



Grain bins

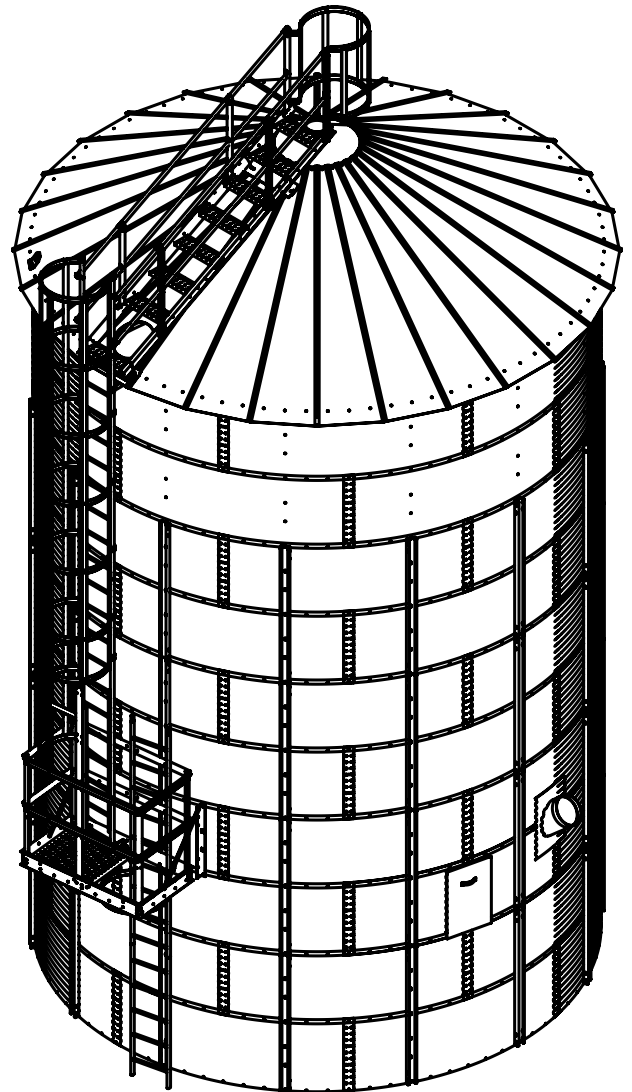
ASSEMBLY AND USER MANUAL

Ø480cm

Ø560cm

Ø640cm

Ø720cm







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INTRODUCTION

This guide contains instructions on installing and using grain bins manufactured by Arskametalli Oy.

In order to ensure efficient use and safe installation of the equipment, read all the instructions carefully. Additionally, make sure that any other persons present on-site are aware of all the safety essentials. Keep this manual on hand and introduce it to any new personnel members.

If you need more information or assistance, contact your dealer or Mepu service.





WARRANTY AND WARRANTY CONDITIONS

The product is intended for professional use. Installation, use and maintenance of the equipment require normal general knowledge and skills related to machines and equipment that a professional farmer should presumably possess.

Warranty conditions

For grain bins manufacturer gives a 5-year factory warranty starting from the date of delivery. Mepu Oy cannot be held responsible for any defects discovered after the aforementioned time limits. Mepu Oy undertakes to eliminate any design, raw materials, or workmanship-related faults in the Goods through repair or replacement. Mepu Oy is not responsible for any other direct or indirect damages or losses.

The warranty does not cover faults arising from materials provided by the Purchaser or structural solutions specified or set out by the Purchaser. Moreover, Mepu Oy's warranty and liability for faults do not cover minor faults and deviations that exert no substantial influence on the use and functionality of the dryer machinery. The warranty does not cover faults caused by any factors discovered after transfer of the burden of risk. For example, the warranty does not cover faults caused by failure to comply with the use and storage conditions specified for the Goods or instructions for use, or improper use of the Goods. In this connection, inter alia, feeding the equipment with material significantly differing from the average quality of the material processed or with material that does not belong in the equipment is also considered improper use, for example, feeding of grain dryers with material of significantly higher-than-average moisture content and / or of significantly higher-than-average weed and / or other impurities (such as rocks, dirt or foreign objects) content, or feeding of material containing large rocks onto the conveyors. The warranty does not cover faults arising from inadequate maintenance or incorrect installation carried out by the Mepu Oy, or faults arising from modifications or repairs performed without the Seller's written consent. Moreover, the warranty does not cover normal wear and tear.

Whenever a fault is detected, the Seller is required to submit a written fault report without undue delay. The fault report must describe the nature of the fault. If there is reason to assume that the fault could cause additional damage, use of the Goods must be discontinued and the fault report submitted immediately. Otherwise, the Purchaser shall lose its right to submit claims regarding damages that could have been avoided by immediate termination of the use and/or submission of a fault report. If the Purchaser has reported a fault and it is determined that the Goods are free of faults covered by Mepu Oy's warranty, Mepu Oy shall have the right of demanding compensation for the work and expenses incurred because of the fault report. If intervention with Goods other than those delivered by Mepu Oy is required in order to repair a fault, Mepu Oy shall not be responsible for the related works and expenses. If a fault in some component of the Goods has been eliminated, Mepu Oy shall be liable for the repaired or replaced component in the same way as for the original delivery for 18 months. However, Mepu Oy shall not be liable for faults in any component of the Goods or damage caused by the Goods for longer than 36 months from the beginning of the original liability period.



EC DECLARATION OF CONFORMITY OF THE MACHINERY



Manufacturer

Name of the company:	Arskametalli Oy
Address:	Saarentaantie 33, 31400 Somero, Finland

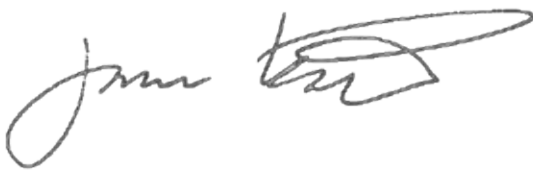
Product

Description:	round grain bin
Type:	Ø480cm, Ø560cm, Ø640cm, Ø720cm
Serial number:	

Directives and standards

We hereby declare that the equipment complies with the directives:	2006/42/EC
Harmonised standards (or parts / clauses) that have been used:	
Other technical standards and specifications that have been used:	EN 953

Signature of authorized person

Date and place:	1.10.2019 Yläne
Signature:	 Janne Käkönen
Title:	CEO / Mepu Oy

SAFETY

The general safety section contains instructions related to all safety routines. Instructions pertaining to certain specific subjects (for example, assembly-related safety) can be found in the respective section. Always read all the instructions, not only the summary of safety practices, before commencing any operations with the equipment.

YOU are responsible for SAFE use and maintenance of the product. YOU need to make sure that you and any other persons working in the vicinity of the product are aware of all procedures and information related to SAFETY and contained in this manual. Remember – YOU are the key to safety. Good safety practices will keep you and the people around you safe. Make these procedures a functional part of the safety programme.

- The user or operator is responsible for reading, understanding, and following the manual's safety instructions. All accidents can be avoided.
- The equipment owner needs to provide guidance and go through the instructions prior to commissioning of the equipment and at least once a year with all the employees before they are allowed to use the equipment. Untrained users/operators expose themselves and bystanders to the risk of serious or fatal injuries.
- Use the equipment only for its intended purpose.
- Do not modify the equipment in any way. Unauthorised modifications may impair the functionality and / or safety and affect the product's service life. Any modification of the product voids the warranty.
- Keep children and unauthorised persons away from the work area.
- Keep first aid means available at all times and make sure you know how to use them.
- A fire extinguisher must be readily available at the work site. Keep it in a visible place.
- Electrical equipment: Before electrical equipment maintenance, adjustment or repair, disconnect the plugs, set all switches to the neutral or OFF position, stop the motors, remove the ignition key or disconnect the power supply, and wait for all moving parts to stop.
- Avoid lifting at windy weather. The lift must go straight.
- Install racks under the bin's hem immediately after the lifting.
- Do not use the bin if hatches and covers haven't been installed.

- Use proper personal protection equipment:

- safety helmet
- work gloves
- anti-slip safety shoes
- safety goggles
- hearing protection
- overalls



- Comply with good work area practices:

- Keep the usage area clean and dry.
- Make sure the electrical outlets and tools are properly grounded.
- Use adequate lighting for works performance.
- Consider SAFETY! Work SAFELY!



General safety instructions

The safety-related warning sign marks important safety instructions on the product and in the manual. If you see this symbol, consider the possible risk of serious or fatal injury. Follow safety instructions.



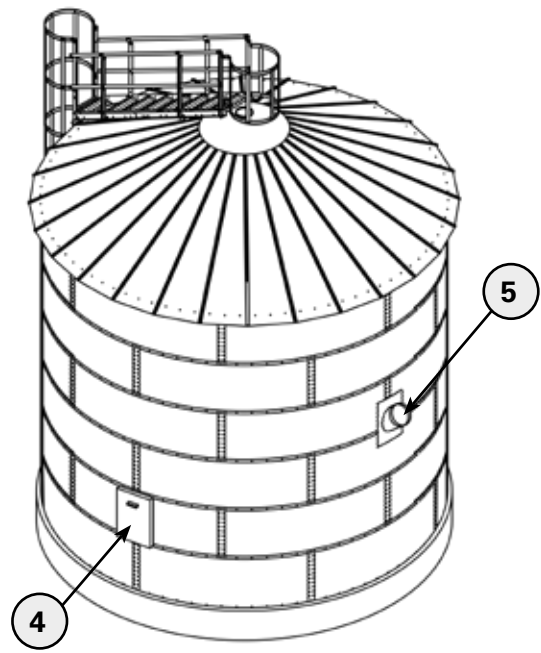
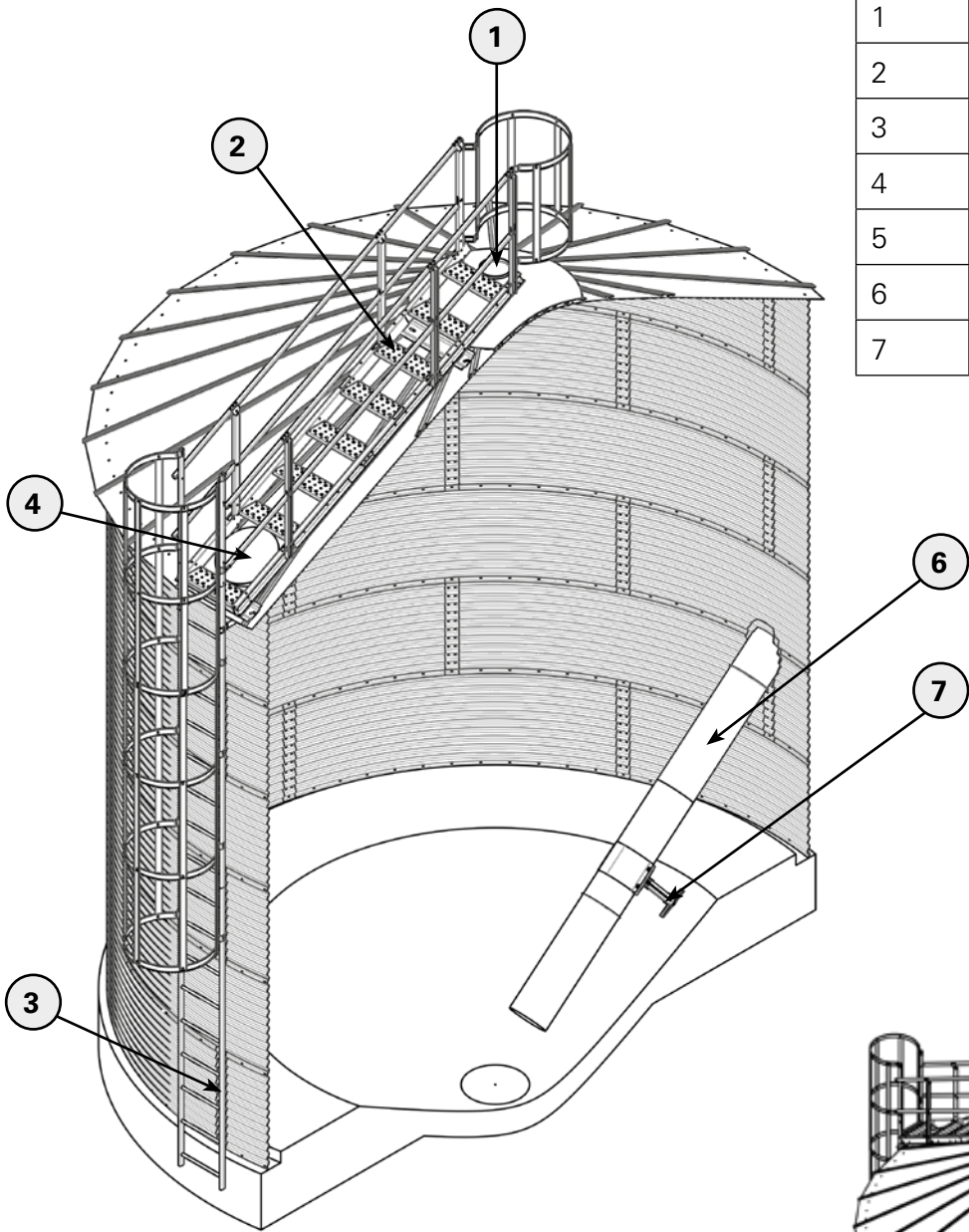
Signal words

Pay attention to the following signal words in the safety instructions: DANGER, WARNING, CAUTION, and NOTE. The signal words used in the safety instructions have been chosen based on the following definitions.

DANGER	Indicates an imminent danger to life that may result in serious or fatal injuries unless avoided.
WARNING	Indicates a potential danger to life that may result in serious or fatal injuries unless avoided.
CAUTION	Indicates a dangerous situation that may result in minor or moderate injuries unless avoided.
NOTE	Indicates a potentially dangerous situation that may result in property damage unless avoided.

1. Overview

PART	DESCRIPTION
1	Fill hatch
2	Roof ladder
3	Wall ladder
4	Manhole
5	Wall outlet for auger
6	Auger cover pipe
7	Auger cover pipe legs



! NOTE!
 In the example picture, the bottom of the bin is in the form of a concrete cone. Also available as a flat bottom, concrete recess and steel hopper bottom.



1.1. Delivery contents

- Wall elements, one with a manhole
- Roof sections, one with a manhole
- Top cone and rain cover
- Wall outlet, cover pipe and cover hood for the discharge auger
- Wall ladder (back support if needed) and roof ladder with railings
- Reinforcements and base parts (attaching to foundation)
- Butyl mass, sealant extruder, screws, nuts, washers, variety of fasteners

1.2. Unpacking

Unpack the package if you can't start the assembly straight away. The storing area has to be dry. Place the wall elements such that the air flows between them. This is to prevent the so called white rust from emergencing. You don't have to unpack the screw packages. Store the sealant to a warm place.

1.3. Foundation

The bin is filled straight from the grain dryer (foundation close to the elevator) or using a conveyor. Check the need for the permission from your local building authority.

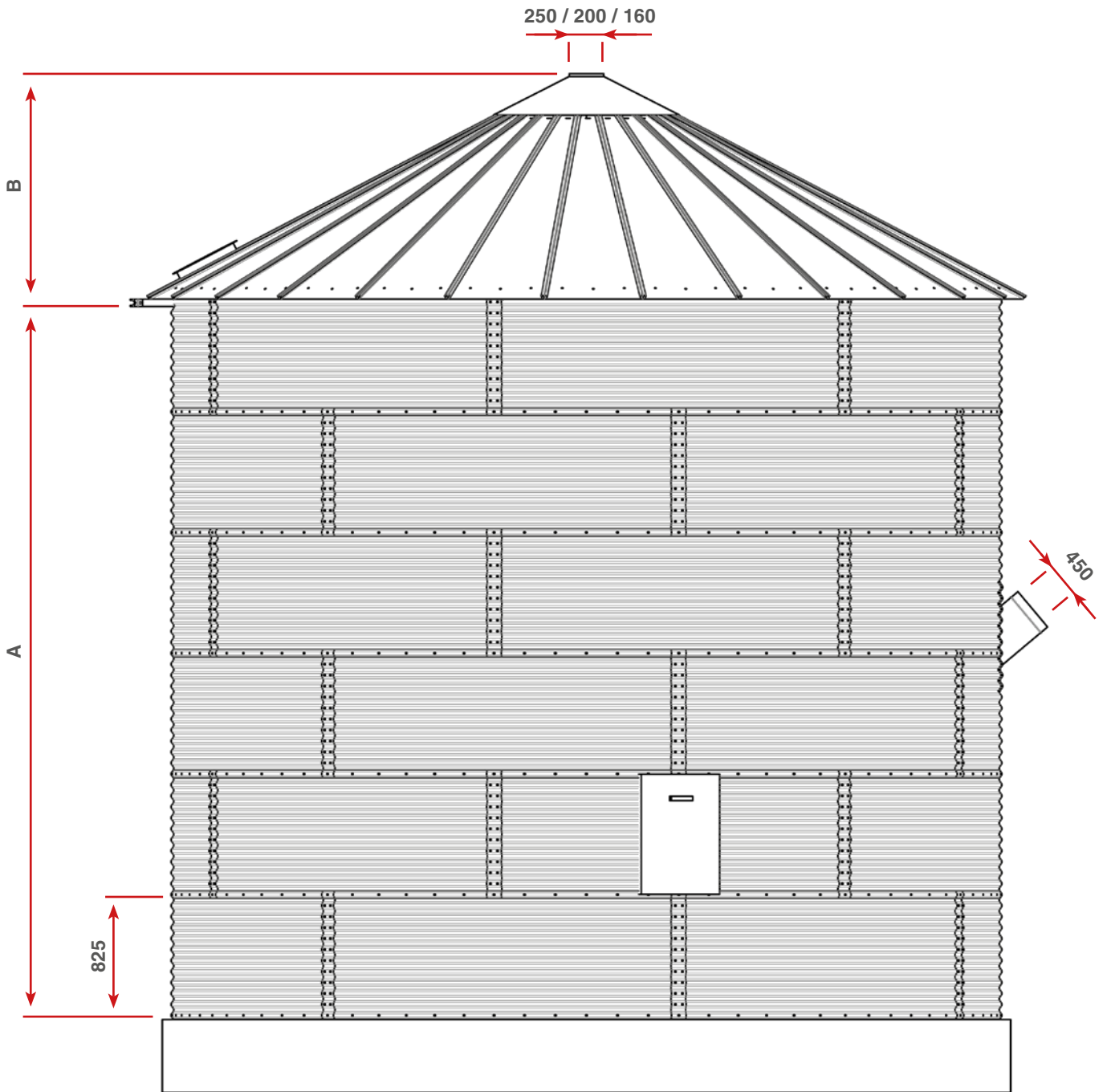
The bin requires strong and frost resistant foundation. Pay attention to the drainage in order to avoid moisture damage. The foundation is made according to the separate structure drawings. You can get the drawings for flat and cone bases from the manufacturer.

1.3.1. List of rebars

Rebars have been calculated with a 0,5m overlap / 6m.

	CONE BASES				FLAT BASES			
	Ø4,8	Ø5,6	Ø6,4	Ø7,2	Ø4,8	Ø5,6	Ø6,4	Ø7,2
Rebar 6mm [m]	125	192	239	267	91	103	118	131
Rebar 10mm [m]	603	815	1 005	1 242	585	791	1 021	1 276
Concrete [m ³]	9,5	12,5	15,5	18,5	6,5	8,5	10,5	12,5
Concrete + 10% [m ³]	11	14	17	21	5	9	12	14

1.4. Dimensions





Ø / LAYER	VOLUME [m ³]	A [mm]	B [mm]	A + B [mm]	C [mm]	WEIGHT [kg]
4,8m / 4	68	3 300	1 200	4 500	4 800	1 430
4,8m / 5	84	4 125	1 200	5 325	4 800	1 706
4,8m / 6	100	4 950	1 200	6 150	4 800	1 897
4,8m / 7	116	5 775	1 200	6 975	4 800	2 203
4,8m / 8	132	6 600	1 200	7 800	4 800	2 423
4,8m / 9	148	7 425	1 200	8 625	4 800	2 710
4,8m / 10	164	8 250	1 200	9 450	4 800	2 913

Ø / LAYER	VOLUME [m ³]	A [mm]	B [mm]	A + B [mm]	C [mm]	WEIGHT [kg]
5,6m / 4	96	3 300	1 400	4 700	5 600	1 688
5,6m / 5	117	4 125	1 400	5 525	5 600	2 010
5,6m / 6	138	4 950	1 400	6 350	5 600	2 231
5,6m / 7	159	5 775	1 400	7 175	5 600	2 583
5,6m / 8	180	6 600	1 400	8 000	5 600	2 833
5,6m / 9	201	7 425	1 400	8 825	5 600	3 166
5,6m / 10	222	8 250	1 400	9 650	5 600	3 399

Ø / LAYER	VOLUME [m ³]	A [mm]	B [mm]	A + B [mm]	C [mm]	WEIGHT [kg]
6,4m / 4	124	3 300	1 600	4 900	6 400	2 091
6,4m / 5	151	4 125	1 600	5 725	6 400	2 459
6,4m / 6	178	4 950	1 600	6 550	6 400	2 699
6,4m / 7	205	5 775	1 600	7 375	6 400	3 097
6,4m / 8	232	6 600	1 600	8 200	6 400	3 377
6,4m / 9	259	7 425	1 600	9 025	6 400	3 756
6,4m / 10	286	8 250	1 600	9 850	6 400	4 019

Ø / LAYER	VOLUME [m ³]	A [mm]	B [mm]	A + B [mm]	C [mm]	WEIGHT [kg]
7,2m / 4	156	3 300	1 800	5 100	7 200	2 604
7,2m / 5	190	4 125	1 600	5 925	7 200	3 018
7,2m / 6	224	4 950	1 600	6 750	7 200	3 288
7,2m / 7	258	5 775	1 600	7 575	7 200	3 741
7,2m / 8	292	6 600	1 600	8 400	7 200	4 060
7,2m / 9	326	7 425	1 600	9 225	7 200	4 494
7,2m / 10	360	8 250	1 600	10 050	7 200	4 796

1.6. Wall element thickness, reinforcements, extensions and base supports

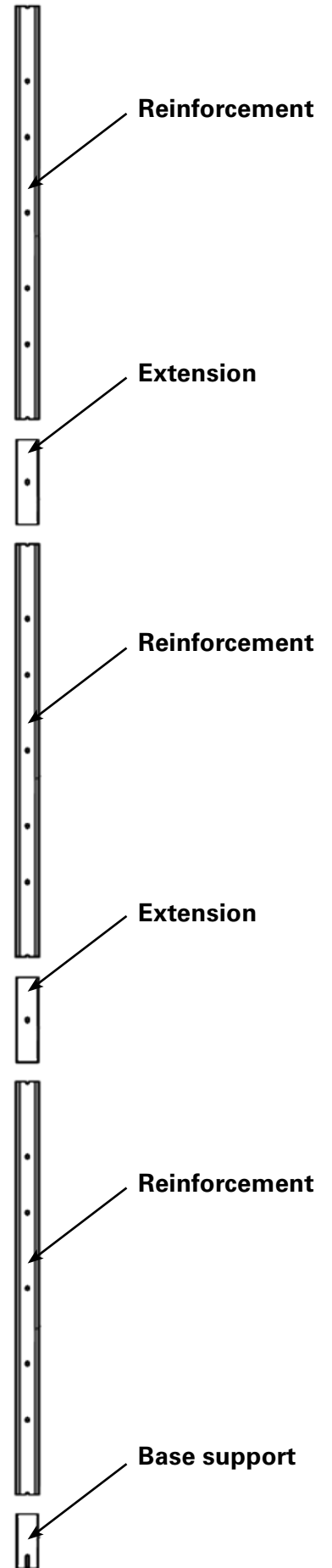
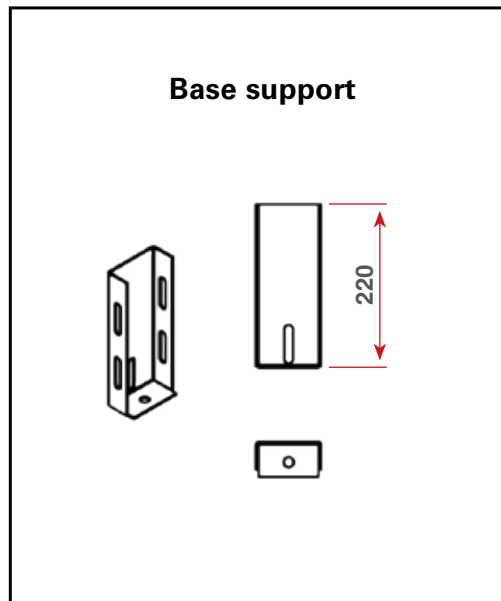
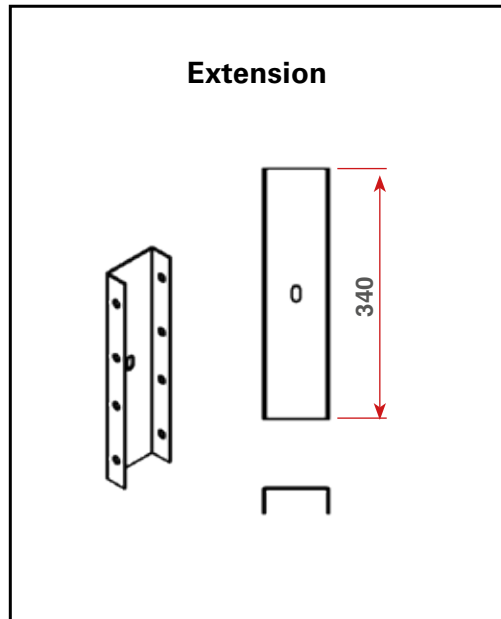
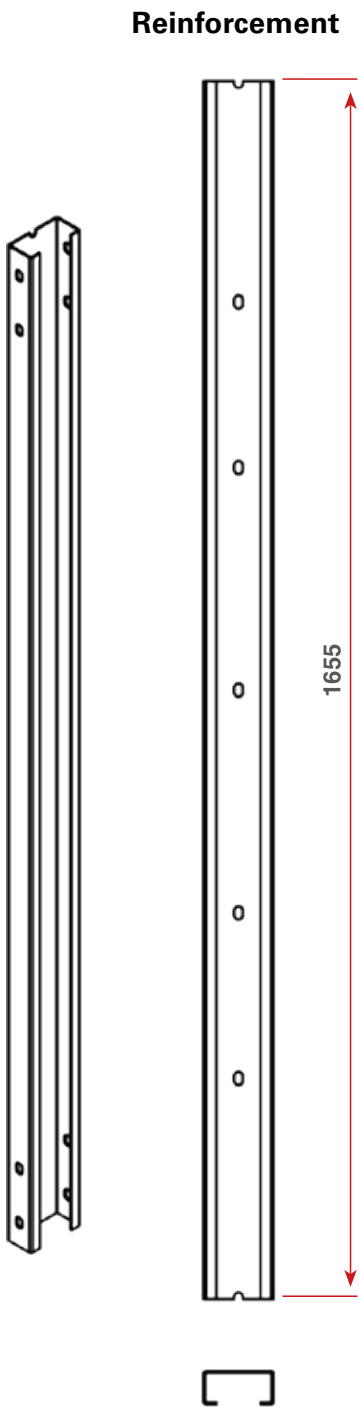
REINFORCEMENTS

Ø4,8	LOWEST LAYER	2.	3.	4.	5.	6.	7.	8.	9.	10.	REINF. [pcs]	EXT. [pcs]	BASE SUPPORT [pcs]
4 layers	1,5	1,5	1,25	1,25	-	-	-	-	-	-	12	0	12
5 layers	1,5	1,5	1,5	1,25	1,25	-	-	-	-	-	12	0	12
6 layers	1,5	1,5	1,5	1,5	1,25	1,25	-	-	-	-	12	0	12
7 layers	1,5	1,5	1,5	1,5	1,5	1,25	1,25	-	-	-	24	12	12
8 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,25	1,25	-	-	24	12	12
9 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,25	1,25	-	36	24	12
10 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,25	1,25	36	24	12

Ø5,6	LOWEST LAYER	2.	3.	4.	5.	6.	7.	8.	9.	10.	REINF. [pcs]	EXT. [pcs]	BASE SUPPORT [pcs]
4 layers	1,5	1,5	1,25	1,25	-	-	-	-	-	-	14	0	14
5 layers	1,5	1,5	1,5	1,25	1,25	-	-	-	-	-	14	0	14
6 layers	1,5	1,5	1,5	1,5	1,25	1,25	-	-	-	-	14	0	14
7 layers	1,5	1,5	1,5	1,5	1,5	1,25	1,25	-	-	-	28	14	14
8 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,25	1,25	-	-	28	14	14
9 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,25	1,25	-	42	28	14
10 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,25	1,25	42	28	14

Ø6,4	LOWEST LAYER	2.	3.	4.	5.	6.	7.	8.	9.	10.	REINF. [pcs]	EXT. [pcs]	BASE SUPPORT [pcs]
4 layers	1,5	1,5	1,25	1,25	-	-	-	-	-	-	16	0	16
5 layers	1,5	1,5	1,5	1,25	1,25	-	-	-	-	-	16	0	16
6 layers	1,5	1,5	1,5	1,5	1,25	1,25	-	-	-	-	32	16	16
7 layers	1,5	1,5	1,5	1,5	1,5	1,25	1,25	-	-	-	32	16	16
8 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,25	1,25	-	-	48	32	16
9 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,25	1,25	-	48	32	16
10 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,25	1,25	64	48	16

Ø7,2	LOWEST LAYER	2.	3.	4.	5.	6.	7.	8.	9.	10.	REINF. [pcs]	EXT. [pcs]	BASE SUPPORT [pcs]
4 layers	1,5	1,5	1,5	1,25	-	-	-	-	-	-	18	0	18
5 layers	1,5	1,5	1,5	1,5	1,25	-	-	-	-	-	36	18	18
6 layers	1,5	1,5	1,5	1,5	1,5	1,25	-	-	-	-	36	18	18
7 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,25	-	-	-	54	36	18
8 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,25	-	-	54	36	18
9 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,25	-	72	54	18
10 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,25	72	54	18



2. Assembly



Make sure you have enough of room during assembly. Note the space required for installing rooflists. Pneumatic and battery powered tools save time and make the job smoother. Book two conical ended mounting hardware (centre punches) for each person. Sturdy racks will expedite the work and prevent damage.

We recommend to assemble bin using the so-called "up-to-down" method with a crane. This manual is made according to this method. The crane should be big and extending enough so that the lifting and working are safe.

Use butyl mass for sealing. Carefully done sealing ensures that the bin fills the requirements. Release the sealant extruder from pressure every time you stop sealing.

The wall elements are made of galvanized steel. The color ID of material thickness is painted inside the wall element, to the top edge. Wall element's edge profile is thinner from the top edge, so it's necessary to install the element to the correct position. The color ID will be inside the bin, up and hidden.

Element color ID:

	1,25mm black color
	1,50mm yellow color

2.1. Roof and two top layers

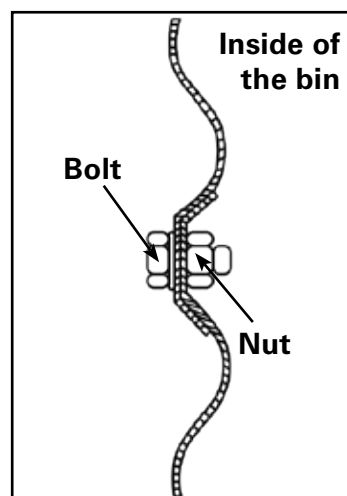
Start the assembly by lifting the top cone to right height according to the picture next page. Assemble two highest layers concentric with the top cone. Pay attention to material thickness.

Wall element vertical seam comes halfway of higher layer's wall elements. Don't tighten the bolts and nuts before all elements of the layer are in place.

CAUTION!

Assemble the wall elements by inserting the lower element inside of the higher element. This is to avoid the rain water getting into the bin.

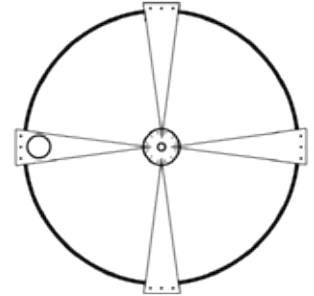
Attach wall elements to each other with M10x25 bolts and nuts. Seal vertical seams from the outside of the hole row. Seal horizontal seams by extruding the mass above the higher hole row (red markings on picture).



Start assembling the roof by attaching the roof fastening plates to wall element's top edge (shorter side against the element).

There's three hole perimeters in the top cone (only one when Ø4,8m bin) with an indication of the diameter of the bin: Ø5,6m round holes, Ø6,4m square holes and Ø7,2m oval holes. Attach the roof sections with M10x25 screws and nuts. Attach the lower edge of the section to the wall element using the fastening plates.

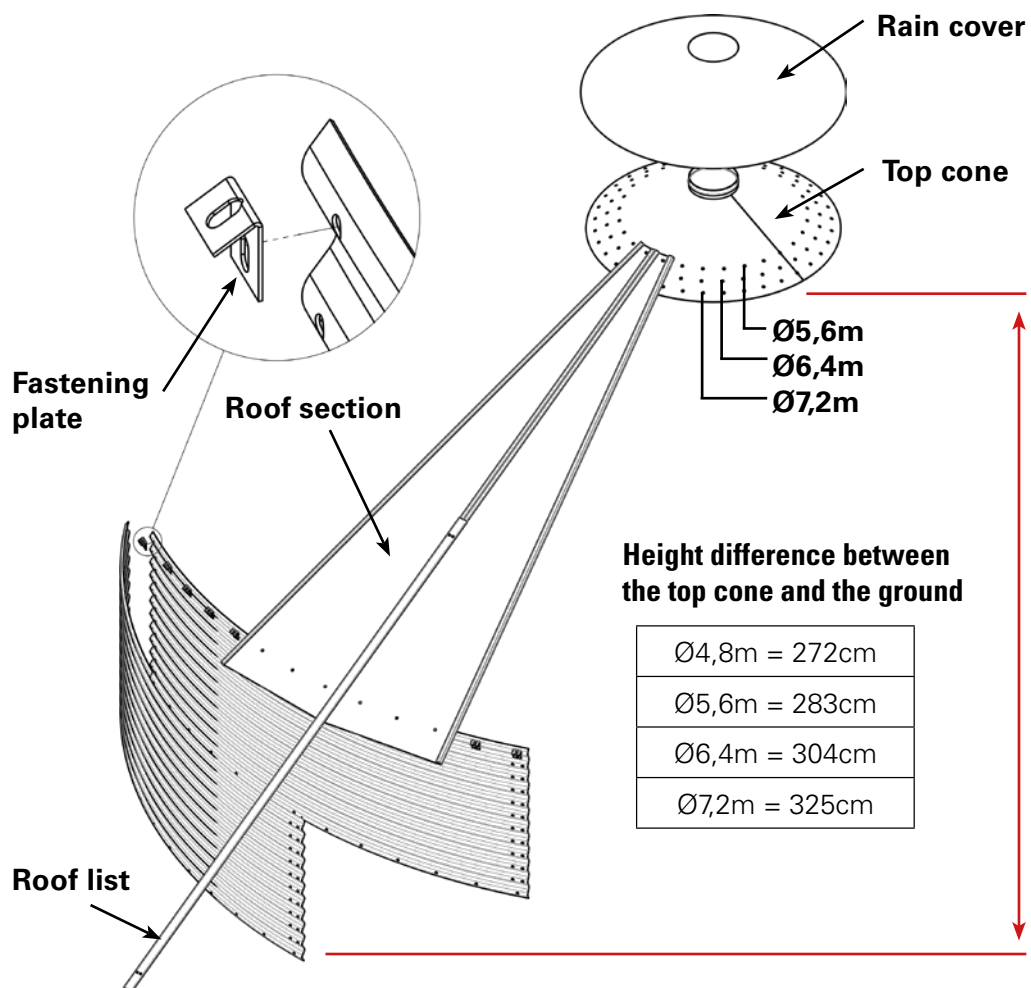
Insert the roof section with a manhole at the point where the ladder is installed. Install the other three sections vertically against each other. Put the other sections on place and attach them to each other with roof lists. Push the roof lists to place from below such that the lower edge is even with the roof section. Attach the roof lists to the section using selfdrilling 4,3x13mm screws, about 10cm from the list's top and lower edge.



Tighten the bolts when all roof sections and lists are on place. Finish the seam between the roof sections and top cone with sealing compound. Block the extra holes in the top cone with M10x25 bolts and nuts.

Install the rain cover on top of the top cone and attach it with a few drill screws.

Sweep the chips that are formed during the drilling from the galvanized plate to prevent corrosion.

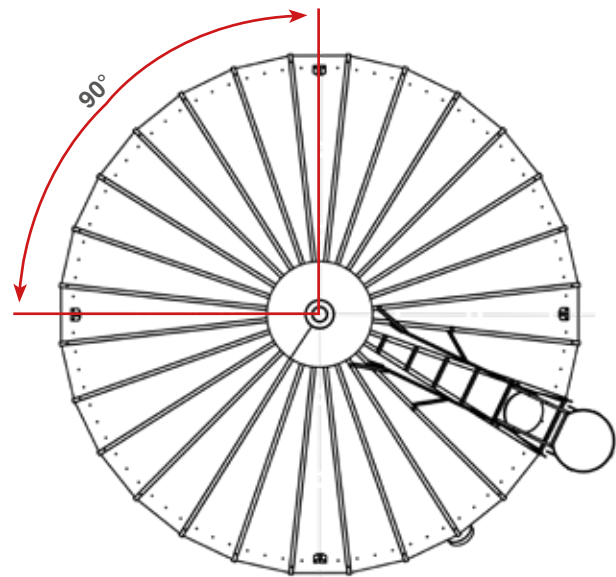
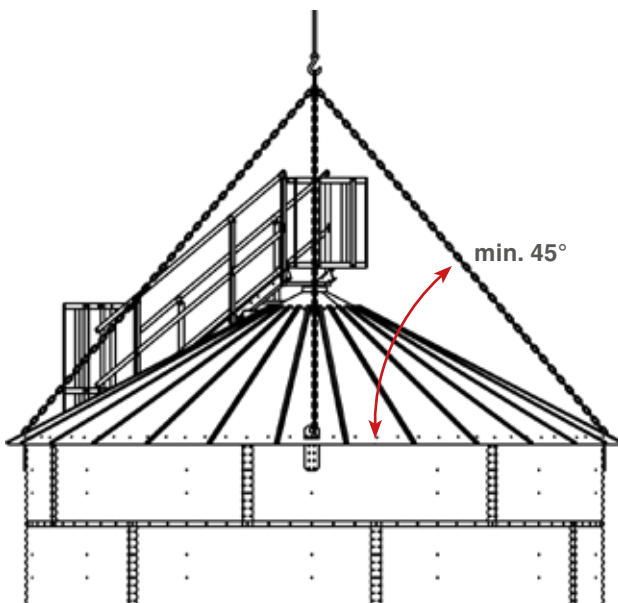
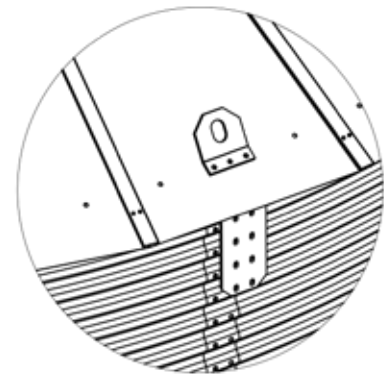
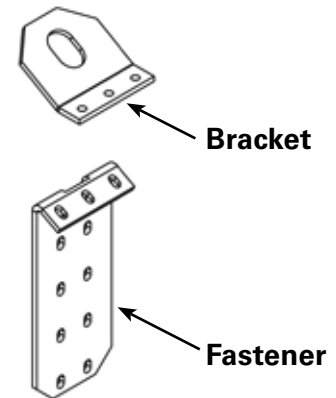


2.2. Lifting the bin

The bin can be lifted from the lifting brackets which are attached to the roof and the wall elements (4 pcs). Lifting brackets are put together of two parts, of a fastener and a bracket. Install the brackets symmetrically to bin's perimeter such that the lifting chains can be same at length. The chain angle between a single chain and the horizontal level is minimum of 45 degrees.

Install the first bracket where the wall element's vertical seam is at the center of the roof section. Install the fastener to the vertical seam with the highest screws. Attach the bracket to the fastener using the middle screw of the roof section. Drill holes to the section to the outermost holes of the bracket and attach the parts to each other with M10x25 screws and nuts.

Install the remaining bracket-fastener pairs such that they come to the middle of the roof section. Drill holes to the wall elements for the fastener screws and to the roof sections the outermost holes of the brackets.



WARNING!

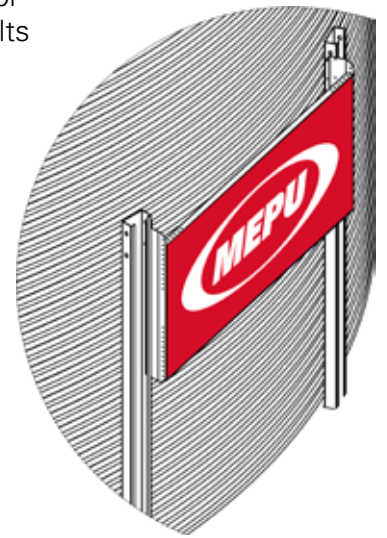
Avoid lifting at windy weather. The lift must go straight. Install racks under the bin's hem immediately after the lifting.



2.3. Remaining layers and reinforcements

Remaining wall element layers are installed one layer at a time by hanging the bin with a crane. Tighten screws and nuts after all wall elements of the layer have been installed to place. Remember the installation direction, material thickness and sealing. Install ladder fasteners during the work.

Install the wall reinforcements at the same time as the wall elements. Most of the grain load will be on the reinforcements. Thus, attaching should be done carefully. The wall elements have been perforated for attaching the reinforcements. Plug the spare holes with M10x25 bolts and nuts. One reinforcement layer is the same height as two wall element layers. Check the reinforcement layer amount and material thickness from page 14. Extend the reinforcements if needed and attach a base support to the lowest reinforcement.



2.3.1. Signboard

Attach the signboard to highest reinforcements with 6,3mm drill screws.

2.3.2. Manhole

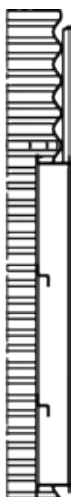
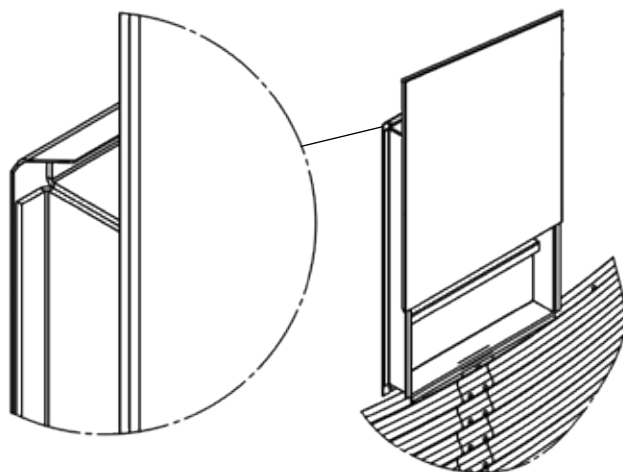
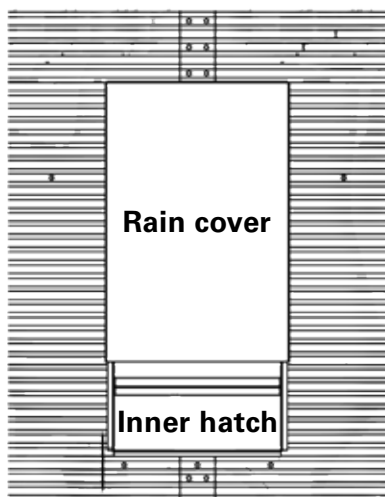


NOTE!

The wall manhole is NOT included in the delivery of the steel hopper bottom bin as standard.

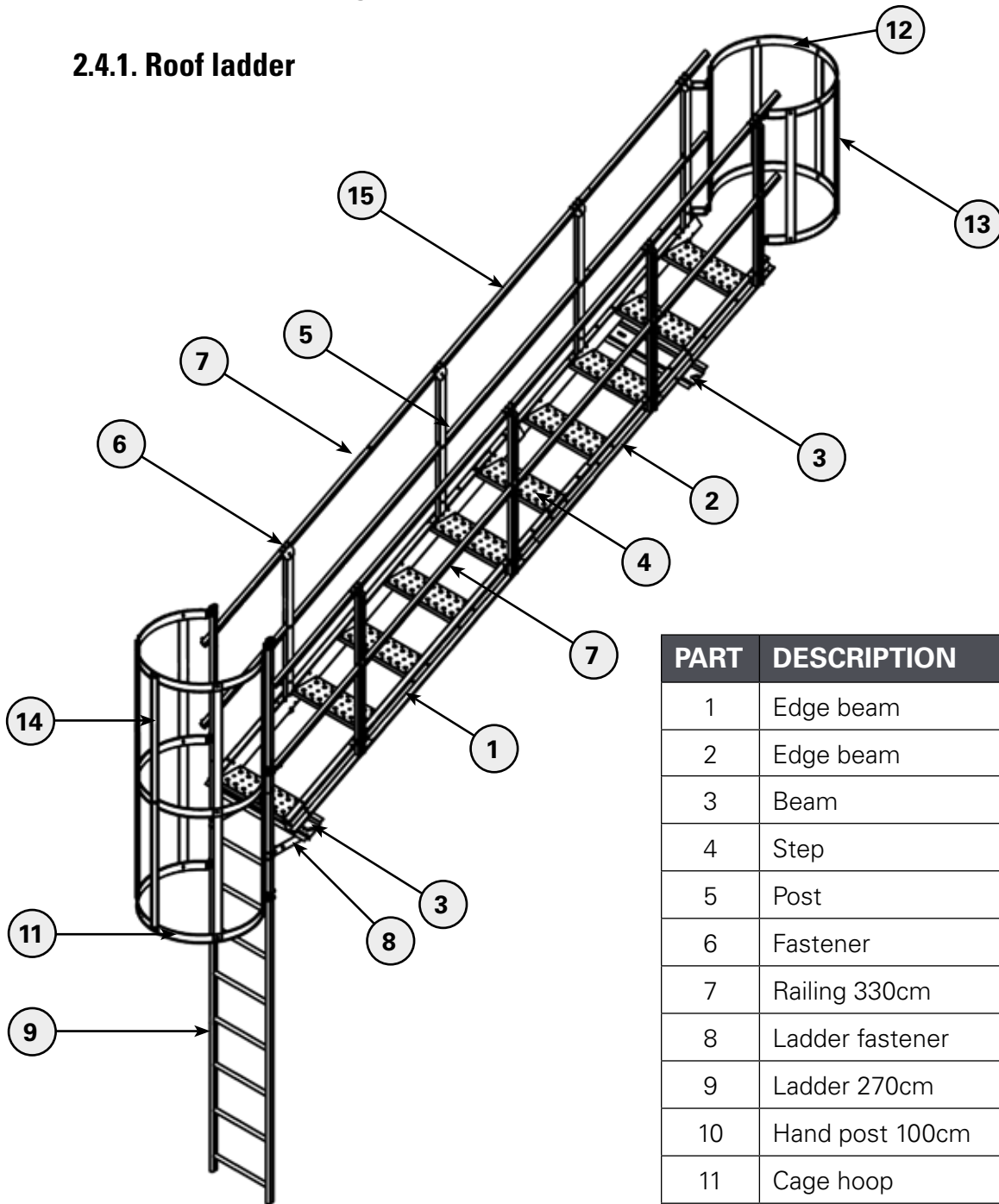
Install the manhole element according to the foundation type to 1st - 4th wall element layer. The grain surface must stay below the hatch lower edge after the bin has been discharged with an auger. Install the inner hatch to inner surface and thread the rain cover to the outside.

Ø4,8m		Ø5,6m		Ø6,4m		Ø7,2m	
Flat base 3rd layer	Cone base 2nd layer	Flat base 3rd layer	Cone base 2nd layer	Flat base 3rd layer	Cone base 2nd layer	Flat base 4th layer	Cone base 2nd or 3rd layer



2.4. Ladder and railings

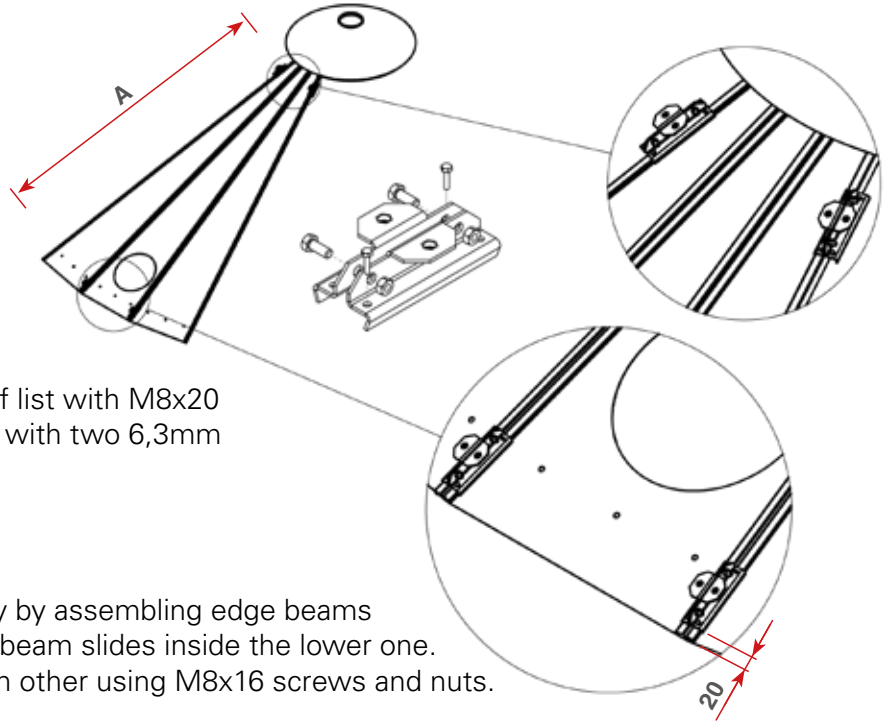
2.4.1. Roof ladder



PART	DESCRIPTION	NO.
1	Edge beam	11866
2	Edge beam	13232
3	Beam	13234
4	Step	11865
5	Post	13220
6	Fastener	11941
7	Railing 330cm	
8	Ladder fastener	11137
9	Ladder 270cm	12497
10	Hand post 100cm	12498
11	Cage hoop	13371
12	Cage hoop	13371
13	Cage post 87,5cm	13262
14	Cage post	
15	Railing 100cm	
16	Extension nut	
17	Hexagon bolt	
18	Hexagon nut	

Start assembling roof ladder by installing brackets (4pcs 13233). Install the lower brackets to roof lists of the roof section with manhole. The lower edge of the brackets is 20mm away from the roof section's lower edge. Install the upper brackets to roof lists next to the roof section with manhole. The distance from the bottom edge of the section varies with the diameter of the bin.

BIN	A [mm]
Ø4,8m	2 110
Ø5,6m	2 500
Ø6,4m	2 900
Ø7,2m	3 300

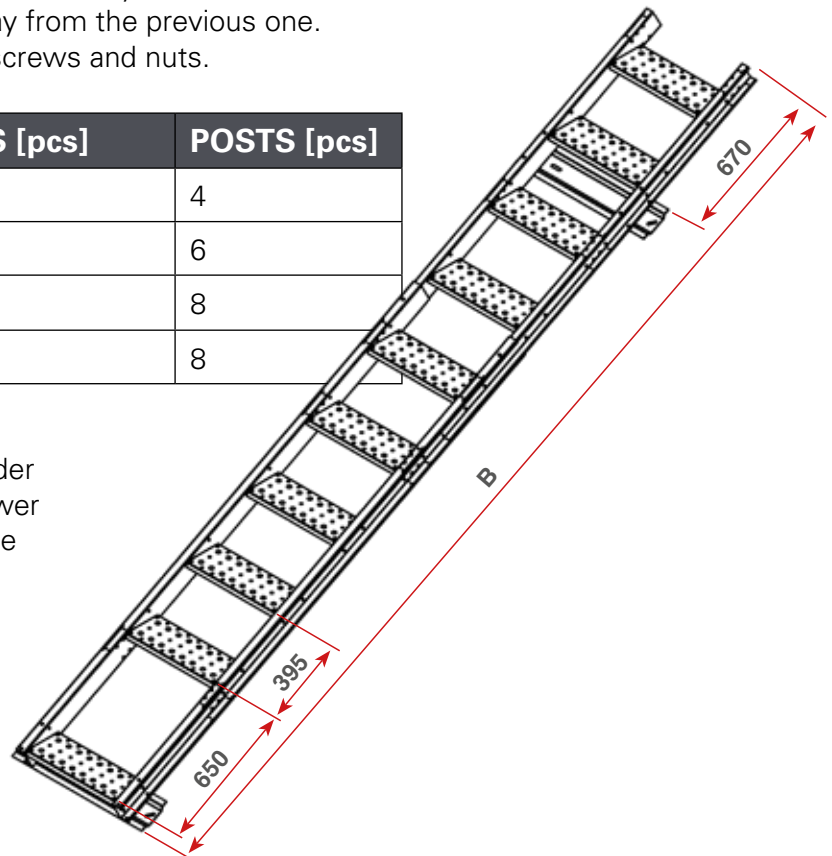


Press the brackets to roof list with M8x20 screws and nuts. Secure with two 6,3mm drill screws.

Start the ladder assembly by assembling edge beams 11866 and 13232. Upper beam slides inside the lower one. Fasten the beams to each other using M8x16 screws and nuts.

Attach steps to edge beams. Install the lowest step at the bottom of the beams, next 650mm away from the lower edge and the rest 395mm away from the previous one. Attach the steps with M8x16 screws and nuts.

BIN	B [mm]	STEPS [pcs]	POSTS [pcs]
Ø4,8m	2 595	6	4
Ø5,6m	3 322	8	6
Ø6,4m	3 717	9	8
Ø7,2m	4 112	10	8

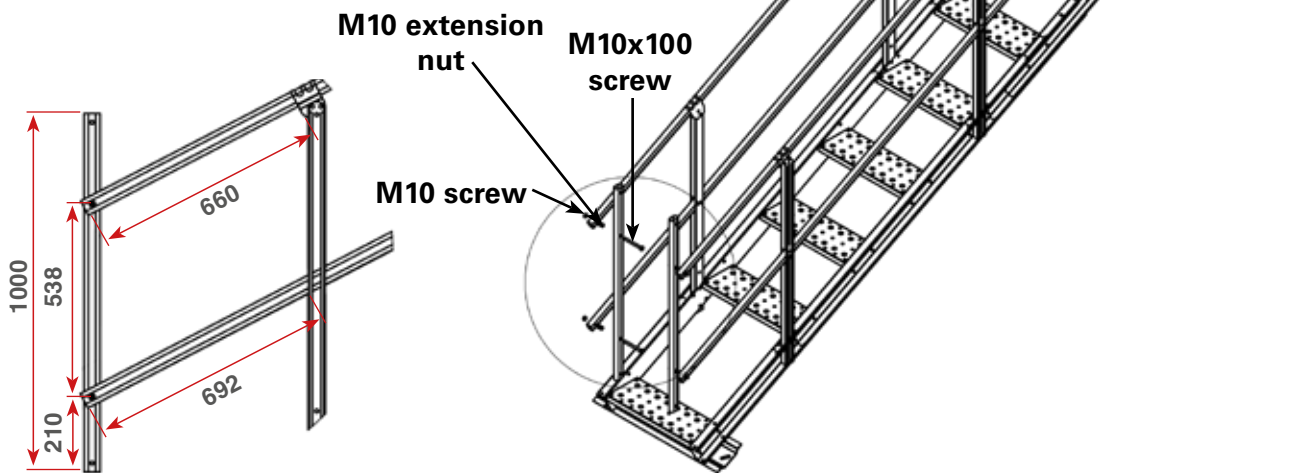


Install beams (2pcs 13234) under the edge beams. Install the lower beam to lower level of the edge beam and upper 670mm away from the upper level of the edge beam.

Install railing posts to edge beams. The open side of the post comes outwards. Use M8x16 screws and nuts to attach parts. Install railings to posts. Thread the lower handrail through the holes in the posts and install higher handrail using brackets to top part of the posts.

Installation direction of the handrails varies according to the diameter of the bin. Ø5,6m model the railing extension part is installed to bottom part, Ø6,4m and Ø7,2m models it's installed to top.

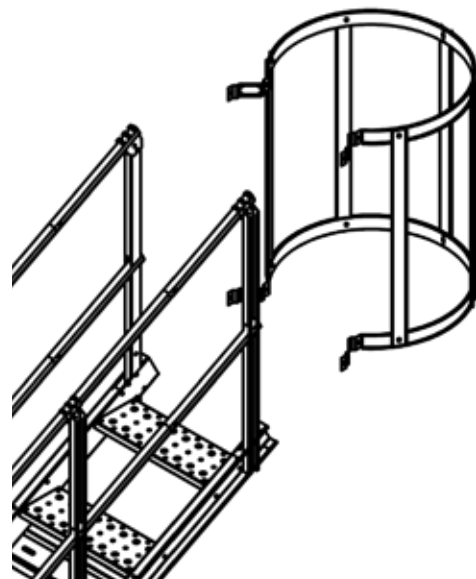
Install the wall ladder's top part's handrails to railing bottom part with M10x100 screws and M10 extension nuts.



Install the railing of the ladder top part (2 pcs cage hoop 13371 and 5pcs handrail 13262). First, install M8x20 screws with nuts to cage hoops so that the screw head remains inside the hoop. Next, install the cage posts outside the hoops with M8 nuts (first mounted nuts are trapped between the hoops and posts).

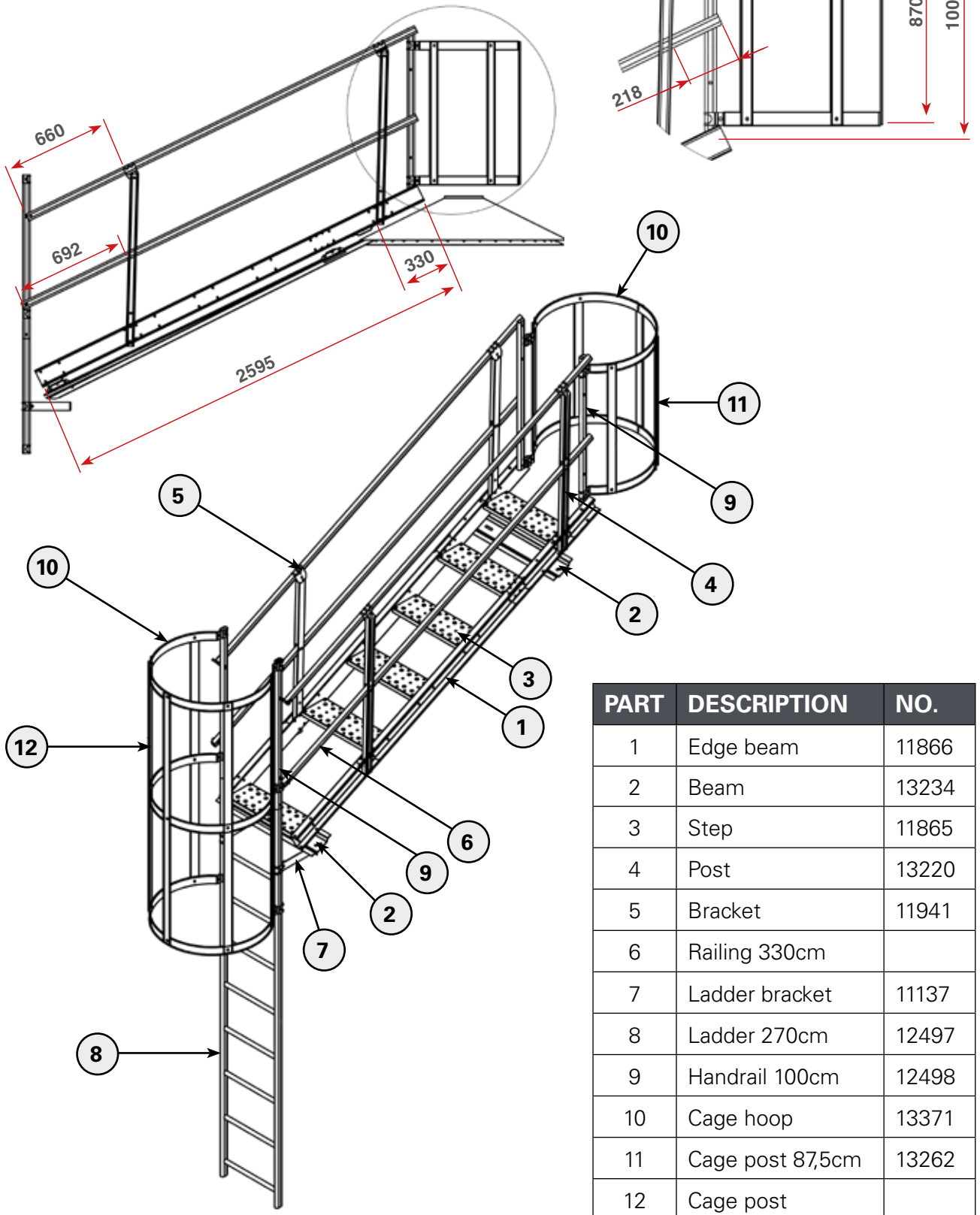
Bend cage hoops end's outwards and install them to the highest posts with M8x20 screws and nuts.

Install the ladder to the roof brackets using M8x20 screws.



2.4.2. Roof ladder Ø4,8m

Ladder edge beam consist only of part 11866.
Install handrails (2pcs 12498) to top part with drill
screws. Install ladder top part's railings to handrails.



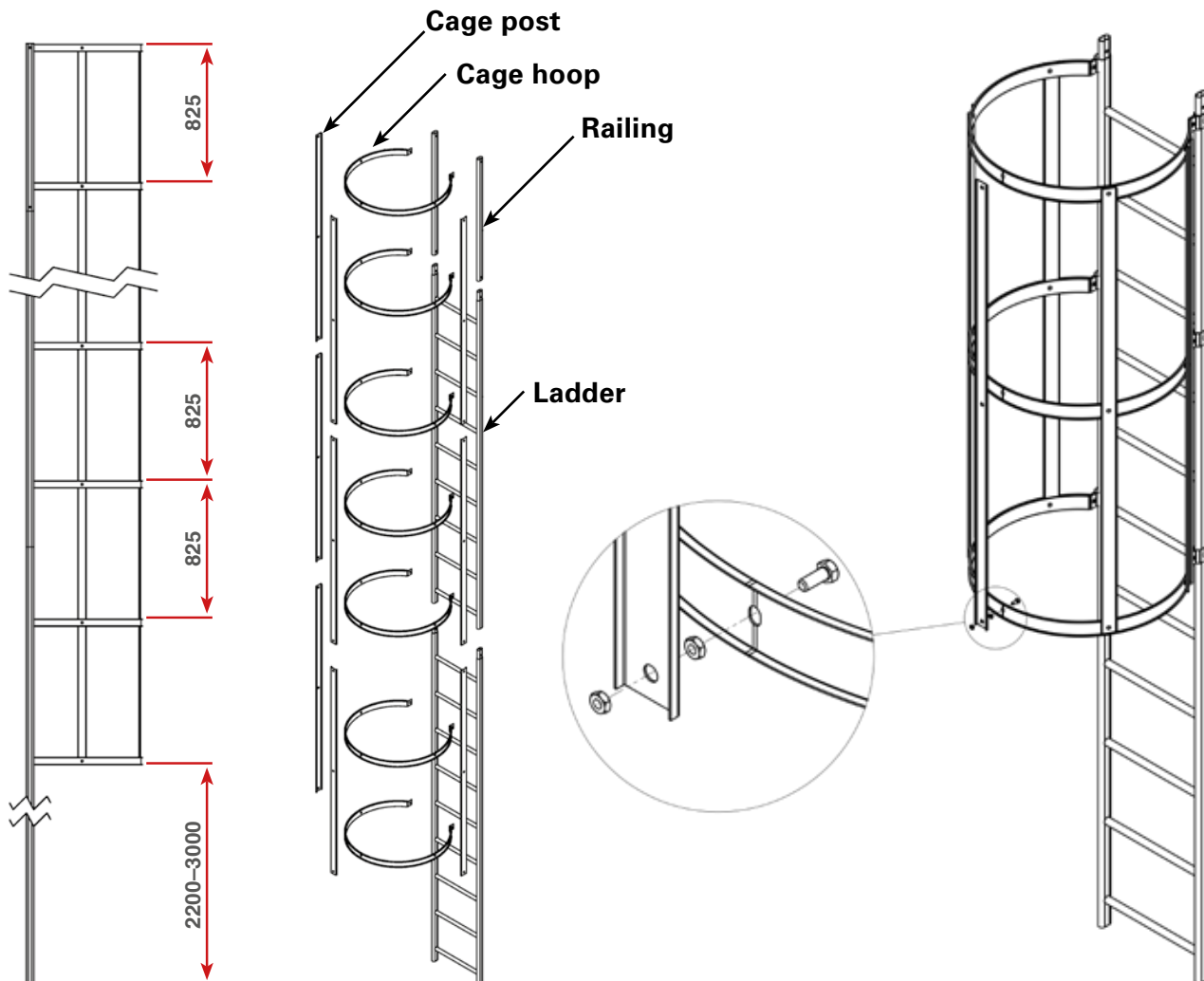
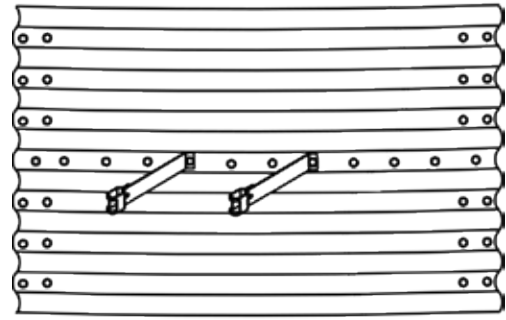
2.4.3. Wall ladder and cages

Install the ladder bracket to wall elements with M10x25 screws and nuts. Install the highest bracket pair to the third fold from the top and the rest to wall element's horizontal seam. Attach ladder elements to roof ladder handrails and wall brackets.

Attach the highest cage hoop to roof ladder handrail's top part and the rest with 825mm intervals. Bend cage hoops end's around the ladder posts and attach them with M8x40 screws and nuts.

Install M8x20 screws with nuts to cage hoops so that the screw head remains inside the hoop. Next, install the cage posts outside the hoops with M8 nuts (first mounted nuts are trapped between the hoops and posts).

The cage should extend to 2,2 – 3 meters height from the level where ladder start to rise. If necessary, you can cut the extra length off the cage posts. Sweep the chips that are formed during the drilling from the galvanized plate to prevent corrosion.



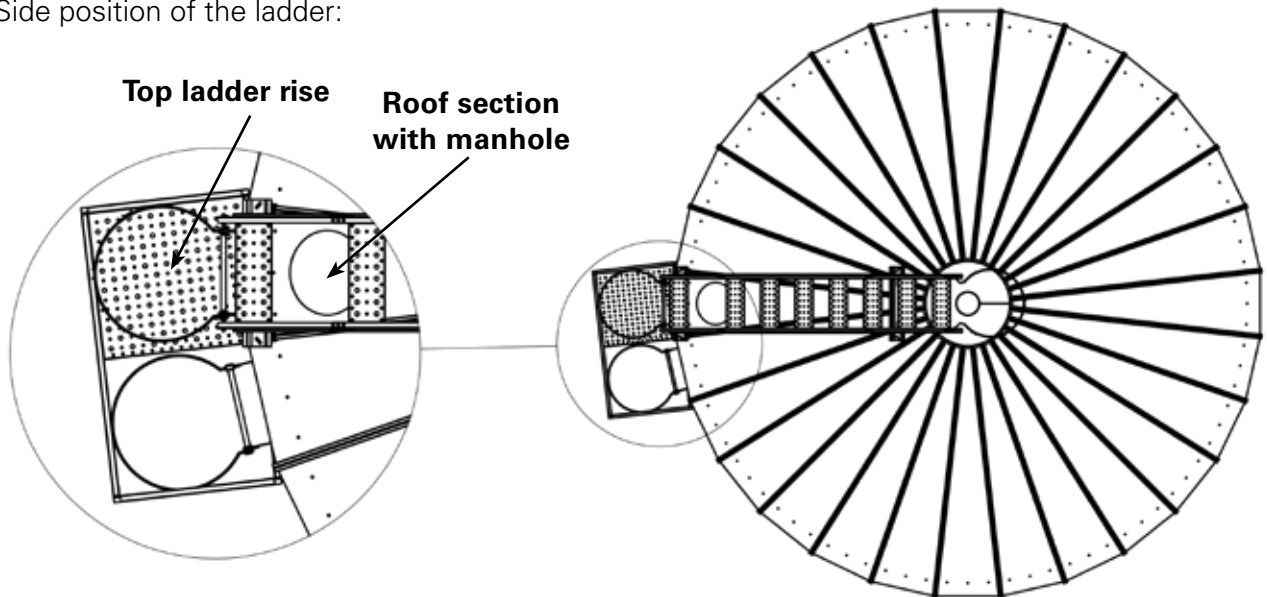
2.4.4. Ladder rest platform

A rest platform must be installed if the height of a single ladder rise exceeds 10 meters. Install rest platforms so that a single ladder rise is not over six meters.

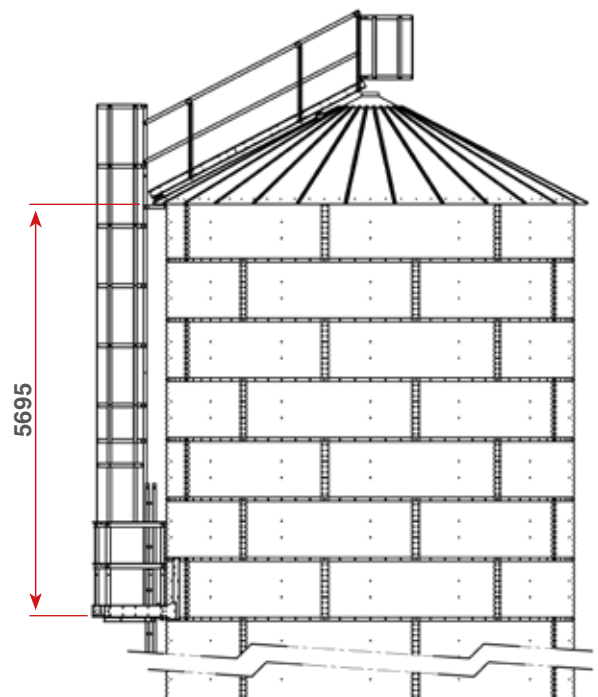
Install the top platform at the level of 7th highest wall element. We recommend to install the platform mounting beams (part 7, see page 28) and ladder while assembling the bin.

Ladder rise from the rest platform is made of 2,7 and 3,3 meter ladder elements. This way the top ladder rise is under six meters high and the whole length of the ladder elements gets in use. Top ladder rise is installed at the level of the roof section with manhole. Depending of the platform position, next rise is on the right or left side of the top rise.

Side position of the ladder:

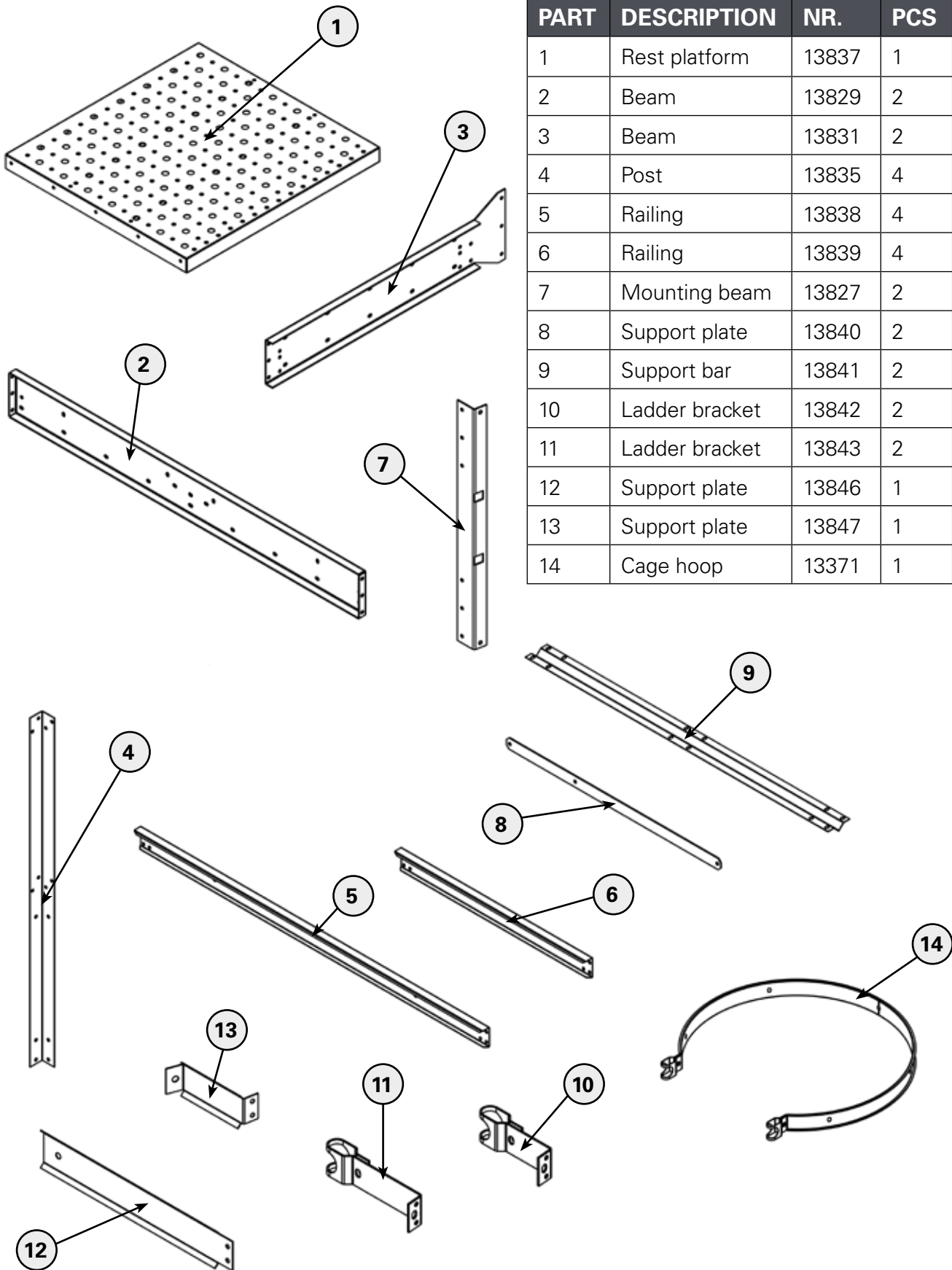


Height position of the top platform:



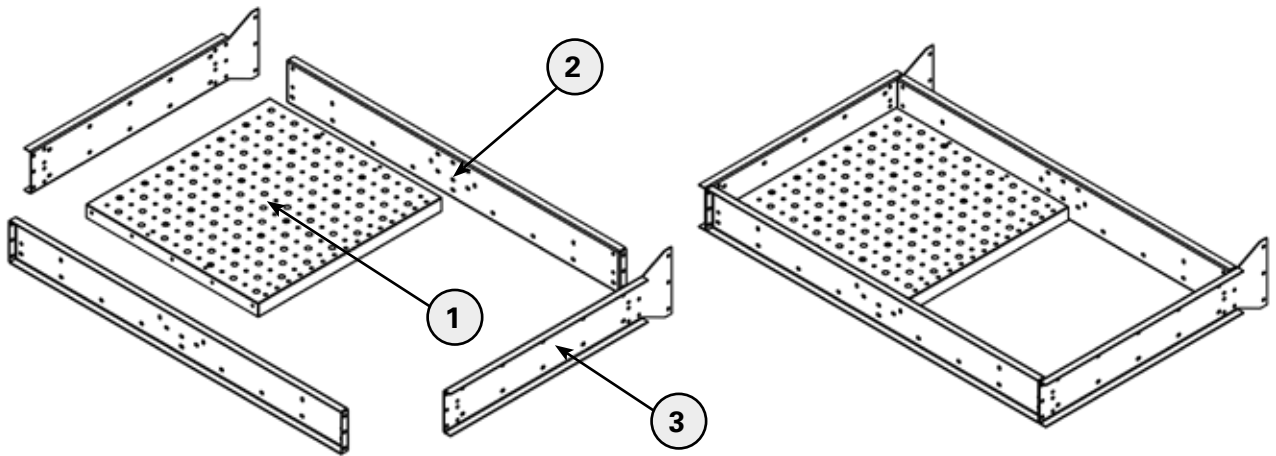
Rest platform parts

PART	DESCRIPTION	NR.	PCS
1	Rest platform	13837	1
2	Beam	13829	2
3	Beam	13831	2
4	Post	13835	4
5	Railing	13838	4
6	Railing	13839	4
7	Mounting beam	13827	2
8	Support plate	13840	2
9	Support bar	13841	2
10	Ladder bracket	13842	2
11	Ladder bracket	13843	2
12	Support plate	13846	1
13	Support plate	13847	1
14	Cage hoop	13371	1

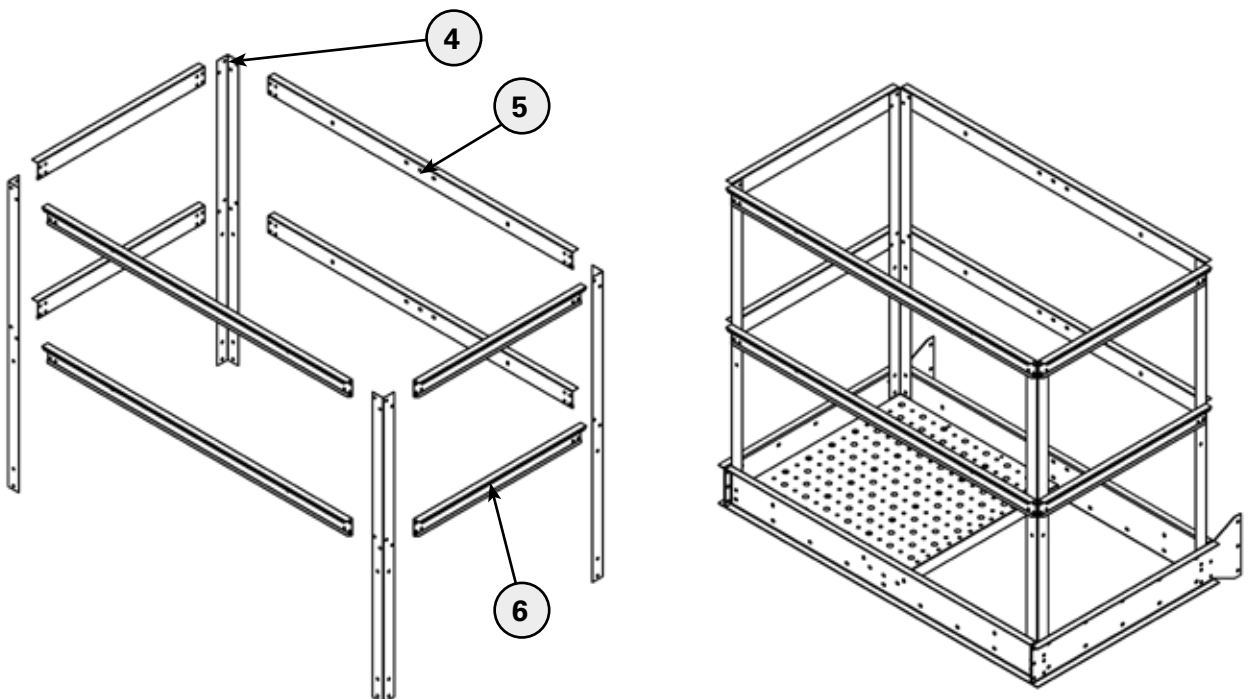




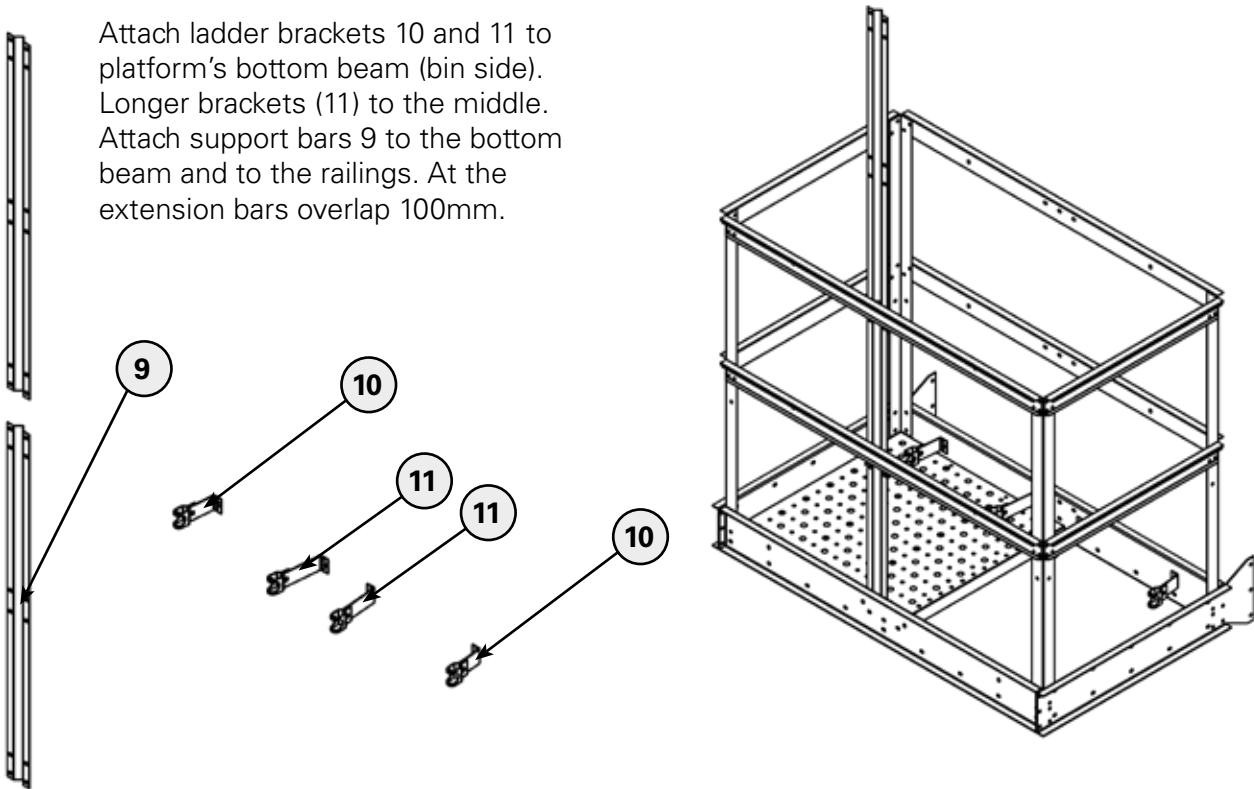
Start assembly by installing beams 2 and 3 and platform 1 to each other. Use M8x16 screws and nuts.



Attach posts 4 to platform corners and railings 5 and 6 to the posts. Use M8x16 screws and nuts.

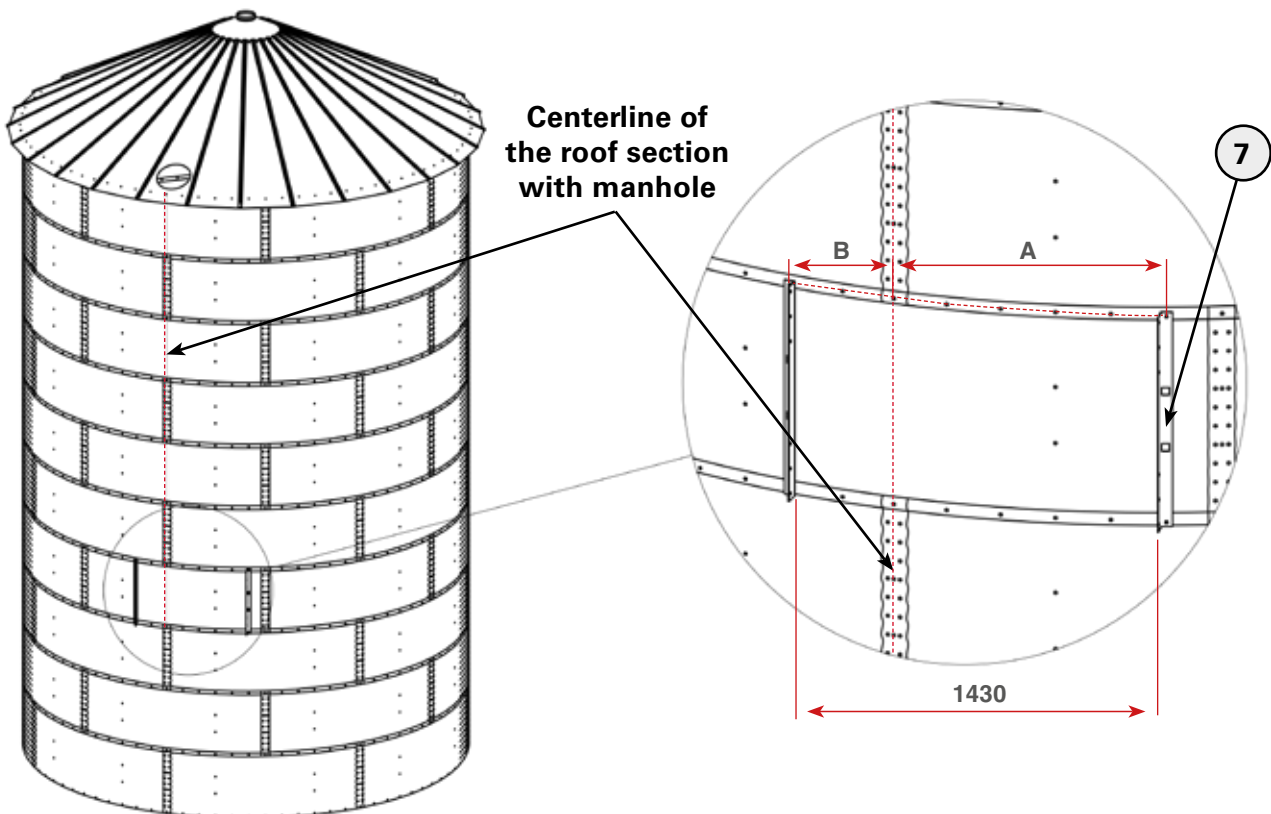


Attach ladder brackets 10 and 11 to platform's bottom beam (bin side). Longer brackets (11) to the middle. Attach support bars 9 to the bottom beam and to the railings. At the extension bars overlap 100mm.



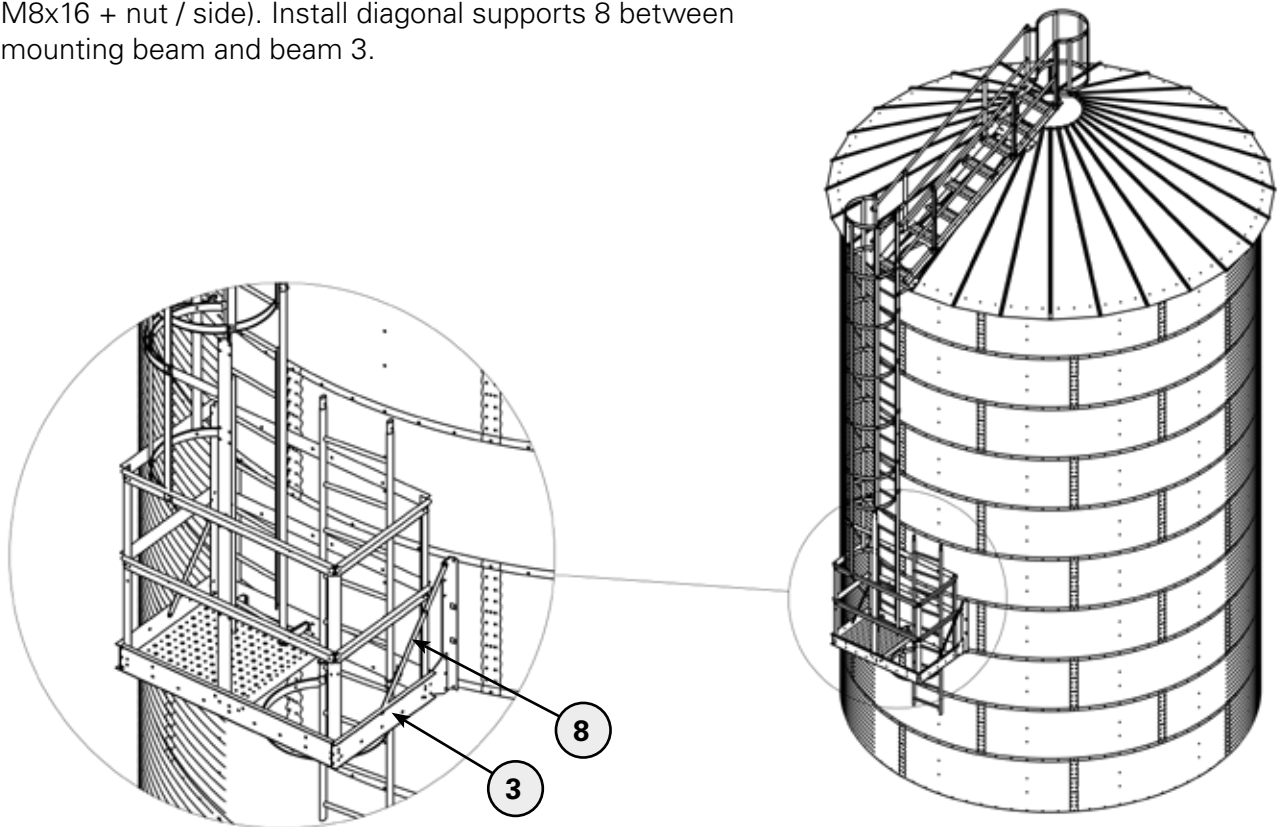
Install the platform mounting beams at the level of 7th highest wall element. Use M10x25 screws and nuts.

- B = 2x hole distance from the centerline of the roof manhole
- A = 5x hole distance from the centerline of the roof manhole



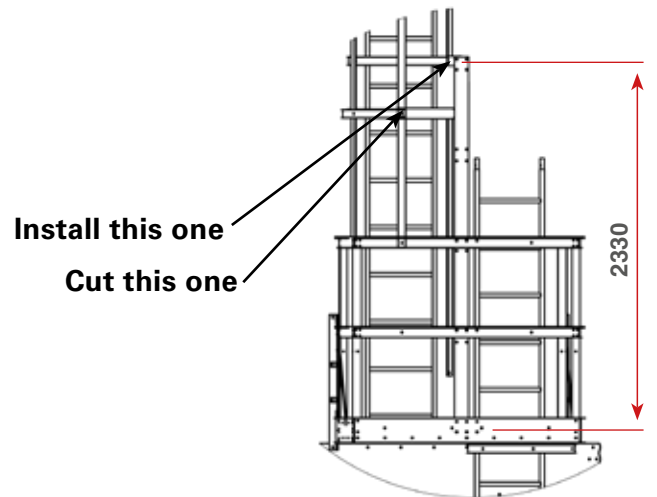


Install platform to lowest holes of the brackets (3pcs M8x16 + nut / side). Install diagonal supports 8 between mounting beam and beam 3.

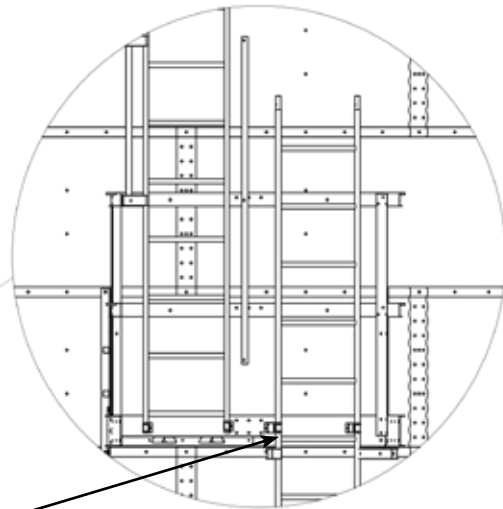
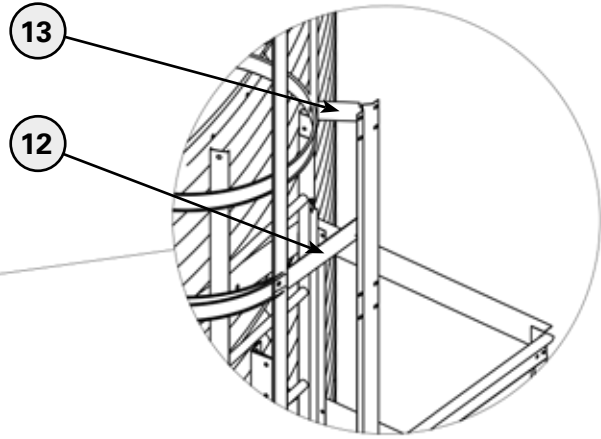
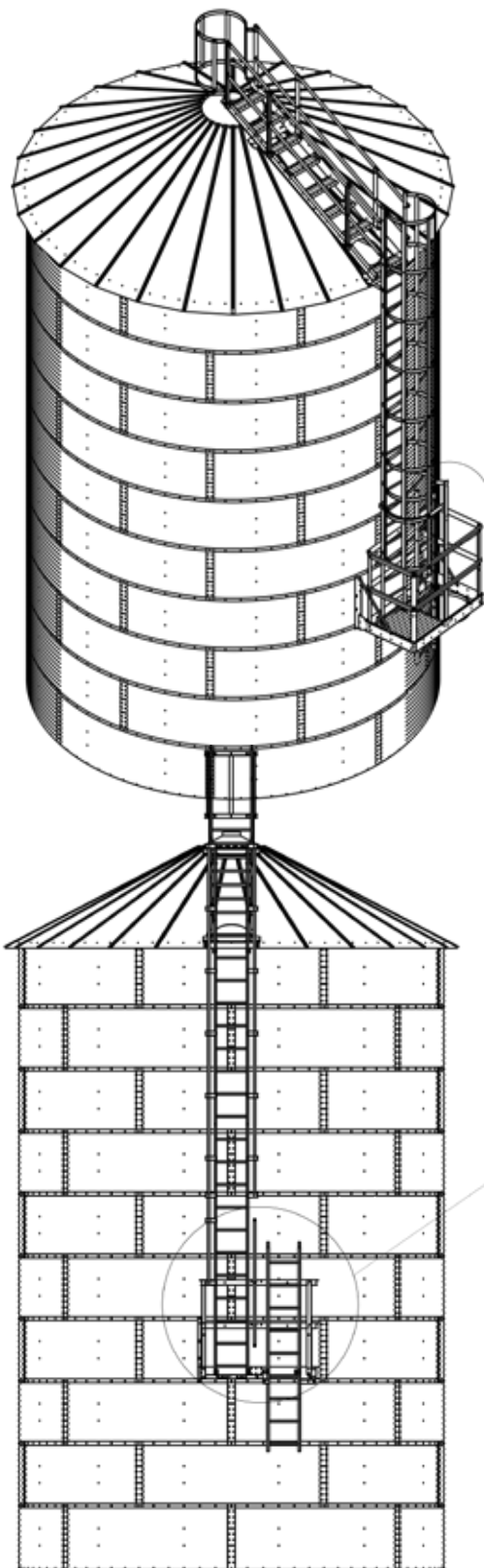


Attach the cage hoop to cage posts so that the hoop bottom level comes to 2330mm height from the rest platform surface. Attach ladder cage posts (3pcs) to platform railings.

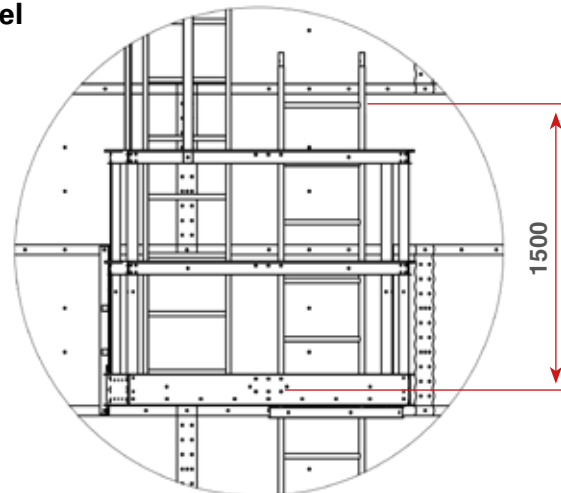
Cut inner cage posts (2pcs) to 2330mm height from the installed cage hoop bottom level.



Attach support plate 12 between the cutted cage hoop and the support bar 9. Use M8x16 screws and nuts and 4,3x13 drill screws. Install support plate 13 between the cage hoop and the support bar 9. Use M8x16 screws and nuts and 4,3x13 drill screws.



**At the
same level**

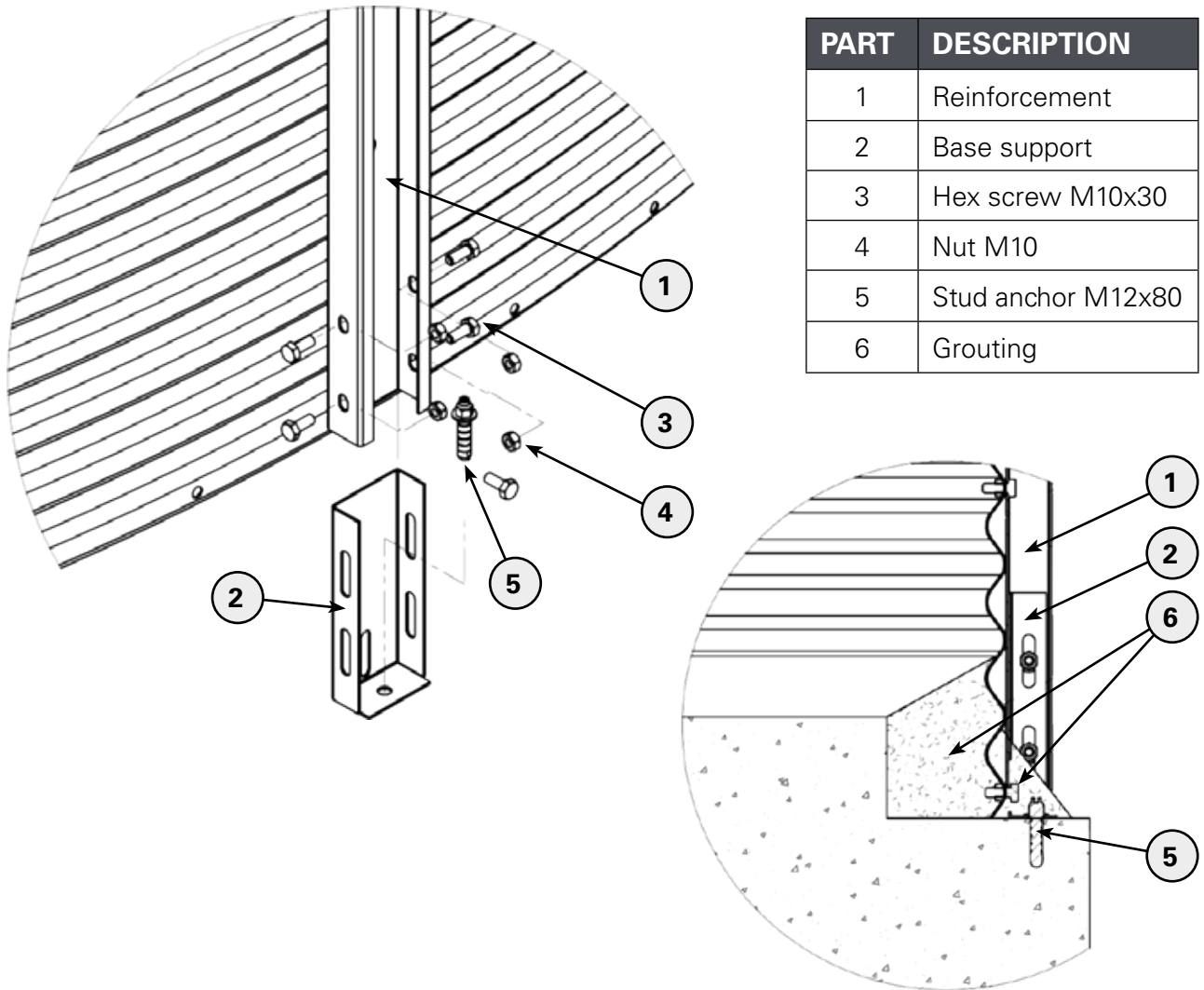


Install down heading ladders so that the top step of the ladder element is about 1500mm above the platform (sixth step at platform level). Attach ladder elements to platform ladder brackets.

2.5. Attaching to foundation

Attach the bin to foundation from the reinforcement base supports with stud anchors or by welding (clamp plates on foundation). Note that most of the grain load will be on top of the reinforcements. Thus, attaching should be done carefully.

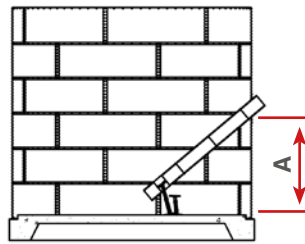
Coat the bottom of the bin wall twice with bitumen. Do grouting: to the outside in 45 degree angle and to the inside horizontally (discharge auger) or in the same angle as the base.



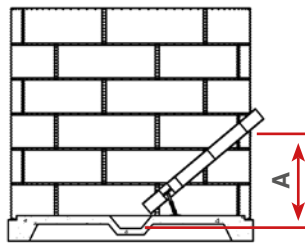
2.6. Wall outlet and cover pipe for auger

Install the wall outlet for auger so that it's in desired angle stated on the picture below (relatively to the horizontal level). The angle depends on the foundation type. Outlet can be installed vertically according to the corrugations of the wall sections at 75mm intervals. Installation height depends of the foundation type. The table shows an indicative dimension from the bottom of the bin to the bottom of the wall outlet.

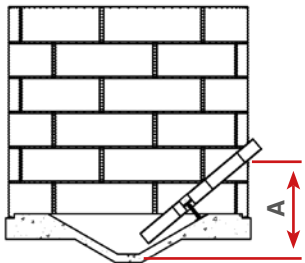
BIN	A [mm]
Ø4,8m	1375
Ø5,6m	1585
Ø6,4m	1775
Ø7,2m	2045



BIN	A [mm]
Ø4,8m	845
Ø5,6m	1075
Ø6,4m	1320
Ø7,2m	1545



BIN	A [mm]
Ø4,8m	1370
Ø5,6m	1525
Ø6,4m	1715
Ø7,2m	1865



Install the cover pipe after the bin has been attached to the foundation.

! **NOTE!**

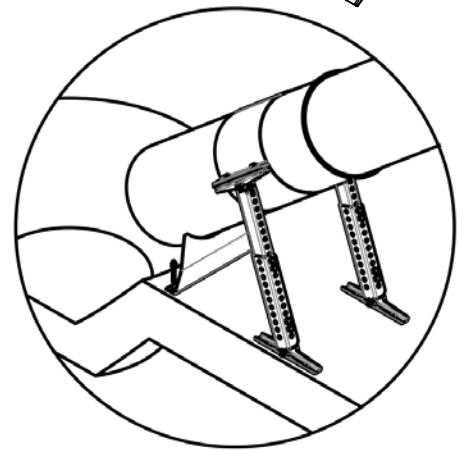
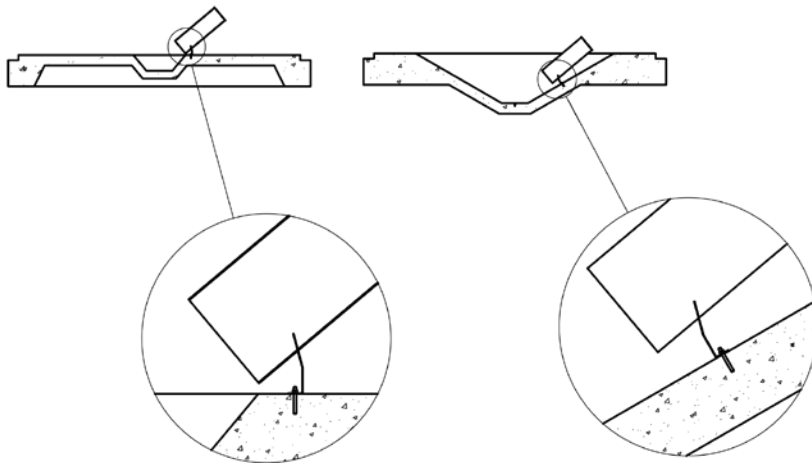
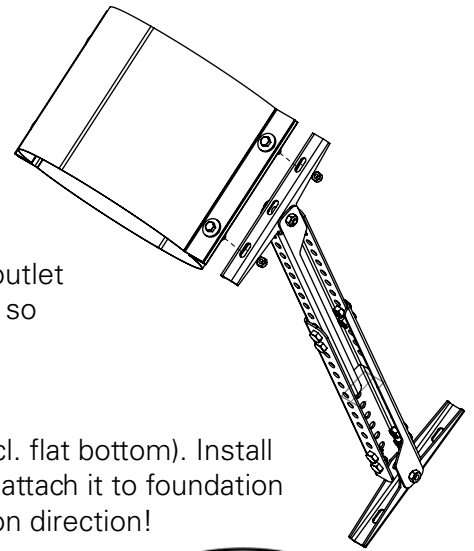
The auger cover pipe is NOT included in the delivery of the steel hopper bottom bin as standard.



Cover pipe parts are attached to wall outlet and to each other with cover pipe bins. Start assembly by attaching the 1,5m pipe into the wall outlet.

Check pipe lengths from the assembly picture of the auger outlet and piping. Install rest of the pipes starting from the longest so that the shortest part is located in the middle of the bin (measure and shorten this pipe during the installation).

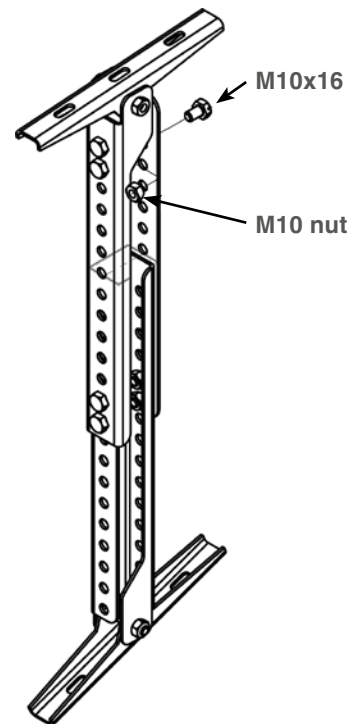
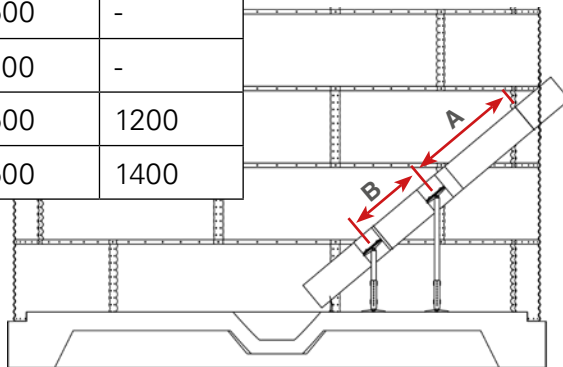
Support the cover pipe to foundation with lower support (excl. flat bottom). Install the lower support as close to the bin center as possible and attach it to foundation with stud anchors. Pay attention to lower support's installation direction!



Install the bins to cover pipe according to the table with M8x40 screws and nuts.

Attach legs to binds with M8 nuts. If needed, adjust the leg length before installation by removing M10x16 hex screws and nuts. Secure the lower part of the legs to the foundation with stud anchors.

BIN	A [mm]	B [mm]
Ø4,8m	1500	-
Ø5,6m	1700	-
Ø6,4m	1500	1200
Ø7,2m	1500	1400



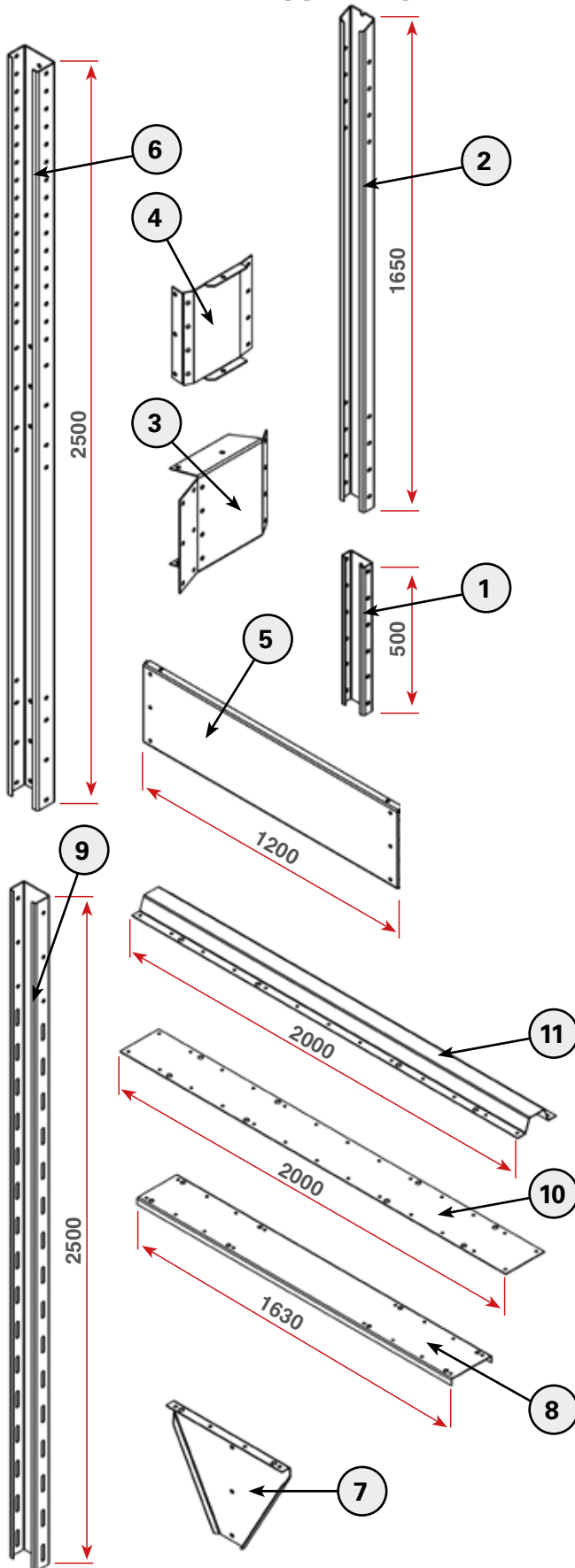


2.7. Finishing

Attach fill pipe (or conveyor) to bin's fill hatch. Seal the joint carefully.

Install the discharge auger and seal the joint using a cover hood.

2.8. Conveyor support (option)



Conveyor support parts

Bottom part

PART	DESCRIPTION	NR.	PCS
1	Extension bracket	13692	2
2	Bracket	13668	2
3	Support plate	13669	4
4	Support plate	13673	4
5	Support plate	13671	2
6	C-profile 120x70	13672	2

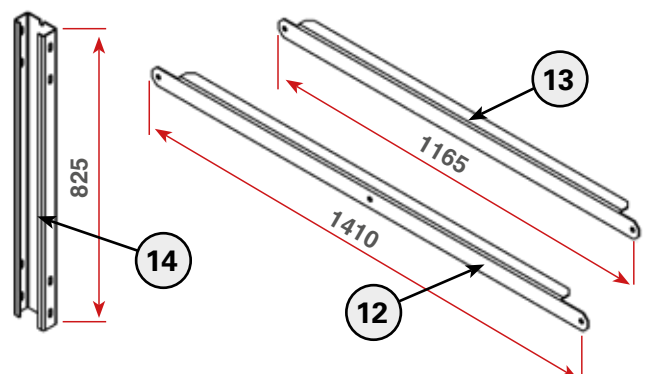
Top part

PART	DESCRIPTION	NR.	PCS
7	Support plate	13679	4
8	Beam	13680	1
9	C-profile 113x63	13677	2
10	Plate	13682	1
11	Beam	13678	1

Common parts

PART	DESCRIPTION	NR.	PCS
12	Cross support	13676	4
13	Horizontal support	13689	2
14	Bracket 825	13690	2

! NOTE!
Parts 14 are used if bin's layer amount is uneven.

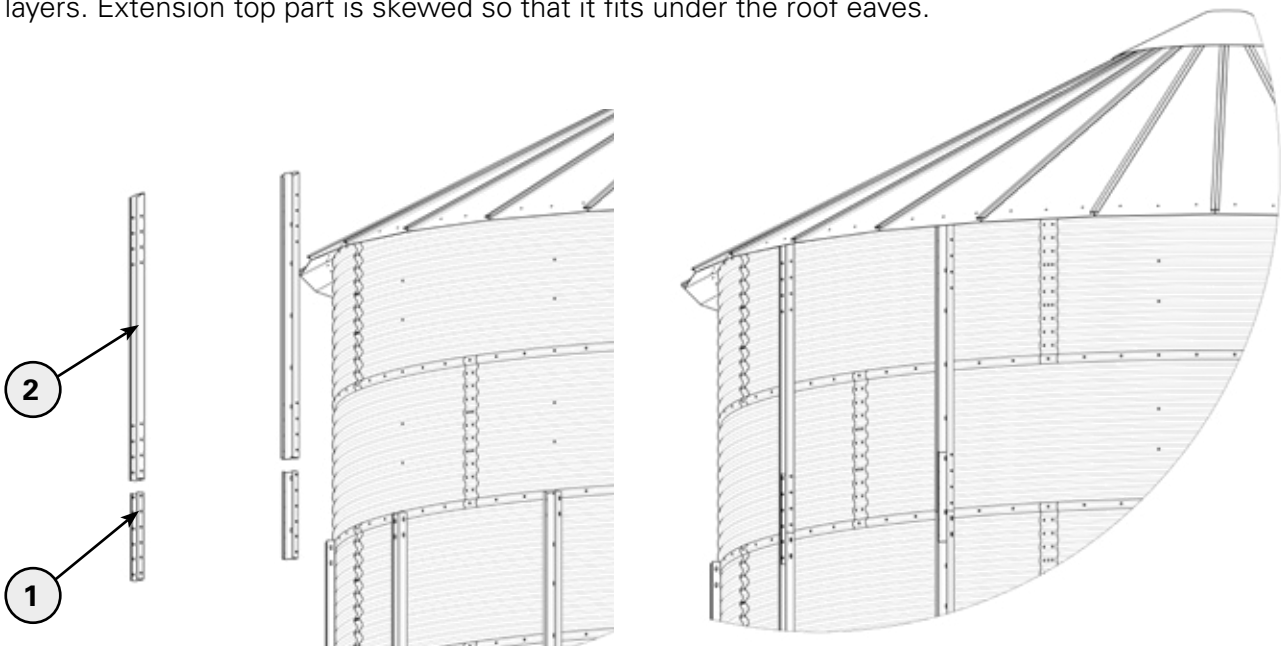


Install the conveyor support at the height of two highest wall element layers. Support is attached as extension of the wall reinforcements. If needed, add more reinforcements so that the reinforcements goes as straight line all the way to bin foundation / steel cone bottom.

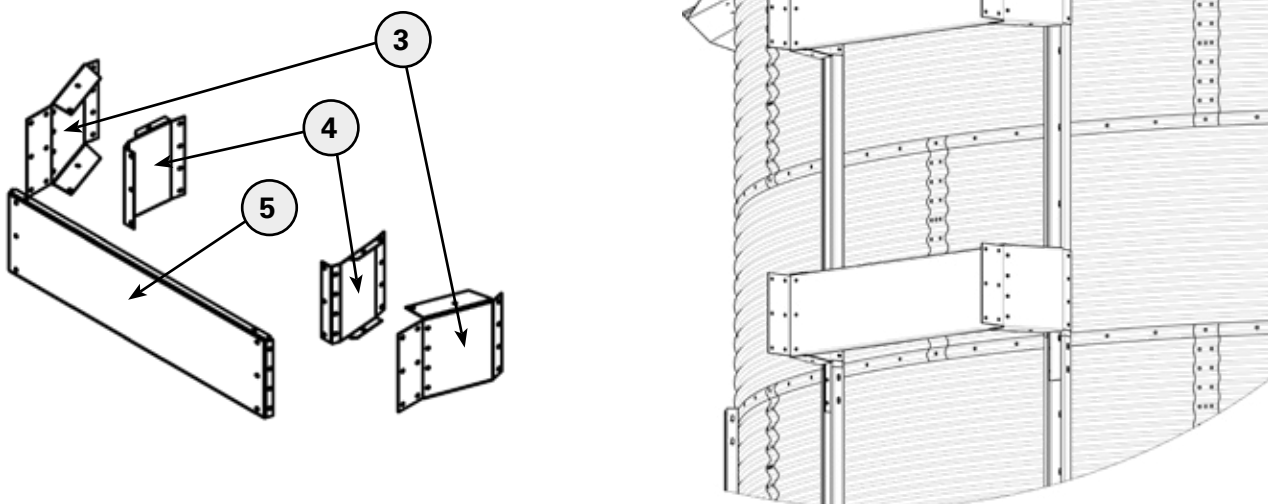
⚠ CAUTION!

Maximum load for the conveyour support is 600kg / support. Support must be positioned so that the conveyour mass is as close as possible of the support centerline.

Attach extensions and brackets (parts 1 and 2) to bin's two highest wall element layers. Extension top part is skewed so that it fits under the roof eaves.

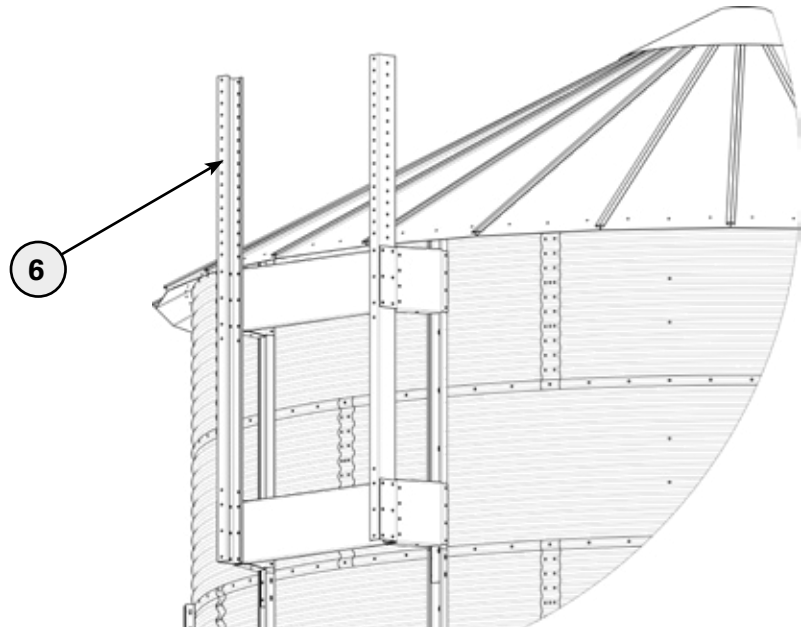


Attach parts 3,4 and 5 and mount them to parts 2.

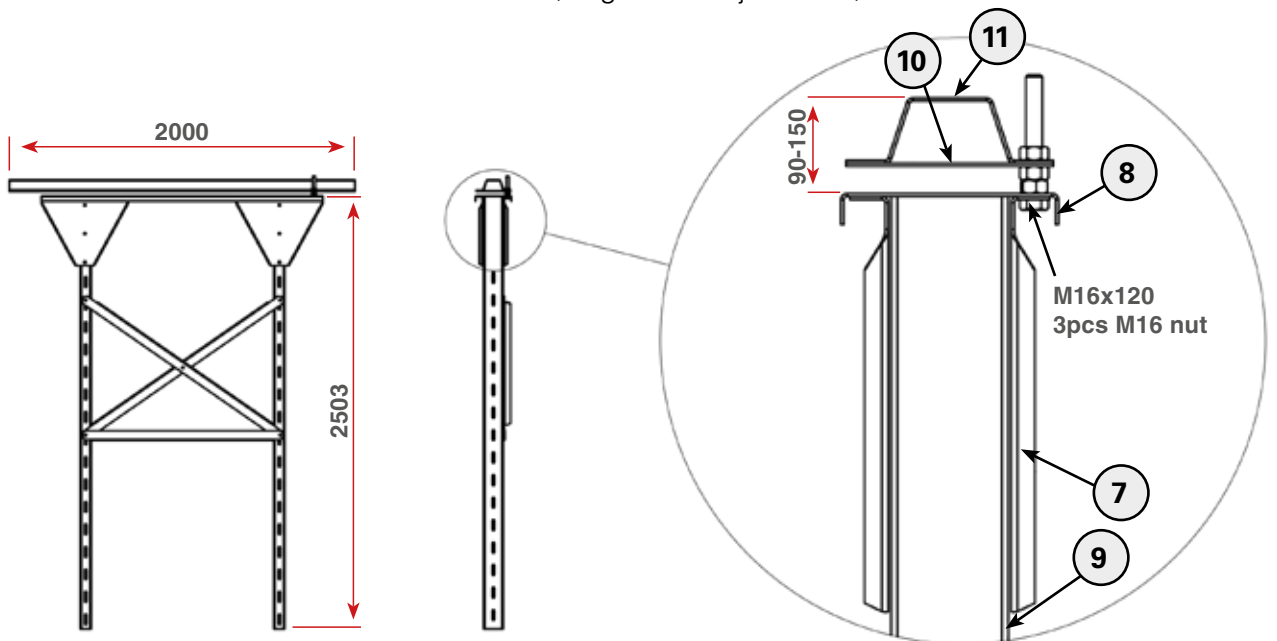


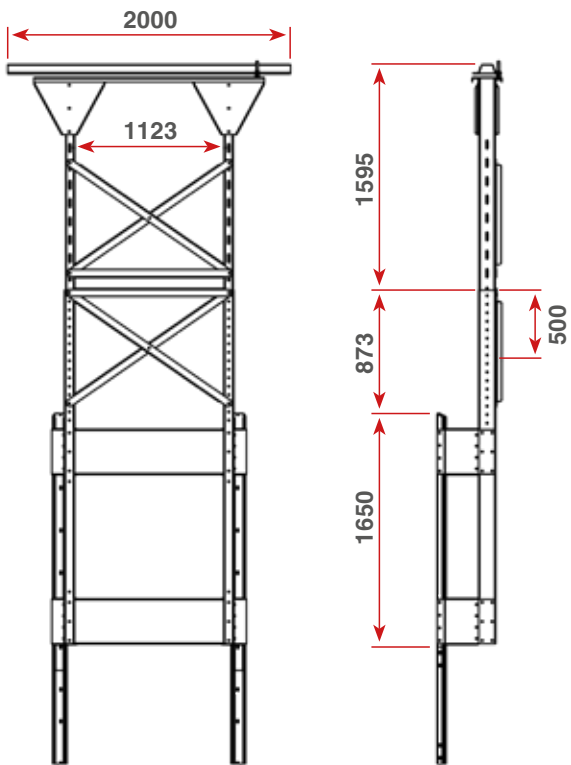


Attach parts 6.

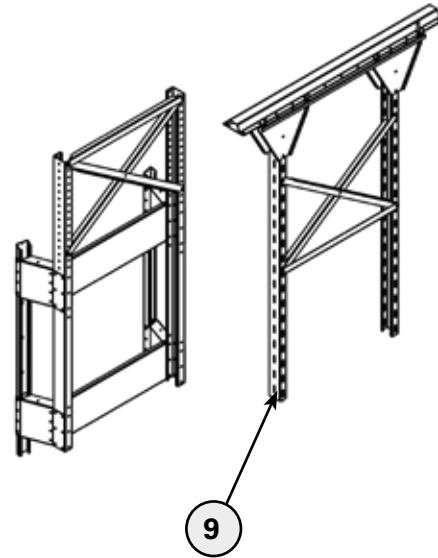


Install parts 7 to part 8 and attach C-profiles to them. Attach parts 10 and 11 to each other with M8x30 screws and nuts. Attach M16x120 screws with nuts to parts 7 and 8 and after that parts 10 and 11 to M16x120 screws with M16-nuts (height fine adjustment).

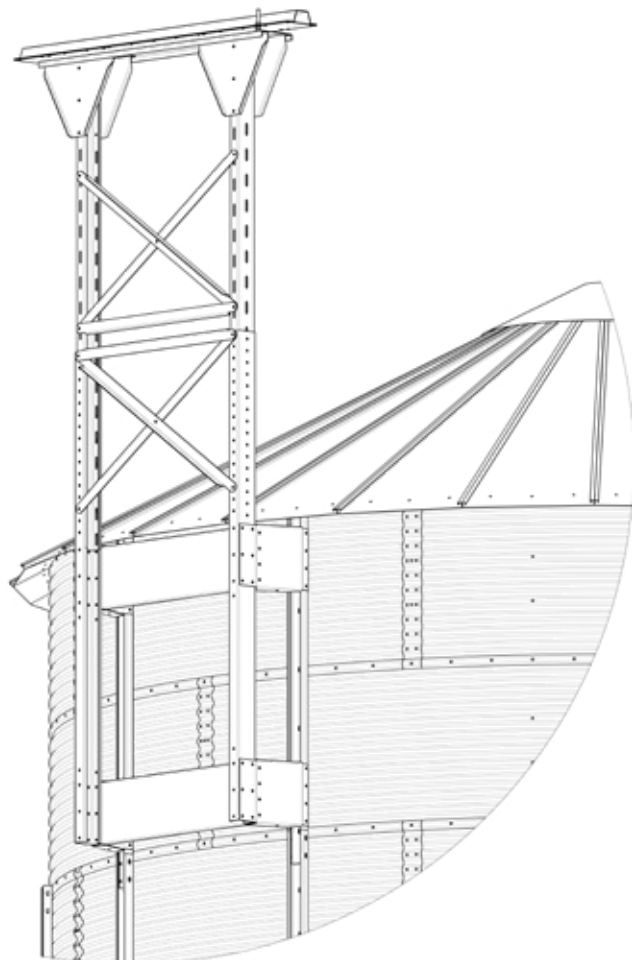




Install top part to bottom part. C-profiles must overlap at least 500mm. Cut the top part's C-profiles (part 9) if the installation height of the conveyor remains too high.



Attach cross support.





3. Operating

3.1. Filling and discharging

Fill the bin from the middle so that the load distributes evenly. Do not fill grain to top. Maximum fill height is 3cm below eave.

Bins are designed to store dry and cool grain (material density max. 800kg / m³). It is not recommended to fill grain with over 16% moisture level in a grain bin.

Discharge the bin with an auger (or equivalent) from the middle.

 **CAUTION!**

Uneven load might cause damage to the grain bin.



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