

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.

TIMBER FRAME

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

SERVICE CLASS

SC1 SC2

MATERIAL

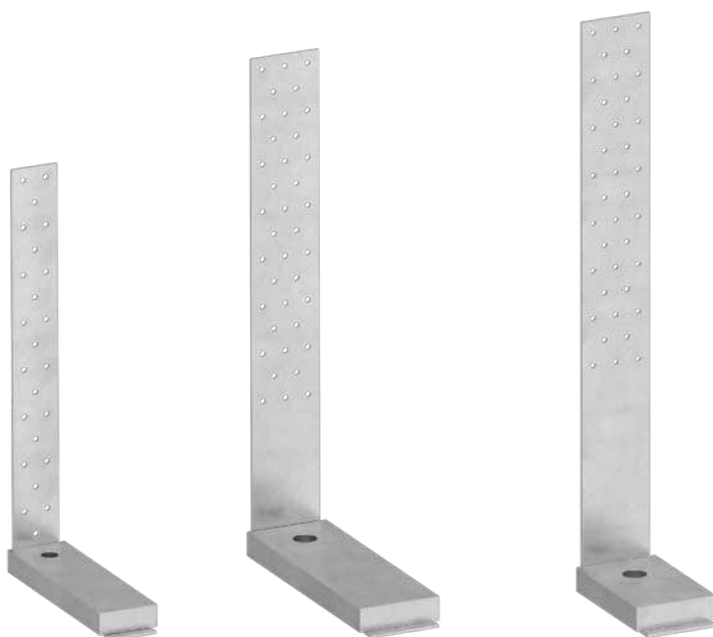
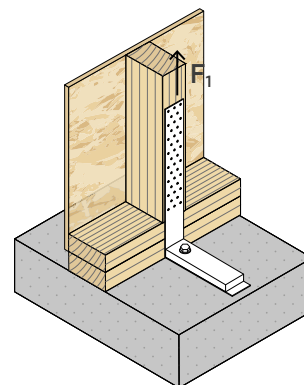
S250
Z275

WZU: S250GD + Z275 carbon steel

S235
Fe/Zn12c

WZUW: S235 + Fe/Zn12c carbon steel

EXTERNAL LOADS



FIELDS OF USE

Tension joints with small to medium stress.
Optimised for fastening frame walls.
Timber-to-timber, timber-to-concrete and timber-to-steel configurations.

Can be applied to:

- solid timber and glulam
- timber frame
- CLT and LVL panels



TIMBER FRAME

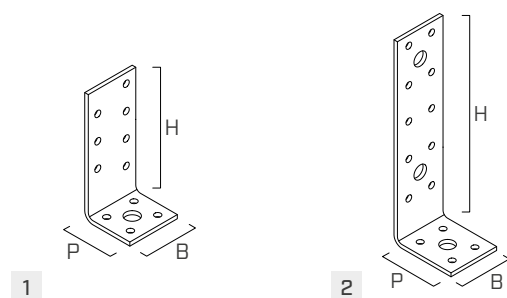
The reduced width of the vertical flange (40 mm) facilitates installation on the studs of the frame panels.

TENSION

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

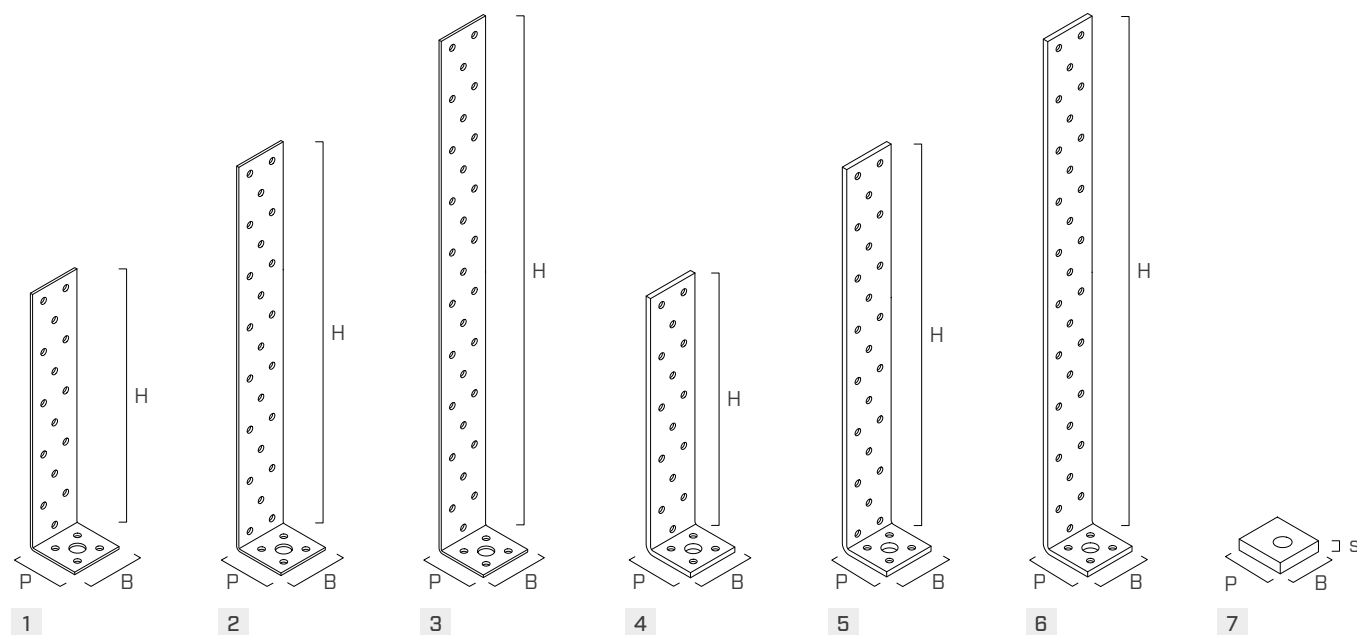
CODES AND DIMENSIONS

WZU 90 / 155



CODE	B [mm]	P [mm]	H [mm]	s [mm]	B [in]	P [in]	H [in]	s [in]	n Ø5 n Ø0.20 [pcs]	n Ø11 n Ø0.44 [pcs]	n Ø13 n Ø0.52 [pcs]			pcs
1 WZU090	40	35	90	3,0	1 9/16	1 3/8	3 1/2	0.12	11	1	-	●	●	100
2 WZU155	40	50	155	3,0	1 9/16	1 15/16	6 1/8	0.12	14	-	3	●	●	100

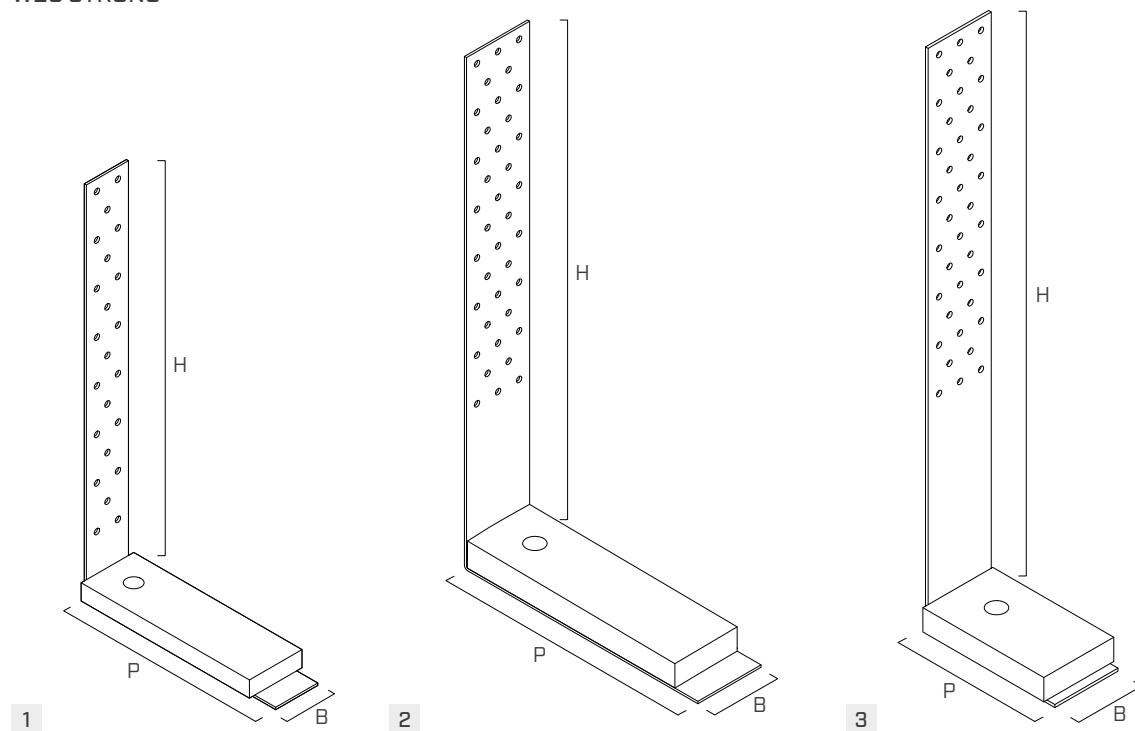
WZU 200 / 300 / 400



CODE	B [mm]	P [mm]	H [mm]	s [mm]	B [in]	P [in]	H [in]	s [in]	n Ø5 n Ø0.20 [pcs]	n Ø14 n Ø0.44 [pcs]			pcs
1 WZU2002	40	40	200	2,0	1 9/16	1 9/16	8	0.08	19	1	●	●	100
2 WZU3002	40	40	300	2,0	1 9/16	1 9/16	11 3/4	0.08	27	1	●	●	50
3 WZU4002	40	40	400	2,0	1 9/16	1 9/16	15 3/4	0.08	34	1	●	●	50
4 WZU2004	40	40	200	4,0	1 9/16	1 9/16	8	0.16	19	1	●	●	50
5 WZU3004	40	40	300	4,0	1 9/16	1 9/16	11 3/4	0.16	27	1	●	●	50
6 WZU4004	40	40	400	4,0	1 9/16	1 9/16	15 3/4	0.16	34	1	●	●	25
7 WZUW	40	43	-	10	1 9/16	1 11/16	-	0.39	-	1	●	●	50

CODES AND DIMENSIONS

WZU STRONG

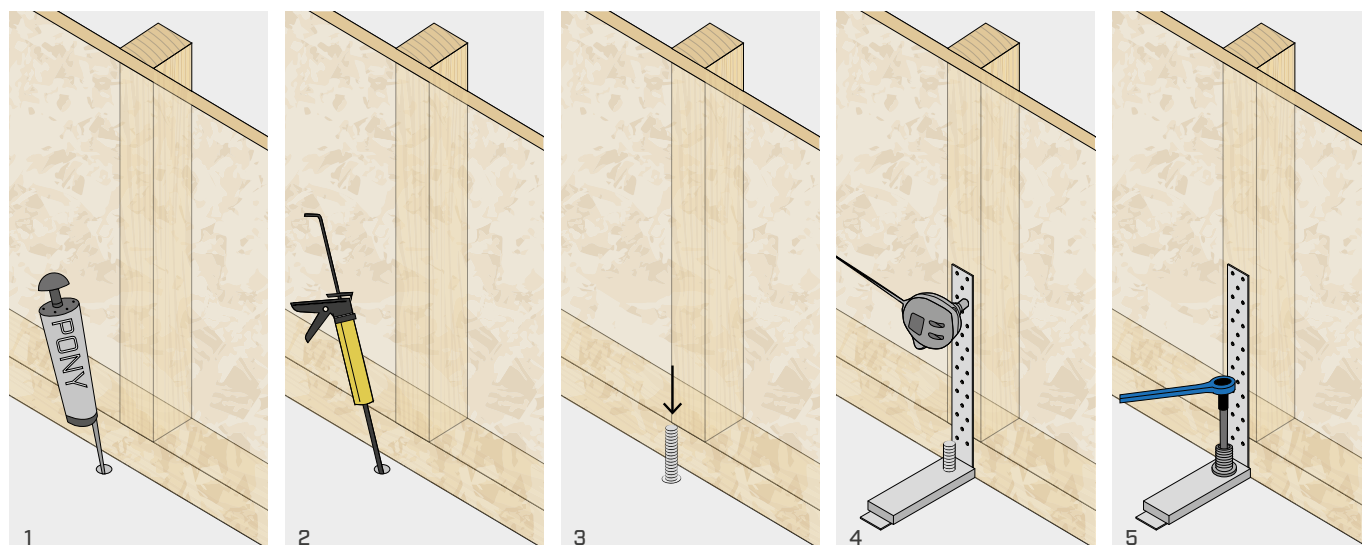


CODE	B [mm] [in]	P [mm] [in]	H [mm] [in]	s [mm] [in]	n Ø5 n Ø.20 [pcs]	n Ø13 n Ø0.52 [pcs]	n Ø18 n Ø0.71 [pcs]	n Ø22 n Ø0.87 [pcs]	washer*			pcs
1 WZU342	40 1 9/16	182 7 3/16	340 13 3/8	2,0 0.08	23	1	-	-	160 x 50 x 15 Ø12,5 6 1/4 x 1 15/16 x 9/12 Ø0.49			10
2 WZU422	60 2 3/8	222 8 3/4	420 16 9/16	2,0 0.08	38	-	1	-	200 x 60 x 20 Ø16,5 8 x 2 3/8 x 13/16 Ø0.65			10
3 WZU482	60 2 3/8	123 4 13/16	480 19	2,5 0.10	38	-	-	1	115 x 70 x 20 Ø20,5 4 1/2 x 2 3/4 x 13/16 Ø0.81			10

*Washer included in the package.

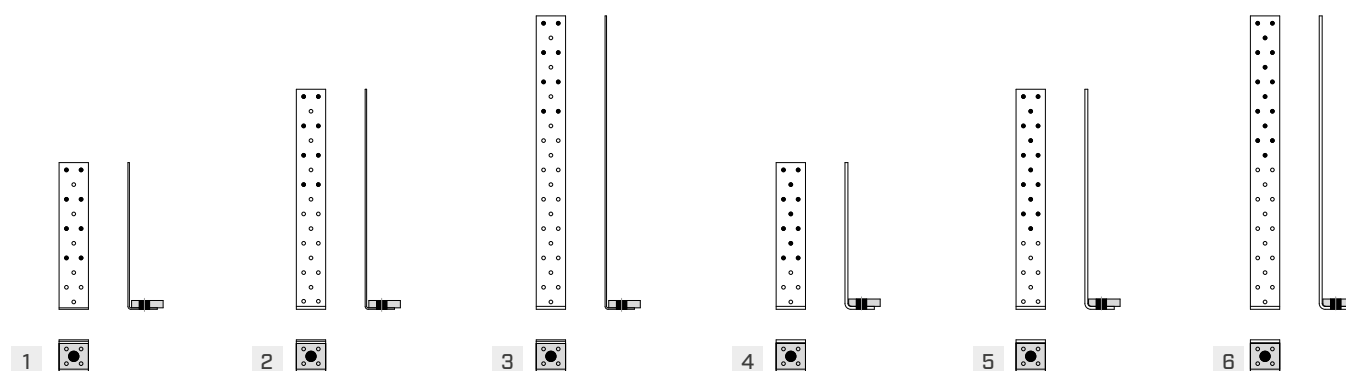
MOUNTING

Fastening to concrete with threaded rods and chemical anchor.



STRUCTURAL VALUES | TIMBER-TO-CONCRETE TENSILE JOINT

WZU 200/300/400 WITH WASHER*



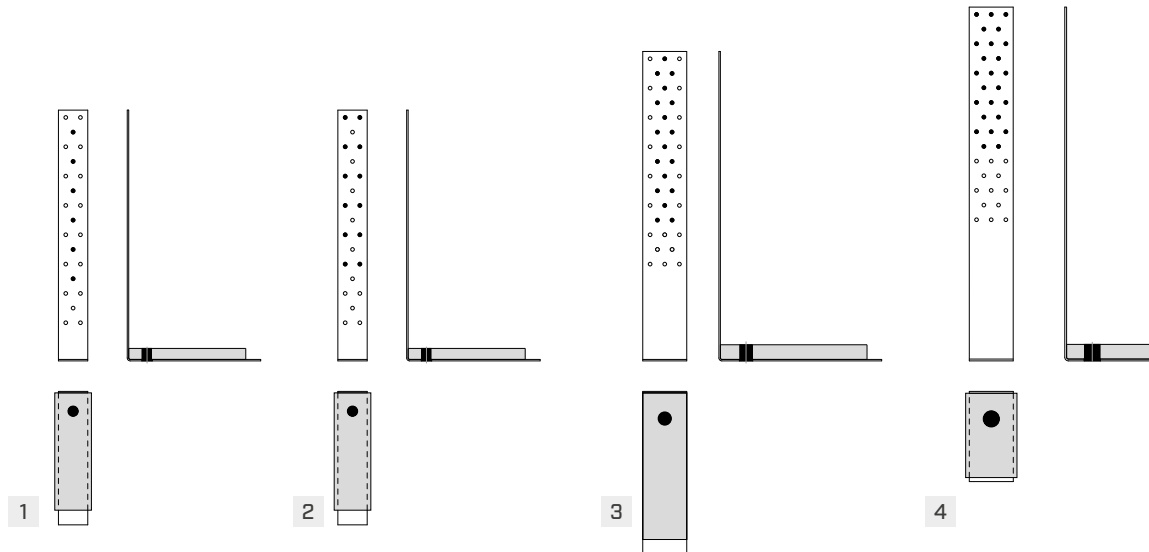
CODE	fastening holes Ø5			TIMBER	STEEL		CONCRETE	
	type	Ø x L [mm]	n _y pcs	R _{1,k} timber	R _{1,k} steel		R _{1,d} uncracked VIN-FIX ⁽¹⁾	
				[kN]	[kN]	γ _{steel}	Ø x L, cl.5.8 [mm]	[kN]
1 WZU2002 + WZUW	LBA	Ø4 x 40 Ø4 x 60	8	12,6 15,4	11,6	γ _{M0}	M12 x 195	8,8
	LBS	Ø5 x 40 Ø5 x 50		12,6 15,4				
2 WZU3002 + WZUW	LBA	Ø4 x 40 Ø4 x 60	8	12,6 15,4	11,6	γ _{M0}	M12 x 195	8,8
	LBS	Ø5 x 40 Ø5 x 50		12,6 15,4				
3 WZU4002 + WZUW	LBA	Ø4 x 40 Ø4 x 60	8	12,6 15,4	11,6	γ _{M0}	M12 x 195	8,8
	LBS	Ø5 x 40 Ø5 x 50		12,6 15,4				
4 WZU2004 + WZUW	LBA	Ø4 x 40 Ø4 x 60	11	17,3 21,2	23,1	γ _{M0}	M12 x 195	7,0
	LBS	Ø5 x 40 Ø5 x 50		17,3 21,2				
5 WZU3004 + WZUW	LBA	Ø4 x 40 Ø4 x 60	15	23,6 28,9	23,1	γ _{M0}	M12 x 195	7,0
	LBS	Ø5 x 40 Ø5 x 50		23,6 28,9				
6 WZU4004 + WZUW	LBA	Ø4 x 40 Ø4 x 60	15	23,6 28,9	23,1	γ _{M0}	M12 x 195	7,0
	LBS	Ø5 x 40 Ø5 x 50		23,6 28,9				

^(*)Washer to be ordered separately.

⁽¹⁾ Precut INA threaded rod, with nut and washer. VIN-FIX chemical anchor according to ETA-20/0363.

STRUCTURAL VALUES | TIMBER-TO-CONCRETE TENSILE JOINT

WZU STRONG WITH WASHER*



CODE	fastening holes Ø5			TIMBER	STEEL		CONCRETE	
	type	Ø x L [mm]	n _V pcs	R _{1,k} timber	R _{1,k} steel		R _{1,d} uncracked VIN-FIX ⁽¹⁾	
				[kN]	[kN]	γ _{steel}	Ø x L, cl.5.8 [mm]	[kN]
1 WZU342	LBA	Ø4 x 40 Ø4 x 60	6	9,4 11,6	11,6	γ _{M0}	M12 x 195	22,5
	LBS	Ø5 x 40 Ø5 x 50		9,4 11,6				
2 WZU342	LBA	Ø4 x 40 Ø4 x 60	12	18,8 23,2	11,6	γ _{M0}	M12 x 195	22,5
	LBS	Ø5 x 40 Ø5 x 50		18,8 23,2				
3 WZU422	LBA	Ø4 x 40 Ø4 x 60	18	22,0 27,0	17,3	γ _{M0}	M16 x 195	29,3
	LBS	Ø5 x 40 Ø5 x 50		22,0 27,0				
4 WZU482	LBA	Ø4 x 40 Ø4 x 60	25	39,3 48,3	21,7	γ _{M0}	M20 x 245	38,6
	LBS	Ø5 x 40 Ø5 x 50		39,3 48,3				

(*) Washer to be ordered separately.

(1) Precut INA threaded rod, with nut and washer. VIN-FIX chemical anchor according to ETA-20/0363.

GENERAL PRINCIPLES

- Characteristic values are consistent with EN 1995:2014 and in accordance with ETA.
- Design values can be obtained from characteristic values as follows:

$$R_d = \min \left\{ \begin{array}{l} \frac{R_{k, \text{timber}} \cdot k_{mod}}{\gamma_M} \\ \frac{R_{k, \text{steel}}}{\gamma_{M0}} \\ R_{d, \text{concrete}} \end{array} \right.$$

The coefficients k_{mod} , γ_M and γ_{M0} should be taken according to the current regulations used for the calculation.

- The calculation process used a timber characteristic density of $\rho_k = 350 \text{ kg/m}^3$ 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 hypothesis listed in the table; for different boundary conditions (e.g. minimum edge distances) shall be verified.