

# KLIMAS

FASTENER TECHNOLOGIES



EXTERNAL THERMAL  
INSULATION  
COMPOSITE SYSTEM  
ETICS

Wkręt-met®  
KLIMAS

POLISH  
PRODUCER



Production plant no. 2 and central warehouse - total area of 30,000 m<sup>2</sup>  
New investment: plants no. 3 and 4 - total area of 30,000 m<sup>2</sup>



Production plant no. 1 - total area of 20,000 m<sup>2</sup>



# 4

PRODUCTION AND  
STORAGE FACILITIES  
OF TOTAL AREA OF

# 80 000 m<sup>2</sup>

**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.



## PRODUCTION PROCESS OF STEEL PRODUCTS:

- Top-quality raw-material from European steelworks.
- Various steel grades.
- Own RGD 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 m<sup>2</sup>



## OWN PRODUCTION OF FASTENER TECHNOLOGIES

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

MORE THAN

# 400

## MODERN MACHINES



- 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 m<sup>2</sup>



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 MOULDING MACHINES**



## 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 Ceramic 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

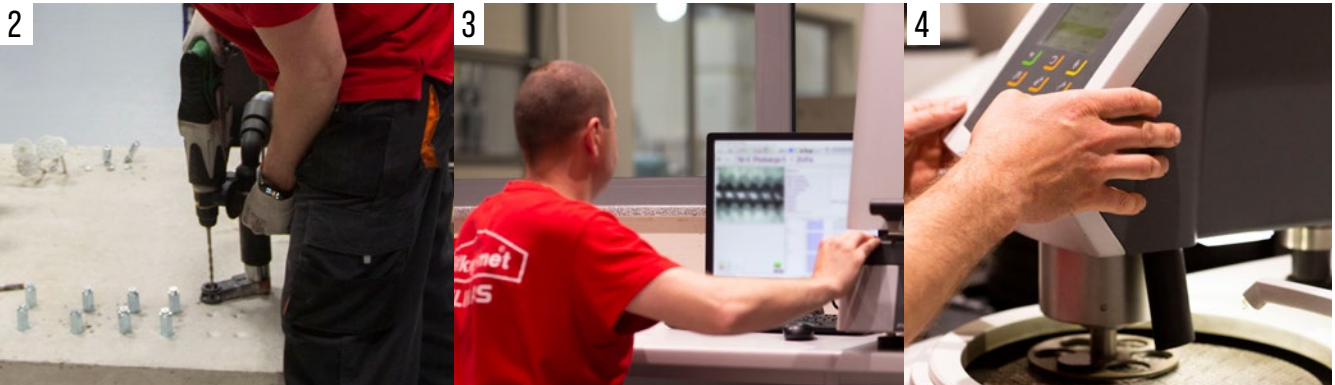
PRECISION  
HIGH QUALITY  
HIGH PRODUCTION CAPACITY

## HARDENING FURNACES



1

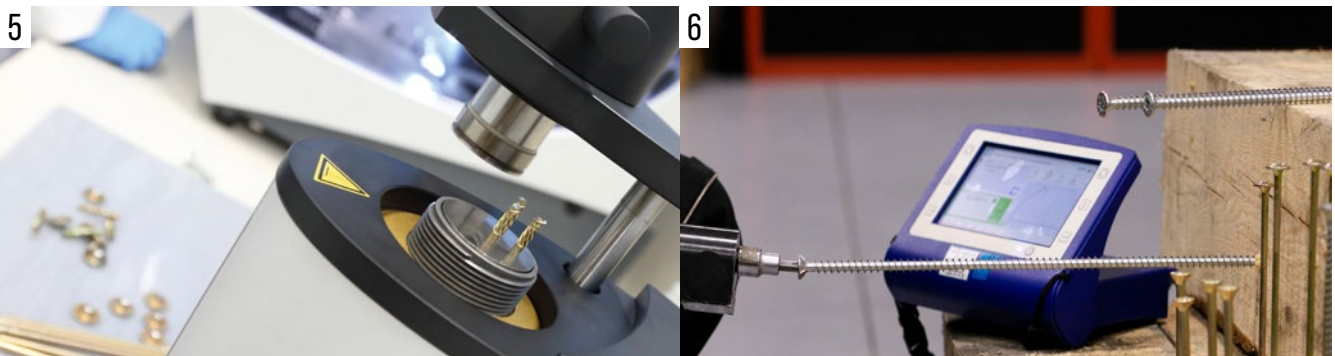
1. Hardness and micro Vickers hardness testing. | 2. Assembly and load-resistance tests for all substrate categories according to ETAG. | 3. Testing thickness of corrosion protection plating using X-ray fluorescence spectroscopy tester - Fischerscope X-RAY XDL. Analysis of chemical composition of alloy 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

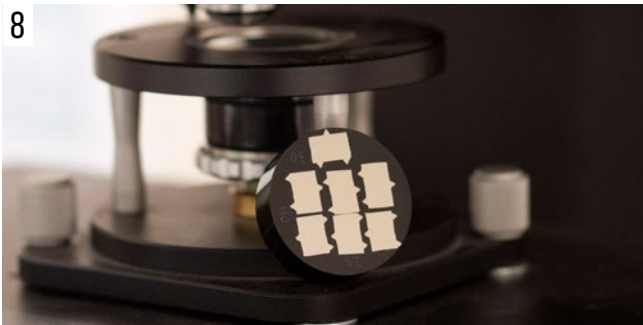
3

4



5

6



APPROVALS  
CERTIFICATES  
AWARDS



20

EUROPEAN APPROVALS



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

HIGH STORAGE WAREHOUSE

**24 000** PALLET PLACE



# OUR ASSETS KLIMAS WKREĆ-MET - WHY IT IS WORTH?

# KLIMAS

FASTENER TECHNOLOGIES



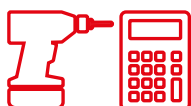
## BRAND MOST FREQUENTLY CHOSEN BY CONTRACTORS IN POLAND\*

\*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.



### 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.






### CONTENT



PRODUCT INDEX - FASTENER TYPE SELECTION	26-29
PRODUCT INDEX - FASTENER TYPE SELECTION - SURFACE MOUNT	30-31
PRODUCT INDEX - FASTENER TYPE SELECTION - IMMERGED MOUNT	32-33



#### EXTERNAL THERMAL INSULATION COMPOSITE SYSTEM – ETICS

### FASTENERS FOR FIXING WALL THERMAL INSULATION WITH PLASTIC PIN

LFN-10		Hammer driven fastener with plastic pin and extended expansion zone	36
LTX-8		Universal hammer driven fastener with plastic pin and short expansion zone	40
LTX-10		Universal hammer driven fastener with plastic pin and short expansion zone	44
FIXPLUG-8		Hammer driven fastener with plastic pin and telescopic collar	48
FIXPLUG-10		Hammer driven fastener with plastic pin and telescopic collar	52

#### EXTERNAL THERMAL INSULATION COMPOSITE SYSTEM – ETICS







### FASTENERS FOR FIXING WALL THERMAL INSULATION WITH METAL PIN

LMX-8		Universal hammer driven fastener with metal pin and short expansion zone	58
LMX-10		Universal hammer driven fastener with metal pin and short expansion zone	62







EXTERNAL THERMAL INSULATION COMPOSITE SYSTEM – ETICS

**FASTENERS FOR FIXING WALL THERMAL INSULATION WITH METAL PIN**

<b>LFMG-10</b>		Hammer driven fastener with metal pin and extended expansion zone	66
<b>WK THERM-8</b>		Hammer driven fastener with metal pin and short expansion zone	70
<b>WK THERM-S 8</b>		Screwed-in fastener with metal pin and short expansion zone	74
<b>ECO-DRIVE 8</b>		Screwed-in fastener with metal pin and telescopic support collar	78
<b>ECO-DRIVE S 8</b>		Screwed-in fastener with metal pin and telescopic support collar	82
<b>ECO-DRIVE W</b>		Screwed-in fastener with metal pin and telescopic support collar for mineral wool MW	86










EXTERNAL THERMAL INSULATION COMPOSITE SYSTEM – ETICS

**SPECIAL FASTENERS**

<b>DRIVE W</b>		Screwed-in fastener for fastening of mineral wool MW in wooden substrate	92
<b>DRIVE S</b>		Screwed-in fastener for fastening of polystyrene EPS foam in wooden substrate	94
<b>TD-060 TDP-060</b>		Special screwed-in fastener with screw	96
<b>MLN / MLN-A2</b>		Special hammer driven metal fastener for mineral wool MW	98








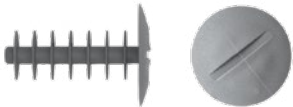
EXTERNAL THERMAL INSULATION COMPOSITE SYSTEM – ETICS

### INSTALLATION ACCESSORIES

WK-FT		Plastic cutter for cutting holes in polystyrene EPS	101
KS, KSG		Polystyrene disc (white, graphite)	101
WK-FM		Metal cutter to mineral wool	101
EDMW		Mineral wool disc	101
EDST		Setting tool (ECO-DRIVE 8, ECO-DRIVE S 8, DRIVE S)	102
EDKS EDKSG		Polystyrene disc (ECO-DRIVE 8, DRIVE S)	102
EDST-W		Setting tool (ECO-DRIVE W 8, DRIVE W)	102
TDX-90 TDX-140		Additional collar	102
EDKW		Mineral wool disc (ECO-DRIVE W, DRIVE W)	102

EXTERNAL THERMAL INSULATION COMPOSITE SYSTEM – ETICS

**INSTALLATION ACCESSORIES**

<p><b>WK-DS</b></p>		<p>Screwed-in helical fastener</p>	<p>103</p>
<p><b>DW</b></p>		<p>Spacer and levelling washers</p>	<p>103</p>
<p><b>SMNKC</b></p>		<p>Expansion plug with collar</p>	<p>103</p>
<p><b>LLC</b></p>		<p>Connector for starting strips</p>	<p>103</p>
<p><b>KST-750</b></p>		<p>PU adhesive for foamed polystyrene THERMO STYRO FIX</p>	<p>104</p>
<p><b>SWS-145</b> <b>SWS-145 Z</b> <b>SWS-160</b> <b>SWS-160 Z</b></p>		<p>Glassfibre mesh</p>	<p>104</p>
<p><b>HOX-14</b> <b>HOX-16</b></p>		<p>Expansion plug with eye hook (For fixing construction scaffolds)</p>	<p>104</p>
<p><b>ZHO</b></p>		<p>Plastic cup for covering HOX eye-hook holes</p>	<p>104</p>

## Wkret-met - trusted brand

From many years now the Wkret-Met brand has been identified as a reliable manufacturer of fixing solutions for thermal insulation composite systems on the home and European markets alike. Through its solutions and innovative products, which match the most demanding European requirements, the Wkret-met company meets specifications defined by ETICS systems' manufacturers as well as demands made by both designers and builders.

Our close cooperation results in the development of new solutions and products. This is exemplified by the family of eco-drive plugs mainly dedicated to system manufacturers, first and foremost used in the renovation of the already-existing insulation composite systems.

The high quality and standard of the products manufactured by the Wkret-Met company has been repeatedly confirmed by the opinions of our customers operating in the thermal insulation sector.

Klimas Wkret-Met is a member of the Polish Association for ETICS.

We would like to introduce to you our products and solutions, meeting the most demanding specifications, which guarantee the following:

- prompt and easy choice of plug for any thermal
- insulation material and substrate,
- safe and reliable fastening,
- high technical parameters,
- fast and reliable fixing,
- meeting the requirements of the plug's point thermal transmittance.



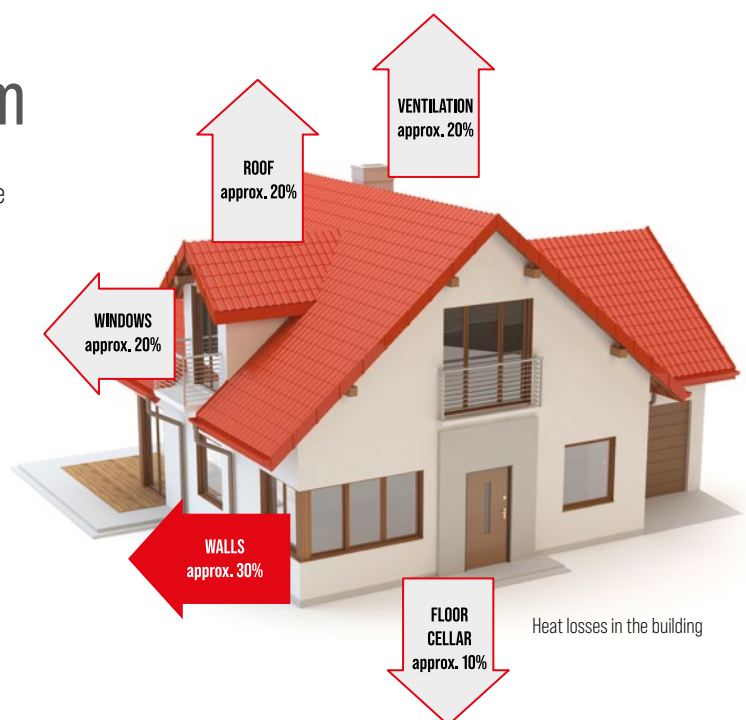
Polish Association for ETICS

## Thermal insulation system

When appropriately chosen and installed, thermal insulation composite systems of a building should comply with the requirements set by an investor, as well as the specific regulations in place.

**Thermal insulation composite system should ensure the following:**

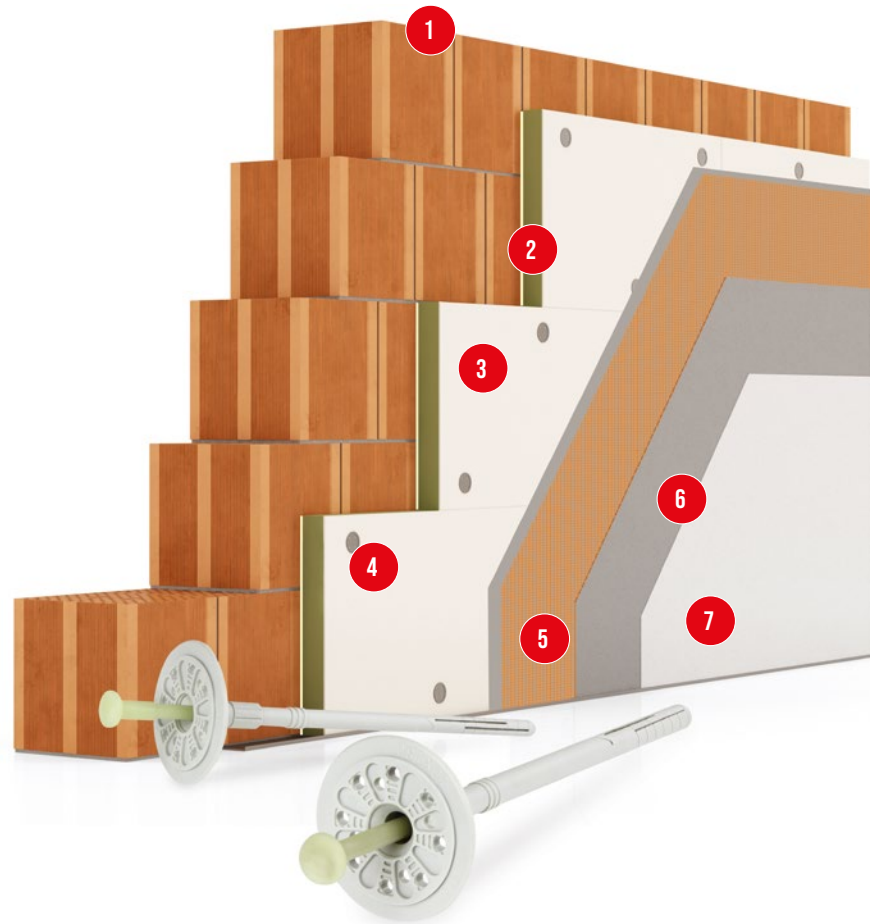
- economic results – energy savings,
- pleasant visual effects – aesthetic appearance,
- long-lasting and fault-free operation – liveliness for 25 years,
- the right atmosphere in the rooms used,
- protection of the facade from damage.



## Thermal insulation system

### Example of thermal insulation composite system

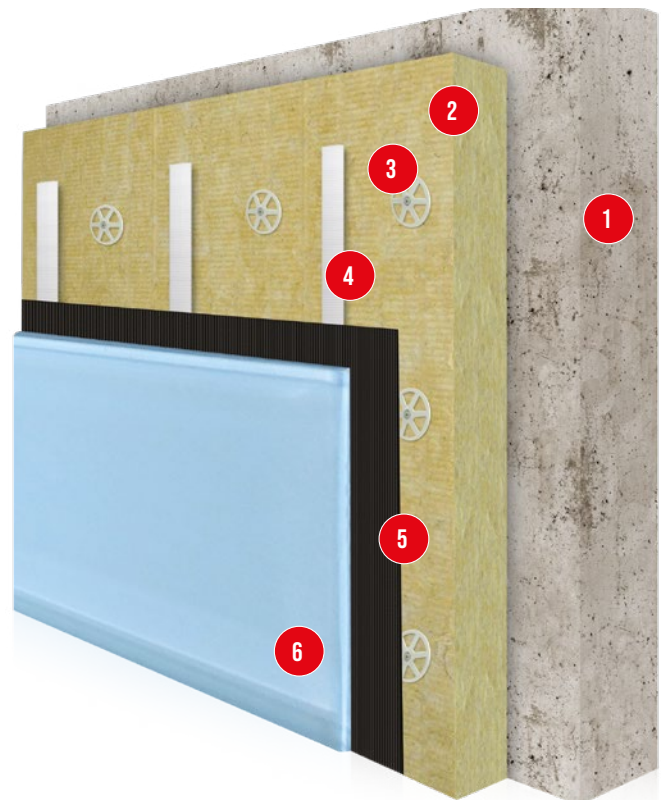
1. substrate - e.g. ceramic hollow brick
2. polystyrene adhesive - THERMO STYROFIX
3. thermo insulation material - polystyrene foam
4. thermo insulation fastener e.g. Fixplug 8/10
5. reinforcement - SWS mesh
6. adhesive
7. finishing coat - textured external plaster



## Insulation system for ventilated facades

### Example of thermal insulation composite system

1. substrate
2. thermo insulation material
3. Fastener e.g. ECO-DRIVE-W
4. the supporting construction
5. the wind foil
6. facade panel



## Legal Requirements for ETICS

· Application of ETICS requires such a system and manufacturers of system components to meet the specific legal and formal requirements, which have been defined in the European Organisation for Technical Approvals (EOTA) guidelines:

- **ETAG 004 - Guidelines for External Thermal Insulation Composite Systems**
- **ETAG 014 - Guidelines for ETICS Fasteners**



ETAG 004 comprises test methods of the ETICS including its specific components while ETAG 014 determines test methods concerning fitness for use and requirements expected of fasteners used in thermal insulation mounting, including expanded polystyrene, mineral wool MW and Lamella mineral wool MW. Compliance with all the requirements defined in the guidelines makes it possible to obtain a European Technical Assessment (ETA). The Wkręt-Met company offers fasteners conforming to those requirements, which is reflected by the European Technical Assessment obtained for those products.

## Requirements for fasteners

### **Anchors for ETICS are supposed to:**

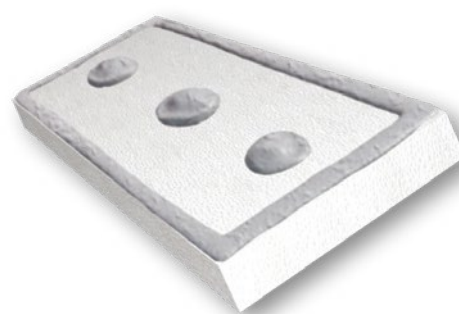
- carry certain pull-out forces caused by wind suction,
- eliminate the possibility of pulling the insulation material through the fastener's collar – required collar stiffness of 0.6 [kN],
- press the thermal insulation material to the wall so that,
- ensure rigidity of the whole thermal insulation composite system,
- ensure appropriate point thermal transmittance – 0.002 [W/K] – to limit recommended
- the occurrence of thermal bridging in the places of fixing the fasteners (visible stains and spots on the finishing coat),
- secure the thermal insulation composite system in case of a failure caused by a loss of bond strength between the adhesive and the substrate or a loss of its load bearing properties,
- compensate for the forces occurring on the facade as a result of high and low temperatures.

According to the ETA Guidelines the **layer of an adhesive transmits the load caused by the shearing force affecting the system**. That is the reason why it is important to provide appropriate distribution of an adhesive applied on the thermal insulation board.

**Adhesive should be distributed over the minimum of 40 % of the board surface – stripes around the edges and three dabs in the centre. Such distribution of the adhesive ensures that the mechanical fixing is installed exactly in the places where adhesive has been applied onto the thermal insulation board.**

## Correct installation of the fastener:






- drill a hole in the substrate whose diameter and depth correspond to the manufacturer's recommendations (clean the drill hole in solid materials such as concrete and solid brick).
- install the fastener where adhesive has been applied.
- carry out installation within the temperature range between + 5 and + 25 °C (ETA Guidelines recommendations).



## Choosing the fastener type for the substrate

The right choice of a mechanical fastener depends on the substrate in which it is going to be installed, which has a significant influence on the ETICS. The requirements under ETAG 014 specify the classification of use that are defined by the letters A, B, C, D and E. All our fasteners have product labels which provide information on the use category. Our new product groups including WK THERM-S and ECO-DRIVE have been designed as universal fasteners, which eliminates the need to use different kinds of fasteners in a structure with varied substrates.

### USE CATEGORIES according to ETAG 014

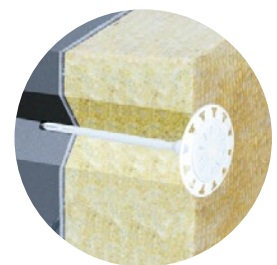
A	B	C	D	E
				
Concrete C12/15 C20/25 to C50/60	Solid clay bricks, calcium silicate solid bricks	Calcium silicate hollow blocks KSL, vertically perforated clay bricks HLZ, porous blocks, ceramic bricks	Elements on Lightweight Aggregate Concrete - LAC	Autoclaved aerated concrete AAC 2, AAC 7

## Choosing the fastener type for the thermal insulation material

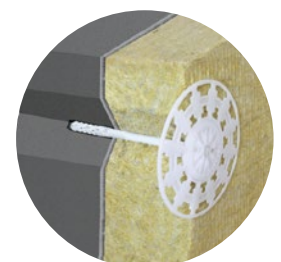
Depending on the kind of insulation material used (polystyrene EPS, XPS or mineral wool MW and Lamella mineral wool MW), it is important to choose a suitable fastener with respect to the material of which its pin has been made.

Anchors with a plastic pin are used for polystyrene while fasteners with a metal pin are intended for both polystyrene EPS and mineral wool MW if used in combination with TDX-90 or TDX-140 support collars.

The Wkręt-met company offers fasteners complying with such a requirement. Our present offer contains a new product – ECO-DRIVE W 8 fastener with an integrated enlarged collar (diameter of 110 mm) for mineral wool MW applications.



Fastener with TDX-090  
additional collar



Fastener with TDX-140  
additional collar

### Distribution of fasteners on the facade

The number of fasteners required in different parts of a building depends on:

- exposure to wind – wind suction,
- height of a building,
- weight of the complete thermal insulation composite system –type of insulation material used,
- type of substrate and fastener’s pull-out strength.

The number and appropriate pattern of fasteners should be specified by the engineering calculations and based on the projected design loads. At least 6 fasteners should be used per 1 square metre. It is recommended that 20% more fasteners are used in the corner zone of a building (its width is said to be 0.2 of the narrower building width and should fall within the range of 2 and 4 m).

#### Sample number of fasteners

Central zone	Corner zone	HEIGHT OF THE BUILDING	
6 pcs./m <sup>2</sup>	6 pcs./m <sup>2</sup>		
6 pcs./m <sup>2</sup>	8 pcs./m <sup>2</sup>	<20m	
6 pcs./m <sup>2</sup>	8 pcs./m <sup>2</sup>	>10m	
8 pcs./m <sup>2</sup>	10 pcs./m <sup>2</sup>	>20m	
10 pcs./m <sup>2</sup>	12 pcs./m <sup>2</sup>		
12 pcs./m <sup>2</sup>	14 pcs./m <sup>2</sup>		

#### Insulation type:

polystyrene EPS foam

mineral wool MW

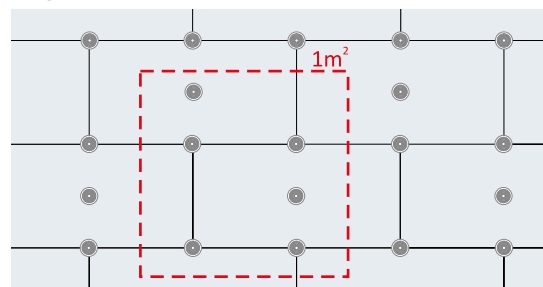
For buildings higher than 25 m insulation fixings should be used as required by paragraph 216(6) of the Regulation of the Polish Minister of Infrastructure dated 12 April 2002 which states: ‘[...] At a building higher than 25 metres from the ground level facade cladding and its mechanical fixings, as well as external wall insulation composite system should be made from non-combustible materials [...]’

An extensive range of products offered by the Wkret-met company also offers a special, metal fasteners (type MLN) conforming to the above mentioned criteria as the whole mechanical fixing is made of metal.

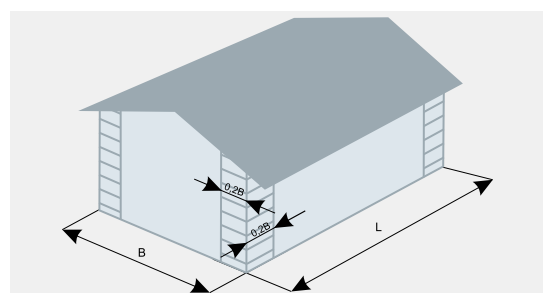
\*on request and order



#### Sample number of fasteners - EPS

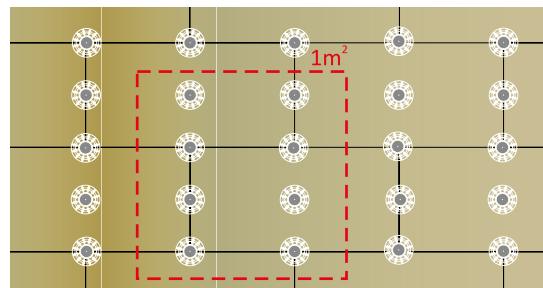


Installation example - polystyrene EPS - 6 pcs./m<sup>2</sup>

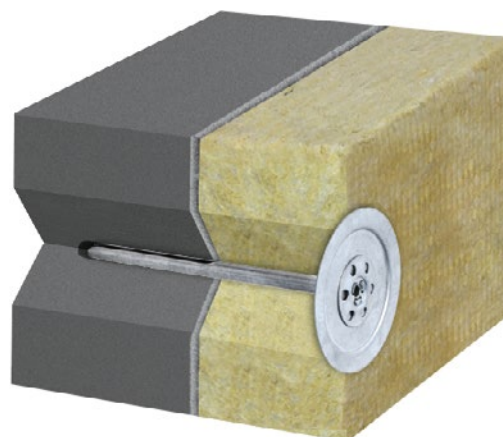


Corner zone of a building  $2m < 0,2B < 4m$

#### Sample number of fasteners - MW



Installation example - mineral wool MW - 8 pcs./m<sup>2</sup>





## Anchor installation methods

In connection with the increasingly stringent requirements for mechanical fixings in terms of point thermal transmittance (occurrence of thermal bridging in the places where fasteners are installed) all the fasteners for installation of thermal insulation composite systems manufactured by Wkręt-met have fastener heads sealed in glass fibre reinforced plastic and an extended length of the plastic – air pockets, which facilitates their compliance with the requirement for point thermal transmittance of 0.002 [W/K].

**There are two methods of installing a fastener in thermal insulation material**



Installation of a fastener without a polystyrene or Mineral wool disc  
– installation surface mount



Installation of a fastener with a polystyrene or Mineral wool disc  
– installation immersed mount

## Choosing the fastener length

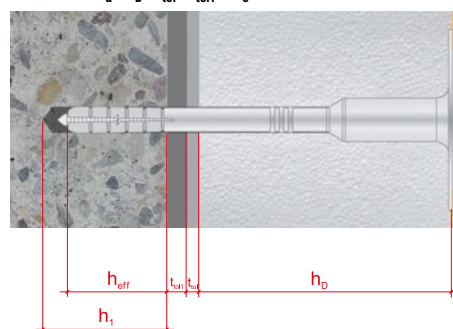
In order to choose the appropriate length of a fastener to be used in a given ETICS, follow the recommendations below:

- check whether the building is a newly built structure or an old structure layer with an old stucco – the thickness of the old stucco cannot be treated as a load bearing substrate,
- determine the kind of substrate in a given building (according to the substrate table),
- determine the type of thermal insulation material (polystyrene EPS, mineral wool MW, etc.)
- find out the thickness of thermal insulation material (thermal insulation boards)
- obtain information about the fastener installation method - visible mounting or recessed mounting, hidden

- $h_D$  - insulation material thickness
- $h_{eff}$  - effective anchorage depth
- $h_1$  - minimum depth of drilled hole
- $t_{tol}$  - adhesive layer (new buildings)
- $t_{tol1}$  - old plaster (renovated buildings)
- $h_k$  - polystyrene disc

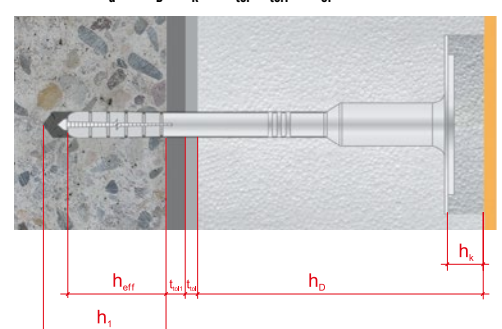
Surface mount

$$\text{Formula: } L_d = h_D + t_{tol} + t_{tol1} + h_e$$



Immersed mount





$$\text{Formula: } L_d = (h_D - h_k) + t_{tol} + t_{tol1} + h_{ef}$$





		page	36	40	44	48	52	58	62
Choosing the fastener type for the thermal insulation material	Polystyrene foam EPS		✓	✓	✓	✓	✓	✓	✓
	Extruded polystyrene XPS							✓	✓
	Mineral wool MW							✓	✓
	Lamella mineral wool MW							✓	✓
	Mineral insulation panels								
Choosing the fastener type for the substrate	Concrete C 12/15, C 20/25-C 50/60 EN 206-1		A	✓	✓	✓	✓	✓	✓
	Solid clay bricks MZ EN 771-1 / DIN 105-100		B	✓	✓	✓	✓	✓	✓
	Calcium silicate solid brick KS EN 771-2 / DIN V 106		B		✓	✓	✓	✓	✓
	Calcium silicate hollow blocks KSL EN 771-2 / DIN V 106		C	✓	✓	✓	✓	✓	✓
	Vertically perforated clay bricks HLZ EN 771-1 / DIN 105-100		C	✓	✓	✓	✓	✓	✓
	Hollow bricks EN 771-1		C	✓	✓	✓	✓	✓	✓
	Lightweight concrete hollow EN 771-3		D		✓	✓	✓	✓	✓
	Lightweight aggregate concrete - LAC EN 771-3		D		✓	✓	✓	✓	✓
	Autoclaved aerated concrete AAC 2 EN 771-7		E	✓	✓	✓	✓	✓	✓
	Autoclaved aerated concrete AAC 7 EN 771-4		E	✓	✓	✓	✓	✓	✓
	Timber C22-C24		-						
	OSB board 12.5-18.0 mm		-						
	Steel sheet 0.5-1.25 mm		-						

ETAG 014  
use cat.

									
LFMG-10	WK THERM-8	WK THERM-8 S	ECO-DRIVE 8	ECO-DRIVE-S 8	ECO-DRIVE W	DRIVE W	DRIVE S	TD/TDP-060	MLN/MLN-A2
									
66	70	74	80	84	86	92	94	96	98
✓	✓	✓	✓	✓			✓	✓	✓
✓	✓	✓							✓
✓	✓	✓			✓	✓		✓	✓
 ✓	 ✓	 ✓			✓	✓			✓
		✓							
✓	✓	✓	✓	✓	✓				✓
✓	✓	✓	✓	✓	✓				✓
✓	✓	✓	✓	✓	✓				✓
✓	✓	✓	✓	✓	✓				✓
✓	✓	✓	✓	✓	✓				✓
✓	✓	✓	✓	✓	✓				✓
		✓	✓	✓	✓				
✓		✓	✓	✓	✓				
✓		✓	✓	✓	✓				✓
✓		✓	✓	✓	✓				✓
						✓	✓	✓	
						✓	✓	✓	
								✓	












	P.	code	LFN-10	LTX-8	LTX-10	FIXPLUG-8	FIXPLUG-10	LMX-8	LMX-10	LFM-8	LFMG-10	WKTherm-8	WKTherm S 8	ECO-DRIVE-8	ECO-DRIVE S 8	ECO-DRIVE W 8	Drive W	Drive S
Plastic cutter for EPS insulation material ø66.7 mm 	101	WK-FT	✓	✓	✓			✓	✓	✓	✓	✓	✓					
Polystyrene disc (white) ø67.0 mm / 17 mm 	101	KS	✓	✓	✓			✓	✓	✓	✓	✓	✓					
Polystyrene disc (graphite) ø67.0 mm / 17 mm 	101	KSG	✓	✓	✓			✓	✓	✓	✓	✓	✓					
Metal cutter for mineral wool ø64 mm 	101	WK-FM						✓	✓	✓	✓	✓	✓					
Mineral wool disc ø67.0 mm / 17 mm 	101	EDMW						✓	✓	✓	✓	✓	✓					
Setting tool ECO-DRIVE 8, S8, DRIVE S ø120 mm / TORX 40 	102	EDST												✓	✓			✓
Polystyrene disc - ECO-DRIVE 8, DRIVE S (graphite) ø62.0 mm / 10 mm (on order) 	102	EDKS-G												✓				✓
Setting tool ECO-DRIVE W, DRIVE W ø65 mm 	102	EDST-W														✓	✓	
Mineral wool disc ECO-DRIVE W, DRIVE W ø67 / 10 mm 	102	EDKW														✓	✓	
Additional collar for mineral wool MW ø90 mm 	102	TDX-90						✓	✓	✓	✓	✓	✓					
Additional collar for mineral wool MW ø140 mm 	102	TDX-140						✓	✓	✓	✓	✓	✓					

Table 2. Installation accessories


	P.	Code and size
Helical fastener 	103	WK-DS ø28 mm, L = 50 mm, L = 85 mm
Spacer and levelling washers 	103	DW 40 x 40 mm
Stop bead hammer drive fixing 	103	SMNKC ø6 mm, ø8 mm
Stop bead connection 	103	LLC 30 x 20 mm
PU adhesive for foamed polystyrene THERMO STYRO FIX 	104	KST-750 750 ml
Reinforcing fibreglass mesh 	104	SWS-145, SWS-145Z, SWS-160, SWS-160Z 110 cm x 50 cm
Expansion plug with eye hook 	104	HOX-14, HOX-16 ø14 mm, ø16 mm
Plastic disc for covering eye-hook holes 	104	ZHO ø14 mm

Table 3. Other accessories - ancillary



**KLIMAS**  
FASTENER TECHNOLOGIES

# TECHNICAL SUPPORT AT EACH STAGE OF INVESTMENT

**DO YOU NEED TECHNICAL ADVISORY?**

Contact us: [dt@wkret-met.com](mailto:dt@wkret-met.com)

ADVISORY DIRECTLY AT THE INVESTMENT | PULL-OUT TESTS | ASSISTANCE IN THE SELECTION OF FASTENERS



Insulation material thickness [mm]	Pin material	Plastic pin					Metal pin								
	Type of insulation material	EPS					MW; EPS								
	Code	LFN-10	LTX-8		LTX-10		FIXPLUG-8	FIXPLUG-10		LMX-8	LMX-10		LFMG-10		
ETAG 014 use cat.	BCE	ABCD	E	ABCD	E	ABCDE	AB	CDE	ABCD	E	ABCD	E	ABCDE		
10	x	x	x	x	10070	x	x	x	x	x	10070	x	x		
20	x	x	08095	x	x	x	x	x	x	08095	x	x	x		
30	x	x	x	10070	10090	x	x	x	x	x	10070	10090	x		
40	x	x	08115	x	x	x	x	x	x	08115	x	x	x		
50	x	x	x	10090	10110	x	x	x	x	x	10090	10110	x		
60	10140	08095	08135	x	10120	08110	x	10120	08095	08135	x	10120	10140		
70	x	x	x	10110	x	x	x	x	x	x	10110	x	x		
80	10160	08115	08155	10120	10140	08130	10120	10140	08115	08155	10120	10140	10160		
90	x	x	x	x	x	x	x	x	x	x	x	x	x		
100	10180	08135	08175	10140	10160	08150	10140	10160	08135	08175	10140	10160	10180		
110	x	x	x	x	x	x	x	x	x	x	x	x	x		
120	10200	08155	08195	10160	10180	08170	10160	10180	08155	08195	10160	10180	10200		
130	x	x	x	x	x	x	x	x	x	x	x	x	x		
140	10220	08175	x	10180	10200	08190	10180	10200	08175	x	10180	10200	10220		
150	x	x	x	x	x	x	x	x	x	x	x	x	x		
160	x	08195	x	10200	10220	08210	10200	10220	08195	x	10200	10220	x		
170	x	x	x	x	x	x	x	x	x	x	x	x	x		
180	10260	x	x	10220	x	x	10220	x	x	x	10220	x	10260		
190	x	x	x	x	x	x	x	x	x	x	x	x	x		
200	x	x	x	x	10260	x	x	10260	x	x	x	10260	x		
210	x	x	x	x	x	x	x	x	x	x	x	x	x		
220	10300	x	x	10260	x	x	10260	x	x	x	10260	x	10300		
230	x	x	x	x	x	x	x	x	x	x	x	x	x		
240	x	x	x	x	x	x	x	x	x	x	x	x	x		
250	x	x	x	x	x	x	x	x	x	x	x	x	x		
260	x	x	x	x	x	x	x	x	x	x	x	x	x		
270	x	x	x	x	x	x	x	x	x	x	x	x	x		
280	x	x	x	x	x	x	x	x	x	x	x	x	x		
290	x	x	x	x	x	x	x	x	x	x	x	x	x		
300	x	x	x	x	x	x	x	x	x	x	x	x	x		
320	x	x	x	x	x	x	x	x	x	x	x	x	x		
340	x	x	x	x	x	x	x	x	x	x	x	x	x		
350	x	x	x	x	x	x	x	x	x	x	x	x	x		
360	x	x	x	x	x	x	x	x	x	x	x	x	x		
page	36	42		44		48		52		58		62		66	

# EXTERNAL THERMAL INSULATION COMPOSITE SYSTEM – ETICS

## PRODUCT INDEX - FASTENER TYPE SELECTION - SURFACE MOUNT



Pin material	Metal pin									
Type of insulation material	MW; EPS									
Code	WK THERM 8	WK THERM S 8	ECO-DRIVE 8	ECO-DRIVE S 8	ECO-DRIVE W	DRIVE W	DRIVE S	MLN	MLN-A2*	
ETAG 014 use cat.	ABC	ABCD E	ABCDE	ABCDE	ABCDE	OSB ; Wood	OSB ; Wood	ABCE	ABCE	
10	x	x	x	x	x	x	x	x	x	
20	x	x	08095	x	x	x	x	x	08080	08080
30	x	x	x	x	x	x	x	x	08090	08090
40	x	x	08115	x	x	x	x	x	08100	08100
50	x	x	x	x	x	x	x	x	08110	08110
60	08095	08095	08135	x	x	x	x	x	08120	08120
70	x	x	x	x	x	x	x	x	08135	08135
80	08115	08115	08155	x	x	x	x	x	08140	08140
90	x	x	x	x	x	x	x	x	08150	08150
100	08135	08135	08175	x	x	x	x	x	08160	08160
110	x	x	x	x	x	x	x	x	08170	08170
120	08155	08155	08195	x	x	x	x	x	08185	08185
130	x	x	x	x	x	x	x	x	08190	08190
140	08175	08175	08215	x	x	x	x	x	08200	08200
150	x	x	x	x	x	x	x	x	08210	08210
160	08195	08195	08235	x	x	x	x	x	08220	08220
170	x	x	x	x	x	x	x	x	08230	08230
180	08215	08215	08255	x	x	x	x	x	08240	08240
190	x	x	x	x	x	x	x	x	08250	08250
200	08235	08235	08275	x	x	x	x	x	08260	08260
210	x	x	x	x	x	x	x	x	08270	08270
220	08255	08255	08295	x	x	x	x	x	08280	08280
230	x	x	x	x	x	x	x	x	08290	08290
240	08275	08275	x	x	x	x	x	x	08300	08300
250	x	x	x	x	x	x	x	x	x	x
260	08295	08295	x	x	x	x	x	x	x	x
270	x	x	x	x	x	x	x	x	x	x
280	x	x	x	x	x	x	x	x	x	x
290	x	x	x	x	x	x	x	x	x	x
300	x	x	x	x	x	x	x	x	x	x
320	x	x	x	x	x	x	x	x	x	x
340	x	x	x	x	x	x	x	x	x	x
350	x	x	x	x	x	x	x	x	x	x
360	x	x	x	x	x	x	x	x	x	x
page	70	74	78	82	86	92	94	96	98	

Insulation material thickness [mm]

\*on request and order



Pin material	Plastic pin									Metal pin				
	EPS									MW; EPS				
Type of insulation material	EPS									MW; EPS				
Code	LFN-10	LTX-8		LTX-10		FIXPLUG-8	FIXPLUG-10			LMX-8		LMX-10		LFMG-10
ETAG 014 use cat.	BCE	ABCD	E	ABCD	E	ABCDE	AB	CDE		ABCD	E	ABCD	E	ABCDE
10	X	X	X	X	X	X	X	X		X	X	X	X	X
20	X	X	X	X	X	X	X	X		X	X	X	X	X
30	X	X	X	X	10070	X	X	X		X	X	10070	X	X
40	X	X	08095	X	X	X	X	X		X	08095	X	X	X
50	X	X	X	10070	10090	X	X	X		X	X	10070	10090	X
60	X	X	08115	X	X	X	X	X		X	08115	X	X	X
70	X	X	X	10090	10110	X	X	X		X	X	10090	10110	X
80	10140	08095	08135	X	10120	X	X	X		08095	08135	X	10120	10140
90	X	X	X	10110	X	X	X	X		X	X	10110	X	X
100	10160	08115	08155	10120	10140	X	X	X		08115	08155	10120	10140	10160
110	X	X	X	X	X	X	X	X		X	X	X	X	X
120	10180	08135	08175	10140	10160	X	X	X		08135	08175	10140	10160	10180
130	X	X	X	X	X	X	X	X		X	X	X	X	X
140	10200	08155	08195	10160	10180	X	X	X		08155	08195	10160	10180	10200
150	X	X	X	X	X	X	X	X		X	X	X	X	X
160	10220	08175	X	10180	10200	X	X	X		08175	X	10180	10200	10220
170	X	X	X	X	X	X	X	X		X	X	X	X	X
180	X	08195	X	10200	10220	X	X	X		08195	X	10200	10220	X
190	X	X	X	X	X	X	X	X		X	X	X	X	X
200	10260	X	X	10220	X	X	X	X		X	X	10220	X	10260
210	X	X	X	X	X	X	X	X		X	X	X	X	X
220	X	X	X	X	10260	X	X	X		X	X	X	10260	X
230	X	X	X	X	X	X	X	X		X	X	X	X	X
240	10300	X	X	10260	X	X	X	X		X	X	10260	X	10300
250	X	X	X	X	X	X	X	X		X	X	X	X	X
260	X	X	X	X	X	X	X	X		X	X	X	X	X
270	X	X	X	X	X	X	X	X		X	X	X	X	X
280	X	X	X	X	X	X	X	X		X	X	X	X	X
290	X	X	X	X	X	X	X	X		X	X	X	X	X
300	X	X	X	X	X	X	X	X		X	X	X	X	X
320	X	X	X	X	X	X	X	X		X	X	X	X	X
340	X	X	X	X	X	X	X	X		X	X	X	X	X
350	X	X	X	X	X	X	X	X		X	X	X	X	X
360	X	X	X	X	X	X	X	X		X	X	X	X	X
page	36	42		44		48	52			58		62		66

Insulation material thickness [mm]



# EXTERNAL THERMAL INSULATION COMPOSITE SYSTEM – ETICS

## PRODUCT INDEX - FASTENER TYPE SELECTION - IMMERGED MOUNT



Pin material	Metal pin												
Type of insulation material	MW; EPS												
Code	WK THERM 8	WK THERM S 8	ECO-DRIVE 8	ECO-DRIVE S 8	ECO-DRIVE W	DRIVE W	DRIVE S	MLN	MLN-A2*				
ETAG 014 use cat.	ABC	ABCD	E	ABCD	E	ABCD	E	ABCD	E	OSB ; Wood	OSB ; Wood	ABCE	ABCE
10	X	X	X	X	X	X	X	X	X	X	X	X	X
20	X	X	X	X	X	X	X	X	X	X	X	X	X
30	X	X	X	X	X	X	X	X	X	X	X	X	X
40	X	X	08095	X	X	X	X	X	X	X	X	X	X
50	X	X	X	X	X	X	X	X	X	X	X	X	X
60	X	X	08115	X	X	X	X	X	X	X	X	X	X
70	X	X	X	X	X	X	X	X	X	X	X	X	X
80	08095	08095	08135	08150	08170	08150	08170	08150	08170	X	X	X	X
90	X	X	X	X	X	X	X	X	X	06120	06120	X	X
100	08115	08115	08155	08170	08190	08170	08190	08170	08190	X	X	X	X
110	X	X	X	X	X	X	X	X	X	06140	06140	X	X
120	08135	08135	08175	08190	08210	08190	08210	08190	08210	X	X	X	X
130	X	X	X	X	X	X	X	X	X	06160	06160	X	X
140	08155	08155	08195	08210	08230	08210	08230	08210	08230	X	X	X	X
150	X	X	X	X	X	X	X	X	X	06180	06180	X	X
160	08175	08175	08215	08230	08250	08230	08250	08230	08250	X	X	X	X
170	X	X	X	X	X	X	X	X	X	06200	06200	X	X
180	08195	08195	08235	08250	08270	08250	08270	08250	08270	X	X	X	X
190	X	X	X	X	X	X	X	X	X	06220	06220	X	X
200	08215	08215	08255	08270	08290	08270	08290	08270	08290	X	X	X	X
210	X	X	X	X	X	X	X	X	X	06240	06240	X	X
220	08235	08235	08275	08290	08310	08290	08310	08290	08310	X	X	X	X
230	X	X	X	X	X	X	X	X	X	06260	06260	X	X
240	08255	08255	08295	08310	08330	08310	08330	08310	08330	X	X	X	X
250	X	X	X	X	X	X	X	X	X	06280	06280	X	X
260	08275	08275	X	08330	08350	08330	08350	08330	08350	X	X	X	X
270	X	X	X	X	X	X	X	X	X	06300	06300	X	X
280	08295	08295	X	08350	08370	08350	08370	08350	08370	X	X	X	X
290	X	X	X	X	X	X	X	X	X	06320	06320	X	X
300	X	X	X	08370	08390	08370	08390	08370	08390	X	X	X	X
320	X	X	X	08390	08410	08390	08410	08390	08410	X	X	X	X
340	X	X	X	08410	08430	08410	08430	08410	08430	X	X	X	X
350	X	X	X	X	X	X	X	X	X	X	X	X	X
360	X	X	X	08430	X	08430	X	08430	X	X	X	X	X
page	70	74	78	82	86	92	94	96	98				

\*on request and order

# FIXPLUG

## BREAKTHROUGH FOR THERMAL INSULATION COMPOSITE SYSTEMS

### ELIMINATES INSTALLATION ERRORS

FIXPLUG telescopic design enables proper positioning of the expansion pin which ensures easy and failure-free installation. FIXPLUG fasteners come as a breakthrough for thermal insulation composite systems.

#### **FAST, EASY AND RELIABLE FIXING**

Telescopic design of FIXPLUG fastener guarantees its proper fixing in the substrate and flush fitting of the support collar with the insulation material used.

#### **WASHER DESIGN**

Large amount of pocket adhesives on the support collar increases the adhesiveness of the mortar.

#### **FIBREGLASS REINFORCED PIN**

Pins do not break during installation, even when heavily hammered. The large head of the pin makes installation easier





<b>LFN-10</b>	Hammer driven fastener with plastic pin and extended expansion zone	36
<b>ø10</b>	<b>Length range:</b> 140 - 300 mm	<b>Fastener sleeve - Polyethylene</b>



<b>LTX-8</b>	Universal hammer driven fastener with plastic pin and short expansion zone	40
<b>ø8</b>	<b>Length range:</b> 95 - 195 mm	<b>Fastener sleeve - Polyethylene</b>



<b>LTX-10</b>	Universal hammer driven fastener with plastic pin and short expansion zone	44
<b>ø10</b>	<b>Length range:</b> 70 - 260 mm	<b>Fastener sleeve - Polyethylene</b>



<b>FIXPLUG-8</b>	Hammer driven fastener with plastic pin and telescopic collar	48
<b>ø8</b>	<b>Length range:</b> 110 - 210 mm	<b>Fastener sleeve - Polyethylene</b>



<b>FIXPLUG-10</b>	Hammer driven fastener with plastic pin and telescopic collar	52
<b>ø10</b>	<b>Length range:</b> 120 - 260 mm	<b>Fastener sleeve - Polyethylene</b>

**Hammer driven fastener with plastic pin and extended expansion zone**

**LFN-10**

ø10

Plastic fastener for fastening of polystyrene EPS foam on cat. B, C, E substrates according to ETAG 014, in ETICS systems.



ETA-17/0450



Plastic pin

**LFN-10**  
Length range: 140 - 300 mm

ø10

SUBSTRATES (ETAG 014 BCE)



**Solid clay bricks MZ, Calcium silicate solid brick KS**



**Hollow bricks**



**Autoclaved aerated concrete AAC**

<b>FASTENER MATERIAL</b>	Polyethylene (PE)
<b>PIN MATERIAL</b>	Glass-fibre reinforced polyamide (PA)
<b>INSTALLATION METHOD</b>	· Surface mount · Immersed mount
<b>APPLICATION</b>	Universal fastener for installing of polystyrene EPS
<b>TYPE OF INSULATION MATERIAL</b>	Styrofoam EPS



**FIBREGLASS REINFORCED PIN**

Ensures good strength during installation. Nail's head design makes installation easier and seals the sleeve - pin connection.



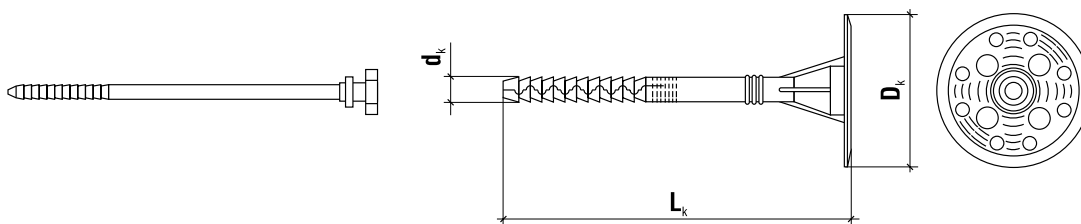
**INNOVATIVE DESIGN OF THE FASTENER**

Greater stiffness of the collar means better holding of the thermal insulation material.



**LONG EXPANSION ZONE**

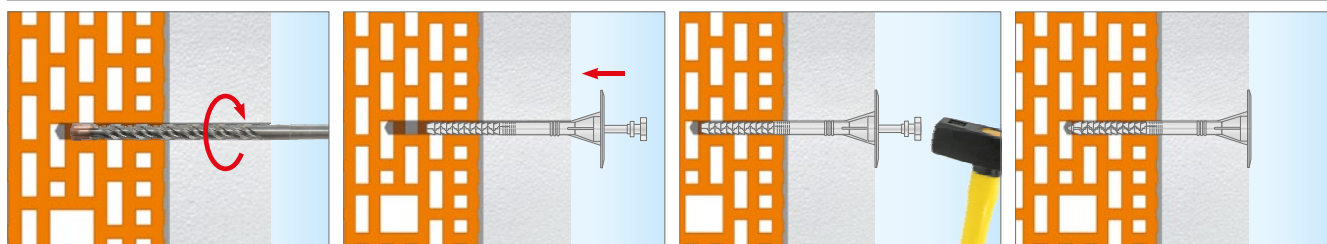
Long expansion zone ensures steady and reliable distribution of stresses in the substrate.



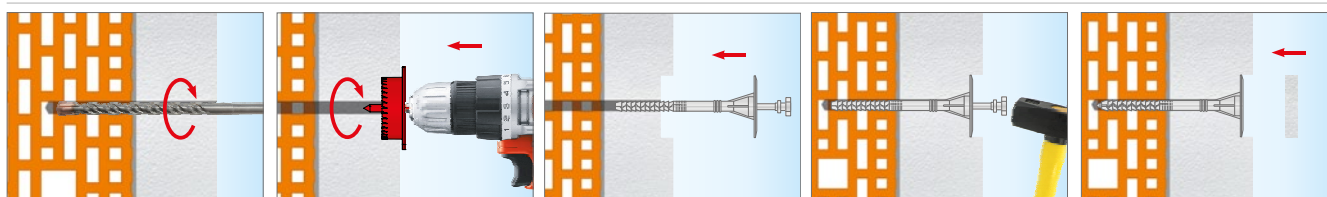
	Product code	Dimensions	Insulation material thickness $t_{ix}$ [mm]				Pack unit [pcs.]
			New buildings		Old buildings		
			$t_{tot}$ adhesive layer of 10 mm		$t_{tot}$ adhesive layer of 10 mm + 20 mm of old plaster		
			$d_k \times L_k$ [mm]	without cutter	with cutter	without cutter	
<b>LFN-10</b>							
<b>ø10</b>	LFN10140(200)	10x140	60	80	40	60	200
	LFN10160 (200)	10x160	80	100	60	80	200
	LFN10180 (200)	10x180	100	120	80	100	200
	LFN10200 (200)	10x200	120	140	100	120	200
	LFN10220 (100)	10x220	140	160	120	140	100
	LFN10260 (100)	10x260	180	200	160	180	100
	LFN10300 (100)	10x300	220	240	200	220	100

Product marking - LFN10140(200)			
LFN	10	140	(200)
Fastener type	Diameter	Length	Number of pieces in a box

**INSTALLATION INSTRUCTIONS - surface mount**



**INSTALLATION INSTRUCTIONS - immersed mount with a polystyrene EPS disc (with plastic cutter)**



AVAILABLE ACCESSORIES

SEE PAGE 39

Hammer driven fastener with plastic pin and extended expansion zone

# LFN-10 - TECHNICAL DATA

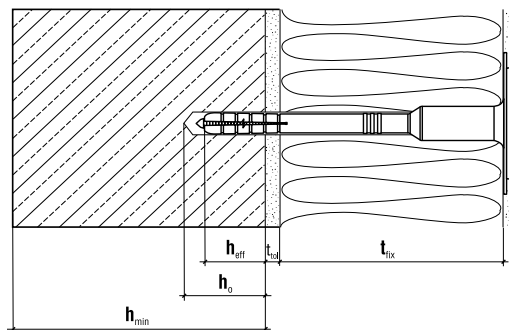
ø10



ETA-17/0450

### TECHNICAL DATA

Parameter	Unit	Value	
Fastener diameter	$d_k$ [mm]	10	
Collar diameter	$D_k$ [mm]	60	
Effective anchorage depth	$h_{eff}$ [mm]	70	
Hole depth	$h_o$ [mm]	75	
Point thermal transmittance	$\chi$ [W/K]	surface mount	Immerged mount
		0,000	0,000
Collar stiffness	$S$ [kN/mm]	0,30	
Substrate category	-	<b>BCE</b>	
Fastener material	-	PE	
Pin material	-	PA + GF	
European Technical Assessment	-	<b>ETA-17/0450</b>	



### LOAD RESISTANCE

ETAG 014 use cat.	Substrate	Density [kg/dm <sup>3</sup> ]	Characteristic pull-out resistance [kN]
B	Solid clay bricks	≥2,00	0,75
C	Calcium silicate hollow blocks	≥1,60	0,50
C	Vertically perforated clay bricks	≥1,20	0,80
C	Porothem 25	≥0,80	0,50
E	Autoclaved aerated concrete AAC 2	≥0,35	0,30
E	Autoclaved aerated concrete AAC 7	≥0,65	0,85

E - Autoclaved aerated concrete

Partial safety factor for fastener resistance  $Y_m = 2,0$  (valid in absence of national regulations)

### INSTALLATION DATA

Fastener type	LFN-10
Min. substrate thickness $h_{min}$ [mm]	100
Minimum fastener spacing $L_{os}$ [mm]	100
Minimum edge distance $C_{min}$ [mm]	100

Hammer driven fastener with plastic pin and extended expansion zone

# LFN-10 - INSTALLATION ACCESSORIES

ø10

## Plastic cutter for polystyrene EPS

**WK-FT**

diameter ø66.7 mm

### Specifications:

- Plastic cutter for cutting holes in polystyrene EPS insulation material for insertion of polystyrene EPS disc.
- Controlled cutting depth, thrust collar with a diameter of 90 mm.



## Polystyrene disc (white, graphite)

**KS, KSG**

dimensions ø67 x 17 mm

### Specifications:

- Polystyrene disc (white, graphite) for covering up work holes in polystyrene - installation immersed mount.





**Universal hammer driven fastener with plastic pin and short expansion zone**

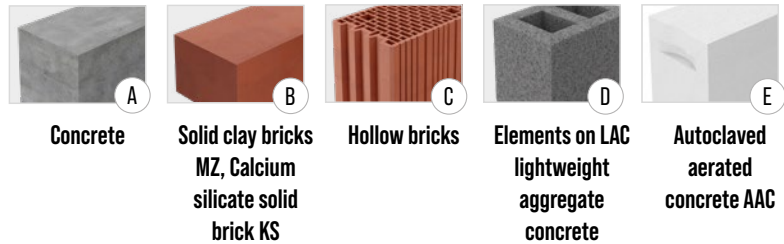
# LTX-8

ø8

Modern fastener with short expansion zone for fastening of polystyrene EPS foam on all substrates according to ETAG 014.



### SUBSTRATES [ETAG 014 ABCDE]



<b>FASTENER MATERIAL</b>	Polyethylene (PE)
<b>PIN MATERIAL</b>	Glass-fibre reinforced polyamide (PA)
<b>INSTALLATION METHOD</b>	· Surface mount · Immersed mount
<b>APPLICATION</b>	Universal fastener for fastening of polystyrene EPS in various substrates
<b>TYPE OF INSULATION MATERIAL</b>	Styrofoam EPS



#### NEW IMPROVED DESIGN EMBEDMENT OF 25 AND 65 mm.

Owing to the new design of the expansion zone the fastener can be installed in all substrate categories while maintaining its high strength parameters.



#### IMPROVED DESIGN OF THE PIN'S HEAD

Improved design of the pin's head ensures good strength during installation.



#### INNOVATIVE DESIGN OF THE FASTENER

Greater stiffness of the support collar means better holding of the thermal insulation material.



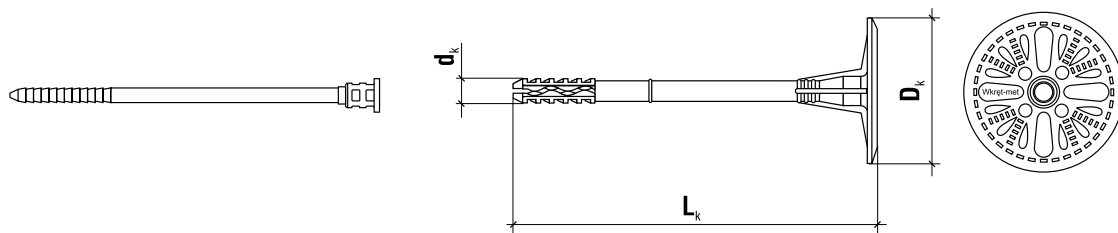
#### INNOVATIVE DESIGN OF THE FASTENER

Large amount of pocket adhesives on the collar increases the adhesiveness of the mortar.

Plastic pin

ø8 LTX-8  
Length range: 95 - 195 mm



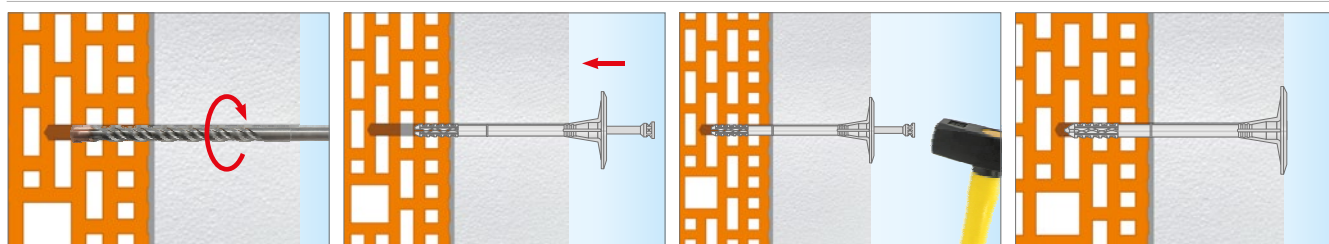


	Product code	Dimensions	Insulation material thickness $t_{ix}$ [mm]				Pack unit [pcs.]
			New buildings		Old buildings		
			$t_{tot}$ adhesive layer of 10 mm		$t_{tot}$ adhesive layer of 10 mm + 20 mm of old plaster		
			without cutter	with cutter	without cutter	with cutter	
<b>LTX-8</b>							
<b>Ø8</b>	LTX08095(200)	8x95	60/20*	80/40*	40/-*	60/20*	200
	LTX08115(200)	8x115	80/40*	100/60*	60/20*	80/40*	200
	LTX08135(200)	8x135	100/60*	120/80*	80/40*	100/60*	200
	LTX08155(200)	8x155	120/80*	140/100*	100/60*	120/80*	200
	LTX08175(200)	8x175	140/100*	160/120*	120/80*	140/100*	200
	LTX08195(200)	8x195	160/120*	180/140*	140/100*	160/120*	200

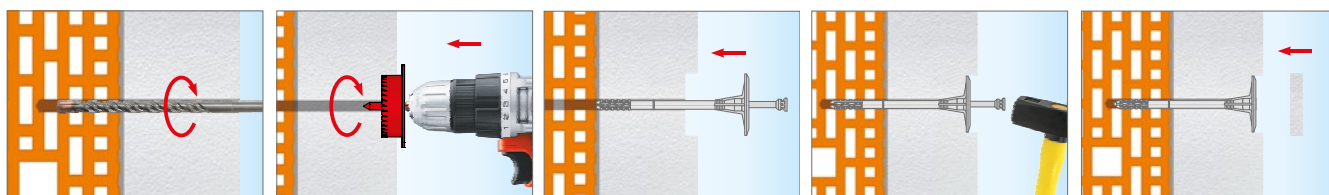
\* - for substrate use category E (Autoclaved aerated concrete)

Product marking - LTX08195(200)			
LTX	08	195	[200]
Fastener type	Diameter	Length	Number of pieces in a box

**INSTALLATION INSTRUCTIONS - surface mount**



**INSTALLATION INSTRUCTIONS - immersed mount with a polystyrene EPS disc (with plastic cutter)**



AVAILABLE ACCESSORIES

SEE PAGE 43

Universal hammer driven fastener with plastic pin and short expansion zone

# LTX-8 - TECHNICAL DATA

ø8

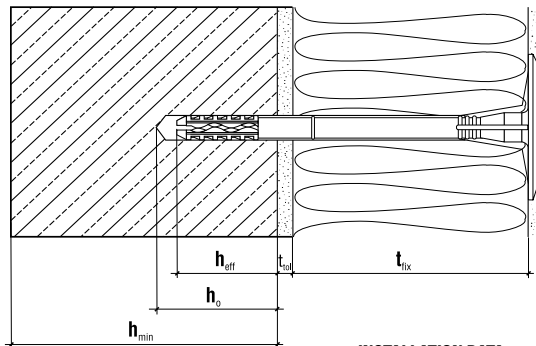


ETA-16/0509

### TECHNICAL PARAMETERS

Parameter	Unit	Value	
Fastener diameter	$d_k$ [mm]	8	
Collar diameter	$D_k$ [mm]	60	
Effective anchorage depth	$h_{eff}$ [mm]	25/65*	
Hole depth	$h_o$ [mm]	35/75*	
Point thermal transmittance	$\chi$ [W/K]	surface mount	Immerged mount
		0,000	0,000
Collar stiffness	$S$ [kN/mm]	0,50	
Substrate category	-	<b>A B C D E</b>	
Fastener material	-	PE	
Pin material	-	PA + GF	
European Technical Assessment	-	<b>ETA-16/0509</b>	

\* - for substrate use category E (Autoclaved aerated concrete)



### LOAD RESISTANCE

ETAG 014 use cat.	Substrate	Density [kg/dm³]	Characteristic pull-out resistance [kN]
A	Concrete C12/15	≥ 2,25	0,50
A	Concrete C20/25 - C50/60	≥ 2,30	0,75
B	Solid clay bricks	≥ 2,00	0,75
B	Calcium silicate solid brick	≥ 2,00	0,75
C	Calcium silicate hollow blocks	≥ 1,60	0,75
C	Vertically perforated clay bricks	≥ 1,20	0,60
C	Porotherm 25	≥ 0,80	0,40
D	LAC lightweight aggregate concrete	≥ 0,88	0,60
E	Autoclaved aerated concrete AAC 2	≥ 0,35	0,75
E	Autoclaved aerated concrete AAC 7	≥ 0,65	0,90

### INSTALLATION DATA

Fastener type	LTX 8
Min. substrate thickness $h_{min}$ [mm]	100
Minimum fastener spacing $L_{os}$ [mm]	100
Minimum edge distance $C_{min}$ [mm]	100

Partial safety factor for fastener resistance  $Y_m = 2,0$  (valid in absence of national regulations)

Universal hammer driven fastener with plastic pin and short expansion zone

# LTX-8 - INSTALLATION ACCESSORIES

ø8

## Plastic cutter for polystyrene EPS

**WK-FT**

diameter ø66.7 mm

### Specifications:

- Plastic cutter for cutting holes in polystyrene EPS insulation material for insertion of polystyrene EPS disc.
- Controlled cutting depth, thrust collar with a diameter of 90 mm.



## Polystyrene disc (white, graphite)

**KS, KSG**

dimensions ø67 x 17 mm

### Specifications:

- Polystyrene disc (white, graphite) for covering up work holes in polystyrene - installation immersed mount.



Universal hammer driven fastener with plastic pin and short expansion zone

# LTX-10

ø10

Modern fastener with short expansion zone for fastening of polystyrene EPS foam on all substrates according to ETAG 014.



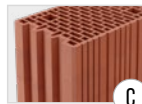
### SUBSTRATES (ETAG 014 ABCDE)



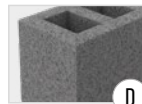
Concrete



Solid clay bricks  
MZ, Calcium  
silicate solid  
brick KS



Hollow bricks



Elements on LAC  
lightweight  
aggregate  
concrete



Autoclaved  
aerated  
concrete AAC

FASTENER MATERIAL	Polyethylene (PE)
PIN MATERIAL	Glass-fibre reinforced polyamide (PA)
INSTALLATION METHOD	· Surface mount · Immersed mount
APPLICATION	Universal fastener for fixing polystyrene
TYPE OF INSULATION MATERIAL	Styrofoam EPS



#### NEW IMPROVED DESIGN EMBEDMENT OF 30 AND 50 mm.

Owing to the new design of the expansion zone the fastener can be installed in all substrate categories while maintaining its high strength parameters.



#### IMPROVED DESIGN OF THE PIN'S HEAD

Improved design of the pin's head ensures good strength during installation.



#### INNOVATIVE DESIGN OF THE FASTENER

Greater stiffness of the support collar means better holding of the thermal insulation material.



#### INNOVATIVE DESIGN OF THE FASTENER

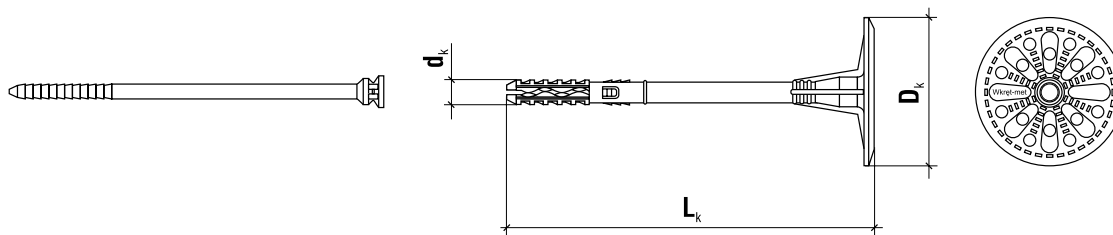
Large amount of pocket adhesives on the collar increases the adhesiveness of the mortar.

ø10

Plastic pin

LTX-10

Length range: 70 - 260 mm

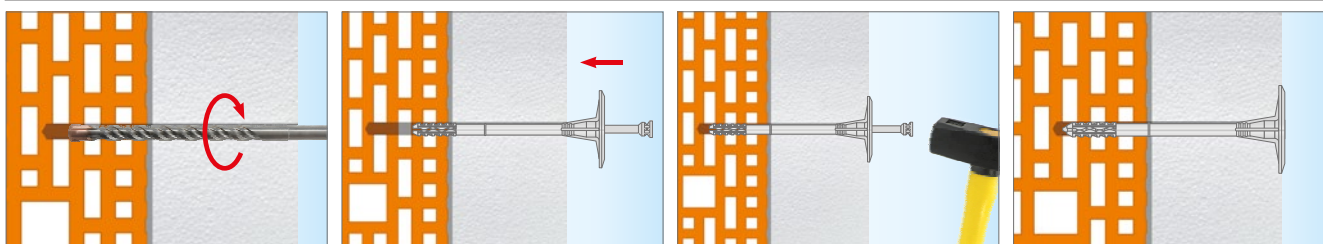


	Product code	Dimensions $d_k \times L_k$ [mm]	Insulation material thickness $t_{ix}$ [mm]				Pack unit [pcs.]
			New buildings		Old buildings		
			$t_{ad}$ adhesive layer of 10 mm		$t_{ad}$ adhesive layer of 10 mm + 20 mm of old plaster		
			without cutter	with cutter	without cutter	with cutter	
<b>LTX-10</b>							
<b>ø10</b>	LTX10070(200)	10x70	30/10*	50/30*	10/-*	30/10*	200
	LTX10090(200)	10x90	50/30*	70/50*	30/10*	50/30*	200
	LTX10110(200)	10x110	70/50*	90/70*	50/30*	70/50*	200
	LTX10120(200)	10x120	80/60*	100/80*	60/40*	80/60*	200
	LTX10140(200)	10x140	100/80*	120/100*	80/60*	100/80*	200
	LTX10160(200)	10x160	120/100*	140/120*	100/80*	120/100*	200
	LTX10180(200)	10x180	140/120*	160/140*	120/100*	140/120*	200
	LTX10200(200)	10x200	160/140*	180/160*	140/120*	160/140*	200
	LTX10220(100)	10x220	180/160*	200/180*	160/140*	180/160*	100
	LTX10260(100)	10x260	220/200*	240/220*	200/180*	220/200*	100

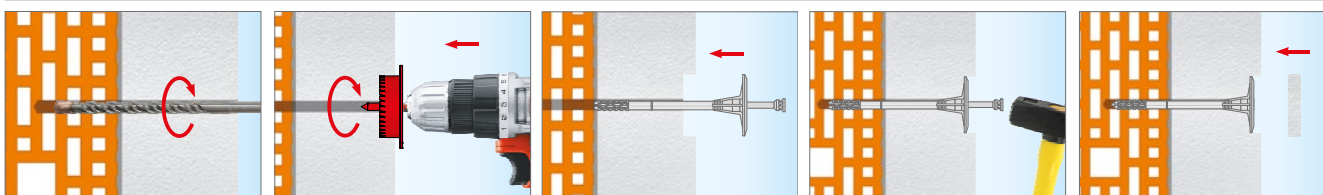
\* - for substrate use category E (Autoclaved aerated concrete)

Product marking - LTX10260(100)			
LTX	10	260	(100)
Fastener type	Diameter	Length	Number of pieces in a box

**INSTALLATION INSTRUCTIONS - surface mount**



**INSTALLATION INSTRUCTIONS - immersed mount with a polystyrene EPS disc (with plastic cutter)**



AVAILABLE ACCESSORIES

SEE PAGE 47

Universal hammer driven fastener with plastic pin and short expansion zone

# LTX-10 - TECHNICAL DATA

Ø10

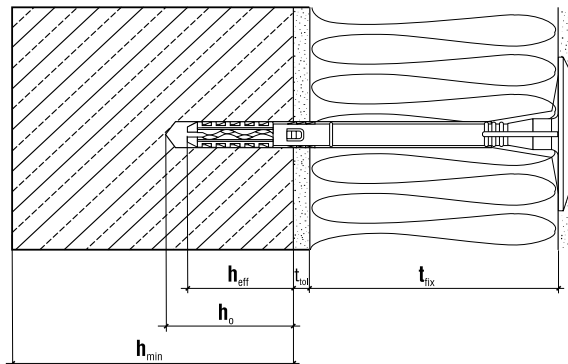


ETA-16/0509

### TECHNICAL PARAMETERS

Parameter	Unit	Value	
Fastener diameter	$d_k$ [mm]	10	
Collar diameter	$D_k$ [mm]	60	
Effective anchorage depth	$h_{eff}$ [mm]	30/50*	
Hole depth	$h_o$ [mm]	40/60*	
Point thermal transmittance	$\chi$ [W/K]	surface mount	Immerged mount
		0,001	0,000
Collar stiffness	S [kN/mm]	0,50	
Substrate category	-	<b>A B C D E</b>	
Fastener material	-	PE	
Pin material	-	PA + GF	
European Technical Assessment	-	ETA-16/0509	

\* - for substrate use category E (Autoclaved aerated concrete)



### LOAD RESISTANCE

ETAG 014 use cat.	Substrate	Density [kg/dm³]	Characteristic pull-out resistance [kN]
A	Concrete C12/15	≥ 2,25	0,50
A	Concrete C20/25 - C50/60	≥ 2,30	0,75
B	Solid clay bricks	≥ 2,00	0,75
B	Calcium silicate solid brick	≥ 2,00	0,60
C	Calcium silicate hollow blocks	≥ 1,60	0,60
C	Vertically perforated clay bricks	≥ 1,20	0,60
C	Poroform 25	≥ 0,80	0,40
D	LAC lightweight aggregate concrete	≥ 0,88	0,60
E	Autoclaved aerated concrete AAC 2	≥ 0,35	0,50
E	Autoclaved aerated concrete AAC 7	≥ 0,65	0,60

### INSTALLATION DATA

Fastener type	LTX 10
Min. substrate thickness $h_{min}$ [mm]	100
Minimum fastener spacing $L_{os}$ [mm]	100
Minimum edge distance $C_{min}$ [mm]	100

Partial safety factor for fastener resistance  $\gamma_m = 2,0$  (valid in absence of national regulations)

Universal hammer driven fastener with plastic pin and short expansion zone

# LTX-10 - INSTALLATION ACCESSORIES

## Ø10

### Plastic cutter for polystyrene EPS

**WK-FT**

diameter Ø66.7 mm

#### Specifications:

- Plastic cutter for cutting holes in polystyrene EPS insulation material for insertion of polystyrene EPS disc.
- Controlled cutting depth, thrust collar with a diameter of 90 mm.



### Polystyrene disc (white, graphite)

**KS, KSG**

dimensions Ø67 x 17 mm

#### Specifications:

- Polystyrene disc (white, graphite) for covering up work holes in polystyrene - installation immersed mount.



Hammer driven fastener with plastic pin and telescopic collar

# FIXPLUG-8

ø8

Innovative telescopic design ensures proper installation of the collar in the insulation material.



ETA-15/0373



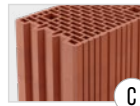
SUBSTRATES (ETAG 014 ABCDE)



Concrete



Solid clay bricks  
MZ, Calcium  
silicate solid  
brick KS



Hollow bricks



Elements on LAC  
lightweight  
aggregate  
concrete



Autoclaved  
aerated  
concrete AAC

FASTENER MATERIAL	Polyethylene (PE)
PIN MATERIAL	Glass-fibre reinforced polyamide (PA)
INSTALLATION METHOD	Surface mount
APPLICATION	Universal fastener for fastening of polystyrene EPS in various substrates
TYPE OF INSULATION MATERIAL	Styrofoam EPS



**INNOVATIVE TELESCOPIC DESIGN OF THE FASTENER**

Fast, easy and reliable fixing. Telescopic design of FIXPLUG fastener guarantees its proper fixing in the substrate and flush fitting of the collar with the insulation material used.



**FIBREGLASS REINFORCED PIN**

Pins do not break during installation, even when heavily hammered. The large head of the pin makes installation easier.

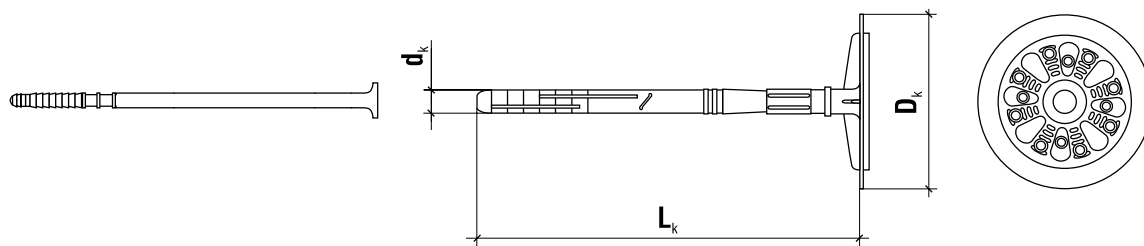


**COLLAR DESIGN**

Large amount of pocket adhesives on the telescopic collar increases the adhesiveness of the mortar.

Plastic pin  
FIXPLUG-8  
Length range: 110 - 210 mm  
ø8





	Product code	Dimensions $d_k \times L_k$ [mm]	Insulation material thickness $t_{fix}$ [mm]		Pack unit [pcs.]
			New buildings	Old buildings	
			$t_{tot}$ adhesive layer of 10 mm	$t_{tot}$ adhesive layer of 10 mm + 20 mm of old plaster	
<b>FIXPLUG-8</b>					
<b>Ø8</b>	FIXPLUG08110(200)	8x110	60	40	200
	FIXPLUG08130(200)	8x130	80	60	200
	FIXPLUG08150(200)	8x150	100	80	200
	FIXPLUG08170(200)	8x170	120	100	200
	FIXPLUG08190(200)	8x190	140	120	200
	FIXPLUG08210(100)	8x210	160	140	100

Product marking - FIXPLUG08110(200)			
FIXPLUG	Ø8	110	(200)
Fastener type	Diameter	Length	Number of pieces in a box

## FIXPLUG

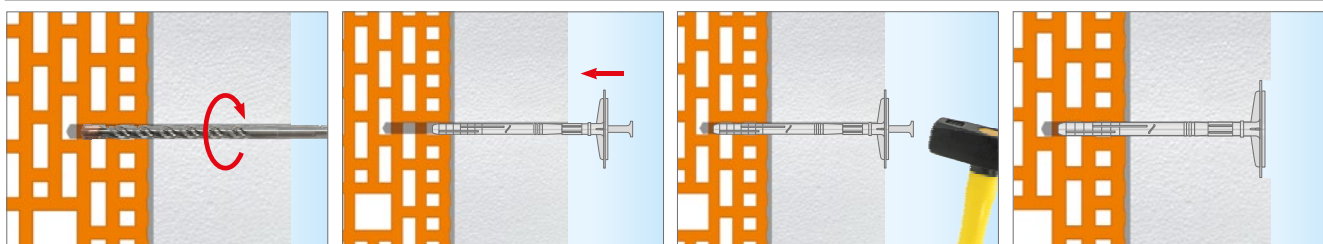
### Eliminates installation errors

Installation of standard fasteners often leads to pin or even whole fastener brake. This is often caused by an installation error involving restriking of the plug with the expansion pin already placed inside (to flush it with insulation material).

FIXPLUG telescopic design enables proper positioning of the expansion pin which ensures easy and failure-free installation.

**FIXPLUG fasteners come as a breakthrough for thermal insulation composite systems.**

### INSTALLATION INSTRUCTIONS - surface mount



AVAILABLE ACCESSORIES

SEE PAGE 51

Hammer driven fastener with plastic pin and telescopic collar

# FIXPLUG-8 - TECHNICAL DATA

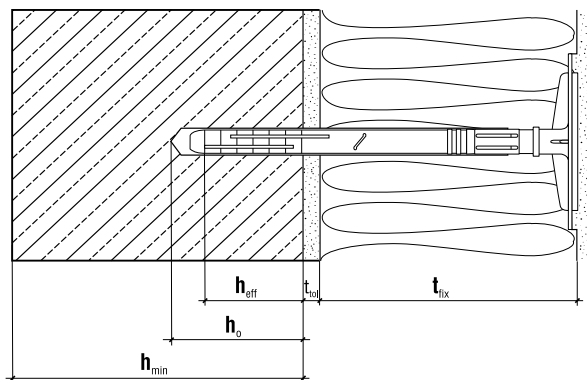
ø8



ETA-15/0373

### TECHNICAL PARAMETERS

Value	Unit	Value
Fastener diameter	$d_k$ [mm]	8
Collar diameter	$D_k$ [mm]	60
Effective anchorage depth	$h_{eff}$ [mm]	40
Hole depth	$h_o$ [mm]	50
Point thermal transmittance	$\chi$ [W/K]	0,00
Collar stiffness	$S$ [kN/mm]	0,60
Substrate category	-	<b>A B C D E</b>
Fastener material	-	PE
Pin material	-	PA + GF
European Technical Assessment	-	<b>ETA-15/0373</b>



### LOAD RESISTANCE

ETAG 014 use cat.	Substrate	Density [kg/dm <sup>3</sup> ]	Characteristic pull-out resistance [kN]
A	Concrete C12/15	≥ 2,25	0,60
A	Concrete C16/20-C50/60	≥ 2,30	0,90
B	Solid clay bricks	≥ 2,00	0,90
B	Calcium silicate solid brick	≥ 2,00	0,90
C	Calcium silicate hollow blocks	≥ 1,60	0,60
C	Vertically perforated clay bricks	≥ 1,20	0,40
C	Vertically perforated clay bricks HBL	≥ 0,80	0,75
D	LAC lightweight aggregate concrete	≥ 1,05	0,60
E	Autoclaved aerated concrete AAC 2	≥ 0,35	0,50
E	Autoclaved aerated concrete AAC 7	≥ 0,65	0,75

### INSTALLATION DATA

Fastener type	FIXPLUG 8
Min. substrate thickness $h_{min}$ [mm]	100
Minimum fastener spacing $L_{os}$ [mm]	100
Minimum edge distance $C_{min}$ [mm]	100

Partial safety factor for fastener resistance  $Y_m = 2,0$  (valid in absence of national regulations)

Hammer driven fastener with plastic pin and telescopic collar

# FIXPLUG-8

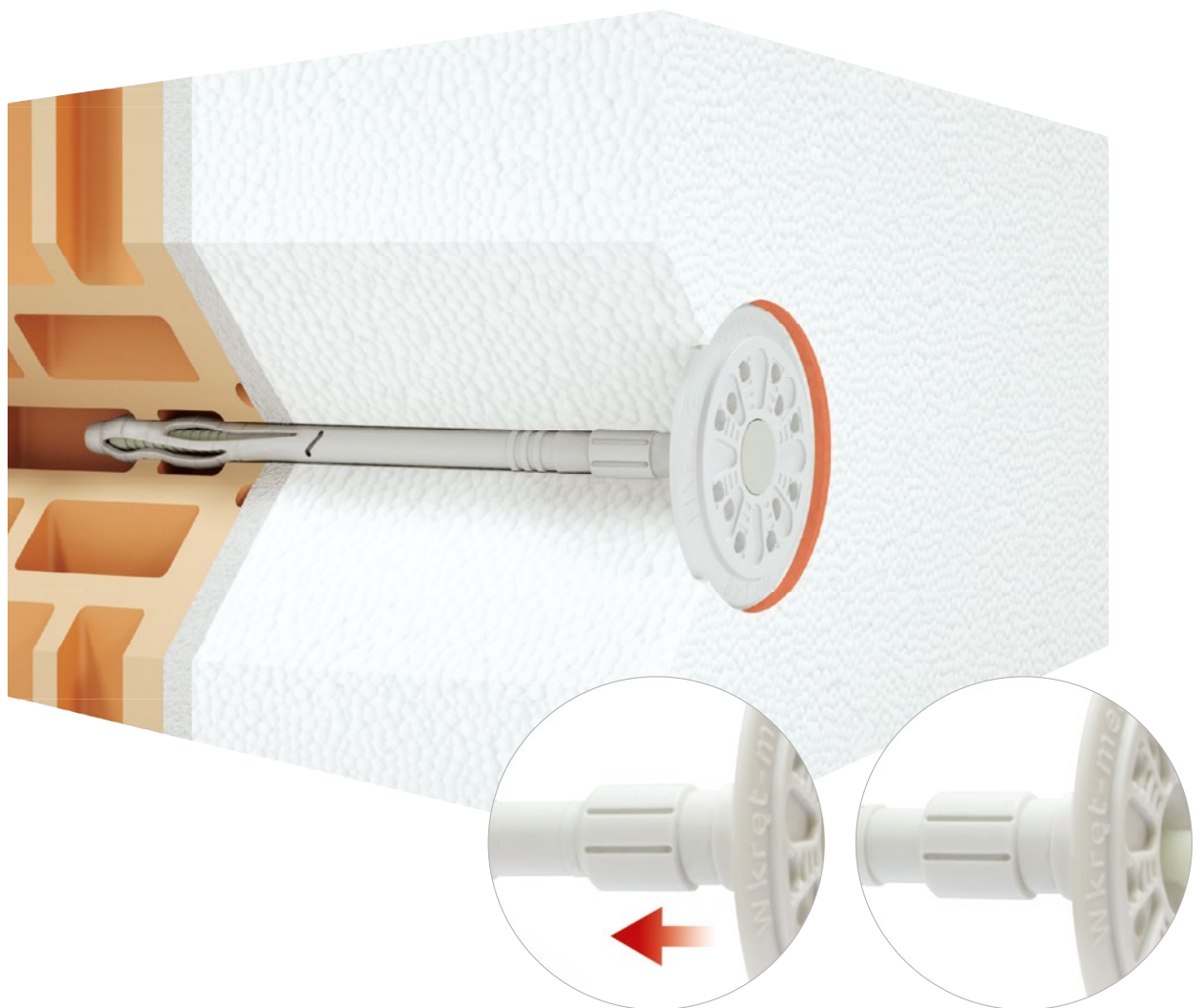
Ø8



Special 4-way expansion guarantees secure installation in ETAG 014; A B C D and E type substrate even when the drill hole has not been cleaned properly.

The telescopic design eliminates the problem of pin break even during heavy hammering. This results in secure installation with no damage to the pin.

Controlled failure zone of the collar eliminates installation errors by flushing the collar in the insulation material. It is also easier to mask the collar.



Hammer driven fastener with plastic pin and telescopic collar

# FIXPLUG-10

ø10

Innovative telescopic design ensures proper installation of the collar in the insulation material.



ETA-15/0373



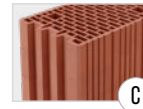
SUBSTRATES (ETAG 014 ABCDE)



Concrete



Solid clay bricks  
MZ, Calcium  
silicate solid  
brick KS



Hollow bricks



Elements on LAC  
lightweight  
aggregate  
concrete



Autoclaved  
aerated  
concrete AAC

FASTENER MATERIAL	Polyethylene (PE)
PIN MATERIAL	Glass-fibre reinforced polyamide (PA)
INSTALLATION METHOD	Surface mount
APPLICATION	Universal fastener for fastening of polystyrene EPS in various substrates
TYPE OF INSULATION MATERIAL	Styrofoam EPS



**INNOVATIVE TELESCOPIC DESIGN OF THE FASTENER**

Fast, easy and reliable fixing. Telescopic design of FIXPLUG fastener guarantees its proper fixing in the substrate and flush fitting of the collar with the insulation material used.



**FIBREGLASS REINFORCED PIN**

Pins do not break during installation, even when heavily hammered. The large head of the pin makes installation easier.



**COLLAR DESIGN**

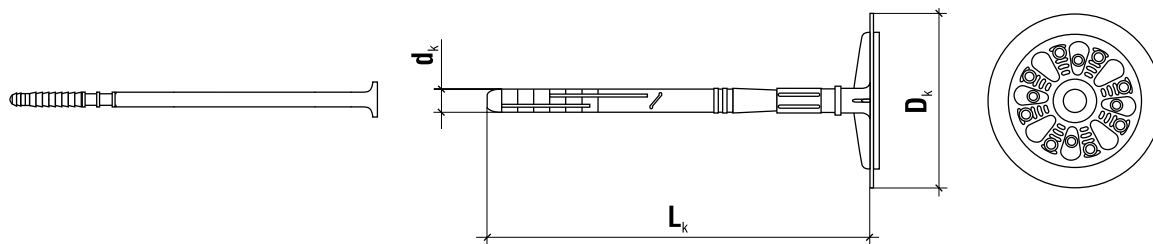
Large amount of pocket adhesives on the telescopic collar increases the adhesiveness of the mortar.

ø10

Plastic pin

FIXPLUG-10

Length range: 120 - 260 mm



	Product code	Dimensions $d_k \times L_k$ [mm]	Insulation material thickness $t_{fix}$ [mm]				Pack unit [szt.]
			New buildings		Old buildings		
			$t_{tot}$ adhesive layer of 10 mm		$t_{tot}$ adhesive layer of 10 mm + 20 mm of old plaster		
			A B	C D E	A B	C D E	
<b>FIXPLUG-10</b>							
<b>ø10</b>	FIXPLUG10120(200)	10x120	80	60	60	40	200
	FIXPLUG10140(200)	10x140	100	80	80	60	200
	FIXPLUG10160(200)	10x160	120	100	100	80	200
	FIXPLUG10180(200)	10x180	140	120	120	100	200
	FIXPLUG10200(200)	10x200	160	140	140	120	200
	FIXPLUG10220(100)	10x220	180	160	160	140	100
	FIXPLUG10260(100)	10x260	220	200	200	180	100

Product marking - FIXPLUG10120(200)			
FIXPLUG	10	120	(200)
Fastener type	Diameter	Length	Number of pieces in a box

## FIXPLUG

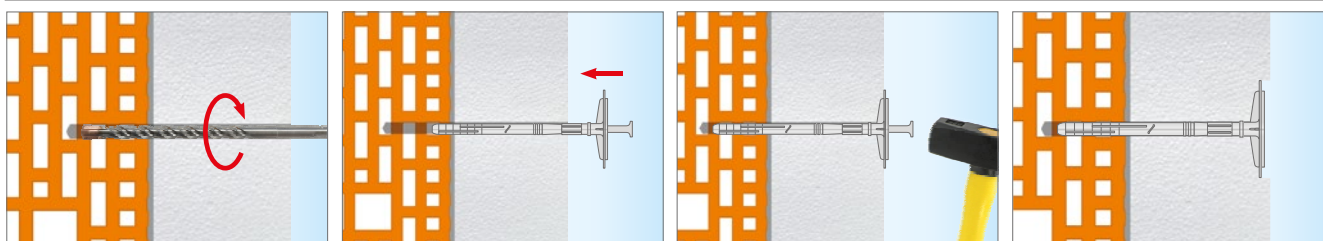
### Eliminates installation errors

Installation of standard fasteners often leads to pin or even whole fastener brake. This is often caused by an installation error involving restriking of the plug with the expansion pin already placed inside (to flush it with insulation material).

FIXPLUG telescopic design enables proper positioning of the expansion pin which ensures easy and failure-free installation.

**FIXPLUG fasteners come as a breakthrough for thermal insulation composite systems.**

### INSTALLATION INSTRUCTIONS - surface mount



AVAILABLE ACCESSORIES

SEE PAGE 55

Hammer driven fastener with plastic pin and telescopic collar

# FIXPLUG-10 - TECHNICAL DATA

ø10

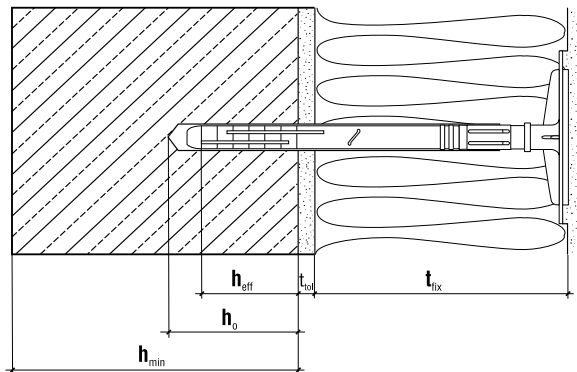


ETA-15/0373

### TECHNICAL PARAMETERS

Parameter	Unit	Value
Fastener diameter	$d_k$ [mm]	10
Collar diameter	$D_k$ [mm]	60
Effective anchorage depth	$h_{eff}$ [mm]	30/50*
Hole depth	$h_o$ [mm]	40/60*
Point thermal transmittance	$\chi$ [W/K]	0,00
Collar stiffness	$S$ [kN/mm]	0,60
Substrate category	-	<b>A B C D E</b>
Fastener material	-	PE
Pin material	-	PA + GF
European Technical Assessment	-	<b>ETA-15/0373</b>

\* - for substrate use category C, D, E



### LOAD RESISTANCE

ETAG 014 use cat.	Substrate	Density [kg/dm <sup>3</sup> ]	Characteristic pull-out resistance [kN]
A	Concrete C12/15	≥ 2,25	0,75
A	Concrete C16/20, C50/60	≥ 2,30	1,20
B	Solid clay bricks	≥ 2,00	0,90
B	Calcium silicate solid brick	≥ 2,00	0,90
C	Calcium silicate hollow blocks	≥ 1,60	0,60
C	Vertically perforated clay bricks	≥ 1,20	0,40
C	Lightweight concrete hollow block HBLC	≥ 0,80	0,90
D	LAC lightweight aggregate concrete	≥ 1,05	0,75
E	Autoclaved aerated concrete AAC 2	≥ 0,35	0,50
E	Autoclaved aerated concrete AAC 7	≥ 0,65	0,75

### INSTALLATION DATA

Fastener type	FIXPLUG 10
Min. substrate thickness $h_{min}$ [mm]	100
Minimum fastener spacing $L_{os}$ [mm]	100
Minimum edge distance $C_{min}$ [mm]	100

Partial safety factor for fastener resistance  $Y_m = 2,0$  (valid in absence of national regulations)

Hammer driven fastener with plastic pin and telescopic collar

# FIXPLUG-10

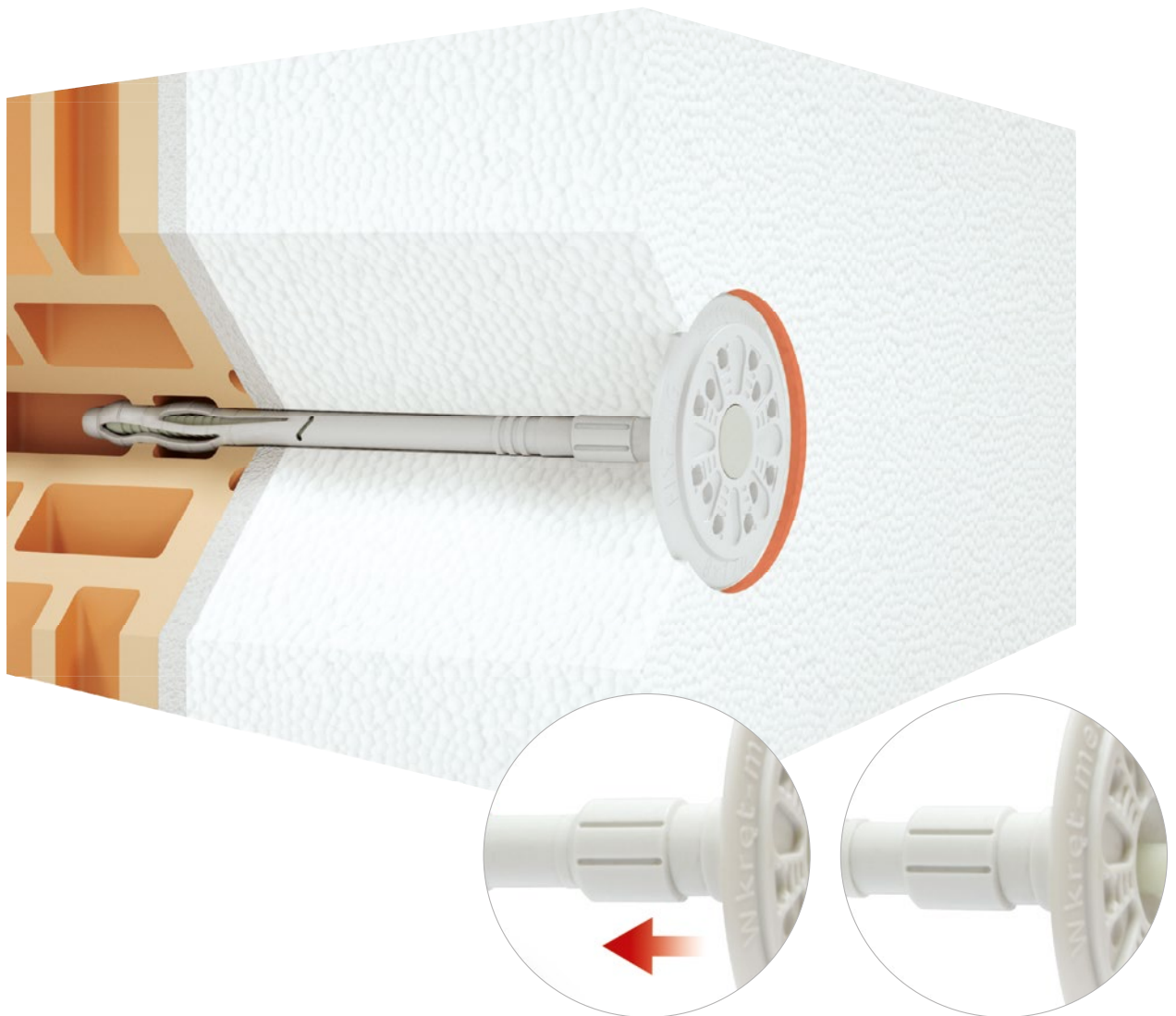
Ø10



Special 4-way expansion guarantees secure installation in ETAG 014; A B C D and E type materials even when the drill hole has not been cleaned properly.

The telescopic design eliminates the problem of pin break even during heavy hammering. This results in secure installation with no damage to the pin.

Controlled failure zone of the collar eliminates installation errors by flushing the collar in the insulation material. It is also easier to mask the collar.



# INNOVATIVE SCREWED-IN FASTENER

WITH METAL PIN AND SHORT EXPANSION ZONE

## ANCHORAGE DEPTH - 35 mm\*

With special design of expansion zone, the fastener can be mounted on all substrate categories while preserving high strength parameters!

\*Depth of only 35 mm for cat. ABCD / Depth 55 mm for cat. E.

### ENHANCED STRENGTH PARAMETERS

Screwed-in fastener is particularly recommended for mounting in perforated materials, and screwing of the pin ensures the highest strength parameters.

### REDUCED INSTALLATION TIME

Combination of telescopic design and cutting collar allows for shortening of the time of fastener installation.

### WIDE RANGE OF APPLICATION

Possibility of installation of insulation materials of up to 360mm in thickness.





# EXTERNAL THERMAL INSULATION COMPOSITE SYSTEM – ETICS

## FASTENERS FOR FIXING WALL THERMAL INSULATION WITH METAL PIN



<b>LMX-8</b>	Universal hammer driven fastener with metal pin and short expansion zone	<b>58</b>
<b>ø8</b>	<b>Length range:</b> 95 - 195 mm <b>Fastener sleeve - Polyethylene</b>	



<b>LMX-10</b>	Universal hammer driven fastener with metal pin and short expansion zone	<b>62</b>
<b>ø10</b>	<b>Length range:</b> 70 - 260 mm <b>Fastener sleeve - Polyethylene</b>	



<b>LFMG-10</b>	Hammer driven fastener with metal pin and extended expansion zone	<b>66</b>
<b>ø10</b>	<b>Length range:</b> 140 - 300 mm <b>Fastener sleeve - Polyethylene</b>	



<b>WKTherm-8</b>	Hammer driven fastener with metal pin and short expansion zone	<b>70</b>
<b>ø8</b>	<b>Length range:</b> 95 - 295 mm <b>Fastener sleeve - Polyethylene</b>	



<b>WKTherm S-8</b>	Screwed-in fastener with metal pin and short expansion zone	<b>74</b>
<b>ø8</b>	<b>Length range:</b> 95 - 295 mm <b>Fastener sleeve - Polyethylene</b>	



<b>ECO-DRIVE 8</b>	Screwed-in fastener with metal pin and telescopic support collar	<b>78</b>
<b>ø8</b>	<b>Length range:</b> 150 - 430 mm <b>Fastener sleeve - Polyamide</b>	



<b>ECO-DRIVE S-8</b>	Screwed-in fastener with metal pin and telescopic support collar	<b>82</b>
<b>ø8</b>	<b>Length range:</b> 150 - 430 mm <b>Fastener sleeve - Polyamide</b>	



<b>ECO-DRIVE W-8</b>	Screwed-in fastener with metal pin and telescopic support collar for mineral wool MW	<b>86</b>
<b>ø8</b>	<b>Length range:</b> 150 - 430 mm <b>Fastener sleeve - Polyamide</b>	



Universal hammer driven fastener with metal pin and short expansion zone

# LMX-8

ø8

Fastener for fastening of polystyrene EPS foam and mineral wool MW (in combination with TDX support collar) on all substrates according to ETAG 014, in ETICS systems.



ETA-16/0509



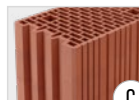
### SUBSTRATES (ETAG 014 ABCDE)



Concrete



Solid clay bricks  
MZ, Calcium  
silicate solid  
brick KS



Hollow bricks



Elements on LAC  
lightweight  
aggregate  
concrete



Autoclaved  
aerated  
concrete AAC

<b>FASTENER MATERIAL</b>	Polyethylene (PE)
<b>PIN MATERIAL</b>	Carbon steel
<b>HEAD MATERIAL</b>	Polyamide (PA)
<b>INSTALLATION METHOD</b>	<ul style="list-style-type: none"> <li>· Surface mount</li> <li>· Immersed mount</li> </ul>
<b>APPLICATION</b>	Universal fastener for fastening polystyrene EPS and mineral wool MW
<b>TYPE OF INSULATION MATERIAL</b>	<ul style="list-style-type: none"> <li>· Styrofoam EPS</li> <li>· Styrofoam XPS</li> <li>· Mineral wool MW</li> </ul>



#### NEW IMPROVED DESIGN EMBEDMENT OF 25 AND 65 mm

Owing to the new design of the expansion zone the fastener can be installed in all substrate categories while maintaining its high strength parameters.



#### METAL PIN'S HEAD SEALED IN PLASTIC

Reduced point thermal transmittance enhances the heat transfer coefficient of the whole barrier, and additionally protects the pin against corrosion.



#### INNOVATIVE DESIGN OF THE FASTENER

Large amount of pocket adhesives on the collar increases the adhesiveness of the mortar. Greater stiffness of the collar means better holding of the thermal insulation material.



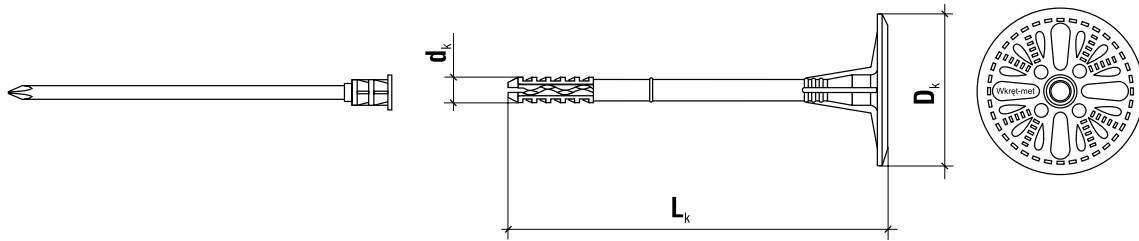
#### SHORT EXPANSION ZONE, 8 mm DIAMETER

Less drilling required – time and work saving solution.

Metal pin + head covered with plastic PA

ø8

LMX-8  
Length range: 95 - 195 mm

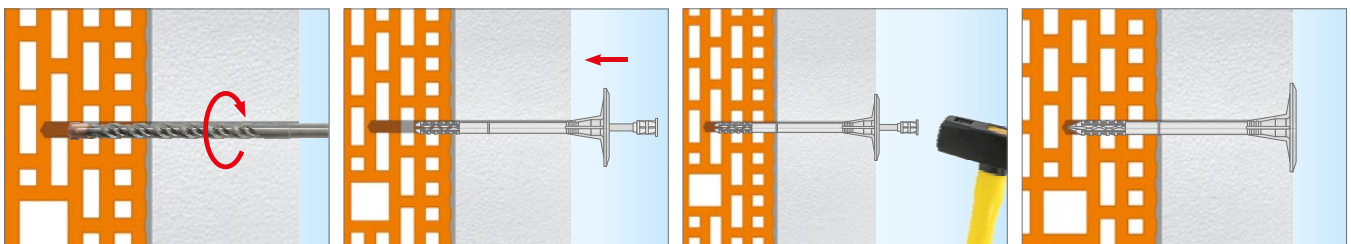


	Product code	Dimensions $d_k \times L_k$ [mm]	Insulation material thickness $t_{fix}$ [mm]				Pack unit [pcs.]
			New buildings		Old buildings		
			$t_{ad}$ adhesive layer of 10 mm		$t_{ad}$ adhesive layer of 10 mm + 20 mm of old plaster		
			without cutter	with cutter	without cutter	with cutter	
<b>LMX-8</b>							
<b>ø8</b>	LMX08095(200)	8x95	60/20*	80/40*	40/-*	60/20*	200
	LMX08115(200)	8x115	80/40*	100/60*	60/20*	80/40*	200
	LMX08135(200)	8x135	100/60*	120/80*	80/40*	100/60*	200
	LMX08155(200)	8x155	120/80*	140/100*	100/60*	120/80*	200
	LMX08175(200)	8x175	140/100*	160/120*	120/80*	140/100*	200
	LMX08195(200)	8x195	160/120*	180/140*	140/100*	160/120*	200

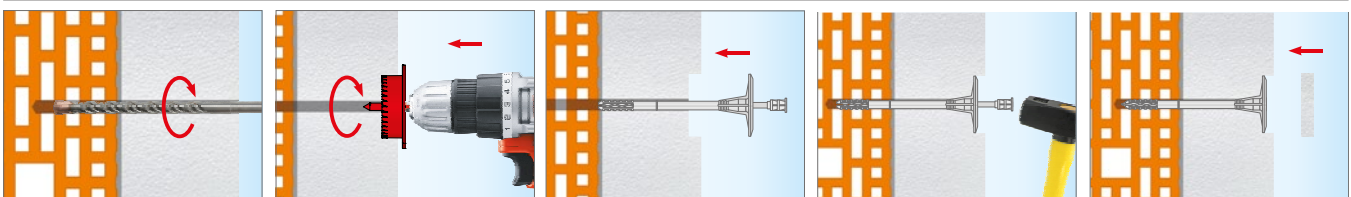
\* - for substrate use category E (Autoclaved aerated concrete)

Product marking - LMX08095(200)			
<b>LMX</b>	<b>08</b>	<b>095</b>	<b>(200)</b>
Fastener type	Diameter	Length	Number of pieces in a box

**INSTALLATION INSTRUCTIONS - surface mount**



**INSTALLATION INSTRUCTIONS - immersed mount with a polystyrene EPS disc (with plastic cutter)**



AVAILABLE ACCESSORIES

SEE PAGE 61

Universal hammer driven fastener with metal pin and short expansion zone



# LMX-8 - TECHNICAL DATA

Ø8

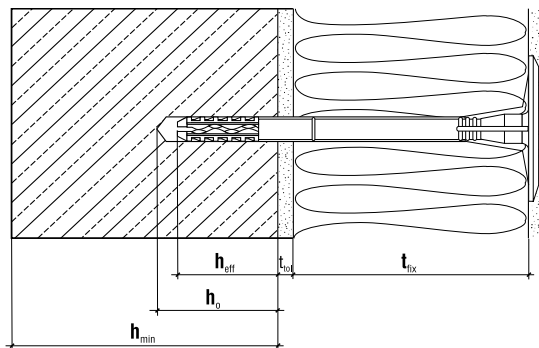


ETA-16/0509

### TECHNICAL PARAMETERS

Parameter	Unit	Value	
Fastener diameter	$d_k$ [mm]	8	
Collar diameter	$D_k$ [mm]	60	
Effective anchorage depth	$h_{eff}$ [mm]	25/65*	
Hole depth	$h_o$ [mm]	35/75*	
Point thermal transmittance	$\chi$ [W/K]	surface mount	Immerged mount
		0,004	0,002
Collar stiffness	S [kN/mm]	0,50	
Substrate category	-	<b>A B C D E</b>	
Fastener material	-	PE	
Pin material	-	Carbon steel, head covered with plastic PA	
European Technical Assessment	-	<b>ETA-16/0509</b>	

\* - for substrate use category E (Autoclaved aerated concrete)



### LOAD RESISTANCE

ETAG 014 use cat.	Substrate	Density [kg/dm <sup>3</sup> ]	Characteristic pull-out resistance [kN]
A	Concrete C12/15	≥ 2,25	0,50
A	Concrete C20/25 - C50/60	≥ 2,30	0,75
B	Solid clay bricks	≥ 2,00	0,75
B	Calcium silicate solid brick	≥ 2,00	0,75
C	Calcium silicate hollow blocks	≥ 1,60	0,75
C	Vertically perforated clay bricks	≥ 1,20	0,60
C	Porothersm 25	≥ 0,80	0,40
D	LAC lightweight aggregate concrete	≥ 0,88	0,75
E	Autoclaved aerated concrete AAC 2	≥ 0,35	0,75
E	Autoclaved aerated concrete AAC 7	≥ 0,65	0,90

### INSTALLATION DATA

Fastener type	LMX 8
Min. substrate thickness $h_{min}$ [mm]	100
Minimum fastener spacing $L_{os}$ [mm]	100
Minimum edge distance $C_{min}$ [mm]	100

Partial safety factor for fastener resistance  $\gamma_m = 2,0$  (valid in absence of national regulations)

Universal hammer driven fastener with metal pin and short expansion zone

# LMX-8 - INSTALLATION ACCESSORIES

Ø8

## Plastic cutter for polystyrene EPS

**WK-FT**

dimensions Ø66.7 mm



### Specifications:

- Plastic cutter for cutting holes in polystyrene EPS insulation material for insertion of polystyrene EPS disc.
- Controlled cutting depth, thrust collar with a diameter of 90 mm.

## Metal cutter for mineral wool

**WK-FM**

diameter Ø64 mm



### Specifications:

- Metal cutter for drilling of holes in mineral wool for immersed mount of fasteners.
- Controlled cutting depth, support collar of 95 mm in diameter.

## Polystyrene disc (white, graphite)

**KS, KSG**

dimensions Ø67 x 17 mm



### Specifications:

- Polystyrene disc (white, graphite) for covering up work holes in polystyrene - installation immersed mount.

## Mineral wool disc

**EDMW**

wymiary Ø67 x 17 mm



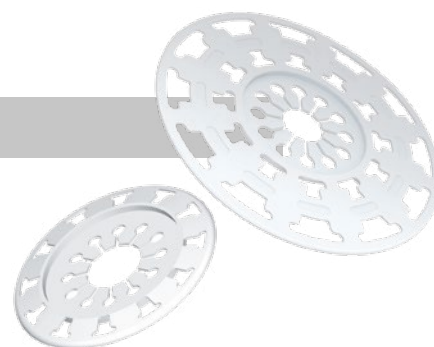
### Specifications:

- Mineral wool disc, density 130 kg/m<sup>3</sup>.

## Additional collar

**TDX-90, TDX-140**

diameters Ø90 mm, Ø140 mm



### Specifications:

- Additional collar with diameter of 90 mm for final securing touches in installation of mineral wool MW (including Lamella) - Fibreglass reinforced plastic.
- Additional collar with diameter of 140 mm for final securing touches in installation of mineral wool MW (including Lamella) - Fibreglass reinforced plastic.



Universal hammer driven fastener with metal pin and short expansion zone

# LMX-10

ø10

Fastener for fastening of polystyrene EPS foam and mineral wool MW (in combination with TDX support collar) on all substrates according to ETAG 014, in ETICS systems.



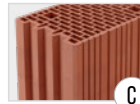
### SUBSTRATES (ETAG 014 ABCDE)



Concrete



Solid clay bricks  
MZ, Calcium silicate solid brick KS



Hollow bricks



Elements on LAC  
lightweight aggregate concrete



Autoclaved aerated concrete AAC

FASTENER MATERIAL	Polyethylene (PE)
PIN MATERIAL	Carbon steel
HEAD MATERIAL	Polyamide (PA)
INSTALLATION METHOD	· Surface mount · Immersed mount
APPLICATION	Universal fastener for fastening polystyrene EPS and mineral wool MW
TYPE OF INSULATION MATERIAL	· Styrofoam EPS · Styrofoam XPS · Mineral wool MW



#### NEW IMPROVED DESIGN EMBEDMENT OF 30 AND 50 mm

Owing to the new design of the expansion zone the fastener can be installed in all substrate categories while maintaining its high strength parameters.



#### METAL PIN'S HEAD SEALED IN PLASTIC

Reduced point thermal transmittance enhances the heat transfer coefficient of the whole barrier, and additionally protects the pin against corrosion.



#### INNOVATIVE DESIGN OF THE FASTENER

Large amount of pocket adhesives on the collar increases the adhesiveness of the mortar. Greater stiffness of the collar means better holding of the thermal insulation material



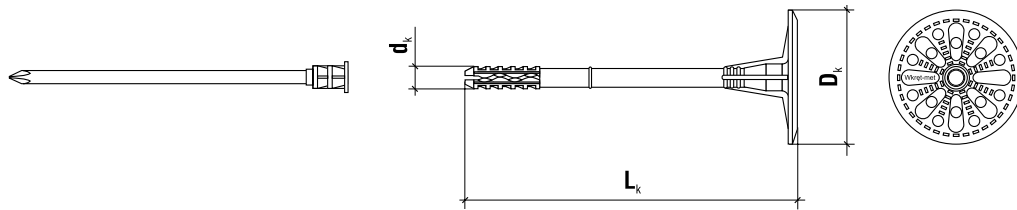
#### SHORT EXPANSION ZONE, 8 mm DIAMETER

Less drilling required – time and work saving solution.

Metal pin + head covered with plastic PA

ø10

LMX-10  
Length range: 70 - 260 mm

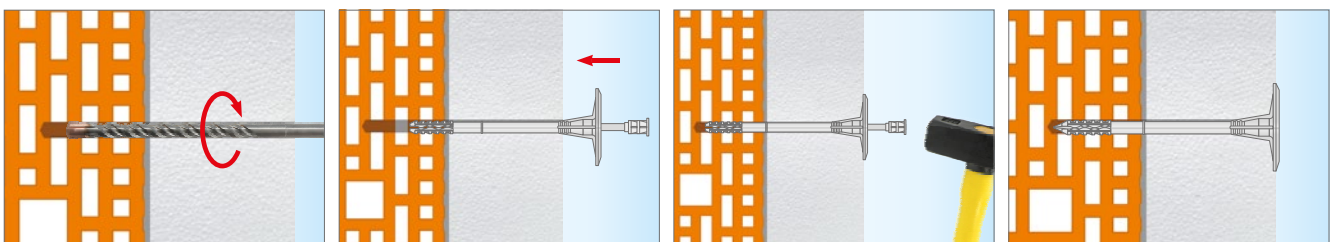


	Product code	Dimensions $d_k \times L_k$ [mm]	Insulation material thickness $t_{fix}$ [mm]				Pack unit [pcs.]
			New buildings		Old buildings		
			$t_{tot}$ adhesive layer of 10 mm		$t_{tot}$ adhesive layer of 10 mm + 20 mm of old plaster		
			without cutter	with cutter	without cutter	with cutter	
<b>LMX-10</b>							
<b>ø10</b>	LMX10070(200)	10x70	30/10*	50/30*	10/-*	30/10*	200
	LMX10090(200)	10x90	50/30*	70/50*	30/10*	50/30*	200
	LMX10110(200)	10x110	70/50*	90/70*	50/30*	70/50*	200
	LMX10120(200)	10x120	80/60*	100/80*	60/40*	80/60*	200
	LMX10140(200)	10x140	100/80*	120/100*	80/60*	100/80*	200
	LMX10160(200)	10x160	120/100*	140/120*	100/80*	120/100*	200
	LMX10180(200)	10x180	140/120*	160/140*	120/100*	140/120*	200
	LMX10200(200)	10x200	160/140*	180/160*	140/120*	160/140*	200
	LMX10220(100)	10x220	180/160*	200/180*	160/140*	180/160*	100
	LMX10260(100)	10x260	220/200*	240/220*	200/180*	220/200*	100

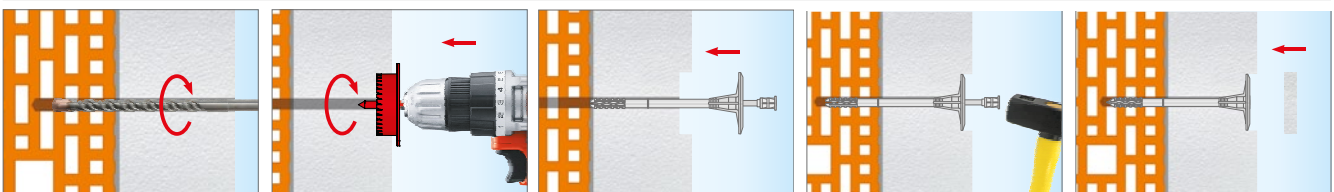
\* - for substrate use category E (Autoclaved aerated concrete)

Product marking - LMX10070(200)			
<b>LMX</b>	<b>10</b>	<b>070</b>	<b>(200)</b>
Fastener type	Diameter	Length	Number of pieces in a box

**INSTALLATION INSTRUCTIONS - surface mount**



**INSTALLATION INSTRUCTIONS - immersed mount with a polystyrene EPS disc (with plastic cutter)**



AVAILABLE ACCESSORIES

SEE PAGE 65

Universal hammer driven fastener with metal pin and short expansion zone



# LMX-10 - TECHNICAL DATA

ø10

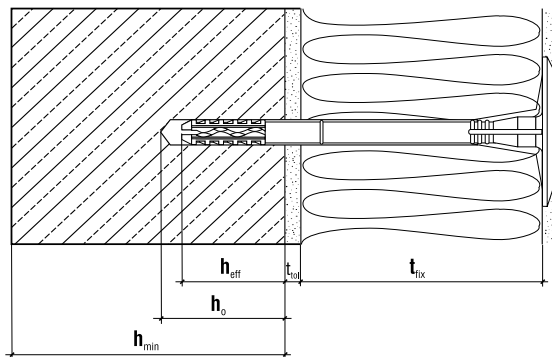


ETA-16/0509

### TECHNICAL PARAMETERS

Parameter	Unit	Value	
Fastener diameter	$d_k$ [mm]	10	
Collar diameter	$D_k$ [mm]	60	
Effective anchorage depth	$h_{eff}$ [mm]	30/50*	
Hole depth	$h_o$ [mm]	40/60*	
Point thermal transmittance	$\chi$ [W/K]	surface mount	Immerged mount
		0,004	0,002
Collar stiffness	$S$ [kN/mm]	0,50	
Substrate category	-	<b>A B C D E</b>	
Fastener material	-	PE	
Pin material	-	Carbon steel, head covered with plastic PA	
European Technical Assessment	-	<b>ETA-16/0509</b>	

\* - for substrate use category E (Autoclaved aerated concrete)



### LOAD RESISTANCE

ETAG 014 use cat.	Substrate	Density [kg/dm <sup>3</sup> ]	Characteristic pull-out resistance [kN]
A	Concrete C12/15	≥ 2,25	0,75
A	Concrete C20/25 - C50/60	≥ 2,30	0,90
B	Solid clay bricks	≥ 2,00	0,90
B	Calcium silicate solid brick	≥ 2,00	0,90
C	Calcium silicate hollow blocks	≥ 1,60	0,90
C	Vertically perforated clay bricks	≥ 1,20	0,90
C	Porotherm 25	≥ 0,80	0,50
D	LAC lightweight aggregate concrete	≥ 0,88	0,90
E	Autoclaved aerated concrete AAC 2	≥ 0,35	0,75
E	Autoclaved aerated concrete AAC 7	≥ 0,65	0,90

### INSTALLATION DATA

Fastener type	LMX 10
Min. substrate thickness $h_{min}$ [mm]	100
Minimum fastener spacing $L_{os}$ [mm]	100
Minimum edge distance $C_{min}$ [mm]	100

Partial safety factor for fastener resistance  $\gamma_m = 2,0$  (valid in absence of national regulations)



Universal hammer driven fastener with metal pin and short expansion zone

# LMX-10 - INSTALLATION ACCESSORIES

Ø10

## Plastic cutter for polystyrene EPS

**WK-FT**

dimensions Ø66.7 mm

### Specifications:

- Plastic cutter for cutting holes in polystyrene EPS insulation material for insertion of polystyrene EPS disc.
- Controlled cutting depth, thrust collar with a diameter of 90 mm.



## Metal cutter for mineral wool

**WK-FM**

diameter Ø64 mm

### Specifications:

- Metal cutter for drilling of holes in mineral wool for immersed mount of fasteners.
- Controlled cutting depth, support collar of 95 mm in diameter.



## Polystyrene disc (white, graphite)

**KS, KSG**

dimensions Ø67 x 17 mm

### Specifications:

- Polystyrene disc (white, graphite) for covering up work holes in polystyrene - installation immersed mount.



## Mineral wool disc

**EDMW**

wymiary Ø67 x 17 mm

### Specifications:

- Mineral wool disc, density 130 kg/m<sup>3</sup>.



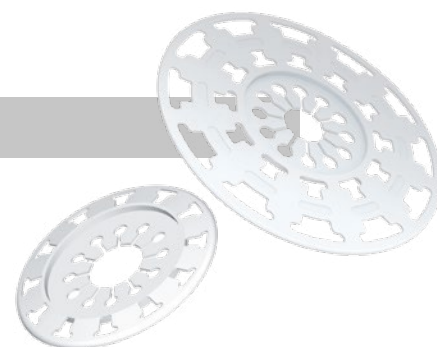
## Additional collar

**TDX-90, TDX-140**

diameters Ø90 mm, Ø140 mm

### Specifications:

- Additional collar with diameter of 90 mm for final securing touches in installation of mineral wool MW (including Lamella) - Fibreglass reinforced plastic.
- Additional collar with diameter of 140 mm for final securing touches in installation of mineral wool MW (including Lamella) - Fibreglass reinforced plastic.



Hammer-in fastener with metal pin and long embedment depth

# LFMG-10

ø10

Fastener for fastening of polystyrene EPS foam and mineral wool MW (in combination with TDX support collar) on all substrates according to ETAG 014, in ETICS systems.



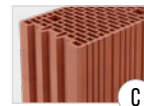
### SUBSTRATES (ETAG 014 ABCDE)



Concrete



Solid clay bricks  
MZ, Calcium  
silicate solid  
brick KS



Hollow bricks



Elements on LAC  
lightweight  
aggregate  
concrete



Autoclaved  
aerated  
concrete AAC

<b>FASTENER MATERIAL</b>	Polyethylene (PE)
<b>PIN MATERIAL</b>	Carbon steel
<b>HEAD MATERIAL</b>	Polyamide (PA)
<b>INSTALLATION METHOD</b>	<ul style="list-style-type: none"> <li>· Surface mount</li> <li>· Immersed mount</li> </ul>
<b>APPLICATION</b>	Universal fastener for fastening polystyrene EPS and mineral wool MW
<b>TYPE OF INSULATION MATERIAL</b>	<ul style="list-style-type: none"> <li>· Polystyrene EPS</li> <li>· Polystyrene XPS</li> <li>· Mineral wool MW</li> </ul>



#### METAL PIN'S HEAD SEALED IN PLASTIC

Reduced point thermal transmittance enhances the heat transfer coefficient of the whole barrier, and additionally protects the pin against corrosion.



#### INNOVATIVE DESIGN OF THE FASTENER

Large amount of pocket adhesives on the collar increases the adhesiveness of the mortar. Greater stiffness of the collar means better holding of the thermal insulation material



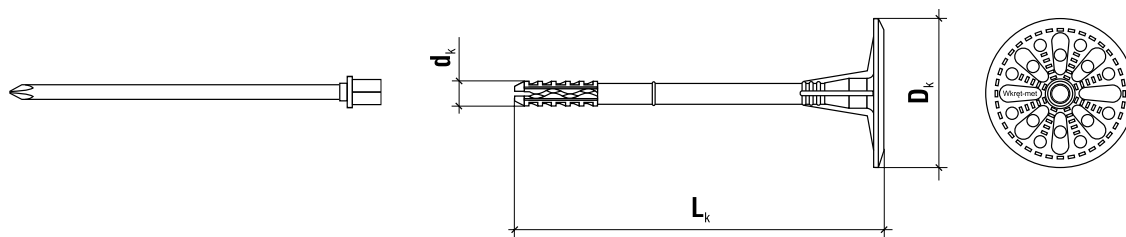
#### DIAMETER 8 mm

Less drilling required – time and work saving solution.

Metal pin + head covered with plastic PA

ø10

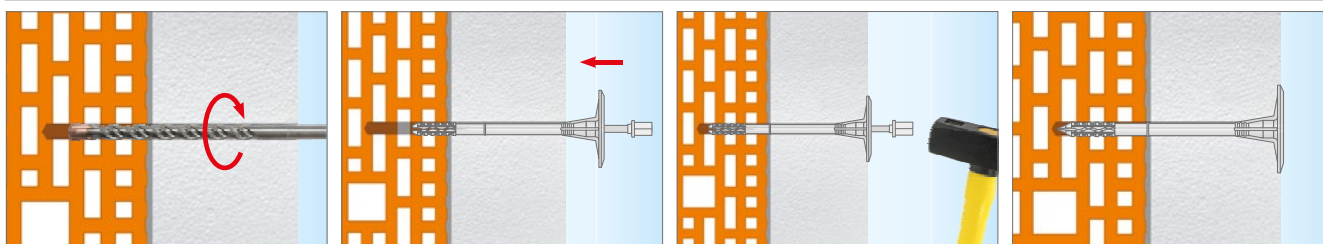
LMFG-10  
Length range: 140 - 300 mm



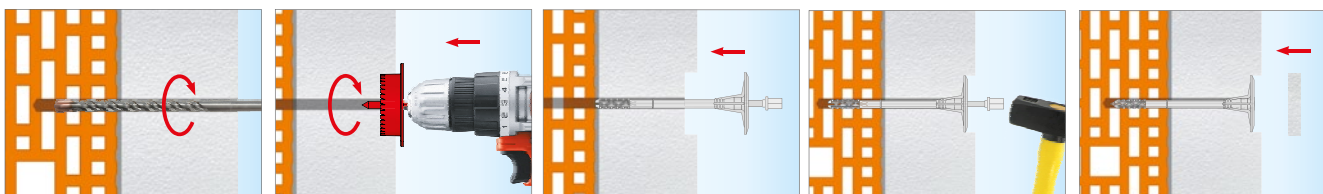
Product code	Dimensions $d_k \times L_k$ [mm]	Insulation material thickness $t_{fix}$ [mm]				Pack unit [pcs.]	
		New buildings		Old buildings			
		$t_{tot}$ adhesive layer of 10 mm		$t_{tot}$ adhesive layer of 10 mm + 20 mm of old plaster			
		without cutter	with cutter	without cutter	with cutter		
<b>LFMG-10</b>							
<b>ø10</b>	LFMG10140(200)	10x140	60	80	40	60	200
	LFMG10160(200)	10x160	80	100	60	80	200
	LFMG10180(200)	10x180	100	120	80	100	200
	LFMG10200(200)	10x200	120	140	100	120	200
	LFMG10220(100)	10x220	140	160	120	140	100
	LFMG10260(100)	10x260	180	200	160	180	100
	LFMG10300(100)	10x300	220	240	200	220	100

Product marking - LFMG10300(100)			
LFMG	10	300	(100)
Fastener type	Diameter	Length	Number of pieces in a box

**INSTALLATION INSTRUCTIONS - surface mount**



**INSTALLATION INSTRUCTIONS - immersed mount with a polystyrene EPS disc (with plastic cutter)**



AVAILABLE ACCESSORIES

SEE PAGE 69

Hammer-in fastener with metal pin and long embedment depth

# LFMG-10 - TECHNICAL DATA

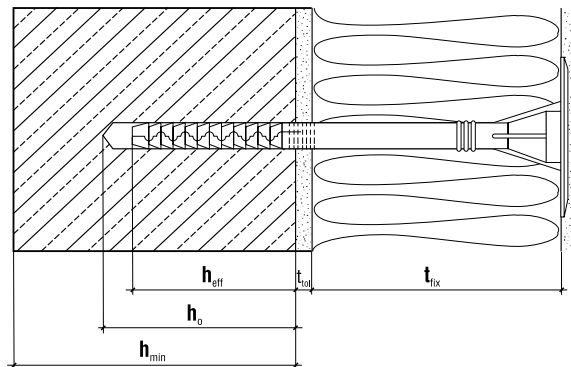
ø10



ETA-17/0450

### TECHNICAL PARAMETERS

Parameter	Unit	Value	
Fastener diameter	$d_k$ [mm]	10	
Collar diameter	$D_k$ [mm]	60	
Effective anchorage depth	$h_{eff}$ [mm]	70	
Hole depth	$h_o$ [mm]	75	
Point thermal transmittance	$\chi$ [W/K]	surface mount	Immerged mount
		0,004	0,003
Collar stiffness	S [kN/mm]	0,40	
Substrate category	-	<b>ABCDE</b>	
Fastener material	-	PE	
Pin material	-	Carbon steel, head covered with plastic PA	
European Technical Assessment	-	<b>ETA-17/0450</b>	



### LOAD RESISTANCE

ETAG 014 use cat.	Substrate	Density [kg/dm <sup>3</sup> ]	Characteristic pull-out resistance [kN]
A	Concrete C12/15	≥2,25	0,65
A	Concrete C20/25-C50/60	≥2,30	0,90
B	Solid clay bricks	≥2,00	0,75
B	Calcium silicate solid brick	≥2,00	0,75
C	Calcium silicate hollow blocks	≥1,60	0,50
C	Vertically perforated clay bricks	≥1,20	0,40
C	Porotherm 25	≥0,80	0,40
D	LAC lightweight aggregate concrete	≥0,88	0,75
E	Autoclaved aerated concrete AAC 2	≥0,35	0,40
E	Autoclaved aerated concrete AAC 7	≥0,65	0,50

### INSTALLATION DATA

Fastener type	LFMG 10
Min. substrate thickness $h_{min}$ [mm]	100
Minimum fastener spacing $L_{os}$ [mm]	100
Minimum edge distance $C_{min}$ [mm]	100

Partial safety factor for fastener resistance  $\gamma_m = 2,0$  (valid in absence of national regulations)

Hammer-in fastener with metal pin and long embedment depth

# LFMG-10 - INSTALLATION ACCESSORIES

Ø10

## Plastic cutter for polystyrene EPS

**WK-FT**

dimensions Ø66.7 mm

### Specifications:

- Plastic cutter for cutting holes in polystyrene EPS insulation material for insertion of polystyrene EPS disc.
- Controlled cutting depth, thrust collar with a diameter of 90 mm.



## Metal cutter for mineral wool

**WK-FM**

diameter Ø64 mm

### Specifications:

- Metal cutter for drilling of holes in mineral wool for immersed mount of fasteners.
- Controlled cutting depth, support collar of 95 mm in diameter.



## Polystyrene disc (white, graphite)

**KS, KSG**

dimensions Ø67 x 17 mm

### Specifications:

- Polystyrene disc (white, graphite) for covering up work holes in polystyrene - installation immersed mount.



## Mineral wool disc

**EDMW**

wymiary Ø67 x 17 mm

### Specifications:

- Mineral wool disc, density 130 kg/m<sup>3</sup>.



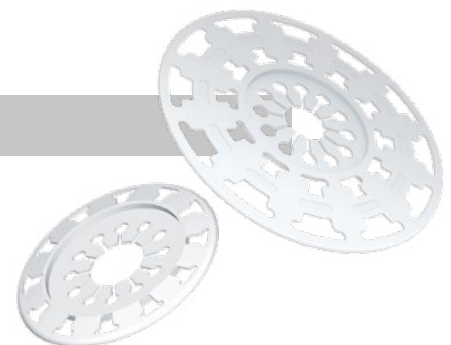
## Additional collar

**TDX-90, TDX-140**

diameters Ø90 mm, Ø140 mm

### Specifications:

- Additional collar with diameter of 90 mm for final securing touches in installation of mineral wool MW (including Lamella) - Fibreglass reinforced plastic.
- Additional collar with diameter of 140 mm for final securing touches in installation of mineral wool MW (including Lamella) - Fibreglass reinforced plastic.



Hammer driven fastener with metal pin and short expansion zone

# WK THERM-8

ø8

Modern fastener with short expansion zone for fastening of polystyrene EPS foam and mineral wool MW (in combination with TDX support collar) on cat. A, B, C substrates according to ETAG 014, in ETICS systems.



ETA-11/0232



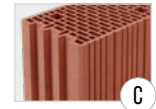
SUBSTRATES (ETAG 014 ABCDE)



Concrete



Solid clay bricks MZ, Calcium silicate solid brick KS



Hollow bricks

<b>FASTENER MATERIAL</b>	Polyethylene (PE)
<b>PIN MATERIAL</b>	Carbon steel
<b>HEAD MATERIAL</b>	Polyamide (PA) with glass fiber
<b>INSTALLATION METHOD</b>	<ul style="list-style-type: none"> <li>· Surface mount</li> <li>· Immersed mount</li> </ul>
<b>FASTENER TYPE</b>	Hammer driven
<b>APPLICATION</b>	Universal fastener for fastening polystyrene EPS and mineral wool MW
<b>TYPE OF INSULATION MATERIAL</b>	<ul style="list-style-type: none"> <li>· Polystyrene EPS, Polystyrene XPS</li> <li>· Mineral wool MW</li> </ul>



**METAL PIN'S HEAD SEALED IN PLASTIC**

Very low point thermal transmittance (0.002 W/K) enhances the heat transfer coefficient of the whole barrier and additionally protects the pin against corrosion.



**INNOVATIVE DESIGN OF THE FASTENER**

Large amount of pocket adhesives on the collar increases the adhesiveness of the mortar. Greater stiffness of the collar means better holding power of the material fixture



**SHORT EXPANSION ZONE, 8 mm DIAMETER**

New expansion zone provides for maximum strength of the fastener with a minimum workload and maintaining low equipment outlays.



**PRE-ASSEMBLED PIN**

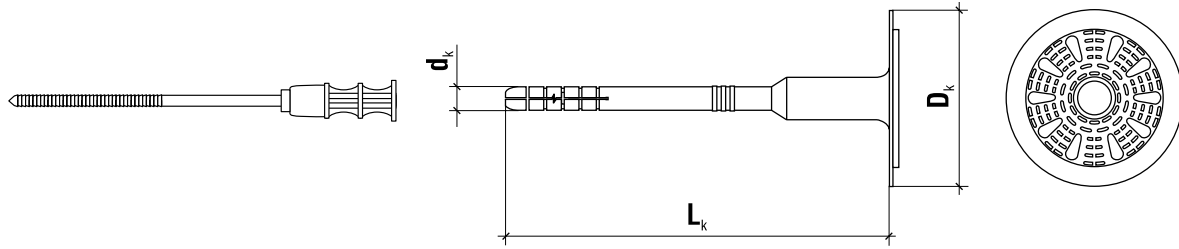
Pre-assembly of the pin with the fastener eliminates errors in the selection of the pin. This ensures that the correct elements are always used



Metal pin + head covered with plastic PA

ø8

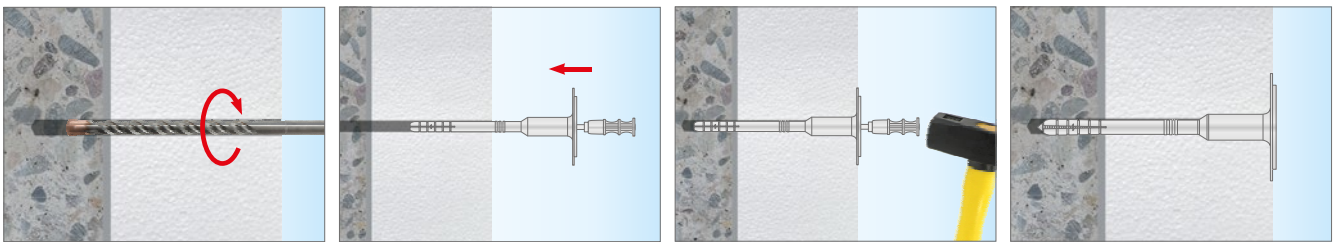
**WK THERM-8**  
Length range: 95 - 295 mm



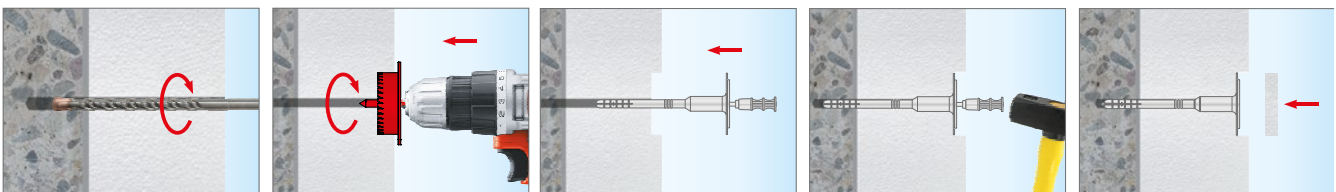
	Product code	Dimensions	Insulation material thickness $t_{ix}$ [mm]				Pack unit [pcs.]
			New buildings		Old buildings		
			$t_{ad}$ adhesive layer of 10 mm		$t_{ad}$ adhesive layer of 10 mm + 20 mm of old plaster		
			without cutter	with cutter	without cutter	with cutter	
<b>WK THERM 8</b>							
<b>Ø8</b>	WK THERM08095(200)	8x95	60	80	40	60	200
	WK THERM08115(200)	8x115	80	100	60	80	200
	WK THERM08135(200)	8x135	100	120	80	100	200
	WK THERM08155(200)	8x155	120	140	100	120	200
	WK THERM08175(200)	8x175	140	160	120	140	200
	WK THERM08195(200)	8x195	160	180	140	160	200
	WK THERM08215(100)	8x215	180	200	160	180	100
	WK THERM08235(100)	8x235	200	220	180	200	100
	WK THERM08255(100)	8x255	220	240	200	220	100
	WK THERM08275(100)	8x275	240	260	220	240	100
	WK THERM08295(100)	8x295	260	280	240	260	100

Product marking - WK THERM08095(200)			
WK THERM	08	095	(200)
Fastener type	Diameter	Length	Number of pieces in a box

**INSTALLATION INSTRUCTIONS - surface mount**



**INSTALLATION INSTRUCTIONS - immersed mount with a polystyrene EPS disc (with plastic cutter)**



AVAILABLE ACCESSORIES

SEE PAGE 73

Hammer driven fastener with metal pin and short expansion zone

# WK THERM-8 - TECHNICAL DATA

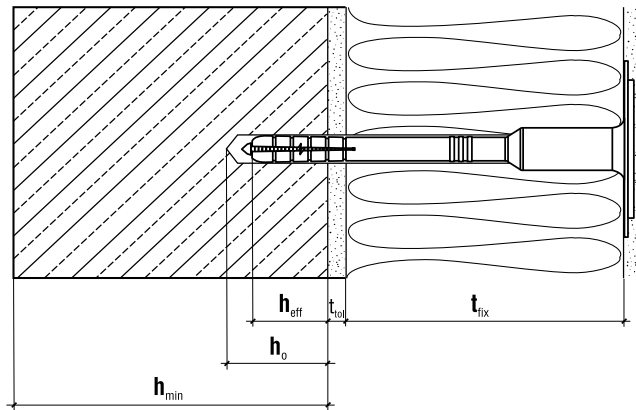
Ø8



ETA-11/0232

### TECHNICAL PARAMETERS

Parameter	Unit	Value	
Fastener diameter	$d_k$ [mm]	8	
Collar diameter	$D_k$ [mm]	60	
Effective anchorage depth	$h_{eff}$ [mm]	25	
Hole depth	$h_o$ [mm]	35	
Point thermal transmittance	$\chi$ [W/K]	surface mount	Immerged mount
		0,002	0,002
Collar stiffness	S [kN/mm]	0,60	
Substrate category	-	<b>A B C</b>	
Fastener material	-	PE	
Pin material	-	Stal węglowa, główka pokryta PA	
European Technical Assessment	-	<b>ETA-11/0232</b>	



### LOAD RESISTANCE

ETAG 014 use cat.	Substrate	Density [kg/dm <sup>3</sup> ]	Characteristic pull-out resistance [kN]
A	Concrete C12/15	≥ 1,80	1,20
A	Concrete C16/20-C50/60	≥ 2,30	1,50
B	Solid clay bricks	≥ 1,70	1,50
B	Calcium silicate solid brick	≥ 2,00	1,50
C	Calcium silicate hollow blocks	≥ 1,60	1,20
C	Vertically perforated clay bricks	≥ 0,95	0,60
C	Lightweight concrete hollow block	≥ 0,80	0,60

### INSTALLATION DATA

Fastener type	WK THERM 8
Min. substrate thickness $h_{min}$ [mm]	100
Minimum fastener spacing $L_{os}$ [mm]	100
Minimum edge distance $C_{min}$ [mm]	100

### Pull-trought test with insulation [kN]

R panel	EPS 035/60 mm	EPS 040/60 mm
	0,47 [kN]	0,47 [kN]

Partial safety factor for fastener resistance  $\gamma_m = 2,0$  (valid in absence of national regulations)



Hammer driven fastener with metal pin and short expansion zone

# WK THERM-8 - INSTALLATION ACCESSORIES

Ø8

## Plastic cutter for polystyrene EPS

**WK-FT** diameter Ø66.7 mm

### Specifications:

- Plastic cutter for cutting holes in polystyrene EPS insulation material for insertion of polystyrene EPS disc.
- Controlled cutting depth, thrust collar with a diameter of 90 mm.



## Metal cutter for mineral wool

**WK-FM** diameter Ø64 mm

### Specifications:

- Metal cutter for drilling of holes in mineral wool for immersed mount of fasteners.
- Controlled cutting depth, support collar of 95 mm in diameter.



## Polystyrene disc (white, graphite)

**KS, KSG** dimensions Ø67 x 17 mm

### Specifications:

- Polystyrene disc (white, graphite) for covering up work holes in polystyrene - installation immersed mount.



## Mineral wool disc

**EDMW** dimensions Ø67 x 17 mm

### Specifications:

- Mineral wool disc, density 130 kg/m<sup>3</sup>.

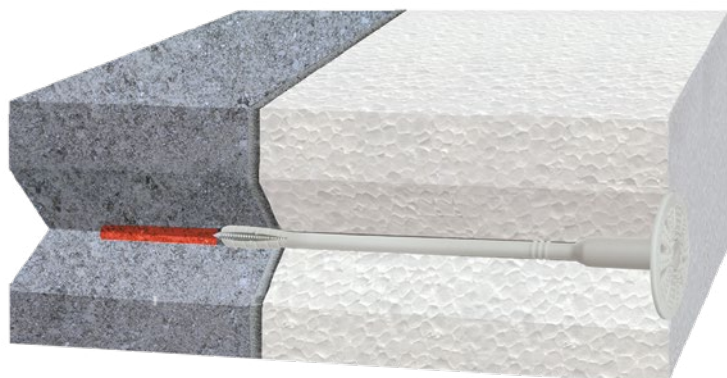
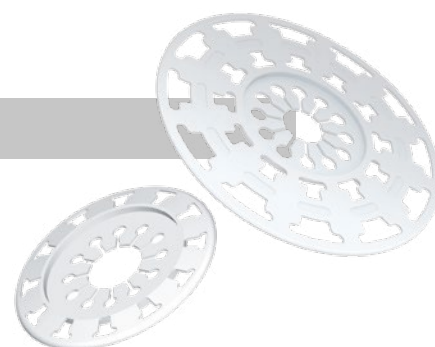


## Additional collar

**TDX-90, TDX-140** diameters Ø90 mm, Ø140 mm

### Specifications:

- Additional collar with diameter of 90 or 140 mm for final securing touches in installation of mineral wool MW (including Lamella) - Fibreglass reinforced plastic.



## ANCHORAGE DEPTH ONLY 25 mm

Reduced drilling depth saves time and money. WK THERM fasteners offer substantial benefits. They also offer an innovative approach to thermal protection of buildings. WK THERM fasteners combine the features of metal and plastic pin fasteners.



Metal pin + head covered with plastic PA with glass fiber

ø8

**WKTherm S-8**  
Length range: 95 - 295 mm

### Screwed-in fastener with metal pin and short expansion zone

# WKTherm S-8

ø8

Modern fastener with short expansion zone for fastening of polystyrene EPS foam and mineral wool MW (in combination with TDX support collar) on all substrates according to ETAG 014, in ETICS systems.



ETA-13/0724



TX-40



#### SUBSTRATES (ETAG 014 ABCDE)



Concrete



Solid clay bricks  
MZ, Calcium silicate solid brick KS



Hollow bricks

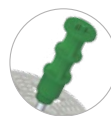


Elements on LAC  
lightweight aggregate concrete



Autoclaved aerated concrete AAC

<b>FASTENER MATERIAL</b>	Polyethylene (PE)
<b>PIN MATERIAL</b>	Carbon steel
<b>HEAD MATERIAL</b>	Polyamide (PA) with glass fiber
<b>INSTALLATION METHOD</b>	<ul style="list-style-type: none"> <li>· Surface mount</li> <li>· Immersed mount</li> </ul>
<b>FASTENER TYPE</b>	Screwed-in
<b>APPLICATION</b>	Universal screwed-in fastener for all substrates
<b>TYPE OF INSULATION MATERIAL</b>	<ul style="list-style-type: none"> <li>· Polystyrene EPS, Polystyrene XPS</li> <li>· Mineral wool MW</li> </ul>



#### METAL PIN'S HEAD SEALED IN PLASTIC

Very low point thermal transmittance (0.002 W/K) enhances the heat transfer coefficient of the whole barrier and additionally protects the pin against corrosion.



#### SCREW-IN FIXING, TX-40

Screw-driven fastener recommended for use in soft materials to avoid damaging of the substrate with a hammer. Screw-driven pin guarantees achieving best strength parameters and facilitates flush fitting of the fastener with the insulation material. These fasteners are real time-savers.



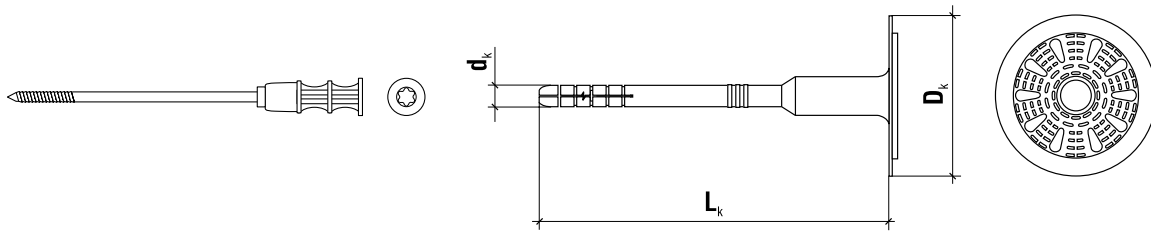
#### INNOVATIVE DESIGN OF THE FASTENER

Large amount of pocket adhesives on the collar increases the adhesiveness of the mortar. Greater stiffness of the collar means better holding power of the material fixture



#### SHORT EXPANSION ZONE, 8 mm DIAMETER

New expansion zone provides for maximum strength of the fastener with a minimum workload and maintaining low equipment outlays.

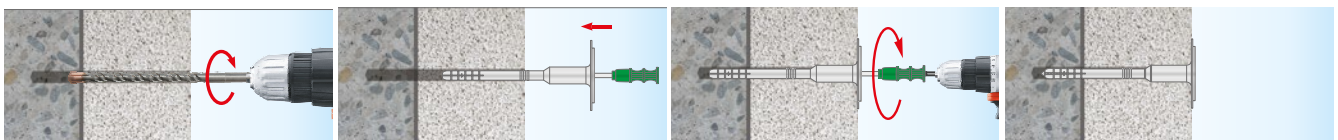


	Product code	Dimensions $d_k \times L_k$ [mm]	Insulation material thickness $t_{fix}$ [mm]				Pack unit [pcs.]
			New buildings		Old buildings		
			$t_{tot}$ adhesive layer of 10 mm		$t_{tot}$ adhesive layer of 10 mm + 20 mm of old plaster		
			without cutter	with cutter	without cutter	with cutter	
<b>WK THERM S-8</b>							
<b>Ø8</b>	WK THERM-S-08095(200)	8x95	60/20*	80/40*	40/-*	60/20*	200
	WK THERM-S-08115(200)	8x115	80/40*	100/60*	60/20*	80/40*	200
	WK THERM-S-08135(200)	8x135	100/60*	120/80*	80/40*	100/60*	200
	WK THERM-S-08155(200)	8x155	120/80*	140/100*	100/60*	120/80*	200
	WK THERM-S-08175(200)	8x175	140/100*	160/120*	120/80*	140/100*	200
	WK THERM-S-08195(200)	8x195	160/120*	180/140*	140/100*	160/120*	200
	WK THERM-S-08215(100)	8x215	180/140*	200/160*	160/120*	180/140*	100
	WK THERM-S-08235(100)	8x235	200/160*	220/180*	180/140*	200/160*	100
	WK THERM-S-08255(100)	8x255	220/180*	240/200*	200/160*	220/180*	100
	WK THERM-S-08275(100)	8x275	240/200*	260/220*	220/180*	240/200*	100
	WK THERM-S-08295(100)	8x295	260/220*	280/240*	240/200*	260/220*	100

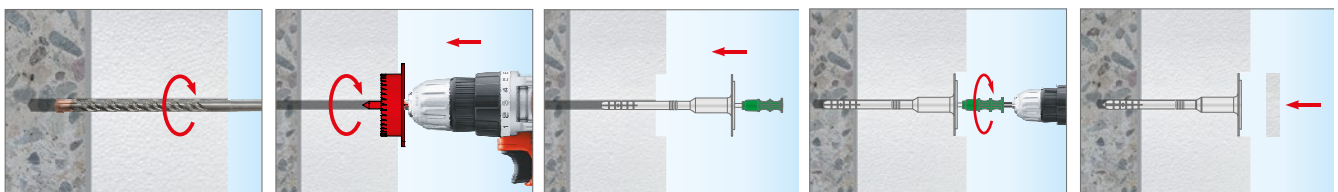
\* - for substrate use category E (Autoclaved aerated concrete)

Product marking - WK THERM-S-08095(200)			
<b>WK THERM-S</b>	<b>08</b>	<b>095</b>	<b>(200)</b>
Fastener type	Diameter	Length	Number of pieces in a box

**INSTALLATION INSTRUCTIONS - surface mount**



**INSTALLATION INSTRUCTIONS - immersed mount with a polystyrene EPS disc (with plastic cutter)**



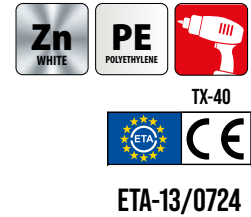
AVAILABLE ACCESSORIES

SEE PAGE 77

Screwed-in fastener with metal pin and short expansion zone

# WK THERM S-8 - TECHNICAL DATA

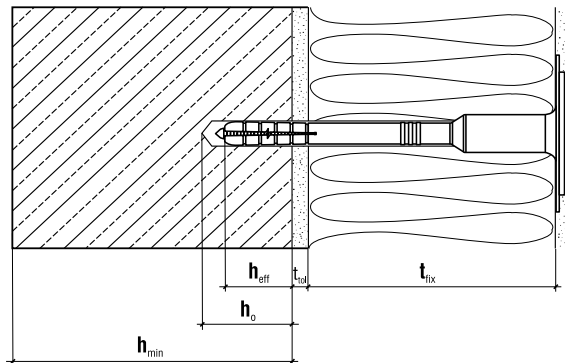
Ø8



### TECHNICAL PARAMETERS

Parameter	Unit	Value	
Fastener diameter	$d_k$ [mm]	8	
Collar diameter	$D_k$ [mm]	60	
Effective anchorage depth	$h_{eff}$ [mm]	25/65*	
Hole depth	$h_o$ [mm]	35/75*	
Point thermal transmittance	$\chi$ [W/K]	surface mount	Immerged mount
		0,002	0,002
Collar stiffness	S [kN/mm]	0,60	
Substrate category	-	<b>A B C D E</b>	
Fastener material	-	PE	
Pin material	-	Carbon steel, head covered with plastic (PA+GF)	
European Technical Assessment	-	<b>ETA-13/0724</b>	

\* - for substrate use category E (Autoclaved aerated concrete)



### LOAD RESISTANCE

ETAG 014 use cat.	Substrate	Density [kg/dm <sup>3</sup> ]	Characteristic pull-out resistance [kN]
A	Concrete C12/15	≥ 1,80	1,20
A	Concrete C16/20-C50/60	≥ 2,30	1,50
B	Solid clay bricks	≥ 2,00	1,50
B	Calcium silicate solid brick	≥ 2,00	1,50
C	Calcium silicate hollow blocks	≥ 1,60	0,90
C	Perforated solid brick	≥ 1,20	0,75
C	Lightweight concrete hollow block HBL	≥ 0,80	0,75
D	Lightweight aggregate concrete - LAC	≥ 1,05	0,90
E	Autoclaved aerated concrete AAC 2	≥ 0,35	0,60
E	Autoclaved aerated concrete AAC 7	≥ 0,65	1,20

### INSTALLATION DATA

Fastener type	WK THERM-S 8
Min. substrate thickness $h_{min}$ [mm]	100
Minimum fastener spacing $L_{os}$ [mm]	100
Minimum edge distance $C_{min}$ [mm]	100

### Pull-trough test with insulation [kN]

R panel	EPS 035/60 mm	EPS 040/60 mm
	0,47 [kN]	0,47 [kN]

Partial safety factor for fastener resistance  $\gamma_m = 2,0$  (valid in absence of national regulations)

Screwed-in fastener with metal pin and short expansion zone

# WK THERM S-8 - INSTALLATION ACCESSORIES

## ø8

### Plastic cutter for polystyrene EPS

**WK-FT** diameter ø66.7 mm

#### Specifications:

- Plastic cutter for cutting holes in polystyrene EPS insulation material for insertion of polystyrene EPS disc.
- Controlled cutting depth, thrust collar with a diameter of 90 mm.



### Metal cutter for mineral wool

**WK-FM** diameter ø64 mm

#### Specifications:

- Metal cutter for drilling of holes in mineral wool for immersed mount of fasteners.
- Controlled cutting depth, support collar of 95 mm in diameter.



### Polystyrene disc (white, graphite)

**KS, KSG** dimensions ø67 x 17 mm

#### Specifications:

- Polystyrene disc (white, graphite) for covering up work holes in polystyrene - installation immersed mount.



### Mineral wool disc

**EDMW** dimensions ø67 x 17 mm

#### Specifications:

- Mineral wool disc, density 130 kg/m<sup>3</sup>.

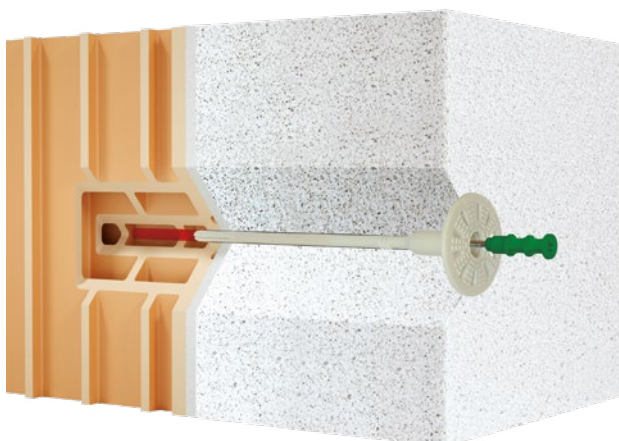
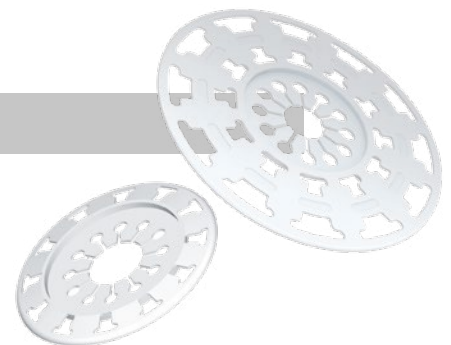


### Additional collar

**TDX-90, TDX-140** diameters ø90 mm, ø140 mm

#### Specifications:

- Additional collar with diameter of 90 or 140 mm for final securing touches in installation of mineral wool MW (including Lamella) - Fibreglass reinforced plastic.



## ANCHORAGE DEPTH ONLY 25 mm\*

Reduced drilling depth saves time and money. WK THERM fasteners offer substantial benefits. They also offer an innovative approach to thermal protection of buildings. WK THERM fasteners combine the features of metal and plastic pin fasteners.

\*for substrate category ABCD; 65 mm for cat. E



Metal pin + head covered with plastic  
PA with glass fiber

ø8

**ECO-DRIVE 8**  
Length range: 150 - 430 mm

Screwed-in fastener with metal pin and telescopic support collar

## ECO-DRIVE 8

ø8

Modern fastener with low spot thermal conductivity for fastening of polystyrene EPS foam on all substrates according to ETAG 014, in ETICS systems.



ETA-13/0107



TX-40



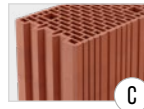
### SUBSTRATES (ETAG 014 ABCDE)



Concrete



Solid clay bricks  
MZ, Calcium  
silicate solid  
brick KS



Hollow bricks



Elements on LAC  
lightweight  
aggregate  
concrete



Autoclaved  
aerated  
concrete AAC

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

#### SCREW-IN FIXING, TX-40

Screw-driven fastener recommended for use in soft materials to avoid damaging of the substrate with a hammer. Screw-driven pin guarantees achieving best strength parameters and provides for flush fitting of the fastener with the insulation material. These fasteners are real time-savers.

#### MODERN TELESCOPIC DESIGN

Combination of telescopic design and a cutting collar offers a most advanced fastener on the market for covered up installation spot which eliminates the use of cutter and reduces pollution with polystyrene dust.

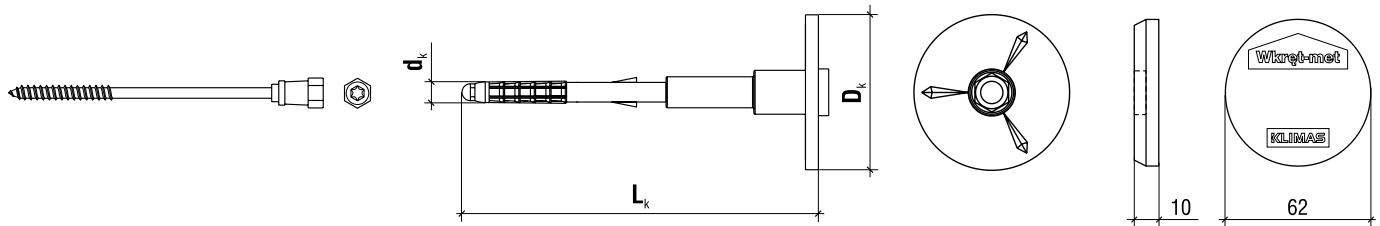
#### POLYSTYRENE DISC

Fasteners are supplied with polystyrene discs, which seriously shortens installation work, eliminates thermal bridging and ensures good aesthetics of the outer layer.

#### PRE-ASSEMBLED PIN

Pre-assembly of the pin with the fastener eliminates errors in the selection of the pin. This ensures that the correct elements are always used.

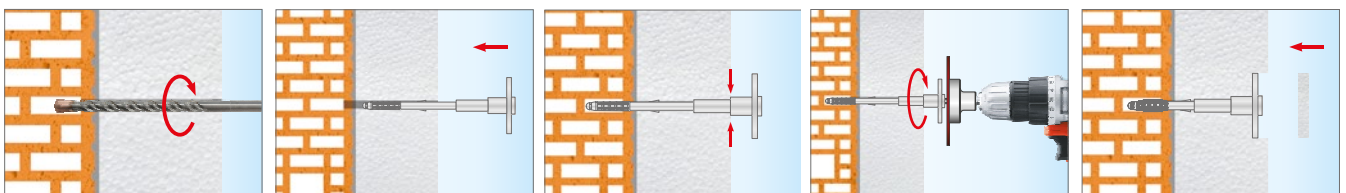




	Product code	Dimensions $d_k \times L_k$ [mm]	Insulation material thickness $t_{fix}$ [mm]			Pack unit [pcs.]
			New buildings		Old buildings	
			$t_{tot}$ adhesive layer of 10 mm		$t_{tot}$ adhesive layer of 10 mm + 20 mm of old plaster	
			cat. A B C D	cat. E	cat. A B C D	
<b>ECO-DRIVE 8</b>						
<b>ø8</b>	ECODRIVE-08150(100)	8x150	80	–	–	100
	ECODRIVE-08170(100)	8x170	100	80	80	100
	ECODRIVE-08190(100)	8x190	120	100	100	100
	ECODRIVE-08210(100)	8x210	140	120	120	100
	ECODRIVE-08230(100)	8x230	160	140	140	100
	ECODRIVE-08250(100)	8x250	180	160	160	100
	ECODRIVE-08270(100)	8x270	200	180	180	100
	ECODRIVE-08290(100)	8x290	220	200	200	100
	ECODRIVE-08310(100)	8x310	240	220	220	100
	ECODRIVE-08330(100)	8x330	260	240	240	100
	ECODRIVE-08350(100)	8x350	280	260	260	100
	ECODRIVE-08370(100)	8x370	300	280	280	100
	ECODRIVE-08390(100)	8x390	320	300	300	100
	ECODRIVE-08410(100)	8x410	340	320	320	100
	ECODRIVE-08430(100)	8x430	360	340	340	100

Product marking - ECODRIVE-08150(100)			
<b>ECODRIVE</b>	<b>08</b>	<b>150</b>	<b>(100)</b>
Fastener type	Diameter	Length	Number of pieces in a box

**INSTALLATION INSTRUCTIONS**



AVAILABLE ACCESSORIES

SEE PAGE 81

Screwed-in fastener with metal pin and telescopic support collar

# ECO-DRIVE 8 - TECHNICAL DATA

Ø8

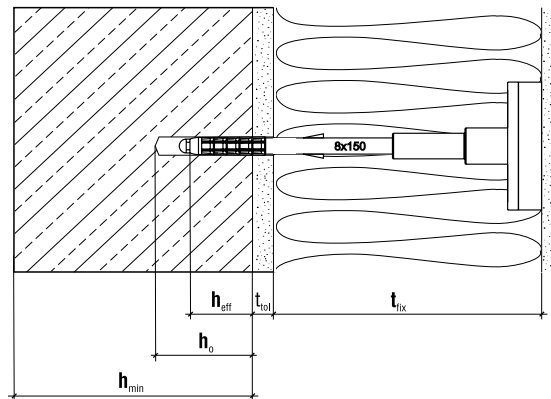


ETA-13/0107

### TECHNICAL PARAMETERS

Parameter	Unit	Value
Fastener diameter	$d_k$ [mm]	8
Collar diameter	$D_k$ [mm]	60
Effective anchorage depth	$h_{eff}$ [mm]	35/55*
Hole depth	$h_o$ [mm]	45/65*
Point thermal transmittance	$\chi$ [W/K]	0,002
Collar stiffness	S [kN/mm]	0,60
Substrate category	-	<b>A B C D E</b>
Fastener material	-	PA
Pin material	-	Carbon steel, head covered with plastic (PA+GF)
European Technical Assessment	-	<b>ETA-13/0107</b>

\* - for substrate use category E (Autoclaved aerated concrete)



### LOAD RESISTANCE

ETAG 014 use cat.	Substrate	Density [kg/dm³]	Characteristic pull-out resistance [kN]
A	Concrete C12/15	≥ 1,80	1,20
A	Concrete C16/20-C50/60	≥ 2,30	1,50
B	Solid clay bricks	≥ 2,00	1,50
B	Calcium silicate solid brick	≥ 2,00	1,50
C	Calcium silicate hollow blocks	≥ 1,60	1,50
C	Perforated solid brick	≥ 1,20	1,50
C	Lightweight concrete hollow block HBL	≥ 0,80	1,50
D	Lightweight aggregate concrete - LAC	≥ 1,05	0,90
E	Autoclaved aerated concrete AAC 2	≥ 0,35	0,60
E	Autoclaved aerated concrete AAC 7	≥ 0,65	1,20

### INSTALLATION DATA

Fastener type	ECO-DRIVE 8
Min. substrate thickness $h_{min}$ [mm]	100
Minimum fastener spacing $L_{os}$ [mm]	100
Minimum edge distance $C_{min}$ [mm]	100

### Pull-trought test with insulation [kN]

R panel	EPS 035/80 mm	EPS 040/80 mm
	0,54 [kN]	0,49 [kN]

Partial safety factor for fastener resistance  $\gamma_m = 2,0$  (valid in absence of national regulations)



Screwed-in fastener with metal pin and telescopic support collar

## ECO-DRIVE 8 - INSTALLATION ACCESSORIES

Ø8

Setting tool (for ECO-DRIVE 8)

**EDST**

diameter Ø120 mm, TX 40

Specifications:

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

Polystyrene disc (for ECO-DRIVE 8)

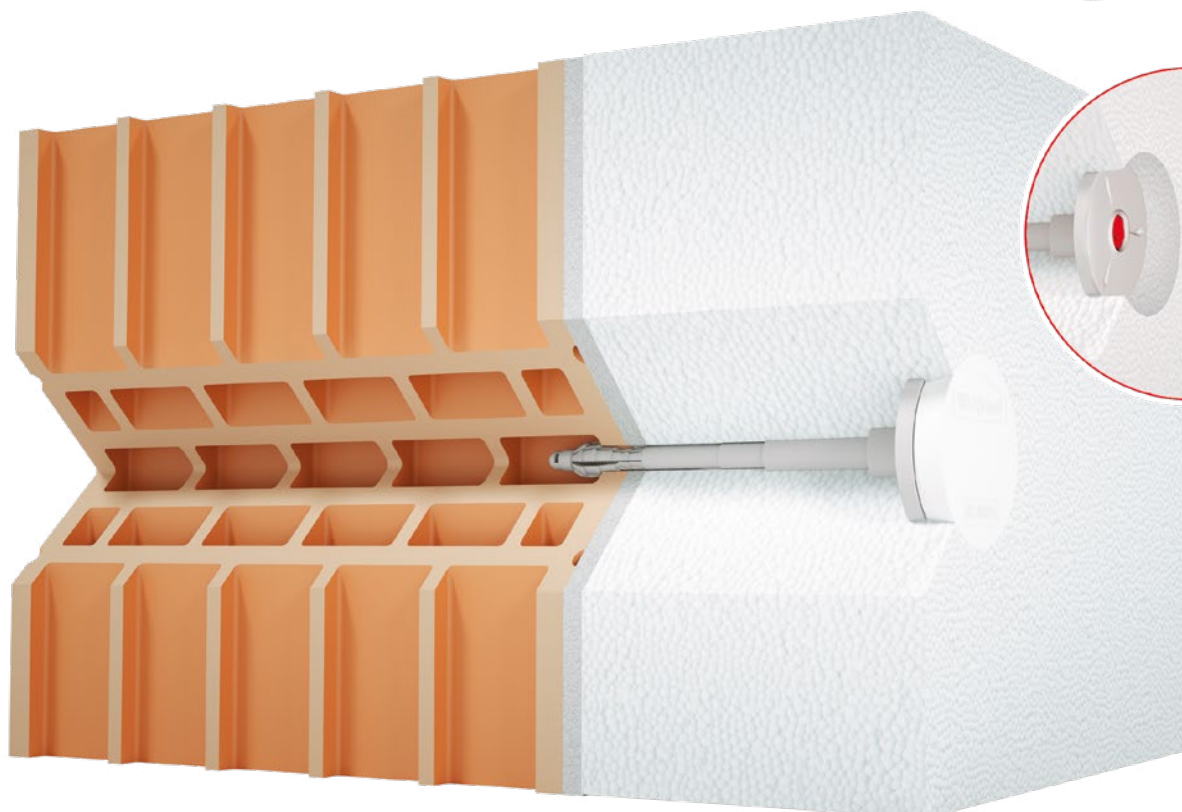
**EDKS-WHITE\***, **EDKSG-GRAPHITE\*\***

diameter Ø62 mm / 10 mm

Specifications:

\* - supplied with fastener.

\*\* - on order.

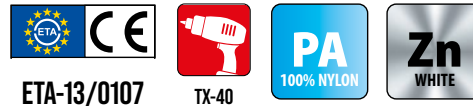


Screwed-in fastener with metal pin and telescopic support collar

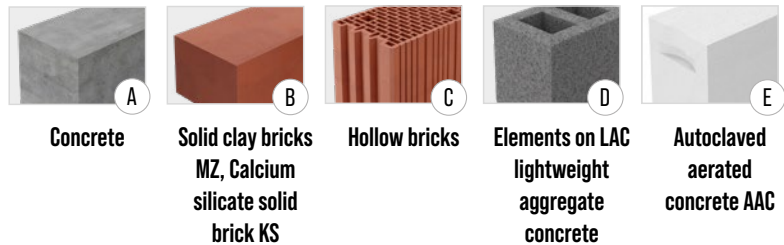
# ECO-DRIVE S 8

ø8

Modern fastener with integrated polystyrene EPS disc with low spot thermal conductivity for fastening of polystyrene EPS foam on all substrates according to ETAG 014, in ETICS systems.



SUBSTRATES (ETAG 014 ABCDE)



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



Metal pin + head covered with plastic PA with glass fiber

ø8

ECO-DRIVE S 8  
Length range: 150 - 430 mm

**SCREW-IN FIXING, TX-40**

Screw-driven fastener recommended for use in soft materials to avoid damaging of the substrate with a hammer. Screw-driven pin guarantees achieving best strength parameters and facilitates flush fitting of the fastener with the insulation material. These fasteners are real time-savers.

**MODERN TELESCOPIC DESIGN**

Combination of telescopic design and a cutting collar offers a most advanced fastener on the market for covered up installation spot which eliminates the use of cutter and reduces pollution with polystyrene dust.

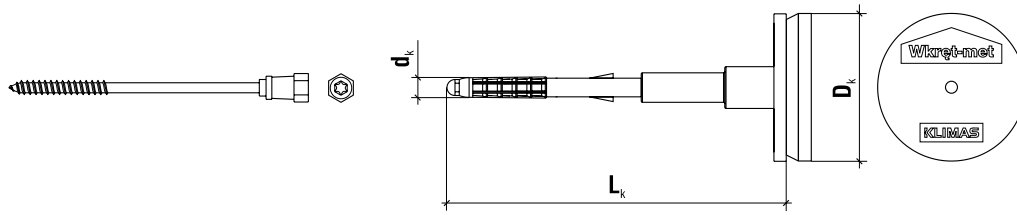
**POLYSTYRENE DISC**

Fasteners are supplied with polystyrene discs, which seriously shortens installation work, eliminates thermal bridging and ensures good aesthetics of the outer layer.

**PRE-ASSEMBLED PIN AND POLYSTYRENE DISC**

Pre-assembly of the pin with the fastener eliminates errors in the selection of the pin. This ensures that the correct elements are always used. Pre-assembly of the polystyrene disc save the time and money.

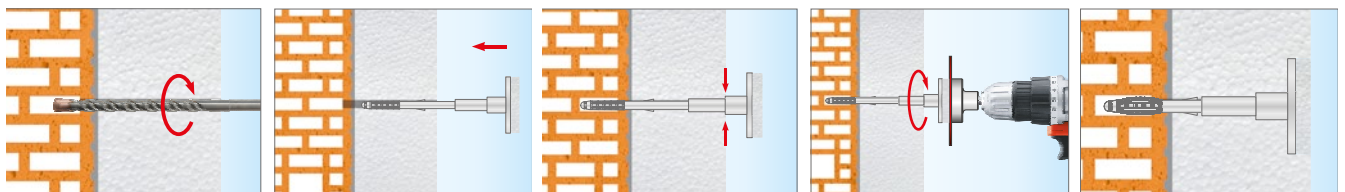




	Product code	Dimensions $d_k \times L_k$ [mm]	Insulation material thickness $t_{ix}$ [mm]			Pack unit [pcs.]
			New buildings		Old buildings	
			$t_{ad}$ adhesive layer of 10 mm		$t_{ad}$ adhesive layer of 10 mm + 20 mm of old plaster	
			cat. A B C D	cat. E	cat. A B C D	
<b>ECO-DRIVE S 8</b>						
<b>ø8</b>	ECODRIVE-S-08150(100)	8x150	80	–	–	100
	ECODRIVE-S-08170(100)	8x170	100	80	80	100
	ECODRIVE-S-08190(100)	8x190	120	100	100	100
	ECODRIVE-S-08210(100)	8x210	140	120	120	100
	ECODRIVE-S-08230(100)	8x230	160	140	140	100
	ECODRIVE-S-08250(100)	8x250	180	160	160	100
	ECODRIVE-S-08270(100)	8x270	200	180	180	100
	ECODRIVE-S-08290(100)	8x290	220	200	200	100
	ECODRIVE-S-08310(100)	8x310	240	220	220	100
	ECODRIVE-S-08330(100)	8x330	260	240	240	100
	ECODRIVE-S-08350(100)	8x350	280	260	260	100
	ECODRIVE-S-08370(100)	8x370	300	280	280	100
	ECODRIVE-S-08390(100)	8x390	320	300	300	100
	ECODRIVE-S-08410(100)	8x410	340	320	320	100
	ECODRIVE-S-08430(100)	8x430	360	340	340	100

Product marking - Ecodrive-S-08150(100)			
<b>ECODRIVE-S</b>	<b>08</b>	<b>150</b>	<b>(100)</b>
Fastener type	Diameter	Length	Number of pieces in a box

**INSTALLATION INSTRUCTIONS - immersed mount with a polystyrene EPS disc (with plastic cutter)**



AVAILABLE ACCESSORIES

SEE PAGE 85

Screwed-in fastener with metal pin and telescopic support collar

# ECO-DRIVE S 8 - TECHNICAL DATA

Ø8

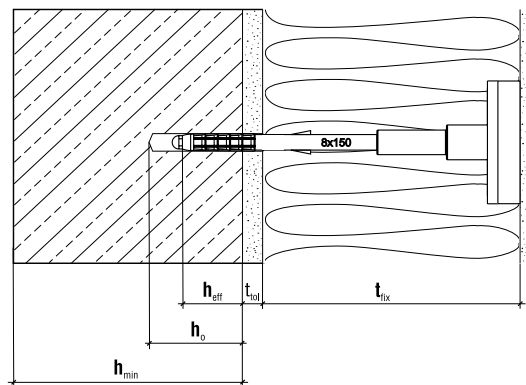


ETA-13/0107

### TECHNICAL PARAMETERS

Parameter	Unit	Value
Fastener diameter	$d_s$ [mm]	8
Collar diameter	$D_s$ [mm]	60
Effective anchorage depth	$h_{eff}$ [mm]	35/55*
Hole depth	$h_o$ [mm]	45/65*
Point thermal transmittance	$\chi$ [W/K]	0,002
Collar stiffness	$S$ [kN/mm]	0,60
Substrate category	-	<b>A B C D E</b>
Fastener material	-	PA
Pin material	-	Carbon steel, head covered with plastic (PA+GF)
European Technical Assessment	-	<b>ETA-13/0107</b>

\* - for substrate use category E (Autoclaved aerated concrete)



### LOAD RESISTANCE

ETAG 014 use cat.	Substrate	Density [kg/dm <sup>3</sup> ]	Characteristic pull-out resistance [kN]
A	Concrete C12/15	≥ 1,80	1,20
A	Concrete C16/20-C50/60	≥ 2,30	1,50
B	Solid clay bricks	≥ 2,00	1,50
B	Calcium silicate solid brick	≥ 2,00	1,50
C	Calcium silicate hollow blocks	≥ 1,60	1,50
C	Perforated solid brick	≥ 1,20	1,50
C	Lightweight concrete hollow block HBL	≥ 0,80	1,50
D	Lightweight aggregate concrete - LAC	≥ 1,05	0,90
E	Autoclaved aerated concrete AAC 2	≥ 0,35	0,60
E	Autoclaved aerated concrete AAC 7	≥ 0,65	1,20

### INSTALLATION DATA

Fastener type	ECO-DRIVE S 8
Min. substrate thickness $h_{min}$ [mm]	100
Minimum fastener spacing $L_{os}$ [mm]	100
Minimum edge distance $C_{min}$ [mm]	100

### Pull-trought test with insulation [kN]

R panel	EPS 035/80 mm	EPS 040/80 mm
	0,54 [kN]	0,49 [kN]

Partial safety factor for fastener resistance  $\gamma_m = 2,0$  (valid in absence of national regulations)

Screwed-in fastener with metal pin and telescopic support collar

## ECO-DRIVE S 8 - INSTALLATION ACCESSORIES

Ø8

Setting tool (for ECO-DRIVE 8)

**EDST**

diameter Ø120 mm, TX 40

Specifications:

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



Screwed-in fastener with metal pin and telescopic support collar for mineral wool MW

# ECO-DRIVE W 8

ø8

Modern fastener with low spot thermal conductivity for fastening of mineral wool MW on all substrates according to ETAG 014, in ETICS systems.



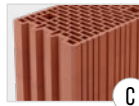
## SUBSTRATES (ETAG 014 ABCDE)



Concrete



Solid clay bricks  
MZ, Calcium silicate solid brick KS



Hollow bricks



Elements on LAC  
lightweight aggregate concrete



Autoclaved aerated concrete AAC

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



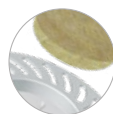
### SCREWED-IN FASTENER

Screw-driven fastener recommended for use in soft materials to avoid damaging of the substrate with a hammer. Screw-driven pin guarantees achieving best strength parameters and facilitates flush fitting of the fastener with the insulation material. These fasteners are real time-savers.



### MODERN TELESCOPIC DESIGN

Combination of telescopic design and a cutting collar offers a most advanced fastener on the market with covered up installation spot which eliminates the use of cutter and reduces pollution with polystyrene dust.



### MINERAL WOOL DISC

Fasteners come with Mineral wool discs, which are used to complete the installation process by covering the fasteners. This eliminates thermal bridging and ensures good aesthetics of the outer layer.

### PRE-ASSEMBLED PIN

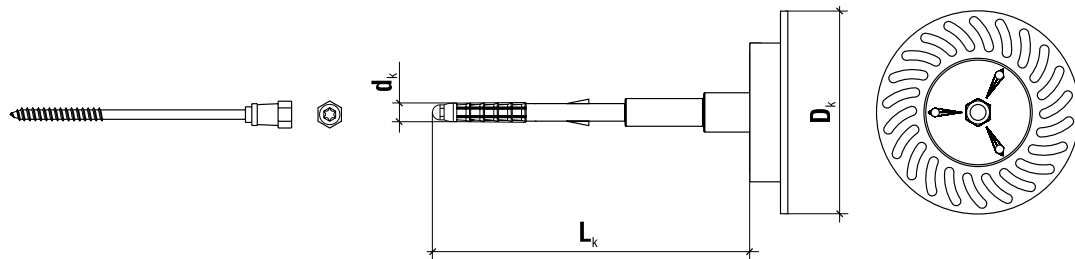
Pre-assembly of the pin with the fastener eliminates errors in the selection of the pin. This ensures that the correct elements are always used.



Metal pin + head covered with plastic  
PA with glass fiber

ø8

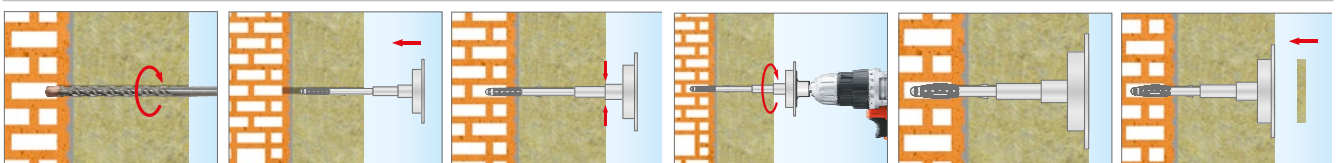
ECO-DRIVE W 8  
Length range: 150 - 430 mm



Product code	Dimensions	Insulation material thickness $t_{fix}$ [mm]			Pack unit	
		New buildings		Old buildings		
		$t_{tot}$ adhesive layer of 10 mm		$t_{tot}$ adhesive layer of 10 mm + 20 mm of old plaster		
$d_k \times L_k$ [mm]	cat. ABCD	cat. E	cat. ABCD	[szt.]		
<b>ECO-DRIVE W 8</b>						
Ø8	ECODRIVE-W-08150(50)	8x150	80	—	—	50
	ECODRIVE-W-08170(50)	8x170	100	80	80	50
	ECODRIVE-W-08190(50)	8x190	120	100	100	50
	ECODRIVE-W-08210(50)	8x210	140	120	120	50
	ECODRIVE-W-08230(50)	8x230	160	140	140	50
	ECODRIVE-W-08250(50)	8x250	180	160	160	50
	ECODRIVE-W-08270(50)	8x270	200	180	180	50
	ECODRIVE-W-08290(50)	8x290	220	200	200	50
	ECODRIVE-W-08310(50)	8x310	240	220	220	50
	ECODRIVE-W-08330(50)	8x330	260	240	240	50
	ECODRIVE-W-08350(50)	8x350	280	260	260	50
	ECODRIVE-W-08370(50)	8x370	300	280	280	50
	ECODRIVE-W-08390(50)	8x390	320	300	300	50
	ECODRIVE-W-08410(50)	8x410	340	320	320	50
	ECODRIVE-W-08430(50)	8x430	360	340	340	50

Product marking - ECODRIVE-W-08150(50)			
ECODRIVE-W	08	150	(50)
Fastener type	Diameter	Length	Number of pieces in a box

**INSTALLATION INSTRUCTIONS - Installation of a fastener with a Mineral wool disc - installation immersed mount without cutting**



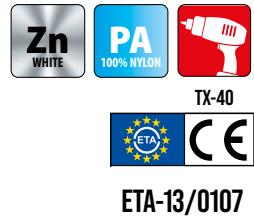
AVAILABLE ACCESSORIES

SEE PAGE 89

Screwed-in fastener with metal pin and telescopic support collar for mineral wool MW

# ECO-DRIVE W 8 - TECHNICAL DATA

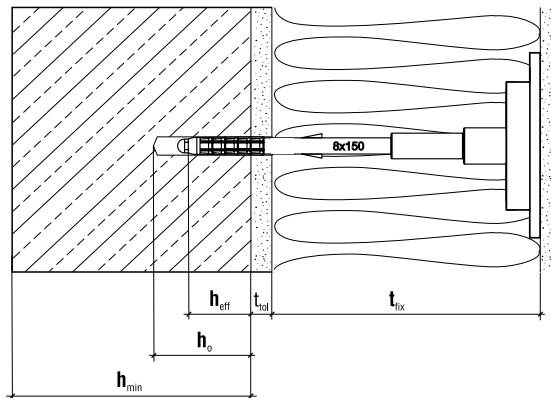
Ø8



### TECHNICAL PARAMETERS

Parameter	Unit	Value
Fastener diameter	$d_k$ [mm]	8
Collar diameter	$D_k$ [mm]	110
Effective anchorage depth	$h_{eff}$ [mm]	35/55*
Hole depth	$h_o$ [mm]	45/65*
Point thermal transmittance	$\chi$ [W/K]	0,002
Collar stiffness	S [kN/mm]	0,60
Substrate category	-	<b>ABCDE</b>
Fastener material	-	PA
Pin material	-	Carbon steel, head covered with plastic (PA+GF)
European Technical Assessment	-	<b>ETA-13/0107</b>

\* - for substrate use category E (Autoclaved aerated concrete)



### LOAD RESISTANCE

ETAG 014 use cat.	Substrate	Density [kg/dm <sup>3</sup> ]	Characteristic pull-out resistance [kN]
A	Concrete C12/15	≥ 1,80	1,20
A	Concrete C16/20-C50/60	≥ 2,30	1,50
B	Solid clay bricks	≥ 2,00	1,50
B	Calcium silica solid brick	≥ 2,00	1,50
C	Calcium silicate hollow blocks	≥ 1,60	1,50
C	Perforated solid brick	≥ 1,20	1,50
C	Lightweight concrete hollow block HBL	≥ 0,80	1,50
D	Lightweight aggregate concrete - LAC	≥ 1,05	0,90
E	Autoclaved aerate concrete AAC2	≥ 0,35	0,60
E	Autoclaved aerate concrete AAC7	≥ 0,65	1,20

### INSTALLATION DATA

Fastener type	ECO-DRIVE W 8
Min. substrate thickness $h_{min}$ [mm]	100
Minimum fastener spacing $L_{os}$ [mm]	100
Minimum edge distance $C_{min}$ [mm]	100

Partial safety factor for fastener resistance  $\gamma_m = 2,0$  (valid in absence of national regulations)



Screwed-in fastener with metal pin and telescopic support collar for mineral wool MW

## ECO-DRIVE W 8

ø8

Setting tool (for ECO-DRIVE W 8 and DRIVE W)

**EDST-W**

diameter ø65 mm

Specifications:

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



Mineral wool disc (for ECO-DRIVE W)

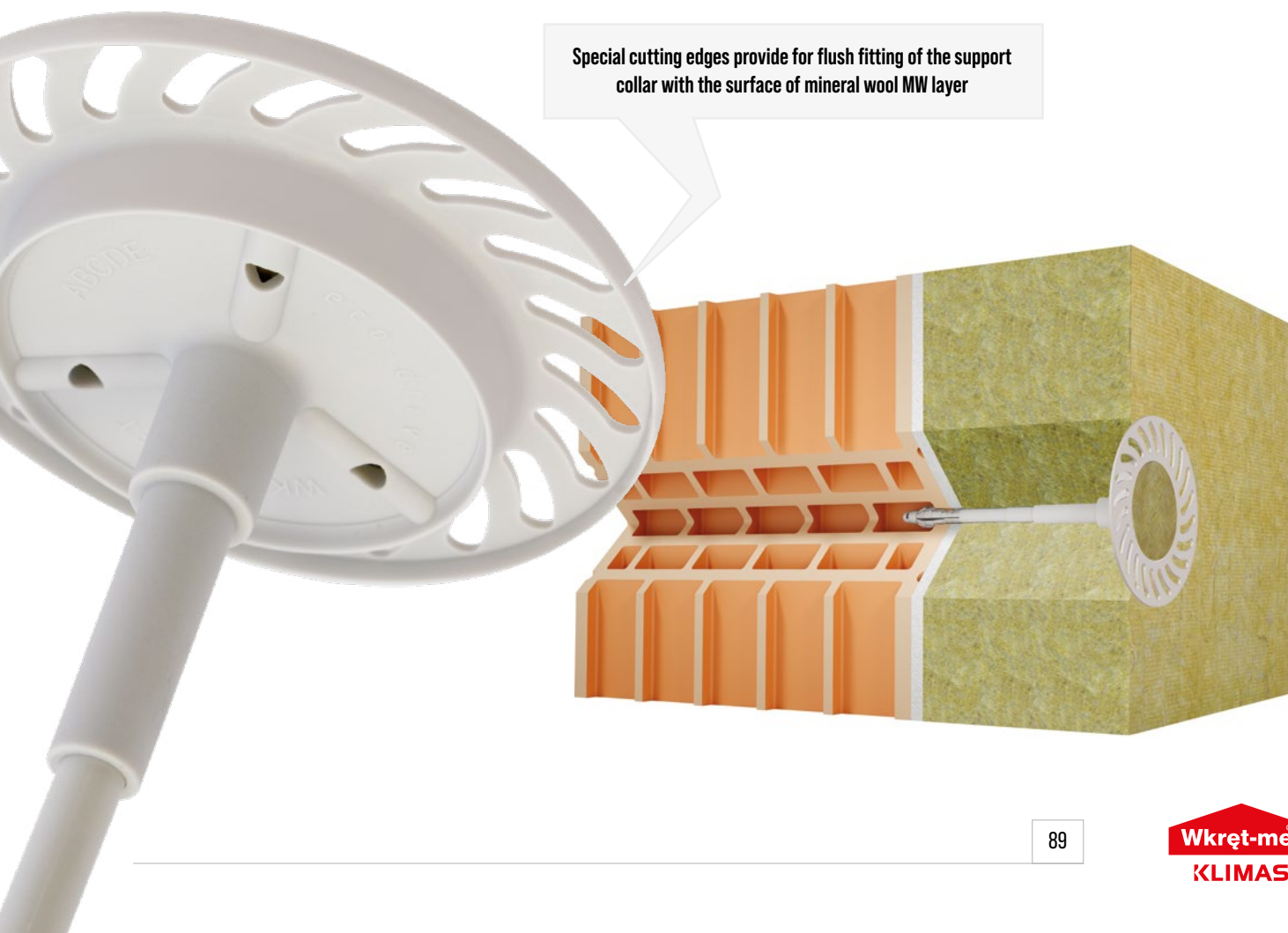
**EDKW**

diameter ø67 mm / 10 mm

Specifications:

- Mineral wool disc density 135 kg/m<sup>3</sup>.

Special cutting edges provide for flush fitting of the support collar with the surface of mineral wool MW layer



# 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.



### EDGE THREADED FOR USE IN TIMBER

Reliable installation in timber.



### POCKET ADHESIVES (DRIVE W)

Very good adhesiveness of the mortar.



### POLYSTYRENE DISC (DRIVE S)

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



<b>DRIVE W</b>	Screwed-in fastener for fastening of mineral wool MW in wooden substrate	92
ø6	<b>Length range:</b> 110 - 310 mm <b>Fastener sleeve - Polyamide</b>	

<b>DRIVE S</b>	Screwed-in fastener for fastening of polystyrene EPS foam in wooden substrate	94
ø6	<b>Length range:</b> 110 - 310 mm <b>Fastener sleeve - Polyamide</b>	



<b>TD-060, TDP-060</b>	Special screwed-in fastener with screw	96
ø64	<b>Material - Polyamide (TD-060) Polypropylene (TDP-060)</b>	

<b>MLN MLN-A2*</b>	Special hammer driven metal fastener for mineral wool MW	98
ø8	<b>Length range:</b> 80 - 300 mm <b>Material - steel / A2*</b>	

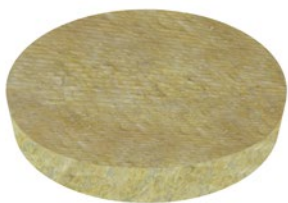
\*on request and order

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

# DRIVE W

ø6

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



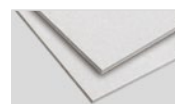
## SUBSTRATES



Timber C22



OSB board, plywood



Fiber-cement board

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

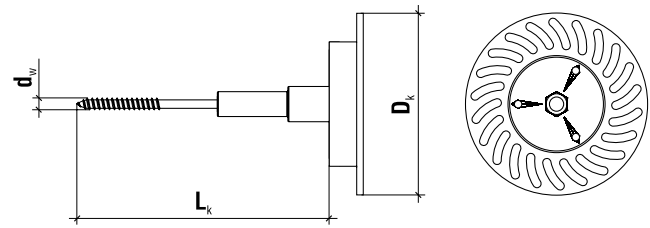
Very good adhesiveness of the mortar.

Metal pin + head covered with plastic  
PA with glass fiber

ø6

**DRIVE W**  
Length range: 110 - 310 mm

	Product code	Dimensions	Insulation material thickness	Pack unit
		$d_k \times L_k$ [mm]	[mm]	[pcs]
<b>DRIVE W</b>				
<b>ø6</b>	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)			
<b>DRIVE-W</b>	<b>06</b>	<b>120</b>	<b>(50)</b>
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	$\chi$ [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	-	<b>Z-91-875</b>
Polish Approval	-	<b>ITB-KOT-2019/0913 (wyd. 1)</b>

**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
OSB board	15	0,84
Cement fiber board	12	0,37

**INSTALLATION ACCESSORIES**

**Setting tool**

**EDST-W** diameter ø65 mm

**Specifications:**

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



**Mineral wool disc**

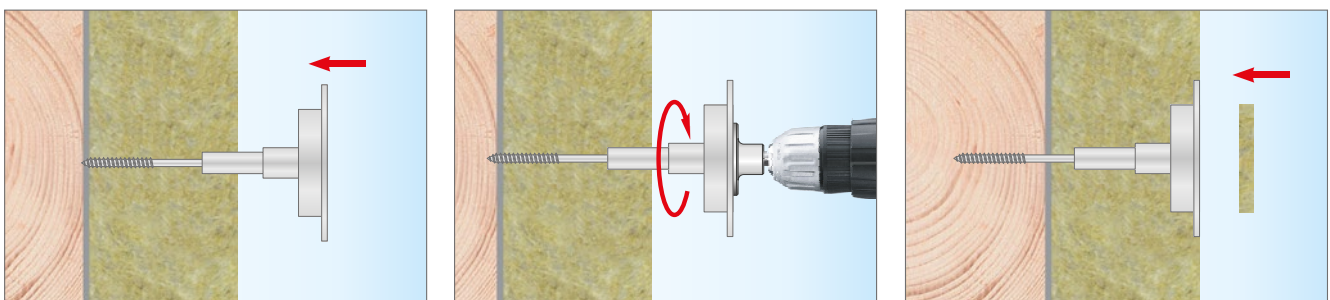
**EDKW** diameter ø67 mm / 10 mm

**Specifications:**

- Mineral wool disc density 135 kg/m<sup>3</sup>.



**INSTALLATION INSTRUCTIONS - installation of a fastener with Mineral wool disc - immersed mount without cutter**



**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.



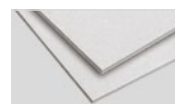
## SUBSTRATES



Timber C22



OSB board, plywood



Fiber-cement board

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

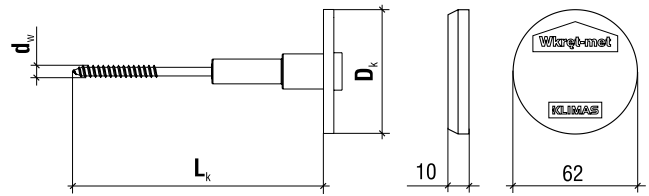
Reliable installation in timber.

Metal pin + head covered with plastic PA with glass fiber

ø6

**DRIVE S**  
Length range: 110 - 310 mm

	Product code	Dimensions	Insulation material thickness	Pack unit
		$d_k \times L_k$ [mm]	[mm]	[pcs]
<b>DRIVE S</b>				
<b>ø6</b>	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)?			
<b>DRIVE-S</b>	<b>06</b>	<b>120</b>	<b>(100)</b>
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	$\chi$ [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	-	<b>Z-9.1-875</b>
Polish Approval	-	<b>ITB-KOT-2019/0913 (wyd. 1)</b>

**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
OSB board	15	0,84
Cement fiber board	12	0,37

**INSTALLATION ACCESSORIES**

**Setting tool**

**EDST** diameter ø120 mm, TX 40

**Specifications:**

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



**Polystyrene disc**

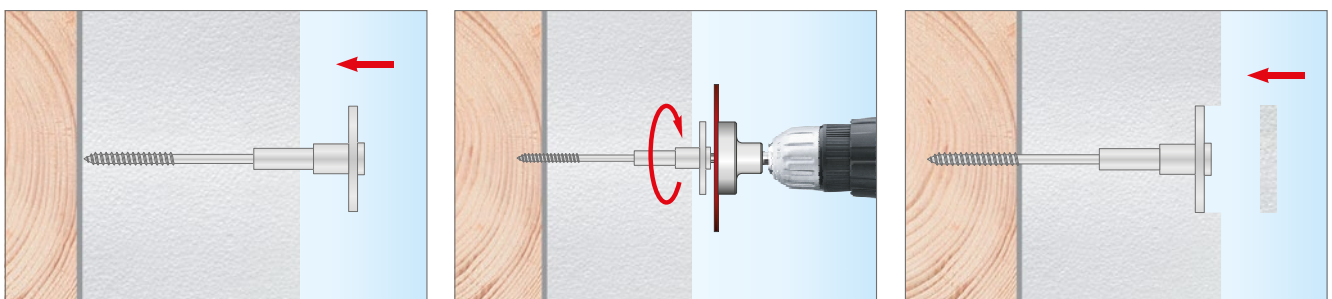
**EDKS\*, EDKSG\*\*** diameter ø62x10 mm

**Specifications:**

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



**INSTALLATION INSTRUCTIONS - immersed 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.



### SUBSTRATES



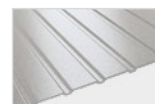
Timber C22



OSB board, plywood



Fiber-cement board



Steel sheet

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



**KDH - SCREW FOR TIMBER**



**WSR-T - SCREW FOR STEEL SHEET 0,5 - 1,25 mm**



**WDB-T - SCREW FOR STEEL SHEET 0,5 - 0,75 mm**



#### 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.

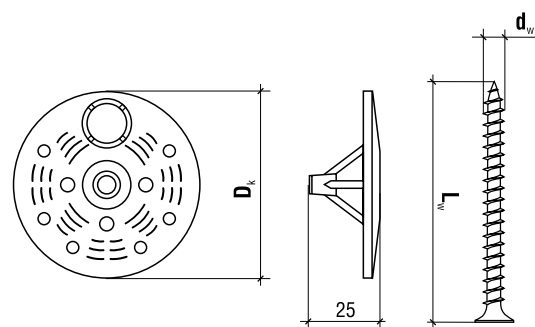


#### COLLAR-INTEGRATED CAP

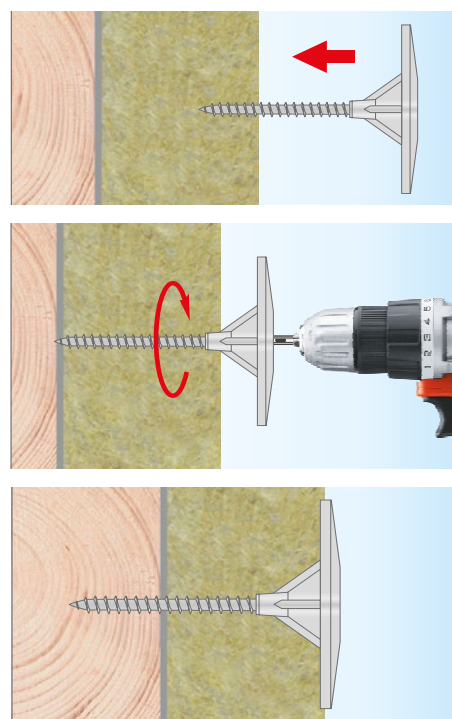
Minimizes thermal bridging and seals connections.



Insulation material thickness [mm]	Collar	Steel sheet profile, thickness 0,5 ÷ 0,75 mm	Steel sheet profile, thickness 0,5 ÷ 1,25 mm	Timber, OSB, Cement board
		WDB-T	WSR-T	KDHT/KDH
30	TD-60, TDP-60	WDB-T-48050	WSR-T-48050	KDHT/KDH-05060
40	TD-60, TDP-60	WDB-T-48060	WSR-T-48060	KDHT/KDH-05070
50	TD-60, TDP-60	WDB-T-48070	WSR-T-48070	KDHT/KDH-05080
60	TD-60, TDP-60	WDB-T-48080	WSR-T-48080	KDHT/KDH-05090
70	TD-60, TDP-60	WDB-T-48090	WSR-T-48090	KDHT/KDH-05100
80	TD-60, TDP-60	WDB-T-48100	WSR-T-48100	KDHT/KDH-06110
90	TD-60, TDP-60	WDB-T-48120	WSR-T-48120	KDHT/KDH-06120
100	TD-60, TDP-60	WDB-T-48120	WSR-T-48120	KDHT/KDH-06140
110	TD-60, TDP-60	WDB-T-48140	WSR-T-48140	KDHT/KDH-06140
120	TD-60, TDP-60	WDB-T-48140	WSR-T-48140	KDHT/KDH-06160
130	TD-60, TDP-60	WDB-T-48160	WSR-T-48160	KDHT/KDH-06160
140	TD-60, TDP-60	WDB-T-48160	WSR-T-48160	KDHT/KDH-06180
150	TD-60, TDP-60	WDB-T-48180	WSR-T-48180	KDHT/KDH-06180
160	TD-60, TDP-60	WDB-T-48180	WSR-T-48180	KDHT/KDH-06180
170	TD-60, TDP-60	WDB-T-48180	WSR-T-48180	KDHT/KDH-06200
180	TD-60, TDP-60	WDB-T-48200	WSR-T-48200	KDHT/KDH-06200
190	TD-60, TDP-60	WDB-T-48200	WSR-T-48200	-



**INSTALLATION INSTRUCTIONS - surface mount**



**TECHNICAL PARAMETERS**

Parameter	Unit	Steel sheet profile, thickness 0,5 ÷ 0,75 mm	Steel sheet profile, thickness 0,5 ÷ 1,25 mm	Timber, OSB board, Cement board
Fastener diameter	d <sub>w</sub> [mm]	4,8	4,8	5,0/6,0
Collar diameter	D <sub>k</sub> [mm]	64	64	64
Fastener material	-	Polyamide PA Polypropylene PP		
Pin material	-	Zinc plated steel		
Polish Approval	-	<b>ITB-KOT-2019/0913 (wyd. 1)</b>		

**LOAD RESISTANCE**

Substrate	Substrate thickness [mm]	Product marking	Design resistance [kN]	Product marking	Design resistance [kN]
Steel sheet profile, thickness 0,50 mm	Push-through	TD+WDB-T / TDP+WDB-T	0,40 / 0,40	TD+WSR-T / TDP+WSR-T	0,34 / 0,34
Steel sheet profile, thickness 0,75 mm	Push-through	TD+WDB-T / TDP+WDB-T	0,66 / 0,66	TD+WSR-T / TDP+WSR-T	0,92 / 0,92
Steel sheet profile, thickness 0,88 mm	Push-through	TD+WDB-T / TDP+WDB-T	1,11 / 1,13	TD+WSR-T / TDP+WSR-T	1,11 / 1,44
Steel sheet profile, thickness 1,00 mm	Push-through	-	-	TD+WSR-T / TDP+WSR-T	1,11 / 1,84
Steel sheet profile, thickness 1,25 mm	Push-through	-	-	TD+WSR-T / TDP+WSR-T	1,11 / 1,84
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

Special hammer driven metal fastener for mineral wool MW

# MLN / MLN-A2\*

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Universal metal fastener for installation of mineral wool MW.



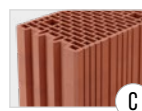
## SUBSTRATES (ETAG 014 ABCE)



Concrete



Solid clay bricks MZ,  
Calcium silicate solid  
brick KS



Hollow bricks



Autoclaved  
aerated  
concrete AAC

<b>FASTENER MATERIAL</b>	· Galvanized steel (MLN) · Stainless steel A2 (MLN-A2*)
<b>TYPE OF INSULATION MATERIAL</b>	Mineral wool MW
<b>FASTENER TYPE</b>	Hammer driven
<b>INSTALLATION METHOD</b>	Surface mount

\*on request and order



### STEEL

Non-combustible fastener, suitable for use in buildings taller than 25 m.



### STEEL COLLAR

Increased holding of the insulation material.



### GALVANIZED

High corrosion resistance.



### STAINLESS STEEL A2\*

Increased corrosion resistance.

\* Product on request and order.

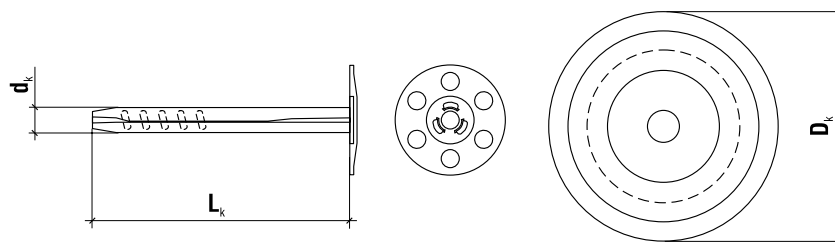


Metal pin / A2\*

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MLN / MLN-A2\*  
80 - 300 mm

\*on request and order

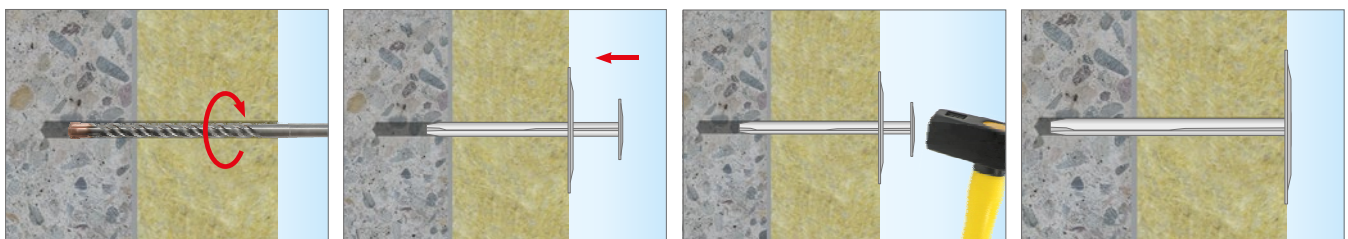


	Product code		Dimensions	Insulation material thickness $t_{fix}$ [mm]		Pack unit
	MLN (Galvanized steel)	MLN-A2 (Stainless steel A2)		New buildings	Old buildings	
			$d_k \times L_k$ [mm]	$t_{tot}$ adhesive layer of 10 mm	$t_{tot}$ adhesive layer of 10 mm + 20 mm of old plaster	[pcs.]
<b>MLN / MLN-A2*</b>						
<b>ø8</b>	MLN08080*	MLN08080-A2*	8x80	20	-	50
	MLN08090*	MLN08090-A2*	8x90	30	10	50
	MLN08100*	MLN08100-A2*	8x100	40	20	50
	MLN08110	MLN08110-A2*	8x110	50	30	50
	MLN08120*	MLN08120-A2*	8x120	60	40	50
	MLN08135*	MLN08135-A2*	8x135	70	50	50
	MLN08140	MLN08140-A2*	8x140	80	60	50
	MLN08150*	MLN08150-A2*	8x150	90	70	50
	MLN08160*	MLN08160-A2*	8x160	100	80	50
	MLN08170	MLN08170-A2*	8x170	110	90	50
	MLN08185*	MLN08185-A2*	8x185	120	100	50
	MLN08190*	MLN08190-A2*	8x190	130	110	50
	MLN08200	MLN08200-A2*	8x200	140	120	50
	MLN08210	MLN08210-A2*	8x210	150	130	50
	MLN08220*	MLN08220-A2*	8x220	160	140	50
	MLN08230	MLN08230-A2*	8x230	170	150	50
	MLN08240*	MLN08240-A2*	8x240	180	160	50
	MLN08250	MLN08250-A2*	8x250	190	170	50
	MLN08260	MLN08260-A2*	8x260	200	180	50
	MLN08270*	MLN08270-A2*	8x270	210	190	50
MLN08280*	MLN08280-A2*	8x280	220	200	50	
MLN08290*	MLN08290-A2*	8x290	230	210	50	
MLN08300	MLN08300-A2*	8x300	240	220	50	

\*on request and order

Product marking - MLN08200		
MLN	08	200
Fastener type	Diameter (mm)	Length (mm)

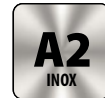
**INSTALLATION INSTRUCTIONS - surface mount**



Special hammer driven metal fastener for mineral wool MW

# MLN / MLN-A2\* - TECHNICAL DATA

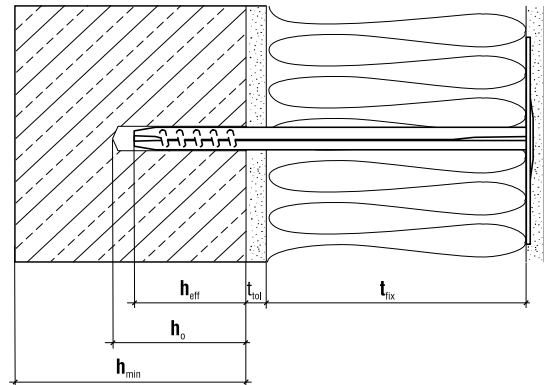
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## TECHNICAL PARAMETERS

Parameter	Unit	Value
Fastener diameter	$d_k$ [mm]	8
Collar diameter	$D_k$ [mm]	70/85*
Effective anchorage depth	$h_{eff}$ [mm]	50
Hole depth	$h_o$ [mm]	60
MLN material	-	Galvanized steel
MLN-A2 material*	-	Stainless steel A2
Polish Approval	-	ITB-KOT-2020/1175 (wyd. 1)

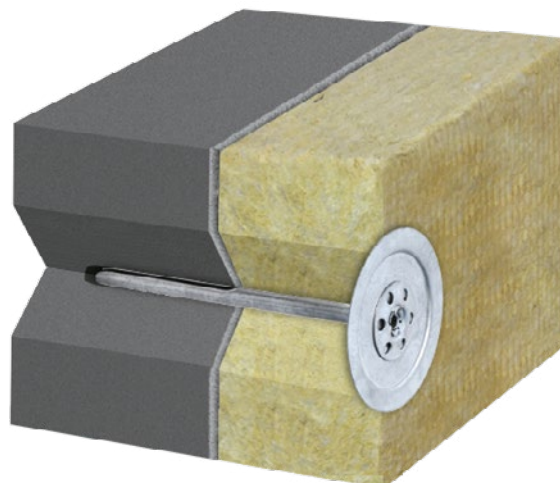
\*on request and order



## LOAD RESISTANCE

Substrate	Density [kg/dm <sup>3</sup> ]	Characteristic pull-out resistance [kN]	
		MLN	MLN-A2
Concrete C20/25 ÷ C50/60	≥ 2,30	0,65	0,80
Solid clay bricks	≥ 1,60	0,60	0,60
Calcium silicate solid brick	≥ 1,60	0,60	0,60
Ceramic hollow brick	≥ 1,60	0,20	0,20
Ceramic silicate brick	≥ 1,60	0,45	0,45
Autoclaved aerated concrete AAC 2	≥ 0,35	0,85	0,85

Partial safety factor for pull-out / shear:  $\gamma_m=1,8/1,25$  for concrete substrate,  $\gamma_m=2,5$  for other substrates



### Plastic cutter for cutting holes in polystyrene EPS

**WK-FT**

dimensions  $\varnothing 66.7$  mm

#### Specifications:

- Plastic cutter for cutting holes in polystyrene EPS insulation material for insertion of polystyrene EPS disc
- Controlled cutting depth, thrust collar with a diameter of 90 mm.



### Polystyrene disc (white, graphite)

**KS, KSG**

dimensions  $\varnothing 67 \times 17$  mm

#### Specifications:

- Polystyrene disc (white, graphite) for covering up work holes in polystyrene - installation immersed mount.



### Metal cutter for mineral wool

**WK-FM**

dimensions  $\varnothing 64$  mm

#### Specifications:

- Metal cutter for drilling of holes in mineral wool for immersed mount of fasteners.
- Controlled cutting depth, support collar of 95mm in diameter.



### Mineral wool disc

**EDMW**

dimensions  $\varnothing 67 \times 17$  mm

#### Specifications:

- Mineral wool disc, density 130 kg/m<sup>3</sup>.



## Setting tool

**EDST**

dimensions  $\varnothing 120$  mm, TX 40

### Specifications:

- For fasteners: ECO-DRIVE 8, ECO-DRIVE S 8 i DRIVE S.

## Polystyrene disc (ECO-DRIVE 8, DRIVE S)

**EDKS-WHITE\***, **EDKSG-GRAPHITE\*\***

dimensions  $\varnothing 62$  X 10 mm

### Specifications:

\* - supplied with fastener

\*\* - on order

## Setting tool

**EDST-W**

diameter  $\varnothing 65$  mm

### Specifications:

- For fasteners: ECO-DRIVE W 8 i DRIVE W.

## Additional collar

**TDX-90, TDX-140**

diameters  $\varnothing 90$  mm,  $\varnothing 140$  mm

### Specifications:

- Additional collar with diameter of 90 mm for final securing touches in installation of mineral wool MW (including Lamella) - Fibreglass reinforced plastic.
- Additional collar with diameter of 140 mm for final securing touches in installation of mineral wool MW (including Lamella) - Fibreglass reinforced plastic.

## Mineral wool disc (ECO-DRIVE W 8, DRIVE W)

**EDKW**

dimensions  $\varnothing 67$  x 10 mm

### Specifications:

- For fasteners: ECO-DRIVE W 8 i DRIVE W.



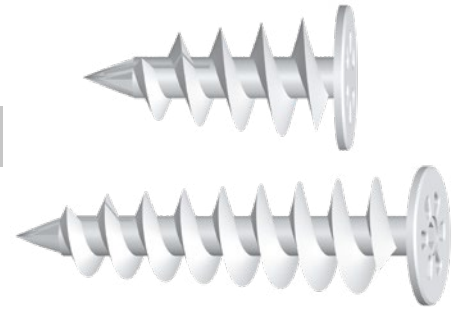
### Screwed-in helical fastener

**WK-DS**

collar diameter  $\varnothing 28$  mm

#### Specifications:

- Length: 50 mm; 85 mm.
- Screwed-in helical fastener for fixing lightweight components (max. 5 kg per fastener) to polystyrene insulation walls.
- Fastened with a screw with diameter of 4.5 mm.



### Spacer and levelling collars

**DW**

dimensions 40x40 mm, 2÷15 mm

#### Specifications:

- Spacer and levelling collars for startup profile panels.
- Colour-coded thickness of spacer collars.



### Expansion plug with collar

**SMNKC**

dimensions  $\varnothing 6$  mm or  $\varnothing 8$  mm

#### Specifications:

- Hammer driven expansion plug with cylindrical collar for fixing startup profile thermal insulation stop beads.



### Stop bead connection

**LLC**

dimensions 30 x 30 mm

#### Specifications:

Fastener for connecting insulation board startup profile panels lengthwise.



### PU adhesive for foamed polystyrene THERMO STYRO FIX

**KST-750**

content 750 ml

#### Specifications:

- Polyurethane adhesive for polystyrene, excellent adhesion to the substrate and polystyrene.
- Layer of the adhesive from 3 mm to 15 mm.
- Filling up the spaces between polystyrene boards.
- Protection from the occurrence of thermal bridging in the filled-up spaces between polystyrene boards.
- Application temperature range from +5°C to +30°C.
- Can temperature range during application from +5°C to +30°C.



### Glassfibre mesh

**SWS-145, SWS-145 Z, SWS-160, SWS-160 Z**

dimensions 110 cm x 50 mb

#### Specifications:

- Glassfibre mesh - SWS-145 (white), SWS-145 Z (yellow).
- Protects thermal insulation material on the facade from mechanical damage.
- Takes thermal stresses occurring on the facade.
- Protects the facade from cracking.
- Effective mesh width 100 cm.



### Expansion plug with eye hook

**HOX-14, HOX-16**

dimensions  $\varnothing 14$  mm;  $\varnothing 16$  mm,



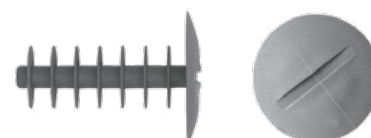
#### Specifications:

- Intended for fastening of scaffolding elements in the substrate.

### Plastic cup for covering HOX eye-hook holes

**ZHO**

dimensions  $\varnothing 14$  mm



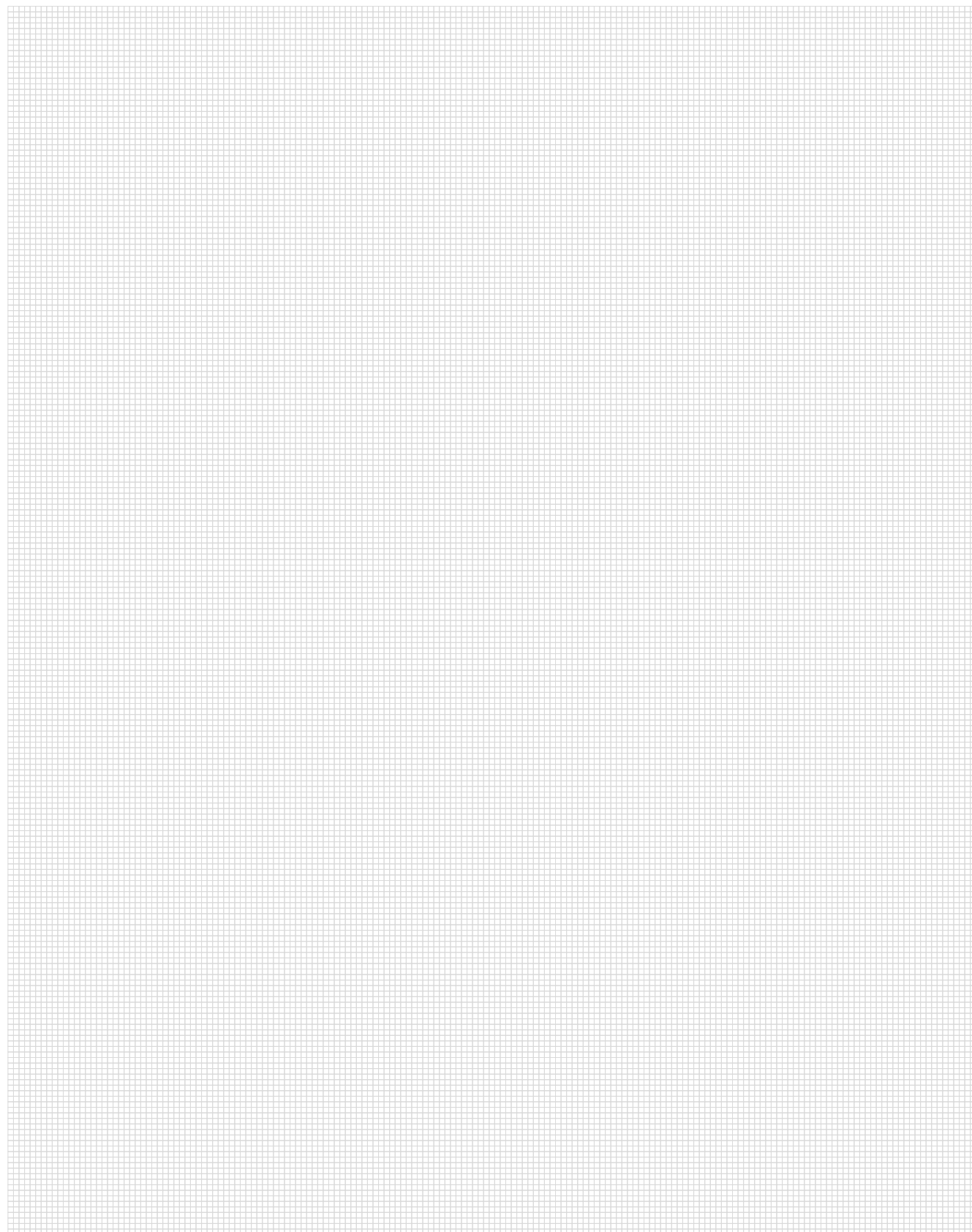
#### Specifications:

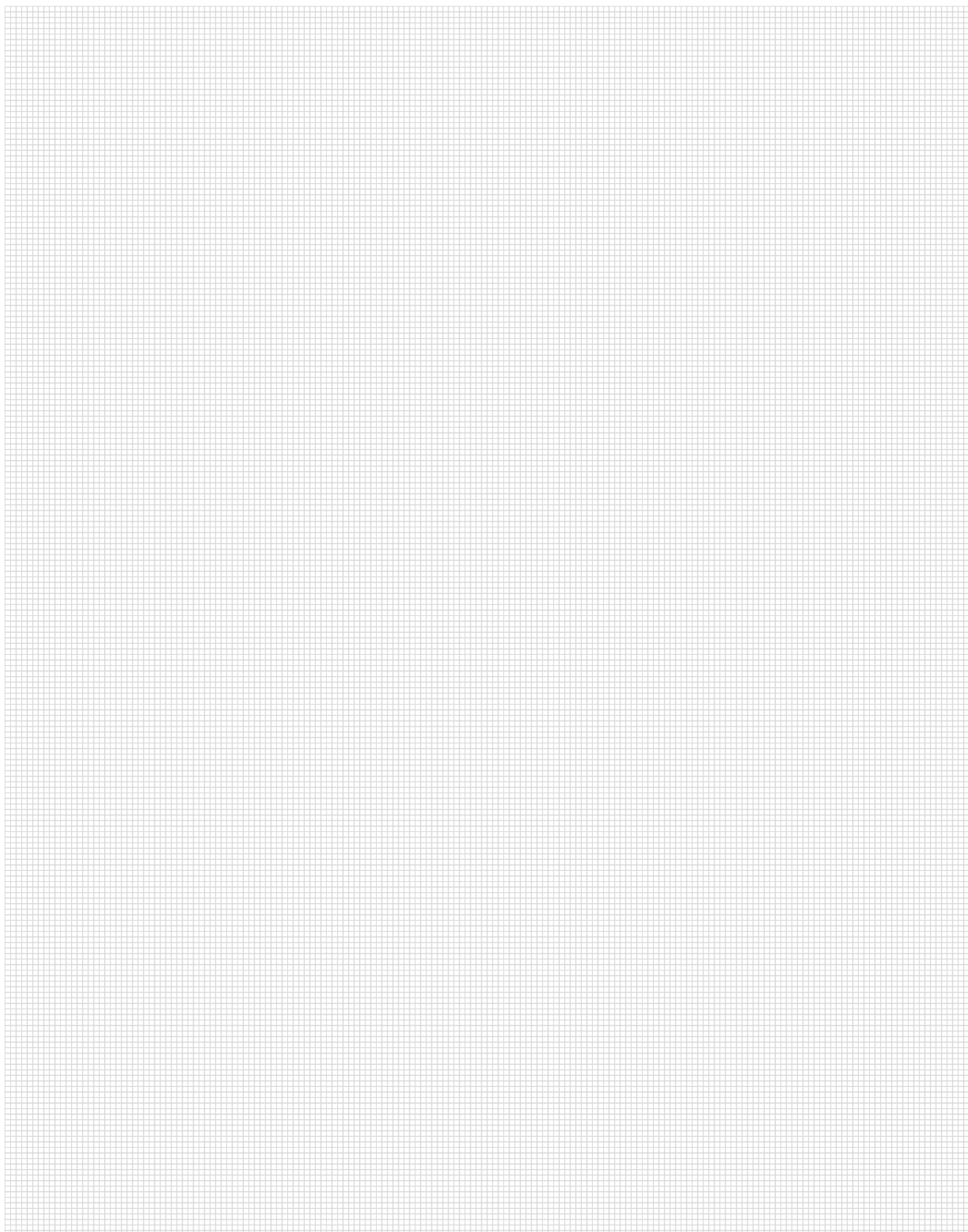
- Plastic cup for covering HOX eye-hook holes.
- Available in 3 colours.
- Paintable.
- Collar cup diameter 28 mm.



**MOCNI NA POKOLENIA**

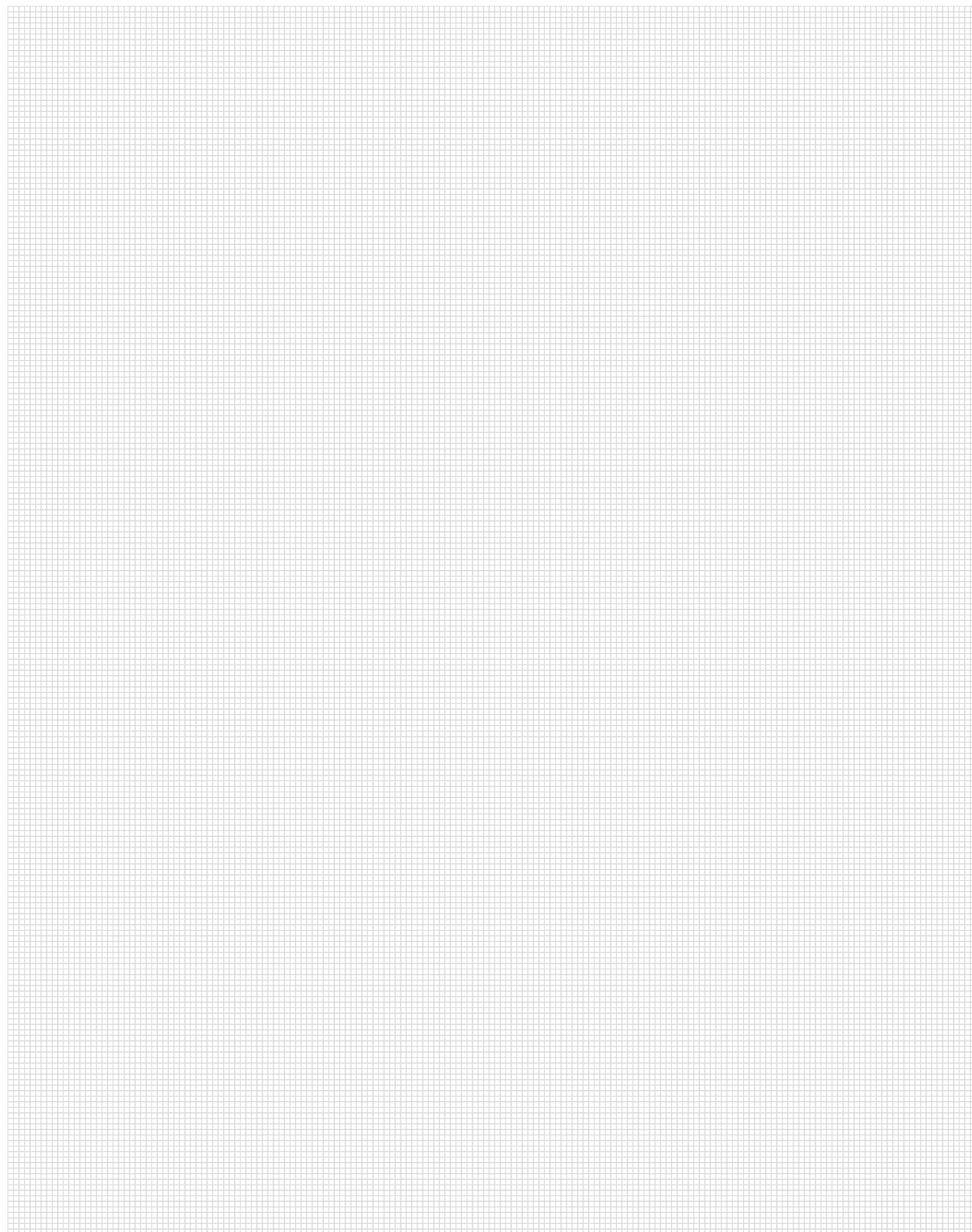
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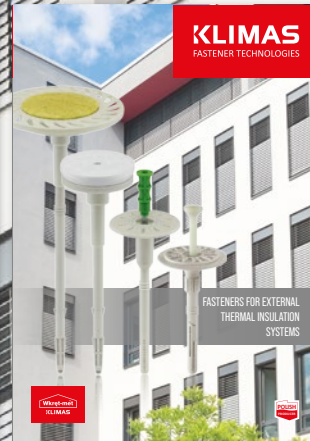
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