

Part 5.1: Short installation instructions

QAK/V & ZKAK/V

Sealing elements / valve with swelling material or cellular rubber
Duct inner Ø 40 - 300 mm

For sealing duct/cable entries with power cables or telecommunication cables

For retro-sealing empty ducts or ducts occupied by power or telecommunication cables. The seal lies between the cable duct and cables or between two ducts, and ensures tightness against gas diffusion and 5 m water column.

Distinguishing features

Sealing-cushion coating	Swelling material	Cellular rubber
Sealing-tape material	Self-sealing thermo-fixed nonwoven fabric made of PP fibres and special super-absorbent fibres, UV stabilised. Geotextile robustness class TL Geok EStB05-3-	Self-sealing, ethylene-propylene-diene based cellular rubber tape. Closed-cell, soft-elastic cellular rubber, cell size 0.1 - 0.5 mm
Installation	Installation not possible in running or standing water!	Installation possible in running or standing water!
Removal	Simple. No adhesion.	Simple. No adhesion.
Tightness	Directly on contact with water	Directly on contact with water
Reusability	Reusable. Can be reinstalled as soon as the swelling material has completely dried out.	Reusable. Can be reinstalled as soon as the deformed cellular rubber has regained its original shape.

Notes on use

In order to ensure reliable retro-sealing of empty or occupied ducts, the following information is needed:

1. Inner Ø of the outer protective pipe
2. Number and Ø of multiple cable entries in the pipe
3. Distribution of the cable entries
4. Number and outer Ø of cables and/or ducts



Caution!

Take care to comply with our safety instructions for handling sealing elements made of aluminium-plastic laminate.

Requirements for the inflation tool

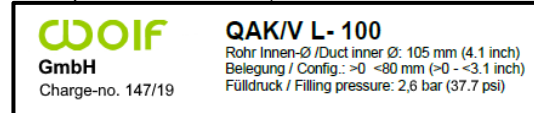
- Filling capacity ≤ 20 litres/min
- Automatic pressure shut-off or pressure gauge for 0 - 4 bar
- The filling-pressure display must be accurate in the range from 0.5 to 3.5 bar (with a tolerance of ± 0.1 bar) at +20 °C

Pressure filling in relation to installation conditions

Pressure filling in relation to the ambient temperature during installation.

See specifications in **MA 05_2.1** Table 2

Example: Product label (reference value for ± 20°C).



MA0 5_2.1 Table 2		Filling pressure [bar psi] at installation/ambient temperature						
		[n °C ± Δ 5 °C] / [n °F ± Δ 9 °F]						
Sealing cushion type		-20 °C -4 °F	-10 °C 14 °F	0 °C 32 °F	+20 °C 68 °F	+30 °C 86 °F	+40 °C 104 °F	+70 °C 158 °F
QAK/V ZKAK/V	L 40	2.4 bar 34.8 psi	2.5 bar 36.3 psi	2.6 bar 37.7 psi	2.8 bar 40.6 psi	2.9 bar 42.1 psi	3.0 bar 43.5 psi	3.3 bar 47.9 psi
	L 45							
	L 50							
	L 60							
	L 80							
	L 90	2.2 bar 31.9 psi	2.3 bar 33.4 psi	2.4 bar 34.8 psi	2.6 bar 37.7 psi	2.7 bar 39.2 psi	2.8 bar 40.6 psi	3.1 bar 45.0 psi
	L 100							
	L 115							
	L 125	1.7 bar 24.7 psi	1.8 bar 26.1 psi	1.9 bar 27.6 psi	2.1 bar 30.5 psi	2.2 bar 31.9 psi	2.3 bar 33.4 psi	2.6 bar 37.7 psi
	L 150	1.4 bar 20.3 psi	1.5 bar 21.8 psi	1.6 bar 23.2 psi	1.8 bar 26.1 psi	1.9 bar 27.6 psi	2.0 bar 29.0 psi	2.3 bar 33.4 psi
	L 175	1.1 bar 16.0 psi	1.2 bar 17.4 psi	1.3 bar 18.9 psi	1.5 bar 21.8 psi	1.6 bar 23.2 psi	1.7 bar 24.7 psi	2.0 bar 29.0 psi
	L 200	0.8 bar 11.6 psi	0.9 bar 13.1 psi	1.0 bar 14.5 psi	1.2 bar 17.4 psi	1.3 bar 18.9 psi	1.4 bar 20.3 psi	1.7 bar 24.7 psi
	L 225							
	L 250	0.7 bar 10.2 psi	0.8 bar 11.6 psi	0.9 bar 13.1 psi	1.1 bar 16.0 psi	1.2 bar 17.4 psi	1.3 bar 18.9 psi	1.6 bar 23.2 psi
	L 275	0.6 bar 8.7 psi	0.7 bar 10.2 psi	0.8 bar 11.6 psi	1.0 bar 14.5 psi	1.1 bar 16.0 psi	1.2 bar 17.4 psi	1.5 bar 21.8 psi
L 300	0.5 bar 7.3 psi	0.6 bar 8.7 psi	0.7 bar 10.2 psi	0.9 bar 13.1 psi	1.0 bar 14.5 psi	1.1 bar 16.0 psi	1.4 bar 20.3 psi	

Installation accessories

- Multi-configurations: Swelling sealing cable separator Art. No. 22.5 QV-MADS or sealing tape Art. No. 22.1 QV-DB are necessary.
- Minimum sealing area : The specified "minimum sealing area per configuration" (see Table 1, MA 05 Part 3.1) must always be complied with, otherwise a dummy tube must be used.
- Additional sealing in the direction of the protective pipe or channel
- The outer surface of the sealing cushion must be completely coated with self-adhesive swelling material or cellular rubber in the case of:
- rough surrounding surfaces e.g. wall openings
 - debris in the channel (e.g. lumps of concrete in wall openings)
 - cavities, objects (such as hose clamps for pipe couplings) or ridges > 3 mm in the sealing area
 - corrugated ducts with a corrugation of > 8 mm

Installation

Preparation: Use a knife to scrape off and clear uneven surfaces in the cable channel. Select a QAK/V or ZKAK/V sealing cushion and accessories from **MA 05 Part 3.1**.

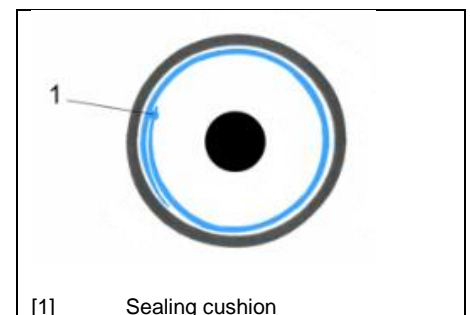
Application

A1

Duct either empty, or occupied by 1 cable or duct

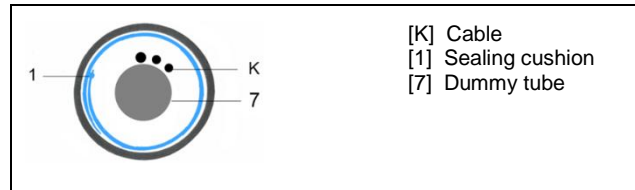
Duct inner $\varnothing \leq 125 \text{ mm} \mid \leq 5 \text{ in.}$

- Position the sealing cushion (valve) round the respective cable, duct or dummy tube, with the valve facing inwards.
- Insert the cushion into the channel and loosen it, so that it lies against the channel wall.
- For ZKADE/V sealing cushions (only): Spray the ZKADE/V sealing cushion with lubricant or washing-up liquid before inserting the cushion into the duct.
- Inflate it to the pressure stated in **MA 05 Part 2.1**, table 2



Duct configuration: **2-n cables etc.**

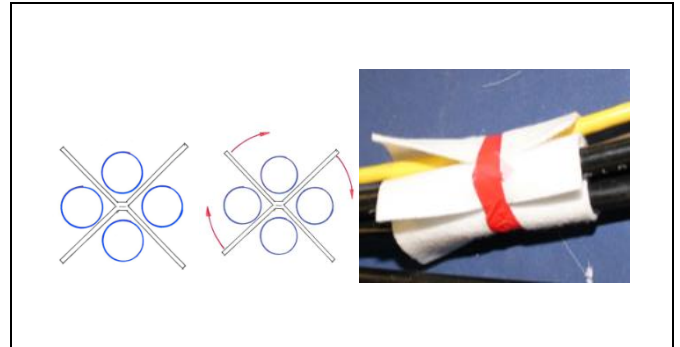
Position the sealing cushion round the cables with the valve facing the cables and loosen it so that it lies against the channel wall.



Accessories : **Swelling sealing cable separator with 4 spaces 22.5 QV-MADS-K**

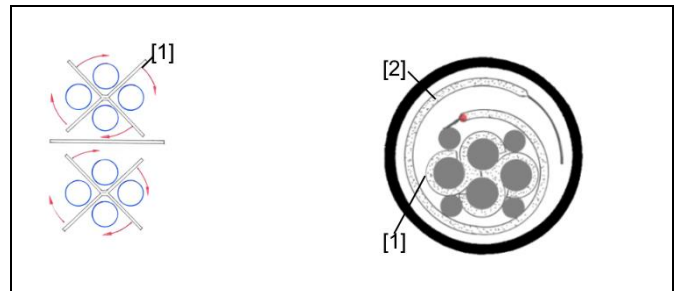
Case 1: 2-4 cables or ducts

- Push apart the cables or microducts
- Lay cables Nos. 1-4 in the spaces of cable separator QV-MADS-K
- Wrap the arms of the cable separator round the cables and fix them loosely in position with adhesive tape.
- Push the cable separator to about 3 cm under the sealing cushion.



Case 2: 5-8 cables or ducts

- For more than 4 cables, lay the cables at 180° to one another between (1) and (2) as shown in the diagram, or use a second QV-MADS-K

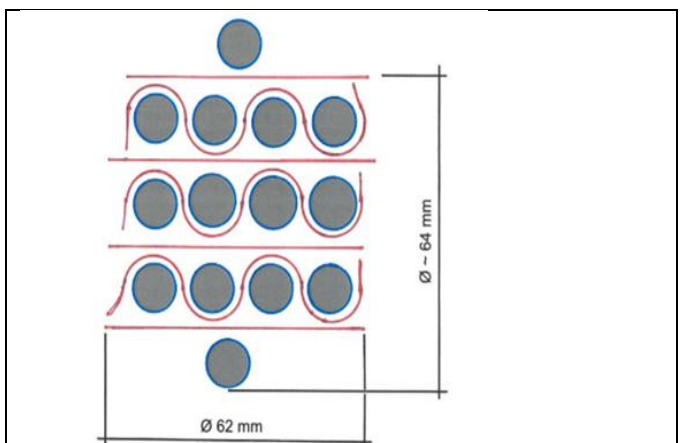
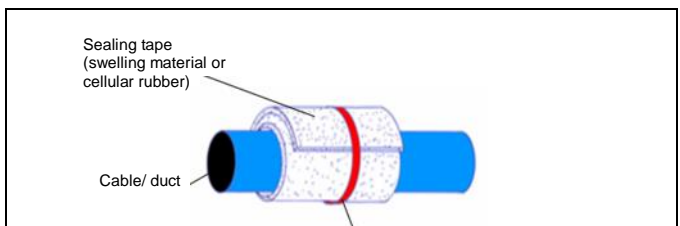


Alternative gap-sealing

Swelling material 22.1 QV-DB

- For each cable, cut a piece of sealing tape to a length of 4 x cable Ø and wrap it loosely round the cable with an overlap of ≥ 1 cm
 - Fix in position with adhesive tape as shown in the diagram and push to about 1 cm under the sealing cushion.
 - For each cable, cut a piece of sealing tape to a length of 2 x cable Ø and wrap it round the cables in "wave-form" (see diagram)
 - Lay a strip of sealing tape between each cable bundle.
- Diagram: example with 14 cables.
- Join both ends of the sealing tape to form a ring and, with the help of a flat object, push it to about 2 cm under the sealing cushion. [See the following sketches Nos. 1 to 9]



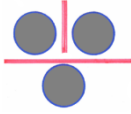
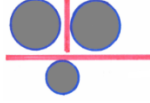
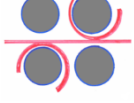
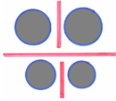
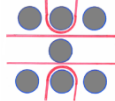
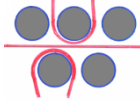

Cellular rubber tape 24.1 ZK-DB



.../ Alternative gap-sealing

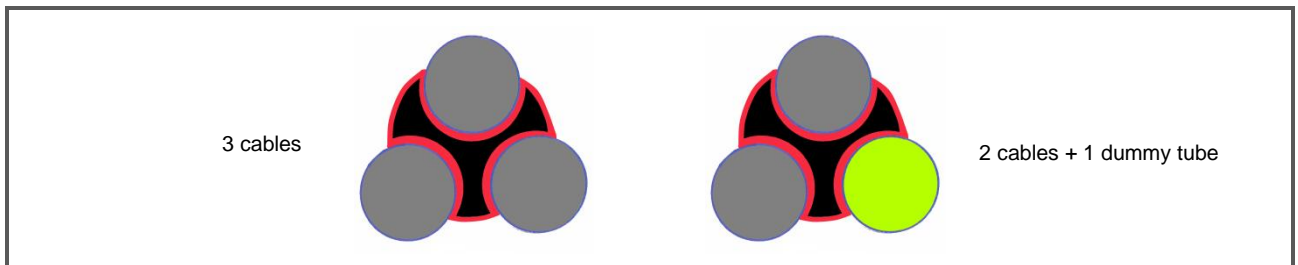
For cable/duct outer diameter ≥ 30 mm

- Any big spaces between individual cables have to be filled. To do this, an appropriate length of sealing tape is cut, rolled it into a ball and positioned in the gap. [See the following sketches Nos. 1 to 9]

<p>No. 1</p> 	<p>No. 2</p> 	<p>No. 3</p> 	<p>No. 4</p> 	<p>No. 5</p> 
<p>No. 6</p> 	<p>No. 7</p> 	<p>No. 8</p> 	<p>No. 9</p> 	

3-notched cable separator made of PP, coated with swelling material 22.9 QV-ADS-3K/..

Using a piece of cable or duct, push the cables apart. Fit a cable or dummy tube into each notch of the cable separator. Push the cable separator to about 3 cm under the sealing cushion.



Application If the "minimum sealing area" is not reached

Accessories: **Dummy-tube**
Sealing tape, self-adhesive

Art. No. 32 DR-QV
Art. No. 22.2 QV-DBK or 24.2 ZK-DBK

Wrap a length of self-adhesive sealing tape (4 x dummy tube Ø) round the dummy tube and push it to about 3 cm under the sealing cushion.

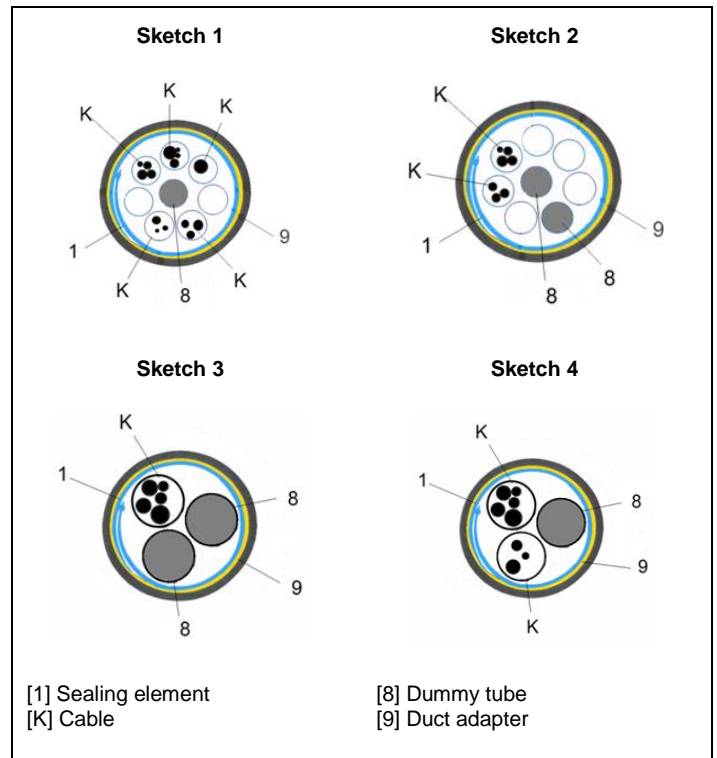
Positioning the dummy tubes

For a single dummy tube

- Position the dummy tube [8] in the centre of the cable configuration as shown in sketch 1.
- For a 3-cable configuration, see sketch 4.

For more than one dummy tube

- Place one of the tubes in the centre and a second tube [8] on the opposite side to an occupied cable duct- (Sketch 2).
- For a 3-cable configuration, see sketch 3.

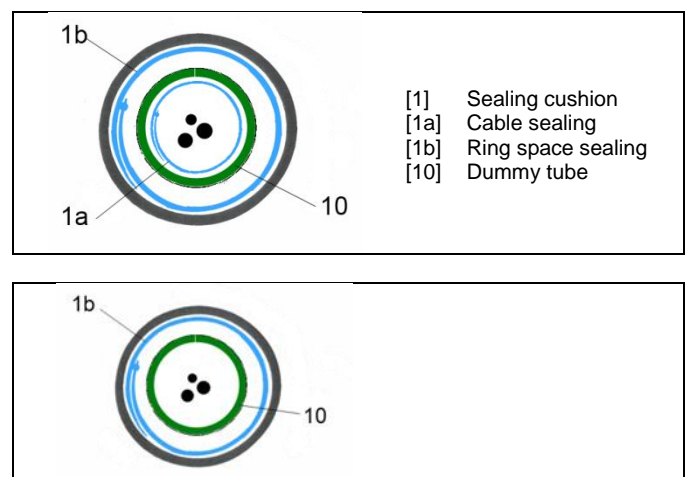


Application **A3** Duct inner Ø ≥ 250 mm | ≥ 10 in.

Duct configuration:

2 x sealing cushions (valve)

- Lay the sealing cushion (valve) [1b] round the cable or cable bundle with the valve side towards the cable. Push the cushion into the channel and loosen it up, in such a way that it lies against the channel wall.
- [10] Widen the spacer tube and slip it over the centrally positioned cables. Wrap a Velcro strip round both ends of the tube to fix it in position (this will secure it against the pressure of the cushion). Push the tube to half its length under the sealing cushion.
- Lay the sealing cushion (valve) [1a] round the cable or cable bundle with the valve side towards the cable. Push the cushion into the spacer tube [10] and loosen it up, in such a way that it lies against the tube wall.



Duct configuration and reusability

The sealing cushion can be used a total of 4 times

1. Retrofitting a service entry in a building, without removing the sealing system

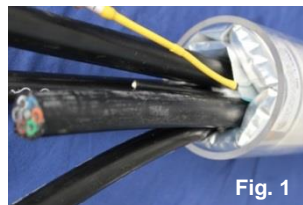
- Remove the valve insert, using a torque screwdriver.
- Deflate the sealing cushion.
- Press the sealing cushion manually towards the surrounding borehole wall

Retrofit the cables:

- Lay film or sealing tape over the inner cables.
- If there are more than 2 cables, seal the gaps between them by means of sealing inserts 22.5 QV-MADS or 24.5 ZK-MADS.
- Screw the valve insert back in place. Inflate the sealing cushion.

2. Cable access chambers: removal and refurbishment of the sealing system

- Remove the valve insert, using a torque screwdriver
- Deflate the sealing cushion.
- Remove the sealing cushion without damaging it.
- Remove wet cellular rubber or swelling material tapes (Figs. 1 and 2). Alternatively, the cushion can be allowed to dry out completely.
- Cut new self-adhesive tapes to the required length (Fig. 3) and glue them to the sealing element (Fig. 4)
- Wind the sealing cushion round a mandrel of Ø 50 mm, press out any remaining air and screw back the valve insert.
- Remove wet sealing inserts and gap-fillers. Replace them with new ones, acc. to the instructions provided. (Fig. 5)
- The sealing cushion can now be reinstalled.



Supplier

Your local sales partner

National sales



WOIF[®] GmbH

Zazenhäuser Str. 52
70437 Stuttgart, Germany

Tel. ++49 (0) 711 87 39 41
Fax ++49 (0) 711 87 12 30

Email: service@wolf-systems.com
Internet: www.wolf-systems.com

All information, pictures and graphic representations correspond to our current knowledge and are correct to the best of our knowledge and belief. However, they cannot be considered as a binding warranty of the properties described. Such a warranty applies only to our product standards. The user must judge for himself on his own responsibility whether the products described are suitable for his intended application. Our liability for these products is based exclusively on our general terms and conditions of business. We reserve the right to alter our specifications without prior notice. We also reserve the right to make such changes to materials or processes as do not affect compliance with the specifications without prior notice to the buyer