

# Post-installed Rebar Connections with Injection System VME



## Cartridge VME 385

Side-by-side cartridge  
Content: 385ml  
With big mixer VM-XL and reducers / extension tube for drill holes from 12mm diameter



## Cartridge VME 585

Side-by-side cartridge  
Content: 585ml  
With big mixer VM-XL and reducers / extension tube for drill holes from 12mm diameter



## Cartridge VME 1400

Side-by-side cartridge  
Content: 1400ml  
With big mixer VM-XL and reducers / extension tube for drill holes from 12mm diameter

**Diameter of Rebar:** 8 -28 mm

**Range of Concrete Quality:** C12/15 - C50/60

**Material:** Reinforcement Bars B 500 B

### Description

The Injection System VME for post-installed rebar connections has a European Technical Approval (ETA-07/0299). Reinforcement bars from 8 to 28 mm diameter can be fastened in regular concrete from strength class C12/15 to C50/60. As usual the reinforcement can be designed in accordance with EN 1992-1-1:2004 (EC 2). Using the Tension Anchor ZA in sizes M12, M16 and M20 steel structures can be fixed at minimum edge distance. The hole cleaning procedure for the MKT Injection System VME is much easier when hammer drilling or air drilling. Just blow the holes out using compressed air and the specific MKT cleaning tools. The reduced cleaning results in quicker installation saving labor costs.

Installer training is provided by MKT and a certificate will be issued by an independent institute, which is recognized by the DIBt.

### Applications

Subsequent closing of wall- and ceiling openings, reinforcing existing concrete structures, installation of reinforcement to connect successive structural members, e.g. if reinforcement has been left out or could not be cast in due to the construction sequence, connection of steel structures.



### Injection Cartridge VME



→ Very high loads

→ No shrinkage

Description	Ref. No.	Content ml	Content of master box pcs	Weight per master box kg	Weight per piece kg
Cartridge VME 385	28255501	385	12	8,5	0,70
Cartridge VME 585	28255601	585	12	12,09	0,98
Cartridge VME 1400	28255701	1400	5	12,34	2,40
Static mixer VM-XL	28305201	-	10	0,28	0,03

One static mixer VM-XL including a reducers/extension tube as well as one screw-on cap comes with each cartridge.



**System case and accessories for post-installed rebar connection to use with Injection System VMU plus (fast curing time) or the Injection System VME (long curing times, optimized for very large and deep drill holes)**

**Description and content:**

Compact system case including equipment for every rebar diameter as well as all the tools necessary for the installation of post-installed rebar connections using the Injection System VME or VMU plus. All parts also sold separately.



**Drilling:**

- Drilling aid device
- Flat- / Ring wrench

**Accessories for drill hole cleaning:**

- 1 of each air hose RS 25 and RS 35
- 1 of each blow-out nozzle RD 12/14, 16/18, 20/25, 30/35
- 1 of each cleaning brush RB 12 M8 – RB 35 M8
- Connection set RS with air valve and connector
- 5 Brush extensions RBL M8, L = 500 mm
- 1 SDS-plus adapter RBL M8-SDS

**Accessories for injection:**

- 5 Static mixer VM-XL
- 5 of each retaining washer VM-IA Ø12 mm - Ø35 mm
- 5 of each extension tube VM-XE 10/500 and VM-XLE 16/500
- Frame saw

**Other:**

- Approval
- Installation sheet and Installation report (available for download at [www.mkt.de](http://www.mkt.de))
- Filling quantity tables
- Adhesive tape
- Measuring tape
- Thermometer
- Ear protection, Breathing protection, Protective goggles and protective gloves

Description	Ref. No.	Suitable for drill hole-Ø mm	Pkg. content pcs.	Weight per piece kg
VME System case	85999101	12 - 35	1	11,8

**System Components**

- Filling of drill hole
- For drill hole diameter 12 - 35 mm

Description	Ref. No.	Length mm	Rebar-Ø mm	Suitable for drill hole Ø mm	Colour	Package content pcs.	Weight per pkg. kg
<b>Extension tube</b>							
VM-XE 10/1000	85952101	1000	8 - 12	12 - 16	white	10	0,30
VM-XE 10/2000	85954101	2000	8 - 12	12 - 16	white	10	0,65
VM-XLE 16/1000	85956101	1000	14 - 28	18 - 35	grey	10	1,15
VM-XLE 16/2000	85958101	2000	14 - 28	18 - 35	grey	10	3,50
<b>Retaining washer (only for post-installed rebar connections. Fits to the system case)</b>							
VM-IA 12	85912101	-	8	12	white	20	0,04
VM-IA 14	85914101	-	10	14	yellow	20	0,01
VM-IA 16	85916101	-	12	16	blue	20	0,02
VM-IA 18	85918101	-	14	18	black	20	0,01
VM-IA 20	85920101	-	16	20	grey	20	0,02
VM-IA 25	85925101	-	20	25	green	20	0,05
VM-IA 32	85932101	-	25	32	brown	20	0,10
VM-IA 35	85935101	-	28	35	red	20	0,12

Extension pipe VM-XE and VM-XLE can be cut to corresponding drill hole depth. Extension pipe > 2000 mm on demand.

**Cleaning Brush RB M8**

- Reinforced brushes with connecting thread M8 for deeper drill holes



Description	Ref. No.	Rebar-Ø mm	Suitable for drill hole Ø mm	Pkg. content pcs.	Weight per piece kg
RB 12 M8	85812101	8	12	1	0,05
RB 14 M8	85814101	10	14	1	0,05
RB 16 M8	85816101	12	16	1	0,05
RB 18 M8	85818101	14	18	1	0,05
RB 20 M8	85820101	16	20	1	0,05
RB 25 M8	85825101	20	25	1	0,06
RB 32 M8	85832101	25	32	1	0,08
RB 35 M8	85835101	28	35	1	0,08
Brush extension RBL M8, L= 500 mm	85871101	8 - 28	12 - 35	1	0,32
SDS-Plus adapter RBL M8 SDS	85881101	-	12 - 35	1	0,07

Please select Brush extension RBL and SDS-Plus adapter according to depth of drill hole. For drill hole depth > 500 mm, the proper number of Brush extensions must be connected.

**Blow-out nozzle**

- Every nozzle cover two drill hole diameter
- Fits on the air hose RS



Description	Ref. No.	Rebar-Ø mm	Suitable for drill hole-Ø mm	Pkg. content pcs.	Weight per piece kg
Blow-out nozzle RD 12/14	85852101	8 - 10	12 - 14	1	0,01
Blow-out nozzle RD 16/18	85854101	12 - 14	16 - 18	1	0,02
Blow-out nozzle RD 20/25	85856101	16 - 20	20 - 25	1	0,03
Blow-out nozzle RD 30/35	85858101	24 - 28	30 - 35	1	0,05

**Air hose**

- Pre-assembled set with connectors
- To use with air valve and blow-out nozzle



Description	Ref. No.	Rebar-Ø mm	Suitable for drill hole-Ø mm	Pkg. content pcs.	Weight per piece kg
Air hose RS 25 (2 m)	85802101	8 - 20	12 - 25	1	0,10
Air hose RS 35 (3 m)	85804101	24 - 28	30 - 35	1	0,40

**Air Valve**

- For drill hole cleaning with



Description	Ref. No.	Rebar-Ø mm	Suitable for drill hole-Ø mm	Pkg. content pcs.	Weight per piece kg
Connection Set RS with valve and connector	85890101	8 - 28	12 - 35	1	0,40

# Tension Anchor ZA



**Thread:** M12, M16, M20  
**Range of Concrete Quality:** C12/15 - C50/60  
**Material:** Stainless steel A4/316  
**On request:** Stainless steel HCR

## Description

The Tension Anchor ZA consists of a connection thread made of stainless steel A4 or HCR which is welded to a reinforcement bar B 500 B. The Tension Anchor ZA is used with the MKT Injection Adhesive VME and is part of the approvals ETA-07/0299 / Z-21.8-1872. It can be used in cracked and non-cracked concrete and can be designed in accordance with EN 1992-1-1 (EC 2).

Cleaning brushes are required for diamond drilled holes only. If the complete anchorage depth of the Tension Anchor is not required, the reinforcement bar can be cut down to the required length.

## Applications

Connection of steel structures to reinforced concrete  
 Maximum loads with minimum edge distance possible  
 Brackets, canopies, signs, stairs

## Tension Anchor ZA



- Stainless steel A4;  
High corrosion resistant steel 1.4529 (HCR)
- Approved for cracked and non-cracked concrete



Description	Ref. No.	Drill-hole-Ø mm	max. setting depth mm	Fixture thickness t <sub>fix</sub> mm	Anchor length mm	Weight per piece kg
ZA M12-60/975 A4	85306501	16	900	60	975	0,9
ZA M12-200/1115 A4	85320501	16	900	200	1115	1,0
ZA M16-60/1180 A4	85506501	20	1100	60	1180	1,9
ZA M16-200/1320 A4	85520501	20	1100	200	1320	2,1
ZA M20-60/1485 A4	85606501	25	1400	60	1485	3,7
ZA M20-200/1625 A4	85620501	25	1400	200	1625	4,0

Stainless steel HCR and other lengths on demand.

**Cartridge Injection Adhesive VME see page 135**  
**Dispenser see page 132**  
**System Accessories see page 136**



## Extract from Permissible Service Conditions of ETA-07/0299 and Z-21.8-1872 for Post-installed Rebar Connections and Tension Anchor ZA with Injection System VME

Concrete Strength		C12/15	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
		Design value of bond strength f <sub>bd</sub> [N/mm <sup>2</sup> ]	Hammer- and pneumatic drilling <sup>1)</sup>	1,6	2,0	2,3	2,7	3,0	3,4	3,7
	Diamond core drilling <sup>2)</sup>	1,6	2,0	2,3	2,7	3,0	3,0	3,4	3,7	3,7

<sup>1)</sup> Minimum anchorage lengths l<sub>o,min</sub> and l<sub>o,min</sub> according to EN 1992-1-1

<sup>2)</sup> Minimum anchorage lengths l<sub>o,min</sub> and l<sub>o,min</sub> given in the EN 1992-1-1 for anchorages and overlap splices shall be multiplied by the factor 1.5 for diamond core drilling

## Installation parameters

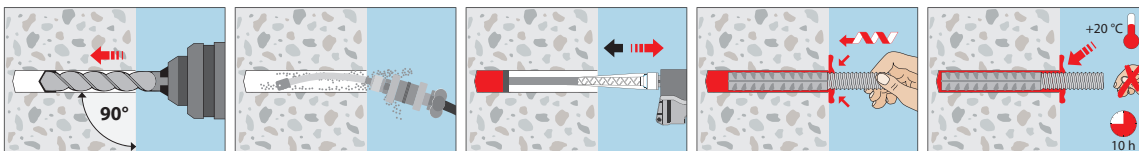
Tension Anchor ZA		ZA M12	ZA M16	ZA M20	ZA M24
RebarØ	[mm]	12	16	20	25
Drill hole diameter	d <sub>o</sub> [mm]	16	20	25	32
Diameter of clearance hole	d <sub>r</sub> [mm]	14	18	22	26
Effective setting depth	l <sub>v</sub> [mm]	according to static calculation			
Installation torque	≤ T <sub>inst</sub> [Nm]	50	100	150	150
Width across nut	SW [mm]	19	24	30	36
max. lap length	l <sub>o</sub> [mm]	800	1000	1300	1650
max. tension load	appr. N [kN]	35,1	62,4	97,6	152,5

## Rebar connection with VME

Rebar-Ø	[mm]	8	10	12	14	16	20	24	25	26	28
Drill hole-Ø	d <sub>o</sub> [mm]	12	14	16	18	20	25	30 <sup>3)</sup>	32	32	35
Amount of adhesive / 100 mm setting depth	[ml]	7,5	9,0	10,6	12,1	13,6	21,2	30,5	37,6	32,8	41,6

<sup>3)</sup> Cleaning brush and retaining washer for drill hole diameter 30 mm on demand.

## Installation



## Curing Time Injection adhesive VME

- Cartridge temperature when installing min. +5°C - +40°C

Temperature (°C) of the base material	maximum working time	minimum curing time	
		dry base material	wet base material
+5°C to +9°C	1:00 h	72 h	144 h
+10°C to +19°C	45 min	36 h	72 h
+20°C to +29°C	30 min	10 h	20 h
+30°C to +39°C	20 min	6 h	12 h
40°C	12 min	4 h	8 h