Deutsches Institut für Bautechnik DIBt

Member of EOTA
www.eota.eu

Public-law institution jointly founded by the federal states and the Federation

European Technical Assessment Body for construction products

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

European Technical Assessment

ETA-23/0699 of 19 January 2026

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	Würth injection system WIT-UH 300/ WIT-VH 300/ WIT-VM 300 for rebar connection
Product family to which the construction product belongs	Post-installed reinforcing bar (rebar) connections with improved bond-splitting behaviour
Manufacturer	Adolf Würth GmbH & Co. KG Reinhold-Würth-Straße 12-17 74653 Künzelsau GERMANY
Manufacturing plant	Werk 3
This European Technical Assessment contains	16 pages including 3 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Article 95(4) of Regulation (EU) No 2024/3110, on the basis of	EAD 332402-00-0601
This version replaces	ETA-23/0699 issued on 1 November 2023

The European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may only be made with the written consent of the issuing Technical Assessment Body. Any partial reproduction shall be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission in accordance with Article 36(3) of Regulation (EU) No 2024/3110.

Specific Part

1 Technical description of the product

The subject of this European Technical Assessment is the post-installed connection, by anchoring or overlap connection joint, of reinforcing bars (rebars) in existing structures made of normal weight concrete, using the Würth Injection system WIT-UH 300/ WIT-VH 300/ WIT-VM 300 in accordance with the regulations for reinforced concrete construction.
Reinforcing bars with a diameter ϕ from 8 to 32 mm according to Annex A and the injection mortar WIT-UH 300/ WIT-VH 300/ WIT-VM 300 are used for the post-installed rebar connection. The rebar is placed into a drilled hole filled with injection mortar and is anchored via the bond between embedded reinforcing bar, injection mortar and concrete.

The product description is given in Annex A.

2 Specification of the intended use in accordance with the applicable European assessment Document

The performances given in Section 3 are only valid if the rebar connection is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the rebar connections of at least 50 and/or 100 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance to tension load (static and quasi-static loading)	
Resistance to combined pull-out and concrete failure in uncracked concrete	See Annex C 1
Resistance to concrete cone failure	See Annex C 1
Robustness	See Annex C 1
Resistance to bond-splitting failure	See Annex C 1
Influence of cracked concrete on resistance to combined pull-out and concrete failure	See Annex C 1

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with European Assessment Document EAD No. 332402-00-0601, the applicable European legal act is: [96/582/EC].

The system to be applied is: 1

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 19 January 2026 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Baderschneider

Installation condition and application example

Figure A1: Column / wall to foundation / slab

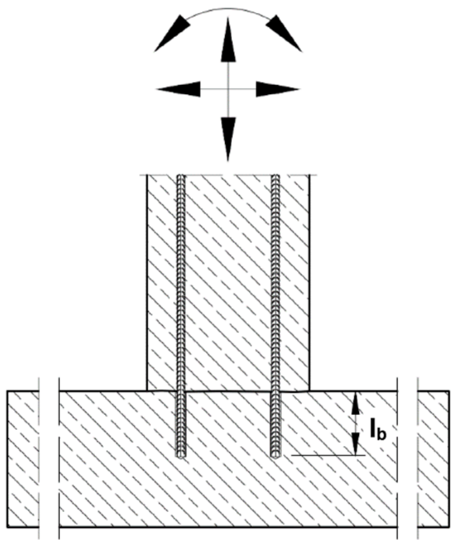
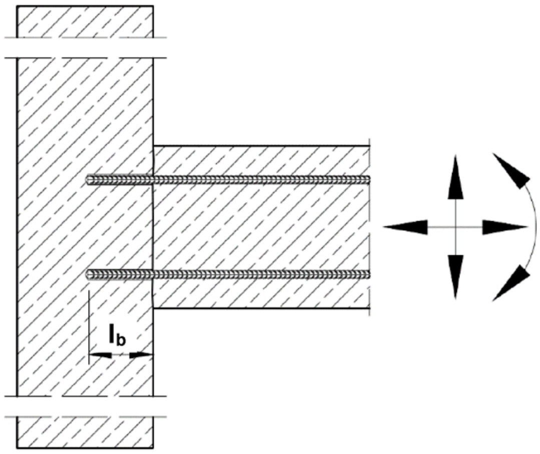


Figure A2: Slab / beam to wall or beam to column



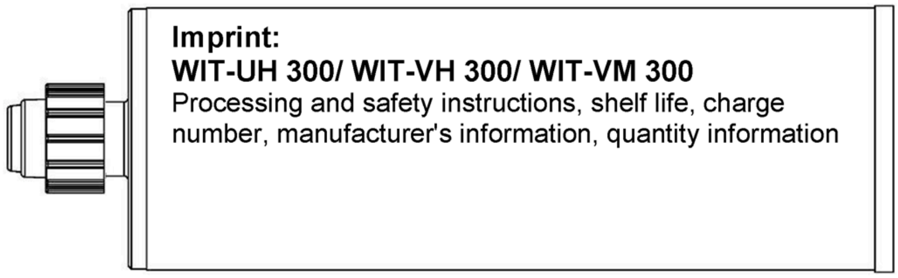
l_b = Embedment length

The transfer of shear forces between new concrete and existing structure shall be designed additionally according to EN 1992-1-1:2004+AC:2010.

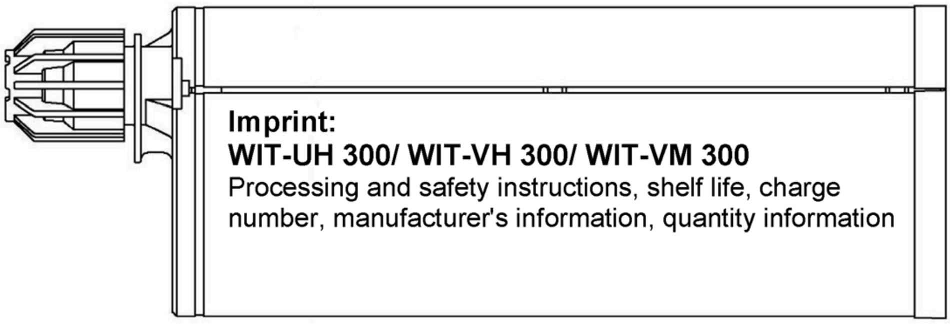
Würth injection system WIT-UH 300/ WIT-VH 300/ WIT-VM 300 for rebar connection	**Annex A 1**
Product description Installed condition and examples of use for rebars	

Cartridge system

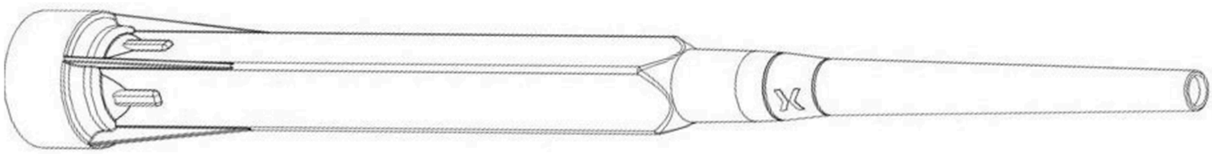
Coaxial Cartridge:
150 ml, 280 ml, 300 ml up to 333 ml and 380 ml up to 420 ml



Side-by-Side Cartridge:
235 ml, 345 ml up to 360 ml and 825 ml



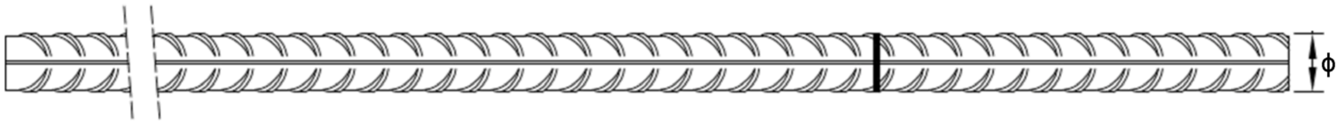
Static mixer WIT-UH, WIT-MX



Piston plug WIT-VS und mixer extension WIT-MV

Würth injection system WIT-UH 300/ WIT-VH 300/ WIT-VM 300 for rebar connection	**Annex A 2**
Product description Injection system	

Reinforcing bar (rebar): ø8 up to ø32



- Minimum value of related rip area $f_{R,min}$ according to EN 1992-1-1:2004+AC:2010
- Rib height of the bar shall be in the range $0{,}05\phi \leq h_{rib} \leq 0{,}07\phi$
  (ϕ: Nominal diameter of the bar; h_{rib}: Rib height of the bar)

Table A1: Materials Rebar

Designation	Material
Rebar EN 1992-1-1:2004+AC:2010, Annex C	Bars and de-coiled rods class B or C f_{yk} and k according to NDP or NCI of EN 1992-1-1/NA $f_{uk} = f_{tk} = k \cdot f_{yk}$

Specification of the intended use

Anchorages subject to:		working life 50 years	working life 100 years
HD: Hammer drilling HDB: Hammer drilling with hollow drill bit CD: Compressed air drilling	Static and quasi-static loads	Ø8 to Ø32	Ø8 to Ø32
Temperature Range:		I: - 40 °C to +40 °C[1)] II: - 40 °C to +80 °C[2)] III: - 40 °C to +120 °C[3)] IV: - 40 °C to +160 °C[4)]	I: - 40 °C to +40 °C[1)] II: - 40 °C to +80 °C[2)]

1) (max. long-term temperature +24°C and max. short-term temperature +40°C)
2) (max. long-term temperature +50°C and max. short-term temperature +80°C)
3) (max. long-term temperature +72°C and max. short-term temperature +120°C)
4) (max. long-term temperature +100°C and max. short-term temperature +160°C)

Base materials:

- Compacted reinforced or unreinforced normal weight concrete without fibres according to EN 206:2013 + A2:2021.
- Strength classes C20/25 to C50/60 according to EN 206:2013 + A2:2021.
- Maximum chloride content of 0,40% (CL 0.40) related to the cement content according to EN 206:2013 + A2:2021.
- Non-carbonated concrete.

  Note: In case of a carbonated surface of the existing concrete structure the carbonated layer shall be removed in the area of the post-installed rebar connection with a diameter of ϕ + 60 mm prior to the installation of the new rebar. The depth of concrete to be removed shall correspond to at least the minimum concrete cover in accordance with EN 1992-1-1:2004 + AC:2010. The foregoing may be neglected if building components are new and not carbonated and if building components are in dry conditions.

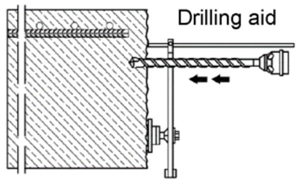
Design:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the forces to be transmitted.
- Design according to EOTA Technical Report TR 069, Edition June 2021.
- The actual position of the reinforcement in the existing structure shall be determined on the basis of the construction documentation and taken into account when designing.

Installation:

- Dry or wet concrete, as well as in flooded holes.
- Overhead installation allowed.
- Hole drilling by hammer drill (HD), hollow drill (HDB) or compressed air drill mode (CD).
- Rebar installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Check the position of the existing rebars (if the position of existing rebars is not known, it shall be determined using a rebar detector suitable for this purpose as well as on the basis of the construction documentation and then marked on the building component).

Table B1: Minimum concrete cover c_{min} of post-installed rebar depending of drilling method

Drilling method	Rebar diameter	Without drilling aid	With drilling aid	
HD: Hammer drilling HDB: Hammer drilling with hollow drill bit	< 25 mm	30 mm + 0,06 · l_b ≥ 2 ϕ	30 mm + 0,02 · l_b ≥ 2 ϕ	
	≥ 25 mm	40 mm + 0,06 · l_b ≥ 2 ϕ	40 mm + 0,02 · l_b ≥ 2 ϕ	
CD: Compressed air drilling	< 25 mm	50 mm + 0,08 · l_b	50 mm + 0,02 · l_b	
	≥ 25 mm	60 mm + 0,08 · l_b ≥ 2 ϕ	60 mm + 0,02 · l_b ≥ 2 ϕ	

The minimum concrete cover acc. EN 1992-1-1:2004 + AC:2010 must be observed.
The minimum clear spacing is a = max (40mm; 4 ϕ)

Table B2: Dispensing tools

Cartridge type/size	Hand tool		Pneumatic tool
Coaxial cartridges 150, 280, 300 up to 333 ml	 e.g. Type H297 / H244C		 e.g. Type TS 492 X
Coaxial cartridges 380 up to 420 ml	 e.g. Type CCM 380/10	 e.g. Type H 285 or H244C	 e.g. Type TS 485 LX
Side-by-side cartridges 235, 345 ml	 e.g. Type CBM 330A	 e.g. Type H 260	 e.g. Type TS 477 LX
Side-by-side cartridge 825 ml	-	-	 e.g. Type TS 498X

All cartridges could also be extruded by a battery tool.

Würth injection system WIT-UH 300/ WIT-VH 300/ WIT-VM 300 for rebar connection	**Annex B 2**
Intended use Minimum concrete cover Dispensing tools	

Table B3: Brushes, piston plugs, max embedment length and mixer extension, hammer (HD) and compressed air (CD) drilling

Bar size ϕ	Drill bit - ∅ HD	Drill bit - ∅ CD	d_b Brush - ∅	d_b Brush - ∅	$d_{b,min}$ min. Brush - ∅	Piston plug	Cartridge: All sizes – Hand or battery tool – $l_{b,max}$	Cartridge: All sizes – Hand or battery tool – Mixer extension	Cartridge: All sizes – Pneumatic tool – $l_{b,max}$	Cartridge: All sizes – Pneumatic tool – Mixer extension	Cartridge: 825 ml – Pneumatic tool – $l_{b,max}$	Cartridge: 825 ml – Pneumatic tool – Mixer extension
[mm]	[mm]		WIT-	[mm]	[mm]	WIT-	[mm]	WIT-	[mm]	WIT-	[mm]	WIT-
8	10	-	RB10	11,5	10,5	-	250	MV10/0,75 or MV16/1,8	250	MV10/0,75 or MV16/1,8	250	MV10/0,75 or MV16/1,8
	12	-	RB12	13,5	12,5	-	700		800		800	
10							250		250		250	
	14	-	RB14	15,5	14,5	VS14	700		1000		1000	
12							250		250		250	
	16		RB16	17,5	16,5	VS16	700		1000		1200	MV16/1,8
14	18		RB18	20,0	18,5	VS18					1400	
16	20		RB20	22,0	20,5	VS20					1600	
20	25	-	RB25	27,0	25,5	VS25	500		700		2000	
	-	26	RB26	28,0	26,5	VS25						
22	28		RB28	30,0	28,5	VS28						
24/25	30		RB30	32,0	30,5	VS30			500			
	32		RB32	34,0	32,5	VS32						
28	35		RB35	37,0	35,5	VS35						
32	40		RB40	43,5	40,5	VS40						

Table B4: Brushes, piston plugs, max embedment length and mixer extension, hammer drilling with hollow drill bit system (HDB)

Bar size ϕ	Drill bit - ∅ HDB	d_b Brush - ∅	$d_{b,min}$ min. Brush - ∅	Piston plug	Cartridge: All sizes – Hand or battery tool – $l_{b,max}$	Cartridge: All sizes – Hand or battery tool – Mixer extension	Cartridge: All sizes – Pneumatic tool – $l_{b,max}$	Cartridge: All sizes – Pneumatic tool – Mixer extension	Cartridge: 825 ml – Pneumatic tool – $l_{b,max}$	Cartridge: 825 ml – Pneumatic tool – Mixer extension
[mm]	[mm]			WIT-	[mm]	WIT-	[mm]	WIT-	[mm]	WIT-
8	10	**No cleaning required**		-	250	MV10/0,75 or MV 16/1,8	250	MV10/0,75 or MV16/1,8	250	MV10/0,75 or MV16/1,8
	12				700		800		800	
10					250		250		250	
	14			VS14	700		1000		1000	
12					250		250		250	
	16			VS16	700		1000		1000	
14	18			VS18						
16	20			VS20						
20	25			VS25	500		700			
22	28			VS28						
24/25	30			VS30			500			
	32			VS32						
28	35			VS35						
32	40			VS40						

Würth injection system WIT-UH 300/ WIT-VH 300/ WIT-VM 300 for rebar connection

Intended use
Parameter brushes, piston plugs, max embedment length and mixer extension

Annex B 3

Cleaning and installation tools

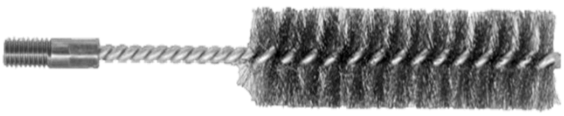
HDB – Hollow drill bit system

The hollow drill system consists of Würth Extraction Drill Bit, MKT Extraction Drill Bit, Heller Duster Expert hollow-core drill and a class M vacuum cleaner with a minimum negative pressure of 253 hPa and a flow rate of minimum 150 m³/h (42 l/s).

Hand pump
(Volume 750 ml, $h_0 \leq 10\ d_s$, $d_0 \leq 20$mm)

Compressed air tool
(min 6 bar)

Brush WIT-RB



Piston Plug WIT-VS

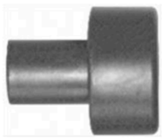


Table B5: Working time and curing time

Temperature in base material			Maximum working time	Minimum curing time[1]
T			t_{work}	t_{cure}
- 5 °C	up to	- 1 °C	50 min	5 h
0 °C	up to	+ 4 °C	25 min	3,5 h
+ 5 °C	up to	+ 9 °C	15 min	2 h
+ 10 °C	up to	+ 14 °C	10 min	1 h
+ 15 °C	up to	+ 19 °C	6 min	40 min
+ 20 °C	up to	+ 29 °C	3 min	30 min
+ 30 °C	up to	+ 40 °C	2 min	30 min
Cartridge temperature			+5°C up to +40°C	

[1] The minimum curing time is only valid for dry base material.
In wet base material the curing time must be doubled.

Würth injection system WIT-UH 300/ WIT-VH 300/ WIT-VM 300 for rebar connection

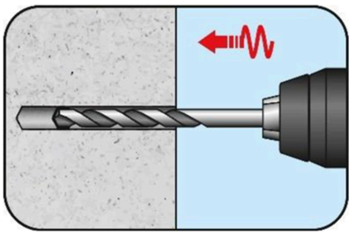
Intended use
Cleaning and installation tools
Working time and curing time

Annex B 4

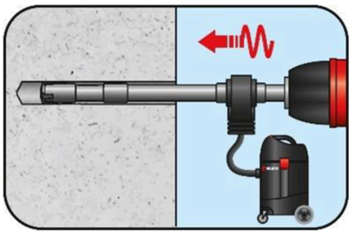
Installation instructions

Attention: Before drilling, remove carbonated concrete and clean contact areas (see Annex B 1)
Aborted drill holes shall be filled with mortar.

Drilling of the bore hole



1a. **Hammer drilling (HD) / Compressed air drilling (CD)**
Drill a hole to the required embedment length.
Drill bit diameter according to Table B3.
Proceed with Step 2 (MAC or CAC).

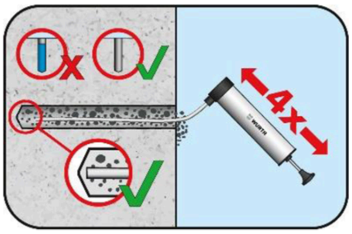


1b. **Hollow drill bit system (HDB) (see Annex B 4)**
Drill a hole to the required embedment length .
Drill bit diameter according to Table B4.
Proceed with Step 3.

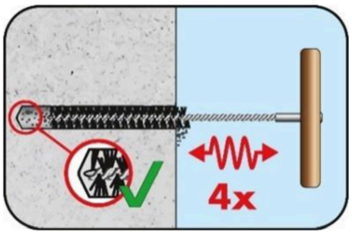
Manual Air Cleaning (MAC)

for bore hole diameter $d_0 \leq 20$mm and bore hole depth $h_0 \leq 10\phi$, with drilling method HD and CD

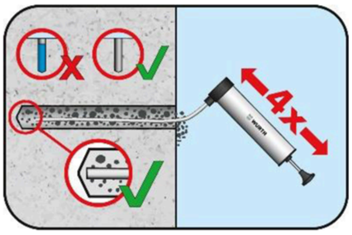
Attention! Standing water in the bore hole must be removed before cleaning.



2a. Blow the bore hole clean minimum 4x from the bottom or back by hand pump (Annex B 4).



2b. Brush the bore hole minimum 4x with brush WIT-RB according to Table B3 over the entire embedment depth in a twisting motion (if necessary, use a brush extension).

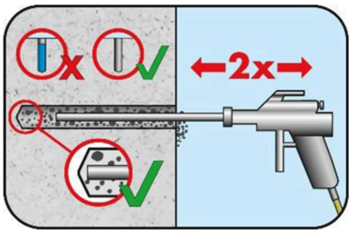


2c. Finally blow the bore hole clean minimum 4x from the bottom or back by hand pump (Annex B 4).

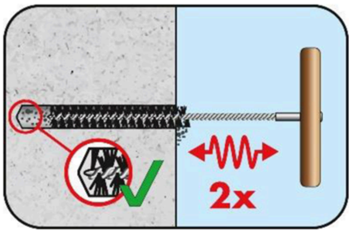
Installation instructions (continuation)

Compressed Air Cleaning (CAC):
All diameter with drilling method HD and CD

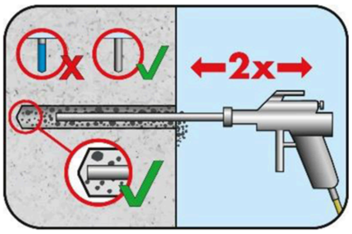
Attention! Standing water in the bore hole must be removed before cleaning.



2a. Blow the bore hole clean minimum 2x with compressed air (min. 6 bar, oil-free) (Annex B 4) over the entire embedment depth until return air stream is free of noticeable dust. (If necessary, an extension shall be used.)

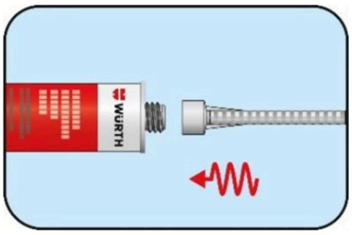


2b. Brush the bore hole minimum 2x with brush WIT-RB according to Table B3 over the entire embedment depth in a twisting motion. (If necessary, a brush extension shall be used.)

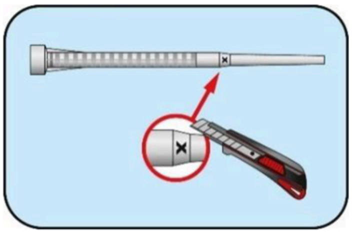


2c. Finally blow the bore hole clean minimum 2x with compressed air (min. 6 bar, oil-free) (Annex B 4) over the entire embedment depth until return air stream is free of noticeable dust. (If necessary, an extension shall be used.)

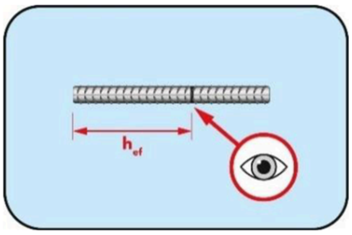
Cleaned bore hole has to be protected against re-contamination in an appropriate way, If necessary, repeat cleaning process directly before dispensing the mortar.



3. Screw on static-mixing nozzle WIT-UH, WIT-MX and load the cartridge into an appropriate dispensing tool.
For every working interruption longer than the maximum working time t_{work} (Annex B 4) as well as for new cartridges, a new static-mixer shall be used.



3a. In case of using the mixer extension WIT-MV16/1,8, the tip of the mixer nozzle has to be cut off at position „X“.

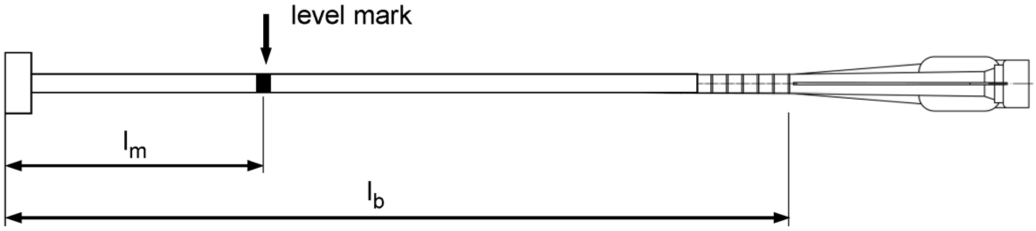


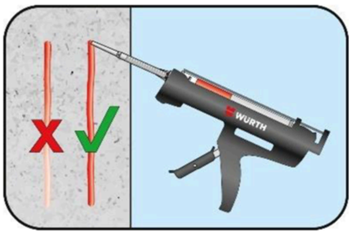
4. Mark embedment length l_b on the reinforcing bar.
The anchor rod shall be free of dirt, grease, oil or other foreign material.

Würth injection system WIT-UH 300/ WIT-VH 300/ WIT-VM 300 for rebar connection	**Annex B 6**
Intended use Installation instructions (continuation)	

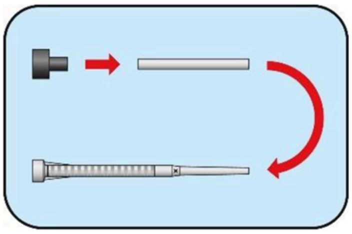
Installation instructions (continuation)

5. Injection tool must be marked by mortar level mark l_m and embedment length l_b with tape or marker.
Quick estimation: $l_m = 1/3 \cdot l_b$
Optimum mortar volume: $$l_m = l_b \cdot \left(1{,}2 \cdot \frac{\phi^2}{d_0^2} - 0{,}2\right)$$

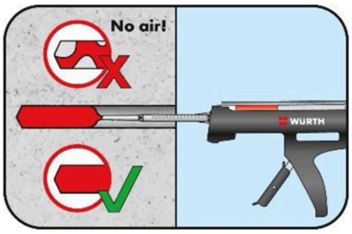




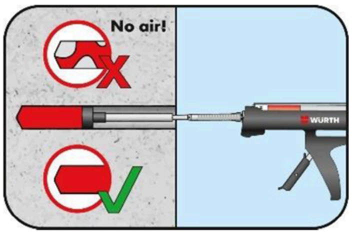
6. Not proper mixed mortar is not sufficient for fastening.
Dispense and discard mortar until an uniform grey colour is shown (at least 3 full strokes).



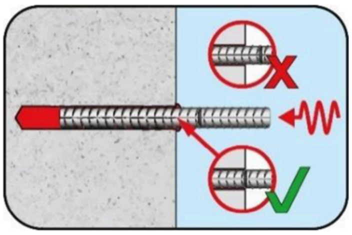
7. Piston plugs WIT-VS and mixer nozzle extensions WIT-MV shall be used according to
Table B3 or B4
Assemble mixing nozzle, mixer extension and piston plug before injecting mortar.



8a. **Injecting mortar without piston plug WIT-VS**
Starting at bottom of the hole and fill the hole up with mortar until the mortar level mark l_m is visible. (If necessary, a mixer nozzle extension shall be used.)
Slowly withdraw of the static mixing nozzle avoid creating air pockets
Observe the temperature related working time t_{work} (Annex B 4).



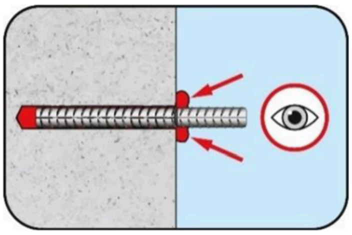
8b. **Injecting mortar with piston plug WIT-VS**
Insert piston plug to bottom of the hole and fill the hole with mortar until mortar level mark l_m is visible. (If necessary, a mixer nozzle extension shall be used.)
During injection the piston plug is pushed out of the bore hole by the back pressure of the mortar.
Observe the temperature related working time t_{work} (Annex B 4).



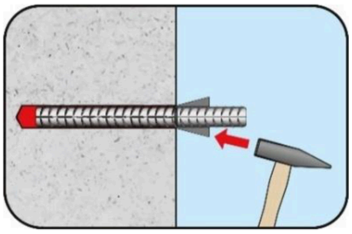
9. Insert the reinforcing bar while turning slightly up to the embedment mark.

Würth injection system WIT-UH 300/ WIT-VH 300/ WIT-VM 300 for rebar connection	**Annex B 7**
Intended use Installation instructions (continuation)	

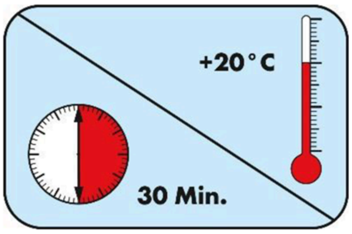
Installation instructions (continuation)



10. Annular gap between reinforcing bar and base material must be completely filled with mortar. Otherwise, the installation must be repeated starting from step 8 before the maximum working time t_{work} has expired.



11. For application in vertical upwards direction the reinforcing bar shall be fixed (e.g. wedges).



12. Temperature related curing time t_{cure} (Annex B 4) must be observed.
Do not move or load the reinforcing bar during curing time.

Würth injection system WIT-UH 300/ WIT-VH 300/ WIT-VM 300 for rebar connection	**Annex B 8**
Intended use Installation instructions (continuation)	

Table C1: Characteristic resistance to tension load under static and quasi-static loading in hammer drilled holes (HD), compressed air drilled holes (CD) and in hammer drilled holes with hollow drill bit (HDB); working life 50 and 100 years

Reinforcing bar					Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 20	Ø 24	Ø 25	Ø 28	Ø 32
Combined pull-out and concrete failure[1)]														
Characteristic bond resistance in uncracked concrete C20/25														
Temperature range[1)]	I: 24°C/40°C	Dry, wet concrete and flooded bore hole	$\tau_{Rk,ucr,50}$ =	[N/mm²]	14	14	14	14	13	13	13	13	13	13
	II: 50°C/80°C		$\tau_{Rk,ucr,100}$		14	14	14	14	13	13	13	13	13	13
	III: 72°C/120°C		$\tau_{Rk,ucr,50}$		13	12	12	12	12	11	11	11	11	11
	IV: 100°C/160°C				9,5	9,5	9,5	9,0	9,0	9,0	9,0	9,0	8,5	8,5
Reduction factor $\psi^0_{sus,50}$ or $\psi^0_{sus,100}$ in cracked and uncracked concrete C20/25														
Temperature range[1)]	I: 24°C/40°C	Dry, wet concrete and flooded bore hole	$\psi^0_{sus,50}$ =	[-]	0,90									
	II: 50°C/80°C		$\psi^0_{sus,100}$		0,87									
	III: 72°C/120°C		$\psi^0_{sus,50}$		0,75									
	IV: 100°C/160°C				0,66									
Increasing factors for concrete			ψ_c	[-]	$(f_{ck} / 20)^{0,1}$									
Characteristic bond resistance depending on the concrete strength class			$\tau_{Rk,ucr,50}$ =		$\psi_c \cdot \tau_{Rk,ucr,50,(C20/25)}$									
			$\tau_{Rk,ucr,100}$ =		$\psi_c \cdot \tau_{Rk,ucr,100,(C20/25)}$									
Influence of cracked concrete on combined pullout and concrete cone failure														
Factor for influence of cracked concrete			Ω_{cr}	[-]	0,77	0,78	0,79	0,81	0,81	0,82	0,83	0,83	0,83	0,83
Bond-splitting failure														
Product basic factor			A_k	[-]	5,6									
Exponent for influence of…														
- concrete compressive strength			sp1	[-]	0,37									
- rebar diameter ϕ			sp2	[-]	0,27									
- concrete cover c_d			sp3	[-]	0,59									
- side concrete cover (c_{max} / c_d)			sp4	[-]	0,16									
- embedment length l_b			lb1	[-]	0,49									
Concrete cone failure														
Uncracked concrete			$k_{ucr,N}$	[-]	11,0									
Cracked concrete			$k_{cr,N}$	[-]	7,7									
Edge distance			$c_{cr,N}$	[mm]	1,5 l_b[3)]									
Axial distance			$s_{cr,N}$	[mm]	3,0 l_b[3)]									
Installation factor														
for dry and wet concrete		MAC	γ_{inst}	[-]	1,2					[2)]				
		CAC			1,0									
		HDB			1,2									
for flooded bore hole		CAC			1,4									

1) Performance in Temperature Range III and IV assessed for working life 50 years only
2) no performance assessed
3) see Annex A 1

Würth injection system WIT-UH 300/ WIT-VH 300/ WIT-VM 300 for rebar connection

Performances
Characteristic resistance to tension load under static and quasi-static loading; working life 50 and 100 years (HD, CD and HDB)

Annex C 1