

HIT-MM Plus injection mortar

Anchor design (ETAG 029) / Rods&Sleeves / Masonry

Injection mortar system		Benefits
	Hilti HIT-MM Plus 300 ml foil pack (also available as 500 ml foil pack)	<ul style="list-style-type: none"> - Chemical injection fastening for all type of base materials: - Hollos and solid clay bricks, sand-lime bricks, normal and light weight concrete blocks, aereated light weight concrete, natural stones - Two component hybrid mortar - Rapid curing - Flexible setting depth and fastening thickness - Suitable for overhead fastenings - Versatile and conventional handling - Clean and simple in use - Small edge distance and anchor spacing - Always correct mixing ratio
	Anchor rods: HIT-V HIT-V-R rods (M8-M12)	
	Anchor rods: HAS HAS-E rods (M8-M16)	
	Anchor rods: HIT-IC (M6-M12)	
	Internally threaded sleeves: HIS-N HIS-RN sleeves (M8-M12)	
	Sieve sleeves: HIT-SC (16-22)	

Base material	Load conditions
Solid brick Hollow brick	Static/ quasi-static
Installation conditions	Other information
Hammer / rotary drilling Variable embedment depth Small edge distance and spacing	<div style="border: 2px solid black; padding: 5px; display: inline-block;">A4 316</div> Corrosion resistance

Approvals / certificates

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



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

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 hammering (solid bricks) / rotary (hollow bricks) mode.
- Correct anchor setting (see instruction for use, setting details)
- Steel quality of fastening elements: see data below
- Steel quality for screws for HIT-IC and HIS-N: min. grade 5.8 / HIS-RN: A4-70
- Threaded rods of appropriate size (diameter and length) and a minimum steel quality of 5.6 can be used

Recommended loads $F_{rec}^{b)}$ for pull-out failure in [kN]

Anchor size		HAS / HAS-E / HIT-V				HIT-IC		
		M8	M10	M12	M8	M10	M12	
Solid Masonry								
Solid clay brick Mz12/2,0 DIN 105/ EN 771-1 $f_{b a)} \geq 12 \text{ N/mm}^2$ 	Setting depth [mm]	80	80	80	80	80	80	80
	F_{rec} [kN]	0,9	1,5	1,5	0,9	1,5	1,5	
Hollow Masonry								
Hiz 12 DIN 105/ EN 771-1 $f_{b a)} \geq 12 \text{ N/mm}^2$ 	Sieve Sleeve HIT-	16x...	16x...	18x...	22x...	16x...	16x...	16x...
	Setting depth [mm]	80	80	80	80	80	80	80
	F_{rec} [kN]	0,8	0,8	0,8	0,8	0,8	0,8	0,8

a) f_b = brick strength

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

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, HAS-(E)	Strength class 5.8, EN ISO 898-1, A5 > 8% ductile Steel galvanized $\geq 5 \mu\text{m}$, EN ISO 4042
Threaded rod HIT-V-R / HAS-(E)R	Stainless steel grade A4, strength class 70; A5 > 8% Ductile Stainless steel 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088
HIT-IC sleeve	Carbon steel; galvanized to min. $5 \mu\text{m}$
HIS-N	C-steel 1.0718, EN 10277-3, Steel galvanized $\geq 5 \mu\text{m}$ EN ISO 4042
HIS-RN	Stainless steel 1.4401 and 1.4571 EN 10088
Washer ISO 7089	Steel galvanized EN ISO 4042
	Stainless steel, EN 10088: 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362
Nut EN ISO 4032	Strength class 8 ISO 898-2 Steel galvanized $\geq 5 \mu\text{m}$ EN ISO 4042
	Strength class 70 EN ISO 3506-2, stainless steel grade A4, EN 10088: Stainless steel 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362
HIT-SC sleeve	PA/PP

Setting information

Installation temperature range:

Solid masonry: 5°C to +40°C

Hollow masonry: -5°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 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.

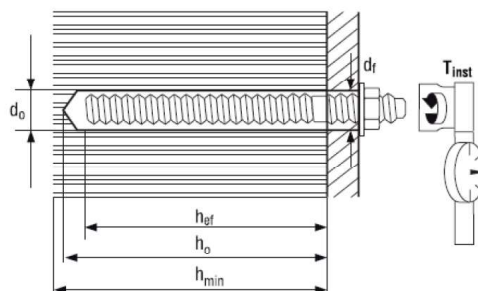
Working time and curing time

Temperature of the base material	Maximum working time t_{work}	Minimum curing time t_{cure}
0 °C < T_{BM} ≤ 5 °C ^{a)}	10 min ^{a)}	6 h ^{a)}
5 °C < T_{BM} ≤ 10 °C	8 min	3 h
10 °C < T_{BM} ≤ 20 °C	5 min	2 h
20 °C < T_{BM} ≤ 30 °C	3 min	60 min
30 °C < T_{BM} ≤ 40 °C	2 min	45 min

a) For hollow bricks only.

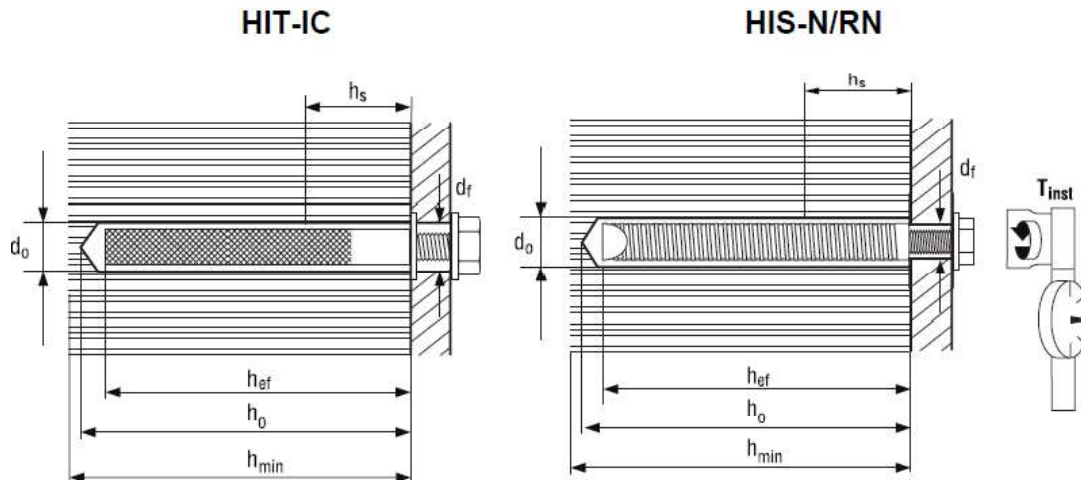
Setting details for solid bricks

Anchor size	HIT-V			HAS / HAS-E / HAS-R				
	M8	M10	M12	M8	M10	M12	M16	
Sieve sleeve	HIT-SC							
Nominal diameter of drill bit	d_0 [mm]	10	12	14	10	12	14	18
Effective anchorage and drill hole depth	h_{ef} [mm]	80	80	80	80	90	110	125
Hole depth	h_0 [mm]	85	85	85	85	95	115	130
Minimum base material thickness	h_{min} [mm]	115	115	115	110	120	140	170
Diameter of clearance hole in the fixture	d_f [mm]	9	12	14	9	12	14	18
Min. spacing	s_{min} [mm]	100	100	100	100	100	100	100
Min. edge distance	c_{min} [mm]	100	100	100	100	100	100	100
Torque moment	T_{max} [Nm]	5	8	10	5	8	10	10
Filling volume	[ml]	4	5	7	4	6	10	15



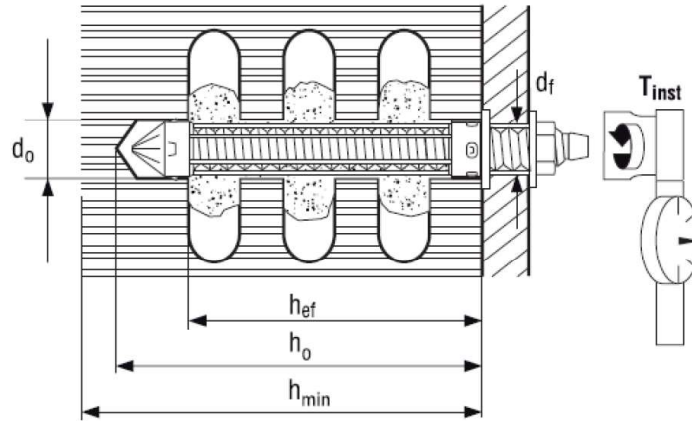
Setting details for solid bricks

Anchor size		HIT-IC			HIS-(R)N		
		M8	M10	M12	M8	M10	M12
Sieve sleeve	HIT-SC	-	-	-	-	-	-
Nominal diameter of drill bit	d_0 [mm]	14	16	18	14	18	22
Effective anchorage and drill hole depth	h_{ef} [mm]	80	80	80	90	110	125
Hole depth	h_0 [mm]	85	85	85	95	115	130
Minimum base material thickness	h_{min} [mm]	115	115	115	120	150	170
Diameter of clearance hole in the fixture	d_f [mm]	9	12	14	9	12	14
Length of bolt engagement	h_s [mm]	min. 10 – max. 75			min. 8 max. 20	min. 10 max. 25	min. 12 max. 30
Min. spacing ^{a)}	s_{min} [mm]	100	100	100	100	100	100
Min. edge distance ^{a)}	c_{min} [mm]	100	100	100	100	100	100
Torque moment	T_{max} [Nm]	5	8	10	5	8	10
Filing volume	[ml]	6	6	6	6	10	16

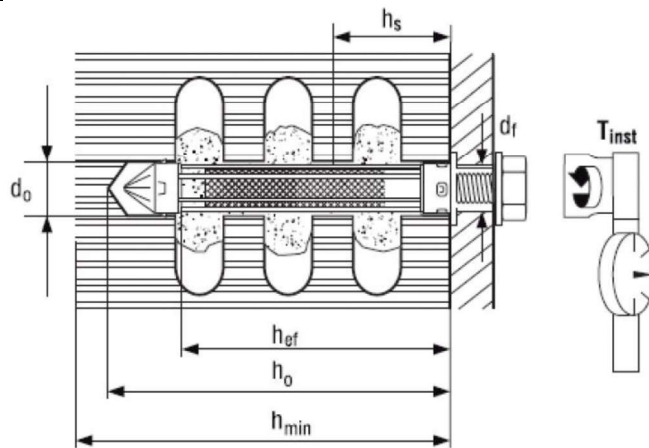


Setting details for hollow bricks

Anchor size		HAS / HIT-V									
		M6		M8		M10		M12			
Sieve sleeve	HIT-SC	12x50	12x85	16x50	16x85	16x50	16x85	18x50	18x85	22x50	22x85
Nominal diameter of drill bit	d_0 [mm]	12	12	16	16	16	16	18	18	22	22
Effective anchorage and drill hole depth	h_{ef} [mm]	50	80	50	80	50	80	50	80	50	80
Hole depth	h_0 [mm]	60	95	60	95	60	95	60	95	60	95
Minimum base material thickness	h_{min} [mm]	80	115	80	115	80	115	80	115	80	115
Diameter of clearance hole in the fixture	d_f [mm]	7	7	9	9	12	12	14	14	14	14
Min. spacing ^{a)}	s_{min} [mm]	100	100	100	100	100	100	100	100	100	100
Min. edge distance ^{a)}	c_{min} [mm]	100	100	100	100	100	100	100	100	100	100
Torque moment	T_{max} [Nm]	3	3	3	3	4	4	6	6	6	6
Filing volume	[ml]	12	24	18	30	18	30	18	36	30	55


Setting details for hollow bricks

Anchor size		HIT-IC		
		M8	M10	M12
Sieve sleeve	HIT-SC	16x85	18x85	22x85
Nominal diameter of drill bit	d_o [mm]	16	18	22
Effective anchorage and drill hole depth	h_{ef} [mm]	80	80	80
Hole depth	h_o [mm]	95	95	95
Minimum base material thickness	h_{min} [mm]	115	115	115
Diameter of clearance hole in the fixture	d_f [mm]	9	12	14
Length of bolt engagement	h_s [mm]	min. 10 – max. 75		
Min. spacing ^{a)}	s_{min} [mm]	100	100	100
Min. edge distance ^{a)}	c_{min} [mm]	100	100	100
Torque moment	T_{max} [Nm]	3	4	6
Filing volume	[ml]	30	36	45



Drilling and cleaning parameters for solid bricks

HIT-V HAS	HIT-IC	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	M8	14	14	14
-	M10	-	16	16	16
M16 ^{a)}	M12	M10	18	18	18
-	-	M12	22	22	22

a) Only for HAS (-E) threaded rods.

Drilling and cleaning parameters for hollow bricks

HIT-V (-R) HAS (-E) + sieve sleeve	HIT-IC + sieve sleeve	Hammer drill	Brush HIT-RB	Piston plug HIT-SZ
		d_0 [mm]	size [mm]	
M6	-	12	12	12
M8	-	16	16	16
M10	M8	16	16	16
M12	M10	18	18	18
M12 ^{a)}	M12	22	22	22

b) M12 with sieve sleeve SC22x50

Setting instructions

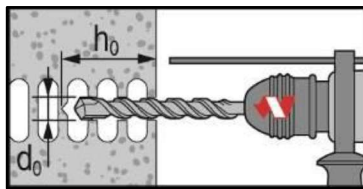
*For detailed information on installation see instruction for use given with the package of the product.



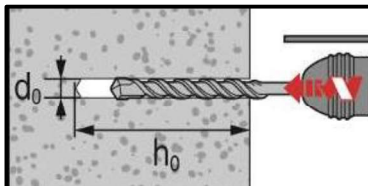
Safety regulations.

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-HY MM+.

Drilling

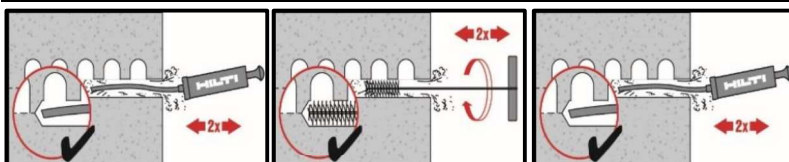


In hollow bricks: rotary mode



In solid bricks: hammer mode

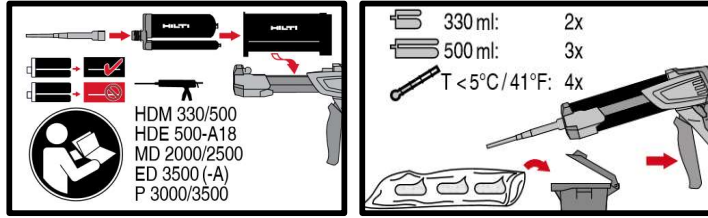
Cleaning



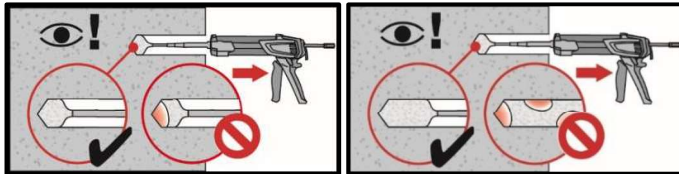
Manual cleaning (MC)

Instructions for solid bricks without sieve sleeve

Injection system

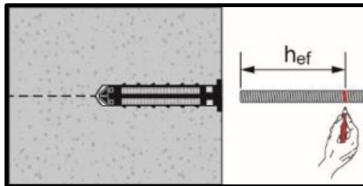


Injection system preparation.

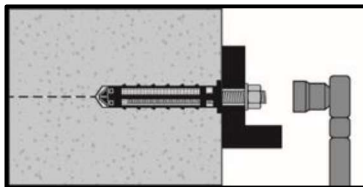


Injection method for drill hole

Setting the element



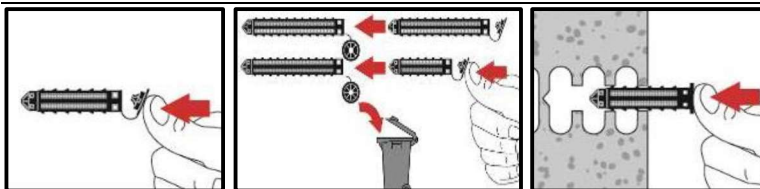
Presetting element, observe working time " t_{work} ".



Loading the anchor: After required curing time t_{cure} the anchor can be loaded.

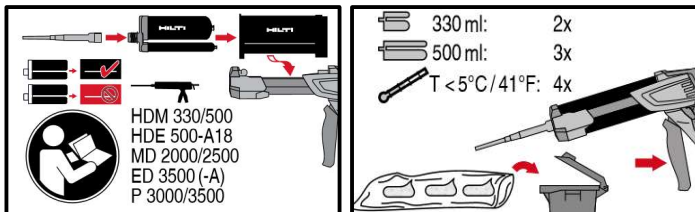
Instructions for hollow and solid bricks with sieve sleeve

Preparation of the sieve sleeve



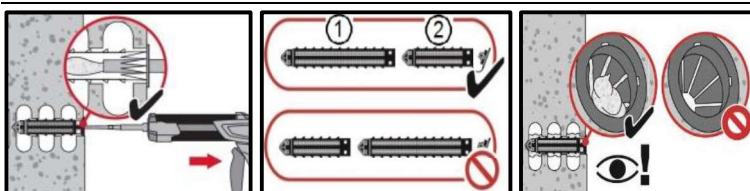
Close lid and insert sieve sleeve manually

Injection system



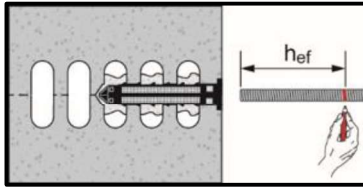
Injection system preparation.

Injection system: hollow bricks

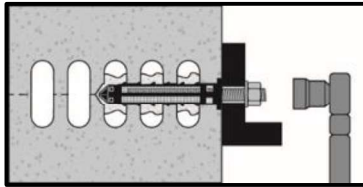


Installation with sieve sleeve HIT-SC

Setting the element



Presetting element, observe working time " t_{work} ",



Loading the anchor: After required curing time t_{cure} the anchor can be loaded.

Chemical anchors Multimaterial

Mechanical anchors

Plastic/Light duty metal anchors

Insulation anchors