

PILLAR

POST-AND-SLAB CONNECTION SYSTEM

BUILDINGS ON COLUMNS

The system allows the construction of buildings with a post-and-slab system. Distance between columns up to 3,5 x 7,0 m. inside the SPIDER system is ideal for use on columns in the corners or on the perimeter of the structural grid.

COLUMN-TO-COLUMN

The steel core of the system prevents the CLT panels from being crushed and allows more than 5000 kN of vertical load to be transferred between the columns.

FIRE SAFETY

The connector is compact, allowing it to remain within the footprint of the columns and floor, providing fire protection.



USA, Canada and more design values available online.



VIDEO



SERVICE CLASS

SC1 SC2

MATERIAL

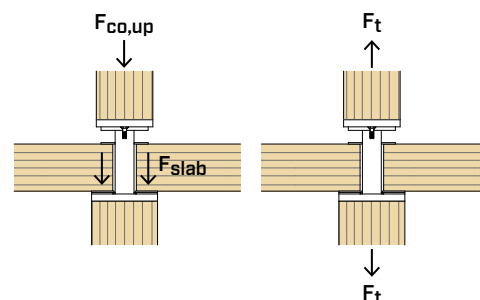
S355
Fe/Zn12c

S355 + Fe/Zn12c carbon steel

S690
Fe/Zn12c

S690 + Fe/Zn12c carbon steel

EXTERNAL LOADS



VIDEO

Scan the QR Code and watch the video on our YouTube channel



FIELDS OF USE

Multi-storey buildings with post-and-slab system. Solid timber, glulam, high density timber, CLT, LVL, steel and reinforced concrete columns.



MULTI-STOREY

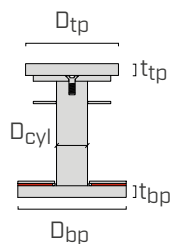
Connection system for large point-to-point compression loads on timber, concrete or steel columns. Reliable and tested on buildings with over 15 storeys.

POST BASE

Versatile and certified connection also on concrete, used at the base of the timber column. With a nut and lock nut system, the height of the support can be adjusted.

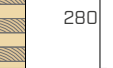
CODES AND DIMENSIONS

PILLAR CONNECTOR



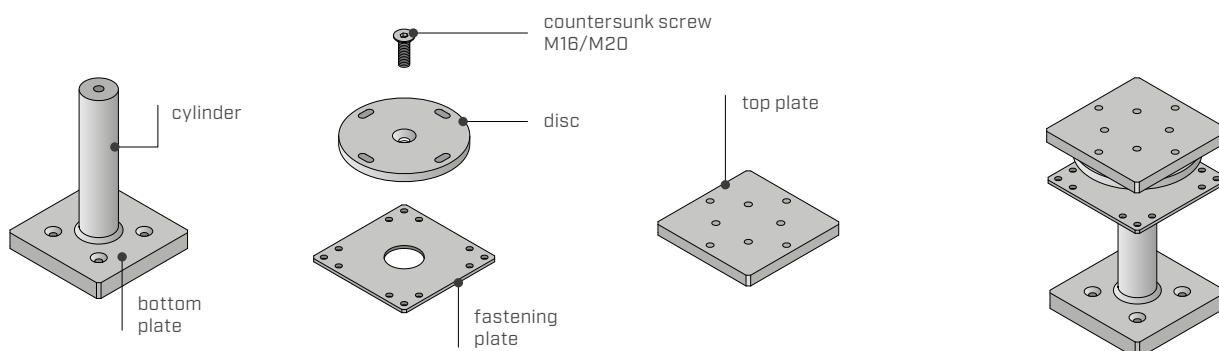
The code consists of the respective CLT panel thickness in mm ($XXX = t_{CLT}$).
Example: the **PIL80M** for CLT panels with $XXX = t_{CLT} = 200$ mm has the code **PIL80M200**.

CODE	cylinder		bottom plate		top plate		weight		pcs
	D_{cyl}		$D_{bp} \times t_{bp}$		$D_{tp} \times t_{tp}$		[kg]	[lb]	
	[mm]	[in]	[mm]	[in]	[mm]	[in]			
PIL60SXXX	60	2 3/8	200 x 30	8 x 1 3/16	200 x 20	13/16 x 13/16	26,4	58.2	1
PIL80SXXX	80	3 1/8	240 x 30	9 1/2 x 1 3/16	200 x 30	1 3/16 x 1 3/16	38,2	84.2	1
PIL80MXXX	80	3 1/8	280 x 30	11 x 1 3/16	240 x 30	1 3/16 x 1 3/16	43,7	96.3	1
PIL80LXXX	80	3 1/8	280 x 40	11 x 1 9/16	280 x 40	1 9/16 x 1 9/16	64.3	141.8	1
PIL100SXXX	100	4	240 x 30	9 1/2 x 1 3/16	240 x 20	13/16 x 13/16	42,2	93.0	1
PIL100MXXX	100	4	280 x 30	11 x 1 3/16	280 x 30	1 3/16 x 1 3/16	55,5	122.4	1
PIL120SXXX	120	4 3/4	280 x 30	11 x 1 3/16	280 x 30	1 3/16 x 1 3/16	60,3	132.9	1
PIL120MXXX	120	4 3/4	280 x 40	11 x 1 9/16	280 x 40	1 9/16 x 1 9/16	72,5	159.8	1
PIL100LXXX	100	4	280 x 20	11 x 13/16	not provided		34,7	76.5	1
PIL120LXXX	120	4 3/4	280 x 20	11 x 13/16	not provided		41,8	92.2	1

XXX = t_{CLT}						
[mm] [in]						
160	180	200	220	240	280	320
6 1/4	7 1/8	8	8 5/8	9 1/2	11	12 5/8
						

Also available for intermediate t_{CLT} thickness values not shown in the table.

Each code includes the following components:



XYLOFON WASHER (optional)

CODE	suitable for	pcs
XYLWXX60200	PIL60S	1
XYLWXX80240	PIL80S	1
XYLWXX80280	PIL80M - PIL80L	1
XYLWXX100240	PIL100S	1
XYLWXX100280	PIL100M - PIL100L	1
XYLWXX120280	PIL120S - PIL120M - PIL120L	1

The code consists of the respective XYLOFON shore (35, 50, 70, 80 or 90).
XYLOFON WASHER 35 shore for PIL80M: code **XYLW3580280**

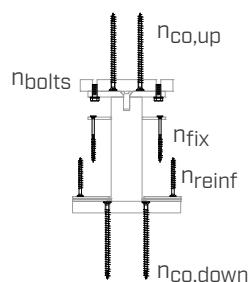
DISTRIBUTION PLATE (optional)

CODE	suitable for	pcs
SP60200	PIL60S	1
SP80240	PIL80S	1
SP80280	PIL80M - PIL80L	1
SP100240	PIL100S	1
SP100280	PIL100M - PIL100L	1
SP120280	PIL120S - PIL120M - PIL120L	1

The distribution plate is to be used only in the presence of XYLOFON WASHER + reinforcement screws.

CODES AND DIMENSIONS

NUMBER OF SCREWS FOR EACH CONNECTOR



n_{co,up}	4	VGS Ø11
n_{co,down}	4	VGS Ø11
n_{bolts}	4	SPBOLT1235 - SPROD1270
n_{fix}	12	HBS PLATE Ø8
n_{reinf}	refer to the GEOMETRY AND MATERIALS section on page 432	
		VGS Ø9

Screws and bolts not included in the package.
The n_{reinf} reinforcement screws are optional.

ADDITIONAL PRODUCTS - FASTENING

SCREWS

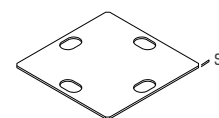
type	description		d [mm]	support	page
HBS PLATE	pan head screw		8		573
VGS	fully threaded countersunk screw		9-11		575

BOLTS - METRIC

CODE	description		d [mm]	L [mm]	SW [mm]	page
SPBOLT1235	hexagonal head bolt 8.8 DIN 933 EN 15048		M12	35	19	-
SPROD1270	threaded rod 8.8 DIN 976-1		M12	70	-	-
MUT93412	hexagonal nut class 8 DIN 934-M12		M12	-	19	178
ULS13242	DIN 125 washer		-	-	-	176

ASSEMBLY ACCESSORIES

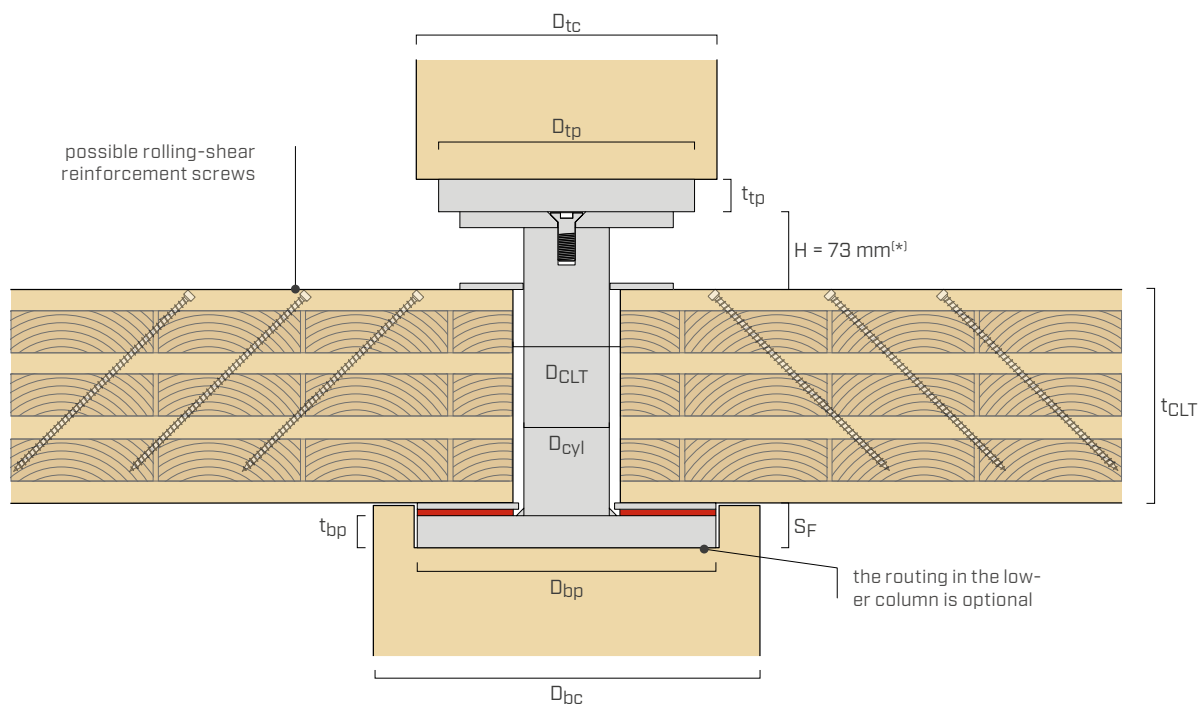
CODE	description	s [mm]	pcs
PILSHIM10	levelling shim	1	20
PILSHIM20	levelling shim	2	10



The **data sheet** complete with **structural values**
is available at www.rothoblaas.com



■ GEOMETRY AND MATERIALS



(*) In case of application without XYLOFON WASHER and distribution plate ($H = 85 \text{ mm}$). In case of application of XYLOFON alone ($H = 79 \text{ mm}$).

CONNECTOR

MODEL	bottom plate			cylinder		disc	top plate		
	$D_{bp} \times t_{bp}$ [mm]	shape	material	D_{cyl} [mm]	material		$D_{tp} \times t_{tp}$ [mm]	shape	material
PIL60S	200 x 30	□	S355	60	S355	S355	200 x 20	□	S355
PIL80S	240 x 30	□	S355	80	S355	S355	200 x 30	□	S355
PIL80M	280 x 30	□	S690	80	S355	S355	240 x 30	□	S690
PIL80L	280 x 40	□	S690	80	S355	S355	280 x 40	□	S690
PIL100S	240 x 30	□	S690	100	S355	S355	240 x 20	□	S690
PIL100M	280 x 30	□	S690	100	S355	S355	280 x 30	□	S690
PIL120S	280 x 30	□	S690	120	S355	S355	280 x 30	□	S690
PIL120M	280 x 40	□	S690	120	S355	S355	280 x 40	□	S690
PIL100L	280 x 20	□	S690	100	1,7225	S690	-	-	-
PIL120L	280 x 20	□	S690	120	1,7225	S690	-	-	-

PIL100L and PIL120L provide for fastening on steel columns without using the top plate.

COLUMNS AND CLT PANELS

MODEL	upper column	lower column		CLT panel	reinforcement (optional)			
	$D_{tc,min}$ [mm]	$D_{bc,min}$ [mm]	S_F^* [mm]		R_{screws} [mm]	n_{reinf}	central	edge
PIL60S	200	200	30	80	85	14	6	2
PIL80S	200	240	30	100	105	14	6	2
PIL80M	240	280	30	100	120	16	7	3
PIL80L	280	280	40	100	120	16	7	3
PIL100S	240	240	30	120	105	14	6	2
PIL100M	280	280	30	120	120	16	7	3
PIL120S	280	280	30	140	120	16	7	3
PIL120M	280	280	40	140	120	16	7	3
PIL100L	200	280	-	120	120	16	7	3
PIL120L	200	280	-	140	120	16	7	3

* The thickness of the S_F routing in the lower column must be increased by 6 mm when using XYLOFON WASHER and by 12 mm when using XYLOFON WASHER + distribution plate.

GEOMETRY AND MATERIALS

CHARACTERISTICS OF CLT PANELS

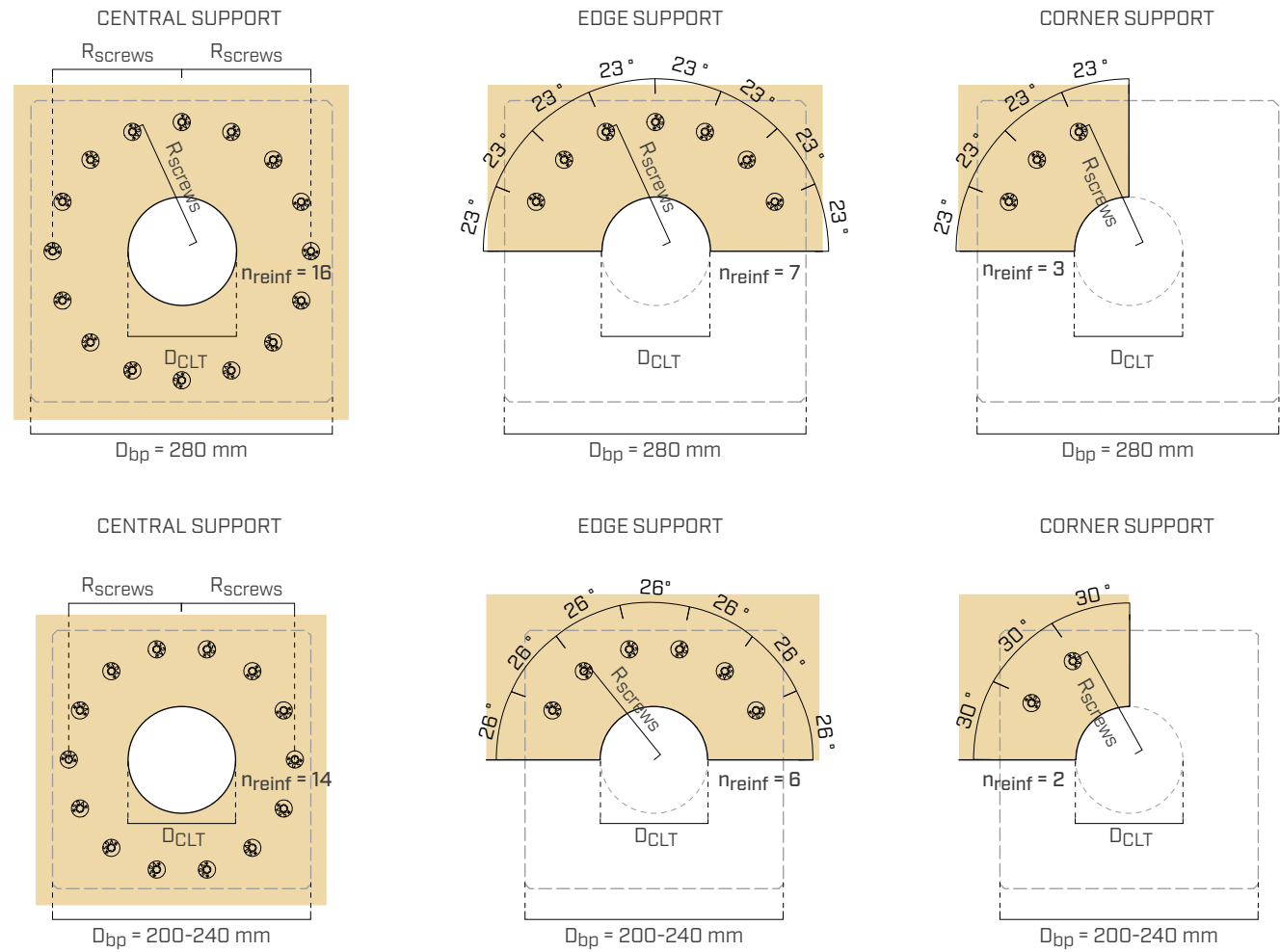
Parameter	160 mm ≤ t _{CLT}
Lamellas thickness	≤ 40 mm
Minimum strength class according to EN 338	C24/T14

REINFORCEMENT SCREWS FOR CLT PANEL

t _{CLT} [mm]	reinforcement screws (optional) [pcs - ØxL]
160	VGS Ø9x100
180	VGS Ø9x100
200	VGS Ø9x100
220	VGS Ø9x120
240	VGS Ø9x120
280	VGS Ø9x140
320	VGS Ø9x140

For intermediate panel thickness values use the length provided for the top panel.
Example: for CLT panels with thickness of 210 mm, VGS Ø9x120 reinforcement screws will be used.

REINFORCEMENT SCREWS (OPTIONAL)



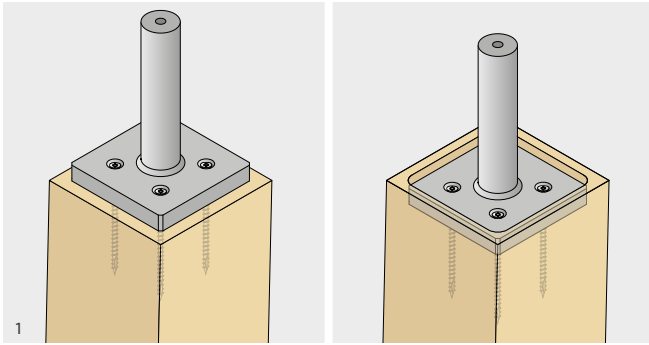
INTELLECTUAL PROPERTY

- Some PILLAR connector models are protected by the following Registered Community Designs:
 - RCD 008254353-0012;
 - RCD 008254353-0013.

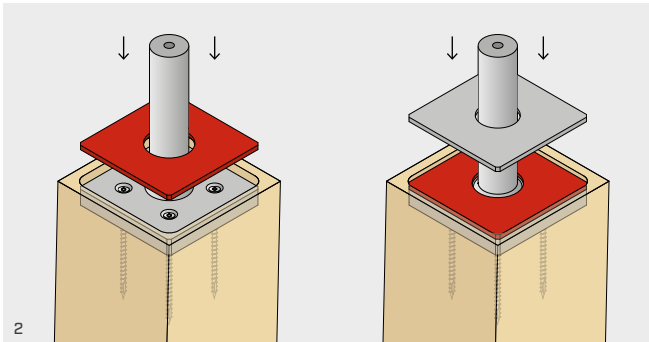
MOUNTING



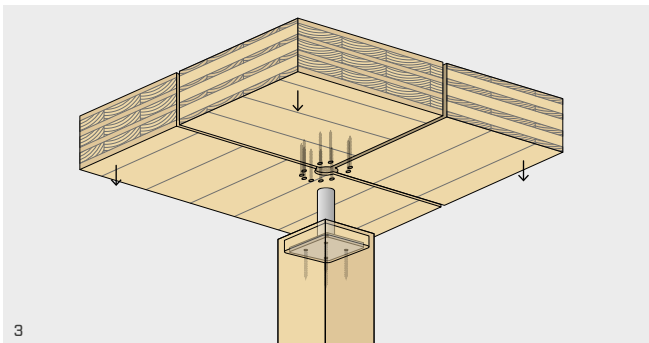
VIDEO



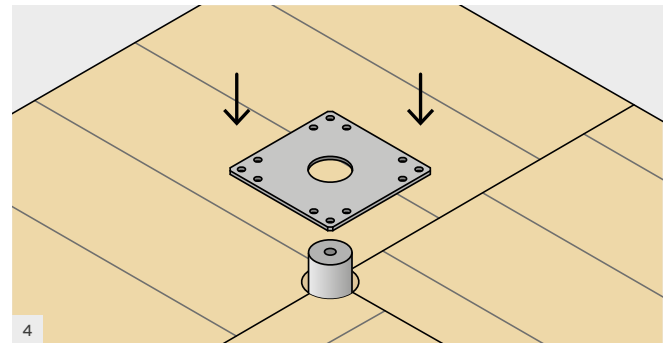
Fasten the bottom plate to the upper face of the column using the VGS Ø11 screws in accordance with the relevant installation instructions. It is possible to conceal the bottom plate in a routing prepared in the column. For installation on steel columns it is possible to use M12 countersunk head bolts. Use suitable countersunk head connectors in case of installation on reinforced concrete columns. If the cylinder and base plate are positioned horizontally, it is recommended to fix a temporary support to enable the element to be fastened on axis to the column.



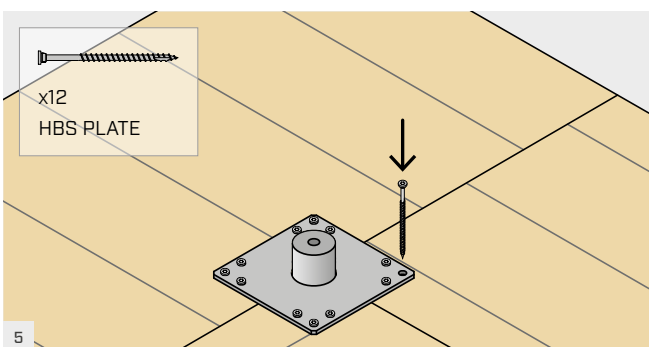
Insert the XYLOFON WASHER (optional) and/or the DISTRIBUTION PLATE (optional) on the cylinder.



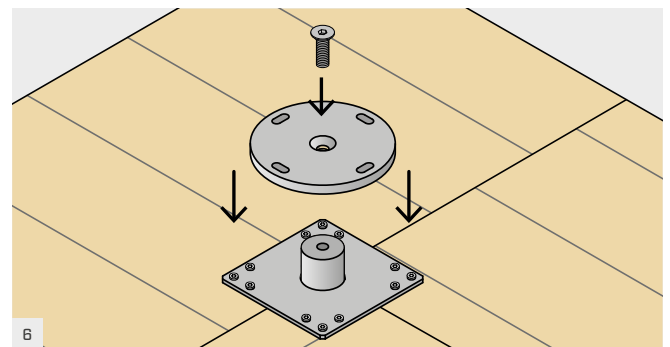
Fit pre-drilled CLT panels with a circular hole of D_{CLT} diameter onto the cylinder. A compression reinforcement can be provided to the panel bottom of beam to increase strength.



Insert the FASTENING PLATE onto the cylinder.

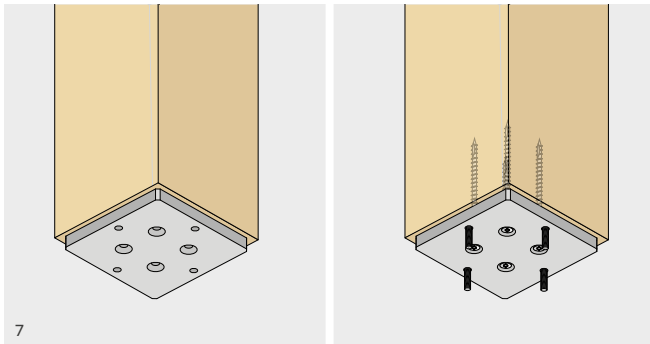


Connect the FASTENING PLATE to the CLT panels with 12 HBS PLATE 8x120 screws.

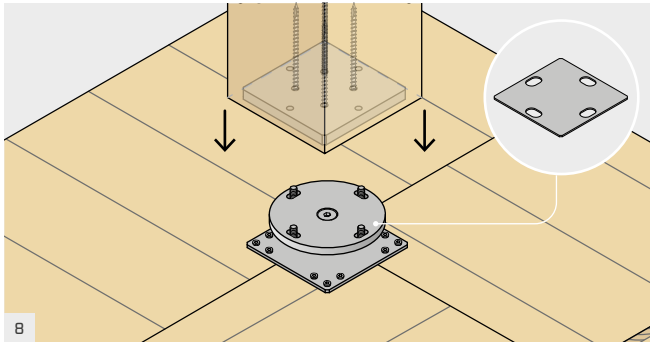


Place the DISC on the CYLINDER and fasten the countersunk head screw with a 10 or 12 mm male hexagonal wrench.

MOUNTING

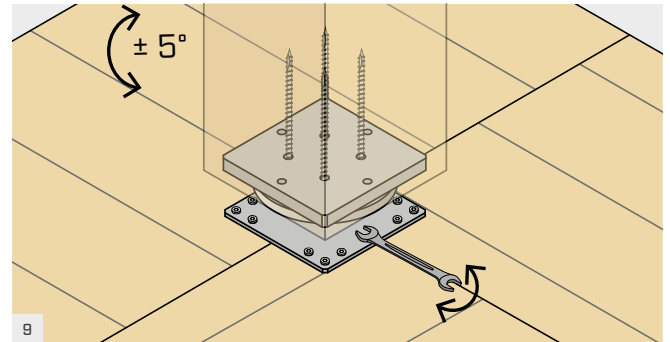


Fasten the upper plate to the lower face of the column using the VGS Ø11 screws, in accordance with the relevant installation instructions. The top plate is equipped with suitable threaded holes for fastening to the disc. If SPRODS are used, after positioning the plate on the upper column, they must be screwed in, taking care to mark the minimum pull-through length in the upper plate.



Place the upper column on the disc and fasten it using 4 SPBOLT1235 bolts with ULS125 washer. In the case of upper steel column, the upper plate must not be used and the column must be equipped with a suitable steel plate with holes for fastening the 4 SPBOLT1235 bolts.

In the event of a misalignment of the column set-up dimension, e.g. due to cutting tolerances, it is possible to compensate for this by means of the PILSHIM10 (1mm) or PILSHIM20 (2mm) shims, or a combination of these two.



The slotted holes in the hexagonal disc allow the column to be rotated $\pm 5^\circ$. Turn the column to the correct position and tighten the 4 SPBOLT1235 bolts or hex nuts of the SPRODS, using a side wrench.

CLT PANEL PRODUCTION AND INSTALLATION TOLERANCES

The connector is designed to adapt to CLT panel production and installation tolerances.

1. PRODUCTION TOLERANCE ON CLT PANEL THICKNESS

If there is any tolerance on the thickness of the CLT floor, it is absorbed by the fastening plate (area **A**), which can slide on the steel cylinder.

The total height of the PILLAR connector remains constant regardless of the CLT panel production tolerance.

2. TOLERANCE OF ± 10 mm ON THE FLOOR POSITIONING (area **B**)

