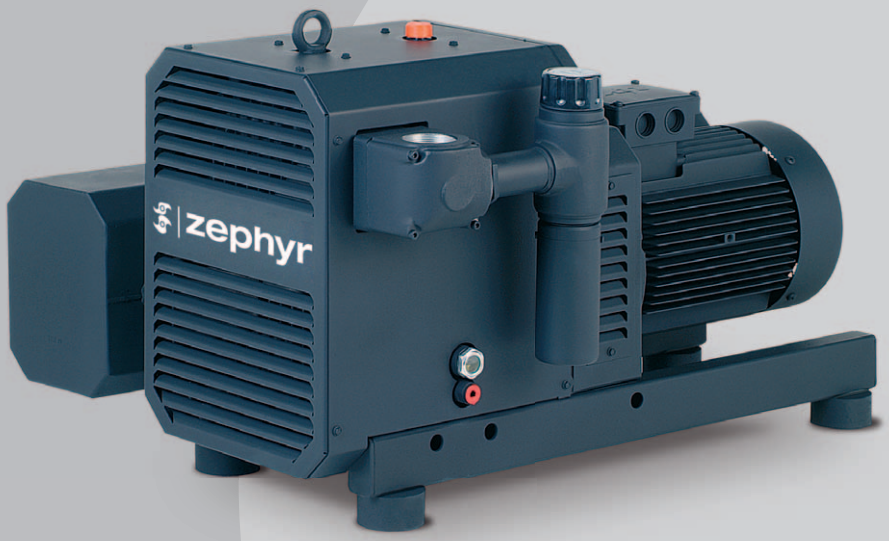
Edition: 1.12.2009 · BA 880-EN

Original Operating Instructions
C-VLR

C-VLR 60 | 100 | 120 | 150 | 251
C-VLR 250 | 300 | 400 | 500

Elmo Rietschle
A Gardner Denver Product



C-Serie
C-Series
Klaue
Claw

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1 Foreword

1.1 Principles

These operating instructions:

- are a part of the following contact free running claw vacuum pumps, models C-VLR 60, C-VLR 100, C-VLR 120, C-VLR 150, C-VLR 250, C-VLR 251, C-VLR 300, C-VLR 400 and C-VLR 500.
- 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	BA 880-EN
	Declaration of Conformity	C 0080-EN
	Declaration of harmlessness	7.7025.003.17
Spare parts‘ list	Spare parts document	E 880
Data sheet	Technical data and graphs	D 880
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^3/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
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 ≥ 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

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
DANGER	immediately imminent danger	Death, severe bodily injury
WARNING	possible imminent danger	Death, severe bodily injury
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 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

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
- 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 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 be 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.

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**

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

WARNING

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

▷ 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 eyebolts (Fig. 1/1) firmly.
b) The machine must be suspended on the eyebolt using the lifting device for lifting and transporting.

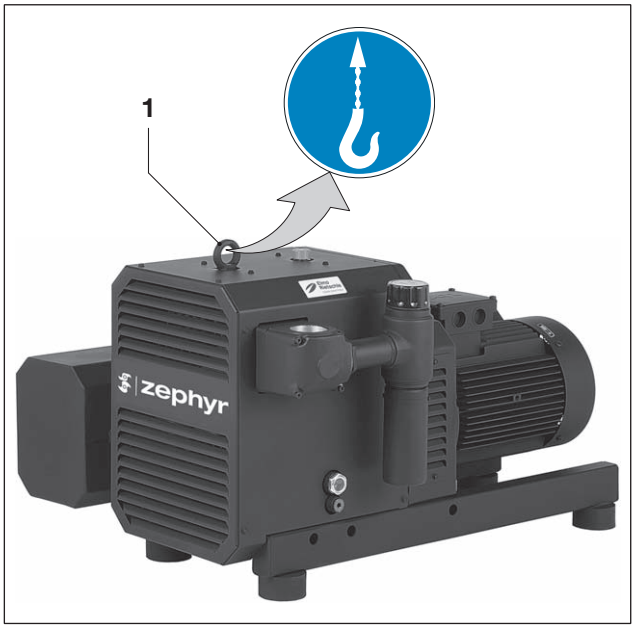


Fig. 1 Lifting and transporting

1 Eyebolt

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 %
Lagertemperatur	-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 “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, 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 (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

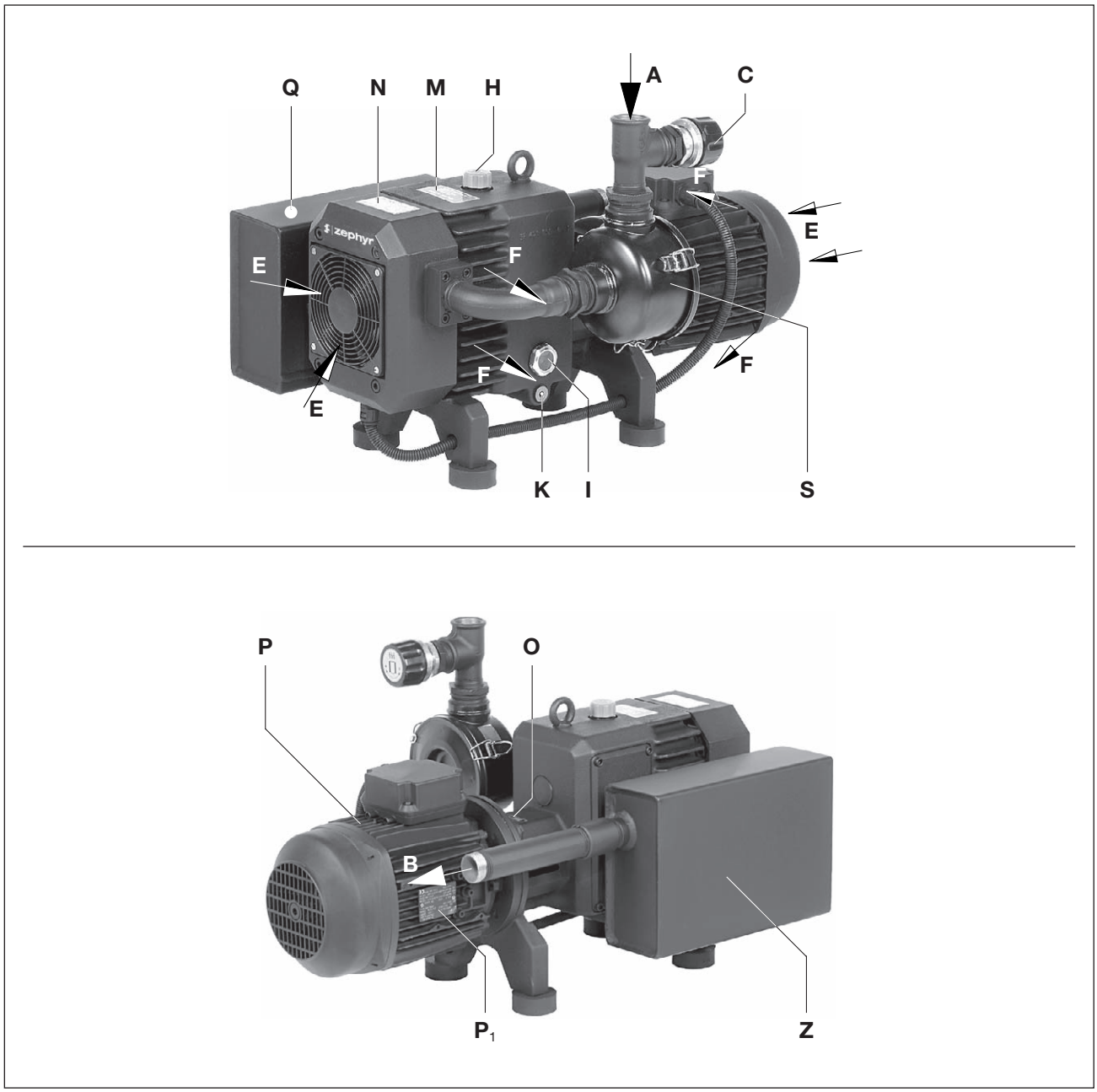


Fig. 2 Vacuum pump C-VLR 60

A	Vacuum connection	**M**	Oil recommendation plate
B	Exhaust air outlet	**N**	Data plate
C	Vacuum regulating valve	**O**	Rotation direction plate
E	Cooling air inlet	**P**	Drive motor
F	Cooling air outlet	**P_1**	Motor data plate
H	Oil filling point	**Q**	hot surfaces > 70S °C
I	Oil sight glass	**S**	Suction filter
K	Oil discharge point	**Z**	Outlet silencer

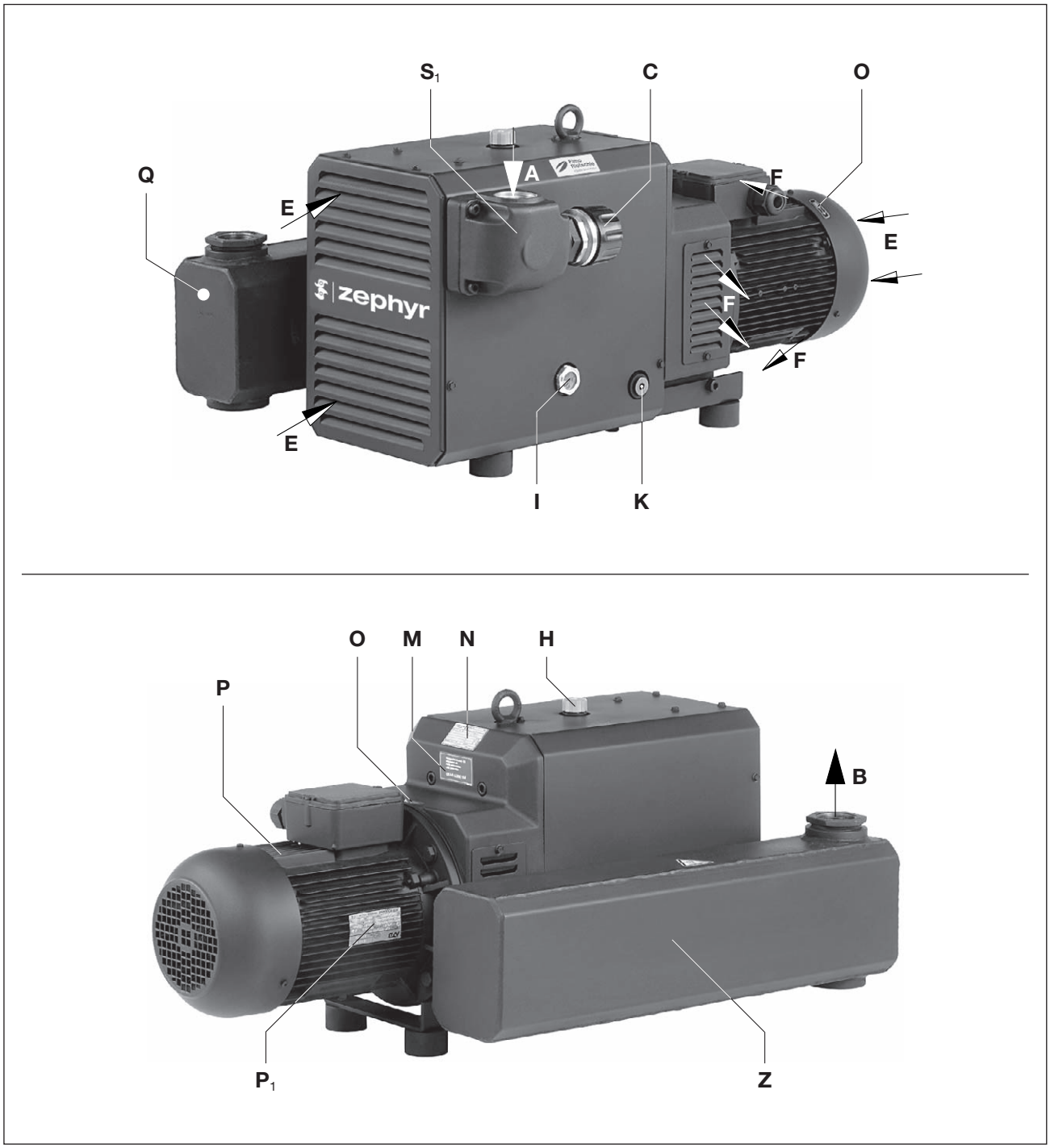


Fig. 3 Vacuum pump C-VLR 150

A	Vacuum connection	**M**	Oil recommendation plate
B	Exhaust air outlet	**N**	Data plate
C	Vacuum regulating valve	**O**	Rotation direction plate
E	Cooling air inlet	**P**	Drive motor
F	Cooling air outlet	**P_1**	Motor data plate
H	Oil filling point	**Q**	hot surfaces > 70°C
I	Oil sight glass	**S_1**	Anschlusskasten
K	Oil discharge point	**Z**	Outlet silencer

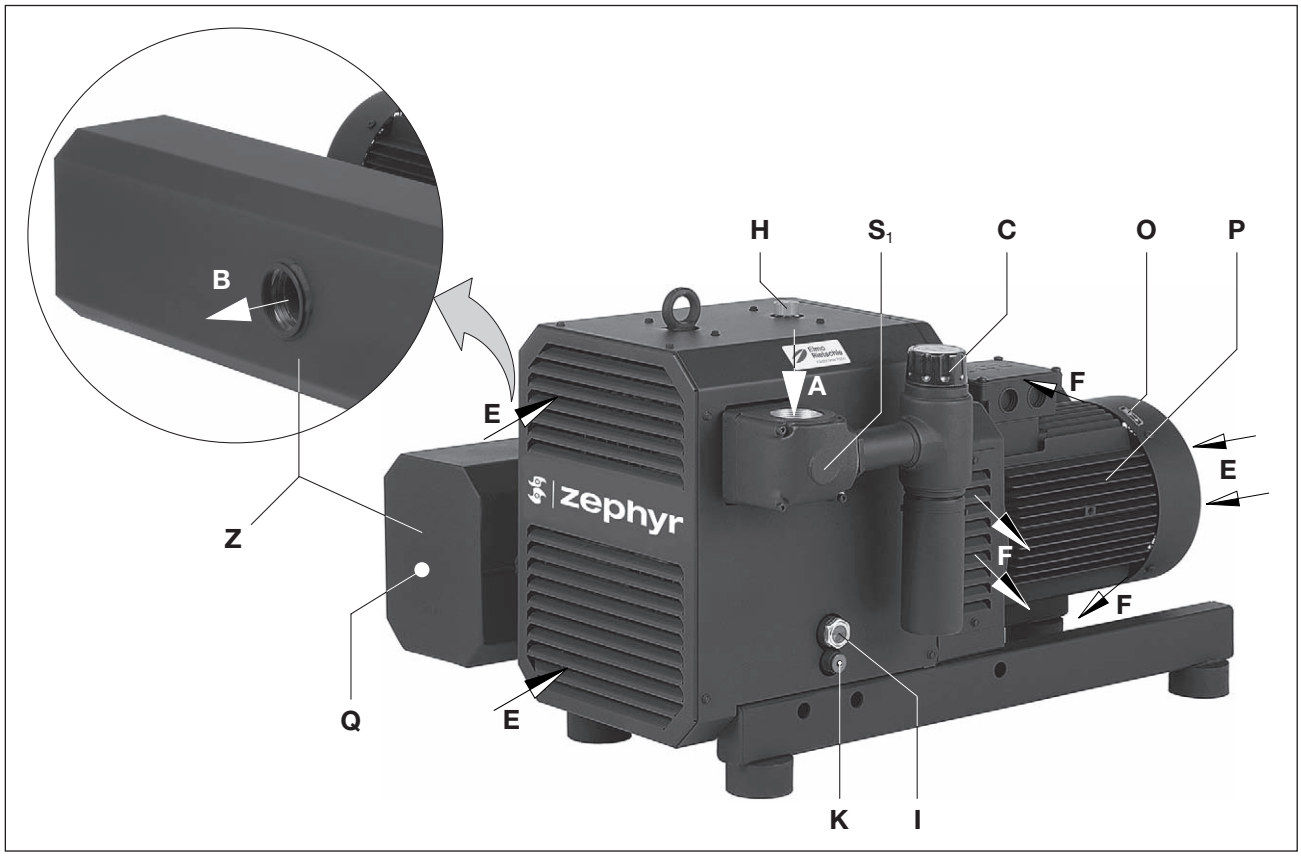
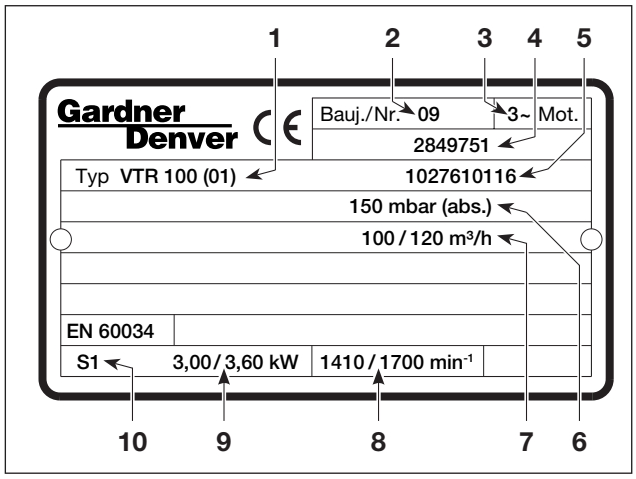


Fig. 4 Vacuum pump C-VLR 300

A	Vacuum connection	**I**	Oil sight glass
B	Exhaust air outlet	**K**	Oil discharge point
C	Vacuum regulating valve	**P**	Drive motor
E	Cooling air inlet	**Q**	hot surfaces > 70°C
F	Cooling air outlet	**S_1**	Anschlusskasten
H	Oil filling point	**Z**	Outlet silencer

4.1.1 Data plate



1	Type/ Size (mechanical version)
2	Year of construction
3	Motor design
4	Serial number
5	Item no.
6	Final pressure (abs.)
7	Pumping capacity 50 Hz/60 Hz
8	Speed 50 Hz/60 Hz
9	Motor output 50 Hz/60 Hz
10	Operating mode

Fig. 5 Data plate (example)

4.2 Description

The C-VLR model range has a connecting thread on the suction side and an exhaust silencer on the pressure side. With the C-VLR 60 the incoming air is cleaned by a filter cartridge. The C-VLR 100-500 have a micro filter on the suction side.
The ZEPHYR C-VLR 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 bearing on the motor side 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 feed chamber has no sealants or lubricants. The C-VLR 400 and 500 sizes have grease lubricated bearings on the B side. 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. Between the two there is also another atmospherically ventilated area that can be loaded with sealing gas (special version).
The C-VLR 100-500 is enclosed in an insulation hood.
In order to dissipate compression heat, the cooling air is sucked through between the machine and the hood using drum fan that sucks in the fresh cooling air (Fig. 3/E) and discharges the heated air out of the cooling air outlet (Fig. 3/F). The ZEPHYR VLR is driven by standard flanged three phase motors via a coupling (with an elastomer component).
A vacuum regulating valve (Fig. 2/C) is used to set the vacuum to the required values.

4.3 Areas of application

These contact free running claw vacuum pumps C-VLR can be operated constantly at any pressure between atmospheric and an inlet pressure of:

100 mbar (abs.) → C-VLR 60/150
150 mbar (abs.) → C-VLR 100/120
200 mbar (abs.) → C-VLR 250/251/300
250 mbar (abs.) → C-VLR 400/500

The pumping capacity with unrestricted suction is 60, 100, 120, 150, 211, 235, 300, 385 and 500 m^3/h at 50 Hz. Data sheet D 880 shows the dependency of the pumping capacity on the intake pressure.

If the unit is switched on more frequently (at regular intervals of about 12 times an hour (C-VLR 60 - 150) or 10 times an hour (C-VLR 250 - 500)) 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.

The oil filling point (Fig. 2/H... 4/H), oil sight glasses (Fig. 2/I... 4/I) and oil outlets (Fig. 2/K... 4/K) must be easily accessible.
The cooling air inlets (Fig. 2/E... 4/E) and cooling air outlets (Fig. 2/F... 4/F) must be at least 30 cm 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 filter (Fig. 2/S) and the inlet silencer (Fig. $3/S_1$, $4/S_1$)

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.

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 substructure we recommend fixing with flexible buffers.

5.3 Connecting pipes

a) Vacuum connection at (Fig. 2/A... 4/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 discharged air can be blown out through the exhaust silencer (ZSZ) at (Fig. 2/B... 4/B) or conducted away using a hose or a pipe.

NOTICE

Length of the connection pipes
With connection pipes that have the same pipe cross section as the machine connection and are more than 3m long, a non-return valve especially for the purpose must be installed in order to avoid reverse operation when the machine has stopped.

Exhaust air must not be restricted
No blocking systems must be built into the exhaust air pipe (max. pressure difference 30 mbars). When the exhaust air pipe is connected it must be checked regularly for impurities.

5.4 Regulating and relief valve

The vacuum can be set by turning the control knob (Fig. 2/C... 4/C) as shown on the symbol fitted to the button.

NOTICE

Do not operate without the standard regulating and relief valve.
If the permissible vacuum is exceeded (see data plate) the machine may be damaged.

5.5 Filling with lubricating oil

a) Fill the lubricating oil (for suitable types see “Maintenance”) for the gear wheels and oil filling point (Fig. 3/H) up to the middle of the sight glasses (Fig. 3/I).

b) Close the oil filling point.

5.6 Connecting the motor

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.

a) The motor‘s electrical data is given on the data plate (Fig. 3/N) or on the motor data plate (Fig. 3/P_1). The motors comply with DIN EN 60034 and are in protection class IP 55 and insulation class F. 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 plug connection or 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 may occur when the machine is started cold.

NOTICE

Power supply
The conditions at the installation location must match the information on the motor data plate.
Without derating the following is permissible:
- ± 5% Voltage deviation
- ± 2% Frequency deviation

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... 4/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.

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... 4/O) on the motor flange.

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

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 16

For commissioning see Section 6.1 Page 19

7 Maintenance and repair

DANGER

Danger of death from touching live parts.
Before maintenance work disconnect the machine by pressing the main switch or unplugging it and ensure that it cannot be turned on again.

WARNING

Hot surfaces and equipment
During maintenance work there is the danger of getting burnt on hot components (Fig. 2/Q) and by the machine lubricating oil.
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 terminal box and cable inlet holes for leaks and if necessary re-seal.	—
monthly	Clean the regulating valve, the ventilation slots on the machine and the motor cooling ribs.	—
monthly	Check the oil level	7.2.1
5.000 h	Changing the oil	
5.000 h	C-VLR 400/500: Lubricate the bearing on the side facing away from the motor	
monthly/ every 6 months	C-VLR 60: Clean or replace filter cartridge	7.2.2
depending on how dirty the discharged medium is	C-VLR 100-500: Clean the micro filter	
at least once a year	Check for coupling wear	7.2.3

7.2.1 Changing the oil and lubricating

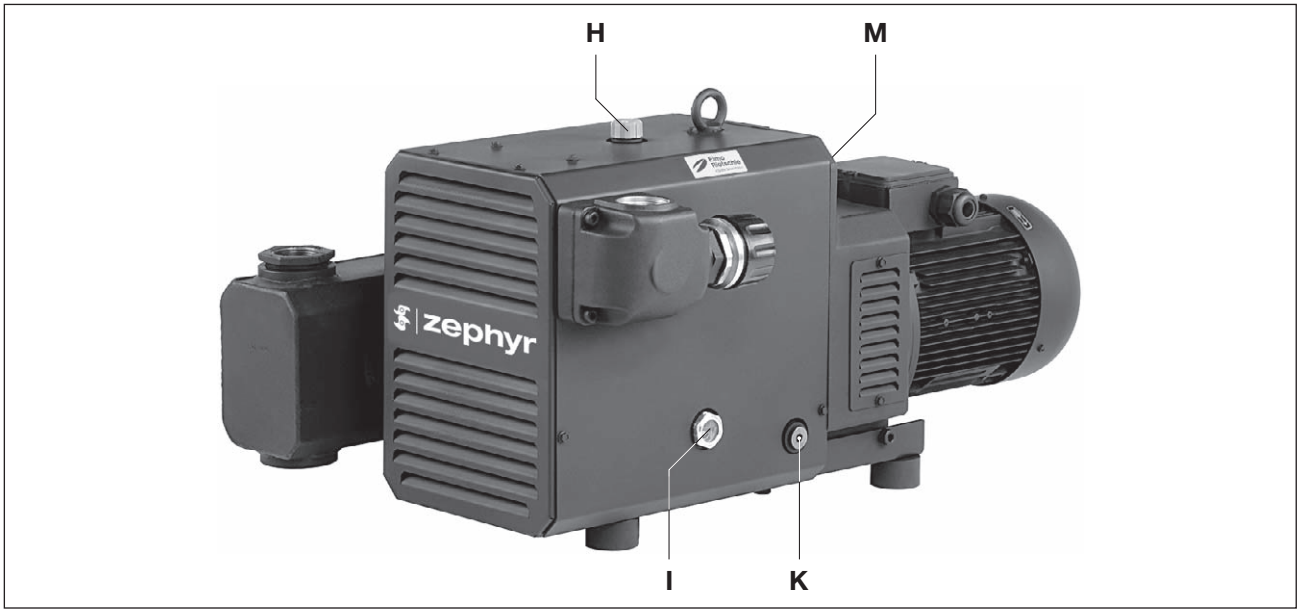


Fig. 6 Changing the oil

H Oil filling point

I Oil sight glass

K Oil discharge point

M Oil recommendation plate

Changing the oil:

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 5,000 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: GEARLUBE 150 or equivalent oils by other manufacturers (also see oil recommendation plate (Fig. 6/M)).

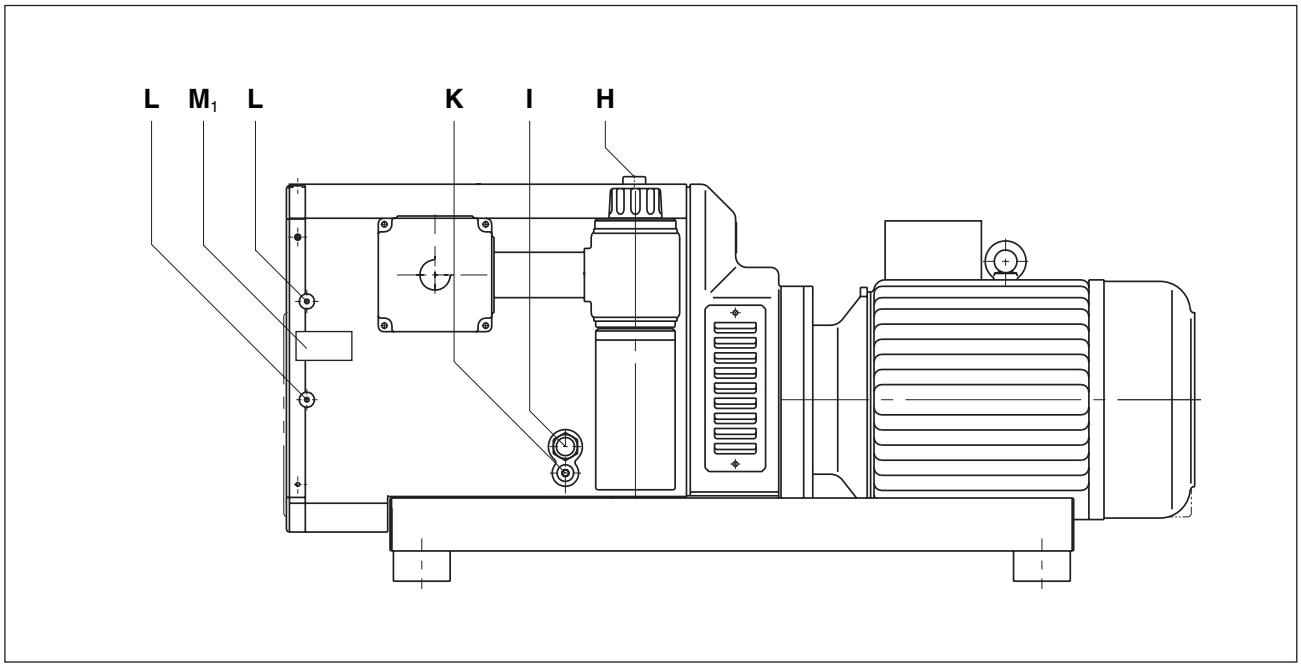


Fig. 7 Lubrication

H Oil filling point

I Oil sight glass

K Oil discharge point

L Grease nipple

M_1 Lubrication plate

Lubrication:

The bearings on the C-VLR 400/500 must be lubricated with 30 g of grease every 5,000 operating hours or after no more than 2 years (see the two grease nipples (Fig. 7/L)).
We recommend Klüber PETAMO GY 193 or other similar greases (see lubrication plate (Fig. 7/M_1)).

NOTICE

This lubrication interval applies when operating the machine at an ambient temperature of 20° C. At 40°C this interval is halved.

7.2.2 Air filtering

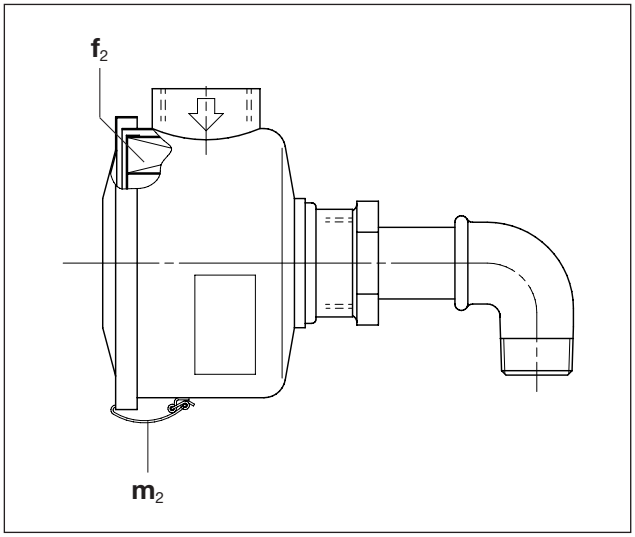


Fig. 8 Vacuum tight suction filter

f_2 Filter cartridge

m_2 Tension clamps

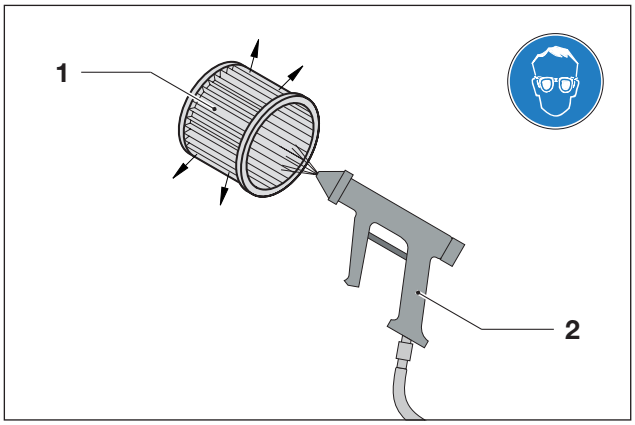


Fig. 9 Purging filter cartridge

1 Filter cartridge

2 Compressed air

NOTICE

Insufficient maintenance on the air filter
The power of the machine lessens and damage may occur to the machine.

Vacuum tight suction filter (C-VLR 60)

The filter cartridge (Fig. 8/f_2) for the suction filter (Fig. 2/S) 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 cartridge (Fig. 8/f_2) can be removed after undoing the tension clamps (Fig. 8/m_2).

NOTICE

Do not damage the filter cartridges when cleaning them.

Micro filters (C-VLR 100 - 500)

The micro filter inbuilt in the intake silencer (Fig. 3/S_1, 4/S_1) must be cleaned or replaced more or less often depending on how dirty the medium in it is by washing or blowing through.

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

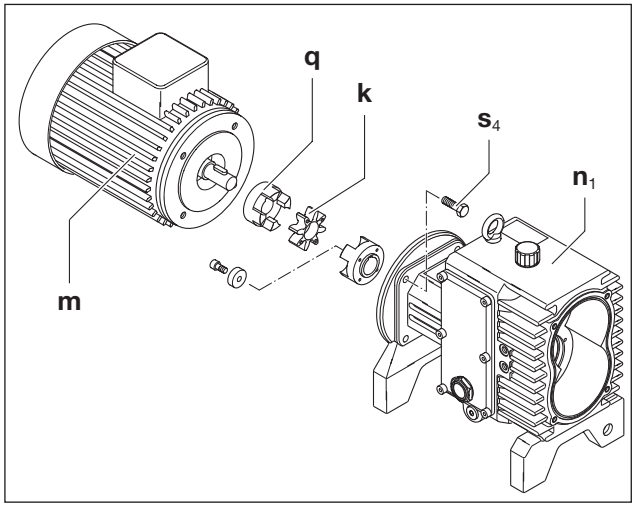


Fig. 10 Coupling C-VLR 60

k Coupling sprocket

m Motor

n_1 Housing

q Coupling half on the motor side

s_4 Screws

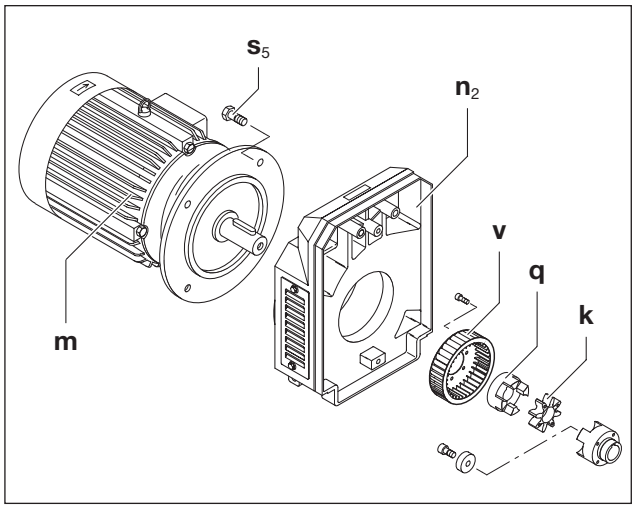


Fig. 11 Coupling C-VLR 100- 500

k Coupling sprocket

m Motor

n_2 Fan housing

q Coupling half on the motor side

s_5 Screws

v Fan

The coupling sprocket (Fig. 10/k, 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. 10/m, 11/m) off and ensure that it cannot be switched on again.

C-VLR 60

Undo the screws (Fig. 10/s_4) on the housing flange (Fig. 10/n_1) . Remove the motor axially with the half of the coupling on the motor side (Fig. 10/q) and suspend with the lifting device. If the sprocket (Fig. 10/k) is damaged or worn, then replace it.

C-VLR 100 - 500

Undo the screws (Fig. 11/s_5) on the motor flange. Remove the motor with the coupling half on the motor side (Fig. 11/q) from the fanhousing (Fig. 11/n_2) 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.

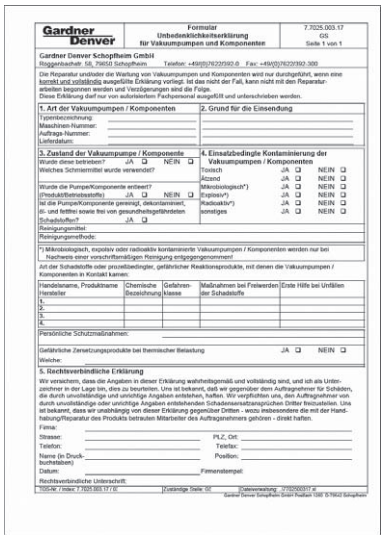
NOTICE

Frequent starting up and high ambient temperature
The service life of the sprocket (Fig. 10/k, 11/k) is reduced.

Re-assemble in reverse order.

7.3 Repair/ Service

a) 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).



Gardner Denver

Formular
Unbedenklichkeitserklärung
für Vakuumpumpen und Komponenten

7.7025.003.17
03
Seite 1 von 1

Gardner Denver Schopfheim GmbH
Roggenbachstr. 56, 79650 Schopfheim Telefon: +49(0)7622/392-0 Fax: +49(0)7622/392-300

Die Reparatur und/oder die Wartung von Vakuumpumpen und Komponenten wird nur durchgeführt, wenn eine korrekt und vollständig ausgefüllte Erklärung vorliegt. Ist das nicht der Fall, kann nicht mit den Reparaturarbeiten begonnen werden und Verzögerungen sind die Folge.
Diese Erklärung darf nur von autorisiertem Fachpersonal ausgefüllt und unterschrieben werden.

1. Art der Vakuumpumpen / Komponenten
Typenbezeichnung
Maschinen-Nummer:
Auftrags-Nummer:
Lieferdatum:

2. Grund für die Einsendung

3. Zustand der Vakuumpumpe / Komponente
Wurde diese betrieben? JA ☐ NEIN ☐
Welches Schmiermittel wurde verwendet?
Wurde die Pumpe/Komponente entleert? (Produkt/Betriebsstoffe) JA ☐ NEIN ☐
Ist die Pumpe/Komponente gereinigt, dekontaminiert, öl- und fettfrei sowie frei von gesundheitsgefährdeten Schadstoffen? JA ☐
Reinigungsmittel:
Reinigungsmethode:

4. Einsatzbedingte Kontaminierung der Vakuumpumpen / Komponenten
Toxisch JA ☐ NEIN ☐
Ätzend JA ☐ NEIN ☐
Mikrobiologisch*) JA ☐ NEIN ☐
Explosiv*) JA ☐ NEIN ☐
Radioaktiv*) JA ☐ NEIN ☐
sonstiges JA ☐ NEIN ☐

*) Mikrobiologisch, explosiv oder radioaktiv kontaminierte Vakuumpumpen / Komponenten werden nur bei Nachweis einer vorschriftsmäßigen Reinigung entgegengenommen!

Art der Schadstoffe oder prozeßbedingter, gefährlicher Reaktionsprodukte, mit denen die Vakuumpumpen / Komponenten in Kontakt kamen:

Handelsname, Produktname / Hersteller	Chemische Bezeichnung	Gefahrenklasse	Maßnahmen bei Freiwerden der Schadstoffe	Erste Hilfe bei Unfällen
1.				
2.				
3.				
4.				

Persönliche Schutzmaßnahmen:

Gefährliche Zersetzungsprodukte bei thermischer Belastung JA ☐ NEIN ☐
Welche:

5. Rechtsverbindliche Erklärung
Wir versichern, dass die Angaben in dieser Erklärung wahrheitsgemäß und vollständig sind, und ich als Unterzeichner in der Lage bin, dies zu beurteilen. Uns ist bekannt, daß wir gegenüber dem Auftragnehmer für Schäden, die durch unvollständige und unrichtige Angaben entstehen, haften. Wir verpflichten uns, den Auftragnehmer von durch unvollständige oder unrichtige Angaben entstehenden Schadenersatzansprüchen Dritter freizustellen. Uns ist bekannt, dass wir unabhängig von dieser Erklärung gegenüber Dritten - wozu insbesondere die mit der Handhabung/Reparatur des Produkts betrauten Mitarbeiter des Auftragnehmers gehören - direkt haften.
Firma:
Strasse: PLZ, Ort:
Telefon: Telefax:
Name (in Druckbuchstaben): Position:
Datum: Firmenstempel:
Rechtsverbindliche Unterschrift:

7055-Nr. / Index 7.7025.003.17 / 03 | Gültig ab Seite: 03 | Datenverwaltung: 7.7025.003.01.xl
Gardner Denver Schopfheim GmbH Postfach 1260 D-79642 Schopfheim

Fig. 12 Clearance certificate 7.7025.003.17

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.

7.4 Spare parts

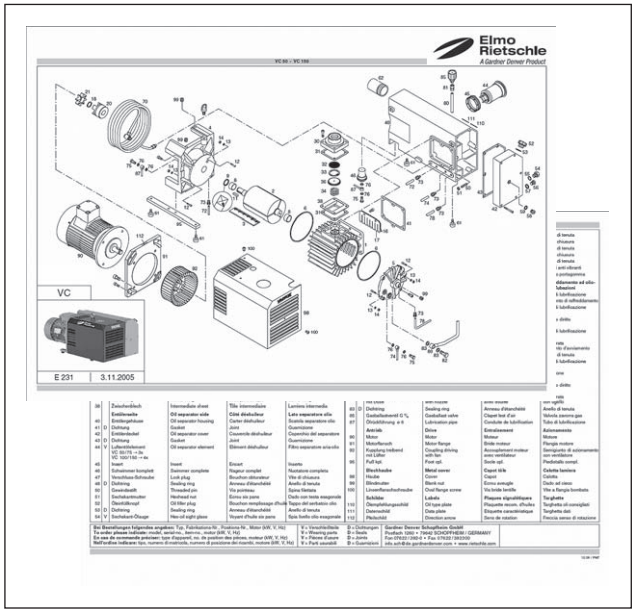


Fig. 13 Spare parts list (example)

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

Order spare parts in accordance with the:

- **Spare parts list:**
  E 880/1 → C-VLR 100/250300
  E 880/2 → C-VLR 400/500
  E 880/3 → C-VLR 60
  E 880/4 → C-VLR 150
  E 880/5 → C-VLR 251 (01)
  - 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.

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 VDE 0660 Part 2 orIEC 947-4)	
	The regulating valve is dirty so that the permissible vacuum value is exceeded	Clean or replace the regulating valve	Section 7.2Section 7.4
Pumping capacity is insufficient	The suction filter is dirty	Clean or replace the 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

Fault	Cause	Troubleshooting	Important
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 regulating valve is dirty so that the permissible vacuum value is exceeded	Clean or replace the regulating valve	Section 7.2 Section 7.4
The machine makes a abnormal noise	Deposits on the rotary piston	Clean the working space and the rotary piston	Elmo Rietschle Service
	The regulating valve is vibrating	Replace the valve	Section 7.4
Please contact Elmo Rietschle Service for other malfunctions or those that cannot be eliminated.			

9 Technical Data

C-VLR			60	100	120	150	251
Sound pressure level (max.) EN ISO 3744 Tolerance± 3 dB(A)	dB(A)	50 Hz	78	82	81	79	81
		60 Hz	80	85	83	82	84
Sound power level	dB(A)	50 Hz	95	94	93	97	92
		60 Hz	95	97	96	99	97
Weight *	kg		51	105	119	125	140
Length *	mm		625	661	717	826	1060
Width	mm		431	540	540	533	635
Height	mm		295	360	360	375	375
Vacuum connection			G1	G1 1/2	G1 1/2	G1 1/2	G2
Exhaust air outlet			G1	G1 1/2	G1 1/2	G1 1/2	G2
Correct amount of oil	l		0,4	0,55	0,55	0,6	0,6

C-VLR			250	300	400	500
Sound pressure level (max.) EN ISO 3744 Tolerance± 3 dB(A)	dB(A)	50 Hz	80	80	86	88
		60 Hz	81	81	89	89
Sound power level	dB(A)	50 Hz	92	92	96	100
		60 Hz	94	94	100	101
Weight *	kg		213	263	330	381
Length *	mm		1060	1060	1059	1201
Width	mm		716	716	744	764
Height	mm		525	525	525	525
Vacuum connection			G2	G2	G3	G3
Exhaust air outlet			G2	G2	G3	G3
Correct amount of oil	l		0,75	0,75	0,75	0,75

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

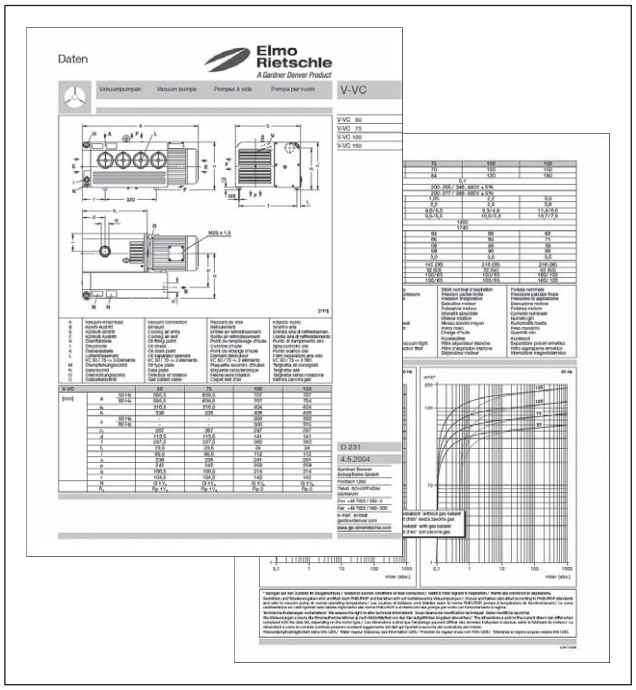


Fig. 15 Data sheet (example)

You will find more technical data on the data sheet **D 880**

- Download the PDF file:
  D 880 → C-VLR 60 - C-VLR 500
  - Download the pdf file:
    http://www.gd-elmorietschle.com
    → Downloads
    → Product Documents
    → C-Series → Data Sheets

NOTICE

Subject to technical changes.

Elmo Rietschle
A Gardner Denver Product

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Fax +49 7622 392-300

Gardner Denver

EC - declaration of conformity 2006/42/EC

Hereby the manufacturer confirms:	Gardner Denver Schopfheim GmbH Postfach 1260 D-79642 Schopfheim	
that the machine:	Claw 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 1000

is conform to the regulations of the guideline indicated above.

The following harmonized and national standards and specifications are applied:

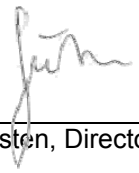
EN 1012-1:2010	Compressors and vacuum pumps — Safety requirements — Part 1: Compressors
EN 1012-2:1996+A1:2009	Compressors and vacuum pumps — Safety requirements — Part 2: Vacuum pumps

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

Gardner Denver Schopfheim GmbH

Schopfheim, 1.8.2011



Dr. Friedrich Justen, Director Engineering

C_0080_EN

Gardner Denver	**Safety declaration form for vacuum pumps and components**	7.7025.003.17 Page 1 of 1

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 ❑ NO ❑ Which lubrication was used?	Toxic YES ❑ NO ❑ Corrosive YES ❑ NO ❑ Microbiological*) YES ❑ NO ❑ Explosive*) YES ❑ NO ❑ Radioactive*) YES ❑ NO ❑ other YES ❑ NO ❑
Was the pump/ component emptied? (Product/Consumables) YES ❑ NO ❑	
Has the pump/ component been cleaned and decontamina YES ❑	
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: