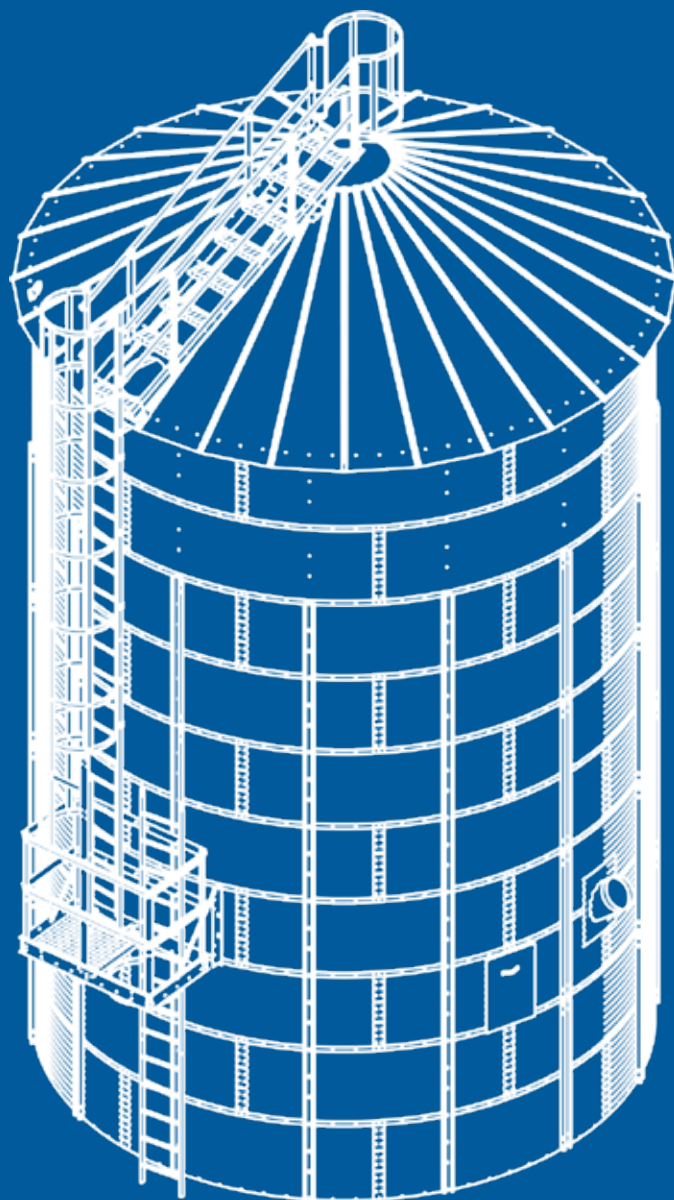


A70-1001-EN-202203



GRAIN BINS

Ø480cm, Ø560cm, Ø640cm, Ø720cm

ASSEMBLY AND USER MANUAL

ARSKAMETALLI OY
www.arskametalli.fi



CONTENTS

Introduction.....	3
Delivery information	4
EU Declaration of Conformity.....	5
Safety.....	6
1. Overview.....	8
1.1. Delivery contents.....	9
1.2. Unpacking.....	9
1.3. Foundation	9
1.3.1. List of rebars	9
1.4. Dimensions.....	10
1.5. Wall element thickness, reinforcements, extensions and base supports.....	12
2. Assembly.....	14
2.1. Roof and two top layers	14
2.2. Lifting the bin	16
2.3. Remaining layers and reinforcements	17
2.3.1. Signboard	17
2.3.2. Manhole.....	17
2.4. Ladder and railings	18
2.4.1. Roof ladder.....	18
2.4.2. Roof ladder Ø4,8m	21
2.4.3. Wall ladder and cages.....	22
2.4.4. Ladder rest platform	23
2.5. Attaching to foundation.....	29
2.6. Wall outlet and cover pipe for auger.....	30
2.7. Finishing.....	32
2.8. Conveyor support (option)	33
3. Operating	37
3.1. Filling and discharging	37



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 grain bin. 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 parts 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 grain bins from the date of delivery.

The warranty requires that owner of the product makes a announcement and a warranty application directly to manufacturer immediately after a detected fault. If the faulted part and the warranty application haven't been delivered to warranty check to the manufacturer within two weeks from the day of detection of the fault, it will not be handled as a warranty case. The manufacturer is not responsible of additional warranty given by distributor.

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

EU DECLARATION OF CONFORMITY



Manufacturer:

Arskametalli Oy
Saarentaantie 33
FI-31400 Somero, Finland

Product: Arska grain bins

Diameter: Ø480cm, Ø560cm, Ø640cm, Ø720cm

We hereby declare that the product complies with the directives:

- 2006/42/EC Machinery Directive

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 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.

Incorrect assembly can lead to personal injuries or cause damage to the product. Incorrectly installed product may not work right and the capacity may decrease. Read this manual carefully before starting the assembly, maintenance or usage.

General information

- Do not use the bin if hatches and covers haven't been installed.
- 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.
- 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 instructions.
- Packaging must be disposed properly.

Personal safety

Always wear protective equipment when assembling or using the bin.

Warnings

NOTE!

Text contains information that makes the installing easier.

CAUTION!

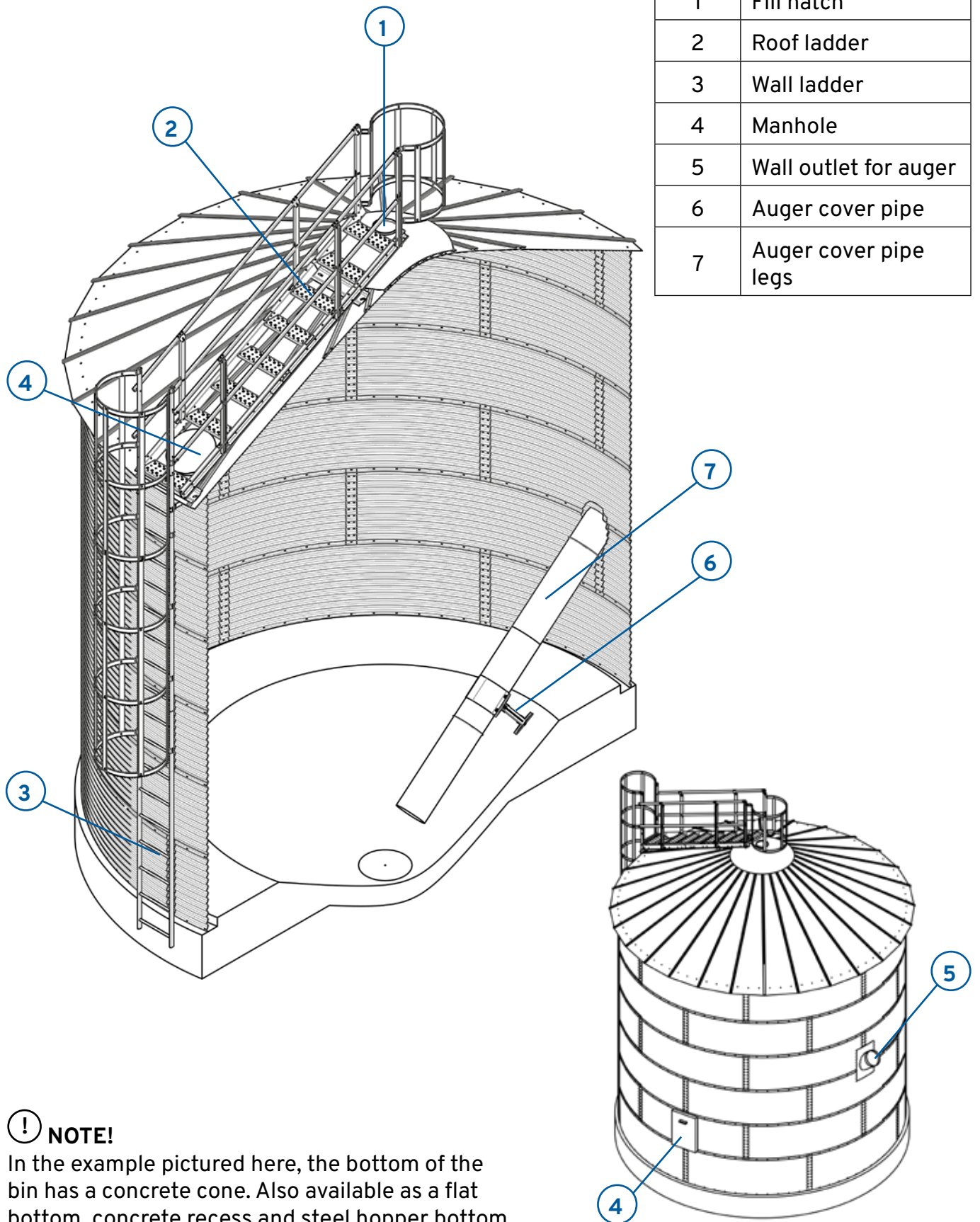
If instructions are not followed, the product may be damaged. It can also result in incorrect operation or capacity decrease.

WARNING!

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

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 pictured here, the bottom of the bin has 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 emerging. 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.

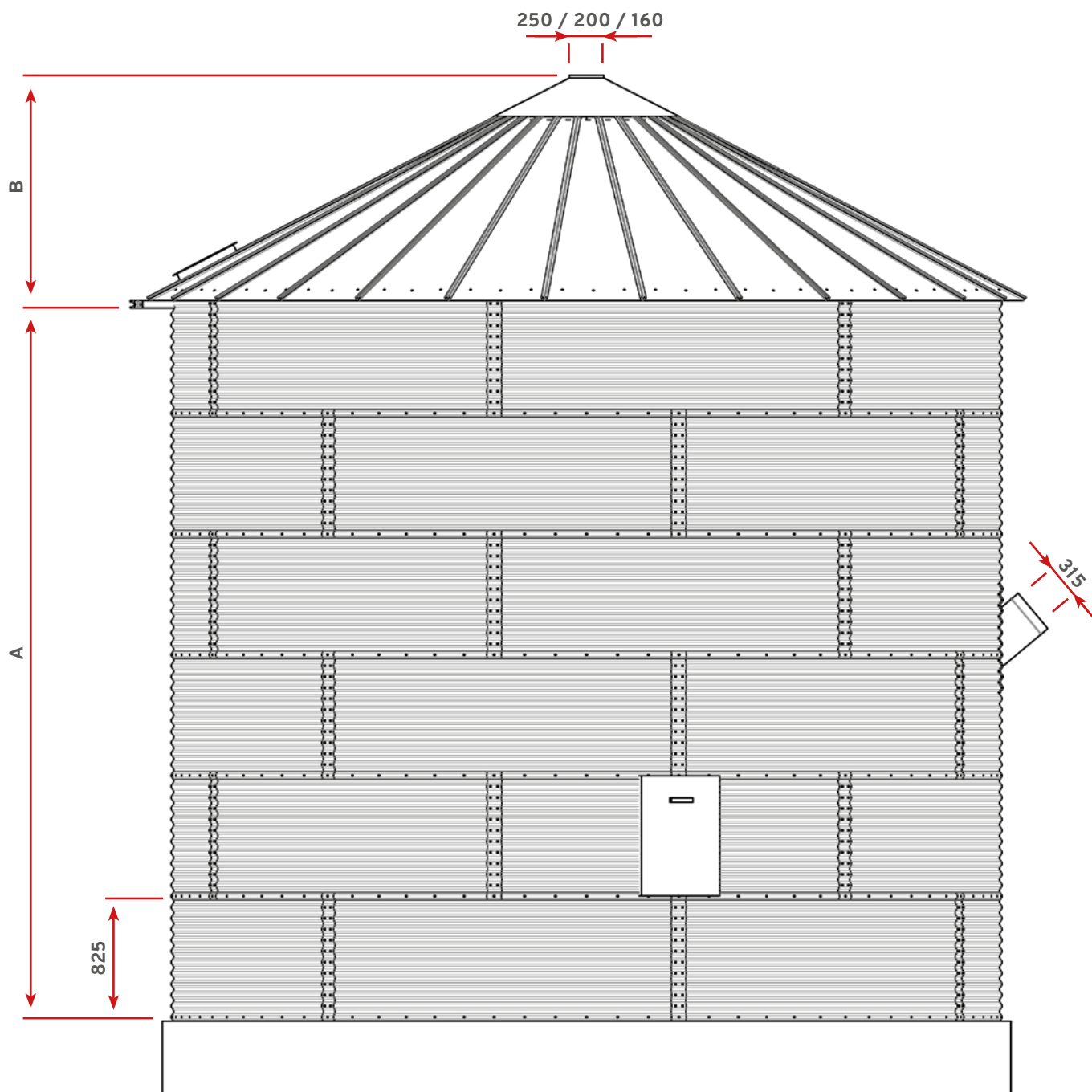
The bin requires strong and frost resistant foundation. Pay attention to the drainage in order to avoid moisture damage. The foundation is made according to the separate structure drawings. You can get the drawings for flat and cone bases from the manufacturer.

1.3.1. List of rebars

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

	CONCRETE RECESS BASE				FLAT BASE			
	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 [m³]	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 [m³]	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

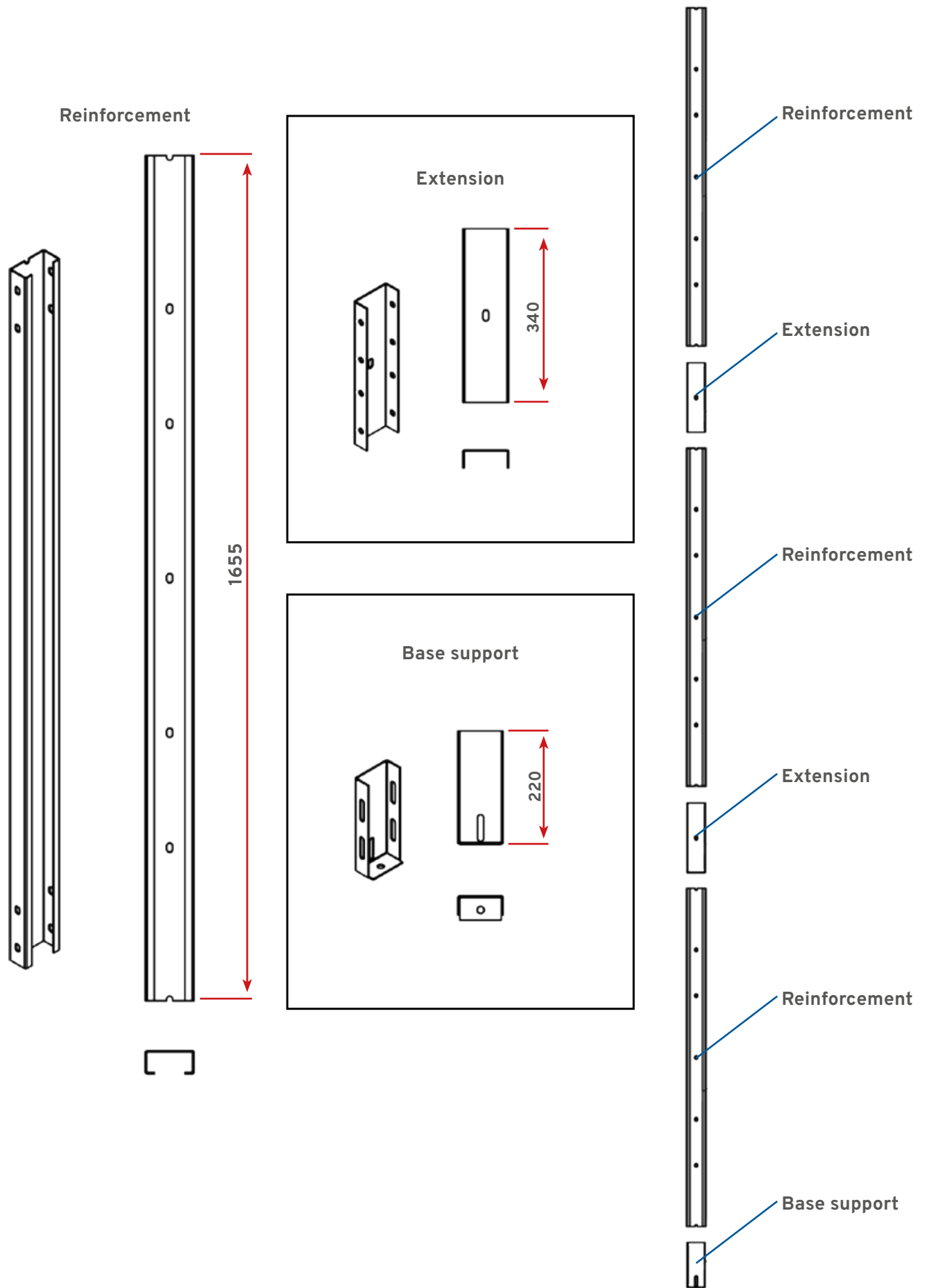
Ø / LAYER	VOLUME [m³]	A [mm]	B [mm]	A + B [mm]	C [mm]	WEIGHT [kg]
6,4m / 4	124	3 300	1 600	4 900	6 400	2 091
6,4m / 5	151	4 125	1 600	5 725	6 400	2 459
6,4m / 6	178	4 950	1 600	6 550	6 400	2 699
6,4m / 7	205	5 775	1 600	7 375	6 400	3 097
6,4m / 8	232	6 600	1 600	8 200	6 400	3 377
6,4m / 9	259	7 425	1 600	9 025	6 400	3 756
6,4m / 10	286	8 250	1 600	9 850	6 400	4 019

Ø / LAYER	VOLUME [m³]	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	1 800	5 925	7 200	3 018
7,2m / 6	224	4 950	1 800	6 750	7 200	3 288
7,2m / 7	258	5 775	1 800	7 575	7 200	3 741
7,2m / 8	292	6 600	1 800	8 400	7 200	4 060
7,2m / 9	326	7 425	1 800	9 225	7 200	4 494
7,2m / 10	360	8 250	1 800	10 050	7 200	4 796

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

REINFORCEMENTS

	LOWEST LAYER										REINFORCEMENTS [pcs]	EXTENSIONS [pcs]	BASE SUPPORT [pcs]
	2.	3.	4.	5.	6.	7.	8.	9.	10.				
Ø4,8m													
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	1,25	1,25	1,25	-	36	24	12
10 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,25	1,25	1,25	1,25	36	24	12
Ø5,6m													
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	1,25	1,25	1,25	-	42	28	14
10 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,25	1,25	1,25	1,25	42	28	14
Ø6,4m													
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	1,25	1,25	1,25	-	48	32	16
10 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,25	1,25	1,25	1,25	64	48	16
Ø7,2m													
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	1,25	1,25	-	-	54	36	18
9 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,25	1,25	1,25	-	72	54	18
10 layers	1,5	1,5	1,5	1,5	1,5	1,5	1,25	1,25	1,25	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.

⚠ NOTE!

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, left, up and hidden.

Element color ID:  1,25mm black color  1,50mm yellow color

2.1. Roof and two top layers

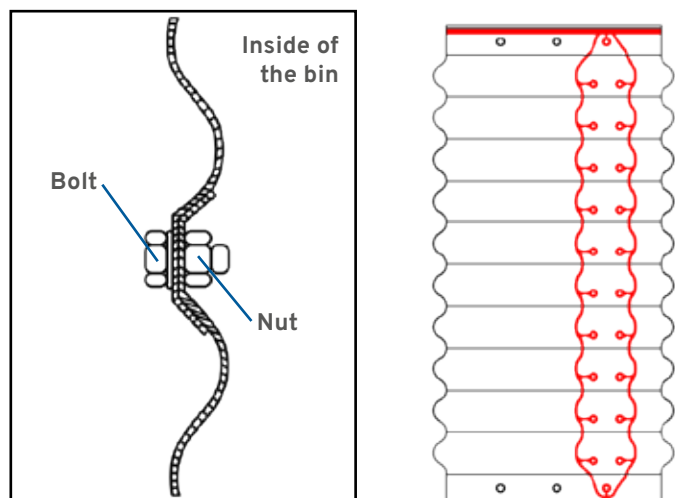
Start the assembly by lifting the top cone to right height according to the picture next page. Assemble two highest layers concentric with the top cone. Pay attention to material thickness.

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!

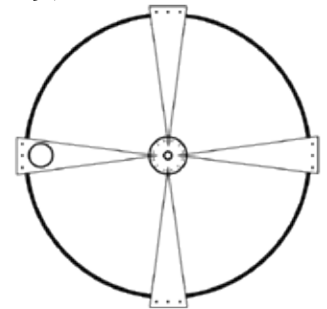
Assemble the wall elements by inserting the lower element inside of the higher element. This is to avoid the rain water getting into the bin.

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.

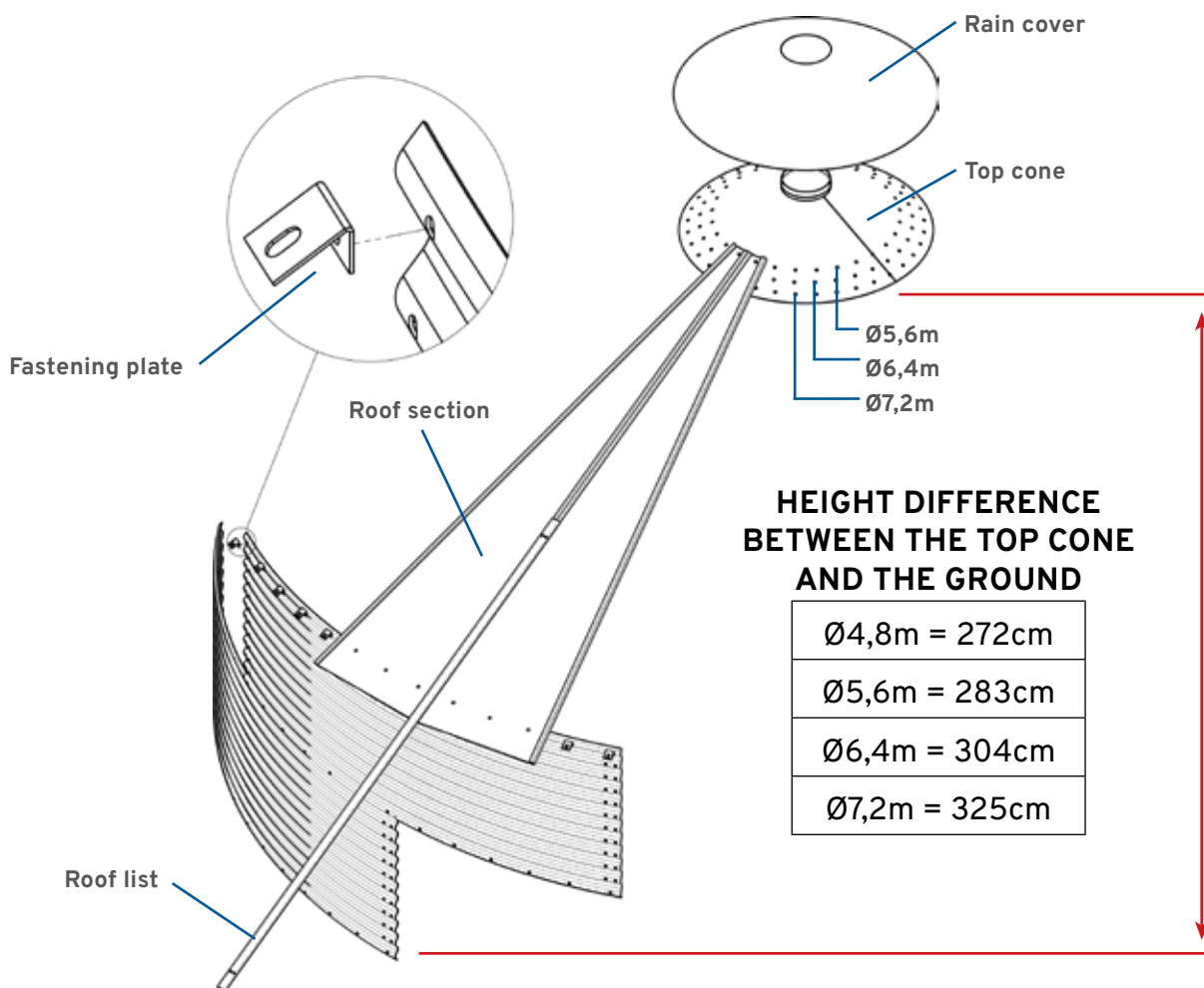
Insert the roof section with a manhole at the point where the ladder is installed. Install the other three sections vertically against each other. Put the other sections on place and attach them to each other with roof lists. Push the roof lists to place from below such that the lower edge is even with the roof section. Attach the roof lists to the section using self-drilling 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 roof 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.

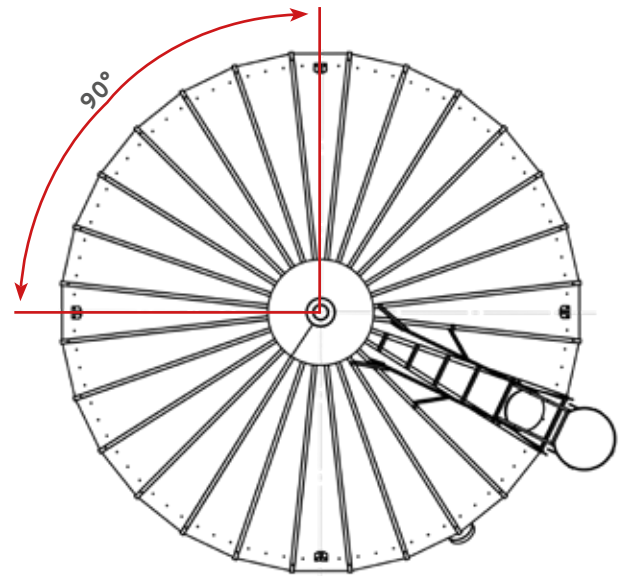
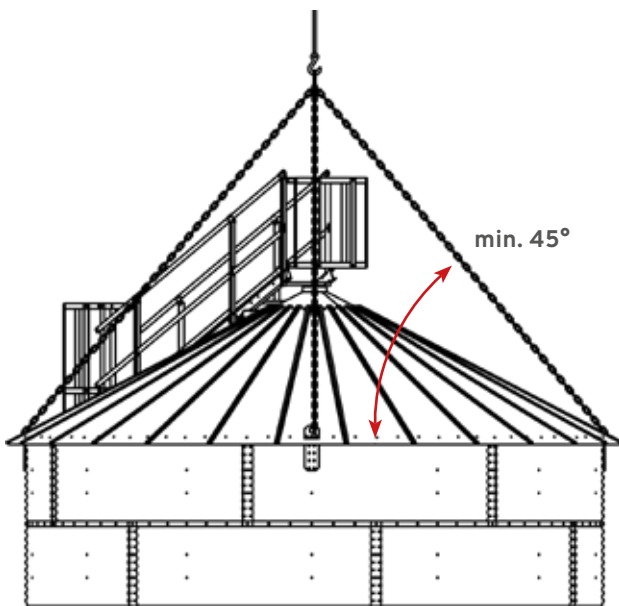
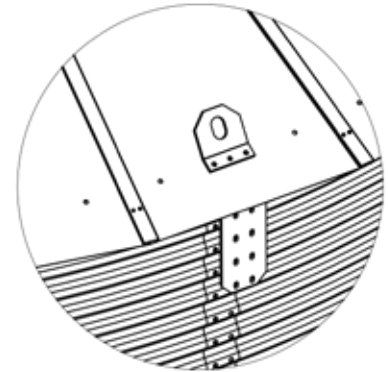
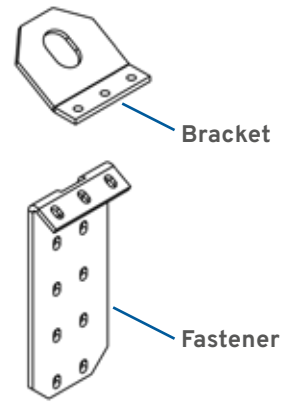


2.2. Lifting the bin

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 12. 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.

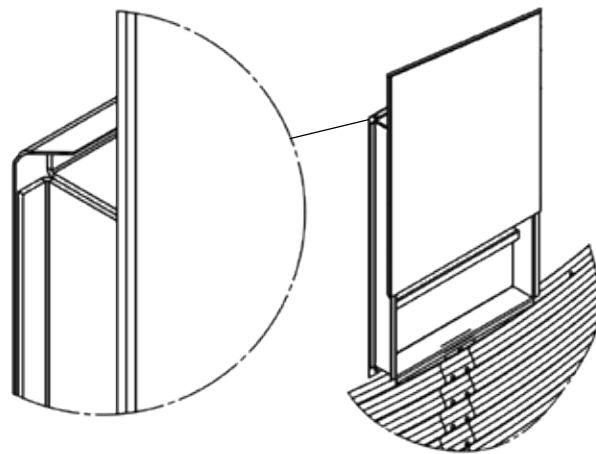
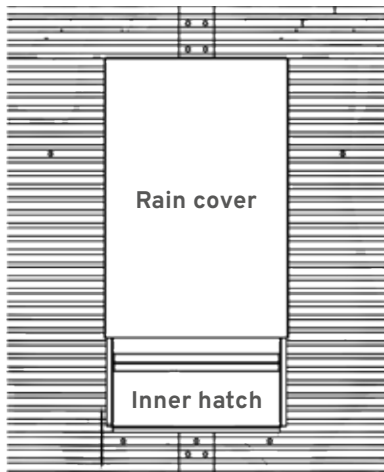
2.3.2. Manhole

⚠ NOTE!

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

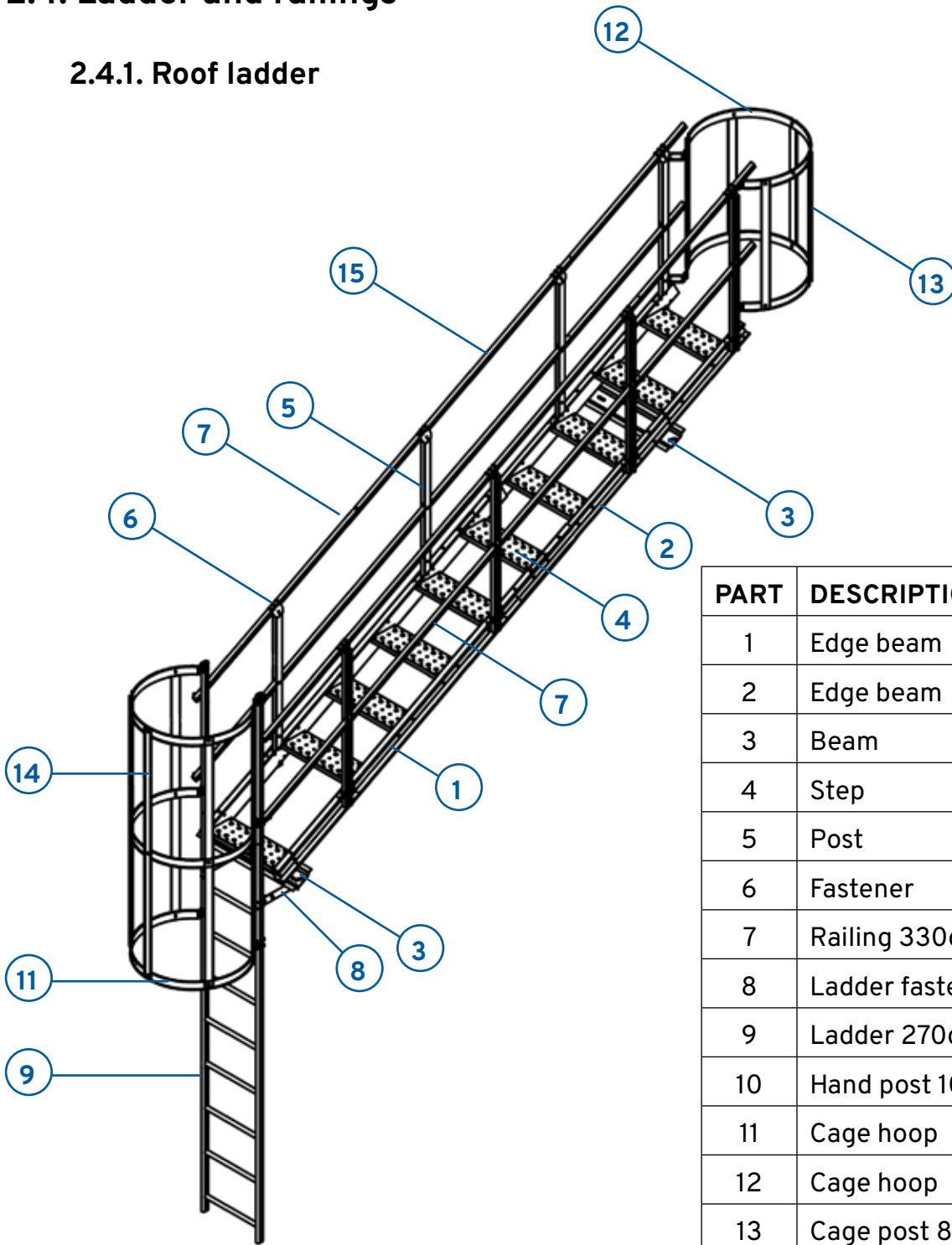
Install the manhole element according to the foundation type to 1st - 4th wall element layer. The grain surface must stay below the hatch lower edge after the bin has been discharged with an auger. Install the inner hatch to inner surface and thread the rain cover to the outside.

	STEEL CONE BOTTOM				FLAT BASE			
	Ø4,8	Ø5,6	Ø6,4	Ø7,2	Ø4,8	Ø5,6	Ø6,4	Ø7,2
Layer	3.	3.	3.	4.	2.	2.	2.	2. or 3.



2.4. Ladder and railings

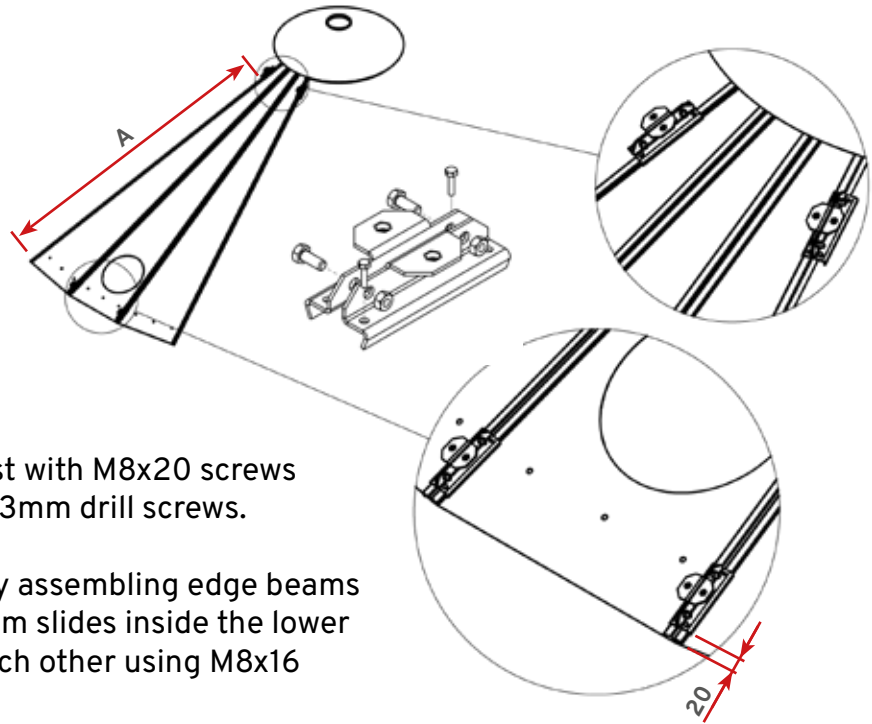
2.4.1. Roof ladder



PART	DESCRIPTION	NO.
1	Edge beam	11866
2	Edge beam	13232
3	Beam	13234
4	Step	12261
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

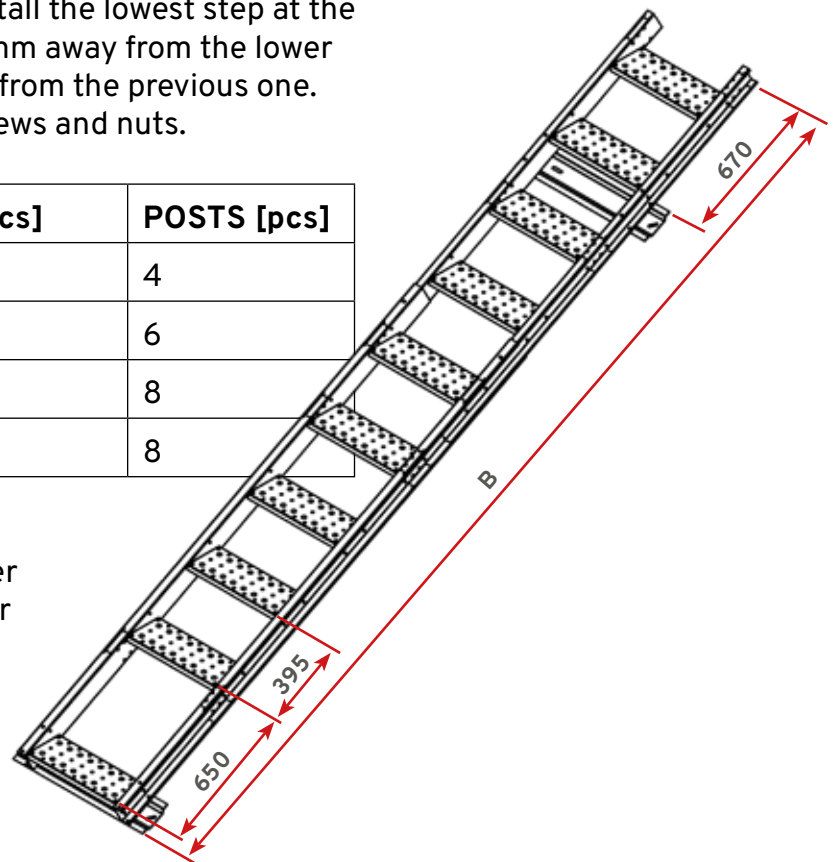


Press the brackets to roof list with M8x20 screws and nuts. Secure with two 6,3mm drill screws.

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

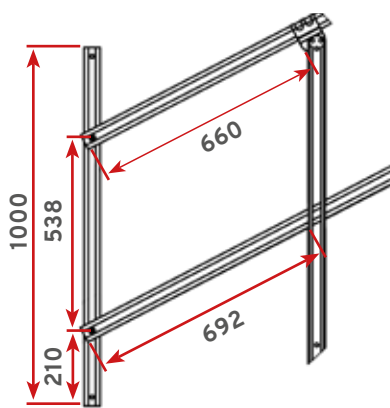


Install beams (2pcs 13234) under the edge beams. Install the lower beam to lower level of the edge beam and upper 670mm away from the upper level of the edge beam.

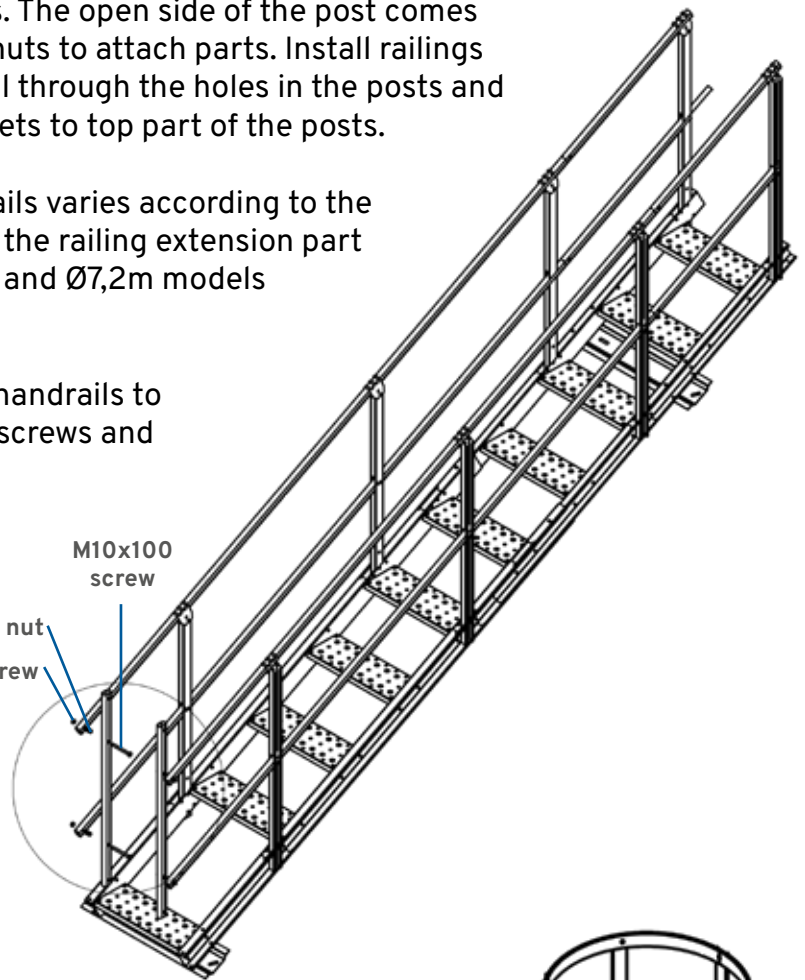
Install railing posts to edge beams. The open side of the post comes outwards. Use M8x16 screws and nuts to attach parts. Install railings to posts. Thread the lower handrail through the holes in the posts and install higher handrail using brackets to top part of the posts.

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.



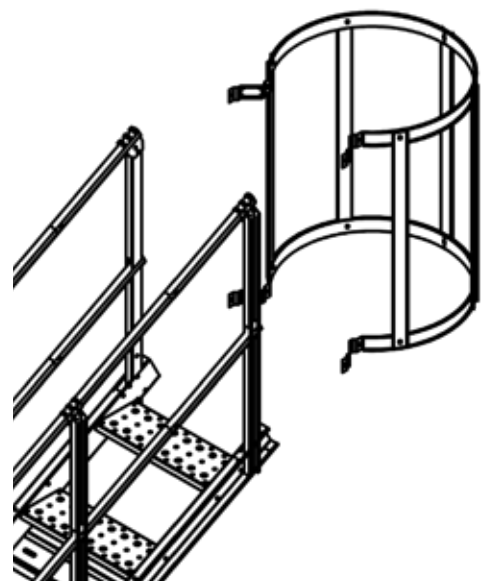
M10x100 screw
M10 extension nut
M10 screw



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).

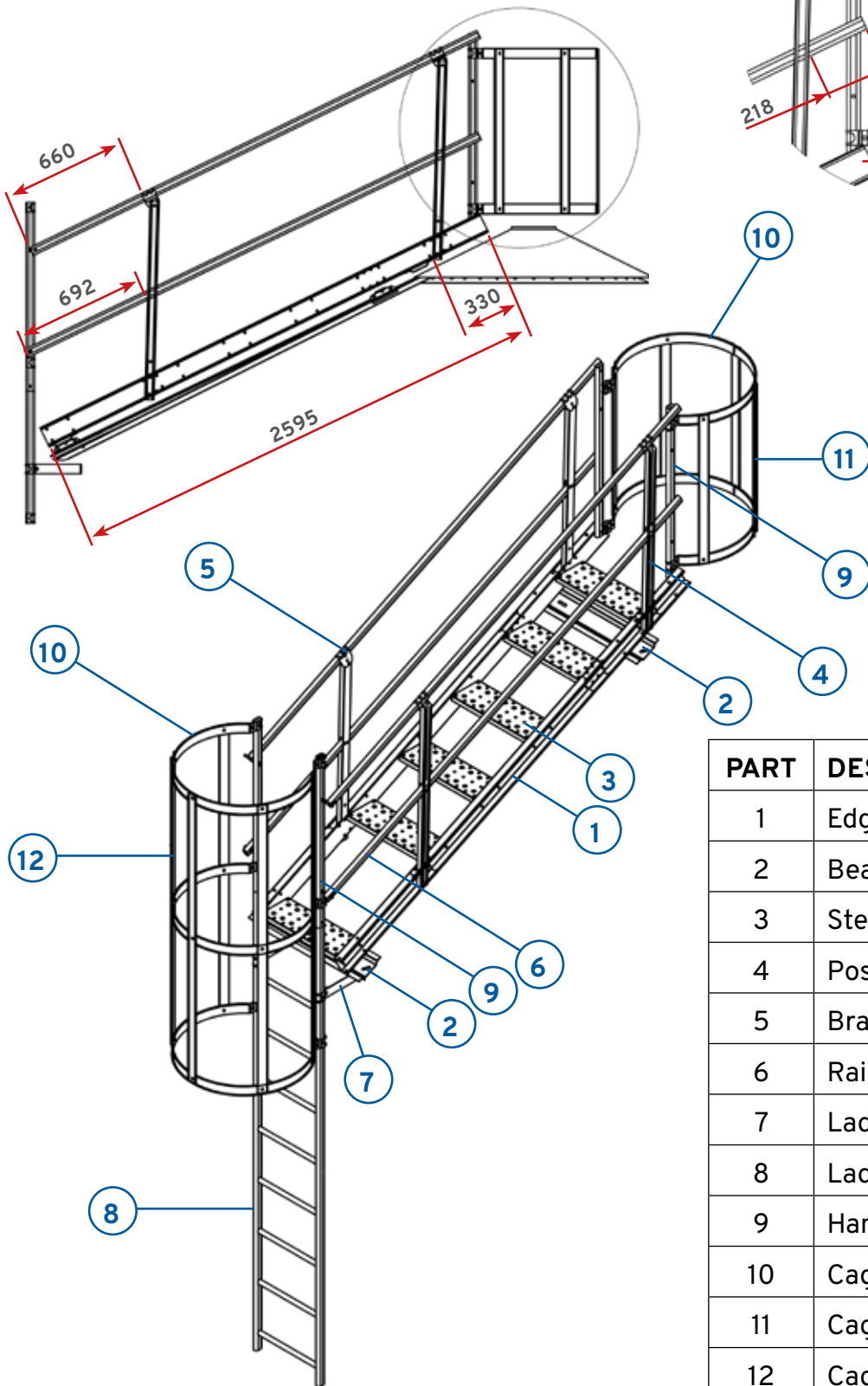
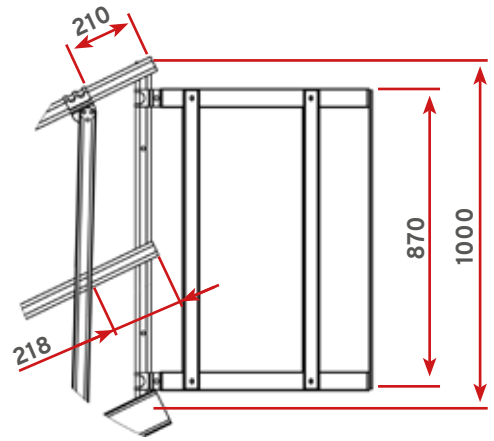
Bend cage hoops end's outwards and install them to the highest posts with M8x20 screws and nuts.

Install the ladder to the roof brackets using M8x20 screws.



2.4.2. Roof ladder Ø4,8m

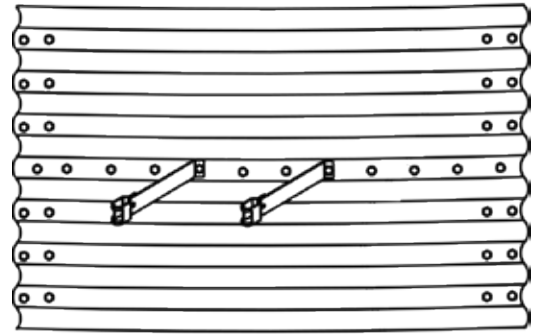
Ladder edge beam consist only of part 11866.
Install handrails (2pcs 12498) to top part with drill screws.
Install ladder top part's railings to handrails.



PART	DESCRIPTION	NO.
1	Edge beam	11866
2	Beam	13234
3	Step	12261
4	Post	13220
5	Bracket	11941
6	Railing 330cm	
7	Ladder bracket	11137
8	Ladder 270cm	12497
9	Handrail 100cm	12498
10	Cage hoop	13371
11	Cage post 87,5cm	13262
12	Cage post	

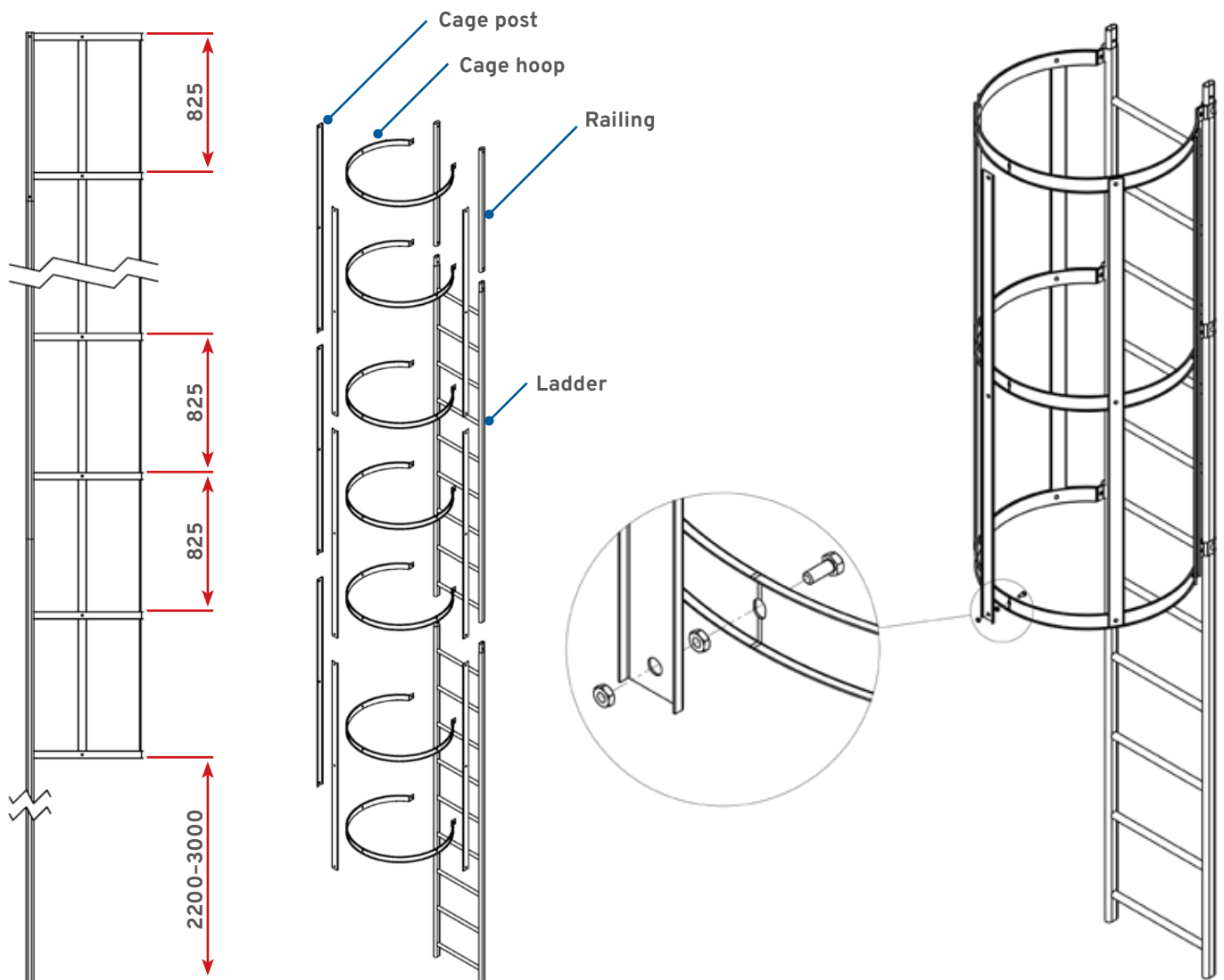
2.4.3. Wall ladder and cages

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.



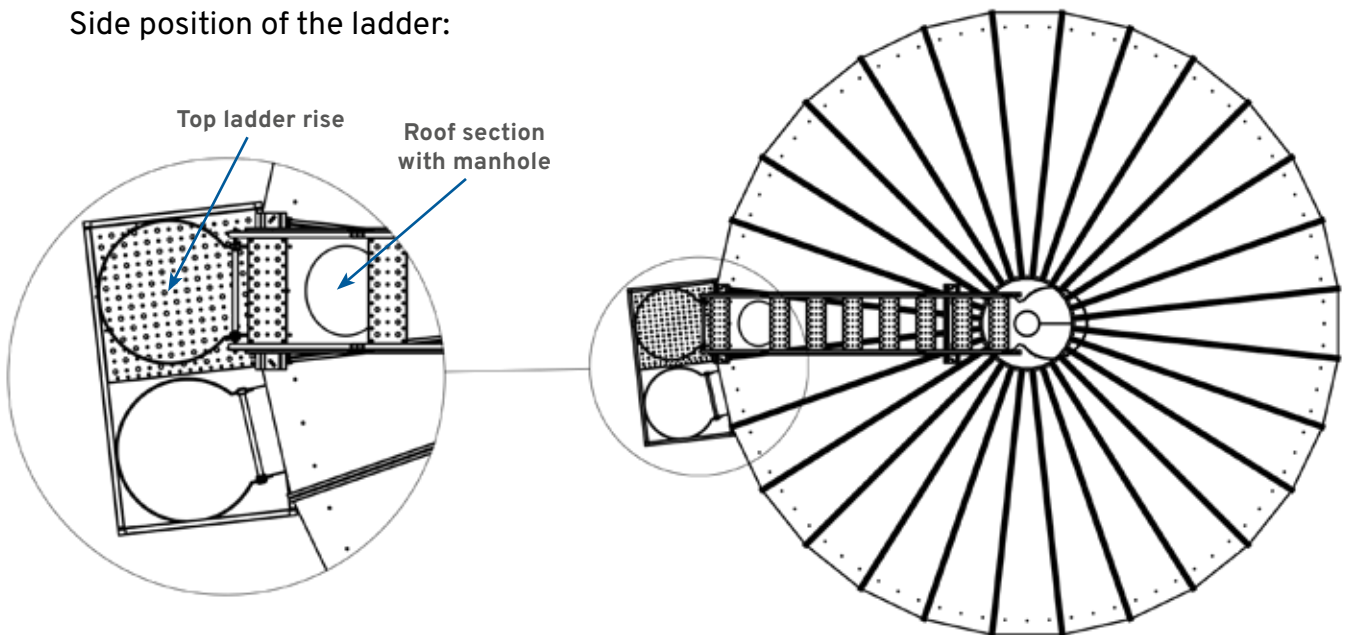
2.4.4. Ladder rest platform

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.

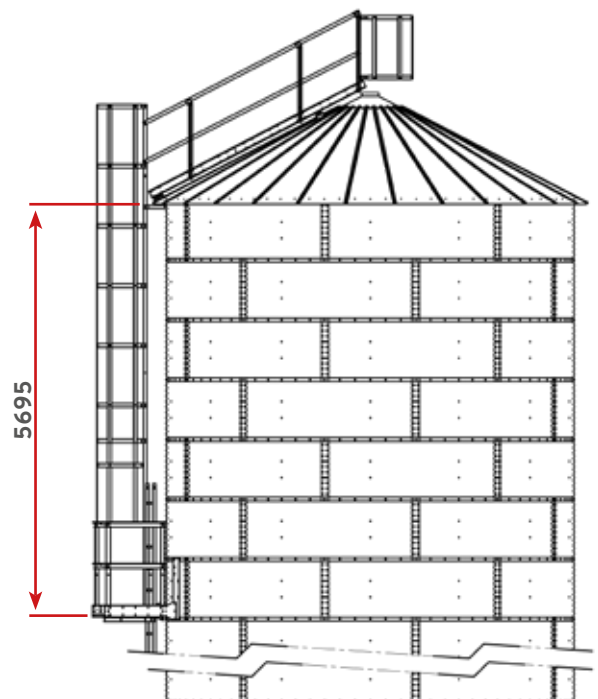
Install the top platform at the level of 7th highest wall element. We recommend to install the platform mounting beams (part 7, see page 26) and ladder while assembling the bin.

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:

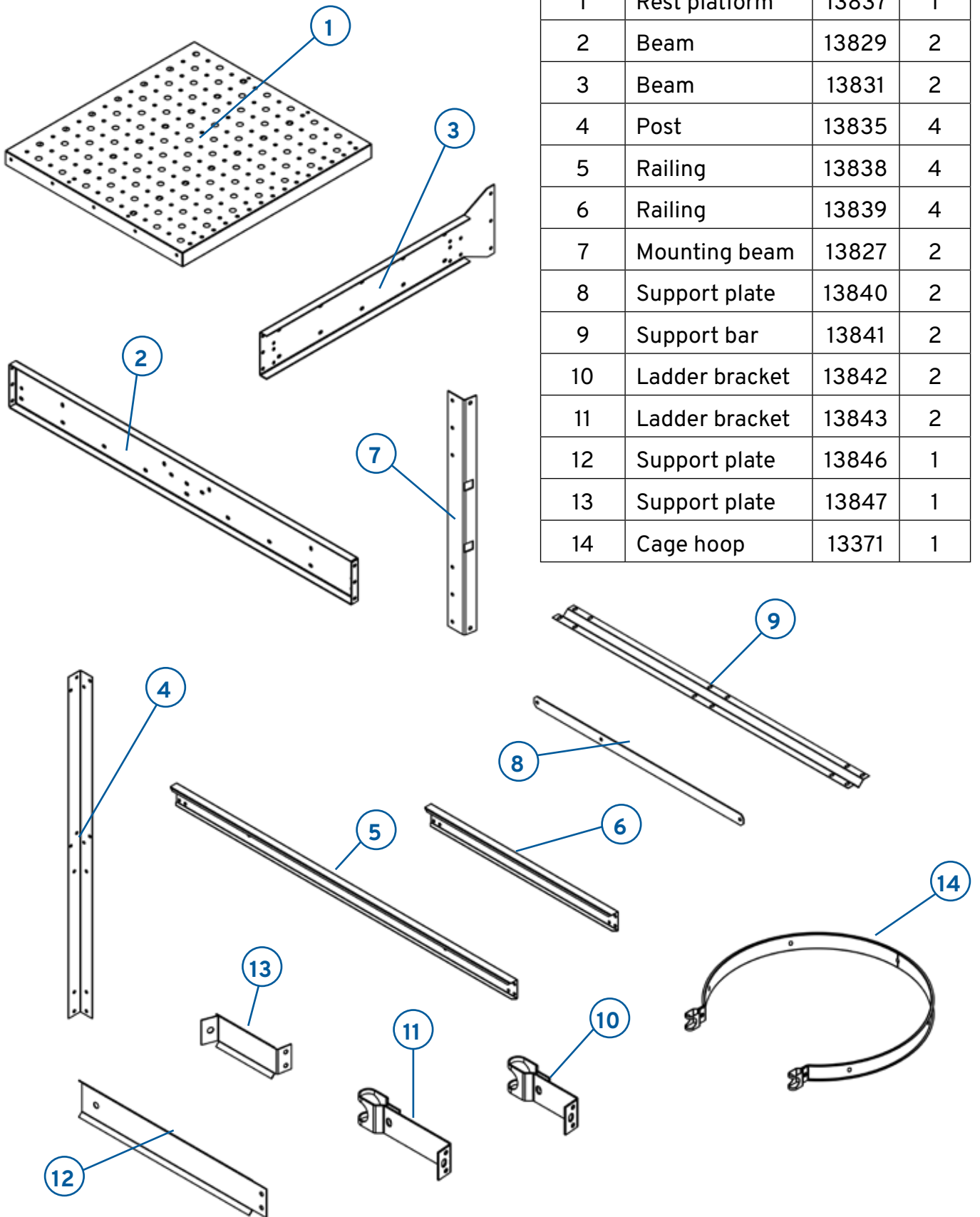


Height position of the top platform:

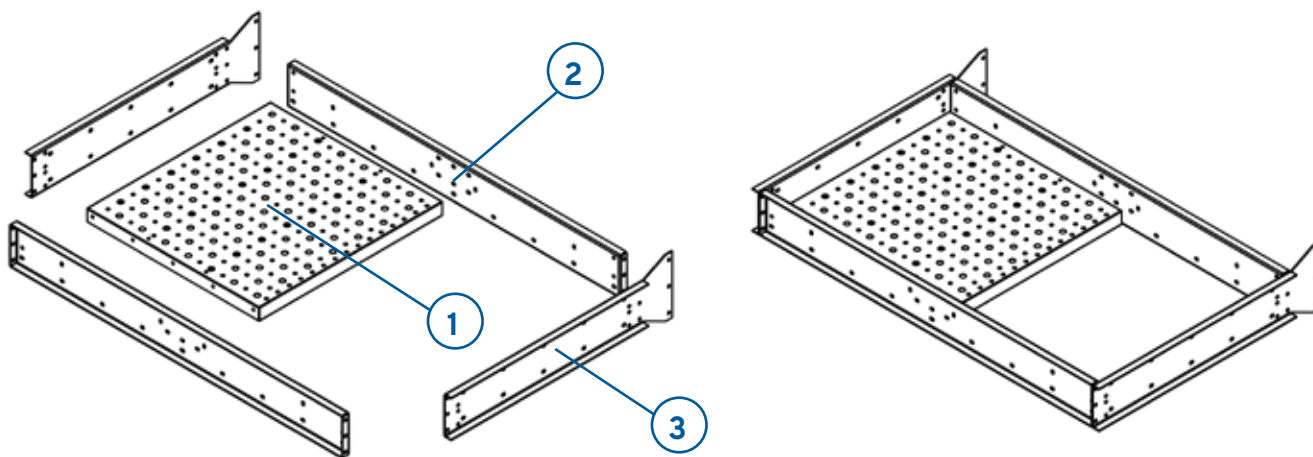


REST PLATFORM PARTS

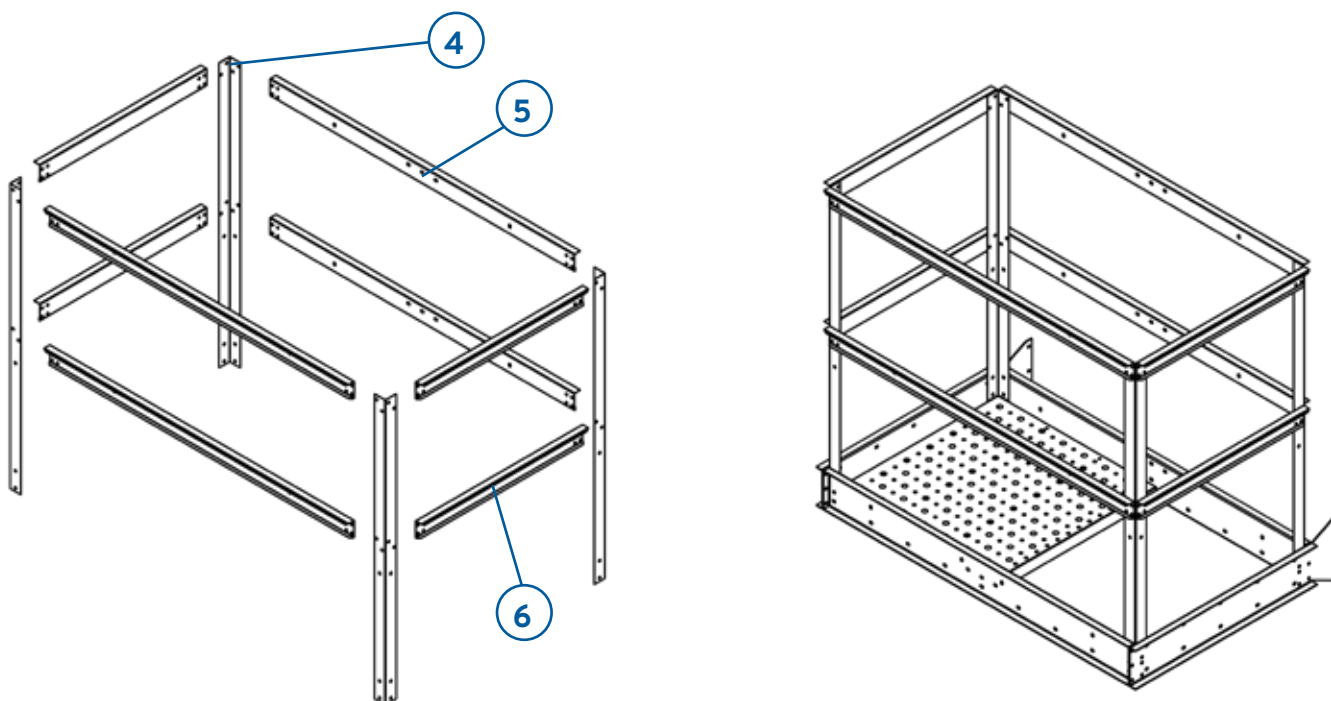
PART	DESCRIPTION	NO	PCS
1	Rest platform	13837	1
2	Beam	13829	2
3	Beam	13831	2
4	Post	13835	4
5	Railing	13838	4
6	Railing	13839	4
7	Mounting beam	13827	2
8	Support plate	13840	2
9	Support bar	13841	2
10	Ladder bracket	13842	2
11	Ladder bracket	13843	2
12	Support plate	13846	1
13	Support plate	13847	1
14	Cage hoop	13371	1



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

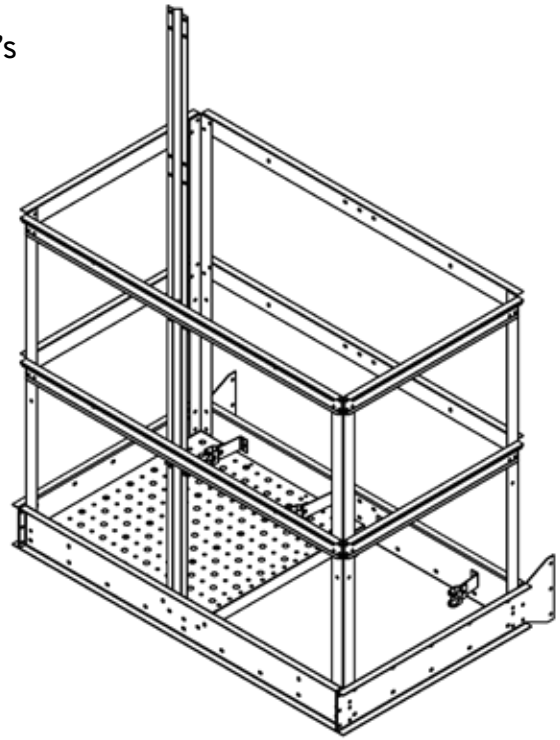
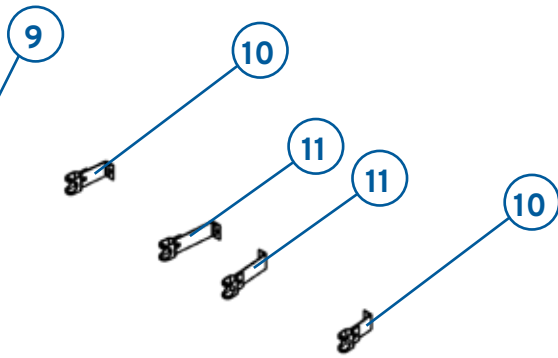


Attach posts 4 to platform corners and railings 5 and 6 to the posts. Use M8x16 screws and nuts.



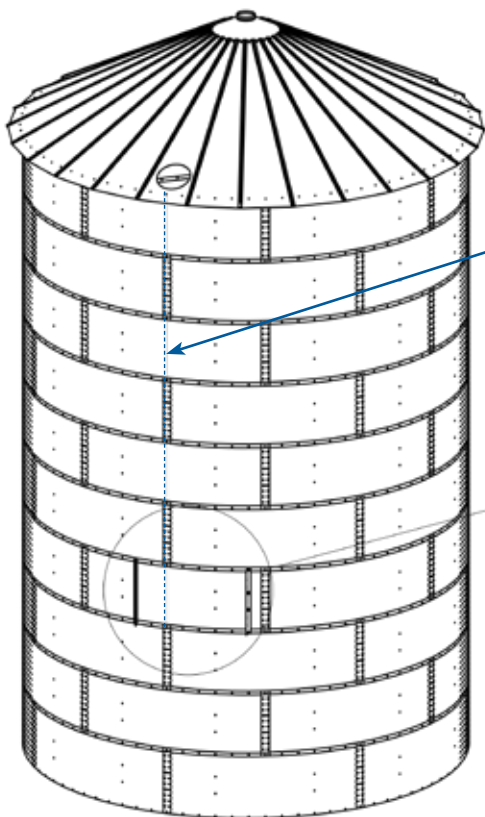


Attach ladder brackets 10 and 11 to platform's bottom beam (bin side). Longer brackets (11) to the middle. Attach support bars 9 to the bottom beam and to the railings. At the extension bars overlap 100mm.

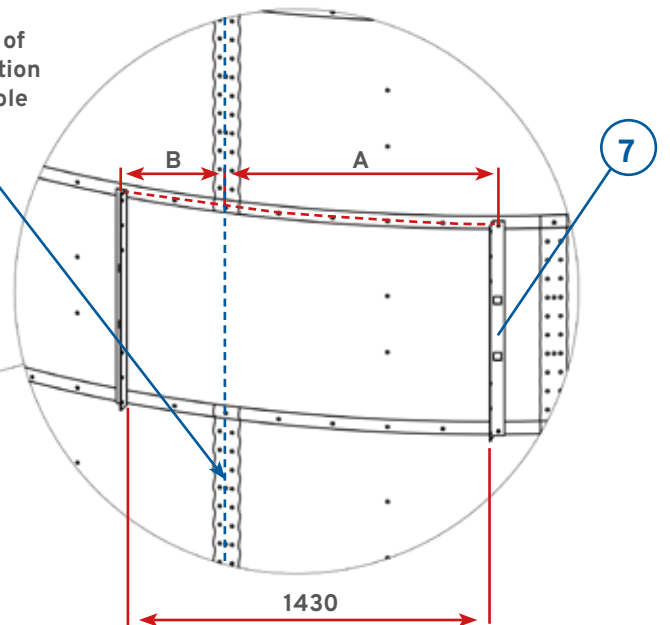


Install the platform mounting beams at the level of 7th highest wall element. Use M10x25 screws and nuts.

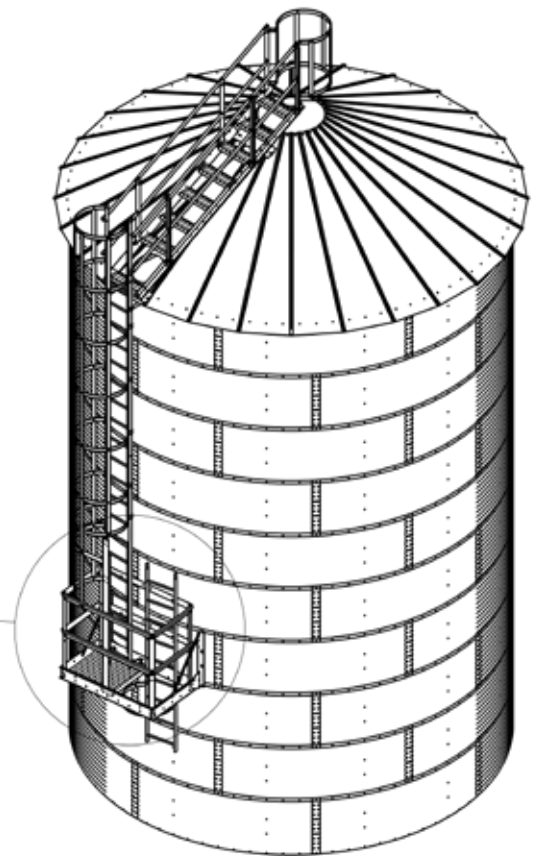
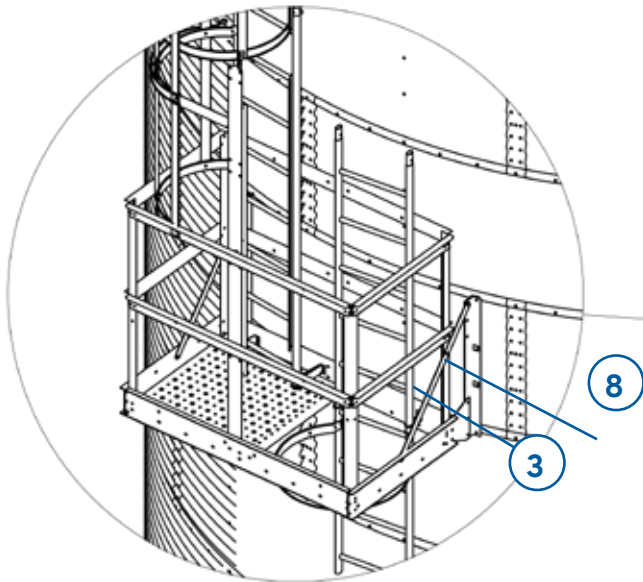
- B = 2x hole distance from the centerline of the roof manhole
- A = 5x hole distance from the centerline of the roof manhole



Centerline of the roof section with manhole

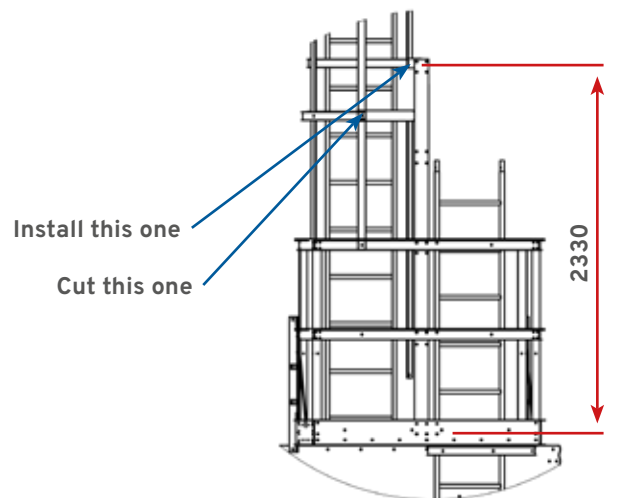


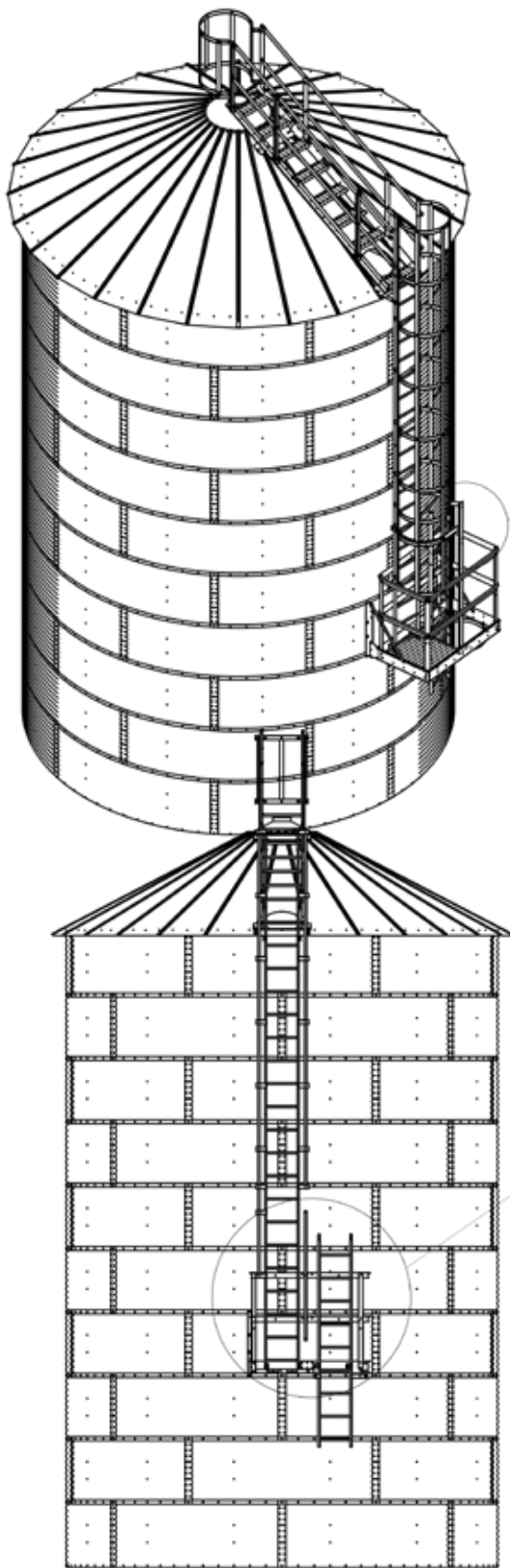
Install platform to lowest holes of the brackets (3pcs M8x16 + nut / side). Install diagonal supports 8 between mounting beam and beam 3.



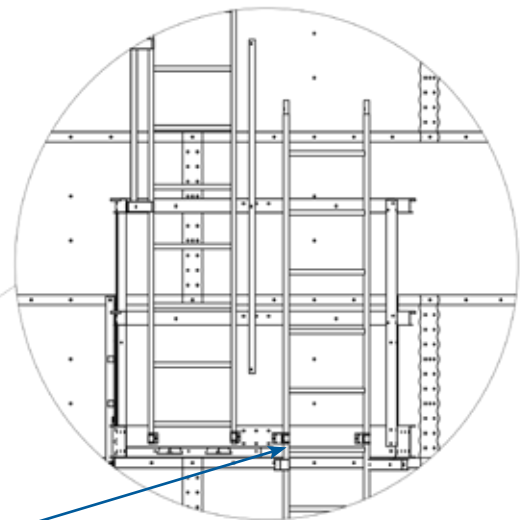
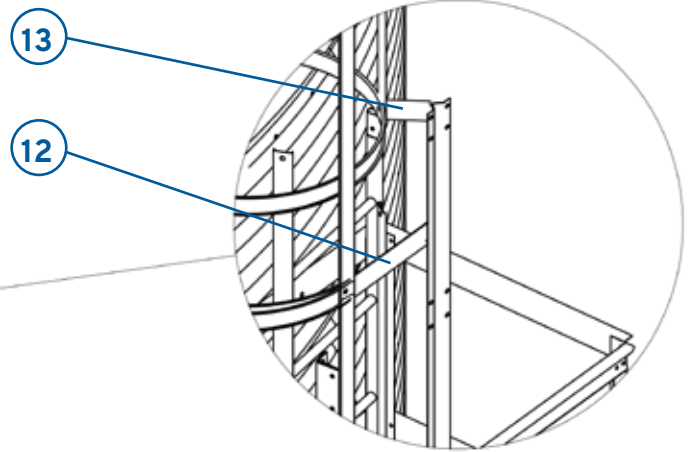
Attach the cage hoop to cage posts so that the hoop bottom level comes to 2330mm height from the rest platform surface. Attach ladder cage posts (3pcs) to platform railings.

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

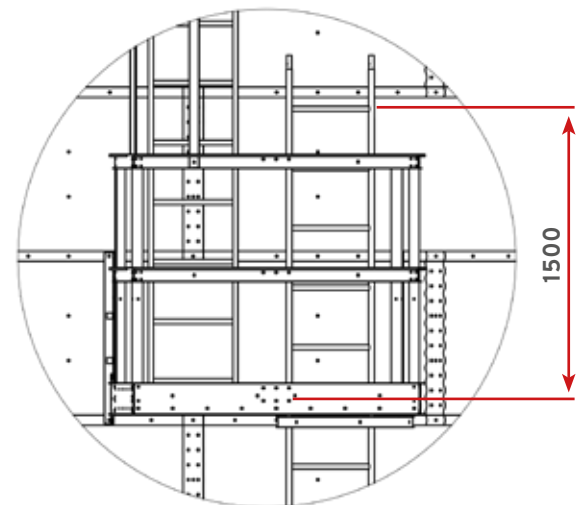




Attach support plate 12 between the cutted cage hoop and the support bar 9. Use M8x16 screws and nuts and 4,3x13 drill screws. Install support plate 13 between the cage hoop and the support bar 9. Use M8x16 screws and nuts and 4,3x13 drill screws.



At the same level

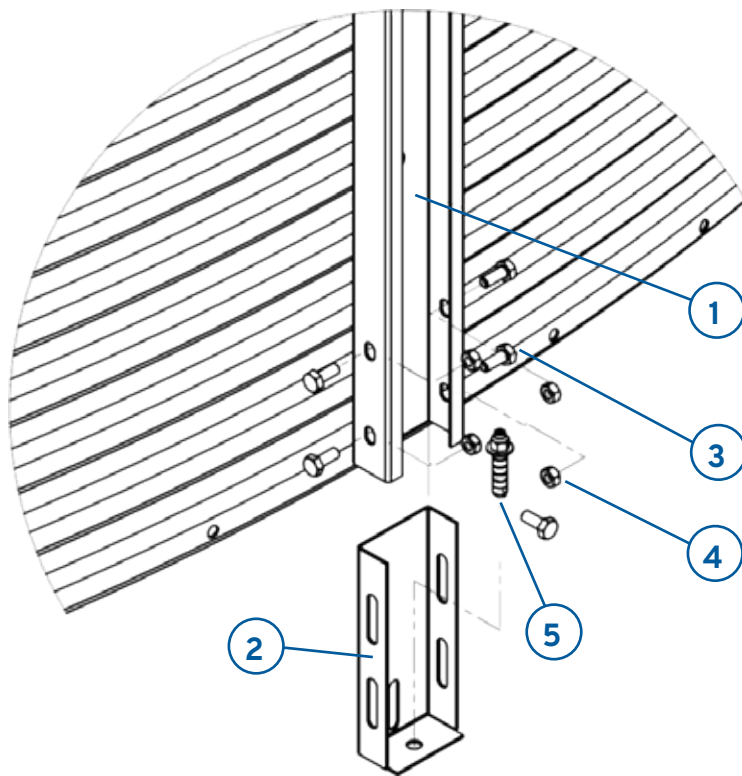


Install down heading ladders so that the top step of the ladder element is about 1500mm above the platform (sixth step at platform level). Attach ladder elements to platform ladder brackets.

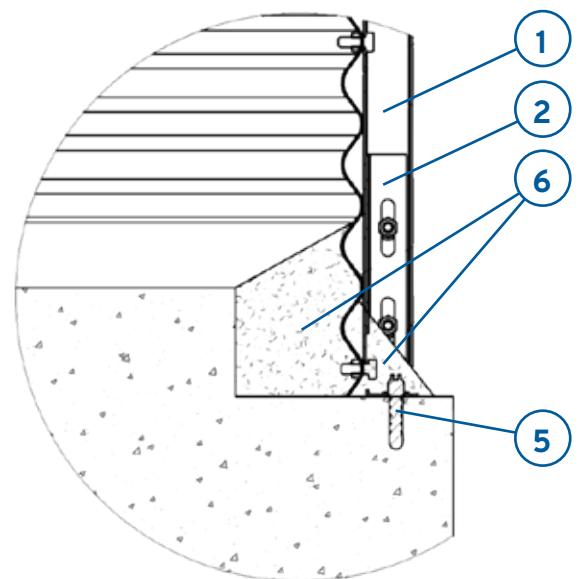
2.5. Attaching to foundation

Attach the bin to foundation from the reinforcement base supports with stud anchors or by welding (clamp plates on foundation).

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.



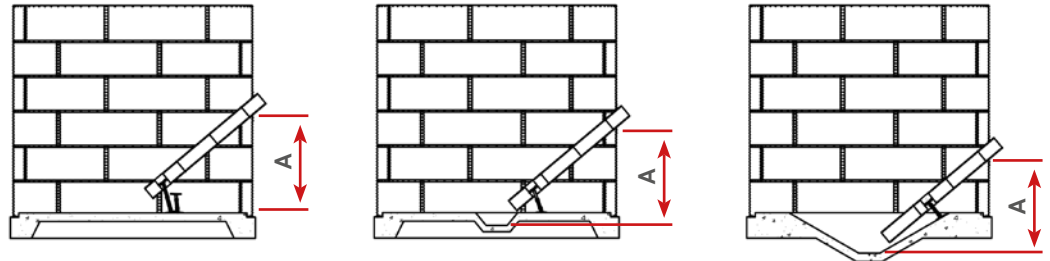
PART	DESCRIPTION
1	Reinforcement
2	Base support
3	Hex screw M10x25
4	Nut M10
5	Stud anchor M12x80
6	Grouting



2.6. Wall outlet and cover pipe for auger

Install the wall outlet for auger so that it's in 40 degree angle relatively to the horizontal level. The outlet can be installed vertically according to the corrugations of the wall sections at 75 mm. 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	1730
Ø5,6m	2060
Ø6,4m	2400
Ø7,2m	2730



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

! NOTE!

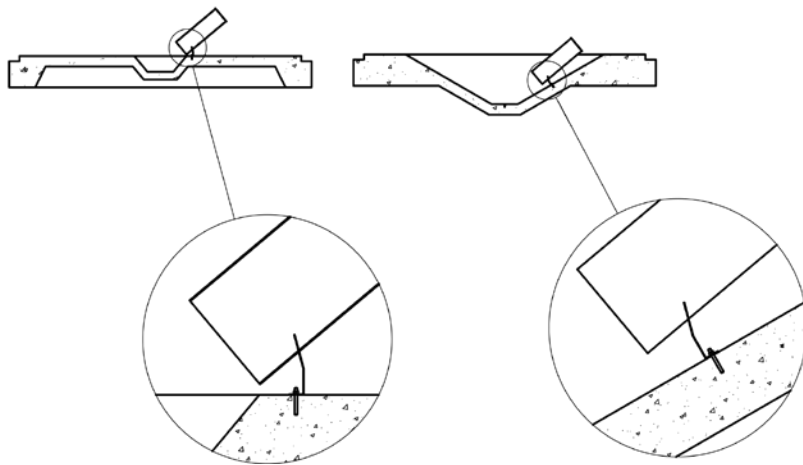
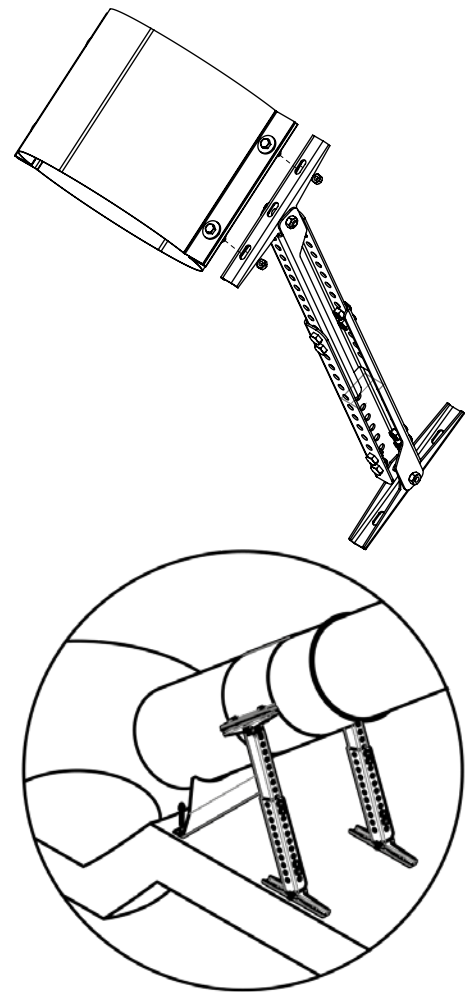
The auger cover pipe is NOT included in the delivery of the steel hopper bottom bin as standard.

COVER PIPE DELIVERY CONTENTS

CODE	DESCRIPTION	Ø4,8m			Ø5,6m			Ø6,4m			Ø7,2m		
		Flat	Recess	Cone	Flat	Recess	Cone	Flat	Recess	Cone	Flat	Recess	Cone
HJ900_27	Cover pipe Ø315 200cm	1	1	1	1	1	1	1	1	1	1	1	1
HJ900_272	Cover pipe Ø315 120cm							1	1	1	1	1	1
HJ900_273	Cover pipe Ø315 60cm				1	1	1				1	1	1
HJ900_28	Cover pipe bind	1	1	1	2	2	2	2	2	2	3	3	3
AR14393	Lower pipe support		1	1		1	1		1	1		1	1
311057	Leg 470-720		2	2			2		2	4			2
311260	Leg 800-1050	2				2		2					
311062	Leg 970-1695				2			2	2		2		
311264	Leg 1595-2370										2	2	
AR14229	Sleeve for leg 1/2	4	4	4	4	4	4	8	8	8	8	8	8
AR6500	Hex screw M8x40	10	10	10	10	10	10	18	18	18	18	18	18
AR6501	Nut M8	10	10	10	10	10	10	18	18	18	18	18	18
AR6514	Stud anchor M8x72	4	6	6	4	6	6	8	10	10	8	10	10

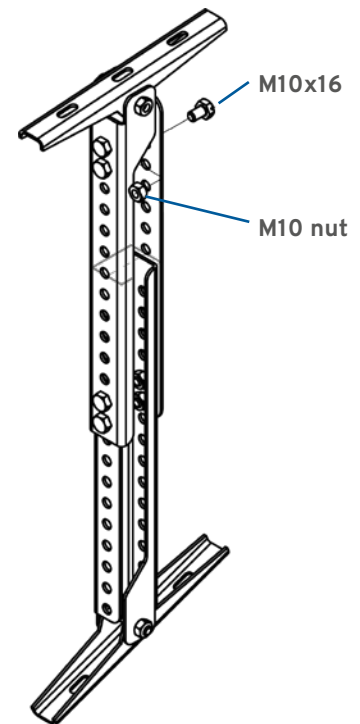
Pipe cover parts are attached to wall outlet and to each other with pipe cover sleeves. Start assembly by attaching the 2m pipe into the wall outlet. Install rest of the pipes starting from the longest so that the shortest part is located in the middle of the bin.

Support the pipe cover to the foundation with the lower support (excl. flat bottom). Install the lower support as close to the center of the bin as possible and attach it to foundation with stud anchors.

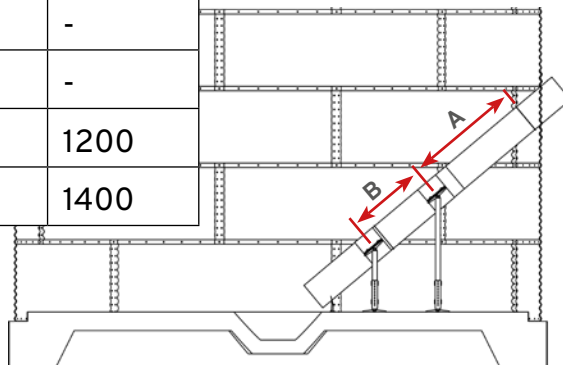


Install the pipe cover to the bin according to the table with M8x40 screws and nuts.

Attach legs to sleeves 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

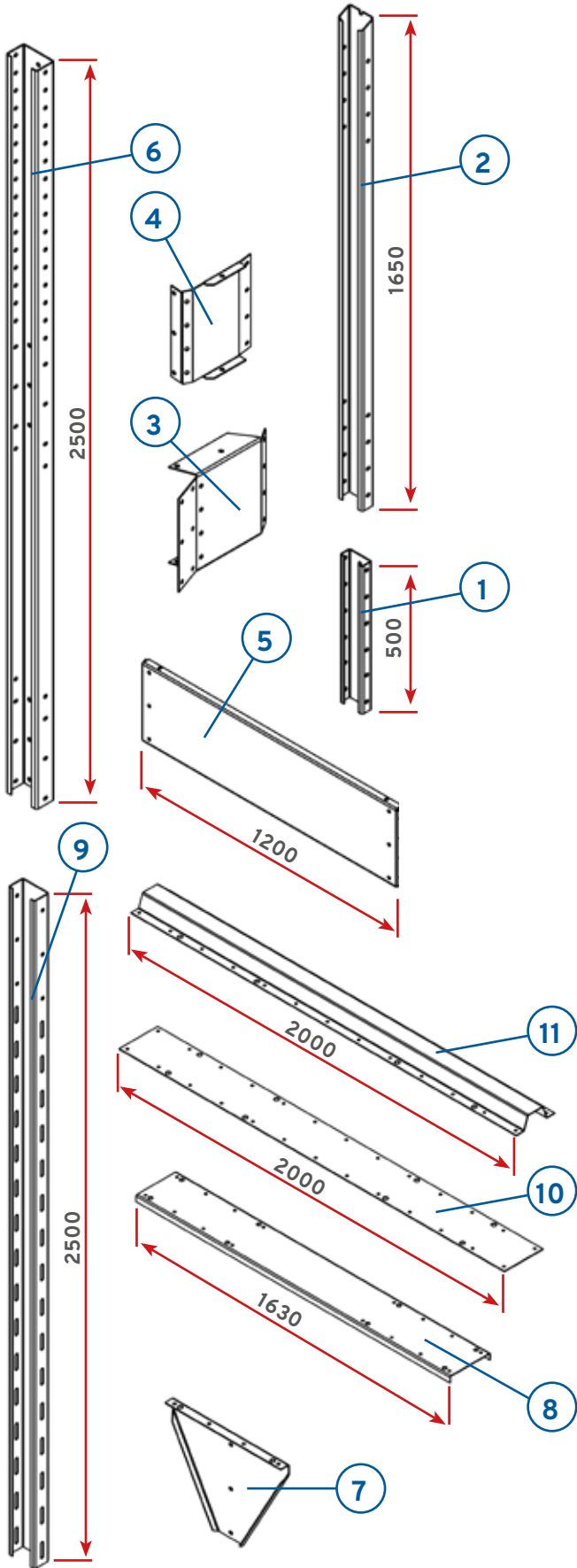


2.7. Finishing

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	NO.	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

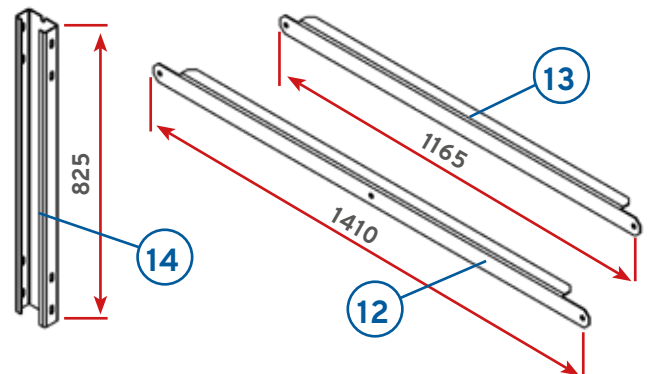
PART	DESCRIPTION	NO.	PCS
7	Support plate	13679	4
8	Beam	13680	1
9	C-profile 113x63	13677	2
10	Plate	13682	1
11	Beam	13678	1

COMMON PARTS

PART	DESCRIPTION	NO.	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.

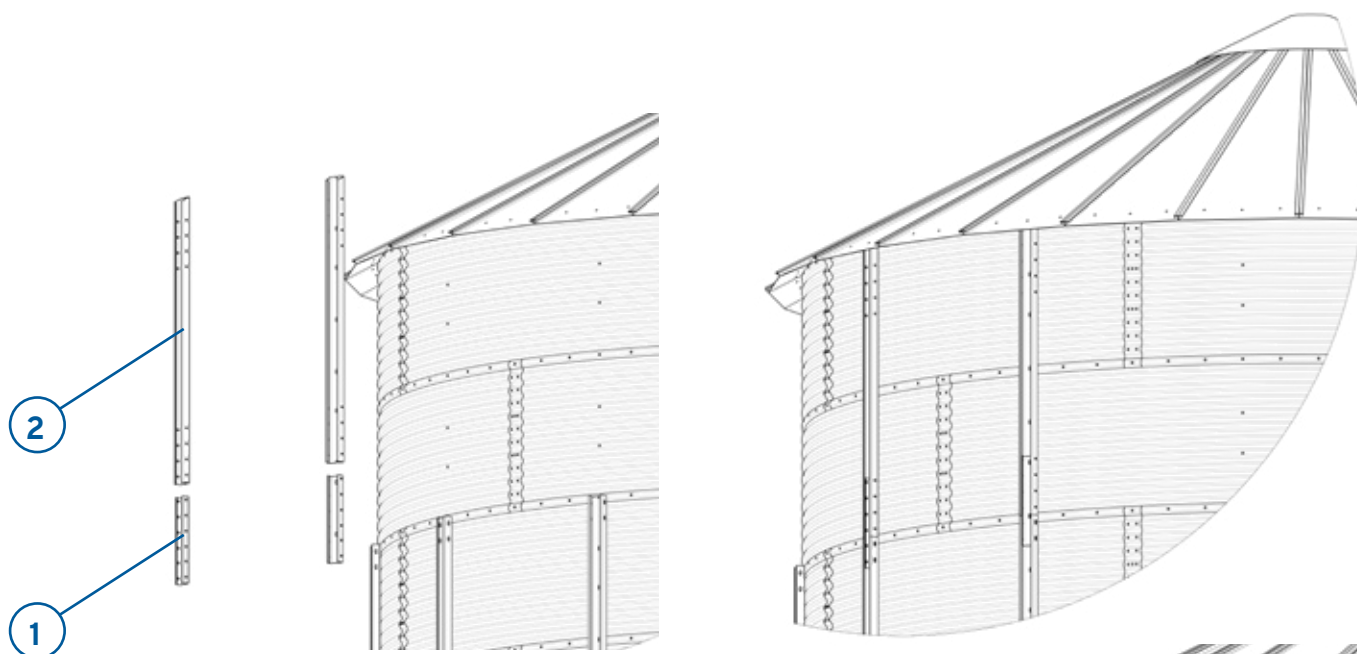


Install the conveyor support at the height of two highest wall element layers. Support is attached as extension of the wall reinforcements. If needed, add more reinforcements so that the reinforcements goes as straight line all the way to bin foundation / steel cone bottom.

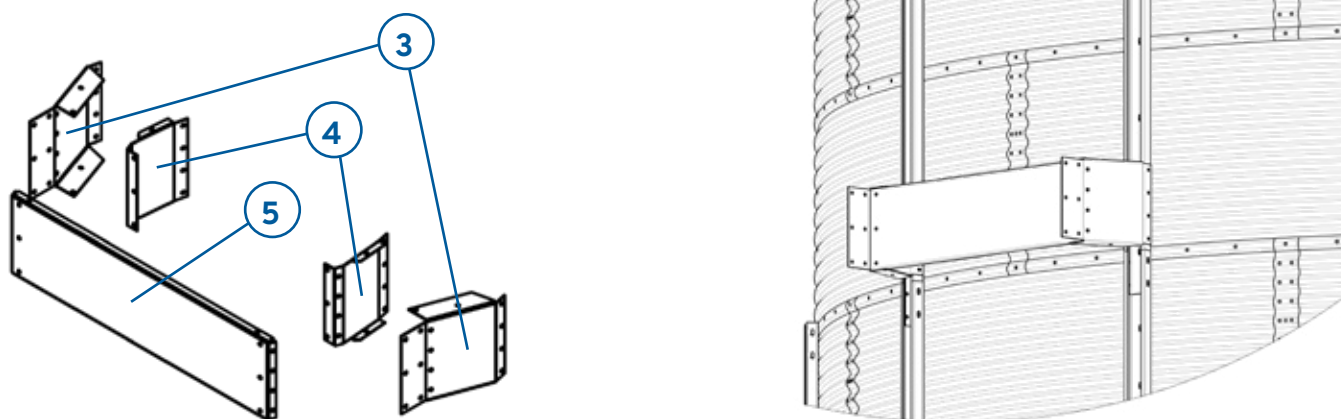
⚠ CAUTION!

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.

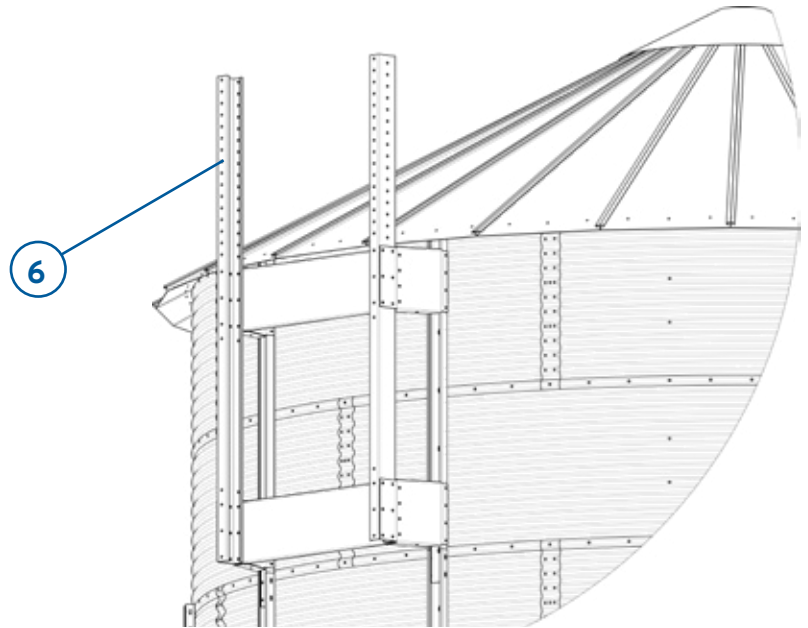
Attach extensions and brackets (parts 1 and 2) to bin's two highest wall element layers. Extension top part is skewed so that it fits under the roof eaves.



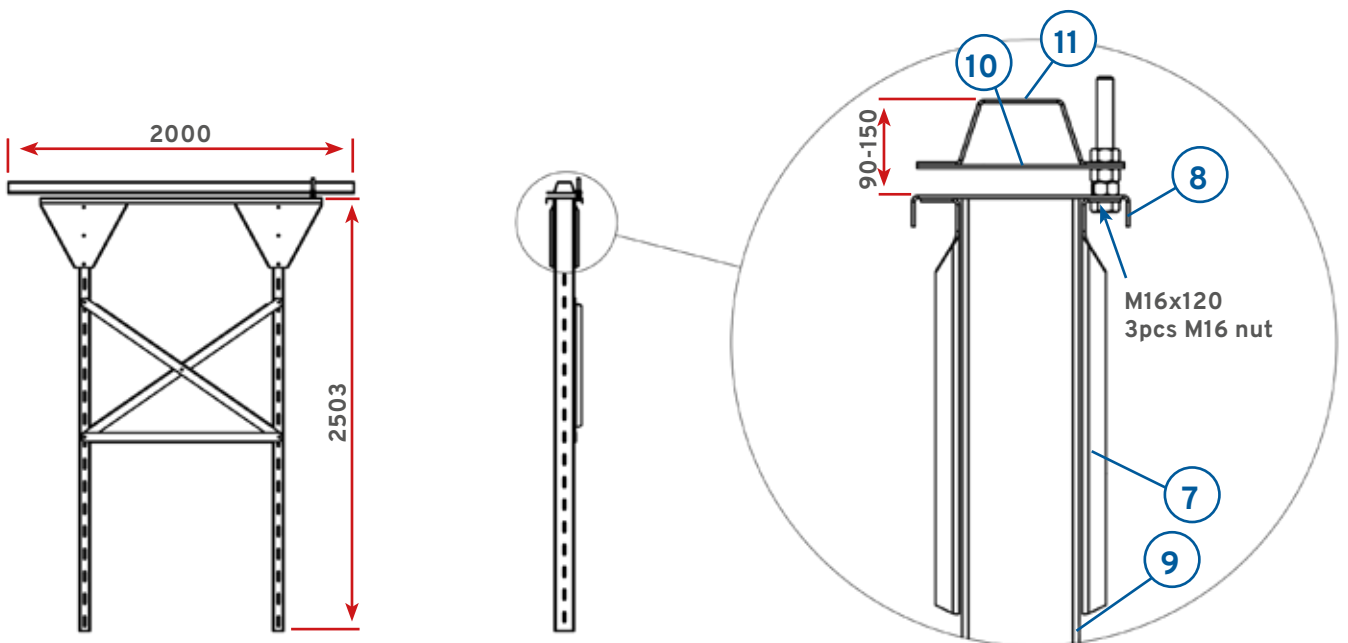
Attach parts 3,4 and 5 and mount them to parts 2.



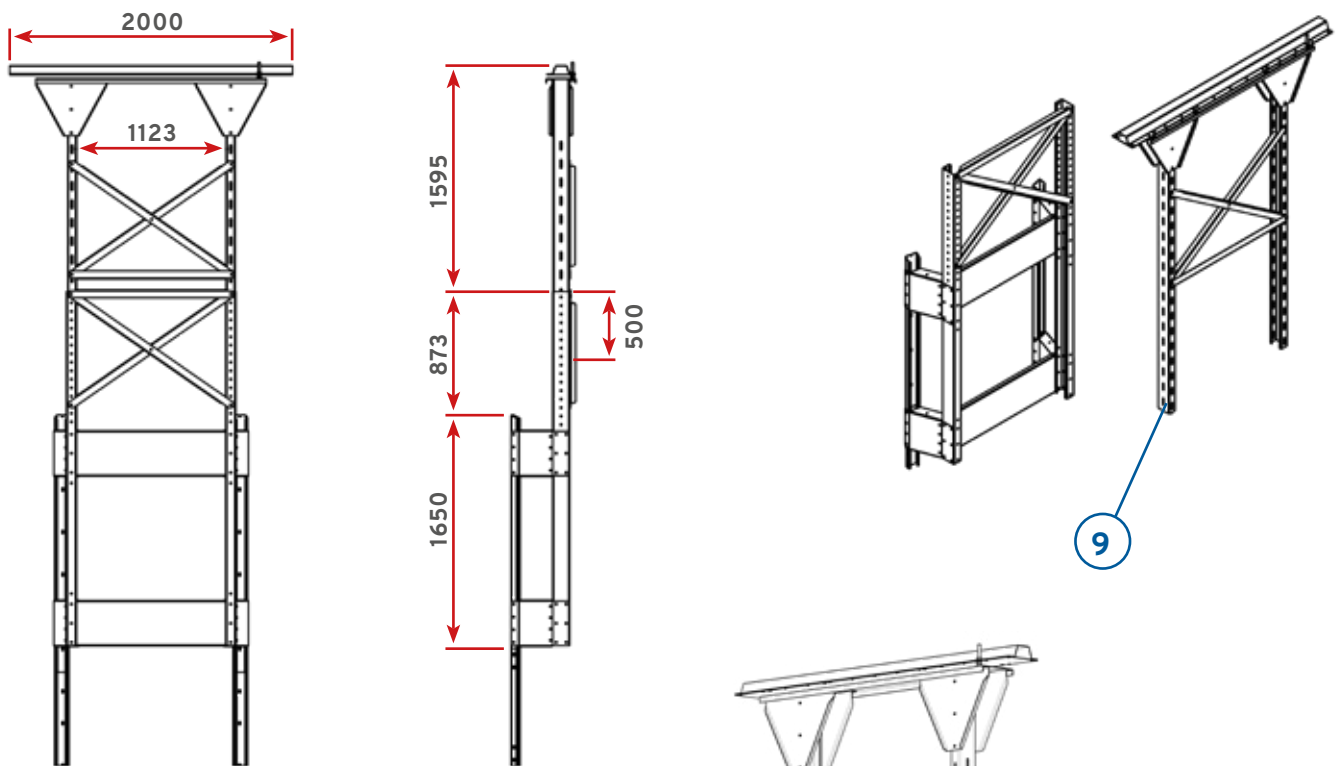
Attach parts 6.



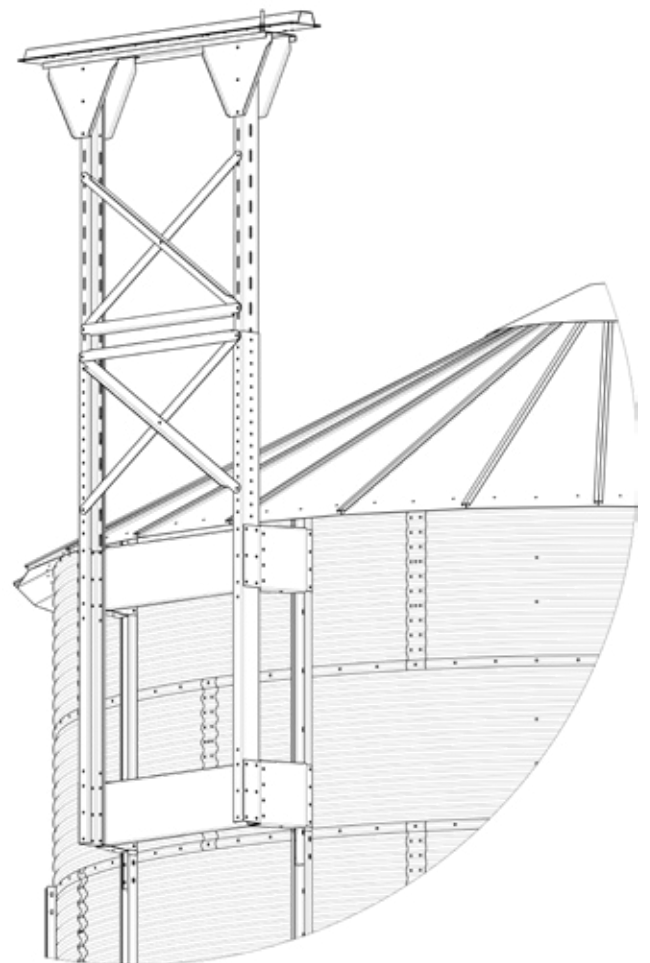
Install parts 7 to part 8 and attach C-profiles to them. Attach parts 10 and 11 to each other with M8x30 screws and nuts. Attach M16-120 screws with nuts to parts 7 and 8 and after that parts 10 and 11 to M16x120 screws with M16-nuts (height fine adjustment).



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.



Arskametalli Oy
Saarentantie 33
FI-31400 Somero, Finland

www.arskametalli.fi

