



SOGEVAC SV300 B / SV320 B

Single-stage, oil-sealed
Rotary Vane Pump
Instruction manual

Operating instructions 300270042_002_C6

Part Numbers

960 700 to 960 703

960 706 to 960 708

960 711 to 960 713

960 716 to 960 718

960722V to 960732V

960722FP to 960732FP

and their variants



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We accept no liability for loss of profit, loss of market or any other indirect or consequential loss whatsoever.

Product warranty and limit of liability are dealt with in our standard terms and conditions of sale or negotiated contract under which this document is supplied.

You must use this product as described in this manual. Read the manual before you install, operate, or maintain the product. For manual enquiries, email documentation@leybold.com.

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1 Safety and compliance

For safe operation from the start, read these instructions carefully before you install or commission the equipment and keep them safe for future use. Read all the safety instructions in this section and the rest of this manual carefully and make sure that you obey these instructions.

The instruction manual is an important safety document that we often deliver digitally. It is your responsibility to keep the instruction manual available and visible while working with the equipment. Please download the digital version of the instruction manual for use on your device or print it if a device will not be available.

1.1 Definition of Warnings and Cautions

Important safety information is highlighted as warning and caution instructions which are defined as follows. Different symbols are used according to the type of hazard.

WARNING:

If you do not obey a warning, there is a risk of injury or death.

CAUTION:

If you do not obey a caution, there is a risk of minor injury, damage to equipment, related equipment or process.

NOTICE:

Information about properties or instructions for an action which, if ignored, will cause damage to the equipment.

We reserve the right to change the design and the stated data. The illustrations are not binding.

1.2 Trained personnel

For the operation of this equipment “trained personnel” are:

- skilled workers with knowledge in the fields of mechanics, electrical engineering, pollution abatement and vacuum technology and
- personnel specially trained for the operation of vacuum pumps

Safety and compliance

1.3 Safety symbols

The safety symbols on the products show the areas where care and attention is necessary.

The safety symbols that we use on the product or in the product documentation have the following meanings:

	Warning/Caution Risk of injury and/or damage to equipment. An appropriate safety instruction must be followed or a potential hazard exists.
	Warning - Automatic start up Risk of injury. The equipment can be started remotely and without warning.
	Warning - Dangerous voltage Risk of injury. Identifies possible sources of hazardous electrical shock.
	Warning - Environmental hazard Risk of damage to the environment. Identifies the presence of toxic or damaging gases, liquids or materials.
	Warning - Flammable material Risk of fire. Identifies possible sources of flammable gases, liquids or materials.
	Warning - Hot surfaces Risk of injury. Identifies a surface capable of inflicting burns through contact.
	Warning - Moving parts present Risk of injury. Identifies moving parts that may cause injury or damage to equipment.
	Warning - Pressurised Risk of injury or damage to equipment. Identifies equipment containing pressurised gases or liquids.
	Warning - Risk of explosion Risk of injury or damage to equipment. Identifies a situation that could result in an explosion.
	Warning - Toxic material Risk of injury or damage to the environment. Identifies a source of toxic gases, liquid or material.
	Warning - Trip hazard Risk of injury. Identifies spilled liquids, trailing cords, pipes and other low-lying objects that may result in slipping, tripping or falling.

Safety and compliance

	Mandatory action symbol Failure to comply with this action may result in injury or damage to equipment.
	Mandatory - Read the manual Failure to comply with this action may result in injury or damage to equipment.
	Warning - Use protective equipment Risk of injury. Use appropriate Personal Protective Equipment (PPE) when performing the task.

Important safety information

2 Important safety information



WARNING:

It is mandatory that these operating instructions be read and understood prior to vacuum pump installation and start-up. are given where failure to observe the instruction could result in injury or death to people. The actual symbol shown varies according to the hazard.



WARNING:

When working on the pump system, always observe the Operating Instructions. Disconnect the unit from the power supply before starting any work. Take appropriate precautions to ensure that the pump cannot start.

If the pump has pumped hazardous gases, it will be absolutely necessary to determine the nature of the hazard involved and take the appropriate safety precautions.

Observe all safety regulations!

Take adequate safety precautions prior to opening the intake or exhaust port.



WARNING:

The pump must be packaged in such a way that it will not be damaged during shipping, and so that no harmful substances can escape from the package.

3 Description

3.1 Design and function

The pumps are single- stage, oil-sealed rotary vane pumps. The antisuckback valve, gas ballast valve (optional), exhaust filter, oil return circuit and oil cooling oil are integrated functional elements. The pumps are driven by a directly flanged motor.

The rotor mounted eccentrically in the pump cylinder has three vanes which divide the pump chamber into several compartments. The volume of each changes periodically with the rotation of the rotor.

As the rotor rotates, the intake portion of the pumping chamber expands and sucks gas through the intake port. The gas passes through the dirt trap and the open anti-suckback valve and enters the pump chamber. As the rotor rotates further, the vane separates part of the pump chamber from the intake port. This part of the pump chamber is reduced, and the gas is compressed.

At slightly above atmospheric pressure the gas is expelled from the chamber via the exhaust valve.

Oil injected into the pump chamber serves to seal, lubricate and cool the pump. The oil entrained with the compressed gas is coarsely trapped in the oil case by deflection. Then fine filtering occurs in the exhaust filter elements.

The proportion of oil in the exhaust gas is thus reduced below the visibility threshold (over 99% entrapment rate).

Oil trapped in the exhaust filters is returned to the inlet chamber via an oil return transfer. To prevent gas flowing at atmospheric pressure from the oil reservoir into the intake port, the oil return line is controlled by a float valve.

The oil cycle is maintained by the pressure difference existing between the oil case (pressure above or equal to atmospheric pressure) and the intake port (pressure below atmospheric pressure). The ball bearings are greased for 30,000 hours.

A fan running on the pump shaft generates the necessary cooling air. The oil cools down through a radiator.

Water cooled pumps with an oil-water heat exchanger and thermostatic valve are also available (as specific variants).

By opening the gas ballast valve, a controlled amount of air so called «gas ballast» is admitted into the pump chamber. This gas ballast prevents condensation (up to the limit of water vapor tolerance specified in the Technical Data) when pumping condensable gases or vapors.

There are different types of gas ballast :

- small gas ballast (4 m³/h)
- standard gas ballast (7.5 m³/h)
- large gas ballast (15 m³/h)
- gas ballast with electromagnetical valve (10 m³/h) - see [Pumping of condensable gases and vapors. Using gasballast.](#) on page 31

On pumps supplied without gas ballast valve, the valve can be retrofitted.

The gas ballast flows are indicative and valid at ultimate pressure.

Description

Unintentional venting of the vacuum chamber as well as oil suckback when shutting down the pump are prevented by the integrated anti suck-back valve .

In applications where an oil suckback must be avoided by all means, it is recommended to install a dedicated valve.

3.1.1 Range of use



WARNING:

The pumps are designed for pumping of inert gases in the range of rough vacuum, between atmospheric pressure and ultimate pressure of the pump.



The pumps are not designed for pumping of aggressive, corrosive, flammable or explosive gases. By presence of aggressive, flammable, corrosive or explosive gases, contact us. These pumps are not designed for working in flammable or explosive environment.



In case of doubt, contact us for the ATEX pump range.



CAUTION:

The pumps are not suitable for pumping liquids or media which contain dust. Corresponding protective measures must be introduced.

In case of doubt, contact us

Before pumping greater than atmospheric concentrations of oxygen (> 23.5 %) or other highly reactive gases, the pump must be modified, degreased and a special oil (such as PFPE) must be used.

Take adequate safety precautions. Contact us for important safety instructions.

3.2 Standard specification

The pump is supplied with drive motor in ready-to-use condition. It is supplied with mineral oil, which is filled in.

Specific variants are delivered with different oils. In any case, the oil type is indicated on the pump. No warranty claims could be accepted with use of another oil than specified.

The connection ports are blanked off by plastic protective caps.

Take these caps away before turning on the pump.

Table 1. Consumables

Description	Cat.Nr.
Oil filter standard	EK96006
Exhaust filter	9 714 31 120

3.3 Lubricants & grease

Unless otherwise specified on the pump, we recommend to run the pumps with Leybonol from Leybold Vacuum which meets following requirements and is approved by us:

- low vapor pressure, even at high temperatures ;
- flat viscosity curve ;
- minimum water content and absorption ;
- good lubricating properties ;
- resistant to aging under mechanical strain.

If you use a non-approved oil, we cannot guarantee that our pumps will meet their operating specifications (ultimate pressure, pumping speed, noise, operating temperature, etc). However, the warranty is voided only if the nonapproved oil adversely affects the operation or reliability of the pump.

When using other oil brands, employ nondetergent mineral oils of viscosity class ISO VG68 to ISO VG 100.

Use of other special-grade lubricants for specific applications is possible. Please consult us.

Only use lubricants and grease which have been fully qualified by us.

Table 2. Lubricants

Pump oil	Ref. No
5 liters mineral oil	L13005
20 liters mineral oil	L13020
200 liters mineral oil	L13099
20 liters Food grade oil	L15020

Technical data

4 Technical data

Table 3. Technical data SV300

SV300	Unit	50Hz	60Hz
Nominal speed ¹⁾	m ³ .h ⁻¹	280	340
Pumping speed ¹⁾	m ³ .h ⁻¹	240	290
Ultimate partial pressure without gas ballast	mbar	≤ 8·10 ⁻²	≤ 8·10 ⁻²
Ultimate total pressure with small gas ballast 4 Nm ³ /h	mbar	≤ 0.5	≤ 0.5
Ultimate total pressure with standard gas ballast 7.5 Nm ³ /h also for EM gas ballast 10 Nm ³ /h	mbar	≤ 0.7	≤ 0.7
Ultimate total pressure with big gas ballast 15 Nm ³ /h	mbar	≤ 2.0	≤ 2.0
Ultimate total pressure with two big gas ballasts 28 Nm ³ /h	mbar	≤ 3.0	≤ 3.0
Water vapour tolerance with small gas ballast 4 Nm ³ /h	mbar	4 with turbine 220 mm	5 with turbine 220 mm
Water vapour capacity with small gas ballast 4 Nm ³ /h	kg.h ⁻¹	0.4 with turbine 220 mm	0.6 with turbine 220 mm
Water vapour tolerance with standard gas ballast 7.5 Nm ³ /h also for EM gas ballast 10 Nm ³ /h	mbar	10 with turbine 220 mm	12 with turbine 220 mm
		40 with turbine 150 mm	50 with turbine 150 mm
Water vapour capacity with standard gas ballast 7.5 Nm ³ /h also for EM gas ballast 10 Nm ³ /h	kg.h ⁻¹	1.3 with turbine 220 mm	1.8 with turbine 220 mm
		6.0 with turbine 150 mm	8.0 with turbine 150 mm
Water vapour tolerance with big gas ballast 15 Nm ³ /h	mbar	70 with turbine 150 mm	70 with turbine 150 mm
Water vapour capacity with big gas ballast 15 Nm ³ /h	kg.h ⁻¹	11 with turbine 150 mm	14 with turbine 150 mm
Water vapour tolerance with two big gas ballasts 28 Nm ³ /h	mbar	95 with turbine 150 mm	95 with turbine 150 mm
Water vapour capacity with two big gas ballasts 28 Nm ³ /h	kg.h ⁻¹	15 with turbine 150 mm	17 with turbine 150 mm
Noise level ²⁾	dB(A)	72	76
Leak rate	mbar.l.s ⁻¹	≤ 1.10 ⁻³	≤ 1.10 ⁻³

Technical data

SV300	Unit	50Hz	60Hz
Mains voltage (std) - for other voltages please contact Leybold	V	See Ordering data	
Motor power	kW	See Ordering data	
Type of protection	-	IP55	IP55
Rated rotational speed	min. ⁻¹	1450	1750
Weight (with oil filling)	kg	200	200
Oil capacity (min./max.)	l	8.5/11.5	8.5/11.5
Intake connection	-	G2	G2 NPT2 ³ nN
Exhaust connection	-	G2	G2 NPT2 ³

1) according to DIN28400 and following numbers, with standard gas ballast.

2) operated at ultimate pressure without gas ballast, free-field measurements at a distance of 1m.

3) please contact Leybold.

Table 4 Technical data SV320B

SV320 B	Unit	50Hz	60Hz
Nominal speed ¹⁾	m ³ .h ⁻¹	330	385
Pumping speed ¹⁾	m ³ .h ⁻¹	284	330
Ultimate total pressure without gas ballast ¹⁾	mbar	≤ 0.08	≤ 0.08
Ultimate total pressure with standard gas ballast ¹⁾	mbar	≤ 0.7	≤ 0.7
Ambient temperature		10 ... 50 °C	
Water vapour tolerance with standard gas ballast ¹⁾	mbar	10 / 40	12 / 50
Water vapour tolerance with standard gas ballast ¹⁾	kg.h ⁻¹	1.3 / 6.0	1.8 / 8.0
Noise level ²⁾	dB(A)	72	73
Motor voltage	V	see Ordering data	
Motor power	kW	7.5	
Net weight (with oil filling)	kg	211	
Intake connection		G2" BSP for NPT use adapter P/N 71231973	
Exhaust connection		G2" BSP for NPT use adapter P/N 71231973	

Other data as per SV300 B GAET.

1) to DIN 28400 and following numbers, with standard gas ballast & 220 mm / 150 mm turbine.

2) operated at the ultimate pressure without gas ballast, free-field measurement at a distance of 1 m.

Technical data

Table 5. Different pressure units

	mbar (millibar)	torr	inches Hg vacuum
1 lb = 0.453 kg	1013	760	0
1 qt = 0.946 l	400	300	18.12
1 hp = 0.735 kW	133	100	25.98
1 inch = 25.4 mm	4	3	29.80
1 r.p.m. = 1 min -	1	0.75	29.89
	0.1	0.75	29.92

1 atm (atmosphere) = 1013 mbar

1 Pa (pascal) = 0.01 mbar = 10^{-2} mbar

1 bar = 1000 mbar

1 torr = 1.33 mbar

Table 6. Different pumping speed units

	$\text{m}^3 \text{h}^{-1}$	l s^{-1}	cfm
$\text{m}^3 \text{h}^{-1} = \text{m}^3 / \text{h}$	1	0.278	0.589
$\text{l s}^{-1} = \text{l/s}$	3.60	1	2.12
cfm (cubic feet per minute)	1.699	0.472	1

Example : $1 \text{m}^3 \text{h}^{-1} = 0.589 \text{ cfm}$

Note : the nominal pumping speed of a pump at 60Hz is 20% higher than at 50Hz.

These values are valid for the standard variants and with the use of the recommended Leybold oils.

4.1 Ordering data

Ordering data Ref. No.	SV300 B
Pump with wide range motor IEC w/o gas ballast 200V -15% ... 230V +10% / 380 ... 400 V +/-10%, 50 Hz, 5.5 kW 200V -15% ... 230V +10% / 380 ... 400 V +/-10% & 460 +/-10%, 60 Hz, 6.6 kW	960 700
Pump with wide range motor IEC and integrated gas ballast valve 200V -15% ... 230V +10% / 380 ... 400 V +/-10%, 50 Hz, 5.5 kW 200V -15% ... 230V +10% / 380 ... 400 V +/-10% & 460 +/-10%, 60 Hz, 6.6 kW	960 702
Pump with three-phase motor NEMA and integrated gas ballast 208V +/-10% and 230/460 +/-10%, 60Hz, 10 hp 400V +/-10% 50Hz, 10 hp	960 707
Pump with three-phase motor JIS and integrated gas ballast valve 200V +10% -15%, 50/60Hz, 7.5 kW	960 712
Pump with wide range motor and integrated gas ballast valve 200V -15% ... 230V +10% / 380 ... 400 V +/-10%, 50Hz, 5.5 kW 200V -15% ... 230V +10% / 380 ... 400 V +/-10% & 460 +/-10%, 60Hz, 6.6 kW	960 717

Other gasballast variants available. Please contact us.

Technical data

Ordering data Ref. No.	SV320 B
Pump with three-phase motor IEC and integrated gas ballast valve, air cooled, mineral oil 230 V/400 V, +/-10% , 50 Hz, 7.5 kW 460 V, +/-10% , 60Hz, 7.5 kW	960 722V
Pump with three-phase motor IEC and integrated gas ballast valve, water cooled, mineral oil 230 V/400 V, +/-10% , 50 Hz, 7.5 kW 460 V, +/-10% , 60Hz, 7.5 kW	960 722V2002
Pump with wide range motor and integrated gas ballast valve, air cooled, mineral oil 200V -15% ... 230V +10% / 380 ... 400 V +/-10%, 50Hz, 6.0 kW 200V -15% ... 230V +10% / 380 ... 400 V +/-10% & 460 +/-10%, 60Hz, 7.2 kW	960 732V
Pump with wide range motor and integrated gas ballast valve, water cooled, mineral oil 200V -15% ... 230V +10% / 380 ... 400 V +/-10%, 50Hz, 6.0 kW 200V -15% ... 230V +10% / 380 ... 400 V +/-10% & 460 +/-10%, 60Hz, 7.2 kW	960 732V2002
Pump with three-phase motor IEC and integrated gas ballast valve, air cooled, food grade oil 230 V/400 V, +/-10% , 50 Hz, 7.5 kW 460 V, +/-10% , 60Hz, 7.5 kW	960 722FP
Pump with three-phase motor IEC and integrated gas ballast valve, water cooled, food grade oil 230 V/400 V, +/-10% , 50 Hz, 7.5 kW 460 V, +/-10% , 60Hz, 7.5 kW	960 722FP2002

Other gasballast variants available. Please contact us.

Water cooling

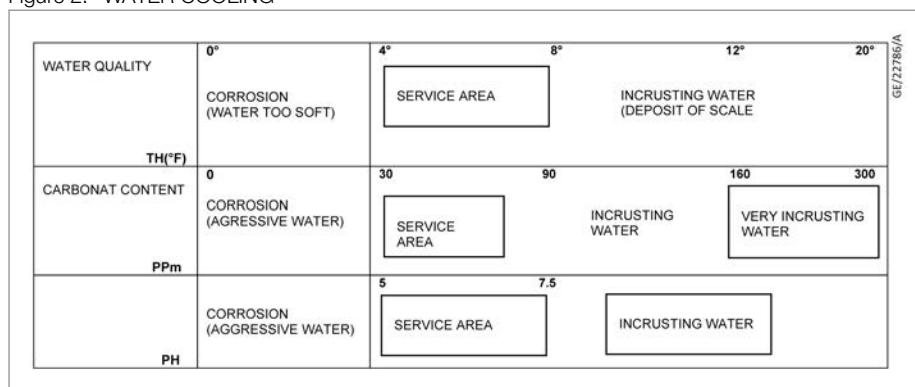
Pressure of water network : 2 bar mini / 8 bar maxi

Minimum water supply : 600 l/h for water temperature 15 °c

Valve regulation on 2 for warm ambiances 40 °c

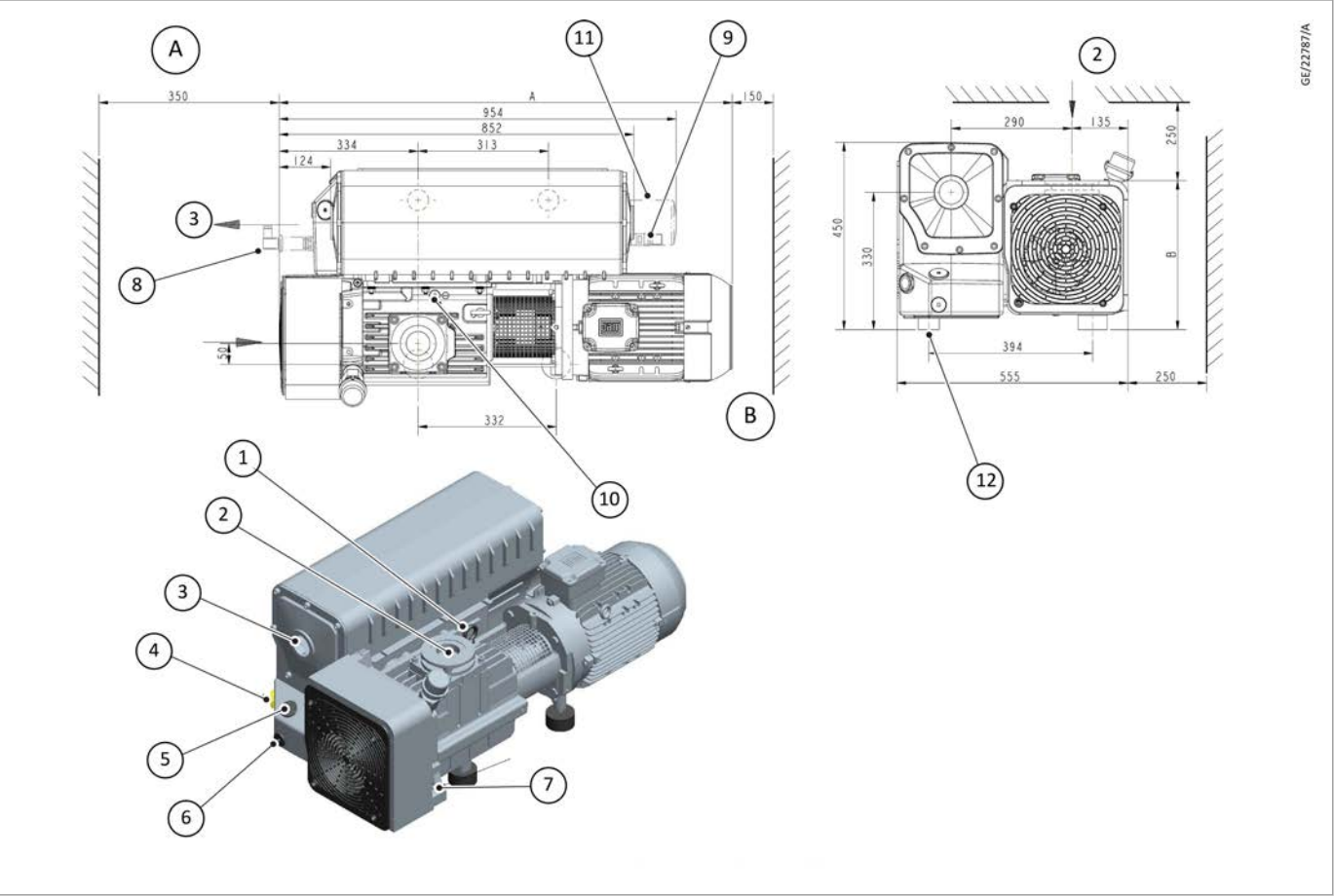
Max . water temperature : 30 °c

Figure 2. WATER COOLING



Technical data

Figure 3. SV300 B overview and dimensions in mm



1. Space for exhaust filter exchange and cooling

A. Space for the motor's ventilation
1. Lifting lug

2. Inlet port DN63

3. Exhaust port DN63

4. Oil sight glass

5. Oil filling

6. Oil drain

7. Gas ballast with EM valve 24v

8. Oil level switch

9. Overpressure switch

10. PT100 and thermal switch

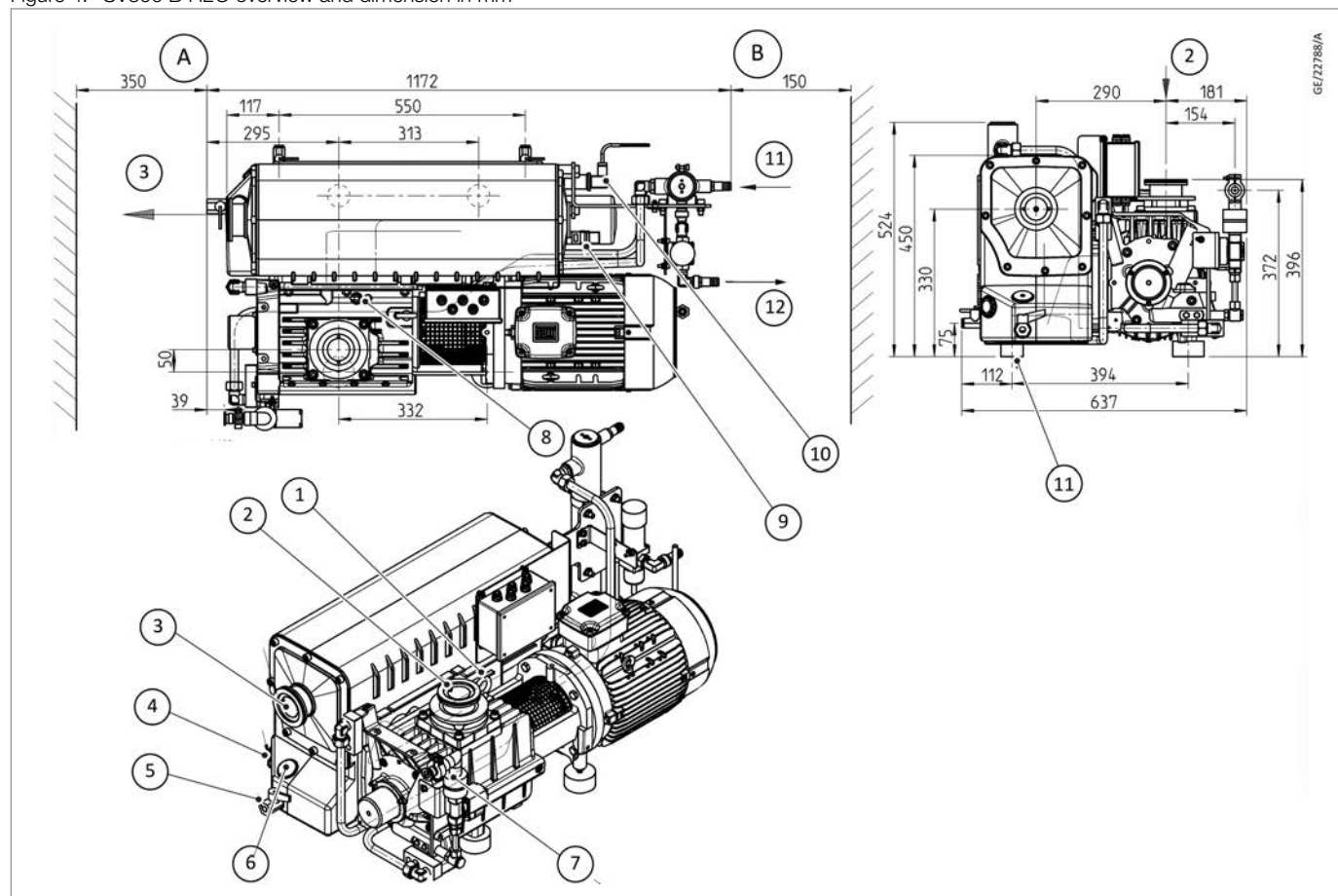
11. Oil filter

12. Mounting 4 M10 x M10

	A	B	Weight
EUR	1115	360	223 kg
JPN	1115	360	232 kg
USA	1145	360	222 kg
Wide range	1115	384	224 kg
9714 63 880 (Roots 500)		405	
9714 63 890 (Roots 1000)		405	
711 18 126 G2 M DN63 ISO-K		396	

Technical data

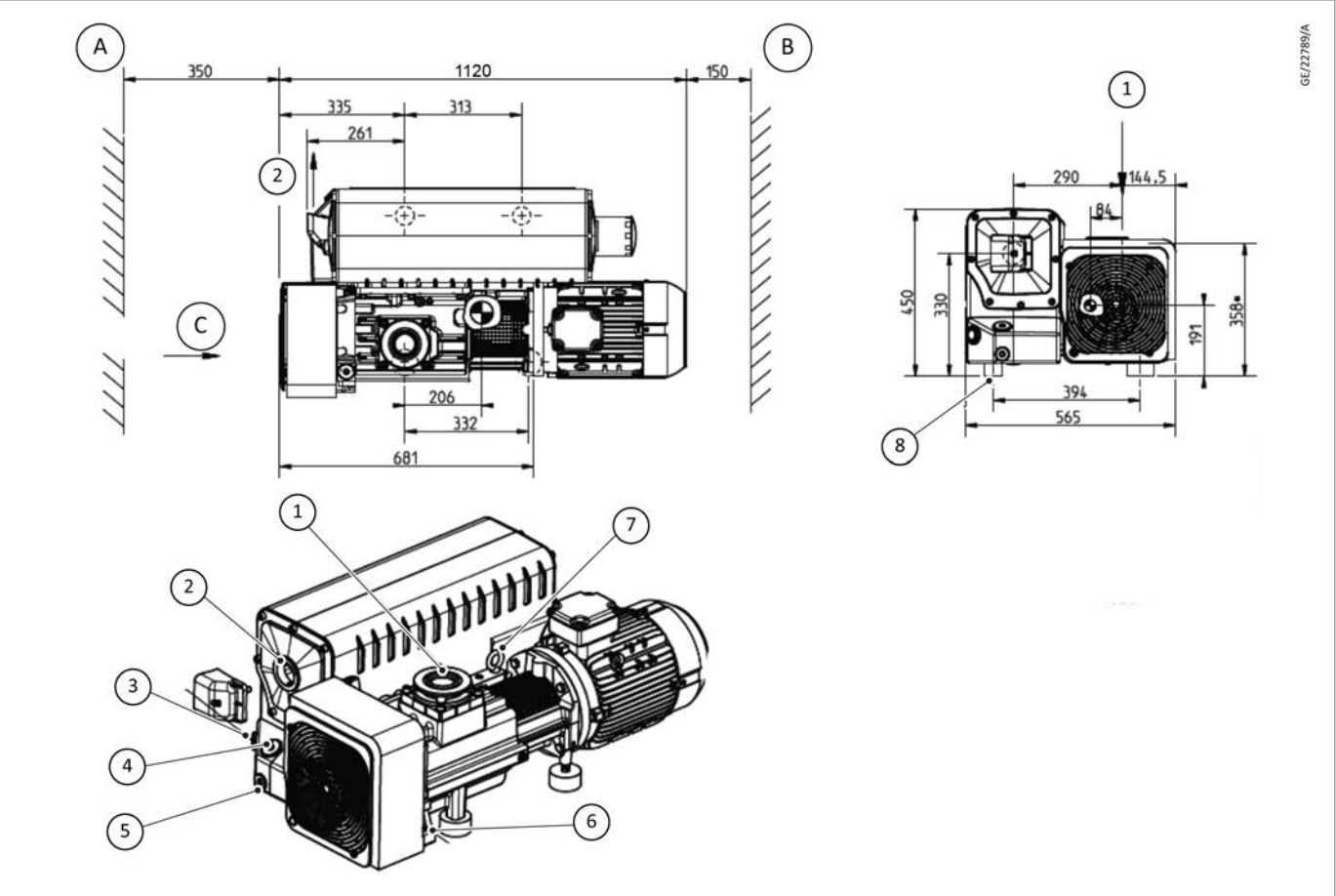
Figure 4. SV300 B H2O overview and dimension in mm



- | | |
|--|--------------------------------------|
| A. Space for exhaust filter exchange and cooling | B. Space for the motor's ventilation |
| 1. Lifting lug | 2. Inlet port DN63 |
| 3. Exhaust port DN63 | 4. Oil sight glass |
| 5. Oil drain | 6. Oil filling |
| 7. Gas ballast with EM valve 24v dc | 8. Temperature switch |
| 9. Exhaust filter over pressure | 10. Oil level switch |
| 11. Water inlet | 12. Water outlet |

Technical data

Figure 5. SV320 B



- A. Space for exhaust filter exchange and cooling
- B. Space for the motor's ventilation
- C. Cooling air
- 1. Inlet port G 2"
- 2. Exhaust port G 2"
- 3. Oil sight glass
- 4. Oil filling
- 5. Oil drain
- 6. Gas ballast
- 7. Lifting lug
- 8. Mounting 4 M10x10

Table 7 Different pressure units

	mbar (millibar)	torr	inches Hg vacuum
1 lb = 0.453 kg	1013	760	0
1 qt = 0.946 l	400	300	18.12
1 hp = 0.735 kW	133	100	25.98
1 inch = 25.4 mm	4	3	29.80
1 r.p.m. = 1 min -	1	0.75	29.89
	0.1	0.75	29.92

1 atm (atmosphere) = 1013 mbar
1 Pa (pascal) = 0.01 mbar = 10^{-2} mbar
1 bar = 1000 mbar
1 torr = 1.33 mbar

Technical data

Table 8. Different pumping speed units

	$\text{m}^3 \text{h}^{-1}$	l s^{-1}	cfm
$\text{m}^3 \text{h}^{-1} = \text{m}^3 / \text{h}$	1	0.278	0.589
$\text{l s}^{-1} = \text{l/s}$	3.60	1	2.12
cfm (cubic feet per minute)	1.699	0.472	1

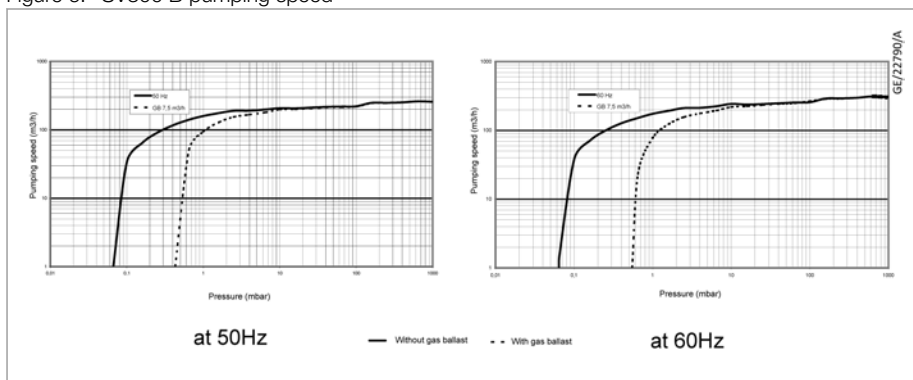
Example : $1 \text{m}^3 \cdot \text{h}^{-1} = 0.589 \text{ cfm}$

Note : the nominal pumping speed of a pump at 60Hz is 20% higher than at 50Hz.

Table 9. 60 Hz

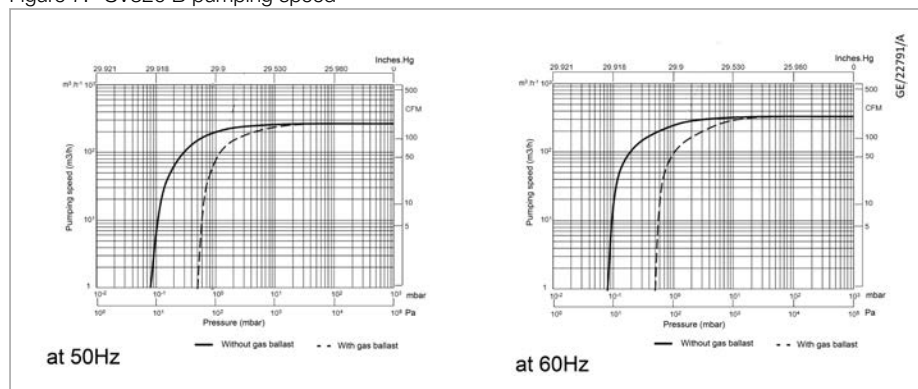
Nominal speed ¹⁾	cfm	200
Pumping speed ¹⁾	cfm	171
Ultimate partial pressure without gas ballast	Torr	6.10^{-2}
Ultimate total pressure with gas ballast	Torr	0.5
Water vapour tolerance with standard gas ballast standard ¹⁾	Torr	≤ 30
Motor power	hp	10.5
Rated rotational speed	rpm	1750
Weight (with oil filling)	lb	430
Oil capacity (min./max.)	qt	9/12.2
Intake connection NPT (F)	inches	NPT2
Exhaust connection NPT (F)	inches	NPT2

Figure 6. SV300 B pumping speed



Technical data

Figure 7. SV320 B pumping speed

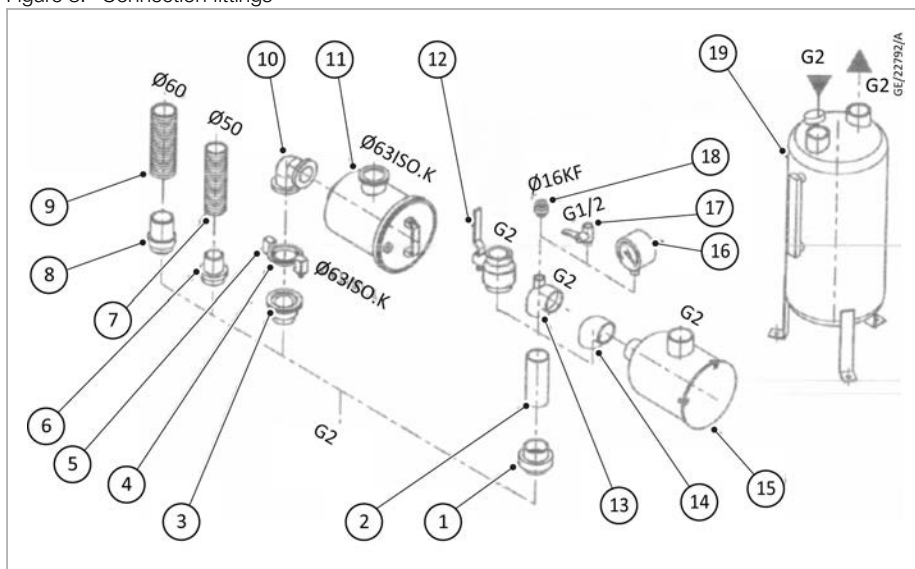


4.2 Connection Fittings

Table 10. Connection fittings

Item	Description	Size	Cat. Nr.
1	Union coupling + seal	G2 F/M	711 18 025
2	Nipple	G2 M/M - 150 mm long	711 18 035
3	Threaded flange adapter	G2 M - DN 63 ISO-K	711 18 126
4	Centering ring	63 ISO-K AL/NBR	268 07
5	Set of 4 clamps for ISO-K flanges	M10 x 24	267 01
6	Adapter for tubing	G2 DN 50	711 18 015
7	PVC tubing	50 mm, 1 m long	711 18 325
8	Adapter for tubing	G2 DN 60	711 18 016
9	PVC tubing	60 mm, 1 m long	711 18 326
10	Right-angle bend 90°	63 ISO K	887 25
11	Dust filter, paper Dust filter, charcoal Dust filter metal Dust filter polyester	63 ISO K	951 68 711 27 125 711 27 126 711 27 127
12	Ball valve	G2 F/F	711 30 107
13	Tee reducer bush	G2-G2-G1/2 F/F/F	711 18 265
14	Elbow 90 °	G2 F/F	711 18 215
15	Dust filter, paper Dust filter, charcoal Dust filter, metal Dust filter polyester	G2 M/F	951 65 711 27 122 711 27 123 711 27 124
16	Vacuum gauge	G1/2 M	951 92
17	Ball valve	G1/2 M/F	711 30 113
18	Threaded flange adapter	G1/2 M - DN 16 KF	711 18 120
21	Condensate Trap	G2 F -G2 F	951 44

Figure 8. Connection fittings



Transportation

5 Transportation

Pumps which have been filled with operating agent must only be moved in the upright position (horizontally). The angle of slope may not be over 10 ° max. Otherwise oil may escape. Avoid any other orientations during transportation.



WARNING:

Check the pump for the presence of any oil leaks, because there is the danger that someone may slip on the oil which has leaked from the pump.

Only use the lifting lugs which are provided on the pump to lift the pump with the specified lifting devices.

6 Installation



CAUTION:

It is essential to observe the following instructions step by step to ensure safe start-up. Start-up may only be conducted by trained specialists.

The pumps can be set up on any flat, horizontal surface. Under the four feet, there are metric threaded holes for securing the pump.

The oil level cannot be read properly if the pump is tilted. Pump risks to run dry. The ambient temperature should be between 12 °C (55 °F) and 40°C (104 °F) depending on oil type. By modifying the pump or changing the oil type, the pump can be run at a lower ambient temperature. Please consult us about this.

To ensure adequate cooling of the pump, leave enough space at the air intake and exhaust points, so as for access and maintenance. Make sure to keep the air intake of motor clear.

Do not step on the pump.

6.1 Connection to system

The standard pump is not suitable for installation in explosion hazard areas. Please contact us, when you are planning such an application. Before installing the pump you must reliably disconnect it from the electrical power supply and prevent the pump from running up inadvertently. The pump must only be installed by suitably qualified and trained personnel.

Observe all safety regulations.

6.1.1 Intake side

The pump has an internally-threaded intake flange. Using suitable connecting elements (see [Figure - Accessories](#) on page 23 and [Connection Fittings](#) on page 22) , the pump can be connected to the vacuum system. The cross-section of the intake line should be at least the same as the intake port. If the intake line is too narrow, it reduces the pumping speed. We recommend to apply either LOCTITE or TEFLON tape to the screwed unions so that they are vacuum-tight (especially if gases are dangerous).

- Pump should be connected to inlet line without any tension. Use flex lines or pipe unions in your inlet and exhaust lines so that they can be easily removed for pump maintenance.
- Type of materials used for mounting of canalisations should take care of pumped gases. It is the same for its tightness.



WARNING:

The maximum pressure at the inlet may not exceed atmospheric pressure (about 1013 mbar). Never operate the pump in the presence of over pressures at its intake.

Installation

If the process gas contains dust or particles, it is absolutely essential to install a dust filter in addition to the dust trap supplied see [Connection Fittings](#) on page 22. We recommend to install the dust filter horizontally using the T-piece or the elbow . This ensures that when removing the filter, no particle falls into the intake port.

You have a choice of four cartridges for the optional inlet filters. The metal cartridge prevents solid particles such as paper or plastics from entering the pump ; the paper and polyester cartridges remove small particles such as dust and powder down to one micron ; the activated carbon cartridge absorbs chemical vapors of acids, solvents, etc. If the carbon cartridge was stored in a damp place, bake it for 2 hours at 212 °F (100 °C) before use.

When pumping vapors, we recommend to install condensate traps or condensers on the intake side see [Connection Fittings](#) on page 22.

By pumping of dangerous gases, inlet line must be tight. No particles or liquids may enter in the pump.

6.1.2 Exhaust side

The pumps have integrated exhaust filters which, even at a high gas throughput, trap the oil mist and guarantee exhaust gas free of oil mist. If the exhaust filters are clogged, pressure relief valve opens and the filters are bypassed. As a result, the proportion of oil in the exhaust gas as well as the pump's oil consumption rise. Installing new exhaust filters will correct this problem. (See [Exhaust filter exchange](#) on page 37)

This situation must be resolved by changing the exhaust filters. It is under utiliser's responsibility to assure maintenance on material to avoid any trespassment of the limits authorised by regulations.

Check in the individual case whether an exhaust line is necessary and/or prescribed. Volatile substances can pass through the filter. Depending on the processed gas, we recommend to connect an exhaust line ; this is always necessary when the exhaust gases are dangerous.



WARNING:

Observe the safety precautions that apply to your application and process gases. The pump's exhaust port also has an internal thread (ET3/18). A hose can be connected via a suitable screw-in nipple (see [Figure - Accessories](#) on page 23 and [Connection Fittings](#) on page 22).



WARNING:

The cross-section of the exhaust line should be at least the same as the pump's exhaust port. If the exhaust line is too narrow, overpressure may occur in the pump.

The exhaust pipe material must be resistant to pumped gases. Use conductive materials for the exhaust pipe to avoid electrostatic charges.

Before installing the exhaust line, remove the exhaust-flange plate and ensure that the exhaust demister(s) are secured tightly in place. They sometimes loosen during shipping and installation. A loose demister results in exhaust smoke during start-up and operation.

**WARNING:**

Install the exhaust line with a downward slope to prevent condensate from flowing back into the pump. If this is not possible, we strongly recommend to install a condensate trap (see [Accessories](#) on page 45). If several pumps are connected to one exhaust line, ensure an adequate cross-section and a non-return valve at the exhaust of each pump.



Never operate the pump with a blocked or restricted exhaust line. Before start-up ensure, that any blinds or similar shut-off devices in the exhaust line on the pressure side are opened and that the exhaust line is not obstructed. Such restrictions reduce the pumping speed, increase the temperature, and could overload the motor or cause a dangerous overpressure in the pump. Excessive pressure in the pump could damage the seals, blow out the sight glass, or destroy the pump housing. In addition to this explosion hazard, excessive backpressure can result in hazardous process gases leaking out of the pump. If you are purging the oil casing with inert gas, limit the inert-gas flow. Contact Leybold for recommendations.

When pumping dangerous gases, the exhaust line must be tight.

**WARNING:**

The maximum exhaust pressure must not exceed 1,15 bar (absolute).

Also reliably prevent the occurrence of any blockage in the exhaust line. Exhaust filter, accessories and the tubing must be rated according to the maximum throughput. The maximum throughput is equivalent to the pumping speed of the pumps.

6.1.3 Electrical connections

**WARNING:**

Ensure that incoming power to the pump is off before wiring the motor or altering the wiring. Electrical connections must be done by a qualified electrician in accordance with the applicable safety regulations.

Wire the motor for the correct supply voltage via connections in the junction box. See the wiring diagram on the motor name plate. For proper connection, a suitable motor protection switch must be used. Set the switch in accordance with the rating on the motor nameplate. The switch should be of class 10 at least

**WARNING:**

After connecting the motor and every time you alter the wiring, check the direction of rotation. Observe the direction arrow on the motor hood. During the check, the intake port should be open. If the direction of rotation is wrong, oil may be ejected out the intake port. The vacuum system may be pressurised.



Don't use the motor fan for checking the rotation direction. The motor fan rotates too fast to clearly check during operation ; when it slows during shutdown, it reserves its direction.

Turn off the power supply, and interchange two phases of the connection, if you need to correct the direction of rotation.

Installation

We recommend checking the direction of rotation with a phase-sequence indicator.

Prolonged running of the motor in the wrong direction of rotation will damage the pump !

A thermal overload switch is available as an accessory. It cuts out the pump if a specific temperature is exceeded and/or triggers a warning signal.

If any security switch or electrical defect cuts out the pump, re-start-up of the pump is only possible by hand-action.

Table 11. Motor protection breaker values SV320 B Europe China India Motors

Voltage/V	Frequency/Hz	Value/A
220	50	24.9
230	50	24.2
240	50	23.3
380	50	14.4
400	50	13.9
415	50	13.5
440	60	13.9
460	60	13.5

Table 12. Motor protection breaker values SV320 B Wide range motors

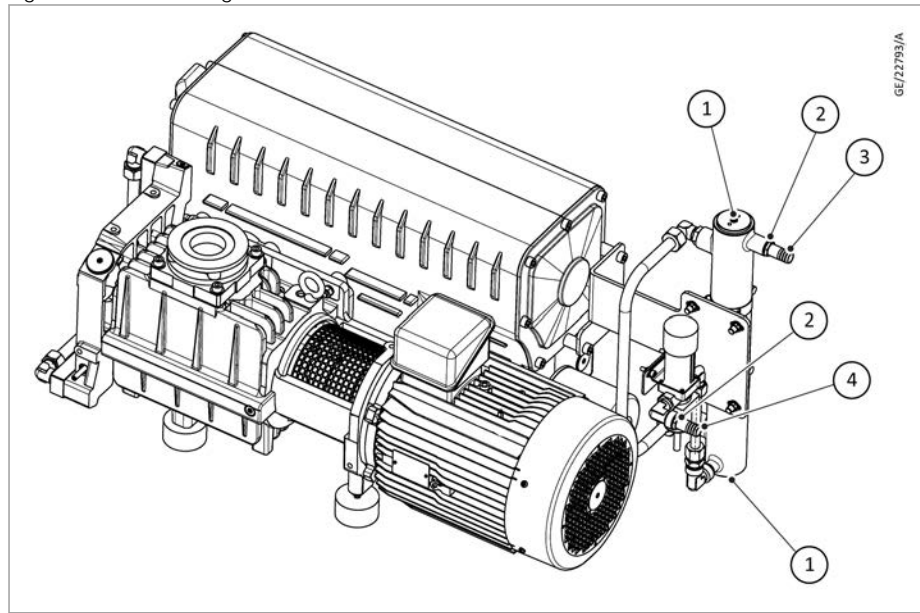
Voltage/V	Frequency/Hz	Value/A
200	50	30
220	50	26.2
230	50	26.2
240	50	26.2
380	50	15.1
400	50	15.1
415	50	15.1
200	60	32
220	60	29
230	60	29
380	60	16.7
400	60	16.7
460	60	16.7

6.1.4 Water cooling SV320 B

The water cooled SV320 B are built similarly to the SV300 B, but do not have a thermostatic valve. See [Figure - Water cooling](#) on page 17 for cooling water requirements. Average water consumption is below 300 l/h.

Installation

Figure 9. Water Cooling Connection SV300 B



- 1. Drain plug
- 3. Water inlet

- 2. Loctite 577
- 4. Water outlet

Operation

7 Operation

The SOGEVAC can pump gases and vapors, provided that the gas ballast valve is installed and open and the pump has reached its operating temperature.

Contact us Vacuum for important safety instructions before pumping greater than atmospheric concentrations of oxygen or other highly reactive gases. The pump must be degreased, modified, and special inert oil must be used for pumping oxygen. Also ATEX variants are available for pumping explosive gases.



WARNING:

The motor manufacturer guarantees a maximum of 6 starts per hour. To avoid exceeding 6 starts per hour, run the pump continuously and regulate the vacuum in your system with a pilot valve.

Pump in operation is hot and some surfaces could reach a temperature higher than 80 °C (176 °F). There is a risk of burn by touching. Take note of warning labels on the pump. labels on the pump.

7.1 Start-up



CAUTION:

Before switching on, always make sure that the pump contains enough oil.

Oil for the first filling is supplied with the pump.

The normal oil level is in the middle of sight glass.

If oil has to be added, unscrew the oil-fill plug, add oil and screw the plug firmly back in.

The pump is designed for normal startup at temperatures over 0 °C (32 °F) (as per PNEUROP), depending on used oils.

To avoid overloading the motor, do not start the pump more than six times within one hour. If frequent starts are needed, the pump should run continuously and be linked to the vacuum vessel by means of a valve. In that case, regulation will be made by the valve and not by start/stop of the pump.

With the valve closed, the pump consumes little energy.



WARNING:

Before starting the pump ensure that the attached accessories meet the requirements of your application and that safe operation is ensured.

Never expose part of the body to the vacuum. There is a danger of injury.

Never operate the pump with an open and thus accessible inlet. Vacuum connections as well as oil filling and oil draining openings must not be opened during operation of the pump.

The safety regulations which apply to the specific application in each case must be observed. This applies in particular to installation, operation and maintenance (servicing) as well as waste disposal and transportation.

Do not lay the hand on the intake to check vacuum.

Exposure of a part of the body to the vacuum result in a rush of blood in the exposed part.

7.2 Pumping of non-condensable Gases

If the process contains mainly permanent gases, the pump can be operated without gas ballast, provided that the saturation vapor pressure at operating temperature is not exceeded during compression.

If you do not know the composition of the gases to be pumped, and if you can't rule out the possibility of condensation, run the pump with gas ballast valve open in accordance with section [Start-up](#) on page 30.

7.3 Pumping of condensable gases and vapors. Using gasballast.

The pumps with gas ballast valves are delivered with the gas ballast valve open.

The pump can be equipped with following types of gas ballasts :

- Standard gas ballast . This gas ballast corresponds to the most important part of applications .
- Gas ballast «big flow» as a variant or accessory is intended for the applications where more vapours of condensable gases could come into the pump.
- Gas ballast "small flow" for pumping on applications where only few vapours are to be pumped and where the ultimate pressure with open gas ballast is important.
- Gasballast with E.M. valve (Cat. No. upon request) This kit is intended for being mounted on pumps on which the gasballast can be driven by an electromagnetic valve applied at 24 VDC.

A gas ballast kit Including all material required for changing the manual gas ballast flow to "small", "standard" or "big" is available: P/N 9 714 64 130

With the gas ballast valve open and at operating temperature, the SOGEVAC's can pump pure water vapor up to the water vapor tolerance indicated in the Technical Data. The pump's water vapor tolerance can be increased by raising the operating temperature.

Use a screwdriver to open the gas ballast valve. The running noise of the pump is slightly louder when the gas ballast valve is open. Before opening the pump to vapors, ensure that the gas ballast valve is open and that the pump has been warmed up for about 30 minutes with closed intake line.

Operation

If the gas ballast is connected to an inert gas supply, the pressure of the latter must not be above 1 bar abs.

Important

Do not open the pump to condensable vapors until it has warmed to operating temperature ; pumping process gas with a cold pump results in vapors condensing in the oil.

For processes with a high proportion of condensable vapors, slowly open the intake line, after reaching the operating temperature to prevent excessive quantities of vapor entering the pump.

One sign of condensation of vapors in the pump is a rise in the oil level during operation of the pump.

During pumping, vapors may dissolve in the oil. This changes the oil properties and causes a risk of corrosion in the pump. Therefore, do not switch off the pump immediately after completion of the process. Instead, allow the pump to continue operating with the gas ballast valve open and the intake line closed until the oil is free of condensed vapors. We strongly recommend operating the pump in this mode for about 30 minutes after completion of the process.



NOTICE:

In cyclic process operation, the pump should not be switched off during the intervals between the individual working phases, but should continue to run with gas ballast valve open and intake port closed (if possible via a valve). Power consumption is minimal when the pump is operating at ultimate pressure. Once all vapors have been pumped off from a process (e.g. during drying), the gas ballast valve can be closed to improve the ultimate pressure.

7.4 Working in cycles in / out

We recommend strongly to limit starting of the pump to 5 or 6 per hour. If the process need it, we recommend utilisation of a pneumatic or electromagnetic piloted valve and to let the pump run continuously.

7.5 Shutdown

Under normal circumstances, all that you need to do is to switch off the pump. The intake port of the pump contains an anti-suckback valve, which closes the intake port when the pump is shut down, thus maintaining the vacuum in the connected system and preventing oil from being sucked back into the system. The valve's functioning is not impaired by gas ballasting, but its cleanliness must be taken care of.

When pumping condensable media, let the pump continue to operate with the gas ballast valve open and the intake line closed before switching off (see Section [Start-up](#) on page 30).



WARNING:

If the pump is to be shut down for an extended period or if the pump has to be stored, proceed as follows: When pumping harmful substances, take adequate safety precautions.



Drain the oil and Pour in clean oil up to the bottom edge of the oil-level glass (see [Oil change, replacing the oil filter](#) on page 35 and let the pump run for a few minutes

Then drain the oil and pour in clean oil up to the top edge of the oil-level glass (see [Oil change, replacing the oil filter](#) on page 35). Seal the connection ports. Special preservation or slushing oils are not necessary.

When the pump has been switched off due to over-heating, initiated by the motor or its protection, the pump must be cooled down to the ambient temperature, and must only be switched on again manually after having eliminated the cause. In order to prevent the pump from running up unexpectedly after a main power failure, the pump must be integrated into the control system in such a way that the pump can only be started by a manually operated switch. This applies equally to emergency cut-off switches.

In case of switching processes in connection with a pump which has warmed up under operating conditions, the pump must then not be directly switched on again.

7.6 Pump ultimate pressure

If the system cannot reach the pressures specified in the technical data, measure the ultimate pressure directly at the pump's intake port after disconnecting the pump from the system.

The ultimate pressure of non-condensable gases (partial pressure of air) can only be measured with a compression vacuum gauge or a partial pressure gauge. Precise measurements can only be obtained with calibrated instruments.

Upon initial start-up, after prolonged idle periods or after an oil change, it takes a while until the pump reaches the specified ultimate pressure. The pump has to attain its operating temperature, and the pump oil has to be degassed. We recommend operating the pump initially with the gas ballast valve open.

The ultimate pressure depends on the pump temperature and the pump oil used. The best ultimate pressure can be obtained at a low pump temperature and by using the recommended oil types.

8 Maintenance



WARNING:

Disconnect the power before disassembling the pump. Make absolutely sure that the pump cannot be accidentally started.

If the pump has pumped harmful substances, ascertain the nature of the hazard and take adequate safety measures.

Observe all safety regulations

8.1 Maintenance schedule

The frequencies stated in the maintenance schedule are approximate values for normal pump operation.

Unfavourable ambient conditions and/or aggressive media may necessitate more frequent maintenance.

Maintenance job	Frequency	Section
Check the oil level	Daily	Oil level on page 35
Check the oil condition	Depends on process	Oil condition on page 35
1st oil change	After 150 h of operation	Oil change, replacing the oil filter on page 35
Subsequent oil changes	Every 2000 h or 6 months (depending on application)	Oil change, replacing the oil filter on page 35
Replace the oil filter	At each oil change	Oil change, replacing the oil filter on page 35
Clean the dirt trap	Monthly	Cleaning the dirt trap on page 36
Check the anti-suckback valve	Annually	Checking the anti-suckback valve on page 36
Radiator cleaning	Depends on ambient conditions	Radiator cleaning on page 37
Exhaust filter change	If oil mist at exhaust or annually	Exhaust filter exchange on page 37
Heat exchanger cleaning	6 months	Heat exchanger cleaning on page 38
Ball bearing exchange	Every 30 000 h	

**CAUTION:**

To simplify the maintenance work we recommend combining several jobs. Never mount used seals. Always mount new seals.

8.2 Checking the oil

8.2.1 Oil level

The pump oil level during operation must always be in the middle of the oil-level glass (ET3/24). When necessary, switch off the pump and add the correct quantity of oil.

High oil consumption often indicates that exhaust filters are clogged (See [Exhaust filter exchange](#) on page 37).

Stop the pump for filling oil. The oil level should be checked at least once a day

8.2.2 Oil condition

Normally the oil is clear and transparent. If gases or liquids dissolved in the oil result in deterioration of the ultimate pressure, the oil can be degassed by allowing the pump to run for about 30 min. with the intake port closed and the gas ballast valve open.

The amount of oil required for an oil check should be drained via the oil-drain plug (ET3/19) into a beaker or similar container with the pump switched off but still at operating temperature.

**WARNING:**

Depending on the process involved, dangerous substances may escape from the pump and oil. Take the appropriate precautions.

Observe the safety regulations.

8.3 Oil change, replacing the oil filter

Tool required: oil filter key (710 73 532)

Always change the oil when the pump is switched off but still at working temperature.

If there is a risk of the oil being polymerized by the connected process, change the oil immediately after operation of the pump.

Pump in function is hot and some surfaces could reach a temperature higher than 80 °C (176 °F).

There is a risk of burn by touching.

Unscrew the oil-drain plug and let the used oil drain into a suitable container.

**CAUTION:**

Depending on the process involved, dangerous substances may escape from the pump and oil. Take the appropriate precautions.

Observe the safety regulations.

When disposing of used oil please observe the relevant environmental regulations!



Maintenance



NOTICE:

When the flow of oil slows down screw the oil-drain plug back in, briefly switch on the pump (max. 10s) and switch it off. Remove the oil-drain plug again and drain the remaining oil

Unscrew the oil filter. Take a new oil filter, moisten its gasket with oil and screw it in manually.

Reinsert the oil-drain plug (check the O-Ring and replace it with a new one if necessary).

Unscrew the oil-fill plug and fill the pump should be flushed by filling it with fresh oil up to the bottom edge of the oil-level glass, run it for a short time and then change the oil again.

Use suitable oil only (see [Lubricants & grease](#) on page 13).

8.4 Cleaning the dirt trap

Required tools: Allen key male 8 mm. A dirt trap for coarse particles is located in the intake flange of the pump. It should be kept clean to avoid reduction of the pumping speed.

Remove four screws and take off the intake flange and gasket. Remove the retaining ring and support piece from inside. Take out the wire-mesh screen and clean it with a suitable solvent.

Reassemble in the reverse sequence. We recommend replacing the gasket by a new one.

Depending on the process involved, dangerous substances may escape from the pump and oil. Take the appropriate precautions.



CAUTION:

When disposing of used oil, please observe the relevant environmental regulations!

Never mount used seals ; always mount new seals.

Observe the safety regulations

8.5 Checking the anti-suckback valve

Required tools : Allen key male 8 mm - Adjusting ring: 710 72 333

Keep the anti-suckback valve clean to ensure proper operation of the pump. If the pump is exposed to large amounts of dust or dirt, we strongly recommend to install a dust filter upstream (see [Connection Fittings](#) on page 22).

First disconnect the intake line. Remove four screws and take off the intake flange and gasket. Remove the spring and anti-suckback valve. If the anti-suckback valve closes too soon, carefully compress the spring slightly. The top edge of the valve should be about 1-2 mm away from the bottom side of the intake port.

**WARNING:**

Depending on the process involved, dangerous substances may escape from the pump and oil. Take the appropriate precautions.



Observe the safety regulations

**CAUTION:**

Never mount used seals ; always mount new seals.

**NOTICE:**

When disposing of used oil, please observe the relevant environmental regulations!

8.6 Cleaning the gas ballast intake filter

Required tools: none

On the big flow gas ballast, the inlet filter must be changed when the GB flow decreases. Filter P/N 710 20 852

8.7 Disassembly of electrical motor

**WARNING:**

Disconnect the power before disassembling the pump. Make absolutely sure that the pump cannot be accidentally started.



-
- To disassemble motor from coupling housing, unscrew the 4 hexagonal head screws.
 - With the help of an extractor puller, remove the coupling of the motor shaft after having untightened the locking screw by a male Allen key 4 mm.
 - The reassembly is carried out in the reverse sequence.
 - Check direction of rotation.

8.8 Radiator cleaning

Please keep the oil cooler clean to have an efficient cooling. For that, remove the turbine cover and clean it with compressed air from the turbine inside.

Then reassemble the cover.

8.9 Exhaust filter exchange

- Remove the screws of the exhaust plate (ET3/18) using a 8 mm Allen key

Maintenance

- Lift the 3 exhaust filters (ET3/25) from the W shaped metal sheet holder and remove them from the oil casing (ET1/1)
- Make sure that the new exhaust filters (ET3/25) have the O-ring (opposite side of overpressure valve) and grease them using vacuum grease
- Replace the O-ring (ET3/26p) of the exhaust plate (ET3/18)
- Insert new exhaust filters (ET3/25). They are guided in the oil casing (ET1/1) correct position. Make sure the compression springs (ET3/27) are behind the W shaped metal sheet holder.
- Plug the exhaust plate (ET3/18) on the W shaped metal sheet holder with the 2 location pins and screw the exhaust plate (ET3/18) on the oil casing (ET1/1) using a 8 mm Allen key.
-

General Remarks

We reserve the right to alter the design or any data given in these Operating Instructions. The illustrations are not binding

8.10 Heat exchanger cleaning

Waterdrain if the cooling circuit before transport, long time storage, winter time.

To drain the water circuit, close the water cooling, remove the both plugs item 104 and place a water recovery tray with a capacity of approx. 2L under the heat exchanger.

Water may be hot, take appropriate safety measures.

For putting into operation again, screw the 2 plugs item 104 again into the heat exchanger, and open the water circuit.

To clean the heat exchanger: It is recommended to clean at least twice a year the water circuit.

For that, dismantle the exchanger from the pump.

Chemical cleaning is the most efficient, with dilute hydrochloric acid solution (5 to 10%) then neutralize with hexamethylethyrenetetramine at 0,2%.

For a 1 MM coat of scale, leave acting the acid during about 30 min.

The system must be open during the operations, so the product gases can escape.

Rinse copiously with water after neutralization.

Proceed in an open and well ventilated place.



WARNING:

Observe the safety regulations given by the manufacturer of the product you are using.



Observe the regulations for the treatment and the disposal of chemical products.



Observe the relevant environmental regulations.

9 Fault finding

Table 13 Troubleshooting

Fault	Possible cause	Remedy	Reference*
Pump does not start	Pump is connected incorrectly Motor protection switch incorrectly set. Operating voltage does not match motor Motor is malfunctioning Oil temperature is below 12°C (54°F) Oil is too viscous Exhaust filter / exhaust line is clogged Pump is seized up (sign : pump is jammed)	Connect the pump correctly Set motor protection switch properly Replace the motor Replace the motor Heat the pump and pump oil or use different oil Use appropriate oil grade Replace the filter or clean the exhaust line Repair the pump	Connection to system on page 25 Installation on page 25 Lubricants & grease on page 13 Checking the oil on page 35 Oil change, replacing the oil filter on page 35 Maintenance on page 34
Pump does not reach ultimate pressure	Measuring technique or gauge is unsuitable External leak ¹⁾ - Piping fittings loose Float valve does not close Anti-suckback valve is malfunctioning Exhaust valve is malfunctioning Inadequate lubrication due to : - unsuitable or contaminated oil clogged oil filter clogged oil lines Vacuum lines are dirty Pump is too small	Use correct measuring technique and gauge Repair the pump - Retighten Repair the valve Repair the valve Repair the valve Change the oil Replace the oil filter Clean the oil lines and oil case Clean vacuum lines Check the process date ; replace the pump, if necessary	Operation on page 30 Checking the anti-suckback valve on page 36 Checking the anti-suckback valve on page 36 Checking the anti-suckback valve on page 36 Checking the oil on page 35 Checking the oil on page 35
Pumping speed is too low	Dirt trap in the intake port is clogged Exhaust filter is clogged	Clean the dirt trap. Precaution : install a dust filter in intake line Install new filter elements	Cleaning the dirt trap on page 36 Exhaust filter exchange on page 37
	Connecting lines are too narrow or too long	Use adequately wide and short connecting lines	Connection to system on page 25

Fault finding

Fault	Possible cause	Remedy	Reference*
	Anti-suckback valve is hard to open	Check spring free length	
After switching off pump under vacuum, pressure in system rises too fast	System has a leak Anti-suckback is malfunctioning	Check the system Repair the valve	Cleaning the gas ballast intake filter on page 37
Pump gets too hot	Cooling air supply is obstructed Cooler is dirty Ambient temperature is too high Process gas is too hot Oil level is too low Oil is unsuitable Oil cycle is obstructed Exhaust filter / exhaust line is obstructed Exhaust valve is malfunctioning Pump module is no longer usable	Set pump up correctly Clean the cooler Set pump up correctly Change the process Add oil to reach the correct oil level Change the oil Clean or repair the oil lines Replace the exhaust filter, clean the exhaust line Repair the valve Replace the pump module	Connection to system on page 25 .Radiator cleaning on page 378 Connection to system on page 25 Checking the oil on page 35 Checking the oil on page 35 Exhaust filter exchange on page 37 Exhaust filter exchange on page 37 Maintenance schedule on page 34
Oil in intake line or in vacuum vessel	Oil comes from the vacuum system Anti-suckback valve is obstructed Sealing surfaces or anti-suckback valve are damaged or dirty Oil level is too high	Check the vacuum system Clean or repair the valve Clean or repair the intake port and valve Drain the excess oil	Checking the anti-suckback valve on page 36 Checking the anti-suckback valve on page 36 Maintenance schedule on page 34
Oil is turbid	Condensation	Degas the oil or change the oil and clean the pump. Precaution : open the gas ballast valve or insert a condensate trap. Clean the gas ballast intake filter	Oil change, replacing the oil filter on page 35
Pump is excessively noisy	Oil level is very low (oil is no longer visible) Oil filter is clogged	Add oil Change the oil and filter	Oil change, replacing the oil filter on page 35 Oil change, replacing the oil filter on page 35

Fault finding

Fault	Possible cause	Remedy	Reference*
	Coupling element is worn	Install new coupling element	Maintenance schedule on page 34
	Large vacuum leak in system	Repair vacuum leak	Maintenance schedule on page 34

Reference section : This column refers to the section in the Operating Instructions that contains the applicable repair information. 1) Bubble test : Let the pump run at operating temperature with degassed oil, without gas ballast and with closed intake port. Immerse the exhaust line in a bucket of water. If a steady stream of bubbles appear, the pump has an external leak. NB: For any other operation as described before, return the pump to a Leybold service center.

Storage

10 Storage

Until the pump is put back into service again, the pump should be stored in a dry place, preferably at room temperature (20 °C) but not below 0°C. Before taking the pump out of service, it should be properly disconnected from the vacuum system, purged with dry nitrogen and oil should be exchanged too. The inlet and exhaust ports of the pump must be blanked off using the shipping seals which are included upon delivery of the pump. The gas ballast must be closed and if the pump is to be shelved for a longer period of time it should be sealed in a plastic bag together with a desiccant (Silicagel).

If the pump has been shelved for more than one year, standard maintenance must be run and oil must be exchanged too before the pump is put into service again. We recommend that you contact the service from Leybold.

11 Disposal

The corresponding national environmental and safety regulations apply. This applies equally to used filters and filter elements (oil filter, exhaust filter and dust filter).



WARNING:

In the case of hazardous substances determine the kind of hazard first and observe the applicable safety regulations. If the potential hazard still persists, the pump must be decontaminated before starting with any maintenance work. For professional decontamination we recommend our service.

Never exchange the oil or the filters while the pump is still hot. Let the pump cool down to uncritical temperatures first. You must wear suitable protective clothing.

12 Service

12.1 Transport and hazardous materials

This product may contain components classified as dangerous goods under international transport regulations. These might include:

- **Hazardous substances:** e.g. lithium-ion batteries (for memory backup), helium (for cooling), or other pressurised gases.
- **Purpose:** Each substance serves a specific function such as energy storage or thermal regulation.

Refer to the declarations document for specific details.

These transport and handling regulations may apply to any substances that you have used in your operations.

12.2 Return the equipment or components for service

Before you send your equipment to us for service or for any other reason, you must complete a Declaration of Contamination Form. The form tells us if any substances found in the equipment are hazardous, which is important for the safety of our employees and all other people involved in the service of your equipment. The hazard information also lets us select the correct procedures to service your equipment.

If you are returning equipment note the following:

- If the equipment is configured to suit the application, make a record of the configuration before returning it. All replacement equipment will be supplied with default factory settings.
- Do not return equipment with accessories fitted. Remove all accessories and retain them for future use.
- The instruction in the returns procedure to drain all fluids does not apply to the lubricant in pump oil reservoirs.

Download the latest documents from leybold.com/en/downloads/download-documents/declaration-of-contamination/, follow the procedure in HS1, fill in the electronic HS2 form, print it, sign it, and return the signed copy to us.



NOTICE:

If we do not receive a completed form, your equipment cannot be serviced.

13 Accessories

Table 14 Accessories

Description	Size	Cat. Nr.
Oil filter by-pass		712 30 570
Oil drain tap	G" $\frac{3}{4}$	711 30 114
Gas ballast kit manual ("small", "standard", "big")		9 714 64 130
Gas ballast standard with EM valve 24 V DC SV300 B (retrofit kit) with end-plate without end-plate		9714 65 380* 9714 65 680*
Exhaust filter gauge		951 94
Exhaust filter overpressure switch		712 22 360*
Oil level monitor (only with all option oil casing)		712 21 992V* or 9714 58 110*
Thermal switch (105°C)		9 714 63 930
PT100		9 714 64 020
Adapter Roots 500		9 714 63 880
Adapter Roots 1000		9 714 63 890
Base frame for pump only		711 19 208
Base frame for Roots direct mounting		9 714 56 590
Water cooling with thermostatic valve (only with all option oil casing)		EK971449111*
Turbine kit 150 mm		EK6503195

** Please consult us for retrofit. Our Service can carry out these upgrades.*

Stability of pump is insured with accessories of Leybold; mounting of any other accessory will engage the responsibility of user concerning stability of pump

EU Declaration of Conformity

This declaration of conformity is issued under the sole responsibility of the manufacturer:

Leybold GmbH

Bonner Strasse 498
D-50968 Köln
Germany

Documentation Officer

T: +49(0) 221 347 0
documentation@leybold.com

- Product: SOGEVAC, Single Stage Rotary Vane pumps, with motor
- Models: SV300B-320B
- Pump family codes:

SV300 B 960700Vxxxx to 960718Vxxxx and 10330300Vxx

SV320 B 960722Vxxxx to 960732Vxxxx and 10330320Vxx

xx or xxxx are chronologically numbered customer variants

xxxx = 2016 = PFPE prepared pumps for O₂ pumping

xxxx = 2002 = water cooling

Is in conformity with the relevant Union harmonisation legislation:

2006/42/EC

Machinery directive

Note: The safety objectives of the Low Voltage Directive 2014/35/EU were complied with in accordance with Annex 1 No. 1.5.1 of this directive.

2011/65/EU

Restriction of certain hazardous substances (RoHS) directive
as amended by Delegated Directive (EU) 2015/863

Based on the requirements of relevant harmonised standards and technical documentation:

EN 1012-2:1996 +A1:2009

Compressors and vacuum pumps. Safety requirements. Vacuum pumps

EN 60204-1:2018

Safety of machinery. Electrical equipment of machines. General requirements

This declaration, based on the requirements of the listed Directives and EN ISO/IEC 17050-1, covers all product serial numbers from this date on: 2023-04-06

You must retain the signed legal declaration for future reference

This declaration becomes invalid if modifications are made to the product without prior agreement.



Andries de BOCK
VP Engineering
Industrial Vacuum Division



François BOUILLOT
General Manager Leybold Valence

Declaration of Conformity

Leybold GmbH
Bonner Strasse 498
D-50968 Köln
Germany

Documentation Officer
Innovation Drive
Burgess Hill
West Sussex
RH15 9TW
documentation@leybold.com

This declaration of conformity is issued under the sole responsibility of the manufacturer.

- Product: SOGEVAC, Single Stage Rotary Vane pumps, with motor
- Models: SV300B-320B
- Pump family codes:

SV300 B 960700Vxxxx to 960718Vxxxx and 10330300Vxx
SV320 B 960722Vxxxx to 960732Vxxxx and 10330320Vxx

xx or xxxx are chronologically numbered customer variants

xxxx = 2016 = PFPE prepared pumps for O₂ pumping

xxxx = 2002 = water cooling

The object of the declaration described above is in conformity with relevant statutory requirements:

Supply of Machinery (Safety) Regulations 2008

The objectives of the Electrical Equipment (Safety) Regulations 2016 are governed by Annex 1 1.5.1 of this regulation.

Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Based on the relevant requirements of harmonised standards:

EN 1012-2:1996 +A1:2009 Compressors and vacuum pumps. Safety requirements. Vacuum pumps

EN 60204-1:2018 Safety of machinery. Electrical equipment of machines. General requirements

This declaration, based on the requirements of the listed Statutory Instruments and EN ISO/IEC 17050-1, covers all product serial numbers from this date on: 2023-04-06

You must retain the signed legal declaration for future reference

This declaration becomes invalid if modifications are made to the product without prior agreement.

Signed for and on behalf of / Leybold GmbH



Andries de BOCK
VP Engineering
Industrial Vacuum Division



François BOUILLOT
General Manager Leybold Valence

ADDITIONAL LEGISLATION AND COMPLIANCE INFORMATION

EMC (EU, UK): Class A/B Industrial equipment

Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

RoHS (EU, UK): Material Exemption Information

This product is compliant with the following Exemptions

Annex III:

- 6(a) **Lead** as an alloying element in steel for machining purposes and in galvanised steel containing up to 0.35 % lead by weight
- 6(b) **Lead** as an alloying element in aluminium containing up to 0.4% by weight
- 6(c) Copper alloy containing up to 4% **lead** by weight

REACH (EU, UK)

This product is a complex article which is not designed for intentional substance release. To the best of our knowledge the materials used comply with the requirements of REACH. The product manual provides information and instruction to ensure the safe storage, use, maintenance and disposal of the product including any substance based requirements.

Article 33.1 Declaration (EU, UK)

This product contains Candidate List Substances of Very High Concern above 0.1%ww by article as clarified under the 2015 European Court of Justice ruling in case C-106/14.

- Lead (Pb)
This substance is present in certain steel / aluminium / brass components.

Compliance Information – incorporated products and assemblies

Motors	Regulation (EU) No 2019/1781 electric motors and variable speed drives <i>Based on the requirements of harmonised standard:</i> EN 60034-30:2009: Rotating electrical machines -- Part 30: Efficiency classes of single-speed, three-phase, cage-induction motors (IE-code)
Fans	2009/125/EC Ecodesign directive requirements for energy-related products Regulation (EU) No 327/2011: Industrial fans driven by motors

Additional Applicable Requirements

The product is in scope for and complies with the requirements of the following:

2012/19/EU	Directive on waste electrical and electronic equipment (WEEE)
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材料成分声明

China Material Content Declaration

部件名称 Part name 	有害物质 Hazardous Substances					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr VI)	多溴联苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
铸铝及铝合金制品 Aluminium alloys	X	O	O	O	O	O
钢合金制品 Steel alloys	X	O	O	O	O	O
铜管管件 Brass pipe fitting	X	O	O	O	O	O
铜接头 Brass connectors	X	O	O	O	O	O
铜衬套轴承 Brass bush bearing	X	O	O	O	O	O
O: 表示该有害物质在该部件的所有均质材料中的含量低于 GB/T 26572 标准规定的限量要求。 O: Indicates that the hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in GB/T 26572. X: 表示该有害物质在该部件的至少一种均质材料中的含量超出 GB/T26572 标准规定的限量要求。 X: Indicates that the hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T26572.						



Pioneering products. Passionately applied.

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