

RAPTOR

RIGGING DEVICE FOR TIMBER ELEMENTS



UNIVERSAL

RAPTOR can be installed with configurations that make it suitable for the most common applications on the construction site:

- 6 screws: maximum strength and capacity
- 4 or 2 screws: for lifting and transporting lighter panels

The screws must be applied symmetrically.

VERSATILE

The device is suitable for many different handling configurations. It can be used to work with any inclination of the chain, working effectively in both tension and shear, but also in intermediate configurations.

CERTIFIED

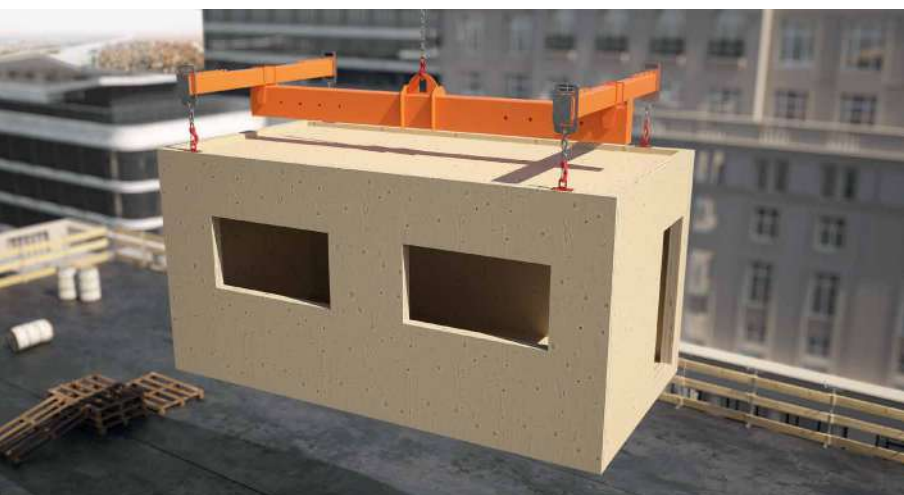
The plate is certified according to the Machinery Directive 2006/42/EC for weights exceeding 3 tonnes.

USE AS A TEMPORARY ANCHOR POINT

One product – two functions. The plate can be used either as a lifting device to transport timber elements, or as a temporary fall protection anchor point.

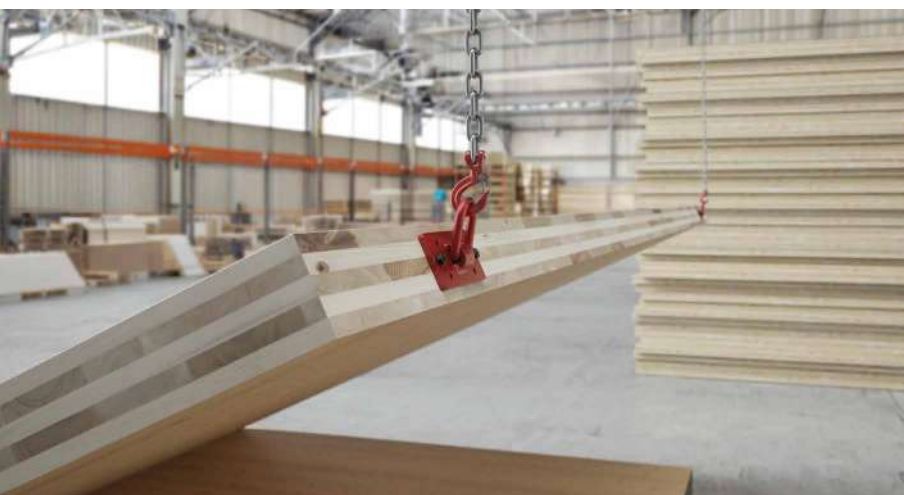
REUSABLE SCREWS

Thanks to compatibility with the innovative VGSPL, the lifting system allows the fasteners to be reused even after handling. This reduces waste and project costs while maintaining high safety standards.



FIELDS OF USE

- CLT panels for floor or wall
- Solid timber or glulam beams
- Prefabricated timber frame walls
- Ribbed structural elements
- Prefabricated modular structures
- Special structures
- Temporary fall protection anchor point



MATERIAL

The sturdy steel plate and lifting hook ensure safe lifting; the red coating improves visibility and protection on site, enhancing overall site safety.

CONFIGURATIONS

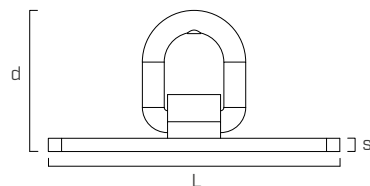
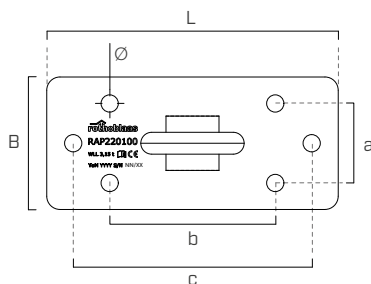
The 6 holes provide 3 assembly options with different screws, ensuring optimal installation for various lifting conditions and materials.

CODE

CODE	plate sizes	max. capacity	suitable screws	pcs
RAP220100	100 x 220 mm 4" x 8 5/8"	3150 mm 6945 lbs	VGS PLATE Ø11 mm 0.44 in HBS PLATE/HBS PLATE EVO Ø10 mm 0.40 in VGS Ø11 mm 0.44 in (+ HUS10)	1

DIMENSIONS

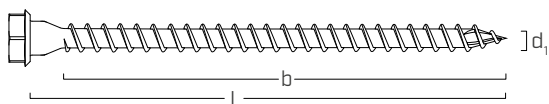
CODE	B	L	s	Ø	a	b	c	d	B	L	s	Ø	a	b	c	d
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[in]	[in]	[in]	[in]	[in]	[in]	[in]	[in]
RAP220100	100	220	10	13	60	125	180	107	4	8 5/8	3/8	1/2	2 3/8	4 15/16	7 1/8	4 3/16



COMPATIBLE SCREWS

VGS PLATE

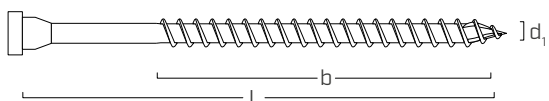
pan head screw for lifting



d ₁	CODE	L	b	L	b	pcs
[mm]		[mm]	[mm]	[in]	[in]	
11 0.44 SW 17 TX 50	VGSPL1160	60	50	2 3/8	1 15/16	25
	VGSPL1180	80	70	3 1/8	2 3/4	25
	VGSPL11100	100	90	4	3 1/2	25
	VGSPL11120	120	110	4 3/4	4 3/8	25
	VGSPL11140	140	130	5 1/2	5 1/8	25
	VGSPL11160	160	150	6 1/4	6	25
	VGSPL11180	180	170	7 1/8	6 3/4	25
	VGSPL11200	200	190	8	7 1/2	25
	VGSPL11240	240	230	9 1/2	9 1/16	25
	VGSPL11280	280	270	11	10 5/8	25

HBS PLATE - HBS PLATE EVO

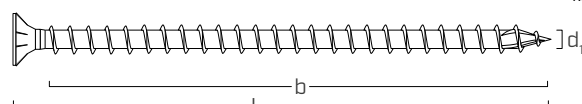
pan head screw for plates



d ₁	CODE	L	b	L	b	pcs
[mm]		[mm]	[mm]	[in]	[in]	
10 0.4 TX 40	HBSPLEVO1060	60	52	2 3/8	1 15/16	50
	HBSPL1080	80	60	3 1/8	2 3/8	50
	HBSPL10100	100	75	4	2 15/16	50
	HBSPL10120	120	95	4 3/4	3 3/4	50
	HBSPL10140	140	110	5 1/2	4 3/8	50
	HBSPL10160	160	130	6 1/4	5 1/8	50
	HBSPL10180	180	150	7 1/8	6	50

VGS

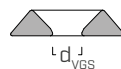
full thread screw with countersunk head



d ₁	CODE	L	b	L	b	pcs
[mm]		[mm]	[mm]	[in]	[in]	
11 0.44 TX 50	VGS1180	80	70	3 1/8	2 3/4	25
	VGS11100	100	90	4	3 1/2	25
	VGS11125	125	115	4 15/16	4 1/2	25
	VGS11150	150	140	6	5 1/2	25
	VGS11175	175	165	6 7/8	6 1/2	25
	VGS11200	200	190	8	7 1/2	25
	VGS11225	225	215	8 7/8	8 7/16	25
	VGS11250	250	240	10	9 1/2	25
	VGS11275	275	265	10 7/8	10 7/16	25
	VGS11300	300	290	11 3/4	11 7/16	25
	VGS11325	325	315	12 3/4	12 3/8	25
	VGS11350	350	340	13 3/4	13 3/8	25
	VGS11375	375	365	14 3/4	14 3/8	25
	VGS11400	400	390	15 3/4	15 3/8	25

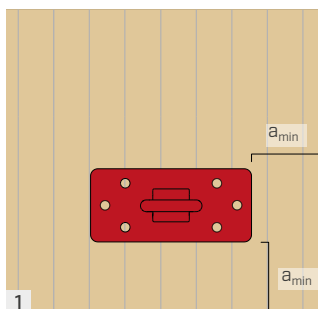
The VGS screw can only be installed in combination with HUS washer.

HUS - turned washer



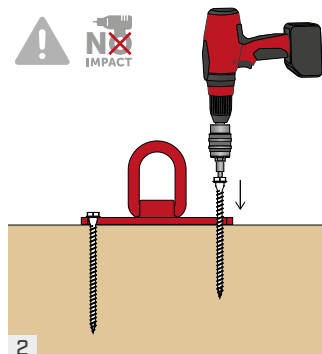
CODE	d _{VGS}		pcs
	[mm]	[in]	
HUS10	11	0.44	50

RAPTOR INSTALLATION

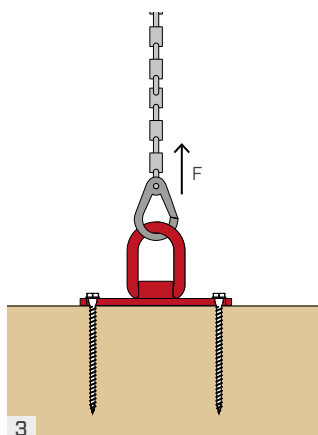


1 Read the instructions for use carefully and follow the directions regarding minimum recommended distances, lifting directions and angles, and maximum load capacity.

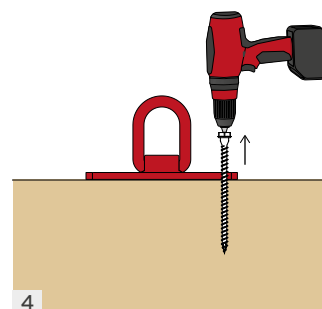
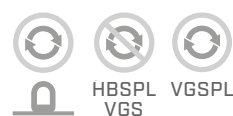
HBSP L Ø10 $M_{ins,max} = 35 \text{ Nm}$
VGS | VGSPL Ø11 $M_{ins,max} = 30 \text{ Nm}$



2 Length and quantity of screws depend on the application and the weight of the element. Ensure correct tightening torque is applied, following the torque values specified in the corresponding installation instructions.

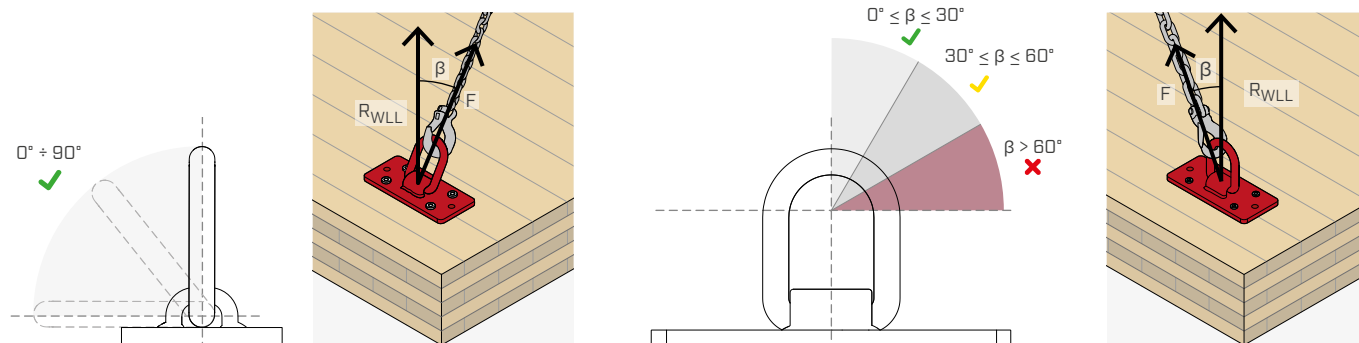


3 Connect the crane hook and carefully lift the element. Pay attention to the permitted lifting angles and directions, as well as the corresponding maximum load capacities.

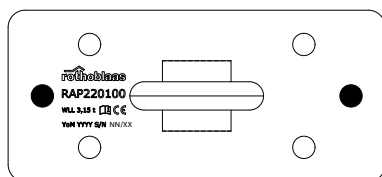


4 When lifting is complete, remove the screws and dispose of them. They can be used for a single lifting operation, except the VGS PL, which is reusable for transport under specific conditions. See the instructions.

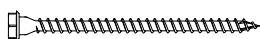
LOAD DIRECTIONS ALLOWED



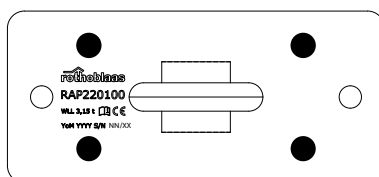
POSSIBLE LAYOUT OF SCREWS



VGS PLATE



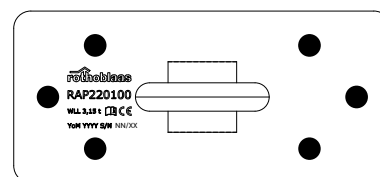
x2 VGS PLATE



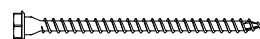
VGS PLATE



x4 VGS PLATE

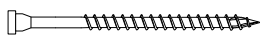


VGS PLATE

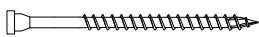


x6 VGS PLATE

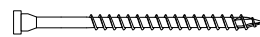
HBS PLATE - HBS PLATE EVO



x2 HBS PLATE

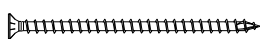


x4 HBS PLATE

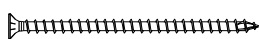


x6 HBS PLATE

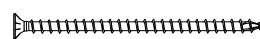
VGS + HUS



x2 VGS + x2 HUS



x4 VGS + x4 HUS



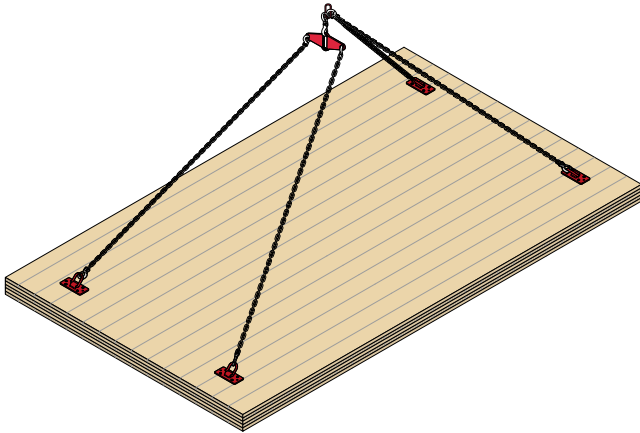
x6 VGS + x6 HUS

NOTES:

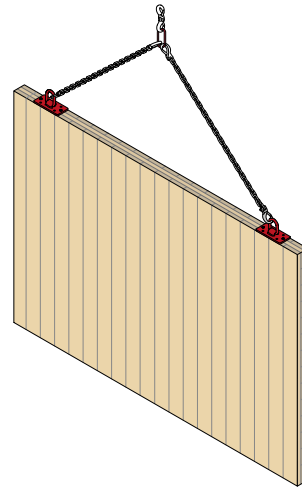
- The RAPTOR plate must be fixed with homogeneous connectors, same type (HBS PLATE, VGS PLATE or VGS) of the same length. The same configuration must be replicated on all plates used on the element to be moved.

APPLICATION EXAMPLES

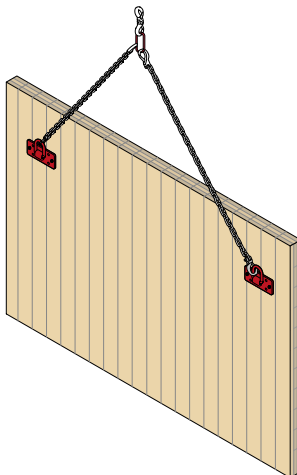
HORIZONTAL CLT PANEL



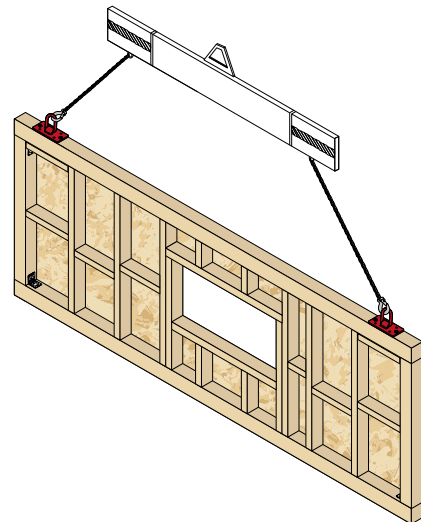
VERTICAL CLT PANEL - NARROW FACE



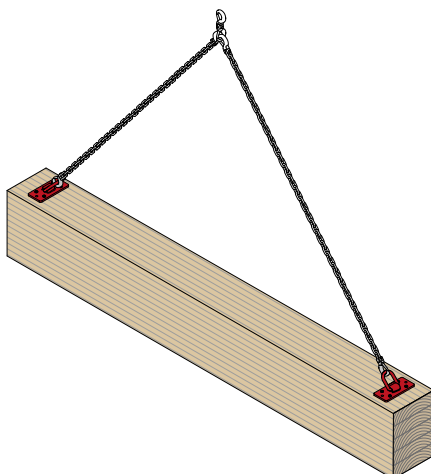
VERTICAL CLT PANEL - LATERAL FACE



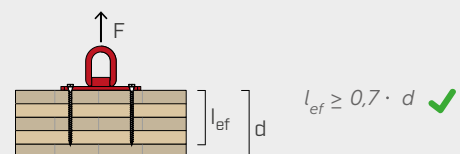
FRAME WALL



HORIZONTAL BEAM



INFLUENCE OF THE RATIO OF SCREW LENGTH TO THE ELEMENT THICKNESS



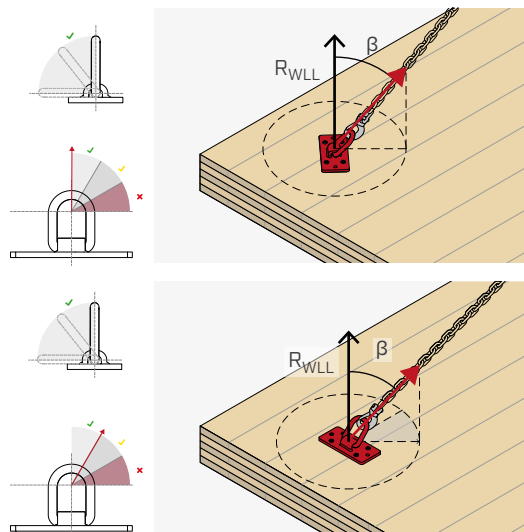
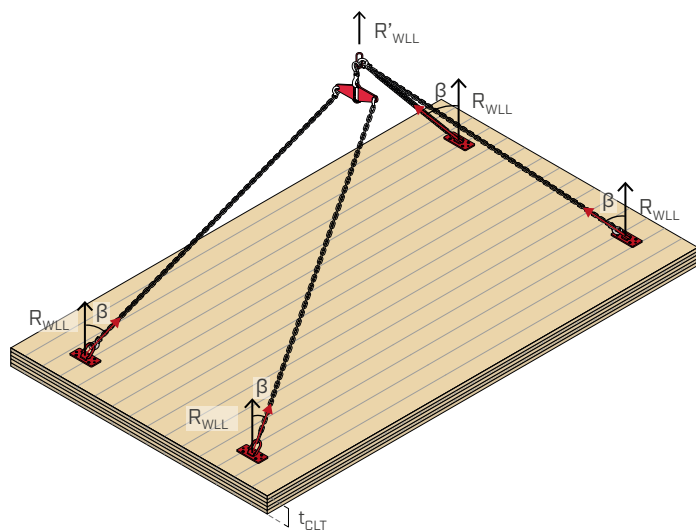
For lifting applications with the load component perpendicular to the timber grain, in order to reach the maximum capacity of the lifting system, it is recommended to use screws longer than $0.7 \cdot d$ (d = depth of the timber element) to avoid cracking. In the event that the ratio is not fulfilled, brittle fracture checks can be carried out according to DIN EN 1995-1-1/NA.

R_{WLL} = reference rigging capacity for a single anchor system

R'_{WLL} = total system rigging capacity

β = lifting angle (angle between vertical axis and chain)

RIGGING CAPACITY | HORIZONTAL CLT PANEL

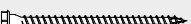


TOTAL RIGGING CAPACITY CALCULATION

$$R'_{WLL} = R_{WLL} \cdot n$$

R'_{WLL} = total system rigging capacity.
 R_{WLL} = reference rigging capacity for a single anchor system (provided in the tables).
 n = number of completely load-bearing anchor systems.

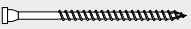
MAXIMUM CAPACITY PER ANCHOR POINT WITH VGS PLATE SCREWS

CODE VGS PLATE screw d x L [mm]	no. of screws 	capacity R_{WLL} [kg]			
		$\beta = 0^\circ$ 	$0^\circ < \beta \leq 30^\circ$ 	$30^\circ < \beta \leq 45^\circ$ 	$45^\circ < \beta \leq 60^\circ$ 
VGSPL1160 11 x 60	2 	305	250	195	130
	4 	570	470	370	255
	6 	820	685	540	370
VGSPL1180 11 x 80	2 	425	340	260	175
	4 	795	650	500	335
	6 	1150	940	730	495
VGSPL11100 11 x 100	2 	550	430	320	210
	4 	1025	815	620	410
	6 	1480	1185	910	605
VGSPL11120 11 x 120	2 	670	505	365	235
	4 	1255	960	710	460
	6 	1805	1400	1045	680
VGSPL11140 11 x 140	2 	795	575	410	260
	4 	1480	1095	795	510
	6 	2135	1600	1170	755
VGSPL11160 11 x 160	2 	915	640	450	280
	4 	1710	1225	875	555
	6 	2465	1795	1285	820
VGSPL11180 11 x 180	2 	1040	700	485	305
	4 	1940	1350	945	595
	6 	2795	1975	1400	885
VGSPL11200 11 x 200	2 	1160	765	520	325
	4 	2165	1470	1020	635
	6 	3125	2155	1505	945
VGSPL11240 11 x 240	2 	1405	880	590	365
	4 	2625	1705	1160	715
	6 	3150	2290	1645	1050
VGSPL11280 11 x 280	2 	1650	995	660	400
	4 	3080	1930	1295	795
	6 	3150	2395	1765	1145

β = lifting angle

RIGGING CAPACITY | HORIZONTAL CLT PANEL

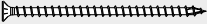
MAXIMUM CAPACITY PER ANCHOR POINT WITH **HBS PLATE** SCREWS

CODE HBS PLATE/HBS PLATE EVO screw d x L [mm]	no. of screws 	capacity R_{WLL} [kg]			
		$\beta = 0^\circ$ 	$0^\circ < \beta \leq 30^\circ$ 	$30^\circ < \beta \leq 45^\circ$ 	$45^\circ < \beta \leq 60^\circ$ 
HBSPLEVO1060 10 x 60	2 	275	230	180	120
	4 	515	430	340	235
	6 	745	625	495	340
HBSP1080 10 x 80	2 	330	275	215	145
	4 	620	520	410	280
	6 	895	755	600	410
HBSP10100 10 x 100	2 	415	340	265	175
	4 	775	640	505	340
	6 	1120	930	735	500
HBSP10120 10 x 120	2 	525	410	310	205
	4 	985	785	595	395
	6 	1420	1140	870	580
HBSP10140 10 x 140	2 	610	465	340	220
	4 	1140	880	655	430
	6 	1645	1285	965	635
HBSP10160 10 x 160	2 	720	525	380	240
	4 	1345	1010	735	475
	6 	1940	1470	1080	700
HBSP10180 10 x 180	2 	830	590	415	260
	4 	1555	1130	805	515
	6 	2240	1650	1190	760

β = lifting angle

RIGGING CAPACITY | HORIZONTAL CLT PANEL

MAXIMUM CAPACITY PER ANCHOR POINT WITH VGS SCREWS

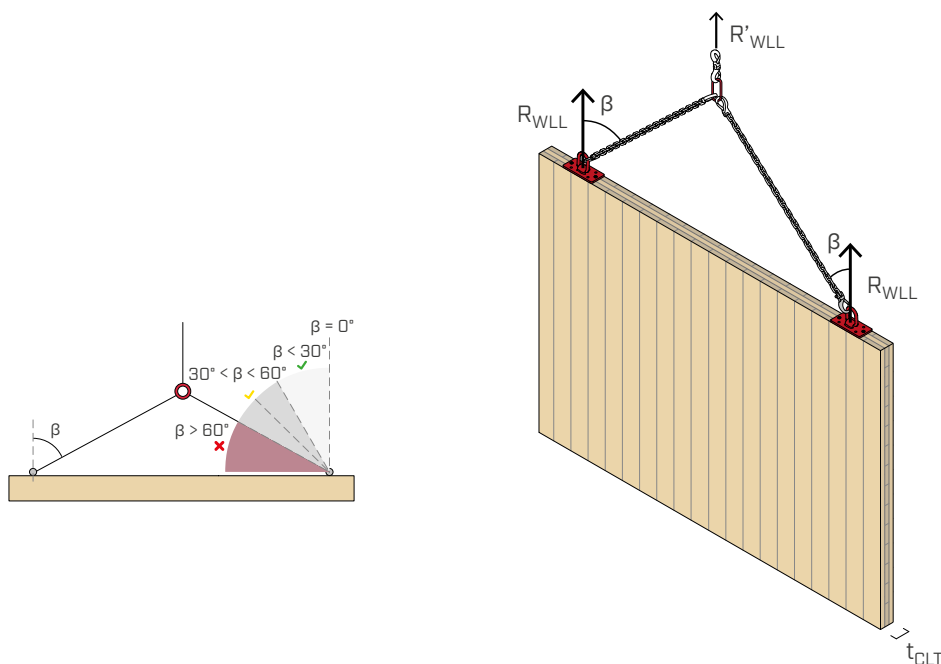
CODE VGS screw + HUS10 d x L [mm]	no. of screws 	capacity R _{WLL} [kg]			
		$\beta = 0^\circ$ 	$0^\circ < \beta \leq 30^\circ$ 	$30^\circ < \beta \leq 45^\circ$ 	$45^\circ < \beta \leq 60^\circ$ 
VGS1180 11 x 80	2 	375	305	235	155
	4 	705	580	450	300
	6 	1015	840	655	445
VGS11100 11 x 100	2 	500	395	300	200
	4 	935	755	580	385
	6 	1345	1095	845	565
VGS11125 11 x 125	2 	650	495	360	235
	4 	1220	940	700	455
	6 	1760	1370	1025	670
VGS11150 11 x 150	2 	805	580	415	260
	4 	1505	1110	800	515
	6 	2170	1620	1180	760
VGS11175 11 x 175	2 	960	660	460	290
	4 	1790	1270	900	570
	6 	2580	1860	1325	840
VGS11200 11 x 200	2 	1110	740	505	315
	4 	2075	1425	990	620
	6 	2990	2085	1465	920
VGS11225 11 x 225	2 	1265	815	550	340
	4 	2360	1570	1080	670
	6 	3150	2220	1570	990
VGS11250 11 x 250	2 	1415	885	595	365
	4 	2645	1715	1165	720
	6 	3150	2295	1650	1055
VGS11275 11 x 275	2 	1570	960	635	390
	4 	2935	1855	1250	770
	6 	3150	2360	1725	1115
VGS11300 11 x 300	2 	1725	1030	680	415
	4 	3150	1975	1330	815
	6 	3150	2420	1795	1170
VGS11325 11 x 325	2 	1805	1065	700	425
	4 	3150	2015	1360	840
	6 	3150	2420	1795	1170
VGS11350 11 x 350	2 	1805	1065	700	425
	4 	3150	2015	1360	840
	6 	3150	2420	1795	1170
VGS11375 11 x 375	2 	1805	1065	700	425
	4 	3150	2015	1360	840
	6 	3150	2420	1795	1170
VGS11400 11 x 400	2 	1805	1065	700	425
	4 	3150	2015	1360	840
	6 	3150	2420	1795	1170

β = lifting angle

NOTES:

- When transporting horizontal CLT panels, the ratio of timber thickness to screw length can affect the load-bearing capacity.
- The load-bearing capacity values given are per single anchorage point.
- In order to consider all fastening points as fully load-bearing, it is necessary to ensure that the load is evenly distributed over all fastening points by means of suitable compensating systems.
- Minimum wall thickness: $t_{CLT} \geq 100$ mm.

RIGGING CAPACITY | VERTICAL CLT PANEL - NARROW FACE

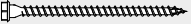


TOTAL RIGGING CAPACITY CALCULATION

$$R'_{WLL} = R_{WLL} \cdot n$$

R'_{WLL} = total system rigging capacity.
 R_{WLL} = reference rigging capacity for a single anchor system (provided in the tables).
 n = number of completely load-bearing anchor systems.

MAXIMUM CAPACITY PER ANCHOR POINT WITH VGS PLATE SCREWS

CODE VGS PLATE screw d x L [mm]	no. of screws 	capacity R_{WLL} [kg]			
		$\beta = 0^\circ$ 	$0^\circ < \beta \leq 30^\circ$ 	$30^\circ < \beta \leq 45^\circ$ 	$45^\circ < \beta \leq 60^\circ$ 
VGSPL1160 11 x 60	2 	215	170	125	80
VGSPL1180 11 x 80	2 	295	225	165	110
VGSPL11100 11 x 100	2 	370	275	200	130
VGSPL11120 11 x 120	2 	445	330	240	150
VGSPL11140 11 x 140	2 	515	380	270	175
VGSPL11160 11 x 160	2 	585	415	295	185
VGSPL11180 11 x 180	2 	655	455	315	200
VGSPL11200 11 x 200	2 	725	490	335	210
VGSPL11240 11 x 240	2 	860	555	375	230
VGSPL11280 11 x 280	2 	995 ^(*)	620	415	255

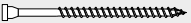
β = lifting angle

NOTES:

- Minimum wall thickness: $t_{CLT} \geq 100$ mm.
- The load-bearing capacity values given are per single anchorage point.
- Be careful not to insert the screw into the glue of the CLT panel.

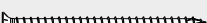
RIGGING CAPACITY | VERTICAL CLT PANEL - NARROW FACE

MAXIMUM CAPACITY PER ANCHOR POINT WITH **HBS PLATE** SCREWS

CODE HBS PLATE/HBS PLATE EVO screw d x L [mm]	no. of screws 	capacity R _{WLL} [kg]			
		$\beta = 0^\circ$ 	$0^\circ < \beta \leq 30^\circ$ 	$30^\circ < \beta \leq 45^\circ$ 	$45^\circ < \beta \leq 60^\circ$ 
HBSPLEVO1060 10 x 60	2 	200	155	115	75
HBSPL1080 10 x 80	2 	235	190	145	95
HBSPL10100 10 x 100	2 	290	225	170	110
HBSPL10120 10 x 120	2 	360	275	205	135
HBSPL10140 10 x 140	2 	410	315	235	150
HBSPL10160 10 x 160	2 	475	355	255	165
HBSPL10180 10 x 180	2 	545	390	280	175

β = lifting angle

MAXIMUM CAPACITY PER ANCHOR POINT WITH **VGS** SCREWS

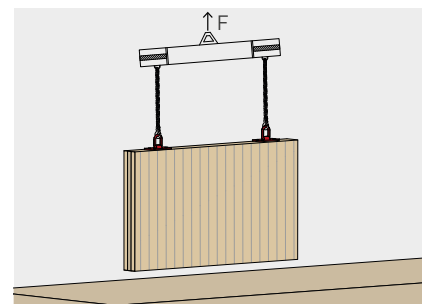
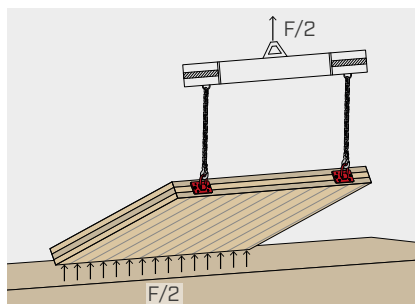
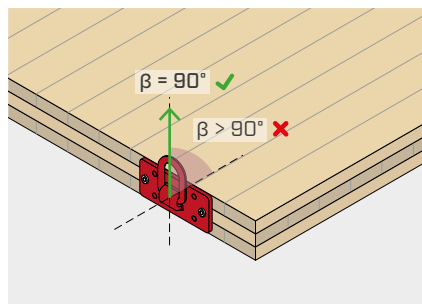
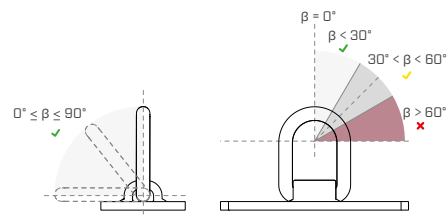
CODE VGS screw + HUS10 d x L [mm]	no. of screws 	capacity R _{WLL} [kg]			
		$\beta = 0^\circ$ 	$0^\circ < \beta \leq 30^\circ$ 	$30^\circ < \beta \leq 45^\circ$ 	$45^\circ < \beta \leq 60^\circ$ 
VGS1180 11 x 80	2 	265	205	155	100
VGS11100 11 x 100	2 	340	255	190	120
VGS11125 11 x 125	2 	430	320	230	150
VGS11150 11 x 150	2 	520	380	275	175
VGS11175 11 x 175	2 	610	430	305	190
VGS11200 11 x 200	2 	700	475	330	205
VGS11225 11 x 225	2 	785	520	355	220
VGS11250 11 x 250	2 	870 ^(*)	560	380	235
VGS11275 11 x 275	2 	955 ^(*)	600	400	245
VGS11300 11 x 300	2 	1035 ^(*)	640	425	260
VGS11325 11 x 325	2 	1120 ^(*)	675	450	275
VGS11350 11 x 350	2 	1200 ^(*)	715	470	285
VGS11375 11 x 375	2 	1280 ^(*)	750	490	300
VGS11400 11 x 400	2 	1365 ^(*)	785	515	310

β = lifting angle

(*) In the case of lifting from a horizontal position, the strength during "tilting" becomes governed. In this case, the strength must be reduced by applying a reduction coefficient of 0.8.

■ RIGGING CAPACITY | LIFTING PANEL/CLT WALL FROM A HORIZONTAL POSITION.

For lifting CLT walls from a horizontal to a vertical position, the load capacities indicated in the table above apply (VERTICAL CLT PANEL - NARROW FACE), applying the reduction coefficient where necessary. During the "tipping" phase, however, the fixed support of the underside of the wall must be ensured so that half of the load is transferred to the ground.



Lifting range

Solutions engineered for the safe lifting and handling of timber elements.
The product range includes devices designed to accommodate different load configurations and on-site handling requirements.



RAPTOR MINI



RAPTOR



RAPTOR MAXI



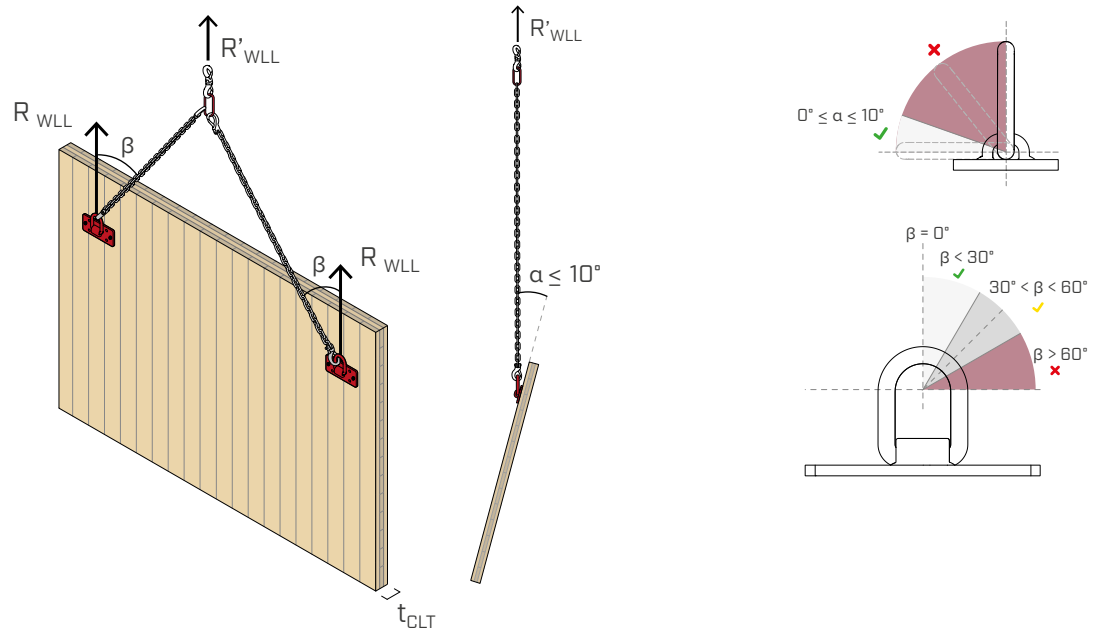
WASP

The comprehensive technical documentation is available at www.rothoblaas.com



rothoblaas.it

RIGGING CAPACITY | VERTICAL CLT PANEL - LATERAL FACE

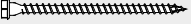


TOTAL RIGGING CAPACITY CALCULATION

$$R'_{WLL} = R_{WLL} \cdot n$$

R'_{WLL} = total system rigging capacity.
 R_{WLL} = reference rigging capacity for a single anchor system (provided in the tables).
 n = number of completely load-bearing anchor systems.

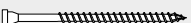
MAXIMUM CAPACITY PER ANCHOR POINT WITH VGS PLATE SCREWS

CODE VGS PLATE screw d x L [mm]	no. of screws 	capacity R_{WLL} [kg]			
		$\beta = 0^\circ$ 	$0^\circ < \beta \leq 30^\circ$ 	$30^\circ < \beta \leq 45^\circ$ 	$45^\circ < \beta \leq 60^\circ$ 
VGSPL1160 11 x 60	2	155	130	105	75
	4	305	260	210	145
	6	450	385	310	215
VGSPL1180 11 x 80	2	205	175	140	100
	4	405	345	280	195
	6	595	510	410	285
VGSPL11100 11 x 100	2	240	210	170	115
	4	480	410	330	230
	6	705	605	490	345
VGSPL11120 11 x 120	2	285	240	195	135
	4	560	480	385	270
	6	825	710	575	400
VGSPL11140 11 x 140	2	320	275	225	155
	4	635	545	440	310
	6	940	805	655	460
VGSPL11160 11 x 160	2	340	295	240	165
	4	680	585	470	330
	6	1005	860	700	490
VGSPL11180 11 x 180	2	360	310	250	175
	4	720	620	500	350
	6	1065	915	745	520
VGSPL11200 11 x 200	2	380	330	265	185
	4	760	650	530	370
	6	1125	965	785	550
VGSPL11240 11 x 240	2	420	360	295	205
	4	835	720	580	410
	6	1240	1065	865	610
VGSPL11280 11 x 280	2	455	395	320	225
	4	905	780	635	445
	6	1350	1165	945	665

β = lifting angle

RIGGING CAPACITY | VERTICAL CLT PANEL - LATERAL FACE

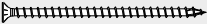
MAXIMUM CAPACITY PER ANCHOR POINT WITH **HBS PLATE** SCREWS

CODE HBS PLATE/HBS PLATE EVO screw d x L [mm]	no. of screws 	capacity R_{WLL} [kg]			
		$\beta = 0^\circ$ 	$0^\circ < \beta \leq 30^\circ$ 	$30^\circ < \beta \leq 45^\circ$ 	$45^\circ < \beta \leq 60^\circ$ 
HBSPLEVO1060 10 x 60	2 	145	125	100	70
	4 	290	245	200	140
	6 	425	365	295	205
HBSPL1080 10 x 80	2 	180	155	125	85
	4 	360	305	245	170
	6 	525	450	360	250
HBSPL10100 10 x 100	2 	215	180	145	100
	4 	420	360	290	200
	6 	615	525	425	295
HBSPL10120 10 x 120	2 	250	215	175	120
	4 	495	425	340	240
	6 	730	625	505	355
HBSPL10140 10 x 140	2 	285	245	195	135
	4 	560	480	390	270
	6 	825	710	570	400
HBSPL10160 10 x 160	2 	305	260	210	145
	4 	605	515	420	290
	6 	890	765	620	435
HBSPL10180 10 x 180	2 	325	280	225	155
	4 	640	550	445	310
	6 	950	815	660	465

β = lifting angle

RIGGING CAPACITY | VERTICAL CLT PANEL - LATERAL FACE

MAXIMUM CAPACITY PER ANCHOR POINT WITH VGS SCREWS

CODE VGS screw + HUS10 d x L [mm]	no. of screws 	capacity R _{WLL} [kg]			
		$\beta = 0^\circ$ 	$0^\circ < \beta \leq 30^\circ$ 	$30^\circ < \beta \leq 45^\circ$ 	$45^\circ < \beta \leq 60^\circ$ 
VGS1180 11 x 80	2 	190	160	130	90
	4 	375	320	260	180
	6 	550	470	380	265
VGS11100 11 x 100	2 	225	195	155	110
	4 	450	385	310	215
	6 	660	565	460	320
VGS11125 11 x 125	2 	275	235	190	135
	4 	545	470	380	265
	6 	805	690	560	395
VGS11150 11 x 150	2 	325	280	225	155
	4 	640	550	445	310
	6 	945	810	660	460
VGS11175 11 x 175	2 	350	300	245	170
	4 	695	595	480	335
	6 	1025	880	715	500
VGS11200 11 x 200	2 	375	320	260	180
	4 	745	640	515	365
	6 	1100	945	770	540
VGS11225 11 x 225	2 	400	340	280	195
	4 	790	680	550	385
	6 	1170	1010	820	575
VGS11250 11 x 250	2 	420	365	295	205
	4 	840	720	585	410
	6 	1245	1070	870	610

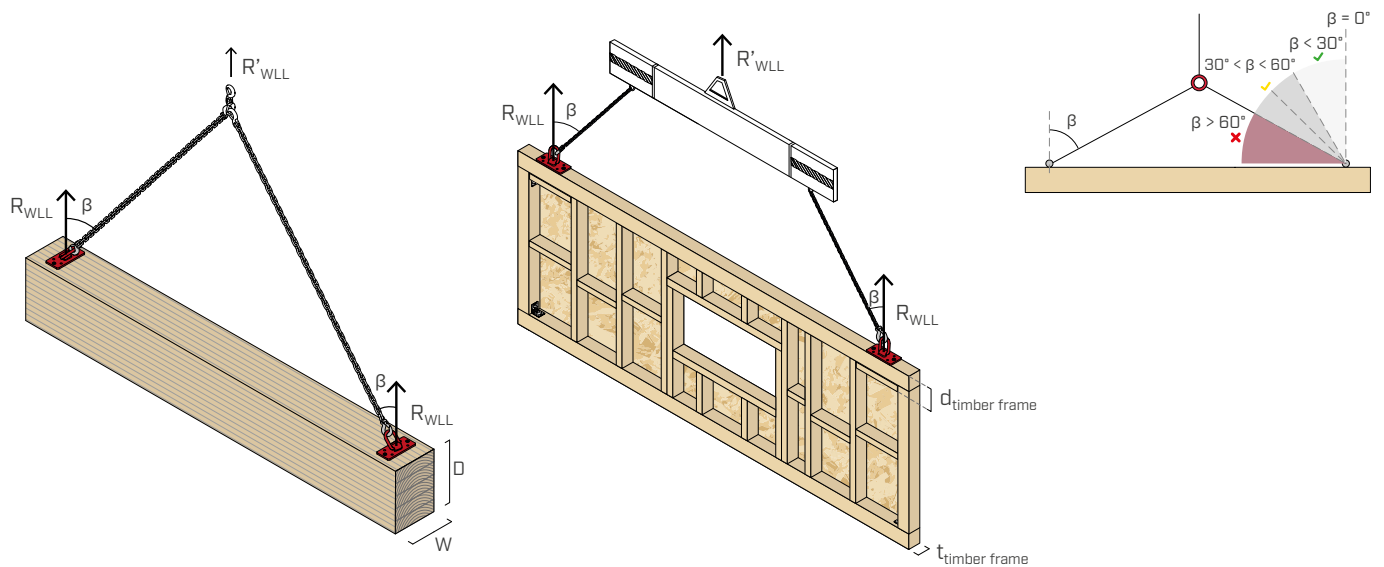
β = lifting angle

NOTES:

- The load-bearing capacity values given are per single anchorage point.
- Minimum wall thickness: $t_{CLT} \geq 80$ mm.
- Due to the single-sided fastening, the wall will tilt slightly. It is advisable to

fix the transport plates as high as possible, maintaining minimum distances from the ends, in order to limit this phenomenon. It is suggested to limit the tilt angle within 10° of the vertical.

LOAD VALUES | HORIZONTAL BEAM AND FRAME WALL



TOTAL RIGGING CAPACITY CALCULATION

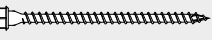
$$R'_{WLL} = R_{WLL} \cdot n$$

R'_{WLL} = total system rigging capacity.

R_{WLL} = reference rigging capacity for a single anchor system (provided in the tables).

n = number of completely load-bearing anchor systems.

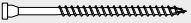
MAXIMUM CAPACITY PER ANCHOR POINT WITH VGS PLATE SCREWS

CODE VGS PLATE screw d x L [mm]	no. of screws 	capacity R_{WLL} [kg]			
		$\beta = 0^\circ$ 	$0^\circ < \beta \leq 30^\circ$ 	$30^\circ < \beta \leq 45^\circ$ 	$45^\circ < \beta \leq 60^\circ$ 
VGSP1160 11 x 60	2 	330	270	210	140
	4 	615	510	400	270
	6 	885	740	585	400
VGSP1180 11 x 80	2 	460	370	280	185
	4 	860	700	540	365
	6 	1240	1015	790	535
VGSP11100 11 x 100	2 	590	460	345	225
	4 	1105	875	665	440
	6 	1595	1275	970	645
VGSP11120 11 x 120	2 	725	540	395	250
	4 	1355	1030	760	495
	6 	1950	1505	1115	730
VGSP11140 11 x 140	2 	855	615	435	275
	4 	1600	1175	850	545
	6 	2305	1720	1250	805
VGSP11160 11 x 160	2 	990	685	480	300
	4 	1845	1315	935	590
	6 	2660	1925	1375	875
VGSP11180 11 x 180	2 	1120	750	520	325
	4 	2095	1450	1015	635
	6 	3015	2120	1495	945
VGSP11200 11 x 200	2 	1255	820	560	345
	4 	2340	1575	1090	680
	6 	3150	2235	1585	1005
VGSP11240 11 x 240	2 	1515	945	630	385
	4 	2830	1825	1240	765
	6 	3150	2360	1720	1110
VGSP11280 11 x 280	2 	1780	1065	705	430
	4 	3150	2025	1370	845
	6 	3150	2420	1795	1170

β = lifting angle

LOAD VALUES | HORIZONTAL BEAM AND FRAME WALL

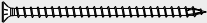
MAXIMUM CAPACITY PER ANCHOR POINT WITH **HBS PLATE** SCREWS

CODE HBS PLATE/HBS PLATE EVO screw d x L [mm]	no. of screws 	capacity R _{WLL} [kg]			
		$\beta = 0^\circ$ 	$0^\circ < \beta \leq 30^\circ$ 	$30^\circ < \beta \leq 45^\circ$ 	$45^\circ < \beta \leq 60^\circ$ 
HBSPLEVO1060 10 x 60	2 	300	250	200	135
	4 	560	475	380	265
	6 	805	685	550	385
HBSPL1080 10 x 80	2 	360	300	240	165
	4 	670	570	460	320
	6 	965	825	665	465
HBSPL10100 10 x 100	2 	450	370	290	200
	4 	840	705	560	385
	6 	1210	1020	810	555
HBSPL10120 10 x 120	2 	570	450	340	225
	4 	1060	855	655	440
	6 	1530	1240	955	640
HBSPL10140 10 x 140	2 	660	505	375	240
	4 	1230	965	725	475
	6 	1775	1400	1055	695
HBSPL10160 10 x 160	2 	780	575	415	265
	4 	1455	1100	805	520
	6 	2095	1600	1180	765
HBSPL10180 10 x 180	2 	900	640	455	285
	4 	1680	1230	885	565
	6 	2420	1790	1295	830

β = lifting angle

LOAD VALUES | HORIZONTAL BEAM AND FRAME WALL

MAXIMUM CAPACITY PER ANCHOR POINT WITH VGS SCREWS

CODE VGS screw + HUS10 d x L [mm]	no. of screws 	capacity R _{WLL} [kg]			
		$\beta = 0^\circ$ 	$0^\circ < \beta \leq 30^\circ$ 	$30^\circ < \beta \leq 45^\circ$ 	$45^\circ < \beta \leq 60^\circ$ 
VGS1180 11 x 80	2 	405	330	260	170
	4 	760	625	500	325
	6 	1100	905	725	480
VGS11100 11 x 100	2 	540	430	335	215
	4 	1010	810	645	415
	6 	1455	1180	935	610
VGS11125 11 x 125	2 	705	530	395	250
	4 	1315	1010	765	485
	6 	1895	1470	1120	715
VGS11150 11 x 150	2 	870	620	450	280
	4 	1625	1190	880	550
	6 	2340	1740	1285	810
VGS11175 11 x 175	2 	1035	710	500	310
	4 	1935	1360	980	605
	6 	2785	1995	1445	900
VGS11200 11 x 200	2 	1200	790	550	335
	4 	2240	1525	1080	660
	6 	3150	2210	1580	980
VGS11225 11 x 225	2 	1365	870	600	365
	4 	2550	1685	1175	715
	6 	3150	2290	1665	1050
VGS11250 11 x 250	2 	1530	950	645	390
	4 	2855	1840	1270	770
	6 	3150	2365	1750	1115
VGS11275 11 x 275	2 	1695	1025	690	415
	4 	3150	1985	1360	820
	6 	3150	2420	1825	1170
VGS11300 11 x 300	2 	1805	1075	720	435
	4 	3150	2035	1400	855
	6 	3150	2420	1870	1170
VGS11325 11 x 325	2 	1805	1075	720	435
	4 	3150	2035	1400	855
	6 	3150	2420	1870	1170
VGS11350 11 x 350	2 	1805	1075	720	435
	4 	3150	2035	1400	855
	6 	3150	2420	1870	1170
VGS11375 11 x 375	2 	1805	1075	720	435
	4 	3150	2035	1400	855
	6 	3150	2420	1870	1170
VGS11400 11 x 400	2 	1805	1075	720	435
	4 	3150	2035	1400	855
	6 	3150	2420	1870	1170

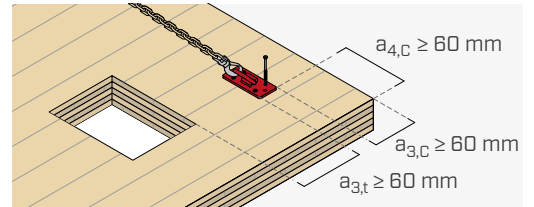
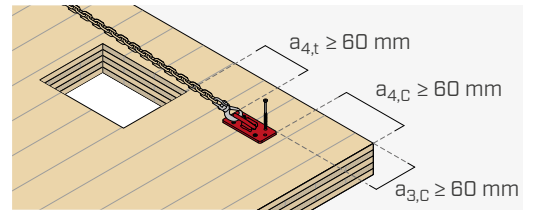
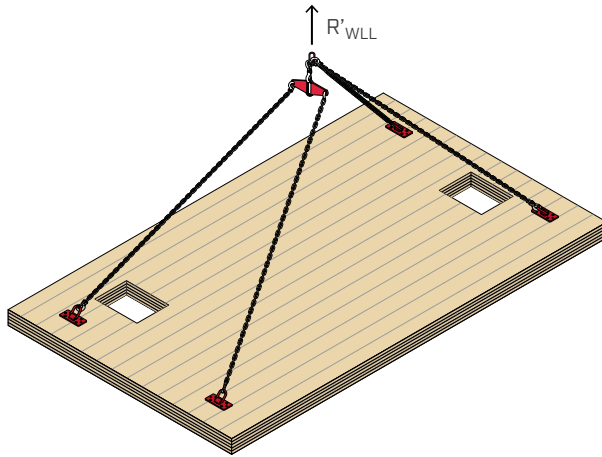
β = lifting angle

NOTES:

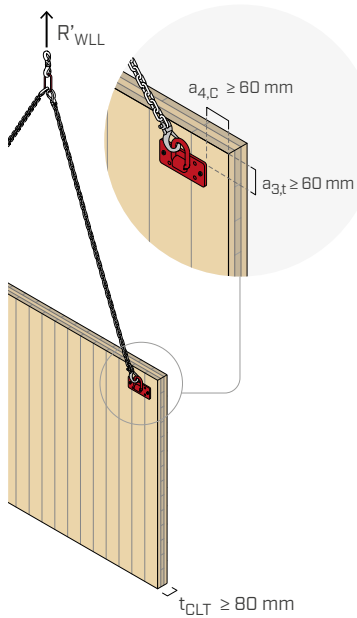
- For load capacities in Timber Frame applications refer to the rigging capacity table for "horizontal beam" considering possible reduction factors for different timber grades.
- For the calculation process a timber characteristic density $\rho_k = 385 \text{ kg/m}^3$ has been considered.
- The load-bearing capacity values given are per single anchorage point.
- Minimum beam base $W \geq 240 \text{ mm}$.
- Minimum beam base $D \geq 80 \text{ mm}$.
- Minimum width of Timber Frame structure $t_{\text{timber frame}} \geq 100 \text{ mm}$.
- Minimum thickness of Timber Frame structure $d_{\text{timber frame}} \geq 80 \text{ mm}$.

MINIMUM DISTANCES

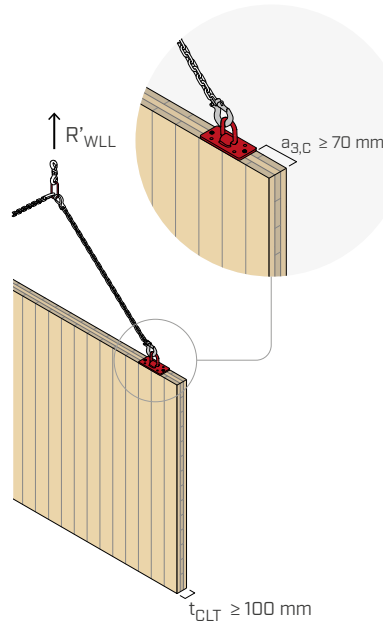
CLT FLOOR



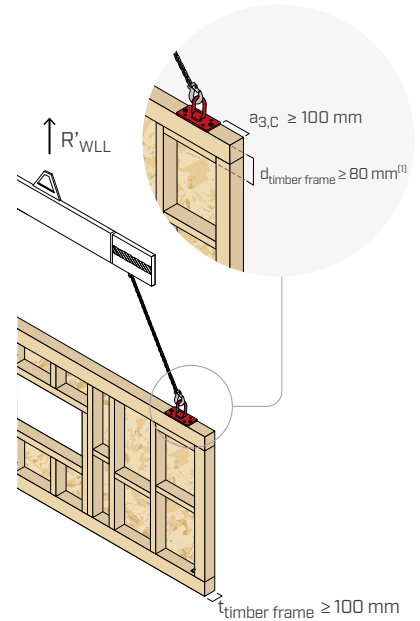
VERTICAL CLT WALL LATERAL FACE



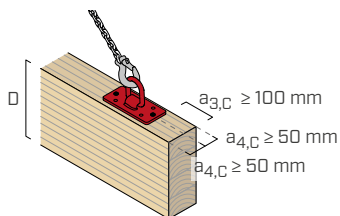
VERTICAL CLT WALL NARROW FACE



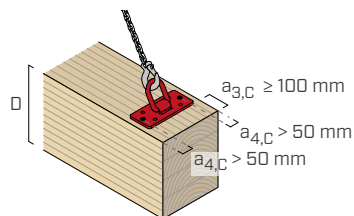
FRAME WALL



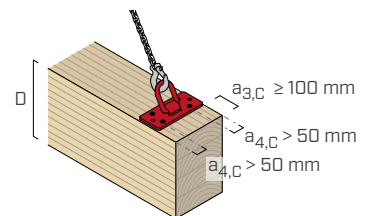
HORIZONTAL BEAM - 0° 2 SCREW FASTENING



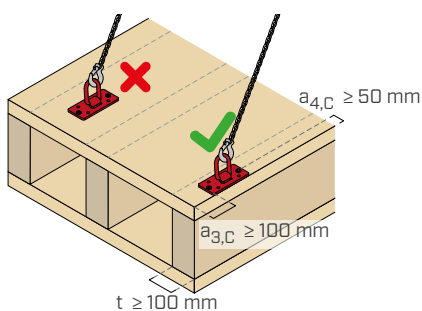
HORIZONTAL BEAM - 90° 2 & 6 SCREW FASTENING



HORIZONTAL BEAM - 90° 4 SCREW FASTENING



RIBBED FLOORS



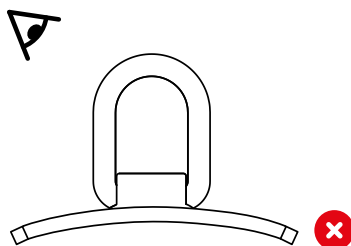
NOTES:

- ⁽¹⁾ For beams of reduced thickness, consider inserting a reinforcing timber element such that the minimum thickness of fixture is achieved.
- Minimum clearances are in accordance with ETA-11/0030 and based on testing. They are valid unless otherwise specified in this data sheet.
 - The minimum distances shown are valid for screws inserted without pre-drilling hole.

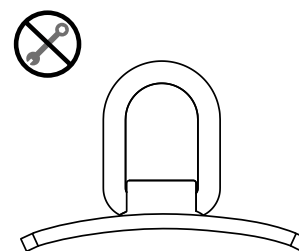
MAINTENANCE



Always follow the instructions in the manual.



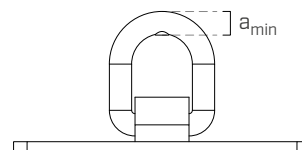
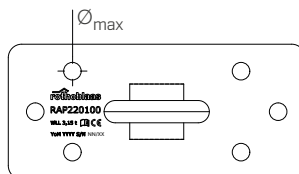
Visual inspection before each use. If there are any defects, the product must not be used again.



Repairs are not permitted!

DIMENSIONS TO BE CHECKED

CODE	$\varnothing_{\max}$ [mm]	$a_{\min}$ [mm]
RAP220100	13,5	16,0



GENERAL PRINCIPLES:

- The choice of fastener length is to be based each time on the dimensions of the wooden element, on the fastener's positioning, on the lift angle, on the weight of the load to be lifted and the arrangement of the lifting plate. In all cases, it is recommended the use of connectors that are as long as possible but such that the tip does not protrude from the element to be lifted.
- The rigging capacity values provided are based on calculations made according to EN 1995-1-1/NA in accordance with ETA-11/0030 and the results of tests performed. A safety factor of 4.0 was applied to the values provided in accordance with the Machinery Directive.
- Any checks for potential reductions in strength due to possible brittle failure related to the geometry of the lifted element and the positioning of the plate and connectors must be carried out separately.
- A timber density $\rho_k = 385 \text{ kg/m}^3$, of CLT elements equal to $\rho_k = 350 \text{ kg/m}^3$ was considered in the calculation. For different ρ_k values, the strength values in the table can be converted by the k_{dens} coefficient. The calculated value must never exceed the maximum capacity of the plate of **3150 kg**.

$$R'_{WLL} = \min(k_{\text{dens}} \cdot R'_{WLL}; 3150 \text{ kg})$$

$\rho_{g,k}$ [kg/m ³]	310	330	350	380	385	405	425	430	440
C-GL	C16	C20	C24	C30	GL24h	GL26h	GL28h	GL30h	GL32h
k_{dens}	0,80	0,85	0,90	0,98	1,00	1,02	1,05	1,05	1,07

$\rho_{g,k}$ [kg/m ³]	310	330	350	380	385	405	425	430	440
C-GL	C16	C20	C24	C30	GL24h	GL26h	GL28h	GL30h	GL32h
k_{dens}	0,88	0,94	1,00	1,04	1,05	1,07	1,10	1,11	1,12

Strength values thus determined may differ, for higher safety standards, from those resulting from an exact calculation.

- The lifting plate may only be used by qualified personnel. The user manual (supplied with the product and available at www.rothoblaas.com) must be read and understood before use. The information and instructions contained therein must be followed. If in doubt, contact the Rothoblaas Technical Department before use.
- For lifting plate rigging capacity calculation in installation configurations other than those indicated here, contact Rothoblaas Technical Department.
- The values indicated in the data sheet for the transport plate fixed with HBS PLATE screws have been calculated considering the geometry and mechanical parameters of the HBS PL version. For the load-bearing capacities of the transport plate fixed with the HBS P screw, refer to the previous version of the data sheet on this website. Alternatively, contact the Technical Office for further support.
- For safety reasons, HBSPL and VGS screws may only be used once. Once lifting operations are complete, the screws must be removed and disposed of correctly. Only the VGS PL screw may be reused for transport under specific conditions. See the specific screw instructions available at www.rothoblaas.com
- The use of pulse screw guns/impact wrenches is not permitted. Respect the insertion angle with the help of a pilot hole and/or installation template. Avoid bending. Ensure correct tightening. We recommend the use of torque-controlled screwdrivers, e.g. with TORQUE LIMITER. Alternatively, tighten with a torque wrench.
- The load capacities provided are calculated in the case of the plate fixed with screws inserted without pre-drilling hole. In the case of screws inserted with pre-drilling hole, the strength can be considered equivalent.