. 229: Schöck Isokorb® T type B: Expansion joint layout

Schöck Isokorb® T type B		M1	M2	M3	M4
Maximum expansion joint spacing e		e [m]			
Insulating element thickness [mm]	80	11.7	10.1	9.2	8.0

Expansion joints

- The expansion joint spacings can be enlarged, if there is no fixed connection between balcony slabs and downstand beams, e. g. through laying of a sliding foil.

Product description

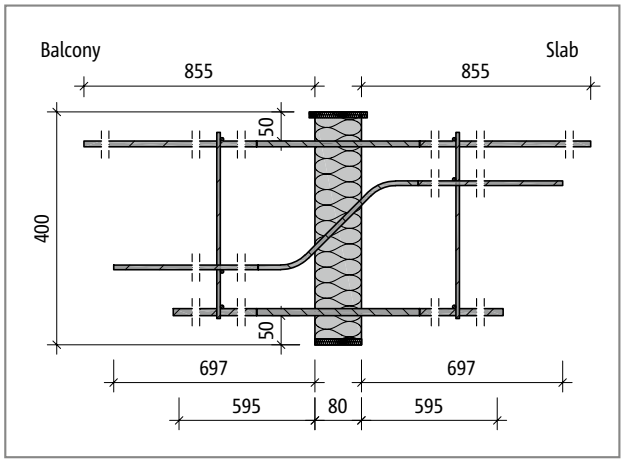


Fig. 230: Schöck Isokorb® T type B-M1: Product section

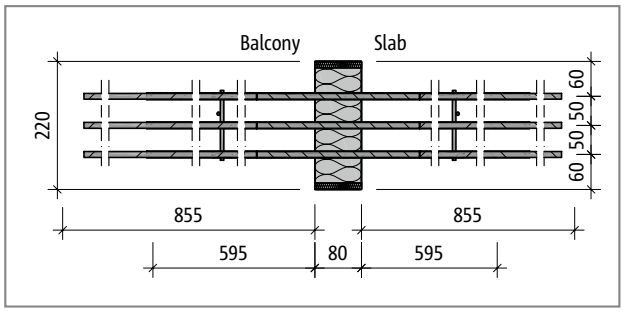


Fig. 231: Schöck Isokorb® T type B: Product layout

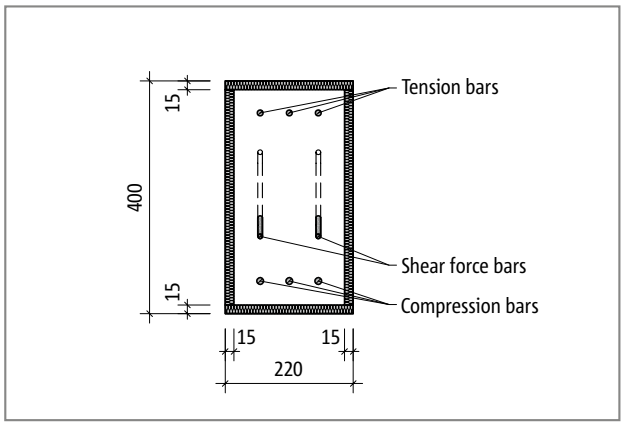


Fig. 232: Schöck Isokorb® T type B: Product layout

Product information

- Download further product plan views and cross-sections at www.schoeck.co.uk/download

On-site reinforcement | Installation instructions

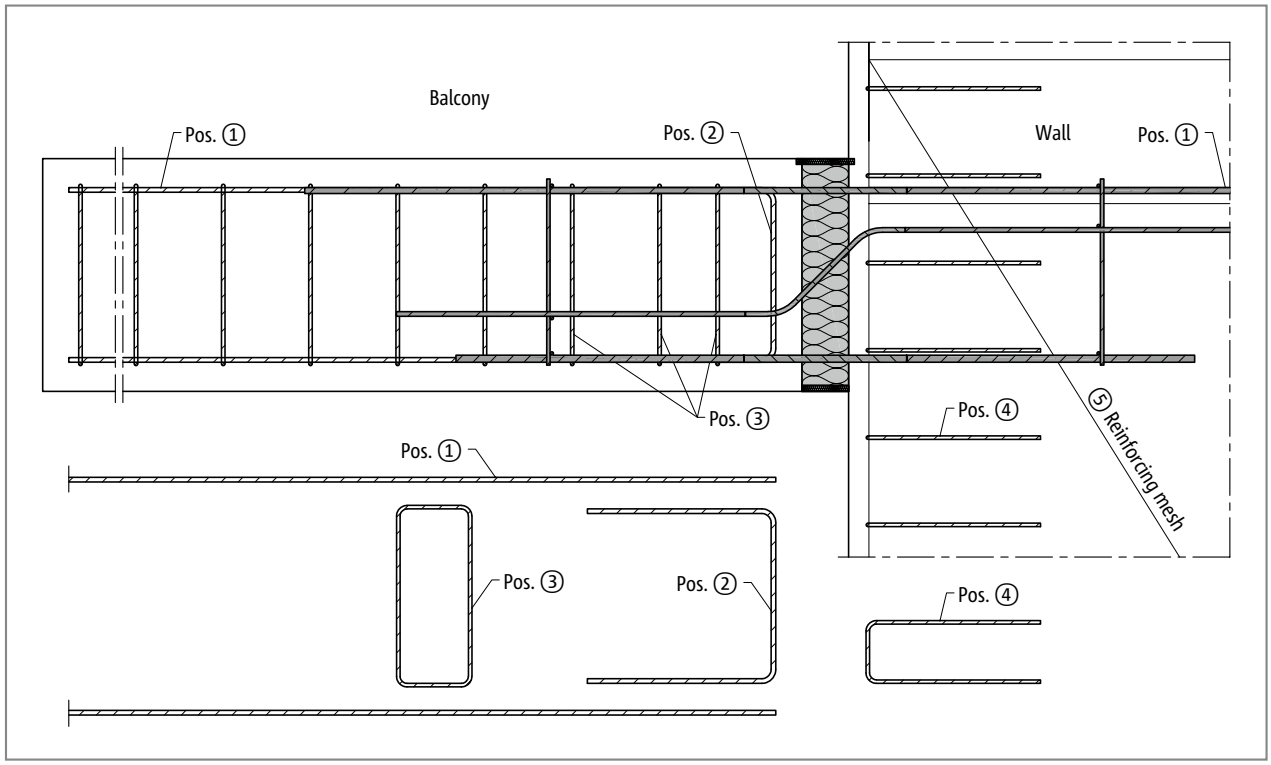


Fig. 233: Schöck Isokorb® T type B: On site reinforcement (cross-section)

Recommendation for the on-site connection reinforcement

Details of the lapping reinforcement for Schöck Isokorb® with a loading of 100 % of the maximum design moment with C25/30; positively selected: a_s lapping reinforcement ≥ a_s Isokorb® tension bars/compression members.

Schöck Isokorb® T type B	M1	M2	M3	M4
On-site reinforcement	**Concrete strength class ≥ C25/30**			
Pos. 1 Lapping reinforcement				
Pos. 1	3 • H10	3 • H12	3 • H16	3 • H16
Lap length VB2 (poor)	801	886	1014	1761
Pos. 2 Suspension reinforcement				
Pos. 2 [mm²]	71	111	160	218
Pos. 3 Stirrup				
Pos. 3	acc. to the specifications of the structural engineer			
Pos. 4 Side reinforcement at the free edge				
Pos. 4	according to BS EN 1992-1-1 (EC2), 9.3.1.4			
Pos. 5 Wall reinforcement and lapping reinforcement shear force bar				
Pos. 5	acc. to the specifications of the structural engineer			

Information about on-site reinforcement

- Alternative connection reinforcement is possible. For the determination of the lap length, the rules according to BS EN 1992-1-1 (EC2) and BS EN 1992-1-1/NA apply FA reduction of the required lap length with m_{Ed}/m_{Rd} is permitted.
- The indicative minimum concrete strength class of the external structural component is C32/40.

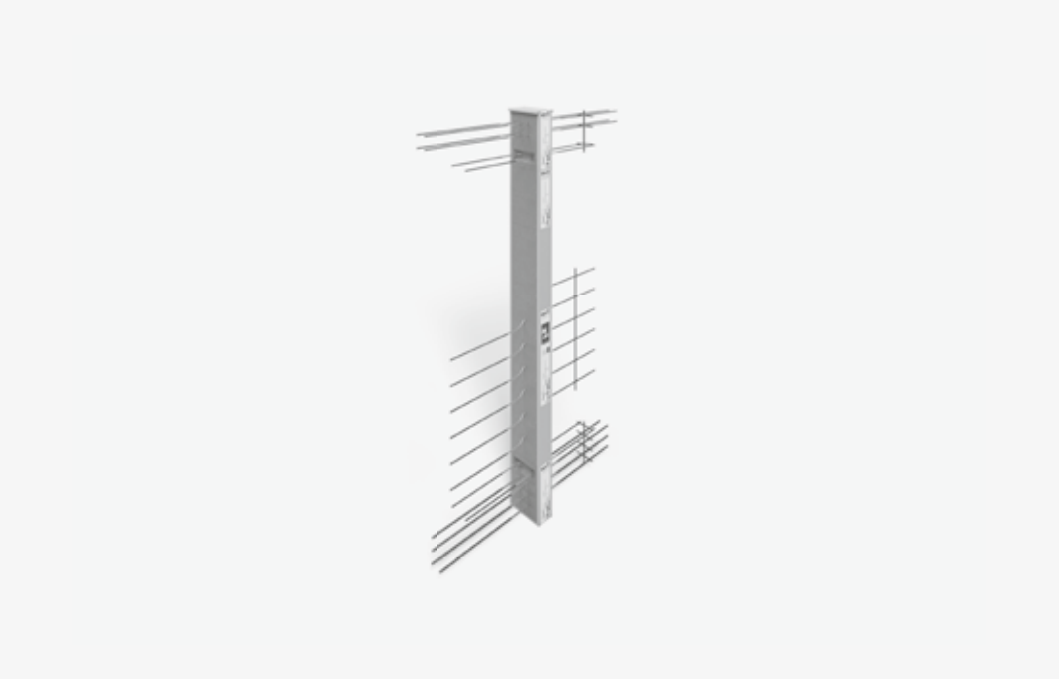
Installation manual

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

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?
- ☐ With the selection of the design table is the relevant concrete cover taken into account?
- ☐ Are the maximum allowable expansion joint spacings 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?
- ☐ Have the requirements for on-site reinforcement of connections been defined in each case?
- ☐ Has the bonding range (good - VB1; poor - VB2) been defined and given in the type designation?

Schöck Isokorb® T type W



Schöck Isokorb® T type W
Suitable for projecting shear walls. It transfers negative moments and positive shear forces. In addition horizontal shear forces are transferred.

Element arrangement | Installation cross section

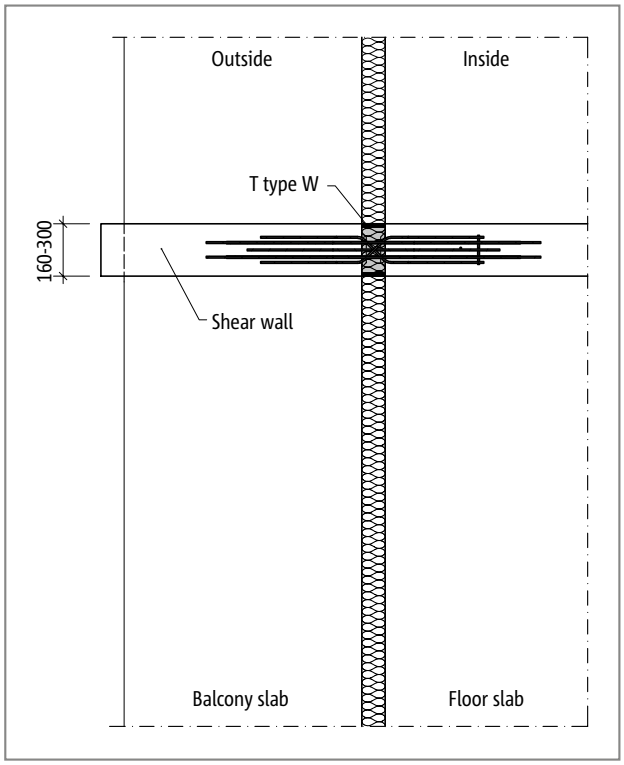


Fig. 234: Schöck Isokorb® T type W: Layout; Balcony structure with thermally insulated load-bearing shear walls

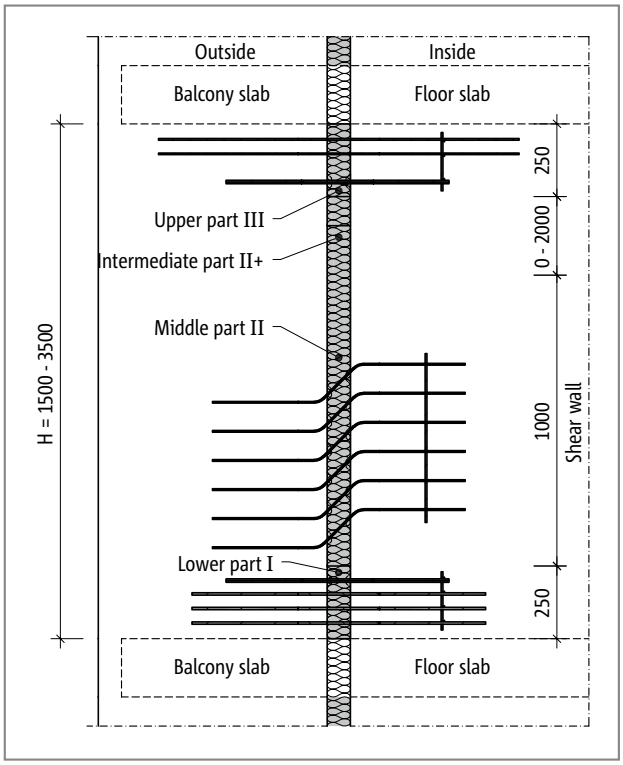


Fig. 235: Schöck Isokorb® T type W: Balcony structure with thermal insulated load-bearing shear walls

Element arrangement

- The Schöck Isokorb® T type W consists of at least 3 parts: Bottom section I, middle section II, top section III. Depending on height an insulation spacer II+ is additionally required.

Product selection | Type designations | Special designs

Schöck Isokorb® T type W variants

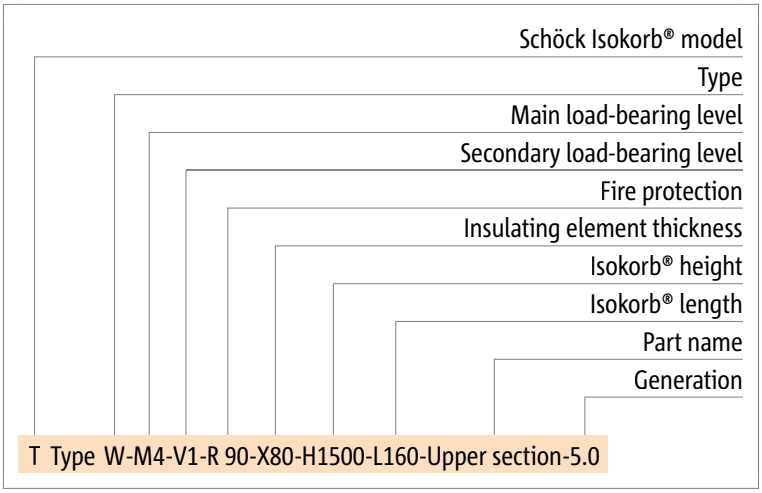
The configuration of the Schöck Isokorb® T type W can be varied as follows:

- Main load-bearing level: M1 to M4
- Secondary load capacity: V1
- Fire resistance class:
  R90 (standard): Topr fire protection board, projecting on both sides by both 10 mm
- Insulating element thickness:
  X80 = 80 mm
- Isokorb® height:
  H = 1500 - 3500 mm
- Isokorb® length:
  L = 160 - 300 mm for R90
- Structural element designation: Upper section
- Generation:
  5.0

Variants

- Please specify the required dimensions when ordering.

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® T type W		M1	M2	M3	M4
Design values with		Concrete strength class ≥ C25/30			
		$M_{Rd,y}$ [kNm/element]			
Isokorb® height H [mm]	1500 - 1990	-64.8	-115.0	-179.5	-146.7
	1500 - 2490	-89.4	-158.8	-247.8	-202.5
	2500 - 3500	-114.0	-202.5	-316.1	-258.4
Isokorb® height H [mm]		$V_{Rd,z}$ [kN/element]			
	1500 - 3500	52.2	92.7	144.9	208.6
		$V_{Rd,y}$ [kN/element]			
	1500 - 3500	±17.4	±17.4	±17.4	±17.4

Schöck Isokorb® T type W	M1	M2	M3	M4
Tension bars	4 ⌀ 6	4 ⌀ 8	4 ⌀ 10	4 ⌀ 12
Compression bars	6 ⌀ 8	6 ⌀ 10	6 ⌀ 12	6 ⌀ 14
Shear force bars vertical	6 ⌀ 6	6 ⌀ 8	6 ⌀ 10	6 ⌀ 12
Shear force bars horizontal	2 × 2 ⌀ 6	2 × 2 ⌀ 6	2 × 2 ⌀ 6	2 × 2 ⌀ 6
B_{min} with R0 [mm]	150	150	150	150
B_{min} with R90 [mm]	160	160	160	160

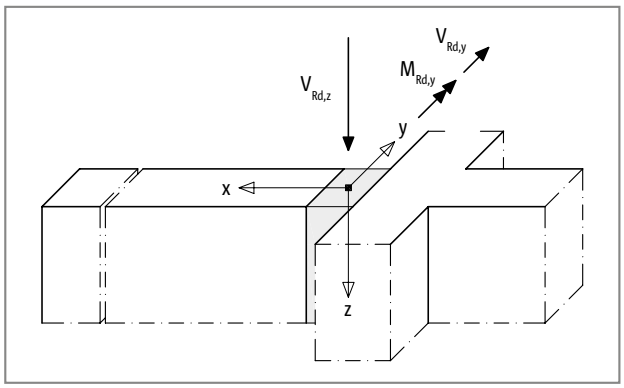


Fig. 236: Schöck Isokorb® T type W: Sign rule for the design

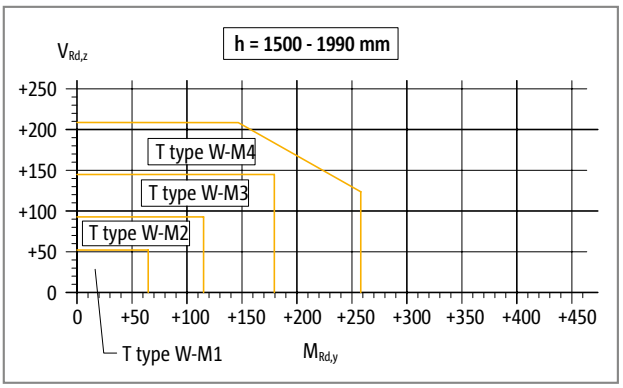


Fig. 237: Schöck Isokorb® T type W: Interaction diagram

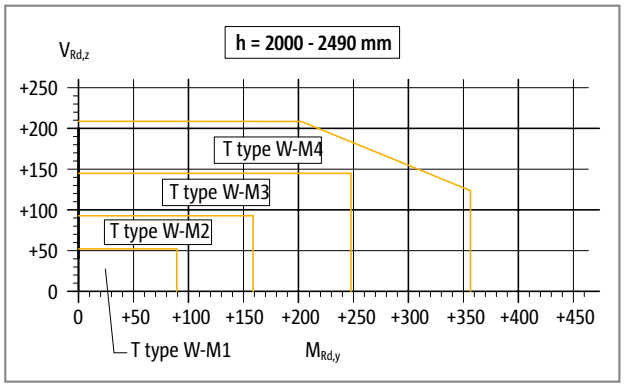


Fig. 238: Schöck Isokorb® T type W: Interaction diagram

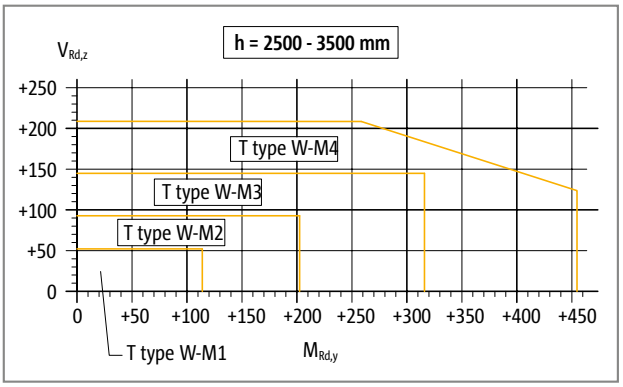


Fig. 239: Schöck Isokorb® T type W: Interaction diagram

Notes on design

- Wind force moments are to be absorbed by the stiffening effect of the balcony slabs. If this is not possible, $M_{Ed,z}$ can be transferred by the additional layout of a Schöck Isokorb® T type D. The T type D in this case is installed in a vertical position in place of the insulating adapter.
- Poor bonding conditions (bonding range II) are the basis for the determination of the tension bar anchoring lengths.
- The indicative minimum concrete strength class of the external structural component is C32/40.

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.

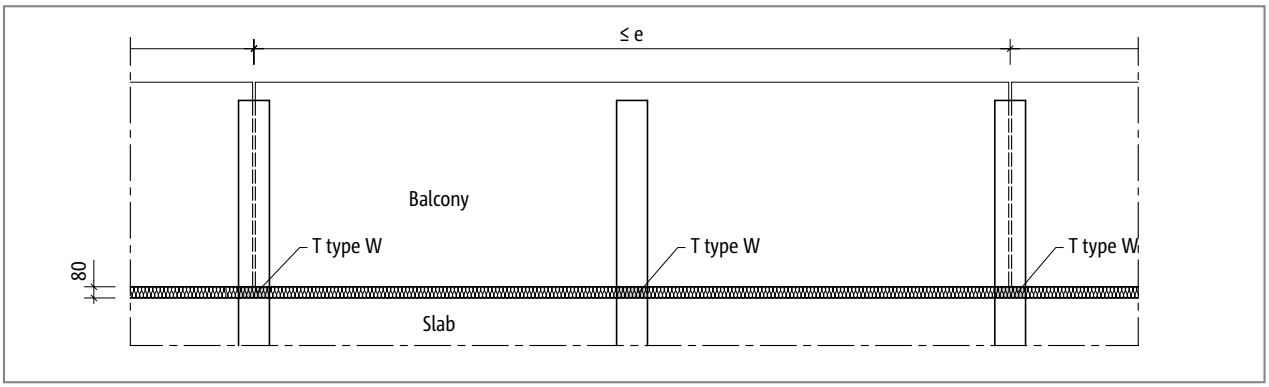


Fig. 240: Schöck Isokorb® T type W: Expansion joint layout

Schöck Isokorb® T type W		M1	M2	M3	M4
Maximum expansion joint spacing e		e [m]			
Insulating element thickness [mm]	80	13.5	13.0	11.7	10.1

Expansion joints

- The expansion joint spacings can be enlarged, if there is no fixed connection between balcony slabs and shear walls, e. g. through laying of a sliding foil.

Product description

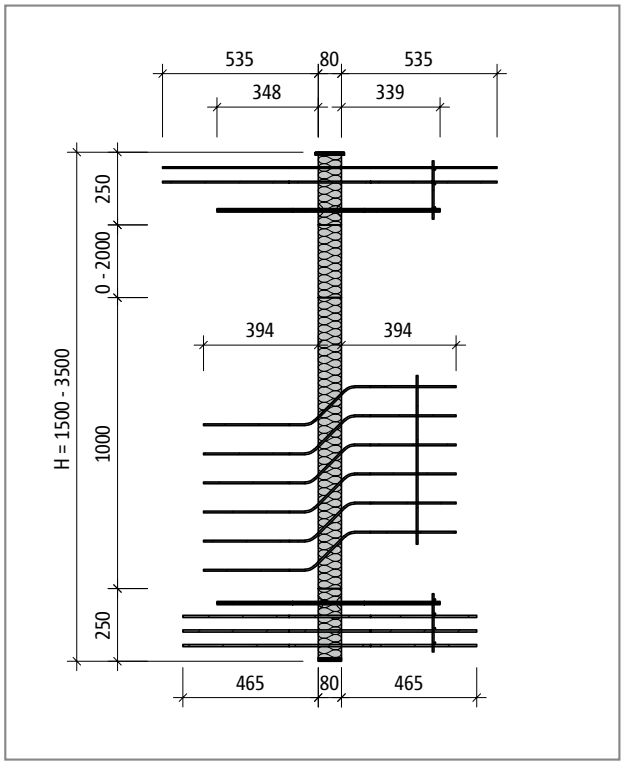


Fig. 241: Schöck Isokorb® T type W-M1: Product section

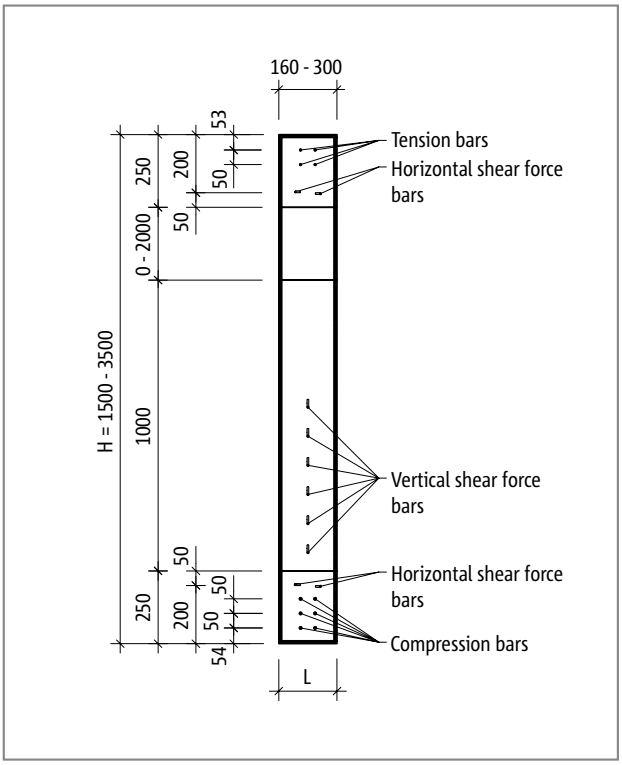


Fig. 242: Schöck Isokorb® T type W-M1: Product layout

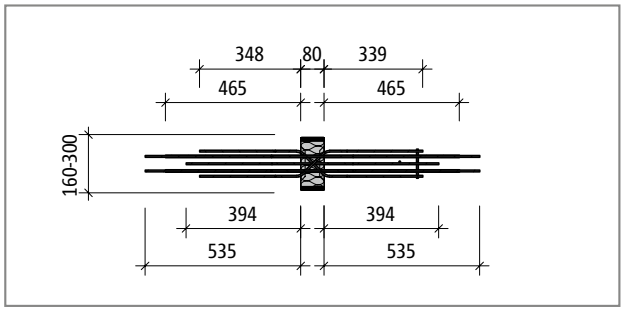


Fig. 243: Schöck Isokorb® T type W-M1: Product layout

Product information

- Download further product plan views and cross-sections at www.schoeck.co.uk/download

On-site reinforcement

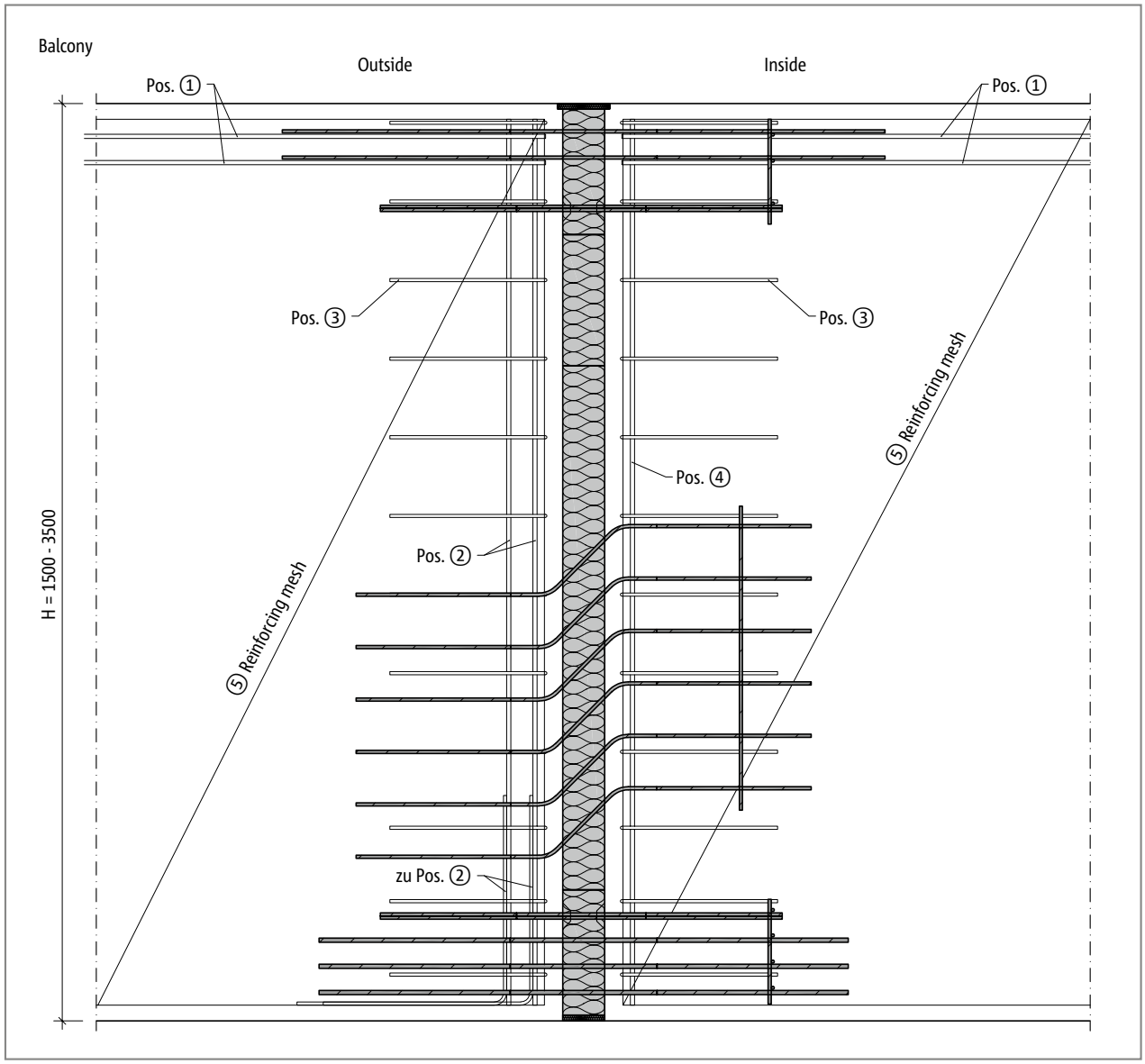


Fig. 244: Schöck Isokorb® T type W: On-site reinforcement (cross-section)

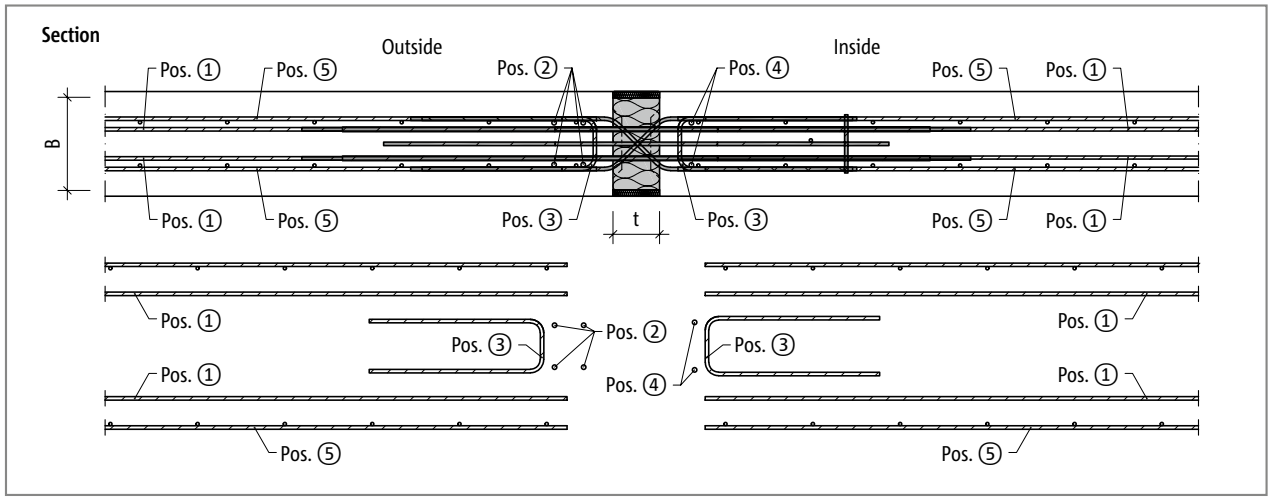


Fig. 245: Schöck Isokorb® T type W: On-site reinforcement (layout)

On-site reinforcement | Installation | Installation instructions

Recommendation for the on-site connection reinforcement

Details of the lapping reinforcement for Schöck Isokorb® with a loading of 100 % of the maximum design moment with C25/30; positively selected: a_s lapping reinforcement ≥ a_s Isokorb® tension bars/compression members.

Schöck Isokorb® T type W	M1	M2	M3	M4
On-site reinforcement	**Concrete strength class ≥ C25/30**			
Pos. 1 Lapping reinforcement				
Pos. 1	4 • H8	4 • H8	4 • H10	4 • H12
Lap length l0 [mm]	481	641	801	961
Pos. 2 Suspension reinforcement (anchoring with stirrup or L)				
Pos. 2	2 • 2 • H8	2 • 2 • H10	2 • 2 • H12	2 • 2 • H16
Pos. 3 and Pos. 4 Side reinforcement				
Pos. 3 and 4	acc. to the specifications of the structural engineer			
Pos. 5 Wall reinforcement and lapping reinforcement shear force bar				
Pos. 5	acc. to the specifications of the structural engineer			

Information about on-site reinforcement

- Alternative connection reinforcement is possible. For the determination of the lap length, the rules according to BS EN 1992-1-1 (EC2) and BS EN 1992-1-1/NA apply FA reduction of the required lap length with m_{Ed}/m_{Rd} is permitted.
- The indicative minimum concrete strength class of the external structural component is C32/40.

Installation

The Schöck Isokorb® T type W is delivered in various components (bottom section, middle section, intermediate section, upper section).

- Depending on the quantity ordered, similar components will be on one pallet for purposes of transport safety.
- The arrangement of components takes place on the building site in accordance with installation instructions.

Installation manual

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

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?
- ☐ With the selection of the design table is the relevant concrete cover taken into account?
- ☐ Are the maximum allowable expansion joint spacings 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?
- ☐ Have the requirements for on-site reinforcement of connections been defined in each case?

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