BUSCH

VACUUM SOLUTIONS

MINK

Claw Compressors
MM 1202 AP, MM 1252 AP
MM 1322 AP

Instruction Manual

SERVICE
AND SPARE PARTS, INSTRUCTION MANUALS ...
WWW.BUSCHVACUUM.COM/SERVICE-CONTACT
VACUUM APP

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2024/10/21

Table of Contents

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.

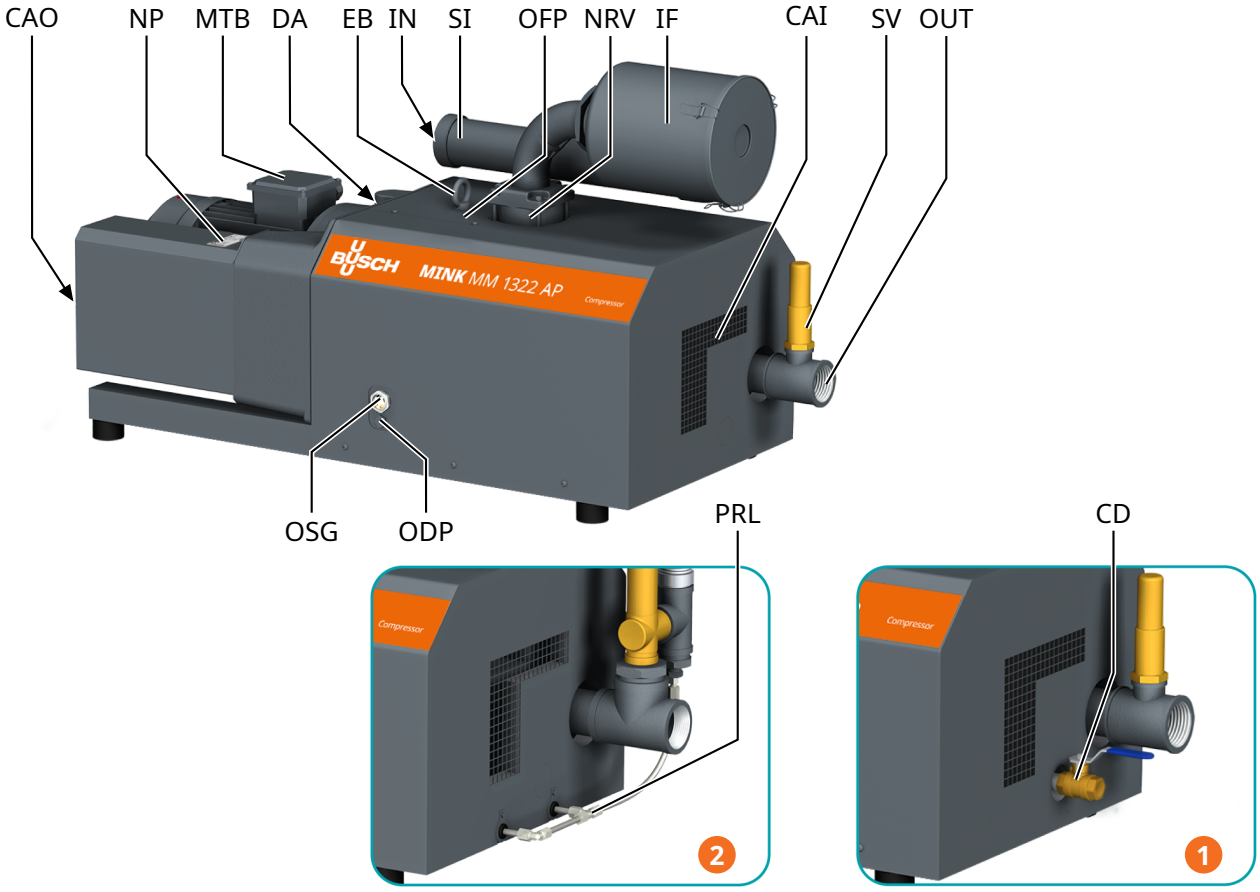
NOTICE

... 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			
1	Aqua version	2	Gas tight version
IN	Suction connection	OUT	Discharge connection
OFP	Oil fill plug/venting valve (below the cover)	ODP	Oil drain plug
OSG	Oil sight glass	NRV	Non-return-valve (integrated)
MTB	Motor terminal box	DA	Directional arrow
CAI	Cooling ait inlet	CAO	Cooling air outlet
SI	Silencer	EB	Eye bolt
NP	Nameplate	CD	Condensate drain (optional)
SV	Safety valve	IF	Inlet filter
PRL	Pressure relief line (gas tight version only)		

NOTE

Technical term.

In this instruction manual, we consider that the term ‘machine’ refers to the ‘compressor’.

NOTE

Illustrations.

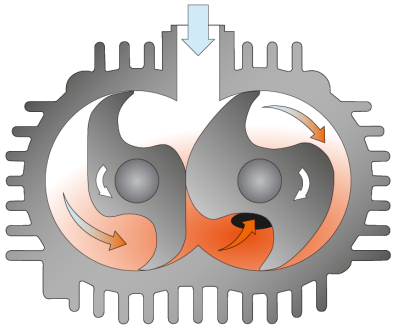
In this instruction manual, the illustrations may differ from the appearance of the machine.

NOTE

Product origin

The serial number on the nameplate (NP) determines the manufacturing plant.

2.1 Operating Principle



The machine works on the claw principle.

The MINK is fully air-cooled thanks to an integrated fan in the drive unit.

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

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

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 compression 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 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 maximum allowed pressure on the discharge connection (OUT) must not exceed the value indicated on the nameplate (NP).

The machine is suitable for continuous operation.

Note: The non-return valve (NRV) shouldn't be used as a non-return or shut off valve for the System. The non-return valve is only to protect the machine.

If the machine needs to be maintained after shutdown:

- Provide an additional manual or automatic operated non-return valve in the suction and discharge line.

Permitted environmental conditions, see *Technical Data* [➔ 28].

2.3 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.

2.4 Standard Features

2.4.1 Safety Valve

The safety valve (SV) protects the machine against overload only. It is not designed for frequent use and must therefore not be used as a system pressure regulating valve.

2.5 Optional Accessories

2.5.1 Inlet Filter

The inlet filter protects the machine against dust and other solids in the process gas. The inlet filter is available with a paper or polyester cartridge.

2.5.2 Inlet Filter with Silencer

The inlet filter (IF) protects the machine against dust and other solids in the process gas. The inlet filter is available with a paper or polyester cartridge. The external silencer (SI) reduces the inlet gas noise at the machine suction inlet (IN).

3 Transport

WARNING

Suspended load.

Risk of severe injury!

- Do not walk, stand, or work under suspended loads.

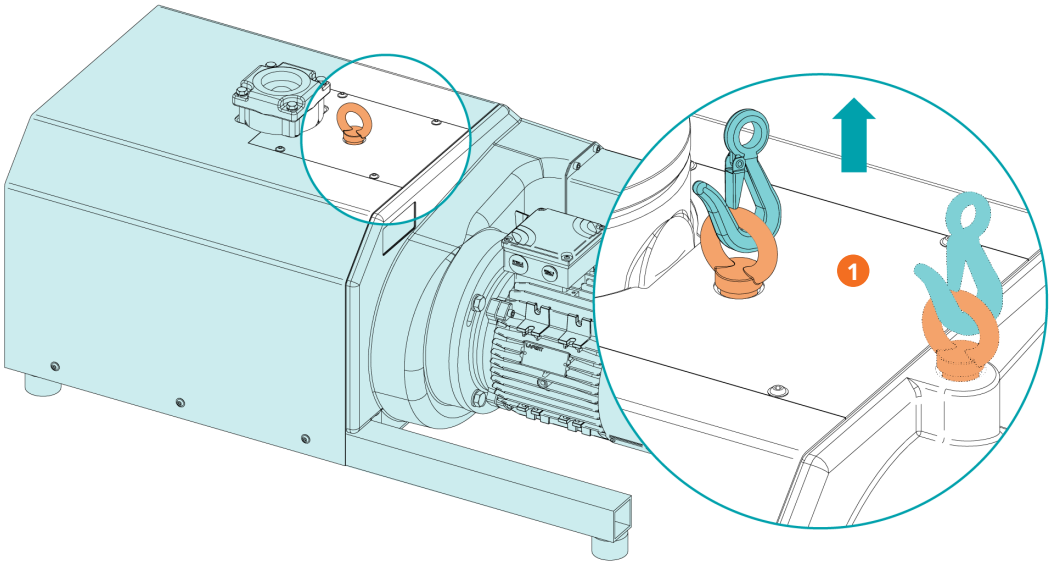
WARNING

Lifting the machine using the motor eye bolt.

Risk of severe injury!

- Do not lift the machine using the eye bolt fitted to the motor. Only lift the machine as shown.

- To find out the weight of the machine, refer to the chapter *Technical Data* [➔ 28] or the name-plate (NP).
- Make sure that the eye bolt(s) (EB) is/are in faultless condition, fully screwed in and tightened by hand.



Description			
1	Use both eye bolts, in case a second eye bolt is mounted!		

- 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

WARNING

Gas tight version:
The machine is not absolutely gas tight, possible leakages of dangerous media.

Risk of poisoning!

Risk of infection!

- Make sure that the ambient atmosphere of the machine is sufficiently ventilated. Closed air cooling systems are not suitable and therefore prohibited.

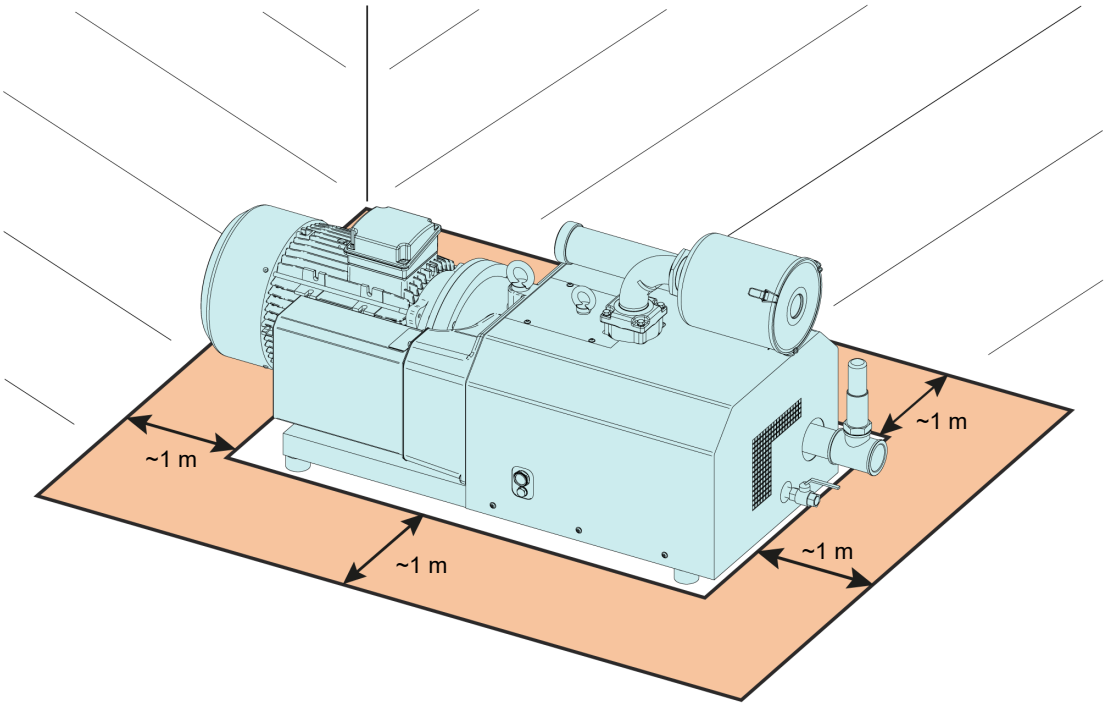
NOTICE

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* [➔ 28].
- 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 cooling air inlets (CAI) and outlets (CAO) are not covered or obstructed and that the cooling air flow is not affected adversely in any other way.
- 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, see *Oil Level Inspection* [➔ 18].
- Make sure that all provided covers, guards, hoods, etc. are mounted.

If the machine is installed at an altitude greater than 1000 meters above sea level:

- Contact your Busch representative, the motor must be derated or the ambient temperature limited.

5.2 Connecting Lines / Pipes

WARNING

Rotating Parts.

Risk of severe injury!

- Do not operate the machine without suction / discharge connection installed.

- 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):

– G2 ½" - with and without inlet filter (IF)

Depending on the specific configuration ordered, other connection dimensions may apply.

- Make sure that the gas is drawn without obstruction.
- 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

Connection size(s):

– G2”

Depending on the specific configuration ordered, other connection dimensions may apply.

- 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

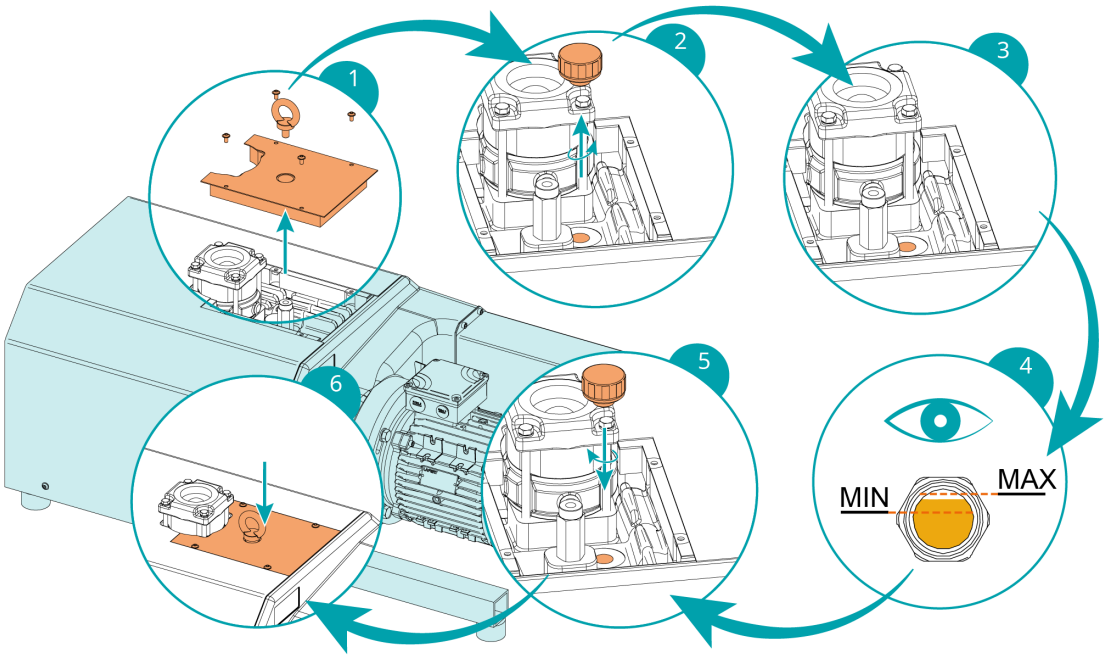
Use of an inappropriate oil.

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* [➔ 28] and *Oil* [➔ 30].



The oil level should stay constant over the lifetime of the oil. If the level does fall, this indicates a leak and the machine requires repair.

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* [➔ 31] or *UK Declaration of Conformity* [➔ 32]).

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.

- Provide a lockable disconnect switch on the power line so that the machine is completely secured during maintenance tasks.
- Provide an overload protection according to EN 60204-1 for the motor.
  - Busch recommends installing a D-curve circuit breaker.
- Connect the protective earth conductor.
- Electrically connect the motor.

NOTICE

Incorrect connection.

Risk of damage to the motor!

- The wiring diagrams given below are typical. Check the inside of the terminal box for motor connection instructions/diagrams.

6.2 Wiring Diagram Three-Phase Motor

NOTICE

Incorrect direction of rotation.

Risk of damage to the machine!

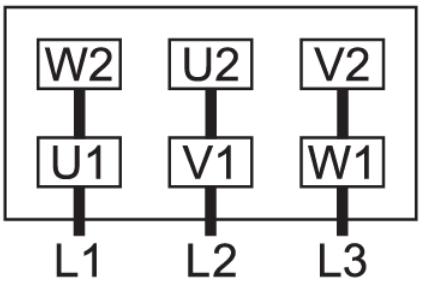
- Operation in the wrong direction of rotation can destroy the machine in a short time! Prior to start-up, ensure that the machine is operated in the right direction.

- Determine the intended direction of rotation with the arrow (stuck on or cast).
- Jog the motor briefly.

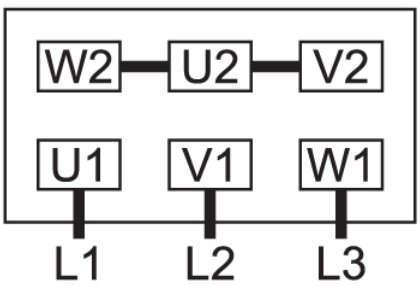
If the rotation of the motor must be changed:

- Switch any two of the motor phase wires.

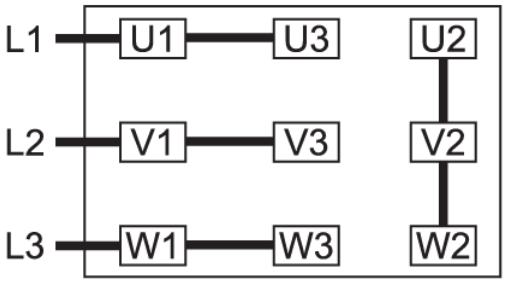
Delta connection (low voltage):



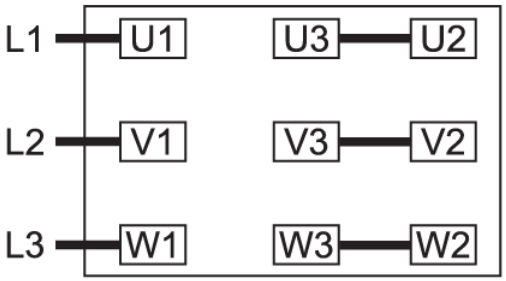
Star connection (high voltage):



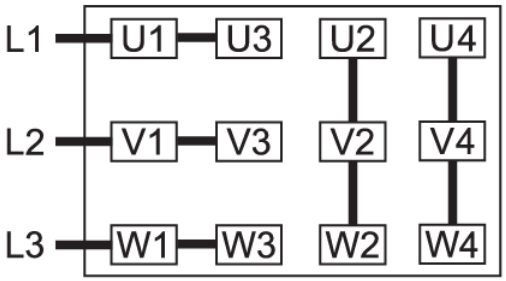
Double star connection, multi-voltage motor with 9 pins (low voltage):



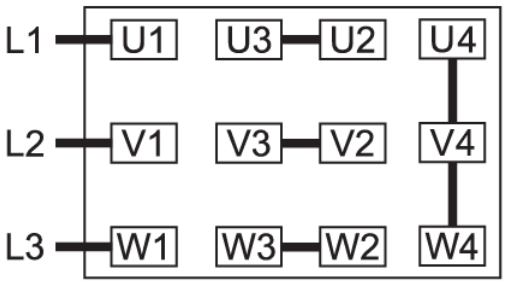
Star connection, multi-voltage motor with 9 pins (high voltage):



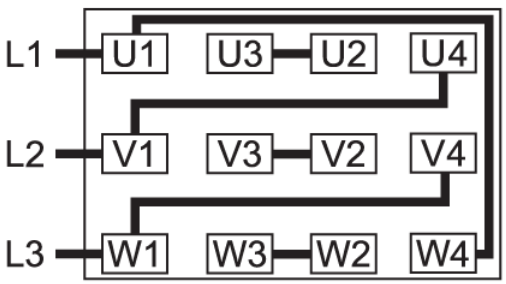
Double star connection, multi-voltage motor with 12 pins (low voltage):



Star connection, multi-voltage motor with 12 pins (high voltage):



Delta connection, multi-voltage motor with 12 pins (middle voltage):



7 Commissioning

NOTICE

Lubricating a dry running machine (compression chamber).

Risk of damage to the machine!

- Do not lubricate the compression chamber of the machine with oil or grease.

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

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 gas and/or liquid stream, in case the gas discharge (OUT) has no connections (lines or pipes) installed.

- Make sure that the *Installation Conditions* [➔ 9] are met.
- Start the machine.
- Make sure that the maximum permissible number of starts does not exceed 12 starts per hour. Those starts should be spread within the hour.
- Make sure that the operating conditions comply with the *Technical Data* [➔ 28].

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

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

7.1 Conveying Condensable Vapors

CAUTION

During operation, the surface of the suction and exhaust connections may reach temperatures above 70°C.

Risk of burns!

- Avoid contact with these surfaces during and directly after operation.

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 while draining the condensate.

Risk of damage to hearing!

While the machine is running, opening the condensate drain valve will lead to a significant increase of the noise level.

- Make sure to wear hearing protection.

The Aqua version is a design option for conveying condensable vapors (water).

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.
- Regularly drain condensate from the silencer with the drain cock.

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

Hot liquids.

Risk of burns!

- Before draining liquids, let the machine cool down first.

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

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.

- Stop the machine and lock it to prevent accidental start-up.
- Vent the connected lines to atmospheric pressure.

If necessary:

- Disconnect all connections.

8.1 Maintenance Schedule

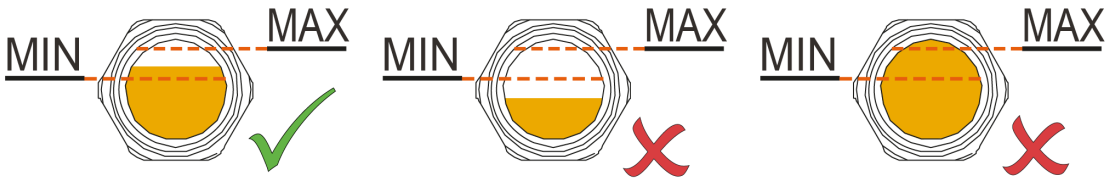
The maintenance intervals depend very much on the individual operating conditions. The intervals given below are considered as starting values which should be individually shortened or extended as appropriate.

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
Monthly	• Check the inlet screen (IS), clean if necessary. In case of an inlet filter (IF) being installed: • Check the inlet filter cartridge, replace if necessary.
Every 3 months	• Check the oil level, see *Oil Level Inspection* [➔ 18].
Every 6 months	• Clean the machine from dust and dirt. In case of a coupling (CPL) being installed: • Check the coupling (CPL) for backlash and wear.
Gas tight version only Every 5000 hours or after 2 years	Depending on the requirements in terms of gas tightness: • Replace sealing rings (contact Busch).
Gas tight version only Every 10000 hours or after 2 years	• Check that pressure relief lines (PRL) are not clogged, see *Pressure Relief Lines Maintenance* [➔ 21].
Every 20000 hours	• Change the oil. The change interval of 20000 operating hours is valid for Busch approved oils only. The change interval depends very much on the operating conditions. Borderline operation may reduce the change interval down to approximately 5000 operating hours. Other oils may reduce the change interval.
Every 40000 hours or after 6 years	• Have a major overhaul on the machine (contact Busch).

8.2 Oil Level Inspection

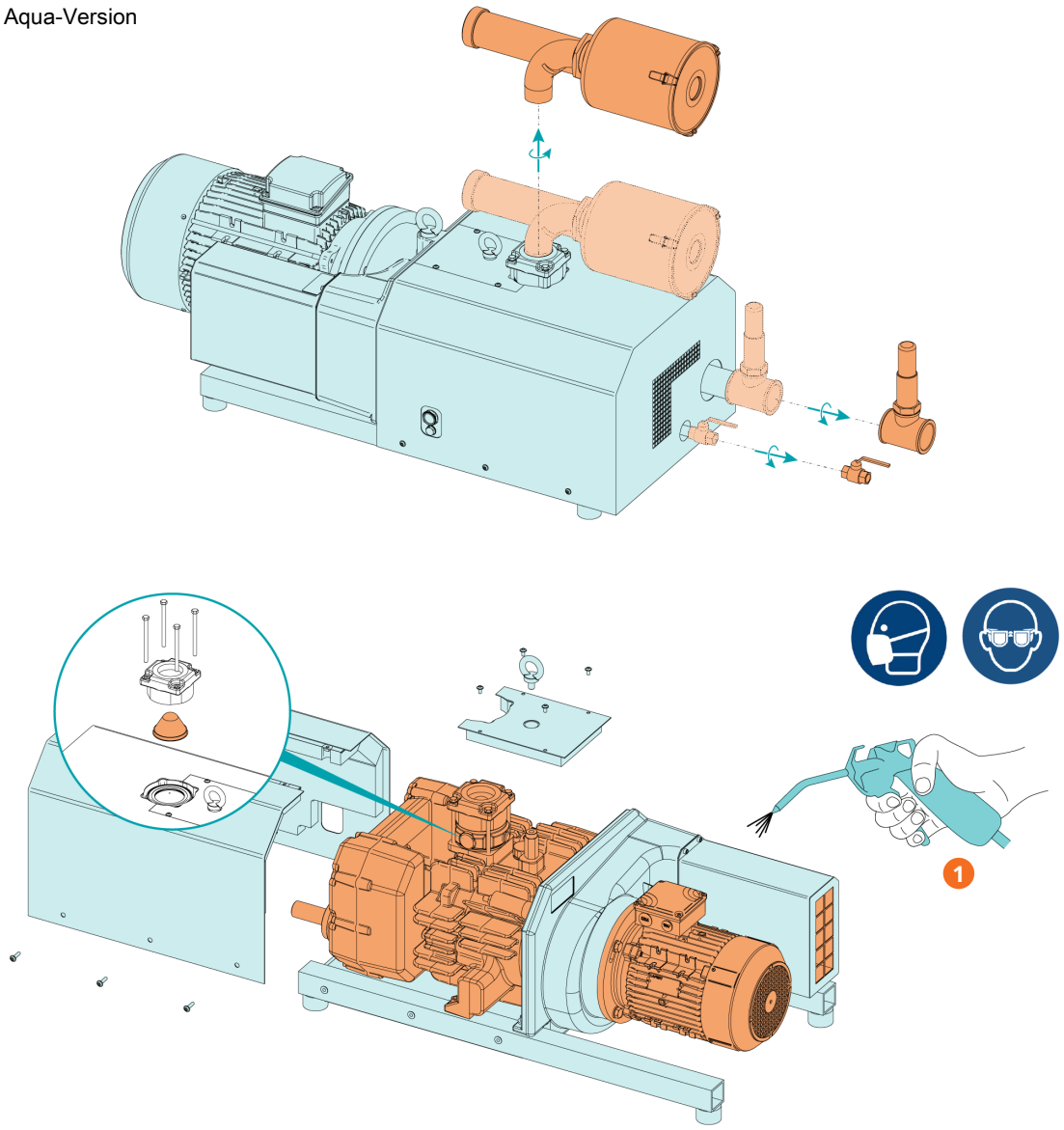
- Stop the machine.
- Wait 1 minute.
- Check the oil level.



The oil level should stay constant over the lifetime of the oil. If the level does fall, this indicates a leak and the machine requires repair.

- Fill up if necessary, see *Filling Oil* [➔ 11].

8.3 Cleaning from Dust and Dirt



Description			
1	Clean the ventilation grid, fans, inlet screen and cooling fins		

8.4 Oil Change

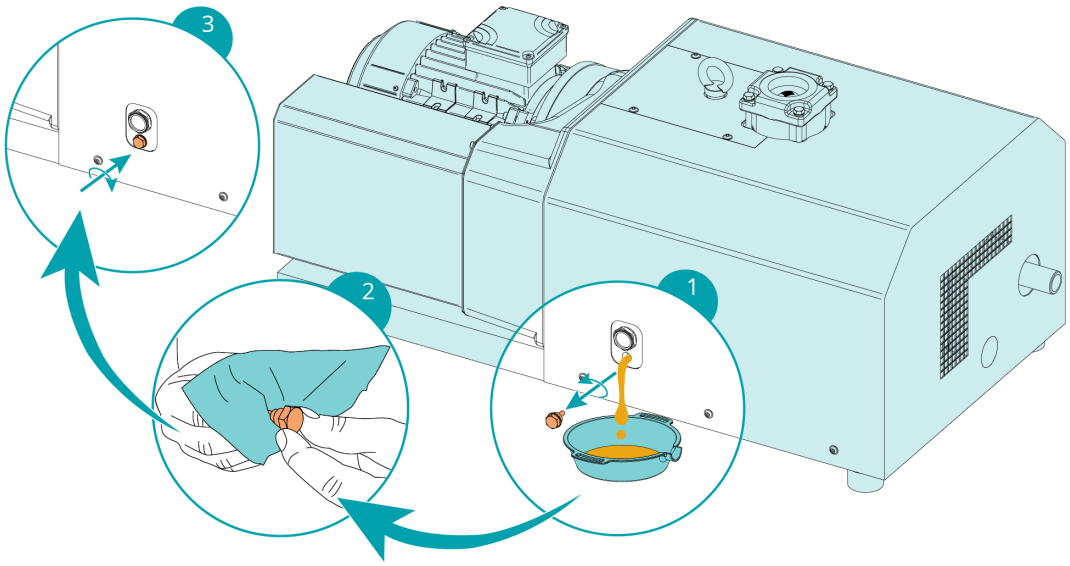
NOTICE

Use of an inappropriate oil.

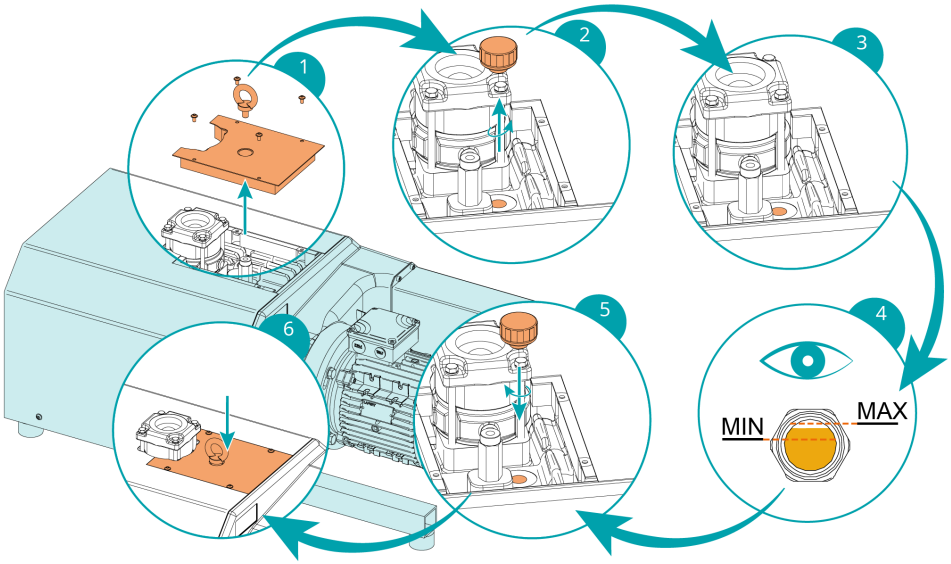
Risk of premature failure!

Loss of efficiency!

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



For oil type and oil capacity see *Technical Data* [➔ 28] and *Oil* [➔ 30].



The oil level should stay constant over the lifetime of the oil. If the level does fall, this indicates a leak and the machine requires repair.

8.5 Pressure Relief Lines Maintenance

(Gas Tight Version Only)

WARNING

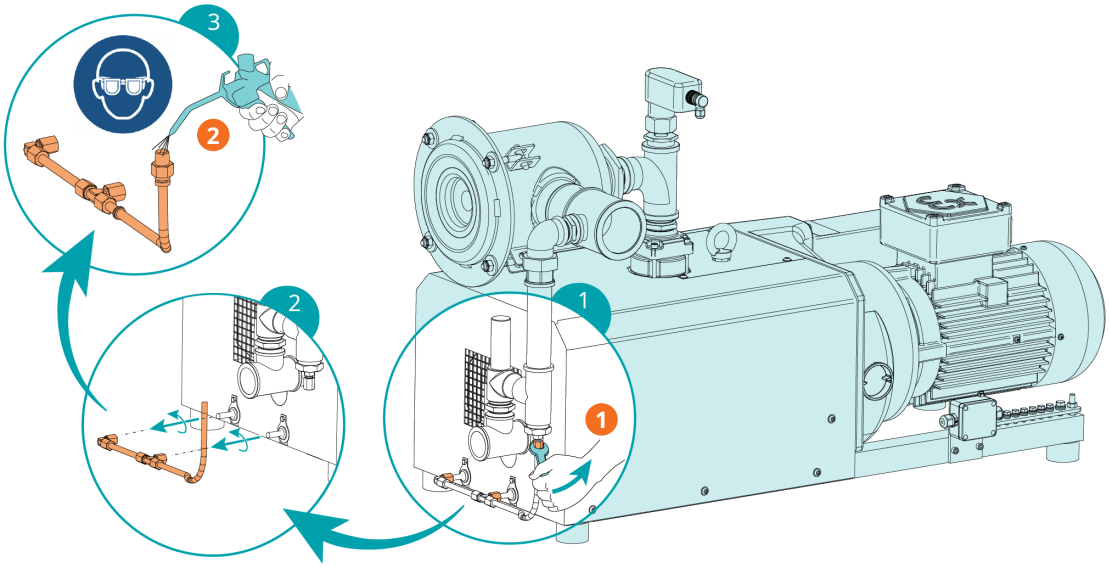
Media potentially dangerous.

Risk of poisoning!

Risk of infection!

- Wear appropriate personal protective equipment in case of high concentration of the medium in the ambient atmosphere of the machine.

- Check that pressure relief lines (PRL) are not clogged as described in the following illustrations.



Description			
1	Unscrew nuts	2	Blow into the pipe

NOTICE

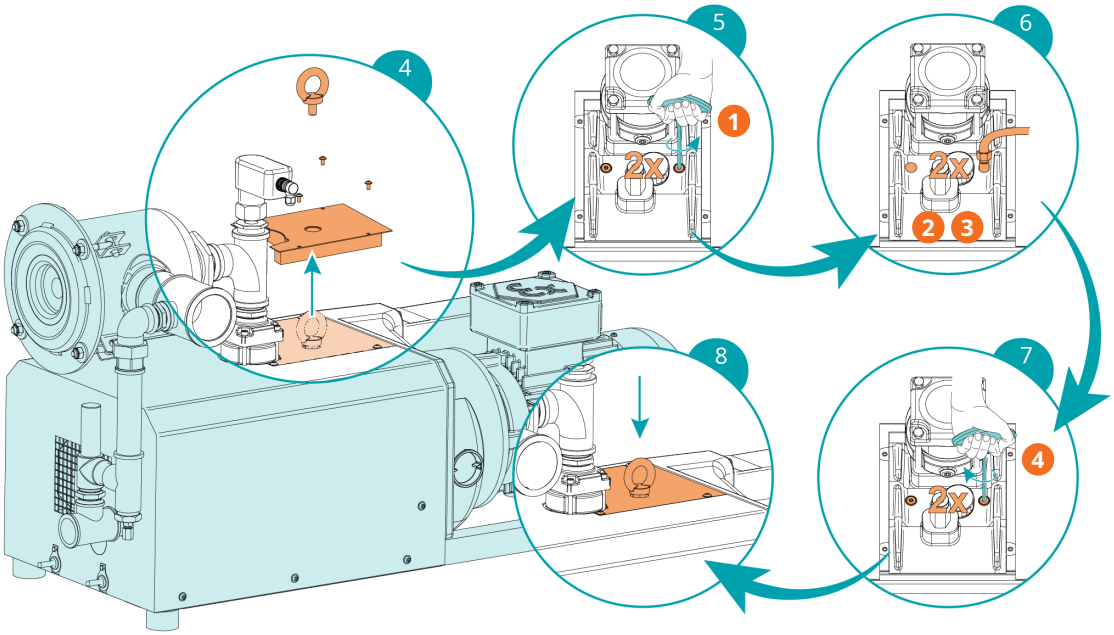
Pressurized air systems supply too high pressure.

Risk of damage to the machine!

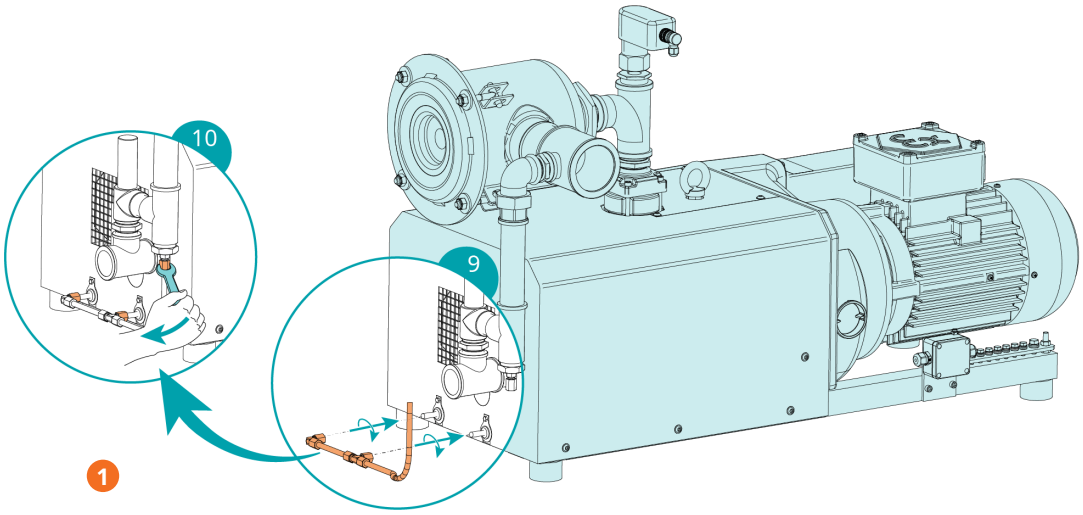
- Adjust the pressurized air to 0.2 bar(g) by means of a pressure regulator.

In case of clogged pressure relief lines (PRL):

- Remove the clogging or have the machine repaired (contact Busch).



Description			
1	Unscrew plugs	2	Connect pressurised air to the pressure relief lines
3	Air pressure max. 0.2 bar (g)	4	Tighten plugs



Description			
1	Tighten nuts		

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.

CAUTION

Hot liquids.

Risk of burns!

- Before draining liquids, let the machine cool down first.

- Stop the machine and lock it to prevent accidental 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

- Drain and collect the oil.
- Make sure that no oil drips onto the floor.
- 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 genuine spare parts.

Risk of premature failure!

Loss of efficiency!

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

Spare part	Description	Part number
Service kit	Includes all parts to perform maintenance work	0992 214 853
Inlet screen (IS)		0534 000 041
Safety valve (SV)	Quote in your order the ultimate working pressure of the machine	On request

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!

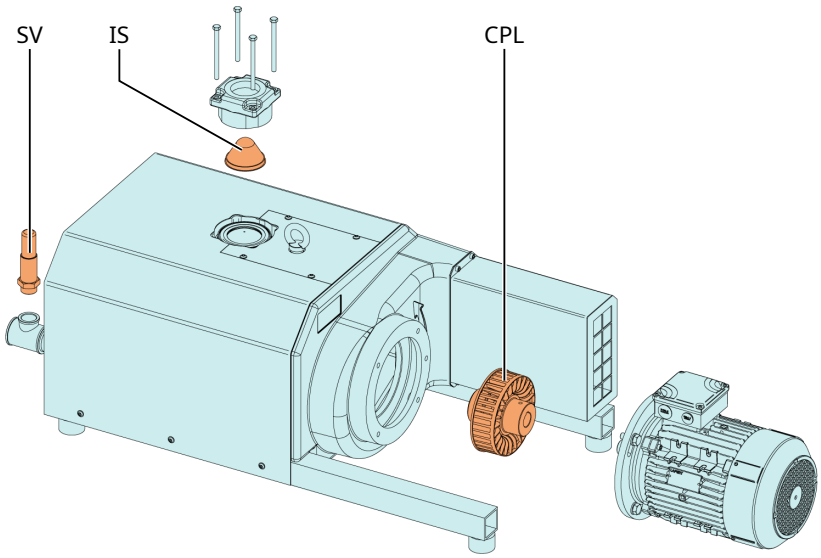
- Before doing anything that requires touching the machine, let it cool down first.

CAUTION

Hot liquids.

Risk of burns!

- Before draining liquids, let the machine cool down first.



Description			
IS	Inlet screen	CPL	Coupling
SV	Safety valve (pressure regulating system)		

Problem	Possible Cause	Remedy
The machine does not start.	The motor is not supplied with the correct voltage.	• Check the power supply.
	The motor is defective.	• Replace the motor.
	The coupling (CPL) is defective.	• Replace the coupling (CPL).

Problem	Possible Cause	Remedy
The machine does not reach the usual pressure on the discharge connection.	The inlet screen (IS) is partially clogged.	• Clean the inlet screen (IS).
	The inlet filter cartridge (optional) is partially clogged.	• Replace the inlet filter cartridge.
	The pressure system or pressure line is not leak-tight.	• Check the hose or pipe connection for leakage.
	The pressure relief valve/ regulating system (SV) is misadjusted or defective.	• Adjust, repair or replace, respectively.
	Internal parts are worn or damaged.	• Repair the machine (contact Busch).
	Partial clogging in the discharge or pressure line.	• Remove the clogging.
The machine runs very noisily.	Worn coupling (CPL).	• Replace the coupling (CPL).
	Oil level too low.	• Top up oil.
	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, see *Technical Data* [➔ 28].
	Temperature of the process gases at the inlet too high.	• Observe the permitted gas inlet temperature, see *Technical Data* [➔ 28].
	Oil level too low.	• Top up oil.

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

13 Technical Data

		MM 1202 AP			MM 1252 AP		
Volume flow (at inlet) (50 / 60 Hz)	m^3/h	200 / 240			245 / 290		
	ACFM	118 / 141			144 / 171		
Overpressure (50 Hz)	bar(g)	see nameplate (NP)					
		0.8	1.2	2.0	0.9	1.6	2.0
	PSIG	11.6	17.4	29.0	13.0	23.2	29.0
Nominal motor rating (50 Hz)	kW	≥ 6.0	≥ 7.5	≥ 11.0	≥ 7.5	≥ 10.6	≥ 12.5
	HP	≥ 8.0	≥ 10.1	≥ 14.8	≥ 10.1	≥ 14.2	≥ 16.8
Overpressure (60 Hz)	bar(g)	see nameplate (NP)					
		0.8	1.1	1.8	0.7	1.4	2.0
	PSIG	11.6	15.9	26.1	10.2	20.3	29.0
Nominal motor rating (60 Hz)	kW	≥ 8.0	≥ 9.5	≥ 12.5	≥ 9.0	≥ 12.6	≥ 15.6
	HP	≥ 10.7	≥ 12.7	≥ 16.8	≥ 12.1	≥ 16.9	≥ 20.9
Nominal motor speed (50 / 60 Hz)	min^{-1}	3000 / 3600					
	RPM	3000 / 3600					
Permitted motor speed range	min^{-1}	1200 ... 3600 at ≤ 1.0 bar (g) 1800 ... 3600 at ≤ 1.5 bar (g) 3000 ... 3600 at ≤ 2.0 bar (g)					
	RPM	1200 ... 3600 at ≤ 14.5 PSIG 1800 ... 3600 at ≤ 21.8 PSIG 3000 ... 3600 at ≤ 29.0 PSIG					
Sound pressure level (ISO 3744), 1 m distance, at medium load at 1.0 bar(g) (50 / 60 Hz)	dB(A)	80 / 83			81 / 84		
Ambient temperature range	°C	0 ... 40					
	°F	32 ... 104					
Inlet gas temperature range	°C	0 ... 40					
	°F	32 ... 104					
Ambient pressure		Atmospheric pressure					
Oil capacity	l	1.0					
	qts.	1.0					
Weight approx.	kg	250 ... 310 **			270 ... 320 **		
	Lbs.	560 ... 690 **			600 ... 710 **		

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

** The weight can vary depending on the order.

		MM 1322 AP		
Volume flow (at inlet) (50 / 60 Hz)	m^3/h	300 / 360		
	ACFM	177 / 212		
Overpressure (50 Hz)	bar(g)	see nameplate (NP)		
		1.0	1.7	2.0
	PSIG	14.5	24.7	29.0
Nominal motor rating (50 Hz)	kW	≥ 10.5	≥ 14.9	≥ 16.5
	HP	≥ 14.1	≥ 20.0	≥ 22.1
Overpressure (60 Hz)	bar(g)	see nameplate (NP)		
		0.8	1.5	2.0
	PSIG	11.6	21.8	29.0
Nominal motor rating (60 Hz)	kW	≥ 12.5	≥ 17.2	≥ 21.0
	HP	≥ 16.8	≥ 23.1	≥ 28.2
Nominal motor speed (50 / 60 Hz)	min^{-1}	3000 / 3600		
	RPM	3000 / 3600		
Permitted motor speed range	min^{-1}	1200 ... 3600 at ≤ 1.0 bar (g) 1800 ... 3600 at ≤ 1.5 bar (g) 3000 ... 3600 at ≤ 2.0 bar (g)		
	RPM	1200 ... 3600 at ≤ 14.5 PSIG 1800 ... 3600 at ≤ 21.8 PSIG 3000 ... 3600 at ≤ 29.0 PSIG		
Sound pressure level (ISO 3744), 1 m distance, at medium load at 1.0 bar(g) (50 / 60 Hz)	dB(A)	82 / 85		
Ambient temperature range	°C	0 ... 40		
	°F	32 ... 104		
Inlet gas temperature range	°C	0 ... 40		
	°F	32 ... 104		
Ambient pressure		Atmospheric pressure		
Oil capacity	l	1.0		
	qts.	1.0		
Weight approx.	kg	310 ... 360 **		
	Lbs.	690 ... 800 **		

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

** The weight can vary depending on the order.

14 Oil

	VS 150	VSB 100
ISO-VG	150	100
Part number 1 L packaging	0831 164 883	0831 168 351
Part number 5 L packaging	0831 164 884	0831 168 352

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

Oil suitability

- **Oil VS 150**: Suitable for standard applications.
- **Oil VSB 100**: Suitable for food applications (H1)
  - 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 is determined by the serial number:

Serial number starts with **DEM1...**

Busch Produktions GmbH
Schauinslandstr. 1
79689 Maulburg
Germany

Serial number starts with **USM1...**

Busch Manufacturing LLC
516 Viking Drive
Virginia Beach, VA 23452
USA

declares that the machine: MINK MM 1202 AP; MINK MM 1252 AP; MINK MM 1322 AP

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 1012-1 : 2010 EN 1012-3 : 2013	Compressors - Safety requirements - Part 1 and Part 3
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, 01.11.2023

Dr. Martin Gutmann

General Manager

Busch Produktions GmbH

Virginia Beach, 01.11.2023

Dalip Kapoor

Chief Counsel, Legal & Compliance Officer

Busch Manufacturing LLC

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 is determined by the serial number:

Serial number starts with **DEM1...**

Busch Produktions GmbH
Schauinslandstr. 1
79689 Maulburg
Germany

Serial number starts with **USM1...**

Busch Manufacturing LLC
516 Viking Drive
Virginia Beach, VA 23452
USA

declares that the machine: MINK MM 1202 AP; MINK MM 1252 AP; MINK MM 1322 AP

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 1012-1 : 2010 EN 1012-3 : 2013	Compressors - Safety requirements - Part 1 and Part 3
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, 01.11.2023

Dr. Martin Gutmann

General Manager

Busch Produktions GmbH

Virginia Beach, 01.11.2023

Dalip Kapoor

Chief Counsel, Legal & Compliance Officer

Busch Manufacturing LLC

Notes

BUSCH GROUP

The Busch Group is one of the world's largest manufacturers of vacuum pumps, vacuum systems, blowers, compressors and gas abatement systems. Under its umbrella, the group houses three well-known brands: Busch Vacuum Solutions, Pfeiffer Vacuum and centrotherm clean solutions. Together, they offer solutions to a wide range of industries. A global network of highly competent local teams in 44 countries ensures that expert, tailor-made support is always available near you. Wherever you are. Whatever your business.

- Busch Group companies
- Busch Group production sites
- Busch Group service centers
- Busch Group local representatives

www.buschvacuum.com

www.pfeiffer-vacuum.com

www.centrotherm.com

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