OPERATING INSTRUCTIONS

Version 1 -

Vacuum-Lifter FORCE-LIFT | 2

Maschine-No.

General drawing to illustrate the device structure. Dimensions of beams and suction plates as well as their number can vary and can be found in the offer / order.

Load capacity: max/SWL/WLL _____kg

For the horizontal transport of airtight and porous materials.
Load capacity depending on the configuration and quality of suction surface.

Read carefully prior to start up!

AERO-LIFT Vakuumtechnik GmbH
Turmstraße 1 | 72351 Geislingen | Germany

E-Mail: info@aero-lift.de
Phone.: +49(0)7428 / 94514-0
Fax: +49(0)7428 / 94514-38

Configuration / Description

Vacuum-Lifter fort he horizontal transport of airtight and porous materials. Load capacity depending on the configuration up to 300 kg

Goods tob e transported:

Dimensions oft he goods:	min.	mm (L x B x H)
	max.	mm (L x B x H)
Weight oft he goods:	max.	kg
Mode of transport:	horizontal transport	

Designed for indoor use (+5 to 40°C).

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1 Safety

1.1 Target group

These operating instructions have been written for persons, who as a result of their professional training, work experience and their current work activity have adequate technical knowledge to safely and competently use the vacuum lifting unit and who are able to read and understand the instructions.

1.2 Abbreviations and definitions

Abbreviation	Definitions	Explanation
UVV	Accident prevention regulations	Maintenance service for accident prevention
VUSS	Vacuum Unit Sensing System	Flow valves integrated in the suction feet, which turn on and off automatically
AL	AERO-LIFT	

1.3 Type label and nomenclature

The macine number, year of manufacture and model designation are are given on the type label for identification. We ask you to provide this information in a service case.
The type label is attached to the rear of the control head. It is structured as follows:

AERO-LIFT Vakuumtechnik GmbH
Turmstrasse 1 / 72351 Geislingen
Mail: Service@aero-lift.de
Tel: +49(0)7428-94571-0

CE

MODEL: FL2-80-250-SV400/160/2000
MASCH.NO: 90104-G YEAR: 2022
MAX LOAD: 80kg OWN WEIGHT: 6,8kg

FL2-80-250-SV400/160/2000

FL2 = Model: FORCE-LIFT | 2
80 = Load capacity in KG
250 = handle length in KG
SV400 = Typ: vacuum generator
160 = Lifting tube Ø mm
2000 = Lifting tube length in mm

1.4 Further applicable documents

Appendix No.	Document	Manufacturer
1	Operating instructions, spare parts list and instructions for sound-proofing box of the vacuum pump	AERO-LIFT Vakuumtechnik GmbH

1.5 Explanation of safety instructions

Safety instructions are always provided with a signal word and a warning. All persons who work with the machine must observe and adhere to the safety instructions. The safety instructions are arranged as follows:

(1) SIGNAL WORD

(5)

(2) Signal word classifies the danger

(3) Note text: type and source of danger + possible consequences

✓ (4) Measures to be taken or prohibitions to be imposed

(5) Symbol: supporting graphic representation of the hazard

Categorization Warnings:

DANGER!
Indicates an immediate or impending danger. If appropriate measures are not taken, it will lead to serious injury or death.

WARNING!
Warns of a potentially dangerous situation. If appropriate measures are not taken, it may lead to serious injury or death.

CAUTION!
Warns of a potentially dangerous situation. If appropriate measures are not taken, it may lead to minor or moderate injuries.

NOTE
Indicates possible damage to property and provides specific information

1.5.1 Explanation of symbols

Warning signs:

	Warns or indicates a hazardous area. Different symbols in the warning triangle explain a danger in more detail		Warns of tipping over and serious injury due to crushing
	Warns of dangers due to electrical voltage		Warns of a suspended load

 Warns of serious injuries due to crushing of limbs	 Warns of falling objects

Bid signs:

 Instructs personnel to unplug the power cord	 Instructs personnel to wear protective shoes
 Instructs personnel to wear protective clothing	 Instructs personnel to wear protective gloves

1.6 Remaining risks in case of use

DANGER!


Electrical Voltage!

Contact with live parts is life-threatening! Live parts, damaged electrical lines and electric shock as a result of faulty or defective parts, or using water to clean may lead to lethal injuries, burns and property damage.

- ✓ Switch off the power supply prior to carrying out any work on the electrical system or cleaning.
- ✓ Pull the vacuum power supply plug (disconnect from power supply)!
- ✓ Cleaning may only be carried out by trained personnel.
- ✓ Maintenance of the electrical system may only be carried out by a qualified electrician.
- ✓ Regular visual inspection of energy chains and electrical lines for any damage.

DANGER!




Suspended loads!

Risk of crushing, shearing and other injuries due to falling or moving parts during transport of the machine or machine parts and during operation.

Risk when moving loads!

- ✓ Do NOT stand under suspended loads and do not climb on suspended loads!
- ✓ Use suitable lifting gear and load handling attachments that are approved for transport and the weight!
- ✓ Wear personal protective equipment.
- ✓ Move goods carefully and pick up load at its center of gravity.
- ✓ Persons may NOT stay in the transport area.

WARNING!


Moving parts!

Crushing of fingers / hands when moving or adjusting the position of the suction plates, during mounting or operation may lead to injuries.

- ✓ Do NOT touch or reach between individual suction plates (double-rectangular suction foot), quick-changing coupling and suction foot or between other components!
- ✓ Carefully install the vacuum lifter.
- ✓ Do not remove the protective covers.
- ✓ When moving, keep the one hand on the control head and the other hand on the product being transported.
- ✓ Always wear personal protective equipment when installing and making adjustments!

WARNING!




Falling loads!

Incorrect pick-up and/or premature release of loads before they are fully resting can cause severe injuries due to possible crushing, shearing or impact. Danger due to loads falling!

- ✓ When operating the vacuum lifter, exercise caution!
- ✓ Pick up load only in center.
- ✓ Only release load when it is fully resting.
- ✓ After changing the suction plates/bases, check whether the connection has been inserted correctly.
- ✓ Persons may NOT stay in the transport area.
- ✓ Always wear personal protective equipment when working on or with the machine!

WARNING!


Danger of being drawn in

Risk of injury from being drawing in, caught or severing during cleaning and maintenance work. Danger posed by moving and rotating parts.

- ✓ Shutdown the system for maintenance and cleaning work.
- ✓ Always wear personal protective equipment when working on or with the device!

CAUTION!

Risk of crushing when operating the device

Crushing of fingers/ hands at the device or between the component and device can lead to injuries.

- ✓ When operating the device, exercise extreme caution!
- ✓ Always wear personal protective equipment when working on or with the device!

1.7 Operator obligations and liability

- These original operating instructions, in particular the safety instructions, must be observed by all persons who work with the machine.
- The laws, regulations and rules on occupational safety, accident prevention, fire prevention and environmental protection which apply for the place of use must be observed (e.g., in Germany: BGR500)!
- Constructive or functional changes to the machine are only permitted with the manufacturer's written approval.
- Unless contractually agreed otherwise, spare parts and wearing parts and recommended accessories may only be obtained from the manufacturer.
- The machine may only be used as intended.
- The machine must be in a sound state of repair.
- The machine must undergo regular inspections and maintenance in accordance with these operating instructions.
- The machine may only be transported, set up and stored by qualified specialists.
- There must be enough space around the machine for the operating personnel to ensure that the machine may be operated without any obstructions.
- Persons may NOT stay in the transport area.
- The machine may only be used and checked by adequately qualified personnel. The personnel must fulfill the following conditions:
- The personnel must have sufficient technical knowledge for safe and professional handling of the machine as a result of their professional training, work experience and up-to-date professional activities.
- The personnel have been instructed and briefed in the operation.
- The entrusted personnel must have read and understood the operating instructions.
- Personnel must comply with their duty to supervise during operation.
- Personnel must be at least 18 years old
- The machine must be secured against any unauthorized use if it is not used for a long period of time.
- Only AL technicians and experienced system technicians may be employed for installation, assembly and start-up.
- Work on the pneumatic system and vacuum equipment may only be carried out by a specialist.
- Cleaning may only be carried out by trained personnel. Upon completion of cleaning activities, all lines are to be checked for leaks, loosened connections, chafe marks and signs of damage! Promptly remedy any identified deficiencies.
- Maintenance and repair activities may only be carried out by qualified personnel.
- Maintenance of the electrical equipment may only be carried out by a qualified electrician.
- Warranty and liability claims for personal injuries and property damage are excluded when one or more of the aforementioned requirements have been disregarded.

1.8 General safety instructions

The machine is designed and constructed in accordance with the current state of technology and the generally accepted safety regulations. Nonetheless, its use may pose a hazard to life or limb of the user or a third party or adversely affect the machine and other material property.

- Only operate the machine as intended!
- Refrain from any form of work that adversely affects safety!
- Only operate the machine when it is in a sound state of repair!
- Check functionality and for freedom from any deficiencies prior to starting work!
- Do not circumvent or bypass the safety functions!
- Immediately remedy or eliminate any faults that could have an adverse effect on safety!
- Observe and follow the safety instructions contained in this instruction manual!

1.9 Intended use

The FORCE-LIFT | 2 vacuum lifter (vacuum tube lifter) is used for lifting and subsequently setting down various goods from a wide variety of industries. In conjunction with exchangeable types of suction feet, it is possible to move and handle vacuum-tight and porous loads of max. 300 kg.

The control head of the vacuum lifter and the suction heads are part of a complete system comprising a vacuum pump or blower, filter unit, supply line, swivel joint and vacuum lift tube. The vacuum lifter is attached to a pillar-mounted slewing crane with a jib, a (rigid) wall-mounted jib or a rail system.

At the time the FORCE-LIFT | 2 vacuum lifter was placed on the market, it is designed/suited for the following variations of suction feet:

- Adaptable double-rectangular suction foot for transport goods surfaces that are not inherently stable with flexible bearing system for handling cardboard boxes, steel plates or similar (box lifter)
- Adaptable Quadruple rectangular suction foot for larger sheet material surfaces. The crossbeams and suction plates can be adjusted individually. (plate lifter)
- Suction foot for drums or barrels and other inherently stable or smooth transport goods surfaces (drum lifter)
- Suction foot for handling sacks, bags and similar transport goods that are not inherently stable and which do not have smooth surfaces (bag lifter)
- Suction foot with an hook for canisters and barrels with handle.

The respective suction foot can be used for the corresponding transport goods.

The vacuum lifter may only be used from the front by one person. These must be qualified specialists.

The vacuum lifter is intended for use in halls and outdoors when milder ambient weather conditions prevail.

The vacuum lifter may only be operated if all safety devices are fully installed and functional. Intended use also includes observing this instruction manual as well as carrying out the necessary Foreseeable misuse.

1.10 Reasonably foreseeable misuses

The machine is NOT intended for the following applications:

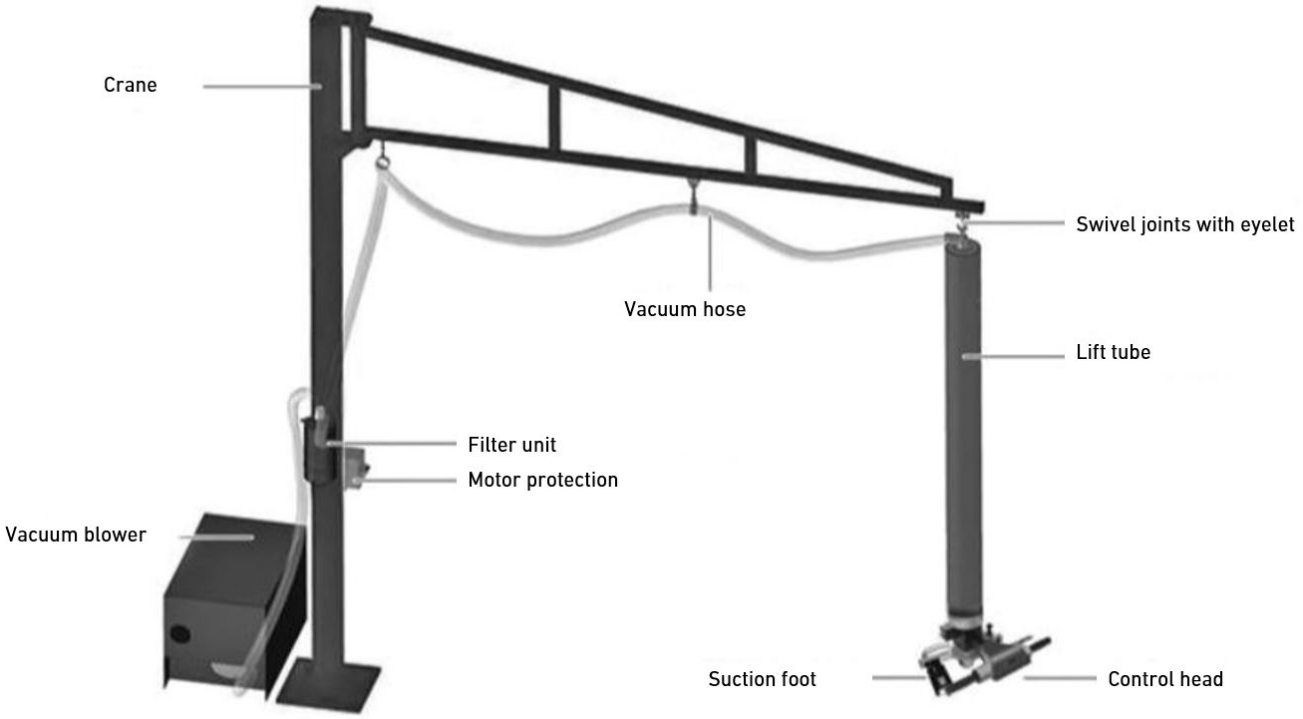
- Handling of other components or variations than those approved by the manufacturer.
- Overstepping of maximum load bearing capacity.
- Shutting off the suction plates that fall below the load bearing capacity.
- Load picked up out of center.
- Product to be transported is approached at an angle when being picked up.
- Storage of suction foot with suction foot facing down.
- Use in closed rooms with particular dangers (e.g. risk of explosion).
- Working in storms, inclement weather or heavy rain.
- Working in wind forces of greater than 5 on the Beaufort scale (above a breeze).
- Picking up loads with snow or ice-covered surfaces.
- Operation by untrained personnel.

2 Technical specifications

Operating data	Nominal size	Unit
Own weight of control head	ca. 7,5 – 10,0 kg, see type lable	kg
Working load maximum:	300	Kg
Possible goods tob e transported:	Boxes, sacks, plates, buckets, canisters, drums, etc…	
HuLift tube Ø:	⌀ 120, 160, 200, 300	mm
Max. number of load cycles	20.000	
Ambient temperature (operation)	+ 5 bis + 40	°C
Ambient temperature (storage):	+15 bis + 25	°C
Rel. air humidity (operation and storage)	max. 80 %	
Vacuum blower: 400V, 3KW	AL SV400/2	
Geräuschpegel	Ca. 74-80	dB(A)

As configured:		
Working load maximum:		kg
Lift tube :	Ø mm, Länge mm, Nr.	
Vacuum blower	Gebläse: AL SV400/2 400V, 3KW Nr.	
Crane :	Typ: Zugelassene Last: kg Nr.	
Suction foot:		

3 Functional description



The vacuum generator generates the volume flow and provides the vacuum. The vacuum or the generated volume flow reaches the product to be transported through the filter unit, via the vacuum hose, the lift tube, the control head and then the suction foot.
If the suction foot is placed on the product to be transported, e.g. a cardboard box, the device attaches itself by means of vacuum. The external air, which previously streamed in through the suction foot, is decreased or stops completely which in turn increases the vacuum in the entire system. With the rapidly increasing vacuum, the previously untensioned lift tube starts to tighten. A spring is integrated in the lift tube to ensure, among other things, that the lift tube does not implode due to the vacuum. As soon as the lifting force (negative pressure x lift tube cross-section area) is greater than the weight of the product to be transported, the product can be lifted.
Regulating the external air in the control head either raises or decreases the vacuum in the entire system. Adding external air reduces the
vacuum and thus causes the lift tube to expand lengthwise and the control head with the suction foot and the product being transported to be lowered. Conversely, the vacuum increases with the reduction of external air, which in turn causes the lift tube to be tensioned and contract in terms of length - the control head with the suction foot and the product to be transported raises up. Consequently, the product being transported can be held suspended in the air by stopping the addition of external air to a certain extent.

4 Control heads

Description	Load caracity	handle length	lift tube Ø	lift tube length	Max stroke	block dimension	overall height	vacuum generator	suction volume flow	Quick-Release	spring balancer	quick change system
	[kg]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[m³/h]			
FL2-45-25-SV400/120/2000	45	250	120	2000	1450	550	2288	blower, 3kW	125	✓	optional	✓
FL2-45-25-SV400/120/2300	45	250	120	2300	1790	510	2588	blower, 3kW	125	✓	optional	✓
FL2-45-25-SV400/120/2800	45	250	120	2800	1960	840	3088	blower, 3kW	125	✓	optional	✓
FL2-75-25-SV400/160/2000	75	250	160	2000	1450	550	2288	blower, 3kW	125	✓	optional	✓
FL2-75-25-SV400/160/2300	75	250	160	2300	1790	510	2588	blower, 3kW	125	✓	optional	✓
FL2-75-25-SV400/160/2800	75	250	160	2800	1960	840	3088	blower, 3kW	125	✓	optional	✓
FL2-75-50-SV400/160/2000	75	500	160	2000	1450	550	2288	blower, 3kW	125	✓	optional	✓
FL2-75-50-SV400/160/2300	75	500	160	2300	1790	510	2588	blower, 3kW	125	✓	optional	✓
FL2-75-50-SV400/160/2800	75	500	160	2800	1960	840	3088	blower, 3kW	125	✓	optional	✓
FL2-75-75-SV400/160/2000	75	750	160	2000	1450	550	2288	blower, 3kW	125	✓	✓	✓
FL2-75-75-SV400/160/2300	75	750	160	2300	1790	510	2588	blower, 3kW	125	✓	✓	✓
FL2-75-75-SV400/160/2800	75	750	160	2800	1960	840	3088	blower, 3kW	125	✓	✓	✓
FL2-100-25-SV400/160/2400	100	250	200	2400	1850	550	2688	blower, 3kW	125	✓	optional	✓
FL2-100-25-SV400/160/2800	100	250	200	2800	1960	840	3088	blower, 3kW	125	✓	optional	✓
FL2-100-50-SV400/160/2400	100	500	200	2400	1850	550	2688	blower, 3kW	125	✓	optional	✓
FL2-100-50-SV400/160/2800	100	500	200	2800	1960	840	3088	blower, 3kW	125	✓	optional	✓
FL2-100-75-SV400/160/2400	100	750	200	2400	1850	550	2688	blower, 3kW	125	✓	✓	✓
FL2-100-75-SV400/160/2800	100	750	200	2800	1960	840	3088	blower, 3kW	125	✓	✓	✓
FL2-100-100-SV400/160/2400	100	1000	200	2400	1850	550	2688	blower, 3kW	125	✓	✓	✓
FL2-140/300-25-SV400/300/2400	300	250	300	2400	1960	440	2688	blower, 3kW	125	✓	optional	✓
FL2-140/300-50-SV400/300/2400	300	500	300	2400	1050	1350	2688	blower, 3kW	125	✓	optional	✓
FL2-140/300-75-SV400/300/2400	300	750	300	2400	1050	1350	2688	blower, 3kW	125	✓	✓	✓
FL2-140/300-100-SV400/300/2400	300	1000	300	2400	1050	1350	2688	blower, 3kW	125	✓	✓	✓

4.1 FORCE-LIFT | 2 ErgoPlus

Description	Load caracity [kg]	handle length [mm]	lift tube Ø [mm]	lift tube length [mm]	Max stroke [mm]	block dimension [mm]	overall height [mm]	vacuum generator	suction volume flow [m³/h]	Quick-Release	spring balancer	quick change system
FLEP-45-5080-SV400/120/2800	45	500+800	120	2800	1960	840	3088	blower, 3kW	125	✓	✓	✓
FLEP-75-5080-SV400/160/2800	75	500+800	160	2800	1960	840	3088	blower, 3kW	125	✓	✓	✓

The FORCE-LIFT | 2 ErgoPlus version enables particularly ergonomic transport of goods weighing up to 300 kg thanks to the angled operating handle.

Whether for exceptionally high or low storage and pick-up situations, the FORCE-LIFT | 2 ErgoPlus always promises an ergonomic posture.
It is therefore an indispensable aid, especially for transport goods stored at a higher level.

CAUTION!

Danger of crushing in the area of the joint!
Crushing fingers / hands at the joint can lead to injuries.

✓ Do not reach into this area!

5 Installing the vacuum lifter

1. Unpack components of the vacuum lifter.

2. If necessary, mount on the crane to be used. Secure the vacuum lifter at the ends of the crossbeam with safety screws, spring retaining pins or locking pins

3. Attach the vacuum supply line to the used crane or jib and connect to the vacuum blower via the filter unit. Do not yet connect the vacuum blower to the mains! Make sure that the supply system eyelets have been fastened securely.

4. Fasten lift tube (1) to the control head (3) using a hose clamp (2). To do so, pull the lift tube over the upper end of the control head (3). Make sure that the closure is airtight!

5. Fasten the lift tube (1) to the cup with the ball bearing on top (suspension) in a positive-fit manner. In this case, screw the wire spiral onto the groove. Make sure that the closure is airtight!

6. Attach the desired suction foot to the control head. See section “Fastening/changing suction foot”.

7. Connect the vacuum pump/blower to the mains and start up the vacuum lifter. Use sound insulation if necessary. See further applicable documents.

6 Electrical connection

When using an vacuum blower as a vacuum generator the electrical fuse protection must be a C16 fuse.

Note:
Check the direction of rotation on the blower.
(The direction of rotation is marked on the turbine with an arrow).

7 Handling and operation

WARNING!




Danger due to loads falling

Incorrect pick-up and/or premature release of loads before they are fully resting can cause severe injuries due to possible crushing, shearing or impact. Danger due to loads falling!

- ✓ When operating the vacuum lifter, exercise caution!
- ✓ Pick up load only in center.
- ✓ Only release load when it is fully resting.
- ✓ After changing the suction plates/bases, check whether the connection has been inserted correctly.
- ✓ Persons may NOT stay in the transport area.
- ✓ Always wear personal protective equipment when working on or with the device!

NOTE

Aligning the vacuum lifter
Lift tube and control head are mounted so that they can rotate. This means that the vacuum lifter can be rotated to the desired position. If the vacuum lifter is to be mounted on a pillar-mounted slewing crane, it is necessary to observe its working radius and reach.

NOTE

Daily functional check
Check the lift tube and the entire system for any damage every day prior to starting work!

Requirements:
The vacuum lifter is mounted, a suitable suction foot is attached and adapted using the regulating screw to the material of the product to be transported.

Vacuum pump or blower connected to the mains and switched on.

1. The vacuum lifter can be raised or lowered by turning the right handle.
   Turning the handle anticlockwise increases the vacuum in the lift tube and the FORCE-LIFT | 2 rises. Turning the handle clockwise decreases the vacuum in the lift tube and the FORCE-LIFT | 2 lowers. This makes it easy to adjust the height of the FORCE-LIFT | 2.

2. Position the vacuum lifter precisely above the product to be transported and lower. To lower the right handle must be turned clockwise.

3. Position the suction foot centrally on the surface of the product to be transported. Pivot at the joint if necessary.

4. When using the box lifter or plate lifter, adjust the suction foot to the width (and length) of the product to be transported by adjusting the suction plates (and cross beams). After moving, the retaining screws are to be retightened again.

WARNING!

Moving parts!
Crushing of fingers/ hands can lead to injuries when moving or adjusting the suction plate position.
Do NOT touch or reach between individual suction plates (double-rectangular suction foot, Quadruple rectangular suction foot), quick-changing coupling and suction foot or between other components!
When moving, keep the one hand on the control head and the other hand on the product being transported.
Always wear personal protective equipment when installing and making adjustments!

5. Raise the vacuum lifter with the product being transported by slowly turn the right handle anti-clockwise.

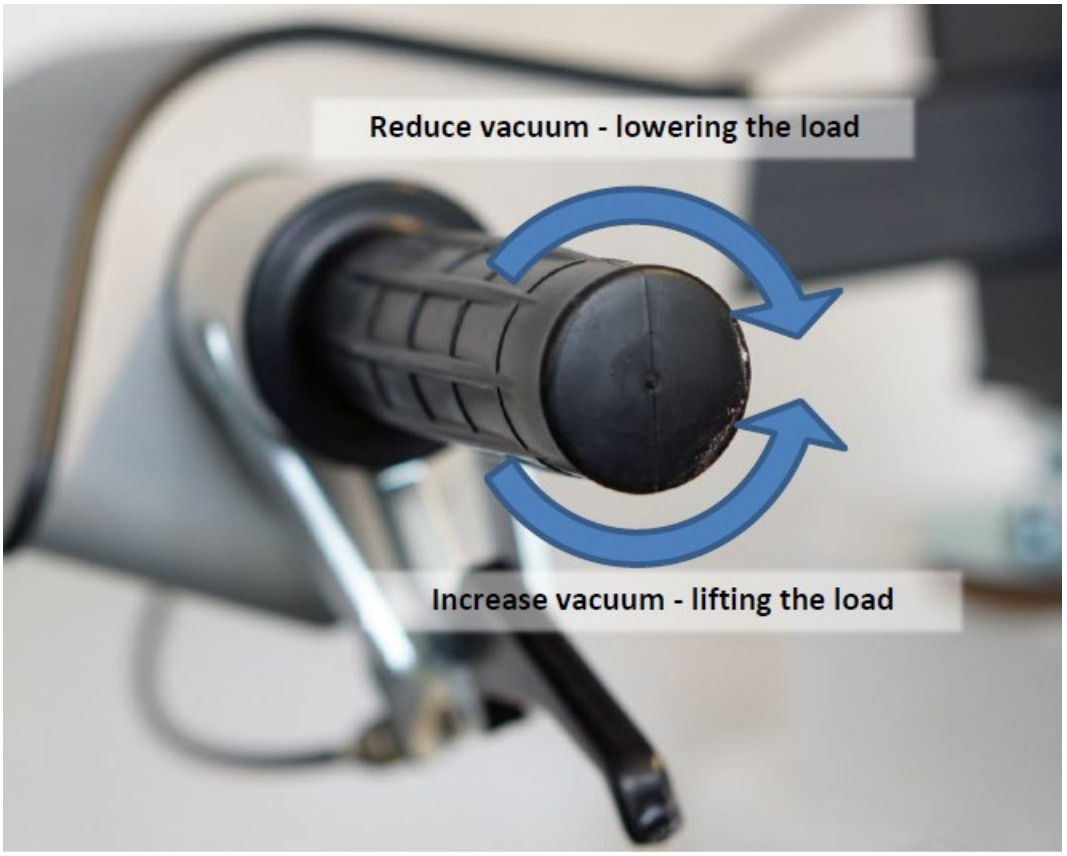
6. Position the product being transported over the spot where it is to be put down.

7. Once the load has reached its destination, the vacuum in the lift tube can be reduced by carefully turning the right handle clockwise and the load lowers. It is important not to turn the handle jerkily or too quickly to avoid damaging the load.

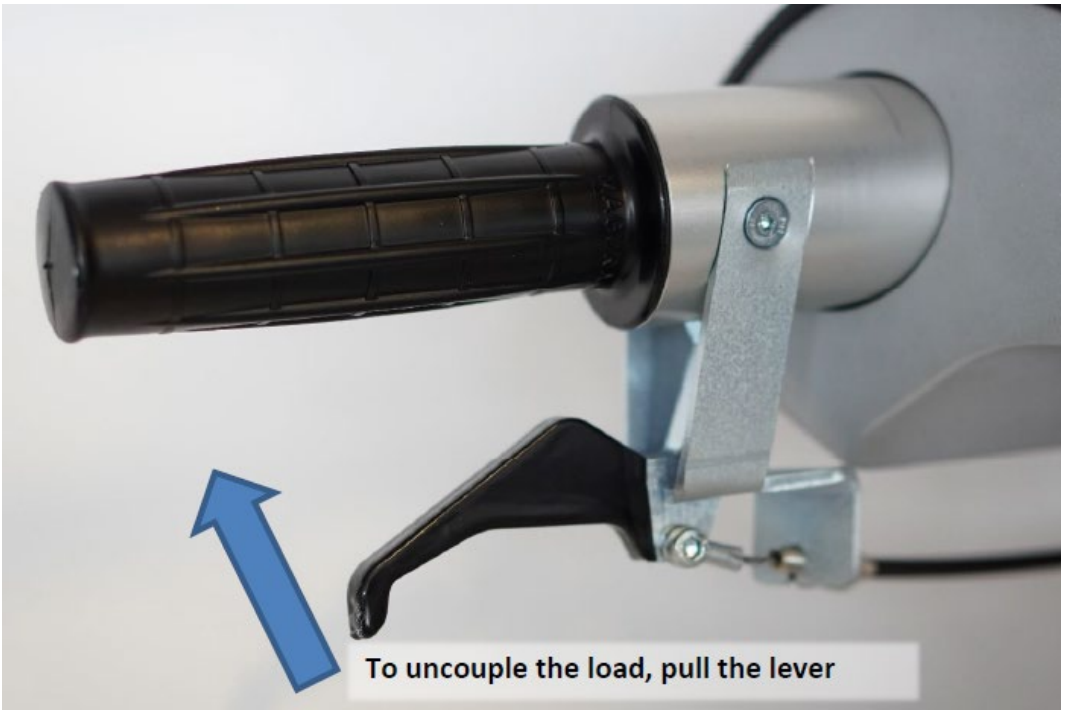
8. When the load has reached its destination, the load can be released quickly and easily by pressing the "quick-release" lever. The brake lever is pressed down with feeling. The faster the lever is pressed or released, the faster the operating head with suction cup is raised or lowered. → This is only possible when the right handle is in the lowest position.

→ The product to be transported was transported using the vacuum tube lifter.

7.1 Turning the right handle to lift up and down

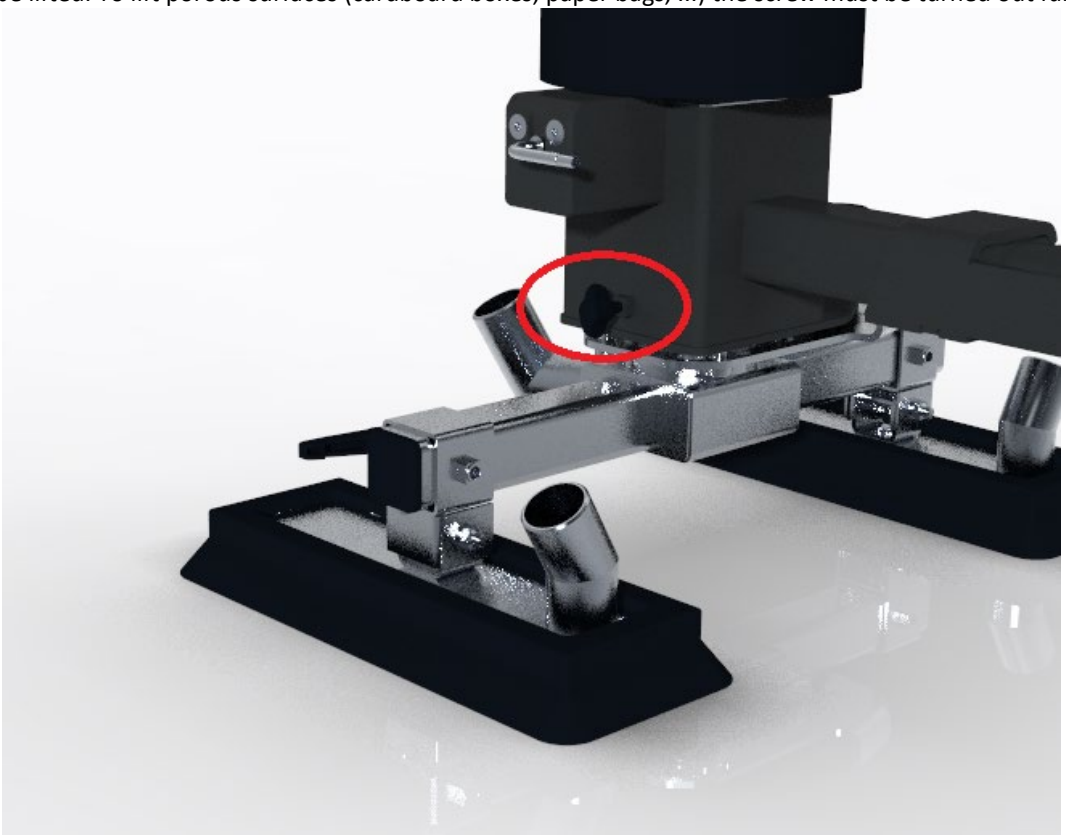


7.2 Uncoupling the load (quick-release)



7.3 Regulating screw

The regulating screw is used to set whether airtight or porous materials are sucked on. If it is closed, airtight transport goods can be lifted. To lift porous surfaces (cardboard boxes, paper bags, ...) the screw must be turned out further.

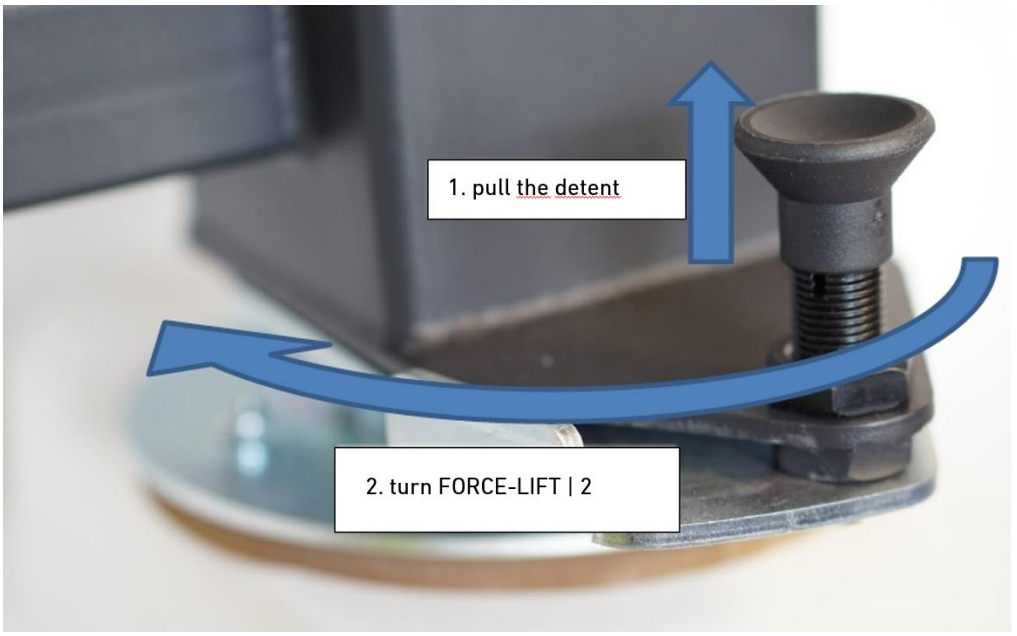


8 Fastening / chainging the suction foot

Requirements:

1. Vacuum lifter mounted and suspended
2. Suction foot to be changed is available, functional and placed on a base
3. Move the vacuum lifter to the desired position.

4. If necessary, detach the suction foot to be changed from the vacuum lifter. To do so, pull up the detent, turn the operating handle clockwise, remove the suction foot to be changed downwards.



1. Attach the new suction foot. To do so, pull up the detent, turn the operating handle clockwise, and press the new suction foot into the holder from below.

2. Lock the quick-change coupling back into place.

9 Maintenance, inspection and repair

WARNING!

Moving parts!

Crushing of fingers / hands when moving or adjusting the position of the suction plates, during mounting, maintenance or operation may lead to injuries.

- ✓ Do NOT touch or reach between individual suction plates (double-rectangular suction foot, quadruple rectangular suction foot), quick-changing coupling and suction foot or between other components!
- ✓ Carefully install the vacuum lifter.
- ✓ Do not remove the protective covers.
- ✓ Always wear personal protective equipment when installing and making adjustments!

WARNING!

Danger of being drawn in!

Risk of injury from being drawing in, caught or severing during cleaning and maintenance work. Danger posed by moving and rotating parts.

- ✓ Shutdown the system for maintenance and cleaning work.
- ✓ Always wear personal protective equipment when working on or with the device!

NOTE

Vacuum blower
For maintenance, inspection and repair of the vacuum pump or blower, observe the information provided in the further applicable documents!

9.1 Maintenance and repairs

Maintenance and repairs may only be carried out by qualified personnel. Constructive or functional changes or additions are only permitted with the manufacturer’s written approval.

9.2 Inspection intervals

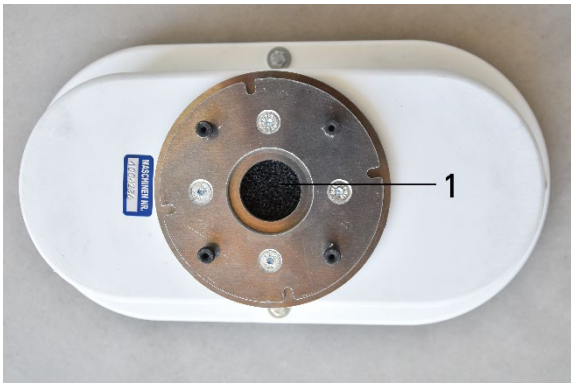
Inspection period	Scope of test/inspection	Inspector
Prior to initial start-up	Visual inspection and functional test	Qualified person[1]
As needed[3]	Visual inspection and functional test of vacuum generator. Check for defective bearings, worn coupling, seized rotor blades.	Qualified person[1]
Daily	Visual inspection and functional test (This includes, e.g., deformations, cracks, breaks, wear)	Competent person[2]
Daily	Visual inspection of lift tube and vacuum supply for damage	Competent person[2]
Weekly to monthly[4]	Visual inspection of lift tube and vacuum supply for damage	Qualified person[1]
Monthly	Visual inspection of the energy chains and power lines	Qualified person[1]
At least every 6 months	Functional check of corrosion prevention	Competent person[2]
At least once a year More often when operated under conditions that may cause damage (e.g. heat)	Visual inspection and functional test	Qualified person[1]
Check/ test after exceptional occurrences (e.g. accidents, changes to the machine, natural events, prolonged period of non-use) Repair work	Depending on the type and scope of the damage, the occurrence or repair.	Qualified person[1]

[1.] Qualified person: possesses as a result of his/her professional training and experience sufficient knowledge of vacuum lifters and is familiar with the relevant national on-the-job safety regulations, accident prevention regulations and generally accepted rules of good practices (e.g. BG rules (mutual indemnity association), DIN standards) to the extent that he or she is able to assess vacuum lifters for safe working conditions.
[2.] Competent person: possesses as a result of his/her vocational training and work experience and recent professional activities the necessary technical knowledge to check and inspect vacuum lifters.
[3.] See notes relating inspection intervals in further applicable documents.
[4.] Inspection intervals depend on the degree of air pollution and the environment. If the lifter is used to transport, e.g., wood, the filters must be checked every week and cleaned if necessary.

9.3 Clean / replace the prefilters

Requirements
Vacuum lifter switched off

1. Detach suction foot from the control head. See section „Fastening/changing suction foot”.



1 =prefilter

2. Remove and clean prefilter. This depends on the type of dirt (wood chips, dust, etc.) Thoroughly clean the prefilter with a small compressor, flushing medium or air filter cleaner.

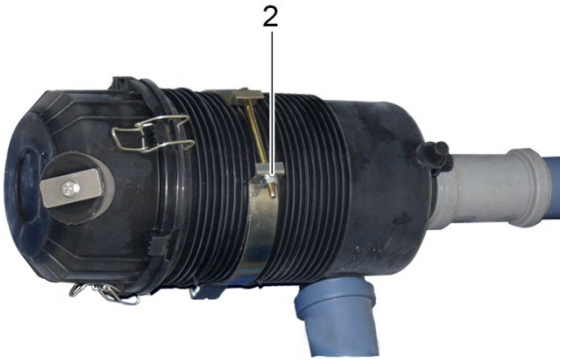
3. Replace prefilter if very dirty.

→ Prefilter was cleaned or replaced.

9.4 Clean / replace vacuum filter

Requirements
Vacuum pump/blower switched off

1. Open vacuum filter of the blower.



AER_0018 2 = vacuum filter for blower

2. Remove filter insert and clean. This depends on the type of dirt (wood chips, dust, etc.) Throughly clean the vacuum filter with a small compressor, flushing medium or air filter cleaner.

3. Replace the vacuum filter if very contaminated.

→ Vacuum filter was cleaned or replaced.

9.5 Replace lift tube

The functional dimension of the lifting tube is reached after 24h in the installed system. A deviation of ±1% is allowed.

Requirements
Vacuum lifter switched off

1. Loosen fastening clamp (3) at the bottom and put down the control head.

3 = fastening clamp

2. Remove spiral wire from the lift tube at the cup with the ball bearing on top (suspension).

3. Put down the old lift tube.

4. Fasten the new lift tube to the cup with the ball bearing on top (suspension) in a positive-fit manner. In this case, screw the wire spiral onto the groove. Make sure that the closure is airtight!

5. Fasten the new lift tube to the control head with the clamp. To do so, pull the lift tube over the control head. Make sure that the closure is airtight!

→ Lift tube was replaced.

WARNING!

Moving parts!
Crushing of fingers / hands when moving or adjusting the position of the suction plates, during mounting or operation may lead to injuries.

- ✓ Do NOT touch or reach between individual suction plates (double-rectangular suction foot), quick-changing coupling and suction foot or between other components!
- ✓ Carefully install the vacuum lifter.
- ✓ Always wear personal protective equipment when installing and making adjustments!

10 Spare parts

Description	Article-No.:	Comment:
Vacuum blower SV400/2	2010530	
Vacuum filter	4049498	
Filter insert	4058343	
Gasket for filter	2020895	
Motor protection switch	3080454	
Supply vacuum tube	2020050	
Hose clip for supply vacuum tube	2020695	
Lifting tube		
Hose clip for lifting tube		
Suction foot		
Seal		
Vacuum tube at suction foot		
Hose clip for vacuum tube on suction foot		
Operating handle		
Filter operating handle	2083368	79x62x20 mm
Break wire L= mm		
Cover for break wire L= mm	2060296	
Pressure spring Ø1,10x24,10	2032313	Handle unit
Spring balancer (OPTIONAL)	2049422	4 – 6 kg

We recommend using only original parts from AERO-LIFT, the configuration, quality and functional characteristics of which are guaranteed.

11 Troubleshooting

Fault: The load is not lifted or is lifted more slowly than usual.

Is the filter dirty?
-Clean the filter or replase it if neccessary.

Does the system have leaks?
-Place the vacuum lifter on an airtight flat board or similar. Set the operating handle to "vacuum". Then check the vacuum hose, connections, filter, swivel joint, lifting tube and control unit for any hissing sounds and patch leaks or replace leaking components if necessary.

Dirt within the suction foot?
-Remove dirt.

Is the lift tube pinched somewhere
-Release the clamp and then check the lift tube for damage.

Load tob e lifted to heavy?
- Check that the weight corresponds to the lifting capacity of the tube lifter supplied. This load cannot and must not be lifted!! reduce load.

Failure to lift the load may be due to a vacuum not being created in the lift hose and/or suction foot. This is usually caused by a leak in the system.
Check the system and all connections for leaks. → Eliminate leakage

Fault: The load is initially lifted very slowly, but faster as the lift height increases.

Is there a leak in the lift tube?
-Replace the lift tube!

Is there a leak in the vacuum tube?
- Replace the lift tube!

Fault: The vacuum blower does not start:

Please contact the person responsible for the electrical installation or our technical sales department

Fault: There is extraneous noise coming from the vacuum pump.

Bitte legen Sie die Vakuumpumpe still und nehmen Sie Kontakt mit unserem Technischen Vertrieb auf.

12 Warranty

The manufacturer is liable for all defects of the vacuum lifter resulting from a verifiable manufacturing error. The warranty includes the rectification of the defect or the replacement of defective parts. Our terms of sales are applicable. All defective original parts shall be sent to us free of carriage charges.

The period of warranty is **one year (except from wear parts)** with respect to a normal one-shift operation. The period of warranty is reduced for all operations other than the normal one-shift operation.

The warranty period starts with the delivery of the vacuum lifter.

We are not liable for rectification and replacements costs, which were caused without our explicit, written agreement.

13 EU Declaration of Conformity

according to: EC Machinery Directive 2006/42/EC, Annex II A from May 17, 2006
EC Low Voltage Directive 2014/35/EU from February 26, 2014
EMC Directive 2014/30/EU from February 26, 2014

We hereby declare that the below-mentioned machine developed by us in terms of design and type, as well as the version marketed by us complies with the underlying health and safety requirements of the EC Machinery Directive of 2006/42/EC, EC Low Voltage Directive 2014/35/EU and EMC Directive 2014/30/EU.

This declaration loses its validity if any alteration is made to the machine that has not been coordinated with us.

Manufacturer / authorizised representative: **AERO-LIFT Vakuumtechnik GmbH**
Turmstraße 1
D - 72351 Geislingen

Description of machine:
Type of machine / system: **Vacuum lifter**
Type designation:
Machine-Number:
Built in:

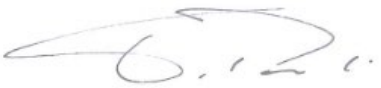
Other applicable technical standards and specifications:

EN 14238: 2010-02 Cranes – Manually controlles load manipulating devices

Authorized representative for technical documentation:
AERO-LIFT Vakuumtechnik GmbH, Turmstr. 1, D-72351 Geislingen

Location/Date:
Geislingen-Binsdorf,

Signature:



Tobias Pauli
CEO

☒ Original Declaration of Confomity
☐ Translation Declaration of Confomity

14 Operating instruction vacuum blower

Gebläse SV 400

BETRIEBSANLEITUNG

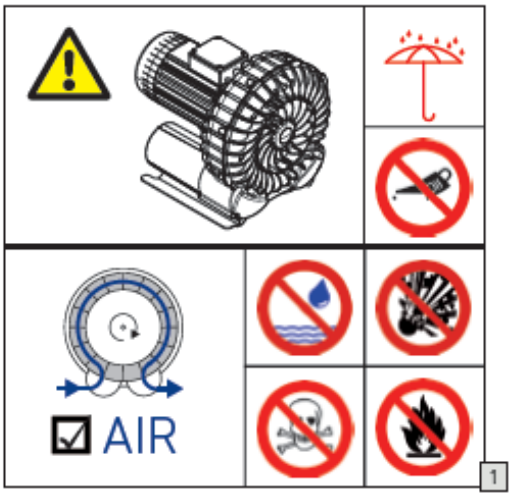
Vacuum blower SV 400

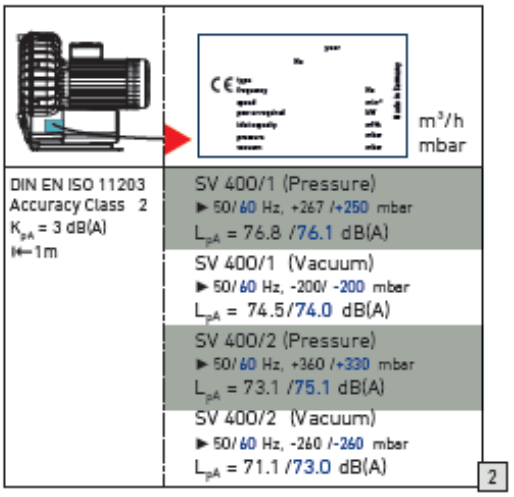
OPERATING INSTRUCTIONS

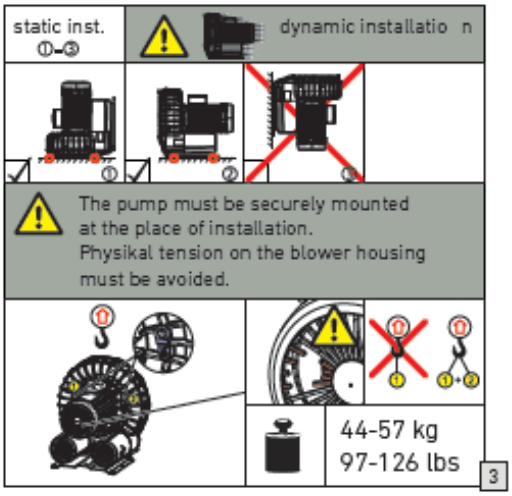
moving limits

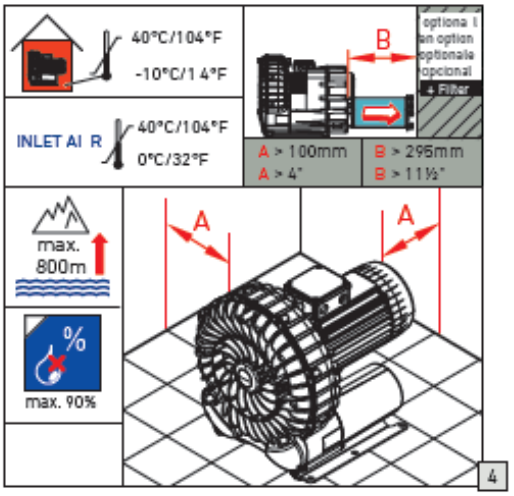
Mehr Informationen unter www.aero-lift.de

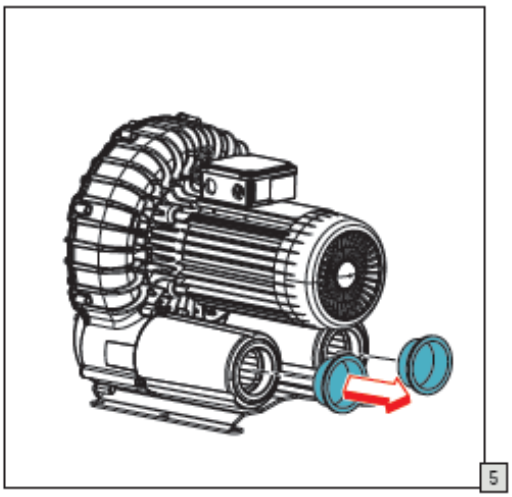
2 I SV 400

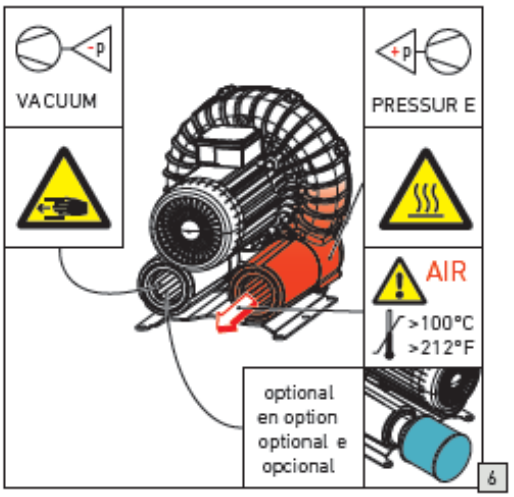

AIR
1

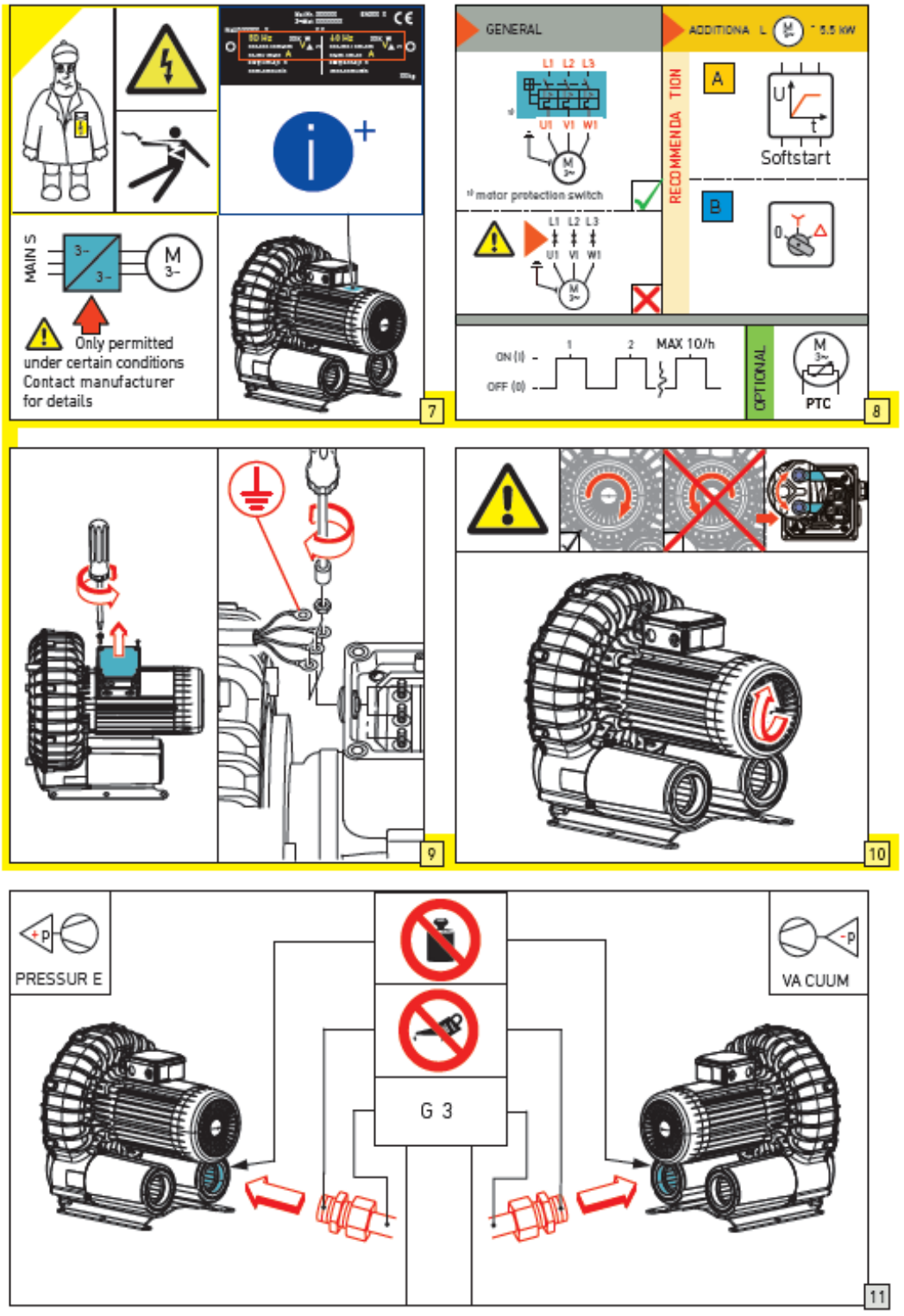

m³/h
mbar
DIN EN ISO 11203
Accuracy Class 2
K_pA = 3 dB(A)
1m
SV 400/1 (Pressure)
50/60 Hz, +267 /+250 mbar
L_pA = 76.8 /76.1 dB(A)
SV 400/1 (Vacuum)
50/60 Hz, -200/ -200 mbar
L_pA = 74.5/74.0 dB(A)
SV 400/2 (Pressure)
50/60 Hz, +360 /+330 mbar
L_pA = 73.1 /75.1 dB(A)
SV 400/2 (Vacuum)
50/60 Hz, -260 /-260 mbar
L_pA = 71.1 /73.0 dB(A)
2


static inst.
①–③
dynamic installatio n
The pump must be securely mounted
at the place of installation.
Physikal tension on the blower housing
must be avoided.
44-57 kg
97-126 lbs
3

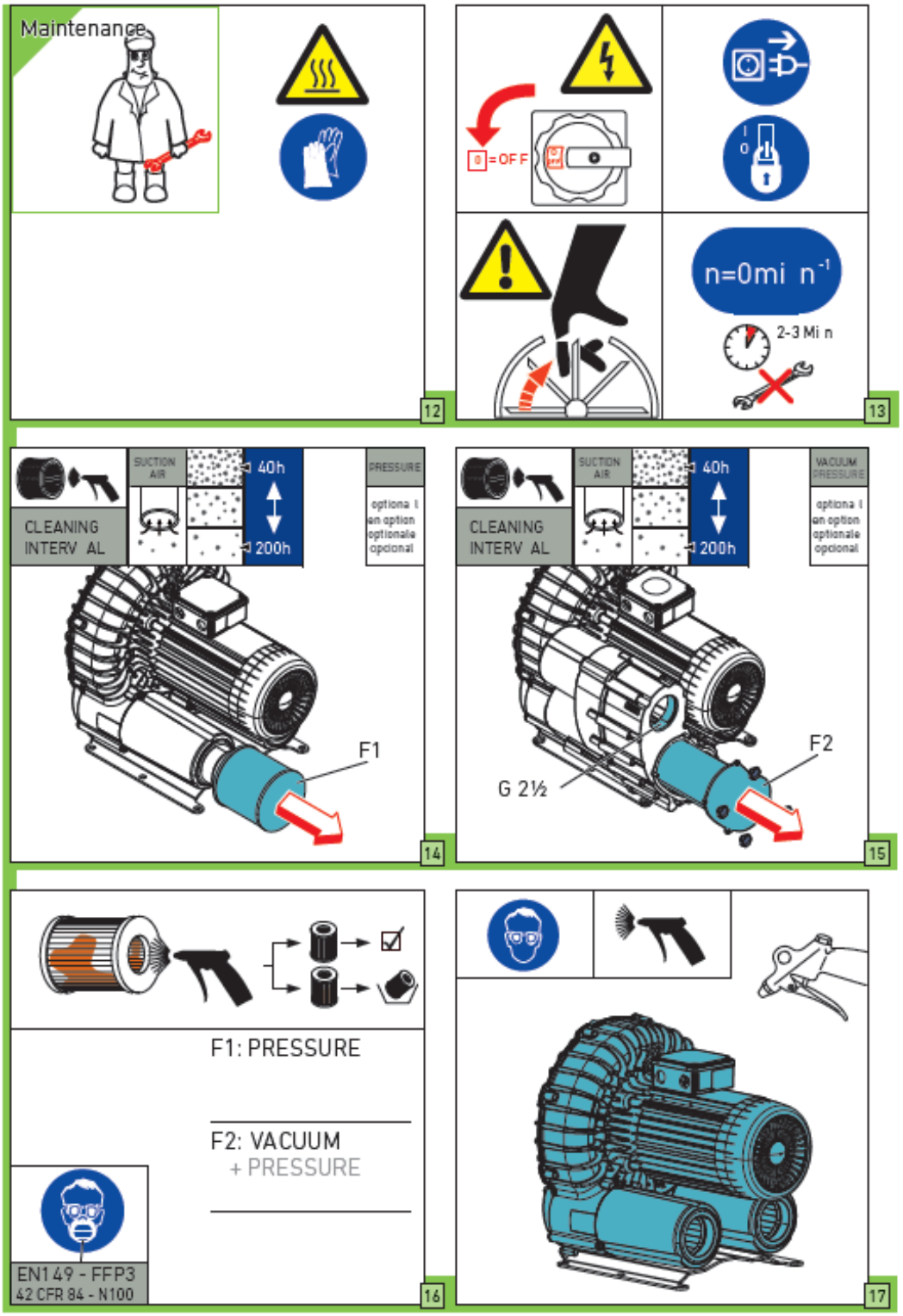

40°C/104°F
-10°C/14°F
INLET AI R
40°C/104°F
0°C/32°F
B
optiona l
en option
optionale
opcional
+ Filter
A > 100mm
A > 4"
B > 295mm
B > 11½"
max.
800m
max. 90%
A
A
4


5


VACUUM
PRESSUR E
AIR
>100°C
>212°F
optional
en option
optional e
opcional
6


MAIN S
Only permitted under certain conditions Contact manufacturer for details
7
GENERAL
ADDITIONA L
RECOMMENDA TION
motor protection switch
Softstart
ON (I)
OFF (0)
MAX 10/h
OPTIONAL
PTC
8
9
10
PRESSUR E
VA CUUM
G 3
11

SV 400 I 4


Maintenance
12
0=OFF
n=0mi n-1
2-3 Mi n
13
CLEANING INTERV AL
SUCTION AIR
40h
200h
PRESSURE
optiona l
en option
optionale
opcional
F1
14
CLEANING INTERV AL
SUCTION AIR
40h
200h
VACUUM PRESSURE
optiona l
en option
optionale
opcional
F2
G 2½
15
F1: PRESSURE
F2: VACUUM
+ PRESSURE
EN1 49 - FFP3
42 CFR 84 - N100
16
17

AERO-LIFT Vakuumtechnik GmbH
Turmstraße 1
D-72351 Geislingen-Binsdorf
www.aero-lift.de

AERO® LIFT

moving limits