

# **SOGEVAC®**

SV10-16B

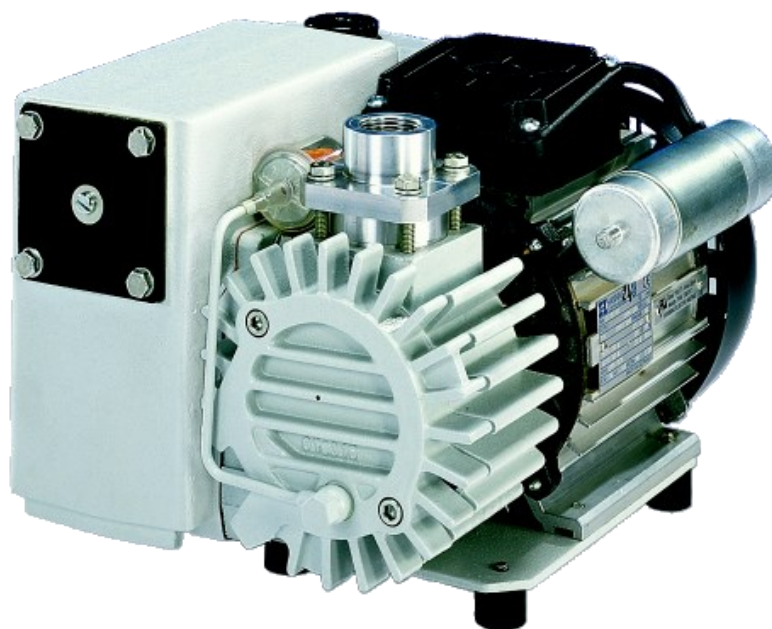
Single-stage, oil-sealed rotary vane pump

**Original Operating instructions 300270017\_002\_C0**

Ref:

960 100  
960 101  
960 105  
960 106  
960 110  
960 114  
960 115  
960 160  
960 161  
960 165  
960 166  
960 170  
960 174  
960 175

And their variants



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# Safety Information

## Important Safety Information

Indicates procedures that must be strictly observed to prevent hazards to persons.

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### Warning

Indicates procedures that must be strictly observed to prevent damage to, or destruction of the product.

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### Caution

Emphasizes additional application information and other useful information provided within these Operating Instructions.

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### Note

The Leybold SOGEVAC® SV10-16 B has been designed for safe and efficient operation when used properly and in accordance with these Operating Instructions. It is the responsibility of the user to carefully read and strictly observe all safety precautions described in this section and throughout the Operating Instructions. The SOGEVAC® SV10-16 B must only be operated in the proper condition and under the conditions described in the Operating Instructions. It must be operated and maintained by trained personnel only. Consult local, state, and national agencies regarding specific requirements and regulations. Address any further safety, operation and/or maintenance questions to our nearest office.

Failure to observe the following precautions could result in serious personal injury!

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### Warning



SOGEVAC® pumps are not designed:

- for pumping of dusty, aggressive, corrosive, flammable or explosive gases or gases mixtures ;
- for pumping of oxygen or other highly reactive gases with a greater concentration than atmospheric concentration (>20%) ;
- for working in flammable, explosive or dusty environment.

For all these cases, special materials must be used. In case of doubt, please contact Leybold.

See also the limits of use indicated in the CE declaration of conformity.

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.

When operating pump is hot and some surfaces could reach a temperature higher than 80°C (176°F). There is a risk of burn by touching.

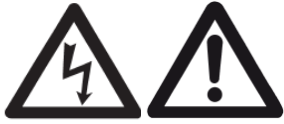
Depending on the process involved, dangerous substances and oil may escape from the pump. Take the necessary safety precautions!

When working on the pump system always observe the Operating Instructions.

# Safety Information

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## Warning



Disconnect the unit from the power supply before starting any work.

Take appropriate precautions to insure 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.

---

## Caution

Failure to observe the following precautions could result in damage to the equipment!

Liquid and solid particles must not enter the pump. Install the adequate filters, separators and/or condensers. In case of doubt consult Leybold.

The intake line of the pump must never be connected to a device with over atmospheric pressure. Design the exhaust line so that no pressure higher than 1,15 bar abs. (0,15 bar rel.) can occur.

Operating of the pump without oil or operating with incorrect direction of rotation can destroy the pump.

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## Note

Never use discarded seals. Always assemble using new seals.

Respect the instructions concerning environment protection when discarding used oil or exhaust filters!

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.

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

These installation and operating instructions are valid for the SOGEVAC® pumps SV10-16 B in their standard version.

Special versions to these pumps are delivered with an additive document, which prevails over the standard instructions.

We would be happy to supply further information as required:  
Available are :

- Technical description of the SOGEVAC® vacuum pumps
- Technical description of special oil types for SOGEVAC® vacuum pumps
- Breakdown analysis
- Declaration of Contamination of Vacuum Equipment and Components.

## 1 Description

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

When pumping condensable vapours, a gas ballast valve must be installed.

### 1.1 Principle of operation

The SOGEVAC® pumps SV10-16 B are single stage oil sealed rotary vane vacuum pumps.

The rotor, having three slots in which the vanes are sliding, is eccentrically installed in a pump cylinder (stator). The vanes separate the interior space into 3 chambers. The volume of these chambers varies with the rotation of the rotor. The gas sucked into the inlet chamber is compressed and then pushed out at the exhaust valve.

The oil injected in the inlet chamber guarantees the air-tightness, the lubrication and cooling of the pump. It is dragged off by the compressed gases and roughly separated by gravity when entering in the oil sump. A fine separation is then operated in the exhaust filter. The proportion of oil in the exhaust gas is thus reduced below the visibility threshold (over 99% entrapment rate). The collected oil is flowing back to the generator through an internal transfer. A non-return valve is included in the oil return screw system to avoid an oil flow from the generator to the oil casing when the pump works at inlet pressures greater than 150mbar. Therefore, continuous operation above 150mbar is not recommended and can lead to oil spilling from the exhaust.

Specific P/N for high inlet pressure duty are available. Please contact us.

Depending on catalog numbers, the pumps are equipped with a permanent gas ballast for pumping condensable vapours.

The anti suck back valve at the inlet flange avoids oil coming back into the inlet line when the pump is stopped.

Nevertheless, this is not a safety valve and correct operation is granted only if the anti suck back valve is clean and in good condition.

# Description

## 1.2 Technical characteristics

### SV10B

| Technical data                                              |                   | 50Hz               | 60Hz               |
|-------------------------------------------------------------|-------------------|--------------------|--------------------|
| Nominal pumping speed <sup>1)</sup>                         | m <sup>3</sup> /h | 11                 | 13                 |
| Pumping speed <sup>1)</sup> (according to PNEUROP)          | m <sup>3</sup> /h | 9.5                | 11.5               |
| Ultimate partial pressure without gas ballast <sup>1)</sup> | mbar              | ≤1.5               | ≤1.5               |
| Ultimate total pressure with gas ballast <sup>1)</sup>      | mbar              | ≤2.5               | ≤2.5               |
| Water vapour tolerance <sup>1)</sup>                        | mbar              | 10                 | 15                 |
| Water vapour tolerable load <sup>1) 3)</sup>                | g.h <sup>-1</sup> | 20                 | 30                 |
| Oil capacity                                                | l                 | 0.5                | 0.5                |
| Noise level <sup>2)</sup>                                   | dB(A)             | 60 (3φ)<br>62 (1φ) | 64 (3φ)<br>66 (1φ) |
| Motor power                                                 | kw                | 0.55               | 0.65               |
| Motor rated rotational speed                                | min <sup>-1</sup> | 3000               | 3600               |
| Protection – Insolation                                     |                   | IP55 – F           | IP55 – F           |
| Weight with mineral oil                                     | kg                | 20                 | 20                 |
| Intake connection                                           |                   | G 3/4 + G 1/2      | G 3/4 + G 1/2      |
| Exhaust connection                                          |                   | –                  | –                  |

### SV16B

| Technical data                                              |                   | 50Hz               | 60Hz               |
|-------------------------------------------------------------|-------------------|--------------------|--------------------|
| Nominal pumping speed <sup>1)</sup>                         | m <sup>3</sup> /h | 16                 | 19                 |
| Pumping speed <sup>1)</sup> (according to PNEUROP)          | m <sup>3</sup> /h | 15                 | 17                 |
| Ultimate partial pressure without gas ballast <sup>1)</sup> | mbar              | ≤1                 | ≤1                 |
| Ultimate total pressure with gas ballast <sup>1)</sup>      | mbar              | ≤2                 | ≤2                 |
| Water vapour tolerance <sup>1)</sup>                        | mbar              | 10                 | 15                 |
| Water vapour tolerable load <sup>1) 3)</sup>                | g.h <sup>-1</sup> | 30                 | 50                 |
| Oil capacity                                                | l                 | 0.5                | 0.5                |
| Noise level <sup>2)</sup>                                   | dB(A)             | 60 (3φ)<br>62 (1φ) | 64 (3φ)<br>66 (1φ) |
| Motor power                                                 | kw                | 0.55               | 0.65               |
| Motor rated rotational speed                                | min <sup>-1</sup> | 3000               | 3600               |
| Protection – Insolation                                     |                   | IP55 – F           | IP55 – F           |
| Weight with mineral oil                                     | kg                | 20                 | 20                 |
| Intake connection                                           |                   | G 3/4 + G 1/2      | G 3/4 + G 1/2      |
| Exhaust connection                                          |                   | –                  | –                  |

1) to DIN 28400 and following numbers

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

3) with room temperature 20 to 25 ° C

Remark : pump technical data like e.g. ultimate pressure & noise level are only valid for standard pumps operating with the mentioned mineral oil. The use of other oils may have consequences on these values.

# Description

SV10-16 B

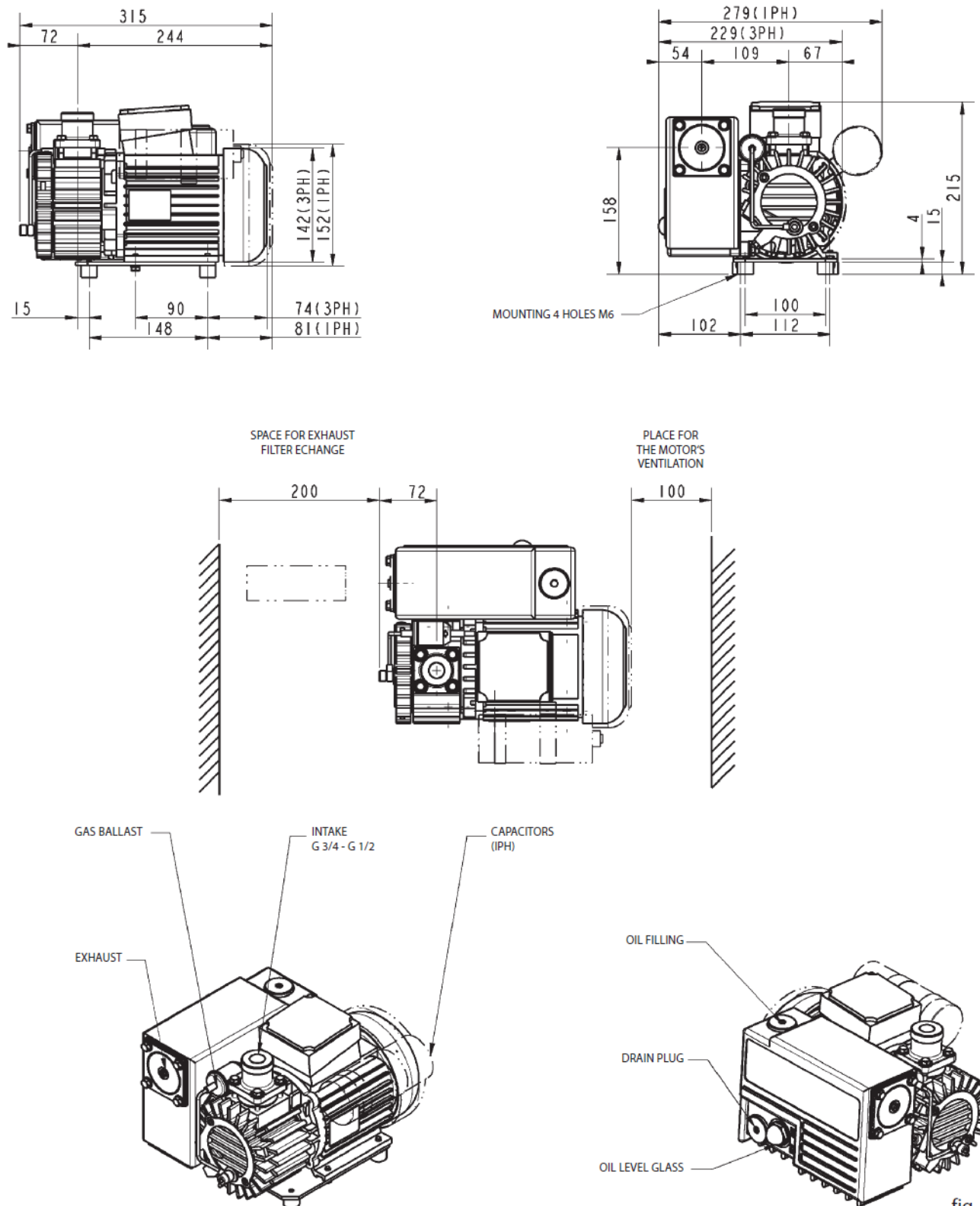


fig. 1

# Description

Pumping speeds SV10-16 B

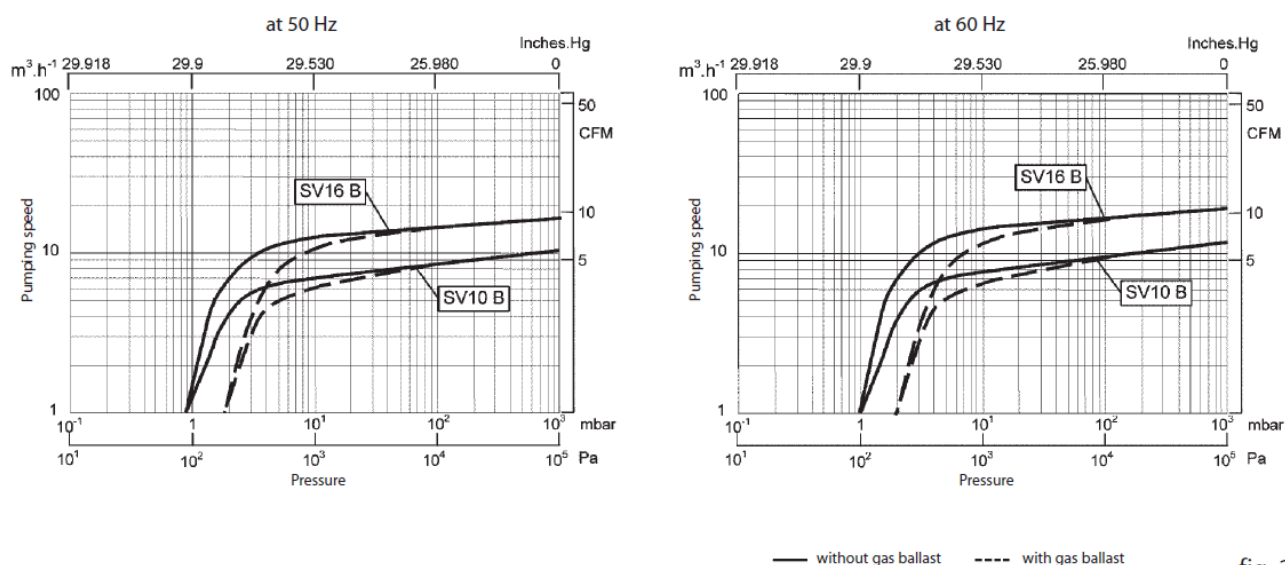


fig. 2

## 1.3 Connection fittings

| Rep. | Specification                            | Size                | Cat. Nr.     |
|------|------------------------------------------|---------------------|--------------|
| 1*   | REDUCTION + O-RING                       | G 3/4" M - G 1/2" F | 951 24       |
| 2    | CONNECTING PIECE (THREE PIECES)          | G 1/2" MF           | 711 18 020   |
| 3    | SCREW IN NIPPLE                          | G 1/2" M - 16KF     | 711 18 120   |
| 4    | CENTERING RING                           | DN 16 KF            | 183 26       |
| 5    | CLAMPING RING                            | DN 16 KF            | 183 41       |
| 6    | HOSE CONNECTION                          | DN 16KF - 25 mm     | 711 18 300   |
| 7    | HOSE CONNECTION                          | G 1/2" M - 25mm     | 711 18 011   |
| 8    | PVC TUBING                               | 25 mm               | 711 18 323   |
| 9    | T- PIECE                                 | G 1/2" M-F-F        | 711 18 250   |
| 10   | VACUUM CONTROL VALVE                     | G 1/2" M            | 951 86       |
| 11   | VACUUM CONTROL VALVE WITH SHUT-OFF VALVE | G 1/2" M            | 951 87       |
| 12   | BALL VALVE                               | G 1/2" M/F          | 711 30 113   |
| 13   | SPRING VACUUM METER                      | G 1/2" M            | 951 92       |
| 14   | ELBOW 90°                                | G 1/2" M/F          | 711 18 210   |
| 15   | DUST FILTER PAPER                        | G 1/2" M/F          | 951 50       |
|      | DUST FILTER CHARCOAL                     | G 1/2" M/F          | 711 27 092   |
|      | DUST FILTER METAL                        | G 1/2" M/F          | 711 27 093   |
|      | DUST FILTER POLYESTER                    | G 1/2" M/F          | 711 27 094   |
|      | EXHAUST CONNECTION                       | G 3/4" F            | 9 714 33 140 |

\* Delivered with the pump depending on pump cat no.



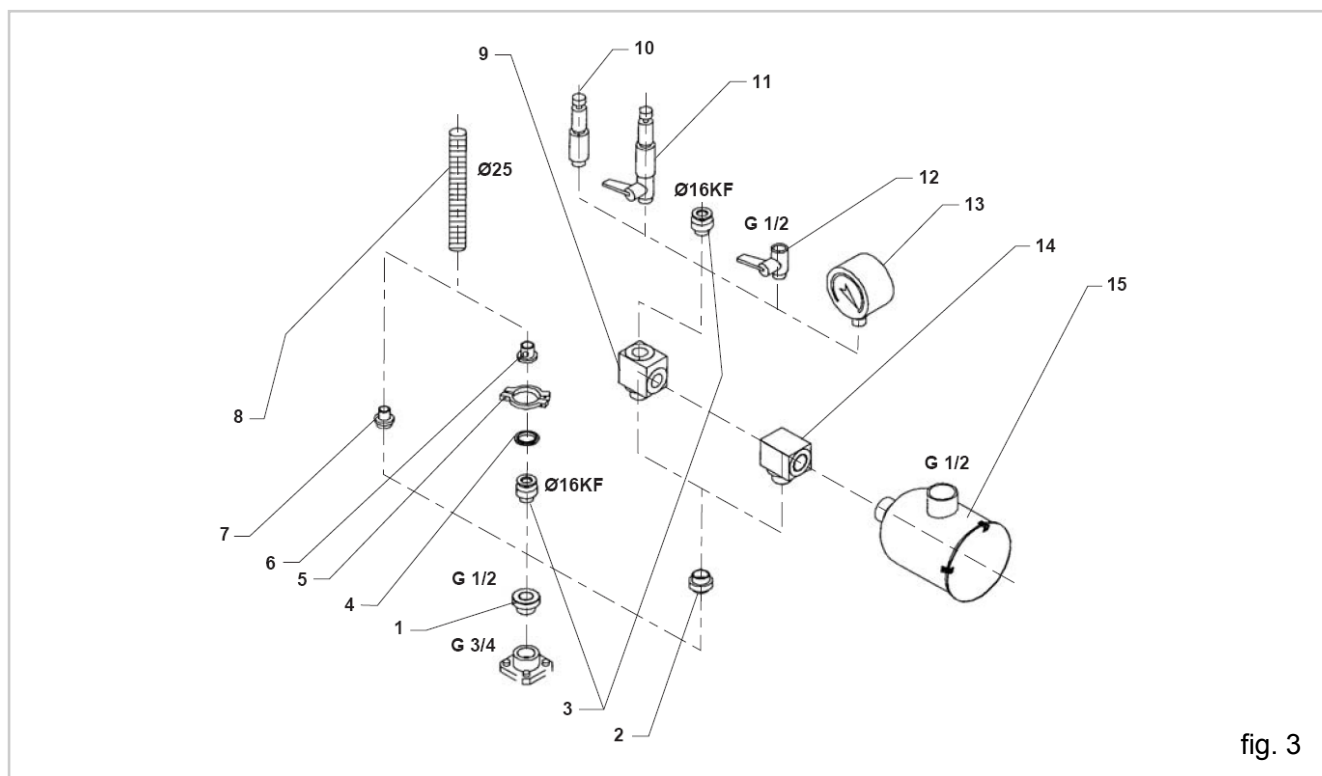


fig. 3

## 1.4 Spare parts

| Specification                             | Cat. Nr.     |
|-------------------------------------------|--------------|
| SET OF SEALS                              | 714 22 220   |
| REPAIR KIT                                | 714 22 230   |
| SERVICE KIT                               | 9 714 44 430 |
| INLET FILTER ELEMENT FOR FILTER POS. (15) |              |
| FILTER ELEMENT PAPER                      | 710 40 762   |
| FILTER ELEMENT CHARCOAL                   | 710 65 713   |
| FILTER ELEMENT METAL                      | 710 65 813   |
| FILTER ELEMENT POLYESTER                  | 712 61 280   |

## 1.5 Lubricants

The SOGEVAC® SV10-16 B pumps should be run with mineral oils for vacuum pumps with low viscosity according to ISO category VG32. The Leybold oil LVO120 corresponds to these prescriptions.

| GS32 / LV0120 Oil | Conditioning | Reference |
|-------------------|--------------|-----------|
|                   | 0.5 l        | L120 00   |
|                   | 1 l          | L120 01   |
|                   | 2 l          | L120 02   |
|                   | 5 l          | L120 05   |
|                   | 20 l         | L120 20   |

You may use other special lubricants adapted to the applications. Please consult us.

# Transport and Storing

## 2 Transport and storing

### 2.1 Transport and packing

SOGEVAC® vacuum pumps pass a rigorous operating test in our factory and are packed to avoid transport damage.

Please check packing on delivery for transport damage.

Packing materials should be disposed off according to environmental laws or re-used.

These operating instructions are part of the consignment.

The connection ports are blanked off by plastic protective caps or self-adhesives. Take these caps or self-adhesives away before turning on the pump.

The necessary LVO120 oil is shipped in a separate can.

Use only lifting devices appropriated to the pump weight. Check name plate. Do not use other pump elements than the lifting lug as handles.

### 2.2 Mounting orientation

See required space on chart in paragraph 1.2.

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

### 2.3 Storage

Before stocking the pump for a long time put it back in its original condition (blank off inlet and exhaust ports with the shipping seals, drain the oil sump) and store the pump in a dry place at room temperature.

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

## 3 Installation

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.

Observe all safety regulations.

### 3.1 Setting-up

The pump must be set up or mounted horizontally on a flat surface. Special mounting is not required.

The following ambient operating environment must be observed:

- Ambient temperature: 12 °C to 40 °C (54 °F to 104 °F)
- Ambient pressure: Atmospheric pressure. Max. altitude 1000 m absl.

In order to avoid over-heating of the pump, an undisturbed fresh airflow to the pump is necessary.

The pump must be kept clean (no dust deposit).

### 3.2 Inlet connection

See safety information page 3.

The inlet flange can be connected with a vacuum-tight flexible hose and/or pipe.

The pipes should cause no stresses on the pump's flanges. If necessary, compensators must be installed.

Restriction of the pipes must be avoided in order not to decrease the pumping speed of the pump. The nominal diameter of the pipes has to be least the same as the diameter of pump's inlet flange.

When pumping condensable vapours, a gas ballast valve must be used.

### 3.3 Connection to exhaust side

No isolation or restricting devices should be installed in the exhaust line of the pump.

Pump exhaust to be connected if oil mist or process gases are to be avoided in the pump area.

If an exhaust line is installed, it must at least have the same diameter as the exhaust flange. It should be installed in a manner so that no condensate can enter the pump (siphon, slope).

Warning: The maximum exhaust pressure must neither exceed 1.15 bar absolute (0.15 bar relative), nor fall under atmosphere pressure minus 15 mbar. Corresponding pressure regulating devices to be installed by the user.

### 3.4 Oil filling

See safety information page 3.

The necessary LVO120 oil is supplied in a can beside the pump. To fill in the oil, unscrew the oil fill plug and fill in until the oil level reaches the MAX-mark beside the oil sight glass.

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Warning



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Caution

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Note

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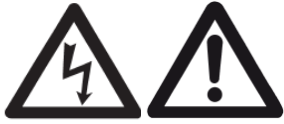
Caution

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# Installation

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## Warning



### 3.5 电气连接

See safety information page 3.

The electrical installation may only be conducted by a specialist. IEC regulations have to be followed as well as local or country regulations.

- Voltage and frequency mentioned on the motor nameplate must agree with the supply voltage.
- The drive motor must be protected against overloads according to IEC 60204-1 & 61010-1.
- To check the direction of rotation of pumps with three-phase motor, flick the ON/OFF switch for a short time at atmospheric pressure. If the direction of rotation is not identical with the one indicated by the arrow sticking on the motor hood, then inverse any two of the electrical phases in the terminal box. Looking at the motor fan cover, the direction of rotation has to be counter clockwise.

## 4 Operation

### 4.1 Operating advices

See safety information page 3.

---

Caution

When removing condensable vapours, a gas ballast valve must be installed.

The vacuum pump must be run for 30 minutes before operating with condensable vapours with the inlet connection closed, in order to reach the operating temperature of about 75 °C. Only up from this operating temperature, condensable vapours can be pumped. After use, the pump has to be left running for an additional 30 minutes with the inlet connection closed, to clear the oil of condensate.

Use ear protection in case of operation at high inlet pressures.

---

Clean eventual oil on the floor.

### 4.2 Shutdown

The inlet flange of the SOGEVAC® pumps contains an anti-suck back valve. It closes the inlet flange when the pump is voluntarily or accidentally shut down, thus maintaining the vacuum in the connected system and preventing oil from being sucked back into the system.

Except the indications in chapter 4.1 (operating advices) there are no particular precautions for the shutdown of the pump.

If the pump must be stopped for a longer period, see chapter 2.3.

# Maintenance

Warning



## 5 Maintenance

### 5.1 Safety Information

Observe all safety regulations.

The vacuum pump must be switched off and secured against accidental switch-on for all maintenance jobs.

All work must be done by suitably trained personnel. Maintenance or repairs carried out incorrectly will affect the life and performance of the pump and may cause problems when filing warranty claims.

Never mount used seals ; always mount new seals.

### 5.2 Maintenance Intervals

The intervals stated in the maintenance schedule are approximate values for normal pump operation. Unfavourable ambient conditions and/or aggressive media may significantly reduce the maintenance intervals.

| Maintenance job                                          | Frequency                                              | Section |
|----------------------------------------------------------|--------------------------------------------------------|---------|
| Oil level checking                                       | Daily                                                  | A       |
| 1st oil change                                           | After 150 h of operation                               | B       |
| Subsequent oil changes                                   | Every 2000 h or 6 months<br>(depending on application) | B       |
| Exhaust filter                                           | If oil mist at exhaust<br>replacement or annually      | C       |
| Checking the oil recovery system                         |                                                        | D       |
| Gas ballast valve                                        | Monthly checking                                       | E       |
| Inlet flange sifter cleaning                             | 6 months                                               | F       |
| Anti-suck back valve checking                            | 6 months                                               | G       |
| Fan cover cleaning                                       | 6 months                                               | H       |
| Electrical connection checking<br>(only by a specialist) | 6 months                                               |         |

In order to simplify the maintenance work we recommend to combine several jobs.

## 5.3 Leybold Service

Whenever you send us in equipment, indicate whether the equipment is contaminated or is free of substances which could pose a health hazard. If it is contaminated, specify exactly which substances are involved. You must use the form we have prepared for this purpose.

Contamination

A copy of the form has been reproduced at the end of these Operating Instructions: "Declaration of Contamination for Compressors, Vacuum Pumps and Components". Another suitable form is available from the Leybold home-page: [www.leybold.com](http://www.leybold.com) → Downloads → Download Documents → Declaration of Contamination

Form

Attach the form to the equipment or enclose it with the equipment.

This statement detailing the type of contamination is required to satisfy legal requirements and for the protection of our employees.

We must return to the sender any equipment which is not accompanied by a contamination statement.

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.

Caution

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

## 5.4 Maintenance Work

### A. Oil level

The oil level should be checked at least once a day. If the oil level is below the "MAX" mark, oil has to be added until the level reaches the mark. If the oil level is below the "MIN" mark, stop the pump and check it (see chapter 6).

### B. Oil changing

See safety information page 3.

Warning

Oil must be changed after the first 150 operating hours. Further oil changes, depending on operating conditions (products, vapours, ambient temperature...) must be done every 500 to 2 000 operating hours or at least every 6 months.



If there is considerable pollution, it could be necessary to change the oil more frequently.

Oil changing must be done with a switched off and still warm pump.

Open the oil drain plug and let run out the used oil into an appropriate container. Refasten the oil drain plug when oil runs slower, start up the pump briefly (5 sec. max) and switch off immediately. Reopen the oil drain plug and drain the rest of the oil. Before refastening the oil drain plug, inspect the O-ring and if necessary replace it. Open the oil fill plug and pour in clean oil; refasten the oil fill plug. The pump has to be rinsed out if there is considerable pollution. Therefore pour in clean oil up to the low edge of the oil level glass, let the pump run briefly (for a few minutes) then drain the oil again.

# Maintenance

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## Caution

### C. Exhaust filters replacement

See safety information page 3.

Oil mist escaping from the exhaust during operation indicates that the filter is probably choked up. Increased motor current could also be the result of a dirty exhaust filter. Open the exhaust hood, take out the filter and replace it. Also check the gasket of the exhaust flange and change it if necessary.

---

## Caution

### D. Checking the oil recovery system

See safety information page 3.

During the exchange of the exhaust filter, check the cleanliness of the foam which protects the oil return compartment and the oil recovery system. Disassemble the oil return screw system from the end plate and check the cleanliness of the nozzle (without disassembling it from the unit). In case of heavy dirtiness, replace the whole oil recovery screw system.

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## Caution

### E. Gas ballast cleaning

See safety information page 3.

If the filter of the gas ballast is dirty, the gas ballast is no longer operative. The filter has to be replaced (see spare parts list).

---

## Caution

### F. Inlet flange sifter cleaning

See safety information page 3.

To clean the inlet flange screen, disconnect the inlet flange and clean the screen with blast air or an appropriate solvent.

---

## Caution

### G. Anti-suck back valve checking

See safety information page 3.

The anti suck-back valve should be checked at the same time as the inlet flange screen and if dirty, be cleaned with an appropriate solvent. Also check, if there is no damage on the sealing part of the valve.

---

### H. Fan cover cleaning

Dirt blockage of the fan cover may lead to overheating of the motor and the pump. Put off the cover and clean it with blast air. Before starting the pump again, be sure that the cover has been reassembled.



# Trouble shooting

## 6 Troubleshooting

| Fault                                                                    | Possible cause                                                                                                                                                                                                                          | Remedy                                                                                                                                                                                                                                      | Reference section *                           |
|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Pump does not start                                                      | Pump is connected incorrectly<br>Motor protection switch incorrectly set.<br>Operating voltage does not match motor<br>Motor is malfunctioning<br>Oil temperature is below 12°C (54°F)                                                  | Connect the pump correctly<br>Set motor protection switch properly<br>Replace the motor<br>Replace the motor<br>Heat the pump and pump oil or use different oil                                                                             | 3.5<br>3.5<br><br><br>1.5                     |
|                                                                          | Oil is too viscous<br>Exhaust filter / exhaust line is clogged                                                                                                                                                                          | Use appropriate oil grade<br>Replace the filter or clean the exhaust line                                                                                                                                                                   | 5.4-B<br>5.4-C                                |
| Pump does not reach ultimate pressure                                    | External leak<br>Anti-suckback valve is malfunctioning<br>Inadequate lubrication due to :<br>■ unsuitable or contaminated oil<br>■ clogged oil lines<br>■ vacuum lines are dirty<br>■ pump is too small                                 | Repair the pump<br>Repair the valve<br><br>Change the oil (degas it, if necessary).<br>Clean the oil lines<br>Clean vacuum lines<br>Check the process date ; replace the pump, if necessary                                                 | 5.4-G<br><br><br>5.4-D                        |
|                                                                          |                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                             |                                               |
| Pumping speed is too low                                                 | Dirt trap in the intake port is clogged                                                                                                                                                                                                 | Clean the dirt trap.<br>Precaution : install a dust filter in intake line                                                                                                                                                                   | 5.4-F                                         |
|                                                                          | Exhaust filter is clogged<br>Connecting lines are too narrow or too long<br>Anti-suckback valve is hard to open                                                                                                                         | Install new filter elements<br>Use adequately wide and short connecting lines<br>Check spring free length                                                                                                                                   | 5.4-C<br>3.3                                  |
| After switching off pump under vacuum, pressure in system rises too fast | System has a leak<br>Anti-suckback is malfunctioning                                                                                                                                                                                    | Check the system<br>Repair the valve                                                                                                                                                                                                        | 5.4-G                                         |
| Pump gets too hot                                                        | Cooling air supply is obstructed<br>Cooler is dirty<br>Ambient temperature is too high<br>Process gas is too hot<br>Oil level is too low<br>Oil is unsuitable<br>Oil cycle is obstructed<br>Exhaust filter / exhaust line is obstructed | Set pump up correctly<br>Clean the cooler<br>Set pump up correctly<br>Change the process<br>Add oil to reach the correct oil level<br>Change the oil<br>Clean or repair the oil lines<br>Replace the exhaust filter, clean the exhaust line | 3.1<br><br>3.1<br><br>5.4-A<br>5.4-B<br>5.4-C |
|                                                                          |                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                             |                                               |
| Oil in intake line or in vacuum vessel                                   | Oil comes from the vacuum system<br>Anti-suckback valve is obstructed<br>Sealing surfaces or anti-suckback valve are damaged or dirty<br>Oil level is too high                                                                          | Clean or repair the valve<br>Clean or repair the intake port and valve<br><br>Drain the excess oil                                                                                                                                          | 5.4-G<br>5.4-G<br><br>5.4-A                   |
|                                                                          |                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                             |                                               |
| Pump's oil consumption too high, oil mist at exhaust                     | Exhaust filters are clogged or damaged.<br>Oil level is too high.                                                                                                                                                                       | Replace the filters.<br>Drain the excess oil.                                                                                                                                                                                               | 5.4-C<br>5.4-A                                |
| Oil is turbid                                                            | Condensation                                                                                                                                                                                                                            | Degas the oil or change the oil and clean the pump.<br>Precaution : open the gas ballast valve or insert a condensate trap.<br>Clean the gas ballast intake filter                                                                          | 4.1/5.4-B<br><br>5.4-E                        |
| Pump is excessively noisy                                                | Oil level is very low (oil is no longer visible)<br>Oil filter is clogged<br>Large vacuum leak in system                                                                                                                                | Add oil<br><br>Change the oil and filter<br>Repair vacuum leak                                                                                                                                                                              | 5.4-B<br><br>5.4-D<br>Contact Leybold         |
|                                                                          |                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                             |                                               |

\* Reference section : This column refers to the section in the Operating Instructions that contains the applicable repair information.  
Never mount used seals. Always mount new seals.

# Spare parts

## 7 Spare parts

To guarantee safe operation of the Leybold pump, only original spare parts and accessories should be used. When ordering spare parts and accessories, always state pump type and serial number. You can find part numbers in the spare parts list.

Consumables and main spare parts kits for SOGEVAC® pumps are usually available on stock at Leybold's service centers. The list of these parts is given here after and in the spare parts table where the contents of each kits is detailed.

- Exhaust demisters 714 13 280
- LVO120 Oil (Special oils please refer to the specific notice of the pump or contact Leybold).
- Service kit 9 714 44 430
- Set of seals 714 22 220
- Repair kit 714 22 230

We recommend to use these kits which have been defined to allow an optimal maintenance or repair. individual spare parts may need longer delivery time.

Repairs requiring the replacement of the stator or the rear endplate should be made by the Leybold Service.

## Notes

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# Spare parts

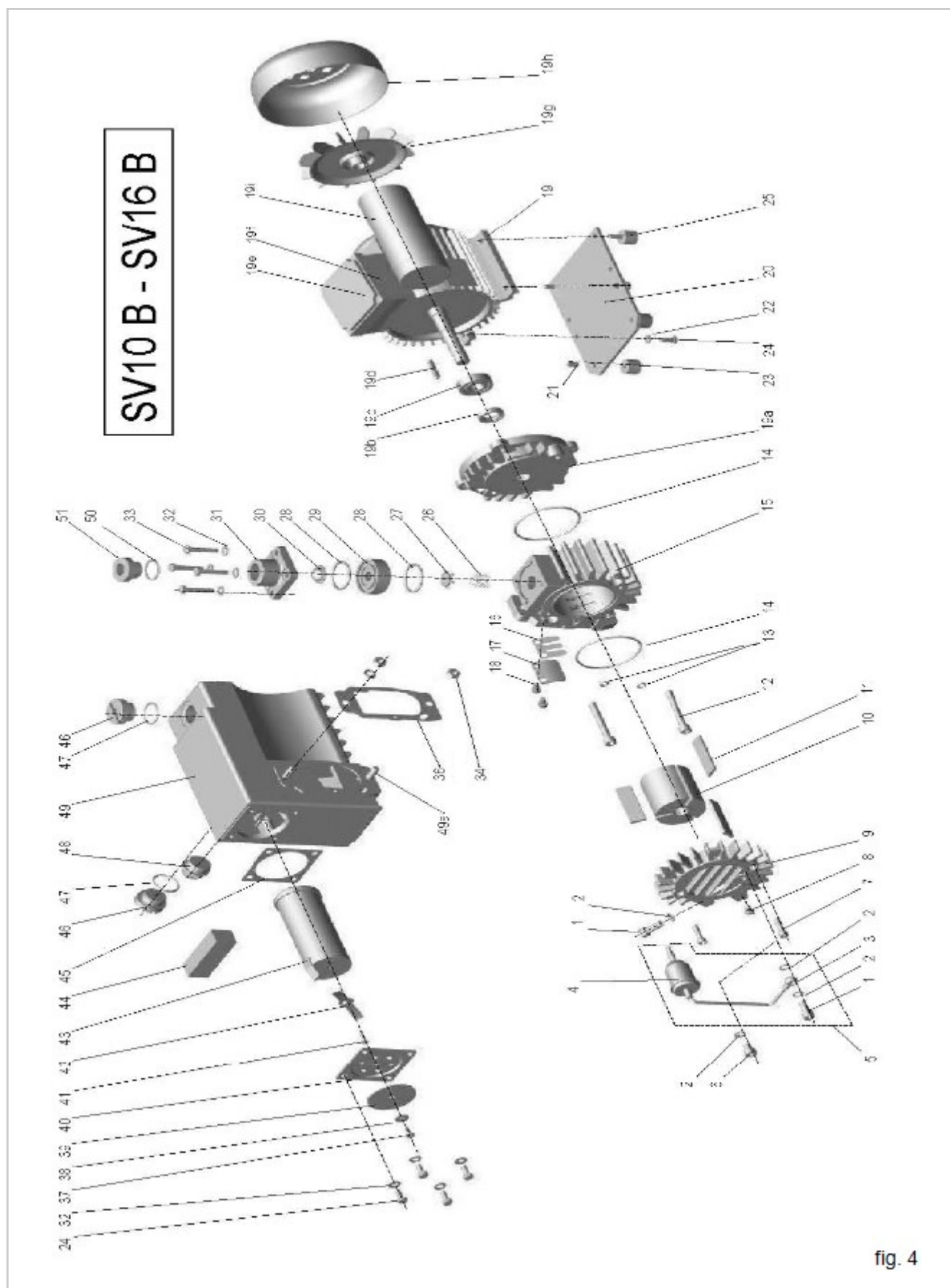


fig. 4

# Spare parts

| POS          | QTY | SPECIFICATION              | DIMENSIONS (mm)   | MATERIAL | REF.NO.  | REMARKS      | 714 22 220 | 714 22 230 | 9 714 44 430 |
|--------------|-----|----------------------------|-------------------|----------|----------|--------------|------------|------------|--------------|
| 1            | 2   | NON RETURN SCREW UNIT      |                   |          |          |              | ●          |            |              |
| 2            | 3   | FLAT GASKET                |                   |          |          |              | ●          |            |              |
| 3            | 1   | G-B PIPE UNIT              |                   |          |          |              |            | ●          | ●            |
| 4            | 1   | FILTER VK 31/2             |                   |          |          |              |            |            |              |
| 5            | 1   | G-B PIPE + FILTER          |                   |          | 71415330 | Incl.1,2,3,4 |            |            |              |
| 6            | 1   | SCREW                      |                   | ZN       |          | Incl.2       |            |            |              |
| 7            | 2   | SCREW                      |                   | ZC       |          |              |            |            |              |
| 8            | 1   | SCREW                      |                   | ZC       |          |              |            |            |              |
| 9            | 1   | FRONT END-PLATE            |                   |          | 71416460 | Incl.8       |            |            |              |
| 10           | 1   | ROTOR                      |                   |          | 71413100 |              |            |            |              |
| 11           | 1   | SET 3 VANES                |                   |          | 71413150 |              |            | ●          |              |
| 12           | 2   | SCREW                      |                   |          |          |              |            |            |              |
| 13           | 2   | O-RING                     | 6,02 X 2,62 70SH  | FKM      | 71237600 |              | ●          |            |              |
| 14           | 2   | O-RING                     | 70 X 2,5 70SH     | NBR      | 71413470 |              | ●          |            |              |
| 15           | 1   | PUMP CYLINDER SV10 B       |                   |          | 71418380 |              |            |            |              |
| 15           | 1   | PUMP CYLINDER SV16 B       |                   |          | 71416450 |              |            |            |              |
| 16           | 1   | VALVE PLATE                |                   |          | 71416370 |              |            | ●          |              |
| 17           | 1   | VALVE STOP                 |                   |          | 71416360 |              |            | ●          |              |
| 18           | 2   | SCREW                      |                   |          |          |              |            |            |              |
| 19           | 1   | SEE NEXT PAGE              |                   |          |          |              |            |            |              |
| 20           | 1   | SUPPORTING PLATE           |                   |          | 71415300 |              |            |            |              |
| 21           | 2   | SCREW                      |                   |          |          |              |            |            |              |
| 22           | 2   | WASHER                     |                   |          |          |              |            |            |              |
| 23           | 2   | RUBBER MOUNT               | D20X15 F-F M6     |          | 71418670 |              |            |            |              |
| 24           | 6   | SCREW                      |                   | ZC       |          |              |            |            |              |
| 25           | 2   | RUBBER MOUNT               | D20X15            |          | 71414030 |              |            |            |              |
| 26           | 1   | INLET SPRING               |                   |          | 71415640 |              |            |            |              |
| 27           | 1   | ANTI SUCKBACK VALVE        |                   |          | 71042990 |              | ●          |            |              |
| 28           | 2   | O-RING                     | 34.52X3.53 70SH   | FKM      | 71417660 |              | ●          |            |              |
| 29           | 1   | INLET ADAPTER              |                   |          | 71413110 |              |            |            |              |
| 30           | 1   | DIRT TRAP                  |                   |          | 71413440 |              |            |            |              |
| 31           | 1   | INLET FLANGE               |                   |          | 71413120 |              |            |            |              |
| 32           | 8   | WASHER                     | M6                | ZC       | V3600401 |              |            |            |              |
| 33           | 4   | SCREW                      |                   |          |          |              |            |            |              |
| 34           | 2   | NUT                        |                   |          |          |              |            |            |              |
| 36           | 1   | FLAT GASKET                |                   |          | 71416430 |              | ●          |            |              |
| 37           | 1   | SHEET METAL SCREW          | CL N 10-19 TYPE P |          |          |              |            |            |              |
| 38           | 1   | WASHER                     |                   |          |          |              |            |            |              |
| 39           | 1   | EXHAUST MEMBRANE           |                   |          | 71413170 |              |            |            |              |
| 40           | 1   | FLANGE EXHAUST             |                   |          | 71413160 |              |            |            |              |
| 41           | 1   | SCREW                      |                   |          |          |              |            |            |              |
| 42           | 1   | FRICTION SPRING CAR-TRIDGE |                   |          | 71413270 |              |            | ●          | ●            |
| 43           | 1   | EXHAUST FILTER             |                   |          | 71413280 |              |            | ●          | ●            |
| 44           | 1   | OIL RETURN FILTER          |                   |          | 71416440 |              |            | ●          | ●            |
| 45           | 1   | FLAT GASKET OUTLET         |                   |          | 71413240 |              | ●          |            | ●            |
| 46           | 2   | PLUG + O-RING              | G3/4              |          | 71256380 | Incl.47      |            |            |              |
| 47           | 2   | O-RING                     | 27 X 2,5          | NBR      |          |              | ●          |            | ●            |
| 48           | 1   | OIL SIGHT GLASS            | G3/4              |          | 71212420 |              | ●          |            |              |
| 49           | 1   | OIL CASING                 |                   |          | 71416410 | Incl.49a     |            |            |              |
| 49a          | 2   | LOCKING SCREW              |                   |          |          |              |            |            |              |
| 50           | 1   | O-RING                     | 28 X 3            | FKM      | 71217590 |              | ●          |            |              |
| 51           | 1   | O-RING                     | G 3/4-G 1/2       |          | 95124    |              |            |            |              |
| SET OF SEALS |     |                            |                   |          |          |              |            |            | ●            |
| REPAIR KIT   |     |                            |                   |          |          |              |            |            | ●            |
| SERVICE KIT  |     |                            |                   |          |          |              |            |            | ●            |

# Spare parts

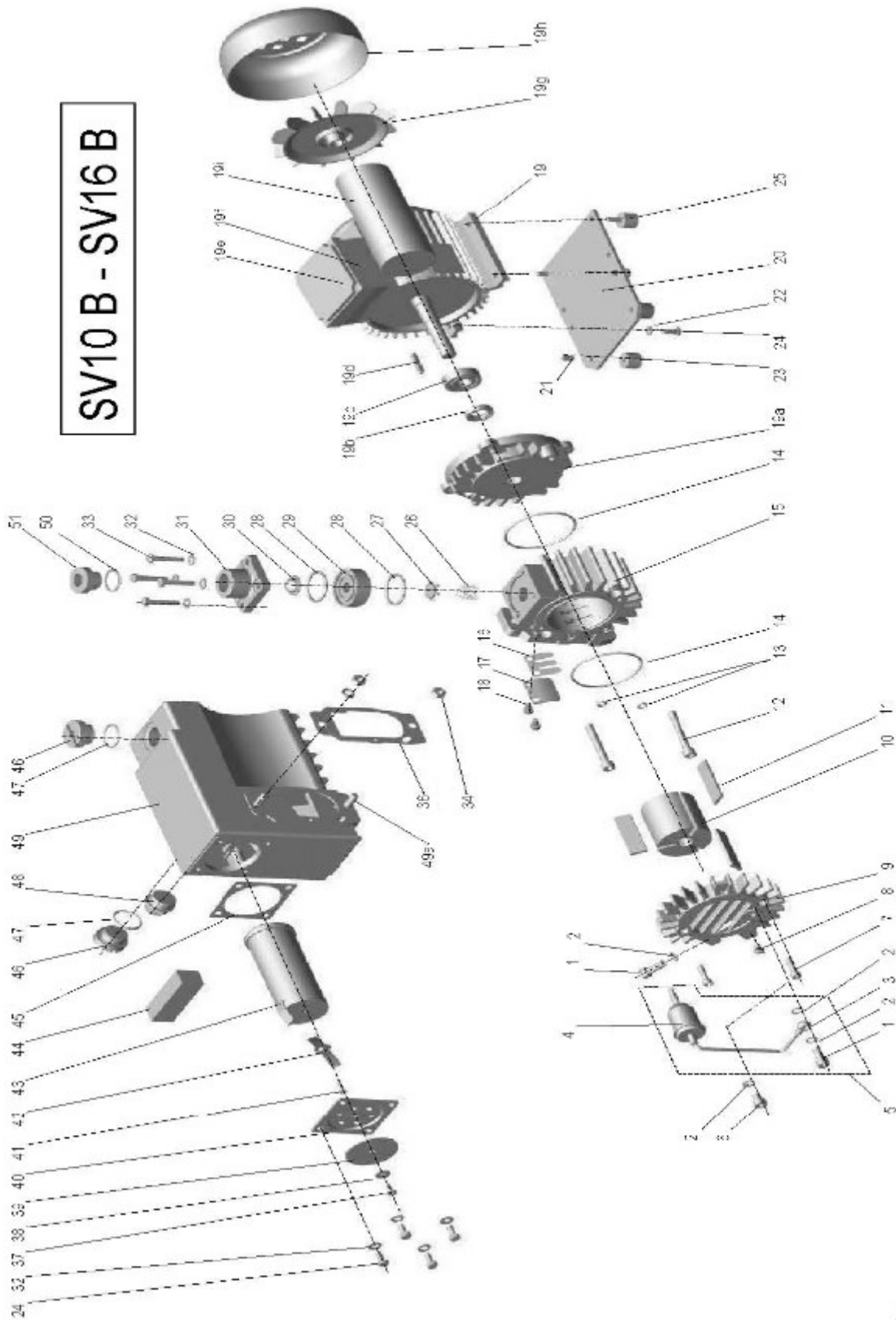


fig. 4

# Spare parts

| POS | QTY | SPECIFICATION       | DIMENSIONS (mm)                       | MATERIAL | REF.NO.   | REMARKS                                                                                     | 714 22 220 | 714 22 230 | 9 714 44 430 |
|-----|-----|---------------------|---------------------------------------|----------|-----------|---------------------------------------------------------------------------------------------|------------|------------|--------------|
| 19  | 1   | MOTOR EUR / USA 3PH | 0,55 kW @ 50 Hz / 0,65 kW @ 60 Hz     |          | 971451240 | Incl. 19a,b,c,d,e,f,g,h                                                                     |            |            |              |
|     |     | CCC                 | 220 - 240 / 380 - 415 V ± 10 %; 50 Hz |          |           |                                                                                             |            |            |              |
|     |     |                     | 220 - 266 / 380 - 460 V ± 10 %; 60 Hz |          |           |                                                                                             |            |            |              |
| 19a | 1   | END BEARING PLATE   |                                       |          |           |                                                                                             | ●          |            |              |
| 19b | 1   | RADIAL SHAFT SEAL   | DN17X30X6                             |          | 71421560  | *                                                                                           |            |            |              |
| 19c | 1   | BALL BEARING        | DN17X40X12                            |          | 71421550  |                                                                                             |            |            |              |
| 19d | 1   | KEY                 | 5X5X30                                |          | 71415200  |                                                                                             |            |            |              |
| 19e | 1   | TERMINAL BOX        |                                       |          | 971444340 |                                                                                             |            |            |              |
| 19f | 1   | TERMINAL BOARD      |                                       |          | 71422210  |                                                                                             |            |            |              |
| 19g | 1   | FAN                 |                                       |          | 71421530  |                                                                                             |            |            |              |
| 19h | 1   | FAN COVER           |                                       |          | 71421540  |                                                                                             |            |            |              |
| 19  | 1   | MOTOR JAPAN 3PH     | 0,55 kW @ 50 Hz / 0,65 kW @ 60 Hz     |          | 71415070  | Incl. 19a,b,c,d,e,f,g,h                                                                     |            |            |              |
|     |     |                     | 200 V + 10 % - 15 %; 50 & 60 Hz       |          |           |                                                                                             |            |            |              |
| 19e | 1   | TERMINAL BOX        |                                       |          | 971444410 |                                                                                             |            |            |              |
| 19f | 1   | TERMINAL BOARD      |                                       |          | 71422210  |                                                                                             |            |            |              |
| 19g | 1   | FAN                 |                                       |          | 71421530  |                                                                                             |            |            |              |
| 19h | 1   | FAN COVER           |                                       |          | 71421540  |                                                                                             |            |            |              |
| 19  | 1   | MOTOR USA 1PH       | 0,65 kW @ 60 Hz                       |          | 71413940  | Incl. 19a,b,c,d,e,f,g,h,i                                                                   |            |            |              |
|     |     |                     | 110 - 120 V ± 10 %; 60 Hz             |          |           |                                                                                             |            |            |              |
| 19e | 1   | TERMINAL BOX        |                                       |          | 971444410 |                                                                                             |            |            |              |
| 19f | 1   | TERMINAL BOARD      |                                       |          | 971444350 |                                                                                             |            |            |              |
| 19g | 1   | FAN                 |                                       |          | 971444360 |                                                                                             |            |            |              |
| 19h | 1   | FAN COVER           |                                       |          | 971444370 |                                                                                             |            |            |              |
| 19i |     | CAPACITOR           | 110 µF                                |          | 971444400 |                                                                                             |            |            |              |
| 19  | 1   | MOTOR JAPAN 1PH     | 0,55 kW @ 50 Hz / 0,65 kW @ 60 Hz     |          | 71415040  | Incl. 19a,b,c,d,e,f,g,h,i                                                                   |            |            |              |
|     |     |                     | 100 V + 10 % - 15 %; 50 & 60 Hz       |          |           |                                                                                             |            |            |              |
| 19e | 1   | TERMINAL BOX        |                                       |          | 971444410 |                                                                                             |            |            |              |
| 19f | 1   | TERMINAL BOARD      |                                       |          | 971444350 |                                                                                             |            |            |              |
| 19g | 1   | FAN                 |                                       |          | 971444360 |                                                                                             |            |            |              |
| 19h | 1   | FAN COVER           |                                       |          | 971444370 |                                                                                             |            |            |              |
| 19i |     | CAPACITOR           | 110 µF                                |          | 971444400 |                                                                                             |            |            |              |
| 19  | 1   | MOTOR EUR 1PH CCC   | 0,55 kW @ 50 Hz / 0,65 kW @ 60 Hz     |          | 971451230 | Incl. 19a,b,c,d,e,f,g,h,i                                                                   |            |            |              |
|     |     |                     | 230 V ± 10 %; 50 & 60 Hz              |          |           |                                                                                             |            |            |              |
| 19e | 1   | TERMINAL BOX        |                                       |          | 971444380 |                                                                                             |            |            |              |
| 19f | 1   | TERMINAL BOARD      |                                       |          | 971444350 |                                                                                             |            |            |              |
| 19g | 1   | FAN                 |                                       |          | 971444360 |                                                                                             |            |            |              |
| 19h | 1   | FAN COVER           |                                       |          | 971444370 |                                                                                             |            |            |              |
| 19i |     | CAPACITOR           | 16 µF                                 |          | E6500533  |                                                                                             |            |            |              |
|     |     | SET OF SEALS        |                                       |          | 71422220  | Incl.  |            |            |              |

\*Always change the ball bearing when changing the shaft seal.



# EU Declaration of Conformity

(Translation of original Declaration of Conformity)

**The manufacturer:**  
Leybold GmbH  
Bonner Strasse 498  
D-50968 Köln, Germany

herewith declares that the products specified and listed below which we have placed on the market, comply with the applicable EU Council Directives. This declaration becomes invalid if modifications are made to the product without agreement of Leybold GmbH.

**Product designation:** SOGEVAC

**Type:** SV10 B, SV16 B, SV25 B, SV40 B, SV65 B, SV70 B, SV100 B, SV105 B, SV200, SV300B, SV630 B, SV750 B, SV10 FP, SV16 FP, SV25 FP, SV45 FP, SV70 FP, SV105 FP, SV200 FP and SV300 FP, and their variants, excepted pumps delivered without motor

**Part no.:** 960100 to 960115 / 960160 to 960175 / 960250 / 960250V3001 / 960251 / 960251V2022 / 960251V3003 / 960251V3005 / 960252 / 960253 / 960255 / 960256 / 960256V2022 / 960256V3003 / 960257 / 960261 / 960261V3001 / 960266 / 960305TE / 960316TE / 960318TE / 960322TE / 960324TE / 960401V3001TE / 960405TE / 960416TE / 960416V2046TE / 960419TE / 960419V1706TE / 960422TE / 960424TE / 960505TE / 960505V3004TE / 960516TE / 960518TE / 960519TE / 960522V3001TE / 960524TE / 10927TE / 109279900037TE / 109279900045TE / 9552746TE / 9552748TE / 955279900001TE / 955279900004TE / 960702TE / 960702V3005TE / 960702V3013TE / 960702V3018TE / 960703V3001TE / 960706V2048TE / 960711V2048TE / 960712TE / 960713V2046TE / 960716V2048TE / 960717TE / 960717V3001TE / 960717V3004TE / 960717V3005TE / 960718V2046TE / 960100FP to 960110FP / 960160FP to 960170FP / 960251FP / 960256FP / 960257FP / 960261FP / 960307FP / 960314FP / 960324FP / 960407FP / 960414FP / 960424FP / 960507FP / 960514FP / 960524FP / 10927FP / 1092791FP / 960702FP / 960707FP / 960717FP / 960862V3002TE / 960863TE / 960863V3006TE / 960863V3008TE / 960863V3020TE / 960867TE / 960867V2091TE / 960867V3001TE / 960867V3005TE / 960875V3002TE / 960876V2007TE / 960877V3002TE / 960877V3013TE / 960877V3017TE

**The products complies to the following European Council Directives:**

Machinery Directive (2006/42/EC)

The safety objectives of the Low Voltage Directive 2014/35/EU were complied with in accordance with Appendix 1 No. 1.5.1 of Machinery Directive 2006/42/EC.

Electromagnetic Compatibility (2014/30/EU)

RoHS Directive (2011/65/EU) & (2015/863/EU)

**The following harmonized standards have been applied:**

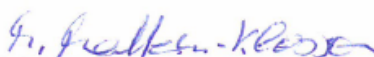
|                           |                                                                                                                   |
|---------------------------|-------------------------------------------------------------------------------------------------------------------|
| EN 1012-2:1996+A1:2009    | Compressors and vacuum pumps — Safety requirements — Part 2: Vacuum pumps                                         |
| EN 60204-1:2006/A1:2009   | Safety of machinery — Electrical equipment of machines — Part 1: General requirements                             |
| EN 61000-6-2:2005/AC:2005 | Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments          |
| EN 61000-6-4:2007/A1:2011 | Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments |

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Cologne, November 14, 2016

Cologne, November 14, 2016

  
ppa. Martin Tollner  
Head of Product Lines

  
ppa. Dr. Monika Mattern-Klosson  
Head of Quality & Business Process Management



## Notes

[illegible]

## Declaration of Contamination of Compressors, Vacuum Pumps and Components

The repair and / or servicing of compressors, vacuum pumps and components will be carried out only if a correctly completed declaration has been submitted. Non-completion will result in delay. The manufacturer can refuse to accept any equipment without a declaration.

A separate declaration has to be completed for each single component.

This declaration may be completed and signed only by authorized and qualified staff.

| Customer/Dep./Institute : _____<br>Address : _____<br>_____<br>Person to contact: _____<br>Phone : _____ Fax: _____<br>End user: _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Reason for return: <input checked="" type="checkbox"/> applicable please mark<br><b>Repair:</b> <input type="checkbox"/> chargeable <input type="checkbox"/> warranty<br><b>Exchange:</b> <input type="checkbox"/> chargeable <input type="checkbox"/> warranty<br><input type="checkbox"/> Exchange already arranged / received<br><b>Return only:</b> <input type="checkbox"/> rent <input type="checkbox"/> loan <input type="checkbox"/> for credit<br><b>Calibration:</b> <input type="checkbox"/> DKD <input type="checkbox"/> Factory-calibr.<br><input type="checkbox"/> Quality test certificate DIN 55350-18-4.2.1 |                          |                          |                |                          |                          |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
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| <b>A. Description of the Leybold product:</b> _____ <b>Failure description:</b> _____<br>Material description : _____<br>Catalog number: _____ <b>Additional parts:</b> _____<br>Serial number: _____ <b>Application-Tool:</b> _____<br>Type of oil (ForeVacuum-Pumps) : _____ <b>Application- Process:</b> _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |                          |                |                          |                          |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| <b>B. Condition of the equipment</b> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 10%; text-align: center;">No<sup>1)</sup></th> <th style="width: 10%; text-align: center;">Yes</th> <th style="width: 10%; text-align: center;">No</th> <th style="width: 30%;"></th> <th style="width: 10%; text-align: center;">No<sup>1)</sup></th> <th style="width: 10%; text-align: center;">Yes</th> </tr> </thead> <tbody> <tr> <td>1. Has the equipment been used</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>2. Drained (Product/service fluid)</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>3. All openings sealed airtight</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>4. Purged</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td colspan="4">If yes, which cleaning agent</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">and which method of cleaning</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4"><sup>1)</sup> If answered with "No", go to D. ←</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          | No <sup>1)</sup>         | Yes            | No                       |                          | No <sup>1)</sup> | Yes | 1. Has the equipment been used | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  | <input type="checkbox"/> | <input type="checkbox"/> | 2. Drained (Product/service fluid) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  | <input type="checkbox"/> | <input type="checkbox"/> | 3. All openings sealed airtight | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  | <input type="checkbox"/> | <input type="checkbox"/> | 4. Purged | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  | <input type="checkbox"/> | <input type="checkbox"/> | If yes, which cleaning agent |  |  |  |  |  |  | and which method of cleaning |  |  |  |  |  |  | <sup>1)</sup> If answered with "No", go to D. ← |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | No <sup>1)</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Yes                      | No                       |                | No <sup>1)</sup>         | Yes                      |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| 1. Has the equipment been used                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> |                | <input type="checkbox"/> | <input type="checkbox"/> |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| 2. Drained (Product/service fluid)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> |                | <input type="checkbox"/> | <input type="checkbox"/> |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| 3. All openings sealed airtight                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> |                | <input type="checkbox"/> | <input type="checkbox"/> |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| 4. Purged                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> |                | <input type="checkbox"/> | <input type="checkbox"/> |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| If yes, which cleaning agent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |                          |                |                          |                          |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| and which method of cleaning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |                          |                |                          |                          |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| <sup>1)</sup> If answered with "No", go to D. ←                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |                          |                |                          |                          |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| <b>C. Description of processed substances (Please fill in absolutely)</b><br>1. What substances have come into contact with the equipment ?<br>Trade name and / or chemical term of service fluids and substances processed, properties of the substances<br>According to safety data sheet (e.g. toxic, inflammable, corrosive, radioactive)<br><table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%; text-align: center;">X</th> <th style="width: 40%;">Tradename:</th> <th style="width: 55%;">Chemical name:</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">a)</td><td></td><td></td></tr> <tr><td style="text-align: center;">b)</td><td></td><td></td></tr> <tr><td style="text-align: center;">c)</td><td></td><td></td></tr> <tr><td style="text-align: center;">d)</td><td></td><td></td></tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | X                        | Tradename:               | Chemical name: | a)                       |                          |                  | b)  |                                |                          | c)                       |                          |  | d)                       |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Tradename:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Chemical name:           |                          |                |                          |                          |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| a)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |                          |                |                          |                          |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |                          |                |                          |                          |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| c)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |                          |                |                          |                          |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| d)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |                          |                |                          |                          |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| 2. Are these substances harmful? <span style="float: right;">←</span><br>3. Dangerous decomposition products when heated ?<br>If yes, which ? _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |                          |                |                          |                          |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |
| <sup>2)</sup> Components contaminated by microbiological, explosive or radioactive products/substances will not be accepted without written evidence of decontamination.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |                          |                |                          |                          |                  |     |                                |                          |                          |                          |  |                          |                          |                                    |                          |                          |                          |  |                          |                          |                                 |                          |                          |                          |  |                          |                          |           |                          |                          |                          |  |                          |                          |                              |  |  |  |  |  |  |                              |  |  |  |  |  |  |                                                 |  |  |  |  |  |  |

### D. Legally binding declaration

I / we hereby declare that the information supplied on this form is accurate and sufficient to judge any contamination level.

Name of authorized person (block letters) : \_\_\_\_\_

Date \_\_\_\_\_

signature of authorized person \_\_\_\_\_

firm stamp

[illegible]

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