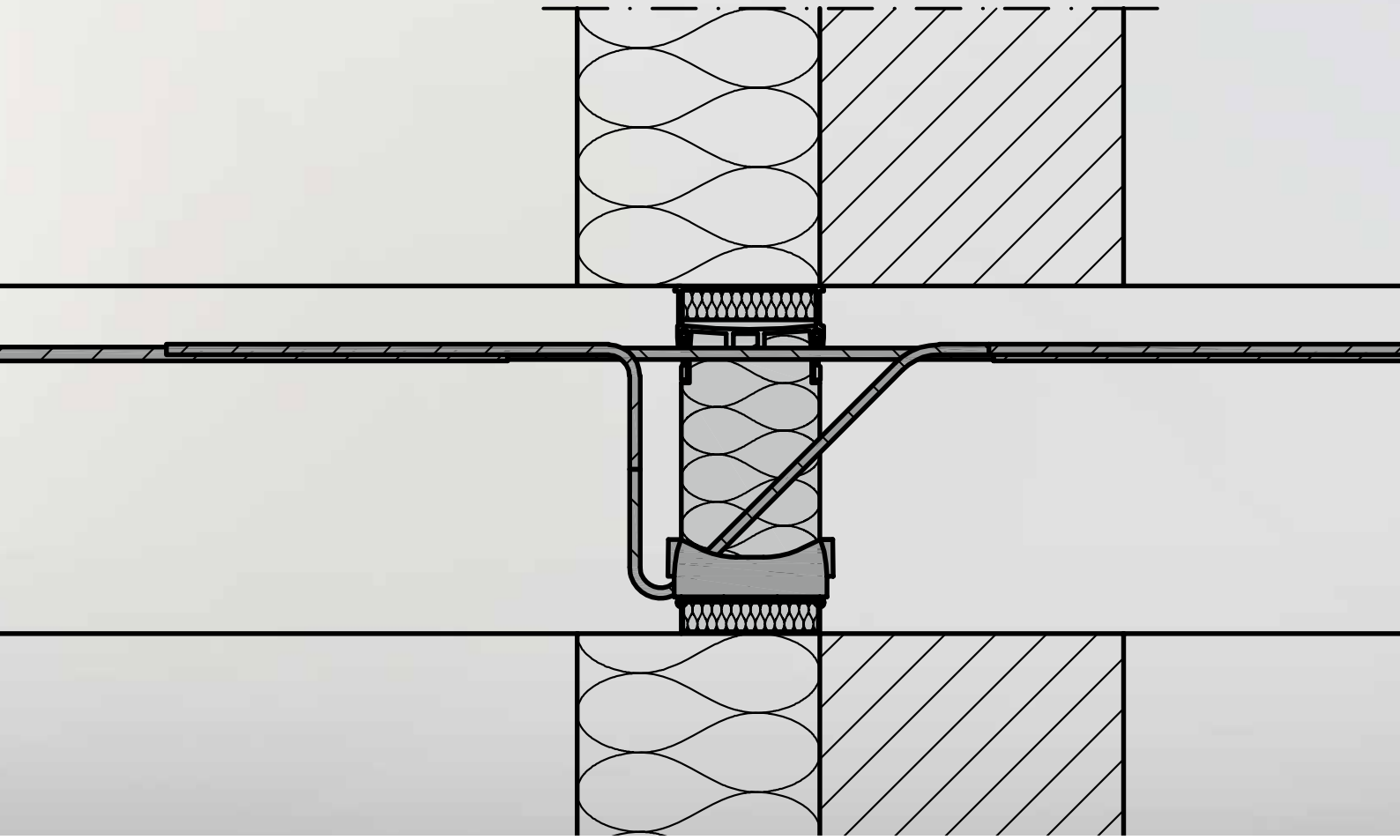
SCHÖCK
Dependable by design



TECHNICAL INFORMATION – MAY 2022

Isokorb® T for reinforced concrete structures

Load-bearing thermal insulation element for the effective reduction of thermal bridges in cantilevered structural elements such as balconies, access balconies and parapets.

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

Telephone hotline for design support services
Tel.: 01865 290 890
Fax: 01865 290 899
E-Mail: design-uk@schoeck.com

Planning tools - downloads and requests
Tel.: 01865 290 890
Fax: 01865 290 899
E-Mail: design-uk@schoeck.com
Web: www.schoeck.com

CPD Seminars and on-site consultation
Tel.: 01865 290 890
Fax: 01865 290 899
Web: www.schoeck.com

Notes | Symbols

Technical Information

- This Technical Information on the respective product application is valid only if complete and therefore may only be reproduced as a whole. With texts and graphics published solely as extracts there is a danger of communicating insufficient or even misleading information. Therefore dissemination is the sole responsibility of the user or the person carrying out the process!
- This Technical Information is valid solely for the United Kingdom and takes into account the country's specific approvals and standards.
- If the installation takes place in another country then the valid Technical Information of the respective country is to be applied.
- The current Technical Information is to be applied. A current version is available at: www.schoeck.com/en-gb/download

Installation instructions

Current installation instructions can be found online at:
www.schoeck.com/en-gb/download

Special constructions – bending of reinforcing steel

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 (EC 2) and BS EN 1992-1-1/NA are observed with regard to bending of reinforcing steel.

Attention: If reinforcing steel in the Schöck product 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.

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 conjunction with the design.

Check list

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

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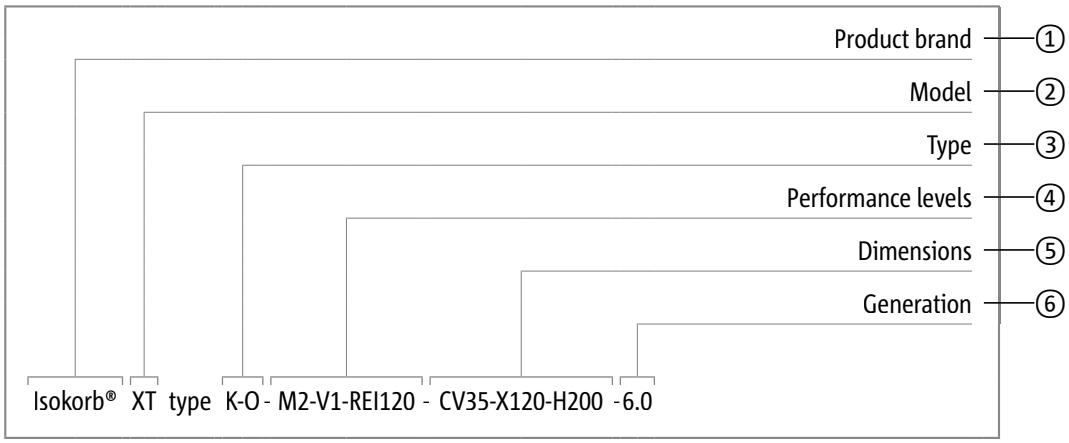
Explanation for the naming of Schöck Isokorb® types

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
The model designation is an integral part of the name of each 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 renovation with 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	D	Floor slab – continuous (indirectly mounted)	W	Shear wall
Q	Balcony, canopy – supported (shear force)	A	Parapet, balustrade	SK	Steel balcony – cantilevered
C	Corner balcony	F	Parapet, balustrade – attached	SQ	Steel balcony – supported (shear force)
H	Balcony with horizontal loads	O	Corbel	S	Steel structure
Z	Balcony with intermediate insulation	B	Beam, downstand beam		

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
R0	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

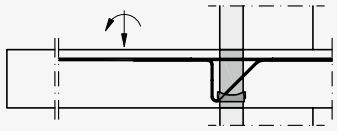
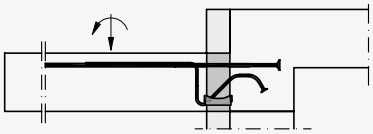
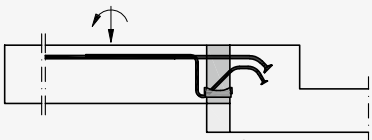
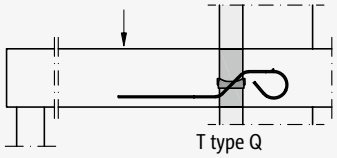
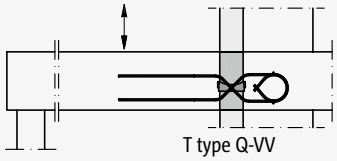
Each type designation ends with a generation number. If Schöck develops a product further and due to this the characteristics of the product change, the generation number increases. With large product changes the number in front of the dot increases, with small product changes the number after the dot increases. Examples:

- Large product change: Generation 6.0 becomes 7.0
- Small product change: Generation 7.0 becomes 7.1

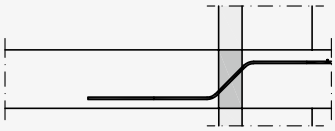
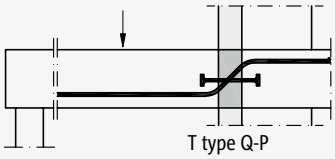
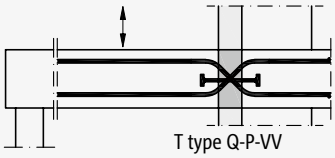
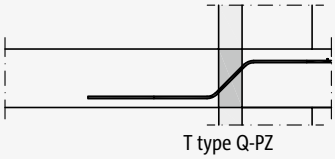
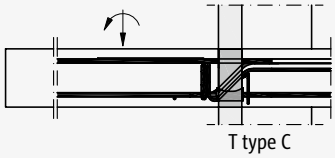
i Translation tool

- The online translation tool for the translation from old to new type designation can be found under: www.schoeck.com/en-gb/isokorb-product-name

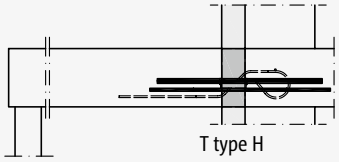
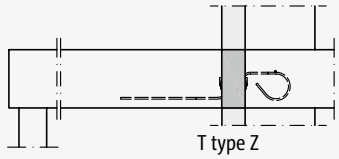
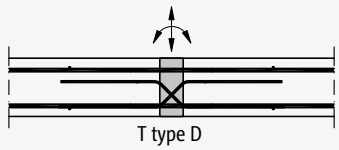
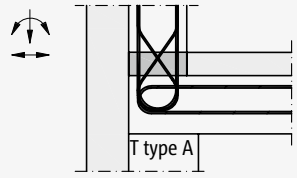
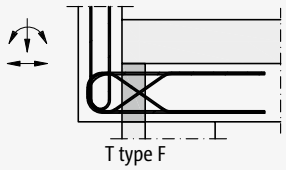
Summary of types

Application	Production type	Schöck Isokorb® type	
Free cantilevered balconies			
 T type K	In-situ concrete Completely prefabricated part	T type K	Page 27
Free cantilevered balconies with height offset downwards or wall connection			
 T type K-U	In-situ concrete Completely prefabricated part	T type K-U	Page 51
Free cantilevered balconies with height offset upwards or wall connection			
 T type K-O	In-situ concrete Completely prefabricated part	T type K-O	Page 51
Supported balconies			
 T type Q	In-situ concrete Completely prefabricated part Semi-finished component	T type Q	Page 85
Supported balconies with positive and negative shear force			
 T type Q-VV	In-situ concrete Completely prefabricated part Semi-finished component	T type Q-VV	Page 85

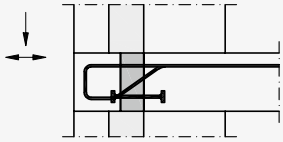
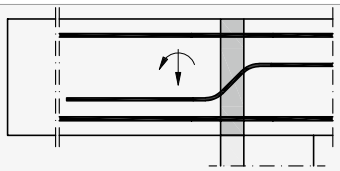
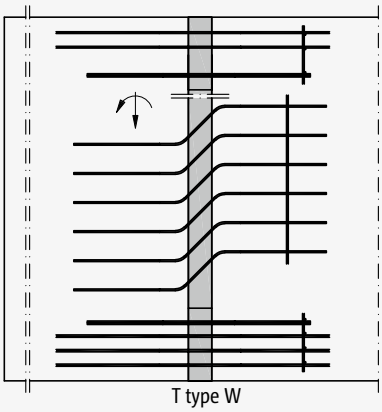
Summary of types

Application	Production type	Schöck Isokorb® type	
Zero-stress shear force connection			
 T type Q-Z	In-situ concrete Completely prefabricated part Semi-finished component	T type Q-Z	Page 85
Supported balconies with point load peaks			
 T type Q-P	In-situ concrete Completely prefabricated part Semi-finished component	T type Q-P	Page 105
Supported balconies with positive and negative shear force with point load peaks			
 T type Q-P-VV	In-situ concrete Completely prefabricated part Semi-finished component	T type Q-P-VV	Page 105
Constraint-free transverse force connection with point peak loads			
 T type Q-PZ	In-situ concrete Completely prefabricated part Semi-finished component	T type Q-PZ	Page 105
Free cantilevered balconies with corner			
 T type C	In-situ concrete Semi-finished component	T type C	Page 123

Summary of types

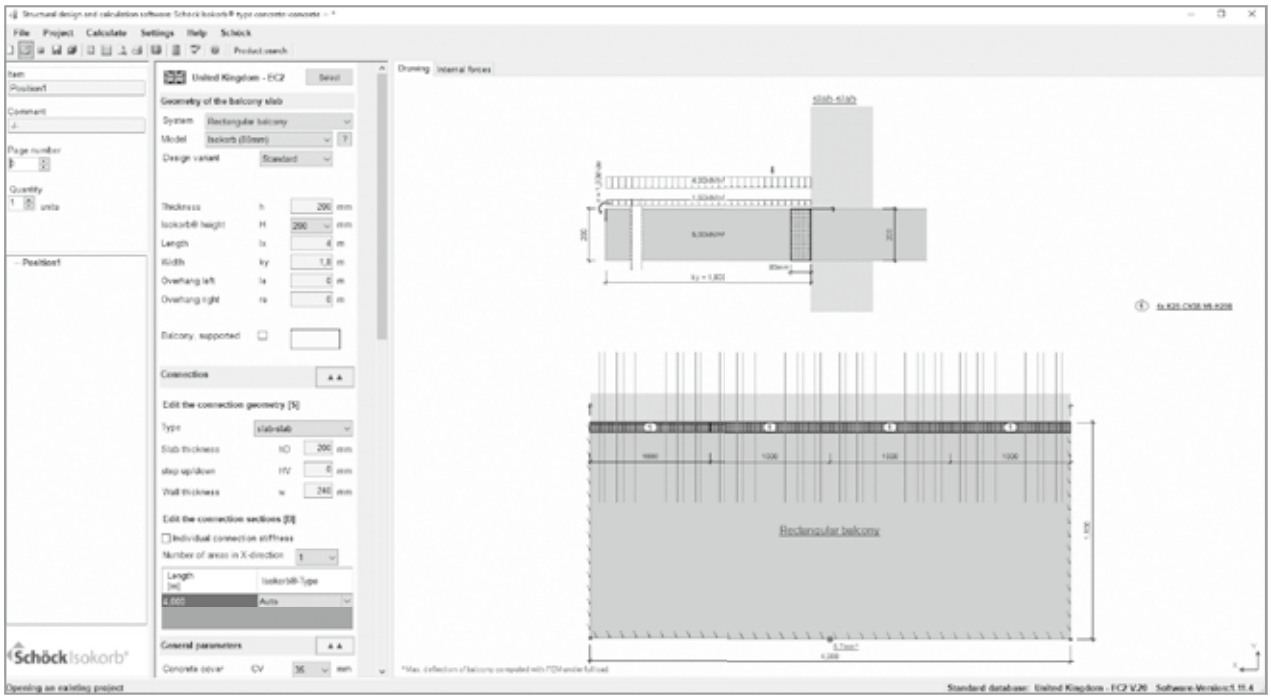
Application	Production type	Schöck Isokorb® type	
Addition for horizontal loads			
 T type H	In-situ concrete Completely prefabricated part Semi-finished component	T type H	Page 135
Addition as insulating spacer without reinforcement			
 T type Z	In-situ concrete Completely prefabricated part Semi-finished component	T type Z	Page 147
Continuous floors with bending momemts and shear forces			
 T type D	In-situ concrete Completely prefabricated part Semi-finished component	T type D	Page 153
Balustrades and parapets			
 T type A	In-situ concrete Completely prefabricated part	T type A	Page 165
For attached balustrades			
 T type F	In-situ concrete Completely prefabricated part	T type F	Page 167

Summary of types

Application	Production type	Schöck Isokorb® type	
Corbel			
 T type O	In-situ concrete Completely prefabricated part	T type O	Page 169
Free cantilevered downstand beams and reinforced concrete beams			
 T type B	In-situ concrete Completely prefabricated part	T type B	Page 171
Free cantilevered shear walls			
 T type W	In-situ concrete Completely prefabricated part	T type W	Page 179

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

Info
Technical information on the thermal insulation and impact sound insulation can be found under:
www.schoeck.co.uk/download/building-physics

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

Fire protection requirements which are placed on the structural component also apply for the product that is to be used. Prerequisite for the fire protection classification of the balcony connection is that the balcony slab and the floor also fulfil the requirements on the necessary fire resistance class according to BS EN 1992-1-1 and BS EN 1992-1-2 (EC2). If, in the case of fire, in addition to the load-bearing capacity (R), integrity (E) and insulation (I) are also required, recesses between the Schöck Isokorb® T are to be closed, for example using the Schöck Isokorb® T type Z with fire protection.

The Schöck Isokorb® T has been tested in room closure configuration on the basis of floors as per 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 there results the classification REI (R = load-bearing capacity, E = integrity, I = insulation under fire exposure).
The requirements from the fire tests with the Schöck Isokorb® using 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. In this way room enclosure and thermal insulation is guaranteed in the case of fire (see figures below).

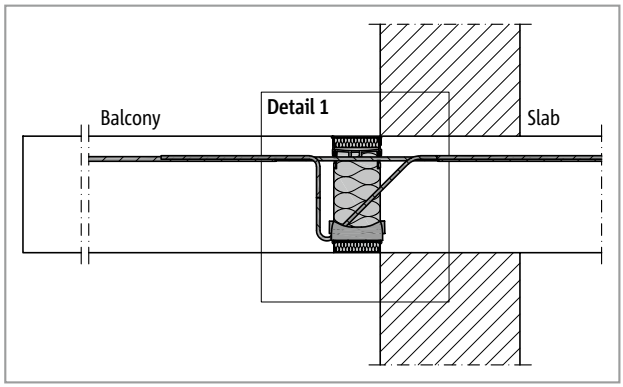


Fig. 1: Schöck Isokorb® T type K-...-REI120: Fire protection board top and bottom; lateral integrated fire protection bands

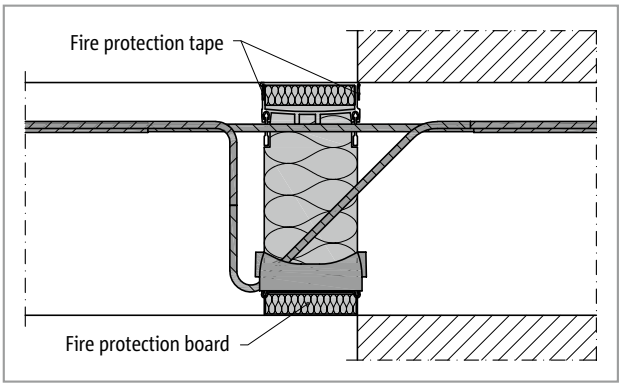


Fig. 2: Schöck Isokorb® T type K-...-REI120: Detail 1

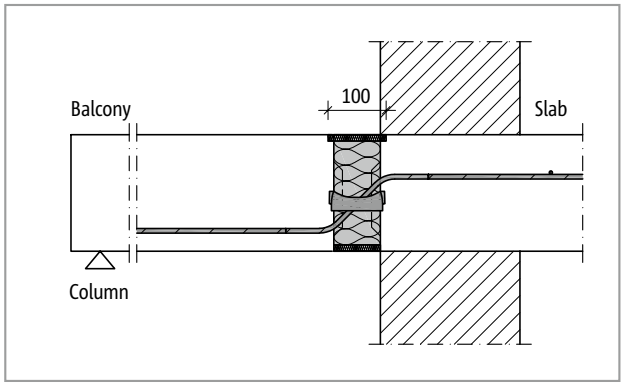


Fig. 3: Schöck Isokorb® T type Q-...-REI120: Fire protection board top, projecting laterally

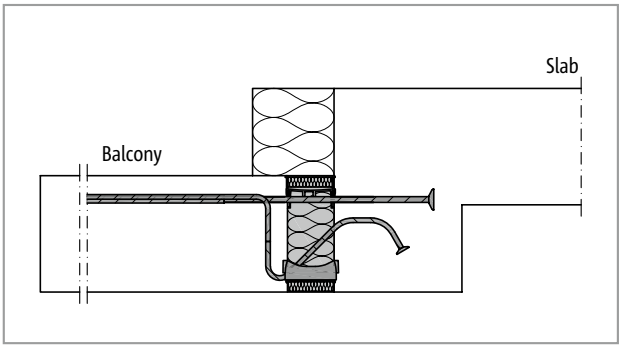


Fig. 4: Schöck Isokorb® T type K-U-...-REI120: Fire protection board top and bottom; lateral integrated fire protection bands

Fire-resistance classes | Balcony fire protection configuration REI 120

Fire resistance classes REI 120, R 90, EI 120
The reaction to fire of structural components is classified on the basis of the European Standard BS EN 13501-2.

The various types of the Schöck Isokorb® T in the variants with fire protection achieve the following fire resistance classes:

Schöck Isokorb® T type	K, K-U, K-O, Q, Q-P, C, H, D, A, F, O	B, W	Z
Fire resistance class	REI 120	R 90	EI 120

Balcony fire protection configuration REI 120
The Schöck Isokorb® T can be supplied with fire protection (-REI120). Then the balcony also achieves fire resistance class REI 120, as long as REI 120 is also achieved on the floor and balcony sides.

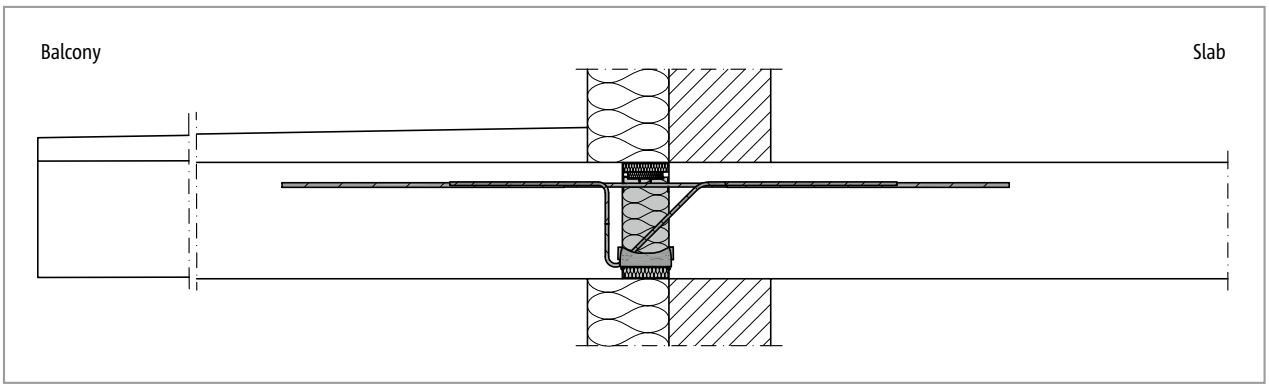


Fig. 5: Schöck Isokorb® T type K-...-REI120: Balcony connection REI 120

Fire protection
- The Schöck Isokorb® T type Z (see page 147) is supplied with fire protection for the insulation between the Schöck Isokorbs®. The rating of the Schöck Isokorb® is relevant for the fire protection of the connection.

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.
- 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.
- In this Technical Information the relevant parameters for the FEM calculation such as the applied projection length and the spring stiffness are presented approximately, simplified. The type test and the Schöck Isokorb® software are to be used for the accurate parameters and/or design values.
- To limit vertical deformation, the use of Schöck Isokorb® types with steel compression elements is recommended for lateral projections greater than 40 cm.

Special constructions

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.

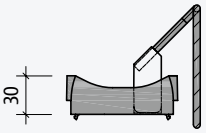
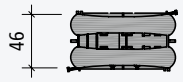
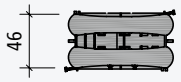
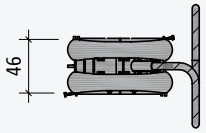
Bending of reinforcing steel

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 observed.

Attention: If original Schöck Isokorb® reinforcing steels are 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, our 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

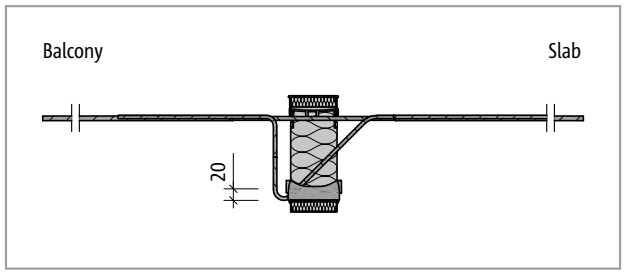


Fig. 6: Schöck Isokorb® T type K-M1 up to M4: Product section

HTE-Compact® 30

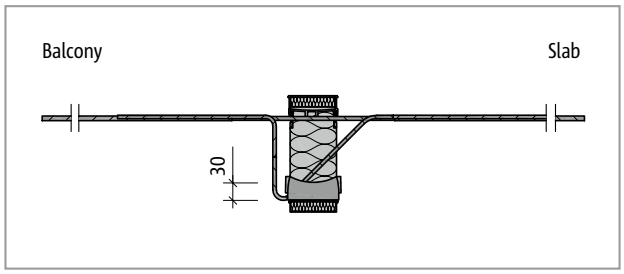


Fig. 7: Schöck Isokorb® T type K-M5 to M6: Cross section of the product

HTE-Compact® 30 with special stirrup

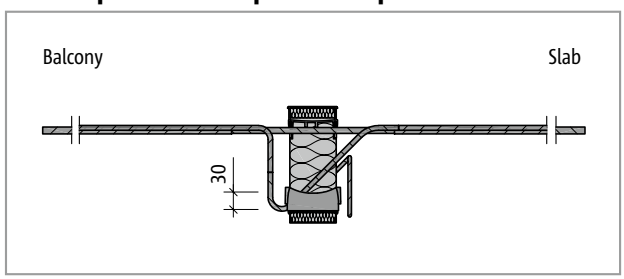


Fig. 8: Schöck Isokorb® T type K-M7 to M11: Cross section of the product

HTE-Compact® 20

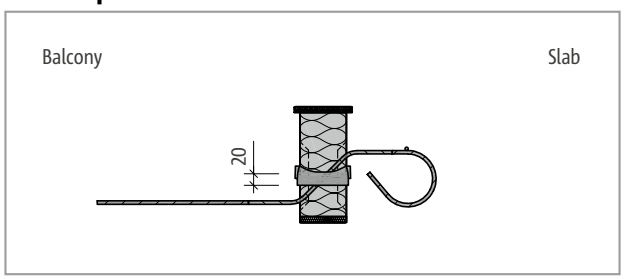


Fig. 9: Schöck Isokorb® T type Q-V1 to Q-V5: Cross section of the product

HTE-Compact® 30 with special stirrup

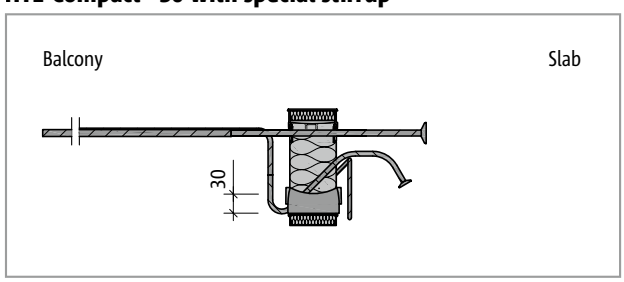


Fig. 10: Schöck Isokorb® T type K-U-M4: Cross section of the product

HTE-Compact® 30

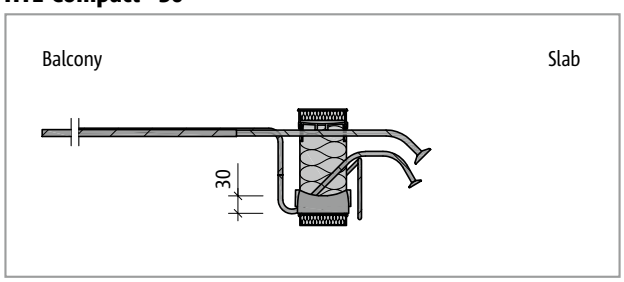


Fig. 11: Schöck Isokorb® T type K-O-M1 to M3: Cross section of the product

FEM guidelines

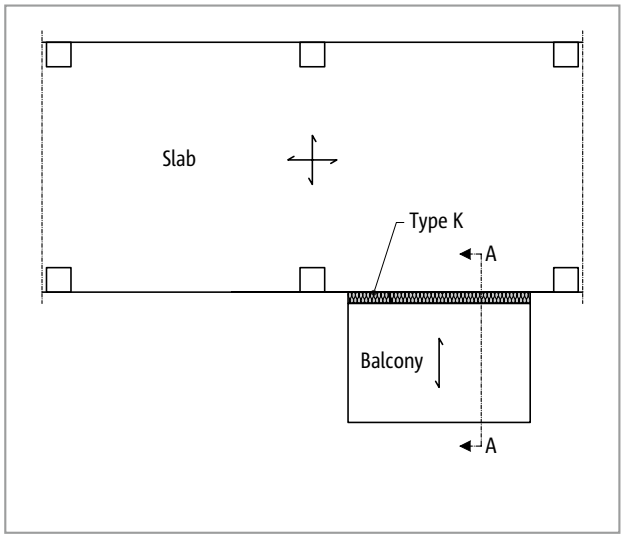


Fig. 12: Static overall system balcony and floor

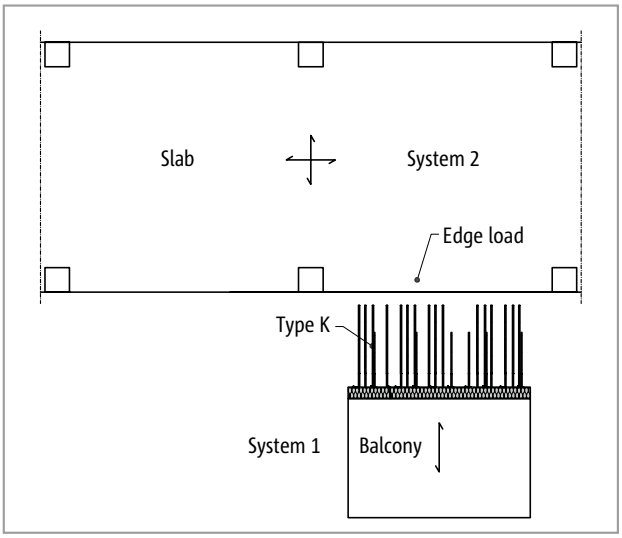


Fig. 13: For the design of the floor and of the balcony the balcony slab is to be decoupled from the overall system (System 1 and 2)

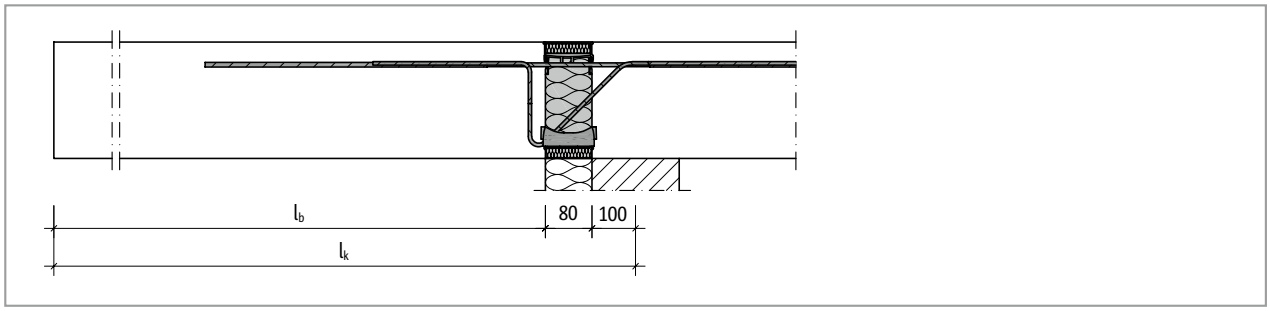


Fig. 14: Schöck Isokorb® type K: System cantilever length (l_k) for design and geometric cantilever length (l_b)

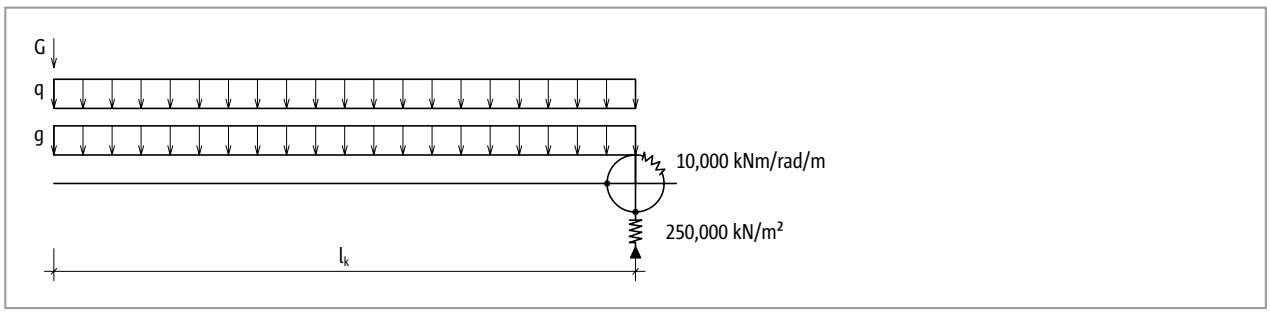


Fig. 15: Schöck Isokorb®: Approximate adoption of the spring stiffness

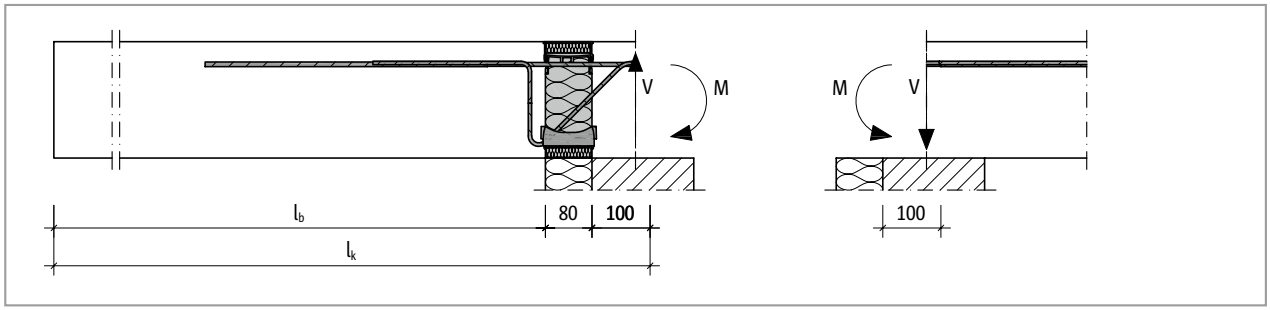


Fig. 16: Schöck Isokorb® Type K Determined design section dimensions applied to floor slab

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/m^2 (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.
- In this Technical Information the relevant parameters for the FEM calculation such as the applied projection length and the spring stiffness are presented approximately, simplified. The type test and the Schöck Isokorb® software are to be used for the accurate parameters and/or design values.

Fatigue/Temperature effect

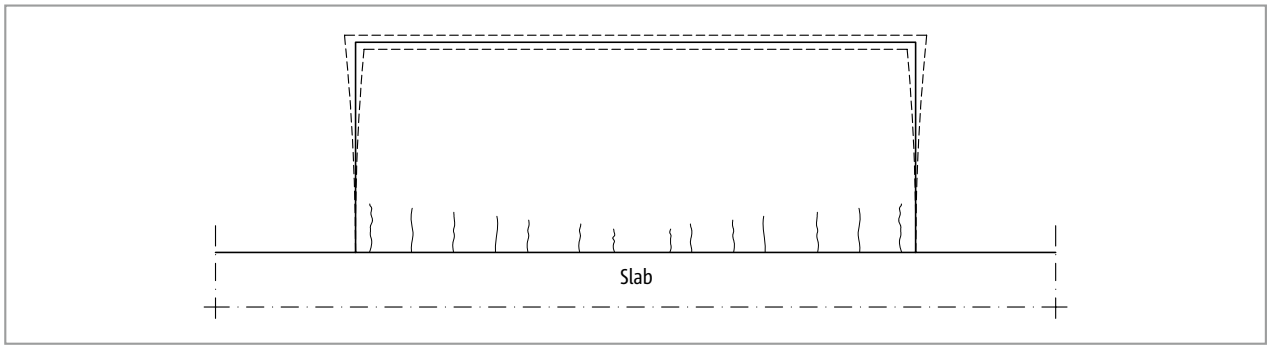


Fig. 17: Balcony slab without Schöck Isokorb®: Crack formation through fatigue possible

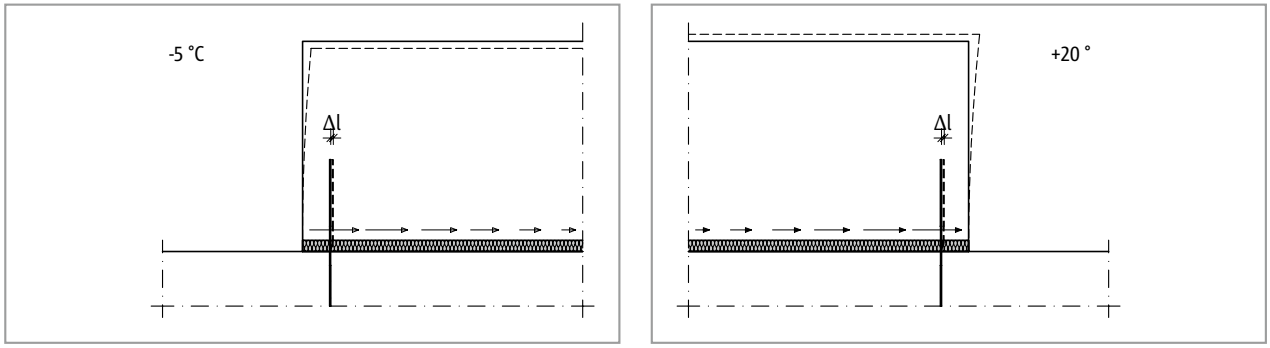


Fig. 18: Schöck Isokorb®: Displacement of the outer bars of a balcony slab by Δl as a result of temperature deformation

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.

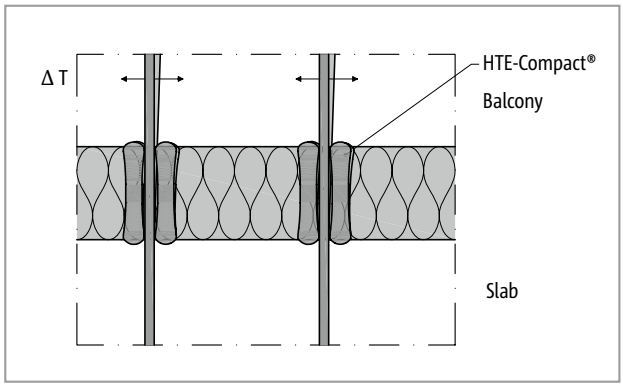


Fig. 19: Schöck Isokorb® detail: deflection of the pressure bearing as a result of temperature difference

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

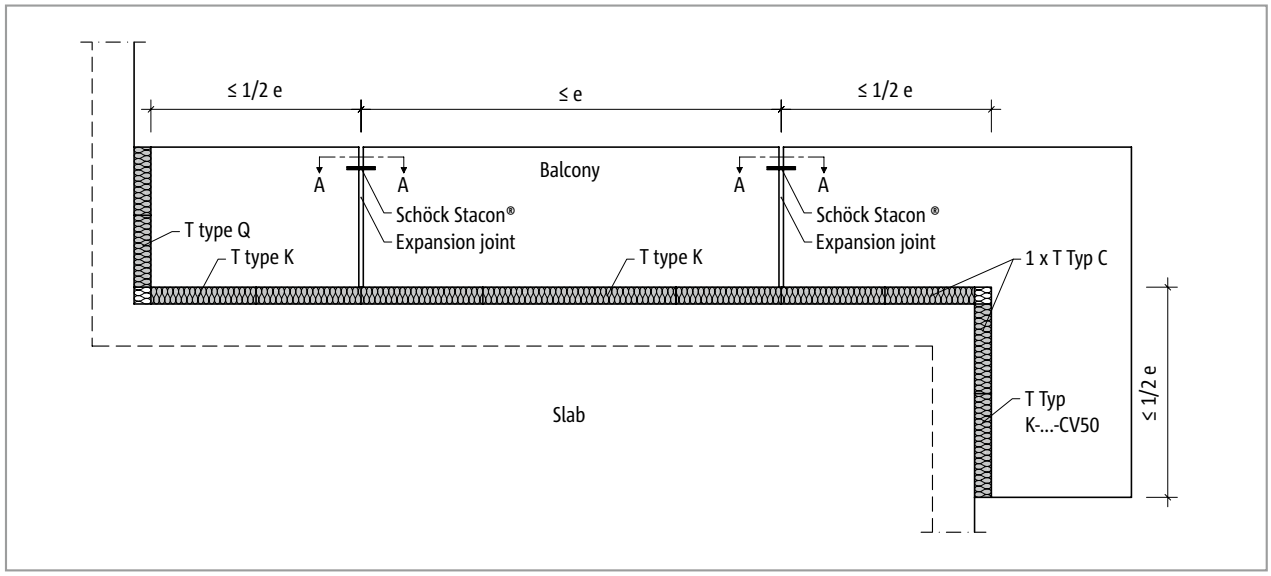


Fig. 20: Schöck Isokorb® T type K: Expansion joint formation with longitudinally displaceable shear force dowel, e.g. Schöck Stacon®

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 Stacon®.

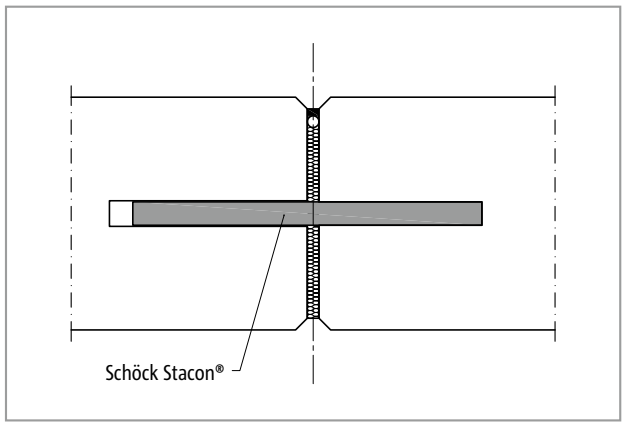


Fig. 21: Schöck Stacon®: Expansion joint formation in in-situ concrete

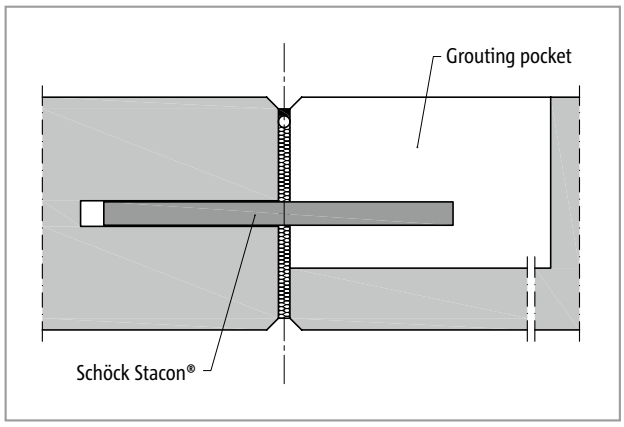


Fig. 22: Schöck Stacon®: Expansion joint formation precast concrete balcony

Expansion joints

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

Indicative minimum concrete strength classes

The concrete cover CV for balcony slab connections with Schöck Isokorb® and the indicative minimum concrete strength class are selected depending on exposure classes and the approval document. 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. The higher minimum concrete strength class is relevant.

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	C25/30	C32/40	35 (Δc = 5 mm)
XC3/4	C30/37	C25/30	C32/40	50
XD1	C35/40	C25/30	C32/40	50
XS1	C45/55	C25/30	C32/40	50 (Δc = 5 mm)
XF1, XF3	acc. to BS EN 206-1	C25/30	C32/40	-

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.

Recycling concrete

- Recycling concrete as per the DAfStb directive using recycled aggregate as per BS EN 12620 of the types 1 and 2 may be employed up to a concrete strength class C30/37.

Approval | Construction materials

Approval of Schöck Isokorb® components

Schöck Isokorb®	European Technical Assessment ETA-17/0261 or ETA-17/0262

BBA Agreement Certificate 05/4277

Schöck Isokorb® construction materials

Reinforcing steel	B500B as per DIN 488-1
Structural steel	S 235 JRG1, S 235 JO, S 235 J2, S 355 JR, S 355 J2, or S 355 JO as per BS EN 10025-2 for the compression slabs
Stainless steel	Concrete ribbed steel B500B NR, Material No. 1.4571 or 1.4482 Tension bars Material No. 1.4482 (f_{yk} = 700 N/mm^2) Plain steel bars, Material No. 1.4571 or 1.4404 of hardening level S 460
Concrete pressure bearing	HTE-Compact® pressure bearings (pressure bearings made from micro-steel fibre-reinforced high performance fine concrete) HDPE plastic sheathing
Insulating material	Neopor® - this insulating material is a polystyrene hard foam and 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, integrated fire protection bands

Connecting structural elements

Reinforcing steel	B500A or B500B as per DIN 488-1, and/or BS EN 1992-1-1 (EC2) and BS EN 1992-1-1/NA
Concrete	Standard concrete a per DIN 1045-2 and/or. BS EN 206-1 with a dry density of 2000 kg/m^3 to 2600 kg/m^3 (lightweight concrete is not permitted) **Indicative minimum strength class of the external structural elements:** At least C25/30 and depending on the environmental classification as per BS-EN 1992-1-1/NA, table NA.E.1 **Indicative concrete strength class of the internal structural elements:** At least C20/25 and depending on the environmental classification as per BS-EN 1992-1-1/NA, table NA.E.1

i 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 observed.

Attention: If original Schöck Isokorb® reinforcing steels are 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, our warranty is invalidated.

Schöck Isokorb® T type K

Schöck Isokorb® T type K
Load-bearing thermal insulation element for freely cantilevered balconies. The element transfers negative moments and positive shear forces. The element with the load-bearing level VV additionally transfers negative shear forces.

Element arrangement | Installation cross sections

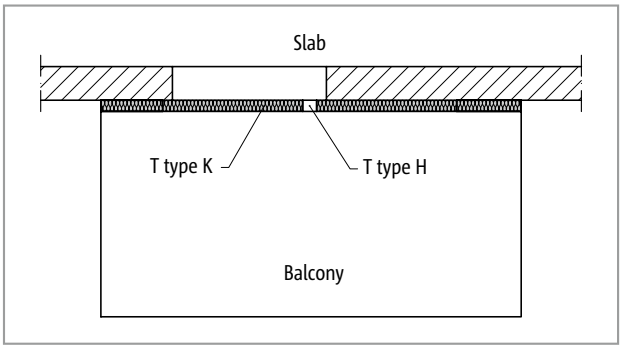


Fig. 23: Schöck Isokorb® T type K: Balcony freely cantilevered, optional with T type H (from page 135) with planned horizontal loads, e.g. closed balustrades

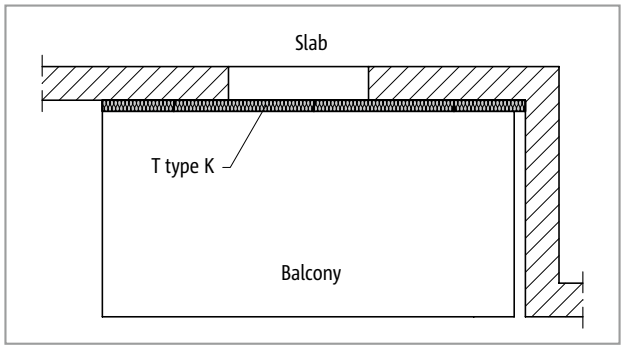


Fig. 24: Schöck Isokorb® T type K: Balcony with facade offset

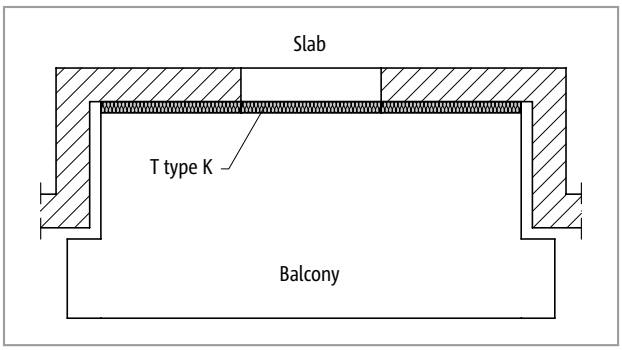


Fig. 25: Schöck Isokorb® T type K: Balcony with facade recess

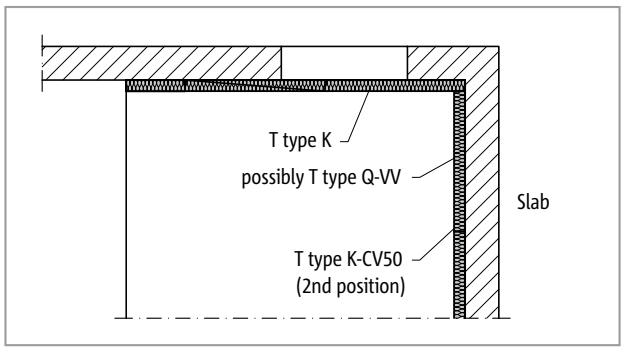


Fig. 26: Schöck Isokorb® T type K, Q-VV: Balcony with inside corner, freely supported on two sides

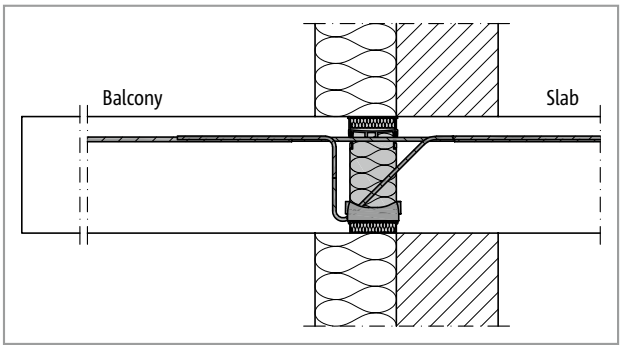


Fig. 27: Schöck Isokorb® T type K: Connection with thermal insulation composite system (TICS)

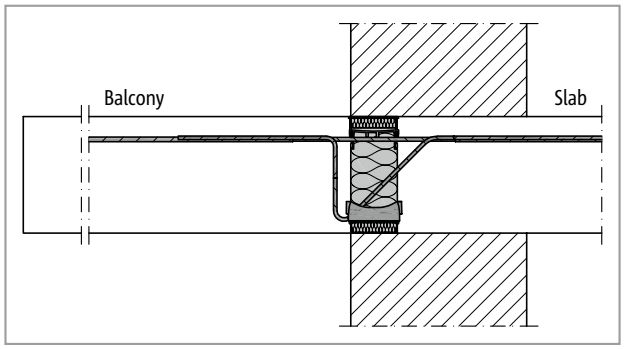


Fig. 28: Schöck Isokorb® T type K: Connection with single-leaf masonry

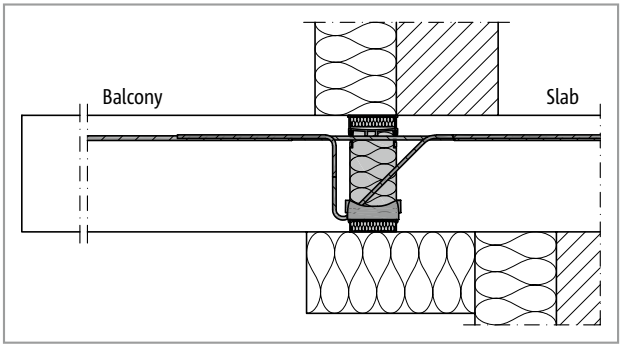


Fig. 29: Schöck Isokorb® T type K: Connection with indirectly positioned floor and TICS

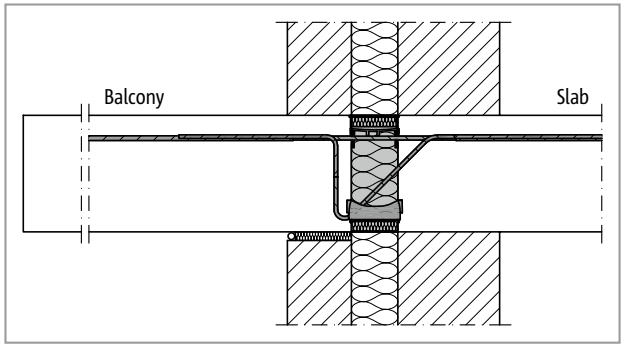


Fig. 30: Schöck Isokorb® T type K: Cavity wall with a balcony at inner slab level

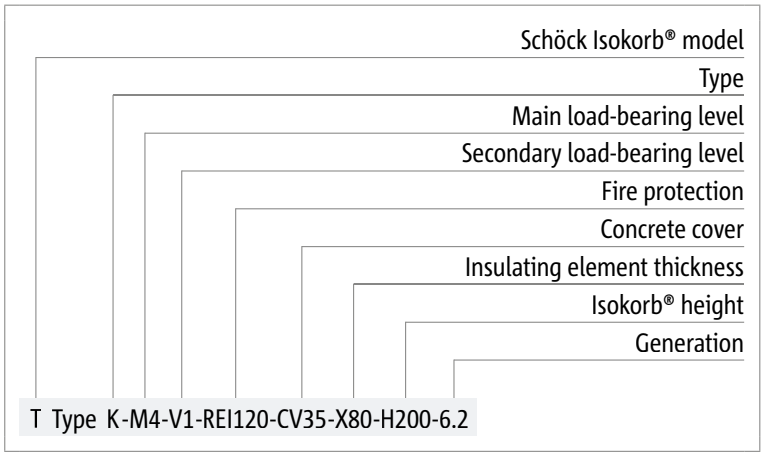
Product selection | Type designations | Special designs

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 M14
- Secondary load-bearing level:
  V1 to V3, VV1
- Fire resistance class:
  REI120: M1 to M11
  REI120: M12 to M14: 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 to 250 mm for Schöck Isokorb® T type K-M1 to M11 and concrete cover CV30, CV35
  H = 180 to 250 mm for Schöck Isokorb® T type K-M1 to M11 and concrete cover CV50
  H = H_{min} to 250 mm for Schöck Isokorb® T type K-M12 to M14
- Isokorb® length:
  1000 mm for M1 to M11
  500 mm for M12 to M14 – required in the type designation: T type K-M12-V1-REI120-CV35-X80-H200-**L500**-6.1
- Generation:
  6.2: M1 to M11
  6.1: M12 to M14

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 to K-M14, see page 34.
- For cantilever slab constructions without live load, stressed from moment loading without direct shear force effectiveness or lightweight constructions, please use the Schöck design software or contact our Technical Design Department.

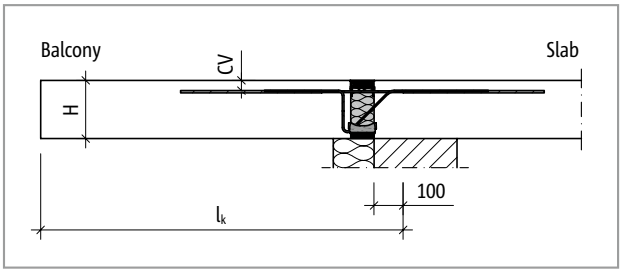


Fig. 31: Schöck Isokorb® T type K-M1 to M11: Static system

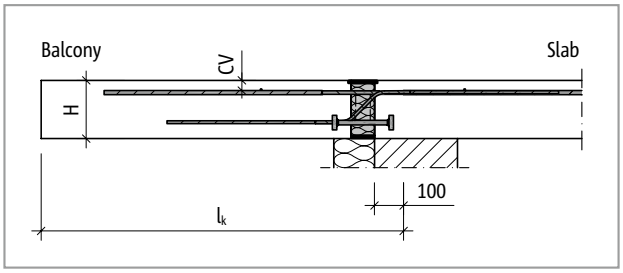


Fig. 32: Schöck Isokorb® T type K-M12: Static system

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]					
Secondary load-bearing level			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
Placement with	Isokorb® length [mm]					
	1000	1000	1000	1000	1000	1000
Tension bars V1/V2	4 ⌀ 8	8 ⌀ 8	10 ⌀ 8	12 ⌀ 8	14 ⌀ 8	15 ⌀ 8
Tension bars V3	-	-	10 ⌀ 8	12 ⌀ 8	14 ⌀ 8	7 ⌀ 12
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
Special stirrup VV1 [Stk.]	-	-	-	-	-	4

Notes on design

- Static system and infomation on the design see page 31.

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]					
Secondary load-bearing level		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
Placement with	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 31.
- 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	M14
Design values with	Concrete cover CV [mm]			Concrete strength class ≥ C25/30		
	CV30	CV35	CV50	$M_{Rd,y}$ [kNm/element]		
Isokorb® height H [mm]		180		-29.9	-43.3	-50.5
	180		200	-31.7	-45.4	-53.0
		190		-33.5	-47.6	-55.5
	190		210	-35.3	-49.7	-58.0
		200		-37.1	-51.9	-60.6
	200		220	-38.9	-54.1	-63.1
		210		-40.7	-56.2	-65.6
	210		230	-42.5	-58.4	-68.1
		220		-44.3	-60.6	-70.7
	220		240	-46.1	-62.7	-73.2
		230		-47.9	-64.9	-75.7
	230		250	-49.7	-67.1	-78.2
		240		-51.6	-69.2	-80.8
	240			-53.4	-71.4	-83.3
		250		-55.2	-73.5	-85.8
	250			-57.0	-75.7	-88.3
				$V_{Rd,z}$ [kN/element]		
Secondary load-bearing level		V1		72.4	72.4	72.4
		V2		104.3	104.3	104.3
		V3		142.0	142.0	142.0

Schöck Isokorb® T type K	M12	M13	M14
Placement with	Isokorb® length [mm]		
	500	500	500
Tension bars	6 ⌀ 14	7 ⌀ 14	8 ⌀ 14
Pressure bearing	5 ⌀ 16	-	-
Compression bars	-	6 ⌀ 16	7 ⌀ 16
Shear force bars V1	3 ⌀ 10	3 ⌀ 10	3 ⌀ 10
Shear force bars V2	3 ⌀ 12	3 ⌀ 12	3 ⌀ 12
Shear force bars V3	3 ⌀ 14	3 ⌀ 14	3 ⌀ 14
H_{min} for V1-CV30/35 [mm]	180	180	180
H_{min} for V2-CV30/35 [mm]	190	190	190
H_{min} for V3-CV30 / V1-CV50 [mm]	200	200	200
H_{min} for V3-CV35 / V2-CV50 [mm]	210	210	210
H_{min} for V3-CV50 [mm]	220	220	220

Notes on design

- Static system and infomation on the design see page 31.
- 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®

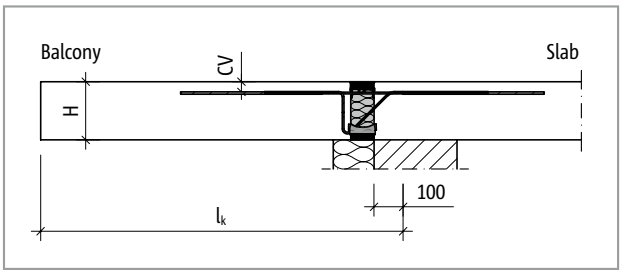


Fig. 33: Schöck Isokorb® T type K-M1 to M11: Static system

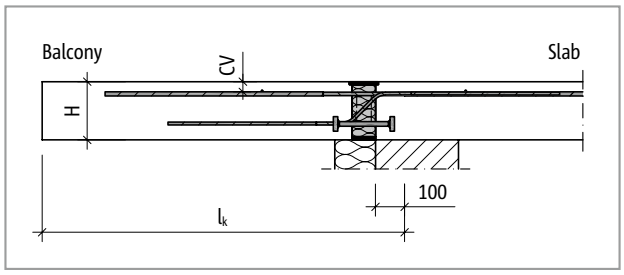


Fig. 34: Schöck Isokorb® T type K-M12: Static system

Deflection/Camber

Schöck Isokorb® T type K		M1–M5, M6-V1/V2			M6-V3/VV1, M7–M11		
Deflection factors when		CV30	CV35	CV50	CV30	CV35	CV50
		tan α [%]					
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

Schöck Isokorb® T type K		M12			M13–M14		
Deflection factors when		CV30	CV35	CV50	CV30	CV35	CV50
		tan α [%]					
Isokorb® height H [mm]	180	1.2	1.3	-	1.5	1.6	-
	190	1.1	1.2	-	1.4	1.4	-
	200	1.0	1.0	1.2	1.3	1.3	1.5
	210	0.9	1.0	1.1	1.2	1.2	1.4
	220	0.8	0.9	1.0	1.1	1.1	1.3
	230	0.8	0.8	0.9	1.0	1.1	1.2
	240	0.7	0.8	0.8	1.0	1.0	1.1
	250	0.7	0.7	0.8	0.9	0.9	1.0

Slenderness

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–M11		
Maximum cantilever length with		CV30	CV35	CV50
		$l_{k,max}$ [m]		
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

Schöck Isokorb® T type K		M12–M14		
Maximum cantilever length with		CV30	CV35	CV50
		$l_{k,max}$ [m]		
Isokorb® height H [mm]	180	2.09	2.01	-
	190	2.23	2.16	-
	200	2.38	2.30	2.09
	210	2.52	2.45	2.23
	220	2.67	2.60	2.38
	230	2.81	2.74	2.52
	240	2.96	2.89	2.67
	250	3.11	3.03	2.81

Maximum cantilever length

The tabular values are based on the following assumptions:

- Accessible balcony
- Concrete weight density $\gamma = 25$ 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
- Service load $q = 4.0$ kN/m^2 with the coefficient $\psi_{2,i} = 0.3$ for the quasi-permanent combination

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 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 Stacon®.

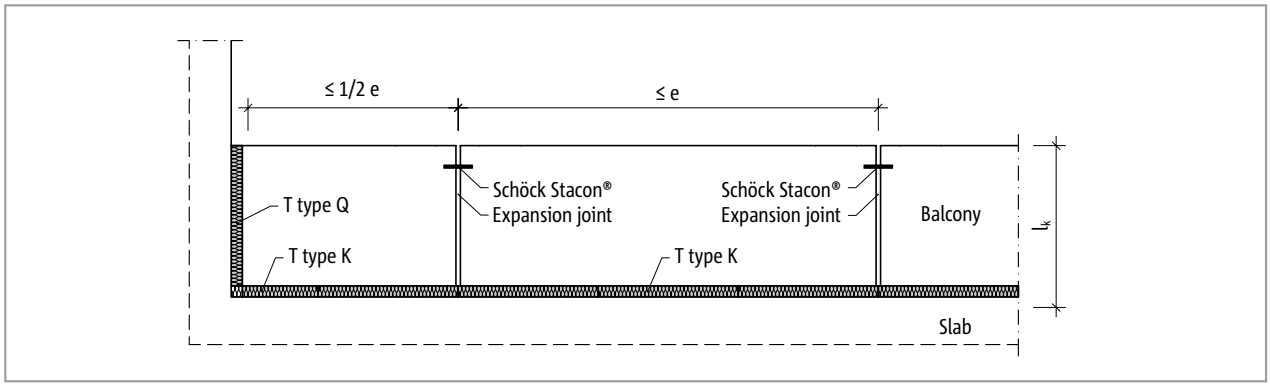


Fig. 35: Schöck Isokorb® T type K: Expansion joint layout

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

Schöck Isokorb® T type K		M12-V1/V2 – M14-V1/V2	M12-V3 – M14-V
Maximum expansion joint spacing when		e [m]	
Insulating element thickness [mm]	80	9.2	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 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 expansion joint the following applies: $e_R \geq 50$ mm and $e_R \leq 150$ mm.
- For the centre distance of the shear force bars from the free edge or from the expansion joints the following applies: $e_R \geq 100$ mm and $e_R \leq 150$ mm.

Product description

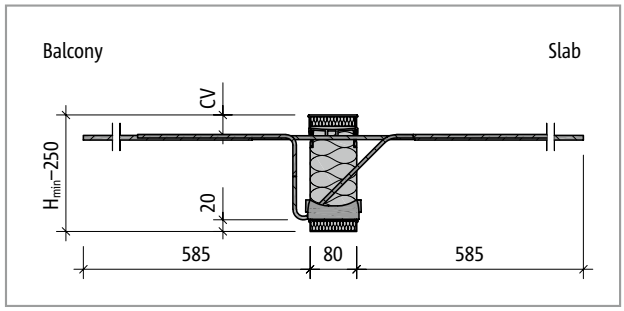


Fig. 36: Schöck Isokorb® T type K-M1 to M4: Product section

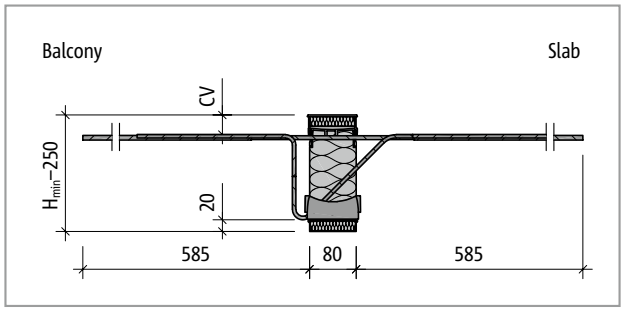


Fig. 37: Schöck Isokorb® T type K-M5 and K-M6: Product section

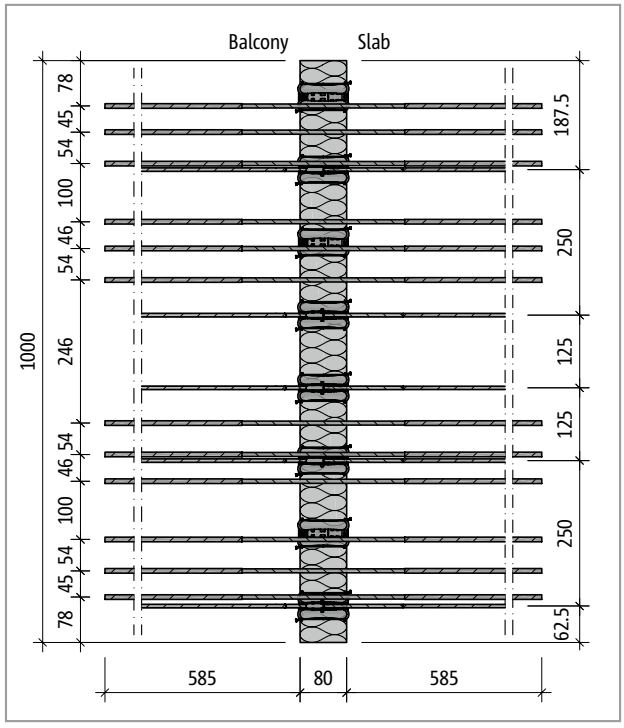


Fig. 38: Schöck Isokorb® T type K-M4-V1: Product layout

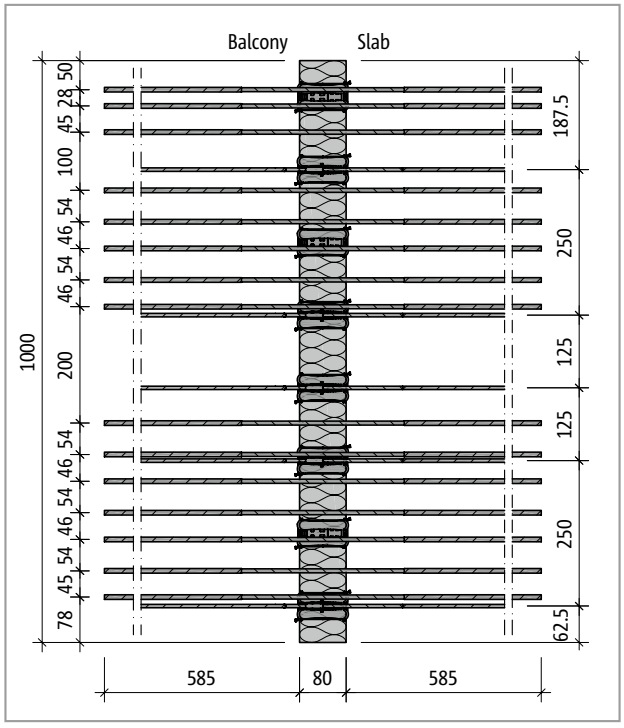


Fig. 39: Schöck Isokorb® T type K-M6-V1: Product layout

Product information

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

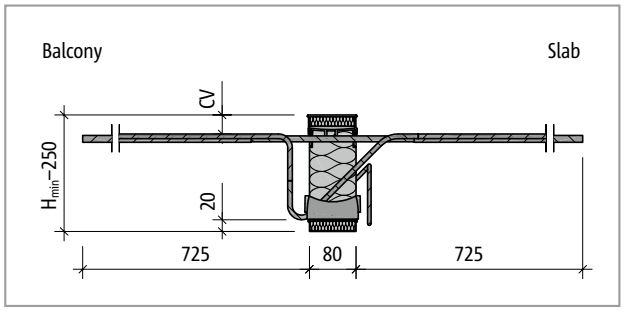


Fig. 40: Schöck Isokorb® T type K-M7 to M11: Product section

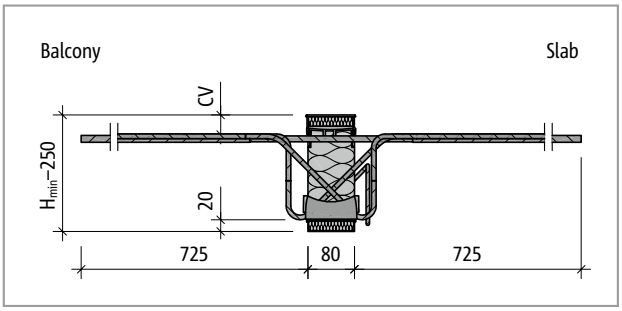


Fig. 41: Schöck Isokorb® T type K-M6-VV1: Product section

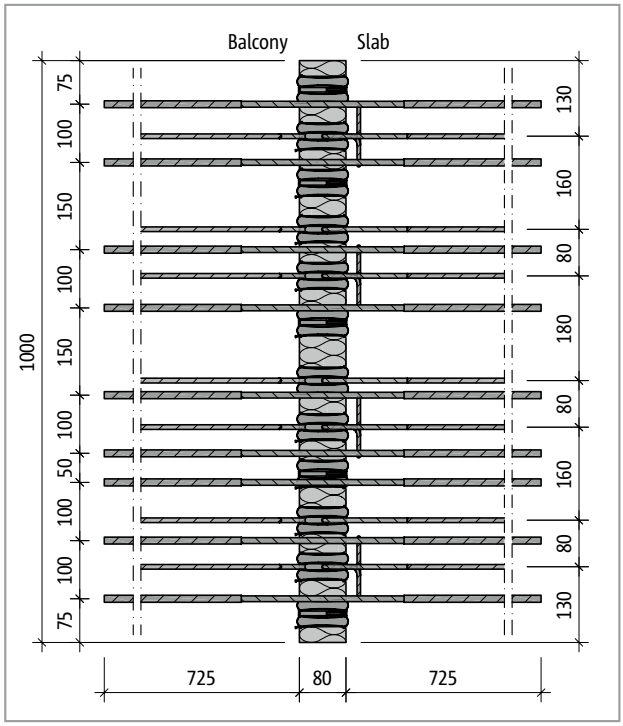


Fig. 42: Schöck Isokorb® T type K-M8-V1: Product layout

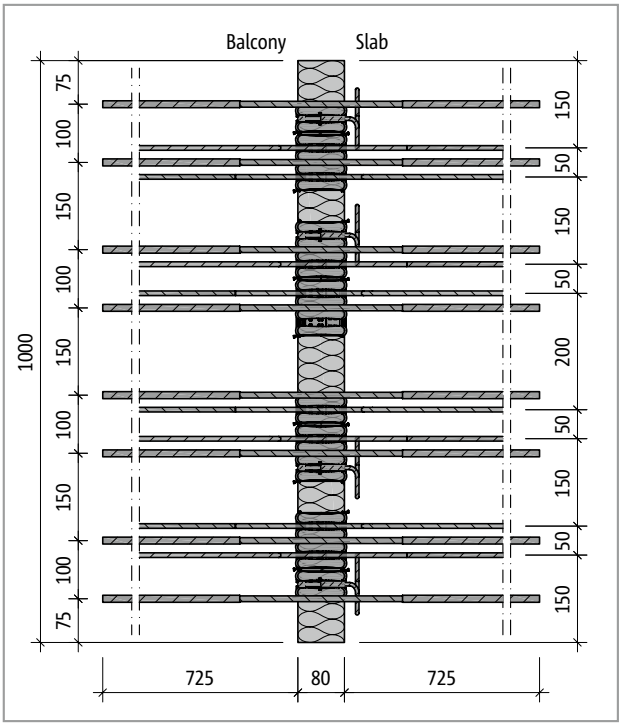


Fig. 43: Schöck Isokorb® T type K-M6-VV1: Product layout

Product information

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

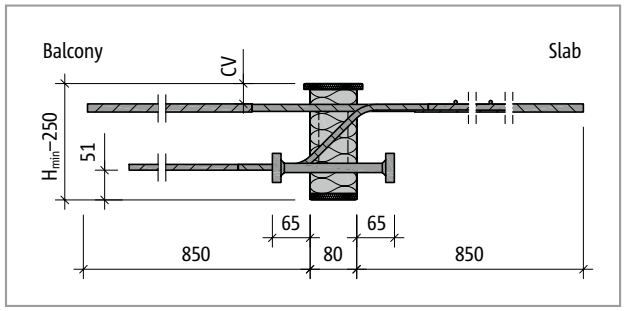


Fig. 44: Schöck Isokorb® T type K-M12: Product section

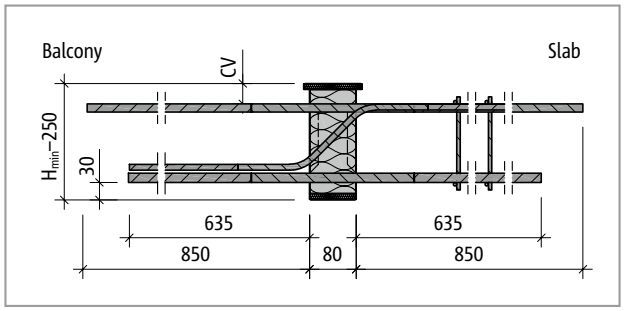


Fig. 45: Schöck Isokorb® T type K-M13 to M14: Product section

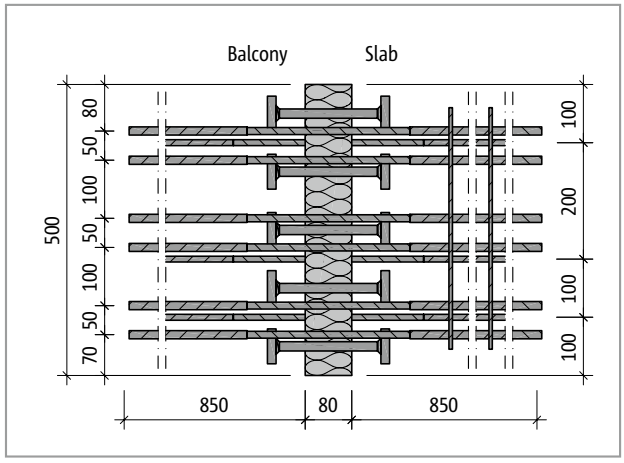


Fig. 46: Schöck Isokorb® T type K-M12-V1: Product layout

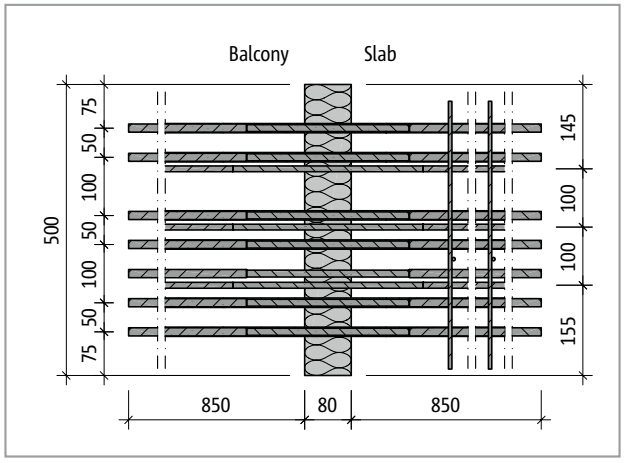


Fig. 47: Schöck Isokorb® T type K-M13-V1: Product layout

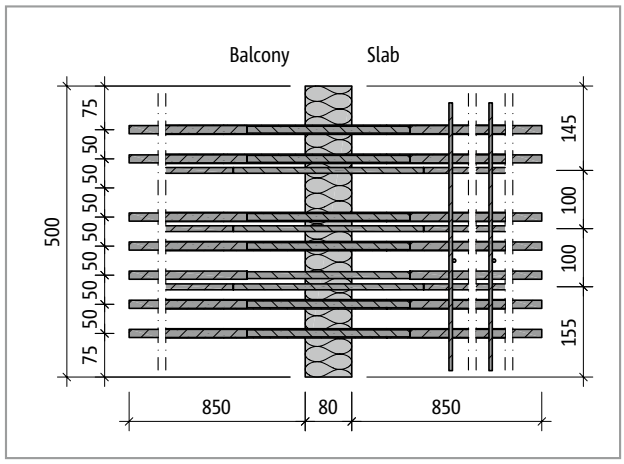


Fig. 48: Schöck Isokorb® T type K-M14-V1: Product layout

Product information

- Download further product plan views and cross-sections at www.schoeck.com/en-gb/download
- Minimum height H_{min} Schöck Isokorb® T type K-M12 to T type K-M14, see page 34
- 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

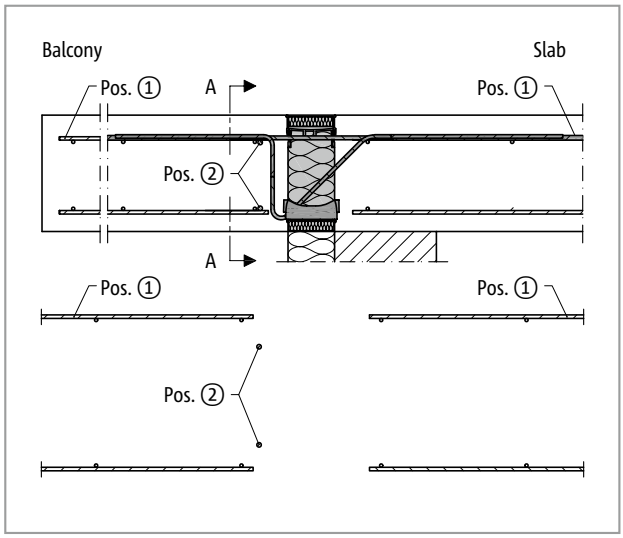


Fig. 49: Schöck Isokorb® T type K-M1 to M11: On-site reinfircement with direct support

Indirect support

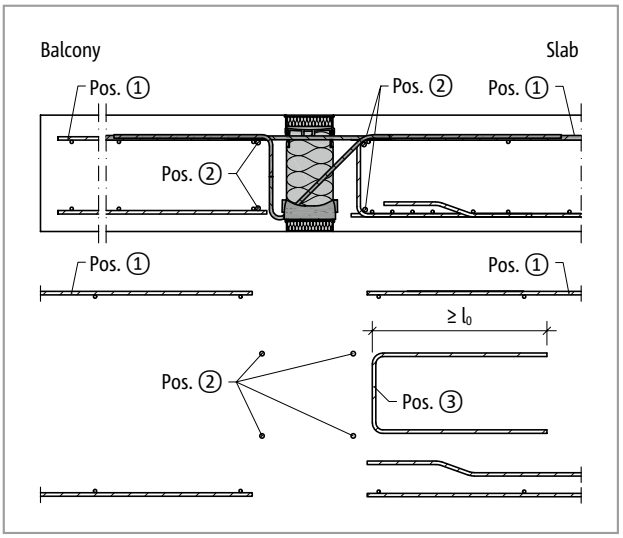


Fig. 50: Schöck Isokorb® T type K-M1 to M11: On-site reinforcement with indirect support

Direct and indirect support

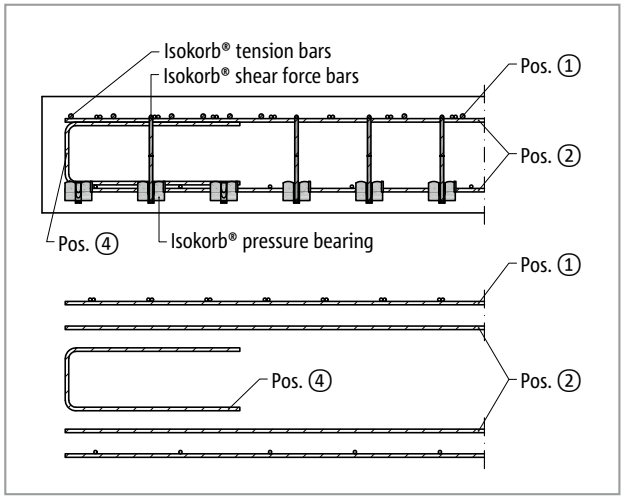


Fig. 51: Schöck Isokorb® T type K-M1 to M11: On-site reinforcement on the balcony side in the Section A-A; Pos.4 = side reinforcement on the free edge perpendicular to the Schöck Isokorb®

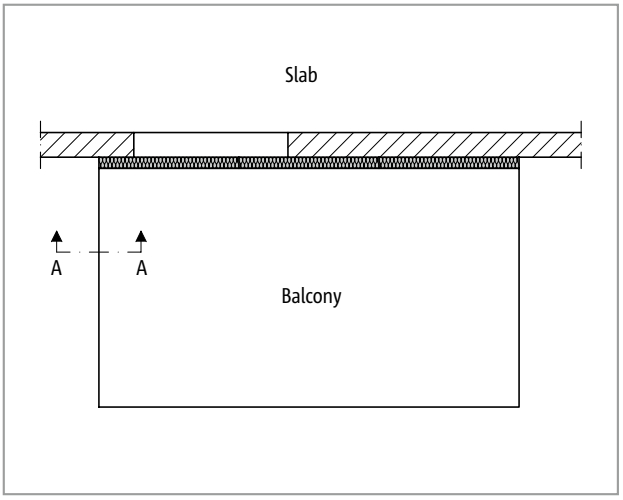


Fig. 52: Schöck Isokorb® T type K: Diagram of the position of Section A-A

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®.

On-site reinforcement

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

Schöck Isokorb® T type K			M1		M2		M3			M4			
			V1	V2	V1	V2	V1	V2	V3	V1	V2	V3	VV1
On-site reinforcement	Type of bearing	Height [mm]	Concrete strength class ≥ C25/30										
Overlap reinforcement depending on bar diameter													
Pos. 1 with H8 [mm²/m]	direct/ indirect	160–250	242	215	443	416	578	544	564	655	622	622	704
Pos. 1 with H10 [mm²/m]			271	252	476	457	619	596	641	698	675	699	717
Pos. 1 with H12 [mm²/m]			325	302	571	548	743	715	769	838	810	839	861
Steel bars along the insulation joint													
Pos. 2	direct	160–250	2 • H8										
	indirect		4 • H8										
Vertical reinforcement													
Pos. 3 [mm²/m]	indirect	160–250	113	113	113	113	113	113	113	113	113	113	–
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		
			V1	V2	V3	VV1	V1	V2	V3	VV1	V1	V2	VV1
On-site reinforcement	Type of bearing	Height [mm]	Concrete strength class ≥ C25/30										
Overlap reinforcement depending on bar diameter													
Pos. 1 with H8 [mm²/m]	direct/ indirect	160–250	757	724	775	754	861	827	844	880	959	959	990
Pos. 1 with H10 [mm²/m]			802	779	856	768	908	884	915	880	1013	1030	990
Pos. 1 with H12 [mm²/m]			963	934	1027	922	1089	1061	986	880	1066	1102	990
Steel bars along the insulation joint													
Pos. 2	direct	160–250	2 • H8										
	indirect		4 • H8										
Vertical reinforcement													
Pos. 3 [mm²/m]	indirect	160–250	113	113	120	–	125	125	130	–	113	113	–
Supplementary edge reinforcement													
Pos. 4	direct/ indirect	160–250	according to BS EN 1992-1-1 (EC2), 9.3.1.4										

On-site reinforcement

Recommendation for the on-site connection reinforcement

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

Schöck Isokorb® T type K			M8			M9		
			V1	V2	VV1	V1	V2	VV1
On-site reinforcement	Type of bearing	Height [mm]	Concrete strength class ≥ C25/30					
Overlap reinforcement depending on bar diameter								
Pos. 1 with H10 [mm²/m]	direct/ indirect	160–250	1130	1139	1100	1232	1241	1170
Pos. 1 with H12 [mm²/m]			1192	1210	1100	1295	1312	1170
Steel bars along the insulation joint								
Pos. 2	direct	160–250	2 • H8					
	indirect		4 • H8					
Vertical reinforcement								
Pos. 3 [mm²/m]	indirect	160–250	113	113	–	113	113	–
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			M10			M11	
			V1	V2	VV1	V1	VV1
On-site reinforcement	Type of bearing	Height [mm]	Concrete strength class ≥ C25/30				
Overlap reinforcement depending on bar diameter							
Pos. 1 with H10 [mm²/m]	direct/ indirect	160–250	1388	1396	1317	1504	1424
Pos. 1 with H12 [mm²/m]			1459	1476	1317	1584	1424
Steel bars along the insulation joint							
Pos. 2	direct	160–250	2 • H8				
	indirect		4 • H8				
Vertical reinforcement							
Pos. 3 [mm²/m]	indirect	160–250	113	113	–	113	–
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

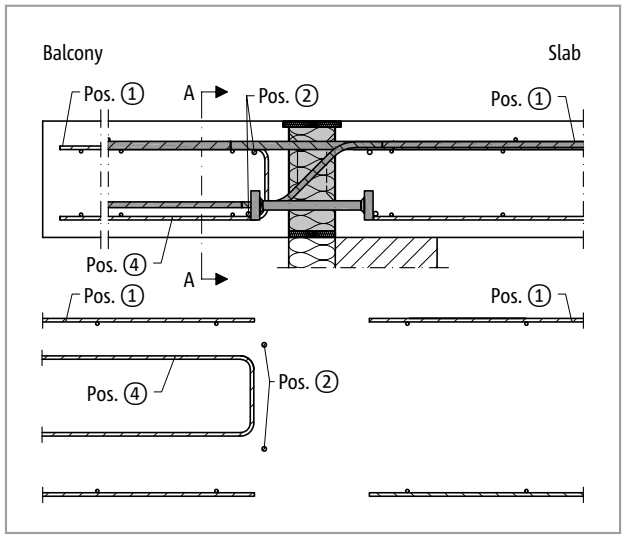


Fig. 53: Schöck Isokorb® T type K-M12: On-site reinforcement with direct support

Indirect support

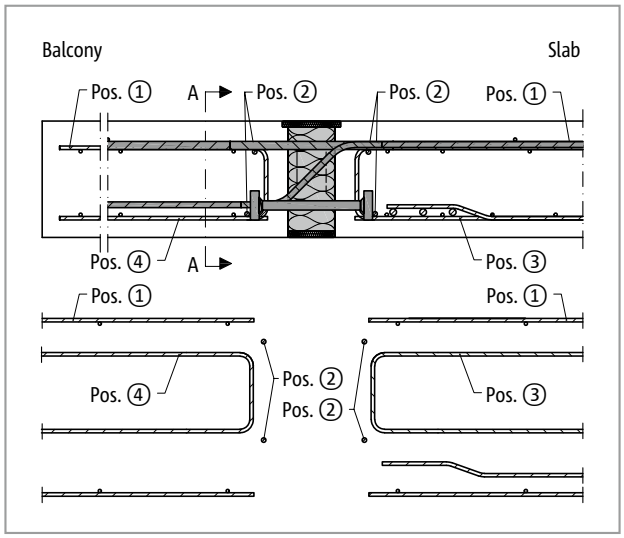


Fig. 54: Schöck Isokorb® T type K-M12: On-site reinforcement with indirect support

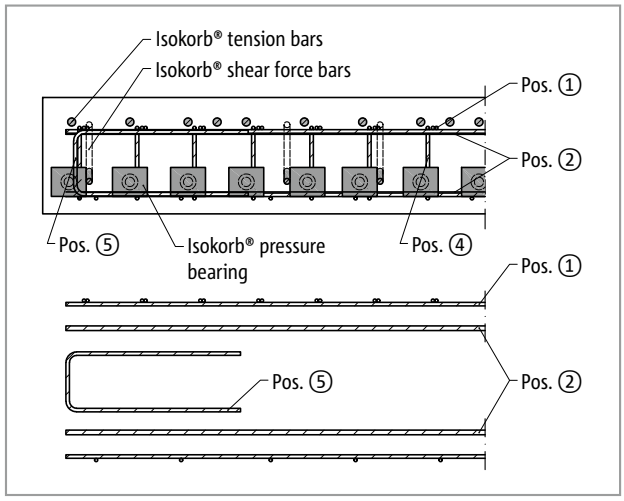


Fig. 55: Schöck Isokorb® T type K-M12: On-site reinforcment on the balcony side in the Section A-A; Pos.5 = structural edging at the free edge perpendicular to the Schöck Isokorb®

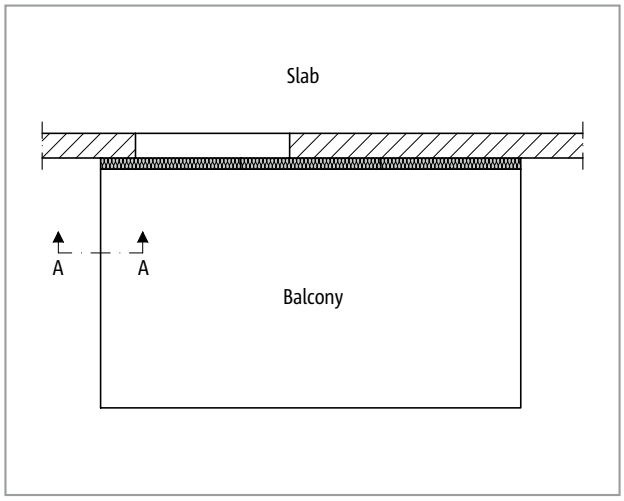


Fig. 56: Schöck Isokorb® T type K: Diagram of the position of Section A-A

On-site reinforcement

Recommendation for the on-site connection reinforcement

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

Schöck Isokorb® T type K			M12			M13			M14		
			V1	V2	V3	V1	V2	V3	V1	V2	V3
On-site reinforcement for	Type of bearing	Height [mm]	Concrete strength class ≥ C25/30								
Overlapping reinforcement											
Pos. 1 with H10 [mm²/element]	direct/ indirect	180-250	829	829	829	995	995	995	1161	1161	1161
Pos. 1 with H12 [mm²/element]											
Pos. 1 with H16 [mm²/element]			1288	1288	1288	1546	1546	1546	1804	1804	1804
Steel bars along the insulation joint											
Pos. 2	direct	180-250	2 • H8								
	indirect		4 • H8								
Vertical reinforcement											
Pos. 3 [mm²/ Element]	direct	180-250	-	-	-	-	-	-	-	-	-
	indirect		113	113	113	57	57	57	57	57	57
Pos. 4 [mm²/ element]	direct/ indirect	180-200	180	209	244	83	120	163	95	137	187
		210-250	280	353	440	167	240	327	167	240	327
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 connection 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 with m_{Ed}/m_{Rd} is permitted. For the overlap (l_0) with the Schöck Isokorb® for the T type K-M12 to K-M14 a length of the tension bars of 820 mm can be brought to account.
- 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 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

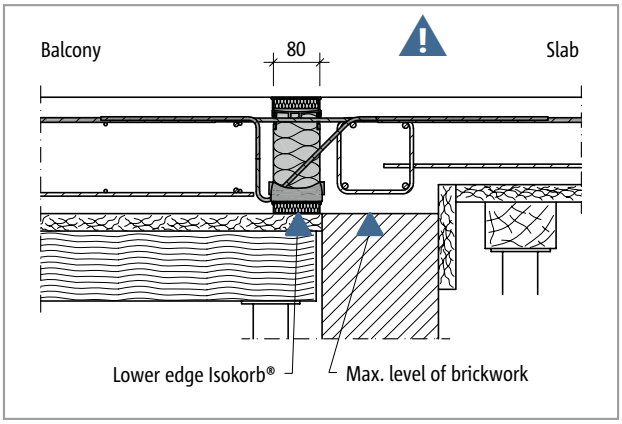


Fig. 57: Schöck Isokorb® T type K: In situ concrete with height offset floor on masonry wall

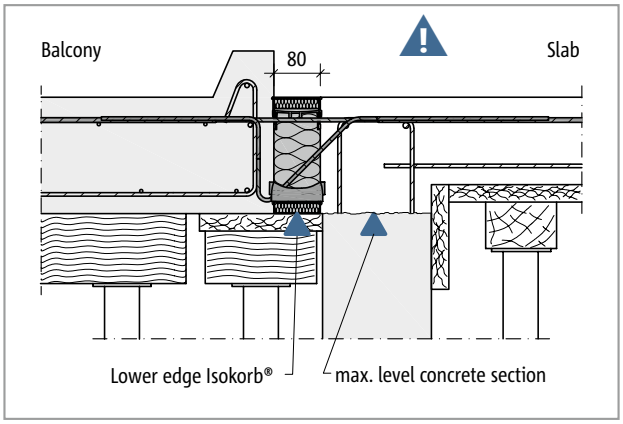


Fig. 58: Schöck Isokorb® T type K: Fully-finished balcony with height offset floor on fully-finished reinforced concrete wall

⚠ 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

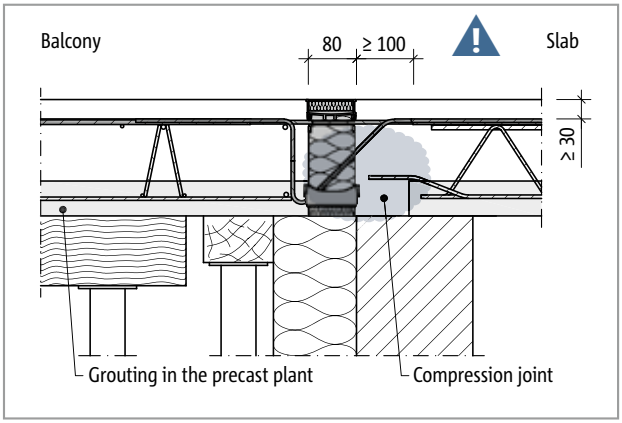


Fig. 59: Schöck Isokorb® T type K/KF: Direct support, installation in conjunction with prefabricated slabs (here: h ≤ 170 mm), compression joint on the floor side

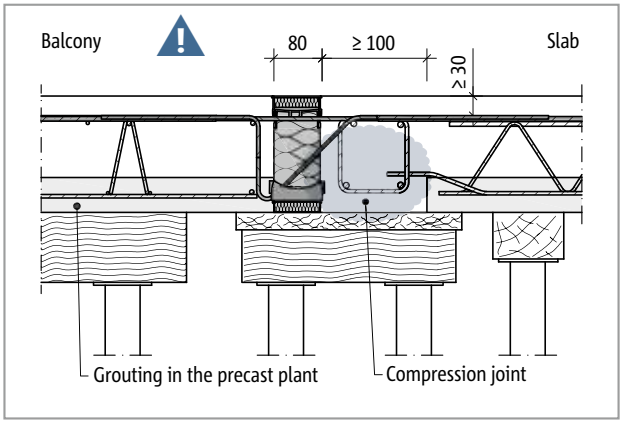


Fig. 60: Schöck Isokorb® T type K/KF: Indirect support, installation in conjunction with prefabricated slabs(here: h ≤ 170 mm), compression joint on the floor side

⚠ 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

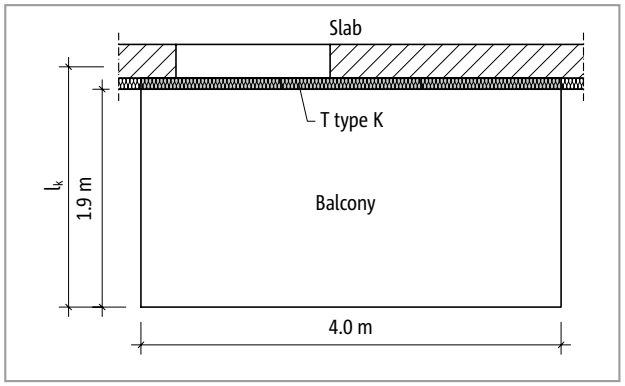


Fig. 61: Schöck Isokorb® T type K: Plan layout

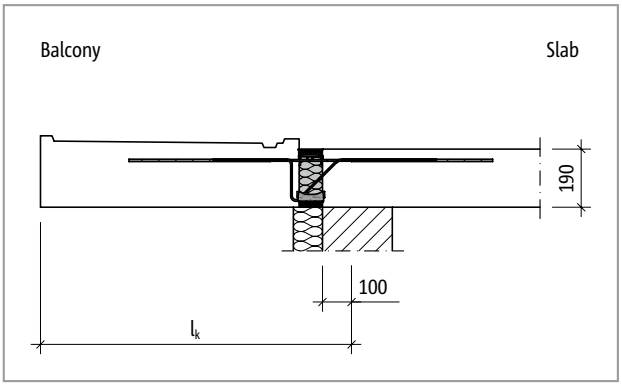


Fig. 62: Schöck Isokorb® T type K: Static system

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 37) > 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 31) > m_{Ed}
	v_{Rd}	= +43.5 kN/m (see page 31) > v_{Ed}
	tan α	= 0.7 % (see page 35)

Design example | Installation instructions

Serviceability limit state (deflection/precamber)

Deflection factor: $\tan \alpha$ = 0.7 (from table, see page 36)

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 instructions

The current installation instruction can be found online under:
www.schoeck.com/view/6419

☑ 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 deformation due to 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 required minimum slab thickness H_{min} taken into account for the respective Schöck Isokorb® type?
- ☐ 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 connection with height offset or to a wall?

Schöck Isokorb® T type K-U, K-O

Schöck Isokorb® T type K-U
Load-bearing thermal insulation element for free cantilevered balconies with height offset downwards or wall connection. The element transfers negative moments and positive shear forces.

Schöck Isokorb® T type K-O
Load-bearing thermal insulation element for free cantilevered balconies with height offset upwards or wall connection. The element transfers negative moments and positive shear forces.

Product change

Old

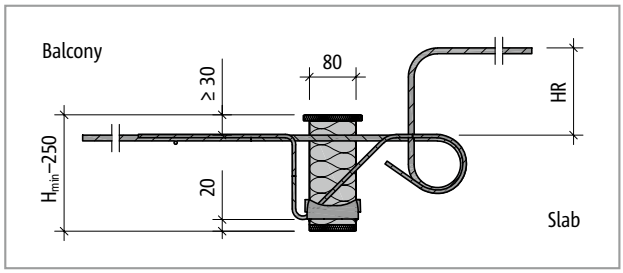


Fig. 63: Schöck Isokorb® T type K-HV: Product sectiont

New

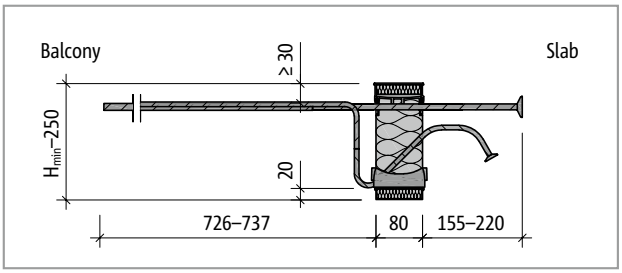


Fig. 64: Schöck Isokorb® T type K-U: Product section

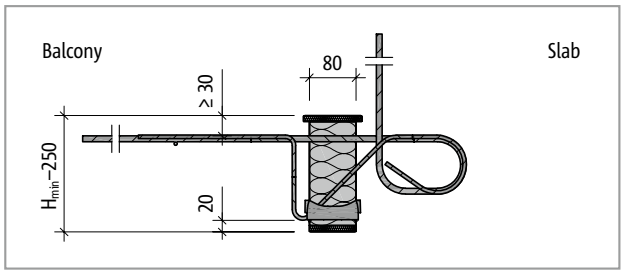


Fig. 65: Schöck Isokorb® T type K-WO: Product section

Old

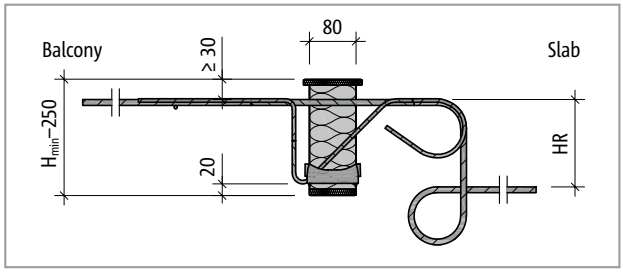


Fig. 66: Schöck Isokorb® T type K-BH: Product section

New

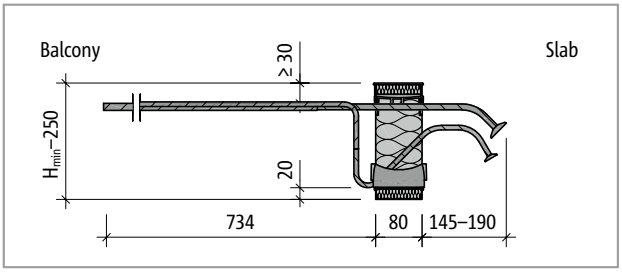


Fig. 67: Schöck Isokorb® T type K-O: Product section

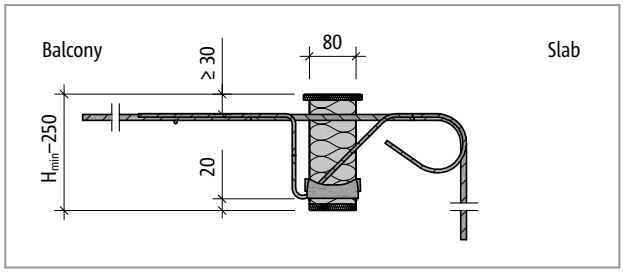


Fig. 68: Schöck Isokorb® T type K-WU: Product section

Product change

- The Schöck Isokorb® T type K-HV and the Schöck Isokorb® T type K-WO can be replaced by the Schöck Isokorb® T type K-U.
- The Schöck Isokorb® T type K-BH and the Schöck Isokorb® T type K-WU can be 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
d_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.

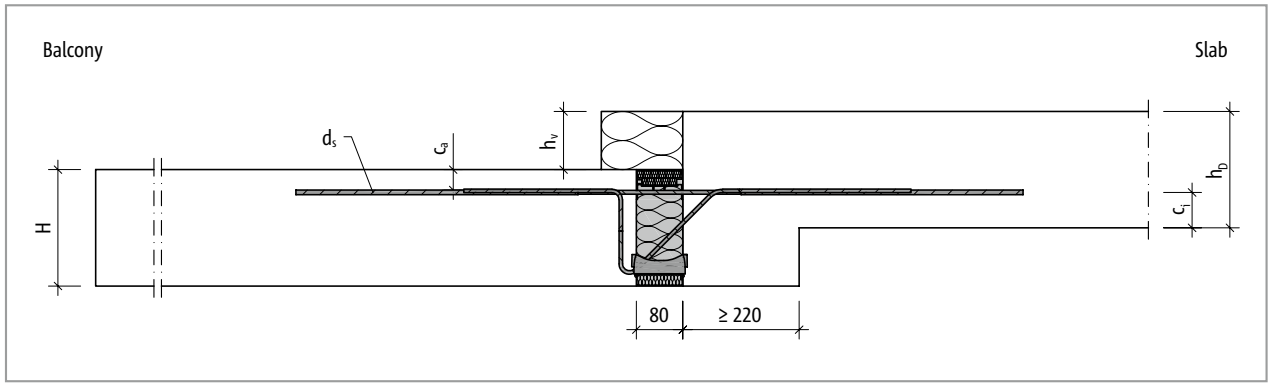


Fig. 69: Schöck Isokorb® T type K: Smaller height offset downwards (balcony lying lower)

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

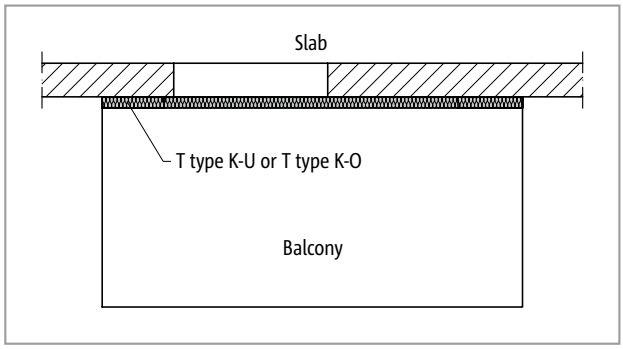


Fig. 70: Schöck Isokorb® T type K-U/K-O: Cantilevered balcony

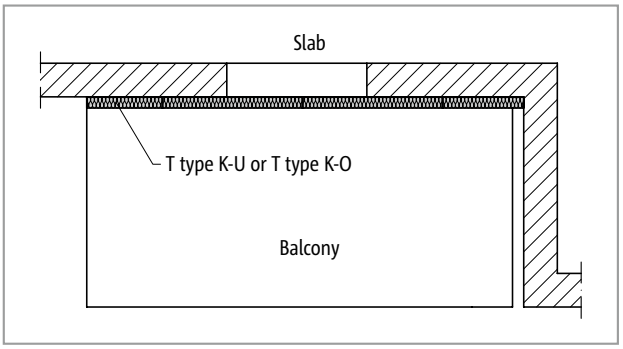


Fig. 71: Schöck Isokorb® T type K-U/K-O: Balcony with façade offset

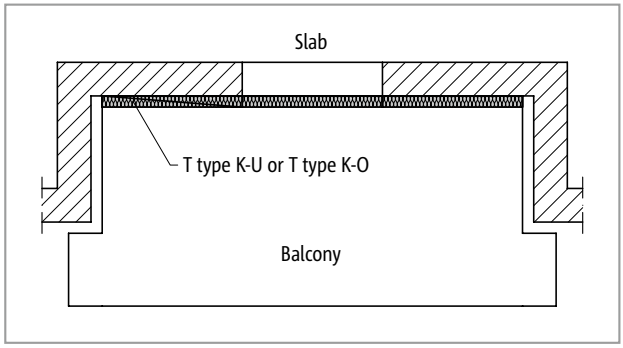


Fig. 72: Schöck Isokorb® T type K-U/K-O: Balcony with façade recess

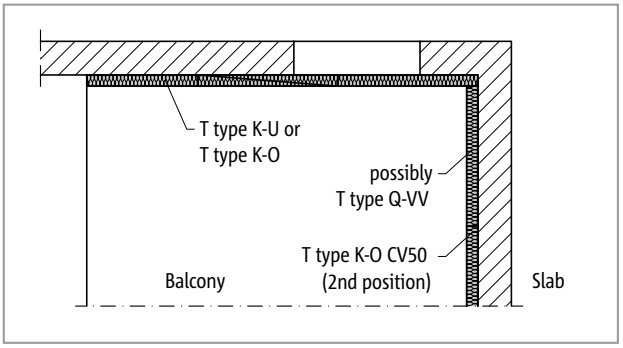


Fig. 73: Schöck Isokorb® T type K-U/K-O, T type Q-VV: Balcony with inside corner, double-faced supported

Balcony with height offset upwards

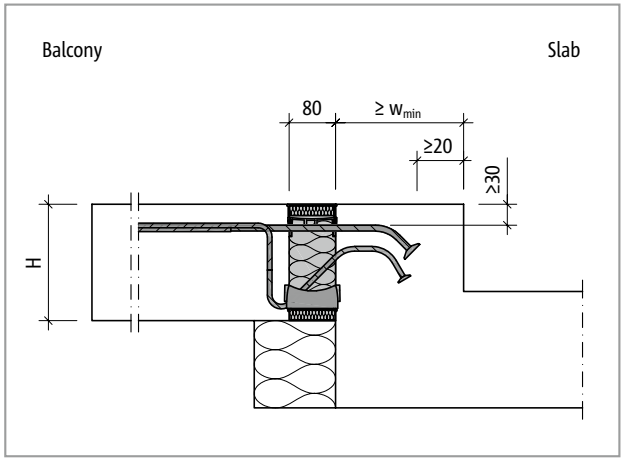


Fig. 74: Schöck Isokorb® T type K-O: Balcony with height offset upwards and external insulation

Balcony with height offset downwards

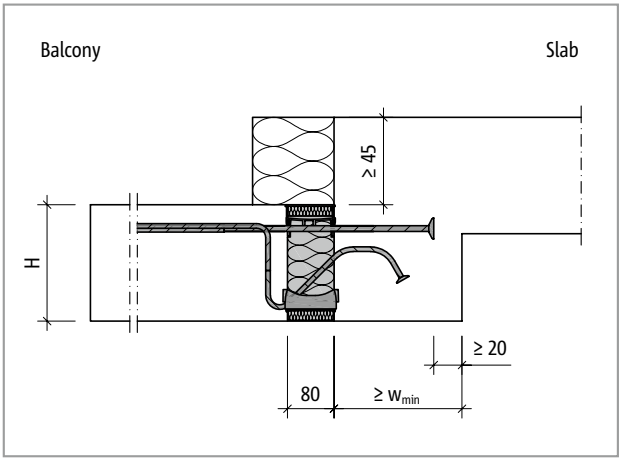


Fig. 75: Schöck Isokorb® T type K-U: Balcony with height offset downwards and external insulation

Installation cross sections

Wall connection upwards

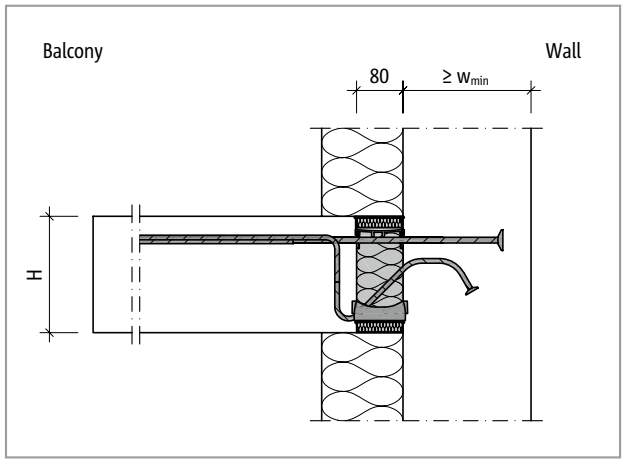


Fig. 76: Schöck Isokorb® T type K-U: Wall connection upwards with external insulation

Wall connection downwards

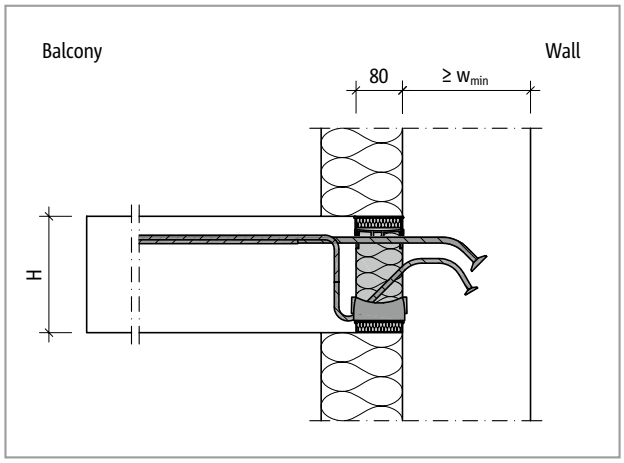


Fig. 77: Schöck Isokorb® T type K-O: Wall connection downwards with external insulation

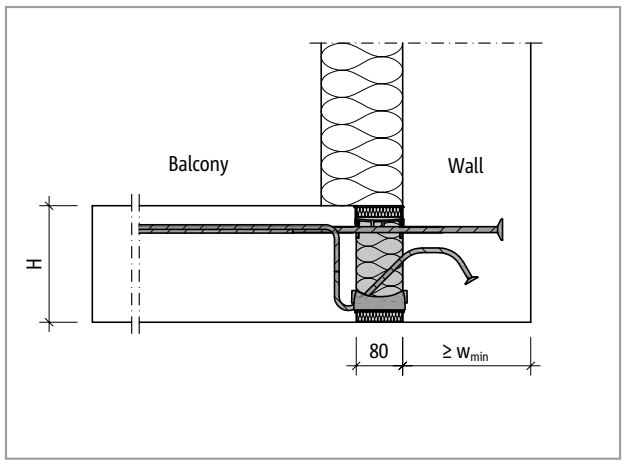


Fig. 78: Schöck Isokorb® T type K-U: Wall connection upwards with external insulation

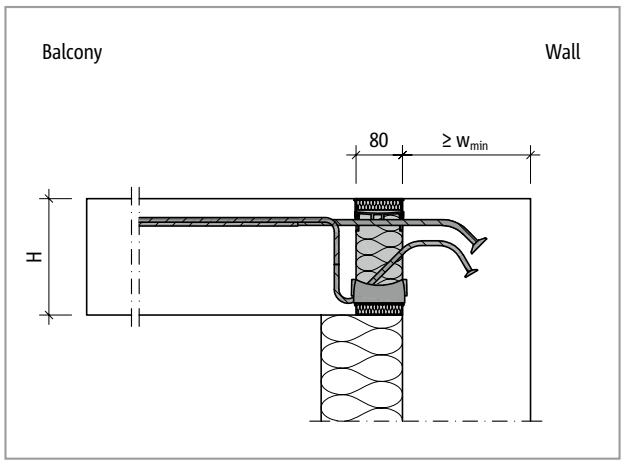


Fig. 79: Schöck Isokorb® T type K-O: Wall connection downwards with external insulation

Geometry

- The use 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 58).
- A minimum concrete cover of 60 mm above the anchor head must be complied with.

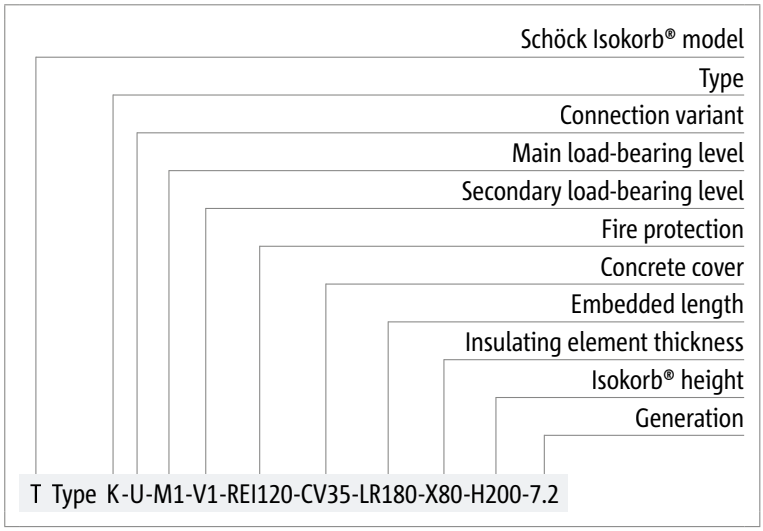
Product selection | Type designations | Special designs

Schöck Isokorb® T type K-U variants

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

- Main load-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 = 155 mm to 220 mm; depends on the Isokorb® height, see page 58.
- Insulating element thickness:
  X80 = 80 mm
- Isokorb® height:
  H = 160 to 250 mm for concrete cover CV30, CV35
  H = 180 to 250 mm for concrete cover CV50
- Generation: 7.2

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).

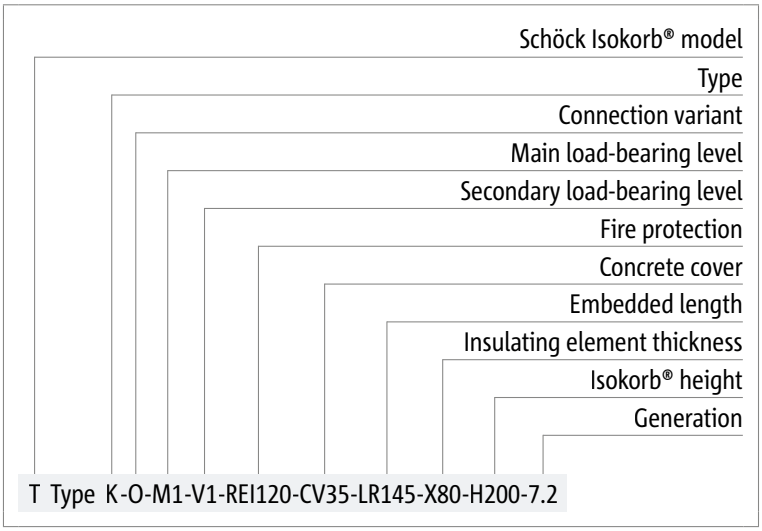
Product selection | Type designations | Special designs

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 58.
- Insulating element thickness:
  X80 = 80 mm
- Isokorb® height:
  H = 160 to 250 mm for concrete cover CV30, CV35
  H = 180 to 250 mm for concrete cover CV50
- Generation: 7.2

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-O		M1–M4			
Minimum structural 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

Schöck Isokorb® T type K-U		M1–M4			
Minimum structural 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

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 use 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 58).
- 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.

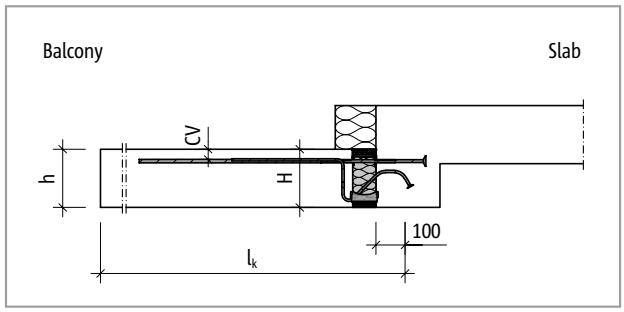


Fig. 80: Schöck Isokorb® T type K-U: Static system

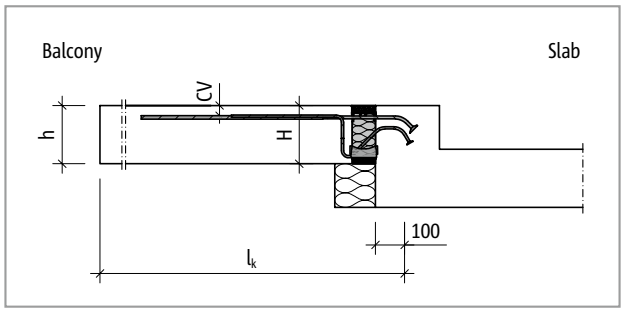


Fig. 81: Schöck Isokorb® T type K-O: Static system

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		-16.3	-20.9	-27.6	-31.6
	160		180	-17.3	-22.2	-29.4	-33.5
		170		-18.3	-23.5	-31.1	-35.5
	170		190	-19.3	-24.8	-32.8	-37.4
		180		-20.3	-26.1	-34.5	-39.4
	180		200	-21.3	-27.4	-36.2	-41.3
		190		-22.3	-28.7	-37.9	-43.3
	190		210	-23.3	-30.0	-39.6	-45.2
				$v_{Rd,z}$ [kN/m]			
Secondary load-bearing level		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		-16.6	-22.9	-30.2	-34.5
	160		180	-17.6	-24.3	-32.1	-36.7
		170		-18.7	-25.7	-33.9	-38.8
	170		190	-19.8	-27.1	-35.8	-40.9
		180		-20.9	-28.5	-37.7	-43.1
	180		200	-22.0	-30.0	-39.5	-45.2
		190		-23.1	-31.4	-41.4	-47.3
	190		210	-24.2	-32.8	-43.3	-49.5
		200		-25.3	-34.2	-45.1	-51.6
	200		220	-26.4	-35.6	-47.0	-53.7
		210		-27.6	-37.0	-48.9	-55.9
	210		230	-28.7	-38.4	-50.7	-58.0
				$v_{Rd,z}$ [kN/m]			
Secondary load-bearing level		V1		61.7	92.5	92.5	92.5

Notes on design

- Static system and information on the design see page 59.

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 ≥ C25/30 240 mm > downstand beam width ≥ 220 mm 240 mm > wall thickness ≥ 220 mm			
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]			
Isokorb® height H [mm]		160		-16.6	-24.4	-32.2	-36.8
	160		180	-17.6	-25.9	-34.2	-39.1
		170		-18.7	-27.4	-36.2	-41.3
	170		190	-19.8	-28.9	-38.2	-43.6
		180		-20.9	-30.4	-40.2	-45.9
	180		200	-22.0	-31.9	-42.1	-48.2
		190		-23.1	-33.4	-44.1	-50.4
	190		210	-24.2	-34.9	-46.1	-52.7
		200		-25.3	-36.4	-48.1	-55.0
	200		220	-26.4	-37.9	-50.1	-57.2
		210		-27.6	-39.4	-52.1	-59.5
	210		230	-28.7	-40.9	-54.1	-61.8
		220		-29.9	-42.5	-56.1	-64.1
	220		240	-31.0	-44.0	-58.0	-66.3
		230		-32.2	-45.5	-59.6	-68.1
	230		250	-33.3	-47.0	-59.6	-68.1
$v_{Rd,z}$ [kN/m]							
Secondary load-bearing level		V1		61.7	92.5	92.5	92.5

Notes on design

- Static system and information on the design see page 59.

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 ≥ 240 mm wall thickness ≥ 240 mm			
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]			
Isokorb® height H [mm]		160		-16.6	-24.5	-32.5	-39.0
	160		180	-17.6	-26.1	-34.5	-41.4
		170		-18.7	-27.7	-36.6	-43.8
	170		190	-19.8	-29.3	-38.7	-46.2
		180		-20.9	-30.9	-40.8	-48.6
	180		200	-22.0	-32.5	-42.9	-51.0
		190		-23.1	-34.1	-45.1	-53.4
	190		210	-24.2	-35.7	-47.2	-55.8
		200		-25.3	-37.4	-49.3	-58.3
	200		220	-26.4	-39.0	-51.5	-60.7
		210		-27.6	-40.7	-53.7	-63.1
	210		230	-28.7	-42.3	-55.8	-65.5
		220		-29.9	-44.0	-58.0	-67.9
	220		240	-31.0	-45.6	-60.1	-70.3
		230		-32.2	-47.3	-62.4	-72.2
	230		250	-33.3	-49.0	-63.2	-72.2
		240		-34.5	-50.7	-63.2	-72.2
	240			-35.6	-52.3	-63.2	-72.2
		250		-36.8	-54.1	-63.2	-72.2
	250			-38.0	-55.7	-63.2	-72.2
				$v_{Rd,z}$ [kN/m]			
Secondary load-bearing level		V1		61.7	92.5	92.5	92.5

Schöck Isokorb® T type K-U	M1	M2	M3	M4
Placement with	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]	7	9	14	16
Special stirrup [piece]	-	-	4	4

Notes on design

- Static system and information on the design see page 59.

C25/30 design

Design table T type K-O

Schöck Isokorb® T type 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
Design values with	Concrete cover CV [mm]			Downstand beam width ≥ 190 mm wall thickness ≥ 190 mm			
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]			
Isokorb® height H [mm]		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
Design values with	Concrete cover CV [mm]			Downstand beam width ≥ 210 mm wall thickness ≥ 210 mm			
	CV30	CV35	CV50	$m_{Rd,y}$ [kNm/m]			
Isokorb® height H [mm]		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
				$v_{Rd,z}$ [kNm/m]			
Secondary load-bearing level			V1	61.7	92.5	92.5	92.5

Schöck Isokorb® T type K-O	M1	M2	M3	M4
Placement with	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	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 59.

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®

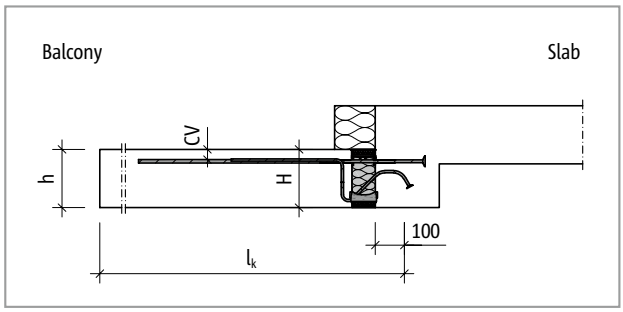


Fig. 82: Schöck Isokorb® T type K-U: Static system

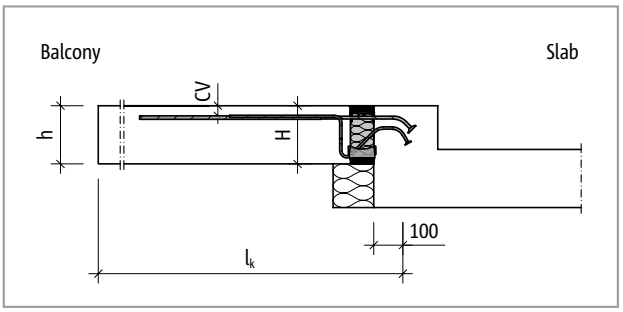


Fig. 83: Schöck Isokorb® T type K-O: Static system

Deflection/Camber

Schöck Isokorb® T type		K-O		
Deflection factors when		CV30	CV35	CV50
		w_{exist} ≥ 175 mm		
		tan α [%]		
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

Schöck Isokorb® T type		K-U		
Deflection factors when		CV30	CV35	CV50
		w_{exist} ≥ 175 mm		
		tan α [%]		
Isokorb® height	160	1.0	1.1	-
	170	0.9	1.0	-
	180	0.8	0.9	1.0
	190	0.8	0.8	0.9
	200	0.7	0.7	0.8
	210	0.6	0.7	0.8
	220	0.6	0.6	0.7
	230	0.6	0.6	0.6
	240	0.5	0.5	0.6
	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 for CV30 and CV35 is to be complied with for H ≥ 240 mm.

Slenderness

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		CV30	CV35	CV50
		$l_{k,max}$ [m]		
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
- Concrete weight density $\gamma = 25$ kN/m³
- Dead weight of the balcony surfacing $g_2 \leq 1.2$ kN/m²
- Balcony rail $g_R \leq 0.75$ kN/m
- Service load $q = 4.0$ kN/m² with the coefficient $\psi_{2,i} = 0.3$ for the quasi-permanent combination

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 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.

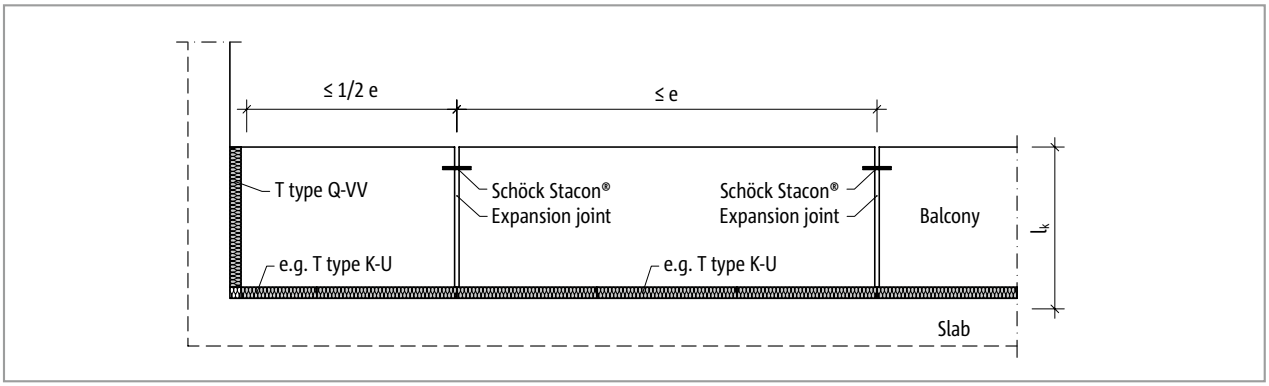


Fig. 84: Schöck Isokorb® T type K-U: Expansion joint layout

Schöck Isokorb® T type K-U/O		M1–M4
Maximum expansion joint spacing when		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 expansion joint the following applies: $e_R \geq 50$ mm and $e_R \leq 150$ mm.
- For the centre distance of the shear force bars from the free edge or from the expansion joints the following applies: $e_R \geq 100$ mm and $e_R \leq 150$ mm.

Product description

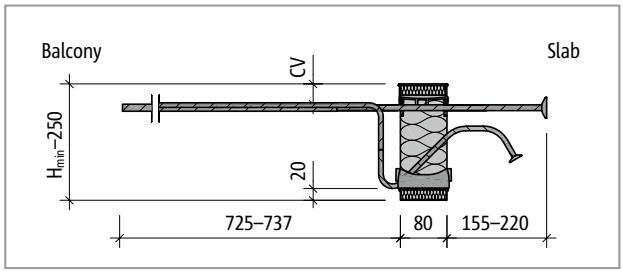


Fig. 85: Schöck Isokorb® T type K-U-M2: Product section

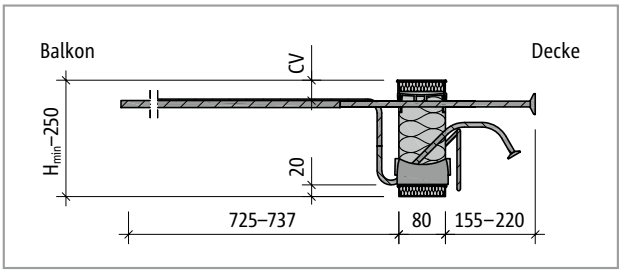


Fig. 86: Schöck Isokorb® T type K-U-M4: Product section

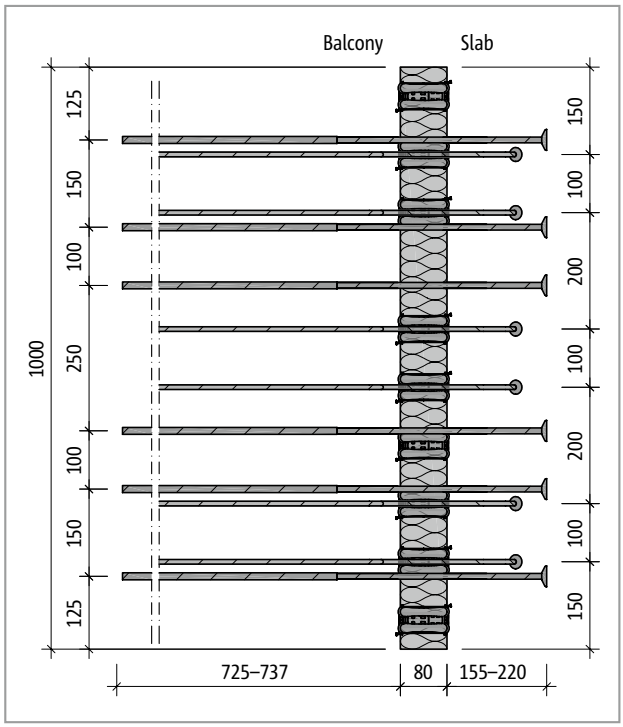


Fig. 87: Schöck Isokorb® T type K-U-M2: Product layout

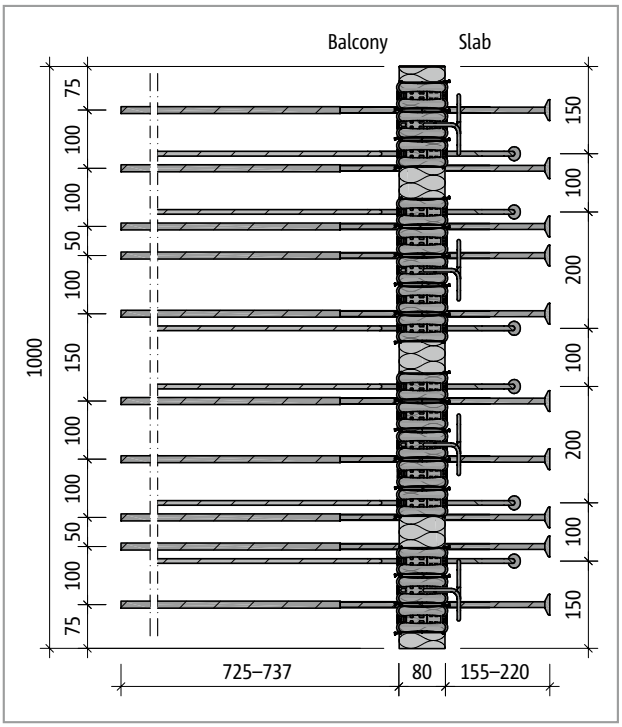


Fig. 88: Schöck Isokorb® T type K-U-M4: Product layout

Product information

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

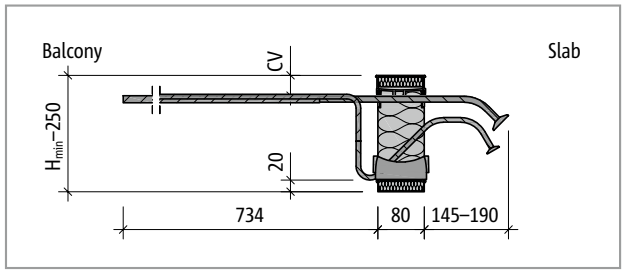


Fig. 89: Schöck Isokorb® T type K-O-M2: Product section

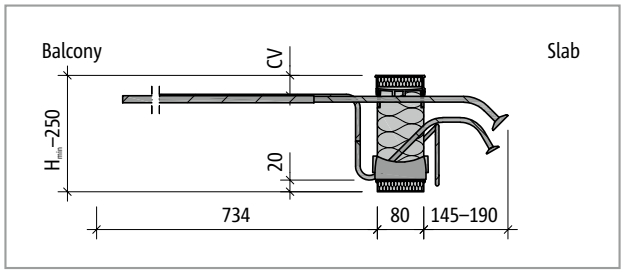


Fig. 90: Schöck Isokorb® T type K-O-M4: Product section

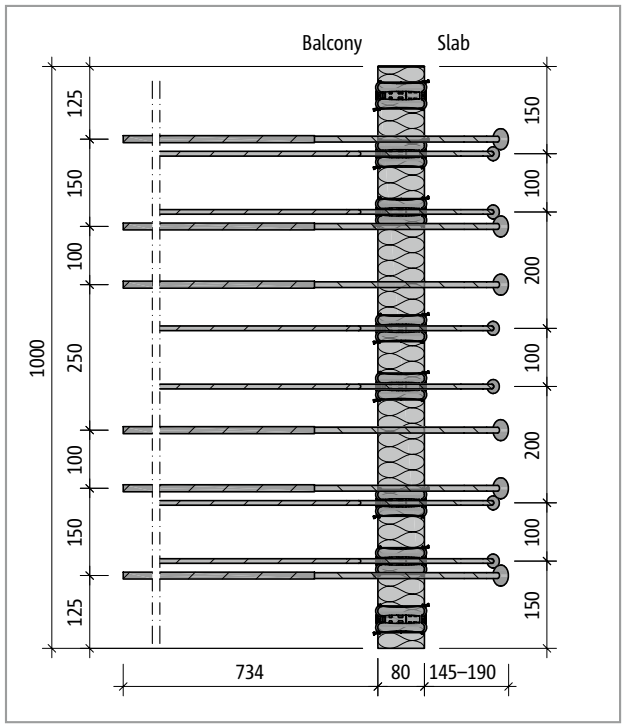


Fig. 91: Schöck Isokorb® T type K-O-M2: Product layout

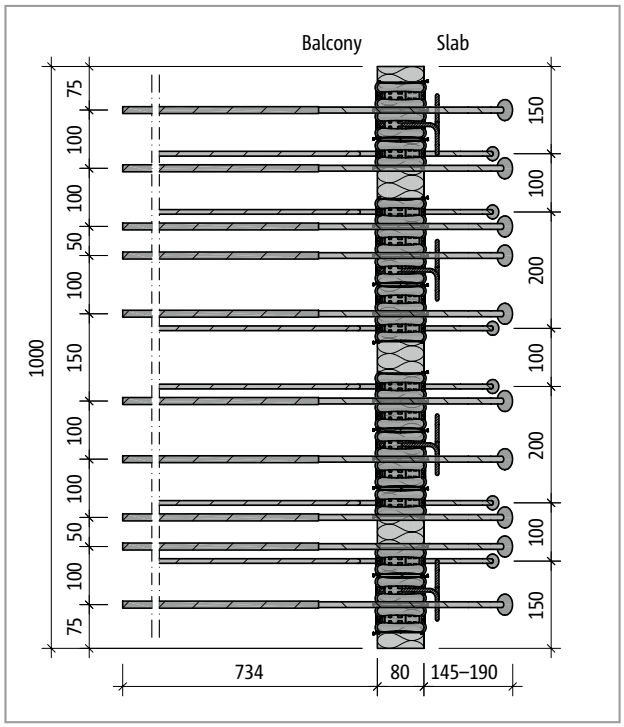


Fig. 92: Schöck Isokorb® T type K-O-M4: Product layout

Product information

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

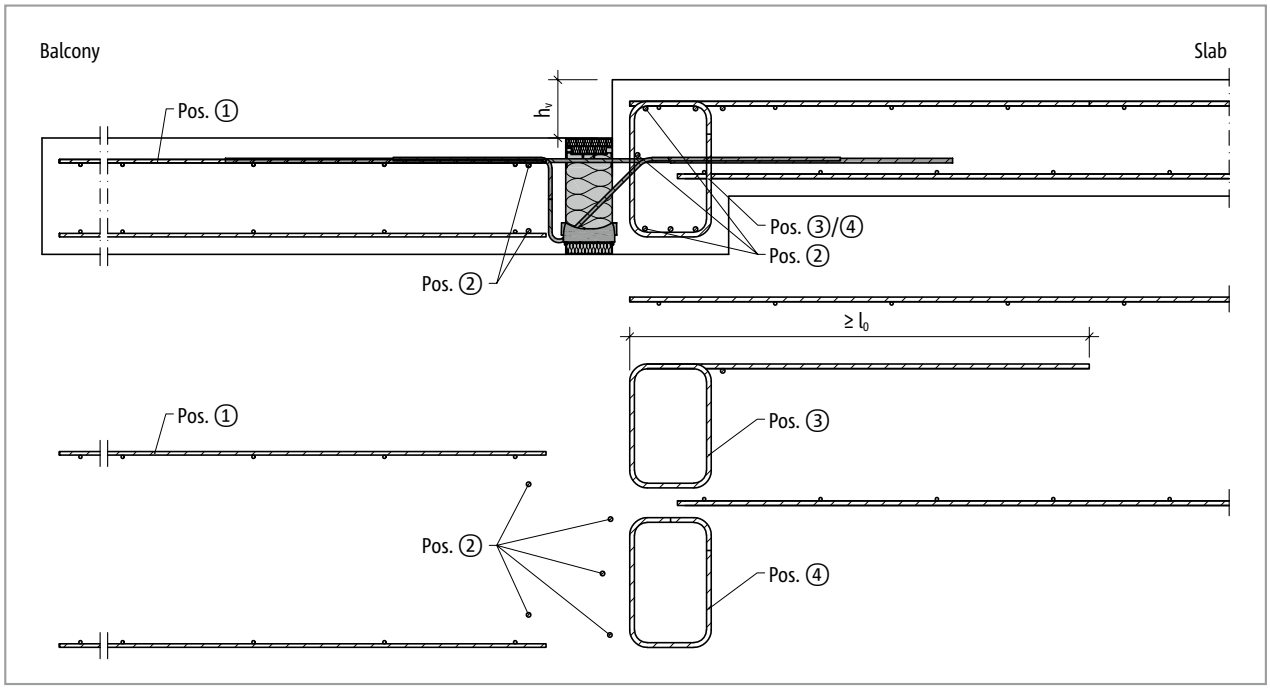


Fig. 93: Schöck Isokorb® T type K: On-site reinforcement for small height offset

On-site reinforcement – Schöck Isokorb® T type K

Recommendation for the on-site connection reinforcement

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

Schöck Isokorb® T type K			M1		M2		M3		
			V1	V2	V1	V2	V1	V2	V3
On-site reinforcement	Location	Height [mm]	Floor (XC1) concrete strength class ≥ C25/30 Balcony (XC4) concrete strength class ≥ C25/30						
Overlap reinforcement depending on bar diameter									
Pos. 1 with H8 [mm²/m]	Balcony side	160–250	242	215	443	416	578	544	564
Pos. 1 with H10 [mm²/m]			271	252	476	457	619	596	641
Pos. 1 with H12 [mm²/m]			325	302	571	548	743	715	769
Steel bars along the insulation joint									
Pos. 2	Balcony side	160–250	2 • H8						
	Floor side		3 • H8						
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
		250	375	406	698	730	845	884	969
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			M4				M5				M6			
			V1	V2	V3	VV1	V1	V2	V3	VV1	V1	V2	V3	VV1
On-site reinforcement	Location	Height [mm]	Floor (XC1) concrete strength class ≥ C25/30 Balcony (XC4) concrete strength class ≥ C25/30											
Overlap reinforcement depending on bar diameter														
Pos. 1 with H8 [mm²/m]	Balcony side	160–250	655	622	622	704	757	724	775	754	861	827	844	880
Pos. 1 with H10 [mm²/m]			698	675	699	717	802	779	856	768	908	884	915	880
Pos. 1 with H12 [mm²/m]			838	810	839	861	963	934	1027	922	1089	1061	986	880
Steel bars along the insulation joint														
Pos. 2	Balcony side	160–250	2 • H8											
	Floor side		3 • H8											
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
		250	970	1009	1062	926	1140	1179	1320	1012	1319	1356	1441	1233
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			M7			M8		
			V1	V2	VV1	V1	V2	VV1
On-site reinforcement	Location	Height [mm]	Floor (XC1) concrete strength class ≥ C25/30 Balcony (XC4) concrete strength class ≥ C25/30					
Overlap reinforcement depending on bar diameter								
Pos. 1 with H8 [mm²/m]	Balcony side	160–250	959	959	990	1068	1068	1100
Pos. 1 with H10 [mm²/m]			1013	1030	990	1130	1139	1100
Pos. 1 with H12 [mm²/m]			1066	1102	990	1192	1210	1100
Steel bars along the insulation joint								
Pos. 2	Balcony side	160–250	2 • H8					
	Floor side		3 • H8					
Stirrup reinforcement for redirection of the tension force (single-shear chargeable)								
Pos. 3 [mm²/m]	Floor side	160	970	1005	819	1102	1120	935
		250	1615	1651	1490	1841	1859	1704
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.
- 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.
- 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 $l_{0,bü}$). This stirrup reinforcement Pos.3 safeguards the load transmission from the Schöck Isokorb®.
- The shear force reinforcement Pos. 4 is based on the loading of balcony, floor and the supporting width of the downstand/upstand beam. Therefore, the shear force reinforcement is to be verified by the structural engineer case by case.
- 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: Values for the Isokorb® height 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

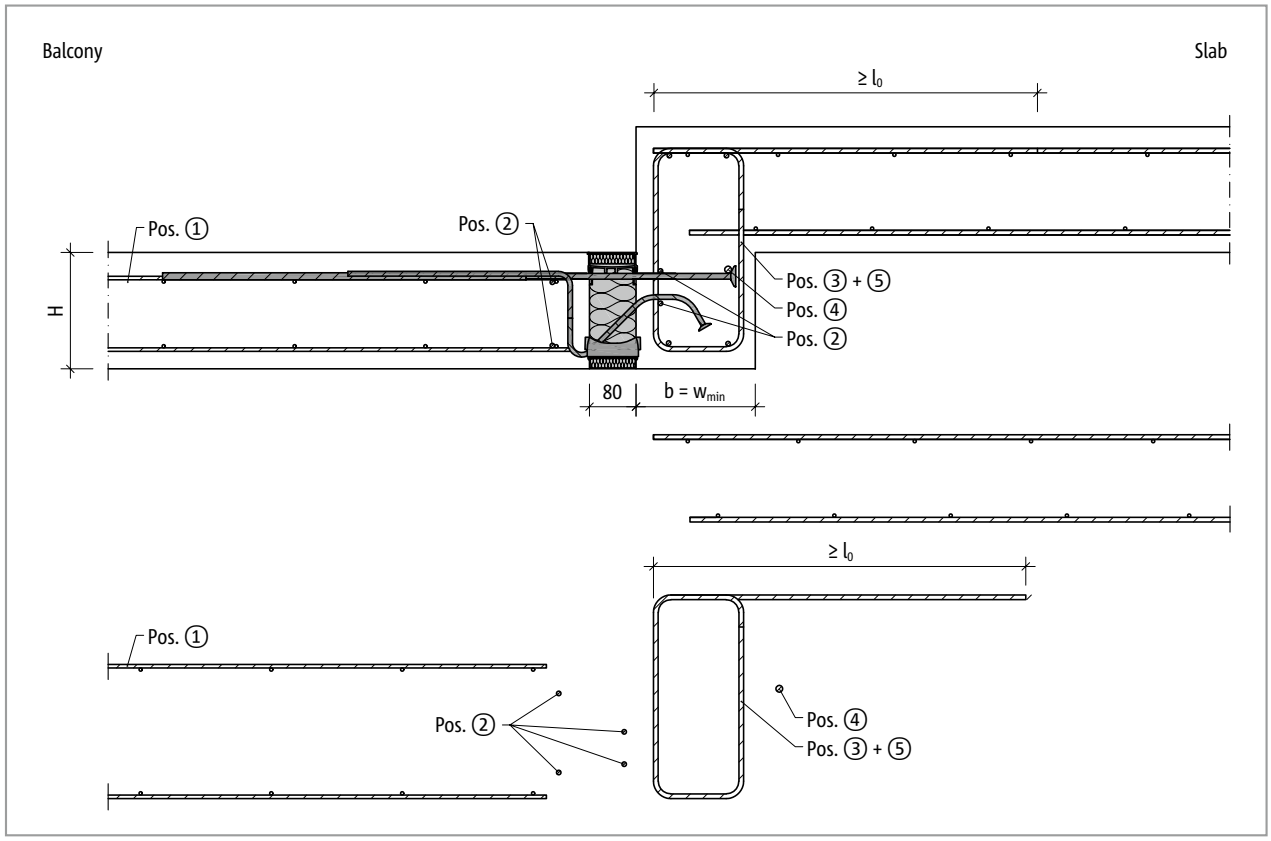


Fig. 94: Schöck Isokorb® T type K-U: On-site reinforcement for balcony with height offset downwards with minimum structural element dimension (w_{exist}= w_{min})

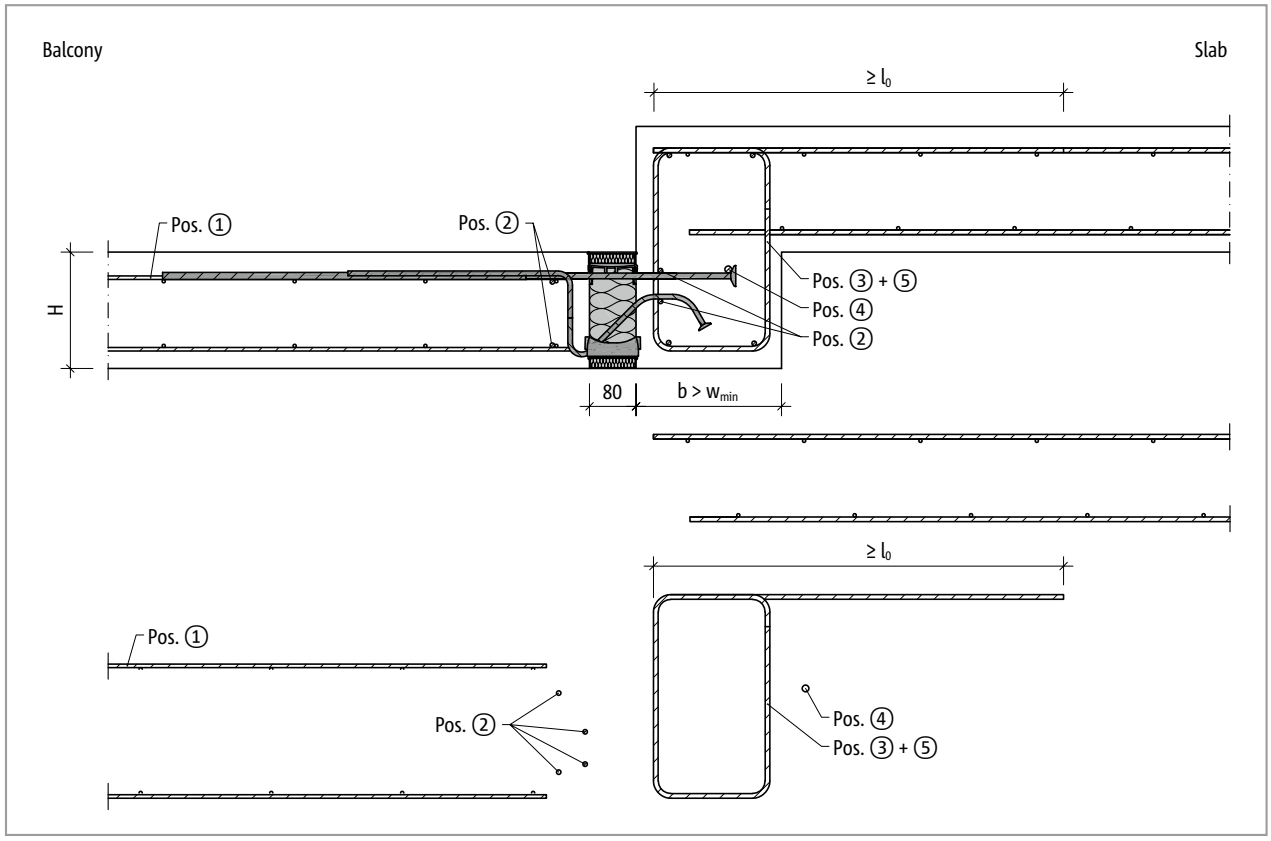


Fig. 95: Schöck Isokorb® T type K-U: On-site reinforcement for balcony with height offset downwards with larger structural element dimension (w_{exist}= w_{min})

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

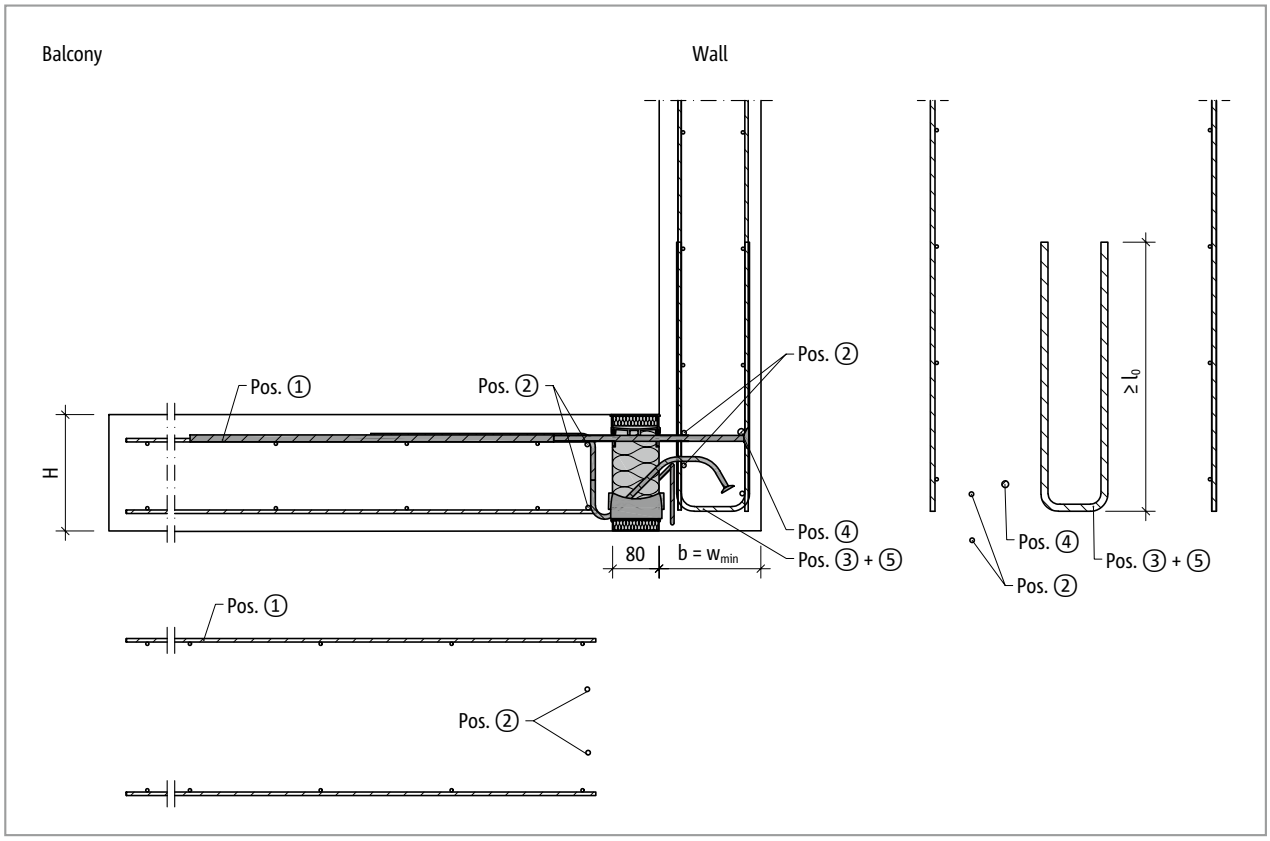


Fig. 96: Schöck Isokorb® T type K-U: On-site reinforcement for wall connection with minimum structural element dimension (w_{exist}= w_{min})

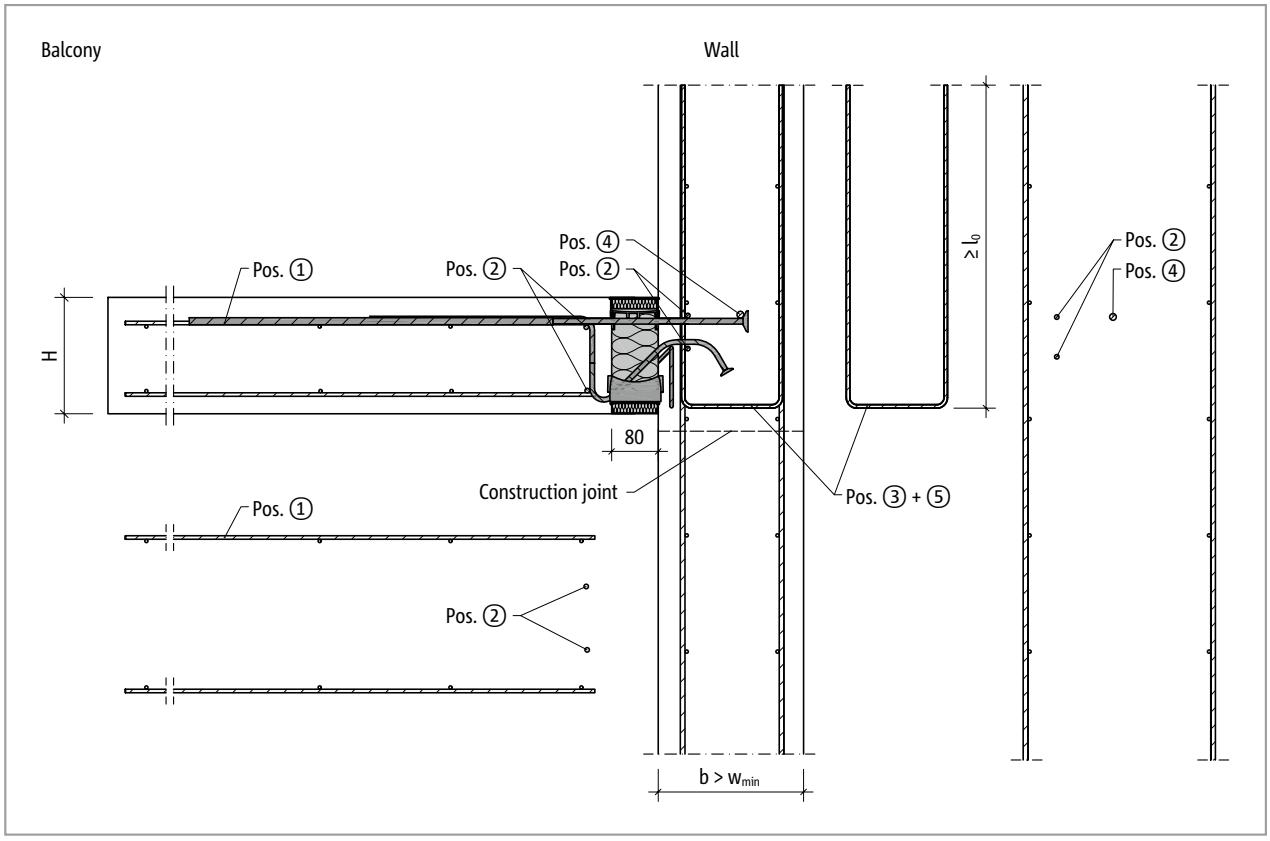


Fig. 97: Schöck Isokorb® T type K-U: On-site reinforcement for wall connection upwards with larger structural element dimension (w_{exist}= w_{min})

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

Recommendation for the on-site connection reinforcement

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

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			
Overlap reinforcement depending on bar diameter						
Pos. 1 with H8 [mm²/m]	Balcony side	160–210	440	594	785	897
Pos. 1 with H10 [mm²/m]						
Pos. 1 with H12 [mm²/m]						
Steel bars along the insulation joint						
Pos. 2	balcony side/ downstand beam, wall	160–210	2 • 2 • H8			
Vertical reinforcement						
Pos. 3 [mm²/m] minimum reinforcement	downstand beam, wall	160–210	≥ 640	≥ 895	≥ 1086	≥ 1198
Pos. 3 structural element design	downstand beam, wall	160–210	Taking into account the moments and shear forces provided by the structural engineer			
Steel bars along the insulation joint						
Pos. 4	downstand beam, wall	160–210	≥ 1 • H12			
Splitting tensionreinforcement (allowable single shear)						
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			
Overlap reinforcement depending on bar diameter						
Pos. 1 with H8 [mm²/m]	Balcony side	160–230	440	650	858	981
Pos. 1 with H10 [mm²/m]						
Pos. 1 with H12 [mm²/m]						
Steel bars along the insulation joint						
Pos. 2	balcony side/ downstand beam, wall	160–230	2 • 2 • H8			
Vertical reinforcement						
Pos. 3 [mm²/m] minimum reinforcement	downstand beam, wall	160–230	≥ 640	≥ 951	≥ 1159	≥ 1281
Pos. 3 structural element design	downstand beam, wall	160–230	Taking into account the moments and shear forces provided by the structural engineer			
Steel bars along the insulation joint						
Pos. 4	downstand beam, wall	160–230	≥ 1 • H12			
Splitting tensionreinforcement (allowable single shear)						
Pos. 5 [mm²/m]	downstand beam, wall	160–230	130			

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

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

Schöck Isokorb® T type K-U			M1	M2	M3	M4
On-site reinforcement	Location	Height [mm]	Concrete strength class ≥ C25/30 240 mm > downstand beam width ≥ 220 mm 240 mm > wall thickness ≥ 220 mm			
Overlap reinforcement depending on bar diameter						
Pos. 1 with H8 [mm²/m]	Balcony side	160–250	440	660	880	1045
Pos. 1 with H10 [mm²/m]						
Pos. 1 with H12 [mm²/m]						
Steel bars along the insulation joint						
Pos. 2	balcony side/ downstand beam, wall	160–230	2 • 2 • H8			
Vertical reinforcement						
Pos. 3 [mm²/m] minimum reinforcement	downstand beam, wall	160–250	≥ 640	≥ 960	≥ 1180	≥ 1346
Pos. 3 structural element design	downstand beam, wall	160–250	Taking into account the moments and shear forces provided by the structural engineer			
Steel bars along the insulation joint						
Pos. 4	downstand beam, wall	160–250	≥ 1 • H12			
Splitting tensionreinforcement (allowable single shear)						
Pos. 5 [mm²/m]	downstand beam, wall	160–250	130			

Schöck Isokorb® T type K-U			M1	M2	M3	M4
On-site reinforcement	Location	Height [mm]	Concrete strength class ≥ C25/30 Downstand beam width ≥ 240 mm wall thickness ≥ 240 mm			
Overlap reinforcement depending on bar diameter						
Pos. 1 with H8 [mm²/m]	Balcony side	160–250	440	660	880	1099
Pos. 1 with H10 [mm²/m]						
Pos. 1 with H12 [mm²/m]						
Steel bars along the insulation joint						
Pos. 2	balcony side/ downstand beam, wall	160–250	2 • 2 • H8			
Vertical reinforcement						
Pos. 3 [mm²/m] minimum reinforcement	downstand beam, wall	160–250	≥ 640	≥ 960	≥ 1180	≥ 1400
Pos. 3 structural element design	downstand beam, wall	160–250	Taking into account the moments and shear forces provided by the structural engineer			
Steel bars along the insulation joint						
Pos. 4	downstand beam, wall	160–250	≥ 1 • H12			
Splitting tensionreinforcement (allowable single shear)						
Pos. 5 [mm²/m]	downstand beam, wall	160–250	130			

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

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} < 220 mm
  H = 160–230 mm downstand beam width w_{min} < 240 mm
- Anchorage and closing of stirrup to be determined as per EC2.
- 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.
- Pos. 3 Vertical reinforcement (stirrup): At least one stirrup is to be arranged between as well as alongside the outer lying tension or compression bars.
- l_0 for l_0 (H10) ≥ 570 mm, l_0 for l_0 (H12) ≥ 680 mm and l_0 (H16) ≥ 910 mm.
- Further reinforcement values for concrete strength class C20/25 under www.schoeck.com/en-gb/download
- With the selection of the Isokorb® type channels and inclinations must be taken into account, in order to maintain the required concrete cover.
- The indicative minimum concrete strength class of the external structural component is C32/40.
- For the safe transmisson of forces the instructions with regard to construction joints are to be observed, see page82.

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 = 200 mm
	Downstand width w_{exist} = 220 mm
	Concrete cover CV30
concrete strength:	C25/30
internal forces from balcony:	m_{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

Vertical reinforcement (considered singly):
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 (single-shear): $a_{s,req}$ = 1163 mm²/m + 130 mm²/m = 1293 mm²/m

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

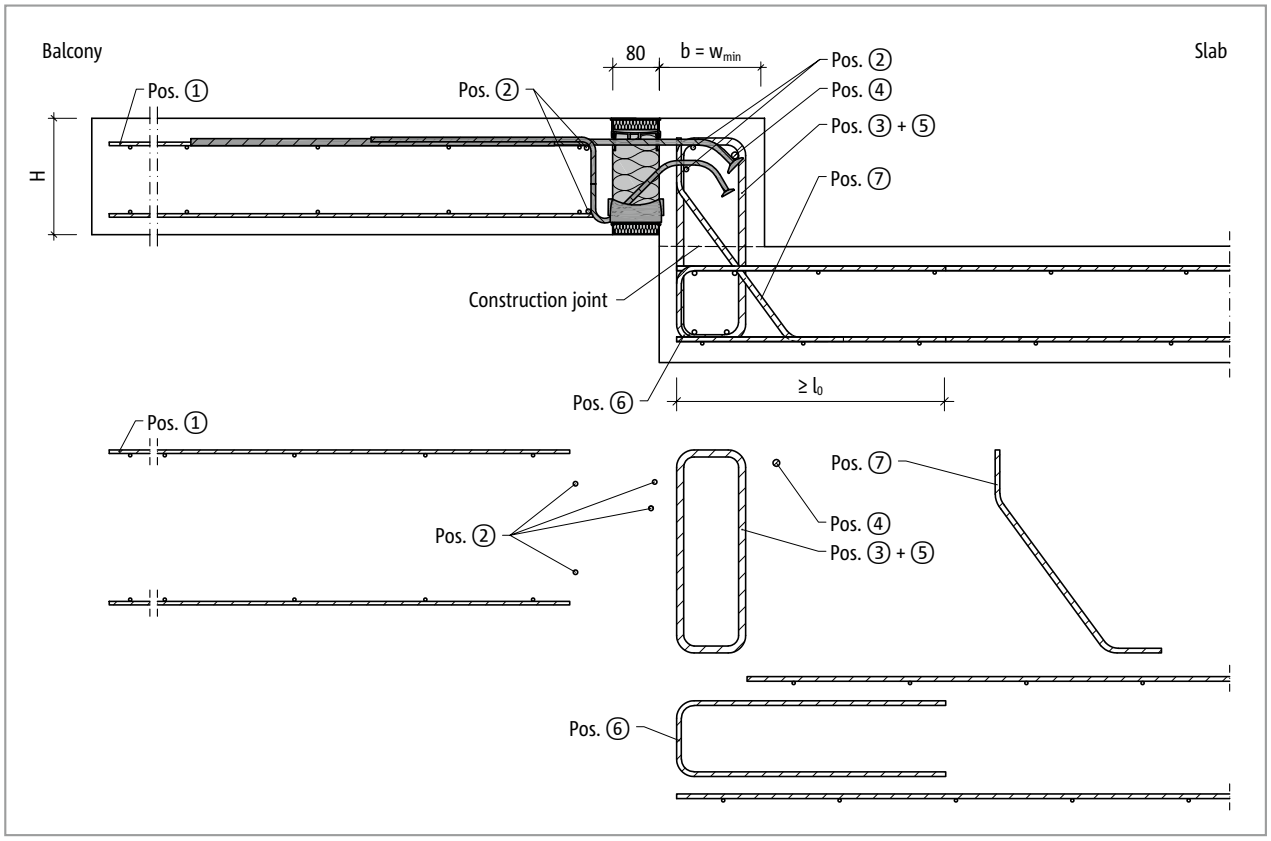


Fig. 98: Schöck Isokorb® T type K-O: On-site reinforcement for balcony with height offset upwards with minimum structural element dimension (wexist= wmin)

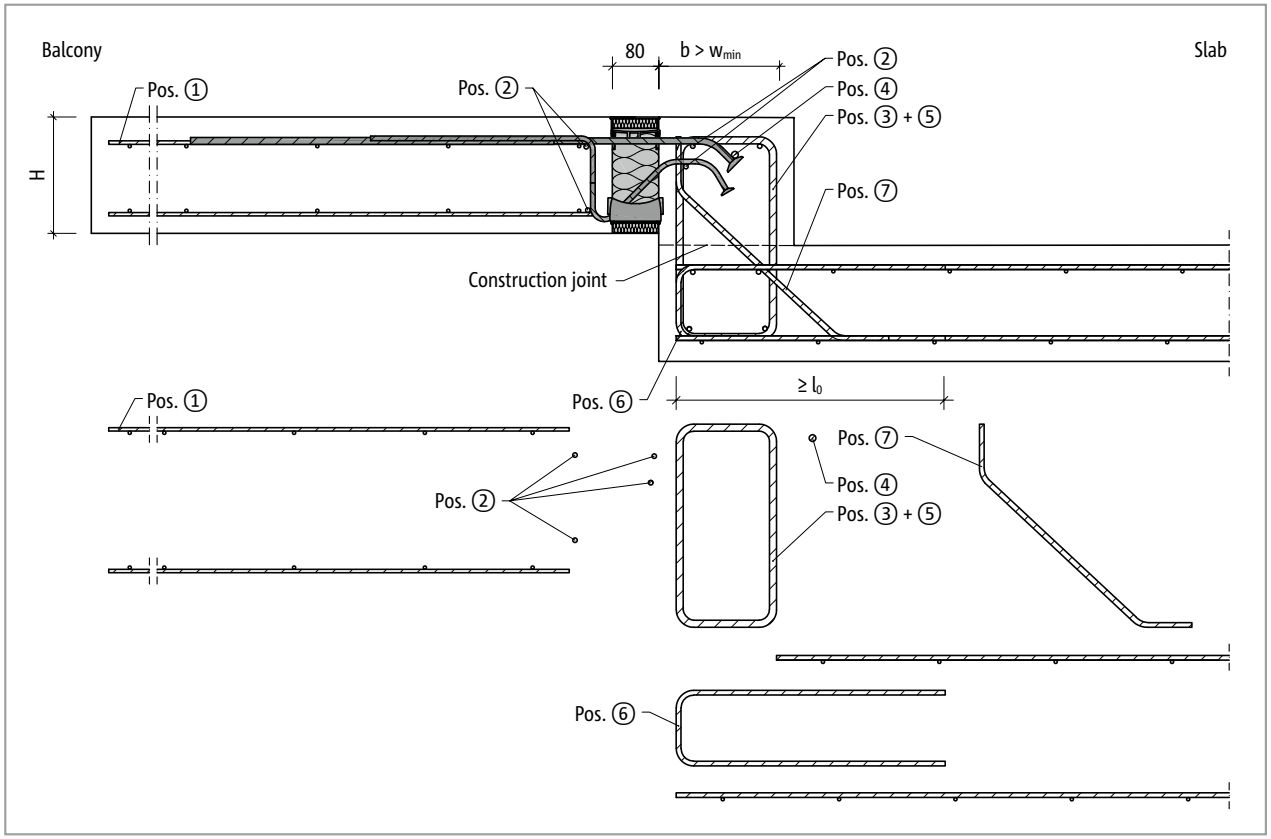


Fig. 99: Schöck Isokorb® T type K-O-F: On-site reinforcement for balcony with height offset upwards with larger structural element dimension (w_{exist} >= w_{min})

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

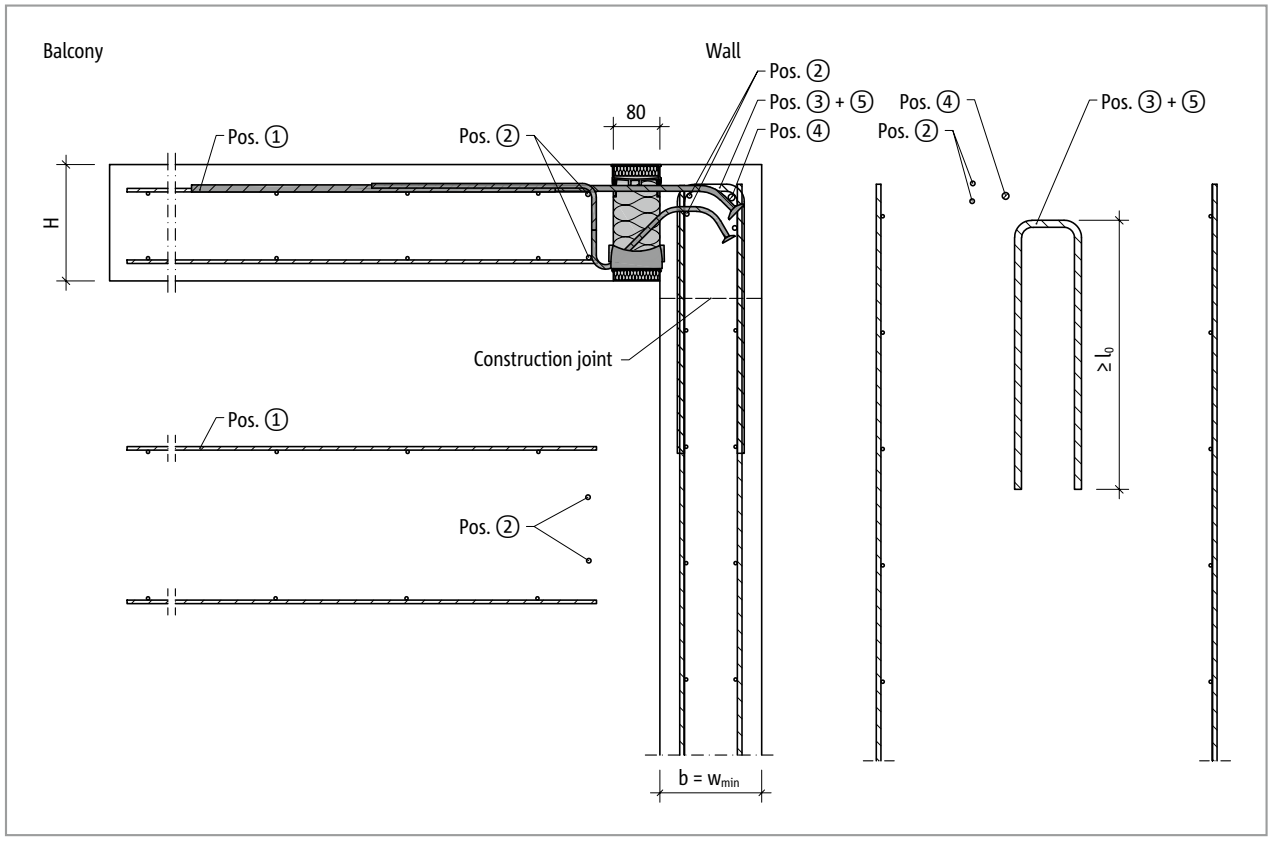


Fig. 100: Schöck Isokorb® T type K-O: On-site reinforcement for wall connection downwards with minimum structural element dimension (w_{exist}= w_{min})

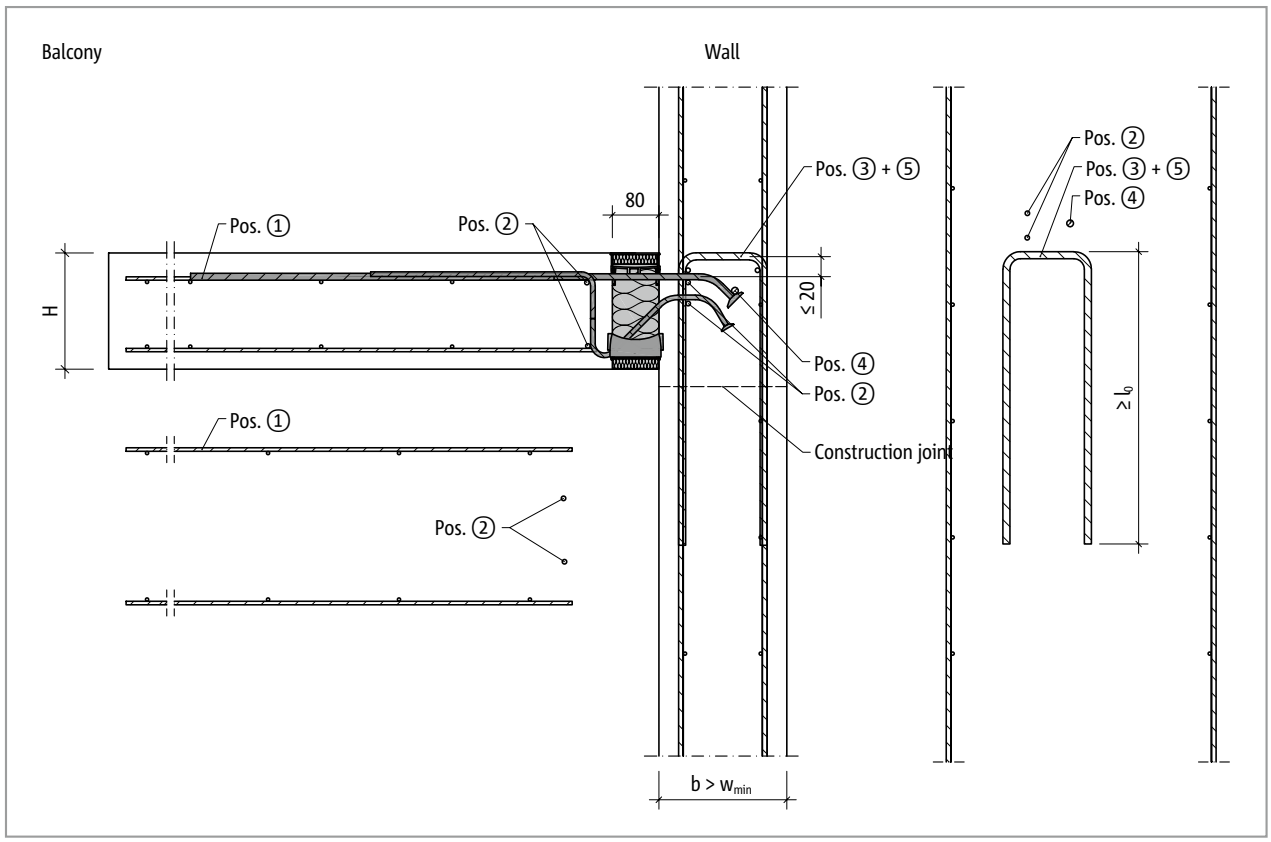


Fig. 101: Schöck Isokorb® T type K-O: On-site reinforcement for wall connection with larger structural element dimension (w_{exist}= w_{min})

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

Recommendation for the on-site connection reinforcement

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

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			
Overlap reinforcement depending on bar diameter						
Pos. 1 with H8 [mm²/m]	Balcony side	160–250	440	660	862	1099
Pos. 1 with H10 [mm²/m]						
Pos. 1 with H12 [mm²/m]						
Steel bars along the insulation joint						
Pos. 2	balcony side/ downstand beam, wall	160–250	2 • 2 • H8			
Pos. 3 structural element design	downstand beam, wall	160–250	Taking into account the moments and shear forces provided by the structural engineer			
Vertical reinforcement						
Pos. 3 [mm²/m] minimum reinforcement	downstand beam, wall	160–250	≥ 640	≥ 960	≥ 1163	≥ 1583
Steel bars along the insulation joint						
Pos. 4	downstand beam, wall	160–250	≥ 1 • H12			
Splitting tensionreinforcement (allowable single shear)						
Pos. 5 [mm²/m]	downstand beam, wall	160–250	130			
Slip in bracket						
Pos. 6	Floor side	160–250	acc. to the specifications of the structural engineer			
Inclined 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 81.
- 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} < 190 mm
  H = 160–230 mm for downstand beam width w_{min} < 210 mm
- 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.
- Anchorage and closing of stirrup to be determined as per EC2.
- 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.
- Pos. 3 Vertical reinforcement (stirrup): At least one stirrup is to be arranged between as well as alongside the outer lying tension or compression bars.
- l_0 for l_0 (H10) ≥ 570 mm, l_0 for l_0 (H12) ≥ 680 mm and l_0 (H16) ≥ 910 mm.
- Further reinforcement values for concrete strength class C20/25 under www.schoeck.com/en-gb/download
- 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 page82.
- 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 width w_{exist} = 175 mm
	Concrete cover in the downstand beam CV30
concrete strength:	C25/30
internal forces from balcony:	m_{Ed} = -69.2 kNm/m
	v_{Ed} = 21.6 kN/m
selected:	T type K-O-M4-V1-REI120-CV50-LR145-X80-H230-7.0

Vertical reinforcement (considered singly):
Minimum reinforcement for Pos. 3: $a_{s,min}$ = 1583 mm²/m
Required reinforcement from structural element design: $a_{s,req}$ = 1600 mm²/m > 1583 mm²/m = $a_{s,min}$

⇒ The required reinforcement from structural element design $a_{s,req}$ = 1600 mm²/m is relevant!

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

⇒ Required stirrup cross-section (single-shear): $a_{s,req}$ = 1600 mm²/m + 130 mm²/m = 1730 mm²/m

Tight fit/Concreting section | Installation instructions

Tight fit/Concreting section

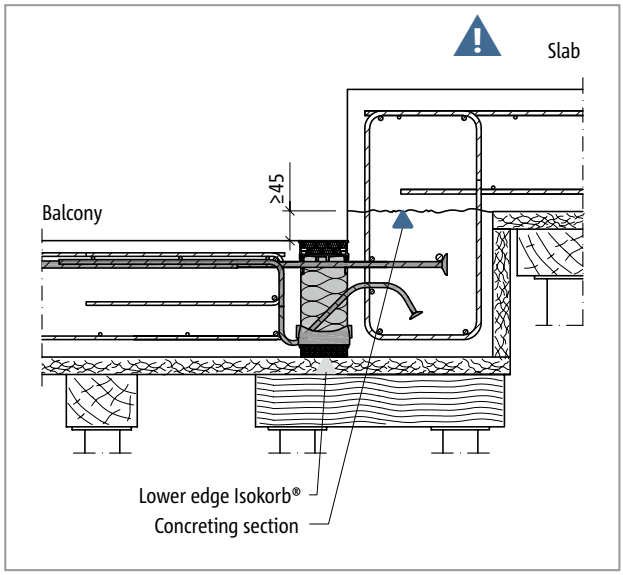


Fig. 102: Schöck Isokorb® T type K-U: Cast-in-place concrete balcony with height offset downwards

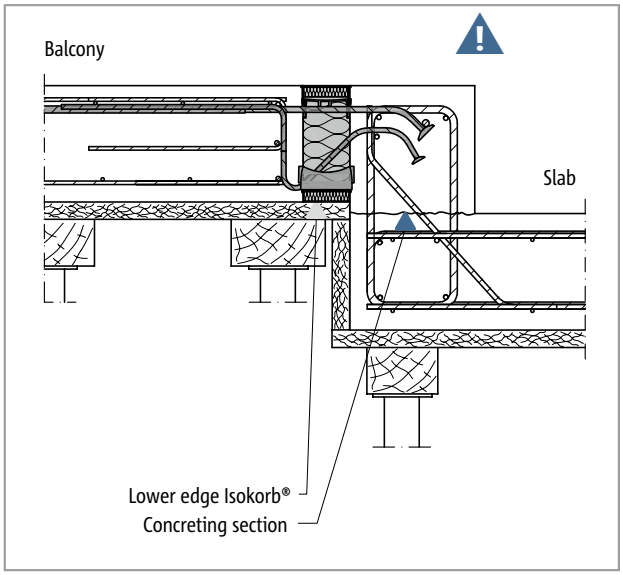


Fig. 103: Schöck Isokorb® T type K-O: Cast-in-place concrete balcony with height offset upwards

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 instructions

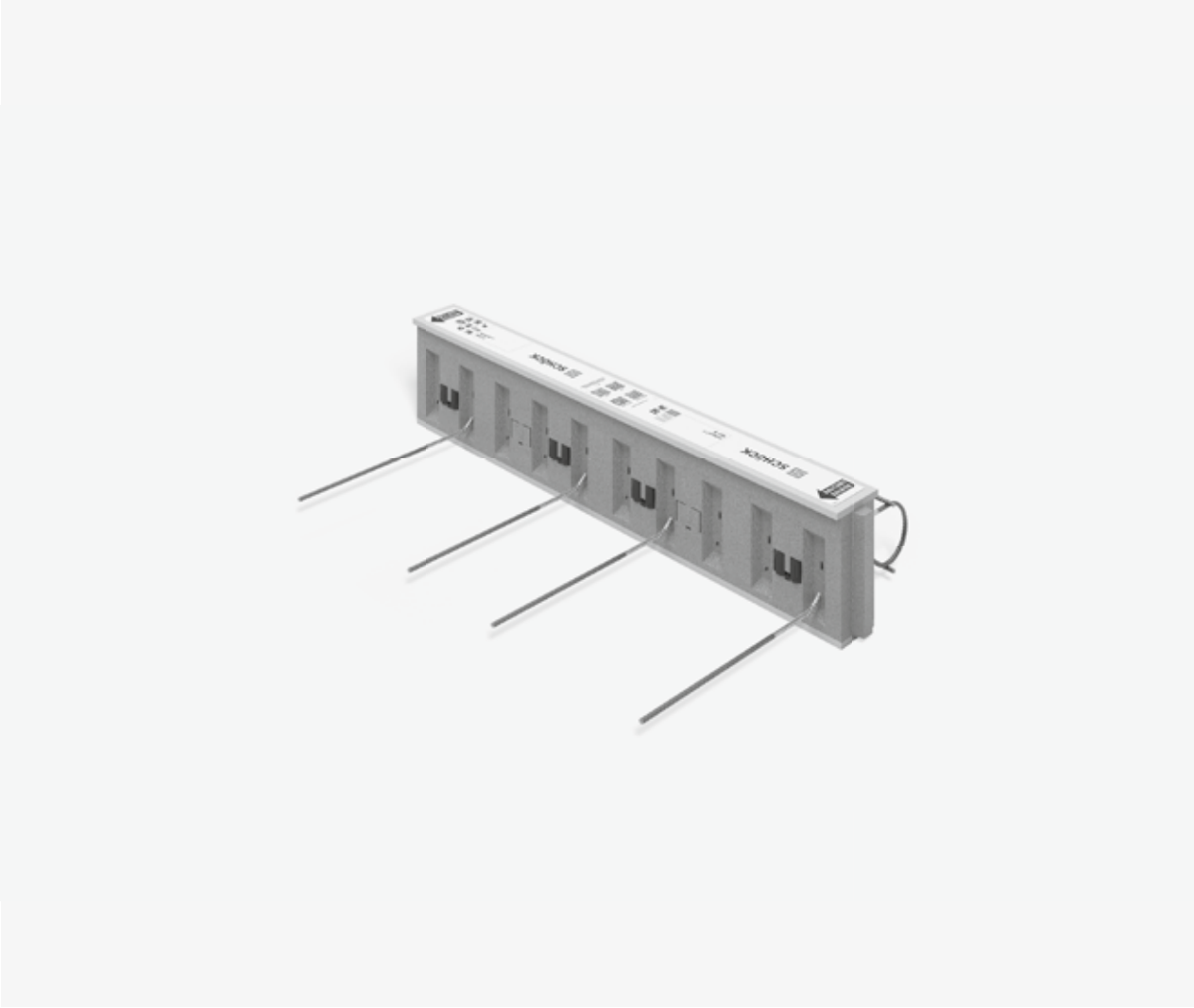
The current installation instruction can be found online under:

- Schöck Isokorb® XT/T type K-U: www.schoeck.com/view/2736
- Schöck Isokorb® XT/T type K-O: www.schoeck.com/view/2738

☑ 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 deformation due to 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?
- ☐ Is the on-site supplementary bar (Pos. 4) incorporated?
- ☐ 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
Load-bearing thermal insulation element for supported balconies. The element transfers positive shear forces. The element with the load-bearing level VV additionally transfers negative shear forces.

Schöck Isokorb® T type Q-Z
Load-bearing thermal insulation element for supported balconies in constraint-free connection. The element transfers positive shear forces.

Element arrangement | Installation cross sections

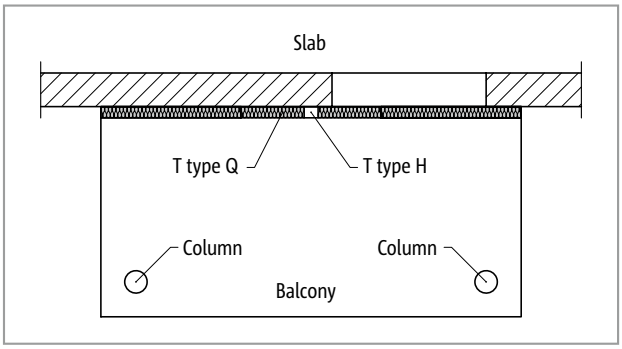


Fig. 104: Schöck Isokorb® type Q: Balcony with column support

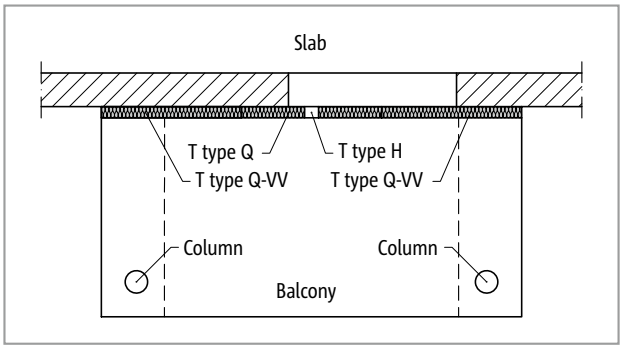


Fig. 105: Schöck Isokorb® T type Q, Q-VV: Supported balcony with various bearing stiffnesses; T type H (optional) with ordinary horizontal forcet

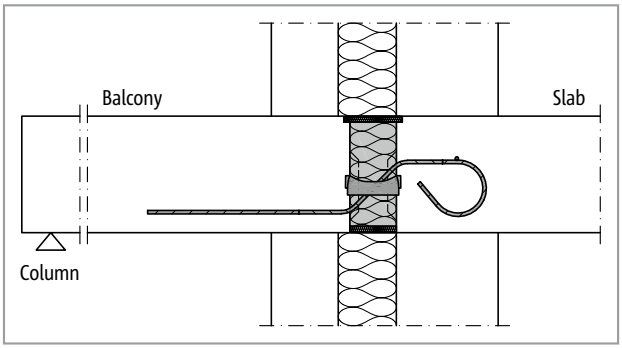


Fig. 106: Schöck Isokorb® T type Q: Connection with non-load-bearing cavity masonry (e.g. T type Q-V1 to T type Q-V5)

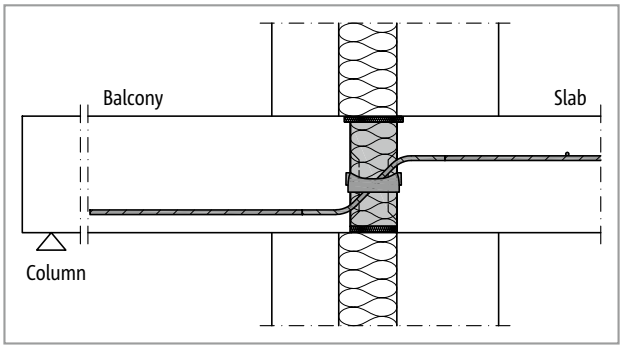


Fig. 107: Schöck Isokorb® T type Q: Connection with non-load-bearing cavity masonry (e.g. T type Q-V6 to T type Q-V10)

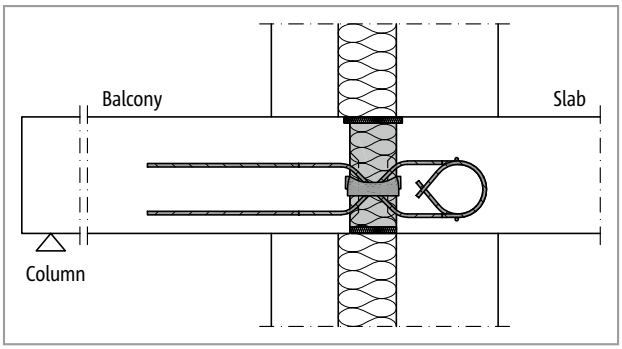


Fig. 108: Schöck Isokorb® T type Q-VV: Connection with non-load-bearing cavity masonry (e.g. T type Q-VV1 toT type Q-VV5)

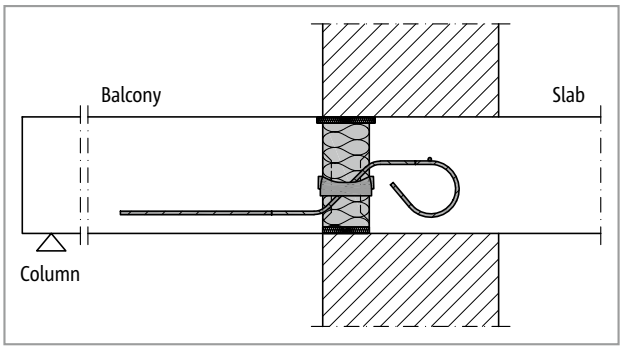


Fig. 109: Schöck Isokorb® T type Q: Connection with thermal insulating cavity masonry (e.g. T type Q-V1 to T Typ Q-V5)

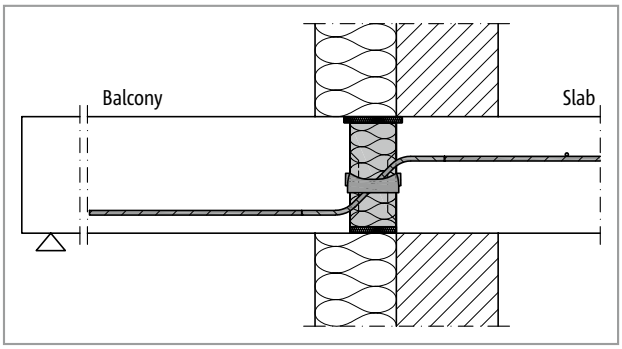


Fig. 110: Schöck Isokorb® T type Q: Connection with thermal insulation composite system (TICS) (e.g. T type Q-V6 to T Typ Q-V12)

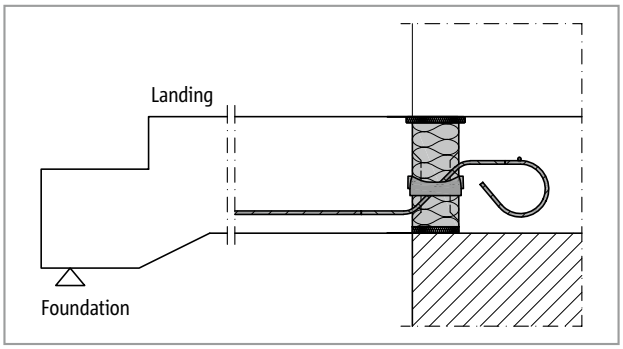


Fig. 111: Schöck Isokorb® T type Q: Connection stair flight with thermal insulating cavity masonry (e.g. T type Q-V1 to T Typ Q-V5)

Installation cross sections

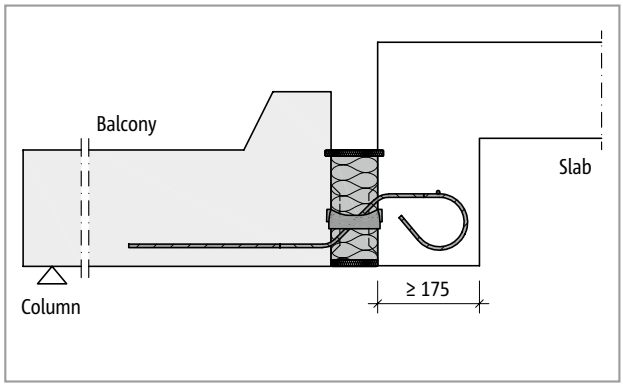


Fig. 112: Schöck Isokorb® T type Q: Installation situation "pre-cast balcony slab" (e.g. T type Q-V1 to Q-V5)

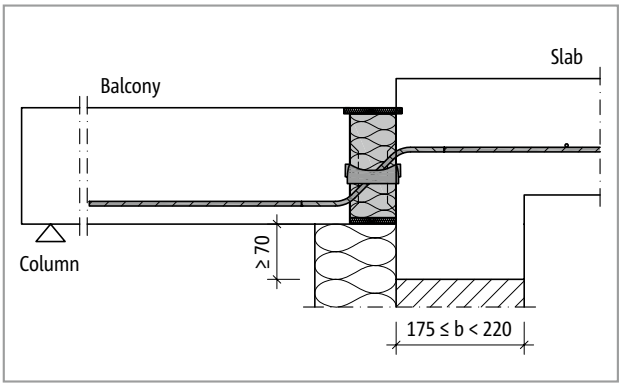


Fig. 113: Schöck Isokorb® T type Q: Installation situation with small height offset (e.g. T type Q-V6 to Q-V12)

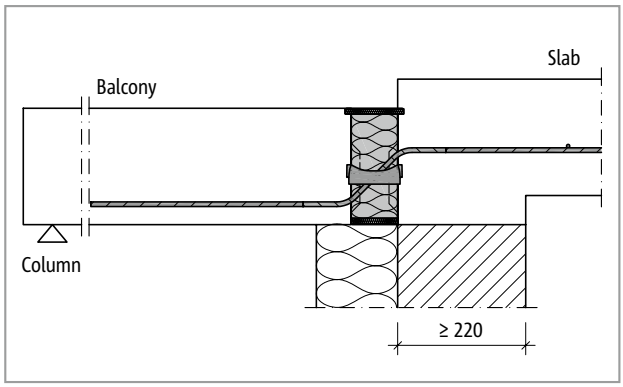


Fig. 114: Schöck Isokorb® T type Q: Installation situation with small height offset (e.g. T type Q-V6 to Q-V12)

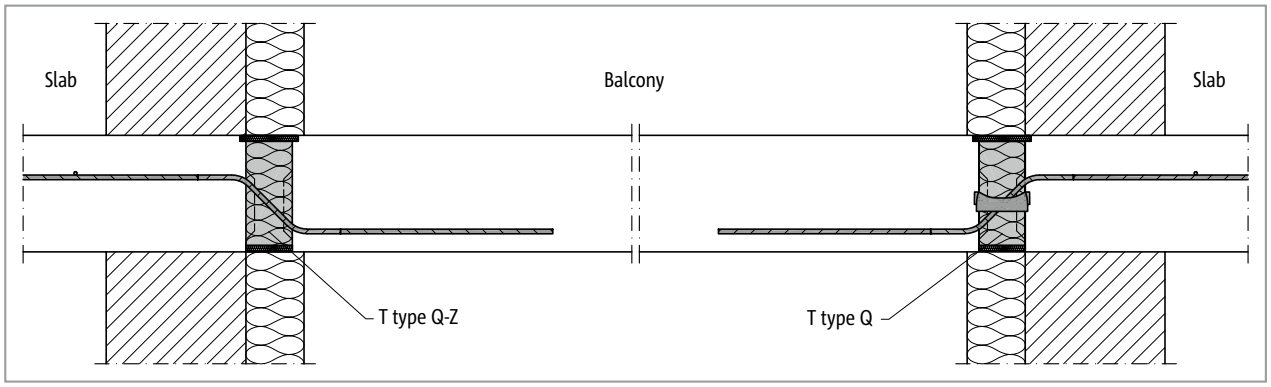


Fig. 115: Schöck Isokorb® T type Q-Z, Q: Application case one-way reinforced concrete slab

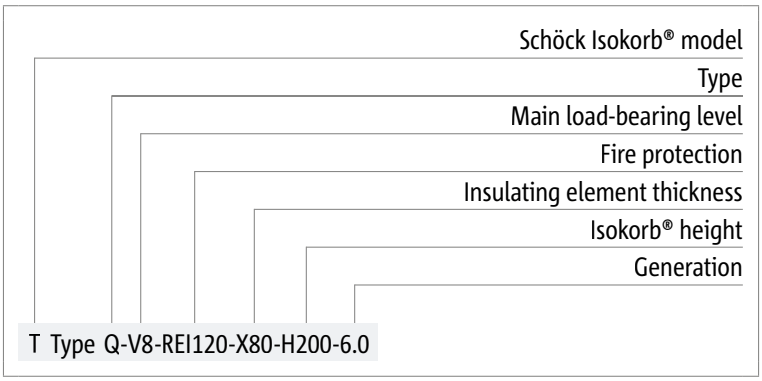
Product selection | Type designations | Special designs

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 V12
  VV1 to VV12
  main load capacities V1 to V5: Shear force bar, floor side bent, balcony side straight
  Main load-bearing level V6 to V12: Shear force bar on floor side straight, on balcony side straight
- Fire resistance class:
  REI120 (standard): Top and bottom fire protection projecting by 10mm on both sides
- 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	V11	V12
Design values with		$v_{Rd,z}$ [kN/m]											
Concrete strength class	C25/30	34.8	43.5	52.2	69.6	87.0	92.8	113.4	136.0	173.9	208.7	278.2	360.0

Schöck Isokorb® T type Q	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12
Placement with	Isokorb® length [mm]											
	1000	1000	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	8 ⌀ 12	8 ⌀ 14
Pressure bearing [piece]	4	4	4	4	4	4	4	4	6	6	8	8
H_{min} width REI120 [mm]	160	160	160	160	160	170	180	180	190	190	190	200

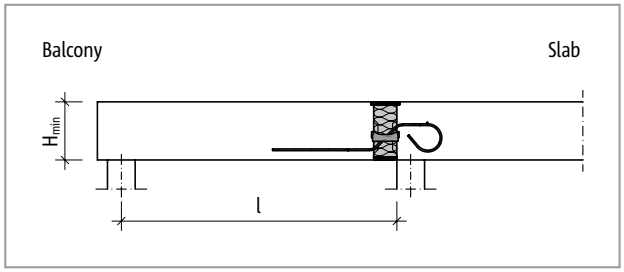


Fig. 116: Schöck Isokorb® T type Q: Static system (T type Q-V1 to Q-V5)

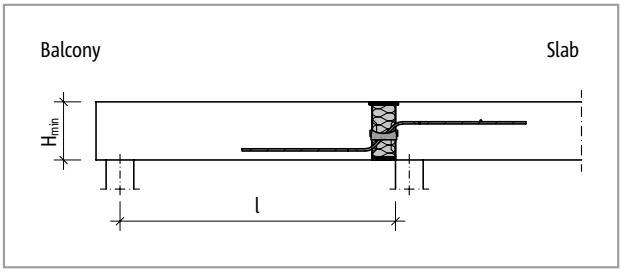


Fig. 117: Schöck Isokorb® T type Q: Static system (T type Q-V6 to Q-V12)

Schöck Isokorb® T type Q-Z		V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12
Design values with		$v_{Rd,z}$ [kN/m]											
Concrete strength class	C25/30	34.8	43.5	52.2	69.6	87.0	92.8	113.4	136.0	173.9	208.7	278.2	360.0

Schöck Isokorb® T type Q-Z	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12
Placement with	Isokorb® length [mm]											
	1000	1000	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	8 ⌀ 12	8 ⌀ 14
Pressure bearing [piece]	-	-	-	-	-	-	-	-	-	-	-	-
H_{min} width REI120 [mm]	160	160	160	160	160	170	180	180	190	190	190	200

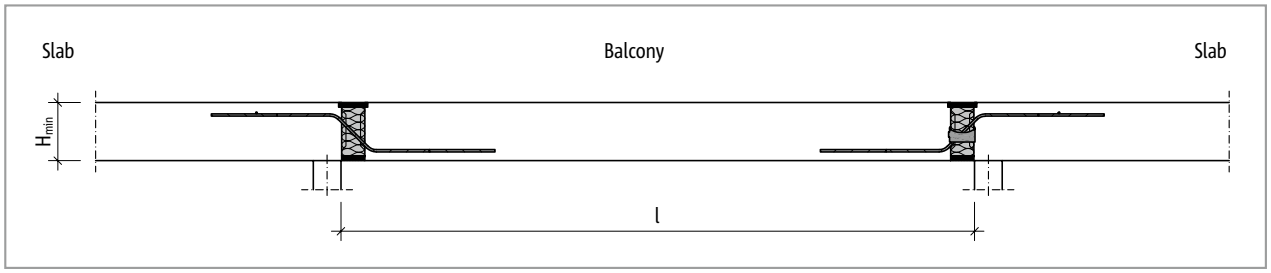


Fig. 118: Schöck Isokorb® T type Q-Z, Q: Static system (T type Q-Z-V6 to Q-Z-12, Q-V6 to Q-V12)

C25/30 design

Schöck Isokorb® T type Q		VV1	VV2	VV3	VV4	VV5	VV6
Design values with		$v_{Rd,z}$ [kN/m]					
Concrete strength class	C25/30	±34.8	±43.5	±52.2	±69.6	±87.0	±92.8

Schöck Isokorb® T type Q	VV1	VV2	VV3	VV4	VV5	VV6
Placement with	Isokorb® length [mm]					
	1000	1000	1000	1000	1000	1000
Shear force bars	2 × 4 ⌀ 6	2 × 5 ⌀ 6	2 × 6 ⌀ 6	2 × 8 ⌀ 6	2 × 10 ⌀ 6	2 × 6 ⌀ 8
Pressure bearing [piece]	4	4	4	4	4	4
H_{min} width REI120 [mm]	160	160	160	160	160	170

Schöck Isokorb® T type Q		VV7	VV8	VV9	VV10	VV11	VV12
Design values with		$v_{Rd,z}$ [kN/m]					
Concrete strength class	C25/30	±113.4	±136.0	±173.9	±208.7	±278.2	±360.0

Isokorb® T type Q	VV7	VV8	VV9	VV10	VV11	VV12
Placement with	Isokorb® length [mm]					
	1000	1000	1000	1000	1000	1000
Shear force bars	2 × 5 ⌀ 10	2 × 6 ⌀ 10	2 × 5 ⌀ 12	2 × 6 ⌀ 12	2 × 8 ⌀ 12	2 × 8 ⌀ 14
Pressure bearing [piece]	4	4	6	6	8	8
H_{min} width REI120 [mm]	180	180	200	200	200	200

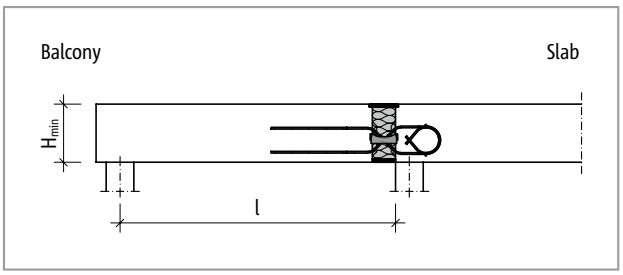


Fig. 119: Schöck Isokorb® T type Q-VV: Static system (T type Q-VV1 to Q-VV5)

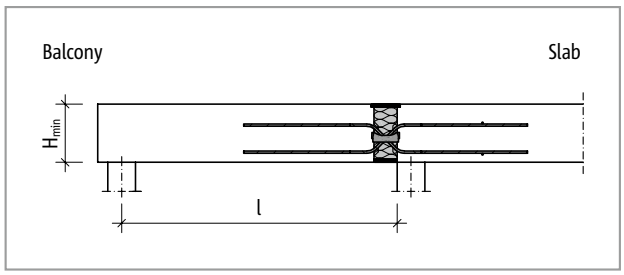


Fig. 120: Schöck Isokorb® T type Q-VV: Static system (T type Q-VV6 to Q-VV12)

Notes on design

- A structural calculation is 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 (connection pin) is assumed to be a static system. In addition, a shear force verification as per BS EN 1992-1-1 and BS EN 1992-1-1/NA of the floor slabs is to be carried out by the structural engineer.
- For the transfer of ordinary horizontal forces additional Schöck Isokorb® type H (see page 135) 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}.

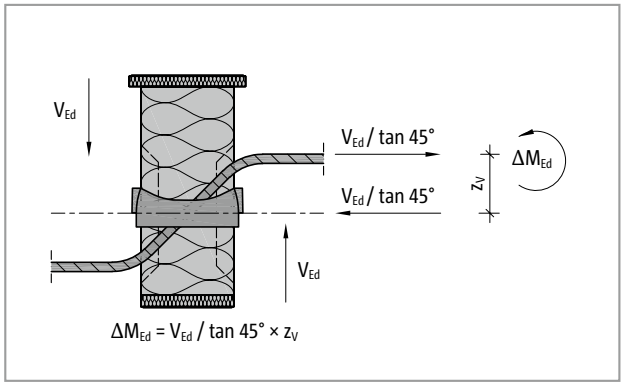


Fig. 121: Schöck Isokorb® T type Q: Moments resulting from eccentric connection

Schöck Isokorb® T type Q		V1 , VV1	V2 , VV2	V3 , VV3	V4 , VV4	V5 , VV5	V6 , VV6	V7 , VV7	V8 , VV8	V9 , VV9	V10 , VV10	V11	V12
Design values with		M_{Ed} [kNm/element]											
Concrete strength class	C25/30	1.6	2.0	2.4	3.1	3.9	4.3	5.8	6.9	10.1	12.1	17.3	23.0

Schöck Isokorb® T type Q		VV1	VV2	VV3	VV4	VV5	VV6	VV7	VV8	VV9	VV10	VV11	VV12
Design values with		M_{Ed} [kNm/element]											
Concrete strength class	C25/30	1.6	2.0	2.4	3.2	4.0	4.4	5.9	7.1	10.1	12.1	17.3	23.0

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 Stacon®.

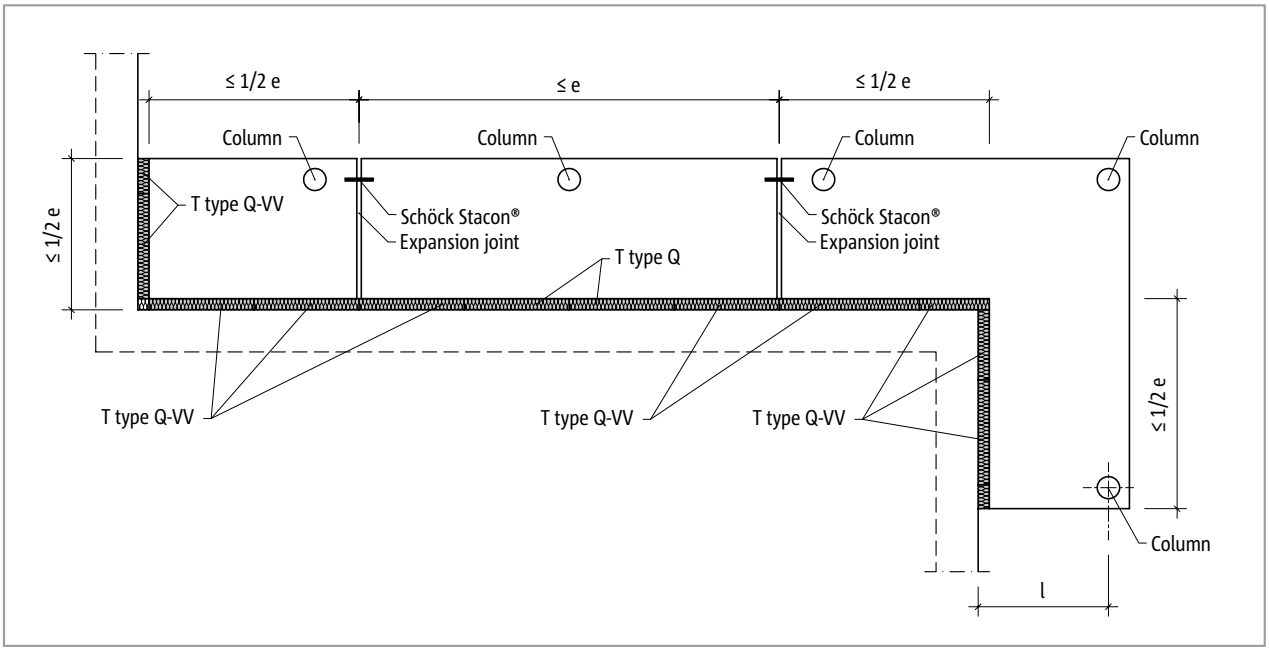


Fig. 122: Schöck Isokorb® T type Q, Q-VV: Expansion joint layout

Schöck Isokorb® T type Q, Q-Z		V1–V6 VV1–VV6	V7–V8 VV7–VV8	V9–V11 VV9–VV11	V12 VV12
Maximum expansion joint spacing when		e [m]			
Insulating element thickness [mm]	80	11.0	10.6	9.5	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 expansion joint the following applies: $e_R \geq 50$ mm and $e_R \leq 150$ mm.
- For the centre distance of the shear force bars from the free edge or from the expansion joints the following applies: $e_R \geq 100$ mm and $e_R \leq 150$ mm.

Product description

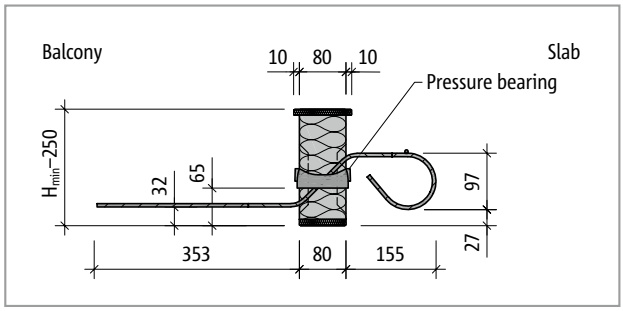


Fig. 123: Schöck Isokorb® T type Q-V1 to Q-V5: Product section

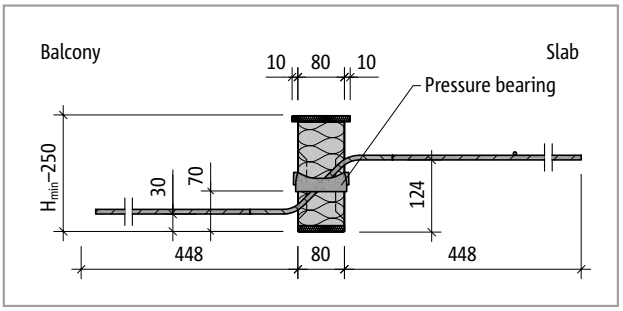


Fig. 124: Schöck Isokorb® T type Q-V6: Product section

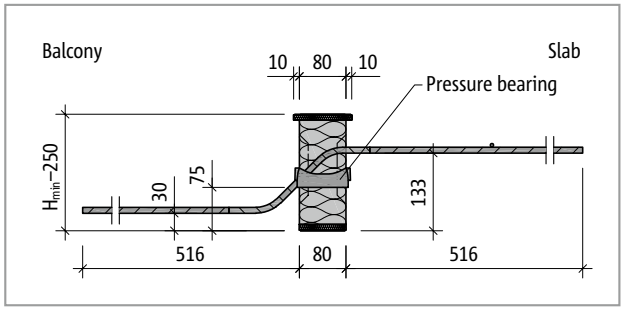


Fig. 125: Schöck Isokorb® T type Q-V7 for Q-V8: Product section

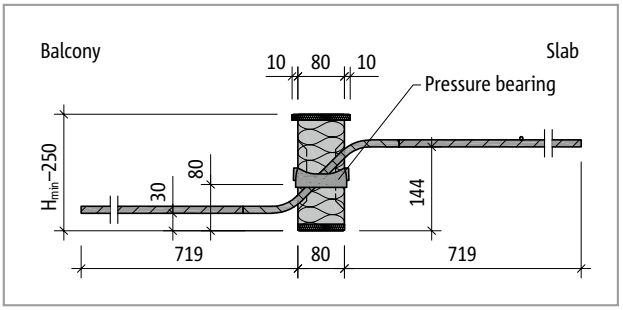


Fig. 126: Schöck Isokorb® T type Q-V9 to Q-V11: Product section

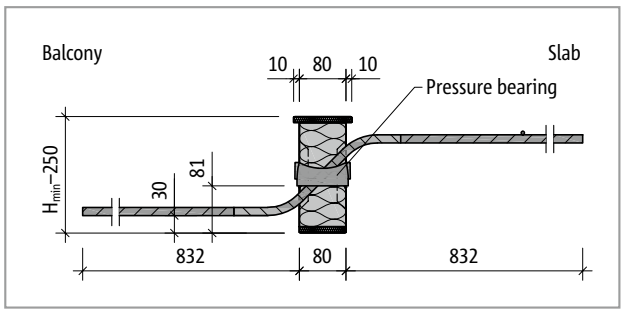


Fig. 127: Schöck Isokorb® T type Q-V12: Product section

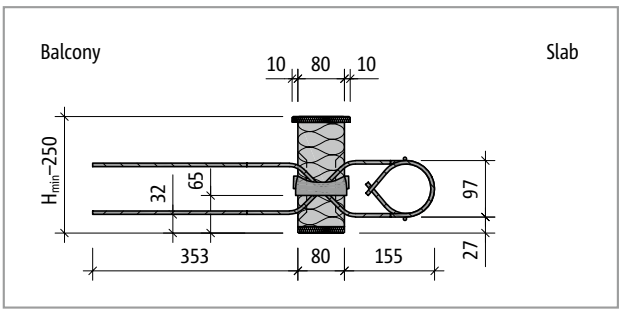


Fig. 128: Schöck Isokorb® T type Q-VV1 up to Q-VV5: Product section

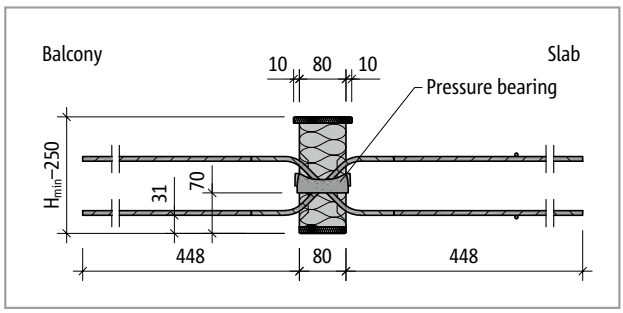


Fig. 129: Schöck Isokorb® T type Q-VV6: Product section

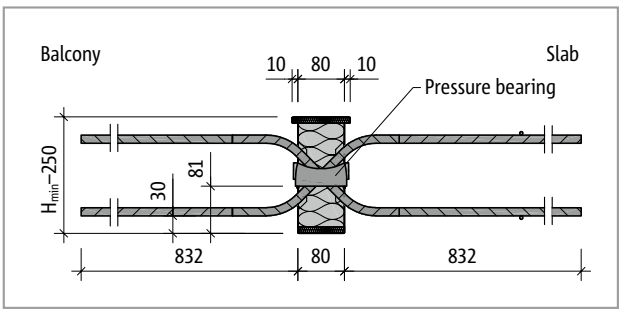


Fig. 130: Schöck Isokorb® T type Q-VV12: Product section

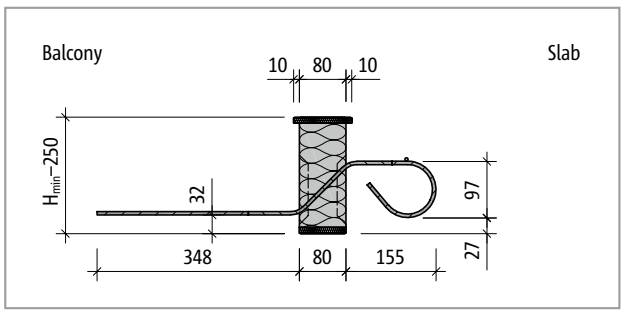


Fig. 131: Schöck Isokorb® T type Q-Z-V1 to Q-Z-V5: Product section

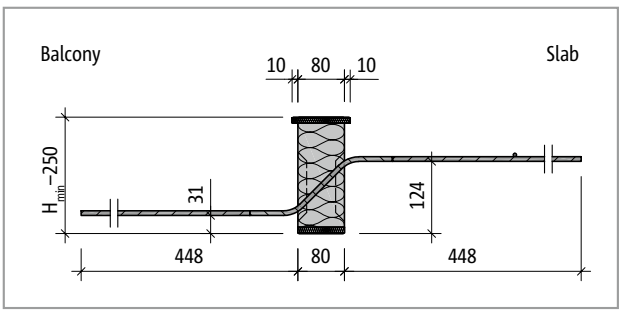


Fig. 132: Schöck Isokorb® T type Q-Z-V6: Product section

Product description

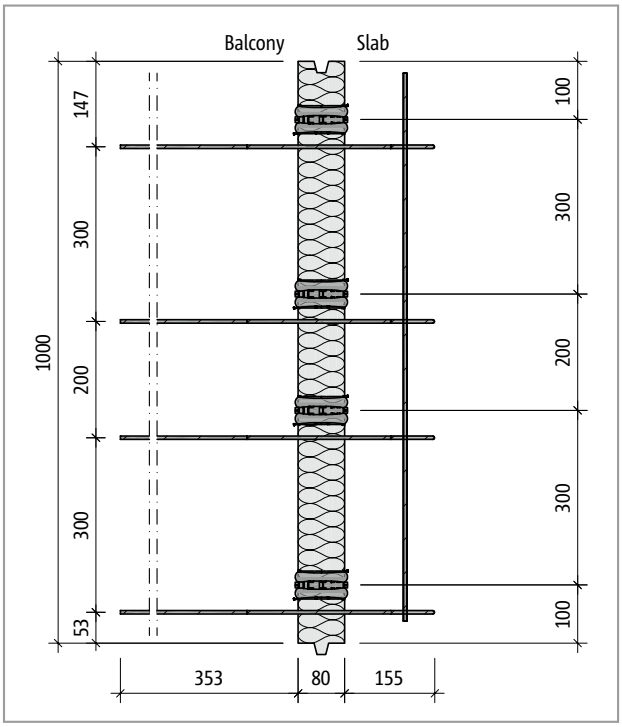


Fig. 133: Schöck Isokorb® T type Q-V1: Product layout

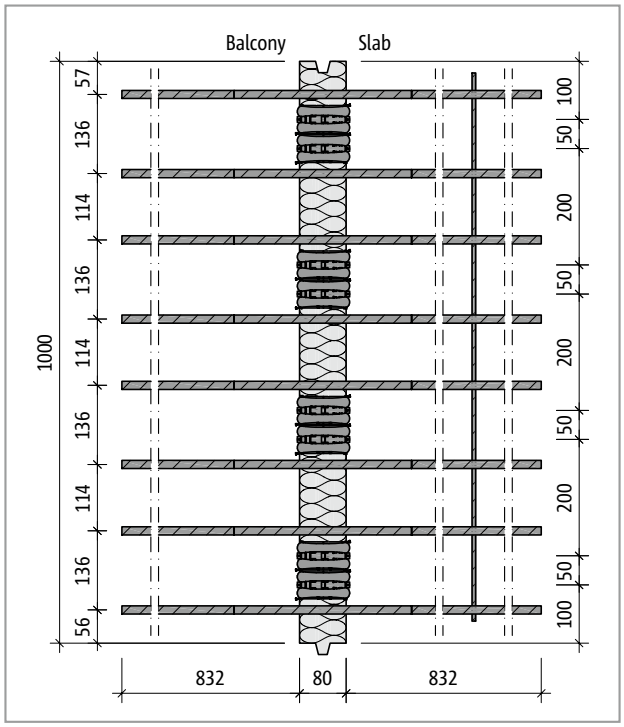


Fig. 134: Schöck Isokorb® T type Q-V12: Product layout

Product information

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

On-site reinforcement

Direct support

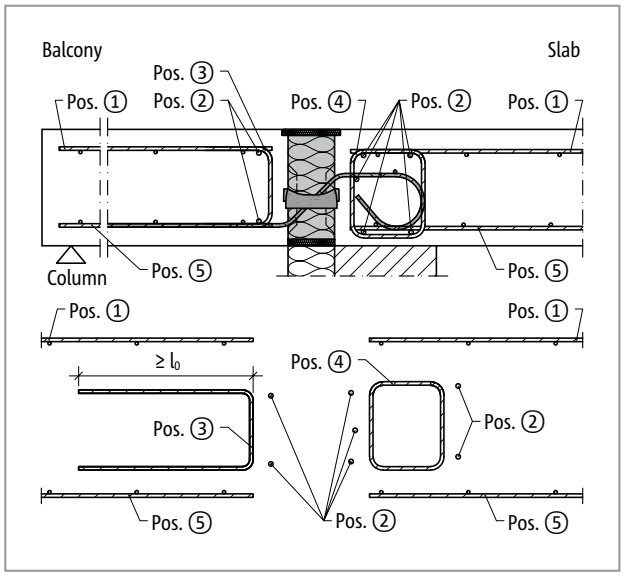


Fig. 135: Schöck Isokorb® T type Q-V1 up to Q-V5: On-site reinforcement

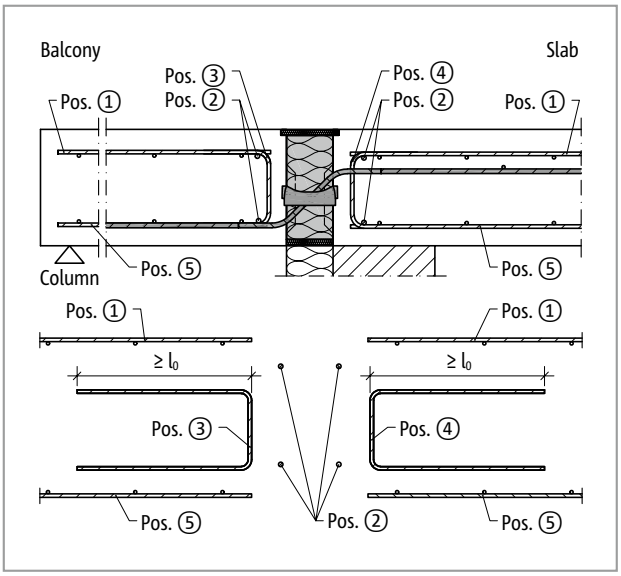


Fig. 136: Schöck Isokorb® T type Q-V6 up to Q-V10: On-site reinforcement

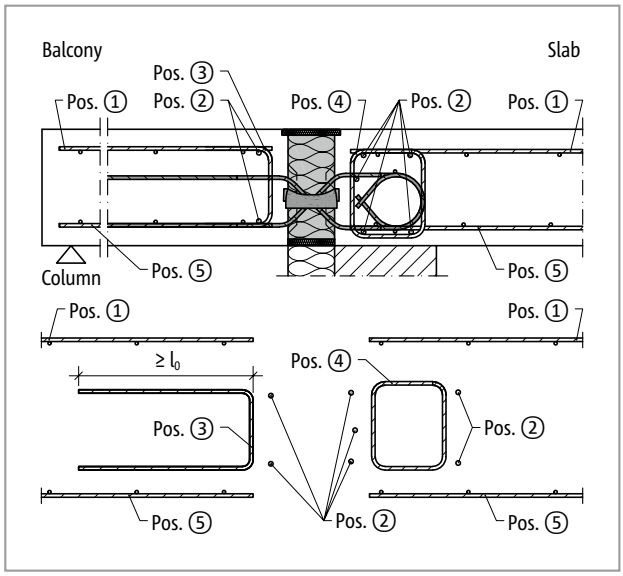


Fig. 137: Schöck Isokorb® T type Q-VV1 up to Q-VV5: On-site reinforcement

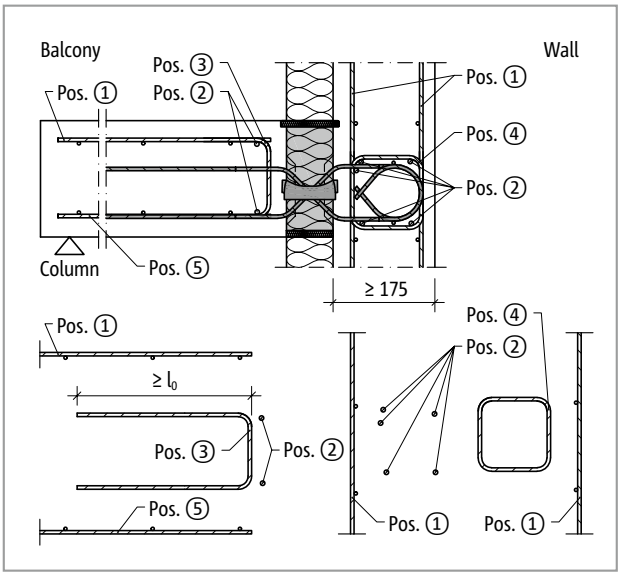


Fig. 138: Schöck Isokorb® T type Q-VV1 to Q-VV5: On-site reinforcement in wall

On-site reinforcement

Direct support

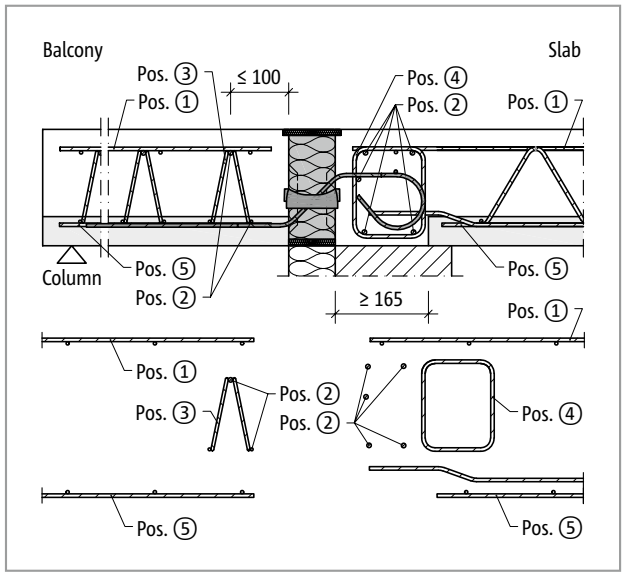


Fig. 139: Schöck Isokorb® T type Q-V1 to Q-V5: On-site reinforcement with lattice beam

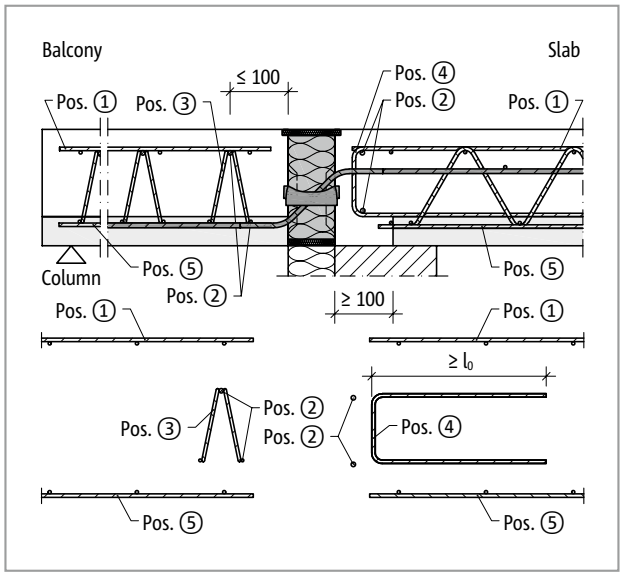


Fig. 140: Schöck Isokorb® T type Q-V6 to Q-V10: On-site reinforcement with lattice beam

On-site reinforcement

Indirect support

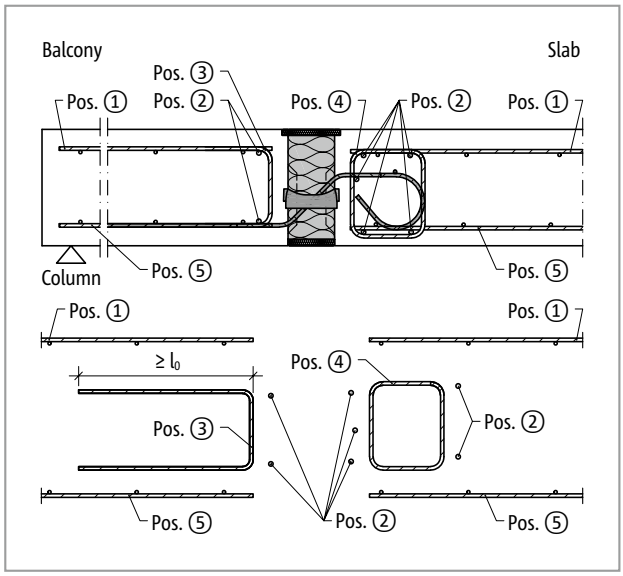


Fig. 141: Schöck Isokorb® T type Q-V1 up to Q-V5: On-site reinforcement

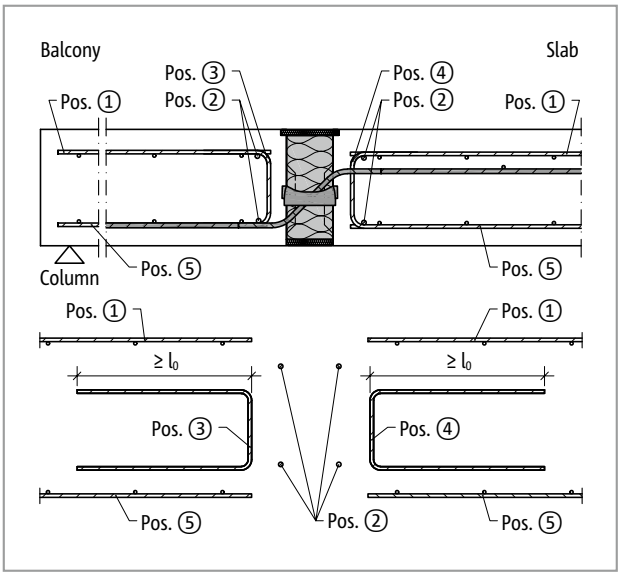


Fig. 142: Schöck Isokorb® T type Q-V6 up to Q-V10: On-site reinforcement

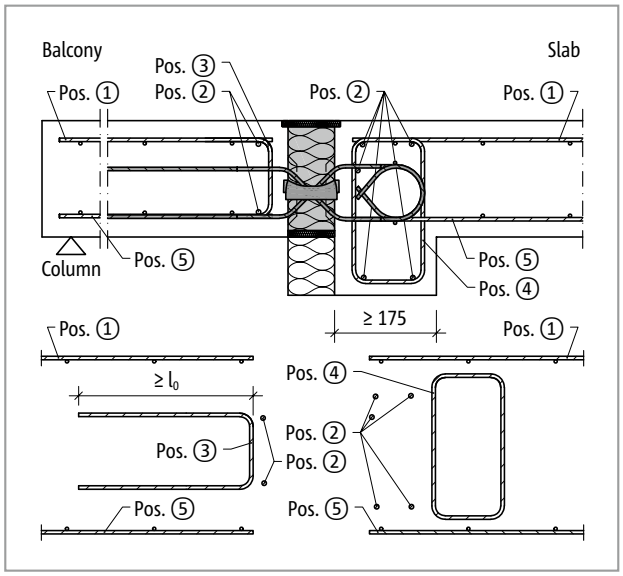


Fig. 143: Schöck Isokorb® T type Q-VV1 to Q-VV5: On-site reinforcement in downstand beam

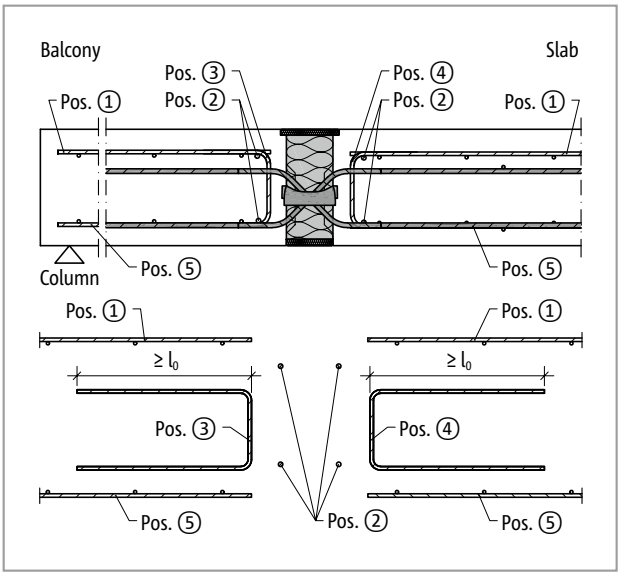


Fig. 144: Schöck Isokorb® T type Q-VV6 to Q-VV10: On-site reinforcement

On-site reinforcement

Indirect support

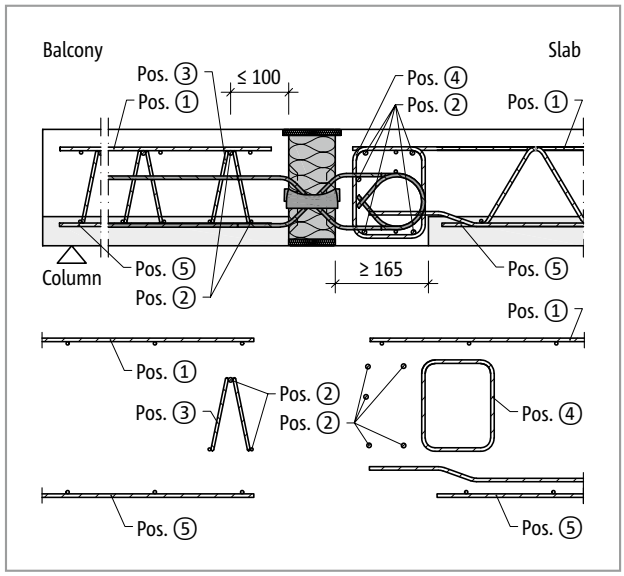


Fig. 145: Schöck Isokorb® T type Q-VV1 to Q-VV5: On-site reinforcement with lattice beam

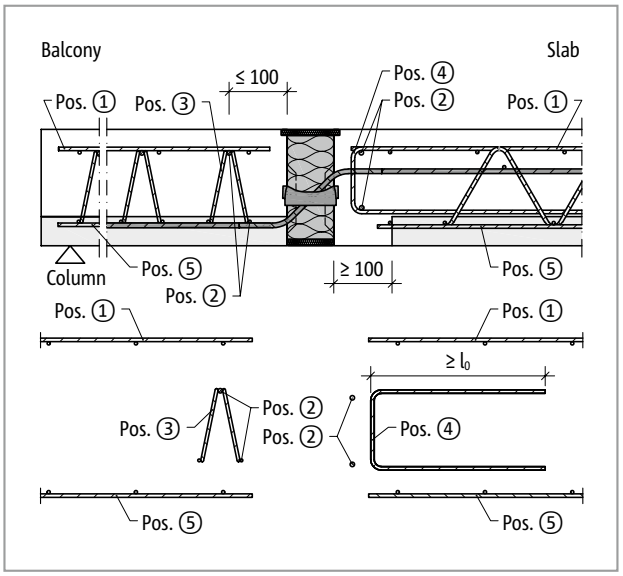


Fig. 146: Schöck Isokorb® T type Q-V6 to Q-V10: On-site reinforcement with lattice beam

On-site reinforcement

Schöck Isokorb® T type Q, Q-Z		V1	V2	V3	V4	V5	V6
On-site reinforcement for	Type of bearing	Concrete strength class ≥ C25/30					
Overlapping reinforcement							
Pos. 1		acc. to the specifications of the structural engineer					
Steel bars along the insulation joint							
Pos. 2 - balcony side		2 • H8					
Pos. 2 - floor side		2 • H8 / 5 • H8					
Vertical reinforcement							
Pos. 3 [mm²/m]	direct/indirect	113	122	146	195	243	260
Pos. 4 [mm²/m]	direct	141	141	141	141	141	-
	indirect	141	141	146	195	243	260
Lapping reinforcement							
Pos. 5		necessary in the tension zone, as specified by the structural engineer					
Side reinforcement at the free edge							
Pos. 6		Edging as per BS EN 1992-1-1 (EC2), 9.3.1.4					

Schöck Isokorb® T type Q, Q-Z		V7	V8	V9	V10	V11	V12
On-site reinforcement for	Type of bearing	Concrete strength class ≥ C25/30					
Overlapping reinforcement							
Pos. 1		acc. to the specifications of the structural engineer					
Steel bars along the insulation joint							
Pos. 2 - balcony side		2 • H8					
Pos. 2 - floor side		2 • H8 / 5 • H8					
Vertical reinforcement							
Pos. 3 [mm²/m]	direct/indirect	318	382	489	587	781	1003
Pos. 4 [mm²/m]	direct	-	-	-	-	-	-
	indirect	318	382	489	587	781	1003
Lapping reinforcement							
Pos. 5		necessary in the tension zone, as specified by the structural engineer					
Side reinforcement at the free edge							
Pos. 6		Edging as per BS EN 1992-1-1 (EC2), 9.3.1.4					

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.
- The above presentation shows only the first lattice beam in its function as suspension reinforcement. Connection variants with lattice beams deviating from the presentation are also possible. Here attention should be paid to the appropriate rules from BS EN 1992-1-1 (EC2), para. 10.9.3 and BS EN 1992-1-1/NA, NCI to 10.9.3 (e.g. separation of the lattice beams < 2h) and from the approvals of the lattice beams.
- Depending on the configuration of the Schöck Isokorb® attention is to be paid that a sufficiently wide in-situ concrete strip is arranged between the Schöck Isokorb® and the element slab.
- Further reinforcement values for Pos. 3 and Pos. 4 see type testing in www.schoeck.com/de/downloads.

On-site reinforcement

Schöck Isokorb® T type Q, Q-Z		VV1	VV2	VV3	VV4	VV5	VV6
On-site reinforcement for	Type of bearing	Concrete strength class ≥ C25/30					
Overlapping reinforcement							
Pos. 1		acc. to the specifications of the structural engineer					
Steel bars along the insulation joint							
Pos. 2 - balcony side		2 • H8					
Pos. 2 - floor side		2 • H8 / 5 • H8					
Vertical reinforcement							
Pos. 3 [mm²/m]	direct/indirect	113	122	146	195	243	260
Pos. 4 [mm²/m]	direct	141	141	141	141	141	113
	indirect	141	141	146	195	243	260
Lapping reinforcement							
Pos. 5		necessary in the tension zone, as specified by the structural engineer					
Side reinforcement at the free edge							
Pos. 6		Edging as per BS EN 1992-1-1 (EC2), 9.3.1.4					

Schöck Isokorb® T type Q, Q-Z		VV7	VV8	VV9	VV10	VV11	VV12
On-site reinforcement for	Type of bearing	Concrete strength class ≥ C25/30					
Overlapping reinforcement							
Pos. 1		acc. to the specifications of the structural engineer					
Steel bars along the insulation joint							
Pos. 2 - balcony side		2 • H8					
Pos. 2 - floor side		2 • H8 / 5 • H8					
Vertical reinforcement							
Pos. 3 [mm²/m]	direct/indirect	318	382	489	587	781	1003
Pos. 4 [mm²/m]	direct	113	113	156	113	142	175
	indirect	318	382	489	587	781	1003
Lapping reinforcement							
Pos. 5		necessary in the tension zone, as specified by the structural engineer					
Side reinforcement at the free edge							
Pos. 6		Edging as per BS EN 1992-1-1 (EC2), 9.3.1.4					

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.
- The above presentation shows only the first lattice beam in its function as suspension reinforcement. Connection variants with lattice beams deviating from the presentation are also possible. Here attention should be paid to the appropriate rules from BS EN 1992-1-1 (EC2), para. 10.9.3 and BS EN 1992-1-1/NA, NCI to 10.9.3 (e.g. separation of the lattice beams < 2h) and from the approvals of the lattice beams.
- Depending on the configuration of the Schöck Isokorb® attention is to be paid that a sufficiently wide in-situ concrete strip is arranged between the Schöck Isokorb® and the element slab.
- Further reinforcement values for Pos. 3 and Pos. 4 see type testing in www.schoeck.com/de/downloads.

Application example reinforced concrete slab spanning in one direction

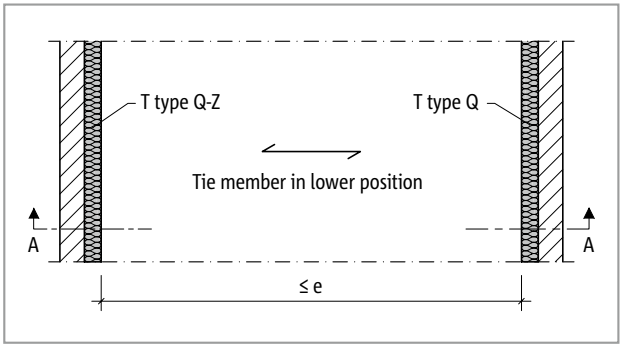


Fig. 147: Schöck Isokorb® T type Q-Z, Q: One-way reinforced reinforced concrete slab

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 page 93.

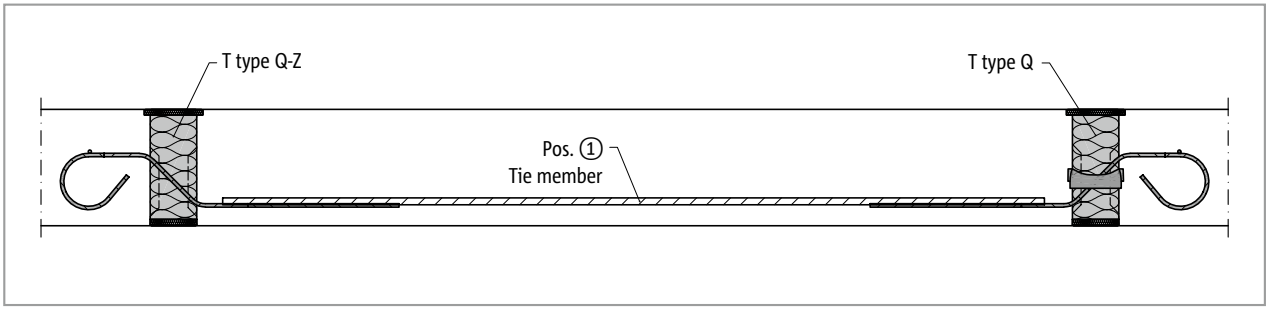


Fig. 148: Schöck Isokorb® T type Q-Z-V1 to Q-Z-V5, Q-V1 to Q-V5: Section A-A; One-way reinforced concrete slab

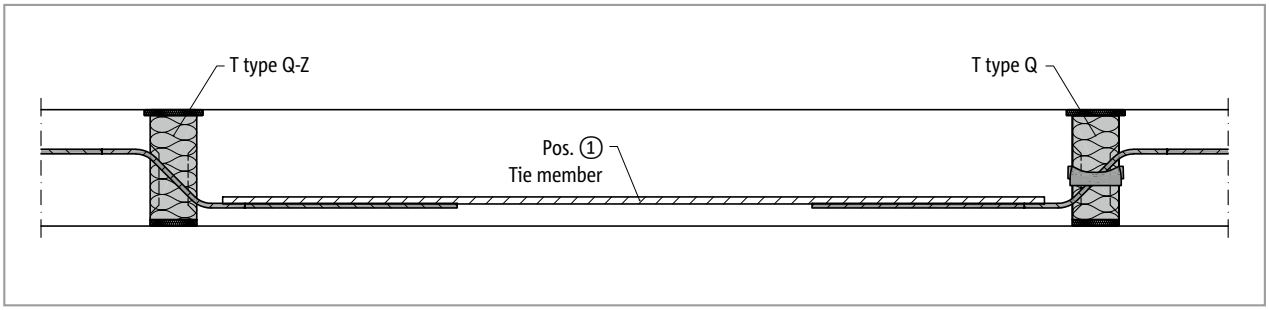


Fig. 149: Schöck Isokorb® T type Q-Z-V6 to Q-Z-V12, Q-V6 to Q-V12: Section A-A; One-way reinforced concrete slab

Schöck Isokorb® T type Q, Q-Z	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12
On-site reinforcement for	Floor (XC1) concrete strength class ≥ C20/25 Balcony (XC4) concrete strength class ≥ C25/30											
Tie												
Pos. 1	4 • H8	5 • H8	6 • H8	8 • H8	10 • H8	6 • H8	5 • H10	6 • H10	5 • H12	6 • H12	8 • H12	8 • H14

Information about on-site reinforcement

- The required suspension reinforcement and the on-site slab reinforcement are not shown here.
- On-site reinforcement analogous to Schöck Isokorb® T type Q, see page 100.

Type of bearing: supported | Installation instructions

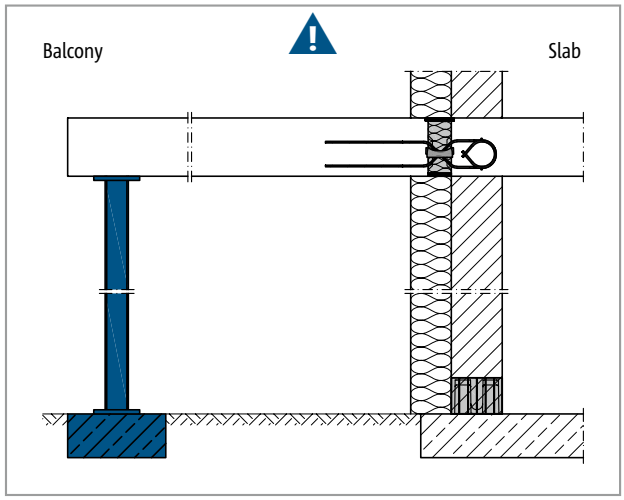


Fig. 150: Schöck Isokorb® T type Q-VV: Support required at all times

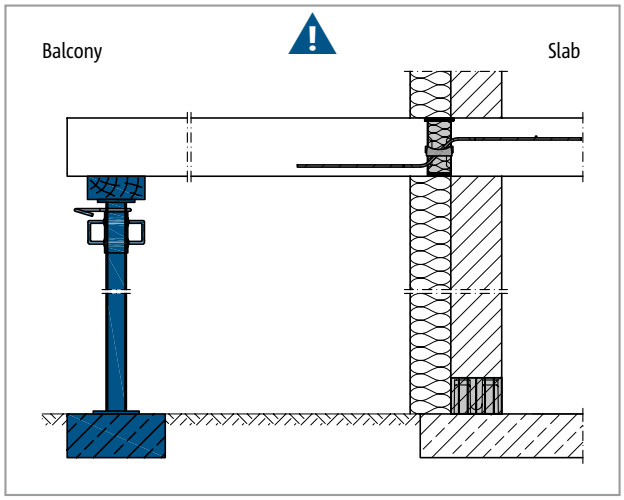


Fig. 151: Schöck Isokorb® T type Q: Support required at all times

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 columns

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

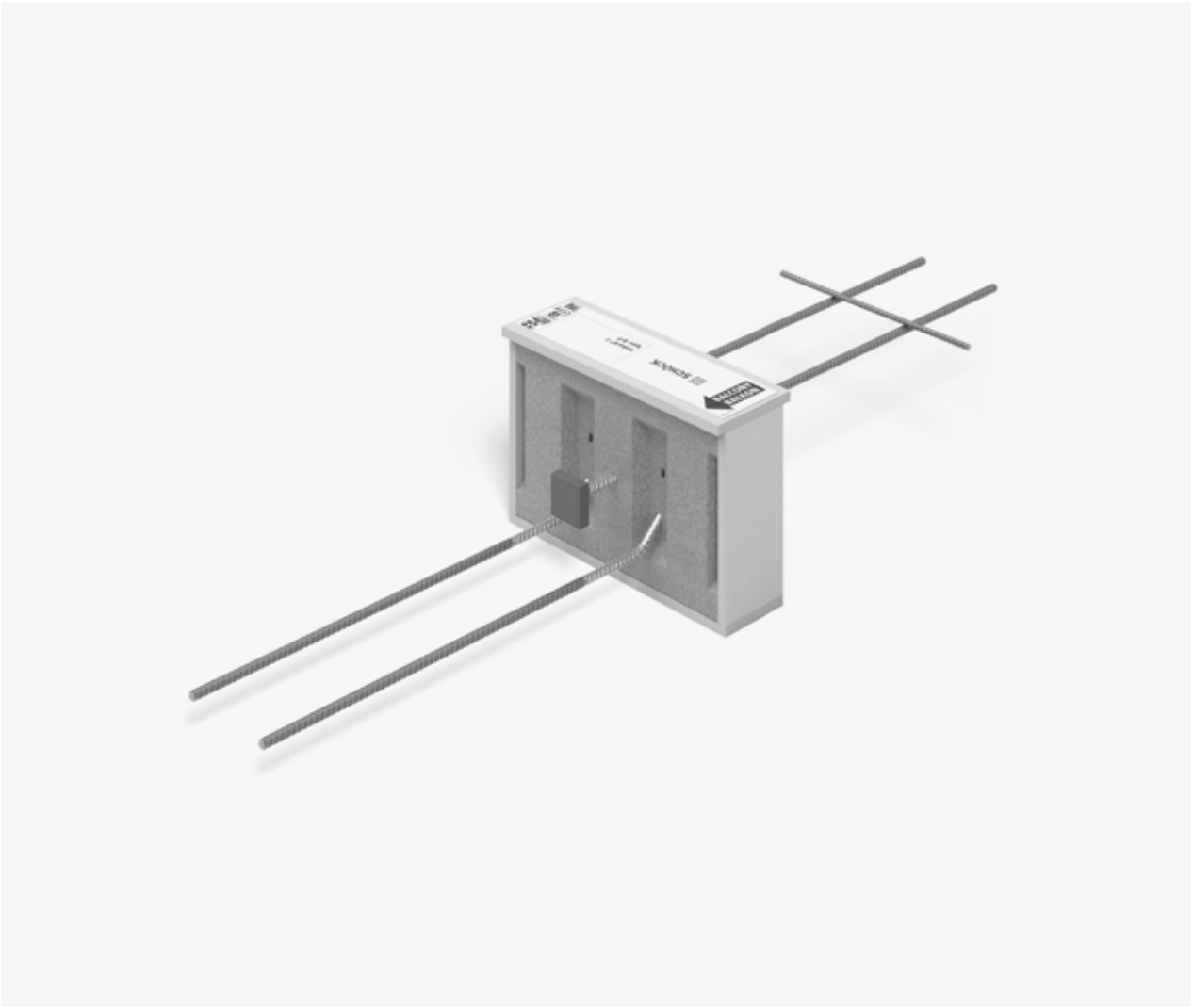
Installation instructions

The current installation instruction can be found online under:
www.schoeck.com/view/6422

☑ 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?
- ☐ Is the danger notice for missing support entered in the implementation plans?
- ☐ 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
Load-bearing thermal insulation element for supported balconies. The element transfers positive shear forces with point loads. The element with the load-bearing level VV additionally transfers negative shear forces.

Schöck Isokorb® T type Q-PZ
Load-bearing thermal insulation element for supported balconies in constraint-free connection. The element transfers positive shear forces with point loads.

Element arrangement | Installation cross sections

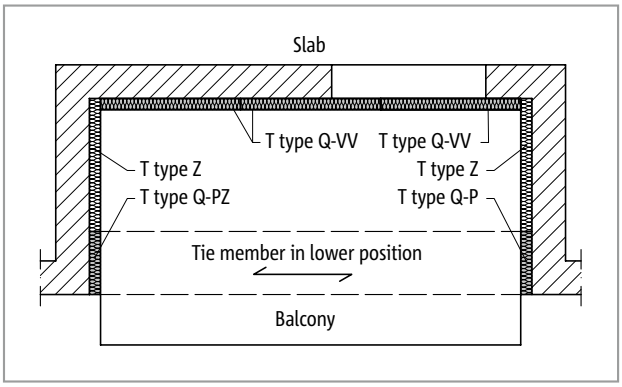


Fig. 152: Schöck Isokorb® T type Q-VV, Q-P,, Q-Z Recessed balcony supported on three sides with tie member

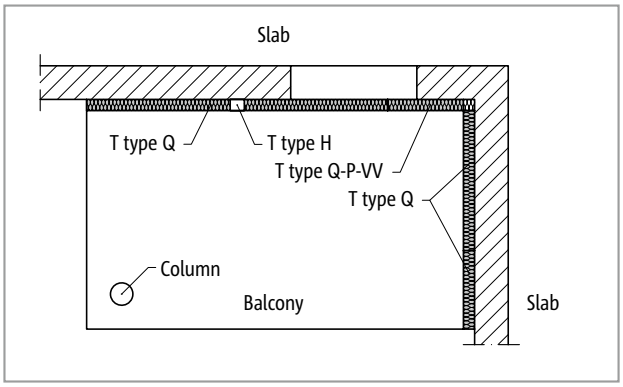


Fig. 153: Schöck Isokorb® T type Q, Q-P-VV: Balcony supported on two sides with column and positive shear forces

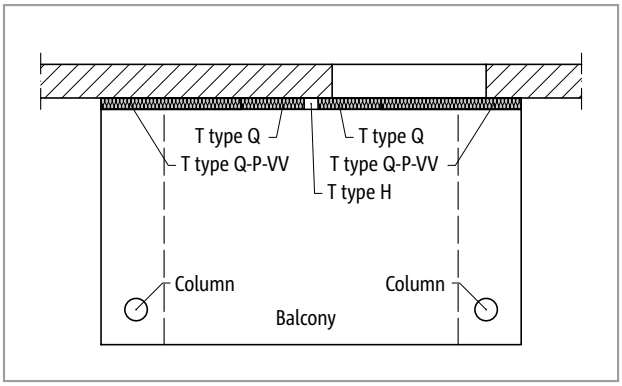


Fig. 154: Schöck Isokorb® T type Q-P-VV, Q: Balcony with column support, connection with various bearing stiffnesses; optionally with T type H

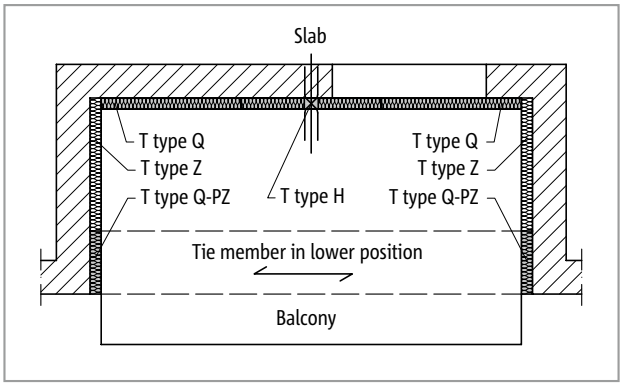


Fig. 155: Schöck Isokorb® T type Q, Q-PZ: Recessed balcony supported on three sides - symmetric with tie member

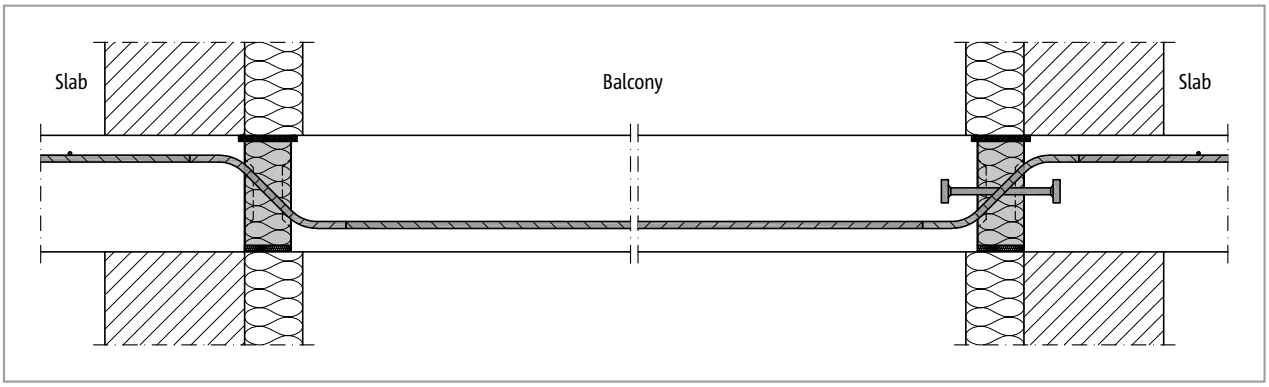


Fig. 156: Schöck Isokorb® T type Q-PZ, Q-P: Recessed balcony application see also page 119

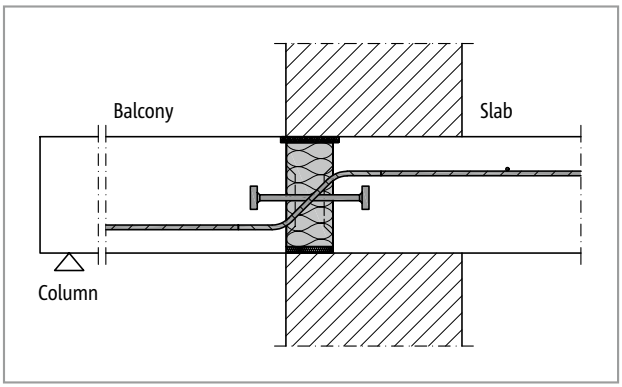


Fig. 157: Schöck Isokorb® T type Q-P: Connection of supported balcony with thermal insulating cavity wall

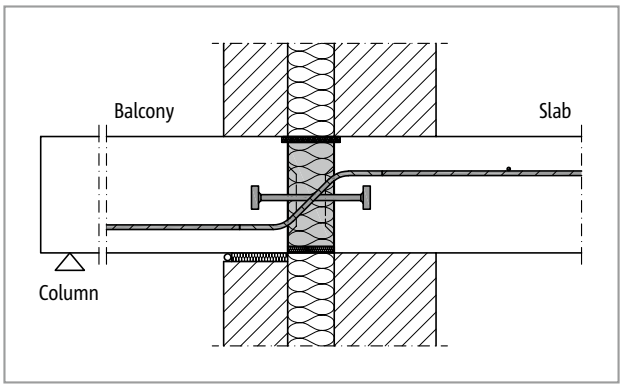


Fig. 158: Schöck Isokorb® T type Q-P: Connection supported balcony with thermal insulating cavity masonry

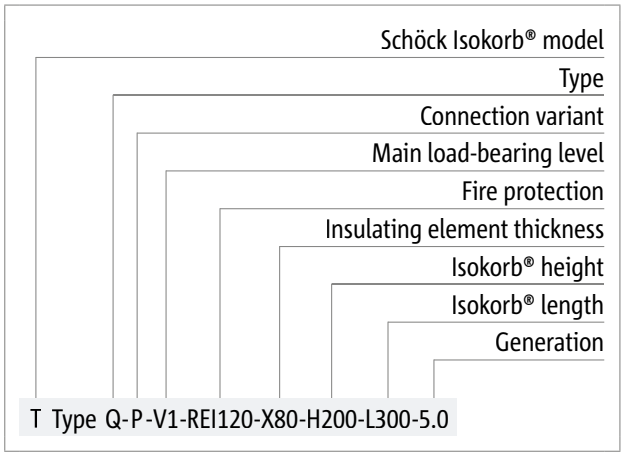
Product selection | Type designations | Special designs

Schöck Isokorb® T type Q-P variants

The configuration of the Schöck Isokorb® types Q-P 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 V10
  VV1 to VV10
- Fire resistance class:
  REI120 (standard): Top and bottom fire protection projecting by 10mm on both sides
- 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	V10
Design values with		$V_{Rd,z}$ [kN/element]									
Concrete strength class	C25/30	30.9	46.4	61.8	45.3	68.0	69.6	104.4	87.0	130.4	189.4

Schöck Isokorb® T type Q-P	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
Placement with	Isokorb® length [mm]									
	300	400	500	300	400	300	400	300	400	500
Shear force bars	2 ⌀ 8	3 ⌀ 8	4 ⌀ 8	2 ⌀ 10	3 ⌀ 10	2 ⌀ 12	3 ⌀ 12	2 ⌀ 14	3 ⌀ 14	4 ⌀ 14
Pressure bearing [piece]	1 ⌀ 10	2 ⌀ 10	2 ⌀ 10	1 ⌀ 12	2 ⌀ 10	2 ⌀ 10	2 ⌀ 12	2 ⌀ 12	3 ⌀ 12	4 ⌀ 12
H_{min} width REI120 [mm]	180	180	180	190	190	200	200	210	210	210

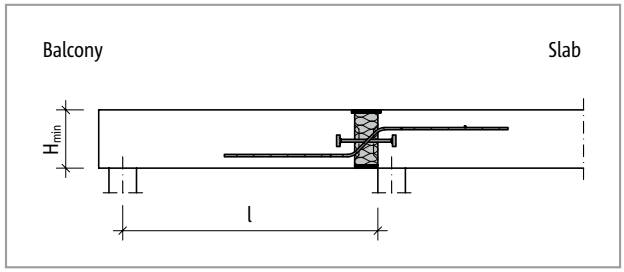


Fig. 159: Schöck Isokorb® T type Q-P: Static system

Schöck Isokorb® T type Q-PZ		V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
Design values with		$V_{Rd,z}$ [kN/element]									
Concrete strength class	C25/30	30.9	46.4	61.8	45.3	68.0	69.6	104.4	87.0	130.4	189.4

Schöck Isokorb® T type Q-PZ	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
Placement with	Isokorb® length [mm]									
	300	400	500	300	400	300	400	300	400	500
Shear force bars	2 ⌀ 8	3 ⌀ 8	4 ⌀ 8	2 ⌀ 10	3 ⌀ 10	2 ⌀ 12	3 ⌀ 12	2 ⌀ 14	3 ⌀ 14	4 ⌀ 14
Pressure bearing [piece]	-	-	-	-	-	-	-	-	-	-
H_{min} width REI120 [mm]	180	180	180	190	190	200	200	210	210	210

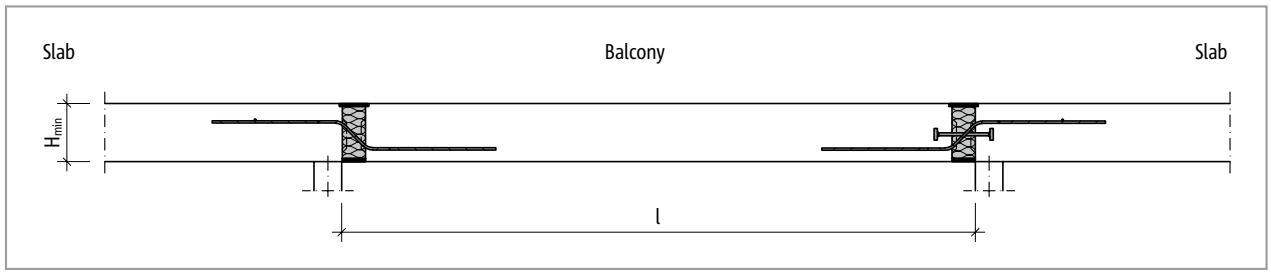


Fig. 160: Schöck Isokorb® T type Q-PZ, Q-P: Static system

C25/30 design

Schöck Isokorb® T type Q-P		VV1	VV2	VV3	VV4	VV5
Design values with		$V_{Rd,z}$ [kN/element]				
Concrete strength class	C25/30	±30.9	±46.4	±61.8	±45.3	±68.0

Schöck Isokorb® T type Q-P	VV1	VV2	VV3	VV4	VV5
Placement with	Isokorb® length [mm]				
	300	400	500	300	400
Shear force bars	2 × 2 ⌀ 8	2 × 3 ⌀ 8	2 × 4 ⌀ 8	2 × 2 ⌀ 10	2 × 3 ⌀ 10
Pressure bearing [piece]	1 ⌀ 10	2 ⌀ 10	2 ⌀ 10	1 ⌀ 12	2 ⌀ 10
H_{min} width REI120 [mm]	180	180	180	190	190

Schöck Isokorb® T type Q-P		VV6	VV7	VV8	VV9	VV10
Design values with		$V_{Rd,z}$ [kN/element]				
Concrete strength class	C25/30	±69.6	±104.4	±87.0	±130.4	±189.4

Schöck Isokorb® T type Q-P	VV6	VV7	VV8	VV9	VV10
Placement with	Isokorb® length [mm]				
	300	400	300	400	500
Shear force bars	2 × 2 ⌀ 12	2 × 3 ⌀ 12	2 × 2 ⌀ 14	2 × 3 ⌀ 14	2 × 4 ⌀ 14
Pressure bearing [piece]	2 ⌀ 10	2 ⌀ 12	2 ⌀ 12	3 ⌀ 12	4 ⌀ 12
H_{min} width REI120 [mm]	200	200	210	210	210

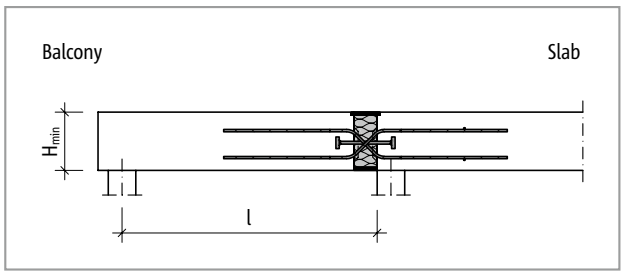


Fig. 161: Schöck Isokorb® T type Q-P-VV: Static system

Notes on design

- For the transfer of ordinary horizontal forces additional Schöck Isokorb® type H (see page 135) 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 with Schöck Isokorb® T type Q-P and T type Q-P-VV a freely rotatable bearing (pin connection) is assumed to be a static system. In addition, a shear force verification as per BS EN 1992-1-1 and BS EN 1992-1-1/NA of the floor slabs is to be carried out by the structural engineer.
- The Schöck Isokorb® T type Q-PZ for connection free of constraint forces requires a reinforced tie bar in the lower position. Select recessed balcony $a_{s,req}$ according to application example.
- 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}.

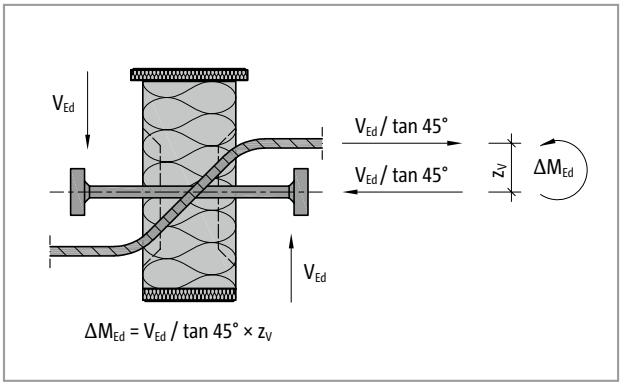


Fig. 162: Schöck Isokorb® T type Q-P: Moments resulting from excentric connection

Schöck Isokorb® T type Q-P		V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
Design values with		M_{Ed} [kNm/element]									
Concrete strength class	C25/30	1.3	2.0	2.6	2.2	3.3	3.8	5.8	5.5	8.2	11.9

Schöck Isokorb® T type Q-P		VV1	VV2	VV3	VV4	VV5	VV6	VV7	VV8	VV9	VV10
Design values with		M_{Ed} [kNm/element]									
Concrete strength class	C25/30	1.6	2.4	3.2	2.5	3.7	4.1	6.1	5.5	8.2	11.9

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 Stacon®.

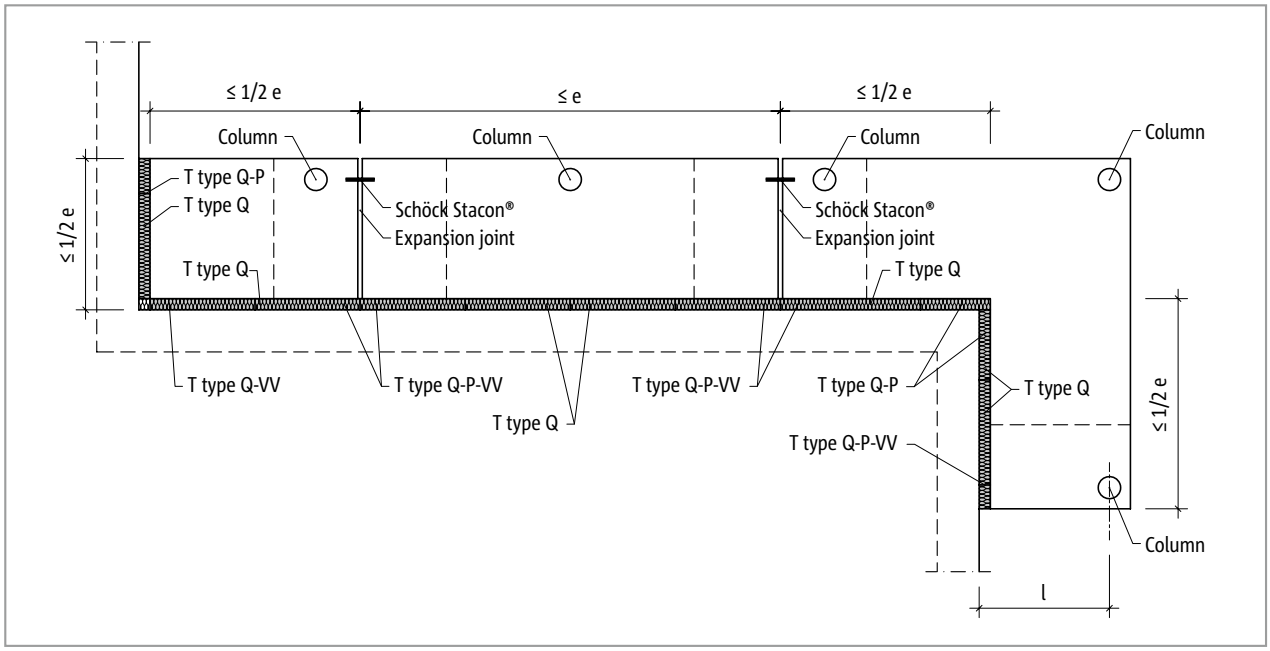


Fig. 163: Schöck Isokorb® T type Q-P, Q-P-VV: Expansion joint layout

Schöck Isokorb® T type Q-P, Q-PZ		V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
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	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 expansion joint the following applies: $e_R \geq 50$ mm and $e_R \leq 150$ mm.
- For the centre distance of the shear force bars from the free edge or from the expansion joints the following applies: $e_R \geq 100$ mm and $e_R \leq 150$ mm.

Product description

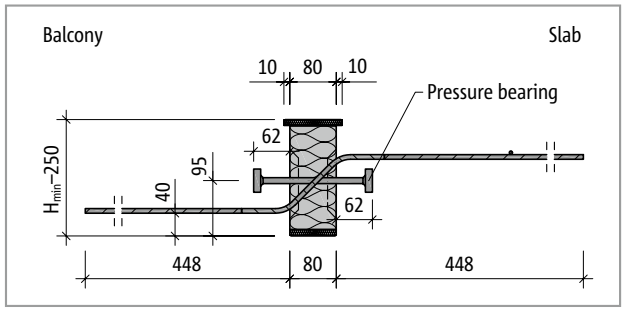


Fig. 164: Schöck Isokorb® T type Q-P-V1 to Q-P-V3: Product section

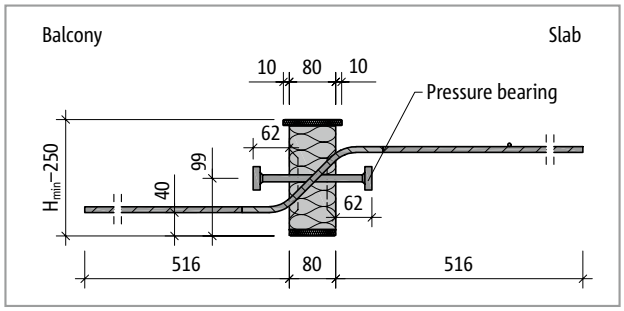


Fig. 165: Schöck Isokorb® T type Q-P-V4: Product section

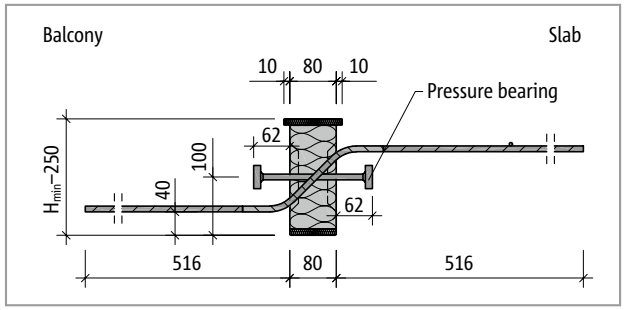


Fig. 166: Schöck Isokorb® T type Q-P-V5: Product section

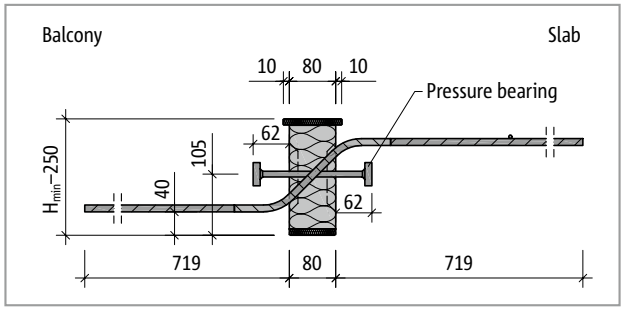


Fig. 167: Schöck Isokorb® T type Q-P-V6: Product section

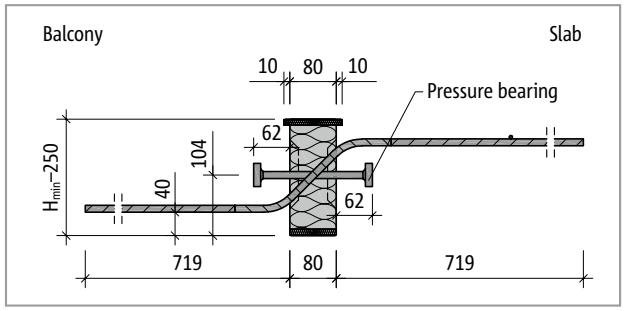


Fig. 168: Schöck Isokorb® T type Q-P-V7: Product section

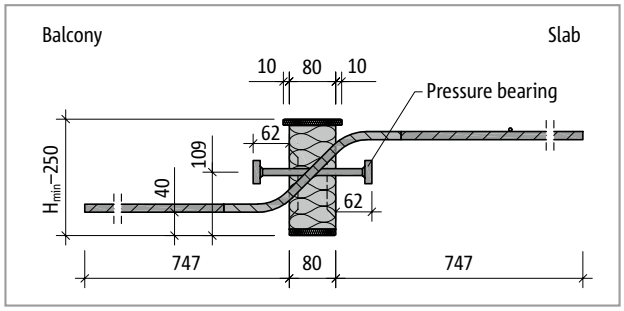


Fig. 169: Schöck Isokorb® T type Q-P-V8 to Q-P-V9: Product section

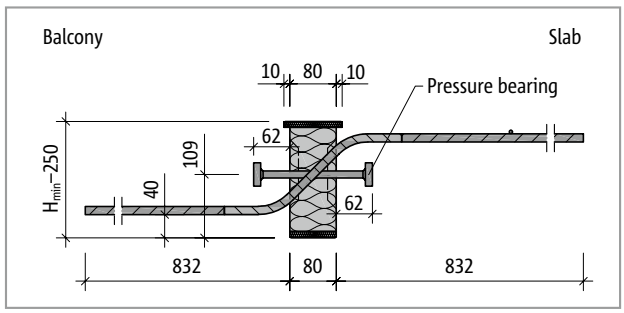


Fig. 170: Schöck Isokorb® T type Q-P-V10: Product section

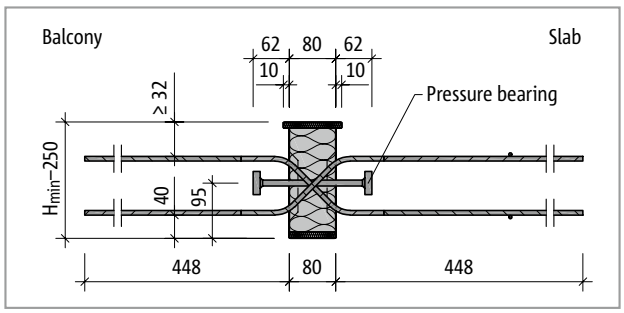


Fig. 171: Schöck Isokorb® T type Q-P-VV1 to Q-P-VV3: Product section

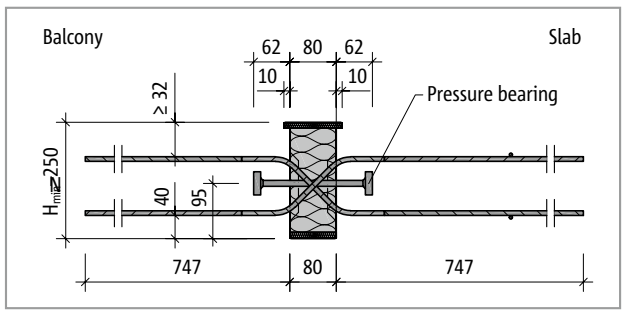


Fig. 172: Schöck Isokorb® T type Q-P-VV8 to Q-P-VV9: Product section

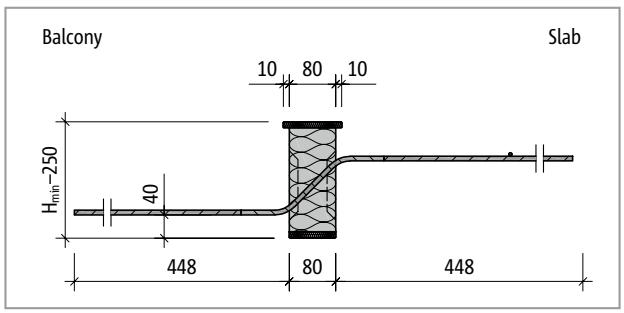


Fig. 173: Schöck Isokorb® T type Q-PZ-V1 to Q-PZ-V3: Product section

Product description

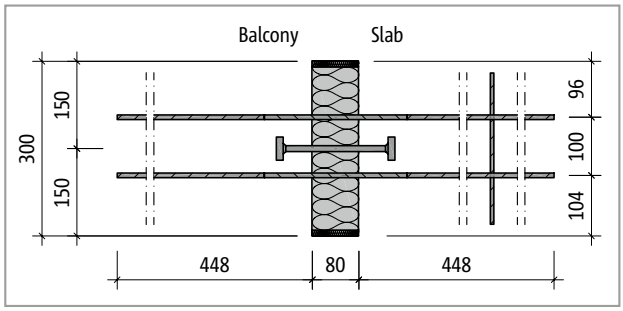


Fig. 174: Schöck Isokorb® T type Q-P-V1: Product layout

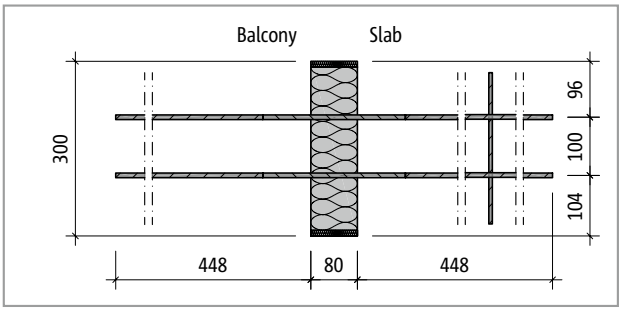


Fig. 175: Schöck Isokorb® T type Q-PZ-V1: Product layout

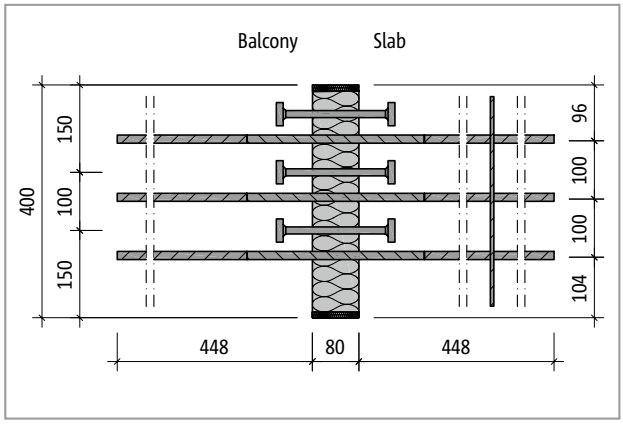


Fig. 176: Schöck Isokorb® T type Q-P-V9: Product layout

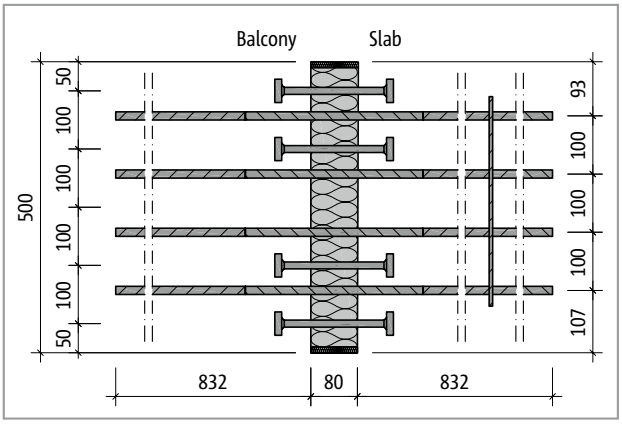


Fig. 177: Schöck Isokorb® T type Q-P-V10: Product layout

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.com/en-gb/download

On-site reinforcement

Direct support

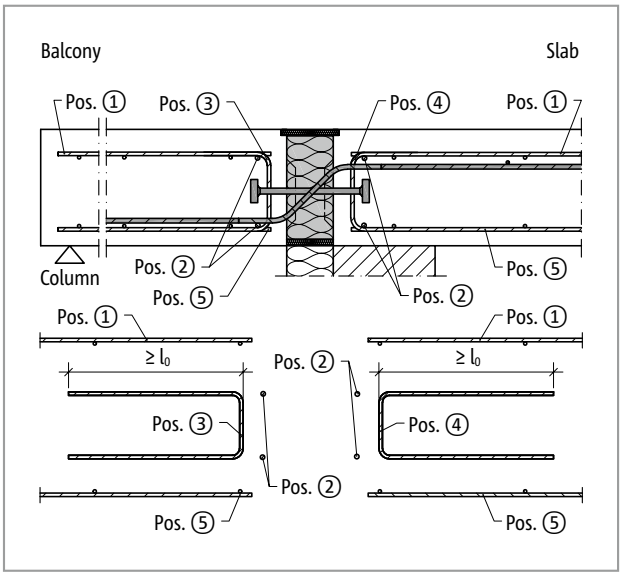


Fig. 178: Schöck Isokorb® T type Q-P: On-site reinforcement

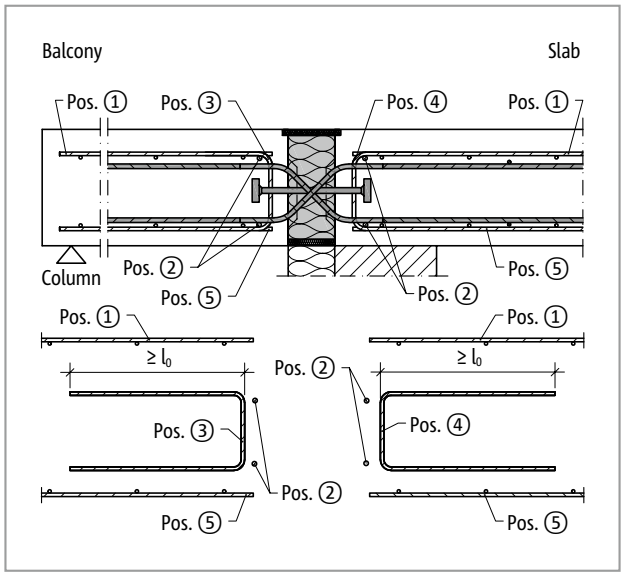


Fig. 179: Schöck Isokorb® T type Q-VV: On-site reinforcement

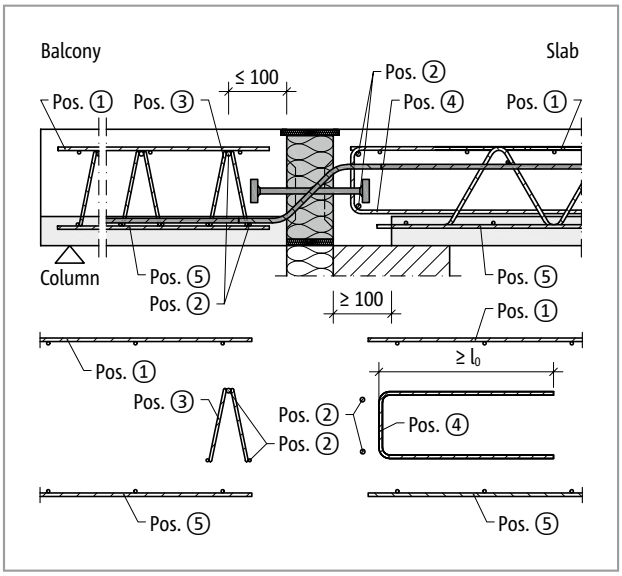


Fig. 180: Schöck Isokorb® T type Q-P: On-site reinforcement with lattice beam

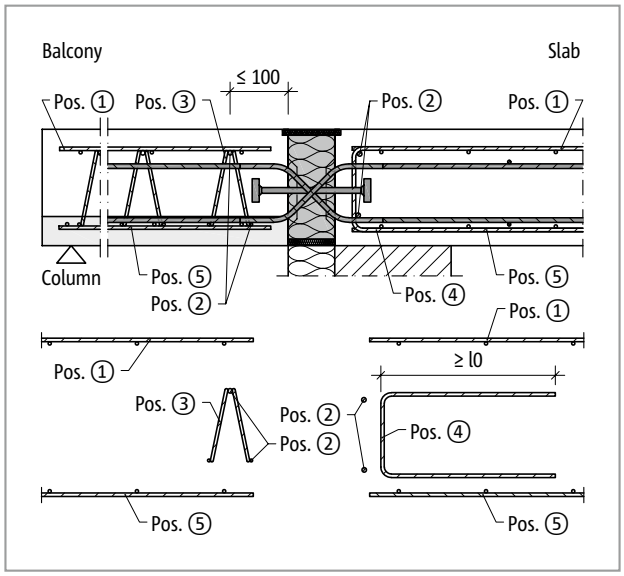


Fig. 181: Schöck Isokorb® T type Q-P-VV: On-site reinforcement, balcony side with lattice beam

On-site reinforcement

Indirect support

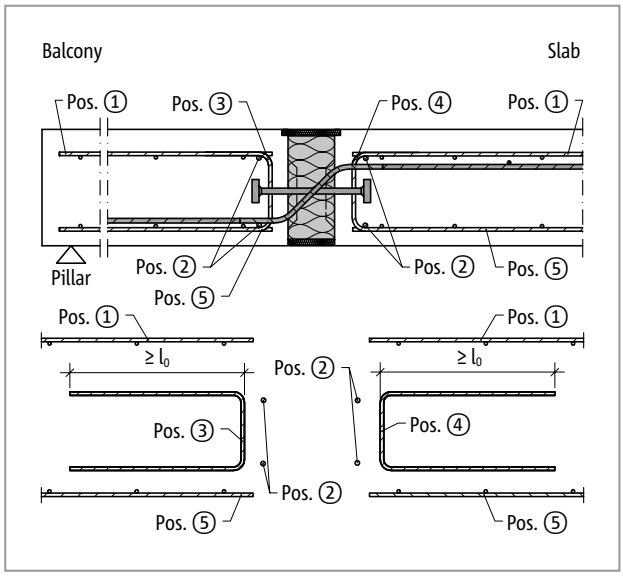


Fig. 182: Schöck Isokorb® T type Q-P: On-site reinforcement

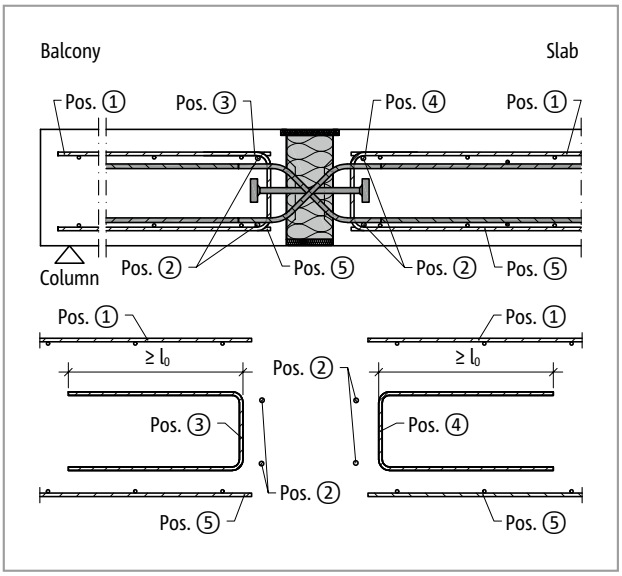


Fig. 183: Schöck Isokorb® T type Q-P-VV: On-site reinforcement

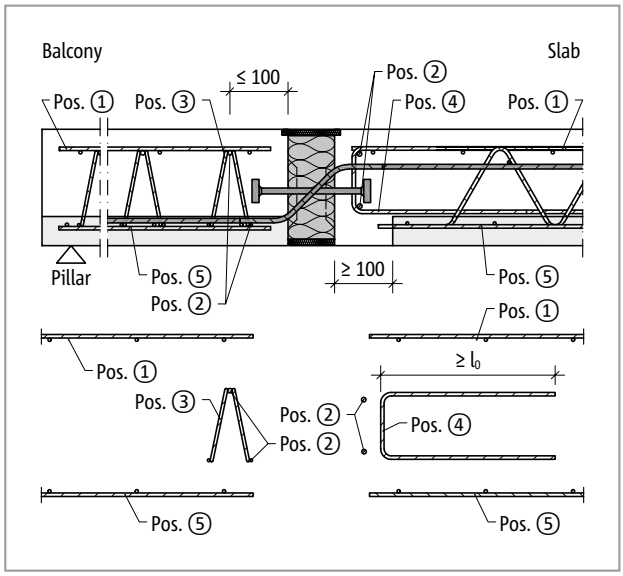


Fig. 184: Schöck Isokorb® T type Q-P: On-site reinforcement with lattice beam

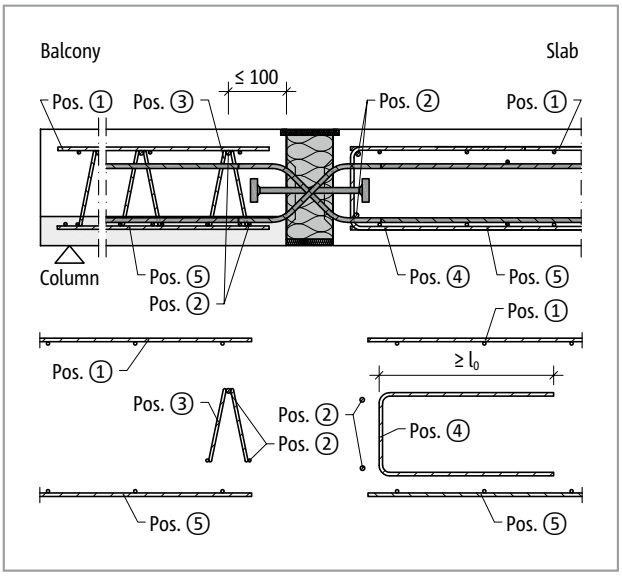


Fig. 185: Schöck Isokorb® T type Q-P-VV: On-site reinforcement, balcony side with lattice beam

On-site reinforcement

Schöck Isokorb® T type Q-P, Q-PZ		V1	V2	V3	V4	V5
On-site reinforcement for	Type of bearing	Concrete strength class ≥ C25/30				
Overlapping reinforcement						
Pos. 1		acc. to the specifications of the structural engineer				
Steel bars along the insulation joint						
Pos. 2		2 • 2 • H8				
Vertical reinforcement						
Pos. 3 [mm²/Element]	direct/indirect	57				
Pos. 4 [mm²/element]	direct	-	-	-	-	-
	indirect	88	140	175	129	190
Lapping reinforcement						
Pos. 5		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				

Schöck Isokorb® T type Q-P, Q-PZ		V6	V7	V8	V9	V10
On-site reinforcement for	Type of bearing	Concrete strength class ≥ C25/30				
Overlapping reinforcement						
Pos. 1		acc. to the specifications of the structural engineer				
Steel bars along the insulation joint						
Pos. 2		2 • 2 • H8				
Vertical reinforcement						
Pos. 3 [mm²/Element]	direct/indirect	57	57	57	75	101
Pos. 4 [mm²/element]	direct	-	-	-	-	-
	indirect	194	290	250	375	536
Lapping reinforcement						
Pos. 5		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				

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 above presentation shows only the first lattice beam in its function as suspension reinforcement. Connection variants with lattice beams deviating from the presentation are also possible. Here attention should be paid to the appropriate rules from BS EN 1992-1-1 (EC2), para. 10.9.3 and BS EN 1992-1-1/NA, NCI to 10.9.3 (e.g. separation of the lattice beams < 2h) and from the approvals of the lattice beams.
- Depending on the configuration of the Schöck Isokorb® attention is to be paid that a sufficiently wide in-situ concrete strip is arranged between the Schöck Isokorb® and the element slab.
- The Schöck Isokorb® T type Q-PZ for connection free of constraint forces requires a reinforced tie bar in the lower position. Select recessed balcony $a_{s,req}$ according to application example.
- When using the Schöck Isokorb® T type Q-P-VV, a recess must be provided in the element ceiling.
- The indicative minimum concrete strength class of the external structural component is C32/40.
- Further reinforcement values for Pos. 3 and Pos. 4 see type testing in www.schoeck.com/de/downloads.

On-site reinforcement

Schöck Isokorb® T type Q-P, Q-PZ		VV1	VV2	VV3	VV4	VV5
On-site reinforcement for	Type of bearing	Concrete strength class ≥ C25/30				
Overlapping reinforcement						
Pos. 1		acc. to the specifications of the structural engineer				
Steel bars along the insulation joint						
Pos. 2		2 • 2 • H8				
Vertical reinforcement						
Pos. 3 [mm²/Element]	direct/indirect	88	140	175	129	190
Pos. 4 [mm²/element]	direct	57	57	57	57	57
	indirect	88	140	175	129	190
Lapping reinforcement						
Pos. 5		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				

Schöck Isokorb® T type Q-P, Q-PZ		VV6	VV7	VV8	VV9	VV10
On-site reinforcement for	Type of bearing	Concrete strength class ≥ C25/30				
Overlapping reinforcement						
Pos. 1		acc. to the specifications of the structural engineer				
Steel bars along the insulation joint						
Pos. 2		2 • 2 • H8				
Vertical reinforcement						
Pos. 3 [mm²/Element]	direct/indirect	194	290	250	375	536
Pos. 4 [mm²/element]	direct	57	57	57	75	101
	indirect	194	290	250	375	536
Lapping reinforcement						
Pos. 5		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				

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 above presentation shows only the first lattice beam in its function as suspension reinforcement. Connection variants with lattice beams deviating from the presentation are also possible. Here attention should be paid to the appropriate rules from BS EN 1992-1-1 (EC2), para. 10.9.3 and BS EN 1992-1-1/NA, NCI to 10.9.3 (e.g. separation of the lattice beams < 2h) and from the approvals of the lattice beams.
- Depending on the configuration of the Schöck Isokorb® attention is to be paid that a sufficiently wide in-situ concrete strip is arranged between the Schöck Isokorb® and the element slab.
- The Schöck Isokorb® T type Q-PZ for connection free of constraint forces requires a reinforced tie bar in the lower position. Select recessed balcony $a_{s,req}$ according to application example.
- When using the Schöck Isokorb® T type Q-P-VV, a recess must be provided in the element ceiling.
- The indicative minimum concrete strength class of the external structural component is C32/40.
- Further reinforcement values for Pos. 3 and Pos. 4 see type testing in www.schoeck.com/de/downloads.

Application case recessed balcony

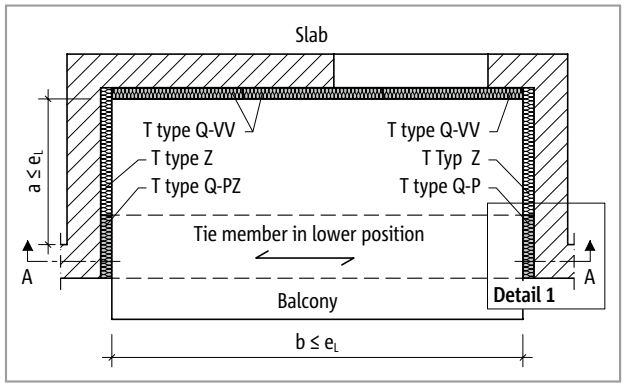


Fig. 186: Schöck Isokorb® T type Q-PZ, Q-P: Layout of recessed balcony

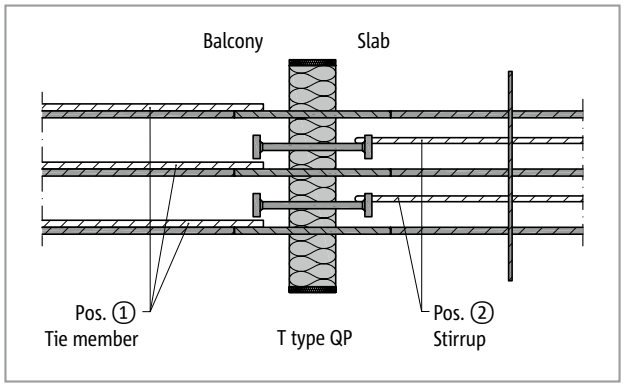


Fig. 187: Schöck Isokorb® T type Q-P: Detail 1; Reinforcement connection tie bar

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.

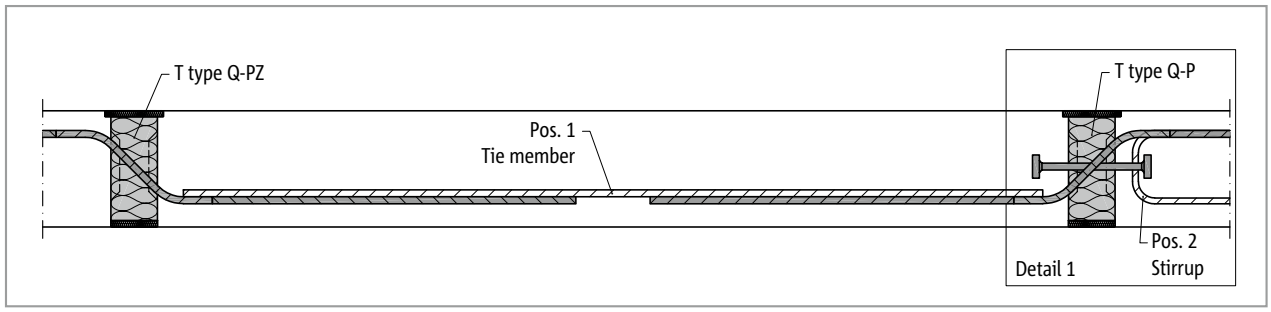


Fig. 188: Schöck Isokorb® T type Q-PZ, Q-P: Section A-A; Tie member connection

Schöck Isokorb® T type Q-P, Q-PZ	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
On-site reinforcement for	Concrete strength class ≥ C25/30									
Tie										
Pos. 1	2 • H8	3 • H8	4 • H8	2 • H10	3 • H10	2 • H12	3 • H12	2 • H16	3 • H16	4 • H14
Pos. 2 Stirrup (bracing)										
Pos. 2	1 • H8	2 • H8	2 • H8	1 • H10	2 • H10	2 • H10	2 • H10	2 • H10	3 • H10	4 • H14

Schöck Isokorb® T type Q-P, Q-PZ		V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
Fixed point separation recessed balcony		e_L [m]									
a, b ≤	80	5.5	5.5	5.5	5.3	5.3	4.8	4.8	4.2	4.2	4.2

Recessed balcony

- The fixed point separations a, b are to be selected witht a ≤ e_L and b ≤ 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

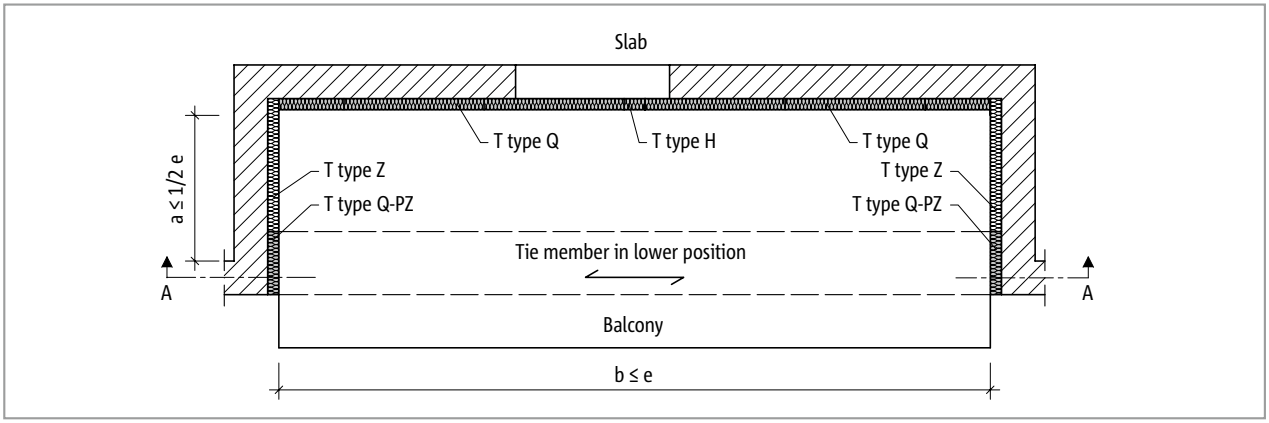


Fig. 189: Schöck Isokorb® T type Q-PZ: Layout of recessed balcony - symmetrical

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.

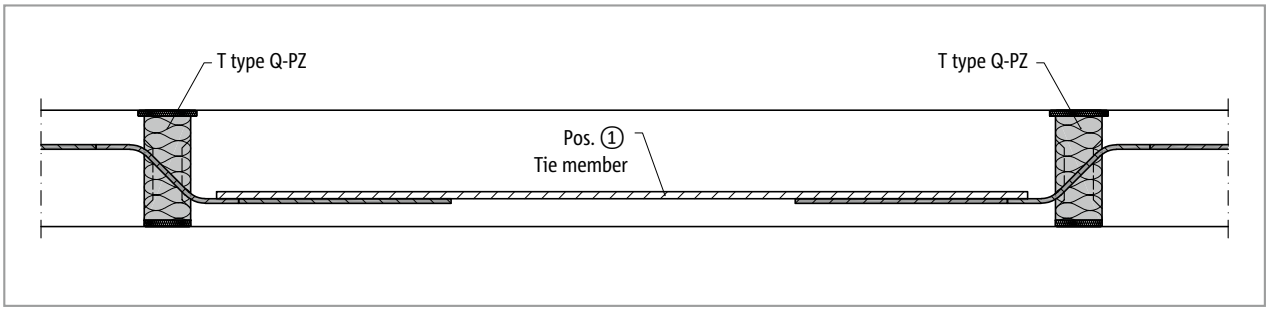


Fig. 190: Schöck Isokorb® T type Q-PZ: Tie member connection

Schöck Isokorb® T type Q-PZ	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
On-site reinforcement for	Concrete strength class ≥ C25/30									
Tie										
Pos. 1	2 • H8	3 • H8	4 • H8	2 • H10	3 • H10	2 • H12	3 • H12	2 • H16	3 • H16	4 • H14

Schöck Isokorb® T type Q-P, Q-PZ		V1, VV1	V2, VV2	V3, VV3	V4, VV4	V5, VV5	V6, VV6	V7, VV7	V8, VV8	V9, VV9	V10, VV10
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	8.3

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

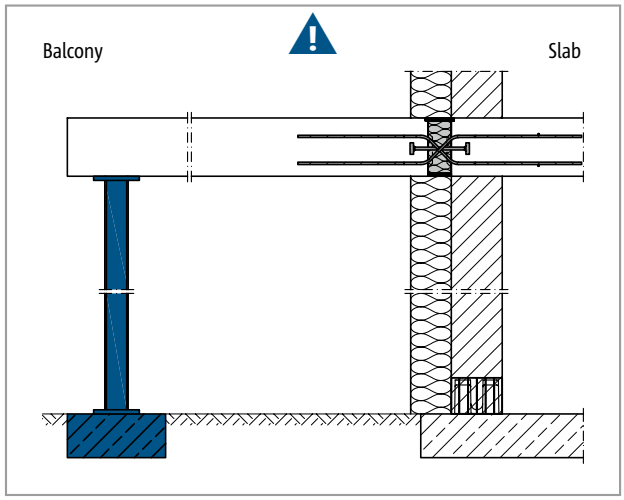


Fig. 191: Schöck Isokorb® T type Q-VV: Support required at all times

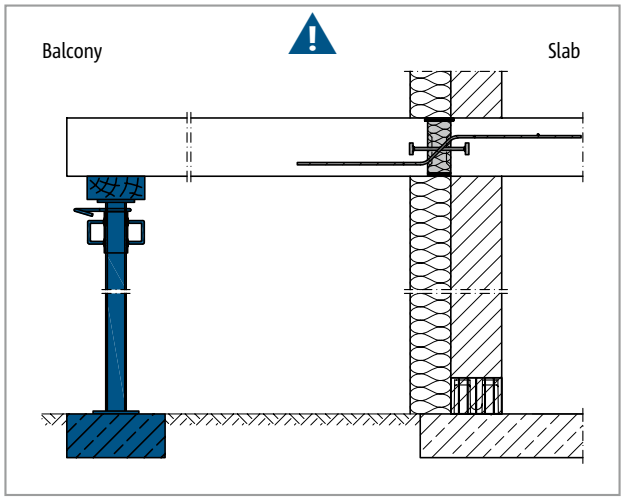


Fig. 192: Schöck Isokorb® T type Q-P: Support required at all times

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 columns

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

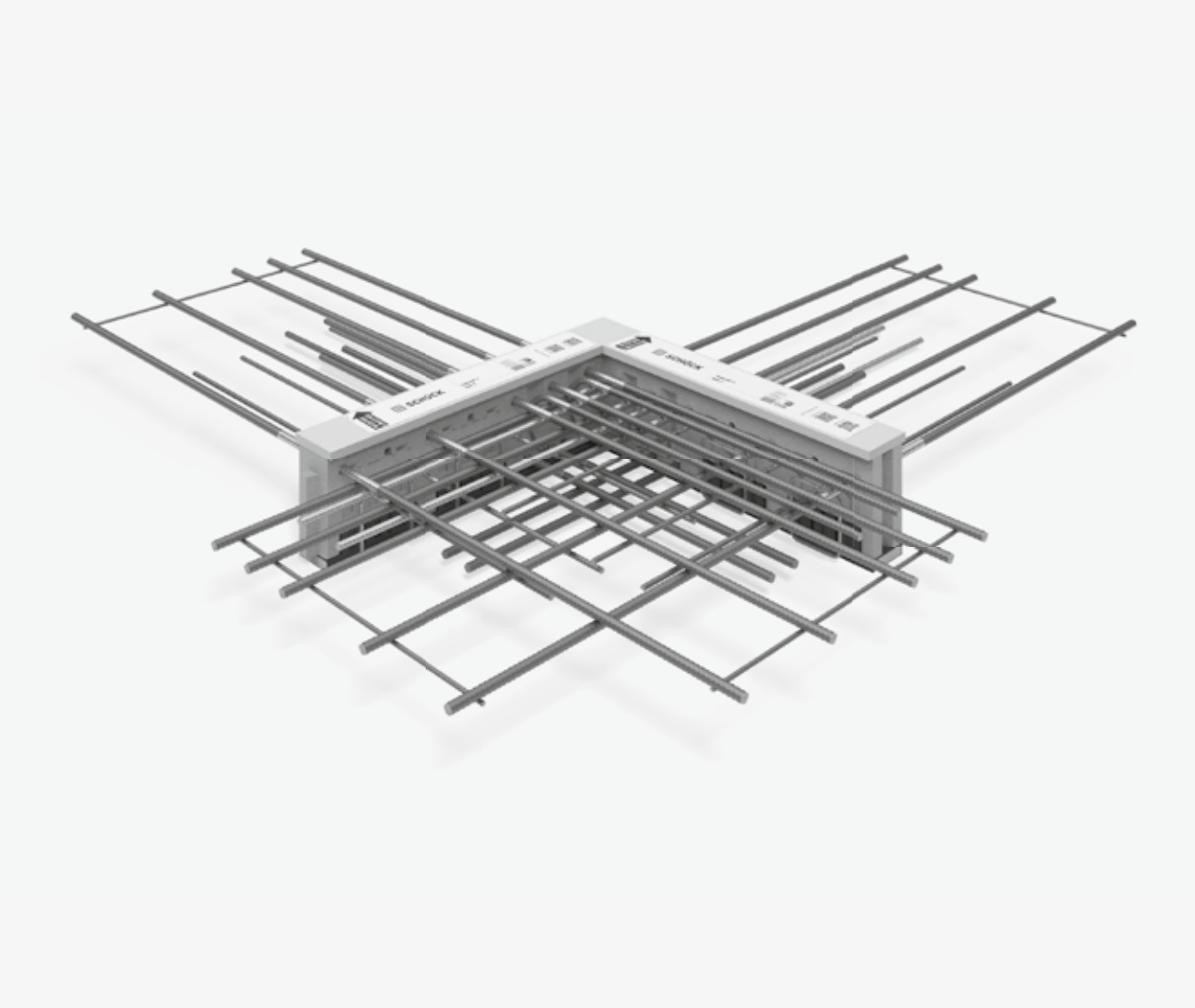
Installation instructions

The current installation instruction can be found online under:
www.schoeck.com/view/6429

☑ Check list

- ☐ Has the right type of Schöck Isokorb® been selected for the static system? Type Q-P 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?
- ☐ Is the danger notice for missing support entered in the implementation plans?
- ☐ 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 strength class 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 C



Schöck Isokorb® T type C
Load-bearing thermal insulation element for freely cantilevered corner balconies. The element transfers negative moments and positive shear forces.

Element arrangement | Installation cross sections

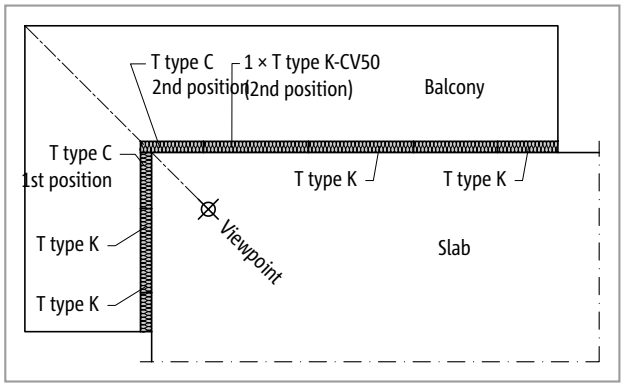


Fig. 193: Schöck Isokorb® T type C: Balcony with outside corner freely cantilevered

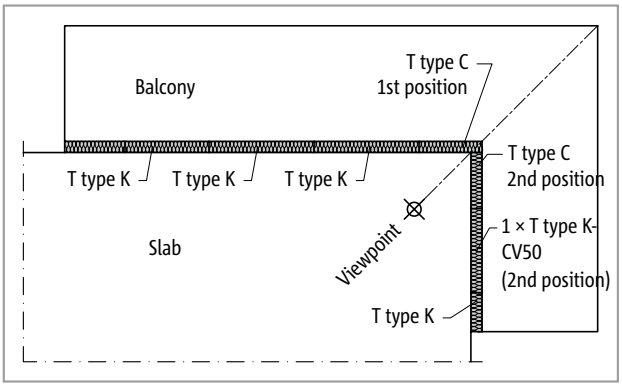


Fig. 194: Schöck Isokorb® T type C: Balcony with outside corner freely cantilevered

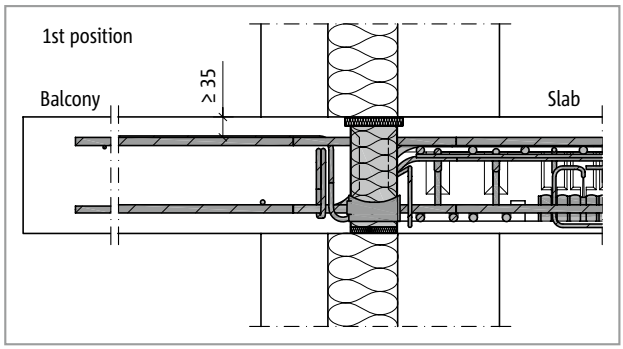


Fig. 195: Schöck Isokorb® T type C: Section 2nd position; connection with non-load-bearing cavity walls

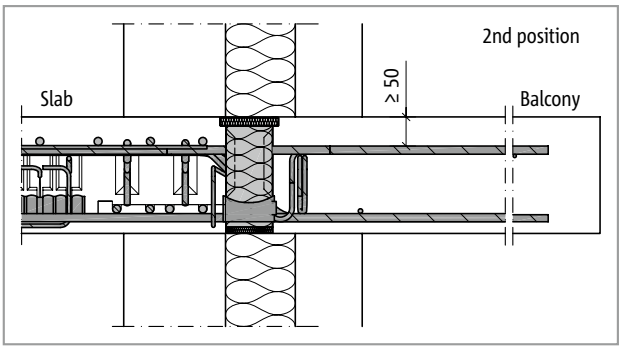


Fig. 196: Schöck Isokorb® T type C: Section 1st position; connection with non-load-bearing cavity walls

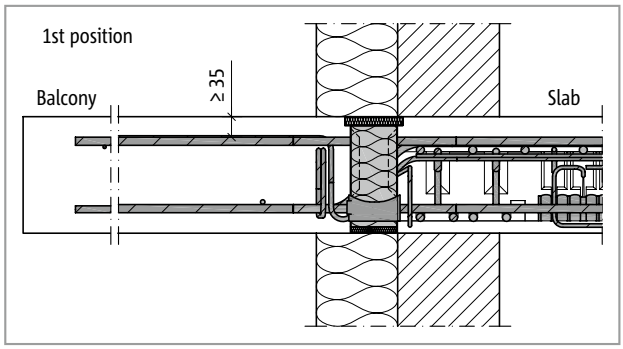


Fig. 197: Schöck Isokorb® T type C: Section 1st position; connection with thermal insulation composite system (TICS)

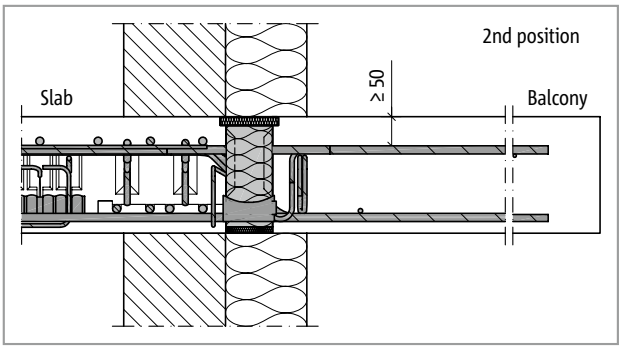


Fig. 198: Schöck Isokorb® T type C: Section 2nd position; connection with thermal insulation composite system (TICS)

Element arrangement

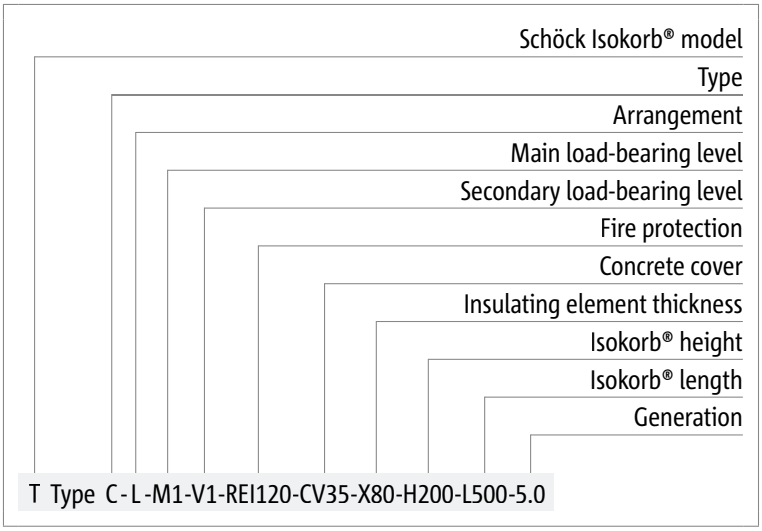
- Subcomponent 1st position and subcomponent 2nd position of the Schöck Isokorb® T type C cannot be interchanged.
- In connection with a Schöck Isokorb® T type C subcomponent 2nd position a Schöck Isokorb® T type K-CV50 element (2nd position) is always required.

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): Top and bottom fire protection projecting by 10mm on both sides
- Concrete cover of the tension bars: CV30 = 30 mm, CV35 = 35 mm
- Insulating element thickness:
  X80 = 80 mm
- Isokorb® height:
  H = 180 mm to 250 mm
- Insulating element length:
  subcomponent C-L 1. Position: static length L = 500 mm, 620 mm; geometric length L = 500 mm, 700 mm
  subcomponent C-R 2. Position: static length L = 500 mm, 620 mm; geometric length L = 580 mm, 700 mm
  The static length is to be used for the type designation.
- 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		
			M_Rd,y [kNm] per subcomponent L 1st position and R 2nd position		
	CV30	CV35			
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
			V_{Rd},z [kN] per subcomponent L 1st position and R 2nd position		
Isokorb® height H [mm]		180–190	37.3	78.6	91.1
		≥ 200	37.3	106.7	119.2

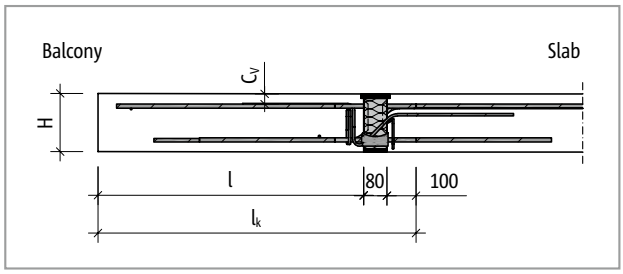


Fig. 199: Schöck Isokorb® T type C: Static system

C25/30 design | Design

Schöck Isokorb® T type C	M1		M2		M3	
Placement with	Geometric connection variant					
	L	R	L	R	L	R
Isokorb® static length [mm]	500	500	620	620	620	620
Isokorb® geometric length [mm]	500	580	700	700	700	700
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

Notes on design

- The shear force loading of the slabs in the area of the insulation joint is to be limited to $V_{Rd,\,max}$, whereby $V_{Rd,\,max}$, acc. to BS EN 1992-1-1 (EC2), Exp. (6.9) is determined for $\theta = 45°$ and $\alpha = 90°$ (slab load-bearing capacity).
- 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 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 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.

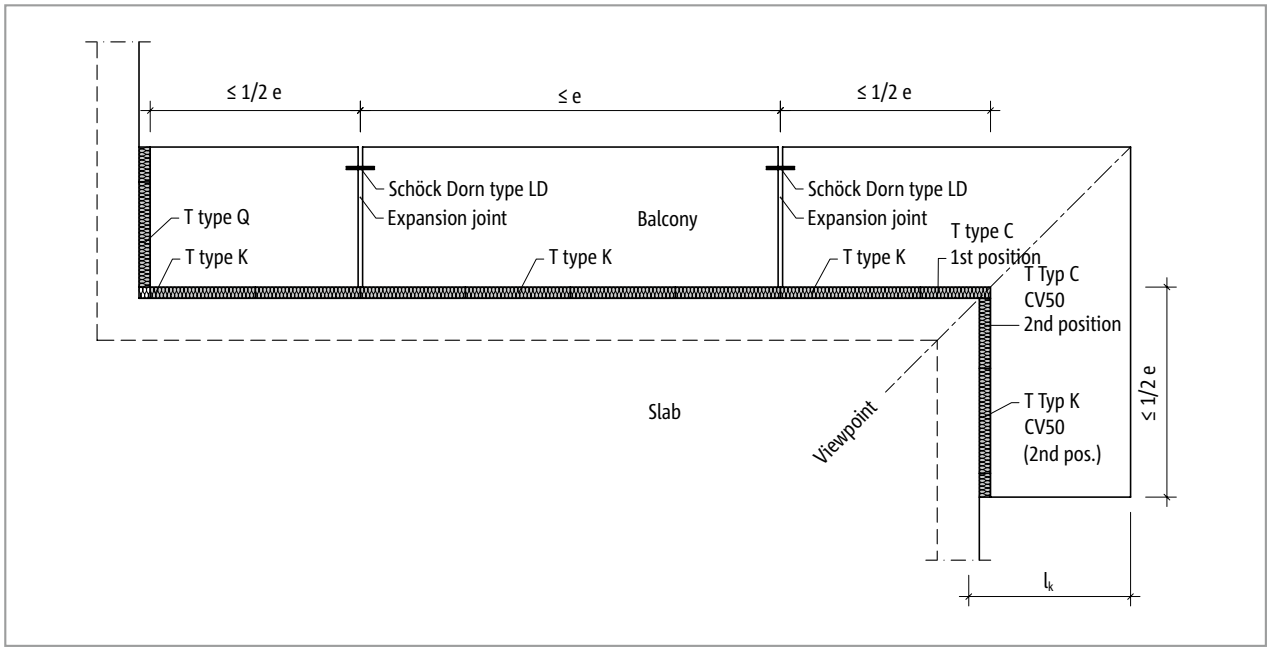


Fig. 200: Schöck Isokorb® T type C: Expansion joint spacing

Schöck Isokorb® T type C		M1	M2, M3
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 page 38	≤ e/2 see page 93	≤ e/2 see page 112	≤ e/2 see page 159

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

Product description

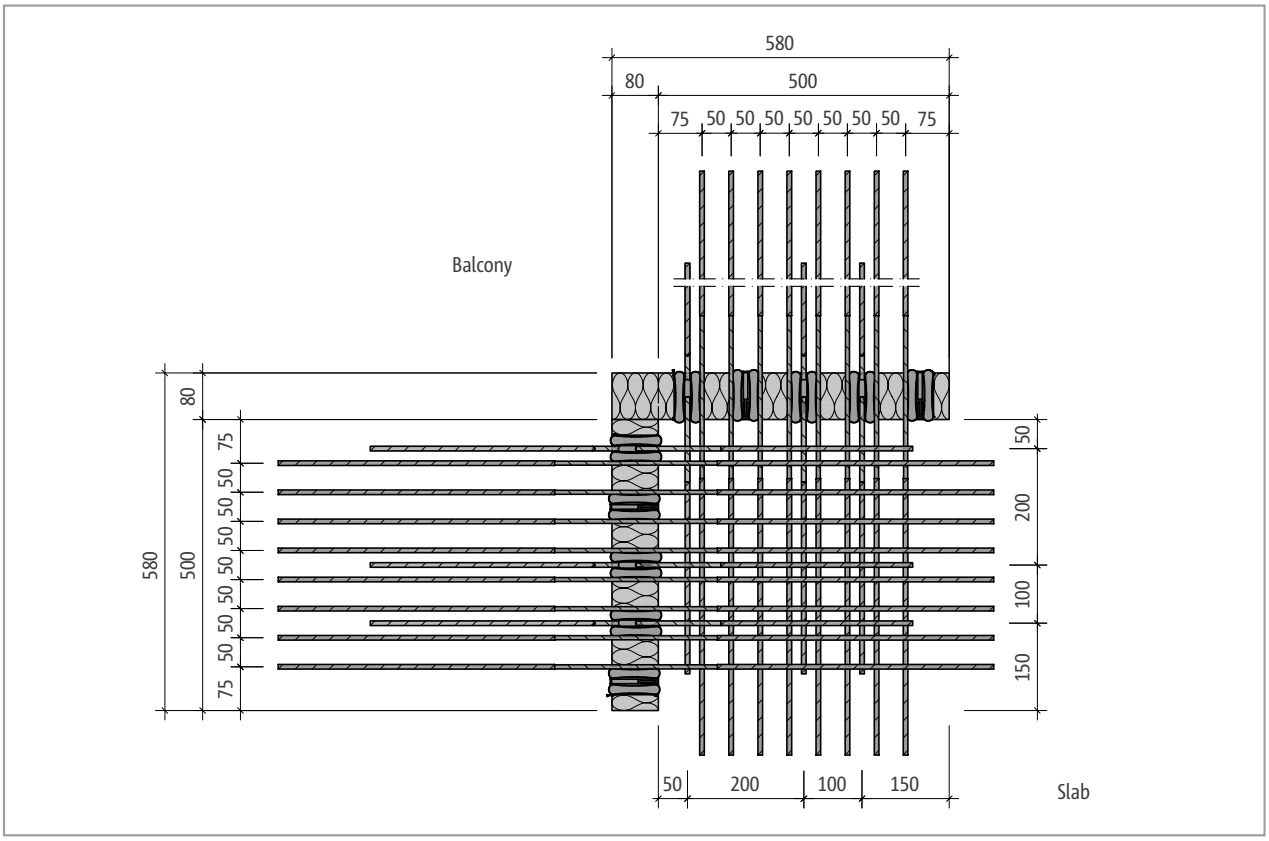


Fig. 201: Schöck Isokorb® T type C-M1: Product layout

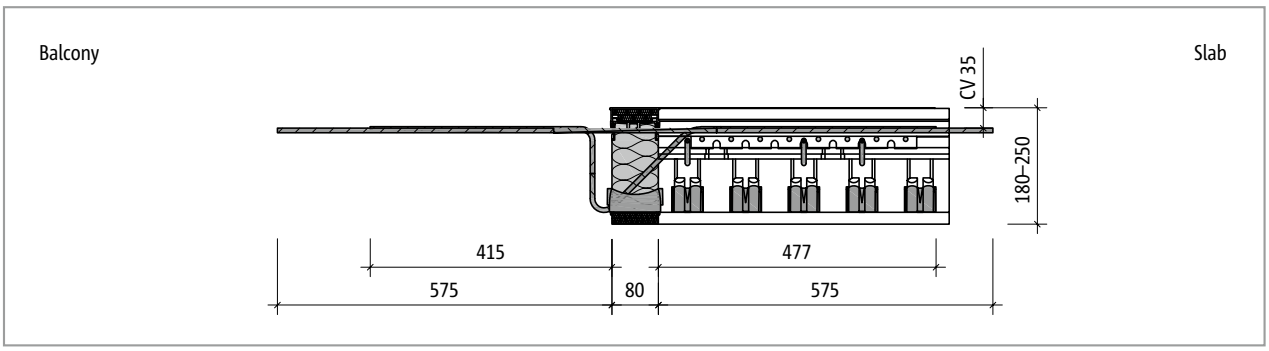


Fig. 202: Schöck Isokorb® T type C-M1: Product section

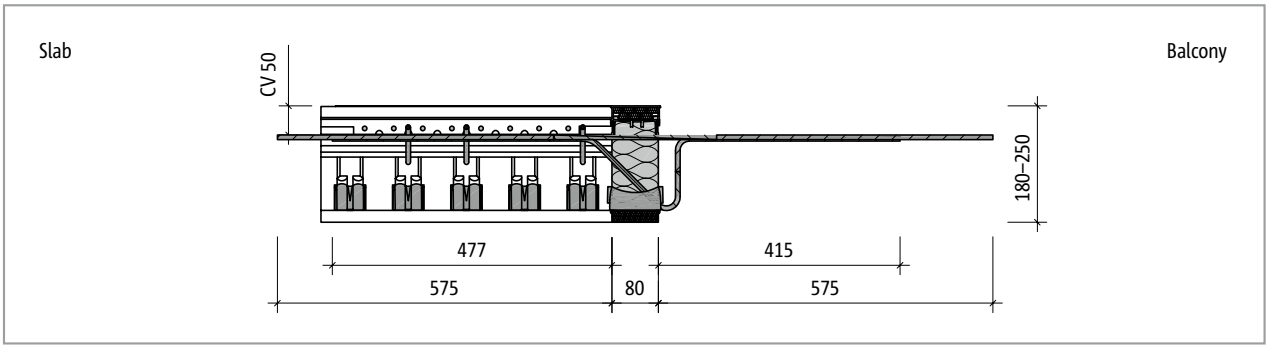


Fig. 203: Schöck Isokorb® T type C-M1: Product section

Product information

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

Product description

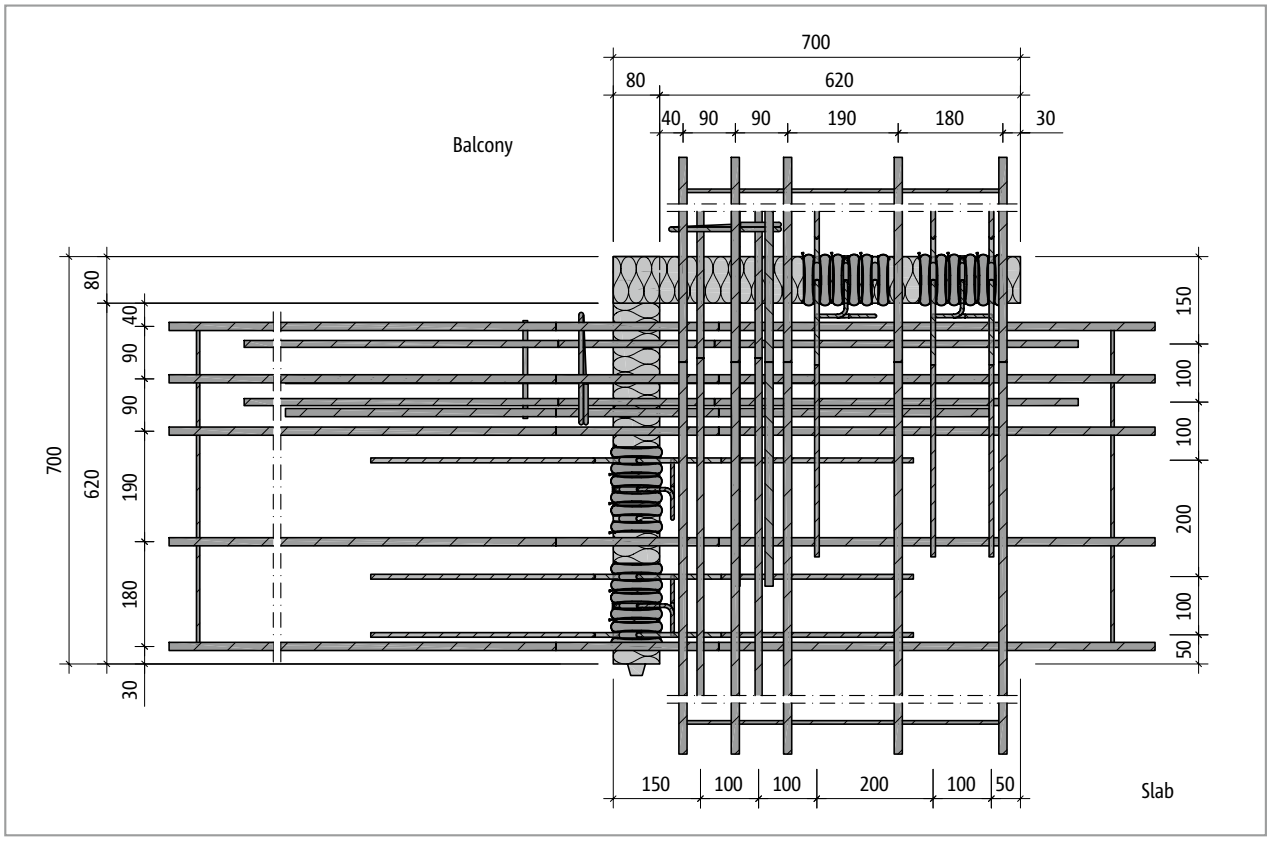


Fig. 204: Schöck Isokorb® T type C-M2: Product layout

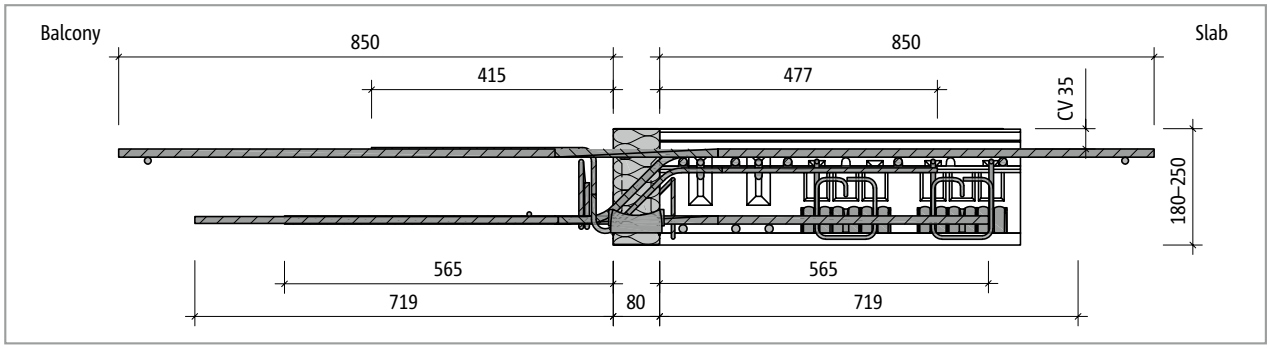


Fig. 205: Schöck Isokorb® T type C-M2: Product section

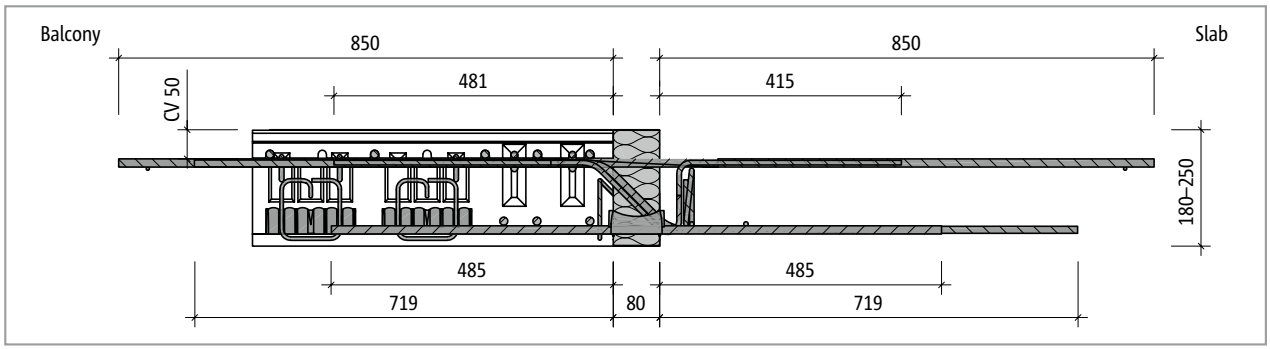


Fig. 206: Schöck Isokorb® T type C-M2: Product section

Product information

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

Product description

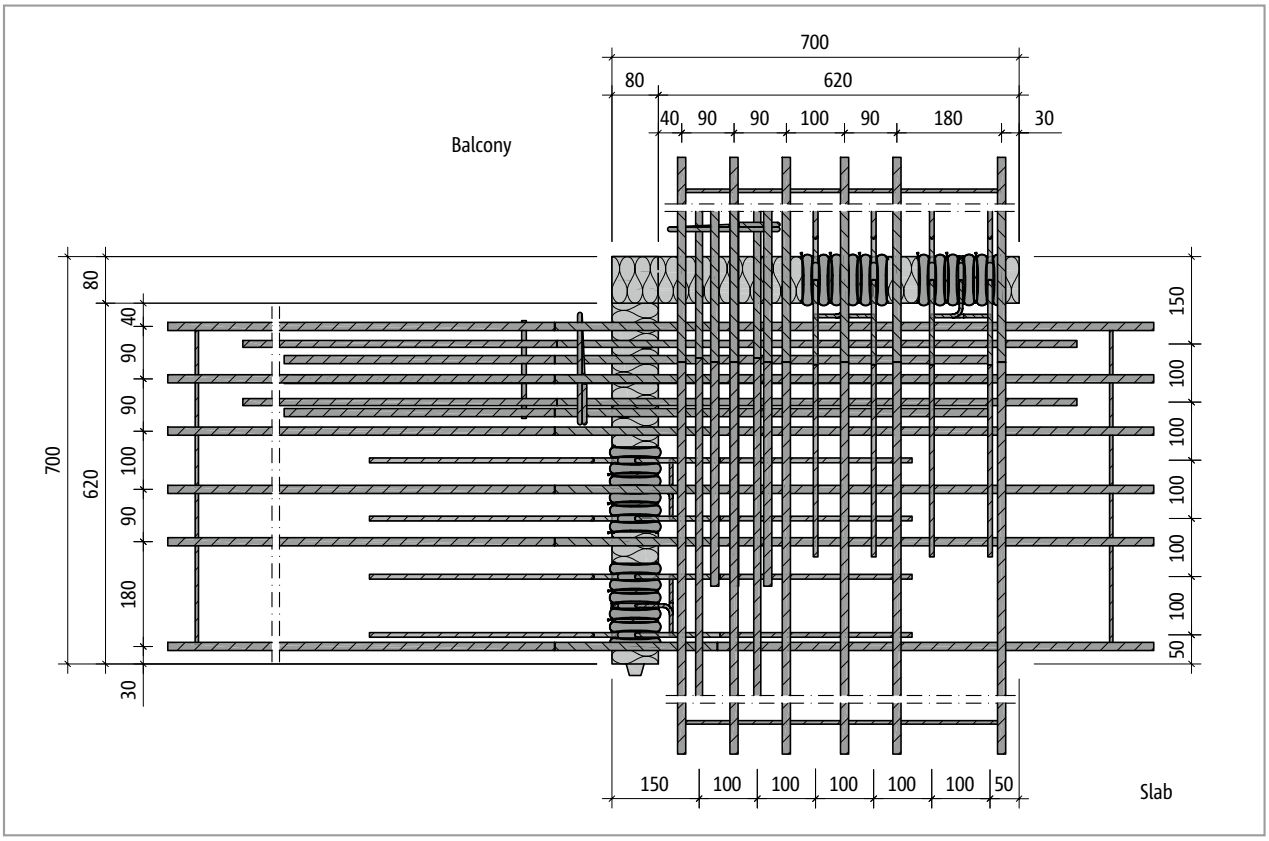


Fig. 207: Schöck Isokorb® T type C-M3: Product layout

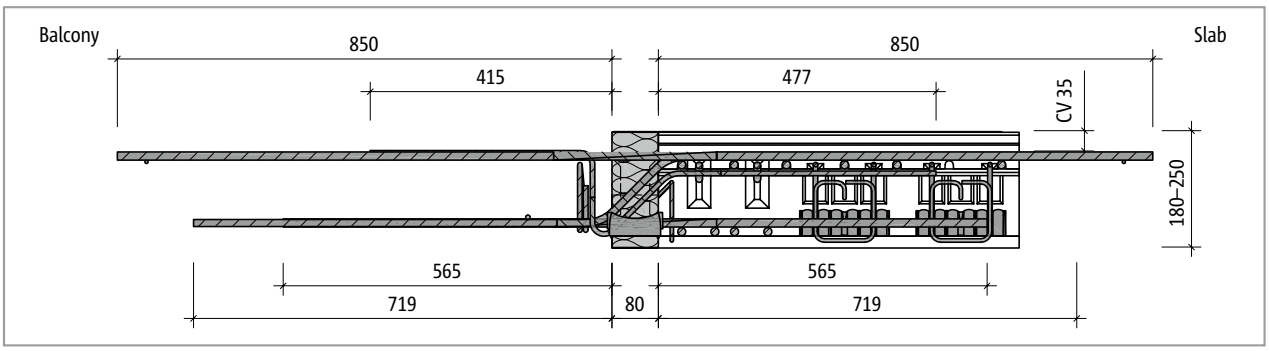


Fig. 208: Schöck Isokorb® T type C-M3: Product section

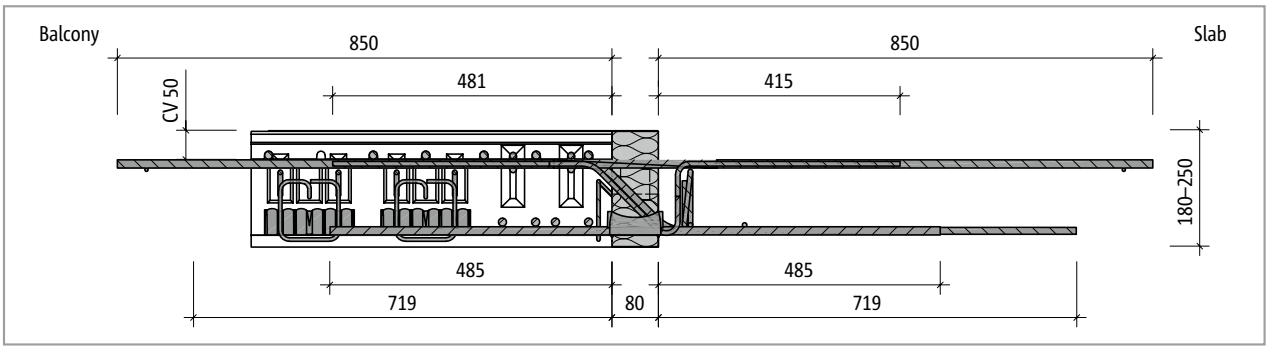


Fig. 209: Schöck Isokorb® T type C-M3: Product section

Product information

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

On-site reinforcement

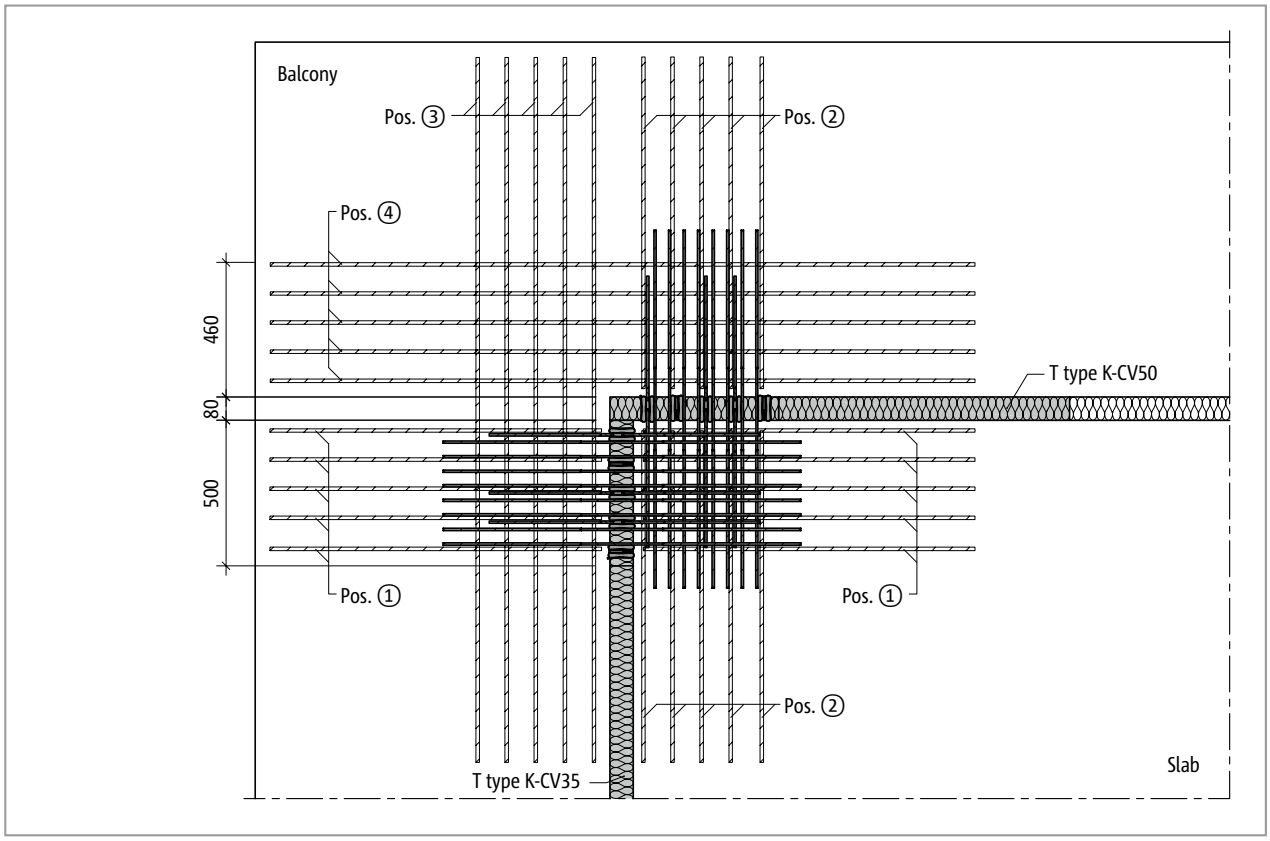


Fig. 210: Schöck Isokorb® T type C-M1: On-site reinforcement (top position)

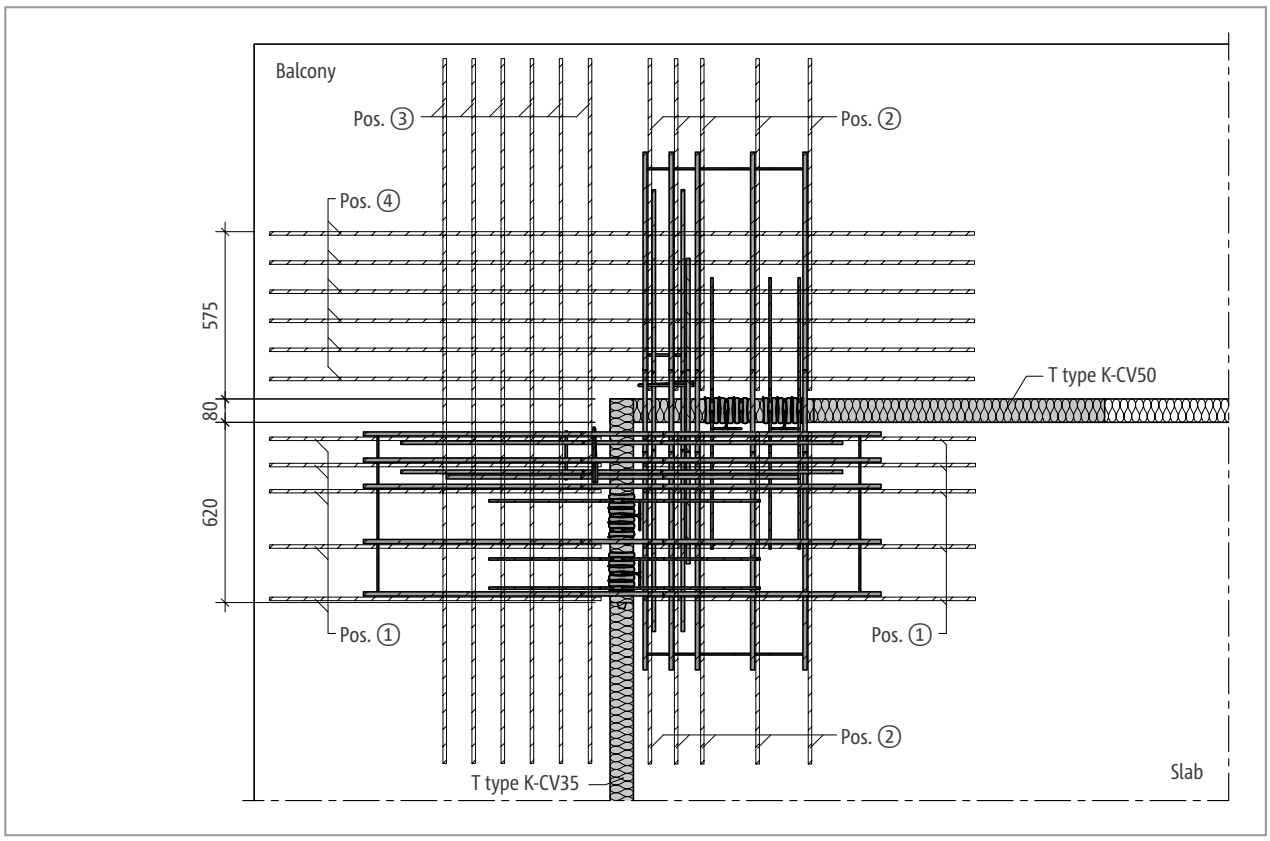


Fig. 211: Schöck Isokorb® T type C-M2: On-site reinforcement (top position)

On-site reinforcement | Installation instructions

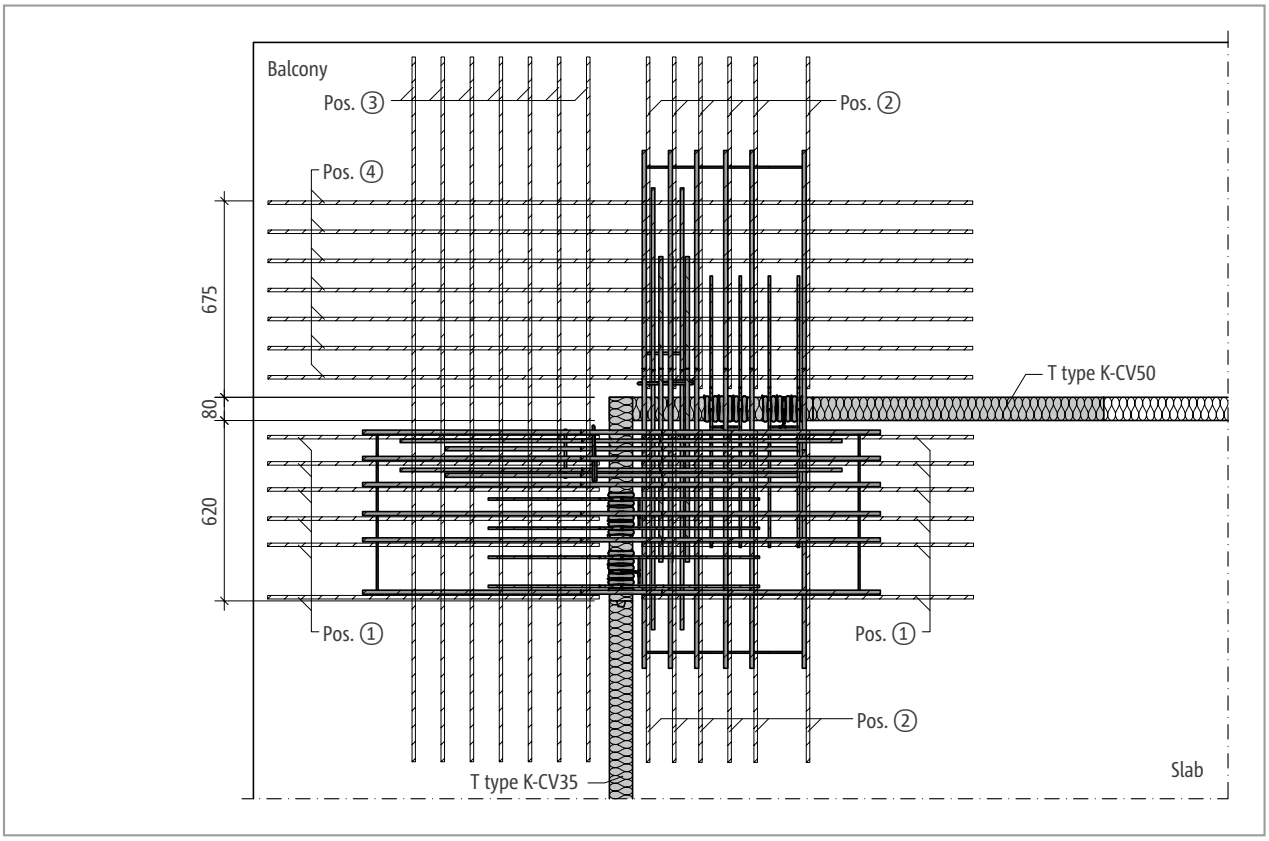


Fig. 212: Schöck Isokorb® T type C-M3: On-site reinforcement (top position)

Schöck Isokorb® T type C		M1	M2	M3
On-site reinforcement	Location	Concrete strength class ≥ C25/30		
Overlapping 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	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
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	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.

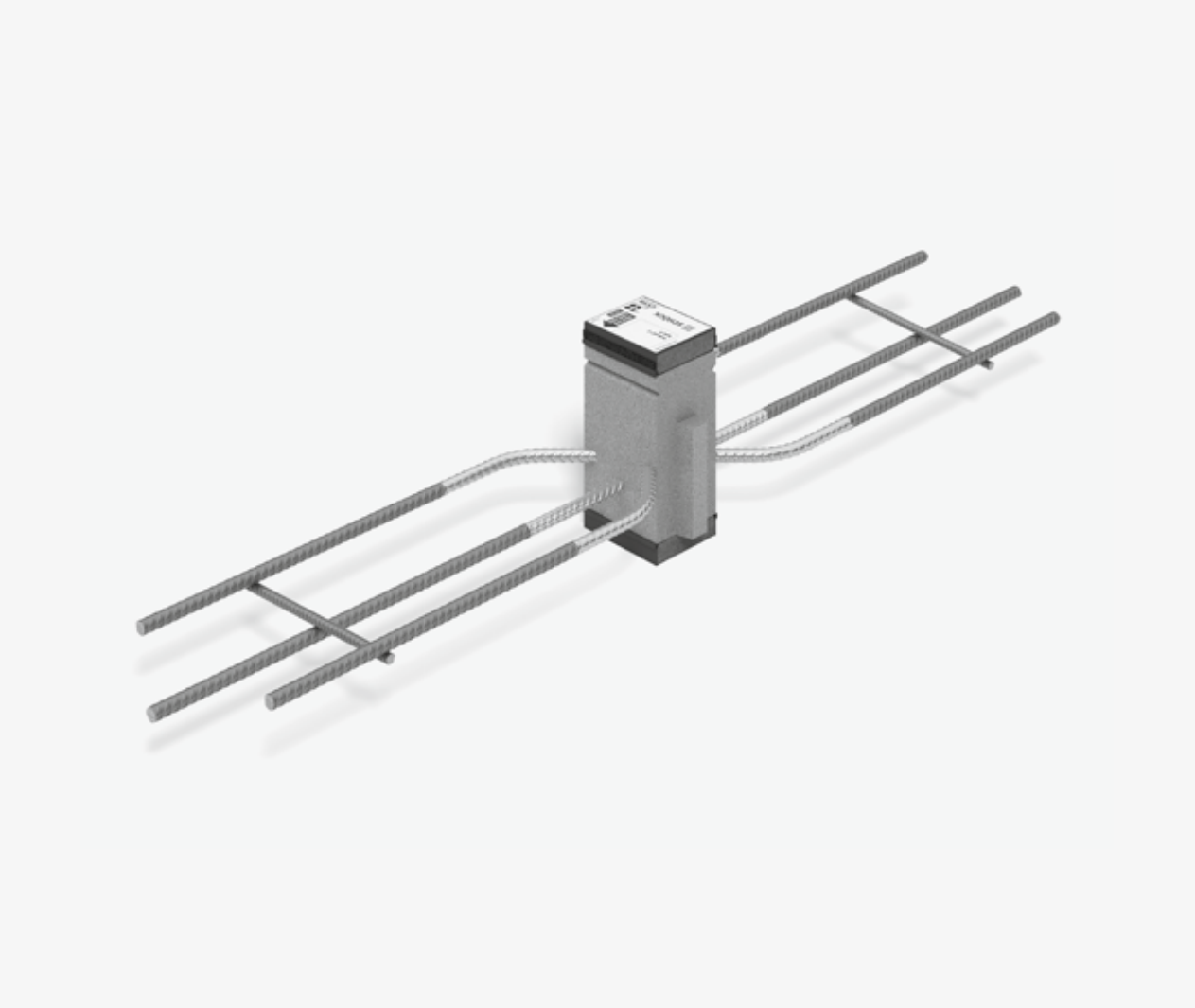
Installation instructions

The current installation instruction can be found online under:
www.schoeck.com/view/6420

☑ 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 deformation due to 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 connection with height offset or to a wall?

Schöck Isokorb® T type H



Schöck Isokorb® T type H
Load-bearing thermal insulation element for the transmission of planned horizontal forces parallel and perpendicular to the insulation plane. The element may be used only in conjunction with other Isokorb® types that can absorb moments or shear forces.
The element with the load bearing capacity NN transmits forces perpendicular to the insulation plane.
The element with the load bearing capacity VV-NN transmits forces parallel and perpendicular to the insulation plane.

Element arrangement | Installation cross sections

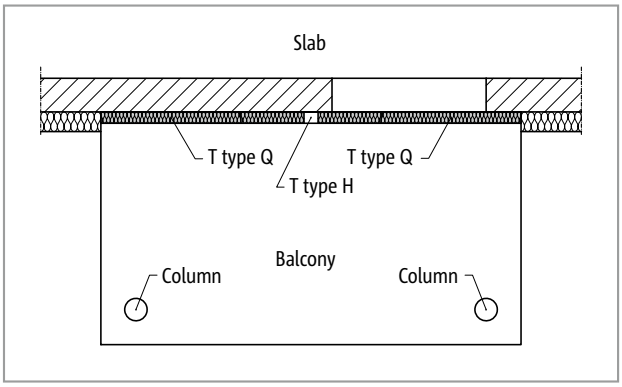


Fig. 213: Schöck Isokorb® T type H: Balcony with column support

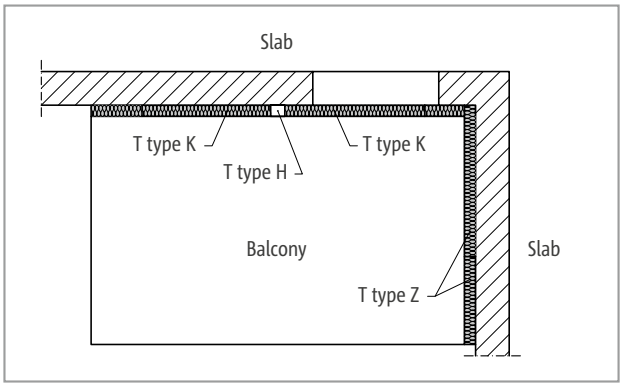


Fig. 214: Schöck Isokorb® T type H: Cantilevered balcony

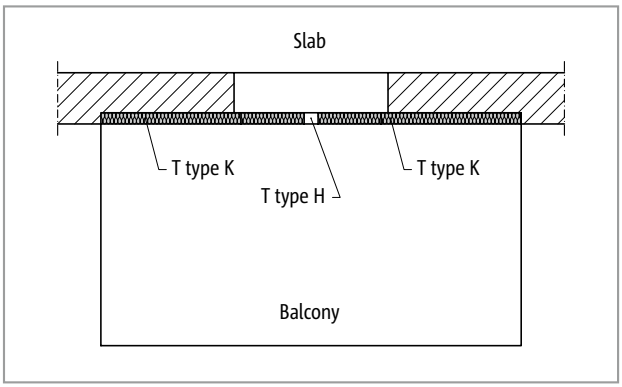


Fig. 215: Schöck Isokorb® T type H: Cantilevered balcony

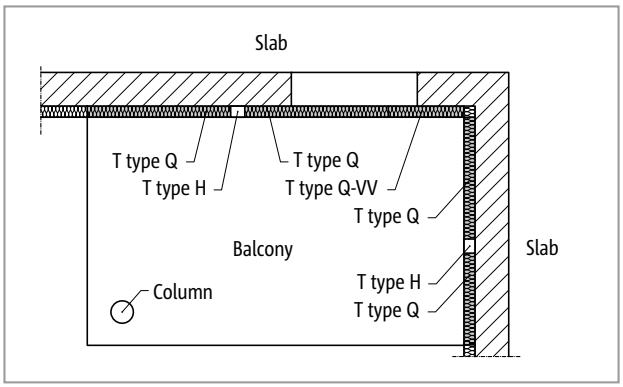


Fig. 216: Schöck Isokorb® T type H: Balcony supported on two sides with column

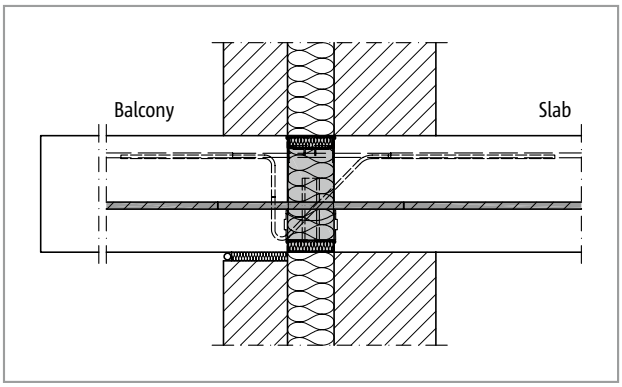


Fig. 217: Schöck Isokorb® T type K, H-NN: Connection with non- cavity masonry

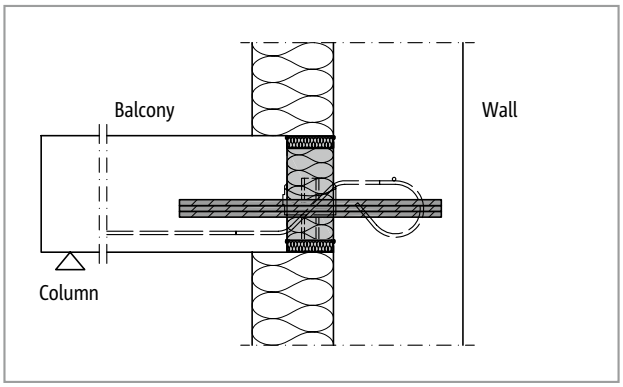


Fig. 218: Schöck Isokorb® T type Q, H-VV-NN: Connection to a reinforced concrete wall with external insulation

Geometry

- The use 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.

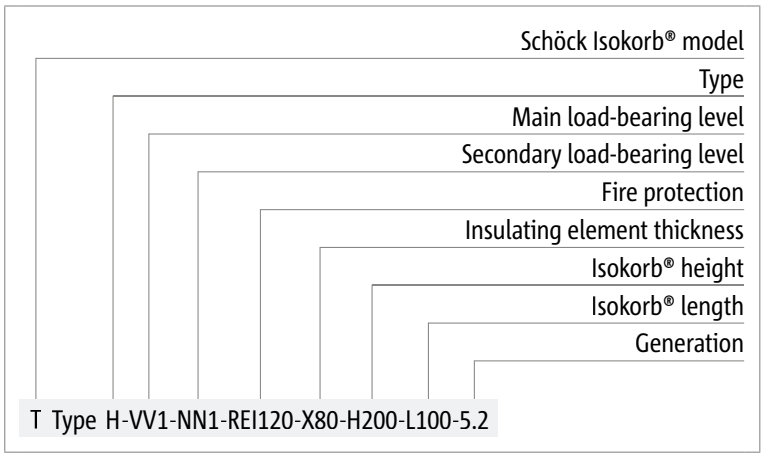
Product selection | Type designations | Special designs

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:
  5.2

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]
Concrete strength class	C25/30	0.0	±11.6	0.0	±49.2	±10.4	±11.6	±39.2	±49.2

Schöck Isokorb® T type H	NN1	NN2	VV1-NN1	VV2-NN1
Placement with	Isokorb® length [mm]			
	100	100	100	100
Shear force bars, horizontal	-	-	2 × 1 ⌀ 10	2 × 1 ⌀ 12
Tension bars/compression bars	1 ⌀ 10	1 ⌀ 12	1 ⌀ 10	1 ⌀ 12

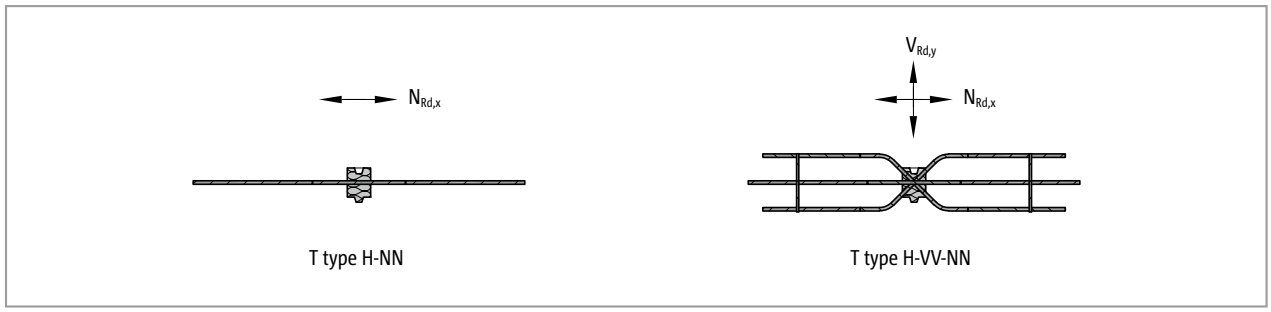


Fig. 219: Schöck Isokorb® T type H: Type selection

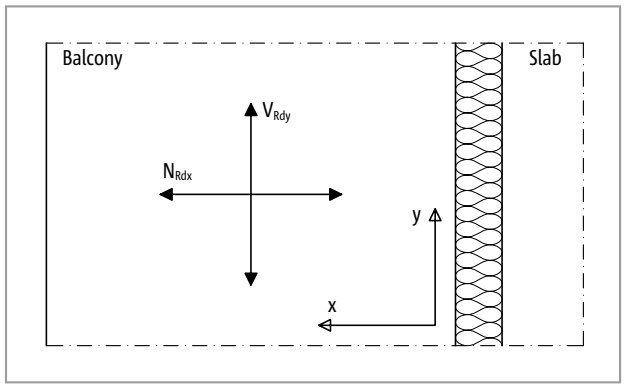


Fig. 220: Schöck Isokorb® T type H: Sign convention for the design

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 Stacon®.

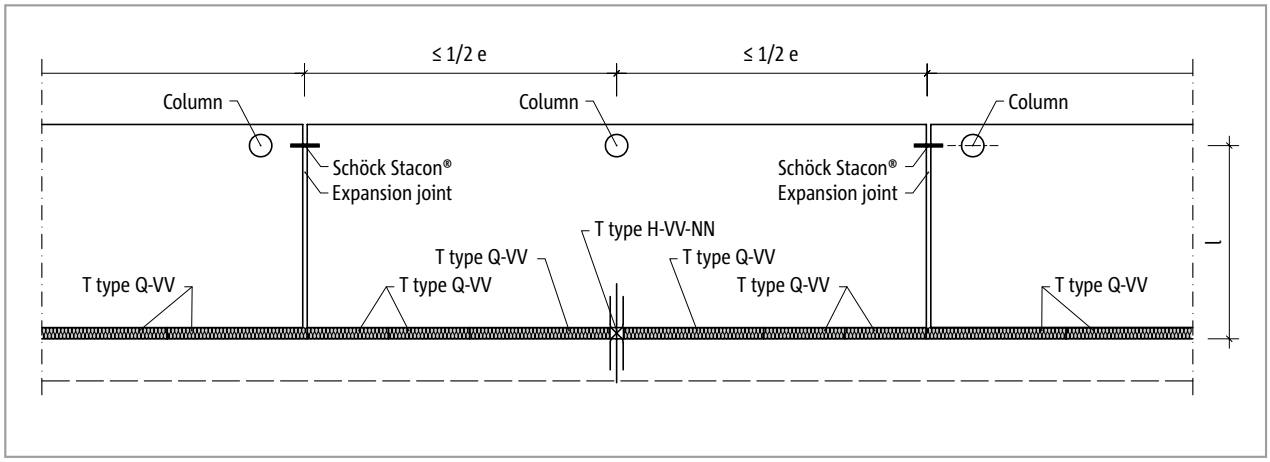


Fig. 221: Schöck Isokorb® T type H: Expansion joint layout

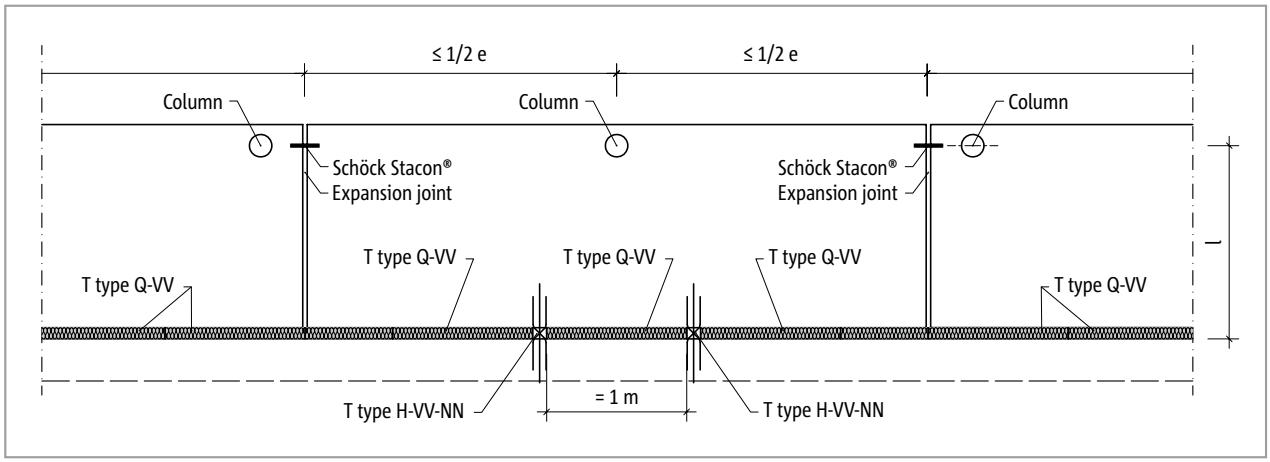


Fig. 222: Schöck Isokorb® T type H: Expansion joint layout

Expansion joint spacing

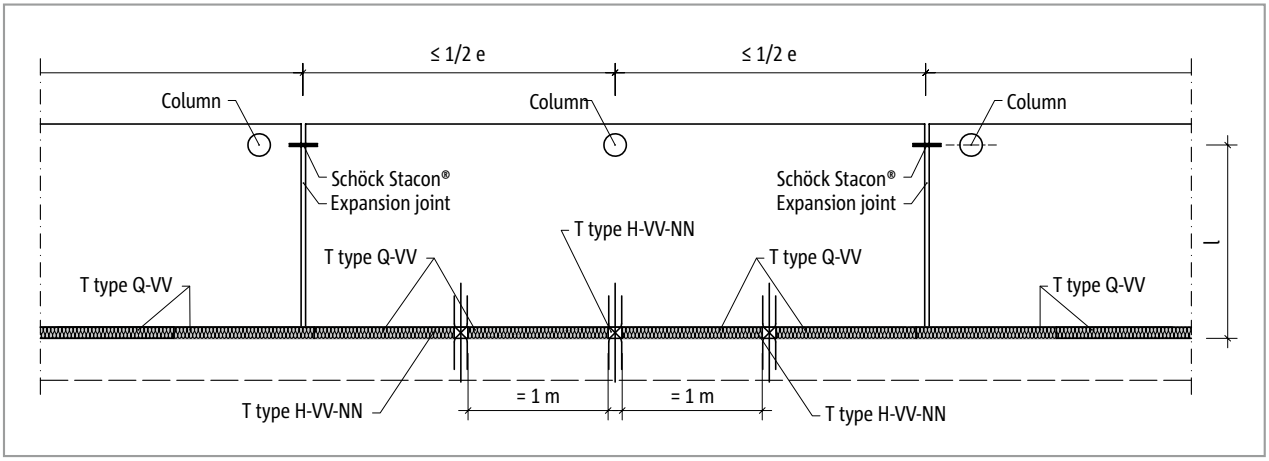


Fig. 223: Schöck Isokorb® T type H: Expansion joint layout

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 seetype K	5.3	≤ e/2 see Type Q, Q-VV	≤ e/2 see T Typ Q-P, Q-P-VV, Q-PZ	5.5

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

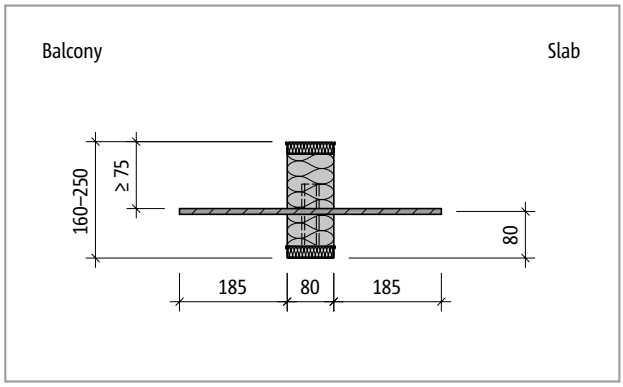


Fig. 224: Schöck Isokorb® T type H-NN1: Product sction

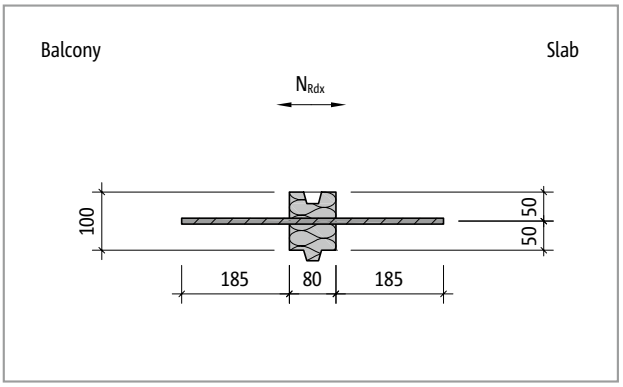


Fig. 225: Schöck Isokorb® T type H-NN1: Product layout

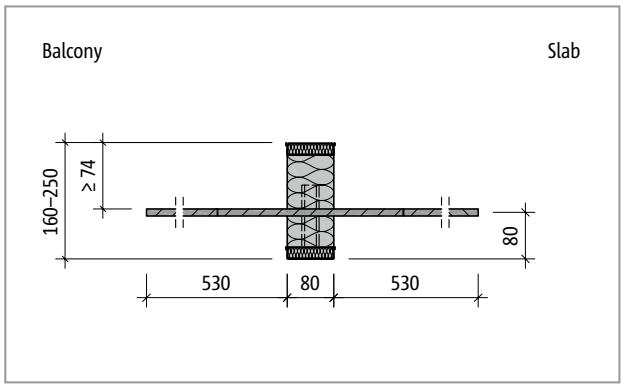


Fig. 226: Schöck Isokorb® T type H-NN2: Product sction

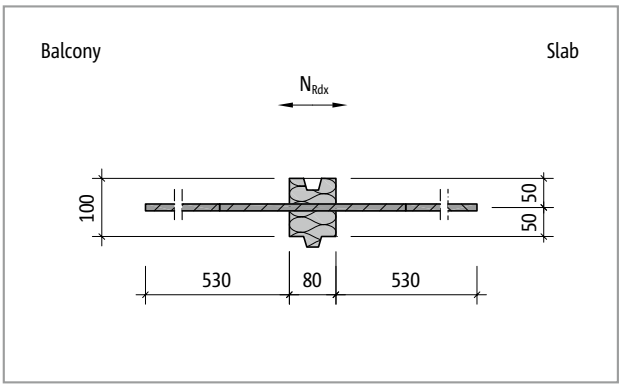


Fig. 227: Schöck Isokorb® T type H-NN2: Product layout

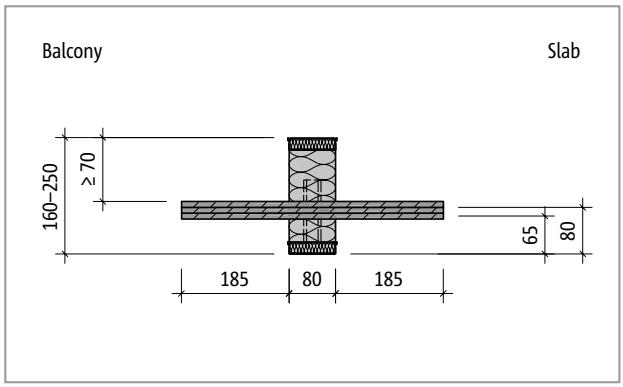


Fig. 228: Schöck Isokorb® T type H-VV1-NN1: Product section

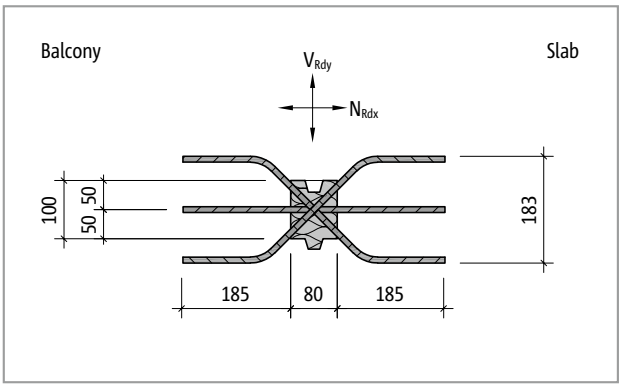


Fig. 229: Schöck Isokorb® T type H-VV1-NN1: Product layout

Product description

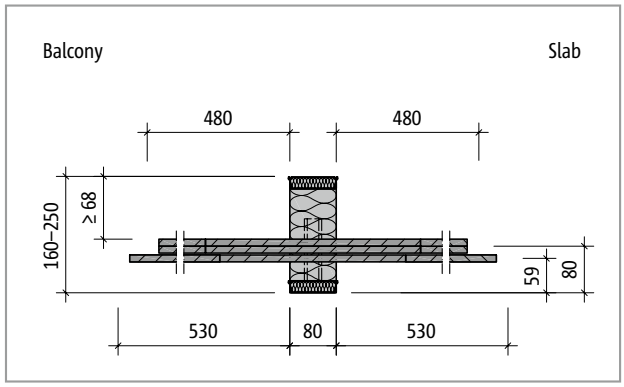


Fig. 230: Schöck Isokorb® T type H-VV2-NN1: Product sction

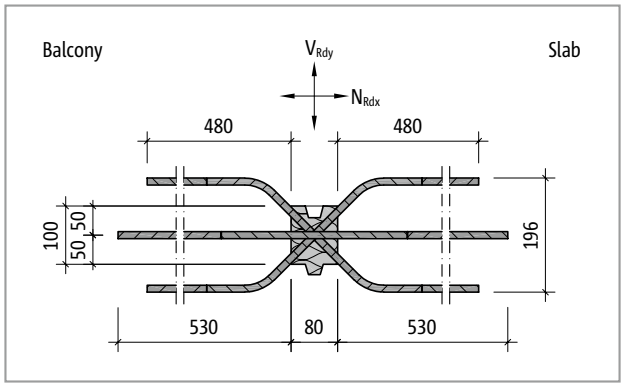


Fig. 231: Schöck Isokorb® T type H-VV2-NN1: Product layout

Design example

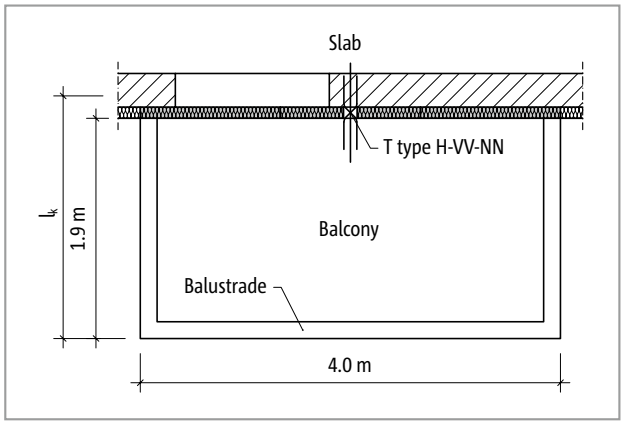


Fig. 232: Schöck Isokorb® T type K, H: Layout

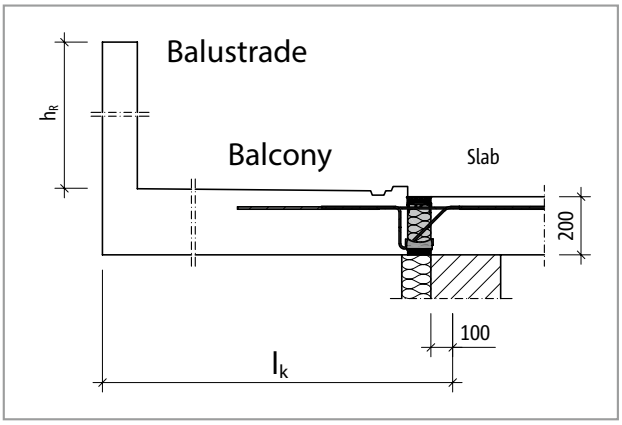


Fig. 233: Schöck Isokorb® T type K: Static system

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

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

$m_{Ed} = -44.0$ 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 page139) > $N_{Ed,x}$

$_{Rd,y} = \pm 10.4$ kN (see page139) > $V_{Ed,y}$

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 page139) > $N_{Ed,x}$

$_{Rd,y} = \pm 39.2$ kN • 2 = 78.4 kN (see page139) > $V_{Ed,y}$

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 = $v_{Ed,z}$

i Design example

- The notes on expansion joint spacing are to be observed, see page 141.

i Installation instructions

The current installation instruction can be found online under:
www.schoeck.com/view/6427

☑ 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?
- ☐ With the selection of the design table is the relevant concrete strength class 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 clarified and is the appropriate supplement entered in the Isokorb® type designation and in the implementation plans?

Schöck Isokorb® T type Z

Schöck Isokorb® T type Z
Thermal insulation element as supplement for different installation situations and fire protection requirements. The element does not transfer any forces.

Element arrangement | Installation cross sections

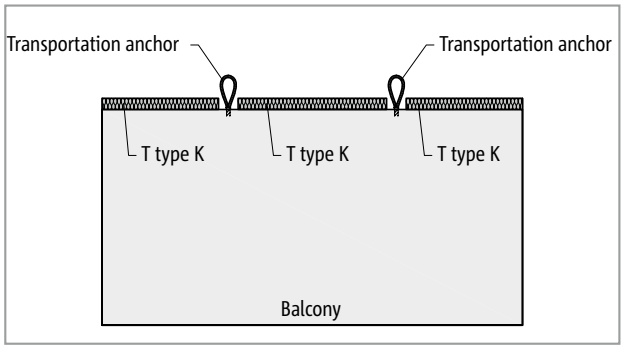


Fig. 234: Schöck Isokorb® T type K: Precast balcony with transporter anchor; insulation spacer T type Z can be inserted on-site

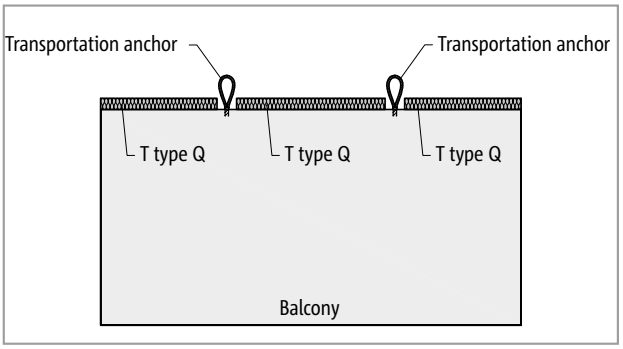


Fig. 235: Schöck Isokorb® T type Q: Precast balcony with transporter anchor; insulation spacer T type Z can be inserted on-site

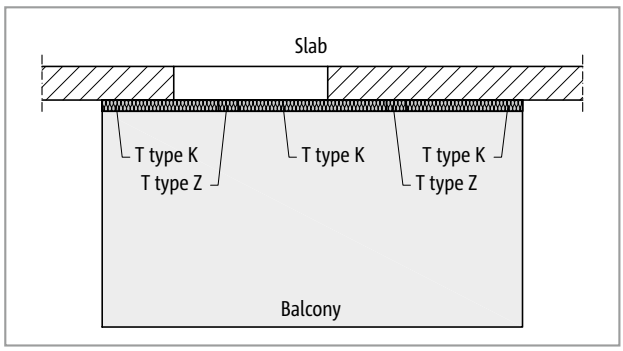


Fig. 236: Schöck Isokorb® T type Z, K: Cantilevered balcony

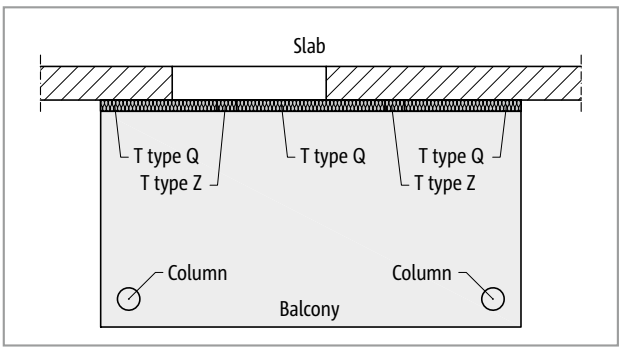


Fig. 237: Schöck Isokorb® T type Z, K: Balcony with column support

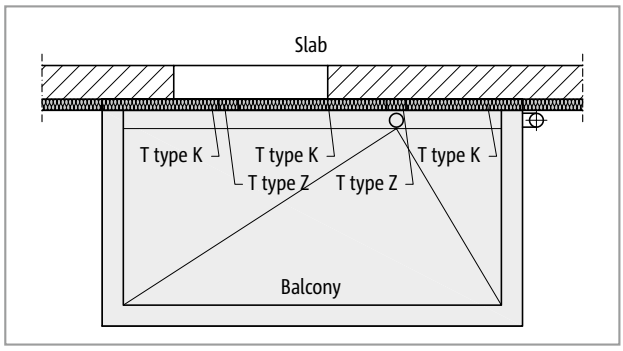


Fig. 238: Schöck Isokorb® T type Z, K: Block-out for drainage with Schöck Isokorb® T type Z

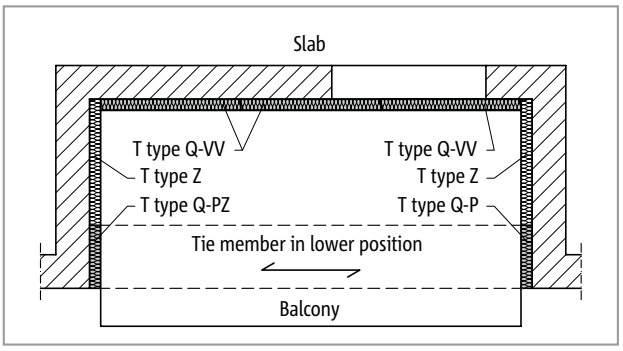


Fig. 239: Schöck Isokorb® T type K: Recessed balcony supported on three sides with tie member

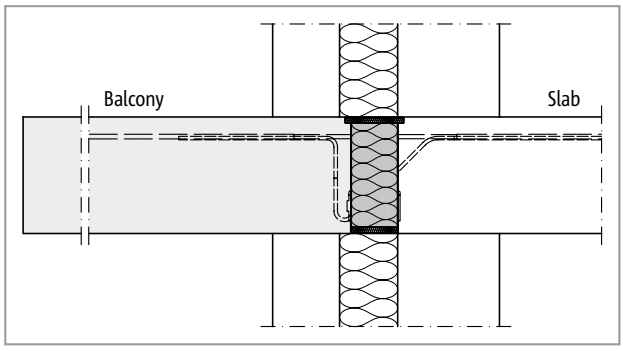


Fig. 240: Schöck Isokorb® T type Z, K: Indirect support, non-load-bearing cavity masonry

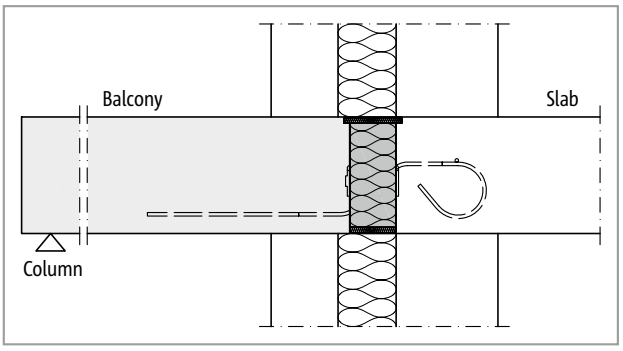


Fig. 241: Schöck Isokorb® T type Z, Q: Indirect support, non-load-bearing cavity masonry

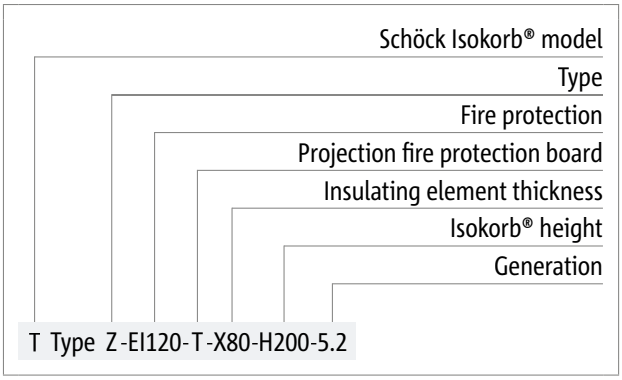
Product selection | Type designations

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
  EI120-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 to 250 mm
- Isokorb® length:
  L = 100 mm, 150 mm or 1000 mm
- Generation:
  5.2

Type designations in planning documents



Product description

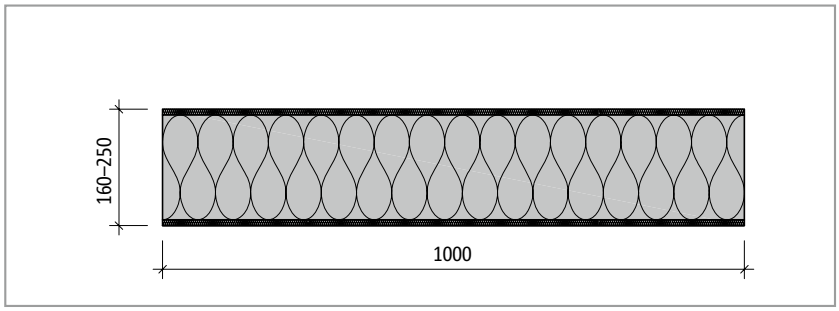


Fig. 242: Schöck Isokorb® T type Z-EI120-L1000: Product layout

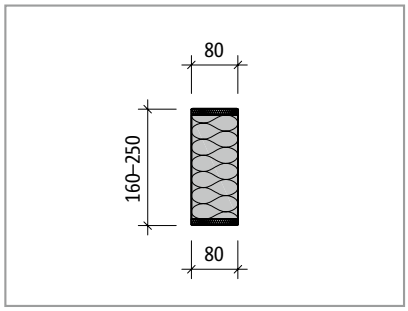


Fig. 243: Schöck Isokorb® T type Z-EI120: Product section

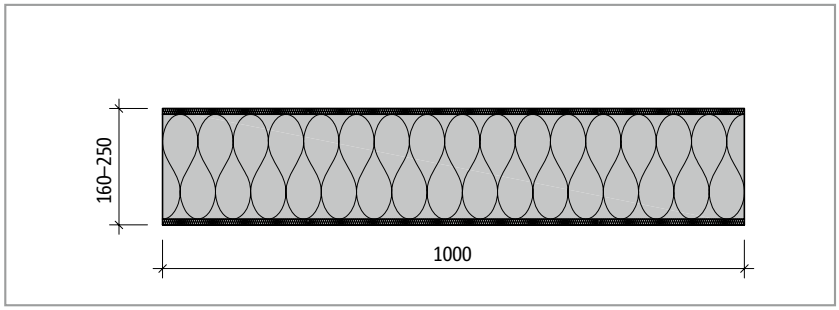


Fig. 244: Schöck Isokorb® T type Z-EI120-T-L1000: Product layout

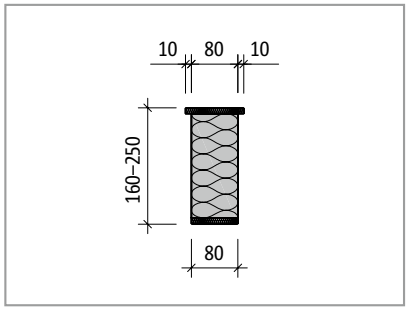


Fig. 245: Schöck Isokorb® T type Z-EI120-T: Product section

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.com/en-gb/download

Notes on design

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

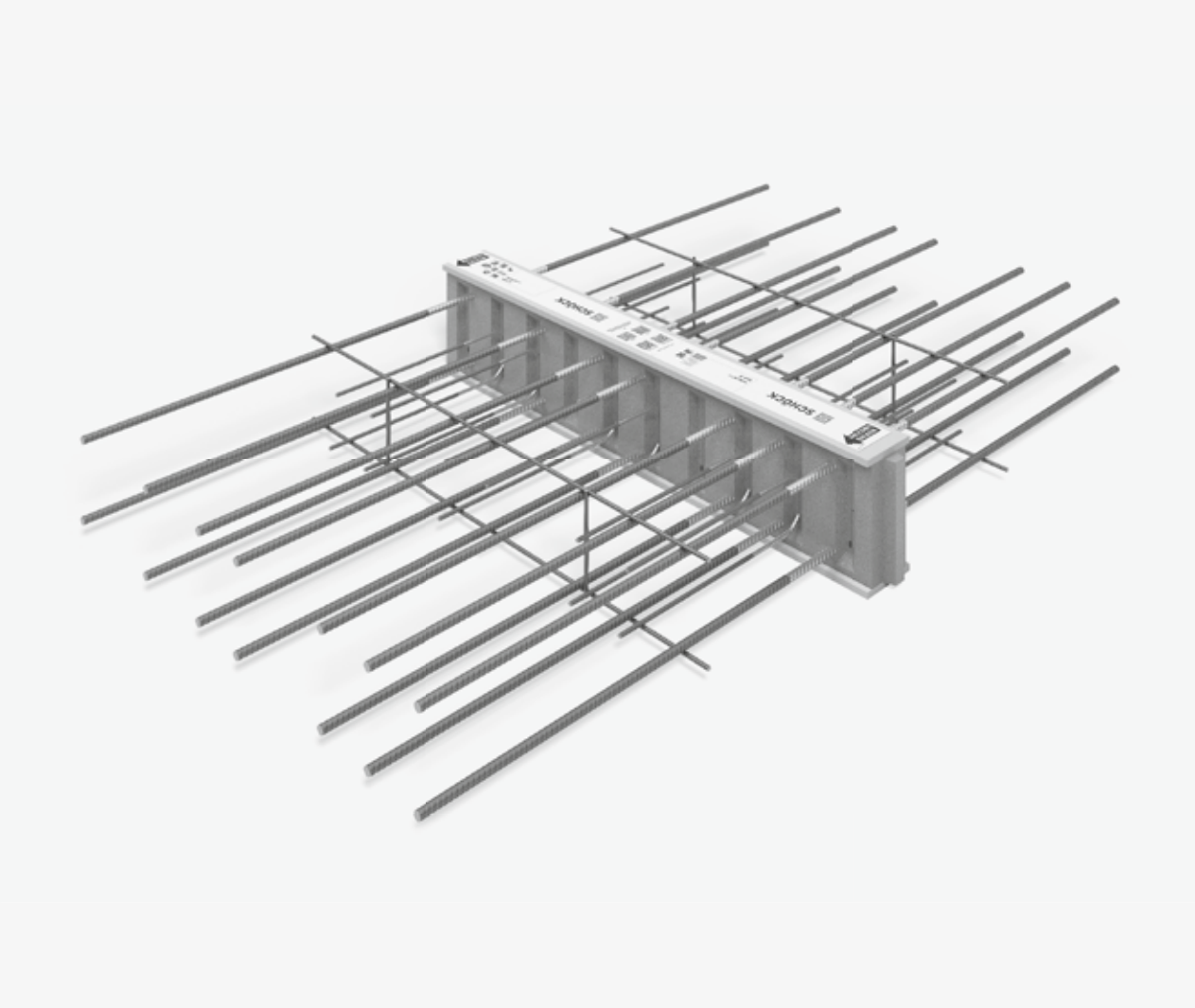
Fire protection

- 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
Load-bearing thermal insulation element for continuous flooring. The element transfers moments and shear forces.

Element arrangement | Installation cross sections

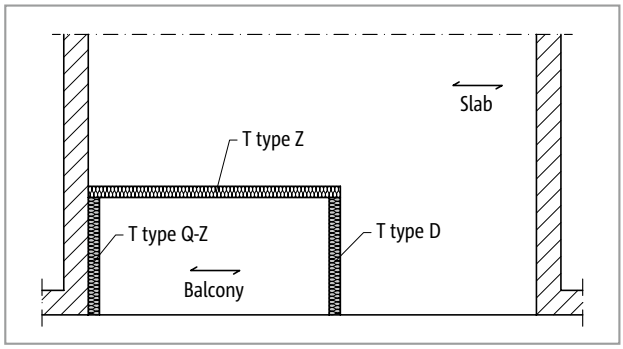


Fig. 246: Schöck Isokorb® T type D, QZ; Z: One-way spanning

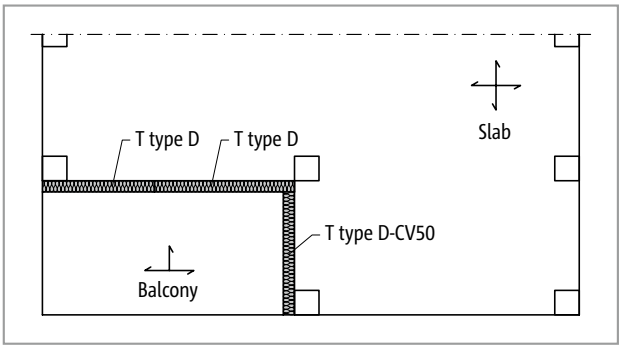


Fig. 247: Schöck Isokorb® T type D: Two-way spanning

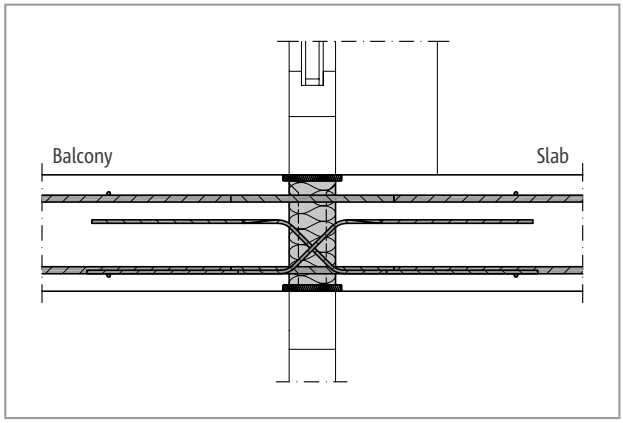


Fig. 248: Schöck Isokorb® T type D: Installation section; one-way spanning

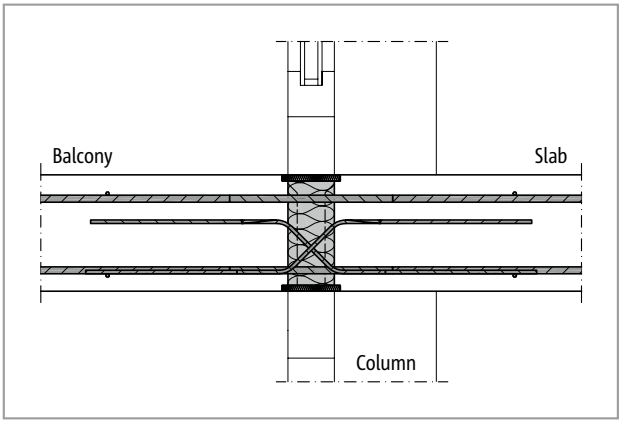


Fig. 249: Schöck Isokorb® T type D: Installation section; one-way spanning

Element arrangement

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

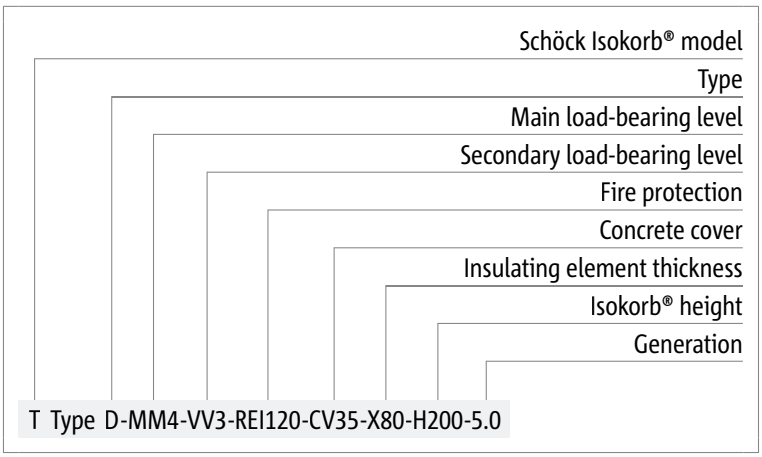
Product selection | Type designations | Special designs

Schöck Isokorb® T type D variants

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

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

Type designation in planning documents



Special designs

Please contact the design support department if you have connections that are not possible with the standard product variants shown in this information (contact details on page 3).
In accordance with approval heights up to 500 mm are possible.

C25/30 design

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

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

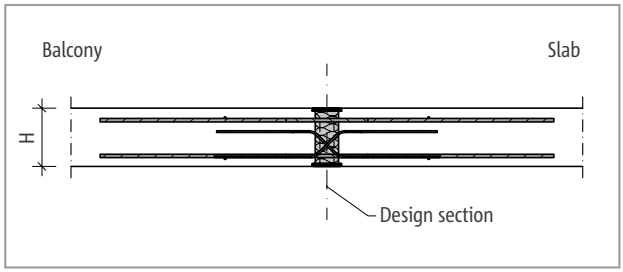


Fig. 250: Schöck Isokorb® T type D: Static system

C25/30 design

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

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

Notes on design

- With different concrete strength classes (e.g. balcony C32/40, inner slab C25/30) basically the weaker concrete is relevant for the design of the Schöck Isokorb®.
- A static verification is to be provided for the adjacent reinforced concrete structural component on both sides of the Schöck Isokorb®.
- The shear force loading of the slabs in the area of the insulation joint is to be limited to $V_{Rd,max}$, whereby $V_{Rd,max}$, acc. to BS EN 1992-1-1 (EC2), Exp. (6.9) is determined for $\theta = 45°$ and $\alpha = 90°$ (slab load-bearing capacity).
- The indicative minimum concrete strength class of the external structural component is C32/40.
- The Schöck Isokorb® T type D transfers only bending moments perpendicular to the insulation body. The Schöck Isokorb® does not transfer torsional moments Therefore the arrangement of a Schöck Isokorb®T type D in in a point-supported slab without downstand beams is not sensible.

Deflection/Camber

Deflection

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

Deflection (p) as a result of Schöck Isokorb®

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

Factors to be applied

$\tan\alpha$ = apply value from table

l_k = cantilever length [m]

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

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

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

Expansion joint spacing

Maximum expansion joint spacing

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

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

Edge distances

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

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

Product description

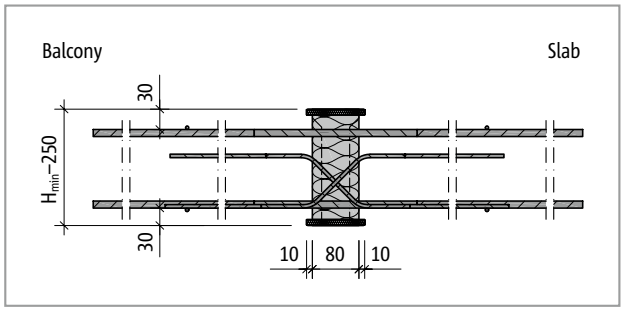


Fig. 251: Schöck Isokorb® T type D with CV30: Product section

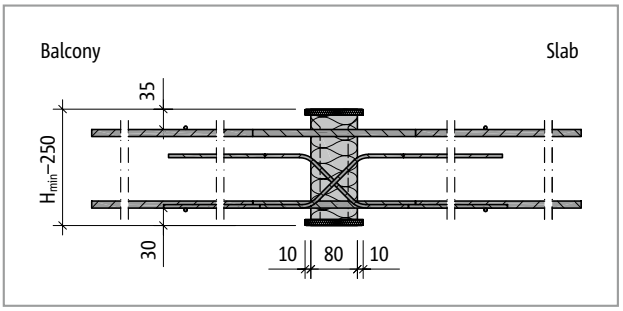


Fig. 252: Schöck Isokorb® T type D for CV35: Product section

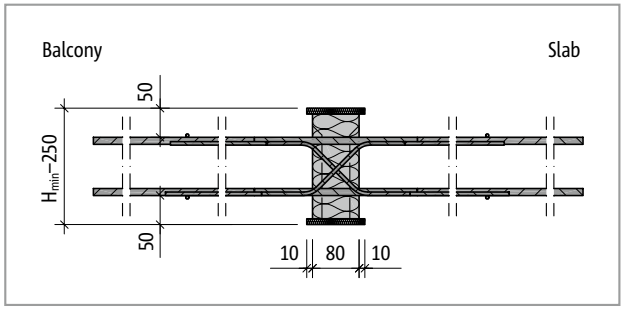


Fig. 253: Schöck Isokorb® T type D for CV50: Product section

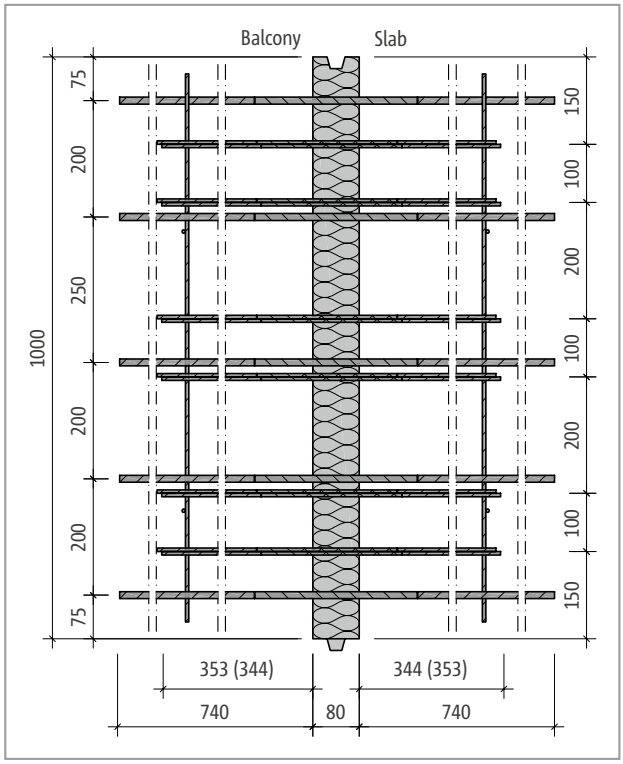


Fig. 254: Schöck Isokorb® T type D-MM2-VV1: Layout

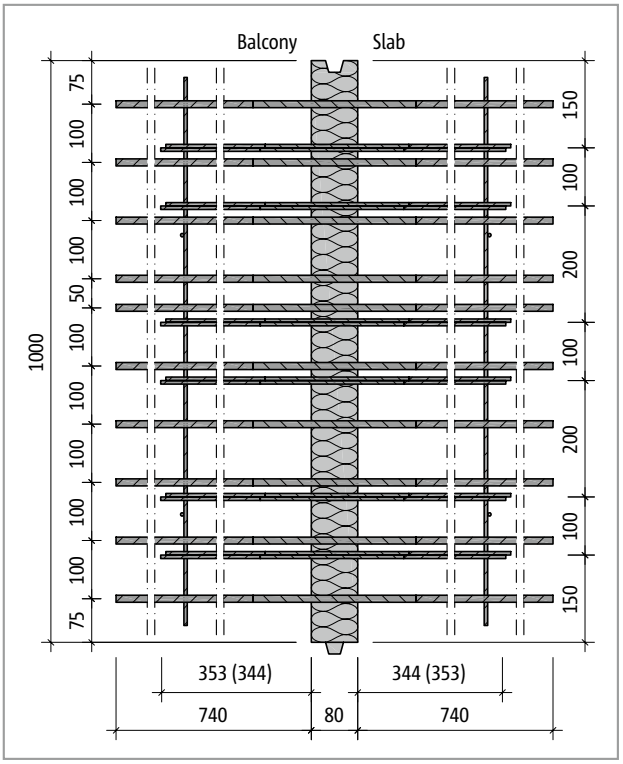


Fig.

Product information

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

On-site reinforcement

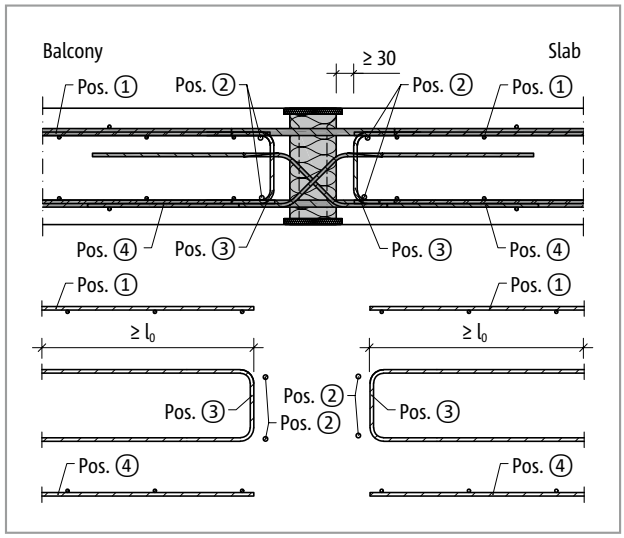


Fig. 255: Schöck Isokorb® T type D: On-site reinforcement

Information about on-site reinforcement

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

On-site reinforcement | Installation instructions

Recommendation for the on-site connection reinforcement

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

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

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

Installation instructions

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

On-site reinforcement

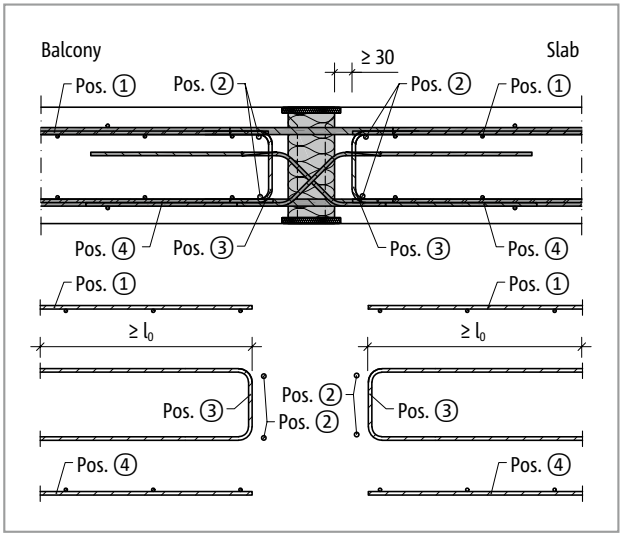


Fig. 256: Schöck Isokorb® T type D: On-site reinforcement

Information about on-site reinforcement

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

On-site reinforcement | Installation instructions

Recommendation for the on-site connection reinforcement

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

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

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

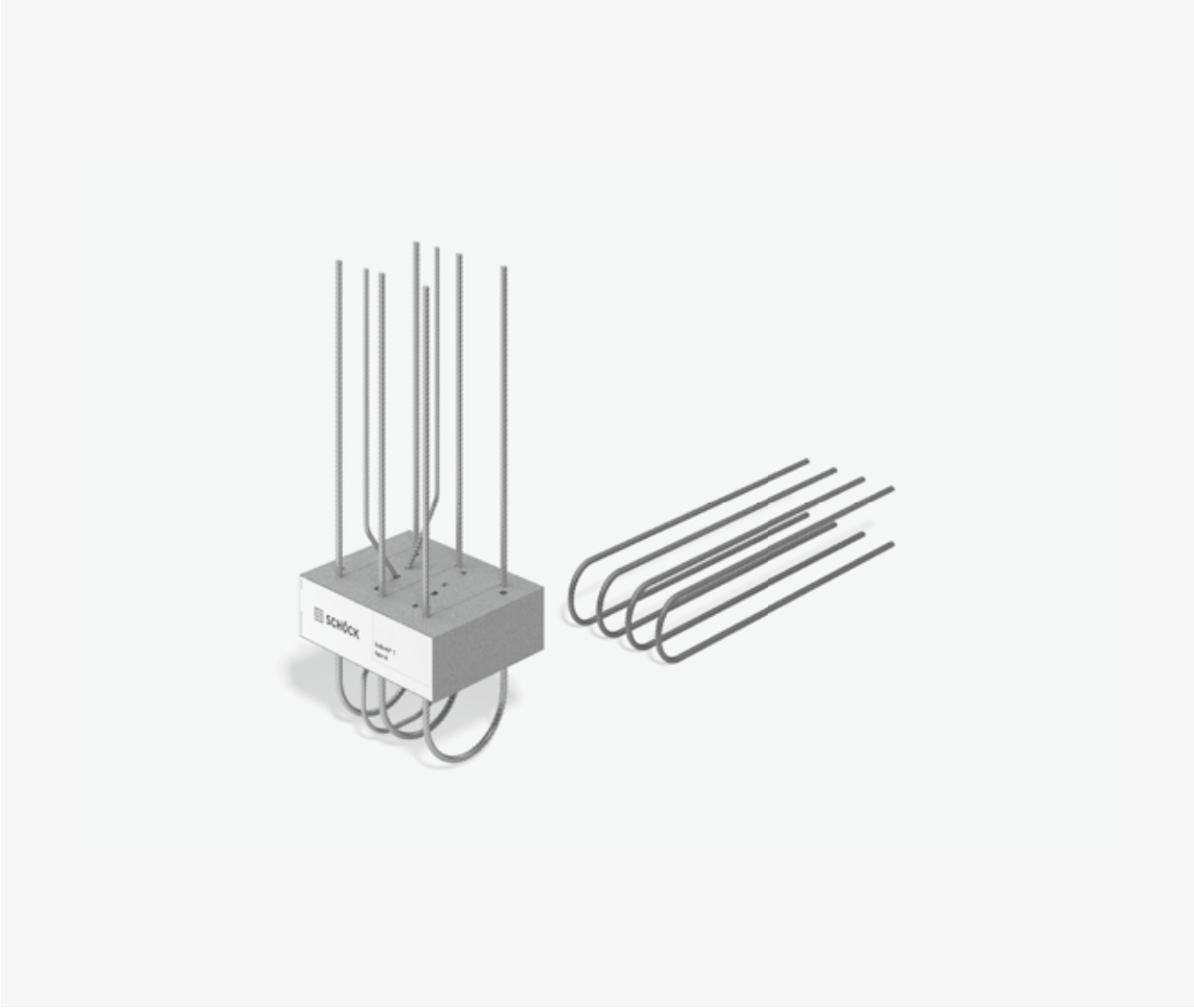
Installation instructions

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

☑ Check list

- ☐ Have the loads on the Schöck Isokorb® connection been specified at design level?
- ☐ Has the cantilevered system length or the system support width been taken as a basis?
- ☐ Are the maximum allowable expansion joint spacings taken into account?
- ☐ With the selection of the design table is the relevant concrete cover taken into account?
- ☐ Are the requirements with regard to fire protection explained and is the appropriate addendum entered in the Isokorb® type description in the implementation plans?
- ☐ Has the minimum slab thickness (≥ 200 mm) and the required 2nd layer (CV50) been taken into account for a connection across a corner? with Schöck Isokorb® T type D?
- ☐ Has the required cutout (width ≥ 760 mm from insulating element) been marked in the construction drawings for the T type D in conjunction with semi-precast balcony slabs and has the on site reinforcement been adjusted constructively?
- ☐ With 2- or 3-sided support has a Schöck Isokorb® (possibly T type Q-Z, T type Q-PZ) been selected for a connection free of constraint forces?
- ☐ Have the requirements for on-site reinforcement of connections been defined in each case?

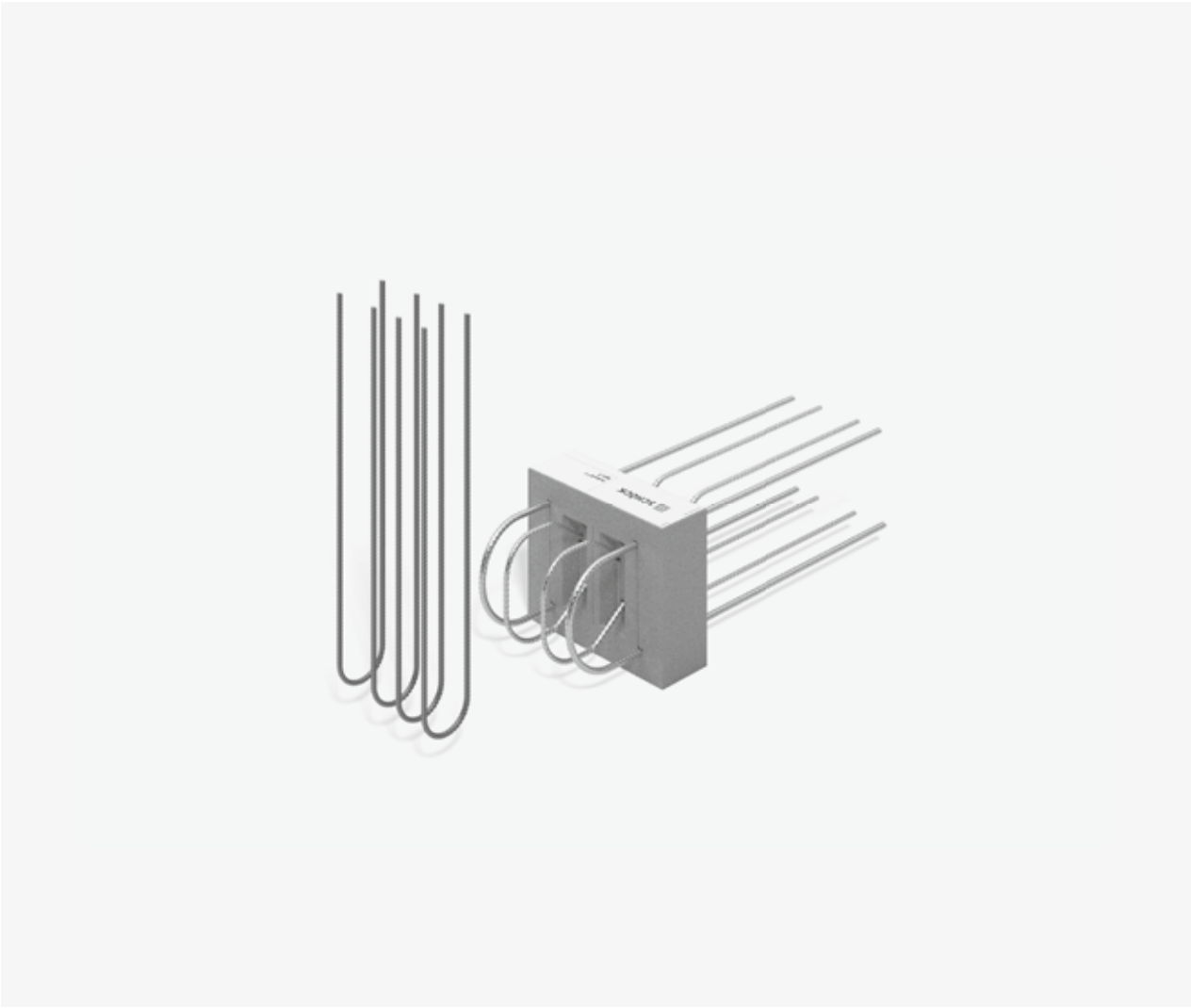
Schöck Isokorb® T type A



Schöck Isokorb® T type A
Load-bearing thermal insulation element for parapets and balustrades. The element transfers moments, shear forces and positive normal forces.

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

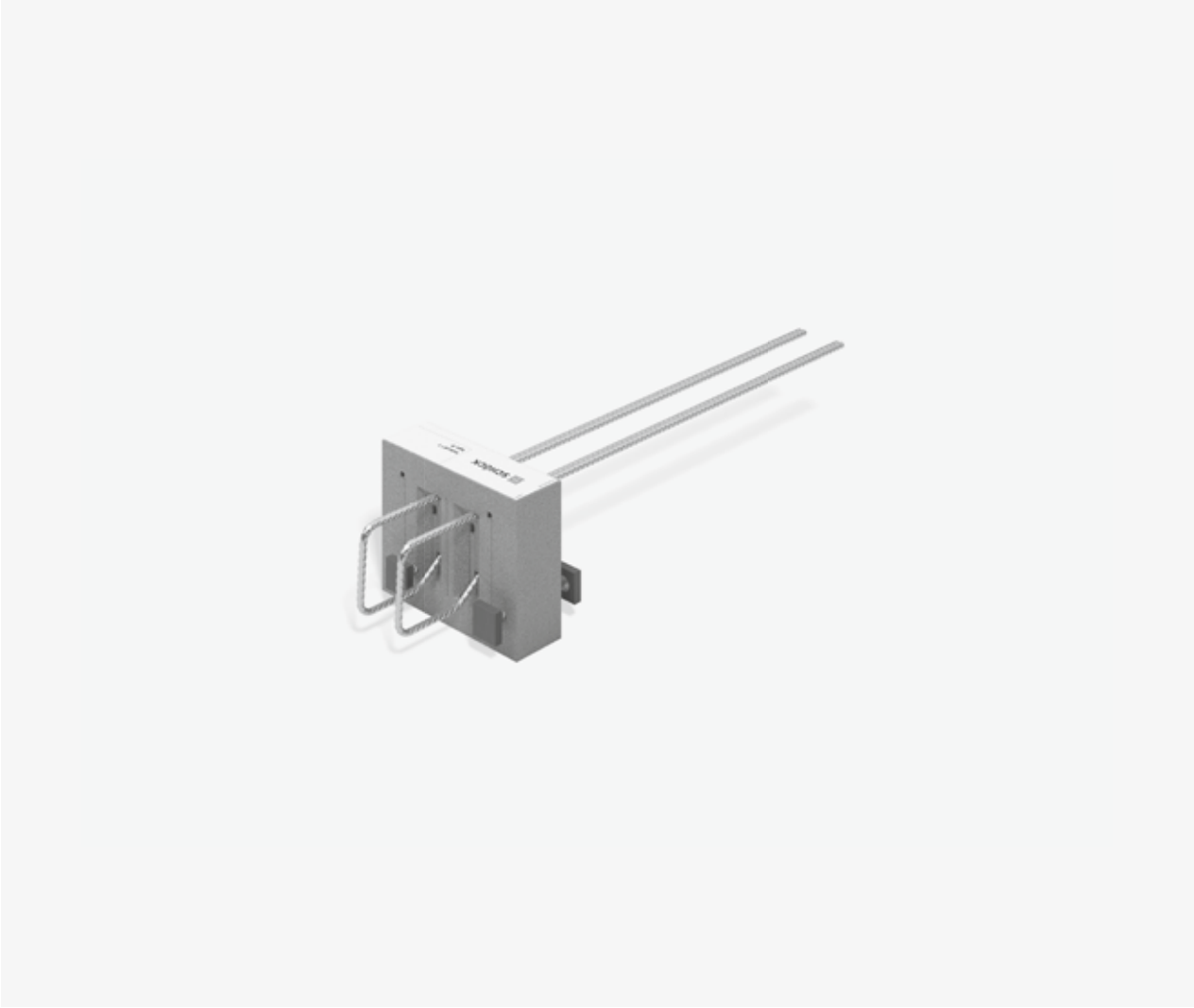
Schöck Isokorb® T type F



Schöck Isokorb® T type F
Load-bearing thermal insulation element for curtain parapets and balustrades. The element transfers normal forces, 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.

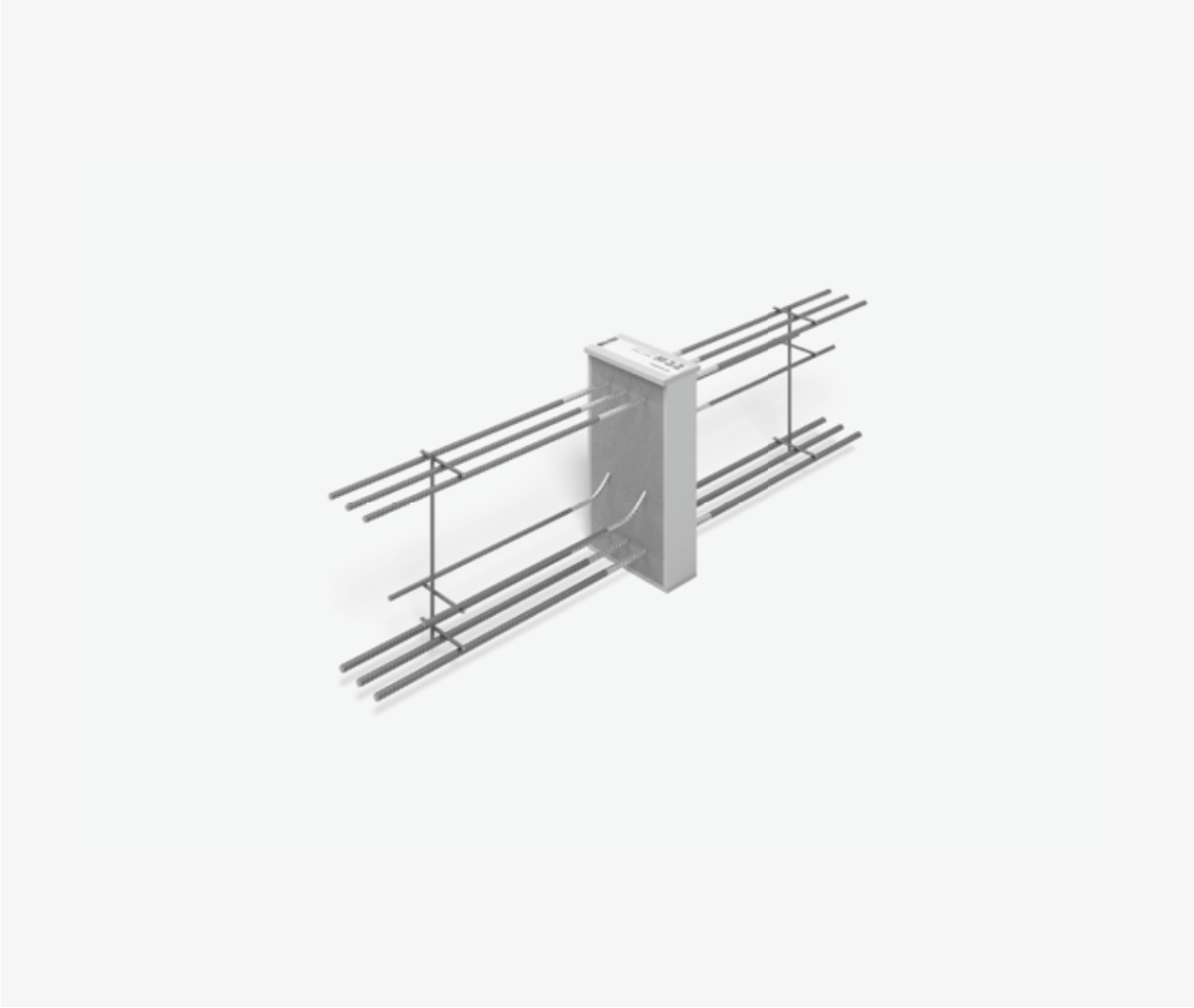
Schöck Isokorb® T type O



Schöck Isokorb® T type O
Load-bearing thermal insulation element for corbels. The element 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
Load-bearing thermal insulation element for cantilever beams and downstand beams. The element transfers negative moments and positive shear forces.

Element configurations | Installation cross sections

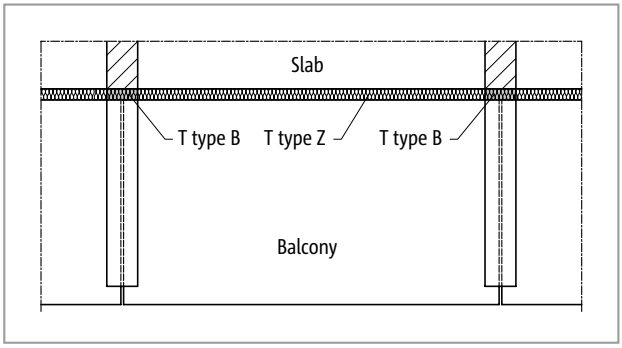


Fig. 257: Schöck Isokorb® T type B: Balcony structure with freely cantilevered downstand beams (precast balcony)

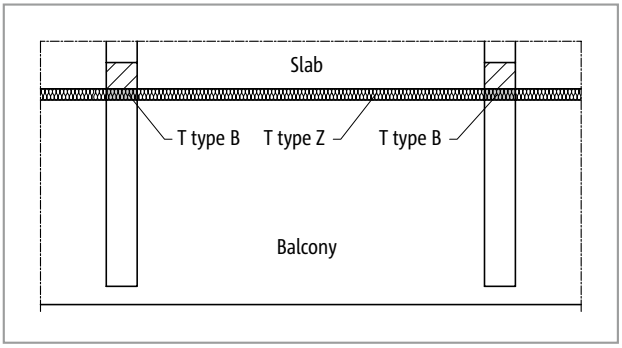


Fig. 258: Schöck Isokorb® T type B: Balcony structure with freely cantilevered downstand beams (precast balcony)

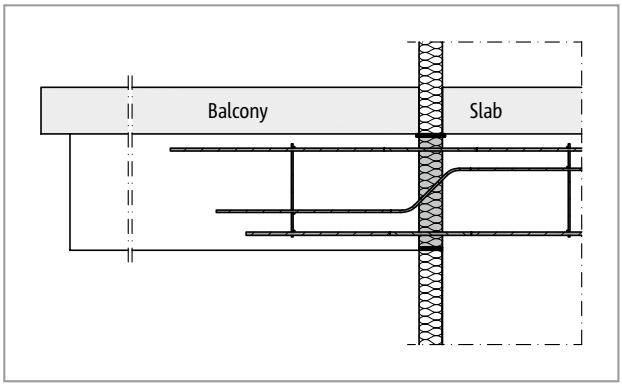


Fig. 259: Schöck Isokorb® T type B: Balcony structure with freely cantilevered downstand beams (precast balcony)

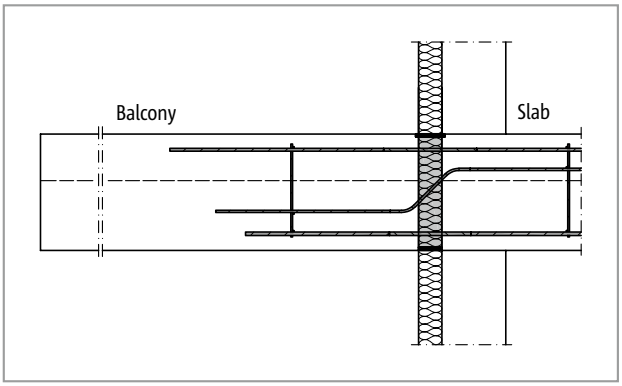


Fig. 260: Schöck Isokorb® T type B: Balcony structure with freely cantilevered downstand beams (precast balcony)

Product selection | Type designations | Special designs

Schöck Isokorb® T type B variants

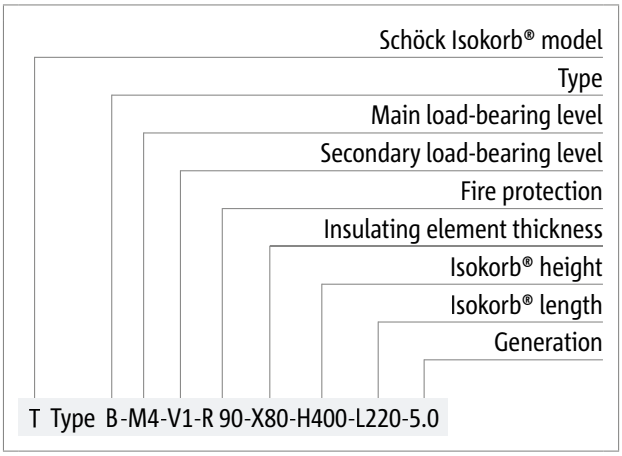
The configuration of the Schöck Isokorb® T type B can be varied as follows:

- 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
- Bonding range:
  VB2 medium bonding (Bonding range II)

Variants

- State desired dimensions on 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 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]			
Isokorb® height H [mm]	400	30.9	48.3	69.5	94.7

Schöck Isokorb® T type B	M1	M2	M3	M4
Placement with	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

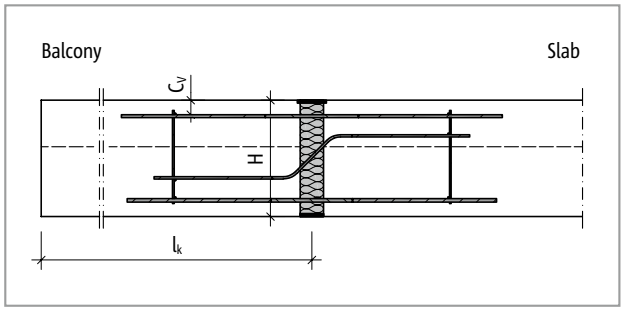


Fig. 261: Schöck Isokorb® T type B: Static system

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.

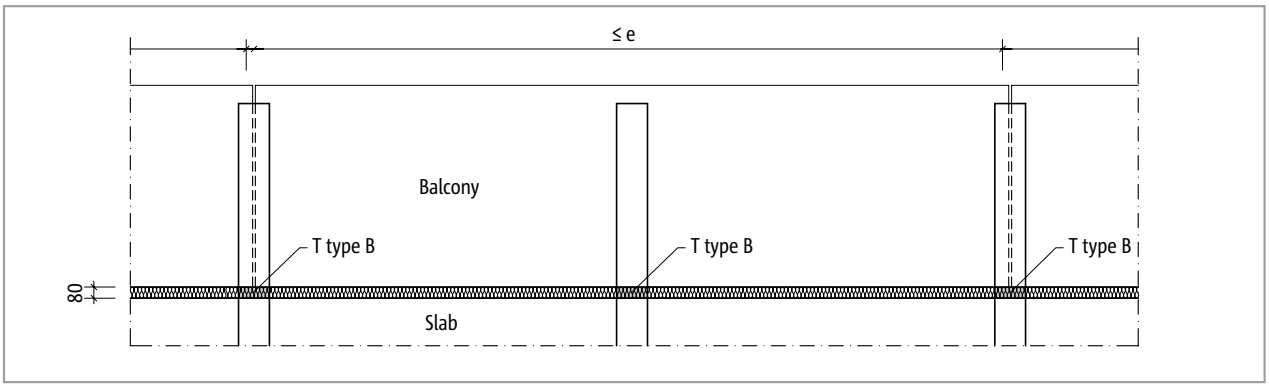


Fig. 262: Schöck Isokorb® T type B: Expansion joint layout

Schöck Isokorb® T type B		M1	M2	M3	M4
Maximum expansion joint spacing when		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

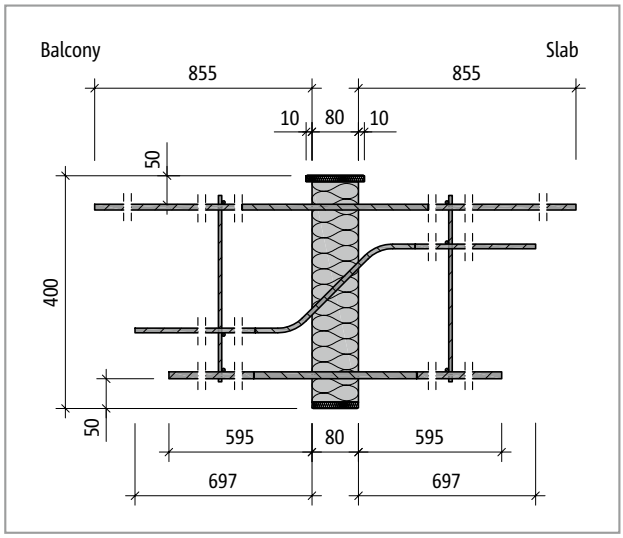


Fig. 263: Schöck Isokorb® T type B-M1: Product section

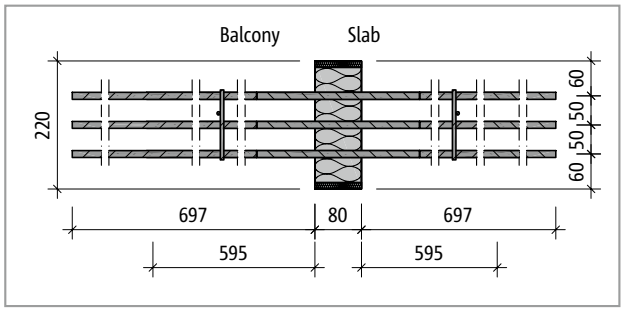


Fig. 264: Schöck Isokorb® T type B: Product layout

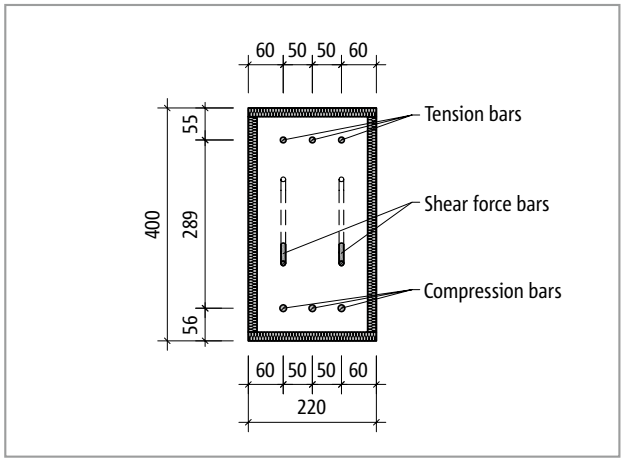


Fig. 265: Schöck Isokorb® T type B: Product layout

Product information

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

On-site reinforcement | Installation instructions

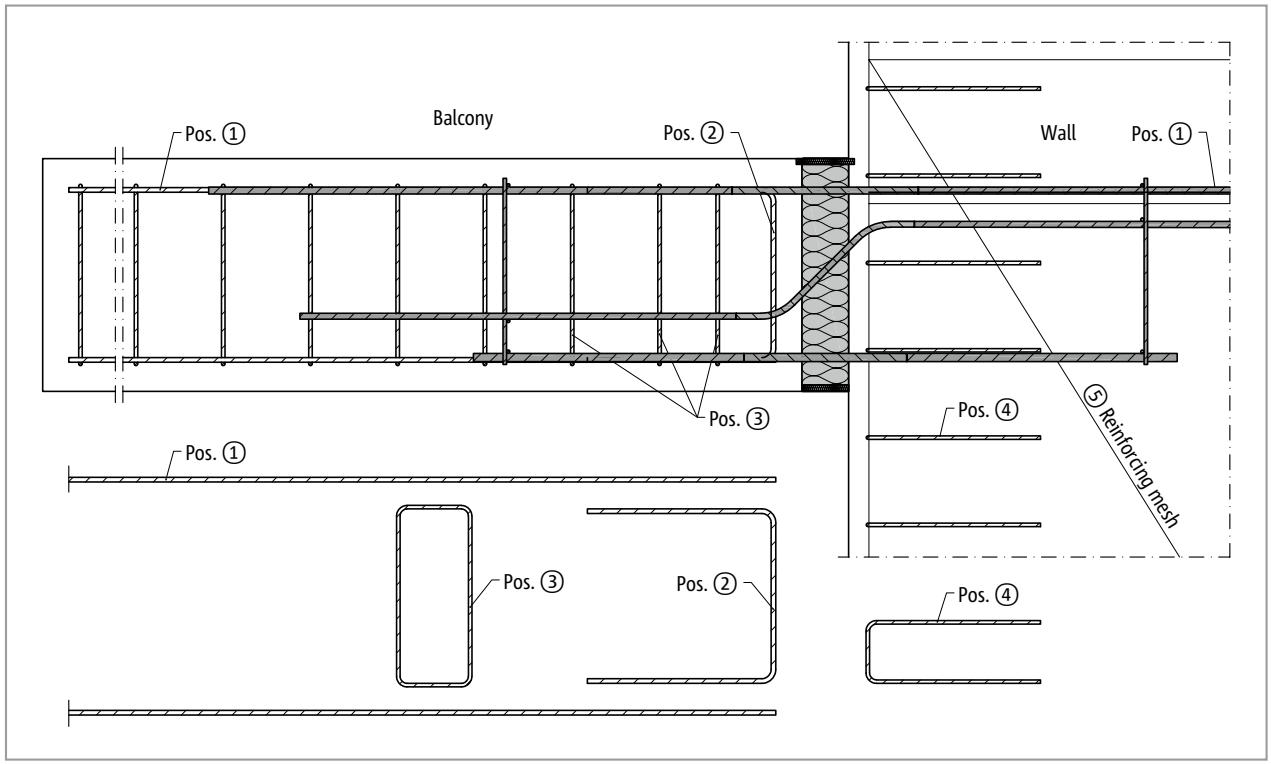


Fig. 266: Schöck Isokorb® T type B: On site reinforcement (cross-section)

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			
Overlapping reinforcement				
Pos. 1	3 • H10	3 • H12	3 • H16	3 • H16
Lap length VB2 (poor)	801	886	1014	1761
Suspension reinforcement				
Pos. 2 [mm²]	71	111	160	218
Stirrup				
Pos. 3	acc. to the specifications of the structural engineer			
Side reinforcement at the free edge				
Pos. 4	according to BS EN 1992-1-1 (EC2), 9.3.1.4			
Wall reinforcement and overlap reinforcement shear force bar				
Pos. 5	acc. to the specifications of the structural engineer			

Information about on-site reinforcement

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

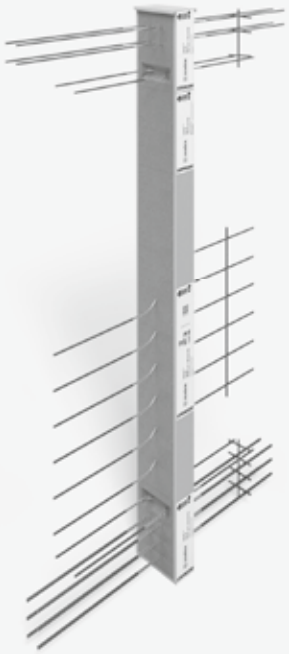
Installation instructions

The current installation instruction can be found online under:
www.schoeck.com/view/6430

☑ 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 strength class taken into account?
- ☐ 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 clarified and is the appropriate supplement entered in the Isokorb® type designation and in the implementation plans?
- ☐ Have the requirements for on-site reinforcement of connections been defined in each case?

Schöck Isokorb® T type W



Schöck Isokorb® T type W
Load-bearing thermal insulation element for cross walls. The element transfers negative moments and shear forces.

Element arrangement | Installation cross section

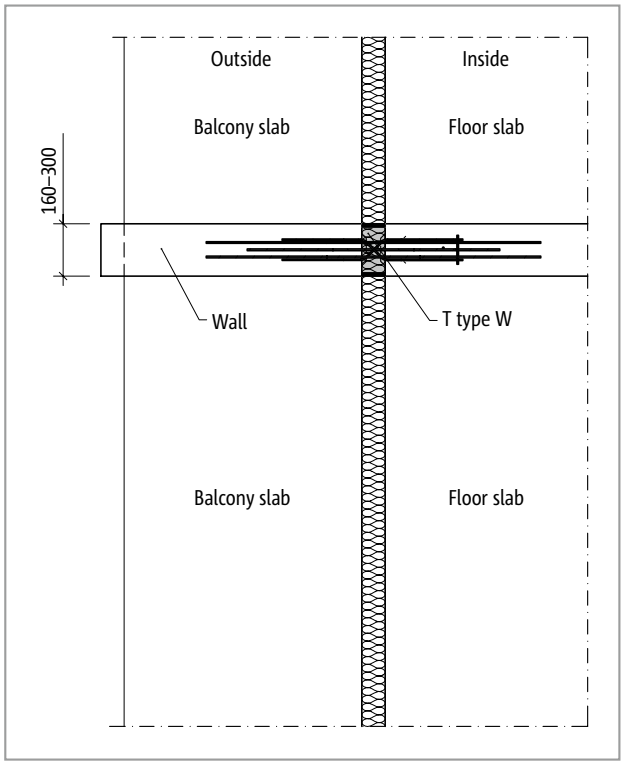


Fig. 267: Schöck Isokorb® T type W: Layout; Balcony structure with thermally insulated load-bearing shear walls

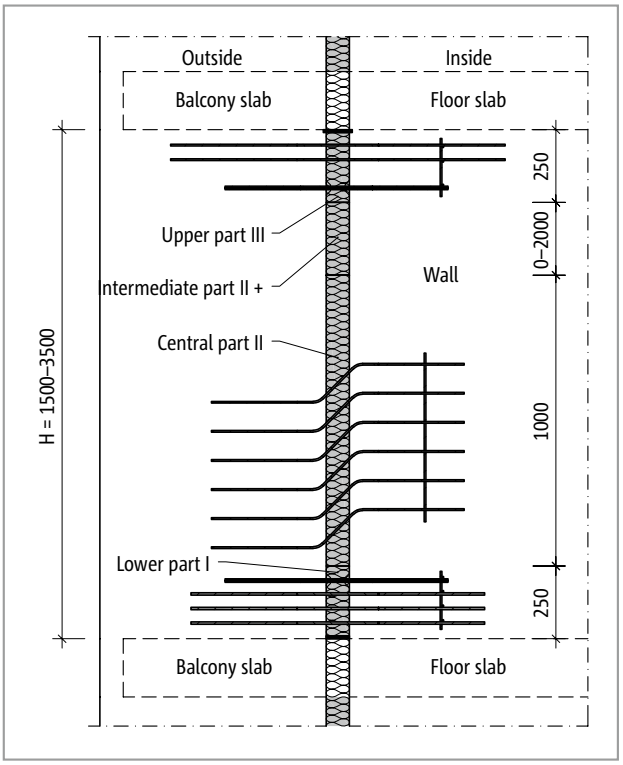


Fig. 268: Schöck Isokorb® T type W: Balcony structure with thermal insulated load-bearing shear walls

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

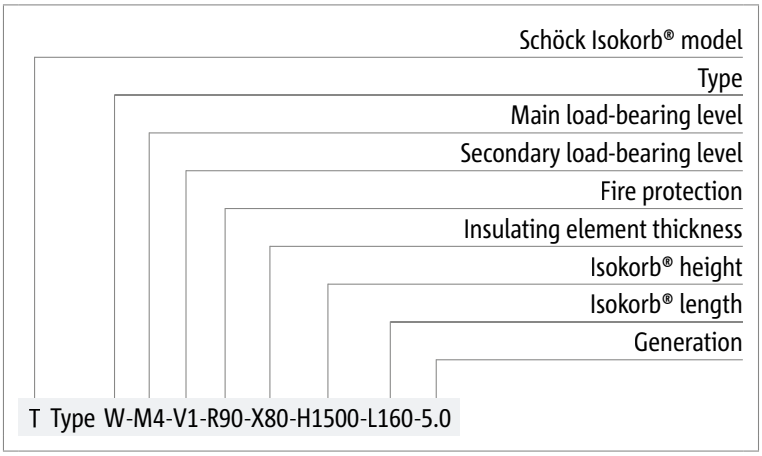
The configuration of the Schöck Isokorb® T type W can be varied as follows:

- Main load-bearing level: M1 to M4
- Secondary load capacity: V1
- Fire resistance class:
  R90 (standard): Top fire protection board, projecting on both sides by both 10 mm
- Insulation element thickness:
  X80 = 80 mm
- Isokorb® height:
  H = 1500 mm to 3500 mm
- Isokorb® length:
  L = 160 mm to 300 mm for R90
- Part designation (optional): Upper part, central part, lower part
- 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]			
	1500-1990	-64.8	-115.0	-179.5	-146.7
	2000-2490	-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

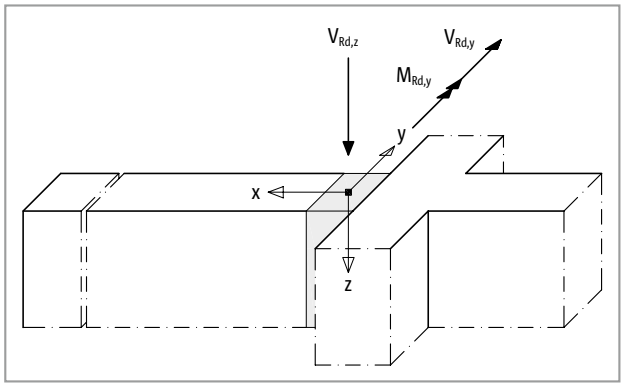


Fig. 269: Schöck Isokorb® T type W: Sign rule for the design

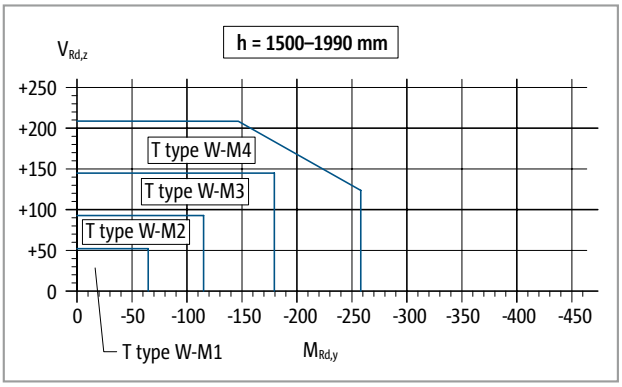


Fig. 270: Schöck Isokorb® T type W: Interaction diagram

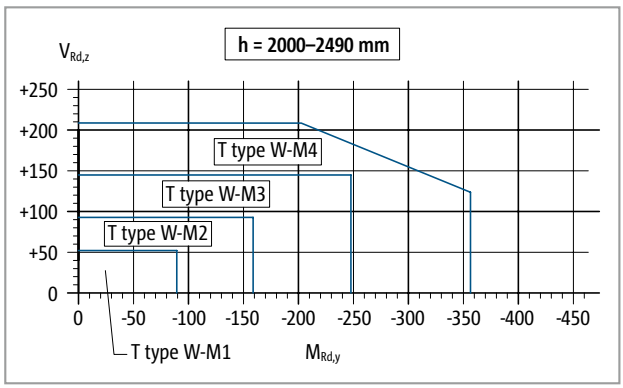


Fig. 271: Schöck Isokorb® T type W: Interaction diagram

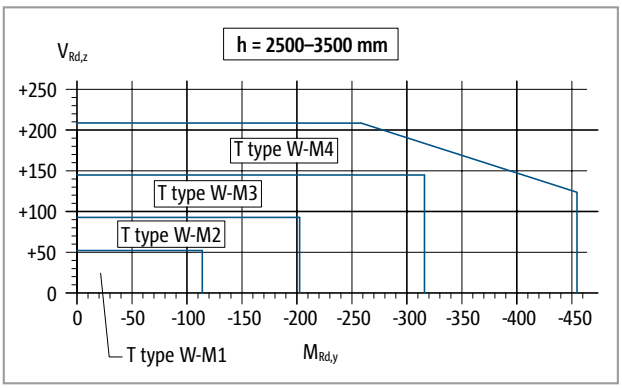


Fig. 272: Schöck Isokorb® T type W: Interaction diagram

Design | Expansion joint spacing

Schöck Isokorb® T type W	M1	M2	M3	M4
Placement with	Isokorb® length [mm]			
	150-300	150-300	150-300	150-300
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
L_{min} for R0 [mm]	150	150	150	150
L_{min} for R90 [mm]	160	160	160	160

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.

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.

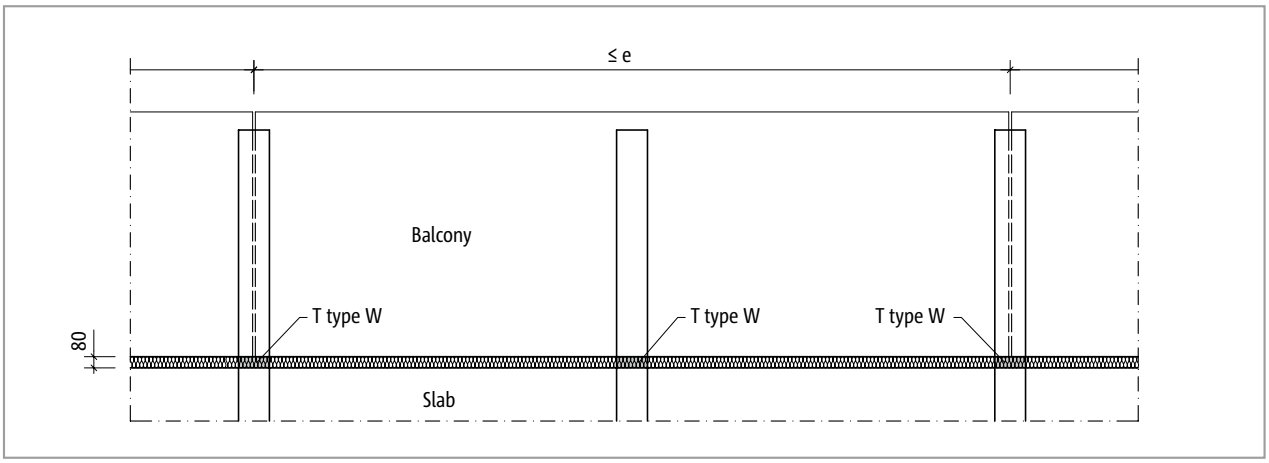


Fig. 273: Schöck Isokorb® T type W: Expansion joint layout

Schöck Isokorb® T type W		M1	M2	M3	M4
Maximum expansion joint spacing when		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

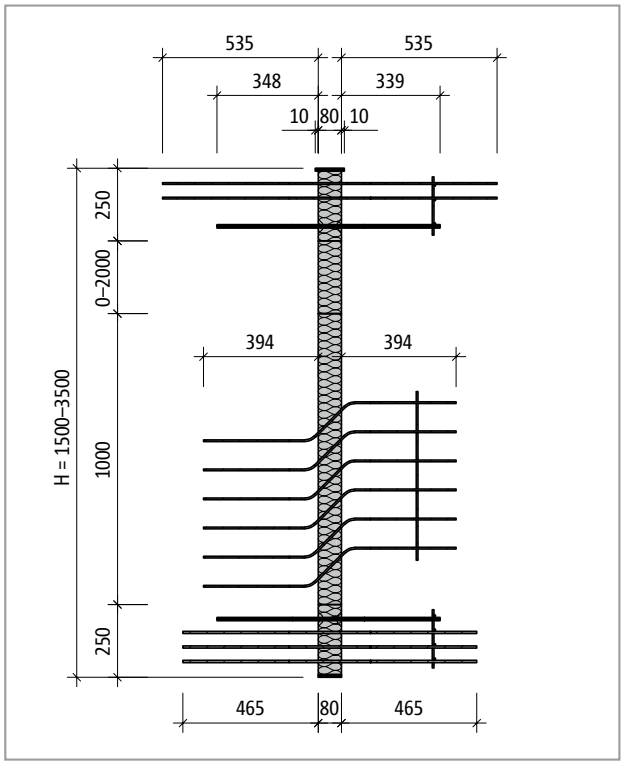


Fig. 274: Schöck Isokorb® T type W-M1-R90: Product layout; Fire protection board top and bottom

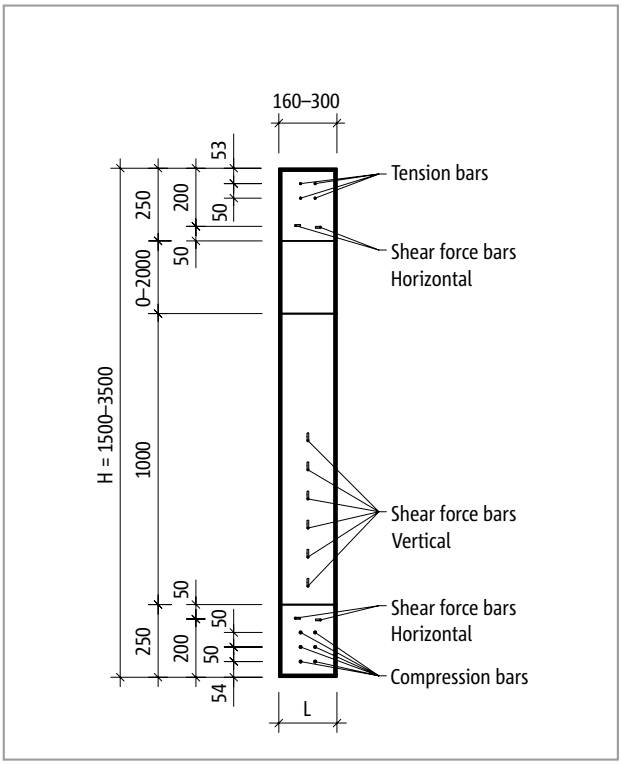


Fig. 275: Schöck Isokorb® T type W-M1-R90: Product layout; perimeter fire protection boards

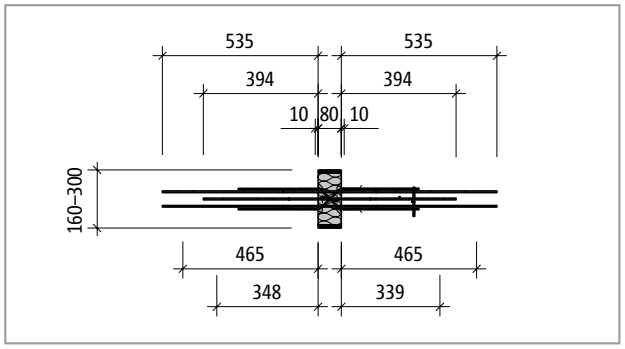


Fig. 276: Schöck Isokorb® T type W-M1: Product layout

Product information

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

On-site reinforcement

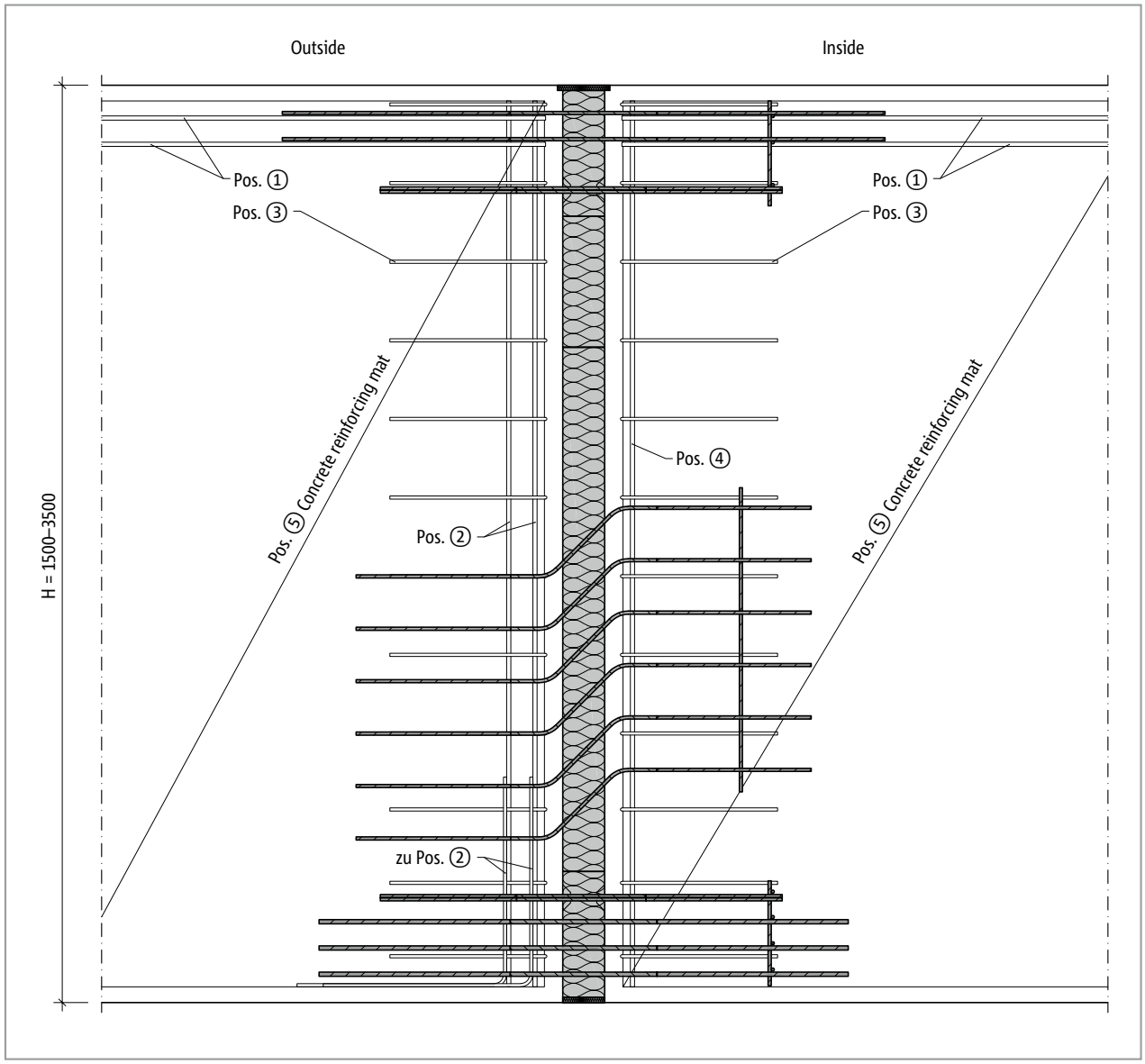


Fig. 277: Schöck Isokorb® T type W: On-site reinforcement (cross-section)

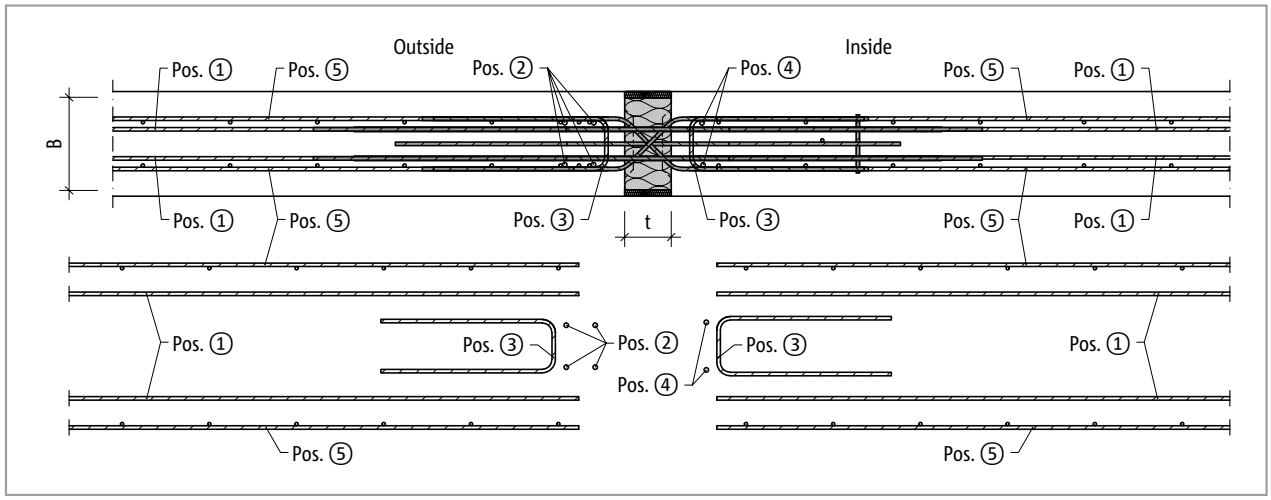


Fig. 278: Schöck Isokorb® T type W: On-site reinforcement (layout)

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			
Overlapping reinforcement				
Pos. 1	4 • H8	4 • H8	4 • H10	4 • H12
Lap length l0 [mm]	481	641	801	961
Suspension reinforcement (anchorage using stirrup or L)				
Pos. 2	2 • 2 • H8	2 • 2 • H10	2 • 2 • H12	2 • 2 • H16
Supplementary edge reinforcement				
Pos. 3 and 4	acc. to the specifications of the structural engineer			
Wall reinforcement and overlap reinforcement shear force bar				
Pos. 5	acc. to the specifications of the structural engineer			

Information about on-site reinforcement
- Alternative connection reinforcements are possible. The rules as per BS EN 1992-1-1 (EC2) and BS EN 1992-1-1/NA apply for the determination of the lap length. A reduction of the required lap length with 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 instructions
The current installation instruction can be found online under:
www.schoeck.com/view/6431

☑ 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 strength class taken into account?
- ☐ 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 clarified and is the appropriate supplement entered in the Isokorb® type designation and in the implementation plans?
- ☐ Have the requirements for on-site reinforcement of connections been defined in each case?

Imprint
Published by: Schöck Ltd
Staniford House
4 Wedgwood Road
Bicester
Oxfordshire
OX26 4UL
Telephone: 01865 290 890

Subject to technical changes
Date of publication: May 2022

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05.2022/GB/210641