



Crack Injection with Mineral Material

Injection with Cement Paste
Injection with Cement Suspension

Crack Injection



Crack Injection with Mineral Material

Preliminary Notes

- The erection of structures without any cracks cannot be guaranteed
- Cracks are typical depending on the construction type
- Cracks are considered to be a defect when the load-bearing capacity is at risk and the usage restricted

Aim

- Tightness, particularly water tightness
- Reinforcement corrosion protection by preventing aggressive media from penetration
- Increasing the load-bearing capacity of concrete by frictional connection of crack edges

Possible Causes

- Incomplete or wrong static calculation
- Shrinkage of concrete
- Influence of outside temperatures (frost)
- Reinforcement corrosion

Technical Standards

- European Norm DIN EN 1504 – „Products and Systems for the Protection and Repair of Concrete Structures“, part 5 – „Treatment of Cracks“
- DAfStb – guideline „Protection and Repair of Concrete Structures, part 2“
- ZTV-ING (part 3, massive type of construction) – „Additional Technical Terms of Contract for Civil Engineering Structure“ – section 5
- STUVA – ABI Leaflet „Waterproofing of Structures by Injection“
- WTA E-2-04-07/D – Assessment and Repair of Cracked Rendering on Facades

Information

- Prior to the injection works the building has to be checked and an injection concept must be made up accordingly.
- The cause of the leaks must be ascertained according to the state of the art and the current technical standards.

Crack Repair with Adhesive Packers

- Adhesive (insulating material) is applied on the adherend of the packer, then the packer is pushed over the steel pin and pressed on the crack
- The adhesive bonding joint between packer and building component is decisive
- Injection pressure: low pressure method up to about 10 bar (depending on the building component)



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Information

The information on the methods are recommendations and not binding.
If required, please, contact us for professional advice.

Crack Repair with Packers

- As a rule drill holes are made at an angle of 45° in order to meet the crack at the half of its depth
- The drill holes also cross the cracks to form the injection canals
- The packers are tightly clamped in the drill holes
- Injection pressure: low pressure method up to about 10 bar (depending on the building component)



Information on Working with Suspensions

- Mixing with dissolver disc
- Infinitely variable delivery pressures in low pressures range
- Packer with free passage must be used



Demands on the Injection Devices

- Easy operation and testing of the operability
- Low susceptibility to failure and high dosing accuracy
- Pressure can be controlled or limited depending on the injection material
- Robust for reliable service on site
- Resistance of all elements against injection materials and cleansing agents

Demands on the Injection Packers

- The material of the packers must be appropriate for the injection material
- Safe fixation in the building component
- Corrosion resistance of the parts remaining in the building
- Possibility to close the packers
- High pressure stability



DESOI-Service

- 24-hours-service
- Competent and experienced application engineers
- Online shop
- Tender specifications (recommendations)










Advantage for Planners and Users

- 30 years of practical experience in cooperation with universities, technical universities, material testing institutes, experts, engineers, users
- Constant further development of the injection technique according to specific demands on site



Injection – Packer Technique

Order number

31610	<p>Drive-in packer with external thread R ¼", internal thread M6 and free passage Ø 3 mm Ø 6 x 45 mm</p>	
31780	<p>Lamella drive-in packer with external thread R ¼" and free passage Ø 7 mm Ø 14 x 95 mm</p>	
31790	<p>Lamella drive-in packer with external thread R ¼" and free passage Ø 7 mm Ø 18 x 105 mm</p>	
32091	<p>Plastic wedge packer for a width of crack from 2.5 – 5 mm 60 mm long, with external thread R ¼" and free passage Ø 2 mm</p>	
32093	<p>Plastic wedge packer for a width of crack from 5 – 10 mm 82 mm long, with external thread R ¼" and free passage Ø 4 mm</p>	
Accessory for Packer Technique		
35101	<p>Mounting tool 130 mm long</p>	
20340	<p>Steel combi packer with external thread R ¼", internal thread M6, plastic thrust piece R ¼" for pressure up to 60 bar and free passage Ø 4 mm Ø 13 x 130 mm – thrust piece 75 mm, clamping rubber 40 mm</p>	
32040	<p>Universal transparent adhesive packer with external thread R ¼", internal thread M8, safety groove, adherend Ø 50 mm, height 40 mm</p>	
31810	<p>Angle adhesive packer with external thread R ¼", internal thread M6, adherend 2 x 50 x 35 mm, height 35 mm</p>	



Injection – Packer Technique

Accessory for packer technique – page 4

Order number



Locking tappet
with internal thread R ¼" and free passage Ø 7 mm

33000



SSP packer
with sealing lip valve for quick snap
Ø 16 x 95 mm
Ø 18 x 120 mm

31789

31791

Ø 16 x 95 mm



Ø 18 x 120 mm



Detail: sealing lip valve



Steel packer
with external thread M10x1 and free passage Ø 6 mm
Ø 18 x 170 mm
Ø 18 x 300 mm
Ø 18 x 550 mm
Ø 18 x 800 mm

20380

20381

20382

20383

Accessories for steel packer



Quick acting tommy nut – galvanized
with internal thread M10x1

20610



Locking tappet
with internal thread M10x1 and free passage Ø 7 mm

33010



Injection – Machine Technique



Accumulator with manometer



Quick snap with ball valve



Ball valve with mouth piece



Manual Reciprocating Pump HP-60ZD

Order number: 10752

The handy and compact manual reciprocating pump HP-60ZD is efficient and suitable for quick service on site. The ready-mixed material is sucked directly out of the mixing container.

Technical data

Working pressure – acc. to compressive force	0 – 20 bar
Delivery	150 ml/stroke
Grain size – material	0.3 mm
Weight	20 kg
Height / width / length – working position	(cm) 75 / 40 / 90
Height / width / length – transport	(cm) 50 / 40 / 80

Delivery range

HP-60ZD: accumulator with manometer 0 – 25 bar, 3 m material hose Ø 13 mm with ball valve R ½" and quick snap, ball valve with external thread R ½" and mouth piece, suction system

Advantages

- Accumulator with manometer for pressure control and constant material output
- Big material passages – high flow rate
- Space-saving transport – collapsible

Material to be used

- Injection mortar – grain size ≤ 0.3 mm
- Cement paste
- Cement suspension
- Aqueous solution, e. g. micro emulsion



Accumulator with manometer



Suction system with filter



Ball valve with mouth piece

Pedal Controlled Membrane Pump MB-1F

Order number: 10760

The handy and compact manual membrane pump MB-1F is efficient and suitable for quick service on site. The ready-mixed material is sucked directly out of the mixing container.

Technical data

Working pressure – acc. to compressive force	0 – 20 bar
Delivery	150 ml/stroke
Grain size – material	0.3 mm
Weight	13 kg
Height / width / length – working position	(cm) 47 / 20 / 60

Delivery range

MB-1F: accumulator with manometer 0 – 40 bar, 3 m material hose \varnothing 13 mm with ball valve R ½“ and quick snap, ball valve with external thread R ½“ and mouth piece, suction system

Advantages

- Accumulator with manometer for pressure control and constant material output
- Big material passages – high flow rate
- Easy operation and cleaning

Material to be used

- Injection mortar – grain size \leq 0.3 mm
- Cement paste
- Cement suspension
- Aqueous solution, e. g. micro emulsion



Pressure reducer with manometer



Quick snap with ball valve



Ball valve with mouth piece



Double Membrane Pump L-1

Order number: 10688

The compact pneumatic double membrane pump L-1 is suitable for works with high demand on the flow rate in the low pressure range. The delivery pressure is set by the pressure reducer.

Technical data

Working pressure – infinitely variable	1 – 8 bar
Delivery	max. 21 l/min
Grain size – material	max. 0.5 mm
Pressure ratio	1 : 1
Air pressure	max. 8 bar
Compressor output – required	min. 120 l/min
Weight	10 kg
Height / width / length – working position	(cm) 30 / 30 / 36

Delivery range

L-1: 5 m material hose Ø 13 mm with ball valve R ½“ and quick snap, ball valve with external thread R ½“ and mouth piece, suction system, pressure reducer

Advantages

- Big material passages – high flow rate
- Compact design
- Exact pressure adjustment
- Easy operation and cleaning

Material to be used

- Injection mortar – grain size ≤ 0.5 mm
- Cement paste
- Cement suspension
- Aqueous solution, e. g. micro emulsion
- Wood preservative



Suction system
a) Liquid material
b) Mineral-based injection material



Quick snap with ball valve and pressure gauge unit with manometer



Ball valve with mouth piece and pressure gauge unit with manometer

Membrane Pump MB-E

Order number: 10440

The compact and powerful membrane pump MB-E can be used for refilling of voids, creation of horizontal water barriers, masonry stabilisation, and crack injection. The working pressure is infinitely variable from 2 to 20 bar. The ready-mixed material is sucked directly out of the mixing container.

Technical data

Supply	230 V
Motor power	1.5 kW
Working pressure – infinitely variable	2 – 20 bar
Delivery	max. 8 l/min
Grain size – material	max. 0.3 mm
Weight	55 kg
Height / width / length – working position	(cm) 68 / 60 / 60

Delivery range

MB-E: moving device, 2 x suction system, 5 m material hose Ø 13 mm with shoulder nipple R ½", pressure gauge unit with manometer 0 – 40 bar, ball valve R ½" and quick snap, ball valve with external thread R ½" and mouth piece

Advantages

- Pressure control infinitely variable
- Exchangeable suction systems
- Big material passages – high flow rate
- Easy operation and cleaning

Material to be used

- Injection mortar – grain size ≤ 0.3 mm
- Cement paste
- Cement suspension
- Aqueous solution, e. g. micro emulsion

Injection – Mixing Technique



Mixing device tilted



Dissolver disc with safety grid for perfect mixing



Mixing Device ZS-U

Order number: 12071

The powerful mixing device ZS-U has been designed for cement suspensions. The motor is located below the mixing container to allow safe and easy filling. As the mixing container can be tilted there is no loss when pouring the material into another container.

Technical data

Supply	230 V
Motor power	1.5 kW
Speed	2 700 rpm
Weight	42 kg
Height / width / length – working position (cm)	115 / 58.5 / 59

Delivery range

ZS-U: moving device, motor, dissolver disc, 40 litre plastic material container, safety grid and sack opener

Advantages

- Safety grid and sack opener on the material container
- Quick and efficient mixing tool
- Can be combined with mixing time control (optional)

Material to be used

- Cement suspension



Mixing device tilted



Mixing head

Mixing Device AKM-150D

Order number: 12612

The mixing device AKM-150D is especially suitable for cement suspension which have to be mixed up at high speed. Due to the big mixing head and the high speed the material is optimally mixed up. For the mixing process a 60 litre material container can be used in which the mixing tool is submerged.

Technical data

Supply	230 V
Motor power	1.5 kW
Speed	2 800 rpm
Mixing volume	35 litre
Weight	15 kg
Height/ width/ length – working position	(cm) 75 / 40 / 90

Delivery range

AKM-150D: frame, motor and mixing unit

Advantages

- Mixing volume 35 l
- Powerful motor
- Easy operation and cleaning

Material to be used

- Cement suspension



DESOI®

Injection technique
Mixing technique
Spraying technique

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Crack Injection

Made in Germany

