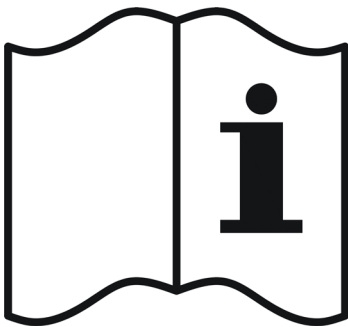


Translation of the original operating instructions

VETTER Lifting Bags 1.0 bar/14.5 psi



Keep in a safe place for future use



Contents

1. Important preliminary remarks	2
2. Description of the product	2
2.1 Scope of delivery	2
2.2 Additional accessories	2
2.3 Application area	3
2.4 The VETTER construction.....	4
2.5 Correct handling and usage.....	6
2.6 Safety instructions	6
3. Preparing the product for use	7
3.1 Preparations for operation	7
3.2 Application instructions.....	7
4. Operating Instructions	8
4.1 Operation with compressed air bottle 200 bar or 300 bar....	8
4.2 Operation with other air supplies.....	10
4.3 Dismantling of the lifting bag system after use.....	11
4.4 Limit for the period of use.....	11
4.5 Care	11
4.6 Repair instructions.....	11
5. Storage.....	11
6. Elimination of defects.....	12
7. Repetitive checks	12
8. Technical data	13

1. Important 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 a person who has been instructed in the use of Vetter Lifting Bags, using the manufacturer operating manual and the instructions from the user, is to be given the operation task.

In addition to the operating instructions, all national, generally applicable, statutory and other binding accident prevention regulations must be observed and instructed.

The disposal of discarded lifting bags is to be carried out according to disposal regulations valid for the region.

The operating instructions given here are to be regarded as part of the product and are to be kept for the complete life duration of the product. In case the product should be passed on to a successive user then the operating instructions must also be included.

2. Description of the product

2.1 Scope of delivery

Inventory check: Items

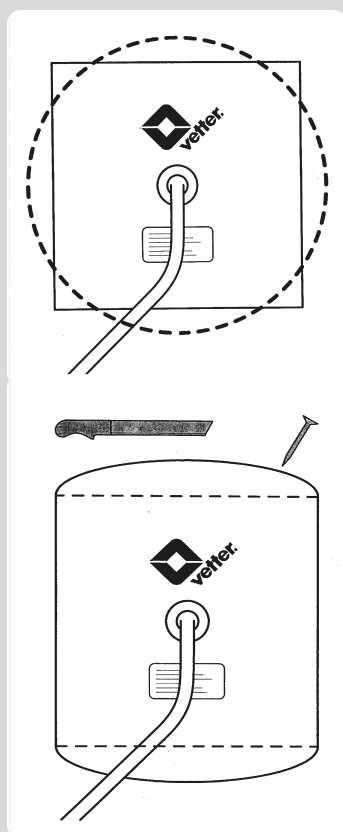
Description	Qty.
Lifting bags, of the same type and size	2
Inflation hoses, 5 m (16.4 ft.) in length	2
Air Cu 1 bar (14.5 psi), deadman	1
Pressure regulator 200/300 bar (2,900/4,350 psi)	1
Packing bag	1
Set repair material	1
Operating instruction	1

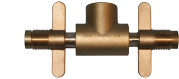
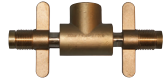
Other set combinations are possible if required!

2.2 Additional accessories

Pos.	Article No.	Description
1	1600 0319 00 or 1600 0320 00	Pressure regulator 200/300 bar US Version 4500 psi (not compatible with below mentioned compressed air bottles)





Pos.	Article No.	Description	
2	1600 0108 00	Comp. air bottle 6 l / 300 bar (0.21 cu. ft. / 4,350 psi)	
3	1600 0199 00	Comp. air bottle 9 l / 300 bar (0.32 cu. ft. / 4,350 psi)	
4	1600 0091 00	Dual connector 300 bar (4,350 psi)	
5	1600 0145 00	Pre-pressure regulator	
6	1600 0120 00	Adapter for compressor	

2.3 Application area

Due to the high pressure point load, it is frequently not possible to use winches or hydraulic lifting gear when dealing with heavy, unstable loads. In such cases the advantages of Vetter lifting bags become very much apparent:

- ✓ Very light
- ✓ Low pressure point loading
- ✓ Very flat in design
- ✓ Can be used in any position

As already known, air distributes itself evenly on all sides. The ideal shape of a pressure container is spherical. With flexible pressure containers, such as the lifting bag, the top and bottom as well as sides bulge.

With lifting bags this bulging, especially of the top and bottom, could damage the bag when pressed against sharp objects and the bag may become cut, punctured or abraded.

Danger of damage to the pressurized walls of the bag.



2.4 The VETTER construction

Bags which have a cylinder shape cannot bulge on the side because the material tensions evenly. This characteristic greatly reduces any damage to the side wall.

Owing the extensive use of internal harnesses, bulging of the top and bottom is avoided. The strong, multi-layer and reinforced material avoids bag damage within the working area. The supporting material of the lifting bag is made of ARAMIDE which is a very light but tear-resistant artificial fibre.

The coating of the supporting material is made of NEOPRENE which is a synthetic artificial rubber. As opposed to material rubber, NEOPRENE has ideal characteristics for the lifting bag, e.g.:

- ✓ High resistance to mineral oil and acid
- ✓ High resistance to wear and has a long life cycle
- ✓ Maintenance free

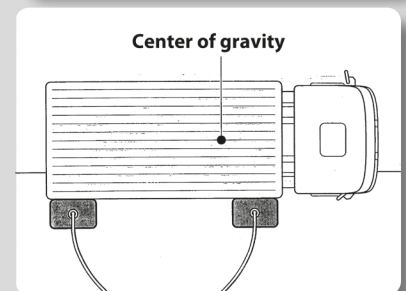
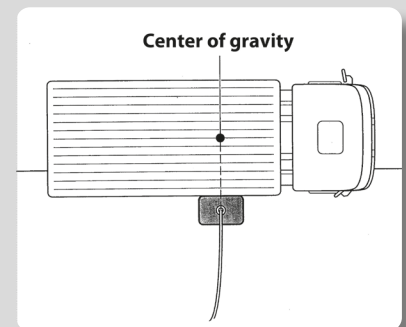
The flexible lifting bags mould themselves to the shape of the load to be lifted as opposed to hydraulic and pneumatic lifting gear with their solid positioning plates. In connection with the very low application pressure of only 1.0 kg/cm^2 , loads can be lifted carefully.

Lifting bags, irrespective of the type, are unstable over the complete lifting distance! When using just one bag it must be positioned exactly under the load's centre of gravity otherwise load movement cannot be avoided.

In practise, exact positioning is not possible!

If the use of one bag cannot be avoided then positioning stability of the load is to be ensured. However, if two bags are used and if one bag is placed to the front part and the other bag to the rear part of the load then the centre of gravity will always be between the two bags.

The basic condition for a stable, different control of both bags is the separate independent control using the corresponding dual controller.





Due to this, the Lifting Bags 1.0 bar/14.5 psi are equipped with the following:

- 2 Bags of the same type and size
- 2 Inflation hoses 5 m (16.4 ft.) or 10 m (32.8 ft.) long
- 1 AIR CU 1.0 bar/14.5 psi deadman
- 1 Pressure regulator 200/300 bar

The corresponding packing bag is included as well as 1 repair set. Lifting bags 1.0 bar/14.5 psi are subject to the requirements specified in DIN EN 13 731.

According to the old DIN, lifting bags are classified as PNEUMATIC LIFTING DEVICES with the following definitions:

Pneumatic lifting devices according to DIN 14 152 T 1		
DIN-Description	Sidewall	Min. lift / kN
LH 10 S	Yes	10
LH 20 S	Yes	20
LH 30 S	Yes	30
LH 50 S	Yes	50
LH 10	No	10
LH 20	No	20

The following Vetter lifting bags correspond to the listed standard types:

Standard	Vetter Lifting Bags 1.0 bar/14.5 psi
LH 10 S	1/6
LH 20 S	1/9
LH 30 S	1/13
LH 50 S	1/23

Pneumatic lifting device or lifting bag without side wall can be supplied if required. As opposed to the old national standard DIN 14 152 T 1, the European standard DIN EN 13 731 requires the following with a controller:

5.2.4.6 When the operating device of a controller is released then it must immediately return to the „neutral „ position automatically.

The so called „deadman switch“ was introduced as a compulsory fitting to meet the requirements of this standard.

(Picture: Air CU 1.0 bar / 14.5 psi deadman)



2.5 Correct handling and usage

Lifting bags are mainly pneumatically driven rescue equipment for the rescue services (e.g. fire service) with which trapped people can be freed, paths made to carry out rescue or counter-measures etc. The lifting bags can also be used as working equipment to lift or move objects.

Lifting bags meet the requirements specified in DIN EN 13 731 as well as DGUV-G 305-002 in the field of fire services. Further operational instructions are specified in the operating manual of the user.

2.6 Safety instructions

Pre-specified personal protective clothing is to be worn during operation! For example: protective clothing, helmet, protective gloves, protection for eyes and face, noise protection etc.

The national regulations in connection with lifting bag systems and their use are to be observed. For example: DIN EN 13731, national regulations.

The Lifting Bags are only to be used with compressed air. Under no circumstances are they to be used with inflammable gases or aggressively acting gases.

Vetter Lifting Bags are only to be inflated with original Vetter inflation fittings, because these were subjected to an acceptance test by the manufacturer. The lifting bag system is to be tested for perfect condition before and after use (specifications from the manufacturer, national regulations).

The national safety guidelines must be observed and adhered to worldwide.

In the Federal Republic of Germany, for example, regular safety inspections are prescribed by DGUV Principle 305-002.

Never lay two or more lifting bags on top of each other.



Ensure that the load does not slip. Gravitationally support loads being lifted during a continuous lifting procedure. Always pay particular attention to the stable condition of the support material during support work.

The support structure must at least support the whole area of the bag and must be larger in its length and width than in its height! Attention danger of slipping! Never place metal on metal when carrying out support work!



Place stones, branches or similar items under the bag in order to increase ground grip when the ground is slippery (ice, snow, mud etc.). Avoid pointed loads such as grips or screws.

Attention danger of slipping! Never place metal on metal when carrying out support work!



Never place the bags on sharp edges or hot to red hot components. Use suitable intermediate layers and cover the whole bearing area of the bag. Protect the bag from sparks from welding or separation work. Do not additionally subject the bag to such things as hydraulic stamps, hoists, falling loads etc.

Never remain under the load being lifted, and never try to grip the load from below! Remain at a safe distance!



Avoid shearing effects caused by bag squeezing when deflating. Never stand in front of the load during operation, always place yourself to the side of it, because the bag can be catapulted out under unfavourable conditions.

3. Preparing the product for use

3.1 Preparations for operation

Remove the set of lifting bags from the transport and unpack the packing bag. Make certain that the inflation device is ready for operation. Make certain that there is sufficient air supply available. Connect the inflation hoses on the one side to the lifting bags and on the other side to the dual controller.

Only perfectly working and tested lifting bag systems are to be used.



The person in charge of the operation is to decide on the method and how it is to be applied from case to case within the field of his responsibility as well as observance of the operating instructions of the user.

3.2 Application instructions

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

Normally at least two bags are used of the same type and size. Position each bag near to the end of the load. If necessary use lines for drawing under the load or lower between loads which have to be pressed apart.

Depending on the low operation pressure of the lifting bags, the maximum pressure point loading is only:

1,0 kg/cm² with lifting bags 1.0 bar (14.5 psi)



Due to low bearing pressure, under-support for ground fixture is only necessary in exceptional cases.

The load to be lifted is to be secured against slipping by suitable measures !



Before moving the lifting bag under the load, it should be ensured that the side wall material is positioned between the top and bottom plates. Under no circumstances should the side wall material be between the load and top or the load and bottom during the lifting sequence. This can, under certain circumstances, cause damage to the side wall of the bag.

If the movement height or the movement area is not sufficient for correct application of the lifting bag, then the required space can normally be quickly obtained by using the Vetter Mini Lifting Bag 8 bar (116 psi).

4. Operating Instructions

4.1 Operation with compressed air bottle 200 bar or 300 bar (2,900 psi or 4,350 psi)

Connect the pressure reducer to the compressed air bottle, 200 bar or 300 bar (2,900 psi or 4,350 psi), using the tommy screw (1). Close the hand wheel of the pressure reducer (2). Open the valve on the bottle (3) slowly. The pre-pressure manometer (4) indicates the pressure in the bottle. Adjust the back pressure to approximately 2 bar (29 psi) with the regulation bar (5) (indication of the reduced pressure on the back pressure manometer (6)).

Connect the air hose of the pressure reducer via the nipple to the input coupling (7) of the controller. In doing this, press the nipple into the coupling until you feel it lock in. For additional safety: turn the brass sleeve (8) so that it is opposite the safety pin (9).

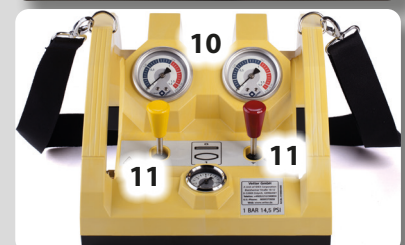
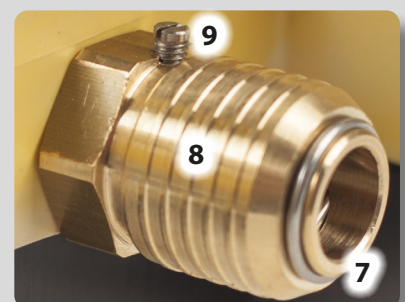
Open the hand wheel (2) of the pressure reducer.

The lifting bag system is ready for operation.

To inflate the lifting bag pull the lever (11) towards you. Observe the manometers (10) and the load.

If the required pressure is reached for lifting or if the lift height is achieved, then end the inflation sequence by releasing the switch lever. Latest when the safety valve blows off or the red marking is reached! The switch lever of the controller with the deadman switch will automatically go back to the zero position.

An integrated safety valve will automatically activate when the bag is unintentionally over-inflated above the maximum operating pressure (1.0 bar/14.5 psi) or when there is an increase in bag pressure due to additional loading of the bag. The activation tolerance for opening and closing of the safety valve must not exceed +/- 10%.



Press the switch lever to „Deflate“ in order to deflate the bag or to lower the load.

Load behaviour and lift movement must always be continuously monitored. Depending on the type, position and behaviour of the load during the lifting sequence, the lifting bags are either

- ✓ simultaneously and evenly inflated or
- ✓ inflated step-by-step, resp. individually.

Remember to remain at a safe distance from the load! Do not stand directly in front of the lifting bags because if the positioning is incorrect the bags could be catapulted outwards.



Never leave the controller and the inflation device unattended while the lifting bags are under pressure. Never disconnect the connection between bags and controller while the bags are under pressure.

Additional information for illuminated control element Air CU 1 bar (14.5 psi) deadman lighting

The lighting of the control element illuminates all couplings, switch levers and manometers. It is switched on and off with Switch (1) on the side.

The control element is supplied by a 9 V block battery. Since the entire lifting bag system is designed for a temperature range of -20 °C to +55 °C, only batteries with this temperature range are allowed to be used. Based on the current state of the art, only lithium batteries meet this requirement.

To insert the battery, unscrew the battery compartment, replace the old battery with a new one and screw the battery compartment back together.

Control elements with lighting come under the German Law on electrical and electronic devices (ElektroG) of 24 March 2005 for implementation of the EC Directive 2002/96/EC on electrical and electronic waste – WEEE Directive.

The label attached to the battery compartment cover points out that the electronic components in this product must not be handled as domestic waste; they have to be returned to the manufacturer (return freight paid) for recycling.



4.2 Operation with other air supplies

Amongst others, the set of transition pieces (Art. No.: 1600 0125 01) with the following adapters are available for operation with other air sources:



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/108.8 psi)!**

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. Adapter Construction-site compressor
8. 2 x Air supply hose, 10 m (32.8 ft.), green, with blocking valve.
9. Case, red

4.3 Dismantling of the lifting bag system after use

Dismantling of the lifting bag system is carried out after ensuring the lifted load and complete deflation of the lifting bag system, including dismantling of all accessory parts in the reverse order.

4.4 Limit for the period of use

Since there is no duty to discard lifting bags (as, e.g., there is for rescue cushions), we recommend discarding the lifting bags at the latest after 18 years if they are deployed and stored properly and are regularly inspected.

4.5 Care

The lifting bag equipment is to be cleaned each time after use. Normally cleaning is made with warm water and a soap detergent.

A chemical cleaning agent is not to be used under any circumstances and high pressure warm water equipment is also never to be used.

Drying is made at room temperature.



4.6 Repair instructions

Small cracks or cuts in the side wall material (max. 4 cm/1.6 inch) can be quickly repaired without difficulty using the supplied repair material. See separate operating instructions.

5. Storage

When stored and handled properly, the properties of rubber products remain nearly constant for a long period of time. However when handled improperly and under unfavourable storage conditions, their physical properties and/or service life are shortened!



Please comply with the following storage conditions:

Store in a place that is cool, dry, dust-free and moderately ventilated.

The storage temperature should be approx. 15 °C; never let it exceed 25 °C.

The temperature should also not fall below -10 °C.

If there are heating appliances and heating conductors in the storage room, they must be appropriately insulated so that the temperature of 25 °C is not exceeded. Maintain a minimum clearance between the heating appliances and the stored goods of 1 m (3.2 ft.).

Do not store rubber products in moist storage rooms. The relative humidity should be less than 65 %.

Protect the rubber products from light (direct exposure to sunlight, artificial light with high proportion of UV). The windows in the storage room need to be correspondingly darkened.

Make sure that the storage room does not contain any appliances that cause ozone.

The storage room must be free of solvents, fuels, lubricants, chemicals, acids, etc.

Store rubber products without pressure, tensile stress or similar distortions since that can promote deformations or crack development.

Some metals such as copper and manganese can also have a damaging effect on rubber products.

For more information please refer to DIN 7716.

6. Elimination of defects

If a safety valve blows-off too early because a foreign body has penetrated and is lodged in, then the blow-off device is to be opened at the head of the safety valve by turning counter-clockwise so that the compressed air is able to escape.

If the foreign body is not removed, the safety valve must be replaced. Then check to make certain that it functions perfectly.

If the seal or seal plate has been removed on the upper part of the valve then reliable function is not guaranteed.



The safety valve is to be exchanged.

7. Repetitive checks

Lifting bag systems are to be subjected to periodic maintenance and testing of rescue equipment in accordance with the relevant national regulations.



The points listed below are merely recommendations of Vetter GmbH for Germany, based on the inspection principles of DGUV (Deutsche Gesetzliche Unfallversicherung - German statutory accident insurance) Principle 305-002:

- ✓ 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.
Create test certificates.
- ✓ Visual check and operation test after each application/use by the user.
Create test certificates.
- ✓ At least once a year, the lifting bag system must be subjected to a visual and functional test by a competent person (in Germany according to DGUV Principle 305-002).
Create test certificates.
- ✓ At least every 5 years, or if there are doubts about the safety of reliability, the lifting bag system is to be subjected to a pressure test by the manufacturer.
Archive test certificates.

The user is responsible for the correct and professional execution of the repetitive tests!

8. Technical data

Lifting bag 1.0 bar/14.5 psi

Type		1/23	1/13	1/9	1/6
DIN Nomination		LH 50 S	LH 30 S	LH 20 S	LH 10 S
Lifting power	to/US tons	11.3/12.45	6.5/7.15	4.5/4.95	3.0/3.3
Lifting power set	to/US tons	22.6/24.9	13.0/14.3	9.0/9.9	6.0/6.6
Lifting height, max.	cm/inch	127/50	81/32	76/30	56/22
Insertion height (uninflated)	cm/inch	3/1.2	3/1.2	3/1.2	3/1.2
Diameter	cm/inch	120/47	91/36	76/30	61/24
Working pressure	bar/psi	1.0/14.5	1.0/14.5	1.0/14.5	1.0/14.5
Test pressure	bar/psi	1.5/21.75	1.5/21.75	1.5/21.75	1.5/21.75
Air requirement at 1.0 bar	l/cu.ft.	3,023/107	1,038/37	667/24	328/12
Inflation time, approx.	sec.	191	62	42	20
Weight, approx.	kg/lbs	21/46	12/26	9/20	7/15
Weight (set), approx.	kg/lbs	56/123	38/84	32/71	26/57

Rescue Set Article No. 3110011100

Lifting power	to/US tons	12.1/13.3
Lifting height	cm/inch	65/26
Working pressure	bar	1.0
	psi	14.5
Test pressure	bar	1.5
	psi	21.75
Air requirement at 1.0 bar	l	2,104
	cu.ft.	74.3
Packaged size	cm	110 x 72 x 30
	inch	43 x 28 x 12
Inflation time	sec.	164
Weight lifting bag, approx.	kg/lbs	10.0/22.0
Weight set, approx.	kg/lbs	35.0/77.2

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

We explicitly point out that changes made to the filling valve and the main products (e.g., modification of the original couplings/fitting nipple) plus operation with third-party valves as well as third-party products obviates all liability and warranty claims.

EC Conformity Declaration (available on request)

in accordance with Directive 2006/42/EC

Manufacturer name and address:

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

We hereby declare, that the VETTER Lifting Bags 1.0 bar/14.5 psi for lifting and lowering loads

Type: _____
Serial No.: _____
Model: _____

(see appliance plate, to be entered by customer)

meets the following relevant provisions:

Directive 2006/42/EC on Machinery

Applied harmonised standards, references to which have been published in the Official Journal of the European Union:

DIN EN ISO 12100

EN 13731

Applied national standards and technical specifications:

Authorised representative for the compilation of technical documents:

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

This EC Conformity Declaration was issued:

Zülrich, 18.09.2020

(Place, Date, Signature)

Place your trust in emergency pneumatics!

We are the company who can help you, find a solution to your problem!

Vetter GmbH

A Unit of IDEX Corporation

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