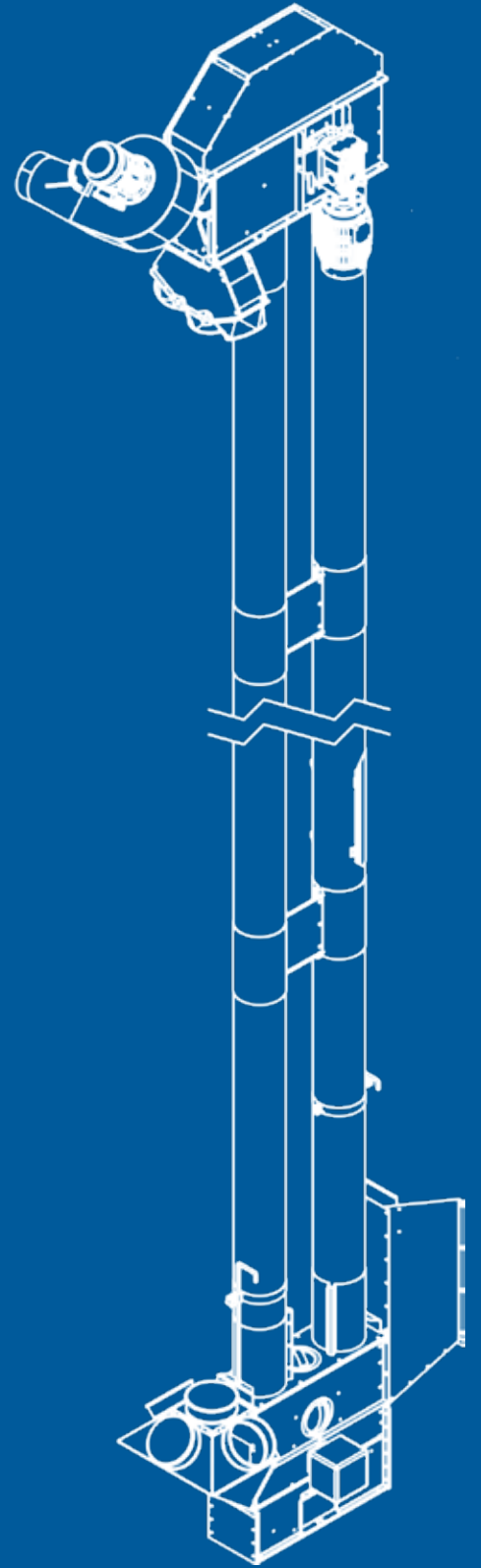


A30-1001-EN-202208



ELEVATOR

A68, A92, A118

ASSEMBLY AND USER MANUAL

ARSKAMETALLI OY
www.arskametalli.fi



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INTRODUCTION

Production facilities of Arskametalli Oy are located in Somero, Southwest Finland. The family company has been operating for three generations and has manufactured grain handling equipment already since 1958.

Arskametalli Oy has been granted CE marking for structural welded steel assemblies and product systems as well as for internal quality control. Operations are based on the SFS-EN ISO 9001 quality system and for load-bearing structures to meet SFS-EN ISO 3834-3 welding requirements. In operations the essential requirements of the SFS-EN ISO 14001 environmental and OHSAS 18001 safety management system are taken into account.

This manual describes the assembly and operating instructions of the Arska elevator. Read this entire manual before installing the product. See the operating instructions and the necessary safety instructions. Successful installation and pre-trained use ensure functional operations.

Keep this manual available for frequent reference and review it with new personnel.

If you need any additional information or assistance, please contact your distributor or us.

DELIVERY INFORMATION

Inspection of goods

Check that the number of packages matches the packing list and that the package and the items are intact. Mark any damages and missing materials on the packing list and report to the transport company and Arskametalli. Do not install any faulty or incorrect materials.

Warranty

Arskametalli grants a 5-year factory warranty for elevators from the date of delivery. Electrical devices have 1-year factory warranty from the date of delivery.

The warranty requires that owner of the product makes a announcement and a warranty application immediately after broke directly to manufacturer. If the faulted part and the warranty application haven't been delivered to warranty check to the manufacturer within two weeks of breaking, it won't be dealed as a warranty issue. The manufacturer is not responsible of additional warranty given by distributor.

The warranty requires that during the assembly there has been followed valid orders and manufacturer's instructions. Warranty covers production and material faults. Warranty does not cover faults caused by wrong assembly, improper using or neglecting the maintenance.

Type plate

Elevator type plate is located in the bottom part. The plate indicates that the product has been manufactured in accordance with the EU Machinery Directive and meets safety requirements. There's model designation, engine power, year of manufacture and serial number marked in the type plate. Always specify the serial number if you have a complaint or when ordering spare parts.



EU DECLARATION OF CONFORMITY



Manufacturer:

Arskametalli Oy
Saarentaantie 33
FI-31400 Somero, Finland

Product: Arska elevator

Model designation: A68, A92, A118

We hereby declare that the product complies with the directives:

- 2006/42/EC Machinery Directive
- 2006/95/EC Low Voltage Directive
- 2004/108/EC Electromagnetic Compatibility Directive (EMC)

Harmonized standards that have been used:

- SFS-EN 349 + A1
- SFS-EN ISO 12100
- SFS-EN ISO 13857
- SFS-EN 60204-1:2018

Somero 1.10.2019

A handwritten signature in black ink, appearing to read 'Janne Käkönen', is written above a solid horizontal line.

Janne Käkönen, CEO
Arskametalli Oy

SAFETY

The product must be installed by a person who is suitably qualified. During assembly work follow valid safety orders.

Use the product only for its intended purpose. Do not modify the product in any way. Unauthorised modifications may impair the functionality and safety and affect the product's service life. Any modification of the product voids the warranty.

Assembly done wrong can lead to personal injuries or cause damage to the product. Incorrectly installed product may not work right and the capacity may drop. Read this manual carefully well before starting the assembly, maintaining or using.

General information

- Before performing any type of installation or maintenance work, stop the machine and turn off the power.
- The machine must not be started if all hatches, joints and covers haven't been installed such that they can be only opened by tools.
- The machine is equipped with covers and warning labels in accordance with the EU Machinery Directive. Pay attention to all warning labels before commissioning the machine.
- Always use appropriate tools, classified lifting equipment and cranes at work.
- Make sure that the railings are properly installed and that they are in good condition.
- If the machine is installed outside, motors and gears must be protected with rain covers.
- Do not use, assemble or maintain the product alone.
- Keep first aid kit available at all times.
- Make sure that the working area is clean, dry and well lit.
- Make sure that the person responsible of using the product has acquainted to its functions and safety orders.
- Packaging must be disposed properly.

Electrical safety

- Person who installs the electrical device must be professional, qualified electrician.
- Safety switch must be permanently installed and placed such that it's easy to reach during maintenance work.
- Make sure that the motor cover switch has been set into the right ampere referred to motor.
- Make sure that the speed control switch is connected during usage.
- Make sure that there isn't any dirt, dust, moisture or electrostatic charge in the electric devices.

Personal safety

Always wear protective equipment when assembling or using the product:

 Overalls	 Safety helmet	 Work gloves
 Safety shoes	 Hearing protection	 Safety goggles

Signal words

NOTE!

The text contains information that makes the installing easier.

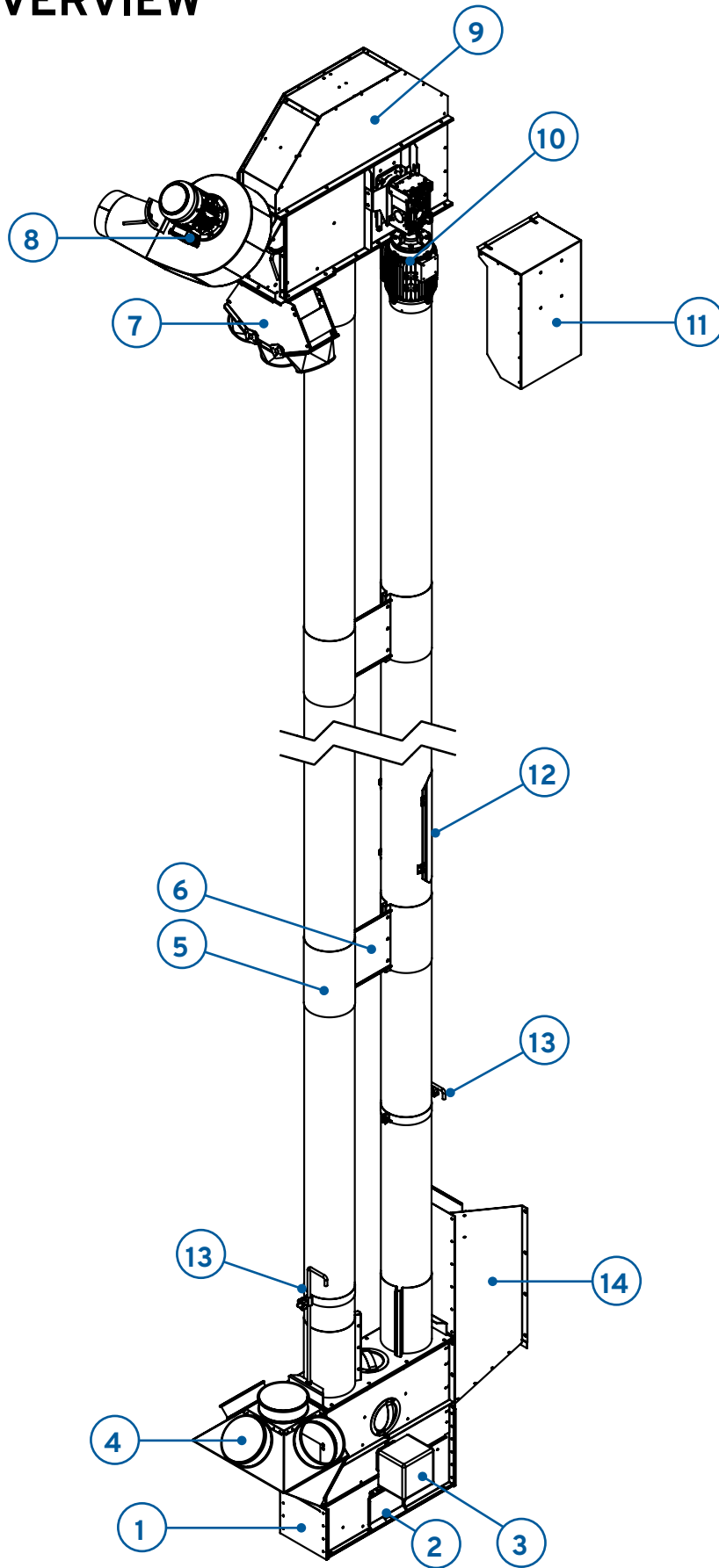
CAUTION!

If text instructions are not followed, the product may be damaged. It can also result in incorrect operation or capacity decrease.

WARNING!

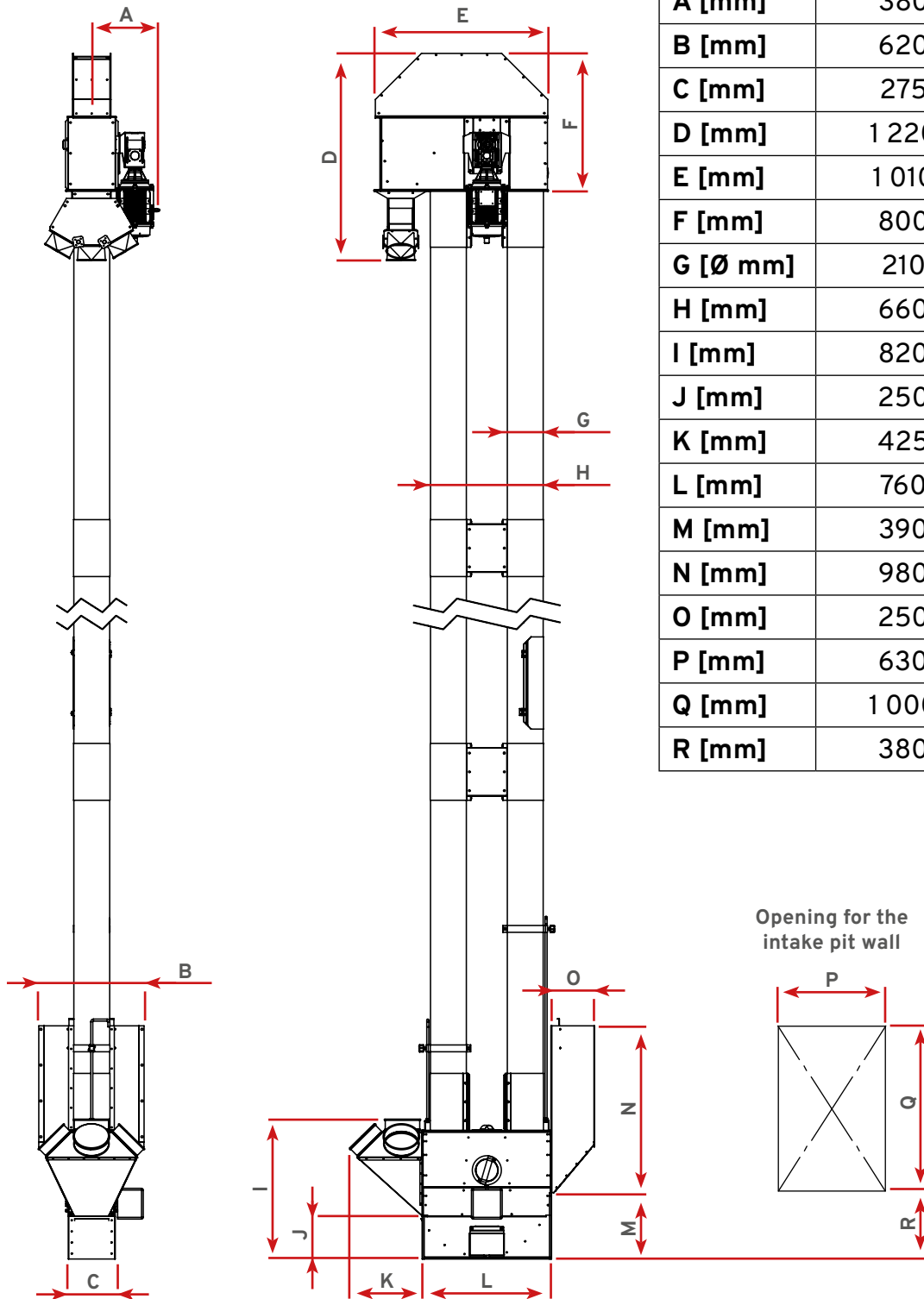
If text instructions are not followed, it could result in serious or life-threatening injuries.

1. OVERVIEW



PART	DESCRIPTION
1	Bottom
2	Cleaning hatch
3	Speed control
4	Inlet 4 x Ø200
5	Pipe bind
6	Clamp plate
7	3-way divider
8	Pre-cleaner A150 (option)
9	Head
10	Gear motor
11	Rain cover for motor (option)
12	Inspection hatch
13	Shutter handle
14	Intake pit inlet

1.1. Dimensions



MODEL	A68	A92 / A118
A [mm]	380	550
B [mm]	620	745
C [mm]	275	350
D [mm]	1 220	1 430
E [mm]	1 010	1 230
F [mm]	800	930
G [Ø mm]	210	285
H [mm]	660	805
I [mm]	820	940
J [mm]	250	290
K [mm]	425	455
L [mm]	760	920
M [mm]	390	445
N [mm]	980	1 000
O [mm]	250	300
P [mm]	630	760
Q [mm]	1 000	1 020
R [mm]	380	430

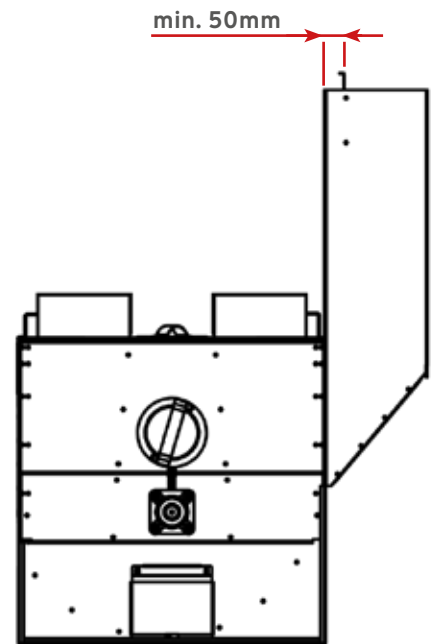
2. INSTALLATION

2.1. Bottom

Fit elevator bottom to place. If needed, use intake pit inlet for fitting. Leave at least 50mm gap to inlet's top part for replacement air.

⚠ NOTE!

Position the bottom so that it's easy to reach the cleaning hatch and that all planned connections can be made.



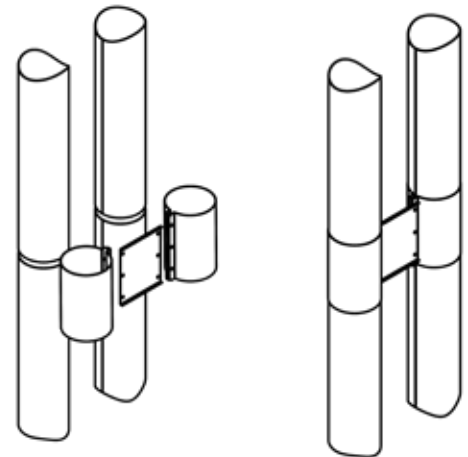
2.2. Body pipes

⚠ CAUTION!

Make sure that the bottom is perfectly horizontal before installing body pipes.

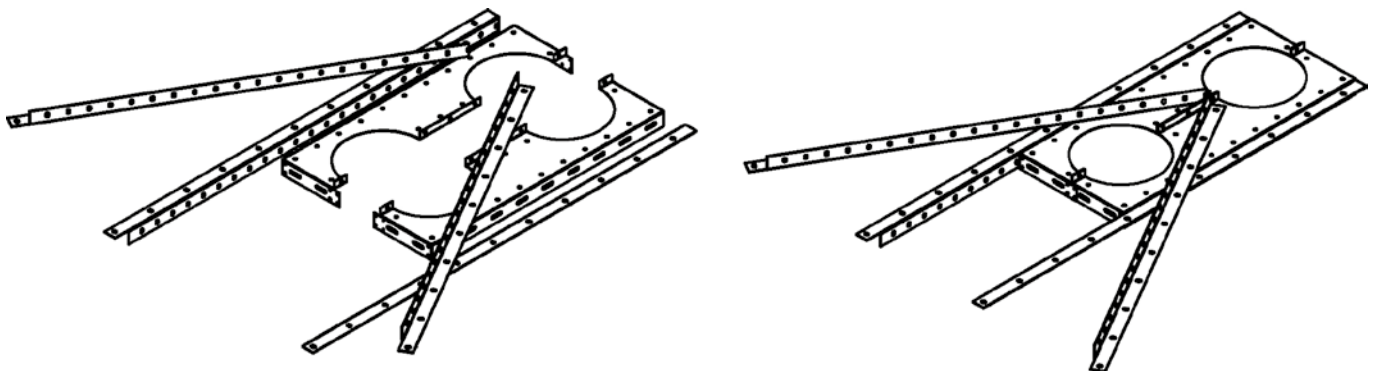
Install the pipes using binds and clamp plates. Aim the seams facing each other. Don't use clamp plates when attaching the bottom and head parts.

Install the pipe with inspection hatch at such height that it's easy to tighten the belt and install the cups.



2.2.1. Support (option)

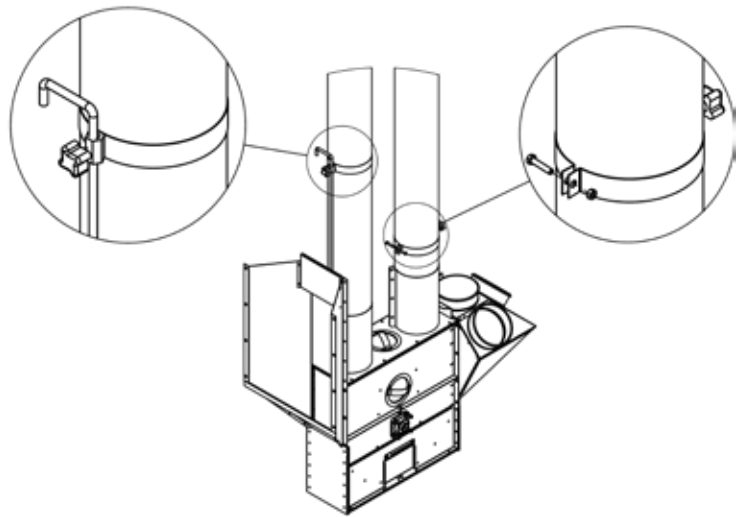
We recommend to support the elevator from the body pipes to other structures every 6 meters. Install the support plate halves around body pipes, at horizontal seam of heat cell or storage container (5pcs M8x20 + nut and 8pcs drill screw). Install the corner rods (2pcs) to support plates and to heat cell's horizontal seam. Install the corner rods (2pcs) as diagonal support.



2.2.2. Shutter handles

Thread the handle through the hole in the locking hoop. Attach the handle with M12 nuts to the hole in the shutter top edge.

Attach the locking hoop to a suitable height to elevator body pipe with M8x40 screw and nut. Lock the handle on place with a hand knob in the hoop.

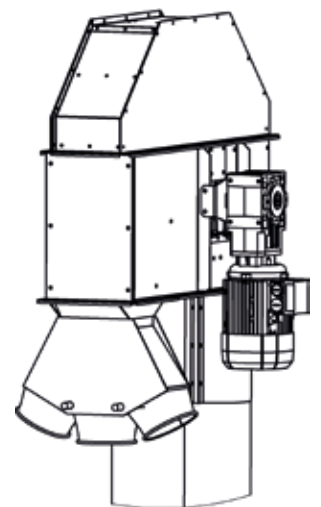


2.3. Head

⚠ CAUTION!

Make sure that the body pipes are straight and that elevator head and bottom are parallel before attaching and supporting the head.

Install the head on place. Install the 3-way divider towards the dryer.



2.4. Gear motor

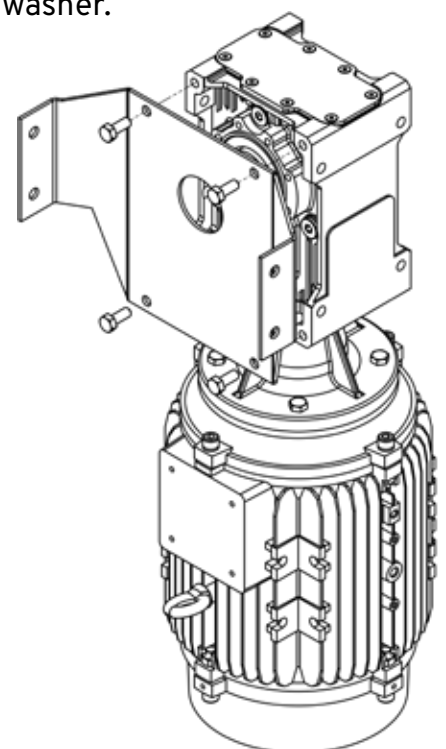
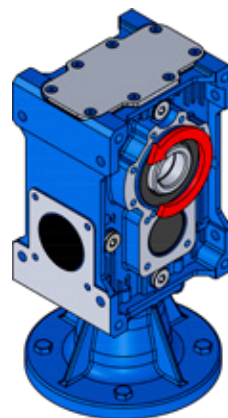
Remove the torque arm from elevator head and attach it to the gear. Install motor and wedge to axle and attach them with screw and washer. Attach the torque arm to the head.

Replace gear's highest fill / inspection plug with breather plug.

The recommended mounting position is with the motor facing down (M4). For other mounting positions, the correct gear oil level should be checked.

⚠ CAUTION!

To ensure optimum performance, the gear's direction of rotation must be as shown in the picture. Direction of rotation is marked with arrows at motor gear.



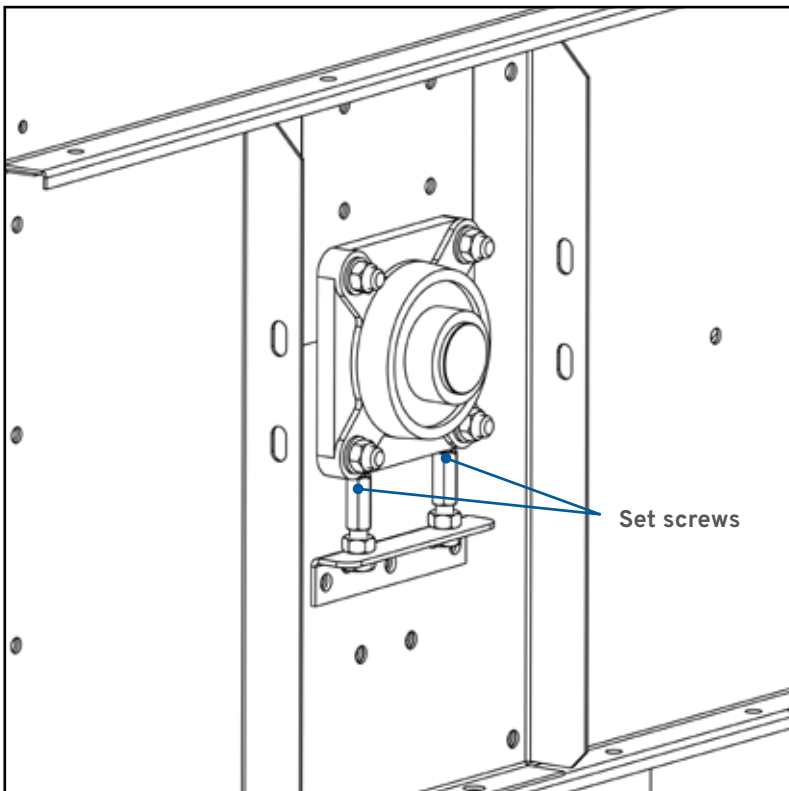
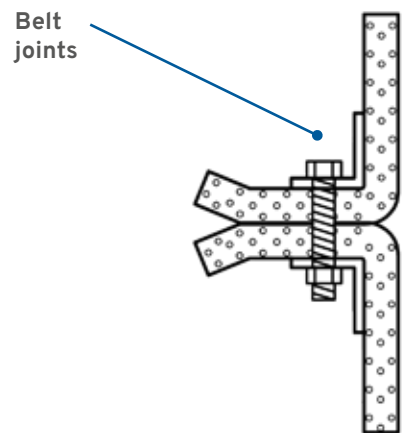
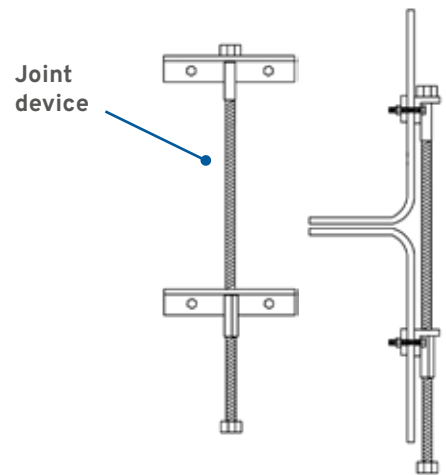
2.5. Cup belt

Install the elevator cup belt on place through the inspection hatch. Make sure that the belt doesn't get twisted.

According to belt type the rubber layer may be thinner in the other side of the belt - in this case, install the thinner side facing the pulley.

Tighten the belt through the inspection hatch with joint device and connect the belt with belt joints. Use existing holes in the belt. Tighten screws in joint gradually to make it straight. Keep tightening until the joints are slightly pressed into the belt.

Rotate the belt by hand and check that the cup belt runs on the middle of the pulleys. Adjust if needed by loosening the bearing fastening screws. By adjusting bearing height (with long set screws in the head and bottom) the belt position changes.

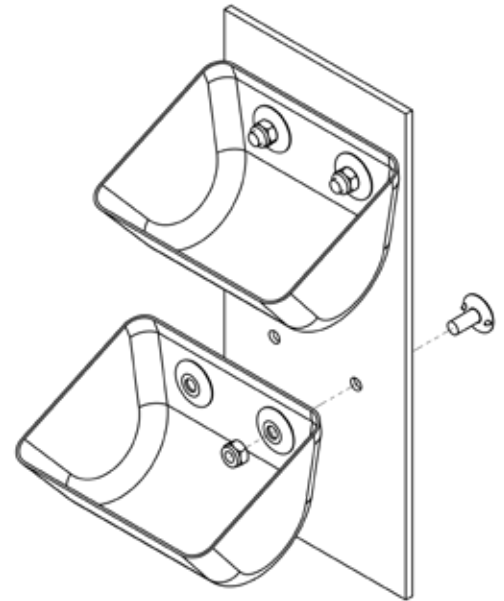


2.6. Cups

Attach cups to the belt with belt screws and nyloc nuts through the inspection hatch. Start attaching the cups at intervals of about one meter to keep the belt in balance. Add the rest of the cups to belt gradually.

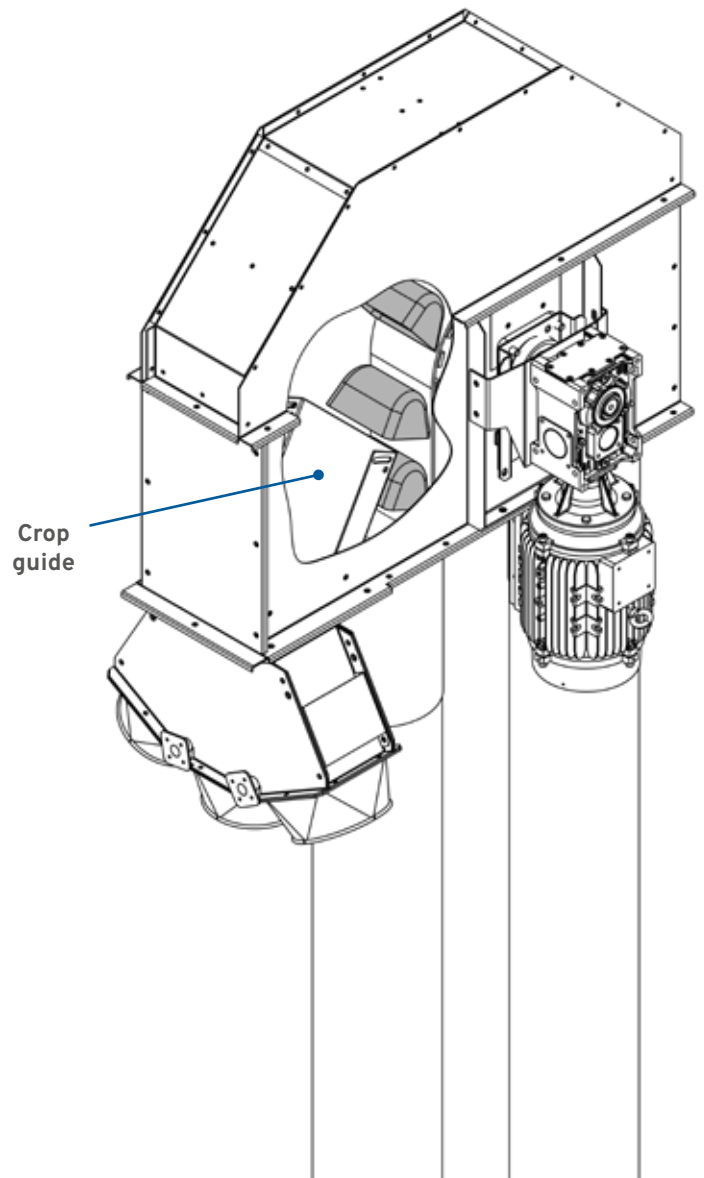
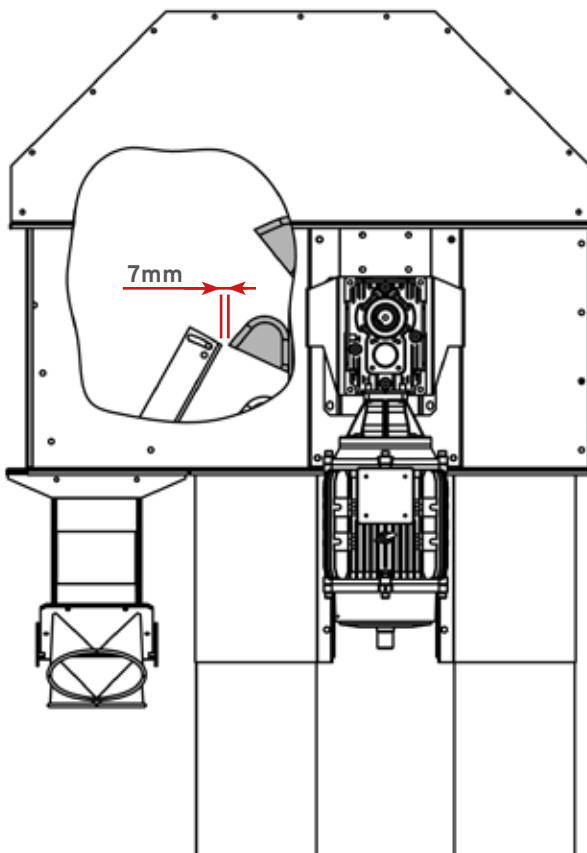
Pre-tighten the nuts on top pulley in the elevator head. Pulley presses the screw head onto the belt and prevents it from rotating.

Do the final tightening from the inspection hatch. Screw head should press about 1mm below the belt surface.



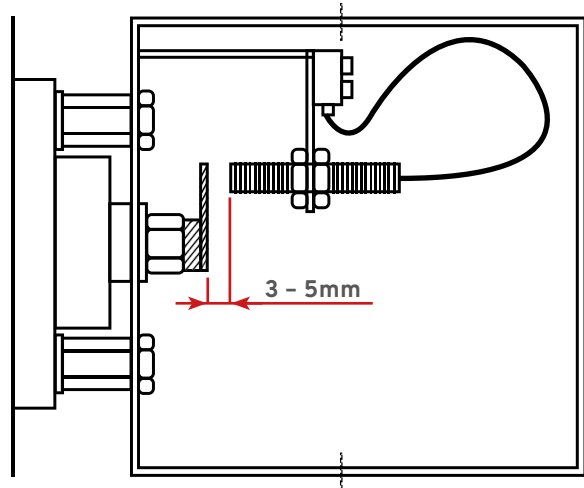
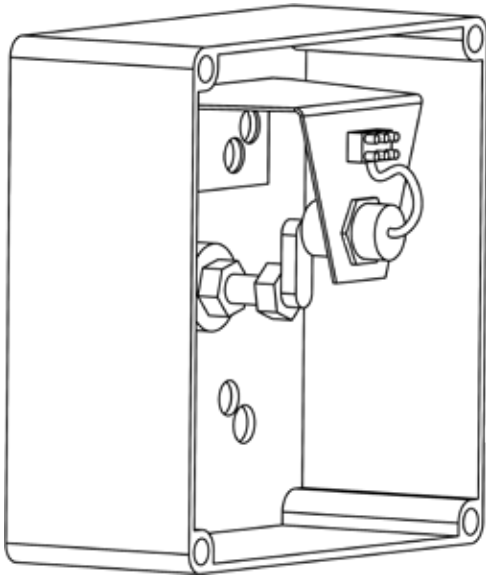
2.7. Crop guide

Crop guide in the head prevents material to flow back to elevator pipe. Adjust the plate about 7mm from the cups.



2.8. Speed control

Speed control stops the elevator if the cup belt is slipping. Attach the control housing and sensor bracket to bearing extension nuts in the elevator bottom part with four hex screws. Attach the spindle on axle's end. Adjust the distance between the spindle and sensor (3 – 5mm).

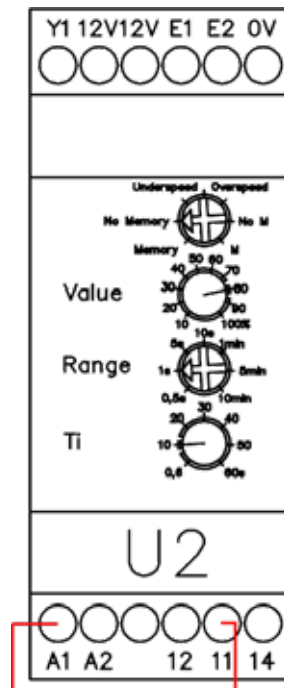


WARNING!

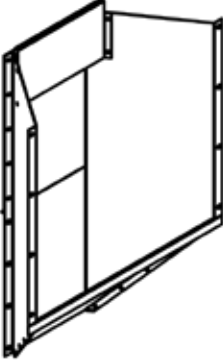
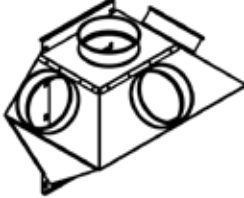
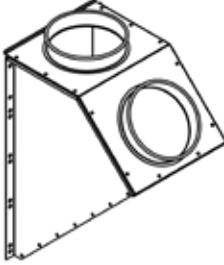
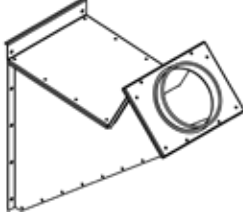
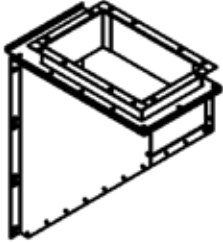
Connections of the speed control must be made by qualified electrician!

PULSE SENSOR SETTING VALUES

MARK	DESCRIPTION
12V	sensor + (brown)
E1	sensor pulse (black)
0V	sensor - (blue)
11	linked to A1
14	to elevator contactor
A1	electricity from elevator switch
A2	zero
80%	pulse rate
10s	start time



2.9. Inlets

Intake pit inlet	Inlet 4 x Ø200	Inlet 2 x Ø200	SW mobile dryer inlet	JEMA T45 horizontal conveyor inlet
				
AR10408 (A68) AR10898 (A92/A118)	AR11633 (A68) AR11701 (A92/A118)	AR11638 (A68) AR11642 (A92/A118)	AR11709 (A68) AR11660 (A92/A118)	AR11930 (A68) AR11936 (A92/A118)

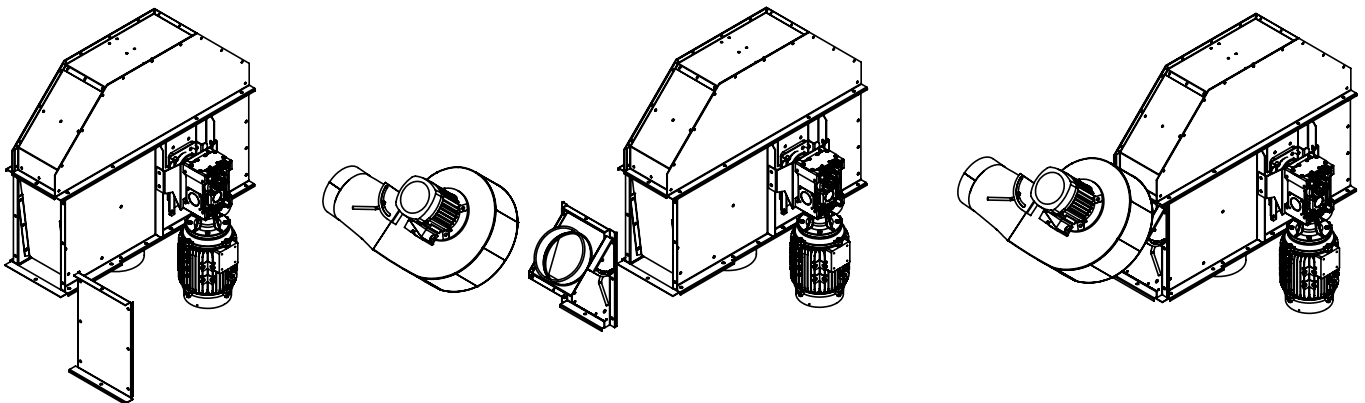
2.10. Pre-cleaner A150 (option)

Remove the end plate off the elevator head and attach the pre-cleaner inlet. Attach the fan to inlet with Ø200 bind.

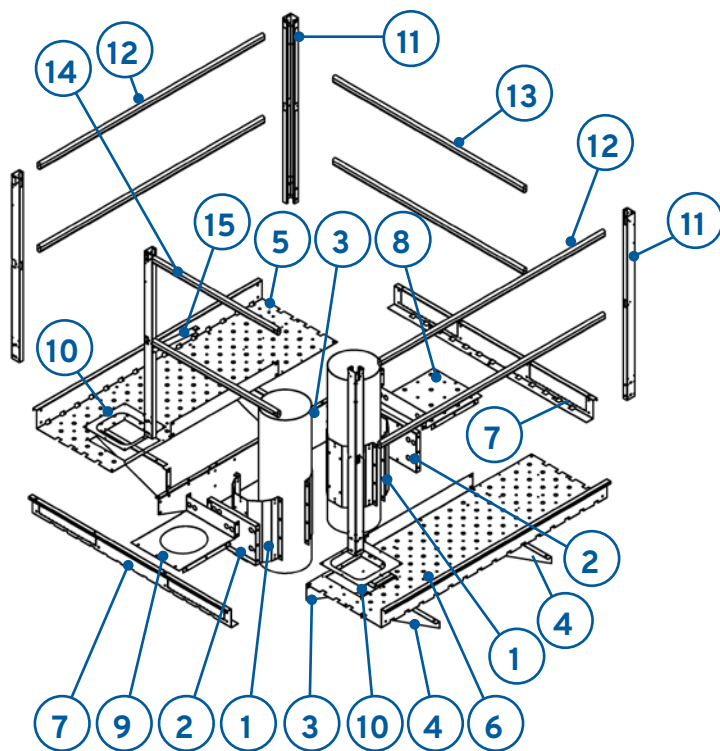
Use spiral pipe as trash pipe. You can direct the fan outlet freely. If needed, install a pipe curve between the fan and inlet. Design the piping with minimal curves.

CAUTION!

Don't connect trash piping from the bottom fan to pre-cleaner.

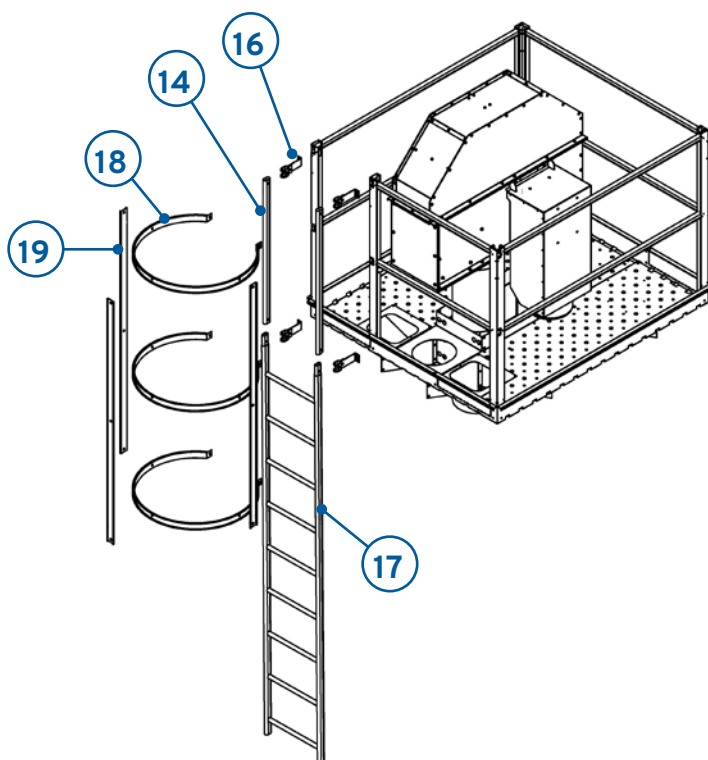


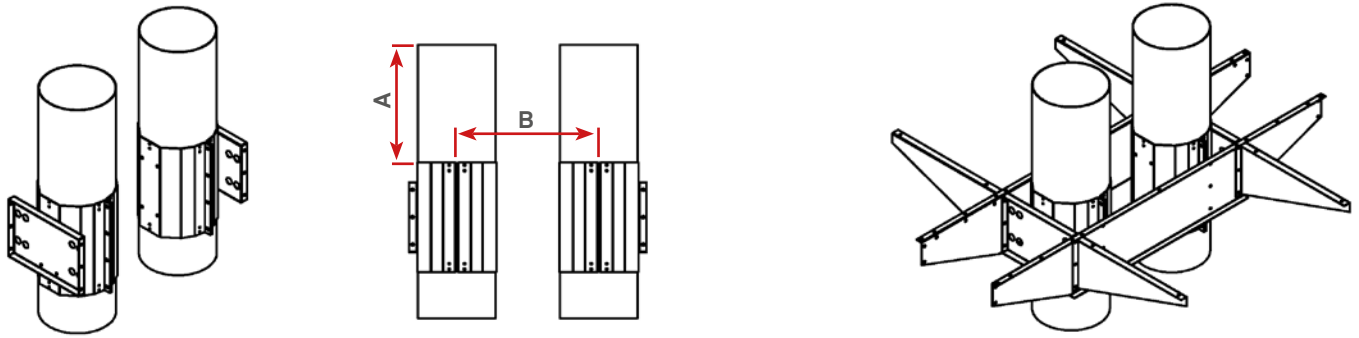
2.11. Service platform (option)



SERVICE PLATFORM PARTS

PART	DESCRIPTION	NO.	PCS
1	Collar	12586	4
1	Collar	12596	4
2	Beam	12581	2
3	Beam	12584	2
4	Support plate	12598	4
5	Platform	12579	1
6	Platform	13217	1
7	Platform	12583	2
8	Plate	13212	1
9	Plate	13215	1
10	Plate	13214	2
11	Post	12521	5
12	Railing 169cm		4
13	Railing 144cm		2
14	Railing 100cm		4
15	Support plate	12615	1
16	Ladder fastener	11483	4
17	Ladder 2,7m		(1)
18	Cage hoop	13371	(3)
19	Cage post	VK1013	(5)

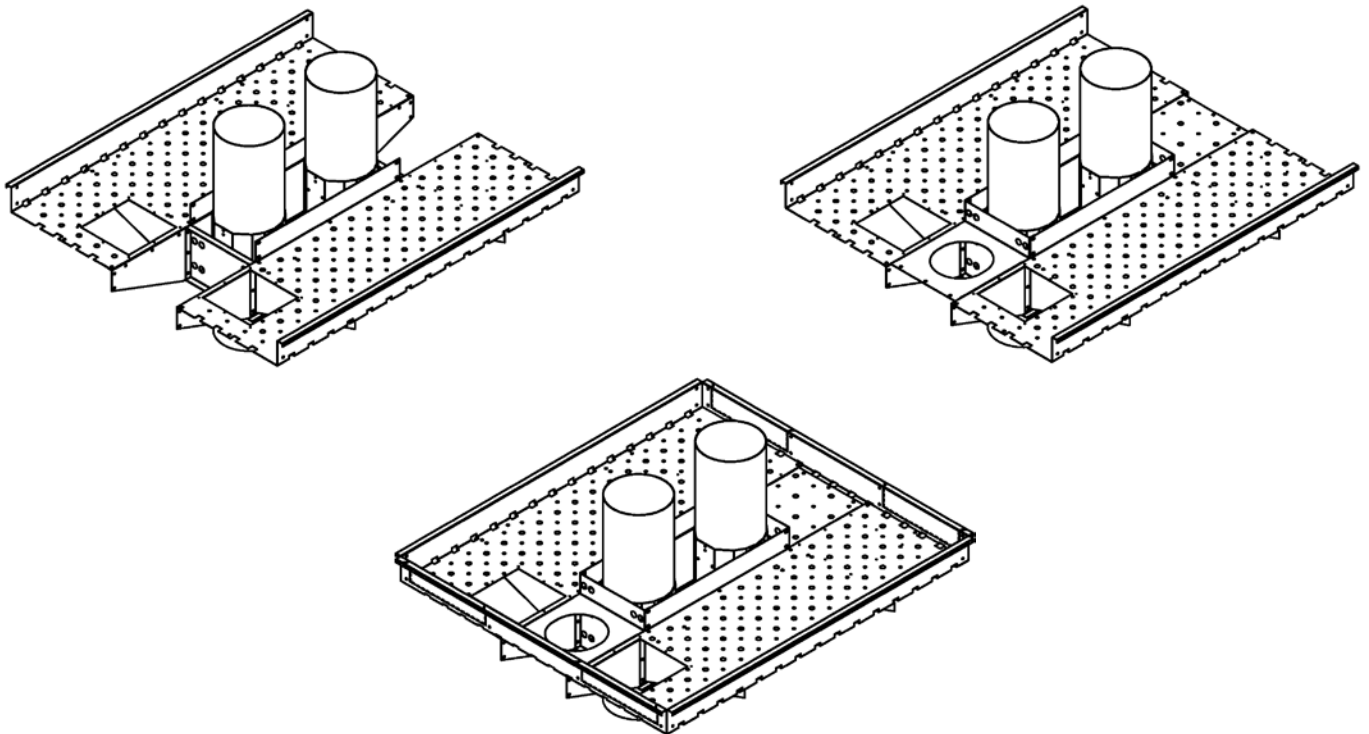




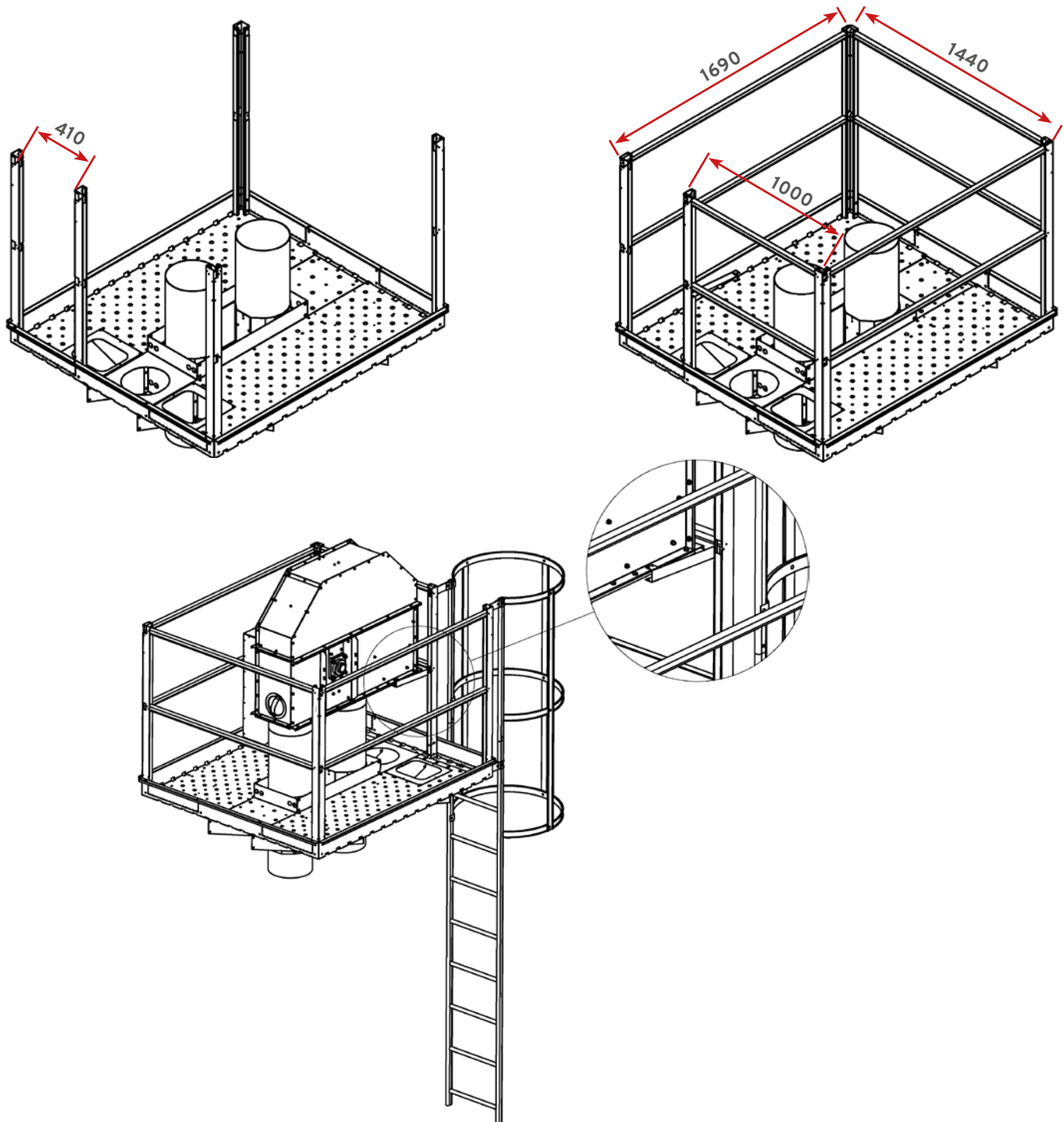
Attach beams (12581) to collars (12596/12586) with ball head M8 screws and nuts. Screw head remains inside the collar.

Attach previous parts to elevator body pipes (to one or two meter longs) with collars. Use M8x40 screws and nuts. Notice the right installation height (measure A: A68 = 365mm and A92/118 = 430mm).

Attach beams 12854 and support plates 12598 with M8x16 screws and M8 nuts. Notice the installation point (measure B: A68 = 450mm and A92/118 = 520mm).



Attach platform 12579 and 13217. Attach plate 13215 at the divider end and plate 13212 on the opposite side. Attach platforms 12583 with M8x16 screws and M8 nuts.



Attach posts 12521 (4pcs) to platform corners and one on the edge of the passage. Place the passage on the opposite side of the elevator gear motor. Passage width is 410mm. Use M8x16 screws and M8 nuts.

Attach railings to posts with 4,2x13 drill screws.

Attach support plate 12615 between the elevator head and passage edge post with 4,2x13 drill screws.

Secure the platform attachment with 6,3x9 drill screws, 6pcs / collar.

2.12. Motored shutter (option)

Install actuator's rod bracket with two M10 nuts to the hole in the shutter top edge. Install the actuator's bind bracket to elevator body pipes. Leave the screws and nuts loose. Install the actuator to the brackets. Install the power supply near to the bind bracket.

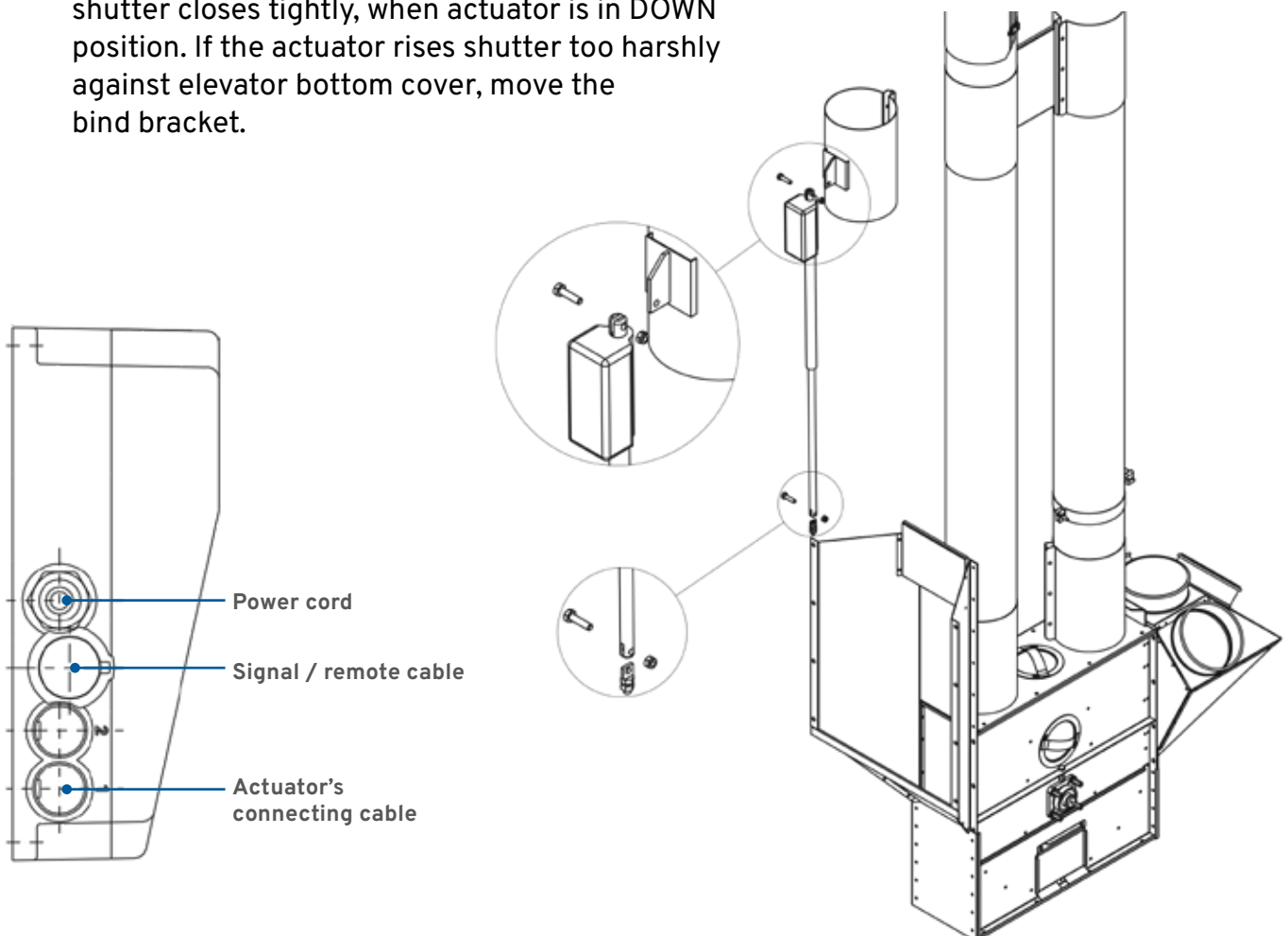
2.12.1. Electrical connections

Remote control: Attach the actuator's connecting cable (6,3mm plug) and controller connecting cable (DIN coupling) to the power supply. Plug in the power cord.

Control from the control panel: Attach the actuator's connecting cable (6,3mm plug) and controller connecting cable (DIN coupling) to the power supply. Have the electrician connect the connecting cable to the control panel. Connecting instructions can be found in the control panel circuit diagram. Plug in the power cord.
Automatic mode is adjusted by the control panel's time relays.

2.12.2. Final touches

Leave the actuator in UP position. Make sure that elevator shutter is open. Tighten actuator's bind bracket to elevator body pipes and install rod bracket to the shutter. Run actuator DOWN and UP and make sure that shutter closes tightly, when actuator is in DOWN position. If the actuator rises shutter too harshly against elevator bottom cover, move the bind bracket.



3. OPERATING

3.1. Procedures before commissioning

Make sure that all hatches, covers and pipe joints are properly closed. Pipe joints must not be open – if needed, attach a one meter long pipe to joint.

Rotate the belt by hand and check that the cup belt runs on the middle of the pulleys. Adjust if needed.

Check the correct direction of rotation of the motor.

3.2. Procedures before every season

Check cup belt tightness and that it runs on the middle of the pulleys.

Check crop guide's distance to the cups (see step 2.7.).

Make sure that elevator is empty. Close all hatches and covers.

Check that divider and speed control are working. Check bearings and grease them if needed.

4. MAINTENANCE

WARNING!

Turn off the main power before performing any maintenance work.

4.1. General procedures

Check annually that the screws are tight, that any parts aren't missing and that there's not rust in the machine. Change any damaged parts.

Clean impurities from bottom and head parts annually. Clean elevator body pipes with cleaning brush.

Check bearings after every season and grease them.

4.2. Cup belt retightening

Tighten the cup belt after the first season by the inspection hatch. Remove cups from both sides of the belt joint. Attach the joint device to the belt, open the joint and tighten the belt 1% of its overall length. Cut the spare belt off and attach the belt using belt joints. Attach removed cups. Rotate the belt by hand and check that the cup belt runs on the middle of the pulleys. Adjust if needed.

4.3. Gear motor

Check oil amount before commissioning and then every year. Change the oil after 5 000 work hours, but at least every three years.

4.3.1. STM Hoyer

In 4kW gears the oil amount must be in all mounting positions at least 0,9 liters.

In 5,5kW and 7,5kW gears the oil amount is 1,5 liters in mounting position M4.

Check the table below for the right oil type.

AGIP	ARAL	BP	CASTROL	CHEVRON	ESSO	KLÜBER
Blasia SX (vain 220)	Degol PAS	Enersyn EPX	Alphasyn EP	Tegra Synthetic Gear	Spartan S EP	Klübersynth EG 4
MOBIL	OPTIMOL	Q8	SHELL	TEXACO	TOTAL	TRIBOL
Mobilgear SHC XMP	Optigear Synthetic A	El Greco	Omala S4 GXV	Pinnacle EP	Carter SH	1510

4.3.2. Bonfiglioli

In 4kW gears the oil amount must be in all mounting positions at least 1,8 liters.

In 5,5kW and 7,5kW gears the oil amount is 3,5 liters.

Check the table below for the right oil type.

AGIP	ARAL	BP	CASTROL	CHEVRON	ESSO	KLÜBER
Blasia S	Degol GS	Enersyn SG-XP	Alphasyn PG	HiPerSYN	Glycolube	Klübersynth GH 6
MOBIL	OPTIMOL	Q8	SHELL	TEXACO	TOTAL	TRIBOL
Glygoyle HE	Optiflex A	Gade	Omala S4 WE	Synlube CLP	Carter SY	800

5. TROUBLESHOOTING

FAULT	CAUSE	ACTIONS
Elevator runs for a few seconds and shuts down	Cup belt is loose	Tighten and adjust the cup belt, make sure that the joint is straight
	Speed control doesn't work	Check pulse rate (80%) / Adjust the distance between the spinde and sensor (3 – 5mm) (see step 2.8.)
	Fault in speed control (sensor or it's lead wire is damaged, speed control relay is damaged)	Check sensor position / Have the electrician check the connection
Elevator motor won't start	Motor thermal protection relay tripped	Reset thermal protection relay
	Fuse blown	Change to new or reset fuse
	Motor starter is damaged	Have the electrician check the starter
	Fault in supply voltage	Have the electrician check the supply voltage
Elevator starts poorly	Blockage in elevator or outlet piping	Discharge the elevator / remove blockage
Elevator shuts down during use	Overload	Limit the feed flow
	Blockage in outlet piping	Remove blockage
	Cup belt slips	Tighten and adjust the cup belt, make sure that the seam is straight
	Speed control doesn't work	Check pulse rate (80%) / Adjust the distance between the spinde and sensor (3 – 5mm) (see step 2.8.)
Elevator is inefficient	Wrong motor electrical connection (Y-Δ)	Have the electrician check the connection
	Crop guide position is incorrect	Distance to cups should be about 7mm (see step 2.7.)

FAULT	CAUSE	ACTIONS
Elevator clacks	Cup belt is loose	Tighten and adjust the cup belt, make sure that the seam is straight
	Cups are loose	Check the cup fastenings and change damaged cups
	Bearing lockings have opened, the axle moves sideways	Check bearing set screw's tightness and tighten if needed
	Elevator body pipes are loose from their joints or skewed	Check the tightness of the joints and straighten the body pipes
	Crop guide position is incorrect	Distance to cups should be about 7mm (see step 2.7.)
Rumbling sound or bearing heats up	Damage in the bearing	Change bearing
Gear motor heats up	Wrong motor electrical connection (Y- Δ)	Have the electrician check the connection
	Insufficient amount of oil in the gear	Check oil amount and add it if needed
	Damage in the gear	Change gear / motor

6. WEIGHT LIST

A68

HEIGHT [m]	WEIGHT [kg]
7,26	392
7,76	397
8,26	401
8,76	413
9,26	431
9,76	433
10,26	450
10,76	463
11,26	480
11,76	482
12,26	500
12,76	512
13,26	530
13,76	532
14,26	549
14,76	562
15,26	579
15,76	581
16,26	598
16,76	611
17,26	628
17,76	631
18,26	648
18,76	640
19,26	658
19,76	660
20,26	677

A92

HEIGHT [m]	WEIGHT [kg]
10,0	624
10,5	647
11,0	663
11,5	686
12,0	693
12,5	716
13,0	731
13,5	755
14,0	762
14,5	785
15,0	800
15,5	824
16,0	831
16,5	854
17,0	869
17,5	893
18,0	900
18,5	934
19,0	949
19,5	973
20,0	979
20,5	1003
21,0	1018
21,5	1042
22,0	1048
22,5	1072
23,0	1087
23,5	1111
24,0	1117

A118

HEIGHT [m]	WEIGHT [kg]
10,0	648
10,5	672
11,0	688
11,5	712
12,0	719
12,5	743
13,0	759
13,5	783
14,0	790
14,5	815
15,0	830
15,5	855
16,0	862
16,5	886
17,0	902
17,5	926
18,0	933
18,5	957
19,0	973
19,5	997
20,0	1005
20,5	1029
21,0	1045
21,5	1069
22,0	1076
22,5	1100
23,0	1116
23,5	1140
24,0	1147

NOTES



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