Operating manual

SILOMAT trans plus 105/145 conveying system
SILOMAT trans plus bag 145 conveying system

Part 2 Overview, operation and service

Item no. of the operating manual: 00132672

Read the operating manual prior to starting any work!

This operating manual applies to the following items:	
SILOMAT trans plus 145, rollable, 400 V, 3 Ph, 50 Hz	Item no. 00124358
SILOMAT trans plus 105, portable, 400 V, 3 Ph, 50 Hz	Item no. 00124365
SILOMAT trans plus 105, rollable, 400 V, 3 Ph, 50 Hz	Item no. 00124366
SILOMAT trans plus 105, portable, 400 V, 3 Ph, 50 Hz	Item no. 00146330
SILOMAT trans plus 145, portable, 400 V, 3 Ph, 50 Hz	Item no. 00689524
SILOMAT trans plus bag 145, 400 V, 3 Ph, 50 Hz	Item no. 00689527

About us

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Table of contents

Table of contents

Table of contents

General information

1 General information

1.1 Information regarding the operating manual

- This operating manual provides important information and instructions on the correct use of the machine. A prerequisite for safe working is the observance of all stated safety guidelines and instructions.
- Furthermore, the local accident prevention guidelines and general safety instructions for the application area of the device are to be adhered to.
- Read the operating manual thoroughly before starting any work! It is a part of the product and has to be kept near the device and easily accessible to the personnel at all times.
- If the device is given to third parties, also include the operating manual.
- The figures in this manual are for presentation purposes of facts, not necessarily to scale and may slightly differ from the actual model of the device.

1.2 Division

The operating manual is divided into 2 books:

- Part 1 Safety

General safety instructions about conveyor systems

Item no.: 00132670

- Part 2 Overview, operation and service (this manual).

⚠ WARNING

Danger of injury due to incorrect operation!

Improper operation may lead to serious damage to persons and property.

- To ensure safe and proper operation of the machine, all parts of the operating manual must be read before starting work; all parts together are considered to be a single operating manual.

1.3 Display of safety and warning notices

In this manual, safety and warning notices are used in conjunction with signal words to raise safety awareness, indicate degrees of danger and explain safety measures.

Such safety and warning information may also be attached to the product in the form of signs, stamps or stickers.

Structure of the safety and warning notices

All safety and warning notices consist of:

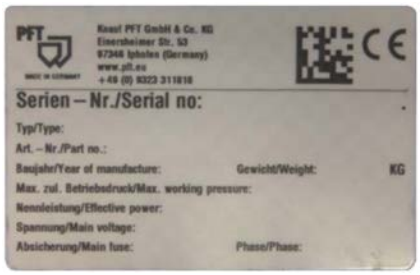
- The danger sign and signal word
- Information on the nature of the hazard
- Information on the source of the hazard
- Information on possible consequences of disregarding the hazard
- Measures to avert the hazard

Danger sign	Signal word	Significance
	Danger	Death or serious injury will occur if you do not take the precautions described.
	Warning	Death or serious injury may occur if you do not take the precautions described.
	Caution	Minor injury may occur if you do not take the precautions described.
	Note	Property damage may occur if you do not take the precautions described.
	Tip	An important piece of information about the product or the particular section of the manual to which special attention is to be drawn.

1.4 Keep the manual for future reference

The operating manual has to be available during the whole service life of the product.

1.5 Name plate



The following details can be found on the name plate:

- Manufacturer
- Type
- Year of manufacture
- Machine number
- Permissible operating pressure

Figure 1: Name plate

1.6 EC Declaration of Conformity

Company: Knauf PFT GmbH & Co. KG
Einersheimer Straße 53
97346 Iphofen
Germany

declares under our sole responsibility that the machine:

Type of machine: SILOMAT trans plus 105/145

Type of equipment: Pneumatic conveying system

Serial number:

Guaranteed sound power level: 101 dB

is in conformity with the following CE directives:

– Outdoor Directive (2000/14/EC),
– Machinery Directive (2006/42/EC),
– Electromagnetic Compatibility Directive (2014/30/EU).,

Operative Conformity Assessment according to Outdoor Directive 2000/14/EC:

Internal production control as per article 14 paragraph 2 in connection with annex V.

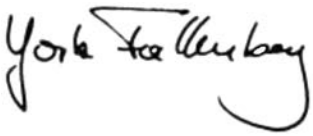
This declaration only refers to the machine in the state in which it has been placed on the market. Parts subsequently added by the user and/or subsequent interventions are not covered. This declaration ceases to be valid if the product is converted or changed without consent.

Person authorised to compile the relevant technical documentation:

– (Dipl. in Industrial Engineering, University of Applied Sciences) Michael Duelli, Einersheimer Straße 53, 97346 Iphofen.

The technical documentation is available from:

– Knauf PFT GmbH & Co. KG, Technical Department, Einersheimer Straße 53, 97346 Iphofen.



Iphofen		Dr York Falkenberg Managing Director
Town/city	Name and signature	Details of signatory

1.7 Quality Control sticker

The following details can be found on the Quality Control sticker:

- CE confirmed as per EU directives
- Serial no / serial number
- Controller / signature
- Date of control

Figure 2: Quality Control sticker

1.8 Intended use

1.8.1 Intended use of the rotary compressor

The device has been designed and constructed only for the intended use described below.

NOTE

The rotary compressor is only intended for generating compressed air and may only be used with connected work devices. Any other use or use beyond what is specified, such as with freely accessible and/or open hoses and pipelines, is deemed to be not for the intended purpose. Connected implements or components are to be designed for the maximum generated pressure of 2.5 bar.

The rotary compressor is to be used only in technically perfect condition, as well as for its intended use and while taking into account the safety and hazard information in the operating manual!

In particular faults that can impair safety must be rectified immediately before the rotary compressor is put back into operation.

1.8.2 Rotary compressor safety devices

⚠ WARNING

Danger to life due to non-functioning safety equipment!

Safety equipment ensures highest level of safety in operation. Even if safety devices make work processes more complicated, they must never be disabled. Safety is only assured when the safety devices are intact.

Therefore:

- Check that the safety devices and functional and correctly installed before starting work.
- Use safety equipment at all times.
- Do not obstruct access to safety systems such as EMERGENCY STOP pushbuttons, emergency off buttons, pull cords etc.

1.8.3 General setup of the rotary compressor

The rotary compressor corresponds to the national and international safety regulations and can therefore also be used in damp rooms or in the open air. Areas with as clean and dry air as possible should be preferred. Make sure that the device can suck in the air unimpeded. This applies in particular when an installation is intended.

The rotary compressor must be set up so that no hazardous admixtures, such as solvents, vapours, dusts or other harmful substances, can be sucked in. The device should be positioned only in rooms where the hazard of a potentially explosive atmosphere is not given.

The specifications are applicable up to a height of 800 m above sea level.

1.8.4 Hot surfaces on the rotary compressor

General information

⚠ WARNING

Risk of injury due to hot surface!

Surface temperatures can reach up to 100 °C during operation of the rotary compressor.

- Therefore, always ensure that the rotary compressor does not come into contact with exposed body parts during use as well as for some time after use, depending on the temperature.

2 Technical data

2.1 General information

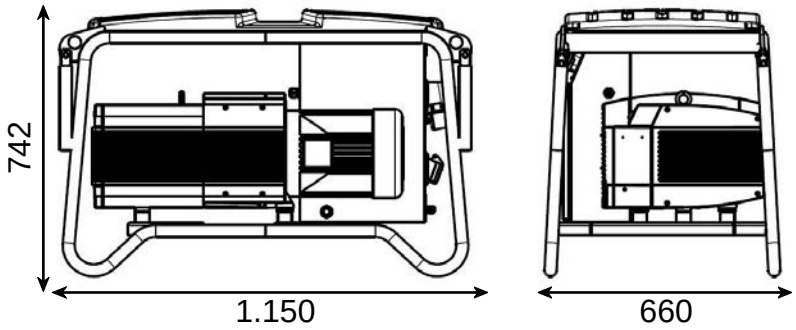


Figure 3: Dimension sheet in mm

Detail	Value	Unit
Length	1,150	mm
Width	660	mm
Height	742	mm

SILOMAT system empty weights

Detail	Value	Unit
SILOMAT trans plus 105 Item no. 00124365	275	kg
SILOMAT trans plus 105 Item no. 00124366	301	kg
SILOMAT trans plus 105 Item no. 00146330	268	kg
SILOMAT trans plus 145 Item no. 00124358	312	kg
SILOMAT trans plus 145 Item no. 00689524	285	kg
SILOMAT trans plus bag 145 Item no. 00689527	304	kg

Carrier dimensions

Detail	Value	Unit
Bag filling height of the SILOMAT trans plus bag	950	mm
Empty weight of SILOMAT trans plus carrier	86	kg
Empty weight of SILOMAT trans plus bag carrier	104	kg

Technical data

2.2 Power connection

Detail	Performance	Setting value	Designation
Compressor KDT 3.105	5.5 kW	11.2 A	Q2
Compressor KDT 3.145	7.5 kW	16.2 A	Q2
Actuator	0.18 kW	0.65 A	Q3

Figure 4: Motor protection switch

2.3 Operating conditions

Environment

Detail	Value	Unit
Temperature range	2 - 45	°C
Relative humidity, max.	80	%

Duration

Detail	Value	Unit
Max. operating time at a stretch	8	hours

Electric SILOMAT trans plus 105

Detail	Value	Unit
Voltage, three-phase current 50 Hz	400	V
Total power consumption, approx.	5.7	kW
Power consumption, approx.	12	A
Connection	32	A
Minimum fuse protection, type C	32	A

Electric SILOMAT trans plus 145

Detail	Value	Unit
Voltage, three-phase current 50 Hz	400	V
Total power consumption, approx.	7.7	kW
Power consumption, approx.	17	A
Connection	32	A
Minimum fuse protection, type C	32	A

2.4 Power values

SILOMAT trans plus 105

Detail	Value	Unit
Pump capacity, approx. at 100 m	20	kg/min
Feed range in m *	100	m
Operating pressure, maximum	2.5	bar
Compressor ventilation system performance	105	Nm³/h

* Reference value depending on the material quality, material weight and conveying height

SILOMAT trans plus 145

Detail	Value	Unit
Pump capacity, approx. at 140 m	20	kg/min
Feed range in m *	140	m
Operating pressure, maximum	2.5	bar
Compressor ventilation system performance	122	Nm³/h

* Reference value depending on the material quality, material weight and conveying height

2.5 Sound power level

Guaranteed sound power level L_{WA}

- 101 dB(A)

2.6 Vibrations

Weighted effective value of acceleration to which the upper body parts are exposed <2.5 m/s²

3 Transport, packing and storage

3.1 Safety instructions for transport

Improper transport

NOTE

Damage from improper transport!

Improper transport may cause substantial property damage.

Therefore:

- When unloading the packages on delivery, as well as transport within the company, pay attention and observe the symbols and instruction on the package.
- Use only the specified anchorage points.
- Remove packaging only shortly before the assembly.

Suspended loads

⚠ WARNING

Danger to life from suspended loads!

When lifting heavy loads, there is danger to life from falling parts or uncontrolled swinging parts.

Therefore:

- Never step under suspended loads.
- Observe the instructions regarding the provided anchorage points.
- Do not attach to projecting machine parts or eyelets of attached components and ensure safe fit of the sling gear.
- Only use approved lifting gear and accessories with a sufficient load-bearing capacity.
- Do not use torn or frayed ropes and belts.
- Do not lay ropes and belts over sharp edges and corners, do not knot or twist.
- When ropes and chains are used in construction operations, the provisions contained in the accident prevention regulation "Load suspension devices in lifting gear operations" (VBG 9a) should be complied with. The following sections contain instructions for scenarios in which ropes and chains are used as lifting means.

3.2 Transport inspection

On receipt check the delivery immediately for completeness and transport damage.

In case of externally visible transport damage, proceed as follows:

- Do not accept the delivery or under reserve only.
- Note the extent of damage on the transport documentation or on the delivery note of the carrier.
- Initiate complaint process.

NOTE

Report any defect as soon as it is detected. Claims for damages can be asserted only within the valid warranty period.

3.3 Packaging

For packaging

The individual packages have to be packed in accordance with the transport conditions to be expected. Only environmentally-friendly materials were used for the packaging.

The packaging should protect the individual components until the assembly from transport damage, corrosion and other damage. Therefore do not destroy the packaging and remove only shortly before the assembly.

Handling packaging materials

If no agreement for the recovery of the packaging has been made, separate materials according to type and size and reuse or recycle.

NOTE

Environmental damage due to incorrect disposal!

Packaging materials are valuable raw materials and in many cases they can be reused or reconditioned and recycled.

- Dispose of packaging materials in an environmentally-friendly way.
- Observe the applicable local disposal regulations. If required hand over the disposal to a specialist.

Transport, packing and storage

3.4 Transport

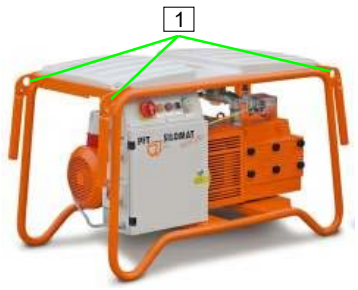


Figure 5: Attachment points

Crane transport

Anchor the SILOMAT system at the
anchor points (1) for transport by crane.

Observe the following conditions:

- The crane and lifting equipment have to be designed for the weight of the packages.
- The operator has to be authorised to operate the crane.

Attachment:

1. Anchor the hooks to the crane hooks accordingly.
2. Ensure that the package is straight, possibly observe eccentric centre of gravity.

⚠ CAUTION

When driving under and lifting with the forks of the forklift truck/pallet truck, watch out for cables and hoses hanging down or protruding!

Figure 6: Forklift transport

Forklift transport

The SILOMAT system can be transported by the forklift truck on the long side.

Figure 7: Pallet truck transport

Pallet truck transport

The SILOMAT system can be transported by the pallet truck on the front side.

3.5 Transporting a running machine

⚠ CAUTION

Risk of injury due to discharged dry material!

Injuries to face and eyes can occur.

- Ensure the hoses are depressurised before opening the couplings.

Carry out the following steps before beginning the transport:

1. Unplug the mains cable.
2. Remove the conveying hoses.

4 Description

4.1 Overview

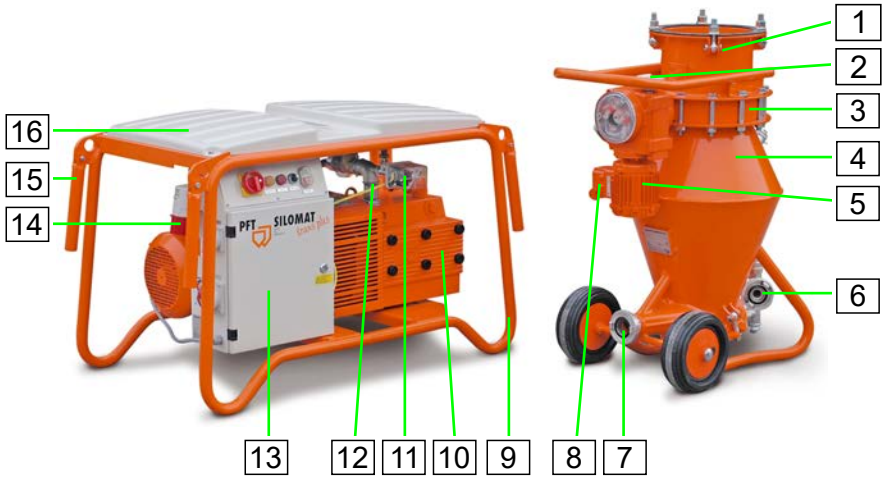


Figure 8: Table of the assembly groups

[1] Connecting piece
[2] Handwheel for closing the flap
[3] Flap
[4] Carrier
[5] Actuator
[6] Connection of conveying air from the compressor
[7] Conveying hose connection for plastering machine
[8] Connection of the control cable from control box
[9] Supporting frame
[10] Rotary compressor KDT 3.105/3.145
[11] Pressure switch
[12] Pressure control
[13] Control box
[14] Main terminal
[15] Carrying handle
[16] SILOMAT cover hood

Figure 9: Table of the assembly groups

[1] Protective grille with bag opener
[2] Bag filling hopper
[3] Filter hose for injection hood
[4] Flap
[5] Carrier
[6] Conveying hose connection for plastering machine

[7] Connection of the control cable from control box

[8] Actuator

4.2 Brief description of the SILOMAT trans plus

The conveying system PFT SILOMAT trans plus is a fully automatic pneumatic conveyor system that performs the material transport of premixed dry mortar from the silo / container to the plastering machine.

4.3 Brief description of the SILOMAT trans plus bag

The PFT SILOMAT trans plus bag conveying system is a fully automatic pneumatic conveying system that performs the dust-free material transport of bagged dry mortar to the plastering machine.

- The carrier of the SILOMAT trans plus bag can be mounted under any silo / container by means of an adapter.

Figure 10: SILOMAT trans plus bag

4.4 Functional description - work flow

As soon as the level sensor of the plastering machine reports "Empty", the flap opens ("Open" position) and the carrier is filled with approx. 62 l of dry material while the silo outlet valve is open. The vibrator starts up at the same time in order to support the flow of material from the silo / container.

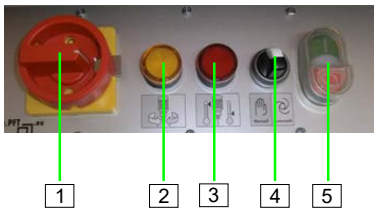
When the filling time has elapsed, the flap closes again ("Closed" position). The carrier is now sealed pressure-tight to the silo / container.

The rotary compressor now starts operating and blows air through the emulsifier base with membrane into the carrier. In this way, the material is aerated and pressed through the extraction connection of the carrier into the conveying hose and on to the plastering machine. Pressure is built up in the conveying hose, which is monitored by the pressure switch. If the pressure drops below the set value of 0.6 bar, the carrier and conveying hose are empty. The system completes the conveying cycle and shuts down. A new conveying cycle is started as soon as there is a new signal from the level sensor.

The distribution of air can be controlled by hand using the bypass on the carrier. The system can then be adapted to suit the individual material (specific weight).

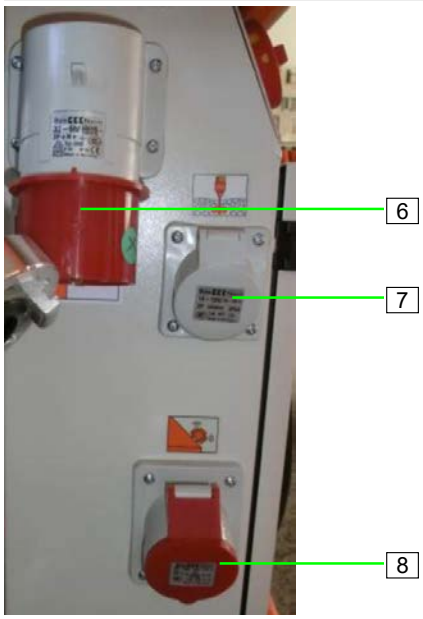
4.5 Description of assemblies

4.5.1 Control box



[1] Main reversing switch is also emergency-stop switch
[2] Yellow control lamp, change the direction of rotation
[3] Red control lamp, motor protection switch activated
[4] Selector switch for rotary compressor "manual-0-automatic"
[5] Pushbutton for control voltage "ON/ OFF"

Description



[6] Main terminal
[7] CEE mounted socket for level sensor request
[8] CEE mounted socket for connection of vibrating unit

Figure 11: Assembly unit control box

4.6 Empty alarm of level sensor

As soon as the level sensor reports "Empty":

- The flap opens.
- During the defined filling time (5 seconds), the carrier is filled with approx. 62 l of dry material.
- At the same time, the vibrating unit that is screwed on the silo, is operated.
- The flap closes after the filling time has elapsed and the rotary compressor starts.
- The rotary compressor is switched off after the conveying time has elapsed (18 or 30 seconds) and the pressure has dropped below 0.6 bar (if the hose is empty).
- The system waits for a new signal to repeat the conveying cycle of fully-automatic supply for the plastering machine.

NOTE

A level sensor, which signals the material requirement to the SILOMAT system via the control cable, is located in the injection hood of the plastering machine.

The conveying system is controlled by the material consumption of the plastering machine.

The SILOMAT system can be connected to every free-fall silo and feeds approximately 20 kg of dry material per minute to a mixing pump, e.g. PFT G 4, up to 100 or 140 m.

The flap in the injection hood opens after the empty alarm is issued for the level sensor. When the full signal is issued, the flap closes and the conveying hose is blown out.

4.7 Operating modes

Figure 12: Rotary compressor selector switch

Rotary compressor selector switch

The rotary compressor can be operated in three different operating modes:

Switch position "0":

- The rotary compressor is switched off.

Switch position "Automatic" (right):

- The rotary compressor runs when the level sensor in the injection hood of the plastering machine requests material.

Switch position "Manual" (left):

- The rotary compressor runs continuously, e.g. for blowing through the conveying hoses or for aerating the silo.

5 Operation

5.1 Safety

Personal protective equipment

The following protective equipment has to be worn for all operative work:

- Protective clothing
- Protective goggles
- Protective gloves
- Safety shoes
- Hearing protection

Further protective equipment that is to be worn during particular jobs will be pointed out separately in the warning instructions of this chapter.

Basic information

⚠ WARNING

Danger of injury due to incorrect operation!

Improper operation may lead to serious damage to persons or property.

Therefore:

- Carry out all operating steps according to the instructions in this user manual.
- Prior to starting your work, ensure that all components are complete and undamaged.
- Prior to starting your work, ensure that all covers and protection devices are installed and work as intended.
- Never operate the machine with defective components and protection devices.
- Never disable protective devices during operation.
- Ensure order and cleanliness in the work area! Loose components and tools on top of one another or lying about pose potential accident risks.
- Increased noise level may cause permanent hearing deficiencies. At close range of the machine 101 dB(A) can be exceeded due to operational conditions. Close range is a distance of less than 5 metres to the machine.

5.1.1 Safety rules

⚠ CAUTION

Observe the regional safety rules for mortar conveyors and mortar guns!

5.1.2 Monitoring the machine

⚠ WARNING

Access by unauthorised persons!

- The machine may only be operated when monitored.

5.1.3 Hazardous dusts

Figure 13: Dust protection

⚠ WARNING

Danger of damage to health!

In the long term, inhaled dust can lead to lung damage or have other adverse health effects.

- Use suitable face protection.

NOTE

The machine operator or the person working in the dusty area always has to wear a dust protection mask when filling the machine!

The rules of the Committee on Dangerous Substances (AGS) can be found under Technical Rules for Dangerous Substances (TRGS 559).

5.2 Inspection by machine operator

- Prior to each shift, the machine operator has to examine the effectiveness of the control and safety devices, as well as the proper fitting of the protection devices.
- The safe working condition of construction machinery has to be checked by the machine operator during operation.
- If the safety devices show any defects or if any other defects are detected that compromise a safe operation, the supervisor has to be informed immediately.
- In case of defects that cause harm to persons, the operation of the construction machine has to be stopped to eliminate the defects.

Operation

5.3 Preparing the machine

Prior to operating the machine carry out the following steps for preparing the machine:

⚠ CAUTION

SILOMAT systems for free-fall silos may only be connected to unpressurized silos / containers. The dust removal lines of the silo / container must be open and unclogged.

NOTE

In order to avoid condensate from entering the system, perform the following steps before starting work:

1. Detach the air hose running from the rotary compressor from the carrier.
2. Switch on the rotary compressor; observe the direction of rotation when doing so.
3. Air must be discharged at the C-coupling (remove the air hose).
4. In case of an incorrect direction of rotation, turn the main switch or the main reversing switch to position "0".
5. Push the metal bracket in the opposite direction, the direction of rotation is changed.
6. Turn the main reversing switch to position "I" and let the system run for approx. 1-2 min.
7. Kink the hose end several times in the process and re-release it after a brief pressure build-up.
8. Repeat the process until water mist is no longer discharged from the air hose.
9. Switch off the system by pressing the red pushbutton for control voltage "OFF".

5.3.1 Setting up the machine

Install the machine on stable and even ground and secure it against accidental movements:

- Do not tilt or roll the machine away.
- Place the machine where it cannot be hit by any falling objects.
- The controls must be freely accessible.
- Maintain a clearance of approx. 1.5 metres around the machine.

5.3.2 Connecting the power supply

Figure 14: Connect power supply.

1. Only connect the SILOMAT system to a three-phase 400 V network.

⚠ DANGER

Danger to life from electric current!

The electrical connection must be fused correctly:

- Only connect the machine to a power source with an approved RCD (residual current device) of type A (30 mA).

5.3.2.1 Connecting the individual connectors

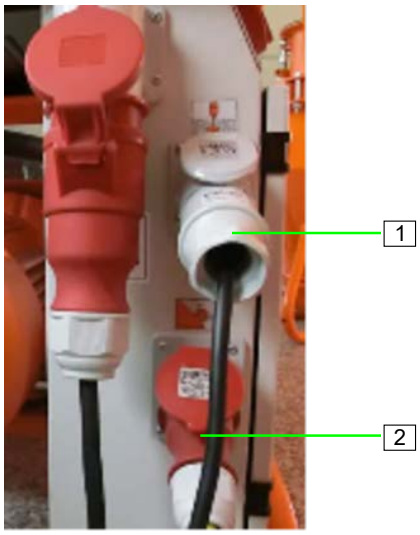


Figure 15: Connections

⚠ WARNING

Danger to life from rotating parts!

Improper operation may lead to serious damage to persons or property.

- The respective drive (motors) must be operated only with the control box of the machine.

1. Connect the control cable for the level sensor to the CEE mounted socket (1).
2. Connect the power supply for the vibrating unit (2).

Figure 16: Connecting the control cable

3. Connect the control cable from the CEE socket outlet (1) to the level sensor of the injection hood (3).

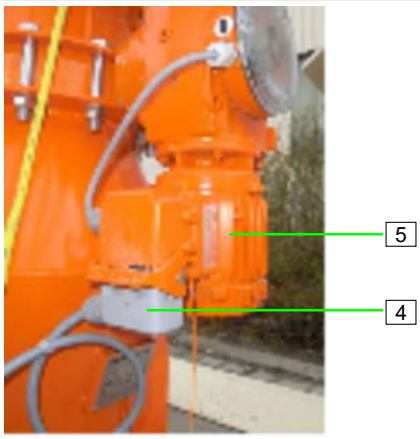


Figure 17: Connecting the control cable

4. Connect the 10-pin control cable (4) from the control box to the actuator (5) of the flap.

5.3.3 Preparing the carrier

5.3.3.1 Connect the carrier to the silo

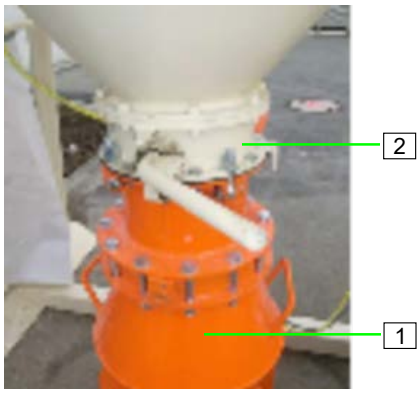


Figure 18: Connecting the carrier

1. Connect the carrier (1) to the silo outlet valve (2).

NOTE

Ensure that the flap valve of the silo / container is closed correctly, so that material does not continue flowing.

5.3.3.2 Connecting the conveying hoses

Figure 19: Connecting the conveying hose

1. Connect the conveying hose (2) to the C-coupling (1) of the injection hood.

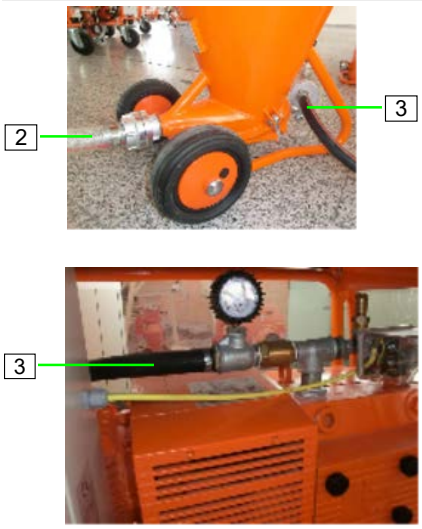


Figure 20: Connecting hoses

2. Connect the conveying hose (2) from the injection hood of the plastering machine to the carrier.
3. Connect the air hose for conveying air (3) from the rotary compressor to the carrier.

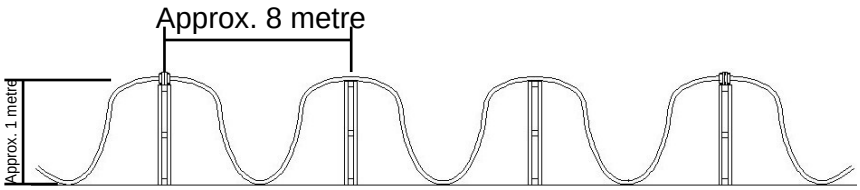
Figure 21: Connecting hoses

4. Connect the conveying hose (2) from the injection hood of the plastering machine to the carrier.
5. Connect the air hose for conveying air (3) from the rotary compressor to the carrier.

5.3.3.3 Installing conveying hoses

Do not install the conveyor hose such that it is level, in order to ensure an optimum work flow of the system in case of long conveyor stretches.

We therefore recommend the creation of elevations at the hose couplings, using positioned pallets for instance.



In case of a horizontal conveyor stretch, a minimum of three barrages per 25 metres should be positioned. This prevents the formation of blockages.

5.3.3.4 Opening the silo discharge flap valve

Figure 22: Opening the silo discharge flap valve

1. Open the silo discharge flap valve (1) before switching on the conveying system.

5.3.4 Bag filling the SILOMAT trans plus bag

Figure 23: Loading with bagged goods

Loading with bagged goods

1. The SILOMAT trans plus bag is filled with bagged goods via the bag filling hopper.

⚠ CAUTION

Danger of injury at the sack opener!

The sharp edges of the sack opener pose a risk of injury.

- Wear safety gloves.

5.4 Shutdown in case of emergency

Shutdown in case of emergency

In dangerous situations, machine movements have to be stopped as quickly as possible, and the power supply has to be disconnected.

In case of danger proceed as follows:

1. Switch off the main reversing switch immediately.
2. Secure the main switch against reactivation.
3. Inform responsible person at the operational site.
4. If necessary call for medical assistance and fire brigade.
5. Recover persons from the danger zone, initiate First Aid measures.
6. Keep access routes free for emergency vehicles.
7. If the severity of the emergency permits, inform the competent authorities.
8. Assign specialised personnel with the troubleshooting.

After the rescue operations

⚠ WARNING

Danger to life from premature reactivation!

On reactivation there is danger to life for all persons in the danger zone.

- Ensure that the danger zone is clear before switching the machine back on.
- Check the system before reactivation and ensure that all safety equipment is installed and functional.

9. Check the system before reactivation and ensure that all safety equipment is installed and functional.

5.5 Putting the machine into operation

5.5.1 Switching on the machine

Figure 24: Main reversing switch

1. Turn the main reversing switch to position "I".

NOTE

Check the direction of rotation, observer the arrow of the direction of rotation on the motor.

If the direction of rotation is wrong, the following steps must be carried out:

- The main reversing switch is locked in the "0" position by pushing the metal bracket (1) to the left or right in a pre-setting and the direction of rotation is thus selected.
- If the switch is to the left, it can be switched back to zero, but is blocked for the right position.
- A number is printed on the metal bracket, which indicates the position in which the switch is blocked.

5.5.2 Starting the conveying process

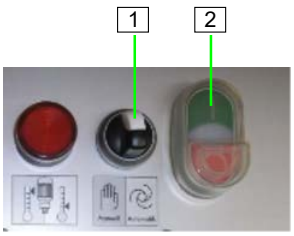


Figure 25: Starting the conveying process

1. Turn the rotary compressor selector switch (1) to the "Automatic" position.
2. Switch the system on by pressing the green pushbutton (2) control voltage "ON".
3. The SILOMAT system starts the conveying process.

NOTE

If the flap is closed, the conveying system goes into the empty blowing phase. The system removes residual material in the conveying hoses.

Operation

5.6 Problematic materials for conveying

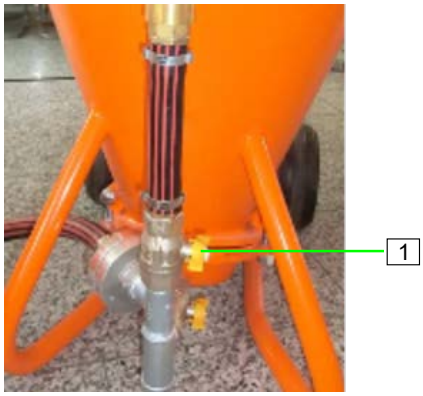


Figure 26: Bypass

NOTE

When material is used that is difficult to convey (e.g. exterior plastering), the conveying air must be set optimally using the taps.

By slightly opening the tap (1) leading upwards, part of the air is led directly into the outlet of the carrier (bypass system) and supports material conveying.

Rule of thumb:

The heavier the material, the more the tap (1) of the air line leading upwards must be opened.

5.7 Switching off the machine

Figure 27: Switching off the machine

1. Switch off the system by pressing the red pushbutton (1) control voltage "OFF".
2. Turn the rotary compressor selector switch (2) to the "0" position.
3. Turn the main reversing switch (3) to position "0".
4. Remove the power cable and hoses.

⚠ WARNING

When doing any kind of work on the SILOMAT system, you should make sure that the conveying system is depressurized and de-energized.

5.8 Action in case of power failure

Figure 28: Turn the main reversing switch to the "0" position

Turn the main reversing switch to the "0" position

1. Turn the main reversing switch to position "0".
2. Have the power supply connection checked by an expert.

NOTE

The SILOMAT system is equipped with a restart interlock. In case of a power cut, the system must be restarted by pressing the green pushbutton control voltage "ON".

Figure 29: Disconnecting the power supply

⚠ DANGER

Danger to life from unauthorised restarting!

When working with the machine, there is the risk that the energy supply is switched on without authorisation. This poses a danger to life for the persons in danger area.

- Before starting work, switch off all electrical power supplies and secure them against being switched back on again.

5.9 Ending work / cleaning the machine

5.9.1 Cleaning

- Clean the system daily at the end of work.
- Clean the outer machine parts only using a damp cloth.

NOTE

Water can enter sensitive machine parts!

- Before cleaning the machine cover all openings in which no water must enter for safety and functional reasons (e.g.: electric motors and control cabinets).
- Remover the covers completely after cleaning.

5.9.2 Secure against restarting

⚠ WARNING

Danger to life from unauthorised restarting!

When working with the machine there is the risk that the energy supply is switched on without authorisation. This poses a danger to life for the persons in danger area.

- Before starting work, switch off all electrical power supplies and secure them against being switched back on again.
- If the protective covers are removed for cleaning purposes, it is essential that they be properly reat-tached when work is finished.

Operation

5.9.3 End of work/interruption to work

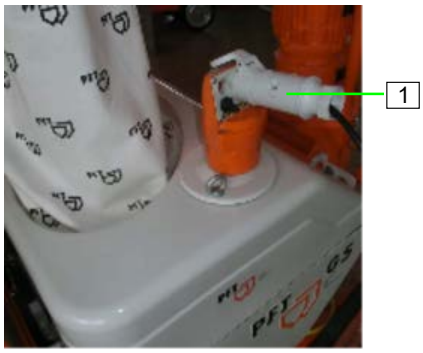


Figure 30: Remove control plug

1. Close the silo outlet valve.
2. Wait till the carrier is discharged completely.
3. Remove the control cable (1) from the injection hood.
4. Wait for the conveying process, until the conveying hoses are blown out.

NOTE

Pulling the plug from the control cable interrupts the material request from the SILOMAT system to the plastering machine. The SILOMAT system blows the conveying hoses until they are empty and then stops the conveying procedure.

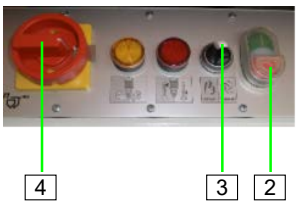


Figure 31: End of work

5. Switch off the system by pressing the red pushbutton (2) control voltage "OFF".
6. Turn the rotary compressor selector switch (3) to the "0" position.
7. Turn the main reversing switch (4) to position "0".
8. Remove the power cable and hoses at the end of work.

5.9.4 Closing the silo discharge flap valve

Figure 32: Closing the silo discharge flap valve

1. At the end of work, close the silo outlet flap (1).

5.9.5 Removing the carrier

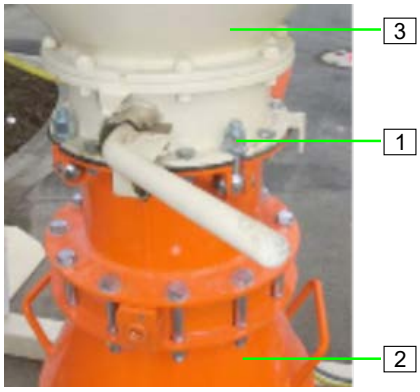


Figure 33: Removing the carrier

1. Loosen the collar nuts (1).
2. Remove the carrier (2) from the silo / container (3).

NOTE

Ensure that the flap valve of the silo / container is closed correctly, so that material does not continue flowing.

5.9.6 Cleaning the conveying system

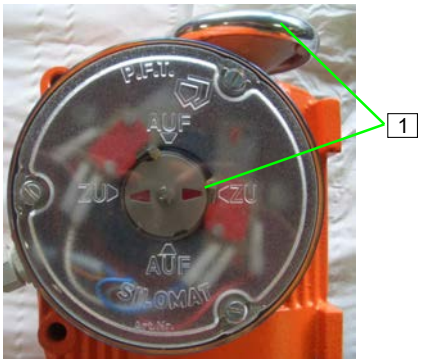


Figure 34: Actuator

1. Turn the main switch to position "0".
2. Close the actuator by turning the hand valve (1) to the "Off" position.

⚠ WARNING

When doing any kind of work on the SILOMAT system, you should make sure that the conveying system is depressurized and de-energized.

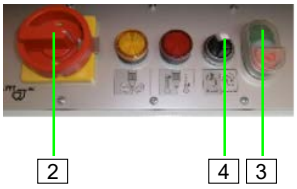


Figure 35: Cleaning

3. Turn the main reversing switch (2) to position "I".
4. Press the green pushbutton (3) control voltage "ON".
5. Turn the rotary compressor selector switch (4) to the "Manual" position.
6. Blow out the carrier and the conveying hoses.
7. Turn the main reversing switch (2) to position "0".

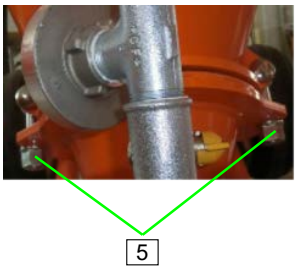


Figure 36: Opening the nuts

8. Remove the base of the carrier by opening the two collar nuts (5).

Operation

5.9.6.1 Cleaning the emulsifier rubber

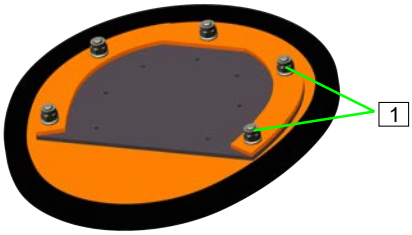


Figure 37: Cleaning the emulsifier rubber

1. Clean the emulsifier rubber and replace if necessary.

NOTE

When installing the membrane, make sure that the lock nuts (1) point upwards.

5.10 Reaction in the event of faults

Reaction in the event of faults

The following applies as a general rule:

1. In the event of faults presenting immediate danger to persons or property, activate the emergency OFF function immediately.
2. Determine cause of the fault.
3. If the rectification of faults requires works in the danger zone, switch off the system and secure against restarting.
4. Inform the manager on site immediately about the fault.
5. Depending on the type of fault, commission authorised skilled personnel or rectify the fault yourself.

The following fault table gives information on who is authorised to rectify the fault.

5.10.1 Safety

Personnel

- The work for rectification of faults described here can be carried out by the operator, unless marked otherwise.
- Some works must be carried out only by specially trained skilled personnel or exclusively by the manufacturer. Information on this can be found in the description of the individual faults.
- Work on electrical systems must always only be carried out by qualified electricians.

Personal protective equipment

The following protective equipment has to be worn for all maintenance work:

- Protective clothing
- Protective goggles
- Protective gloves
- Safety shoes

5.10.2 Faults

The following chapter describes possible causes for faults and the activities carried out for their rectification.

In case faults occur frequently, shorten the maintenance intervals in accordance with the actual load.

Contact your dealer if malfunctions occur that cannot be solved using this manual.

5.10.3 Fault displays

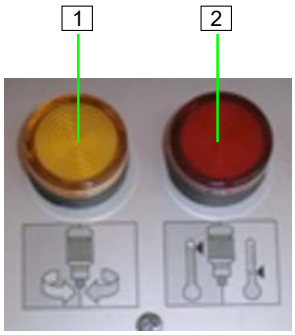


Figure 38: Fault displays

The following installation indicates faults:

Pos.	Light signal	Description
1	Yellow control lamp	Lights up if the motor's direction of rotation is wrong. → Change direction of rotation Lights up if a phase is missing in the supply line.
2	Red control lamp	Lights up on motor protection switch fault. → Check the motor protection switch

Operation

5.10.4 Table of faults

Fault	Possible cause	Troubleshooting	Rectification by
Machine does not start current	Power supply not in order	Repair power supply	Service technician
	Main reversing switch not switched on	Switch on the main reversing switch	Operator
	RCD was triggered	Reset RCD	Service technician
	Control lamp for direction of rotation (yellow) lights up	Change direction of rotation, push the metal bracket at the main reversing switch in the opposite direction	Operator
	Motor protection switch triggered	Turn motor protection switch in control box to position 1	Service technician
	Green pushbutton for control voltage "ON" is not pressed	Press green pushbutton for control voltage "ON"	Operator
	Contactor defective	Change contactor	Service technician
	Fuse defective	Change fuse	Service technician
Program does not start	Micro fuse on the transformer faulty	Replace micro fuse	Service technician
	Control cable, level sensor, compressor selector switch defective	Check parts and replace if necessary	Service technician
	Conveying time or requirement defect	Check parts and replace if necessary	Service technician
	Limit switch on the actuator faulty or set incorrectly	Replace limit switch or re-adjust it	Service technician
Compressor runs at all times	Compressor selector switch is in the "Manual" position	Switch to the "Automatic" position	Operator
	Conveying hose kinked	Straighten conveying hose	Operator
	Conveying hose clogged	Remedy hose blockage	Operator
	Conveying time relay defect	Replace K8	Service technician
	Level sensor or indicator cable faulty	Replace parts	Operator
	Filter hoses on the plastering machine hidden or sealed	Knock out the filter and replace if necessary	Operator
Compressor becomes too hot	Fan wheel faulty	Replace fan wheel	Service technician
	Air-intake filter contaminated	Clean the filter	Operator
Program is running, compressor is not	Cable, motor protection switch or motor faulty	Replace parts	Service technician
	Conveyor hose laid incorrectly	Create elevations, e.g. pallets	Operator
	Pressure control set incorrectly	Set the pressure switch correctly	Service technician

Fault	Possible cause	Troubleshooting	Rectification by
Not enough material in the machine	Material does not flow from the silo	Connecting the vibrating unit	Operator
	Silo discharge flap valve is closed	Opening the silo discharge flap valve	Operator
	Level sensor too long	Attach the rotary paddle at a higher position	Operator
Red control lamp, fault lights up	Fill time is too short	Check K5	Service technician
	Error in the sequence program	Check the program setting	Service technician

5.10.5 Removal of hose blockage

⚠ WARNING

Danger from discharged material!

Never detach hose couplings if the feed pressure has not been fully released! Material to be conveyed can be discharged under pressure and cause injuries particularly to the eyes.

Persons commissioned with the cleaning of clogged hoses have to wear personal protective equipment (protective goggles, gloves) for safety reasons, and must position themselves in such a way that they cannot be hit by discharged material. Other persons have to clear the area.

NOTE

Additionally required personal protective equipment:

- Face guard

Implementation by operator

NOTE

If there are faults, close the silo outlet valve (1).

Figure 39: Closing the silo discharge flap valve

Operation

Figure 40: Switching off the machine

Figure 41: Relieving the pressure

Figure 42: Blow out the conveying hoses

1. Turn the main reversing switch (2) to position "0".
2. Turning the hand valve (3) on the actuator opens the flap slightly so that the pressure in the silo / container can escape.
3. Afterwards, close the flap again by turning the hand valve.
4. Open the conveying hoses close to the blockage carefully.
5. Loosen the compacted material and remove it from the hose by shaking the hose and tapping the coupling on a smooth base (wood or something similar).
6. Then connect the conveying hoses again and make the system ready for operation (connect the connection cable and switch on the main reversing switch).
7. Turn the rotary compressor selector switch (4) to the "Manual" position. Let the compressor run until the hoses are empty.
8. Now turn the rotary compressor selector switch (4) to the "Automatic" position.

6 Maintenance

6.1 Safety

Personnel

- The maintenance works described here can be carried out by the operator, unless marked otherwise.
- Some maintenance work must only be carried out by specially trained technical personnel or exclusively by the manufacturer.
- Work on electrical systems must always only be carried out by qualified electricians.

Basic information

⚠ WARNING

Risk of injury due to improperly carried out maintenance work!

Improper maintenance can lead to severe injuries or considerable property damage.

- Prior to starting the works ensure that there is enough space to carry out the works.
- Ensure order and safety at the assembly site! Unattached components or tools left lying around or stacked on one another can cause accidents.
- If components have been previously removed, ensure that they are mounted again correctly, reattach all fastening elements and adhere to the specified screw tightening torques.

Electrical system

⚠ DANGER

Danger to life from electric current!

Contact with live components can lead to death or serious injury. Live electrical components can move uncontrollably and cause serious injury.

- Switch off the energy supply before starting any work and secure against restarting.

High temperatures

⚠ WARNING

Risk of injury due to high temperatures!

High temperatures are generated on the compressor due to air compression.

Attention: Risk of burns

- Allow the compressor to cool down before disassembling the parts.

Maintenance

6.1.1 Remove connection cable

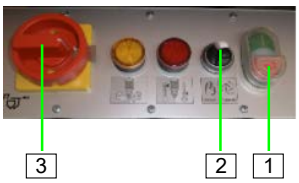


Figure 43: Maintenance

Figure 44: Disconnecting the power supply

Electrical system

⚠ WARNING

When doing any kind of work on the SILOMAT system, you should make sure that the conveying system is depressurized and de-energized.

1. Switch off the system by pressing the red pushbutton (1) control voltage "OFF".
2. Turn the rotary compressor selector switch (2) to the "0" position.
3. Turn the main reversing switch (3) to position "0".
4. Remove the power cable and hoses.

⚠ WARNING

Danger to life from electric current!

There is danger to life if you come in contact with live parts. Activated electrical components can carry out uncontrolled movements and cause serious injuries.

Therefore:

- Switch off the energy supply before starting any work and secure against restarting.
- Disconnect the power supply by removing the connection cable.

Secure against restarting

⚠ WARNING

Danger to life from unauthorised restarting!

When working with the tool, there is the risk that the energy supply is switched on without authorisation. This poses a danger to life for the persons in danger area.

Therefore:

- Switch off all power supplies before starting any work and secure against restarting.

6.2 Environmental protection

Environmental protection

Observe the following notes on environmental protection when carrying out maintenance works:

- Remove the discharged, exhausted or surplus grease at all greasing points that are lubricated manually and dispose of in accordance with the local applicable regulations.
- Collect used oil in suitable containers and dispose of it according to the applicable local regulations.

6.3 Maintenance plan

The following paragraphs describe the maintenance works required for an optimal and trouble-free operation.

In the event that increased wear is detected during regular checks, the required maintenance intervals have to be shortened according to the actual signs of wear.

Should you have any queries regarding maintenance works and intervals contact the manufacturer, see back page for service address.

The maintenance is limited to a few checks.

Thorough cleaning after use is the most important maintenance.

Interval	Maintenance work	To be carried out by
Weekly	Clean the filter cartridges	Operator
After 1,000 operating hours	Lubricate the bearings	Operator
Yearly	Check the slider width	Service technician

6.4 Maintenance work

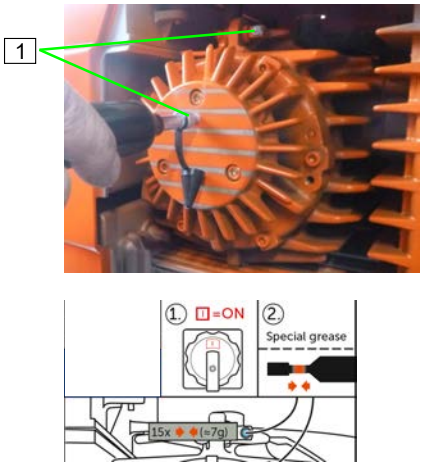
In the event that increased wear is detected during regular checks, the required maintenance intervals have to be shortened according to the actual signs of wear.

Should you have any queries regarding maintenance works and intervals contact the manufacturer, see back page for service address.

6.4.1 Implementation by a service technician

A service technician is responsible for the assembly and commissioning of machines. In addition, service technicians carry out maintenance and repair work. If work is required on the control box or on other electrical parts, the service technician must have completed vocational training as an electrician.

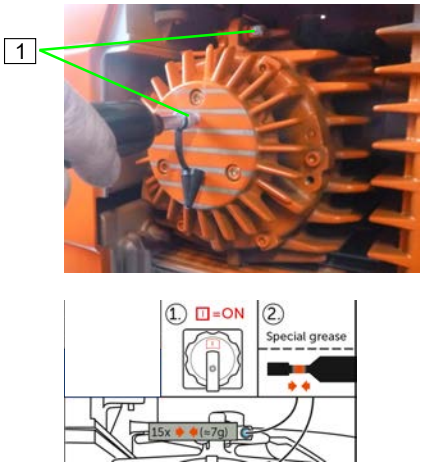
6.4.2 Lubricate KDT 3.105



1. Grease nipples (1) are attached to the housing and to the side cap.
2. Lubricate the bearings after 1,000 operating hours in each case when the rotary compressor is running.

Figure 45: Lubrication

6.4.3 Lubricate KDT 3.145



1. Grease nipples (1) are attached to the housing and to the side cap.
2. Lubricate the bearings after 1,000 operating hours in each case when the rotary compressor is running.

Figure 46: Lubrication

6.4.4 Remove the side cap

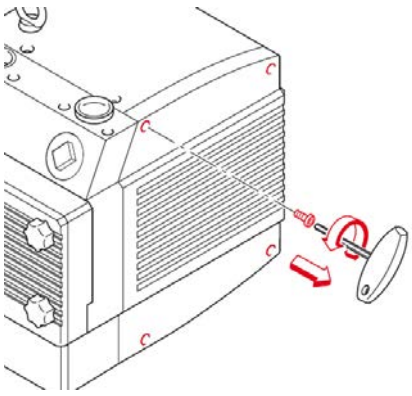


Figure 47: Unscrew cover

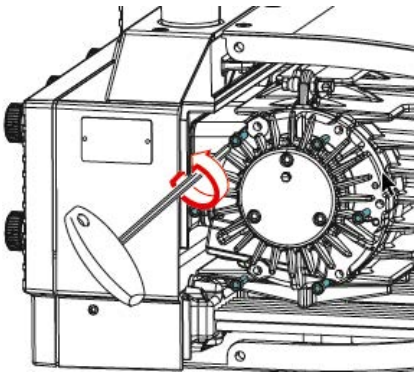


Figure 48: Loosen side cover

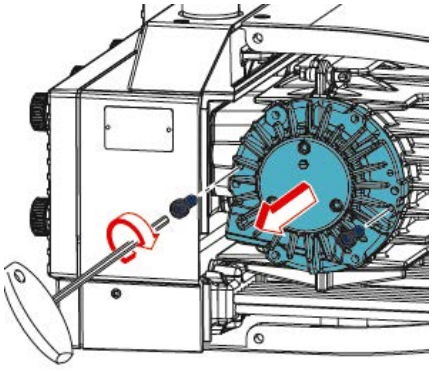


Figure 49: Remove side cap

6.4.4.1 Slider width KDT 3.105

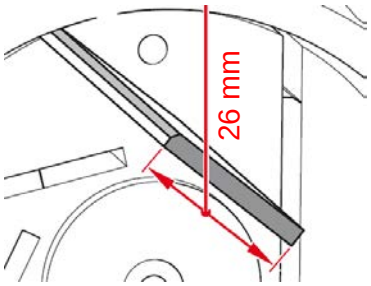


Figure 50: Minimum slider width

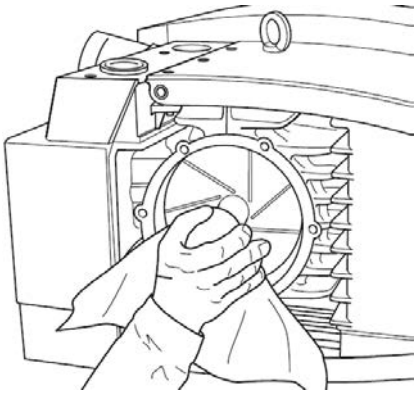


Figure 51: Clean housing

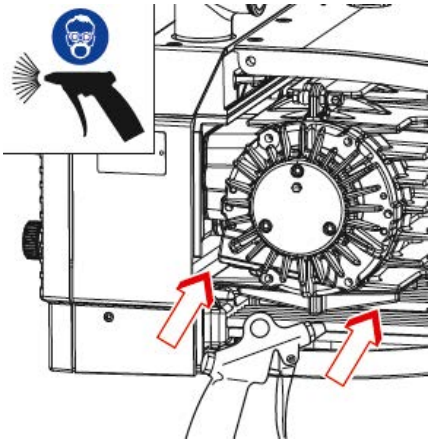


Figure 52: Mount side cover

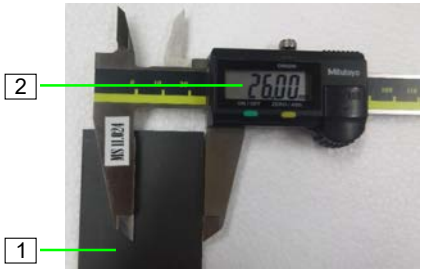


Figure 53: Check the slider width

Implementation by a service technician

Check the slider width annually:

⚠ CAUTION

Damage to the rotary compressor due to broken sliders!

The minimum width of the slider (1) of 26 mm (2) must not be undershot.

1. When replacing the slider, blow the housing with dry air.
2. The volume of grease consumed during assembly must be replenished in the ball bearing.

6.4.4.2 Slider width KDT 3.145

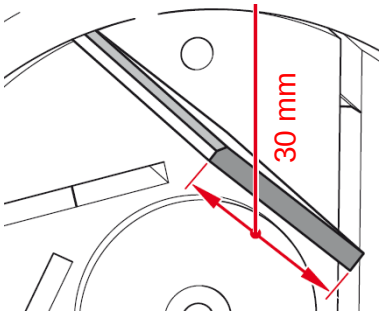


Figure 54: Minimum slider width

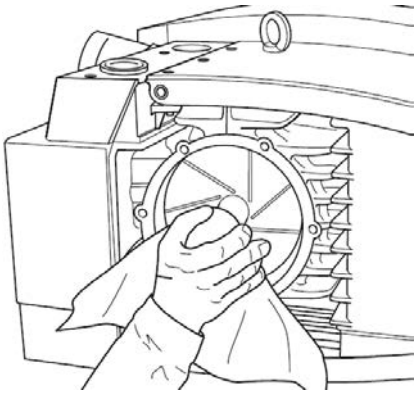


Figure 55: Clean housing

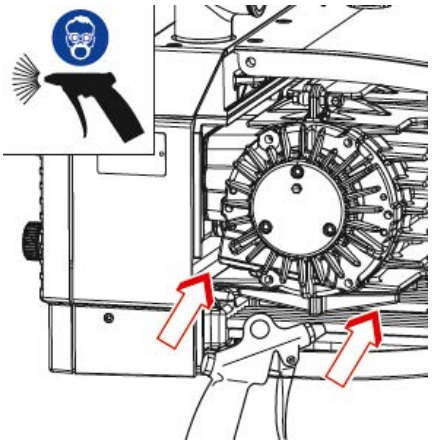


Figure 56: Mount side cover

Maintenance

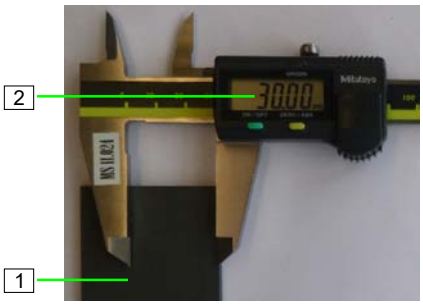


Figure 57: Check the slider width

Implementation by a service technician

Check the slider width annually:

⚠ CAUTION

Damage to the rotary compressor due to broken sliders!

The minimum width of the slider (1) of 30 mm (2) must not be undershot.

1. When replacing the slider, blow the housing with dry air.
2. The volume of grease consumed during assembly must be replenished in the ball bearing.

6.4.4.3 Replace sliders

If the sliders are damaged or have fallen below the minimum width, they must be replaced:

1. Remove old and worn sliders.
2. Blow out housing with dry air.
3. Replenish used grease in roller bearing.
4. Insert new sliders.

⚠ CAUTION

Damage to rotary compressor due to incorrect installation!

Incorrect installation of the sliders can cause damage to the sliders and the rotary compressor!

1. When installing the new sliders, observe the installation position of the chamfer (1) in combination with the direction of rotation of the rotary compressor (2).

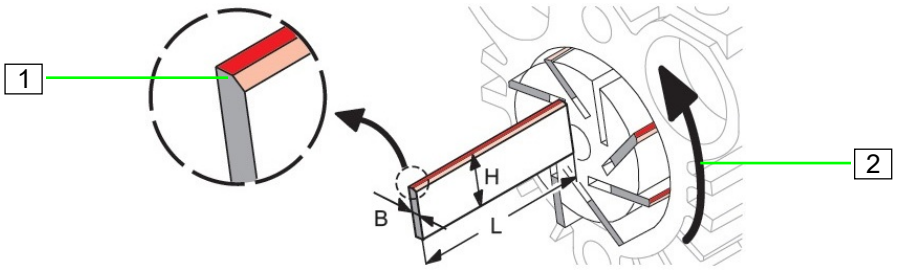


Figure 58: Observe installation position

6.4.5 Clean the filter

Figure 59: Remove the filter cover

1. Loosen the knurled screws on the filter cover and remove the filter cover (1).

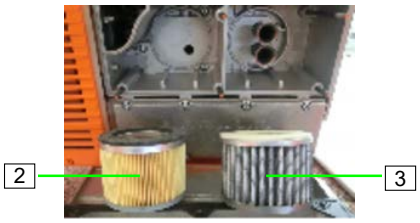


Figure 60: Filter cartridges

2. Remove the filter cartridges C1112/2 (2) and filter cartridge polyester (3) from the filter housing.

NOTE

Clean the filter cartridges weekly!

If the filter cartridges are highly contaminated, the ventilation system performance reduces and the compressor is overheated.

Figure 61: Clean the filter cartridges

3. Blow through the filter cartridges with dry compressed air from inside to outside.
4. Replace damaged or heavily contaminated filter cartridges.

Figure 62: Clean the filter housing

5. Blow the filter housing with dry compressed air.
6. Use cleaned or replaced filters and screw the filter cover closed.

NOTE

When installing the filter, ensure that it is aligned and fit correctly.

6.4.6 Clean the cooler

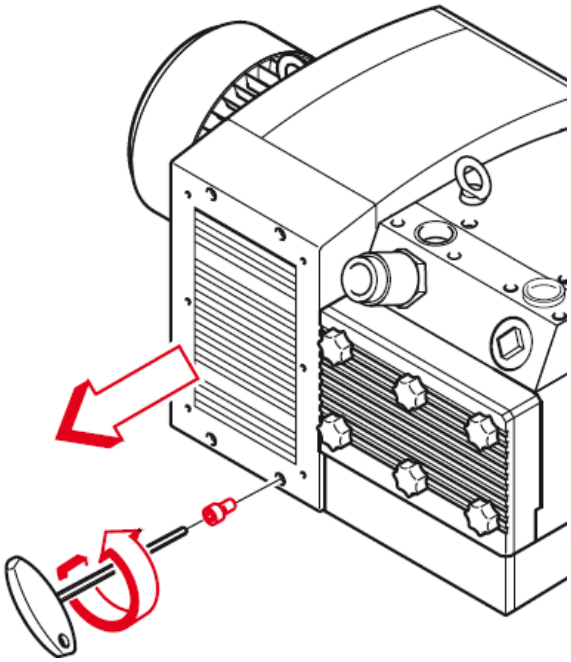


Figure 63: Unscrew fan cover

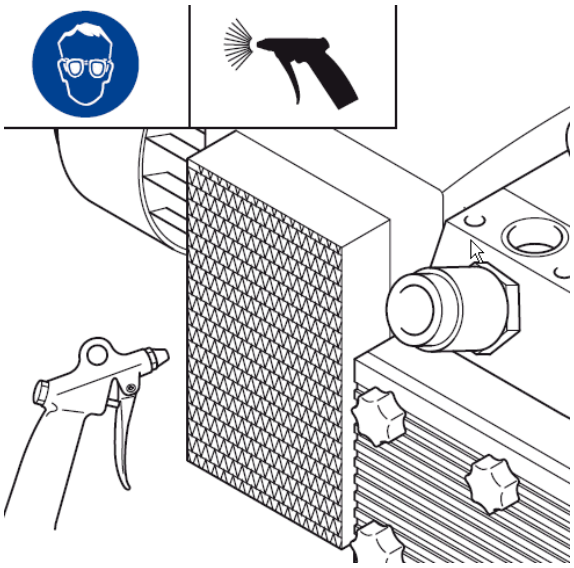


Figure 64: Blow out cooler

6.4.7 Pressure control

Figure 65: Pressure switch

- The machine switches on at 0.8 bar.

NOTE

The pressure control is fitted as standard. The conveying time is set to approx. 18 or 30 seconds when the pressure control is connected. The conveying process is ended only when the total air resistance has fallen below the setting value "OFF" (i.e. the hose is empty).

By means of this equipment, lower conveyance times or conveyance times optimally adapted to site are achieved, the possibility of blockage formation is reduced and longer conveyance routes are overcome.

6.4.7.1 Monitor the pressure control

1. Bend the black pressure hose.
2. Let the set conveying time elapse.
3. Open the hose slowly.
4. The machine must be switched off via pressure control when the pressure drops.

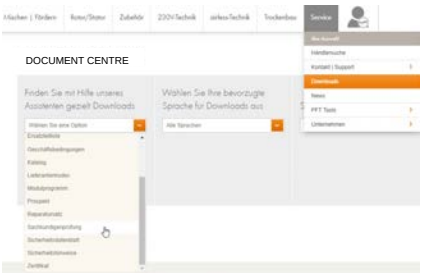
6.5 Actions after completed maintenance

After finishing the maintenance works and prior to switching on the machine, the following steps have to be carried out:

1. Check all previously loosened screw connections for secure fit.
2. Check if all previously removed safety systems and covers are properly reinstalled.
3. Ensure that all tools, materials and other equipment used have been removed from the work area.
4. Clean the work area and remove any spilled materials such as liquids, processing material or similar.
5. Ensure that all safety systems of the installation work perfectly.

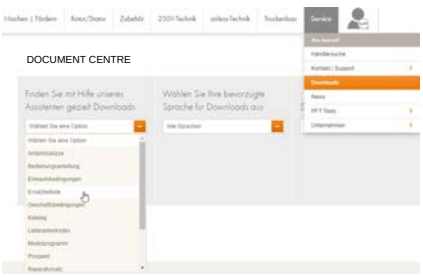
6.6 Periodic inspection/expert inspection

- Construction machinery has to be inspected for safe working condition in accordance with the operating conditions and the operational requirements as needed, however at least once a year by an expert.
- Pressure vessels have to undergo the prescribed expert inspections.
- The inspection results have to be documented and kept at least until the next inspection.



- The documents for the expert inspection can be found on the internet at www.pft.net.
- Open the Document Centre under Service → Downloads.
- In this area, select the expert inspection category to access all relevant inspection documents.

6.7 Spare parts lists



The spare parts lists for the machine can be found on the Internet at www.pft.net.

- Open the Document Centre under Service → Downloads.
- In this area, select the spare parts list category.
- In addition, select the machine you are looking for.

Maintenance

6.7.1 Accessories

Recommended accessories/equipment can be found in the PFT machine and equipment catalogue or under www.pft.net

7 Disassembly

After the useful service life has been reached, the device has to be dismantled and disposed of in an environment-friendly manner.

7.1 Safety

Personnel

- Disassembly must be carried out by specially trained technical personnel only.
- Work on the electrical system must be carried out by qualified electricians only.

Basic information

⚠ WARNING

Risk of injury in case of improper disassembly!

Stored residual energies, sharp components, points or edges at and inside the device or on the required tools might cause injuries.

Therefore:

- Prior to starting the works ensure that there is sufficient space.
- Carefully handle components with sharp edges.
- Ensure order and cleanliness at the working place! Loose components and tools on top of one another or lying about pose potential accident risks.
- Dismantle components correctly. Pay attention to partly high dead weight of the components. If required, use lifting equipment.
- Secure components that they do not fall down or topple over.
- In case of doubt, consult the dealer.

Electrical system

⚠ DANGER

Danger to life from electric current!

Contact with live components can lead to death or serious injury. Activated electrical components can carry out uncontrolled movements and cause serious injuries.

Therefore:

- Prior to beginning the disassembly, switch off the power supply and fully disconnect it.

7.2 Disassembly

When decommissioning, clean the device and dismantle it according to the applicable work safety and environmental protection regulations.

Prior to starting the disassembly:

- Switch off device and secure against restarting.
- Disconnect the entire energy supply from the machine and discharge the residual energy.
- Remove operating and auxiliary materials as well as residual processing materials and dispose of them in an environmentally sound manner.

8 Disposal

Provided no return or disposal agreements have been made, recycle the disassembled parts:

- Scrap metals.
- Recycle plastic elements.
- Dispose of remaining components, sorted according to the type of material.

NOTE

Environmental damage due to incorrect disposal!

- Electrical scrap and components, lubricants and other process materials are subject to special guidelines and may only be disposed of by approved waste disposal specialists!

Local authorities and waste disposal specialists can provide more details on the correct disposal of materials.

PFT - ALWAYS AT YOUR SITE

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