

## PRODUCT DATA SHEET – KNX

### Section 1. PRODUCT DESCRIPTION

#### EXPANSION SLEEVE PLUG FOR USE WITH LINO AND WDB-4.8/WDB-T-4.8 SCREWS OR KD STEEL WASHERS – KNX

Expansion sleeve plug KNX is made of polyamide. In combination with LINO 13, LINO K 13, LINO 15 plastic sleeve with use of telescopic connections or KD steel washer with use of fixed connections (no thermal insulation or hard thermal insulation materials, e.g. PIR, PUR) and WDB, WDB-T-4,8xL screw is used for fixing of flat roof thermal insulation and waterproofing systems. The plug is held firmly in place as the expansion lugs on its outside prevent it from turning once it is placed in the hole. On the inner side sleeves have guide lugs on the entire length to ensure axial guiding of a screw when being installed.

Types of substrates on which LINO/KD+WDB+KNX combination can be installed according to ETAG 006:

- concrete C12/15, concrete C20/25, thin-wall concrete panel

Fastener (LINO/KD+WDB+KNX) holds European Technical Assessment: ETA-15/0578



Szybkie wstępne klinowanie



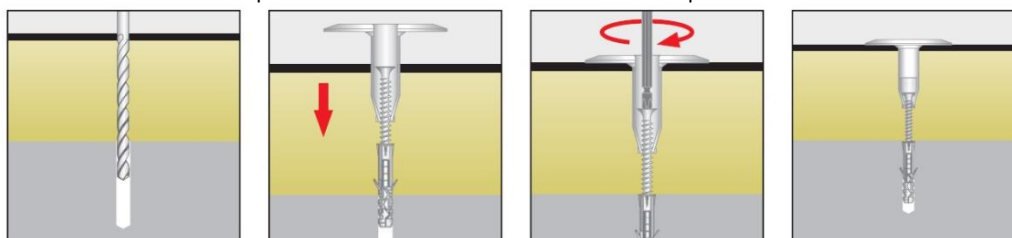
Powiększony kołnierz



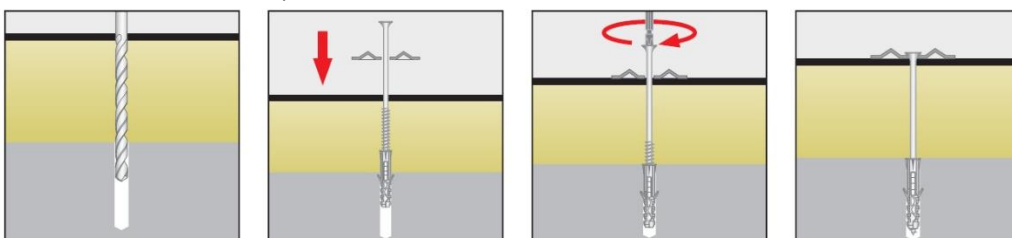
### Section 2. METHOD OF INSTALLATION

- Before installation identify the substrate and its thickness and select suitable fasteners. Pay particular attention to select suitable fastener type for renovation of flat roofs on a concrete substrate (in special cases perform fastener pull-out resistance tests).
- Identify thermal insulation thickness and type (mineral wool, polystyrene, PIR foam, PUR foam, EPS roofing membrane).
- Identify waterproofing material type and width (1.0; 1.5; 2.0; 2.5 rm.)
- Based on items 1-3 select adequate length of plastic sleeve – by min. 15 mm shorter than thermal insulation thickness
- Due to telescopic connection of the screw, effective width of plastic sleeve is:  $L_k - 15\text{mm}$
- Select adequate length of KNX sleeve and a WDB/WDB-T screw according to a substrate, so that its effective depth of anchorage conforms with European Technical Assessment and relevant Product Data Sheet
- It is recommended to keep the distance of support washer of the sleeve or KD steel washers of min. 10mm from the edge of the waterproofing (on the overlap, for oval washers in parallel with the longer side to the waterproofing edge)
- If the waterproofing layer is installed only (without thermal insulation layer) or if thermal insulation system of high density is installed, it is recommended to use a combination: KD + WDB/WDB-T screw + KNX sleeve – fixed connection
- Once plastic sleeve/washer is combined with a suitable screw and KNX sleeve, drill an 8mm hole in the substrate, screw the fastener in the substrate using dedicated driver bits
- After installation, roof fastener should maintain effective pressure on the waterproofing and thermal insulation systems, and the support washer of the plastic sleeve/washer should prevent rotation about steel fastener axis
- Number of fasteners per  $1\text{m}^2$  should be defined in the facility technical design – the design should include division of a flat roof into individual wind zones (corner, outer side, inner side, central)

Example installation: concrete substrate – telescopic connection



Example installation: concrete substrate – fixed connection

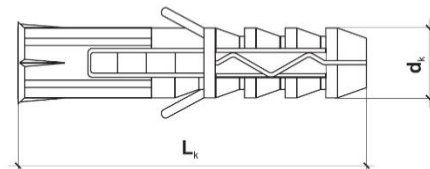


**PRODUCT DATA SHEET – KNX**

**Section 3. TECHNICAL DATA**

TECHNICAL PARAMETERS		
Parameter	Unit	Value
Sleeve diameter	$d_k$	8
Sleeve length	$L_k$	50
Drilled hole diameter	$d_o$	8
Effective depth of anchorage	$h_{eff}$	50
Drilled hole depth	$h_o$	60
Expansion anchor material	[-]	PA - polyamide
European Technical Assessment	[-]	ETA-15/0578

INSTALLATION PARAMETERS			
Substrate	Min. substrate thickness	Min. distance from edge	Min. spacing
	$h_{min}$ [mm]	$c_{min}$ [mm]	$L_{os}$ [mm]
Concrete C12/15	60	30	120
Concrete C20/25	60	30	120
Thin wall concrete slab	20	30	120



STRENGTH PARAMETERS			
Substrate	LINO 13 + WDB + KNX	LINO 15 + WDB + KNX	KD + WDB + KNX
<b>Characteristic load-bearing capacity [kN]</b>			
Concrete C12/15	1.12	1.12	1.12
Concrete C20/25	1.45	1.45	1.45
Thin wall concrete slab	1.20	1.20	1.20
<b>Design resistance [kN] – <math>\gamma_M=2.0</math></b>			
Concrete C12/15	0.56	0.56	0.56
Concrete C20/25	0.73	0.73	0.73
Thin wall concrete slab	0.60	0.60	0.60

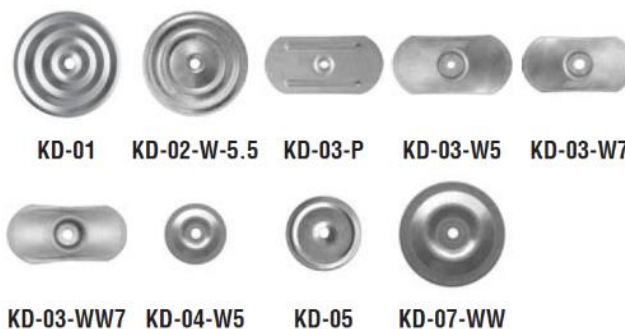


LINO+WDB+KNX



KD+WDB+KNX

WASHER TYPES			
Washer marking	Washer type	Drilled hole diameter [mm]	Washer dimensions [mm]
KD-01	round	5.0	70
KD-02-W-5.5	round	5.5	70
KD-03-P	oval	5.5	80 x 40
KD-03-W5	oval	5.0	80 x 40
KD-03-W7	oval	7.0	80 x 40
KD-03-WW7	oval	7.0	80 x 40
KD-04-W5	round	5.0	40
KD-05	round	5.0	50
KD-07-WW	round	6.5	70



SELECTION TABLE		
Product code	Sleeve dimensions ( $d_k \times L_k$ )	Number of pieces in a box
KNX-08050	8 x 50	400

**Section 4. REMARKS**

1. All previous versions of this Product Data Sheet shall cease to be valid
2. Data given in this Product Data Sheet is in accordance with current knowledge and published in good faith. KLIMAS Sp. z o.o. is not responsible for correctness and quality of the fixing if recommendations regarding method of use and installation are not followed.