NATIONAL DECLARATION OF PERFORMANCE NO:

KDWU-2018/0680

for fixing metal sheets and metal elements

Version: V-1.2019 EN

1. Name and trade name of construction product::

Fasteners GM-S, GMR-S, GMZ-S, GM-B, GMR-B, GM-K, GTZF, GTO2, GTRO2, GTO3FH, GT3, GTS-STAR, GT3 HD, GTR3, GTX3, GTX3 AL, GTZ5-AGF, GT5, GTR5, GT5FH, GTX5, GT6, GTR6, GT6L, GT8, GTR8, GT12, GTR12, GT12FH, GTX12, GT16, GTR16, GT20, GTR20, GT25, GTR25, G, GTFO2, GTFO2P, GTF2, GTFS, GTF HD, GTFP, GTXFO2, GTZ FO2, GTX F2 for fixing steel elements and sheets

2. Type of the construction product:

GM-S, GMR-S, GMZ-S, GM-B, GMR-B, GM-K, GTZF, GTO2, GTRO2, GTO3FH, GT3, GTS-STAR, GT3 HD, GTR3, GTX3, GTX3 AL, GTZ5-AGF, GT5, GTR5, GT5FH, GTX5, GT6, GTR6, GT6L, GT8, GTR8, GT12, GTR12, GT12FH, GTX12, GT16, GTR16, GT20, GTR20, GT25, GTR25, G, GTFO2, GTFO2P, GTF2, GTFS, GTF HD, GTFP, GTXFO2, GTZ FO2, GTX F2

3. Intended uses or uses:

Fasteners GM-S, GMR-S, GMZ-S, GM-B, GMR-B, GM-K, GTZF, GTO2, GTRO2, GTO3FH, GT3, GTS-STAR, GT3 HD, GTR3, GTX3, GTX3 AL, GTZ5-AGF, GT5, GTR5, GT5FH, GTX5, GT6, GTR6, GT6L, GT8, GTR8, GT12, GTR12, GT12FH, GTX12, GT16, GTR16, GT20, GTR20, GT25, GTR25, G, GTFO2, GTFO2P, GTF2, GTFS, GTF HD, GTFP, GTXFO2, GTZ FO2, GTX F2 i GTX F2 are intended for fixing metal sheets to steel substrates of the S280GD, S320GD or S350GD grade according to PN-EN 10346: 2015 or S235JR grade according to PN-EN 10025-1: 2007 or aluminum grade 1050A according to PN-EN 573-3: 2010 or for wood substrates ≥ C24 according to PN-EN 338: 2016 (according to Table 1).

GT6L connectors are designed to connect sheets between which there is thermal insulation.

Connectors covered by this National Technical Assessment can be used to attach aluminum GMF flange bases, protecting roofing around ventilation chimneys, ventilators, antenna masts, etc. against direct penetration of precipitation.

Because of the aggressiveness of the corrosive environment:

- **Fasteners made of plain carbon steel coated with a zinc coating of 12 µm or 20 µm thickness, without a pad or with an aluminum pad, of galvanized steel or stainless steel, should be used in environments with atmospheric corrosion in accordance with Table 1 of PN- EN ISO 2081: 2011,**
- **Connectors made of plain carbon steel, zinc plated and additional gRey.coat, without a pad or with aluminum or stainless steel pads, should be used in environments with atmospheric corrosivity categories C1, C2, C3 and C4 according to PN-EN ISO 12944-2: 2001,**
- **Connectors made of plain carbon steel coated with zinc coating and an additional powder-coated polyester powder coating, without a pad or with an aluminum pad, of galvanized steel or stainless steel, should be used in atmospheres of C1, C2 and C3 corrosivity categories according to Standard PN-EN ISO 12944-2: 2001,**
- **Stainless steel fasteners, without additional coating or polyester paint coating with a thickness of no less than 50 µm, together with a stainless steel washer, should be used in atmospheres of C1, C2, C3, C4 atmospheric corrosivity categories, according to PN standards. -EN ISO 12944-2: 2001, excluding chlorine-rich environments (eg marine and coastal areas, pool halls),**

BIMETAL stainless steel fasteners, coated with gRey.coat or polyester paint coatings of thickness not less than 50 µm, including stainless steel washers, should be used in atmospheres of atmospheric corrosivity category C1, C2, C3, C4, C5. -I and C5-M according to PN-EN ISO 12944-2: 2001 standard.

4. Name and address of the manufacturer and place of manufacture of the product:

Etanco Sp. z o. o., Al. Jana Pawła II 1, 81-345 Gdynia,

Address of production plant: ul. Olsztyńska 30 , 11-130 Orneta

5. Name and address of the authorized representative, if established:

N/A

6. National system used for assessment and verification of constancy of performance:

System 2+

7. National technical specification:

7a. Polish Product standard : **N/A**

Name of accredited certification body, accreditation number and national certificate number or name of accredited laboratory / laboratory and accreditation number: **N/A**

7b. National technical assessment: **KOT-2018/0680**

Technical Assessment Unit / National Technical Assessment Unit**:**

Instytut Techniki Budowlanej w Warszawie nr 1488

Name of accredited certification body and certificate number:

Zakład Certyfikacji ITB Warszawa AC 020

Certyfikat Zakładowej Kontroli Produkcji nr: 020-UWB-0740/Z

8. Declared performance properties

Essential characteristics of the construction product for the intended use or uses	**Declared usable features**	**Comments**
Characteristic characteristics of connectors: - pull-out $N_{R,k}$ [kN] - shear $V_{R,k}$ [kN]	according to tables C1÷C58 of approval	KOT-2018/0680
Protective coating / Corrosion protection	according to point 2 of approval	KOT-2018/0680 PN-EN ISO 12944-2:2001
Reaction to fire	class A1 according to point 2 of approval	PN-EN 13501-1+A1:2010

Table C1

Characteristic bearing capacity of fasteners G 4,8 x 20 i G 4,8 x 20 powder.coat, with hexagon head and sealing washer Ø14 mm made of aluminum – steel substrate										
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24**
$M_{t,nom}$				**3 Nm**						
Thickness of fastened metal sheet[2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,11	1,11	1,11	1,11	1,11	1,11	
			0,55	1,11	1,11	1,11	1,11	1,11	1,11	
			0,63	1,11	1,11	1,45	1,45	1,45	1,45	
			0,75	1,11	1,11	1,45	1,49	1,49	1,49	
			0,88	1,11	1,11	1,45	1,49	1,49	1,49	
			1,00	1,11	1,11	1,45	1,49	1,49	1,49	
		for pull-out [kN]	**0,50**	0,48	0,48	0,48	0,48	0,48	0,48	
			0,55	0,48	0,48	0,48	0,48	0,48	0,48	
			0,63	0,48	0,48	0,78	0,78	0,78	0,78	
			0,75	0,48	0,48	0,78	0,91	0,91	0,91	
			0,88	0,48	0,48	0,78	0,91	1,30	1,30	
			1,00	0,48	0,48	0,78	0,91	1,30	1,61	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C2

Characteristic bearing capacity of fasteners G 4,8 x L i G 4,8 x L powder.coat, with hexagon head and sealing washer Ø14 mm made of aluminum – wood substrate											
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24 h_{ef} = 20 mm**	
$M_{t,nom}$				**3 Nm**							
Thickness of fastened metal sheet[2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	–	–	–	–	–	–	1,11	Nośność mocowanej blachy na docisk trzpienia
			0,55	–	–	–	–	–	–	1,11	
			0,63	–	–	–	–	–	–	1,45	
			0,75	–	–	–	–	–	–	1,49	
			0,88	–	–	–	–	–	–	1,49	
			1,00	–	–	–	–	–	–	1,49	
		for pull-out [kN]	**0,50**	–	–	–	–	–	–	2,78	Nośność mocowanej blachy na przeciąganie łba
			0,55	–	–	–	–	–	–	2,78	
			0,63	–	–	–	–	–	–	4,51	
			0,75	–	–	–	–	–	–	4,51	
			0,88	–	–	–	–	–	–	4,51	
			1,00	–	–	–	–	–	–	4,51	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

Table C3

Characteristic bearing capacity of fasteners GTFO2 4,8 x 20 i GTFO2 4,8 x 20 powder.coat, with hexagon head and sealing washer Ø14 mm made of carbon steel – steel substrate										
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24**
$M_{t,nom}$				**3 Nm**						
Thickness of fastened metal sheet[2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,11	1,11	1,11	1,11	1,11	1,11	
			0,55	1,11	1,11	1,11	1,11	1,11	1,11	
			0,63	1,11	1,11	1,45	1,45	1,45	1,45	
			0,75	1,11	1,11	1,45	1,49	1,49	1,49	
			0,88	1,11	1,11	1,45	1,49	1,49	1,49	
			1,00	1,11	1,11	1,45	1,49	1,49	1,49	
		for pull-out [kN]	**0,50**	0,48	0,48	0,48	0,48	0,48	0,48	
			0,55	0,48	0,48	0,48	0,48	0,48	0,48	
			0,63	0,48	0,48	0,78	0,78	0,78	0,78	
			0,75	0,48	0,48	0,78	0,91	0,91	0,91	
			0,88	0,48	0,48	0,78	0,91	1,30	1,30	
			1,00	0,48	0,48	0,78	0,91	1,30	1,61	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C4

Characteristic bearing capacity of fasteners GTFO2P 4,8 x 20 i GTFO2P 4,8 x 20 powder.coat, z łbem owalnym and sealing washer Ø14 mm made of aluminum – steel substrate										
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24**
$M_{t,nom}$				**3 Nm**						
Thickness of fastened metal sheet[2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,11	1,11	1,11	1,11	1,11	1,11	
			0,55	1,11	1,11	1,11	1,11	1,11	1,11	
			0,63	1,11	1,11	1,45	1,45	1,45	1,45	
			0,75	1,11	1,11	1,45	1,49	1,49	1,49	
			0,88	1,11	1,11	1,45	1,49	1,49	1,49	
			1,00	1,11	1,11	1,45	1,49	1,49	1,49	
		for pull-out [kN]	**0,50**	0,48	0,48	0,48	0,48	0,48	0,48	
			0,55	0,48	0,48	0,48	0,48	0,48	0,48	
			0,63	0,48	0,48	0,78	0,78	0,78	0,78	
			0,75	0,48	0,48	0,78	0,91	0,91	0,91	
			0,88	0,48	0,48	0,78	0,91	1,30	1,30	
			1,00	0,48	0,48	0,78	0,91	1,30	1,61	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C5

Characteristic bearing capacity of fasteners GTF2 4,8 x L i GTF2 4,8 x L powder.coat, with hexagon head and sealing washer Ø14 mm made of carbon steel – wood substrate												
Thickness of substrate [1] [mm]				0,50	0,55	0,63	0,75	0,88	1,00	Wood class ≥ C24 h_{ef} = 20 mm		
$M_{t,nom}$				3 Nm								
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	0,50	–	–	–	–	–	–	1,11	Nośność mocowanej blachy na docisk trzpienia	
			0,55	–	–	–	–	–	–	1,11		
			0,63	–	–	–	–	–	–	1,45		
			0,75	–	–	–	–	–	–	1,49		
			0,88	–	–	–	–	–	–	1,49		
			1,00	–	–	–	–	–	–	1,49		
		for pull-out [kN]	0,50	–	–	–	–	–	–	2,78	Nośność mocowanej blachy na przeciąganie łba	
			0,55	–	–	–	–	–	–	2,78		
			0,63	–	–	–	–	–	–	4,51		
			0,75	–	–	–	–	–	–	4,51		
			0,88	–	–	–	–	–	–	4,51		
			1,00	–	–	–	–	–	–	4,51		

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

Table C6

Characteristic bearing capacity of fasteners GTFS 4,8 x L i GTFS 4,8 x L powder.coat, with hexagon head and sealing washer Ø14 mm made of carbon steel – wood substrate												
Thickness of substrate [1] [mm]				0,50	0,55	0,63	0,75	0,88	1,00	Wood class ≥ C24 h_{ef} = 20 mm		
$M_{t,nom}$				3 Nm								
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	0,50	–	–	–	–	–	–	0,80	Nośność mocowanej blachy na docisk trzpienia	
			0,55	–	–	–	–	–	–	1,40		
			0,63	–	–	–	–	–	–	1,40		
			0,75	–	–	–	–	–	–	1,40		
			0,88	–	–	–	–	–	–	–		
			1,00	–	–	–	–	–	–	–		
		for pull-out [kN]	0,50	–	–	–	–	–	–	2,78	Nośność mocowanej blachy na przeciąganie łba	
			0,55	–	–	–	–	–	–	2,78		
			0,63	–	–	–	–	–	–	4,51		
			0,75	–	–	–	–	–	–	4,51		
			0,88	–	–	–	–	–	–	–		
			1,00	–	–	–	–	–	–	–		

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

Table C7

Characteristic bearing capacity of fasteners GTXFO2 4,8 x 20 i GTXFO2 4,8 x 20 powder.coat, with hexagon head and sealing washer Ø14 mm made of stainless steel – steel substrate										
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24**
$M_{t,nom}$				**3 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	0,62	0,62	0,62	0,62	0,62	0,62	
			0,55	0,62	0,62	0,62	0,62	0,62	0,62	
			0,63	0,62	0,62	1,13	1,13	1,13	1,13	
			0,75	0,62	0,62	1,13	1,46	1,46	1,46	
			0,88	0,62	0,62	1,13	1,46	1,46	1,46	
			1,00	0,62	0,62	1,13	1,46	1,46	1,46	
		for pull-out [kN]	**0,50**	0,49	0,49	0,49	0,49	0,49	0,49	
			0,55	0,49	0,49	0,49	0,49	0,49	0,49	
			0,63	0,49	0,49	0,77	0,77	0,77	0,77	
			0,75	0,49	0,49	0,77	0,89	0,89	0,89	
			0,88	0,49	0,49	0,77	0,89	1,01	1,01	
			1,00	0,49	0,49	0,77	0,89	1,01	1,44	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C8

Characteristic bearing capacity of fasteners GTXF2 4,8 x L i GTXF2 4,8 x L powder.coat, with hexagon head and sealing washer Ø14 mm made of stainless steel – wood substrate											
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24 h_{ef} = 20 mm**	
$M_{t,nom}$				**3 Nm**							
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	–	–	–	–	–	–	0,62	Nośność mocowanej blachy na docisk trzpienia
			0,55	–	–	–	–	–	–	0,62	
			0,63	–	–	–	–	–	–	1,13	
			0,75	–	–	–	–	–	–	1,46	
			0,88	–	–	–	–	–	–	1,46	
			1,00	–	–	–	–	–	–	1,46	
		for pull-out [kN]	**0,50**	–	–	–	–	–	–	2,78	Nośność mocowanej blachy na przeciąganie łba
			0,55	–	–	–	–	–	–	2,78	
			0,63	–	–	–	–	–	–	4,51	
			0,75	–	–	–	–	–	–	4,51	
			0,88	–	–	–	–	–	–	4,51	
			1,00	–	–	–	–	–	–	4,51	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

Table C9

Characteristic bearing capacity of fasteners GTF HD 6,4 x L i GTF HD 6,4 x L powder.coat, with hexagon head and sealing washer Ø16 mm made of carbon steel – wood substrate												
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24 h_{ef} = 20 mm**	
$M_{t,nom}$				**8 Nm**							
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	–	–	–	–	–	–	1,30	Nośność mocowanej blachy na docisk trzpienia
			0,55	–	–	–	–	–	–	1,30	
			0,63	–	–	–	–	–	–	1,30	
			0,75	–	–	–	–	–	–	1,30	
			0,88	–	–	–	–	–	–	1,30	
			1,00	–	–	–	–	–	–	1,30	
		for pull-out [kN]	**0,50**	–	–	–	–	–	–	3,75	Nośność mocowanej blachy na przeciąganie łba
			0,55	–	–	–	–	–	–	3,75	
			0,63	–	–	–	–	–	–	4,04	
			0,75	–	–	–	–	–	–	5,63	
			0,88	–	–	–	–	–	–	5,63	
			1,00	–	–	–	–	–	–	5,63	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

Table **C10**

Characteristic bearing capacity of fasteners GTF P 4,8 x L i GTF P 4,8 x L powder.coat, z łbem owalnym and sealing washer Ø14 mm made of aluminum– steel and wood substrate												
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24 h_{ef} = 20 mm**	
$M_{t,nom}$				**8 Nm**							
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,21	1,21	1,21	1,21	1,21	1,21	1,08	Nośność mocowanej blachy na docisk trzpienia
			0,55	1,21	1,21	1,21	1,21	1,21	1,21	1,08	
			0,63	1,21	1,21	1,42	1,42	1,42	1,42	1,08	
			0,75	1,21	1,21	1,42	2,27	2,27	2,27	1,08	
			0,88	1,21	1,21	1,42	2,27	2,67	2,67	1,08	
			1,00	1,21	1,21	1,42	2,27	2,67	2,69	1,08	
		for pull-out [kN]	**0,50**	0,62	0,62	0,62	0,62	0,62	0,62	2,97	Nośność mocowanej blachy na przeciąganie łba
			0,55	0,62	0,62	0,62	0,62	0,62	0,62	2,97	
			0,63	0,62	0,62	0,80	0,80	0,80	0,80	3,93	
			0,75	0,62	0,62	0,80	0,91	0,91	0,91	4,73	
			0,88	0,62	0,62	0,80	0,91	1,23	1,23	4,73	
			1,00	0,62	0,62	0,80	0,91	1,23	1,48	4,73	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

Table C11

Characteristic bearing capacity of fasteners GTO2 4,8 x 20, GTO2 4,8 x 20 powder.coat, GTRO2 4,8 x 20 i GTRO2 4,8 x 20 powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24**
$M_{t,nom}$				**3 Nm**						
Thickness of fastened metal sheet[2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,05	1,05	1,05	1,05	1,05	1,05	
			0,55	1,05	1,05	1,05	1,05	1,05	1,05	
			0,63	1,05	1,05	1,42	1,42	1,42	1,42	
			0,75	1,05	1,05	1,42	2,02	2,02	2,02	
			0,88	1,05	1,05	1,42	2,02	2,21	2,21	
			1,00	1,05	1,05	1,42	2,02	2,21	2,53	
		for pull-out [kN]	**0,50**	0,55	0,55	0,73	0,86	1,04	1,59	
			0,55	0,55	0,55	0,73	0,86	1,04	1,59	
			0,63	0,55	0,55	0,73	0,86	1,04	1,59	
			0,75	0,55	0,55	0,73	0,86	1,04	1,59	
			0,88	0,55	0,55	0,73	0,86	1,04	1,59	
			1,00	0,55	0,55	0,73	0,86	1,04	1,59	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C12

Characteristic bearing capacity of fasteners GTO2 4,8 x 20, GTO2 4,8 x 20 powder.coat, GTRO2 4,8 x 20 i GTRO2 4,8 x 20 powder.coat, with hexagon head and sealing washer Ø14 mm made of carbon steel, stainless steel or aluminum – steel substrate										
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24**
$M_{t,nom}$				**3 Nm**						
Thickness of fastened metal sheet[2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,05	1,05	1,05	1,05	1,05	1,05	
			0,55	1,05	1,05	1,05	1,05	1,05	1,05	
			0,63	1,05	1,05	1,42	1,42	1,42	1,42	
			0,75	1,05	1,05	1,42	2,02	2,02	2,02	
			0,88	1,05	1,05	1,42	2,02	2,21	2,21	
			1,00	1,05	1,05	1,42	2,02	2,21	2,53	
		for pull-out [kN]	**0,50**	0,55	0,55	0,73	0,86	1,04	1,59	
			0,55	0,55	0,55	0,73	0,86	1,04	1,59	
			0,63	0,55	0,55	0,73	0,86	1,04	1,59	
			0,75	0,55	0,55	0,73	0,86	1,04	1,59	
			0,88	0,55	0,55	0,73	0,86	1,04	1,59	
			1,00	0,55	0,55	0,73	0,86	1,04	1,59	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C13

Characteristic bearing capacity of fasteners GTO3 FH 6,3 x L GTO3 FH 6,3 x L powder.coat, with hexagon head– steel substrate												
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**1,13**	**1,25**	**Wood class ≥ C24**
$M_{t,nom}$				**8 Nm**								
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,53	1,53	1,53	1,53	1,53	1,53	1,53	1,53	
			0,55	1,53	1,53	1,53	1,53	1,53	1,53	1,53	1,53	
			0,63	1,53	1,53	1,88	1,88	1,88	1,88	1,88	1,88	
			0,75	1,53	1,53	1,88	2,92	2,92	2,92	2,92	2,92	
			0,88	1,53	1,53	1,88	2,92	3,21	3,21	3,21	3,21	
			1,00	1,53	1,53	1,88	2,92	3,21	3,66	3,66	3,66	
			1,13	1,53	1,53	1,88	2,92	3,21	3,66	3,66	3,66	
			1,25	1,53	1,53	1,88	2,92	3,21	3,66	3,66	3,69	
		for pull-out [kN]	**0,50**	0,53	0,53	0,69	0,84	1,02	1,77	1,77	2,01	
			0,55	0,53	0,53	0,69	0,84	1,02	1,77	1,77	2,01	
			0,63	0,53	0,53	0,69	0,84	1,02	1,77	1,77	2,01	
			0,75	0,53	0,53	0,69	0,84	1,02	1,77	1,77	2,01	
			0,88	0,53	0,53	0,69	0,84	1,02	1,77	1,77	2,01	
			1,00	0,53	0,53	0,69	0,84	1,02	1,77	1,77	2,01	
			1,13	0,53	0,53	0,69	0,84	1,02	1,77	1,77	2,01	
			1,25	0,53	0,53	0,69	0,84	1,02	1,77	1,77	2,01	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C14

Characteristic bearing capacity of fasteners GT3 4,8 x L, GT3 4,8 x L powder.coat, GTR3 4,8 x L GTR3 4,8 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				1,00	1,25	1,50	2,00	2,50	3,00	Wood class ≥ C24
$M_{t,nom}$				3 Nm						
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	0,50	1,08	1,08	1,08	1,08	—	—	
			0,55	1,08	1,08	1,08	1,08	—	—	
			0,63	1,38	1,38	1,38	1,38	—	—	
			0,75	2,11	2,11	2,11	2,11	—	—	
			0,88	2,29	2,29	2,29	2,29	—	—	
			1,00	2,59	2,59	2,59	2,59	—	—	
			1,13	2,59	2,59	2,59	—	—	—	
			1,25	2,59	2,74	2,74	—	—	—	
			1,50	2,59	2,74	3,41	—	—	—	
			1,75	2,59	2,74	—	—	—	—	
			2,00	2,59	—	—	—	—	—	
		for pull-out [kN]	0,50	0,51	0,51	0,51	0,51	—	—	
			0,55	0,51	0,51	0,51	0,51	—	—	
			0,63	0,76	0,76	0,76	0,76	—	—	
			0,75	0,84	0,84	0,84	0,84	—	—	
			0,88	0,78	0,78	0,78	0,78	—	—	
			1,00	0,94	0,94	0,94	0,94	—	—	
			1,13	0,94	0,94	0,94	—	—	—	
			1,25	0,94	0,94	0,94	—	—	—	
			1,50	0,94	0,94	0,94	—	—	—	
			1,75	0,94	0,94	—	—	—	—	
			2,00	0,94	—	—	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C15

Characteristic bearing capacity of fasteners GT3 4,8 x L, GT3 4,8 x L powder.coat, GTR3 4,8 x L i GTR3 4,8 x L powder.coat, with hexagon head and sealing washer Ø14 mm made of carbon steel , stainless steel or aluminum – steel substrate											
Thickness of substrate [1] [mm]				**0,75**	**1,00**	**1,25**	**1,50**	**2,00**	**2,50**	**3,00**	**Wood class ≥ C24**
$M_{t,nom}$				**3 Nm**							
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	-	1,08	1,08	1,08	1,08	—	—	
			0,55	-	1,08	1,08	1,08	1,08	—	—	
			0,63	-	1,38	1,38	1,38	1,38	—	—	
			0,75	2,11	2,11	2,11	2,11	2,11	—	—	
			0,88	2,11	2,29	2,29	2,29	2,29	—	—	
			1,00	2,11	2,59	2,59	2,59	2,59	—	—	
			1,13	2,11	2,59	2,59	2,59	—	—	—	
			1,25	2,11	2,59	2,74	2,74	—	—	—	
			1,50	2,11	2,59	2,74	3,41	—	—	—	
			1,75	2,11	2,59	2,74	—	—	—	—	
			2,00	2,11	2,59	—	—	—	—	—	
		for pull-out [kN]	**0,50**	-	0,97	1,43	1,69	2,19	—	—	
			0,55	-	0,97	1,43	1,69	2,19	—	—	
			0,63	-	0,97	1,43	1,69	2,76	—	—	
			0,75	0,75	0,97	1,43	1,69	2,76	—	—	
			0,88	0,75	0,97	1,43	1,69	2,76	—	—	
			1,00	0,75	0,97	1,43	1,69	2,76	—	—	
			1,13	0,75	0,97	1,43	1,69	—	—	—	
			1,25	0,75	0,97	1,43	1,69	—	—	—	
			1,50	0,75	0,97	1,43	1,69	—	—	—	
			1,75	0,75	0,97	1,43	—	—	—	—	
			2,00	0,75	0,97	—	—	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C16

Characteristic bearing capacity of fasteners GTX3 4,8 x L i GTX3 4,8 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				1,00	1,25	1,50	2,00	2,50	3,00	Wood class ≥ C24
$M_{t,nom}$				3 Nm						
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	**0,50**	1,08	1,08	1,08	1,08	—	—	
			0,55	1,08	1,08	1,08	1,08	—	—	
			0,63	1,38	1,38	1,38	1,38	—	—	
			0,75	2,11	2,11	2,11	2,11	—	—	
			0,88	2,29	2,29	2,29	2,29	—	—	
			1,00	2,59	2,59	2,59	2,59	—	—	
			1,13	2,59	2,59	2,59	—	—	—	
			1,25	2,59	2,74	2,74	—	—	—	
			1,50	2,59	2,74	3,41	—	—	—	
			1,75	2,59	2,74	—	—	—	—	
			2,00	2,59	—	—	—	—	—	
		for pull-out [kN]	**0,50**	0,51	0,51	0,51	0,51	—	—	
			0,55	0,51	0,51	0,51	0,51	—	—	
			0,63	0,76	0,76	0,76	0,76	—	—	
			0,75	0,84	0,84	0,84	0,84	—	—	
			0,88	0,78	0,78	0,78	0,78	—	—	
			1,00	0,94	0,94	0,94	0,94	—	—	
			1,13	0,94	0,94	0,94	—	—	—	
			1,25	0,94	0,94	0,94	—	—	—	
			1,50	0,94	0,94	0,94	—	—	—	
			1,75	0,94	0,94	—	—	—	—	
			2,00	0,94	—	—	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C17

Characteristic bearing capacity of fasteners GTX3 4,8 x L i GTX3 4,8 x L powder.coat, with hexagon head and sealing washer Ø14 mm made of stainless steel – steel substrate											
Thickness of substrate [1] [mm]				**0,75**	**1,00**	**1,25**	**1,50**	**2,00**	**2,50**	**3,00**	**Wood class ≥ C24**
$M_{t,nom}$				**3 Nm**							
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**										
		for shear [kN]	**0,50**	-	1,08	1,08	1,08	1,08	—	—	
			0,55	-	1,08	1,08	1,08	1,08	—	—	
			0,63	-	1,38	1,38	1,38	1,38	—	—	
			0,75	2,11	2,11	2,11	2,11	2,11	—	—	
			0,88	2,11	2,29	2,29	2,29	2,29	—	—	
			1,00	2,11	2,59	2,59	2,59	2,59	—	—	
			1,13	2,11	2,59	2,59	2,59	—	—	—	
			1,25	2,11	2,59	2,74	2,74	—	—	—	
			1,50	2,11	2,59	2,74	3,41	—	—	—	
			1,75	2,11	2,59	2,74	—	—	—	—	
			2,00	2,11	2,59	—	—	—	—	—	
		for pull-out [kN]	**0,50**	-	1,02	1,24	1,69	2,19	—	—	
			0,55	-	1,02	1,24	1,69	2,19	—	—	
			0,63	-	1,02	1,24	1,69	2,52	—	—	
			0,75	0,75	1,02	1,24	1,69	2,52	—	—	
			0,88	0,75	1,02	1,24	1,69	2,52	—	—	
			1,00	0,75	1,02	1,24	1,69	2,52	—	—	
			1,13	0,75	1,02	1,24	1,69	—	—	—	
			1,25	0,75	1,02	1,24	1,69	—	—	—	
			1,50	0,75	1,02	1,24	1,69	—	—	—	
			1,75	0,75	1,02	1,24	—	—	—	—	
			2,00	0,75	1,02	—	—	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C18

Characteristic bearing capacity of fasteners GTX3 AL 5,5 x L i GTX3 AL 5,5 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				0,75	1,00	1,25	1,50	2,00	2,50	3,00	Wood class ≥ C24
$M_{t,nom}$				6 Nm							
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	0,50	—	1,08	1,08	1,08	1,08	—	—	
			0,55	—	1,08	1,08	1,08	1,08	—	—	
			0,63	—	1,38	1,38	1,38	1,38	—	—	
			0,75	0,95	2,11	2,11	2,11	2,11	—	—	
			0,88	0,95	2,29	2,29	2,29	2,29	—	—	
			1,00	0,95	2,59	2,59	2,59	2,59	—	—	
			1,13	0,95	2,59	2,59	2,59	—	—	—	
			1,25	0,95	2,59	2,74	2,74	—	—	—	
			1,50	0,95	2,59	2,74	3,41	—	—	—	
			1,75	0,95	2,59	2,74	—	—	—	—	
			2,00	0,95	2,59	—	—	—	—	—	
		for pull-out [kN]	0,50	—	0,61	0,61	0,61	0,61	—	—	
			0,55	—	0,61	0,61	0,61	0,61	—	—	
			0,63	—	0,90	0,90	0,90	0,90	—	—	
			0,75	0,86	0,96	0,99	0,99	0,99	—	—	
			0,88	0,86	0,96	0,99	0,99	0,99	—	—	
			1,00	0,86	0,96	1,13	1,13	1,13	—	—	
			1,13	0,86	0,96	1,13	1,13	—	—	—	
			1,25	0,86	0,96	1,13	1,13	—	—	—	
			1,50	0,86	0,96	1,13	1,13	—	—	—	
			1,75	0,86	0,96	1,13	—	—	—	—	
			2,00	0,86	0,96	—	—	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C19

Characteristic bearing capacity of fasteners GTX3 AL 5,5 x L i GTX3 AL 5,5 x L powder.coat, with hexagon head and sealing washer Ø14 mm made of stainless steel – steel substrate											
Thickness of substrate [1] [mm]				0,75	1,00	1,25	1,50	2,00	2,50	3,00	Wood class ≥ C24
$M_{t,nom}$				6 Nm							
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity										
		for shear [kN]	**0,50**	—	1,08	1,08	1,08	1,08	—	—	
			0,55	—	1,08	1,08	1,08	1,08	—	—	
			0,63	—	1,38	1,38	1,38	1,38	—	—	
			0,75	0,95	2,11	2,11	2,11	2,11	—	—	
			0,88	0,95	2,29	2,29	2,29	2,29	—	—	
			1,00	0,95	2,59	2,59	2,59	2,59	—	—	
			1,13	0,95	2,59	2,59	2,59	—	—	—	
			1,25	0,95	2,59	2,74	2,74	—	—	—	
			1,50	0,95	2,59	2,74	3,41	—	—	—	
			1,75	0,95	2,59	2,74	—	—	—	—	
			2,00	0,95	2,59	—	—	—	—	—	
		for pull-out [kN]	**0,50**	—	0,96	1,42	1,85	2,63	—	—	
			0,55	—	0,96	1,42	1,85	2,63	—	—	
			0,63	—	0,96	1,42	1,85	2,78	—	—	
			0,75	0,95	0,96	1,42	1,85	2,78	—	—	
			0,88	0,95	0,96	1,42	1,85	2,78	—	—	
			1,00	0,95	0,96	1,42	1,85	2,78	—	—	
			1,13	0,95	0,96	1,42	1,85	—	—	—	
			1,25	0,95	0,96	1,42	1,85	—	—	—	
			1,50	0,95	0,96	1,42	1,85	—	—	—	
			1,75	0,95	0,96	1,42	—	—	—	—	
			2,00	0,95	0,96	—	—	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C20

Characteristic bearing capacity of fasteners GTX3 AL 5,5 x L i GTX3 AL 5,5 x L powder.coat, with hexagon head– aluminum substrate										
Thickness of substrate [1] [mm]				1,00	1,25	1,50	2,00	2,50	3,00	Wood class ≥ C24
$M_{t,nom}$				6 Nm						
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	0,50	—	—	—	—	—	—	
			0,55	—	—	—	—	—	—	
			0,63	—	—	—	—	—	—	
			0,75	—	—	—	—	—	—	
			0,88	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	
			1,13	—	—	—	—	—	—	
			1,25	—	—	—	—	—	—	
			1,50	—	—	0,76	0,76	—	—	
			1,75	—	—	0,76	2,21	—	—	
			2,00	—	—	0,76	2,21	—	—	
		for pull-out [kN]	0,50	—	—	—	—	—	—	
			0,55	—	—	—	—	—	—	
			0,63	—	—	—	—	—	—	
			0,75	—	—	—	—	—	—	
			0,88	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	
			1,13	—	—	—	—	—	—	
			1,25	—	—	—	—	—	—	
			1,50	—	—	0,76	0,76	—	—	
			1,75	—	—	0,76	2,21	—	—	
			2,00	—	—	0,76	2,21	—	—	

[1] aluminium gatunku 1050A według PN-EN 573-3:2010
[2] aluminium gatunku 1050A według PN-EN 573-3:2010

Table C21

Characteristic bearing capacity of fasteners GTX3 AL 5,5 x L i GTX3 AL 5,5 x L powder.coat, with hexagon head and sealing washer Ø14 mm made of stainless steel – aluminum substrate										
Thickness of substrate [1] [mm]				1,00	1,25	1,50	2,00	2,50	3,00	Wood class ≥ C24
$M_{t,nom}$				6 Nm						
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	0,50	—	—	—	—	—	—	
			0,55	—	—	—	—	—	—	
			0,63	—	—	—	—	—	—	
			0,75	—	—	—	—	—	—	
			0,88	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	
			1,13	—	—	—	—	—	—	
			1,25	—	—	—	—	—	—	
			1,50	—	—	0,76	0,76	—	—	
			1,75	—	—	0,76	2,21	—	—	
			2,00	—	—	0,76	2,21	—	—	
		for pull-out [kN]	0,50	—	—	—	—	—	—	
			0,55	—	—	—	—	—	—	
			0,63	—	—	—	—	—	—	
			0,75	—	—	—	—	—	—	
			0,88	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	
			1,13	—	—	—	—	—	—	
			1,25	—	—	—	—	—	—	
			1,50	—	—	0,76	0,76	—	—	
			1,75	—	—	0,76	2,21	—	—	
			2,00	—	—	0,76	2,21	—	—	

[1] aluminium gatunku 1050A według PN-EN 573-3:2010
[2] aluminium gatunku 1050A według PN-EN 573-3:2010

Table C22

Characteristic bearing capacity of fasteners GT5 5,5 x L, GT5 5,5 x L powder.coat, GTR5 5,5 x L i GTR5 5,5 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				1,50	2,00	3,00	4,00	5,00	6,00	Wood class ≥ C24
$M_{t,nom}$				6 Nm						
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	0,50	1,25	1,25	1,25	1,25	—	—	
			0,55	1,25	1,25	1,25	1,25	—	—	
			0,63	1,18	1,18	1,18	1,18	—	—	
			0,75	1,70	1,70	1,70	1,70	—	—	
			0,88	2,07	2,07	2,07	2,07	—	—	
			1,00	2,32	2,32	2,32	2,32	—	—	
			1,13	2,32	2,32	2,32	—	—	—	
			1,25	3,41	3,41	3,41	—	—	—	
			1,50	3,41	3,41	3,41	—	—	—	
			1,75	3,41	3,41	3,41	—	—	—	
			2,00	3,41	3,41	3,41	—	—	—	
		for pull-out [kN]	0,50	0,61	0,61	0,61	0,61	—	—	
			0,55	0,61	0,61	0,61	0,61	—	—	
			0,63	0,90	0,90	0,90	0,90	—	—	
			0,75	0,99	0,99	0,99	0,99	—	—	
			0,88	0,99	0,99	0,99	0,99	—	—	
			1,00	1,13	1,13	1,13	1,13	—	—	
			1,13	1,13	1,13	1,13	—	—	—	
			1,25	1,13	1,13	1,13	—	—	—	
			1,50	1,13	1,13	1,13	—	—	—	
			1,75	1,13	1,13	1,13	—	—	—	
			2,00	1,13	1,13	1,13	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C23

Characteristic bearing capacity of fasteners GT5 5,5 x L, GT5 5,5 x L powder.coat, GTR5 5,5 x L i GTR5 5,5 x L powder.coat, with hexagon head and sealing washer Ø14 mm made of carbon steel , stainless steel or aluminum – steel substrate										
Thickness of substrate [1] [mm]				1,50	2,00	3,00	4,00	5,00	6,00	Wood class ≥ C24
$M_{t,nom}$				6 Nm						
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	0,50	1,25	1,25	1,25	1,25	—	—	
			0,55	1,25	1,25	1,25	1,25	—	—	
			0,63	1,18	1,18	1,18	1,18	—	—	
			0,75	1,70	1,70	1,70	1,70	—	—	
			0,88	2,07	2,07	2,07	2,07	—	—	
			1,00	2,32	2,32	2,32	2,32	—	—	
			1,13	2,32	2,32	2,32	—	—	—	
			1,25	3,41	3,41	3,41	—	—	—	
			1,50	3,41	3,41	3,41	—	—	—	
			1,75	3,41	3,41	3,41	—	—	—	
			2,00	3,41	3,41	3,41	—	—	—	
		for pull-out [kN]	0,50	1,78	2,55	2,63	2,63	—	—	
			0,55	1,78	2,55	2,63	2,63	—	—	
			0,63	1,78	2,55	3,59	3,59	—	—	
			0,75	1,78	2,55	4,13	4,13	—	—	
			0,88	1,78	2,55	4,14	4,14	—	—	
			1,00	1,78	2,55	4,71	4,71	—	—	
			1,13	1,78	2,55	4,71	—	—	—	
			1,25	1,78	2,55	4,71	—	—	—	
			1,50	1,78	2,55	4,71	—	—	—	
			1,75	1,78	2,55	4,71	—	—	—	
			2,00	1,78	2,55	4,71	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C24

Nośności charakterystyczne zamocowań GT5 5,5 x L, GT5 5,5 x L powder.coat, GTR5 5,5 x L i GTR5 5,5 x L powder.coat, with hexagon head or oval head and sealing washer Ø16 mm made of carbon steel , stainless steel or aluminum – steel substrate										
Thickness of substrate [1] [mm]				1,50	2,00	3,00	4,00	5,00	6,00	Wood class ≥ C24
$M_{t,nom}$				6 Nm						
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	0,50	1,25	1,25	1,25	1,25	—	—	
			0,55	1,25	1,25	1,25	1,25	—	—	
			0,63	1,18	1,18	1,18	1,18	—	—	
			0,75	1,70	1,70	1,70	1,70	—	—	
			0,88	2,07	2,07	2,07	2,07	—	—	
			1,00	2,32	2,32	2,32	2,32	—	—	
			1,13	2,32	2,32	2,32	—	—	—	
			1,25	3,41	3,41	3,41	—	—	—	
			1,50	3,41	3,41	3,41	—	—	—	
			1,75	3,41	3,41	3,41	—	—	—	
			2,00	3,41	3,41	3,41	—	—	—	
		for pull-out [kN]	0,50	1,78	2,55	3,16	3,16	—	—	
			0,55	1,78	2,55	3,16	3,16	—	—	
			0,63	1,78	2,55	3,63	3,63	—	—	
			0,75	1,78	2,55	4,17	4,17	—	—	
			0,88	1,78	2,55	4,18	4,18	—	—	
			1,00	1,78	2,55	4,75	4,75	—	—	
			1,13	1,78	2,55	4,75	—	—	—	
			1,25	1,78	2,55	4,75	—	—	—	
			1,50	1,78	2,55	4,75	—	—	—	
			1,75	1,78	2,55	4,75	—	—	—	
			2,00	1,78	2,55	4,75	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C25

Characteristic bearing capacity of fasteners GT5 FH 5,5 x L i GT5 FH 5,5 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				1,50	2,00	3,00	4,00	5,00	6,00	Wood class ≥ C24
$M_{t,nom}$				6 Nm						
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	0,50	1,25	1,25	1,25	1,25	—	—	
			0,55	1,25	1,25	1,25	1,25	—	—	
			0,63	1,18	1,18	1,18	1,18	—	—	
			0,75	1,70	1,70	1,70	1,70	—	—	
			0,88	2,07	2,07	2,07	2,07	—	—	
			1,00	2,32	2,32	2,32	2,32	—	—	
			1,13	2,32	2,32	2,32	—	—	—	
			1,25	3,41	3,41	3,41	—	—	—	
			1,50	3,41	3,41	3,41	—	—	—	
			1,75	3,41	3,41	3,41	—	—	—	
			2,00	3,41	3,41	3,41	—	—	—	
		for pull-out [kN]	0,50	1,78	2,55	2,76	2,76	—	—	
			0,55	1,78	2,55	2,76	2,76	—	—	
			0,63	1,78	2,55	3,77	3,77	—	—	
			0,75	1,78	2,55	4,34	4,34	—	—	
			0,88	1,78	2,55	4,35	4,35	—	—	
			1,00	1,78	2,55	4,94	4,94	—	—	
			1,13	1,78	2,55	4,94	—	—	—	
			1,25	1,78	2,55	4,94	—	—	—	
			1,50	1,78	2,55	4,94	—	—	—	
			1,75	1,78	2,55	4,94	—	—	—	
			2,00	1,78	2,55	4,94	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C26

Characteristic bearing capacity of fasteners GTX5 5,5 x L i GTX5 5,5 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				1,50	2,00	3,00	4,00	5,00	6,00	Wood class ≥ C24
$M_{t,nom}$				6 Nm						
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	0,50	1,25	1,25	1,25	1,25	—	—	
			0,55	1,25	1,25	1,25	1,25	—	—	
			0,63	1,18	1,18	1,18	1,18	—	—	
			0,75	1,70	1,70	1,70	1,70	—	—	
			0,88	2,07	2,07	2,07	2,07	—	—	
			1,00	2,32	2,32	2,32	2,32	—	—	
			1,13	2,32	2,32	2,32	—	—	—	
			1,25	3,41	3,41	3,41	—	—	—	
			1,50	3,41	3,41	3,41	—	—	—	
			1,75	3,41	3,41	3,41	—	—	—	
			2,00	3,41	3,41	3,41	—	—	—	
		for pull-out [kN]	0,50	0,61	0,61	0,61	0,61	—	—	
			0,55	0,61	0,61	0,61	0,61	—	—	
			0,63	0,90	0,90	0,90	0,90	—	—	
			0,75	0,99	0,99	0,99	0,99	—	—	
			0,88	0,99	0,99	0,99	0,99	—	—	
			1,00	1,13	1,13	1,13	1,13	—	—	
			1,13	1,13	1,13	1,13	—	—	—	
			1,25	1,13	1,13	1,13	—	—	—	
			1,50	1,13	1,13	1,13	—	—	—	
			1,75	1,13	1,13	1,13	—	—	—	
			2,00	1,13	1,13	1,13	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C27

Characteristic bearing capacity of fasteners GTX5 5,5 x L i GTX5 5,5 x L powder.coat,, with hexagon head and sealing washer Ø14 mm made of stainless steel – steel substrate										
Thickness of substrate [1] [mm]				1,50	2,00	3,00	4,00	5,00	6,00	Wood class ≥ C24
$M_{t,nom}$				6 Nm						
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	0,50	1,25	1,25	1,25	1,25	—	—	
			0,55	1,25	1,25	1,25	1,25	—	—	
			0,63	1,18	1,18	1,18	1,18	—	—	
			0,75	1,70	1,70	1,70	1,70	—	—	
			0,88	2,07	2,07	2,07	2,07	—	—	
			1,00	2,32	2,32	2,32	2,32	—	—	
			1,13	2,32	2,32	2,32	—	—	—	
			1,25	3,41	3,41	3,41	—	—	—	
			1,50	3,41	3,41	3,41	—	—	—	
			1,75	3,41	3,41	3,41	—	—	—	
			2,00	3,41	3,41	3,41	—	—	—	
		for pull-out [kN]	0,50	1,44	1,96	1,96	2,63	—	—	
			0,55	1,44	1,96	1,96	2,63	—	—	
			0,63	1,44	1,96	1,96	3,59	—	—	
			0,75	1,44	1,96	1,96	4,13	—	—	
			0,88	1,44	1,96	1,96	4,14	—	—	
			1,00	1,44	1,96	1,96	4,71	—	—	
			1,13	1,44	1,96	1,96	—	—	—	
			1,25	1,44	1,96	1,96	—	—	—	
			1,50	1,44	1,96	1,96	—	—	—	
			1,75	1,44	1,96	1,96	—	—	—	
			2,00	1,44	1,96	1,96	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C28

Characteristic bearing capacity of fasteners GT6 6,3 x L, i GT6 6,3 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				**4,00**	**5,00**	—	—	—	—	**Wood class ≥ C24**
$M_{t,nom}$				**8 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,33	1,33	—	—	—	—	
			0,55	1,33	1,33	—	—	—	—	
			0,63	1,48	1,48	—	—	—	—	
			0,75	2,03	2,03	—	—	—	—	
			0,88	2,44	2,44	—	—	—	—	
			1,00	2,97	2,97	—	—	—	—	
			1,13	2,97	—	—	—	—	—	
			1,25	2,97	—	—	—	—	—	
			1,50	2,97	—	—	—	—	—	
			1,75	2,97	—	—	—	—	—	
			2,00	2,97	—	—	—	—	—	
		for pull-out [kN]	**0,50**	0,72	0,72	—	—	—	—	
			0,55	0,72	0,72	—	—	—	—	
			0,63	1,05	1,05	—	—	—	—	
			0,75	1,16	1,16	—	—	—	—	
			0,88	1,16	1,16	—	—	—	—	
			1,00	1,32	1,32	—	—	—	—	
			1,13	1,32	—	—	—	—	—	
			1,25	1,32	—	—	—	—	—	
			1,50	1,32	—	—	—	—	—	
			1,75	1,32	—	—	—	—	—	
			2,00	1,32	—	—	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C29

Characteristic bearing capacity of fasteners GT6 6,3 x L,i GT6 6,3 x L powder.coat, with hexagon head and sealing washer Ø16 mm made of carbon steel – steel substrate										
Thickness of substrate [1] [mm]				4,00	5,00	—	—	—	—	Wood class ≥ C24
$M_{t,nom}$				8 Nm						
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity									
		for shear [kN]	0,50	1,33	1,33	—	—	—	—	
			0,55	1,33	1,33	—	—	—	—	
			0,63	1,48	1,48	—	—	—	—	
			0,75	2,03	2,03	—	—	—	—	
			0,88	2,44	2,44	—	—	—	—	
			1,00	2,97	2,97	—	—	—	—	
			1,13	2,97	—	—	—	—	—	
			1,25	2,97	—	—	—	—	—	
			1,50	2,97	—	—	—	—	—	
			1,75	2,97	—	—	—	—	—	
			2,00	2,97	—	—	—	—	—	
		for pull-out [kN]	0,50	3,31	3,31	—	—	—	—	
			0,55	3,31	3,31	—	—	—	—	
			0,63	3,74	3,74	—	—	—	—	
			0,75	4,85	4,85	—	—	—	—	
			0,88	5,49	5,49	—	—	—	—	
			1,00	6,66	6,66	—	—	—	—	
			1,13	6,66	—	—	—	—	—	
			1,25	6,66	—	—	—	—	—	
			1,50	6,66	—	—	—	—	—	
			1,75	6,66	—	—	—	—	—	
			2,00	6,66	—	—	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C30

Characteristic bearing capacity of fasteners GT8 5,5 x L, GT8 5,5 x L powder.coat, GTR8 5,5 x L i GTR8 5,5 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				2,00	3,00	4,00	5,00	6,00	8,00	Wood class ≥ C24
$M_{t,nom}$				6 Nm						
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	**0,50**	1,29	1,29	1,29	1,29	1,29	—	
			0,55	1,29	1,29	1,29	1,29	1,29	—	
			0,63	1,63	1,63	1,63	1,63	1,63	—	
			0,75	1,75	1,75	1,75	1,75	1,75	—	
			0,88	2,14	2,14	2,14	2,14	2,14	—	
			1,00	2,29	2,29	2,29	2,29	2,29	—	
			1,13	2,29	2,29	2,29	2,29	2,29	—	
			1,25	2,29	2,29	2,29	2,29	2,29	—	
			1,50	2,29	2,29	2,29	2,29	2,29	—	
			1,75	2,29	2,29	2,29	2,29	2,29	—	
			2,00	2,29	2,29	2,29	2,29	2,29	—	
		for pull-out [kN]	**0,50**	0,61	0,61	0,61	0,61	0,61	—	
			0,55	0,61	0,61	0,61	0,61	0,61	—	
			0,63	0,90	0,90	0,90	0,90	0,90	—	
			0,75	0,99	0,99	0,99	0,99	0,99	—	
			0,88	0,99	0,99	0,99	0,99	0,99	—	
			1,00	1,13	1,13	1,13	1,13	1,13	—	
			1,13	1,13	1,13	1,13	1,13	1,13	—	
			1,25	1,13	1,13	1,13	1,13	1,13	—	
			1,50	1,13	1,13	1,13	1,13	1,13	—	
			1,75	1,13	1,13	1,13	1,13	1,13	—	
			2,00	1,13	1,13	1,13	1,13	1,13	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C31

Characteristic bearing capacity of fasteners GT8 5,5 x L, GT8 5,5 x L powder.coat, GTR8 5,5 x L i GTR8 5,5 x L powder.coat, with hexagon head and sealing washer Ø14 mm made of carbon steel , stainless steel or aluminum – steel substrate										
Thickness of substrate [1] [mm]				2,00	3,00	4,00	5,00	6,00	8,00	**Wood class ≥ C24**
$M_{t,nom}$				**6 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,29	1,29	1,29	1,29	1,29	—	
			0,55	1,29	1,29	1,29	1,29	1,29	—	
			0,63	1,63	1,63	1,63	1,63	1,63	—	
			0,75	1,75	1,75	1,75	1,75	1,75	—	
			0,88	2,14	2,14	2,14	2,14	2,14	—	
			1,00	2,29	2,29	2,29	2,29	2,29	—	
			1,13	2,29	2,29	2,29	2,29	2,29	—	
			1,25	2,29	2,29	2,29	2,29	2,29	—	
			1,50	2,29	2,29	2,29	2,29	2,29	—	
			1,75	2,29	2,29	2,29	2,29	2,29	—	
			2,00	2,29	2,29	2,29	2,29	2,29	—	
		for pull-out [kN]	**0,50**	2,57	2,63	2,63	2,63	2,63	—	
			0,55	2,57	2,63	2,63	2,63	2,63	—	
			0,63	2,57	3,59	3,59	3,59	3,59	—	
			0,75	2,57	4,13	4,13	4,13	4,13	—	
			0,88	2,57	4,14	4,14	4,14	4,14	—	
			1,00	2,57	4,71	4,71	4,71	4,71	—	
			1,13	2,57	4,71	4,71	4,71	4,71	—	
			1,25	2,57	4,71	4,71	4,71	4,71	—	
			1,50	2,57	4,71	4,71	4,71	4,71	—	
			1,75	2,57	4,71	4,71	4,71	4,71	—	
			2,00	2,57	4,71	4,71	4,71	4,71	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C32

Characteristic bearing capacity of fasteners GT8 5,5 x L, GT8 5,5 x L powder.coat, GTR8 5,5 x L i GTR8 5,5 x L powder.coat, with hexagon head and sealing washer Ø16 mm made of carbon steel , stainless steel or aluminum – steel substrate										
Thickness of substrate [1] [mm]				2,00	3,00	4,00	5,00	6,00	8,00	**Wood class ≥ C24**
$M_{t,nom}$				**6 Nm**						
Thickness of fastened metal sheet[2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,29	1,29	1,29	1,29	1,29	—	
			0,55	1,29	1,29	1,29	1,29	1,29	—	
			0,63	1,63	1,63	1,63	1,63	1,63	—	
			0,75	1,75	1,75	1,75	1,75	1,75	—	
			0,88	2,14	2,14	2,14	2,14	2,14	—	
			1,00	2,29	2,29	2,29	2,29	2,29	—	
			1,13	2,29	2,29	2,29	2,29	2,29	—	
			1,25	2,29	2,29	2,29	2,29	2,29	—	
			1,50	2,29	2,29	2,29	2,29	2,29	—	
			1,75	2,29	2,29	2,29	2,29	2,29	—	
			2,00	2,29	2,29	2,29	2,29	2,29	—	
		for pull-out [kN]	**0,50**	2,57	2,63	2,63	2,63	2,63	—	
			0,55	2,57	2,63	2,63	2,63	2,63	—	
			0,63	2,57	3,59	3,59	3,59	3,59	—	
			0,75	2,57	4,13	4,13	4,13	4,13	—	
			0,88	2,57	4,14	4,14	4,14	4,14	—	
			1,00	2,57	4,71	4,71	4,71	4,71	—	
			1,13	2,57	4,71	4,71	4,71	4,71	—	
			1,25	2,57	4,71	4,71	4,71	4,71	—	
			1,50	2,57	4,71	4,71	4,71	4,71	—	
			1,75	2,57	4,71	4,71	4,71	4,71	—	
			2,00	2,57	4,71	4,71	4,71	4,71	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C33

Characteristic bearing capacity of fasteners GT12 5,5 x L, GT12 5,5 x L powder.coat, GTR12 5,5 x L i GTR12 5,5 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				4,00	5,00	6,00	8,00	10,00	12,00	**Wood class ≥ C24**
$M_{t,nom}$				**6 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**									
		for shear [kN]	**0,50**	1,34	1,34	1,34	1,34	1,34	—	
			0,55	1,34	1,34	1,34	1,34	1,34	—	
			0,63	1,46	1,46	1,46	1,46	1,46	—	
			0,75	1,93	1,93	1,93	1,93	1,93	—	
			0,88	2,35	2,35	2,35	2,35	2,35	—	
			1,00	2,82	2,82	2,82	2,82	2,82	—	
			1,13	2,82	2,82	2,82	2,82	2,82	—	
			1,25	2,82	2,82	2,82	2,82	2,82	—	
			1,50	2,82	2,82	2,82	2,82	2,82	—	
			1,75	2,82	2,82	2,82	2,82	2,82	—	
			2,00	2,82	2,82	2,82	2,82	2,82	—	
		for pull-out [kN]	**0,50**	0,61	0,61	0,61	0,61	0,61	—	
			0,55	0,61	0,61	0,61	0,61	0,61	—	
			0,63	0,90	0,90	0,90	0,90	0,90	—	
			0,75	0,99	0,99	0,99	0,99	0,99	—	
			0,88	0,99	0,99	0,99	0,99	0,99	—	
			1,00	1,13	1,13	1,13	1,13	1,13	—	
			1,13	1,13	1,13	1,13	1,13	1,13	—	
			1,25	1,13	1,13	1,13	1,13	1,13	—	
			1,50	1,13	1,13	1,13	1,13	1,13	—	
			1,75	1,13	1,13	1,13	1,13	1,13	—	
			2,00	1,13	1,13	1,13	1,13	1,13	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C34

Characteristic bearing capacity of fasteners GT12 5,5 x L, GT12 5,5 x L powder.coat, GTR12 5,5 x L i GTR12 5,5 x L powder.coat, with hexagon head and sealing washer Ø14 mm made of carbon steel , stainless steel or aluminum – steel substrate											
Thickness of substrate [1] [mm]				4,00	5,00	6,00	8,00	10,00	12,00	**Wood class ≥ C24**	
$M_{t,nom}$				**6 Nm**							
Thickness of fastened metal sheet[2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,34	1,34	1,34	1,34	1,34	—		
			0,55	1,34	1,34	1,34	1,34	1,34	—		
			0,63	1,46	1,46	1,46	1,46	1,46	—		
			0,75	1,93	1,93	1,93	1,93	1,93	—		
			0,88	2,35	2,35	2,35	2,35	2,35	—		
			1,00	2,82	2,82	2,82	2,82	2,82	—		
			1,13	2,82	2,82	2,82	2,82	2,82	—		
			1,25	2,82	2,82	2,82	2,82	2,82	—		
			1,50	2,82	2,82	2,82	2,82	2,82	—		
			1,75	2,82	2,82	2,82	2,82	2,82	—		
			2,00	2,82	2,82	2,82	2,82	2,82	—		
		for pull-out [kN]	**0,50**	2,63	2,63	2,63	2,63	2,63	—		
			0,55	2,63	2,63	2,63	2,63	2,63	—		
			0,63	3,59	3,59	3,59	3,59	3,59	—		
			0,75	4,13	4,13	4,13	4,13	4,13	—		
			0,88	4,14	4,14	4,14	4,14	4,14	—		
			1,00	4,71	4,71	4,71	4,71	4,71	—		
			1,13	4,71	4,71	4,71	4,71	4,71	—		
			1,25	4,71	4,71	4,71	4,71	4,71	—		
			1,50	4,71	4,71	4,71	4,71	4,71	—		
			1,75	4,71	4,71	4,71	4,71	4,71	—		
			2,00	4,71	4,71	4,71	4,71	4,71	—		

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C35

Characteristic bearing capacity of fasteners GT12 5,5 x L, GT12 5,5 x L powder.coat, GTR12 5,5 x L i GTR12 5,5 x L powder.coat, with hexagon head and sealing washer Ø16 mm made of carbon steel , stainless steel or aluminum – steel substrate										
Thickness of substrate [1] [mm]				4,00	5,00	6,00	8,00	10,00	12,00	**Wood class ≥ C24**
$M_{t,nom}$				**6 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,34	1,34	1,34	1,34	1,34	—	
			0,55	1,34	1,34	1,34	1,34	1,34	—	
			0,63	1,46	1,46	1,46	1,46	1,46	—	
			0,75	1,93	1,93	1,93	1,93	1,93	—	
			0,88	2,35	2,35	2,35	2,35	2,35	—	
			1,00	2,82	2,82	2,82	2,82	2,82	—	
			1,13	2,82	2,82	2,82	2,82	2,82	—	
			1,25	2,82	2,82	2,82	2,82	2,82	—	
			1,50	2,82	2,82	2,82	2,82	2,82	—	
			1,75	2,82	2,82	2,82	2,82	2,82	—	
			2,00	2,82	2,82	2,82	2,82	2,82	—	
		for pull-out [kN]	**0,50**	3,16	3,16	3,16	3,16	3,16	—	
			0,55	3,16	3,16	3,16	3,16	3,16	—	
			0,63	3,63	3,63	3,63	3,63	3,63	—	
			0,75	4,17	4,17	4,17	4,17	4,17	—	
			0,88	4,18	4,18	4,18	4,18	4,18	—	
			1,00	4,75	4,75	4,75	4,75	4,75	—	
			1,13	4,75	4,75	4,75	4,75	4,75	—	
			1,25	4,75	4,75	4,75	4,75	4,75	—	
			1,50	4,75	4,75	4,75	4,75	4,75	—	
			1,75	4,75	4,75	4,75	4,75	4,75	—	
			2,00	4,75	4,75	4,75	4,75	4,75	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C36

Characteristic bearing capacity of fasteners GT12 FH 5,5 x L i GT12 FH 5,5 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				4,00	5,00	6,00	8,00	10,00	12,00	**Wood class ≥ C24**
$M_{t,nom}$				**6 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,34	1,34	1,34	1,34	1,34	—	
			0,55	1,34	1,34	1,34	1,34	1,34	—	
			0,63	1,46	1,46	1,46	1,46	1,46	—	
			0,75	1,93	1,93	1,93	1,93	1,93	—	
			0,88	2,35	2,35	2,35	2,35	2,35	—	
			1,00	2,82	2,82	2,82	2,82	2,82	—	
			1,13	2,82	2,82	2,82	2,82	2,82	—	
			1,25	2,82	2,82	2,82	2,82	2,82	—	
			1,50	2,82	2,82	2,82	2,82	2,82	—	
			1,75	2,82	2,82	2,82	2,82	2,82	—	
			2,00	2,82	2,82	2,82	2,82	2,82	—	
		for pull-out [kN]	**0,50**	3,08	3,08	3,08	3,08	3,08	—	
			0,55	3,08	3,08	3,08	3,08	3,08	—	
			0,63	4,20	4,20	4,20	4,20	4,20	—	
			0,75	4,84	4,84	4,84	4,84	4,84	—	
			0,88	4,84	4,84	4,84	4,84	4,84	—	
			1,00	5,51	5,51	5,51	5,51	5,51	—	
			1,13	5,51	5,51	5,51	5,51	5,51	—	
			1,25	5,51	5,51	5,51	5,51	5,51	—	
			1,50	5,51	5,51	5,51	5,51	5,51	—	
			1,75	5,51	5,51	5,51	5,51	5,51	—	
			2,00	5,51	5,51	5,51	5,51	5,51	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C37

Characteristic bearing capacity of fasteners GTX 12 5,5 x L i GTX12 5,5 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				4,00	5,00	6,00	8,00	10,00	12,00	**Wood class ≥ C24**
$M_{t,nom}$				**6 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,34	1,34	1,34	1,34	1,34	—	
			0,55	1,34	1,34	1,34	1,34	1,34	—	
			0,63	1,46	1,46	1,46	1,46	1,46	—	
			0,75	1,93	1,93	1,93	1,93	1,93	—	
			0,88	2,35	2,35	2,35	2,35	2,35	—	
			1,00	2,82	2,82	2,82	2,82	2,82	—	
			1,13	2,82	2,82	2,82	2,82	2,82	—	
			1,25	2,82	2,82	2,82	2,82	2,82	—	
			1,50	2,82	2,82	2,82	2,82	2,82	—	
			1,75	2,82	2,82	2,82	2,82	2,82	—	
			2,00	2,82	2,82	2,82	2,82	2,82	—	
		for pull-out [kN]	**0,50**	0,61	0,61	0,61	0,61	0,61	—	
			0,55	0,61	0,61	0,61	0,61	0,61	—	
			0,63	0,90	0,90	0,90	0,90	0,90	—	
			0,75	0,99	0,99	0,99	0,99	0,99	—	
			0,88	0,99	0,99	0,99	0,99	0,99	—	
			1,00	1,13	1,13	1,13	1,13	1,13	—	
			1,13	1,13	1,13	1,13	1,13	1,13	—	
			1,25	1,13	1,13	1,13	1,13	1,13	—	
			1,50	1,13	1,13	1,13	1,13	1,13	—	
			1,75	1,13	1,13	1,13	1,13	1,13	—	
			2,00	1,13	1,13	1,13	1,13	1,13	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C38

Characteristic bearing capacity of fasteners GTX 12 5,5 x L i GTX12 5,5 x L powder.coat, with hexagon head and sealing washer Ø14 mm made of stainless steel – steel substrate										
Thickness of substrate [1] [mm]				4,00	5,00	6,00	8,00	10,00	12,00	**Wood class ≥ C24**
$M_{t,nom}$				**6 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**									
		for shear [kN]	**0,50**	1,34	1,34	1,34	1,34	1,34	—	
			0,55	1,34	1,34	1,34	1,34	1,34	—	
			0,63	1,46	1,46	1,46	1,46	1,46	—	
			0,75	1,93	1,93	1,93	1,93	1,93	—	
			0,88	2,35	2,35	2,35	2,35	2,35	—	
			1,00	2,82	2,82	2,82	2,82	2,82	—	
			1,13	2,82	2,82	2,82	2,82	2,82	—	
			1,25	2,82	2,82	2,82	2,82	2,82	—	
			1,50	2,82	2,82	2,82	2,82	2,82	—	
			1,75	2,82	2,82	2,82	2,82	2,82	—	
			2,00	2,82	2,82	2,82	2,82	2,82	—	
		for pull-out [kN]	**0,50**	2,63	2,63	2,63	2,63	2,63	—	
			0,55	2,63	2,63	2,63	2,63	2,63	—	
			0,63	3,59	3,59	3,59	3,59	3,59	—	
			0,75	4,13	4,13	4,13	4,13	4,13	—	
			0,88	4,14	4,14	4,14	4,14	4,14	—	
			1,00	4,71	4,71	4,71	4,71	4,71	—	
			1,13	4,71	4,71	4,71	4,71	4,71	—	
			1,25	4,71	4,71	4,71	4,71	4,71	—	
			1,50	4,71	4,71	4,71	4,71	4,71	—	
			1,75	4,71	4,71	4,71	4,71	4,71	—	
			2,00	4,71	4,71	4,71	4,71	4,71	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C39

Characteristic bearing capacity of fasteners GT16 6,3 x L, GT16 6,3 x L powder.coat, GTR16 6,3 x L i GTR16 6,3 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				5,00	6,00	8,00	10,00	12,00	14,00	**Wood class ≥ C24**
$M_{t,nom}$				**8 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,42	1,42	1,42	1,42	1,42	—	
			0,55	1,42	1,42	1,42	1,42	1,42	—	
			0,63	1,54	1,54	1,54	1,54	1,54	—	
			0,75	2,10	2,10	2,10	2,10	2,10	—	
			0,88	2,49	2,49	2,49	2,49	2,49	—	
			1,00	3,00	3,00	3,00	3,00	3,00	—	
			1,13	3,00	3,00	3,00	3,00	3,00	—	
			1,25	3,00	3,00	3,00	3,00	3,00	—	
			1,50	3,00	3,00	3,00	3,00	3,00	—	
			1,75	3,00	3,00	3,00	3,00	3,00	—	
			2,00	3,00	3,00	3,00	3,00	3,00	—	
		for pull-out [kN]	**0,50**	0,70	0,70	0,70	0,70	0,70	—	
			0,55	0,70	0,70	0,70	0,70	0,70	—	
			0,63	0,88	0,88	0,88	0,88	0,88	—	
			0,75	1,21	1,21	1,21	1,21	1,21	—	
			0,88	1,32	1,32	1,32	1,32	1,32	—	
			1,00	1,60	1,60	1,60	1,60	1,60	—	
			1,13	1,60	1,60	1,60	1,60	1,60	—	
			1,25	1,60	1,60	1,60	1,60	1,60	—	
			1,50	1,60	1,60	1,60	1,60	1,60	—	
			1,75	1,60	1,60	1,60	1,60	1,60	—	
			2,00	1,60	1,60	1,60	1,60	1,60	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C40

Characteristic bearing capacity of fasteners GT16 6,3 x L, GT16 6,3 x L powder.coat, GTR16 6,3 x L i GTR16 6,3 x L powder.coat, with hexagon head and sealing washer Ø16 mm made of carbon steel , stainless steel or aluminum – steel substrate											
Thickness of substrate [1] [mm]				5,00	6,00	8,00	10,00	12,00	14,00	**Wood class ≥ C24**	
$M_{t,nom}$				**8 Nm**							
Thickness of fastened metal sheet[2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,42	1,42	1,42	1,42	1,42	—		
			0,55	1,42	1,42	1,42	1,42	1,42	—		
			0,63	1,54	1,54	1,54	1,54	1,54	—		
			0,75	2,10	2,10	2,10	2,10	2,10	—		
			0,88	2,49	2,49	2,49	2,49	2,49	—		
			1,00	3,00	3,00	3,00	3,00	3,00	—		
			1,13	3,00	3,00	3,00	3,00	3,00	—		
			1,25	3,00	3,00	3,00	3,00	3,00	—		
			1,50	3,00	3,00	3,00	3,00	3,00	—		
			1,75	3,00	3,00	3,00	3,00	3,00	—		
			2,00	3,00	3,00	3,00	3,00	3,00	—		
		for pull-out [kN]	**0,50**	2,53	2,53	3,31	3,31	3,31	—		
			0,55	2,53	2,53	3,31	3,31	3,31	—		
			0,63	2,53	2,53	3,74	3,74	3,74	—		
			0,75	2,53	2,53	4,85	4,85	4,85	—		
			0,88	2,53	2,53	5,50	5,50	5,50	—		
			1,00	2,53	2,53	6,37	6,37	6,37	—		
			1,13	2,53	2,53	6,37	6,37	6,37	—		
			1,25	2,53	2,53	6,37	6,37	6,37	—		
			1,50	2,53	2,53	6,37	6,37	6,37	—		
			1,75	2,53	2,53	6,37	6,37	6,37	—		
			2,00	2,53	2,53	6,37	6,37	6,37	—		

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C41

Characteristic bearing capacity of fasteners GT20 6,3 x L, GT20 6,3 x L powder.coat, GTR20 6,3 x L, GTR20 6,3 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				5,00	6,00	8,00	10,00	12,00	14,00	**Wood class ≥ C24**
$M_{t,nom}$				**8 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,42	1,42	1,42	1,42	1,42	—	
			0,55	1,42	1,42	1,42	1,42	1,42	—	
			0,63	1,54	1,54	1,54	1,54	1,54	—	
			0,75	2,10	2,10	2,10	2,10	2,10	—	
			0,88	2,49	2,49	2,49	2,49	2,49	—	
			1,00	3,00	3,00	3,00	3,00	3,00	—	
			1,13	3,00	3,00	3,00	3,00	3,00	—	
			1,25	3,00	3,00	3,00	3,00	3,00	—	
			1,50	3,00	3,00	3,00	3,00	3,00	—	
			1,75	3,00	3,00	3,00	3,00	3,00	—	
			2,00	3,00	3,00	3,00	3,00	3,00	—	
		for pull-out [kN]	**0,50**	0,70	0,70	0,70	0,70	0,70	—	
			0,55	0,70	0,70	0,70	0,70	0,70	—	
			0,63	0,88	0,88	0,88	0,88	0,88	—	
			0,75	1,21	1,21	1,21	1,21	1,21	—	
			0,88	1,32	1,32	1,32	1,32	1,32	—	
			1,00	1,60	1,60	1,60	1,60	1,60	—	
			1,13	1,60	1,60	1,60	1,60	1,60	—	
			1,25	1,60	1,60	1,60	1,60	1,60	—	
			1,50	1,60	1,60	1,60	1,60	1,60	—	
			1,75	1,60	1,60	1,60	1,60	1,60	—	
			2,00	1,60	1,60	1,60	1,60	1,60	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C42

Characteristic bearing capacity of fasteners GT20 6,3 x L, GT20 6,3 x L powder.coat, GTR20 6,3 x L i GT20 6,3 x L powder.coat, with hexagon head and sealing washer Ø16 mm made of carbon steel , stainless steel or aluminum – steel substrate										
Thickness of substrate [1] [mm]				5,00	6,00	8,00	10,00	12,00	14,00	**Wood class ≥ C24**
$M_{t,nom}$				**8 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,42	1,42	1,42	1,42	1,42	—	
			0,55	1,42	1,42	1,42	1,42	1,42	—	
			0,63	1,54	1,54	1,54	1,54	1,54	—	
			0,75	2,10	2,10	2,10	2,10	2,10	—	
			0,88	2,49	2,49	2,49	2,49	2,49	—	
			1,00	3,00	3,00	3,00	3,00	3,00	—	
			1,13	3,00	3,00	3,00	3,00	3,00	—	
			1,25	3,00	3,00	3,00	3,00	3,00	—	
			1,50	3,00	3,00	3,00	3,00	3,00	—	
			1,75	3,00	3,00	3,00	3,00	3,00	—	
			2,00	3,00	3,00	3,00	3,00	3,00	—	
		for pull-out [kN]	**0,50**	2,53	2,53	3,31	3,31	3,31	—	
			0,55	2,53	2,53	3,31	3,31	3,31	—	
			0,63	2,53	2,53	3,74	3,74	3,74	—	
			0,75	2,53	2,53	4,85	4,85	4,85	—	
			0,88	2,53	2,53	5,50	5,50	5,50	—	
			1,00	2,53	2,53	6,37	6,37	6,37	—	
			1,13	2,53	2,53	6,37	6,37	6,37	—	
			1,25	2,53	2,53	6,37	6,37	6,37	—	
			1,50	2,53	2,53	6,37	6,37	6,37	—	
			1,75	2,53	2,53	6,37	6,37	6,37	—	
			2,00	2,53	2,53	6,37	6,37	6,37	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C43

Characteristic bearing capacity of fasteners GT25 6,3 x L, GT25 6,3 x L powder.coat, GTR25 6,3 x L i GTR25 6,3 x L powder.coat, with hexagon head – steel substrate										
Thickness of substrate [1] [mm]				5,00	6,00	8,00	10,00	12,00	14,00	**Wood class ≥ C24**
$M_{t,nom}$				**8 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,42	1,42	1,42	1,42	1,42	—	
			0,55	1,42	1,42	1,42	1,42	1,42	—	
			0,63	1,54	1,54	1,54	1,54	1,54	—	
			0,75	2,10	2,10	2,10	2,10	2,10	—	
			0,88	2,49	2,49	2,49	2,49	2,49	—	
			1,00	3,00	3,00	3,00	3,00	3,00	—	
			1,13	3,00	3,00	3,00	3,00	3,00	—	
			1,25	3,00	3,00	3,00	3,00	3,00	—	
			1,50	3,00	3,00	3,00	3,00	3,00	—	
			1,75	3,00	3,00	3,00	3,00	3,00	—	
			2,00	3,00	3,00	3,00	3,00	3,00	—	
		for pull-out [kN]	**0,50**	0,70	0,70	0,70	0,70	0,70	—	
			0,55	0,70	0,70	0,70	0,70	0,70	—	
			0,63	0,88	0,88	0,88	0,88	0,88	—	
			0,75	1,21	1,21	1,21	1,21	1,21	—	
			0,88	1,32	1,32	1,32	1,32	1,32	—	
			1,00	1,60	1,60	1,60	1,60	1,60	—	
			1,13	1,60	1,60	1,60	1,60	1,60	—	
			1,25	1,60	1,60	1,60	1,60	1,60	—	
			1,50	1,60	1,60	1,60	1,60	1,60	—	
			1,75	1,60	1,60	1,60	1,60	1,60	—	
			2,00	1,60	1,60	1,60	1,60	1,60	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C44

Characteristic bearing capacity of fasteners GT25 6,3 x L, GT25 6,3 x L powder.coat, GTR25 6,3 x L i GTR25 6,3 x L powder.coat, with hexagon head and sealing washer Ø16 mm made of carbon steel , stainless steel or aluminum – steel substrate										
Thickness of substrate [1] [mm]				5,00	6,00	8,00	10,00	12,00	14,00	**Wood class ≥ C24**
$M_{t,nom}$				**8 Nm**						
Thickness of fastened metal sheet[2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,42	1,42	1,42	1,42	1,42	1,42	
			0,55	1,42	1,42	1,42	1,42	1,42	1,42	
			0,63	1,54	1,54	1,54	1,54	1,54	1,54	
			0,75	2,10	2,10	2,10	2,10	2,10	2,10	
			0,88	2,49	2,49	2,49	2,49	2,49	2,49	
			1,00	3,00	3,00	3,00	3,00	3,00	3,00	
			1,13	3,00	3,00	3,00	3,00	3,00	3,00	
			1,25	3,00	3,00	3,00	3,00	3,00	3,00	
			1,50	3,00	3,00	3,00	3,00	3,00	3,00	
			1,75	3,00	3,00	3,00	3,00	3,00	3,00	
			2,00	3,00	3,00	3,00	3,00	3,00	3,00	
		for pull-out [kN]	**0,50**	2,53	2,53	3,31	3,31	3,31	3,31	
			0,55	2,53	2,53	3,31	3,31	3,31	3,31	
			0,63	2,53	2,53	3,74	3,74	3,74	3,74	
			0,75	2,53	2,53	4,85	4,85	4,85	4,85	
			0,88	2,53	2,53	5,50	5,50	5,50	5,50	
			1,00	2,53	2,53	6,37	6,37	6,37	6,37	
			1,13	2,53	2,53	6,37	6,37	6,37	6,37	
			1,25	2,53	2,53	6,37	6,37	6,37	6,37	
			1,50	2,53	2,53	6,37	6,37	6,37	6,37	
			1,75	2,53	2,53	6,37	6,37	6,37	6,37	
			2,00	2,53	2,53	6,37	6,37	6,37	6,37	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C45

Characteristic bearing capacity of fasteners GTZ F02 4,8 x 20 i GTZ F02 4,8 x 20 powder.coat, with hexagon head– aluminum substrate										
Thickness of substrate [1] [mm]				0,50	0,55	0,63	0,75	0,88	1,00	**Wood class ≥ C24**
$M_{t,nom}$				**8 Nm**						
Thickness of fastened metal sheet[2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	0,31	0,31	0,35	0,37	—	—	
			0,55	—	—	0,35	0,37	—	—	
			0,63	—	—	0,35	0,37	—	—	
			0,75	—	—	—	0,37	—	—	
			0,88	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	
		for pull-out [kN]	**0,50**	0,31	0,31	0,35	0,37	—	—	
			0,55	—	—	0,35	0,37	—	—	
			0,63	—	—	0,35	0,37	—	—	
			0,75	—	—	—	0,37	—	—	
			0,88	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	

[1] aluminium gatunku 1050A według PN-EN 573-3:2010
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C46

Characteristic bearing capacity of fasteners GTZ F02 4,8 x 20 i GTZ F02 4,8 x 20 powder.coat, with hexagon head and sealing washer Ø14 mm made of stainless steel lub aluminium – aluminum substrate										
Thickness of substrate [1] [mm]				0,50	0,55	0,63	0,75	0,88	1,00	**Wood class ≥ C24**
$M_{t,nom}$				**8 Nm**						
Thickness of fastened metal sheet[2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	0,31	0,31	0,35	0,37	—	—	
			0,55	—	—	0,35	0,37	—	—	
			0,63	—	—	0,35	0,37	—	—	
			0,75	—	—	—	0,37	—	—	
			0,88	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	
		for pull-out [kN]	**0,50**	0,31	0,31	0,35	0,37	—	—	
			0,55	—	—	0,35	0,37	—	—	
			0,63	—	—	0,35	0,37	—	—	
			0,75	—	—	—	0,37	—	—	
			0,88	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	

[1] aluminium gatunku 1050A według PN-EN 573-3:2010
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C47

Characteristic bearing capacity of fasteners GM-S 4,2 x L i GM-S 4,2 x L powder.coat, with flat head – steel and wood substrate												
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24 h_{ef} = 16,8 mm**	
$M_{t,nom}$				**8 Nm**							
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	0,92	0,92	0,92	—	—	—	0,92	Nośność mocowanej blachy na docisk trzpienia wkręta
			0,55	0,92	0,92	0,92	—	—	—	0,92	
			0,63	1,32	1,32	1,32	—	—	—	1,32	
			0,75	—	—	—	—	—	—	—	
			0,88	—	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	—	
		for pull-out [kN]	**0,50**	0,63	0,63	0,63	—	—	—	2,19	Nośność mocowanej blachy na przeciąganie łba wkręta
			0,55	0,63	0,63	0,63	—	—	—	2,19	
			0,63	0,63	0,63	0,85	—	—	—	2,19	
			0,75	—	—	—	—	—	—	—	
			0,88	—	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

[2] stal gatunku S23JR+N według PN-EN 10025-1:2007 lub gatunku S280GD, S320GD lub S350GD według PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%

If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C48

Characteristic bearing capacity of fasteners GMR-S 4,2 x L i GMR-S 4,2 x L powder.coat, with flat head – steel substrate										
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24**
$M_{t,nom}$				**8 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,05	1,05	1,05	1,05	—	—	
			0,55	1,05	1,05	1,05	1,05	—	—	
			0,63	1,24	1,24	1,24	1,24	—	—	
			0,75	1,24	1,24	1,24	1,24	—	—	
			0,88	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	
		for pull-out [kN]	**0,50**	0,63	0,63	0,94	1,13	—	—	
			0,55	0,63	0,63	0,94	1,13	—	—	
			0,63	0,63	0,63	0,94	1,13	—	—	
			0,75	0,63	0,63	0,94	1,13	—	—	
			0,88	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

[2] stal gatunku S23JR+N według PN-EN 10025-1:2007 lub gatunku S280GD, S320GD lub S350GD według PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%

If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C49

Characteristic bearing capacity of fasteners GMZ-S 4,2 x L i GMZ-S 4,2 x L powder.coat, with flat head – wood substrate												
Thickness of substrate [1] [mm]				0,50	0,55	0,63	0,75	0,88	1,00	Wood class ≥ C24 h_{ef} = 16,8 mm		
$M_{t,nom}$				3 Nm								
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	0,50	—	—	—	—	—	—	0,92	Nośność mocowanej blachy na docisk trzpienia wkręta	
			0,55	—	—	—	—	—	—	0,92		
			0,63	—	—	—	—	—	—	1,32		
			0,75	—	—	—	—	—	—	—		
			0,88	—	—	—	—	—	—	—		
			1,00	—	—	—	—	—	—	—		
		for pull-out [kN]	0,50	—	—	—	—	—	—	1,02	Nośność mocowanej blachy na przeciąganie łba wkręta	
			0,55	—	—	—	—	—	—	1,02		
			0,63	—	—	—	—	—	—	1,29		
			0,75	—	—	—	—	—	—	1,29		
			0,88	—	—	—	—	—	—	1,29		
			1,00	—	—	—	—	—	—	1,29		

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

Table C50

Characteristic bearing capacity of fasteners GM-B 4,2 x L i GM-B 4,2 x L powder.coat, with flat head – steel substrate										
Thickness of substrate [1] [mm]				0,50	0,55	0,63	0,75	0,88	1,00	Wood class ≥ C24
$M_{t,nom}$				8 Nm						
Thickness of fastened metal sheet [2] [mm]	Characteristic bearing capacity	for shear [kN]	0,50	0,92	0,92	0,92	—	—	—	
			0,55	0,92	0,92	0,92	—	—	—	
			0,63	1,32	1,32	1,32	—	—	—	
			0,75	—	—	—	—	—	—	
			0,88	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	
		for pull-out [kN]	0,50	0,63	0,63	0,63	—	—	—	
			0,55	0,63	0,63	0,63	—	—	—	
			0,63	0,63	0,63	0,85	—	—	—	
			0,75	—	—	—	—	—	—	
			0,88	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] stal gatunku S23JR+N według PN-EN 10025-1:2007 lub gatunku S280GD, S320GD lub S350GD według PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C51

Characteristic bearing capacity of fasteners GMR-B 4,2 x L i GMR-B 4,2 x L powder.coat, with flat head – steel substrate										
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24**
$M_{t,nom}$				**3 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	1,05	1,05	1,05	1,05	1,05	1,05	
			0,55	1,05	1,05	1,05	1,05	1,05	1,05	
			0,63	1,24	1,24	1,24	1,24	1,24	1,24	
			0,75	1,95	1,95	1,95	1,95	1,95	1,95	
			0,88	1,95	1,95	1,95	1,95	1,95	1,95	
			1,00	2,46	2,46	2,46	2,46	2,46	2,46	
		for pull-out [kN]	**0,50**	0,41	0,41	0,66	0,84	0,84	1,41	
			0,55	0,41	0,41	0,66	0,84	0,84	1,41	
			0,63	0,41	0,41	0,66	0,84	0,84	1,41	
			0,75	0,41	0,41	0,66	0,84	0,84	1,41	
			0,88	0,41	0,41	0,66	0,84	0,84	1,41	
			1,00	0,41	0,41	0,66	0,84	0,84	1,41	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

[2] stal gatunku S23JR+N według PN-EN 10025-1:2007 lub gatunku S280GD, S320GD lub S350GD według PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%

If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C52

Characteristic bearing capacity of fasteners GM-K 4,2 x L i GM-K 4,2 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24**
$M_{t,nom}$				**8 Nm**						
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	0,92	0,92	0,92	—	—	—	
			0,55	0,92	0,92	0,92	—	—	—	
			0,63	1,32	1,32	1,32	—	—	—	
			0,75	—	—	—	—	—	—	
			0,88	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	
		for pull-out [kN]	**0,50**	0,57	0,57	0,57	—	—	—	
			0,55	0,57	0,57	0,57	—	—	—	
			0,63	0,57	0,57	0,63	—	—	—	
			0,75	—	—	—	—	—	—	
			0,88	—	—	—	—	—	—	
			1,00	—	—	—	—	—	—	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015

[2] stal gatunku S23JR+N według PN-EN 10025-1:2007 lub gatunku S280GD, S320GD lub S350GD według PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%

If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C53

Characteristic bearing capacity of fasteners GTZF 4,8 x L i GTZF 4,8 x L, powder.coat, with hexagon head and sealing washer Ø14 mm made of stainless steel – wood substrate												
Thickness of substrate [1] [mm]				**0,50**	**0,55**	**0,63**	**0,75**	**0,88**	**1,00**	**Wood class ≥ C24 h_{ef} = 16,8 mm**	
$M_{t,nom}$				**3 Nm**							
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	—	—	—	—	—	—	0,62	Nośność mocowanej blachy na docisk trzpienia wkręta
			0,55	—	—	—	—	—	—	0,62	
			0,63	—	—	—	—	—	—	1,13	
			0,75	—	—	—	—	—	—	1,46	
			0,88	—	—	—	—	—	—	1,46	
			1,00	—	—	—	—	—	—	1,46	
		for pull-out [kN]	**0,50**	—	—	—	—	—	—	2,78	Nośność mocowanej blachy na przeciąganie łba wkręta
			0,55	—	—	—	—	—	—	2,78	
			0,63	—	—	—	—	—	—	4,51	
			0,75	—	—	—	—	—	—	4,51	
			0,88	—	—	—	—	—	—	4,51	
			1,00	—	—	—	—	—	—	4,51	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] aluminium gatunku 1050A według PN-EN 573-3:20102015

Table C54

Characteristic bearing capacity of fasteners GTS-STAR 4,8 x L, with hexagon head– steel substrate									
Thickness of substrate [1] [mm]				**0,75**	**0,88**	**1,00**	**1,25**	**1,50**	**Wood class ≥ C24**
$M_{t,nom}$				**3 Nm**					
Thickness of fastened metal sheet [2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,50**	—	—	—	—	—	
			0,55	—	—	—	—	—	
			0,63	—	—	—	—	—	
			0,75	1,56	1,56	1,56	1,56	1,56	
			0,88	1,56	1,56	1,56	1,56	1,56	
			1,00	2,10	2,10	2,10	2,10	2,10	
		for pull-out [kN]	**0,50**	—	—	—	—	—	
			0,55	—	—	—	—	—	
			0,63	—	—	—	—	—	
			0,75	0,60	0,60	1,22	1,43	1,99	
			0,88	0,60	0,60	1,22	1,43	1,99	
			1,00	0,60	0,60	1,22	1,43	1,99	

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] stal gatunku S23JR+N według PN-EN 10025-1:2007 lub gatunku S280GD, S320GD lub S350GD według PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C55

Characteristic bearing capacity of fasteners GT3 HD 5,5 x L i GT3 HD 5,5 x L powder.coat, with hexagon head– steel substrate										
Thickness of substrate [1] [mm]			**0,75**	**0,88**	**1,00**	**1,25**	**1,50**		**Wood class ≥ C24**	
$M_{t,nom}$			**5 Nm**							
Thickness of fastened metal sheet[2]	**Characteristic bearing capacity**	**for shear [kN]**	**0,75**	1,90	1,90	1,90	1,90	1,90		
			0,88	1,90	1,90	1,90	1,90	1,90		
			1,00	3,20	3,20	3,20	3,20	3,20		
			1,25	3,20	3,20	3,20	3,20	3,20		
			1,50	3,20	3,20	3,20	3,20	3,20		
		for pull-out [kN]	**0,75**	0,95	0,95	0,95	0,95	0,95		
			0,88	0,95	0,95	0,95	0,95	0,95		
			1,00	0,95	0,95	1,66	1,66	1,66		
			1,25	0,95	0,95	1,66	1,88	1,88		
			1,50	0,95	0,95	1,66	1,88	2,77		

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] stal gatunku S23JR+N według PN-EN 10025-1:2007 lub gatunku S280GD, S320GD lub S350GD według PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C56

Characteristic bearing capacity of fasteners GT3 HD 5,5 x L i GT3 HD 5,5 x L powder.coat, with hexagon head and sealing washer Ø14 mm made of carbon steel – steel substrate										
Thickness of substrate [1] [mm]			**0,75**	**0,88**	**1,00**	**1,25**	**1,50**		**Wood class ≥ C24**	
$M_{t,nom}$			**5 Nm**							
Thickness of fastened metal sheet[2]	**Characteristic bearing capacity**	**for shear [kN]**	**0,75**	1,90	1,90	1,90	1,90	1,90		
			0,88	1,90	1,90	1,90	1,90	1,90		
			1,00	3,20	3,20	3,20	3,20	3,20		
			1,25	3,20	3,20	3,20	3,20	3,20		
			1,50	3,20	3,20	3,20	3,20	3,20		
		for pull-out [kN]	**0,75**	0,95	0,95	0,95	0,95	0,95		
			0,88	0,95	0,95	0,95	0,95	0,95		
			1,00	0,95	0,95	1,66	1,66	1,66		
			1,25	0,95	0,95	1,66	1,88	1,88		
			1,50	0,95	0,95	1,66	1,88	2,77		

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] stal gatunku S23JR+N według PN-EN 10025-1:2007 lub gatunku S280GD, S320GD lub S350GD według PN-EN 10346:2015

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

Table C57

Characteristic bearing capacity of fasteners GT6L 6,3 x L i GT6L 6,3 x L powder.coat, with hexagon head and sealing washer Ø16 mm made of carbon steel – steel substrate									
Thickness of substrate [1] [mm]				**2,50**	**3,00**	**4,00**	**5,00**			**Wood class ≥ C24**
$M_{t,nom}$				**7 Nm**						
Thickness of fastened metal sheet[2] [mm]	**Characteristic bearing capacity**	**for shear [kN]**	**0,75**	2,10	2,10	2,10	2,10			
			1,00	3,60	3,60	3,60	3,60			
			1,25	4,35	4,35	4,35	—			
			1,50	6,15	6,15	6,15	—			
			2,00	10,50	10,50	10,50	—			
			3,00	11,30	11,30	—	—			
		for pull-out [kN]	**0,75**	5,10	5,10	5,10	5,10			
			1,00	5,10	5,10	5,10	5,10			
			1,25	5,10	5,10	5,10	—			
			1,50	5,10	5,10	5,10	—			
			2,00	5,10	5,10	5,10	—			
			3,00	5,10	5,10	—	—			

[1] steel grade S280GD, S320GD or S350GD according to PN-EN 10346:2015
[2] stal gatunku S23JR+N według PN-EN 10025-1:2007 lub gatunku S280GD, S320GD lub S350GD według PN-EN 10346:2015

If both components I and II are made of S320GD the values VR,k may be increased by 8,3%
If both components I and II are made of S350GD the values VR,k may be increased by 16,6%

Table C58

Characteristic bearing capacity of fasteners GTZ5AGF 5,5 x L i GTZ5AGF 5,5 x L powder.coat, with hexagon head and sealing washer Ø16 mm made of stainless steel – aluminum substrate								
Thickness of substrate [1] [mm]				**1,50**	**2,00**	**3,00**	**4,00**	**Wood class ≥ C24**
$M_{t,nom}$				**7 Nm**				
Characteristic bearing capacity	**for pull-out [kN]**	**Thickness of fastened metal sheet[2] [mm]**	**2,00**	1,83	2,51	2,74	3,30	
			3,00	1,83	2,51	2,74	3,30	
	for shear [kN]	**Długość ramienia [mm]**	**25**	0,15	0,16	0,17	0,17	
			30	0,13	0,13	0,14	0,14	
			34	0,11	0,12	0,12	0,13	
			38	0,10	0,11	0,11	0,11	
			42	0,09	0,10	0,10	0,10	
			46	0,08	0,09	0,09	0,09	
			50	0,08	0,08	0,08	0,08	
			54	0,07	0,08	0,08	0,08	

[1] aluminium gatunku 1050A według PN-EN 573-3:2010
[2] aluminium gatunku 1050A według PN-EN 573-3:2010

9. Właściwości użytkowe określonego powyżej wyrobu są zgodne z wszystkimi wymienionymi w pkt 8 deklarowanymi właściwościami użytkowymi. Niniejsza krajowa deklaracja właściwości użytkowych wydana zostaje zgodnie z ustawą z dnia 16 kwietnia 2004 r. o wyrobach budowlanych, na wyłączną odpowiedzialność producenta.

Miejsce i data wystawienia

Orneta 25.09.2018

W imieniu producenta podpisał(-a)
(nazwisko i stanowisko)

Product Manager:

