Declaration of Performance, DoP 701.2/2013

(Version 2)

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1. Product type: Paslode angle brackets

2. Identification: V1, V1Ø7, V2, V2PL, V2 Stainless, V2Ø7, V3, V4, V4PL, V4 Stainless, V6, V7, V7PL, V8, V10, 2,5mm, V10, V12, V13, V14, V15, V17, V18, V20, V21, V26, V27, V170, LV1, P4, P1-8, P1-10, P1-12, P2-10, P2-12, 1-75, 1-100, 1-150, K4, PHV, PHK, AP 60-60

3. Intended use: For load-bearing of various structures

4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant to Article 11(5):

   SIMA Industri ApS
   Industrivej Nord 40
   DK-7490 Aulum

5. Authorised representative: N/A

6. System of assessment: 2+

7. Notified body / Test laboratory:

   Dancert A/S
   no. 1073
   Gregersensvej 4
   DK-2630 Taastrup

   performed under system 2+

8. For the angle brackets a European Technical Assessment has been issued:

   DS Certificering A/S, ETA-Danmark, Göteborg Plads 1, DK-2150 Nordhavn issued ETA-07/0212 performed under system 2+ and issued 2015-08-30.

9. Declared performance:

   Notes to the table:

   Characteristic values are calculated and declared according to ETA-07/0212 and ETA-09/0324.

10. The performance of the products is in conformity with the declared performance in point 9.

    This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.

    Signed for and on behalf of the manufacturer by:

    Flemming Sørensen
    QHSE Manager

    Middelfart, 2018-04-25

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Item	Height [mm]	Length [mm]	Thickness [mm]	Width [mm]	Corrosion protection	Service class	Material	Steel standard	Fastener	Declared values according to ETA 07/0212					
										Characteristic values					
										Values have been only been modified with k_{mod} not γ_M					
										Load duration k_{mod}	Upward $f_{1,k}$ [kN]	Sideward $f_{2,k} = f_{3,k}$ [kN]	Backward $f_{4,k}$ [kN]	Forward $f_{5,k}$ [kN]	Maximum $f_{5,k,max}$ [kN]
ANGLES *Empty cells occur when there is no value in the ETA*															
V1	89	89	2,5	65	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	2,03	4,40	0,47*(29,6+b)/e	= f4,k	5,36
									4,0x40	L - load	2,37	5,13	0,55*(29,6+b)/e	= f4,k	6,25
									8 Nails	M - load	2,70	5,86	0,62*(29,6+b)/e	= f4,k	7,14
									Wood	S - load	3,04	6,60	0,70*(29,6+b)/e	= f4,k	8,04
									8 Nails	I - load	3,72	8,06	0,86*(29,6+b)/e	= f4,k	9,82
									Wood	Characteristic	3,38	7,33	0,78*(29,6+b)/e	= f4,k	8,93
									2 brackets	P - load	4,07	4,40	0,47*(29,6+b)/e	= f4,k	8,04
									4,0x40	L - load	4,75	5,13	0,55*(29,6+b)/e	= f4,k	6,25
									8 Nails	M - load	5,42	5,86	0,64*(29,6+b)/e	= f4,k	7,14
									Wood	S - load	6,10	6,60	0,72*(29,6+b)/e	= f4,k	8,04
									12 Nails	I - load	7,46	8,06	0,96*(29,6+b)/e	= f4,k	9,82
									Wood	Characteristic	6,78	7,33	0,78*(29,6+b)/e	= f4,k	13,4
									2 brackets	P - load	4,07	6,31	0,47*(29,6+b)/e	= f4,k	12,05
									4,0x40	L - load	4,75	7,36	0,55*(29,6+b)/e	= f4,k	14,06
									12 Nails	M - load	5,42	8,42	0,62*(29,6+b)/e	= f4,k	16,06
									Wood	S - load	6,10	9,47	0,70*(29,6+b)/e	= f4,k	18,07
									18 Nails	I - load	7,46	11,57	0,86*(29,6+b)/e	= f4,k	22,09
									Wood	Characteristic	6,78	10,52	0,78*(29,6+b)/e	= f4,k	20,08
									2 brackets	P - load	3,78	4,40	0,87*(15,9+b)/e	= f4,k	5,36
									4,0x60	L - load	4,41	5,13	0,55*(15,9+b)/e	= f4,k	6,25
									8 Nails	M - load	5,04	5,86	0,62*(15,9+b)/e	= f4,k	7,14
									Wood	S - load	5,67	6,60	0,70*(15,9+b)/e	= f4,k	8,04
									8 Nails	I - load	6,93	8,06	0,86*(15,9+b)/e	= f4,k	9,82
									Wood	Characteristic	6,3	7,33	1,45*(15,9+b)/e	= f4,k	8,93
									2 brackets	P - load	5,01	4,40	0,87*(15,9+b)/e	= f4,k	8,04
									4,0x60	L - load	5,85	5,13	0,55*(15,9+b)/e	= f4,k	9,38
									8 Nails	M - load	6,68	5,86	0,62*(15,9+b)/e	= f4,k	10,72
									Wood	S - load	7,52	6,60	0,70*(15,9+b)/e	= f4,k	12,06
									12 Nails	I - load	9,19	8,06	0,86*(15,9+b)/e	= f4,k	14,74
									Wood	Characteristic	8,36	7,33	1,45*(15,9+b)/e	= f4,k	13,4
									2 brackets	P - load	6,78	6,31	0,87*(15,9+b)/e	= f4,k	12,05
									4,0x60	L - load	7,91	7,36	1,02*(15,9+b)/e	= f4,k	14,06
									12 Nails	M - load	9,04	8,41	1,16*(15,9+b)/e	= f4,k	16,06
									Wood	S - load	10,17	9,46	1,31*(15,9+b)/e	= f4,k	18,08
									18 Nails	I - load	12,43	11,56	1,60*(15,9+b)/e	= f4,k	22,10
									Wood	Characteristic	11,3	10,51	1,45*(15,9+b)/e	= f4,k	20,09
									2 brackets	P - load	2,45	19,24			
									4,0x40	L - load	2,86	22,44			
									10 Nails	M - load	3,26	25,65			
									Wood	S - load	3,67	28,85			
									6 bolts	I - load	4,49	35,27			
									Concrete	Characteristic	4,08	32,06			
									1 bracket	P - load			25,4/e, max 20,63	1,85*(2,5+b)/e	1,07
									4,0x40	L - load			25,4/e, max 20,63	2,16*(2,5+b)/e	1,25
									5 nails	M - load			25,4/e, max 20,63	2,47*(2,5+b)/e	1,42
									Wood	S - load			25,4/e, max 20,63	2,78*(2,5+b)/e	1,60
									3 bolts	I - load			25,4/e, max 20,63	3,4*(2,5+b)/e	1,96
									Concrete	Characteristic			25,4/e, max 20,63	3,09*(2,5+b)/e	1,78

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Item	Height [mm]	Length [mm]	Thickness [mm]	Width [mm]	Corrosion protection	Service class	Material	Steel standard	Fastener	Declared values according to ETA 07/0212					
										Characteristic values					
										Values have been only been modified with k_{mod} not γ_M					
										Load duration k_{mod}	Upward $f_{1,k}$ [kN]	Sideward $f_{2,k} = f_{3,k}$ [kN]	Backward $f_{4,k}$ [kN]	Forward $f_{5,k}$ [kN]	Maximum $f_{5,k,max}$ [kN]
V1Ø7	90	90	2,5	65	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	1,87	0,49	0,93*(2,5+b)/e	= f4,k	1,87
									M6	L - load	2,18	0,57	1,09*(2,5+b)/e	= f4,k	2,18
									4 bolts	M - load	2,49	0,66	1,24*(2,5+b)/e	= f4,k	2,49
									Wood	S - load	2,80	0,74	1,40*(2,5+b)/e	= f4,k	2,80
									8 bolts	I - load	3,42	0,90	1,71*(2,5+b)/e	= f4,k	3,42
									Wood	Characteristic	3,11	0,81	1,55*(2,5+b)/e	= f4,k	3,11
V2 / V2PL	90	90	2,5 /1,5	65	Z275MA	1-2	S250GD / S350GD	EN 10346	2 brackets	P - load	5,58	8,52	2,10*(41,1+b)/e	= f4,k	9,06
									4,0x40	L - load	6,51	9,94	2,45*(41,1+b)/e	= f4,k	10,57
									16 Nails	M - load	7,44	11,36	2,80*(41,1+b)/e	= f4,k	12,08
									Wood	S - load	8,37	12,78	3,15*(41,1+b)/e	= f4,k	13,59
									20 Nails	I - load	10,23	15,62	3,85*(41,1+b)/e	= f4,k	16,61
									Wood	Characteristic	9,3	14,2	3,50*(41,1+b)/e	= f4,k	15,10
									2 brackets	P - load	4,07	4,33	0,94*(65+b)/e	= f4,k	5,36
									4,0x60	L - load	4,75	5,05	1,09*(65+b)/e	= f4,k	6,25
									8 Nails	M - load	5,42	5,78	1,25*(65+b)/e	= f4,k	7,14
									Wood	S - load	6,10	6,50	1,40*(65+b)/e	= f4,k	8,04
									8 Nails	I - load	7,46	7,94	1,72*(65+b)/e	= f4,k	9,82
									Wood	Characteristic	6,78	7,22	1,56*(65+b)/e	= f4,k	8,93
									2 brackets	P - load	7,33	7,98	1,69*(47,5+b)/e	= f4,k	10,72
									4,0x60	L - load	8,55	9,31	1,97*(47,5+b)/e	= f4,k	12,50
									16 Nails	M - load	9,78	10,64	2,25*(47,5+b)/e	= f4,k	14,29
									Wood	S - load	11,00	11,97	2,53*(47,5+b)/e	= f4,k	16,07
									16 Nails	I - load	13,44	14,63	3,09*(47,5+b)/e	= f4,k	19,65
									Wood	Characteristic	12,22	13,30	2,81*(47,5+b)/e	= f4,k	17,86
									2 brackets	P - load	9,66	8,52	2,10*(41,1+b)/e	= f4,k	9,06
									4,0x40	L - load	11,27	9,94	2,45*(41,1+b)/e	= f4,k	10,57
									16 Nails	M - load	12,88	11,36	2,80*(41,1+b)/e	= f4,k	12,08
									Wood	S - load	14,49	12,78	3,15*(41,1+b)/e	= f4,k	13,59
									20 Nails	I - load	17,71	15,62	3,85*(41,1+b)/e	= f4,k	16,61
									Wood	Characteristic	16,10	14,20	3,50*(41,1+b)/e	= f4,k	15,10
									1 bracket	P - load	1,75	2,87	25,4/e, max 6,408	6,41*(b+37,5)/e	1,75
									4,0x60	L - load	2,04	3,35	25,4/e, max 7,476	7,48*(b+37,5)/e	2,04
									8 Nails	M - load	2,34	3,82	25,4/e, max 8,544	8,55*(b+37,5)/e	2,34
									Wood	S - load	2,63	4,30	25,4/e, max 9,612	9,62*(b+37,5)/e	2,63
									10 Nails	I - load	3,21	5,26	25,4/e, max 11,75	11,76*(b+37,5)/e	3,21
									Wood	Characteristic	2,91	4,78	25,4/e, max 10,68	10,69*(b+37,5)/e	2,92
									2 brackets	P - load	0,76	5,17			
									4,0x60	L - load	0,89	6,03			
									16 Nails	M - load	1,02	6,90			
									Wood	S - load	1,14	7,76			
									2 bolts	I - load	1,40	9,48			
									Concrete	Characteristic	1,27	8,62			
									1 bracket	P - load			25,4/e, max 20,63	1,53*(b+2,5)/e	1,22
									4,0x40	L - load			25,4/e, max 20,63	1,79*(b+2,5)/e	1,42
									8 Nails	M - load			25,4/e, max 20,63	2,04*(b+2,5)/e	1,62
									Wood	S - load			25,4/e, max 20,63	2,3*(b+2,5)/e	1,83
									1 bolt	I - load			25,4/e, max 20,63	2,81*(b+2,5)/e	2,23
									Concrete	Characteristic			25,4/e, max 20,63	2,55*(b+2,5)/e	2,03
V2 Stainless	90	90	2	65	-	1-2-3	AISI 316	EN 10088	2 brackets	P - load	4,79	6,91	2,4*(2+b)/e	= f4,k	7,73
									4,0x40	L - load	5,59	8,06	2,8*(2+b)/e	= f4,k	9,02
									16 Nails	M - load	6,38	9,22	3,2*(2+b)/e	= f4,k	10,31
									Wood	S - load	7,18	10,37	3,6*(2+b)/e	= f4,k	11,60
									20 Nails	I - load	8,78	12,67	4,4*(2+b)/e	= f4,k	14,18
									Wood	Characteristic	7,98	11,52	4,0*(2+b)/e	= f4,k	12,89

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Item	Height [mm]	Length [mm]	Thickness [mm]	Width [mm]	Corrosion protection	Service class	Material	Steel standard	Fastener	Declared values according to ETA 07/0212					
										Characteristic values					
										Values have been only been modified with k_{mod} not γ_M					
										Load duration k_{mod}	Upward $f_{1,k}$ [kN]	Sideward $f_{2,k} = f_{3,k}$ [kN]	Backward $f_{4,k}$ [kN]	Forward $f_{5,k}$ [kN]	Maximum $f_{5,k,max}$ [kN]
V2Ø7	90	90	2,5	65	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	1,87	1,51	0,93*(15,9+b)/e	= f4,k	1,87
									M6	L - load	2,18	1,76	1,09*(15,9+b)/e	= f4,k	2,18
									8 bolts	M - load	2,49	2,02	1,24*(15,9+b)/e	= f4,k	2,49
									Wood	S - load	2,80	2,27	1,40*(15,9+b)/e	= f4,k	2,80
									8 bolts	I - load	3,42	2,77	1,71*(15,9+b)/e	= f4,k	3,42
									Wood	Characteristic	3,11	2,52	1,55*(15,9+b)/e	= f4,k	3,11
V3	105	105	3	90	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	2,08	4,97	0,48*(57,8+b)/e	= f4,k	5,36
									4,0x40	L - load	2,42	5,80	0,56*(57,8+b)/e	= f4,k	6,25
									8 Nails	M - load	2,77	6,62	0,64*(57,8+b)/e	= f4,k	7,14
									Wood	S - load	3,11	7,45	0,72*(57,8+b)/e	= f4,k	8,04
									8 Nails	I - load	3,81	9,11	0,88*(57,8+b)/e	= f4,k	9,82
									Wood	Characteristic	3,46	8,28	0,80*(57,8+b)/e	= f4,k	8,93
									2 brackets	P - load	4,15	7,03	0,95*(b+28,9)/e	= f4,k	8,04
									4,0x40	L - load	4,84	8,20	1,11*(b+28,9)/e	= f4,k	6,25
									12 Nails	M - load	5,54	9,38	1,27*(b+28,9)/e	= f4,k	7,14
									Wood	S - load	6,23	10,55	1,43*(b+28,9)/e	= f4,k	8,04
									12 Nails	I - load	7,61	12,89	1,75*(b+28,9)/e	= f4,k	9,82
									Wood	Characteristic	6,92	11,72	1,59*(b+28,9)/e	= f4,k	13,4
									2 brackets	P - load	6,22	5,53	1,43*(19,3+b)/e	= f4,k	10,72
									4,0x40	L - load	7,25	6,45	1,67*(19,3+b)/e	= f4,k	12,50
									12 Nails	M - load	8,29	7,37	1,91*(19,3+b)/e	= f4,k	14,29
									Wood	S - load	9,32	8,29	2,15*(19,3+b)/e	= f4,k	16,07
									16 Nails	I - load	11,40	10,13	2,63*(19,3+b)/e	= f4,k	19,65
									Wood	Characteristic	10,36	9,21	2,39*(19,3+b)/e	= f4,k	17,86
									2 brackets	P - load	6,22	10,38	1,43*(19,3+b)/e	= f4,k	13,40
									4,0x40	L - load	7,25	12,11	1,67*(19,3+b)/e	= f4,k	15,63
									18 Nails	M - load	8,29	13,84	1,91*(19,3+b)/e	= f4,k	17,86
									Wood	S - load	9,32	15,57	2,15*(19,3+b)/e	= f4,k	20,10
									20 Nails	I - load	11,40	19,03	2,63*(19,3+b)/e	= f4,k	24,56
									Wood	Characteristic	10,36	17,3	2,39*(19,3+b)/e	= f4,k	22,33
									2 brackets	P - load	3,85	4,97	0,89*(b+31,2)/e	= f4,k	5,36
									4,0x60	L - load	4,49	5,80	1,03*(b+31,2)/e	= f4,k	6,25
									8 Nails	M - load	5,13	6,62	1,18*(b+31,2)/e	= f4,k	7,14
									Wood	S - load	5,77	7,45	1,33*(b+31,2)/e	= f4,k	8,04
									8 Nails	I - load	7,05	9,11	1,63*(b+31,2)/e	= f4,k	9,82
									Wood	Characteristic	6,41	8,28	1,48*(b+31,2)/e	= f4,k	8,93
									2 brackets	P - load	7,70	7,03	1,77*(b+15,6)/e	= f4,k	8,04
									4,0x60	L - load	8,98	8,20	2,07*(b+15,6)/e	= f4,k	9,38
									12 Nails	M - load	10,26	9,38	2,36*(b+15,6)/e	= f4,k	10,72
									Wood	S - load	11,55	10,55	2,66*(b+15,6)/e	= f4,k	12,06
									12 Nails	I - load	14,11	12,89	3,25*(b+15,6)/e	= f4,k	14,74
									Wood	Characteristic	12,83	11,72	2,95*(b+15,6)/e	= f4,k	13,4
									2 brackets	P - load	9,61	5,49	30,36/e	= f4,k	54,75
									4,0x40	L - load	9,61	6,41	35,42/e	= f4,k	54,75
									16 Nails	M - load	9,61	7,32	40,48/e	= f4,k	54,75
									Wood	S - load	9,61	8,24	45,54/e	= f4,k	54,75
									6 bolts	I - load	9,61	10,07	55,66/e	= f4,k	54,75
									Concrete	Characteristic	9,61	9,15	50,60/e	= f4,k	54,75
									1 bracket	P - load			50,6/e, max 54,75	3,63*(3+b)/e	1,04
									4,0x40	L - load			50,6/e, max 54,75	4,24*(3+b)/e	1,22
									8 Nails	M - load			50,6/e, max 54,75	4,84*(3+b)/e	1,39
									Wood	S - load			50,6/e, max 54,75	5,45*(3+b)/e	1,57
									3 bolts	I - load			50,6/e, max 54,75	6,66*(3+b)/e	1,91
									Concrete	Characteristic			50,6/e, max 54,75	6,05*(3+b)/e	1,74

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Item	Height [mm]	Length [mm]	Thickness [mm]	Width [mm]	Corrosion protection	Service class	Material	Steel standard	Fastener	Declared values according to ETA 07/0212					
										Characteristic values					
										Values have been only been modified with k_{mod} not γ_M					
										Load duration k_{mod}	Upward $f_{1,k}$ [kN]	Sideward $f_{2,k} = f_{3,k}$ [kN]	Backward $f_{4,k}$ [kN]	Forward $f_{5,k}$ [kN]	Maximum $f_{5,k,max}$ [kN]
V4 / V4PL	105	105	3 / 2	90	Z275MA	1-2	S250GD / S350GD	EN 10346	2 brackets	P - load	4,79	7,48	1,87*(73,5+b)/e	= f4,k	8,04
									4,0x40	L - load	5,59	8,72	2,18*(73,5+b)/e	= f4,k	9,38
									12 Nails	M - load	6,38	9,97	2,50*(73,5+b)/e	= f4,k	10,72
									Wood	S - load	7,18	11,21	2,81*(73,5+b)/e	= f4,k	12,06
									12 Nails	I - load	8,78	13,71	3,43*(73,5+b)/e	= f4,k	14,74
									Wood	Characteristic	7,98	12,46	3,12*(73,5+b)/e	= f4,k	13,40
									2 brackets	P - load	9,90	9,68	2,65*(56,3+b)/e	= f4,k	9,06
									4,0x40	L - load	11,55	11,30	3,09*(56,3+b)/e	= f4,k	10,57
									16 Nails	M - load	13,20	12,91	3,54*(56,3+b)/e	= f4,k	12,08
									Wood	S - load	14,85	14,53	3,98*(56,3+b)/e	= f4,k	13,59
									16 Nails	I - load	18,15	17,75	4,86*(56,3+b)/e	= f4,k	16,61
									Wood	Characteristic	16,50	16,14	4,42*(56,3+b)/e	= f4,k	15,10
									2 brackets	P - load	8,14	7,48	1,87*(73,5+b)/e	= f4,k	8,04
									4,0x60	L - load	9,50	8,73	2,18*(73,5+b)/e	= f4,k	9,38
									12 Nails	M - load	10,86	9,98	2,50*(73,5+b)/e	= f4,k	10,72
									Wood	S - load	12,21	11,22	2,81*(73,5+b)/e	= f4,k	12,06
									12 Nails	I - load	14,93	13,72	3,43*(73,5+b)/e	= f4,k	14,74
									Wood	Characteristic	13,57	12,47	3,12*(73,5+b)/e	= f4,k	13,40
									2 brackets	P - load	13,32	9,84	2,65*(56,3+b)/e	= f4,k	10,26
									4,0x60	L - load	15,54	11,48	3,09*(56,3+b)/e	= f4,k	11,97
									16 Nails	M - load	17,76	13,12	3,54*(56,3+b)/e	= f4,k	13,68
									Wood	S - load	19,98	14,76	3,98*(56,3+b)/e	= f4,k	15,39
									16 Nails	I - load	24,42	18,04	4,86*(56,3+b)/e	= f4,k	18,81
									Wood	Characteristic	22,20	16,40	4,42*(56,3+b)/e	= f4,k	17,10
									1 bracket	P - load	1,75	2,83	47,8/e, max. 8,55	8,55*(33+b)/e	0,88
									4,0x60	L - load	2,04	3,30	47,8/e, max. 8,55	9,97*(33+b)/e	1,02
									8 Nails	M - load	2,34	3,78	47,8/e, max. 8,55	11,4*(33+b)/e	1,17
									Wood	S - load	2,63	4,25	47,8/e, max. 8,55	12,82*(33+b)/e	1,31
									10 Nails	I - load	3,21	5,19	47,8/e, max. 8,55	15,67*(33+b)/e	1,61
									Wood	Characteristic	2,92	4,72	47,8/e, max. 8,55	14,25*(33+b)/e	1,46
									1 bracket	P - load			50,6/e, max. 54,75	3,89*(33+b)/e	1,52
									4,0x40	L - load			50,6/e, max. 54,75	4,54*(33+b)/e	1,77
									8 Nails	M - load			50,6/e, max. 54,75	5,19*(33+b)/e	2,02
									Wood	S - load			50,6/e, max. 54,75	5,84*(33+b)/e	2,28
									3 bolts	I - load			50,6/e, max. 54,75	7,14*(33+b)/e	2,78
									Concrete	Characteristic			50,6/e, max. 54,75	6,49*(33+b)/e	2,53
									2 brackets	P - load	5,29	29,93			
									4,0x40	L - load	6,17	34,92			
									16 Nails	M - load	7,06	39,90			
									Wood	S - load	7,94	44,89			
									6 bolts	I - load	9,70	54,87			
									Concrete	Characteristic	8,82	49,88			
V4 Stainless	105	105	2,5	90	-	1-2-3	AISI 316	EN 10088	2 brackets	P - load	4,79	6,80	2,40*(17,5+b)/e	= f4,k	10,31
									4,0x40	L - load	5,59	7,94	2,80*(17,5+b)/e	= f4,k	12,03
									16 Nails	M - load	6,38	9,07	3,20*(17,5+b)/e	= f4,k	13,75
									Wood	S - load	7,18	10,21	3,60*(17,5+b)/e	= f4,k	15,47
									16 Nails	I - load	8,78	12,47	4,40*(17,5+b)/e	= f4,k	18,91
									Wood	Characteristic	7,98	11,34	4,00*(17,5+b)/e	= f4,k	17,19
V6	70	70	2	55	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	3,42	3,07	1,96*(20,5+b)/e	= f4,k	5,66
									4,0x40	L - load	3,42	3,58	2,29*(20,5+b)/e	= f4,k	6,60
									8 Nails	M - load	3,42	4,09	2,61*(20,5+b)/e	= f4,k	7,54
									Wood	S - load	3,42	4,60	2,94*(20,5+b)/e	= f4,k	8,49
									10 Nails	I - load	3,42	5,62	3,60*(20,5+b)/e	= f4,k	10,37
									Wood	Characteristic	3,42	5,11	3,27*(20,5+b)/e	= f4,k	9,43

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Item	Height [mm]	Length [mm]	Thickness [mm]	Width [mm]	Corrosion protection	Service class	Material	Steel standard	Fastener	Declared values according to ETA 07/0212					
										Characteristic values					
										Values have been only been modified with k_{mod} not γ_M					
										Load duration k_{mod}	Upward $f_{1,k}$ [kN]	Sideward $f_{2,k} = f_{3,k}$ [kN]	Backward $f_{4,k}$ [kN]	Forward $f_{5,k}$ [kN]	Maximum $f_{5,k,max}$ [kN]
V7	70	70	2	55	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	2,39	3,07	1,2*(17+b)/e	= f4,k	4,52
									4,0x40	L - load	2,79	3,58	1,4*(17+b)/e	= f4,k	5,28
									8 Nails	M - load	3,19	4,09	1,6*(17+b)/e	= f4,k	6,03
									Wood	S - load	3,59	4,60	1,8*(17+b)/e	= f4,k	6,79
									8 Nails	I - load	4,39	5,62	2,2*(17+b)/e	= f4,k	8,29
									Wood	Characteristic	3,99	5,11	2,0*(17+b)/e	= f4,k	7,53
V7PL	70	70	1,5	55	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	2,39	3,07	1,2*(16,5+b)/e	= f4,k	4,52
									4,0x40	L - load	2,79	3,58	1,4*(16,5+b)/e	= f4,k	5,28
									8 Nails	M - load	3,19	4,09	1,6*(16,5+b)/e	= f4,k	6,03
									Wood	S - load	3,59	4,60	1,8*(16,5+b)/e	= f4,k	6,79
									8 Nails	I - load	4,39	5,62	2,2*(16,5+b)/e	= f4,k	8,29
									Wood	Characteristic	3,99	5,11	2,0*(16,5+b)/e	= f4,k	7,53
V8	65	65	2,5	55	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	3,48	3,96	1,85*(15+b)/e	= f4,k	5,63
									4,0x40	L - load	4,06	4,62	2,16*(15+b)/e	= f4,k	6,57
									10 Nails	M - load	4,64	5,28	2,46*(15+b)/e	= f4,k	7,50
									Wood	S - load	5,22	5,94	2,77*(15+b)/e	= f4,k	8,44
									10 Nails	I - load	6,38	7,26	3,39*(15+b)/e	= f4,k	10,32
									Wood	Characteristic	5,80	6,60	3,08*(15+b)/e	= f4,k	9,38
									1 bracket	P - load	1,75	1,98	21,5/e, max 5,35	1,33	
									4,0x40	L - load	2,04	2,31	21,5/e, max 6,24	1,33	
									5 Nails	M - load	2,32	2,64	21,5/e, max 7,13	1,33	
									Wood	S - load	2,61	2,97	21,5/e, max 8,02	1,33	
									5 Nails	I - load	3,19	3,63	21,5/e, max 9,80	1,33	
									Wood	Characteristic	2,90	3,30	21,5/e, max 8,91	1,33	
									1 bracket	P - load	1,98	1,90	21,5/e, max 5,35	1,33	
									4,0x40	L - load	1,98	1,90	21,5/e, max 6,24	1,33	
									4 Nails	M - load	1,98	1,90	21,5/e, max 7,13	1,33	
									Wood	S - load	1,98	1,90	21,5/e, max 8,02	1,33	
									1 bolt	I - load	1,98	1,90	21,5/e, max 9,80	1,33	
									Concrete	Characteristic	1,98	1,90	21,5/e, max 8,91	1,33	
V10 2,5mm	90	90	2,5	40	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	2,39	2,07	1,2*(21+b)/e	= f4,k	4,52
									4,0x40	L - load	2,79	2,42	1,4*(21+b)/e	= f4,k	5,28
									8 Nails	M - load	3,19	2,76	1,6*(21+b)/e	= f4,k	6,03
									Wood	S - load	3,19	3,11	1,8*(21+b)/e	= f4,k	6,79
									8 Nails	I - load	3,19	3,80	2,2*(21+b)/e	= f4,k	8,29
									Wood	Characteristic	3,19	3,45	2,0*(21+b)/e	= f4,k	7,54
									1 bracket	P - load	1,20	1,03	15,6/e, max 2,63	4,52*(2,5+b)/e	1,20
									4,0x40	L - load	1,40	1,20	15,6/e, max 3,07	5,28*(2,5+b)/e	1,40
									4 Nails	M - load	1,60	1,38	15,6/e, max 3,5	6,03*(2,5+b)/e	1,60
									Wood	S - load	1,60	1,55	15,6/e, max 3,94	6,79*(2,5+b)/e	1,60
									4 Nails	I - load	1,60	1,89	15,6/e, max 4,82	8,29*(2,5+b)/e	1,60
									Wood	Characteristic	1,60	1,72	15,6/e, max 4,38	7,54*(2,5+b)/e	1,60

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Item	Height [mm]	Length [mm]	Thickness [mm]	Width [mm]	Corrosion protection	Service class	Material	Steel standard	Fastener	Declared values according to ETA 07/0212					
										Characteristic values					
										Values have been only been modified with k_{mod} not γ_M					
										Load duration k_{mod}	Upward $f_{1,k}$ [kN]	Sideward $f_{2,k} = f_{3,k}$ [kN]	Backward $f_{4,k}$ [kN]	Forward $f_{5,k}$ [kN]	Maximum $f_{5,k,max}$ [kN]
V10	90	90	3,0	40	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	2,47	0,98	1,23*(19,5+b)/e	= f4,k	4,51
									4,0x40	L - load	2,88	1,15	1,44*(19,5+b)/e	= f4,k	5,26
									8 Nails	M - load	3,29	1,31	1,64*(19,5+b)/e	= f4,k	6,01
									Wood	S - load	3,70	1,48	1,85*(19,5+b)/e	= f4,k	6,76
									8 Nails	I - load	4,52	1,80	2,26*(19,5+b)/e	= f4,k	8,26
									Wood	Characteristic	4,11	1,64	2,05*(19,5+b)/e	= f4,k	7,51
									1 bracket	P - load	1,23	0,49	22,5/e, max 2,61	1,23	
									4,0x40	L - load	1,44	0,57	22,5/e, max 3,05	1,44	
									4 Nails	M - load	1,64	0,66	22,5/e, max 3,48	1,64	
									Wood	S - load	1,85	0,74	22,5/e, max 3,92	1,85	
									4 Nails	I - load	2,26	0,90	22,5/e, max 4,79	2,26	
									Wood	Characteristic	2,05	0,82	22,5/e, max 4,35	2,05	
V12	94	50	3	50	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	2,39	3,55	1,2*(21+b)/e	= f4,k	2,26
									4,0x40	L - load	2,79	4,14	1,4*(21+b)/e	= f4,k	2,63
									12 nails	M - load	3,19	4,74	1,6*(21+b)/e	= f4,k	3,01
									Wood	S - load	3,59	5,33	1,8*(21+b)/e	= f4,k	3,38
									8 Nails	I - load	4,39	6,51	2,2*(21+b)/e	= f4,k	4,14
									Wood	Characteristic	3,99	5,92	2,0*(21+b)/e	= f4,k	3,76
									2 brackets	P - load	3,72	3,92	10,41	= f4,k	
									4,0x40	L - load	3,72	4,58	12,15	= f4,k	
									12 Nails	M - load	3,72	5,23	13,88	= f4,k	
									Wood	S - load	3,72	5,89	15,62	= f4,k	
									2 bolts	I - load	3,72	7,19	19,09	= f4,k	
									Concrete	Characteristic	3,72	6,54	17,35	= f4,k	
									1 bracket	P - load	1,86	1,96	28,1/e, max 16,26	6,41*b/e	1,58
									4,0x40	L - load	1,86	2,29	28,1/e, max 16,26	7,48*b/e	1,58
									6 Nails	M - load	1,86	2,62	28,1/e, max 16,26	8,55*b/e	1,58
									Wood	S - load	1,86	2,94	28,1/e, max 16,26	9,62*b/e	1,58
									1 bolt	I - load	1,86	3,60	28,1/e, max 16,26	11,76*b/e	1,58
									Concrete	Characteristic	1,86	3,27	28,1/e, max 16,26	10,69*b/e	1,58
									1 bracket	P - load	0,88	1,68	16,86/e, max 2,14	6,41*b/e	1,58
									4,0x40	L - load	1,02	1,96	19,67/e, max 2,14	7,48*b/e	1,58
									6 Nails	M - load	1,17	2,24	22,48/e, max 2,14	8,55*b/e	1,58
									Wood	S - load	1,36	2,52	25,49/e, max 2,14	9,62*b/e	1,58
									4 Nails	I - load	1,61	3,08	30,91/e, max 2,14	11,76*b/e	1,58
									Wood	Characteristic	1,46	2,80	28,10/e, max 2,14	10,69*b/e	1,58
V13	91	50	3	76	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	2,39	4,95	1,2*(22+b)/e	= f4,k	2,26
									4,0x40	L - load	2,79	5,78	1,4*(22+b)/e	= f4,k	2,64
									16 Nails	M - load	3,19	6,60	1,6*(22+b)/e	= f4,k	3,02
									Wood	S - load	3,59	7,43	1,8*(22+b)/e	= f4,k	3,39
									8 Nails	I - load	4,39	9,08	2,2*(22+b)/e	= f4,k	4,15
									Wood	Characteristic	3,98	8,25	2,0*(22+b)/e	= f4,k	3,77
V14	91	52	3	116	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	4,79	8,48	2,4*(20+b)/e	= f4,k	4,52
									4,0x40	L - load	5,59	9,89	2,8*(20+b)/e	= f4,k	5,28
									18 nails	M - load	6,38	11,30	3,2*(20+b)/e	= f4,k	6,03
									Wood	S - load	7,18	12,72	3,6*(20+b)/e	= f4,k	6,79
									16 Nails	I - load	8,78	15,54	4,4*(20+b)/e	= f4,k	8,29
									Wood	Characteristic	7,98	14,13	4,0*(20+b)/e	= f4,k	7,54
V15	120	90	3	40	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	1,60	2,57	1,45*(42,9+b)/e	= f4,k	4,52
									4,0x40	L - load	1,87	3,00	1,69*(42,9+b)/e	= f4,k	5,28
									16 Nails	M - load	2,14	3,42	1,93*(42,9+b)/e	= f4,k	6,03
									Wood	S - load	2,40	3,85	2,17*(42,9+b)/e	= f4,k	6,79
									8 Nails	I - load	2,94	4,71	2,65*(42,9+b)/e	= f4,k	8,29
									Wood	Characteristic	2,67	4,28	2,41*(42,9+b)/e	= f4,k	7,54

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Item	Height [mm]	Length [mm]	Thickness [mm]	Width [mm]	Corrosion protection	Service class	Material	Steel standard	Fastener	Declared values according to ETA 07/0212					
										Characteristic values					
										Values have been only been modified with k_{mod} not γ_M					
										Load duration k_{mod}	Upward $f_{1,k}$ [kN]	Sideward $f_{2,k} = f_{3,k}$ [kN]	Backward $f_{4,k}$ [kN]	Forward $f_{5,k}$ [kN]	Maximum $f_{5,k,max}$ [kN]
V20	89	36	2,5	40	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	3,12	3,27	7,83	= f4,k	
									4,0x40	L - load	3,12	3,82	9,14	= f4,k	
									10 Nails	M - load	3,12	4,36	10,44	= f4,k	
									Wood	S - load	3,12	4,91	10,69	= f4,k	
									2 Bolts	I - load	3,12	6,00	10,69	= f4,k	
									Concrete	Characteristic	3,12	5,45	13,05	= f4,k	
									1 bracket	P - load	1,56	1,63	15,6/e, max 7,83	1,09	
									4,0x40	L - load	1,56	1,90	15,6/e, max 9,14	1,09	
									5 Nails	M - load	1,56	2,18	15,6/e, max 10,44	1,09	
									Wood	S - load	1,56	2,45	15,6/e, max 10,69	1,09	
									1 Bolt	I - load	1,56	2,99	15,6/e, max 10,69	1,09	
									Concrete	Characteristic	1,56	2,72	15,6/e, max 13,05	1,09	
V21	160	50	3	40	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	2,47	2,94	14,64	= f4,k	
									4,0x40	L - load	2,47	3,43	17,08	= f4,k	
									16 Nails	M - load	2,47	3,92	19,52	= f4,k	
									Wood	S - load	2,47	4,41	19,80	= f4,k	
									2 Bolts	I - load	2,47	5,39	19,80	= f4,k	
									Concrete	Characteristic	2,47	4,90	19,80	= f4,k	
									1 bracket	P - load	1,23	1,47	20,5/e, max 19,8	10,69*b/e	1,31
									4,0x40	L - load	1,23	1,72	20,5/e, max 19,8	12,47*b/e	1,31
									8 Nails	M - load	1,23	1,96	20,5/e, max 19,8	14,25*b/e	1,31
									Wood	S - load	1,23	2,21	20,5/e, max 19,8	16,03*b/e	1,31
									1 Bolt	I - load	1,23	2,70	20,5/e, max 19,8	19,59*b/e	1,31
									Concrete	Characteristic	1,23	2,45	20,5/e, max 19,8	17,82*b/e	1,31
									1 bracket	P - load	0,88	1,47	22,5/e, max 2,14	10,69*b/e	1,31
									4,0x40	L - load	1,02	1,72	22,5/e, max 2,49	12,47*b/e	1,31
									8 Nails	M - load	1,17	1,96	22,5/e, max 2,85	14,25*b/e	1,31
									Wood	S - load	1,31	2,21	22,5/e, max 3,20	16,03*b/e	1,31
									4 Nails	I - load	1,61	2,70	22,5/e, max 3,92	19,59*b/e	1,31
									Wood	Characteristic	1,46	2,45	22,5/e, max 3,56	17,82*b/e	1,31
V170	170	110	3	95	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	7,39	8,90	3,70*(31+b)/e	= f4,k	9,01
									4,0x40	L - load	8,62	10,39	4,31*(31+b)/e	= f4,k	10,51
									32 nails	M - load	9,86	11,87	4,93*(31+b)/e	= f4,k	12,02
									Wood	S - load	11,09	13,36	5,54*(31+b)/e	= f4,k	13,52
									16 nails	I - load	13,55	16,32	6,78*(31+b)/e	= f4,k	16,52
									Wood	Characteristic	12,32	14,84	6,16*(31+b)/e	= f4,k	15,02
									2 brackets	P - load	36,04	8,90	18,02*b/e	= f4,k	19,79
									4,0x40	L - load	42,04	10,39	21,02*b/e	= f4,k	23,09
									32 nails	M - load	48,05	11,87	24,02*b/e	= f4,k	26,39
									Wood	S - load	54,05	13,36	27,03*b/e	= f4,k	29,69
									8 bolts	I - load	66,07	16,32	33,03*b/e	= f4,k	36,29
									Concrete	Characteristic	60,06	14,84	30,03*b/e	= f4,k	32,99
									1 bracket	P - load	3,70	4,45	9,01	2,47	
									4,0x40	L - load	4,31	5,19	10,51	2,88	
									16 nails	M - load	4,93	5,94	12,02	3,29	
									Wood	S - load	5,54	6,68	13,52	3,70	
									8 nails	I - load	6,78	8,16	16,52	4,52	
									Wood	Characteristic	6,16	7,42	15,02	4,11	
									1 bracket	P - load	18,02	4,45	19,79	2,47	
									4,0x40	L - load	21,02	5,19	23,09	2,88	
									16 nails	M - load	24,02	5,94	26,39	3,29	
									Wood	S - load	27,03	6,68	29,69	3,70	
									4 bolts	I - load	33,03	8,16	36,29	4,52	
									Concrete	Characteristic	30,03	7,42	32,99	4,11	

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Item	Height [mm]	Length [mm]	Thickness [mm]	Width [mm]	Corrosion protection	Service class	Material	Steel standard	Fastener	Declared values according to ETA 07/0212					
										Characteristic values					
										Values have been only been modified with k_{mod} not γ_M					
										Load duration k_{mod}	Upward $f_{1,k}$ [kN]	Sideward $f_{2,k} = f_{3,k}$ [kN]	Backward $f_{4,k}$ [kN]	Forward $f_{5,k}$ [kN]	Maximum $f_{5,k,max}$ [kN]
P4	90	35	3	40	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	4,50	2,38	9,90	= f4,k	
									4,0x40	L - load	4,50	2,78	9,90	= f4,k	
									8 nails	M - load	4,50	3,18	9,90	= f4,k	
									Wood	S - load	4,50	3,57	9,90	= f4,k	
									2 Bolts	I - load	4,50	4,37	9,90	= f4,k	
									Concrete	Characteristic	4,50	3,97	9,90	= f4,k	
									1 bracket	P - load	2,25	1,19	22,5/e, max 8,11	5,35*b/e	1,03
									4,0x40	L - load	2,25	1,39	22,5/e, max 9,46	6,24*b/e	1,20
									4 nails	M - load	2,25	1,58	22,5/e, max 9,9	7,13*b/e	1,38
									Wood	S - load	2,25	1,78	22,5/e, max 9,9	8,02*b/e	1,55
									1 Bolt	I - load	2,25	2,18	22,5/e, max 9,9	9,80*b/e	1,89
									Concrete	Characteristic	2,25	1,98	22,5/e, max 9,9	8,91*b/e	1,72
									1 bracket	P - load	0,88	1,19	22,5/e, max 2,14	5,35*b/e	1,21
									4,0x40	L - load	1,02	1,39	22,5/e, max 2,49	6,24*b/e	1,41
									4 nails	M - load	1,17	1,58	22,5/e, max 2,85	7,13*b/e	1,62
									Wood	S - load	1,31	1,78	22,5/e, max 3,20	8,02*b/e	1,82
									4 Nails	I - load	1,61	2,18	22,5/e, max 3,92	9,80*b/e	2,22
									Wood	Characteristic	1,46	1,98	22,5/e, max 3,56	8,91*b/e	2,02
K4	163	83	3	80	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	5,16	6,41	6,79	= f4,k	
									4,0x40	L - load	6,02	7,48	7,92	= f4,k	
									22 Nails	M - load	6,88	8,55	9,05	= f4,k	
									Wood	S - load	7,74	9,62	10,18	= f4,k	
									12 Nails	I - load	9,46	11,76	12,44	= f4,k	
									Wood	Characteristic	8,60	10,69	11,31	= f4,k	
1-150	150	75	8	60	HDG min. 55 µm	1-2-3	S250GD	EN 10346	1 bracket	P - load	4,12				
									M12	L - load	4,80				
									1 Bolt	M - load	5,49				
									Wood	S - load	6,17				
									1 Bolt	I - load	7,55				
									Concrete	Characteristic	6,86				
LV-1	82	62	2	40	Z275MA	1-2	S250GD	EN 10346	2 brackets	P - load	1,89	1,30	1,44*(20,7+b)/e	= f4,k	4,52
									4,0x40	L - load	2,21	1,51	1,68*(20,7+b)/e	= f4,k	5,27
									10 nails	M - load	2,52	1,73	1,92*(20,7+b)/e	= f4,k	6,02
									Wood	S - load	2,84	1,94	2,16*(20,7+b)/e	= f4,k	6,78
									10 nails	I - load	3,47	2,38	2,64*(20,7+b)/e	= f4,k	8,28
									Wood	Characteristic	3,15	2,16	2,40*(20,7+b)/e	= f4,k	7,53

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Item	Height [mm]	Length [mm]	Thickness [mm]	Width [mm]	Corrosion protection	Service class	Material	Steel standard	Fastener	Declared values according to ETA 07/0212					
										Characteristic values					
										Values have been only been modified with k_{mod} not γ_M					
										Load duration k_{mod}	Upward $f_{1,k}$ [kN]	Sideward $f_{2,k} = f_{3,k}$ [kN]	Backward $f_{4,k}$ [kN]	Forward $f_{5,k}$ [kN]	Maximum $f_{5,k,max}$ [kN]
											f1,k				
V26 / V27	190 / 290	50	2	40	Z275MA	1-2	S250GD	EN 10346	1 bracket	P - load	1,13 * n, max 17,82				
									4,0x40	L - load	1,32 * n, max 17,82				
									n nails	M - load	1,50 * n, max 17,82				
									Wood	S - load	1,69 * n, max 17,82				
									1 bolt	I - load	2,07 * n, max 17,82				
									Concrete	Characteristic	1,88 * n, max 17,82				
									2 brackets	P - load	2,25 * n, max 35,64				
									4,0x40	L - load	2,63 * n, max 35,64				
									n nails	M - load	3,00 * n, max 35,64				
									Wood	S - load	3,38 * n, max 35,64				
									2 bolts	I - load	4,13 * n, max 35,64				
									Concrete	Characteristic	3,75 * n, max 35,64				
									1 bracket	P - load	1,13 * n, max 1,23				
									4,0x40	L - load	1,32 * n, max 1,44				
									n nails	M - load	1,50 * n, max 1,64				
									Wood	S - load	1,69 * n, max 1,85				
									4 nails	I - load	2,07 * n, max 2,26				
									Wood	Characteristic	1,88 * n, max 2,05				
									2 brackets	P - load	2,25 * n, max 2,47				
									4,0x40	L - load	2,63 * n, max 2,88				
									n nails	M - load	3,00 * n, max 3,29				
									Wood	S - load	3,38 * n, max 3,70				
									8 nails	I - load	4,13 * n, max 4,52				
									Wood	Characteristic	3,75 * n, max 4,11				
P1-8	90	60	2,5	60	Z275MA	1-2	S250GD	EN 10346	1 bracket	P - load			2,26		
									4,0x40	L - load			2,64		
									5 Nails	M - load			3,02		
									Wood	S - load			3,39		
									4 Nails	I - load			4,15		
									Wood	Characteristic			3,77		
P1-10	90	60	2,5	60	Z275MA	1-2	S250GD	EN 10346	1 bracket	P - load			4,52		
									4,0x40	L - load			5,28		
									5 Nails	M - load			6,03		
									Wood	S - load			6,79		
									4 Nails	I - load			8,29		
									Wood	Characteristic			7,54		
P1-12	90	60	2,5	60	Z275MA	1-2	S250GD	EN 10346	1 bracket	P - load			4,52		
									4,0x40	L - load			5,28		
									5 Nails	M - load			6,03		
									Wood	S - load			6,79		
									4 Nails	I - load			8,29		
									Wood	Characteristic			7,54		
P2-10	90	60	2,5	60	Z275MA	1-2	S250GD	EN 10346	1 bracket	P - load			4,52		
									4,0x40	L - load			5,28		
									5 Nails	M - load			6,03		
									Wood	S - load			6,79		
									4 Nails	I - load			8,29		
									Wood	Characteristic			7,54		
P2-12	90	60	2,5	60	Z275MA	1-2	S250GD	EN 10346	1 bracket	P - load			4,52		
									4,0x40	L - load			5,28		
									5 Nails	M - load			6,03		
									Wood	S - load			6,79		
									4 Nails	I - load			8,29		
									Wood	Characteristic			7,54		