

# Vetter: Industry

ALWAYS ONE IDEA AHEAD







Special constructions

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Industrial Bags 6.0 bar/87 psi

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Mini-Lifting Bags 8.0 bar/116 psi

Mini-Lifting Bags 8.0 bar/116 psi

Resistance and material charts

Resistance and material charts

# Vetter

## Always one idea ahead



Safety net with a diameter of 19,300 mm

It is precisely in the industrial sector that you will often find tool applications especially tailored to individual requirements.

In this respect such aspects as flexibility and versatility are in the forefront. Pneumatic constructions are developed and produced in cooperation with the customer.

The customer has numerous possibilities available with respect to material, operating pressure, size, shape, inflation connection, resistance etc.

### Material

- Neoprene coated polyamide
- Aramide
- Polyester
- Anti-static and self-extinguishing material
- With or without reinforcement (aramide, steel cord, nylon etc.)
- Electrically conductive material

### Operating pressure

Can be individually adapted according to the application.

### Size / Shape

All sizes and shapes (e.g. round, square, semi-circular etc.) are possible as long as they are in safe relationship to the maximum operating pressure.

### Inflation connection

Corresponding to requirements

### Resistance

Refer to the resistance list on Page 12. Material specimens can be made available in order to carry out own investigations concerning the resistance to chemicals.

## Functions

- Screening
- Isolation
- Pressing
- Stabilization
- Tensioning
- Sealing
- Shaping
- Extracting (of couplings)
- Bagging
- Lifting / elevating
- Re-railing
- Conveyance, transportation
- Alignment

and a lot more

## Advantages

- Minimum of maintenance
- Cold vulcanised repair
- Long life duration
- Environmentally-friendly
- Precision control
- Noiseless
- Smooth regulation without stepping or jerking

## Air sources

- Compressors
- Compressed air network
- Compressed air bottles
- Hand or foot pumps
- Blowers

Water can also be used as an inflation medium.

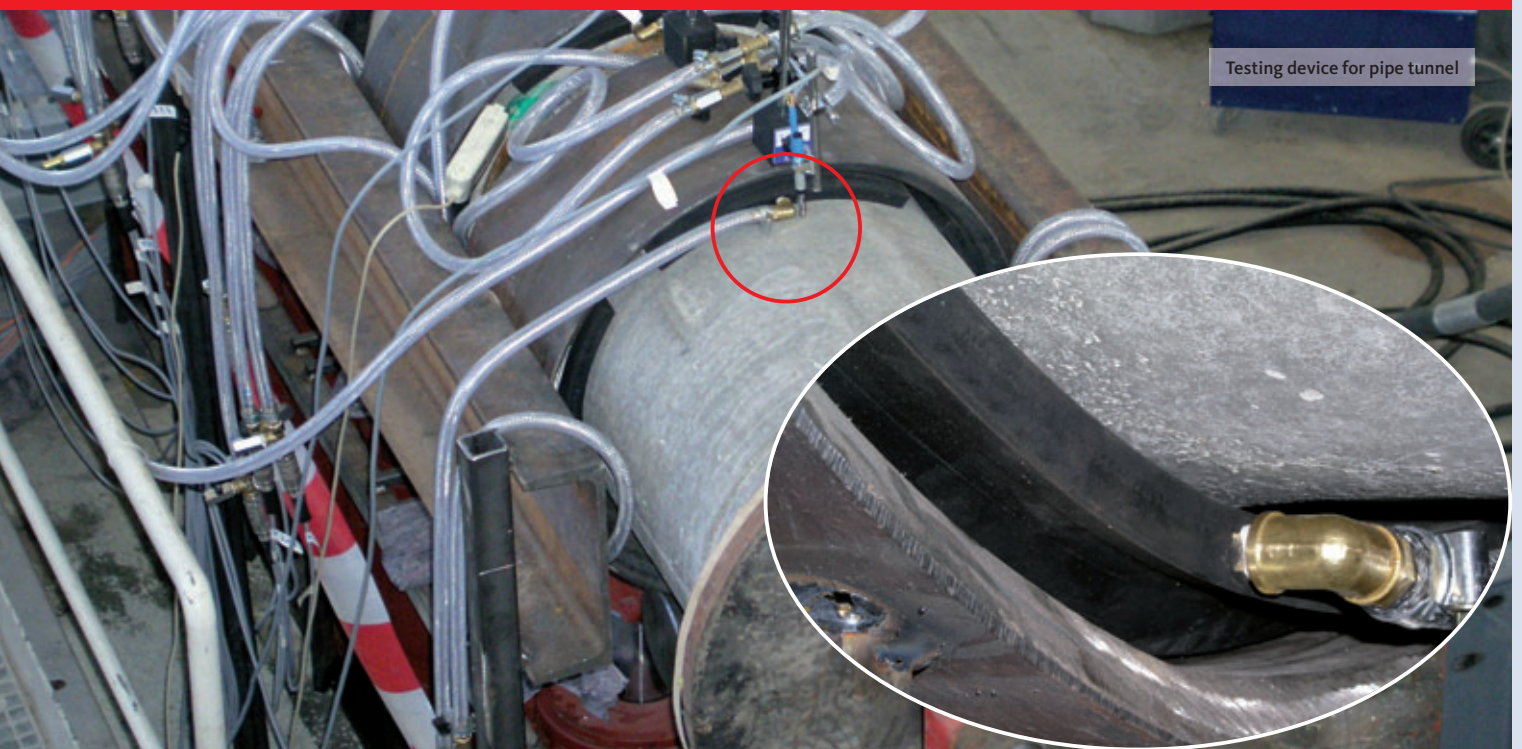
Well packer for restructuring



CO<sub>2</sub> expansion tank



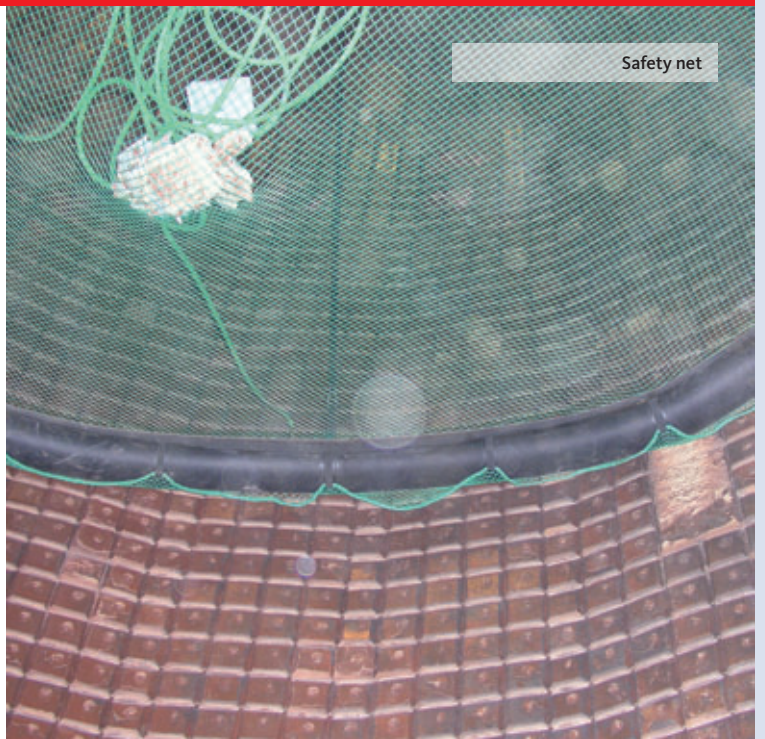
Testing device for pipe tunnel



Packer with necking



Safety net



## Vetter Industrial Bags 6.0 bar/87 psi

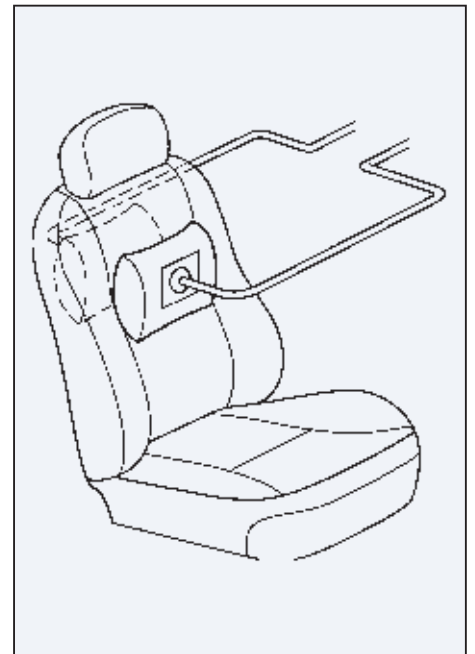


Industry requires tools which are tailored to requirements. The industrial bags are used in industrial production, e.g. automotive, machine engineering, building construction and shipbuilding. With respect to these factors they are characterized by their lifting power, high quality standard and their excellent adaptation capability.

As a standard, the industrial bags are supplied with a surface profile – increasing grip – and a centred air connection.

### AS AN OPTION THE INDUSTRIAL BAGS CAN ALSO:

- be fitted with a side connection
- have a smooth surface
- be supplied in other sizes and shapes (e.g. rhombic)

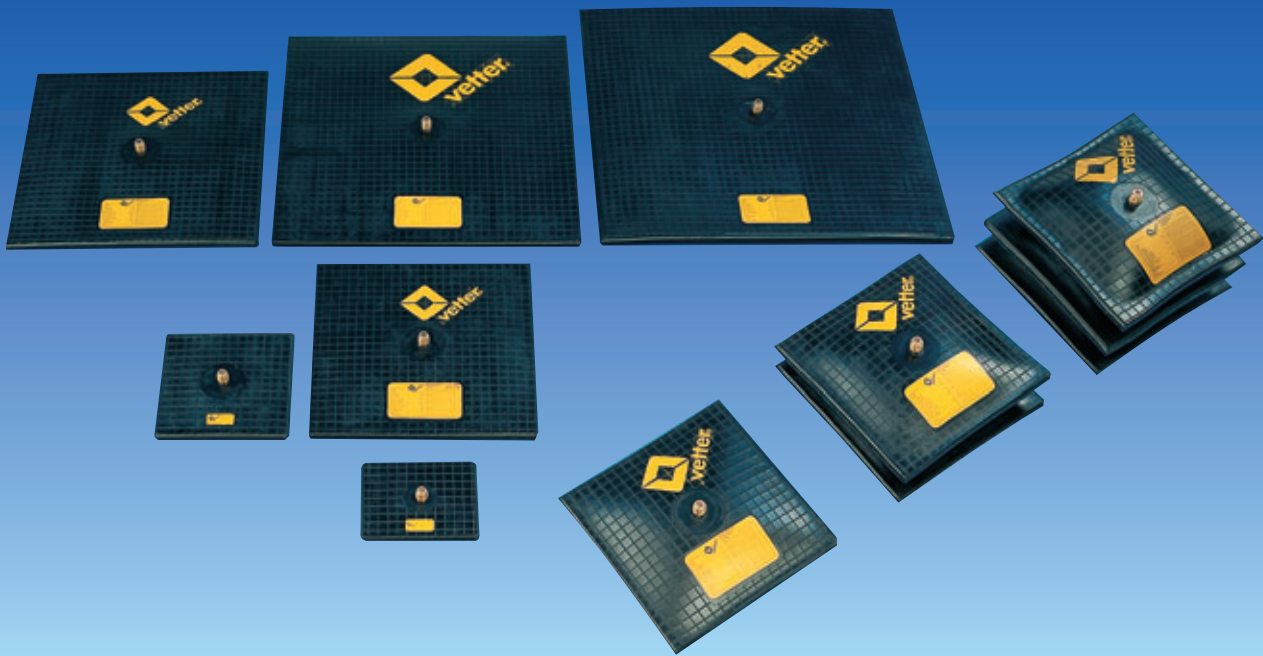


### Advantages

- Large and versatile range of operation
- Valve connection in the centre (either 1/4" or 1/2")
- Thread length variable
- Self-extinguishing material
- Up to three bags can be fixed together thus reaching a lift height of up to 96 cm/38 inch (in solidly tension condition)

### Safety

- Very high bursting pressure in the built-in state
- Extremely wear-proof and slip-proof



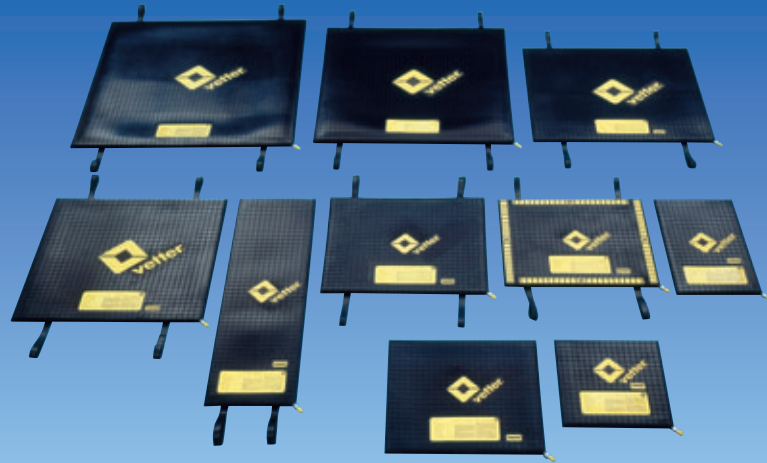
### Technical data for Industrial Bags

	Unit	IK3	IK4	IK8	IK13	IK19	IK27	IK35
<b>Art- No.</b>		<b>510000200</b>	<b>5100001200</b>	<b>5100001400</b>	<b>5100001600</b>	<b>5100001800</b>	<b>5100002000</b>	<b>5100002200</b>
Lift power	to	2.9	4.3	8.2	13.3	19.5	26.9	35.6
	US tons	3.2	4.7	9.0	14.7	21.5	29.7	39.3
Max. lifting height	cm	12.0	16.0	22.5	27.0	28.0	30.0	32.0
	inch	4.7	6.3	8.9	10.6	11.0	11.8	12.6
Insertion height* (deflated bag)	cm	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	inch	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Size	cm	25 x 25	30 x 30	40 x 40	50 x 50	60 x 60	70 x 70	80 x 80
	inch	9.9 x 9.9	11.8 x 11.8	15.8 x 15.8	19.7 x 19.7	23.6 x 23.6	27.6 x 27.6	31.5 x 31.5
Max. operating pressure	bar	6.0	6.0	6.0	6.0	6.0	6.0	6.0
	psi	87.0	87.0	87.0	87.0	87.0	87.0	87.0
Air requirement at 6.0 bar/87 psi	l	11.2	32.9	75.6	154.7	294.0	497.0	735.0
	cu. ft.	0.4	1.2	2.7	5.5	10.4	17.6	26.0
Nominal capacity	l	1.6	4.7	10.8	22.1	42.0	71.0	105.0
	cu. ft.	0.1	0.2	0.4	0.8	1.5	2.5	3.7
Inflation time, approximate	sec.	1	2	5	10	18	31	46
Weight, approximate	kg	1.5	2.5	3.9	6.5	8.9	13.0	17.0
	lbs	3.3	5.5	8.6	14.3	19.6	28.7	37.5

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\* with smooth surface 2.2 cm / 0.87 inches. All data applies to the fixed built-in condition!

## Vetter Mini-Lifting Bags 8.0 bar/116 psi



Vetter mini-lifting bags are characterized by their noiseless, bump-free and smooth lifting of the most heavy loads. They lift, press, compress, brace and cleave – even in angled positions.

The surface profile improves the gripping capability on slippery ground such as grass, sand etc.

They are produced in two different versions whereby both variations have a multi-layer construction which widely extends over both sides of the bag. This is made either of steel cord or aramide.

The advantage of aramide over steel cord is the light weight (refer to the technical data) as well as the high degree of flexibility. On the other hand steel cord has a greater experimental value to fall back on.

Both versions have anti-static and self-extinguishing characteristics.

Inflation of mini-lifting bags can be made with air as well as water.

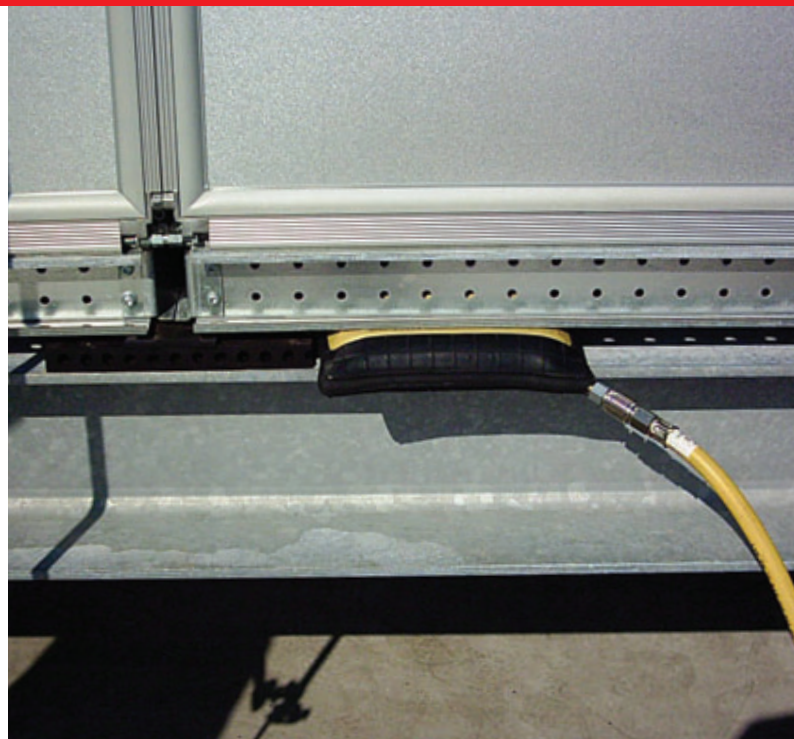
Accessories necessary for inflation on the page “System Accessorie” can be individually put together.

As an alternative, the mini-lifting bags can also be supplied with:

- smooth surfaces
- other inflation connections (e.g. in the centre)
- in special sizes or shapes
- with other maximum operating pressures.

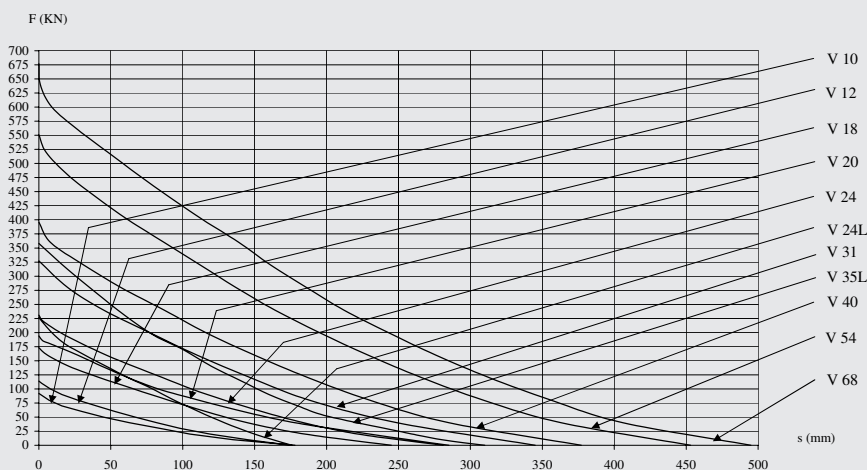
### Advantages

- Insertion height from 2.5 cm/1 inch
- Technical data is vulcanised with lettering in yellow rubber
- Positioning accurate to within millimetres
- Type marking = lifting power
- Rapid (5 sec for mini-lifting bag V 10)
- Inflation with water = double the lifting power





## Lifting power – Load path diagram V 10 – V 68



In order to use the maximum lifting power, the total effective area, i.e. total area minus the edge zone, must be completely positioned underneath the load to be lifted and the bag must be inflated to the maximum permissible operating pressure.

Selection of the mini-lifting bag depends on the weight of the load to be lifted as well as the lifting path.

This means that the mini-lifting bag develops the greatest lifting power at the beginning of the lift path and the greatest possible lifting height in the unloaded state. This results in the fact that the lift path reduces with increasing weight. The load-path diagram shown here illustrates this.

Load-path diagrams of the individual bags can be obtained on request.

## Technical data for Mini-Lifting Bags 8.0 bar/116 psi, steel cord

	Unit	V 10	V 12	V 18	V 20	V 24	V 24 L	V 31	V 35 L	V 40	V 54	V 68
Art. No.		1310000600	1310001000	1310001100	1310002100	1310001200	1310001300	1310001400	1310008200	1310001500	1310001600	1310001700
Lift power	to	9.60	12.00	17.70	19.40	24.00	24.00	31.40	35.8	39.60	54.40	67.70
	US tons	10.58	13.23	19.51	21.38	26.46	26.46	34.61	39.49	43.65	59.97	74.63
Max. lifting height	cm	20.3	20.0	27.0	28.0	30.6	20.1	37.0	31.0	40.2	47.8	52.0
	inch	8.0	7.9	10.6	11.0	12.0	7.9	14.6	12.2	15.8	18.8	20.5
Insertion height* (deflated bag)	cm	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.8	2.8
	inch	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1
Size	cm	37 x 37	32 x 52	47 x 52	48 x 58	52 x 62	31 x 102	65 x 69	43 x 115	78 x 69	86 x 86	95 x 95
	inch	15 x 15	13 x 20	19 x 20	19 x 23	20 x 24	12 x 40	26 x 27	17 x 45	31 x 27	34 x 34	37 x 37
Max. operating pressure	bar	8	8	8	8	8	8	8	8	8	8	8
	psi	116	116	116	116	116	116	116	116	116	116	116
Test pressure	bar	16	16	16	16	16	16	16	16	16	16	16
	psi	232	232	232	232	232	232	232	232	232	232	232
Min. bursting pressure	bar	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
	psi	464.0	464.0	464.0	464.0	464.0	464.0	464.0	464.0	464.0	464.0	464.0
Air requirement at 8.0 bar/116 psi	l	82.8	96.3	195.3	224.1	296.1	211.5	517.5	349.4	675.0	1,117.8	1,457.1
	cu. ft.	2.9	3.4	6.9	7.9	10.4	7.5	18.0	12.3	23.6	39.5	51.4
Nominal capacity	l	9.2	10.7	21.7	24.9	32.9	23.5	57.5	38.8	75.0	124.2	161.9
	cu. ft.	0.3	0.4	0.7	0.9	1.2	0.8	2.0	1.4	2.6	4.3	5.7
Inflation time, approx.	sec.	5	6	11	14	18	13	31	35	41	68	88
Weight, approx.	kg	4.3	5.1	7.5	8.7	9.8	9.7	13.6	15.8	16.3	27.3	33.8
	lbs	9.5	11.3	16.5	19.2	21.6	21.4	30.0	34.8	35.9	60.2	74.5

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Technical data for Mini-Lifting Bags 8.0 bar/116 psi, aramide

	Unit	V1	V3	V5	V6	V10	V12	V18
Art. No.		1314009300	1314009500	1314018200	1314009600	1314002200	1314002400	1314002500
Lift power	to	1.0	3.29	5.70	6.36	9.60	12.00	17.70
	US tons	1.1	3.63	6.29	7.01	10.58	13.23	19.51
Max. lifting height	cm	7.5	12.0	14.5	16.5	20.3	20.0	27.0
	inch	3.0	4.7	5.7	6.5	8.0	7.9	10.6
Insertion height* (deflated bag)	cm	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	inch	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Size	cm	14.0 x 13.0	25.5 x 20.0	28.0 x 28.0	29.5 x 29.5	37.0 x 37.0	32.0 x 52.0	47.0 x 52.0
	inch	5.5 x 5.1	10.0 x 7.9	11.0 x 11.0	11.6 x 11.6	15.0 x 15.0	13.0 x 20.0	19.0 x 20.0
Max. operating pressure	bar	8	8	8	8	8	8	8
	psi	116	116	116	116	116	116	116
Test pressure	bar	12	12	12	12	12	12	12
	psi	174	174	174	174	174	174	174
Min. bursting pressure	bar	32.0	32.0	32.0	32.0	32.0	32.0	32.0
	psi	464.0	464.0	464.0	464.0	464.0	464.0	464.0
Air requirement at 8.0 bar/116 psi	l	2.7	15.8	28.4	39.6	82.8	96.3	195.3
	cu. ft.	0.1	0.6	1.0	1.4	2.9	3.4	6.9
Nominal capacity	l	0.30	1.75	3.16	4.40	9.2	10.7	21.7
	cu. ft.	0.01	0.06	0.11	0.16	0.30	0.40	0.70
Inflation time, approx.	sec.	0.50	1.00	1.30	1.40	5.00	6.00	11.00
Weight, approx.	kg	1.44	1.10	1.70	1.95	3.00	3.60	5.30
	lbs	0.97	2.43	3.75	4.30	6.60	7.90	11.70

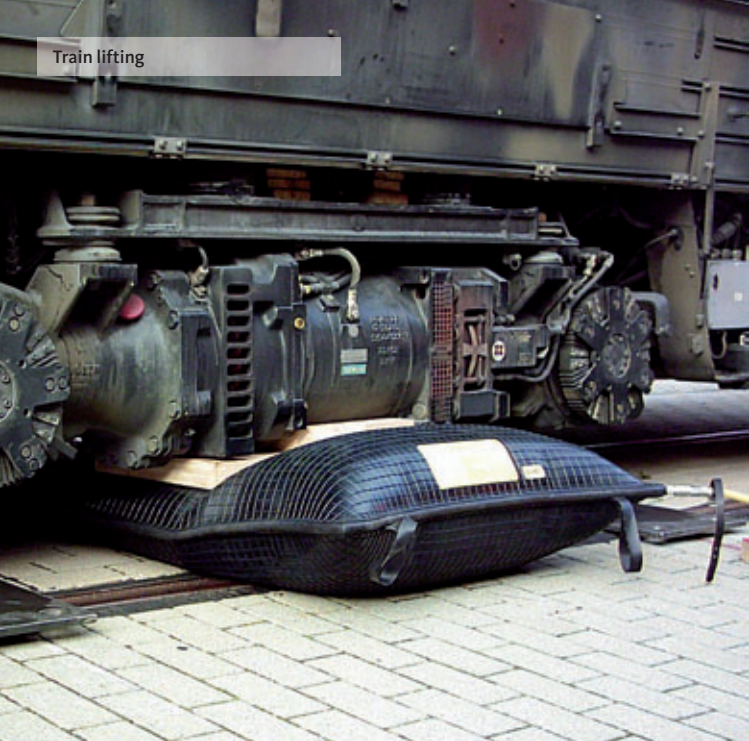
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Technical data for Mini-Lifting Bags 8.0 bar/116 psi, aramide

	Unit	V20	V24	V24 L	V31	V35 L	V40	V54	V68
Art. No.		1314003400	1314002600	1314002700	1314002800	1314018300	1314002900	1314003000	1314003100
Lift power	to	19.40	24.00	24.00	31.40	35.8	39.60	54.40	67.70
	US tons	21.38	26.46	26.46	34.61	39.49	43.65	59.97	74.63
Max. lifting height	cm	28.0	30.6	20.1	37.0	31.0	40.2	47.8	52.0
	inch	11.0	12.0	7.9	14.6	12.2	15.8	18.8	20.5
Insertion height* (deflated bag)	cm	2.5	2.5	2.5	2.5	2.5	2.5	2.8	2.8
	inch	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1
Size	cm	48 x 58	52 x 62	31 x 102	65 x 69	43 x 115	78 x 69	86 x 86	95 x 95
	inch	19 x 23	20 x 24	12 x 40	26 x 27	17 x 45	31 x 27	34 x 34	37 x 37
Max. operating pressure	bar	8	8	8	8	8	8	8	8
	psi	116	116	116	116	116	116	116	116
Test pressure	bar	12	12	12	12	12	12	12	12
	psi	174	174	174	174	174	174	174	174
Min. bursting pressure	bar	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
	psi	464.0	464.0	464.0	464.0	464.0	464.0	464.0	464.0
Air requirement at 8.0 bar/116 psi	l	224.1	296.1	211.5	517.5	349.4	675.0	1,117.8	1,457.1
	cu. ft.	7.9	10.4	7.5	18.0	12.3	23.6	39.5	51.4
Nominal capacity	l	24.9	32.9	23.5	57.5	38.8	75.0	124.2	161.9
	cu. ft.	0.9	1.2	0.8	2.0	1.4	2.6	4.3	5.7
Inflation time, approx.	sec.	14	18	13	31	35	41	68	88
Weight, approx.	kg	5.8	6.7	6.3	9.5	10.1	11.4	16.2	19.5
	lbs	12.8	14.8	13.9	21.0	22.3	25.1	35.7	43.0

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Train lifting



Application in mines



Assembly of wind energy installations



Creating intermediate space



Substructure support of bridge elements



# Systematic safety. Vetter system accessories 8.0 bar/116 psi

## Inflation hoses 8.0 bar (116 psi)



**Inflation hoses 8.0 bar, 5 m (116 psi, 16.4 ft.)**  
 Art.-No. 0800000901 (yellow)  
 Art.-No. 0800001301 (red) Art.-No. 0800000601 (blue)  
 Art.-No. 0800000701 (grey) Art.-No. 0800000801 (green)



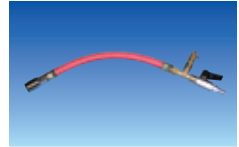
**Inflation hoses 8.0 bar, 10 m (116 psi, 32 ft.)**  
 Art.-No. 0800007401 (yellow)  
 Art.-No. 0800007601 (red) Art.-No. 0800007801 (blue)  
 Art.-No. 0800007901 (grey) Art.-No. 0800007501 (green)



## Shut-off unit/Inline relief hoses



Art.-No. 0800005800  
 Shut-off unit  
 8.0 bar (116 psi)



**Shut-off unit 8.0 bar, 0.3 m (116 psi, 1 ft.)**  
 Art.-No. 0800007201 (red)  
 Art.-No. 0800007301 (yellow)

## Controllers 8.0 bar (116 psi)



Art.-No. 0800001600  
 Dual deadman controller  
 8.0 bar (116 psi)



Art.-No. 0800000401  
 Single deadman controller  
 8.0 bar (116 psi),  
 aluminium style



Art.-No. 0800000201  
 Dual deadman controller  
 8.0 bar (116 psi),  
 aluminium style



Art.-No. 0800002001  
 Single fitting controller,  
 8.0 bar (116 psi)



Art.-No. 0800002401  
 Dual fitting controller,  
 8.0 bar (116 psi)

## Please choose your additional accessories according to the air source

### Compressed air cylinder



Art.-No. 1600000200  
 Pressure regulator  
 200/300 bar  
 (3.000/4.500 psi)

US-Version: 1600005301  
 FR-Version: 1600004700

### Compressor



Art.-No. 1600013401  
 Air-supply hose  
 10 m, green (32 ft.)

### Brake line of a truck

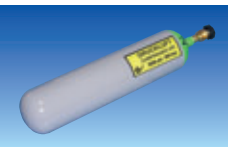
### Tyre inflation system

### Tyre



Art.-No. 1600013601  
 Air-supply hose  
 10 m, green (32 ft.)  
 with shut-off unit

or alternative



**Compressed air cylinders**  
 Art.-No. 1600010100  
 1 l/200 bar  
 (0.04 cu.ft./3.000 psi)  
 Art.-No. 1600010800  
 6 l/300 bar  
 (0.2 cu.ft./4.500 psi)  
 Art.-No. 1600019900  
 9 l/300 bar  
 (0.3 cu.ft./4.500 psi)  
 Art.-No. 1600010500  
 10 l/200 bar  
 (0.35 cu.ft./3.000 psi)



Art.-No. 1600011600  
 Safety and carrier rack for  
 compressed air cylinder  
 6 l/300 bar  
 (0.2 cu.ft./4.500 psi)  
**Two cylinder rack**



Art.-No. 1600011600  
 Safety and carrier rack for  
 compressed air cylinder  
 6 l/300 bar  
 (0.2 cu.ft./4.500 psi)  
 (you have to use this  
 article two times for the  
 four cylinder rack)  
 Art.-No. 1600011800  
 Trolley for safety  
 and carrier rack  
**Four cylinder rack**

Supplied  
 without cylinders.



Art.-No. 1600012000  
 Construction-site  
 compressor adaptor



Art.-No. 1600008200  
 Adaptor for portable  
 compressor



Art.-No. 1600007500  
 Truck brake connector,  
 2 way



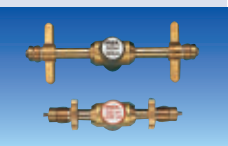
Art.-No. 1600012600  
 Sealing-off cap



Art.-No. 1600007800  
 Tyre inflation system  
 adaptor



Art.-No. 1600012900  
 Tyre valve connector



Art.-No. 1600009100  
 Dual connector  
 300 bar (4.500 psi)  
 Art.-No. 1600008400  
 Dual connector  
 200 bar (3.000 psi)



Art.-No. 1600012500  
 Set universal connectors

## 8.0 bar (116 psi)



**Shut-off unit 8.0 bar,  
5 m (116 psi, 16.4 ft.)**

Art.-No. 0800008201  
(yellow)  
Art.-No. 0800008401 (red)  
Art.-No. 0800008601 (grey)  
Art.-No. 0800008801 (blue)  
Art.-No. 0800009001  
(green)



**Shut-off unit 8.0 bar,  
10 m (116 psi, 32 ft.)**

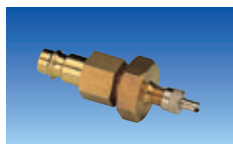
Art.-No. 0800008301  
(yellow)  
Art.-No. 0800008501 (red)  
Art.-No. 0800008701 (grey)  
Art.-No. 0800008901 (blue)  
Art.-No. 0800009101  
(green)

Commercial hand  
or foot pump

Fixed compressed  
air installation

Other adapters

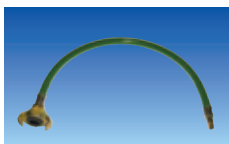
Hand or foot pump



Art.-No. 1600008000  
Truck tyre valve



Art.-No. 1600008200  
Compressed-air mains  
connector

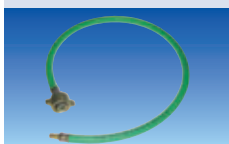


Art.-No. 1600013701  
Quarry adapter



Art.-No. 1600014500  
Pressure regulator max.  
20 bar (290 psi)

If the outgoing pressure of  
the fixed compressed air  
installation is higher than  
the permitted filling  
pressure of the controller,  
you have to replace the  
compressed-air mains  
connector with this pressure  
regulator.

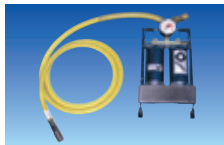


Art.-No. 1600011101  
Mining adapter



Art.-No. 1600011300  
Railway compressed  
air adapter

## Foot pumps with safety- valve and pres- sure gauge



Art.-No. 0800009900  
Foot pump with safety-  
valve 8.0 bar (116 psi) and  
pressure gauge, 420 ccm/  
stroke (25.6 cu.in.)



Art.-No. 0800012400  
Foot pump with safety-  
valve 8.0 bar (116 psi) and  
pressure gauge, 800 ccm/  
stroke (48.8 cu.in.)



Art.-No. 1600008700  
Hand pump. 520 ccm/  
stroke (31.7 cu.in.)  
Art.-No. 1600009400  
Foot pump. 420 ccm/  
stroke (25.6 cu.in.)

# Vetter Resistance charts and material charts



With resistance inspections (DIN 53476 and 53521) material durability is assessed with respect to changes in its mass and hardness. The resistance of a rubber mixture is, depending on diffusion, influenced by the material thickness used. Most of the stresses are caused by a combination of chemical-thermal effects and swelling.

An expanding material reacts to chemicals a lot quicker than when it is in the non-operative condition.

This means, the greater the expansion, the lower the chemical resistance.

Therefore the resistance list can only be used as a rough guide.

The data is based on laboratory tests, experience and are influenced by such factors as temperature, intensity, length of exposure etc.

This list of resistance values was compiled under the above factors and rated with the following symbols:

- + resistant
- o conditionally resistant
- non-resistant
- nd no details

The data corresponds to our current know-how and are to be taken as guidelines.

We will gladly provide material samples to users wishing to conduct their own chemical resistance tests.

Temperature resistance limits

Products	Cold. resistance	Cold. flexible	Heat resistance long term	Heat resistance short term
Hot-vulcanised	- 40° C	- 20° C	+ 90° C	+ 115° C
Cold-vulcanised	- 40° C	- 20° C	+ 70° C	+ 85° C
Rubber hoses	- 40° C	- 30° C	+ 90° C	
Controller, fitting	- 20° C		+ 50° C	
Controller, plastic	- 20° C		+ 50° C	
Controller, aluminium	- 20° C		+ 50° C	

Technical changes reserved!

Material chart

Products	Material	Support material	Type of manufacture
Lifting bag 1.0 bar/14.5 psi	CR	Aramide/Polyester	Cold vulcanised
Pressure bag 1.0 bar/14.5 psi	CR	Aramide/Polyester	Cold vulcanised
Industrial pressure bag 6.0 bar/87 psi	NR	Nylon cord	Hot vulcanised
Mini-lifting bag 8.0 bar/116 psi	CR	Steel cord/Aramide	Hot vulcanised
Inflation hoses and air supply hoses	EPDM	Polyester	-

Technical changes reserved!

Pipe grip with internal expansion



Pipe grip with external expansion

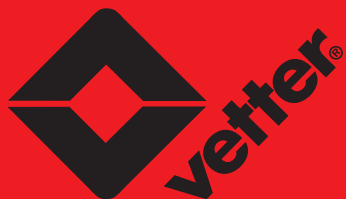


Resistance charts

Agent	CR	NR	EPDM	NBR
Acetone	o	+	-	-
Acetylene	+	+	-	+
Alum watery	+	+	-	nd
Aluminium chloride	+	+	+	+
Aniline	-	nd	nd	-
ASTM-oil 1	o	-	-	+
Petrol	o	-	nd	o
Benzene	-	-	-	-
Boric acid	+	+	+	+
Bromine (moist)	-	-	-	-
Butyric acid	-	-	nd	-
Chlorine gas (moist)	-	-	nd	-
Chlorine, wet	o	-	o	-
Diesel fuel	o	-	-	o
Iron chloride	+	+	+	+
Petroleum	o	-	-	+
Acetic acid	o	+	o	+
Fatty acid	+	o	-	o
Formaldehyde	+	+	+	+
Glucose	+	+	+	o
Heating oil	+	-	-	o
Potassium chloride	+	+	+	o
Calcium chloride	+	+	+	o

Agent	CR	NR	EPDM	NBR
Calcium nitrate	+	+	+	nd
Carbon dioxide	+	+	+	+
Carbon monoxide	+	+	+	+
Copper sulphate	+	+	+	+
Adhesive	+	+	+	+
Methyl chloride	-	-	o	-
Sea water	+	+	nd	+
Mineral oil	+	-	-	+
Sodium carbonate	+	+	-	+
Ozone	+	-	+	o
Paraffin	+	-	-	o
Perchloric acid	o	nd	+	o
Phenol (watery)	-	-	+	-
Phosphoric acid (consentrated)	-	-	-	+
Mercury	+	+	+	nd
Nitric acid (fuming)	-	-	-	-
Sulphur dioxide (dry)	-	o	nd	o
Sulphuric acid (50%)	+	+	-	+
Nitrogen	+	+	+	o
Carbon tetrachloride	-	-	-	o
Animal fat	+	-	+	o
Toluene	-	-	-	-

Technical changes reserved!



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