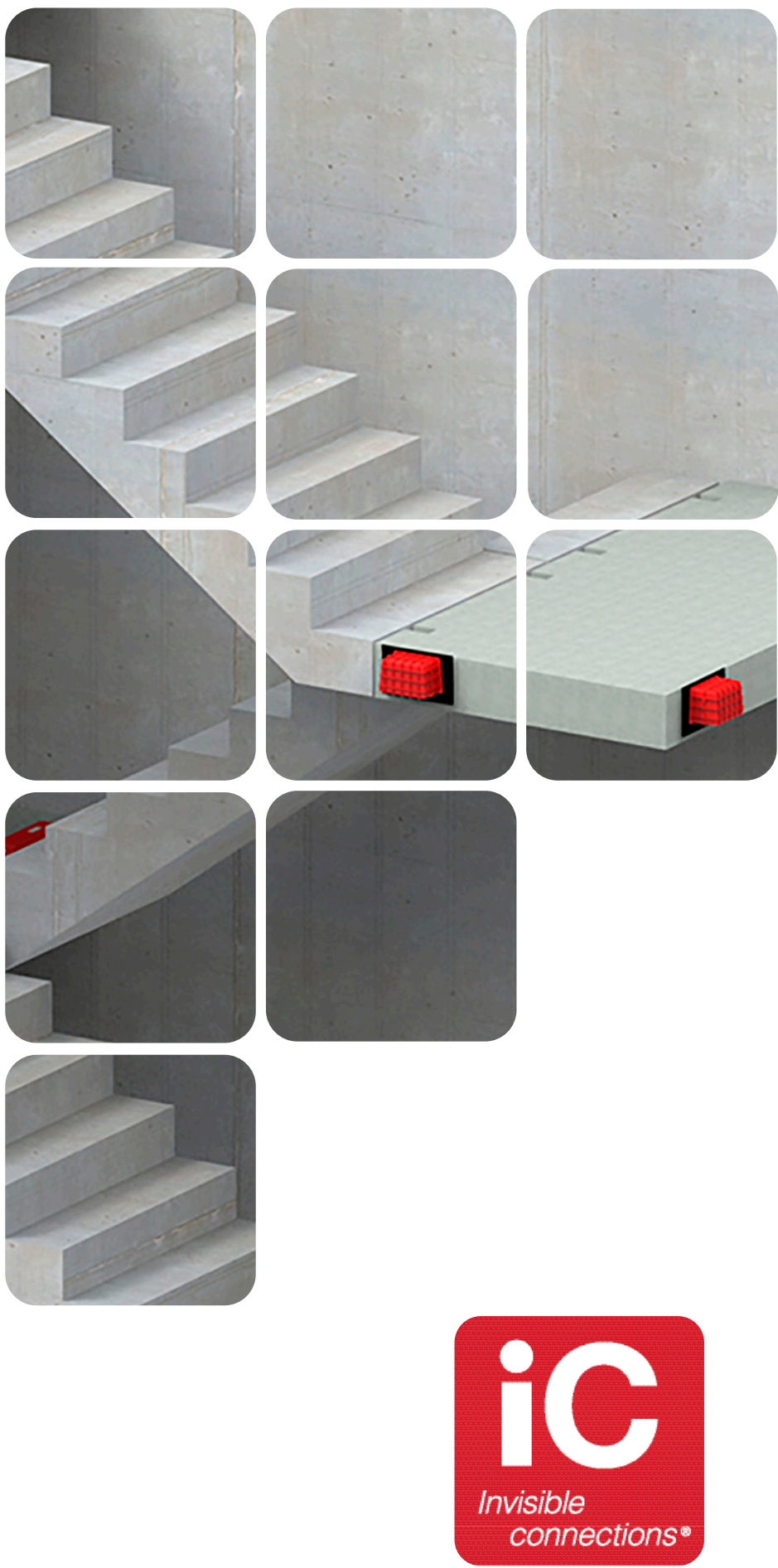


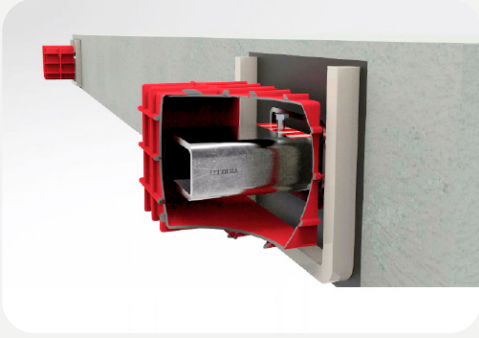
# CONNECTING CONCRETE ELEMENTS



## Telescopic stair connectors

**Efficient**  
**Economic**  
**Sustainable**

## Efficient



Enable fast and safe installation of stair and landings at building site. Calculation tools, ultimate loads pr connector, potential load during installation and uplift forces

ETA approved, and each connector individually CE-marked

Bim and Cad files for downloading at our webpage

The new generation PE outer tube have inbuilt clips to connect local reinforcement, so correct positioning is assured – an important performance benefit

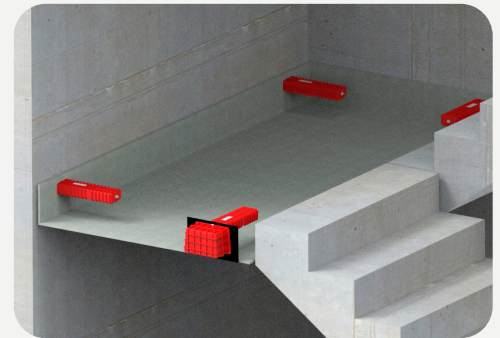
Fire protection, with our recommended installation is taken care of in a good way.

## Economic

Reduced cost.

Fast and safe installation with a minimum of manpower. The comparison have been done with traditional corbel, installation with IC connectors came out with 1/3 of manpower used at building site.

Slim design enables thinner slabs, less concrete volume is saved money



## Sustainable

The outer tube is made of 100% recycled PE. By replacing the steel outer tube with recycled PE, steel content has been reduced by more than 50%

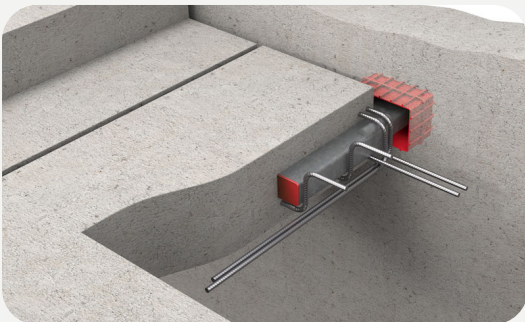
All parts are produced in a highly automatized production line with reduced energy consumption. And we are using clean hydro power in our factory, made from waterfalls in nearby mountains.

Our new connectors enable reduced landing and stair thicknesses.

Full capacity of the connectors is at 170 mm slab thickness, but they can be used down to 120 mm slab thickness.

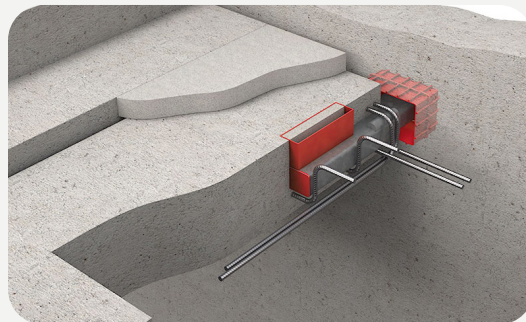
Thinner slabs mean less concrete, which means lower CO2 emissions.

## TSS or RVK



### TSS - Terrazzo Stair Support

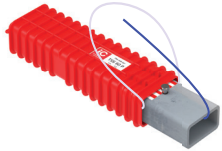
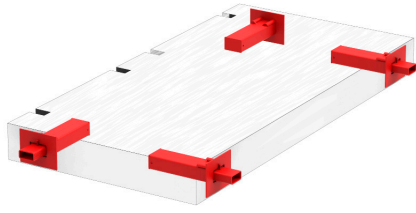
Inner sleeve pulled out with a wire (no visual marks in the surface of the slab).



### RVK - Landing Wall Connector

Inner sleeve adjusted through a slot in the surface of the staircase (the slot has to be grouted).

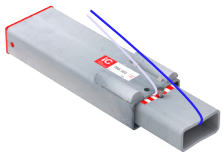
## Connections for landing to wall



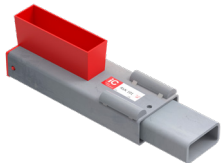
**TSS 60 P**  
Precast concrete stair landing connector 60kN. Cord operated outer tube is made of 100% recycled PE.



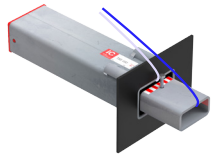
**RVK 60 P**  
Precast Concrete Stair Landing Connector. 60kN, Bolt operated. Outer tube is made of 100% recycled PE.



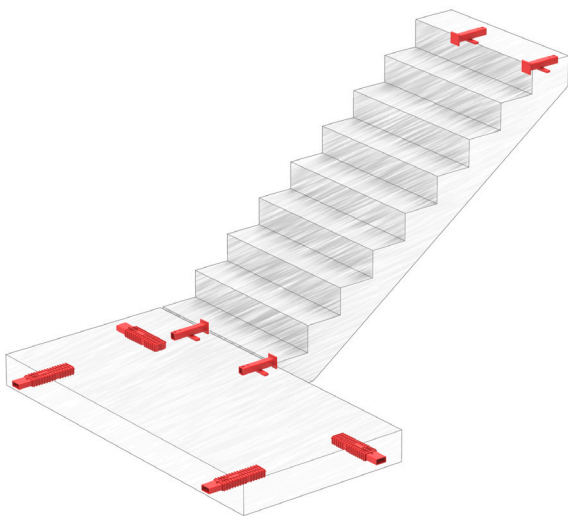
**TSS 101**  
Precast concrete stair landing connector 100kN, cord operated.



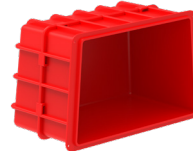
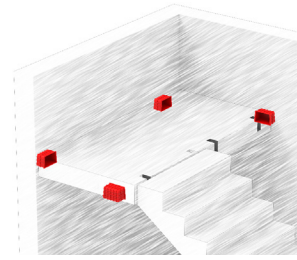
**RVK 101**  
Precast concrete stair landing connector 100kN, bolt operated.



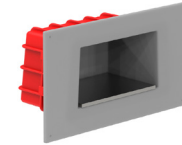
**TSS 102**  
Precast concrete stair landing connector 100kN, cord operated.



## Recess Box



**IC Box 100**  
Recess box. Made of 100% recycled PE.

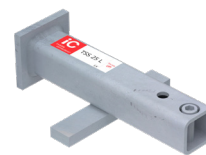
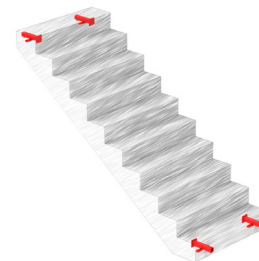


**IC Box 100 SRU**  
Recess box with sound reduction Recycled PE.



**REDiBOX**  
Recess box incl face-plate.

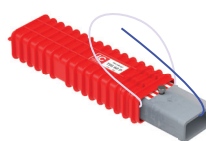
## Connections for flight to landing



**TSS 25 L**  
Stair flight to landing connector with adjustment and lifting device. Reinforcement included.



**TSS 20 FA**  
Stair flight to landing connector with adjustment

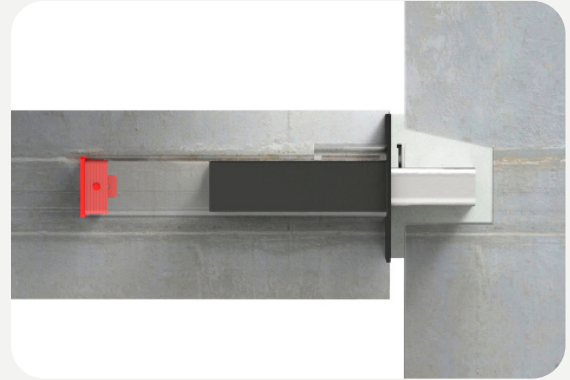
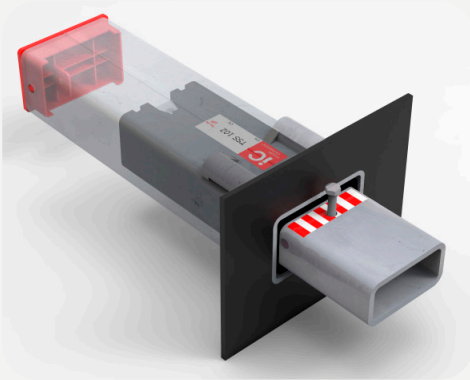


**TSS 60 P**  
Precast concrete stair landing connector 60kN, cord operated. Outer tube is made of 100% recycled PE.

# Impact Sound insulation

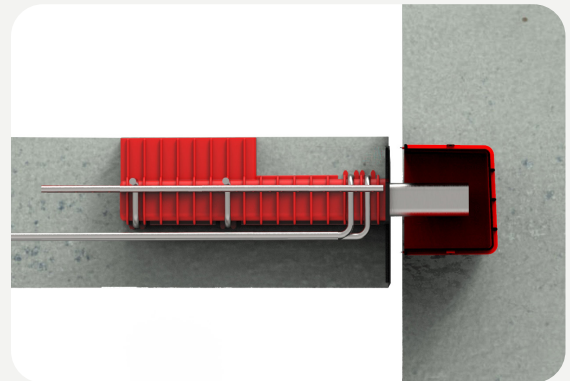
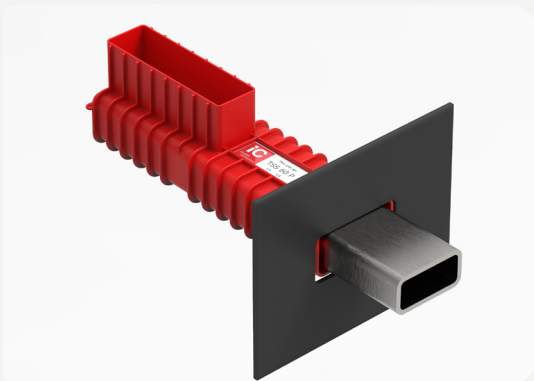
## Impact sound insulation in landing

TSS 102 with vertical flange, reduce sound impact by 20-25 dB



## Impact sound insulation in landing/wall

TSS/RVK vertical rubber flange, reduce sound impact by 10-12 dB



## Impact sound insulation in wall

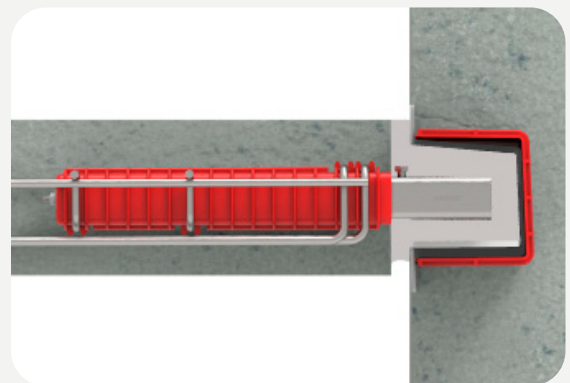
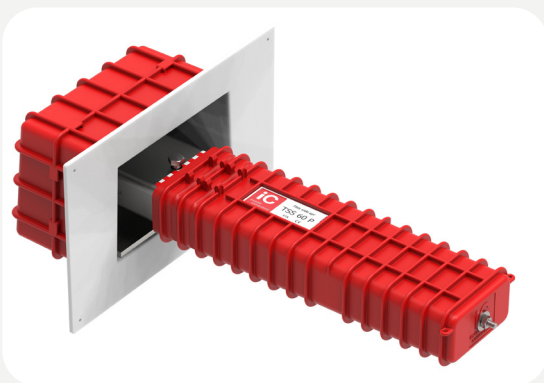
TSS/RVK with IC Box 100 SRU reduce impact sound by 20-28 dB

Our new IC-Box SRU minimizes step-sound vibration from stair shaft into adjacent room.

For high specification application sound transmission typically must be reduced by 25-28 dB. The IC Box SRU give a reduction of 20-28 dB.

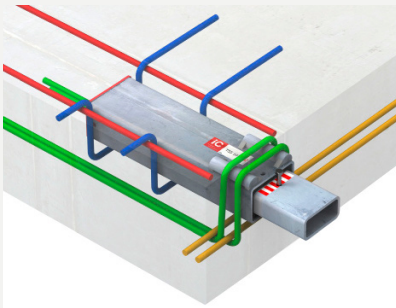
The sound reduction unit is produced in recycled HDPE, with a sound reduction inside.

Easy to install and use, and it gives good installation tolerances.



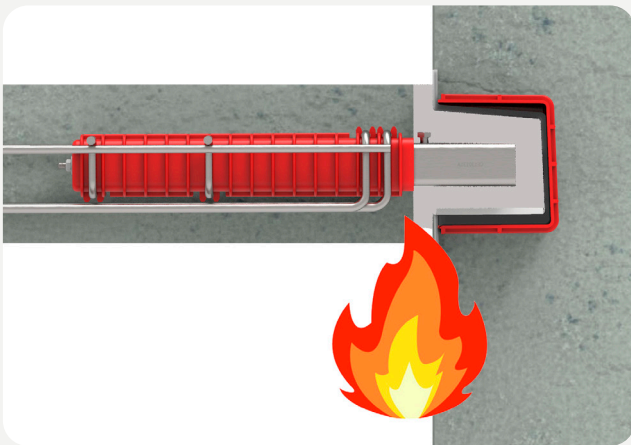
# Reinforcement

Open Technical info, Memo 55 for more information about reinforcement.



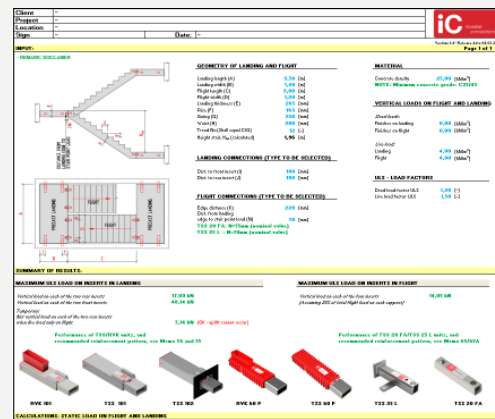
PRODUCT SERIES	RVK 60 P	TSS 60 P	TSS 101 TSS 101 G	RVK 101 RVK 101 G	TSS 102 TSS 102 G
<b>Load category a) - without simultaneously acting horizontal design support reaction. <math>H_{Ed}</math></b>					
<b>Recommended maximum ULS load <math>F_{v,Ed}</math> [kN]</b>					
Slab thickness [mm]	120	34	34	-	-
	150	46	46	-	-
	170	57	57	96	96
	200			100	100
	265			100	100
<b>Load category b) - with simultaneously acting horizontal design support reaction. <math>H_{Ed}=0,2F_{v,Ed}</math></b>					
<b>Recommended maximum ULS load <math>F_{v,Ed}</math> [kN]</b>					
Slab thickness [mm]	120	33	33	-	-
	150	44	44	-	-
	170	55	55	90	90
	200			94	94
	265			94	94

# Fire protection



The fire protection is taken care of in a good way when using IC stair connectors. After installation the TSS/RVK will be completely covered with concrete.

# Calculation tool



Our calculation tool helps you to find correct model. You will find calculations tool under "Resources" - Stair-landing connections

## The Architect

Gets freedom in design, can create elegant and clean corbel free connections



## The Engineer

Gains a robust, simple and efficient connection; ETA approved, design tools, sustainable and EPD declaration



## The Main Contractor

Gains a fast and safe installation of stairs and values the reduction in crane time. Sustainable construction



## The Precaster

Keeps control in the production with a well approved system, standard reinforcement design.





Google headquarter, London



New hospital, Malmö



## TSS and RVK Stair Connectors prosjekt focus

### Google headquarter, London

Google's new headquarters at King's Cross in London will be a whopping 80,819 m2. It will have 11 floors, will be able to accommodate 7,000 Google employees, contain a basketball court and swimming pool, as well as have a park and running track on top. Invisible Connections AS will supply TSS 101 for the project.

### New hospital, Malmö

Skanska chose to use TSS101 for fixing stairs in the new hospital in Malmö, as they achieve efficient, fast and secure mounting of stairs. Element manufacturer is Lithana Group in Lithuania and TSS was supplied by our distributor Semtu.

### Dovrekvartalet, Lilleström

We are proud to have delivered TSS 25 L to the Dovrekvartalet in Lillestrøm. Anders Fredriksson, Bundebygg, Bas at Dovrekvartalet says:

*"An absolutely superb product that should be used by several stair suppliers. Simple, smart and quick solution for adjusting the stairs. 10-15% time saving."*



Dovrekvartalet, K-tre, Lillestrøm



Southbank place, London



Varso tower, Warszawa

## Southbank place, London

Southbank Place is a masterplan designed for the site of the former Shell HQ in one of London's most iconic cultural locations on the South Bank of the River Thames, overlooking Jubilee Gardens and the London Eye. And we are proud to be a part of this project with our stair connectors, actually as many as 1700 units.

## Varso tower, Warszawa

Another exciting project has been built using fastenings developed and produced by Invisible Connections AS in Ådalsnes. Before the summer of 2019, it became clear that solutions from Invisible Connections AS were to be used in the 310 meter high Varso Tower in Warsaw. The tower opened in 2020 and the stairs are all installed in the 54-storey building.

*"An absolutely superb product that should be used by several stair suppliers. Simple, smart and quick solution for adjusting the stairs. 10-15% time saving."*

**Anders Fredriksson, Dovrekvartalet about TSS 25 L**



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