



HTR

Insulation fastener

Technical Datasheet

Update: Jan-23



HTR-P / HTR-M Insulation fastener

Anchor version



HTR-P
HTR-M

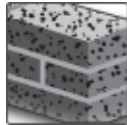
Benefits

- Best in class setting comfort and surface finish
- Productivity increase
- Heat transmission class 0 W/K due to screw made of high performance plastic
- Fastening in all base materials of category A, B, C, D and E

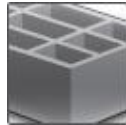
Base material



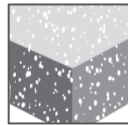
Concrete



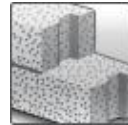
Solid brick



Hollow brick

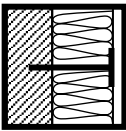


Lightweight
Aggregate
concrete



Autoclaved
Aerated
concrete

Other information



Fastening of
insulation at the
wall only



European
Technical
Assessment



CE
conformity

Approvals/Certificates

Description	Authority / Laboratory	No. / date of issue
European technical assessment ^{a)}	ZAG, Ljubljana	ETA-16/0116 / 2018-03-28

a) All data given in this section are - if not otherwise indicated - in accordance ETA-16/0116, issue 2018-03-28

Basic loading data (for a single anchor)

All data in this section applies to:

- Correct setting (see setting instruction)
- No edge distance and spacing influence
- Base material as specified in table
- Minimum base material thickness or greater
- Transmission of wind suction loads only
- Redundant fastening in non-cracked concrete
- Anchor and its plate is not exposed to UV-radiation for more than 6 weeks

Anchorage depth

Anchor		HTR-P / HTR-M
Overall plastic anchor embedment depth in the base material	$h_{nom} \geq$ [mm]	30

Characteristic resistance

Base material		HTR-P / HTR-M
Concrete C12/15	N_{Rk} [kN]	1,00
Concrete 16/20 – C50/60	N_{Rk} [kN]	1,50
Thin concrete members (e.g. weather resistant skins of external wall panels) C16/20 – C50/60	N_{Rk} [kN]	1,20
Solid clay brick, Mz 12/2,0	N_{Rk} [kN]	1,20
Solid sand-lime brick, KS 12/1,8	N_{Rk} [kN]	1,50
Vertically perforated clay brick, Hlz 20/1,6	N_{Rk} [kN]	1,20 ^{a)}
Vertically perforated clay brick, Hlz 12/0,8	N_{Rk} [kN]	0,70 ^{b)}
Vertically perforated sand-lime brick, KSL 12/1,4	N_{Rk} [kN]	1,20 ^{a)}
Lightweight Aggregate Concrete \geq LAC4, (raw density \geq 1,4 kg/dm ³)	N_{Rk} [kN]	0,90
Autoclaved aerated concrete \geq PP4 (raw density \geq 0,5 kg/dm ³)	N_{Rk} [kN]	0,50 / 0,75 ^{c)}

a) The value applies only for outer web thickness \geq 20 mm, rotary drilling only

b) The value applies only for outer web thickness \geq 11 mm, rotary drilling only

c) The greater resistance is applicable only with alternative (greater) embedment depth $h_{nom}=50$ mm

Design resistance

Base material		HTR-P / HTR-M
Concrete C12/15	N_{Rd} [kN]	0,50
Concrete 16/20 – C50/60	N_{Rd} [kN]	0,75
Thin concrete members (e.g. weather resistant skins of external wall panels) C16/20 – C50/60	N_{Rd} [kN]	0,60
Solid clay brick, Mz 12/2,0	N_{Rd} [kN]	0,60
Solid sand-lime brick, KS 12/1,8	N_{Rd} [kN]	0,75
Vertically perforated clay brick, Hlz 20/1,6	N_{Rd} [kN]	0,60 ^{a)}
Vertically perforated clay brick, Hlz 12/0,8	N_{Rd} [kN]	0,35 ^{b)}
Vertically perforated sand-lime brick, KSL 12/1,4	N_{Rd} [kN]	0,60 ^{a)}
Lightweight Aggregate Concrete \geq LAC4, (raw density \geq 1,4 kg/dm ³)	N_{Rd} [kN]	0,45
Autoclaved aerated concrete \geq PP4 (raw density \geq 0,5 kg/dm ³)	N_{Rd} [kN]	0,25 / 0,375 ^{c)}

a) The value applies only for outer web thickness \geq 20 mm, rotary drilling only

b) The value applies only for outer web thickness \geq 11 mm, rotary drilling only

c) The greater resistance is applicable only with alternative (greater) embedment depth $h_{nom}=50$ mm



Recommended loads

Base material		HTR-P / HTR-M
Concrete C12/15	N _{Rec} [kN]	0,33
Concrete 16/20 – C50/60	N _{Rec} [kN]	0,50
Thin concrete members (e.g. weather resistant skins of external wall panels) C16/20 – C50/60	N _{Rec} [kN]	0,40
Solid clay brick, Mz 12/2,0	N _{Rec} [kN]	0,40
Solid sand-lime brick, KS 12/1,8	N _{Rec} [kN]	0,50
Vertically perforated clay brick, Hlz 20/1,6	N _{Rec} [kN]	0,40 ^{a)}
Vertically perforated clay brick, Hlz 12/0,8	N _{Rec} [kN]	0,23 ^{b)}
Vertically perforated sand-lime brick, KSL 12/1,4	N _{Rec} [kN]	0,40 ^{a)}
Lightweight Aggregate Concrete ≥ LAC4, (raw density ≥ 1,4 kg/dm ³)	N _{Rec} [kN]	0,30
Autoclaved aerated concrete ≥ PP4 (raw density ≥ 0,5 kg/dm ³)	N _{Rec} [kN]	0,167 / 0,25 ^{c)}

a) The value applies only for outer web thickness ≥ 20 mm, rotary drilling only

b) The value applies only for outer web thickness ≥ 11 mm, rotary drilling only

c) The greater resistance is applicable only with alternative (greater) embedment depth $h_{nom}=50\text{mm}$

Recommended pull-through (short term acting) loads in different insulation materials^{a)}

Insulation	Thickness [mm]	Plate-Ø [mm]	Pull-through load [kN]
Expanded polystyrene EPS	60 - 119	≥ 60	0,15
Expanded polystyrene EPS	120 - 260	≥ 60	0,20
Mineral wool, type HD	60 - 260	≥ 60	0,15
Mineral wool, type WV	60 - 260	≥ 90	0,15 ^{b)}
Mineralwolle, type lamella	60 - 260	≥ 140	0,167 ^{c)}

a) This technical data are not covered by ETA-16/0116. They are based on an HILTI-internal assessment of test data. Recommended values can be used in case that the insulation material to be fastened is not covered by a European Technical Assessment (ETA) or any national approval document. If the ETICS to be fastened is covered by an ETA or any national approval document, the given pull-through resistance in the ETA or national approval document is applicable. The design of anchorages has to be carried out in accordance to EAD 330196-01-0604 and ETAG 004 or EAD 040083-00-0404 or applicable national regulation under the responsibility of an engineer experienced in anchorages.

b) HILTI slip-on plate HDT 90 must be used

c) HILTI slip-on plate HDT 140 must be used

Basic provisions for dead loads on the bottom side of ceilings (for a single anchor)

All data in this section applies to

- Correct setting (see setting instruction)
- No edge distance and spacing influence
- Base material as specified in the table
- Minimum base material thickness
- Quasi-static permanent loads only
- Redundant fastening in non-cracked and cracked concrete
- Anchor and its plate is not exposed to UV-radiation for more than 6 weeks

Note: Pull-through resistance of panel and its bending resistance shall be proven by panel manufacturer or any other person experienced in the design of such panels. Drawings of fixing positions shall be provided to the operator. Each panel shall be fixed with 4 anchors at least.

Recommended number of anchors for fixing panels to ceilings w/o consideration of wind loads^{a)}:

Specific panels weight	Number of anchors per m ²
≤ 29 kg/m ²	4
≤ 43 kg/m ²	6
≤ 57 kg/m ²	8
≤ 71 kg/m ²	10

a) This technical data are not covered by ETA-16/0116. They are based on an HILTI-internal assessment of test data. A safety factor for dead load $\gamma_F=1,35$ and a safety factor $\gamma_M=1,80$ for material is considered.

Additional technical parameters

Point thermal transmittance

Anchor	HTR-P / HTR-M
Point thermal transmittance ^{a)} χ [W/K]	0,000

a) For insulation thickness 60-260 mm

Plate stiffness and plate capacity

Anchor	HTR-P / HTR-M
Capacity of plate [kN]	1,4
Plate stiffness [kN/mm]	0,6

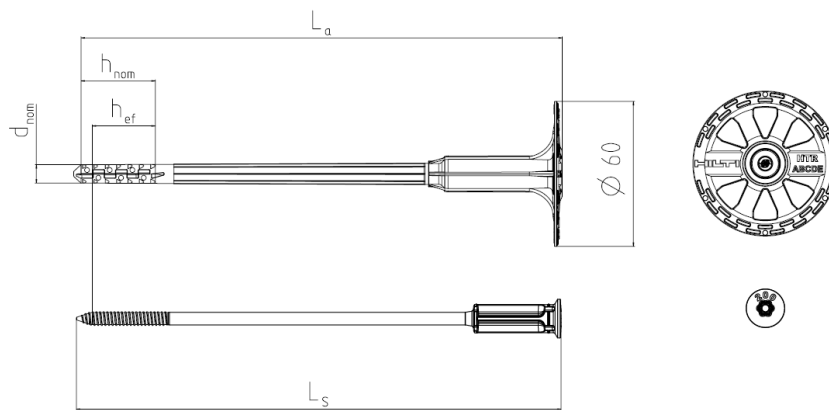


Materials

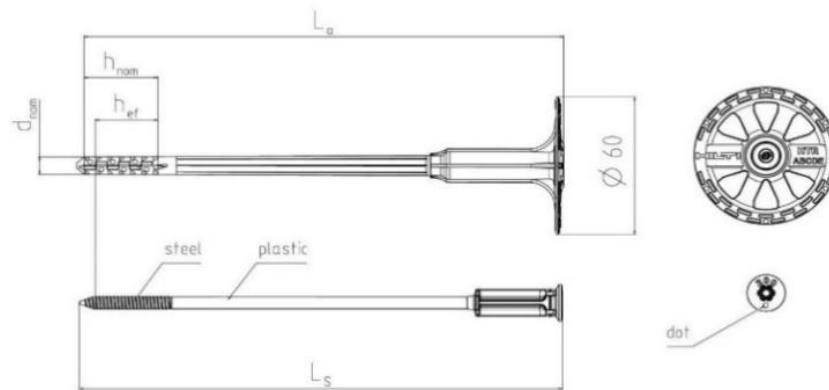
Material quality

Part		Material
Anchor sleeve		Polyethylene, black
Anchor plate		Polypropylene, red
Expansion plastic screw	HTR-P	Polyamide, glass fiber reinforced 50%, black
Composite screw	HTR-M	Expansion element: steel, galvanized Shank: polyamide, glass fiber reinforced, black
Slip-on plate	HDT 90	Polypropylene, glass fiber reinforced, white
Slip-on plate	HDT 140	Polyamide, glass fiber reinforced, white

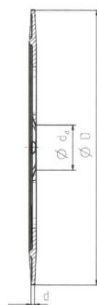
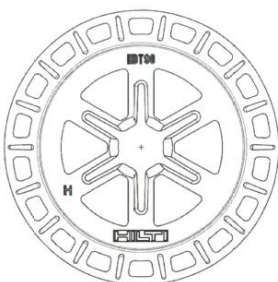
HTR-P



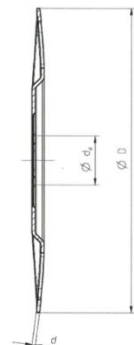
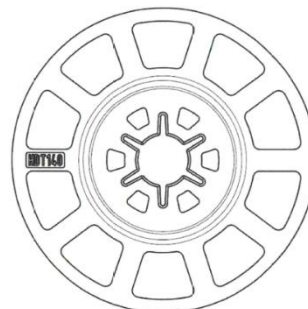
HTR-M



HDT 90



HDT 140





Anchor dimensions

		HTR-P / HTR-M
Diameter of sleeve	d_{nom} [mm]	8
Plate diameter	d [mm]	60
Minimum length of anchor body	$L_{a,min}$ [mm]	100
Maximum length of anchor body	$L_{a,max}$ [mm]	300
Minimum length of screw	$L_{S,min}$ [mm]	101
Maximum length of screw	$L_{S,max}$ [mm]	301

Slip-on plate dimensions

		HDT 90	HDT 140
External diameter	D [mm]	90	140
Internal diameter	d_d [mm]	23	
Thickness	d [mm]	1,5	

Anchor designations

		HTR-P / HTR-M
Expansion screw	Top of head	HTR-P: Anchor length L_a (e.g. "300") HTR-M: Anchor length L_a (e.g. "300" and a dot •)
Plate	Top of plate	Producer: HILTI
		Anchor type: HTR
	Bottom side of plate	Nominal embedment depth: $h_{nom}=30$ mm for base material categories A, B, C, D, E Nominal drill bit diameter: 8 mm



Setting information

Installation temperature range:

0°C to +40°C

Service temperature range

Hilti HTR-P, HTR-M insulation fastener may be applied in the temperature ranges given below.

Service temperature range

Temperature range	Base material temperature	Maximum long term base material temperature	Maximum short term base material temperature
Temperature range I	0 °C to +40 °C	+24 °C	+40 °C

Maximum short-term base material temperature

Short-term elevated base material temperatures are those that occur over brief intervals, e.g. because of diurnal cycling.

Maximum long-term base material temperature

Long-term elevated base material temperatures are roughly constant over significant periods of time.

The anchor shall not be exposed to UV-radiation for more than 6 weeks

Setting details

			HTR-P / HTR-M
			Base material category A, B, C, D and E ^{a)}
Nominal diameter of drill bit	d_o	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8,45
Depth of drill hole	$h_1 \geq$	[mm]	40
Effective anchorage depth	$h_{ef} \geq$	[mm]	25
Overall embedment depth	h_{nom}	[mm]	30
Thickness of insulation	h_D	[mm]	60 to 260
Maximum thickness of tolerance layer	$t_{tol,max}$	[mm]	$L_a - h_{nom} - h_D^{b)}$

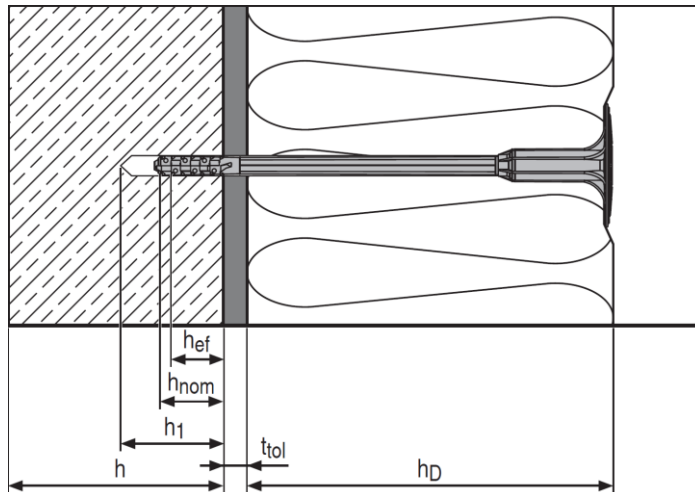
a) In base material category E (autoclaved aerated concrete PP4) an alternative embedment depth $h_{nom} = 50\text{mm}$ with greater resistance is available with corresponding drill hole depth $h_1 \geq 60\text{ mm}$

b) L_a ... Anchor length, h_{nom} ... Overall embedment depth, h_D ... Thickness of insulation

Example:

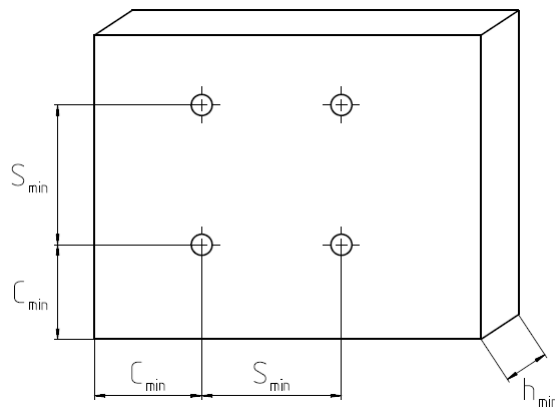
HTR-P 8x300 or HTR-M 8x300: $L_a = 300\text{mm}$; $h_{nom} = 30\text{mm}$; $h_D = 260\text{mm}$

$t_{tol,max} = 300\text{mm} - 30\text{mm} - 260\text{mm} = 10\text{mm}$



Setting parameters

			HTR-P / HTR-M
Minimum base material thickness	h_{min}	[mm]	100 ^{a)}
Minimum spacing	s_{min}	[mm]	100
Minimum edge distance	c_{min}	[mm]	100



a) Except for thin concrete members (e.g. weather resistant skins of external walls) with $h_{min}=40\text{mm}$). The belonging characteristic resistance must be considered.

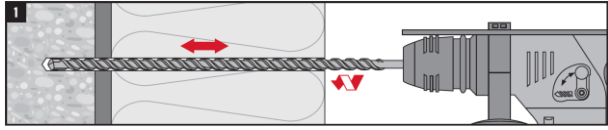
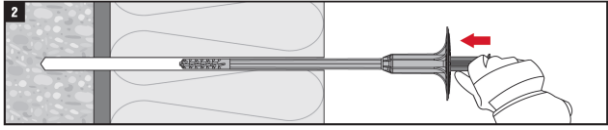
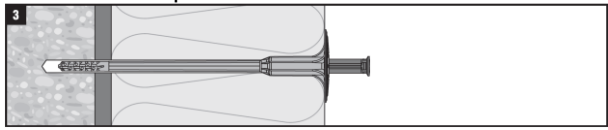
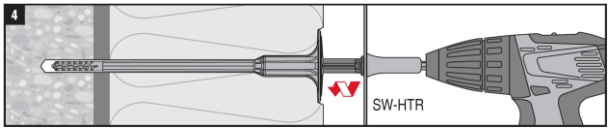


Installation equipment

	HTR-P / HTR-M
Rotary hammer	Corded: HILTI TE 2 – TE 7 Battery: HILTI TE2-A22, TE4-A22, TE6-A36
Installation	Electrical screw driver e.g. HILTI SF 2-A + TX30 The use of setting tool SW-HTR is recommended

Setting instruction*

*For detailed information on installation see instruction for use given with the package of the product.

Setting instructions	
<p>1. Drill hole with drill bit</p> 	<p>2. Insert the fastener by hand</p> 
<p>3. Make sure that anchor's plate is in touch with insulation panel's surface</p> 	<p>4. Use screw driver with setting tool to insert the fastener</p> 
<p>5. Check correct setting</p> 