

Original Operating Instructions V-VGD 11 | 16 | 21

Vacuum pump





















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1 Foreword

1.1 Principles

These operating instructions:

- is a part of the following oil-sealed rotary vane vacuum pumps V-VGD11, V-VGD16 and V-VGD21.
- describe how to use them safely and properly in all life phases.
- must be available where the equipment is used.

For other languages: please refer to website www.gd-elmorietschle.com

1.2 Target group

The target group for these instructions is technically trained specialists.

1.3 Supplier documentation and accompanying documents

Document	Contents	No.
	Operating Instructions	BA 234
Supplier documentation	Declaration of Conformity	C 0091
	Declaration of harmlessness	7.7025.003.17
Info sheet	Storage guidelines for lubricants	I 100
Info sheet	Storage guidelines for machines	I 150

1.4 Abbreviations

Fig. Figure

V-VGD Vacuum pump m3/h Suction capacity

mbar (abs.) Final vacuum, operating vacuum

1.5 Directives, standards, laws

See Conformity Declaration





1.6 Symbols and meaning

Symbol	Explanation
>	Instructions, action
a), b),	Instructions in several steps
⇒	Results
	Reference
Warning signs	Obey all safety instructions with this symbol in order to avoid injury or death.
	Warns of potential risk of injury
4	Warns of electrical voltage
	Warns of suspended loads
	Warns of hot surface
	Warns of automatic or unexpected start-up of the machine
Mandatory signs	Obey all instructions with this symbol in order to avoid injury or death.
	Observe the Operating Manual
	Wear eye protection
	Wear protective gloves
	Wear safety shoes
	Wear ear protection
	Wear respiratory protection
?	Disconnect the plant and secure it against unexpected restart
0	Information, note
	Protection of environment





1.7 Technical terms and meaning

Term	Explanation		
Machines	Pump and motor combination ready to be connected		
Motor	Pump drive motor		
Vacuum pump	Machine to create a vacuum		
Rotary vane	Machine's design or active principle		
Suction capacity	Vacuum pump volume flow related to the condition in the suction connection		
Final pressure (abs.)	The maximum vacuum that a pump reaches when the suction opening is closed. Given as absolute pressure.		
Permanent vacuum	The vacuum or the suction range at which the pump operates permanently. The permanent vacuum or intake pressure is ≥ than the final vacuum and < than the atmospheric pressure.		
Noise emission	The noise emitted at a specific loading given as a figure, sound pressure level dB(A) as per EN ISO 3744.		

1.8 Copyright

Passing on or copying this document, using and providing information on its contents are prohibited unless expressly permitted. Contraventions will lead to claims for damages.





2 Safety

The manufacturer is not responsible for damage due to non-observance of the whole documentation.

2.1 Warning instruction markings

Warning	Danger level	Consequences of non-observance	
▲ DANGER	Imminent danger	Death, severe bodily injury	
WARNING	Possible imminent danger	Death, severe bodily injury	
A CAUTION	Possible hazardous situation	Slight bodily injury	
NOTICE	Possible hazardous situation	Material damage	

2.2 General

These operating instructions contain basic instructions for installation, commissioning, maintenance and inspection work which must be obeyed to ensure the safe operation of the machine and prevent physical and material damage.

The safety instructions in all sections must be taken into consideration.

The operating instructions must be read by the responsible technical personnel/ operator before installing and commissioning and must be fully understood. The contents of the operating instructions must always be available on site for the technical personnel/operator. Instructions fixed directly onto the machine must be obeyed and must always remain legible. This applies for example to:

- Symbols for connections
- Data plate
- Instruction and warning plates

The operator is responsible for observing local regulations.

2.3 Designated use

The machine must only be operated in such areas as are described in the operating instructions:

- · only operate the machine in a technically perfect condition
- do not operate the machine when it is only partially assembled
- The machine must only be operated at an ambient temperature and a suction temperature of between 10 and 40°C.

Please contact us for temperatures outside this range.

- the machine may convey, compress or extract the following media:
 - Air

The air extracted may contain water vapour but no water or other liquids.

 all non-explosive, non-inflammable, non-aggressive and non-poisonous dry gases and gas air mixtures





2.4 Unacceptable operating modes

- extracting, conveying and compressing explosive, inflammable, aggressive or poisonous media, e.g. dust as per ATEX zone 20-22, solvents as well as gaseous oxygen and other oxidants
- extracting, conveying and compressing explosive, inflammable, aggressive, oxidative or poisonous media, e.g. dust as per ATEX zone 20-22, solvents
- using the machine in non-commercial plants if the necessary precautions and protective measures have not been taken in the plant
- installing in environments that are at risk of explosions
- · using the machine in areas with ionising radiation
- back pressures on the outlet side of more than +0,1 bars
- · modifications to the machine and accessories

2.5 Personal qualifications and training

- Ensure that people entrusted with working on the machine have read and understood these operating
 instructions before starting work, particularly the safety instructions for installation, commissioning, maintenance and inspection work.
- · manage the responsibilities, competence and monitoring of staff
- all work must only be carried out by technical specialists:
 - Installation, commissioning, maintenance and inspection work
 - Working with electricity
- personnel being trained to work on the machine must be supervised by technical specialists only

2.6 Safety-conscious work

The following safety regulations apply in addition to the safety instructions and intended use listed in these instructions:

- · accident prevention regulations, safety and operating regulations
- the standards and laws in force

2.7 Safety notes for the operator

- · hot parts of the machine must not be accessible during operation or must be fitted with a guard
- people must not be endangered by the free extraction or discharge of pumped media
- risks arising from electrical energy must be eliminated.
- The machine must not be in touch with inflammable substances. Danger of fire by hot surfaces, discharge of pumped media or cooling air





2.8 Safety instructions for installing, commissioning and maintenance

- The operator will ensure that any installation, commissioning and maintenance work is carried out by authorised, qualified specialists who have gained sufficient information by an in-depth study of the operating instructions.
- Only work on the machine when it is idle and cannot be switched on again
- Ensure that you follow the procedure for decommissioning the machine described in the operating instructions.
- Fit or start up safety and protective devices again immediately after finishing work.
- Conversion work or modifications to the machine are only permissible with the manufacturer's consent.
- Only use original parts or parts approved by the manufacturer. The use of other parts may invalidate liability for any consequences arising.
- Keep unauthorised people away from the machine

2.9 Guarantee conditions

The manufacturer's guarantee or warranty will no longer apply in the following cases:

- Improper use
- · Not complying with these instructions
- Operation by insufficiently qualified staff
- Using spare parts that have not been approved by Gardner Denver Schopfheim GmbH
- Unauthorised modifications to the machine or the accessories supplied by Gardner Denver Schopfheim GmbH



Tel. 071 918 60 60, Mail: v-g@prematic.ch



3 Transport, storage and disposal

3.1 Transportation

3.1.1 Unpack and check the delivery condition

- a) Unpack the machine on receipt and check for transport damage.
- b) Notify the manufacturer of transport damage immediately
- c) Dispose of the packaging in accordance with the local regulations in force.

3.1.2 Lifting and transporting





Death by falling down or tipping over of the transported goods!

Falling down or tipping over of transported goods can cause serious or fatal injuries. Limbs can be crushed.

- > Select the lifting device according to the total weight to be transported.
- Secure the machine against tipping over and falling.
- > Do not stand underneath a suspended load.
- Put the goods to be conveyed on a horizontal base (max. inclination: 10° in all directions).

WARNING

Bodily injury resulting from improper operation!

Improper operation of the lifting gear and the transported goods can cause serious or fatal injuries.

- Loads crosswise to the ring level are not permitted.
- > Avoid impact stress.

3.2 Storage

NOTICE

Material damage caused by improper storage!

Improper storage can damage the machine.

Ensure that the storage area meets the following conditions:

- Dust-free
- Vibration free
- > Close the inlet and the discharge connection with a locking plug to avoid pollution.





3.2.1 Ambient conditions for storage

Ambient conditions	Value
Relative humidity	0 % to 80 %
Storage temperature	-10 °C to +60 °C



For long-term storage (more than 3 months), it is useful to use a preservation oil rather than operating oil.

See Info "Storage guidelines", page 4.

3.3 Disposal

WARNING

Danger due to flammable, corrosive or poisonous substances!

Machine with contact to hazardous substances can cause serious burns, cauterisation or poisoning.

- > Before disposal decontaminate the machine.
- Wear suitable protective clothing.

When disposing ensure the following:

- a) Collect oils and grease separately and dispose of in accordance with the local regulations in force.
- b) Do not mix solvents, limescale removers and paint residues
- c) Remove components and dispose of them in accordance with the local regulations in force.
- d) Dispose of the machine in accordance with the national and local regulations in force.
- e) Parts subject to wear and tear are special waste and must be disposed of in accordance with the national and local waste laws.





4 Product overview and functioning

4.1 Product Overview

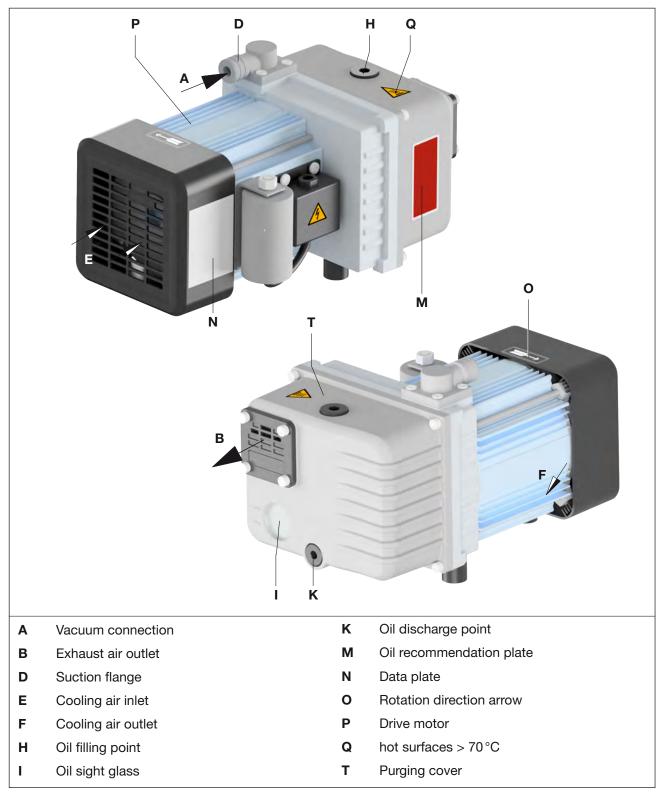


Fig. 1 Vacuum pump V-VGD 11



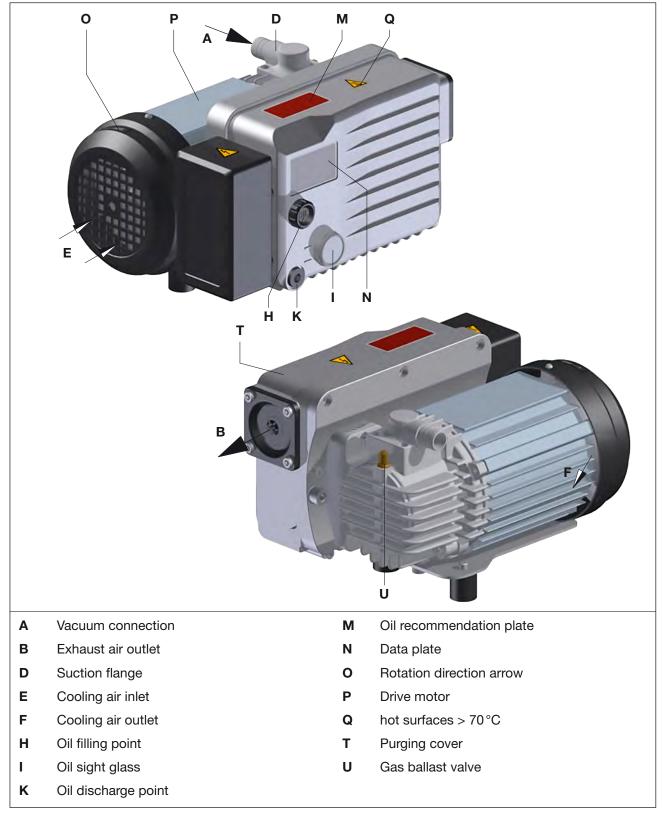


Fig. 2 Vacuum pump V-VGD 16



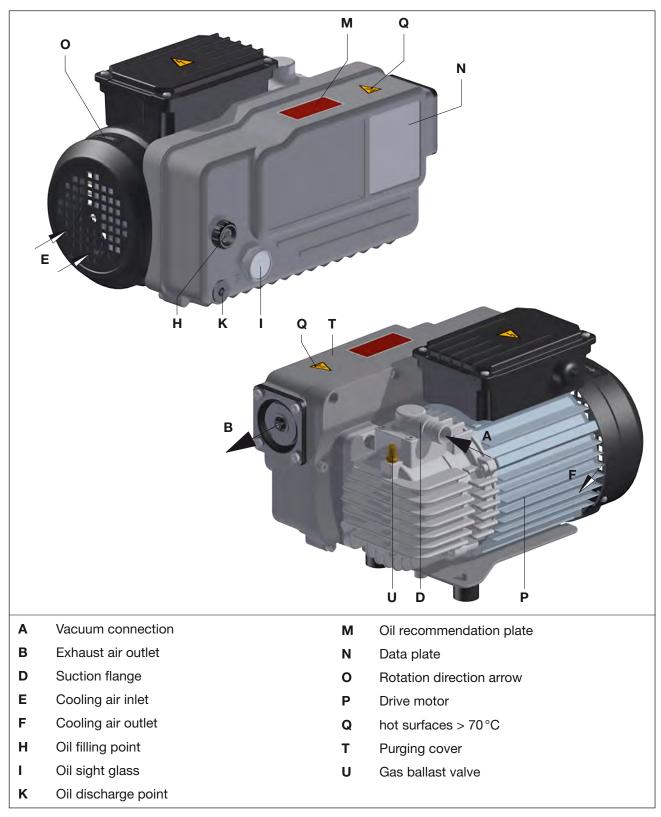


Fig. 3 Vacuum pump V-VGD 21



4.2 Data plate

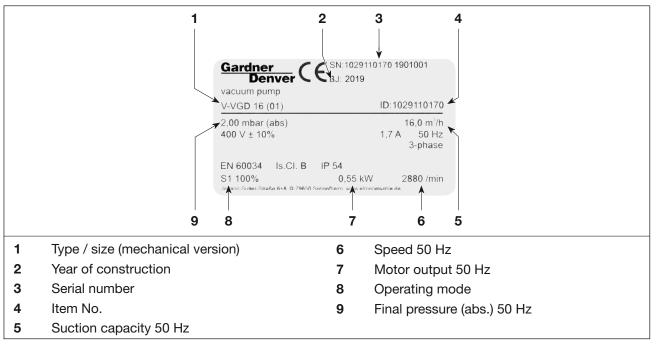


Fig. 4 Data plate (example)

4.3 Description

The V-VGD 11, V-VGD 16 and V-VGD 21 have a fine mesh filter on the suction side and on the outlet side an oil and oil mist separator to return the oil to the oil circulation system.

The motor fan cools the motor and the pump housing. The motor and the pump have a common shaft.

An integral non-return valve prevents the evacuated system from being ventilated after the pump has stopped. If the machine has been idle for more than two minutes the connected pipe should be ventilated to atmospheric pressure.

A gas ballast valve (Fig. 2- 3/U) prevents water vapour condensation getting inside the pump if low amounts of steam are sucked in when the pump is at operating temperature.

4.4 Areas of application

These oil-sealed rotary vane vacuum pumps V-VGD 11, V-VGD 16 and V-VGD 21 are suitable for creating vacuum. The suction capacity with unrestricted suction is 10 m³/h, 15 m³/h and 20 m³/h at 50 Hz.

These types are suitable for the evacuation of closed systems. These types are not suitable for a continuous operation mode. The switching interval may not exceed 12 times an hour (start/stop) at a pressure range of 2 – 100 mbar (abs.) for V-VGD 11, V-VGD 16 and 1.5 – 100 mbar (abs.) for V-VGD 21.

If the unit is operated constantly outside these ranges there is the risk of oil leaking through the outlet opening. When evacuating closed systems the volume to be evacuated must be no more than 2 % of the nominal suction capacity of the vacuum pump.



If the unit is switched on more frequently (at regular intervals of about 12 times an hour) or at higher ambient temperatures and intake temperatures, the excess temperature limit of the motor winding and the bearings may be exceeded. Please contact the manufacturer should the unit be used under such conditions.



If it is installed in the open air the unit must be protected from environmental influences, (e.g. by a protective roof).





5 Installation

5.1 Preparing for installation

Check the following points:

- · Machine freely accessible from all sides
- Do not close ventilation grids and holes
- Sufficient room for installing and removing pipes and for maintenance work, particularly for installing and dismantling the machine
- No external vibration effects
- Do not suck any hot exhaust air from other machines into the cooling system.

5.2 Installation

NOTICE

Property damage caused by improper installation!

Improper erection and installation can damage the machine.

- > The machine may only be operated when it is set up horizontally. (Max. inclination: 10° in all directions)
- The machine must be screwed to the bearing surface to secure it against tipping and slipping.
- > The bearing surface must be plane and even.
- > The bearing surface must be designed to be able to carry the weight of the machine.
- > The bearing surface must be at least the same size as the machine.
- An output reduction is noticeable when installed at more than 1000 m above sea level. In this case, please contact us.
 - It is possible to install the machine on a firm base without anchoring. When installing on a substructure we recommend fixing with flexible buffers.





5.3 Connecting pipes

NOTICE

Material damage resulting from the forces and torques of the pipes acting on the unit that are too high!

If forces and torques during installation and operation are too high, the machine can be damaged.

- Only screw in pipes by hand.
- > If necessary, use flexible connections.

WARNING

Risk of injury due to closed exhaust air opening!

Closed, constricted or covered exhaust air openings can cause too high back pressure in the machine.

- Never close or constrict the exhaust air openings.
- Counter pressures on the outlet side are only permissible up to + 0.1 bars.
- > Prevent liquids from accumulating in the exhaust line.
- a) Remove the blind plug on the vacuum connection.
- b) Connect the pipes with the vacuum connection (Fig. 1- 3/A) on the suction flange (Fig. 1- 3/D).
- c) The discharged air can be freely blown out through the exhaust air hole (Fig. 1- 3/B).
- d) Check that the maximum back pressure is not exceeded!



The pumping capacity of the vacuum pump is reduced if the inlet pipe is too narrow and/or too long.

5.4 Filling with lubricating oil

- a) Fill the lubricating oil (for suitable types see the "Maintenance" section) via the oil filling point (Fig. 1- 3/H) between the max. and min. mark (Fig. 5).
- b) Close the oil filling point.

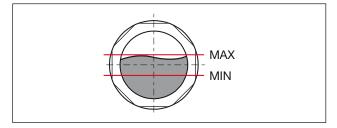


Fig. 5 Oil level



5.5 Connecting the motor

DANGER



Danger to life if the electrical installation has not been carried out professionally!

Installation that has not been carried out professionally or improperly can cause serious injuries or death. The whole electrical system can be destructed.

- ➤ The electrical installation must only be carried out by a qualified electrician observing EN 60204.
- The main switch has to be provided by the user.

NOTICE

Property damage due to wrong energy supply!

Wrong operating voltages, frequencies or currents can cause loss of power or damages to the machine.

- ➤ The conditions at the installation location must comply with the details on the motor data plate.
- Permissible tolerances:
 - ± 5 % voltage deviation
 - ± 2 % frequency deviation
- a) The motors comply with DIN EN 60034 and are in protection class IP 54 and insulation class B. The appropriate connection diagram is located in the motor's terminal box (not for the plug connection version). The motor data must be compared with the data of the existing mains network (current type, voltage, network frequency, permitted current value).
- b) Connect the motor via the motor protection switch (for safety reasons, a motor protection switch is required and the connecting cable must be installed via a cable fitting to provide strain relief). We recommend using motor protection switches with delayed switch off, depending on possible excess current. Temporary excess current can occur when the machine is started cold.





6 Commissioning and decommissioning

6.1 Commissioning

MARNING

Risk of injury due to improper operation!

Improper operation of the machine can cause serious or fatal injuries.

Strictly observe the safety instructions. Especially observe the safety instructions in chapter 2.

A CAUTION



Risk of injury due to hot surfaces!

When the machine is at operating temperature the surface temperatures on the components may rise to above 70 °C. This can cause burns.



- Do not touch hot surfaces (marked by warning signs).
- Wear suitable protective gloves, if necessary.

CAUTION

Risk of injury due to noise emission!

High sound pressure level can permanently damage hearing.



- > Observe measured sound pressure level, see chapter 9.
- When spending a long time in the vicinity of the running machine use ear protection to avoid permanent damage to hearing.

CAUTION

Risk of injury due to oil aerosols in the extracted air!

In spite of the air oil removing system separating the oil mist to a large extent, the extracted air contains a small residue of oil aerosols. Breathing in these aerosols all the time could damage your health.



- > Ensure that the installation room is well ventilated.
- ➤ When spending a long time in the vicinity of the running machine use respiratory protection to avoid health injury.



The operating ambient temperature is 10 – 40 °C and humidity should be less than 85 %.





6.1.1 Checking the rotation direction

NOTICE

Property damage due to wrong direction of rotation!

Rotating backwards for a longer time can damage the machine.

Use a phase sequence indicator to check the direction of rotation (clockwise rotating field).

The drive shaft direction of rotation is shown by the rotation direction arrow (Fig. 1-3/O).

- a) Start the motor briefly (max. two seconds) to check the direction of rotation. When looking at the motor fan, it must rotate anti-clockwise.
- b) After correcting the direction of rotation if necessary, start the motor again and stop it again after 2 minutes in order to top missing oil up to the upper edge of the sight glass (Fig. 1- 3/I). The filling point must not be open when the pump is running.

6.2 Decommissioning/ storing

Stop the machine

- a) Switch the machine off.
- b) If available close the cut off device in the suction and pressure pipe.
- c) Disconnect the machine from the electricity source.
- d) Depressurise the machine:
 - Open the pipes slowly.
 - ⇒ The pressure reduces slowly.
- e) Remove the pipes and hoses.
- f) Seal the connections for suction and discharge nozzles with adhesive foil.
- see also Section 3.2.1, Page 11

6.3 Re-commissioning

- a) Check the condition of the machine (cleanliness, cabling etc.).
- b) Drain the preserving agents.
- For installation see Section 5 Page 16
- For commissioning see Section 6.1 Page 19





7 Maintenance and repair

DANGER



Danger to life from touching live parts!

Touching live parts cause serious injuries or death.



> Before starting any maintenance work, disconnect the machine by actuation of the main switch or disconnection of the plug and secure it against accidental switching.



CAUTION



Risk of injury due to hot surfaces!

During maintenance there is the risk of burning on hot components of the machine. This can cause burns.



- Wait for the machine to cool down.
- Wear suitable protective clothes, if necessary.



7.1 **Ensuring operational safety**

Regular maintenance work must be carried out in order to ensure operational safety.

Maintenance intervals also depend on the operational demands on the machine.

With any work observe the safety instructions described in Section 2.8 "Safety instructions for installing, commissioning and maintenance".

The whole unit should always be kept in a clean condition.

7.2 Maintenance work

Interval	Maintenance to be carried out	Section
monthly	Check the pipes and screws for leaks and to ensure they are seated properly and if necessary seal again or tighten up.	_
monthly	Check the terminal box and cable inlet holes for leaks and if necessary re-seal.	
monthly	Clean the ventilation slots on the machine and the motor cooling ribs.	_
depending on how dirty the discharged medium is.	Clean intake air filter	7.2.1
daily	Check the oil level	7.2.2
500 h	First time oil change	
1500 – 3000 h	Change the oil	
1500 – 3000 h	Change the oil separator element	7.2.3



7.2.1 Air filtering

WARNING



Risk of injuries due to rotating parts!

If the suction flange has been removed, there will be the risk of injury on rotating parts when reaching in.

- > Before demounting of the suction flange, disconnect the pump from the power supply and secure it against accidental restart.
- Do not reach into the suction flange.
- > During disassembly/assembly make sure that not parts fall into the suction flange.



WARNING

Danger of injury when dealing with compressed air!

When the filter is blown off with compressed air, loose solid particles or powder dust swirling around may cause injury to the eyes. Inhaling can damage lungs.



Wear protective glasses and dust mask when cleaning the filter with compressed air.

NOTICE

Property damage due to insufficient maintenance of the air filter!

Performance of the machine is reduced by a polluted air filter and insufficient maintenance. This can cause damage of the machine.

- Regularly clean the mesh filter.
- Replace highly polluted or damaged mesh filters.

Depending on the pollution of the inlet medium, the mesh filter has to be cleaned more or less often by washing or blowing off or it must be replaced.

- a) Take off the suction flange (Fig. 1- 3/D) after releasing the screws.
- b) Remove and clean the mesh filter.
- c) Also check the non-return valve for contamination by removing it from the suction flange.

Re-assemble in reverse order.





7.2.2 Lubrication

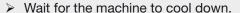
CAUTION



Risk of injury due to hot surfaces and lubricants!

During maintenance there is the risk of burning on hot components of the machine. This can cause burns.





Wear suitable protective clothes, if necessary.



CAUTION

Risk of injury due to slipping and falling!

The floor can be slippery due to leaked oil and cause slipping, tripping or falling.



- For oil change wear non-slip shoes.
- Remove leaked oil immediately.



Always change the oil when the machine is at operating temperature and in an atmospherically ventilated area. If it is not completely emptied, the refilling quantity is reduced.



If you are going to use another oil type, empty the oil removing device housing and oil cooler completely.



The waste oil must be disposed of in compliance with the local environmental protection regulations.

- a) Check the oil level in the sight glass (Fig. 1- 3/I) at least once a day, the oil level of the pump must always be visible between the max. and min. mark (Fig. 5).
- b) First oil change after 500 hours of operation. Subsequent oil changes after 1500 3000 hours of operation. Reduce the change intervals accordingly depending on how contaminated the discharged medium
- c) To refill the oil, switch off the machine and bleed to atmospheric pressure.

We recommend using Elmo Rietschle oils (also see Oil recommendation plate (Fig. 1- 3/M)) as operating agent. Elmo Rietschle oil types:

V-VGD 11/16: SUPER-LUBE 32 - Synthetic oil, for longer oil change intervals at high thermal oil load (e.g. ambient or intake temperatures above 30 °C, insufficient cooling, 60 Hz-operation).

V-VGD 21: SUPER-LUBE 46 - Synthetic oil, for longer oil change intervals at high thermal oil load (e.g. ambient or intake temperatures above 30 °C, insufficient cooling, 60 Hz-operation).

The viscosity of the oil used must comply with ISO VG 32 (V-VGD 11/16) or ISO VG 46 (V-VGD 21)as per **DIN ISO 3448.**

Also consider the safety data sheet of the oil type used.

If you want to change the oil type, please contact us.





7.2.3 Oil separator element



WARNING

Risk of injury and burns due to hot lubricants!

Heavily contaminated oil separator elements lead to increased pump temperatures and in extreme cases may cause the lubricating oil to ignite spontaneously. This can cause burns and can damage to the machine.

➤ Replace the oil separator element in time. It is depending on how contaminated the discharged medium is.

NOTICE

Property damage due to faulty maintenance of the oil separator element!

Faulty maintenance can cause damage of the machine.

> Ensure that the O-ring is correctly seated on the new oil separator element.

The oil separator element may be contaminated with particles of dirt when it has been running for a long time (power consumption and pump temperature increase). Replace the device every 1500 – 3000 operating hours because it is not possible to clean it.

Reduce the change intervals accordingly depending on how contaminated the discharged medium is.

- a) Remove the cover and the gasket after undoing the screws. Unscrew the oil separator element and replace.
- b) Before fitting lightly oil the O-ring on the new oil removing device and tighten it to 15 Nm. Re-assemble in reverse order.





7.3 Repair / Service

A DANGER



Danger to life from touching live parts!

Touching live parts cause serious injuries or death.



- Before starting any repair work, disconnect the machine by actuation of the main switch or disconnection of the plug and secure it against unexpected restart.
- > Repair works are only allowed to be done by authorised specialists.

For on site repair work the motor must be disconnected from the mains by a qualified electrician so that it cannot be started up again accidentally. For repairs use the manufacturer, its branch offices or authorised dealers. Please contact the manufacturer for the address of the service centre responsible for you (see Manufacturer's address).

WARNING

Risk of injury due to substances hazardous to health!

Due to contamination with hazardous substances and supplies during in the course of operation there is a high health risk for the repair personnel.

- ➤ For each machine that is sent to an Elmo Rietschle Service centre for inspection, maintenance or repair, a fully completed, signed declaration of harmlessness must be enclosed.
 - The declaration of harmlessness is part of the supplier's documentation.
- Before returning, properly clean the machine.

After a repair or re-commissioning, the actions listed in chapter 5 "Installation" and chapter 6 "Commissioning and decommissioning" are to be performed as in the first commissioning.



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8 Malfunctions: Causes and elimination

Fault	Cause	Troubleshooting	Important
Machine is switched off by the motor protection switch	Mains voltage/ Frequency does not correspond with the motor data	Check by qualified electrician	Section 5.5
	Connection to motor terminal board is not correct		
	Motor protection switch is not set correctly		
	Motor protection switch is triggered too quickly	Use a motor protection switch with an overload-dependent delayed switch off that takes into consideration the short term excess current at start up (version with short circuit and overload trigger as per IEC 60947-4-1 or VDE 0660 Part 102)	
	Vacuum pump or its oil is too cold	Note the ambient temperature and the intake temperature	Section 2.3
	The lubricating oil is too viscous	The oil viscosity must comply with ISO VG 32 or 46 as per DIN ISO 3448	Section 7.2.2
	The oil separator element is dirty.	Change the oil separator element	Section 7.2.3
	The back pressure is too high when the exhaust air is being discharged.	Check the hose or the pipe	Section 5.3
Suction capacity is insufficient	The suction pipe is too long or too narrow	Check the hose or the pipe	Section 5.3
	Leak on the suction side of the vacuum pump or in the system	Check the pipework and screw connections for leaks and to ensure that they are firmly seated.	Section 7.2
	The intake filter is dirty	Clean or replace the intake filter	Section 7.2.1
Final pressure (max. vacuum) is not reached	Leak on the suction side of the vacuum pump or in the system	Check the pipework and screw connections for leaks and to ensure that they are firmly seated.	Section 7.2
	Incorrect oil viscosity	The oil viscosity must comply with ISO VG 32 or 46 as per DIN ISO 3448	Section 7.2.2





Fault	Cause	Troubleshooting	Important
Machine gets too hot	Ambient or intake temperature is too high	Ensure it is being used properly	Section 2.3
	Cooling air supply is obstructed	Check environmental conditions	Section 5.1
		Clean ventilation slots	Section 7.2
	The lubricating oil is too viscous	The oil viscosity must comply with ISO VG 32 or 46 as per DIN ISO 3448	Section 7.2.2
	The oil separator element is dirty.	Change the oil separator element	Section 7.2.3
	The back pressure is too high when the exhaust air is being discharged.	Check the hose or the pipe	Section 5.3
Exhaust air contains visible oil mist	The oil separator element is not inserted correctly or the O ring is missing	Check that it is correctly seated	Section 7.2.3
	Unsuitable oil is being used	Use suitable types	Section 7.2.2
	The oil separator element is dirty.	Change the oil separator element	Section 7.2.3
	Ambient or intake temperature is too high	Ensure it is being used properly	Section 2.3
	Cooling air supply is obstructed	Check environmental conditions	Section 5.1
		Clean ventilation slots	Section 7.2



Tel. 071 918 60 60, Mail: v-g@prematic.ch



Fault	Cause	Troubleshooting	Important
The machine makes a abnormal noise	The pump housing is worn (chatter marks)	Repair by manufacturer or authorised workshop	Elmo Rietschle Service
(The blades making a hammering noise when starting from	Blades are damaged	Repair by manufacturer or authorised workshop	Elmo Rietschle Service
cold is normal if it disappears within two	Vacuum pump or its oil is too cold	Note the ambient temperature and the intake temperature	Section 2.3
minutes as the op- erating temperature increases)	The lubricating oil is too viscous	The oil viscosity must comply with ISO VG 32 or 46 as per DIN ISO 3448	Section 7.2.2
Water in lubricating oil	Pump sucks in water	Install water interceptor upstream of the pump	-
	The pump sucks in more water vapour than is suitable for its water vapour compatibility	Contact the manufacturer for increased gas ballast	_
	Pump only works for a short time and therefore does not reach its normal operating temperature	Let the pump continue to run with a closed suction side after extracting the water vapour until the water has evaporated from the oil	_

Please contact Elmo Rietschle Service for other malfunctions or those that cannot be eliminated.





9 Technical Data

V-VGD		11	16	21
Sound pressure level (max.) EN ISO 3744 Tolerance±3 dB(A)	dB(A) 50 Hz	62	65	65
Weight*	kg	11.5	16	19.5
Length*	mm	275	301	318
Width	mm	165	237.5	230
Height	mm	169	189	220
Ultimate vacuum	mbar (abs.)	2	2	1.5
Vacuum connection	mm	Ø 20	Ø 20	Ø 20
Correct amount of oil	I	0.25	0.45	0.45

^{*} The length and the weight may differ from the information listed here depending on the motor design.







Elmo Rietschle is a brand of Gardner Denver's Industrial Products Division and part of Blower Operations.