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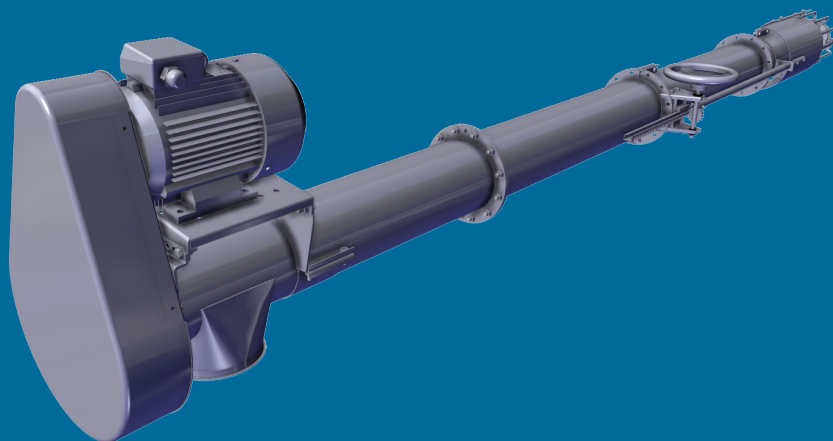


User manual

SS205-254

Thank you for choosing SØBY
In order for the machine to function
optimally, it is important to forllow the
instructions in this manual.

Enjoy.



Introduction

Thank you for choosing SØBY.

It is very important that you read this user manual to obtain the necessary knowledge regarding installation, operation, service, maintenance, and dismantling. It is important to keep the user manual in a safe location for future use.

At SØBY we always work to improve our machines therefore we reserve the right to improve and update our products continually. This mean that some machine parts will be removed from the product selection, but it will always be possible to get a corresponding machine part for our machines. SØBY will always be ready to help and guide regarding our products.

Enjoy.

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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 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.
- The area where the equipment is going to be installed must be selected or adapted so that the unit is not unnecessarily exposed to mechanical stresses from the environment, resulting in damage of the equipment.
- 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.
- Open inlets must be equipped with rack in a sufficient safety distance, see valid Machinery Directive and the Directions of the National Labour Inspection (DK). One must show particular vigilance by auger foot inlet with basket, so that there from the auger will be a sufficient safety distance when the machine is in operation. There must minimum be there is a requirement of a current mesh size of up to 40mm, with a safety minimum distance of min. 850mm from rack to auger. This must be observed in relation to DS/EN ISO 13857.
- 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 fan 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
 - Control of belts, here under after tightening
- 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 for transportation of feedstuff, which gives reason for an inner Zone 22. In that case the machine is placed in an Atex zone, 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
- Flour/meal
- Minerals
- Soya bean crushed corn/meal
- Rape/beans

	Particle Size [µm] [Microns]	Ignition temperatures Cloud of Dust [°C]	Ignition Temperature 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 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. All pointed out shieldings must be mounted before the machine is put into operation. All shieldings may only be removed by using tools. The shieldings must be mounted before the machine is put into operation.

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

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

When the pipe auger is running, do not put your hand or your fingers into the drive device or into the control throttle.

Shieldings and also belt shielding and inlet coverings for prevention or elimination 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.

Safety equipment, which has been removed during repair, cleaning or maintenance, must be re-established before the installation is put back into service.

Prior to starting-up of the auger, 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 auger 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 pipe auger 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 auger, there must be adequate work lighting

During any kind of work with the machine should be used, safety boots, earmuffs and other required precautions as they might be required by the local workplace assessment, in which the auger 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.

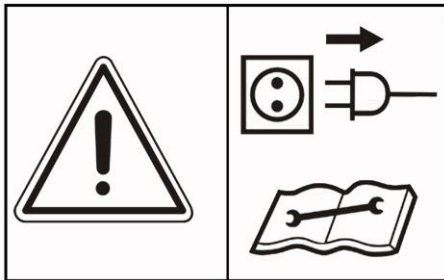
You should be aware that if the auger is expected to run empty for more than 30 seconds a dry-running sensor must be mounted, which ensures that the machine stops. Likewise, it is ensured that the machine outlet will not be clogged. For example, by using a stow detector. If there are jarring sounds from the machine during operation one has to find the cause of the jarring sounds, and defective parts must be replaced.

Use of the Machine

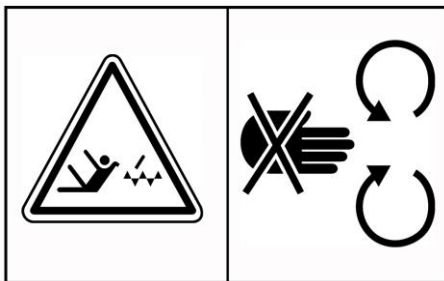
The pipe auger is designed for horizontal and inclined transportation of grain and almost of all cereals, seeds and flour products available within agriculture (see page 5 about material specifications in General Specifications). The pipe auger can be used in an angle up to 45°. The pipe auger **may not** be used for tasks beyond these ones.

The pipe auger may have a speed of 200-450 rpm at the auger. Maximum lengths of 10m.

Explonation of the Pictograms



Prior to repair, maintenance and cleaning work the motor must be turned off and the electric plug pulled out, or the safety lock should be locked in the open position.



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



Hearing protection is required when working with this machine.



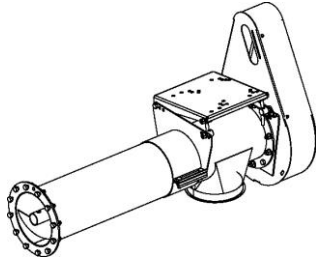
Sealing for belt shielding can be turned according to the location of the motor, relative to the belt shielding. (See Description of the Parts of Sealings)

Residual Risk

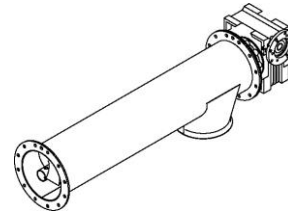
The pipe auger is produced in accordance with the health and safety requirements, which are set out in the ATEX and in the Machinery Directive, and in accordance with the consequently harmonized standards. If these regulations are disregarded, the pipe auger might be a danger to the operator/user or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

Description of the Components

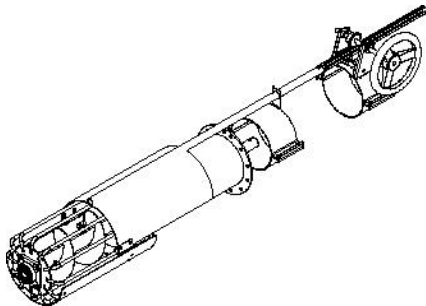
Head of the auger w/ motor bracket and belt drive



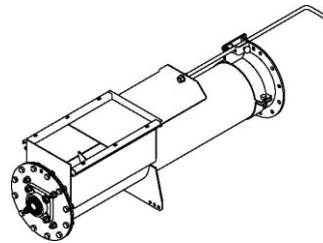
Head of the auger w/ gear



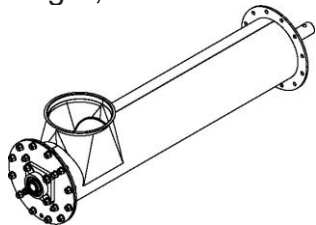
Foot of the auger, inlet w/ basket and og regulation



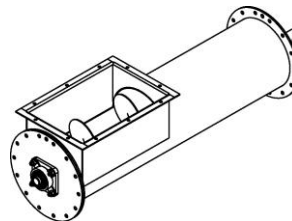
Oblong inlet w/ or w/out throttle



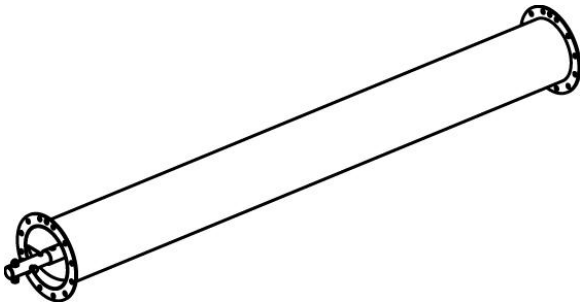
Foot of the auger, inlet/outlet SS205



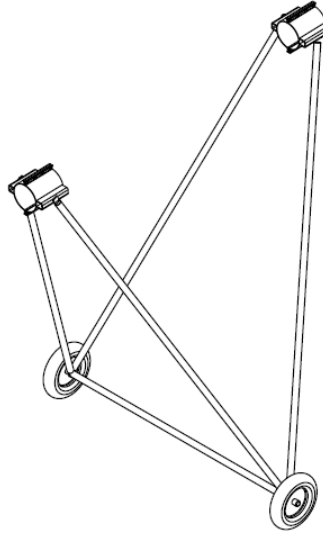
Foot of the auger, inlet/outlet SS254



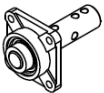
Extensions w/ spigot and socket



Carry support



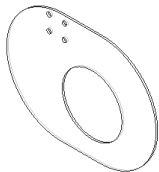
Bottom bearing



Intermediate bearing



Sealing grain cannon 205



Sealing SS205



Mounting

Technical knowledge is prerequisite for assembling of pipe augers.

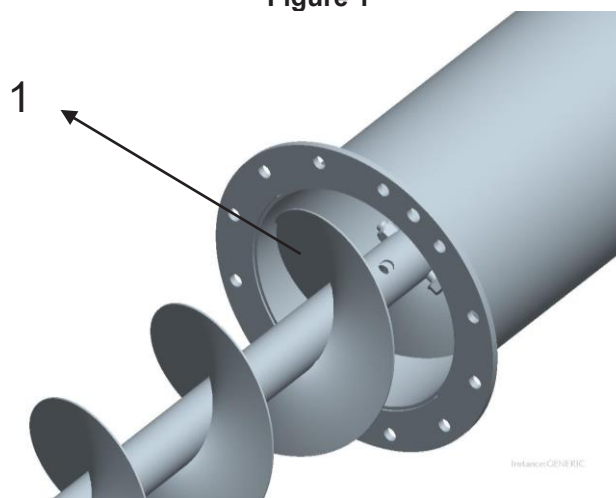
Head of the Auger w/ Belt Drive

Head of the pipe auger is delivered already assembled.

The inner pipe auger is pulled via the tie bolt a little out from the external pipe of the extension and is connected to the inner pipe of the head of the auger, so that the convolution of the respective ends of the auger align. The external pipe of the extension should be pushed into the flange, figure 1 position 1.

Further extensions are mounted by the same procedure. Flange against flange.

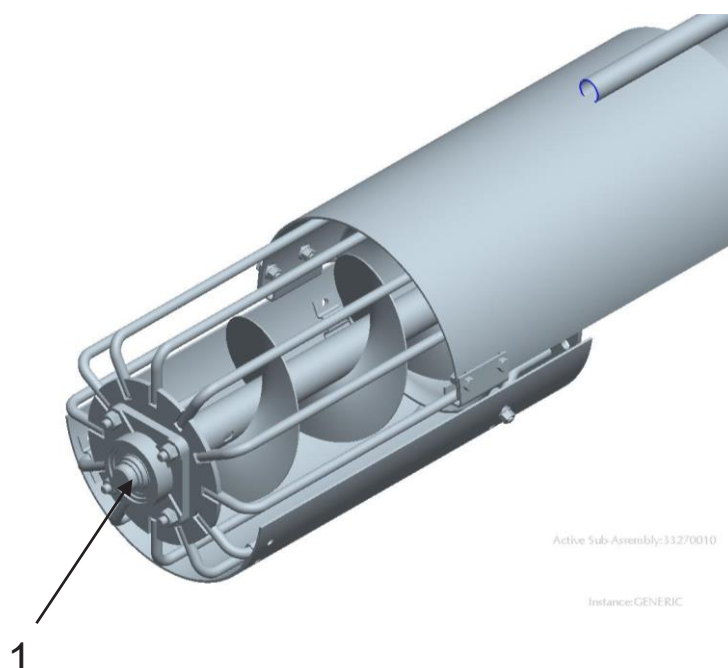
Figure 1



Foot of the Auger w/ Basket

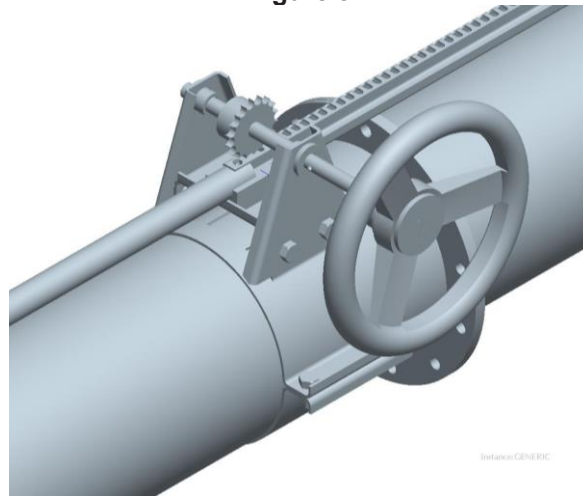
Foot of the auger is mounted like extensions, the inner auger is fitted in the end steering knuckle, see figure 2 position 1.

Figure 2



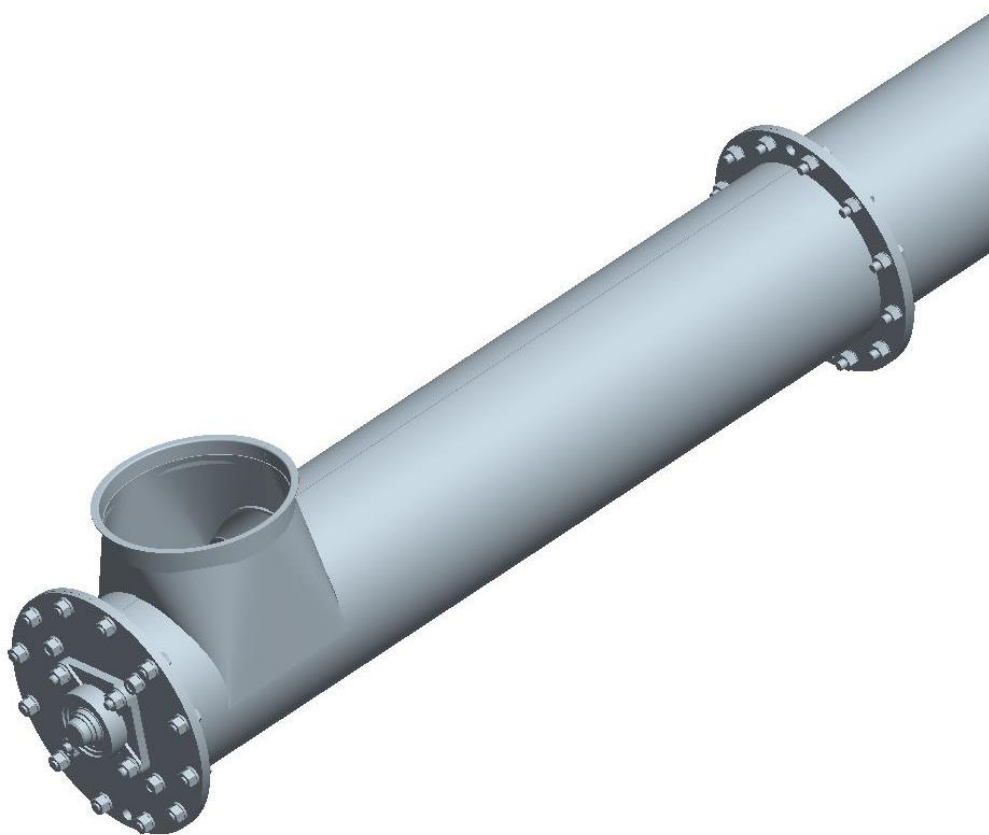
The operating lever w/ attachments is to be placed onto the external pipe of the extension, while the inlet slide is pushed all the way down. The function is to be controlled by the hand wheel.

Figure 3



Foot of the Auger, round Inlet (square onto SS254)

Foot of the auger is in principle mounted in the same way as at foot of the auger w/ basket.

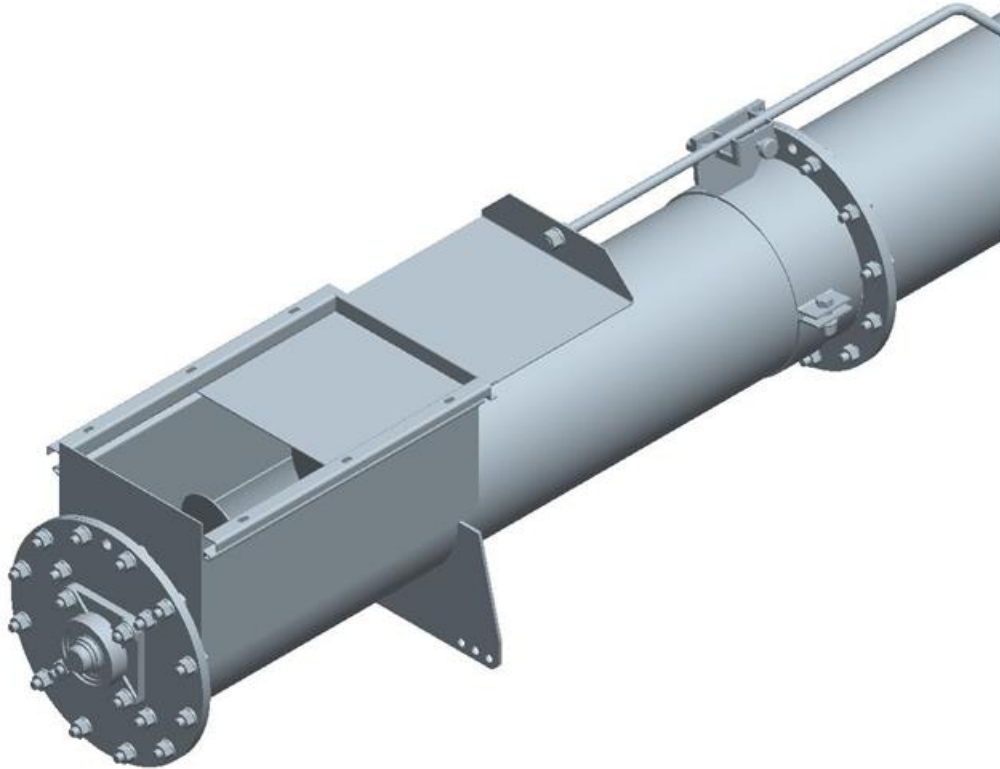


Instance:GENERIC

Oblong Inlet

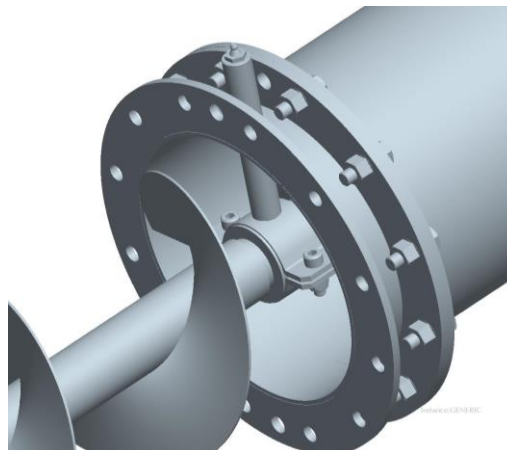
Oblong inlet is mounted as if one assembles the extensions. At first one dismounts the inner auger inside the oblong inlet and it is screwed together with the inner auger from the extension, here after the external pipe is fitted, and flange against flange. Eventually the bolt is screwed firmly into the end steering knuckle, see figure 4.

Figure 4



Mounting of Intermediate Bearing

The connecting pivot is supplied by an extra set of holes, staggered by 50mm, so that one could mount a slide bearing between two extensions.



Mounting of Motor and V-Belt Pulley

The protective plate (the cover/lid) is to be removed. The large wheel of the V-belt pulley and the taperlock-bush are to be connected loosely together (see special-instructions), and are to be pushed onto the drive shaft of the auger and are to be tightened firmly by two threaded pins.

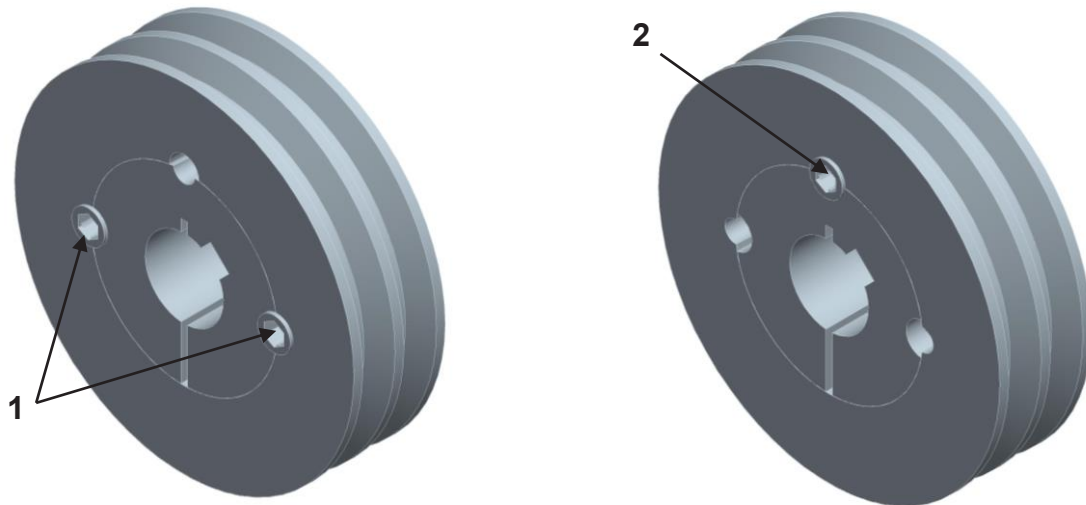
The motor must be fitted onto the motor bracket by 4 screws. The V-belt-tighten- device is to be turned totally down. The small wheel of the V-belt should be pre-mounted and to be pushed into the motor shaft. The two wheels of the V-belt must be put into position, so that they flush with one another. Hereafter the two threaded pins must fix the small wheel of the V-belt. The V-belt is mounted and tightened so much, that the belt only just can be pushed 7-8 mm to the inside. The protective cover/lid for the V-belt is to be mounted again.

Taperlock

Figure 5

In order to secure the pulley onto the shaft, tighten the threaded pins in the 2 holes opposite to each other position 1

In order to loosen the taper-lock bushes, the threaded pins are to be screwed out, one of these threaded pins are again to be turned into the third hole, position 2 and to be tightened



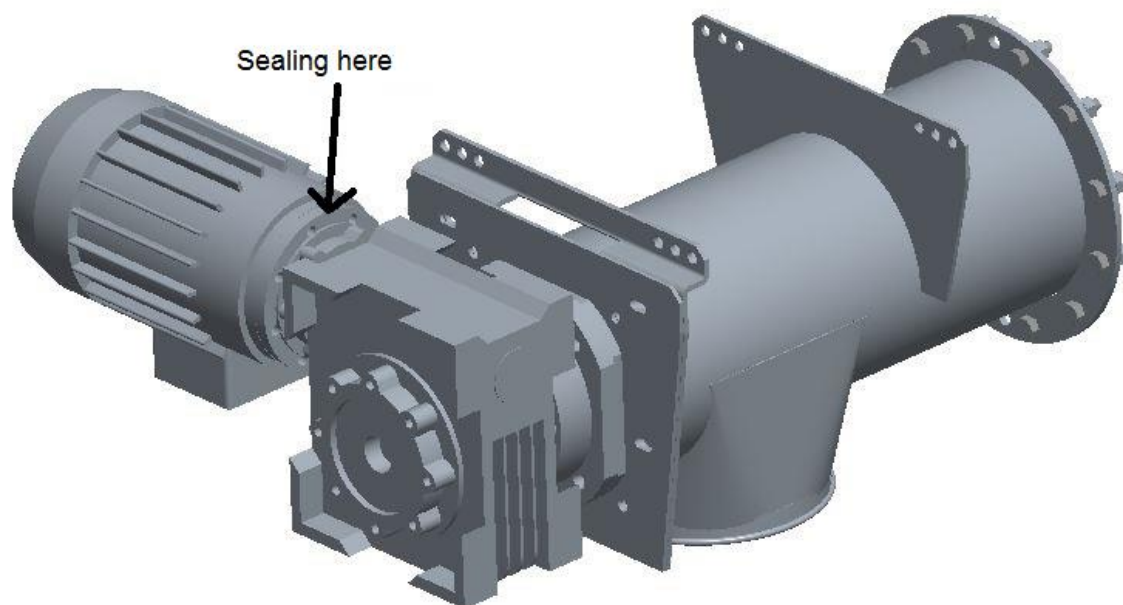
Head of the Auger w/ Gear Motor

The head of the auger and extensions are mounted as at the head of the auger w/ belt drive.

If the auger has been ordered supplied by motor, this one is mounted onto gear and onto head of the auger from the side of the factory, or else it must be installed according to the instructions of the motor supplier.

Sealing of Flange between Gear and Motor

The assembly is to be jointed at the upper side, in order to prevent ingress of water.

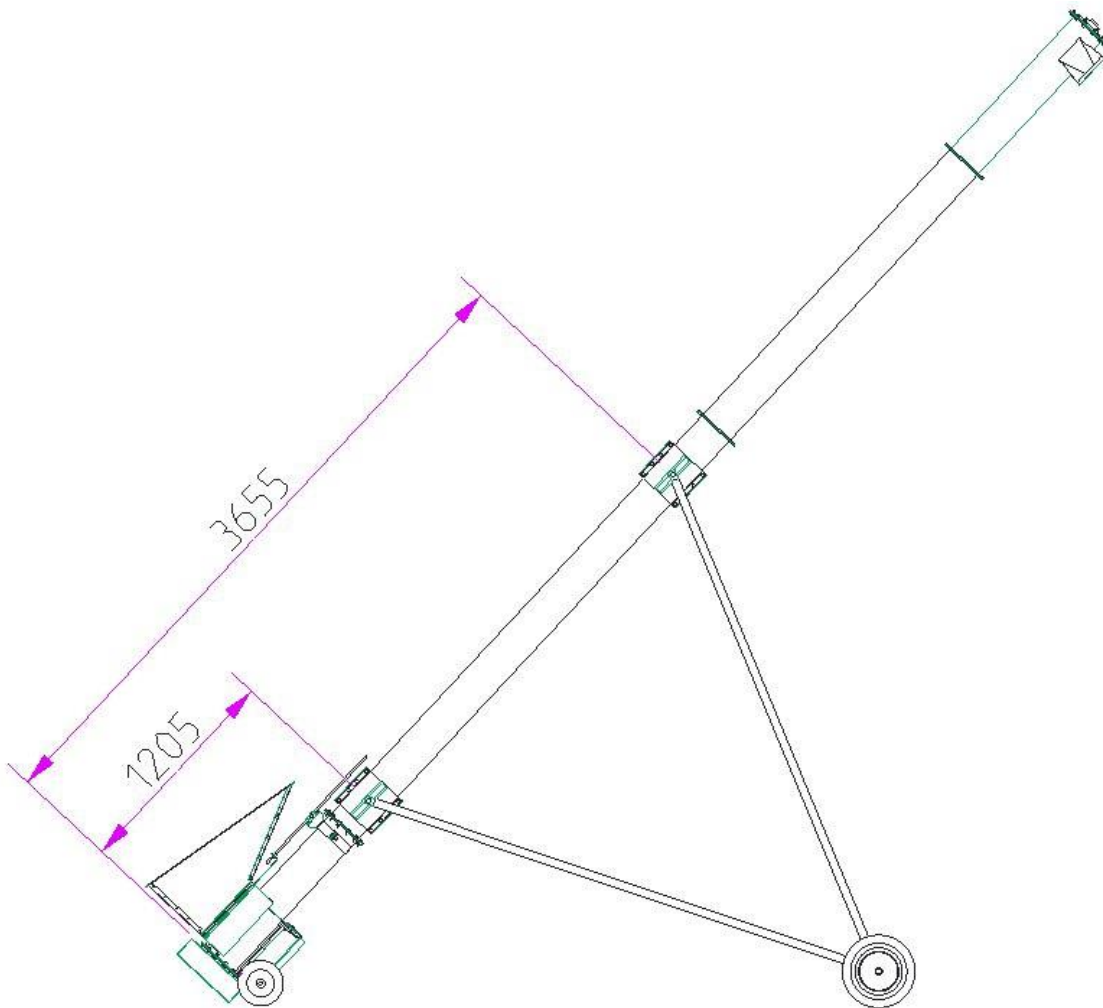


Supports

The pipe auger must have supports for each 6m and joints between parts must be properly carried out. Grain cannon must use a suitable rack in order for proper balance. If in doubt, please contact SØBY.

Description of the location of brackets for grain cannon:

SS205 45° (Do not angle more than 45°):



Electrical Equipment

Specially trained staff only may perform the electrical connection to machinery delivered by SØBY.



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.

When the pipe auger is connected, check the direction of rotation according to the arrow.

Figure 6



Operation

During operation of the pipe auger, the relevant regulations for prevention of accidents must be observed.

Add transport material to the pipe auger (See chart page 5 upper) and control if this can freely run through.

Avoid running the pipe auger empty, as this cause huge wear of the bends of the auger, and hereby the pipe auger also will make more noise and danger of explosion might arise.

During normal operation, the auger will be totally filled up.

Maintenance

During maintenance works, the safety regulations, which are described in the section Safety Instructions, must be observed.

The tension of the drive V-belt should be checked every 3 months. At frequent use of the pipe auger, the tension of the drive V-belt must be checked every month. At the tightening of the belt, one should look for abrasion, if this is the case, the belt must be changed immediately. If this is not any longer possible, the V-belt must be changed.

The inner augers are worn more or less, depending on how much dirt there is in the material transported, and once a year one has to control for abrasion or damages. Damages at the inner augers may arise via foreign objects, such as for instance pieces of wood, stone or iron.

If foreign objects are stuck inside the auger, these can be removed by using appropriate tools, but under no circumstances by your own hands. In such case, one has to take apart the pipe auger. The inner auger must be replaced, if it is too worn out.

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

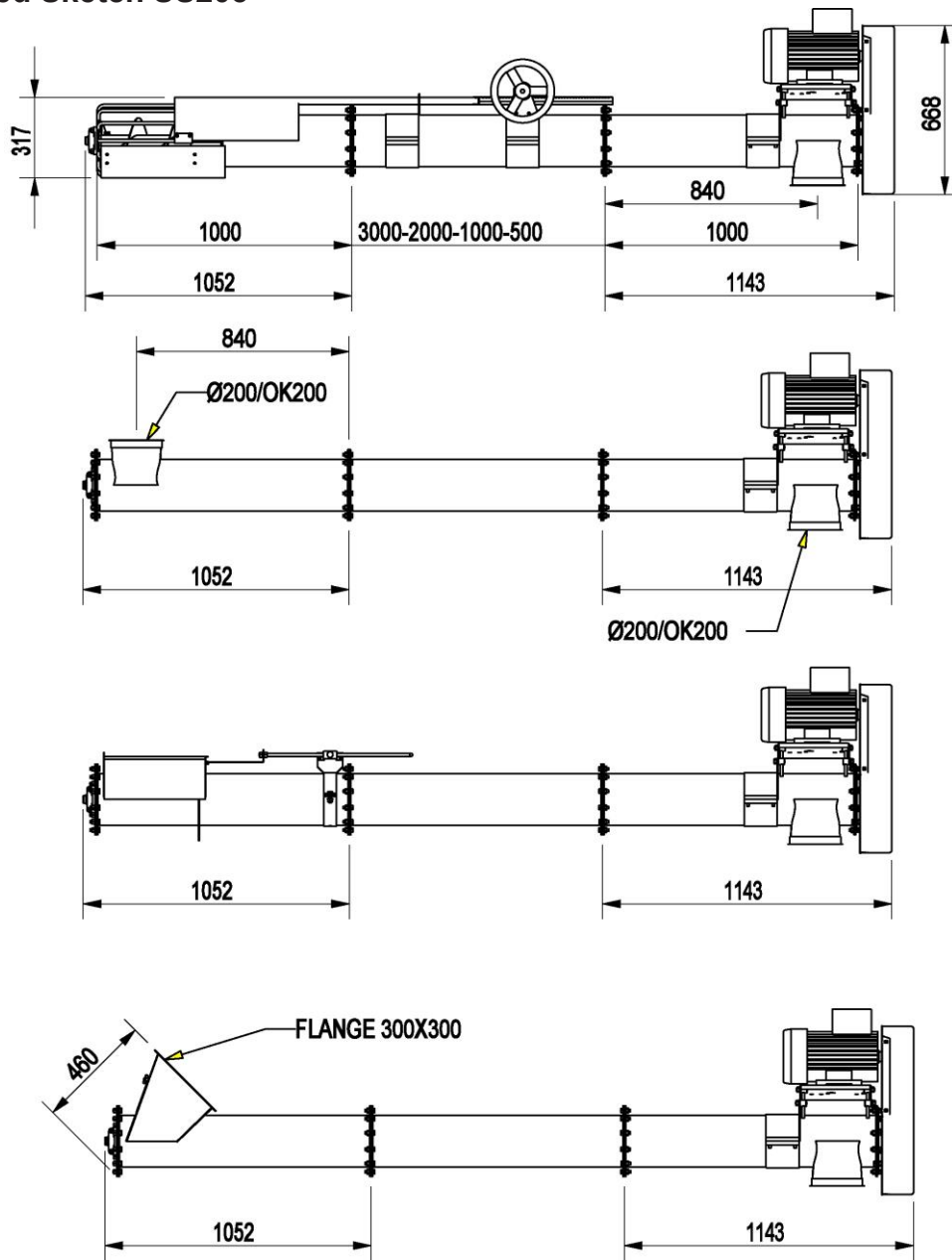
The following equipment at the unit is going to be maintained with the following intervals:

Equipment	Manufacturer	Intervals of Maintenance:
Top bearing	PTI	Must be replaced at every 10.000 operating hours. Lubrication for every 2500 hours
Intermediate bearing	SØBY	Must be replaced at every 1.000 operating hours. Lubrication for every 300 hours
Bottom bearing	PTI	Must be replaced at every 10.000 operating hours. Lubrication for every 2500 hours
Belt	PTI	The tension of the drive V-belt should be checked at each 1.000 operating hours. At frequent use of the pipe auger, the tension of the drive V-belt must be checked every month. At the tightening of the belt, one should look for abrasion, if this is the case, the belt must be changed immediately. If this is not any longer possible, the V-belt must be changed. The V-belt must be antistatic and flame retardant.
Belt pulley	PTI	Must be replaced at every 10.000 operating hours.
Motor	Cantoni /techtop	Must be replaced at every 20.000 operating hours.
Gear box	Varvel	It is important to emphasize that the explosion safety is subject to the fact that there will be carried out the below demanded maintenance: Dust layer more than 5 mm must be removed by vacuum-cleaner For every 500 hours of operation, seals must be controlled for leaks For every 3.000 hours of operation or for every 6 months, a visual inspection of oil seals must be carried out and in cases of signs of abrasion, the seals must be replaced. Oil changes are to be carried out every 5 years.
Pipe of the auger	SØBY	Must be controlled for signs of corrosion for every 1.000 operating hours

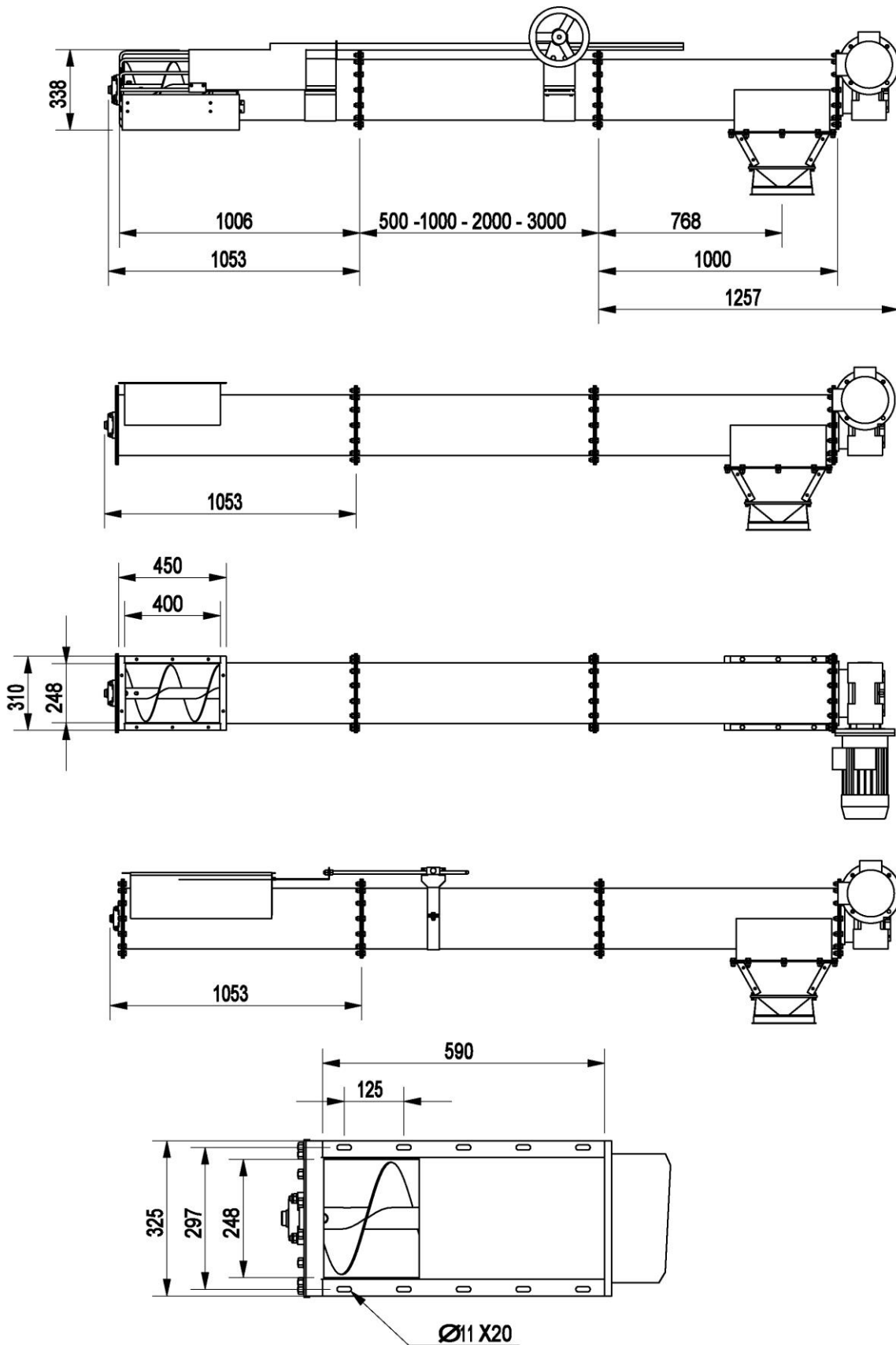
Technical Data

Noise Level:	Operation w/ grain 81,8 dB(A) Half Empty 85,6 dB(A) Total Empty 92 dB(A)
Motor Capacity:	Between 3,0 kW and 11,0 kW. See nameplate of the motor for further information.
Gear:	Varvel RT/RS Synthetic gear oil ISO VG 320 "long-life" oil
Transport Capacity:	SS205 up to 60 tons/hour horizontal SS254 up to 90 tons/hour horizontal

Dimensioned Sketch SS205



Dimensioned Sketch SS254



Lengths of Pipes	SS205 Auger rpm 450 Motor 1400 rpm	SS205 Auger rpm 400 Motor 2800 rpm	SS254 Auger rpm 450 Motor 1400 rpm	SS254 Auger rpm 400 Motor 2800 rpm
1m	3,0 kW	3,0 kW	3,0 kW	3,0 kW
2m	3,0 kW	3,0 kW	3,0 kW	4,0 kW
3m	3,0 kW	3,0 kW	3,0 kW	4,0 kW
4m	4,0 kW	4,0 kW	4,0 kW	5,5T kW
5m	4,0 kW	4,0 kW	4,0 kW	5,5T kW
6m	5,5 kW	5,5T kW	5,5 kW	7,5T kW
7m	5,5 kW	5,5T kW	5,5 kW	7,5T kW
8m	7,5 kW	7,5T kW	7,5 kW	11T kW
9m	7,5 kW	7,5T kW	7,5 kW	11T kW
10m	7,5 kW	7,5T kW	7,5 kW	11T kW

TroubleShooting

Errors	Possible Cause	Advice/Remedies
The pipe auger 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 pipe auger	Remove the foreign objects via suitable remedies
Motor stops / motor is overloaded	Foreign object is blocking the pipe auger	Remove the foreign objects via suitable remedies
	The outlet is blocked	Clean the outlet
	Too much transport material in the chain conveyor	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	Replace fuses
The pipe auger does not transport / transports irregularly	The drive shaft is broken	Replace the drive shaft
	The inner auger is too worn	Replace the inner auger
	The inner auger is bent due to foreign object(s)	Remove the foreign object(s) via suitable tools, straighten out the inner auger, or replace if necessary
	The V-belt tension is too weak	Retighten the V-belt, replace if necessary
	Transport material is too much polluted	Clean the transport material
	The transport material is too moist	Dry transport material
	Insufficient material available	Add transport material



Declaration of Conformity

The Company
Søby Maskinaktieselskab
Viborgvej 306
DK-7840 Højslev
Denmark

Hereby declares that this machine type supplied by **Søby Maskinaktieselskab**

type: SS205-SS254

Complies with the following normative documents:

DIRECTIVE 2006/42/EC	OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006 on machinery, and amending Directive 95/16/EC
DIRECTIVE 2014/34/EU	OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres
DS/EN ISO 12100:2011	Safety of machinery – General principles for design – Risk assessment and risk reduction
DS/EN ISO 13857:2019	Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs
DS/EN IEC 60079-0:2018	Explosive atmospheres – Part 0: Equipment – General requirements
DS/EN ISO 80079-36:2016	Non-electrical equipment for use in potentially explosive atmospheres Part 1: Basic method and requirements
DS/EN ISO 80079-37:2016	Non-electrical equipment for use in potentially explosive atmospheres Part 5: Protection by constructional safety 'c'
DS/EN ISO 1127-1:2011	Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology

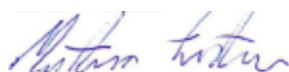
The electrical components mounted on this machine type complies with the following normative documents:

DIRECTIVE 2014/30/EU	OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility
DIRECTIVE 2014/35/EU	OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits
DIRECTIVE 2011/65/EU	OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

This machine is designed for equipment group II category 3/- D and have the following marking.

   II 3D/- Ex III C 135C° Dc/- X

Højslev, Nov-22



Morten Frantsen
Co-Owner



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