PRODUCT DATA SHEET

KONSTRUX ST, CYLINDER HEAD

PRODUCT DESCRIPTION

KonstruX fully threaded screws maximise a joint's load-bearing capacity with a high thread-extraction resistance in both components. If partially threaded screws are used, the joint's load-bearing capacity is limited by the considerably lower head pull-through resistance in the attached part.

KonstruX fully threaded screws are a cost-saving alternative to traditional connections or timber joints such as joist hangers and beams.

ADVANTAGES

- Reduced screwing torque
- High extraction resistance

MATERIAL

- Hardened carbon steel + blue galvanised
- Free of chromium (VI) oxide
- Good resistance to mechanical stresses

CERTIFICATION

- European Technical Assessment ETA 11/0024

Europ. Techn. Bewertung
European Technical Assessment
ETA-11/0024

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TECHNICAL INFORMATION

KonstruX ST Cylinder head							
Geometric properties					Mechanical properties		
Nominal Ø [mm]	Root Øi [mm]	Head Øh [mm]	Head high hh [mm]	Tip type	$f_{tens,k}$ [kN]	$f_{ax,k}$ [MPa]	$M_{y,k}$ [Nm]
5.2	3.6	6.4	5.0	ST-Drill	13.0	15.5	10.0
5.9	3.6	8.0	5.5	ST-Drill	17.0	15.5	15.0
6.5	4.5	8.0	5.5	ST-Drill	17.0	15.5	15.0
8	5.2	10	6.5	STDrill	25.0	12.5	25.0
10	5.9	13	6.5	ST-Drill	33.0	11.5	40.0

MIN. DISTANCES FOR AXIAL LOADS

With and with pre-drilled holes						
d [mm]	Rule	5.2	5.9	6.5	8	10
$a_{1,c}$	5.d	26	30	32.5	40	50
$a_{2,c}$	3.d	16	18	20	24	30
a_1	5.d	26	30	32.5	40	50
a_2	5.d	26	30	32.5	40	50
a_x	1.5.d	8	9	10	12	15

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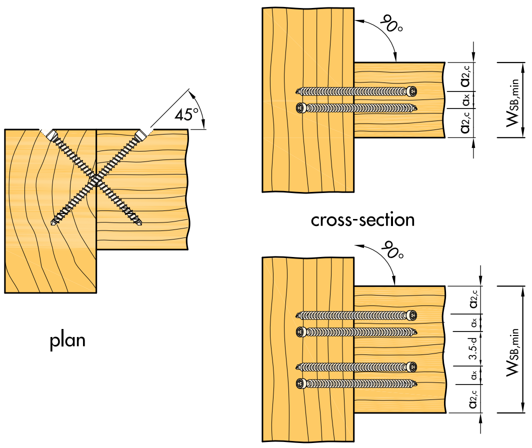
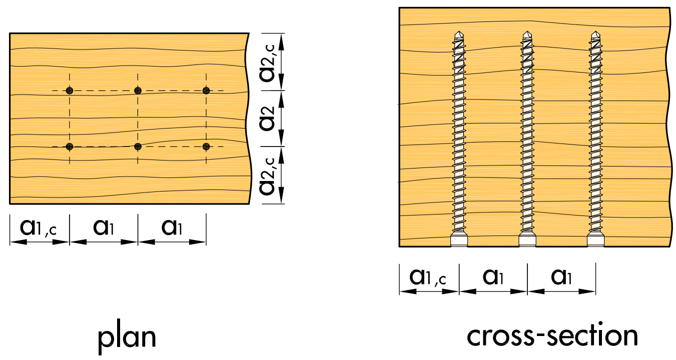
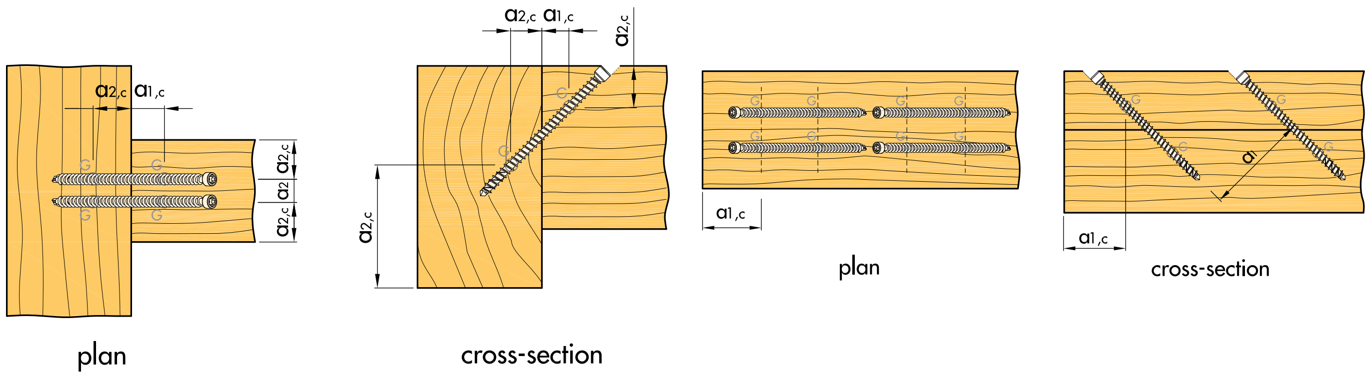
Crossed screws in beam-to-beam connection



Screws inserted perpendicular to the grain



Tensioned screws inserted with an angle α with respect to the wood grain direction

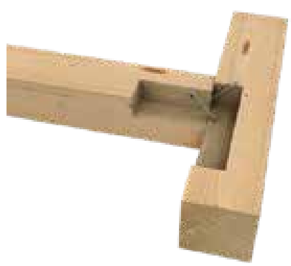


Effective number of axially stressed pairs of connectors

The load-bearing capacity of a connection made with multiple screws of the same type and size is affected by the quantity of screws used due to the unequal load-distribution effect. For a connection with n pairs of crossed screws, the effective characteristic load-bearing capacity is equal to:

$F_{ef,V,Rk} = n_{ef,ax} \cdot F_{ax,Rk}$

$n_{ef,ax} = \max\{n^{0.9} ; 0.9 \cdot n\}$



The value of nef,ax corresponding with the number of crossed pairs used in the connection is given in the table below:

n_{pairs}	2	3	4	5	6	7	8	9	10
$n_{ef,ax}$	1.87	2.70	3.60	4.50	5.40	6.30	7.20	8.10	9.00

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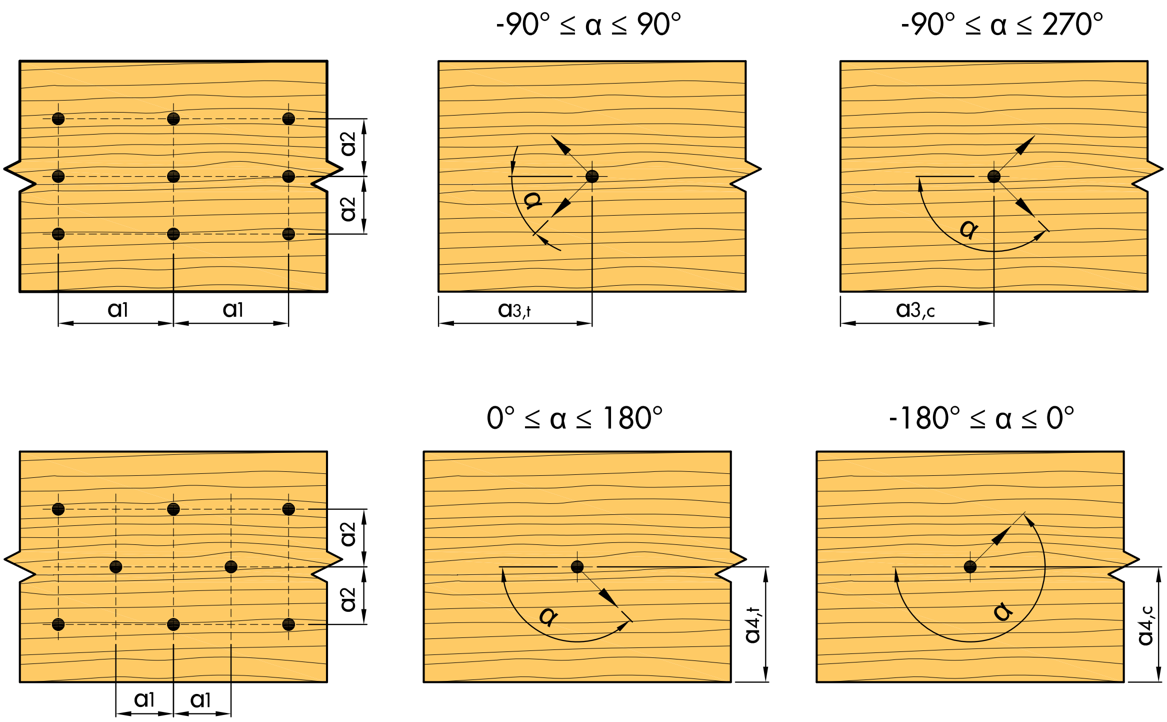
KONSTRUX ST, CYLINDER HEAD

Min. Distances for Shear Loads



α: load-to-grain angle

d: nominal screw diameter

Effective number of screws for shear loads

The load-bearing capacity of a connection with multiple screws of the same type and size may be affected by the quantity of screws used due to the unequal load-distribution effect. For a row of n screws arranged parallel to the wood grain direction at a distance a_1, the effective characteristic load-bearing capacity is equal to:

$F_{ef,v,Rk} = n_{ef} \cdot F_{v,Rk}$

The value of n_{ef} corresponding with the number of screws used in the connection is given in the table below (for intermediate a_1 values a linear interpolation is allowed):

		a_1										
		4·d	5·d	6·d	7·d	8·d	9·d	10·d	11·d	12·d	13·d	≥14·d
n	2	1.41	1.48	1.55	1.62	1.68	1.74	1.80	1.85	1.90	1.95	2.00
	3	1.73	1.86	2.01	2.16	2.28	2.41	2.54	2.65	2.76	2.88	3.00
	4	2.00	2.19	2.41	2.64	2.83	3.03	3.25	3.42	3.61	3.80	4.00
	5	2.24	2.49	2.77	3.09	3.34	3.62	3.93	4.17	4.43	4.71	5.00

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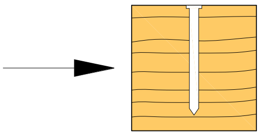
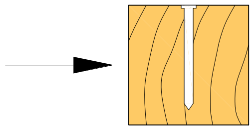


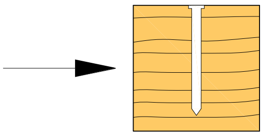
α = 0°



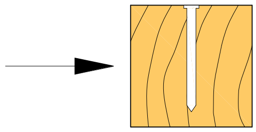
α = 90°

α = 0°, with pre-drilled hole						
d [mm]	Rule	5.2	5.9	6.5	8	10
a_1	10·d	52	59	65	80	100
a_2	5·d	26	29.5	32.5	40	50
$a_{3,t}$	15·d	78	88.5	97.5	120	150
$a_{3,c}$	10·d	52	59	65	80	100
$a_{4,t}$	5·d	26	29.5	32.5	40	50
$a_{4,c}$	5·d	26	29.5	32.5	40	50

α =90°, with pre-drilled hole						
d [mm]	Rule	5.2	5.9	6.5	8	10
a_1	5·d	26	29.5	32.5	40	50
a_2	5·d	26	29.5	32.5	40	50
$a_{3,t}$	10·d	52	59	65	80	100
$a_{3,c}$	10·d	52	59	65	80	100
$a_{4,t}$	10·d	52	59	65	80	100
$a_{4,c}$	5·d	26	29.5	32.5	40	50



α = 0°



α = 90°

α = 0°, with pre-drilled hole						
d [mm]	Rule	5.2	5.9	6.5	8	10
a_1	5·d	26	29.5	32.5	40	50
a_2	3·d	15.6	17.7	19.5	24	30
$a_{3,t}$	12·d	62.4	70.8	78	96	120
$a_{3,c}$	7·d	36.4	41.3	45.5	56	70
$a_{4,t}$	3·d	15.6	17.7	19.5	24	30
$a_{4,c}$	3·d	15.6	17.7	19.5	24	30

α =90°, with pre-drilled hole						
d [mm]	Rule	5.2	5.9	6.5	8	10
a_1	4·d	20.8	23.6	26	32	40
a_2	4·d	20.8	23.6	26	32	40
$a_{3,t}$	7·d	36.4	41.3	45.5	56	70
$a_{3,c}$	7·d	36.4	41.3	45.5	56	70
$a_{4,t}$	7·d	36.4	41.3	45.5	56	70
$a_{4,c}$	3·d	15.6	17.7	19.5	24	30

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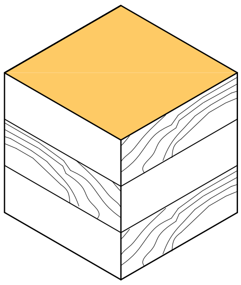
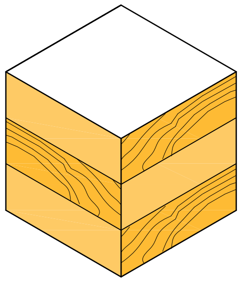
MIN. DISTANCES FOR CLT PANELS

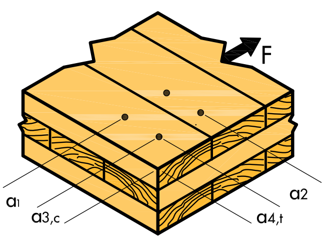


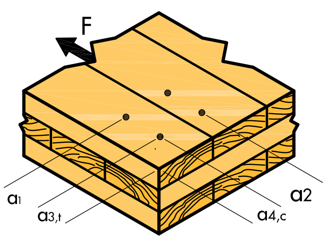
wide face

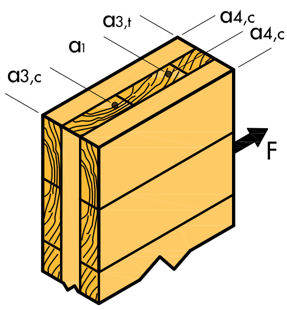


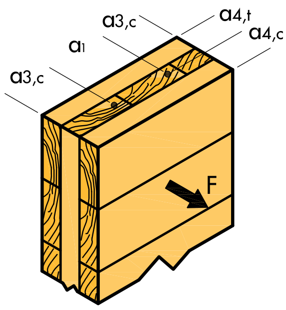
narrow face

Wide face							Narrow face						
d [mm]	Rule	5.2	5.9	6.5	8	10	d [mm]	Rule	5.2	5.9	6.5	8	10
a_1	4·d	20.8	23.6	26	32	40	a_1	10·d	52	59	65	80	100
a_2	2.5·d	13	14.75	16.25	20	25	a_2	4·d	20.8	23.6	26	32	40
$a_{3,t}$	6·d	31.2	35.4	39	48	60	$a_{3,t}$	12·d	62.4	70.8	78	96	120
$a_{3,c}$	6·d	31.2	35.4	39	48	60	$a_{3,c}$	7·d	36.4	41.3	45.5	56	70
$a_{4,t}$	6·d	31.2	35.4	39	48	60	$a_{4,t}$	6·d	31.2	35.4	39	48	60
$a_{4,c}$	2.5·d	13	14.75	16.25	20	25	$a_{4,c}$	3·d	15.6	17.7	19.5	24	30









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PREDRILLING RECOMMENDATIONS

- Predrilling for KonstruX hardened carbon steel screws is optional for softwood elements and mandatory for hardwood elements.
- For screws longer than 600 mm it is recommended to drill a pilot hole of approx. 1/3 the screw length in order to prevent the screw from deviating the desired direction.

KonstruX ST Cylinder head		
Nominal screw diameter [mm]	Drill hole diameter [mm]	
	Softwood	Hardwood and beech LVL
5.2	3.0	3.5
5.9	3.5	4.0
6.5	4.0	5.0
8	5.0	6.0
10	6.0	8.0

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GENERAL NOTES AND CALCULATION ASSUMPTIONS

- Characteristic resistance values conform to EN 1995:2014 standard in accordance with ETA-11/0024.
- The coefficients γ_M and k_{mod} should be taken according to the current regulations used for the calculation.
- The tensile design resistance of the screw is the minimum between the timber-side design resistance ($F_{ax,\varepsilon,Rd}$) and the steel-side design resistance ($f_{tens,d}$).

$$F_{ax,\varepsilon,Rd} = min\left\{\frac{F_{ax,\varepsilon,Rk} \cdot k_{mod}}{\gamma_M} \middle| \frac{f_{tens,k}}{\gamma_{M2}}\right\}$$

- In the case of combined tensile and shear loads, the following equation must be satisfied:

$$\left(\frac{F_{v,Ed}}{F_{v,Rd}}\right)^2 + \left(\frac{F_{ax,Ed}}{F_{ax,\varepsilon,Rd}}\right)^2 \leq 1$$

- For the calculation process, a characteristic density of ρ_k = 385 kg/m³ (GL24h) is considered for the glued laminated timber elements and ρ_k = 350 kg/m³ for CLT panels.
- Values were calculated considering the threaded part as being completely inserted into the wood.
- The drill tip and screw head are not considered for the embedded thread length.
- Sizing and verification of the timber elements must be done separately.
- The screws must be installed in agreement with the minimum distances.
- The characteristic shear resistances are calculated for screws installed without pre-drilling. In the case of screws inserted with pre-drilling, greater resistance values can be achieved.
- The characteristic timber-to-timber withdrawal and shear resistances were determined considering both an angle ε of 90° ($F_{V,90,Rk}$) and 0° ($F_{V,0,Rk}$) between the grains of the second element and the screw.
- The axial withdrawal resistance of inclined screws in GLT was calculated considering a 45°-angle between the wood grain direction and the screw's axis.

CROSS SCREWS

- The resistance of inclined shear-tension screws was calculated considering the center of gravity of each screw portion on both sides of the shear plane.
- The compression design resistance of the screw is the minimum between the withdrawal-side design resistance ($F_{ax,45,Rk}$) and the instability design resistance ($F_{inst,45,Rk}$).

$$F_{ax,Rd} = min\left\{\frac{F_{ax,Rk} \cdot k_{mod}}{\gamma_M} \middle| \frac{F_{inst,45,k}}{\gamma_{M1}}\right\}$$

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- The coefficients γ_M and k_{mod} should be taken according to the correspondent national regulations.
- The assembly distance m applies in the event of symmetrical installation of flush screws above the elements (approx. same embedded thread length in the secondary and main elements). In the case of asymmetric installation, additional analysis is required.
- The thread withdrawal resistance was determined considering an approximately equal effective thread length on the main and secondary elements. The screws must be installed at 45° with respect to the shear plane.
- Effective number of screws are calculated for pair of cross-screws as follows:

$$n_{ef} = max\{n^{0,9}; 0,9 \cdot n\}$$

CLT SPECIFIC

- The characteristic shear resistance doesn't depend on the orientation of the CLT panel's outer layers.
- The axial thread withdrawal resistance was calculated considering a 90° angle between the grain direction and the screw's axis.
- The minimum distances are compliant with ETA-11/0024 and are to be considered valid unless otherwise specified in the technical documents for the CLT panels.
- Minimum CLT thickness is 10·d.
- Minimum screw insertion depth on CLT is 10·d.

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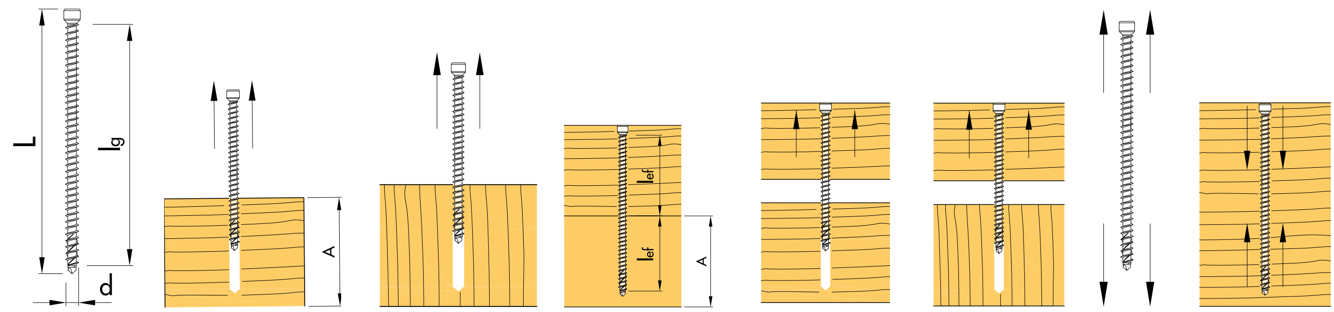
KONSTRUX ST, CYLINDER HEAD

STRUCTURAL CAPACITIES – GLT



Geometry			Total thread withdrawal			Partial thread withdrawal				Steel Tension	Steel Compression
				ε = 90°	ε = 0°		ε = 90°		ε = 0°		ε = 90°
Ø	L	l_g [mm]	A_{min} [mm]	$F_{ax,90,Rk}$ [kN]	$F_{ax,90,Rk}$ [kN]	l_{ef} [mm]	A_{min} [mm]	$F_{ax,90,Rk}$ [kN]	$F_{ax,90,Rk}$ [kN]	$f_{tens,k}$ [kN]	$F_{inst,90,Rk}$ [kN]
5.2	80	70	90	6.09	1.83	30	40	2.61	0.78	13	6.2
	100	90	110	7.83	2.35	40	50	3.48	1.04		
	120	110	130	9.57	2.87	50	60	4.35	1.30		
	140	130	150	11.31	3.39	60	70	5.22	1.57		
	160	150	170	13.05	3.91	70	80	6.09	1.83		
5.9	80	70	90	6.91	2.07	30	40	2.96	0.89	17	7.7
	100	90	110	8.88	2.66	40	50	3.95	1.18		
	120	110	130	10.86	3.26	50	60	4.93	1.48		
	130	120	140	11.84	3.55	55	65	5.43	1.63		
	140	130	150	12.83	3.85	60	70	5.92	1.78		
	160	150	170	14.80	4.44	70	80	6.91	2.07		
	180	170	190	16.78	5.03	80	90	7.90	2.37		
	200	190	210	18.75	5.63	90	100	8.88	2.66		
6.5	80	70	90	7.61	2.28	30	40	3.26	0.98	17	9.8
	100	90	110	9.79	2.94	40	50	4.35	1.30		
	120	110	130	11.96	3.59	50	60	5.44	1.63		
	140	130	150	14.14	4.24	60	70	6.52	1.96		
	160	150	170	16.31	4.89	70	80	7.61	2.28		
	195	185	200	20.12	6.03	85	95	9.24	2.77		
	200	190	210	20.66	6.20	90	100	9.79	2.94		
	220	210	230	22.83	6.85	100	110	10.87	3.26		
	240	230	250	25.01	7.50	110	120	11.96	3.59		
	260	250	270	27.18	8.15	120	130	13.05	3.91		

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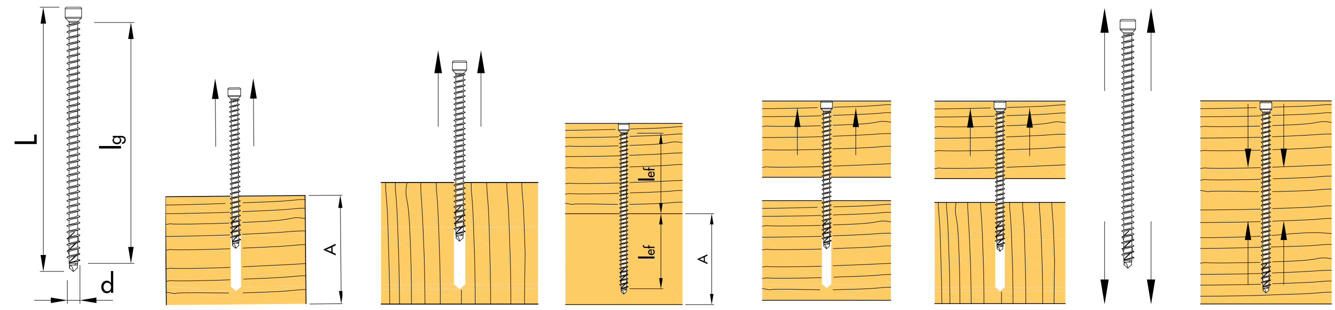
STRUCTURAL CAPACITIES – GLT



Geometry			Total thread withdrawal			Partial thread withdrawal				Steel Tension	Steel Compression
				ε = 90°	ε = 0°		ε = 90°		ε = 0°		ε = 90°
Ø	L	l_g [mm]	A_{min} [mm]	$F_{ax,90,Rk}$ [kN]	$F_{ax,90,Rk}$ [kN]	l_{ef} [mm]	A_{min} [mm]	$F_{ax,90,Rk}$ [kN]	$F_{ax,90,Rk}$ [kN]	$f_{tens,k}$ [kN]	$F_{inst,90,Rk}$ [kN]
	125	110	140	11.87	3.56	55	80	5.94	1.78		
	155	140	160	15.11	4.53	70	80	7.55	2.27		
	195	180	200	19.43	5.83	90	100	9.71	2.91		
	220	205	240	22.12	6.64	100	110	10.79	3.24		
	245	230	260	24.82	7.45	115	120	12.41	3.72		
	270	255	280	27.52	8.26	125	130	13.49	4.05		
8.0	295	280	300	30.22	9.07	140	150	15.11	4.53	25	13.2
	330	315	340	34.00	10.20	155	160	16.73	5.02		
	375	360	380	38.85	11.66	180	190	19.43	5.83		
	400	385	420	41.55	12.47	190	200	20.51	6.15		
	430	415	440	44.79	13.44	205	220	22.12	6.64		
	480	465	500	50.18	15.06	230	240	24.82	7.45		
	530	515	540	55.58	16.67	255	260	27.52	8.26		
	580	565	600	60.98	18.29	280	290	30.22	9.07		
	195	180	200	22.34	6.70	90	100	11.17	3.35		
	220	205	240	25.44	7.63	100	110	12.41	3.72		
	245	230	260	28.55	8.56	115	120	14.27	4.28		
	270	255	280	31.65	9.49	125	130	15.51	4.65		
	300	285	320	35.37	10.61	140	150	17.38	5.21		
	330	315	340	39.10	11.73	155	160	19.24	5.77		
	360	345	380	42.82	12.85	170	180	21.10	6.33		
	400	385	420	47.78	14.33	190	200	23.58	7.07		
	450	435	460	53.99	16.20	215	225	26.68	8.01		
10.0	500	485	520	60.19	18.06	240	250	29.79	8.94	33	17.3
	550	535	560	66.40	19.92	265	275	32.89	9.87		
	600	585	620	72.61	21.78	290	300	35.99	10.80		
	650	635	660	78.81	23.64	315	325	39.10	11.73		
	700	685	720	85.02	25.50	340	350	42.20	12.66		
	750	735	760	91.22	27.37	365	375	45.30	13.59		
	800	785	820	97.43	29.23	390	400	48.40	14.52		
	900	885	920	109.84	32.95	440	450	54.61	16.38		
	1000	985	1020	122.25	36.67	490	500	60.81	18.24		

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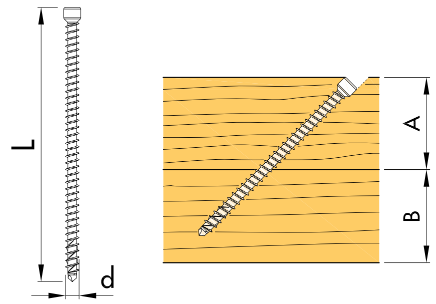
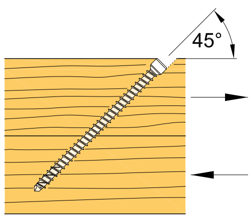
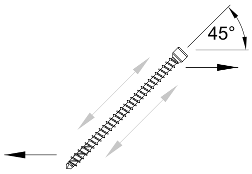
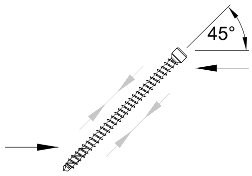
PRODUCT DATA SHEET

KONSTRUX ST, CYLINDER HEAD

STRUCTURAL CAPACITIES – GLT

Geometry	Timber-to-timber Shear	Steel Tension	Steel instability
			

d	L	A [mm]	B_{min} [mm]	$F_{v,45,Rk}$ [kN]	$f_{tens,45,Rk}$ [kN]	$F_{inst,45,Rk}$ [kN]
5.2	80	30	30	1.99	9.2	4.0
	100	40	40	2.36		
	120	45	45	3.16		
	140	50	50	3.73		
	160	60	60	4.31		
5.9	80	30	30	2.26	12.0	4.9
	100	40	40	2.68		
	120	45	45	3.58		
	130	45	50	3.74		
	140	50	50	4.24		
	160	60	60	4.90		
	180	70	70	5.30		
	200	75	75	6.21		
6.5	80	30	30	2.49	12.0	6.3
	100	40	40	3.03		
	120	45	45	4.03		
	140	50	50	4.67		
	160	60	60	5.47		
	195	70	70	6.84		
	200	70	80	6.84		
	220	80	80	7.91		
	240	90	90	8.36		
	260	100	100	8.81		

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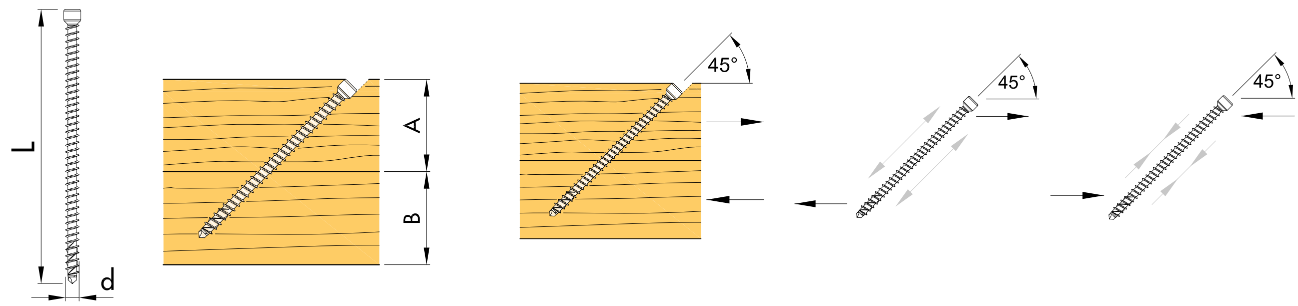
PRODUCT DATA SHEET

KONSTRUX ST, CYLINDER HEAD

STRUCTURAL CAPACITIES – GLT

Geometry	Timber-to-timber Shear	Steel Tension	Steel instability



Ø	L	A [mm]	B_{min} [mm]	$F_{v,45,Rk}$ [kN]	$f_{tens,45,Rk}$ [kN]	$F_{inst,45,Rk}$ [kN]
8.0	155	60	60	4.97	17.7	8.6
	195	70	70	6.79		
	220	80	80	7.77		
	245	90	90	8.60		
	270	100	100	9.43		
	295	110	110	10.26		
	330	120	120	11.81		
	375	130	140	12.89		
	400	140	160	13.96		
	430	160	160	15.17		
	480	180	180	16.82		
	530	200	200	18.48		
	580	220	220	20.14		
10.0	195	70	70	7.81	23.3	11.2
	220	80	80	8.85		
	245	90	90	9.80		
	270	100	100	10.76		
	300	110	110	12.15		
	330	120	120	13.54		
	360	130	130	14.82		
	400	140	140	16.06		
	450	160	160	18.54		
	500	180	180	21.01		
	550	200	200	22.92		
	600	220	220	24.82		
	650	240	240	26.73		
	700	250	250	29.71		
	750	260	280	30.95		
	800	280	300	33.43		
	900	320	320	38.40		
	1000	360	360	42.55		

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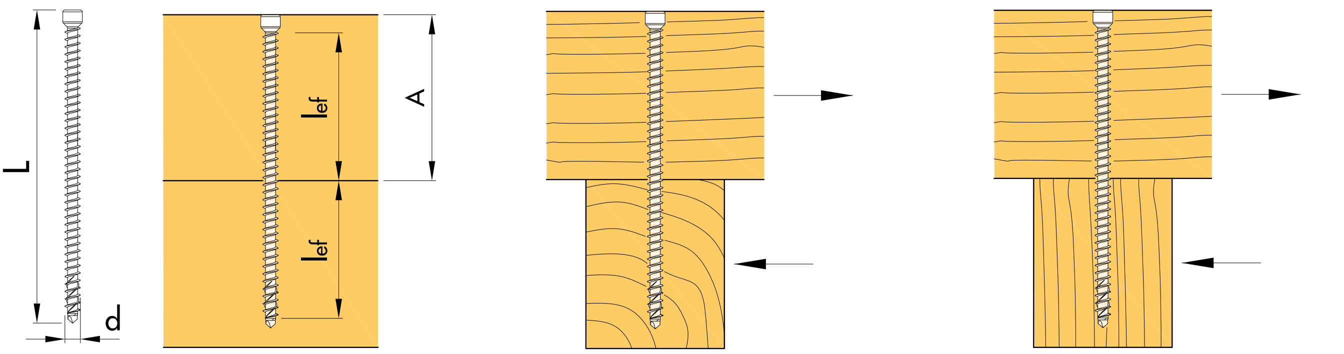
KONSTRUX ST, CYLINDER HEAD

STRUCTURAL CAPACITIES – GLT

Geometry	Timber-to-timber shear ε = 90°	Timber-to-timber shear ε = 0°



d	L	A [mm]	l_{ef} [mm]	$F_{v,90,Rk}$ [kN]	$F_{v,0,Rk}$ [kN]
5.2	80	40	30	2.22	1.11
	100	50	40	2.50	1.28
	120	60	50	2.71	1.47
	140	70	60	2.93	1.62
	160	80	70	3.15	1.69
5.9	80	40	30	2.51	1.33
	100	50	40	3.07	1.50
	120	60	50	3.32	1.70
	130	65	55	3.44	1.80
	140	70	60	3.56	1.90
	160	80	70	3.81	2.09
	180	90	80	4.06	2.17
	200	100	90	4.17	2.24
6.5	80	40	30	2.69	1.40
	100	50	40	3.24	1.60
	120	60	50	3.51	1.81
	140	70	60	3.79	2.03
	160	80	70	4.06	2.20
	195	100	90	4.31	2.36
	200	100	90	4.31	2.36
	220	110	100	4.31	2.44
	240	120	110	4.31	2.53
	260	130	120	4.31	2.61

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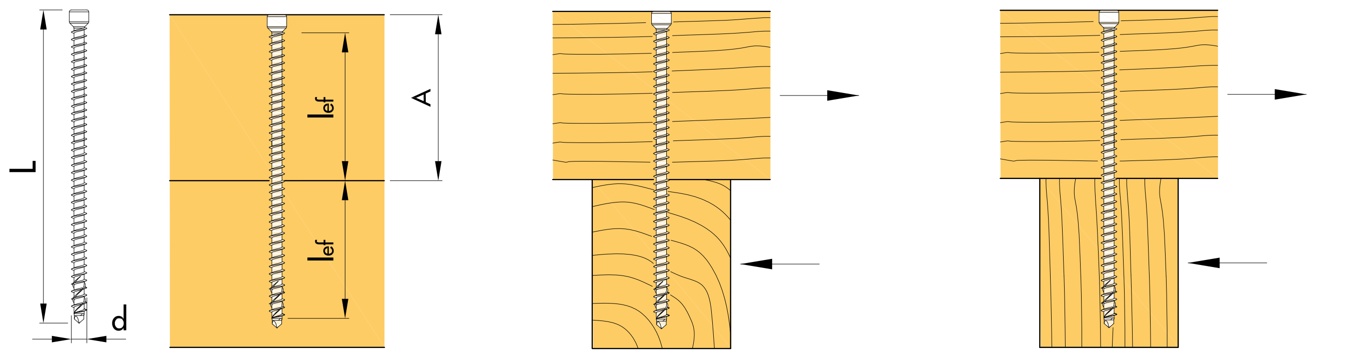
KONSTRUX ST, CYLINDER HEAD

STRUCTURAL CAPACITIES – GLT



Geometry				Timber-to-timber shear ε = 90°	Timber-to-timber shear ε = 0°
Ø	L	A [mm]	l_{ef} [mm]	$F_{v,90,Rk}$ [kN]	$F_{v,0,Rk}$ [kN]
8.0	125	60	50	4.34	2.24
	155	80	70	4.88	2.56
	195	100	90	5.42	2.99
	220	110	100	5.69	3.07
	245	120	110	5.98	3.15
	270	130	120	5.98	3.23
	295	140	130	5.98	3.31
	330	160	150	5.98	3.48
	375	180	170	5.98	3.64
	400	200	190	5.98	3.80
	430	220	210	5.98	3.88
	480	240	230	5.98	4.12
	530	260	250	5.98	4.28
	580	280	270	5.98	4.45
10.0	195	100	90	6.88	3.71
	220	110	100	7.19	4.02
	245	120	110	7.50	4.12
	270	130	120	7.81	4.21
	300	140	130	8.13	4.30
	330	160	150	8.18	4.49
	360	180	170	8.18	4.68
	400	200	190	8.18	4.86
	450	225	215	8.18	5.09
	500	250	240	8.18	5.33
	550	275	265	8.18	5.56
	600	300	290	8.18	5.79
	650	325	315	8.18	6.02
	700	350	340	8.18	6.19
	750	375	365	8.18	6.19
	800	400	390	8.18	6.19
	900	450	440	8.18	6.19
	1000	500	490	8.18	6.19

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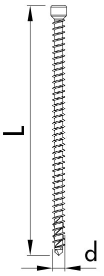
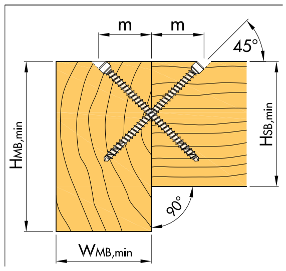
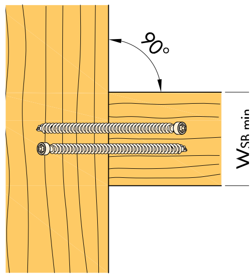
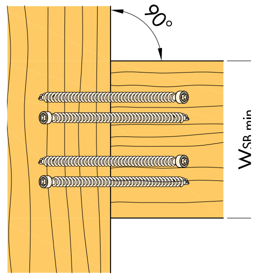
KONSTRUX ST, CYLINDER HEAD

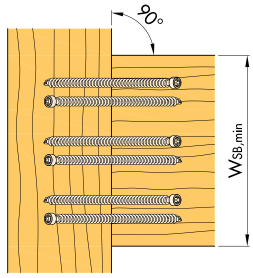
STRUCTURAL CAPACITIES – CROSSED SCREWS











Geometry		Main-secondary beam			1 pair			2 pairs			3 pairs		
d [mm]	L [mm]	$W_{MB,min}$ [mm]	$H_{MB,min}$ $H_{SB,min}$ [mm]	m [mm]	$W_{SB,min}$ [mm]	$F_{ax,Rk}$ [kN]	$F_{inst,45,Rk}$ [kN]	$W_{SB,min}$ [mm]	$F_{ax,Rk}$ [kN]	$F_{inst,45,Rk}$ [kN]	$W_{SB,min}$	$F_{ax,Rk}$ [kN]	$F_{inst,45,Rk}$ [kN]
5.2	140	60	120	52	60	8.01	8.13	80	14.94	15.17	100	21.53	21.86
	160	80	140	60	60	9.24		80	17.24		100	24.83	
5.9	160	80	140	60	60	10.40	10.12	100	19.40	18.89	120	27.95	27.21
	180	80	160	65	60	11.79		100	22.01		120	31.70	
	200	80	160	70	60	13.19		100	24.61		120	35.45	
6.5	195	80	160	69	60	14.15	12.90	100	26.40	24.07	120	38.03	34.67
	200	80	160	70	60	14.53		100	27.12		120	39.06	
	220	100	180	80	60	16.07		100	29.99		120	43.19	
	240	100	180	85	60	17.61		100	32.86		120	47.32	
	260	100	200	90	60	19.14		100	35.72		120	51.46	
8.0	245	100	200	87	80	17.70	17.50	100	33.04	32.65	140	47.59	47.03
	270	100	200	95	80	19.61		100	36.60		140	52.72	
	295	120	220	104	80	21.52		100	40.16		140	57.84	
	330	140	260	117	80	24.19		100	45.14		140	65.02	
	375	160	280	133	80	27.63		100	51.55		140	74.25	
	400	160	300	141	80	29.53		100	55.11		140	79.38	
	430	180	320	152	80	31.82		100	59.38		140	85.54	
	480	180	360	170	80	35.36		100	65.98		140	95.03	
	530	200	400	187	80	35.36		100	65.98		140	95.03	
	580	220	440	205	80	35.36		100	65.98		140	95.03	
10.0	300	120	240	106	80	25.19	22.96	140	47.00	42.85	180	67.70	61.72
	330	140	260	117	80	27.82		140	51.91		180	74.78	
	360	140	280	127	80	30.45		140	56.83		180	81.85	
	400	160	300	141	80	33.96		140	63.38		180	91.29	
	450	180	340	159	80	38.35		140	71.57		180	103.08	
	500	200	380	177	80	42.74		140	79.75		180	114.88	
	550	200	400	195	80	46.67		140	87.09		180	125.44	
	600	220	440	212	80	46.67		140	87.09		180	125.44	
	650	240	480	230	80	46.67		140	87.09		180	125.44	
	700	260	520	250	80	46.67		140	87.09		180	125.44	
	750	280	560	265	80	46.67		140	87.09		180	125.44	
	800	300	600	280	80	46.67		140	87.09		180	125.44	
	900	340	680	320	80	46.67		140	87.09		180	125.44	
	1000	360	720	350	80	46.67		140	87.09		180	125.44	

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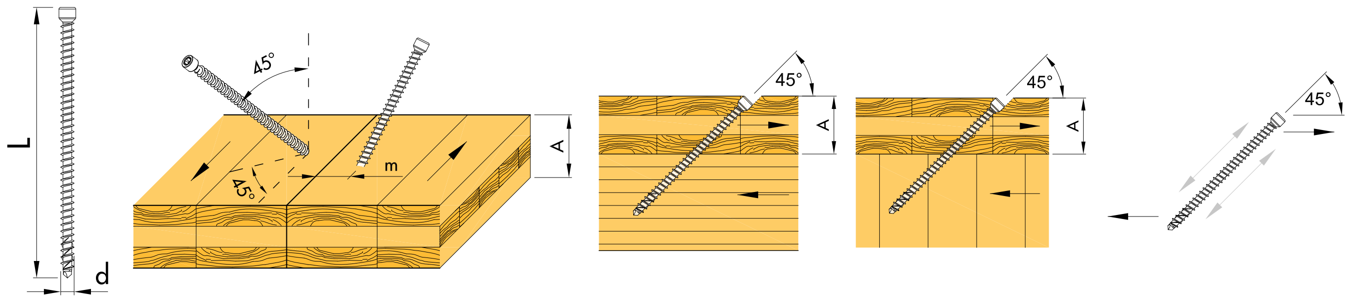
PRODUCT DATA SHEET

KONSTRUX ST, CYLINDER HEAD

STRUCTURAL CAPACITIES – CLT



Geometry		CLT-CLT 45-45° Shear					CLT Floor-Timber 45° Shear		CLT Floor-Wall 45° Shear	Steel Tension
d	L	A_{min} [mm]	m [mm]	$F_{v,45\text{-}45,Rk}$ [kN]	$f_{tens,45\text{-}45,k}$ [kN]	$F_{vi,45\text{-}45,Rk}$ [kN]	A [mm]	$F_{v,45,Rk}$ [kN]	$F_{v,45,Rk}$ [kN]	$f_{tens,45,Rk}$ [kN]
	160	130	45	2.29			60	4.84	2.68	
5.9	180	140	50	2.54	8.5	4.5	70	5.75	2.88	12.0
	200	160	55	2.80			80	6.67	3.08	
	160	130	46	2.53			60	5.33	2.90	
	195	140	50	2.75			70	6.34	3.66	
6.5	200	160	55	3.02	8.5	4.5	75	6.84	3.59	12.0
	220	180	60	3.29			80	7.35	4.06	
	240	200	65	3.56			90	8.36	4.26	
	260	220	75	4.09			100	9.36	4.47	
	155	–	–	–			60	5.29	3.20	
	195	160	56	3.63			70	6.29	4.33	
	220	180	60	3.89			80	7.29	4.79	
	245	200	70	4.52			90	8.29	5.25	
	270	220	75	4.83			100	9.29	5.70	
	295	260	85	5.45			110	10.29	6.15	
8.0	330	280	95	6.06	12.5	6	120	11.29	7.00	17.7
	375	320	105	6.66			130	12.29	8.24	
	400	340	115	7.26			140	13.29	8.67	
	430	360	120	7.55			150	14.29	9.30	
	480	400	135	8.43			160	15.29	10.69	
	530	440	150	9.31			180	17.29	11.53	
	580	480	160	9.88			200	19.29	12.36	

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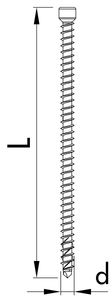
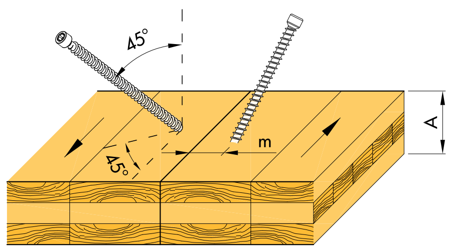
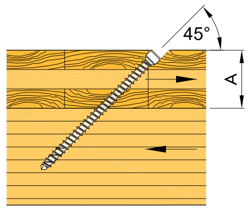
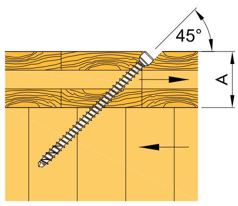
KONSTRUX ST, CYLINDER HEAD

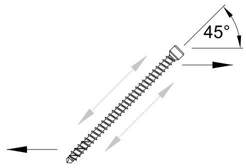
STRUCTURAL CAPACITIES – CLT











Geometry		CLT-CLT 45-45° Shear					CLT Floor-Timber 45° Shear		CLT Floor-Wall 45° Shear	Steel Tension
d	L	A_{min} [mm]	m [mm]	$F_{v,45-45,Rk}$ [kN]	$f_{tens,45-45,k}$ [kN]	$F_{vi,45-45,Rk}$ [kN]	A [mm]	$F_{v,45,Rk}$ [kN]	$F_{v,45,Rk}$ [kN]	$f_{tens,45,Rk}$ [kN]
10.0	195	–	–	–	16.5	8	70	7.24	5.17	23.3
	220	–	–	–			80	8.39	5.72	
	245	200	70	5.40			90	9.54	6.27	
	270	220	75	5.78			100	10.69	6.81	
	300	260	85	6.51			110	11.84	7.59	
	330	280	95	7.24			120	12.99	8.37	
	360	300	100	7.60			130	14.14	9.13	
	400	340	115	8.68			140	15.29	10.36	
	450	360	125	9.38			160	17.59	11.39	
	500	420	140	10.43			180	19.89	12.40	
	550	440	150	11.12			200	22.19	13.40	
	600	–	–	–			220	24.49	14.40	
	650	–	–	–			240	26.79	15.39	
	700	–	–	–			250	27.94	17.00	
	750	–	–	–			260	29.09	18.60	
	800	–	–	–			280	31.39	19.56	
	900	–	–	–			320	35.99	21.47	
	1000	–	–	–			360	40.59	23.36	

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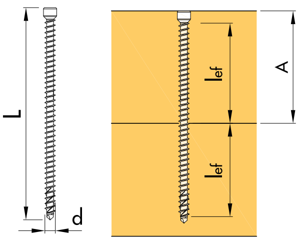
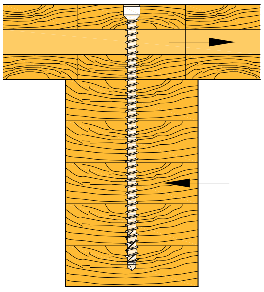
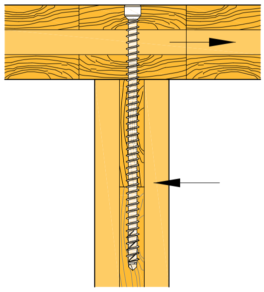
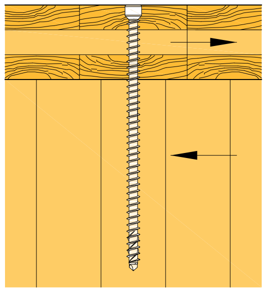
PRODUCT DATA SHEET

KONSTRUX ST, CYLINDER HEAD

STRUCTURAL CAPACITIES – CLT

Geometry	CLT-Timber Shear wide face	CLT narrow Edge-CLT narrow edge Shear wide face-narrow face
		 

d	L	CLT [mm]	l_{ef} [mm]	$F_{v,90,Rk}$ [kN]	$F_{v,0,Rk}$ [kN]
5.2	120	60	55	2.66	1.93
	140	70	65	2.87	2.07
	160	80	75	3.07	2.18
5.9	120	60	55	3.23	2.17
	130	65	60	3.34	2.31
	140	70	65	3.46	2.45
	160	80	75	3.68	2.62
	180	90	85	3.91	2.74
	200	100	95	3.97	2.86
6.5	120	60	55	3.43	2.29
	140	70	65	3.68	2.59
	160	80	75	3.93	2.74
	195	100	90	4.11	2.94
	200	100	95	4.11	3.00
	220	110	105	4.11	3.13
	240	120	115	4.11	3.25
	260	130	125	4.11	3.31
8.0	125	60	50	4.19	2.92
	155	80	70	4.69	3.24
	195	100	90	5.19	3.78
	220	110	100	5.44	4.00
	245	120	110	5.70	4.23
	270	130	120	5.70	4.45
	295	140	130	5.70	4.53
	330	160	150	5.70	4.53
	375	180	170	5.70	4.53
	400	200	190	5.70	4.53
	430	220	210	5.70	4.53
	480	240	230	5.70	4.53
	530	260	250	5.70	4.53
	580	280	270	5.70	4.53

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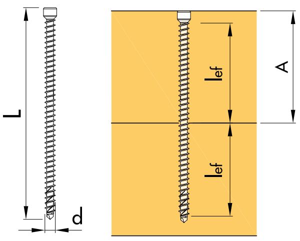
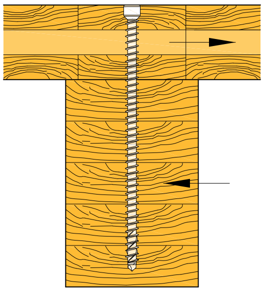
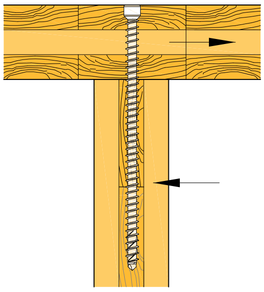
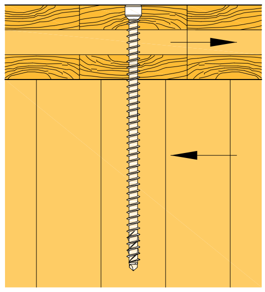
PRODUCT DATA SHEET

KONSTRUX ST, CYLINDER HEAD

STRUCTURAL CAPACITIES – CLT

Geometry				CLT-Timber Shear wide face	CLT narrow Edge-CLT narrow edge Shear wide face-narrow face
					 
d	L	CLT [mm]	l_{ef} [mm]	$F_{v,90,Rk}$ [kN]	$F_{v,0,Rk}$ [kN]
10.0	195	100	90	6.59	4.65
	220	110	100	6.88	5.13
	245	120	110	7.16	5.39
	270	130	120	7.45	5.66
	300	140	130	7.74	6.00
	330	160	150	7.80	6.10
	360	180	170	7.80	6.10
	400	200	190	7.80	6.10
	450	225	215	7.80	6.10
	500	250	240	7.80	6.10
	550	275	265	7.80	6.10
	600	300	290	7.80	6.10
	650	325	315	7.80	6.10
	700	350	340	7.80	6.10
	750	375	365	7.80	6.10
	800	400	390	7.80	6.10
	900	450	440	7.80	6.10
	1000	500	490	7.80	6.10

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PRODUCT DATA SHEET

KONSTRUX ST, CYLINDER HEAD

PRODUCT TABLE

KonstruX ST, cylinder head			
Art. no.	Dimension [mm]	Drive	PU
Ø 5.2 mm			
100425	5.2 x 80	TX 25 •	100
100427	5.2 x 100	TX 25 •	100
100428	5.2 x 120	TX 25 •	100
100430	5.2 x 140	TX 25 •	100
100431	5.2 x 160	TX 25 •	100
Ø 5.9 mm			
100410	5.9 x 80	TX30 •	100
100412	5.9 x 100	TX30 •	100
100413	5.9 x 120	TX30 •	100
100415	5.9 x 140	TX30 •	100
100416	5.9 x 160	TX30 •	100
100417	5.9 x 180	TX30 •	100
100418	5.9 x 200	TX30 •	100
Ø 6.5 mm			
904808	6.5 x 80	TX30 •	100
904809	6.5 x 100	TX30 •	100
904810	6.5 x 120	TX30 •	100
904811	6.5 x 140	TX30 •	100
904812	6.5 x 160	TX30 •	100
904813	6.5 x 195	TX30 •	100
100063[a)]	6.5 x 200	TX30 •	100
100064[a)]	6.5 x 220	TX30 •	100
100065[a)]	6.5 x 240	TX30 •	100
100066[a)]	6.5 x 260	TX30 •	100
Ø 8.0 mm			
954081	8.0 x 125	TX40 •	50
904825	8.0 x 155	TX40 •	50
904826	8.0 x 195	TX40 •	50
904827	8.0 x 220	TX40 •	50
904828	8.0 x 245	TX40 •	50
904834	8.0 x 270	TX40 •	50
904829	8.0 x 295	TX40 •	50
904830	8.0 x 330	TX40 •	50
904831	8.0 x 375	TX40 •	50
904832	8.0 x 400	TX40 •	50
944804	8.0 x 430	TX40 •	50
944805	8.0 x 480	TX40 •	50
944806	8.0 x 530	TX40 •	50
944807	8.0 x 580	TX40 •	50

a) European Technical Assessment (ETA) has been applied for.

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PRODUCT DATA SHEET

KONSTRUX ST, CYLINDER HEAD

PRODUCT TABLE

KonstruX ST, cylinder head			
Art. no.	Dimension [mm]	Drive	PU
Ø 10.0 mm			
904872	10.0 x 195	TX50 •	25
904873	10.0 x 220	TX50 •	25
904874	10.0 x 245	TX50 •	25
904875	10.0 x 270	TX50 •	25
904815	10.0 x 300	TX50 •	25
904816	10.0 x 330	TX50 •	25
904817	10.0 x 360	TX50 •	25
904818	10.0 x 400	TX50 •	25
904819	10.0 x 450	TX50 •	25
904820	10.0 x 500	TX50 •	25
904821	10.0 x 550	TX50 •	25
904822	10.0 x 600	TX50 •	25
100080[a)]	10.0 x 650	TX50 •	25
100081[a)]	10.0 x 700	TX50 •	25
100082[a)]	10.0 x 750	TX50 •	25
100083[a)]	10.0 x 800	TX50 •	25
100084[a)]	10.0 x 900	TX50 •	25
100085[a)]	10.0 x 1000	TX50 •	25

a) European Technical Assessment (ETA) has been applied for.

If you are not familiar with how this product is used, and particularly with the product's intended use, please contact our Application Technology department (Technik@eurotec.team).

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