

Translation of the Original Operating Instructions

VETTER S.Tec 12 Lifting Bags



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1. Important preliminary remarks

Only the knowledge and exact observance of these operating instructions guarantees correct and professional operation produces the greatest possible use and ensures any claims made within the scope of the Vetter guarantee.

The handling of the Vetter S.Tec 12 Lifting Bags is only to be made by trained persons using the operating instructions of the manufacturer and the information from the user.

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. Product description

2.1 Description of the set

a. S.Tec 12 Lifting Bags

The selection of bag size must correspond to operation requirements. There are 14 sizes available from 1.3 t to 101.6 t.

b. Inflation hoses

In order to inflate S.Tec 12 Lifting Bags from a safe position for the operator there are inflation hoses available with lengths of 5 m and 10 m. The hose colours in RED and YELLOW are used exclusively to assist the operator in recognizing the correct side when controlling the S.Tec 12 Lifting Bags.

c. Controller 12 bar

When filling and deflating of the bags, the manometer and the load must be observed.



Air CU (Control Unit) 12 bar deadman

Connect the inflation hoses on the output couplings on the rear side of the controller. Connect the air supply to the input coupling on the side. Move the switching lever towards you in order to inflate the S.Tec 12 Lifting Bags. In doing this, observe the corresponding manometer and the movement of the load. When the required operating pressure for the lifting power or lift height is reached terminate the inflation sequence by releasing the lever.

Latest when the safety valve blows off or the red marking is reached! The switching lever automatically returns back to the zero position (deadman switching).





Different couplings!



The integrated safety valve activates automatically as soon as the maximum operating pressure of 12 bar is exceeded when inflating or when there is a sudden increase in bag pressure caused by an unintended loading of the bag.

The activation tolerance for opening and closing of the safety valve must only be a maximum of +/- 10 %.

Press the switching lever in the opposite direction in order to deflate the bag or to lower the load.

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.

Dual deadman controller 12 bar / 174 psi, aluminium style, connectable

Connect the filling hose to the outlet couplings (4) on the rear of the control element. Connect the air supply to the lateral inlet coupling (1). To fill the S.Tec 12 Lifting Bags, press the lower "+" push-button (2). When the desired operating pressure has been reached for the lift force or lift height, discontinue the filling process by releasing the push-button. Release latest when the safety valve blows off or the red marking has been reached! During this process, the push-button independently returns to the zero setting (deadman switch). If you overfill the bags past the maximum operating pressure of 12 bar or if there is an unexpected additional load on the bag, the integrated safety valve automatically blows off.

The activation tolerance for opening and closing of the safety valve must only be a maximum of +/- 10 %.

To drain the bag or lower the load, press the upper "-" push-button (3).

To prevent long-term damage of the membranes in the interior, vent the control element after use. To vent, first press all push-buttons (+ / -) one time.

Connecting and disconnecting two double control elements

To link, connect the nipple (5) of the left control element with the inlet coupling (1) of the next control element. Swivel the transom (7) on the rear of the right control element to the side of the left control element and screw it tight with the star screws (6).

The control elements are now connected and will be supplied with compressed air through the inlet coupling of the left control element.

Before separating, disconnect the air supply connection and depressurise the control element by pressing the push-buttons.

Note:

Do not separate the control elements as long as the bags are connected.

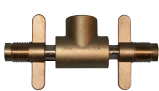
Loosen the star screws on the rear and swivel the transom back into place. Press both control elements together, pull back the union nut of the inlet coupling of the right control element and then let go of both control elements. The control elements are now disconnected.

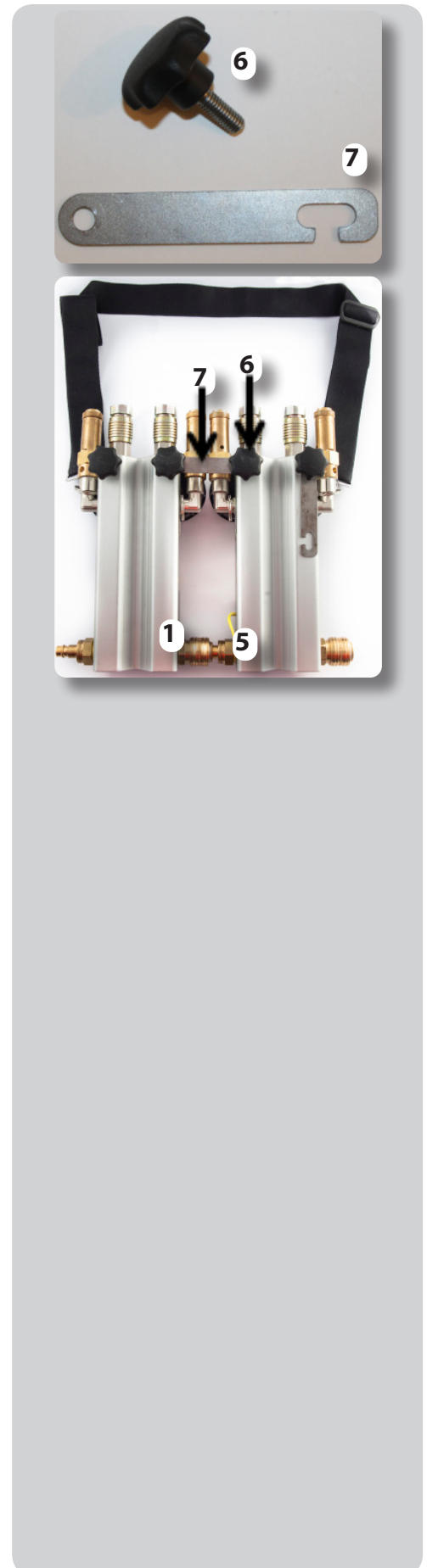
If the transom and the star screws are not going to remain on the control element, keep them together in a bag.

Inventory check

On acceptance of the S.Tec 12 Lifting Bags equipment a check is to be made to see if the delivery is complete according to the delivery note. In addition to this a visual check and function test is to be made according to the operating instructions.

2.2 Other accessories

Article No.	Description	
1600 0319 00 or 1600 0320 00	Pressure regulator 200/300 bar Working pressure 14 bar US Version 4500 psi (not compatible with below mentioned compressed air bottles)	
1600 0108 00	Comp. air bottle 6 l / 300 bar	
1600 0199 00	Comp. air bottle 9 l / 300 bar	
1600 0091 00	Dual connector 300 bar	





1600 0145 00

Pressure regulator



1600 0120 00

Adapter for construction site compressor



2.3 Vetter safety coupling system

a. Input coupling of the controller

Connect the air supply hose or the connection hose of the pressure regulator to the nipple of the input coupling (1) on the controller pushing the nipple solidly into the coupling until the ratchet action can be felt. In order to ensure that it is correctly connected: turn the brass sleeve (2) of the coupling opposite to the safety pin (3).

b. Inflation hoses

To connect the inflation hoses to the corresponding controller or to the S.Tec 12 Lifting Bag press the hoses or bag nipple solidly into the coupling until the ratchet action can be felt. The coupling sleeve must be seated on the support ring without any gap (1). To release the connection (only in the pressure-free condition) the nipple must be solidly pressed against the spring pressure in the coupling. At the same time the coupling sleeve must be pushed back. The coupling then releases.

c. Inflation with an 8 bar or 10 bar inflation device

The S.Tec 12 safety coupling system facilitates filling the pad with the Vetter 8 bar or 10 bar S.Tec system. However, do this only in exceptional cases since in such a case the pad cannot lift with its entire lifting force.

2.4 Product description

Vetter S.Tec 12 Lifting Bags are made by hand from high quality raw materials so that after completion a seamless bag is produced. The semi-finished product is vulcanized under the influence of pressure and temperature and by doing this the individual layers bond to form an elastomer body. After production has been finalized each S.Tec 12 Lifting Bag is subjected to a plant acceptance test within the scope of quality assurance.

Material of the S.Tec 12 Lifting Bag: CR/Aramide, hot vulcanized

Temperature resistance of S.Tec 12 Lifting Bags:

Cold resistance	-40 °C
Cold flexible	-20 °C
Heat resistance long-term	+90 °C
Heat resistance short-term	+115 °C

The aramide layer on the S.Tec 12 Lifting Bags can be damaged by damage made to the bag surface, e.g. cuts, cracks, punctures or by the effects of ozone.



Therefore with a visual check after every operation special attention is to be made to the following types of damage:

- ✓ Damage by separation
- ✓ Damage by cuts
- ✓ Damage by punctures
- ✓ Damage by heat and chemicals

Danger of bursting! If, when carrying out the check, this type of damage is determined then the bag is to be immediately taken out of service. Repair is not possible.



In order to use the maximum lifting power, the total effective area, i.e. the total area minus the edge area, must be completely under the load to be lifted and that the bag must be taken to the maximum permitted operating pressure.

The bag develops a spherical shape (with rectangular or square base) 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 S.Tec 12 Lifting Bag will only be reached in the unloaded state.

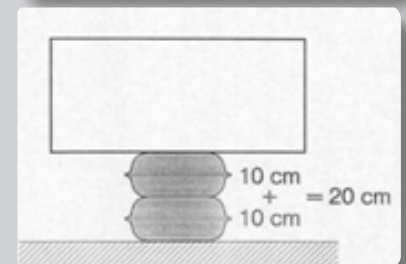
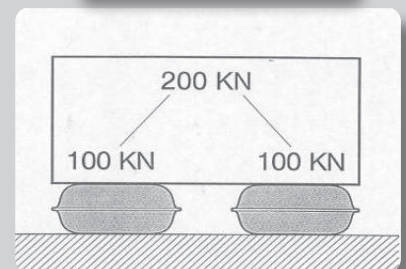
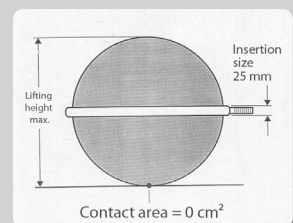
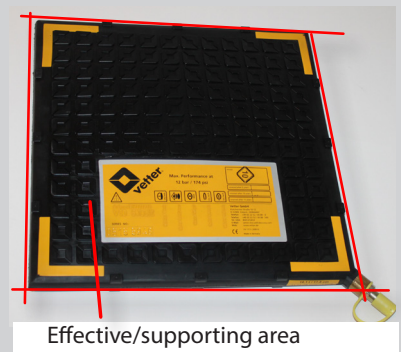
In case the lifting power produced by the S.Tec 12 Lifting Bag is not sufficient depending on the lift height, then a number of S.Tec 12 Lifting Bags can be placed next to each other.

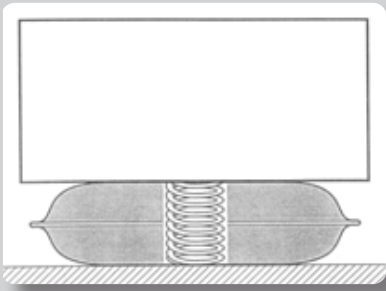
In case the lifting height of an S.Tec 12 Lifting Bag is not sufficient then a **maximum** of 2 bags can be placed over each other. In this mode the lifting height is additive for both S.Tec 12 Lifting Bags.

However the lifting power only corresponds to that of the smaller bag. Basically the lower bag should always be inflated first.

Sequence: Large bag below, small bag on top!

Never place 3 or more bags over each other!





An S.Tec 12 Lifting Bag under load can be compared to a spring under tension with respect to its behaviour. As soon as the S.Tec 12 Lifting Bag is suddenly released, e.g. by slipping, load break or anything similar then there will be spontaneous catapulting outwards of the S.Tec 12 Lifting Bag.

**Never stand in front of the S.Tec 12 Lifting Bag!
This is an area of danger!**



2.5 Correct usage

First and foremost S.Tec 12 Lifting Bags are pneumatic rescue devices for rescue services (fire services) in which trapped persons can be freed and access can be obtained for rescue and carrying out counter-measures as well as other similar measures. In addition to this S.Tec 12 Lifting Bags can be used as working equipment for lifting or movement of loads.

S.Tec 12 Lifting Bags are subject to national requirements of the fire service sector. Further instruction information can be obtained from the operating instructions of the user. The complete S.Tec system is cold-resistant to -20 °C and heat-resistant up to +55 °C.

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 S.Tec 12 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 S.Tec 12 Lifting Bags are only to be inflated with original Vetter S.Tec 12 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.

The lifted load is to be continually supported during the progressive lifting sequence. The stable condition of foundation support material must always be observed during construction of the foundation support.

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



Ensure load against slippage.

In order to fully use the strengths of the S.Tec 12 Lifting Bag the distance between load and bag should be at a minimum.

**The foundation support must brace at least the complete area of the bag and the smallest edge length of the foundation support must be larger than the height of the foundation support.
Metal must never be placed on metal!
Attention: danger of slipping!**



With slippery ground (ice, snow, mud etc.) place anti-slip materials under the bag in order to increase adhesion. Point-shaped loads are to be avoided, e.g. construction claws or screws. Never place the bags on sharp edges, hot or red hot components. Use suitable temporary storages and cover the complete contact area of the bag. Protect the bag against flying sparks during welding or separation work. Do not additionally load bags with such things as hydraulic lifting devices, winches or falling loads.

**Never remain beneath a lifted load,
never hold the load from below!
Remain at a distance!**



Avoid shearing effects by squeezing of the bag when lowering the load!

**During operation never stand in front of the bag
but always to one side, because the bag could
catapult outwards under unfavourable
conditions!**



**The lifting sequence is to be stopped
immediately if there is a function failure!**

A S.Tec 12 Lifting Bag can burst under adverse conditions with incorrect operation. incorrect handling or by manipulation on the controller and/or inflation hose (problems concerning pressure waves and sound waves, uncontrolled movement)!

**Vetter S.Tec 12 Lifting Bags are not suited for use in
explosion endangered zones!
Special versions are possible on request!**



3. Preparing the product for use

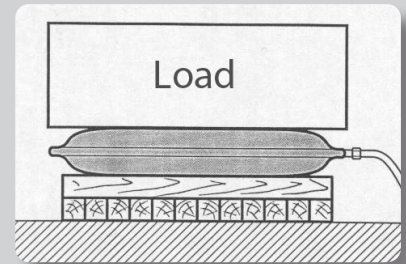
3.1 Preparations for operation

Remove the S.Tec 12 Lifting Bag from the vehicle. Prepare the inflation device. Ensure that sufficient air supply is available.

**Only perfectly working and tested S.Tec 12 Lifting Bag
systems are to be used!**



From case to case the head of operations is to decide, within his area of responsibility, about the method to be used for the operation as well as the operating instructions of the user.



3.2 Application instructions

Insert the S.Tec 12 Lifting Bag at a suitable position so that at least 75% of the support surface of the bag is under the load. Continuously 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 S.Tec 12 Lifting Bag because it could be catapulted outwards under unfavourable conditions.

4. Operating instructions

4.1 Operation with compressed bottles

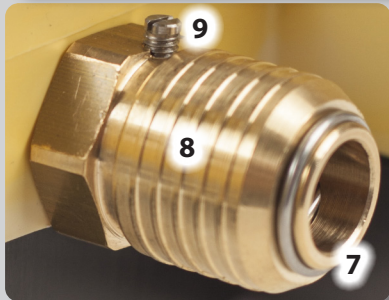
Connect the pressure reducer to the compressed air bottle 200 bar or 300 bar using the tommy screw (1). Close the hand wheel of the pressure reducer (2). Open the valve on the bottle (3) slowly. The pre-pressure manometer (4) indicates the pressure in the bottle.

Adjust the back pressure to approximately 14 bar 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).

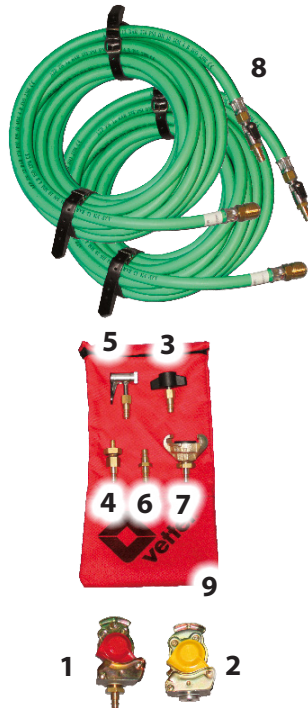
Open the hand wheel (2) of the pressure reducer.

The lifting bag system is ready for operation.



4.2 Operation with other sources of compressed air

Basically every source of air available can be used for operation of the S.Tec 12 Lifting Bag as long as the pressure does not exceed 14 bar and that the air is free of oil as far as possible. 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!

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, 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, maintenance

The lifting bag equipment is to be cleaned after every operation. Cleaning is normally made with warm water and a soap solution.

Cleaning must never be carried out with chemicals and high-pressure hot water devices.

Drying is to be made at normal room temperature.

A bag is to be immediately discarded, if during inspection any sign of damage is established (refer to Page 5). Repair is not possible. If needed, components such as manometers, safety valves and piston valves can be exchanged. Hose couplings and nipples can also be exchanged.

After necessary repair the equipment is to be checked according to the repetitive tests. This special test is also to be documented.

The VETTER Guarantee is 36 months for S.Tec 12 Lifting Bags.



5. Elimination of defects

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 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 the seal plate on the safety valve of the controller on the upper part of the valve has been removed then correct operation is no longer guaranteed.

The safety valve is to be exchanged!



6. 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.

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.

7. Repetitive tests

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 a competent person (in Germany according to DGUV Principle 305-002) with further training of the manufacturer or a test by the manufacturer.
Create test certificates.



Proposal for inspection intervals on the label

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

8. Technical data

S.Tec 12 Lifting Bags							
	Unit	V 1 12 bar	V 5 12 bar	V 7 12 bar	V 10 12 bar	V 12 12 bar	V 20 12 bar
Art. No.		1316000200	1316000300	1316000400	1316000500	1316000600	1316000700
Max. Lift power at 12 bar/174 psi*	t	1.3	4.6	7.5	10.1	12.3	20.2
	US tons	1.5	5.1	8.3	11.1	13.5	22.2
Max. Lift power at 10 bar/145 psi*	t	1.1	3.8	6.3	8.4	10.2	16.8
	US tons	1.2	4.2	6.9	9.3	11.3	18.5
Max. Lift power at 8 bar/116 psi*	t	0.9	3.1	5.0	6.7	8.2	13.5
	US tons	1.0	3.4	5.5	7.4	9.0	14.8
Max. Lift height	cm	7.4	12.1	15.8	17.8	19.5	24.5
	inch	2.9	4.8	6.2	7.0	7.7	9.6
Dimensions	cm	14 x 13	25.5 x 20	28 x 28	32 x 32	35 x 35	44 x 44
	inch	5.5 x 5.1	10 x 7.9	11 x 11	12.6 x 12.6	13.8 x 13.8	17.3 x 17.3
Insertion height	cm	2.5	2.5	2.5	2.5	2.5	2.5
	inch	0.98	0.98	0.98	0.98	0.98	0.98
Air requirement at 12 bar/174 psi	l	4.0	23.2	54.0	120.3	191.3	253.9
	cu.ft.	0.2	0.8	1.9	4.3	6.8	8.9
Weight approx.	kg	0.5	1.3	2.0	2.6	3.0	4.8
	lbs	1.1	2.9	4.4	5.8	6.7	10.6
	Unit	V 26 12 bar	V 33 L 12 bar	V 35 12 bar	V 40 12 bar	V 50 12 bar	V 59 12 bar
Art. No.		1316003300	1316000800	1316000900	1316003500	1316001000	1316001100
Max. Lift power at 12 bar/174 psi*	t	25.9	33.3	34.7	40.4	50.1	59.4
	US tons	28.6	36.7	38.2	44.5	55.2	65.5
Max. Lift power at 10 bar/145 psi*	t	21.6	27.7	28.9	33.6	41.7	49.5
	US tons	23.8	30.6	31.9	37.1	46.0	54.6
Max. Lift power at 8 bar/116 psi*	t	17.3	22.2	23.1	26.9	33.4	39.6
	US tons	19.0	24.4	25.5	29.7	36.8	43.7
Max. Lift height	cm	27.0	19.3	29.9	33.6	37.5	39.3
	inch	10.6	7.6	11.8	19.2	14.8	15.5
Dimensions	cm	47 x 52	31 x 102	52 x 62	61 x 61	67.6 x 67.6	78 x 69
	inch	18.5 x 20.5	12.2 x 40.2	20.5 x 24.4	24 x 24	26.6 x 26.6	30.7 x 27.2
Insertion height	cm	2.5	2.5	2.5	2.5	2.5	2.62
	inch	0.98	0.98	0.98	0.98	0.98	1.03
Air requirement at 12 bar/174 psi	l	279.0	321.7	479.0	603.0	798.3	1103.7
	cu.ft.	9.9	11.4	16.9	21.3	28.2	39.0
Weight approx.	kg	6.2	8.0	8.2	9.3	11.9	13.9
	lbs	13.7	17.6	18.1	20.5	26.2	30.6

	Unit	V 83 12 bar	V 102 12 bar
Art. No.		1316001200	1316001300
Max. Lift power at 12 bar/174 psi*	t	82.7	101.6
	US tons	91.1	112.0
Max. Lift power at 10 bar/145 psi*	t	68.9	84.6
	US tons	75.9	93.3
Max. Lift power at 8 bar/116 psi*	t	55.1	67.7
	US tons	60.8	74.6
Max. Lift height	cm	46.6	51.6
	inch	18.3	20.3
Dimensions	cm	86 x 86	95 x 95
	inch	33.9 x 33.9	37.4 x 37.4
Insertion height	cm	2.62	2.62
	inch	1.03	1.03
Air requirement at 12 bar/174 psi	l	1646.0	2301.3
	cu.ft.	58.1	81.3
Weight approx.	kg	19.1	23.1
	lbs	42.1	50.9

S.Tec 12 Lifting Bags (12 bar / 174 psi):

Working pressure: 12 bar (174 psi)

Test pressure: 18 bar (261 psi)

Burst pressure, at least.: 48 bar (696 psi)

L = rectangular shaped lifting bag

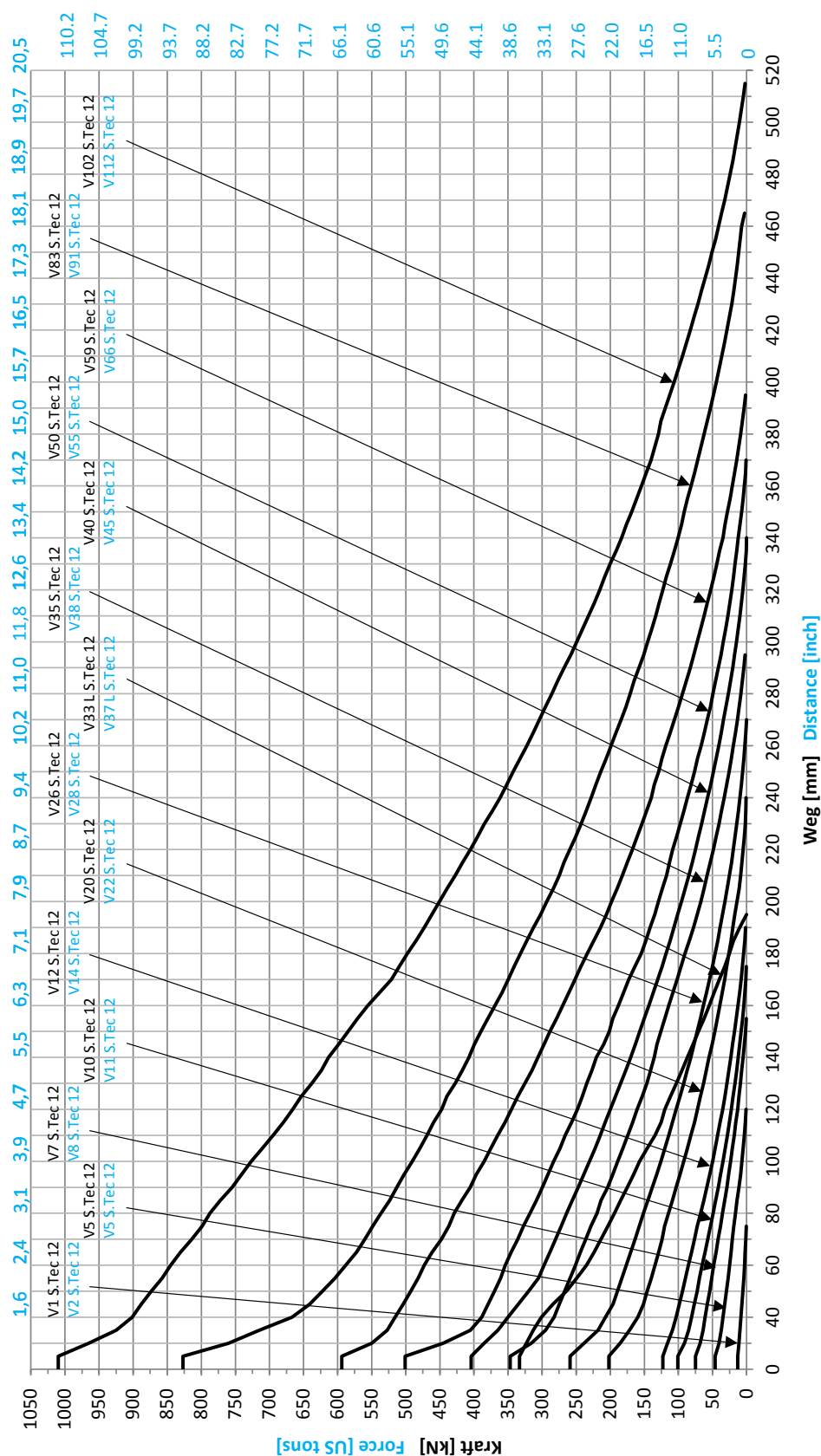
*Actual lifting power after subtraction of the edge area.

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

9. Diagram: Force vs. Stroke

Last-Weg-Diagramm V1 S.Tec 12 - V102 S.Tec 12

Force vs. Stroke V2 S.Tec 12 - V112 S.Tec 12



On request special individual Force vs. Stroke diagrams are available for each bag types.

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 S.Tec 12 Lifting Bags (Aramide)
for lifting and lowering of loads

Type: _____
Serial-No.: _____
Model: _____

(refer to equipment label, to be entered by the 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, 23.03.2021

(Place, Date, Signature)

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