

Leistungserklärung / Declaration of Performance

2009100351_008CPR2022-11-041_2023

- **Eindeutiger Kenncode des Produkttyps / Unique identification code of the product type**
HV2410, HV2650, HVG2650

- **Verwendungszweck(e) / Usage(s)**
Winkel für Holz zu Holz Verbindungen/
Angle bracket for timber to timber connections

- **Hersteller / Manufacturer**
Conmetall Meister GmbH
Hafenstraße 26
29223 Celle Germany

- **System(e) zur Bewertung und Überprüfung der Leistungsbeständigkeit /
System(s) for evaluating and verifying constancy of performance**
System 2+

- **Europäisch Technische Bewertung / European Technical Assessment**
Europäisches Bewertungsdokument / *European evaluation document:*
EAD 130186-00-0603 01.07.2018
Europäisch technische Bewertung / *European technical evaluation:*
ETA 11/0485 31.10.2022
Technische Bewertungsstelle / *Technical Assessment Body:*
ETA Danmark A/S
Notifizierte Stelle / *Notified body:*
1336



■ **Wesentliche Merkmale und erklärte Leistung(en) /**
Essential features and stated performance(s)

Wesentliches Merkmal <i>Essential features</i>	Leistung <i>Performance</i>	Harmonisierte technische Spezifikation <i>Harmonized technical specification</i>
Verbindungsfestigkeit – Charakteristische Tragfähigkeit <i>Joint Strength - Characteristic load-carry- ing capacity</i>	Annex B	ETA-11/0485; 3.1
Steifigkeit der Verbindung <i>Joint Stiffness</i>	Annex B	ETA-11/0485; 3.1
Duktilität der Verbindung <i>Joint ductility</i>	NPD	ETA-11/0485; 3.1
Widerstandsfähigkeit gegen seismische Einflüsse <i>Resistance to seismic actions</i>	NPD	ETA-11/0485; 3.1
Widerstandsfähigkeit gegen Korrosion und Beschädigung <i>Resistance to corrosion and deterioration</i>	Nutzungsklasse 1 und 2 <i>Service class 1 and 2</i> DX 51 D / Z 275.	ETA-11/0485; 3.1, 3.6 EAD 130186-00-0603 EN 10346
Brandverhalten <i>Reaction to fire</i>	Stahl klassifiziert als Euroklasse A1 <i>Steel classified as Euroclass A1</i>	ETA-11/0485; 3.2 EN 13501-1
Allgemeine Aspekte im Zusammenhang mit der Leistung des Produkts <i>General aspects related to the perfor- mance of the product</i>	Nutzungsklasse 1 und 2 bei Holzkonstruktionen unter Verwendung von Holzarten gem. Eurocode 5 <i>Service class 1 and 2 for timber constructions using timber species according to Eurocode 5</i>	ETA-11/0485; 3.3

Tab.1 Wesentliche Merkmale / *essential features*

Kenncode <i>Identification code</i>	Winkel-Typ <i>Angle bracket type</i>	Spezifikation von Stahl und Beschichtung <i>Steel and coating specification</i>
HV2410	40 x 40 x 40 x 2,0	DX51D + Z275
HV2650 / HVG2650	90 x 90 x 65 x 2,5	DX51D + Z275

Tab.2 Produkt Details / *Product details*

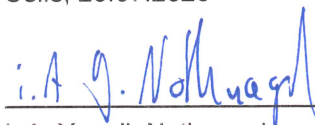
Die Leistung des vorstehenden Produkts entspricht der erklärten Leistung / den erklärten Leistungen.
Für die Erstellung der Leistungserklärung im Einklang mit der Verordnung (EU) Nr. 305/2011 ist allein
der obengenannte Hersteller verantwortlich.

Unterzeichnet für den Hersteller und im Namen des Herstellers von:

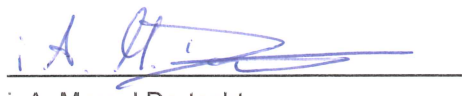
*The performance of the above product is the declared performance. The above manufacturer is solely
responsible for drawing up the declaration of performance in accordance with Regulation (EU) No
305/2011.*

Signed for the manufacturer and on behalf of the manufacturer of:

Conmetall Meister GmbH
Celle, 28.07.2023



i. A. Yannik Nothnagel
Leitung Einkauf Eisenwaren
Head of purchasing ironmongery



i. A. Marcel Dartscht
Standortverantwortlicher Qualitätsmanagement Celle
Site Manager Quality Management Celle



Annex B

Characteristic load-carrying capacities

Table 1: Force F_1 Column, 2 angle brackets / connection

Bracket type	Nail number n_V	Nail number n_H	$F_{1,Rk}$ [kN] (column)	
			Timber	Steel
75 x 60 x 60 x 2,0, short rib, long hole	1,2,3	10,11,12,14,15,16	2,81	1,49
75 x 60 x 60 x 2,5, short rib, long hole	1,2	8,10,11,12,13	1,87	2,02
75 x 60 x 60 x 2,5, short rib, two long holes	1,2,3	9,10,11,13,14,15	2,81	2,33
80 x 80 x 40 x 2,0	1,2	9,10,11,12,13,14,15,16	2,50	1,55
80 x 80 x 40 x 2,5	1,2	9,10,11,12,13,14,15,16	2,50	2,43
80 x 80 x 50 x 2,0 with bolt hole	1,2	12,13,14,15,16,18,19,20,21,22	2,47	1,93
80 x 80 x 50 x 2,5 with bolt hole	1,2	12,13,14,15,16,18,19,20,21,22	2,47	3,02
80 x 80 x 60 x 2,0	1,2,3	13,14,15,16,17,18,19,20,21,22, 23,24	3,82	2,61
80 x 80 x 80 x 2,0	1,2,3	15,16,17,18,19,20,21,22,23,24, 25,26,27,28	4,90	2,78
80 x 80 x 100 x 2,0	1,2,3,4	19,20,21,22,23,24,25,26,27,28, 29,30,31,32,33,34,35,36	6,13	3,48
80 x 80 x 100 x 2,0 with bolt hole	1,2,3,4	20,21,22,23,24,25,26,27,28,30, 31,32,33,34,35,36,37,38	4,94	3,87
80 x 80 x 100 x 2,5	1,2,3,4	19,20,21,22,23,24,25,26,27,28, 29,30,31,32,33,34,35,36	6,13	5,44
80 x 80 x 100 x 2,5 with bolt hole	1,2,3,4	20,21,22,23,24,25,26,27,28,30, 31,32,33,34,35,36,37,38	4,94	6,04
90 x 40 x 40 x 2,5	1,2,4,5	11,12	1,36	1,47
90 x 60 x 60 x 2,0, short rib, long hole	1,2,3,4,5,6	10,11,12,14,15,16	2,81	1,49
90 x 60 x 60 x 2,0, short rib, two long holes	1,2,4,5,6	10,11,13,14,15	1,87	1,33
90 x 60 x 60 x 2,5, short rib, long hole	1,2,3,4,5,6	10,12,14,15,16	2,81	2,02
90 x 60 x 60 x 2,5, short rib, two long holes	1,2,4,5,6	10,11,13,14,15	1,87	2,07
90 x 60 x 60 x 2,5, short rib, three long holes	1,2,4	8,9,11,12,13	1,87	2,07
90 x 90 x 65 x 2,5 with bolt hole	1,2,5,6	16,17,18,20,21,22,24,25,26,29,30	3,44	3,24
90 x 90 x 65 x 2,5 with bolt hole, long hole	1,2,5,6	16,17,18,20,21,22,24,25,26,29,30	3,44	3,24
90 x 90 x 65 x 2,5 with rib	1,2,5,6	13,14,16,17,19,20,23,24	2,29	11,47
90 x 90 x 90 x 3,0	1,2	14,15,16,17,18,21,22,25,26, 27,28	5,94	5,22



Bracket type	Nail number n_v	Nail number n_H	$F_{1,Rk}$ [kN] (column)	
			Timber	Steel
90 x 60 x 60 x 2,0, short rib, long hole	1,2,3,4,5,6	10,11,12,14,15,16	1,40	0,75
90 x 60 x 60 x 2,0, short rib, two long holes	1,2,4,5,6	10,11,13,14,15	0,94	0,66
90 x 60 x 60 x 2,5, short rib, long hole	1,2,3,4,5,6	10,12,14,15,16	1,40	1,01
90 x 60 x 60 x 2,5, short rib, two long holes	1,2,4,5,6	10,11,13,14,15	0,94	1,04
90 x 60 x 60 x 2,5, short rib, three long holes	1,2,4	8,9,11,12,13	0,94	1,04
90 x 90 x 65 x 2,5 with bolt hole	1,2,5,6	16,17,18,20,21,22,24,25,26,29,30	1,72	1,62
90 x 90 x 65 x 2,5 with bolt hole, long hole	1,2,5,6	16,17,18,20,21,22,24,25,26,29,30	1,72	1,62
90 x 90 x 65 x 2,5 with rib	1,2,5,6	13,14,16,17,19,20,23,24	1,15	5,73
90 x 90 x 90 x 3,0	1,2	14,15,16,17,18,21,22,25,26,27,28	2,97	2,61
90 x 90 x 90 x 3,0 with hook	1,2	14,15,16,17,18,21,22,25,26,27,28	2,97	2,61
90 x 90 x 90 x 3,0 with rib	1,2	13,14,15,16,19,20,23,24,25,26	2,37	6,94
90 x 90 x 90 x 3,0 with rib, with hook	1,2	13,14,15,16,19,20,23,24,25,26	2,37	6,94
100 x 100 x 40 x 2,0	1,2,3,4	11,12,13,14,15,16,17,18,19,20	1,30	0,78
100 x 100 x 40 x 2,5	1,2,3,4	11,12,13,14,15,16,17,18,19,20	1,30	1,21
100 x 100 x 50 x 2,0 with bolt hole	1,2,3,5,6	16,17,18,19,20,22,23,24,25,26,28,29	1,28	0,93
100 x 100 x 50 x 2,5 with bolt hole	1,2,3,5,6	16,17,18,19,20,22,23,24,25,26,28,29	1,28	1,45
100 x 100 x 55 x 2,5 with rib	1,2,3,4,5	13,14,15,16,20,21,22,23,24	1,28	4,16
100 x 100 x 60 x 2,0	1,2,3,4,5,6	16,17,18,19,20,21,22,23,24,25,26,27,28,29,30	1,97	1,31
100 x 100 x 60 x 2,5	1,2,3,4,5,6	16,17,18,19,20,21,22,23,24,25,26,27,28,29,30	1,97	2,04
100 x 100 x 80 x 2,0	1,2,3,4,5,6,7	19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36	2,55	1,39
100 x 100 x 100 x 2,0	1,2,3,4,5,6,7,8,9	24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46	3,21	1,81
100 x 100 x 100 x 2,0 with bolt hole	1,2,3,4,5,7,8,9,10	26,27,28,29,30,31,32,33,34,36,37,38,39,40,41,42,43,44,46,47,48,49	2,57	1,93
100 x 100 x 100 x 2,5	1,2,3,4,5,6,7,8,9	24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46	3,21	2,83
105 x 105 x 90 x 2,5, rib, with bolt hole	1,2,4,5	16,17,18,19,22,23,26,29,31,32	2,28	5,14
105 x 105 x 90 x 2,5 with bolt hole, long hole	1,2,4,5	17,18,19,20,21,24,25,28,31,33,34	2,86	1,76



Bracket type	Nail number n_V	Nail number n_H	$F_{1,Rk}$ [kN] (column)	
			Timber	Steel
105 x 105 x 90 x 3,0	1,2,4,5	17,18,19,20,21,24,25,28,31,33,34	3,07	2,61
105 x 105 x 90 x 3,0 with hook	1,2,4,5	17,18,19,20,21,24,25,28,31,33,34	3,07	2,61
105 x 105 x 90 x 3,0 with rib	1,2,4,5	16,17,18,19,22,23,26,29,31,32	2,46	7,03
105 x 105 x 90 x 3,0 with rib, with hook	1,2,4,5	16,17,18,19,22,23,26,29,31,32	2,46	7,03
120 x 120 x 90 x 3,0	3,4,6,7	19,20,21,22,23,26,27,30,33,35,36,38	3,15	2,61
120 x 120 x 90 x 3,0 with hook	3,4,6,7	19,20,21,22,23,26,27,30,33,35,36,38	3,15	2,61
120 x 120 x 90 x 3,0 with rib	3,4,6,7	18,19,20,21,24,25,28,31,33,34,36	2,52	7,37
120 x 120 x 90 x 3,0 with rib, with hook	3,4,6,7	18,19,20,21,24,25,28,31,33,34,36	2,52	7,36
130 x 50 x 65 x 2,5 with bolt hole and long hole	1,2,4,5,8,9,11	17,18,19,21,22	1,01	2,08
140 x 140 x 90 x 3,0	1,2,3,6,7,9,10	22,23,24,25,26,29,30,33,36,38,39,41,43,44	3,23	2,61
140 x 140 x 90 x 3,0 with hook	1,2,3,6,7,9,10	22,23,24,25,26,29,30,33,36,38,39,41,43,44	3,23	2,61
140 x 140 x 90 x 3,0 with rib	1,2,3,6,7,9,10	21,22,23,24,27,28,31,34,36,37,39,41,42	2,58	6,74
140 x 140 x 90 x 3,0 with rib, with hook	1,2,3,6,7,9,10	21,22,23,24,27,28,31,34,36,37,39,41,42	2,58	6,74

Table 3: Force F_1 Purlin, 2 angle brackets / connection

Bracket type	Nail number n_V	Nail number n_H	$F_{1,Rk}$ [kN] (purlin)	
			Timber	Steel
40 x 40 x 40 x 2,0	1,2	5,6,7,8	2,00	1,55
40 x 40 x 40 x 2,5	1,2	5,6,7,8	2,00	2,43
40 x 40 x 50 x 2,0	1,2,3	6,7,8,9,10	3,15	2,03
40 x 40 x 50 x 2,5	1,2,3	6,7,8,9,10	3,15	3,17
40 x 40 x 60 x 2,0	1,2,3	7,8,9,10,11,12	3,15	2,61
40 x 40 x 60 x 2,5	1,2,3	7,8,9,10,11,12	3,15	4,08
40 x 40 x 80 x 2,0	1,2,3	8,9,10,11,12,13,14	3,83	2,90
40 x 40 x 80 x 2,5	1,2,3	8,9,10,11,12,13,14	3,78	4,35
40 x 40 x 100 x 2,0	1,2,3,4	10,11,12,13,14,15,16,17,18	4,83	3,63
40 x 40 x 100 x 2,5	1,2,3,4	10,11,12,13,14,15,16,17,18	4,83	5,66
50 x 50 x 55 x 2,5	1,2	6,7,9,10	1,96	3,24
60 x 35 x 60 x 2,0	1,2,4,5	7,9	1,14	1,29



Bracket type	Nail number n _V	Nail number n _H	F _{1,Rk} [kN] (purlin)	
			Timber	Steel
80 x 80 x 100 x 2,0	1,2,3,4,5,6,7,8,9,10,11,12,13	19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36	6,13	3,48
80 x 80 x 100 x 2,0 with bolt hole	1,2,3,4,5,6,7,8,9,11,12,13,14	20,21,22,23,24,25,26,27,28,30,31,32,33,34,35,36,37,38	4,94	3,87
80 x 80 x 100 x 2,5	1,2,3,4,5,6,7,8,9,10,11,12,13	19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36	6,13	5,44
80 x 80 x 100 x 2,5 with bolt hole	1,2,3,4,5,6,7,8,9,11,12,13,14	20,21,22,23,24,25,26,27,28,30,31,32,33,34,35,36,37,38	4,94	6,04
90 x 40 x 40 x 2,5	1,2,4,5,6,7	11,12	1,36	1,47
90 x 60 x 60 x 2,0	1,2,3,4,5,6,7,9	10,11,12,14,15,16	2,81	1,49
90 x 60 x 60 x 2,0	1,2,4,5,6,7,9	10,11,13,14,15	1,87	1,33
90 x 60 x 60 x 2,5	1,2,3,4,5,6,7,9	10,12,14,15,16	2,81	2,02
90 x 60 x 60 x 2,5	1,2,4,5,6,7,9	10,11,13,14,15	1,87	2,07
90 x 60 x 60 x 2,5	1,2,4,5,6	8,9,11,12,13	1,87	2,07
90 x 90 x 65 x 2,5	1,2,5,6,9,10	16,17,18,20,21,22,24,25,26,29,30	3,44	3,24
90 x 90 x 65 x 2,5	1,2,5,6,9,10	16,17,18,20,21,22,24,25,26,29,30	3,44	3,24
90 x 90 x 65 x 2,5	1,2,5,6,8,9	13,14,16,17,19,20,23,24	2,29	11,47
90 x 90 x 90 x 3,0	1,2,5,6,8	14,15,16,17,18,21,22,25,26,27,28	5,94	5,22
90 x 90 x 90 x 3,0 with hook	1,2,5,6,8	14,15,16,17,18,21,22,25,26,27,28	5,94	5,22
90 x 90 x 90 x 3,0 with rib	1,2,5,6	13,14,15,16,19,20,23,24,25,26	4,75	13,9
90 x 90 x 90 x 3,0 with rib, with hook	1,2,5,6	13,14,15,16,19,20,23,24,25,26	4,75	13,9
100 x 100 x 40 x 2,0	1,2,3,4,5,6,7,8	11,12,13,14,15,16,17,18,19,20	2,59	1,55
100 x 100 x 40 x 2,5	1,2,3,4,5,6,7,8	11,12,13,14,15,16,17,18,19,20	2,59	2,43
100 x 100 x 50 x 2,0 with bolt hole	1,2,3,5,6,7,8,9,11,12	16,17,18,19,20,22,23,24,25,26,28,29	2,55	1,86
100 x 100 x 50 x 2,5 with bolt hole	1,2,3,5,6,7,8,9,11,12	16,17,18,19,20,22,23,24,25,26,28,29	2,55	2,90
100 x 100 x 55 x 2,5 with rib	1,2,3,4,5,9,10	13,14,15,16,20,21,22,23,24	2,56	8,33
100 x 100 x 60 x 2,0	1,2,3,4,5,6,7,8,9,10,11,12	16,17,18,19,20,21,22,23,24,25,26,27,28,29,30	3,95	2,61
100 x 100 x 60 x 2,5	1,2,3,4,5,6,7,8,9,10,11,12	16,17,18,19,20,21,22,23,24,25,26,27,28,29,30	3,95	4,08
100 x 100 x 80 x 2,0	1,2,3,4,5,6,7,8,9,10,11,12,13,14	19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36	5,11	2,78
100 x 100 x 100 x 2,0	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18	24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46	6,42	3,63



Table 5: Force F_1 Purlin, L angle bracket / connection

Bracket type	Nail number n_V	Nail number n_H	$F_{1,Rk}$ [kN] (purlin)	
			Timber	Steel
40 x 40 x 40 x 2,0	1,2	5,6,7,8	1,00	0,78
40 x 40 x 40 x 2,5	1,2	5,6,7,8	1,00	1,21
40 x 40 x 50 x 2,0	1,2,3	6,7,8,9,10	1,58	1,02
40 x 40 x 50 x 2,5	1,2,3	6,7,8,9,10	1,58	1,59
40 x 40 x 60 x 2,0	1,2,3	7,8,9,10,11,12	1,58	1,31
40 x 40 x 60 x 2,5	1,2,3	7,8,9,10,11,12	1,58	2,04
40 x 40 x 80 x 2,0	1,2,3	8,9,10,11,12,13,14	1,92	1,45
40 x 40 x 80 x 2,5	1,2,3	8,9,10,11,12,13,14	1,89	2,18
40 x 40 x 100 x 2,0	1,2,3,4	10,11,12,13,14,15,16,17,18	2,42	1,81
40 x 40 x 100 x 2,5	1,2,3,4	10,11,12,13,14,15,16,17,18	2,42	2,83
50 x 50 x 55 x 2,5	1,2	6,7,9,10	0,98	1,62
60 x 35 x 60 x 2,0	1,2,4,5	7,9	0,57	0,65
60 x 60 x 20 x 2,0	1,2	4,5	0,59	0,39
60 x 60 x 20 x 2,5	1,2	4,5	0,59	0,61
60 x 60 x 30 x 2,0	1,2,3	6,7,8,9,10	1,17	0,52
60 x 60 x 30 x 2,5	1,2,3	6,7,8,9,10	1,17	0,81
60 x 60 x 40 x 2,0	1,2,3,4	7,8,9,10,11,12	1,17	0,78
60 x 60 x 50 x 2,0	1,2,3,4,5	8,9,10,11,12,13,14,15	1,80	1,02
60 x 60 x 50 x 2,0 with bolt hole	1,2,3,5,6	10,11,12,13,14,16,17	1,15	0,97
60 x 60 x 50 x 2,5	1,2,3,4,5	8,9,10,11,12,13,14,15	1,80	1,59
60 x 60 x 60 x 2,0	1,2,3,4,5,6	10,11,12,13,14,15,16,17,18	1,80	1,31
60 x 60 x 80 x 2,0	1,2,3,4,5,6,7	12,13,14,15,16,17,18,19, 20,21,22	2,30	1,45
60 x 60 x 80 x 2,5	1,2,3,4,5,6,7	12,13,14,15,16,17,18,19, 20,21,22	2,29	2,27
60 x 60 x 90 x 2,0	1,2,3,4,5,6,7,8	13,14,15,16,17,18,19,20, 21,22,23,24	2,30	1,69
60 x 60 x 90 x 2,5	1,2,3,4,5,6,7,8	13,14,15,16,17,18,19,20, 21,22,23,24	2,30	2,64
60 x 60 x 100 x 2,0	1,2,3,4,5,6,7,8,9	15,16,17,18,19,20,21,22, 23,24,25,26,27,28	2,87	1,81
60 x 60 x 100 x 2,0 with bolt hole	1,2,3,4,5,7,8,9,10	16,17,18,19,20,21,22,23, 24,26,27,28,29	2,30	1,93
60 x 60 x 100 x 2,5	1,2,3,4,5,6,7,8,9	15,16,17,18,19,20,21,22, 23,24,25,26,27,28	2,87	2,83
60 x 60 x 100 x 2,5 with bolt hole	1,2,3,4,5,7,8,9,10	16,17,18,19,20,21,22,23, 24,26,27,28,29	2,30	3,02
60 x 65 x 55 x 3,0	1,2,3,4	8,9,11,12,13,14	1,03	1,96
65 x 65 x 55 x 2,5	1,2,3,4	8,9,13,14	1,10	1,62

Bracket type	Nail number n _V	Nail number n _H	F _{1,Rk} [kN] (purlin)	
			Timber	Steel
75 x 60 x 60 x 2,0	1,2,3,4,5,6	10,11,12,14,15,16	1,40	0,75
75 x 60 x 60 x 2,5	1,2,4	8,10,11,12,13	0,94	1,01
75 x 60 x 60 x 2,5	1,2,3,4,5	9,10,11,13,14,15	1,40	1,17
80 x 80 x 20 x 2,0	1,2,3	5,6,7,8	0,63	0,39
80 x 80 x 20 x 2,5	1,2,3	5,6,7,8	0,63	0,61
80 x 80 x 40 x 2,0	1,2,3,4,5,6	9,10,11,12,13,14,15,16	1,25	0,78
80 x 80 x 40 x 2,5	1,2,3,4,5,6	9,10,11,12,13,14,15,16	1,25	1,21
80 x 80 x 50 x 2,0 with bolt hole	1,2,3,4,5,7,8	12,13,14,15,16,18,19,20, 21,22	1,23	0,97
80 x 80 x 50 x 2,5 with bolt hole	1,2,3,4,5,7,8	12,13,14,15,16,18,19,20, 21,22	1,23	1,51
80 x 80 x 60 x 2,0	1,2,3,4,5,6,7,8,9	13,14,15,16,17,18,19,20, 21,22,23,24	1,91	1,31
80 x 80 x 80 x 2,0	1,2,3,4,5,6,7,8,9,10	15,16,17,18,19,20,21,22, 23,24,25,26,27,28	2,45	1,39
80 x 80 x 100 x 2,0	1,2,3,4,5,6,7,8,9, 10,11,12,13	19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36	3,06	1,74
80 x 80 x 100 x 2,0 with bolt hole	1,2,3,4,5,6,7,8,9, 11,12,13,14	20,21,22,23,24,25,26,27,28, 30,31,32,33,34,35,36,37,38	2,47	1,93
80 x 80 x 100 x 2,5	1,2,3,4,5,6,7,8,9, 10,11,12,13	19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36	3,06	2,72
80 x 80 x 100 x 2,5 with bolt hole	1,2,3,4,5,6,7,8,9, 11,12,13,14	20,21,22,23,24,25,26,27,28, 30,31,32,33,34,35,36,37,38	2,47	3,02
90 x 40 x 40 x 2,5	1,2,4,5,6,7	11,12	0,68	0,73
90 x 60 x 60 x 2,0	1,2,3,4,5,6,7,9	10,11,12,14,15,16	1,40	0,75
90 x 60 x 60 x 2,0	1,2,4,5,6,7,9	10,11,13,14,15	0,94	0,66
90 x 60 x 60 x 2,5	1,2,3,4,5,6,7,9	10,12,14,15,16	1,40	1,01
90 x 60 x 60 x 2,5	1,2,4,5,6,7,9	10,11,13,14,15	0,94	1,04
90 x 60 x 60 x 2,5	1,2,4,5,6	8,9,11,12,13	0,94	1,04
90 x 90 x 65 x 2,5	1,2,5,6,9,10	16,17,18,20,21,22,24, 25,26,29,30	1,72	1,62
90 x 90 x 65 x 2,5	1,2,5,6,9,10	16,17,18,20,21,22,24, 25,26,29,30	1,72	1,62
90 x 90 x 65 x 2,5	1,2,5,6,8,9	13,14,16,17,19,20,23,24	1,15	5,73
90 x 90 x 90 x 3,0	1,2,5,6,8	14,15,16,17,18,21,22,25, 26,27,28	2,97	2,61
90 x 90 x 90 x 3,0 with hook	1,2,5,6,8	14,15,16,17,18,21,22,25, 26,27,28	2,97	2,61
90 x 90 x 90 x 3,0 with rib	1,2,5,6	13,14,15,16,19,20,23,24,25,26	2,37	6,94
90 x 90 x 90 x 3,0 with rib, with hook	1,2,5,6	13,14,15,16,19,20,23,24,25,26	2,37	6,94
100 x 100 x 40 x 2,0	1,2,3,4,5,6,7,8	11,12,13,14,15,16,17,18,19,20	1,30	0,78
100 x 100 x 40 x 2,5	1,2,3,4,5,6,7,8	11,12,13,14,15,16,17,18,19,20	1,30	1,21



Bracket type	Nail number n_v	Nail number n_H	$F_{1,Rk}$ [kN] (purlin)	
			Timber	Steel
140 x 140 x 90 x 3,0 with hook	1,2,3,6,7,9,10,13, 14,16	22,23,24,25,26,29,30,33, 36,38,39,41,43,44	3,23	2,61
140 x 140 x 90 x 3,0 with rib	1,2,3,6,7,9,10,13,14	21,22,23,24,27,28,31,34, 36,37,39,41,42	2,58	6,74
140 x 140 x 90 x 3,0 with rib, with hook	1,2,3,6,7,9,10,13,14	21,22,23,24,27,28,31,34, 36,37,39,41,42	2,58	6,74

Table 6: Force F_1 Purlin, 1 angle bracket / connection

Bracket type	Nail number n_v	k_i	$F_{1,Rk}$ [kN] (purlin)	
			Timber	Steel
60 x 35 x 60 x 2,5	1,2,3,4,5	3,0	7,95	0,68
60 x 35 x 60 x 2,0	1,2	3,0	3,21	0,44

Table 7: Forces $F_{2,3}$, 2 angle brackets / connection

Bracket type	Nail number n_v	Nail number n_H	$F_{2,3,Rk}$ [kN]
			Timber
40 x 40 x 40 x 2,0	1,2	5,6,7,8	3,36
40 x 40 x 40 x 2,5	1,2	5,6,7,8	3,40
40 x 40 x 50 x 2,0	1,2,3	6,7,8,9,10	5,52
40 x 40 x 50 x 2,5	1,2,3	6,7,8,9,10	5,49
40 x 40 x 60 x 2,0	1,2,3	7,8,9,10,11,12	6,53
40 x 40 x 60 x 2,5	1,2,3	7,8,9,10,11,12	6,50
40 x 40 x 80 x 2,0	1,2,3	8,9,10,11,12,13,14	7,71
40 x 40 x 80 x 2,5	1,2,3	8,9,10,11,12,13,14	7,58
40 x 40 x 100 x 2,0	1,2,3,4	10,11,12,13,14,15,16,17,18	11,6
40 x 40 x 100 x 2,5	1,2,3,4	10,11,12,13,14,15,16,17,18	11,5
50 x 50 x 55 x 2,5	1,2	6,7,9,10	4,21
60 x 35 x 60 x 2,0	1,2,4,5	7,9	4,83
60 x 60 x 20 x 2,0	1,2	4,5	1,65
60 x 60 x 20 x 2,5	1,2	4,5	1,64
60 x 60 x 30 x 2,0	1,2,3	6,7,8,9,10	2,80
60 x 60 x 30 x 2,5	1,2,3	6,7,8,9,10	2,82
60 x 60 x 40 x 2,0	1,2,3,4	7,8,9,10,11,12	4,46
60 x 60 x 50 x 2,0	1,2,3,4,5	8,9,10,11,12,13,14,15	6,93
60 x 60 x 50 x 2,0 with bolt hole	1,2,3,5,6	10,11,12,13,14,16,17	5,57
60 x 60 x 50 x 2,5	1,2,3,4,5	8,9,10,11,12,13,14,15	6,89
60 x 60 x 60 x 2,0	1,2,3,4,5,6	10,11,12,13,14,15,16,17,18	8,38
60 x 60 x 80 x 2,0	1,2,3,4,5,6,7	12,13,14,15,16,17,18,19,20,21,22	11,3

Bracket type	Nail number n _V	Nail number n _H	F _{2,3,Rk} [kN]
			Timber
60 x 60 x 80 x 2,5	1,2,3,4,5,6,7	12,13,14,15,16,17,18,19,20,21,22	11,3
60 x 60 x 90 x 2,0	1,2,3,4,5,6,7,8	13,14,15,16,17,18,19,20,21,22,23,24	13,4
60 x 60 x 90 x 2,5	1,2,3,4,5,6,7,8	13,14,15,16,17,18,19,20,21,22,23,24	13,3
60 x 60 x 100 x 2,0	1,2,3,4,5,6,7,8,9	15,16,17,18,19,20,21,22,23,24,25, 26,27,28	17,0
60 x 60 x 100 x 2,0 with bolt hole	1,2,3,4,5,7,8,9,10	16,17,18,19,20,21,22,23,24,26,27, 28,29	15,5
60 x 60 x 100 x 2,5	1,2,3,4,5,6,7,8,9	15,16,17,18,19,20,21,22,23,24,25, 26,27,28	16,9
60 x 60 x 100 x 2,5 with bolt hole	1,2,3,4,5,7,8,9,10	16,17,18,19,20,21,22,23,24,26,27, 28,29	14,2
60 x 65 x 55 x 3,0	1,2,3,4	8,9,11,12,13,14	5,81
65 x 65 x 55 x 2,5	1,2,3,4	8,9,13,14	5,34
75 x 60 x 60 x 2,0	1,2,3,4,5,6	10,11,12,14,15,16	5,76
75 x 60 x 60 x 2,5	1,2,4	8,10,11,12,13	3,46
75 x 60 x 60 x 2,5	1,2,3,4,5	9,10,11,13,14,15	5,27
80 x 80 x 20 x 2,0	1,2,3	5,6,7,8	2,47
80 x 80 x 20 x 2,5	1,2,3	5,6,7,8	2,45
80 x 80 x 40 x 2,0	1,2,3,4,5,6	9,10,11,12,13,14,15,16	5,96
80 x 80 x 40 x 2,5	1,2,3,4,5,6	9,10,11,12,13,14,15,16	5,92
80 x 80 x 50 x 2,0 with bolt hole	1,2,3,4,5,7,8	12,13,14,15,16,18,19,20,21,22	7,38
80 x 80 x 50 x 2,5 with bolt hole	1,2,3,4,5,7,8	12,13,14,15,16,18,19,20,21,22	7,33
80 x 80 x 60 x 2,0	1,2,3,4,5,6,7,8,9	13,14,15,16,17,18,19,20,21,22,23,24	10,6
80 x 80 x 80 x 2,0	1,2,3,4,5,6,7,8,9,10	15,16,17,18,19,20,21,22,23,24,25, 26,27,28	12,7
80 x 80 x 100 x 2,0	1,2,3,4,5,6,7,8,9,10,11, 12,13	19,20,21,22,23,24,25,26,27,28,29, 30,31,32,33,34,35,36	19,0
80 x 80 x 100 x 2,0 with bolt hole	1,2,3,4,5,6,7,8,9,11,12, 13,14	20,21,22,23,24,25,26,27,28,30,31, 32,33,34,35,36,37,38	18,8
80 x 80 x 100 x 2,5	1,2,3,4,5,6,7,8,9,10,11, 12,13	19,20,21,22,23,24,25,26,27,28,29, 30,31,32,33,34,35,36	18,9
80 x 80 x 100 x 2,5 with bolt hole	1,2,3,4,5,6,7,8,9,11,12, 13,14	20,21,22,23,24,25,26,27,28,30,31, 32,33,34,35,36,37,38	18,7
90 x 40 x 40 x 2,5	1,2,4,5,6,7	11,12	3,05
90 x 60 x 60 x 2,0	1,2,3,4,5,6,7,9	10,11,12,14,15,16	6,70
90 x 60 x 60 x 2,0	1,2,4,5,6,7,9	10,11,13,14,15	6,18
90 x 60 x 60 x 2,5	1,2,3,4,5,6,7,9	10,12,14,15,16	6,01
90 x 60 x 60 x 2,5	1,2,4,5,6,7,9	10,11,13,14,15	6,13
90 x 60 x 60 x 2,5	1,2,4,5,6	8,9,11,12,13	5,30
90 x 90 x 65 x 2,5	1,2,5,6,9,10	16,17,18,20,21,22,24,25,26,29,30	7,51
90 x 90 x 65 x 2,5	1,2,5,6,9,10	16,17,18,20,21,22,24,25,26,29,30	7,52
90 x 90 x 65 x 2,5	1,2,5,6,8,9	13,14,16,17,19,20,23,24	7,20



Table 8: Forces $F_{2,3}$, 1 angle bracket / connection

Bracket type	Nail number n_v	Nail number n_H	$F_{2,3,Rk}$ [kN]
			Timber
40 x 40 x 40 x 2,0	1,2	5,6,7,8	1,68
40 x 40 x 40 x 2,5	1,2	5,6,7,8	1,70
40 x 40 x 50 x 2,0	1,2,3	6,7,8,9,10	2,76
40 x 40 x 50 x 2,5	1,2,3	6,7,8,9,10	2,74
40 x 40 x 60 x 2,0	1,2,3	7,8,9,10,11,12	3,27
40 x 40 x 60 x 2,5	1,2,3	7,8,9,10,11,12	3,25
40 x 40 x 80 x 2,0	1,2,3	8,9,10,11,12,13,14	3,85
40 x 40 x 80 x 2,5	1,2,3	8,9,10,11,12,13,14	3,79
40 x 40 x 100 x 2,0	1,2,3,4	10,11,12,13,14,15,16,17,18	5,79
40 x 40 x 100 x 2,5	1,2,3,4	10,11,12,13,14,15,16,17,18	5,76
50 x 50 x 55 x 2,5	1,2	6,7,9,10	2,10
60 x 35 x 60 x 2,0	1,2,4,5	7,9	2,41
60 x 60 x 20 x 2,0	1,2	4,5	0,83
60 x 60 x 20 x 2,5	1,2	4,5	0,82
60 x 60 x 30 x 2,0	1,2,3	6,7,8,9,10	1,40
60 x 60 x 30 x 2,5	1,2,3	6,7,8,9,10	1,41
60 x 60 x 40 x 2,0	1,2,3,4	7,8,9,10,11,12	2,23
60 x 60 x 50 x 2,0	1,2,3,4,5	8,9,10,11,12,13,14,15	3,47
60 x 60 x 50 x 2,0 with bolt hole	1,2,3,5,6	10,11,12,13,14,16,17	2,79
60 x 60 x 50 x 2,5	1,2,3,4,5	8,9,10,11,12,13,14,15	3,45
60 x 60 x 60 x 2,0	1,2,3,4,5,6	10,11,12,13,14,15,16,17,18	4,19
60 x 60 x 80 x 2,0	1,2,3,4,5,6,7	12,13,14,15,16,17,18,19,20,21,22	5,67
60 x 60 x 80 x 2,5	1,2,3,4,5,6,7	12,13,14,15,16,17,18,19,20,21,22	5,63
60 x 60 x 90 x 2,0	1,2,3,4,5,6,7,8	13,14,15,16,17,18,19,20,21,22,23,24	6,70
60 x 60 x 90 x 2,5	1,2,3,4,5,6,7,8	13,14,15,16,17,18,19,20,21,22,23,24	6,66
60 x 60 x 100 x 2,0	1,2,3,4,5,6,7,8,9	15,16,17,18,19,20,21,22,23,24,25, 26,27,28	8,48
60 x 60 x 100 x 2,0 with bolt hole	1,2,3,4,5,7,8,9,10	16,17,18,19,20,21,22,23,24,26,27, 28,29	7,74
60 x 60 x 100 x 2,5	1,2,3,4,5,6,7,8,9	15,16,17,18,19,20,21,22,23,24,25, 26,27,28	8,43
60 x 60 x 100 x 2,5 with bolt hole	1,2,3,4,5,7,8,9,10	16,17,18,19,20,21,22,23,24,26, 27,28,29	7,11
60 x 65 x 55 x 3,0	1,2,3,4	8,9,11,12,13,14	2,90
65 x 65 x 55 x 2,5	1,2,3,4	8,9,13,14	2,67
75 x 60 x 60 x 2,0	1,2,3,4,5,6	10,11,12,14,15,16	2,88
75 x 60 x 60 x 2,5	1,2,4	8,10,11,12,13	1,73



Bracket type	Nail number n _V	Nail number n _H	F _{2,3,Rk} [kN]
			Timber
75 x 60 x 60 x 2,5	1,2,3,4,5	9,10,11,13,14,15	2,63
80 x 80 x 20 x 2,0	1,2,3	5,6,7,8	1,24
80 x 80 x 20 x 2,5	1,2,3	5,6,7,8	1,23
80 x 80 x 40 x 2,0	1,2,3,4,5,6	9,10,11,12,13,14,15,16	2,98
80 x 80 x 40 x 2,5	1,2,3,4,5,6	9,10,11,12,13,14,15,16	2,96
80 x 80 x 50 x 2,0 with bolt hole	1,2,3,4,5,7,8	12,13,14,15,16,18,19,20,21,22	3,69
80 x 80 x 50 x 2,5 with bolt hole	1,2,3,4,5,7,8	12,13,14,15,16,18,19,20,21,22	3,67
80 x 80 x 60 x 2,0	1,2,3,4,5,6,7,8,9	13,14,15,16,17,18,19,20,21,22,23,24	5,29
80 x 80 x 80 x 2,0	1,2,3,4,5,6,7,8,9,10	15,16,17,18,19,20,21,22,23,24,25, 26,27,28	6,35
80 x 80 x 100 x 2,0	1,2,3,4,5,6,7,8,9,10,11, 12,13	19,20,21,22,23,24,25,26,27,28,29, 30,31,32,33,34,35,36	9,49
80 x 80 x 100 x 2,0 with bolt hole	1,2,3,4,5,6,7,8,9,11,12, 13,14	20,21,22,23,24,25,26,27,28,30,31, 32,33,34,35,36,37,38	9,41
80 x 80 x 100 x 2,5	1,2,3,4,5,6,7,8,9,10,11, 12,13	19,20,21,22,23,24,25,26,27,28,29, 30,31,32,33,34,35,36	9,43
80 x 80 x 100 x 2,5 with bolt hole	1,2,3,4,5,6,7,8,9,11,12, 13,14	20,21,22,23,24,25,26,27,28,30,31, 32,33,34,35,36,37,38	9,37
90 x 40 x 40 x 2,5	1,2,4,5,6,7	11,12	1,52
90 x 60 x 60 x 2,0	1,2,3,4,5,6,7,9	10,11,12,14,15,16	3,35
90 x 60 x 60 x 2,0	1,2,4,5,6,7,9	10,11,13,14,15	3,09
90 x 60 x 60 x 2,5	1,2,3,4,5,6,7,9	10,12,14,15,16	3,01
90 x 60 x 60 x 2,5	1,2,4,5,6,7,9	10,11,13,14,15	3,06
90 x 60 x 60 x 2,5	1,2,4,5,6	8,9,11,12,13	2,65
90 x 90 x 65 x 2,5	1,2,5,6,9,10	16,17,18,20,21,22,24,25,26,29,30	3,75
90 x 90 x 65 x 2,5	1,2,5,6,9,10	16,17,18,20,21,22,24,25,26,29,30	3,76
90 x 90 x 65 x 2,5	1,2,5,6,8,9	13,14,16,17,19,20,23,24	3,60
90 x 90 x 90 x 3,0	1,2,5,6,8	14,15,16,17,18,21,22,25,26,27,28	4,34
90 x 90 x 90 x 3,0 with hook	1,2,5,6,8	14,15,16,17,18,21,22,25,26,27,28	4,34
90 x 90 x 90 x 3,0 with rib	1,2,5,6	13,14,15,16,19,20,23,24,25,26	3,80
90 x 90 x 90 x 3,0 with rib, with hook	1,2,5,6	13,14,15,16,19,20,23,24,25,26	3,80
100 x 100 x 40 x 2,0	1,2,3,4,5,6,7,8	11,12,13,14,15,16,17,18,19,20	3,68
100 x 100 x 40 x 2,5	1,2,3,4,5,6,7,8	11,12,13,14,15,16,17,18,19,20	3,66
100 x 100 x 50 x 2,0 with bolt hole	1,2,3,5,6,7,8,9,11,12	16,17,18,19,20,22,23,24,25,26,28,29	4,58



Table 9: Basic Forces $F_{4,5}$, 2 angle brackets / connection

Bracket type	Nail number n_V	Nail number n_H	$F_{4,5,Rk}$ [kN]	
			Timber	Steel
40 x 40 x 40 x 2,0	1,2	5,6,7,8	7,13	2,04
40 x 40 x 40 x 2,5	1,2	5,6,7,8	6,07	2,66
40 x 40 x 50 x 2,0	1,2,3	6,7,8,9,10	9,09	2,27
40 x 40 x 50 x 2,5	1,2,3	6,7,8,9,10	7,08	2,91
40 x 40 x 60 x 2,0	1,2,3	7,8,9,10,11,12	9,76	2,90
40 x 40 x 60 x 2,5	1,2,3	7,8,9,10,11,12	9,10	3,75
40 x 40 x 80 x 2,0	1,2,3	8,9,10,11,12,13,14	12,1	4,20
40 x 40 x 80 x 2,5	1,2,3	8,9,10,11,12,13,14	11,4	5,67
40 x 40 x 100 x 2,0	1,2,3,4	10,11,12,13,14,15,16,17,18	14,3	5,21
40 x 40 x 100 x 2,5	1,2,3,4	10,11,12,13,14,15,16,17,18	14,5	6,89
50 x 50 x 55 x 2,5	1,2	6,7,9,10	7,53	4,04
60 x 35 x 60 x 2,0	1,2,4,5	7,9	4,15	3,99
60 x 60 x 20 x 2,0	1,2	4,5	2,46	1,14
60 x 60 x 20 x 2,5	1,2	4,5	2,41	1,42
60 x 60 x 30 x 2,0	1,2,3	6,7,8,9,10	3,34	1,49
60 x 60 x 30 x 2,5	1,2,3	6,7,8,9,10	3,32	1,84
60 x 60 x 40 x 2,0	1,2,3,4	7,8,9,10,11,12	5,29	2,24
60 x 60 x 50 x 2,0	1,2,3,4,5	8,9,10,11,12,13,14,15	7,14	2,58
60 x 60 x 50 x 2,0 with bolt hole	1,2,3,5,6	10,11,12,13,14,16,17	6,04	2,75
60 x 60 x 50 x 2,5	1,2,3,4,5	8,9,10,11,12,13,14,15	6,83	3,22
60 x 60 x 60 x 2,0	1,2,3,4,5,6	10,11,12,13,14,15,16,17,18	7,72	3,29
60 x 60 x 80 x 2,0	1,2,3,4,5,6,7	12,13,14,15,16,17,18,19, 20,21,22	9,10	4,33
60 x 60 x 80 x 2,5	1,2,3,4,5,6,7	12,13,14,15,16,17,18,19, 20,21,22	9,09	5,52
60 x 60 x 90 x 2,0	1,2,3,4,5,6,7,8	13,14,15,16,17,18,19,20, 21,22,23,24	11,2	5,00
60 x 60 x 90 x 2,5	1,2,3,4,5,6,7,8	13,14,15,16,17,18,19,20, 21,22,23,24	11,1	6,58
60 x 60 x 100 x 2,0	1,2,3,4,5,6,7,8,9	15,16,17,18,19,20,21,22, 23,24,25,26,27,28	12,0	5,52
60 x 60 x 100 x 2,0 with bolt hole	1,2,3,4,5,7,8,9,10	16,17,18,19,20,21,22,23, 24,26,27,28,29	11,9	5,54
60 x 60 x 100 x 2,5	1,2,3,4,5,6,7,8,9	15,16,17,18,19,20,21,22, 23,24,25,26,27,28	11,6	7,10
60 x 60 x 100 x 2,5 with bolt hole	1,2,3,4,5,7,8,9,10	16,17,18,19,20,21,22,23, 24,26,27,28,29	11,6	7,32
60 x 65 x 55 x 3,0	1,2,3,4	8,9,11,12,13,14	6,45	4,79

Bracket type	Nail number n _V	Nail number n _H	F _{4,5,Rk} [kN]	
			Timber	Steel
65 x 65 x 55 x 2,5	1,2,3,4	8,9,13,14	7,79	4,12
75 x 60 x 60 x 2,0	1,2,3,4,5,6	10,11,12,14,15,16	7,21	3,65
75 x 60 x 60 x 2,5	1,2,4	8,10,11,12,13	4,57	4,74
75 x 60 x 60 x 2,5	1,2,3,4,5	9,10,11,13,14,15	7,15	4,56
80 x 80 x 20 x 2,0	1,2,3	5,6,7,8	2,93	1,11
80 x 80 x 20 x 2,5	1,2,3	5,6,7,8	2,77	1,49
80 x 80 x 40 x 2,0	1,2,3,4,5,6	9,10,11,12,13,14,15,16	5,86	2,23
80 x 80 x 40 x 2,5	1,2,3,4,5,6	9,10,11,12,13,14,15,16	5,53	2,97
80 x 80 x 50 x 2,0 with bolt hole	1,2,3,4,5,7,8	12,13,14,15,16,18,19,20, 21,22	6,79	2,72
80 x 80 x 50 x 2,5 with bolt hole	1,2,3,4,5,7,8	12,13,14,15,16,18,19,20, 21,22	6,53	3,71
80 x 80 x 60 x 2,0	1,2,3,4,5,6,7,8,9	13,14,15,16,17,18,19,20, 21,22,23,24	8,56	3,35
80 x 80 x 80 x 2,0	1,2,3,4,5,6,7,8,9,10	15,16,17,18,19,20,21,22, 23,24,25,26,27,28	10,3	4,39
80 x 80 x 100 x 2,0	1,2,3,4,5,6,7,8,9, 10,11,12,13	19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36	13,3	5,49
80 x 80 x 100 x 2,0 with bolt hole	1,2,3,4,5,6,7,8,9,11, 12,13,14	20,21,22,23,24,25,26,27,28, 30,31,32,33,34,35,36,37,38	13,2	5,50
80 x 80 x 100 x 2,5	1,2,3,4,5,6,7,8,9, 10,11,12,13	19,20,21,22,23,24,25,26,27, 28,29,30,31,32,33,34,35,36	12,6	7,53
80 x 80 x 100 x 2,5 with bolt hole	1,2,3,4,5,6,7,8,9, 11,12,13,14	20,21,22,23,24,25,26,27,28, 30,31,32,33,34,35,36,37,38	12,8	7,33
90 x 40 x 40 x 2,5	1,2,4,5,6,7	11,12	4,01	3,08
90 x 60 x 60 x 2,0	1,2,3,4,5,6,7,9	10,11,12,14,15,16	8,27	5,41
90 x 60 x 60 x 2,0	1,2,4,5,6,7,9	10,11,13,14,15	7,94	5,08
90 x 60 x 60 x 2,5	1,2,3,4,5,6,7,9	10,12,14,15,16	6,98	5,98
90 x 60 x 60 x 2,5	1,2,4,5,6,7,9	10,11,13,14,15	6,97	5,99
90 x 60 x 60 x 2,5	1,2,4,5,6	8,9,11,12,13	6,46	5,84
90 x 90 x 65 x 2,5	1,2,5,6,9,10	16,17,18,20,21,22,24,25, 26,29,30	7,06	4,59
90 x 90 x 65 x 2,5	1,2,5,6,9,10	16,17,18,20,21,22,24,25, 26,29,30	6,82	4,50
90 x 90 x 65 x 2,5	1,2,5,6,8,9	13,14,16,17,19,20,23,24	6,93	6,98
90 x 90 x 90 x 3,0	1,2,5,6,8	14,15,16,17,18,21,22,25, 26,27,28	11,3	7,73
90 x 90 x 90 x 3,0 with hook	1,2,5,6,8	14,15,16,17,18,21,22,25, 26,27,28	11,3	7,54
90 x 90 x 90 x 3,0 with rib	1,2,5,6	13,14,15,16,19,20,23,24, 25,26	9,77	10,1

