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Original Operating Instructions — English

Operating Instructions

S-VSI 300 (44)

Vacuum Pump

Elmo Rietschle

S-Series

Screw

Table of contents

1 Forward

1.1 Principles

These operating instructions:

- are a part of the following screw vacuum pumps S-VSI 300 (44).
- describes how to use them safely and properly.
- 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 832-44-EN
	Declaration of Conformity	C 0084-EN
	Declaration of harmlessness	7.7025.003.17
Spare parts' list	Spare parts document	E 832
Data sheet	Technical data and graphs	D832-44-US
Info sheet	Storage guidelines for pumps	I 150-EN
Info sheet	Recommended water quality	I 832-EN
Manufacturer’s declaration	EU Directive 2002/95/EG (RoHS)	—

1.4 Abbreviations

Fig.	Figure
S-VSI	Vacuum pump
cfm	Pumping capacity
Torr	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
Pump	Pump and motor combination ready to be connected
Motor	Pump drive motor
Vacuum pump	Pump to create a vacuum
Screw	Pump‘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 pump 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. Instruction labels affixed to the pump 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 all local codes and regulations.

2.3 Designated use

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

- only operate the pump when it is in good mechanical condition
- do not operate the pump when it is partially assembled
- the pump must only be operated at an ambient temperature and suction temperature of between 41 and 104°F.
  Please contact us for temperatures outside this range.
- the pump may convey, compress or extract the following media:
  - all non-explosive, non-flammable, non-aggressive and non-poisonous dry gases and gas air mixtures
  - in addition, may handle inlet gasses with high humidity levels due to its excellent water-vapor tolerances.

2.4 Unacceptable operating modes

- extracting, conveying and compressing explosive, flammable, aggressive or poisonous media, e.g. dust as per ATEX zone 20–22, solvents as well as gaseous oxygen and other oxidants, water vapor, liquids or solid materials
- using the pump in non-commercial plants where the necessary precautions and protective measures have not been taken employed
- installing in environments that are at risk of explosions
- using the pump in areas with ionizing radiation
- back pressures on the outlet side:
  S-VSI (44) 10 Hp > +2.9 psi
- Modifications to the pump and accessories

2.5 Personal qualifications and training

- Ensure that people entrusted with working on the pump 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 pump 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 pump 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 pump must not be in touch with flammable 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 pump when it is turned off and power is locked out
- Ensure that you follow the procedure for decommissioning the pump described in the operating instructions.
- Reinstall or use safety and protective equipment immediately after completing any service work.
- Conversion work or modifications to the pump 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 unauthorized people away from the pump

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**
- Unauthorized modifications to the pump or the accessories supplied by **Gardner Denver Schopfheim GmbH**

3 Transport, storage and disposal

3.1 Transportation

3.1.1 Unpacking and delivery inspection

a) Unpack the pump 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

During transport, falling or toppling loads may result in injury or death.

▷ When transporting with the lifting device remember:
a) Select the lifting device suitable for the total weight to be transported.
b) Ensure that the pump cannot tip and fall.
c) Do not walk or stand under a suspended load.
d) Only transport the pump using an approved pallet.

Lifting device/ Transporting with a crane

WARNING

Bodily injury resulting from improper operation
a) Lifting unbalanced loads.
b) Impact to persons during lifting or transporting of the load.

a) Tighten the eyebolts (Fig. 1/1) firmly.
b) The pump must be suspended on the eyebolts using the lifting device for lifting and transporting.

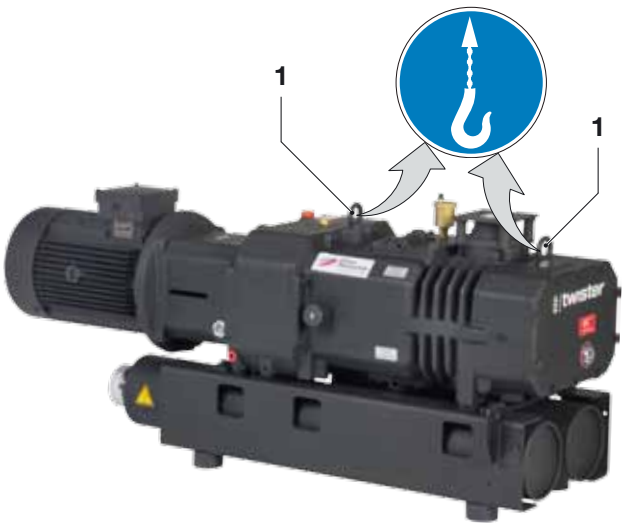


Fig. 1 Lifting and transporting

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 %
Storage temperature	14°F to 140°F

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

see Info “Pump storage guidelines”, Page 4

3.3 Disposal

WARNING

Danger from flammable, corrosive or poisonous substances!
Pumps 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 pump 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

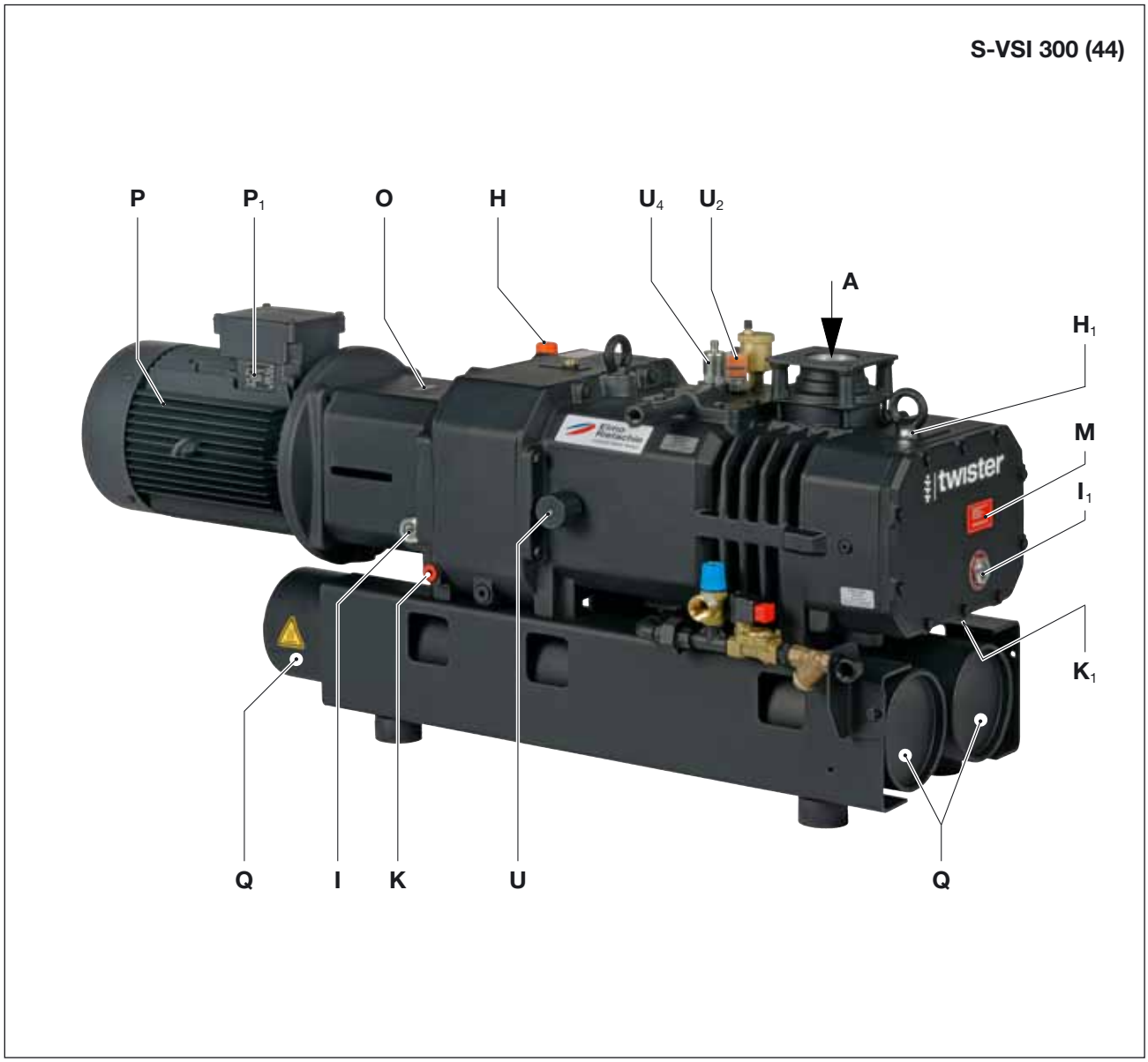


Fig. 2 Vacuum pump S-VSI 300 (44)

A Vacuum port

H, **H**$_1$ Oil fill ports

I, **I**$_1$ Oil sight glass

K, **K**$_1$ Oil drain plugs

M Oil recommendation plate

O Rotation direction plate

P Drive motor

P$_1$ Motor data plate

Q hot surfaces > 158°F

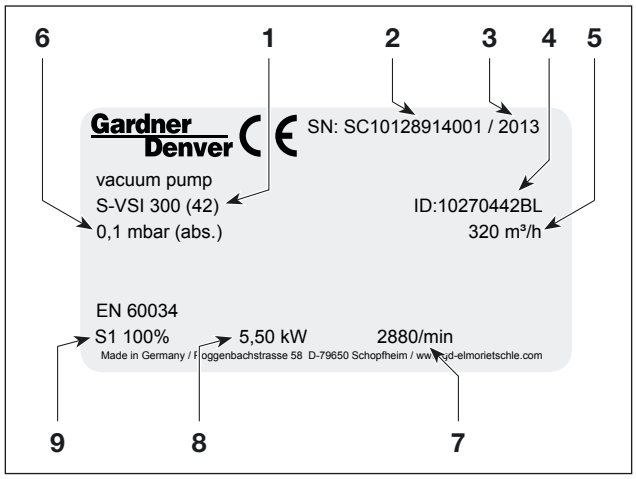
U$_2$ Thermostat (optional)

U$_4$ Liquid level switch (optional)

Fig. 3 Vacuum pump S-VSI 300 (44)

A Vacuum port
B Exhaust air outlet
C Cooling water inlet G½"
D Cooling water outlet G½"
D_1 Cooling water drain
E Cooling air intake
F Cooling air outlet
M Oil recommendation plate
N Data plate
U_1 Vent valve
Z Discharge silencer

4.1.1 Data plate



1 Model designation
2 Serial number
3 Year of construction
4 Item no.
6 Suction capacity
6 Ultimate vacuum (abs.)
7 RPM speed
8 Motor rating
9 Operating mode (S1 = continuous operation)

Fig. 4 Data plate

4.2 Description

The S-VSI model range has threaded connections on the suction and discharge ports.
The VSI is an oil-free double shaft screw vacuum pump in which two parallel screws mesh with each other without contact. The gas flows into the pump's suction chamber and compressed by the rotary movement of the screw rotors in the direction of the outlet. Due to our continuously variable pitch screw design, the gas is drawn in and is gradually compressed to atmospheric pressure. The counter-rotating screw rotors are synchronised by a set of gears. The synchronous gears and bearings are splash-lubricated with oil.
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, as well as the compression chamber with piston rings. There is also an atmospherically vented area that can be pressurized with a sealing gas (special version).
The VSI is driven by a standard NEMA three-phase motor.

4.3 Areas of application

The VSI pumps are suitable for the evacuation of closed volumes for a continuous vacuum within a pressure range of: 0.075 to 760 Torr.
They are also suitable for handling humid gas streams due to its high water vapor tolerance.

The maximum pumping capacity is 224 cfm at 60 Hz. Data sheet D832-44-US shows the vacuum versus capacity performance curve.

If the unit is switched on more frequently (at regular intervals of > 8 times an hour) or at higher ambient temperatures and intake temperatures, the excess temperature limit of the motor winding and the bearings may be exceeded. Please contact the manufacturer should the unit be used under such conditions.

If it is installed outdoors, the pump must be protected from environmental influences, (e.g. by a protective roof).

4.4 Cooling the pump

4.4.1 **Continuous flow cooling** (Optional)

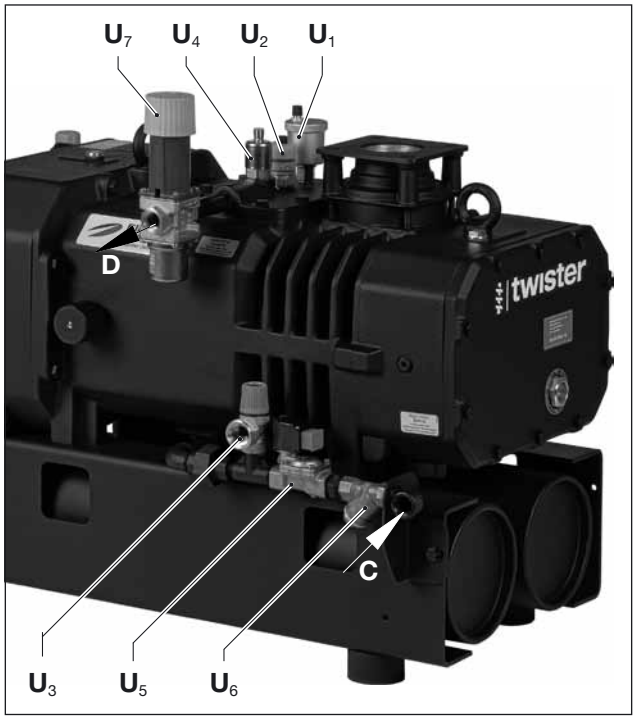


Fig. 5 Closed circuit water cooling (optional)

C Cooling water inlet G½"

D Cooling water outlet G½"

U_1 Vent valve

U_2 Temperature control

U_3 Safety valve

U_4 Liquid level monitor

U_5 Solenoid valve

U_6 Y-strainer

U_7 Thermostatic water valve (optional)

Cooling water flows continuously through the cavity in the double walled compressor housing.
For safety reasons the cooling system is fitted with a solenoid valve, temperature control and a safety valve (optional).
A special control unit and a thermostatic water valve are obtainable (optional).

Temperature control
Monitors the temperature of the cooling water.
Factory-provided adjustment: T_{max} = 140 °F

Safety valve
Protect from an incorrect operating pressure of the cooling water > 87 psi.

Solenoid valve
Regulate the cooling circuit.
Control voltage: 24 V DC

Y-strainer
Protect the armatures and the cooling circuit from impurities in the incoming cooling liquid.

Thermostatic water valve (option)
Fresh water cooling control
Factory-provided adjustment: T_{max} = 130 °F

The Operating Instructions for the monitoring device are enclosed next to the pump.

4.4.2 **Control unit** (optional)

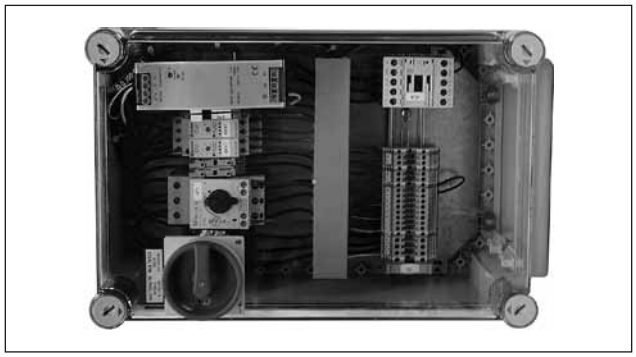


Fig. 6 Control unit (optional)

Control unit (optional)
Analyzes the signals of the monitoring devices and controls the motor as well as the solenoid valve.

5 Installation

5.1 Preparing for installation

Check the following points:

- Pump is freely accessible from all sides
- Do not block ventilation grids and holes
- Sufficient room for installing and removing pipes and for maintenance work, particularly for installing and dismantling the pump
- No external vibration effects
- Do not draw in any hot exhaust air from other pumps into the cooling system.

The oil fill ports (Fig. 2/H, H_1), oil sight glass (Fig. 2/I, I_1) and oil drains (Fig. 2/K, K_1), cooling water inlet (Fig. 3/C) and cooling water outlet (Fig. 3/D) must be easily accessible.
The cooling air intake (Fig. 3/E) and cooling air outlets (Fig. 3/F) must be at least 1 ft. away from adjacent walls. Hot cooling air coming out must not be allowed to recirculate.

5.2 Installation

NOTICE

The pump may only be operated in a horizontal position.

Damage may result from the pump tipping over and falling.

When installed at more than 3000 ft. above sea level, a reduction in capacity occurs. Contact Engineering for more information.

Contamination in the intake air
Protect the pump intake port with an external filter canister unit.

Check for oil leakage
Risk of falling due to oil spills!

Ensure that the mounting surface complies with the following conditions:

- Level and straight
- The mounting surface must be designed to accept the weight of the pump.

It is possible to install the pump on a firm surface without anchoring. When installing on a substructure we recommend mounting with vibration isolators.

5.3 Connecting pipes

a) Vacuum connection at (Fig. 2/A, 3/A).

NOTICE

Damage to the threaded inlet connection may result from excessive torque during the installation of the process piping. Use only the sufficient amount of torque to obtain a sealed connection.

Small diameter and excessive length of piping may reduce the pumping capacity. Contact Engineering for pipe size recommendations.

b) The discharged air can be blown out through the exhaust silencer at (Fig. 3/B) or conducted away using a hose or a pipe.

NOTICE

The air vent (Fig. 3/B) must not be closed or restricted.

Back pressure on the discharge port is only permissible up to:
S-VSI (44) 10 Hp < 2.9 psi

Prevent liquids accumulating in the vertical exhaust line by installing a drip leg.

5.4 Connecting the cooling water pipe

NOTICE

Cooling water!
The vacuum pump must not be operated without cooling water.

Potential pump failure
Ensure that the cooling water flow is not interrupted.

a) Connect the cooling water pipe to the cooling water inlet (Fig. 3/C) and the cooling water discharge pipe to the cooling water outlet (Fig. 3/D).

NOTICE

Only use pH-neutral, clean and filtered water for cooling
Dirt particles and aggressive water may lead to malfunctions or to premature wear in the cooling system

Suitable cooling water

see Info “Recommended water quality”, Page 4

NOTICE

The cooling water operating pressure must not exceed 87 psi.

Cooling water temperature must be between 60 – 122 °F.

b) When connecting a circulating cooling system to an external cooling system, it must be filled with cooling fluid.

NOTICE

Rinse the pipe network on the process side before connecting it
A filter element must be installed in the pipe network to prevent foreign debris getting into the heat exchanger.

Risk of frost damage in the cooling system
Freezing cooling water may lead to extensive damage to the pump. Therefore mix the cooling water with at least 10 % of anti-freeze. The amount of anti-freeze used must be adjusted to the ambient climatic conditions.

Handling anti-freeze
Anti-freeze may contain harmful ingredients, such as ethylene glycol that could damage your health, especially if swallowed.

5.5 Filling with lubricating oil

a) Fill the lubricating oil (for suitable sorts see “Maintenance”) for the gears and bearings into the oil fill ports (Fig. 2/H, 2/H_1) up to the middle of the inspection glasses (Fig. 2/I, 2/I_1).

b) Close the oil fill ports.

5.6 Connecting the motor

DANGER

Improper electrical connections may cause severe injury or death!
The electrical installation may only be done by a qualified, licensed electrician observing local codes and regulations. The customer must provide a main disconnect switch.

a) The motor's electrical data is given on the data plate (Fig. 3/N) or on the motor data plate (Fig. 2/P_1). The motor specifications must comply with the existing power supply (current type, voltage, frequency).

b) Connect the motor via a motor overload protection switch. We recommend using motor protection switches with delayed switch off, depending on possible excess current. Temporary excess current may occur when the pump is started cold.

NOTICE

Power supply
The conditions at the installation location must match the information on the motor data plate. Without de-rating 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 pump is at operating temperature the surface temperatures on the components (Fig. 2/Q) may go above 158°F.
You must avoid touching the hot surfaces (marked with warning labels)!

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 pump use hearing protection to avoid permanent damage to your hearing.

CAUTION

Do not put your hands onto the suction port to verify the vacuum function

NOTICE

Do not operate without a sufficient amount of cooling water.
Permanent pump damage may result due to overheating.

6.1.1 Checking the rotation direction

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

NOTICE

Incorrect direction of rotation
Operating in the wrong direction of rotation leads to damage to the pump.

6.1.2 Post-run

If operating for less than 2 hours, in order to remove condensation from the pump, let the vacuum pump run at 28"Hg with dry air for a minimum of 10 minutes.

CAUTION

Condensate formation and impurities
After pump shutdown, condensation may form inside the pump and deposit impurities on the claw rotors and cylinder surfaces which may prevent a pump start-up in the future. It is best to preform a post-run as described above.

Depending on the application, a post-run with a specific type of purge gas may be required. Contact Engineering for further advice.

6.2 Decommissioning/ storing

Stop the pump

a) Switch the pump off.

b) Close isolation valve to pump inlet.

c) Disconnect the motor from the power supply.

d) Open isolation valve slowly to vent the pump to atmosphere.

e) Remove the pipes and hoses.

f) Seal the connections for suction and discharge ports with adhesive foil.

g) Discharge cooling water (Fig. 3/D_1).

see also Section 3.2.1, Page 11

6.3 Re-commissioning

a) Check the condition of the pump (cleanliness, cabling etc.).

For installation see Section 5 Page 18

For commissioning see Section 6.1 Page 23

7 Maintenance and repair

DANGER

Electrical Warning!
Before performing any maintenance, disconnect power to motor at main power switch or circuit breaker. Install a lock-out tag to ensure power remains off during the service procedure.

WARNING

Hot surfaces and equipment
During maintenance work there is the danger of getting burned from hot components (Fig. 2/Q) and by the pump lubricating oil.
Wait for the pump 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 pump.

With any work observe the safety instructions described in Section 2.8 “Safety notes for installation, commissioning and maintenance”.

The entire pump should always be kept in a clean condition.

7.2 Maintenance work

Interval	Maintenance to be carried out	Section
monthly	Check the pipes and fasteners for leaks and to ensure they are seated properly and if necessary seal again or tighten up.	—
monthly	Check the motor terminal box and power cable inlet ports for leaks and if necessary re-seal.	—
monthly	Clean cooling fins of the pump and the motor.	—
monthly	Check the oil level.	7.2.1
7.500 hrs.	Change the oil.	
depending on how dirty the discharged medium is	Clean intake air filter. Clean gas ballast valve filter.	7.2.2
at least once a year	Check for coupling wear.	7.2.3
monthly	Check the cooling water system and the water supply lines.	7.2.4
depending on how dirty the cooling liquid is	Clean Y-strainer.	

7.2.1 Changing the oil

Fig. 9 Changing the oil

H, **H**$_1$ Oil fill ports

I, **I**$_1$ Oil sight glass

K, **K**$_1$ Oil drain plugs

M Oil recommendation plate

NOTICE

Always change the oil when the pump is at operating temperature and in a ventilated area.
If the oil sump 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 change the type of oil, empty the oil tank completely.

The oil level in the sight glasses (Fig. 9/I, I$_1$) must be checked every month.
When refilling with oil the pump must be switched off and vented to atmospheric pressure. With clean operations the oil must be changed after every 7,500 operating hours.
The oil viscosity must comply with ISO VG 150 as per DIN 51519.
Designation as per DIN 51502: CLP HC 150.
GEAR-LUBE 150 or equivalent oils by other manufacturers (also see oil recommendation plate (Fig. 9/M)).

7.2.2 Inlet Filtration

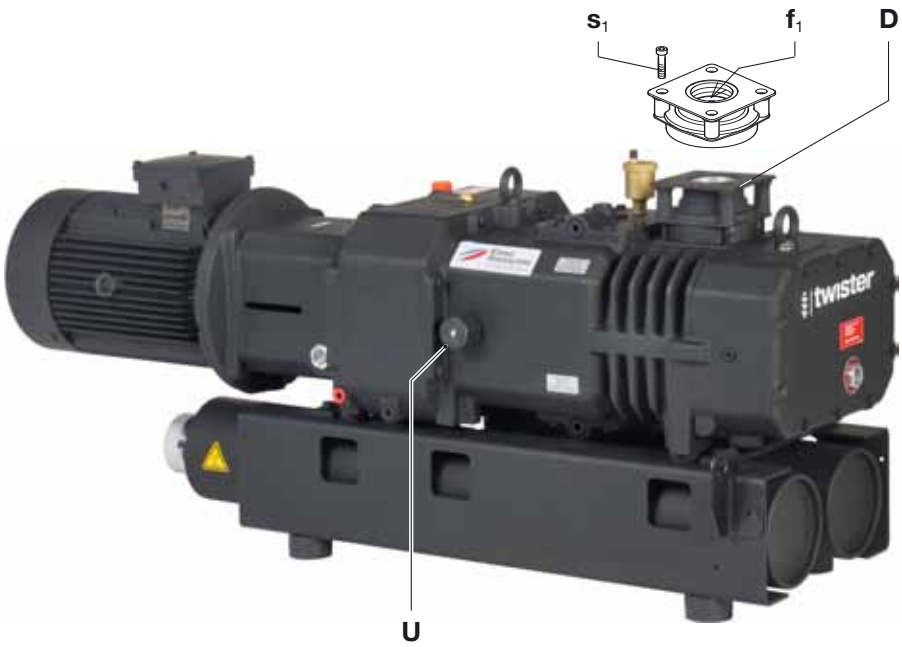


Fig. 10 Inlet Filtration

D Suction flange

f_1 Mesh filter

s_1 Screws

U Gas ballast valve

NOTICE

Insufficient maintenance of the air filter
The capacity of the pump is reduced and damage may occur to the pump.

Intake air filter:
The mesh filter (Fig. 10/f_1) must be cleaned on a regular basis or replaced if damaged. Depending on the application, the mesh filter may require more frequent attention.
Remove the suction flange (Fig. 10/D) after undoing the screws (Fig. 10/s_1).
Also check the valve seating for contamination.
Assemble in reverse order.

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.

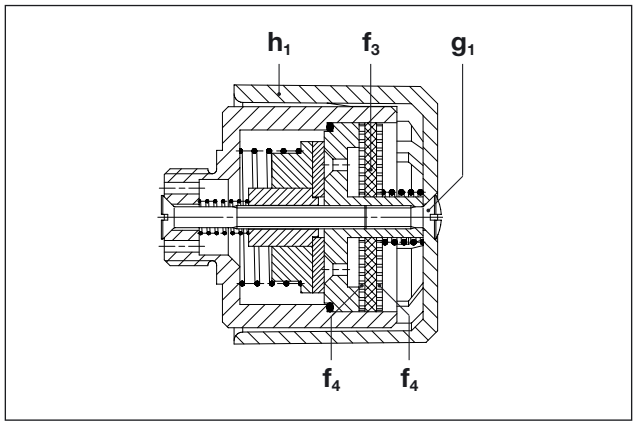


Fig. 11 Gas ballast valve

h_1 Cover

f_3 Filter disc

g_1 Countersunk screw

f_4 Micro filter screens

Gas ballast valve filter:
The pump has a gas ballast valve (Fig. 10/U). The filter disc (Fig. 11/f_3) must be replaced every 7,500 hours. The micro filter screens (Fig. 11/f_4) must be cleaned at the same time. By undoing the countersunk screw (Fig. 11/g_1) and removing the plastic cover (Fig. 11/h_1) the filter components can be removed for cleaning and replacement. Re-assemble in the reverse order.

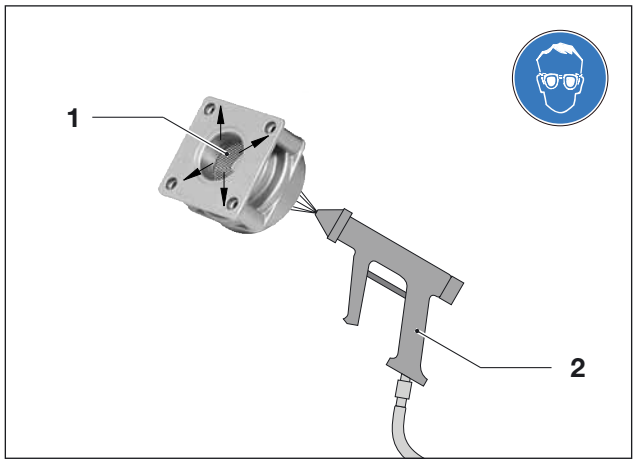


Fig. 12 Blowing out the mesh filter

1 Mesh filter

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 Drive Coupling

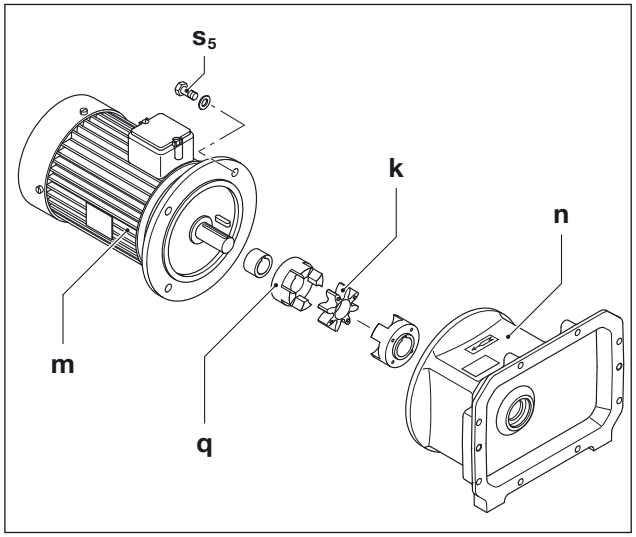


Fig. 13 Drive Coupling

k Coupling insert

m Motor

n Motor flange housing

q Motor drive coupling

s_5 Screws

The coupling insert (Fig. 13/k) is subject to wear and must be checked regularly (at least once a year).

CAUTION

Damaged or worn coupling insert may lead to rotor shaft breakage.

To inspect the coupling, switch off the motor and lock out the power supply.
Suspend the motor (Fig. 13/m) on the eyebolt by means of lifting equipment.
Undo the screws (Fig. 13/s_5) on the motor flange.
Remove motor and the coupling half on the motor side (Fig. 13/q) from the motor flange housing (Fig. 13/n) axially. If the insert (Fig. 13/k) is damaged or worn, then replace it.

NOTICE

Frequent starts and stops as well as high ambient temperatures reduces the life of the coupling insert.

Re-assemble in reverse order.

7.2.4 Cooling

Check the cooling water system and the pipes monthly.

Continuous flow cooling

The Y-strainer (Fig. 5/U_6) must be cleaned periodically, depending on the cooling liquid quality. To do this unscrew the plug and clean the built-in mesh screen.

7.3 Repair/ Service

a) For on-site repair work the motor must be disconnected from the power supply by a qualified electrician. Please contact the Elmo Rietschle for the a of the service center in your area.

b) After any repairs, please follow all guidance listed under “Installation” and “Commissioning” in this manual.

7.4 Spare parts

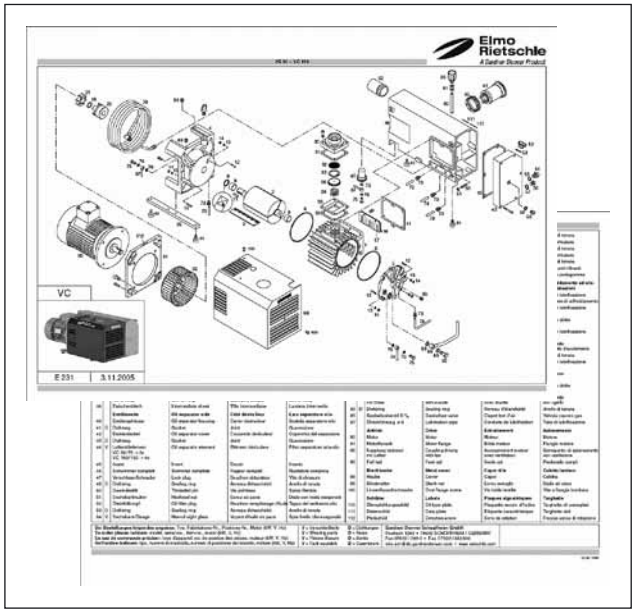


Fig. 15 Spare parts list (example)

Order spare parts in accordance with the:

- **Spare parts list:**
  E 832/4 → S-VSI 300 (44)
  - Download the pdf file:
  http://www.elmorietschle.com
  → Downloads
  → Product Documents
  → S-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.

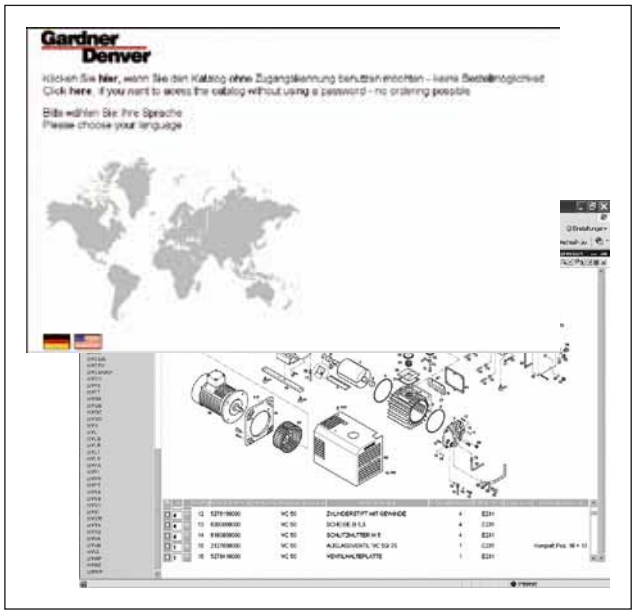


Fig. 16 Web site
http://www.service-er.de

8 Malfunctions: Causes and elimination

Fault	Cause	Troubleshooting	Important
Pump is switched off by the motor protection switch	Power Supply/ Frequency does not correspond with the motor data	Check by qualified electrician	Section 5.5
	Connection to motor leads 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	
Pumping capacity is insufficient	The mesh filter is dirty	Clean or replace the mesh 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
	Pump or system vacuum leaks	Check the pipe work 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	Pump or system vacuum leaks	Check the pipe work and screw connections for leaks and to ensure that they are firmly seated	Section 7.2
	Insufficient cooling water	Note cooling water consumption from data sheet	Section 9
	The mesh filter is dirty	Clean or replace the mesh filter	Section 7.2.2 Section 7.4
Pump gets too hot	Ambient or intake temperature is too high	Recheck operating parameters	Section 2.3
	Cooling air supply is obstructed	Check environmental conditions	Section 5.1
		Clean the cooling fins	Section 7.2
	The cooling water system is obstructed	Check the cooling water system and the pipes	Section 7.2
	Insufficient cooling water	Note cooling water consumption	Section 9
	Cooling water inflow is too hot	Note the max. intake temperature	Section 9
The pump makes a abnormal noise	Deposits on the rotors	Clean the compression chamber and the rotors	Elmo Rietschle Service
Please contact Elmo Rietschle Service for other malfunctions or those that cannot be eliminated.			

9 Technical Data

S-VSI			300 (44) 10 Hp
Sound pressure level (max.) 150 → 0.075 Torr EN ISO 3744 Tolerance ±3 dB(A)	dB(A)	50 Hz	74
		60 Hz	76
Weight *	lb		715
Length *	in		52.23
Width	in		17.87
Height	in		22.83
Vacuum connection			2" NPT
Correct amount of oil	qt		2.0 (1.2 → H + 0.8 → H_1)
Cooling water consumption max. intake temperature: 50°C	gpm		1.8
Cooling water pressure	psig		max. 87

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

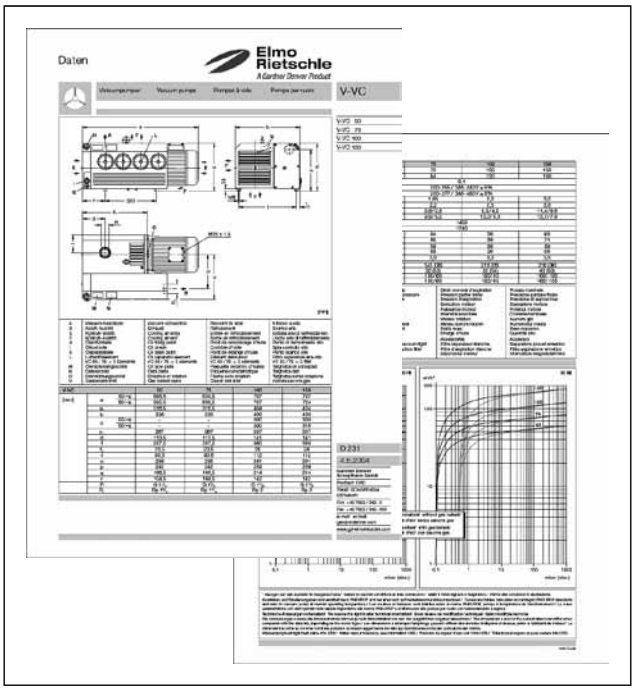


Fig. 17 Data sheet (example)

You will find more technical data on the data sheet **D 832-44-US**

- Download the pdf file:
  D 832-44-US → S-VSI 300 (44)
  - Download the pdf file:
    http://www.elmorietschle.com
    → Downloads
    → Product Documents
    → S-Series → Data Sheets

NOTICE

Subject to technical changes.

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