



# OPERATING INSTRUCTIONS

## Vetter Mini-Lifting Bags 8.0 bar



Item No. 9987 0153 01

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## Preliminary remarks

Only knowledge and the exact observance of this operating manual guarantee correct and reliable operation, achieve the best possible usage and ensure any claims made within the framework of the Vetter guarantee.

Only staff are to use Vetter mini-lifting bags who have been instructed in their use by the manufacturer's operating manual and operating instructions.

## Safety instructions

Only prespecified protective clothing is to be worn during operation. The national regulations are to be observed in connection with lifting bag systems and their use. Mini-lifting bags must only be used with compressed air. It is imperative that no inflammable or aggressively acting gases be used.

Mini-lifting bags must only be inflated with original Vetter fittings due to the fact that these have been subjected to an acceptance test.

The lifting bag system is to be inspected before and after operation to see that it is in a correct and perfect condition.



**Never place more than 2 Mini-Lifting Bags over each other.**

Ensure against slippage.

Continually prop up loads being lifted during the lifting procedure.

Always ensure that the substructure material is in a stable condition when constructing the support.



**The support must at least cover the whole bag area and should be larger in length and width than in height !**



**Danger of slippage !**

**During support construction never place metal on metal !**

With slippery ground (ice, snow, clay etc.) place stones, branches similar objects underneath the bag in order to increase ground or grip.

Avoid pointed objects, such as screws, spikes etc.

Never place bags on sharp edges or objects which are hot. Use suitable layers of lining and cover the complete positioning area of the bag.

Protect the bag from sparks coming from welding or cutting work.

Do not subject bags to heavy loads such as hydraulic stamps, winches or falling objects.



**Do not stay underneath a load being lifted, never hold or touch the load from lifted, never hold or touch underneath !  
Remain at a safe distance from the load !**

Avoid shearing effects by squeezing the bag during deflation!

**Never stand in front of the load but always at the side of it because under unfavourable conditions it may swing out!**

### Correct use

The Mini-Lifting Bag is primarily a pneumatic (normally with air) rescue device used by the rescue services (e.g. fire services) with which trapped people can be freed, access gained for rescue and many other tasks.

The Mini-Lifting Bag can also be used as a working device in order to lift or move loads.

Mini-Lifting Bags meet the requirements for fire services as specified in GUV-G 9102.

Additional instructions are to be found in the user's own operating instructions.

### Inventory of items

An inventory and check of all items in the delivery package is to be made according to the delivery documentation when acceptance of the Mini-Lifting Bag equipment is carried out.

A visual check and function check is also to be made as specified in the operating manual.

### Product description

All Vetter Mini-Lifting Bags 8.0 bar are produced by hand in a layer structure and are made of high quality raw material so that a seamless bag is created as the finished product.

**This danger only exists when the surface of the bag is damaged so that the supporting cord comes through. This is the reason why a visual check should be made after operation for the following types of damage:**

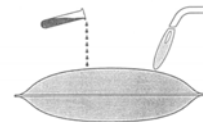
#### Damage types

**Damage caused by separation**

**Damage caused by cuts**

**Damage caused by puncture**

**Damage caused by heat and acids**



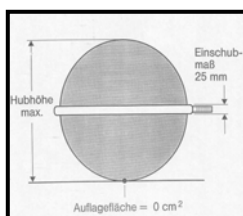
**The bag must be immediately discarded if, during inspection, established that there is damage and that the support cord (steel or ARAMIDE) shows through. Repair is not possible. Danger of bursting !**

Lifting bags with side wall (e.g. Vetter Lifting Bag 1.0 bar) achieve their maximum height by the expansion of the side wall material.

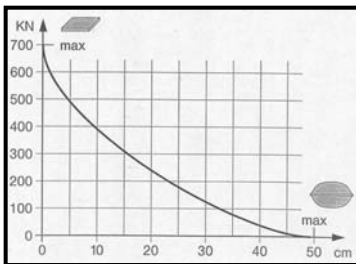
Mini-Lifting Bags do not have a side wall and therefore achieve their lifting effect by a shape change, i.e. both surfaces curve outwards.



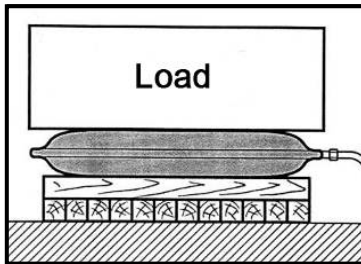
In order to use maximum lift strength, the whole effective area, i.e. the complete area minus the edge zone, must be completely under the load to be lifted and the maximum operating pressure applied. **A Mini-Lifting Bag develops the maximum lifting power at the beginning of the lift path!**



The bag develops a spherical shape as the lift height increases. This is the reason why the contact area with the load decreases until at a max. bag curvature this will be almost zero. **The largest lift height of the Mini-Lifting Bag will only be reached in the unloaded state.**

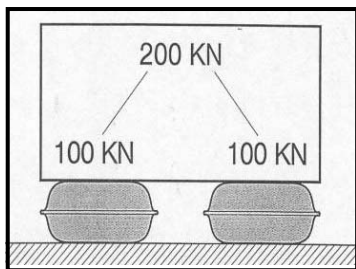


Load path diagram for the individual Mini-Lifting-Bags are given on request. The lift power (resulting from contacting surface and pressure) is only available when the first bag curvature contacts the load.

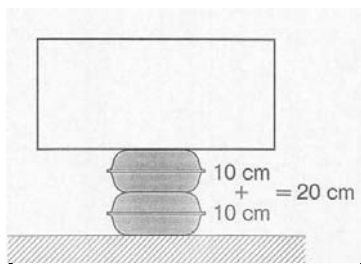


The lower the space distance between load and Mini-Lifting Bag, the greater the lift power. In order to fully use the strengths of the Mini-Lifting Bag, the distance between load and bag should be at a minimum.

**The under-support must be at least as large as the applied Mini-Lifting Bag and must not be higher than the smallest side length.**



In case the lift power produced by one Mini-Lifting Bag is not sufficient then a number of bags can be positioned next to each other when the load is slip-free. However, a separate controller must be used for each bag.



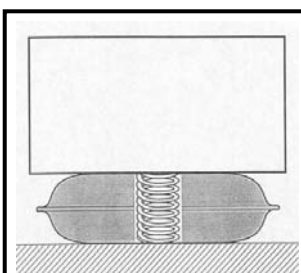
If the lift power of only one Mini-Lifting Bag is not sufficient then **a maximum of two bags can be placed on top of each other when the load is slip-free.**

This configuration has an additive effect for the lift height of both Mini-Lifting Bags

**The lift power only corresponds to that of the smaller bag!**



**Never position 3 or more bags on top of each other !**



A Mini-Lifting Bag under load reacts the same as a spring under tension !

**As soon as the Mini-Lifting Bag is quickly relieved of the of the load, e. g. slipping, load breakage etc., then the Mini-Lifting Bag will be rapidly catapulted outwards !**



**Never stand in front of the Mini-Lifting Bag !  
Danger area !**

## Preparations for use

Remove a set of lifting bags from the set. Prepare the inflation device.  
Ensure sufficient air supply.



**Only perfectly operating and inspected Mini-Lifting Bag systems are to be used.**

The method and type of application is to be decided from case to case by the operation leader with his own area of responsibility as well as the operating instructions of the user.

## Application instructions

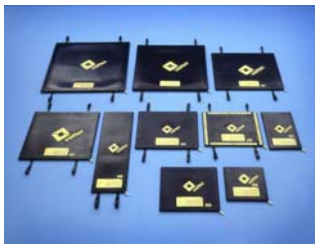
Move the lifting bag to a suitable position so that at least 75% of the supporting bag area is under the load.

Continually built up the under-support for maintaining contact when the load is lifted during the lifting procedure.

**Never stand in front of the bag during operation but to the side of the Mini-Lifting Bag because it could be catapulted outwards under unfavourable conditions.**

## Description of the set

### a) Mini-Lifting Bags



Bag size selection is made according to the task. There are 16 different sizes from 1.1 t to 67.7 tons with a choice of steel cord or aramide reinforcement. There is no difference in performance between Mini-Lifting Bags having the same size with steelcord and those with Aramide. Aramide bags are lighter than Lifting bags made of steel cord (when comparing bags in the same size).

### b) Inflation hoses



There are inflation hoses available (5 m and 10 m in length) which enable the user to control the Mini-Lifting Bags from a safe position.

The colours of the hoses, RED and YELLOW, avoid any confusion during control of the different sides (inlets and outlets) of mini-Lifting Bags.

**c) Dual deadman controller 8 bar in plastic housing**

Connect the inflation hoses to the outlet coupling on the rear side of the controller.

Connect the air supply to the inlet coupling.

Move the control lever to the front in order to inflate the Mini-Lifting Bag.

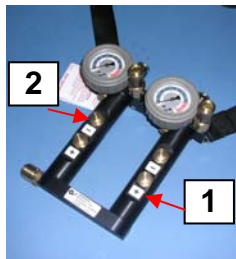
In doing this, observe the corresponding manometer and load.

Release the control lever, thus ending the inflation process, when the required operating pressure for the lift power or lift height is reached. The control lever automatically returns to the center position (zero) when released (deadman switched).

The built-in safety valve automatically activates when the bag is unintentionally over-inflated above the maximum operating pressure of 8 bar or when there is an increase in pressure of 8 bar or when there is an increase in pressure in the bag due to a unforeseen loading of the bag.

The activation tolerance for opening and closing of the safety valve can be +/- 10 %.

Press the control lever in the opposite direction in order to deflate the bag or to reduce the load.

**d) Dual deadman controller 8 bar, aluminium**

Press down the lower button (1) in order to inflate the bag.

Inflation is stopped when the button is released and it returns back to the zero position.

The bag is released by pressing the upper button (2).

**e) Single deadman controller 8 bar, aluminium**

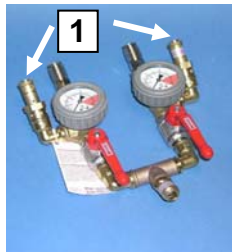
The single deadman controller, on the left, can be used when only one Mini-Lifting Bag is to be used.





**The single and dual controllers in the 8 bar fitting version do not correspond to the requirements of the Fire Service standard DIN EN 13 731.**

**f) Dual controller 8 bar, fitting**



Controller with inflation regulator using a ball valve **without** deadman switching.

To empty the bag, open the head of the safety valve (1) by turning to the left.

Close the safety valve by turning to the right after deflation.

**g) Single controller 8 bar, fitting**



The same version as described in e) but used for the control of only one Mini-Lifting Bag.

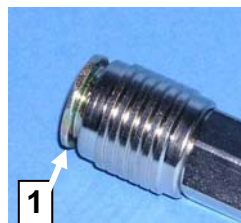
### The Vetter safety coupling system

**a) Inlet coupling controller**



Connect the air supply hose, resp. Connection hose of the pressure reducer, to the plug nipple of the inlet coupling on the controller. In doing this, firmly press the nipple into the coupling until it latches in. Turn the brass sleeve of the coupling opposite to the safety pin for additional safety.

**b) 8 bar inflation coupling**



Firmly press the hose, resp. bag nipple, into the coupling until it latches in order to connect the inflation hose with the corresponding controller, resp. with the Mini-Lifting Bag. The coupling sleeve must lay on the support ring without any gap (1).

The nipple must be firmly pressed against the spring pressure in the coupling in order to release the connection (only in pressure-free condition). At the same time, the coupling sleeve must be pulled back. The connection is then released.

### Operation with compressed air bottles



Connect the pressure reducer to the compressed air bottle (200 or 300 bar) using the T-Screw (1). Close the valve of the reducer (2). Open the valve on the bottle (3). The manometer (4) indicates the pressure in the bottle.

Adjust the backpressure to approximately 10 bar using the regulator lever (5) (indication of reduced pressure on the backpressure manometer (6)).

Connect air hose of the pressure reducer to the controller. Open the valve on the pressure reducer (2). The system is ready for operation.

### Operation with the SAG 8



The rapid reaction SAG 8 is a compact, portable inflation and operating station for Mini-Lifting Bags 8 bar.

It is quickly operational:

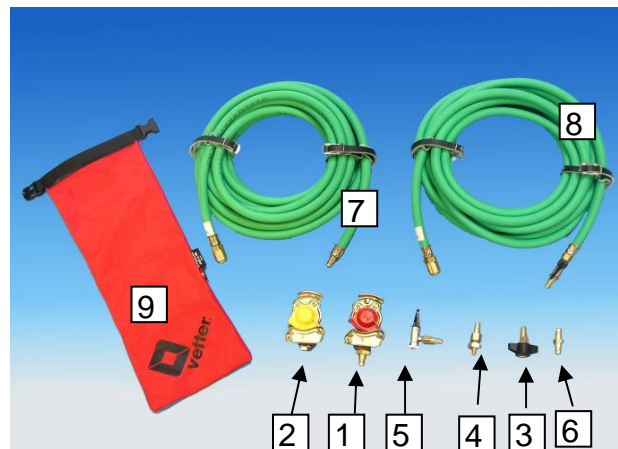
Open bottle valve, pull out inflation hose from the reel, connect bag and ready

How it works can be seen in the special operating manual for each equipment.

### Operation with other compressed air supplies

Basically, any air supply which is available can be used for operation of Mini-Lifting Bags as long as the pressure does not exceed 10 bar and the air is free of oil.

The transition set (B.-Nr.: 1600 0125 00) can be used with any other air supplies and has the following adapters:



- 1) Truck compressed air connection, dual brake system.  
For tapping air out of the trailer coupling head.

- 2.) Dummy coupling  
Seals off the control line of the brake system



**Remember !**

**Ensure that the truck does not roll, use brake blocks !**

- 3.) Truck tyre inflation device adapter  
For tapping off air from the so-called tyre inflation bottle near the brake.



**Remember !**

**The tyre inflation connection must be ensured by a safety valve as a standard (blow-off pressure approximately 7.5 bar) !**

- 4.) Truck tyre valve  
Inflation with a normal hand or foot pump as well as other air supplies for tyre inflation.

- 5.) Truck tyre valve connection, can be clamped  
For extracting air for the spare tyre.





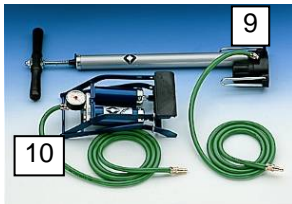


- 6) Adapter for the local air pressure network.

- 7) Air supply hose, 10 m, green.

- 8) Air supply hose, 10 m, green, with blocking valve.

- 9) Case, red.

**Additional accessories**

	Pos.	Item No.	Description
		1600 0105 00	Comp. air bottle 10 l / 200 bar
		1600 0091 00	Comp. air bottle 6 l / 300 bar
		1600 0101 00	Comp. air bottle 1 l / 200 bar
	5	1600 0084 00	Dual connector 200 bar
	6	1600 0091 00	Dual connector 300 bar
	7	1600 0116 00	Safety carrier rack (without bottles)
	8	1600 0118 00	Trolley for safety carrier rack  (shown with 2 x Pos. 7) (without bottles)
	9	1600 0087 00	Hand pump
	10	1600 0094 00	Foot pump
	11	1600 0145 00	Pressure regulator
	12	1600 0120 00	Adapter for construction site compressor

## Trouble-shooting for faults

If the safety valve blows too early because of foreign body penetration caught up inside then the blow-off valve is to be fully opened on the head of safety valve by turning counter-clockwise so that the compressed air can escape. If, due to this, the foreign body is not removed then the upper part of the safety valve is to be unscrewed when the safety valve is disassembled. To do this, position the pipe wrench in the centre and unscrew by turning to the left.

Carefully take out the valve ball and remove foreign body.

Firmly screw on the upper part of the valve again, assemble the safety valve and check operation. The set pressure must not be changed.



**Should the sealing or sealing plate on the upper part of the valve be removed then correct operation can no longer be guaranteed.**

**The safety valve is to be exchanged.**

If operational faults occur on the pressure reducer or controller due to icing at high air humidity in connection with low temperatures then a normal defrosting agent (the same as in cars) should be used.

## Repetitive tests

Lifting bag systems are to be subjected to the following repetitive tests:

**A) Testing on acceptance**

Testing for completeness by the person/people delegated by the user.

Visual check and operation test by a trained person according to the operation manual.

**B) Visual check and operation test** after each application / use by a trained person.

This test is to be documented.

**C) The lifting bag system is to be subjected at least once every year to a visual check and operation test** by a trained person according to the following check list.

This test is to be documented.

- D) **The lifting bag system is to be given a pressure test, by user or manufacturer, according to DIN EN 13 731 and recommendation of the manufacturer, every 5 years or if there is any doubt about the safety or reliability.**

The responsibility for correct execution of repetitive testing lies with the user.

**Lifting bags or lifting bag systems are not subject to the requirements of EC guideline 97/123/EC (refer to Point: 3.15).**

### **Limit for the period of use**

Mini-Lifting Bags are subject, the same as other rubber products, to natural aging. The first sign of material aging is the loss of flexibility, this is especially seen in the formation of "age cracks". If these cracks propagate so far along the upper layer so that the supporting cord layer (steel or Aramide) is no longer fully insulated then this can quickly limit the tear resistance of the bag wall.

**This can cause wall tearing and thus lead of bursting.**



**Caution ! Danger of bursting !**

The experiences over the past decade have clearly shown that the failure rate in general for rubber products considerably increases with application periods exceeding 15 years.

Therefore Mini-Lifting Bags should be replaced after 15 to 17 years of use at the latest. The danger for operational services using over-aged Mini-Lifting Bags must never be under-estimated, alone due to the consideration aspect. Although at present there is no regulation about the time limit for the maximum period of use, the responsibility for this lies wholly and solely with the user, resp. the person who has been commissioned by him to carry out testing.

## Care and storage

The lifting bag equipment is to be cleaned after each operation.  
Cleaning is normally carried out with warm water and a detergent.

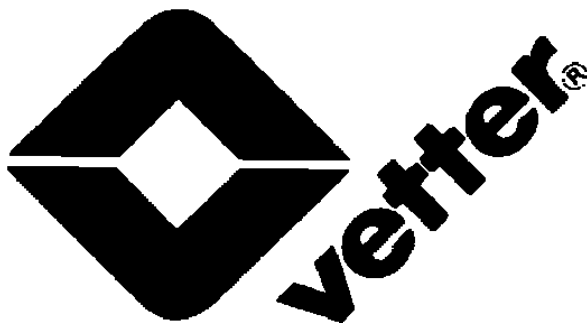


**Cleaning must never be carried out with a chemical cleaning agent and never with high-pressure hot water devices.**

Drying is made at normal room temperature.

DIN 7716 is to be observed with long storage periods

**All rights are reserved for technical changes within the scope of product improvement.**



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**Notes:**

**Technical data**

Mini- Lifting Bags steelcord reinforcement

Type	V 10	V 12	V 18	V 20
Item No.	1310 0006 00	1310 0010 00	1310 0011 00	1314 0021 00
Lift power,max to	9,6	12,0	17,7	19,4
Lift height, max cm	20,3	20	27	28,0
Size cm	37x37	32x52	47x52	48x58
Insertion height cm	2,5	2,5	2,5	2,5
Nom. content l	9,2	10,7	21,7	24,9
Air capacity l	82,8	96,3	195,3	224,1
Operating pressure max. bar	8	8	8	8
Test pressure bar	16	16	16	16
Burst pressure bar	48,3	71,3	54,7	55,3
Weight kg	5,0	6,0	8,5	8,7
Type	V 24	V 24 L	V 31	V 35 L
Item No.	1310 0012 00	1310 0013 00	1310 0014 00	1310 00082 00
Lift power,max to	24,0	24,0	31,4	35,8
Lift height, max cm	30,6	20,1	37	31,0
Size cm	52x62	31x102	65x69	43x115
Insertion height cm	2,5	2,5	2,5	2,5
Nom. content l	32,9	23,5	57,5	38,8
Air capacity l	296,1	211,5	517,5	349,4
Operating pressure max. bar	8	8	8	8
Test pressure bar	16	16	16	16
Burst pressure bar	65	74,3	44	37,0
Weight kg	12	11,5	17	15,8
Type	V 40	V 54	V 68	
Item No.	1310 0015 00	1310 0016 00	1310 0017 00	
Lift power,max to	39,6	54,4	67,7	
Lift height, max cm	40,2	47,8	52,0	
Size cm	78x69	86x86	95x95	
Insertion height cm	2,5	2,5	2,5	
Nom. content l	75,0	124,2	161,9	
Air capacity l	675,0	1.117,8	1.457,1	
Operating pressure max. bar	8	8	8	
Test pressure bar	16	16	16	
Burst pressure bar	35	35,5	34,7	
Weight kg	20	31	38,5	

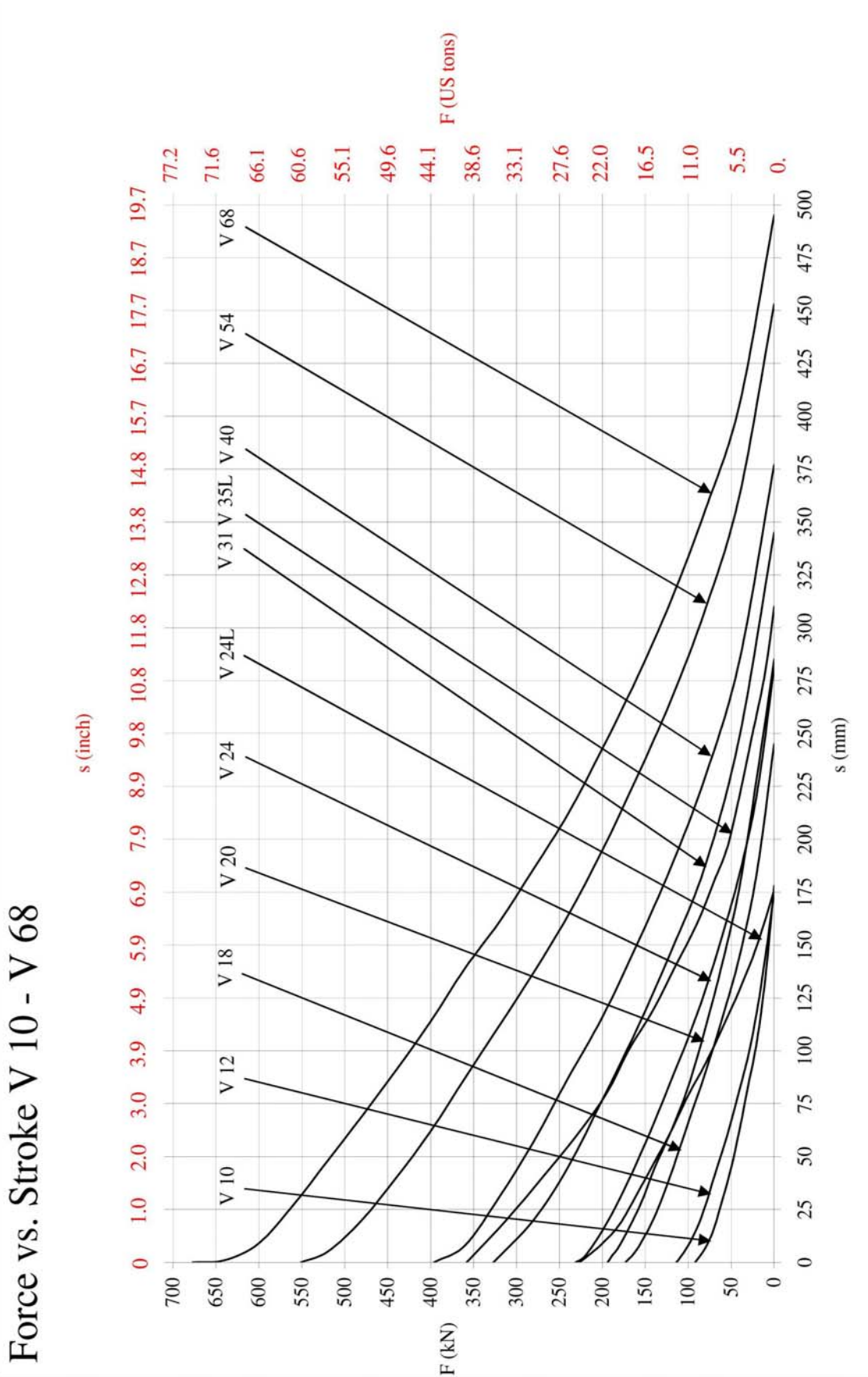


**Technical data**

Mini- Lifting Bags aramide reinforcement

Type	V 10	V 12	V 18	V 20
Item No.	1314 0022 00	1314 0024 00	1314 0025 00	1314 0034 00
Lift power,max to	9,6	12,0	17,7	19,4
Lift height, max cm	20,3	20	27	28,0
Size cm	37x37	32x52	47x52	48x58
Insertion height cm	2,5	2,5	2,5	2,5
Nom. content l	9,2	10,7	21,7	24,9
Air capacity l	82,8	96,3	195,3	224,1
Operating pressure max. bar	8	8	8	8
Test pressure bar	12	12	12	12
Burst pressure bar	73	73	62,5	53,1
Weight kg	3,25	4,0	5,8	5,8
Type	V 24	V 24 L	V 31	V 35 L
Item No.	1314 0026 00	1314 0027 00	1314 0028 00	1314 0183 00
Lift power,max to	24,0	24,0	31,4	35,8
Lift height, max cm	30,6	20,1	37	31,0
Size cm	52x62	31x102	65x69	43x115
Insertion height cm	2,5	2,5	2,5	2,5
Nom. content l	32,9	23,5	57,5	38,8
Air capacity l	296,1	211,5	517,5	349,4
Operating pressure max. bar	8	8	8	8
Test pressure bar	12	12	12	12
Burst pressure bar	55,5	73	38	37,0
Weight kg	7,3	7,8	9,5	10,1
Type	V 40	V 54	V 68	
Item No.	1314 0029 00	1314 0030 00	1314 0031 00	
Lift power,max to	39,6	54,4	67,7	
Lift height, max cm	40,2	47,8	52,0	
Size cm	78x69	86x86	95x95	
Insertion height cm	2,5	2,5	2,5	
Nom. content l	75,0	124,2	161,9	
Air capacity l	675,0	1.117,8	1.457,1	
Operating pressure max. bar	8	8	8	
Test pressure bar	12	12	12	
Burst pressure bar	38	36	32,5	
Weight kg	11,8	17,2	21,9	

Diagram : Force vs. Stroke

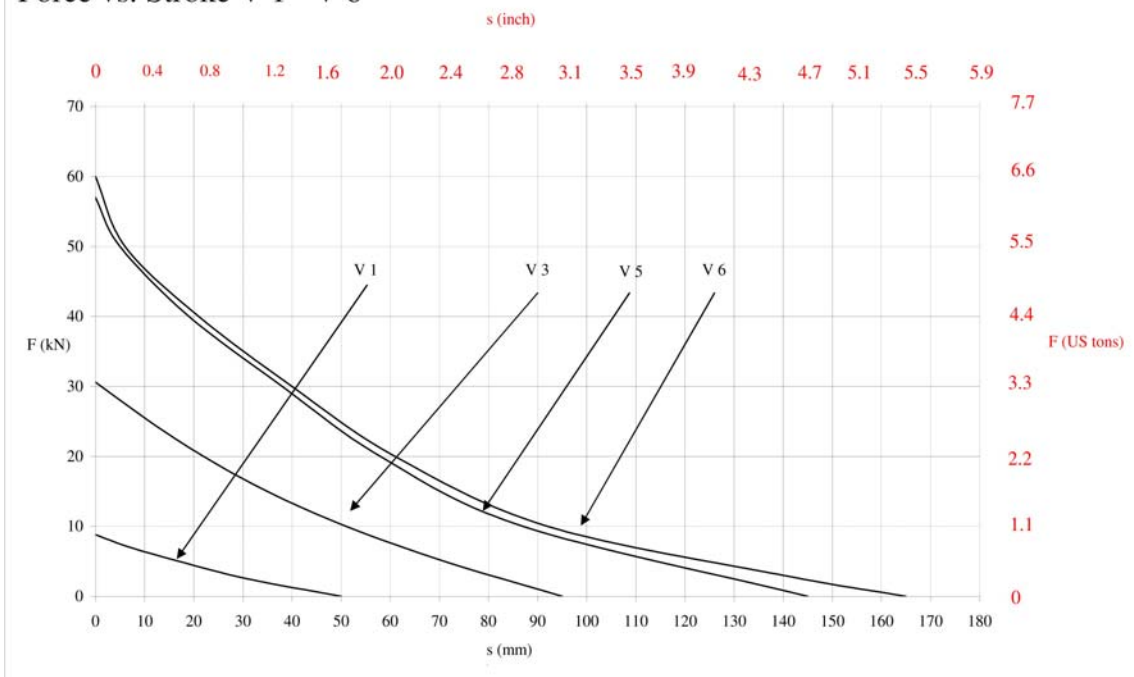


**Technical Data :**

Super Mini-Lifting Bags aramide reinforcement

Type	V 1	V 3	V 5	V 6
Item No.	1314 0093 00	1314 0095 00	1314 0182 00	1314 0096 00
Lift power,max to	1,1	3,3	5,7	6,4
Lift height, max cm	7,5	12,0	14,5	16,5
Size cm	14x13	25,5x20,0	28x28	29,5x29,5
Insertion height cm	2,5	2,5	2,5	2,5
Nom. content l	0,30	1,75	3,16	4,4
Air capacity l	2,7	15,8	28,4	39,6
Operating pressure max. bar	8	8	8	8
Test pressure bar	12	12	12	12
Burst pressure bar	56,3	49,9	41,0	38,7
Weight kg	0,44	1.10	1,70	1,95

Force vs. Stroke V 1 - V 6



## List of possible dangers according to EN 12100-1 and EN 12100-2

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7.18 Exceptional conditions during assembly, testing, use, maintenance	3 / 9
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7.20 Dangers due to negligence of ergonomic principles (load bumping)	6
7.21 Fire and explosion	3 / 4
7.22 Control failure	3

## EC Declaration of Conformity in terms of the EC Machine Directive

We

Vetter GmbH  
A Unit of IDEX Corporation  
Blatzheimer Str. 10 - 12  
53909 Zülpich

hereby declare that the Mini Lifting Bags (Steelcord and Aramide)

**for lifting and lowering loads**

**Serial No.:** \_\_\_\_\_

**Design:** \_\_\_\_\_

(see ratings plate, to be completed by customer)

complies with the following pertinent regulations in its standard design:

**Machine Directive 98/37/EG**

Harmonised standards employed:

**DIN EN ISO 12100 part 1/2**

**according to prEN 13731**

National standards and technical specifications employed:

**according to the EC Directive 97/23 EC**

We hereby assure that the certification procedure was conducted in accordance with the Directive 98/37/EC of the European Parliament and of the Council of 22 June 1998 on the approximation of the laws of the Member States relating to machinery and that the requirements of the standard DIN EN 45 014 General Criteria for Supplier's Declaration of Conformity were observed in the preparation of the Declaration of Conformity.

Zülpich, 06.12.2005