2

02 CONCEALED CONNECTORS

TOPLINE KONSTRULINE DCSTATIK

CONCEALED CONNECTORS

(Invisible connectors)

TOP UV CONCEALED CONNECTORS

- Invisible dovetail connection
- Safety catch
- Optimised hole pattern
- For loading in 4 load directions
- Quick assembly of secondary beams
- Conical dovetail guide pulls together
- Milling radii

up to 72 kN

Basics of statics **from page 68** / Products & statics **from page 66**

CONCEALED CONNECTORS TOP OV

„Simple and ingenious“
More flexibility in connection technology

- **In the factory:** Simply mill out the connection form or attach and mount on the secondary beam with a maximum of 4 tensile and 2 pressure screws.
- **On the building site:** Insert the secondary beam in the recess of the main beam or only place it down. Turn 2 pressure screws into the main beam/support.

up to 27 kN

Basics of statics **from page 84** / Products & statics **from page 82**

BEAM HANGER

- Connection to timber, concrete and masonry
- Type alu combi without holes for rod dowels. By drilling through the secondary beam and connector, you receive a connection with a perfect fit.
- Type alu SD 12 and SD 16 with assembly fix tab.

up to 258 kN

Basics of statics **from page 90** / Products & statics **from page 88**

INTEGRAL CONNECTORS

- GH integral connectors type M, 2- and 4-row with assembly fix tab for concealed connections with connections between the main/secondary beam and connections to the columns.
  For both versions, the secondary beam with pre-fitted rod dowel is suspended in the assembly fix tab.
- 2-row integral connectors with embossed reinforcement studs. This gives you the necessary accuracy of fit and the same slot width as with a 4-row integral connector.
- 4-row integral connections with even higher load-bearing capacities!

up to 58 kN

Basics of statics **from page 90** / Products & statics **from page 88**

CONCEALED CONNECTORS

2 ASSORTMENT

							Basics Statics & Diagrams from page	Products & Statics from page
TOP UV CONNECTORS TIMBER/TIMBER		CE	Al Aluminium	NKL 2			65	66
TOP UVB CONNECTORS TIMBER/CONCRETE		CE	Al Aluminium	NKL 2			65 / 68	78
TOP OV CONNECTORS		CE	Al Aluminium	NKL 2			65 / 84	82
BEAM HANGER TYPE ALU COMBI		CE	Al Aluminium	NKL 2			65 / 90	88
BEAM HANGER TYPE ALU COMBI SD 12		CE	Al Aluminium	NKL 2			65 / 90	88
BEAM HANGER TYPE ALU COMBI SD 16		CE	Al Aluminium	NKL 2			65 / 90	88
INTEGRAL CONNECTOR 2-ROW TYPE M		CE	250 GD Z275	NKL 2			65 / 90	88
INTEGRAL CONNECTOR 4-ROW TYPE M		CE	250 GD Z275	NKL 2			65 / 90	88
INTEGRAL CONNECTOR ANGLED CONNECTION			250 GD Z275	NKL 2				102

CE symbol

Steel with indication of the steel quality and galvanisation

Aluminium

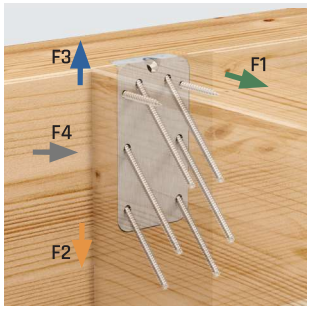
Timber/timber connection

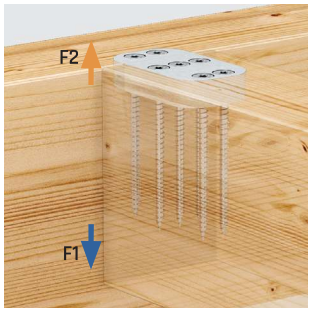
Timber/concrete-connection

Usage class 1
Moisture content in the building materials that corresponds to a temperature of 20° C and a relative humidity of the ambient air that only exceeds a value of 65% for a few weeks per year, e.g. in the case of buildings that are closed on all sides and heated. Comment: In UC 1, the average moisture content of most softwoods does not exceed 12 %.

Usage class 2
Moisture content in the building materials that corresponds to a temperature of 20° C and a relative humidity of the ambient air that only exceeds a value of 85% for a few weeks per year, e.g. in the case of open buildings covered by a roof. Comment: In UC 2, the average moisture content of most softwoods does not exceed 20 %.

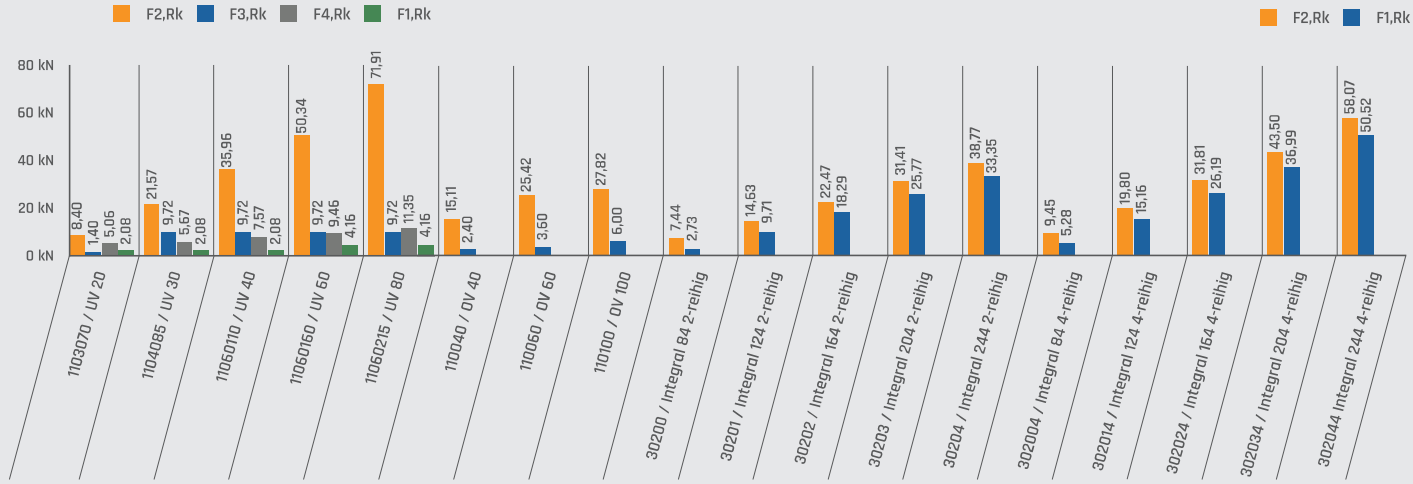
Usage class 3
Includes climatic conditions that lead to higher moisture contents than in UC 2, e.g. structures that are exposed to the weather without protection. Eurocode 5 / DIN EN 1995-1-1 section 2.3.1.3

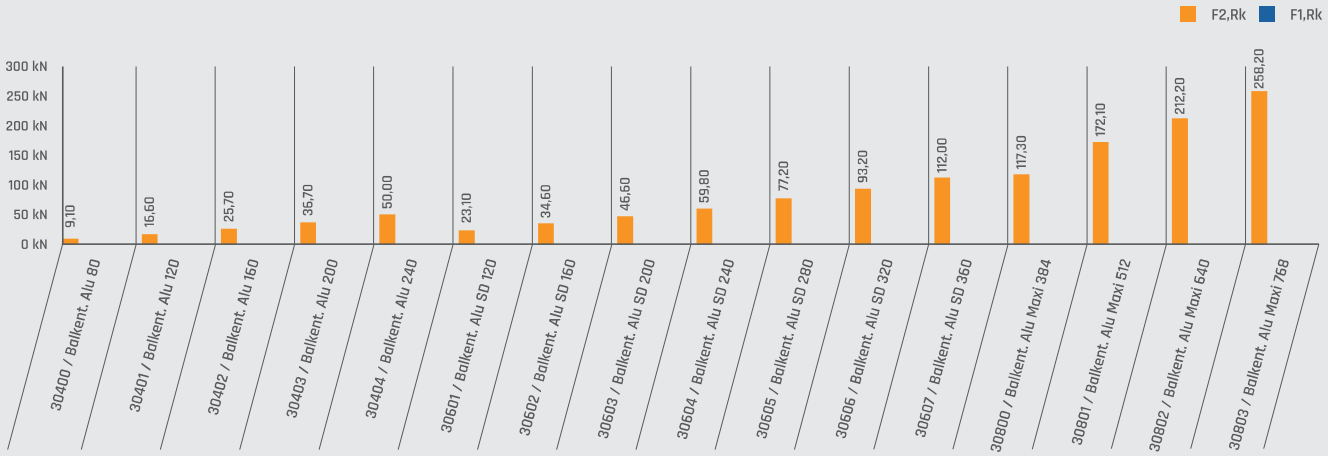




CONCEALED CONNECTORS

STATICS DIAGRAM 2





TOP OV CONNECTORS

2 TECHNICAL FEATURES

Geometry

W(B)	Width (mm)
H	Height (mm)
T(S)	Material thickness (mm)

Tables

n_{HT}	Number of holes in main beam
n_{NT}	Number of holes in secondary beam
n_v	Number of connecting elements for full screw fitting
HT	Main beam
NT	Secondary beam
H_{HT}	Minimum height of main beam
B_{HT}	Minimum width of main beam
H_{NT}	Minimum height of secondary beam
B_{NT}	Minimum width of secondary beam

Timber connecting element

Ø [mm]	Diameter of connecting element
L [mm]	Length of connecting element
	Grain direction of component

Force directions

$F_{Z,c,Rk}$ ↓	Pressure load directly downward (main load)
$F_{Z,t,RK}$ ↑	Upwards directed, lifting load

User video
for our TOP OV connectors

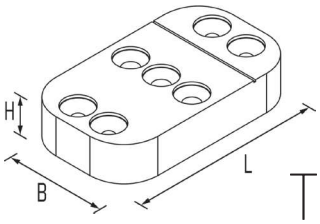
Aluminium

Usage class 1
Moisture content in the building materials that corresponds to a temperature of 20° C and a relative humidity of the ambient air that only exceeds a value of 65% for a few weeks per year, e.g. in the case of buildings that are closed on all sides and heated. Comment: In UC 1, the average moisture content of most softwoods does not exceed 12 %.

Usage class 2
Moisture content in the building materials that corresponds to a temperature of 20° C and a relative humidity of the ambient air that only exceeds a value of 85% for a few weeks per year, e.g. in the case of open buildings covered by a roof. Comment: In UC 2, the average moisture content of most softwoods does not exceed 20 %.

Usage class 3
Includes climatic conditions that lead to higher moisture contents than in UC 2, e.g. structures that are exposed to the weather without protection. Eurocode 5 / DIN EN 1995-1-1 section 2.3.1.3

TOPLINE DCSTATIK ETA-12 0171



NKL 2 Aluminium

TOP OV CONNECTORS

TIMBER/TIMBER 2

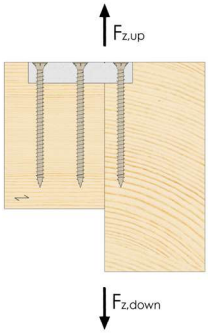
Timber / Timber

Art. No.	Type	Dimensions [mm]					nH	nN	B_{NT}	EAN	Weight	Pallet	PU
		W(B)	x	L	x	H				4019346	kg		
110040	OV 40	40	x	104	x	20	1	3	60	017692	0.200	480	10
110060	OV 60	60	x	104	x	20	2	5	80	017708	0.304	480	10
110100	OV 100	100	x	104	x	20	2	6	120	017722	0.537	480	10

Art. No.	Dimensions [mm]			Minimum height of secondary beam					
	Ø	x	L	OV applied $H_{min\ [mm]}$	OV inlaid $H_{min\ [mm]}$				
110120	8,0	x	120	130	150	017739	3.000	14500	50
110160	8,0	x	160	170	190	017753	3.520	11000	50
110200	8,0	x	200	210	230	017777	4.370	11000	50

nH = number of connectors in the main beam
nN = maximum number of connecting elements in the secondary beam
B_{NT} = minimum width of secondary beam

Load directions



Proof of load capacity
See statics table. For more detailed information on design, see ETA-12/0171

Proof of load capacity
The pressure load-bearing capacity of the screws (OV pressure screws) is limited depending on the diameter. This limit is lower than the tensile load capacity (OV tension screws).

The load-bearing capacity for buckling is a pure steel component and is therefore not dependent on the KLED. In the design situation, the thread load-bearing capacity is always lower than the buckling load-bearing capacity (k_mod). With the characteristic load-bearing capacity, buckling is already decisive with shorter screws.

General information
One-sided connection
The main beam must be secured against twisting.

The load capacities in the table apply to timbers with a characteristic raw density of ρ_k at least 350 kg/m³. For timber with a high raw density, the values in the table can be used to be on the safe side.

Timber / Timber

Art. No.	Type	W(B)	L	H	n_{HT}	n_{NT}		GH VG screw 8.0 x L [mm] 120	160	200
110040	OV 40	40	104	20	1	3	$F_{Z,c,Rk}$	10,06	13,62	15,11
							$F_{Z,t,Rk}$	2,40	2,40	2,40
110060	OV 60	60	104	20	2	5	$F_{Z,c,Rk}$	15,10	20,44	25,42
							$F_{Z,t,Rk}$	3,60	3,60	3,60
110100	OV 100	100	104	20	2	6	$F_{Z,c,Rk}$	20,13	27,25	27,82
							$F_{Z,t,Rk}$	6,00	6,00	6,00