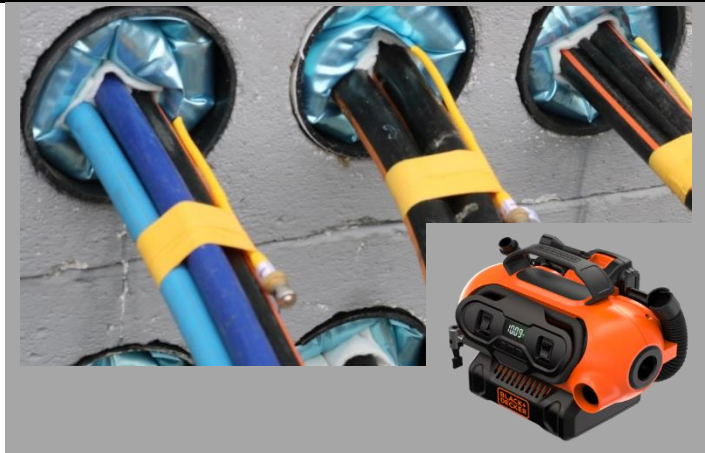


Part 2.1: Sealing-cushion filling pressure regulations

**Wolf®-Sealing elements/ valve & SealingBags**

Sealing applications and filling pressure regulations for all Wolf® sealing elements that can be filled with compressed air



**PRESSURE FILLING**

Pressure filling indications are printed on the sealing cushion (reference value for installation-/ambient temperature +20 °C). See example:



**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)

**FILLING TOOLS**

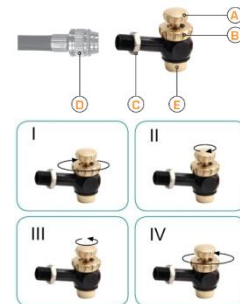
Pressure filling tool  
 with pre-setting pressure selection, auto shut-off and separately 1.5 Ah rechargeable Li-Ion Battery.  
 Cordless air compressor  
 e.g. Art. No. 33 BDC-S



Filling device  
 (inflator hose)  
 e.g. Art. No. 33 EMS-150 &  
 Art. No. 33 E-VAS-3000



Automatic fill-stop  
 - essential for sealing element types 40 to 60  
 e.g. Art. No 33 DB VG8-M8

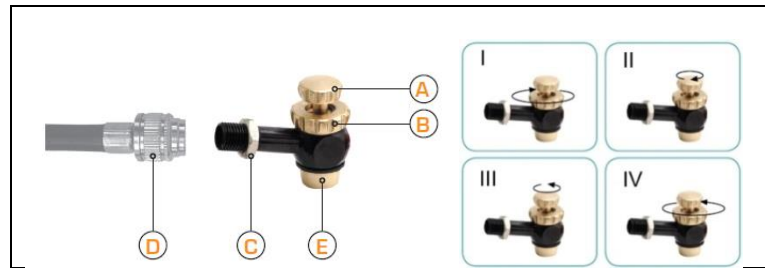


## INFLATING SEALING ELEMENTS TYPES 40 - 60

### Automatic fill-stop

Art. No. 33 DB VG8-M8

- essential for sealing element types 40 to 60



- Screw the end cap onto the sealing element.
- Attach inflator hose (end D) to the automatic fill-stop (end C).
- Fig I: Attach end E to the valve and tighten with B, holding the valve extension immobile.
- Fig II: Turn part A in the clockwise direction.
- Pressure-fill the sealing element with air (CO<sub>2</sub>-neutral) using the cordless compressor and inflator hose e.g. Art.-No. 33 BDC-S.
- The max. permissible filling pressure is printed on the packaging unit and on the sealing element itself.
- Fig III: Loosen part A (turning it in the anti-clockwise direction).
- Fig IV: Unscrew part B (anti-clockwise), holding the valve extension immobile, and remove the fill-stop valve.
- After inflation of the sealing element, the valve end cap must be screwed finger-tight onto the valve (lengthens service life).

Tightness of 0.5 bar is reached immediately on water entry.

## INFLATING SEALING ELEMENTS TYPES 80 - 300

- Screw the valve end cap onto the sealing element.
- Inflate the sealing element with air (CO<sub>2</sub>-neutral) using the cordless compressor and inflator hose e.g. Art. No. 33 BDC-S or the equivalent.
- The max. permissible filling pressure is printed on the packaging unit and on the sealing element itself.
- After inflation of the sealing element, the valve end cap must be screwed finger-tight onto the valve (lengthens service life).

Tightness of 0.5 bar is reached immediately on water entry.

## REQUIREMENTS FOR INFLATION TOOLS

**WARNING!**

- Filling capacity ≤ 20 litres/min
- Automatic pressure shut-off or 0 to 4 bar pressure gauge
- Accuracy of the pressure display in the 0.5-3.5 bar range at 20 °C (tolerance ± 0.1 bar)
- Please observe our safety instructions when using sealing elements made of aluminium and synthetic material composites.

**SI 05 part 1**



TABLE 1

## SEALING AREAS &amp; FILLING PRESSURE

Art. No.		Duct ID [mm]	Sealing area configuration		Filling pressure at 20 ± 5 °C (68 ± Δ 9 °F)		
			Optimum [mm]	Minimum [mm]	[bar]	[psi]	
16.*	*AK/V	L 40	40	22	0	2,8	40.6
			35	11	0		
	L 45	45	32	0			
		40	27	0			
	L 50	50	33	0			
		45	25	0			
	L 60	60	42	0			
		50	26	0			
	L 80	80	57	0			
		70	41	0			
19.*	SealingBag	L 90	90	70	0	2,6	37.7
20.*	*AD/V	L 100	80	55	0		
			105	80	0		
L 115	95	65	0				
	115	89	0				
L 125	105	70	0				
	125	97	20				
L 150	115	82	10				
	150	119	42				
L 175	140	104	32				
	175	130	70	1,5	21.8		
L 200	165	115	60				
	155	105	50				
	200	155	90	1,2	17.4		
L 225	190	140	80				
	180	130	70				
	225	175	120				
L 250	215	160	110				
	205	150	100				
	250	190	140	1,1	16.0		
L 275	240	180	130				
	230	170	120				
	275	230	170				
L 300	265	215	160	1,0	14.5		
	255	205	150				
	300	250	190				
L 300	290	240	180	0,9	13.1		
	280	225	170				

**TABLE 2 FILLING PRESSURE DEPENDENT ON AMBIENT AND OPERATION TEMPERATURE**

The values provided in table 1 for operational filling pressure are based on an ambient and operational temperature of 20 °C ± 5 °C.

Due to the physical properties of compressed air as a function of temperature, the filling pressure will change depending on the ambient and operational temperature.

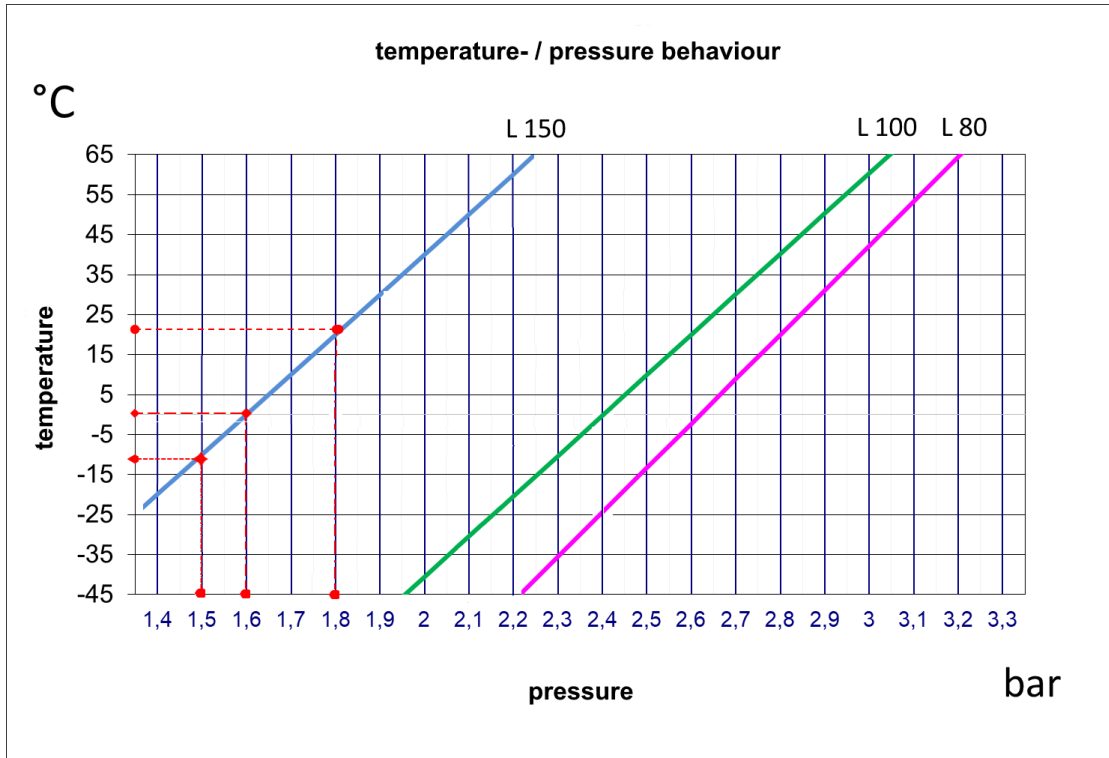
For this reason, an adjustment of the filling pressure must be adapted to the current ambient or operating temperatures during installation.

		Filling pressure [bar   psi] at installational-/ambient temperature [Δ ± 5 °C] / [Δ ± 9 °F]														
Sealing element 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								
16.*	*AK/V	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 40															
	L 45															
	L 50															
	L 60															
19.*	SealingBag	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							
20.*	*AD/V	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 115							
									L 125							
									L 150							
16.*	*AK/V	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 175							
									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 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									

## Example: Effects of unsuitable filling pressure

An unsuitable filling pressure can impair the transmission properties of the sealed cables and damage casing pipes, medium pipes, etc.

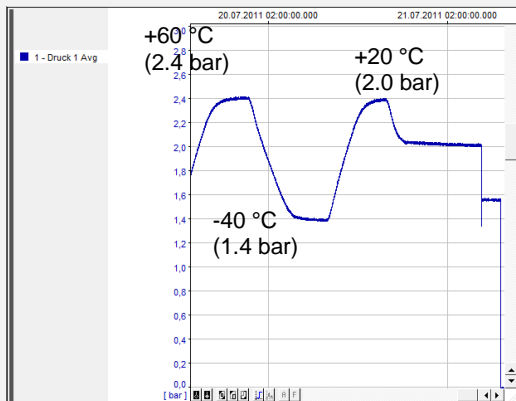
**Diagram: Benchmarks „Change in sealing element filling pressure depending on the ambient temperature“**



**Example: Measurement reports filling pressure "Influence of ambient or operating temperature on the filling pressure inside the sealing cushion"**

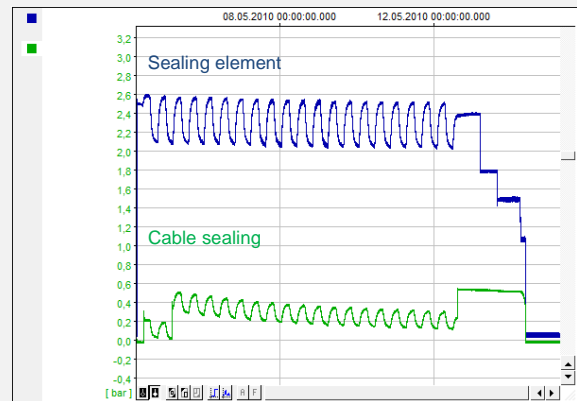
Change of a filling pressure of **2.0 bar (at +20 °C)**

in the temperature range  
> +45 °C up to < +70 °C



Change of a filling pressure of **2.5 bar (at +20 °C)**

in the temperature range  
> -15 °C up to < +45 °C



**EXAMPLES: REASONS WHY THE FILLING PRESSURE MUST BE ADAPTED TO THE CURRENT AMBIENT OR OPERATING TEMPERATURES DURING INSTALLATION.**

**Consequences of unreduced filling pressure at operational temperatures of -15 °C to +70 °C**



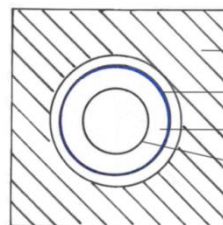
**ADAPTATION OF FILLING PRESSURE TO AMBIENT &**

**1. Ambient or operational temperature > +25 °C**

**Annular space sealing**

(the sealing element is between the borehole/ outer casing duct and the plastic inner duct made of plastic)

Reduction of the prescribed filling pressure by 0.5 bar as shown in Table 1 can prevent the plastic inner casing tube from collapsing.



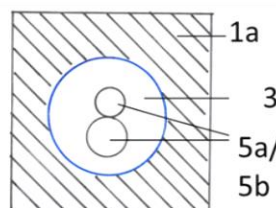
- 1 Borehole
- 2 Outer casing duct
- 3 Seal (ring)
- 4 Inner casing duct (made of plastic)

**2. Ambient or operational temperature > +45 °C**

**Cable sealing**

(the sealing element is between the borehole/ outer casing duct. the plastic inner duct made of plastic. and telecom cables):

Reduction of the prescribed filling pressure by 0.5 bar as shown in Table 1

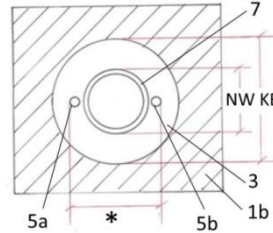


- 1 Bore hole
- 3 Sealing (ringe)
- 5a electrical and/or optical telecom cables
- 5b inner casing duct

### 3. Operational temperature < +70 °C at cable sheath or duct (for local heating)

#### Cable sealing

Reduction of the prescribed filling pressure (Table 1) by 0.8 bar can prevent buckling of cable (5a) and/or microduct (5b) and bursting of the cable seal.



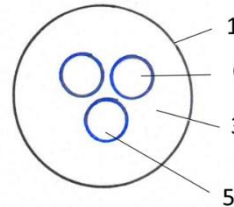
- KB Borehole
- 3 Seal
- 5 Electrical and/or optical telecom cables or inner casing ducts
- NW Local heating duct

\*Additional configurations: cables/microducts

### 4. Operational temperature < +70 °C at cable sheath or duct (for local heating)

#### Power cable acc. to DIN EN 61442 (short circuit):

Reduction of the prescribed filling pressure (Table 1) by 0.8 bar can prevent buckling of cable (5a) and/or microduct (5b) and bursting of the cable seal.

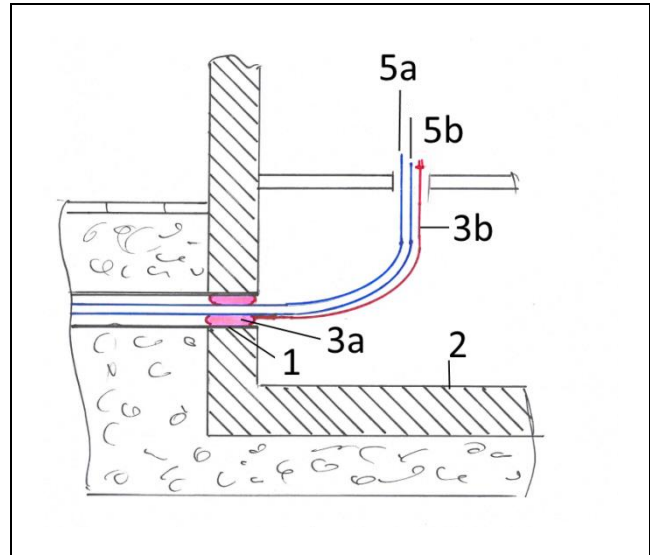


- 1 Outer casing duct
- 3 Cable seal
- 6 Power cable with short circuit (temperature +70 °C)
- 5b Inner casing duct

## HOW CAN THE FILLING PRESSURE BE SUBSEQUENTLY ADAPTED TO THE AMBIENT TEMPERATURE?

The filling pressure can be checked, and if necessary topped up, via the custom-made pliable metal valve extension in the course of routine inspections.

- 1 Outer casing duct
- 2 Transmission station etc.
- 3a Sealing cushion (valve)
- 3b Pliable metal valve extension  
(with thread adhesive on the sealing cushion)  
Art. No. 83.8 MSR-VV
- 5a Electrical and/or optical telecommunication cables
- 5b Inner casing duct or power cable



### **Note (for 3b):**

With rubberised hose extensions, a leak rate of  $\leq 2.7$  mbarl/year will not be reached.

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National sales



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