

## Original Operating Instructions

### C-VLR 301 (F001), (F002)

vacuum pump



**C-Serie**  
**C-Series**  
Klaue  
Claw



## Table of contents

<b>1</b>	<b>Foreword</b>	<b>4</b>
1.1	Principles	4
1.2	Target group	4
1.3	Supplier documentation and accompanying documents	4
1.4	Abbreviations	4
1.5	Directives, standards, laws	4
1.6	Symbols and meaning	5
1.7	Technical terms and meaning	5
1.8	Copyright	5
<b>2</b>	<b>Safety</b>	<b>6</b>
2.1	Warning instruction markings	6
2.2	General	6
2.3	Designated use	7
2.4	Unacceptable operating modes	7
2.5	Personal qualifications and training	8
2.6	Safety-conscious work	8
2.7	Safety notes for the operator	8
2.8	Safety instructions for installing, commissioning and maintenance	9
2.9	Guarantee conditions	9
<b>3</b>	<b>Transport, storage and disposal</b>	<b>10</b>
3.1	Transportation	10
3.1.1	Unpack and check the delivery condition	10
3.1.2	Lifting and transporting	10
3.2	Storage	11
3.2.1	Ambient conditions for storage	11
3.3	Disposal	11
<b>4</b>	<b>Set up and operation</b>	<b>12</b>
4.1	Setup	12
4.1.1	Data plate	14
4.2	Description	14
4.3	Areas of application	14
<b>5</b>	<b>Installation</b>	<b>15</b>
5.1	Preparing for installation	15
5.2	Installation	15
5.3	Connecting pipes	16
5.4	Connecting the drive	17
<b>6</b>	<b>Commissioning and decommissioning</b>	<b>18</b>
6.1	Commissioning	18
6.1.1	Checking the rotation direction	19
6.1.2	Post-run	19
6.2	Decommissioning/ storing	20
6.3	Re-commissioning	20

<b>7</b>	<b>Maintenance and repair. . . . .</b>	<b>21</b>
7.1	Ensuring operational safety . . . . .	21
7.2	Maintenance work . . . . .	21
7.2.1	Changing the oil . . . . .	22
7.2.2	Air filtering. . . . .	23
7.2.3	Coupling . . . . .	25
7.2.4	Integrated frequency converter . . . . .	26
7.3	Repair/ Service. . . . .	26
7.4	Spare parts. . . . .	27
<b>8</b>	<b>Malfunctions: Causes and elimination. . . . .</b>	<b>28</b>
<b>9</b>	<b>Technical Data . . . . .</b>	<b>29</b>

# 1 Foreword

## 1.1 Principles

These operating instructions:

- are a part of the following contact free running claw vacuum pumps C-VLR 301 (15).
- describe 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 specialists.

## 1.3 Supplier documentation and accompanying documents

Document	Contents	No.
Supplier documentation	Operating Instructions C-VLR 301 (15)	BA 88570--EN
	Declaration of Conformity	C 0080-EN
	Declaration of harmlessness	7.7025.003.17
	Operating instructions for frequency inverter	610.00260.40.000-EN
Spare parts' list	Spare parts document	E 885
Data sheet	Technical data and graphs	D 885-78
Info sheet	Storage guidelines for machines	I 150
Manufacturer's declaration	EU Directive 2002/95/EG (RoHS)	—




## 1.4 Abbreviations

Fig.	Figure
C-VLR	vacuum pump
m <sup>3</sup> /h	pumping capacity
mbar (abs.)	Final vacuum, operating vacuum

## 1.5 Directives, standards, laws

See Conformity Declaration

## 1.6 Symbols and meaning

Symbol	Explanation
▷	Condition, pre-requisite
####	Instructions, action
a), b),...	Instructions in several steps
⇒	Results
 [-> 14]	Cross reference with page number
	Information, note
	Safety symbol Warns of potential risk of injury Obey all the safety instructions with this symbol in order to avoid injury and death.

## 1.7 Technical terms and meaning

Term	Explanation
Machine	Pump and motor combination ready to be connected
Motor	Pump drive motor
Frequency converter	Frequency inverter makes possible infinitely variable of the speed
Vacuum pump	Machine to create a vacuum
Claw	Machine's design or active principle
Pumping 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 $\geq$ 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 if you do not follow all of this documentation.

### 2.1 Warning instruction markings

Warning	Danger level	Consequences if not obeyed
 <b>DANGER</b>	immediately imminent danger	Death, severe bodily injury
 <b>WARNING</b>	possible imminent danger	Death, severe bodily injury
 <b>CAUTION</b>	possible hazardous situation	Slight bodily injury
 <b>NOTICE</b>	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 and motor 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 suction temperature of between 5 and 40°C. Please contact us for temperatures outside this range.
- the machine may convey, compress or extract the following media:
  - all non-explosive, non-inflammable, non-aggressive and non-poisonous dry gases and gas air mixtures
- the machine must only be operated at speed- and frequency range according to the data plate (Fig. 2/N<sub>1</sub>)

## **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, water vapour, liquids or solid materials
- must not be operated in rooms that are at risk of explosion and in Zone 22 dusty atmospheres that are at risk of explosion
- 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
- modifications to the machine, default settings of the frequency converter 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 as well as operating Instructions frequency converter
- 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 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

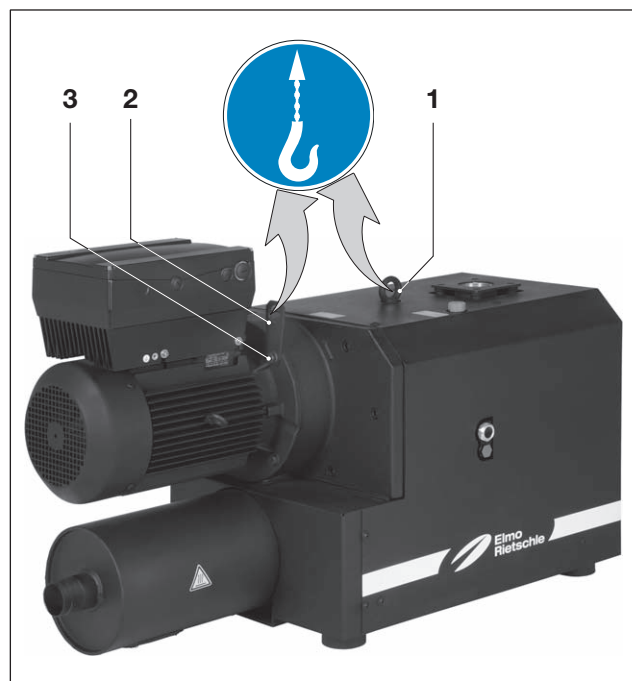


Fig. 1 Lifting and transporting

- 1 Eyebolt
- 2 Transport shackle
- 3 Fixing screw



#### WARNING

**Death or limbs crushed as a result of the items being transported falling or tipping over**

- ▷ Remember the centre of gravity when transporting with a forklift truck or platform lift truck.
- ▷ When transporting with the lifting device remember:
  - a) Select the lifting device suitable for the total weight to be transported.
  - b) Ensure that the machine cannot tip and fall.
  - c) Do not stop under a suspended load.
  - d) Put the goods to be conveyed on a horizontal base.

#### Lifting device/ Transporting with a crane



#### WARNING

**Bodily injury resulting from improper operation**

- a) Loads crosswise to the ring level are not permitted.
  - b) Avoid impact stress.
- 
- a) Tighten the eyebolt (Fig. 1/1) and fixing screw (Fig. 1/3) on the transport shackle (Fig. 1/2) firmly.
  - b) The machine must be suspended on the eyebolt and the transport shackle using the lifting device.

## 3.2 Storage

### NOTICE

#### Material damage caused by improper storage.

- ▷ Ensure that the storage area meets the following conditions:
  - a) dust free
  - b) vibration free

### 3.2.1 Ambient conditions for storage

Ambient conditions	Value
Relative humidity	0 % to 80 %
Storage temperature	-20° C to +70° 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 „Machine storage guidelines“, Page 4

## 3.3 Disposal



### WARNING

#### Danger from inflammable, corrosive or poisonous substances.

Machines that come into contact with hazardous substances must be decontaminated before disposal.

- ▷ 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, cold cleaners 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 Set up and operation

### 4.1 Setup

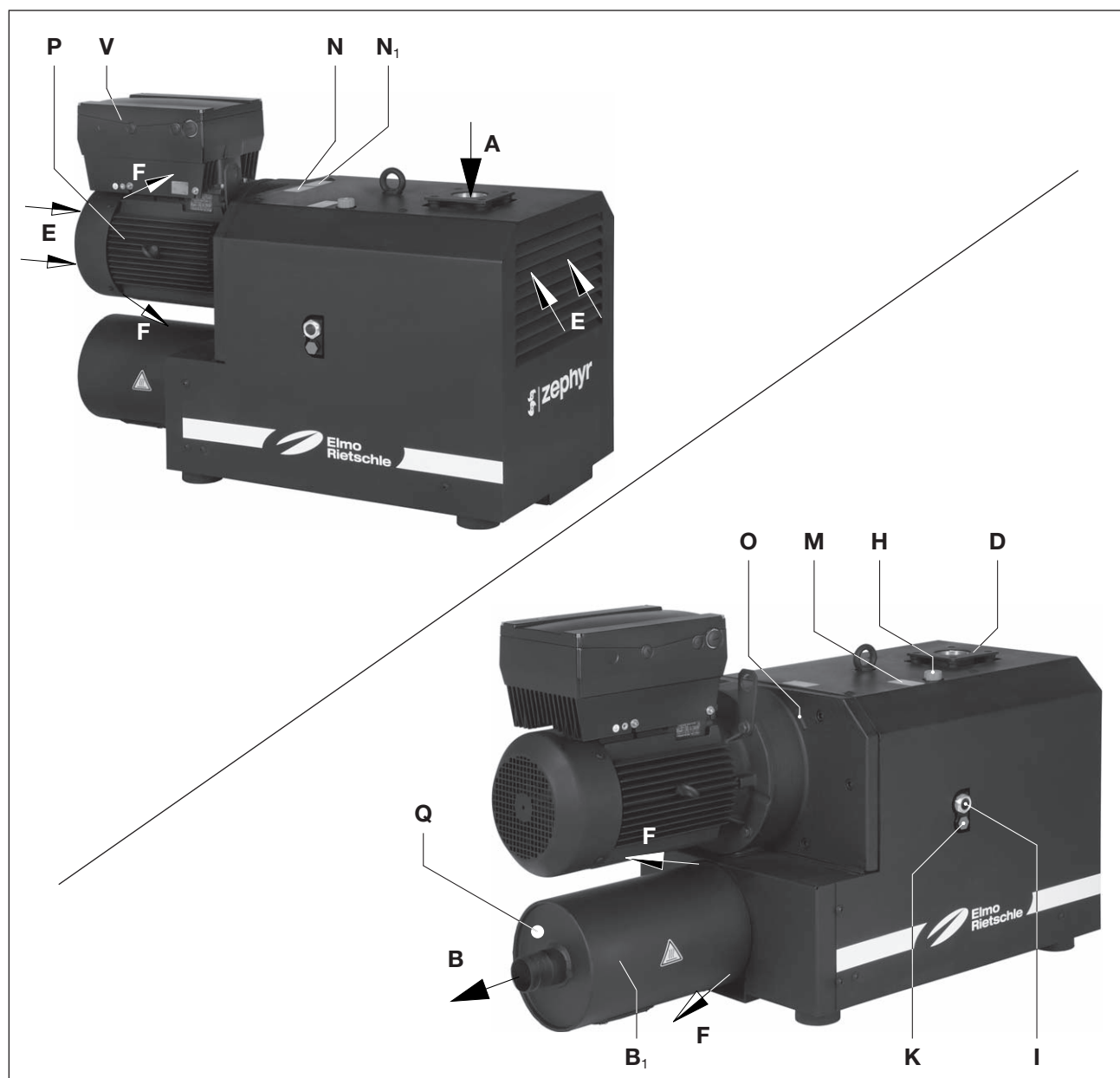


Fig. 2 Vacuum pump C-VLR 301 (15BI)

- |                      |                                 |                      |                                |
|----------------------|---------------------------------|----------------------|--------------------------------|
| <b>A</b>             | Vacuum connection               | <b>M</b>             | Oil recommendation plate       |
| <b>B</b>             | Air outlet connection           | <b>N</b>             | Data plate                     |
| <b>B<sub>1</sub></b> | Exhaust silencer                | <b>N<sub>1</sub></b> | Data plate frequency converter |
| <b>D</b>             | Suction flange                  | <b>O</b>             | Direction of rotation arrow    |
| <b>E</b>             | Cooling air inlet               | <b>P</b>             | Drive motor                    |
| <b>F</b>             | Cooling air outlet              | <b>Q</b>             | hot surfaces > 70°C            |
| <b>H</b>             | Oil filling point               | <b>V</b>             | Frequency converter            |
| <b>I</b>             | Oil sight glass                 |                      |                                |
| <b>K</b>             | Oil discharge point with magnet |                      |                                |

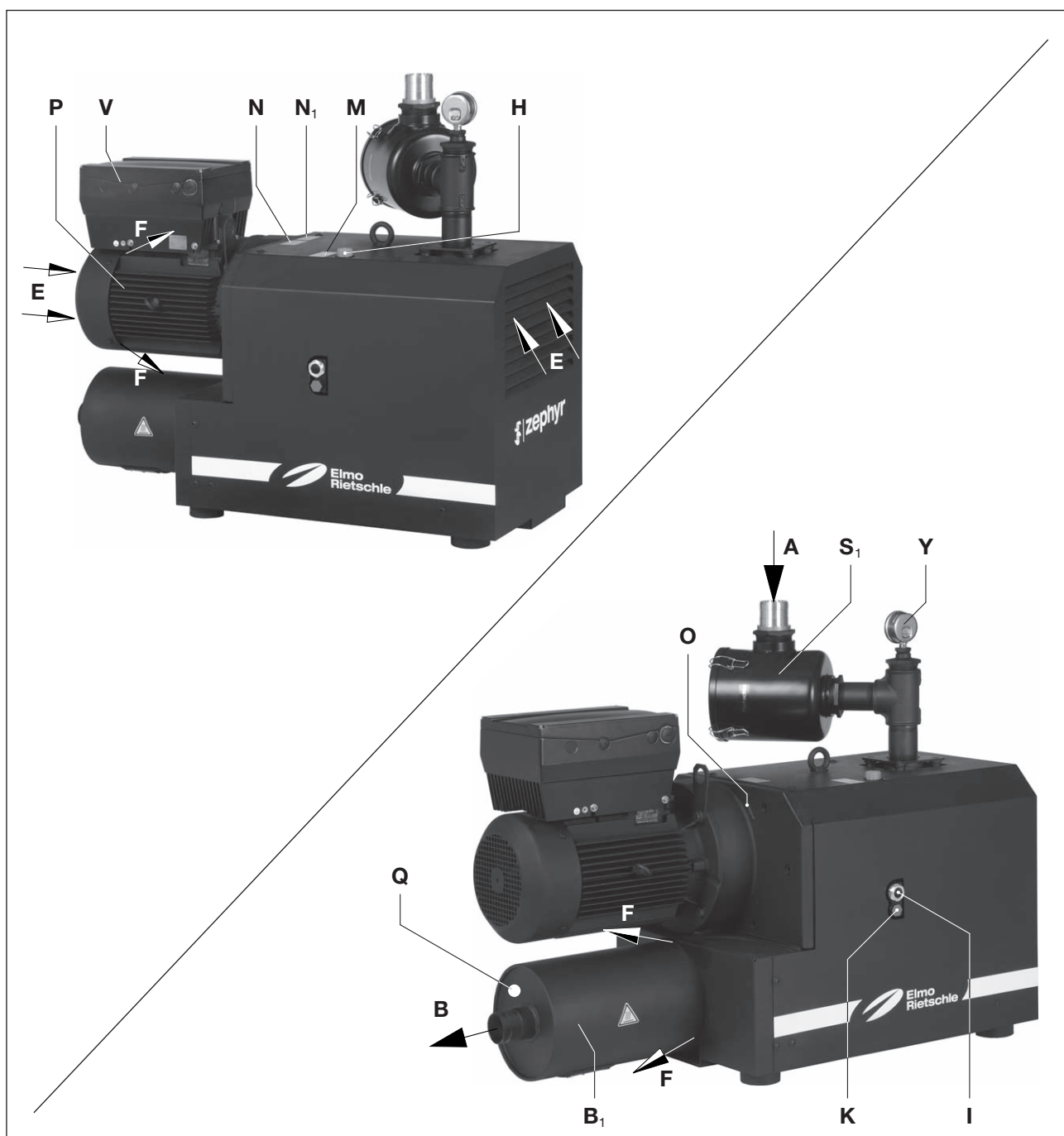


Fig. 3 Vacuum pump C-VLR 301 (15)

- |                      |                                 |                      |                                |
|----------------------|---------------------------------|----------------------|--------------------------------|
| <b>A</b>             | Vacuum connection               | <b>N</b>             | Data plate                     |
| <b>B</b>             | Air outlet connection           | <b>N<sub>1</sub></b> | Data plate frequency converter |
| <b>B<sub>1</sub></b> | Exhaust silencer                | <b>O</b>             | Direction of rotation arrow    |
| <b>E</b>             | Cooling air inlet               | <b>P</b>             | Drive motor                    |
| <b>F</b>             | Cooling air outlet              | <b>Q</b>             | hot surfaces > 70°C            |
| <b>H</b>             | Oil filling point               | <b>S<sub>1</sub></b> | Suction filter ' Vacuum        |
| <b>I</b>             | Oil sight glass                 | <b>V</b>             | Frequency converter            |
| <b>K</b>             | Oil discharge point with magnet | <b>Y</b>             | Vacuum gauge                   |
| <b>M</b>             | Oil recommendation plate        |                      |                                |

### 4.1.1 Data plate

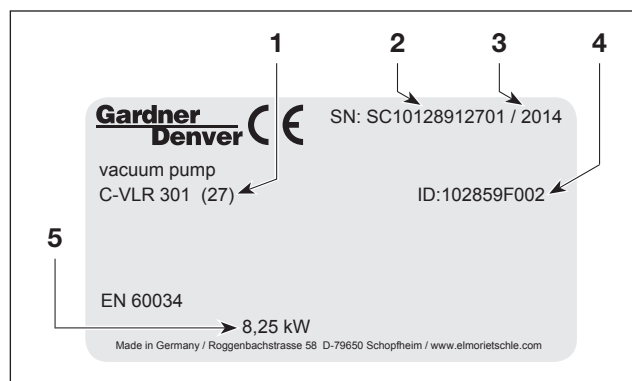


Fig. 4 Data plate

- 1 Type/ Size (mechanical version)
- 2 Serial number
- 3 Year of construction
- 4 Item no.
- 5 Motor output

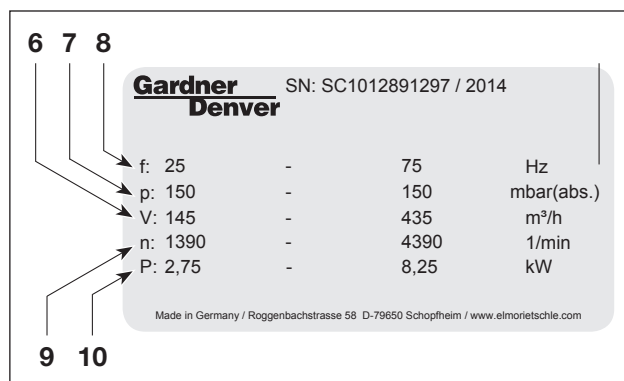


Fig. 5 Data plate frequency converter

- 6 Suction capacity
- 7 Ultimate vacuum (abs.)
- 8 Frequency range
- 9 Speed range
- 10 Motor output

## 4.2 Description

The C-VLR 301 (F001) model has a connection flange on the inlet side and an exhaust silencer on the pressure side (Fig. 2/B<sub>1</sub>). The C-VLR 301 (F002) model has a vacuum gauge (Fig. 2/Y), a suction filter (Fig. 2/S<sub>1</sub>) on the inlet side and an exhaust silencer on the pressure side (Fig. 2/B<sub>1</sub>). An integral non-return valve prevents the evacuated system from being ventilated after the pump has stopped.

The ZEPHYR VLR 301 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 synchronous gearbox gear wheels and the bearings are lubricated with oil. These components are in a gearbox that also contains the oil supply. Oil conveying devices always ensure that the bearings and the gear wheels are sufficiently supplied with oil at all permissible speeds.

The gearbox and the compression chamber are separated from each other by special seals. The gearbox is sealed from the outside with shaft seals and O rings, the compressor chamber with piston rings. The VLR 301 is enclosed in an insulating hood. In order to dissipate compression heat, the cooling air is sucked through between the machine and the hood using a drum fan that sucks in the fresh cooling air (Fig. 2/E) and discharges the heated air out of the cooling air outlet (Fig. 2/F).

Three-phase motor with integral frequency converter (Fig. 2/V) makes possible infinitely variable control of the speed.

A vacuum limitation valve is incorporated into the machine.

## 4.3 Areas of application

This contact free running claw vacuum pump, the C-VLR 301, can be operated constantly at any pressure between 700mbars (abs.) and an inlet pressure of 150mbars (abs.).

When evacuating closed systems the volume to be evacuated must be no more than 2% of the nominal pumping capacity of the vacuum pump.

Data sheet D 885 shows the dependency of the pumping capacity on the intake pressure, with frequency converter data sheet D 885-78.

## 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.



The oil filling point (Fig. 2/H), oil sight glass (Fig. 2/I) and the oil outlets (Fig. 2/K) must be easily accessible. The cooling air inlets (Fig. 2/E) and the cooling air outlets (Fig. 2/F) must be at least 30 cm away from adjacent walls. Cooling air coming out must not be sucked in again. For maintenance work there must be a minimum of 40 cm in front of the inlet filters (Fig. 2/S<sub>1</sub>, 2/S<sub>2</sub>).

### 5.2 Installation

#### NOTICE

**The machine may only be operated when it is set up horizontally.**

**Material damage resulting from the machine tipping over and falling.**

**When installed at more than 1000 m above sea level a reduction in power is noticeable. In this case we would ask you to contact us.**

#### Contamination in the intake air

To protect the machine the operator should install appropriate filters on the suction side.

**The C-VLR 301 must not be operated without covering plates.**

Ensure that the foundation complies with the following conditions:

- Level and straight
- The bearing surface must be designed to be able to take the weight of the machine.



It is possible to install the machine on a firm base without anchoring. When installing on a sub-structure we recommend fixing with flexible buffers.

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

### 5.3 Connecting pipes

- a) Connect the vacuum line (Fig. 2/A).

#### **NOTICE**

**Material damage resulting from the forces and torques of the pipes on the unit being too high.**  
Only screw pipes in by hand.

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

- b) The extracted air can be discharged through the exhaust silencer (Fig. 2/B) or conducted away via a pipe.

#### **NOTICE**

**Exhaust air must not be restricted**  
No blocking systems must be built into the exhaust air pipe (max. pressure difference 50 mbars). When the exhaust air pipe is connected it must be checked regularly for impurities.



## 5.4 Connecting the drive



**⚠ DANGER**

**Danger of death if the electrical installation has not been done professionally.**

The electrical installation must only be done by a qualified electrician observing EN 60204. The operating company has to provide the main switch.

For operation on the frequency inverter, observe the manufacturer's operating instructions for the frequency converter.

- a) The drive consisting of the components motor and frequency converter. The mechanical and electric connection between motor and frequency converter is already assembled on delivery. The frequency converter is parameterised with the basic adjustment settings.
- b) Connect the frequency converter (Fig. 2/V) according to the operating instructions 610.00260.40.000-EN or with the attached terminal lay-out. For the observance with the protection class IP 65 shall be provided suitable cable glands resp. shutters.  
The electric network connection values are to be taken from the type label of the frequency converter.

**NOTICE**

## Power supply

The electric supply of the frequency converter must to be in accordance with the following values:

- Input voltage 3AC 400V -15 %  
bis 480V + 10 %
- Input frequency 47 bis 63 Hz  $\pm 0\%$
- Suitable network configurations TN / TT

## 6 Commissioning and decommissioning

### 6.1 Commissioning



#### WARNING

##### Improper use

May lead to severe or fatal injuries. Therefore be sure to obey the safety instructions.



#### CAUTION

##### Hot surfaces

When the machine is at operating temperature the surface temperatures on the components (Fig. 2/ Q) may go above 70°C.

You must avoid touching the hot surfaces (marked with warning plates).



#### CAUTION

##### Noise emission

The highest noise pressure levels measured as per EN ISO 3744 are given in Section 9.

When spending a long time in the vicinity of the running machine use ear protectors to avoid permanent damage to your hearing.

#### NOTICE

##### Wait until the machine stops

The machine must only be switched on again after it stops.

#### NOTICE

The **oil level** in the sight glasses (Fig. 6/I) must be checked.

The machine must be switched off and vented to atmospheric pressure to top up the oil.

### 6.1.1 Checking the rotation direction

- ▷ The intended direction of rotation of the drive shaft is shown by the rotary direction arrow (Fig. 2/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.



#### NOTICE

##### **Incorrect direction of rotation**

Operating in the wrong direction of rotation leads to damage to the machine.

### 6.1.2 Post-run

For removing accrued dampness and impurities out of the pump we recommend, let the vacuum pump post-run with 700 mbar (abs.) approximately 15 to 30 minutes.



#### CAUTION

##### **Condensate formation and impurities**

By heightened condensate formation and impurities after shutdown of the machine deposits can adhere to rotors as well as compressor housing and prevent an starting when restart.

### 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.).

📄 For installation see Section 5 Page 15

📄 For commissioning see Section 6.1 Page 18

## 7 Maintenance and repair



### DANGER

#### **Danger of death from touching live parts.**

Before maintenance work disconnect the machine by pressing the main switch and ensure that it cannot be turned on again.

For operation on the frequency inverter, observe the manufacturer's operating instructions for the frequency converter.



### WARNING

#### **Hot surfaces**

During maintenance work there is the danger of getting burnt on hot components (Fig. 2/Q) of the machine.

Wait for the machine to cool down.

### 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 notes for installation, 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 cable inlet holes for leaks and if necessary re-seal.	—
monthly	Clean the ventilation slots on the machine and the motor cooling ribs.	—
monthly	Check the oil level	7.2.1
20.000 h	Changing the oil	
depending on how dirty the discharged medium is.	Clean mesh filter	7.2.2
monthly/ every 6 months	Clean or replace filter cartridge	
at least once a year	Check for coupling wear	7.2.3
—	Integrated frequency converter	7.2.4

### 7.2.1 Changing the oil

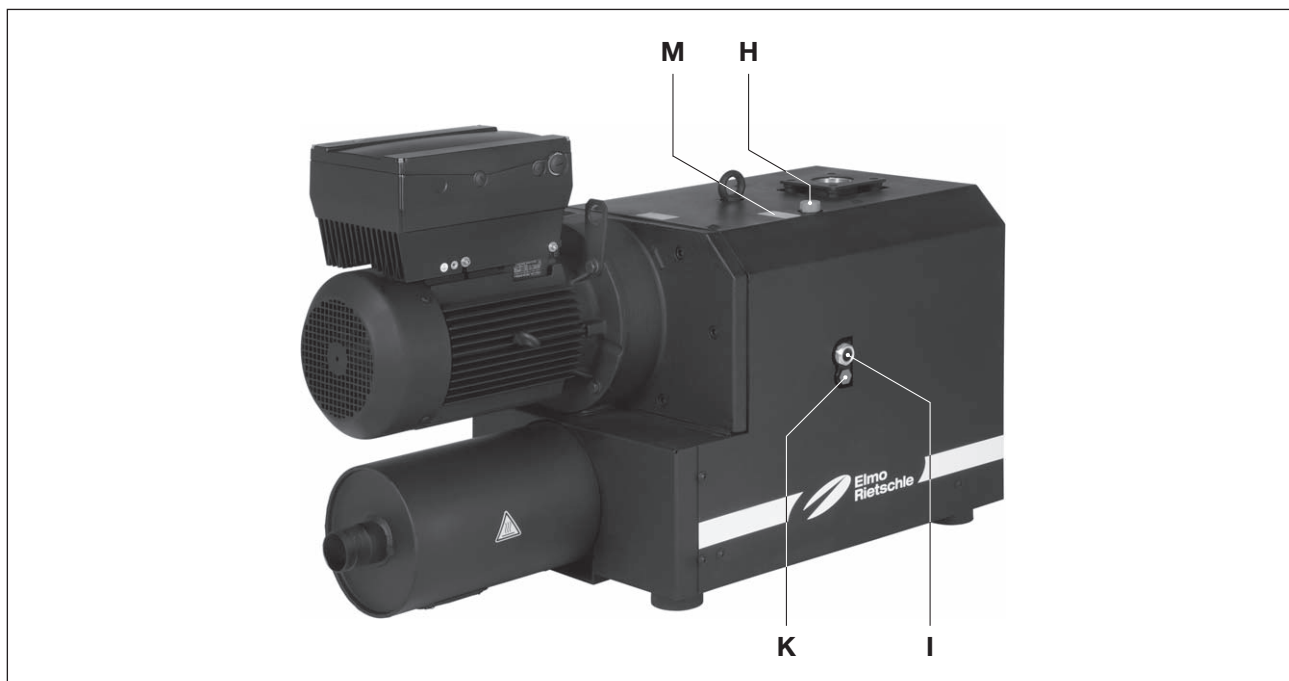


Fig. 6 Changing the oil

- H** Oil filling point
- I** Oil sight glass
- K** Oil discharge point
- M** Oil recommendation plate

#### NOTICE

Always change the oil when the machine is at operating temperature and in an atmospherically ventilated area.  
If it is not completely emptied the amount that can be refilled is reduced.

The waste oil must be disposed of in compliance with the local environmental protection regulations.  
If you are going to use another oil type, empty the oil removing device housing and oil cooler completely.

The oil level in the sight glasses (Fig. 6/I) must be checked every month.

The machine must be switched off and vented to atmospheric pressure to top up the oil. With clean operations the oil must be changed after every 20,000 operating hours.

The oil viscosity must comply with ISO VG 150 as per DIN 51519.

Designation as per DIN 51502: CLP HC 150.

*We recommend the following oil brand: GEAR-LUBE 150 or equivalent oils by other manufacturers (also see oil recommendation plate (Fig. 6/M)).*

### 7.2.2 Air filtering

#### Mesh filter (C-VLR 301 (F001))

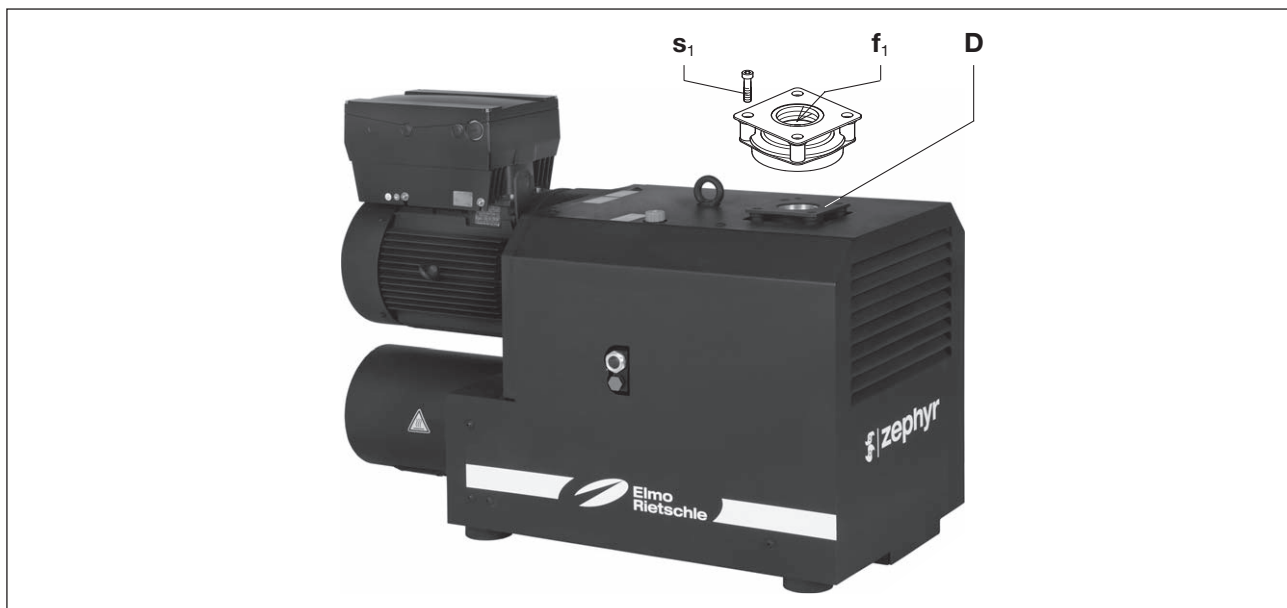


Fig. 7 Air filtering

- D** Suction flange
- f<sub>1</sub>** Mesh filter
- s<sub>1</sub>** Screws

#### NOTICE

##### Insufficient maintenance on the air filter

The power of the machine lessens and damage may occur to the machine.

The mesh filter (Fig. 7/f<sub>1</sub>) must be cleaned by rinsing out or purging or replaced more or less often depending on how dirty the discharged medium is. Remove the suction flange (Fig. 7/D) after undoing the screws (Fig. 7/s<sub>1</sub>).

Also check the valve seating for contamination. Assemble in reverse order.

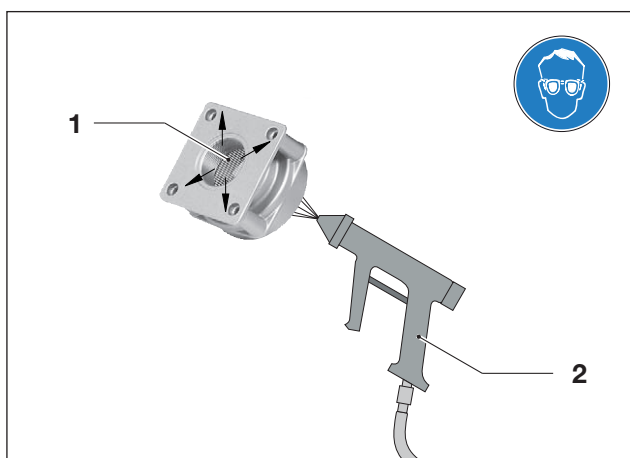


Fig. 8 Blowing out the mesh filter

- 1** Mesh filter
- 2** Compressed air



#### WARNING

##### Risk of injury when handling compressed air

When blowing through with compressed air, solid particles may be carried along or powder dust swirling around may cause injury to the eyes.

Therefore, when cleaning with compressed air always wear goggles and a dust mask.

### Vacuum tight suction filter (C-VLR 301 (F002))

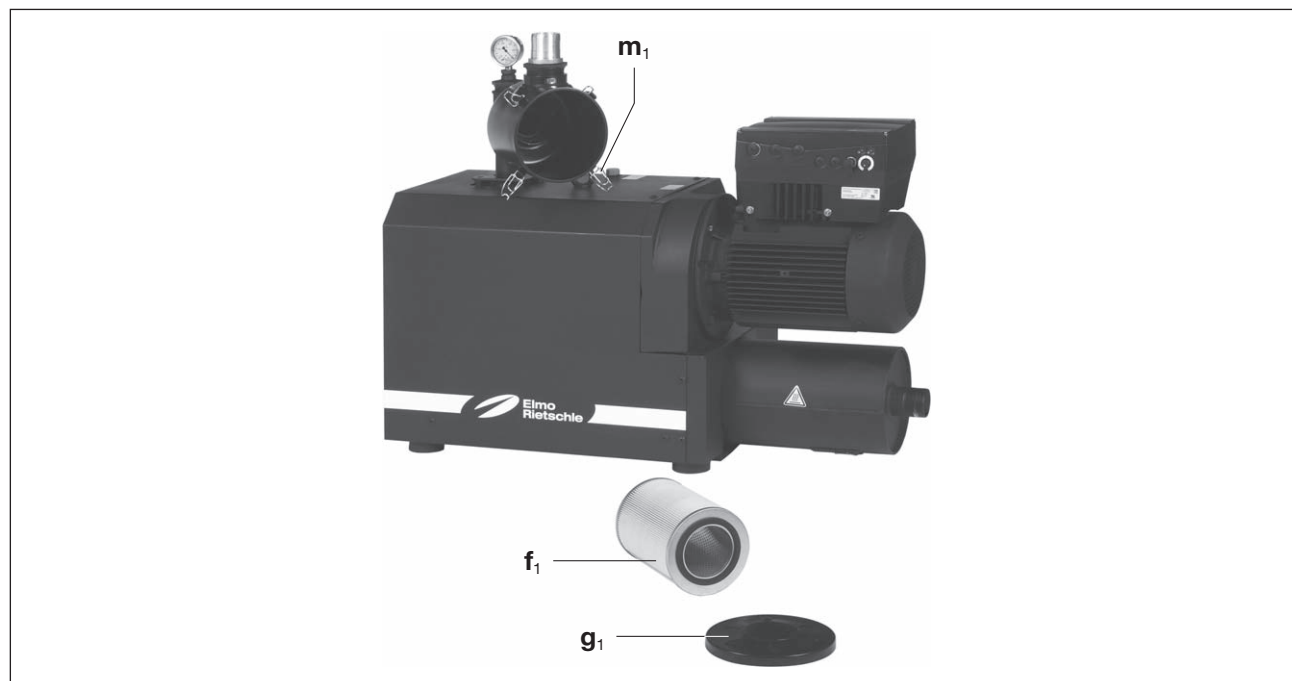


Fig. 9 Vacuum tight suction filter

- $f_1$  Filter cartridge
- $g_1$  Filter cover
- $m_1$  Tension clamp

#### NOTICE

##### Insufficient maintenance on the air filter

The power of the machine lessens and damage may occur to the machine..

The filter cartridge (Fig. 9/ $f_1$ ) for the vacuum tight suction filter (Fig. 3/ $S_1$ ) must be cleaned monthly or more often depending on the level of contamination by purging from the inside outwards. In spite of cleaning the filter its separation efficiency will continue to deteriorate. Therefore the filter should be replaced every six months.

Filter cartridges can be removed after undoing the tension clamps (Fig. 9/ $m_1$ ).

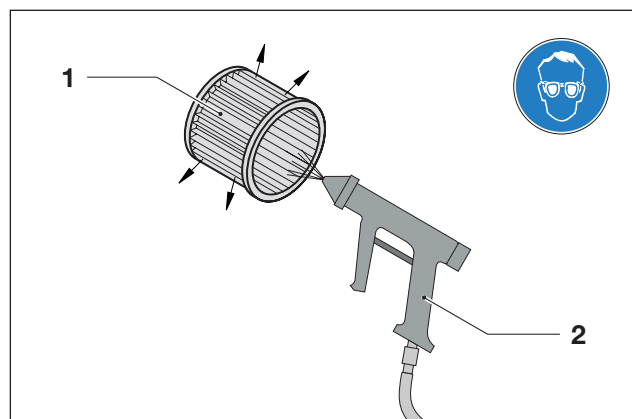


Fig. 10 Purging filter cartridge

- 1 Filter cartridge
- 2 Compressed air

#### WARNING

##### Danger of injury when dealing with compressed air

When blowing through with compressed air, solid particles may be carried along or powder dust swirling around may cause injury to the eyes. Therefore, when cleaning with compressed air always wear goggles and a dust mask.



### 7.2.3 Coupling

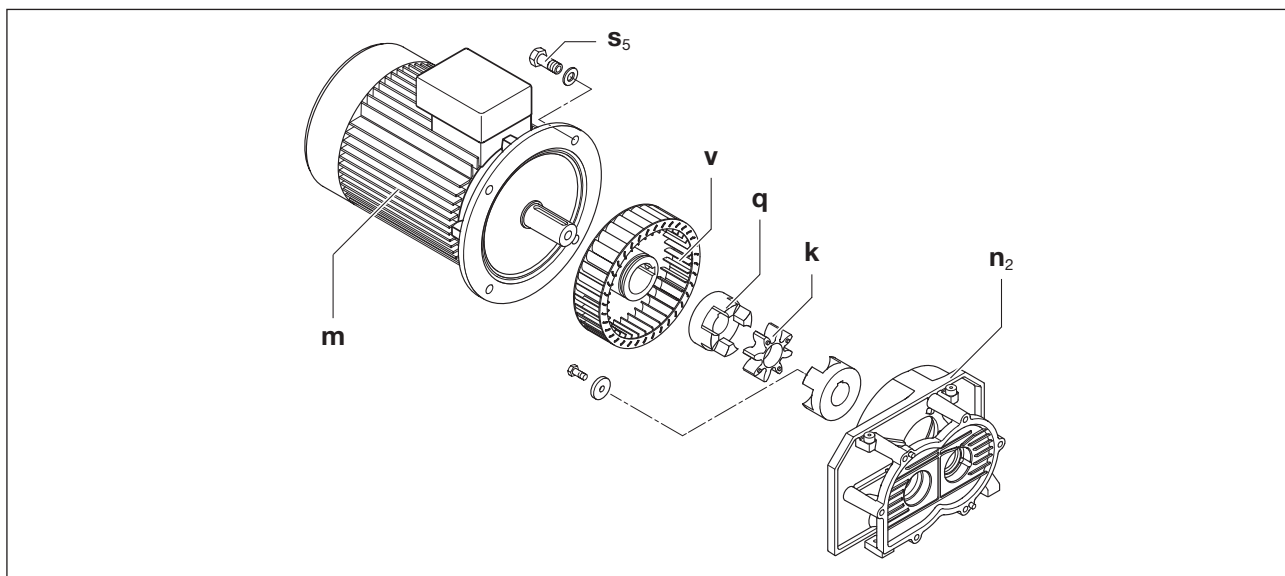


Fig. 11 Coupling

- k** Coupling sprocket
- m** Motor
- n<sub>2</sub>** Fan housing
- q** Coupling half on the motor side
- s<sub>5</sub>** Screws
- v** Fan

The coupling sprocket (Fig. 11/k)) is subject to wear and must be checked regularly (at least once a year).

#### **CAUTION**

##### **Defective coupling sprocket**

Defective sprockets may lead to the rotor shaft breaking.

To check the coupling switch the motor (Fig. 11/m) off and ensure that it cannot be switched on again. Undo the screws (Fig. 11/s<sub>5</sub>) on the motor flange. Remove the motor with the coupling half on the motor side (Fig. 11/q) from the fanhousing (Fig. 11/n<sub>2</sub>) axially and suspend using a lifting tool. If the sprocket (Fig. 11/k) is damaged or worn, then replace it. The fan (Fig. 11/v) should also be checked for damage from time to time and replaced if necessary.

#### **NOTICE**

##### **Frequent starting up and high ambient temperature**

The service life of the sprocket (Fig. 11/k) is reduced.

Re-assemble in reverse order.

## 7.2.4 Integrated frequency converter

- For maintenance of the integrated frequency converter (Fig. 2/V) see enclosed operating instructions 610.00260.40.000-EN Section 3.2.5

## 7.3 Repair/ Service

- a) For on site repair work the frequency converter 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).

**Gardner Denver** Formular 7.025.003.17  
Unbedenklichkeitsklärung für Vakuumpumpen und Komponenten  
Seite 1 von 1

Gardner Denver Schopfheim GmbH  
Hauptstraße 16, 76833 Schopfheim  
Telefon: +49(0)7823/950-0 Fax: +49(0)7823/950-300

Die Reparatur und/oder die Wartung von Vakuumpumpen und Komponenten wird nur durchgeführt, wenn eine  
sicherheits- und umweltbedingende Erklärung vorliegt, die das nicht der Fall, kann nicht mit der Reparatur  
arbeiten begonnen werden und Verzögerungen sind die Folge.  
Diese Erklärung darf nur von autorisiertem Fachpersonal ausgefüllt und unterschrieben werden.

**1. Art der Vakuumpumpe / Komponenten**  
Pumpenbezeichnung: \_\_\_\_\_  
Maschinen-Nummer: \_\_\_\_\_  
Auftrags-Nummer: \_\_\_\_\_  
Lieferdatum: \_\_\_\_\_

**2. Grund für die Einweisung**  
\_\_\_\_\_

**3. Zustand der Vakuumpumpe / Komponente**  
Wurde diese bedient? JA ☐ NEIN ☐  
Welches Schmiermittel wurde verwendet? \_\_\_\_\_  
Wurde die Pumpe/Komponente entleert? \_\_\_\_\_  
Ist die Pumpe/Komponente gereinigt, dekontaminiert, ge- und befreit sowie frei von verschluckten Feststoffen? \_\_\_\_\_  
Schadstofffrei? JA ☐ NEIN ☐  
Reinigungsprotokoll: \_\_\_\_\_

**4. Einseitige/bedingte Kontamination der Vakuumpumpe / Komponente**  
Tisch JA ☐ NEIN ☐  
Boden JA ☐ NEIN ☐  
Mikrobiologisch? JA ☐ NEIN ☐  
Bakteriell? JA ☐ NEIN ☐  
Medikament? JA ☐ NEIN ☐  
Sonstiges? JA ☐ NEIN ☐

**5. Mikrobiologisch, explosive oder radioaktiv kontaminierte Vakuumpumpen / Komponenten werden nur bei "Nachweis einer vorschriftsmäßigen Reinigung entgegengenommen!"**  
Art der Schadstoffe oder präventiv bedingter, gefährlicher Reaktionsprodukte, mit denen die Vakuumpumpen / Komponenten in Kontakt kamen: \_\_\_\_\_

Hersteller: \_\_\_\_\_ Chemische Bezeichnung: \_\_\_\_\_ Gefahren-Namen: \_\_\_\_\_ Maßnahmen bei Freisetzen (Ziele Hilfe bei Unfällen der Schadstoffe): \_\_\_\_\_

**6. Persönliche Schutzmaßnahmen:**  
Gefährliche Zersetzungserzeugnisse bei thermischer Belastung: JA ☐ NEIN ☐  
Sonstige: \_\_\_\_\_

**7. Rechtserklärende Erklärung**  
Wir versichern, dass die Angaben in dieser Erklärung wahrheitsgemäß und vollständig sind, und ich als Unterzeichner in der Lage bin, dies zu bezeugen. Uns ist bekannt, dass wir gegenüber dem Auftraggeber für Schäden, die durch unrichtige und unvollständige Angaben entstehen, haften. Wir verpflichten uns, den Auftraggeber von durch unrichtige oder unvollständige Angaben entstehenden Schadensersatzansprüchen Dritter freizustellen. Uns ist bekannt, dass wir unabhängig von dieser Erklärung gegenüber Dritten - auch insbesondere die mit der Handhabung/Reparatur des Produkts betrauten Mitarbeiter des Auftraggebers - gelistet - droht haften.

Firma: \_\_\_\_\_ PLZ, Ort: \_\_\_\_\_  
Telefon: \_\_\_\_\_ Telefax: \_\_\_\_\_  
Name (Druck): \_\_\_\_\_ Position: \_\_\_\_\_  
Datum: \_\_\_\_\_ Firmenstempel: \_\_\_\_\_

Abschließende Unterschrift: \_\_\_\_\_

7.025.003.17 (7.025.003.17) (Katalog-Nr. 10) (Katalog-Nr. 10) (Katalog-Nr. 10) (Katalog-Nr. 10)

### NOTICE

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.

- b) After a repair or re-commissioning, the actions listed under „Installation“ and „Commissioning“ must be carried out as for initial commissioning.

Fig. 12 Clearance certificate 7025.003.17

## 7.4 Spare parts

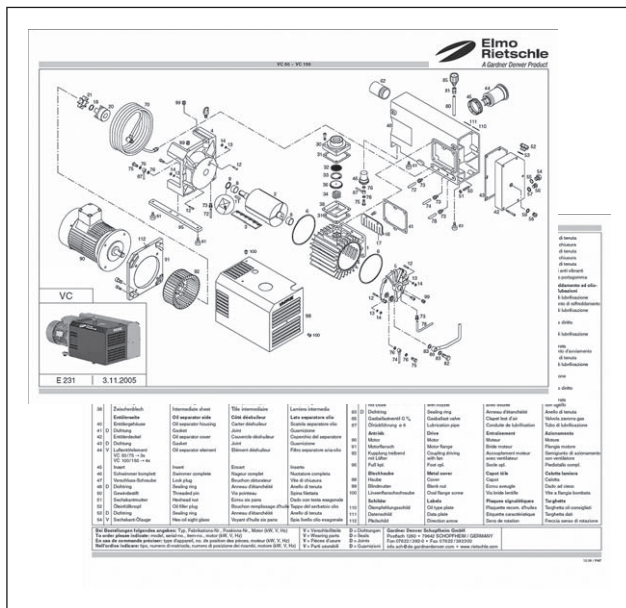


Fig. 13 Spare parts list (example)

**Order spare parts in accordance with the:**

- **Spare parts list:**  
**E 8805** → C-VLR 301
  - Download the PDF file  
<http://www.gd-elmorietschle.com>
    - Downloads
    - Product Documents
    - C-Series → Spare Parts
  - Parts subject to wear and gaskets are indicated separately on the list
- **Web site:**  
<http://www.service-er.de>
  - Select the type, size and design.

**NOTICE**

Only use original spare parts or parts approved by the manufacturer. The use of other parts may lead to malfunctions and invalidate liability or the guarantee for any consequences arising.



Fig. 14 Web site  
<http://www.service-er.de>

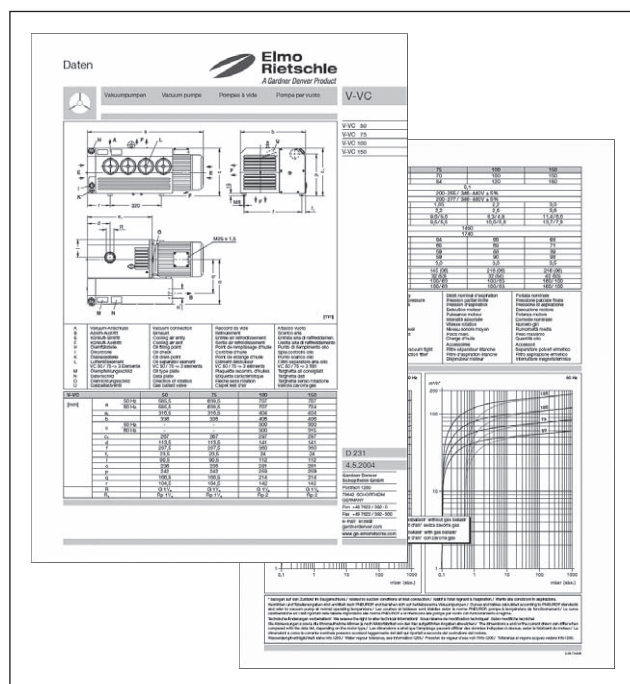
## 8 Malfunctions: Causes and elimination

Fault	Cause	Troubleshooting	Important
Maschine does not run or the frequency converter shows an error message	Technical fault of the integrated frequency converter	see enclosed operating instructions 610.00260.40.000-EN Section 8	—
Pumping capacity is insufficient	The mesh filter/ suction filter is dirty	Clean or replace the mesh filter/ suction filter	Section 7.2.2 Section 7.4
	The suction pipe is too long or too narrow	Check the hose or the pipe	Section 5.3
	Machine or system leaking	Check the pipework and screw connections for leaks and to ensure that they are firmly seated.	Section 7.2
Final pressure (max. vacuum) is not reached	Machine or system leaking	Check the pipework and screw connections for leaks and to ensure that they are firmly seated.	Section 7.2
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 machine makes an abnormal noise	Deposits on the rotary piston	Clean the working space and the rotary piston	Elmo Rietschle Service
<b>Please contact Elmo Rietschle Service for other malfunctions or those that cannot be eliminated.</b>			

## 9 Technical Data

C-VLR		301 (15)	301 (15BI)
Sound pressure level (max.) EN ISO 3744 Tolerance $\pm 3$ dB(A)	dB(A) 70 Hz	82	
Weight *	kg	280	286
Length *	mm	1093	1093
Width	mm	478	478
Height	mm	701	1000
Vacuum connection		G 2	
Exhaust air outlet		G 2	
Correct amount of oil	l	1.5	

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



You will find more technical data on the data sheets **D 885-78 / SCE1014282**.

### NOTICE

Subject to technical changes.

Fig. 15 Data sheet (example)



[www.gd-elmorietschle.com](http://www.gd-elmorietschle.com)  
[er.de@gardnerdenver.com](mailto:er.de@gardnerdenver.com)

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**Gardner Denver**  
**Schopfheim GmbH**  
Roggenbachstraße 58  
79650 Schopfheim · Deutschland  
Tel. +49 7622 392-0  
Fax +49 7622 392-300

**Gardner**  
**Denver**

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

**EC - declaration of conformity 2006/42/EC**

**Hereby the manufacturer confirms:** Gardner Denver Schopfheim GmbH  
Postfach 1260  
D-79642 Schopfheim

**that the machine:** vacuum pump

**of the:** Series: C-VLR  
Type: C-VLR 60, C-VLR 100, C-VLR 120,  
C-VLR 150, C-VLR 250, C-VLR 251,  
C-VLR 300, C-VLR 400, C-VLR 500,  
C-VLR 301, C-VLR 1000

**is conform to the regulations of the guideline indicated above.**

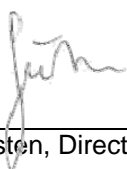
The following harmonized and national standards and specifications are applied:

EN 1012-1:2010	Compressors and vacuum pumps — Safety requirements — Part 1: Compressors
EN 1012-2:1996+A1:2009	Compressors and vacuum pumps — Safety requirements — Part 2: Vacuum pumps

These declarations of conformity are invalid when the machine has been modified without prior approval by us and the approval has been documented in writing.

Name and address of the EC person in charge for documentation	Gardner Denver Schopfheim GmbH Postfach 1260 D-79642 Schopfheim
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Gardner Denver Schopfheim GmbH  
Schopfheim, 1.3.2012

  
\_\_\_\_\_  
Dr. Friedrich Justen, Director Engineering

<b>Gardner Denver</b>	<b>Safety declaration form for vacuum pumps and components</b>	7.7025.003.17  Page 1 of 1
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**Gardner Denver Schopfheim GmbH**  
 Roggenbachstr. 58, 79650 Schopfheim      Phone: +49/(0)7622/392-0      Fax: +49/(0)7622/392-300

Repairs and/or maintenance of vacuum pumps and components will only be carried out if a declaration has been filled in correctly and completely.  
 If not, the repair work cannot be started and delays will result.  
 This declaration must only be filled in and signed by authorised qualified staff.

1. Type of vacuum pumps/ components	2. Reason for the submission
Type description: _____ Machine number: _____ Order number: _____ Delivery date: _____	_____ _____ _____ _____

3. Condition of vacuum pumps/ components	4. Contamination of the vacuum pumps/ components when in use
Was this being operated?    YES <input type="checkbox"/> NO <input type="checkbox"/> Which lubrication was used? _____  Was the pump/ component emptied? (Product/Consumables)    YES <input type="checkbox"/> NO <input type="checkbox"/> Has the pump/ component been cleaned and decontaminated? <div style="text-align: right;">YES   <input type="checkbox"/></div>	Toxic                                      YES <input type="checkbox"/> NO <input type="checkbox"/> Corrosive                                  YES <input type="checkbox"/> NO <input type="checkbox"/> Microbiological*)                      YES <input type="checkbox"/> NO <input type="checkbox"/> Explosive*)                                YES <input type="checkbox"/> NO <input type="checkbox"/> Radioactive*)                            YES <input type="checkbox"/> NO <input type="checkbox"/> other                                        YES <input type="checkbox"/> NO <input type="checkbox"/>

Cleaning agent: \_\_\_\_\_  
 Cleaning method: \_\_\_\_\_

\*) Microbiological, explosive or radioactively contaminated vacuum pumps/ components will only be accepted with proof that they have been cleaned properly.

Type of toxic substance or process-related, dangerous reaction products with which the vacuum pumps/ components came into contact:

Trade name, manufacturer's product name	Chemical name	Hazard class	Action to be taken if toxic substances are released	First aid in the event of accidents
1				
2				
3				
4				

Personal protection measures: \_\_\_\_\_

Hazardous decomposition products when subjected to thermal load                                      YES   ☐    NO   ☐  
 Which? \_\_\_\_\_

**5. Legally binding declaration**  
 We swear that the information in this declaration is accurate and complete and that I, the undersigned, am in a position to judge this. We are aware that we are liable to the contractor for damage caused by incomplete and inaccurate information. We undertake to release the contractor from any damage claims from third parties arising from incomplete or incorrect information. We are aware that, regardless of this declaration, we are directly liable to third parties including in particular the contractor's staff entrusted with handling or repairing the product.

Company: \_\_\_\_\_  
 Street: \_\_\_\_\_      Post code/ Town: \_\_\_\_\_  
 Phone: \_\_\_\_\_      Fax: \_\_\_\_\_  
 Name (in capitals) \_\_\_\_\_      Position: \_\_\_\_\_  
  
 Date: \_\_\_\_\_      Company stamp: \_\_\_\_\_  
 Legally binding signature: \_\_\_\_\_

TOS no. / Index: 7.7025.003.17 / 0:	Office responsible: GS	File management: ..\7702500317.xl
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Gardner Denver Schopfheim GmbH Postfach 1260 D-79642 Schopfheim