KLIMAS

FASTENER TECHNOLOGIES

SCREWS AND FASTENERS FOR WOODEN CONSTRUCTIONS

Wkręt-met®
KLIMAS

POLISH PRODUCER

Production plant no. 2 and central warehouse - total area of 30,000 m²
New investment: plants no. 3 and 4 - total area of 30,000 m²

Production plant no. 1 - total area of 20,000 m²

4 PRODUCTION AND STORAGE FACILITIES OF TOTAL AREA OF **80 000 m²**

OWN PRODUCTION

OF FASTENER TECHNOLOGIES

Production of Klimas Wkręt-met fastening technologies is held in 4 modern facilities, located in Kuźnica Kiedrzyńska and Wanaty near Częstochowa. The Company has launched production in its third facility in Wanaty which, with use of state-of-the-art technologies and applications, implements the assumptions of the Industry 4.0. programme.

ADVANCED MACHINE PARK ROLLING MILL AND STAMPING PRESS DEPARTMENT

PRODUCTION PROCESS OF STEEL PRODUCTS:

- Top-quality raw-material from European steelworks.
- Various steel grades.
- Own R&D department.
- Extensive machine park.
- Hardening (heat treatment).
- Application of protective coats.
- Possibility of painting heads and washers to RAL colours.
- Quality control at each production stage.
- Polish and European technical assessments.

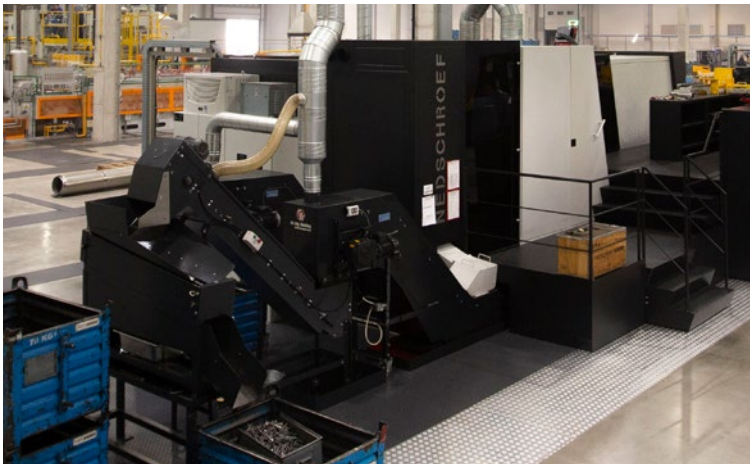
WE PRODUCE

30 000 000 pcs. of SCREWS DAILY

Production plant no. 1 - total area of 20,000 m²

ADVANCED MACHINE PARK ROLLING MILL AND STAMPING PRESS DEPARTMENT

KLIMAS
FASTENER TECHNOLOGIES



OWN PRODUCTION OF FASTENER TECHNOLOGIES

PRODUCTS DEVELOPED BY R&D
WIDE RANGE OF SIZES
TOP QUALITY

MORE THAN **400** MODERN MACHINES

Wkręt-met
KLIMAS

KLIMAS
FASTENER TECHNOLOGIES

ADVANCED MACHINE PARK INJECTION MOULDER DEPARTMENT

- Highest quality production materials.
- Appropriate flexibility is guaranteed by conditioning of polyamide products.
- Own production using the highest quality hybrid injection moulding machines with robots.
- Automatic packing process: from carton/blister to pallet wrapping.

WE PRODUCE

9 000 000 **pcs. of PLASTIC FASTENERS** DAILY

Production plant no. 2 and central warehouse - total area of 30,000 m²

Fully-automated process of production of plastic fasteners

OWN PRODUCTION OF FASTENER TECHNOLOGIES

PRODUCTS DEVELOPED BY R&D
WIDE RANGE OF SIZES
TOP QUALITY

MORE THAN **120** **STATE-OF-THE-ART INJECTION MOULDERS**

ADVANCED MACHINE PARK HARDENING PLANT DEPARTMENT

PROCESS OF SCREW HARDENING:

- Advanced machine park including 7 hardening furnaces.
- 2 modern furnaces for hardening of screws over 200 mm long while keeping high quality of parameters – no curvature.
- Automated hardening line – high capacity.

WE HARDEN

21 000 000 pcs. of SCREWS

DAILY

CUSTOM COATING

White Zinc
Zinc coating guarantee of quality and high level of anti-corrosion protection.

Yellow Zinc
Zinc coating guarantee of quality and high level of anti-corrosion protection.

SQ Ceramic
Very high level of anti-corrosion protection (several times higher than the traditional galvanization).

Advanced machine park: **ZN yellow without CR6+.**
Advanced processing line for SQ Cermic coating.
Automatic passivation and top coat line.
State-of-the-art robots and baths for sealing of coating.

ADVANCED PROCESSING LINE – HARDENING PLANT AND GALVANIZING LINE DEPARTMENT

PRECISION
HIGH QUALITY
HIGH PRODUCTION CAPACITY

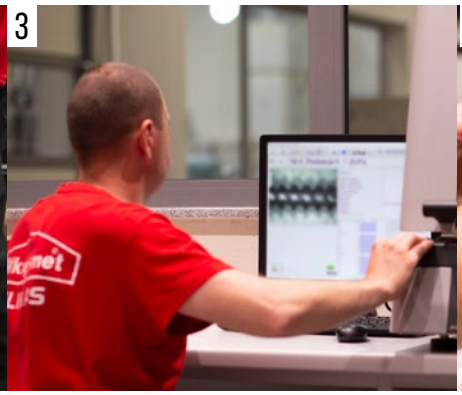
7 HARDENING FURNACES

ADVANCED MACHINE PARK RESEARCH & DEVELOPMENT DEPARTMENT

1

1. Hardness and micro Vickers hardness testing. | 2. Assembly and load-resistance tests for all substrate categories according to ETAG. | 3. Testing thickness of corrosion protection plating using X-ray fluorescence spectroscopy tester - Fischeroscope X-RAY XDL. Analysis of chemical composition of alloy steels. | 4. Preparation of metallographic micro-sections – metallographic tests. | 5. Preparation of metallographic micro-sections – metallographic tests. | 6. Torque value testing | 7. Determination of tensile strength for wire and finished goods. 8. Metallographic tests – control of thermal and chemical treatment process, hardness, structure. | 9. Testing of corrosion resistance in salt spray/cyclic chamber. | 10. Accelerated ageing of paint coats in UV chamber. | 11. Testing of loading resistance of fasteners – characteristic pull-out strength.


2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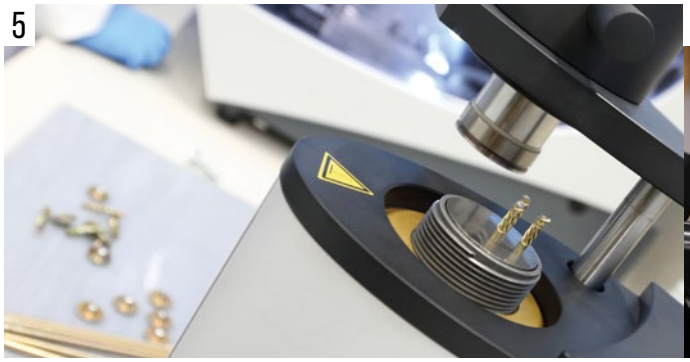
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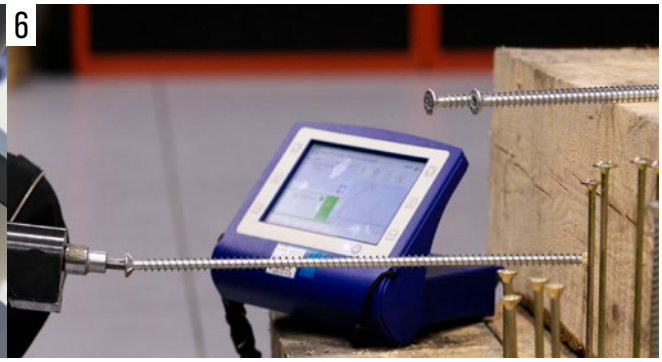
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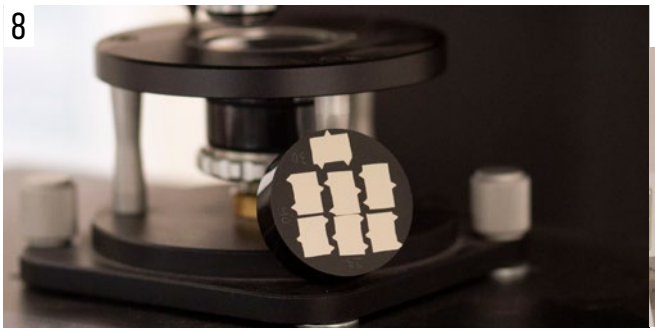
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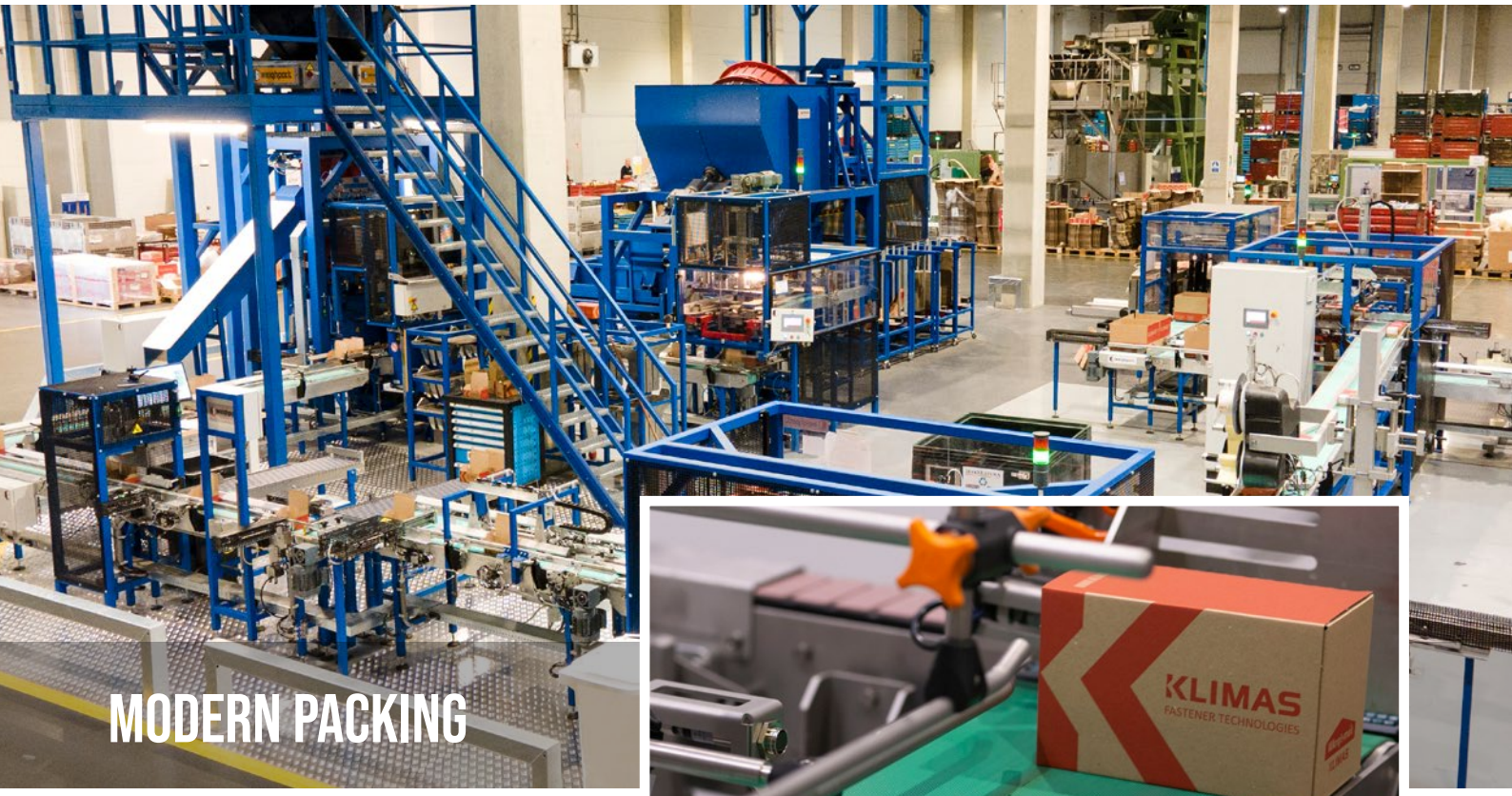
APPROVALS
CERTIFICATES
AWARDS

20
EUROPEAN APPROVALS

COMPREHENSIVE SOLUTIONS PACKING DEPARTMENT AND HIGH STORAGE WAREHOUSE



MODERN PACKING

- Automated picking and packing processes.
- Most popular packaging: unit packages, bags, blisters.
- High performance

HIGH STORAGE WAREHOUSE

24 000 PALLET PLACE

BRAND MOST FREQUENTLY CHOSEN BY CONTRACTORS IN POLAND*

*according to annual research of ASM - Centre for Market Research and Analysis (2020)

Certified products - 21 European Technical Approvals and 21 Polish Technical Approvals
Our products regularly receive Polish and European technical approvals what proves their reliability. Due to these documents Polish and foreign Clients obtain a guarantee of the highest quality of Klimas Wkręt-met brand products.

Technical advisory
Caring about the Client's comfort, we ensure the assistance of technical advisors in the selection of our products. Persons interested in our offer may always count on the professional support in the selection of fastening systems adequate to the needs of the Client and requirements of the specific construction.

Partnership
Our company is set on continuous improvement of its production control processes at each stage of manufacture. We wish to provide our customers with services of the highest possible standard.

Our company offers products that find application in many different industries
Specialised sections of products reach many selected groups of customers who value and appreciate their reliability.
Klimas Wkręt-met undertakes cooperation with companies from various industries using products marked with our brand. Thus, for example, thanks to cooperation with window producers we deliver them high quality products used by them in the production process – and in return we receive the knowledge necessary for enhancing our products and developing brand new innovative products by Klimas Wkręt-met that perfectly fit the needs of a given industry or field.

Integrated Management System
Quality Management System according to PN-EN ISO 9001.
OH&S Management System according to PN-EN ISO 45001.
Energy Management System according to PN-EN ISO 50001.

PRIZES AND AWARDS

Budowlana Marka Roku 2021

For the 9th time, Klimas Wkręt-met won the most prestigious title on the market of building materials in Poland.

Forbes Diamond Award 2021

Klimas Wkręt-met has been awarded with Forbes Diamond 2021. According to the ranking compiled by Forbes Magazine and Bisnode Polska, the producer of fastening techniques dynamically increased its sales value in the last three years.

Statuettes of the Polish Windows and Doors Association

The Polish Windows and Doors Association awarded Klimas Wkręt-met for its achievements in the woodwork industry. The Association also awarded the prestigious title of Honorary Member to the founder and President of the company - Wojciech Klimas.

Construction Company of the Year

The editors and the Program Council of the "Builder" magazine once more awarded Klimas Wkręt-met the title of Construction Company of the Year. The distinction is awarded to companies characterized by dynamic development and strong market position. This title aims at selecting the most outstanding companies in the country, their promotion and popularization of good business practices.

Creator of Construction 2020

For 9 years now, the Polish Chamber of Civil Engineers has been distinguishing individuals and companies that shape the construction market with their activities, introduce new technologies and innovative solutions, as well as take care of the quality of products and services offered and can be proud of their CSR activities. The title of the Creator of Construction 2019 went to President Wojciech Klimas, as well as to the entire Klimas Wkręt-met company.

DAFA - Flat Roof and Fasade Contractors Association

The organization undertakes activities aimed at unification of executive standards and commercial conditions, creation of partnership relations, initiation of activities influencing the development of the industry and integration of environments that operate in the area of design and construction of flat roofs and facades.

POiD - Polish Windows and Doors Association

The organization unites domestic manufacturers, suppliers and distributors related to woodwork. The Association aims to combat all forms of unfair competition, set professional standards and carry out technical analyses, among other things.

PSD - Polish Roofers' Association

The Polish Roofers' Association unites professionals from the roofing industry: contractors, experts, designers, suppliers and manufacturers of construction materials for roofing.

EDG - Energy Efficient Finished Houses Association

The EDG Association is an organization associating manufacturers of prefabricated buildings and producers of materials dedicated to this type of construction in Poland. The organization places great emphasis on increasing awareness and taking care of the quality and reliability of services.

SSO - Association for External Thermal Insulation Composite Systems - ETICS

Membership in the Association for Thermal Insulation composite systems allows us to actively contribute to the development of energy efficient and sustainable construction industry. The Association unites the leading manufacturers of thermal insulation composite systems in Poland.

SDD - Wooden House Association

One of product categories carried by Klimas Wkręt-met are fasteners for wooden constructions that work great in the wooden construction industry. That is why, since 2014, the company has been a member of the Wooden House Association which promotes wood as an environmentally friendly material and gathers all stakeholders interested in the subject of wooden houses. A significant goal of the organization is to take up activities aimed at improving the quality of houses made of wood.

BCC - Business Centre Club

The Klimas Wkręt-met company has been awarded the European Medal. The award was granted by the largest organization of individual employers in the country - Business Center Club. Awards were granted by the Business Center Club on June 12th this year at Warsaw headquarter placed in the Lubomirski Palace. It was the final of the 30th edition of the event. Among the guests were European Medal winners, honorary winners, Chancellors of the BCC Regional Lodge and the representatives of the European Economic and Social Committee.

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SCREW FOR WOODEN CONSTRUCTIONS

SCREW FOR WOODEN CONSTRUCTIONS

HARDENED SCREWS

BRACKETS AND PLATES

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SCREWS FOR FASTENING CLADDINGS OF TERRACES AND FLOORS

ROOFING FASTENERS

NAILS

EXTERNAL THERMAL INSULATION COMPOSITE SYSTEM – ETICS - SPECIAL FASTENERS

SCREWS FOR WOODEN CONSTRUCTIONS

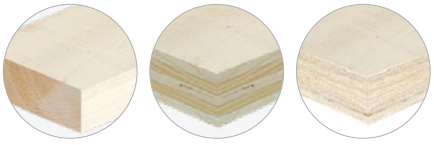
THESE PRODUCTS OUST CONVENTIONAL NAILS DUE TO THEIR ADVANTAGES, SUCH AS:

- transfer of higher loads,
- comfortable and fast fixing,
- possibility of tightening the screwed elements,
- improved stiffness of the whole arrangement,
- possibility of correction in case of incorrect installation (screws can be removed and re-tightened).

TYPES OF WOOD

Carpentry screws are designed for joining wooden and wood-based members. In most cases these screws are used for:

JOINING THE FOLLOWING ELEMENTS:

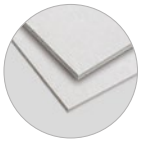


Solid wood | CLT wood | LVL wood

KVH wood | BSH wood

JOINING WOOD-BASED MATERIALS AND WOODEN ELEMENTS, SUCH AS:

Plywood | Chipboard | Beaverboard | OSB board



Cement chipboard

FORCES AND CONDITIONS FASTENERS ARE EXPOSED TO

When designing and selecting carpentry fasteners a few basic parameters should be taken into account, such as:

1. Location of fastener's application,
2. Location and type of load,
3. Type of forces acting on fastener.

LOCATION OF FASTENER'S APPLICATION

Use Classes for Moisture Content

n the case of wooden structures, the classification of the use classes of structures is as follows:

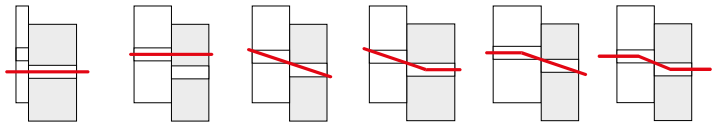
Use class 1: characterized by material moisture content corresponding to a temperature of 20°C and a relative humidity of ambient air of above 65% only for a few weeks in the year. This class includes all structural elements which are located in a heated space, closed off from all sides, where external conditions have no impact. In such case an average moisture content in softwood timber does not exceed 12%.

Use class 2: characterized by material moisture content corresponding to a temperature of 20°C and a relative humidity of ambient air of above 85% only for a few weeks in the year. This class includes roofed structural elements in open structures. Such elements are not directly exposed to weather conditions. In such case an average moisture content in softwood timber does not exceed 20%. Examples of such structures are shelters, or roofed, unheated loft spaces.

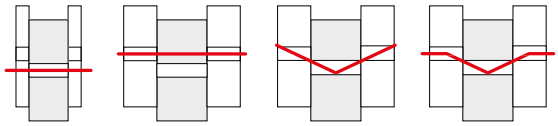
Use class 3: corresponds to conditions causing wood moisture higher than for use classes 1 and 2. This category includes all structural elements exposed to external weather conditions.

JOINT FAILURE DIAGRAMS

Single-cut joints:



Double-cut joints:



LOAD TYPES

Load duration classes

Load duration class	Order of magnitude of accumulated duration of characteristic load
Permanent	more than 10 years
Long-term	6 months -10 years
Medium-term	1 week - 6 months
Short-term	shorter than one week
Instantaneous	-

Examples of load-duration assignment in each class

Load duration class	Examples of loading
Permanent	self-weight
Long-term	warehouse storage
Medium-term	imposed floor load, snow
Short-term	snow, wind
Instantaneous	wind, accidental load

TYPES OF FORCES ACTING ON FASTENER:

Forces, which are most frequently present in joints, are as follows:

- head pull-through fixed material (Fig. 1),
- fastener pull-out from structure caused by tensile force (Fig. 2),
- joint failure caused by shear force (Fig. 3).

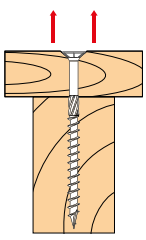


Fig. 1

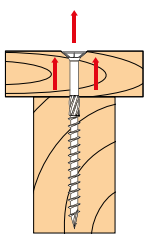


Fig. 2

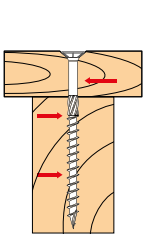


Fig. 3

KLIMAS
FASTENER TECHNOLOGIES

SQ CERAMIC

SQ Ceramic

10x improved resistance to corrosion*

*) compared to galvanising 5 µm

WHAT IS SQ CERAMIC?

SUPER QUALITY SQ CERAMIC

SQ Ceramic lamellar coating application technology is the modern way of protection against corrosion. Lamellar coating application technology properties are also used in the automotive and aerospace industries. The coating consists of a mix of zinc and aluminium flakes, and binding resins. The lamellar coating is characterised by exceptionally effective protection against corrosion despite a relatively thin layer. This ensures 10-time higher protection against corrosion in relation to zinc plating and 2-time higher protection in relation to hot-dip galvanizing (HDG). The coating has also high resistance to chemicals and UV radiation but does not contain heavy metals, including hexavalent chromium (VI).

CORROSION/CORROSION CATEGORIES

Corrosion is a process that destroys the structure of the material, leading to it breaking down. There are two types of corrosion:

Chemical corrosion - caused by contact with environment. The rate of this corrosion depends on concentration of individual chemical factors in air and water (sulphur, chloride - industrial areas, offshore areas - large concentration of salt).

Electrochemical corrosion (galvanic corrosion) - occurs when two materials with different electrochemical potentials come into contact. It leads to forming of a corrosion cell and gradual damage to one of the materials.

It is very important to determine the location and working conditions of the fastener in order to ensure continuous, reliable use of the building.

There are 5 classes of atmospheric corrosion (chemical) depending on the location and conditions of use:

Corrosion category according to PN-EN ISO 12944-2		Reduction of the zinc layer	Temperate climate environment examples (for information purposes only)	
		[µm/year]	Interior	Exterior
C1	very small	< 0,1	Buildings with heatings and clean atmosphere, such as offices, stores, schools and hotels.	Does not apply
C2	small	> 0,1 do 0,7	Buildings with no heating where condensation might occur, such as storage facilities and sports arenas.	Small degree of atmospheric contamination. Mainly for rural areas.
C3	average	> 0,7 do 2,1	Manufacturing facility with high humidity and some degree of air pollution, such as food production plants, breweries, laundries and dairies.	City and industrial atmosphere, average SO2 contamination. Coastal areas with low salinity.
C4	very large	> 2,1 do 4,2	Chemical plants, pools, shipyards and boatyards.	Industrial areas and offshore areas with average salinity.
C5-I	very large (industrial)	> 4,2 do 8,4	Building and areas with constant condensation and high pollution	Industrial areas with high humidity and aggressive atmosphere.
C5-M	very large (marine)	> 4,2 do 8,4	Building and areas with constant condensation and high pollution.	Coastal areas and marine environments with high salinity.

Average yearly zinc layer reduction rate is given for above-mentioned corrosion grades. Based on this average it is possible to determine the durability of fasteners depending on their zinc layer thickness.

As a general rule, galvanized anchors should be used inside buildings or in environments with small corrosion exposure, while for highly corrosive environments, stainless steel - A2 or A4 connectors are recommended instead.

ANTI-CORROSION PROTECTION

White/Yellow Zinc - Zinc coating guarantee of quality and high level of anti-corrosion protection.

SQ Ceramic - Very high level of anti-corrosion protection (several times higher than the traditional galvanization).

Stainless Steel A4 - Highest level of anti-corrosion protection.

TECHNICAL DATA

	Name	WKCP-D			WKCP-B			WKCP			WKCS-D		WKCS-B		WKCS	
	Category	SCREW FOR WOODEN CONSTRUCTIONS														
	Screw diameter [mm]	Ø6	Ø8	Ø10	Ø6	Ø8	Ø10	Ø6	Ø8	Ø10	Ø8	Ø10	Ø8	Ø10	Ø8	Ø10
	Bit type	TX 30	TX 40	TX 40	TX 30	TX 40	TX 40	TX 30	TX 40	TX 40	TX 30	TX 40	TX 30	TX 40	TX 30	TX 40
	Screw length range [mm]	50-300	40-400	120-400	50-300	40-400	120-400	50-300	40-400	120-400	40-400	120-400	40-400	120-400	40-400	120-400
	Screw material	Carbon steel														
	Type of protective coating	SQ Ceramic			Galvanized - white			Galvanized - yellow			SQ Ceramic		Galvanized - white		Galvanized - yellow	
APPLICATION	Protection against failure of notched beams															
	Joining beams – improving resistance															
	Protection against failure in roof ridge area															
	Reinforcement of points of support of beams															
	Reinforcement of points weakened by drill hole															
	Carcass construction		✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
	Roof truss		✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
	Counter battens and battens															
	Wooden finishing elements	✓			✓			✓								
	Installation of strips	✓			✓			✓			✓	✓	✓	✓	✓	✓
	Installation of wood-based boards	✓	✓		✓	✓		✓	✓							
	Garden architecture	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Installation of garden anchors		✓			✓			✓							
	Levelling of wall surfaces															
	Levelling of battens – roof surface															
	Fixing of over-rafter insulation		✓			✓			✓							
	Fixing of insulation on façade															
	Installation of three-dimensional carpentry fasteners															
	Terraces – installation of clips															
	Wooden structures of terraces										✓	✓	✓	✓	✓	✓
	Exotic wood terraces															
	Furniture assembly															
	PAGE	40			40			40			48		48		48	

NEW!

NEW!


NEW!

NEW!


KMWHT-D						KMWHT-B						KMWHT						WKFC			WKFS	
SCREW FOR WOODEN CONSTRUCTIONS																						
Ø3	Ø3,5	Ø4	Ø4,5	Ø5	Ø6	Ø3	Ø3,5	Ø4	Ø4,5	Ø5	Ø6	Ø3	Ø3,5	Ø4	Ø4,5	Ø5	Ø6	Ø6	Ø8	Ø10	Ø8	Ø10
TX 10	TX 15	TX 20	TX 20	TX 25	TX 30	TX 10	TX 15	TX 20	TX 20	TX 25	TX 30	TX 10	TX 15	TX 20	TX 20	TX 25	TX 30	TX 30	TX 40	TX 50	TX 40	TX 50
30-40	30-50	30-70	40-80	40-120	50-200	30-40	30-50	30-70	40-80	40-120	50-200	30-40	30-50	30-70	40-80	40-120	50-200	80-300	120-500	300-600	120-500	300-600
Carbon steel																						
SQ Ceramic						Galvanized - white						Galvanized - yellow						Galvanized - white				
																		✓	✓	✓	✓	✓
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56						56						56						64			68	

TECHNICAL DATA

	Name	WKCP-D			WKCP-B			WKCP			WKCS-D		WKCS-B		WKCS	
	Category	SCREW FOR WOODEN CONSTRUCTIONS														
	Screw diameter [mm]	Ø6	Ø8	Ø10	Ø6	Ø8	Ø10	Ø6	Ø8	Ø10	Ø8	Ø10	Ø8	Ø10	Ø8	Ø10
	Bit type	TX 30	TX 40	TX 40	TX 30	TX 40	TX 40	TX 30	TX 40	TX 40	TX 30	TX 40	TX 30	TX 40	TX 30	TX 40
	Screw length range [mm]	50-300	40-400	120-400	50-300	40-400	120-400	50-300	40-400	120-400	40-400	120-400	40-400	120-400	40-400	120-400
	Screw material	Carbon steel														
	Type of protective coating	SQ Ceramic			Galvanized - white			Galvanized - yellow			SQ Ceramic		Galvanized - white		Galvanized - yellow	
Method of installation	With pre-drilling															
	Without pre-drilling	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Increased pressure of material fixed to substrate	✓	✓	✓	✓	✓	✓	✓	✓	✓						
	Head flush with product										✓	✓	✓	✓	✓	✓
Substrate	Fibreboards															
	Chipboard															
	OSB board															
	Plywood															
	Bonded wood	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Solid wood	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fixing location	Environments exposed to higher corrosion	✓	✓	✓							✓	✓				
	Outdoors	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Indoors	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	PAGE	40			40			40			48		48		48	

KLIMAS
FASTENER TECHNOLOGIES

NEW!

NEW!

NEW!

NEW!

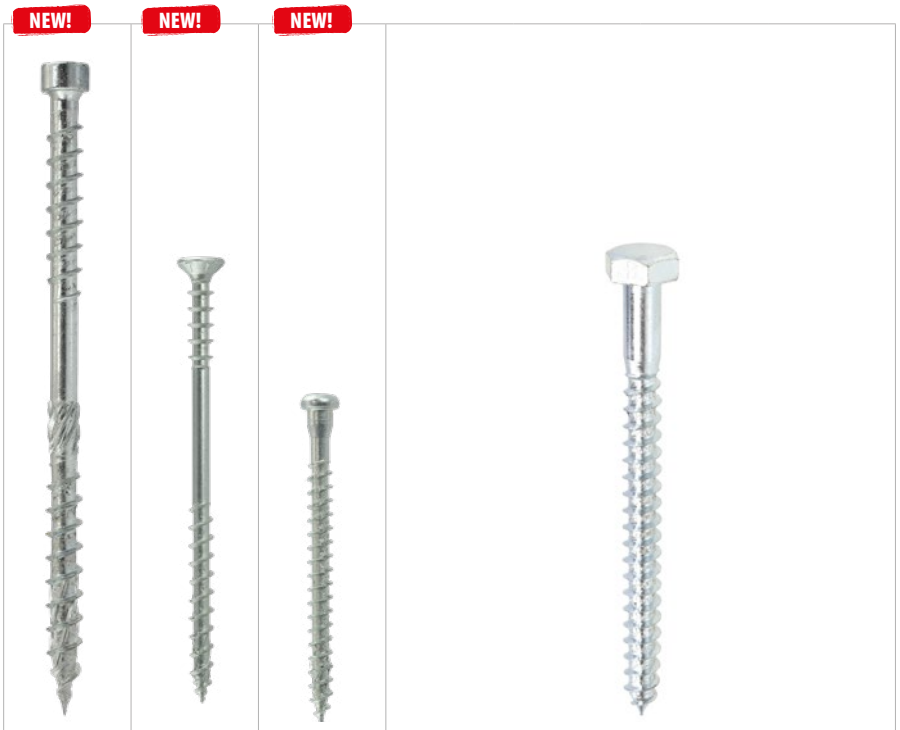
KMWHT-D						KMWHT-B						KMWHT						WKFC			WKFS	
SCREW FOR WOODEN CONSTRUCTIONS																						
Ø3	**Ø3,5**	**Ø4**	**Ø4,5**	**Ø5**	**Ø6**	**Ø3**	**Ø3,5**	**Ø4**	**Ø4,5**	**Ø5**	**Ø6**	**Ø3**	**Ø3,5**	**Ø4**	**Ø4,5**	**Ø5**	**Ø6**	**Ø6**	**Ø8**	**Ø10**	**Ø8**	**Ø10**
TX 10	TX 15	TX 20	TX 20	TX 25	TX 30	TX 10	TX 15	TX 20	TX 20	TX 25	TX 30	TX 10	TX 15	TX 20	TX 20	TX 25	TX 30	TX 30	TX 40	TX 50	TX 40	TX 50
30-40	30-50	30-70	40-80	40-120	50-200	30-40	30-50	30-70	40-80	40-120	50-200	30-40	30-50	30-70	40-80	40-120	50-200	80-300	120-500	300-600	120-500	300-600
Carbon steel																						
SQ Ceramic						Galvanized - white						Galvanized - yellow						Galvanized - white				
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓						
✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓						
✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓						
✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓						
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓																	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
56						56						56						64			68	

TECHNICAL DATA

	Name	WKPC	WKSS	WKLC	K			
	Category	SCREW FOR WOODEN CONSTRUCTIONS						
	Screw diameter [mm]	Ø8	Ø6	Ø5	Ø6	Ø8	Ø10	Ø12
	Bit type	TX 40	TX 30	TX 20	TX 30	TX 40	TX 30	TX 40
	Screw length range [mm]	165-472	60-160	30-70	60-140	60-200	80-200	120-260
	Screw material	Carbon steel						
	Type of protective coating	Galvanized - white			Galvanized - white			
APPLICATION	Protection against failure of notched beams							
	Joining beams – improving resistance							
	Protection against failure in roof ridge area							
	Reinforcement of points of support of beams				✓	✓	✓	✓
	Reinforcement of points weakened by drill hole				✓	✓	✓	✓
	Carcass construction				✓	✓	✓	✓
	Roof truss				✓	✓	✓	✓
	Counter battens and battens		✓		✓	✓	✓	✓
	Wooden finishing elements							
	Installation of strips							
	Installation of wood-based boards							
	Garden architecture							
	Installation of garden anchors							
	Levelling of wall surfaces		✓					
	Levelling of battens – roof surface		✓					
	Fixing of over-rafter insulation	✓						
	Fixing of insulation on façade	✓						
	Installation of three-dimensional carpentry fasteners			✓				
	Terraces – installation of clips							
	Wooden structures of terraces							
	Exotic wood terraces							
	Furniture assembly	✓			✓	✓	✓	✓
	PAGE	72	76	82	86			

KDH/KMH						HNT	WN		WT
						SCREWS FOR FASTENING CLADDINGS OF TERRACES AND FLOORS			
Ø3	Ø3,5	Ø4	Ø4,5	Ø5	Ø6	Ø5	Ø4	Ø5	Ø4
PZ-1	PZ-2	PZ-2	PZ-2	PZ-2	PZ-3	TX 25	TX 15	TX 20	TX 15
10-40	13-60	13-70	16-80	20-120	40-200	50-80	40-60	50-80	45
						A2 Stainless steel			
Galvanized - yellow						-			
✓	✓	✓	✓	✓	✓				
✓	✓	✓	✓	✓	✓				
✓	✓	✓	✓	✓	✓				
✓	✓	✓	✓	✓	✓				
									✓
							✓	✓	
						✓	✓	✓	
✓	✓	✓	✓	✓	✓				
92						120	122		124

TECHNICAL DATA



	Name	**WKPC**	**WKSS**	**WKLC**	**K**			
	Category	SCREW FOR WOODEN CONSTRUCTIONS						
	Screw diameter [mm]	**Ø8**	**Ø6**	**Ø5**	**Ø6**	**Ø8**	**Ø10**	**Ø12**
	Bit type	TX 40	TX 30	TX 20	TX 30	TX 40	TX 30	TX 40
	Screw length range [mm]	165-472	60-160	30-70	60-140	60-200	80-200	120-260
	Screw material	Carbon steel						
	Type of protective coating	Galvanized - white			Galvanized - white			
Method of installation	With pre-drilling				✓	✓	✓	✓
	Without pre-drilling	✓	✓	✓				
	Increased pressure of material fixed to substrate			✓	✓	✓	✓	✓
	Head flush with product	✓	✓					
Substrate	Fibreboards							
	Chipboard							
	OSB board							
	Plywood							
	Bonded wood	✓	✓	✓	✓	✓	✓	✓
	Solid wood	✓	✓	✓	✓	✓	✓	✓
Fixing location	Environments exposed to higher corrosion							
	Outdoors	✓	✓	✓	✓	✓	✓	✓
	Indoors	✓	✓	✓	✓	✓	✓	✓
	PAGE	72	76	82	86			

KDH/KMH						HNT	WN		WT
						SCREWS FOR FASTENING CLADDINGS OF TERRACES AND FLOORS			
Ø3	Ø3,5	Ø4	Ø4,5	Ø5	Ø6	Ø5	Ø4	Ø5	Ø4
PZ-1	PZ-2	PZ-2	PZ-2	PZ-2	PZ-3	TX 25	TX 15	TX 20	TX 15
10-40	13-60	13-70	16-80	20-120	40-200	50-80	40-60	50-80	45
						A2 Stainless steel			
Galvanized - yellow						-			
						✓*	✓*	✓*	✓*
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓				
✓	✓	✓	✓	✓	✓				
✓	✓	✓	✓	✓	✓				
✓	✓	✓	✓	✓	✓				
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
						✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
92						120	122		124

* - hard wood

KLIMAS

FASTENER TECHNOLOGIES

SCREWS AND FASTENERS FOR WOODEN CONSTRUCTIONS

KLIMAS
FASTENER TECHNOLOGIES

STRONG FOR GENERATIONS

NEW MILLING TIP

TIMBER CONSTRUCTION SCREWS

WKCP, WKCS, KMWHT

NEW CUTTING EDGE

New special design of cutting edge with added milling r**educes screwing resistance by 20%.** This helps to extend the life of batteries and power tools.

DOUBLE THREAD

Additional recessed second thread **improve remarkably a speed of timber penetration** and reaction time of first grip into the wood.

SERRATED THREAD

Special cutting notches integrated on the thread **cuts wood fibres structure while screwing in**.

WAX COATING

With a special wax coating needed torque has been reduced significantly. This provides faster and easier installation in same time extending the battery life of power tools.

NEW TIP

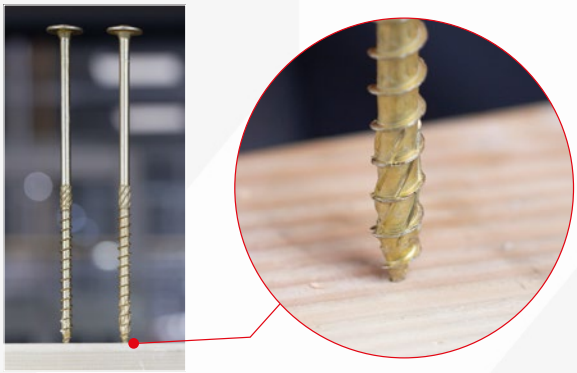
EASY AND FAST MONTAGE

STRONG FOR GENERATIONS

KLIMAS
FASTENER TECHNOLOGIES

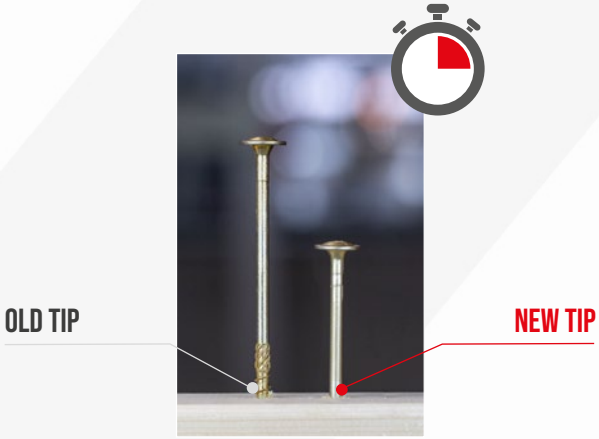
DOUBLE THREAD - QUICKER SCREWING

Additional recessed second thread turn rolled out to the tip of the screw **reduce the reaction time of first grip into the wood**. Such advantage is particularly important on the project site, when fastening wooden elements in the area with limited access and applying extra pressure is difficult. In such kind of situation the double thread ensures to reach the same effect with much lower pressure.



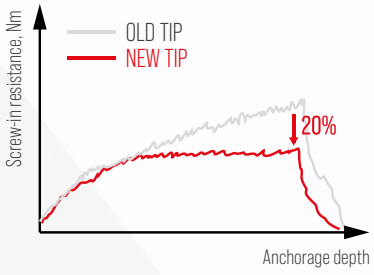
UP TO 40% FASTER SCREWING TIME

Testing performed prior to new product implementation confirmed, that new design of cutting edge provides **reduction of screwing time by up to 40%** with same pressure applied during installation. Exact time reduction result depends on type of fastening and wooden elements itself.



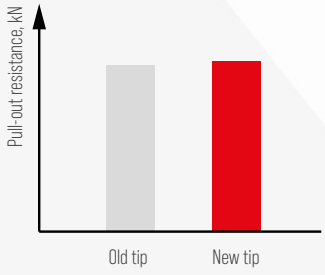
20 % LESS SCREWING RESISTANCE

The new design of cutting edge with added milling **reduces screwing resistance and friction by 20 %.** This parameter is especially needed for contractors, who use power tools on a daily basis - as this extends the battery life.



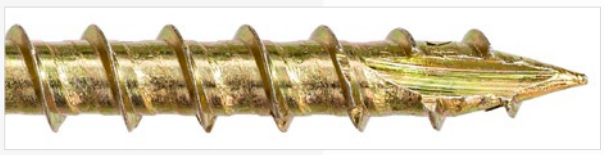
HIGH PERFORMANCE PARAMETERS

Designed in cooperation with contractors , the new cutting edge with added milling easy screwing and improves performance parameters such as pull-out and shear resistance, etc.



PRODUCT CODES AND BARCODES OF PRODUCTS REMAIN THE SAME

OLD TIP



NEW TIP

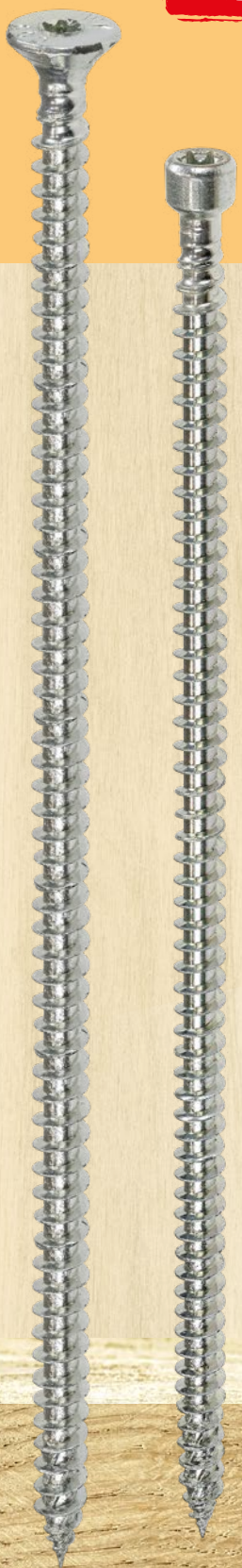
KLIMAS
FASTENER TECHNOLOGIES

STRONG FOR GENERATIONS

NEW!

SCREW FOR WOODEN CONSTRUCTIONS

WKFC / WKFS



NEW IN THE OFFER!

FULL THREAD

WITHOUT ELEMENTS BEING OVER TIGHTEN TO EACH OTHER.

NEW CUTTING EDGE

New special design of cutting edge with added milling reduces screwing resistance by 20%. This helps to extend the life of batteries and power tools.

DOUBLE THREAD

Additional recessed second thread improve remarkably a speed of timber penetration and reaction time of first grip into the wood.

WAX COATING

With a special wax coating needed torque has been reduced significantly. This provides faster and easier installation in same time extending the battery life of power tools.

EUROPEAN TECHNICAL ASSESSMENT
ETA-18/0817

NEW!

WKCP-D	Flange head construction screw, TX	40
ø6 ø8 ø10	**Length range:** 50 - 400 mm	**SQ Ceramic**

NEW!

WKCP-B	Flange head construction screw, TX	40
ø6 ø8 ø10	**Length range:** 50 - 400 mm	**Galvanized - white**

WKCP	Flange head construction screw, TX	40
ø6 ø8 ø10	**Length range:** 50 - 400 mm	**Galvanized - yellow**

NEW!

WKCS-D	Countersunk head construction screw, TX	48
ø8 ø10	**Length range:** 80 - 400 mm	**SQ Ceramic**

NEW!

WKCS-B	Countersunk head construction screw, TX	48
ø8 ø10	**Length range:** 80 - 400 mm	**Galvanized - white**

WKCS	Countersunk head construction screw, TX	48
ø8 ø10	**Length range:** 80 - 400 mm	**Galvanized - yellow**

NEW!

NEW!

PWKCS	Washer for countersunk head timber screw	51
ø8 ø10	**Material: SQ Ceramic, Galvanized - white, Galvanized - yellow**	

NEW!

KMWHT-D	Countersunk head construction screw, TX	56
ø3 ø3,5 ø4 ø4,5 ø5 ø6	**Length range:** 30 - 300 mm	**SQ Ceramic**

NEW!

KMWHT-B	Countersunk head construction screw, TX	56
ø3 ø3,5 ø4 ø4,5 ø5 ø6	**Length range:** 30 - 300 mm	**Galvanized - white**

KMWHT	Countersunk head construction screw, TX	56
ø3 ø3,5 ø4 ø4,5 ø5 ø6	**Length range:** 30 - 300 mm	**Galvanized - yellow**

CONTINUED ON NEXT PAGE

KLIMAS
FASTENER TECHNOLOGIES

STRONG FOR GENERATIONS

NEW!

ROUND HEAD SCREW FOR PLATES

WKLC

UNDERHEAD REINFORCEMENT

Wider screw diameter under the head improves shear strength of the screw.

ROUND HEAD WITH CYLINDRICAL UNDERHEAD AND TX DRIVE

Allows safe and secure fastening of perforated and angular metal plates.

NEW CUTTING EDGE

New special design of cutting edge with added milling reduces screwing resistance by 20%. This helps to extend the life of batteries and power tools.

DOUBLE THREAD

Additional recessed second thread improve remarkably a speed of timber penetration and reaction time of first grip into the wood.

WAX COATING

With a special wax coating needed torque has been reduced significantly. This provides faster and easier installation in same time extending the battery life of power tools.

EUROPEAN TECHNICAL ASSESSMENT
ETA-18/0817

NEW!

WKFC	Screw for wooden constructions with full thread and cylindrical head	64
ø6 ø8 ø10	**Length range:** 80 - 600 mm	**Galvanized - white**

NEW!

WKFS	Screw for wooden constructions with full thread and countersunk head	68
ø8 ø10	**Length range:** 120 - 600 mm	**Galvanized - white**

NEW!

WKPC	Screws with double thread for over-rafter insulation, TX	72
ø8	**Length range:** 165-472 mm	**Galvanized - white**

NEW!

WKSS	Spacer screws, TX	76
ø6	**Length range:** 60 - 160 mm	**Galvanized - white**

NEW!

WKLC	Round head screws for metal plates, TX	80
ø5	**Length range:** 30 - 70 mm	**Galvanized - white**

K	Hex head wood screw	86
ø6 ø8 ø10 ø12	**Length range:** 60 - 260 mm	**Galvanized - white**

KDH / KMH	Hardened countersunk head wood screw with partial/full thread	92
ø3 ø3,5 ø4 ø4,5 ø5 ø6	**Length range:** 12 - 200 mm	**Galvanized - yellow**

	SQ Ceramic	Galvanized - white	Galvanized - yellow
⌀6	WKCP-D	WKCP-B	WKCP
	Length range: 50 - 300 mm		
⌀8	WKCP-D	WKCP-B	WKCP
	Length range: 40 - 400 mm		
⌀10	WKCP-D	WKCP-B	WKCP
	Length range: 120 - 400 mm		

Flange head construction screw, TX

WKCP

⌀6, ⌀8, ⌀10

Flange head construction screw with TX drive for structural connections of wooden members, including solid, bonded and wood-based panels.

ETA-18/0817

SUPER QUALITY SQ CERAMIC

Zn YELLOW

Zn WHITE

SUBSTRATES

Solid wood

Glued laminated timber
CLT, KVH, BSH/GLT, LVL

SCREW MATERIAL	Carbon steel
ANTI-CORROSION PROTECTION	· Galvanized (white or yellow) · SQ Ceramic
APPLICATION	· Roof truss system · Carcass construction · Counter battens and battens · Wood-based panels, wooden finishing elements

FLANGE HEAD WITH TX DRIVE
Flange head increases the bearing area and provides tight connection as well as resistance to ensuring head pull-through. TX drive guarantees optimum torque transfer.

SHANK RIBS
Shank ribs reduces installation torque by reaming the hole.

NEW CUTTING EDGE / SERRATED THREAD
New special design of cutting edge with added milling reduces screwing resistance by 20%. This helps to extend the life of batteries and power tools Special cutting notches integrated on the thread cuts wood fibres structure while screwing in.

DOUBLE THREAD
Additional recessed second thread improve remarkably a speed of timber penetration and reaction time of first grip into the wood.

HIGH TORQUE
Allows screws to be installed without pre-drilling, even in hardwood substrates.

WAX COATING
Wax coating applied during the production process significantly reduces the torque. This makes the installation easier, faster and saves energy, which is important in the case of battery-powered tools.

EXAMPLES OF USE

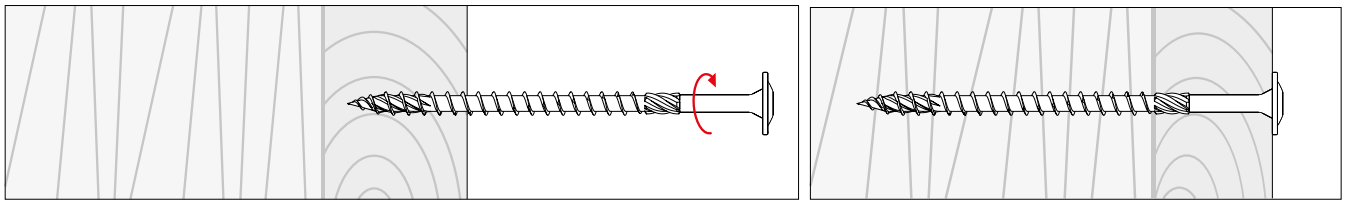
Joint between rafter and wall plate

Joint between post or beam and knee braces

Joint between post base and post

Construction of roof truss

INSTALLATION INSTRUCTIONS (screw requires no pre-drilling)



ACCESSORIES SEE P. 142-143

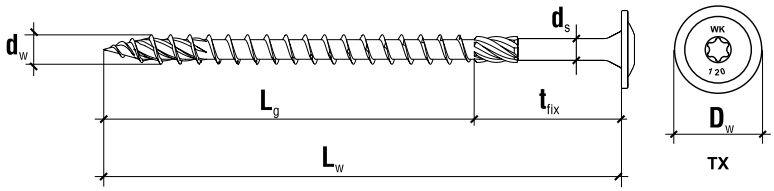
Flange head construction screw, TX

WKCP - TECHNICAL DATA

⌀6, ⌀8, ⌀10

SUPER QUALITY SQ CERAMIC | Zn YELLOW | Zn WHITE

ETA-18/0817



Basic informations

	Product code			Dimensions	Thread length	Max. usable length	Screw head diameter	Type of drive	Quantity
	SQ Ceramic	Galvanized - white	Galvanized - yellow	d_w x L_w [mm]	L_g [mm]	t_{fix} [mm]	D_w [mm]	[-]	[pcs]
WKCP-6									
⌀6	WKCP-06050-D*	WKCP-06050-B*	WKCP-06050	6x50	30	20	14	TX 30	100
	WKCP-06060-D*	WKCP-06060-B*	WKCP-06060	6x60	35	25	14	TX 30	100
	WKCP-06070-D*	WKCP-06070-B*	WKCP-06070	6x70	40	30	14	TX 30	100
	WKCP-06080-D*	WKCP-06080-B*	WKCP-06080	6x80	50	30	14	TX 30	100
	WKCP-06090-D*	WKCP-06090-B*	WKCP-06090	6x90	50	40	14	TX 30	50
	WKCP-06100-D*	WKCP-06100-B*	WKCP-06100	6x100	60	40	14	TX 30	50
	WKCP-06120-D*	WKCP-06120-B*	WKCP-06120	6x120	70	50	14	TX 30	50
	WKCP-06140-D*	WKCP-06140-B*	WKCP-06140	6x140	70	70	14	TX 30	50
	WKCP-06160-D*	WKCP-06160-B*	WKCP-06160	6x160	75	85	14	TX 30	50
	WKCP-06180-D*	WKCP-06180-B*	WKCP-06180	6x180	75	105	14	TX 30	50
	WKCP-06200-D*	WKCP-06200-B*	WKCP-06200	6x200	75	125	14	TX 30	50
	WKCP-06220-D*	WKCP-06220-B*	WKCP-06220 N	6x220	75	145	14	TX 30	50
	WKCP-06240-D*	WKCP-06240-B*	WKCP-06240 N	6x240	75	165	14	TX 30	50
	WKCP-06260-D*	WKCP-06260-B*	WKCP-06260 N	6x260	75	185	14	TX 30	50
	WKCP-06280-D*	WKCP-06280-B*	WKCP-06280 N	6x280	75	205	14	TX 30	50
	WKCP-06300-D*	WKCP-06300-B*	WKCP-06300 N	6x300	75	225	14	TX 30	50

* Product on order N - New

NEW! **Screws WKCP ⌀8 mm - length: 40-60 mm**

WKCP-08040

WKCP-08060

Basic informations

	Product code			Dimensions	Thread length	Max. usable length	Screw head diameter	Type of drive	Quantity
	SQ Ceramic	Galvanized - white	Galvanized - yellow	d_w x L_w [mm]	L_g [mm]	t_{fix} [mm]	D_w [mm]	[-]	[pcs]
WKCP-8									
ø8	WKCP-08040-D**	WKCP-08040-B*	WKCP-08040 N	8x40	40	-	21	TX 40	50
	WKCP-08050-D**	WKCP-08050-B*	WKCP-08050 N	8x50	50	-	21	TX 40	50
	WKCP-08060-D**	WKCP-08060-B*	WKCP-08060 N	8x60	60	12	21	TX 40	50
	WKCP-08080-D**	WKCP-08080-B*	WKCP-08080	8x80	50	30	21	TX 40	50
	WKCP-08100-D**	WKCP-08100-B*	WKCP-08100	8x100	50	50	21	TX 40	50
	WKCP-08120-D* *	WKCP-08120-B *	WKCP-08120	8x120	80	40	21	TX 40	50
	WKCP-08140-D**	WKCP-08140-B*	WKCP-08140	8x140	80	60	21	TX 40	50
	WKCP-08160-D**	WKCP-08160-B*	WKCP-08160	8x160	80	80	21	TX 40	50
	WKCP-08180-D**	WKCP-08180-B*	WKCP-08180	8x180	80	100	21	TX 40	50
	WKCP-08200-D**	WKCP-08200-B*	WKCP-08200	8x200	80	120	21	TX 40	50
	WKCP-08220-D**	WKCP-08220-B*	WKCP-08220	8x220	80	140	21	TX 40	50
	WKCP-08240-D**	WKCP-08240-B*	WKCP-08240	8x240	80	160	21	TX 40	50
	WKCP-08260-D**	WKCP-08260-B*	WKCP-08260	8x260	80	180	21	TX 40	50
	WKCP-08280-D**	WKCP-08280-B*	WKCP-08280	8x280	80	200	21	TX 40	50
	WKCP-08300-D**	WKCP-08300-B*	WKCP-08300	8x300	80	220	21	TX 40	50
	WKCP-08320-D**	WKCP-08320-B*	WKCP-08320 N	8x320	80	240	21	TX 40	50
	WKCP-08340-D**	WKCP-08340-B*	WKCP-08340 N	8x340	80	260	21	TX 40	50
	WKCP-08360-D**	WKCP-08360-B*	WKCP-08360 N	8x360	80	280	21	TX 40	50
	WKCP-08380-D**	WKCP-08380-B*	WKCP-08380 N	8x380	80	300	21	TX 40	50
	WKCP-08400-D**	WKCP-08400-B*	WKCP-08400 N	8x400	80	320	21	TX 40	50
WKCP-10									
ø10	WKCP-10120-D*	WKCP-10120-B*	WKCP-10120	10x120	80	40	25	TX 40	50
	WKCP-10140-D*	WKCP-10140-B*	WKCP-10140	10x140	80	60	25	TX 40	50
	WKCP-10160-D*	WKCP-10160-B*	WKCP-10160	10x160	80	80	25	TX 40	50
	WKCP-10180-D*	WKCP-10180-B*	WKCP-10180	10x180	80	100	25	TX 40	50
	WKCP-10200-D*	WKCP-10200-B*	WKCP-10200	10x200	80	120	25	TX 40	50
	WKCP-10220-D*	WKCP-10220-B*	WKCP-10220	10x220	80	140	25	TX 40	25
	WKCP-10240-D*	WKCP-10240-B*	WKCP-10240	10x240	80	160	25	TX 40	25
	WKCP-10260-D*	WKCP-10260-B*	WKCP-10260	10x260	80	180	25	TX 40	25
	WKCP-10280-D*	WKCP-10280-B*	WKCP-10280	10x280	80	200	25	TX 40	25
	WKCP-10300-D*	WKCP-10300-B*	WKCP-10300	10x300	80	220	25	TX 40	25
	WKCP-10320-D*	WKCP-10320-B*	WKCP-10320	10x320	80	240	25	TX 40	25
	WKCP-10340-D*	WKCP-10340-B*	WKCP-10340	10x340	80	260	25	TX 40	25
	WKCP-10360-D*	WKCP-10360-B*	WKCP-10360 N	10x360	80	280	25	TX 40	25
	WKCP-10380-D*	WKCP-10380-B*	WKCP-10380 N	10x380	80	300	25	TX 40	25
	WKCP-10400-D*	WKCP-10400-B*	WKCP-10400 N	10x400	80	320	25	TX 40	25

* Product on order N - New

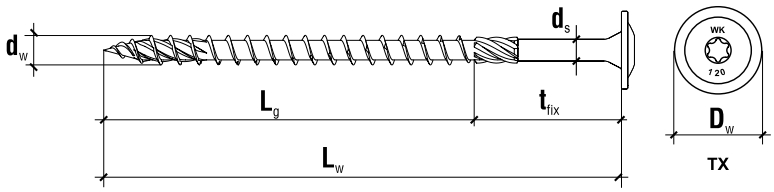
Flange head construction screw, TX

WKCP - TECHNICAL DATA

⌀6, ⌀8, ⌀10

SUPER QUALITY SQ CERAMIC | Zn YELLOW | Zn WHITE

ETA-18/0817



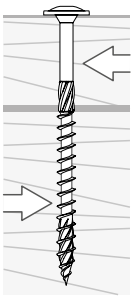
Geometry and mechanical properties

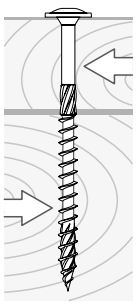
Product	Thread outer diameter	Thread inner diameter	Unthreaded part diameter	Head diameter	Length range
	d_w [mm]	d_1 [mm]	d_s [mm]	D_w [mm]	L_w [mm]
WKCP ⌀6	6	3,9	4,3	14	50-300
WKCP ⌀8	8	5,4	5,8	21	40-400
WKCP ⌀10	10	6,4	7	25	120-400

Product	Material characteristic yield strength	Characteristic pull-out resistance	Assigned density	Characteristic head pull-through resistance	Assigned density	Characteristic tensile resistance	Characteristic torsional resistance
	$M_{y,k}$ [N*m]	$f_{ax,k,90}$ [N/mm^2]	p_a [kg/m^3]	$f_{head,k}$ [N/mm^2]	p_a [kg/m^3]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
WKCP ⌀6	10,0	12,0	350	9,4	350	13,0	10,0
WKCP ⌀8	25,0	12,0		9,4		25,0	27,0
WKCP ⌀10	43,0	11,0		9,4		36,0	45,0

Minimum distances for screws subject to shear load

MINIMUM SCREW SPACING - **WITHOUT PRE-DRILLED HOLE**

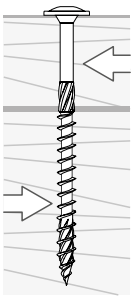


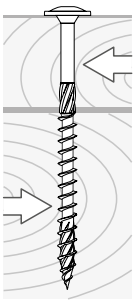


Product	Angle between force and fibre α = 0 °						Angle between force and fibre α = 90 °					
	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]
WKCP ⌀6	72	30	90	60	30	30	30	30	60	60	60	30
WKCP ⌀8	96	40	120	80	40	40	40	40	80	80	80	40
WKCP ⌀10	120	50	150	100	50	50	50	50	100	100	100	50

Minimum distances for screws subject to shear load

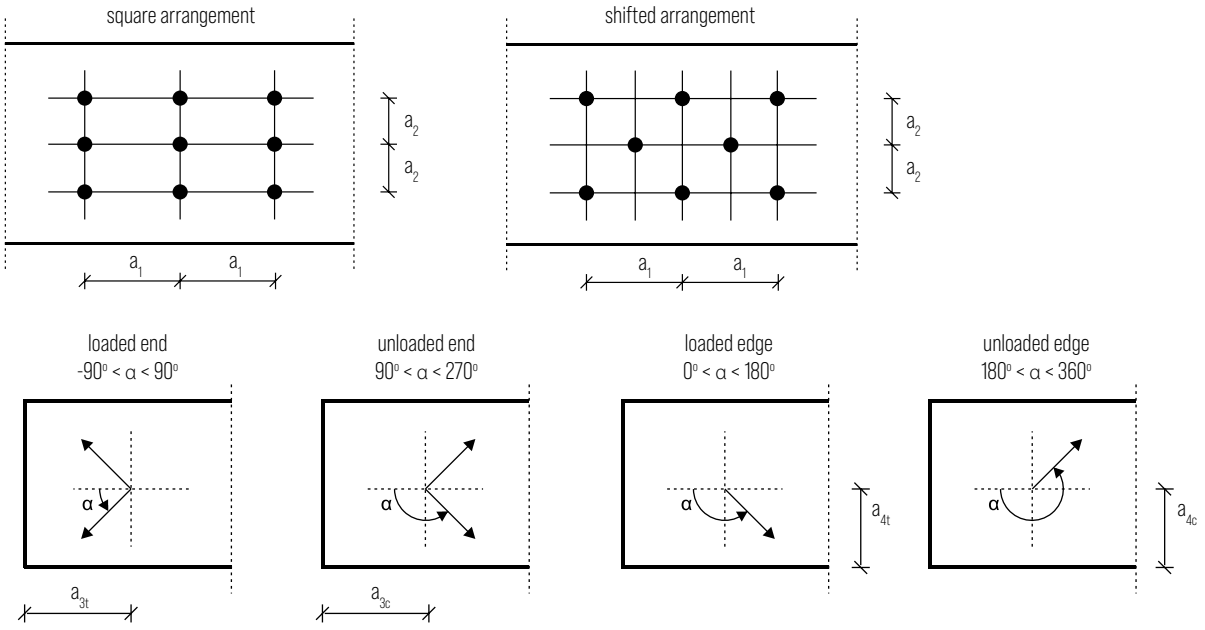
MINIMUM SCREW SPACING - **WITH PRE-DRILLED HOLE**





Product	Angle between force and fibre α = 0 °						Angle between force and fibre α = 90 °					
	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]
WKCP ⌀6	30	18	72	42	18	18	24	24	42	42	42	18
WKCP ⌀8	40	24	96	56	24	24	32	32	56	56	56	24
WKCP ⌀10	50	30	120	70	30	30	40	40	70	70	70	30

1. Minimum distances comply with PN-EN 1995:2014 and ETA-18/0817
2. Bulk density of wooden members complies with the relation $p_k \leq 420$ kg/m^3
3. For OSB board-wood joints minimum distances (a_1, a_2) can be multiplied by factor 0,85
4. For steel plate-wood joints minimum distances (a_1, a_2) can be multiplied by factor 0,7



Flange head construction screw, TX

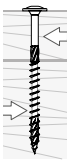
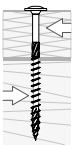
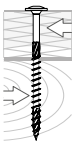
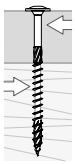
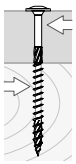
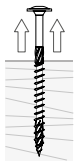
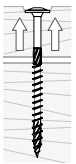
WKCP - TECHNICAL DATA

⌀6, ⌀8, ⌀10

SUPER QUALITY SQ CERAMIC | Zn YELLOW | Zn WHITE

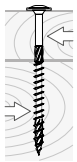
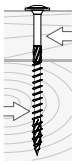
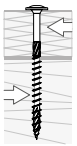
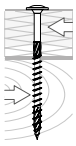
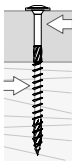
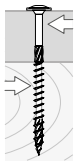
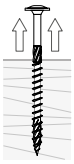
CE ETA-18/0817

Characteristic resistances for shear and tensile loads

		SHEAR [kN]												TENSILE [kN]	
		wood - wood				OSB - wood		steel - wood thin board (t ≤ 0,5d)		steel - wood thick board (t ≥ d)				Pull-out	Head pull--through
		α_1=90 α_2=0	α_1=0 α_2=0	α_1=90 α_2=90	α_1=0 α_2=90	α_2=0	α_2=90	α_2=0	α_2=90	α_2=0	α_2=90				
															
WKCP 6															
⌀6	WKCP-06050*	1,54	1,54	1,54	1,54	t = 22 mm	-	t = 22 mm	-	t ≤ 3 mm	1,89	t ≤ 3 mm	1,89	t ≥ 6 mm	2,69	t ≥ 6 mm	2,69	2,16	1,84
	WKCP-06060*	1,72	1,72	1,72	1,72		1,93		1,93		2,26		2,26		2,94		2,94	2,52	1,84
	WKCP-06070*	1,84	1,84	1,84	1,84		1,93		1,93		2,35		2,35		3,03		3,03	2,88	1,84
	WKCP-06080*	1,84	1,84	1,84	1,84		1,93		1,93		2,53		2,53		3,21		3,21	3,60	1,84
	WKCP-06090*	2,09	2,09	2,09	2,09		1,93		1,93		2,53		2,53		3,21		3,21	3,60	1,84
	WKCP-06100*	2,09	2,09	2,09	2,09		1,93		1,93		2,71		2,71		3,39		3,39	4,32	1,84
	WKCP-06120*	2,09	2,09	2,09	2,09		1,93		1,93		2,89		2,89		3,57		3,57	5,04	1,84
	WKCP-06140*	2,09	2,09	2,09	2,09		1,93		1,93		2,89		2,89		3,57		3,57	5,04	1,84
	WKCP-06160*	2,09	2,09	2,09	2,09		1,93		1,93		2,98		2,98		3,66		3,66	5,40	1,84
	WKCP-06180*	2,09	2,09	2,09	2,09		1,93		1,93		2,98		2,98		3,66		3,66	5,40	1,84
	WKCP-06200*	2,09	2,09	2,09	2,09		1,93		1,93		2,98		2,98		3,66		3,66	5,40	1,84
	WKCP-06220*	2,09	2,09	2,09	2,09		1,93		1,93		2,98		2,98		3,66		3,66	5,40	1,84
	WKCP-06240*	2,09	2,09	2,09	2,09		1,93		1,93		2,98		2,98		3,66		3,66	5,40	1,84
	WKCP-06260*	2,09	2,09	2,09	2,09		1,93		1,93		2,98		2,98		3,66		3,66	5,40	1,84
	WKCP-06280*	2,09	2,09	2,09	2,09		1,93		1,93		2,98		2,98		3,66		3,66	5,40	1,84
	WKCP-06300*	2,09	2,09	2,09	2,09		1,93		1,93		2,98		2,98		3,66		3,66	5,40	1,84
WKCP 8															
⌀8	WKCP-08040*/**	-	-	-	-	t = 22 mm	-	t = 22 mm	-	t ≤ 4 mm	-	t ≤ 4 mm	-	t ≥ 8 mm	-	t ≥ 8 mm	-	3,84	4,15
	WKCP-08050*/**	-	-	-	-		-		-		-		-		-		-	4,80	4,15
	WKCP-08060*/**	1,72	2,53	1,72	2,53		-		-		4,73		3,22		6,66		5,19	5,76	4,15
	WKCP-08080*	3,49	4,06	3,32	3,82		3,70		3,48		4,94		4,28		6,49		5,56	4,80	4,15
	WKCP-08100*	4,25	4,77	4,01	4,25		3,70		3,48		4,94		4,28		6,49		5,56	4,80	4,15
	WKCP-08120*	3,83	4,62	3,66	4,35		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15
	WKCP-08140*	4,40	4,77	4,12	4,40		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15
	WKCP-08160*	4,40	4,77	4,12	4,40		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15
	WKCP-08180*	4,40	4,77	4,12	4,40		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15
	WKCP-08200*	4,40	4,77	4,12	4,40		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15
	WKCP-08220*	4,40	4,77	4,12	4,40		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15
	WKCP-08240*	4,40	4,77	4,12	4,40		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15
	WKCP-08260*	4,40	4,77	4,12	4,40		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15
	WKCP-08280*	4,40	4,77	4,12	4,40		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15
	WKCP-08300*	4,40	4,77	4,12	4,40		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15
	WKCP-08320*	4,40	4,77	4,12	4,40		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15
	WKCP-08340*	4,40	4,77	4,12	4,40		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15
	WKCP-08360*	4,40	4,77	4,12	4,40		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15
	WKCP-08380*	4,40	4,77	4,12	4,40		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15
	WKCP-08400*	4,40	4,77	4,12	4,40		3,70		3,48		5,66		5,00		7,21		6,28	7,68	4,15

*also applicable to WKCP-B and WKCP-D / ** Sizes not covered by European Technical Assessment (ETA-18/0817)

Characteristic resistances for shear and tensile loads

		SHEAR [kN]												TENSILE [kN]	
		wood - wood				OSB - wood		steel - wood thin board (t ≤ 0,5d)		steel - wood thick board (t ≥ d)				Pull-out	Head pull--through
		α_1=90 α_2=0	α_1=0 α_2=0	α_1=90 α_2=90	α_1=0 α_2=90	α_2=0	α_2=90	α_2=0	α_2=90	α_2=0	α_2=90				
															
WKCP 10															
⌀10	**WKCP-10120***	5,15	6,14	4,90	5,76	t = 22 mm	5,01	t = 22 mm	4,69	t ≤ 5 mm	7,62	t ≤ 5 mm	6,63	t ≥ 10 mm	9,87	t ≥ 10 mm	8,46	8,80	5,88
	WKCP-10140*	6,10	6,89	5,80	6,32		5,01		4,69		7,62		6,63		9,87		8,46	8,80	5,88
	WKCP-10160*	6,32	6,89	5,89	6,32		5,01		4,69		7,62		6,63		9,87		8,46	8,80	5,88
	WKCP-10180*	6,32	6,89	5,89	6,32		5,01		4,69		7,62		6,63		9,87		8,46	8,80	5,88
	WKCP-10200*	6,32	6,89	5,89	6,32		5,01		4,69		7,62		6,63		9,87		8,46	8,80	5,88
	WKCP-10220*	6,32	6,89	5,89	6,32		5,01		4,69		7,62		6,63		9,87		8,46	8,80	5,88
	WKCP-10240*	6,32	6,89	5,89	6,32		5,01		4,69		7,62		6,63		9,87		8,46	8,80	5,88
	WKCP-10260*	6,32	6,89	5,89	6,32		5,01		4,69		7,62		6,63		9,87		8,46	8,80	5,88
	WKCP-10280*	6,32	6,89	5,89	6,32		5,01		4,69		7,62		6,63		9,87		8,46	8,80	5,88
	WKCP-10300*	6,32	6,89	5,89	6,32		5,01		4,69		7,62		6,63		9,87		8,46	8,80	5,88
	WKCP-10320*	6,32	6,89	5,89	6,32		5,01		4,69		7,62		6,63		9,87		8,46	8,80	5,88
	WKCP-10340*	6,32	6,89	5,89	6,32		5,01		4,69		7,62		6,63		9,87		8,46	8,80	5,88
	WKCP-10360*	6,32	6,89	5,89	6,32		5,01		4,69		7,62		6,63		9,87		8,46	8,80	5,88
	WKCP-10380*	6,32	6,89	5,89	6,32		5,01		4,69		7,62		6,63		9,87		8,46	8,80	5,88
	WKCP-10400*	6,32	6,89	5,89	6,32		5,01		4,69		7,62		6,63		9,87		8,46	8,80	5,88

*also applicable to WKCP-B i WKCP-D / ** Sizes not covered by European Technical Assessment (ETA-18/0817)

1. Characteristic resistances conform to PN-EN 1995:2014 in accordance with European Technical Assessment ETA-18/0817
2. In order to obtain a design value, use the following formula:

$$R_d = \frac{R_k * k_{mod}}{\gamma_m}$$

Factors γ_m and k_{mod} should be assumed in accordance with PN-EN 1995:2014
3. For calculations characteristic resistances and geometry of screws were assumed based on European Technical Assessment ETA-18/0817
4. Characteristic resistances given in the table were calculated for bulk density of wooden members of ρ_k = 350 kg/m^3
5. For calculations it was assumed that threaded part is fully recessed in a wooden member
6. Characteristic resistances given in the table were calculated for a single screw. To check resistances of groups of screws, please follow rules defined in PN-EN 1995:2014
7. Characteristic shear resistances were calculated for connections without pre-drilled holes
8. Calculations apply to resistances for screws only. Wooden members and steel plates should be dimensioned separately
9. Characteristic shear resistances were calculated including wood fibre inclination in relation to shearing force
10. Characteristic shear resistances for OSB board-wood joint were calculated for OSB board with a thickness t [mm]
11. Characteristic shear resistances for steel-wood joint were calculated for a thin steel plate with a thickness of t = 0,5d
12. Characteristic shear resistances for steel-wood joint were calculated for a thick steel plate with a thickness of t = d

	SQ Ceramic	Galvanized - white	Galvanized - yellow
⌀8	WKCS-D	WKCS-B	WKCS
	Length range: 80 - 400 mm		
⌀10	WKCS-D	WKCS-B	WKCS
	Length range: 120 - 400 mm		

Countersunk head construction screw, TX

WKCS

⌀8, ⌀10

Countersunk head construction screw with TX drive for structural connections of wooden members, including solid, bonded and wood-based panels.

ETA-18/0817

SUPER QUALITY SQ CERAMIC

Zn YELLOW

Zn WHITE

SUBSTRATES

Solid wood

Glued laminated timber
CLT, KVH, BSH/GLT, LVL

SCREW MATERIAL	Carbon steel
ANTI-CORROSION PROTECTION	· Galvanized · SQ Ceramic
APPLICATION	· Roof truss system · Carcass construction

COUNTERSUNK HEAD WITH TX DRIVE
Countersunk head ensures flush installation of the screw in the wooden member.

CUTTING RIBS
Allow optimal and smooth countersink with aesthetic finish result.

SHANK RIBS
Shank ribs reduces installation torque by reaming the hole.

NEW CUTTING EDGE / SERRATED THREAD
New special design of cutting edge with added milling reduces screwing resistance by 20%. This helps to extend the life of batteries and power tools.Special cutting notches integrated on the thread cuts wood fibres structure while screwing in.

DOUBLE THREAD
Additional recessed second thread improve remarkably a speed of timber penetration and reaction time of first grip into the wood.

HIGH TORQUE
Allows screws to be installed without pre-drilling, even in hardwood substrates.

WAX COATING
Wax coating applied during the production process significantly reduces the torque. This makes the installation easier, faster and saves energy, which is important in the case of battery-powered tools.

EXAMPLES OF USE

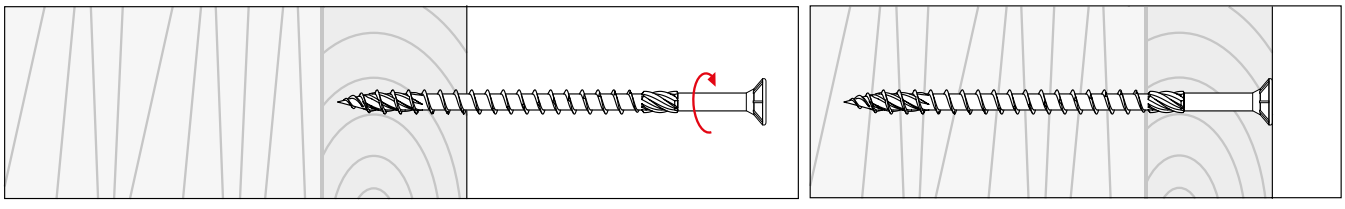
Joint between post or beam and knee braces

Joint between beams in pergola construction

Construction of roof truss

Joint between rafter and wall plate

INSTALLATION INSTRUCTIONS (screw requires no pre-drilling)



ACCESSORIES SEE P. 142-143

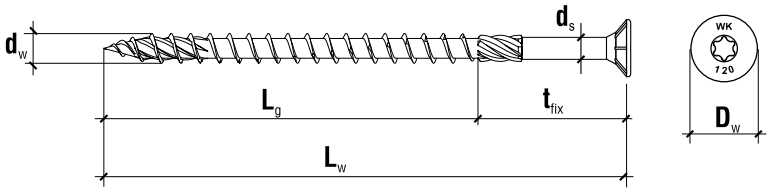
Countersunk head construction screw, TX

WKCS - TECHNICAL DATA

⌀6, ⌀8, ⌀10

SUPER QUALITY SQ CERAMIC | Zn YELLOW | Zn WHITE

ETA-18/0817



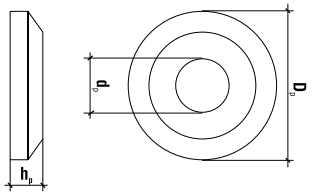
Basic informations

	Product code			Dimensions	Thread length	Max. usable length	Screw head diameter	Type of drive	Quantity
	SQ Ceramic	Galvanized - white	Galvanized - yellow	d_w x L_w [mm]	L_g [mm]	t_{fix} [mm]	D_w [mm]	[-]	[pcs]
WKCS-8									
⌀8	WKCS-08080-D*	WKCS-08080-B*	WKCS-08080(50)	8x80	50	30	14,5	TX 40	50
	WKCS-08100-D*	WKCS-08100-B*	WKCS-08100(50)	8x100	50	50	14,5	TX 40	50
	WKCS-08120-D*	WKCS-08120-B*	WKCS-08120(50)	8x120	80	40	14,5	TX 40	50
	WKCS-08140-D*	WKCS-08140-B*	WKCS-08140(50)	8x140	80	60	14,5	TX 40	50
	WKCS-08160-D*	WKCS-08160-B*	WKCS-08160(50)	8x160	80	80	14,5	TX 40	50
	WKCS-08180-D*	WKCS-08180-B*	WKCS-08180(50)	8x180	80	100	14,5	TX 40	50
	WKCS-08200-D*	WKCS-08200-B*	WKCS-08200(50)	8x200	80	120	14,5	TX 40	50
	WKCS-08220-D*	WKCS-08220-B*	WKCS-08220(50)	8x220	80	140	14,5	TX 40	50
	WKCS-08240-D*	WKCS-08240-B*	WKCS-08240(50)	8x240	80	160	14,5	TX 40	50
	WKCS-08260-D*	WKCS-08260-B*	WKCS-08260(50)	8x260	80	180	14,5	TX 40	50
	WKCS-08280-D*	WKCS-08280-B*	WKCS-08280(50)	8x280	80	200	14,5	TX 40	50
	WKCS-08300-D*	WKCS-08300-B*	WKCS-08300(50)	8x300	80	220	14,5	TX 40	50
	WKCS-08320-D*	WKCS-08320-B*	WKCS-08320(50)	8x320	80	240	14,5	TX 40	50
	WKCS-08340-D*	WKCS-08340-B*	WKCS-08340(50)	8x340	80	260	14,5	TX 40	50
	WKCS-08360-D*	WKCS-08360-B*	WKCS-08360(50)	8x360	80	280	14,5	TX 40	50
	WKCS-08380-D*	WKCS-08380-B*	WKCS-08380(50)	8x380	80	300	14,5	TX 40	50
	WKCS-08400-D*	WKCS-08400-B*	WKCS-08400(50)	8x400	80	320	14,5	TX 40	50
WKCS-10									
⌀10	WKCS-10120-D*	WKCS-10120-B*	WKCS-10120	10x120	80	40	18	TX 40	50
	WKCS-10140-D*	WKCS-10140-B*	WKCS-10140	10x140	80	60	18	TX 40	50
	WKCS-10160-D*	WKCS-10160-B*	WKCS-10160	10x160	80	80	18	TX 40	50
	WKCS-10180-D*	WKCS-10180-B*	WKCS-10180	10x180	80	100	18	TX 40	50
	WKCS-10200-D*	WKCS-10200-B*	WKCS-10200	10x200	80	120	18	TX 40	50
	WKCS-10220-D*	WKCS-10220-B*	WKCS-10220	10x220	80	140	18	TX 40	25
	WKCS-10240-D*	WKCS-10240-B*	WKCS-10240	10x240	80	160	18	TX 40	25
	WKCS-10260-D*	WKCS-10260-B*	WKCS-10260	10x260	80	180	18	TX 40	25
	WKCS-10280-D*	WKCS-10280-B*	WKCS-10280	10x280	80	200	18	TX 40	25
	WKCS-10300-D*	WKCS-10300-B*	WKCS-10300	10x300	80	220	18	TX 40	25
	WKCS-10320-D*	WKCS-10320-B*	WKCS-10320	10x320	80	240	18	TX 40	25
	WKCS-10340-D*	WKCS-10340-B*	WKCS-10340 N	10x340	80	260	18	TX 40	25
	WKCS-10360-D*	WKCS-10360-B*	WKCS-10360 N	10x360	80	280	18	TX 40	25
	WKCS-10380-D*	WKCS-10380-B*	WKCS-10380 N	10x380	80	300	18	TX 40	25
	WKCS-10400-D*	WKCS-10400-B*	WKCS-10400 N	10x400	80	320	18	TX 40	25

* Product on order N - New

PWKCS-D (SQ Ceramic)

Washer for countersunk head timber screw



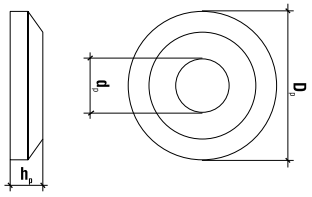
Example of use WKCS-D + PWKCS-D

Product code	Dimensions	Internal diameter	Quantity
SQ Ceramic	D_p x h_p [mm]	d_p [mm]	[pcs]
PWKCS-8-D*	25 x 5	8,5	50
PWKCS-10-D*	32 x 6	11	50

* Product on order

PWKCS-B (Galvanized - white)

Washer for countersunk head timber screw



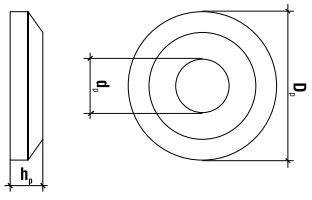
Example of use WKCS-B + PWKCS-B

Product code	Dimensions	Internal diameter	Quantity
Galvanized - white	D_p x h_p [mm]	d_p [mm]	[pcs]
PWKCS-8-B*	25 x 5	8,5	50
PWKCS-10-B*	32 x 6	11	50

* Product on order

PWKCS (Galvanized - yellow)

Washer for countersunk head timber screw



Example of use WKCS + PWKCS

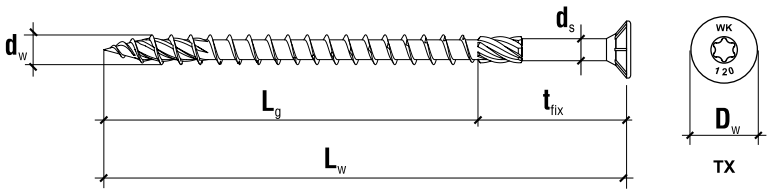
Product code	Dimensions	Internal diameter	Quantity
Galvanized - yellow	D_p x h_p [mm]	d_p [mm]	[pcs]
PWKCS-8	25 x 5	8,5	50
PWKCS-10	32 x 6	11	50

Countersunk head construction screw, TX

WKCS - TECHNICAL DATA

⌀6, ⌀8, ⌀10

ETA-18/0817



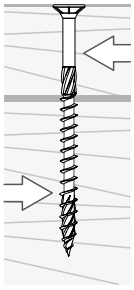
Geometry and mechanical properties

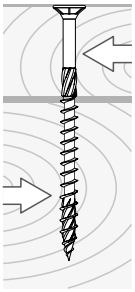
Product	Thread outer diameter	Thread inner diameter	Unthreaded part diameter	Head diameter	Length range
	d_w [mm]	d_1 [mm]	d_s [mm]	D_w [mm]	L_w [mm]
WKCS ⌀8	8	5,4	5,8	14,5	80-400
WKCS ⌀10	10	6,4	7	18	120-400

Product	Material characteristic yield strength	Characteristic pull-out resistance	Assigned density	Characteristic head pull-through resistance	Assigned density	Characteristic tensile resistance	Characteristic torsional resistance
	$M_{y,k}$ [N*m]	$f_{ax,k,90}$ [N/mm^2]	p_a [kg/m^3]	$f_{head,k}$ [N/mm^2]	p_a [kg/m^3]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
WKCS ⌀8	25,0	12,0	350	9,4	350	25,0	27,0
WKCS ⌀10	43,0	11,0		9,4		36,0	45,0

Minimum distances for screws subject to shear load

MINIMUM SCREW SPACING - **WITHOUT PRE-DRILLED HOLE**

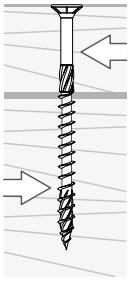


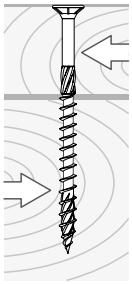


Product	Angle between force and fibre α = 0 °						Angle between force and fibre α = 90 °					
	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]
WKCS ⌀8	96	40	120	80	40	40	40	40	80	80	80	40
WKCS ⌀10	120	50	150	100	50	50	50	50	100	100	100	50

Minimum distances for screws subject to shear load

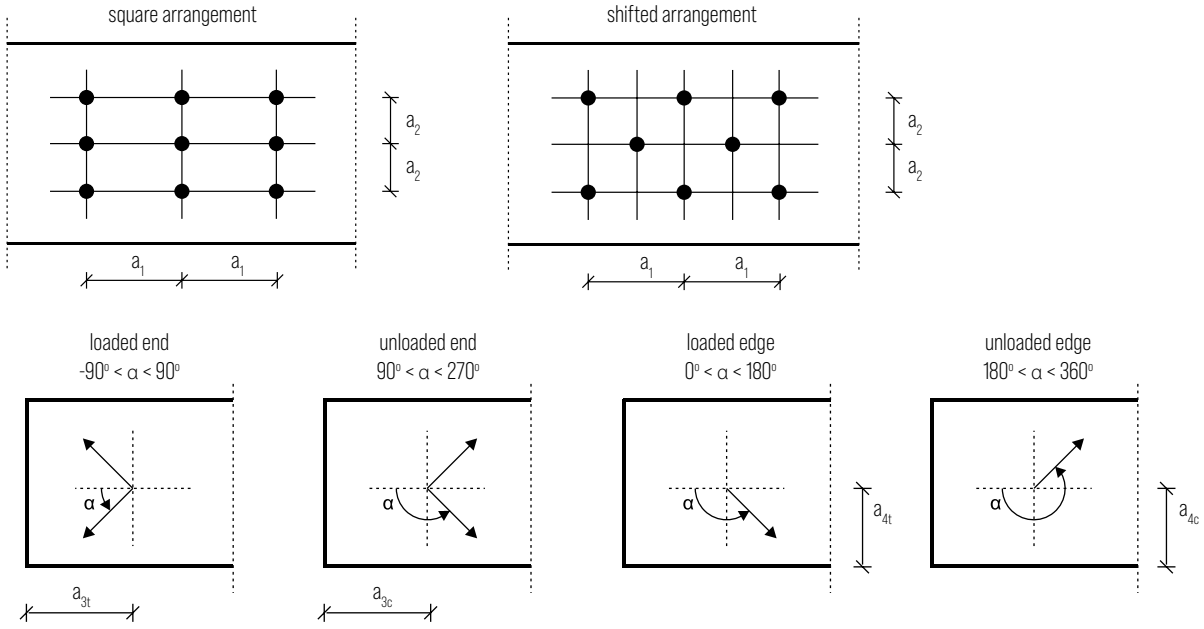
MINIMUM SCREW SPACING - **WITH PRE-DRILLED HOLE**





Product	Angle between force and fibre α = 0 °						Angle between force and fibre α = 90 °					
	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]
WKCS ⌀8	40	24	96	56	24	24	32	32	56	56	56	24
WKCS ⌀10	50	30	120	70	30	30	40	40	70	70	70	30

1. Minimum distances comply with PN-EN 1995:2014 and ETA-18/0817
2. Bulk density of wooden members complies with the relation $p_k \leq 420$ kg/m^3
3. For OSB board-wood joints minimum distances (a_1, a_2) can be multiplied by factor 0,85
4. For steel plate-wood joints minimum distances (a_1, a_2) can be multiplied by factor 0,7



Countersunk head construction screw, TX

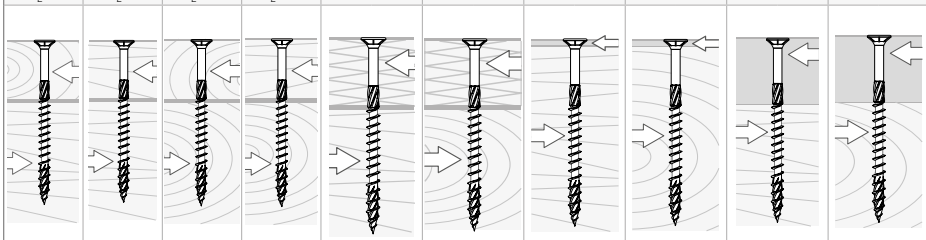
WKCS - TECHNICAL DATA

⌀6, ⌀8, ⌀10

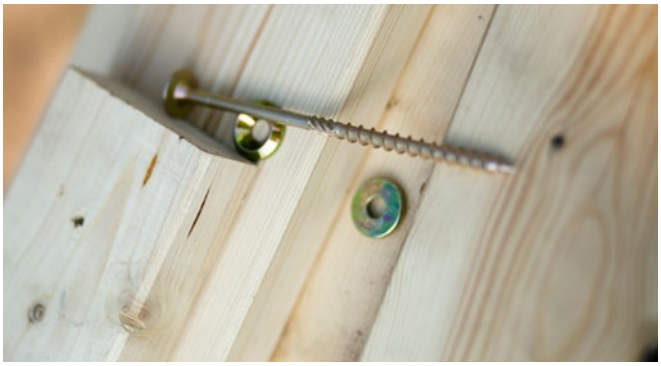
SUPER QUALITY SQ CERAMIC | Zn YELLOW | Zn WHITE

ETA-18/0817

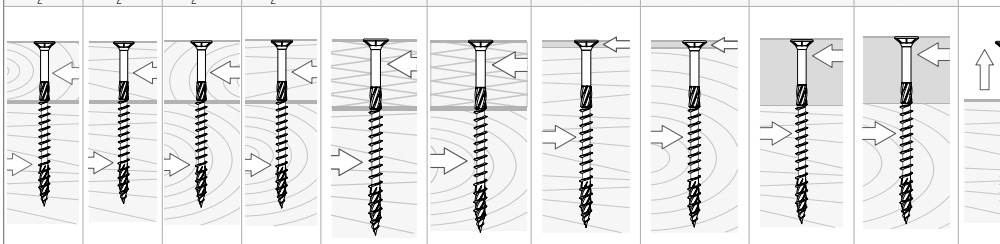
Characteristic resistances for shear and tensile loads

Product code - WKCS		SHEAR [kN]														TENSILE [kN]	
		wood - wood				OSB - wood		steel - wood thin board (t ≤ 0,5d)		steel - wood thick board (t ≥ d)						Pull-out	Head pull--through
		α_1=90 α_2=0	α_1=0 α_2=0	α_1=90 α_2=90	α_1=0 α_2=90	α_2=0	α_2=90	α_2=0	α_2=90	α_2=0	α_2=90						
																	
WKCS 8																	
⌀8	WKCS-08080*	2,94	3,51	2,78	3,28	t = 22 mm	3,16	t = 22 mm	2,94	t ≤ 4 mm	4,94	t ≤ 4 mm	4,28	t ≥ 8 mm	6,49	t ≥ 8 mm	5,56	4,80	1,98
	WKCS-08100*	3,70	4,23	3,47	3,70		3,16		2,94		4,94		4,28		6,49		5,56	4,80	1,98
	WKCS-08120*	3,29	4,07	3,12	3,81		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98
	WKCS-08140*	3,86	4,23	3,58	3,86		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98
	WKCS-08160*	3,86	4,23	3,58	3,86		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98
	WKCS-08180*	3,86	4,23	3,58	3,86		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98
	WKCS-08200*	3,86	4,23	3,58	3,86		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98
	WKCS-08220*	3,86	4,23	3,58	3,86		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98
	WKCS-08240*	3,86	4,23	3,58	3,86		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98
	WKCS-08260*	3,86	4,23	3,58	3,86		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98
	WKCS-08280*	3,86	4,23	3,58	3,86		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98
	WKCS-08300*	3,86	4,23	3,58	3,86		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98
	WKCS-08320*	3,86	4,23	3,58	3,86		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98
	WKCS-08340*	3,86	4,23	3,58	3,86		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98
	WKCS-08360*	3,86	4,23	3,58	3,86		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98
	WKCS-08380*	3,86	4,23	3,58	3,86		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98
	WKCS-08400*	3,86	4,23	3,58	3,86		3,16		2,94		5,66		5,00		7,21		6,28	7,68	1,98

*also applicable to WKCS-B i WKCS-D



Characteristic resistances for shear and tensile loads

Product code - WKCS		SHEAR [kN]												TENSILE [kN]	
		wood - wood				OSB - wood		steel - wood thin board (t ≤ 0,5d)		steel - wood thick board (t ≥ d)				Pull-out	Head pull--through
		α_1=90 α_2=0	α_1=0 α_2=0	α_1=90 α_2=90	α_1=0 α_2=90	α_2=0	α_2=90	α_2=0	α_2=90	α_2=0	α_2=90				
															
WKCS 10															
⌀10	**WKCS-10120***	4,45	5,43	4,19	5,05	t = 22 mm	4,30	t = 22 mm	3,98	t ≤ 5 mm	7,62	t ≤ 5 mm	6,63	t ≥ 10 mm	9,87	t ≥ 10 mm	8,46	8,80	3,05
	WKCS-10140*	5,39	6,18	5,09	5,61		4,30		3,98		7,62		6,63		9,87		8,46	8,80	3,05
	WKCS-10160*	5,61	6,18	5,19	5,61		4,30		3,98		7,62		6,63		9,87		8,46	8,80	3,05
	WKCS-10180*	5,61	6,18	5,19	5,61		4,30		3,98		7,62		6,63		9,87		8,46	8,80	3,05
	WKCS-10200*	5,61	6,18	5,19	5,61		4,30		3,98		7,62		6,63		9,87		8,46	8,80	3,05
	WKCS-10220*	5,61	6,18	5,19	5,61		4,30		3,98		7,62		6,63		9,87		8,46	8,80	3,05
	WKCS-10240*	5,61	6,18	5,19	5,61		4,30		3,98		7,62		6,63		9,87		8,46	8,80	3,05
	WKCS-10260*	5,61	6,18	5,19	5,61		4,30		3,98		7,62		6,63		9,87		8,46	8,80	3,05
	WKCS-10280*	5,61	6,18	5,19	5,61		4,30		3,98		7,62		6,63		9,87		8,46	8,80	3,05
	WKCS-10300*	5,61	6,18	5,19	5,61		4,30		3,98		7,62		6,63		9,87		8,46	8,80	3,05
	WKCS-10320*	5,61	6,18	5,19	5,61		4,30		3,98		7,62		6,63		9,87		8,46	8,80	3,05
	WKCS-10340*	5,61	6,18	5,19	5,61		4,30		3,98		7,62		6,63		9,87		8,46	8,80	3,05
	WKCS-10360*	5,61	6,18	5,19	5,61		4,30		3,98		7,62		6,63		9,87		8,46	8,80	3,05
	WKCS-10380*	5,61	6,18	5,19	5,61		4,30		3,98		7,62		6,63		9,87		8,46	8,80	3,05
	WKCS-10400*	5,61	6,18	5,19	5,61		4,30		3,98		7,62		6,63		9,87		8,46	8,80	3,05

*also applicable to WKCS-B i WKCS-D

1. Characteristic resistances conform to PN-EN 1995:2014 in accordance with European Technical Assessment ETA-18/0817
2. In order to obtain a design value, use the following formula:

$$R_d = \frac{R_k * k_{mod}}{\gamma_m}$$

Factors γ_m and k_{mod} should be assumed in accordance with PN-EN 1995:2014
3. For calculations characteristic resistances and geometry of screws were assumed based on European Technical Assessment ETA-18/0817
4. Characteristic resistances given in the table were calculated for bulk density of wooden members of ρ_k = 350 kg/m^3
5. For calculations it was assumed that threaded part is fully recessed in a wooden member
6. Characteristic resistances given in the table were calculated for a single screw. To check resistances of groups of screws, please follow rules defined in PN-EN 1995:2014
7. Characteristic shear resistances were calculated for connections without pre-drilled holes
8. Calculations apply to resistances for screws only. Wooden members and steel plates should be dimensioned separately
9. Characteristic shear resistances were calculated including wood fibre inclination in relation to shearing force
10. Characteristic shear resistances for OSB board-wood joint were calculated for OSB board with a thickness t [mm]
11. Characteristic shear resistances for steel-wood joint were calculated for a thin steel plate with a thickness of t = 0,5d
12. Characteristic shear resistances for steel-wood joint were calculated for a thick steel plate with a thickness of t = d

Countersunk head construction screw, TX

KMWHT

ø3, ø3,5, ø4, ø4,5, ø5, ø6

Countersunk head construction screw with TX drive for structural connections of wooden members, including solid, bonded and wood-based panels.

ETA-18/0817 (Ø6)

PN-EN 14592:2008+A1:2012

SUPER QUALITY SQ CERAMIC

Zn YELLOW

Zn WHITE

SUBSTRATES

Solid wood

Glued laminated timber
CLT, KVH, BSH/GLT, LVL

Wood-based panels
OSB, MDF, plywood, chipboard

SCREW MATERIAL	Carbon steel
ANTI-CORROSION PROTECTION	· Galvanized · SQ Ceramic
APPLICATION	Wood-based panels, battens, wooden finishing elements, furniture, furniture accessories, garden architecture

	SQ Ceramic	Galvanized - white	Galvanized - yellow
ø3	KMWHT-D	KMWHT-B	KMWHT
	Length range: 30 - 40 mm		
ø3,5	KMWHT-D	KMWHT-B	KMWHT
	Length range: 30 - 50 mm		
ø4	KMWHT-D	KMWHT-B	KMWHT
	Length range: 30 - 70 mm		
ø4,5	KMWHT-D	KMWHT-B	KMWHT
	Length range: 40 - 80 mm		
ø5	KMWHT-D	KMWHT-B	KMWHT
	Length range: 40 - 120 mm		
ø6	KMWHT-D	KMWHT-B	KMWHT
	Length range: 50 - 300 mm		

COUNTERSUNK HEAD WITH TX DRIVE
Countersunk head ensures flush installation of the screw in the wooden member.

CUTTING RIBS
Allow optimal and smooth countersink with aesthetic finish result.

SHANK RIBS
Shank ribs reduces installation torque by reaming the hole.

NEW CUTTING EDGE / SERRATED THREAD
New special design of cutting edge with added milling reduces screwing resistance by 20%. This helps to extend the life of batteries and power tools.Special cutting notches integrated on the thread cuts wood fibres structure while screwing in.

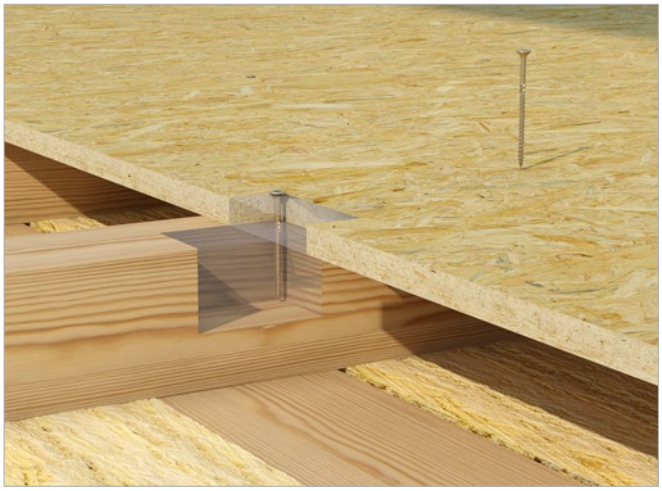
DOUBLE THREAD
Additional recessed second thread improve remarkably a speed of timber penetration and reaction time of first grip into the wood.

HIGH TORQUE
Allows screws to be installed without pre-drilling, even in hardwood substrates.

WAX COATING
Wax coating applied during the production process significantly reduces the torque. This makes the installation easier, faster and saves energy, which is important in the case of battery-powered tools.

EXAMPLES OF USE

Fixing of battens and counter battens

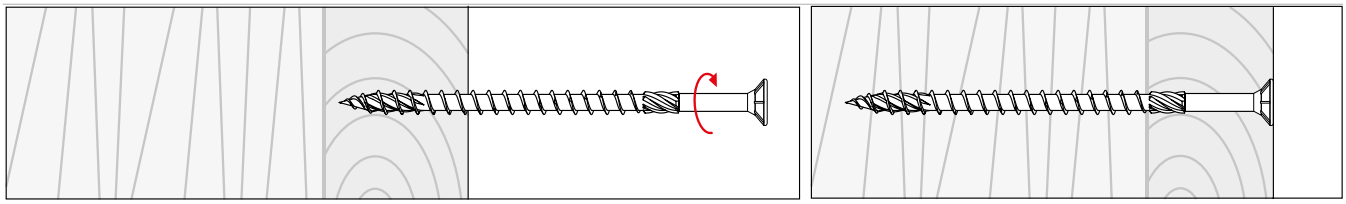


Fixing boards to wooden structure in deck construction

Fixing boards to wooden structure in facade construction

Assembly of garden furniture

INSTALLATION INSTRUCTIONS (screw requires no pre-drilling)



ACCESSORIES SEE P. 142-143

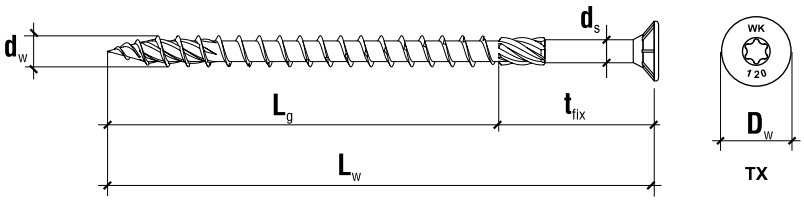
Countersunk head construction screw, TX

KMWHT - TECHNICAL DATA

ø3, ø3,5, ø4, ø4,5, ø5, ø6

ETA-18/0817

PN-EN 14592:2008+A1:2012



Basic informations

	Product code			Dimensions	Thread length	Max. usable length	Screw head diameter	Type of drive	Quantity
	SQ Ceramic	Galvanized - white	Galvanized - yellow	d_w x L_w [mm]	L_g [mm]	t_{fix} [mm]	D_w [mm]	[-]	[pcs]
KMWHT-3									
ø3	KMWHT-30030-D*	KMWHT-30030-B*	KMWHT-30030	3x30	17	13	6	TX 10	500
	KMWHT-30035-D*	KMWHT-30035-B*	KMWHT-30035	3x35	17	18	6	TX 10	500
	KMWHT-30040-D*	KMWHT-30040-B*	KMWHT-30040	3x40	22	18	6	TX 10	500
KMWHT-3.5									
ø3,5	KMWHT-35030-D*	KMWHT-35030-B*	KMWHT-35030	3,5x30	17	13	7	TX 15	500
	KMWHT-35035-D*	KMWHT-35035-B*	KMWHT-35035	3,5x35	17	18	7	TX 15	500
	KMWHT-35040-D*	KMWHT-35040-B*	KMWHT-35040	3,5x40	22	18	7	TX 15	500
	KMWHT-35050-D*	KMWHT-35050-B*	KMWHT-35050	3,5x50	30	20	7	TX 15	400
KMWHT-4									
ø4	KMWHT-40030-D*	KMWHT-40030-B*	KMWHT-40030	4x30	17	13	8	TX 20	500
	KMWHT-40035-D*	KMWHT-40035-B*	KMWHT-40035	4x35	17	18	8	TX 20	500
	KMWHT-40040-D*	KMWHT-40040-B*	KMWHT-40040	4x40	22	18	8	TX 20	500
	KMWHT-40045-D*	KMWHT-40045-B*	KMWHT-40045	4x45	30	15	8	TX 20	300
	KMWHT-40050-D*	KMWHT-40050-B*	KMWHT-40050	4x50	30	20	8	TX 20	300
	KMWHT-40060-D*	KMWHT-40060-B*	KMWHT-40060	4x60	35	25	8	TX 20	250
	KMWHT-40070-D*	KMWHT-40070-B*	KMWHT-40070	4x70	40	30	8	TX 20	250
KMWHT-4.5									
ø4,5	KMWHT-45040-D*	KMWHT-45040-B*	KMWHT-45040	4,5x40	22	18	9	TX 20	250
	KMWHT-45050-D*	KMWHT-45050-B*	KMWHT-45050	4,5x50	30	20	9	TX 20	250
	KMWHT-45060-D*	KMWHT-45060-B*	KMWHT-45060	4,5x60	35	25	9	TX 20	250
	KMWHT-45070-D*	KMWHT-45070-B*	KMWHT-45070	4,5x70	40	30	9	TX 20	250
	KMWHT-45080-D*	KMWHT-45080-B*	KMWHT-45080	4,5x80	50	30	9	TX 20	250

* product on order

	Product code			Dimensions	Thread length	Max. usable length	Screw head diameter	Type of drive	Quantity
	SQ Ceramic	Galvanized - white	Galvanized - yellow	d_w x L_w [mm]	L_g [mm]	t_{fix} [mm]	D_w [mm]	[-]	[pcs]
KMWHT-5									
ø5	KMWHT-50040-D*	KMWHT-50040-B*	KMWHT-50040	5x40	22	18	10	TX 25	500
	KMWHT-50050-D*	KMWHT-50050-B*	KMWHT-50050	5x50	30	20	10	TX 25	300
	KMWHT-50060-D*	KMWHT-50060-B*	KMWHT-50060	5x60	35	25	10	TX 25	200
	KMWHT-50070-D*	KMWHT-50070-B*	KMWHT-50070	5x70	40	30	10	TX 25	200
	KMWHT-50080-D*	KMWHT-50080-B*	KMWHT-50080	5x80	50	30	10	TX 25	200
	KMWHT-50090-D*	KMWHT-50090-B*	KMWHT-50090	5x90	50	40	10	TX 25	200
	KMWHT-50100-D*	KMWHT-50100-B*	KMWHT-50100	5x100	60	40	10	TX 25	200
	KMWHT-50120-D*	KMWHT-50120-B*	KMWHT-50120	5x120	70	50	10	TX 25	200
KMWHT-6									
ø6	KMWHT-60050-D*	KMWHT-60050-B*	KMWHT-60050	6x50	30	20	12	TX 30	200
	KMWHT-60060-D*	KMWHT-60060-B*	KMWHT-60060	6x60	35	25	12	TX 30	200
	KMWHT-60070-D*	KMWHT-60070-B*	KMWHT-60070	6x70	40	30	12	TX 30	200
	KMWHT-60080-D*	KMWHT-60080-B*	KMWHT-60080	6x80	50	30	12	TX 30	200
	KMWHT-60090-D*	KMWHT-60090-B*	KMWHT-60090	6x90	50	40	12	TX 30	100
	KMWHT-60100-D*	KMWHT-60100-B*	KMWHT-60100	6x100	60	40	12	TX 30	100
	KMWHT-60120-D*	KMWHT-60120-B*	KMWHT-60120	6x120	70	50	12	TX 30	100
	KMWHT-60140-D*	KMWHT-60140-B*	KMWHT-60140	6x140	70	70	12	TX 30	100
	KMWHT-60160-D*	KMWHT-60160-B*	KMWHT-60160	6x160	75	85	12	TX 30	100
	KMWHT-60180-D*	KMWHT-60180-B*	KMWHT-60180	6x180	75	105	12	TX 30	100
	KMWHT-60200-D*	KMWHT-60200-B*	KMWHT-60200	6x200	75	125	12	TX 30	100
	KMWHT-60220-D*	KMWHT-60220-B*	KMWHT-60220 N	6x220	75	145	12	TX 30	100
	KMWHT-60240-D*	KMWHT-60240-B*	KMWHT-60240 N	6x240	75	165	12	TX 30	100
	KMWHT-60260-D*	KMWHT-60260-B*	KMWHT-60260 N	6x260	75	185	12	TX 30	100
	KMWHT-60280-D*	KMWHT-60280-B*	KMWHT-60280 N	6x280	75	205	12	TX 30	100
	KMWHT-60300-D*	KMWHT-60300-B*	KMWHT-60300 N	6x300	75	225	12	TX 30	100

N - New * product on order

Countersunk head construction screw, TX

KMWHT - TECHNICAL DATA

ø3, ø3,5, ø4, ø4,5, ø5, ø6

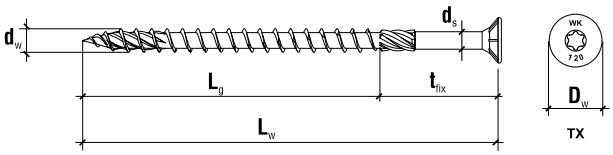
SUPER QUALITY SQ CERAMIC | Zn YELLOW | Zn WHITE

ETA-18/0817

PN-EN 14592:2008+A1:2012

Geometry and mechanical properties

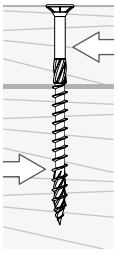
Product	Thread outer diameter	Thread inner diameter	Head diameter	Length range
	d_w [mm]	d_1 [mm]	D_w [mm]	L_w [mm]
KMWHT ø3	3	2	6	30-40
KMWHT ø3,5	3,5	2,25	7	30-50
KMWHT ø4	4	2,65	8	30-70
KMWHT ø4,5	4,5	2,8	9	40-80
KMWHT ø5	5	3,1	10	40-120
KMWHT ø6	6	3,8	12	50-300

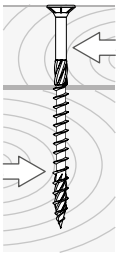


Product	Material characteristic yield strength	Characteristic pull-out resistance	Assigned density	Characteristic head pull-through resistance	Assigned density	Characteristic tensile resistance	Characteristic torsional resistance
	$M_{y,k}$ [N*m]	$f_{ax,k,90}$ [N/mm^2]	p_a [kg/m^3]	$f_{head,k}$ [N/mm^2]	p_a [kg/m^3]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
KMWHT ø3	2,454	18,24	370	26,34	350	4,05	1,83
KMWHT ø3,5	3,641	23,20		26,63		5,25	2,33
KMWHT ø4	5,162	22,26		25,56		5,65	2,90
KMWHT ø4,5	7,023	23,84		26,45		7,09	4,67
KMWHT ø5	9,247	22,90		23,50		8,54	5,70
KMWHT ø6	14,815	12,54		21,06		10,12	9,57

Minimum distances for screws subject to shear load

MINIMUM SCREW SPACING - **WITHOUT PRE-DRILLED HOLE**

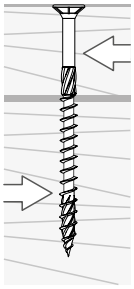


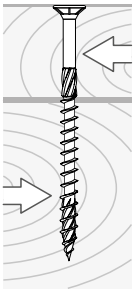


Product	Angle between force and fibre α = 0 °						Angle between force and fibre α = 90 °					
	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]
KMWHT ø3	30	15	45	30	15	15	15	15	30	30	21	15
KMWHT ø3,5	35	18	53	35	18	18	18	18	35	35	25	18
KMWHT ø4	40	20	60	40	20	20	20	20	40	40	28	20
KMWHT ø4,5	45	23	68	45	23	23	23	23	45	45	32	23
KMWHT ø5	60	25	75	50	25	25	25	25	50	50	50	25
KMWHT ø6	72	30	90	60	30	30	30	30	60	60	60	30

Minimum distances for screws subject to shear load

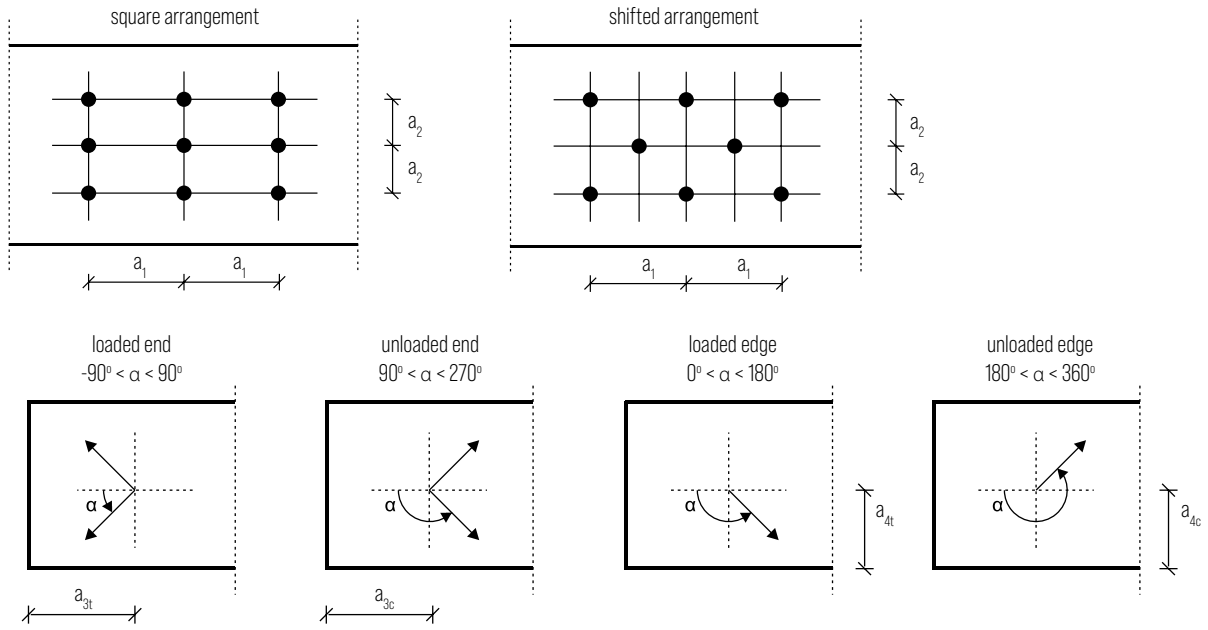
MINIMUM SCREW SPACING **- WITH PRE-DRILLED HOLE**





Product	Angle between force and fibre α = 0 °						Angle between force and fibre α = 90 °					
	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]
KMWHT ⌀3	15	9	36	21	9	9	12	12	21	21	15	9
KMWHT ⌀3,5	18	11	42	25	11	11	14	14	25	25	18	11
KMWHT ⌀4	20	12	48	28	12	12	16	16	28	28	20	12
KMWHT ⌀4,5	23	14	54	32	14	14	18	18	32	32	23	14
KMWHT ⌀5	25	15	60	35	15	15	20	20	35	35	35	15
KMWHT ⌀6	30	18	72	42	18	18	24	24	42	42	42	18

1. Minimum distances comply with PN-EN 1995:2014
2. Bulk density of wooden members complies with the relation $\rho_k \leq 420$ kg/m^3
3. For OSB board-wood joints minimum distances (a_1, a_2) can be multiplied by factor 0,85
4. For steel plate-wood joints minimum distances (a_1, a_2) can be multiplied by factor 0,7



Countersunk head construction screw, TX

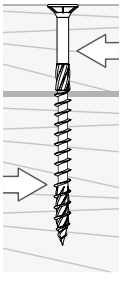
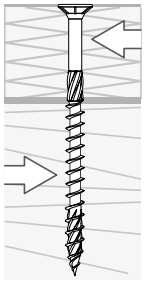
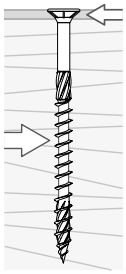
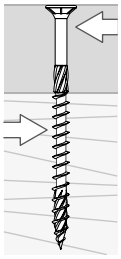
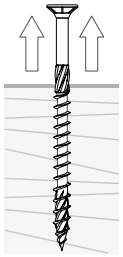
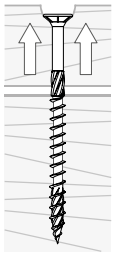
KMWHT - TECHNICAL DATA

⌀3, ⌀3,5, ⌀4, ⌀4,5, ⌀5, ⌀6

SUPER QUALITY SQ CERAMIC | Zn YELLOW | Zn WHITE

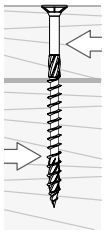
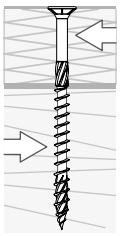
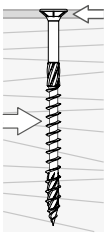
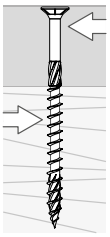
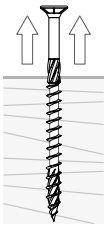
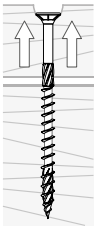
ETA-18/0817 | PN-EN 14592:2008+A1:2012

Characteristic resistances for shear and tensile loads

		SHEAR [kN]						TENSILE [kN]	
		wood - wood	OSB - wood		steel - wood thin board (t ≤ 0,5d)		steel - wood thick board (t ≥ d)	Pull-out	Head pull-through
									
KMWHT 3									
⌀3	KMWHT-30030*	-	t = 12 mm	0,73	t ≤ 1,5 mm	0,71	t ≥ 3 mm	1,04	0,89	0,95
	KMWHT-30035*	-		0,81		0,83		1,12	0,89	0,95
	KMWHT-30040*	0,75		0,83		0,92		1,18	1,15	0,95
KMWHT 3,5									
⌀3,5	KMWHT-35030*	-	t = 12 mm	-	t ≤ 1,75 mm	0,78	t ≥ 3,5 mm	1,27	1,32	1,30
	KMWHT-35035*	-		0,96		0,92		1,39	1,32	1,30
	KMWHT-35040*	0,90		1,02		1,06		1,58	1,71	1,30
	KMWHT-35050*	0,98		1,02		1,33		1,74	2,33	1,30
KMWHT 4									
⌀4	KMWHT-40030*	-	t = 15 mm	-	t ≤ 2 mm	0,85	t ≥ 4 mm	1,45	1,45	1,64
	KMWHT-40035*	-		-		1,00		1,56	1,45	1,64
	KMWHT-40040*	-		1,20		1,15		1,80	1,87	1,64
	KMWHT-40045*	1,11		1,30		1,30		2,08	2,56	1,64
	KMWHT-40050*	1,18		1,30		1,45		2,08	2,56	1,64
	KMWHT-40060*	1,27		1,30		1,76		2,18	2,98	1,64
	KMWHT-40070*	1,38		1,30		1,87		2,29	3,41	1,64
KMWHT 4,5									
⌀4,5	KMWHT-45040*	-	t = 15 mm	-	t ≤ 2,25 mm	1,24	t ≥ 4,5 mm	2,04	2,26	2,14
	KMWHT-45050*	1,42		1,54		1,57		2,52	3,08	2,14
	KMWHT-45060*	1,52		1,54		1,90		2,65	3,59	2,14
	KMWHT-45070*	1,63		1,54		2,23		2,77	4,10	2,14
	KMWHT-45080*	1,63		1,54		2,52		3,03	5,13	2,14

*also applicable to KMWHT-B i KMWHT-D

Characteristic resistances for shear and tensile loads

		SHEAR [kN]						TENSILE [kN]	
		wood - wood		OSB - wood	steel - wood thin board (t ≤ 0,5d)		steel - wood thick board (t ≥ d)	Pull-out	Head pull-through
									
KMWHT 5									
ø5	KMWHT-50040*	-	t = 18 mm	-	t ≤ 2,5 mm	1,33	t ≥ 5 mm	2,24	2,41	2,35
	KMWHT-50050*	1,54		1,72		1,68		2,76	3,29	2,35
	KMWHT-50060*	1,71		1,81		2,04		3,04	3,83	2,35
	KMWHT-50070*	1,82		1,81		2,39		3,18	4,38	2,35
	KMWHT-50080*	1,82		1,81		2,74		3,45	5,48	2,35
	KMWHT-50090*	2,06		1,81		2,84		3,45	5,48	2,35
	KMWHT-50100*	2,06		1,81		3,11		3,72	6,57	2,35
	KMWHT-50120*	2,06		1,81		3,39		4,00	7,67	2,35
KMWHT 6									
ø6	KMWHT-60050*	-	t = 22 mm	-	t ≤ 3 mm	1,89	t ≥ 6 mm	2,83	2,16	3,03
	KMWHT-60060*	-		2,14		2,29		3,26	2,52	3,03
	KMWHT-60070*	2,20		2,35		2,70		3,53	2,88	3,03
	KMWHT-60080*	2,28		2,39		2,89		3,71	3,60	3,03
	KMWHT-60090*	2,53		2,39		2,89		3,71	3,60	3,03
	KMWHT-60100*	2,53		2,39		3,06		3,89	4,32	3,03
	KMWHT-60120*	2,74		2,39		3,24		4,07	5,04	3,03
	KMWHT-60140*	2,74		2,39		3,24		4,07	5,04	3,03
	KMWHT-60160*	2,74		2,39		3,33		4,16	5,40	3,03
	KMWHT-60180*	2,74		2,39		3,33		4,16	5,40	3,03
	KMWHT-60200*	2,74		2,39		3,33		4,16	5,40	3,03
	KMWHT-60220*/**	2,74		2,39		3,33		4,16	5,40	3,03
	KMWHT-60240*/**	2,74		2,39		3,33		4,16	5,40	3,03
	KMWHT-60260*/**	2,74		2,39		3,33		4,16	5,40	3,03
	KMWHT-60280*/**	2,74		2,39		3,33		4,16	5,40	3,03
	KMWHT-60300*/**	2,74		2,39		3,33		4,16	5,40	3,03

*also applicable to KMWHT-B i KMWHT-D / ** Sizes not covered test report no. L0K03-0604/14/R130SK

1. Characteristic resistances conform to PN-EN 1995:2014
2. In order to obtain a design value, use the following formula:

$$R_d = \frac{R_k * k_{mod}}{\gamma_m}$$

Factors γ_m and k_{mod} should be assumed in accordance with PN-EN 1995:2014

3. For calculations characteristic resistances and geometry of screws were assumed based on test report no. L0K03-06040/14/R130SK
4. Characteristic resistances given in the table were calculated for bulk density of wooden members of ρ_k = 350 kg/m^3
5. For calculations it was assumed that threaded part is fully recessed in a wooden member
6. Characteristic resistances given in the table were calculated for a single screw. To check resistances of groups of screws, please follow rules defined in PN-EN 1995:2014
7. Characteristic shear resistances were calculated for connections without pre-drilled holes
8. Calculations apply to resistances for screws only. Wooden members and steel plates should be dimensioned separately
9. For screws with a diameter d ≤ 6 mm characteristic shear resistances are independent of wood fibre inclination
10. Characteristic shear resistances for OSB board-wood joint were calculated for OSB board with a thickness t [mm]
11. Characteristic shear resistances for steel-wood joint were calculated for a thin steel plate with a thickness of t = 0,5d
12. Characteristic shear resistances for steel-wood joint were calculated for a thick steel plate with a thickness of t = d

SCREWS FOR WOODEN CONSTRUCTIONS

Screw for wooden constructions with full thread and cylindrical head

WKFC

NEW!

⌀6, ⌀8, ⌀10

Construction cylindrical head screws with full thread and TX drive for structural connections and reinforcements of wooden members.

ETA-18/0817

Zn WHITE

SUBSTRATES

Solid wood

Glued laminated timber
CLT, KVH, BSH/GLT, LVL

SCREW MATERIAL	Carbon steel
ANTI-CORROSION PROTECTION	Galvanized
APPLICATION	· Timber couplings · Structural reinforcement · Protections of structures against failure

CYLINDRICAL HEAD WITH TX DRIVE
Allow quick and secure fastening , ideal for concealed joints.
TX drive guarantees optimum torque transfer.

FULL THREAD
Without elements being over tighten to each other.

NEW CUTTING EDGE / SERRATED THREAD
New special design of cutting edge with added milling reduces screwing resistance by 20%. This helps to extend the life of batteries and power tools.Special cutting notches integrated on the thread cuts wood fibres structure while screwing in.

DOUBLE THREAD
Additional recessed second thread improve remarkably a speed of timber penetration and reaction time of first grip into the wood.

HIGH TORQUE
Allows screws to be installed without pre-drilling, even in hardwood substrates.

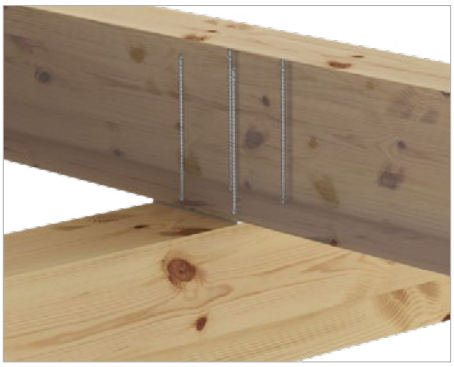
WAX COATING
Wax coating applied during the production process significantly reduces the torque. This makes the installation easier, faster and saves energy, which is important in the case of battery-powered tools.

	Galvanized
⌀6	WKFC **Length range: 80 - 300 mm**
⌀8	WKFC **Length range: 120 - 500 mm**
⌀10	WKFC **Length range: 300 - 600 mm**

EXAMPLES OF USE

Reinforcement with screws in roof ridge area

Protection against failure of notched beam



Reinforcement in the point of support

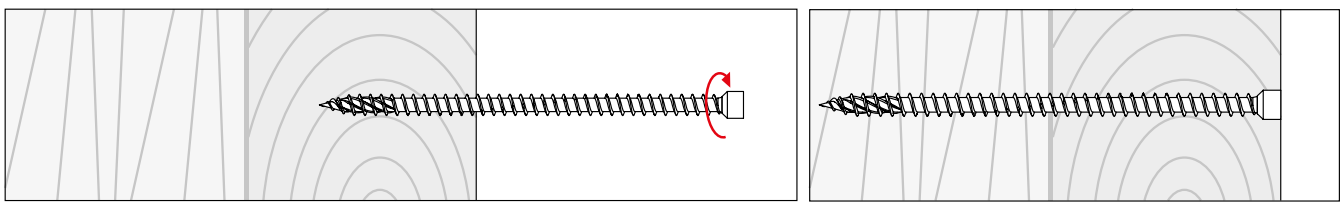
Reinforcement by coupling of beams

Reinforcement of beam in the point weakened by drill hole

Joint between two girders

Joint between two passing-by beams

INSTALLATION INSTRUCTIONS



ACCESSORIES SEE P. 142-143

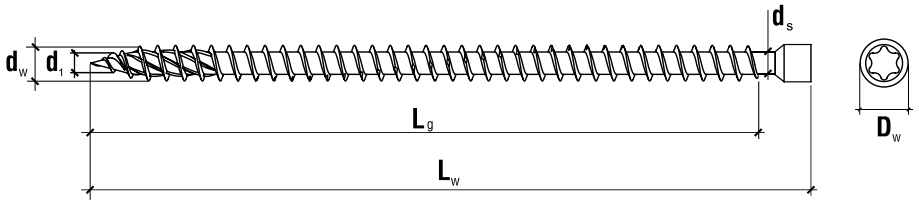
Screw for wooden constructions with full thread and cylindrical head

WKFC - TECHNICAL DATA

⌀6, ⌀8, ⌀10

ETA-18/0817

Zn WHITE



Basic informations

	Product code	Dimensions	Thread length	Screw head diameter	Type of drive	Quantity
	Galvanized - white	d_w x L_w [mm]	L_g [mm]	D_w [mm]	[-]	[pcs]
			WKFC-6			
⌀6	WKFC-06080-B*	6x80	72	8	TX 30	100
	WKFC-06100-B*	6x100	92	8	TX 30	100
	WKFC-06120-B*	6x120	112	8	TX 30	100
	WKFC-06140-B*	6x140	132	8	TX 30	100
	WKFC-06160-B*	6x160	152	8	TX 30	100
	WKFC-06180-B*	6x180	172	8	TX 30	100
	WKFC-06200-B*	6x200	192	8	TX 30	100
	WKFC-06220-B*	6x220	212	8	TX 30	100
	WKFC-06240-B*	6x240	232	8	TX 30	100
	WKFC-06260-B*	6x260	252	8	TX 30	100
	WKFC-06280-B*	6x280	272	8	TX 30	100
	WKFC-06300-B*	6x300	292	8	TX 30	100
			WKFC-8			
⌀8	WKFC-08120-B*	8x120	105	10	TX 40	50
	WKFC-08140-B*	8x140	125	10	TX 40	50
	WKFC-08160-B*	8x160	145	10	TX 40	50
	WKFC-08180-B*	8x180	165	10	TX 40	50
	WKFC-08200-B*	8x200	185	10	TX 40	50
	WKFC-08220-B*	8x220	205	10	TX 40	50
	WKFC-08240-B*	8x240	225	10	TX 40	50
	WKFC-08260-B*	8x260	245	10	TX 40	50
	WKFC-08280-B*	8x280	265	10	TX 40	50
	WKFC-08300-B*	8x300	285	10	TX 40	50
	WKFC-08350-B*	8x350	335	10	TX 40	50
	WKFC-08400-B*	8x400	385	10	TX 40	50
	WKFC-08450-B*	8x450	435	10	TX 40	50
	WKFC-08500-B*	8x500	485	10	TX 40	50

* Product on order

Basic informations

		Dimensions	Thread length	Screw head diameter	Type of drive	Pack unit
	Galvanized - white	d_w x L_w [mm]	L_g [mm]	D_w [mm]	[-]	[pcs]
WKFC-10						
⌀10	WKFC-10300-B*	10x300	285	13	TX 50	25
	WKFC-10330-B*	10x330	315	13	TX 50	25
	WKFC-10360-B*	10x360	345	13	TX 50	25
	WKFC-10400-B*	10x400	385	13	TX 50	25
	WKFC-10450-B*	10x450	435	13	TX 50	25
	WKFC-10500-B*	10x500	485	13	TX 50	25
	WKFC-10550-B*	10x550	535	13	TX 50	25
	WKFC-10600-B*	10x600	585	13	TX 50	25

* Product on order

Geometry and mechanical properties

Product	Thread outer diameter	Thread inner diameter	Unthreaded part diameter	Head diameter	Length range
	d_w [mm]	d_i [mm]	d_s [mm]	D_w [mm]	L_w [mm]
WKFC ⌀6	6	3,9	4,3	8	80-300
WKFC ⌀8	8	5	5,8	10	120-500
WKFC ⌀10	10	6,2	7	13	300-600

Product	Material characteristic yield strength	Characteristic pull-out resistance	Assigned density	Characteristic head pull-through resistance	Assigned density	Characteristic tensile resistance	Characteristic torsional resistance
	$M_{y,k}$ [N*m]	$f_{ax,k,90}$ [N/mm^2]	p_a [kg/m^3]	$f_{head,k}$ [N/mm^2]	p_a [kg/m^3]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
WKFC ⌀6	10,0	12,0	350	9,4	350	13,0	10,0
WKFC ⌀8	25,0	12,0		9,4		25,0	27,0
WKFC ⌀10	43,0	11,0		9,4		36,0	45,0

Screw for wooden constructions with full thread and countersunk head

WKFS

NEW!

⌀8, ⌀10

Construction countersunk head screws with full thread and TX drive for structural connections and reinforcements of wooden members.

ETA-18/0817

Zn WHITE

SUBSTRATES

Solid wood

Glued laminated timber
CLT, KVH, BSH/GLT, LVL

SCREW MATERIAL	Carbon steel
ANTI-CORROSION PROTECTION	Galvanized
APPLICATION	· Timber couplings · Structural reinforcement · Protections of structures against failure

COUNTERSUNK HEAD WITH TX DRIVE
Allows quick and flush installation of the screw in the wooden member.
TX drive guarantees optimum torque transfer.

FULL THREAD
Without elements being over tighten to each other.

NEW CUTTING EDGE / SERRATED THREAD
New special design of cutting edge with added milling reduces screwing resistance by 20%. This helps to extend the life of batteries and power tools. Special cutting notches integrated on the thread cuts wood fibres structure while screwing in.

DOUBLE THREAD
Additional recessed second thread improve remarkably a speed of timber penetration and reaction time of first grip into the wood.

HIGH TORQUE
Allows screws to be installed without pre-drilling, even in hardwood substrates.

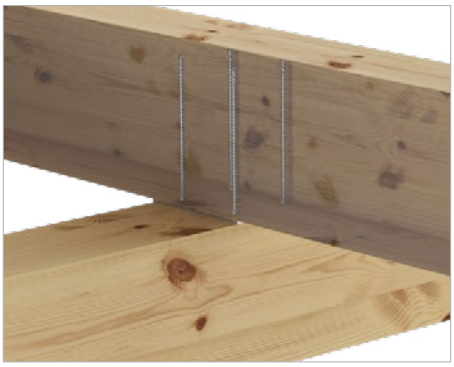
WAX COATING
Wax coating applied during the production process significantly reduces the torque. This makes the installation easier, faster and saves energy, which is important in the case of battery-powered tools.

	Galvanized
⌀8	WKFS **Length range: 120 - 500 mm**
⌀10	WKFS **Length range: 300 - 600 mm**

EXAMPLES OF USE

Reinforcement with screws in roof ridge area

Protection against failure of notched beam



Reinforcement in the point of support

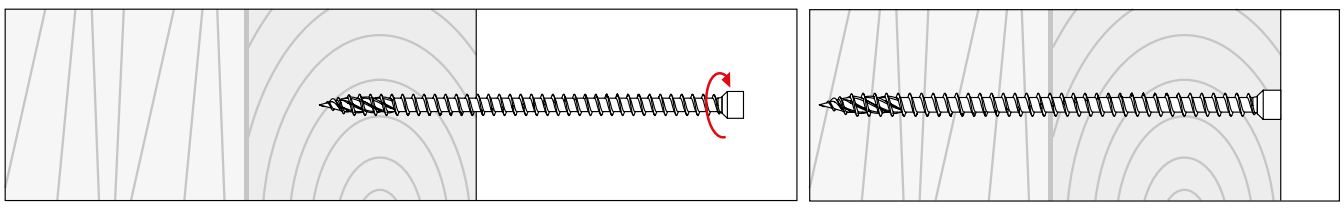
Reinforcement by coupling of beams

Reinforcement of beam in the point weakened by drill hole

Joint between two girders

Joint between two passing-by beams

INSTALLATION INSTRUCTIONS



ACCESSORIES SEE P. 142-143

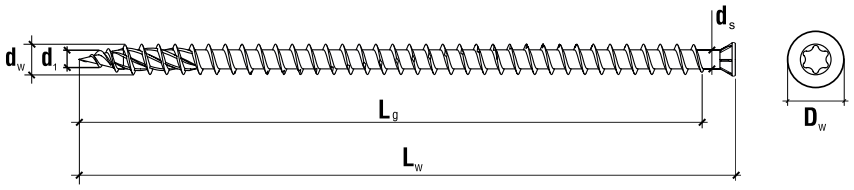
Screw for wooden constructions with full thread and countersunk head

WKFS - TECHNICAL DATA

⌀8, ⌀10

ETA-18/0817

Zn WHITE



Basic informations

	Product code	Dimensions	Thread length	Screw head diameter	Type of drive	Quantity
	Galvanized - white	d_w x L_w [mm]	L_g [mm]	D_w [mm]	[-]	[pcs]
			WKFS-8			
⌀8	WKFS-08120-B*	8x120	105	14	TX 40	50
	WKFS-08140-B*	8x140	125	14	TX 40	50
	WKFS-08160-B*	8x160	145	14	TX 40	50
	WKFS-08180-B*	8x180	165	14	TX 40	50
	WKFS-08200-B*	8x200	185	14	TX 40	50
	WKFS-08220-B*	8x220	205	14	TX 40	50
	WKFS-08240-B*	8x240	225	14	TX 40	50
	WKFS-08260-B*	8x260	245	14	TX 40	50
	WKFS-08280-B*	8x280	265	14	TX 40	50
	WKFS-08300-B*	8x300	285	14	TX 40	50
	WKFS-08350-B*	8x350	335	14	TX 40	50
	WKFS-08400-B*	8x400	385	14	TX 40	50
	WKFS-08450-B*	8x450	435	14	TX 40	50
	WKFS-08500-B*	8x500	485	14	TX 40	50
			WKFS-10			
⌀10	WKFS-10300-B*	10x300	285	18	TX 50	25
	WKFS-10330-B*	10x330	315	18	TX 50	25
	WKFS-10360-B*	10x360	345	18	TX 50	25
	WKFS-10400-B*	10x400	385	18	TX 50	25
	WKFS-10450-B*	10x450	435	18	TX 50	25
	WKFS-10500-B*	10x500	485	18	TX 50	25
	WKFS-10550-B*	10x550	535	18	TX 50	25
	WKFS-10600-B*	10x600	585	18	TX 50	25

* Product on order

Geometry and mechanical properties

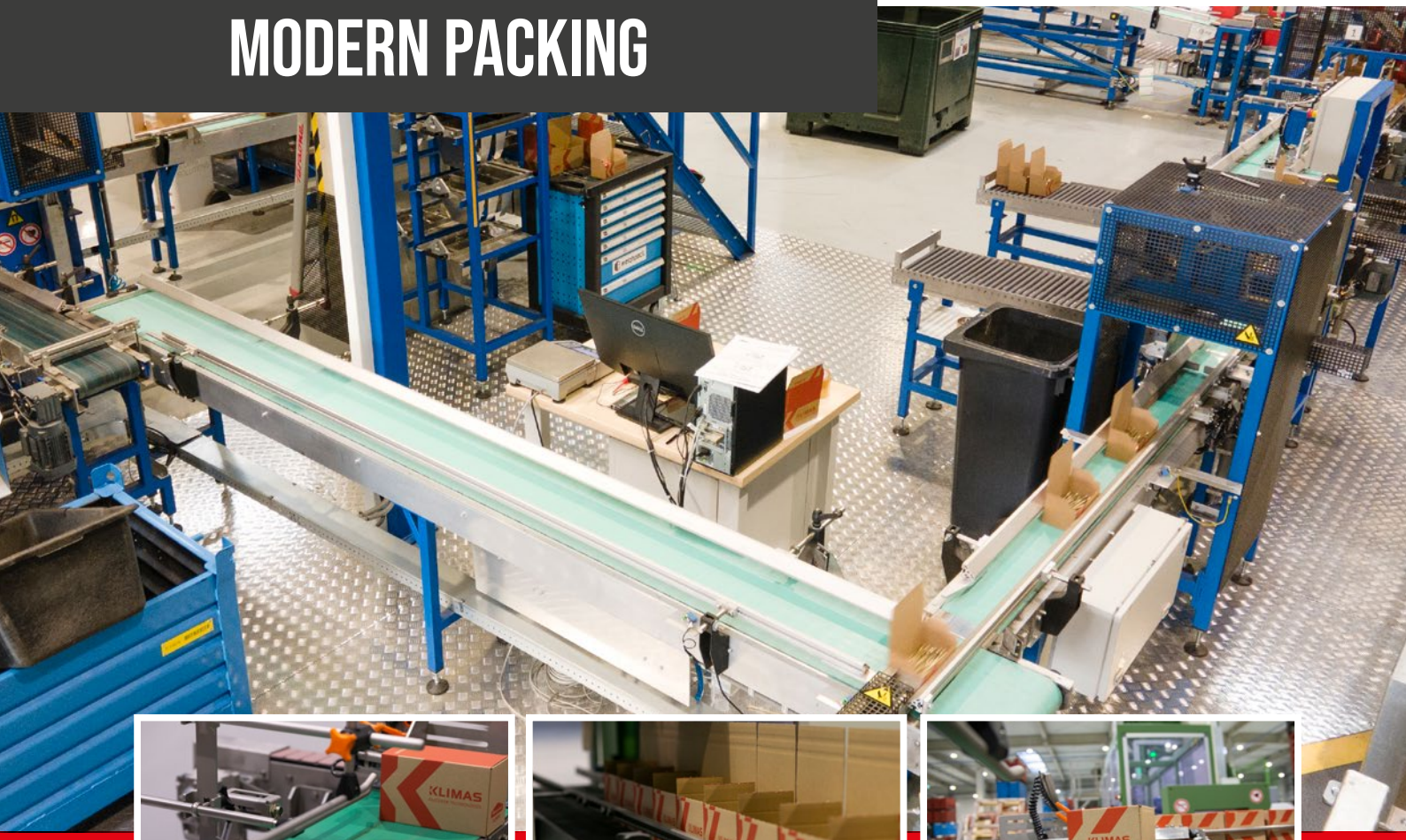
Product	Thread outer diameter	Thread inner diameter	Unthreaded part diameter	Head diameter	Length range
	d_w [mm]	d_1 [mm]	d_s [mm]	D_w [mm]	L_w [mm]
WKFS ⌀8	8	5	5,8	14	120-500
WKFS ⌀10	10	6,2	7	18	300-600

Product	Material characteristic yield strength	Characteristic pull-out resistance	Assigned density	Characteristic head pull-through resistance	Assigned density	Characteristic tensile resistance	Characteristic torsional resistance
	$M_{y,k}$ [N*m]	$f_{ax,k,90}$ [N/mm^2]	p_a [kg/m^3]	$f_{head,k}$ [N/mm^2]	p_a [kg/m^3]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
WKFS ⌀8	25,0	12,0	350	9,4	350	25,0	27,0
WKFS ⌀10	43,0	11,0		9,4		36,0	45,0

STRONG FOR GENERATIONS

KLIMAS
FASTENER TECHNOLOGIES

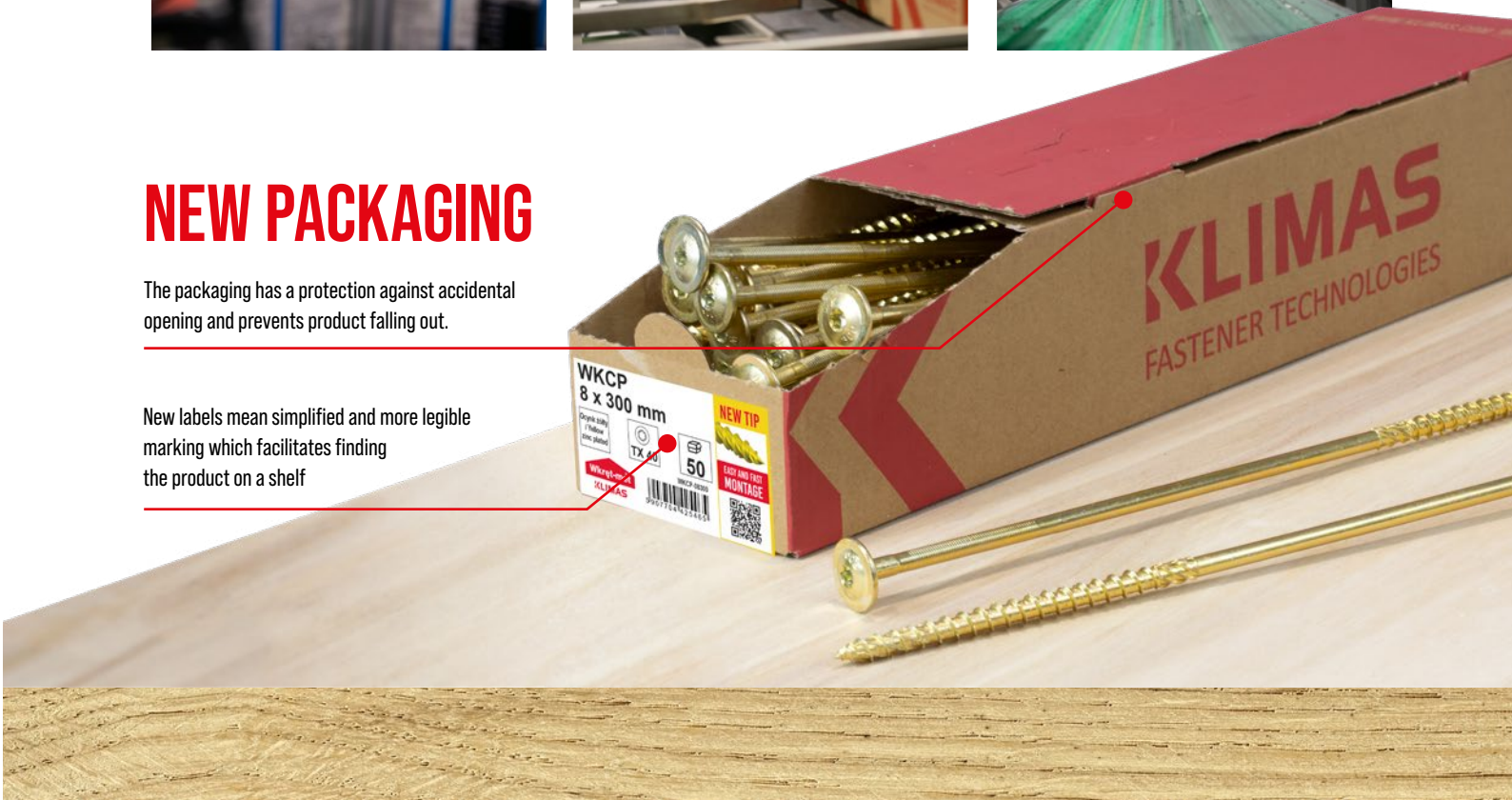
MODERN PACKING



NEW PACKAGING

The packaging has a protection against accidental opening and prevents product falling out.

New labels mean simplified and more legible marking which facilitates finding the product on a shelf



Galvanized

⌀8	WKPC **Length range: 165 - 472 mm**

Screws with double thread for over-rafter insulation, TX

WKPC

NEW!

⌀8

Pan head screw with double thread and TX drive for installation of over-rafter insulation in timber substrates.

ETA-18/0817

Zn WHITE

SUBSTRATES

Solid wood

Glued laminated timber
CLT, KVH, BSH/GLT, LVL

SCREW MATERIAL	Carbon steel
ANTI-CORROSION PROTECTION	Galvanized
APPLICATION	Fixing of over-rafter insulation and wall insulation

CYLINDRICAL HEAD WITH TX DRIVE
Allow quick and secure fastening , ideal for hidden insertion in the batten.
TX drive guarantees optimum torque transfer.

DOUBLE THREAD
Provides optimum load transfer from battens to rafters and allows uninterrupted fastening of insulation to prevent thermal bridges

SHANK RIBS
Shank ribs reduces installation torque by reaming the hole.

NEW CUTTING EDGE / SERRATED THREAD
New special design of cutting edge with added milling reduces screwing resistance by 20%. This helps to extend the life of batteries and power tools. Special cutting notches integrated on the thread cuts wood fibres structure while screwing in.

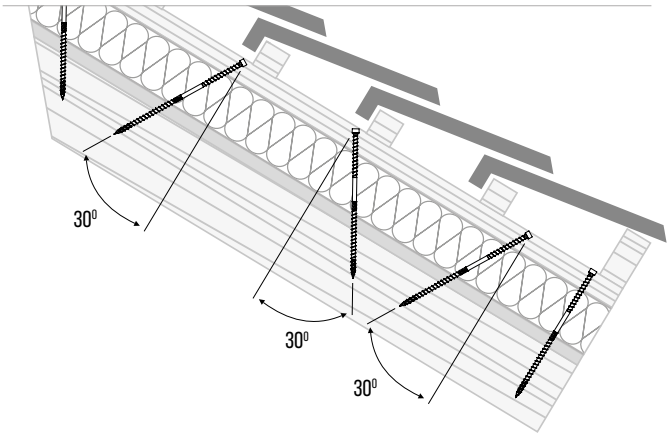
DOUBLE THREAD
Additional recessed second thread improve remarkably a speed of timber penetration and reaction time of first grip into the wood.

HIGH TORQUE
Allows screws to be installed without pre-drilling, even in hardwood substrates.

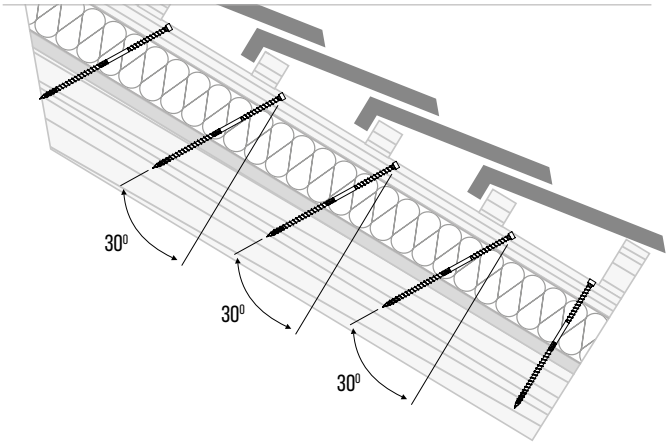
WAX COATING
Wax coating applied during the production process significantly reduces the torque. This makes the installation easier, faster and saves energy, which is important in the case of battery-powered tools.

EXAMPLES OF USE

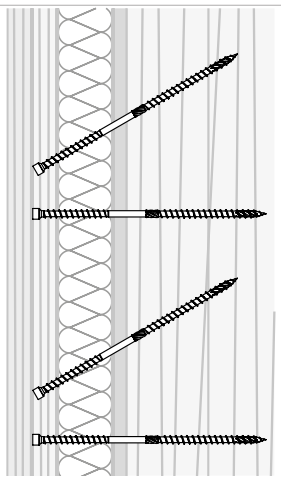
Fixing of soft over-rafter insulation
Insulation material with a low compressive strength (σ (10%) < 50 kPa - EN 826)



Fixing of rigid insulation
Insulation material with a high compressive strength (σ(10%) ≥ 50 kPa - EN 826)



Fixing of insulation on façade
Insulation material with a high compressive strength (σ(10%) ≥ 50 kPa - EN 826)



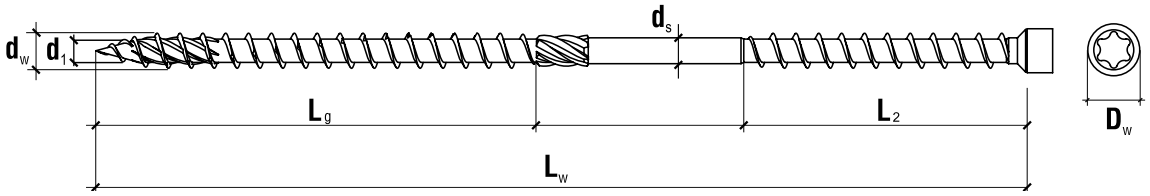
ACCESSORIES SEE P. 142-143

Screws with double thread for over-rafter insulation, TX

WKPC - TECHNICAL DATA

⌀8

ETA-18/0817



Basic informations

	Product code	Dimensions	Thread length	Underhead thread length	Screw head diameter	Type of drive	Quantity
	Galvanized - white	d_w x L_w [mm]	L_g [mm]	L_2 [mm]	D_w [mm]	[-]	[pcs]
WKPC-8							
⌀8	WKPC-080165-B*	8x165	100	60	10	TX 40	50
	WKPC-080195-B*	8x195	100	60	10	TX 40	50
	WKPC-080225-B*	8x225	100	60	10	TX 40	50
	WKPC-080235-B*	8x235	100	60	10	TX 40	50
	WKPC-080255-B*	8x255	100	60	10	TX 40	50
	WKPC-080275-B*	8x275	100	60	10	TX 40	50
	WKPC-080302-B*	8x302	100	60	10	TX 40	50
	WKPC-080335-B*	8x335	100	60	10	TX 40	50
	WKPC-080365-B*	8x365	100	60	10	TX 40	50
	WKPC-080397-B*	8x397	100	60	10	TX 40	50
	WKPC-080435-B*	8x435	100	60	10	TX 40	50
	WKPC-080472-B*	8x472	100	60	10	TX 40	50

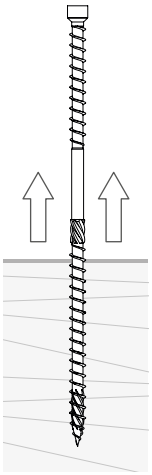
* Product on order

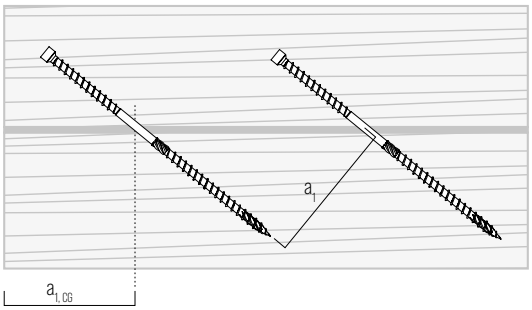
Geometry and mechanical properties

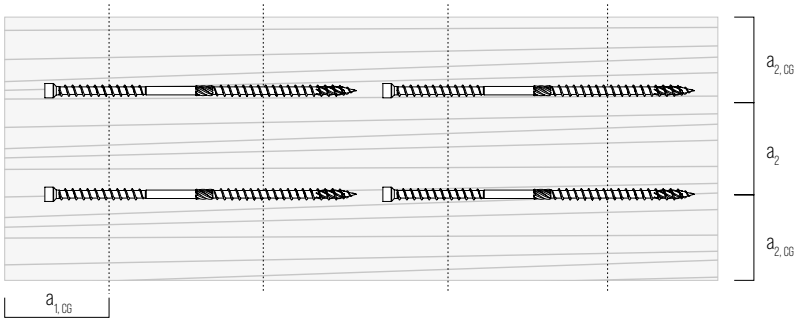
Product	Thread outer diameter	Thread inner diameter	Unthreaded part diameter	Head diameter	Length range
	d_w [mm]	d_1 [mm]	d_s [mm]	D_w [mm]	L_w [mm]
WKPC ⌀8	8	5,4	5,8	10	165-472

Product	Material characteristic yield strength	Characteristic pull-out resistance	Assigned density	Characteristic head pull-through resistance	Assigned density	Characteristic tensile resistance	Characteristic torsional resistance
	$M_{y,k}$ [N*m]	$f_{ax,k,90}$ [N/mm^2]	p_a [kg/m^3]	$f_{head,k}$ [N/mm^2]	p_a [kg/m^3]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
WKPC ⌀8	25,0	12,0	350	9,4	350	25,0	27,0

Minimum distances for screws subject to tensile load - WKPC

	WITH PRE-DRILLED HOLE AND WITHOUT PRE-DRILLED HOLE			
				
	a_1 [mm]	a_2 [mm]	$a_{1,CG}$ [mm]	$a_{2,CG}$ [mm]
WKPC ⌀8	56	40	80	32





Spacer screws, TX

WKSS NEW!

⌀6

Countersunk head spacer screw with TX drive is designed to create and regulate space in joint between two wooden based members

ETA-18/0817

Zn WHITE

Galvanized

⌀6	WKSS **Length range: 60 - 160 mm**

SUBSTRATES

Solid wood

Glued laminated timber
CLT, KVH, BSH/GLT, LVL

SCREW MATERIAL	Carbon steel
ANTI-CORROSION PROTECTION	Galvanized
APPLICATION	· Levelling of battens · Levelling of false ceilings · Levelling of flooring

COUNTERSUNK HEAD WITH TX DRIVE
Allows quick and flush installation of the screw in the wooden member.
TX drive guarantees optimum torque transfer.

CUTTING RIBS
Allow optimal and smooth countersink with aesthetic finish result.

UNDERHEAD THREAD
Special asymmetric geometry of the thread enable levelling of fastening quickly and precisely.

NEW CUTTING EDGE / SERRATED THREAD
New special design of cutting edge with added milling reduces screwing resistance by 20%. This helps to extend the life of batteries and power tools. Special cutting notches integrated on the thread cuts wood fibres structure while screwing in.

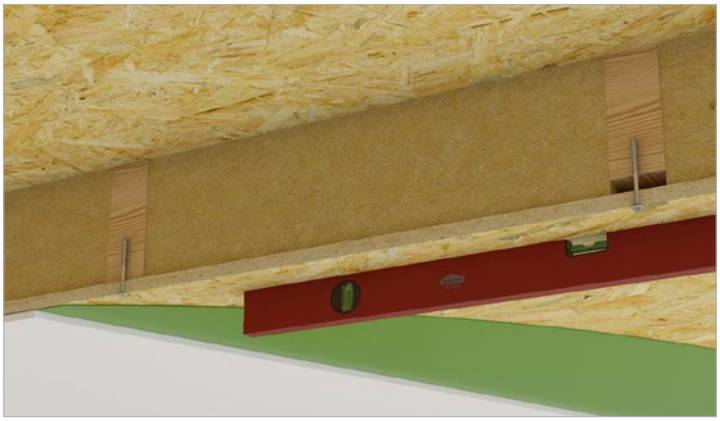
DOUBLE THREAD
Additional recessed second thread improve remarkably a speed of timber penetration and reaction time of first grip into the wood.

HIGH TORQUE
Allows screws to be installed without pre-drilling , even in hardwood substrates.

WAX COATING
Wax coating applied during the production process significantly reduces the torque. This makes the installation easier, faster and saves energy, which is important in the case of battery-powered tools.

EXAMPLES OF USE

Levelling of battens

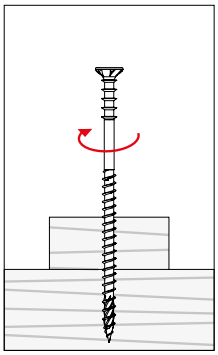


Levelling of ceiling panelling structure

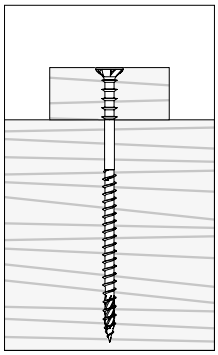
Levelling of facade substructure

INSTALLATION INSTRUCTIONS

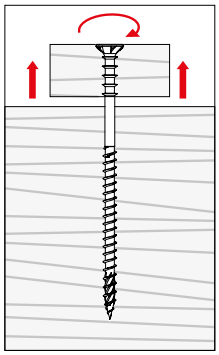
1. Place a screw in a structure.



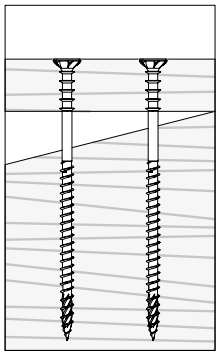
2. Tighten the screw completely.



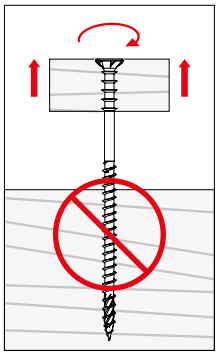
3. Loosen the screw to obtain a gap.



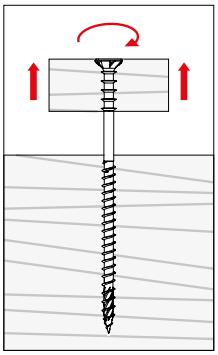
4. Adjust other screws.



EXAMPLE OF INCORRECT INSTALLATION



EXAMPLE OF CORRECT INSTALLATION



ACCESSORIES SEE P. 142-143

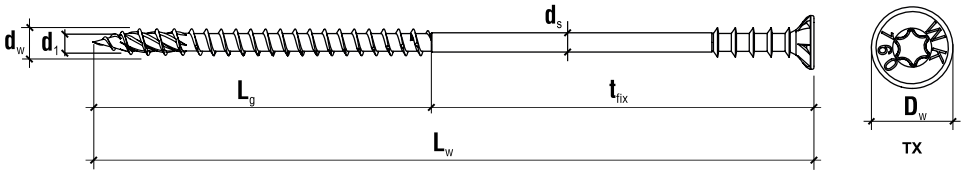
Distance screws, TX

WKSS - TECHNICAL DATA

⌀6

ETA-18/0817

Zn WHITE



Basic informations

	Product code	Dimensions	Thread length	Max. usable length	Screw head diameter	Type of drive	Quantity
	Galvanized - white	d_w x L_w [mm]	L_g [mm]	t_{fix} [mm]	D_w [mm]	[-]	[pcs]
	WKSS						
⌀6	WKSS-60060-B	6x60	35	25	12	TX 30	200
	WKSS-60070-B	6x70	35	35	12	TX 30	200
	WKSS-60080-B	6x80	50	30	12	TX 30	200
	WKSS-60090-B	6x90	50	40	12	TX 30	100
	WKSS-60100-B	6x100	50	50	12	TX 30	100
	WKSS-60110-B	6x110	50	60	12	TX 30	100
	WKSS-60120-B	6x120	50	70	12	TX 30	100
	WKSS-60130-B	6x130	50	80	12	TX 30	100
	WKSS-60145-B	6x145	75	70	12	TX 30	100
	WKSS-60160-B	6x160	75	85	12	TX 30	100

Geometry and mechanical properties

Product	Thread outer diameter	Thread inner diameter	Unthreaded part diameter	Head diameter	Length range
	d_w [mm]	d_1 [mm]	d_s [mm]	D_w [mm]	L_w [mm]
WKSS ⌀6	6	3,9	4,3	10	60-160

Product	Material characteristic yield strength	Characteristic pull-out resistance	Assigned density	Characteristic head pull-through resistance	Assigned density	Characteristic tensile resistance	Characteristic torsional resistance
	$M_{y,k}$ [N*m]	$f_{ax,k,90}$ [N/mm^2]	p_a [kg/m^3]	$f_{head,k}$ [N/mm^2]	p_a [kg/m^3]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
WKSS ⌀6	10,0	12,0	350	9,4	350	13,0	10,0

Round head screw for plates, TX

WKLC NEW!

⌀5

Round head screw with cylindrical underhead and TX drive is designed for fastening metal elements , such as perforated plates and angular brackets to timber substrate.

ETA-18/0817

Zn WHITE

Galvanized	
⌀5	WKLC **Length range: 30 - 70 mm**

SUBSTRATES

Solid wood

Glued laminated timber
CLT, KVH, BSH/GLT, LVL

SCREW MATERIAL	Carbon steel
ANTI-CORROSION PROTECTION	Galvanized
APPLICATION	Joints of metal to timber , ideal for fastening perforated plates and angular brackets to timber substrate

ROUND HEAD WITH CYLINDRICAL UNDERHEAD AND TX DRIVE
allows safe and secure fastening of perforated and angular metal plates.
TX drive guarantees optimum torque transfer.

UNDERHEAD REINFORCEMENT
Wider screw diameter under the head improves shear strength of the screw.

NEW CUTTING EDGE / SERRATED THREAD
New special design of cutting edge with added milling reduces screwing resistance by 20%. This helps to extend the life of batteries and power tools. Special cutting notches integrated on the thread cuts wood fibres structure while screwing in.

DOUBLE THREAD
Additional recessed second thread improve remarkably a speed of timber penetration and reaction time of first grip into the wood.

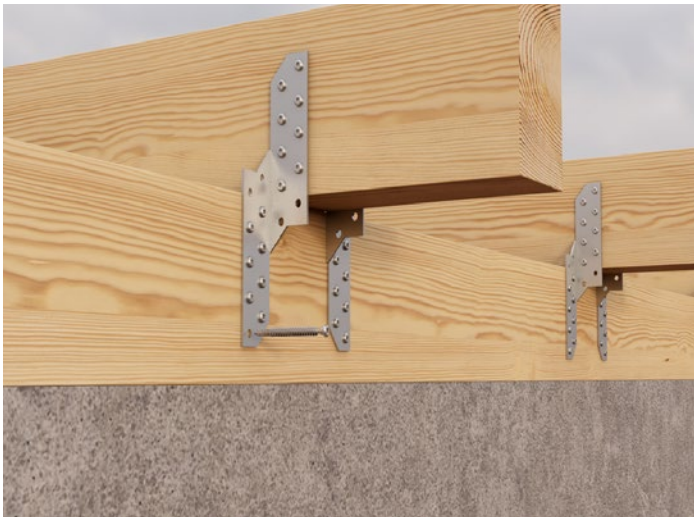
HIGH TORQUE
Allows screws to be installed without pre-drilling, even in hardwood substrates.

WAX COATING
Wax coating applied during the production process significantly reduces the torque. This makes the installation easier, faster and saves energy, which is important in the case of battery-powered tools.

EXAMPLES OF USE

Joint between wall wooden panel and concrete slab using angular bracket

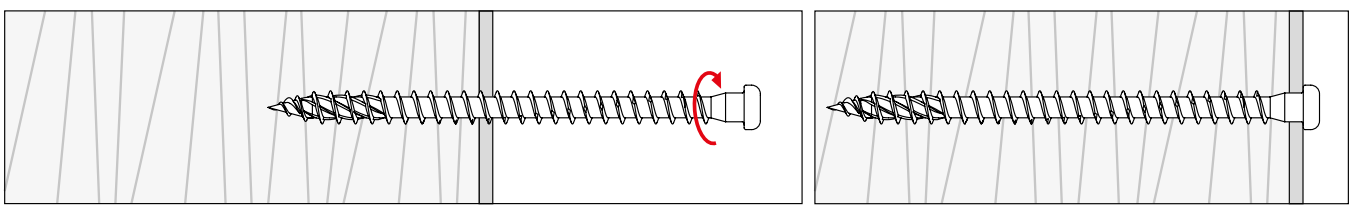
Joint between post and beam using angular bracket



Joint between rafter and beam using LK rafter connecting plate

Joint between wall panel and joist using joist hanger WBW with internal wings

INSTALLATION INSTRUCTIONS



ACCESSORIES SEE P. 142-143

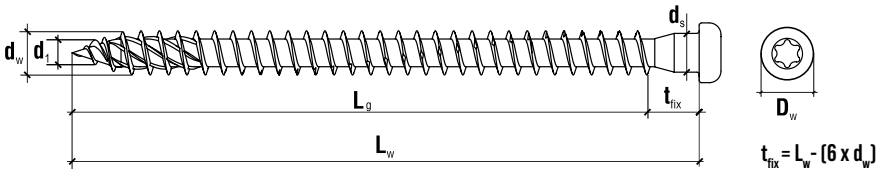
Screws for wood construction connectors, TX

WKLC - TECHNICAL DATA

⌀5

ETA-18/0817

Zn WHITE



$t_{fix} = L_w - (6 \times d_w)$

Basic informations

	Product code	Dimensions	Thread length	Max. usable length	Screw head diameter	Type of drive	Quantity
	Galvanized - white	$d_w \times L_w$ [mm]	L_g [mm]	t_{fix} [mm]	D_w [mm]	[-]	[pcs]
WKLC							
⌀5	WKLC-50030-B	5x30	20	-	7,4	TX 20	250
	WKLC-50035-B	5x35	25	5	7,4	TX 20	250
	WKLC-50040-B	5x40	30	10	7,4	TX 20	250
	WKLC-50050-B	5x50	40	20	7,4	TX 20	250
	WKLC-50060-B	5x60	50	30	7,4	TX 20	250
	WKLC-50070-B	5x70	60	40	7,4	TX 20	250

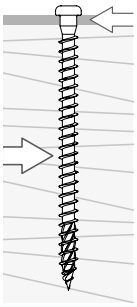
Geometry and mechanical properties

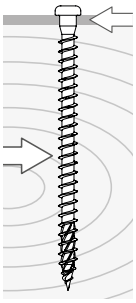
Product	Thread outer diameter	Thread inner diameter	Unthreaded part diameter	Head diameter	Length range
	d_w [mm]	d_1 [mm]	d_s [mm]	D_w [mm]	L_w [mm]
WKLC ⌀5	5	3,3	4,8	7,4	30-70

Product	Material characteristic yield strength	Characteristic pull-out resistance	Assigned density	Characteristic head pull-through resistance	Assigned density	Characteristic tensile resistance	Characteristic torsional resistance
	$M_{y,k}$ [N*m]	$f_{ax,k,90}$ [N/mm^2]	p_a [kg/m^3]	$f_{head,k}$ [N/mm^2]	p_a [kg/m^3]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
WKLC ⌀5	7,0	13,0	350	9,4	350	10,0	7,0

Minimum distances for screws subject to shear load

MINIMUM SCREW SPACING - WITHOUT PRE-DRILLED HOLE

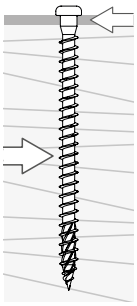


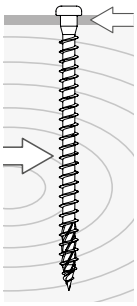


Product	Angle between force and fibre α = 0 °						Angle between force and fibre α = 90 °					
	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]
WKLC ⌀5	42	18	75	50	25	25	18	18	50	50	50	25

Minimum distances for screws subject to shear load

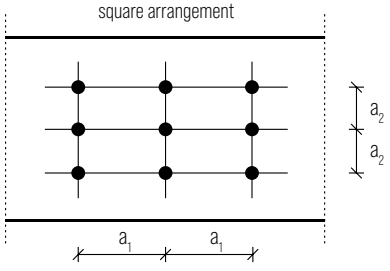
MINIMUM SCREW SPACING - WITH PRE-DRILLED HOLE

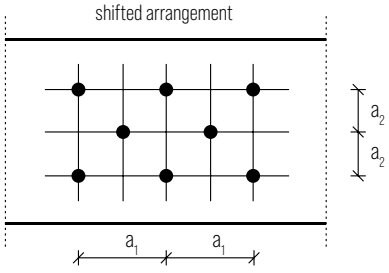


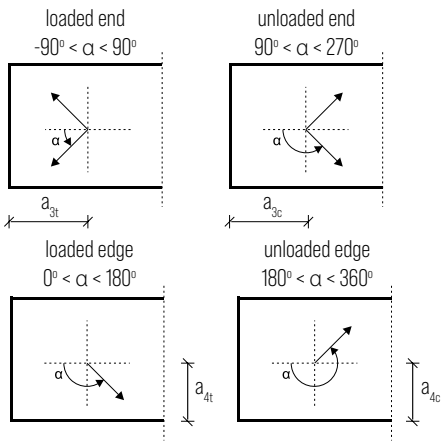


Product	Angle between force and fibre α = 0 °						Angle between force and fibre α = 90 °					
	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]
WKLC ⌀5	18	11	60	35	15	15	14	14	35	35	35	15

1. Minimum distances comply with PN-EN 1995:2014 and ETA-18/0817
2. Bulk density of wooden members complies with the relation $\rho_k \leq 420$ kg/m^3
3. For steel plate-wood joints minimum distances (a_1, a_2) can be multiplied by factor 0,7







Screws for wood construction connectors, TX

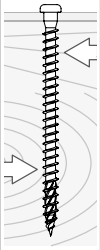
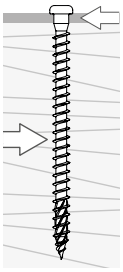
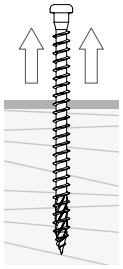
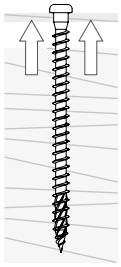
WKLC - TECHNICAL DATA

ø5

ETA-18/0817

Zn WHITE

Characteristic resistances for shear and tensile loads

		SHEAR [kN]								TENSILE [kN]	
		wood - wood	steel - wood							Pull-out	Head pull-through
			t = 1,5 mm	t = 2,0 mm	t = 2,5 mm	t = 3,0 mm	t = 4,0 mm	t = 5,0 mm	t = 6,0 mm		
											
		WKLC									
ø5	WKLC-50030-B	-	1,01	0,99	0,97	1,10	1,36	1,62	1,59	1,30	0,51
	WKLC-50035-B	0,44	1,19	1,17	1,15	1,29	1,55	1,82	1,80	1,63	0,51
	WKLC-50040-B	0,89	1,36	1,35	1,33	1,47	1,76	2,05	2,02	1,95	0,51
	WKLC-50050-B	1,07	1,72	1,70	1,68	1,84	2,15	2,46	2,46	2,60	0,51
	WKLC-50060-B	1,23	2,07	2,05	2,04	2,15	2,39	2,62	2,62	3,25	0,51
	WKLC-50070-B	1,29	2,26	2,26	2,26	2,36	2,57	2,79	2,79	3,90	0,51

1. Characteristic resistances conform to PN-EN 1995:2014 in accordance with European Technical Assessment ETA-18/0817
2. In order to obtain a design value, use the following formula:

$$R_d = \frac{R_k * k_{mod}}{\gamma_m}$$

Factors γ_m and k_{mod} should be assumed in accordance with PN-EN 1995:2014
3. For calculations characteristic resistances and geometry of screws were assumed based on European Technical Assessment ETA-18/0817
4. Characteristic resistances given in the table were calculated for bulk density of wooden members of p_k = 350 kg/m^3
5. Characteristic resistances given in the table were calculated for a single screw. To check resistances of groups of screws, please follow rules defined in PN-EN 1995:2014
6. Characteristic shear resistances were calculated for connections without pre-drilled holes
7. Characteristic resistances for head pull-through were calculated for wooden element
8. Calculations apply to resistances for screws only. Wooden members and steel plates should be dimensioned separately
9. For screws with a diameter d ≤ 6 mm characteristic shear resistances are independent of wood fibre inclination
10. Characteristic shear resistances for steel-wood joint were calculated for a thin steel plate with a thickness of t = 0,5d
11. Characteristic shear resistances for steel-wood joint were calculated for an intermediate steel plate with a thickness of 0,5d < t < d
12. Characteristic shear resistance for steel-wood joint were calculated for a thick steel plate with a thickness of t ≥ d

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Hex head wood screw

K

⌀6, ⌀8, ⌀10, ⌀12

Screw for fastening of wooden, steel and PVC elements to timber

CE
PN-EN 14592:2008
+A1:2012

Zn WHITE

SUBSTRATES

Solid wood

Glued laminated timber
CLT, KVH, BSH/GLT, LVL

SCREW MATERIAL	Carbon steel
ANTI-CORROSION PROTECTION	Galvanized
APPLICATION	Screw for fastening of wooden, steel and PVC elements to timber

HEX HEAD
Hex head improves pull-through resistance of joint and allows steel-wood applications

PARTIAL THREAD
Partial thread prevents splitting of elements being installed and guarantees their tight fastening.

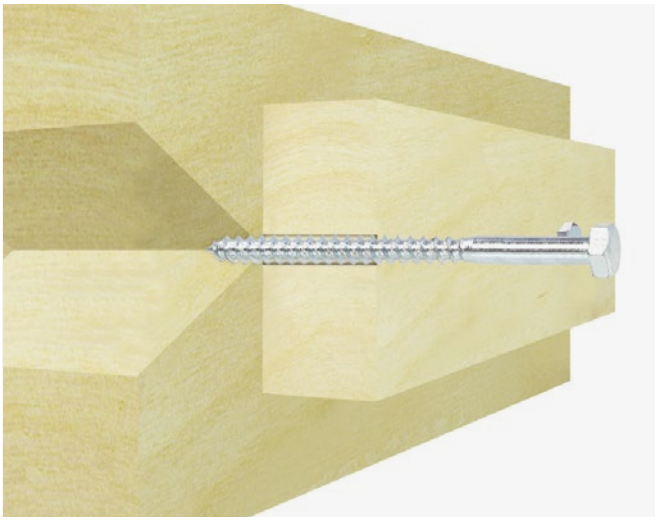
	Galvanized
⌀6	K **Length range: 60 - 140 mm**
⌀8	K **Length range: 60 - 200 mm**
⌀10	K **Length range: 80 - 200 mm**
⌀12	K **Length range: 120 - 260 mm**

EXAMPLES OF USE

Joint between post and beam using angle bracket KL

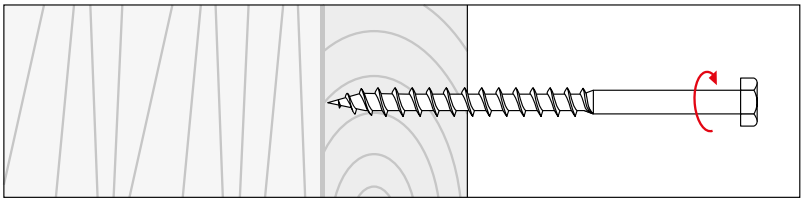
Joint between beam and joist using joist hanger WB

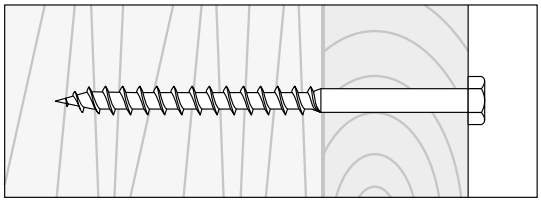
Fastening of steel profile to wooden based construction of wall



Joint between two wooden members

INSTALLATION INSTRUCTIONS





ACCESSORIES SEE P. 142-143

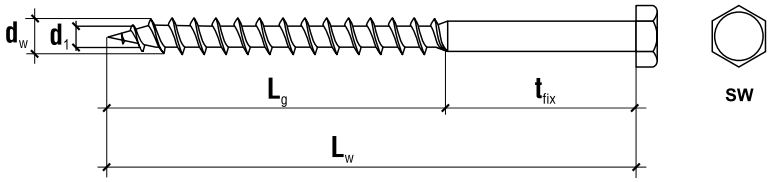
Hex head wood screw

K - TECHNICAL DATA

⌀6, ⌀8, ⌀10, ⌀12

CE
PN-EN 14592:2008
+A1:2012

Zn WHITE



Basic informations

	Product code	Dimensions	Thread length	Max. usable length	Head type	Quantity
	Galvanized - white	d_w x L_w [mm]	L_g [mm]	t_{fix} [mm]	[-]	[kg]
			K-6			
⌀6	K-06060(X5)	6x60	36	24	SW 10	5
	K-06070(X5)	6x70	42	28	SW 10	5
	K-06080(X5)	6x80	48	32	SW 10	5
	K-06090(X5)	6x90	54	36	SW 10	5
	K-06100(X5)	6x100	60	40	SW 10	5
	K-06120(X5)	6x120	72	48	SW 10	5
	K-06140(X5)	6x140	84	56	SW 10	5
			K-8			
⌀8	K-08060(X5)	8x60	36	24	SW 13	5
	K-08070(X5)	8x70	42	28	SW 13	5
	K-08080(X5)	8x80	48	32	SW 13	5
	K-08090(X5)	8x90	54	36	SW 13	5
	K-08100(X5)	8x100	60	40	SW 13	5
	K-08120(X5)	8x120	72	48	SW 13	5
	K-08140(X5)	8x140	84	56	SW 13	5
	K-08160(X5)	8x160	96	64	SW 13	5
	K-08180(X5)	8x180	108	72	SW 13	5
	K-08200(X5)	8x200	120	80	SW 13	5
			K-10			
⌀10	K-10080(X5)	10x80	48	32	SW 17	5
	K-10100(X5)	10x100	60	40	SW 17	5
	K-10120(X5)	10x120	72	48	SW 17	5
	K-10140(X5)	10x140	84	56	SW 17	5
	K-10160(X5)	10x160	96	64	SW 17	5
	K-10180(X5)	10x180	108	72	SW 17	5
	K-10200(X5)	10x200	120	80	SW 17	5
			K-12			
⌀12	K-12120(X5)	12x120	72	48	SW 19	5
	K-12140(X5)	12x140	84	56	SW 19	5
	K-12160(X5)	12x160	96	64	SW 19	5
	K-12180(X5)	12x180	108	72	SW 19	5
	K-12200(X5)	12x200	120	80	SW 19	5
	K-12220(X5)	12x220	132	88	SW 19	5
	K-12240(X5)	12x240	144	96	SW 19	5
	K-12260(X5)	12x260	156	104	SW 19	5

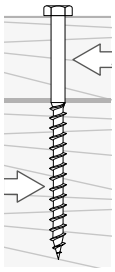
Geometry and mechanical properties

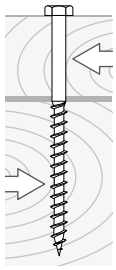
Product	Thread outer diameter	Thread inner diameter	Head diameter	Length range
	d_w [mm]	d_1 [mm]	D_w [mm]	L_w [mm]
K ø6	6	4,2	10	60-140
K ø8	8	5,6	13	60-200
K ø10	10	7,2	17	80-200
K ø12	12	9,2	19	120-260

Product	Material characteristic yield strength	Characteristic pull-out resistance	Assigned density	Characteristic head pull-through resistance	Assigned density	Characteristic tensile resistance	Characteristic torsional resistance
	$M_{y,k}$ [N*m]	$f_{ax,k,90}$ [N/mm^2]	p_a [kg/m^3]	$f_{head,k}$ [N/mm^2]	p_a [kg/m^3]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
K ø6	11,852	21,87	370	22,73	350	9,19	7,69
K ø8	25,040	21,01		20,87		13,49	11,37
K ø10	44,729	18,31		21,83		20,73	16,37
K ø12	71,856	15,78		22,91		25,06	19,68

Minimum distances for screws subject to shear load

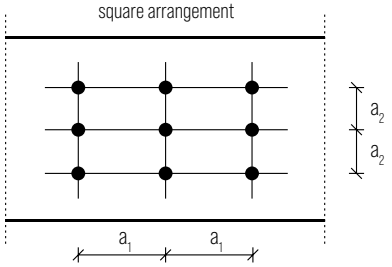
MINIMUM SCREW SPACING - WITH PRE-DRILLED HOLE

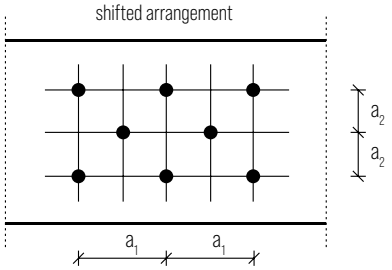


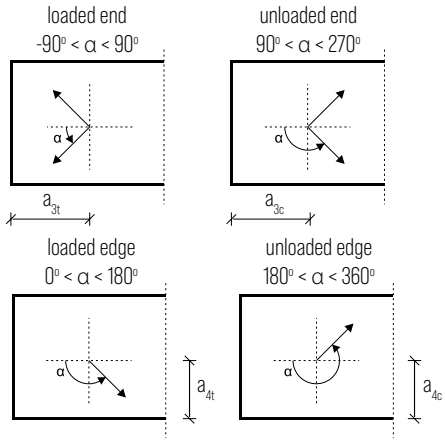


Product	Angle between force and fibre α = 0 °						Angle between force and fibre α = 90 °					
	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]
K ø6	30	24	80	24	18	18	24	24	80	42	24	18
K ø8	40	32	80	32	24	24	32	32	80	56	32	24
K ø10	50	40	80	40	30	30	40	40	80	70	40	30
K ø12	60	48	84	48	36	36	48	48	84	84	48	36

1. Minimum distances comply with PN-EN 1995:2014
2. Bulk density of wooden members complies with the relation $p_k \leq 420$ kg/m^3
3. For OSB board-wood joints minimum distances (a_1, a_2) can be multiplied by factor 0,85
4. For steel plate-wood joints minimum distances (a_1, a_2) can be multiplied by factor 0,7







Hex head wood screw

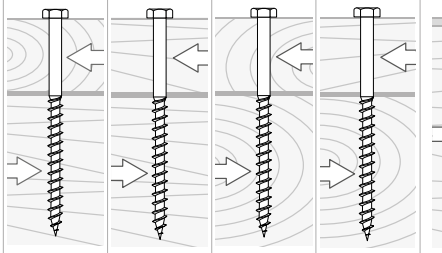
K - TECHNICAL DATA

⌀6, ⌀8, ⌀10, ⌀12

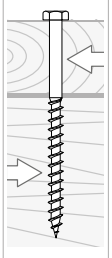
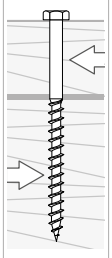
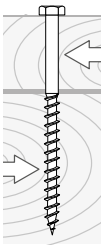
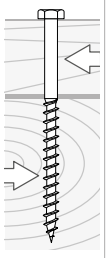
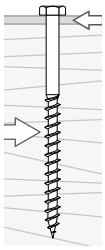
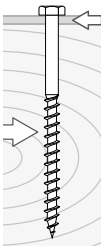
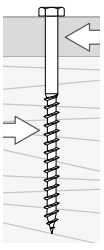
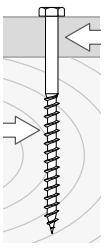
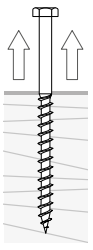
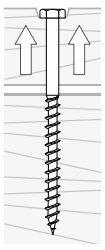
CE
PN-EN 14592:2008
+A1:2012

Zn WHITE

Characteristic resistances for shear and tensile loads

		SHEAR [kN]										TENSILE [kN]	
		wood - wood				steel - wood thin board (t ≤ 0,5d)				steel - wood thick board (t ≥ d)		Pull-out	Head pull--through
		α_1=90 α_2=0	α_1=0 α_2=0	α_1=90 α_2=90	α_1=0 α_2=90	α_2=0		α_2=90		α_2=0	α_2=90		
													
K 6													
⌀6	K-06060(X5)	2,07	2,40	1,97	2,22	t ≤ 3 mm	3,38	t ≤ 3 mm	2,56	t ≥ 6 mm	4,32	3,78	4,52	2,27
	K-06070(X5)	2,18	2,57	2,08	2,43		3,57		3,01		4,50	3,97	5,27	2,27
	K-06080(X5)	2,29	2,75	2,19	2,60		3,76		3,38		4,69	4,16	6,02	2,27
	K-06090(X5)	2,42	2,82	2,31	2,61		3,95		3,57		4,88	4,35	6,78	2,27
	K-06100(X5)	2,55	2,82	2,44	2,61		4,14		3,76		5,07	4,54	7,53	2,27
	K-06120(X5)	2,61	2,82	2,45	2,61		4,51		4,14		5,44	4,91	9,04	2,27
	K-06140(X5)	2,61	2,82	2,45	2,61		4,89		4,51		5,82	5,29	10,54	2,27
K 8														
⌀8	K-08060(X5)	3,17	3,60	2,73	3,01	t ≤ 4 mm	4,73	t ≤ 4 mm	3,22	t ≥ 8 mm	6,66	5,20	5,79	3,53
	K-08070(X5)	3,27	3,80	3,04	3,36		5,43		3,79		6,98	5,94	6,75	3,53
	K-08080(X5)	3,40	4,01	3,23	3,72		5,67		4,37		7,22	6,29	7,72	3,53
	K-08090(X5)	3,53	4,23	3,36	3,97		5,91		4,94		7,46	6,53	8,68	3,53
	K-08100(X5)	3,68	4,46	3,50	4,19		6,15		5,50		7,70	6,77	9,65	3,53
	K-08120(X5)	4,01	4,62	3,82	4,25		6,63		5,98		8,18	7,26	11,58	3,53
	K-08140(X5)	4,25	4,62	3,97	4,25		7,12		6,46		8,67	7,74	13,50	3,53
	K-08160(X5)	4,25	4,62	3,97	4,25		7,60		6,94		9,15	8,22	15,43	3,53
	K-08180(X5)	4,25	4,62	3,97	4,25		8,08		7,43		9,63	8,70	17,36	3,53
	K-08200(X5)	4,25	4,62	3,97	4,25		8,56		7,91		10,11	9,19	19,29	3,53
K 10														
⌀10	K-10080(X5)	5,02	5,79	4,53	5,00	t ≤ 5 mm	7,63	t ≤ 5 mm	5,17	t ≥ 10 mm	9,92	7,98	8,41	6,31
	K-10100(X5)	5,30	6,29	5,05	5,86		8,16		6,54		10,44	9,01	10,51	6,31
	K-10120(X5)	5,65	6,85	5,38	6,43		8,68		7,67		10,97	9,54	12,61	6,31
	K-10140(X5)	6,03	7,11	5,74	6,52		9,21		8,19		11,50	10,06	14,71	6,31
	K-10160(X5)	6,44	7,11	6,09	6,52		9,73		8,72		12,02	10,59	16,81	6,31
	K-10180(X5)	6,52	7,11	6,09	6,52		10,26		9,24		12,55	11,11	18,91	6,31
	K-10200(X5)	6,52	7,11	6,09	6,52		10,78		9,77		13,07	11,64	21,02	6,31

Characteristic resistances for shear and tensile loads

		SHEAR [kN]										TENSILE [kN]	
		wood - wood				steel - wood thin board (t ≤ 0,5d)		steel - wood thick board (t ≥ d)				Pull-out	Head pull--through
		α_1=90 α_2=0	α_1=0 α_2=0	α_1=90 α_2=90	α_1=0 α_2=90	α_2=0		α_2=90		α_2=0		α_2=90			
															
K 12													
⌀12	**K-12120(X5)**	7,18	8,63	6,82	8,02	t ≤ 6 mm	10,85	t ≤ 6 mm	9,03	t ≥ 12 mm	13,99	t ≥ 12 mm	11,94	13,04	8,27
	K-12140(X5)	7,58	9,29	7,20	8,68		11,39		9,94		14,54		12,48	15,21	8,27
	K-12160(X5)	8,02	9,66	7,61	8,82		11,94		10,48		15,08		13,02	17,39	8,27
	K-12180(X5)	8,48	9,66	8,06	8,82		12,48		11,03		15,62		13,57	19,56	8,27
	K-12200(X5)	8,82	9,66	8,20	8,82		13,02		11,57		16,17		14,11	21,74	8,27
	K-12220(X5)	8,82	9,66	8,20	8,82		13,57		12,11		16,71		14,65	23,91	8,27
	K-12240(X5)	8,82	9,66	8,20	8,82		14,11		12,66		17,25		15,20	26,08	8,27
	K-12260(X5)	8,82	9,66	8,20	8,82		14,65		13,20		17,80		15,74	28,26	8,27

1. Characteristic resistances conform to PN-EN 1995:2014
2. In order to obtain a design value, use the following formula:

$$R_d = \frac{R_k * k_{mod}}{\gamma_m}$$

Factors γ_m and k_{mod} should be assumed in accordance with PN-EN 1995:2014

3. For calculations characteristic resistances and geometry of screws were assumed based on test report no. LOK04-06040/14/R130SK
4. Characteristic resistances given in the table were calculated for bulk density of wooden members of ρ_k = 350 kg/m^3
5. For calculations it was assumed that threaded part is fully recessed in a wooden member
6. For calculations it is assumed that thread length is b=0,6 L_w
7. Characteristic resistances given in the table were calculated for a single screw. To check resistances of groups of screws, please follow rules defined in PN-EN 1995:2014
8. Characteristic shear resistances were calculated for connections with pre-drilled holes
9. Calculations apply to resistances for screws only. Wooden members and steel plates should be dimensioned separately
10. Characteristic shear resistances were calculated including wood fibre inclination in relation to shearing force
11. Characteristic shear resistances for steel-wood joint were calculated for a thin steel plate with a thickness of t = 0,5d
12. Characteristic shear resistances for steel-wood joint were calculated for a thick steel plate with a thickness of t = d

Hardened countersunk head wood screw with partial/full thread

KDH/KMH

⌀3, ⌀3,5, ⌀4, ⌀4,5, ⌀5, ⌀6

Hardened wood screw for making joints with wood and wood-based elements. Could be also applied to install furniture fittings e.g. hinges, drawer slides, hangers etc. to wooden elements, chipboard , plywood, OSB board.

CE
PN-EN 14592:2008 +A1:2012

Zn YELLOW

SUBSTRATES

Solid wood

Glued laminated timber
CLT, KVH, BSH/GLT, LVL

Wood-based panels
OSB, MDF, plywood, chipboard

SCREW MATERIAL	Carbon steel
ANTI-CORROSION PROTECTION	Galvanized
APPLICATION	Wood-based panels, battens, wooden finishing elements, furniture, furniture accessories, garden furniture assembly

	Galvanized - yellow
⌀3	KDH/KMH **Length range: 10 - 40 mm**
⌀3,5	KDH/KMH **Length range: 13 - 60 mm**
⌀4	KDH/KMH **Length range: 13 - 70 mm**
⌀4,5	KDH/KMH **Length range: 16 - 80 mm**
⌀5	KDH/KMH **Length range: 20 - 120 mm**
⌀6	KDH/KMH **Length range: 40 - 200 mm**

COUNTERSUNK HEAD WITH PZ DRIVE
Allows ideally flush installation of the screw in the wooden member.

GEOMETRY OF THREAD
Specially designed geometry of thread speed up screw installation with securing long-lasting joint.

FULL THREAD
Full thread provides maximum coupling efficiency

EXAMPLES OF USE

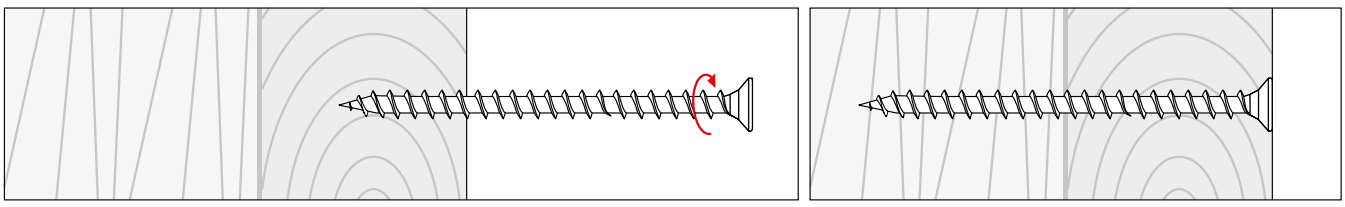
Installation of hinges

Assembly of transport boxes

Garden furniture assembly

Installation of furniture accessories

INSTALLATION INSTRUCTIONS



ACCESSORIES SEE P. 142-143

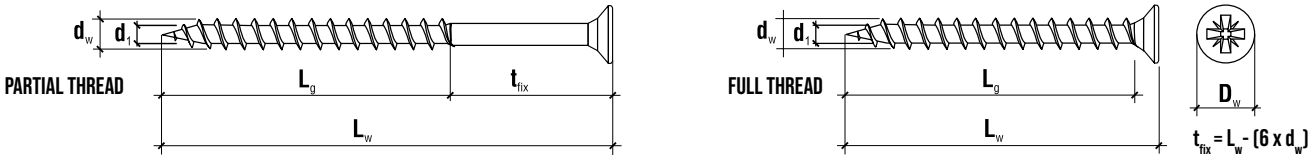
Hardened countersunk head wood screw with partial/full thread

KDH/KMH - TECHNICAL DATA

ø3, ø3,5, ø4, ø4,5, ø5, ø6

CE
PN-EN 14592:2008
+A1:2012

Zn YELLOW



Basic informations

	Product code				Dimensions	Thread length	Max. usable length	Screw head diameter	Type of drive	Type of thread
	Galvanized - yellow	[kg]	Galvanized - yellow	[pcs]	$d_w \times L_w$ [mm]	L_g [mm]	t_{fix} [mm]	D_w [mm]	[-]	[-]
KDH-3 / KMH-3										
ø3	**KDH-30012(X5)**	5	**KMH-30012**	2000	3x12	9	-	6	PZ 1	Full
	KDH-30013(X5)	5	**KMH-30013**	2000	3x13	10	-	6	PZ 1	Full
	KDH-30016(X5)	5	**KMH-30016**	2000	3x16	13	-	6	PZ 1	Full
	KDH-30020(X5)	5	**KMH-30020**	2000	3x20	17	2	6	PZ 1	Full
	KDH-30025(X5)	5	**KMH-30025**	1500	3x25	22	7	6	PZ 1	Full
	KDH-30030(X5)	5	**KMH-30030**	1000	3x30	27	12	6	PZ 1	Full
	KDH-30035(X5)	5	**KMH-30035**	1000	3x35	32	17	6	PZ 1	Full
	KDH-30040(X5)	5	**KMH-30040**	500	3x40	37	22	6	PZ 1	Full
KDH-3,5 / KMH-3,5										
ø3,5	**KDH-35013(X5)**	5	**KMH-35013**	2000	3,5x13	9	-	7	PZ 2	Full
	KDH-35016(X5)	5	**KMH-35016**	2000	3,5x16	12	-	7	PZ 2	Full
	KDH-35020(X5)	5	**KMH-35020**	1500	3,5x20	16	-	7	PZ 2	Full
	KDH-35025(X5)	5	**KMH-35025**	1000	3,5x25	21	4	7	PZ 2	Full
	KDH-35030(X5)	5	**KMH-35030**	500	3,5x30	26	9	7	PZ 2	Full
	KDH-35035(X5)	5	**KMH-35035**	500	3,5x35	31	14	7	PZ 2	Full
	KDH-35040(X5)	5	**KMH-35040**	500	3,5x40	36	19	7	PZ 2	Full
	KDH-35045(X5)	5	**KMH-35045**	500	3,5x45	41	24	7	PZ 2	Full
	KDH-35050(X5)	5	**KMH-35050**	400	3,5x50	46	29	7	PZ 2	Full
	KDH-35060(X5)	5	**KMH-35060**	400	3,5x60	56	39	7	PZ 2	Full
KDH-4 / KMH-4										
ø4	**KDH-40013(X5)**	5	**KMH-40013**	1000	4x13	8	-	8	PZ 2	Full
	KDH-40016(X5)	5	**KMH-40016**	1000	4x16	11	-	8	PZ 2	Full
	KDH-40020(X5)	5	**KMH-40020**	1000	4x20	15	-	8	PZ 2	Full
	KDH-40025(X5)	5	**KMH-40025**	1000	4x25	20	1	8	PZ 2	Full
	KDH-40030(X5)	5	**KMH-40030**	500	4x30	25	6	8	PZ 2	Full
	KDH-40035(X5)	5	**KMH-40035**	500	4x35	30	11	8	PZ 2	Full
	KDH-40040(X5)	5	**KMH-40040**	500	4x40	35	16	8	PZ 2	Full
	KDH-40045(X5)	5	**KMH-40045**	300	4x45	40	21	8	PZ 2	Full
	KDH-40050(X5)	5	**KMH-40050**	300	4x50	45	26	8	PZ 2	Full
	KDH-4005030(X5)	5	**KMH-4005030**	300	4x50	30	20	8	PZ 2	Partial
	KDH-40055(X5)	5	**KMH-40055**	250	4x55	50	31	8	PZ 2	Full
	KDH-40060(X5)	5	**KMH-40060**	250	4x60	55	36	8	PZ 2	Full
	KDH-4006035(X5)	5	**KMH-4006035**	250	4x60	35	25	8	PZ 2	Partial
	KDH-40070(X5)	5	**KMH-40070**	250	4X70	55	15	8	PZ 2	Partial

* Product on order

Basic informations

	Product code				Dimensions	Thread length	Max. usable length	Screw head diameter	Type of drive	Type of thread
	Galvanized - yellow	[kg]	Galvanized - yellow	[pcs]	d_w x L_w [mm]	L_g [mm]	t_{fix} [mm]	D_w [mm]	[-]	[-]
KDH-4,5 / KMH-4,5										
ø4,5	**KDH-45016(X5)**	5	**KMH-45016**	1000	4,5x16	11	-	9	PZ 2	Full
	KDH-45020(X5)	5	**KMH-45020**	1000	4,5x20	15	-	9	PZ 2	Full
	KDH-45025(X5)	5	**KMH-45025**	500	4,5x25	20	-	9	PZ 2	Full
	KDH-45030(X5)	5	**KMH-45030**	500	4,5x30	25	3	9	PZ 2	Full
	KDH-45035(X5)	5	**KMH-45035**	500	4,5x35	30	8	9	PZ 2	Full
	KDH-45040(X5)	5	**KMH-45040**	300	4,5x40	35	13	9	PZ 2	Full
	KDH-45045(X5)	5	**KMH-45045**	300	4,5x45	40	18	9	PZ 2	Full
	KDH-45050(X5)	5	**KMH-45050**	250	4,5x50	45	23	9	PZ 2	Full
	KDH-45060(X5)	5	**KMH-45060**	250	4,5x60	55	33	9	PZ 2	Full
	KDH-45070(X5)	5	**KMH-45070**	250	4,5x70	55	15	9	PZ 2	Partial
	KDH-45080(X5)	5	**KMH-45080**	250	4,5x80	55	25	9	PZ 2	Partial
KDH-5 / KMH-5										
ø5	**KDH-50020(X5)**	5	**KMH-50020**	500	5x20	14	-	10	PZ 2	Full
	KDH-50025(X5)	5	**KMH-50025**	500	5x25	19	-	10	PZ 2	Full
	KDH-50030(X5)	5	**KMH-50030**	500	5x30	24	-	10	PZ 2	Full
	KDH-50035(X5)	5	**KMH-50035**	500	5x35	29	5	10	PZ 2	Full
	KDH-50040(X5)	5	**KMH-50040**	500	5x40	34	10	10	PZ 2	Full
	KDH-50045(X5)	5	**KMH-50045**	300	5x45	39	15	10	PZ 2	Full
	KDH-50050(X5)	5	**KMH-50050**	300	5x50	44	20	10	PZ 2	Full
	KDH-5005030(X5)	5	**KMH-5005030**	300	5x50	30	20	10	PZ 2	Partial
	KDH-50060(X5)	5	**KMH-50060**	200	5x60	54	30	10	PZ 2	Full
	KDH-5006035(X5)	5	**KMH-5006035**	200	5x60	35	25	10	PZ 2	Partial
	KDH-50070(X5)	5	**KMH-50070**	200	5x70	55	15	10	PZ 2	Partial
	KDH-50080(X5)	5	**KMH-50080**	200	5x80	55	25	10	PZ 2	Partial
	KDH-50090(X5)	5	**KMH-50090**	200	5x90	55	35	10	PZ 2	Partial
	KDH-50100(X5)	5	**KMH-50100**	200	5x100	55	45	10	PZ 2	Partial
	KDH-50120(X5)	5	**KMH-50120**	100	5x120	75	45	10	PZ 2	Partial
KDH-6 / KMH-6										
ø6	**KDH-60040(X5)**	5	**KMH-60040**	200	6x40	32	4	12	PZ 3	Full
	KDH-60050(X5)	5	**KMH-60050**	200	6x50	42	14	12	PZ 3	Full
	KDH-60060(X5)	5	**KMH-60060**	200	6x60	52	24	12	PZ 3	Full
	KDH-60070(X5)	5	**KMH-60070**	200	6x70	55	15	12	PZ 3	Partial
	KDH-60080(X5)	5	**KMH-60080**	200	6x80	55	25	12	PZ 3	Partial
	KDH-60090(X5)	5	**KMH-60090**	100	6x90	55	35	12	PZ 3	Partial
	KDH-60100(X5)	5	**KMH-60100**	100	6x100	55	45	12	PZ 3	Partial
	KDH-60110(X5)	5	**KMH-60110**	100	6x110	75	35	12	PZ 3	Partial
	KDH-60120(X5)	5	**KMH-60120**	100	6x120	75	45	12	PZ 3	Partial
	KDH-60140(X5)	5	**KMH-60140**	100	6x140	75	65	12	PZ 3	Partial
	KDH-60160(X5)	5	**KMH-60160**	100	6x160	75	85	12	PZ 3	Partial
	KDH-60180(X5)	5	**KMH-60180**	100	6x180	75	105	12	PZ 3	Partial
	KDH-60200(X5)	5	**KMH-60200**	100	6x200	75	125	12	PZ 3	Partial

* Product on order

Hardened countersunk head wood screw with partial/full thread

KDH/KMH - TECHNICAL DATA

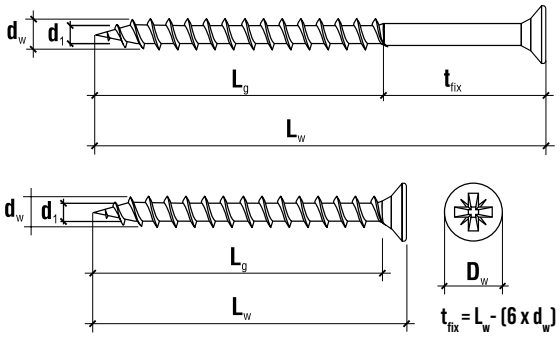
⌀3, ⌀3,5, ⌀4, ⌀4,5, ⌀5, ⌀6

CE
PN-EN 14592:2008
+A1:2012

Zn YELLOW

Geometry and mechanical properties

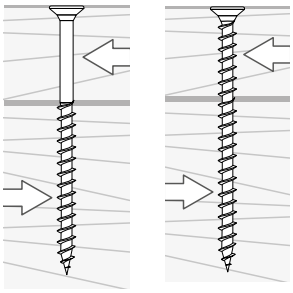
Product	Thread outer diameter	Thread inner diameter	Head diameter	Length range
	d_w [mm]	d_1 [mm]	D_w [mm]	L_w [mm]
KDH/KMH ⌀3	3	2	6	10-40
KDH/KMH ⌀3,5	3,5	2,25	7	13-60
KDH/KMH ⌀4	4	2,65	8	13-70
KDH/KMH ⌀4,5	4,5	2,8	9	16-80
KDH/KMH ⌀5	5	3,1	10	20-120
KDH/KMH ⌀6	6	3,8	12	40-200

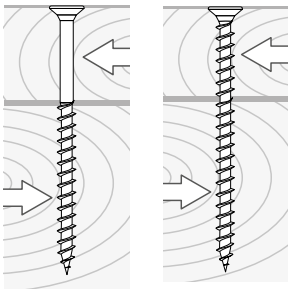


Product	Material characteristic yield strength	Characteristic pull-out resistance	Assigned density	Characteristic head pull-through resistance	Assigned density	Characteristic tensile resistance	Characteristic torsional resistance
	$M_{y,k}$ [N*m]	$f_{ax,k,90}$ [N/mm^2]	p_a [kg/m^3]	$f_{head,k}$ [N/mm^2]	p_a [kg/m^3]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
KDH/KMH ⌀3	2,454	19,80	370	25,66	350	3,95	1,76
KDH/KMH ⌀3,5	3,641	22,69		26,51		5,04	2,32
KDH/KMH ⌀4	5,162	23,59		24,74		5,57	2,80
KDH/KMH ⌀4,5	7,023	24,09		26,09		7,03	4,65
KDH/KMH ⌀5	9,247	22,42		22,93		8,25	5,59
KDH/KMH ⌀6	14,815	12,19		20,46		9,58	9,29

Minimum distances for screws subject to shear load

MINIMUM SCREW SPACING - **WITHOUT PRE-DRILLED HOLE**

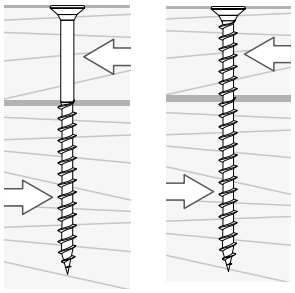


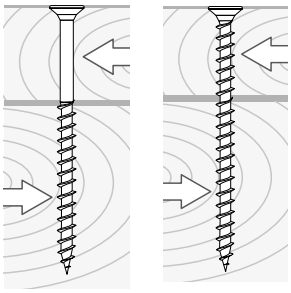


Product	Angle between force and fibre α = 0°						Angle between force and fibre α = 90°					
	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]
KDH/KMH ⌀3	30	15	45	30	15	15	15	15	30	30	21	15
KDH/KMH ⌀3,5	35	18	53	35	18	18	18	18	35	35	25	18
KDH/KMH ⌀4	40	20	60	40	20	20	20	20	40	40	28	20
KDH/KMH ⌀4,5	45	23	68	45	23	23	23	23	45	45	32	23
KDH/KMH ⌀5	60	25	75	50	25	25	25	25	50	50	50	25
KDH/KMH ⌀6	72	30	90	60	30	30	30	30	60	60	60	30

Minimum distances for screws subject to shear load

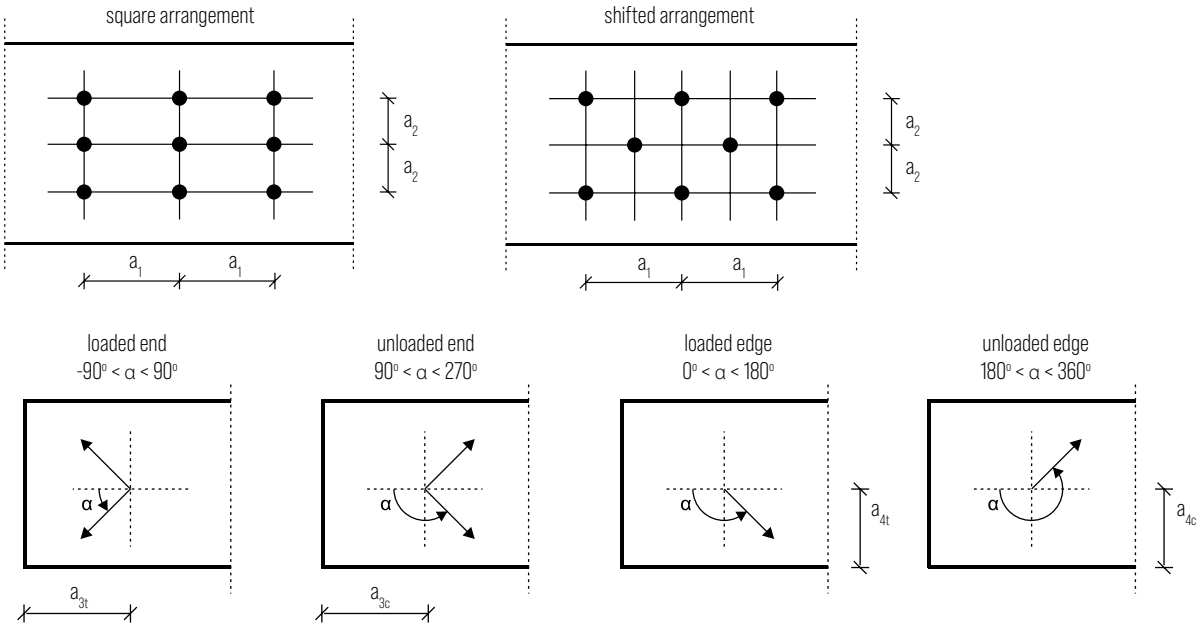
MINIMUM SCREW SPACING - **WITH PRE-DRILLED HOLE**





Product	Angle between force and fibre α = 0 °						Angle between force and fibre α = 90 °					
	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]	a_1 [mm]	a_2 [mm]	$a_{3,t}$ [mm]	$a_{3,c}$ [mm]	$a_{4,t}$ [mm]	$a_{4,c}$ [mm]
KDH/KMH ⌀3	15	9	36	21	9	9	12	12	21	21	15	9
KDH/KMH ⌀3,5	18	11	42	25	11	11	14	14	25	25	18	11
KDH/KMH ⌀4	20	12	48	28	12	12	16	16	28	28	20	12
KDH/KMH ⌀4,5	23	14	54	32	14	14	18	18	32	32	23	14
KDH/KMH ⌀5	25	15	60	35	15	15	20	20	35	35	35	15
KDH/KMH ⌀6	30	18	72	42	18	18	24	24	42	42	42	18

1. Minimum distances comply with PN-EN 1995:2014
2. Bulk density of wooden members complies with the relation $p_k \leq 420$ kg/m^3
3. For OSB board-wood joints minimum distances (a_1, a_2) can be multiplied by factor 0,85
4. For steel plate-wood joints minimum distances (a_1, a_2) can be multiplied by factor 0,7



Hardened countersunk head wood screw with partial/full thread

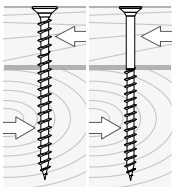
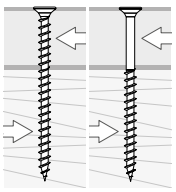
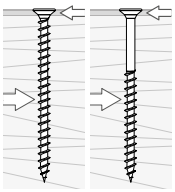
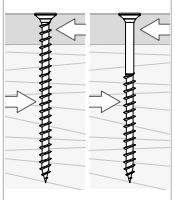
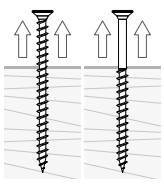
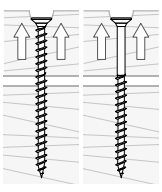
KDH/KMH - TECHNICAL DATA

ø3, ø3,5, ø4, ø4,5, ø5, ø6

CE
PN-EN 14592:2008
+A1:2012

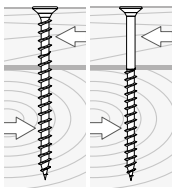
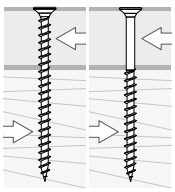
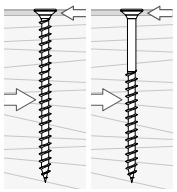
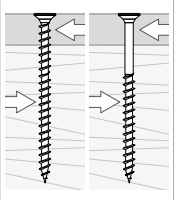
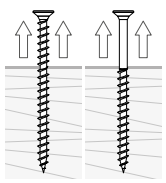
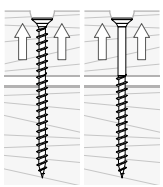
Zn YELLOW

Characteristic resistances for shear and tensile loads

		SHEAR [kN]						TENSILE [kN]	
		wood - wood		OSB - wood		steel - wood thin board (t ≤ 0,5d)	steel - wood thick board (t ≥ d)	Pull-out	Head pull-through
									
KDH 3									
ø3	KDH-30012(X5)*	-	t = 12 mm	-	t ≤ 1,5 mm	0,26	t ≥ 3 mm	0,56	0,51	0,92
	KDH-30013(X5)*	-		-		0,28		0,62	0,57	0,92
	KDH-30016(X5)*	-		-		0,36		0,76	0,74	0,92
	KDH-30020(X5)*	0,12		-		0,46		0,87	0,97	0,92
	KDH-30025(X5)	0,43		-		0,58		1,03	1,25	0,92
	KDH-30030(X5)	0,63		0,74		0,71		1,20	1,53	0,92
	KDH-30035(X5)	0,68		0,82		0,83		1,35	1,82	0,92
	KDH-30040(X5)	0,75		0,82		0,95		1,42	2,10	0,92
KDH 3,5									
ø3,5	KDH-35013(X5)*	-	t = 12 mm	-	t ≤ 1,75 mm	0,31	t ≥ 3,5 mm	0,66	0,68	1,30
	KDH-35016(X5)*	-		-		0,39		0,86	0,91	1,30
	KDH-35020(X5)*	-		-		0,50		1,06	1,22	1,30
	KDH-35025(X5)	0,28		-		0,64		1,24	1,60	1,30
	KDH-35030(X5)	0,62		-		0,78		1,44	1,98	1,30
	KDH-35035(X5)	0,84		0,96		0,92		1,65	2,35	1,30
	KDH-35040(X5)	0,90		1,02		1,06		1,84	2,73	1,30
	KDH-35045(X5)	0,97		1,02		1,19		1,93	3,11	1,30
	KDH-35050(X5)	1,00		1,02		1,33		2,03	3,49	1,30
	KDH-35060(X5)	1,00		1,02		1,61		2,22	4,25	1,30
KDH 4									
ø4	KDH-40013(X5)*	-	t = 15 mm	-	t ≤ 2 mm	0,33	t ≥ 4 mm	0,68	0,72	1,58
	KDH-40016(X5)*	-		-		0,42		0,91	0,99	1,58
	KDH-40020(X5)*	-		-		0,55		1,21	1,35	1,58
	KDH-40025(X5)	0,08		-		0,70		1,43	1,81	1,58
	KDH-40030(X5)	0,45		-		0,85		1,65	2,26	1,58
	KDH-40035(X5)	0,83		-		1,00		1,88	2,71	1,58
	KDH-40040(X5)	1,04		1,19		1,15		2,12	3,16	1,58
	KDH-40045(X5)	1,10		1,28		1,30		2,34	3,61	1,58

*Sizes not covered by test report no. L0K02-06040/14/R130SK

Characteristic resistances for shear and tensile loads

		SHEAR [kN]						TENSILE [kN]	
		wood - wood		OSB - wood		steel - wood thin board (t ≤ 0,5d)	steel - wood thick board (t ≥ d)	Pull-out	Head pull-through
									
KDH 4									
	KDH-40050(X5)	1,18	t = 15 mm	1,28	t ≤ 2 mm	1,45	t ≥ 4 mm	2,45	4,06	1,58
	KDH-4005030(X5)	1,17		1,28		1,45		2,12	2,71	1,58
	KDH-40055(X5)	1,24		1,28		1,61		2,57	4,51	1,58
	KDH-40060(X5)	1,24		1,28		1,76		2,68	4,96	1,58
	KDH-4006035(X5)	1,26		1,28		1,76		2,23	3,16	1,58
	KDH-40070(X5)	1,10		1,28		2,06		2,68	4,96	1,58
KDH 4,5									
⌀4,5	**KDH-45016(X5)***	-	t = 15 mm	-	t ≤ 2,25 mm	0,45	t ≥ 4,5 mm	0,95	1,14	2,11
	KDH-45020(X5)*	-		-		0,58		1,27	1,56	2,11
	KDH-45025(X5)	-		-		0,75		1,66	2,07	2,11
	KDH-45030(X5)	0,25		-		0,91		1,88	2,59	2,11
	KDH-45035(X5)	0,66		-		1,08		2,13	3,11	2,11
	KDH-45040(X5)	1,07		-		1,24		2,39	3,63	2,11
	KDH-45045(X5)	1,32		1,49		1,41		2,66	4,15	2,11
	KDH-45050(X5)	1,38		1,54		1,57		2,91	4,67	2,11
	KDH-45060(X5)	1,56		1,54		1,90		3,17	5,70	2,11
	KDH-45070(X5)	1,23		1,54		2,23		3,17	5,70	2,11
	KDH-45080(X5)	1,52		1,54		2,56		3,17	5,70	2,11
KDH 5									
⌀5	**KDH-50020(X5)***	-	t = 18 mm	-	t ≤ 2,5 mm	0,62	t ≥ 5 mm	1,33	1,50	2,29
	KDH-50025(X5)	-		-		0,80		1,77	2,04	2,29
	KDH-50030(X5)	-		-		0,97		2,05	2,57	2,29
	KDH-50035(X5)	0,44		-		1,15		2,29	3,11	2,29
	KDH-50040(X5)	0,89		-		1,33		2,55	3,65	2,29
	KDH-50045(X5)	1,33		-		1,51		2,83	4,18	2,29
	KDH-50050(X5)	1,52		1,70		1,68		3,11	4,72	2,29
	KDH-5005030(X5)	1,52		1,70		1,68		2,74	3,22	2,29
	KDH-50060(X5)	1,67		1,80		2,04		3,53	5,79	2,29
	KDH-5006035(X5)	1,70		1,80		2,04		3,02	3,75	2,29
	KDH-50070(X5)	1,33		1,80		2,39		3,56	5,90	2,29
	KDH-50080(X5)	1,70		1,80		2,74		3,56	5,90	2,29
	KDH-50090(X5)	1,92		1,80		2,95		3,56	5,90	2,29
	KDH-50100(X5)	2,04		1,80		2,95		3,56	5,90	2,29
	KDH-50120(X5)	2,04		1,80		3,48		4,09	8,04	2,29

* Sizes not covered by test report no. LOK02-06040/14/R130SK

1. Characteristic resistances conform to PN-EN 1995:2014
2. In order to obtain a design value, use the following formula:

$$R_d = \frac{R_k * k_{mod}}{\gamma_m}$$

Factors γ_m and k_{mod} should be assumed in accordance with PN-EN 1995:2014

3. For calculations characteristic resistances and geometry of screws were assumed based on test report no. LOK02-06040/14/R130SK
4. Characteristic resistances given in the table were calculated for bulk density of wooden members of ρ_k = 350 kg/m^3
5. Calculations assume that the threaded part is fully recessed in a wooden member and minimum anchorage depth is 6_{dw}
6. Characteristic resistances given in the table were calculated for a single screw. To check resistances of groups of screws, please follow rules defined in PN-EN 1995:2014
7. Characteristic shear resistances were calculated for connections without pre-drilled holes
8. Calculations apply to resistances for screws only. Wooden members and steel plates should be dimensioned separately
9. For screws with a diameter d ≤ 6 mm characteristic shear resistances are independent of wood fibre inclination
10. Characteristic shear resistances for OSB board-wood joint were calculated for OSB board with a thickness t [mm]
11. Characteristic shear resistances for steel-wood joint were calculated for a thin steel plate with a thickness of t = 0,5d
12. Characteristic shear resistances for steel-wood joint were calculated for a thick steel plate with a thickness of t = d

Hardened countersunk head wood screw with partial/full thread

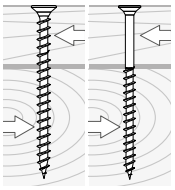
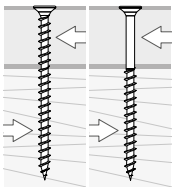
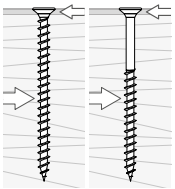
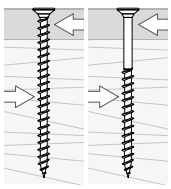
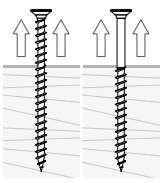
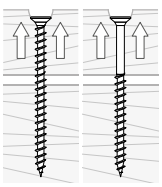
KDH/KMH - TECHNICAL DATA

⌀3, ⌀3,5, ⌀4, ⌀4,5, ⌀5, ⌀6

CE
PN-EN 14592:2008
+A1:2012

Zn YELLOW

Characteristic resistances for shear and tensile loads

		SHEAR [kN]						TENSILE [kN]	
		wood - wood		OSB - wood	steel - wood thin board (t ≤ 0,5d)		steel - wood thick board (t ≥ d)	Pull-out	Head pull-through
									
KDH 6									
⌀6	KDH-60040(X5)*	0,40	t = 22 mm	-	t ≤ 3 mm	1,49	t ≥ 6 mm	2,56	2,24	2,95
	KDH-60050(X5)*	1,41		-		1,89		3,03	2,94	2,95
	KDH-60060(X5)*	2,03		2,24		2,29		3,54	3,64	2,95
	KDH-60070(X5)*	1,51		2,37		2,70		3,77	3,85	2,95
	KDH-60080(X5)*	2,16		2,37		2,95		3,77	3,85	2,95
	KDH-60090(X5)*	2,38		2,37		2,95		3,77	3,85	2,95
	KDH-60100(X5)*	2,65		2,37		2,95		3,77	3,85	2,95
	KDH-60110(X5)*	2,38		2,37		3,30		4,12	5,25	2,95
	KDH-60120(X5)*	2,65		2,37		3,30		4,12	5,25	2,95
	KDH-60140(X5)*	2,72		2,37		3,30		4,12	5,25	2,95
	KDH-60160(X5)*	2,72		2,37		3,30		4,12	5,25	2,95
	KDH-60180(X5)*	2,72		2,37		3,30		4,12	5,25	2,95
	KDH-60200(X5)*	2,72		2,37		3,30		4,12	5,25	2,95

*also applicable to KDH-B/KMH-B/KMH / ** Sizes beyond test report no. LOK02-06040/14/R13OSK

1. Characteristic resistances conform to PN-EN 1995:2014
2. In order to obtain a design value, use the following formula: $R_d = \frac{R_k * k_{mod}}{\gamma_m}$
Factors γ_m and k_{mod} should be assumed in accordance with PN-EN 1995:2014
3. For calculations characteristic resistances and geometry of screws were assumed based on test report no. LOK02-06040/14/R13OSK
4. Characteristic resistances given in the table were calculated for bulk density of wooden members of ρ_k = 350 kg/m^3
5. Calculations assume that the threaded part is fully recessed in a wooden member and minimum anchorage lenght is $6d_w$
6. Characteristic resistances given in the table were calculated for a single screw. To check resistances of groups of screws, please follow rules defined in PN-EN 1995:2014
7. Characteristic shear resistances were calculated for connections without pre-drilled holes
8. Calculations apply to resistances for screws only. Wooden members and steel plates should be dimensioned separately
9. For screws with a diameter d ≤ 6 mm characteristic shear resistances are independent of wood fibre inclination
10. Characteristic shear resistances for OSB board-wood joint were calculated for OSB board with a thickness t [mm]
11. Characteristic shear resistances for steel-wood joint were calculated for a thin steel plate with a thickness of t = 0,5d
12. Characteristic shear resistances for steel-wood joint were calculated for a thick steel plate with a thickness of t = d

STRONG FOR GENERATIONS

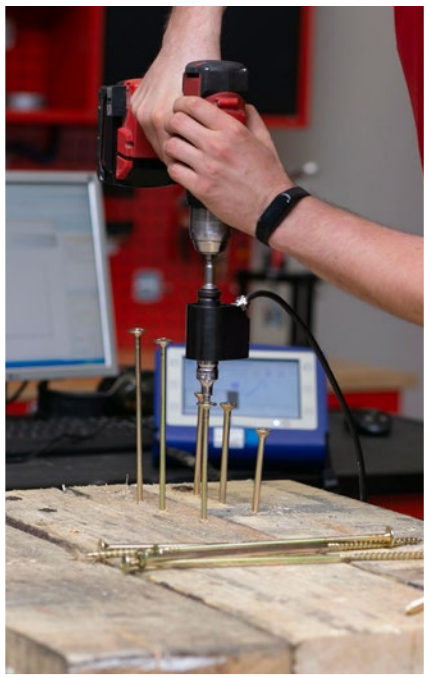
KLIMAS
FASTENER TECHNOLOGIES

QUALITY INCLUDED IN THE PROCESS

We have started a high-tech quality-control laboratory to ensure the highest quality of the products from our portfolio.

Our laboratory is equipped with measuring microscope, X-ray spectrometer, salt spray chamber, load capacity testing machine, Vickers microhardness tester, Rockwell hardness tester, torque converters, permascope and a number of other equipment, which allow us to:

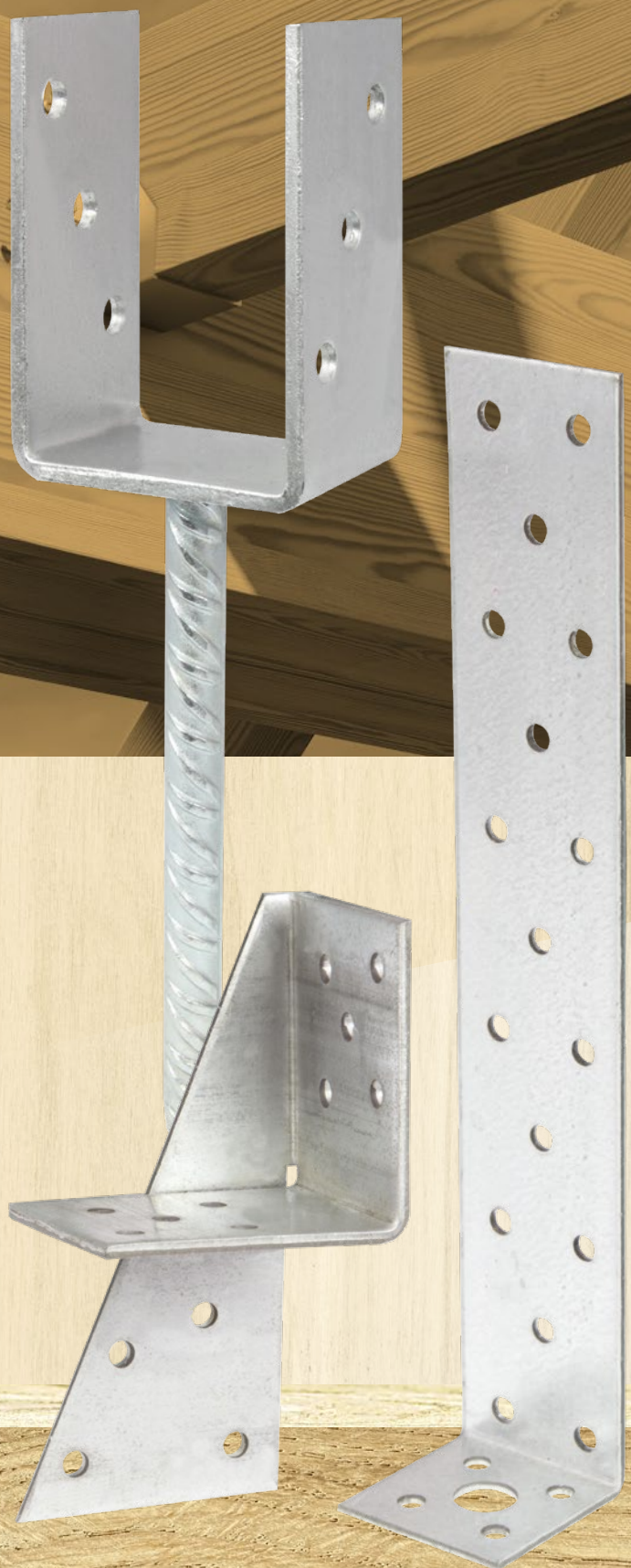
- check and control paint and zinc coat thickness;
- check resistance of protective coating to highly corrosive environments;
- check hardness of the screw surface and body, thickness of carburized layer;
- measure the torque required for a particular screw to be installed;
- test the pull-out strength;
- measure rigidity of the support washer;
- measure installation time of screws;
- and many others.



KLIMAS
FASTENER TECHNOLOGIES

STRONG FOR GENERATIONS

BRACKETS AND PLATES



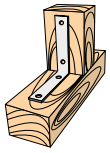
We provide wide range of brackets and plates intended for making carpentry joints. Among them we distinguish perforated plates , angle brackets, joist hangers, post bases.

To make steel-timber joint, screws or nails from our portfolio could be combined with brackets and plates e.g. round head screws for metal plates WKLC , carpentry nail GCOC , ring roofing nail GWOC etc.Material: steel sheet.

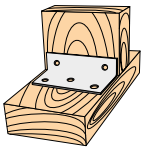
Corrosion protection: zinc plated.

Fire resistance class A1

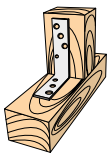
POLISH TECHNICAL APPROVAL
KOT-2019/0439



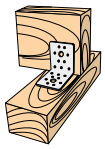
KW Narrow angle bracket



KS Wide angle bracket

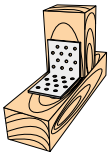


KB Joist angle bracket

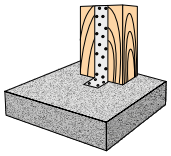


KL Connecting angle bracket

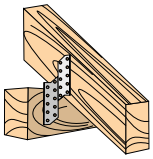
KPW Reinforced angle bracket



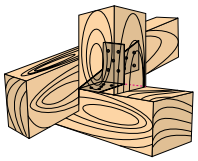
KP Basic angle bracket



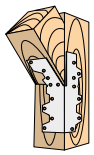
KK Angle bracket for anchoring



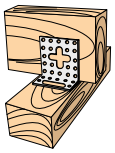
LK Rafter connecting plate



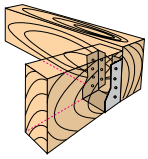
LU Plate for universal connections



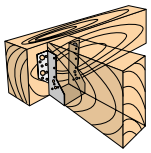
KG Bendable angle bracket



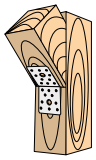
KN Adjustable angle bracket



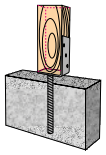
WBW Internal joist hanger



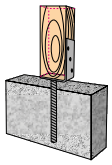
WB Joist hanger



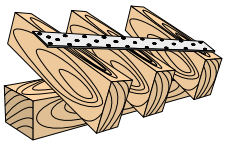
CLG Skewable angle bracket 135°



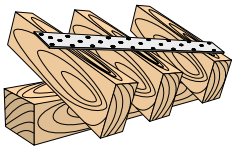
LB Post base



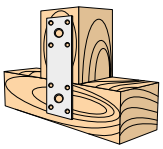
LB-9 Adjustable post base



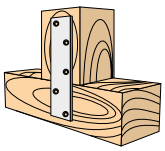
LP Basic perforated plate



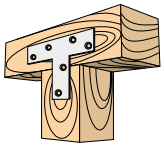
TM Fixing strap



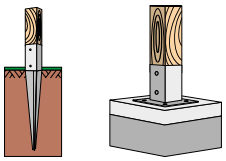
LPS Special purpose plate



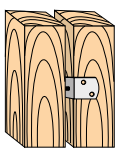
LG Heavy duty plate



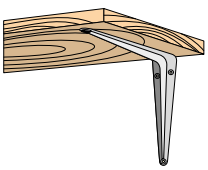
LT T plate



KOW / KOP Post base



OP1W Plate clip with screw



WP Shelf bracket

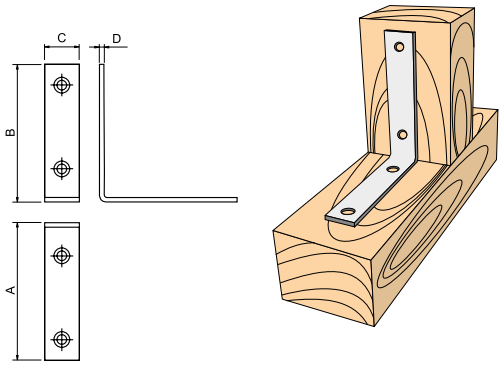
KW

Narrow angle bracket

KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1

Kod	Dimensions [mm]				No. of holes		Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	⌀4,5	⌀6		
KW-01(X100)	27	27	17	2	4	-	0,73	100
KW-02(X100)	32	32	17	2	4	-	0,73	100
KW-03(X100)	42	42	17	2	4	-	0,73	100
KW-04(X100)	52	52	17	2	4	-	0,73	100
KW-05(X100)	62	62	17	2	4	-	0,73	100
KW-06(X100)	77	77	17	2	4	-	0,73	100
KW-07(X100)	92	92	20	2	4	-	0,73	100
KW-08(X50)	102	102	20	2	4	-	0,73	50
KW-09(X50)	104	104	20	4	4	-	0,73	50
KW-10(X50)	122	122	20	2	4	-	0,73	50
KW-11(X50)	125	125	20	5	-	4	0,73	50
KW-12(X50)	150	150	25	5	-	4	0,73	50



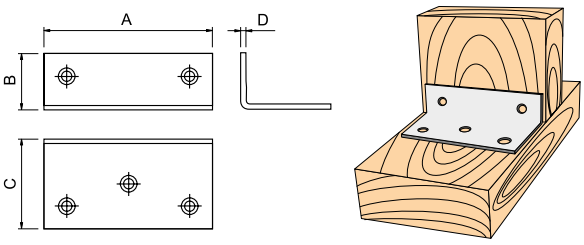
KS

Wide angle bracket

KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1

Kod	Dimensions [mm]				No. of holes		Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	⌀4,5	⌀6		
KS-01(X100)	32	32	30	2	4	-	1,13	100
KS-02(X100)	42	42	40	2	4	-	1,13	100
KS-03(X50)	60	60	60	2	8	-	2,14	50
KS-04(X50)	42	27	75	2	-	5	2,14	50



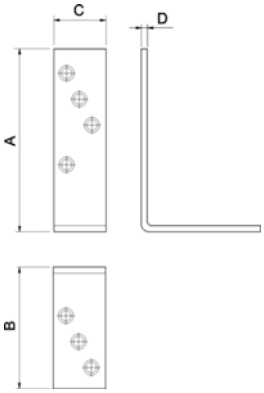
KB

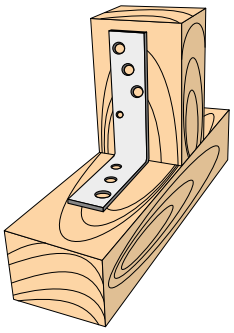
Joist angle bracket

KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1

Kod	Dimensions [mm]				No. of holes			Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	ø5	ø6	ø7		
KB-01(X50)	100	75	30	2,5	5	-	-	2,50	50
KB-02(X40)	100	50	50	4,0	-	5	-	2,50	40
KB-03(X20)	120	80	35	4,0	-	-	7	2,50	20
KB-04(X25)	180	120	40	5,0	-	-	7	2,50	25





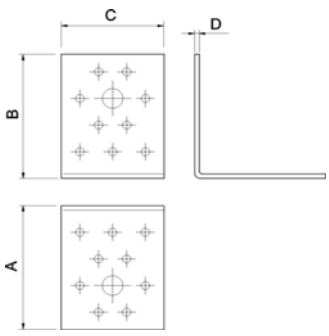
KL

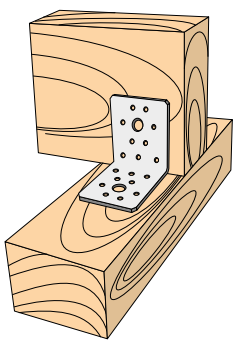
Connecting angle bracket

KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1

Kod	Dimensions [mm]				No. of holes						Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	ø4,5	5	7	8	11	14		
KL-01(X100)	52	52	35	2,5	8	-	-	-	2	-	1,23	100
KL-02(X50)	72	72	55	2,5	20	-	-	-	2	-	1,83	50
KL-03(X50)	90	90	65	2,5	-	16	12	-	2	-	1,83	50
KL-04(X50)	105	105	90	2,5	-	24	-	8	4	2	2,5	50
KL-05(X50)	151	51	35	2,5	-	16	-	-	4	-	1,83	50



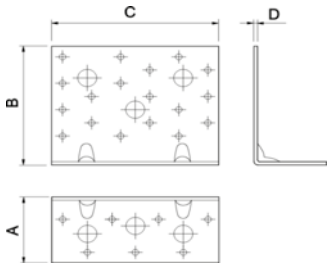


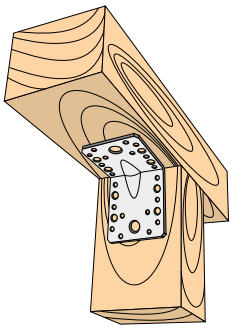
KPW

Reinforced angle bracket

KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1





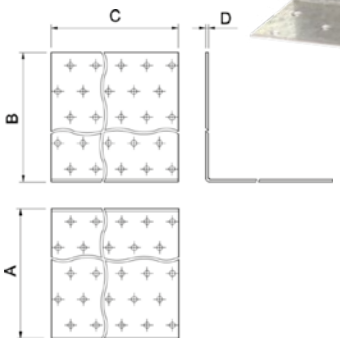
Kod	Dimensions [mm]				No. of holes						Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	⌀4,5	5	7	11	13	14		
KPW-01(X50)	73	73	55	2,5	20	-	-	2	-	-	5,79	50
KPW-02(X50)	93	53	55	2,5	18	-	-	2	-	-	5,79	50
KPW-03(X50)	92	92	65	2,5	16	-	12	2	-	-	5,79	50
KPW-04(X25)	105	105	90	2,5	-	24	8	4	-	2	5,79	25
KPW-05(X50)	90	60	60	2,5	-	9	-	1	-	-	5,79	50
KPW-06(X50)	90	60	60	2,5	-	9	-	-	-	-	5,79	50
KPW-07(X50)	93	53	48	2,5	-	11	-	-	3	-	5,79	50
KPW-08(X50)	88	50	76	2,5	16	-	-	-	5	-	5,79	50
KPW-09(X25)	93	53	116	2,5	25	-	-	-	6	-	5,79	25
KPW-10(X50)	63	63	90	2,5	18	-	-	-	-	-	5,79	50

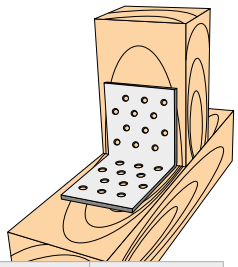
KP

Basic angle bracket

KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1





Kod	Dimensions [mm]				No. of holes		Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	⌀4,5	⌀5		
KP-01(X100)	42	42	20	2	4	-	1,23	100
KP-02(X50)	42	42	40	2	8	-	1,23	50
KP-03(X50)	42	42	60	2	12	-	1,23	50
KP-04(X50)	42	42	100	2	20	-	1,83	50
KP-05(X50)	42	42	200	2	40	-	2,04	50
KP-06(X50)	52	52	40	2	8	-	1,23	50
KP-07(X50)	62	62	40	2	12	-	1,23	50
KP-08(X50)	62	62	60	2	18	-	1,81	50
KP-09(X50)	62	62	80	2	24	21	1,81	50

Kod	Dimensions				No. of holes		Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	⌀4,5	⌀5		
KP-10(X50)	62	62	100	2	27	27	1,81	50
KP-11(X50)	82	82	40	2	16	12	1,83	50
KP-12(X50)	82	82	60	2	24	-	2,04	50
KP-13(X25)	82	82	80	2	32	-	2,04	25
KP-14(X25)	102	102	60	2	30	-	2,04	25
KP-15(X25)	102	102	80	2	40	35	4,51	25
KP-16(X25)	102	102	100	2	45	-	4,51	25
KP-17(X40)	162	162	60	2	40	40	4,51	40
KP-18(X40)	162	162	80	2	56	56	4,51	40

KK

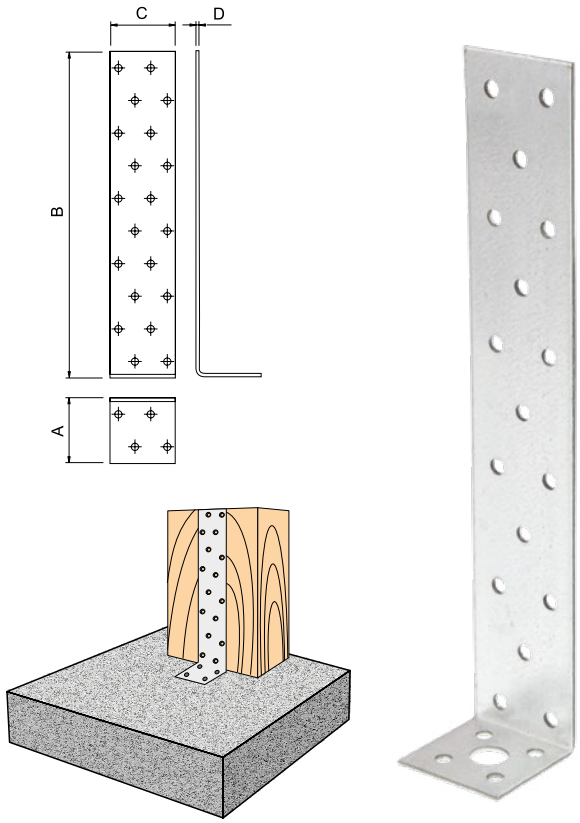
Angle bracket for anchoring

KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.

Fire resistance class A1

Kod	Dimensions [mm]				No. of holes	Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	⌀4,5		
KK-01(X25)	42	202	40	2	24	2,5	25
KK-02(X25)	42	302	40	2	34	3,68	25
KK-03(X25)	42	402	40	2	44	3,68	25
KK-04(X50)	97	97	40	2	20	2,5	50
KK-05(X50)	122	97	40	2	22	2,5	50



LK

Rafter connecting plate

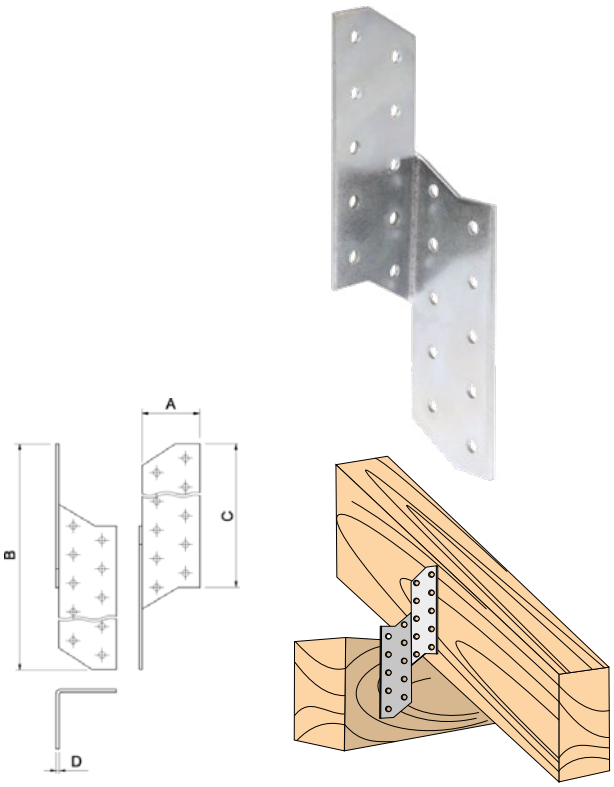
KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.

Fire resistance class A1

Kod	Dimensions [mm]				Quantity otw.	Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	⌀4,5		
LK-01-L(X25)*	40	170	100	2	20	6,66	25
LK-02-P(X25)**	40	170	100	2	20	6,66	25
LK-03-L(X25)*	40	210	140	2	28	6,66	25
LK-04-P(X25)**	40	210	140	2	28	6,66	25
LK-05-L(X25)*	40	250	180	2	36	6,66	25
LK-06-P(X25)**	40	250	180	2	36	6,66	25

*L - left; **P - right

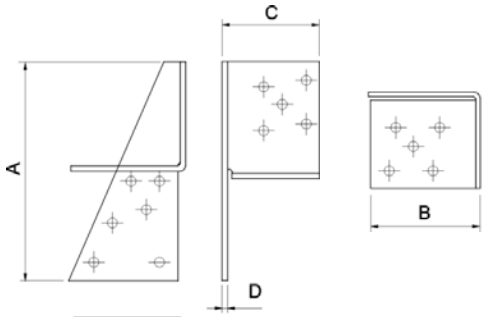


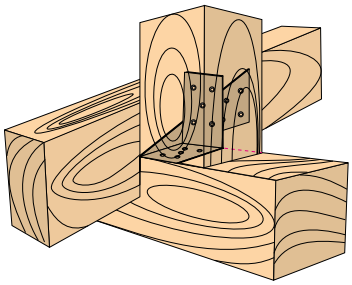
LU

Plate for universal connections

KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1





Kod	Dimensions [mm]				No. of holes	Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	⌀4,5		
LU-01-L(X20)*	100	52	42	2,5	16	1,83	20
LU-02-P(X20)**	100	52	42	2,5	16	1,83	20

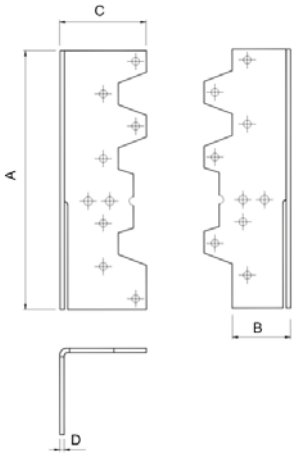
*L - left; **P - right

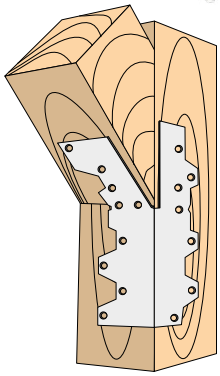
KG

Bendable angle bracket

KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1





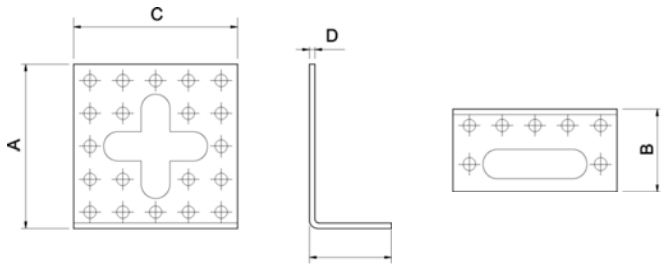
Kod	Dimensions [mm]				No. of holes		Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	⌀3,5	⌀4		
KG-01(X50)	120	27	42	2,0	14	4	1,13	50

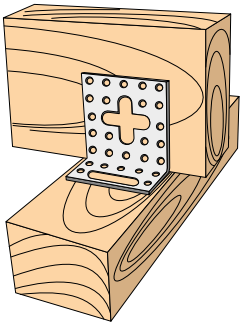
KN

Adjustable angle bracket

KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1





Kod	Dimensions [mm]				No. of holes					Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	⌀4,5	5	7	11	14		
KN-01(X50)	61	31	60	2,0	27	-	-	-	-	1,23	50
KN-02(X50)	60	40	60	2,5	-	12	-	2	1	1,23	50
KN-03(X50)	80	65	20	4,0	-	-	2	-	-	1,23	50

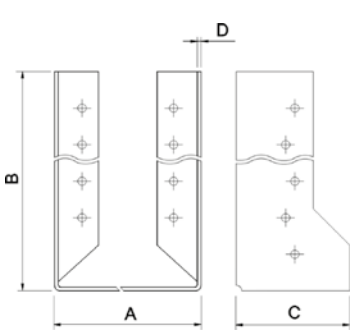
WBW

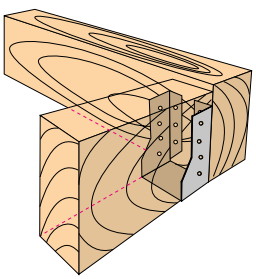
Internal joist hanger

KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1

Kod	Dimensions [mm]				No. of holes	Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	⌀4,5		
WBW-01(X20)	64	102	60	2	14	5,53	20
WBW-02(X20)	84	122	60	2	18	5,53	20
WBW-03(X10)	104	142	60	2	22	6,98	10
WBW-04(X10)	124	162	60	2	26	9,69	10
WBW-05(X10)	144	182	60	2	30	9,69	10





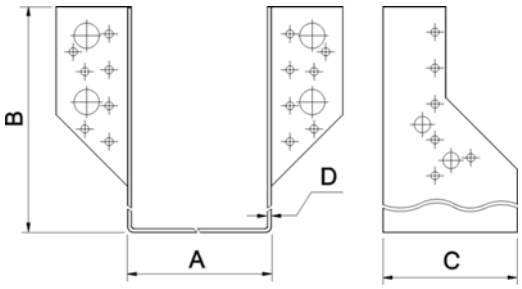
WB

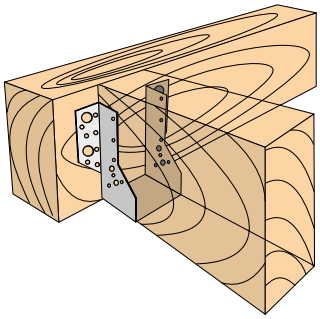
Joist hanger

KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1

Kod	Dimensions [mm]				No. of holes			Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	⌀4,5	⌀9	⌀14		
WB-01(X20)	29	102	75	2	20	4	2	5,53	20
WB-02(X20)	42	132	75	2	24	2	4	5,53	20
WB-03(X20)	45	102	75	2	18	4	2	6,98	20
WB-04(X20)	45	137	75	2	30	4	4	6,98	20
WB-05(X20)	45	171	75	2	32	4	4	9,69	20
WB-06(X20)	50	102	75	2	18	4	2	6,98	20
WB-07(X20)	50	169	75	2	32	4	4	9,69	20
WB-08(X20)	51	102	75	2	18	4	2	6,98	20
WB-09(X20)	51	138	75	2	32	4	4	6,98	20
WB-10(X20)	54	126	75	2	24	2	4	6,98	20
WB-11(X20)	54	147	75	2	26	4	4	6,98	20
WB-12(X20)	64	102	75	2	18	2	2	5,53	20
WB-13(X20)	64	132	75	2	32	4	4	6,98	20
WB-14(X20)	64	152	75	2	32	4	4	6,98	20
WB-15(X20)	68	152	75	2	32	4	4	6,98	20
WB-16(X20)	68	160	75	2	32	4	4	8,75	20
WB-17(X20)	74	157	75	2	32	4	4	8,75	20
WB-18(X20)	75	127	75	2	30	4	4	5,53	20
WB-19(X20)	79	154	75	2	32	4	4	8,75	20
WB-20(X20)	80	212	80	2	34	2	4	9,69	20
WB-21(X20)	84	122	75	2	30	4	4	6,98	20
WB-22(X20)	90	148	75	2	32	4	4	8,75	20
WB-23(X20)	94	146	75	2	32	4	4	8,75	20
WB-24(X20)	104	142	75	2	32	4	4	8,75	10
WB-25(X10)	124	162	80	2	28	2	4	9,69	10
WB-26(X10)	144	182	80	2	34	2	4	9,69	10





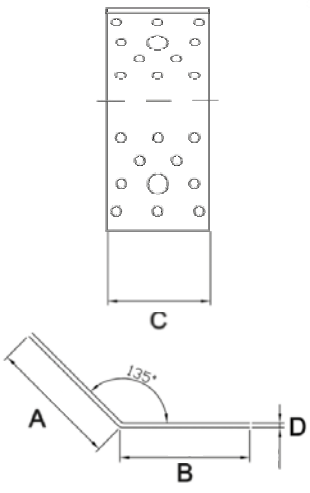
*Product on order

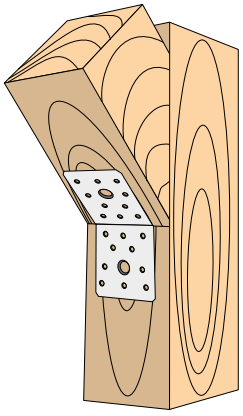
CLG

Skewable angle bracket 135°

KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1





Kod	Dimensions [mm]				Design resistance [kN]	Pack unit [pcs]
	A	B	C	D		
CLG-01*	50	50	35	2,5	1,23	25
CLG-02*	70	70	55	2,5	1,83	25
CLG-03*	90	90	65	2,5	1,83	25
CLG-04*	100	100	90	2,5	2,5	25

*Product on order

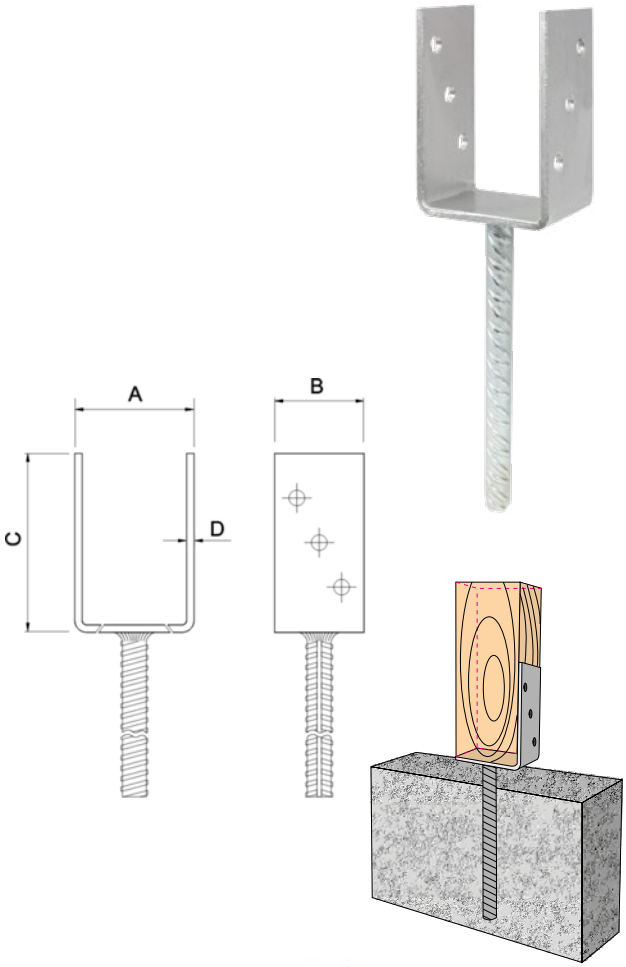
LB

Post base

KOT-2019/0439

Plate fastener for timber-to-concrete connections.
Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1

Kod	Dimensions [mm]				No. of holes	Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	⌀10,5		
LB-01(X10)	80	60	130	5	6	1,86	10
LB-02(X10)	90	60	130	5	6	1,86	10
LB-03(X10)	100	60	130	5	6	1,86	10
LB-04(X10)	110	60	130	5	6	1,86	10
LB-05(X10)	160	60	130	5	6	1,86	10
LB-07(X10)	89	90	135	5	3	1,86	10
LB-08(X10)	130	60	130	5	6	1,86	10
LB-06-0T(X10)	150	60	130	5	6	1,86	10



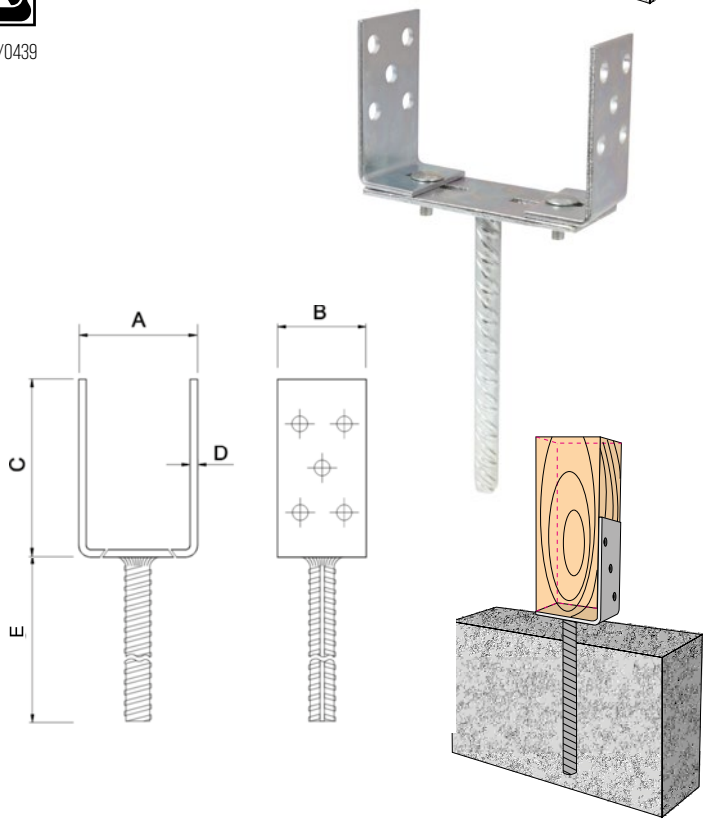
LB-9

Adjustable post base

KOT-2019/0439

Plate fastener for timber-to-concrete connections.
Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1

Kod	Dimensions					Quantity otworów	Pack unit [pcs]
	A	B	C	D	E	⌀10,5	
LB-9(X10)	10 + 160	60	100	5	200	10	10

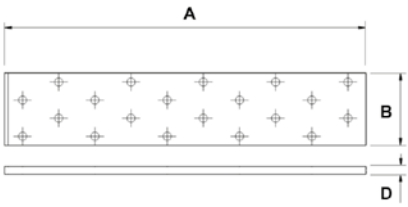


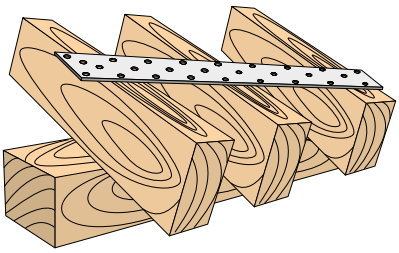
LP

Basic perforated plate

PN-EN 14545:2011

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1





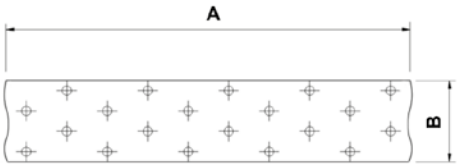
Kod	Dimensions [mm]			No. of holes		Pack unit [pcs]
	A	B	D	⌀4,5	⌀5	
LP-01(X50)	40	80	2	8	-	50
LP-02(X50)	40	100	2	10	-	50
LP-03(X50)	40	120	2	12	-	50
LP-04(X100)	40	160	2	16	-	100
LP-05(X50)	50	180	2	22	-	50
LP-06(X50)	50	200	2	25	-	50
LP-07(X50)	50	240	2	30	-	50
LP-08(X50)	60	140	2	21	-	50
LP-09(X50)	60	160	2	24	-	50
LP-10(X50)	60	180	2	27	-	50
LP-11(X50)	60	200	2	30	-	50
LP-12(X50)	60	220	2	33	-	50
LP-13(X50)	60	240	2	36	-	50
LP-14(X50)	80	100	2	20	-	50
LP-15(X50)	80	140	2	28	-	50
LP-16(X50)	80	180	2	36	-	50
LP-17(X25)	80	200	2	40	-	25
LP-18(X50)	80	220	2	44	-	50
LP-19(X25)	80	240	2	48	-	25
LP-20(X25)	80	300	2	60	-	25
LP-21(X25)	100	200	2	50	-	25
LP-22(X25)	100	220	2	55	-	25
LP-23(X25)	100	240	2	60	-	25
LP-24(X25)	100	260	2	65	-	25
LP-25(X20)	100	300	2	75	-	20
LP-26(X25)	120	240	2	72	-	25
LP-27(X25)	120	300	2	90	-	25
LP-28(X20)	140	400	2	-	140	20
LP-29(X20)	200	200	2	-	100	20
LP-30(X20)	300	400	2	-	300	20

TM

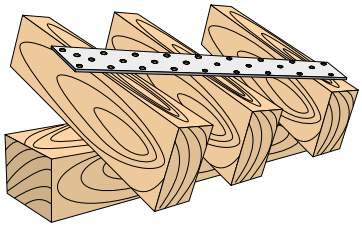
Fixing strap

PN-EN 14545:2011

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1



Kod	Dimensions [mm]			No. of holes	Quantity [mb]
	A	B	D	⌀4,5	
TM-01010	mb.	40	2	100	10
TM-02010	mb.	60	2	150	10
TM-03010	mb.	80	2	200	10
TM-01025	mb.	40	2	100	25
TM-02025	mb.	60	2	150	25
TM-03025	mb.	80	2	200	25



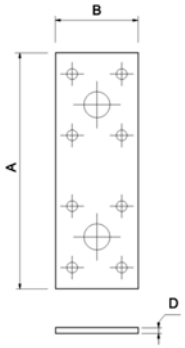
LPS

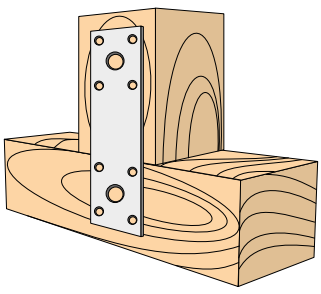
Special purpose plate

PN-EN 14545:2011

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1

Kod	Dimensions [mm]			No. of holes					Pack unit [pcs]
	A	B	D	⌀4,5	5	7	11	14	
LPS-01(X50)	100	35	2,5	8	-	-	2	-	50
LPS-02(X50)	140	55	2,5	-	18	-	2	-	50
LPS-03(X50)	180	40	2,5	16	-	-	4	-	50
LPS-04(X50)	180	65	2,5	16	-	12	2	-	50
LPS-05(X50)	210	90	2,5	-	36	-	-	2	50





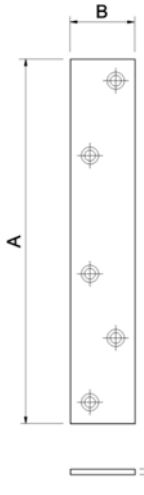
LG

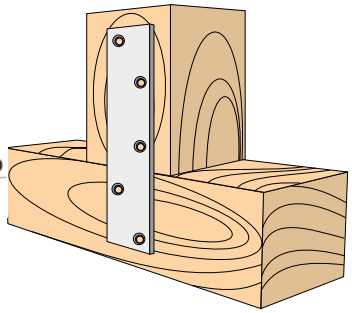
Heavy duty plate

PN-EN 14545:2011

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1

Kod	Dimensions [mm]			No. of holes		Pack unit [pcs]
	A	B	D	⌀5	⌀7	
LG-01(X50)	170	30	2,5	5	-	50
LG-02(X50)	195	35	4	-	7	50



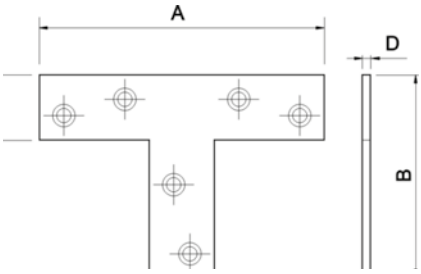


LT

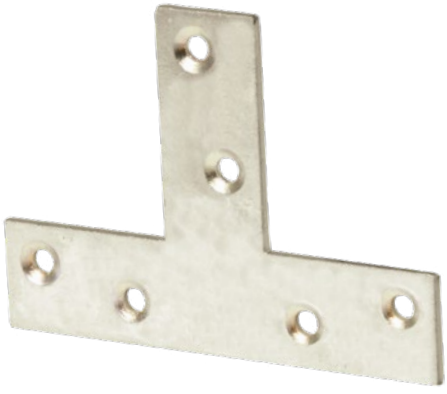
T brackets

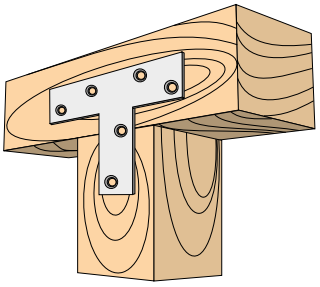
PN-EN 14545:2011

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1



Kod	Dimensions [mm]				No. of holes	Pack unit [pcs]
	A	B	C	D	⌀8	
LT-01(X50)	70	50	16	2	6	50

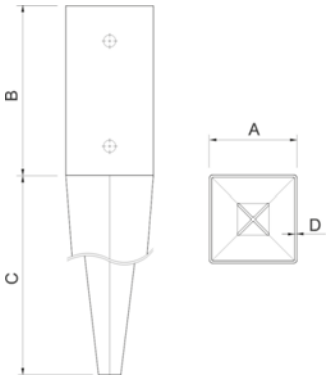


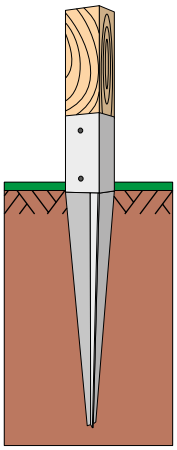


KOW

Post base

For securing wood posts directly in the ground.
Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1



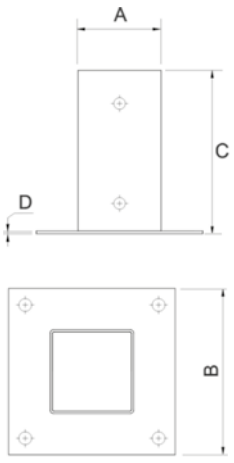


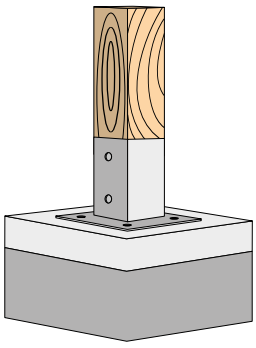
Kod	Dimensions [mm]				No. of holes	Pack unit [pcs]
	A	B	C	D	⌀10,5	
KOW-01	71	145	600	2	4	1
KOW-02	91	145	600	2	4	1

KOP

Post base

Wood post base bolted down to concrete members.
Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1





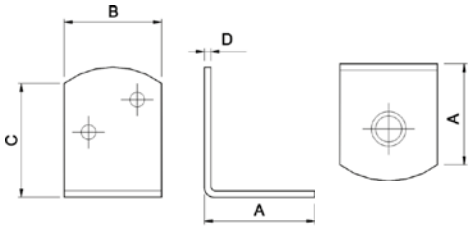
Kod	Dimensions [mm]				No. of holes	Pack unit [pcs]
	A	B	C	D	⌀10,5	
KOP-01	71	145	150	2	4	1
KOP-02	91	145	170	2	4	1

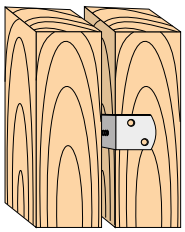
OP1W

Plate clip with screw

KOT-2019/0439

Material: steel sheet. Corrosion protection: zinc plated.
Fire resistance class A1



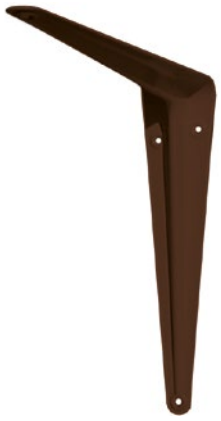


Kod	Dimensions [mm]				No. of holes		Design resistance [kN]	Pack unit [pcs]
	A	B	C	D	⌀4	⌀7		
OP-01-W(X50)	31	30	35	2	2	1	1,13	50

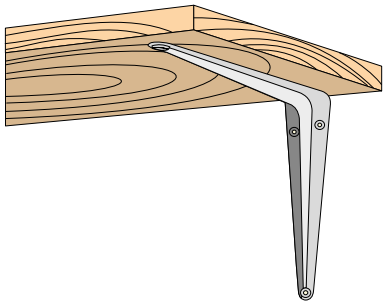
WP

Shelf bracket

Material: powder painted steel sheet



Kod	Dimensions [mm]		Colour	Pack unit [pcs]
	A	B		
WP-01BI(X20)	75	100	white	20
WP-02BI(X20)	100	125	white	20
WP-03BI(X20)	125	150	white	20
WP-04BI(X20)	150	200	white	20
WP-05BI(X20)	175	225	white	20
WP-06BI(X20)	200	250	white	20
WP-07BI(X20)	250	300	white	20
WP-08BI(X20)	300	350	white	20
WP-09BI(X20)	350	400	white	20
WP-01BR(X20)	75	100	brown	20
WP-02BR(X20)	100	125	brown	20
WP-03BR(X20)	125	150	brown	20
WP-04BR(X20)	150	200	brown	20
WP-05BR(X20)	175	225	brown	20
WP-06BR(X20)	200	250	brown	20
WP-07BR(X20)	250	300	brown	20
WP-08BR(X20)	300	350	brown	20
WP-09BR(X20)	350	400	brown	20

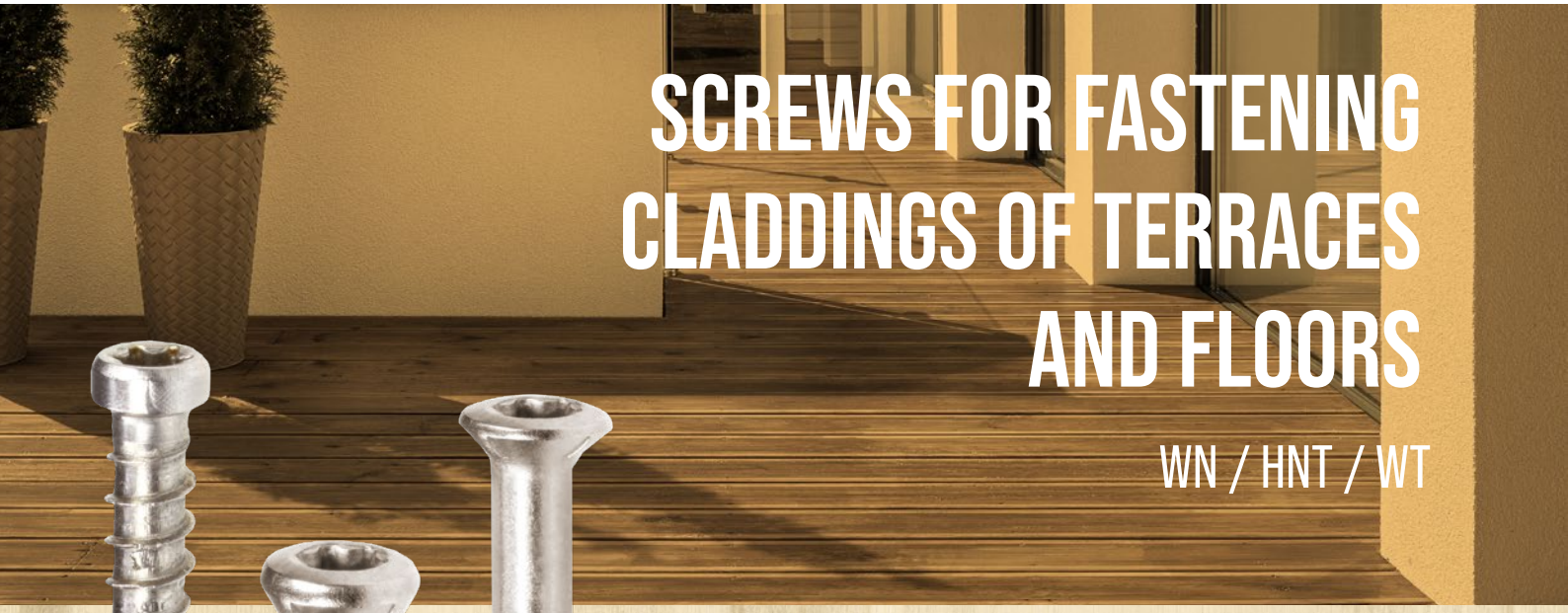


KLIMAS
FASTENER TECHNOLOGIES

STRONG FOR GENERATIONS

SCREWS FOR FASTENING CLADDINGS OF TERRACES AND FLOORS

WN / HNT / WT



Group of screws designed for wooden flooring construction and for fastening claddings of terraces. Their special design prevents wood from breaking or splitting during installation.

These products have many features that make the installation quicker. Some of them improve aesthetics of flooring, allowing for e.g. concealed fixing.

TX DRIVE

TX drive guarantees optimum torque transfer.

SERRATED THREAD

Special cutting notches integrated on the thread cut wood fibres structure while screwing in.

SPECIAL CUTTING POINT

Special design of cutting point enables quick initiation of screwing and prevents splitting of wooden elements

CE
PN-EN 14592:2008
+A1:2012

A2
INOX

WN	Screw with cone-shaped concealed head , TX		120
⌀6	⌀8	**Length range:** 40 - 80 mm	**Stainless steel A2**

HNT	Screw with cylindrical head and underhead thread, TX		122
⌀5		**Length range:** 50 - 80 mm	**Stainless steel A2**

WT	Screw with countersunk head, TX		124
⌀4		**Length range:** 45 mm	**Stainless steel A2**

SCREWS FOR FASTENING CLADDINGS OF TERRACES AND FLOORS

	A2 Stainless steel
ø4	WN **Length range: 40 - 60 mm**
ø5	WN **Length range: 50 - 80 mm**

Screw with cone-shaped concealed head, TX

WN

ø4, ø5

Screw is designed to be installed in outdoor environments into very hard woods.

CE
PN-EN 14592:2008
+A1:2012

A2 INOX

SUBSTRATES

Solid wood

Hardwood

SCREW MATERIAL	A2 Stainless steel
TYPE ON INSTALLATION	Pre-drilling is always recommended for very hard woods.
APPLICATION	· Decking of terraces · Fastening claddings of facades · Construction of small and medium-sized wooden structures in outdoor environments · Other outdoor applications

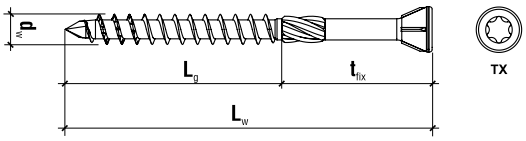
SPECIAL CONE-SHAPED CONCEALED HEAD 60, TX drive
Head angle of 60 ensures concealed installation of the screw in the wooden member. TX drive guarantees optimum torque transfer.

CUTTING RIBS
Allow optimal and smooth countersink with aesthetic finish result.

SHANK RIBS
Shank ribs reduces installation torque by reaming the hole.

SERRATED THREAD
Special cutting notches integrated on the thread cut wood fibres structure while screwing in.

SPECIAL CUTTING POINT
Special design of cutting point enables quick initiation of screwing and prevents splitting of wooden elements.



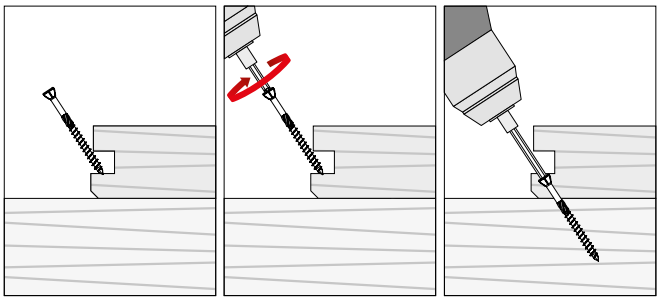
Basic informations

	Product code	Dimensions	Thread length	Max. usable length	Type of drive	Quantity
WN-4						
ø4		d_w x L_w [mm]	L_g [mm]	t_{fix} [mm]	[-]	[pcs]
	WN-40040-A2	4,0 x 40	22	18	TX 15	200
	WN-40045-A2	4,0 x 45	30	15	TX 15	200
	WN-40050-A2	4,0 x 50	30	20	TX 15	200
	WN-40060-A2	4,0 x 60	35	25	TX 15	200
WN-5						
ø5		d_w x L_w [mm]	L_g [mm]	t_{fix} [mm]	[-]	[pcs]
	WN-50050-A2	5,0 x 50	30	20	TX 20	100
	WN-50060-A2	5,0 x 60	35	25	TX 20	100
	WN-50070-A2	5,0 x 70	40	30	TX 20	100
	WN-50080-A2	5,0 x 80	50	30	TX 20	100

Product	Thread outer diameter	Thread inner diameter	Head diameter	Length range
	d_w [mm]	d_1 [mm]	D_w [mm]	L_w [mm]
WN-4	4	2,87	6,62	40-80
WN-5	5	3,23	7,98	50-100

Product	Material characteristic yield strength	Characteristic pull-out resistance	Characteristic head pull-through resistance	Characteristic tensile resistance	Characteristic torsional resistance
	$M_{y,k}$ [N*m]	$f_{ax,k,90}$ [N/mm^2]	$f_{head,k}$ [N/mm^2]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
WN-4	6,149	26,56	28,82	6,95	3,76
WN-5	10,956	23,32	41,19	7,60	7,35

INSTALLATION EXAMPLE



ACCESSORIES SEE P. 142-143

	A2 Stainless steel
⌀5	HNT **Length range: 50 - 80 mm**

Screw with cylindrical head and underhead thread, TX

HNT

⌀5

Screw is designed to be installed in outdoor environments into very hard woods. Special underhead thread design ensures good coupling of the wooden elements. Cylindrical head allows easy installation of decking boards with pleasing appearance in case of using decking boards, which do not have the tongue cut on one side and the groove on the other side e.g. clips technology fastening. The advantage of direct fastening of decking boards is especially easy removal of single board without the need of removing adjacent boards.

CE
PN-EN 14592:2008
+A1:2012

A2
INOX

SUBSTRATES

Solid wood

Hardwood

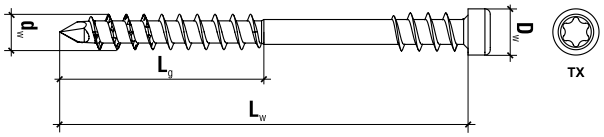
SCREW MATERIAL	A2 Stainless steel
TYPE ON INSTALLATION	Pre-drilling is always recommended for very hard woods.
APPLICATION	· Decking of terraces · Fastening claddings of facades · Construction of small and medium-sized wooden structures in outdoor environments · Other outdoor applications

TX DRIVE
TX drive guarantees optimum torque transfer.

CYLINDRICAL HEAD AND UNDERHEAD THREAD
Size of cylindrical head is matched to width of grooves on decking boards. Underhead thread ensures good coupling of the wooden elements. Aesthetic finish result and also secure fastening are therefore guaranteed.

SERRATED THREAD
Special cutting notches integrated on the thread cut wood fibres structure while screwing in.

SPECIAL CUTTING POINT
Special design of cutting point enables quick initiation of screwing and prevents splitting of wooden elements.



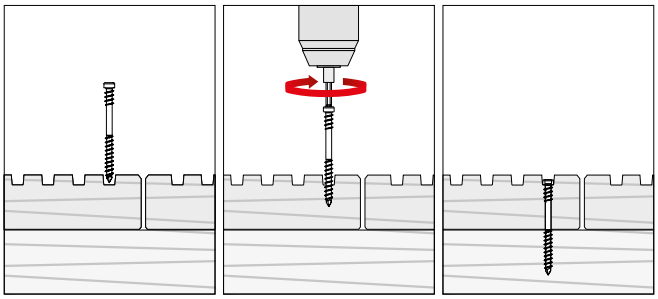
Basic informations

	Product code	Dimensions	Thread length	Max. usable length	Type of drive	Quantity
HNT-5						
ø5		d_w x L_w [mm]	L_g [mm]	t_{fix} [mm]	[-]	[pcs]
	HNT-50050-A2	5,0 x 50	22,5	27,5	TX 25	100
	HNT-50060-A2	5,0 x 60	27,5	32,5	TX 25	100
	HNT-50070-A2	5,0 x 70	32,5	37,5	TX 25	100
	HNT-50080-A2	5,0 x 80	37,5	42,5	TX 25	100

Product	Thread outer diameter	Thread inner diameter	Head diameter	Length range
	d_w [mm]	d_1 [mm]	D_w [mm]	L_w [mm]
HNT	5	3,64	7,35	50-100

Product	Material characteristic yield strength	Characteristic pull-out resistance	Characteristic head pull-through resistance	Characteristic tensile resistance	Characteristic torsional resistance
	$M_{y,k}$ [N*m]	$f_{ax,k,90}$ [N/mm^2]	$f_{head,k}$ [N/mm^2]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
HNT	10,898	26,75	39,60	9,23	7,32

INSTALLATION EXAMPLE



ACCESSORIES SEE P. 142-143

SCREWS FOR FASTENING CLADDINGS OF TERRACES AND FLOORS

	A2 Stainless steel
⌀4	WN **Length: 45 mm**

Screw with countersunk head, TX

WT

⌀5

Screw is designed to be installed in outdoor environments into very hard woods.

Ideal for concealed fastening of decking boards with the use of clips in tongue and groove joints.

CE
PN-EN 14592:2008
+A1:2012

A2
INOX

SUBSTRATES

Solid wood

Hardwood

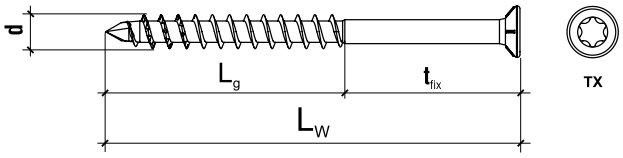
SCREW MATERIAL	A2 Stainless steel
TYPE ON INSTALLATION	Pre-drilling is always recommended for very hard woods.
APPLICATION	Fastening of decking boards with the use of clips in tongue and groove joints

TX DRIVE
TX drive guarantees optimum torque transfer.

CUTTING RIBS AND SPECIAL SHAPED 6 mm HEAD
Allow optimal and smooth countersink with aesthetic finish result.

SERRATED THREAD
Special cutting notches integrated on the thread cut wood fibres structure while screwing in.

SPECIAL CUTTING POINT
Special design of cutting point enables quick initiation of screwing and prevents splitting of wooden elements.



Basic informations

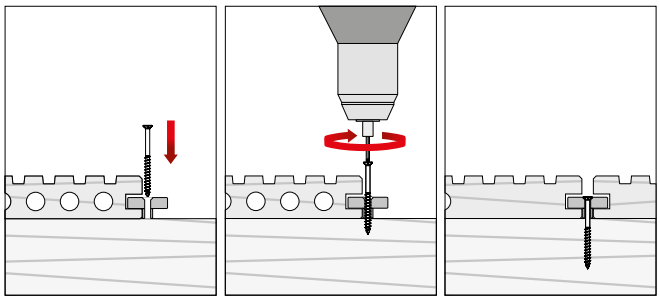
	Product code	Dimensions	Thread length	Max. usable length	Type of drive	Quantity
WT-4						
ø4		d_w x L_w [mm]	L_g [mm]	t_{fix} [mm]	[-]	[pcs]
	WT-40045-A2	4,0 x 45	30	15	TX 15	200

Geometry and mechanical properties

Product	Thread outer diameter	Thread inner diameter	Head diameter	Length range
	d_w [mm]	d_1 [mm]	D_w [mm]	L_w [mm]
WT	4	2,87	6,09	40-55

Product	Material characteristic yield strength	Characteristic pull-out resistance	Characteristic head pull-through resistance	Characteristic tensile resistance	Characteristic torsional resistance
	$M_{y,k}$ [N*m]	$f_{ax,k,90}$ [N/mm^2]	$f_{head,k}$ [N/mm^2]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
WT	6,109	17,00	29,21	6,94	3,78

INSTALLATION EXAMPLE (Screws recommended for fastening of decking boards with the use of clips - concealed fastening)



ACCESSORIES SEE P. 142-143

KLIMAS
FASTENER TECHNOLOGIES

STRONG FOR GENERATIONS

SELF-DRILLING SCREWS WITH EPDM WASHER

FOR FIXING STEEL ROOFING TILES
IN TIMBER STRUCTURES

WFD / WFDOC / WDD

POSSIBILITY OF PAINTING ACCORDING TO RAL PALETTE

Permanent colour adjusted to roof covering, resistant to UV radiation and atmospheric conditions

EPDM WASHER

It seals and secures the connection from corrosion.

ANTI-CORROSION COATING

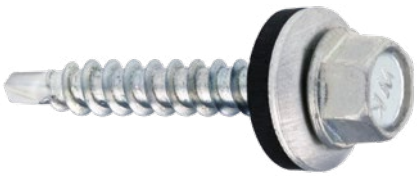
Galvanized

Thickness of zinc coating min. 12 µm, guarantee of quality and high level of anti-corrosion protection.

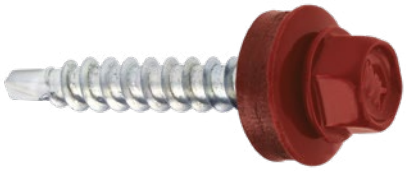
SELF-DRILLING TIP

Ability of drilling plates of thickness up to 2.5 mm, short time of fixing.

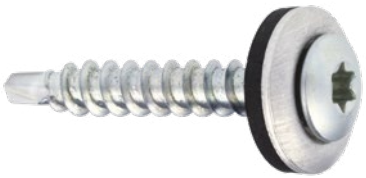
EUROPEAN TECHNICAL ASSESSMENT
ETA-16/0443



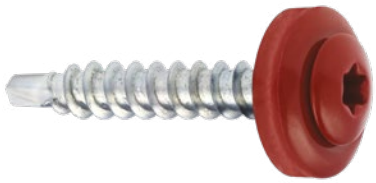
WFDOC	Self-drilling screw with EPDM washer for fixing steel sheets and steel roof tiles in timber substrate	
ø4,8	**Length range:** 25 - 100 mm	**Galvanized**



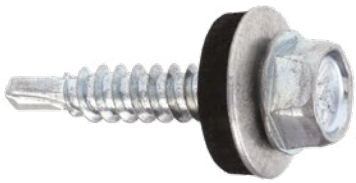
WFD	Self-drilling screw with EPDM washer for fixing steel sheets and steel roof tiles in timber substrate	
ø4,8	**Length range:** 25 - 100 mm	**Galvanized + RAL**



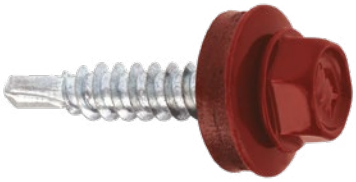
WDD	Steel self-drilling screw with EPDM washer for fixing steel sheets and steel roof tiles in timber substrate, TX	
ø4,8	**Length range:** 35 mm	**Galvanized**



WDD	Steel self-drilling screw with EPDM washer for fixing steel sheets and steel roof tiles in timber substrate, TX	
ø4,8	**Length range:** 35 mm	**Galvanized + RAL**



WSBP	Self-drilling screw with EPDM washer for making lap joints in steel sheets	
ø4,8	**Length range:** 19 - 25 mm	**Galvanized**



WSBP	Steel self-drilling screw with EPDM washer for making lap joints in steel sheets	
ø4,8	**Length range:** 19 - 25 mm	**Galvanized + RAL**

STANDARD RAL COLOUR CHART

RAL 3005 RAL 3009 RAL 3011 RAL 6005 RAL 6020 RAL 7016 RAL 7024

RAL 8004 RAL 8017 RAL 8019 RAL 9003 RAL 9005 RAL 9006 RAL 9010

The colours in the catalogue are for reference only and may slightly differ from the original RAL colours.

	Galvanized
ø4,8	WFDOC **Length range: 25 - 100 mm**

	Galvanized + RAL
ø4,8	WFD **Length range: 25 - 100 mm**

Self-drilling screw with EPDM washer for fixing steel sheets and steel roof tiles in timber substrate

WFDOC/WFD

Self-drilling screw with EPDM washer in galvanized zinc coating for fixing sheet metals, steel roofing tiles and flashings in timber structures. Farmer screw coated in RAL colours

ø4,8

ETA-16/0443

Zn WHITE

RAL

SUBSTRATES

timber min. C24

SCREW MATERIAL	Carbon steel
ANTI-CORROSION PROTECTION	· Galvanized · SQ Ceramic*
APPLICATION	· For fixing sheet metals in timber structures. · For fixing metal profiles in timber structures. · For fixing steel roofing tiles in timber structures.

* Product on order

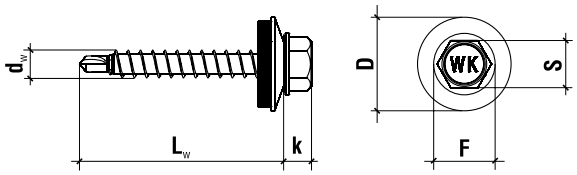
HEX HEAD SW-8 / BRANDING OF HEAD OF SCREW
WK feature at head of the screw facilitates the identification of our company as the producer and easy recognition of the product

POSSIBILITY OF PAINTING ACCORDING TO RAL PALETTE
UV-resistant coating in colour matched with the fixed member, additionally ensures protection against corrosion.

EPDM WASHER
It seals and secures the connection from corrosion.

ANTI-CORROSION COATING - ELECTRO-GALVANIZED (WFDOC/WFD)
Thickness of zinc coating min. 12 µm, guarantee of quality and high level of anti-corrosion protection.

SELF-DRILLING TIP
Ability of drilling plates of thickness up to 2.5 mm, short time of fixing.



Basic informations

	Product code	Dimensions	Max. usable length	Quantity
		d_w x L_w [mm]	t_{fix} [mm]	[pcs]
WFDOC				
ø4,8	**WFDOC-48025**	4,8x25	1,25	250
	WFDOC-48035	4,8x35	5	250
	WFDOC-48055	4,8x55	25	200
	WFDOC-48070	4,8x70	45	200
	WFDOC-48080	4,8x80	55	200
	WFDOC-48100	4,8x100	75	100
WFD + RAL				
ø4,8	**WFD-48025-RAL...**	4,8x25	1,25	250
	WFD-48035-RAL...	4,8x35	5	250
	WFD-48055-RAL...	4,8x55	25	200
	WFD-48070-RAL...	4,8x70	45	200
	WFD-48080-RAL...	4,8x80	55	200
	WFD-48100-RAL...	4,8x100	75	100

TECHNICAL PARAMETERS

Type		WFDOC/WFD
European Technical Assessment	-	ETA-16/0443
Screw diameter	d_w [mm]	4,8
Drilling capacity	$\sum t_i$ [mm]	≤ 2,5
Spanner size	S [mm]	SW-8
Head height	k [mm]	4,5
Head diameter	F [mm]	10,0
Tip length	[mm]	5,0
EPDM washer	D [mm]	steel Z14
Screw material	-	Carbon steel

Type		WFDOC/WFD
Paint coating RAL	[µm]	min. 60 µm
Protective coating	[µm]	Galvanized min. 12 µm
Fastener anchorage depth	h_{ef} [mm]	20/30
Min. substrate thickness	h_{min} [mm]	20/30

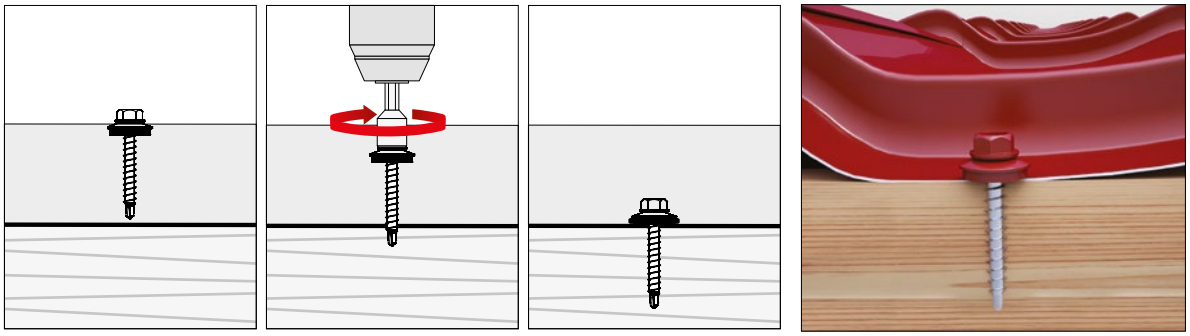
Type		WFDOC/WFD
Min. spacing	S_{min} [mm]	50
Min. edge distance	C_{min} [mm]	25
Substrate material	-	timber ≥ C24

CHARACTERISTIC PULL-OUT / SHEAR STRENGTH [KN]

Substrate	Substrates thickness [mm]	Steel sheet thickness [mm]					
		0,5	**0,63**	**0,75**	**0,88**	**1,00**	**1,25**
Timber C24	20	1,24/1,10	1,24/1,50	1,24/1,74	1,24/1,74	1,24/1,74	1,24/1,74
	30	1,73/1,10	1,73/1,50	1,73/1,74	1,73/1,74	1,73/1,74	1,73/1,74

Partial safety factor of 1.33 recommended

INSTALLATION INSTRUCTIONS



Self-drilling screw with EPDM washer for fixing steel sheets and steel roof tiles in timber substrate, TX

WDD

ø4,8

ETA-16/0443

Zn WHITE

RAL

	Galvanized
ø4,8	WDD **Length: 35 mm**

	Galvanized + RAL
ø4,8	WDD **Length: 35 mm**

SUBSTRATES

wood min. C24

SCREW MATERIAL	Carbon steel
ANTI-CORROSION PROTECTION	· Galvanized · SQ Ceramic*
APPLICATION	· For fixing sheet metals in timber structures. · For fixing metal profiles in timber structures. · For fixing steel roofing tiles in timber structures.

* Product on order

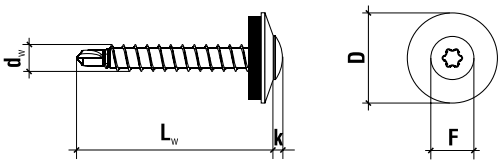
FILLISTER HEAD SCREW WITH TORX-20 DRIVE
Modern shape of head provides aesthetic appearance of the connection, the head adjusts to the surface of the fixed plates.

POSSIBILITY OF PAINTING ACCORDING TO RAL PALETTE
UV-resistant coating in colour matched with the fixed member, additionally ensures protection against corrosion.

EPDM WASHER
It seals and secures the connection from corrosion.

ANTI-CORROSION COATING - ELECTRO-GALVANIZED (WFDOC/WFD)
Thickness of zinc coating min. 12 µm, guarantee of quality and high level of anti-corrosion protection.

SELF-DRILLING TIP
Ability of drilling plates of thickness up to 2.5 mm, short time of fixing.



Basic informations

	Product code	Dimensions	Max. usable length	Quantity
		d_w x L_w [mm]	t_{fix} [mm]	[pcs]
WDD				
⌀4,8	**WDD-48035**	4,8x35	5	250
WDD + RAL				
⌀4,8	**WDD-48035-RAL...**	4,8x35	5	250

RAL colours other than our permanent offer (standard RAL colour chart) are available for orders of minimum 210000 pcs.

TECHNICAL PARAMETERS

Type		WDD
European Technical Assessment	-	ETA-16/0443
Screw diameter	d_w [mm]	4,8
Drilling capacity	$\sum t_i$ [mm]	≤ 2,5
Spanner size	S [mm]	TX-20
Head height	k [mm]	2,0
Head diameter	F [mm]	9,0
Tip length	[mm]	5,0
EPDM washer	D [mm]	aluminum A14
Screw material	-	Carbon steel

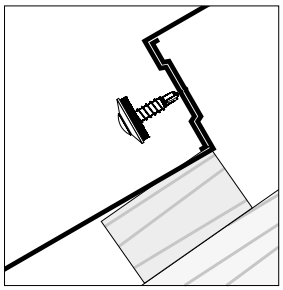
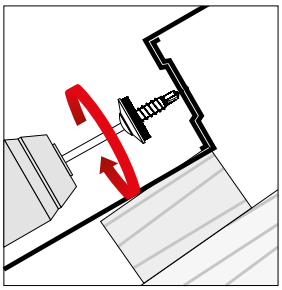
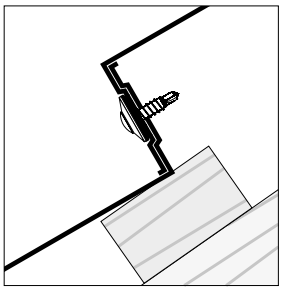
Type		WDD
Paint coating RAL	[µm]	min. 60 µm
Protective coating	[µm]	Galvanized min. 12 µm
Fastener anchorage depth	h_{ef} [mm]	20/30
Min. substrate thickness	h_{min} [mm]	20/30
Min. spacing	S_{min} [mm]	50
Min. edge distance	C_{min} [mm]	25
Substrate material	-	timber ≥ C24

CHARACTERISTIC PULL-OUT / SHEAR STRENGTH [KN]

Substrate	Substrates thickness [mm]	Steel sheet thickness [mm]					
		0,5	**0,63**	**0,75**	**0,88**	**1,00**	**1,25**
Timber C24	20	1,24/1,10	1,24/1,50	1,24/1,74	1,24/1,74	1,24/1,74	1,24/1,74
	30	1,73/1,10	1,73/1,50	1,73/1,74	1,73/1,74	1,73/1,74	1,73/1,74

Partial safety factor of 1.33 recommended

INSTALLATION INSTRUCTIONS


Self-drilling screw with EPDM washer for making lap joints in steel sheets

WSBP

ø4,8

ETA-16/0443

Zn WHITE

RAL

	Galvanized
ø4,8	WSBP **Length range: 19 - 25 mm**

	Galvanized + RAL
ø4,8	WSBP **Length range: 19 - 25 mm**

SUBSTRATES

STEEL SHEET

SCREW MATERIAL	Carbon steel
ANTI-CORROSION PROTECTION	· Galvanized · SQ Ceramic*
APPLICATION	· For making lap joints in sheet metals. · For stitching steel roofing tiles. · For joining flashings.

* Product on order

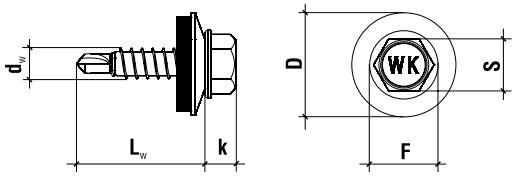
HEX HEAD SW-8 / BRANDING OF HEAD OF SCREW
WK feature at head of the screw facilitates the identification of our company as the producer and easy recognition of the product

POSSIBILITY OF PAINTING ACCORDING TO RAL PALETTE
UV-resistant coating in colour matched with the fixed member, additionally ensures protection against corrosion.

EPDM WASHER
It seals and secures the connection from corrosion.

ANTI-CORROSION COATING - ELECTRO-GALVANIZED (WFDOC/WFD)
Thickness of zinc coating min. 12 µm, guarantee of quality and high level of anti-corrosion protection.

SELF-DRILLING TIP
Ability of drilling plates of thickness up to 2.5 mm, short time of fixing.



Basic informations

	Product code	Dimensions	Max. usable length	Quantity
		d_w x L_w [mm]	t_{fix} [mm]	[pcs]
WSBP				
ø4,8	**WSBP-48019**	4,8x19	1,5	250
	WSBP-48025	4,8x25	2,5	250
WSBP + RAL				
ø4,8	**WSBP-48019-RAL...**	4,8x19	1,5	250
	WSBP-48025-RAL...	4,8x25	2,5	250

RAL colours other than our permanent offer (standard RAL colour chart) are available for orders of minimum 210000 pcs.

TECHNICAL PARAMETERS

Type		WSBP
European Technical Assessment	-	ETA-16/0443
Screw diameter	d_w [mm]	4,8
Drilling capacity	$\sum t_1$ [mm]	≤ 2,5
Spanner size	S [mm]	SW-8
Head height	k [mm]	4,5
Head diameter	F [mm]	10,0
Tip length	[mm]	5,0
EPDM washer	D [mm]	stalowa Z14
Screw material	-	Carbon steel

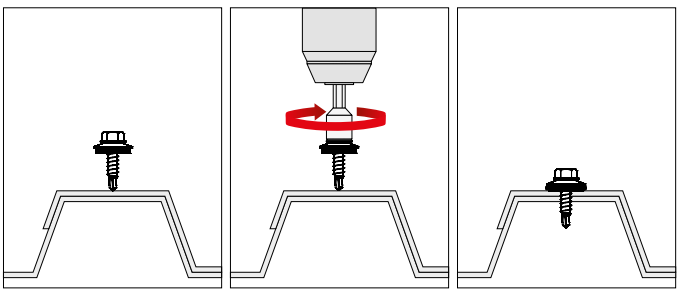
Type		WSBP
Paint coating RAL	[µm]	min. 60 µm
Protective coating	[µm]	Galvanized min. 12 µm
Fastener anchorage depth	h_{ef} [mm]	push-through installation
Min. substrate thickness	h_{min} [mm]	0,50
Min. spacing	S_{min} [mm]	50
Min. edge distance	C_{min} [mm]	25
Substrate material	-	steel ≥ S280GD

CHARACTERISTIC PULL-OUT / SHEAR STRENGTH [KN]

Substrates thickness [mm]	Steel sheet thickness [mm]					
	0,50	**0,63**	**0,75**	**0,88**	**1,00**	**1,25**
0,50	0,64/1,10	0,64/1,10	0,64/1,10	0,64/1,10	0,64/1,10	0,64/1,10
0,63	0,64/1,10	0,82/1,50	0,82/1,50	0,82/1,50	0,82/1,50	0,82/1,50
0,75	0,64/1,10	0,82/1,50	0,96/1,74	0,96/1,74	0,96/1,74	0,96/1,74
0,88	0,64/1,10	0,82/1,50	0,96/1,74	1,28/1,74	1,28/1,74	1,28/1,74
1,00	0,64/1,10	0,82/1,50	0,96/1,74	1,28/1,74	1,55/1,74	1,55/1,74
1,25	0,64/1,10	0,82/1,50	0,96/1,74	1,28/1,74	1,55/1,74	2,21/1,74

Partial safety factor of 1.33 recommended

INSTALLATION INSTRUCTIONS



KLIMAS
FASTENER TECHNOLOGIES

STRONG FOR GENERATIONS

NAILS

Designed for fixing various wooden parts to timber structures and to each other. The head of the nail is enlarged and flattened to allow easy hammering. Various head shapes are used depending on the type of materials being fastened and the intended appearance. As nails get longer, the diameter of the wire generally becomes larger as well. Larger sizes are used for joints requiring increased strength parameters.

GBCZ / GBOC	Common polished nails	136
Length range: 40 - 300 mm	**Bright**	**Galvanized - white**

GDCZ / GDOC	Roofing nails	136
Length range: 25 - 40 mm	**Bright**	**Galvanized - white**

GSCZ / GSOC	Lost head nails	137
Length range: 20 - 40 mm	**Bright**	**Galvanized - white**

GSKCZ / GSKOC	Twisted nails	137
Length range: 50 - 100 mm	**Bright**	**Galvanized - white**

GCOC	Carpentry nails	138
Length range: 40 - 80 mm	**Galvanized - white**	

GPCZ / GPOC	Clout nails	138
Length range: 25 - 40 mm	**Bright**	**Galvanized - white**

PGP	Washers for clout nails	139
Diameter: 27 mm	**Galvanized - white**	

GPP	Clout nails with washer	139
Length range: 25 - 38 mm	**Galvanized - white**	

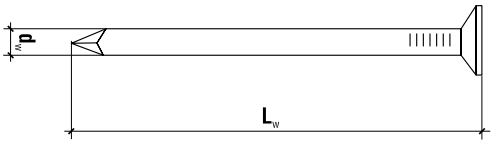
GHWOC	Hardened grooved nails	140
Length range: 25 - 80 mm	**Galvanized - white**	

GWCZ / GWOC	Ring nails	140
Length range: 50 - 125 mm	**Bright**	**Galvanized - white**

GTCZ / GTOC	Upholstery nails	141
Length range: 18 - 20 mm	**Bright**	**Galvanized - white**

GBCZ / GBOC (PN-EN 10230-1)

Common polished nails



APPLICATION For fixing various wooden parts to timber structures and to each other. Wide flush head with rough surface facilitates hammering and prevents the hammer from slipping. Shank diameter depends on shank length.

Installation Does not require prior drilling.

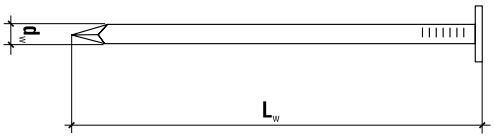
Substrate Chipboard, plywood, wood, OSB board, MDF board

Material Bright or galvanized low-carbon steel

Bright	Galvanized - white	d_w x L_w [mm]	Unit pack [kg]
GBCZ-20040	**GBOC-20040**	2,0 x 40	5
GBCZ-22050	**GBOC-22050**	2,2 x 50	5
GBCZ-24060	**GBOC-24060**	2,4 x 60	5
GBCZ-27065	**GBOC-27065**	2,7 x 65	5
GBCZ-30070	**GBOC-30070**	3,0 x 70	5
GBCZ-30080	**GBOC-30080**	3,0 x 80	5
GBCZ-34090	**GBOC-34090**	3,4 x 90	5
GBCZ-42100	**GBOC-42100**	4,2 x 100	5
GBCZ-46125	**GBOC-46125**	4,6 x 125	5
GBCZ-50150	**GBOC-50150**	5,0 x 150	5
GBCZ-60175	**GBOC-60175**	6,0 x 175	5
GBCZ-70200	**GBOC-70200**	7,0 x 200	5
GBCZ-70225	**GBOC-70225**	7,0 x 225	5
GBCZ-80250	**GBOC-80250**	8,0 x 250	5
GBCZ-80280	**GBOC-80280**	8,0 x 280	5
GBCZ-80300	**GBOC-80300**	8,0 x 300	5

GDCZ / GDOC (PN-EN 10230-1)

Roofing nails



APPLICATION For fixing various wooden parts to timber structures and to each other. Small diameter shank and flat head.

Installation Does not require prior drilling.

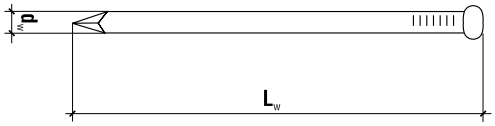
Substrate Chipboard, plywood, wood, OSB board, MDF board

Material Bright or galvanized low-carbon steel

Bright	Galvanized - white	d_w x L_w [mm]	Size in inches	Unit pack [kg]
GDCZ-12025	**GDOC-12025**	1,2 x 25	1"	5
GDCZ-14025	**GDOC-14025**	1,4 x 25	1"	5
GDCZ-14030	**GDOC-14030**	1,4 x 30	-	5
GDCZ-16030	**GDOC-16030**	1,6 x 30	-	5
GDCZ-16035	**GDOC-16035**	1,6 x 35	-	5
GDCZ-16040	**GDOC-16040**	1,6 x 40	1,5"	5

GSCZ / GSOC

Lost head nails



APPLICATION For fixing various wooden parts to timber structures and to each other. Small barrel head with thin shank. Also suitable for concealed fixing.

Installation Does not require prior drilling.

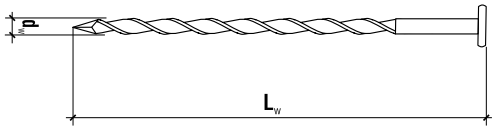
Substrate Chipboard, plywood, wood, OSB board, MDF board

Material Bright or galvanized low-carbon steel

Bright	Galvanized - white	d_w x L_w [mm]	Size in inches	Unit pack [kg]
GSCZ-12020	**GSOC-12020**	1,2 x 20	-	5
GSCZ-12025	**GSOC-12025**	1,2 x 25	1"	5
GSCZ-14025	**GSOC-14025**	1,4 x 25	1"	5
GSCZ-14030	**GSOC-14030**	1,4 x 30	-	5
GSCZ-16035	**GSOC-16035**	1,6 x 35	-	5
GSCZ-18040	**GSOC-18040**	1,8 x 40	1,5"	5
GSCZ-20040	**GSOC-20040**	2,0 x 40	1,5"	5

GSKCZ / GSKOC (PN-EN 10230-1)

Twisted nails



APPLICATION For fixing various wooden parts to timber structures and to each other. Wide flat head with rough surface facilitates hammering and prevents hammer from slipping during installation. Twisted shank provides increased strength parameters.

Installation Does not require prior drilling.

Substrate Chipboard, plywood, wood, OSB board, MDF board

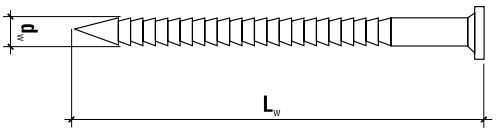
Material Bright or galvanized low-carbon steel

Bright	Galvanized - white	d_w x L_w [mm]	Size in inches	Unit pack [kg]
GSKCZ-31050	**GSKOC-31050**	3,1 x 50	2"	5
GSKCZ-31060	**GSKOC-31060**	3,1 x 60	-	5
GSKCZ-35070	**GSKOC-35070**	3,5 x 70	-	5
GSKCZ-35080	**GSKOC-35080**	3,5 x 80	3"	5
GSKCZ-42090	**GSKOC-42090**	4,2 x 90	3,5"	5
GSKCZ-42100	**GSKOC-42100**	4,2 x 100	4"	5

GCOC (PN-EN 10230-1)

Carpentry nails

Zn WHITE



APPLICATION For fixing various wooden parts to timber structures and to each other. Reinforced flat head with rough surface prevents hammer from slipping during installation. Ring shank provides increased strength parameters.

Installation Does not require prior drilling.

Substrate Chipboard, plywood, wood, OSB board, MDF board

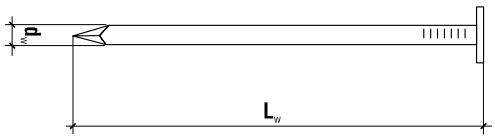
Material Galvanized low-carbon steel

Galvanized - white	d_w x L_w [mm]	Size in inches	Unit pack [kg]
GCOC-40040	4,0 x 40	1,5"	5
GCOC-40050	4,0 x 50	2"	5
GCOC-40060	4,0 x 60	-	5
GCOC-40070	4,0 x 70	-	5
GCOC-40080	4,0 x 80	3"	5

GPCZ / GPOC (PN-EN 10230-1)

Clout nails

Zn WHITE



APPLICATION For fixing felt roofing materials to timber structures. Large flat head with smooth surface.

Installation Does not require prior drilling.

Substrate Chipboard, plywood, wood, OSB board, MDF board

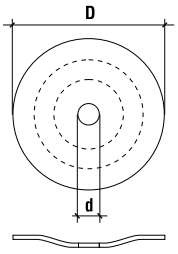
Material Bright or galvanized low-carbon steel

Bright	Galvanized - white	d_w x L_w [mm]	Size in inches	Unit pack [kg]
GPCZ-25025	**GPOC-25025**	2,5 x 25	1"	5
GPCZ-25030	**GPOC-25030**	2,5 x 30	-	5
GPCZ-30025	**GPOC-30025**	3,0 x 25	1"	5
GPCZ-30030	**GPOC-30030**	3,0 x 30	-	5
GPCZ-30035	**GPOC-30035**	3,0 x 35	-	5
GPCZ-30040	**GPOC-30040**	3,0 x 40	1,5"	5

PGP (PN-EN 10230-1)

Washers for clout nails

Zn WHITE



APPLICATION Washers for clout nails increase pull-through resistance of felt roofing materials

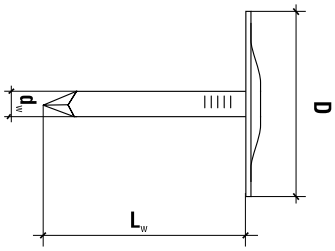
Material Galvanized low-carbon steel

Galvanized - white	D [mm]	d [mm]	Thickness [mm]	Unit pack [kg]
PGP-3	27	3,5	0,8	1

GPP (PN-EN 10230-1)

Clout nails with washer

Zn WHITE



APPLICATION For fixing felt roofing materials to timber structures. Washers increase pull-through resistance.

Installation Does not require prior drilling.

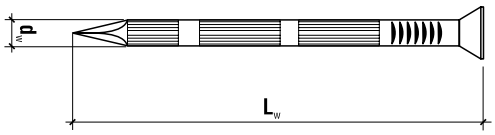
Substrate Chipboard, plywood, wood, OSB board, MDF board

Material Galvanized low-carbon steel

Galvanized - white	d_w x L_w [mm]	D [mm]	Unit pack [kg]
GPPOC-28025	2,8 x 25	30	5
GPPOC-28028	2,8 x 28	30	5
GPPOC-28038	2,8 x 38	30	5

GHWOC (PN-EN 10230-1)

Hardened grooved nails



APPLICATION For fixing timber structures and various wooden elements to concrete , solid brick , AAC block ,lightweight concrete . Grooved shank provides strong and reliable fastening.

Installation Does not require prior drilling.

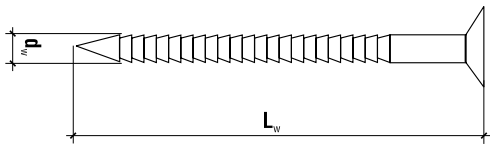
Substrate Chipboard, plywood, wood, OSB board, MDF board

Material Galvanized low-carbon steel

Galvanized - white	d_w x L_w [mm]	Size in inches	Unit pack [kg]
GHWOC-27025	2,7 x 25	1"	3
GHWOC-27030	2,7 x 30	-	3
GHWOC-27035	2,7 x 35	-	3
GHWOC-27040	2,7 x 40	1,5"	3
GHWOC-35045	3,5 x 45	-	3
GHWOC-35050	3,5 x 50	2"	3
GHWOC-35060	3,5 x 60	-	3
GHWOC-35065	3,5 x 65	2,5"	3
GHWOC-45070	4,5 x 70	-	3
GHWOC-45080	4,5 x 80	3"	3

GWCZ / GWOC (PN-EN 10230-1)

Ring nails



APPLICATION For fixing various wooden parts to timber structures and to each other. Wide flat head with rough surface prevents hammer from slipping during installation. Ring shank provides increased strength parameters.

Installation Does not require prior drilling.

Substrate Chipboard, plywood, wood, OSB board, MDF board

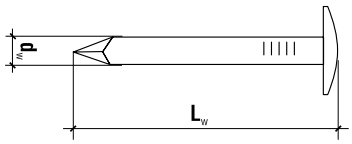
Material Bright or galvanized low-carbon steel

Bright	Galvanized - white	d_w x L_w [mm]	Size in inches	Unit pack [kg]
GWCZ-31050	**GWOC-31050**	3,1 x 50	2"	5
GWCZ-35060	**GWOC-35060**	3,5 x 60	-	5
GWCZ-35070	**GWOC-35070**	3,5 x 70	-	5
GWCZ-35080	**GWOC-35080**	3,5 x 80	3"	5
GWCZ-42090	**GWOC-42090**	4,2 x 90	-	5
GWCZ-42100	**GWOC-42100**	4,2 x 100	4"	5
GWCZ-42125	**GWOC-42125**	4,2 x 125	-	5

GTCZ / GTOC

Upholstery nails

Zn WHITE



APPLICATION For fixing upholstery padding or material to furniture wooden structure. Large domed head allow to push easily the sharp tip of the nail through the material and into the wooden structure.

Installation Does not require prior drilling.

Substrate Chipboard, plywood, wood, OSB board, MDF board

Material Bright or galvanized low-carbon steel

Bright	Galvanized - white	d_w x L_w [mm]	Unit pack [kg]
GTCZ-18018	**GTOC-18018**	1,8 x 18	5
GTCZ-20020	**GTOC-20020**	2,0 x 20	5

TX screwdriver bits TX

TX-S2

Product code	Type / length [mm]	Quantity [pcs]
TX-10S2	TX-10 / dł. 25	2
TX-15S2	TX-15 / dł. 25	2
TX-20S2	TX-20 / dł. 25	2
TX-25S2	TX-25 / dł. 25	2
TX-30S2	TX-30 / dł. 25	5
TX-40S2	TX-40 / dł. 25	2
TX-40S2-50	TX-40 / dł. 50	2
TX-50S2	TX-50 / dł. 25	2

PZ screwdriver bits

PZ-S2

Product code	Type / length	Quantity [pcs]
PZ-S2-01025	PZ-1 / length: 25 mm	10
PZ-S2-02025	PZ-2 / length: 25 mm	10
PZ-S2-03025	PZ-3 / length: 25 mm	10

Bit set

STBIT-30

1, 2, 3 — 1, 2, 3
3, 4, 5, 6 — 3, 4, 5, 6
10, 15, 20, 25, 27, 30, 40
10, 15, 20, 25, 27, 30, 40

Wood drill bits

WDS

Product code	Dimensions	Quantity [pcs]
WDS-03060	3,0 x 60	1
WDS-04075	4,0 x 75	1
WDS-05085	5,0 x 85	1
WDS-06090	6,0 x 90	1
WDS-07105	7,0 x 105	1
WDS-08115	8,0 x 115	1
WDS-09115	9,0 x 115	1
WDS-10120	10 x 120	1
WDS-11150	11 x 150	1
WDS-12150	12 x 150	1
WDS-13150	13 x 150	1
WDS-14150	14 x 150	1
WDS-15160	15 x 160	1
WDS-16160	16 x 160	1

KLIMAS
FASTENER TECHNOLOGIES

STRONG FOR GENERATIONS

SCREWED-IN FASTENERS FOR FASTENING INSULATION MATERIALS IN WOODEN SUBSTRATE

DRIVE W, DRIVE S

INNOVATIVE CONSTRUCTION OF PRESSURE COLLAR

Simple and fast assembly of mineral wool MW without the need to apply additional pressure collar. Very rigid flange of a diameter of 110 mm guarantees a certain pressure of insulation material.

TX DRIVE IN THE PIN'S HEAD

Screw-in installation, no hammer action.

PIN THREADED FOR USE IN TIMBER

Reliable installation in timber.

POCKET ADHESIVES (DRIVE W)

Very good adhesiveness of the mortar.

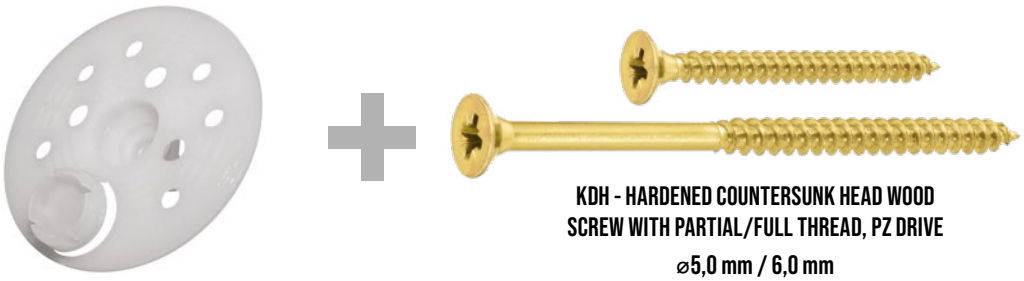
Deutsches Institut für Bautechnik DIBt

ZULASSUNG
DIBT-Z-9.1-875

POLISH APPROVAL
ITB-KOT-2019/0913 - wyd. 1

DRIVE W	Screwed-in fastener for fastening of mineral wool MW in wooden substrate	146
⌀6	**Length range:** 110 - 310 mm	**PLUG - polyamide**

DRIVE S	Screwed-in fastener for fastening of polystyrene EPS foam in wooden substrate	148
⌀6	**Length range:** 110 - 310 mm	**PLUG - polyamide**



KDH - HARDENED COUNTERSUNK HEAD WOOD SCREW WITH PARTIAL/FULL THREAD, PZ DRIVE
⌀5,0 mm / 6,0 mm

TD-060, TDP-060	Special screwed-in fastener with screw	150
⌀64	**Material - polyamide (TD-060) / polypropylene (TDP-060)**	

Screwed-in fastener for fastening of mineral wool MW in wooden substrate

DRIVE W

⌀6

Modern fastener with low spot thermal conductivity for fastening of mineral wool MW on wooden substrate in ETICS systems.

TX-40

PA 100% NYLON

Zn WHITE

Metal pin + head covered with plastic PA with glass fiber

⌀6	DRIVE W **Length range: 110 - 320 mm**

SUBSTRATES

Timber C22

OSB board, polywood

Fiber-cement board

FASTENER MATERIAL	Polyamide (PA)
PIN MATERIAL	Carbon steel
HEAD MATERIAL	Polyamide (PA) with glass fiber
CORROSION PROTECTION	Galvanized
INSTALLATION METHOD	Immerged mount
FASTENER TYPE	Screwed-in
APPLICATION	Universal screwed-in fastener for fastening of mineral wool
TYPE OF INSULATION MATERIAL	Mineral wool MW

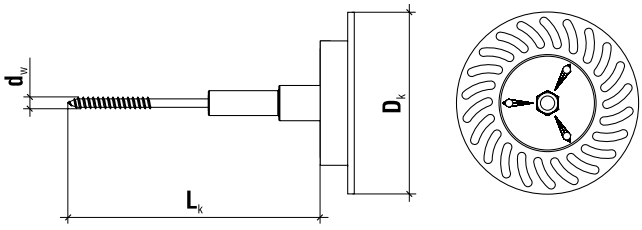
INNOVATIVE CONSTRUCTION OF PRESSURE COLLAR
Simple and fast assembly of mineral wool MW without the need to apply additional pressure collar. Very rigid collar of a diameter of 110 mm guarantees a certain pressure of insulation material.

MINERAL WOOL DISC
Minimizes the formation of thermal bridges on the facade, increases the aesthetics of the insulation executed.

PIN THREADED FOR USE IN TIMBER
Reliable installation in timber.

POCKET ADHESIVES
Very good adhesiveness of the mortar.

	Product code	Dimensions	Insulation material thickness	Pack unit
		d_k x L_k [mm]	[mm]	[pcs]
DRIVE W				
⌀6	DRIVE-W-06120(50)	6x110	90	50
	DRIVE-W-06140(50)	6x130	110	50
	DRIVE-W-06160(50)	6x150	130	50
	DRIVE-W-06180(50)	6x170	150	50
	DRIVE-W-06200(50)	6x190	170	50
	DRIVE-W-06220(50)	6x210	190	50
	DRIVE-W-06240(50)	6x230	210	50
	DRIVE-W-06260(50)	6x250	230	50
	DRIVE-W-06280(50)	6x270	250	50
	DRIVE-W-06300(50)	6x290	270	50
	DRIVE-W-06320(50)	6x310	290	50



Product marking - DRIVE-W-06120(50)			
DRIVE-W	**06**	**120**	**(50)**
Fastener type	Diameter	Length	Number of pieces in a box

TECHNICAL PARAMETERS

Parameter	Unit	Value
Fastener diameter	d_k [mm]	6
Collar diameter	D_k [mm]	110
Point thermal transmittance	χ [W/K]	0,000
Collar stiffness	S [kN/mm]	0,60
Fastener material	-	PA
Pin material	-	Carbon steel, head covered with plastic (PA+GF)
DiBT (Zulassung) Approval	-	**Z-9.1-875**
Polish Approval	-	**ITB-KOT-2019/0913 (wyd. 1)**

LOAD RESISTANCE (ITB APPROVAL)

Substrate	Effective anchorage depth [mm]	Design resistance [kN]
Timber C22÷C24	16	1,33
Timber C22÷C24	20÷40	1,52
Wood basen panels OSB	15	0,84
Particle-cement board	12	0,37

INSTALLATION ACCESSORIES

Setting tool

EDST-W diameter ⌀65 mm

Specifications:

- ECO-DRIVE W 8 and DRIVE W setting tool.

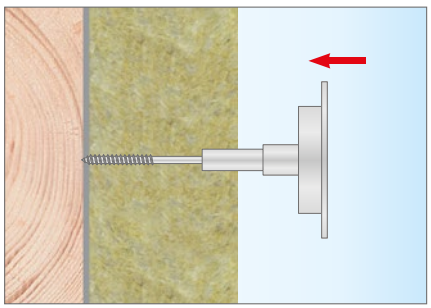
Mineral wool disc

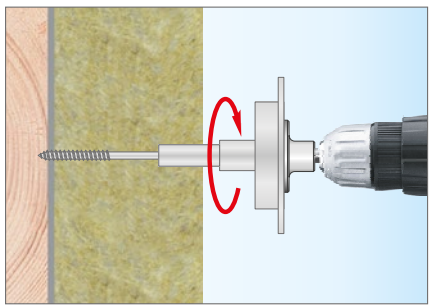
EDKW diameter ⌀67 mm / 10 mm

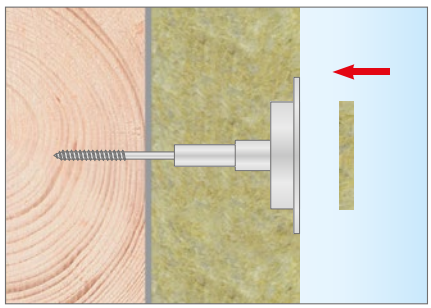
Specifications:

- Mineral wool disc density135 kg/m^3.

INSTALLATION INSTRUCTIONS - installation of a fastener with Mineral wool disc – immerged mount without cutter







Metal pin + head covered with plastic PA with glass fiber

ø6	DRIVE S **Length range: 110 - 320 mm**

Screwed-in fastener for fastening of polystyrene EPS foam in wooden substrate

DRIVE S

ø6

Modern fastener with low spot thermal conductivity for fastening of polystyrene EPS foam on wooden substrate in ETICS systems.

TX-40

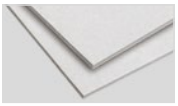
PA 100% NYLON

Zn WHITE

SUBSTRATES

Timber C22

OSB board, polywood



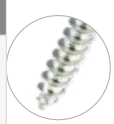
Fiber-cement board

FASTENER MATERIAL	Polyamide (PA)
PIN MATERIAL	Carbon steel
HEAD MATERIAL	Polyamide (PA) with glass fiber
CORROSION PROTECTION	Galvanized
INSTALLATION METHOD	Immerged mount
FASTENER TYPE	Screwed-in
APPLICATION	Innovative fastener for fastening of polystyrene EPS
TYPE OF INSULATION MATERIAL	Polystyrene EPS

INNOVATIVE DESIGN
Facilitates fast and easy installation of polystyrene EPS in wooden substrate.

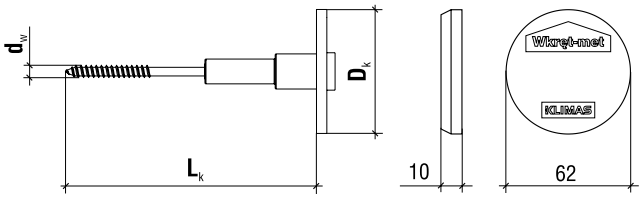
POLYSTYRENE DISC
Eliminates thermal bridging on the facade and enhances aesthetics of the connection.

TX DRIVE IN THE PIN'S HEAD
Screw-in installation, no hammer action.



PIN THREADED FOR USE IN TIMBER
Preliable installation in timber.

	Product code	Dimensions	Insulation material thickness	Pack unit
		d_k x L_k [mm]	[mm]	[pcs]
DRIVE S				
⌀6	DRIVE-S-06120(100)	6x110	90	100
	DRIVE-S-06140(100)	6x130	110	100
	DRIVE-S-06160(100)	6x150	130	100
	DRIVE-S-06180(100)	6x170	150	100
	DRIVE-S-06200(100)	6x190	170	100
	DRIVE-S-06220(100)	6x210	190	100
	DRIVE-S-06240(100)	6x230	210	100
	DRIVE-S-06260(100)	6x250	230	100
	DRIVE-S-06280(100)	6x270	250	100
	DRIVE-S-06300(100)	6x290	270	100
	DRIVE-S-06320(100)	6x310	290	100



Product marking - DRIVE-S-06120(100)?			
DRIVE-S	**06**	**120**	**(100)**
Fastener type	Diameter	Length	Number of pieces in a box

TECHNICAL PARAMETERS

Parameter	Unit	Value
Fastener diameter	d_k [mm]	6
Collar diameter	D_k [mm]	60
Point thermal transmittance	χ [W/K]	0,000
Collar stiffness	S [kN/mm]	0,60
Fastener material	-	PA
Pin material	-	Carbon steel, head covered with plastic (PA+GF)
DiBT (Zulassung) Approval	-	**Z-9.1-875**
Polish Approval	-	**ITB-KOT-2019/0913 (wyd. 1)**

LOAD RESISTANCE (ITB APPROVAL)

Substrate	Effective anchorage depth [mm]	Design resistance [kN]
Timber C22÷C24	16	1,33
Timber C22÷C24	20÷40	1,52
Wood basen panels OSB	15	0,84
Particle-cement board	12	0,37

INSTALLATION ACCESSORIES

Setting tool

EDST diameter ⌀120 mm, TX 40

Specifications:

- ECO-DRIVE 8, ECO-DRIVE S 8 and DRIVE S setting tool.

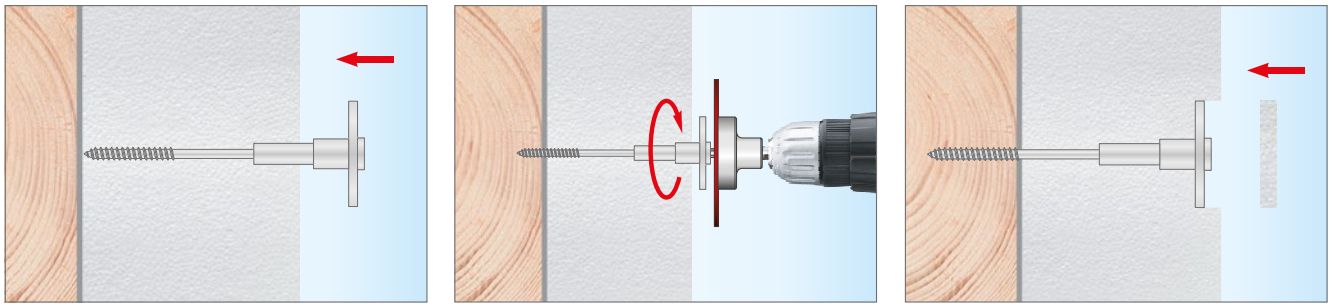
Polystyrene disc

EDKS*, EDKSG** diameter ⌀62x10 mm

Specifications:

* - WHITE DISC - supplied with fastener.
** - GRAPHITE DISC - on order.

INSTALLATION INSTRUCTIONS - immerged mount with a polystyrene EPS disc



Special screwed-in fastener with screw

TD-060, TDP-060

Support collar with steel screws for fastening of polystyrene EPS foam and mineral wool on profiled sheet and wooden substrates, in ETICS systems.

KDH - HARDENED COUNTERSUNK HEAD WOOD SCREW WITH PARTIAL/FULL THREAD, PZ DRIVE

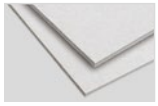
⌀5,0 mm / 6,0 mm

SEE PAGE 90

SUBSTRATES

Timber C22

OSB board, polywood



Fiber-cement board

Steel sheet

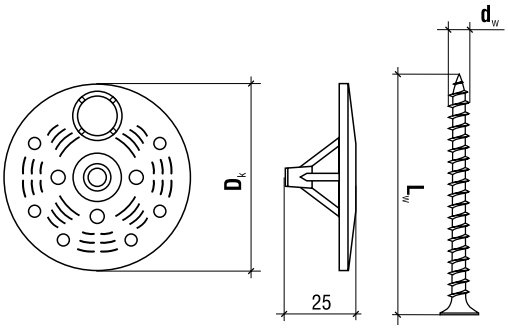
FASTENER MATERIAL	· Polyamide (TD-060) · Polypropylene (TDP-060)
SCREW MATERIAL	Galvanized steel
TYPE OF INSULATION MATERIAL	· Polystyrene EPS · Mineral wool MW
FASTENER TYPE	Screwed-in
INSTALLATION METHOD	Surface mount
APPLICATION	Special screwed-in fastener with steel screw for fastening of mineral wool MW and polystyrene EPS in wooden and steel sheet substrates

SUPPORT COLLAR
Universal application for installing commonly-used insulation material in timber and steel sheet substrates.

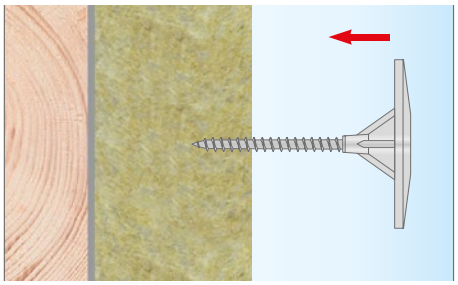
HOLDING COLLAR
To be used with a wide range of screws –allows for installing insulation materials of different thicknesses.

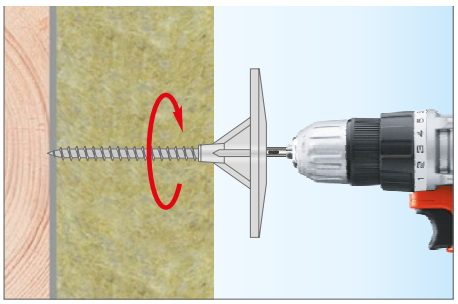
COLLAR-INTEGRATED CAP
Minimizes thermal bridging and seals connections.

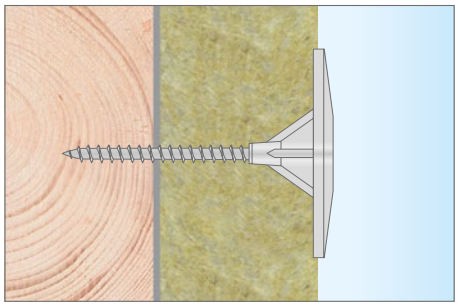
Insulation material thickness [mm]	Collar	Timber, OSB, Cement board
		KDHT/KDH
30	TD-60, TDP-60	KDHT/KDH-05060
40	TD-60, TDP-60	KDHT/KDH-05070
50	TD-60, TDP-60	KDHT/KDH-05080
60	TD-60, TDP-60	KDHT/KDH-05090
70	TD-60, TDP-60	KDHT/KDH-05100
80	TD-60, TDP-60	KDHT/KDH-06110
90	TD-60, TDP-60	KDHT/KDH-06120
100	TD-60, TDP-60	KDHT/KDH-06140
110	TD-60, TDP-60	KDHT/KDH-06140
120	TD-60, TDP-60	KDHT/KDH-06160
130	TD-60, TDP-60	KDHT/KDH-06160
140	TD-60, TDP-60	KDHT/KDH-06180
150	TD-60, TDP-60	KDHT/KDH-06180
160	TD-60, TDP-60	KDHT/KDH-06200
170	TD-60, TDP-60	KDHT/KDH-06200
180	TD-60, TDP-60	KDHT/KDH-06200
190	TD-60, TDP-60	-



INSTALLATION INSTRUCTIONS - surface mount







TECHNICAL PARAMETERS

Parameter	Unit	Timber, OSB board, Cement board
Fastener diameter	d_w [mm]	5,0/6,0
Collar diameter	D_k [mm]	64
Fastener material	-	Polyamide PA Polypropylene PP
Pin material	-	Zinc plated steel
Polish Approval	-	**ITB-KOT-2019/0913 (wyd. 1)**

LOAD RESISTANCE

Substrate	Substrate thickness [mm]	Product marking	Design resistance [kN]	Product marking	Design resistance [kN]
Timber C22	25	TD+KDH 5,0 / TDP+KDH 5,0	1,19 / 2,08	-	-
Timber C22	30	-	-	TD+KDH 6,0 / TDP+KDH 6,0	2,08 / 2,47
OSB board	12,5	TD+KDH 5,0 / TDP+KDH 5,0	0,84 / 0,84	TD+KDH 6,0 / TDP+KDH 6,0	0,95 / 0,95
OSB board	18	TD+KDH 5,0 / TDP+KDH 5,0	1,19 / 1,26	TD+KDH 6,0 / TDP+KDH 6,0	1,38 / 1,38
Fibreboard	12,5	TD+KDH 5,0 / TDP+KDH 5,0	0,86 / 0,86	TD+KDH 6,0 / TDP+KDH 6,0	0,86 / 0,86

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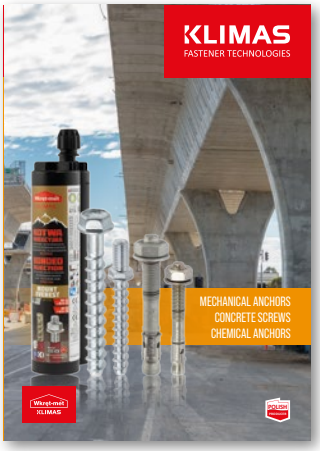
FASTENER TECHNOLOGIES

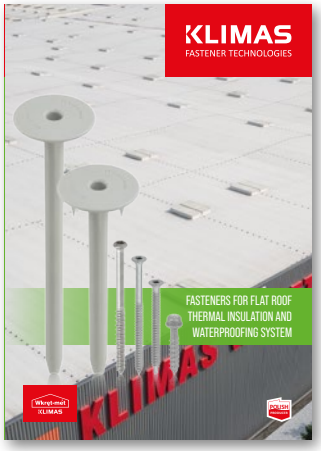
www.wkret-met.com/framework-fasteners

www.wkret-met.com/wood-screws



www.wkret-met.com/anchoring-systems

www.wkret-met.com/etics-wallfasteners



www.wkret-met.com/flat-roofs-fastenings

www.wkret-met.com/lightweight-cladding

www.wkret-met.com/drywall-fasteners

www.wkret-met.com/window-screws

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