

Injections System VMH

for post-installed rebar connection



Reinforcement Bars B500



Tension Anchor ZA



Cartridge VMH 280
Coaxial cartridge suitable for silicone guns
Content: 280ml including 2 mixers



Cartridge VMH 345
Side-by-side cartridge
Content: 345ml



Cartridge VMH 420
Coaxial cartridge
Content: 420ml

Description

The Injection System VMH also has the European Technical Assessment for post-installed rebar connection. Reinforcement bars with diameters from 8mm to 32mm as well as tension anchors from M12 to M24 with a setting depth up to 2m¹⁾ can be fixed. Due to the short processing and curing times, the VMH is particularly suitable for low temperatures.

Advantages

- Short processing and curing times, therefore ideal for low temperatures
- Wide range of application, as up to 35mm rebar diameter allowed
- Drill hole creation with hammer drill, compressed air drill or hollow drill bit
- Approved for installation in dry and wet concrete
- Opened cartridges can be reused with a new static mixer
- Approved for use under fire exposure
- Tie rods ZA with connecting thread M12 - M24 can be supplied in individual lengths on request
- When using the hollow drill bit SB, no further borehole cleaning is required

Application examples for post-installed rebar connection:

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

Application examples for tension anchors:

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



Injection Cartridge VMH

→ Hybrid injection adhesive, styrene free

→ for post-installed rebar

| Description | Ref. No. | Content ml | Content of master box | Weight per master box kg | Weight per piece kg |
|---------------------------------|----------|------------|-----------------------|--------------------------|---------------------|
| Cartridge VMH 280 ¹⁾ | 28251501 | 280 | 12 | 6,70 | 0,56 |
| Cartridge VMH 345 | 28253501 | 345 | 12 | 8,00 | 0,65 |
| Cartridge VMH 420 | 28257501 | 420 | 12 | 10,1 | 0,83 |
| Static mixer VM-XHP | 28305301 | - | 12 | 0,18 | 0,01 |

One static mixer comes with each cartridge.

¹⁾Cartridge VMH 280 comes with 2 mixers.

Curing Time

Injection Adhesive VMH

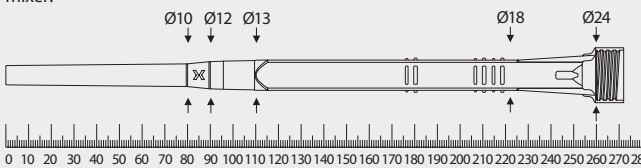
→ Cartridge temperature when installing +5°C to +40°C

| Temperature (°C) of the base material | Gel time | Curing time | |
|---------------------------------------|----------|-------------------|-------------------|
| | | Dry base material | Wet base material |
| -5°C to -1°C | 50 min | 5 h | 10 h |
| 0°C to +4°C | 25 min | 3,5 h | 7 h |
| +5°C to +9°C | 15 min | 2 h | 4 h |
| +10°C to +14°C | 10 min | 1 h | 2 h |
| +15°C to +19°C | 6 min | 40 min | 80 min |
| +20°C to +29°C | 3 min | 30 min | 60 min |
| +30°C to +40°C | 2 min | 30 min | 60 min |

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⁾See table accessories for Injection system VMH



Accessories for Injection System VMH 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 ²⁾ | Extension tube ²⁾ | Maximum permissible drilling depth for dispenser | | |
|-----------------|----------------|-------------|---|---------------------------------|--------------------------------------|---------------------------------------|---|--|----------------------------------|
| | | | | | | | VM-P 345 Standard, VM-P 345 Profi, VM-P 380 Standard, VM-P 380 Profi, VM-P 345 Akku, VM-P 380 Akku, VM-P 825 Akku ⁵⁾ | VM-P 345 Pneumatic Eco, VM-P 380 Pneumatic Eco, VM-P 380 Pneumatic | VM-P 825 Pneumatic ⁵⁾ |
| mm | mm | mm | | | | | mm | mm | mm |
| 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 | | 14 | VM-AP 360 ²⁾ VM-ABP 200 DLS with RS, RS25 | RB 14 M6 RB 14 M8 | VM-IA 14 ³⁾ | VM-XE 10 | 700 | 1000 | 1000 |
| 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 ³⁾ | VM-XE 10 | 700 | 1000 | 1200 |
| 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 ³⁾ | VM-XE 10 ⁴⁾ , VM-XLE 16 | 700 | 1000 | 1400 |
| 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 ³⁾ | VM-XE 10 ⁴⁾ , VM-XLE 16 | 700 | 1000 | 1600 |
| 20 | ZA-M20 | 25 | VM-ABP 250 / 500 / 1000 DLS with RS, RS25 | RB 25 M8 RB 26 M6 | VM-IA 25 ³⁾ | VM-XE 10 ⁴⁾ , VM-XLE 16 | 500 | 700 | 2000 |
| 22 | | 28 | VM-ABP 250 / 500 / 1000 DLS with RS, RS25 | RB 28 M6 | VM-IA 28 ³⁾ | VM-XE 10 ⁴⁾ , VM-XLE 16 | 500 | 700 | 2000 |
| 24 / 25 | ZA-M24 | 32 | VM-ABP 250 / 500 / 1000 DLS with RS, RS35 | RB 32 M6 RB 32 M8 | VM-IA 32 ³⁾ | VM-XE 10 ⁴⁾ , VM-XLE 16 | 500 | 500 | 2000 |
| 28 | | 35 | VM-ABP 250 / 500 / 1000 DLS with RS, RS35 | RB 35 M6 RB 35 M8 | VM-IA 35 ³⁾ | VM-XE 10 ⁴⁾ , VM-XLE 16 | 500 | 500 | 2000 |
| 32 | | 40 | VM-ABP 250 / 500 / 1000 DLS with RS, RS35 | RB 40 M6 | VM-IA 40 ³⁾ | VM-XE 10 ⁴⁾ , VM-XLE 16 | 500 | 500 | 2000 |
| 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 hole depth $h_1 \leq 1,000\text{mm}$)

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), a extension tube must be used. From a drill-Ø $do \geq 14\text{ mm}$, retaining washer and extension tube must be used for horizontal and overhead installation and for drill hole depths $> 240\text{ mm}$.

⁴⁾Not in combination with the dispenser VM-P 825 Pneumatic

⁵⁾Cartridge VMH 825 available on request



Extract from Permissible Service Conditions of European Technical Assessment ETA-17/0715 for post-installed rebar connection with the Injekton System VMH

| 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 $f_{bd,PIR}^{(1)}$ [N/mm ²] | 1,6 | 2,0 | 2,3 | 2,7 | 3,0 | 3,4 | 3,7 | 4,0 | 4,3 |

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

Installation parameters and Amount of adhesive Injection System VMH for post-installed rebar connection

| Rebar-Ø | [mm] | 8 | 10 | 12 | 14 | 16 | 20 | 22 | 24 | 25 | 28 | 32 |
|---|-----------|------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
| Drill hole-Ø | do [mm] | 12 | 14 | 16 | 18 | 20 | 25 | 28 | 32 | 32 | 35 | 40 |
| Amount of adhesive / 100 mm setting depth | [ml] | 8,46 | 10,12 | 11,78 | 13,44 | 15,09 | 23,11 | 30,4 | 44,65 | 40,03 | 44,22 | 57,32 |

Installation parameters Injection System VMH with Tension Anchor

| Tension Anchor ZA | | ZA M12 | ZA M16 | ZA M20 | ZA M24 |
|---|----------------------|---------------------------------|------------|------------|-------------------|
| Rebar | [mm] | 12 | 16 | 20 | 25 |
| Drill hole diameter | do [mm] | 16 | 20 | 25 | 32 |
| Diameter of clearance hole | $df \leq$ [mm] | 14 | 18 | 22 | 26 |
| Effective setting depth | lv [mm] | according to static calculation | | | |
| Installation torque | $T_{inst} \leq$ [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 |
| Tension Anchor ZA see page | | 177 | 177 | 177 | on request |

Installation

