

Vacuum Energy Unit

VEE

Customer:

Order-no.:

Type:

Article-/Drawing-no.:

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Electrical diagram-no.:

Vacuum pump:

<input type="checkbox"/>	Oil-lubricated pump
<input type="checkbox"/>	Oilless pump

Year of construction:

Please read before installing!



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1 Area of Application and correct Use

Vacuum energy units serve exclusively the purpose of generating and keeping up a certain level of vacuum. The devices are designed for the use in closed rooms, in which no special dangers (e.g. danger of explosion) exist. Using the devices in such areas without the proper designs is counted as not-suitable. The manufacturer is not liable for resulting damages. The risk is solely carried by the operator.

2 Safety warnings



This "Work safety symbol" can be found at several points in this manual, wherever there is a risk of life and limb for people. Please pay attention to the warnings and inform the people working with the units.



The "Pay attention symbol" can be found in the manual wherever regulations, instructions and hints are given regarding operation procedures and preventing damage to the device.

Please pay especial attention to the following tips regarding work safety!

The FEZER vacuum energy units are designed according to current technology and safety regulations. Still, the devices can be dangerous when handled by unauthorized personnel or for operations which they were not designed for. Possible dangers are:

The energy units may only be operated and maintained by instructed and authorized staff.

Each person working with the energy unit must have read the operation manual prior to this.

Whenever any work is carried out on the energy units the main switch for the power supply must be switched off and secured against accidental switch on.

Do not handle the devices in a way which may endanger your own safety or that of other persons.

The operator must notify his superior of any changes in the energy unit that may endanger the safety.

The operator must only use an energy unit which is not damaged in any way. He has to constantly check the unit visually on any damages and notify in writing any changes that he noticed.

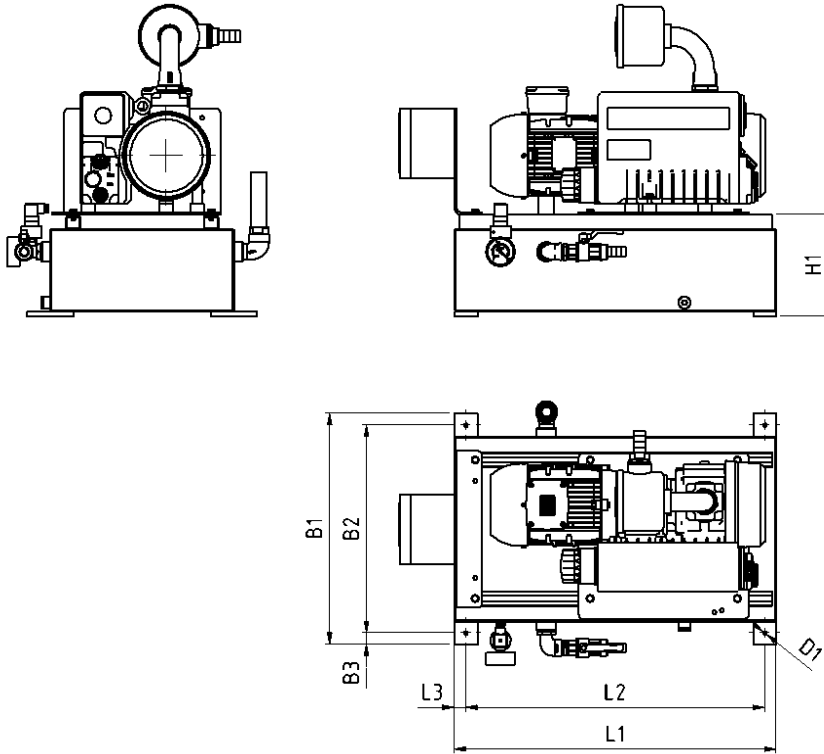
Tampering or changes of the unit which may reduce the safety are not allowed. For damages caused by this the manufacturer is not liable.

Only FEZER original spare parts must be used. When other spares are employed FEZER is not to be held liable.

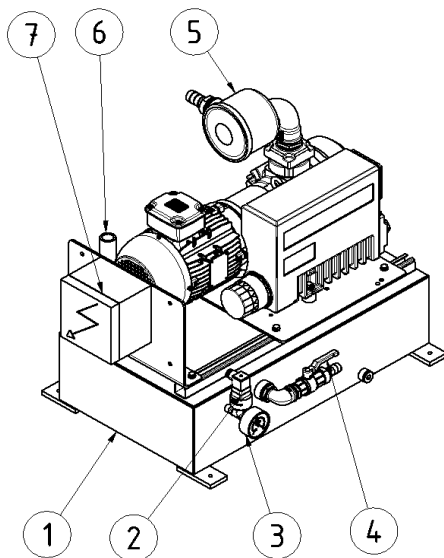
3 Technical Data

Tank volume see type description on label.
For further data see operation manual of the pump.

Installation dimensions:



VEE-	L1	B1	B2	L3/B3	B2	L2	D1	Schlauch LW
15L	450	380	158	25	330	400	8,5	3/4"
50L	700	500	220	25	450	650	8,5	1"
100L	700	600	320	25	550	650	8,5	38
200L	1000	800	338	25	750	950	11	38



- 1 tank
- 2 vacuum switch
- 3 vacuum gauge
- 4 switch off cock
- 5 filter
- 6 hose
- 7 electric box (on vacuum controlled motor switch and integrated warning unit)

4 Function

Part	Function (if part is included)
Vacuum pump	Creates vacuum inside the safety tank and customer's vacuum system.
Filter on the pump	Separates dirt to protect the pump.
Connection on pump via non-return valve	Connection of the vacuum hose to the vacuum generator (only required if the vacuum generator is already with the customer. On complete delivery the pump is already connected to the tank) Prevents a quick release of the vacuum when the pump fails. On pump types 016 - 0160 the non-return valve is inside the pump.
Vacuum gauge	Visual display of vacuum inside the tank. „Red-green“ area for operation situation.
Stop cock	Switching the vacuum on or off towards the vacuum consumer.
Solenoid valve (special design)	Electrical switching on and off of the vacuum towards the consumer.
Hose connection	Connection between hose and consumer. Please see spare parts list.
Vacuum-controlled motor switch (special design)	An underpressure switch switches the pump automatically on and off. This increases the durability of the pump and saves energy.
Warning Unit (special design)	optical/ acoustic signal when vacuum is low (below 60%/ 80%) in tank.

4.1 Vacuum and ventilation filters

Vacuum energy units with oil lubricated pumps have a vacuum filter to protect the valves and the pump from dirt particles. These filters need a regular cleaning and occasional exchange of the cartridges.

Filter type VF-:	1/2"	3/4"	1 1/4" A	1 1/4"	2 1/2" A
Design:	Short	Short	Short	long	Short
Filter complete	1.53.2.0002	1.53.2.0006	1.53.2.0003	1.53.2.0004	1.53.2.0005
Filter cartridge	2.53.2.0007	2.53.2.0014	2.53.2.0005	2.53.2.0004	2.53.2.0006

5 Initial Operation

Before the initial operation please check the device on completeness and possible transport damages. The latter must be advised instantly.

Connect vacuum energy unit with a vacuum hose on connection S with the existing consumer. Please allow for sufficient hose length and make sure that the unit is not damaged mechanically.

5.1 Fastening of the energy unit

To avoid movements of the energy unit and thus the possibility that the vacuum hose is torn out please fasten the unit to the floor with four trowels.

5.2 Electrical Connection

The electrical connection is done on the pump. Please read operation manual of the vacuum pump. Please allow for sufficient electric cable and beware of mechanical damages.



Please use authorized personnel for electric works.



The vacuum energy units cause an extremely strong current on the connection stud. No person or things must be in that area. Do not touch the connection in any way or look into the stud.



Before operation please check the turning direction of the pump. Please see arrow on the housing of the motor.



On vacuum energy units with oil-lubricated pumps please check oil quantity before operation.

5.2 Density test



The vacuum energy unit has been tested prior to delivery. We still recommend to check on any leakages before operation.

Switch vacuum pump on and close the cock. When maximum vacuum is reached (indicator on the vacuum gauge does not move any longer!) switch the pump off and wait for 5 minutes. Within these 5 minutes the vacuum must not drop by more than 5%. If it does, please check hose connections between pump and tank, maybe the hose clamps need to be tightened.

6 Operations

6.1 Switch on vacuum energy unit

Switch on the vacuum pump through the motor protection switch and wait until sufficient vacuum has been built up in the safety tank (vacuum gauge must be in green area). During this short time the energy unit is not yet ready. On 60% or 80% vacuum (see control vacuum gauge) the energy unit is operational.



Please take care that the cock is in „open“ position, otherwise not vacuum can be built up.

6.2 Failures

Failure	Ursache	Beseitigung
Pump does not run	Electrical connection incorrect	Check connection
	Motor protection switch has switched off	Check motor on overload Check protection switch
	Vacuum pump defective	Check pump
Vacuum pump does not reach vacuum any more	Leakage in system	Check hose connections Check filter lid Check vacuum gauge Check non-return valve Check pump

6.3 Putting out of Operation

Disassembly and disposal:

Before disconnecting anything, make sure that the connected hoses have been aired.!

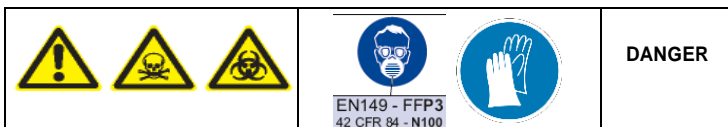
Disconnect electric connections from the power outlet and secure them that they are not accidentally plugged in again.

While disassembling always wear safety goggles, breathing equipment and gloves.



The parts being used for production of the pump do not contain harmful materials as far as can be determined when this manual was printed

Disposal of the vacuum filter:



If the pump was used for gases charged with harmful particles, then the filter is contaminated with them.

Danger for the health when checking, cleaning or changing the filter.

Danger for the environment.

When handling contaminated filters please wear safety clothes.

Contaminated filters are special waste and have to be disposed accordingly.

Take out the cartridge from the filter. When no poisonous gases were sucked on the cartridge can be disposed via residual waste.

Metal parts are disposed through scrap metal.



Pull off the hoses. Attention:  Danger for the eyes! Hoses are special waste.

Electric parts have to be disposed as per the current regulations,

pumps/ blowers as per the supplied operation manual

7 Maintenance

7.1 Information

Failures caused by insufficient or unauthorized maintenance can cause high costs and a waste of labor hours. Regular maintenance helps to keep these costs down.



Parts must only be changed by authorized personnel!

7.2 Maintenance list

Nr.	What to check (if existing)	Frequ-ency	Notes
1	Vacuum pump		see separate operation manual
2	Safety units Warning unit: Function check Vacuum gauge: Function check	d d	Check signal of warning unit against vacuum gauge, re-set underpressure switch Check vacuum gauge connections
3	Accessories Vacuum filter: Check dust inside filter Condense water in tank:	w r	Blow out filter insert, maybe exchange cartridge Release water thro release screw in tank. Before doing so switch off pump and make sure no vacuum is any more inside the tank.

d = daily; w = weekly; r = if required

8 Warning units (special design)

Each device has a vacuum gauge placed directly on the distribution line. The vacuum gauge indicates the operational status of the unit. In the red area (below 60%) the unit is non-operational. Next to the vacuum gauge there are electric warning units which warn the user either optically or acoustically. Red lamps light up and/or a howler goes off.



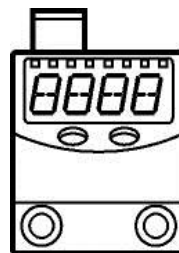
When the warning units goes off instantly stop the operation. Danger of dropping loads!

9 Vacuum-contolled motor switch (special design)

An electric vacuum switch controls the pump. Is the highest value reached the pump switches off. When it drops to the lowest switching point the pump switches on again. This reduces the time that the pump runs, which increases its life span and saves energy. Switching points can be set on the underpressure switch. Please see operation manual for more information.

9.1 Vacuum switch digital VSD 1/8-I-4PNP-M8

Article-no.: 1.52.3.0034 see separate manual



9.2 Vacuum switch VSM

Type:	VSM-1/4-SP-0,1-5%	VSM-1/4-SP-0,6-5%	VSM-1/4-SP-0,7-5%	VSM-1/4-SP-0,8-5%
Article-No:	1.52.1.0009	1.52.1.0001	1.52.1.0008	1.52.1.0002
Mounting position:	any	any	any	any
Pressure setting range:	0,02-0,8 bar	0,02-0,8 bar	0,02-0,8 bar	0,02-0,8 bar
Pre-set switching point:	10 %	60 %	70 %	80 %
Bursting pressure:	2 bar	2 bar	2 bar	2 bar
Medium:	air, hydraulic oil, oil emulsions, water	air, hydraulic oil, oil emulsions, water	air, hydraulic oil, oil emulsions, water	air, hydraulic oil, oil emulsions, water
Mechanical life	1.000.000	1.000.000	1.000.000	1.000.000
Switch back difference:	6%	6%	6%	6%
Switching frequency max.:	200/min	200/min	200/min	200/min
Protective system:	IP 65	IP 65	IP 65	IP 65
Ambient temperature:	-25°C ÷ +85°C	-25°C ÷ +85°C	-25°C ÷ +85°C	-25°C ÷ +85°C
Weight approx.:	0,12 kgs	0,12 kgs	0,12 kgs	0,12 kgs

Breaking capacity	A.C.		D.C.					
	125V	250V	30V	50V	75V	125V	250V	
Voltage up to	125V	250V	30V	50V	75V	125V	250V	
Resistance load	2A	2A	2A	2A	1A	0,5A	0,25A	
Incandescent lamp load	0,5A	0,5A	0,5A	0,4A	0,3A	0,2A	0,1A	
Inductive load	2A	2A	2A	2A	1A	0,06A	0,03A	

It is recommended not to use only the manometric switch to separate the device from the mains. For inductively loaded DC circuits e.g. for magnets, spark extinguishers have to be provided.

How to set the vacuum switch:

- Loosen the screw A with crosstip screwdriver.
- Pull off coupler socket B
- Turn the central setting screw M3 by means of an Allen key SW1,5
- Turn right: decrease switching point.
- Turn left: increase switching point.

