XI-FV ETICS DATA SHEET

Insulation fastener

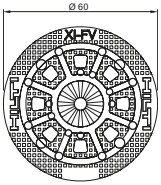
April 2021

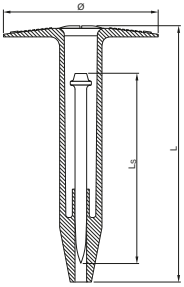
XI-FV ETICS Insulation fastener

Product data

Dimensions

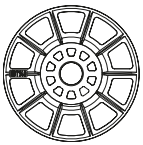
XI-FV





HDT-FV 90

HDT-FV 140



Material specifications

Plate: XI-FV – HDPE, Orange
HDT-FV – HDPE, Orange

Nail: Carbon steel shank: HRC 58
Zinc coating: Delta-Tone

Recommended fastening tools

DX 6 IE, DX 6 IE XL, DX 5 IE, DX 5 IE XL, DX 460 IE, DX 460 IE XL

- See fastener program in the next pages.

Approvals

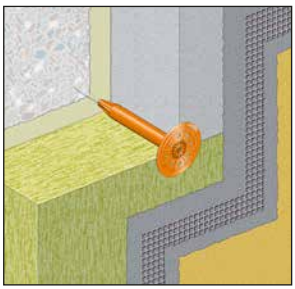
ETA-17/0304, DOP no. Hilti-DX-DoP-006

- Not all information presented in this product data sheet might be subject to approval/certificate content. Please refer to approval/certificate for further information.

Applications

External Thermal Insulation Composite System (ETICS)

Examples



The XI-FV fastener is used to transfer wind suction loads acting on the thermal insulation composite system.
The base material is normal weight concrete, which is either uncoated or coated with plaster or tiles. Coatings with plaster or tiles is often met if existing buildings are renovated and are improved with regards to their thermal insulation properties.

Performance data and application recommendation

Fixing element		XI-FV
Characteristic tension resistance in uncoated concrete fastener pull-out	$N_{Rk,p}$ =	1.0 kN
Partial safety factor, fastener pull-out	γ_M =	2.0
Partial safety factor for variable action of wind suction forces	γ_Q =	1.5
Mean anchorage depth	h_V =	30 mm
Spacing	$s_c \geq$	100 mm
Edge distance	$c_c \geq$	75 mm
Corner distance	$c_e \geq$	100 mm
Thickness of concrete member	h ≥	100 mm

Characteristic resistance in concrete which is coated with plaster or tiles, see ETA-17/0304

Design value of resistance: $N_{Rd} = N_{Rk,p} / \gamma_M$

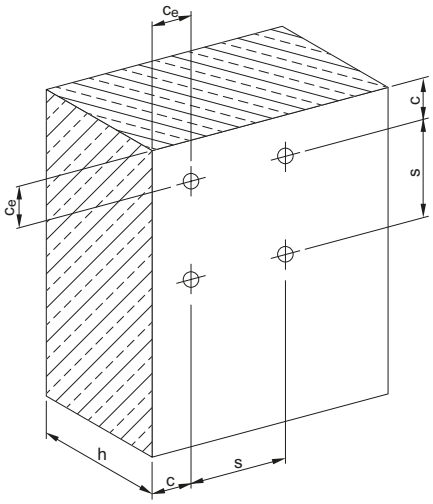
Design value of action: $N_{Sd} = N_{Sk} \cdot \gamma_Q$
$N_{Sd} \leq N_{Rd}$

Please refer to ETA-17/0304 for detailed information on:
- the intended use (e.g. thickness of plaster and adhesive layer)
- verification of setting energy by means of control tests
- plate stiffness and point thermal transmittance

In case of concrete coated with plaster and tiles, the characteristic tension pull-out resistance needs in general be verified by job-site tests in accordance with EOTA Technical Report TR52: Recommendations for job-site tests of powder-actuated fasteners for ETICS for use in concrete.

Applicable insulation material are EPS and mineral wool.

Schematic illustration of spacings of fixing elements



Base material

Concrete: C12/15 to C35/45

Corrosion information

The intended use comprises fastenings of thermal insulation composite systems which are subject to external atmospheric exposure.
During construction, exposure to UV due to solar radiation of the fixing element not protected by rendering shall not exceed the time of 6 weeks.
The temperature during installation of the fixing element shall not be less than 5 °C.

System recommendation

- For more details, please refer to the chapter **Accessories and consumables compatibility** in the Direct Fastening Technology Manual (DFTM).

Fastener program

Designation	Fastener	Item no.	Insulation thickness
			h_D
XI-FV 60	X-CPH 72	376484	60 mm
XI-FV 80	X-CPH 72	376485	80 mm
XI-FV 100	X-CPH 72	376489	100 mm
XI-FV 120	X-CPH 72	376490	120 mm
XI-FV 140	X-CPH 72	376491	140 mm
XI-FV 160	X-CPH 72	2069160	160 mm
XI-FV 180	X-CPH 72	2069161	180 mm
XI-FV 200	X-CPH 72	2069162	200 mm
HDT-FV 90	–	285628	–
HDT-FV 140	–	372907	–

- For soft mineral wool use XI-FV with HDT-FV 90 and HDT-FV 140.

Cartridge recommendation

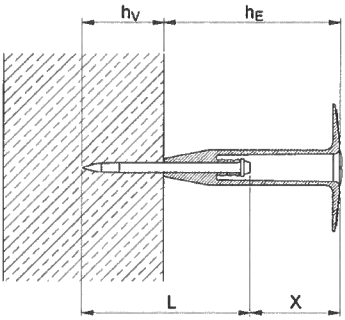
Base material	Cartridge color (tool power level)	
	Tool type: DX 6 IE, DX 6 IE XL	Tool type: DX 5 IE, DX 5 IE XL, DX 460 IE, DX 460 IE XL
	Cartridge type: 6.8/11 M	Cartridge type: 6.8/11 M
Soft/medium concrete	titanium ■ (2-8)	yellow ■, red ■
Tough concrete	titanium ■ (6-8)	yellow ■, red ■

- Tool power level adjustment by setting tests on site.
- Start tool energy selection with lowest recommended tool power level.
- Correct according requirement from chapter quality assurance.

Quality assurance

Cartridge colour and tool energy selection

Example in case of uncoated concrete (Annex B4 of ETA-17/0304: By means of the control tests made to uncoated concrete, the cartridge colour and tool energy required for driving in XI-FV for achieving the mean anchorage depth, hv, is determined. Please refer to XI-FV ETA approval for more details.



$h_V = (\ell_N + X) - h_E = 30$ mm

where

h_V = mean anchorage depth

h_E = length of plastic part

L = length of powder actuated fastener

X = control dimension

Designation	Insulation thickness	Control dimension
	t_I	X
XI-FV 60	60 mm	≥ 12.5 mm
XI-FV 80	80 mm	≥ 32.5 mm
XI-FV 100	100 mm	≥ 52.5 mm
XI-FV 120	120 mm	≥ 72.5 mm
XI-FV 140	140 mm	≥ 92.5 mm
XI-FV 160	160 mm	≥ 112.5 mm
XI-FV 180	180 mm	≥ 132.5 mm
XI-FV 200	200 mm	≥ 152.5 mm

These are abbreviated instructions which may vary by application.
ALWAYS review/follow the instructions accompanying the product.