





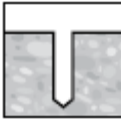

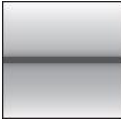

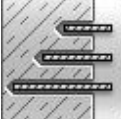




## Hilti HIT-1 / HIT-1 CE Adhesive Anchor System

Injection mortar system	Benefits
 <p>Hilti HIT-1 / HIT-1 CE 300 ml foil tube cartridge</p>	<ul style="list-style-type: none"> <li>- chemical injection fastening</li> <li>- two-component hybrid mortar</li> <li>- rapid curing</li> <li>- suitable for overhead fastenings</li> <li>- versatile and convenient handling</li> <li>- clean and simple in use</li> <li>- small edge distance and anchor spacing</li> <li>- always correct mixing ratio</li> <li>- in-service temperatures: Short term: max. 80°C Long term: max. 50°C</li> </ul>
 <p>Mixer HIT PM</p>	
 <p>HIT-V rods</p>	
 <p>Dispenser: Hilti MD 300 Hilti MD 1000</p>	
 <p>Hilti CFS-DISP Standard Caulk Gun</p>	

<p><b>Base material</b></p>  <p>Concrete (non-cracked)</p>  <p>Dry concrete</p>  <p>Wet concrete</p>	<p><b>Load conditions</b></p>  <p>Static/ quasi-static</p>
<p><b>Installation conditions</b></p>  <p>Hammer drilling</p>  <p>Variable embedment depth</p>	<p><b>Other information</b></p>  <p>European Technical Assessment</p>  <p>CE conformity</p>

### Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
European Technical Assessment <sup>a)</sup>	ZÜS, Prague	ETA-17/0005 / 2017-02-20

a) All data given in this section according to the approvals mentioned above ETA-17/0005 issue 2017-02-20.

**Static and quasi-static loading (for a single anchor)**
**All data in this section applies to**

- Non-cracked concrete C 20/25,  $f_{ck,cube} = 25 \text{ N/mm}^2$
- Load values valid for holes drilled with TE rotary hammers in hammering mode
- Diamond coring is not permitted
- Correct anchor setting (see instruction for use, setting details)
- No edge distance and spacing influence
- Embedment depth, base material thickness, as specified in the tables
- Base material temperature during installation and curing must be between 0°C through +40°C
- Temperature range I and II, as specified in the tables
- *Steel* failure

**Recommended loads for tension loading**

Threaded rod HIT-V 5.8			M8	M10	M12	M16
<b>Temperature range I (24/40°C)</b>						
Embedment depth	$h_{ef,min}$	[mm]	60	60	70	80
Base material thickness	h	[mm]	100	100	100	116
Tensile load	$N_{rec}$	[kN]	4,2	5,2	7,3	9,6
Embedment depth	$h_{ef,10d}$	[mm]	80	100	120	160
Base material thickness	h	[mm]	110	130	150	196
Tensile load	$N_{rec}$	[kN]	5,6	8,7	12,6	19,2
Embedment depth	$h_{ef,20d}$	[mm]	160	200	240	320
Base material thickness	h	[mm]	190	210	270	356
Tensile load	$N_{rec}$	[kN]	8,7	13,8	20,1	37,4
<b>Temperature range II (50/80°C)</b>						
Embedment depth	$h_{ef,min}$	[mm]	60	60	70	80
Base material thickness	h	[mm]	100	100	100	116
Tensile load	$N_{rec}$	[kN]	3,0	3,7	5,2	7,2
Embedment depth	$h_{ef,10d}$	[mm]	80	100	120	160
Base material thickness	h	[mm]	110	130	150	196
Tensile load	$N_{rec}$	[kN]	4,0	6,2	9,0	14,4
Embedment depth	$h_{ef,20d}$	[mm]	160	200	240	320
Base material thickness	h	[mm]	190	210	270	356
Tensile load	$N_{rec}$	[kN]	8,0	12,5	18,0	28,7

**Recommended loads for shear loading**

Threaded rod HIT-V 5.8			M8	M10	M12	M16
Shear load	$V_{rec}$	[kN]	5,1	8,6	12,0	22,3

## Materials

### Mechanical properties

Anchor size			M8	M10	M12	M16
Nominal tensile strength $f_{uk}$	HIT-V 5.8	[N/mm <sup>2</sup> ]	500	500	500	500
	HIT-V 8.8		800	800	800	800
	HIT-V-R		700	700	700	700
	HIT-V-HCR		800	800	800	800
Yield strength $f_{yk}$	HIT-V 5.8	[N/mm <sup>2</sup> ]	400	400	400	400
	HIT-V 8.8		640	640	640	640
	HIT-V-R		450	450	450	450
	HIT-V-HCR		640	640	640	640
Stressed cross-section $A_s$	HIT-V	[mm <sup>2</sup> ]	36,6	58,0	84,3	157
Moment of resistance W	HIT-V	[mm <sup>3</sup> ]	31,2	62,3	109	277

### Material quality

Part	Material
Threaded rod HIT-V 5.8 (F)	Strength class 5.8, A5 > 8% ductile Electroplated zinc coated $\geq 5\mu\text{m}$ (F) Hot dip galvanized $\geq 45\mu\text{m}$
Threaded rod HIT-V 8.8 (F)	Strength class 8.8, A5 > 12% ductile Electroplated zinc coated $\geq 5\mu\text{m}$ (F) Hot dip galvanized $\geq 45\mu\text{m}$
Threaded rod HIT-V-R	Strength class 70 for $\leq M24$ and class 50 for $> M24$ , A5 > 8% ductile Stainless steel 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362
Threaded rod HIT-V-HCR	Strength class 70 for $\leq M24$ and class 50 for $> M24$ , A5 > 8% ductile High corrosion resistance steel 1.4528; 1.4565;
Washer	Electroplated zinc coated $\geq 5\mu\text{m}$ , hot dip galvanized $\geq 45\mu\text{m}$
	Stainless steel 1.4401, 1.4404, 1.4578, 1.4571, 1.4439, 1.4362 EN 10088-1:2014
	High corrosion resistant steel 1.4529, 1.4565 EN 10088-1:2014
Nut	Strength class of nut adapted to strength class of threaded rod. Electroplated zinc coated $\geq 5\mu\text{m}$ , hot dip galvanized $\geq 45\mu\text{m}$
	Strength class of nut adapted to strength class of threaded rod. Stainless steel 1.4401, 1.4404, 1.4578, 1.4571, 1.4439, 1.4362 EN 10088-1:2014
	Strength class of nut adapted to strength class of threaded rod.
	High corrosion resistant steel 1.4529, 1.4565 EN 10088-1:2014

## Setting

**Installation temperature range:**  
0°C to +40°C

### Service temperature range

Hilti HIT-1 / HIT-1 CE injection mortar may be applied in the temperature ranges given below. An elevated base material temperature may lead to a reduction of the design bond resistance.

Temperature range	Base material temperature	Maximum long term base material temperature	Maximum short term base material temperature
Temperature range I	-40 °C to +40 °C	+24 °C	+40 °C
Temperature range II	-40 °C to +80 °C	+50 °C	+80 °C

### Max short term base material temperature

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

### Max long term base material temperature

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

### Working time and curing time:

Temperature of the base material $T_{BM}$	Maximum working time $t_{work}$	Minimum curing time $t_{cure}$
$0^{\circ}\text{C} \leq T_{BM} < 5^{\circ}\text{C}$	45 min	3 h
$5^{\circ}\text{C} \leq T_{BM} < 10^{\circ}\text{C}$	25 min	2 h
$10^{\circ}\text{C} \leq T_{BM} < 20^{\circ}\text{C}$	15 min	100 min
$20^{\circ}\text{C} \leq T_{BM} < 30^{\circ}\text{C}$	6 min	45 min
$30^{\circ}\text{C} \leq T_{BM} < 40^{\circ}\text{C}$	2 min	25 min

### Installation equipment

Anchor – size	M8	M10	M12	M16
Rotary hammer	TE2(-A) – TE30(-A)			
Other tools	Blow out pump ( $h_{ef} \leq 10 \cdot d$ )			
	Compressed air gun <sup>b)</sup>			
	Set of cleaning brushes <sup>c)</sup> , dispenser, piston plug			

- a) Compressed air gun with extension hose for all drill holes deeper than 250 mm (for M8 to M12) or deeper than  $20 \cdot \phi$  (for  $\phi > 12$  mm)  
 b) Automatic brushing with round brush for all drill holes deeper than 250 mm (for M8 to M12) or deeper than  $20 \cdot \phi$  (for  $\phi > 12$  mm)

### Setting details

Threaded rod – size		M8	M10	M12	M16
Nominal diameter of drill bit	$d_o$ [mm]	10	12	14	18
Maximum diameter of clearance hole in the fixture	$d_f$ [mm]	9	12	14	18
Minimum base material thickness	$h_{min}$ [mm]	$h_{ef} + 30 \text{ mm} \geq 100 \text{ mm}$			$h_{ef} + 2d_o$
Effective anchorage depth (= drill hole depth) $h_{ef} = h_o$	$h_{ef,min}$ [mm]	60	60	70	80
	$h_{ef,max}$ [mm]	160	200	240	320
Minimum spacing	$s_{min}$ [mm]	40	50	60	80
Minimum edge distance	$c_{min}$ [mm]	40	50	60	80
Torque moment	$T_{max}$ [Nm]	10	20	40	80

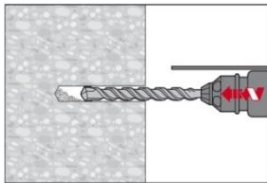
Parameters of cleaning and setting tools

Threaded rod HIT-V-...	Drill and clean [mm]		Installation
	Hammer drilling	Brush HIT-RB	Piston plug HIT-SZ
<b>M8</b>	10	10	-
<b>M10</b>	12	12	12
<b>M12</b>	14	14	14
<b>M16</b>	18	18	18

Setting instructions

Bore hole drilling

**Hammer drilling:** For dry and wet concrete (not in flooded holes).



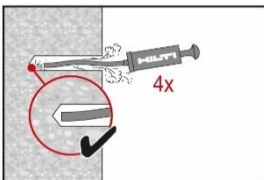
Drill Hole to the required embedment depth with a hammer drill set in rotation-hammer mode using an appropriately sized carbide drill bit.

Drill hole cleaning

Just before setting an anchor, the drill hole must be free of dust and debris. Inadequate hole cleaning=poor load values.

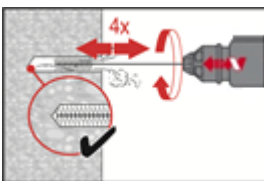
a) Manual cleaning with machine brushing (MCMB):

for drill hole diameters  $d_0 \leq 20$  mm and drill hole depths  $h_0 \leq 10 \cdot d$



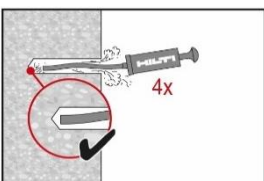
The Hilti hand pump may be used for blowing out drill holes up to diameters  $d_0 \leq 20$  mm and embedment depths up to  $h_{ef} \leq 10 \cdot d$ .

Blow out at least 4 times from the back of the drill hole until return air stream is free of noticeable dust.



Check brush diameter and attach the brush to a drilling machine or a battery screwdriver. Brush the hole with an appropriate sized HIT-RB wire brush a minimum of four times.

The brush must produce natural resistance as it enters the drill hole (brush  $\varnothing \geq$  drill hole  $\varnothing$ ) - if not the brush is too small and must be replaced with the proper brush diameter. If the bore hole ground is not reached, a brush extension shall be used.

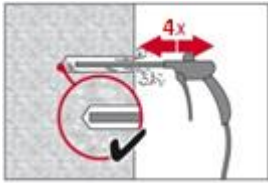


Blow out again with the Hilti hand pump at least 4 times until return air stream is free of noticeable dust.

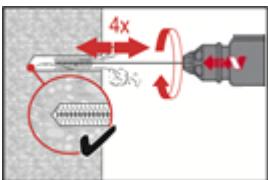
After cleaning, the bore hole has to be protected against re-contamination in an appropriate way, until dispensing the mortar in the bore hole. If necessary, the cleaning has to be repeated directly before dispensing the mortar.

**b) Compressed air cleaning with machine brushing (CACMB):**

for all drill hole diameters  $d_0$  and all drill hole depths  $h_0$ .

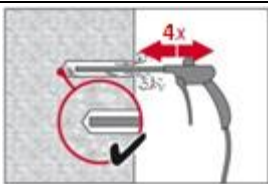


Blow 4 times from the back of the hole (if needed with nozzle extension) over the hole length with oil-free compressed air (min. 6 bar at 6 m<sup>3</sup>/h) until return air stream is free of noticeable dust.



Check brush diameter and attach the brush to a drilling machine or a battery screwdriver. Brush the hole with an appropriate sized HIT-RB wire brush a minimum of four times.

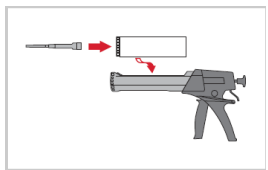
The brush must produce natural resistance as it enters the drill hole (brush  $\varnothing \geq$  drill hole  $\varnothing$ ) - if not the brush is too small and must be replaced with the proper brush diameter. If the bore hole ground is not reached, a brush extension shall be used.



Blow again with compressed air 4 times until return air stream is free of noticeable dust.

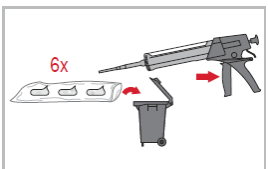
After cleaning, the bore hole has to be protected against re-contamination in an appropriate way, until dispensing the mortar in the bore hole. If necessary, the cleaning has to be repeated directly before dispensing the mortar.

**Injection preparation**



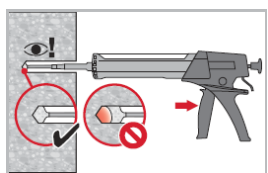
Tightly attach new Hilti mixing nozzle HIT PM to the cartridge and load the cartridge into the Hilti dispenser tool. Do not modify the mixing nozzle. Cut off the foil tube clip before use.

Observe the instruction for use of the dispenser and mortar. Do not use damaged cartridges.



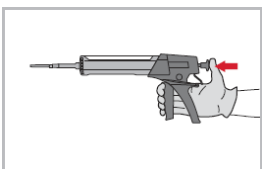
Prior to dispensing into the drill hole, squeeze out separately a minimum of 6 full strokes and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey colour.

**Inject adhesive** from the back of the drill hole without forming air voids.

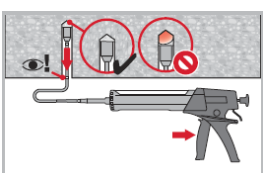


Inject the adhesive starting at the back of the hole, slowly withdrawing the mixer with each trigger pull.

Fill holes approximately 2/3 full. It is required that the annular gap between the anchor and the concrete is completely filled with adhesive along the embedment length.



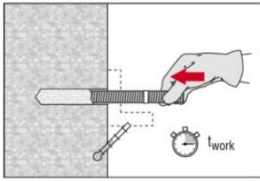
After injection is completed, depressurize the dispenser by pressing the release trigger. This will prevent further adhesive discharge from the mixer.



Overhead installation and/or installation with embedment depth  $h_{ef} > 190$ mm. For overhead installation the injection is only possible with the aid of extensions and piston plugs. Assemble HIT PM mixer, extension(s) and appropriately sized piston plug HIT-SZ. Insert piston plug to back of the hole and inject adhesive. During injection the piston plug will be naturally extruded out of the bore hole by the adhesive pressure.

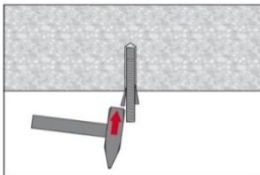
**Setting the element:** Just before setting an anchor, the drill hole must be free of dust and debris.

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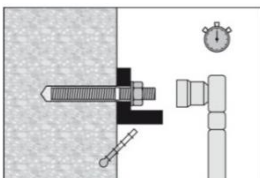
Before use, verify that the element is dry and free of oil and other contaminants. Mark and set element to the required embedment depth before working time  $t_{work}$  has elapsed. Be sure that the anchor is fully seated at the bottom of the hole and that excess mortar is visible at the top of the hole. If these requirements are not maintained, the application has to be renewed.

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For overhead installation use piston plugs and fix embedded parts with e.g. wedges.




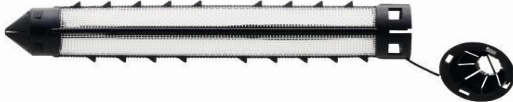

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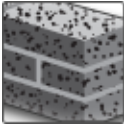
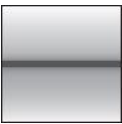
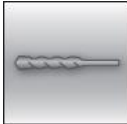


Loading the anchor: after required curing time  $t_{cure}$  the anchor can be loaded. The applied installation torque shall not exceed  $T_{max}$ .

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## Hilti HIT-1 / HIT-1 CE Adhesive Anchor System

Injection mortar system	Benefits
 <p>Hilti HIT-1 / HIT-1 CE 300 ml foil tube cartridge</p>	<ul style="list-style-type: none"> <li>- hollow and solid masonry: clay bricks</li> <li>- two-component hybrid mortar</li> <li>- rapid curing</li> <li>- suitable for overhead fastenings</li> </ul>
 <p>Mixer HIT PM</p>	<ul style="list-style-type: none"> <li>- versatile and convenient handling</li> </ul>
 <p>HIT-V rods</p>	<ul style="list-style-type: none"> <li>- flexible setting depth and fastening thickness</li> <li>- small edge distance and anchor spacing</li> </ul>
 <p>HIT-SC sieve sleeve</p>	<ul style="list-style-type: none"> <li>- mortar filling control with HIT-SC sleeves</li> </ul>
 <p>Dispenser: Hilti MD 300 Hilti MD 1000 Hilti CFS-DISP Standard Caulk Gun</p>	<ul style="list-style-type: none"> <li>- in-service temperatures: Short term: max. 80°C Long term: max. 50°C</li> </ul>

Base material	Load conditions	Installation conditions
 <p>Solid bricks</p>	 <p>Static/ quasi-static</p>	 <p>Hammer drilling</p>



**Static and quasi-static loading (for a single anchor)**
**All data in this section applies to**

- Load values valid for holes drilled with TE rotary hammers in hammer mode
- Correct anchor setting (see instruction for use, setting details)
- Steel quality of fastening elements: see data below
- Threaded rods of appropriate size (diameter and length) and a minimum steel quality of 5.6 can be used
- Base material temperature during installation and curing must be between 0°C through +40°C

**Recommended loads**

Anchor size	sleeve	effective anchorage depth	40°C/24°C	80°C/50°C	all temp. range
		$h_{ef}$ [mm]	$N_{rec}$ [kN]	$N_{rec}$ [kN]	$V_{rec}$ [kN]
Compressive strength $f_b \geq 28 \text{ N/mm}^2$					
M8	-	80	0,7	0,4	1,3
M10	-	90	0,7	0,4	1,7
M12	-	100	0,7	0,4	2,5
M8	HIT-SC 16x85	80	0,9	0,6	1,3
M10	HIT-SC 16x85	80	0,9	0,6	1,6
M12	HIT-SC 18x85	80	0,9	0,6	1,7

Due to the wide variety of bricks, site tests have to be performed for determination of load values for all applications outside of the above mentioned base materials and/or setting conditions.

**Materials**
**Material quality**

Part	Material
Threaded rod HIT-V 5.8 (F)	Strength class 5.8, A5 > 8% ductile Electroplated zinc coated $\geq 5 \mu\text{m}$ (F) Hot dip galvanized $\geq 45 \mu\text{m}$
Threaded rod HIT-V 8.8 (F)	Strength class 8.8, A5 > 12% ductile Electroplated zinc coated $\geq 5 \mu\text{m}$ (F) Hot dip galvanized $\geq 45 \mu\text{m}$
Threaded rod HIT-V-R	Strength class 70 for $\leq \text{M24}$ and class 50 for $> \text{M24}$ , A5 > 8% ductile Stainless steel 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362
Threaded rod HIT-V-HCR	Strength class 70 for $\leq \text{M24}$ and class 50 for $> \text{M24}$ , A5 > 8% ductile High corrosion resistance steel 1.4528; 1.4565;
Washer	Electroplated zinc coated $\geq 5 \mu\text{m}$ , hot dip galvanized $\geq 45 \mu\text{m}$
	Stainless steel 1.4401, 1.4404, 1.4578, 1.4571, 1.4439, 1.4362 EN 10088-1:2014
	High corrosion resistant steel 1.4529, 1.4565 EN 10088-1:2014
Nut	Strength class of nut adapted to strength class of threaded rod. Electroplated zinc coated $\geq 5 \mu\text{m}$ , hot dip galvanized $\geq 45 \mu\text{m}$
	Strength class of nut adapted to strength class of threaded rod. Stainless steel 1.4401, 1.4404, 1.4578, 1.4571, 1.4439, 1.4362 EN 10088-1:2014
	Strength class of nut adapted to strength class of threaded rod. High corrosion resistant steel 1.4529, 1.4565 EN 10088-1:2014
HIT-SC sleeve	Frame: FPP 20T, Sieve: PA6.6 N500/200

## Setting

**Installation temperature range:**  
0°C to +40°C

### Service temperature range

Hilti HIT-1 / HIT-1 CE injection mortar may be applied in the temperature ranges given below. An elevated base material temperature may lead to a reduction of the design bond resistance.

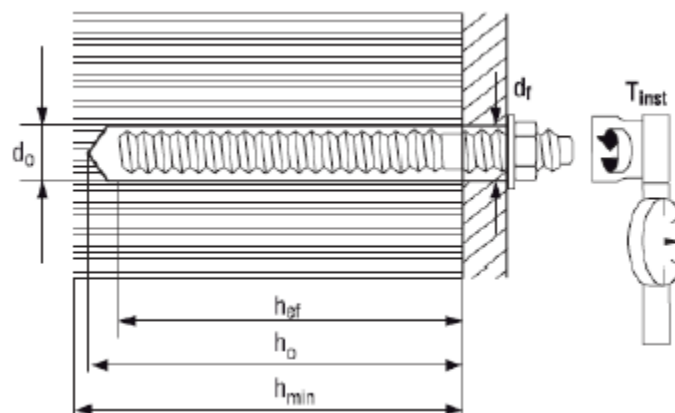
Temperature range	Base material temperature	Maximum long term base material temperature	Maximum short term base material temperature
Temperature range I	-40 °C to +40 °C	+24 °C	+40 °C
Temperature range II	-40 °C to +80 °C	+50 °C	+80 °C

### Working time and curing time:

Temperature of the base material $T_{BM}$	Maximum working time $t_{work}$	Minimum curing time $t_{cure}$
$0^{\circ}\text{C} \leq T_{BM} < 5^{\circ}\text{C}$	45 min	3 h
$5^{\circ}\text{C} \leq T_{BM} < 10^{\circ}\text{C}$	25 min	2 h
$10^{\circ}\text{C} \leq T_{BM} < 20^{\circ}\text{C}$	15 min	100 min
$20^{\circ}\text{C} \leq T_{BM} < 30^{\circ}\text{C}$	6 min	45 min
$30^{\circ}\text{C} \leq T_{BM} < 40^{\circ}\text{C}$	2 min	25 min

### Installation equipment

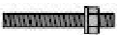



Anchor – size	M8	M10	M12
Rotary hammer	TE2(-A) – TE30(-A)		
Other tools	Blow out pump Set of cleaning brushes, dispenser		



### Setting details

Anchor type			HIT-V			HIT-V + SC		
Threaded rod – size			M8	M10	M12	M8+SC16	M10+SC16	M12+SC18
Nominal diameter of drill bit	$d_0$	[mm]	10	12	14	16	16	18
Maximum diameter of clearance hole in the fixture	$d_f$	[mm]	9	12	14	9	12	14
Effective anchorage depth	$h_{ef}$	[mm]	80	90	100	80	80	80
Hole depth	$h_0$	[mm]	80	90	100	95	95	95
Minimum base material thickness	$h_{min}$	[mm]	115	115	115	115	115	115
Torque moment	$T_{max}$	[Nm]	6	10	10	6	8	8

### Parameters of cleaning and setting tools

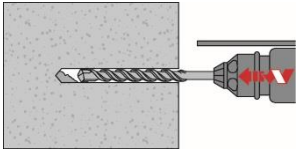
Threaded rod HIT-V-...	Sieve sleeve HIT-SC	Drill and clean [mm]	
		Hammer drilling	Brush HIT-RB
			
<b>M8</b>	-	10	10
<b>M10</b>	-	12	12
<b>M12</b>	-	14	14
<b>M8</b>	HIT-SC 16x85	16	16
<b>M10</b>	HIT-SC 16x85	16	16
<b>M12</b>	HIT-SC 18x85	18	18

## Setting instructions

### Bore hole drilling

#### Hole drilling

If no significant resistance is felt over the entire depth of the hole when drilling (e.g. in unfilled butt joints), the anchor should not be set at this position.



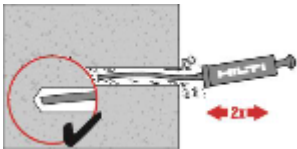
#### In solid bricks: hammer mode

Drill hole to the required embedment depth with a hammer drill set in hammer mode using an appropriately sized carbide drill bit.

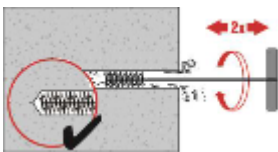
#### Drill hole cleaning

Just before setting an anchor, the drill hole must be free of dust and debris. Inadequate hole cleaning=poor load values.

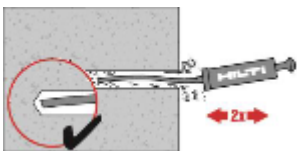
#### Manual cleaning (MC)



Blow out at least 2 times from the back of the drill hole with the Hilti hand pump until return air stream is free of noticeable dust



Brush 2 times with the specified steel brush by inserting the steel brush Hilti HIT-RB to the back of the hole in a twisting motion and removing it. The brush must produce natural resistance as it enters the drill hole (brush  $\varnothing \geq$  drill hole  $\varnothing$ ) - if not the brush is too small and must be replaced with the proper brush diameter.



Blow out again with the Hilti hand pump at least 2 times until return air stream is free of noticeable dust.

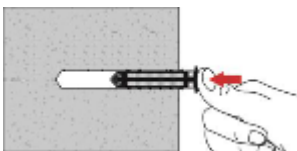
#### Injection preparation

in masonry with holes or voids: installation with sieve sleeve HIT-SC



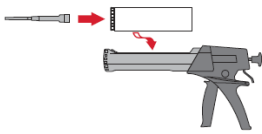
#### Sieve sleeve HIT-SC

Close lid.

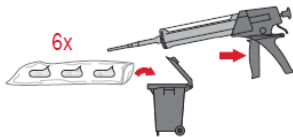


Insert sieve sleeve manually.

**For all applications**



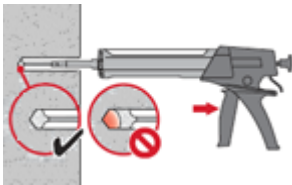
Tightly attach new Hilti mixing nozzle HIT PM to the cartridge and load the cartridge into the Hilti dispensing tool. Do not modify the mixing nozzle. Cut off the foil tube clip before use. Observe the instruction for use of the dispenser and mortar. Do not use damaged cartridges.



Prior to dispensing into the drill hole, squeeze out separately a minimum of six full strokes and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey colour.

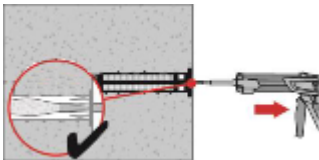
**Inject adhesive** without forming air voids.

**Installation without sieve sleeve**

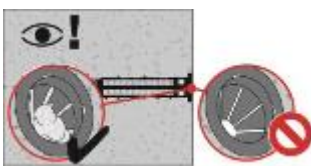


Inject the adhesive starting at the back of the hole, slowly withdrawing the mixer with each trigger pull. Fill holes approximately 2/3 full, or as required to ensure that the annular gap between the anchor and the base material is completely filled with adhesive along the embedment length. After injection is completed, depressurize the dispenser by pressing the release trigger. This will prevent further adhesive discharge from the mixer.

**Installation with sieve sleeve HIT-SC**

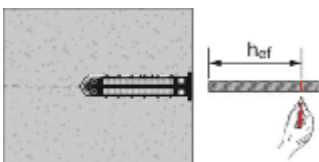


Insert mixer approximately 1 cm through the lid. Inject enough amount of adhesive. Adhesive must emerge through the lid.

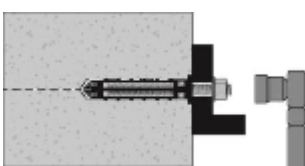


Control amount of injected mortar. Adhesive has to protrude into the lid. After injection is completed, depressurize the dispenser by pressing the release trigger. This will prevent further adhesive discharge from the mixer.

**Setting the element:** Just before setting an anchor, the drill hole must be free of dust and debris.



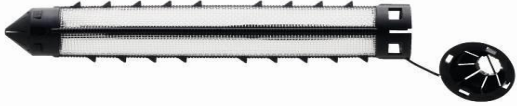



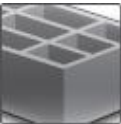
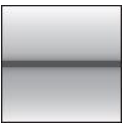
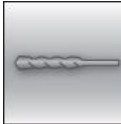
Before use, verify that the element is dry and free of oil and other contaminants. Mark and set element to the required embedment depth until working time  $t_{work}$  has elapsed.



After required curing time  $t_{cure}$  the anchor can be loaded. The applied installation torque shall not exceed the values  $T_{max}$  given.

## Hilti HIT-1 / HIT-1 CE Adhesive Anchor System

Injection mortar system	Benefits
 <p>Hilti HIT-1 / HIT-1 CE 300 ml foil tube cartridge</p>	<ul style="list-style-type: none"> <li>- hollow and solid masonry: clay bricks</li> <li>- two-component hybrid mortar</li> <li>- rapid curing</li> <li>- suitable for overhead fastenings</li> </ul>
 <p>Mixer HIT PM</p>	<ul style="list-style-type: none"> <li>- versatile and convenient handling</li> </ul>
 <p>HIT-V rods</p>	<ul style="list-style-type: none"> <li>- small edge distance and anchor spacing</li> <li>- mortar filling control with HIT-SC sleeves</li> </ul>
 <p>HIT-SC sieve sleeve</p>	<ul style="list-style-type: none"> <li>- in-service temperatures: Short term: max. 80°C Long term: max. 50°C</li> </ul>
 <p>Dispenser: Hilti MD 300 Hilti MD 1000 Hilti CFS-DISP Standard Caulk Gun</p>	

Base material	Load conditions	Installation conditions
 <p>Hollow bricks</p>	 <p>Static/ quasi-static</p>	 <p>Rotary drilling</p>

## Static and quasi-static loading (for a single anchor)

### All data in this section applies to

- Load values valid for holes drilled with TE rotary hammers in rotary mode
- Correct anchor setting (see instruction for use, setting details)
- Steel quality of fastening elements: see data below
- Threaded rods of appropriate size (diameter and length) and a minimum steel quality of 5.6 can be used
- Base material temperature during installation and curing must be between 0°C through +40°C

### Recommended loads

Anchor size	sleeve	effective anchorage depth	40°C/24°C	80°C/50°C	all temp. range
		$h_{ef}$ [mm]	$N_{rec}$ [kN]	$N_{rec}$ [kN]	$V_{rec}$ [kN]
Compressive strength $f_b \geq 28$ N/mm <sup>2</sup>					
M8	HIT-SC 16x85	80	0,25	0,15	0,85
M10	HIT-SC 16x85	80	0,25	0,20	0,85
M12	HIT-SC 18x85	80	0,35	0,20	0,85

Due to the wide variety of bricks, site tests have to be performed for determination of load values for all applications outside of the above mentioned base materials and/or setting conditions.

## Materials

### Material quality

Part	Material
Threaded rod HIT-V 5.8 (F)	Strength class 5.8, A5 > 8% ductile Electroplated zinc coated $\geq 5\mu\text{m}$ (F) Hot dip galvanized $\geq 45\mu\text{m}$
Threaded rod HIT-V 8.8 (F)	Strength class 8.8, A5 > 12% ductile Electroplated zinc coated $\geq 5\mu\text{m}$ (F) Hot dip galvanized $\geq 45\mu\text{m}$
Threaded rod HIT-V-R	Strength class 70 for $\leq M24$ and class 50 for $> M24$ , A5 > 8% ductile Stainless steel 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362
Threaded rod HIT-V-HCR	Strength class 70 for $\leq M24$ and class 50 for $> M24$ , A5 > 8% ductile High corrosion resistance steel 1.4528; 1.4565;
Washer	Electroplated zinc coated $\geq 5\mu\text{m}$ , hot dip galvanized $\geq 45\mu\text{m}$
	Stainless steel 1.4401, 1.4404, 1.4578, 1.4571, 1.4439, 1.4362 EN 10088-1:2014
	High corrosion resistant steel 1.4529, 1.4565 EN 10088-1:2014
Nut	Strength class of nut adapted to strength class of threaded rod. Electroplated zinc coated $\geq 5\mu\text{m}$ , hot dip galvanized $\geq 45\mu\text{m}$
	Strength class of nut adapted to strength class of threaded rod. Stainless steel 1.4401, 1.4404, 1.4578, 1.4571, 1.4439, 1.4362 EN 10088-1:2014
	Strength class of nut adapted to strength class of threaded rod. High corrosion resistant steel 1.4529, 1.4565 EN 10088-1:2014
HIT-SC sleeve	Frame: FPP 20T, Sieve: PA6.6 N500/200

## Setting

**Installation temperature range:**  
0°C to +40°C

### Service temperature range

Hilti HIT-1 / HIT-1 CE injection mortar may be applied in the temperature ranges given below. An elevated base material temperature may lead to a reduction of the design bond resistance.

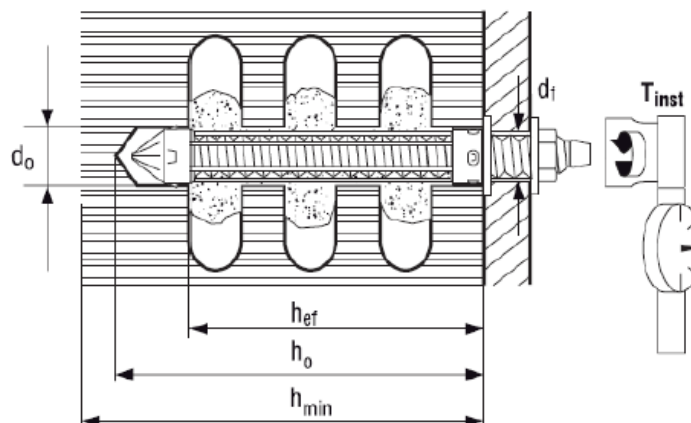
Temperature range	Base material temperature	Maximum long term base material temperature	Maximum short term base material temperature
Temperature range I	-40 °C to +40 °C	+24 °C	+40 °C
Temperature range II	-40 °C to +80 °C	+50 °C	+80 °C

### Working time and curing time:

Temperature of the base material $T_{BM}$	Maximum working time $t_{work}$	Minimum curing time $t_{cure}$
$0^{\circ}\text{C} \leq T_{BM} < 5^{\circ}\text{C}$	45 min	3 h
$5^{\circ}\text{C} \leq T_{BM} < 10^{\circ}\text{C}$	25 min	2 h
$10^{\circ}\text{C} \leq T_{BM} < 20^{\circ}\text{C}$	15 min	100 min
$20^{\circ}\text{C} \leq T_{BM} < 30^{\circ}\text{C}$	6 min	45 min
$30^{\circ}\text{C} \leq T_{BM} < 40^{\circ}\text{C}$	2 min	25 min

### Installation equipment

Anchor – size	M8	M10	M12
Rotary hammer	TE2(-A) – TE30(-A)		
Other tools	Blow out pump Set of cleaning brushes, dispenser		









### Setting details

Anchor type		HIT-V + SC		
Threaded rod – size		M8	M10	M12
Nominal diameter of drill bit	$d_0$ [mm]	16	16	18
Maximum diameter of clearance hole in the fixture	$d_f$ [mm]	9	12	14
Effective anchorage depth	$h_{ef}$ [mm]	80	80	80
Hole depth	$h_0$ [mm]	95	95	95
Minimum base material thickness	$h_{min}$ [mm]	115	115	115
Torque moment	$T_{max}$ [Nm]	4	4	4

### Parameters of cleaning and setting tools

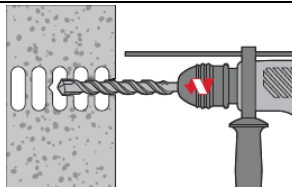
Threaded rod HIT-V-...	Sieve sleeve HIT-SC	Drill and clean [mm]	
		Rotary drilling	Brush HIT-RB
			
<b>M8</b>	HIT-SC 16x85	16	16
<b>M10</b>	HIT-SC 16x85	16	16
<b>M12</b>	HIT-SC 18x85	18	18

## Setting instructions

### Bore hole drilling

#### Hole drilling

If no significant resistance is felt over the entire depth of the hole when drilling (e.g. in unfilled butt joints), the anchor should not be set at this position.



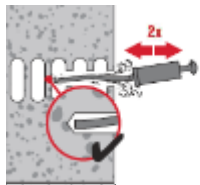
#### In hollow bricks: rotary mode

Drill hole to the required embedment depth with a hammer drill set in rotary mode using an appropriately sized carbide drill bit.

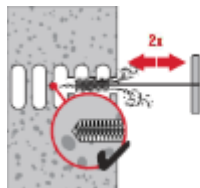
#### Drill hole cleaning

Just before setting an anchor, the drill hole must be free of dust and debris. Inadequate hole cleaning = poor load values.

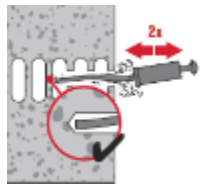
#### Manual cleaning (MC)



Blow out at least 2 times from the back of the drill hole with the Hilti hand pump until return air stream is free of noticeable dust



Brush 2 times with the specified steel brush by inserting the steel brush Hilti HIT-RB to the back of the hole in a twisting motion and removing it. The brush must produce natural resistance as it enters the drill hole (brush  $\varnothing \geq$  drill hole  $\varnothing$ ) - if not the brush is too small and must be replaced with the proper brush diameter.



Blow out again with the Hilti hand pump at least 2 times until return air stream is free of noticeable dust.

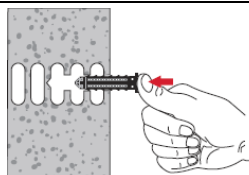
#### Injection preparation

installation with sieve sleeve HIT-SC



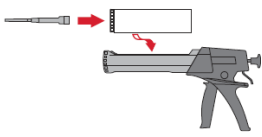
#### Sieve sleeve HIT-SC

Close lid.

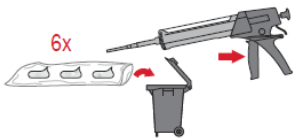


Insert sieve sleeve manually.

**For all applications**



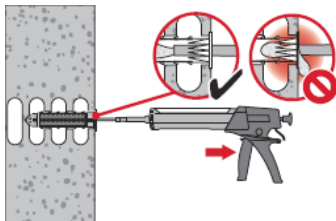
Tightly attach new Hilti mixing nozzle HIT PM to the cartridge and load the cartridge into the Hilti dispensing tool. Do not modify the mixing nozzle. Cut off the foil tube clip before use. Observe the instruction for use of the dispenser and mortar. Do not use damaged cartridges.



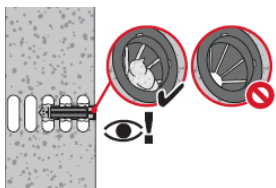
Prior to dispensing into the drill hole, squeeze out separately a minimum of six full strokes and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey colour.

**Inject adhesive** without forming air voids.

**Installation with sieve sleeve HIT-SC**



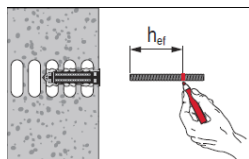
Insert mixer approximately 1 cm through the lid. Inject enough amount of adhesive. Adhesive must emerge through the lid.



Control amount of injected mortar. Adhesive has to protrude into the lid.

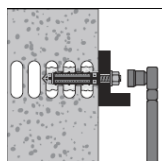
After injection is completed, depressurize the dispenser by pressing the release trigger. This will prevent further adhesive discharge from the mixer.

**Setting the element:** Just before setting an anchor, the drill hole must be free of dust and debris.



Before use, verify that the element is dry and free of oil and other contaminants.

Mark and set element to the required embedment depth until working time  $t_{work}$  has elapsed.



After required curing time  $t_{cure}$  the anchor can be loaded. The applied installation torque shall not exceed the values  $T_{max}$  given.