

VGZ



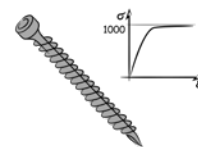
Full thread connector with cylindrical head

Galvanized carbon steel



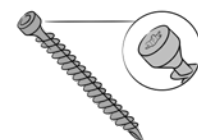
SPECIAL STEEL

Highly ductile (moves with the wood) and resistant steel ($f_{y,k} = 1000 \text{ N/mm}^2$).

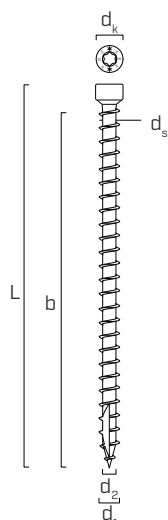


COUNTERSUNK HEAD

Countersunk head for use on steel plates.



GEOMETRY AND MECHANICAL CHARACTERISTICS



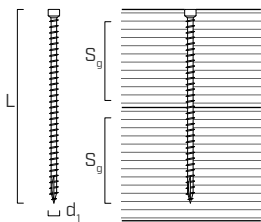
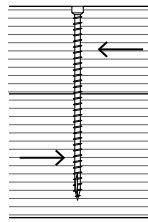
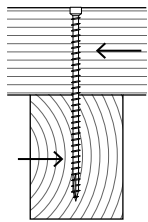
VGZ SCREW							
Nominal diameter	d ₁	[mm] [inch]	5.3 13/64 "	5.6 14/64"	7.0 9/32"	9.0 11/32"	11.0 7/16 "
Head diameter	d _k	[mm] [inch]	8.00 0.315	8.00 0.315	9.50 0.374	11.50 0.453	13.50 0.531
Tip diameter	d ₂	[mm] [inch]	3.60 0.142	3.80 0.150	4.60 0.181	5.90 0.232	6.60 0.260
Shank diameter	d _s	[mm] [inch]	3.95 0.156	4.15 0.163	5.00 0.197	6.50 0.256	7.70 0.303
Pre-drilling diameter	d _v	[mm] [inch]	3.50 0.138	3.50 0.138	4.00 0.157	5.00 0.197	6.00 0.236
Bending strength	F _{yb}	[N/mm ²] [psi]	1000 145038	1000 145038	1000 145038	1000 145038	1000 145038
Characteristic tensile strength	f _{tens,k}	[kN] [lbf]	7.9 1.776	7.9 1.776	15.4 3.462	25.4 5.710	38.0 8.543

PRODUCT CODES AND PIECES PER PACKAGE

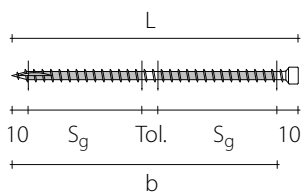
d ₁	Length L	CODE	pcs
[mm] [inch]	[mm]		
5.3 13/64 "	80	VGZ580	50
	100	VGZ5100	50
	120	VGZ5120	50
5.6 4/64 "	140	VGZ5140	5
	160	VGZ5160	50
7 9/32 "	80	VGZ780	25
	100	VGZ7100	25
	120	VGZ7120	25
	140	VGZ7140	25
	160	VGZ7160	25
	180	VGZ7180	25
	200	VGZ7200	25
	220	VGZ7220	25
	240	VGZ7240	25
	260	VGZ7260	25
	280	VGZ7280	25
	300	VGZ7300	25
	340	VGZ7340	25
	380	VGZ7380	25
9 11/32 "	160	VGZ9160	25
	180	VGZ9180	25
	200	VGZ9200	25
	220	VGZ9220	25
	240	VGZ9240	25
	260	VGZ9260	25
	280	VGZ9280	25
	300	VGZ9300	25
	320	VGZ9320	25
	340	VGZ9340	25
	360	VGZ9360	25
	380	VGZ9380	25
	400	VGZ9400	25
	440	VGZ9440	25
	480	VGZ9480	25
	520	VGZ9520	25
11 7/16 "	250	VGZ11250	25
	300	VGZ11300	25
	350	VGZ11350	25
	400	VGZ11400	25
	450	VGZ11450	25
	500	VGZ11500	25
	550	VGZ11550	25
	600	VGZ11600	25



STATIC VALUES: SHEAR WOOD-WOOD

GEOMETRY							WOOD-WOOD Z//				WOOD-WOOD Z _{mL}			
														
d ₁	Length L		Thread length b		S _g		REFERENCE LATERAL DESIGN VALUE (Z) FOR:				REFERENCE LATERAL DESIGN VALUE (Z) FOR:			
	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	G=0.35 Z//	G=0.42 Z//	G=0.50 Z//	G=0.55 Z//	G=0.35 Z _{mL}	G=0.42 Z _{mL}	G=0.50 Z _{mL}	G=0.55 Z _{mL}
5.3 13/64"	80	3 1/8"	70	2 3/4"	25	0.984	69	97	134	159	69	97	134	159
	100	4"	90	3 4/8"	35	1.378	97	136	165	180	97	136	165	180
	120	4 3/4"	110	4 3/8"	45	1.772	119	140	165	180	119	140	165	180
5.6 4/64"	140	5 1/2"	130	5 1/8"	55	2.165	131	155	182	198	131	155	182	198
	160	6 1/4"	150	6"	65	2.559	131	155	182	198	131	155	182	198
7 9/32"	80	3 1/8"	70	2 3/4"	25	0.984	127	153	182	200	83	104	128	143
	100	4"	90	3 4/8"	35	1.378	178	214	255	271	117	145	173	191
	120	4 3/4"	110	4 3/8"	45	1.772	216	237	258	271	136	166	192	204
	140	5 1/2"	130	5 1/8"	55	2.165	216	237	258	271	153	172	192	204
	160	6 1/4"	150	6"	65	2.559	216	237	258	271	153	172	192	204
	180	7 1/8"	170	6 1/4"	75	2.953	216	237	258	271	153	172	192	204
	200	7 7/8"	190	7 1/8"	85	3.346	216	237	258	271	153	172	192	204
	220	8 5/8"	210	7 7/8"	95	3.740	216	237	258	271	153	172	192	204
	240	9 1/2"	230	8 5/8"	105	4.134	216	237	258	271	153	172	192	204
	260	10 1/4"	250	9 1/2"	115	4.528	216	237	258	271	153	172	192	204
	280	11"	270	10 1/4"	125	4.921	216	237	258	271	153	172	192	204
	300	11 7/8"	290	11"	135	5.315	216	237	258	271	153	172	192	204
	340	13 3/8"	330	12 5/8"	155	6.102	216	237	258	271	153	172	192	204
	380	15"	370	14 1/4"	175	6.890	216	237	258	271	153	172	192	204
9 11/32"	160	6 1/4"	150	6"	65	2.559	282	309	337	353	174	212	241	256
	180	7 1/8"	170	6 1/4"	75	2.953	282	309	337	353	189	216	241	256
	200	7 7/8"	190	7 1/8"	85	3.346	282	309	337	353	192	216	241	256
	220	8 5/8"	210	7 7/8"	95	3.740	282	309	337	353	192	216	241	256
	240	9 1/2"	230	8 5/8"	105	4.134	282	309	337	353	192	216	241	256
	260	10 1/4"	250	9 1/2"	115	4.528	282	309	337	353	192	216	241	256
	280	11"	270	10 1/4"	125	4.921	282	309	337	353	192	216	241	256
	300	11 7/8"	290	11"	135	5.315	282	309	337	353	192	216	241	256
	320	12 5/8"	310	11 7/8"	145	5.709	282	309	337	353	192	216	241	256
	340	13 3/8"	330	12 5/8"	155	6.102	282	309	337	353	192	216	241	256
	360	14 1/4"	350	13 3/8"	165	6.496	282	309	337	353	192	216	241	256
	380	15"	370	14 1/4"	175	6.890	282	309	337	353	192	216	241	256
	400	15 3/4"	390	15"	185	7.283	282	309	337	353	192	216	241	256
	440	17 1/4"	430	15 3/4"	205	8.071	282	309	337	353	192	216	241	256
11 7/16"	480	19"	470	17 1/4"	225	8.858	282	309	337	353	192	216	241	256
	520	20 1/2"	510	19 3/4"	245	9.646	282	309	337	353	192	216	241	256
	250	9 1/2"	240	9 1/2"	110	4.331	395	433	473	496	261	294	328	349
	300	11 7/8"	290	11"	135	5.315	395	433	473	496	261	294	328	349
	350	13 3/8"	340	13 3/8"	160	6.299	395	433	473	496	261	294	328	349
	400	15 3/4"	390	15"	185	7.283	395	433	473	496	261	294	328	349
	450	17 1/4"	440	17 1/4"	210	8.268	395	433	473	496	261	294	328	349
11 7/16"	500	19 3/4"	490	19"	235	9.252	395	433	473	496	261	294	328	349
	550	20 1/2"	540	20 1/2"	260	10.236	395	433	473	496	261	294	328	349
	600	23 5/8"	590	22"	285	11.220	395	433	473	496	261	294	328	349

EFFECTIVE THREAD USED IN CALCULATION

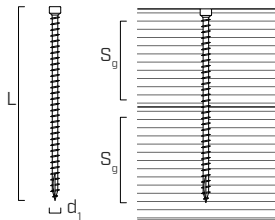
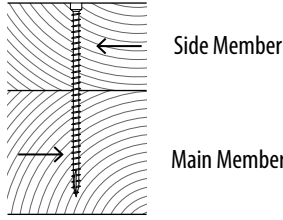
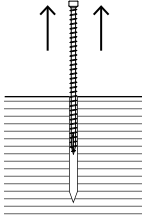


$b = L - 10 \text{ mm}$ represents the entire length of the threaded part

$S_g = (L - 10 \text{ mm} - 10 \text{ mm} - \text{Tol.}) / 2$ represents the partial length of the threaded part net of a laying tolerance (Tol.) of 10 mm

The extraction, shear and sliding values were calculated placing the centre of gravity of the connector in correspondence with the shear plane and considering an effective thread of S_g .

The allowable extraction values are calculated considering the threaded part (b or S_g) as being completely inserted into the wood.

GEOMETRY							WOOD-WOOD $Z_{\perp}$				WITHDRAWAL				
															
							REFERENCE LATERAL DESIGN VALUE (Z) FOR:								
d_1	Length L		Thread length b		S_g		G=0.35 $Z_{\perp}$	G=0.42 $Z_{\perp}$	G=0.50 $Z_{\perp}$	G=0.55 $Z_{\perp}$	d_1	G=0.33 W	G=0.42 W	G=0.50 W	G=0.55 W
[mm] [inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[lbf]	[lbf]	[lbf]	[lbf]	[mm] [inch]	[lbs/in]	[lbs/in]	[lbs/in]	[lbs/in]
5.3 13/64"	80	3 1/8"	70	2 3/4"	25	0.984	69	97	134	159	5.3 13/64"	120	158	205	236
	100	4"	90	3 4/8"	35	1.378	97	136	165	180					
	120	4 3/4"	110	4 3/8"	45	1.772	119	140	165	180					
5.6 4/64"	140	5 1/2"	130	5 1/8"	55	2.165	131	155	182	198	5.6 14/64"	120	158	205	236
	160	6 1/4"	150	6"	65	2.559	131	155	182	198					
7 9/32"	80	3 1/8"	70	2 3/4"	25	0.984	66	86	111	127	7 9/32"	142	186	242	279
	100	4"	90	3 4/8"	35	1.378	92	120	155	178					
	120	4 3/4"	110	4 3/8"	45	1.772	119	155	180	193	9 11/32"	171	225	292	337
	140	5 1/2"	130	5 1/8"	55	2.165	139	159	180	193					
	160	6 1/4"	150	6"	65	2.559	139	159	180	193	11 7/16"	199	262	340	392
	180	7 1/8"	170	6 1/4"	75	2.953	139	159	180	193					
	200	7 7/8"	190	7 1/8"	85	3.346	139	159	180	193					
	220	8 5/8"	210	7 7/8"	95	3.740	139	159	180	193					
	240	9 1/2"	230	8 5/8"	105	4.134	139	159	180	193					
	260	10 1/4"	250	9 1/2"	115	4.528	139	159	180	193					
	280	11"	270	10 1/4"	125	4.921	139	159	180	193					
	300	11 7/8"	290	11"	135	5.315	139	159	180	193					
	340	13 3/8"	330	12 5/8"	155	6.102	139	159	180	193					
	380	15"	370	14 1/4"	175	6.890	139	159	180	193					
9 11/32"	160	6 1/4"	150	6"	65	2.559	135	176	220	236					
	180	7 1/8"	170	6 1/4"	75	2.953	156	194	220	236					
	200	7 7/8"	190	7 1/8"	85	3.346	170	194	220	236					
	220	8 5/8"	210	7 7/8"	95	3.740	170	194	220	236					
	240	9 1/2"	230	8 5/8"	105	4.134	170	194	220	236					
	260	10 1/4"	250	9 1/2"	115	4.528	170	194	220	236					
	280	11"	270	10 1/4"	125	4.921	170	194	220	236					
	300	11 7/8"	290	11"	135	5.315	170	194	220	236					
	320	12 5/8"	310	11 7/8"	145	5.709	170	194	220	236					
	340	13 3/8"	330	12 5/8"	155	6.102	170	194	220	236					
	360	14 1/4"	350	13 3/8"	165	6.496	170	194	220	236					
	380	15"	370	14 1/4"	175	6.890	170	194	220	236					
	400	15 3/4"	390	15"	185	7.283	170	194	220	236					
	440	17 1/4"	430	15 3/4"	205	8.071	170	194	220	236					
	480	19"	470	17 1/4"	225	8.858	170	194	220	236					
	520	20 1/2"	510	19 3/4"	245	9.646	170	194	220	236					
11 7/16"	250	9 1/2"	240	9 1/2"	110	4.331	227	259	294	315					
	300	11 7/8"	290	11"	135	5.315	227	259	294	315					
	350	13 3/8"	340	13 3/8"	160	6.299	227	259	294	315					
	400	15 3/4"	390	15"	185	7.283	227	259	294	315					
	450	17 1/4"	440	17 1/4"	210	8.268	227	259	294	315					
	500	19 3/4"	490	19"	235	9.252	227	259	294	315					
	550	20 1/2"	540	20 1/2"	260	10.236	227	259	294	315					
	600	23 5/8"	590	22"	285	11.220	227	259	294	315					

NOTES

- Values based on the "Technical Design Guide USA", download from www.rothoblaas.com
- Reference lateral design values (Z) are based on NDS 2018. Characteristic values of mechanical properties and geometries are in accordance with ETA-11/0030
- Reference lateral design values (W) are based on NDS 2018. Characteristic values of mechanical properties and geometries are in accordance with ETA-11/0030
- The axial thread-extraction resistance was calculated considering a 90° angle between the grain and the connector and for a fixing length of b
- Download the latest version of this document from www.rothoblaas.com

GENERAL PRINCIPLES

- The reference resistance values for connections shall be multiplied by all applicable adjustment factors (ref. NDS Table 11.3.1)
- Sizing and verification of the wooden elements, panels and steel plates must be done separately
- For different calculation methods, the My Project software is available free of charge (www.rothoblaas.com)
- The characteristic resistances were calculated using solid wood or glulam. In the case of joints with CLT elements, the resistance values may be different and should be calculated taking into account the characteristics of the panel and the connection configuration
- ASTM A36 steel side plates. Bearing strength $F_u = 87,000$ [psi]