

Part 5.1: Short installation instructions

Art.-Group 16	WOLF® Sealing elements / valve Duct inner Ø 40 - 300 mm
POWER & TELECOMMUNICATION CABLES	

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.

Features of the coating material

Sealing element type	Material	Note	Reuseable (reassembly)
„ZK“	Cellular rubber sealing strip	Installation possible in standing or running water	The strip must not be damaged. The sealing element can be installed as soon as the deformed cellular rubber has regained its original shape.
„Q“	Non-woven waterproofing sealing strip (PP-fleece with water swelling polymer)	Installation not possible in standing or running water	The sealing element can be installed as soon as the sealing strip has completely dried out
„SQ“	SQB-V-sealing strip (PES/CO with water swelling SAP)		The strip must not be damaged. The sealing element can be installed as soon as the sealing strip has completely dried out

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 \leq 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 \pm 0.1 bar) at +20 °C

PRESSURE FILLING IN RELATION TO INSTALLATION CONDITIONS

Pressure filling in relation to the ambient temperature during installation.

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

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

WOOLF GmbH
Charge-no. 178/23

ZKAK/V L- 100
Rohr Innen-Ø/Duct inner Ø: 105 mm (4.1 inch)
Belegung / Config.: 0 <70 mm (0 <2.8 inch)
Fülldruck / Filling pressure: 2.6 bar (37.7 psi)

MA0 5_2.1 Table 2	Filling pressure [bar psi] at installation/ambient temperature [n °C \pm Δ 5 °C] / [n °F \pm Δ 9 °F]						
	-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
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	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 90							
L 100							
L 115	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 125							
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

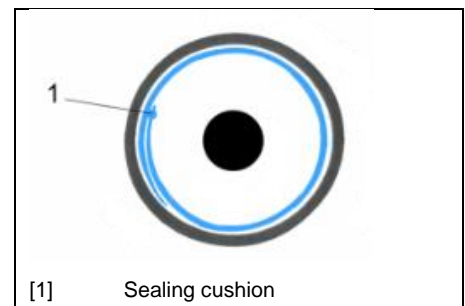
- Multi-configurations: Wolf® cable separator (QV, SQ..) or Wolf® sealing strip are necessary.
- Minimum sealing area: The specified "minimum sealing area per configuration" (see Table 1, MA 05 Part 3.1) must always be complied with, otherwise a dummy tube plug must be used.
- Additional sealing in the direction of the protective pipe or channel
- The outer surface of the sealing cushion must be completely coated f.ex. with self-adhesive cellular rubber (« ZK ») 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 sealing cushion and accessories from **MA 05 Part 3.1**.

Application **A1** **Duct either empty, or occupied by 1 cable or duct** Duct inner $\varnothing \leq 125 \text{ mm} \mid \leq 5 \text{ in.}$

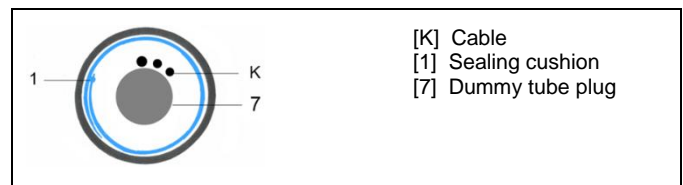
- Position the sealing cushion (valve) round the respective cable, duct or dummy tube plug, with the valve facing inwards.
- Insert the cushion into the channel and loosen it, so that it lies against the channel wall.
- For ZKADE/V sealing cushions (only): Spray the ZKADE/V sealing cushion with lubricant 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



Application **A2** **Duct with multi-configuration** Duct inner \varnothing **40 - 250 mm** | **1.6 - 10 in.**

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

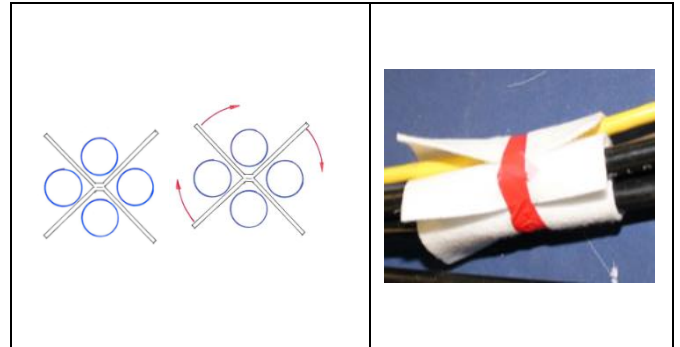
Position the sealing cushion round the cables with the valve facing the cables and loosen it so that it lies against the channel wall.



Accessories: **Wolf® Cable separator (QV, SQ) with 4 spaces**

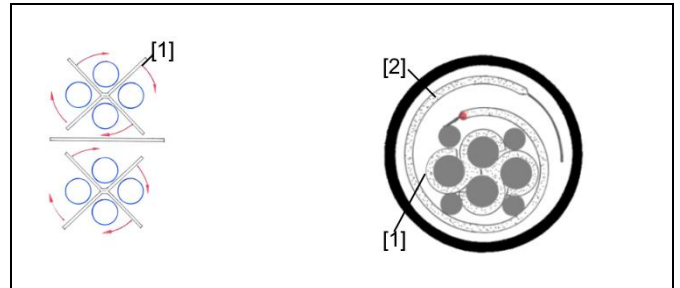
Case 1: 2 - 4 cables or ducts

- Push apart the cables or microducts
- Lay cables Nos. 1-4 in the spaces of cable separator
- 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 cable separator

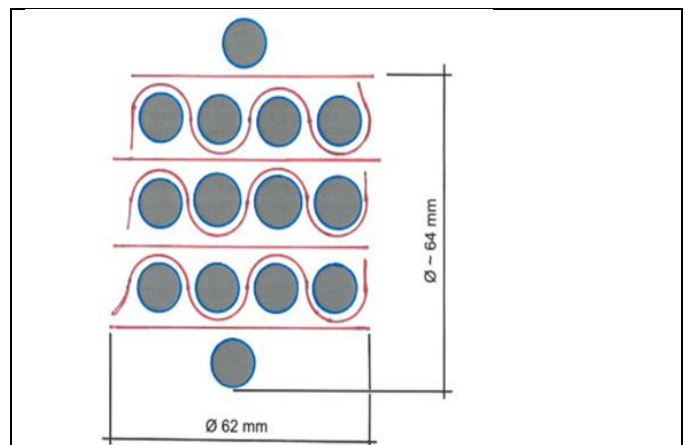
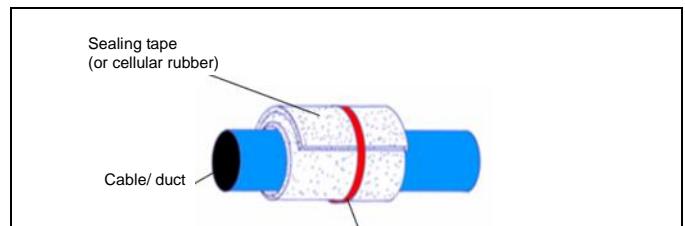


ALTERNATIVE GAP-SEALING

Wolf® Swelling sealing strips (QV, SQ)

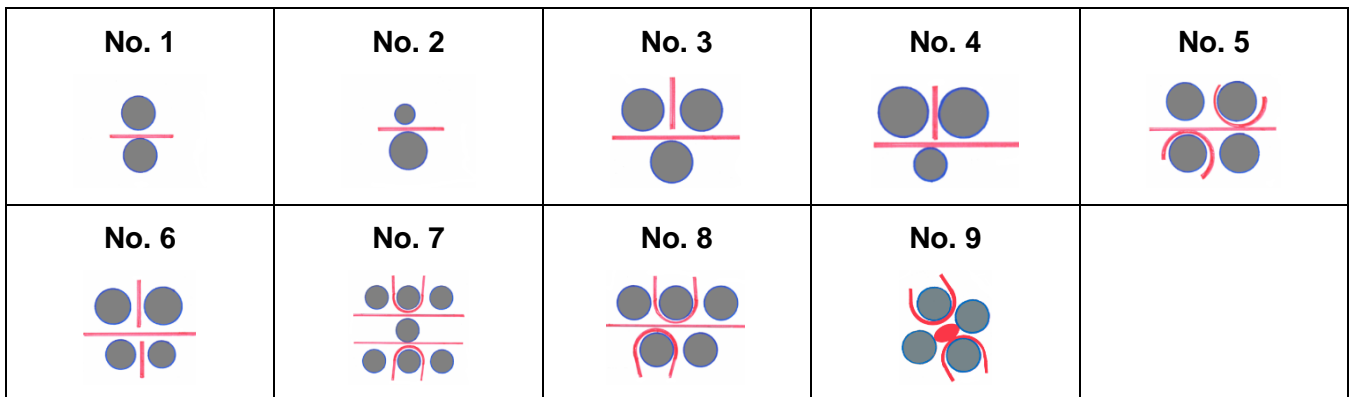
- For each cable, cut a piece of sealing strip to a length of 4 x cable Ø and wrap it loosely round the cable with an overlap of ≥ 1 cm
 - Fix in position with adhesive tape as shown in the diagram and push to about 1 cm under the sealing cushion.
 - For each cable, cut a piece of sealing tape to a length 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



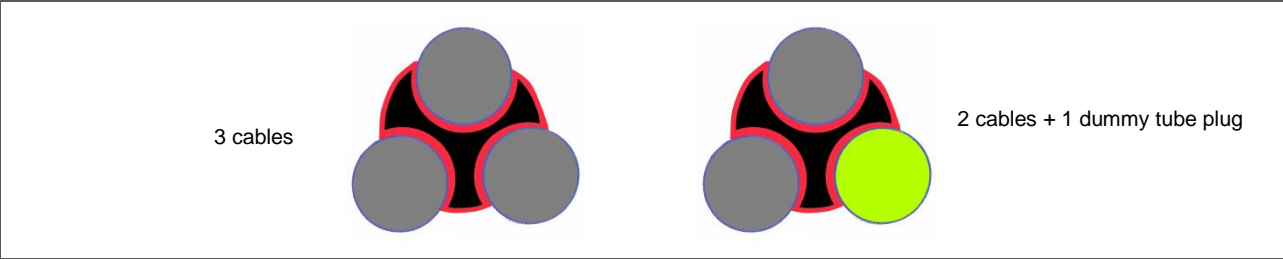
.../ Alternative gap-sealing : For cable/duct outer diameter ≥ 30 mm

- 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]



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 plug into each notch of the cable separator. Push the cable separator to about 3 cm under the sealing cushion.

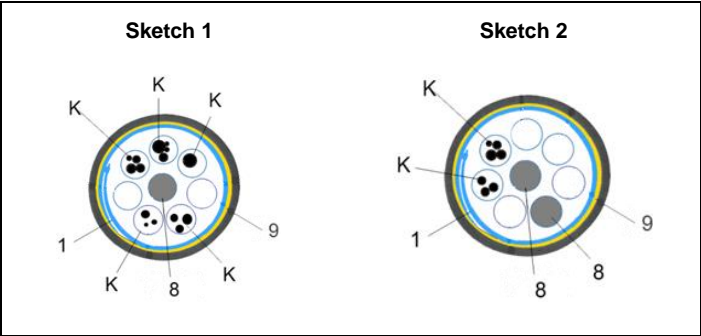


Application If the "minimum sealing area" is not reached

Accessories: **Dummy-tube plug** **Art. No. 32.01 DRS-ZK**

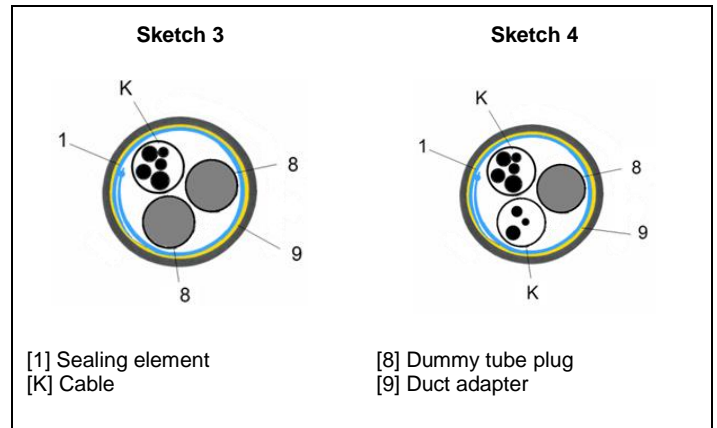
Positioning the dummy tube plugs

- **For a single dummy tube plug**
- Position the dummy tube plug [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 plug

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



Application

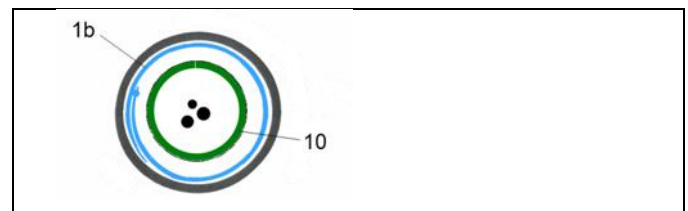
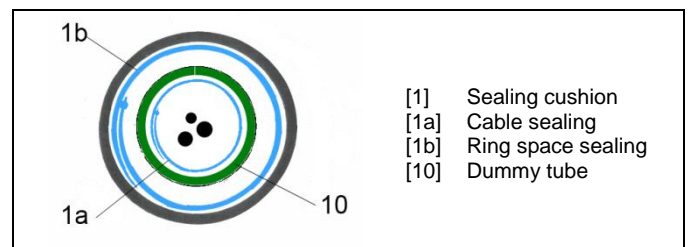
A3

Duct inner $\varnothing \geq 250 \text{ mm}$ | $\geq 10 \text{ in.}$

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.



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