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User manual

SK5-12

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 references

Please read the entire User Instructions before assembling and operating
The bucket elevator.



If the purchaser makes any technical modifications to the machine, any warranty from
SØBY will then be cancelled. The Declaration of Conformity hereby loses its validity.

The guarantee is only granted if the following conditions are met:

- The unit may only be used as described in this manual. Replacement of parts or changing in the construction of the unit may cause the equipment to be re-certified.
- Installation, putting into service and operation by using this manual.
- Documentable compliance with maintenance intervals, cf. instructions.
- Use the original spare parts of the manufacturer only.
- Operation of the bucket elevator only by using motor protection.
- All joints must be sealed with silicone in order to avoid dust emissions.
- Emergency stop must be installed in accordance with current standard EN 60204-1.
- By normal operation at the machine, see pictogram devices and read user/assembly instructions.
- When performing operations in areas where there is a risk of explosion, the safety of persons and equipment is subject to compliance with relevant safety regulations. Performing installation and maintenance work in such areas implies a special responsibility for the persons performing the work.

This work requires that assembly and maintenance personnel have thorough knowledge of laws, regulations and standards within the area. This construction gives a brief overview of the most important safety conditions in connection with the installation, maintenance and use of the equipment. Please pay attention to the fact that it is the responsibility of the end user to identify potentially explosive areas according to current regulations, with the following requirements for zone classifications and, if applicable, reporting to the local authorities.

- Repair, service and maintenance must be done carefully in accordance with the instructions of SØBY and must be performed by personnel who possess the necessary qualifications in relation to the explosion safety of the equipment. Inspection and maintenance in respect of the electrical equipment must be based on the instructions in EN60079-17.

During the life time of the bucket elevator and in connection with use, special attention must be paid to the following:

- Lifetime (see diagram page 25)
- Damage to parts and screens
- Corrosion
- Tightening of bolts and screws
- Data and information about allowable installation- and operating conditions on the data plate of the equipment
- Instruction in possible type certificates for equipment installed on the unit

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 and assembled and installed as directed by SØBY.

The manufacturer reserves the right to make technical changes.

The machine can be used for transportation of feed, which give reason for an inner ATEX zone zone 22. In case the machine is installed in zone 21 or 22, please select suitable gear and motor etc. for this purpose.

The machine can be used for transportation of the following material, with data as shown below. Materials beyond this must not be used in this machine:

- Grain, mixed dust
- Flour
- Minerals
- Soya bean meal
- Rape/beans
- Feed pellets up to 8 mm in diameter

	Particle size [μm]	Ignition- temperature Dust clouds [$^{\circ}\text{C}$]	Ignition temp. 5mm layer of dust [$^{\circ}\text{C}$]	LEL [g/m ³]	MIE [mJ]	Kst [bar m/s]	Refe- rence
Grænse værdier	12	400	280	30	50	131	-

If the media 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 atmosphere/dust loads.

Safety Instructions



The instructions and especially the safety information must be read carefully prior to assembly, commissioning, operation and maintenance.

All plants and components must be installed in accordance with the applicable accident prevention rules.

The machine must be shielded correctly in relation to the current Machinery Directive and as such making it impossible to get in touch with moving parts. The shields may only be removed by using tools. These must be fitted before the machine is put into operation.

The motor must be properly protected through overload protection equipment, and the bucket elevator must be properly fitted with a suitable potential equalization.

For any repair or maintenance, disconnect the power source from the drive motors.

When the bucket elevator is running, do not put your hand or your fingers into the drive device or elsewhere.

There must always be shielding of in- and outlet, and there is a required mesh size of up to 120mm, with a safety clearance of min. 850mm. This must be observed in relation to DS/EN ISO 13857.

Shields such as shaft shields for prevention or elimination of risks must be maintained on a regular basis.

The machine must be installed in a way that provides good ergonomic conditions for service on the machine.

The safety equipment that has been removed during repair, cleaning and maintenance work must be re-established before the plant is put back into service.

All screws, bolts and attachments must be properly tightened.

If the machine is stuck/clogged, the transmission might be overheated.

The bucket elevator must only be put into operation when it is assured that it is not defective. The user is obliged to only operating the installation when it is in perfect condition.

SØBY is not liable for damage arising from abuse or technical modifications of the installation and breach of the instructions given in this user guide.

The bucket elevator type SK5-12 is constructed in accordance with the 94/9-EF Directive (ATEX) and can be used for transportation of the materials listed in this manual. If the bucket elevator is used for transportation of types of material, which have characteristics that cause the material when blending into air immediately can cause an explosion if ignited, attention should be drawn to the fact that such materials must not contain foreign objects such as steel or stone, which during transportation through the bucket elevator may cause mechanical sparks, with the risk of ignition of the explosive atmosphere inside the elevator. This could damage the elevator and in worst case harm human beings, animals and property.

If the bucket elevator is used for transportation of the above combination of explosive material and foreign objects, SØBY cannot guarantee for the safety of the bucket elevator in relation to explosion. In such situations it is recommended that the elevator is produced with safety devices in the form of explosion relief and/or explosion suppression systems, whose efficiency is to be determined by more detailed calculation as not all types of dust explode at the same speed and pressure.

If the bucket elevator is placed in areas classified as potentially explosive, specially approved motor and gearbox etc. must be used for the zone in question. If you have any questions, please contact SØBY for further information. It must be ensured that the ambient temperature in the area, where the equipment is installed remains within the permitted limit values of the equipment $-20^{\circ}\text{C} \leq \text{TA} \leq 40^{\circ}$. Therefore, when installing the device, it is necessary to consider any external heat sources that may affect the ambient temperature in the area where the equipment is installed.

During any work with the bucket elevator there must be sufficient work lighting.

Respiratory masks, safety shoes, hearing protection and other required safety precautions that may be required by the local workplace assessment should be used during any work with the machine, where the bucket elevator is installed.

Furthermore, a helmet must be used during installation, service and assembly/disassembly.

When assembling machines, heavy lifting may occur. Persons setting up the machine must read the assembly / user manual first. Suitable lifting equipment must be used in connection with installation and assembly.

Gloves must be used while handling the machine as there is a risk of sharp edges.

The equipment must not be exposed to larger dust loads (dust layer) than permitted in EN60079-14.

The electrical connection to the supplied machines may only be carried out by specially-trained personnel.

Use of the machine

The bucket elevator is designed for the transportation of grain, and almost all seeds and flour products within agriculture (see material specifications in general references). The bucket elevator must not be used for tasks beyond these.

The bucket elevator is driven by a gear motor. It lifts the transportation material from the inlet on the foot of the elevator and up to the outlet of the elevator head.

The complete installation must be observed in accordance with the applicable regulations in this manual and in accordance with the applicable Machine Directive 2006/42/EC.

The bucket elevator may not be used for tasks beyond the scope of this manual.

Explanation of the Pictogram



Prior to repair, maintenance and cleaning work turn off the engine and unplug the power cord.

Moving machine parts can be dangerous. They are only to be touched when they are completely at ease.

Hearing protection is mandatory during work with this machine



Lifting point



Direction arrow indicates direction of rotation.

Specifications

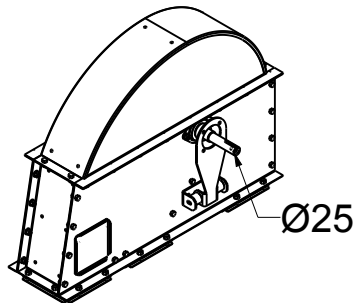
Designations	SK5-12
Elevator head with direct drive via gear motor	Yes
Rain cover for gear motor	Yes (extra equipment)
Power consumption	Up to 1,5kW
Belt speed	2,71 m/sec
Buckets per m	SK5 = 6 SK12 = 11
Bucket designation	SK5 = Columbus G80 SK12 = Columbus G80
Plate thickness	Head = 2 mm Foot = 2 mm Extension = 2 mm
Extension square inner	158x158 mm
Belt type	SK5/12: Moderate oil resistant 1 m belt EP500/4 B= 100 mm Full oil resistant 1 m belt EP63/5 B= 100 mm (extra equipment)
Back stop unit	No
Rotating sensor	Yes (extra equipment)

Additional accessories for:

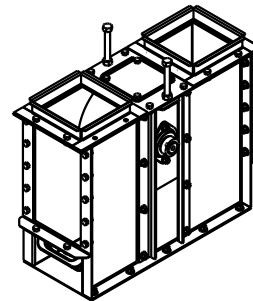
- Inlet to direct transition for ST152 trough auger to both sides
- Inlet with 45° and 60° i Ø150/Q16

Description of components

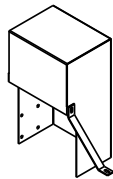
Bucket elevator head complete
with Q16 outlet



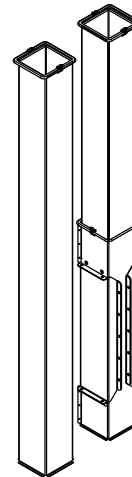
Bucket elevator foot complete



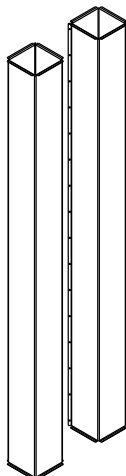
Rain cover for SK5-12



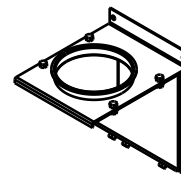
2,0m extension with inspection



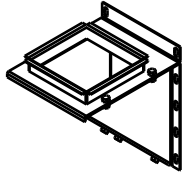
2,0m extension



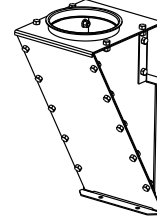
Inlet Ø150 45° for bucket elevator
foot



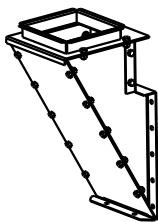
Inlet Q16 45° for bucket elevator
foot



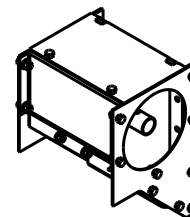
Inlet Ø150 60° for bucket elevator
foot



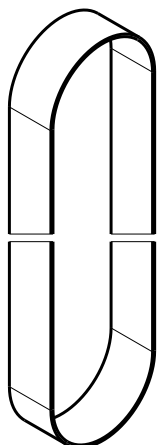
Inlet Q16 60° for bucket elevator
foot



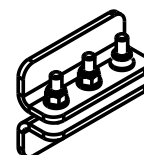
Inlet for bucket elevator foot with
transition to ST152 trough auger



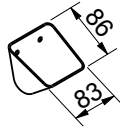
Elevator belt with a width of
100mm



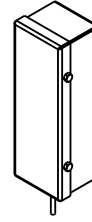
Fastener for elevator belt



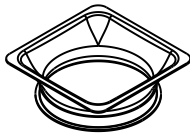
Elevator bucket



Rotating sensor



Outlet, transition from Q16 to Ø150



Mounting of SK5-12

Mounting of the bucket elevator as described in this section is a guideline from SØBY. If this is followed, you are ensured a safe and uniform assembly of the bucket elevator. The machine can also be assembled in other ways. Mounting of the bucket elevator may only be carried out by specially trained personnel.

Installation of the elevator

Place the elevator head with the backside on trestles with the outlet pointing upwards. Adjust the elevator head so that the flange side is vertical. Remove the top of the elevator head so that you can mount the elevator belt again later on.

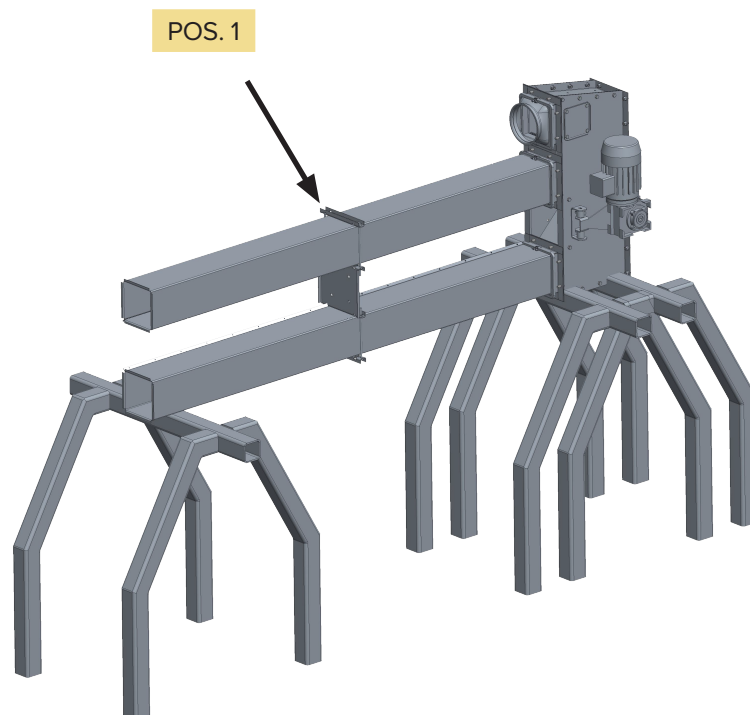
Place the elevator tubes as shown in figure, with the accompanying spacers as guide (see Pos. 1). These spacers should be used with all extensions.

Adjust the elevator tubes so that they are horizontal and tighten them on the elevator head. It may be necessary to loosen the bolts at flanges to adjust the elevator tubes. All joints must be sealed.

Pull a rope/cord through both elevator tubes, so you can eventually pull the elevator belt into place.

Other extensions are mounted in the same way. Remember to check with a spirit level that all extensions are horizontal and that they are in a straight line.

FIGURE 1

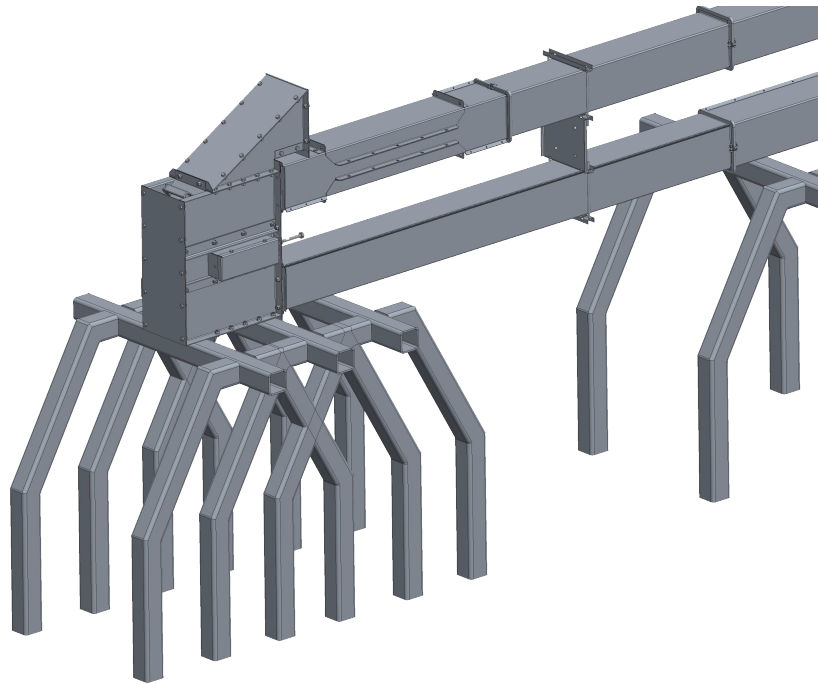


When all extensions (Max 12m) are assembled (the last extension must always be with the inspection hatch in the lower elevator tube), the elevator foot is to be placed - figure 2.

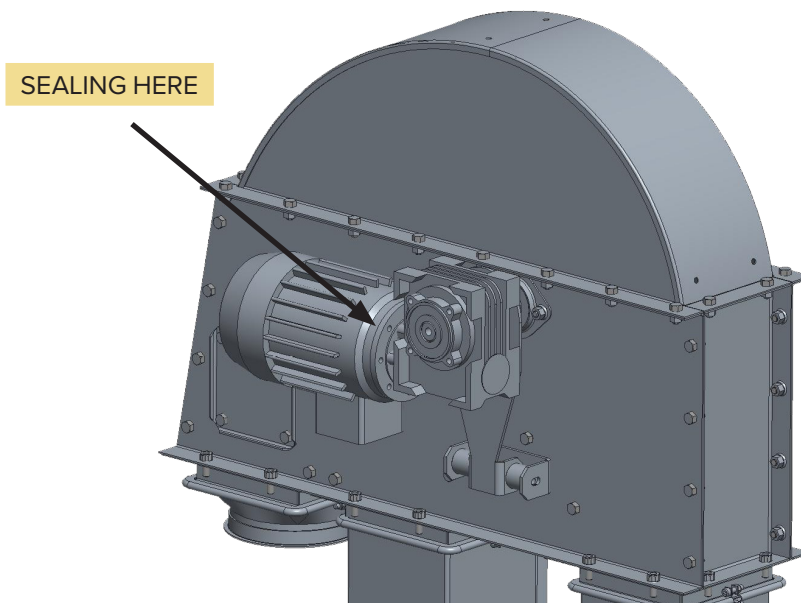
If the bucket elevator is more than 12 m, it is necessary to assemble it in two parts and collect these two when the elevator is raised in vertical position. Belt and cups can usefully be mounted in the upper part before assembling the two parts.

NB! Remember the rope/cord.

FIGURE 2



Sealing of flange between gear and motor:
The joint is sealed on the upper side to prevent water ingress.

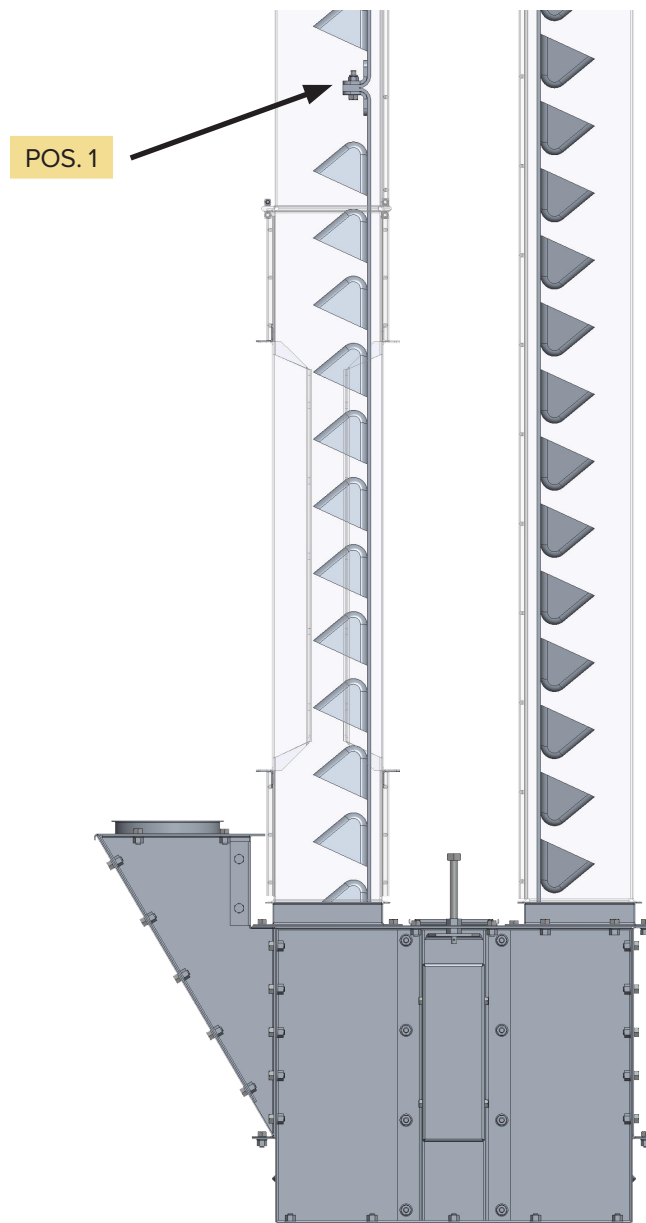


Insertion of the belt

The belt tensioning device at the elevator foot is completely loosened. Remove one cover plate on the upper elevator tube at the elevator foot. The belt is passed through both elevator tubes. One end of the belt is passed via the rope / cord under the bottom belt wheel to the opening. The other end is passed over the belt wheel at elevator head to the opening. The belt is assembled with the supplied assembly fittings Pos. 1, as seen in figure 3. The belt is shortened if necessary. Attach the elevator buckets with the supplied screws.

Before that, check that the belt has not been twisted when it was led into the elevator tubes.

FIGURE 3

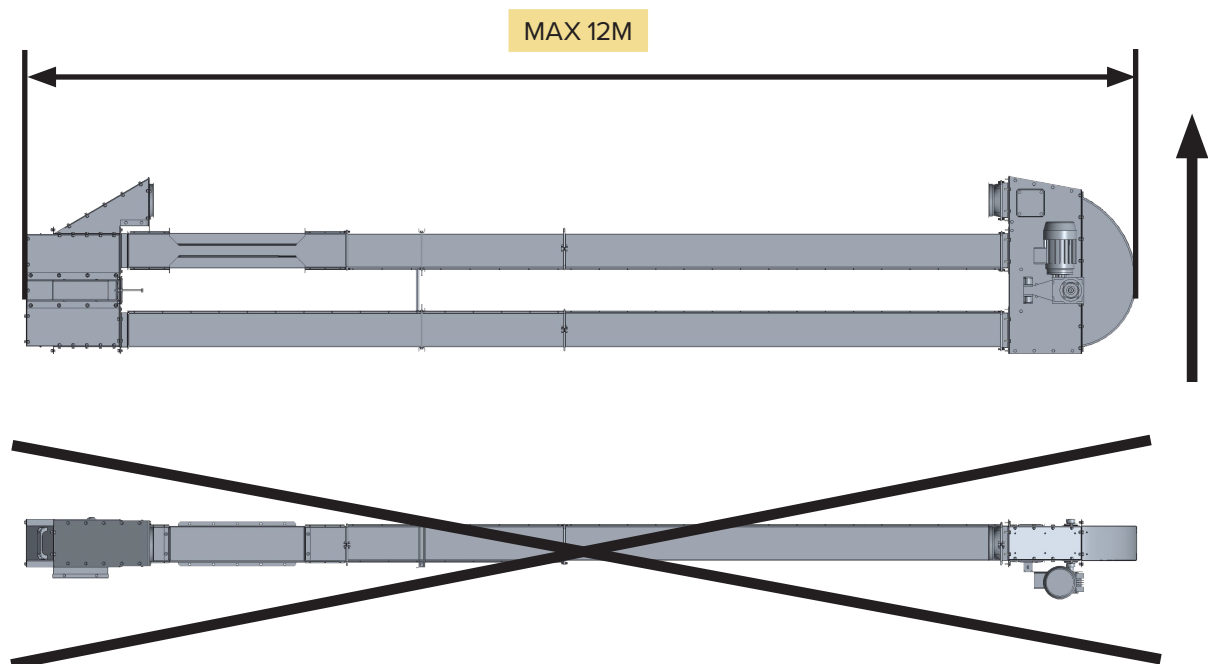


When the elevator is to be raised, it is important that it is raised over the high edge as shown in figure 4. Never over the flat side.



Place the lifting strap between the transitions from the head to the tubes.
When the elevator is raised vertically, it can be placed on its final foundation.

FIGURE 4



Adjustment of the elevator belt

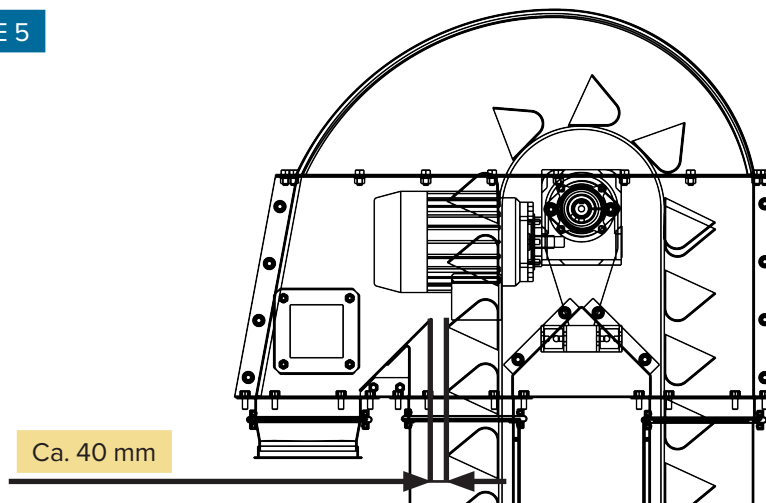
Tension of the belt

The belt is tightened equally in both sides. Make a test run and be aware that the belt runs in the middle of the belt wheel (the belt in the wheels are convex).

If the belt is running irregularly, correct this by adjusting at the elevator foot (The belt always runs to the highest point of the belt wheel).

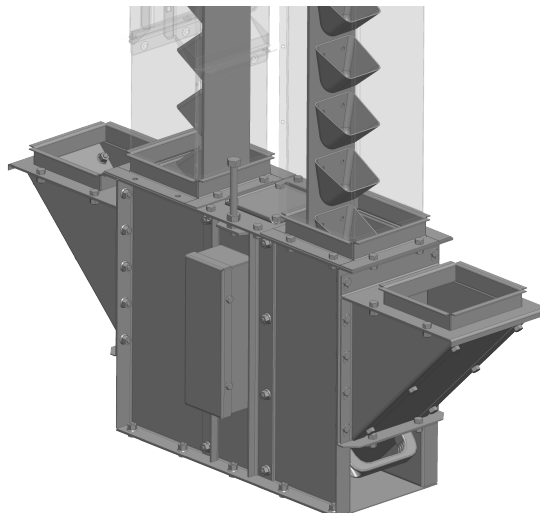
Adjustment of wiper approx. 40mm

FIGURE 5



Inlet hopper (extra)

An extra inlet hopper can be mounted on the riser side at the elevator foot. There may be a reduction in capacity, when mounted on the riser side.



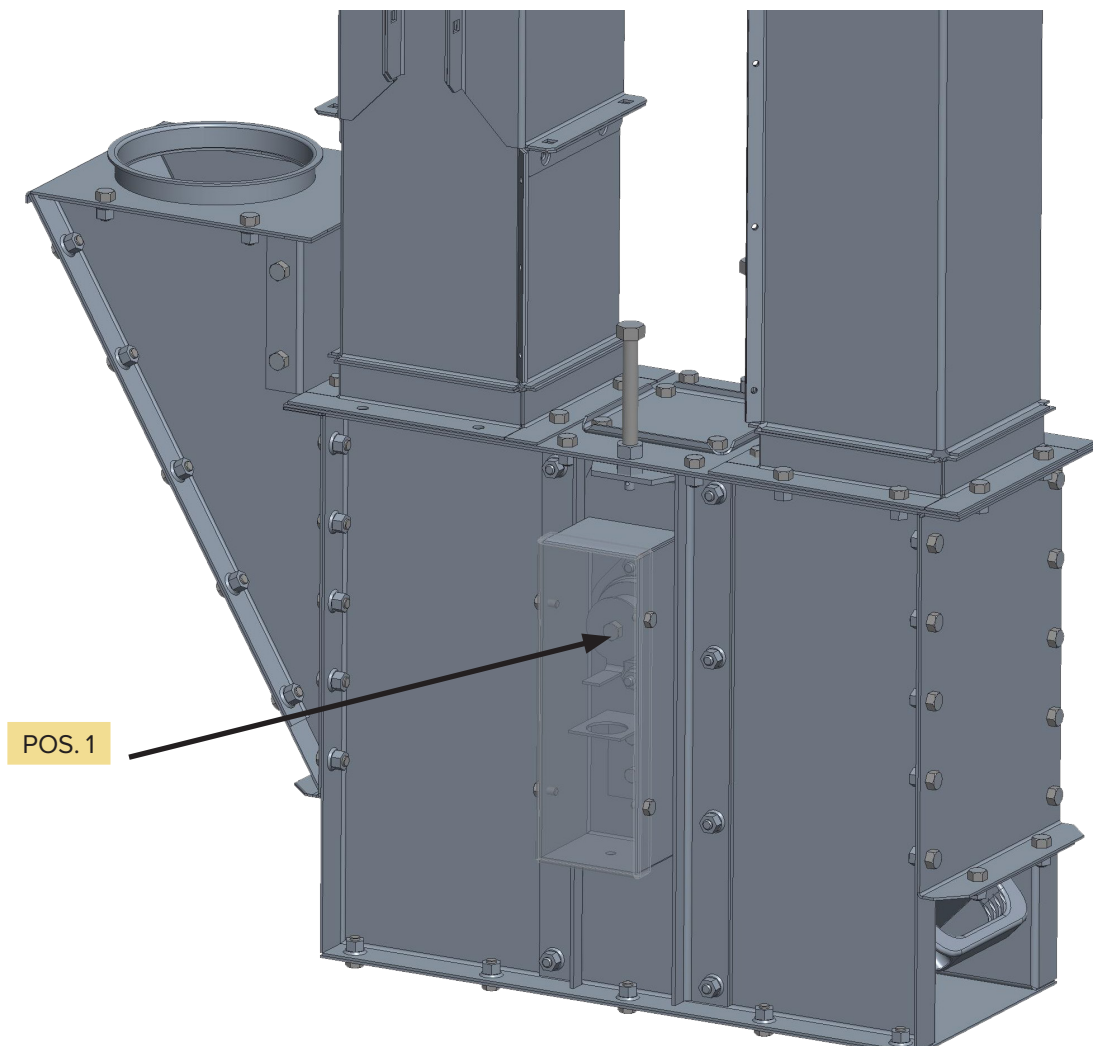
Monitoring of irregular drive and speed

Speed monitoring (extra accessories)

The rotating sensor is mounted on the tension plate (elevator foot around the flange bearing).

Mount the scanner at the end of the shaft see Pos. 1 figure 6. The sensor is adjusted to a 5 mm distance between sensor and scanner.

FIGURE 6



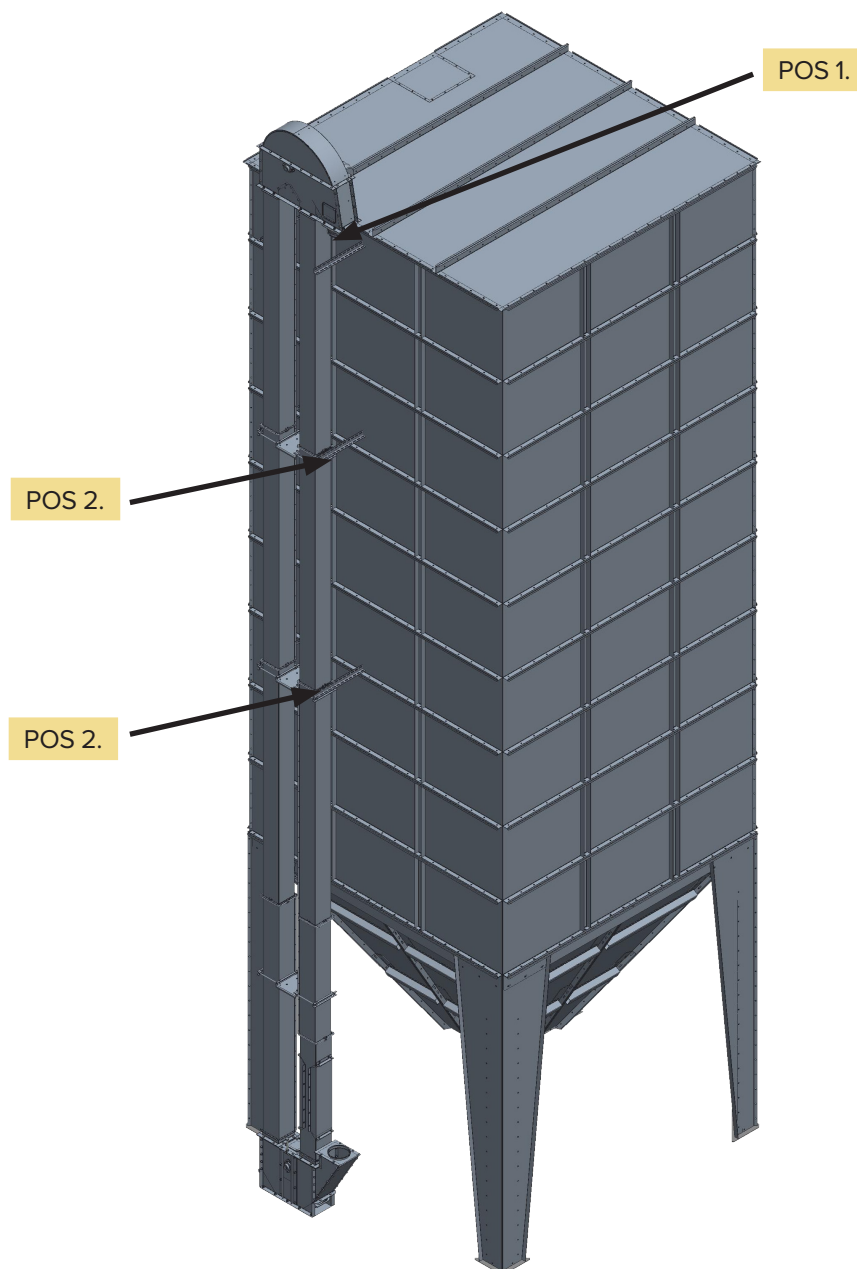
Outlet tube

The specified tube cross section must not be reduced. Outlet pipes Pos. 1 with grain must be fitted with a minimum of 45 ° downward slope, floury materials with 60° downward slope.

Reinforcement from bucket elevator to silo or building with fittings for every 4 m. These must be placed at the extension joints Pos. 2.

The elevator head must be anchored to the silo or other.

FIGURE 7



Electrical equipment

The electrical connection to the machines supplied by us may only be carried out by specially-trained personnel.



During installation, pay attention to the voltages and data listed on the rating plate. The terminals of the motor are connected according to the instructions on the rating plate of the motor. The motor is protected by thermal protection and a lockable main circuit breaker, as the warranty of the engine manufacturer otherwise expires. (This equipment is not inclusive in the delivery).

Installation and connection of the unit must be in accordance with national installation regulations, supplemented by the requirements set out in the Power Supply Order, EN60204-1 and EN60079-14. Commissioning of the electrical parts and subsequent maintenance must comply with the instructions in EN60079-17.

The bucket elevator must always be connected to motor protection.

If a frequency converter or soft starter is inserted, carefully check the data from the converter and the rating plate. Pay attention to electrical components labelling in classified areas.

When connecting the bucket elevator, make sure that the direction of rotation of the bucket elevator matches the directional arrow.

In addition, reference is made to manufacturer's instructions for motor, gear and any possible requirements to maintenance interval and service to maintain the explosion safety for these parts.

Equipotential bonding

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

Maintenance

During maintenance work, the precautions described under safety instructions are implemented.



The bucket elevator is worn out more or less depending on the amount of dirt in the transport material and must be inspected for wear or damage at least once a year. Damages might occur through foreign objects, such as wood, stone or iron pieces. If foreign objects have stuck in the bucket elevator, these can be removed using appropriate tools, but under no circumstances with your own hands. If this should be the case, please dismantle the bucket elevator. Parts that might be worn out should be replaced during the same round. However, foreign objects should always be avoided.

Please note that the safety of motors, gears and bearings is subject to compliance with maintenance intervals / replacement.

The electric motors are dimensioned so that they cannot be overloaded during normal operation if properly mounted and installed. The motor protection will interrupt the power supply if the motor is overloaded or if there is a power failure. Fuse and motor protection must be checked and, if necessary, replaced by specially trained personnel.

The bucket elevator belt is checked for the first time after 50 operating hours, for proper tightening and tilted running. This is done by turning off the main switch and then removing the inspection plate on the extension or in the elevator bottom. This enables you to test the belt and check the tension and tightening of the belt (please see previous section under mounting).

Maintenance table

Equipment	Manufacturer/ Supplier	Maintenance requirements	Maintenance interval
Buckets	JTT	Replaced by abrasion	Control for each 1,000 operating hours, or once a year.
Bearings in elevator top and bottom	PTI	Control of abrasion, packing and discoloration	Replaced for every 10,000 operating hours.
Elevator belt	JTT	Control of belt tightening.	Belt tightening is checked for every 100 operating hours. If it is too loose, tighten it.
Motor	Cantoni	Control motor and remove dust or the like on a regular basis	Bearings must be replaced for every 25.000 operation hours.
Worm gear	Varvel	Control of abrasion, dust and leakage	It is important to emphasize that the explosion safety is conditional upon the maintenance required below: Dust layers of more than 5 mm must be removed with a vacuum cleaner. Every 6 months, a visual inspection of oil seals is performed and replacement is made in case of wear and tear. Likewise, regular control of dissonance is carried out.

Cleaning

The bucket elevator should be cleaned regularly to avoid product mixes, bacterial formation and damage to the product.



To avoid overheating, dust at the motor and gear must be removed regularly.

At least once a year, the entire bucket elevator should be cleaned and checked for defects and abrasion.

Cleaning is required when changing crops in order not to mix them together.

When transporting highly sticky products such as rape, corn, soybean and the like, all inlets and outlets must be checked for free passage.

Make sure that the buckets are in good condition and that the elevator belt is not defective, otherwise they should be replaced. (See maintenance instructions)

When cleaning, take the precautions described under safety instructions.

Trouble shooting

Error	Possible cause	Remedy
The bucket elevator does not start	Power supply disconnected	Check power cable and replace if necessary
	The motor fuses are defective	Replace fuses
	The motor safety switch is defective	Replace the switch
	The motor is defective	Replace the motor
	Voltage is too low, below 400 V	Inform possibly electricity supplier
	Capacitor level sensor is activated	Find reason for overflow
	Foreign object is blocking the bucket elevator	Remove the foreign object with appropriate tools
The bucket elevator does not transport / does not transport properly	The outlet is blocked or no outlets are open	Clean or open the outlet
	The inlet capacity is too low	Increase the inlet capacity
	The elevator belt is too loose	Re-tighten the elevator belt and check the buckets
	Outflow tube is too small dimensioned	Change outflow tube, larger diameter
	Outflow tube has too small fall	Modify to at least 45° fall for grain, and 60° for flour
	Wrong transportation material	Add transport material according to the intended use as described in the previous section
	Insufficient transportation material	Add transportation material
	Transportation material is too contaminated	Clean the transportation material
	The material is too wet	Wet material is harder to transport than dry material
	Wrong speed	Make sure that the bucket elevator runs with the correct rotations
Foreign object blocks outflow tube	Remove foreign object with appropriate tools	
The bucket elevator emits loud sounds	Defective bearing	Renew bearing
	Buckets strike against	Tighten the elevator belt (see maintenance in previous section) and inspect buckets/belt again
	Foreign objects in the machine	Remove the foreign objects with appropriate tools
	Loose bearing	Fix the bearing or change bearing

Residual risk

The bucket elevator is performed in accordance with the safety and health requirements set out in the ATEX and Machinery Directive, and consequent harmonization standards. If these requirements are overridden, the bucket elevator may endanger the life or limbs of the user or third party. See Declaration of Conformity.

Supplier guides

Equipotential bonding:

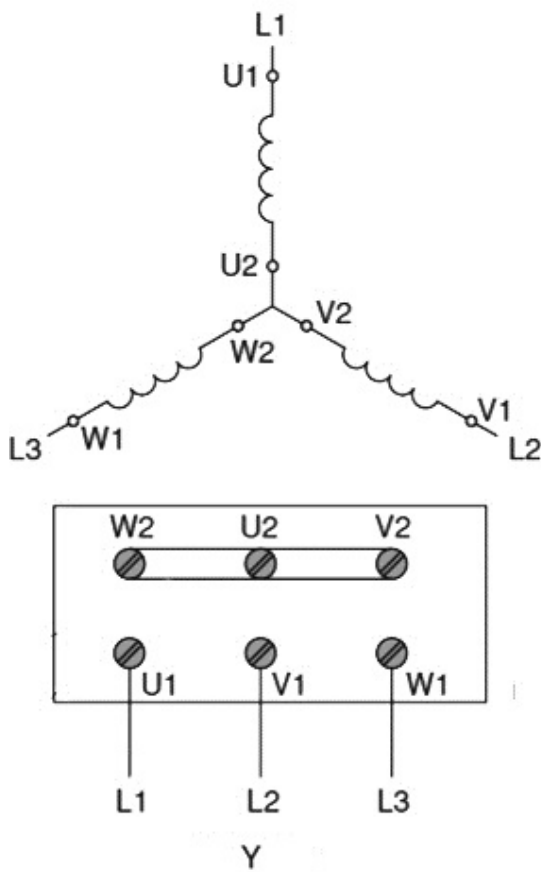
There is a terminal for connecting the interconnectors to the terminal box of the motor.
The connection must be carried out in accordance with the instructions in EN60079-14.

Connection diagram for Cantoni motors for either triangle or star connection.

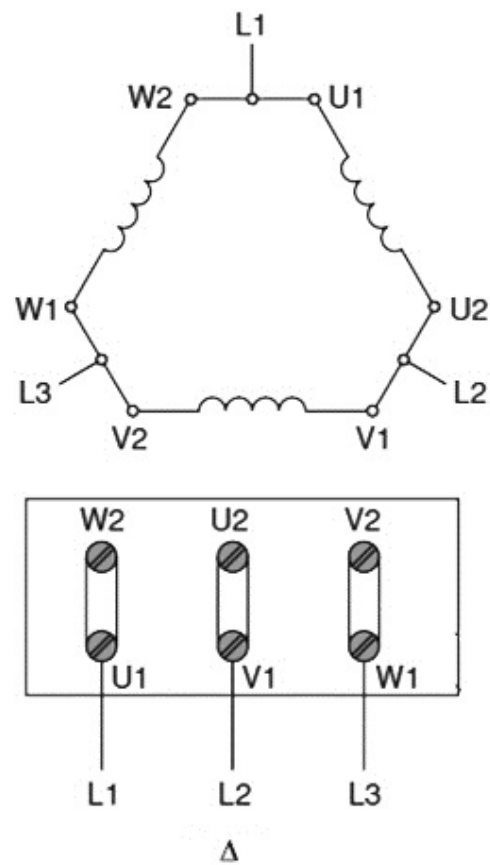
Standard motor terminal connection diagrams

3-phase single-speed motors:

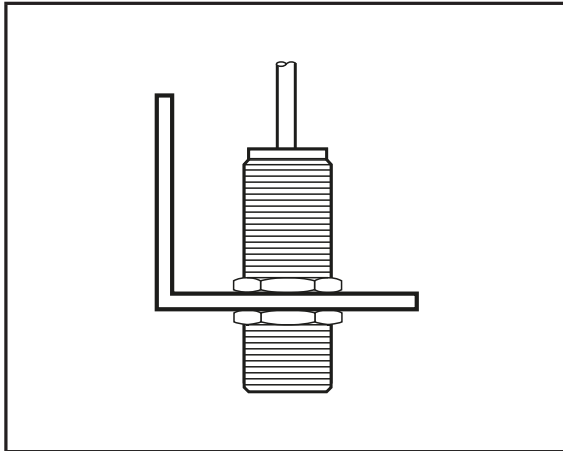
Connection in a Y



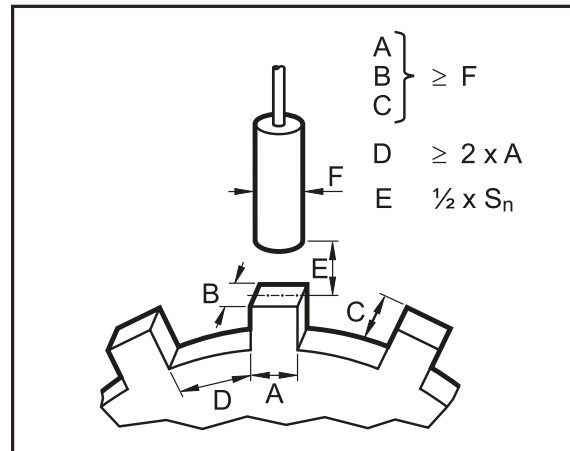
Connection in a Δ



4 Installation



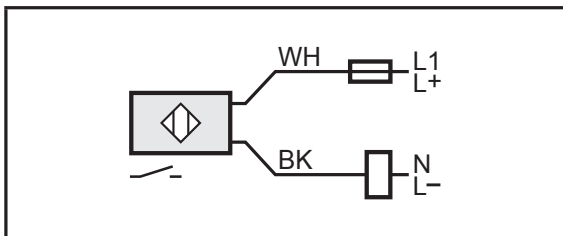
Mounting principle



Mounting specifications

- ▶ Fix the unit by means of a mounting device and secure it by means of the nuts provided so that it cannot work loose.
Flush installation.
- ▶ Adhere to the above mounting specifications to ensure a correct function.
Nominal sensing range S_n (→ 8 Technical data)

5 Electrical connection

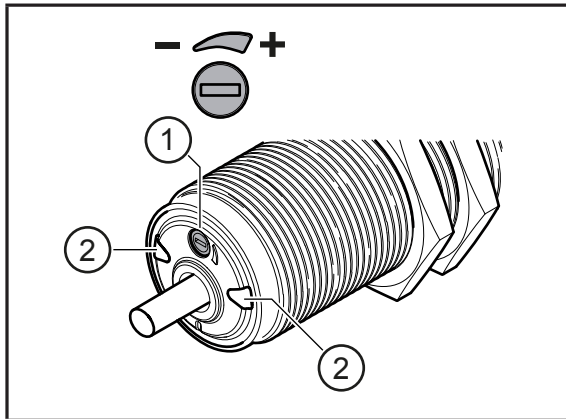


BK = black
WH = white

Wiring

- ▶ Disconnect power.
 - ▶ Connect the device according to the wiring arrangement.
- !** Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting)
ATEX units (DI1xxA):
Place the fuse outside the hazardous area.

6 Setting



- 1: Multi-turn potentiometer for switch point setting (without end stop)
- 2: LEDs for switching status indication (→ 3.1 Switching function)

Operating and display elements

- ▶ Keep the minimum speed to be monitored in the plant on a constant level.
- ▶ Switch on the device.
- ▶ Wait until the start-up delay is over (→ 8 Technical data).
- ▶ Set the switch point depending on the status of the LEDs.

If the LEDs are not lit:

- Turn the pot slowly anticlockwise (-) until the LEDs are lit.
Setting is finished.

If the LEDs are lit:

- Turn the pot clockwise (+) until the LEDs go off.
- Turn the pot slowly anticlockwise (-) until the LEDs are lit.
Setting is finished.

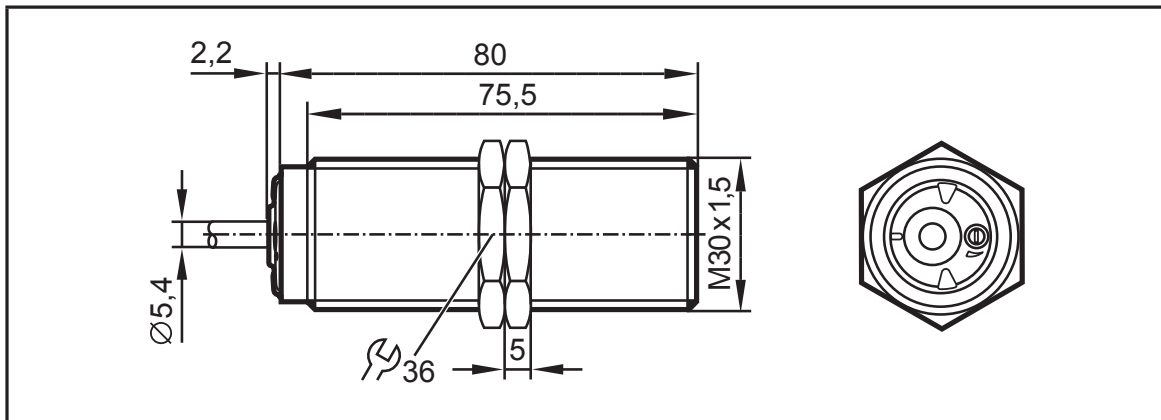
7 Operation

The operation is maintenance-free.

Ensure the following for a correct function:

- ▶ Keep the sensing face and the open space free of metal deposits and foreign bodies.
- ▶ Do not operate units with high field intensity (e.g. mobile phones) at close range to the speed monitor.

8 Technical data



Dimensions [mm]

		DI0101	DI0104	DI103A
Nominal voltage	[V]	20...250 AC/DC (45...65 Hz, AC)		
Current rating (continuous)	[mA]	350 AC, 50 °C 250 AC, 80 °C 100 DC, 80 °C		200 AC, 60 °C 100 DC, 60 °C
Current rating (peak)	[mA]	2200 (20 ms / 0.5 Hz)		
Minimum load current	[mA]	> 6		
Leakage current	[mA]	< 1.5		
Voltage drop	[V]	< 7.5		
Reverse polarity protection		yes		
Short circuit / overload protection		no / no		
Nominal sensing range (Sn)	[mm]	10		
Operating distance (Sa)	[mm]	0...8.1		
Setting range	[pulses/min]	5...3600		
Hysteresis	[% of SP]	10		
Start-up delay	[s]	12	< 0.5	12
Damping frequency	[pulses/min]	≤ 4800 (for Sn/2)		
Ambient temperature	[°C]	-25...80		-20...60
Protection		IP 65 / IP 67 / II		
ATEX equipment category		-		3D
Connection		PUR cable / 2 m; 2 x 0.5 mm ²		

Data sheets and EC declarations of conformity can be found at:
www.ifm.com → Data sheet search → Article number



Working Instructions & Maintenance

Lubricants

LUBRICANTS

Recommended Types

All the units are delivered already filled with synthetic long-life oil.

The safe operation of the units with ISO VG 320 grade lubricant is recommended in the ambient temperature range
-20 to +55 °C (-4 to 131 °F)

Other temperatures require specific recommendations for low or high temperatures to ask the Customer Service.

Temperature range	ISO VG	ARAL	bp	Castrol	EXON	Mobil	TEXACO	TOTAL	Shell
	* 320	Degol GS 320	Enersyn SG-XP320	Alphasyn PG 320	Glycolube 320	Glygoyle HE 320	Synlube CLP 320	Carter SY 320	Tivela SC 320
	** 320	Eural Gear 320	---	Vitalube GS 320	Gear Oil FM 320	Mobil DTE FM 320	---	Nevas-tane EP 320	Cassida Fluid GL 320

* - Synthetic oil

** - Food Industry Approved Oil

RT	RT	I	TA	I ₁ / I ₂	RT / RT	I ₃ / I ₄
	28	0.03	63 / 40	0.04 / 0.08	28 / 28	0.03 / 0.03
	40	0.08	63 / 50	0.04 / 0.13	28 / 40	0.03 / 0.08
	50	0.13	63 / 60	0.04 / 0.20	28 / 50	0.03 / 0.13
	60	0.20	71 / 50	0.06 / 0.13	28 / 60	0.03 / 0.20
	70	0.35	71 / 60	0.06 / 0.20	40 / 70	0.08 / 0.35
	85	0.60	71 / 70	0.06 / 0.35	40 / 85	0.08 / 0.60
	110	1.50	71 / 85	0.06 / 0.60	50 / 110	0.13 / 1.50
			80 / 60	0.10 / 0.20		
			80 / 70	0.10 / 0.35		
			80 / 85	0.10 / 0.60		
			80 / 110	0.10 / 1.50		
			100 / 110	0.20 / 1.50		

I - Litres FRT

I₁ / I₂ - Litres FTA / FRT

I₃ / I₄ - Litres FRT / FRT



Declaration of Conformity

The Company
Søby Maskinaktieselskab
Viborgvej 306
DK-7840 Højslev
Denmark

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

type: SK5-SK12

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 IIIC 135C° Dc/- X

Højslev, Nov-22

Morten Frantsen
Co-Owner



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