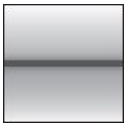
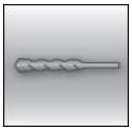
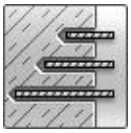
Hilti HIT-RE 10 mortar with rebar

(as post-install connection)

Injection mortar system	Benefits
 Hilti HIT-RE 10 580 ml hard cartridges  Static mixer  Rebar B500 B (ϕ8 - ϕ32)	- suitable for non-cracked concrete C20/25 to C50/60 - suitable for dry and water saturated concrete - suitable for overhead fastenings

Base material	Load conditions
 Concrete (non-cracked)  Dry concrete  Wet concrete	 Static/ quasi-static
Installation conditions	**Other information**
 Hammer drilling  Variable embedment depth	CRT Corrosion resistance tested

Static and quasi-static loading

Pre-calculated values[1] – anchorage length
Rebar yield strength f_{yk} =500 N/mm², concrete C25/30, good bond conditions

Rebar-size	Anchorage length l_{bd} [mm]	Design value N_{Rd} [kN]	Mortar volume[2] V_M [ml]		Overlap length l_0 [mm]	Design value N_{Rd} [kN]	Mortar volume[2] V_M [ml]
ϕ8	*150*	*10,2*	(6)[3] 12		*300*	*20,4*	(11)[3] 23
	250	17,0	(9)[3] 19		310	21,0	(11)[3] 24
	322	**21,9**	(11)[3] 24		**322**	**21,9**	(11)[3] 25
ϕ10	*181*	*15,4*	(8)[3] 17		*300*	*25,4*	(13)[3] 28
	310	26,3	(13)[3] 29		350	29,7	(15)[3] 32
	403	**34,1**	(17)[3] 37		**403**	**34,1**	(17)[3] 37
ϕ12	*217*	*22,1*	(11)[3] 23		*300*	*30,5*	(15)[3] 32
	370	37,7	(19)[3] 40		400	40,7	(20)[3] 43
	483	**49,2**	(24)[3] 51		**483**	**49,2**	(24)[3] 51
ϕ14	*254*	*30,1*	31		*315*	*37,4*	39
	350	41,6	43		400	47,5	49
	500	59,4	61		500	59,4	61
ϕ16	*290*	*39,3*	40		*360*	*48,9*	49
	400	54,3	55		400	54,3	55
	500	67,9	68		500	67,9	68
ϕ20	*362*	*61,5*	77		*450*	*76,3*	96
	420	71,3	90		470	79,7	100
	500	84,8	107		500	84,8	107

1) Values italic letters correspond to the minimum anchorage length. The maximum permissible load (bold letters) is valid for “good bond conditions” as described in EN 1992-1-1. For all other conditions multiply by the value by 0,7.
2) Mortar volume according to the equation: $1{,}2\cdot(d_0^2-d_s^2)\cdot\pi\cdot l_{bd/0}/4$.
3) Value of mortar volume corresponds with minimal nominal diameter of drill bit (see table “Installation equipment”).

Fitness for use

Creep tests have been conducted in accordance with EAD 330087-00-0601 and TR 023 in the following conditions: **in dry environment at 43 °C during 90 days.**
These tests show an excellent behaviour of the post-installed connection made with HIT-RE 10: low displacements

Durability of Hilti-RE 10 injection mortar:

Condition	Comment	Resistance
Sulphurous atmosphere	23°C	+
High alkalinity	pH = 13,2, 23°C	+

Corrosion resistance of post-installed rebar:
Post-installed rebar connections made with Hilti-RE 10 injection mortar provide the same corrosion resistance as a cast-in-place rebar.

Installation temperature range:
+10°C to +40°C

Service temperature range
Hilti HIT-RE 10 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 +43 °C	+20 °C	+43 °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}	Initial curing time $t_{cure,ini}$ a)	Minimum curing time t_{cure} a)
5˚C ≤ T_{BM} ≤ 10˚C	5 h	30 h	72 h
10˚C < T_{BM} ≤ 15˚C	2,5 h	20 h	48 h
15˚C < T_{BM} ≤ 20˚C	2 h	15 h	36 h
20˚C < T_{BM} ≤ 30˚C	60 min	10 h	24 h
30˚C < T_{BM} ≤ 40˚C	30 min	5 h	12 h

a) The curing time data are valid for dry anchorage base only. For water saturated anchorage bases the curing times must be doubled.

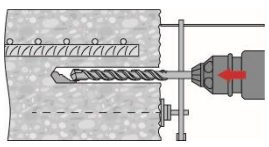
Setting

Installation equipment

Rebar – size		ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25	ϕ28	ϕ32
Nominal diameter of drill bit	d_0 [mm]	(10) 12b)	(12) 14b)	(14) 16b)	18	20	25	32	35	40
Rotary hammer		TE2(-A) – TE30(-A)					TE40 – TE80			
Other tools		Blow out pump (h_{ef} ≤ 10·d)					-			
		Compressed air gunc)								
		Set of cleaning brushesd), dispenser, piston plug								

b) Both given drill bit diameter can be used.
c) Compressed air gun with extension hose for all drill holes deeper than 250 mm (for ϕ 8 to ϕ 12) or deeper than 20·ϕ (for ϕ > 12 mm).
d) Automatic brushing with round brush for all drill holes deeper than 250 mm (for ϕ 8 to ϕ 12) or deeper than 20·ϕ (for ϕ > 12 mm).

Minimum concrete cover c_{min} of the post-installed rebar

Drilling method	Rebar – size [mm]	Minimum concrete cover c_{min} [mm]		
		Without drilling aid	With drilling aid	
Hammer drilling	ϕ < 25	30 + 0,06 · l_v ≥ 2 · ϕ	30 + 0,02 · l_v ≥ 2 · ϕ	
	ϕ ≥ 25	40 + 0,06 · l_v ≥ 2 · ϕ	40 + 0,02 · l_v ≥ 2 · ϕ	

Dispenser and corresponding maximum embedment depth $\ell_{v,max}$

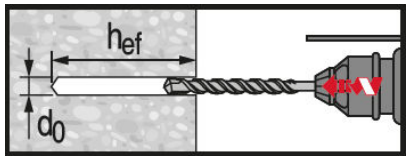
Rebar – size [mm]	Dispenser (HDM 500, HDE 500-A)
	$\ell_{v,max}$ [mm]
ϕ8 - ϕ32	500

Setting instructions

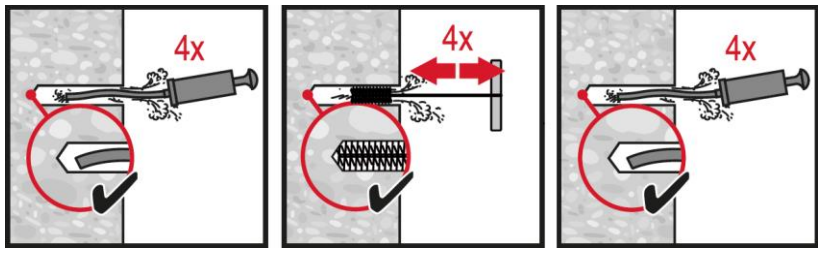
***For detailed information on installation see instruction for use given with the package of the product.**

Safety regulations.

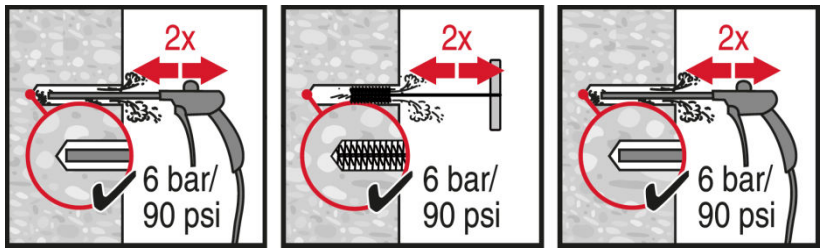
Review the Material Safety Data Sheet (MSDS) before use for proper and safe handling! Wear well-fitting protective goggles and protective gloves when working with Hilti HIT-RE 10.



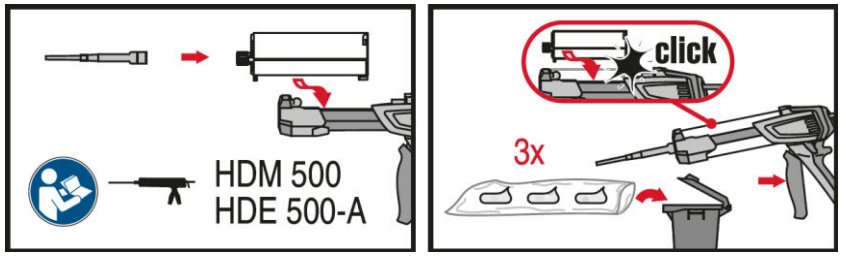
Hammer drilled hole



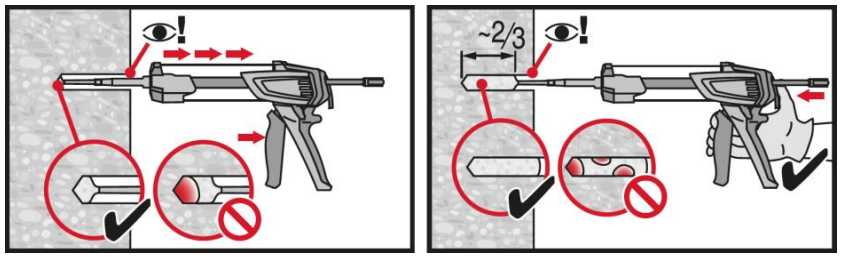
Manual cleaning (MC)
for drill diameters $d_0 \leq 20$ mm and drill hole depth $h_0 \leq 10 \cdot d$.



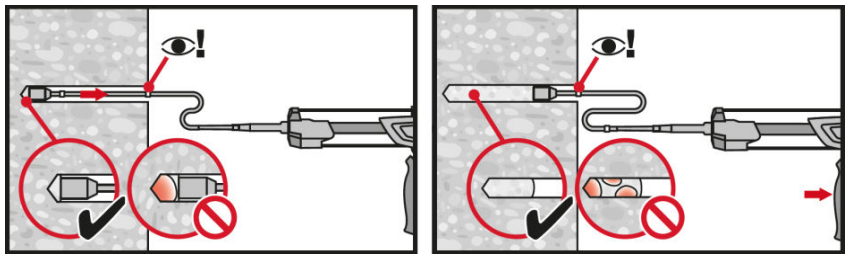
Compressed air cleaning (CAC)
for all drill hole diameters d_0 and drill hole depths $h_0 \leq 20 \cdot d$.



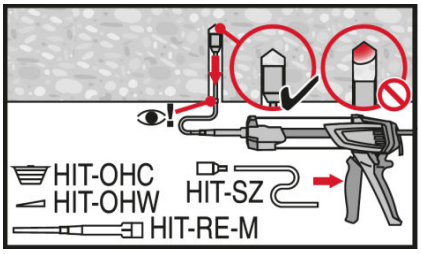
Injection system preparation.

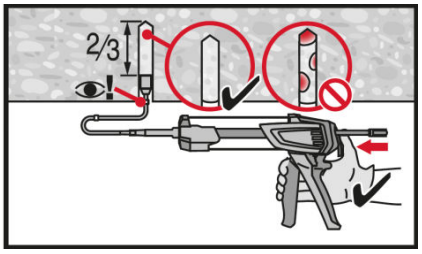


Injection method for drill hole depth $h_{ef} \leq 250$ mm.

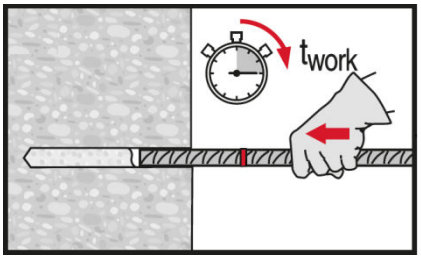


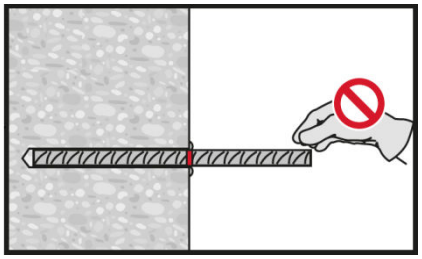
Injection method for drill hole depth $h_{ef} > 250$mm.



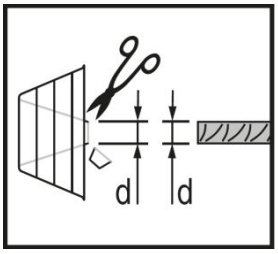


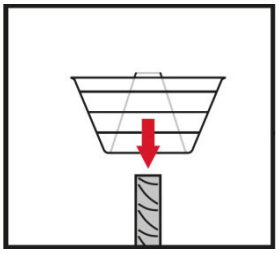
Injection method for overhead application.

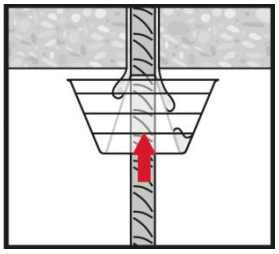


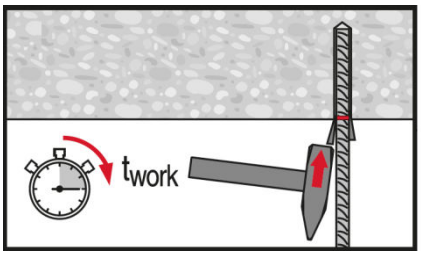


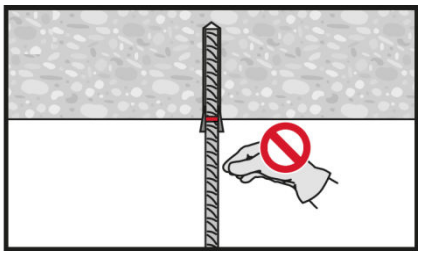
Setting element, observe working time "t_{work}".



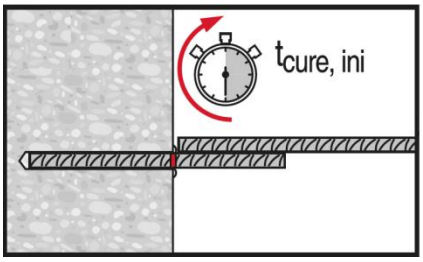


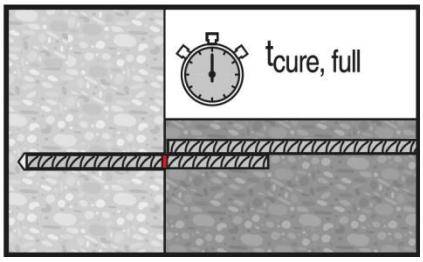






Setting element for overhead applications, observe working time "t_{work}".





Apply full load only after curing time "t_{cure}".