WZU

ANGLE BRACKET FOR TENSILE LOADS

COMPLETE RANGE
Available in different thicknesses. The capacity can also be increased with the inclusion of the washer, according to the loads.

CERTIFIED STRENGTH
Tensile strength values are certified by the CE marking in accordance with the ETA.

STRUTS
Ideal for the fastening of timber struts in frame structures to concrete.

CHARACTERISTICS

FOCUS	timber frame struts fastening
HEIGHT	from 90 to 480 mm
THICKNESS	from 2,0 to 4,0 mm
FASTENERS	LBA, LBS, VIN-FIX PRO

MATERIAL

Bright zinc plated carbon steel, three dimensional perforated plate.

FIELD OF USE

Timber-to-concrete and timber-to-timber tensile joints for panels and timber beams
- solid timber and glulam
- CLT, LVL
- framed structures (platform frame)
- timber based panels

TIMBER FRAME

The reduced width of the vertical flange (40 mm) facilitates installation on the struts of the frame panels.

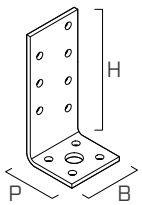
TENSION

The washer that is included in the WZU STRONG bracket packages, guarantees excellent tensile strength performance. Values are certified according to ETA.

CODES AND DIMENSIONS

WZU 90 / 155

S250 GALV



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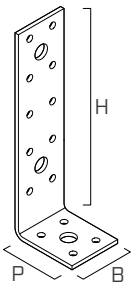

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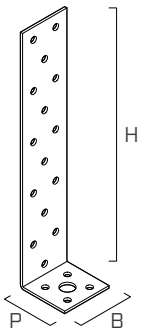
	CODE	B [mm]	P [mm]	H [mm]	s [mm]	n Ø5 pcs	n Ø11 pcs			pcs
1	**WZU090**	40	35	90	3,0	11	1	●	●	100
2	**WZU155**	40	50	155	3,0	14	3	●	●	100

WZU 200 / 300 / 400

S250 GALV



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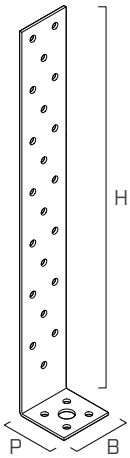

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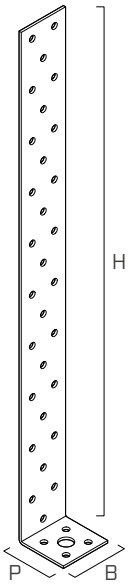

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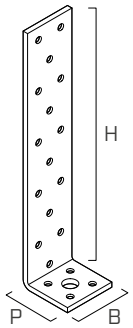

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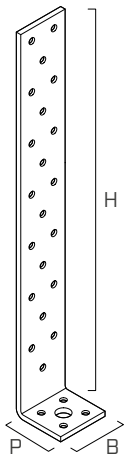

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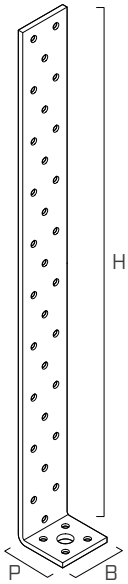

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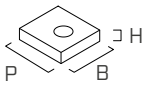

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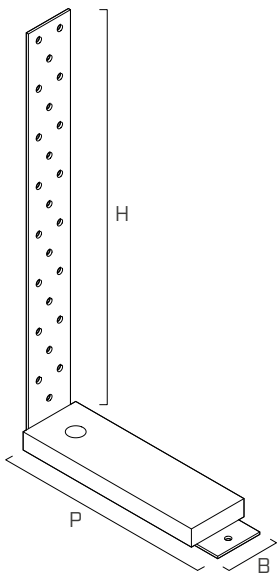
	CODE	B [mm]	P [mm]	H [mm]	s [mm]	n Ø5 pcs	n Ø14 pcs			pcs
1	**WZU2002**	40	40	200	2,0	19	1	●	●	100
2	**WZU3002**	40	40	300	2,0	25	1	●	●	50
3	**WZU4002**	40	40	400	2,0	34	1	●	●	50
4	**WZU2004**	40	40	200	4,0	19	1	●	●	50
5	**WZU3004**	40	40	300	4,0	25	1	●	●	50
6	**WZU4004**	40	40	400	4,0	34	1	●	●	25
7	**WZUW**	40	43	10	-	-	1	●	●	50

CODES AND DIMENSIONS

WZU STRONG

S250 GALV



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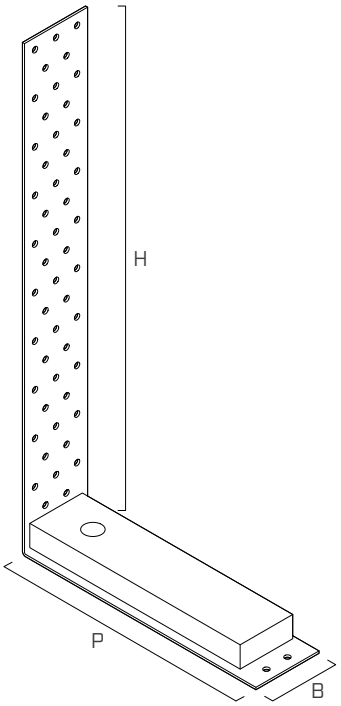

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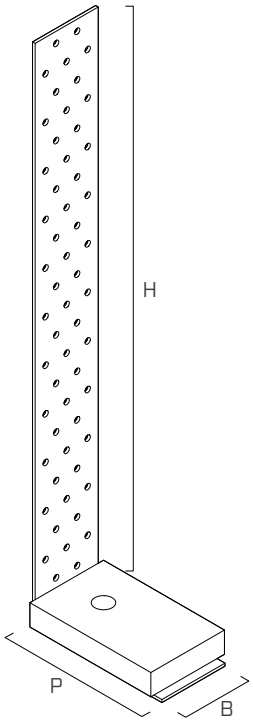

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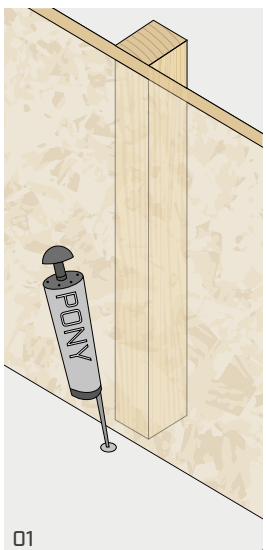
	CODE	B [mm]	P [mm]	H [mm]	s [mm]	n Ø5 pcs	n Ø13 pcs	n Ø18 pcs	n Ø22 pcs	washer*			pcs
1	**WZU342**	40	182	340	2,0	39	1	-	-	160 x 50 x 15 Ø12,5	●	●	10
2	**WZU422**	60	222	420	2,0	79	-	1	-	200 x 60 x 20 Ø16,5	●	●	10
3	**WZU482**	60	123	480	2,5	72	-	-	1	115 x 70 x 20 Ø20,5	●	●	10

* Washer included in the package

ASSEMBLY

Fastening to concrete with threaded rods and chemical anchor.



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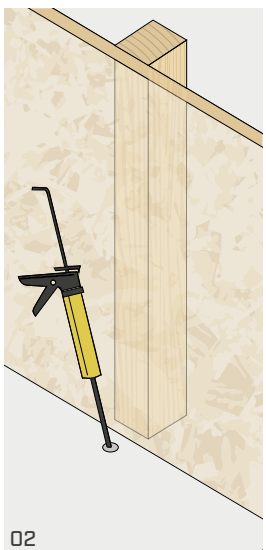
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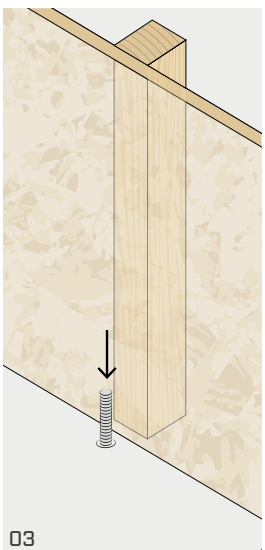
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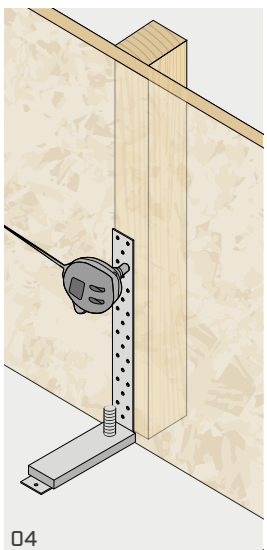
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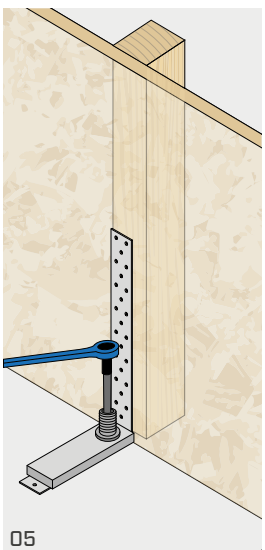
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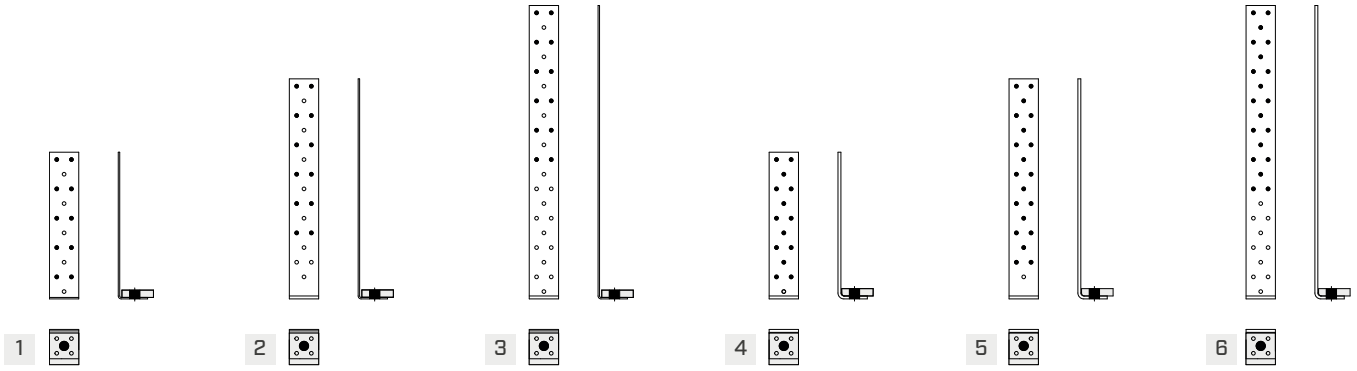
STATIC VALUES | TIMBER-TO-CONCRETE TENSILE JOINT

WZU 200/300/400 WITH WASHER*

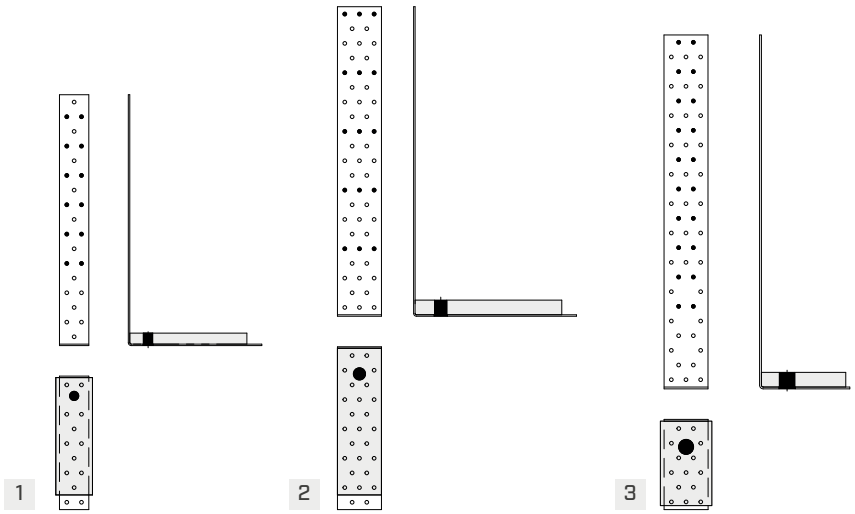


	CODE	FASTENING NUMBER			CHARACTERISTIC VALUES				
		holes fastening Ø5			$R_{1,K}$ TIMBER	$R_{1,K}$ STEEL		$R_{1,d}$ CONCRETE	
					$R_{1,k\ timber}$	$R_{1,k\ steel}$		$R_{1,d\ uncracked}$ VIN-FIX PRO[(1)]	
		type	Ø x L	n_v				Ø x L	
			[mm]	pcs	[kN]	[kN]	γ_{steel}	[mm]	[kN]
1	**WZU2002 with washer WZUW**	LBA nails	Ø4,0 x 40	10	**15,7**	**11,6**	$\gamma_{M,0}$	M12 x 180	**8,8**
			Ø4,0 x 60		**19,3**				
		LBS screws	Ø5,0 x 40		**15,7**				
			Ø5,0 x 50		**19,3**				
2	**WZU3002 with washer WZUW**	LBA nails	Ø4,0 x 40	12	**18,8**	**11,6**	$\gamma_{M,0}$	M12 x 180	**8,8**
			Ø4,0 x 60		**23,2**				
		LBS screws	Ø5,0 x 40		**18,8**				
			Ø5,0 x 50		**23,2**				
3	**WZU4002 with washer WZUW**	LBA nails	Ø4,0 x 40	12	**18,8**	**11,6**	$\gamma_{M,0}$	M12 x 180	**8,8**
			Ø4,0 x 60		**23,2**				
		LBS screws	Ø5,0 x 40		**18,8**				
			Ø5,0 x 50		**23,2**				
4	**WZU2004 with washer WZUW**	LBA nails	Ø4,0 x 40	14	**22,0**	**23,1**	$\gamma_{M,0}$	M12 x 180	**7,0**
			Ø4,0 x 60		**27,0**				
		LBS screws	Ø5,0 x 40		**22,0**				
			Ø5,0 x 50		**27,0**				
5	**WZU3004 with washer WZUW**	LBA nails	Ø4,0 x 40	20	**31,4**	**23,1**	$\gamma_{M,0}$	M12 x 180	**7,0**
			Ø4,0 x 60		**38,6**				
		LBS screws	Ø5,0 x 40		**31,4**				
			Ø5,0 x 50		**38,6**				
6	**WZU4004 with washer WZUW**	LBA nails	Ø4,0 x 40	20	**31,4**	**23,1**	$\gamma_{M,0}$	M12 x 180	**7,0**
			Ø4,0 x 60		**38,6**				
		LBS screws	Ø5,0 x 40		**31,4**				
			Ø5,0 x 50		**38,6**				

* Washer to be ordered separately

STATIC VALUES | TIMBER-TO-CONCRETE TENSILE JOINT

WZU STRONG WITH WASHER*



		FASTENING NUMBER			CHARACTERISTIC VALUES				
	CODE	holes fastening Ø5			$R_{1,K}$ TIMBER	$R_{1,K}$ STEEL		$R_{1,d}$ CONCRETE	
		type	Ø x L	n_v	$R_{1,k\ timber}$	$R_{1,k\ steel}$		$R_{1,d\ uncracked}$ VIN-FIX PRO[1] Ø x L, cl.5.8	
			[mm]	pcs	[kN]	[kN]	γ_{steel}	[mm]	[kN]
1	**WZU342**	LBA nails	Ø 4,0 x 40	12	**18,8**	**11,60**	$\gamma_{M,0}$	M12 x 180	**23,2**
			Ø 4,0 x 60		**23,2**				
		LBS screws	Ø 5,0 x 40		**18,8**				
			Ø 5,0 x 50		**23,2**				
2	**WZU422**	LBA nails	Ø 4,0 x 40	15	**23,6**	**17,30**	$\gamma_{M,0}$	M16 x 190	**29,1**
			Ø 4,0 x 60		**29,0**				
		LBS screws	Ø 5,0 x 40		**23,6**				
			Ø 5,0 x 50		**29,0**				
3	**WZU482**	LBA nails	Ø 4,0 x 40	20	**31,4**	**21,70**	$\gamma_{M,0}$	M20 x 240	**37,9**
			Ø 4,0 x 60		**38,6**				
		LBS screws	Ø 5,0 x 40		**31,4**				
			Ø 5,0 x 50		**38,6**				

* Washer included in the package

NOTES:

[1] Precut INA threaded rod, with nut and washer.

GENERAL PRINCIPLES:

- Characteristic values are consistent with EN 1995-1-1 and in accordance with ETA.
- The design values are obtained from the characteristic values as follows:

$$R_d = min \begin{cases} \frac{R_{k,\ timber} \cdot k_{mod}}{\gamma_M} \\ \frac{R_{k,\ steel}}{\gamma_{steel}} \\ R_{d,\ concrete} \end{cases}$$

Coefficients γ_{steel}, γ_M and k_{mod} shall be taken depending on the applicable regulation used for the calculation.

- The calculation process used a timber characteristic density of $\rho_k = 350\ kg/m^3$ and C25/30 concrete with a thin reinforcing layer, minimum thickness of 240 mm, where edge-distance is not a limiting factor.
- Dimensioning and verification of timber and concrete elements must be carried out separately.
- The strength values of the connection system are valid under the calculation hypotheses listed in the table; for different boundary conditions (e.g. minimum edge distances) shall be verified.