

# Declaration of Performance

1404-CPR-3157

**1. Unique identification code of the product-type:** Injection anchors Mungo smartline SP100 for use in masonry

**2. Manufacturer:** Mungo Befestigungstechnik AG, Bornfeldstrasse 2, CH-4600 Olten/Switzerland

**3. System/s of AVCP:** System 1

**4. Intended use or use/es:**

Product	Intended use
Injection anchors for use in masonry	For fixing and/or supporting to masonry, structural elements (which contributes to the stability of the works) or heavy units.

**5. European Assessment Document:** EAD 330076-00-0604 "Metal injection anchors for use in masonry"

**European Technical Assessment:** ETA-19/0189 of 09/05/2019

**Technical Assessment Body:** ITB-Institut Techniki Budowlanej

**Notified body/ies:** 1404 - ZAG

**6. Declared performance:**

**Mechanical resistance and stability (BWR 1)**

Essential characteristic	Performance
Characteristic resistance for tension and shear loads	See appendix, especially Annex C1
Reduction factor for job site tests ( $\beta$ )	See appendix, especially Annex C2
Displacement under shear and tension loads	See appendix, especially Annex C1
Edge distance and spacing	See appendix, especially Annex C2

**Safety in case of fire (BWR 2)**

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1
Resistance to fire	No performance assessed

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Massimo Pirozzi, Dipl.-Ing.

Head of Engineering

*p.p.a. Massimo Pirozzi*

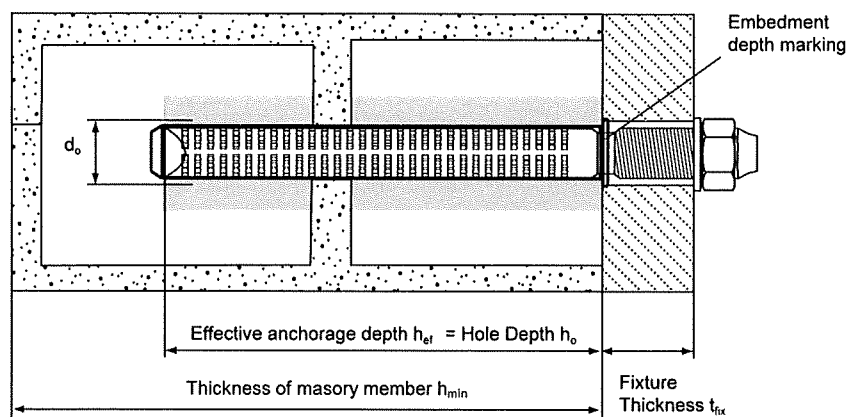
Olten, 2019-01-07



This DoP Has been prepared in different languages. In case there is a dispute on the interpretation the English version shall always prevail.

The Appendix includes voluntary and complementary information in English language exceeding the (language as neutrally specified) legal requirements.

### Schema of the anchor in use



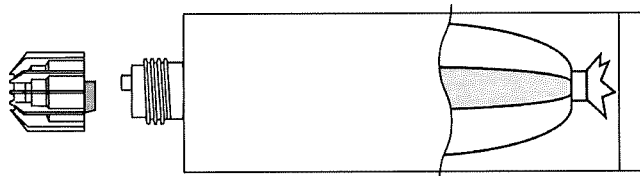
**smartline SP100**

Installation conditions

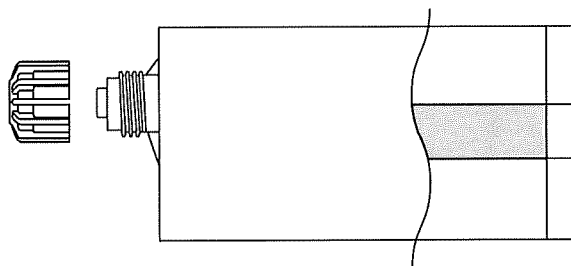
**Annex A1**  
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### Mortar cartridges

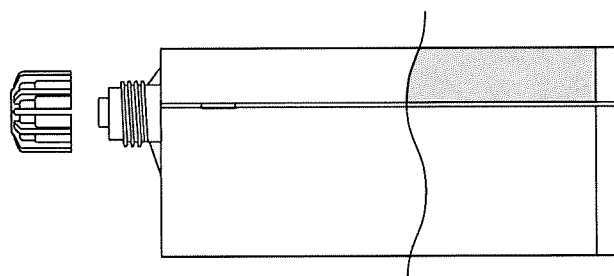
Foil Bag Cartridge:  
165 ml, 300 ml



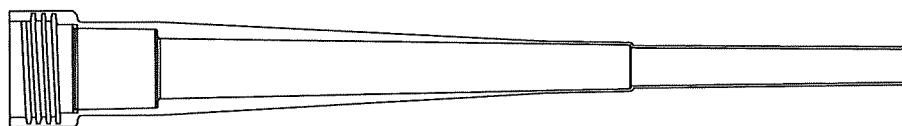
Coaxial Cartridge:  
380 ml, 400 ml,  
410 ml



Side by Side  
Cartridge: 345 ml,  
825 ml



### Mixer

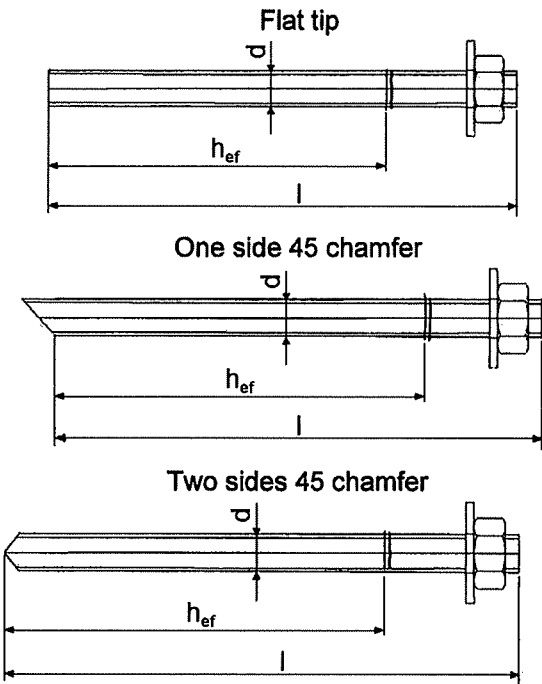


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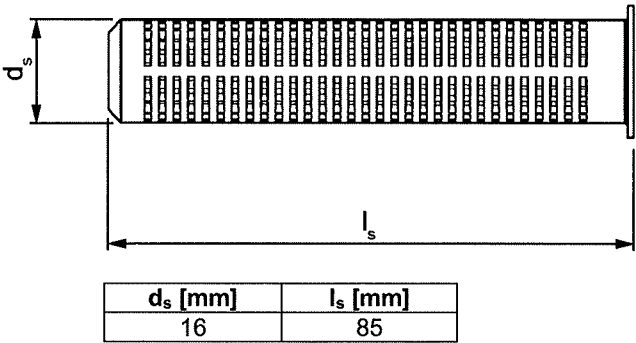
Cartridge type and sizes

**Annex A2**  
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Threaded rods



Perforated plastic sleeve



smartline SP100

Threaded rods and sleeve

**Annex A3**  
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**Table A1: Materials**

Part	Designation	Material
1	Injection mortar	Polyester styrene free resin, hardener, additive
2	Anchor rod	Carbon steel class 5.8, EN ISO 898-1, zinc plated $\geq 5 \mu\text{m}$ , EN ISO 4042
3	Washer	Carbon steel, zinc plated $\geq 5 \mu\text{m}$ , EN ISO 4042
4	Hexagonal nut	Carbon steel class 5, EN 20898-2, zinc plated $\geq 5 \mu\text{m}$ , EN ISO 4042
5	Perforated sleeve	Polyethylene

Commercial standard threaded rods, with:

- material and mechanical properties according to Table A1,
- confirmation of material and mechanical properties by inspection certificate 3.1 according to EN 0204:2004; the documents shall be stored,
- marking of the threaded rod with the embedment depth.

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Materials

**Annex A4**  
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### Specification of intended use

#### Anchorage subject to:

- Static and quasi-static loads.

#### Base materials:

- Perforated ceramic blocks (use category c), according to Annex B2.
- Mortar strength class of the masonry M2,5 at minimum according to EN 998-2:2010.
- For other perforated, ceramic blocks the characteristic resistance of the anchor may be determined by job site tests according to EOTA Technical Report TR 053 under consideration of the  $\beta$ -factor according to Annex C2, Table C4.

#### Temperature range:

- Tb: -40°C to +80°C (max. short term temperature +80°C and max. long term temperature +50°C).

#### Use conditions (Environmental conditions):

- (X1) Structures subject to dry internal conditions (zinc coated steel).

#### Use conditions in respect of installation and use:

- w/d installation and use.

#### Design:

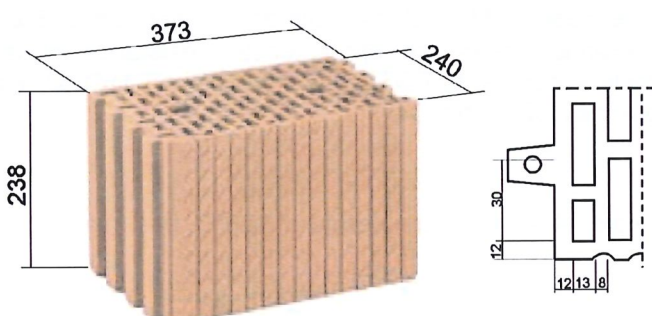
- Verifiable calculation notes and drawings are prepared taking account the relevant masonry in the region of the anchorage, the loads to be transmitted and their transmission to the supports of the structure. The position of the anchor is indicated on the design drawings.
- The anchorages are designed in accordance with to the EOTA Technical Report TR 054 under the responsibility of an engineer experienced in anchorages and masonry work.

#### Installation:

- Dry internal structures.
- Hole drilling by rotary drill mode.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.

smartline SP100	Annex B1 of European Technical Assessment ETA-19/0189
Intended use	

**Table B1: Base material**

Type of base material	Standard
<p>Perforated ceramic blocks (LD) class <math>\geq 15</math></p> 	EN 771-1

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Type of brick and dimensions

**Annex B2**  
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**Table B2: Installation parameters of anchor rods with perforated sleeves**

Size		M10
Size of rod	$d_{nom}$ [mm]	10
Drill hole diameter	$d_o$ [mm]	16
Depth of drilled hole to deepest point	$h_1$ [mm]	90
Effective anchorage depth	$h_{ef}$ [mm]	85
Minimum thickness of masonry member	$h_{min}$ [mm]	115
Torque moment	$T_{inst}$ [Nm]	4

**Table B3: Maximum processing time and minimum curing time of smartline SP100 resin mortar**

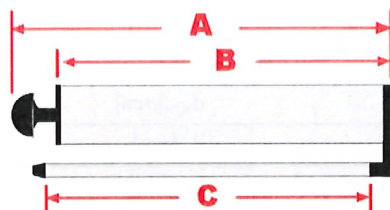
Masonry temperature [°C]	Maximum processing (working) time [minutes]	Minimum curing (loading) time [minutes]
5	18	30
15	8	20
25	3	20
35	2	20

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Installation data, processing time and curing time

**Annex B3**  
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**Manual pump****Brush**

Brush diameter	$d_b$ [mm]
	18 mm

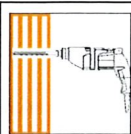
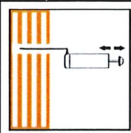
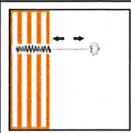
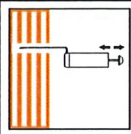
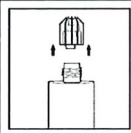
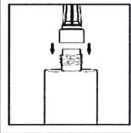
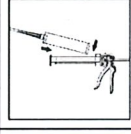

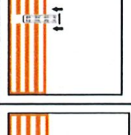
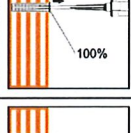
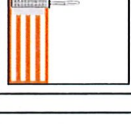
**Applicator guns**

Image	Size Cartridge	Type
	165 / 300 ml	Manual
	345 ml	Manual
	380 / 410 ml	Manual
	165 / 300 / 345 / 380 / 410 ml	Battery

smartline SP100

Tools

**Annex B4**  
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	Drill hole to the required embedment depth with a hammer drill set in rotation-hammer mode using an appropriately sized carbide drill bit.
 X 4	Blow out at least 4 times from the back of the bore hole until return air stream is free of noticeable dust.
 X 4	Brush 4 times by inserting the steel brush to the back of the hole (if needed with an extension) in a twisting motion.
 X 4	Blow out again with manual pump at least 4 times until return air stream is free from noticeable dust.
	Remove the threaded cap from the cartridge without cutting.
	Tightly attach the mixing nozzle.
	Insert the cartridge into the dispenser.
 X	Dispense the first part (~ 10 cm) to waste until an even color is achieved.
	Introduce the sleeve to the back of the hole so that the collar is level with the hole face.
 100%	Insert the nozzle to the end of the sleeve and inject the resin so long till the sleeve will fill into 100%.
	Insert the anchor, slowly with a slight twisting motion into the sleeve. Remove excess resin and leave the fixing until minimum curing (loading) times has elapsed.
<b>smartline SP100</b>	
Installation instruction	
<b>Annex B5</b> of European Technical Assessment ETA-19/0189	

**Table C1: Characteristic tension load and shear load values**

Brick parameter:		Sleeve	Anchor size	Effective anchorage depth $h_{ef}$ [mm]	Characteristic resistance	
Density $\rho_m$ [kg/m <sup>3</sup> ]	Compressive strength $f_b$ [N/mm <sup>2</sup> ]				$N_{Rk}$ [kN] <sup>1)</sup>	$V_{Rk}$ [kN] <sup>2), 3)</sup>
≥ 900	≥ 15	16 x 85	M10	85	3,0	1,25
Partial safety factor $\gamma_M = 2,5$ <sup>4)</sup>						

<sup>1)</sup> For design according to TR 54

$$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{R,pb} = N_{Rk,s}$$

<sup>2)</sup> For design according to TR 54

$$V_{Rk} = V_{Rk,b} = V_{Rk,c} = V_{Rk,s}$$

<sup>3)</sup>  $V_{Rk}$  calculated according to TR 54<sup>4)</sup> In the absence of other national regulations**Table C2: Characteristic bending moment**

Characteristic bending moment	$M_{Rk,s}$ [Nm]	37,38
Partial safety factor	$\gamma_{Ms}$	1,25 <sup>1)</sup>

<sup>1)</sup> In the absence of other national regulations**Table C3: Displacements under tension and shear load**

N [kN]	$\delta_{N0}$ [mm]	$\delta_{N\infty}$ [mm]	V [kN]	$\delta_{V0}$ [mm]	$\delta_{V\infty}$ [mm]
1,3	0,09	0,15	2,5	0,8	2,5

**smartline SP100**Characteristic tension load and shear load values,  
characteristic bending moment, displacements**Annex C1**  
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Electronic copy of the ETA by ITB: ETA-19/0189

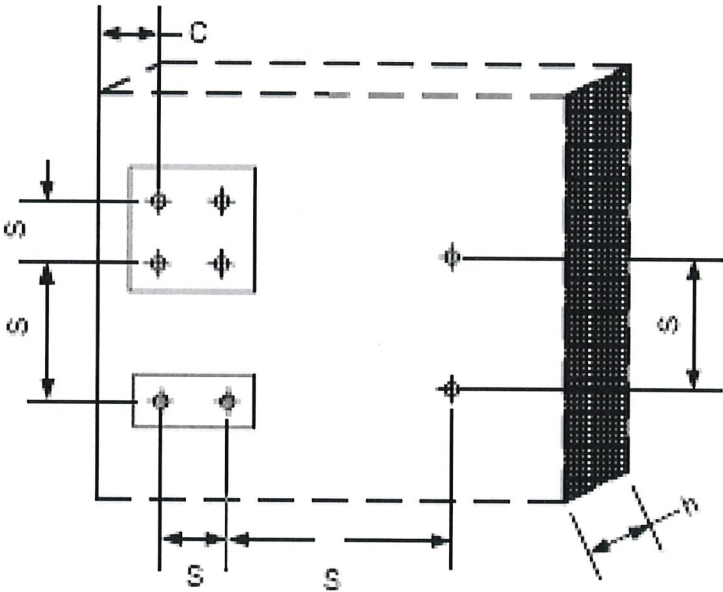
Table C4: Factor  $\beta$  for job site tests

Temperature	factor $\beta$
-40°C to 80°C	0,95 x 0,91 = 0,86

Table C5: Edge distances and spacings

Size $d_{nom} + \Phi d \times L$ [mm]	$s_{or}$ [mm]	$s_{min}$ [mm]	$c_{min}$ [mm]
10 + $\Phi 16 \times 85$	$l_{unit, max}$	$l_{unit, max}$	$\geq 100$

$l_{unit, max}$  – maximal length of masonry unit



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$\beta$ -factor, edge distances and spacings

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