HIT-HY 110
INJECTION MORTAR

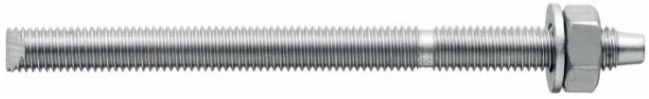
Technical Datasheet

Update: Jan-23

HIT-HY 110 injection mortar

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

Injection mortar system



Hilti HIT-HY 110

330 ml foil pack (also available as 500 ml and 1.400 ml foil pack)

Anchor rod:
HIT-V
HIT-V-F
HIT-V-R
HIT-V-HCR
(M8-M30)

Anchor rod:
HAS-(E)
HAS-(E)R
HAS-(E)RHCR
(M8-M30)

Internally threaded sleeve:
HIS-N
HIS-RN
(M8-M20)

Benefits

- Suitable non-cracked concrete C 20/25 to C 50/60
- High corrosion [a] / corrosion ressitant
- Suitable for dry and water saturated concrete
- Small edge distance and anchor spacing possible
- Large diameter applications
- In service temperature rangeup to 120°C short term / 72°C long term

a) Applications only for HIT-V rods

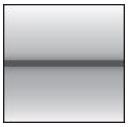
Base material


Concrete (non-cracked)


Dry concrete

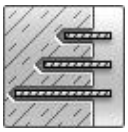

Wet concrete

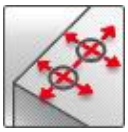
Load conditions


Static/ quasi-static

Installation conditions


Hammer drilling


Variable embedment depth


Small edge distance and spacing

Other informations


European Technical Assessment


CE conformity

Corrosion resistance

High corrosion resistance [a]

a) Applications only for HIT-V rods

Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
European technical assessment [a]	DIBt, Berlin	ETA-08/0341 / 2013-03-18

a) All data given in this section according to ETA-08/0341 issue 2013-03-18.

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

All 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
- Concrete C 20/25, $f_{ck,cube}$ = 25 N/mm²
- Temperate range I
  (min. base material temperature -40°C, max. long term/short term base material temperature: +24°C/40°C)

Embedment depth and base material thickness

Anchor size		M8	M10	M12	M16	M20	M24	M27	M30
HIT-V									
Typical embedment depth h_{ef}	[mm]	80	90	110	125	170	210	240	270
Base material thickness h	[mm]	110	120	140	165	220	270	300	340
HIS-N									
Typical embedment depth	[mm]	90	110	125	170	205	-	-	-
Base material thickness h	[mm]	120	150	170	230	270	-	-	-

Characteristic resistance

Anchor size			M8	M10	M12	M16	M20	M24	M27	M30
Tension N_{Rk}	HIT-V 5.8	[kN]	*18,0*	*29,0*	*42,0*	56,5	90,8	126,7	152,7	178,1
	HIS-N 8.8		*25,0*	40,0	60,0	119,0	*109,0*	-	-	-
Shear V_{Rk}	HIT-V 5.8	[kN]	*9,0*	*15,0*	*21,0*	*39,0*	*61,0*	*88,0*	*115,0*	*140,0*
	HIS-N 8.8		*13,0*	*23,0*	*39,0*	*59,0*	*55,0*	-	-	-

Design resistance

Anchor size			M8	M10	M12	M16	M20	M24	M27	M30
Tension N_{Rd}	HIT-V 5.8	[kN]	12,0	17,3	25,3	26,9	43,2	60,3	72,7	84,8
	HIS-N 8.8		17,5	26,7	40,0	62,2	74,1	-	-	-
Shear V_{Rd}	HIT-V 5.8	[kN]	7,2	12,0	16,8	31,2	48,8	70,4	92,0	112,0
	HIS-N 8.8		10,4	18,4	26,0	39,3	36,7	-	-	-

Recommended loads [a)]

Anchor size			M8	M10	M12	M16	M20	M24	M27	M30
Tension N_{Rec}	HIT-V 5.8	[kN]	8,6	12,3	18,1	19,2	30,9	43,1	51,9	60,6
	HIS-N 8.8		12,5	19,0	28,6	44,4	53,0	-	-	-
Shear V_{Rec}	HIT-V 5.8	[kN]	5,1	8,6	12,0	22,3	34,9	50,3	65,7	80,0
	HIS-N 8.8		7,4	13,1	18,6	28,1	26,2	-	-	-

a) With overall partial safety factor for action γ=1,4. The partial safety factors for action depend on the type of loading and shall be taken from national regulations.

Materials

Mechanical properties for HIT-V and HAS

Anchor size			M8	M10	M12	M16	M20	M24	M27	M30
Nominal tensile strength f_{uk}	HIT-V 5.8 HAS-(E) 5.8	[N/mm²]	500	500	500	500	500	500	500	500
	HIT-V 8.8		800	800	800	800	800	800	800	800
	HIT-V-R HAS-(E)R		700	700	700	700	700	700	500	500
	HIT-V-HCR HAS-(E)-HCR		800	800	800	800	800	700	700	700
Yield strength f_{yk}	HIT-V 5.8 HAS-(E) 5.8	[N/mm²]	400	400	400	400	400	400	400	400
	HIT-V 8.8 HAS-(E) 8.8		640	640	640	640	640	640	640	640
	HIT-V-R HAS-(E)R		450	450	450	450	450	450	210	210
	HIT-V-HCR HAS-(E)-HCR		600	600	600	600	600	400	400	400
Stressed cross-section A_s	HIT-V	[mm²]	36,6	58,0	84,3	157	245	353	459	561
	HAS-(E)		32,8	52,3	76,2	144,0	225,0	324,0	427	519
Moment of resistance W	HIT-V	[mm³]	31,2	62,3	109	277	541	935	1387	1874
	HAS-(E)		27,0	54,1	93,8	244,0	474,0	809,0	1274	1706

Mechanical properties for HIS-N

Anchor size			M8	M10	M12	M16	M20
Nominal tensile strength f_{uk}	HIS-N	[N/mm²]	490	490	460	460	460
	Screw 8.8		800	800	800	800	800
	HIS-RN		700	700	700	700	700
	Screw A4-70		700	700	700	700	700
Yield strength f_{yk}	HIS-N	[N/mm²]	410	410	375	375	375
	Screw 8.8		640	640	640	640	640
	HIS-RN		350	350	350	350	350
	Screw A4-70		450	450	450	450	450
Stressed cross-section	HIS-(R)N	[mm²]	51,5	108,0	169,1	256,1	237,6
	Screw		36,6	58	84,3	157	245
Moment of resistance W	HIS-(R)N	[mm³]	145	430	840	1595	1543
	Screw		31,2	62,3	109	277	541

Material quality for HIT-V

Part	Material
Zinc coated steel	
Threaded rod, HIT-V 5.8 (F) HAS-(E) M8 to M24	Strength class 5.8; Elongation at fracture A5 > 8% ductile Electroplated zinc coated ≥ 5μm; (F) hot dip galvanized ≥ 45 μm
Threaded rod, HIT-V 8.8 (F) HAS-(E) M27 to M30	Strength class 8.8; Elongation at fracture A5 > 12% ductile Electroplated zinc coated ≥ 5μm; (F) hot dip galvanized ≥ 45 μm
Washer	Electroplated zinc coated ≥ 5 μm, hot dip galvanized ≥ 45 μm
Nut	Strength class of nut adapted to strength class of threaded rod. Electroplated zinc coated ≥ 5μm, hot dip galvanized ≥ 45 μm
Stainless Steel	
Threaded rod, HIT-V-R HAS-(E)R	Strength class 70 for ≤ M24 and strength class 50 for > M24; 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
High corrosion resistant steel	
Threaded rod, HIT-V-HCR HAS-(E)HCR	Strength class 80 for ≤ M20 and class 70 for > M20, Elongation at fracture A5 > 8% ductile High corrosion resistance steel 1.4529; 1.4565;
Washer	High corrosion resistant steel 1.4529, 1.4565 EN 10088-1:2014
Nut	High corrosion resistant steel 1.4529, 1.4565 EN 10088-1:2014

Material quality for HIS-N

Part		Material
HIS-N	Internal threaded sleeve	C-steel 1.0718 Steel galvanized ≥ 5 μm
	Screw 8.8	Strength class 8.8, A5 > 8 % Ductile Steel galvanized ≥ 5 μm
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:
-5°C to +40°C

In service temperature range
Hilti HIT-HY 110 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	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
Temperature range II	-40 °C to + 120 °C	+ 72 °C	+ 120 °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.

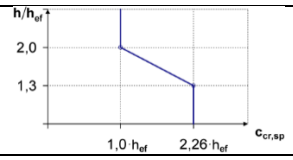
Working time and curing time

Temperature in the anchorage base	Maximum working time t_{work}	Minimum curing time t_{cure}
-5°C < T_{BM} ≤ 0°C	90 min	9 h
0°C < T_{BM} ≤ 5°C	45 min	4,5 h
5°C < T_{BM} ≤ 10°C	25 min	2 h
10°C < T_{BM} ≤ 20°C	6 min	90 min
20°C < T_{BM} ≤ 30°C	4 min	50 min
30°C < T_{BM} ≤ 40°C	2 min	40 min

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

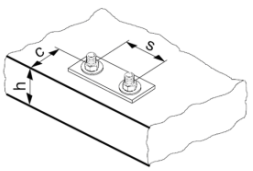
Setting details for HIT-V and HAS

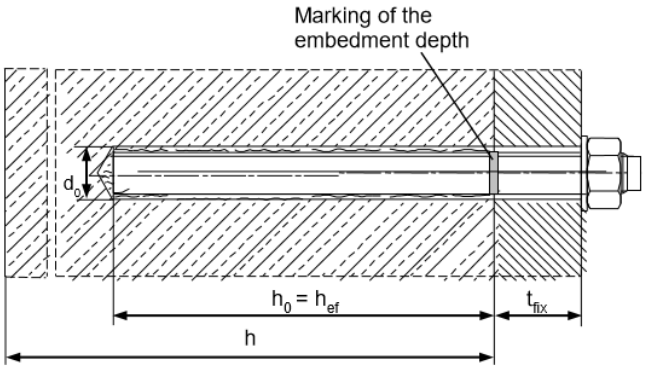
Anchor size			M8	M10	M12	M16	M20	M24	M27	M30
Nominal diameter of drill bit	d_0	[mm]	10	12	14	18	22	28	30	35
Diameter of element	d	[mm]	8	10	12	16	20	24	27	30
Effective anchorage and drill hole depth [a] for HIT-V	$h_{ef,min}$	[mm]	60	60	70	80	90	100	110	120
	$h_{ef,max}$		160	200	240	320	400	480	540	600
Effective anchorage and drill hole depth [a] for HAS	h_{ef}	[mm]	80	90	110	125	170	210	240	270
Minimum base material thickness	h_{min}	[mm]	h_{ef} + 30			h_{ef} + 2 d_0				
Diameter of clearance hole in the fixture	d_f ≤	[mm]	9	12	14	18	22	26	30	33
Torque moment [b]	T_{max}	[Nm]	10	20	40	80	150	200	270	300
Min. spacing	s_{min}	[mm]	40	50	60	80	100	120	135	150
Min. edge distance	c_{min}	[mm]	40	50	60	80	100	120	135	150
Critical spacing for splitting failure	$s_{cr,sp}$	[mm]	2 $c_{cr,sp}$							
Critical edge distance for splitting failure [c]	$c_{cr,sp}$	[mm]	**1,0 · h_{ef}** for h / h_{ef} ≥ 2,0 **4,6 h_{ef} - 1,8 h** for 2,0 > h / h_{ef} > 1,3 **2,26 h_{ef}** for h / h_{ef} ≤ 1,3							
Critical spacing for concrete cone failure	$s_{cr,N}$	[mm]	2 $c_{cr,N}$							
Critical edge distance for concrete cone failure [d]	$c_{cr,N}$	[mm]	1,5 h_{ef}							



For spacing (edge distance) smaller than critical spacing (critical edge distance) the design loads have to be reduced.

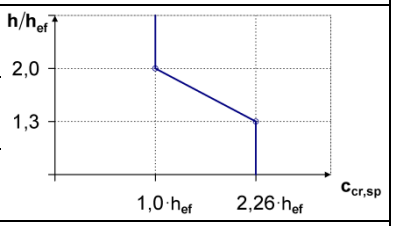
a) $h_{ef,min}$ ≤ h_{ef} ≤ $h_{ef,max}$ (h_{ef}: embedment depth)
b) Maximum recommended torque moment to avoid splitting failure during installation with minimum spacing anchor edge distance
c) h: base material thickness (h ≥ h_{min})
d) The critical edge distance for concrete cone failure depends on the embedment depth h_{ef} and the design bond resistance. The simplified formula given in this table is on the save side.





Setting details for HIS-N

Anchor size			**M8**	**M10**	**M12**	**M16**	**M20**
Nominal diameter of drill bit	d_0	[mm]	14	18	22	28	32
Diameter of element	d	[mm]	12,5	16,5	20,5	25,4	27,6
Effective anchorage and drill hole depth	h_{ef}	[mm]	90	110	125	170	205
Minimum base material thickness	h_{min}	[mm]	120	150	170	230	270
Diameter of clearance hole in the fixture	d_f	[mm]	9	12	14	18	22
Thread engagement length min-max	h_s	[mm]	8-20	10-25	12-30	16-40	20-50
Min. spacing	s_{min}	[mm]	40	45	55	65	90
Min. edge distance	c_{min}	[mm]	40	45	55	65	90
Critical spacing for splitting failure	$s_{cr,sp}$	[mm]	$2\ c_{cr,sp}$				
Critical edge distance for splitting failure [a]	$c_{cr,sp}$	[mm]	**$1,0 \cdot h_{ef}$** for $h / h_{ef} \geq 2,0$ **$4,6\ h_{ef} - 1,8\ h$** for $2,0 > h / h_{ef} > 1,3$ **$2,26\ h_{ef}$** for $h / h_{ef} \leq 1,3$				
Critical spacing for concrete cone failure	$s_{cr,N}$	[mm]	$2\ c_{cr,N}$				
Critical edge distance for concrete cone failure [b]	$c_{cr,N}$	[mm]	$1,5\ h_{ef}$				
Torque moment [c]	T_{max}	[Nm]	10	20	40	80	150

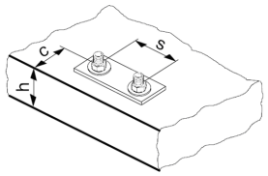


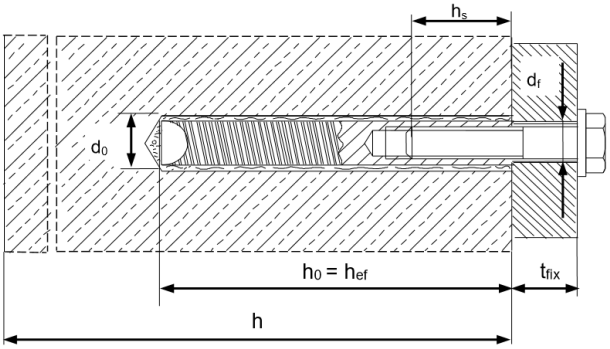
For spacing (edge distance) smaller than critical spacing (critical edge distance) the design loads have to be reduced.

a) h: base material thickness ($h \geq h_{min}$), h_{ef}: embedment depth

b) The critical edge distance for concrete cone failure depends on the embedment depth h_{ef} and the design bond resistance. The simplified formula given in this table is on the save side.

c) Maximum recommended torque moment to avoid splitting failure during installation with minimun spacing and/or edge distance.





Installation equipment

Anchor size		M8	M10	M12	M16	M20	M24	M27	M30
Rotary hammer	HIT-V / HAS	TE 2– TE 30				TE 40 – TE 80			
	HIS-N	TE 2– TE 30		TE 40 – TE 80			-		
Other tools		compressed air gun or 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
M20	**M12**	22	22	22
M24	**M16**	28	28	28
M27	**-**	30	30	30
-	**M20**	32	32	32
M30	**-**	35	35	35

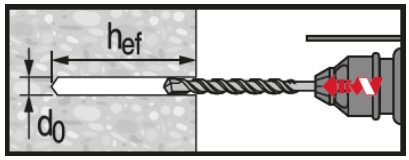
Setting instructions

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

Safety regulations.

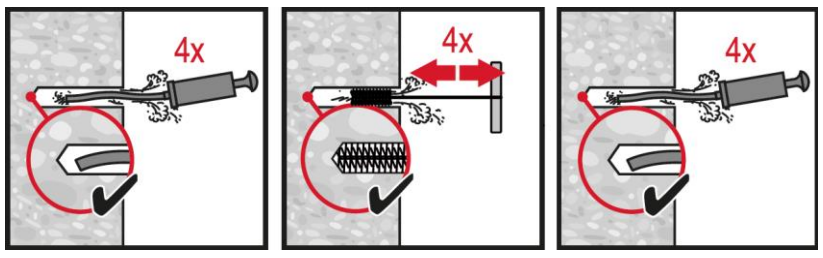
Review the Material Safety Data Sheet (MSDS) before use for proper and safe handling! Wear well-fitting protective goggles and protective gloves when working with Hilti HIT-HY 110.

Drilling



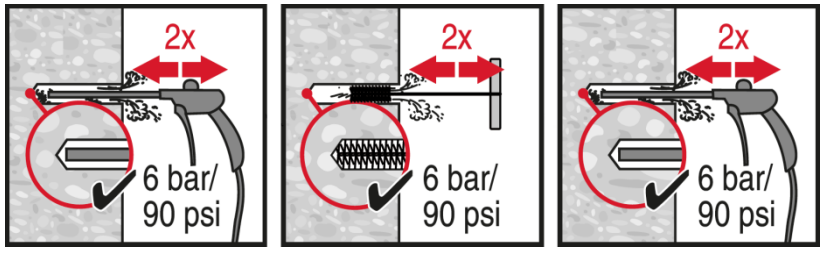
Hammer drilled hole (HD)

Cleaning



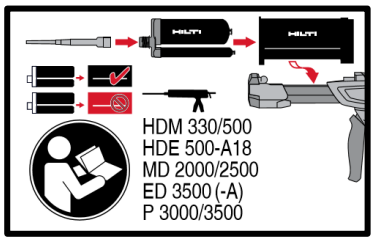
Manual cleaning (MC)
Non-cracked concrete only

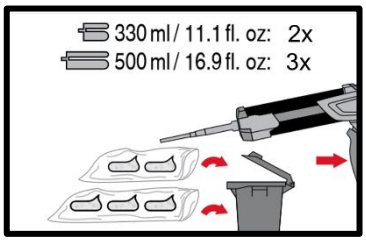
for drill diameters $d_0 \leq 18$ mm and drill hole depth $h_0 \leq 10 \cdot d$ or $h_0 \leq 160$.



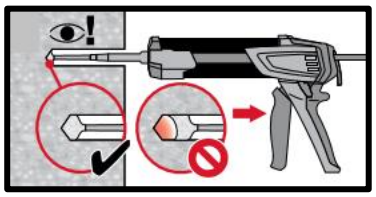
Compressed air cleaning (CAC)
for all drill hole diameters d_0 and drill hole depths h_0.

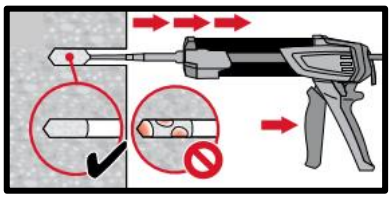
Injection system



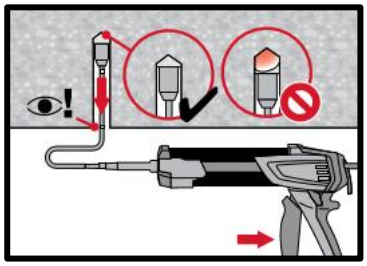


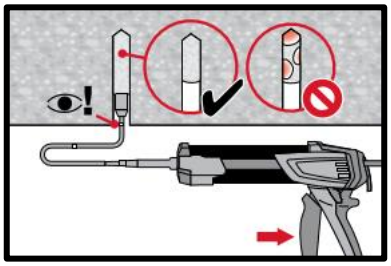
Injection system preparation.





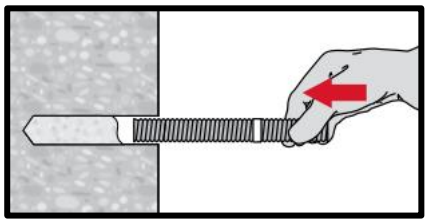
Injection method for drill hole depth $h_{ef} \leq 250$ mm.



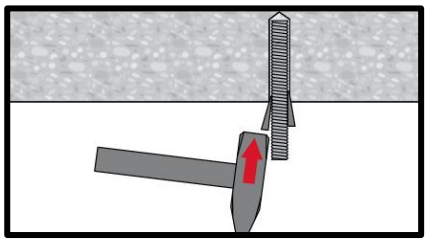


Injection method for overhead application or installation with embedment depth $h_{ef} > 250$mm.

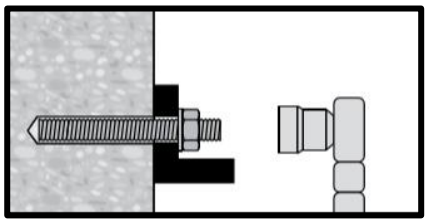
Setting the element



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



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

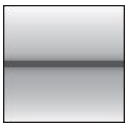


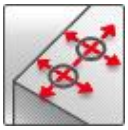
Loading the anchor: After required curing time t_{cure} the anchor can be loaded.

HIT-HY 110 injection mortar

Anchor design (ETAG 001) / Rebar elements / Concrete

Injection mortar system		Benefits
	Hilti HIT-HY 110 330 ml foil pack (also available as 500 ml and 1.400 ml foil pack)	- Suitable non-cracked concrete C 20/25 to C 50/60 - Suitable for dry and water saturated concrete - Small edge distance and anchor spacing possible - Large diameter applications - In service temperature range up to 120°C short term / 72°C long term
	Rebar B St 500 S (ϕ8-ϕ25)	

Base material			Load conditions
			
Concrete (non-cracked)	Dry concrete	Wet concrete	Static/ quasi-static

Installation conditions			Other informations	
				
Hammer drilling	Variable embedment depth	Small edge distance and spacing	European Technical Assessment	CE conformity

b) Applications only for HIT-V rods

Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
European technical assessment [a)]	DIBt, Berlin	ETA-08/0341 / 2013-03-18

b) All data given in this section according to ETA-08/0341 issue 2013-03-18.

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

All 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
– Anchor material: Rebar B St 500 S
– Concrete C 20/25, $f_{ck,cube}$ = 25 N/mm²
– Temperate range I
(min. base material temperature -40°C, max. long term/short term base material temperature: +24°C/40°C)

Embedment depth [a] and base material thickness for static and quasi-static loading data

Anchor- size		ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25
Typical embedment depth	[mm]	80	90	110	125	170	210	240
Base material thickness	[mm]	110	120	140	165	220	270	300

a) The allowed range of embedment depth is shown in the setting details. The corresponding load values can be calculated according to the simplified design method.

Characteristic resistance

Anchor- size		ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25
Tensile N_{Rk}	[kN]	17,1	24,0	35,2	41,2	54,7	80,1	123,7
Shear V_{Rk}		*9,3*	*14,7*	*20,7*	*28,0*	*36,7*	*57,3*	*90,0*

Design resistance

Anchor- size		ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25
Tensile N_{Rd}	[kN]	11,4	13,4	19,6	19,6	26,0	38,1	58,9
Shear V_{Rd}		9,3	14,7	20,7	28,0	36,7	57,3	90,0

Recommended loads[a]

Anchor- size		ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25
Tensile N_{Rec}	[kN]	8,1	9,5	14,0	14,0	18,6	27,2	42,1
Shear V_{Rec}		6,7	10,5	14,8	20,0	26,2	41,0	64,3

a) With overall partial safety factor for action γ = 1,4. The partial safety factors for action depend on the type of loading and shall be taken from national regulations.

Materials

Mechanical properties

Anchor size		ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25
Nominal tensile strength f_{uk}	[N/mm²]	550	550	550	550	550	550	550
Yield strength f_{yk}	[N/mm²]	500	500	500	500	500	500	500
Stressed cross-section A_s	[mm²]	50,3	78,5	113,1	153,9	201,1	314,2	490,9
Moment of resistance W	[mm³]	50,3	98,2	169,6	269,4	402,1	785,4	1534

Material quality

Part	Material
Rebar EN 1992-1-1	Mechanical properties according to DIN 488-1:1984 Geometry according to DIN 488-21:1986

Setting information

Installation temperature range:
-5°C to +40°C

In service temperature range
Hilti HIT-HY 110 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	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
Temperature range II	- 40 °C to + 120 °C	+ 72 °C	+ 120 °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.

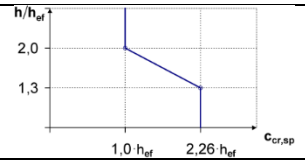
Working time and curing time

Temperature in the anchorage base	Maximum working time t_{work}	Minimum curing time t_{cure}
-5°C < T_{BM} ≤ 0°C	90 min	9 h
0°C < T_{BM} ≤ 5°C	45 min	4,5 h
5°C < T_{BM} ≤ 10°C	25 min	2 h
10°C < T_{BM} ≤ 20°C	6 min	90 min
20°C < T_{BM} ≤ 30°C	4 min	50 min
30°C < T_{BM} ≤ 40°C	2 min	40 min

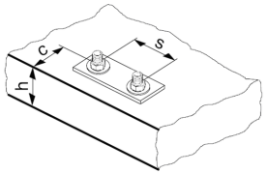
The curing time data are valid for dry base material only. In wet base material the curing times must be doubled.

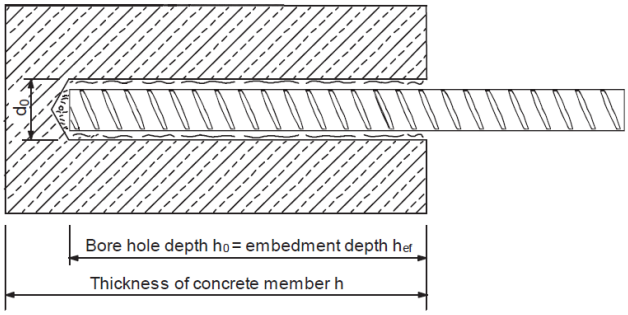
Setting details

Anchor size			ϕ8	ϕ10	ϕ12		ϕ14	ϕ16	ϕ20	ϕ25
Nom. diameter of drill bit	d_0	[mm]	10 / 12 a)	12 / 14 a)	14 a)	16 a)	18	20	25	32
Effective anchorage and drill hole depth range	$h_{ef,min}$	[mm]	60	60	70		75	80	90	100
	$h_{ef,max}$		160	200	240		280	320	400	500
Minimum base material thickness	h_{min}	[mm]	h_{ef} + 30 mm ≥ 100 mm			h_{ef} + 2 d_0				
Min. spacing	s_{min}	[mm]	40	50	60		70	80	100	125
Min. edge distance	c_{min}	[mm]	40	50	60		70	80	100	125
Critical spacing for splitting failure	$s_{cr,sp}$	[mm]	2 $c_{cr,sp}$							
Critical edge distance for splitting failure b)	$c_{cr,sp}$	[mm]	**1,0 · h_{ef}** for h / h_{ef} ≥ 2,0 **4,6 h_{ef} - 1,8 h** for 2,0 > h / h_{ef} > 1,3 **2,26 h_{ef}** for h / h_{ef} ≤ 1,3							
Critical spacing for concrete cone failure	$s_{cr,N}$	[mm]	2 $c_{cr,N}$							
Critical edge distance for concrete cone failure c)	$c_{cr,N}$	[mm]	1,5 h_{ef}							



For spacing (edge distance) smaller than critical spacing (critical edge distance) the design loads have to be reduced.
a) Each of the two given values can be used.
b) h: base material thickness (h ≥ h_{min}), h_{ef}: embedment depth
c) The critical edge distance for concrete cone failure depends on the embedment depth h_{ef} and the design bond resistance. The simplified formula given in this table is on the save side.





Installation equipment

Anchor size	ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ20	ϕ25
Rotary hammer	TE 2 – TE 30					TE 40 – TE 70	
Other tools	compressed air gun or blow out pump set of cleaning brushes, dispenser						

Drilling and cleaning parameters

Rebar	Hammer drilling (HD)	Brush HIT-RB	Piston plug HIT-SZ
	d_0 [mm]	size [mm]	
			
ϕ8	10 / 12 a)	10 / 12 a)	- / 12
ϕ10	12 / 14 a)	12 / 14 a)	12 / 14 a)
ϕ12	14 / 16 a)	14 / 16 a)	14 / 16 a)
ϕ14	18	18	18
ϕ16	20	20	20
ϕ20	25	25	25
ϕ25	32	32	32

a) Each of the two given values can be used

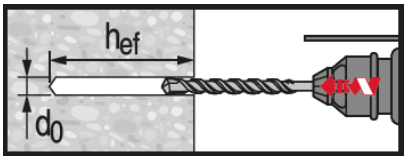
Setting instructions

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

Safety regulations.

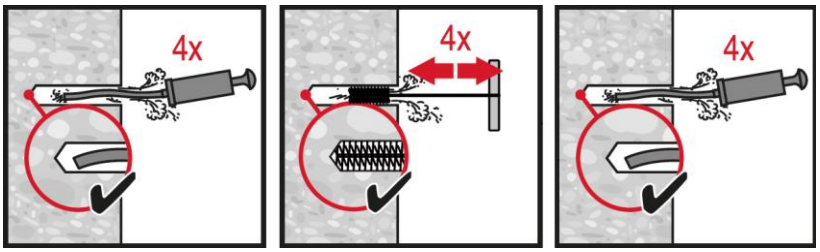
Review the Material Safety Data Sheet (MSDS) before use for proper and safe handling! Wear well-fitting protective goggles and protective gloves when working with Hilti HIT-HY 110.

Drilling



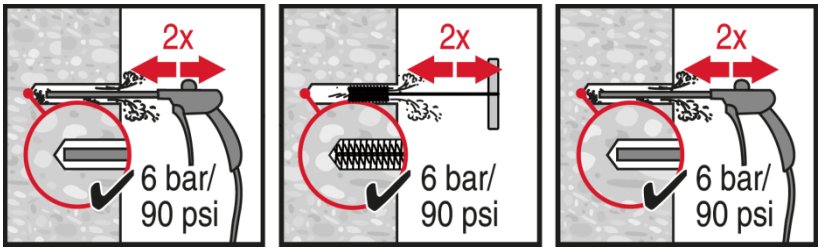
Hammer drilled hole (HD)

Cleaning



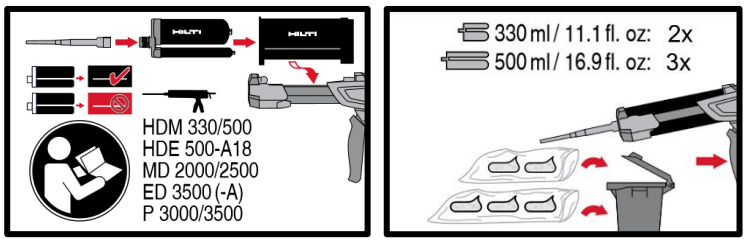
Manual cleaning (MC)
Non-cracked concrete only

for drill diameters $d_0 \leq 18$ mm and drill hole depth $h_0 \leq 10 \cdot d$ or $h_0 \leq 160$.

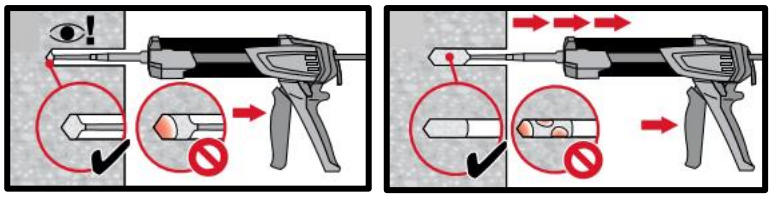


Compressed air cleaning (CAC)
for all drill hole diameters d_0 and drill hole depths h_0.

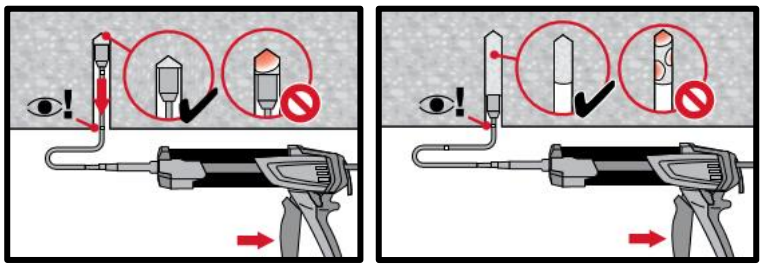
Injection system



Injection system preparation.

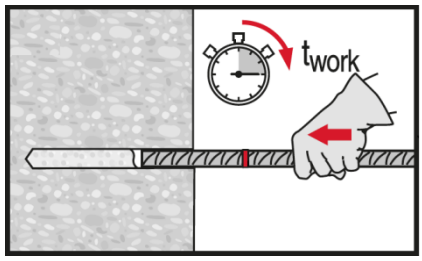


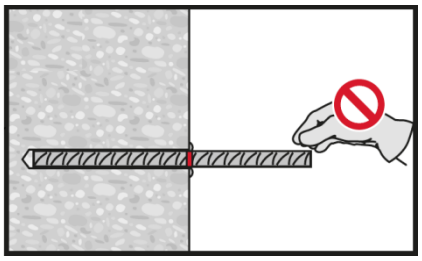
Injection method for drill hole depth $h_{ef} \leq 250$ mm.



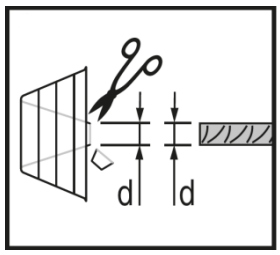
Injection method for overhead application or installation with embedment depth $h_{ef} > 250$mm.

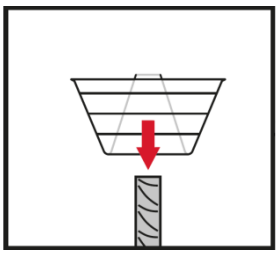
Setting the element

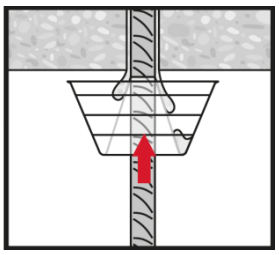




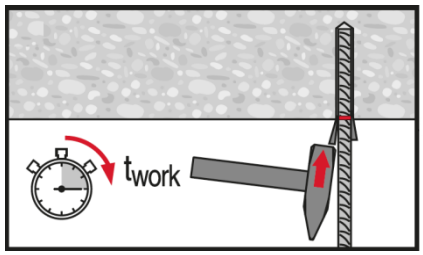
Setting element, observe working time "t_{work}".

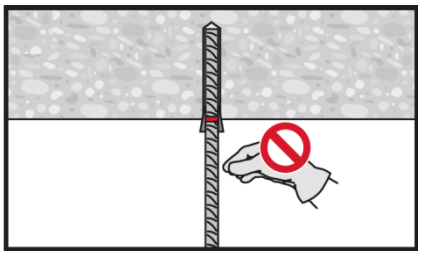






Setting element for overhead applications, observe working time "t_{work}".





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

HIT-HY 110 injection mortar

Rebar design (EN 1992-1) / Rebar elements / Concrete

Injection mortar system

Hilti HIT-HY 110

500 ml foil pack (also available as 330 ml foil pack)

Rebar (ϕ8-ϕ25)

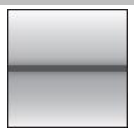
Benefits

- Suitable for concrete C 12/15 to C 50/60
- Suitable for dry and water saturated concrete
- For rebar diameters up to 25 mm
- Non corrosive to rebar elements
- Good loading capacity and fast cure
- Suitable for applications down to -5 °C
- Suitable for embedment depth up to 1500 mm depending on the rebar diameter

Base material

Concrete (non-cracked)

Load conditions



Static/ quasi-static

Installation conditions

Hammer drilled holes

Other information

European Technical Assessment

CE conformity

Approvals / certificates

Description	Authority / Laboratory	No. / date of issue
European technical approval	DIBt, Berlin	ETA-13/1037 / 2014-05-26

a) All data given in this section according to ETA-13/1037, issue 2014-05-26.

Static and quasi-static loading

Design bond strength in N/mm² according to ETA 11/0492 for good bond conditions for hammer drilling and compressed air drilling.

Rebar (mm)	Concrete class								
	C12/15	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
8 - 25	1,6	2,0	2,3	2,7	3,0	3,0	3,0	3,4	3,7

For all other bond conditions, multiply the value by 0.7.

Anchorage length

The minimum anchorage length $\ell_{b,min}$ and the minimum lap length $\ell_{0,min}$ according to EN 1992-1-1:2004+AC:2010 ($\ell_{b,min}$ acc. to Eq. 8.6 and Eq. 8.7 and $\ell_{0,min}$ acc. to Eq. 8.11) shall be multiplied by a factor according to Table below.

Concrete class	Drilling method	Factor
C12/15 to C25/30	Hammer drilling (HD) and compressed air drilling (CA)	1,0
C30/37		1,1
C35/45 to C40/50		1,2
C45/55 to C50/60		1,3

Example of pre-calculated values for rebar yield strength fyk = 500 N/mm², concrete C25/30 and good bond conditions

Rebar	Anchorage length l_{bd}	Design value N_{Rd}	Mortar volume	Anchorage length l_{bd}	Design value N_{Rd}	Mortar volume
[mm]	[mm]	[kN]	[ml]	[mm]	[kN]	[ml]
	All α = 1			One of the α = 0.7		
8	100 (minimum)	6,8	7,5	100	9,7	8
	170	11,5	13	140	13,6	11
	250	17,0	19	180	17,4	14
	322 (yelding)	**21,9**	24	**225**	**21,8**	17
10	121	10,3	11	121	14,7	11
	220	18,7	20	170	20,6	15
	310	26,3	28	230	27,9	21
	403	**34,2**	36	**282**	**34,2**	26
12	145	14,8	15	145	21,1	15
	260	26,5	27	210	30,5	22
	370	37,7	39	270	39,3	29
	483	**49,2**	51	**338**	**49,1**	36
14	169	20,1	20	169	28,7	20
	300	35,6	36	240	40,7	29
	430	51,1	52	320	54,3	39
	564	**67,0**	68	**395**	**67,0**	48
16	193	26,2	26	193	37,4	26
	340	46,1	46	280	54,3	38
	490	66,5	67	370	71,7	50
	644	**87,4**	87	**451**	**87,4**	61
18	218	33,3	33	218	47,5	33
	310	47,3	47	310	67,6	47
	410	62,6	62	410	89,4	62
	500	**76,3**	75	**500**	**109,1**	75
20	242	41,1	51	242	58,6	51
	330	56,0	70	330	80,0	70
	410	69,6	87	410	99,4	87
	500	**84,8**	106	**500**	**121,2**	106
22	266	49,6	75	266	70,9	75
	340	63,4	96	340	90,6	96
	420	78,4	119	420	112,0	119
	500	**93,3**	141	**500**	**133,3**	141
24	290	59,0	122	290	84,3	122
	360	73,3	152	360	104,7	152
	430	87,5	182	430	125,1	182
	500	**101,8**	211	**500**	**145,4**	211
25	302	64,0	114	302	91,5	114
	370	78,5	139	370	112,1	139
	430	91,2	162	430	130,3	162
	500	**106,0**	188	**500**	**151,5**	188

* Values corresponding to the minimum anchorage length. The maximum permissible load is valid for “good bond conditions” as described in EN 1992-1-1. For all other conditions multiply by the value by 0,7. The volume of mortar correspond to the formula “$1{,}2*(d_0^2-d_s^2)*\pi*lb/4$” for hammer drilling

Materials

Material quality

Part	Material
Rebar EN 1992-1-1	Bars and de-coiled rods class B or C with f_{yk} and k according to NDP or NCL of EN 1992-1-1 $f_{uk} = f_{tk} = k \cdot f_{yk}$

Fitness for use

Temperature range	Base material temperature	Max. long term base material temperature	Max. short term base material temperature
Temperature range II	- 40 °C to + 80 °C	+ 50 °C	+ 80 °C

Curing and working time

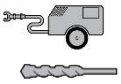
Temperature of the base material T_{BM}	Working time t_{work} a)	Curing time t_{cure}
-5 °C to -1 °C	90 min	9 h
0 °C to 4 °C	45 min	4,5 h
5 °C to 9 °C	20 min	2 h
10 °C to 19 °C	6 min	90 min
20 °Cto 29 °C	4 min	50 min
30 °C to 40 °C b)	2 min	40 min

Setting information

Installation equipment

Rebar [mm]	ϕ8	ϕ10	ϕ12	ϕ14	ϕ16	ϕ18	ϕ20	ϕ22	ϕ24	ϕ25
Rotary hammer	TE 2 – TE 40					TE 40 – TE 70				
Other tools	compressed air gun or blow out pump, set of cleaning brushes									

Drilling and cleaning diameters

Rebar [mm]	Hammer drill (HD)	Compressed air drill (CA)	Brush HIT-RB	Air nozzle HIT-RB
	d_0 [mm]		size [mm]	
				
ϕ8	12 / 10 a)	-	12 / 10 a)	12 / 10 a)
ϕ10	14 / 12 a)	-	14 / 12 a)	14 / 12 a)
ϕ12	16 / 14 a)	-	16 / 14 a)	16 / 14 a)
	-	17	18	16
ϕ14	18	17	18	18
ϕ16	20	-	20	20
	-	20	22	20
ϕ18	22	22	22	22
ϕ20	25	-	25	25
	-	26	28	25
ϕ22	28	28	28	28
ϕ24	32	32	32	32
ϕ25	32	32	32	-

a) Maximum installation length l=250 mm.

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

Rebar	Dispenser	
	HDM 330, HDM 500	HDE 500
	$\ell_{v,max}$ [mm]	$\ell_{v,max}$ [mm]
ϕ8 - ϕ10	700	1000
ϕ12	700	1150
ϕ14	700	1300
ϕ16	700	1500
ϕ18 - ϕ25	500	500

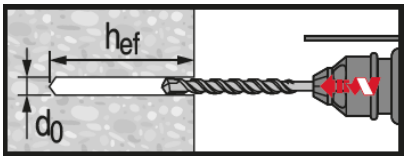
Setting instructions

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

Safety regulations.

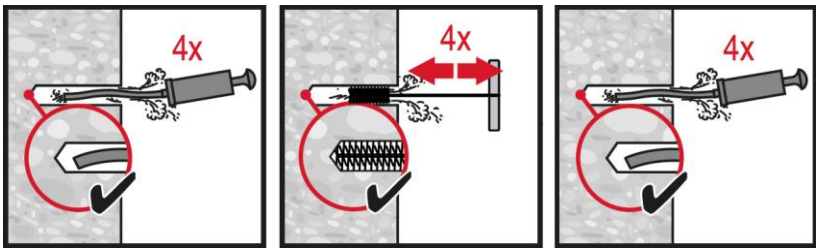
Review the Material Safety Data Sheet (MSDS) before use for proper and safe handling! Wear well-fitting protective goggles and protective gloves when working with Hilti HIT-HY 110.

Drilling



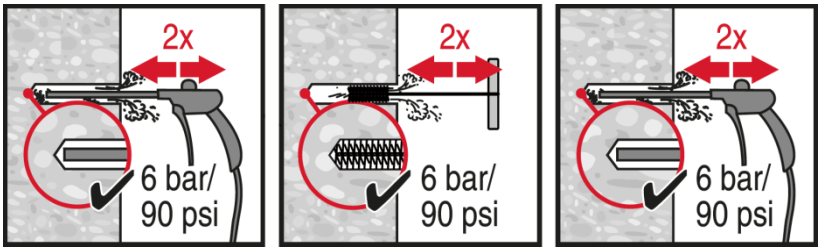
Hammer drilled hole (HD)

Cleaning



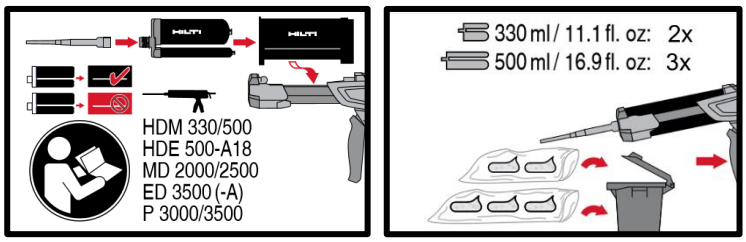
Manual cleaning (MC)
Non-cracked concrete only

for drill diameters $d_0 \leq 18$ mm and drill hole depth $h_0 \leq 10 \cdot d$ or $h_0 \leq 160$.

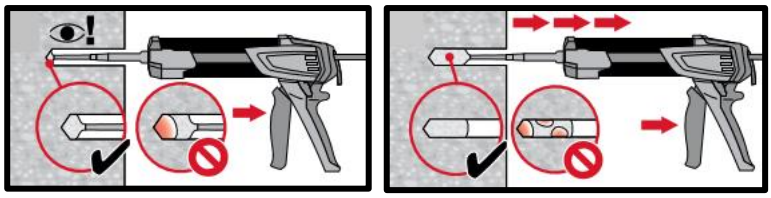


Compressed air cleaning (CAC)
for all drill hole diameters d_0 and drill hole depths h_0.

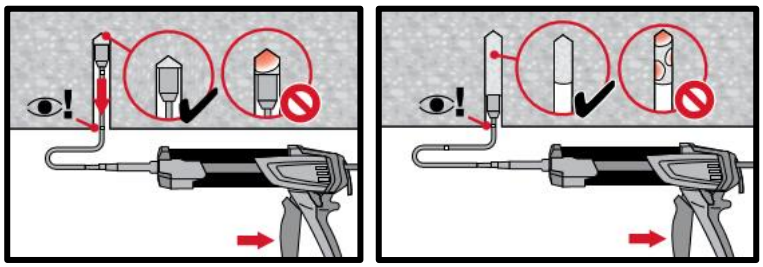
Injection system



Injection system preparation.

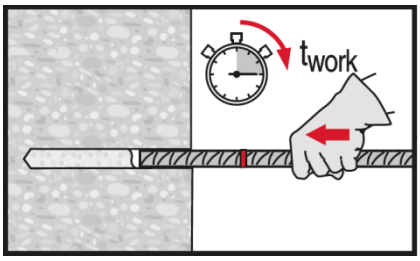


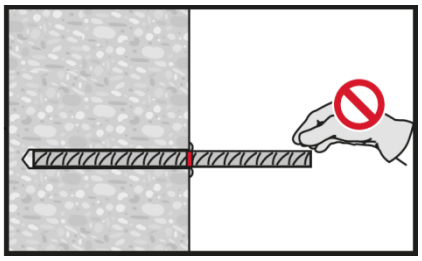
Injection method for drill hole depth $h_{ef} \leq 250$ mm.



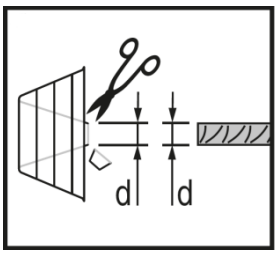
Injection method for overhead application or installation with embedment depth $h_{ef} > 250$mm.

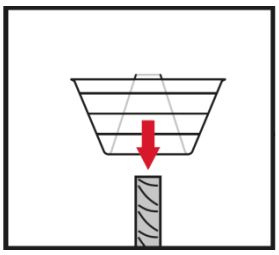
Setting the element

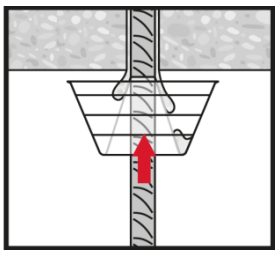




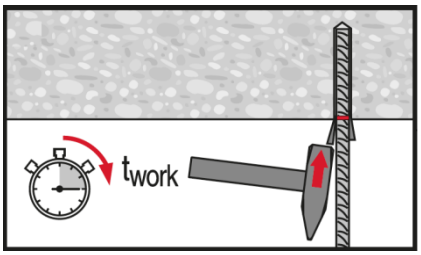
Setting element, observe working time "t_{work}".

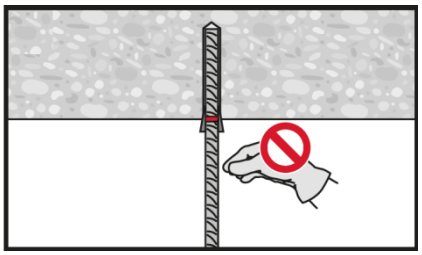






Setting element for overhead applications, observe working time "t_{work}".





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