

Instructions

Aspirator Type R14 - R25 - R40 – R60



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General Information



Please read the entire User Instructions before assembling and operating the installation.

If the purchaser makes any technical modifications to the machine, then any warranty from SØBY is cancelled. The declaration will lose its validity. The factory warranty does not include water or transport damages or consequences thereof, therefore, protect the cleaner from moisture and water. Likewise, the factory warranty will lapse if the directions of this guidance have not been followed.

- The guarantee is only granted, if the following conditions are met:
- The unit only is to be used as described in this User Instructions. Replacement of parts or changing in the construction of the device might cause that the equipment must be re-certified.
- Assembly, putting into operation and operation only by using this User Instructions.
- Compliance with the intervals for maintenance in accordance with instructions must be documented.
- Only use the original spare parts of the manufacturer.
- In order to prevent dust emissions, all joints must be sealed by silicone.
- Emergency stops must be installed in accordance to current standard EN 60204-1.
- At normal operation at the machine, one must look into the pictogram devices and study the User/Assembly Instructions.
- When performing operations in areas where there might be a risk of explosion, the safety of personnel and equipment depends on compliance with the relevant safety regulations. Performing installation works and maintenance in such areas, involves a special responsibility of the people who are carrying out the works. The works mentioned requires that the assembly personnel and maintenance personnel have a thorough knowledge of laws, regulations and standards within the area. This construction provides a brief review of the most important safety issues, which are associated with installation, maintenance and use of the equipment. Please pay attention to the fact, that the end user has the final responsibility of identifying any possible explosion hazardous areas according to current regulations, with the following requirements for zone classification and possible reporting to the local authorities.
- Repair, service and maintenance must be performed carefully in strict compliance with the instructions of SØBY and must be performed by personnel who possess the qualifications required for the taking care of the explosion safety of the equipment. Inspection and maintenance must be based for the electrical equipment concerned, on the instructions in EN60079-17.

- During the lifetime of the cleaner concerning the mechanical parts, and in connection with use, there must be a particularly focus on:
 - Service lifetimes (see chart)
 - Damages to pipes and shieldings
 - Corrosion
 - After tightening of bolts and screws

- Modifications or alterations of the equipment, which influence the explosion safety of the equipment, are not allowed. Before using the equipment, check that the equipment is undamaged, assembled, and installed as directed by SØBY.

Attention is in particular drawn to:

- National Security Rules
- National Requirements to Safety and Health at Places of Work
- National Rules of Installation for the Type of Installation in Question
- Recognized Standards
- Safety Information in this Instructions for Operation
- Data and Information on the Permissible Installation and Operating Conditions of the Rating Plate
- Directions in any Type Certificates for Equipment installed on the Unit

The manufacturer reserves the right of performing technical changes.

The machine can be used in ATEX Zone 21, for transportation of feedstuff, which gives reason for an inner Zone 21. In that case, one must select suitable gear and motor. The machine can be used for transportation of the following materials, with data, which are shown in the following:

- Cereal, mixed dust.
- Rape/beans.
- Peas.

	Particle Size [µm] [Microns]	Ignitions Temperatures Cloud of Dust [°C]	Ignitions Temperatures 5mm Dust Layer [°C]	LEL [g/m ³]	MIE [mJ]	Kst [bar m/s]	Reference
Limit Values	12	400	280	30	50	131	-

If the medium, which is transported, contains stones or metal parts, the explosion safety of the equipment cannot be guaranteed.

Must comply with EN 60079-10-2:2015 concerning explosive atmospheres/atmosphere of dust.

Safety Instructions



The manual and especially information concerning safety must be read carefully prior to assembling, operating, servicing and maintaining.

All installations and components must be assembled in accordance with the relevant regulations for prevention of accidents.

The machine must be shielded correctly in relation to the relevant Machinery Directive. Therefore, that it will be impossible to encounter moving parts. It is only allowed to remove the shieldings by help of tools. These must be mounted before the machine is put into operation.

The motor must be properly protected through overload protection equipment. Just like the cleaner properly must be ensured capable potential compensation.

At any repair or maintenance, the power source must be separated from the drive motor.

When the cleaner is running, do not put your hand or your fingers into the air-intake or into other places. Likewise there must always minimum be mounted a downpipe of at least 0,75 m. This must always be observed in relation to DS/EN ISO 13857.

Shieldings and removing of risks must be maintained regularly.

The machine must be installed in such a way that there are ergonomic good conditions at service at the machine.

Prior to starting-up of the cleaner, one must ensure that all screws, bolts and trailed things are properly tightened.

If the machine gets stuck/clogging, it may result in overheating of the transmission.

The cleaner may only be put into operation when it is assured that it is not defective. The user is obliged only to operate the system, when it is in perfect condition.

SØBY is not liable for damages arising from misuse or technical alterations to the system and breach of the instructions given in these Instructions of Use.

If the cleaner is placed in areas classified as potentially explosive, use specially approved motor for that zone. If in doubt, please contact SØBY for further information. It must be ensured that the ambient temperature in the area in which the equipment is going to be placed, remains within the allowed limit values of the equipment $-20^{\circ}\text{C} \leq \text{TA} \leq 40^{\circ}$. Therefore, one must, at installing of the unit take into account, that there might be possible heat sources that could affect the ambient temperature in the area in which the equipment is installed.

During any kind of work with the cleaner, there must be adequate work lighting.

During any kind of work with the cleaner should be used, safety boots, earmuffs and other required precautions as they might be required by the local workplace assessment, in which the cleaner is going to be installed. Furthermore, helmet must be used during installation, service and assembly/disassembly.

When assembling of machines, there might be heavy lifting. People, who set up the machine, must read the assembly/user manual at first. Suitable lifting equipment must be used in connection to installation and assembly.

As there might be a danger of sharp edges, one must use gloves when handling the machine.

The equipment must not be exposed to more dust impact (dust layers) than allowed in EN 60079-14.

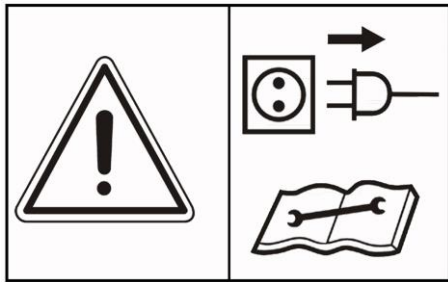
Use of the Machine

The cleaner is designed for horizontal transportation of grain and almost of all cereals, seeds and flour products available within agriculture (see page 5 about material specifications in General Specifications).

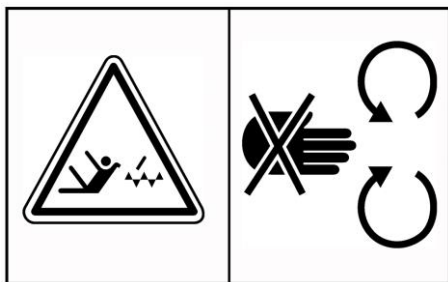
The cleaner may **not** be used for tasks beyond these ones.

The cleaner can have a capacity of 14t and up to 60t, depending on the model type.

Explanation of the Pictograms



Prior to repair, maintenance and cleaning work the motor must be turned off and the electric plug pulled out.



Moving parts of the machine can be dangerous.
All shieldings must be mounted before starting up of the machine



Hearing protection is required when working with this machine.



Setting of the cleaning effect

Residual Risk

The cleaner is produced in accordance with the health and safety requirements, which are set out in the ATEX and in the Machinery Directive, and in accordance with the consequently harmonized standards. If these regulations are disregarded, the cleaner might be a danger to the operator/user or to the life and limb of a third party. See Declaration of Conformity.

Specifications

Aspirators are delivered in four sizes, 14 tons/hour, 25 tons/hour, 40 tons/hour, and 60 tons/hour.

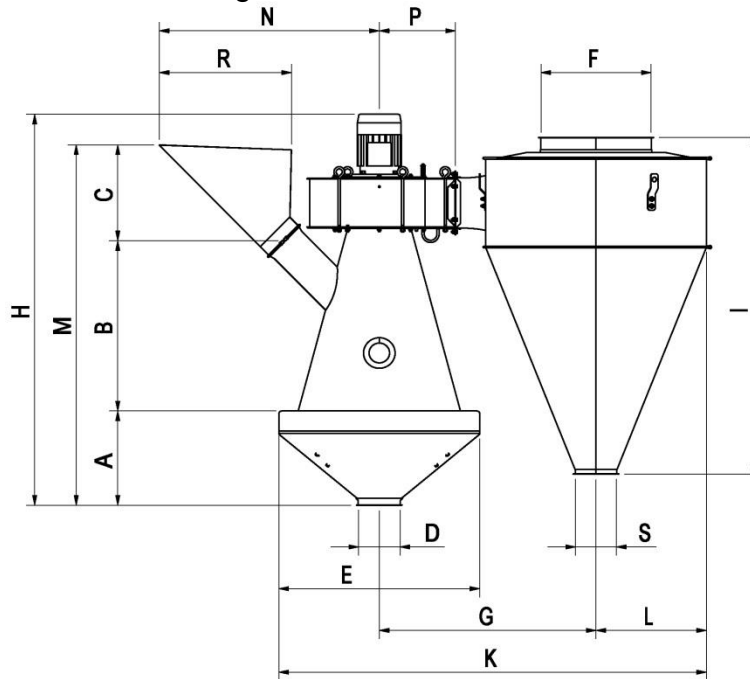
Powder coated construction

ASPIRATOR R14

Aspirator R14 w/ 0,75kW motor, collecting funnel, suspension bracket, inspection window, throttle valve and transitional pieces for further piping Ø150

Technical specifications:

- Motor type B5: 0,75 kW 3000 rpm
- Capacity: 12-14 t/Hour
- Air flow: 1400 m³/Hour
- mm VS: 120
- Blow pipe: Ø150 mm
- Pipe lengths horizontal: maximum 18 m
- Weight: 32 kg
- Weight cyclone: 14 kg



Type	A	B	C	D	E	F	G	H	I
R14	241	450	328	150	502	300	617	1144	892
Type	K	L	M	N	P	R	S		
R14	1156	276	1019	629	197	388	150		

Accessories

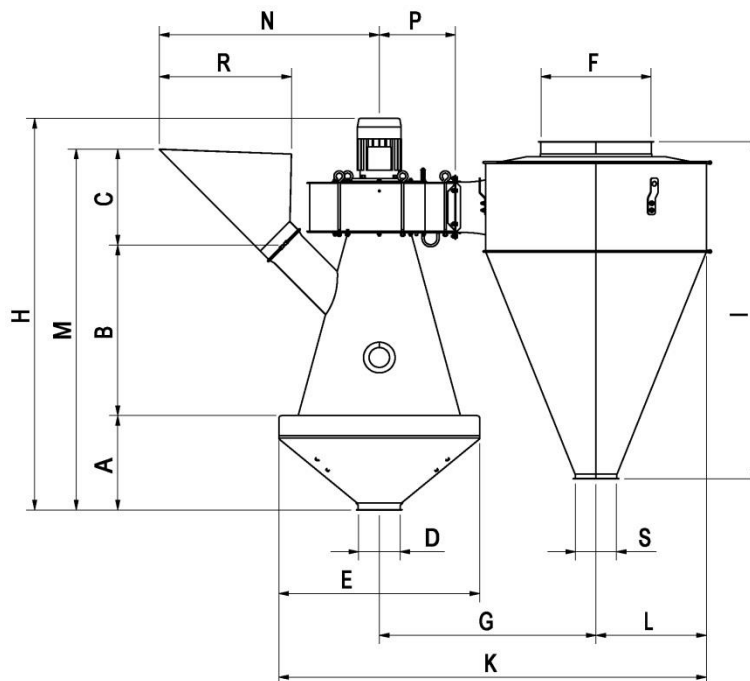
- Inlet funnel for R14
- Frame R14
- Cyclone R14 Ø600
- Inlet Ø150
- Air control throttle valve Ø300

ASPIRATOR R25

Aspirator R25 w/ 2,2kW motor, collecting funnel, suspension bracket, inspection window, throttle valve and transitional pieces for further piping Ø200

Technical specifications:

- Motor type B5: 2,2kW 3000 rpm
- Capacity: 20-25 t/Hour
- Air flow: 2400 m³/Hour
- Mm VS: 150
- Blow pipe: Ø200 mm
- Pipe lengths horizontal: maximum 24 m
- Weight: 78 kg
- Weight cyclone: 30 kg



Type	A	B	C	D	E	F	G	H	I
R25	338	612	344	150	725	400	783	1404	1210
Type	K	L	M	N	P	R	S		
R25	1544	399	1294	794	275	477	200		

Accessories

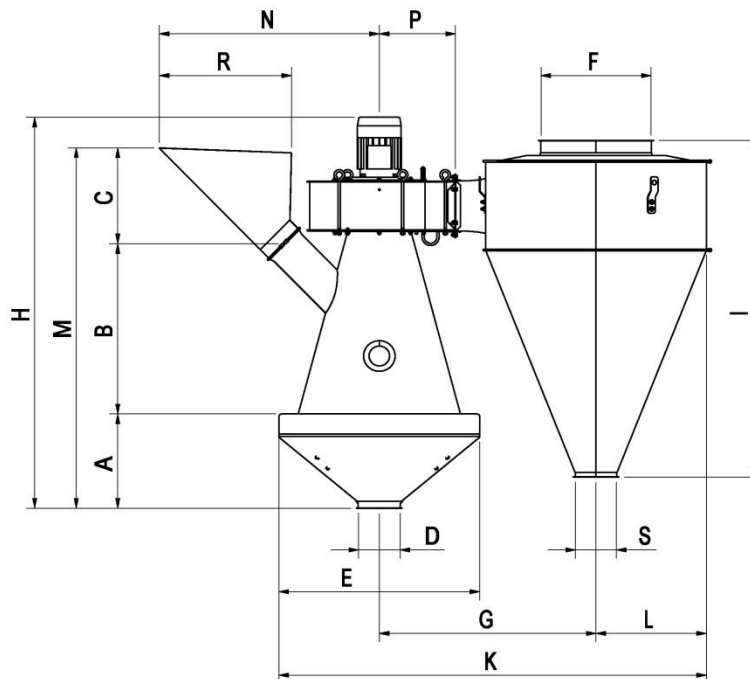
- Inlet funnel for R25
- Frame R25
- Cyclone R25 Ø800
- Inlet Ø200
- Air control throttle valve

ASPIRATOR R40

Aspirator R40 w/ 5,5kW motor, collecting funnel, suspension bracket, inspection window, throttle valve and transitional pieces for further piping Ø300

Technical specifications:

- Motor type B5: 5,5 kW 3000 rpm
- Capacity: 40-50 t/Hour
- Air flow: 5500 m³/Hour
- Mm VS: 225
- Blow pipe: Ø300 mm
- Pipe lengths horizontal: maximum 21 m
- Weight: 185 kg
- Weight cyclone: 52 kg



Type	A	B	C	D	E	F	G	H	I
R40	410	920	780	200	1000	400	1400	2140	2400
Type	K	L	M	N	P	R	S		
R40	2250	350	2110	1010	580	750 x750	200		

Accessories

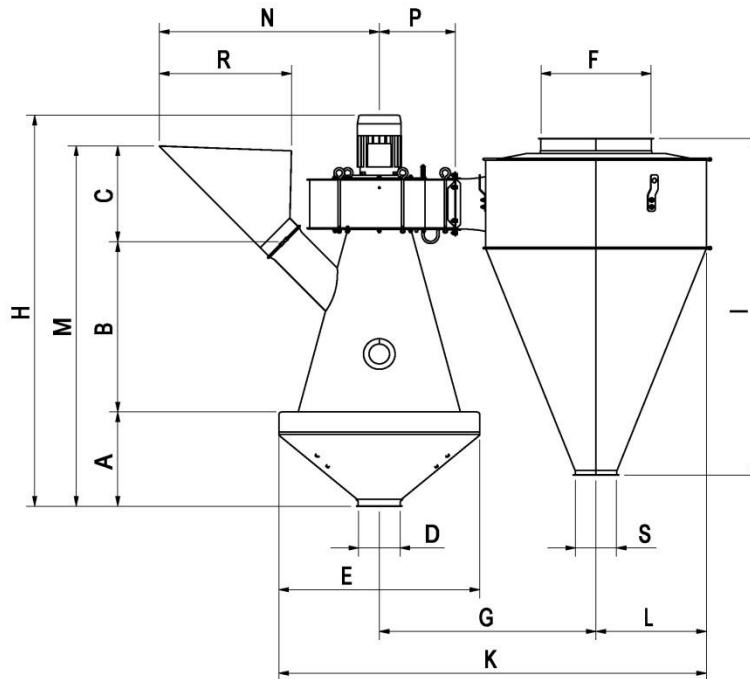
- Inlet funnel for R40
- Frame R40
- Cyclone R40 Ø1000
- Inlet Ø300
- Air control throttle valve Ø400

ASPIRATOR R60

Aspirator R60 w/ 7,5kW motor, collecting funnel, suspension bracket, inspection window, throttle valve and transitional pieces for further piping Ø300

Technical specifications:

- Motor type B5: 7,5 kW 3000 rpm
- Capacity: 50-60 t/Hour
- Air flow: 6000 m³/Hour
- Mm VS: 225
- Blow pipe: Ø300 mm
- Pipe lengths horizontal: maximum 21 m
- Weight: 189 kg
- Weight cyclone: 52 kg



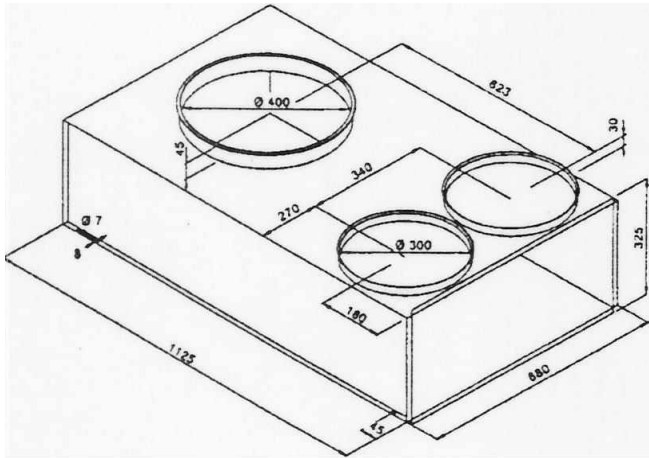
Type	A	B	C	D	E	F	G	H	I
R60	410	920	780	200	1000	400	1400	2140	2400
Type	K	L	M	N	P	R	S		
R60	2250	350	2110	1010	580	750 x750	200		

Accessories

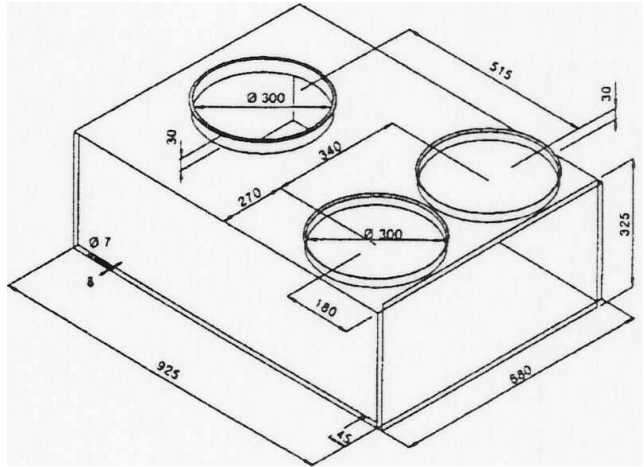
- Inlet funnel for R60
- Frame R60
- Cyclone R60 Ø1000
- Inlet Ø300
- Air control throttle valve Ø400

Filter Boxes

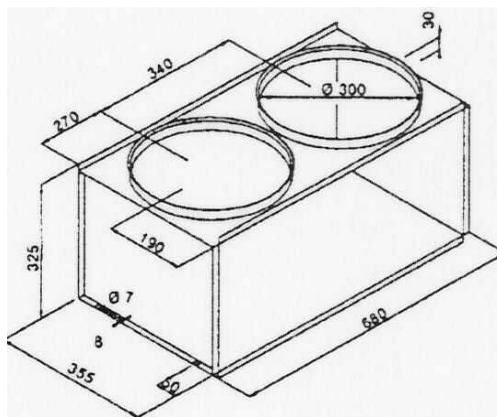
R25 – R60



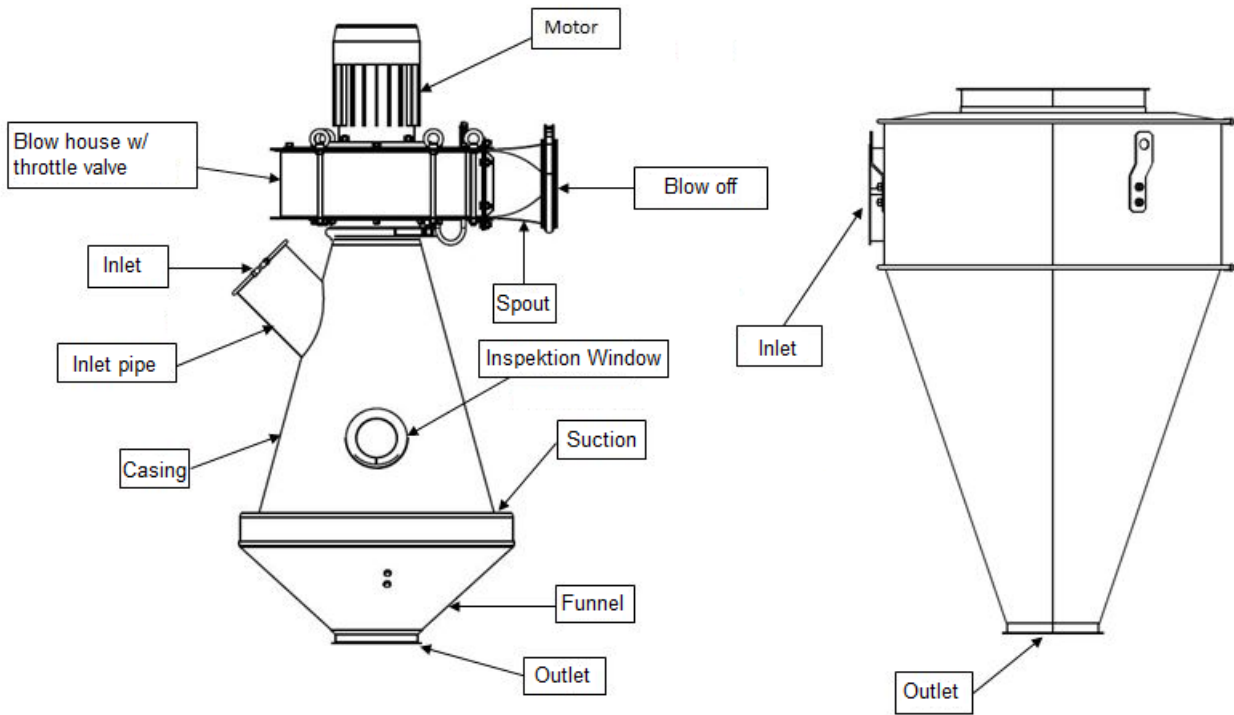
R14



Extension



Description of the Components



Installation and Mounting

Cleaner and cyclone are mounted/hung securely in the suspension brackets. Pipe length between cleaner and cyclone may not exceed 24 meters in horizontal length.

The cleaner should be hung up so that the centerline is exactly vertical.

The cleaner should be fed through the inlet funnel. If the inlet funnel is removed and a firmly closed connection is established, then the cleaning effect will be considerably reduced.

Electrical Equipment

Specially trained staff may only carry out the electrical connection for the delivered cleaners.



During installation, be aware of the voltage and data indicated at the motor data plate.

The connection terminals of the motor are connected according to the instructions on the motor. The motor must be protected with thermal protection and by a lockable main cutout switch, as the guarantee from the motor manufacturer else will be nullified (This equipment is not included in the delivery standard).

Installation of connection of the unit must take place in accordance with national rules of installation, supplemented by the demands, which are stated in the Heavy Current Regulations nos. EN60204-1 and EN60079-14. Starting up of the electrical parts and subsequent maintenance must be in accordance with the instructions in EN60079-17.

Incidentally, we refer to the directions of the manufacturer for the motor and gear and possible demands for intervals of maintenance and service, concerning steady enforcement of the explosion security of these parts.

If a frequency converter is installed, one carefully has to take stock of data from the converter and from the data plate. Pay attention to the labeling of the electrical components in classified areas.

Balancing of the Potential:

An outside terminal for connection to the equalizer exists.

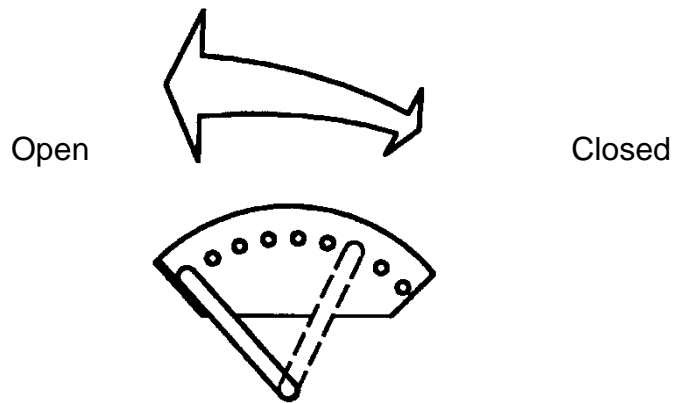
The connection must be carried out in accordance with the instructions in EN60079-14.

Operation

Adjustment of Cleaning Effect

Throttle Valve

Open: Maximum cleaning effect.
Closed: Minimum cleaning effect.



Maintenance

During maintenance works, the safety regulations, which are described in the section "Safety Instructions"

Please be aware of, that securities of motors, gearings and bearings are subject of compliances of intervals of maintenances/replacements, must be observed.

The following equipment at the unit is going to be maintained with the following intervals:

Equipment	Manufacturer	Intervals of Maintenance:
Bearings	PTI	Must be replaced at every 10.000 operating hours.
Motor	Cantoni /techtop	Must be replaced at every 20.000 operating hours.
Washers and Nuts	Bossard	It must be checked after 40 hours of operation that all washers and nuts are tightened.

TroubleShooting

Error	Possible Cause	Remedies
The cleaner does not start	Electricity supply is cut off	Check electric power cable and replace if necessary.
	The fuses of the motor are defect	Replace fuses
	The safety switch of the motor is defect	Replace the safety switch of the motor
	Motor is defect	Replace the motor
	Foreign object is blocking the trough auger	Remove the foreign objects via suitable remedies
The motor stops / is overloaded	Foreign object is blocking the cleaner auger	Remove the foreign objects via suitable remedies
	The outlet/the out blow is blocked	Clean the outlet
	Too much transport material in the pipe	Adjust admission down to smaller quantities of transport material
	Electricity supply is cut off	Check electric power cable and replace if necessary.
	The fuses of the motor are defect	Change fuses
The cleaner does not transport/ transports irregularly	The drive shaft is broken	Replace the drive shaft
	Fan wheel is too worn	Renew/Replace
	The fan wings are bent due to foreign object(s)	Remove the foreign object(s) via suitable tools, straighten out the fan wings, or replace if necessary
	The transport material is too moist	Dry transport material
	Insufficient material available	Add transport material

The Company

**Søby Maskinaktieselskab
Viborgvej 306
DK-7840 Højslev
Denmark**

Herewith declares that under the provisions of EC directives
94/9/EC, potentially explosive atmospheres
2006/42/EC, machine directive
2004/108/EC, EMC directive
In its current form.

The model supplied by Søby Maskinaktieselskab of the following product type

type: R14 – R60

As referred to in this declaration
Complies with the following standards and normative documents
In their currently valid form:

EN 60079-0:2012	Explosive atmospheres - Part 0: Equipment - General requirements
EN 60079-14:2014	Explosive atmospheres - Part 14: Electrical installations design, selection and erection
EN 60079-31:2014	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
EN 1127-1:2011	Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology
EN 13463-1:2009	Non-electrical equipment for use in potentially explosive atmospheres Part 1: Basic method and requirements
EN 13463-5:2011	Non-electrical equipment for use in potentially explosive atmospheres Part 5: Protection by constructional safety 'c'
EN 13463-6:2005	Non-electrical equipment for use in potentially explosive atmospheres – Part 6: Protection by control of ignition source 'b'
EN 14986:2007	Design of fans working in potentially explosive atmospheres
EN 14121:2007	Safety of machinery - Risk assessment - Part 1: Principles
EN 60034-1:2010	Rotating electrical machines - Part 1; Rating and performance
EN 60034-5:2007	Rotating electrical machines - Part 5; Classification of degrees of protection provided by enclosure for rotating machinery
EN 12100-1:2005	Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology
EN 12100-2:2009	Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles
EN 13857:2008	Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs
EN 60034-30:2009	Rotating electrical machines - Part 30; Efficiency classes of single-speed, three-phase-induction motors (IE-code)
EN 61000-6-2:2005	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-3:2011	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments

The product are marked additionally with the following characteristic:



II 2 D Ex 1b c IIB T85°C Db

If the unit is to be installed in potentially explosive atmospheres, the outside mounted equipment must be selected according to 94/9-EC. This unit is only intended for handling materials which gives an internal explosive atmosphere.

Højslev, Feb, 2016

Director
Frants Frantsen

