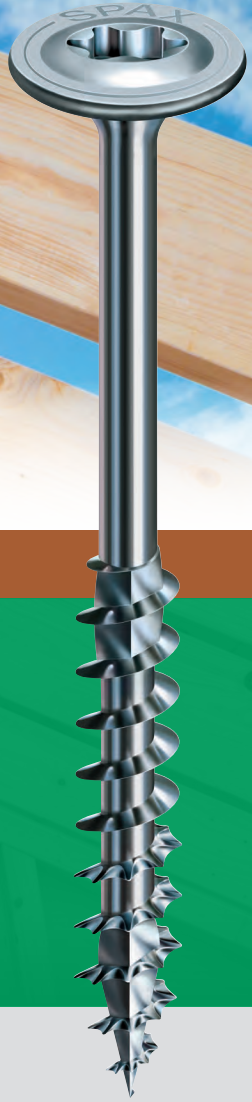
SPAX – Construction

SPAX

For wood construction.



MADE IN Germany

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SPAX – guaranteeing quality and innovation since 1823.

Guaranteed by us, certified by TÜV –
SPAX, located in Germany.



Certified proof of origin

for product clarity and consumer protection.

Our SPAX branded products can be purchased around the globe, in the familiar green packaging that specifies their origin in the address field: **Ennepetal – company head office and production location.** And this is exactly where the certification “Made in Germany” was carried out for SPAX screws by the German Technical Inspection Agency (TÜV) during a sophisticated test procedure.

SPAX International is and will remain based in Germany. This, in particular, guarantees its customers the high degree of safety, quality and continuity associated with the name SPAX.

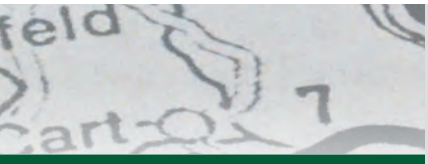
SPAX – Made in Germany

Impressive advantages:

- With certified proof of origi
- Company head office and production location Germany
- Offers a high degree of safety, quality and continuity for the customer







MADE IN Germany



SPAX video “TÜV certification



CE marking and declaration of performance (DoP) – Quality made in Germany





2

3

CE marking and declaration of performance (DoP)
in accordance with the EU Construction Products Regulation

The commitment of SPAX International

The new Construction Products Regulation (CPR) No. 305/2011, which replaces the previous Construction Products Directive (CPD) 89/106/EEC, has been in effect since 1 July 2013.

Issuing a declaration of performance (DoP) is a fundamental change for manufacturers of construction projects.

Products will continue to be labelled with the CE marking, but the marking now also includes the number of the declaration of performance.

SPAX International provides the utmost transparency for its customers by including all items in the declaration of performance. The European Technical Assessment ETA-12/0114 dated 10 July 2017 (modified as of 12 Oct. 2017) is now the applicable basis for the assessment and CE marking of our products in accordance with the EU Construction Products Regulation (Regulation (EU) No. 305/2011).

In this way, the declaration of performance is unambiguously associated with the product and vice versa.

1 **European Technical Approval ETA**

2 **Declaration of Performance (DoP)**

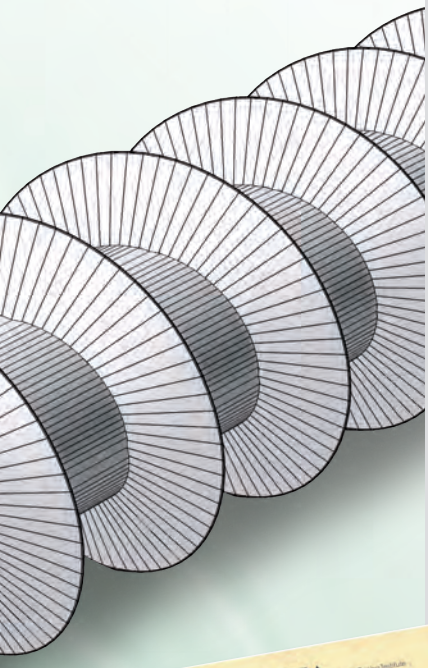
3 **CE marking**

downloads.spax.com



SPAX – Voluntary technical monitoring.

Safety
is the point.



Voluntary technical monitoring
for your safety

A resolution of the EU Commission moderated the system for the assessment and verification of constancy of performance (AVCP system), which also applies for SPAX products, and downgraded the requirement level from 2+ to 3. This affects all of the SPAX products governed by European Technical Approval ETA and, therefore, labelled with a CE marking. Level 3 means that external monitoring by an independent materials testing institute as a recognised certification body is no longer required. For this reason, only in-house production control is necessary in the future.

From the SPAX perspective, this downgrade in level represents a departure from the proven principle of dual control, which can result in a loss of trust by users in the long run. In the end, customers can no longer trust the products in the same way as before.

To counteract these circumstances, **SPAX is subjecting its products to voluntary technical monitoring by the Materials Testing Institute at the University of Stuttgart (MPA Stuttgart).** Therefore, our products will be clearly labelled with the MPA Stuttgart testing seal on the product packaging. This means that our SPAX products will continue to be tested and inspected externally on an ongoing basis.


Materials Testing Institute
University of Stuttgart

Certificate

Product quality monitored by MPA University of Stuttgart

No. ÜW-OGI-5/1200-001

SPAX self-tapping screws
Screws for use in timber constructions

ETA-12/0114

1

2

1 Certificate

2 MPA logo

For this reason, our customers can continue to place their full and complete trust in SPAX quality, which is tested by an independent body. Because it's safety first at SPAX! This is why we do our best at SPAX to guarantee the safety of our products and, hence, our customers' safety.

Expiration of the general construction approvals for SPAX since 1 Aug. 2017

The general construction approvals (Allgemeine bauaufsichtliche Zulassungen (abZ)) for SPAX screws have been expired since 1 Aug. 2017 and will no longer be renewed. After the expiration date of the abZ, only the European Technical Assessments (ETA) can be consulted, which result in products labelled with the CE marking.

downloads.spax.com



SPAX – Strong partnership

Holzbau Deutschland –
An influential partner.



© Swantje Küttner

SPAX is a strong partner

Working together to create a larger market for wood construction

The partners of Holzbau Deutschland (Association of German Carpenters) consist of a group of manufacturers of construction materials, elements and machinery together with Holzbau Deutschland in the Zentralverband des Deutschen Baugewerbes (central association of the German construction industry) and its state associations. The common goal is to support carpentry and wood construction businesses with coordinated, effective measures in marketing and education. It's about creating a larger market for the German wood construction industry. The partnership was initiated in 2000. Now there are more than 20 partners in the group.

The following projects, among others, are being implemented together:

- **Support for the German National Carpentry Team**
  There are no better ambassadors for the wood construction industry than the ambitious and successful German national team. Since 2008, the partners of Holzbau Deutschland have supported the extremely successful team made up of the best, up and coming talent in the field of carpentry. At the 2015 World Championships, the team won the gold medal, and in 2016 they were European champions in the individual and team classifications for the third time in a row. The German national team is a significant and popular symbol for the entire profession and provides considerable support for recruiting the next generation of carpenters.

- **The "HOLZ KANN!" information portal**
  The goal of the "Holz kann" ("Do it with wood") campaign website is to help builder-owners and clients understand the advantages of wood in construction and renovation. The website primarily addressed builder-owners in the private sector and presents construction with wood in a neutral, comprehensive and competent manner.
  In this way, the partners hope to strengthen the demand for wood construction and demonstrate everything wood can do: a lot!

- **German Wood Construction Award**
  The Deutsche Holzbaupreis (German Wood Construction Award) honours buildings and building components consisting mainly of wood and wood materials as well as other renewable raw materials and which demonstrate the spectrum of applications for wood in an exemplary manner. The German Wood Construction Award has been presented biannually since 2003 and is now considered the most important award for building with wood in Germany. The partners supported this prize for the first time in 2017.

- **University Award for Wood Construction**
  The Hochschulpreis Holzbau (University Award for Wood Construction) honours students in architecture and construction engineering in order to support exemplary and creative work with wood materials in construction and development. Prizes are awarded for designs of buildings consisting mainly of wood and wood materials as well as other renewable raw materials. The award is given in connection with the prestigious Deutscher Holzbaupreis (German Wood Construction Award). The University Award for Wood Construction for 2017 was presented in May 2017 at the LIGNA trade fair in Hannover.

- **Zimmermeister-Suche.de**
  The Zimmermeister-Suche.de website is the largest search machine for carpentry businesses in Germany. All industry enterprises in Holzbau Deutschland (Association of German Carpenters) are automatically listed here, at no cost, of course. A geo-data search displays the location of the business for users. Businesses can add the services they provide and a link to their own websites.

- **Education projects**
  Together with its partners, Holzbau Deutschland (Association of German Carpenters) carries out various education projects. Information about technical development and standards as well as workplace safety in wood construction is provided to master training institutes and education facilities.

© Swantje Küttner



SPAX – Construction

A new surface –
for weatherproof outdoor applications too.



The surface with
high corrosion protection.

The new SPAX finish offers greater corrosion protection than bright zinc plating and has a considerably higher surface hardness. This makes it ideal for use in outdoor applications in structures such as carports or pergolas without direct exposure to weather. It also provides a significantly greater surface hardness than conventional yellow zinc plating or zinc flake coating, so it has better resistance properties in response to mechanical stress.

The advantages and properties at a glance:

- Is particularly suited to service class 2 in accordance with Eurocode 5 for open constructions without direct exposure to weather, such as car ports or pergolas
- Despite the high level of corrosion-resistance of WIROX® **it still can't replace rustproof stainless steel.**
- Is mechanically resistant
- Is free of chrome(VI) and far more **environmentally-friendly** than conventional surfaces, both during manufacturing and usage



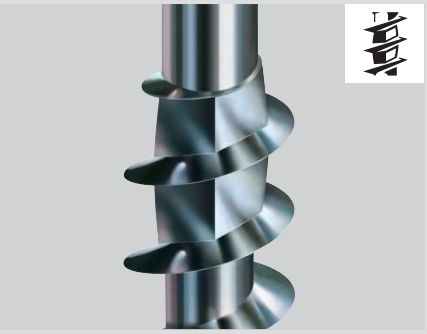




SPAX video
"Salt spray test"

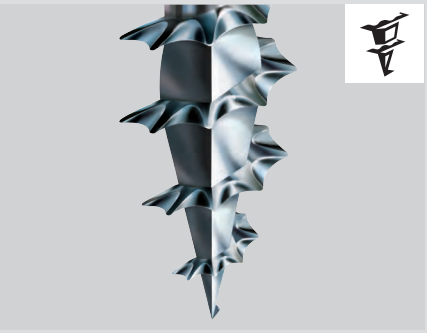
Product characteristics

SPAX technology and application: **Thread and point**



***4CUT* at the thread**

Starting at screw lengths of 160 mm, the special moulding at the thread of partial thread screws significantly reduces the screwing-in torque.

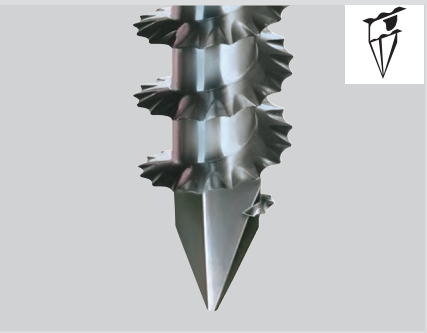


***4CUT* in the screw point and Ground serrations**

4CUT: No pre-drilling (wood-dependent), its point effectively reduces the splitting effect. The square end pushes aside the fibre of the wood and reduces the screwing-in torque.

Ground serrations: For a quick and secure fastening.

Your advantage: Lower minimum clearances and lower minimum wood thicknesses in accordance with ETA.



***CUT point* and SPAX typical ground serrations**

CUT-point: Precision placement allows screwing in without pre-drilling (wood-dependent). Effectively reduces splitting of the wood.

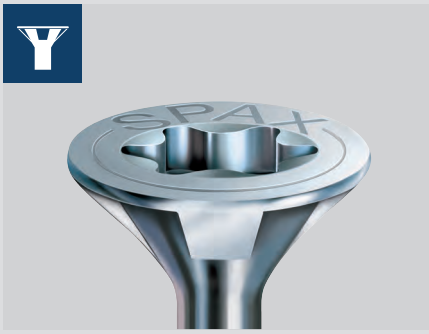
SPAX typical ground serrations: For a quick and secure fastening.

Your advantage: Lower minimum clearances and lower minimum wood thicknesses in accordance with ETA.

SPAX technology and application: **Various head shapes**

MULTI Head

Flush countersinking. Mills in wood and stops on metal. Length and manufacturer marking on the head.



Flat countersunk head T-STAR *plus* with milled ribs

Flush countersinking. Countersinks the screw head flush into the wood.



Washer head

Better tightening of connections also of warped boards. Easy bolting of steel parts and sheet metal to wood without prior counter boring of the bore hole.Guarantees higher beam supporting forces and allows savings with regard to piece numbers and working time.

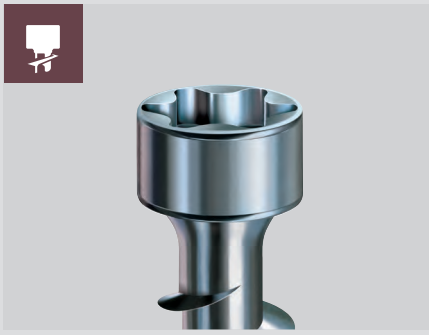
Particularly suited for rafter connections.



Cylindric head

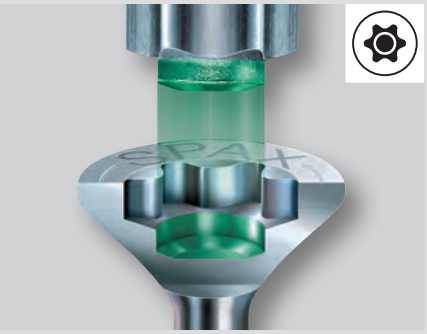
Low splitting effect when sinking the head. Can be easily countersunk in wood.

Barely visible due to small head diameter.



Product characteristics

T-STAR *plus* – The innovative recess



T-STAR *plus*

The SPAX T-STAR *plus* recess offers all the advantages of the T-STAR recess (no cam-out effect, minimises contact pressure force, accepts higher torques). In addition, this recess has a small depression in the screw head below the driving surface, into which the appropriate T-STAR *plus* BIT with guide cone can be inserted precisely. This T-STAR *plus* connection ensures optimal force transmission, a long service life for the T-STAR *plus* BITs, and a perfect fit. SPAX can even be used overhead because the screw is easier to guide and can no longer fall off the BIT.

T-STAR *plus* – Positive and secure fit of the BIT and better driving





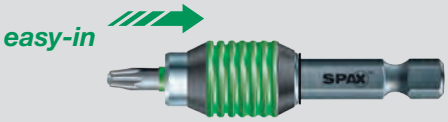
SPAX-BIT-program

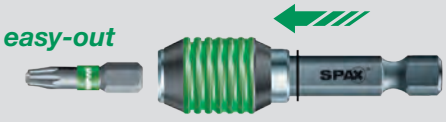
SPAX-BITs are specifically designed for hand held screw drivers, electric mains powered and battery screw drivers and even industrial pneumatic machines. SPAX-BITs give perfect fit as well as optimum hardness to ensure long life.

The SPAX BIT*check* T-STAR *plus* offers a simple colour coding system, which makes it easy to find the right size at the right time. A glance and a grab and you're set.

The SPAX BIT*check* T-STAR *plus* is a practical accessory and is offered together with the Rapidaptor bit receiver (50 mm).

Application note: Do not use SPAX bits in lengths of 50 mm and 35 mm in the bit receiver; instead, these must be inserted directly into the chuck of the cordless screwdriver or drill.





SPAX-BIT-program

T-STAR *plus* – Programme overview

SPAX-BITs T-STAR *plus* **25 mm length**	Holding fixture ⬣ 1/4“ hexagon					
						
Blade size	**T 10**	**T 15**	**T 20**	**T 25**	**T 30**	**T 40**
	3.0	3.5	3.5 4.0 4.5 5.0	Decking 5.0 for A2 6.0 for A4	6.0	8.0
SPAX-No.	5000009182109	5000009182159	5000009182209	5000009182259	5000009182309	5000009182409
EAN-No.	4003530239632	4003530239649	4003530239656	4003530239663	4003530239670	4003530239687



SPAX-BITs T-STAR *plus* **50 mm length**	Holding fixture ⬣ 1/4“ hexagon					
						
Blade size	**T 10**	**T 15**	**T 20**	**T 25**	**T 30**	**T 40**
For SPAX thread Ø [mm]	3.0	3.5	3.5 4.0 4.5 5.0	Decking 5.0 for A2 6.0 for A4	6.0	8.0
SPAX-No.	5000009183109	5000009183159	5000009183209	5000009183259	5000009183309	5000009183409
EAN-No.	4003530192852	4003530192869	4003530192876	4003530192883	4003530192890	4003530192906



SPAX-BITs T-STAR *plus* **35 mm length**	Holding fixture ⬣ 1/4“ hexagon	
		
Blade size	**T 50**	
For SPAX thread Ø [mm]	10.0 / 12.0	
SPAX-No.	5077701516035	
EAN-No.	4003530241918	



Brief overview

Flat countersunk head T-STAR *plus*

WIROX® A9J | 1.4567 | 1.4578

Length [mm]	Ø d_1, [mm] 8.0		10.0		12.0		8.0	10.0	12.0
	Ø d_k, [mm] 15.1		18.6		22.6	18.6	15.1	18.6	18.6
80	❑		❑				❑		
100	❑		❑		❑		❑		
120	❑	■	❑	■			❑		
140	❑	■	❑				❑		
160	❑	■	❑	■	❑		❑	■	
180	❑	■	❑				❑		
200	❑	■	❑	■		■	❑	■	
220	❑	■	❑	■	❑	■	❑	■	
240	❑	■	❑	■	❑	■	❑	■	
260	❑	■	❑	■			❑	■	
280	❑	■	❑	■		■	❑	■	
300	❑	■	❑	■		■	❑	■	
320	❑		❑						
340	❑		❑						
350		■		■	❑	■		■	
360	❑		❑						
380	❑		❑						
400	❑	■	❑	■		■		■	■
450	❑	■	❑	■		■			■
500		■		■		■			■
550		■		■	❑	■			■
600		■		■		■			
700				■					
800				■					

NEW

Article discontinued

■ T-STAR *plus*, Full thread
❑ T-STAR *plus*, Partial thread

Washer head T-STAR *plus*



Length [mm]	WIROX A9J			1.4567 A2 AISI 304	
	Ø d_1, [mm] 6.0	8.0	10.0	6.0	8.0
	Ø d_k, [mm] 13.6	20.0	25.0	13.6	20.0
40	■				
50		■*			■
60	■			■	■
80	■	■	■	■	■
100	❑	■	■	❑	■
120	❑	■	■	❑	■
140	❑	❑	❑	❑	❑
160	❑	❑	❑		❑
180	❑	❑	❑		❑
200	❑	❑	❑		❑
220	❑	❑	❑		❑
240		❑	❑		❑
250	❑				
260		❑	❑		❑
280	❑	❑	❑		❑
300	❑	❑	❑		❑
320		❑	❑		
340		❑	❑		
360		❑	❑		
380		❑	❑		
400		❑	❑		
450		❑	❑		
500		❑			
550		❑			

NEW

*Different surface finish P5J

Cylindric head T-STAR *plus*



Length [mm]	WIROX A9J	
	Ø d_1, [mm] 6.0	
	Ø d_k, [mm] 8.4	
	80	■
	100	■
	120	■
	140	■
	160	■
	180	■
	200	■

Cylindric head T-STAR plus



Length [mm]	WIROX A9J			
	Ø d_1, [mm] 8.0			
	Ø d_k, [mm] 10.0			
	160	■	300	■
	180	■	350	■
	200	■	400	■
	220	■	450	■
	240	■	500	■
	260	■	550	■
	280	■	600	■



SPAX – Construction

The wood construction range
with new surface



Bürgerhaus Altdorf
© Volker Winkler

SPAX screw finde

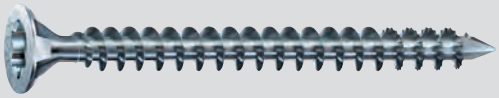
Our wood construction range

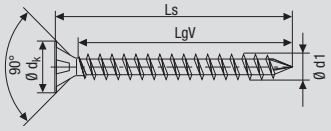
Our new finish protects the environment. It does not contain chrome(VI), so it is considerably more environmentally conscious than conventional surfaces in terms of both manufacturing and use. Both users and the environment benefit from this innovation. Despite the high level of corrosion-resistance of WIROX®, it still can't replace rustproof stainless steel.

WIROX®

Technical directive	
RoHS – EC Directive 2002/95/EC "Restriction of the use of certain hazardous substances"	**Complies with RoHS**
REACH – Regulation (EC) No. 1907/2006 "Registration, Evaluation, Authorisation and Restriction of Chemicals"	**Complies with REACH**







WIROX

A9J

Flat countersunk head, Full thread, T-STAR *plus*

MULTI Head, CUT point, case hardened, slide-coated

13 DoP 1

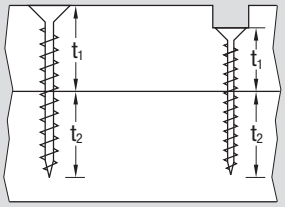
ETA-12/0114

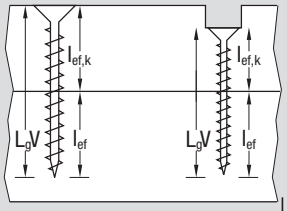
Dimensions [mm] Thread Ø d1	Length total Ls	Length full thread LgV	BIT size T	Packaging units SPAX BOX [pieces]	Master carton [pieces]	Pallet qty	SPAX-No.	EAN code
8.0 Ø d_K = 15.1 mm	120		40	50	500	14,000	1201010801205	4003530257278
	140		40	50	500	14,000	1201010801405	4003530257285
	160		40	50	500	14,000	1201010801605	4003530245992
	180		40	50	500	14,000	1201010801805	4003530246005
	200		40	50	500	12,000	1201010802005	4003530246012
	220		40	50	500	12,000	1201010802205	4003530246029
	240		40	50	–	4,800	1201010802405	4003530246036
	260		40	50	–	4,800	1201010802605	4003530246043
	280		40	50	–	4,800	1201010802805	4003530246050
	300		40	50	–	4,800	1201010803005	4003530246067
	350		40	50	–	3,600	1201010803505	4003530246074
	400		40	50	–	3,600	1201010804005	4003530246081
	450		40	50	–	3,000	1201010804505	4003530246098
	500		40	25	–	1,200	1201010805005	4003530246104
	550		40	25	–	1,200	1201010805505	4003530246111
	600		40	25	–	1,200	1201010806005	4003530246128
10.0 Ø d_K = 18.6 mm	120		50	50	500	12,000	1201011001205	4003530257469
	160		50	50	500	14,000	1201011001605	4003530252273
	200		50	50	500	12,000	1201011002005	4003530246135
	220		50	50	500	12,000	1201011002205	4003530246142
	240		50	50	–	4,800	1201011002405	4003530246159
	260	Thread	50	50	–	4,800	1201011002605	4003530246166
	280	close	50	50	–	4,800	1201011002805	4003530246173
	300	to	50	50	–	4,800	1201011003005	4003530246180
	350	head	50	50	–	3,600	1201011003505	4003530246197
	400		50	50	–	3,600	1201011004005	4003530246203
	450		50	50	–	3,000	1201011004505	4003530246210
	500		50	25	–	1,200	1201011005005	4003530246227
	550		50	25	–	1,200	1201011005505	4003530246234
	600		50	25	–	1,200	1201011006005	4003530246241
	700		50	25	–	800	1201011007005	4003530257476
	800		50	25	–	800	1201011008005	4003530246258
12.0 Ø d_K = 18.6 mm	200		50	25	250	6,000	1201011202005	4003530246265
	220		50	25	250	6,000	1201011202205	4003530249617
	240		50	25	–	2,400	1201011202405	4003530246272
	280		50	25	–	2,400	1201011202805	4003530246289
	300		50	25	–	2,400	1201011203005	4003530246296
	350		50	25	–	1,800	1201011203505	4003530246302
	400		50	25	–	1,800	1201011204005	4003530246319
	450		50	25	–	1,500	1201011204505	4003530246326
	500		50	25	–	1,500	1201011205005	4003530246333
	550		50	20	–	960	1201011205505	4003530246340
	600		50	20	–	960	1201011206005	4003530246357

Flat countersunk head 10/12 mm also in stainless steel, see page 46

Article discontinued

NEW

Shear 

Withdrawal 

Load-carrying capacity values $F_{v,Rk}$ for shear and $F_{ax,\alpha,Rk}$ for withdrawal

Product			Wood-Wood (C24), α = 90°						Sheet steel-Wood (C24), α = 90°					
Dimensions [mm]			Shear			Withdrawal			Shear			Withdrawal		
Thread Ø d1	Length total Ls	Length full thread LgV	t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$f_{ax,d1,k}$ [N/mm]	t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$f_{ax,d1,k}$ [N/mm]
8.0 Ø d_K = 15.1 mm	120		60	60	**3,995**	60	60		10	120	**6,253**	10	120	
	140		70	70	**4,235**	70	70		10	130	**6,733**	10	130	
	160		80	80	**4,475**	80	80		10	150	**7,213**	10	150	
	180		90	90	**4,715**	90	90		10	170	**7,227**	10	170	
	200		100	100	**4,955**	100	100		10	190	**7,227**	10	190	
	220		110	110	**5,110**	110	110		10	210	**7,227**	10	210	
	240		120	120	**5,110**	120	120	**96,0**	10	230	**7,227**	10	230	**96,0**
	260		130	130	**5,110**	130	130	**N/mm**	10	250	**7,227**	10	250	**N/mm**
	280		140	140	**5,110**	140	140		10	270	**7,227**	10	270	
	300		150	150	**5,110**	150	150	**Max,**	10	290	**7,227**	10	290	**Max,**
	350		175	175	**5,110**	175	175	**$f_{ax,d1,k}$**	10	340	**7,227**	10	340	**$f_{ax,d1,k}$**
	400		200	200	**5,110**	200	200	**=13,1kN**	10	390	**7,227**	10	390	**=13,1kN**
	450		225	225	**5,110**	225	225		10	440	**7,227**	10	440	
	500		250	250	**5,110**	250	250		10	490	**7,227**	10	490	
	550		275	275	**5,110**	275	275		10	540	**7,227**	10	540	
	600		300	300	**5,110**	300	300		10	590	**7,227**	10	590	
10.0 Ø d_K = 18.6 mm	120		60	60	**5,300**	60	60		10	120	**8,384**	10	110	
	160		80	80	**5,992**	80	80		10	150	**9,534**	10	150	
	200		100	100	**6,567**	100	100		10	190	**10,443**	10	190	
	220		110	110	**6,855**	110	110		10	210	**10,443**	10	210	
	240		120	120	**7,142**	120	120		10	230	**10,443**	10	230	
	260	Thread	130	130	**7,384**	130	130	**115,0**	10	250	**10,443**	10	250	**115,0**
	280	close	140	140	**7,384**	140	140	**N/mm**	10	270	**10,443**	10	270	**N/mm**
	300	to	150	150	**7,384**	150	150		10	290	**10,443**	10	290	
	350	head	175	175	**7,384**	175	175	**Max,**	10	340	**10,443**	10	340	**Max,**
	400		200	200	**7,384**	200	200	**$f_{ax,d1,k}$**	10	390	**10,443**	10	390	**$f_{ax,d1,k}$**
	450		225	225	**7,384**	225	225	**=21,5kN**	10	440	**10,443**	10	440	**=21,5kN**
	500		250	250	**7,384**	250	250		10	490	**10,443**	10	490	
	550		275	275	**7,384**	275	275		10	540	**10,443**	10	540	
	600		300	300	**7,384**	300	300		10	590	**10,443**	10	590	
	700		350	350	**7,384**	350	350		10	690	**10,443**	10	690	
	800		400	400	**7,384**	400	400		10	790	**10,443**	10	790	
12.0 Ø d_K = 18.6 mm	200		100	100	**8,288**	100	100		12	188	**13,258**	10	190	
	220		110	110	**8,618**	110	110		12	208	**13,918**	10	210	
	240		120	120	**8,948**	120	120		12	228	**14,108**	10	230	
	280		140	140	**9,608**	140	140	**132,0**	12	268	**14,108**	12	268	**132,0**
	300		150	150	**9,938**	150	150	**N/mm**	12	288	**14,108**	12	288	**N/mm**
	350		175	175	**9,976**	175	175		12	338	**14,108**	12	338	
	400		200	200	**9,976**	200	200	**Max,**	12	388	**14,108**	12	388	**Max,**
	450		225	225	**9,976**	225	225	**$f_{ax,d1,k}$**	12	438	**14,108**	12	438	**$f_{ax,d1,k}$**
	500		250	250	**9,976**	250	250	**=29,2kN**	12	488	**14,108**	12	488	**=29,2kN**
	550		275	275	**9,976**	275	275		12	538	**14,108**	12	538	
	600		300	300	**9,976**	300	300		12	588	**14,108**	12	588	

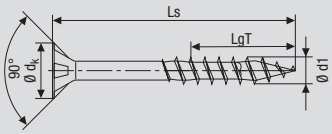
Multiply the value $f_{ax,d1,k}$ with the effective thread length (l_{ef}, $l_{ef,k}$) in the respective wood component. Lower as appropriate for angle α < 90°. The design value for thread load-carrying capacity must not exceed the design value for steel load-carrying capacity $f_{tens,d}$.

For more information regarding measurement and design, see the SPAX design information at https://downloads.spax.com

Article discontinued

NEW





WIROX

A9J

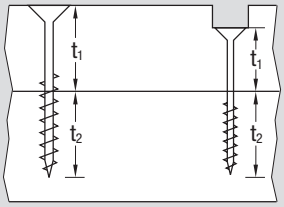
Flat countersunk head, Partial thread, T-STAR *plus*

4CUT, MULTI Head, case hardened, slide-coated

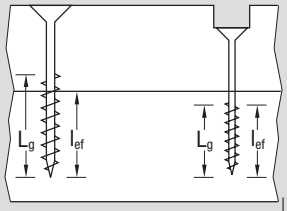
Dimensions [mm]				Packaging units			SPAX-No,	EAN code
Thread Ø d1	Length total Ls	Length partial thread LgT	BIT size T	SPAX BOX [pieces]	Master carton [pieces]	Pallet qty		
8.0 Ø d_K = 15.1 mm	80	47	40	50	500	14,000	0191010800805	4003530243837
	100	57	40	50	500	14,000	0191010801005	4003530244100
	120	70	40	50	500	14,000	0191010801205	4003530244117
	140	80	40	50	500	14,000	0191010801405	4003530244124
	160	80	40	50	500	14,000	0191010801605	4003530244131
	180	80	40	50	500	14,000	0191010801805	4003530244148
	200	80	40	50	500	12,000	0191010802005	4003530244155
	220	80	40	50	500	12,000	0191010802205	4003530244162
	240	80	40	50	–	4,800	0191010802405	4003530244179
	260	80	40	50	–	4,800	0191010802605	4003530244186
	280	80	40	50	–	4,800	0191010802805	4003530244193
	300	80	40	50	–	4,800	0191010803005	4003530244209
	320	80	40	50	–	3,600	0191010803205	4003530244216
	340	80	40	50	–	3,600	0191010803405	4003530244223
	360	80	40	50	–	3,600	0191010803605	4003530244230
	380	80	40	50	–	3,600	0191010803805	4003530244247
	400	80	40	50	–	3,600	0191010804005	4003530244254
	450	80	40	50	–	3,000	0191010804505	4003530244261
10.0 Ø d_K = 18.6 mm	80	50	50	50	500	14,000	0191011000805	4003530244278
	100	60	50	50	500	14,000	0191011001005	4003530244285
	120	80	50	50	500	14,000	0191011001205	4003530244292
	140	80	50	50	500	14,000	0191011001405	4003530244308
	160	80	50	50	500	14,000	0191011001605	4003530244315
	180	80	50	50	500	14,000	0191011001805	4003530244322
	200	80	50	50	500	12,000	0191011002005	4003530244339
	220	80	50	50	500	12,000	0191011002205	4003530244346
	240	80	50	50	–	4,800	0191011002405	4003530244353
	260	80	50	50	–	4,800	0191011002605	4003530244360
	280	80	50	50	–	4,800	0191011002805	4003530245329
	300	80	50	50	–	4,800	0191011003005	4003530245336
	320	80	50	50	–	3,600	0191011003205	4003530245343
	340	80	50	50	–	3,600	0191011003405	4003530245350
	360	80	50	50	–	3,600	0191011003605	4003530245367
	380	80	50	50	–	3,600	0191011003805	4003530245374
	400	80	50	50	–	3,600	0191011004005	4003530245381
	450	80	50	50	–	3,000	0191011004505	4003530245398

Practical screwing aid for rooftop insulation flat countersunk head 8 mm with partial thread, see page 4

Shear



Withdrawal

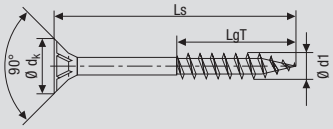


Load-carrying capacity values $F_{v,Rk}$ for shear and $F_{ax,\alpha,Rk}$ for withdrawal

Product			Wood-Wood (C24), $\alpha = 90°$						Sheet steel-Wood (C24), $\alpha = 90°$					
Dimensions [mm]			Shear			Withdrawal			Shear			Withdrawal		
Thread Ø d1	Length total Ls	Length partial thread LgT	t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$F_{ax,\alpha,Rk}$ [N]	t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$F_{ax,\alpha,Rk}$ [N]
8.0 Ø d_K = 15.1 mm	80	47	30	50	**2,600**	30	47	**2,713**	10	70	**4,738**	10	47	**4,512**
	100	57	40	60	**2,889**	40	57	**2,713**	10	90	**4,981**	10	57	**5,472**
	120	70	50	70	**3,436**	50	70	**3,527**	10	110	**5,293**	10	70	**6,720**
	140	80	60	80	**3,436**	60	80	**3,527**	10	130	**5,533**	10	80	**7,680**
	160	80	80	80	**3,436**	80	80	**3,527**	10	150	**5,533**	10	80	**7,680**
	180	80	100	80	**3,436**	100	80	**3,527**	10	170	**5,533**	10	80	**7,680**
	200	80	120	80	**3,436**	120	80	**3,527**	10	190	**5,533**	10	80	**7,680**
	220	80	140	80	**3,436**	140	80	**3,527**	10	210	**5,533**	10	80	**7,680**
	240	80	160	80	**3,436**	160	80	**3,527**	10	230	**5,533**	10	80	**7,680**
	260	80	180	80	**3,436**	180	80	**3,527**	10	250	**5,533**	10	80	**7,680**
	280	80	200	80	**3,436**	200	80	**3,527**	10	270	**5,533**	10	80	**7,680**
	300	80	220	80	**3,436**	220	80	**3,527**	10	290	**5,533**	10	80	**7,680**
	320	80	240	80	**3,436**	240	80	**3,527**	10	310	**5,533**	10	80	**7,680**
	340	80	260	80	**3,436**	260	80	**3,527**	10	330	**5,533**	10	80	**7,680**
	360	80	280	80	**3,436**	280	80	**3,527**	10	350	**5,533**	10	80	**7,680**
	380	80	300	80	**3,436**	300	80	**3,527**	10	370	**5,533**	10	80	**7,680**
	400	80	320	80	**3,436**	320	80	**3,527**	10	390	**5,533**	10	80	**7,680**
	450	80	370	80	**3,436**	370	80	**3,527**	10	440	**5,533**	10	80	**7,680**
10.0 Ø d_K = 18.6 mm	80	50	40	40	**3,293**	30	50	**3,626**	10	70	**6,312**	10	50	**5,750**
	100	60	40	60	**3,770**	40	60	**3,626**	10	90	**6,946**	10	60	**6,900**
	120	80	50	70	**4,131**	40	80	**3,626**	10	110	**7,521**	10	80	**9,200**
	140	80	60	80	**4,796**	60	80	**4,714**	10	130	**7,521**	10	80	**9,200**
	160	80	80	80	**4,870**	80	80	**4,714**	10	150	**7,521**	10	80	**9,200**
	180	80	100	80	**4,870**	100	80	**4,714**	10	170	**7,521**	10	80	**9,200**
	200	80	120	80	**4,870**	120	80	**4,714**	10	190	**7,521**	10	80	**9,200**
	220	80	140	80	**4,870**	140	80	**4,714**	10	210	**7,521**	10	80	**9,200**
	240	80	160	80	**4,870**	160	80	**4,714**	10	230	**7,521**	10	80	**9,200**
	260	80	180	80	**4,870**	180	80	**4,714**	10	250	**7,521**	10	80	**9,200**
	280	80	200	80	**4,870**	200	80	**4,714**	10	270	**7,521**	10	80	**9,200**
	300	80	220	80	**4,870**	220	80	**4,714**	10	290	**7,521**	10	80	**9,200**
	320	80	240	80	**4,870**	240	80	**4,714**	10	310	**7,521**	10	80	**9,200**
	340	80	260	80	**4,870**	260	80	**4,714**	10	330	**7,521**	10	80	**9,200**
	360	80	280	80	**4,870**	280	80	**4,714**	10	350	**7,521**	10	80	**9,200**
	380	80	300	80	**4,870**	300	80	**4,714**	10	370	**7,521**	10	80	**9,200**
	400	80	320	80	**4,870**	320	80	**4,714**	10	390	**7,521**	10	80	**9,200**
	450	80	370	80	**4,870**	370	80	**4,714**	10	440	**7,521**	10	80	**9,200**

For more information regarding measurement and design, see the SPAX design information at https://downloads.spax.com





WIROX

A9J

Flat countersunk head, Partial thread, T-STAR *plus*

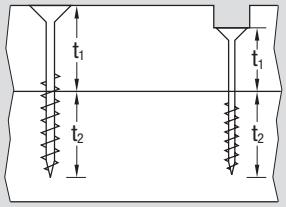
With milled ribs, case hardened, slide-coated

Dimensions [mm] Thread Ø d1	Length total Ls	Length partial thread LgT	BIT size T	Packaging units SPAX BOX [pieces]	Master carton [pieces]	Pallet qty	SPAX-No.	EAN code
12.0 Ø d_K = 22.6 mm	100	60	50	25	250	7,000	0191011201005	4003530245404
	160	100	50	25	250	6,000	0191011201605	4003530245435
	220	100	50	25	250	6,000	0191011202205	4003530245466
	240	100	50	25	–	2,400	0191011202405	4003530245473
	350	100	50	25	–	1,800	0191011203505	4003530245510
	550**	100	50	20	–	960	0191011205505	4003530245558

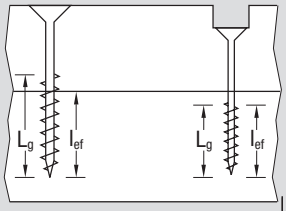
** alternative design

Article discontinued

Shear



Withdrawal



Load-carrying capacity values $F_{v,Rk}$ for shear and $F_{ax,\alpha,Rk}$ for withdrawal

Product			Wood-Wood (C24), $\alpha = 90°$						Sheet steel-Wood (C24), $\alpha = 90°$					
Dimensions [mm]			Shear			Withdrawal			Shear			Withdrawal		
Thread Ø d1	Length total Ls	Length partial thread LgT	t_1 [mm]	t_2 [mm]	**$F_{v,Rk}$ [N]**	t_1 [mm]	l_{ef} [mm]	**$f_{ax,d1,k}$ [N/mm]**	t_1 [mm]	t_2 [mm]	**$F_{v,Rk}$ [N]**	t_1 [mm]	l_{ef} [mm]	**$f_{ax,d1,k}$ [N/mm]**
12.0 Ø d_K = 22.6 mm	100	60	40	60	**4,736**	40	60	**4,944**	12	88	**9,034**	12	60	**7,920**
	160	100	60	100	**5,610**	60	100	**4,944**	12	148	**10,354**	12	100	**13,200**
	220	100	120	100	**6,595**	120	100	**6,427**	12	208	**10,354**	12	100	**13,200**
	240	100	140	100	**6,595**	140	100	**6,427**	12	228	**10,354**	12	100	**13,200**
	350	100	250	100	**6,595**	250	100	**6,427**	12	338	**10,354**	12	100	**13,200**
	550**	100	450	100	**6,595**	450	100	**6,427**	12	538	**10,354**	12	100	**13,200**

** alternative design

Article discontinued

Explanations regarding the **load-carrying capacity tables**

$F_{v,Rk}$ = Characteristic value for lateral load-carrying capacity per shear joint and connector under lateral load (shearing off), including ΔR_k increase in the characteristic value for load-carrying capacity R_k proportionately by ΔR_k (hanging or rope effect)

$F_{ax,\alpha,Rk}$ = Characteristic value for axial load-carrying capacity per connector (withdrawal)

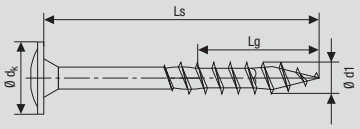
Wood (C24) = Characteristic density (ρ) k = 350kg/m³

The respective, specified characteristic values for load-carrying capacity must be lowered by safety factor coefficients to the esign values for load-carrying capacity. The safety factor coefficients depend on the climatic, environmental conditions ($_{mod}$) and the load effect duration class (γ_M).

For more information regarding measurement and design, see the SPAX design information at https.//downloads.spax.com







WIROX

A9J

Washer head, Partial thread, T-STAR *plus*

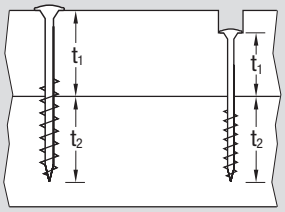
4CUT, case hardened, slide-coated

Dimensions [mm] Thread Ø d1	Length total Ls	Longth thread Lg		Bit Size T	Packaging units SPAX BOX [pieces]	Master carton [pieces]	Pallet qty	SPAX-No.	EAN code
6.0 Ø d_k = 13.6 mm	40	37	■	30	200	2,000	64,000	0251010600405	4003530257490
	60	56	■	30	200	2,000	56,000	0251010600605	4003530248351
	80	61	■	30	100	1,000	28,000	0251010600805	4003530245572
	100	61	❑	30	100	1,000	32,000	0251010601005	4003530245589
	120	68	❑	30	100	1,000	28,000	0251010601205	4003530245596
	140	68	❑	30	100	1,000	28,000	0251010601405	4003530245602
	160	65	❑	30	100	1,000	28,000	0251010601605	4003530245619
	180	65	❑	30	100	1,000	28,000	0251010601805	4003530245626
	200	65	❑	30	50	500	12.000	0251010602005	4003530248474
	220	65	❑	30	50	–	12.000	0251010602205	4003530250002
	250	65	❑	30	50	–	4.800	0251010602505	4003530248511
	280	65	❑	30	50	–	4.800	0251010602805	4003530253133
	300	65	❑	30	50	–	4.800	0251010603005	4003530248528
8.0 Ø d_k = 20 mm	50*	46	■	40	50	500	16,000	0251720800505	4003530182358
	80	70	■	40	50	500	14,000	0251010800805	4003530165184
	100	80	■	40	50	500	14,000	0251010801005	4003530245640
	120	80	■	40	50	500	14,000	0251010801205	4003530245657
	140	80	❑	40	50	500	14,000	0251010801405	4003530245664
	160	80	❑	40	50	500	14,000	0251010801605	4003530245671
	180	80	❑	40	50	500	14,000	0251010801805	4003530245688
	200	80	❑	40	50	500	12,000	0251010802005	4003530245695
	220	80	❑	40	50	500	12,000	0251010802205	4003530245701
	240	80	❑	40	50	–	4,800	0251010802405	4003530245718
	260	80	❑	40	50	–	4,800	0251010802605	4003530245725
	280	80	❑	40	50	–	4,800	0251010802805	4003530245732
	300	80	❑	40	50	–	4,800	0251010803005	4003530245749
	320	80	❑	40	50	–	3,600	0251010803205	4003530245756
	340	80	❑	40	50	–	3,600	0251010803405	4003530245763
	360	80	❑	40	50	–	3,600	0251010803605	4003530245770
	380	80	❑	40	50	–	3,600	0251010803805	4003530245787
	400	80	❑	40	50	–	3,600	0251010804005	4003530245794
	450	80	❑	40	25	–	1,500	0251010804505	4003530245800
	500	80	❑	40	25	–	1,500	0251010805005	4003530257254
	550	80	❑	40	25	–	1,200	0251010805505	4003530257261

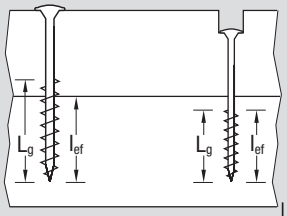
■ T-STAR *plus,* Full thread ❑ T-STAR *plus,* Partial thread *alternative design: P5J NEW

Washer head 8 mm also in stainless steel, see page 48
Practical screwing aid for rooftop insulation flat countersunk head 8 mm with partial thread, see page 4

Shear



Withdrawal



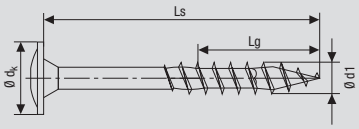
Load-carrying capacity values $F_{v,Rk}$ for shear and $F_{ax,\alpha,Rk}$ for withdrawal

Product				Wood-Wood (C24), α = 90°						Sheet steel-Wood (C24), α = 90°					
Dimensions [mm]				Shear			Withdrawal			Shear			Withdrawal		
Thread Ø d1	Length total Ls	Length thread Lg		t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$F_{ax,\alpha,Rk}$ [N]	t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$F_{ax,\alpha,Rk}$ [N]
6.0 Ø d_K = 13.6 mm	40	37	■							6	34	**2.409**	4	36	**2.592**
	60	56	■	24	36	**1,867**	24	36	**2,592**	6	54	**3,219**	4	56	**4,032**
	80	61	■	32	48	**2,131**	24	56	**2,848**	6	74	**3,345**	4	61	**4,392**
	100	61	❑	40	60	**2,301**	41	59	**3,703**	6	94	**3,345**	4	61	**4,392**
	120	68	❑	50	70	**2,515**	52	68	**3,703**	6	114	**3,471**	4	68	**4,896**
	140	68	❑	70	70	**2,515**	72	68	**3,703**	6	134	**3,471**	4	68	**4,896**
	160	65	❑	90	70	**2,515**	95	65	**3,703**	6	154	**3,471**	4	65	**4,680**
	180	65	❑	110	70	**2,515**	115	65	**3,703**	6	174	**3,471**	4	65	**4,680**
	200	65	❑	130	70	**2,515**	135	65	**3,703**	6	194	**3,471**	4	65	**4,680**
	220	65	❑	150	70	**2,515**	155	65	**3,703**	6	214	**3,471**	4	65	**4,680**
	250	65	❑	180	70	**2,515**	185	65	**3,703**	6	244	**3,471**	4	65	**4,680**
	280	65	❑	210	70	**2,515**	215	65	**3,703**	6	274	**3,471**	4	65	**4,680**
	300	65	❑	230	70	**2,515**	235	65	**3,703**	6	294	**3,471**	4	65	**4,680**
8.0 Ø d_K = 20 mm	50*	46	■							6	44	**3,042**	6	44	**4,224**
	80	70	■	30	50	**3,118**	30	50	**4,800**	10	70	**5,293**	10	70	**6,720**
	100	80	■	40	60	**3,514**	40	60	**5,200**	10	90	**5,533**	10	80	**7,680**
	120	80	■	50	70	**3,855**	50	70	**5,200**	10	110	**5,533**	10	80	**7,680**
	140	80	❑	60	80	**4,245**	60	80	**6,760**	10	130	**5,533**	10	80	**7,680**
	160	80	❑	80	80	**4,245**	80	80	**6,760**	10	150	**5,533**	10	80	**7,680**
	180	80	❑	100	80	**4,245**	100	80	**6,760**	10	170	**5,533**	10	80	**7,680**
	200	80	❑	120	80	**4,245**	120	80	**6,760**	10	190	**5,533**	10	80	**7,680**
	220	80	❑	140	80	**4,245**	140	80	**6,760**	10	210	**5,533**	10	80	**7,680**
	240	80	❑	160	80	**4,245**	160	80	**6,760**	10	230	**5,533**	10	80	**7,680**
	260	80	❑	180	80	**4,245**	180	80	**6,760**	10	250	**5,533**	10	80	**7,680**
	280	80	❑	200	80	**4,245**	200	80	**6,760**	10	270	**5,533**	10	80	**7,680**
	300	80	❑	220	80	**4,245**	220	80	**6,760**	10	290	**5,533**	10	80	**7,680**
	320	80	❑	240	80	**4,245**	240	80	**6,760**	10	310	**5,533**	10	80	**7,680**
	340	80	❑	260	80	**4,245**	260	80	**6,760**	10	330	**5,533**	10	80	**7,680**
	360	80	❑	280	80	**4,245**	280	80	**6,760**	10	350	**5,533**	10	80	**7,680**
	380	80	❑	300	80	**4,245**	300	80	**6,760**	10	370	**5,533**	10	80	**7,680**
	400	80	❑	320	80	**4,245**	320	80	**6,760**	10	390	**5,533**	10	80	**7,680**
	450	80	❑	370	80	**4,245**	370	80	**6,760**	10	440	**5,533**	10	80	**7,680**
	500	80	❑	420	80	**4,245**	420	80	**6,760**	10	490	**5,533**	10	80	**7,680**
	550	80	❑	470	80	**4,245**	470	80	**6,760**	10	540	**5,533**	10	80	**7,680**

For more information regarding measurement and design, see the SPAX design information at https://downloads.spax.com







WIROX

A9J

Washer head, Partial thread, T-STAR *plus*

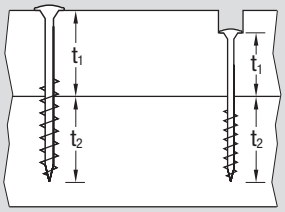
4CUT, case hardened, slide-coated

Dimensions [mm] Thread Ø d1	Length total Ls	Longth thread Lg		Bit Size T	Packaging units SPAX BOX [pieces]	Master carton [pieces]	Pallet qty	SPAX-No.	EAN code
10.0 Ø d_K = 25 mm	80	70	■	50	50	500	14,000	0251011000805	4003530245817
	100	80	■	50	50	500	12,000	0251011001005	4003530245824
	120	80	■	50	50	500	12,000	0251011001205	4003530245831
	140	80	❑	50	50	500	12,000	0251011001405	4003530245848
	160	80	❑	50	25	250	6,000	0251011001605	4003530165207
	180	80	❑	50	25	250	6,000	0251011001805	4003530245862
	200	80	❑	50	25	250	6,000	0251011002005	4003530245879
	220	80	❑	50	25	250	6,000	0251011002205	4003530165214
	240	80	❑	50	25	–	2,400	0251011002405	4003530245893
	260	80	❑	50	25	–	2,400	0251011002605	4003530245909
	280	80	❑	50	25	–	2,400	0251011002805	4003530245916
	300	80	❑	50	25	–	2,400	0251011003005	4003530245923
	320	80	❑	50	25	–	1,800	0251011003205	4003530245930
	340	80	❑	50	25	–	1,800	0251011003405	4003530245947
	360	80	❑	50	25	–	1,800	0251011003605	4003530245954
	380	80	❑	50	25	–	1,800	0251011003805	4003530245961
	400	80	❑	50	25	–	1,800	0251011004005	4003530245978
	450	80	❑	50	25	–	1,500	0251011004505	4003530245985

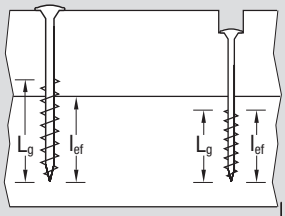
■ T-STAR *plus,* Full thread ❑ T-STAR *plus,* Partial thread

Washer head 8 mm also in stainless steel, see page 48
Practical screwing aid for rooftop insulation flat countersunk head 8 mm with partial thread, see page 4

Shear



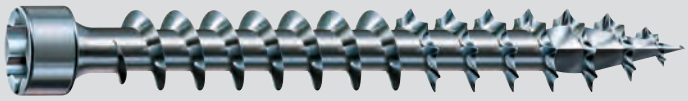
Withdrawal

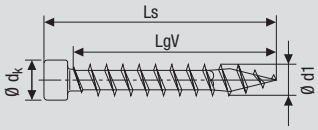


Load-carrying capacity values $F_{v,Rk}$ for shear and $F_{ax,\alpha,Rk}$ for withdrawal

Product				Wood-Wood (C24), $\alpha = 90°$						Sheet steel-Wood (C24), $\alpha = 90°$					
Dimensions [mm]				Shear			Withdrawal			Shear			Withdrawal		
Thread Ø d1	Length total Ls	Length thread Lg		t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$F_{ax,\alpha,Rk}$ [N]	t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$F_{ax,\alpha,Rk}$ [N]
10.0 Ø d_k = 25 mm	80	70	■	40	40	**3,539**	30	50	**5,750**	10	70	**6,890**	6	70	**8,050**
	100	80	■	40	60	**4,539**	40	60	**6,900**	10	90	**7,521**	10	80	**9,200**
	120	80	■	50	70	**5,012**	50	70	**7,188**	10	110	**7,521**	10	80	**9,200**
	140	80	❑	60	80	**5,417**	60	80	**7,188**	10	130	**7,521**	10	80	**9,200**
	160	80	❑	80	80	**5,992**	80	80	**9,200**	10	150	**7,521**	10	80	**9,200**
	180	80	❑	100	80	**5,992**	100	80	**9,200**	10	170	**7,521**	10	80	**9,200**
	200	80	❑	120	80	**5,992**	120	80	**9,200**	10	190	**7,521**	10	80	**9,200**
	220	80	❑	140	80	**5,992**	140	80	**9,200**	10	210	**7,521**	10	80	**9,200**
	240	80	❑	160	80	**5,992**	160	80	**9,200**	10	230	**7,521**	10	80	**9,200**
	260	80	❑	180	80	**5,992**	180	80	**9,200**	10	250	**7,521**	10	80	**9,200**
	280	80	❑	200	80	**5,992**	200	80	**9,200**	10	270	**7,521**	10	80	**9,200**
	300	80	❑	220	80	**5,992**	220	80	**9,200**	10	290	**7,521**	10	80	**9,200**
	320	80	❑	240	80	**5,992**	240	80	**9,200**	10	310	**7,521**	10	80	**9,200**
	340	80	❑	260	80	**5,992**	260	80	**9,200**	10	330	**7,521**	10	80	**9,200**
	360	80	❑	280	80	**5,992**	280	80	**9,200**	10	350	**7,521**	10	80	**9,200**
	380	80	❑	300	80	**5,992**	300	80	**9,200**	10	370	**7,521**	10	80	**9,200**
	400	80	❑	320	80	**5,992**	320	80	**9,200**	10	390	**7,521**	10	80	**9,200**
	450	80	❑	370	80	**5,992**	370	80	**9,200**	10	440	**7,521**	10	80	**9,200**

For more information regarding measurement and design, see the SPAX design information at https://downloads.spax.com





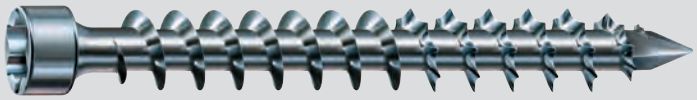
WIROX

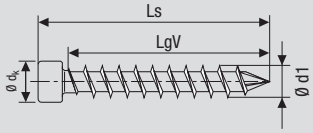
A9J

Cylindric head, Full thread, T-STAR *plus*

4CUT, case hardened, slide-coated

Dimensions [mm] Thread Ø d1	Length total Ls	Length full thread LgV	BIT size T	Packaging units SPAX BOX [pieces]	Master carton [pieces]	Pallet qty	SPAX-No.	EAN code
6.0 Ø d_k = 8.4 mm	80		30	200	2,000	56,000	1211010600805	4003530246364
	100	Thread	30	100	1,000	32,000	1211010601005	4003530246371
	120	close	30	100	1,000	28,000	1211010601205	4003530246388
	140	to	30	100	1,000	28,000	1211010601405	4003530246395
	160	head	30	100	1,000	28,000	1211010601605	4003530246401
	180		30	100	1,000	28,000	1211010601805	4003530246418
	200		30	100	1,000	24,000	1211010602005	4003530246425





WIROX

A9J

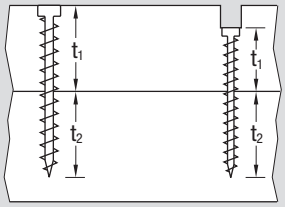
Cylindric head, Full thread, T-STAR *plus*

With *CUT point,* case hardened, slide-coated

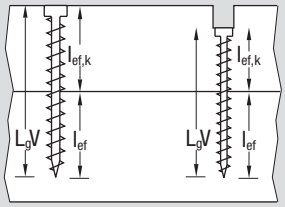
Dimensions [mm] Thread Ø d1	Length total Ls	Length full thread LgV	BIT size T	Packaging units SPAX BOX [pieces]	Master carton [pieces]	Pallet qty	SPAX-No.	EAN code
8.0 Ø d_k = 10 mm	160		40	50	500	14,000	1221010801605	4003530257209
	180		40	50	500	14,000	1221010801805	4003530257216
	200		40	50	500	12,000	1221010802005	4003530246432
	220		40	50	500	12,000	1221010802205	4003530246449
	240		40	50	–	4,800	1221010802405	4003530246456
	260	Thread	40	50	–	4,800	1221010802605	4003530246463
	280	close	40	50	–	4,800	1221010802805	4003530246470
	300	to	40	50	–	4,800	1221010803005	4003530246487
	350	head	40	50	–	3,600	1221010803505	4003530246494
	400		40	50	–	3,600	1221010804005	4003530246500
	450		40	50	–	3,000	1221010804505	4003530246517
	500		40	25	–	1,500	1221010805005	4003530257223
	550		40	25	–	1,200	1221010805505	4003530257230
	600		40	25	–	1,200	1221010806005	4003530257247

NEW

Shear



Withdrawal

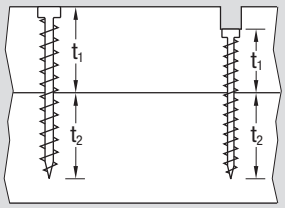


Load-carrying capacity values $F_{v,Rk}$ for shear and $F_{ax,\alpha,Rk}$ for withdrawal

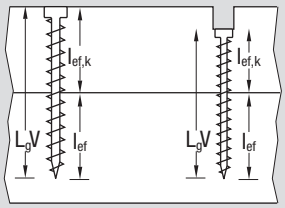
Product			Wood-Wood (C24), $\alpha = 90°$					
Dimensions [mm]			Shear			Withdrawal		
Thread Ø d1	Length total Ls	Length full thread LgV	t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$F_{ax,d1,k}$ [N/mm]
6.0 Ø d_K = 8.4 mm	80		40	40	**2,309**	40	40	**72,0**
	100	Thread	50	50	**2,489**	50	50	**N/mm**
	120	close	60	60	**2,669**	60	60	
	140	to	70	70	**2,849**	70	70	**Max.**
	160	head	80	80	**3,029**	80	80	**$f_{tens,d}$=**
	180		90	90	**3,178**	90	90	**8,462 N**
	200		100	100	**3,178**	100	100	

see footnote below

Shear



Withdrawal



Load-carrying capacity values $F_{v,Rk}$ for shear and $F_{ax,\alpha,Rk}$ for withdrawal

Product			Wood-Wood (C24), $\alpha = 90°$					
Dimensions [mm]			Shear			Withdrawal		
Thread Ø d1	Length total Ls	Length full thread LgV	t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$F_{ax,d1,k}$ [N/mm]
8.0 Ø d_K = 10 mm	160		80	80	**4,475**	80	80	
	180		90	90	**4,715**	90	90	
	200		100	100	**4,955**	100	100	
	220		110	110	**5,110**	110	110	
	240		120	120	**5,110**	120	120	**96,0**
	260	Thread	130	130	**5,110**	130	130	**N/mm**
	280	close	140	140	**5,110**	140	140	
	300	to	150	150	**5,110**	150	150	**Max.**
	350	head	175	175	**5,110**	175	175	**$f_{ax,d1,k}$**
	400		200	200	**5,110**	200	200	**=13,1kN**
	450		225	225	**5,110**	225	225	
	500		250	250	**5,110**	250	250	
	550		275	275	**5,110**	250	250	
	600		300	300	**5,110**	250	250	

NEW

Multiply the value $f_{ax,d1,k}$ with the effective thread length ($l_{ef,}$ $l_{ef,k}$) in the respective wood component. Lower as appropriate for angle $\alpha < 90°$.
The design value for thread load-carrying capacity must not exceed the design value for steel load-carrying capacity $f_{tens,d.}$

For more information regarding measurement and design, see the SPAX design information at https.//downloads.spax.com



SPAX-Iso

The insulation screw
for roofs and facades

spax.com
„SPAX-Iso“

SPAX-Iso

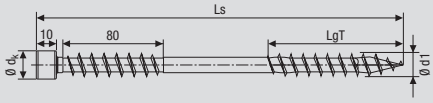
the insulation screw for roofs and facades

The SPAX-Iso screw is suitable for installing soft materials used in over-rafter insulation. Pressure loads, such as those caused by roofing or snow loads, cannot be absorbed by compressible insulating materials. Partial-thread screws are not suitable for installing compressible insulating materials.

Thanks to SPAX-Iso, installing compressible insulating materials is not a problem. The fixing thread holds the counter-batten tight and transfers the compressive forces. This keeps the insulating material in shape..

You can also use the SPAX design software to calculate your projects at: https://designsoftware.spax.com.





Cylinder head, T-STAR *plus*

4CUT, fixing thread, case hardened, slide-coate

Dimensions [mm]				Packaging units		SPAX-No.	EAN code
Thread-Ø d1	Lenght total Ls	Length partial thread LgT	BIT size T	SPAX BOX [pieces]	Master carton [pieces]		
10.0 Ø d_K = 12.3 mm	200	80	50	50	500	0491011002005	4003530252761
	230	80	50	50	500	0491011002305	4003530252778
	260	80	50	50	500	0491011002605	4003530252785
	290	80	50	50	500	0491011002905	4003530252792
	320	80	50	50	500	0491011003205	4003530252808
	350	80	50	50	500	0491011003505	4003530252815

Penetration depth in rafter [mm]

Screw length [mm]	200		230		260		290		320		350	
Batten thickness [mm]	**40**	**60**	**40**	**60**	**40**	**60**	**40**	**60**	**40**	**60**	**40**	**60**
Insulating-material thickness [mm]*												
60	91	70	121	100	151	130	181	160	211	190	241	220
80	70	48	100	78	130	108	160	138	190	168	220	198
100	48	-	78	56	108	86	138	116	168	146	198	176
120	-	-	56	-	86	64	116	94	146	124	176	154
140	-	-	-	-	64	43	94	73	124	103	154	133
160	-	-	-	-	43	-	73	51	103	81	133	111
180	-	-	-	-	-	-	51	-	81	59	111	89
200	-	-	-	-	-	-	-	-	59	-	89	68
220	-	-	-	-	-	-	-	-	-	-	68	46

Minimum thread depth in rafter = batten thickness or min. 4xd1 acc. to ETA-16/0617

* If the roof boarding is used, this has to be taken into account when calculating the thickness of the insulating material. E.g. 120 mm insulating material + 20 mm roof boarding = 140 mm in the table



SPAX – Construction

Design guidelines

Guidelines for the design of structural connections with SPAX fasteners



SPAX Design guidelines

These guidelines apply to the design and installation of loadbearing connections with SPAX fasteners in accordance with BS EN 1995-1-1:2004+A2:2014 (Eurocode 5 resp. EC5) and its National Annex dated October 2012, and in accordance with the European Technical Approval ETA-12/0114.

It is aimed at quick predesign of loadbearing connections with SPAX fasteners, but is not intended to replace appropriate engineering and design by a design professional.

In absence of further specific provisions in the European Technical Approval (ETA), EC5 and its National Annexes apply to the design and installation of connections. Outside the European Union, national standards shall be considered as well.

This document solely covers requirements relative to load-carrying capacity and serviceability of connections.

In addition to EC5 provisions, specific design prescriptions are provided in the relevant sections, and shall be considered as minimum requirements. They may need to be extended to particular connection configurations.

Members of solid timber, glued-laminated timber, laminated veneer lumber (LVL), wood-based products
(in accordance with their ETA or national approval) or steel may be connected to further members of solid timber, glued-laminated timber, laminated veneer lumber (LVL), wood-based products (in accordance with their ETA or national approval).

Connections to wood-based panels (particle board, fibre board, OSB or plywood) may be designed in accordance with the prescriptions of the ETA or national approval of the relevant panel, provided screwed connection is accepted or covered in its scope.

This guide has been established in good faith and to the best of our knowledge. No liability is therefore engaged or accepted for any obvious mistake or error.

Please send any suggestion, question or proposal for corrections to technik@spax.com.

For more information regarding measurement and design, see the SPAX design information at https.//downloads.spax.com

Verification of load-carrying capacity

Shear

Design value for lateral load-carrying capacity

$$F_{v,Rd} = \frac{k_{mod} \cdot F_{v,Rk}}{\gamma_M} \quad [N] \quad \gamma_M = 1.3$$

Verification of lateral load-carrying capacity

The following requirement must be met:

$$\frac{F_{v,Ed}}{n_{ef} \cdot F_{v,Rd}} \leq 1$$ (If n_{ef} has already been taken into consideration in $F_{v,Rd}$, then it must not be considered again here.)

Withdrawal capacity

Design value for axial load-carrying capacity

To calculate the withdrawal load capacity, the design values of three different instances of failure are compared.
The lowest of these is the significant value

$$F_{ax,\alpha,Rd} = \min. \begin{cases} \text{Design value } F_{ax,\alpha,Rd,2} \text{ for failure related to withdrawing the thread} \\ \text{Design value } f_{tens,d} \text{ for failure related to tensile strength (steel)} \\ \text{Design value } F_{ax,\alpha,Rd,1} = \max.\left\{F_{ax,\alpha,Rd,1}\,;F_{ax,\alpha,Rhead,d,1}\right\} \text{ for failure related to head pull-through capacity} \end{cases}$$

Design value related to withdrawing the thread:

$$F_{ax,\alpha,Rd,2} = \frac{k_{mod} \cdot F_{ax,\alpha,Rk,2}}{\gamma_M} \quad [N] \quad \gamma_M = 1.3$$

Design value for tensile strength (steel):

$$f_{tens,d} = \frac{f_{tens,k}}{\gamma_M} \quad [N] \quad \gamma_M = 1.3$$

Design value for head pull-through capacity

$$F_{ax,\alpha,Rd,1} = \frac{k_{mod} \cdot \max\left\{F_{ax,\alpha,Rk,1}\,;F_{ax,\alpha,Rhead,k,1}\right\}}{\gamma_M} \quad [N] \quad \gamma_M = 1.3$$

Verification of axial load-carrying capacity

The following requirement must be met:

$$\frac{F_{ax,\alpha,Ed}}{n_{ef} \cdot F_{ax,\alpha,Rd}} \leq 1$$ (If n_{ef} has already been taken into consideration in $F_{ax,\alpha,Rd}$, then it must not be considered again here.)

Verification of combined lateral and axial load-carrying capacity

The following requirement must be met:

$$\left(\frac{F_{v,Ed}}{n_{ef} \cdot F_{v,Rd}}\right)^2 + \left(\frac{F_{ax,\alpha,Ed}}{n_{ef} \cdot F_{ax,\alpha,Rd}}\right)^2 \leq 1$$ (If n_{ef} has already been taken into consideration in $F_{v,Rd}$ and in $F_{ax,\alpha,Rd}$, then it must not be considered again here.)

ETA 3.9

Modification coefficient k_{mod}
Load effect duration class (LEDC)

Classification of effects acc. to DIN EN 1991-1-1, DIN EN 1991-1-3, DIN EN 1991-1-4, DIN EN 1991-1-7, DIN EN 1991-3 and the associated national appendices in the load effect duration classes (LEDC)

NA; Tab. NA.1

	A	B
1	**Effect**	**LEDC**
2	**Densities and distributed loads** acc. to DIN EN 1991-1-1	Constant
3	**Vertical imposed loads** acc. to DIN EN 1991-1-1	
4	A Attics, living rooms and common rooms	Average
5	B Office spaces, work spaces, corridor	Average
6	C Rooms, meeting spaces and areas where people could gather (except for those categories specified under A, B, D and E	Short
7	D Sales rooms	Average
8	E1 Storage facilities, factories and workshops, stands, storage spaces and entrances	Long
9	E2 Spaces where forklifts are operated	Average
10	F Areas with traffic and for parking (light vehicles, total load ≤ 30,000 N), entrance ramps to these areas	Average Short
11	H Roofs where foot traffic is not permitted except for normal maintenance work and repairs	Short
12	K Helicopter loads	Short
13	T Staircases and landings	Short
14	Z Entrances, balconies and similar structures	Short
15	**Horizontal loads** acc. to DIN EN 1991-1-1	
16	Horizontal imposed loads consisting of people on railings, guard rails and other structures that serve as barriers	Short
17	Horizontal loads for achieving sufficient longitudinal and transverse rigidit	[a]
18	Horizontal loads for helicopter landing pads on roofs, – for horizontal imposed loads, – for rollover protection	 Short Very short
19	**Wind loads** acc. to DIN EN 1991-1-4	Short/Very short[b]
20	**Snow and ice loads** acc. to DIN EN 1991-1-3	
21	Ground elevation of the building location above sea level ≤ 1,000 m	Short
22	Ground elevation of the building location above sea level > 1,000 m	Average
23	**Impact loads** acc. to DIN EN 1991-1-7	Very short
24	**Horizontal loads based on crane and machine operation** acc. to DIN EN 1991-3	Short

Effects due to changes in temperature or moisture are part of load effect duration class “Average”. NA; 2.3.1.2(2)P

Effects due to uneven settlement are part of load effect duration class “Constant”.

For wood components, ignoring the effect of temperature changes is permitted. NA; 2.3.1.2(2)P

For effects in a combination of loads with various LEDC, the LEDC with the shortest duration can be used to determine the modification coefficient $_{mod}$. NA; 2.3.1.2(2)P EC5; 3.1.3 (2)

[a] In accordance with the associated loads

[b] For wind, the average between Short and Very short can be used for k_{mod}

Modification coefficient k_{mod}

Calculation values for modification coefficient k_{mod}

EC5; Tab. 3.1

	A	B	C	D	E	F	G	H
1	**Material**	**Standard**	**Use class**	**Load effect duration class**				
				Constant effect	**Long effect**	**Average effect**	**Short effect**	**Very short effect**
2	Solid wood	EN 14081-1	1	0.60	0.70	0.80	0.90	1.10
3			2	0.60	0.70	0.80	0.90	1.10
4			3	0.50	0.55	0.65	0.70	0.90
5	Glued laminated timber	EN 14080	1	0.60	0.70	0.80	0.90	1.10
6			2	0.60	0.70	0.80	0.90	1.10
7			3	0.50	0.55	0.65	0.70	0.90
8	Laminated veneer lumber (LVL)	EN 14374, EN 14279	1	0.60	0.70	0.80	0.90	1.10
9			2	0.60	0.70	0.80	0.90	1.10
10			3	0.50	0.55	0.65	0.70	0.90
11	Plywood	EN 636						
12		Type EN 636-1	1	0.60	0.70	0.80	0.90	1.10
13		Type EN 636-2	2	0.60	0.70	0.80	0.90	1.10
14		Type EN 636-3	3	0.50	0.55	0.65	0.70	0.90
15	OSB	EN 300						
16		OSB/2	1	0.30	0.45	0.65	0.85	1.10
17		OSB/3, OSB/4	1	0.40	0.50	0.70	0.90	1.10
18		OSB/3, OSB/4	2	0.30	0.40	0.55	0.70	0.90
19	Particle board	EN 312						
20		Type P4, Type P5	1	0.30	0.45	0.65	0.85	1.10
21		Type P5	2	0.20	0.30	0.45	0.60	0.80
22		Type P6, Type P7	1	0.40	0.50	0.70	0.90	1.10
23		Type P7	2	0.30	0.40	0.55	0.70	0.90
24	Fibreboard, hard	EN 622-2						
25		HB.LA, HB.HLA1 or 2	1	0.30	0.45	0.65	0.85	1.10
26		HB.HLA1 or 2	2	0.20	0.30	0.45	0.60	0.80
27	Fibreboard, medium-hard	EN 622-3						
28		MBH.LA1 or 2 MBH.HLS1 or 2	1 1	0.20 0.20	0.40 0.40	0.60 0.60	0.80 0.80	1.10 1.10
29		MBH.HLS1 or 2	2	–	–	–	0.45	0.80
30	Fibreboard, MDF	EN 622-5						
31		MDF.LA, MDF.HLS	1	0.20	0.40	0.60	0.80	1.10
32		MDF.HLS	2	–	–	–	0.45	0.80

For wood material connections, if the modification coefficients $_{mod}$ of the two components joined together ($k_{mod,1}$ and $k_{mod,2}$), then the following value can be used for k_{mod}:

EC5; 2.3.2.1(2)

$$k_{mod} = \sqrt{k_{mod,1} \cdot k_{mod,2}}$$

NA; Gl. (NA.114)

Modification coefficient k_{mod}

Calculation values for modification coefficients k_{mod} for wood, wood material and gypsum material

NA; Tab. NA.4

	A	B	C	D	E	F	G	H
1	**Material**	**Standard**	**Use class**	**Load effect duration class**				
				Constant effect	**Long effect**	**Average effect**	**Short Effect**	**Very short effect**
2	Laminated timber, cross-laminated timber, solid wood boards		1	0.60	0.70	0.80	0.90	1.10
3			2	0.60	0.70	0.80	0.90	1.10
4	Gypsum board (Types GKB[a], GKF[a], GKBI and GKFI), gypsum fibreboar	DIN 18180, DIN EN 15283-2	1	0.20	0.40	0.60	0.80	1.10
5			2	0.15	0.30	0.45	0.60	0.80
6	Cement particle board		1	0.30	0.45	0.65	0.85	1.10
7			2	0.20	0.30	0.45	0.60	0.80
8	[a] Only Use class 1:							

Safety factor coefficient γ_M for the strength characteristic on the material side

Safety factor coefficient γ_M for the strength characteristics in constant and temporary measurement situations

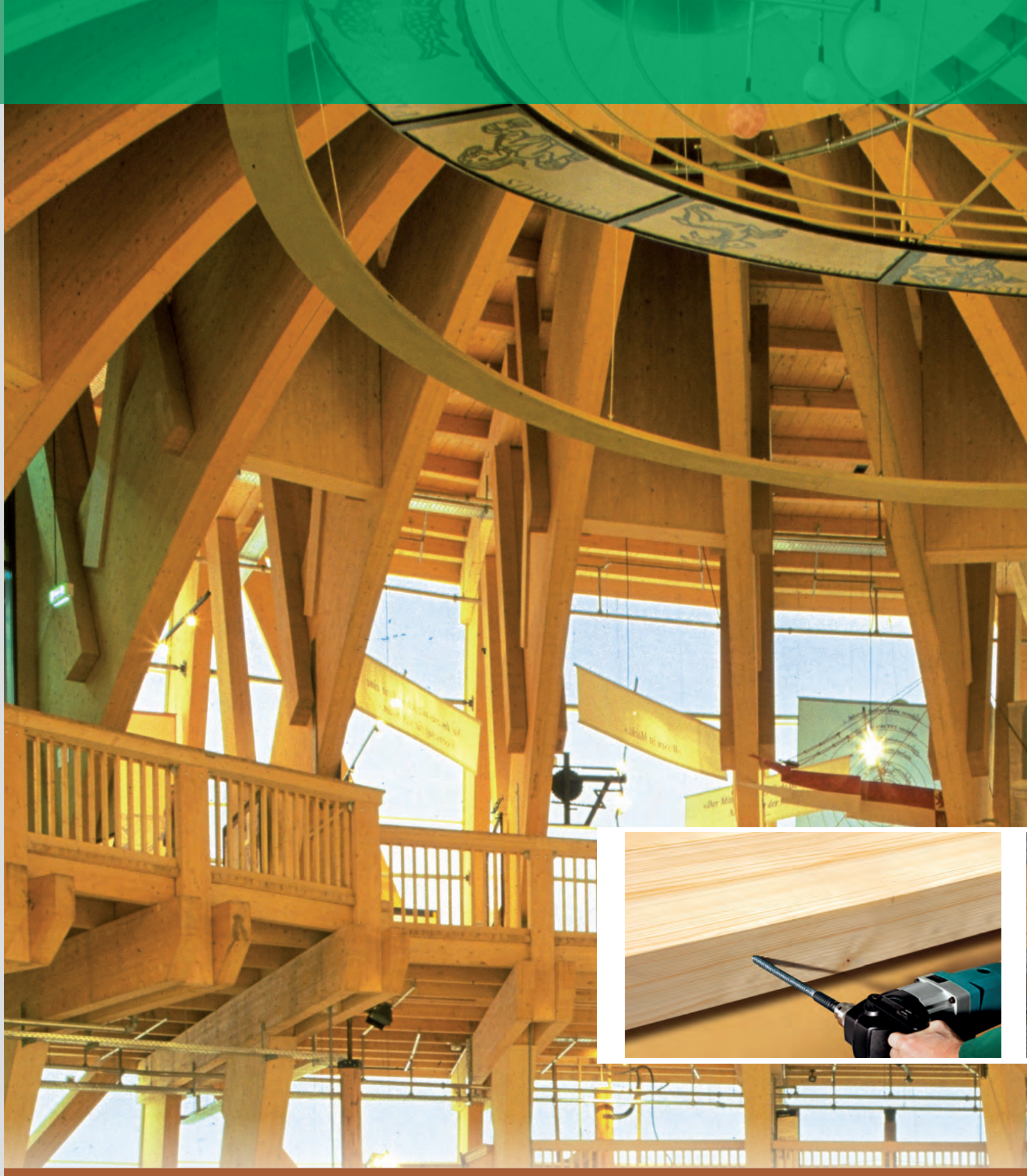
NA; Tab. NA.2 + NA.3

	A	B
1	**Material**	γ_M
2	Solid wood, particle board, hard fibreboard, medium-hard fibreboard, MDF fibreb d, soft fibreboard, laminated veneer lumber, plywood, OSB, glued laminated timber	1.3
3	Laminated timber, cross-laminated timber, solid wood boards, fibre-reinforced gypsum board, gypsum board, cement particle board	1.3
4	Steel in connections	
5	– Dowel-type connections subject to bending loads	1.3
6	– Parts subject to tensile or shearing loads when verifying the yield strength in the net cross section	1.3
7	– Verification of load-carrying capacity for boards with regard to nail plate	1.25

For verification of steel parts, use the safety factor coefficients i DIN EN 1993 or the associated national appendices.

NA; 2.4.1

For exceptional measurement situations, apply safety factor coef cients γ_M to 1.0.



SPAX-threaded rod

A better solution for transverse reinforcement for large components made of glued laminated timber



The alternative for transverse reinforcement
SPAX threaded rod

The SPAX threaded rod is primarily used with large components (e.g. made of glued laminated timber) that require additional transverse reinforcement. The availability of long lengths up to 3,000 mm makes it an ideal product to replace glued-in metric threaded rods. Because they are less vulnerable to the negative influences of moisture and temperature change, the SPAX threaded rod is also suitable for later renovations on the construction site.

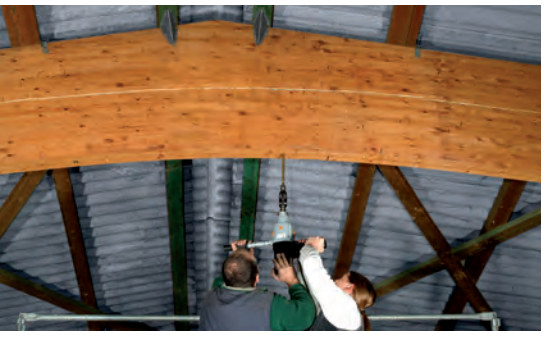
For pre-drilling, the following drills having a diameter of 12 to 13 mm are recommendable:

FAMAG, Remscheid: Auger BIT
WOODTEC FANKHAUSER,
CH-Vordemwald: Deep hole drill ushed with pressurised air

The following machines are recommended for screwing-in:

PROTOOL DRP 32-4,
BOSCH GBM 32-4,
FEIN angle screwing machine Mammut SCW 16-6,
MAKITA angle screwing machine DA 4301.

Shortening to desired length possible.





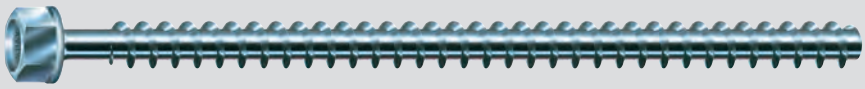


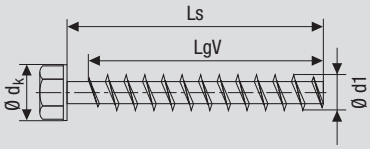
Ideal accessory:

SPAX-screw-sleeve, wrench size SW 11 for threaded rods without head



SPAX screw finde





A2J

SPAX-threaded rod

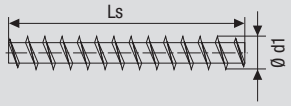
With hex head and shaft ring, synthetic coating

Dimensions [mm]				Packaging units		SPAX-No.	EAN code
Thread-Ø d1	Length total Ls**	Length full thread LgV	Widths across flat	Shaft ring [piece]	Pallet qty*		
16.0 Ø d_K = 26 mm	800		SW 22	25	500	35616000108011	4003530189067
	1,000		SW 22	25	500	35616000101011	4003530189074
	1,200	Thread	SW 22	25	500	35616000102011	4003530189081
	1,400	close	SW 22	25	500	35616000103011	4003530189098
	1,600	to	SW 22	25	500	35616000104011	4003530189104
	1,800	head	SW 22	25	300	35616000105011	4003530189111
	2,000		SW 22	25	300	35616000106011	4003530189128
	2,200		SW 22	25	300	35616000107011	4003530189135

* Dimensions 16 x 1,400 to 16 x 2,000 on special pallets

** Additional lengths on request





A2J

SPAX-threaded rod

Without head, synthetic coating

Dimensions [mm]		Packaging units		SPAX-No.	EAN code
Thread Ø d1	Length total Ls**	Shaft ring [piece]	Pallet qty*		
16.0	3,000	10	100	35616000201011	4003530192821

** Additional lengths on request

SPAX-threaded rod also available in Stainless steel A2

Construction accessories

Accessory for SPAX flat countersunk head and washer head 8 mm

SPAX Screwing aid

Practical screwing aid for rooftop insulation.

For use with SPAX 8 mm allowing precise and pinpoint fastening in the rafter (67° angle).



SPAX-No.	5001120800011
EAN code	4003530168956
Packing unit	1 piece in carton



Accessory for threaded rods without head

SPAX-screw-sleeve

Screw-sleeve for SPAX-threaded rod.

For threaded rods without head. Wrench size SW11.

SPAX-No.	5001900900011
EAN code	4003530192845
Sales unit	1 piece in carton







Stainless steel

The wood construction product range in stainless steel



Protection from corrosion in outdoor areas.
Stainless steel

Galvanised protective coating is often not sufficient to protect steel screws from corrosion in outdoor areas for the long term. Rust is not only ugly, but it also costs money. In particular if the quality of expensive products or components is reduced and related damage occurs.

Expensive reworking and repairs are required. Rust can be prevented. SPAX stainless steel provides protection against corrosion!

Advantages at a glance:

- High-quality austenitic steel
- Provides protection against corrosion
- Particularly suited for use outdoors, on windows and doors, and in areas with moisture



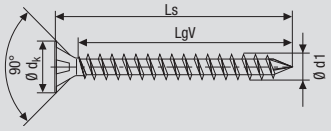






SPAX screw finde





A4
AISI 316

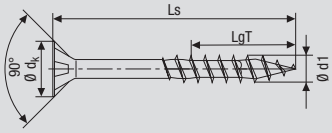
Rostfrei

Flat countersunk head, Full thread, T-STAR *plus*

MULTI Head, CUT point, slide-coated

Dimensions [mm] Thread Ø d1	Length total Ls	Length full thread LgV	BIT size T	Packaging units SPAX BOX [pieces]	Master carton [pieces]	Pallet qty	SPAX-No.	EAN code
10.0 Ø d_K = 18.6 mm	160		50	50	500	14,000	1208001001605	4003530182501
	200		50	50	500	12,000	1208001002005	4003530182303
	220		50	50	500	12,000	1208001002205	4003530182310
	240		50	50	–	4,800	1208001002405	4003530178689
	260	Thread	50	50	–	4,800	1208001002605	4003530182327
	280	close	50	50	–	4,800	1208001002805	4003530182334
	300	to	50	50	–	4,800	1208001003005	4003530182341
	350	head	50	50	–	3,600	1208001003505	4003530182228
	400		50	50	–	3,600	1208001004005	4003530182235
12.0 Ø d_K = 18.6 mm	400		50	25	–	1,800	1208001204005	4003530182242
	450		50	25	–	1,500	1208001204505	4003530182259
	500		50	25	–	1,500	1208001205005	4003530182266
	550		50	20	–	960	1208001205505	4003530182495





A2
AISI 304

Rostfrei

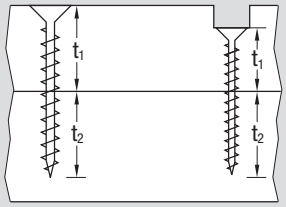
Flat countersunk head, Partial thread, T-STAR *plus*

MULTI Head, CUT point, slide-coated

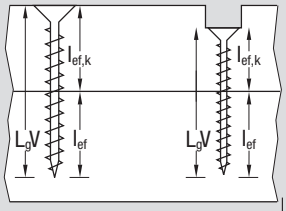
Dimensions [mm] Thread Ø d1	Length total Ls	Length partial thread LgT	BIT size T	Packaging units SPAX BOX [pieces]	Master carton [pieces]	Pallet qty	SPAX-No.	EAN code
8.0 Ø d_K = 15.1 mm	80	47	40	50	500	14,000	0197000800805	4003530257292
	100	57	40	50	500	14,000	0197000801005	4003530257308
	120	70	40	50	500	14,000	0197000801205	4003530257315
	140	80	40	50	500	14,000	0197000801405	4003530257322
	160	80	40	50	500	14,000	0197000801605	4003530257339
	180	80	40	50	500	14,000	0197000801805	4003530257346
	200	80	40	50	500	12,000	0197000802005	4003530257353
	220	80	40	50	500	12,000	0197000802205	4003530257360
	240	80	40	50	–	4,800	0197000802405	4003530257377
	260	80	40	50	–	4,800	0197000802605	4003530257384
	280	80	40	50	–	4,800	0197000802805	4003530257391
	300	80	40	50	–	4,800	0197000803005	4003530257407

NEW

Shear



Withdrawal



Load-carrying capacity values $F_{v,Rk}$ for shear and $F_{ax,\alpha,Rk}$ for withdrawal

Product			Wood-Wood (C24), $\alpha = 90°$						Sheet steel-Wood (C24), $\alpha = 90°$					
Dimensions [mm]			Shear			Withdrawal			Shear			Withdrawal		
Thread Ø d1	Length total Ls	Length full thread LgV	t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$F_{ax,d1,k}$ [N/mm]	t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$F_{ax,d1,k}$ [N/mm]
10.0 Ø d_K = 18.6 mm	160		80	80	**5,313**	80	80		10	150	**8,521**	10	150	
	200		100	100	**5,888**	100	100	**115,0**	10	190	**8,521**	10	190	**115,0**
	220		110	110	**6,025**	110	110	**N/mm**	10	210	**8,521**	10	210	**N/mm**
	240		120	120	**6,025**	120	120		10	230	**8,521**	10	230	
	260	Thread	130	130	**6,025**	130	130	**Max.**	10	250	**8,521**	10	250	**Max.**
	280	close	140	140	**6,025**	140	140	**$f_{tens,d}$=**	10	270	**8,521**	10	270	**$f_{tens,d}$=**
	300	to	150	150	**6,025**	150	150	**15,385 N**	10	290	**8,521**	10	290	**15,385 N**
	350	head	175	175	**6,025**	175	175		10	340	**8,521**	10	340	
	400		200	200	**6,025**	200	200		10	390	**8,521**	10	390	
12.0 Ø d_K = 18.6 mm	400		200	200	**8,140**	200	200	**132,0**	12	388	**11,512**	12	388	**132,0**
	450		225	225	**8,140**	225	225	**N/mm**	12	438	**11,512**	12	438	**N/mm**
	500		250	250	**8,140**	250	250		12	488	**11,512**	12	488	
	550		275	275	**8,140**	275	275	**Max.**	12	538	**11,512**	12	538	**Max.**
								$f_{tens,d}$=						**$f_{tens,d}$=**
								21,538 N						**21,538 N**

Load-carrying capacity values $F_{v,Rk}$ for shear and $F_{ax,\alpha,Rk}$ for withdrawal

Product			Wood-Wood (C24), $\alpha = 90°$						Sheet steel-Wood (C24), $\alpha = 90°$					
Dimensions [mm]			Shear			Withdrawal			Shear			Withdrawal		
Thread Ø d1	Length total Ls	Length partial thread LgT	t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$F_{ax,\alpha,Rk}$ [N]	t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$F_{ax,\alpha,Rk}$ [N]
8.0 Ø d_K = 15.1 mm	80	70	30	50	**2,402**	30	47	**2,713**	10	70	**4,078**	10	47	**4,512**
	100	57	40	60	**2,736**	40	57	**2,713**	10	90	**4,318**	10	57	**5,472**
	120	70	50	70	**2,968**	50	70	**3,527**	10	110	**4,630**	10	70	**6,720**
	140	80	60	80	**2,968**	60	80	**3,527**	10	130	**4,870**	10	80	**7,680**
	160	80	80	80	**2,968**	80	80	**3,527**	10	150	**4,870**	10	80	**7,680**
	180	80	100	80	**2,968**	100	80	**3,527**	10	170	**4,870**	10	80	**7,680**
	200	80	120	80	**2,968**	120	80	**3,527**	10	190	**4,870**	10	80	**7,680**
	220	80	140	80	**2,968**	140	80	**3,527**	10	210	**4,870**	10	80	**7,680**
	240	80	160	80	**2,968**	160	80	**3,527**	10	230	**4,870**	10	80	**7,680**
	260	80	180	80	**2,968**	180	80	**3,527**	10	260	**4,870**	10	80	**7,680**
	280	80	200	80	**2,968**	200	80	**3,527**	10	270	**4,870**	10	80	**7,680**
	300	80	220	80	**2,968**	220	80	**3,527**	10	290	**4,870**	10	80	**7,680**

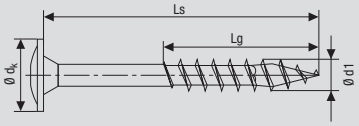
Multiply the value $f_{ax,d1,k}$ with the effective thread length (l_{ef}, $l_{ef,k}$) in the respective wood component. Lower as appropriate for angle $\alpha < 90°$.
The design value for thread load-carrying capacity must not exceed the design value for steel load-carrying capacity $f_{tens,d.}$

For more information regarding measurement and design, see the SPAX design information at https://downloads.spax.com

NEW







A2
AISI 304

Washer head, Partial thread, T-STAR *plus*

4CUT, case hardened, slide-coated

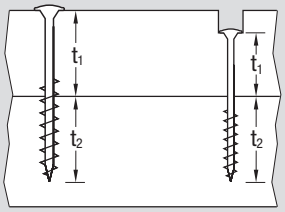
Dimensions [mm]					Packaging units			SPAX-No.	EAN code
Thread Ø d1	Length total Ls	Longth thread Lg		Bit Size T	SPAX BOX [pieces]	Master carton [pieces]	Pallet qty		
6.0 Ø d_K = 13.6 mm	60	56	■	30	100	1,000	32,000	0257000600605	4003530183027
	80	61	■	30	100	1,000	28,000	0257000600805	4003530183034
	100	61	❑	30	100	1,000	32,000	0257000601005	4003530183041
	120	68	❑	30	100	1,000	28,000	0257000601205	4003530183058
	140	68	❑	30	100	1,000	28,000	0257000601405	4003530183065
8.0 Ø d_K = 20 mm	50	46	■	40	50	500	14,000	0257000800505	4003530182815
	60	56	■	40	50	500	14,000	0257000800605	4003530182839
	80	70	■	40	50	500	14,000	0257000800805	4003530176760
	100	80	■	40	50	500	14,000	0257000801005	4003530177880
	120	80	■	40	50	500	14,000	0257000801205	4003530177897
	140	80	❑	40	50	500	14,000	0257000801405	4003530177903
	160	80	❑	40	50	500	14,000	0257000801605	4003530177910
	180	80	❑	40	50	500	14,000	0257000801805	4003530182143
	200	80	❑	40	50	500	12,000	0257000802005	4003530182181
	220	80	❑	40	50	500	12,000	0257000802205	4003530257414
	240	80	❑	40	50	–	4,800	0257000802405	4003530257421
	260	80	❑	40	50	–	4,800	0257000802605	4003530257438
	280	80	❑	40	50	–	4,800	0257000802805	4003530257445
	300	80	❑	40	50	–	4,800	0257000803005	4003530257452

■ T-STAR *plus,* Full Thread ❑ T-STAR *plus,* Partial thread

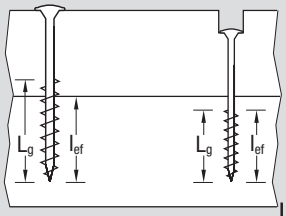
NEW

Practical screwing aid for rooftop insulation flat countersunk head 8 mm with partial thread, see page 4

Shear



Withdrawal



Load-carrying capacity values $F_{v,Rk}$ for shear and $F_{ax,\alpha,Rk}$ for withdrawal

Product				Wood-Wood (C24), α = 90°						Sheet steel-Wood (C24), α = 90°					
Dimensions [mm]				Shear			Withdrawal			Shear			Withdrawal		
Thread Ø d1	Length total Ls	Length thread Lg		t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$F_{ax,\alpha,Rk}$ [N]	t_1 [mm]	t_2 [mm]	$F_{v,Rk}$ [N]	t_1 [mm]	l_{ef} [mm]	$F_{ax,\alpha,Rk}$ [N]
6.0 Ø d_K = 13.6 mm	60	56	■	24	36	**1,946**	24	50	**2,592**	6	54	**2,806**	4	56	**4,032**
	80	61	■	32	48	**2,010**	24	60	**2,848**	6	74	**2,932**	4	61	**4,392**
	100	61	❑	40	60	**2,010**	41	70	**2,848**	6	94	**2,932**	4	61	**4,392**
	120	68	❑	50	70	**2,222**	52	80	**2,848**	6	114	**3,058**	4	68	**4,896**
	140	68	❑	70	70	**2,222**	72	80	**2,848**	6	134	**3,058**	4	68	**4,896**
8.0 Ø d_K = 20 mm	50	46	■							4	46	**2,260**	4	46	**4,416**
	60	56	■							4	56	**2,760**	4	56	**5,376**
	80	70	■	30	50	**2,924**	30	50	**4,800**	6	74	**4,144**	6	70	**6,720**
	100	80	■	40	60	**3,357**	40	60	**5,200**	10	90	**4,868**	10	80	**7,680**
	120	80	■	50	70	**3,385**	50	70	**5,200**	10	110	**4,868**	10	80	**7,680**
	140	80	❑	60	80	**3,775**	60	80	**6,760**	10	130	**4,868**	10	80	**7,680**
	160	80	❑	80	80	**3,775**	80	80	**6,760**	10	150	**4,868**	10	80	**7,680**
	180	80	❑	100	80	**3,775**	100	80	**6,760**	10	170	**4,868**	10	80	**7,680**
	200	80	❑	120	80	**3,775**	120	80	**6,760**	10	190	**4,868**	10	80	**7,680**
	220	80	❑	140	80	**3,775**	140	80	**6,760**	10	210	**4,868**	10	80	**7,680**
	240	80	❑	160	80	**3,775**	160	80	**6,760**	10	230	**4,868**	10	80	**7,680**
	260	80	❑	180	80	**3,775**	180	80	**6,760**	10	250	**4,868**	10	80	**7,680**
	280	80	❑	200	80	**3,775**	200	80	**6,760**	10	270	**4,868**	10	80	**7,680**
	300	80	❑	220	80	**3,775**	220	80	**6,760**	10	290	**4,868**	10	80	**7,680**

$F_{v,Rk}$ = Characteristic value for lateral load-carrying capacity per shear joint and connector under lateral load (shearing off), including ΔRk increase in the characteristic value for load-carrying capacity R_k proportionately by ΔR_k (hanging or rope effect)

NEW

$F_{ax,\alpha,Rk}$ = Characteristic value for axial load-carrying capacity per connector (withdrawal)

Wood (C24) = Characteristic density (ρ) k = 350kg/m³

The respective, specified characteristic values for load-carrying capacity must be lowered by safety factor coefficients to the esign values for load-carrying capacity. The safety factor coefficients depend on the climatic, environmental conditions ($_{mod}$) and the load effect duration class (γ_M).

For more information regarding measurement and design, see the SPAX design information at https.//downloads.spax.com



SPAX Design Software

Planning and design
of selected connections and reinforcements



SPAX Design Software

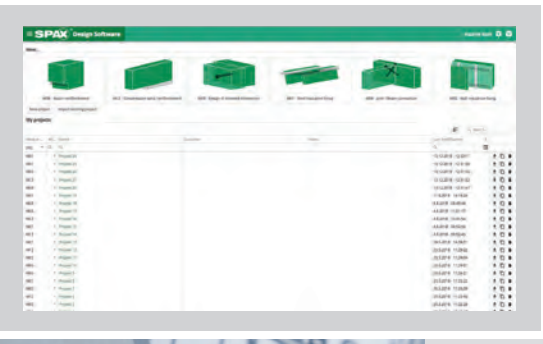
Connections and reinforcements in wood constructions

SPAX Design Software is an online solution that is compatible with the most common browsers such as Microsoft Internet Explorer, Google Chrome, Mozilla Firefox, Apple Safari, etc. The software does not require JAVA! With SPAX Design Software you always have access to the most current version and you don't need to download any applications.

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SPAX
Design Software



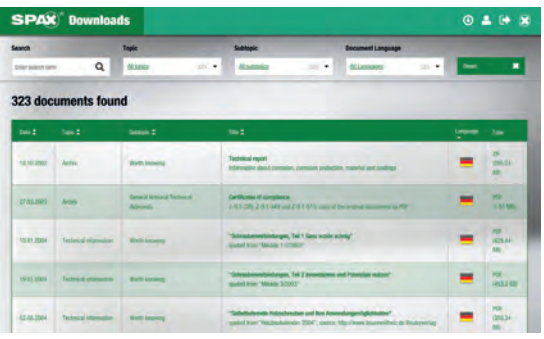
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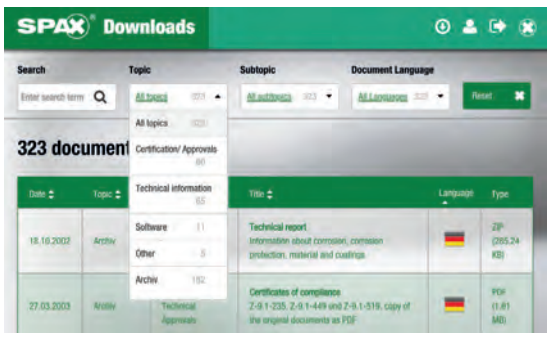
Extensive technical information
is available for download in several languages

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