CONNECTING ELEMENT

WOOD CONNECTOR SCREWS/THREADED NAILS/ROD DOWELS

GH CONNECTING ELEMENT

WOOD CONNECTOR SCREWS/NAILS/ROD DOWELS

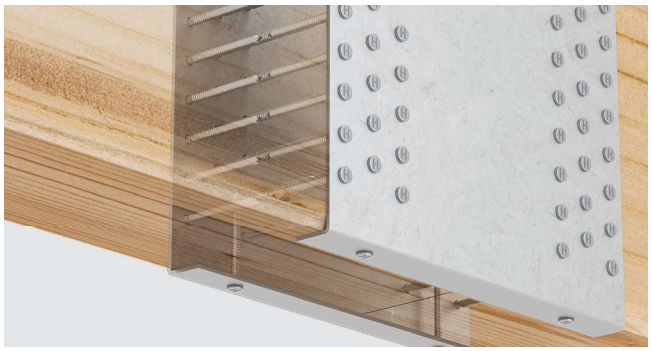
GH WOOD CONNECTOR SCREWS

Due to their special geometry, GH screws can be used as an approved connection as an alternative to anchors or threaded nails. In solid timber and board plywood, the GH screw achieves higher load-bearing capacity values than anchor or threaded nails. In addition, the GH screw is approved for many joist hangers for installation on beech, OSB, laminated veneer lumber, hard fibreboard and resin-bonded chipboard.

Basics of statics **from page 278**
Products & statics **from page 280**

THREADED NAILS

Threaded nails are used where nails are stressed due to pull-out and shearing. They are driven into the timber just like nails, but hold like a screw. There is a tapered shoulder under the flat head, which means that the hole in the GH connector is always completely filled when the nail is driven in, resulting in force-fit, centred fastening.
GH threaded nails are used for fixing GH timber connectors in timber construction, engineering timber construction, carpentry work, building trades, etc.
GH threaded nails with embossed length information on the nail head for static verification.



Basics of statics **from page 278**
Products & statics **from page 282**

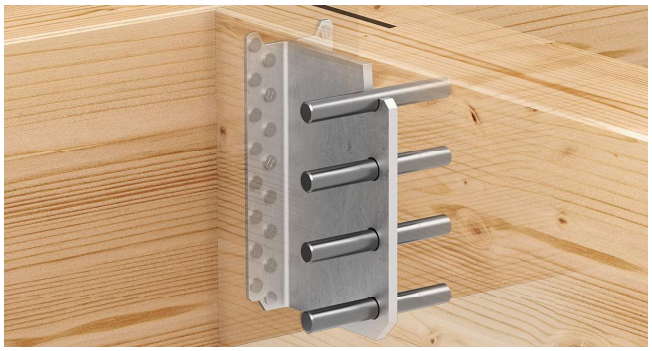
RAFTER NAILS

Rafter nails are used for load-bearing timber structures in roof construction, e.g. for purlin or rafter assemblies. The nail shaft has a barbed profile. This profiling allows a high permissible stress in the shaft direction (pull-out).

Products **from page 282**

ROD DOWELS

Rod dowels serve as a connecting element between timber connectors such as beam hangers or integral connectors. Furthermore, they are used in the assembly of columns on stanchions, for example. The drill hole in the timber may not be larger than the rod dowel diameter.



Products **from page 284**

GH CONNECTING ELEMENT

WOOD CONNECTOR SCREWS/NAILS/ROD DOWELS

								Basics Statics from page	Products & Statics from page	Products Made of V4A from page
GH WOOD CONNECTOR SCREWS		CE	Stahl VZ	NKL 2				278	280	
GH THREADED NAILS		CE	Stahl VZ	NKL 2	A4 1.4404	NKL 3		278	282	295
GH RAFTER NAILS		CE	Stahl VZ	NKL 2					282	
ROD DOWELS*		CE	235 JR galv. verzinkt	NKL 2					284	

* More steel qualities and galvanisations available on request.

S235 hot-dip galvanised
S355 galvanically and hot-dip galvanised
Stainless steel 1.4571 with usage class 3

11

CE symbol

Galvanised steel

Stainless steel with material number

Usage class 1
Moisture content in the building materials that corresponds to a temperature of 20° C and a relative humidity of the ambient air that only exceeds a value of 65% for a few weeks per year, e.g. in the case of buildings that are closed on all sides and heated.
Comment: In UC 1, the average moisture content of most softwoods does not exceed 12 %.

Usage class 2
Moisture content in the building materials that corresponds to a temperature of 20° C and a relative humidity of the ambient air that only exceeds a value of 85% for a few weeks per year, e.g. in the case of open buildings covered by a roof.
Comment: In UC 2, the average moisture content of most softwoods does not exceed 20 %.

Usage class 3
Includes climatic conditions that lead to higher moisture contents than in UC 2, e.g. structures that are exposed to the weather without protection. Eurocode 5 / DIN EN 1995-1-1 section 2.3.1.3

GH SCREWS AND THREADED NAILS

TECHNICAL FEATURES

Geometry

$Ø_{[mm]}$	Diameter of connecting element
$L_{[mm]}$	Length of connecting element

Load directions

F_v ↓	Value of load capacity for shearing per shear joint of the connecting element [kN]
F_{ax} →	Value of load capacity when pulling out the connecting element [kN]

Design

R_d	Design value of load capacity [kN]
R_k	Characteristic value of load capacity [kN]
KLED	Classes of load impact duration according to EN 1995-1-1, chapter 2.3.1.2

Stahl VZ **Galvanised steel**

A4 1.4404 **Stainless steel with material number**

NKL 1 **Usage class 1**
Moisture content in the building materials that corresponds to a temperature of 20° C and a relative humidity of the ambient air that only exceeds a value of 65% for a few weeks per year, e.g. in the case of buildings that are closed on all sides and heated.
Comment: In UC 1, the average moisture content of most softwoods does not exceed 12 %.

NKL 2 **Usage class 2**
Moisture content in the building materials that corresponds to a temperature of 20° C and a relative humidity of the ambient air that only exceeds a value of 85% for a few weeks per year, e.g. in the case of open buildings covered by a roof.
Comment: In UC 2, the average moisture content of most softwoods does not exceed 20 %.

NKL 3 **Usage class 3**
Includes climatic conditions that lead to higher moisture contents than in UC 2, e.g. structures that are exposed to the weather without protection. Eurocode 5 / DIN EN 1995-1-1 section 2.3.1.3

GH SCREWS AND THREADED NAILS

APPLICATIONS

Application:
Connections in timber with steel sheet formed parts up to 6.0 [mm] Material thickness. GH threaded nails and GH wood connection screws are used for connections of two- or three-dimensional timber connectors up to 6.0 [mm] material thickness, in load-bearing timber constructions without pre-drilling in compliance with the edge and centre spacing according to Eurocode 5, or the corresponding ETA of the connector.

Design

Threaded nail Ø 4.0 [mm]
BDesign as a thick sheet: Ab $t_{thick} \geq 1.5$ [mm]
Design as a thin sheet: Ab $t_{thin} \geq 0.9$ to 1.5 [mm]

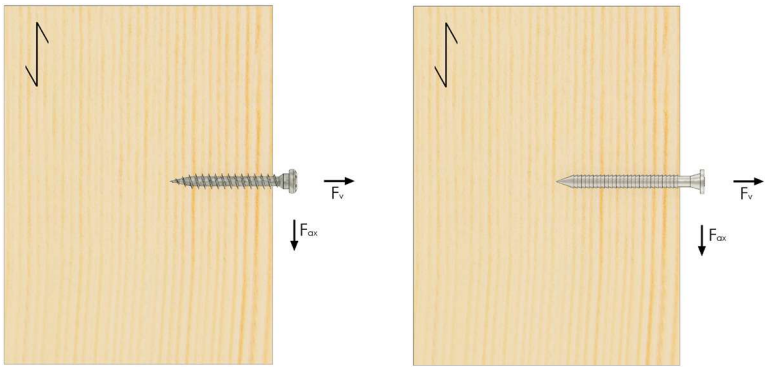
Threaded nail Ø 6.0 [mm]
Design as a thick sheet: Ab $t_{thick} \geq 3.0$ [mm]
Design as a thin sheet: Ab $t_{thin} \geq 2.0$ to 3.0 [mm]

GH wood connection screws Ø 5.0 [mm]
Design as a thick sheet: Ab $t_{thick} \geq 2,0$ [mm]
Design as a thin sheet: Ab $t_{thin} \geq 1,5$ to 2,0 [mm]
Linear interpolation can take place between t_{thin} and t_{thick}

For use in usage classes

Timber qualities
Construction beech
GH threaded nails 4.0 x 35 mm is approved for fixing in construction beech, without pilot drilling.

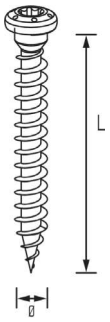
Load directions



Minimum spacing

Spacing		Minimum spacing			
		Without pilot drilling		With pilot drilling	
		Parallel to the grain	Right-angle to the grain	Parallel to the grain	Right-angle to the grain
a_1	in grain direction	10d	5d	5d	4d
a_2	Right angle to the grain direction	5d	5d	3d	4d
$a_{3,t}$	End grain with stress	15d	10d	12d	7d
$a_{3,c}$	End grain without stress	10d	10d	7d	7d
$a_{4,t}$	Loaded edge	5d	7d	3d	5d
$a_{4,c}$	Unloaded edge	5d	7d	3d	3d

For other brackets than those specified between force and grain see EN 1995-1-1 Tab. 8.2



ETA-13
0523

NKL 2

Stahl
VZ

GH SCREWS

FOR TIMBER CONNECTORS

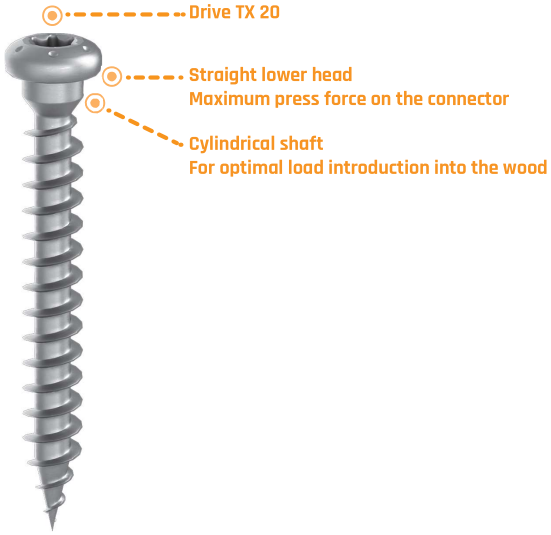
Art. No.	Dimensions [mm]			TX	EAN	Weight	Pallet	PU
	Ø	x	L		4019346	kg		
505025	5,0	x	25	TX20	400050	0.231	145000	500
505035	5,0	x	35	TX20	400005	0.323	145000	500
505040	5,0	x	40	TX20	400012	0.356	145000	500
505050	5,0	x	50	TX20	400029	0.427	72000	200
505060	5,0	x	60	TX20	400036	0.480	58000	200
505070	5,0	x	70	TX20	400043	0.554	58000	200

The **GH timber connector screw** can be used as an alternative to anchor/threaded nails due to its special geometry with approval for fastening to timber connectors. In solid timber and board plywood, the GH wood connector screw achieves higher load-bearing capacity values than anchor or threaded nails.

Special features of the GH wood connector screw

- Approved for fixing GH wood connectors as an alternative to the threaded nail
- Special head geometry with cylindrical lower head for optimum load distribution
- Only screw with approval in OSB (from 12 mm plate thickness)
- Connection can be released again
- This is the only screw to be used for a wide range of connections to timber components:
  - Plywood according to EN 636 or ETA
  - Solid wood boards according to EN 13353 and EN 13986
  - Board plywood according to ETA
  - Veneered wood according to EN 14374 or ETA
  - Timber material according to ETA[1]
  - Tensioning plates of technical classes P4 to P7 according to EN 312 or ETA
  - OSB/3 and OSB/4 according to EN 300 or ETA

[1] if the ETA of the product contains specifications for the use of self-cutting screws, the specifications of the ETA for the timber material shall apply.

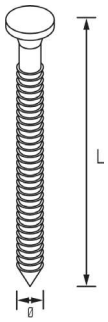


STATICS

Art. No.	Dimensions [mm]				Rk [kN]	Design value Rd according to KLED [kN]				
	Ø	X	L			Constant	Long	Medium	Short	Very short
505025	5	X	25	F_v	1,41	0,55	0,76	0,87	0,98	1,19
				F_{ax}	1,10	0,51	0,59	0,68	0,76	0,93
505035	5	X	35	F_v	1,83	0,84	0,98	1,12	1,26	1,55
				F_{ax}	1,63	0,75	0,88	1,00	1,13	1,38
505040	5	X	40	F_v	2,00	0,93	1,08	1,23	1,39	1,70
				F_{ax}	1,89	0,87	1,02	1,16	1,31	1,60
505050	5	X	50	F_v	2,14	0,99	1,15	1,31	1,48	1,81
				F_{ax}	2,42	1,11	1,30	1,49	1,67	2,04
505060	5	X	60	F_v	2,27	1,05	1,22	1,39	1,57	1,92
				F_{ax}	2,94	1,36	1,58	1,81	2,04	2,49
505070	5	X	70	F_v	2,40	1,11	1,29	1,48	1,66	2,03
				F_{ax}	3,47	1,60	1,87	2,13	2,40	2,93

Screws d=5 mm according to EN 1995-1-1 + ETA

THREADED NAILS



ETA-13
0523

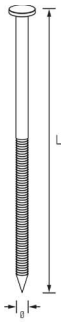
NKL 2

Stahl VZ

Art. No.	Dimensions [mm]			EAN	Weight	Pallet	Outer box	PU
	Ø	x	L	4019346	kg			
403	4,0	x	35*	210093	3.400	120000	3000	250
404	4,0	x	40	210017	4.200	120000	3000	250
405	4,0	x	50	210024	5.200	120000	3000	250
406	4,0	x	60	210031	6.100	120000	3000	250
407	4,0	x	75	210048	7.600	120000	2000	250
408	4,0	x	100	210055	10.200	90000	2000	250
606	6,0	x	60	210062	14.500	50000	1000	250
608	6,0	x	80	210079	19.000	50000	1000	250
601	6,0	x	100	210086	23.000	40000	1000	250

GH threaded nails with embossed length information on the nail head for static verification.
* Approval for fixing in construction beech, without pilot drilling

RAFTER NAILS



EN
14592

NKL 2

Stahl VZ

11

Art. No.	Dimensions [mm]			EAN	Weight	Pallet	PU
	Ø	x	L	4019346	kg		
39600080	6,0	x	80	230008	0.019	20000	250
39600110	6,0	x	110	230015	0.026	20000	250
39600150	6,0	x	150	230022	0.035	10000	250
39600180	6,0	x	180	230039	0.042	10000	100
39600210	6,0	x	210	230046	0.049	10000	100
39600230	6,0	x	230	230053	0.053	10000	100
39600260	6,0	x	260	230060	0.060	10000	100
39600280	6,0	x	280	230077	0.065	10000	100
39600300	6,0	x	300	230084	0.069	10000	100
39600330	6,0	x	330	230091	0.076	10000	100
39600360	6,0	x	360	230107	0.082	10000	100

STATICS

Art. No.					Rk [kN]	Design value Rd according to KLED [kN]				
	Ø	X	L			Constant	Long	Medium	Short	Very short
403	4	X	35	F_v	1,68	0,77	0,90	1,03	1,16	1,42
				F_{ax}	0,75	0,35	0,40	0,46	0,52	0,63
404	4	X	40	F_v	1,88	0,87	1,01	1,16	1,30	1,59
				F_{ax}	0,90	0,42	0,48	0,55	0,62	0,76
405	4	X	50	F_v	2,21	1,02	1,19	1,36	1,53	1,87
				F_{ax}	1,20	0,55	0,65	0,74	0,83	1,02
406	4	X	60	F_v	2,36	1,09	1,27	1,45	1,64	2,00
				F_{ax}	1,50	0,69	0,81	0,92	1,04	1,27
407	4	X	75	F_v	2,51	1,16	1,35	1,55	1,74	2,13
				F_{ax}	1,80	0,83	0,97	1,11	1,25	1,52
408	4	X	100	F_v	2,81	1,30	1,52	1,73	1,95	2,38
				F_{ax}	2,40	1,11	1,29	1,48	1,66	2,03
606	6	X	60	F_v	3,96	1,83	2,13	2,44	2,74	3,35
				F_{ax}	2,25	1,04	1,21	,38	1,56	1,90
608	6	X	80	F_v	4,75	2,19	2,56	2,93	3,29	4,02
				F_{ax}	3,15	1,45	1,70	1,94	2,18	2,67
601	6	X	100	F_v	4,98	2,30	2,68	3,06	3,45	4,21
				F_{ax}	3,60	1,66	1,94	2,22	2,49	3,05

Threaded nails according to EN 1995-1-1 + ETA

EN 14592

NKL 2

235 JR galv. verzinkt

ROD DOWELS

8 MM

Art. No.	Dimensions [mm]			EAN	Weight	PU
	Ø	x	L	4019346	kg	
08040	8	x	40	038505	1.560	250
08050	8	x	50	216385	2.000	100
08060	8	x	60	216392	2.340	100
08070	8	x	70	038529	2.730	100
08080	8	x	80	216248	3.120	100
08090	8	x	90	216255	3.510	100
08100	8	x	100	216262	3.900	100
08110	8	x	110	216422	4.250	100
08120	8	x	120	216279	4.680	100
08130	8	x	130	216446	5.100	100
08140	8	x	140	216286	5.460	100
08150	8	x	150	216453	5.900	100
08160	8	x	160	216460	6.200	100
08170	8	x	170	216477	6.600	100
08180	8	x	180	216484	7.000	100
08190	8	x	190	038635	7.410	100
08200	8	x	200	216491	7.800	100
081000	8	x	1000	217719	39.000	1

10 MM

Art. No.	Dimensions [mm]			EAN	Weight	PU
	Ø	x	L	4019346	kg	
01040	10	x	40	038659	6.200	100
01050	10	x	50	038666	6.200	100
01060	10	x	60	216361	3.720	100
01070	10	x	70	038697	5.000	100
01080	10	x	80	216101	5.000	100
01090	10	x	90	038727	5.000	100
10100	10	x	100	216118	6.200	100
10110	10	x	110	216538	6.800	100
10120	10	x	120	216293	7.440	100
10130	10	x	130	216552	8.100	100
10140	10	x	140	213094	8.680	100
10150	10	x	150	216125	9.300	100
10160	10	x	160	216576	9.920	100
10170	10	x	170	038802	11.160	100
10180	10	x	180	216583	11.160	100
10190	10	x	190	038833	12.400	100
10200	10	x	200	216132	12.400	100
10210	10	x	210	216590	13.000	100
10220	10	x	220	216606	13.600	100
10230	10	x	230	216613	14.300	100
10240	10	x	240	216620	14.900	100
10250	10	x	250	216637	15.500	50
10260	10	x	260	216644	16.100	50
10270	10	x	270	038857	17.300	50
10280	10	x	280	216651	17.300	50
10290	10	x	290	038864	18.600	50
10300	10	x	300	216668	18.600	50
10400	10	x	400	038871	24.800	100
101000	10	x	1000	217726	62.000	20

Further dimensions available on request.

All rod dowels also come in a hot-dip galvanised version, S355 galvanised and hot-dip galvanised and in stainless steel 1.4571 for use in usage class 3, available at short notice.

EN 14592

235 JR galv. verzinkt

NKL 2

ROD DOWELS

12 MM

Art. No.	Dimensions [mm]			EAN	Weight	PU
	Ø	x	L	4019346	kg	
01240	12	x	40	038888	4.500	100
01250	12	x	50	216149	4.500	100
01260	12	x	60	216002	5.340	100
01270	12	x	70	216019	6.230	100
01280	12	x	80	216026	7.120	100
01290	12	x	90	216033	8.010	100
12100	12	x	100	216040	8.900	100
12110	12	x	110	216705	9.790	100
12120	12	x	120	216057	10.680	100
12130	12	x	130	216729	11.570	100
12140	12	x	140	216064	12.460	100
12150	12	x	150	216071	13.350	100
12160	12	x	160	216088	14.240	100
12170	12	x	170	216743	15.100	100
12180	12	x	180	216750	16.020	100
12190	12	x	190	216767	16.900	100
12200	12	x	200	216095	17.800	100
12210	12	x	210	216774	18.700	100
12220	12	x	220	216781	19.600	100
12230	12	x	230	216798	20.500	100
12240	12	x	240	216804	21.200	100
12250	12	x	250	216811	22.300	50
12260	12	x	260	039021	23.100	50
12270	12	x	270	216828	24.000	50
12280	12	x	280	216835	25.000	50
12290	12	x	290	039038	24.800	50
12300	12	x	300	039045	24.800	50
12400	12	x	400	039052	33.000	50
121000	12	x	1000	216699	89.000	1

16 MM

Art. No.	Dimensions [mm]			EAN	Weight	PU
	Ø	x	L	4019346	kg	
16080	16	x	80	216903	12.600	50
16090	16	x	90	216910	14.200	50
16100	16	x	100	216156	15.800	50
16110	16	x	110	216927	17.400	50
16120	16	x	120	216316	19.000	50
16130	16	x	130	216941	20.500	50
16140	16	x	140	216323	22.100	50
16150	16	x	150	216163	23.700	50
16160	16	x	160	216330	25.300	50
16170	16	x	170	216965	26.900	50
16180	16	x	180	216972	28.400	50
16190	16	x	190	216989	30.000	50
16200	16	x	200	216170	31.600	50
16210	16	x	210	216996	33.200	50
16220	16	x	220	217009	34.800	50
16230	16	x	230	217016	36.300	50
16240	16	x	240	039069	37.900	50
16250	16	x	250	217023	39.500	25
16260	16	x	260	217030	41.000	25
16270	16	x	270	039076	37.900	25
16280	16	x	280	217047	37.900	25
16290	16	x	290	039083	47.500	25
16300	16	x	300	216187	47.500	25
16400	16	x	400	216194	63.200	25
161000	16	x	1000	217702	158.000	1

Further dimensions available on request.

All rod dowels also come in a hot-dip galvanised version, S355 galvanised and hot-dip galvanised and in stainless steel 1.4571 for use in usage class 3, available at short notice.

EN 14592

NKL 2

235 JR galv. verzinkt

ROD DOWELS

20 MM

Art. No.	Dimensions [mm]			EAN	Weight	PU
	Ø	x	L	4019346	kg	
20100	20	x	100	039090	29.600	50
20110	20	x	110	039106	29.640	50
20120	20	x	120	217078	29.600	50
20130	20	x	130	039113	32.110	50
20140	20	x	140	039120	34.580	50
20150	20	x	150	039137	37.500	50
20160	20	x	160	216347	39.500	50
20170	20	x	170	039144	44.500	50
20180	20	x	180	216354	44.500	25
20190	20	x	190	217085	46.900	25
20200	20	x	200	216200	49.500	25
20210	20	x	210	039151	51.870	25
20220	20	x	220	217092	55.000	25
20230	20	x	230	039168	59.280	25
20240	20	x	240	039175	59.280	25
20250	20	x	250	216217	61.800	25
20260	20	x	260	039182	62.300	25
20270	20	x	270	039199	69.200	25
20280	20	x	280	039205	69.200	25
20290	20	x	290	039212	74.100	25
20300	20	x	300	216224	74.100	25
20400	20	x	400	216231	99.000	25
201000	20	x	1000	217733	247.000	1

Further dimensions available on request.

All rod dowels also come in a hot-dip galvanised version, S355 galvanised and hot-dip galvanised and in stainless steel 1.4571 for use in usage class 3, available at short notice.