

Injection System VME plus

for post-installed rebar connection



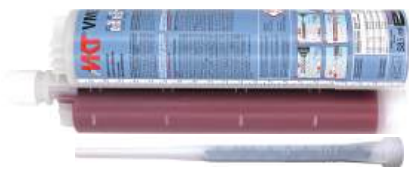
Reinforcement Bars B500



Tension Anchor ZA



Cartridge VME plus 440
Side-by-side cartridge
Content: 440ml



Cartridge VME plus 585
Side-by-side cartridge
Content: 585ml



Injection Cartridge VME plus



- Long processing time
- Almost no shrinkage

Description

The Injection System VME plus also has the European Technical Assessment for post-installed rebar connection. Reinforcement Bars with diameters from 8mm to 40mm as well as tension anchors from M12 to M24 with a setting depth of up to 2m can be fixed.

By using the hollow drill bit SB the drilling dust is sucked off during drilling directly at the point of origin. This reduces pollution and dust load of the respiratory tract to a minimum. Subsequent well cleaning - brushing and blowing out - is also no longer necessary.

Advantages

- Long processing time, therefore ideal for large embedment depths and for high temperatures
- Wide range of application, as up to 40mm rebar diameter allowed
- Drill hole creation with hammer drill, compressed air drill or hollow drill bit
- When using the hollow drill bit SB the subsequent cleaning of the borehole is not necessary
- Approved for installation in dry and wet concrete
- Approved for use under fire exposure
- The initial curing time allows to continue working sooner¹⁾
- Opened cartridges can be reused with a new static mixer
- Tie rods ZA with connecting thread M12 - M24 can be supplied in individual lengths on request

Applications for post-installed rebar connection:

Subsequent connection of stairs, balconies, walls or columns, closing of wall and ceiling openings

Application examples tension anchor:

Anchoring of railing posts and of supports subject to bending loads, anchoring of cantilevered components

Description	Ref. No.	Content ml	Content of master box pcs.	Weight per master box kg	Weight per piece kg
Cartridge VME plus 440	28258001	440	12	9,79	0,78
Cartridge VME plus 585	28258243	585	12	12,28	1,02
Cartridge VME plus 1400	28258401	1400	5	12,84	2,50
Static mixer VM-XHP	28305301	-	12	0,18	0,01

Curing Time Injection Adhesive VME plus

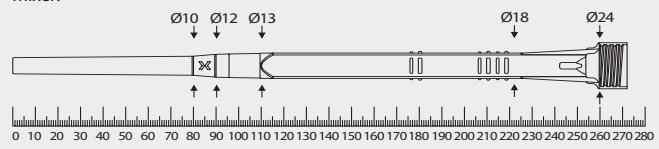
- Cartridge temperature when installing +5°C to +40°C

Temperature (°C) of the base material	Maximum gel time	Initial curing time ¹⁾	Minimum curing time	
			dry base material	wet base material
0°C bis +4°C	80 min	30 h	144 h	288 h
+5°C bis +9°C	80 min	20 h	48 h	96 h
+10°C bis +14°C	60 min	15 h	28 h	56 h
+15°C bis +19°C	40 min	9 h	18 h	36 h
+20°C bis +24°C	30 min	6 h	12 h	24 h
+25°C bis +34°C	12 min	4 h	9 h	18 h
+35°C bis +39°C	8 min	3 h	6 h	12 h
+40°C	8 min	1,5 h	4 h	8 h

Usable length static mixer VM-XHP

Drill holes must always be filled from the bottom of the hole to ensure no air pockets are trapped in the adhesive. This is only possible when the tip of the mixing nozzle reaches the very bottom of the drill hole before injecting the adhesive. If the mixing nozzle does not reach the bottom of the drill hole, a mixer extension tube must be used.

Outer diameter mixer:



¹⁾After the initial curing time has passed, the installation of the connecting reinforcement and the installation of the formwork may continue.

Accessories Injection System VME plus for post-installed rebar connection

Rebar Ø	Tension Anchor	Drill Bit Ø	Blow-out pump / Air gun ¹⁾	Cleaning brush RB ¹⁾	Retaining washer VM-IA ³⁾	Extension tube ³⁾	Maximum permissible drilling depth for dispenser		
							VM-P 585 Standard, VM-P 585 Profi, VM-P 585 Akku	VM-P 585 Pneumatic	VM-P 585 Pneumatic
mm		mm					mm	mm	mm
8		10	VM-AP 360 ²⁾ VM-ABP 200	RB 10 M6		VM-XE 10	250	250	250
8		12	VM-AP 360 ²⁾ VM-ABP 200 DLS with RS, RS25	RB 12 M6 RB 12 M8		VM-XE 10	700	800	800
10		12	VM-AP 360 ²⁾ VM-ABP 200 DLS with RS, RS25	RB 12 M6 RB 12 M8		VM-XE 10	250	250	250
10		14	VM-AP 360 ²⁾ VM-ABP 200 DLS with RS, RS25	RB 14 M6 RB 14 M8	VM-IA 14	VM-XE 10	700	1000	1000
12	ZA-M12	14	VM-AP 360 ²⁾ VM-ABP 200 DLS with RS, RS25	RB 14 M6 RB 14 M8	VM-IA 14	VM-XE 10	250	250	250
12	ZA-M12	16	VM-AP 360 ²⁾ VM-ABP 200 / 250 / 500 / 1000 DLS with RS, RS25	RB 16 M6 RB 16 M8	VM-IA 16	VM-XE 10	700	1300 ¹⁾	1200 ¹⁾
14		18	VM-AP 360 ²⁾ VM-ABP 200 / 250 / 500 / 1000 DLS with RS, RS25	RB 18 M6 RB 18 M8	VM-IA 18	VM-XE 10 VM-XLE 16	700	1300 ¹⁾	1400 ¹³⁾
16	ZA-M16	20	VM-AP 360 ²⁾ VM-ABP 200 / 250 / 500 / 1000 DLS with RS, RS25	RB 20 M6 RB 20 M8	VM-IA 20	VM-XE 10 VM-XLE 16	700	1300 ¹⁾	1600 ¹³⁾
20	ZA-M20	25 ⁴⁾	VM-AP 360 ²⁾ VM-ABP 250 / 500 / 1000 DLS with RS, RS25	RB 25 M8 ⁵⁾	VM-IA 25	VM-XE 10 VM-XLE 16	500	1000	2000 ¹³⁾
22		28	VM-ABP 250 / 500 / 1000 DLS with RS, RS25	RB 28 M6	VM-IA 28	VM-XE 10 VM-XLE 16	500	1000	2000 ¹³⁾
24/25	ZA-M24	32	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 32 M6 RB 32 M8	VM-IA 32	VM-XE 10 VM-XLE 16	500	1000	2000 ¹³⁾
28		35	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 35 M6 RB 35 M8	VM-IA 35	VM-XE 10 VM-XLE 16	500	1000	2000 ¹³⁾
32		40	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 40 M6	VM-IA 40	VM-XE 10 VM-XLE 16	500	1000	2000 ¹³⁾
34		40	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 40 M6	VM-IA 40	VM-XE 10 VM-XLE 16		1000	2000 ¹³⁾
36		45	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 45 M6	VM-IA 45	VM-XE 10 VM-XLE 16		1000	2000 ¹³⁾
40		55	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 55 M6	VM-IA 55	VM-XE 10 VM-XLE 16		1000	2000 ¹³⁾
See page			179	180	182	181	182 / 183	183	183

¹⁾When using the hollow drill bit SB (see page 178), no further cleaning is required (drill-Ø d₀ ≤ 40 mm, drill hole depth h₁ ≤ 1,000mm)

²⁾Approved for a maximum drilling depth of 10 times the outside diameter of the anchor

³⁾If the static mixer does not reach the bottom of the borehole (see usable length of static mixer), an extension tube must be used. From a drill-Ø d₀ ≥ 14 mm, retaining washer and extension tube must be used for horizontal and overhead installation and for drill hole depths > 240 mm.

⁴⁾From an anchoring depth of l_v > 1300 mm only the mixer extension VM-XLE 16 is permitted ⁵⁾Hammer- or suction drilling. Pneumatic drilling: drill-Ø 26, cleaning brush RB 26 M6



Extract from Permissible Service Conditions of European Technical Assessment ETA-19/0671 for post-installed Rebar Connections with VME plus

Rod diameter	Ø8	Ø8	Ø10	Ø10	Ø12	Ø12	Ø14	Ø16	Ø20	Ø20	Ø22	Ø24	Ø25	Ø28	Ø32	Ø34	Ø36	Ø40													
Tension Anchor ZA / threaded stud					ZAM12				ZAM16				ZAM20				ZAM24														
Drill hole diameter	d ₀ [mm]				10	12	12	14	14	16	18	20	25	26	28	32	32	35	40	45	55										
Design value of bond strength ¹⁾ f _{bd,PIR} [N/mm ²]																															
Concrete strength	C12/15	f _{bd,PIR}	[N/mm ²]	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,5	1,5												
	C16/20	f _{bd,PIR}	[N/mm ²]	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	1,9	1,8												
	C20/25	f _{bd,PIR}	[N/mm ²]	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,2	2,1												
	C25/30	f _{bd,PIR}	[N/mm ²]	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,6	2,5												
	C30/37	f _{bd,PIR}	[N/mm ²]	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	2,9	2,9	2,8												
	C35/45	f _{bd,PIR}	[N/mm ²]	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,3	3,3	3,1												
	C40/50	f _{bd,PIR}	[N/mm ²]	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,6	3,6	3,4												
	C45/55	f _{bd,PIR}	[N/mm ²]	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	3,9	3,8	3,7												
	C50/60	f _{bd,PIR}	[N/mm ²]	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,2	4,1	4,0													
Installation parameters reinforcing steel B500B																															
Amount of adhesive / 100 mm setting depth	[ml]				4,16	8,46	5,07	10,12	5,97	11,78	13,44	15,09	23,11	27,99	30,40	44,65	40,03	44,22	57,32	44,88	72,11	138,47									
Installation parameters Tension Anchor ZA																															
Tension Anchor ZA / threaded stud					ZAM12				ZAM16				ZAM20				ZAM24														
Clearance hole in the fixture	d _f [mm]				14				18				22				26														
Effective setting depth	l _v [mm]				according to static calculation																										
Installation torque	T _{inst} ≤ [Nm]				50				100				150				150														
Width across nut	SW [mm]				19				24				30				36														
Amount of adhesive / 100 mm setting depth	[ml]				11,78				15,09				23,11				40,03														
Different tension anchors see page												177								177				177				on request			

¹⁾The values for f_{bd,PIR} are valid for good bonding conditions according to EN 1992-1-1:2004

Installation

