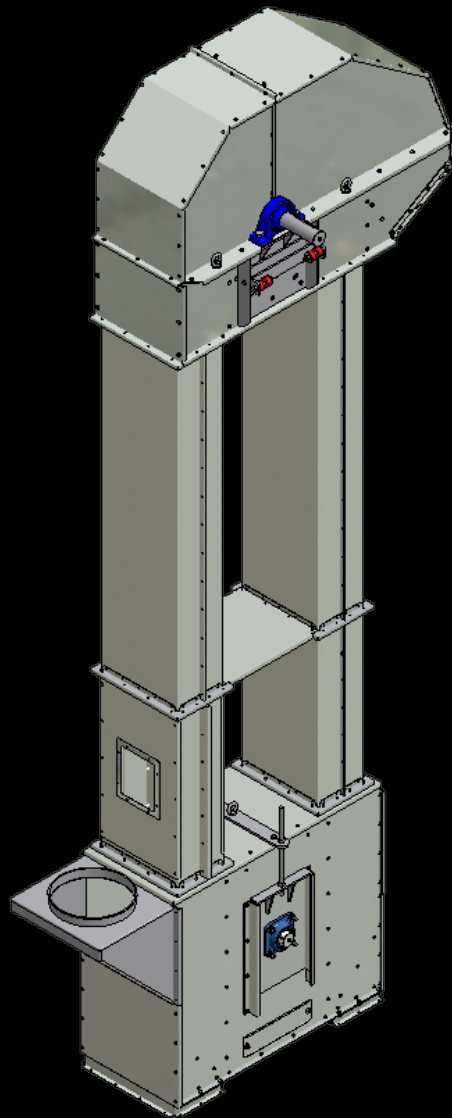


Manual Bucket elevator E300

Version 70518.1



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Introduction

JEMA AGRO A/S is a modern factory, which specializes in producing and delivering equipment for transport systems for grain, seeds and granulates.

Our current product range is the result of more than 50 years experience in machine development especially for the agriculture in close collaboration with our customers – and our company is highly regarded in the industry due to the quality and versatility of our products.

JEMA AGRO A/S conveyors and transport systems are compatible with ALL types of dryer- and silo systems.

IMPORTANT!

Please read these instructions carefully before assembly and use.

EC - Declaration of Conformity



The manufacturer: JEMA AGRO A/S
Kløservejen 2, Sahl
DK-8850 Bjerringbro
Tlf. +45 86 68 16 55

Hereby declares that:

Product: Bucket elevator
Type: E300
Year of production: 2010

- Conforms to the Machine directive 2006/42/EF with special reference to the directive appendix 1 regarding major health- and safety regulations regarding construction and production of the machines

The following standards have been applied:

EN ISO 12100-1:2005 Basic terminology and methodology
EN ISO 12100-2:2005 Technical principles
EN 1050:1997 Principles for risk assessment

- is in accordance with EMC-directive 04/108/EF of 15th December 2004 regarding electromagnetic compatibility.

Director Jens-Peter Pedersen

Title Name

21-02-2011

Date Signature

A handwritten signature in black ink, appearing to be "JP Pedersen", written over a horizontal line.

Conditions of use

JEMA AGRO A/S bucket elevators E300 have been constructed for transport of grain, granular materials and seed mix.

- Bucket elevators E300 can only be used for the product(s) specified in the contract.
- The electrical connections must be done by a qualified electrician.
- The bucket elevators E300 must be potential adjusted in accordance with the current local regulations
- The bucket elevator has been thoroughly controlled regarding maintenance, and a checklist has been drawn up containing regular cleaning- and maintenance intervals. If these intervals are not observed, the JEMA AGRO conditions for a trouble-free operation cease to exist and the warranty will be invalid.
- During installation, maintenance or repair the electric supply to the bucket elevator must be disconnected and secured against accidental reconnection.
- The user manual must be kept / be available in close proximity to the bucket elevators E300.

General information

Delivery

The bucket elevator is disassembled for shipment. Standard packing (pallet/wooden boxes, grid boxes, etc.) Regarding the actual transport there are no specific requirements apart from normal consideration.

The shipment includes the parts stated in the order confirmation.

Before installation and use, this manual must be read carefully.

Storage

There are no precautions regarding long-time storage.

After delivery the components must be kept in a suitable, dry storage area before installation.

Noise level

A noise level test was conducted for the bucket elevator. The level has been measured in a distance of 1 m from the elevator surface and at a height of 1.6 m from the floor level. During the test the bucket elevator was without any load, which is the operational state of maximum noise level.

The measured noise level is below 70 dB

Type Plate

The type plated is fitted on the drive station.



Construction

The bucket elevator type T53/T54/T55 is built of standard elements that combined will easily fit into any grain conveyor system.

The bucket elevator is made of galvanized steel, which makes it very suitable for outdoor use. The elevator head and boot are fitted with heavy-duty bearings to secure a stable operation.

The bucket elevator consists of:

- Elevator head
- Elevator boot with spindles for belt tensioning
- Cleaning door in both sides and under the elevator boot
- Inlet piece
- Elevator belt with buckets
- 1.0 m extension with inspection door
- Extensions from 0.25 m to 2.5 m
- Spacer plates
- Torque arm
- Gear motor

Extra inlet piece is available.

Capacity

The table below shows the various density capacities:

	E300 (300 m³/h)
650 kg/m	195 t/h
700 kg/m	210 t/h
750 kg/m (wheat)	225 t/h

*Measured in cleaned, storable material at a power supply of 50 Hz
The capacity varies according to the nature of the material.*

Technical specifications – power consumption

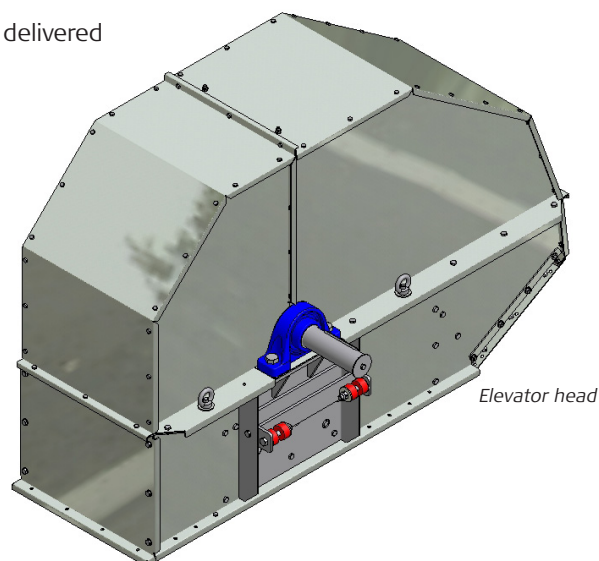
Bucket elevator T53/T54/T55 power consumption in kW:

	E300 (300 m³/h)
7,5 kW	0 - 4,5 m.
11 kW	5,5 - 9,5 m.
15 kW	10,5 - 14,5 m.
18,5 kW	15,5 - 19,5 m.
22 kW	20,5 - 24,5 m.
30 kW	25,5 - 30,5 m.

Elevator head

The elevator head is delivered as a complete unit. The engine is delivered separately.

The elevator head is equipped with a non return device in gear.



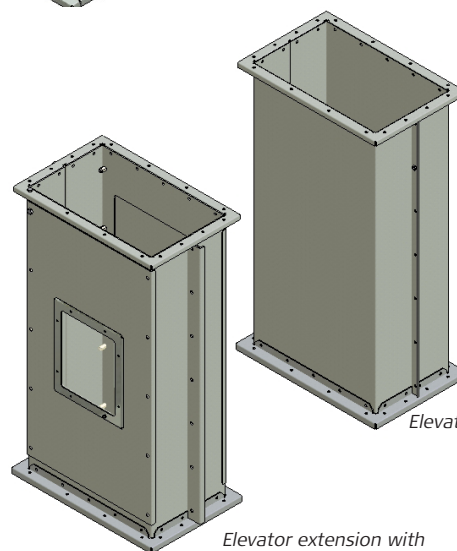
Elevator head

Elevator extension

The extension is available in different lengths:
2.5 m – 2.0 m – 1.0 m – 0.5 m – 0.25 m

The elevator extension with inspection door is only available for the 1 m. version.

The elements can be combined for various heights with 0.25 m intervals.

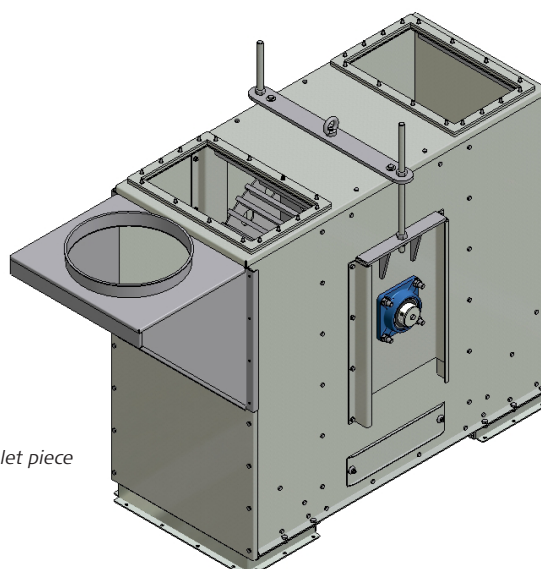


Elevator extension

Elevator extension with inspection door

Elevator boot

The elevator boot is delivered with spindles for belt tensioning in both sides and an inlet piece on the optional side.

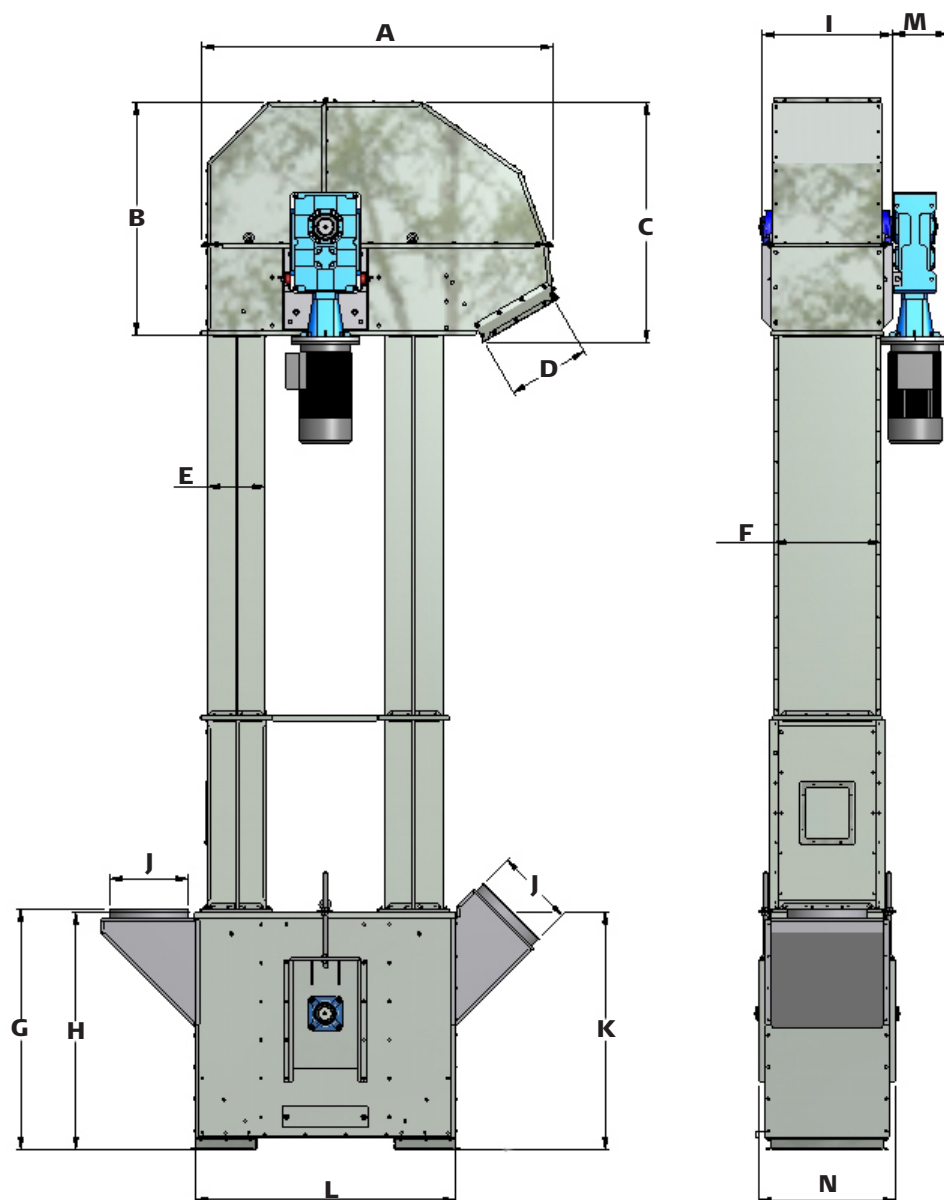


Elevator boot with inlet piece

Scale drawing E300

	A	B	C	D	E	F	G	H	I	J
E300	1820	1200	1250	400x400	300	558	1235	1230	675	Ø400

	K	L	M 7,5 kW	M 11 kW	M 15 kW	M 18,5 kW	M 22 kW	M 30 kW	N
E300	1250	1350	300	300	300	300	350	350	705



Upon receipt

Please check that all parts and components are included and check for possible transport damages.

NB: Check that the relevant supplier documentation is attached.

In case of missing documentation, please contact JEMA AGRO A/S – remember to state the order no.

Remember all necessary safety equipment before installation.

Please read this manual carefully before assembly or installation work begins.

Warning labels

The bucket elevator is fitted with warning labels.

Warning!

The inspection door and shields must not be opened or removed, when the machine is working.



Foundation

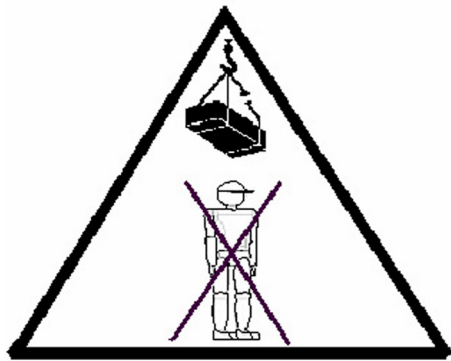
The bucket elevator should be placed on a sufficiently hard, level surface.

Lifting equipment

Make sure to have the required SWL-approved lifting equipment/crane, required for the actual job.

The lifting equipment must be approved to carry the load in question. The load on the individual components can be seen under "Parts list E300" in this manual.

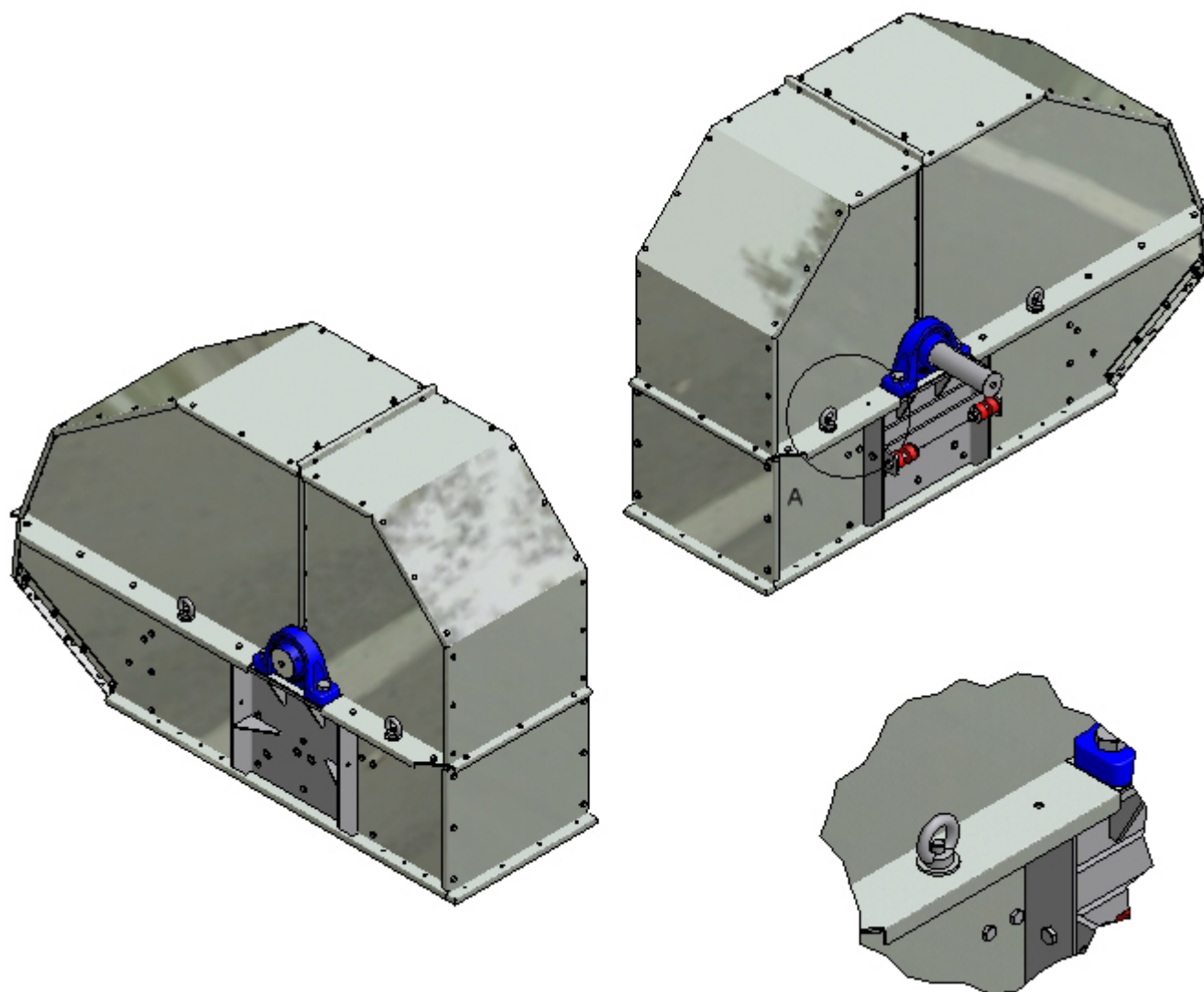
The total weight of the machine is stated in the section "Weight table bucket elevator E300".



NB: Always make sure that nobody is standing under any suspended loads.

Lifting instructions

The drawings below show how to lift the elevator head in the fitted brackets.



Weight table - individual components E300

	Beskrivelse	E300 Vare nr.	vægt kg
	Bucket elevator head RHS	73001	415,00
	Bucket elevator head LHS	73002	415,00
	Bucket elevator boot	73010	412,29
	Extension 1m / w. inspection door	73023	62,00
	Extension L = 2,5m	73025	72,55
	Extension L = 2,0m	73024	59,17
	Extension L = 1,0m	73022	32,34
	Extension L = 0,5m	73021	16,20
	Extension L = 0,25m	73020	8,10
	Elevator bucket	73033	2,25
	Bucket bolt incl. washer and nut	55065	0,05
	Elevator belt 400 mm oil resistant 6 buckets rm	91168	3,66
	Inlet piece 90° dia. 400	73015	25,48
	Inlet piece 45° dia. 400	73019	25,00

Weight table – bucket elevator E300

Complete with elevator head, elevator boot, inlet piece, extensions, shaft geared motor, elevator belt with buckets

Height in metres	E300
	Kg
3,5	1101
4,5	1209
5,5	1317
6,5	1425
7,5	1533
8,5	1641
9,5	1749
10,5	1857
11,5	1965
12,5	2073
13,5	2181
14,5	2289
15,5	2397
16,5	2505
17,5	2613
18,5	2721
19,5	2829
20,5	2937
21,5	3045
22,5	3153
23,5	3261
24,5	3369
25,5	3477
26,5	3585
27,5	3693
28,5	3801
29,5	3909
30,5	4017

Make sure that the surface is sufficiently strong and check the transport direction (location of in- and outlet), before assembly.

Please read the complete instructions carefully before assembly.

Check that the work area is safe.

Remember!

To use the necessary safety equipment during the assembly, such as work gloves, safety footwear, helmet, safety glasses and a life line, if necessary. These parts are not included.

The elevator is assembled in two parts, a top part and a bottom part.

- The bottom part consists of the elevator boot and elevator extensions that correspond to half of the elevator height and 1 off. 1m elevator extension with inspection door, through which the belt lacing and bucket fitting are carried out (separate section).
- The elevator extensions with the inspection door must be fitted at a suitable height to make room for future assembly and bucket fitting.
- The top part consists of elevator head and the remaining number of elevator extensions and must be connected to the belt (separate section).

After partial assembly of the bottom- and top part, the parts must be assembled.

For safety reasons the outlet and inlet in the elevator top and bottom part must be blocked during assembly.

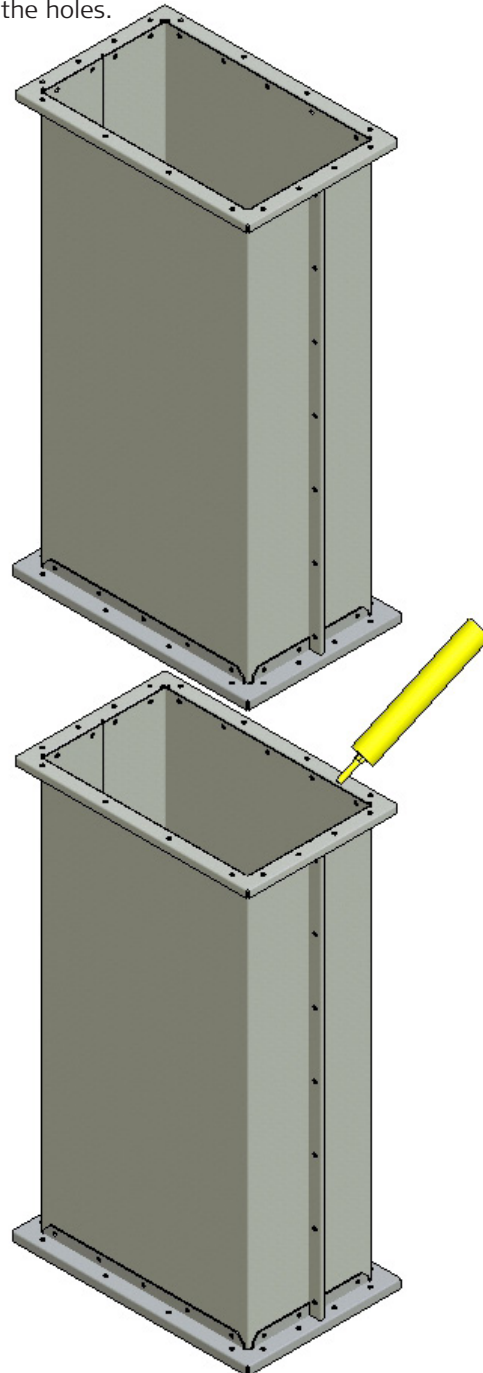
The blockage must only be removed immediately before the mechanical assembly, and the bucket elevator must not be started prior to this.

Sealing

To prevent dust and moisture from entering, it is important that all joints are completely sealed lengthwise with an appropriate sealing compound.

The sealer must be applied at the flanges inside the holes.

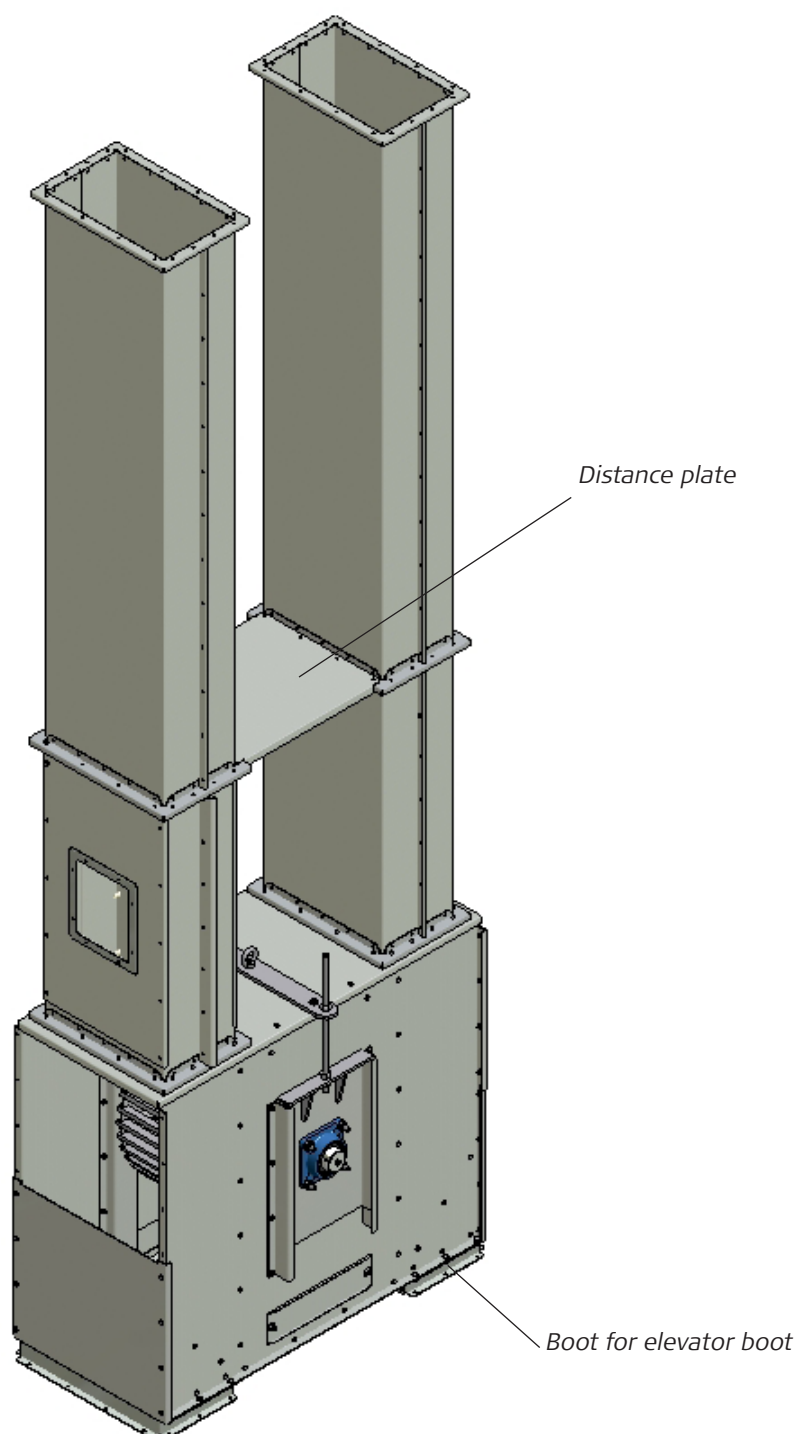
After sealing the joints must be bolted together.



The elevator boot

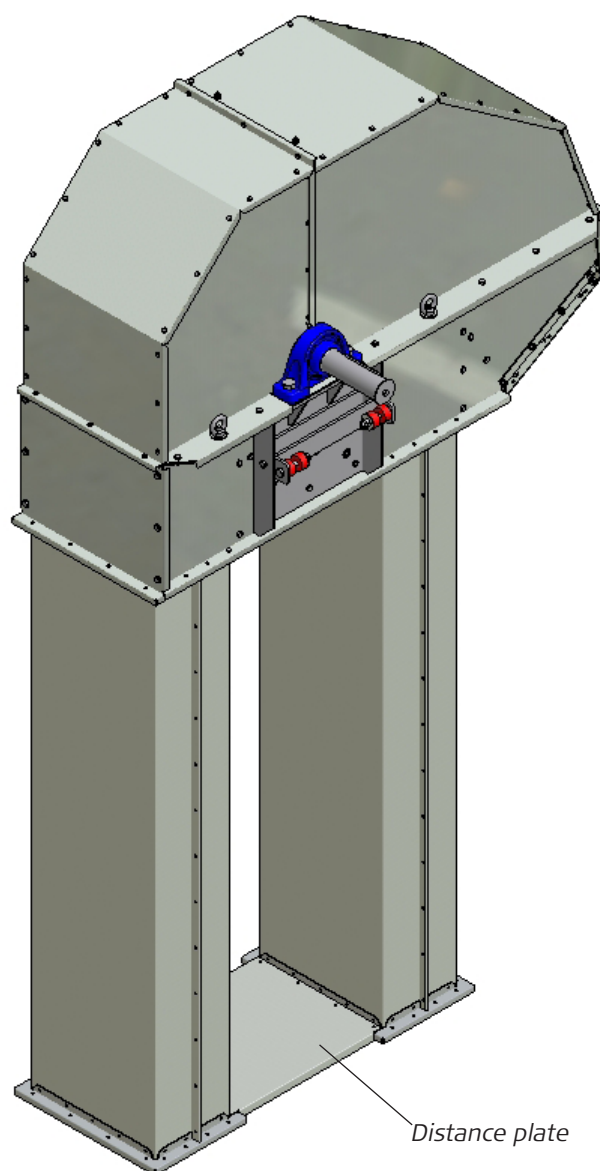
Fit the base plates, if necessary.

The base plate is located and fitted to the foundation. Check that the plate is completely level, before the extensions are fitted. Remember the distance plate.



Elevator head

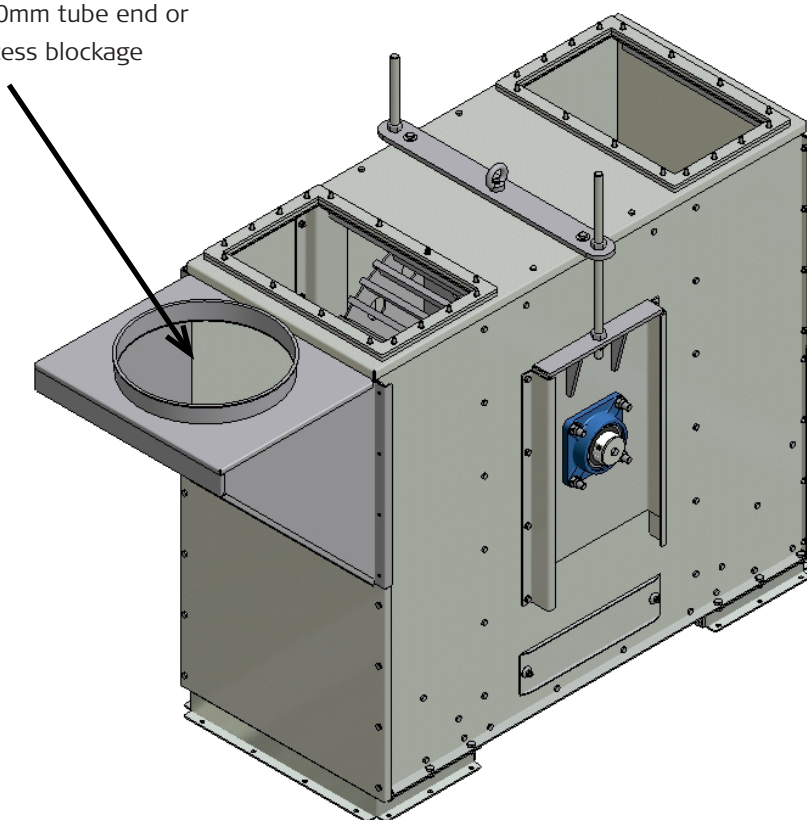
The elevator head must be assembled at the floor level. The head must be fitted with extensions corresponding to half of the total height. When the extensions have been fitted, the belt without buckets is fitted (see instructions in section "Elevator belt"). Remember the distance plate.



Important!

When the blockage is removed, it is important to fit a tube of min. 850mm or another type of blocking device to avoid the possibility of somebody sticking a hand into the machine.

850mm tube end or
access blockage

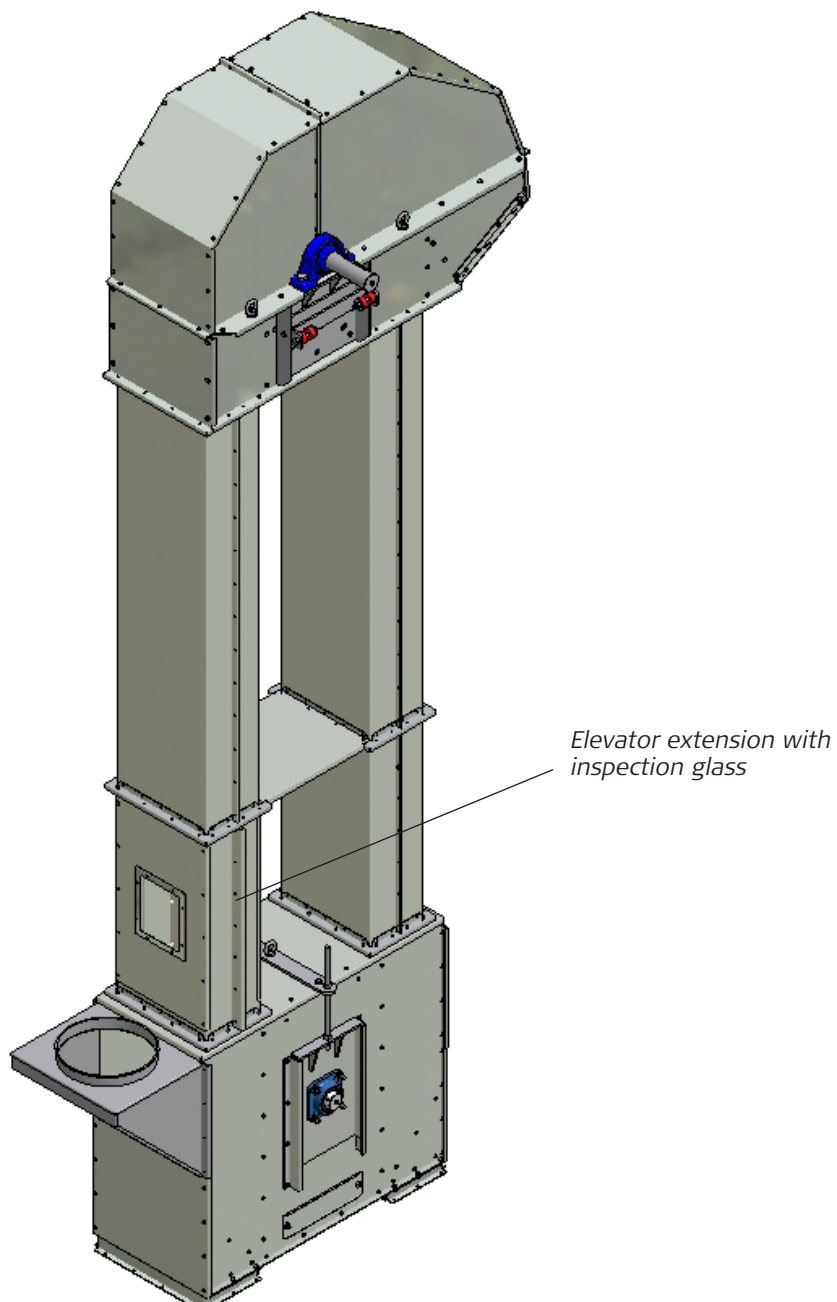


Elevator extensions

The elevator extension with inspection glass must be fitted at a height that facilitates the belt connecting and bucket fitting, as this has to be done through the door.

Fit the extension as shown on the drawing.

The elevator must constantly be secured during the fitting. See section "height attachment"

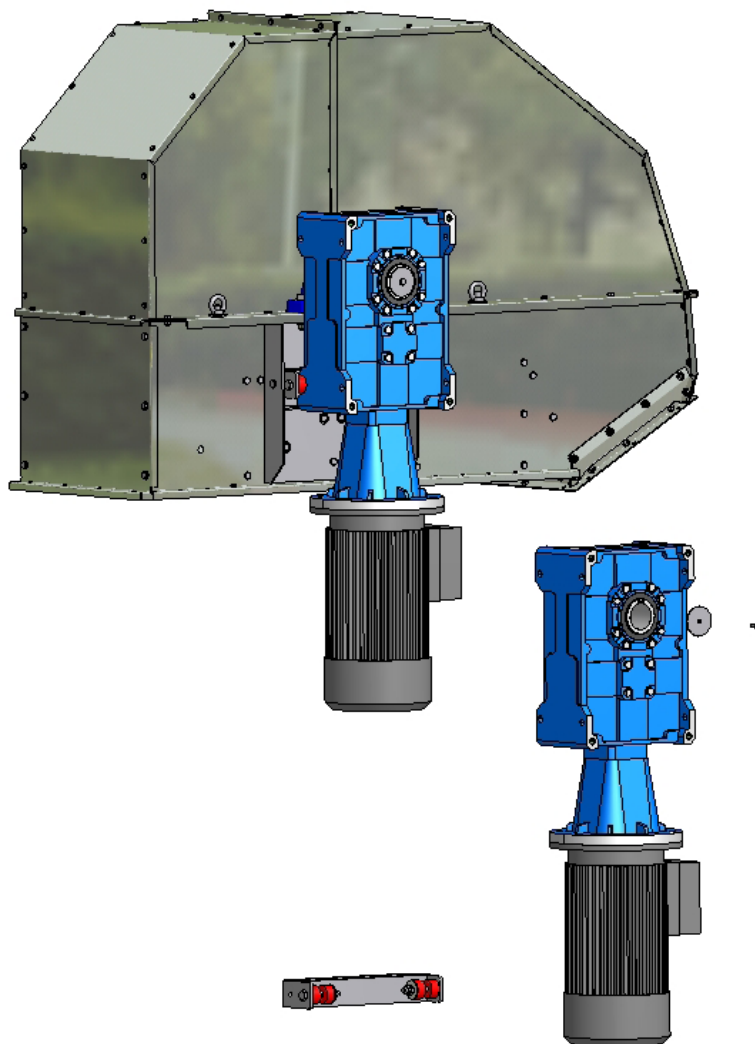


Motor

The motor and gear are fitted on the drive shaft (see below drawing).

Important!

The bleed screw on the gear must always be fitted in the top position.



See the attached supplier documentation regarding maintenance of motor and gear.

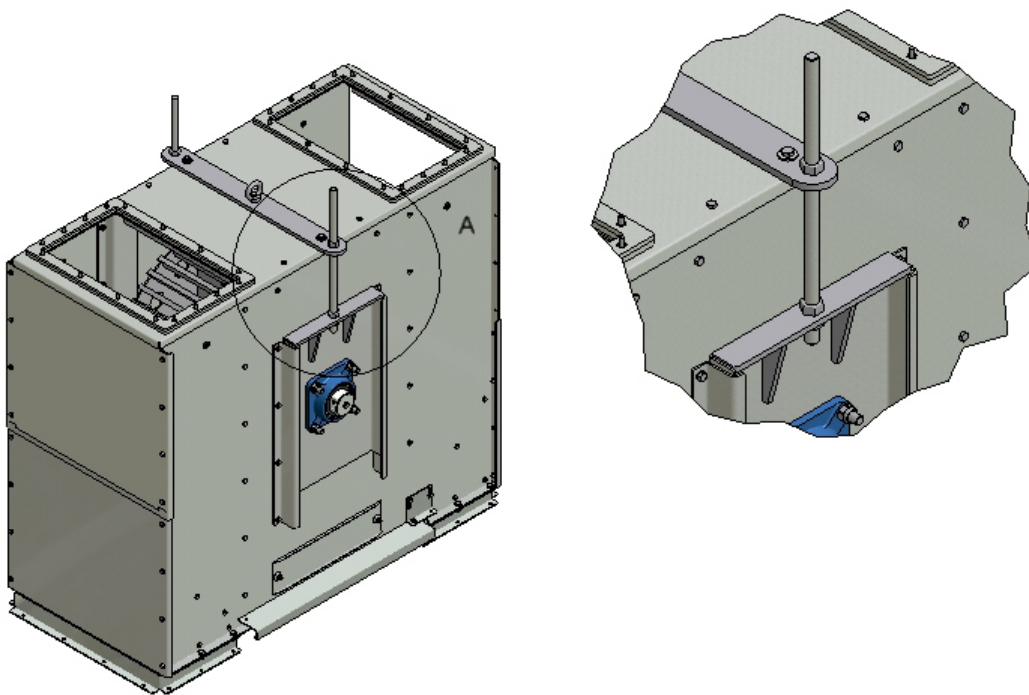
Elevator belt

Before fitting the belt, please check that the pulleys on the elevator boot are in their top position. Otherwise it will not be possible to adjust the belt, when the buckets have been fitted.

The belt must be fitted in the elevator, before the elevator head with extensions is raised.

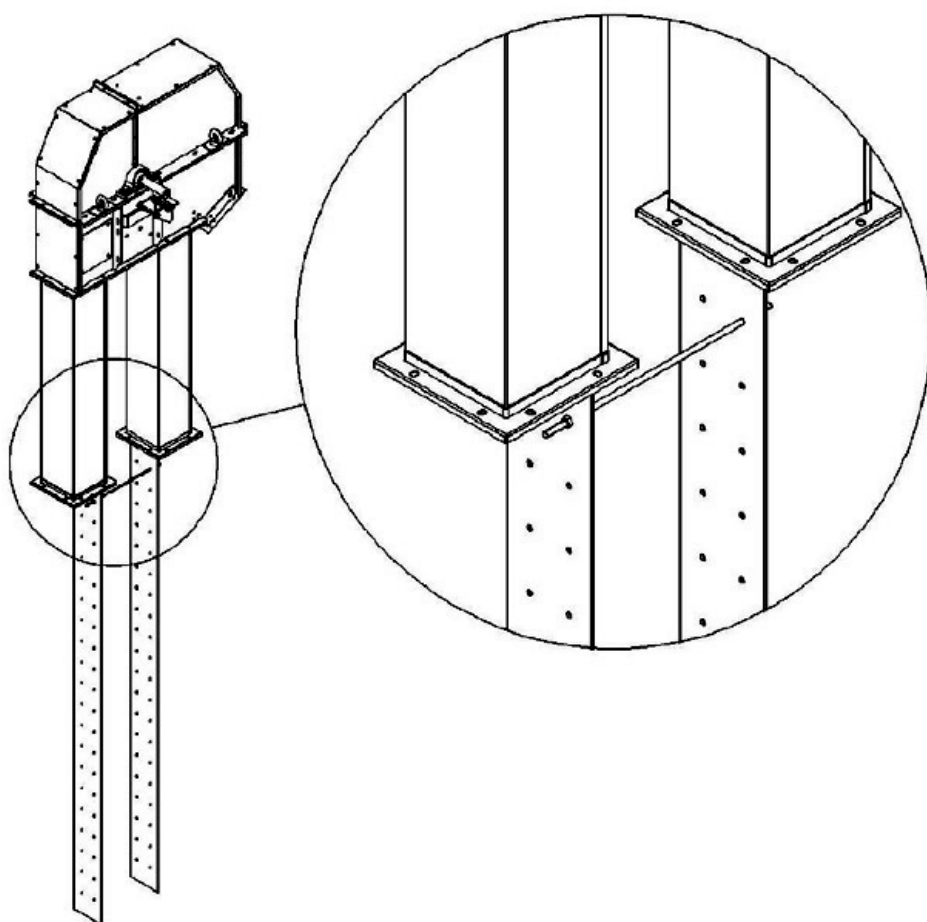
Important!

The belt has to be secured as shown on the drawing in the "Elevator assembly" section before the elevator head is being raised.



Elevator assembly

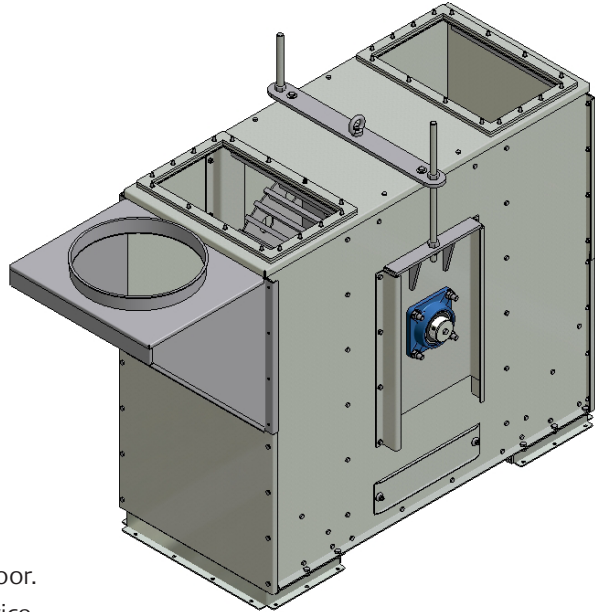
The elevator must be assembled by means of correct and approved SWL lifting equipment. Also read the section "Upon receipt", before assembly of the elevator.



Before the elevator is lifted, the belt must be secured, as shown on the drawing. The locking device must be removed before assembly with the bottom part.

Assembling of elevator belt

1. Before the elevator head is fitted to the elevator boot, the locking devices must be removed.
2. When the elevator head with belt has been lowered onto the boot, a side cover in the elevator bottom must be detached. The belt is drawn through the opening, around the drum and further up through the elevator extension with inspection door.
3. Assemble the belt with the connecting device.
 1. Assemble the belt through the inspection door.
 2. Drill holes in the belt for the connecting device.
 3. Bolt the connecting device together and cut off any excess belt.



Fitting the buckets

Start by fitting 5 buckets on the belt, then fit 5 more buckets with an interval of 5 m. Repeat this procedure until the belt is filled up.

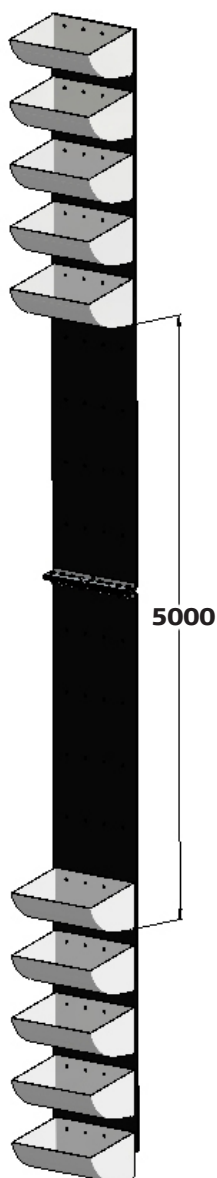
Important!

The bucket bolts must be tightened to a torque of 9 to 11 Nm.

When the buckets have been fitted, the belt must be tightened and adjusted, so it runs evenly on the cylinders, which is done by adjusting the tensioners on the elevator boot.

Important!

Remember to refit all inspection doors after the final assembly.

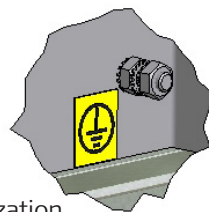
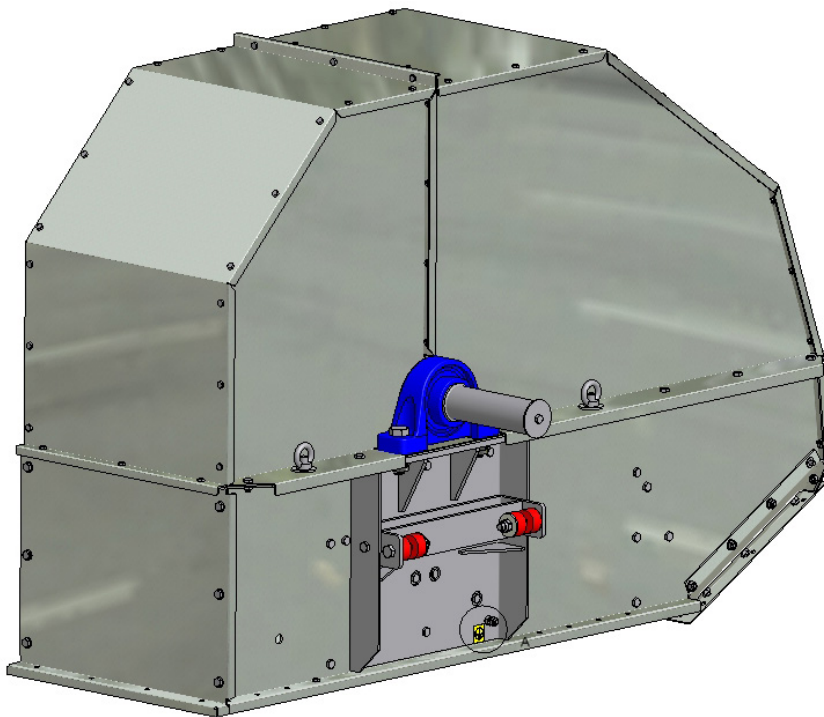


Potential equalization

The potential equalization must be carried out according to current regulations.

A label on the elevator head indicates the point of elevator potential equalization. This equalization of the machine is important to make sure that it is connected metalically.

The label indicates the potential equalization point of the bucket elevator.

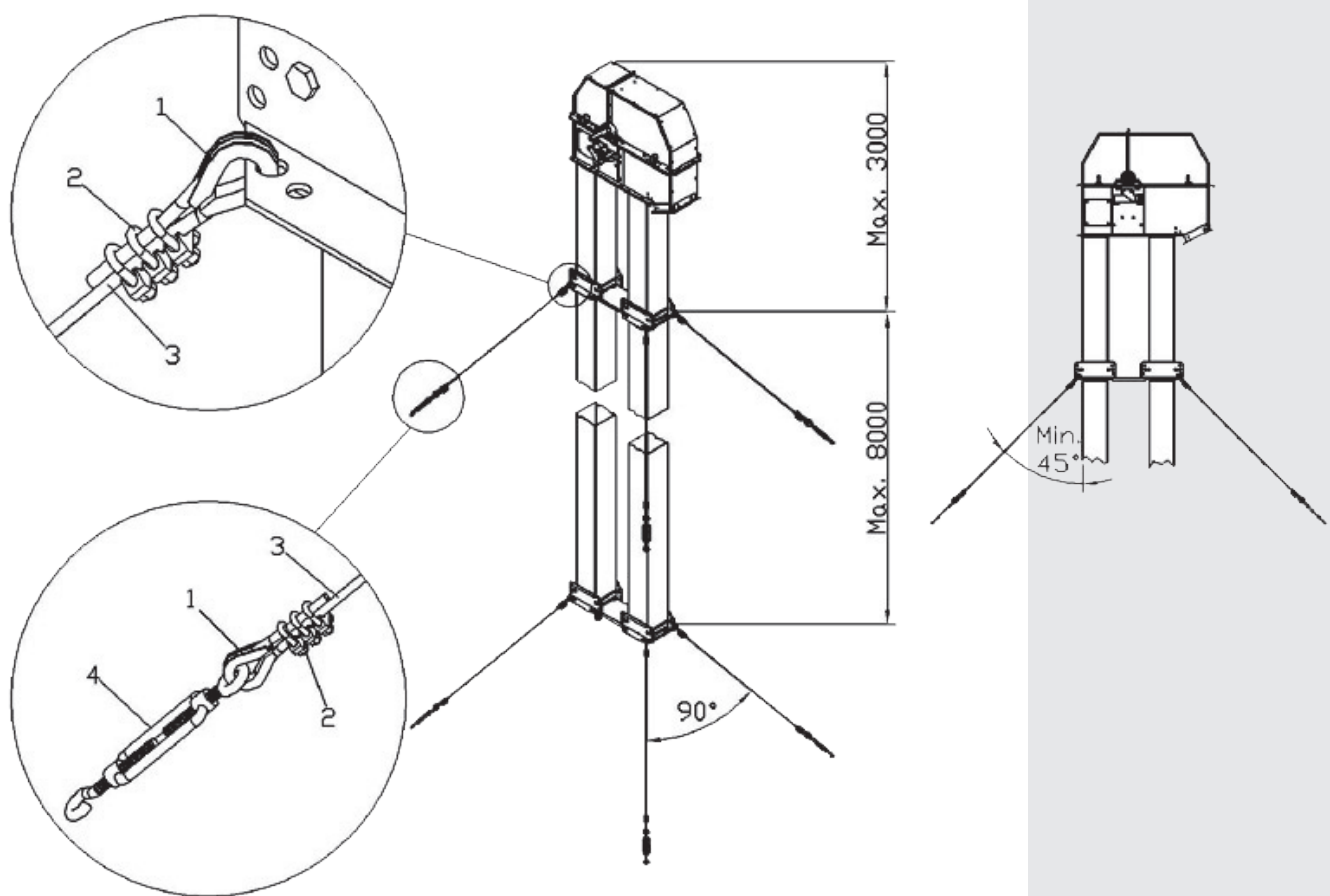


Potential equalization

Height attachment

It is important to secure the elevator heightwise to make sure it does not overturn. There should be a distance of max. 3.0 m from the top of the elevator head to the top bracket, and max. 8.0 m between the following attachments.

The angle between the wires and the elevator must be max. 45°, and 90° between the wires (see the below drawings).



Pos.	Description	T53	Kg	T54	Kg	T55	Kg
1	Wire thimble for 8 mm wire	92112	0,032	92112	0,032	92112	0,032
2	Wire clips for 8 mm wire	92113	0,032	92113	0,032	92113	0,032
3	Wire 8 mm (weight per metre)	92114	0,194	92114	0,194	92114	0,194
4	Turnbuckle with open eye and hook 12 mm	92106	0,400	92106	0,400	92106	0,400

Starting up

Before starting up the bucket elevator, check that:

- All inspection doors are fitted
- No work must be carried out on/near the machine.
- The motor rotation direction is correct.
- All elevator bolts are correctly fitted and tightened.
- All bucket bolts are correctly fitted and tightened.
- The belt is fitted and correctly adjusted.
- The attachment and stability of the bucket elevator is correct.
- All joints are sealed.

Elevator stops – faultfinding

In case of elevator stops, check first whether the elevator will start again, after the relay has gone cold. If yes, the fault is either caused by low adjustment of the relay or lack of motor capacity.

If the elevator is still not able to start without being drained of material, it must be checked whether the return tube on the elevator (where the belt is running downwards) is filled with material in the bottom part (open the inspection door). In this case the fault is due to blockage of the elevator drain (drain tubes too small or with insufficient slope) or stops in other parts of the transport system.

It is very important to observe the indicated cleaning- and maintenance instructions in order to secure a trouble-free operation of the machine.

Please see the maintenance summary and the attached supplier documentation for cleaning- and maintenance intervals.

Warning!

- During cleaning and maintenance work, the electric supply for the bucket elevator must be disconnected and secured against accidental reconnection.
- After repair and maintenance the inspection doors and shielding must be refitted before the work is continued.

Always use original parts only

In case that original parts are not used, the warranty becomes void, and JEMA AGRO A/S can no longer be held liable for the EU Declaration of conformity.

Gear motor

Control the gear in accordance with the attached supplier documentation.

Important!

Check that the bleed screw is fitted in the top position on the gear.

Motor

Bearing noise from the motor: please see the attached supplier documentation.

Motor inspection: please see the attached supplier documentation.

Retorque the motor as indicated in the maintenance summary. Please see the assembly guidance regarding the process.

Elevator belts

Check the belts for correct tensioning. This is done by checking that the belt starts immediately at full speed.

When the buckets are fitted, the belt must be tightened and adjusted in order to run evenly on the cylinders. This is done by adjusting the turnbuckles at the elevator boot.

Please see the maintenance survey for service intervals.

Elevator buckets

The elevator buckets must be retightened after approx. 200 operating hours.

Metallic sounds indicate that the belt is not adjusted correctly or that one or more buckets have gone loose. Immediately stop the machine and retighten or change the loose/damaged buckets.

Bearings

Check the bearings for wear/looseness and lubricate in accordance to the maintenance summary.

Lift up the shaft to check for any damages/looseness. Check that there is no water in the elevator pit, as this will damage the bearings in the elevator boot.

Lubrication of bearings

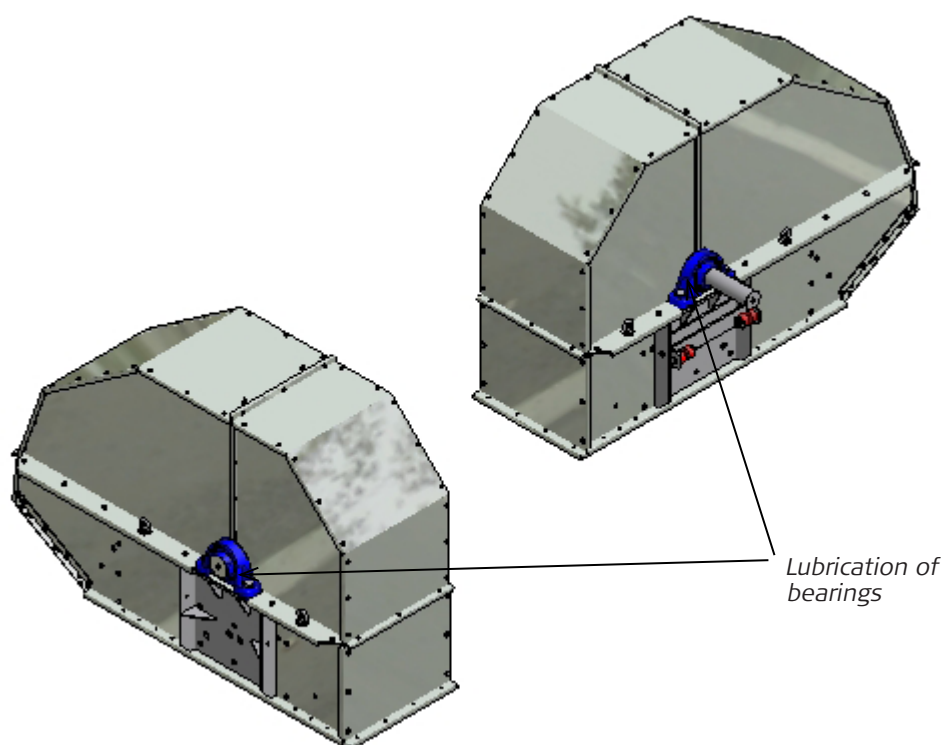
Important!

Lubrication with the correct amount of grease is very important, as an excessive amount of grease may damage the sealing of the bearing, which may result in overheating.

Check the amount of grease that the grease gun delivers per pressure.

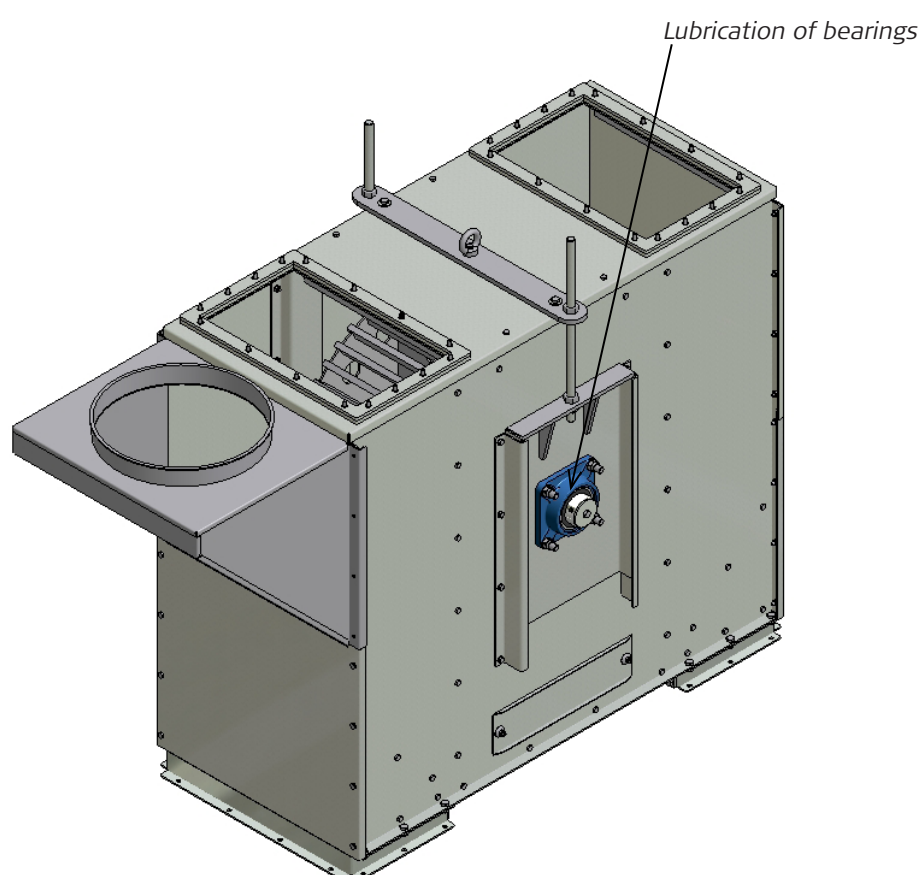
Elevator head

The 2 bearings in the elevator head must be lubricated with 4.0 g. of grease as indicated in the maintenance summary.



Elevator boot

The two bearings in the elevator boot must be lubricated with 2.5 g. of grease as indicated in the maintenance summary.



Non return device and speed monitor

Check the non return device and speed monitor as stated in the maintenance summary.

Leaks

Any leaks must be repaired immediately.

Noise and vibrations

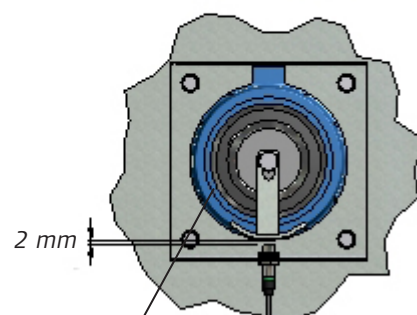
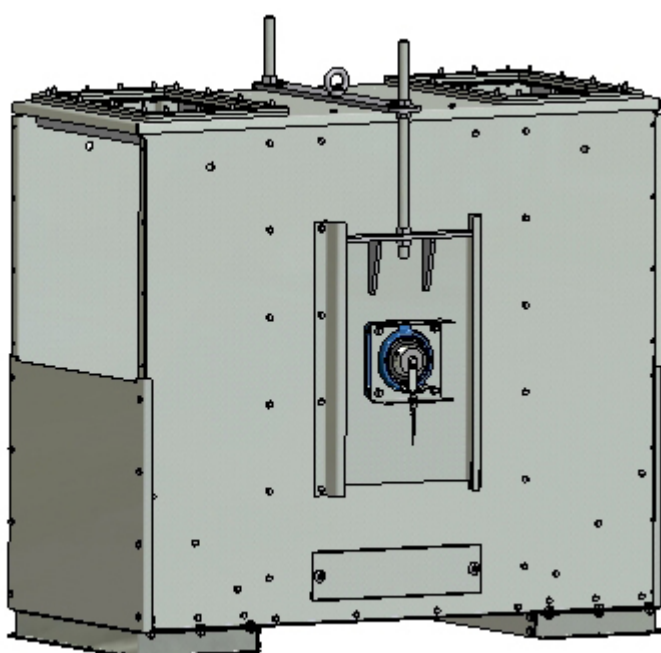
Stop the bucket elevator immediately to determine what is causing the problem.

Options/accessories

According to the individual requirements, various components for the bucket elevator are available as accessories.

Speed monitor

After fitting, adjust the monitor according to the below drawing.



*Pivot sensor with bracket
for speed monitor*

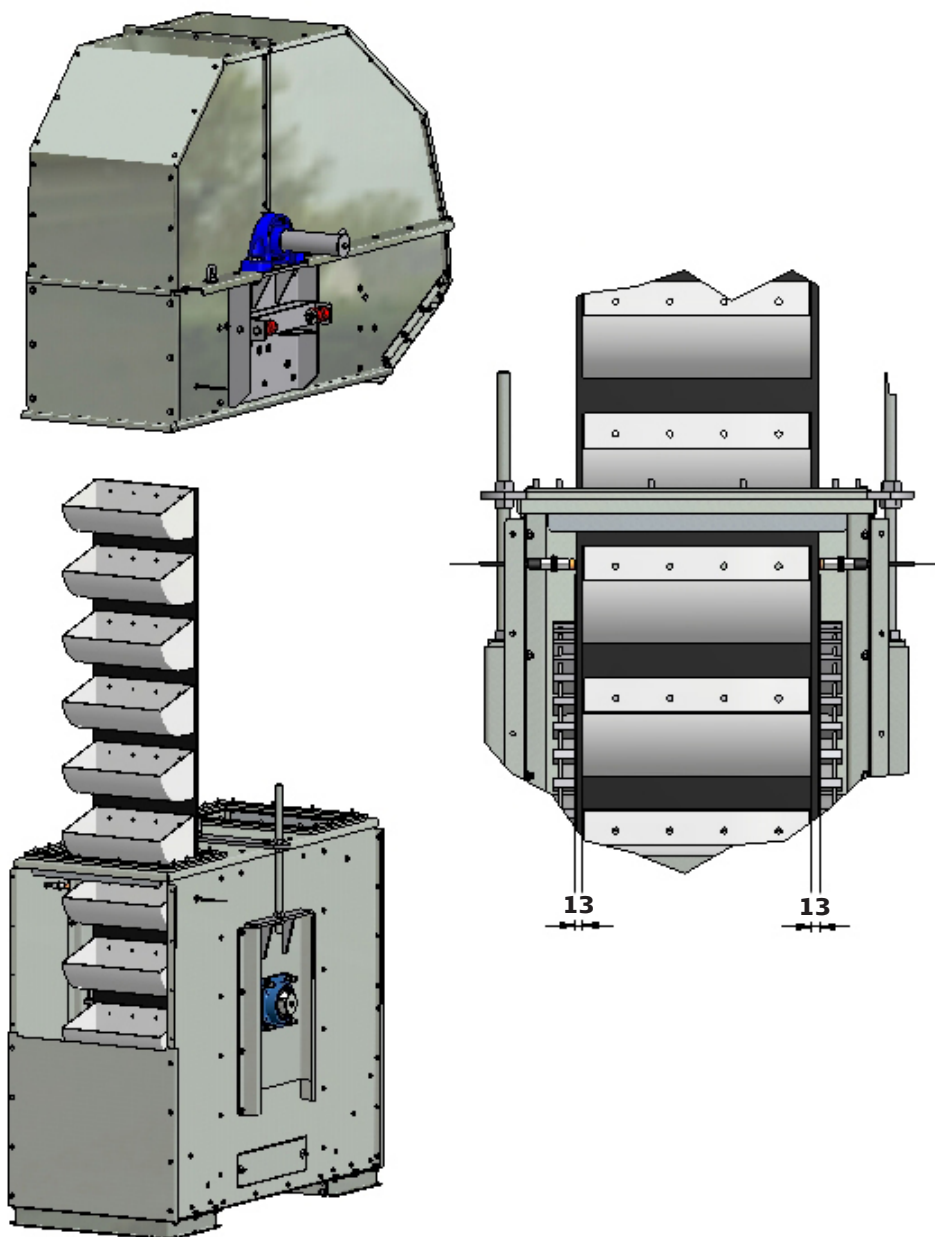
Misalignment sensor (not standart)

The belt guide control registers whether the belt is correctly aligned, and stops the machine if necessary. The sensor is fitted at the top and bottom of the elevator.

Important!

It is important that the sensor is adjusted at a distance of 13 mm with a tolerance of $\pm 0/-1$. Measure the distance between the sensor and the bucket.

For maintenance please see the supplier documentation.



Disposal

The methods of disposal must comply with the relevant local regulations

Warning!

The electric supply to the motor must be disconnected during the disassembly.

Disassemble the elevator on the floor, if there is sufficient space, and use the reverse order of the assembly procedure.

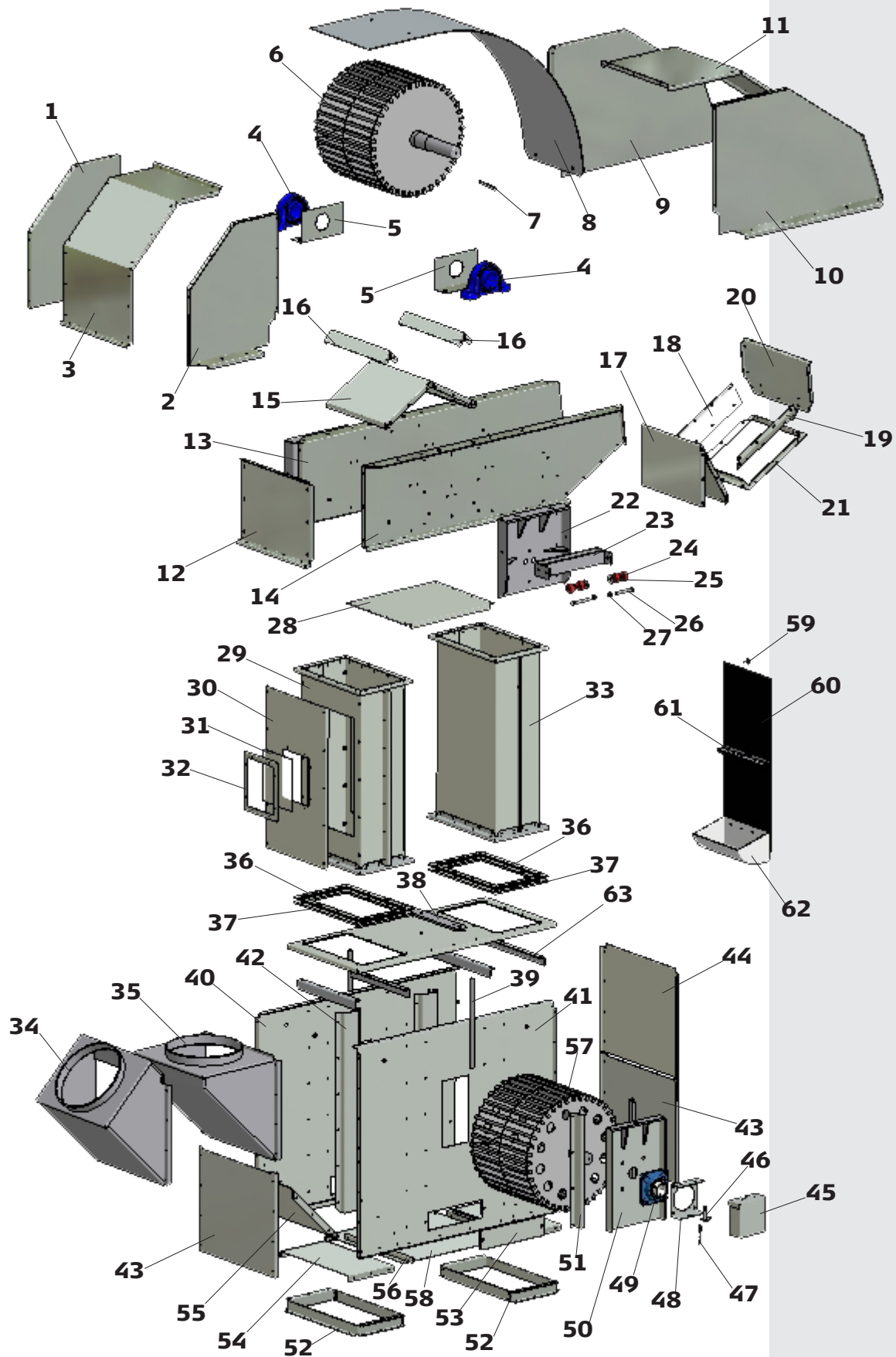
If the elevator is disassembled at the premises, start by detaching the gear motor.

First screw off the inspection door in the downward flow side, then dismantle the buckets similar to the fitting procedure. Now detach the belt lacer and attach a long rope to the end facing downwards. Slowly pull the end of the rope that turns upwards out, while slackening at the same time, then proceed with a new piece, etc. until the complete rope is out.

Then remove the elevator head, and finally all the extension.

The elevator consists partly of material that can be reused. All metal parts should be delivered to a recycle industry.

Parts E300



Parts list E300

Pos.	Varetekst	E300	Kg.
1	Side plate small Left for head	73001-11	11,29
2	Side plate small Right for head	73001-10	11,29
3	Cover small for head	73001-12	2,21
4	Bearing, UCP 216, 80mm	85166	1,35
5	Shaft sealing plate for elevator head	73001-16	0,82
6	Drum for elevator head	73004	140,00
7	Key 20x12x140mm "A" Key steel h9	87080	0,26
8	Wearing plate for elevator head	73001-14	31,71
9	Side plate large Left for head	73001-9	19,70
10	Side plate large Right for head	73001-8	19,70
11	Cover large for head	73001-13	22,24
12	Gable plate bottom for head	73001-3	9,77
13	Side plate Left for bottom, head	73001-2	32,15
14	Side plate Right for bottom, head	73001-1	32,15
15	Distance plate for head	73001-5	13,77
16	Distance profile small for head	73001-7	2,54
17	Distance plate for outlet for head	73001-6	13,88
18	Side plate for outlet Left for head	73001-18	1,68
19	Side plate for outlet Right for head	73001-17	1,68
20	Cover plate for outlet, head	73001-4	5,80
21	Flange for outlet, head E300	73001-15	2,29
22	Bearing plate cpl. head E300	73006	14,26
23	Torque arm	73007	5,84
24	Rubber bush for torque arm	81323	0,04
25	Washer Ø50/Ø17/4mm for Torque arm	87264	0,06
26	Steel bolt 8.8 M16 x 110 FZB	86300	0,21
27	Lock nut M16 FZB	86635	0,03
28	Distance plate for Extension	73030	7,87
29	Extension 1m / w. inspection cover	73023	62,00
30	Inspection door for sight glass	73023-6	6,66
31	Sight glass	73023-8	0,46
32	Support for sight glass	73023-7	0,54
33	Extension 0,5m	73021	16,20
	Extension 1m	73022	33,00
	Extension 2m	73024	59,17

Parts list E300

Pos.	Varetekst	E300	Kg.
	Extension 2,5m	73025	72,55
34	Inlet piece 45° dia. 400	73019	25,08
35	Inlet piece 90° dia. 400	73015	25,50
36	Top flange for boot	73016	3,44
37	Flange for boot	73013	4,37
38	Tightening plate for spindle	73014	4,85
39	Tightening spindle M20x500mm	54314	1,24
40	Side plate for Inspection cover, boot	73010-1	50,10
41	Side plate for boot	73010-2	50,10
42	Support for boot	73010-6	7,74
43	Cover plate bottom for boot	73010-4	9,18
44	Cover plate top for boot	73010-5	9,71
45	Cover for speed monitor	73040-2	1,36
46	Sensor support for speed monitor	73040-3	0,09
47	Inductive proximity sensor (2 outputs)	88075	0,10
	Inductive proximity sensor (3 outputs)	88079	0,15
48	Bearing plate for speed monitor	73040-1	0,65
49	Flange ball bearing UCF 212, 60mm	85165	2,40
50	Bearing plate kpl. for fod	73012	10,50
51	Guideway for boot	73010-7	2,02
52	Boot for bucket elevator boot	73017	4,48
53	Inspection cover for boot	73010-8	0,87
54	Base plate for boot E300	73010-11	5,09
55	Angled plate for boot	73010-10	6,93
56	Side list for shutter	73010-13	0,51
57	Drum for elevator boot	73011	113,00
58	Inspection cover for boot	73010-9	11,89
59	Bucket bolt M8x30 incl. washer and nut	53065	0,05
60	Elevator belt 400 mm rm oil resistant	91168	3,66
61	Connecting piece for belt	73032	1,77
62	Elevator bucket	73033	2,25
63	Support profile top for boot	73010-12	1,23

Please state part number, when ordering.

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