

R5

Oil-lubricated Rotary Vane Vacuum Pumps
KD 0012 A, KD 0020 A

Instruction Manual



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1 Safety

Prior to handling the machine, this instruction manual should be read and understood. If anything needs to be clarified, please contact your Busch representative.

Read this manual carefully before use and keep for future reference.

This instruction manual remains valid as long as the customer does not change anything on the product.

The machine is intended for industrial use. It must be handled only by technically trained personnel.

Always wear appropriate personal protective equipment in accordance with the local regulations.

The machine has been designed and manufactured in accordance with the state-of-the-art methods. Nevertheless, residual risks may remain, as described in the following chapters and in accordance with the chapter *Intended Use* [→ 5].

This instruction manual highlights potential hazards where appropriate. Safety notes and warning messages are tagged with one of the keywords DANGER, WARNING, CAUTION, NOTICE and NOTE as follows:



DANGER

... indicates an imminent dangerous situation that will result in death or serious injuries if not prevented.



WARNING

... indicates a potentially dangerous situation that could result in death or serious injuries.



CAUTION

... indicates a potentially dangerous situation that could result in minor injuries.



NOTICE

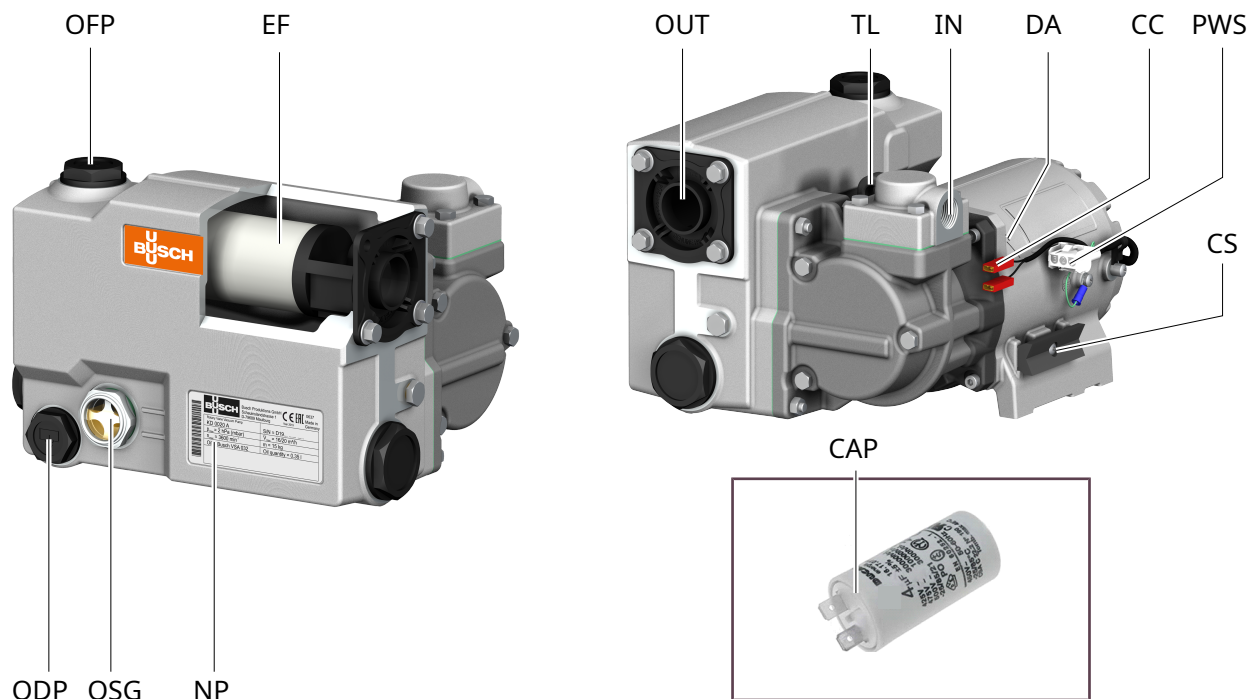
... indicates a potentially dangerous situation that could result in damage to property.



NOTE

... indicates helpful tips and recommendations, as well as information for efficient and trouble-free operation.

2 Product Description



Description			
OFP	Oil fill plug	EF	Exhaust filter
OUT	Gas discharge	TL	Transport lug
IN	Suction connection	DA	Directional arrow
CC	Capacitor connection	PWS	Power supply (MATE-N-LOK)
CS	Capacitor support	ODP	Oil drain plug
OSG	Oil sight glass	NP	Nameplate
CAP	Capacitor		

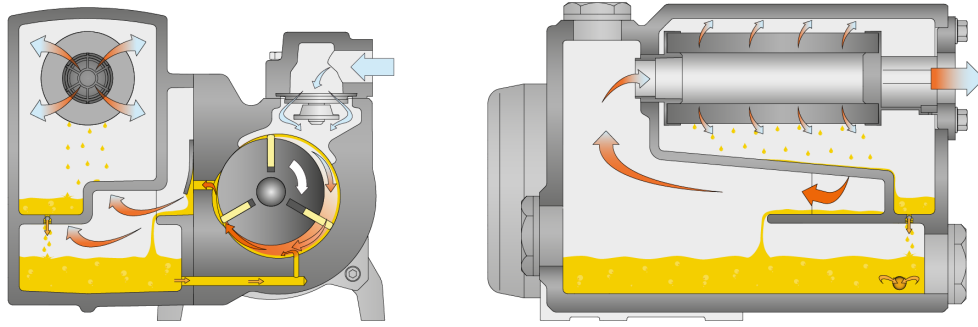
NOTE

Technical term.
In this instruction manual, we consider that the term 'machine' refers to the 'vacuum pump'.

NOTE

Illustrations.
In this instruction manual, the illustrations may differ from the appearance of the machine.

2.1 Operating Principle



The machine works on the rotary vane principle.

The oil seals the gaps, lubricates the vanes and takes away compression heat.

In order to avoid reverse rotation after switching off, the machine is equipped with a non-return valve (NRV).

In order to avoid solids from entering, the machine is equipped with an inlet screen (IS).

Exhaust filters separate the oil from the discharged gas.

2.2 Intended Use



WARNING

In case of foreseeable misuse outside the intended use of the machine.

Risk of injuries!

Risk of damage to the machine!

Risk of damage to the environment!

- Make sure to follow all instructions described in this manual.

The machine is intended for the suction of air and other dry, non-aggressive, non-toxic, non-ignitable and non-explosive gases.

Conveying of other media leads to an increased thermal and/or mechanical load on the machine and is permissible only after a consultation with Busch.

The machine is designed to be integrated into vacuum packaging table-top machines.

The machine is intended for the placement in a non-potentially explosive environment.

The machine is designed for indoor installations. For outdoor installations, consult your Busch representative for special precautions.

The machine is capable of maintaining ultimate pressure, see *Technical Data* [→ 27].

Permitted environmental conditions, see *Technical Data* [→ 27].

The machine is suitable for intermittent periodic duty as per IEC 60034-1.

Duty type:

S3	S1
S3 60 % - = 100 cycles in series S3 50 % - unlimited cycles in series*	Independent of the load - unlimited cycles in series*

* (Depending on the use of the pump under these conditions, other oil types might be more appropriate! Contact Busch for specification.)

Remark Number of cycles for S3 Motors:

The maximum number of cycles is depending on the motor and electrical supply, the evacuated chamber volume and ambient conditions. The stated values were measured at an ambient temperature of 20°C.

Duty type S3:

Definition: It is a sequence of identical duty cycles, each including a time of operation at constant load and a time deenergized and a rest.

Cyclic duration factor:

Definition: The cyclic duration factor is defined as the ratio between the periods of loading, including starting and electric braking, and the duration of the duty cycle, expressed as a percentage.

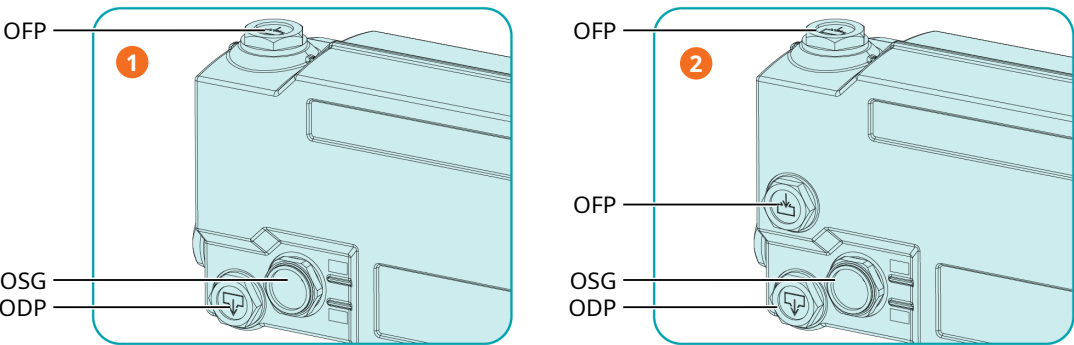
This means:

During a period of e.g. 10 minutes (100 %) the operating time of the machine is of 6 minutes (60 %) and the standstill of the machine is of 4 minutes (40 %).

2.3 **Variants**

Features differentiating variants

Positions of: Oil sight glass (OSG), oil fill plug (OFP) and oil drain plug (ODP).



Description			
1	KD 0012 A / KD 0020 A	2	KD 0020 A only

2.4 **Start Controls**

The machine comes without start controls. The control of the machine is to be provided in the course of installation.

The machine can be equipped with a soft-starter.

2.5 **Optional Accessories**

2.5.1 **Rubber feet**

The rubber feet isolate and reduce the vibration of the machine.

Fix the pump unit to the housing. Use M6-screws for each rubber foot and tighten them.

2.5.2 **Extension Cables**

See *Extension Cable Variants* [→ 14].

3 Transport

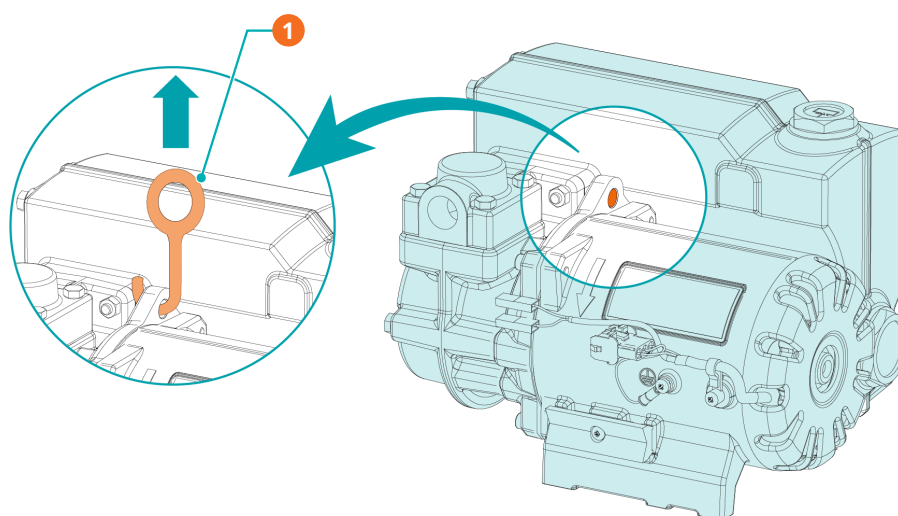


WARNING

Suspended load.

Risk of severe injury!

- Do not walk, stand, or work under suspended loads.
- To find out the weight of the machine, refer to the chapter *Technical Data* [→ 27] or the name-plate (NP).



Description

1	Use the transport lug (TL) to lift the machine!		
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- Check the machine for transport damage.
- If the machine is secured to a base plate:
- Remove the machine from the base plate.

4 Storage

- Seal hermetically all apertures with the caps provided with the machine, or with adhesive tape if the caps are no longer available.
- Store the machine indoors, in a dry place, away from dust and vibrations and if possible, in original packaging, preferably at temperatures between 0 ... 40 °C.

If the machine is to be stored for more than 3 months:

- Seal hermetically all apertures with the caps provided with the machine, or with adhesive tape if the caps are no longer available.
- Wrap the machine in a corrosion inhibitor film.
- Store the machine indoors, in a dry place, away from dust and vibrations and if possible, in original packaging, preferably at temperatures between 0 ... 40 °C.

5 Installation

5.1 Installation Conditions



NOTICE

Use of the machine outside of the permitted installation conditions.

Risk of premature failure!

Loss of efficiency!

- Make sure that the installation conditions are fully respected.
-
- Make sure that the environment of the machine is not potentially explosive.
 - Make sure that the ambient conditions comply with the *Technical Data* [→ 27].
 - Make sure that the environmental conditions comply with the protection class of the motor and the electrical elements.
 - Make sure that the installation space or location is protected from weather and lightning.
 - Make sure that the installation space or location is vented such that sufficient cooling of the machine is provided.
 - Make sure that the oil sight glass (OSG) remains easily visible.
 - Make sure that enough space remains for maintenance work.
 - Make sure that the machine is placed or mounted horizontally, a maximum deviation of 1° in any direction is acceptable.
 - Check the oil level, fill up if necessary, see *Filling Oil* [→ 10].
 - Make sure that all provided covers, guards, hoods, etc. are mounted.
 - Fix the pump unit with M6-screws to the housing of the table top-packing machine.
 - You can use the same fixing screws even if you use the rubber feet for absorbing vibrations.

These conditions are recommended installation conditions made by the manufacturer Busch. If you have questions, contact Busch.

5.2 Connecting Lines / Pipes

- Remove all protective covers before installation.
- Make sure that the connection lines cause no stress on the connections of the machine. Therefore, we recommend installing flexible lines on the suction and discharge connections.
- Make sure that the diameter of the connection lines over the entire length is at least as large as the connections of the machine.

In case of long connection lines:

- Use larger diameters to avoid a loss of efficiency.
- Contact your Busch representative for more information.

5.2.1 Suction Connection



NOTICE

Ingress of foreign objects or liquids.

Risk of damage to the machine !

If the inlet gas contains dust or other foreign solid particles:

- Install a suitable filter (5 micron or less) upstream from the machine.

Connection size(s):

- G ½"



NOTICE

Using the non-return valve as shut off valve.

Risk of oil mist flow back into the vacuum system.

- It is highly recommended not to use the non-return valve as a shut off system.
- Make sure that the connection lines cause no stress on the connections of the machine. Therefore, we recommend installing flexible lines on the suction and discharge connections.

5.2.2 Discharge Connection



CAUTION

The discharge gas contains small quantities of oil.

Risk to health!

If air is discharged into rooms where persons are present:

- Make sure that sufficient ventilation is provided.

Connection size(s):

- Without connection. The discharged gas is released to the ambient of the machine.
- Make sure that the connection lines cause no stress on the connections of the machine. Therefore, we recommend installing flexible lines on the suction and discharge connections.

5.3 Filling Oil



NOTICE

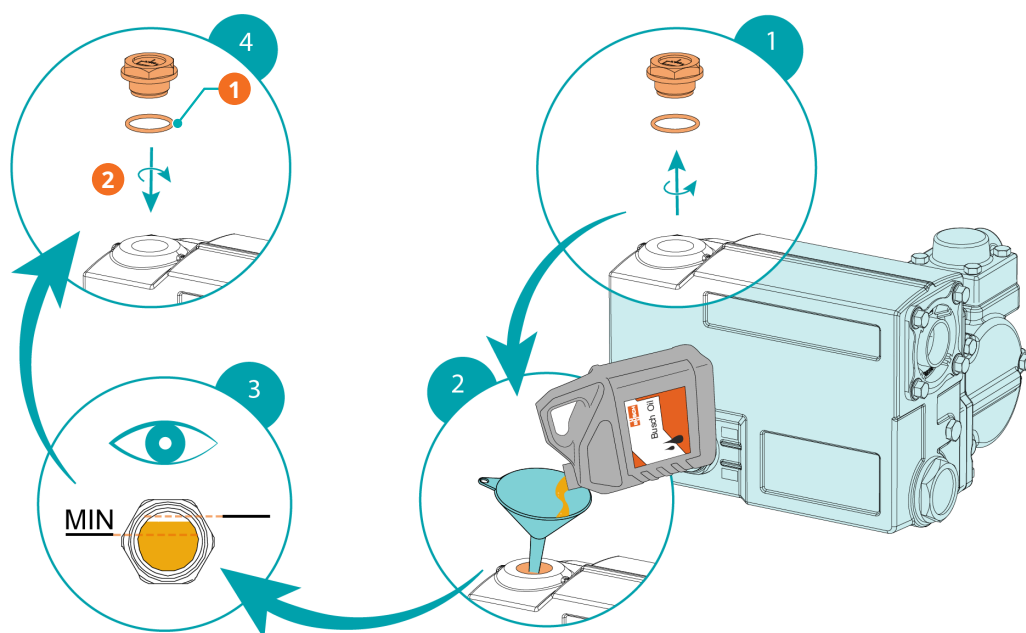
Use of an inappropriate oil.

Risk of premature failure!

Loss of efficiency!

- Only use an oil type which has previously been approved and recommended by Busch.

For oil type and oil capacity see *Technical Data* [→ 27] and *Oil* [→ 28].

**Description**

1	1x o-ring, part no.: 0486 000 590	2	Max. admissible torque: 12 Nm
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6 Electrical Connection



DANGER

Live wires.

Risk of electrical shock!

- Electrical installation work must only be executed by qualified personnel.

INSTALLATION(S) CURRENT PROTECTION:



DANGER

Missing current protection.

Risk of electrical shock!

- Provide current protection in accordance with EN 60204-1 on your installation(s).
- The electrical installation must comply with the applicable national and international standards.



NOTICE

Electromagnetic compatibility.

- Make sure that the motor of the machine will not be affected by electric or electromagnetic disturbance from the mains. If necessary, contact your Busch representative for more information.
- Make sure that the EMC of the machine is compliant with the requirements of your supply network system, if necessary, provide further interference suppression (EMC of the machine, see *EU Declaration of Conformity* [→ 29] or *UK Declaration of Conformity* [→ 30]).

6.1 Machine delivered without Control Box or Variable Speed Drive (VSD)



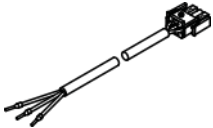
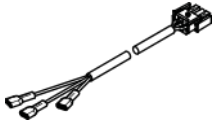
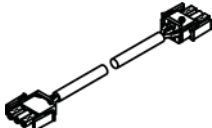
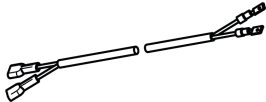
DANGER

Live wires.

Risk of electrical shock!

- Electrical installation work must only be executed by qualified personnel.
- Make sure that the power supply for the motor is compatible with the data on the nameplate of the motor.
- If the machine is equipped with a power connector, install a residual current protective device to protect persons in case of a defective insulation.
 - Busch recommends installing a type B residual protective device suitable for the electrical installation.
- Provide a lockable disconnect switch or an emergency stop switch on the power line so that the machine is completely secured in case of an emergency situation.

6.2.1 Extension Cable Variants

Extension Cable Variants			
AMP MATE-N-LOK to wire end ferrules	AMP MATE-N-LOK to tab receptacles	AMP MATE-N-LOK to AMP MATE-N-LOK	For capacitor with tab receptacles
			
Length: 1000 mm	Length: 490 mm	Length: 400 mm	Length: 230 mm
Part no.: 0671 212 762	Part no.: 0671 212 763	Part no.: 0671 210 443	Part no.: 0671 213 016

6.2.2 Motor Variants

Motor Variants					
Motor volt- age	Motor fre- quency	Motor speed		Capacitor capacitance	Capacitor voltage
220 – 240 V	50 / 60 Hz	3000 / 3600 min ⁻¹	IE0	20 µF	400 V
			IE2 KD0012A	8 µF	
			IE2 KD0020A	16 µF	
110 / 110 – 120 V	50 / 60 Hz	3000 / 3600 min ⁻¹	IE0 / IE2	40 µF	250 V
100 V	50 / 60 Hz	3000 / 3600 min ⁻¹	IE0 / IE2	40 µF	250 V

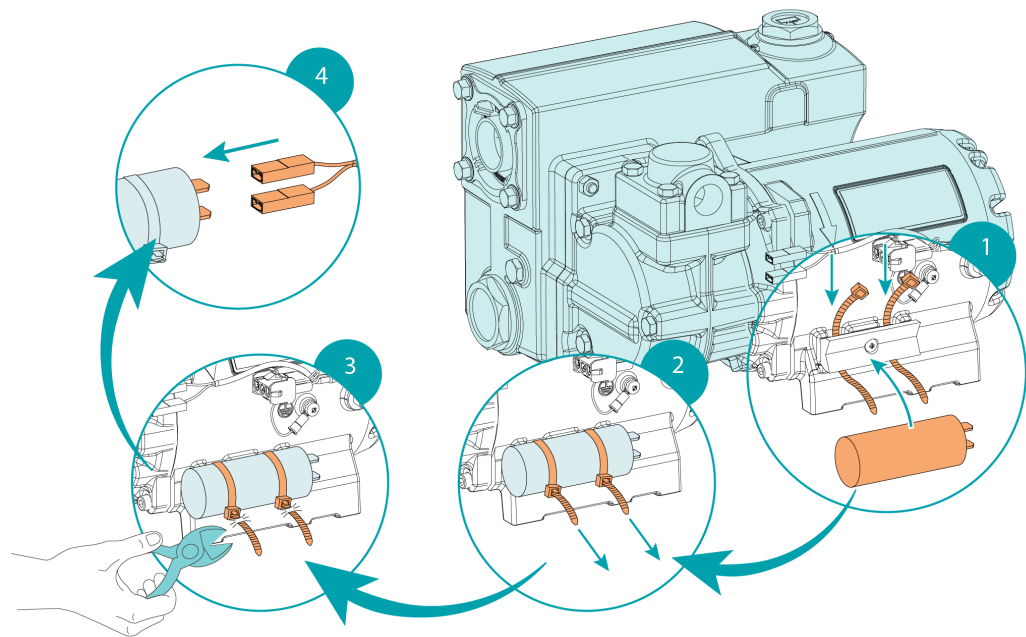
6.3 Capacitor Installation

The machine needs a suitable capacitor (CAP) to operate, see Motor Variants.

Depending on the order, the scope of delivery contains one of the following delivery options.

1. Delivery option: The capacitor (CAP) is delivered loosely with 2 cable ties

- Install the capacitor (CAP) on the capacitor's support (CS) of the motor and connect the capacitor connection (CC).



- For thermal reasons, the capacitor (CAP) can be mounted at a different location. Maximum distance of 230 mm (cable length) from the capacitor connection (CC).

2. Delivery option: The capacitor (CAP) is installed on the capacitor's support (CS)

- connect the capacitor connection (CC).
- For thermal reasons, the capacitor (CAP) can be mounted at a different location. Maximum distance of 230 mm (cable length) from the capacitor connection (CC).

3. Delivery option: No capacitor (CAP)

- Depending on the motor, install a suitable capacitor (CAP), see Motor Variants.
- Install the capacitor (CAP) on the capacitor's support (CS) of the motor and connect the capacitor connection (CC). (see above picture)
- For thermal reasons, the capacitor (CAP) can be mounted at a different location. Maximum distance of 230 mm (cable length) from the capacitor connection (CC).

7 Commissioning



CAUTION

During operation the surface of the machine may reach temperatures of more than 70°C.

Risk of burns!

- Avoid contact with the machine during and directly after operation.



CAUTION



Noise of running machine.

Risk of damage to hearing!

If people are present in the vicinity of a machine that is not insulated from noise for extended periods of time:

- Make sure to wear hearing protection.



NOTICE

The machine can be shipped without oil.

Operation without oil will ruin the machine in short time!

- Prior to commissioning, the machine must be filled with oil, see *Filling Oil* [→ 10].

- Make sure that the *Installation Conditions* [→ 9] are met.
- Start the machine.
- Make sure that the operating conditions comply with the *Technical Data* [→ 27].
- After a few minutes of operation, perform an *Oil Level Inspection* [→ 19].

As soon as the machine is operated under normal operating conditions:

- Measure the motor current and record it as reference for future maintenance and troubleshooting work.

7.1 Conveying Condensable Vapors



CAUTION

Draining the condensate while operating and/or venting the machine.

The discharged gases and/or liquids may reach temperatures above 70°C!

Risk of burns!

- Avoid direct contact with the flow of gases and/or liquids.



CAUTION



Noise of running machine.

Risk of damage to hearing!

If people are present in the vicinity of a machine that is not insulated from noise for extended periods of time:

- Make sure to wear hearing protection.

Water vapor within the gas flow is tolerated within certain limits. The conveyance of other vapors shall be agreed upon with Busch.

If condensable vapors are to be conveyed:

Before process:

- Warm up the machine for approximately half an hour.

After process:

- Operate the machine for approximately another half an hour.

8 Maintenance



DANGER

Live wires.

Risk of electrical shock!

- Electrical installation work must only be executed by qualified personnel.



WARNING



The machine is contaminated with hazardous material.

Risk of poisoning!

Risk of infection!

If the machine is contaminated with hazardous material:

- Wear appropriate personal protective equipment.



CAUTION

Hot surface.

Risk of burns!

- Before doing anything that requires touching the machine, let it cool down first.



CAUTION

Failing to properly maintain the machine.

Risk of injuries!

Risk of premature failure and loss of efficiency!

- Maintenance work must only be executed by qualified personnel.
- Respect the maintenance intervals or ask your Busch representative for service.



NOTICE

Using inappropriate cleaners.

Risk of removing safety stickers and protective paint!

- Do not use incompatible solvents to clean the machine.

- Shut down the machine and lock against inadvertent start up.
- Vent the connected lines to atmospheric pressure.

If necessary:

- Disconnect all connections.

8.1 Maintenance Schedule

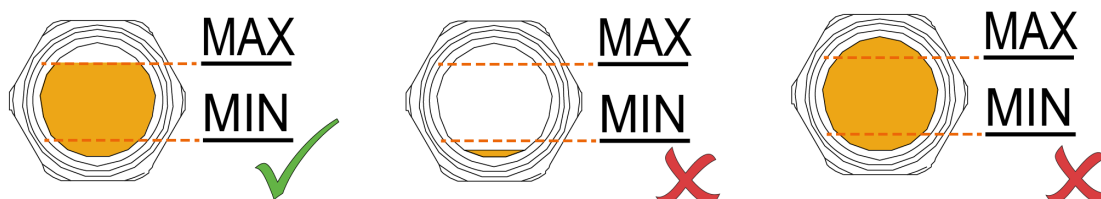
The maintenance intervals depend very much on the individual operating conditions. The intervals given below are considered as starting values which should be individually shortened or extended as appropriate.

Particularly harsh applications or heavy duty operation, such as high dust loads in the environment or in the process gas, other contamination or ingress of process material, can make it necessary to shorten the maintenance intervals significantly.

Interval	Maintenance work
Daily	Check the oil level, see <i>Oil Level Inspection</i> [→ 19].
Weekly	Check the machine for oil leaks - in case of leaks have the machine repaired (contact Busch).
Every 2000 hours or every 6 months	Change the oil and the exhaust filters (EF).
Every 5 years	Have a major overhaul on the machine (contact Busch).

8.2 Oil Level Inspection

- Stop the machine.
- Wait 1 minute.
- Check the oil level.



- Fill up if necessary, see *Oil Filling* [→ 10].

8.3 Oil Change



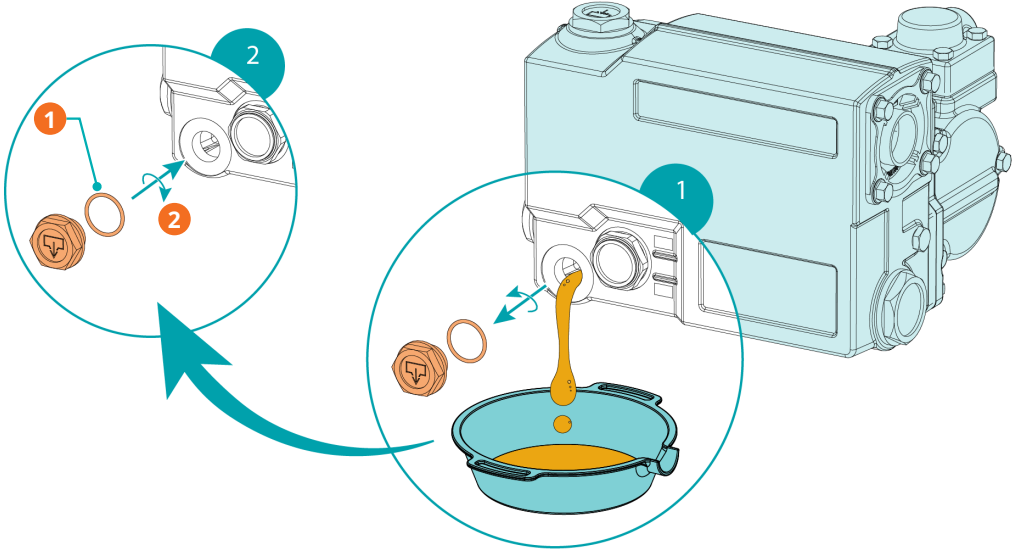
NOTICE

Use of an inappropriate oil.

Risk of premature failure!

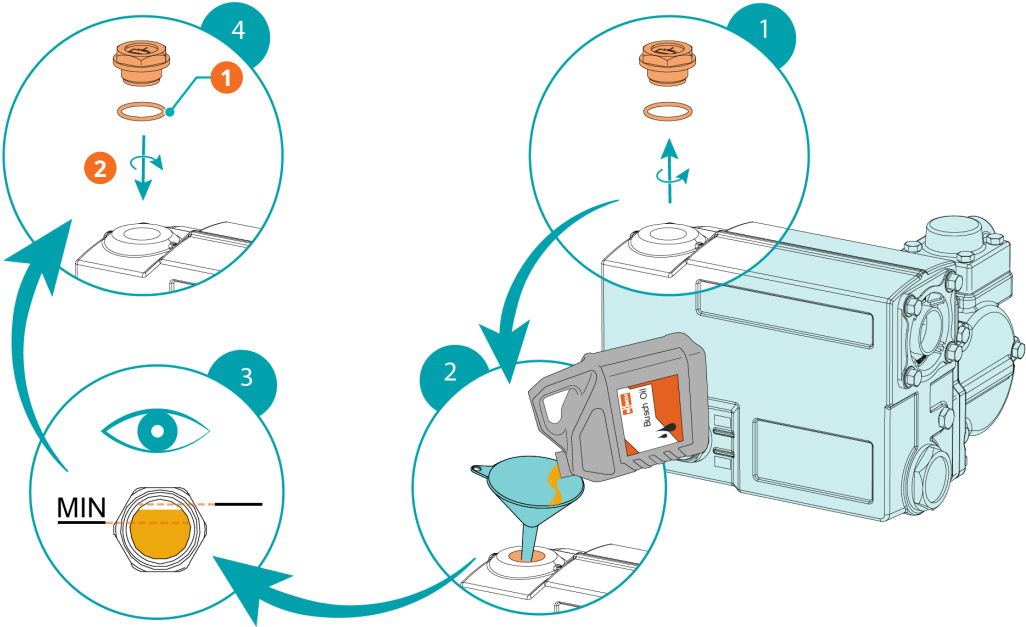
Loss of efficiency!

- Only use an oil type which has previously been approved and recommended by Busch.



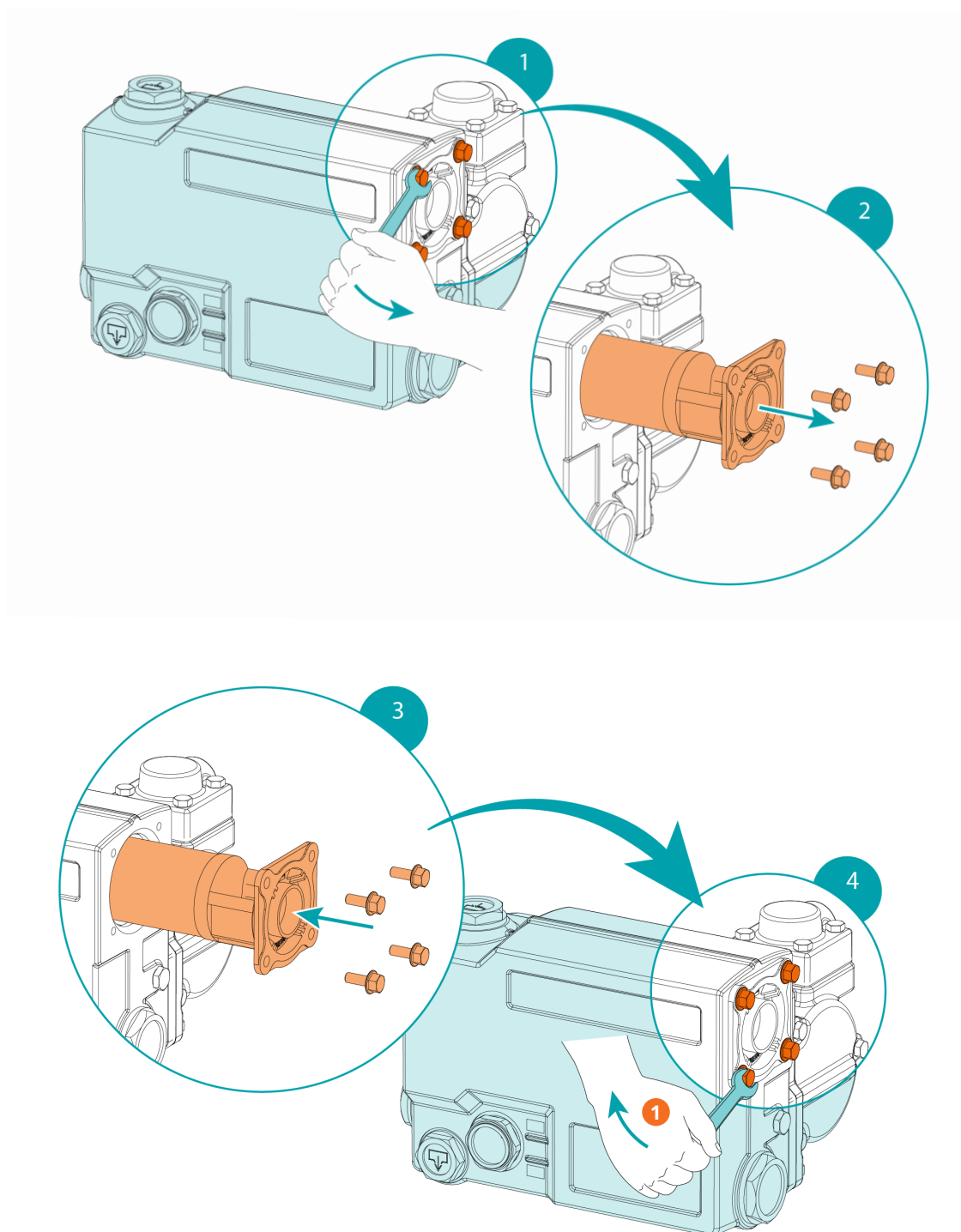
Description			
1	1x o-ring, part no.: 0486 000 505	2	Max. admissible torque: 12 Nm

For oil type and oil capacity see *Technical Data* [→ 27] and *Oil* [→ 28].



Description			
1	1x o-ring, part no.: 0486 000 590	2	Max. admissible torque: 12 Nm

8.4 Exhaust Filter Change



Description

1	Max. admissible torque: 12 Nm		
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9 Overhaul



WARNING



The machine is contaminated with hazardous material.

Risk of poisoning!

Risk of infection!

If the machine is contaminated with hazardous material:

- Wear appropriate personal protective equipment.



NOTICE

Improper assembly.

Risk of premature failure!

Loss of efficiency!

- Any dismantling of the machine that goes beyond anything that is described in this manual should be done by Busch authorized technicians.

If the machine has conveyed gas contaminated with foreign materials which are hazardous to health:

- Decontaminate the machine as much as possible and state the contamination status in a 'Declaration of Contamination'.

Busch will only accept machine accompanied by a signed, fully completed and legally binding "declaration of contamination", downloadable from the following link: buschvacuum.com/declaration-of-contamination.

10 Decommissioning



DANGER

Live wires.

Risk of electrical shock!

- Electrical installation work must only be executed by qualified personnel.



CAUTION

Hot surface.

Risk of burns!

- Before doing anything that requires touching the machine, let it cool down first.

- Shut down the machine and lock against inadvertent start up.
- Disconnect the power supply.
- Vent the connected lines to atmospheric pressure.
- Disconnect all connections.

If the machine is to be stored:

- See *Storage* [→ 8].

10.1 Dismantling and Disposal

- Loosen the pump screws fixing it to the housing of the table top-packing machine.
- Drain and collect the oil.
- Make sure that no oil drips onto the floor.
- Remove the exhaust filters.
- Separate special waste from the machine.
- Dispose of special waste in compliance with applicable regulations.
- Dispose of the machine as scrap metal.

11 Spare Parts



NOTICE

Use of non-Busch original spare parts.

Risk of premature failure!

Loss of efficiency!

- Use only original Busch spare parts, consumables and supplies to ensure correct operation of the machine and to validate the warranty.

Spare part kits	Description	Part no.
Service Kit	Includes all the necessary parts for maintenance.	0992217026

If other parts are required:

- Contact your Busch representative.

12 Troubleshooting



DANGER

Live wires.

Risk of electrical shock!

- Electrical installation work must only be executed by qualified personnel.



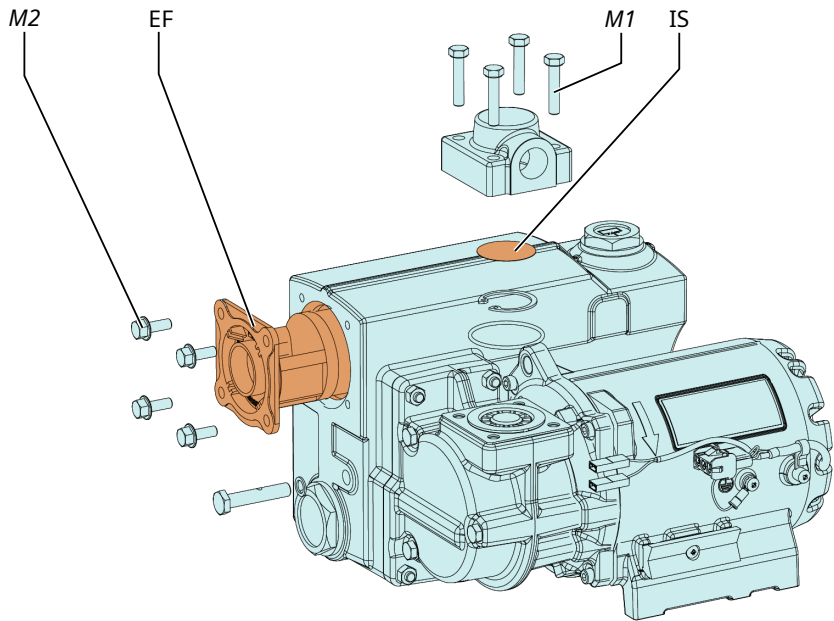
CAUTION

Hot surface.

Risk of burns!

- Before doing anything that requires touching the machine, let it cool down first.

Illustration showing parts that may be involved during troubleshooting:



Description			
IS	Inlet screen	EF	Exhaust filter
M1	Max. admissible torque: 10 Nm	M2	Max. admissible torque: 4 Nm

Problem	Possible Cause	Remedy
The machine does not start.	The motor is not supplied with the correct voltage.	• Check the power supply. • Have the machine repaired (contact Busch Service).
	The capacitor is defective. (Single phase motor only)	• Check the capacitor as well as the connection.
	The machine heated up, disconnection by bimetallic element.	• Have the machine cool down.
The machine does not reach the usual pressure on the suction connection.	Oil level too low.	• Top up oil.
	The inlet screen (IS) is partially clogged.	• Clean the inlet screen (IS).
	Internal parts are worn or damaged.	• Repair the machine (contact Busch).
The machine runs very noisily.	Stuck vanes.	• Repair the machine (contact Busch).
	Defective bearings.	• Repair the machine (contact Busch).
The machine runs too hot.	Insufficient cooling.	• Remove dust and dirt from the machine.
	Ambient temperature too high.	• Observe the permitted ambient temperature.
	Oil level too low.	• Top up oil.
	The exhaust filters (EF) are partially clogged.	• Replace the exhaust filters (EF).
The machine fumes or expels oil droplets through the gas discharge.	The exhaust filters (EF) are partially clogged.	• Replace the exhaust filters (EF).
	An exhaust filter (EF) with o-ring is not fitted properly.	• Ensure the correct position of the exhaust filters (EF) and the o-rings.
The oil is black.	Oil change intervals are too long.	• Flush the machine (contact Busch).
	The machine runs too hot.	• See problem "The machine runs too hot".
The oil is emulsified.	The machine sucked in liquids or significant amounts of vapor.	• Flush the machine (contact Busch).

For resolution of problems not listed in the troubleshooting table, please contact your Busch representative.

13 Technical Data

		KD 0012 A	KD 0020 A
Nominal pumping speed (50 / 60 Hz)	m ³ /h	10 / 12	16 / 20
Ultimate pressure (50 / 60 Hz)	hPa (mbar) abs.	2 / 2	
Nominal motor rating (50 / 60 Hz)	kW	0.37 / 0.37	0.55 / 0.55
Nominal motor speed (50 / 60 Hz)	min ⁻¹	3000 / 3600	
Ambient temperature range	°C	5 ... 40 *	
Inlet gas temperature range	°C	5 ... 40 *	
Ambient pressure		Atmospheric pressure	
Oil capacity	l	0.35	
Weight approx.	kg	15 **	15 **

* In case of higher or lower temperatures, please consult your Busch representative.

** The weight can vary depending on the order.

14 Oil

	VSA 032	VSB 032
ISO-VG	32	32
Oil type	Synthetic oil	Synthetic oil
Part number: 1 L packaging	0831 163 958	0831 168 343
Part number: 5 L packaging	0831 163 961	0831 168 344

In case of unfavorable ambient temperature, other oil viscosities may be used. Please consult your Busch representative for more details.

To find out which oil needs to be filled into the machine, please refer to the nameplate (NP).

Oil suitability

- **Oil VSA 032:** Suitable for food applications (H1)
 - With additives against corrosion
 - Light cycle operation (long downtime)
 - Operating oil temperature <100°C
 - Compliant with kosher and halal standards.
- **Oil VSB 032:** Suitable for food applications (H1)
 - Continuous operation
 - Compliant with kosher and halal standards.

15 EU Declaration of Conformity

This Declaration of Conformity and the CE-markings affixed to the nameplate are valid for the machine within the Busch scope of delivery. This Declaration of Conformity is issued under the sole responsibility of the manufacturer.

When this machine is integrated into a superordinate machinery the manufacturer of the superordinate machinery (this can be the operating company, too) must conduct the conformity assessment process for the superordinate machine or plant, issue the Declaration of Conformity for it and affix the CE-marking.

The manufacturer

Busch Produktions GmbH
Schauinslandstr. 1
DE-79689 Maulburg

declares that the machine: R5 KD 0012 A; R5 KD 0020 A

fulfill(s) all the relevant provisions from EU directives:

- 'Machinery' 2006/42/EC
- 'Electromagnetic Compatibility' (EMC) 2014/30/EU
- 'RoHS' 2011/65/EU Restriction of the use of certain hazardous substances in electrical and electronic equipment (incl. all related applicable amendments)

and comply(-ies) with the following harmonized standards that have been used to fulfill those provisions:

Standard	Title of the Standard
EN ISO 12100 : 2010	Safety of machinery - Basic concepts, general principles of design
EN 1012-2 : 1996 + A1 : 2009	Vacuum pumps - Safety requirements - Part 2
EN 60204-1 : 2018	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN ISO 13857 : 2019	Safety of machinery - Safety distances to prevent hazard zones being reached by the upper and lower limbs
EN ISO 2151 : 2008	Acoustics - Noise test code for compressors and vacuum pumps - Engineering method (grade 2)
EN IEC 61000-6-2 : 2019	Electromagnetic compatibility (EMC) - Generic standards. Immunity for industrial environments
EN IEC 61000-6-4 : 2019	Electromagnetic compatibility (EMC) - Generic standards. Emission standard for industrial environments

Legal person authorized to compile the technical file and authorized representative in the EU (if the manufacturer is not located in the EU):

Busch Dienste GmbH
Schauinslandstr. 1
DE-79689 Maulburg

Maulburg, 02.01.2024



Dr. Martin Gutmann
General Manager
Busch Produktions GmbH

16 UK Declaration of Conformity

This Declaration of Conformity and the UKCA-markings affixed to the nameplate are valid for the machine within the Busch scope of delivery. This Declaration of Conformity is issued under the sole responsibility of the manufacturer.

When this machine is integrated into a superordinate machinery the manufacturer of the superordinate machinery (this can be the operating company, too) must conduct the conformity assessment process for the superordinate machine or plant, issue the Declaration of Conformity for it and affix the UKCA-marking.

The manufacturer

Busch Produktions GmbH
Schauinslandstr. 1
DE-79689 Maulburg

declares that the machine: R5 KD 0012 A; R5 KD 0020 A

fulfill(s) all the relevant provisions from UK legislations:

- Supply of Machinery (Safety) Regulations 2008
- Electromagnetic Compatibility Regulations 2016
- Restriction of the use of certain hazardous substances in Electrical and Electronic Equipment Regulations 2012

and comply(-ies) with the following designated standards that have been used to fulfill those provisions:

Standard	Title of the Standard
EN ISO 12100 : 2010	Safety of machinery - Basic concepts, general principles of design
EN 1012-2 : 1996 + A1 : 2009	Vacuum pumps - Safety requirements - Part 2
EN 60204-1 : 2018	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN ISO 13857 : 2019	Safety of machinery - Safety distances to prevent hazard zones being reached by the upper and lower limbs
EN ISO 2151 : 2008	Acoustics - Noise test code for compressors and vacuum pumps - Engineering method (grade 2)
EN IEC 61000-6-2 : 2019	Electromagnetic compatibility (EMC) - Generic standards. Immunity for industrial environments
EN IEC 61000-6-4 : 2019	Electromagnetic compatibility (EMC) - Generic standards. Emission standard for industrial environments

Legal person authorized to compile the technical file and importer in the UK (if the manufacturer is not located in the UK):

Busch (UK) Ltd
30 Hortonwood
Telford - UK

Maulburg, 02.01.2024



Dr. Martin Gutmann
General Manager
Busch Produktions GmbH

Notes

Grid of dots for notes.

Busch Vacuum Solutions

With a network of over 60 companies in more than 40 countries and agencies worldwide, Busch has a global presence. In every country, highly competent local personnel delivers custom-tailored support backed by a global network of expertise. Wherever you are. Whatever your business. We are there for you.



● Busch companies and Busch employees ● Local representatives and distributors ● Busch production site

www.buschvacuum.com