

Operating Instructions

Conveyor Hopper SSP 5

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Edition: 04/01

These operating instructions are for:*

(* Please fill in personally)

Serial number: _____

Built in: _____

Date of delivery: _____

Number of delivery: _____

Date of commissioning: _____

Location: _____

Group of machines: _____

SM3-625

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1. Safety instructions



These safety instructions apply to all persons within the range of action of the equipment.

Please inform all persons within the range of action of the equipment of the direct and indirect hazards connected with the equipment.

These operating instructions are to be used by all persons assigned activities connected with the equipment.

Knowledge of the English language is prerequisite.

Ensure in each case that the operating personnel are familiar with the operating instructions and the function of the equipment.

Observe the safety instructions of the connected conveying system.

1.1. Warnings and symbols

The following warnings and symbols are used in these operating instructions:



This symbol indicates danger to life! Fatal or serious injury is possible if the corresponding instructions, regulations or warnings are not observed.



This symbol indicates that serious injury is possible if the corresponding instructions, regulations or warnings are not observed.



This symbol indicates that extensive damage to equipment is possible if the corresponding instructions, regulations or warnings are not observed.



This symbol indicates information important for becoming familiar with the equipment, i.e. technical correlations.



This symbol indicates that a technical term is explained at this point.

1.2. Explanations and information

Various terms and designations are used frequently in these operating instructions to ensure clarity. Therefore please note that the terms used in the text stand for the corresponding explanations listed below.

- **Equipment**
“Equipment” can mean an individual unit, a machine or an installation.

- **Operating personnel**
The “operating personnel” are persons operating the equipment on their own responsibility or according to instructions (minimum age: 16).

- **Operator**
The “operator” of the equipment (production manager, foreman, etc.) is the person responsible for all production sequences. The operator instructs the operating personnel of what is to be done.

- **Operating instructions**
The “plant operating instructions” describe the interaction of the equipment, production sequences or methods. The plant operating instructions must be compiled by the operator of the equipment.

- **Equipment foreman**
When several operating personnel work on one machine, the “equipment foreman” coordinates the sequences. The equipment foreman must be appointed by the operator.

- **Trained personnel**
“Trained personnel” are persons who, due to their training, are authorized to carry out the required work in good practice.

1.3. For your safety

- It is absolutely necessary that you observe the operating instructions for the corresponding conveying system.
- The device is intended exclusively for conveying plastic granules and regrind. Any other usage is not permitted.
- This device is not suitable for processing foods.
- Before beginning maintenance work, set all compressed air piping on the device at zero pressure. Danger of accidents!
- The device may only be operated if all corresponding components have been properly connected and are in accordance with the relevant regulations.

1.4. For the safety of the equipment

- It is absolutely necessary that you observe the operating instructions for the corresponding conveying system.
- For the operation of the hoppers, a compressed-air supply is necessary.
- Never set the operating pressure of the hoppers at more than 6 bar (87.02 PSI) (system overpressure).
- Install the hoppers in such a way that the outlet flap is hinged in a right angle to the direction of movement of the machine.
- Make sure that all plugs are connected properly.
- Observe the carrying capacity of the machine flange.

2. Installation instructions



These installation instructions are intended for persons with skills in electrical and mechanical areas due to their training, experience and received instructions.

Personnel using these installation instructions must be instructed in the regulations for the prevention of accidents, the operating conditions and safety regulations and their implementation.

Ensure in each case that the personnel are informed.

The installation instructions provided in the corresponding operating instructions apply for all connected equipment.

Observe safety regulations with regard to lifting gear handling

All installation work must be carried out with the equipment disconnected from electrical power and compressed air supply.



For installation work taking place at heights of over approx. 1829mm (6 ft.), use only ladders or similar equipment and working platforms intended for this purpose. At greater heights, the proper equipment for protection against falling must be worn.

Use only suitable lifting gear which is in proper working order and load suspension devices with sufficient carrying capacity. Do not stand or work under suspended loads!

Use suitable workshop equipment.



Install the equipment such that all parts are easily accessible; this facilitates maintenance and repair work.

2.1. Transport

For transport, only the appropriate lifting gear should be used (e.g. fork lift or workshop crane).



Observe the carrying capacity of the lifting gear.

Observe the safety instructions for the handling of lifting gear.

2.2. Set-up

The arrangement of the hopper loaders may vary depending on the type of device to be conveyed on and the material used. Fastening onto fixed machine throats is provided by means of strap retainers. However, additional support of the hopper loader is necessary if the devices are not sufficiently capable of bearing the load.

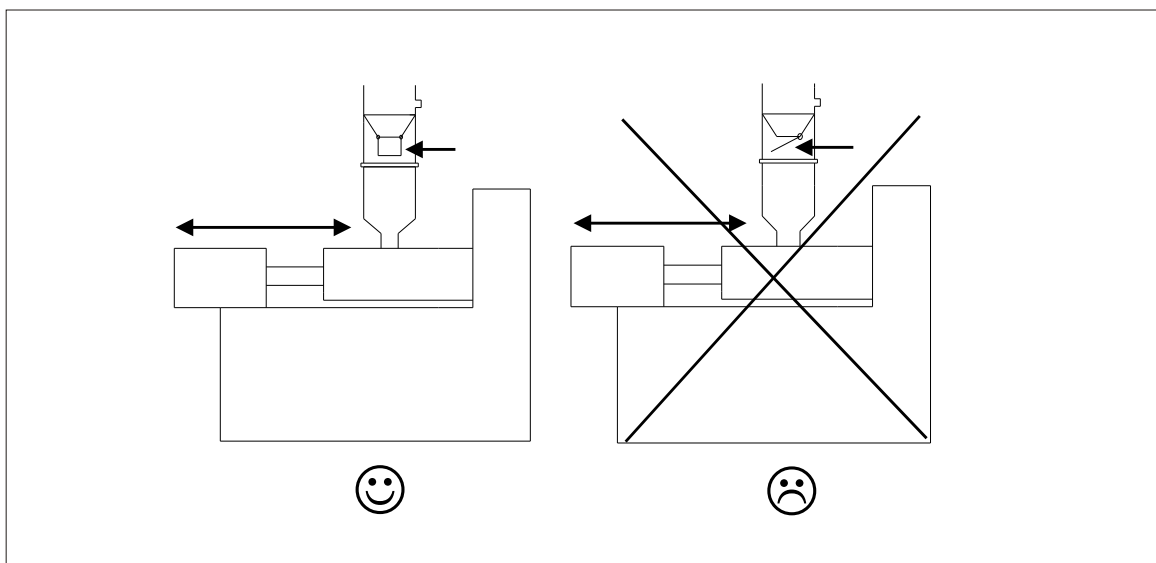
Mount the hopper loader in such a way that the outlet flap swings in a right-hand angle to the direction of machine movement. Please check during assembly that the admissible bearing loads are not exceeded.

Please check that all connecting points are tight to ensure that the conveying performance is not impaired.

It should moreover be observed, particularly if custom produced connecting parts are used, that the material discharged from the hopper loader must neither get into the open nor must it clog the filter surfaces (observe angle of repose!).



Do not excessively load inlet nozzle of hopper loader, remove hose separately, if necessary!



Assembly

2.3. Compressed-air supply

For operating the control valves and the cleaning unit, a compressed-air supply is necessary.



Depressurize compressed-air supply lines which must be opened.



Compressed air must be dewatered, dustfree and oilfree.

Install a maintenance unit if required.

Adjust pressure to a max. value of 6 bar (87.02 PSI) (system overpressure).

Check compressed-air piping for correct installation and assembly.

Check fittings, length and quality of the hose connections for agreement with requirements.

The operating pressure is 5-6 bar (72.52-87.02 PSI) (system overpressure).

Check the compressed-air supplied by the plant's supply network.

Adjust compressed-air pressure to 5-6 bar (72.52-87.02 PSI) (system overpressure).

Connect the unit to the plant's supply network by means of a hose.

2.4. Electrical connection



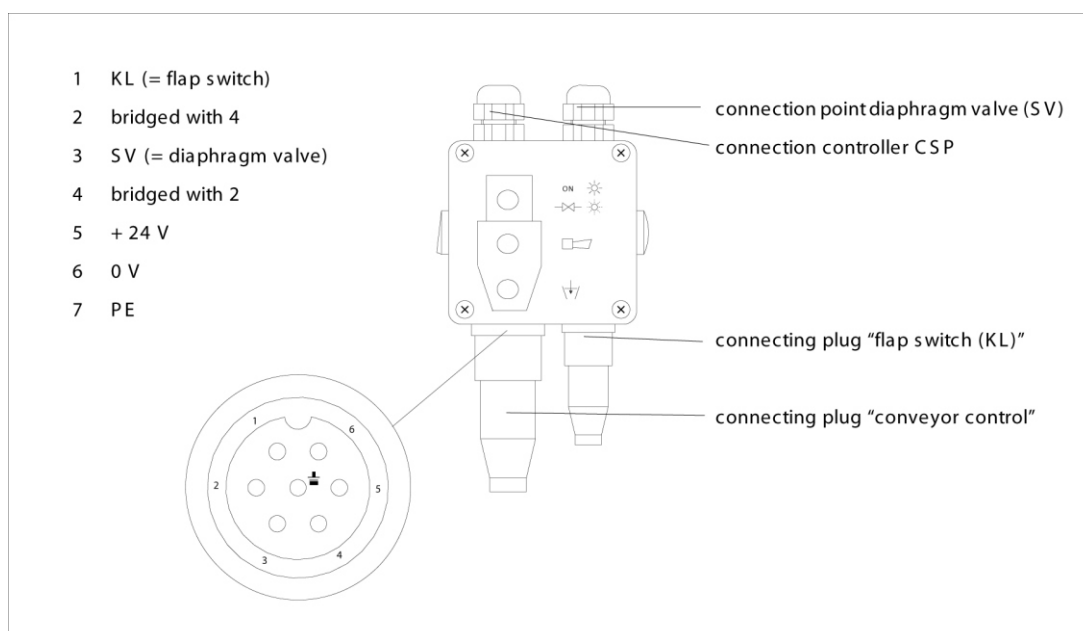
The electrical connection may only be carried out by trained personnel.

Other persons are not permitted to carry out the electrical connection.

The rules of the local electricity board must be observed.

Before beginning the electrical connection, make sure that the mains voltage and the power frequency are in accordance with the data on the name plate of the device.

All work may only be carried out when the unit is at zero voltage and at zero pressure.



Connection housing hopper

3. Functional description



This functional description is intended for all operating personnel of the equipment.

Prerequisite for this functional description is general knowledge of conveying units.

Ensure in each case that the operating personnel are sufficiently informed.

3.1. General

The conveyor hopper is used for the automatic conveyance of freely flowing plastic granules, regrind and powder. The hopper can only function in connection with a multi-station vacuum conveying system.

The conveyor hopper functions according to the principle of suction conveyance. A high-performance turbine provides for the vacuum that is required to convey the material into the separator.

In the separator the material is separated from air by several filter cartridges. After the conveying time is finished the turbine is switched off and the material emptied.

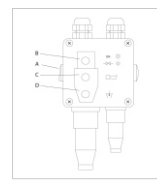
The automatic filter cleaning takes place by adjustable compressed-air shocks (pulse duration).

On the hopper, there is a separate on/off switch (A) and a function controlling device which indicates the following operational modes:

(B): lamp on - hopper switched on at the on/off switch (A); lamp flashes - the hopper is conveying

(C): lamp flashes - error

(D): lamp is on - hopper signals lack of material



Connection housing hopper



The filter-cleaning process takes place during the conveying process.

The filter cartridges are cleaned in adjustable intervals (time interval).

3.2. Controller SSP

The setting for the conveying time and the line clear time are made via the keys (A1: “change-over” key, A2: “arrow key”) on the front of the control system. The values which have been set will be displayed on the display (B). The values which have been set are maintained after the machine has been shut off.

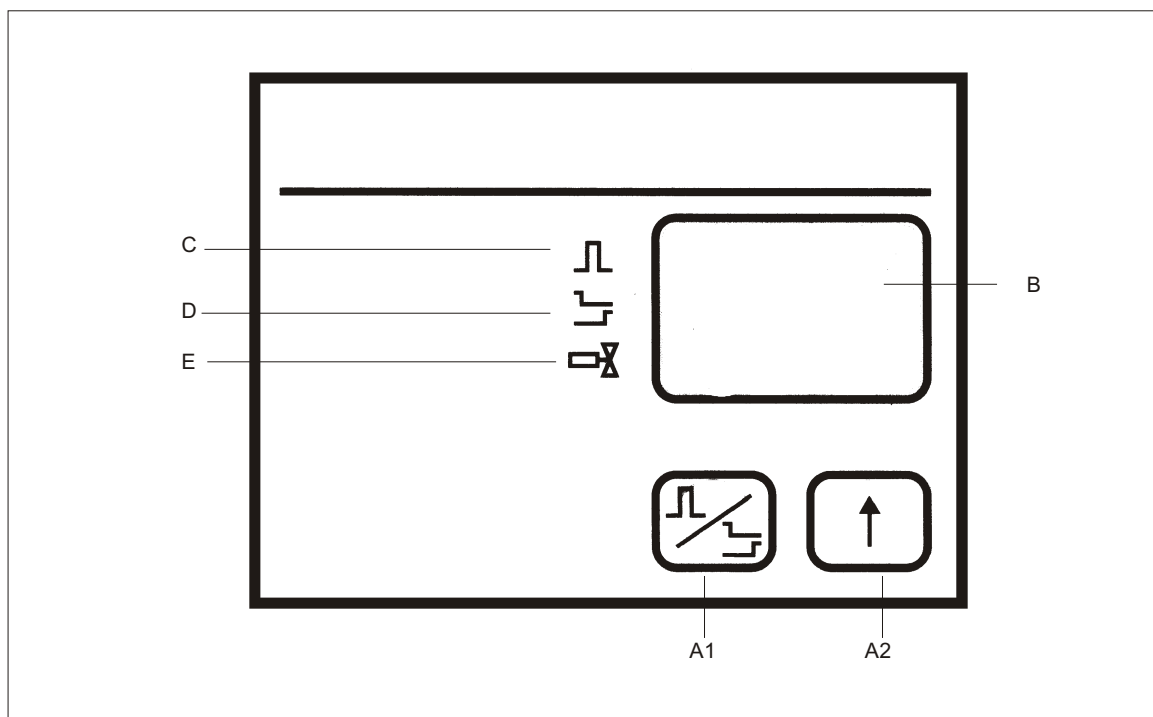
3 LEDs indicate the respective modes of operation: pulse duration (C), time interval (D), without function (E).



The pulse duration can be set to 0.5, 1.0 or 1.5 seconds.

The time interval can be set from 5 to 20 seconds.

When the unit is switched on all LEDs blink and the software version is displayed.



Controller SSP

4. Putting into operation



This chapter is intended for operating personnel.

Prerequisite for this chapter is general knowledge of the operation of conveying units.

Also prerequisite for this chapter is that the functional description has been read and understood.

Ensure in each case that the operating personnel are sufficiently informed.



Observe the manual of the conveying system.

Make sure that the On/Off switch of the hopper loader connection housing is in position "1".

4.1. Setting the controller SSP



It is only possible to set the pulse duration / time interval when the unit is not conveying any material.

Setting the pulse duration

Press the “**arrow key**”.

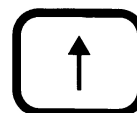


The pulse duration (= duration of a cleaning pulse) which was last selected appears in the display.

0.5, 1.0 or 1.5 seconds may be set for the pulse duration.

Setting the time interval

Press the “**arrow key**” and the “**change-over**” key.



The time interval which was last selected appears in the display.

5-20 seconds may be set for the time interval between 2 cleaning pulses.

4.2. Alarm Messages displayed on the controller SSP

If a disturbance occurs in the unit, an alarm message will be issued.



An "E" appears in the display and an error number.

"E2"

If the control system becomes too hot during operation $>70^{\circ}\text{C}$ (158°F) the "E2" alarm message is displayed and the unit is switched off.

Ensure that the control system is sufficient cooled.



The unit starts automatically after the cooling down phase.

5. Maintenance



This chapter is intended for persons with skills in electrical and mechanical areas due to their training, experience and received instructions.

Personnel using the instructions in this chapter must be instructed of the regulations for the prevention of accidents, the operating conditions and safety regulations and their implementation.

Ensure in each case that the personnel are informed accordingly.

For maintenance work taking place at heights of over approx. 1829 mm (6 ft.), use only ladders or similar equipment and working platforms intended for this purpose. At greater heights, the proper equipment for protection against falling must be worn.

Use only suitable lifting gear which is in proper working order and load suspension devices with sufficient carrying capacity. Do not stand or work under suspended loads!

Ensure that the electric motors/switch cabinets are sufficiently protected against moisture.

Use only suitable workshop equipment.

Before starting maintenance work, appoint a supervisor.

Inform the responsible personnel before maintenance work on the system is started.

Never operate the equipment when partially dismantled.

All maintenance and repair work not described in this chapter may only be carried out by Sterling service personnel or authorized personnel (appointed by Sterling).



Disconnect the equipment from mains supply before starting maintenance procedures to ensure that it cannot be switched on unintentionally.

Depressurize all compressed air piping of the equipment before starting maintenance work.



Please observe the maintenance intervals.

Before starting maintenance work, clean the equipment of oil, fuel or lubricants.

Ensure that materials and incidentals required for operation as well as spare parts are disposed of properly and in an environmentally sound manner.

Use only original Sterling spare parts.

Keep record of all maintenance and repair procedures.

5.1. Maintenance intervals

Daily:	check warning signs on equipment for good legibility and completeness.
Weekly:	check the maintenance unit check the operating pressure in the factory ductwork system (max. 6 bar system overpressure)
Monthly:	check the sealings on the filter cartridges (according to the accumulation of dust)
Every six months:	check filter contamination, if necessary clean or replace the filter cartridges check all electrical and mechanical connections for proper fit check the settings of the level probes (if available) check the sealing ring on the locking flap check the sealing ring on the outlet flap
Yearly:	replace the sealing ring on the locking flap replace the sealing ring on the outlet flap



The given maintenance intervals are average values.

Check whether in your individual case the maintenance intervals must be shortened.

5.2. Replacing the nonreturn valve sealing ring



Stop the conveying procedure.

Switch off the hopper by means of the on/off switch on the connection housing.

Switch off the conveying control by means of the main switch.

Disconnect the unit from mains supply.

Depressurize all system sections of the equipment.

Open the tension ring (A).

Remove the hopper lid.

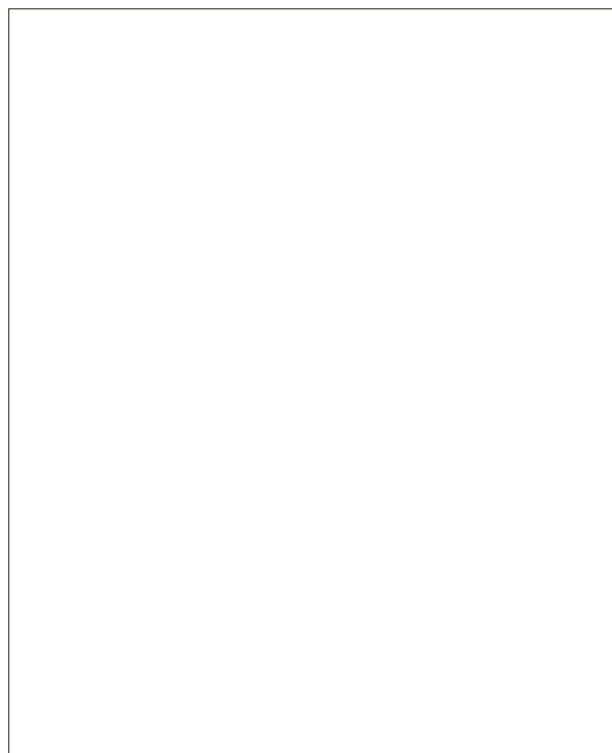
Draw the old sealing ring off the nozzle.

Install the new sealing ring. Observe the direction of installation (B).

Mount the hopper lid.

Close the tension ring (A).

Install the hopper loader.



SSP 5



Order number sealing ring: ID 85610

5.3. Replacing the outlet flap sealing ring



Stop the conveying procedure.

Switch off the hopper by means of the on/off switch on the connection housing.

Switch off the conveying control by means of the main switch.

Disconnect the unit from mains supply.

Depressurize all system sections of the equipment.

Remove the tension ring (A).

Remove the upper part of the hopper loader with hopper lid.

Draw the old sealing ring off the nozzle of the material outlet.

Install the new sealing ring.



Observe the direction of installation (B).

Set the flap switch.

Install the upper part of the hopper loader.

Install the tension ring (A).

Install the hopper loader.

SSP 5



Order number sealing ring: ID 23098

5.3.1. Adjust the flap switch

Remove the connecting plug “flap switch” from the connection housing of the hopper.

Connect an ohmmeter to PINS 2 and 3 of the connecting plug “flap switch”.

Release the nuts (A) of the flap switch (B) until the support can be displaced.

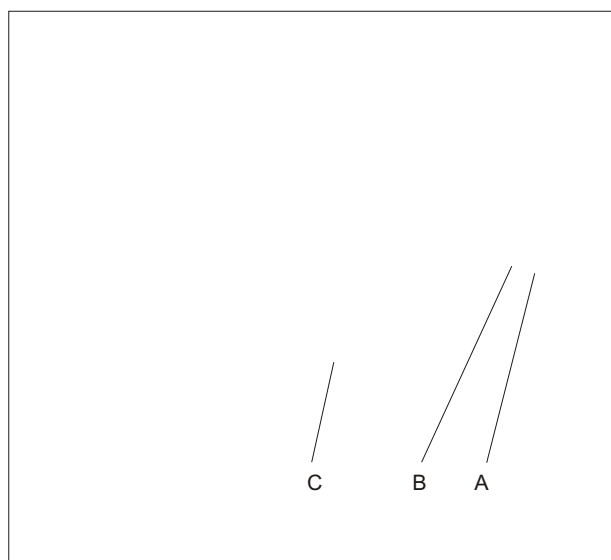
Open the outlet flap (C) so far that the front tip of the outlet flap is approx. 30 mm (1.28 in.) away from the sealing surface.

Displace the flap switch (B) until the contact of the magnet switch is closed.

Tighten the nuts (A) of the flap switch.

Check the adjustment:

In case of free hanging outlet flap (empty hopper loader) the contact of the magnet switch must be closed.



Outlet flap

If the outlet flap cannot be properly adjusted, replace the flap switch or the outlet flap with magnet.

Install the hopper.



Order numbers

flap switch:	ID 28839
outlet flap with magnet:	ID 23093

5.4. Cleaning the hopper loader



Stop the conveying procedure.

Switch off the hopper by means of the on/off switch on the connection housing.

Switch off the conveying control by means of the main switch.

Disconnect the unit from mains supply.

Depressurize all system sections of the equipment.

Open the tension ring (A).

Remove the hopper loader lid.

Remove the cleaning unit.

Open the tension ring (B).

Remove the upper part of the hopper loader.

Clean the hopper loader by means of a vacuum cleaner.

Install the upper part of the hopper loader.

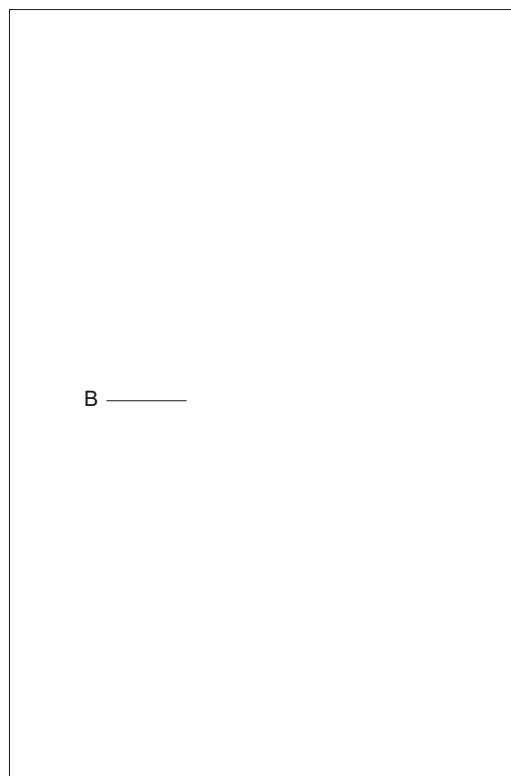
Close the tension ring (B).

Mount the cleaning unit.

Mount the hopper loader lid.

Close the tension ring (A).

Install the hopper.



SSP 5

5.5. Cleaning/replacing the filter cartridges of the cleaning unit



Stop the conveying procedure.

Switch off the hopper by means of the on/off switch on the connection housing.

Switch off the conveying control by means of the main switch.

Disconnect the unit from mains supply.

Depressurize all system sections of the equipment.



Clean the separator hopper each time you are changing the materials.

Use only cleaning agents which fulfil the corresponding requirements.

Only clean the separator hopper with compressed-air and/or a brush.



The conveying capacity is diminished by a clogged filter cartridge.

Removal

Open the tension ring (A).

Remove the hopper loader lid.

Remove the cleaning unit.

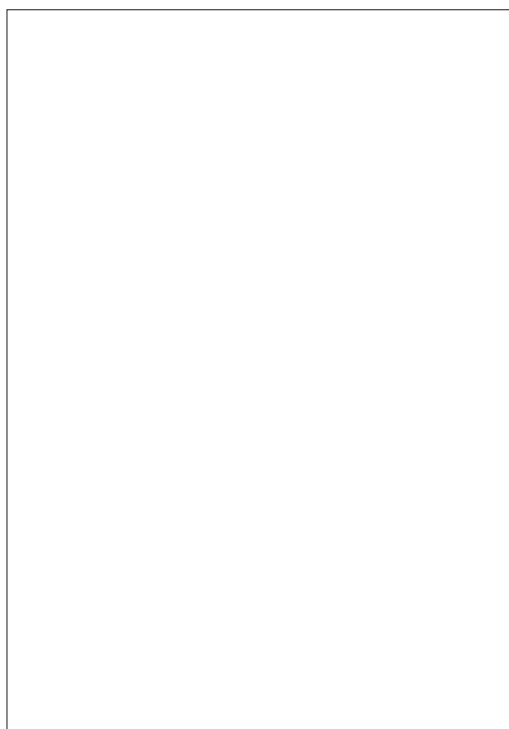
Release clamping devices of the filter cartridges.

Remove the filter cartridges from the intermediate platform.

Clean the filter cartridges from the inside out by means of compressed air **or** replace the filter cartridges by new ones.

Installation

Insert filter cartridges into the opening of the intermediate platform.



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Make sure that the sealing pad is tightly fitted between filter cartridges and intermediate platform.

Mount clamping devices of the filter cartridges.

Mount the cleaning unit.

Mount the hopper loader lid.

Mount the tension ring.



Order number
filter cartridge, short version:

ID 83379

6. Technical data

Basic Version

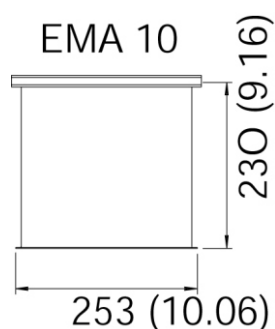
- Conveying hopper made of stainless steel
- Integrated high performance filter
- Automatic filter cleaning
- Integrated controller for cleaning

Performance

- Hopper loader capacity
SSP 5: approx. 5 l (0.28 cf.)
with extension module: max. 15 l (0.53 cf.)
- Typical conveying capacity
SSP 5: up to 250 kg/hr (550 lbs/hr)
with extension module: 400 kg/hr (880 lbs/hr)

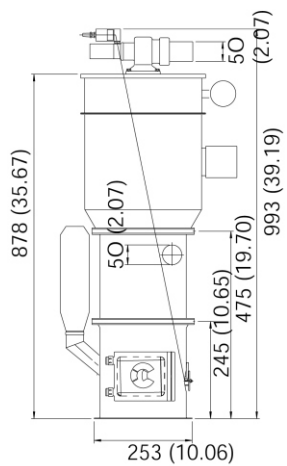
Optional Features

- Extension module



Dimensions and data without obligation. Dimensions in mm. (in.). Specifications may be subject to alterations.

Dimension Sheet



64.10-0225GB02_04/01

Technical data 31

Dimensions and data without obligation. Dimensions in mm (in.). Specifications may be subject to alterations.

7. Spare parts list



This parts list is only for the use of trained personnel only.

All other persons are not permitted to repair or to change the equipment.

Pos.	Order no.	Designation
1	26487	Pneumatic valve
2	85460	Vent valve
	85462	Compressed-air container
	97556	Solenoid valve
3	86851	Tension ring
4	98754	Sealing (1 m)
5	83081	Controller SSP (24 V)
6	83379	Filter cartridge, short version (4x)
7	85533	Tension ring
8	28420	Sealing
9	85610	Sealing ring
10	35796	Filter support
	26299	Filter bag
11	85533	Tension ring
12	28420	Sealing
13	28839	Flap switch
	26462	Cover
14	23098	Sealing ring
15	23093	Outlet flap with magnet

8. Accessories

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