Operating instructions

Maintenance instructions

Spare part list

EFA Vacuum unit Type VS200







Important Information:

Please forward these operating instructions to your operating personnel!

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D 75433 Maulbronn

Execution

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1. Use, scope of delivery, accessories Notes, be sure to read!

These instructions are intended for the machine operator.

Keep the operating instructions with the vacuum unit. It must be available at all times.

The EFA vacuum unit may only be operated:

- in technically perfect condition, in accordance with the regulations, as well as safety- and hazardconscious,
- with all safety devices attached,
- according to the safety instructions,
- after the operating personnel have read these instructions, in particular chapter 2 "Safety instructions" (p.2) and chapter 3 "Functional description and operation" (p. 3) have been read and understood.

This is the only way to avoid operating errors and to assess driving situations correctly.

1.1 Symbols in these instructions

Hazard symbol:



Extreme caution and care are required here. In case of incorrect behavior, there is a direct risk of injury to the operating personnel or third parties. In addition, the machine may be damaged.

Information symbol:



Text passages marked with this symbol provide you with important information and useful tips.

1.2 Intended use

1.2.1 Application area

The vacuum unit is built according to state-ofthe-art technology and recognized safety rules.

The EFA vacuum unit is used exclusively for the removal of animal excrement by vacuum. Any other use or use beyond this is considered

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improper. The manufacturer is not liable.

The manufacturer is not liable for any damage resulting from this. The risk is borne solely by the user. Intended use also includes observing the operating instructions and complying with the inspection and maintenance conditions.

For all other applications, the risk of accidents or increased wear must be pointed out. The user alone is liable in the event of noncompliance.

1.2.2 Residual hazards

However, the use of the equipment may result in danger to life and limb of the user or third parties, or damage to the equipment or other property if the user:

- is not used as intended,
- is improperly modified or converted,
- the safety instructions are not observed.

2. Safety instructions

When using the vacuum aggregate, be sure to observe the following safety measures.

2.1 General safety instructions

- It is assumed that the operating personnel have sufficient knowledge to work with the vacuum unit.
- Make sure that the machine is always kept in a safe operating condition and immediately replace defective parts that could impair operating safety.
- Installation, maintenance and repair work may only be carried out by authorized and qualified personnel.
- Only use original EFA accessories. The use of other tools or accessories can be dangerous for you. Failure to use original spare parts will void the warranty.
- Technical modifications or conversions to the equipment are generally not permitted and release S&W from any warranty and liability.
- The system may only be operated if all protective and safety devices are present and functioning properly.

- The limit values for pressures and temperatures must be permanently marked and must not be exceeded or fallen short of.
- The warning and safety notices on the equipment must be observed and kept in a legible condition at all times.

2.2 Behavior of the workspace

- Keep your workplace tidy. Disorder can result in accidents.
- Take environmental influences into account. Ensure good lighting (min. 500 lux).
- Always switch off the device when not in use.
- Work clothing: Do not wear loose clothing or jewelry these can be caught by moving parts. Wear sturdy shoes when working. Generally wear a hair net!
- Wear the prescribed personal hearing protection during operation of the system, depending on the noise level.
- Avoid abnormal body posture. Ensure secure footing and maintain balance at all times.
- When working above body height, use suitable, safety-compliant access aids and working platforms. Do not use any machine parts as climbing aids.
- Care for your tools with care.
- Do not leave any tool keys inserted. Before switching on, check that all keys have been removed.

3. Functional description and operation



Only use the vacuum unit for the extraction of animal excrement.

3.1 Functional description



Fig 1 - Main view

- 1 Vacuum filter
- 2 Vacuum manometer
- 3 Vacuum pump
- 4 Vacuum control valve
- 5 Vacuum cut-off valve
- 6 Vacuum separator
- 7 Vacuum separator drain valve
- 8 Tank
- 9 Main valve
- 10 Tank lock
- 11 Pneumatic cut-off control valve
- 12 Main switch
- 13 Vacuum pump frame
- 14 Vacuum pump frame nuts
- 15 Vacuum separator hose
- 16 Pressure reducer

The vacuum pump (3) generates a vacuum in the receiving tank (8) and in the suction lines directly connected to it. As a result of the pressure compensation, the liquid and dirt flows into the container via the suction lines. A float switch is located in the receiving tank (8) itself. It switches off the vacuum pump (3) when the filling level reaches its maximum. A suction filter (6) and an air filter (1) are connected upstream of the vacuum pump (3). These prevent liquid or dirt particles from entering the vacuum pump (3). A vacuum regulating valve (4) is used to set the vacuum. A vacuum gauge (2) above the vacuum pump indicates the pressure in the vessel. A Vacuum separator drain valve (7) is located at the bottom of the vacuum separator (6), through which the contents can be drained.

3.2 Operation



Only use the vacuum unit for the extraction of animal excrement.



All cleaning agents for stainless steel equipment are suitable for cleaning the receptacle.



Fig 2 - Vacuum pump with accessories

3.2.1 Daily controls

- Check the vacuum filter (1) at least once a day for contamination and the oil level of the vacuum pump (3).
- The work steps are explained in the following sections 5.2. and 5.3.

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3.2.2 Switch on

Set the main switch (12) to 1 (green switch).

3.2.3 Switch off

Set the main switch (12) to 0 (red switch).

3.2.4 Draining

Empty the receiving tank (8) when the maximum filling level is reached and before each longer downtime. To emptying use main valve (9).

3.2.5 Pneumatic Valve

The pneumatic cut-off control valve (11) has 2 modes (ON / OFF).



Fig 3 - Main switch and pneumatic cut-off control valve

For normal operation the pneumatic valve should be switched ON (Upper position). When the operator of the Vacuum Extraction System finds that the vacuum is not temporarily needed for operate, he can switch OFF (lower position) the pneumatic valve, also shown at Photo 1 below.



Photo 1 - Pneumatic cut-off control valve

3.2.6 Vacuum Control Valve

By turning the Vacuum Control Valve (4) clockwise You can increase vacuum (**+** sign on the valve), by turning the valve anti-clockwise

(- sign on the valve) You can decrease the vacuum.

To control the level of the vacuum look at the vacuum manometer (2), also shown at the Photo 2 below.



Photo 2 - Vacuum control valve and vacuum manometer

Emptying the receiving tank:

- Set the main switch (12) to 0 (red switch).
- Open the main ball valve (9) at the bottom of the tank (8).
- After emptying, close the main valve (9).

Drain the vacuum separator:

• Unscrew the vacuum separator drain valve (7) at the bottom of the Vacuum

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separator (6).

- Drain the water with the dirt residues from out of the Vacuum separator (6).
- Screw the vacuum separator drain valve (7) back in again.

4. Assembly

4.1 Transport



It is strictly forbidden to stand underneath a lifted load! Falling loads can cause extremely serious injuries.

- Only transport the vacuum unit bolted to a pallet while it is upright.
- Only use suitable means of transport and lifting gear with sufficient load-bearing capacity.
- Only use load-bearing and stable loading ramps.
- Secure the vacuum unit against sliding and tipping.

4.2 Before installing the Vacuum Extraction System for EFA 202

Unpack the device and assemble it, as shown on the figure below. Connect vacuum pump frame (13) with tank (8). Use the enclosed 4 vacuum pump frame nuts (14) for this and tighten them with a torque of 12Nm.



Fig 4 - System installation

Connect the vacuum separator hose (15) and secure it with the enclosed clamps.

Connect the EFA 202 with the tank (8) of EFA Vacuum Unit with appropriate couplings and a hose.



Photo 3 – Vacuum pump rotation direction arrow

Before use EFA Vacuum Unit, start the vacuum pump (3) and check the rotation of the motor. The right direction is shown on the housing of the vacuum pump (3) (see arrow as at Photo 3).

In case if the direction of the rotation of motor is opposite side than shown on the housing of the vacuum pump (3), stop the vacuum pump (3) immediately and change the direction by switching the two phases (e.g. PH1 and PH2) in the plug.

NOTICE!

This operation should be done only by qualified electrician.

Connect the pneumatic hose to the pressure reducer (16).

NOTICE!

The minimal pressure for applicable operation of the EFA Vacuum unit is 6 bar.

After making sure, that all connections and the direction of the rotation of the vacuum pump (3) are correct, turn the main switch on. The EFA Vacuum Unit is ready to operate.

4.3 Set up



The mains connection must comply with the regulations of the local power supply company and be protected by a residual current circuit breaker (residual current <0.03 A) and fuses (16 A, slow-blow).

Do not lay the unit on its side.

The suction connection is designed as a spigot with a 1" female thread. A 1/2" hose nipple is screwed into the suction connection. 1/2" hose nipple is screwed into the suction connection.

Carry out the set-up and installation as follows:

- Set up the vacuum unit on a level, loadbearing floor.
- Anchor the vacuum unit in the floor using hexagonal bolts (min. 8mm diameter).
- Establish a hose connection between the unit or the system via which the liquid is to be aspirated and the suction connection. To do this, attach a sufficiently long hose to the hose nipple using hose clamps.
- Have a qualified person make the electrical connection.
- The socket in main valve (9) under the receiving tank has a 2" internal thread to which you can connect a drain line.



Always lay the drain line with a downward slope from the vacuum unit.

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5. Cleaning and maintenance



Disconnect the vacuum unit from the power supply before servicing the vacuum pump. Ventilate the vacuum pump to ambient pressure.



The vacuum must not exceed 85 kPa! Higher negative pressures can cause damage to the receiving tank.

5.1 Receiving tank (8)

Rinse the tank (8) with spray water at least every week to remove any stuck dirt or before every longer downtime. Proceed as follows:

- Set the main switch (12) to 0 (red switch).
- Open the main ball valve (9) and empty the receiving tank (8).
- Spray the receiving tank (8).
- Close the main ball valve (9) when the receiving tank (8) is empty.



All cleaning agents for stainless steel equipment are suitable for cleaning the tank.

5.2 Vacuum filter (1)

Check the filter element in the vacuum filter (1) at regular intervals (at least every three months), as follows:

- Open the retaining clips on the air filter (1) and remove the cover.
- Check the vacuum filter (1) and replace it if necessary.
- Replace the cover on the vacuum filter (1) and secure it with the retaining clips.

5.3 Refill oil



Use only special vacuum pump oil according to DIN 51506, lubricating oil group VC. For the exact specification, refer to the table or enclosed operating instructions for the vacuum pump.

When the oil level is below the MIN mark on the sight glass (19), add oil. Proceed as follows:

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- Open the oil filler plug (18).
- Add oil until the oil level reaches the MAX mark on the oil sight glass (19).
- Close the oil filler plug (18).

5.4 Oil change



Dispose of the used oil in accordance with the applicable regulations.

Change the oil:

- after the first 100 hours of operation.
- after every further 500 2000 operating hours, depending on oil quality.
- Unscrew the oil drain plug (20) on the vacuum pump (3) and allow the used oil to run into a collecting pan.
- Screw the oil drain plug (20) back in.
- Unscrew the oil filler cover (17) on the vacuum pump (3) and change filter insert.
- Screw the oil filler cover (17) back in.
- Open the oil filler plug (18).
- Add oil until the oil level reaches the MAX mark on the oil sight glass (19).
- Close the oil filler plug (18).

Recommended oil types	Ambient temperature
VM 032	< 0 °C
VM 068	0 12 °C
VM 100	12 30 °C
VS 100	> 30 °C

The vacuum unit contains approx. 1 l of oil.



Fig 5 – Vacuum pump details

5.5 Fan cover

Check the fan guards of the vacuum pump (3) for dirt. If necessary, blow out the fan guards with compressed air.



For further maintenance instructions, refer to the enclosed operating instructions for the vacuum pump (3).

Malfunction	Possible reason	Remediation
Vacuum unit does not run Level is out	Power supply interrupted.	Check the mains connection and fuses. Notify the customer service if none of the above errors are present.
	Motor protection in main switch (12) tripped due to overload of vacuum pump (3).	Open the main switch box (12) and check whether the motor protection switch has tripped.
	Vacuum separator (6) clogged and vacuum filter (1) wet> Vacuum pump has sucked in water.	Notify customer service.
	Vacuum separator (6) clogged.	Empty the suction filter (6) (section 3.2).
		Press the "Reset" button on the motor protection switch.
Vacuum unit does not run Level is full	Tank (8) is full.	Empty the receiving tank (8) (section 3.2).
Low flow rate	Vacuum filter (1) clogged.	Clean/renew vacuum filter (1).
Vacuum too high	Vacuum separator (6) clogged.	Drain the vacuum separator (6) (section 3.2).
	Regulating valve (4) set incorrectly.	Readjust the vacuum (section 5.6).
Vacuum too low	Main valve (9) open or not properly closed.	Close the main valve (9).
	Hose line at suction connection leaking.	Check the hose line and the devices connected to it. Eliminate the leaks. If necessary, replace the leaking parts.
	Regulate valve (4) set incorrectly.	Readjust the vacuum (section 5.6).
	Leakage at the receiver (8) or other parts of the vacuum unit. Defective vacuum pump (3).	Notify customer service.

5.6 Troubleshooting

6. Take back of old equipment Return old equipment to the parent company for disposal.

A. Appendix

A.1 Technical Data

Description	Value
Voltage	3 x 400 V /50 Hz / N / PE
Current	3,2A
Rated power	0,75kW
Flow rate	25 m³/h
Contents of the receptacle	90 L
Mass (net)	115 kg
Ambient temperature	+5°C - +35°C

A.2 Spare part list











Page	Index	Part	
	Z100173	Pneumatic hose	
11	Z084015	Separator-tank hose	
	Z100449	Separator-tank hose clamp	
	Z100450	Separator-pump hose clamp	
	Z084016	Separator-pump hose	
	Z084014	Vacuum pump	
12	Z100173	Pneumatic hose	
	Z084018	ON/OFF Switch	
	Z099878	Pneumatic Tee (optional)	
	Z011057	Cable gland	
	Z015247	Pneumatic fitting	
	Z083927	Pneumatic valve	
13	Z084193	Pneumatic silencer	
	Z084195	Pneumatic manometer	
	Z083925	Air pressure reductor	
14	Z083809	Pneumatic-controlled valve	
	Z083710	Separator clamp	
	Z083850	Separator exhaust valve	
	Z012306	Separator exhaust nozzle	
15	Z093543	Vacuum manometer	
	Z081497	Tee-vacuum manometer reduction	
	Z093572	Тее	
	Z093583	Vacuum control valve	
	Z093578	Tee-Vacuum control valve reduction	
	Z083847	Clamp	
	Z058340	Hexagon plug	
16	Z084044	Main tank gasket	
	Z094412	Pneumatic-controlled valve (optional)	
	Z059987	Main tank exhaust valve	
	Z102621	Control box (optional)	
17	Z015247	Pneumatic fitting – control box (optional)	
	Z084193	Pneumatic silencer – control box (optional)	
	Z094456	Electro-pneumatic valve – control box (optional)	
	Z077395	Fuse – control box (optional)	
	Z057225	Cable gland – control box (optional)	

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A.2 Electrical and pneumatic diagrams

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DECLARATION OF CONFORMITY 2006/42/EC MACHINERY

Manufacturer: Weindich Sp. z o. o., ul. Adamieckiego 8, 41-503 Chorzów

Declare that the product described below is in conformity with the relevant provisions of the following directives and the National Laws and Regulations adopting these directives.

Machinery Directive:	2006/42/EC
Low Voltage Directive:	2014/35/EC
EMC Directive:	2014/30/EU

Product type: Model: Serial Number: Vacuum Extraction System VS200

15.03.2023

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