# RAPTOR

REUSABLE 2006/42/CE

## 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.

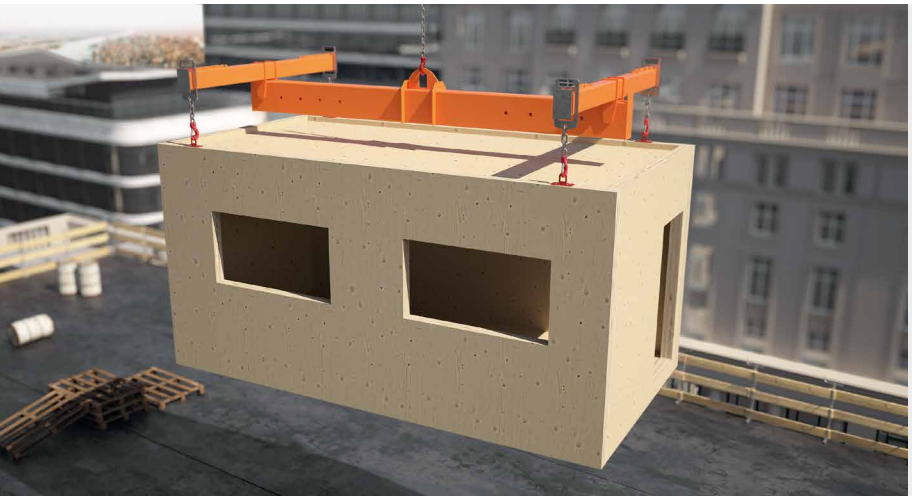
### USE AS A TEMPORARY ANCHOR POINT

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

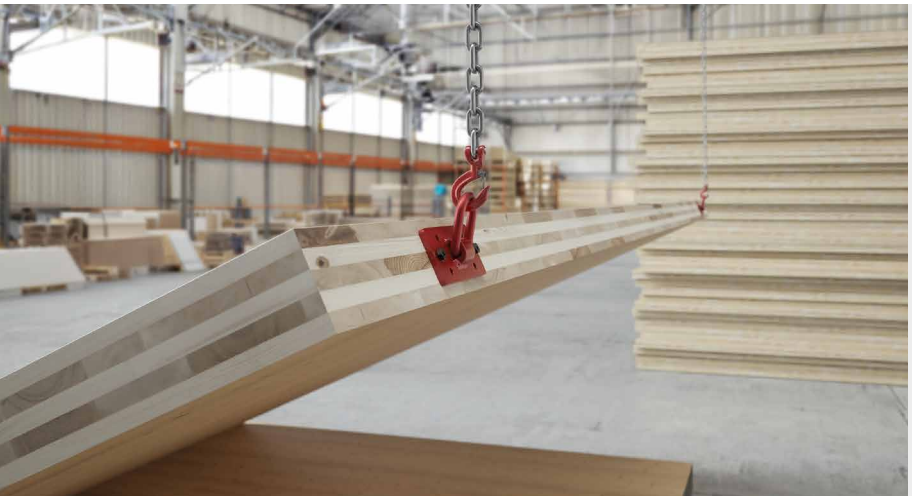
Thanks to compatibility with the innovative VGSPL, the lifting system allows the fasteners to be reused even after handling. This reduces waste and project costs while maintaining high safety standards.

MANUALS



### 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

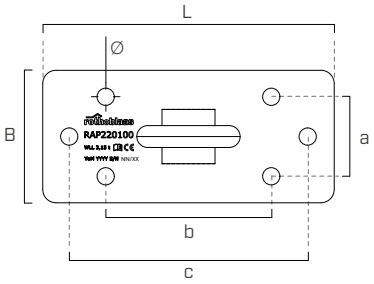
The 6 holes provide 3 assembly options with different screws, ensuring optimal installation for various lifting conditions and materials.

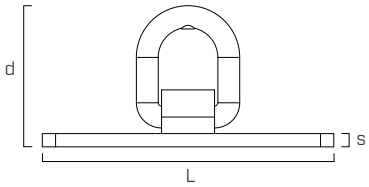
## CODE

| CODE | plate sizes | max. capacity | suitable screws | pcs |
|---|---|---|---|---|
| | | | **VGS PLATE Ø11 mm** | |
| **RAP220100** | 100 x 220 mm | 3150 kg | HBS PLATE/HBS PLATE EVO Ø10 mm<br>VGS Ø11 mm (+ HUS10) | 1 |

## DIMENSIONS

| CODE | B [mm] | L [mm] | s [mm] | Ø [mm] | a [mm] | b [mm] | c [mm] | d [mm] |
|---|---|---|---|---|---|---|---|---|
| **RAP220100** | 100 | 220 | 10 | 13 | 60 | 125 | 180 | 107 |

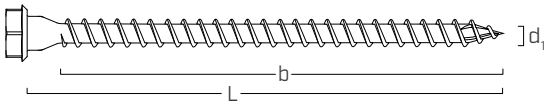



## COMPATIBLE SCREWS

**VGS PLATE**
pan head screw for lifting

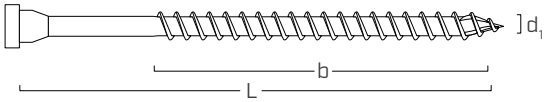
Zn E-COATING · REUSABLE




| $d_1$ [mm] | CODE | L [mm] | b [mm] | pcs |
|---|---|---|---|---|
| 11<br>SW 17<br>TX 50 | **VGSPL1160** | 60 | 50 | 25 |
| | **VGSPL1180** | 80 | 70 | 25 |
| | **VGSPL11100** | 100 | 90 | 25 |
| | **VGSPL11120** | 120 | 110 | 25 |
| | **VGSPL11140** | 140 | 130 | 25 |
| | **VGSPL11160** | 160 | 150 | 25 |
| | **VGSPL11180** | 180 | 170 | 25 |
| | **VGSPL11200** | 200 | 190 | 25 |
| | **VGSPL11240** | 240 | 230 | 25 |
| | **VGSPL11280** | 280 | 270 | 25 |

**HBS PLATE - HBS PLATE EVO**
pan head screw for plates

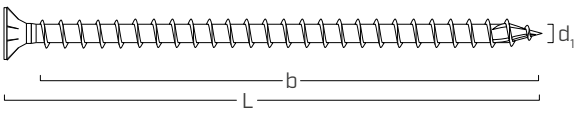
Zn ELECTRO PLATED · C4 EVO COATING · DO NOT RE-USE




| $d_1$ [mm] | CODE | L [mm] | b [mm] | pcs |
|---|---|---|---|---|
| 10<br>TX 40 | **HBSPLEVO1060** | 60 | 52 | 50 |
| | **HBSPL1080** | 80 | 60 | 50 |
| | **HBSPL10100** | 100 | 75 | 50 |
| | **HBSPL10120** | 120 | 95 | 50 |
| | **HBSPL10140** | 140 | 110 | 50 |
| | **HBSPL10160** | 160 | 130 | 50 |
| | **HBSPL10180** | 180 | 150 | 50 |

**VGS**
full thread screw with countersunk head

Zn ELECTRO PLATED · DO NOT RE-USE

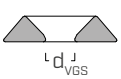



| $d_1$ [mm] | CODE | L [mm] | b [mm] | pcs |
|---|---|---|---|---|
| 11<br>TX 50 | **VGS1180** | 80 | 70 | 25 |
| | **VGS11100** | 100 | 90 | 25 |
| | **VGS11125** | 125 | 115 | 25 |
| | **VGS11150** | 150 | 140 | 25 |
| | **VGS11175** | 175 | 165 | 25 |
| | **VGS11200** | 200 | 190 | 25 |
| | **VGS11225** | 225 | 215 | 25 |
| | **VGS11250** | 250 | 240 | 25 |
| | **VGS11275** | 275 | 265 | 25 |
| | **VGS11300** | 300 | 290 | 25 |
| | **VGS11325** | 325 | 315 | 25 |
| | **VGS11350** | 350 | 340 | 25 |
| | **VGS11375** | 375 | 365 | 25 |
| | **VGS11400** | 400 | 390 | 25 |

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

**HUS -** turned washer

Zn ELECTRO PLATED




| CODE | $d_{VGS}$ [mm] | pcs |
|---|---|---|
| **HUS10** | 11 | 50 |



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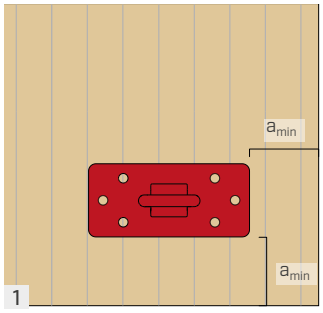
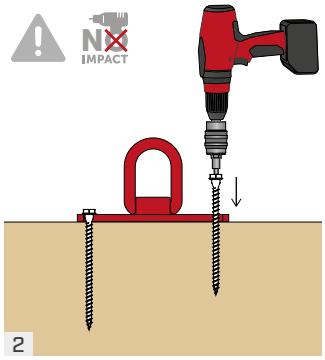
# RAPTOR INSTALLATION

MANUALS

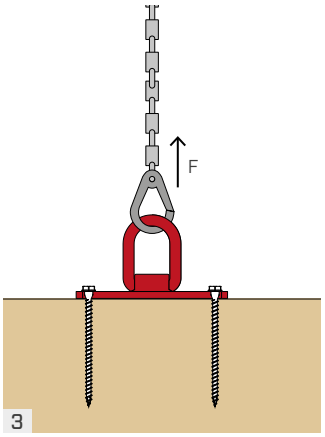



Read the instructions for use carefully and follow the directions regarding minimum recommended distances, lifting directions and angles, and maximum load capacity.

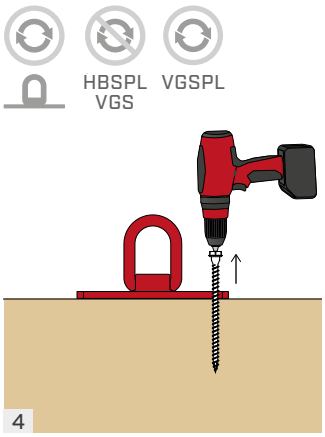
HBSPL Ø10 $M_{ins,max}$ = 35 Nm
VGS | VGSPL Ø11 $M_{ins,max}$ = 30 Nm




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.

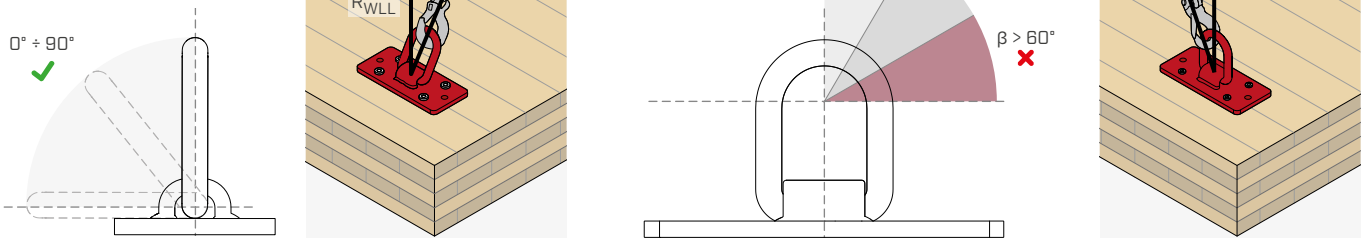



Connect the crane hook and carefully lift the element. Pay attention to the permitted lifting angles and directions, as well as the corresponding maximum load capacities.

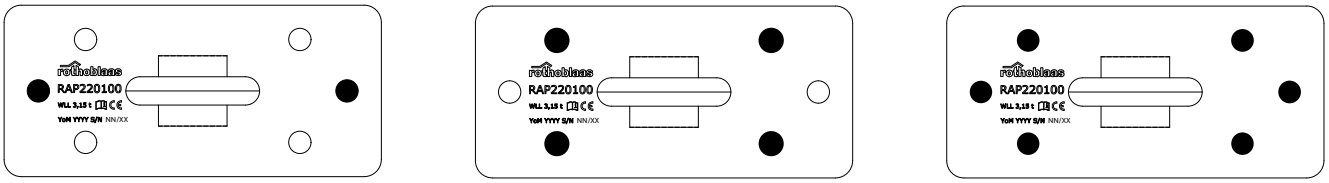



When lifting is complete, remove the screws and dispose of them. They can be used for a single lifting operation, except the VGS PL, which is reusable for transport under specific conditions. See the instructions.

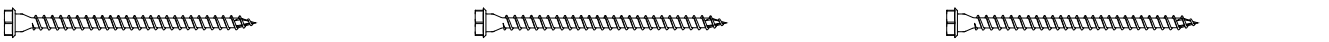
## LOAD DIRECTIONS ALLOWED




## POSSIBLE LAYOUT OF SCREWS

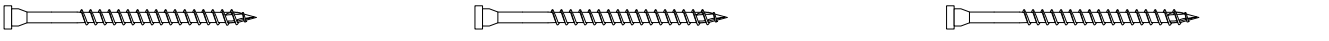



### VGS PLATE



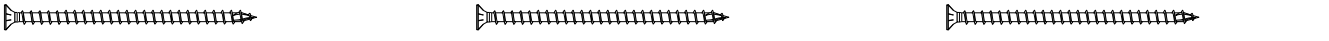
x2 VGS PLATE | x4 VGS PLATE | x6 VGS PLATE

### HBS PLATE - HBS PLATE EVO



x2 HBS PLATE | x4 HBS PLATE | x6 HBS PLATE

### VGS + HUS



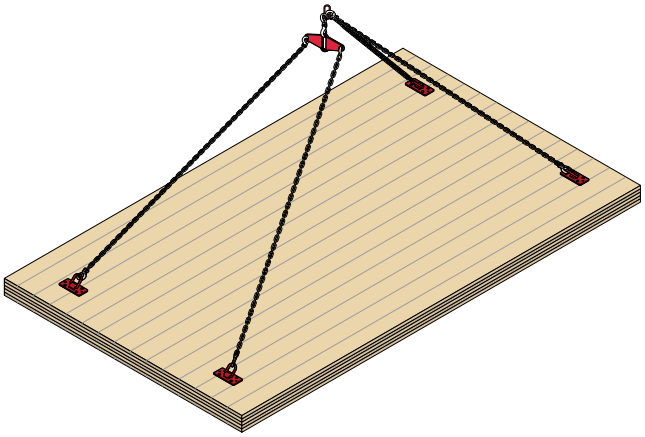
x2 VGS + x2 HUS | x4 VGS + x4 HUS | x6 VGS + x6 HUS

**NOTES:**

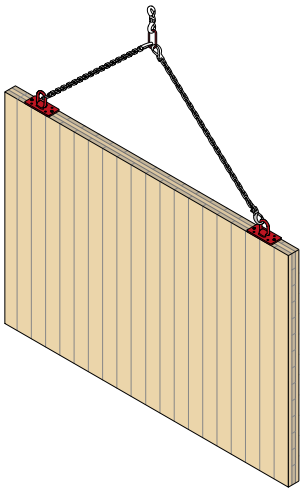
- The RAPTOR plate must be fixed with homogeneous connectors, same type (HBS PLATE, VGS PLATE or VGS) of the same length. The same configuration must be replicated on all plates used on the element to be moved.

## APPLICATION EXAMPLES

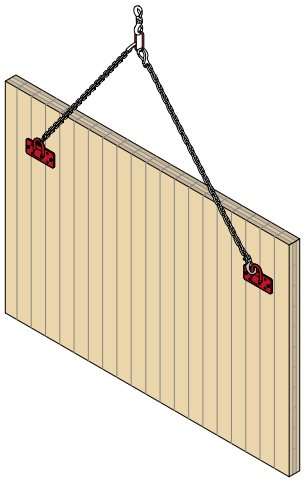
### HORIZONTAL CLT PANEL



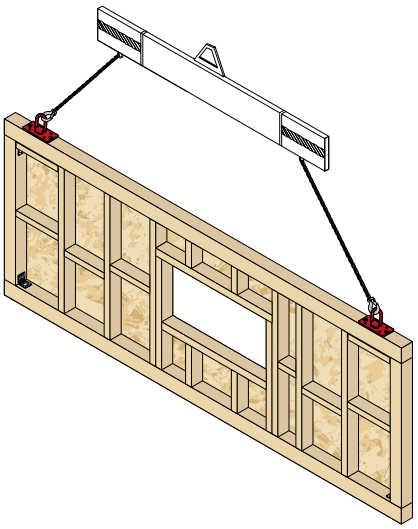
### VERTICAL CLT PANEL - NARROW FACE



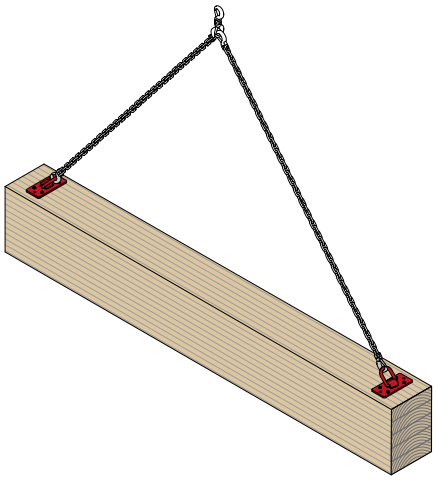
### VERTICAL CLT PANEL - LATERAL FACE



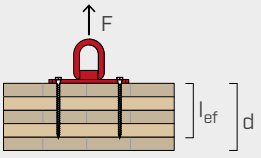
### FRAME WALL



### HORIZONTAL BEAM



### INFLUENCE OF THE RATIO OF SCREW LENGTH TO THE ELEMENT THICKNESS




$l_{ef} \geq 0{,}7 \cdot d$ ✓

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·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
$\beta$ = lifting angle (angle between vertical axis and chain)



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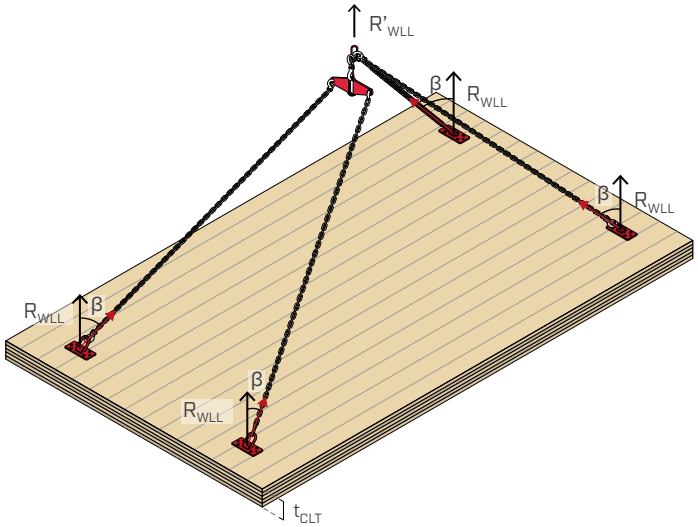
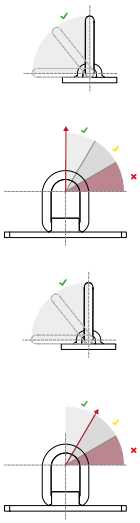
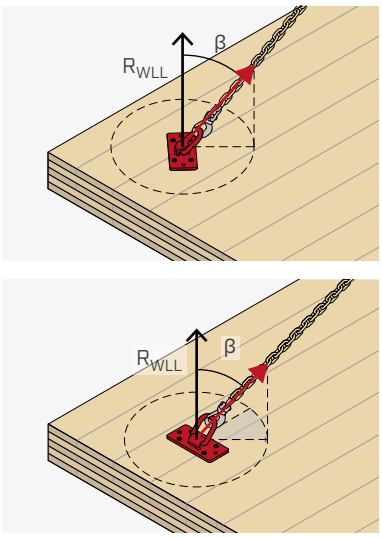
# RIGGING CAPACITY | HORIZONTAL CLT PANEL









## 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<br>VGS PLATE screw<br>d x L [mm] | no. of screws | capacity $R_{WLL}$ [kg]<br>β = 0° | 0° < β ≤ 30° | 30° < β ≤ 45° | 45° < β ≤ 60° |
|---|---|---|---|---|---|
| **VGSPL1160<br>11 x 60** | 2 | 305 | 250 | 195 | 130 |
| | 4 | 570 | 470 | 370 | 255 |
| | 6 | 820 | 685 | 540 | 370 |
| **VGSPL1180<br>11 x 80** | 2 | 425 | 340 | 260 | 175 |
| | 4 | 795 | 650 | 500 | 335 |
| | 6 | 1150 | 940 | 730 | 495 |
| **VGSPL11100<br>11 x 100** | 2 | 550 | 430 | 320 | 210 |
| | 4 | 1025 | 815 | 620 | 410 |
| | 6 | 1480 | 1185 | 910 | 605 |
| **VGSPL11120<br>11 x 120** | 2 | 670 | 505 | 365 | 235 |
| | 4 | 1255 | 960 | 710 | 460 |
| | 6 | 1805 | 1400 | 1045 | 680 |
| **VGSPL11140<br>11 x 140** | 2 | 795 | 575 | 410 | 260 |
| | 4 | 1480 | 1095 | 795 | 510 |
| | 6 | 2135 | 1600 | 1170 | 755 |
| **VGSPL11160<br>11 x 160** | 2 | 915 | 640 | 450 | 280 |
| | 4 | 1710 | 1225 | 875 | 555 |
| | 6 | 2465 | 1795 | 1285 | 820 |
| **VGSPL11180<br>11 x 180** | 2 | 1040 | 700 | 485 | 305 |
| | 4 | 1940 | 1350 | 945 | 595 |
| | 6 | 2795 | 1975 | 1400 | 885 |
| **VGSPL11200<br>11 x 200** | 2 | 1160 | 765 | 520 | 325 |
| | 4 | 2165 | 1470 | 1020 | 635 |
| | 6 | 3125 | 2155 | 1505 | 945 |
| **VGSPL11240<br>11 x 240** | 2 | 1405 | 880 | 590 | 365 |
| | 4 | 2625 | 1705 | 1160 | 715 |
| | 6 | 3150 | 2290 | 1645 | 1050 |
| **VGSPL11280<br>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<br>HBS PLATE/HBS PLATE EVO screw<br>d x L [mm] | no. of screws | capacity $R_{WLL}$ [kg] | | | |
|---|---|---|---|---|---|
| | | β = 0° | 0° < β ≤ 30° | 30° < β ≤ 45° | 45° < β ≤ 60° |
| **HBSPLEVO1060 10 x 60** | 2 | 275 | 230 | 180 | 120 |
| | 4 | 515 | 430 | 340 | 235 |
| | 6 | 745 | 625 | 495 | 340 |
| **HBSPL1080 10 x 80** | 2 | 330 | 275 | 215 | 145 |
| | 4 | 620 | 520 | 410 | 280 |
| | 6 | 895 | 755 | 600 | 410 |
| **HBSPL10100 10 x 100** | 2 | 415 | 340 | 265 | 175 |
| | 4 | 775 | 640 | 505 | 340 |
| | 6 | 1120 | 930 | 735 | 500 |
| **HBSPL10120 10 x 120** | 2 | 525 | 410 | 310 | 205 |
| | 4 | 985 | 785 | 595 | 395 |
| | 6 | 1420 | 1140 | 870 | 580 |
| **HBSPL10140 10 x 140** | 2 | 610 | 465 | 340 | 220 |
| | 4 | 1140 | 880 | 655 | 430 |
| | 6 | 1645 | 1285 | 965 | 635 |
| **HBSPL10160 10 x 160** | 2 | 720 | 525 | 380 | 240 |
| | 4 | 1345 | 1010 | 735 | 475 |
| | 6 | 1940 | 1470 | 1080 | 700 |
| **HBSPL10180 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

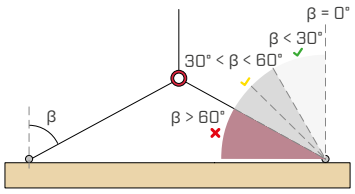
| CODE<br>VGS screw + HUS10<br>d x L [mm] | no. of screws | capacity $R_{WLL}$ [kg] | | | |
|---|---|---|---|---|---|
| | | β = 0° | 0° < β ≤ 30° | 30° < β ≤ 45° | 45° < β ≤ 60° |
| **VGS1180 11 x 80** | 2 | 375 | 305 | 235 | 155 |
| | 4 | 705 | 580 | 450 | 300 |
| | 6 | 1015 | 840 | 655 | 445 |
| **VGS11100 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 |

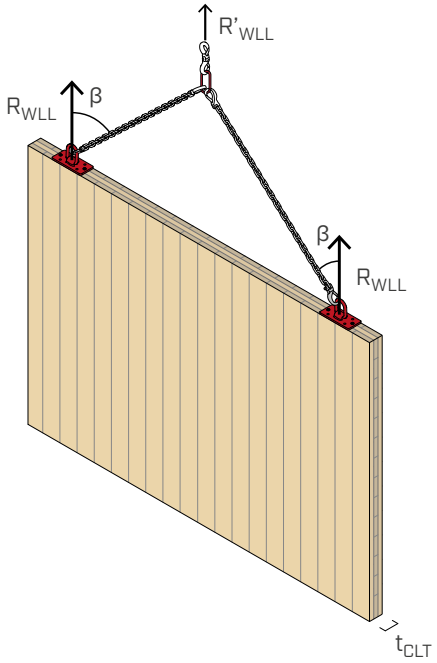
β = lifting angle

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<br>VGS PLATE screw<br>d x L [mm] | no. of screws | capacity $R_{WLL}$ [kg] | | | |
|---|---|---|---|---|---|
| | | β = 0° | 0° < β ≤ 30° | 30° < β ≤ 45° | 45° < β ≤ 60° |
| **VGSPL1160<br>11 x 60** | 2 | 215 | 170 | 125 | 80 |
| **VGSPL1180<br>11 x 80** | 2 | 295 | 225 | 165 | 110 |
| **VGSPL11100<br>11 x 100** | 2 | 370 | 275 | 200 | 130 |
| **VGSPL11120<br>11 x 120** | 2 | 445 | 330 | 240 | 150 |
| **VGSPL11140<br>11 x 140** | 2 | 515 | 380 | 270 | 175 |
| **VGSPL11160<br>11 x 160** | 2 | 585 | 415 | 295 | 185 |
| **VGSPL11180<br>11 x 180** | 2 | 655 | 455 | 315 | 200 |
| **VGSPL11200<br>11 x 200** | 2 | 725 | 490 | 335 | 210 |
| **VGSPL11240<br>11 x 240** | 2 | 860 | 555 | 375 | 230 |
| **VGSPL11280<br>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<br>HBS PLATE/HBS PLATE EVO screw<br>d x L [mm] | no. of screws | capacity $R_{WLL}$ [kg] | | | |
|---|---|---|---|---|---|
| | | β = 0° | 0° < β ≤ 30° | 30° < β ≤ 45° | 45° < β ≤ 60° |
| **HBSPLEVO1060<br>10 x 60** | 2 | 200 | 155 | 115 | 75 |
| **HBSPL1080<br>10 x 80** | 2 | 235 | 190 | 145 | 95 |
| **HBSPL10100<br>10 x 100** | 2 | 290 | 225 | 170 | 110 |
| **HBSPL10120<br>10 x 120** | 2 | 360 | 275 | 205 | 135 |
| **HBSPL10140<br>10 x 140** | 2 | 410 | 315 | 235 | 150 |
| **HBSPL10160<br>10 x 160** | 2 | 475 | 355 | 255 | 165 |
| **HBSPL10180<br>10 x 180** | 2 | 545 | 390 | 280 | 175 |

β = lifting angle

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

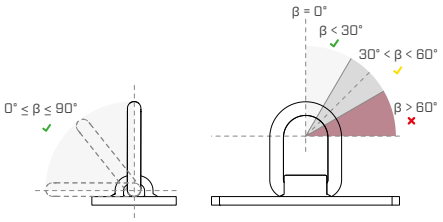
| CODE<br>VGS screw + HUS10<br>d x L [mm] | no. of screws | capacity $R_{WLL}$ [kg] | | | |
|---|---|---|---|---|---|
| | | β = 0° | 0° < β ≤ 30° | 30° < β ≤ 45° | 45° < β ≤ 60° |
| **VGS1180<br>11 x 80** | 2 | 265 | 205 | 155 | 100 |
| **VGS11100<br>11 x 100** | 2 | 340 | 255 | 190 | 120 |
| **VGS11125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

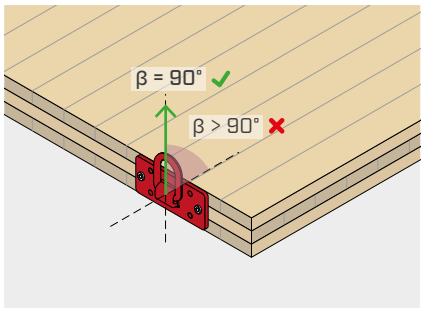
β = lifting angle

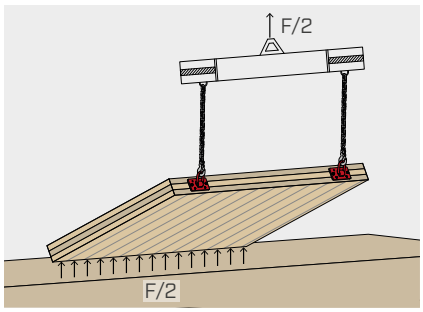
(*) In the case of lifting from a horizontal position, the strength during "tilting" becomes governed. In this case, the strength must be reduced by applying a reduction coefficient of 0.8.

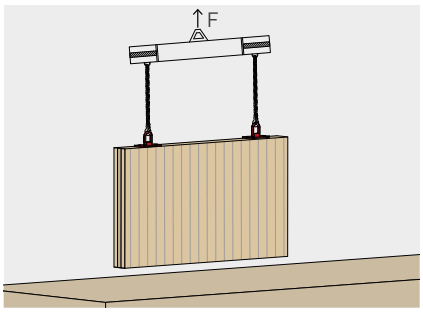
## RIGGING CAPACITY | LIFTING PANEL/CLT WALL FROM A HORIZONTAL POSITION.

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

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WASP

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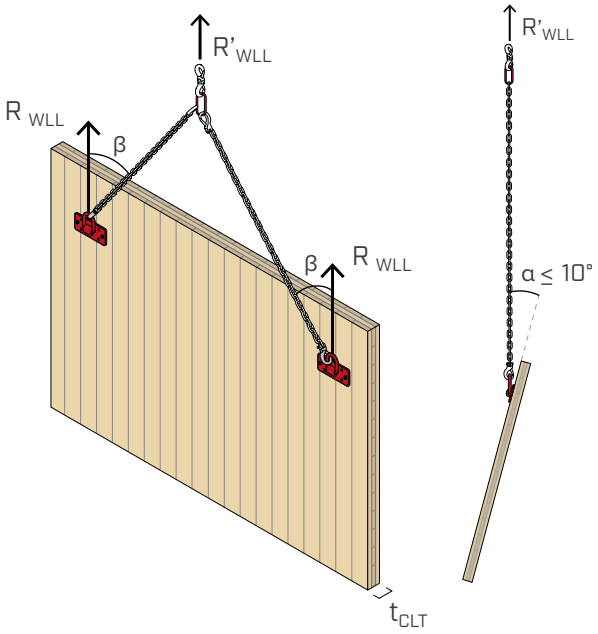
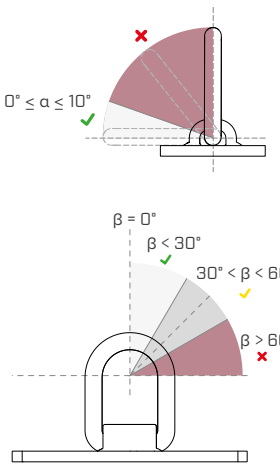
# RIGGING CAPACITY | VERTICAL CLT PANEL - LATERAL FACE




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

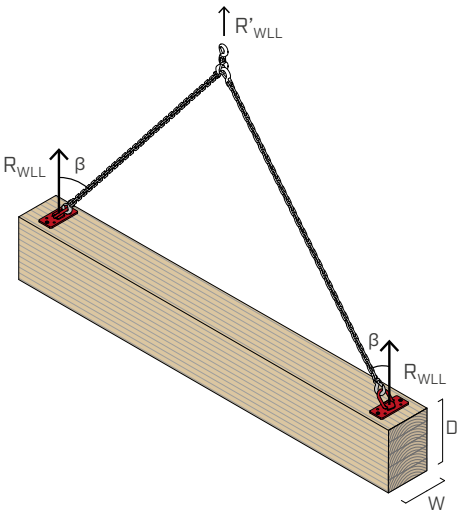
| CODE<br>VGS screw + HUS10<br>d x L [mm] | no. of screws | capacity $R_{WLL}$ [kg] | | | |
|---|---|---|---|---|---|
| | | β = 0° | 0° < β ≤ 30° | 30° < β ≤ 45° | 45° < β ≤ 60° |
| **VGS1180 11 x 80** | 2 | 190 | 160 | 130 | 90 |
| | 4 | 375 | 320 | 260 | 180 |
| | 6 | 550 | 470 | 380 | 265 |
| **VGS11100 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 |

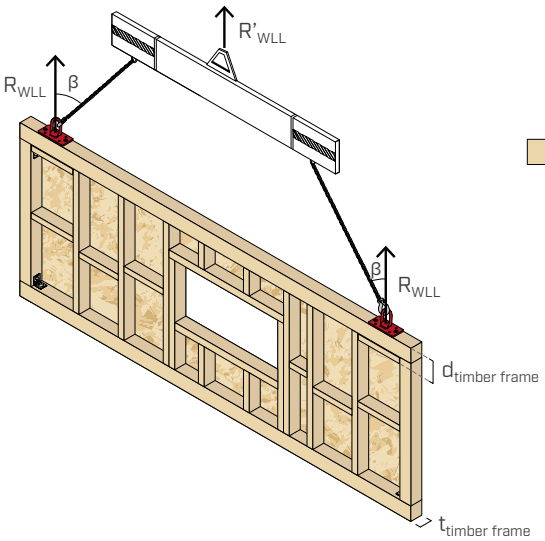
β = lifting angle

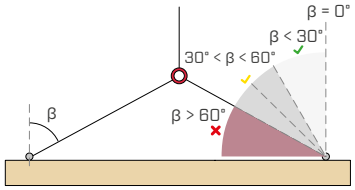
NOTES:

- 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<br>VGS PLATE screw<br>d x L [mm] | no. of screws | capacity $R_{WLL}$ [kg] | | | |
|---|---|---|---|---|---|
| | | β = 0° | 0° < β ≤ 30° | 30° < β ≤ 45° | 45° < β ≤ 60° |
| **VGSPL1160<br>11 x 60** | 2 | 330 | 270 | 210 | 140 |
| | 4 | 615 | 510 | 400 | 270 |
| | 6 | 885 | 740 | 585 | 400 |
| **VGSPL1180<br>11 x 80** | 2 | 460 | 370 | 280 | 185 |
| | 4 | 860 | 700 | 540 | 365 |
| | 6 | 1240 | 1015 | 790 | 535 |
| **VGSPL11100<br>11 x 100** | 2 | 590 | 460 | 345 | 225 |
| | 4 | 1105 | 875 | 665 | 440 |
| | 6 | 1595 | 1275 | 970 | 645 |
| **VGSPL11120<br>11 x 120** | 2 | 725 | 540 | 395 | 250 |
| | 4 | 1355 | 1030 | 760 | 495 |
| | 6 | 1950 | 1505 | 1115 | 730 |
| **VGSPL11140<br>11 x 140** | 2 | 855 | 615 | 435 | 275 |
| | 4 | 1600 | 1175 | 850 | 545 |
| | 6 | 2305 | 1720 | 1250 | 805 |
| **VGSPL11160<br>11 x 160** | 2 | 990 | 685 | 480 | 300 |
| | 4 | 1845 | 1315 | 935 | 590 |
| | 6 | 2660 | 1925 | 1375 | 875 |
| **VGSPL11180<br>11 x 180** | 2 | 1120 | 750 | 520 | 325 |
| | 4 | 2095 | 1450 | 1015 | 635 |
| | 6 | 3015 | 2120 | 1495 | 945 |
| **VGSPL11200<br>11 x 200** | 2 | 1255 | 820 | 560 | 345 |
| | 4 | 2340 | 1575 | 1090 | 680 |
| | 6 | 3150 | 2235 | 1585 | 1005 |
| **VGSPL11240<br>11 x 240** | 2 | 1515 | 945 | 630 | 385 |
| | 4 | 2830 | 1825 | 1240 | 765 |
| | 6 | 3150 | 2360 | 1720 | 1110 |
| **VGSPL11280<br>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<br>HBS PLATE/HBS PLATE EVO screw<br>d x L [mm] | no. of screws | capacity $R_{WLL}$ [kg] | | | |
|---|---|---|---|---|---|
| | | β = 0° | 0° < β ≤ 30° | 30° < β ≤ 45° | 45° < β ≤ 60° |
| **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<br>VGS screw + HUS10<br>d x L [mm] | no. of screws | capacity $R_{WLL}$ [kg] | | | |
|---|---|---|---|---|---|
| | | β = 0° | 0° < β ≤ 30° | 30° < β ≤ 45° | 45° < β ≤ 60° |
| **VGS1180<br>11 x 80** | 2 | 405 | 330 | 260 | 170 |
| | 4 | 760 | 625 | 500 | 325 |
| | 6 | 1100 | 905 | 725 | 480 |
| **VGS11100<br>11 x 100** | 2 | 540 | 430 | 335 | 215 |
| | 4 | 1010 | 810 | 645 | 415 |
| | 6 | 1455 | 1180 | 935 | 610 |
| **VGS11125<br>11 x 125** | 2 | 705 | 530 | 395 | 250 |
| | 4 | 1315 | 1010 | 765 | 485 |
| | 6 | 1895 | 1470 | 1120 | 715 |
| **VGS11150<br>11 x 150** | 2 | 870 | 620 | 450 | 280 |
| | 4 | 1625 | 1190 | 880 | 550 |
| | 6 | 2340 | 1740 | 1285 | 810 |
| **VGS11175<br>11 x 175** | 2 | 1035 | 710 | 500 | 310 |
| | 4 | 1935 | 1360 | 980 | 605 |
| | 6 | 2785 | 1995 | 1445 | 900 |
| **VGS11200<br>11 x 200** | 2 | 1200 | 790 | 550 | 335 |
| | 4 | 2240 | 1525 | 1080 | 660 |
| | 6 | 3150 | 2210 | 1580 | 980 |
| **VGS11225<br>11 x 225** | 2 | 1365 | 870 | 600 | 365 |
| | 4 | 2550 | 1685 | 1175 | 715 |
| | 6 | 3150 | 2290 | 1665 | 1050 |
| **VGS11250<br>11 x 250** | 2 | 1530 | 950 | 645 | 390 |
| | 4 | 2855 | 1840 | 1270 | 770 |
| | 6 | 3150 | 2365 | 1750 | 1115 |
| **VGS11275<br>11 x 275** | 2 | 1695 | 1025 | 690 | 415 |
| | 4 | 3150 | 1985 | 1360 | 820 |
| | 6 | 3150 | 2420 | 1825 | 1170 |
| **VGS11300<br>11 x 300** | 2 | 1805 | 1075 | 720 | 435 |
| | 4 | 3150 | 2035 | 1400 | 855 |
| | 6 | 3150 | 2420 | 1870 | 1170 |
| **VGS11325<br>11 x 325** | 2 | 1805 | 1075 | 720 | 435 |
| | 4 | 3150 | 2035 | 1400 | 855 |
| | 6 | 3150 | 2420 | 1870 | 1170 |
| **VGS11350<br>11 x 350** | 2 | 1805 | 1075 | 720 | 435 |
| | 4 | 3150 | 2035 | 1400 | 855 |
| | 6 | 3150 | 2420 | 1870 | 1170 |
| **VGS11375<br>11 x 375** | 2 | 1805 | 1075 | 720 | 435 |
| | 4 | 3150 | 2035 | 1400 | 855 |
| | 6 | 3150 | 2420 | 1870 | 1170 |
| **VGS11400<br>11 x 400** | 2 | 1805 | 1075 | 720 | 435 |
| | 4 | 3150 | 2035 | 1400 | 855 |
| | 6 | 3150 | 2420 | 1870 | 1170 |

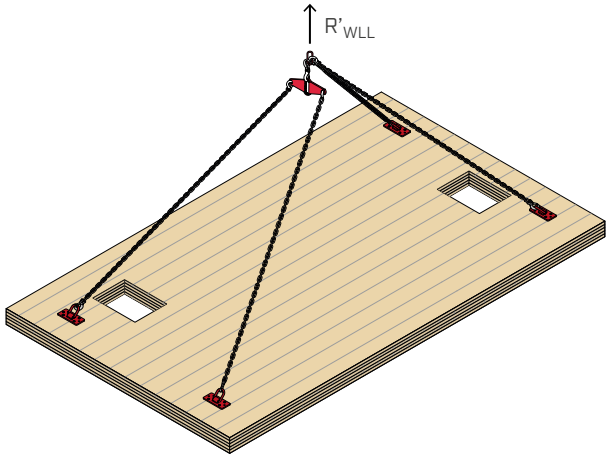
β = lifting angle

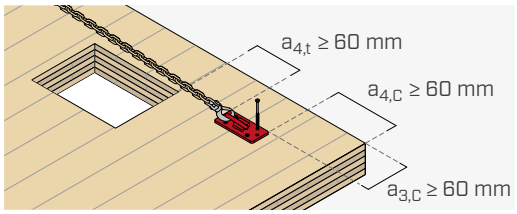
**NOTES:**

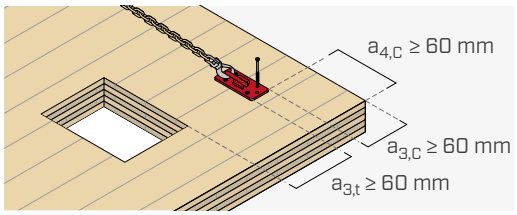
- For load capacities in Timber Frame applications refer to the rigging capacity table for "horizontal beam" considering possible reduction factors for different timber grades.
- For the calculation process a timber characteristic density ρk = 385 kg/m$^3$ has been considered.
- The load-bearing capacity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

# MINIMUM DISTANCES

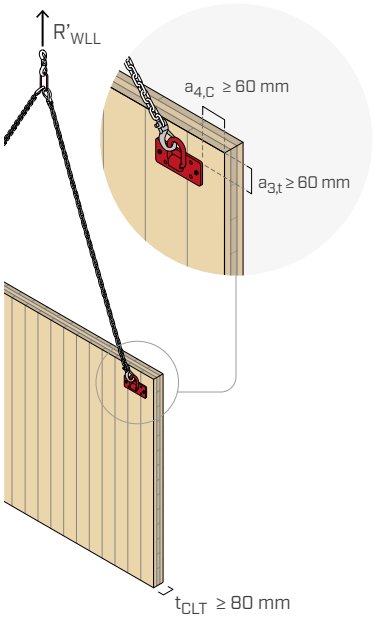
## CLT FLOOR



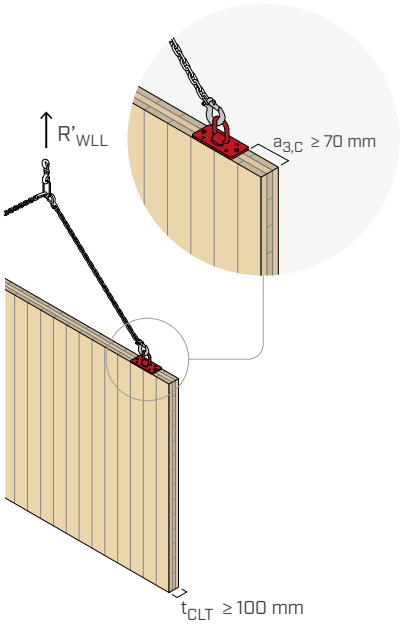



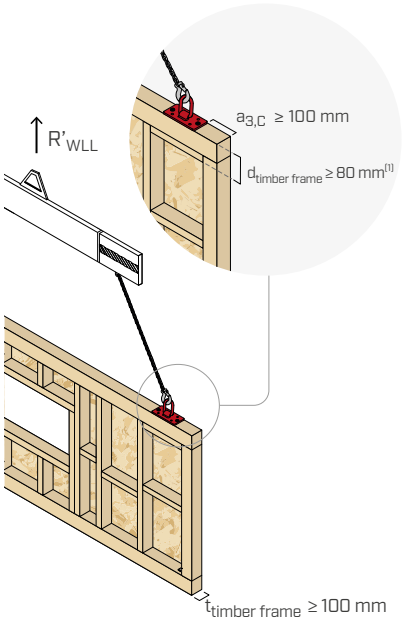

## VERTICAL CLT WALL LATERAL FACE



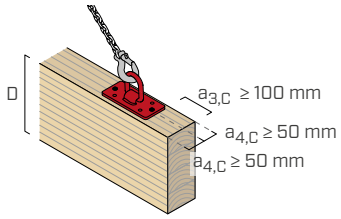

## VERTICAL CLT WALL NARROW FACE



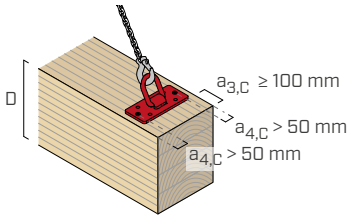

## FRAME WALL



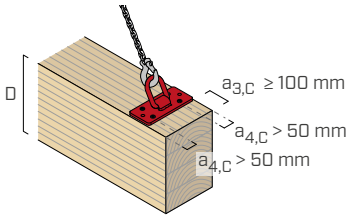

## HORIZONTAL BEAM - 0° 2 SCREW FASTENING



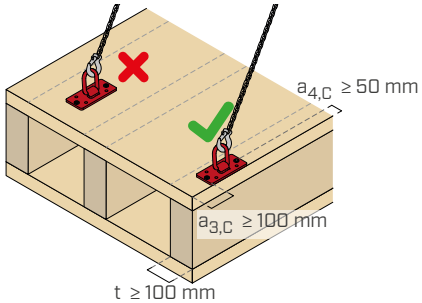

## HORIZONTAL BEAM - 90° 2 & 6 SCREW FASTENING




## HORIZONTAL BEAM - 90° 4 SCREW FASTENING




## RIBBED FLOORS

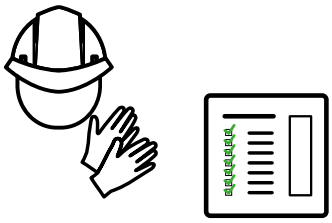



### NOTES:

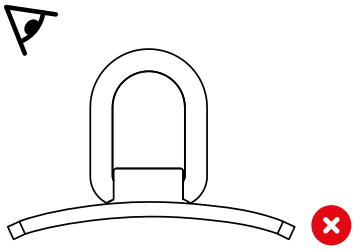
(1) For beams of reduced thickness, consider inserting a reinforcing timber element such that the minimum thickness of fixture is achieved.

- 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.

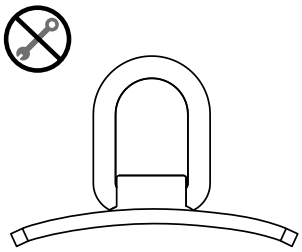
## MAINTENANCE



Always follow the instructions in the manual.



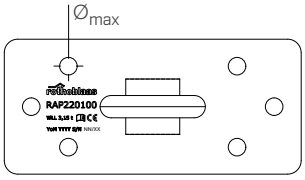
Visual inspection before each use. If there are any defects, the product must not be used again.

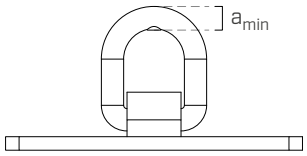


Repairs are not permitted!

### DIMENSIONS TO BE CHECKED

| CODE | $Ø_{max}$ [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 kg/m$^3$, of CLT elements equal to $\rho_k$ = 350 kg/m$^3$ was considered in the calculation. For different $\rho_k$ 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**.

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

| $\rho_{g,k}$ [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.