

2

02

CONCEALED CONNECTORS



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**



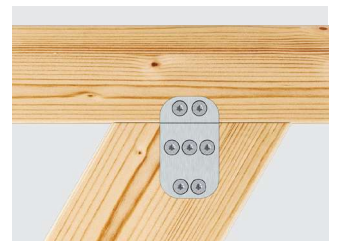
Basics of statics **from page 68** / Products & statics **from page 66**

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						65 66
TOP UVB CONNECTORS TIMBER/CONCRETE						65 / 68 78
TOP OV CONNECTORS						65 / 84 82
BEAM HANGER TYPE ALU COMBI					 	65 / 90 88
BEAM HANGER TYPE ALU COMBI SD 12					 	65 / 90 88
BEAM HANGER TYPE ALU COMBI SD 16					 	65 / 90 88
INTEGRAL CONNECTOR 2-ROW TYPE M						65 / 90 88
INTEGRAL CONNECTOR 4-ROW TYPE M						65 / 90 88
INTEGRAL CONNECTOR ANGLED CONNECTION						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

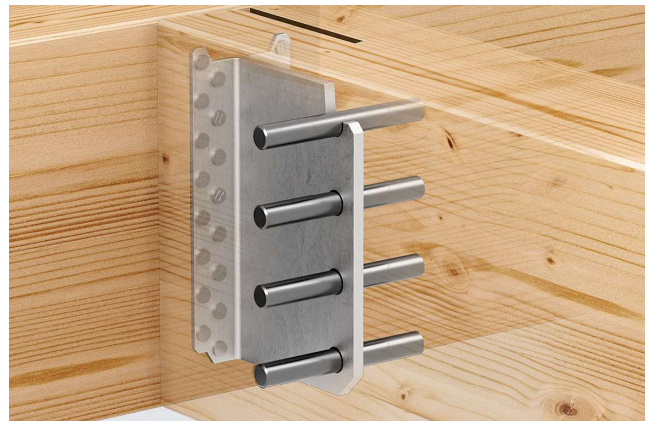
2



INTEGRAL CONNECTORS/BEAM HANGERS

ADVANTAGES OF INTEGRAL CONNECTORS

- Assembly fix tab for simple, quick assembly
- Invisible, attractive look
- Customised angled connection of 30° to 90°.



ADVANTAGES OF BEAM HANGERS

- For connection to timber and concrete
- Simple, quick assembly
- Invisible, attractive look
- Narrow geometry
- Angled connections possible
- Fire resistant requirements are met



INTEGRAL CONNECTORS/BEAM HANGERS

2 TECHNICAL FEATURES

Geometry

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

Tables

HT	Main beam
H _{NT}	Minimum height of secondary beam
NT	Secondary beam
B _{NT}	Minimum width of secondary beam
n _{HT}	Number of holes in main beam
n _{NT}	Number of holes in secondary beam
n _a	Number of connecting elements
n _{o Ø}	Number of connecting elements with Ø
L _s	Length of self-drilling rod dowels

Timber connecting element

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

Connecting element concrete/ steel

Bo	Dowel/bolt
----	------------

Force directions

F _{2,Rk} ↓	Force in insertion direction (main load)
F _{1,Rk} ↑	Force against insertion direction (lifting load)



Aluminium



Steel with indication of the steel quality and galvanisation



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

INTEGRAL CONNECTORS/BEAM HANGERS

APPLICATIONS 2

Application:

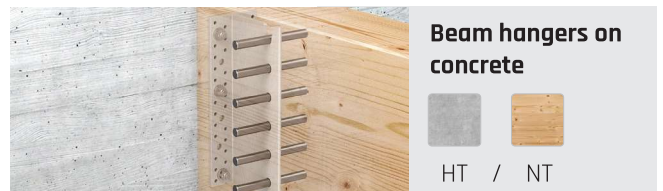
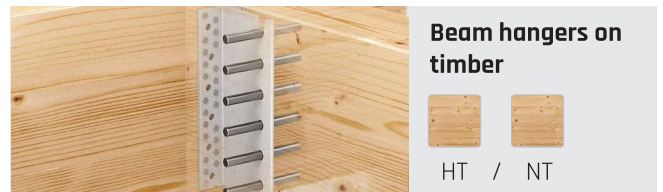
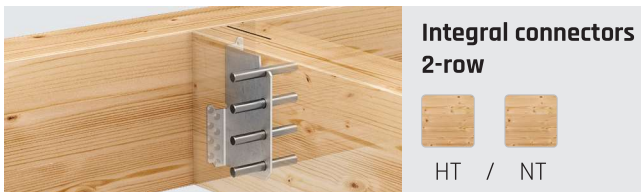
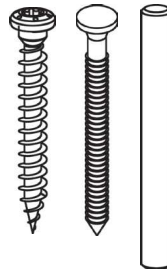
Connection timber-timber/concrete*/ steel*

*Beam hangers only

Materials:

Material thickness:

Integral connectors 3,0/6,0 mm
Beam hangers 6,0/10,0 mm


For use in usage classes

Connecting element:

GH threaded nails Ø 4,0 X 35 / 40 / 50 / 60 / 75 / 100 mm
Ø 6,0 x 60 / 80 / 100 mm*

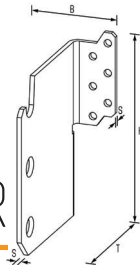
GH screws Ø 5,0 x 25 / 35 / 40 / 50 / 60 / 70 mm

Rod dowels

Bolts, dowels, concrete anchors Ø8, Ø 16*

*Only joist hanger type Combi Maxi SD 16

Connecting elements from page 274



INTEGRAL CONNECTOR

2-ROW TYPE M (ASSEMBLY FIX TAB)

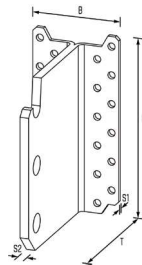
Art. No.	Type	Dimensions [mm]							nH	nBo	EAN	Weight	Pallet	PU		
		H	x	W(B)	x	D(T)	x	T(S)	Ø 5	Ø 13	4019346	kg				
30200	MO	84	x	60	x	98	x	3,0 / 6,0	8	2	105061	0.195	1200	25	■	
30201	MI	124	x	60	x	98	x	3,0 / 6,0	12	3	105078	0.295	900	25	■	
30202	MII	164	x	60	x	98	x	3,0 / 6,0	16	4	105085	0.395	1000	25	■	
30203	MIII	204	x	60	x	98	x	3,0 / 6,0	20	5	105092	0.495	600	25	■	
30204	MIII	244	x	60	x	98	x	3,0 / 6,0	24	6	105108	0.595	600	25	■	

Slot width in secondary beam: 6.0 mm



2-ROW TYPE M (ASSEMBLY FIX TAB) 2

Timber / Timber																	
Art. No.	Dimensions [mm]				Secondary beam			Main beam									
	H	W(B)	D(T)	T(S)	H _{NT}	B _{NT}	n _{a,812}	n _a	4.0x60	F2,rk	F1,rk						
30200	84	60	98	3,0	108	60	2	8	Full	6,17	2,73						
							2	4	Partial	2,93	1,15						
						80	2	8	Full	6,38	2,73						
							2	4	Partial	3,03	1,15						
						100	2	8	Full	6,83	2,73						
							2	4	Partial	3,24	1,15						
						120	2	8	Full	7,44	2,73						
							2	4	Partial	3,53	1,15						
						30201	124	60	98	3,0	144	60	3	12	Full	12,14	8,06
													3	8	Partial	10,05	6,80
80	3	12	Full	12,54	8,32												
	3	8	Partial	10,38	7,03												
100	3	12	Full	13,44	8,92												
	3	8	Partial	11,12	7,53												
120	3	12	Full	14,63	9,71												
	3	8	Partial	12,11	8,20												
30202	164	60	98	3,0	180							60	4	16	Full	19,36	15,17
													4	8	Partial	13,78	10,57
						80	4	16	Full	20,00	15,67						
							4	8	Partial	13,78	10,92						
						100	4	16	Full	21,43	16,80						
							4	8	Partial	13,78	11,70						
						120	4	16	Full	22,47	18,29						
							4	8	Partial	13,78	12,56						
						30203	204	60	98	3,0	216	60	5	20	Full	26,06	23,65
													5	12	Partial	20,66	16,22
80	5	20	Full	26,92	24,43												
	5	12	Partial	20,66	16,76												
100	5	20	Full	28,84	25,77												
	5	12	Partial	20,66	17,96												
120	5	20	Full	31,41	25,77												
	5	12	Partial	20,66	19,55												
30204	244	60	98	3,0	252							60	6	24	Full	34,85	33,07
													6	12	Partial	20,66	20,66
						80	6	24	Full	36,00	33,35						
							6	12	Partial	20,66	20,66						
						100	6	24	Full	38,57	33,35						
							6	12	Partial	20,66	20,66						
						120	6	24	Full	38,77	33,35						
							6	12	Partial	20,66	20,66						



INTEGRAL FASTENER

4-ROW TYPE M (ASSEMBLY FIX TAB)

Art. No.	Type	Dimensions [mm]										nH	nBo	EAN	Weight	Pallet	PU		
		H	x	W(B)	x	D(T)	x	T1(S1)	x	T2(S2)	Ø 5	Ø 13	4019346	kg					
302004	M0-4	84	x	60	x	98	x	3	x	6	16	2	479704	0.390	1000	25	■		
302014	MI-4	124	x	60	x	98	x	3	x	6	24	3	479711	0.590	1000	25	■		
302024	MII-4	164	x	60	x	98	x	3	x	6	32	4	479728	0.790	1000	25	■		
302034	MIII-4	204	x	60	x	98	x	3	x	6	40	5	479735	0.990	600	25	■		
302044	MIIII-4	244	x	60	x	98	x	3	x	6	48	6	479742	1.190	600	25	■		

Slot width in secondary beam: 6.0 mm



TOOLS

INTEGRAL CONNECTOR DRILLING TEMPLATE



Art. No.	EAN	Weight	PU
	4019346	kg	
33000120	000731	2.100	1

4-ROW TYPE M (ASSEMBLY FIX TAB) 2

Timber / Timber											
Art. No.	Dimensions [mm]				Secondary beam			Main beam			
	H	W(B)	D(T)	T(S)	H _{NT}	B _{NT}	n _{a,812}	n _a	4.0x60	F2,rk	F1,rk
302004	84	60	98	6,0	108	60	2	16	Full	9,00	5,28
							2	8	Partial	6,70	1,57
						80	2	16	Full	9,30	5,28
							2	8	Partial	6,92	1,57
						100	2	16	Full	9,45	5,28
							2	8	Partial	7,41	1,57
						120	2	16	Full	9,45	5,28
							2	8	Partial	8,07	1,57
302014	124	60	98	6,0	144	60	3	24	Full	16,43	13,92
							3	12	Partial	12,98	7,32
						80	3	24	Full	16,97	14,38
							3	12	Partial	13,40	7,57
						100	3	24	Full	18,19	15,16
							3	12	Partial	14,36	8,11
						120	3	24	Full	19,80	15,16
							3	12	Partial	15,27	8,83
302024	164	60	98	6,0	180	60	4	32	Full	27,31	23,75
							4	16	Partial	19,36	12,98
						80	4	32	Full	28,21	24,54
							4	16	Partial	20,00	13,40
						100	4	32	Full	30,23	26,19
							4	16	Partial	21,43	14,36
						120	4	32	Full	31,81	26,19
							4	16	Partial	23,34	15,64
302034	204	60	98	6,0	216	60	5	40	Full	39,76	36,31
							5	20	Partial	26,06	20,61
						80	5	40	Full	41,08	36,99
							5	20	Partial	26,92	21,30
						100	5	40	Full	43,50	36,99
							5	20	Partial	28,84	22,82
						120	5	40	Full	43,50	36,99
							5	20	Partial	31,41	24,85
302044	244	60	98	6,0	252	60	6	48	Full	50,33	46,77
							6	24	Partial	33,17	29,30
						80	6	48	Full	52,00	48,32
							6	24	Partial	34,27	30,27
						100	6	48	Full	55,72	50,52
							6	24	Partial	36,72	32,44
						120	6	48	Full	58,07	50,52
							6	24	Partial	39,99	34,86



INTEGRAL CONNECTOR

2

TYPE M FOR ANGLED CONNECTION FROM 30° - 90°



Art. No.	Type	Dimensions [mm]							nH	nBo	EAN	Weight kg	PU		
		H	x	W(B)	x	D(T)	x	T(S)							
30200R	O-R	84	x	30	x	98	x	3,0 / 6,0	8	2	105306	0.195	1	■	
30200L	O-L	84	x	30	x	98	x	3,0 / 6,0	8	2	595053	0.195	1	■	
30201R	I-R	124	x	30	x	98	x	3,0 / 6,0	12	3	105320	0.295	1	■	
30201L	I-L	124	x	30	x	98	x	3,0 / 6,0	12	3	595060	0.295	1	■	
30202R	II-R	164	x	30	x	98	x	3,0 / 6,0	16	4	105344	0.395	1	■	
30202L	II-R	164	x	30	x	98	x	3,0 / 6,0	16	4	595077	0.395	1	■	
30203R	III-R	204	x	30	x	98	x	3,0 / 6,0	20	5	105368	0.495	1	■	
30203L	III-R	204	x	30	x	98	x	3,0 / 6,0	20	5	595084	0.495	1	■	
30204R	IIII-R	244	x	30	x	98	x	3,0 / 6,0	24	6	105382	0.595	1	■	
30204L	IIII-L	244	x	30	x	98	x	3,0 / 6,0	24	6	595091	0.595	1	■	

Slot width in secondary beam: 6.0 mm

Set up costs per degree and attachment direction

30210	Set up costs	105405	1
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Angled connections left/right of 30° - 90° are available

