

## Operating Instructions

### Conveyor Hopper SSK-5

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**Edition: 07/03**

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: \_\_\_\_\_

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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!

### 1.4. For the safety of the equipment

- The device may only be operated if all corresponding components have been properly connected and are in accordance with the relevant regulations.
- 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 (system overpressure) (87.02 PSI).
- 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. 1828.8mm (6 feet), 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.

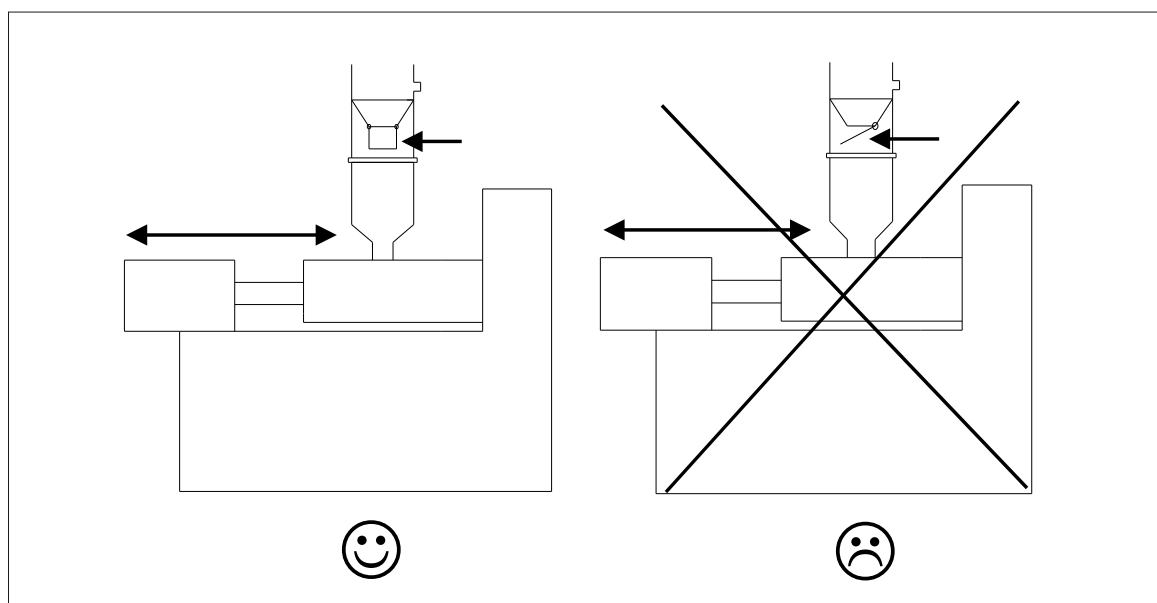
Mount the hopper loader in such a way that the outlet flap swings in a right-hand angle to the direction of machine movement. Please check during assembly that the admissible bearing loads are not exceeded.

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 (only with compressed-air valves)

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

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.



Depressurize compressed-air supply lines which must be opened.



Compressed air must be dewatered, dust-free and oil-free.

Install a maintenance unit if required.

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

## 2.4. Electrical connection



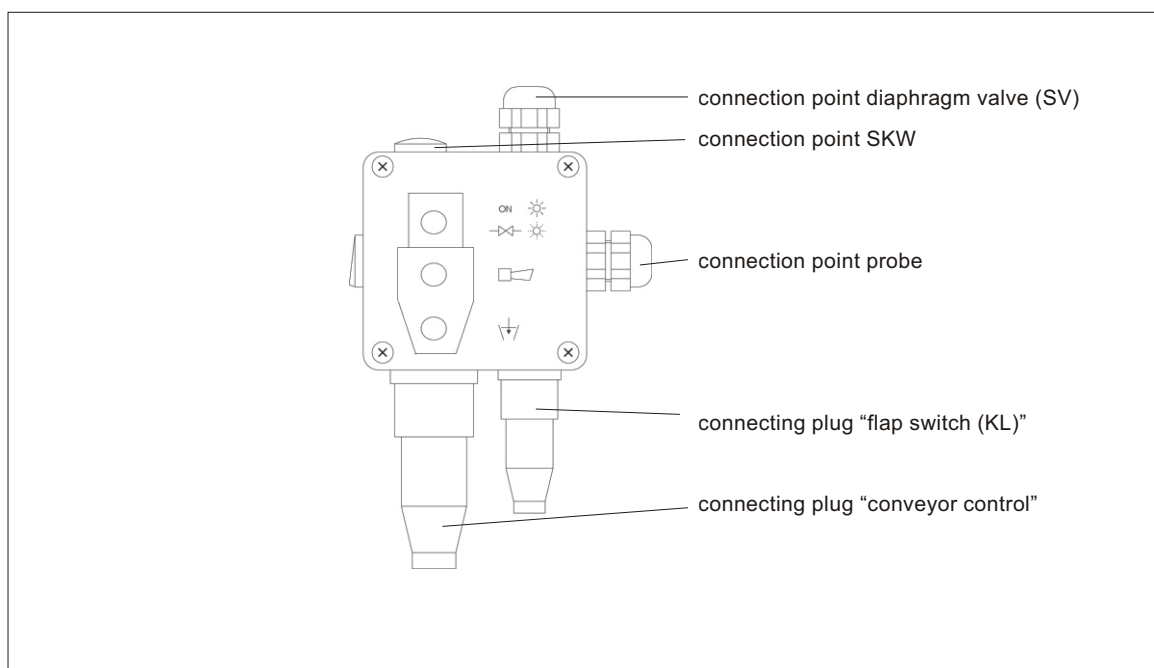
The electrical connection may only be carried out by trained personnel.

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

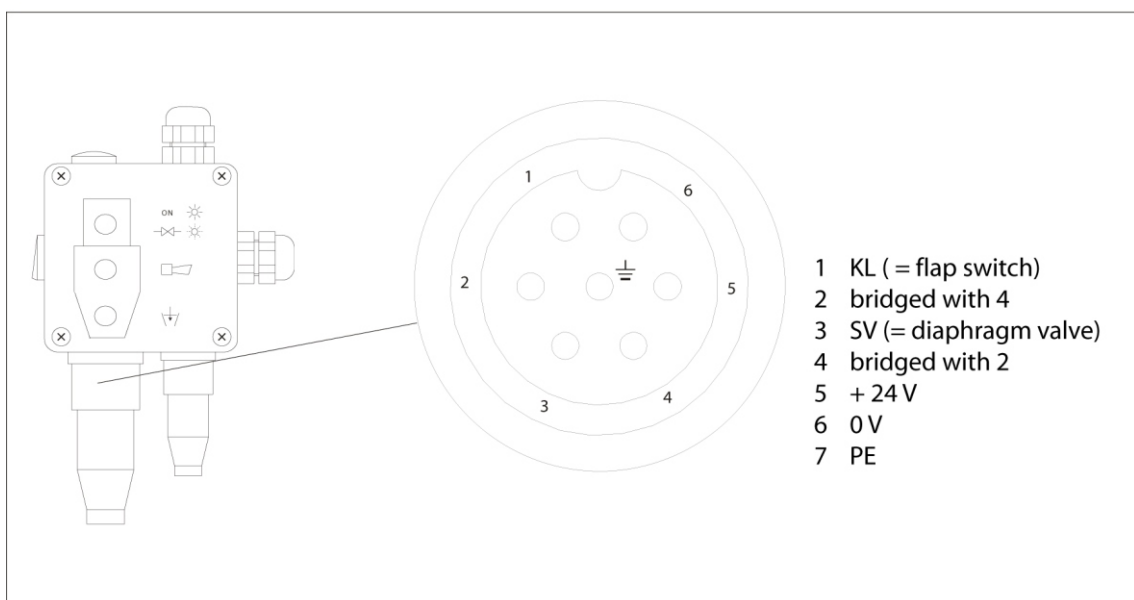
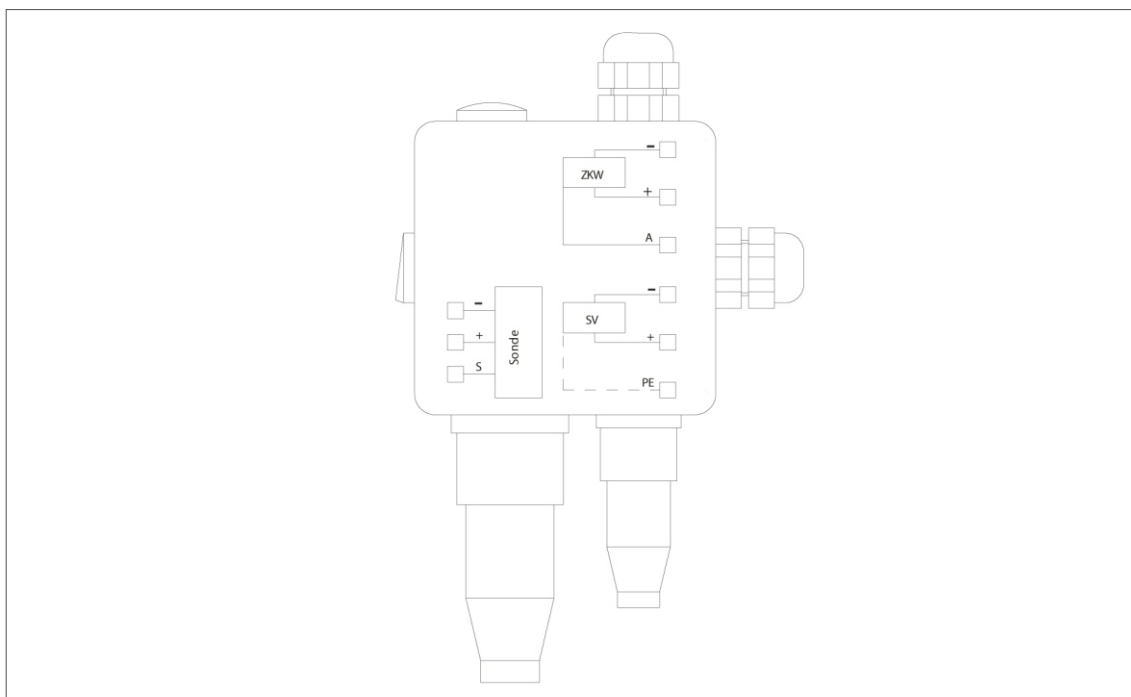
The rules of the local electricity board must be observed.

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.



Plug connection connection housing hopper



### 3. Functional description

The conveyor hopper is used for the automatic conveyance of freely flowing plastic granules. The hopper can only function in connection with a vacuum conveyor plant.

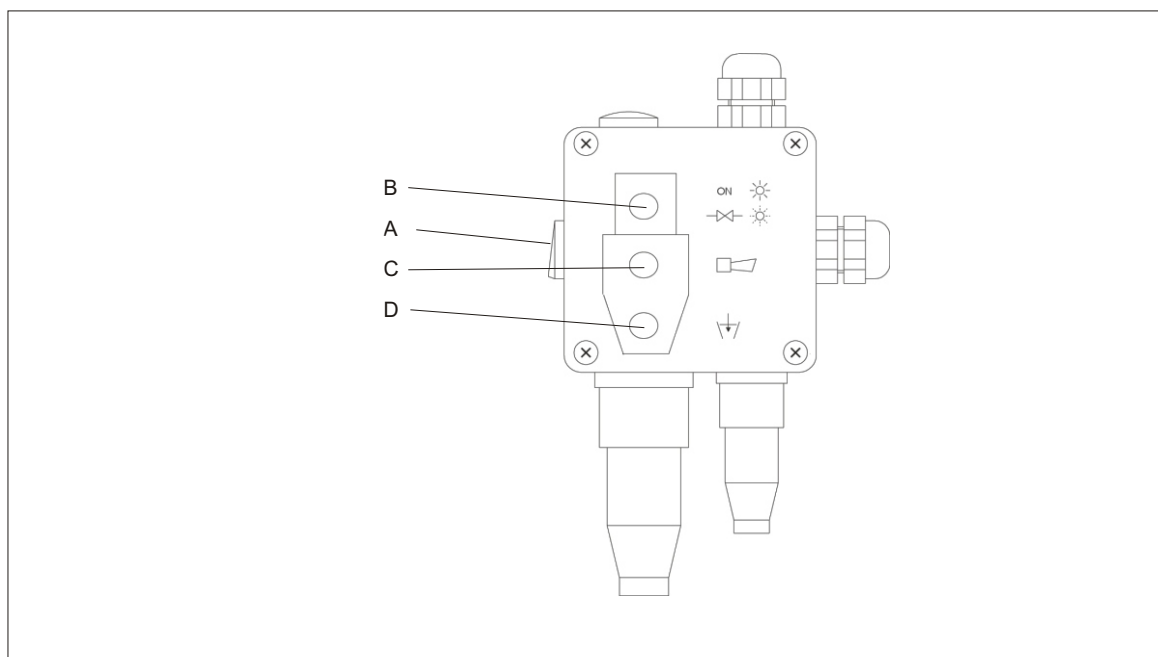
The hopper works without a filter. Depending on the type of valve, the shut-off valve of the vacuum line is operated with compressed air (compressed-air valve) or with the vacuum air (diaphragm valve).

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



## 4. 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. 1828.8mm ( 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.

#### 4.1. Maintenance intervals

Daily:	Check warning signs on equipment for good legibility and completeness.  with compressed-air valve: check the oil level in the oiler empty the water separator check the operating pressure in the factory ductwork system (max. 6 bar (87.02 PSI) system overpressure)
every six months:	check all electrical and mechanical connections for proper fit  check the settings of the level probes  check the sealing rings on the locking flaps
yearly:	replace the sealing rings on the locking flaps



The given maintenance intervals are average values.

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

## 4.2. Servicing the hopper loader



Individual hoppers can also be maintained during operation. However, Sterling recommends that you switch off the conveying plant for all types of work on the hopper.

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

Wait until the conveying procedure has stopped.

Disassemble the vacuum line on the hopper.

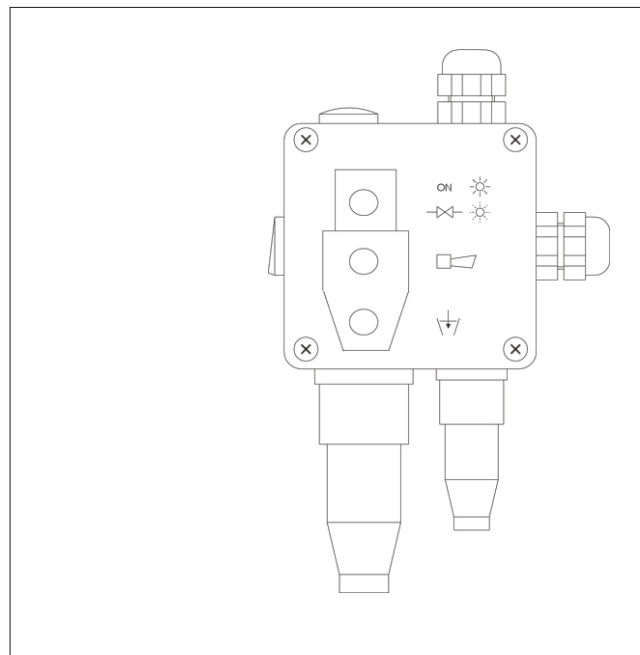
Close the disassembled vacuum line so that the vacuum for the active hopper-loaders does not break down.

Depressurize the compressed-air line to the hopper (only with compressed-air valve).

Disassemble the material line on the lateral inlet of the hopper.

Remove the connecting plug (B) "conveyor control" on the connection housing of the hopper.

Disassemble the hopper.



Connection housing hopper

### 4.2.1. Replace the sealing rings

#### Nonreturn valve

Open the toggle-type fasteners (A) between the hopper lid and the hopper loader.

Fold the hopper lid upwards.

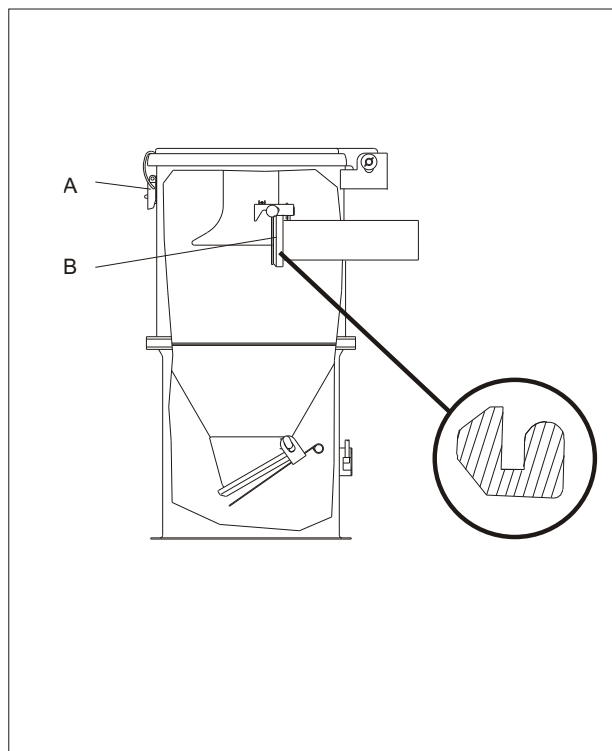
Draw the old sealing ring off the nozzle (B).

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

Close the hopper lid.

Close the toggle-type fasteners (A).

Install the hopper.



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Order number sealing ring: ID 85610

## Outlet flap

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

Remove the tension ring (B) and the sealing ring on the hopper loader.

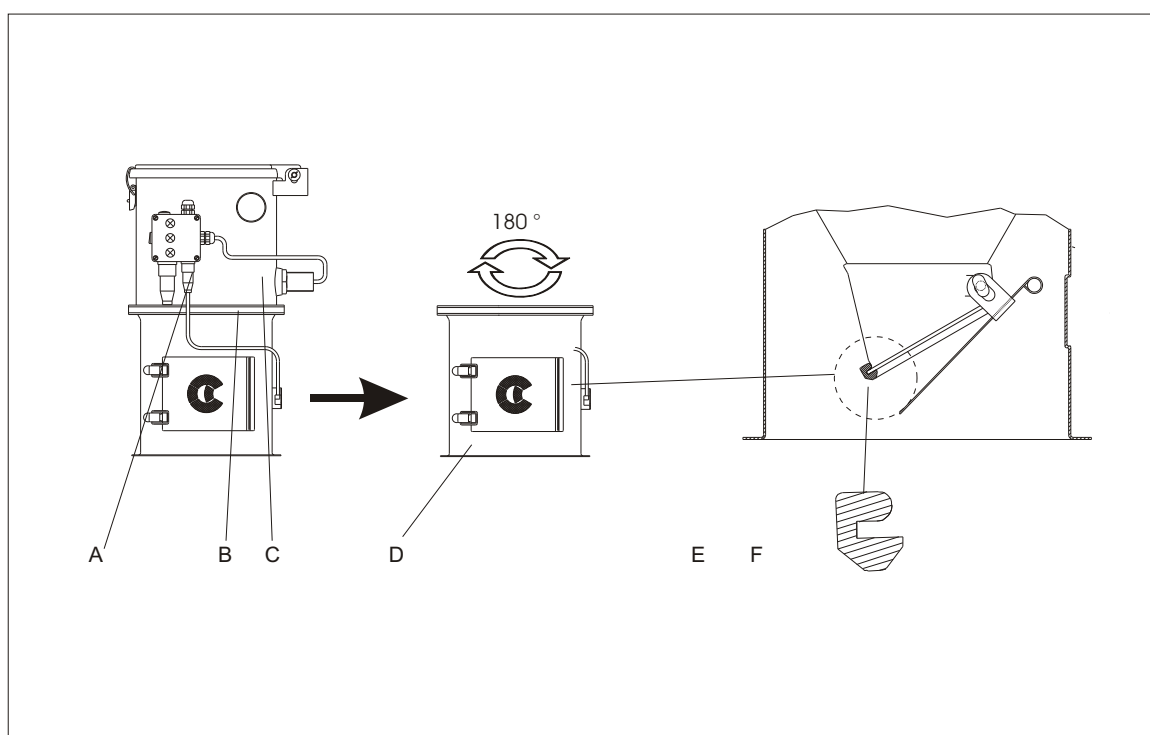
Remove the upper part of the hopper loader (C) from the lower part of the hopper loader (D).

Draw the old sealing ring (E) off the nozzle of the material outlet.

Install the new sealing ring (E).



Observe the direction of installation (F).



Installation sealing ring

Install the upper part of the hopper loader (C) on the lower part of the hopper loader (D).

Install the sealing ring and the tension ring (B) on the hopper loader.

Connect the connecting plug “flap switch” (A) to the connection housing of the hopper.

Install the hopper.



Order number sealing ring: ID 23098

### 4.2.2. 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.

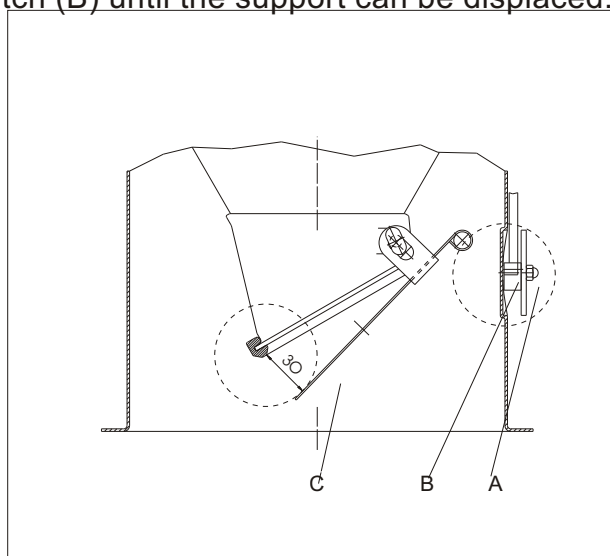
Open the outlet flap (C) so far that the front tip of the outlet flap is approx. 30 mm (1.18 in.) away from the sealing surface.

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.



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



### 4.2.3. Cleaning the hopper

Open the toggle-type fasteners (A) between the hopper lid and the hopper loader.

Fold the hopper lid upwards.

Check the sieve (B) within the hopper for material residue. For cleaning, disassemble the hopper: turn the hopper approx. 1/2 rotation counterclockwise.

Clean the sieve by means of compressed-air.

Install the hopper: turn the hopper approx. 1/2 rotation clockwise.

Check the hopper for proper fit.

Clean the hopper loader by means of a vacuum cleaner.

Close the hopper lid.

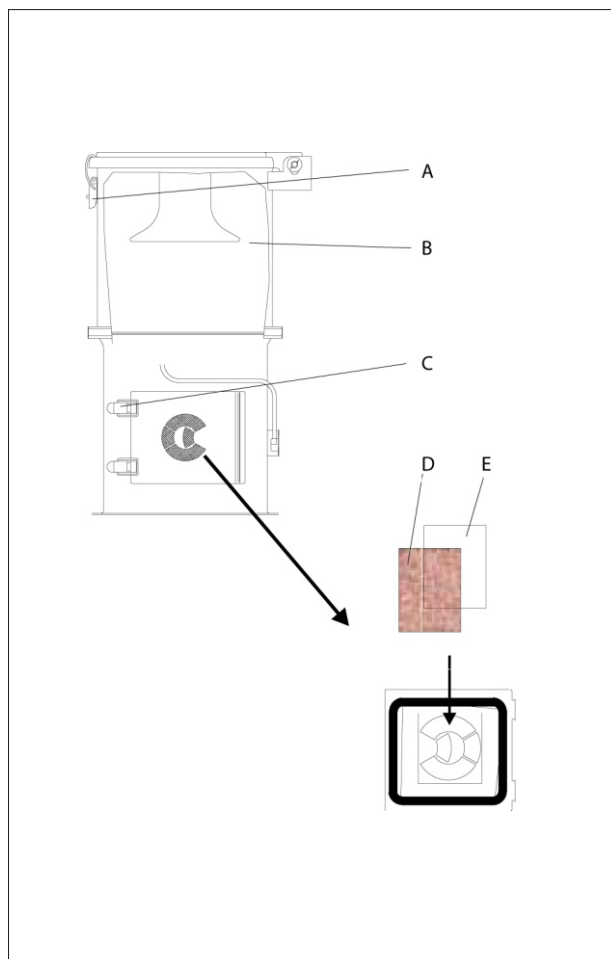
Close the toggle-type fasteners (A).

Open the toggle-type fasteners (C) on the flap of the hopper loader.

Check the filter cloth (D) and the wire cloth (E) for material residue. Clean the filters by means of compressed air.

Close the toggle-type fasteners (C) on the flap of the hopper loader.

Install the hopper.



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## 5. 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.



Wear Code:

A = Wearing part, fast used up

B = Wearing part

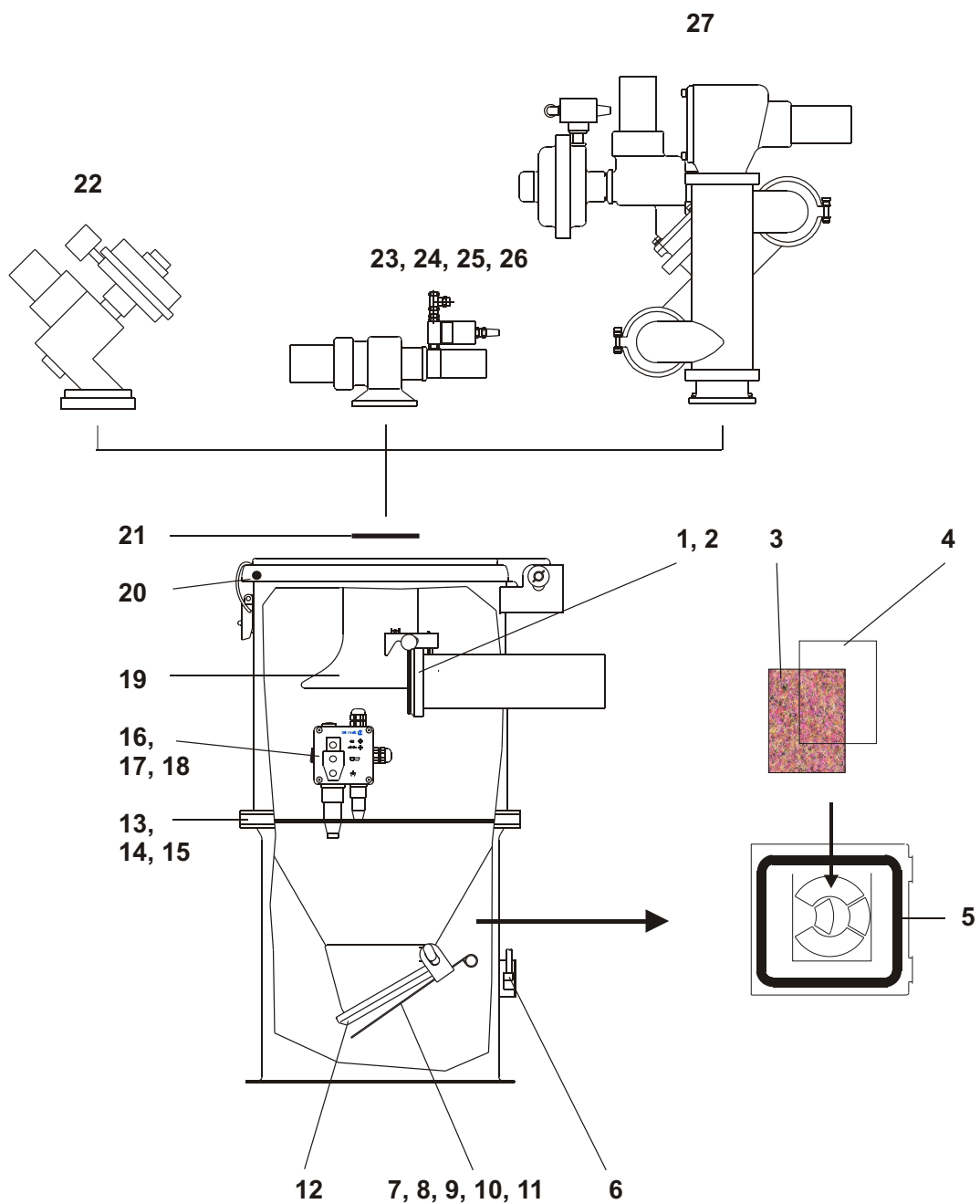
C = Spare part, storekeeping for 1 year

D = Spare part, storekeeping for 2 years

E = Spare part, storekeeping for more than 2 years

Execution free of silicone on request.

26493 Hopper complete



SM3-615

Pos.	Order no.	Designation	Wear Code
1	26454	flap	D
2	85610	sealing	B
3	28626	filter cloth	C
4	23091	wire cloth	C
5	28625	sealing	C
6	28839	flap switch with plug	D
7	26462	cover	D
8	23093	outlet flap	E
9	85477	nut	D
10	85471	screw	D
11	93358	disc	D
12	23098	sealing ring	B
13, 14, 15	82555	tension ring with sealing ring and lock	C
16	84555	connection housing	E
17	86152	plug	E
18	86151	plug	E
19	23069	hopper with sieve	E
20	95881	sealing	C
21	23092	sealing	E
22	26491	diaphragm valve, complete (optional)	
23	26495	compressed-air valve, complete	E
24	09646	sealing ring	C
25	23066	cylinder	C
26	85489	sieve	C
27	26497	dedusting valve, complete (optional)	

## 6. Technical data

### Basic Version

Hopper loader capacity approx. 5 l (0.16 cu. ft. )

Made of stainless steel

Cleaning opening

Pneumatic valve (B)

On/off switch on the hopper loader

Indication of operating conditions at the hopper loader: demand, conveying, alarm

ZKW output

Voltage 24 VDC

Maximum material temperature approx. 160 °C (320 °F)

### Optional Features

Diaphragm valve (A)

Maximum level probe (D)

High abrasion resistant option

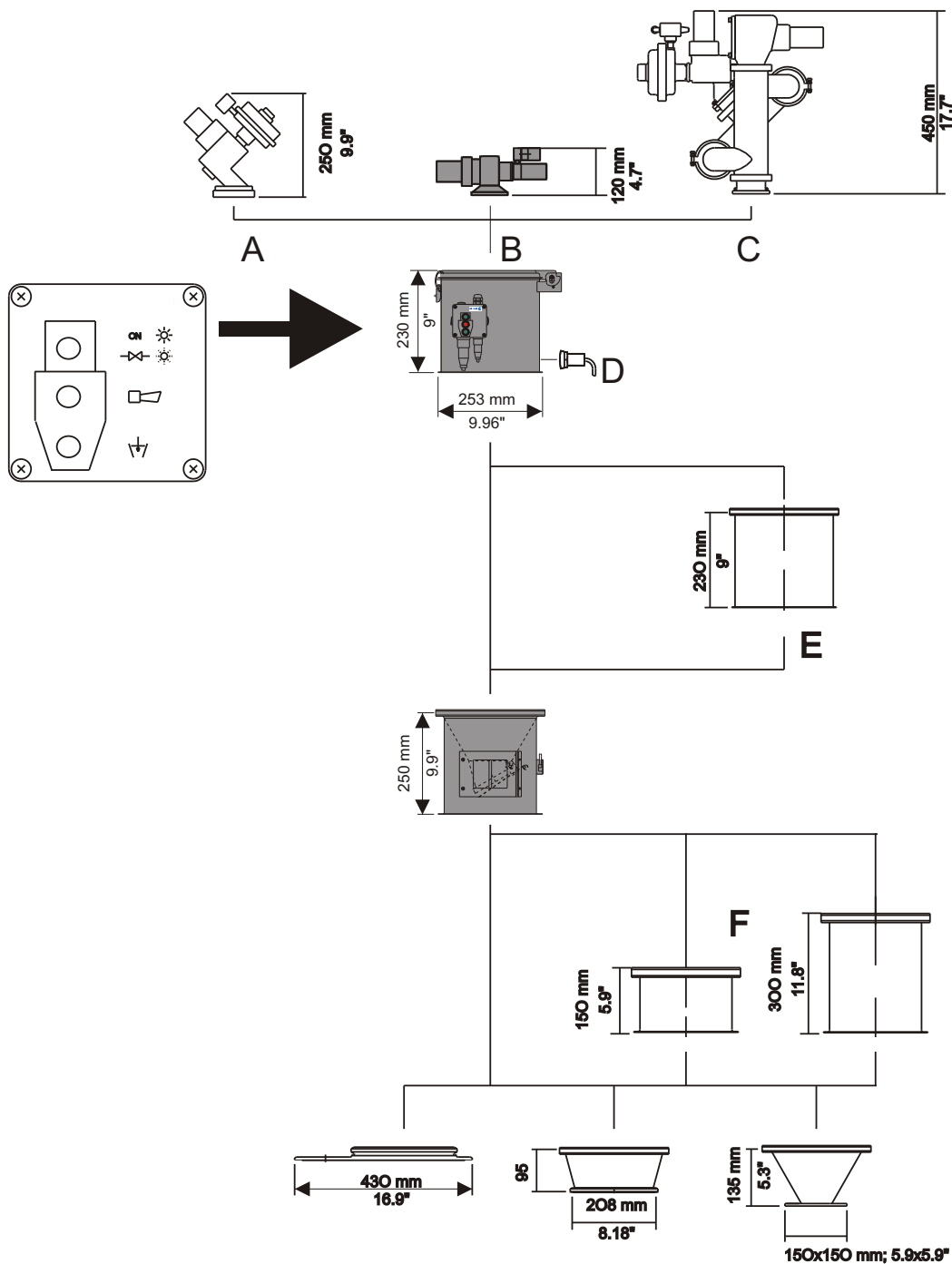
Dust separating module (C)

Extension module for hopper loader capacity of approx. 15 l ( 0.5 cu. ft.) (E)

Connection modules (F)

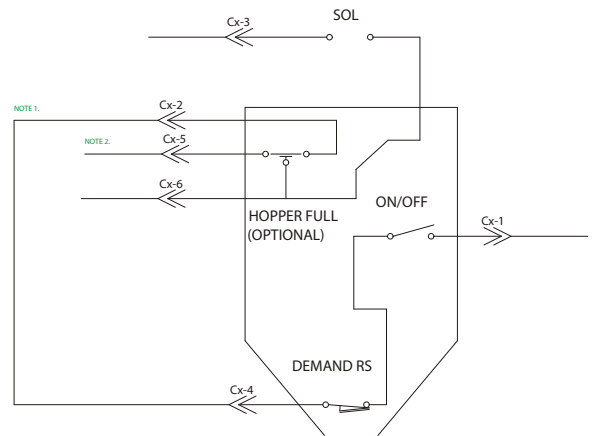
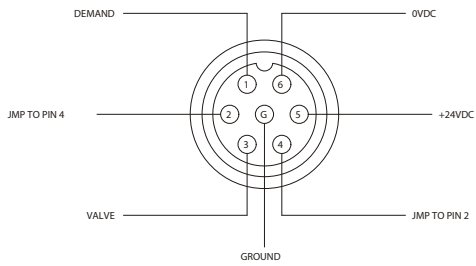
**Blow back module for automatic cleaning of the hopper loader sieve**

## 6.1 Dimension Sheet



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

## 6.2 Control Cable Wiring Schematic



## Electrical manual



This electrical manual is intended to be used only by Sterling service personnel and trained personnel authorized by Sterling

Other persons are not permitted to modify or repair the equipment.





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