Vacuum Solutions

Application Support

Service



GA/ET 01.208/3.02



SERVICE OF VACUUM PUMP SYSTEMS

TANAC.B.DOT pumps and accessories are nuids are equipped with special seals brake huids are acapable of resisting exposure to brake huids TRIVAC.B.DOT pumps and accessories which are equipped with special seals which are fluids. 2442 Emrick Blvd. Bethlehem, PA 18020 -apapie of reseting exposure to prake number with a process only be with agents which the set approved by Leybold.

These pumps in accordance ating adents which brake huids afternative of by Leybold.

These pumps approved by Leybold. For Service Call (610) 625-1505 DOI A OF atternative operating age have been approved by Leybold.

TRIVAC® B - DOT

**Rotary Vane Vacuum Pump** 

your BEST solution

S 4 B - DOT

D 8 B - DOT

D 16 B - DOT/-with float switch

D 25 B - DOT D 40 B - DOT

D 65 B - DOT

Cat. No.

104 04 114 06 114 10

**Accessories** 

AF/AK 4 - 8 - DOT AF/AK 16 - 25 -DOT AF/AK 40 - 65 -DOT AF/AK 40 - 65 -DOT 4 - 8 - DOT AR

Float switch 16 - 25

**Operating Instructions Spare Parts List** 

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



### Caution

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

## **Figures**

The references to figures, e.g. (1/2) consist of the Fig. No. and the Item No. in that order.

## Leybold Service

If a pump is returned to Leybold, indicate whether the pump is free of substances damaging to health or whether it is contaminated.

If it is contaminated also indicate the nature of the hazard. Leybold must return any pumps without a "Declaration of Contamination" to the sender's address.

### Information on the pump's operating agent

The operating agent used in the pump complies with the US standard FMVSS/116 DOT 4.

Operating agents which comply with this specification may be used instead of DOT 3 and may also be mixed with DOT 3.

Page

- **Caution** Store the operating agent only in its original container in a clean and dry place. Keep the container firmly sealed.
  - Any contamination by dirt, water, crude oil products or other materials may result in damage to the pump.
  - · Operating agent which has been used must never be re-used.
  - The operating agent will attack (dissolve) paint.

Warning • When swallowing the operating agent there is the danger of being poisoned.



• Always keep the operating agent in a sealed container and out of reach of children.

## Disposal of waste oil

Under the amended law relating to waste disposal dated November 1, 1986 (valid in the Federal Republic of Germany) the disposal of used oil is subject to new provisions. According to legislation relating to waste disposal the so-called principle of causality is applied. Hence, anyone in possession of used oil is responsible for its proper disposal.

Used oils coming from vacuum pumps must not be mixed with other substances.

Used operating agents must be disposed of separately and in accordance with the regulations.

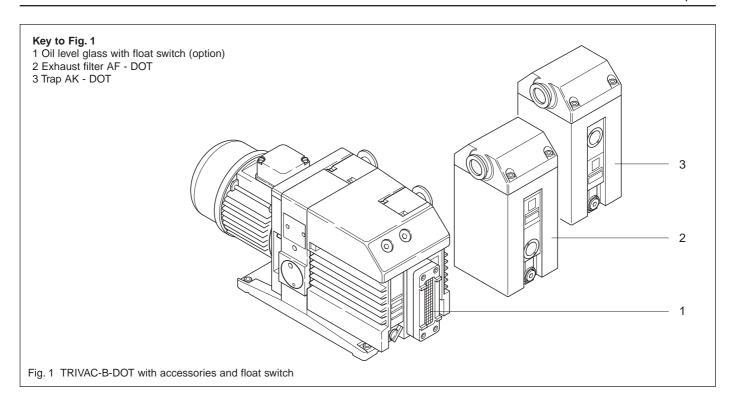
Operating agents from vacuum pumps that have been contaminated by other substances must be labelled, stored and disposed of as special waste with reference to the kind of contamination.

Waste disposal key: + 55256 x

In many countries proof of were the operating agent has finally been left is required by Law and often shipping of such contaminated waste requires permission by the authorities. Waste disposal information is available through:

Bundesamt für Gewerbliche Wirtschaft (BAW) Frankfurter Str. 29-31

D-65760 Eschborn/Taunus Phone: + 49 (0)6196 4041 Telefax: + 49 (0)6196 404212



## 1 Description

TRIVAC-B-DOT pumps are oil-sealed rotary vane pumps having either a single stage or two stages. The number in the type designation indicates the pumping speed in  $m^3 \times h^{-1}$ .

TRIVAC-B-DOT pumps can pump gases and vapours. They are used to evacuate brake systems and to degas hydraulics liquids.

The drive motor of the TRIVAC-B-DOT is directly flanged to the pump at the coupling housing. The pump and motor shafts are directly connected by a flexible coupling. The bearing points of the pump module are force lubricated sliding bearings. All controls as well as the oil-level glass and the nameplate are arranged on the front. All connections are to be found at the sides of the pump. The oil-level glass is provided with prisms for better observation of the oil level.

The pump module consists of assembly parts which are pin-fitted so as to allow easy disassembly and reassembly. The pump module can be easily removed without special tools.

### Caution

TRIVAC-B-DOT pumps are equipped with special seals capable of resisting brake fluids.

## 1.1 Function

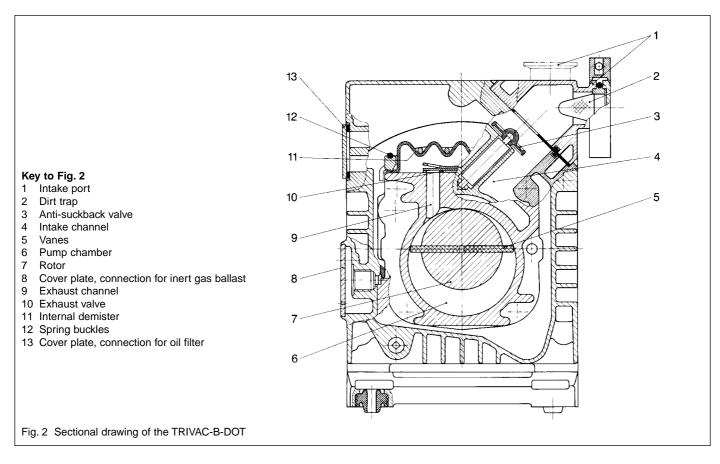
The rotor (2/7), mounted eccentrically in the pump housing (2/6), has two radially sliding vanes (2/5) which divide the pump chamber into several compartments. The volume of each compartment changes periodically with the rotation of the rotor.

As a result, gas is sucked in at the intake port (2/1). The gas passes through the dirt trap sieve (2/2), flows past the open anti-suckback valve (2/3) and then enters the pump chamber (2/6). In the pump chamber, the gas is passed on and compressed, after the inlet aperture is closed by the vane.

The operating agent injected into the pump chamber is used for sealing and lubricating. The slap noise in the pump which usually occurs when attaining the ultimate pressure is prevented by admitting a very small amount of air into the pump chamber.

The compressed gas in the pump chamber is ejected through the exhaust valve (2/10). The operating agent entrained in the gas is coarsely trapped in the internal demister (2/11); there the operating agent is also freed of mechanical impurities. The gas leaves the TRIVAC-B-DOT through the exhaust port.

During compression, a controlled amount of air - the socalled gas ballast - can be allowed to enter the pump chamber by opening the gas ballast valve. The gas ballast stops condensation of vapours in the pump chamber up to the limit of water vapour tolerance as specified in the technical data for the pump.



The gas ballast valve is opened and closed by turning the gas ballast knob (7/5) on the front.

To enable the TRIVAC-B-DOT to be used at intake pressures as high as 1,000 mbar, a special lubricating system was developed featuring force-lubrication of the sliding bearings.

A pump (3/6) for the operating agent pumps the operating agent from the reservoir (3/5) into a pressure-lubrication system which supplies all bearing points (3/2). From there the operating agent enters the pump chamber area (2/6) of the vacuum pump.

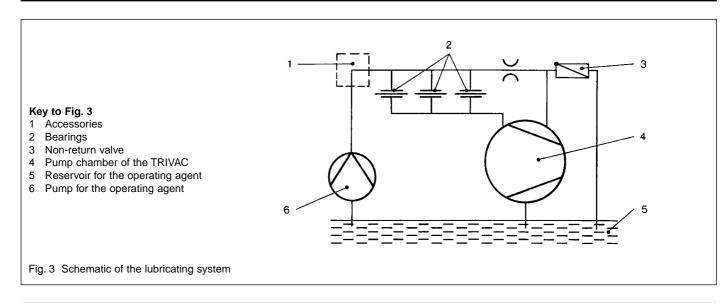
The pump for the operating agent is fitted in the front end plate on the coupling side of the pump module. The suction line for the operating agent is placed low, resulting in a large usable reservoir.

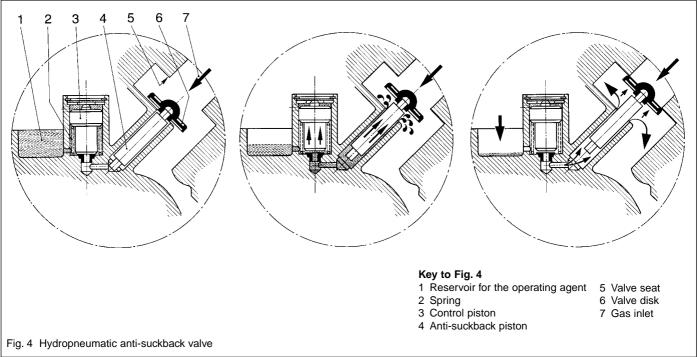
The operating agent is separated from the gas in the TRIVAC-B-DOT in two steps as described above. First, small droplets are coalesced into large drops in the internal demister (2/11) fitted above the exhaust valve (2/10). These are then returned by deflection at the chamber wall of the volume for the operating agent back to the reservoir for the operating agent. This and the large usable reservoir for the operating agent ensure long intervals between operating agent changes even at high intake pressures.

The vacuum is maintained by the TRIVAC-B-DOT by an integrated hydropneumatic anti-suckback valve (2/3) which is controlled via the pressure of the operating agent.

During operation of the TRIVAC-B-DOT the control piston (4/3) remains sealed against a spring (4/2) by the pressure of the operating agent. The valve disc (4/6) of the anti-suckback valve is held at the lower position by its own weight (valve open). When the pump stops (because it has been switched off or because of a failure), the pressure of the operating agent drops and the spring (4/2) presses the control piston (4/3) up. Thus a connection is provided between the case for the operating agent or the reservoir (4/1) for the operating agent and the piston (4/4) of the anti-suckback valve. Due to the pressure difference between the case of the operating agent and the intake port, the operating agent presses the piston (4/4) up and the valve plate (4/6) against the valve seat (4/5). The quantity of operating agent in the reservoir (4/1) prevents the entry of air into the intake port (2/1) at the beginning of this process.

After the operating agent has flowed out from the reservoir and when the valve plate rests on the valve seat, air follows in, which vents the pump chamber and forces the valve disc (4/6) against its seat. This effectively prevents backstreaming of any operating agent or its vapours. The anti-suckback valve (2/3) operates independently of the operating mode of the pump, i.e. also with gas ballast.





## 1.2 Supplied Equipment

The TRIVAC-B-DOT is delivered with the following basic equipment:

- Pump with all-metal motor; all external plastic parts have been replaced by metal parts,
- Pump filled with brake fluid according to DOT 4,
- 1 centering ring,
- 1 centering ring with dirt trap,
- 2 clamping rings.

As protection during shipment, the connection ports are each blanked off by shipping seals.

TRIVAC-B-DOT pumps with single-phase AC motor are supplied ready to operate with switch, built-in thermal motor protection switch, mains cable (2 m) and mains plug.

For TRIVAC-B-DOT pumps with three-phase AC motor, the switch, motor protection switch, mains cable etc. are not included.

## 1.3 Accessories

| C                                         | at. No. |
|-------------------------------------------|---------|
| Exhaust filter AF 16-25 DOT               | 124 16  |
| Exhaust filter AF 4-8 DOT                 | 124 14  |
|                                           |         |
| Condensate trap AK 16-25 DOT upon re      |         |
| Condensate trap AK 4-8 DOT upon re        | equest  |
| Exhaust filter AF 40-65 DOTupon re        |         |
| AR 16-25 DOT                              | equest  |
| Float switch for all modelsRef. No. 200 3 | 39 838  |
| FE 40 - 65 for AF 40 - 65 Ref. No. 200 3  | 39 840  |
|                                           |         |

### Caution

Only use the kind of operating agent specified by Leybold. Alternative types of operating agent are specified upon request.

## 1.4 Transportation

Caution • Pumps which are filled with operating agent must only be moved while standing upright. Otherwise operating agent may escape.

> Avoid any other orientations during transport.



- Warning Check the pump for the presence of any operating agent leaks, since there exists the danger that someone may slip on spilt operating agent.
  - When lifting the pump you must make use of the crane eyes provided on the pump for this purpose; also use the recommended type of lifting device.

## 1.5 Technical Data

|                                                       |                                  |           |                      | 50 Hz oper             | ration, SI unit      | S                    |                      |                      |
|-------------------------------------------------------|----------------------------------|-----------|----------------------|------------------------|----------------------|----------------------|----------------------|----------------------|
| TRIVAC B - DOT                                        |                                  | S 4 B-DOT | D 8 B-DOT            | D 16 B-DOT             | D 25 B-DOT           | D 40 B-DOT           | D 65 B-DOT           |                      |
| Nominal pumping speed*                                | m <sup>3</sup> x h <sup>-1</sup> | 4.8       | 9.7                  | 18.9                   |                      |                      |                      | float switch         |
| Pumping speed*                                        | m <sup>3</sup> x h <sup>-1</sup> | 4.2       | 8.5                  | 16.5                   |                      |                      |                      |                      |
| Ultimate partial pressure without gas ballast*        | mbar                             | < 3       | < 6x10 <sup>-1</sup> | < 6 x 10 <sup>-1</sup> | < 6x10 <sup>-1</sup> | < 6x10 <sup>-1</sup> | < 6x10 <sup>-1</sup> | < 6x10 <sup>-1</sup> |
| Ultimate total pressure with gas ballast*             | mbar                             | < 8       | < 9x10 <sup>-1</sup> | < 9 x 10 <sup>-1</sup> | < 9x10 <sup>-1</sup> | < 9x10 <sup>-1</sup> | < 9x10 <sup>-1</sup> | < 9x10 <sup>-1</sup> |
| Water vapour tolerance*                               | mbar                             | 30        |                      | 25                     |                      |                      |                      |                      |
| Operating agent filling min./max.                     | ı                                | 0.3/1.0   |                      | 0.45/1.0               |                      |                      |                      |                      |
| Connection ports                                      | DN                               | 16 KF     |                      | 25 KF                  |                      |                      |                      |                      |
| Type of motor protection                              | IP                               | 54        | 54                   | 54                     | 54                   | 54                   | 54                   | 54                   |
| Motor power                                           | W                                | 180       | 250                  | 550                    |                      |                      |                      |                      |
| Nominal speed                                         | rpm                              | 1500      | 1500                 | 1500                   |                      |                      |                      |                      |
| Noise level to DIN 45 635, without / with gas ballast | dB(A)                            | 50/52     | 50/52                | 50/52                  | 50/52                | 50/52                | 50/52                | 50/52                |
| Weight <sup>1)</sup>                                  | kg                               | 15.7      |                      | 26                     |                      |                      |                      |                      |
| TRIVAC B - DOT                                        | Cat. No.                         | 104 04    |                      | 114 06                 |                      |                      |                      | 114 10               |
| Exhaust filter AF 4-8                                 | Cat. No.                         | 124 14    | 124 14               | -                      | -                    | -                    | -                    | -                    |
| Exhaust filter AF 16-25                               | Cat. No.                         | -         | -                    | 124 16                 | 124 16               |                      |                      | 124 16               |
| Exhaust filter AF 40-65                               | Cat. No.                         | request   | request              | request                | request              | request              | request              | request              |
| Condensate trap AK 4-8, AK 16-25, AK 40-65            | Cat. No.                         | request   | request              | request                | request              | request              | request              | -                    |
| Float switch                                          | Cat. No.                         |           | I                    | 200 3                  | 9 838                |                      | I                    | -                    |

<sup>\*</sup> as per DIN 28 400 and following numbers

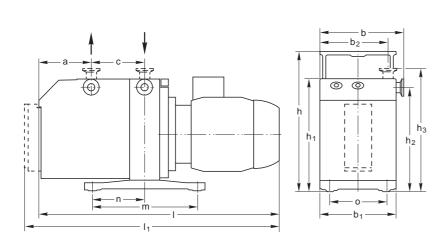
220-240/380-420 V, 50 Hz 240-265/415-460 V, 60 Hz

## Motor related data

| Type                        | Cat. No      | 1   | l1  | Weight | Motor supply voltage                                                   | Nom. current           | Motor power | Speed     | Ref. No. for the Motor |
|-----------------------------|--------------|-----|-----|--------|------------------------------------------------------------------------|------------------------|-------------|-----------|------------------------|
| S 4 B-DOT                   | 104 04       | 430 | -   | 12.2   | Δ/Y 220-240/380-420 V ± 5%, 50 Hz<br>Δ/Y 240-265/415-460 V ± 5%, 60 Hz | 2.1/1.2 A<br>1.75/1 A  | 0.18 kW     | 1400/1700 | 200 10 298             |
| D 16 B-DOT                  | 114 06       | 482 | -   | 23.7   | Δ/Y 220-240/380-420 V ± 5%, 50 Hz<br>Δ/Y 240-265/415-460 V ± 5%, 60 Hz | 3.2/1.8 A<br>2.8/1.6 A | 0.55 kW     | 1370/1670 | 200 10 299             |
| D 16 B-DOT with float swite | 114 10<br>ch | -   | 542 | 24.7   | Δ/Y 220-240/380-420 V ± 5%, 50 Hz<br>Δ/Y 240-265/415-460 V ± 5%, 60 Hz | 3.2/1.8 A<br>2.8/1.6 A | 0.55 kW     | 1370/1670 | 200 10 299             |

**Caution** We can only guarantee that the pump will meet its specifications when using the type of lubricant which has been specified by us.

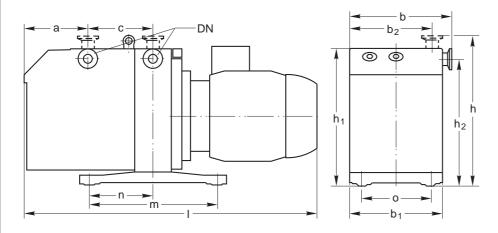
<sup>1)</sup> Weight for the version with three-phase motor



Dimensional drawing for the TRIVAC S 4 B - DOT, D 8 B - DOT, D 16 B - DOT, D 25 B - DOT

|       | а   | b   | b <sub>1</sub> | b <sub>2</sub> | С   | h   | h <sub>1</sub> | h <sub>2</sub> | h <sub>3</sub> | m   | n  | 0   |
|-------|-----|-----|----------------|----------------|-----|-----|----------------|----------------|----------------|-----|----|-----|
| S 4 B | 75  | 162 | 147            | 132            | 100 | 265 | 215            | 200            | 230            | 198 | 99 | 108 |
| D 8 B | 100 | 162 | 147            | 132            | 100 | 265 | 215            | 200            | 230            | 198 | 99 | 108 |

|        |                                                | а   | b                 | b <sub>1</sub> | b <sub>2</sub>    | С   | h   | h <sub>1</sub> | h <sub>2</sub> | h <sub>3</sub> | m   | n   | 0   |
|--------|------------------------------------------------|-----|-------------------|----------------|-------------------|-----|-----|----------------|----------------|----------------|-----|-----|-----|
| D 16 B | 1 ~ , 50 Hz<br>3 ~ , 50 Hz<br>1 ~ /3 ~ , 60 Hz | 82  | 193<br>190<br>193 | 175            | 153<br>150<br>150 | 135 | 298 | 250            | 226            | 263            | 280 | 140 | 132 |
| D 25 B | 1 ~ , 50 Hz<br>3 ~ , 50 Hz<br>1 ~ /3 ~ , 60 Hz | 143 | 193<br>190<br>193 | 175            | 153<br>150<br>150 | 135 | 298 | 250            | 226            | 263            | 280 | 140 | 132 |

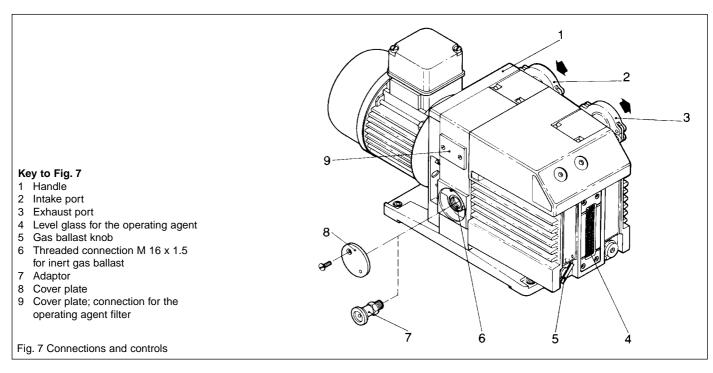


Dimensional drawing for the TRIVAC D 40 B - DOT

D 65 B - DOT

|        | DN    | а   | b   | b <sub>1</sub> | b <sub>2</sub> | С   | h   | h <sub>1</sub> | h <sub>2</sub> | m   | n   | o   |
|--------|-------|-----|-----|----------------|----------------|-----|-----|----------------|----------------|-----|-----|-----|
| D 40 B | 40 KF | 135 | 254 | 234            | 206            | 166 | 355 | 336            | 308            | 382 | 191 | 190 |
| D 65 B | 40 KF | 213 |     | _0.            |                |     | 000 | 000            | 000            | 002 |     |     |

 $Fig. \ 6 \ \ Dimensional \ drawings \ for \ the \ TRIVAC-B-DOT \ rotary \ vane \ pumps \ (Dimensions \ a, \ I, \ b \ to \ b_2 \ and \ h_1 \ are \ approximate, \ dimensions \ in \ mm)$ 



## 2 Operation

## 2.1 Installation

### Caution

TRIVAC-B-DOT pumps must only be operated in connection with brake fluid filling and degassing systems.

The TRIVAC-B-DOT pump can be set up on a flat, horizontal surface. Rubber feet under the coupling housing ensure that the pump can not slip.

If you wish firmly install the TRIVAC-B-DOT in place, insert bolts through bore holes in the rubber feet.

### Caution

Max. tilt for the pump (without further attachment) with possibly fitted standard accessories is 10° from the vertical.

The rubber feet act as vibration absorbers. They must therefore not be compressed by screws. When installing the TRIVAC-B-DOT pump, make sure that the connections and controls are readily accessible.

The site chosen should allow adequate air circulation to cool the TRIVAC-B-DOT (keep front and rear unobstructed). The ambient temperature should not exceed + 40 °C (104 °F) and not drop below + 12 °C (55 °F) (see Section 2.5.3).

The max. amount of heat given off approximately corresponds to the rated motor power.

# 2.2 Connection to the System

Before connecting the TRIVAC-B-DOT, remove the shipping seals from the connection flanges (7/2) and (7/3).

**Caution** Retain the shipping seals in case you need to store the pump in the future.

The pump is shipped with intake and exhaust flanges mounted for horizontal connection of the connecting lines. You can easily convert the ports for vertical connection by removing the four capscrews, rotating the flanges as required, and reinstalling the capscrews.

Connect the intake and exhaust lines with a centering ring and a clamping ring each. Use the centering ring with the dirt trap for the intake port.

Connect the intake and exhaust lines using anti-vibration bellows, without placing any strain on the pump.

The intake line must be clean. Deposits in the intake line may outgas and adversely affect the vacuum. The connecting flanges must be clean and undamaged.

The maximum throughput of the pump is equivalent to the pumping speed of the pump (see Section 1.5).

## Caution

The cross-section of the intake and exhaust lines should be at least the same size as the connection ports of the pump. If the intake line is too narrow, it reduces the pumping speed. If the exhaust line is too narrow, overpressures may occur in the pump; this might damage the shaft seals and cause leaks. The maximum pressure in the case for the operating agent must not exceed 1.5 bar (absolute).

When pumping vapours, it is advisable to install condensate traps on the intake and exhaust sides.

Install the exhaust line with a downward slope (lower than the pump) so as to prevent condensate from flowing back into the pump. If this is not possible, insert a condensate trap.

The exhaust gases from the vacuum pump must be safely led away and subjected to post-treatment as required. In order to reduce the emission of operating agent vapours we recommend the installation of an additional exhaust filter (Leybold accessory).

Depending on the type of application or the kind of pumped media, the corresponding regulations and information sheets must be observed.

### Warning

Never operate the pump with a sealed exhaust line. There is the danger of injury.



The exhaust gases coming from the vacuum pump must be lead away safely and subjected to suitable post treatment as required.

Before starting any work on the pump, the personnel must be informed about possible dangers first. All safety regulations must be observed.

## 2.3 Electrical Connection



Warning Before wiring the motor or altering the wiring, ensure that mains supply for the pump is off and that it can not be applied inadvertently.



In order to prevent the pump from running up unexpectedly after a mains power failure, the pump must be integrated in the control system in such a way that the pump can only be switched on again manually. This applies equally to emergency cut-out arrangements.

Electrical connections must only be done by a qualified electrician as defined by VDE 0105 in accordance with the VDE 0100 guidelines.

Observe all safety regulations.

TRIVAC-B-DOT pumps are available with a single-phase or a three-phase AC motor.

## 2.3.1 Pump with Single-Phase AC Motor

Pumps equipped with a single-phase AC motor may be connected directly to the mains via the mains cord and the mains plug.

At 230 V use at least a 6 A slow-blow or a 10 A fast-blow fuse.

The direction of rotation need not be checked as it is fixed

The motor is protected against overloading by a thermal overload switch with automatic resetting.

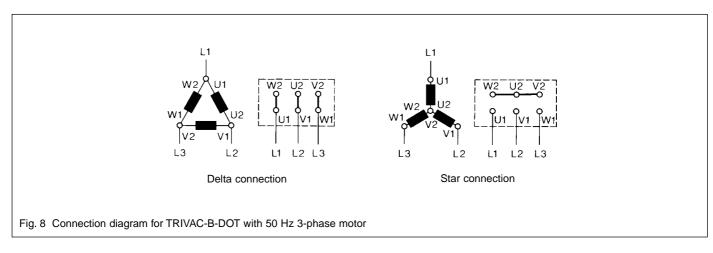


Warning If the thermal overload protector shuts off the pump, the motor will restart itself as soon as it cools. That's why the mains plug should be disconnected from the mains before starting with any work on the pump.

## 2.3.2 Pump with Three-Phase AC Motor

TRIVAC-B-DOT pumps with a three-phase motor are supplied without accessories for electrical connection. They must be connected via the appropriate cable, and a suitable motor protection switch. Set the switch in accordance with the rating on the motor nameplate.

Fig. 8 shows the connection for pumps with 230/400 V, 50 Hz motors. Please also observe the motor wiring diagram in the junction box and the information given on the nameplate of the motor.



### Caution

After connecting the motor and after every time you alter the wiring, check the direction of rotation. To do so, briefly switch on the motor and check whether a suitable cover (e. g. a blank flange) is sucked in at the intake port. If not, interchange two phases of the connection.

Observe the direction arrow on the coupling housing.

## 2.4 Start-up

### Caution

TRIVAC-B-DOT pumps must only be operated in connection with brake fluid filling and degassing systems.

Do not select a degassing pressure of less than 1 mbar, since at this pressure volatile substances in the brake fluid may escape and damage the elastomer seals of the pump.

Each time before starting up check the level of the operating agent.

For pumps with 3-phase motors, check the direction of rotation before starting the pump for the first time and after each change in the electrical connection (see Section 2.3.2).

On initial start-up, after prolonged idle periods or after having changed the operating agent, the specified ultimate pressure cannot be attained until the operating agent has been degassed. This can be done by running the pump for approx. 30 min. with the intake line closed and the gas ballast valve (7/5) open.

## Warning



Before starting the pump ensure that the pump and the fitted accessories meet the requirements of your application and that safe operation can be guaranteed.

## Warning



Avoid exposure of any part of the body to the vacuum. There is the danger of injury. Never operate the pump with an open intake port. Vacuum connections as well as oilfill and oil-drain openings must never be opened during operation.

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

The standard pump is not suited for pumping of hazardous gases or vapours.

Our technical sales department is available for further advice in these matters.

## 2.4.1 Areas of Application

**Warning** The pump is not suitable for pumping of:



- ignitable and explosive gases or vapours,
- oxidants,
- pyrophorous gases.

### Caution

The pumps are not suitable for pumping of liquids or very dusty media. Suitable protective devices must be installed.

Our technical sales department is available for further advice in these matters.

## 2.5 Operation

TRIVAC-B-DOT pumps can pump condensable gases and vapours, provided that the gas ballast valve (7/15) is open and the pump has attained its operating temperature.

## 2.5.1 Pumping of Non-Condensable Gases

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

If the composition of the gases to be pumped is not known and if condensation in the pump cannot be ruled out, run the pump with the gas ballast valve open in accordance with Section 2.5.2.

## 2.5.2 Pumping of Condensable Gases and Vapours

With the gas ballast valve open and at operating temperature, TRIVAC-B-DOT pumps can pump pure water vapour up to the water vapour tolerance specified by the technical data. If the vapour pressure increases above the permissible level, the water vapour will condense in the oil of the pump.

When pumping vapours ensure that the gas ballast valve is open and that the pump has been warmed up for approximately 30 minutes with the intake line closed.

### Caution

Vapour phases may only be pumped up to the permissible limit after the pump has attained its operating temperature.

During pumping, vapours may dissolve in the oil. This changes the properties of the operating agent and thus there is a risk of corrosion in the pump. Therefore, don't switch off the TRIVAC-B-DOT immediately after completion of the process. Instead, allow the pump to continue operating with the gas ballast valve open and the intake line closed until the operating agent is free of condensed vapours. We strongly recommend operating the TRIVAC-B-DOT in this mode for about 30 minutes after completion of the process.

In cyclic operation, the TRIVAC-B-DOT should not be switched off during the intervals between the individual working phases (power consumption is minimal when the pump is operating at ultimate pressure), but should continue to run with gas ballast valve open and intake port closed (if possible via a valve).

Once all vapours have been pumped off from a process (e.g. during drying), the gas ballast valve can be closed to improve the attainable ultimate pressure.

## 2.5.3 Operating Temperature

Proper operation of the TRIVAC-B-DOT is ensured in the ambient temperature range between 12 °C to 40 °C (55 °F to 104 °F).

At operating temperature, the surface temperature of the TRIVAC-B-DOT may lie between 40 °C and over 80 °C (104 °F and 176 °F), depending on the load.

Warning The surface temperature of the TRIVAC-B-DOT pumps may rise above 80 °C. There is the danger of receiving burns.



## 2.6 Switching Off/Shutdown

Under normal circumstances, all that you need do is to electrically switch off the TRIVAC-B-DOT.

## Caution

For longer standstill periods you must seal the pump so that no humidity can enter because brake fluid is hygroscopic.

No further measures will be required.

When pumping condensable media let the pump continue to operate with the gas ballast valve open and the intake line closed before switching off (see Section 2.5.2).

When pumping aggressive or corrosive media, let the pump continue to operate even during long non-working intervals (e.g. overnight) with the intake line closed and the gas ballast valve open. This avoids corrosion during idle periods.

If the TRIVAC-B-DOT is to be shutdown for an extended period after pumping aggressive or corrosive media or if the pump has to be stored, proceed as follows:

## Warning

After pumping of pumping harmful substances, take adequate safety precautions.



Our technical sales department is available for further advice in this matter.

Drain the operating agent (see Section 3.2).

Add clean operating agent until the level is at the "min" mark (see Section 3.2) and let the pump operate for some time.

Then drain the operating agent and add clean operating agent until the level is at the "max" mark (see Section 3.2).

Seal the connection ports. Special conservation or anticorrosion oils aren't necessary.

Caution

Please also take note of the information given in Section 3.9 (Storing the Pump).

## 2.6.1 Shut-Down through Monitoring Components



Warning When the pump has been switched off due to overheating sensed by the motor coil protector, the pump must only be started manually after the pump has cooled down to the ambient temperature and after having removed the cause first.

## 2.6.2 Failure of the Control System or the Mains Power

Warning



In order to prevent the pump from running up unexpectedly after a mains power failure, the pump must be integrated in the control system in such a way that the pump can only be switched on again manually. This applies equally to emergency cut-out arrangements.

## Maintenance

Warning



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



If the pump has pumped harmful substances, contrary to what has been stated in Section 2.4, ascertain the nature of hazard and take adequate safety measu-

Observe all safety regulations.

If you send a pump to LEYBOLD for repair please indicate any harmful substances existing in or around the pump. A form is available from LEYBOLD for this purpo-

Caution

When disposing of used oil, you must observe the applicable environmental regulations!

Due to the design concept, TRIVAC-B-DOT pumps require very little maintenance when operated under normal conditions. The work required is described in the sections below. In addition to this, a maintenance plan is provided in Section 3.10.

Caution

All work must be carried out 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. For more information please contact the Leybold Service.

If the TRIVAC-B-DOT is used in ambient air which is much contaminated, make sure that the air circulation and the gas ballast valve are not adversely affected.

## 3.1 Checking the Oil Level

During operation of the TRIVAC-B-DOT the level of the operating agent must always remain between marks (9/2) and (9/3) on the level glass. The amount of operating agent must be checked and topped up as required.

**Caution** Fill in operating agent only after the pump has been switched off.

## 3.2 Oil Change

For proper operation of the pump, it is essential that the pump has an adequate supply of the correct and clean operating agent at all times.

The operating agent must be changed when it looks dirty or if it appears chemically or mechanically worn out.

The operating agent should be changed after the first 100 operating hours and then at least every 2,000 to 3,000 operating hours or after one year. At high intake pressures and intake temperatures and/or when pumping contaminated gases, the operating agent will have to be changed much more frequently.

Further changes of the operating agent should be made before and after long-term storage of the pump.

If the operating agent becomes contaminated too quickly, install a dust filter and/or a filter for the operating agent (see Section 1.3).

Contact us for more information in this matter.

### Caution

Only change the operating agent after the pump has been switched off and while the pump is still warm.

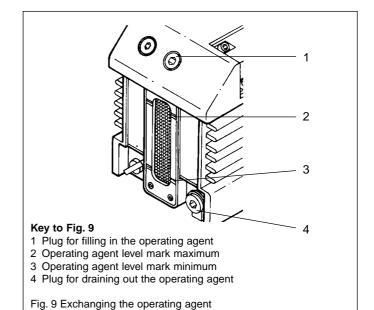
Required tool: Allen key 8 mm.

Remove the drain plug (9/4) for the operating agent and let the used operating agent drain into a suitable container. When the flow of operating agent slows down, screw the drain plug for the operating agent back in, briefly switch on the pump (max. 10 s) and then switch it off again. Remove the drain plug for the operating agent once more and drain out the remaining operating agent.

Screw the drain plug for the operating agent back in (check the flat gasket and reinstall a new one if necessary).

Remove the fill plug (9/1) for the operating agent and fill in fresh operating agent.

Screw the fill plug (9/1) for the operating agent back in.



## Warning



If there is the danger that the operating agent may present a hazard in any way because of the media which have been pumped, you must determine the kind of hazard and ensure that all necessary safety precautions are taken.



## Caution

We can only guarantee that the pump operates as specified by the technical data if the lubricants recommended by us are used.

## 3.3 Cleaning the Dirt Trap

A wire-mesh sieve is located in the intake port of the pump to act as a dirt trap for coarse particles. It should be kept clean to avoid a reduction of the pumping speed.

For this purpose, remove the dirt trap (2/2) from the intake port and rinse it in a suitable vessel with solvent. Then thoroughly dry it with compressed air. If the dirt trap is defective, replace it with a new one.

### Caution

The cleaning intervals depend on the application. If the pump is exposed to large amounts of abrasive materials, a dust filter should be fitted into the intake line.

### Key to Fig. 10

- 1 Case for the operating agent
- 2 Spring buckles
- 3 Demister
- 4 Frame for demister
- 5 Hex. socket screws (5 pcs.)
- 6 Silencing nozzle
- 7 Gasket

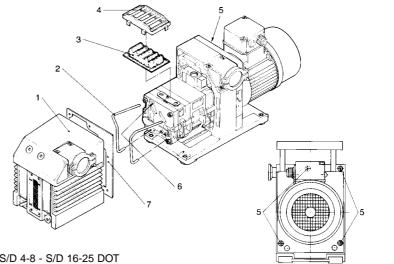


Fig. 10 Removal and fitting of the internal demister TRIVAC S/D 4-8 - S/D 16-25 DOT

### Key to Fig. 11

- Screw with small washer, spring, large washer and O-ring
- 2 Holding frame for demister
- 3 Demister
- 4 Case for the operating agent
- 5 Gasket
- 6 Fixing screws

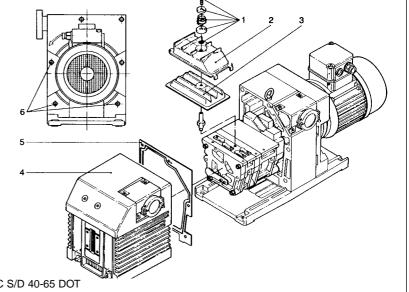


Fig. 11 Removal and fitting of the internal demister TRIVAC S/D 40-65 DOT

# 3.4 Removing and Fitting the Internal Demister

The internal demister is spring-mounted in a frame. When it is clogged, it rises periodically to reduce the pressure difference created.

The resultant noise at high intake pressures indicates that the internal demister is dirty.

Periodically clean or replace the internal demister; the maintenance interval depends on the application. Use a suitable solvent for cleaning.

Shutdown the pump and drain the operating agent (see Section 3.2).

Pull the handle upward.

Remove the recessed screws. Don't remove the nonrecessed screws; they hold the motor flange in place and should not be unscrewed.

Pull the case for the operating agent forward off the pump.

Remove the gasket and spacing discs/rings.

Take the internal demister out of its holder. Clean or exchange it and then fit it.

The sealing surfaces for the case of the operating agent and the coupling housing must be cleaned and dried.

Reassemble in the reverse order. When doing so, make sure that the spacing rings have been fitted to the seals so that these are not compressed when tightening the screws

Caution Torque for the screws is 5 Nm.

## Key to Fig. 12 1 Gasket 2 Handle 3 Hex. socket screws 4 Electric motor 5 Intermediate flange 6 Hex. socket screws 7 Coupling 8 Threaded pin

## 3.5 Disassembly and Reassembly of the Electric Motor

Warning Before starting work, always disconnect the motor from the mains.

Fig. 12 Disassembly and reassembly of the electric motor (similar for all other types)



Disconnect the wires in the junction box of the motor (three-phase models only) or pull the mains plug.



Required tools:

Screwdriver 1.0 x 5.5 mm (for junction box), open-jaw wrenches 7 mm and 19 mm (for junction box), Allan keys 2.5 mm, 3 mm, 5 mm, 6 mm, possibly puller for coupling.

Place the pump on its front side.

Unscrew the four non-recessed hex. socket screws (12/3).

Remove the intermediate flange (12/5) together with the electric motor (12/4).

Remove the handle (12/2).

Loosen the threaded pin (12/8) and pull the coupling (12/7) off the motor shaft.

Take off the gasket (12/1).

Unscrew the hex. socket screws (12/6).

Remove the electric motor.

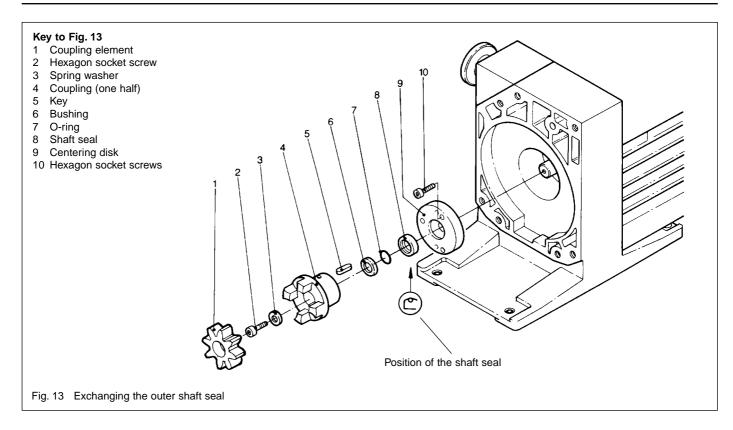
Clean all parts and check that they are in perfect condition; if not, replace them with new parts.

Reassemble in the reverse order.

In the case of 60 Hz motors (USA versions) the coupling must not be pushed on to the shaft right up to the stop.

On the other hand if it is not pushed on far enough the pump module may be damaged during operation.

Push the coupling on in such a way that the distance between the front end of the coupling (12/7) and the gasket (12/1) on the intermediate flange amounts to 21.4 mm  $(27/_{32} \text{ inch}).$ 



## 3.6 Replacing the Outer Shaft Seal

The outer shaft seal (13/8) can be replaced without removing or disassembling the pump module.

Shutdown the pump.

Drain the operating agent and place the pump on its front side.

Unscrew the non-recessed screws and remove the motor together with the intermediate flange.

Remove the gasket.

Remove the coupling element.

Pull off the coupling half.

Remove the key.

Unscrew the screws and pull off the centering disk.

If the centering disk is stuck make use of the forcing threads.

Carefully force the shaft seal out of the centering disk.

Carefully pull off the bushing, the O-ring and the compression ring from the shaft and remove these items.

We recommend the use of a new shaft seal, an O-ring and bushing for reassembly.

Before insertion, moisten the new shaft seal slightly with a little operating agent.

Using a suitable plastic or aluminium cylinder (shaft seal driver) and a plastic hammer, force the shaft seal (13/8) carefully and without bending it into the centering disk (for position of shaft seal, see Fig. 13).

If you do not have a shaft seal driver, place the shaft seal on the centering disk and carefully force it in with light blows of the plastic hammer.

The shaft seal must not be bent.

Carefully push the O-ring (13/7) and the bushing (13/6) onto the shaft.

Push the centering disk (13/1) with the shaft seal onto the shaft and up against the end plate; fasten it with the hex. socket screws (13/10).

Insert the key (13/5).

Push the pump-half of the coupling (13/4) on to the shaft.

Install the spring washer (13/3) and tighten the screw (13/2).

Insert the coupling element (13/1) into the coupling and mount the motor (see Section 3.5).

# 3.7 Removing and Remounting the Pump Module

## 3.7.1 Removing the Pump Module

Drain the operating agent and remove the case for the operating agent (see Section 3.4).

Unscrew the hex. nuts (14/1).

Pull the entire pump module (14/2) forward off the tie rods (14/6).

### Caution

When doing so, ensure that the individual pin-fitted parts are not loosened. Further disassembly of the pump module should only be carried out by a trained service engineer.

Remove the gasket (14/4).

Take the coupling element (14/5) off the coupling.

### Caution

After removing the protective shipping materials, handle the new pump module with care.

Before installing a new pump module, remove the four tie rods from the new module and insert them in the old one for protection during shipment.

## 3.7.2 Remounting the Pump Module

When installing a new pump module, it is also advisable to use a new gasket (14/4).

Check the coupling element (14/5) for damage; if necessary, install a new one.

Use the tie rods supplied with the new pump module only if the old ones are damaged. To do so, unscrew the old tie rods with lock nuts, and screw in the new ones. With the aid of the lock nuts, tighten the tie rods. Then remove the lock nuts.

Before mounting the pump module, make sure that sealing disc (14/3) fits correctly in its bore.

Push the gasket (14/4) onto the tie rods (14/6), push the coupling element (14/5) onto one coupling half.

Push the entire pump module (new or repaired) onto the tie rods.

**Caution** Screw on the hex. nuts (14/1) and carefully cross-tighten them (torque 7.5 Nm).

Mount the case for the operating agent together with the gasket (see Section 3.4).

Fill in operating agent.

## 3.8 Leybold Service

If a pump is returned to Leybold, indicate whether the pump free of substances damaging to health or whether it is contaminated.

If it is contaminated also indicate the nature of the hazard. For this you must use a form which has been prepared by us which we will provide upon request.

A copy of this form is reproduced at the end of these Operating Instructions: "Declaration of Contamination of Vacuum Instruments and Components".

Please attach this form to the pump or enclose it with the pump.

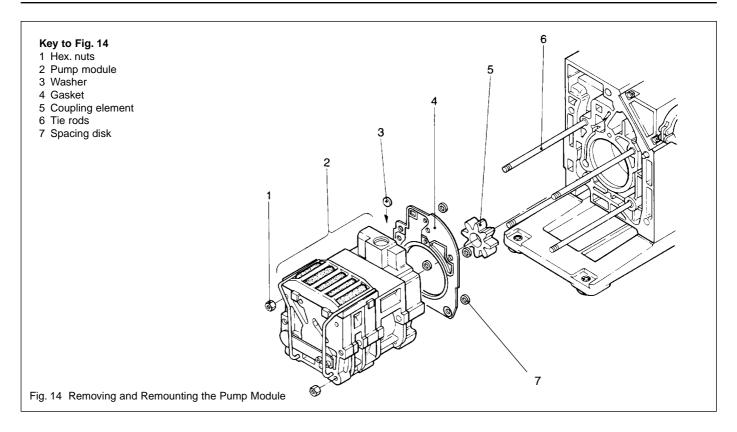
This "Declaration of Contamination" is required to meet German Law and to protect our personnel.

Leybold must return any pumps without a "Declaration of Contamination" to the sender's address.

### Warning



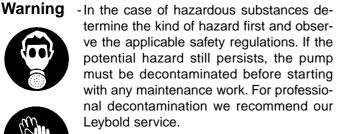
The pump must be packed in such a way, that it will not be damaged during shipping and so that any contaminants are not released from the package.



## 3.8.1 Waste Disposal of Used Pump Materials

The corresponding environmental and safety regulations apply. This applies equally to used filters and filter elements (filter for the operating agent, exhaust filter and dust filter).







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

## 3.9 Storing the Pump

## Caution

Before putting a pump into operation once more it should be stored in a dry place preferably at room temperature (20 °C). Before the pump is shelved it must be properly disconnected from the vacuum system, purged with dry nitrogen and the operating agent should be changed too.

Since the brake fluid is hygroscopic, the inlets and outlets of the pump must be sealed with the shipping seals which are provided upon delivery.

The gas ballast switch must be set to the "0" position and if the pump is to be shelved for a longer period of time it should be sealed in a PE bag containing some desiccant (silica gel).

When a pump is put into operation after it has been shelved for over one year, standard maintenance should be run on the pump and the operating agent should also be exchanged (see Operating Instructions). We recommend that you contact the Leybold service.

## 3.10 Maintenance Plan (Recommendation)

| No. | Rotary vane pumps                                                                                                       | Measurement/test quantity                   | ı  | nte | rval |   | Remarks                                                                                                                                                                                                                                                                                                                                                                                  |
|-----|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|----|-----|------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | TRIVAC - DOT                                                                                                            | Operating / auxiliary materials             | VE | t   | 6m   | а | Refer to the Operating Instructions - individual components.                                                                                                                                                                                                                                                                                                                             |
| 1   | Operate the pump for at least 0.8 hours with gas ballast.                                                               |                                             |    | х   |      |   | Condensed water is thus removed from the operating agent.                                                                                                                                                                                                                                                                                                                                |
| 2   | Check the level of the operating agent, change if required.                                                             | Operating agent:<br>Brake fluid DOT 3/4     | х  | х   |      |   | Refill: Only after the pump has been switched off.                                                                                                                                                                                                                                                                                                                                       |
| 3   | Clean the dirt trap in the intake port, change it as required.                                                          | Suitable cleaning agent and compressed air. |    |     | x    |   | <ul> <li>□ Clean dirt trap with a cleaning agent and blow it out with compressed air under a suction hood.</li> <li>□ Replace the defective dirt trap.         Use a cleaning agent which complies with the national / international specifications.</li> <li>Observe the safety regulations when using cleaning agents.</li> </ul>                                                      |
| 4   | Clean the internal demister, change it as required.                                                                     | Suitable cleaning agent.                    |    |     |      | × | Already clean before the maintenance interval has elapsed when the noise level increases.  Clean the internal demister using a cleaning agent.  Replace the defective internal demister.  Dispose of the defective internal demister as special waste.  Cleaning agent according to national / international specifications.  Observe the safety regulations when using cleaning agents. |
| 5   | Check the edges of the teeth on<br>the coupling element for any<br>damages, change the coupling<br>element as required. |                                             |    |     |      | Х |                                                                                                                                                                                                                                                                                                                                                                                          |

| No. |                                                                                                                      | Measurement/test quantity                   | I  | nte | erval |   | Remarks                                                                                                                                                                                                                                                                                     |
|-----|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------|----|-----|-------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | TRIVAC - DOT                                                                                                         | Operating / auxiliary materials             | VE | t   | 6m    | а | Refer to the Operating Instructions - individual components.                                                                                                                                                                                                                                |
| 7   | Change the oil - and                                                                                                 | Operating agent:<br>Brake fluid DOT 3/4     |    |     |       | x | Change of operating agent:  • First change after 100 operating hours  • Pump switched off and cold.  Change the operating agent when the pump is cold in order to avoid releasing absorbed gases.                                                                                           |
|     | clean the level glass for the operating agent.                                                                       | Suitable cleaning agent and compressed air. |    |     |       |   | <ul> <li>Clean the level glass for the operating agent with a cleaning agent and blow it out with compressed air under a suction hood.</li> <li>Cleaning agent according to national / international specifications.</li> <li>Observe the safety regulations when using cleaning</li> </ul> |
|     |                                                                                                                      |                                             |    |     |       |   | agents.                                                                                                                                                                                                                                                                                     |
|     |                                                                                                                      |                                             |    |     |       |   | Quantity of operating agent: See Operating Instructions, Section 1.5.  Waste disposal of operating agent: See Operating Instructions, Section 3.8.1.                                                                                                                                        |
| 8   | Check the fan of the pump and the motor as well as the cooling fins on the motor for deposits and clean as required. | Brush and industrial vacuum cleaner.        |    |     |       | x | Already clean before the maintenance interval has elapsed when the pump or the motor gets to warm.  Caution: switch off the pump and ensure that it can not run up inadvertently (disconnect from the mains).                                                                               |

### Key to the maintenance plan

VE = Maintenance before switching on the system

t = Daily maintenance

w = Weekly maintenance

2w = Maintenance every two weeks

m = Monthly maintenance

3m = Three monthly maintenance 6m = Six monthly maintenance

a = Annual maintenance

We recommend servicing the pump every two years covering the following:

- Cleaning
- Checking of the individual components
- Exchange of all seals
- Functional check

This check should be run by the Leybold service.

## Troubleshooting

| Fault                                                                          | Possible cause                                                                                                                                                                                                                                                                             | Remedy                                                                                                                                                                                                                                                                                                                                                | Repair*                                                               |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Pump does not start.                                                           | Wiring is malfunctioning.  Motor protection switch incorrectly set (3-phase motors only). Operating voltage does not match motor. Motor is malfunctioning. Oil temperature is below 12 °C. Oil is too thick. Exhaust filter/exhaust line is clogged.                                       | Check and repair wiring. Set motor protection switch properly.  Replace the motor. Replace the motor. Heat the pump and pump oil or use different oil. Change the oil. Replace the filter or clean the exhaust line.                                                                                                                                  | 2.3<br>3.5<br>3.5<br>2.5.3/3.2<br>3.2                                 |
|                                                                                | Pump is seized up (sign: pump is jammed).                                                                                                                                                                                                                                                  | Repair the pump.                                                                                                                                                                                                                                                                                                                                      | Service                                                               |
| Pump does not reach ultimate pressure.                                         | Measuring technique or gauge is unsuitable. Humidity (water) in the operating agent.  External leak <sup>1</sup> ). Anti-suckback valve is malfunctioning. Exhaust valve is malfunctioning. Oil is unsuitable. Intake line is dirty. Pump is too small.                                    | Use correct measuring technique and gauge. Operate the pump with gas ballast and intake sealed for about 0.5 hours. Measure the pressure directly at pump's intake port. Repair the pump. Repair the valve. Repair the valve. Change the oil (degas it, if necessary). Clean the intake line. Check the process data; replace the pump, if necessary. | Service<br>Service<br>Service<br>3.2                                  |
| Pumping speed is too low.                                                      | Dirt trap in the intake port is clogged.  Exhaust filter is clogged.  Connecting lines are too narrow or too long.                                                                                                                                                                         | Clean the dirt trap; Precaution: install a dust filter in intake line. Install new filter elements. Use adequately wide and short connecting lines.                                                                                                                                                                                                   | 3.3<br>-<br>2.2                                                       |
| After switching off pump under vacu-<br>um, pressure in system rises too fast. | System has a leak.<br>Anti-suckback valve is malfunctioning.                                                                                                                                                                                                                               | Check the system.<br>Repair the valve.                                                                                                                                                                                                                                                                                                                | -<br>Service                                                          |
| Pump gets hotter<br>than usually obser-<br>ved.                                | Cooling air supply is obstructed. Ambient temperature is too high. Process gas is too hot. Oil level is too low. Oil is unsuitable. Oil cycle is obstructed. Exhaust filter/exhaust line is obstructed. Exhaust valve is malfunctioning. Pump module is worn out. Deviating mains voltage. | Set pump up correctly. Set pump up correctly. Change the process. Add oil. Change the oil. Clean or repair the oil lines and channels. Replace the exhaust filter, clean the exhaust line. Repair the valve. Replace the pump module. Check the motor voltage and check the available mains voltage.                                                  | 2.1<br>2.1/2.5.3<br>-<br>3.1<br>3.2<br>Service<br>-<br>Service<br>3.7 |
| Oil in the intake line or in vacuum ves-<br>sel.                               | Oil comes from the vacuum system. Anti-suckback valve is obstructed. Sealing surfaces of anti-suckback valve are damaged or dirty. Level of the operating agent is too high.                                                                                                               | Check the vacuum system. Clean or repair the valve. Clean or repair the intake port and valve.  Drain the excess operating agent.                                                                                                                                                                                                                     | Service<br>Service                                                    |
| Oil is turbid.                                                                 | Condensation                                                                                                                                                                                                                                                                               | Degas the oil or change the oil and clean the pump. Precaution: open gas ballast valve or insert a condensate trap.                                                                                                                                                                                                                                   | 2.5.2/3.2                                                             |
| Pump is excessively noisy.                                                     | Oil level is much too low (oil is no longer visible). Silencing nozzle is clogged. Intake pressure is too high. Internal demister is clogged. Coupling element is worn. Vanes or bearings are damaged.                                                                                     | Add oil. Clean or replace the silencing nozzle. Lower the intake pressure. Clean or replace demister. Install new coupling element. Repair pump.                                                                                                                                                                                                      | 3.1/3.2<br>Fig 10<br>-<br>3.4<br>3.5/3.6<br>Service                   |

<sup>\*</sup> Repair information: refer to the Section in the Operation Instructions stated here.

1) Bubble test: The warm pump with degassed oil is running without gas ballast and the intake blanked off. The exhaust line is led in to a vessel with water. If a an evenly spaced line of bubbles appears then the pump has an external leak.



ponents

Equipment type/model:



## **Declaration of Contamination of Vacuum Equipment and Components**

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

2. Reason for Return

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

1. Description of Vacuum Equipment and Com-

| Manufacturer (or Symbol) material class if spillage human contact  1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <ul> <li>Serial No.:</li> </ul>              |                               |                |                                 |                   |                 |         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------|----------------|---------------------------------|-------------------|-----------------|---------|
| A. Process related Contamination of Vacuum Equipment and Components   A. Process related Contamination of Vacuum Equipment been used?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | - Invoice No.:                               |                               |                |                                 |                   |                 |         |
| Ponents  - Has the equipment been used?  - What type of pump oil/liquid was used?  - Is the equipment free from potentially harmful substances?  - What type of pump oil/liquid was used?  - Is the equipment free from potentially harmful substances?  - (go to Section 6) - no                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | - Delivery date:                             |                               |                |                                 |                   |                 |         |
| Ponents  - Has the equipment been used?  - What type of pump oil/liquid was used?  - Is the equipment free from potentially harmful substances?  - What type of pump oil/liquid was used?  - Is the equipment free from potentially harmful substances?  - (go to Section 6) - no                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                               |                |                                 |                   |                 |         |
| - What type of pump oil/liquid was used? - Is the equipment free from potentially harmful substances? yes   (go to Section 5)   control of the contaminated by biological explosive or radioactive substances, not accepted without written evidence of decontamination!  Please list all substances, gases and by-products which may have come into contact with the equipment:  Trade name Product name (or Symbol)   Dangerous Measures if spillage   First aid in case of human contact   1.   2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                              | cuum Equipment and C          | om-   4.       |                                 |                   | n of Vac        | uum     |
| - What type of pump oil/liquid was used? - Is the equipment free from potentially harmful substances? - Is the equipment free from potentially harmful substances? - Is the equipment free from potentially harmful substances? - explosive*) - post code: - explosive*) - post code: - explosive*) - post code: - radioactive*) - post code: - radioactive* - post code: - radio | - Has the equipment b                        | peen used?                    |                | - toxic                         | yes               | □ no            |         |
| - Is the equipment free from potentially harmful substances?  yes   (go to Section 5)   - other harmful substances yes   no   or other harmful substances yet   no   or other harmful substances yet   no   or other  |                                              |                               |                | - corrosive                     | yes               | □ no            |         |
| harmful substances? yes   (go to Section 5) no   (go to Section 4)   - radioactive*) yes   no   - radioactive*) yes   no   - radioactive*) yes   no   - radioactive*) yes   no   - radioactive* yes   no |                                              |                               | -1             | - explosive*)                   | yes               | □ no            |         |
| yes   (go to Section 5)   - radioactive*)   yes   no       'You with a propriet and components which have been contaminated by biological explosive or radioactive substances, not accepted without written evidence of decontamination!  Trade name   Chemical name   Dangerous   Measures   First aid in case of human contact                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | • •                                          |                               |                | - biological hazard*            | ) yes             | □ no            |         |
| *) Vacuum equipment and components which have been contaminated by biological explosive or radioactive substances, not accepted without written evidence of decontamination!  Trade name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                              | ☐ (go to Section 5)           |                | <ul><li>radioactive*)</li></ul> | yes               | □ no            |         |
| not accepted without written evidence of decontamination!  Ilease list all substances, gases and by-products which may have come into contact with the equipment:  Trade name Product name Manufacturer  Chemical name (or Symbol)  Dangerous Measures if spillage First aid in case of human contact  1. 2. 3. 4. 5.  Legally Binding Declaration  I hereby declare that the information supplied on this form is complete and accurate. The despatch of the contamin vacuum equipment and components will be in accordance with the appropriate regulations covering Packaging, Transtation and Labelling of Dangerous Substances.  Name of organisation or company:  Address:  Post code:  Tel.:  Fax:  Telex:  Name:  Job title:  Date:  Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | no                                           | ☐ (go to Section 4)           |                | - other harmful sub             | stances yes       | □ no            |         |
| not accepted without written evidence of decontamination!  Ilease list all substances, gases and by-products which may have come into contact with the equipment:  Trade name Product name Manufacturer  Chemical name (or Symbol)  Dangerous Measures if spillage First aid in case of human contact  1. 2. 3. 4. 5.  Legally Binding Declaration  I hereby declare that the information supplied on this form is complete and accurate. The despatch of the contamin vacuum equipment and components will be in accordance with the appropriate regulations covering Packaging, Transtation and Labelling of Dangerous Substances.  Name of organisation or company:  Address:  Post code:  Tel.:  Fax:  Telex:  Name:  Job title:  Date:  Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |                               |                |                                 |                   |                 |         |
| Please list all substances, gases and by-products which may have come into contact with the equipment:  Trade name Product name Manufacturer  Chemical name (or Symbol)  Dangerous Measures if spillage  First aid in case of human contact  1.  2.  3.  4.  5.  Legally Binding Declaration  I hereby declare that the information supplied on this form is complete and accurate. The despatch of the contamin vacuum equipment and components will be in accordance with the appropriate regulations covering Packaging, Transtation and Labelling of Dangerous Substances.  Name of organisation or company:  Address:  Fax:  Post code:  Tel.:  Fax:  Telex:  Name:  Job title:  Date:  Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |                               |                | ated by biological exp          | olosive or radioa | ctive subs      | tances, |
| Trade name Product name Product name (or Symbol)  Dangerous material class if spillage  First aid in case of human contact  1.  2.  3.  4.  5.  Legally Binding Declaration I hereby declare that the information supplied on this form is complete and accurate. The despatch of the contamin vacuum equipment and components will be in accordance with the appropriate regulations covering Packaging, Trans tation and Labelling of Dangerous Substances.  Name of organisation or company:  Address:  Post code:  Fax:  Telex:  Name:  Job title:  Date:  Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | not accepted without v                       | written evidence of decontain | nination!      |                                 |                   |                 |         |
| Trade name Product name Manufacturer  Chemical name (or Symbol)  Dangerous material class if spillage  First aid in case of human contact  1.  2.  3.  4.  5.  Legally Binding Declaration  I hereby declare that the information supplied on this form is complete and accurate. The despatch of the contamin vacuum equipment and components will be in accordance with the appropriate regulations covering Packaging, Transtation and Labelling of Dangerous Substances.  Name of organisation or company:  Address:  Fax:  Post code:  Tel.:  Fax:  Telex:  Name:  Job title:  Date:  Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | lease list all substances.                   | gases and by-products which   | h may have c   | ome into contact with           | the equipment:    | :               |         |
| Product name Manufacturer Chemical name (or Symbol) Dangerous material class if spillage First aid in case of human contact  1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                              | 7.                            | •              |                                 |                   |                 |         |
| Product name Manufacturer Chemical name (or Symbol) Dangerous material class if spillage First aid in case of human contact  1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                              |                               |                |                                 |                   |                 |         |
| 1. 2. 3. 4. 5. Legally Binding Declaration  I hereby declare that the information supplied on this form is complete and accurate. The despatch of the contamin vacuum equipment and components will be in accordance with the appropriate regulations covering Packaging, Transtation and Labelling of Dangerous Substances.  Name of organisation or company:  Address:  Tel.:  Fax:  Post code:  Fax:  Telex:  Name:  Job title:  Date:  Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Trade name<br>Product name                   | Chemical name                 | Dangerous      | Measures                        | F                 | First aid in ca | ase of  |
| 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Manufacturer                                 | (or Symbol)                   | material class | if spillage                     | h                 | numan conta     | ct      |
| 3. 4. 5. Legally Binding Declaration  I hereby declare that the information supplied on this form is complete and accurate. The despatch of the contamir vacuum equipment and components will be in accordance with the appropriate regulations covering Packaging, Transtation and Labelling of Dangerous Substances.  Name of organisation or company:  Tel.:  Fax:  Post code:  Telex:  Name:  Job title:  Date:  Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <br>1.                                       |                               |                |                                 |                   |                 |         |
| Legally Binding Declaration  I hereby declare that the information supplied on this form is complete and accurate. The despatch of the contamin vacuum equipment and components will be in accordance with the appropriate regulations covering Packaging, Transtation and Labelling of Dangerous Substances.  Name of organisation or company:  Address:  Fax:  Fax:  Fax:  Name:  Job title:  Date:  Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2.                                           |                               |                |                                 |                   |                 |         |
| Legally Binding Declaration  I hereby declare that the information supplied on this form is complete and accurate. The despatch of the contamin vacuum equipment and components will be in accordance with the appropriate regulations covering Packaging, Transtation and Labelling of Dangerous Substances.  Name of organisation or company:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                              |                               |                |                                 |                   |                 |         |
| I hereby declare that the information supplied on this form is complete and accurate. The despatch of the contamin vacuum equipment and components will be in accordance with the appropriate regulations covering Packaging, Transtation and Labelling of Dangerous Substances.  Name of organisation or company:  Address:  Post code:  Fax:  Fax:  Name:  Job title:  Date:  Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                               |                |                                 |                   |                 |         |
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| vacuum equipment and components will be in accordance with the appropriate regulations covering Packaging, Transtation and Labelling of Dangerous Substances.  Name of organisation or company:  Address:  Tel.:  Fax:  Name:  Job title:  Date:  Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <ol><li>Legally Binding De</li></ol>         | eclaration                    |                |                                 |                   |                 |         |
| vacuum equipment and components will be in accordance with the appropriate regulations covering Packaging, Transtation and Labelling of Dangerous Substances.  Name of organisation or company:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | I hereby declare that                        | the information supplied on   | this form is c | omplete and accurat             | te. The despatch  | n of the c      | ontamin |
| Name of organisation or company:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | vacuum equipment ar                          | nd components will be in acc  |                |                                 |                   |                 |         |
| Address:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | tation and Labelling of                      | f Dangerous Substances.       |                |                                 |                   |                 |         |
| Tel.: Fax: Telex:  Name:  Job title:  Date: Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Name of organisation                         | or company:                   |                |                                 |                   |                 |         |
| Fax: Telex: Telex: Date: Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Address:                                     |                               | F              | ost code:                       |                   |                 |         |
| Name:  Job title:  Date:  Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Tel·                                         |                               |                |                                 |                   |                 |         |
| Name:  Job title:  Date:  Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 101                                          |                               | _              | -1                              |                   |                 |         |
| Job title:  Date:  Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                               | ı              | elex:                           |                   |                 |         |
| Date: Company stamp:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Fax:                                         |                               |                | eiex:                           |                   |                 |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Fax:<br>Name:                                |                               | I              | eiex:                           |                   |                 |         |
| Legally binding signature:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Fax: Name: Job title:                        |                               |                |                                 |                   |                 |         |
| Legally billuling signature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Fax: Name: Job title:                        |                               |                |                                 |                   |                 |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Fax: Name: Job title: Date:                  |                               | (              | company stamp:                  |                   |                 |         |

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## **EEC Declaration of Conformity**

We - LEYBOLD Vacuum GmbH - herewith declare that the products defined below meet the basic requirements regarding safety and health of the relevant EEC directives by design, type and versions which are brought into circulation by us.

In case of any product changes made without our approval, this declaration will be void.

Designation of the products: Rotary vane pump, single and dual stage:

Types: S 4 B-DOT B - DOT D 8 D 16 B - DOT

D 16 B - DOT with float switch

D 25 B - DOT D 40 B - DOT D 65 B - DOT The products conform to the following directives:

- EEC Directive on Machinery (89/392/EWG) and subsequent 91/368/EWG
- EEC Directive on Low-Voltages (73/23/EWG)
- EEC EMI Directive (89/336/EWG)

Applied harmonised standards:

• EN 292 Part 1 and Part 2 Nov. 1991

• pr. EN 1012 Part 2 1993

• EN 60 204 1993

Applied national standards and technical specifications:

• DIN 31 001 **April 1983** 

Catalogue numbers:

114 06

104 04

114 10

Cologne Jan. 19, 1996

Plingen, Business Area Manager Forevacuum pumps

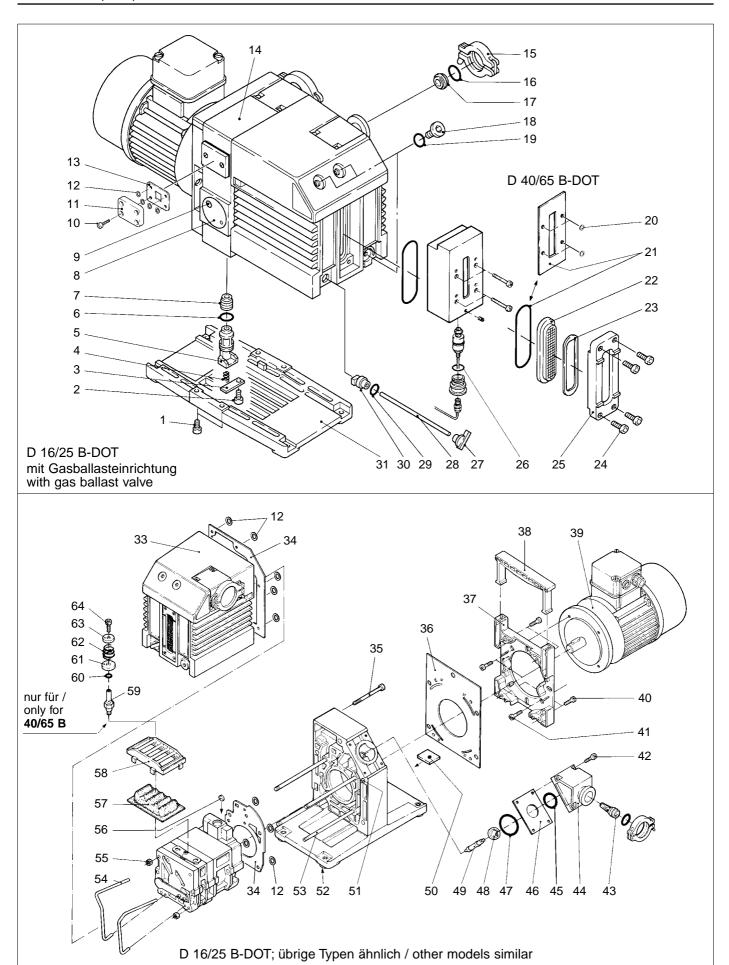
Cologne Jan. 19, 1996 -

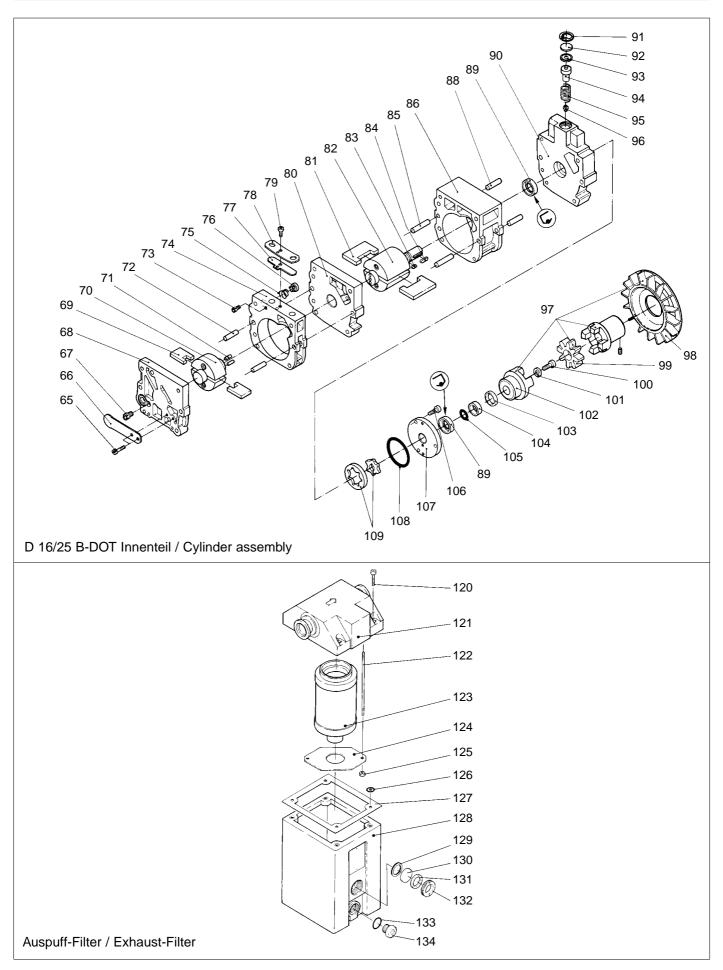
Frings, Design Department Manager

Forevacuum pumps

## 5 Spare Parts List

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| Pos.     | St  | ückz | zahl | / Qı | uant | ity | TRIVAC            | B-DOT             | Abmessungen     |             | Bestell-Nr.     |
|----------|-----|------|------|------|------|-----|-------------------|-------------------|-----------------|-------------|-----------------|
| Item     | S4  | D8   | D16  | D25  | D40  | D65 | Benennung         | Description       | Dimensions(mr   | n)/Material | Part Number     |
| 1        |     |      | 4    | 4    |      |     | Zylinderschraube  | Cylinder screw    | M6 x 25         | DIN 912     | 201 03 105      |
| 1        |     |      |      |      | 4    | 4   | Zylinderschraube  | Cylinder screw    | M8 x 30         | DIN 912     | 201 03 122      |
| 2        | 1   | 1    |      |      |      |     | Zylinderschraube  | Cylinder screw    | M6 x 12         | DIN 912     | 201 03 101      |
| 2        |     |      | 1    | 1    |      |     | Zylinderschraube  | Cylinder screw    | M6 x 12         | DIN 6912    | 201 03 014      |
| 2        |     |      |      |      | 1    | 1   | Zylinderschraube  | Cylinder screw    | M8 x 16         | DIN 912     | 201 03 119      |
| 3        | 1   | 1    | 1    | 1    |      |     | Halteblech        | Supporting plate  | 35 x 12 x 2     | St          | 451 74 040      |
| 3        |     |      |      |      | 1    | 1   | Halteblech        | Supporting plate  | 46 x 20 x 2     | St          | 451 74 039      |
| 4        | 1   | 1    | 1    | 1    | 1    | 1   | Druckfeder        | Spring            | 1 x 5 x 34,5    | St          | 221 61 041      |
| 5        | 1   | 1    | 1    | 1    | 1    | 1   | Kolben            | Piston            | ø21,5 x 57      | PA          | 321 06 151      |
| 6        | 1   | 1    |      |      |      |     | O-Ring            | O-ring            | 16 x 2,5        | EPDM        | a)siehe Seite35 |
| 6        |     |      | 1    | 1    |      |     | O-Ring            | O-ring            | 16 x 2,5        | EPDM        | b)siehe Seite35 |
| 6        |     |      |      |      | 1    | 1   | O-Ring            | O-ring            | 16 x 2,5        | EPDM        | c)siehe Seite35 |
| 7        | 1   | 1    |      |      |      |     | Dichtelement      | Seal              | ø16 x 12,5      | EPDM        | a)siehe Seite35 |
| 7        |     |      | 1    | 1    |      |     | Dichtelement      | Seal              | ø16 x 12,5      | EPDM        | b)siehe Seite35 |
| 7        |     |      |      |      | 1    | 1   | Dichtelement      | Seal              | ø16 x 12,5      | EPDM        | c)siehe Seite35 |
| 8        | 1   | 1    | 1    | 1    |      |     | Blende            | Shutter           | ø54 x 3         | Al          | 221 02 253      |
| 8        |     |      |      |      | 1    | 1   | Blende            | Shutter           | ø54 x 3         | Al          | 200 09 335      |
| 9        | 1   | 1    |      |      |      |     | Schneidschraube   | Tapping screw     | FM 4 x 12       | DIN 7513    | 201 03 034      |
| 9        |     |      | 1    | 1    | 1    | 1   | Schneidschraube   | Tapping screw     | FM 4 x 16       | DIN 7513    | 201 03 016      |
| 10       | 2   | 2    | 2    | 2    | -    | -   | Senkschraube      | Countersunk screw | M6 x 16         | DIN 7991    | 201 03 015      |
| 10       |     |      |      |      | 4    | 4   | Zylinderschraube  | Cylinder screw    | M8 x 16         | DIN 912     | 201 03 119      |
| 11       | 1   | 1    | 1    | 1    |      |     | Deckel            | Cover             | 4 x 40 x 53     | Al          | 200 10 019      |
| 11       |     |      |      | ·    | 1    | 1   | Deckel            | Cover             | 63,5x 89,5x15,  |             | 200 10 045      |
| 12       | 10  | 10   |      |      | -    | -   | Scheibe           | Washer            | 12 x 6,5 x 1,6  |             | 200 10 301      |
| 12       | -   | _    | 11   | 11   |      |     | Scheibe           | Washer            | 12 x 6,5 x 1,6  |             | 200 10 301      |
| 12       |     |      |      |      | 14   | 14  | Scheibe           | Washer            | 15 x 8,5 x 1,6  |             | 200 39 441      |
| 13       | 1   | 1    |      |      |      |     | Dichtung          | Gasket            | 53 x 40 x 0,5   | EPDM        | a)siehe Seite35 |
| 13       | -   | -    | 1    | 1    |      |     | Dichtung          | Gasket            | 53 x 40 x 0,5   | EPDM        | b)siehe Seite35 |
| 13       |     |      |      |      | 1    | 1   | Dichtung          | Gasket            | 88,5 x 62,5 x 2 |             | c)siehe Seite35 |
| 14       | 1   | 1    |      |      | -    | -   | Kupplungsgehäuse  | Coupling housing  | 211x228x142     | Al          | 331 68 004      |
| 14       |     |      | 1    | 1    |      |     | Kupplungsgehäuse  | Coupling housing  | 170x212x66      | Al          | 331 68 005      |
| 14       |     |      |      | •    | 1    | 1   | Kupplungsgehäuse  | Coupling housing  | 305x234x117     | Al          | 331 68 006      |
| 15       | 2   | 2    |      |      | -    | -   | Spannring         | Clamping ring     | DN 10/16        | Al          | 230 60 101      |
| 15       |     | _    | 2    | 2    |      |     | Spannring         | Clamping ring     | DN 20/25        | Al          | 230 60 102      |
| 15       |     |      | _    |      | 2    | 2   | Spannring         | Clamping ring     | DN 32/40        | Al          | 230 60 103      |
| 16       | 2   | 2    |      |      |      |     | O-Ring            | O-ring            | 18 x 5          | EPDM        | a)siehe Seite35 |
| 16       | _   | _    | 2    | 2    |      |     | O-Ring            | O-ring            | 28 x 5          | EPDM        | b)siehe Seite35 |
| 16       |     |      |      |      | 2    | 2   | O-Ring            | O-ring            | 42 x 5          | EPDM        | c)siehe Seite35 |
| 17       | 1   | 1    |      |      | _    | -   | Zentrierring      | Centering ring    | DN 16 KF        | Al          | 231 94 205      |
| 17       |     |      | 1    | 1    |      |     | Zentrierring      | Centering ring    | DN 25 KF        | Al          | 231 94 206      |
| 17       |     |      | •    |      | 1    | 1   | Zentrierring      | Centering ring    | DN 40 KF        | Al          | 231 94 207      |
| 18       | 3   | 3    | 3    | 3    | 3    | 3   | Verschlußschraube | Plug screw        | M16 x 1,5       | DIN 908     | 201 27 105      |
| 19       | 3   | 3    | 5    |      | 5    | 5   | Flachdichtring    | Flat gasket       | 16 x 22 x 2     | EPDM        | a)siehe Seite35 |
| 19       | J   |      | 3    | 3    |      |     | Flachdichtring    | Flat gasket       | 16 x 22 x 2     | EPDM        | b)siehe Seite35 |
| 19       |     |      | 3    | 5    | 3    | 3   | Flachdichtring    | Flat gasket       | 16 x 22 x 2     | EPDM        | c)siehe Seite35 |
|          |     |      |      |      | 4    | 4   | Scheibe           | Washer            | 9 x 4,5 x 1,6   | _, DIVI     | 200 39 440      |
| /()      |     |      |      |      | -    | -   | 23110100          | . 7401101         | 3 X 1,0 X 1,0   |             | 200 00 770      |
| 20<br>21 | (2) | (2)  |      |      |      |     | O-Ring            | O-ring            | 70 x 5          | EPDM        | a)siehe Seite35 |

| Pos. | s. Stückzahl / Quantity |                          |     |     |           | tity        | TRIVAC                | B-DOT                | Abmessungen     | Werkstoff | Bestell-Nr.             |
|------|-------------------------|--------------------------|-----|-----|-----------|-------------|-----------------------|----------------------|-----------------|-----------|-------------------------|
| Item |                         | S4   D8  D16 D25 D40 D65 |     | -   | Benennung | Description | Dimensions(mr         | n)/Material          | Part Number     |           |                         |
| 21   |                         |                          |     |     | (2)       | (2)         | Dichtung              | Gasket               | 149 x 83 x 2    | EPDM      | c)siehe Seite35         |
| 22   | 1                       | 1                        | 1   | 1   | 1         | 1           | Ölschauglas           | Oil level glass      | 111x35x14       | Glas      | 350 01 179              |
| 23   | 1                       | 1                        | 1   | 1   |           | •           | Dichtung Ölauge       | Gasket               | 108 x 33 x 1    | AFM       | a);b)s.Seite35          |
| 23   |                         |                          | -   | •   | 1         | 1           | O-Ring                | O-ring               | 69,44 x 3,53    | EPDM      | c)siehe Seite35         |
| 24   | 4                       | 4                        | 4   | 4   | 4         | 4           | Zylinderschraube      | Cylinder screw       | M4 x 18         | DIN 912   | 200 09 162              |
| 25   | 1                       | 1                        | 1   | 1   |           |             | Rahmen                | Frame                | 43 x 132 x 14   |           | 200 10 017              |
| 25   |                         |                          |     |     | 1         | 1           | Rahmen                | Frame                | 63 x 150 x 14   | Al        | 200 10 043              |
| 26   | (1)                     | (1)                      |     |     |           |             | O-Ring                | O-ring               | 27 x 2,5        | EPDM      | a)siehe Seite35         |
| 26   | ,                       | ( )                      | (1) | (1) |           |             | O-Ring                | O-ring               | 27 x 2,5        | EPDM      | b)siehe Seite35         |
| 26   |                         |                          |     | ( ) | (1)       | (1)         | O-Ring                | O-ring               | 22,2 x 3        | EPDM      | c)siehe Seite35         |
| 27   | 1                       | 1                        | 1   | 1   | 1         | 1           | Knebel für Gasballast | Lever                | 30 x 36 x 18    | PA        | 281 53 014              |
| 28   | 1                       |                          |     |     |           |             | Welle                 | Shaft                | 130 lg          | St        | 401 57 327              |
| 28   |                         | 1                        |     |     |           |             | Welle                 | Shaft                | 155 lg          | St        | 401 57 328              |
| 28   |                         |                          | 1   |     |           |             | Welle                 | Shaft                | 169 lg          | St        | 401 57 330              |
| 28   |                         |                          |     | 1   |           |             | Welle                 | Shaft                | 231 lg          | St        | 401 57 332              |
| 28   |                         |                          |     |     | 1         |             | Welle                 | Shaft                | 230 x 4 x 4     | St        | 401 57 329              |
| 28   |                         |                          |     |     |           | 1           | Welle                 | Shaft                | 308 x 4 x 4     | St        | 401 57 331              |
| 29   | 1                       | 1                        |     |     |           |             | O-Ring                | O-ring               | 12 x 1,5        | EPDM      | a)siehe Seite35         |
| 29   |                         |                          | 1   | 1   |           |             | O-Ring                | O-ring               | 12 x 1,5        | EPDM      | b)siehe Seite35         |
| 29   |                         |                          |     |     | 1         | 1           | O-Ring                | O-ring               | 12 x 1,5        | EPDM      | c)siehe Seite35         |
| 30   | 1                       | 1                        | 1   | 1   | 1         | 1           | Exzenter              | Cam                  | ø16 x 29        | PA        | 281 53 015              |
| 31   |                         |                          | 1   | 1   |           |             | Pumpenfuß             | Pump base            | 320x172x24      | Al        | 200 10 018              |
| 31   |                         |                          |     |     | 1         | 1           | Pumpenfuß             | Pump base            | 414x234x35      | Al        | 200 10 044              |
| 33   | 1                       |                          |     |     |           |             | Ölkasten              | Oil casing           | 142x190x145     | Al        | 200 09 338              |
| 33   |                         | 1                        |     |     |           |             | Ölkasten              | Oil casing           | 142x190x170     | Al        | 200 09 344              |
| 33   |                         |                          | 1   |     |           |             | Ölkasten              | Oil casing           | 170x212x183,5   | iΑl       | 200 39 685              |
| 33   |                         |                          |     | 1   |           |             | Ölkasten              | Oil casing           | 170x212x245,5   | iΑl       | 200 09 346              |
| 33   |                         |                          |     |     | 1         |             | Ölkasten              | Oil casing           | 246x305x234     | Al        | 200 09 342              |
| 33   |                         |                          |     |     |           | 1           | Ölkasten              | Oil casing           | 324x305x234     | Al        | 200 09 348              |
| 34   | 1                       | 1                        |     |     |           |             | Dichtung              | Gasket               |                 | EPDM      | a)siehe Seite35         |
| 34   |                         |                          | 1   | 1   |           |             | Dichtung              | Gasket               |                 | EPDM      | <b>b)</b> siehe Seite35 |
| 34   |                         |                          |     |     | 1         | 1           | Dichtung              | Gasket               |                 | EPDM      | c)siehe Seite35         |
| 35   | 6                       | 6                        |     |     |           |             | Zylinderschraube      | Cylinder screw       | M6 x 60         | DIN 912   | 201 03 109              |
| 35   |                         |                          | 5   | 5   |           |             | Zylinderschraube      | Cylinder screw       | M6 x 70         | DIN 912   | 201 03 011              |
| 35   |                         |                          |     |     | 6         | 6           | Zylinderschraube      | Cylinder screw       | M8 x 125        | DIN 912   | 201 03 722              |
| 36   | 1                       | 1                        |     |     |           |             | Dichtung KupplZwfl.   | Gasket               | 140 x 189 x 1   | Lowoflex  | a)siehe Seite35         |
| 36   |                         |                          | 1   | 1   |           |             | Dichtung KupplZwfl.   | Gasket               | 170 x 202 x 1,5 | Lowoflex  | <b>b)</b> siehe Seite35 |
| 36   |                         |                          |     |     | 1         | 1           | Dichtung KupplZwfl.   | Gasket               | 303 x 230 x 2   | Lowoflex  | c)siehe Seite35         |
| 37   | 1                       | 1                        |     |     |           |             | Zwischenflansch       | Motor connect flange | 140 x 174 x 18  | ,5        | 361 46 001              |
| 37   |                         |                          | 1   | 1   |           |             | Zwischenflansch       | Motor connect flange | 170 x 202 x 25  | Al        | 361 46 002              |
| 37   |                         |                          |     |     | 1         | 1           | Zwischenflansch       | Motor connect flange | 303 x 235 x 38  | Al        | 200 09 126              |
| 38   | 1                       | 1                        |     |     |           |             | Tragegriff            | Handle               | 140 x 76 x 16   | PA        | 281 53 011              |
| 38   |                         |                          | 1   | 1   |           |             | Tragegriff            | Handle               |                 | PA        | 281 53 012              |
| 39   | 1                       | 1                        | 1   | 1   | 1         | 1           | Motor                 | Motor                |                 |           | siehe Seite 7           |
| 40   | 4                       | 4                        |     |     |           |             | Zylinderschraube      | Cylinder screw       | M6 x 20         | DIN 912   | 201 03 103              |
| 40   |                         |                          | 4   | 4   |           |             | Zylinderschraube      | Cylinder screw       | M6 x 25         | DIN 912   | 201 03 105              |
| 40   |                         |                          |     |     | 4         | 4           | Zylinderschraube      | Cylinder screw       | M8 x 65         | DIN 912   | 201 03 126              |
| 41   | 4                       | 4                        |     |     |           |             | Zylinderschraube      | Cylinder screw       | M8 x 16         | DIN 912   | 201 03 012              |

| Pos.     | St | Stückzahl / Quantity |   |   |     |     | TRIVAC           | B-DOT             | Abmessungen    | /Werkstoff | Bestell-Nr.                 |
|----------|----|----------------------|---|---|-----|-----|------------------|-------------------|----------------|------------|-----------------------------|
| Item     | S4 | •                    |   |   |     |     | Benennung        | Description       | Dimensions(mn  |            | Part Number                 |
| 41       | 34 | D0                   | 4 | 4 | D40 | D03 | Zylinderschraube | Cylinder screw    | M8 x 20        | DIN 912    | 200 10 842                  |
| 41       |    |                      | 7 | 7 | 4   | 4   | Zylinderschraube | Cylinder screw    | M8 x 35        | DIN 912    | 201 03 123                  |
| 42       | 8  | 8                    |   |   | 7   | _   | Zylinderschraube | Cylinder screw    | M6 x12         | DIN 912    | 201 03 123                  |
| 42       | 0  | 0                    | 8 | 8 |     |     | Zylinderschraube | Cylinder screw    | M6 x 16        | DIN 912    | 201 03 101                  |
| 42       |    |                      | 0 | 0 | 8   | 8   | Zylinderschraube | Cylinder screw    | M8 x 16        | DIN 912    | 201 03 102                  |
|          | 1  | 1                    |   |   | 0   | 0   | Schmutzfänger    | •                 |                |            |                             |
| 43       | 1  | 1                    | 4 | 1 |     |     | •                | Dirt trap         | DN 16 KF       | St         | 411 70 122<br>411 70 206    |
| 43       |    |                      | 1 | ļ | 1   | 1   | Schmutzfänger    | Dirt trap         | DN 25 KF       | St         |                             |
| 43       |    |                      |   |   | 1   | 1   | Schmutzfänger    | Dirt trap         | DN 40 KF       | St         | 411 70 121                  |
| 44       | 2  | 2                    | 0 | 0 |     |     | Stutzen          | Connecting port   | DN 16          | Al         | 431 71 253                  |
| 44       |    |                      | 2 | 2 |     |     | Stutzen          | Connecting port   | DN 25          | Al         | 431 71 254                  |
| 44       |    |                      | • | _ | 2   | 2   | Stutzen          | Connecting port   | DN 40          | Al         | 431 71 255                  |
| 45       |    |                      | 2 | 2 |     |     | O-Ring           | O-ring            | 45 x 3         | EPDM       | b)siehe Seite35             |
| 46       |    | _                    | 1 | 1 |     |     | Ventilhalteblech | Valve retainer    | 82 x 65 x 2    | St         | 451 74 053                  |
| 47       | 2  | 2                    |   |   |     |     | O-Ring           | O-ring            | 37,15 x 2      | EPDM       | a)siehe Seite35             |
| 47       |    |                      | 1 | 1 |     |     | O-Ring           | O-ring            | 52 x 3         | EPDM       | <b>b</b> )siehe Seite35     |
| 47       |    |                      |   |   | 2   | 2   | O-Ring           | O-ring            | 80 x 3         | EPDM       | <sup>c</sup> )siehe Seite35 |
| 48       | 1  | 1                    |   |   |     |     | Ventilteller     | Valve plate       | ø24 x 9        | EPDM       | <sup>a</sup> )siehe Seite35 |
| 48       |    |                      | 1 | 1 |     |     | Ventilteller     | Valve plate       | ø33 x 12       | EPDM       | <b>b)</b> siehe Seite35     |
| 48       |    |                      |   |   | 1   | 1   | Ventilteller     | Valve plate       | ø50 x 27       | EPDM       | <sup>c</sup> )siehe Seite35 |
| 49       | 1  |                      |   |   |     |     | Kolben           | Piston            | ø7,5 x 50      | St         | 321 06 153                  |
| 49       |    | 1                    |   |   |     |     | Kolben           | Piston            | ø7,5 x 50      | St         | 200 09 609                  |
| 49       |    |                      | 1 | 1 |     |     | Kolben           | Piston            | ø12 x 62       | GG 25      | 321 06 154                  |
| 49       |    |                      |   |   | 1   | 1   | Kolben           | Piston            | ø11,7 x 51     | St         | 321 06 155                  |
| 50       | 1  | 1                    |   |   |     |     | Filz             | Felt              | 40 x 35 x 12   |            | 151 08 035                  |
| 51       | 2  | 2                    | 2 | 2 | 2   | 2   | Kerbstift        | Grooved pin       | 4 x 16         | DIN 1472   | 241 03 001                  |
| 52       | 4  | 4                    | 4 | 4 | 4   | 4   | Fuß              | Foot              | ø25 x 18       | EPDM       | 200 10 291                  |
| 53       | 4  |                      |   |   |     |     | Zuganker         | Tie rod           | M6 x 86        | St 60      | 101 20 002                  |
| 53       |    | 4                    |   |   |     |     | Zuganker         | Tie rod           | M6 x 153       | St 60      | 101 20 005                  |
| 53       |    |                      | 4 |   |     |     | Zuganker         | Tie rod           | M6 x 168       | St         | 101 20 007                  |
| 53       |    |                      |   | 4 |     |     | Zuganker         | Tie rod           | M6 x 230       | St         | 101 20 009                  |
| 53       |    |                      |   |   | 4   |     | Zuganker         | Tie rod           | M8 x 224       | St         | 101 20 011                  |
| 53       |    |                      |   |   |     | 4   | Zuganker         | Tie rod           | M8 x 306       | St         | 101 20 013                  |
| 54       | 1  | 1                    |   |   |     |     | Klammer, links   | Clamp, left       | links/left     |            | 200 10 769                  |
| 54       | 1  | 1                    |   |   |     |     | Klammer, rechts  | Clamp, right      | rechts/right   |            | 200 10 768                  |
| 54       |    |                      | 2 | 2 |     |     | Klammer          | Clamp             | ø 4            |            | 221 61 034                  |
| 55       | 4  | 4                    | 4 | 4 |     |     | Mutter           | Nut               | M6             | DIN 934    | 211 03 009                  |
| 55       | •  | •                    | • |   | 4   | 4   | Mutter           | Nut               | M8             | DIN 934    | 211 03 010                  |
| 56       | 1  | 1                    |   |   |     | ·   | Scheibe          | Disc              | ø10 x 2        | 1.4301     | <sup>a</sup> )siehe Seite35 |
| 56       | •  | •                    | 1 | 1 |     |     | Scheibe          | Disc              | ø10 x 2        | 1.4301     | b)siehe Seite35             |
| 57       | 1  | 1                    |   |   |     |     | Formfilter       | Internal demister | 210 % 2        | SYPATR     | <sup>a</sup> )siehe Seite35 |
| 57       |    |                      | 1 | 1 |     |     | Formfilter       | Internal demister |                | SYPATR     | b)siehe Seite35             |
| 57       |    |                      |   | • | 1   | 1   | Formfilter       | Internal demister |                | SYPATR     | c)siehe Seite35             |
| 58       | 1  |                      |   |   |     | 1   | Rahmen           | Frame             | 102 x 39 x 16  |            | 371 82 139                  |
| 58       | ı  | 1                    |   |   |     |     | Rahmen           | Frame             | 102 x 39 x 16  |            | 371 82 139                  |
|          |    | 1                    | 4 |   |     |     | Rahmen           |                   | 102 x 64 x 16  |            |                             |
| 58<br>50 |    |                      | 1 | 4 |     |     |                  | Frame             |                |            | 371 82 141                  |
| 58       |    |                      |   | 1 | 4   |     | Rahmen           | Frame             | 122 x 108 x 18 |            | 371 82 142                  |
| 58       |    |                      |   |   | 1   | 1   | Rahmen           | Frame             | 195 x 98 x 47  |            | 371 82 143                  |
| 59       |    |                      |   |   | 1   | 1   | Stehbolzen       | Stud bolt         | 67 x 19        | St         | 201 03 010                  |

| Pos.     | . Stückzahl / Quantity |    |     |     |     | ity | TRIVAC              | Abmessungen                                  | /Werkstoff      | Bestell-Nr. |                                                 |
|----------|------------------------|----|-----|-----|-----|-----|---------------------|----------------------------------------------|-----------------|-------------|-------------------------------------------------|
| Item     | S4                     | D8 | D16 | D25 | D40 | D65 | Benennung           | Description                                  | Dimensions(mr   | n)/Material | Part Number                                     |
| 60       |                        |    |     |     | 1   | 1   | O-Ring              | O-Ring                                       | 10 x 3          | EPDM        | c)siehe Seite35                                 |
| 61       |                        |    |     |     | 1   | 1   | Preßscheibe         | Pressed disc                                 | ø34 x 5         | St          | 200 09 135                                      |
| 62       |                        |    |     |     | 1   | 1   | Druckfeder          | Split spring                                 | 3,2 x 22/32     | St          | 200 09 118                                      |
| 63       |                        |    |     |     | 1   | 1   | Spannscheibe        | Clamping disc                                | ø25 x 3         | St          | 401 57 311                                      |
| 64       |                        |    |     |     | 1   | 1   | Zylinderschraube    | Cylinder screw                               | M6 x 20         | DIN 912     | 201 03 103                                      |
| 65       | 2                      | 2  | 2   | 2   |     |     | Zylinderschraube    | Cylinder screw                               | M5 x 10         | DIN 912     | 201 03 215                                      |
| 65       |                        |    | _   | _   | 2   | 2   | Zylinderschraube    | Cylinder screw                               | M5 x 8          | DIN 912     | 201 03 214                                      |
| 66       | 1                      | 1  | 1   | 1   | 1   | 1   | Überdruckventil     | Pressure valve                               | 0,4 x 26 x 93   | St          | 401 75 023                                      |
| 67       | 1                      |    |     |     |     |     | Düse-Öleinspritzung | Oil nozzle                                   | ø0,9            | Al          | 200 09 243                                      |
| 67       |                        | 1  |     |     |     |     | Düse-Öleinspritzung | Oil nozzle                                   | ø0,8            | Al          | 200 09 244                                      |
| 67       |                        |    | 1   |     |     |     | Düse-Öleinspritzung | Oil nozzle                                   | ø1,2            |             | 200 09 057                                      |
| 67       |                        |    | -   | 1   |     |     | Düse-Öleinspritzung | Oil nozzle                                   | ø1,2            | Al          | 393 50 008                                      |
| 67       |                        |    |     | •   | 1   |     | Düse-Öleinspritzung | Oil nozzle                                   | ø1,5            | Al          | 393 50 007                                      |
| 67       |                        |    |     |     | •   | 1   | Düse-Öleinspritzung | Oil nozzle                                   | ø2,1            | Al          | 393 50 018                                      |
| 68       | 1                      | 1  |     |     |     | ·   | Lagerdeckel         | Rear end plate                               | 92 x 102 x 14   | GG          | 351 11 010                                      |
| 68       |                        | •  | 1   | 1   |     |     | Lagerdeckel         | Rear end plate                               | 115 x 115 x 16  |             | 351 11 011                                      |
| 68       |                        |    | •   | •   | 1   | 1   | Lagerdeckel         | Rear end plate                               | 185 x 143 x 19  |             | 351 11 012                                      |
| 69       | 2                      |    |     |     | •   |     | Schieber            | Vane                                         | 25 x 28 x 4     | Inkutex     | 200 10 654                                      |
| 69       | _                      | 2  |     |     |     |     | VV-Schieber         | Vane                                         | 25 x 28 x 4     | Inkutex     | 200 39 220                                      |
| 69       |                        | _  | 2   |     |     |     | VV-Schieber         | Vane                                         | 26 x 36 x 5     | Inkutex     | 200 10 656                                      |
| 69       |                        |    | _   | 2   |     |     | VV-Schieber         | Vane                                         | 37,5 x 57 x 5   | Inkutex     | 200 10 655                                      |
| 69       |                        |    |     | _   | 2   |     | VV-Schieber         | Vane                                         | 38 x 52 x 6     | Inkutex     | 200 10 653                                      |
| 69       |                        |    |     |     |     | 2   | VV-Schieber         | Vane                                         | 52 x 79 x 6     | Inkutex     | 200 10 653                                      |
| 70       | 1                      |    |     |     |     | _   | Anker               | Rotor forestage                              | ø45 x 97        | GG          | 321 66 160                                      |
| 70       | •                      | 1  |     |     |     |     | VV-Anker            | Rotor forestage                              | ø45 x 41        | GG          | 321 66 166                                      |
| 70       |                        | •  | 1   |     |     |     | VV-Anker            | Rotor forestage                              | ø60 x 26        | GG          | 321 66 168                                      |
| 70       |                        |    |     | 1   |     |     | VV-Anker            | Rotor forestage                              | ø60 x 57        | GG          | 321 66 169                                      |
| 70       |                        |    |     | •   | 1   |     | VV-Anker            | Rotor forestage                              | ø82,5 x 62      | GG          | 321 66 170                                      |
| 70       |                        |    |     |     | •   | 1   | VV-Anker            | Rotor forestage                              | ø82,5 x 103     | GG          | 321 66 171                                      |
| 71       |                        | 2  | 2   | 2   |     | '   | Zylinderstift       | Cylindrical pin                              | Ø6m6 x 24       | DIN 6325    | 241 03 011                                      |
| 71       |                        |    | _   | _   | 2   | 2   | Zylinderstift       | Cylindrical pin                              | Ø8m6 x 32       | DIN 6325    | 241 03 011                                      |
| 72       | 2                      | 2  |     |     |     |     | Zylinderstift       | Cylindrical pin                              | Ø8k4 x 24       | DIN 7979    | 241 03 232                                      |
| 72       |                        |    | 2   | 2   | 2   | 2   | Zylinderstift       | Cylindrical pin                              | Ø8k4 X 32       | DIN 7979    | 241 03 010                                      |
| 73       | 1                      | 1  | _   | _   | _   | _   | Düse GD             | Nozzle                                       | Ø0,25           | Al          | 393 50 013                                      |
| 73       | •                      | '  | 1   | 1   |     |     | Düse                | Nozzle                                       | ø0,23<br>ø0,4   | Al          | 393 50 015                                      |
| 73       |                        |    | '   | '   | 1   |     | Düse                | Nozzle                                       | ø0,15           | Al          | 200 10 086                                      |
| 73       |                        |    |     |     |     | 1   | Düse                | Nozzle                                       | ø0,13<br>ø0,2   | Al          | 393 50 019                                      |
| 74       | 1                      |    |     |     |     | '   | Pumpenring          | Pump cylinder                                | 92 x 102 x 25   | GG          | 231 92 008                                      |
| 74       |                        | 1  |     |     |     |     | VV-Ring             | Pump cylinder forest.                        | 92 x 102 x 25   | GG          | 231 92 000                                      |
| 74       |                        | 1  | 1   |     |     |     | VV-Ring<br>VV-Ring  | Pump cylinder forest.                        | 115x118x26      | GG          | 231 92 021                                      |
| 74       |                        |    | ı   | 1   |     |     | VV-Ring<br>VV-Ring  |                                              | 115x118x57      | GG          | 231 92 022                                      |
| 74       |                        |    |     | 1   | 1   |     | VV-Ring<br>VV-Ring  | Pump cylinder forest.  Pump cylinder forest. | 185x147,5x38    | GG          | 231 92 023                                      |
| 74       |                        |    |     |     | ı   | 1   | VV-Ring<br>VV-Ring  | Pump cylinder forest.  Pump cylinder forest. | 185x147,5x36    | GG          | 231 92 024                                      |
|          | 1                      | 1  | 1   | 1   | 1   |     | Druckfeder          |                                              | konisch         | St          | 221 61 031                                      |
| 75<br>76 | 1                      |    | ı   | ı   | l   | 1   |                     | Spring Non-return valve                      | ø12 x 7         | EPDM        |                                                 |
|          | ı                      | 1  | 1   | 1   |     |     | Rückschlagventil    |                                              | Ø12 x 7         | EPDM        | <b>a)</b> siehe Seite35 <b>b)</b> siehe Seite35 |
| 76<br>76 |                        |    | 1   | 1   | 4   | 4   | Rückschlagventil    | Non-return valve                             |                 | EPDM        | -                                               |
| 76<br>77 | 4                      | 4  |     |     | 1   | 1   | Rückschlagventil    | Non-return valve                             | Ø12 x 7         |             | c)siehe Seite35                                 |
| 77       | 1                      | 1  |     |     |     |     | Blattventil         | Valve plate                                  | 51 x 14,5 x 0,2 | ા           | 401 75 014                                      |

| Pos. | s. Stückzahl / Quantity |   |   |   |      | ity         | TRIVAC           | B-DOT                 | Abmessungen    | Werkstoff   | Bestell-Nr.                 |
|------|-------------------------|---|---|---|------|-------------|------------------|-----------------------|----------------|-------------|-----------------------------|
| Item | •                       |   |   |   | -    | Benennung   | Description      | Dimensions(mn         | n)/Material    | Part Number |                             |
| 77   | <b>-</b>                |   | 1 |   | D-10 | <b>D</b> 00 | Blattventil      | Valve plate           | `              | St          | 401 75 017                  |
| 77   |                         |   | • | 1 |      |             | Blattventil      | Valve plate           | 68 x 35 x 0,2  | St          | 401 75 019                  |
| 77   |                         |   |   | · | 4    | 7           | Ventilplatte     | Valve plate           | 44 x 16 x 0,3  | St          | 200 11 245                  |
| 78   | 1                       | 1 |   |   |      |             | Ventilfänger     | Valve stop            | 52 x 15 x 15   | St          | 451 74 043                  |
| 78   | ·                       | • | 1 |   |      |             | Ventilfänger     | Valve stop            | 72 x 24 x 2    | St          | 451 74 046                  |
| 78   |                         |   | · | 1 |      |             | Ventilfänger     | Valve stop            | 72 x 36 x 2    | St          | 451 74 048                  |
| 78   |                         |   |   | · | 4    | 7           | Ventilfänger     | Valve stop            | 43 x 15 x 2,5  | St          | 200 11 376                  |
| 79   | 1                       | 1 | 1 | 2 | 4    | 7           | Zylinderschraube | Cylinder screw        | M5 x 8         | DIN 912     | 201 03 214                  |
| 80   | •                       | 1 | • | _ | -    | -           | Zwischenlager    | Center bearing        | 92 x 102 x17,2 |             | 261 51 137                  |
| 80   |                         |   | 1 | 1 |      |             | Zwischenlager    | Center bearing        | 115 x 115 x 20 |             | 261 51 138                  |
| 80   |                         |   | · | · | 1    | 1           | Zwischenlager    | Center bearing        | 185 x 143 x 25 |             | 261 51 139                  |
| 81   |                         | 2 |   |   |      |             | HV-Schieber      | Vane                  | 50 x 28 x 4    | Inkutex     | 200 10 658                  |
| 81   |                         | _ | 2 |   |      |             | HV-Schieber      | Vane                  | 57 x 37,5 x 5  | Inkutex     | 200 10 655                  |
| 81   |                         |   | _ | 2 |      |             | Hv-Schieber      | Vane                  | 88 x 37,5 x 5  | Inkutex     | 200 10 885                  |
| 81   |                         |   |   | _ | 2    |             | HV-Schieber      | Vane                  | 79 x 52 x 6    | Inkutex     | 200 10 652                  |
| 81   |                         |   |   |   | _    | 2           | HV-Schieber      | Vane                  | 120 x 52 x 6   | Inkutex     | 200 10 886                  |
| 82   |                         | 1 |   |   |      | _           | HV-Anker         | Rotor hv-stage        | ø45 x 122      | GG          | 321 66 161                  |
| 82   |                         | • | 1 |   |      |             | HV-Anker         | Rotor hv-stage        | ø60 x 57       | GG          | 321 66 162                  |
| 82   |                         |   | • | 1 |      |             | HV-Anker         | Rotor hv-stage        | ø60 x 88       | GG          | 321 66 163                  |
| 82   |                         |   |   | • | 1    |             | HV-Anker         | Rotor hv-stage        | ø82,5 x 186    | GG          | 321 66 164                  |
| 82   |                         |   |   |   | ·    | 1           | HV-Anker         | Rotor hv-stage        | ø82,5 x 227    | GG          | 321 66 165                  |
| 83   | 1                       | 1 | 1 | 1 |      |             | Paßfeder         | Key                   | 3,2 x 3,2 x 6  | DIN 6885    | 221 16 022                  |
| 83   | ·                       | • | • | · | 1    | 1           | Paßfeder         | Key                   | 4,8 x 4,8 x 6  | St          | 221 16 026                  |
| 84   | 1                       | 1 |   |   |      |             | Paßfeder         | Key                   |                | DIN 6885    | 221 16 023                  |
| 84   | ·                       | • | 1 | 1 |      |             | Paßfeder         | Key                   | 5 x 5 x 22     | DIN 6885    | 221 16 024                  |
| 84   |                         |   | · | • | 1    | 1           | Paßfeder         | Key                   | 6 x 6 x 32     | St          | 221 16 025                  |
| 85   |                         | 2 |   |   |      | -           | Zylinderstift    | Cylindrical pin       | Ø8k4 x 32      | DIN 7979    | 241 03 009                  |
| 85   |                         | _ | 2 | 2 | 2    | 2           | Zylinderstift    | Cylindrical pin       | Ø8k4 x 45      | DIN 7979    | 241 03 010                  |
| 86   |                         | 1 | _ | _ | _    | _           | HV-Ring          | Pump cylinder hv-stg. |                | GG          | 231 92 015                  |
| 86   |                         |   | 1 |   |      |             | HV-Ring          | Pump cylinder hv-stg. | 115 x 118 x 57 |             | 231 92 016                  |
| 86   |                         |   | - | 1 |      |             | HV-Ring          | Pump cylinder hv-stg. | 115 x 118 x 88 |             | 231 92 017                  |
| 86   |                         |   |   | - | 1    |             | HV-Ring          | Pump cylinder hv-stg. | 185x147,5x79   |             | 231 92 018                  |
| 86   |                         |   |   |   |      | 1           | HV-Ring          | Pump cylinder hv-stg. | 185x147,5x120  |             | 231 92 019                  |
| 88   | 2                       | 2 |   |   |      | -           | Zylinderstift    | Cylindrical pin       | ø8k4 x 24      | DIN 7979    | 241 03 016                  |
| 88   |                         |   | 2 | 2 | 2    | 2           | Zylinderstift    | Cylindrical pin       | ø8k4 x 32      | DIN 7979    | 241 03 009                  |
| 89   | 2                       | 2 |   |   |      | _           | Radial-Dichtring | Radial shaft seal     | 15 x 24 x 7/6  | EPDM        | a);d)s.Seite35              |
| 89   |                         |   | 2 | 2 |      |             | Radial-Dichtring | Radial shaft seal     | 20 x 30 x 7    | EPDM        | b);e)s.Seite35              |
| 89   |                         |   |   |   | 1    | 1           | Radial-Dichtring | Radial shaft seal     | 30 x 40 x 7    | EPDM        | c);f)s.Seite35              |
| 90   | 1                       | 1 |   |   |      |             | Lagerstück       | Front bearing         |                | GG          | 200 09 544                  |
| 90   | -                       | - | 1 | 1 |      |             | Lagerstück       | Front bearing         | 119x149x35     | GG          | 200 40 005                  |
| 90   |                         |   |   |   | 1    | 1           | Lagerstück       | Front bearing         | 192x166x34     | GG          | 301 51 147                  |
| 91   | 1                       | 1 |   |   |      |             | Sicherungsring   | Retainer ring         | 24 x 1,2       | DIN 472     | <sup>a</sup> )siehe Seite35 |
| 91   | -                       | - | 1 | 1 |      |             | Sicherungsring   | Retainer ring         | 24 x 1,2       | DIN 472     | b)siehe Seite35             |
| 91   |                         |   |   |   | 1    | 1           | Sicherungsring   | Retainer ring         | 24 x 1,2       | DIN 472     | c)siehe Seite35             |
| 92   | 1                       | 1 |   |   | -    |             | Scheibe          | Disc                  | ø23,5 x 1      | St          | <sup>a</sup> )siehe Seite35 |
| 92   |                         |   | 1 | 1 |      |             | Scheibe          | Disc                  | ø23,5 x 1      |             | b)siehe Seite35             |
| 92   |                         |   |   |   | 1    | 1           | Scheibe          | Disc                  | ø23,5 x 1      | St          | c)siehe Seite35             |
|      |                         |   |   |   |      |             |                  |                       | ,              |             | ,                           |

33

| Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Bestell-Nr.                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| 93                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Part Number                 |
| 93                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <sup>a</sup> )siehe Seite35 |
| 94         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | b)siehe Seite35             |
| 95                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <sup>c</sup> )siehe Seite35 |
| 96         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 321 06 152                  |
| 96                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 221 61 040                  |
| 96                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <sup>a</sup> )siehe Seite35 |
| 97         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         Kupplung kompl.         Coupling compl.         ø55 x 80         Rotex24           97         1         1         1         Kupplung kompl.         Coupling compl.         ø65 x 135         Rotex28           97         1         1         1         Kupplung kompl.         Coupling compl.         ø65 x 135         Rotex28           98         1         1         1         Lüfterrad         Fan           99         1         1         1         Lüfterrad         Fan           100         1         1         1         Zahnkranz         Thoothed ring         Rotex24           99         1         1         1         Zahnkranz         Thoothed ring         Rotex24           100         1         1         1         Zahnkranz         Thoothed ring         M4 x 12         DIN 919           100         1         1         1         Zahnkranz         Thoothed ring         M5 x 12         DIN 919           100         1         1         1         Zahnkranz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | b)siehe Seite35             |
| 97         Image: Composition of State of S | <sup>c</sup> )siehe Seite35 |
| 97                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 200 09 104                  |
| 97           1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 570 42 004                  |
| 98           1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 570 42 005                  |
| 98         I         1         1         Lüfterrad         Fan         Thoothed ring         Rotex24           99         I         1         1         I         Zahnkranz         Thoothed ring         Ø55         Rotex24           99         I         1         1         Zahnkranz         Thoothed ring         Rotex28           100         1         1         1         Zahnkranz         Thoothed ring         Rotex24           100         1         1         1         Zahnkranz         Thoothed ring         Rotex24           100         1         1         1         Spanscheibe         Counter sunk screw         M5         X12         DIN 7991           100         1         1         1         Zylinderschraube         Cylinder screw         M6 x 20         St           100         1         1         1         Spannschei                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 570 42 006                  |
| 99         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         2ahnkranz         Thoothed ring         ø55         Rotex24           99         1         1         1         1         Zahnkranz         Thoothed ring         Rotex28           100         1         1         1         Spannscheibe         Counter sunk screw         M5         x12         DIN 912           100         1         1         1         Zylinderschraube         Cylinder screw         M6         x20         x3         St           101         1         1         Spannscheibe         Clamping disc         20 x 3,5         St                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 200 98 007                  |
| 99           1         1         1         Zahnkranz         Thoothed ring         Ø55         Rotex24           100         1         1         1         Zahnkranz         Thoothed ring         Rotex28           100         1         1         1         Zylinderschraube         Cylinder screw         M4 x 12         DIN 912           100         1         1         1         Zylinderschraube         Counter sunk screw         M5 x 12         DIN 7991           100         1         1         1         Zylinderschraube         Counter sunk screw         M6 x 20         St           101         1         1         1         Zylinderschraube         Cylinder screw         M6 x 20         St           101         1         1         1         Zylinderschraube         Cylinder screw         M6 x 20         St           101         1         1         1         Spannscheibe         Clamping disc         Ø20 x 3,5         St           101         1         1         1         Spannscheibe         Clamping disc         Ø25 x 3         St           102         1         1         1         Kupplungshälfte         Coupling half         Ø55 x 46         Rotex2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 200 98 006                  |
| 99                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 200 09 110                  |
| 100         1         1         1         1         1         2 ylinderschraube         Cylinder screw         M4 x 12         DIN 912           100         1         1         1         1         2 ylinderschraube         Counter sunk screw         M5 x 12         DIN 7991           100         1         1         1         1         2 ylinderschraube         Cylinder screw         M6 x 20         St           101         1         1         1         1         3 ylinderschraube         Cylinder screw         M6 x 20         St           101         1         1         1         1         3 ylinderschraube         Clamping disc         20 x 3,5         St           101         1         1         1         3 ypannscheibe         Clamping disc         225 x 3         St           102         1         1         1         4         4         4         4         855 x 46         Rotex24           102         1         1         1         4         4         4         4         4         55         Rotex24           102         1         1         1         4         4         4         4         4         4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 200 09 094                  |
| 100         Image: color of the color  | 200 09 095                  |
| 100         Image: square  | 201 03 037                  |
| 101         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 201 03 017                  |
| 101         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 201 03 103                  |
| 101         Image: red bit of the content of the  | 200 09 102                  |
| 101         Image: color of the color  | 401 57 309                  |
| 102         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 401 57 311                  |
| 102           1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 200 09 112                  |
| 102           1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 200 09 099                  |
| 103         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 200 09 100                  |
| 104         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 200 09 113                  |
| 104         1         1         1         Laufbuchse         Sleeve         15 x 20 x 13         St           104         1         1         1         1         Laufbuchse         Sleeve         Ø22 x 24         St           105         1         1         0-Ring         O-ring         12 x 1,5         EPDM           105         1         1         1         0-Ring         O-ring         12 x 1,5         EPDM           105         1         1         1         0-Ring         O-ring         12 x 1,5         EPDM           106         3         3         3         Zylinderschraube         Cylinder screw         M4 x 18         DIN 912           106         3         3         Zylinderschraube         Cylinder screw         M5 x 30         DIN 912           107         1         1         Zentrierscheibe         Centering disc         Ø62 x 11         GG           107         1         1         Zentrierscheibe         Centering disc         Ø76 x 11         GG           107         1         1         Zentrierscheibe         Centering disc         Ø106 x 22         GG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 231 92 033                  |
| 104         Image: red black of the content of th | a);d)s.Seite 35             |
| 105         1         1         1         0-Ring         O-ring         12 x 1,5         EPDM           105         1         1         1         O-Ring         O-ring         12 x 1,5         EPDM           105         1         1         1         O-Ring         O-ring         22 x 1,5         EPDM           106         3         3         3         Zylinderschraube         Cylinder screw         M4 x 18         DIN 912           106         3         3         Zylinderschraube         Cylinder screw         M5 x 30         DIN 912           107         1         1         Zentrierscheibe         Centering disc         Ø62 x 11         GG           107         1         1         Zentrierscheibe         Centering disc         Ø76 x 11         GG           107         1         1         Zentrierscheibe         Centering disc         Ø106 x 22         GG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | b);e)s.Seite 35             |
| 105         1         1         1         O-Ring         O-ring         12 x 1,5         EPDM           105         1         1         O-Ring         O-ring         22 x 1,5         EPDM           106         3         3         3         Zylinderschraube         Cylinder screw         M4 x 18         DIN 912           106         3         3         Zylinderschraube         Cylinder screw         M5 x 30         DIN 912           107         1         1         Zentrierscheibe         Centering disc         Ø62 x 11         GG           107         1         1         Zentrierscheibe         Centering disc         Ø76 x 11         GG           107         1         1         Zentrierscheibe         Centering disc         Ø106 x 22         GG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | c);f)s.Seite 35             |
| 105         1         1         1         O-Ring         O-ring         12 x 1,5         EPDM           105         1         1         O-Ring         O-ring         22 x 1,5         EPDM           106         3         3         3         Zylinderschraube         Cylinder screw         M4 x 18         DIN 912           106         3         3         Zylinderschraube         Cylinder screw         M5 x 30         DIN 912           107         1         1         Zentrierscheibe         Centering disc         Ø62 x 11         GG           107         1         1         Zentrierscheibe         Centering disc         Ø76 x 11         GG           107         1         1         Zentrierscheibe         Centering disc         Ø106 x 22         GG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | a);d)s.Seite 35             |
| 106         3         3         3         3         3         Zylinderschraube         Cylinder screw         M4 x 18         DIN 912           106         3         3         Zylinderschraube         Cylinder screw         M5 x 30         DIN 912           107         1         1         Zentrierscheibe         Centering disc         Ø62 x 11         GG           107         1         1         Zentrierscheibe         Centering disc         Ø76 x 11         GG           107         1         1         Zentrierscheibe         Centering disc         Ø106 x 22         GG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | b);e)s.Seite 35             |
| 106         3         3         3         3         3         Zylinderschraube         Cylinder screw         M4 x 18         DIN 912           106         3         3         Zylinderschraube         Cylinder screw         M5 x 30         DIN 912           107         1         1         Zentrierscheibe         Centering disc         Ø62 x 11         GG           107         1         1         Zentrierscheibe         Centering disc         Ø76 x 11         GG           107         1         1         Zentrierscheibe         Centering disc         Ø106 x 22         GG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | c);f)s.Seite 35             |
| 10633ZylinderschraubeCylinder screwM5 x 30DIN 91210711ZentrierscheibeCentering discØ62 x 11GG10711ZentrierscheibeCentering discØ76 x 11GG10711ZentrierscheibeCentering discØ106 x 22GG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 201 03 206                  |
| 1071113ZentrierscheibeCentering discØ62 x 11GG107111ZentrierscheibeCentering discØ76 x 11GG107111ZentrierscheibeCentering discØ106 x 22GG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 201 03 222                  |
| 107 1 1 1 Zentrierscheibe Centering disc Ø76 x 11 GG 107 Zentrierscheibe Centering disc Ø106 x 22 GG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 401 57 312                  |
| 107 1 1 Zentrierscheibe Centering disc ø106 x 22 GG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 401 57 313                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 401 57 314                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | a);d)s.Seite 35             |
| 108 1 1 1 O-Ring O-ring 55 x 2 EPDM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | b);e)s.Seite 35             |
| 108   1 1 O-Ring O-ring 80 x 3 EPDM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | c);f)s.Seite 35             |
| 109 1 1 Gerotor Gerotor Typ 8030                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 321 66 157                  |
| 109 1 1 1 Gerotor Gerotor Ø51 x 6,4 Typ 6063                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 321 66 158                  |
| 109   1 1 Gerotor Gerotor Ø40 x 7,5 Typ 6170                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 321 66 159                  |
| ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                             |
| Bei Ersatzteilbestellungen bitte unbedingt die Katalog- und Fabrikations-Nummer ange                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ben!                        |

If you order spare parts, please always indicate the catalog and serial number!

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| Pos. | Stück | zahl / Qı | uantity    | Auspuff-Filter DOT               | Abmessungen           | Bestell-Nr.    |             |             |
|------|-------|-----------|------------|----------------------------------|-----------------------|----------------|-------------|-------------|
| Item | AF4-8 | AF16-25   | AF40-65    | Benennung                        | Description           | Dimensions(mr  | n)/Material | Part Number |
| 120  | 4     |           |            | Zylinderschraube                 | Cylinder screw        | M6 x 20        | DIN 912     | 201 03 103  |
| 120  |       | 4         |            | Zylinderschraube                 | Cylinder screw        | M6 x 30        | DIN 912     | 201 03 259  |
| 120  |       |           | 4          | Zylinderschraube                 | Cylinder screw        | M8 x 25        | DIN 912     | 201 03 121  |
| 121  | 1     |           |            | Oberteil                         | Upper part            | 120 x 90 x 40  | Al          | 200 09 075  |
| 121  |       | 1         |            | Oberteil                         | Upper part            | 142 x 125 x 50 | Al          | 200 09 084  |
| 121  |       |           | 1          | Oberteil                         | Upper part            | 170 x 156 x 58 | S AI        | 200 09 114  |
| 122  | 2     |           |            | Gewindestange                    | Threaded pin          | M4 x 105       | 1.4305      | 200 39 141  |
| 122  |       | 2         |            | Gewindestange                    | Threaded pin          | M4 x 125       | 1.4305      | 200 39 140  |
| 122  |       |           | 2          | Gewindestange                    | Threaded pin          | M6 x 210       | 1.4305      | 200 39 139  |
| 123  | 1     |           |            | Filterelement                    | Filter                | 4-8 (DOT)      |             | 200 10 305  |
| 123  |       | 1         |            | Filterelement                    | Filter                | 16-25 (DOT)    |             | 200 10 304  |
| 123  |       |           | 2          | Filterelement                    | Filter                | 40-65 (DOT)    |             | 200 39 840  |
| 124  | 1     |           |            | Filterpratze                     | Pressing plate        | 67 x 50 x 3    | St          | 371 82 125  |
| 124  |       | 1         |            | Filterpratze                     | Pressing plate        | 96 x 60 x 3    | St          | 200 09 091  |
| 124  |       |           | 1          | Filterpratze                     | Pressing plate        | 108 x 54 x 4   | St          | 200 09 119  |
| 125  | 2     | 2         |            | Sechskantmutter                  | Hexagon nut           | M 4            | DIN 934     | 211 28 112  |
| 125  |       |           | 2          | Sechskantmutter                  | Hexagon nut           | M 6            | DIN 934     | 211 28 114  |
| 126  | 4     | 4         |            | Scheibe                          | Washer                | 12 x 6,5 x 1,6 |             | 200 10 301  |
| 126  |       |           | 4          | Scheibe                          | Washer                | 15 x 8,5 x 1,6 |             | 200 39 441  |
| 127  | 1     |           |            | Dichtung                         | Gasket                | 90 x 90 x 0,5  | EPDM        | 200 10 306  |
| 127  |       | 1         |            | Dichtung                         | Gasket                | 125 x 110 x 0, | 5EPDM       | 200 10 307  |
| 127  |       |           | 1          | Dichtung                         | Gasket                | 156 x 140 x 0, | 5EPDM       | 200 39 703  |
| 128  | 1     |           |            | Unterteil                        | Lower part            |                |             | 200 10 351  |
| 128  |       | 1         |            | Unterteil                        | Lower part            |                |             | 200 10 352  |
| 129  | 1     | 1         | 1          | Flach-Dichtring                  | Flat gasket           | 24 x 30 x 2    | EPDM        | 200 10 353  |
| 130  | 1     | 1         | 1          | Schauglas                        | Sight glass           | ø30 x 4        | Glas        | 226 80 139  |
| 131  | 1     | 1         | 1          | Scheibe                          | Washer                | 30 x 23 x 2    | Al          | 233 75 135  |
| 132  | 1     | 1         | 1          | Schraubring                      | Lock ring             | M32 x 1,5      | Al          | 231 54 207  |
| 133  | 1     | 1         | 1          | Flach-Dichtring                  | Flat gasket           | 16 x 22 x 2    | EPDM        | 200 10 296  |
| 134  | 1     | 1         | 1          | Ablaßschraube                    | Drain plug            | M16 x 1,5      | St          | 201 27 105  |
|      |       |           |            |                                  |                       |                |             |             |
|      |       |           |            |                                  |                       |                |             |             |
|      |       |           |            |                                  |                       |                |             |             |
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|      |       |           |            |                                  |                       |                |             |             |
|      |       |           |            |                                  |                       |                |             |             |
|      |       |           |            |                                  |                       |                |             |             |
|      |       |           |            |                                  |                       |                |             |             |
|      |       |           |            |                                  |                       |                |             |             |
|      |       |           |            |                                  |                       |                |             |             |
|      |       |           |            |                                  |                       |                |             |             |
|      |       |           |            |                                  |                       |                |             |             |
|      |       |           |            |                                  |                       |                |             |             |
|      |       |           |            |                                  |                       |                |             |             |
|      |       |           |            |                                  |                       |                |             |             |
|      | D -:  | C         | -:     4 - | سألم مطاميني مكائما المتميم متنا | at die Katalog- und E | - I'I - 4' NI  |             |             |

Bei Ersatzteilbestellungen bitte unbedingt die Katalog- und Fabrikations-Nummer angeben! If you order spare parts, please always indicate the catalog and serial number!

|    | St | ück                 | zahl | / Q  | uant | tity | TRIVAC                                  | Bestell-Nr.                        |             |
|----|----|---------------------|------|------|------|------|-----------------------------------------|------------------------------------|-------------|
|    | S4 | D8  D16 D25 D40 D65 |      |      | D40  | D65  | Benennung                               | Description                        | Part Number |
|    |    |                     |      |      |      |      |                                         |                                    |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
| •  |    |                     |      |      |      |      | 2.1.                                    | 0 1 1 10 000                       |             |
| a) | 1  | 1                   |      |      |      |      | Dichtungssatz 4/8 DOT                   | Set of seals 4/8 DOT               | 200 39 058  |
|    |    |                     |      |      |      |      | enthält folgende Ersatzteile            | includes the following spare parts |             |
|    |    |                     |      |      |      |      | ( Pos. / Item 6, 7, (2x12), 13, 16, 19, |                                    |             |
|    |    |                     |      |      |      |      | 57, 76, 89, 91, 92, 93,                 | 96, 104, 105, 108 )                |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
| b) |    |                     | 1    | 1    |      |      | Dichtungssatz 16/25 DOT                 | Set of seals 16/25 DOT             | 200 39 059  |
| )  |    |                     |      | •    |      |      | enthält folgende Ersatzteile            | includes the following spare parts | 200 39 039  |
|    |    |                     |      |      |      |      | ( Pos. / Item 6, 7, (2x12), 13, 16, 19  | • • •                              |             |
|    |    |                     |      |      |      |      | 56, 57, 76, 89, 91, 92,                 |                                    |             |
|    |    |                     |      |      |      |      | 30, 37, 70, 69, 91, 92,                 | 93, 96, 104, 103, 108 )            |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
| c) |    |                     |      |      | 1    | 1    | Dichtungssatz 40/65 DOT                 | Set of seals 40/65 DOT             | 200 39 707  |
| ,  |    |                     |      |      | -    | •    | enthält folgende Ersatzteile            | includes the following spare parts | 200 00 101  |
|    |    |                     |      |      |      |      | ( Pos. / Item 6, 7, (2x12), 13, 16, 19  |                                    |             |
|    |    |                     |      |      |      |      | 60, 76, 89, 91, 92, 93,                 |                                    |             |
|    |    |                     |      |      |      |      | 00, 10, 00, 01, 02, 00,                 |                                    |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
| d) | 1  | 1                   |      |      |      |      | <b>Dichtungssatz Wellendichtring</b>    | Set of seals(radial shaft seal)    | 200 39 705  |
|    |    |                     |      |      |      |      | enthält folgende Ersatzteile            | includes the following spare parts |             |
|    |    |                     |      |      |      |      | ( Pos. / Item 89, 1                     | 04, 105, 108 )                     |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
| •  |    |                     |      |      |      |      | 5                                       |                                    |             |
| e) |    |                     | 1    | 1    |      |      | Dichtungssatz Wellendichtring           | ,                                  | 200 39 706  |
|    |    |                     |      |      |      |      | enthält folgende Ersatzteile            | includes the following spare parts |             |
|    |    |                     |      |      |      |      | ( Pos. / Item 89, 1                     | 04, 105, 108 )                     |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
| f) |    |                     |      |      | 1    | 4    | Dichtungssatz Wallandichtring           | Sot of soals(radial shoft ass)     | 200 39 708  |
| ٠) |    |                     |      |      | I    | 1    | Dichtungssatz Wellendichtring           | ,                                  | 200 39 706  |
|    |    |                     |      |      |      |      | enthält folgende Ersatzteile            | includes the following spare parts |             |
|    |    |                     |      |      |      |      | ( Pos. / Item 89, 1                     | 04, 105, 106 <i>)</i>              |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
|    |    |                     |      |      |      |      |                                         |                                    |             |
|    |    | Bei                 | Ersa | atzt | eilb | este | llungen bitte unbedingt die Katalo      | g- und Fabrikations-Nummer ange    | eben!       |

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The illustrations are not binding.

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