





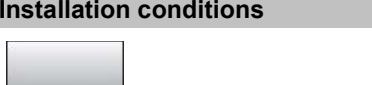


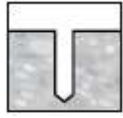
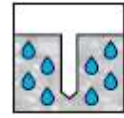
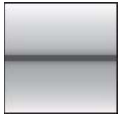



HIT-MM Plus injection mortar

Anchor design (ETAG 001) / Rods&Sleeves / Concrete

Injection mortar system	Benefits
       	<p>Hilti HIT-MM Plus 300 ml foil pack (also available as 500 ml foil pack)</p> <p>Anchor rods: HIT-V HIT-V-F HIT-V-R (M8-M16)</p> <p>Anchor rods: HAS-(E) HAS-(E)R (M8-M16)</p> <p>Internally threaded sleeves: HIS-N (M8-M16)</p> <ul style="list-style-type: none"> - Chemical injection fastening - Two component hybrid mortar - Rapid curing - Suitable for overhead fastenings - Versatile and conventional handling - Clean and simple in use - Small edge distance and anchor spacing - Always correct mixing ratio

Base material	Load conditions
 <p>Concrete (non-cracked)</p>  <p>Dry concrete</p>  <p>Wet concrete</p>	 <p>Static/ quasi-static</p>
Installation conditions	Other information
 <p>Hammer drilling</p>	<div style="border: 2px solid black; padding: 5px; display: inline-block;"> <p>A4 316</p> </div> <p>Corrosion resistance</p>

Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
Hilti Technical Data ^{a)}	Hilti	2017-11-28

a) All data given in this section according to Hilti Technical Data.

Basic loading data (for a single anchor)

Data in this section applies to:

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- Steel failure
- Base material thickness, as specified in the table
- One typical embedment depth, as specified in the table
- One anchor material, as specified in the tables
- Non-cracked concrete C 20/25, $f_{ck,cube} = 25 \text{ N/mm}^2$
- Temperate range I
(min. base material temperature -40°C , max. long term/short term base material temperature: $+24^\circ\text{C}/40^\circ\text{C}$)

Embedment depth and base material thickness for HIT-V and HAS-(E) rods

Threaded rods			M8	M10	M12	M16
Embedment depth	h_{ef}	[mm]	80	90	110	125
Base material thickness	h	[mm]	110	120	140	161

Recommended loads ^{a)} for HIT-V and HAS-(E) rods

Threaded rods			M8	M10	M12	M16
Tension	N_{Rec}	[kN]	5,0	7,0	10,0	12,0

a) The data provided in the table is intended for product comparison only and not suitable for the complete design of an anchorage.

Materials

Material quality for HIT-V

Part	Material
Zinc coated steel	
Threaded rod, HIT-V 5.8 (F) HAS-(E)	Strength class 5.8; Elongation at fracture 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) HAS-(E)R	Strength class 8.8; Elongation at fracture A5 > 12% ductile Electroplated zinc coated $\geq 5\mu\text{m}$; (F) hot dip galvanized $\geq 45 \mu\text{m}$
Washer	Electroplated zinc coated $\geq 5 \mu\text{m}$, hot dip galvanized $\geq 45 \mu\text{m}$
Nut	Strength class of nut adapted to strength class of threaded rod. Electroplated zinc coated $\geq 5\mu\text{m}$, hot dip galvanized $\geq 45 \mu\text{m}$
Stainless Steel	
Threaded rod, HIT-V-R	Strength class 70 for $\leq \text{M}24$ and strength class 50 for $> \text{M}24$; Elongation at fracture A5 > 8% ductile Stainless steel 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362
Washer	Stainless steel 1.4401, 1.4404, 1.4578, 1.4571, 1.4439, 1.4362 EN 10088-1:2014
Nut	Stainless steel 1.4401, 1.4404, 1.4578, 1.4571, 1.4439, 1.4362 EN 10088-1:2014

Material quality for HIS-N

Part	Material	
HIS-N	Internal threaded sleeve	C-steel 1.0718; Steel galvanized $\geq 5 \mu\text{m}$
	Screw 8.8	Strength class 8.8, A5 > 8 % Ductile; Steel galvanized $\geq 5 \mu\text{m}$
HIS-RN	Internal threaded sleeve	Stainless steel 1.4401, 1.4571
	Screw 70	Strength class 70, A5 > 8 % Ductile Stainless steel 1.4401; 1.4404, 1.4578; 1.4571; 1.4439; 1.4362

Setting information

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

In service temperature range

Hilti HIT-HY MM+ injection mortar with anchor rods may be applied in the temperature ranges given below. An elevated base material temperature leads to a reduction of the design bond resistance.

Temperature range	Base material temperature	Max. long term base material temperature	Max. short term base material temperature
Temperature range	-40 °C to + 40 °C	+ 24 °C	+ 40 °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.

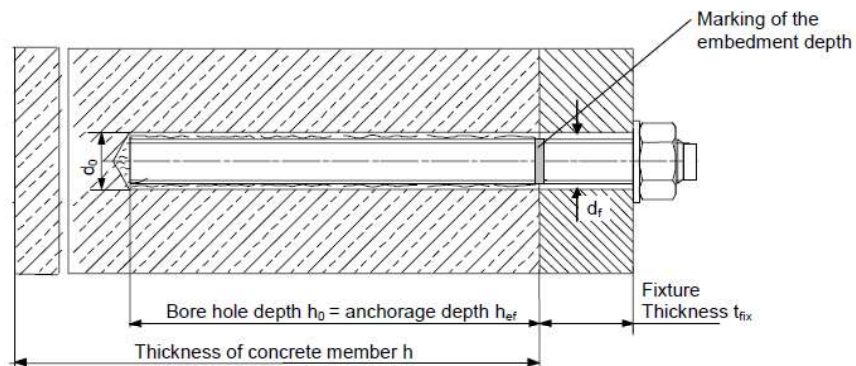
Working time and curing time

Temperature of the base material T	Working time t _{gel}	Minimum curing time t _{cure} ¹⁾
0 °C	10 min	4 h
0 °C < T _{BM} < 5 °C	10 min	2.5 h
5 °C < T _{BM} ≤ 10 °C	8 min	1.5 h
10 °C < T _{BM} ≤ 20 °C	5 min	45 min
20 °C < T _{BM} ≤ 30 °C	3 min	30 min
30 °C < T _{BM} ≤ 40 °C	2 min	20 min

1) The curing time data are valid for dry base material only. In wet base material, the curing times must be doubled.

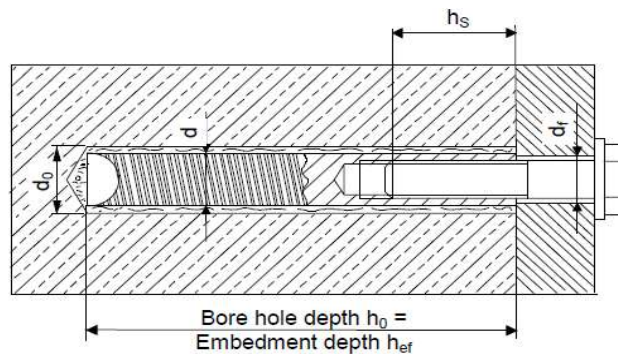
Setting details for HIT-V / HAS

Threaded rods	M8	M10	M12	M16
Nominal diameter of drill bit d ₀ [mm]	10	12	14	18
Effect. anchorage depth h _{ef} [mm]	80	90	110	125
Min. base material thickness: h _{min} [mm]	110	120	140	161
Diameter of clearance hole in the fixture d _f [mm]	9	12	14	18
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



Setting details for HIS-N

Anchor size		M8	M10	M12	M16
Nominal diameter of drill bit	d_0 [mm]	14	18	22	28
Diameter of element	d [mm]	12,5	16,5	20,5	25,4
Effective anchorage depth	h_{ef} [mm]	12,5	16,5	20,5	170
Minimum base material thickness	h_{min} [mm]	120	146	169	226
Diameter of clearance hole in the fixture	d_f [mm]	9	12	14	18
Thread engagement length; min – max	h_s [mm]	8-20	10-25	12-30	16-40
Torque moment	T_{max} [Nm]	10	20	40	80
Minimum spacing	s_{min} [mm]	60	75	90	115
Minimum edge distance	c_{min} [mm]	40	45	55	65



Installation equipment

Anchor size	M8	M10	M12	M16
Rotary hammer	TE2 – TE16			
Other tools	blow out pump, set of cleaning brushes, dispenser			

Drilling and cleaning parameters

HIT-V HAS	HIS-N	Hammer drill	Brush HIT-RB	Piston plug HIT-SZ
		d_0 [mm]	size [mm]	
M8	-	10	10	-
M10	-	12	12	12
M12	M8	14	14	14
M16	M10	18	18	18
-	M12	22	22	22
-	M16	28	28	28

Setting instructions

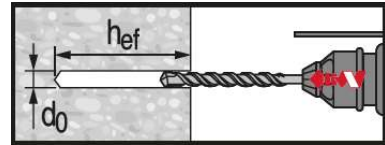
***For detailed information on installation see instruction for use given with the package of the product.**



Safety regulations.

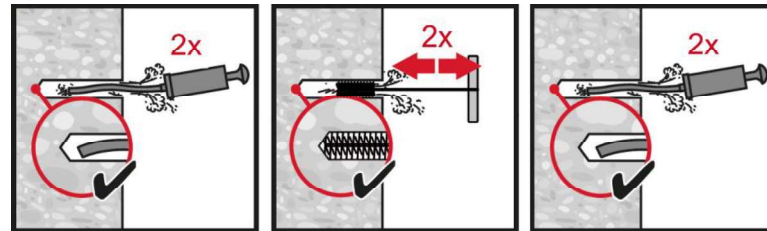
Review the Material Safety Data Sheet (MSDS) before use for proper and safe handling! Wear well-fitting protective goggles and protective gloves when working with Hilti HIT-MM Plus.

Drilling



Hammer drilled hole (HD)

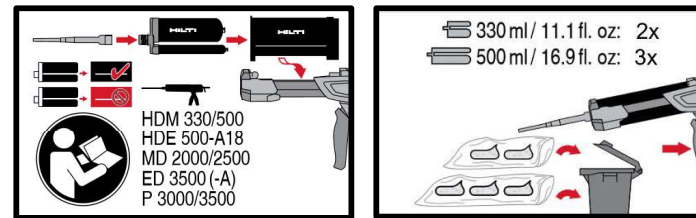
Cleaning



**Manual cleaning (MC)
Non-cracked concrete only**

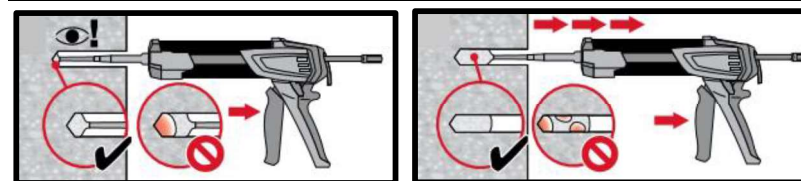
for drill diameters $d_0 \leq 18$ mm and drill hole depth $h_0 \leq 10 \cdot d$.

Injection system



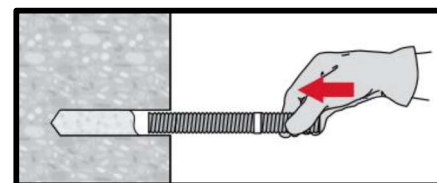
Injection system preparation.

Injection system

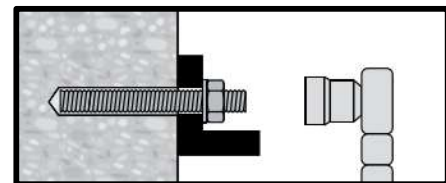


Injection method for drill hole depth
 $h_{ef} \leq 250$ mm.

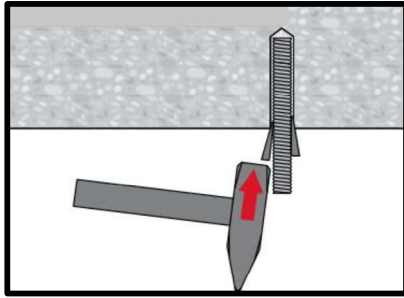
Setting the element



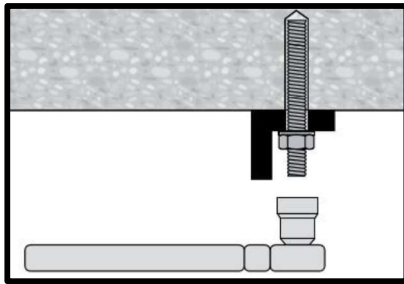
Setting element, observe working time " t_{work} ".



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



Setting element for overhead applications, observe working time “ t_{work} ”



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

Chemical anchors Multimaterial

Mechanical anchors

Plastic/Light duty metal anchors

Insulation anchors