

## Operating Instructions

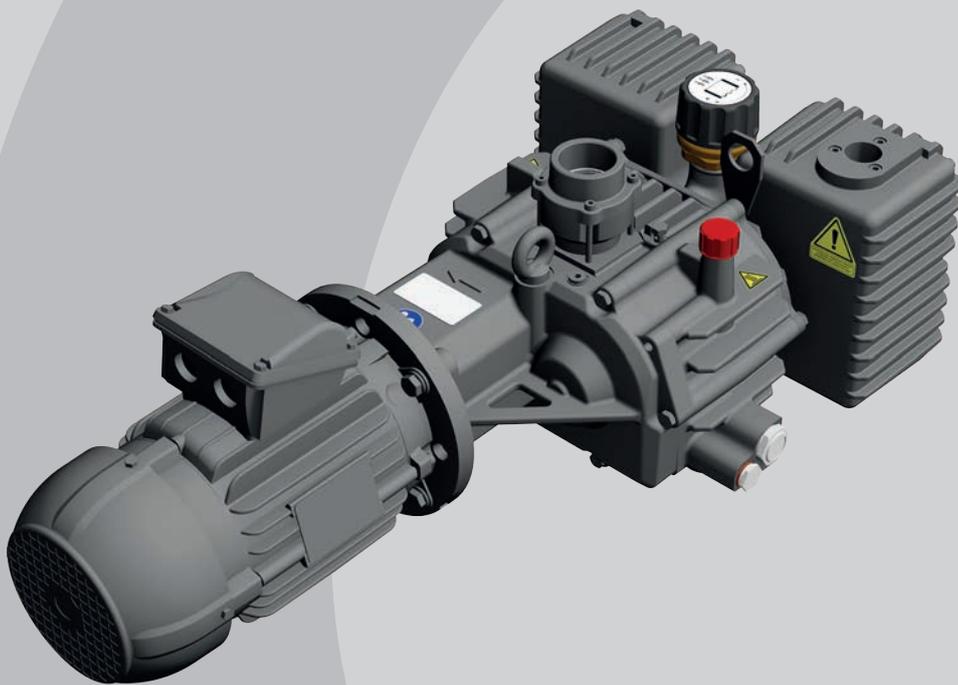
**C-VLR 62 | 122** Passive cooling

Vacuum pump



**Elmo  
Rietschle**

by Gardner Denver



**C-Serie  
C-Series**

Klaue  
Claw



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## Preface

### 1 Foreword

#### 1.1 Principles

These Operating Instructions:

- form a part of the following contactless claw vacuum pumps C-VLR 62 and C-VLR 122 with passive cooling
- Describes how to use them safely and properly in all life phases
- Must be available where the equipment is used.

#### 1.2 Target group

The target group for these instructions is technically trained personnel.

#### 1.3 Supplier documentation and accompanying documents

Document	Contents	No.
Supplier documentation	Operating Instructions	BA 882-PC
	Declaration of Conformity	C 0080
	Declaration of no-objection	7.7025.003.17
Spare parts list	Spare parts documents	E 882
Data sheet	Technical data and characteristic curves	D 882
Info sheet	Storage guideline for lubricants	I 100
	Storage guideline for machines	I 150
Manufacturer's declaration	EU Directive 2011/65/EU (RoHS II)	—

#### 1.4 Abbreviations

Fig.	Figure
C-VLR	Vacuum pump
m <sup>3</sup> /h	Suction capacity
mbar (abs.)	Final vacuum, operating pressure
CD	standard model
XD	model with a corrosion-protective coating

#### 1.5 Directives, standards, laws

See Declaration of Conformity.

## 1.6 Symbols and meaning

Symbol	Explanation
	Instructions, action
a), b),...	Instructions in several steps
	Results
	Reference
<p>General warning signs</p>   	<p>Warns of potential risk of injury</p> <p>Warns of electrical voltage</p> <p>Warns of hot surface</p>
<p>General prohibition signs</p>       	<p>Observe the Operating Instructions</p> <p>Wear eye protection</p> <p>Wear protective gloves</p> <p>Wear safety shoes</p> <p>Wear ear protection</p> <p>Use mask</p> <p>Disconnect the plant and secure it against unexpected restart</p>
	Information, note
	Protection of environment

### 1.7 Specialist terms and meaning

Term	Explanation
Machine	Pump and motor combination ready for connection
Motor	Pump drive motor
Vacuum pump	Machine for creating underpressure (vacuum)
Claw	Design or operating principle of the machine
Suction capacity	Vacuum pump volume flow related to the condition in the inlet connection
Final pressure (abs.)	The maximum vacuum that a pump reaches when the inlet opening is closed, indicated as absolute pressure
Permanent vacuum	Vacuum or the inlet pressure range, at which the pump operates in continuous operation. The permanent vacuum or inlet pressure is $\geq$ than the final vacuum and $<$ than the atmospheric pressure.
Noise emission	Noise emitted at a specific loading state indicated as a numeric value, 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 is 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 Labelling of warnings

Warning	Danger level	Consequences of non-observance
	Imminent danger	Death, severe bodily injury
	Possible imminent danger	Death, severe bodily injury
	Possible hazardous situation	Slight bodily injury
	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.

Observe the safety instructions in all chapters.

The operating instructions must be read by the responsible technical personnel / user 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/user. Instructions attached directly to the machine must be obeyed and must always remain legible. For example, this applies:

- Symbols for connections
- Data plate and motor data plate
- Information signs and warning plates

The user is responsible for observing local regulations.

### 2.3 Intended use

The machine is suitable for pumping, compressing or compressing of the following media:

- Standard model:  
All non-explosive, non-combustible, non-aggressive and non-poisonous dry gases and gas-air mixtures
- XD model:  
All non-explosive, non-combustible, non-aggressive and non-poisonous moist gases and gas-air mixtures

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

- Only operate the machine in technically perfect condition
- The machine must only be operated at an ambient temperature and inlet temperature of between 5 and 40 °C  
Please contact us for temperatures outside this range
- The permissible back pressure may not be exceeded (see chapter 5.3)

If used under critical conditions and/or in case of any doubts, contact the manufacturer. If this is not observed, this can cause personal injuries and machine failures.

### 2.4 Inadmissible operating modes

- Extracting, conveying and compressing of explosive, inflammable, aggressive or poisonous media, e.g. dust as per ATEX zone 20-22, solvents as well as gaseous oxygen and other oxidation agents, water vapour, water vapour (does not apply to the XD model), liquids or solids
- Installation and operation in environments and/or in dusty atmosphere that are at risk of explosion as per Zone 22
- Using the machine in non-commercial plants unless the necessary precautions and protective measures are taken in the plant
- Using the machine in areas with ionising radiation
- Modifications to machine and accessories
- Operation of the machine when it is only partially assembled

### 2.5 Personnel qualification 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, competences and monitoring of personnel
- All work must only be carried out by technical specialists:
  - Installation, commissioning, maintenance and inspection work
  - Works on the electrical system must only be done by electricians
- Personnel being trained to work on the machine must be supervised by technical specialists when working on the machine

### 2.6 Safety-conscious working

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
- Standards and laws in force

### 2.7 Safety instructions for the user

- Hot parts of the machine must not be accessible during operation or must be fitted with a guard
- Persons 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 come into contact with flammable materials.  
Risk of fire due to hot surfaces, output of hot pumped media or cooling air

## 2.8 Safety instructions for installation, commissioning and maintenance

- The user ensures 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 stands still and is secured against accidental switching on
- Strictly observe the procedure for decommissioning the machine described in the operating instructions
- Fit or start up safety and protective devices again immediately after finishing work. Before recommissioning, follow the instructions listed for commissioning
- Alteration works 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 can void liability for any consequences arising.
- Keep unauthorised people away from the machine

## 2.9 Guarantee terms

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

- Not intended use
- Nonobservance of 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**

### 3 Transport, storage and disposal

#### 3.1 Transport

##### 3.1.1 Unpacking and checking the as-delivered condition

- a) Unpack the machine on receipt and check for transport damage.
- b) Immediately notify the manufacturer of transport damages.
- c) Check the machine for oil leakages.
- d) Dispose of the packaging in accordance with the local regulations in force.

##### 3.1.2 Lift and transport



#### WARNING

#### 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 eye bolt are not permitted.
- Avoid impact stress.



- 1 Eyebolt
- 2 Lifting lug

Fig. 1 Lift and transport

- a) Tighten the eyebolt (Fig. 1/1) to the head contact.
- b) For lifting the machine, it must be suspended on the eyebolt (Fig. 1/1) and the lifting lug (Fig. 1/2) using the lifting device.  
For transport, put the machine in a transport crate or on a pallet. With this, secure the machine against tipping over and slipping away!

## 3.2 Storage

### NOTICE

#### Material damage caused by improper storage!

Improper storage can damage the machine.

The storage area must meet the following conditions:

- Dust-free
- Vibration free

### 3.2.1 Ambient conditions during storage

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



The machine must be stored in a dry environment with normal air humidity. It should not be stored for more than 6 months.

📄 See Info "Storage instructions", 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.

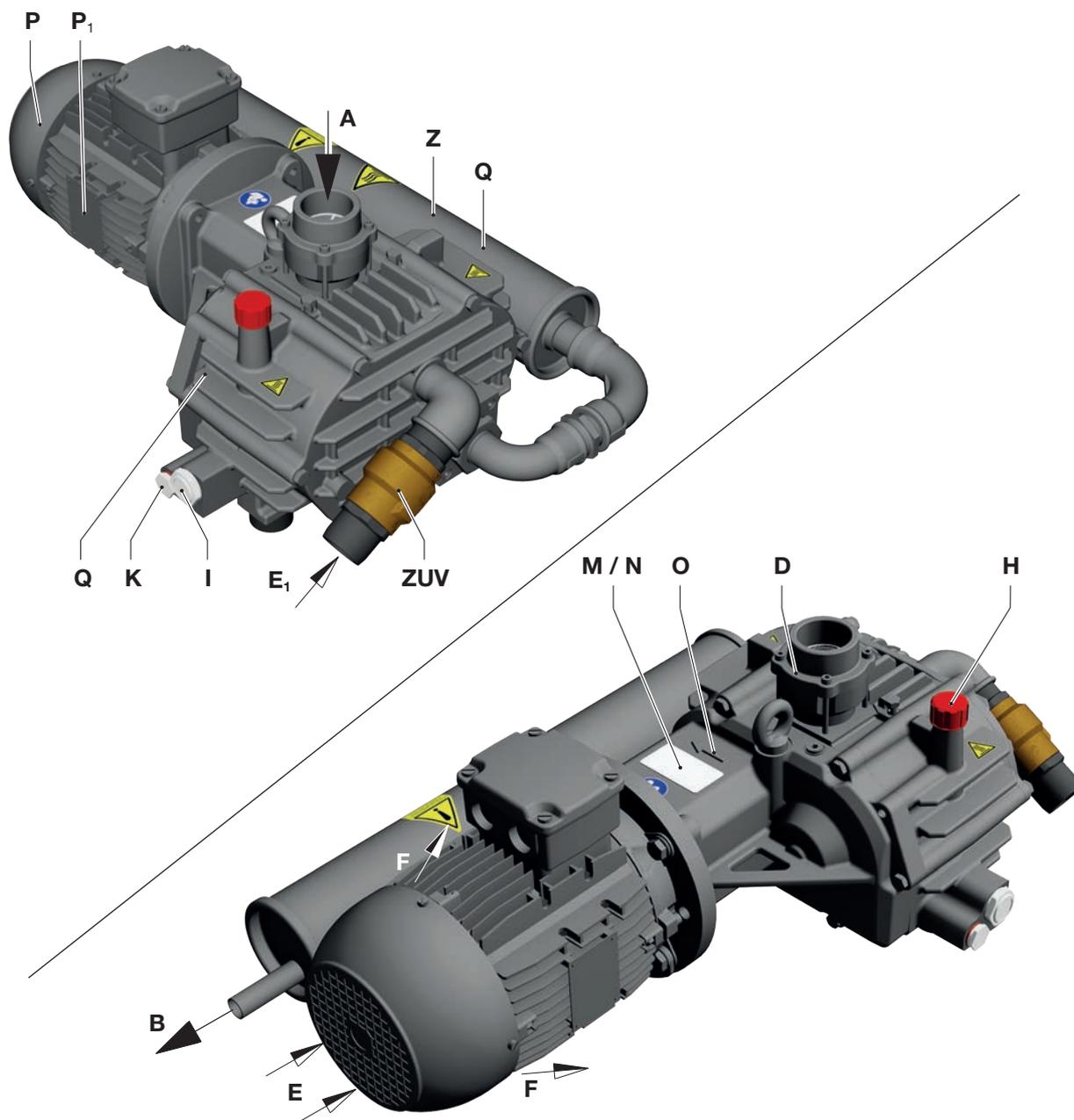
- Before disposal decontaminate the machine.
- Wear suitable protective clothing.

For disposing of observe the following items:

- a) Collect oils and grease separately and dispose of in accordance with the local regulations in force.
- b) Do not mix solvents, cold cleaning agent 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 (marked as such in the spare parts list) are special waste and must be disposed of in accordance with the national and local waste laws.

## 4 Product overview and functioning

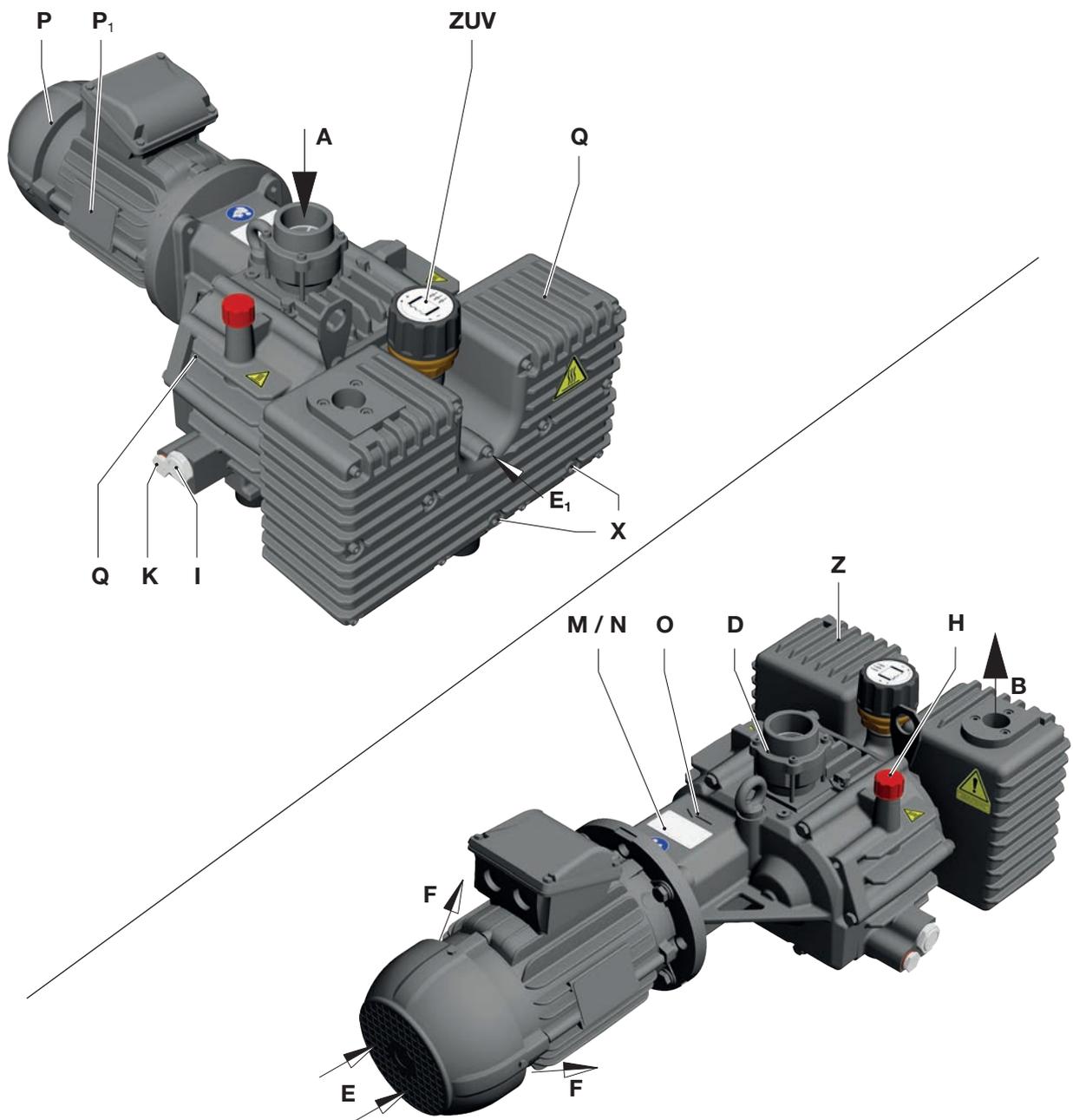
### 4.1 Product overview C-VLR 62



- |                      |                                    |                      |                             |
|----------------------|------------------------------------|----------------------|-----------------------------|
| <b>A</b>             | Vacuum connection G 1½             | <b>M</b>             | Oil recommendation plate    |
| <b>B</b>             | Exhaust air outlet                 | <b>N</b>             | Data plate                  |
| <b>D</b>             | Inlet flange with non-return valve | <b>O</b>             | Direction of rotation arrow |
| <b>E</b>             | Cooling air inlet                  | <b>P</b>             | Drive motor                 |
| <b>E<sub>1</sub></b> | Cooling air inlet ZUV              | <b>P<sub>1</sub></b> | Motor data plate            |
| <b>F</b>             | Cooling air outlet                 | <b>Q</b>             | Hot surfaces > 70 °C        |
| <b>H</b>             | Oil filling point                  | <b>Z</b>             | Exhaust silencer            |
| <b>I</b>             | Oil sight glass                    | <b>ZUV</b>           | Vacuum relief valve         |
| <b>K</b>             | Oil discharge point                |                      |                             |

Fig. 2 Vacuum pump C-VLR 62 with active cooling (XD is identically structured)

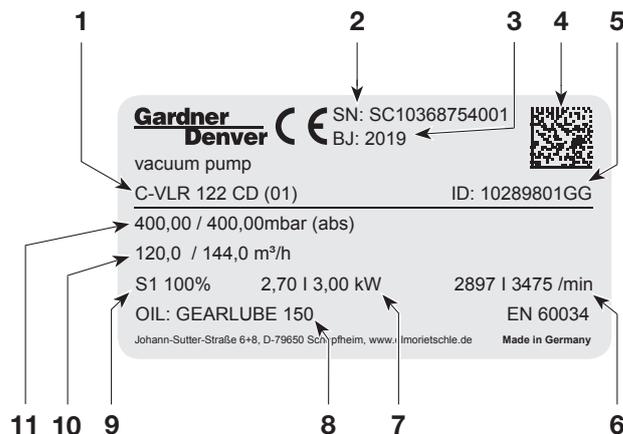
## 4.2 Product overview C-VLR 122



- |                      |                                    |                      |                             |
|----------------------|------------------------------------|----------------------|-----------------------------|
| <b>A</b>             | Vacuum connection G 1½             | <b>M</b>             | Oil recommendation plate    |
| <b>B</b>             | Exhaust air outlet G 1             | <b>N</b>             | Data plate                  |
| <b>D</b>             | Inlet flange with non-return valve | <b>O</b>             | Direction of rotation arrow |
| <b>E</b>             | Cooling air inlet                  | <b>P</b>             | Drive motor                 |
| <b>E<sub>1</sub></b> | Cooling air inlet ZUV              | <b>P<sub>1</sub></b> | Motor data plate            |
| <b>F</b>             | Cooling air outlet                 | <b>Q</b>             | Hot surfaces > 70 °C        |
| <b>H</b>             | Oil filling point                  | <b>X</b>             | Condensate drain            |
| <b>I</b>             | Oil sight glass                    | <b>Z</b>             | Exhaust silencer            |
| <b>K</b>             | Oil discharge point                | <b>ZUV</b>           | Vacuum relief valve         |

Fig. 3 Vacuum pump C-VLR 122 with active cooling (XD is identically structured)

### 4.3 Data plate



- |  |  |
|--|--|
| <p><b>1</b> Type / size (mechanical version)</p> <p><b>2</b> Serial number</p> <p><b>3</b> Year of construction</p> <p><b>4</b> Data matrix barcode</p> <p><b>5</b> Item No.</p> <p><b>6</b> Speed 50 Hz / 60 Hz</p> | <p><b>7</b> Motor output 50 Hz / 60 Hz</p> <p><b>8</b> Recommended type of oil</p> <p><b>9</b> Operating mode</p> <p><b>10</b> Pumping capacity 50 Hz / 60 Hz</p> <p><b>11</b> Final pressure (abs.) 50 Hz / 60 Hz</p> |
|--|--|

Fig. 4 Data plate

The following information is encoded as barcode:

- Material number (MA)
- Production order (PR)
- Serial Number (SC)

### 4.4 Description

The C-VLR xx2 type with passive cooling is a double shaft rotary piston vacuum pump in which the claws roll off against each other contact free and dry. The counter-rotating claw rotors are synchronised by a gear pair in the gearbox. The gears of the synchronized gearbox and the bearings are lubricated with oil. These components are in a gear case that also contains the oil supply. Oil conveying device always ensures that the bearings and the gears are sufficiently supplied with oil at all permissible speeds. The gearbox and the compression chamber are separated from each other by special seals.

It is driven via a coupling by a flanged, three-phase standard motor.

The VLR xx2 has a connection flange on the inlet side and an exhaust silencer on the pressure side (Fig. 2- 3/Z). An integral non-return valve prevents the evacuated system from being ventilated after the pump has stopped. This non-return valve includes a mesh filter to avoid damages due to pollution. A vacuum relief valve is incorporated into the machine.

## 4.5 Fields of application

The claw vacuum pumps are suitable for the evacuation of closed systems or for a continuous vacuum within the following inlet pressure ranges: **400 - 1000 mbar (abs.)**

The maximum suction capacity with unrestricted suction is **62 m<sup>3</sup>/h** or **120 m<sup>3</sup>/h** at **50 Hz**.  
Data sheet **D 882** shows the dependency of the pumping capacity on the intake pressure.

XD model: The vacuum pump is equipped with a corrosion-protective coating and is suitable for conveying water-damp gases (water vapour).



If the unit is switched on more frequently (at regular intervals of approx. 10 times per hour) or at higher ambient temperatures and inlet temperatures, excess temperature limit of the motor winding and the bearings may be exceeded.  
Contact the manufacturer regarding such operating conditions.



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

## 4.6 Accessories

The following accessories are options and on request available from Gardner Denver.

### 4.6.1 Intake filter

The intake filter serves for the protection of the machine from dust and other solids in the process gas.  
The intake filter is available with a paper filter or a polyester filter.

### 4.6.2 Vacuum relief valve

The vacuum relief valve limits the final pressure of the pump. The vacuum relief valve is set at the factory for the lowest permissible final pressure (see data plate of the pump).

### 5 Installation

#### 5.1 Preparation of installation

Ensure the following conditions:

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



Oil filling point (Fig. 2- 3/H), oil sight glass (Fig. 2- 3/I) and oil drain (Fig. 2- 3/K) must easily be available.

The cooling air inlets (Fig. 2- 3/E) and the cooling air outlets (Fig. 2- 3/F) must be **at least 30 cm away** from the adjacent walls. Cooling air coming out must not be sucked in again.

#### 5.2 Installation



##### WARNING



##### Risk of burns 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 serious burns. Highly flammable materials can catch fire.

- Install the pump in a way that touching of hot surfaces (mainly silencer and pipelines) is excluded.
- If necessary, barriers or protective grating must be installed.
- Pumps may not be installed near flammable or highly flammable materials.



##### CAUTION

##### Burns due to hot exhaust gases!

Place the freely blowing machine in a way that hazards due to hot exhaust gases are prevented.

##### 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: 8° in all directions).
- Secure the machine against tipping over and falling.
- The floor must be plane and even.
- The bearing surface must be designed to be able to carry the weight of the machine.
- If a non-return valve is integrated in the pump, it may not be removed.



An output reduction is noticeable when installed at more than 1000m 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 sub-structure we recommend fixing it with flexible buffers.

### 5.3 Connection of pipes

#### NOTICE

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

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.

#### CAUTION

#### Risk of injury due to closed exhaust air opening!

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

- Never close or restrict the exhaust air openings.
- Do not install any blocking devices.
- Maximum permissible back pressure: +50 mbar  
If the back pressures are higher due to the process, please contact us.
- Prevent liquids from accumulating in the exhaust line.
- Regularly check the connected exhaust lines for pollution.

- a) Remove the blind plug from the vacuum connection.
- b) Connect the pipes with the vacuum connection (Fig. 2-3/A).
- c) The exhausted air can be blown out through the exhaust air outlet (Fig. 2-3/B) or conducted away using a hose or pipeline.  
To avoid distorting in the piping system, we recommend using compensators.
- d) Check that the maximum back pressure is not exceeded!



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

### 5.4 Check lubricating oil

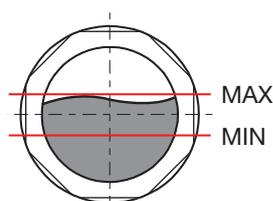


Fig. 6 Oil level

- a) Check the lubricating oil level through the oil sight glass (Fig. 23/I) and top up, if necessary.
- b) Fill the lubricating oil for the gear wheels and bearings at the oil filling point (Fig. 2-3/H) up to the middle of the sight glass (Fig. 2-3/I).

Oil change and suitable types: see chapter 7.2.1 "Change the oil", page 24

### 5.5 Connect to the energy supply network

#### DANGER



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

Installation that has not been carried out professionally or properly 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:
  - $\pm 5\%$  voltage deviation
  - $\pm 2\%$  frequency deviation

#### 5.5.1 Connection of motor

- a) Please find the electrical motor data on the data plate (Fig. 23/N) or the motor data plate (Fig. 23/P<sub>1</sub>). The motors comply with DIN EN 60034 and are designed in protection class IP 55 and insulation class F. The appropriate connection diagram is located in the terminal box of the motor (not existing for the version with plug connection). Compare the motor data with the data of the existing mains network (current type, voltage, network frequency, permitted current value).
- b) Connect motor via motor protection circuit breaker (For strain relief provide for a screwed cable connection to connect the connecting cable).  
We recommend using motor protection circuit breakers with delayed switch off, depending on a possible excess current. Temporary excess current can occur when the machine is started under cold conditions.

### 5.6 Vacuum pump without vacuum relief valve (ZUV)

#### NOTICE

#### **Property damage caused by improper installation!**

Exceeding of the permissible end pressure can damage the machine.

- In case of pumps that have been delivered without a vacuum relief valve (ZUV) the user has to take measures that protect the pump from impermissible end pressures. The permissible end pressure is specified on the data plate.

## 6 Commissioning and decommissioning

### 6.1 Start-up



**WARNING**

#### **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 .



**WARNING**



#### **Risk of burns on hot surfaces!**

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

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



**WARNING**

#### **Risk of injury due to drawing in and trapping!**

Due to the high suction capacity possibly parts of the body are drawn in the inlet connection and injured.

- Do not put your hands onto the inlet connection to check the suction.
- By barriers or keeping sufficient distance make sure that parts of the body can be drawn into the inlet connection.



**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.

**NOTICE**

#### **Property damage due to insufficient cooling!**

If the cooling air flow is reduced or interrupted, cooling of the machine cannot be ensured. This can cause reduced performance or blackout failure of the machine and damage the machine.

- Operation is only allowed with sufficient cooling air quantity.
- Make sure that the cooling air flow is not interrupted.

### 6.1.1 Check the rotation direction



**CAUTION**

#### **Risk of injury due to wrong direction of rotation!**

Rotating backwards for a longer time can cause injuries due to drawing in and can damage the machine.

- Use a phase sequence indicator to check the direction of rotation (**clockwise**).
- Keep a distance of 1 m to outlet and inlet connections.

The drive shaft direction of rotation is shown by the arrow for the direction of rotation (Fig. 2- 3/O) on the motor flange.

- Start the motor briefly (max. two seconds) to check the direction of rotation. When looking at the motor blower, it must rotate counter-clockwise.

## 6.2 Decommissioning

### 6.2.1 After-run

Before putting the pump out of operation for more than 2 hours or before decommissioning of the vacuum pump, remove moisture and pollution from the pump by running the vacuum pump at **-700 mbar (abs.)** for at least **15 - 30 minutes** with dry air.



**CAUTION**

#### **Risk of injury due to hot condensate!**

If condensate is discharged manually, this can cause burns.



- Do not discharge the condensate manually.
- If there are any condensate drains on the machine, allow the machine to cool down before drain off the condensate.
- Wear protective gloves.

**NOTICE**

#### **Property damage due to formation of condensate and impurities!**

Due to increased condensate formation and impurities, deposits may adhere to the rotors and the compressor casing after switching off the machine, preventing the start-up when restarting it. Condensate and impurities can cause damage to the machine.

- Before the decommissioning of the machine, drain off the condensate.
- Regularly and depending on the application, discharge the condensate from the silencer through the condensate drain (Fig. 3/X).



Depending on the use case, we recommend letting the vacuum pump run after with purging gas. Contact the manufacturer regarding such operating conditions.

### 6.2.2 Decommissioning of the machine

- a) Switch the machine off and allow it to cool down.
  - b) If available, close the cut-off device in the inlet and outlet pipes.
  - c) Disconnect the machine from the power supply.
  - d) Depressurise the machine:  
Open the pipes slowly.  
⇒ The pressure reduces slowly.
  - e) Remove the pipes and hoses.
  - f) Drain the condensate from the silencer (VLR 122).
  - g) Seal the connections for inlet and outlet stubs using adhesive foil.
- 📖 See also chapter 3.2.1, page 11

### 6.3 Recommissioning

- a) Check the condition of the machine (cleanliness, cabling etc.).
- 📖 For installation see chapter 5, page 16
- 📖 For commissioning see chapter 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.

### WARNING



#### **Risk of burns on hot surfaces and operating agents!**

During maintenance, there is the risk of burns on hot components and hot operating agents of the machine. This can cause serious burns.

- Wait for the machine to cool down.
- Before maintenance and repair works allow the machine to cool down completely.

### CAUTION

#### **Risk of injury due to missing safety devices!**

Missing safety devices can cause injuries.

- Safety devices as well as safety guards on motor fans and ventilators may not be removed.

### 7.1 Ensure 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.

For all works, observe the safety instructions described in chapter 2.8 “Safety instructions for installation, commissioning and maintenance” .

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

## 7.2 Maintenance tasks

Interval	Maintenance activities	Chapter
Depending on the application, at least monthly	Check the pipes and screws for leaks and ensure their tight fit and if necessary re-seal or re-tighten.	—
	Check the terminal box and cable inlet holes for leaks and if necessary re-seal.	—
	Clean the ventilation slots on the machine and the motor cooling ribs.	—
	Check the oil level	7.2.1
	Check, clean, and replace the air filters, if necessary	7.2.2
	Drain the condensate from the silencer (only VLR 122)	6.2.1
20,000 h	<p>Oil change</p> <p>The oil change interval strongly depends on how the machine is loaded (operating time, operating conditions, etc.) and the type of oil used. Extreme load can reduce the lifetime of oil to up to 5,000 hours.</p> <p>The specified interval of 20,000 h only applies to oil that has been delivered or is approved by Elmo Rietschle.</p>	7.2.1
At least 1 x per year	Check couplings for wear	7.2.3
40,000 h	General overhaul of the machine (Elmo Rietschle Service)	—

### 7.2.1 Change the oil

#### 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.



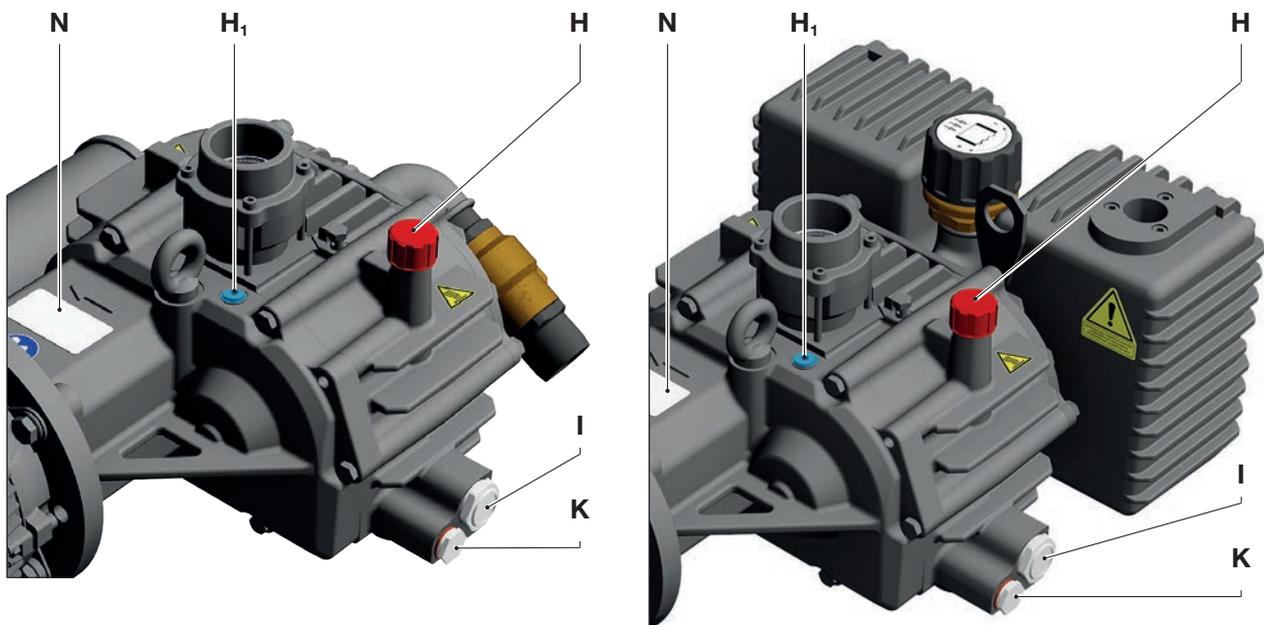
If it is not completely emptied, the refilling quantity is reduced.

If you change the type of oil, empty the oil tank completely.

A minimum oil quantity may escape from the vent screw due to pressure compensation.  
If larger quantities of oil escape, wash the internal filter of the vent screw.



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



- H Oil filling point
- H<sub>1</sub> Vent screw
- I Oil sight glass

- K Oil discharge point
- N Data plate (recommended type of oil)

Fig. 7 Change the oil

#### Check the oil level:

- Check the oil level in the sight glasses (Fig. 7/I) every month.
- To refill the oil, switch off the machine and bleed to atmospheric pressure.

**Change the oil:**

Change oil after every 20,000 operating hours.

- a) Switch the machine off, relieve it to atmospheric pressure and allow the pump to cool down.
- b) Open the vent screw (Fig. 7/H<sub>1</sub>), open the oil discharge point (Fig. 7/K) and completely discharge the used oil.
- c) Close the oil discharge point (Fig. 7/K) and fill in new oil through the oil filling point (Fig. 7/H). Check the oil level in the sight glasses (Fig. 7/I).
- d) Re-close the vent screw.

We recommend using Elmo Rietschle oils (also see Oil data plate (Fig. 7/N)) as operating agent. Elmo Rietschle oil type:

GEAR-LUBE 150 – Synthetic oil, highly loadable with high resistance to aging and with excellent wear protection

The viscosity of the oil used must comply with ISO VG 150 as per DIN 3448.  
Also consider the safety data sheet of the oil type used.

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

### 7.2.2 Air filter

#### **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**

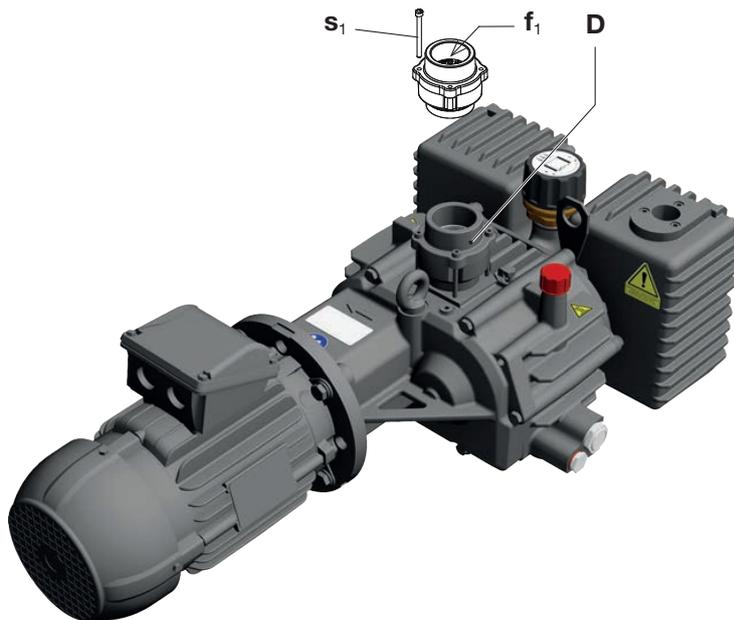
#### **Property damage due to insufficient maintenance of the air filter!**

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

- Regularly check and clean the integrated air filters.
- Replace highly polluted or damaged air filters.

### Mesh filter

Clean or replace the mesh filter by washing or blowing off every month, or more often depending on the pollution of the sucked in medium.



D Inlet flange  
f<sub>1</sub> Mesh filter

s<sub>1</sub> Screws

Fig. 8 Air filter

#### **WARNING**

#### **Risk of injuries due to rotating parts!**

There will be the risk of injury on rotating parts when reaching in the inlet flange.

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

- a) Take off the inlet flange (Fig. 8/D) after releasing the screws (Fig. 8/s<sub>1</sub>).
- b) Clean the mesh filter (Fig. 8/f<sub>1</sub>).

Also check the valve seat for contamination.

Re-assemble in reverse order.

### Intake filter (accessories)

Clean the filter cartridge of the intake filter every month or more often, depending on pollution, by blowing off from the inside to the outside.

In spite of cleaning the filter its separation efficiency will continue to deteriorate. Therefore the filter should be replaced every six months.

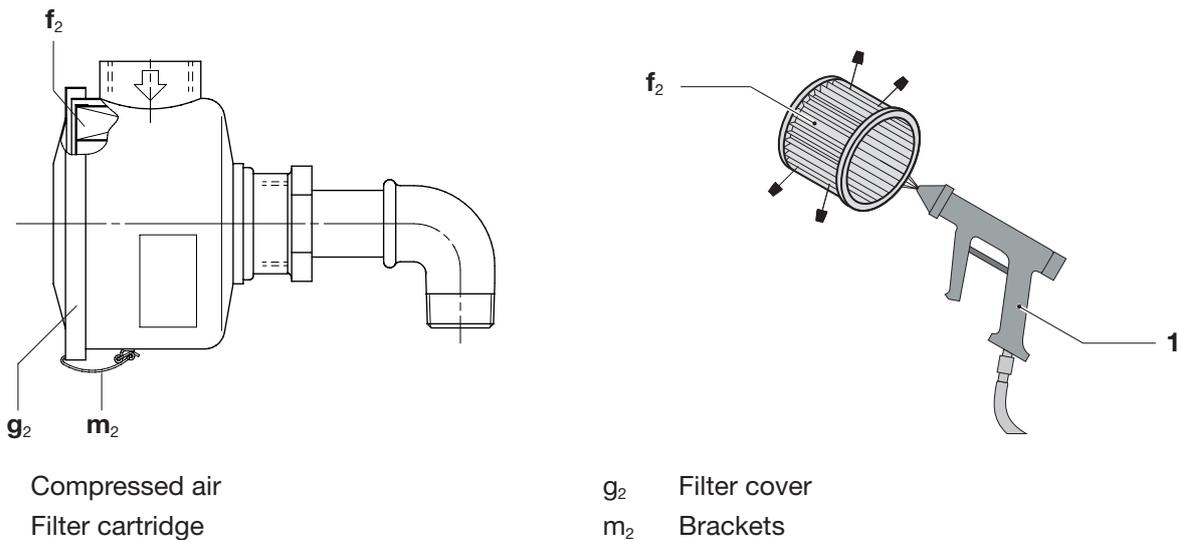


Fig. 9 Intake filter

- a) Release the brackets (Fig. 9/m<sub>2</sub>) on the filter cover (Fig. 9/g<sub>2</sub>).
- b) Remove the filter cartridge (Fig. 9/f<sub>2</sub>) from the filter and clean or replace.
- c) Re-insert the filter cartridge in the filter and fasten the filter cover (Fig. 9/g<sub>2</sub>) with the brackets (Fig. 9/m<sub>2</sub>).

### 7.2.3 Coupling

#### NOTICE

#### Property damage due to defective coupling sprocket!

Defective sprockets can cause breaking of the rotor shaft and blackout failure of the machine.

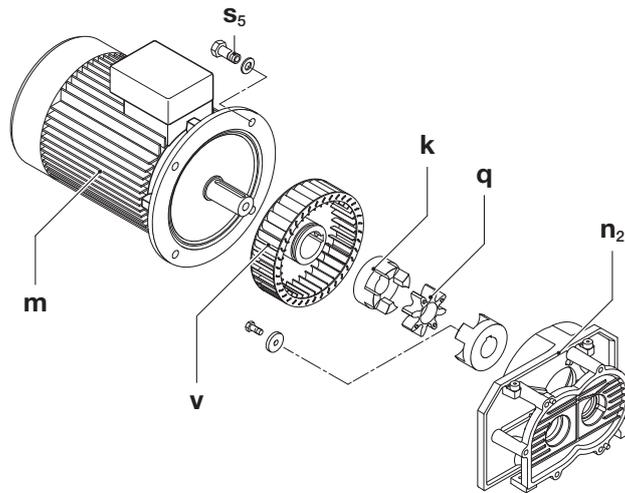
- Regularly check the coupling tooth for wear.

#### NOTICE

#### Property damage due to frequent starting and high ambient temperature!

Frequent starting and high ambient temperature reduces the lifetime of the sprocket.

- Regularly check the coupling tooth for wear.



**k** Coupling half on the motor side  
**m** Motor  
**n<sub>2</sub>** Fan housing

**q** Coupling sprocket  
**s<sub>5</sub>** Screws  
**v** Fan

Fig. 10 Coupling

The coupling sprocket (Fig. 10/q) is subject to wear and must be checked regularly (at least 1 x per year).

- Switch the motor off and secure it against unexpected restart.
- Hook the motor (Fig. 10/m) in through the lifting lug using a lifting gear.
- Release the screws (Fig. 10/s<sub>5</sub>) on the motor flange and axially pull the motor with the half of the coupling on the motor side (Fig. 10/k) off the fan housing (Fig. 10/n<sub>2</sub>).
- Check the sprocket (Fig. 10/q). If the sprocket is damaged or worn, replace it.
- The fan (Fig. 10/v) should also be checked for damage from time to time and replaced if necessary.

Re-assemble in reverse order.

### 7.3 Repair/ service

#### DANGER



#### **Danger to life from touching live parts!**

Touching of 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.

#### WARNING

#### **Risk of injury due to substances hazardous to health!**

Due to contamination with hazardous substances and operating agents during 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 No Objection is part of the supplier's documentation.
- Before returning, properly clean the machine.

For repairs contact the manufacturer, its branch offices or authorised dealers.

Please contact the manufacturer for the address of the authorized service centre (see manufacturer's address at the rear side).

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.

### 7.4 Spare parts

#### **NOTICE**

#### **Property damage due to wrong or defective spare parts!**

Wrong or defective spare parts can cause malfunctions or blackout failure of the machine.

- Only use original spare parts or parts approved by the manufacturer.
- The use of other parts may revoke liability or guarantee for any resulting consequences.

#### **Order spare parts according to:**

- **List of spare parts:**  
E 882 → C-VLR 62 | 122 passive cooling
  - Download the PDF file:  
<http://www.gd-elmorietschle.com>  
→ Downloads
  - Wearing parts and sealings are separately listed.
- **Website:**  
<http://www.service-er.de>
  - Select type, size and design.

## 8 Malfunions: Causes and elimination

Malfunion	Cause	Elimination	Note
The machine is switched off by the motor protection switch	Mains voltage/ Frequency does not correspond with the motor data	Get it checked by an electrician	Chapter 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 turn-off delay that considers the short excess current at start up (version with short circuit and overload trigger as per VDE 0660 Part 102 or IEC 60947-4-1)	
Suction capacity is insufficient	Air filter is polluted	Clean / replace the air filter	Chapter 7.2.2 Chapter 7.4
	The inlet pipe is too long or too narrow	Check the hose and/or the pipe	Chapter 5.3
	Machine or system leaking	Check the pipework and screw connections for leaks and check for tight fit	Chapter 7.2
Final pressure (max. vacuum) is not reached	Machine or system leaking	Check the pipework and screw connections for leaks and check for tight fit	Chapter 7.2
	Air filter is polluted	Clean / replace the air filter	Chapter 7.2.2 Chapter 7.4
Machine gets too hot	Ambient or inlet temperatures too high	Ensure proper use	Chapter 2.3
	Cooling air supply is obstructed	Check ambient conditions	Chapter 5.1
		Clean ventilation slots	Chapter 7.2
The machine makes a strange noise	Deposits on the rotary piston	Clean the working space and the rotary piston	Elmo Rietschle Service
Please contact Elmo Rietschle Service for other malfunctions or those that cannot be eliminated.			

## 9 Technical Data

C-VLR			62	122
Sound pressure level (max.) EN ISO 3744 Tolerance ± 3 dB(A)	dB(A)	50 Hz	79	–
		60 Hz	82	–
Sound power level	dB(A)	50 Hz	85	–
		60 Hz	85	–
Weight *	kg		70	90
Length *	mm		707	776
Width	mm		439	378
Height	mm		277	277
Vacuum connection			G 1 ½	
Oil filled volume	l		0.43	
Rated voltage 3~	V	50 Hz	230 / 400 V ± 10 %	
		60 Hz	265 / 460 V ± 10 %	–
Current consumption	A	50 Hz	4.89 / 2.81	–
		60 Hz	4.84 / 2.79	–
Motor output	kW	50 Hz	1.25	–
		60 Hz	1.5	–

\* Length and weight may differ from the information listed here depending on the motor manufacturer.

Please find more technical data in the data sheet **D 882**

- Download the PDF file:  
**D 882** → C-VLR 62 | 122 Passive cooling
  - Download the PDF file:  
<http://www.gd-elmorietschle.com>  
→ Downloads



Subject to technical changes!



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**Gardner**  

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