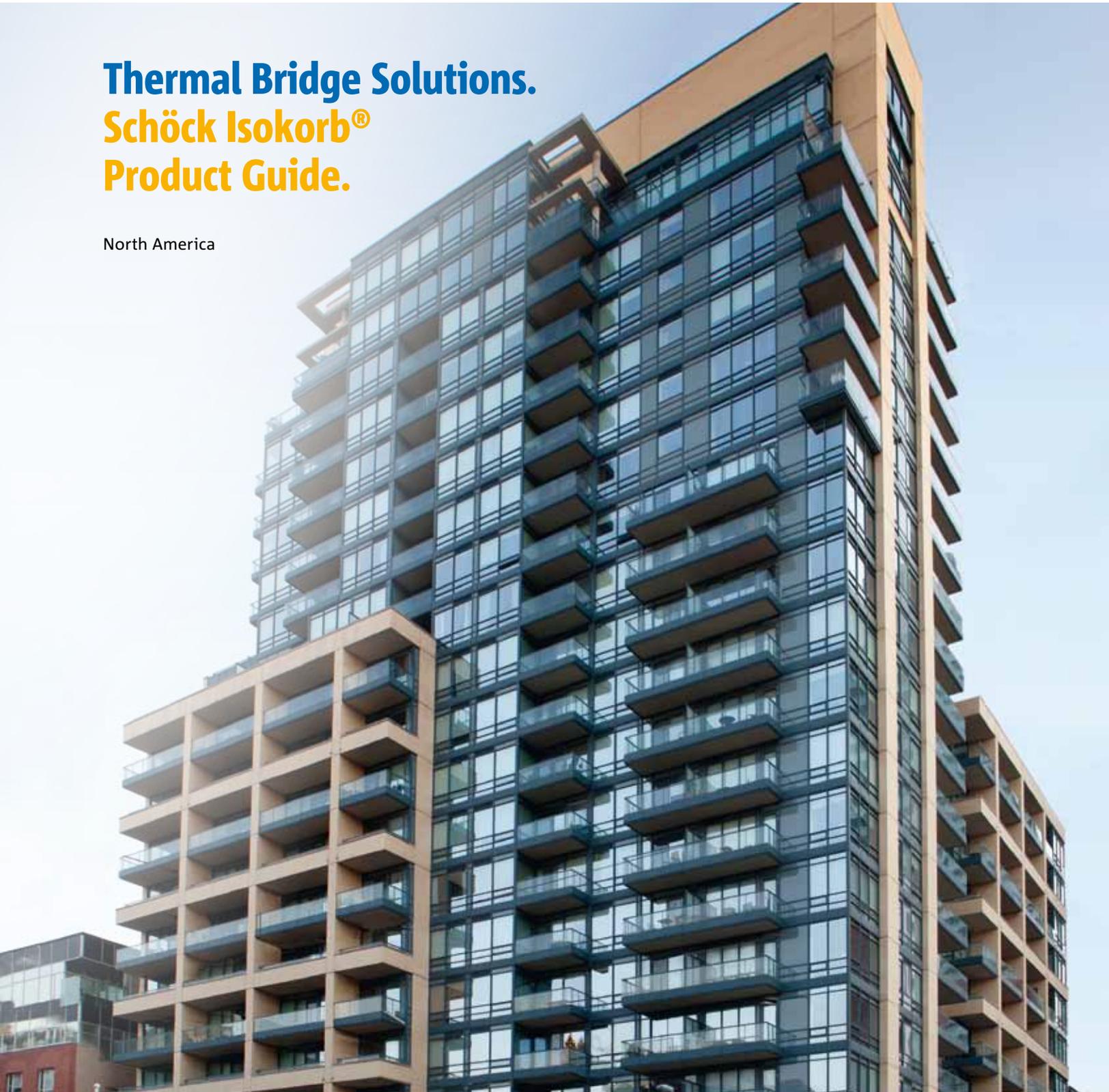




Thermal Bridge Solutions. Schöck Isokorb® Product Guide.

North America



Guide to Thermal Breaks.

Innovative Design in Practice.

Over 10 million units of Schöck Isokorb® installed since its introduction more than 20 years ago.

Table of Contents

The Purpose of this Guide	2
Leading Thermal Break Innovation	3
Structural Thermal Bridge	4-5
Concrete Slabs	6-7
Steel Structures	8-9
A Comprehensive Range of Applications	10
Schöck Customer Services	11

The purpose of this product guide is to provide architects, structural engineers and other building professionals with a range of solutions to avoid thermal bridges in cantilever building elements.

Building and Climate Change

The future of a building design is now more than ever linked to environmental consideration, placing greater pressure on the industry to provide thermally efficient, energy saving technologies. It is well documented that improving thermal insulation is an effective means of addressing energy use in buildings and tackling the global warming. Schöck is dedicated to providing innovative and effective technical solutions and professional support to architects and specifiers who are working to reduce carbon dioxide and greenhouse gas emissions by creating more efficient buildings. The Schöck Isokorb® thermal break system complies with both LEED® certifications and public expectation.



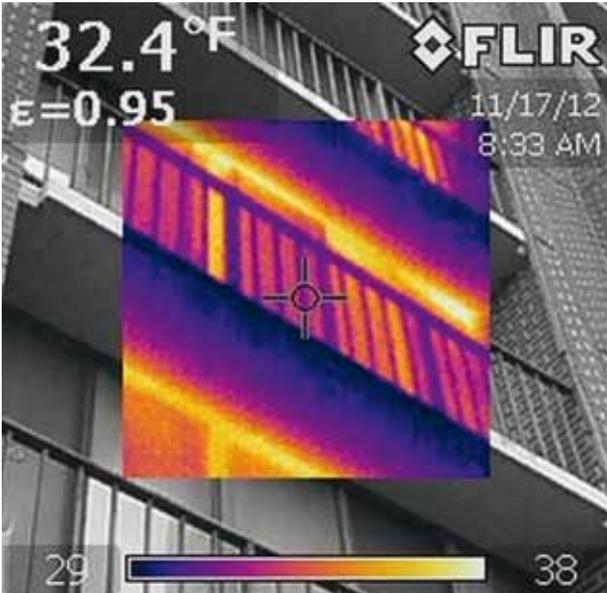
Through persistent research and development, Schöck became the leading supplier of innovative thermal insulation solutions, noise impact suppression and reinforcement technology solutions.

Leading Thermal Break Innovation

For over 20 years, Schöck has manufactured and supplied quality, German engineered products. We focus on providing thermal energy insulation, noise impact suppression and reinforcement solutions for the design community. Our product line leads the market in balcony, canopy and beam connections for residential, industrial and commercial buildings.

Our dedication to technical research and implementation is driven by Eberhard Schöck, the founder of the company. He discovered that balcony penetrations in the building envelope create an effect now known as “thermal bridging.” He spent four years on a development program to consider every aspect of building physics and technology. In 1983 the Schöck Isokorb® thermal break element was launched.

Schöck continues to invest heavily in research and development programs, and works closely with many universities and research institutions. A central aspect in our development is the ease of installation at the construction site and in the pre-cast plant.

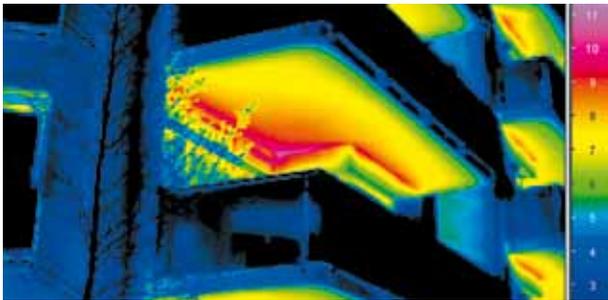


PHI  **Low thermal bridge construction**



Structural Thermal Bridge.

Where Thermal Bridging Occurs.



The Balcony – Spacious, but Demanding.

Balconies are an important part of modern buildings, offering a feeling of freedom and spaciousness. Unfortunately, incorporating a balcony may not be so relaxing for the architect or structural engineer. Cantilever balcony connections which extend through the building envelope break the insulation, and are well known thermal bridges that create significant heat and energy loss.



Types of Thermal Bridges

A thermal bridge is an area in the building envelope where the outflow of heat is greater than in adjacent areas. Thermal bridges are due to construction material and/or building design. A distinction is made between material thermal bridges (reinforced concrete slabs with a high thermal conductivity factor) and geometrical thermal bridges (the principle of increased surface area with “cooling fin effect”). In practice there is often a mix of both effects. A classic example of this is in a monolithic balcony slab extended from the floor slab.

The Effects of Thermal Bridges

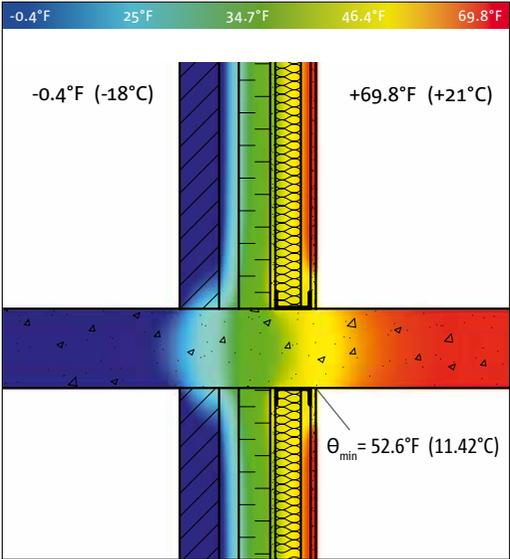
- ▶ Energy consumption can increase by up to one third.
- ▶ If there is sustained exposure to condensation, the building is subject to serious deterioration.
- ▶ Mold growth is not only an aesthetic disaster, it is hazardous to health and well known for being a major source of adverse respiratory effects, such as asthma.
- ▶ Uncomfortable living.

The Risk of Thermal Bridges

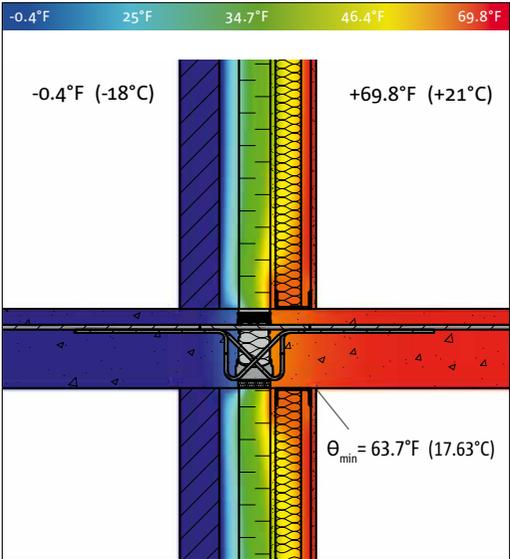
During winter months, conventional heating warms interior wall surfaces. At a thermal bridge, the interior surface temperature falls at a dramatic rate which leads to dew point risks. When heat flows unrestricted to the exterior, cold and moisture penetrate to the interior, causing damage to the building’s structure with condensation and potential mold growth.

Schöck Isokorb® insulates directly at the connection point between the balcony slab and the floor slab, decreasing heat flow by approximately 80 % compared with monolithic concrete connections.

Thermal bridging results in increased thermal energy loads, condensation damage, and mold growth. This problem is prevalent with cantilevered balconies and similar building elements. Schöck Isokorb® delivers an effective countermeasure by thermally separating components from one another while providing structural capacity.



Balcony connection without thermal break.

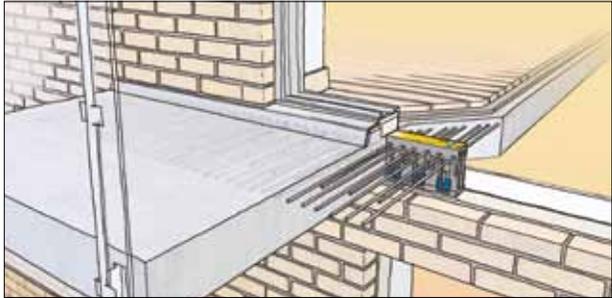


Balcony connection with Schöck Isokorb® CM20.

Schöck Isokorb® is part of the structural design and allows various connections including reinforced concrete-to-reinforced concrete and steel-to-steel.

The Schöck Isokorb® thermal break element is the only product of its type that allows thermally efficient load bearing connections between:

concrete slabs



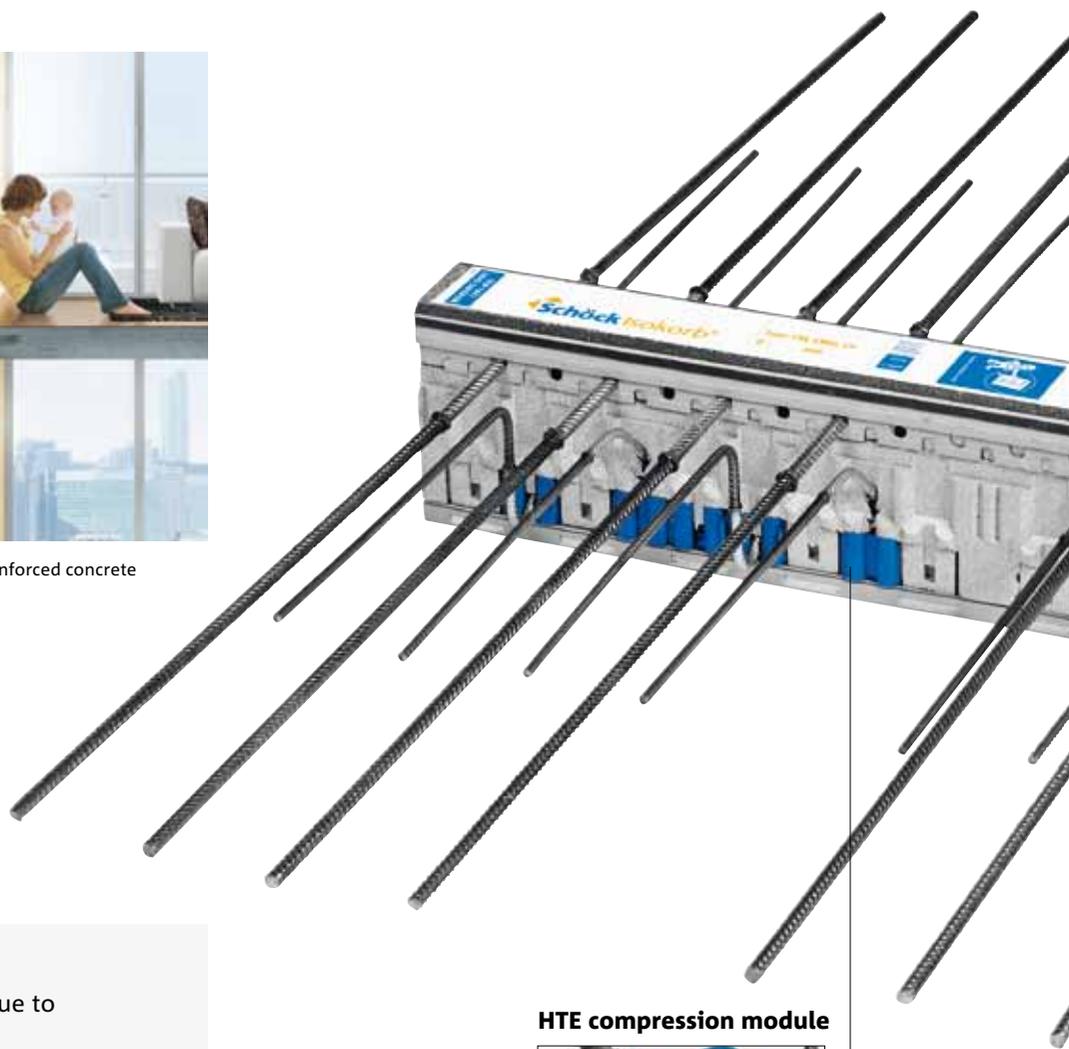
steel structures



Thermal Insulation for Concrete Slab Construction. Schöck Isokorb® Type CM.



Schöck Isokorb® thermally separates external reinforced concrete components from the main building structure



Schöck Isokorb® Benefits

- ▶ Avoids damages to buildings due to condensation and mold.
- ▶ Reduces operating costs for space heating with energy savings of up to 11%¹⁾.
- ▶ Contributes towards the protection of the environment and LEED® accreditation (for more information visit our website).
- ▶ Improves living comfort by increasing the surface temperatures by up to 11°F¹⁾.

HTE compression module



The Schöck Isokorb® thermal break element, with its low thermal conductivity and integral load bearing capacity, offers the ideal insulation solution to thermal bridging. Manufactured from state-of-the-art materials - stainless steel and the HTE (High Thermal Efficiency)-module with steel fiber reinforced UHPC (Ultra High Performance Concrete) - Schöck Isokorb guarantees the highest quality thermal partitioning for balconies and floor slabs. The dramatically reduced thermal outflow means higher surface temperatures inside, minimizing the risk of extra condensation, damage and mold growth.



Setting the Benchmark

At the core of Schöck Isokorb® is the HTE (High Thermal Efficiency)-Module. The HTE-pressure-bearing module is made from steel fiber reinforced UHPC (Ultra High Performance Concrete). The HTE compression module results in a number of advantages including greater structural performance, higher thermal efficiency, and allows the Isokorb® element to be easily installed. Using this technology, Schöck Isokorb® sets the benchmark for the best thermal performance achievable with thermal breaks.

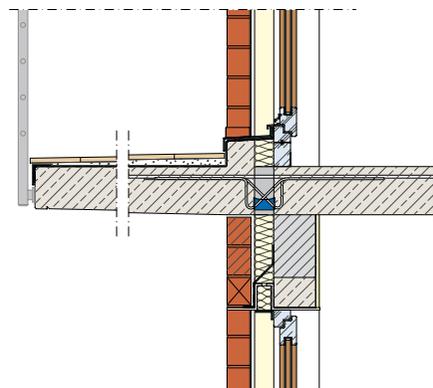
Insulation Material

Neopor® ²⁾
(graphite-enhanced expanded polystyrene)

Tension and Shear Force Bars

Stainless steel with high strength and low thermal conductivity.

Construction Details of Schöck Isokorb® type CM



¹⁾ depending on the design of the building

²⁾ Neopor® is a registered brand name of BASF

Thermal Insulation for Steel Structures.

Schöck Isokorb® Type S.



Schöck Isokorb® type S for cantilever steel structures. Load-bearing and insulating at the same time with maximum design flexibility.



On-site:

- ▶ Easy to fit with regular end plate connections.
- ▶ Specific load situation controlled by modular use of components.
- ▶ Designed to suit loading conditions in residential and commercial buildings.

The Schöck Solution

The Isokorb® minimizes thermal bridges, reduces condensation and dew point problems.

Increased Market Value

Property market value is increased through energy savings, sustainable design and possible LEED certification.

Design Freedom

Modular system and uncomplicated construction allows enormous freedom of design and planning implementation.

Insulation material

Neopor (EPS expandable polystyrene)



Free cantilever beams or canopies, balconies or walkways, the Schöck Isokorb® type S offers complete freedom of design when it comes to steel construction. The unit is able to withstand demanding loads and is effective against normal forces and shear forces. Stainless steel components prevent the risk of moisture and corrosion, while reducing the thermal conductivity.



Rods
stainless steel –
for lower thermal
conductivity and
higher strength
than carbon steel.

End plate block
Stainless steel – for transferring
compression and vertical shear forces

German Quality and Engineering

Cutting edge design minimizes thermal bridging, providing a connection with stainless steel components and protecting against corrosion.

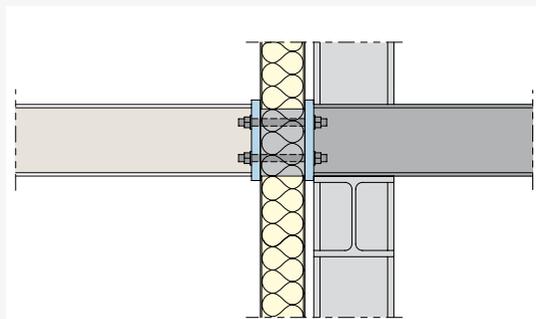
Simple Installation

Installation is simplified with easy fit end-plate connections and compatibility to all steel profiles.

High Load Bearing Capacity

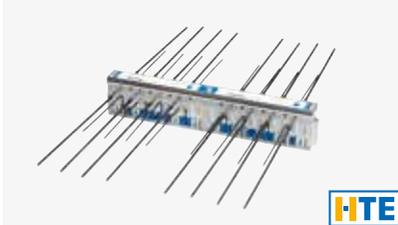
Resists normal forces and shear forces. Free cantilevered structures can be connected by using a minimum of 2 modules, one upon the other.

Construction Details of Schöck Isokorb® type S



Free cantilevered structures can be connected by using a minimum of 2 modules, one upon the other

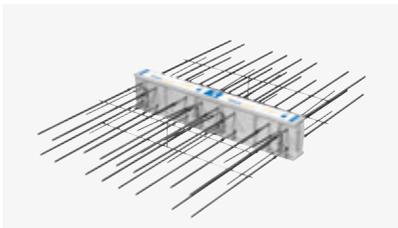
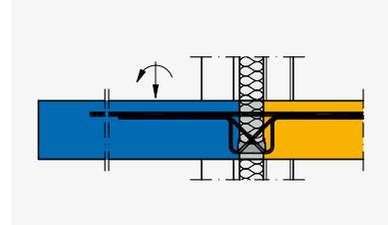
A Comprehensive Range of Applications



HTE

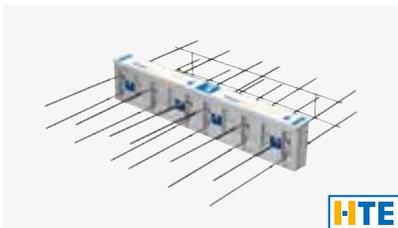
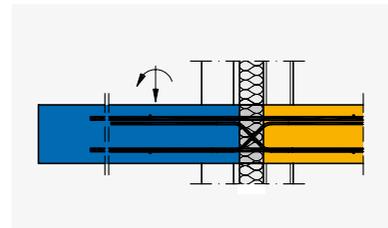
Schöck Isokorb® type CM

Load bearing thermal insulation element for cantilever concrete slabs such as balconies. Transfers shear force and bending moment stress.



Schöck Isokorb® type CMD

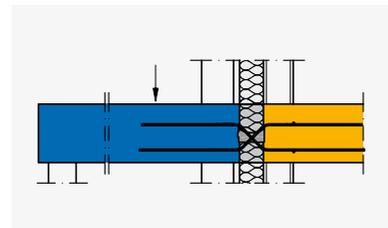
Load bearing thermal insulation element for "run-through" concrete slabs which encroach into the floor slab area. It transfers positive and negative bending moment stress and shear forces.



HTE

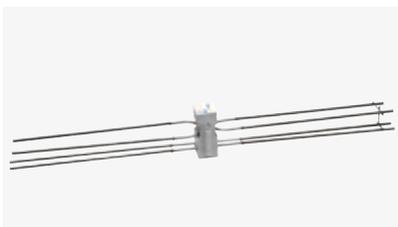
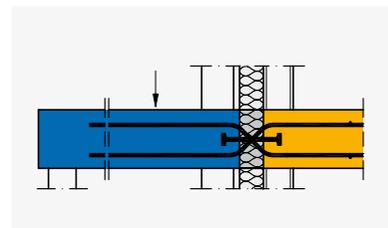
Schöck Isokorb® type CV

Load bearing thermal insulation element for column supported concrete slabs such as balconies. It transfers vertical shear forces from concrete slabs with continuous bearing.



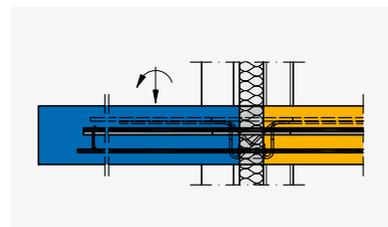
Schöck Isokorb® type CVB

Load bearing thermal insulation element for Loggia's or column supported concrete slabs such as balconies, for transferring vertical shear forces from concrete slabs with t-beams.



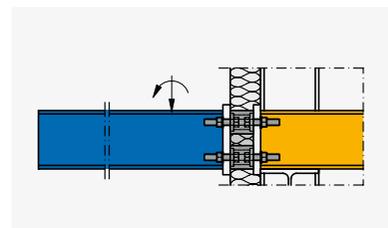
Schöck Isokorb® type CEQ

For intermitted transfer of earth quake loads. It transfers horizontal shear or/and tensile forces parallel or/and perpendicular to the insulation layer as well as up-lift forces when used in addition with type CM. It is used in addition to linear connection (e.g. Type CM, type CV, type CMD).



Schöck Isokorb® type S

The thermal insulation element for steel-to-steel connections. Free cantilevered structures can be connected by using a minimum of 2 modules.



Schöck Customer Services



Our experts in the Technical Design Support department are ready to help you with your design and construction inquiries by providing general advice, along with detailed plans, project solutions, building physics analysis and calculations where necessary.

Exceptional customer service and support are paramount to our success and we offer:

- ▶ Structural planning and design services
- ▶ Building physics analysis
- ▶ Technical assistance
- ▶ In-house training
- ▶ AIA CES seminars
- ▶ Manufacturer’s installation guidance

Visit our website in Canada at www.schoeck.ca, or in the USA at www.schock-us.com for more information about:

- ▶ Our products
- ▶ Case studies
- ▶ Training seminars
- ▶ The latest company news
- ▶ Subscribing to our newsletter



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